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# HYDRAULIC

PIPING PRODUCTS

INSTRUMENTATION

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HYDRAULIC

PROCHEM
PIPELINE PRODUCTS

# Hydraulic




WARNING: Improper selection or use of products described herein can cause personal injury or property damage. Whilst every care has been taken in preparation of the data contained in this handbook, Prochem Pipeline Products accepts no liability for the accuracy of information supplied. It is solely the responsibility of the system designer and user to select products suitable for their specific application requirements and to ensure proper installation, operation, and maintenance of these products. Material compatibility, product ratings, and application details should be considered in the selection.

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# Tube-Mac®

Tube-Mac® was founded 30 years ago as a piping systems repair and installation business. It has since grown into a progressive worldwide company with offices in Canada, USA, UK, Spain and Austria.

Tube-Mac® utilises technologically advanced non-welded flanged and coupling systems as a more cost effective alternative to welded piping systems. In today's world, skilled high pressure welders are becoming more difficult to find, especially in remote parts of the world. Cleanliness and environmental issues are becoming a major concern in the industry.

## PYPLOK® 37° FLARE RETAIN RING

**BENEFITS:**

**Overall installed cost savings**
**Proven leak-free system**
**Improved flow characteristics**
**Ease of installation**
**No welding**
**No acid cleaning**

**TYPICAL APPLICATIONS INCLUDE:**

| | |
|---|---|
| Steel mill equipment | Log handling |
| Transfer lines | Apron and screw feeders |
| Simulation equipment | Deck machinery |
| Aluminium mills | Winches, thrusters, jack up cylinders |
| Crushers, compactors | Barge and tower cranes |
| Shredders | Chemical, agitators and reactor drives |
| Presses | Sugar mill equipment |
| Digesters | Steam, steam traced lines |


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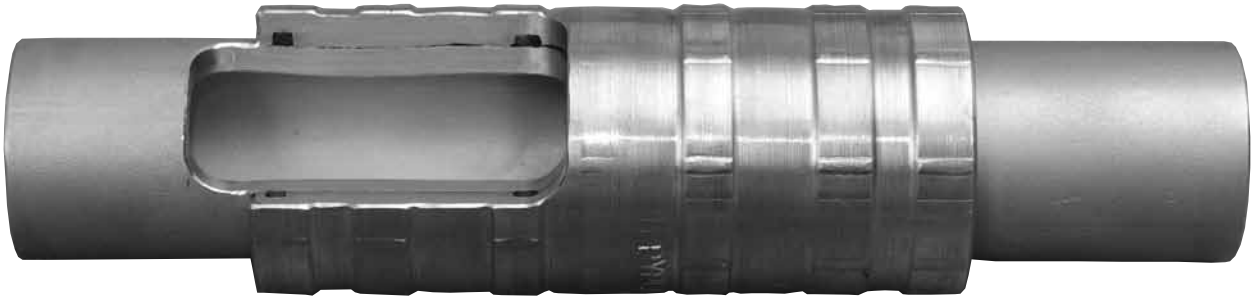
# The Tube-Mac®
# PYPLOK® System

## It's the weldless, threadless way to join pipe/tube



### LEAKFREE PERFORMANCE, REDUCED INSTALLED COST AND MINIMISED DOWNTIME

The Tube-Mac® PYPLOK® connecting system is sparkless and has a successful history of pipe and tube fabrication in the most demanding environments and systems, where fire safety is essential.

Using a portable, hand-held installation tool, fittings are cold worked and permanently compressed onto piping. This process deforms the pipe diameter a controlled amount, thus forming a permanent leaktight seal.

### USE IT ANYWHERE YOU'D WELD... BUT WOULDN'T WANT TO

Now you can have the benefits of a welded joint, but without the hazards of hot work, using the Tube-Mac® PYPLOK® coupling. It's not only a permanent system, it's also sparkless. It goes on cold. Which means all of the risks and requirements associated with "hot work" are avoided.

And the permanent characteristics of the Tube-Mac® PYPLOK® system make it ideal in place of welded flanges and threaded fittings which are prone to leaks due to flexure or vibration.

No hot work permits, no x-rays, no gas freeing, no system flushing or purging, no attached slag or contaminants enter the piping system. And with easy installation method, there is a substantial reduction of system downtime for repairs.

### THE ADVANTAGES OF PYPLOK'S SEALING CHARACTERISTICS

Tube-Mac® PYPLOK® Fittings incorporates unique sealing capabilities. It utilises four non-metallic o-rings, which make PYPLOK® Fittings adaptable to normal pipe and tube tolerances and surface conditions.

The outer o-ring seals prevent outside contaminants from entering the system.

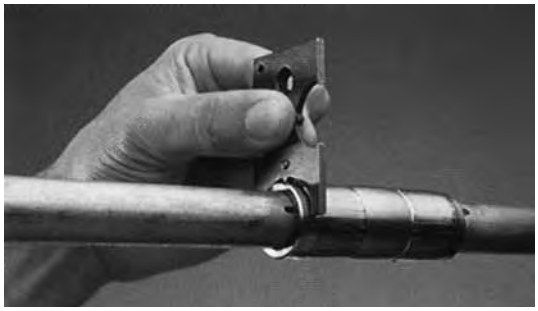
The Tube-Mac® PYPLOK® system is extremely versatile: Ideal for gaseous systems as well as fluids. Also available in various shapes: tees, elbows, 45° and 90°, reducers and custom ends.

### HOW PYPLOK® IS INSTALLED

The unique characteristics of the Tube-Mac® PYPLOK® Fitting system allows for installation on piping/tubing with normal tolerances and surface conditions.

Tooling is positioned around the fitting assembly and is pressurised using a manual or electric pump. The tool converts linear force into radial force, compressing, or swaging, the fitting and piping material together.

The connection results in joint tensile strength greater than the minimum pipe yield. A simple inspection gauge verifies proper diameter reduction.



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# PYPLOK® Fitting Specifications

| | |
|---|---|
| **Fitting Material:** | 316L, Duplex and Super Duplex Stainless Steel, Carbon Steel, 70/30 CuNi |
| **Pressure Range:** | Up to 640 bar (9300 psi) with 3:1 Safety Factor |
| **Fitting Size Range:** | 1/4" to 3" NB Pipe, 6.35 (1/4") to 50.8 mm* (2") OD Tube and<br>6 to 66 mm Metric Tube |
| **Fitting Material Temperature Limits:** | Stainless Steel -254 to 260°C (-425 to 500°F)<br>Carbon Steel -45 to 260°C (-50 to 500°F)<br>Copper Nickel -267 to 260°C (-452 to 500°F)<br>Duplex -51 to 260°C (-60 to 500°F)<br>Super Duplex -29 to 260°C (-20 to 500°F) |
| **Standard Seal Material Temperature Limits:**<br>(other materials available upon request) | • Viton® -26 to 205°C (-15 to 400°F)<br>• EPDM -42 to 260°C (-45 to 500°F) |
| **Standards and Testing:** | • ABS, DNV, BV, RMRS and NAVSEA certified, MIL-S-901D shock tested<br>• API 6FB and IS0 15540/19921 fire tested<br>• Meets ASME B31.1 and B31.3 Requirements |

** Up to 101.6 mm (4") available on request*

# PYPLOK® System Benefits

### TUBE-MAC® PYPLOK® SYSTEM ASSISTS YOU AND YOUR TEAM WITH SAFE AND COST EFFECTIVE WORK PRACTICES

**Most Cost Effective On-site Pipe Work Fabrication and Repairs**

- Reduces on-site time and labor – PYPLOK® fittings are swaged on cold, hot work permits are no longer required. PYPLOK® tooling is hydraulically actuated deleting special site services.
- PYPLOK® system prevents the need for Gas Freeing, System Flushing, NDT, and Fire Watch – designed as a one person operation.
- Swaged fittings are verified with a “Go-No-Go” inspection gauge – much quicker than NDT.
- Provides an Improved Safety Environment.
- The PYPLOK® system, developed to reduce hot work, is in itself a safe system since no torches, open flames or sparks are associated with the installation or maintenance.

**PYPLOK® System on EVERY Installation Achieves**

- Improved productivity – many tasks carried out in only one-shift with minimum disruption to production.
- Installed cost reduction of up to 65%.

**PYPLOK® System on EVERY Installation Offers**

- High tensile AND high torque hold.
- Crevice Corrosion protection.
- Minimum pipe preparation (seals on corroded pipe).

**Requires Very Little Specialised Skill and Training**

- PYPLOK® system provides a range of fittings and hand-held tooling that requires a minimum of specialised skills to install – easy and user friendly.
- Training is provided at no cost and takes less than 30 minutes to complete.
- Fully detailed, simple to follow documentation (Installation and Preventive Maintenance Manuals including Inspection Criteria Instructions) are provided with each purchased kit.

**How Much Does it Cost - Rent or Buy?**

- Clients have recuperated tooling and fitting cost in one system installation.
- Tooling can be purchased over a 12 month period – no Capital Expenditure issues.
- For Tooling Rental Program, please contact Prochem.


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# PYPLOK® Tube and Pipe Qualification

| NB Pipe | | |
|---|---|---|
| Size | **Min. Wall** | **Max. Wall** |
| 1/4" | SCH 10 | SCH 80 |
| 3/8" | SCH 10 | SCH 80 |
| 1/2" | SCH 10 | SCH 80 |
| 3/4" | SCH 10 | SCH 160 |
| 1" | SCH 10 | SCH 160 |
| 1-1/4" | SCH 10 | SCH 160 |
| 1-1/2" | SCH 10 | SCH 160 |
| 2" | SCH 10 | SCH 160 |
| 2-1/2" | SCH 10 | SCH 80 |
| 3" | SCH 10 | SCH 80 |

| OD Tube | | | |
|---|---|---|---|
| **Size** | | **Min. Wall** | **Max. Wall** |
| mm | inch | mm (inch) | mm (inch) |
| 6.35 | 1/4" | 0.71 (0.028") | 2.11 (0.083") |
| 9.53 | 3/8" | 0.71 (0.028") | 2.41 (0.095") |
| 12.70 | 1/2" | 0.89 (0.035") | 3.05 (0.120") |
| 15.88 | 5/8" | 0.89 (0.035") | 3.05 (0.120") |
| 19.05 | 3/4" | 1.24 (0.049") | 4.57 (0.180") |
| 25.40 | 1" | 1.24 (0.049") | 4.57 (0.180") |
| 31.75 | 1-1/4" | 1.65 (0.065") | 5.59 (0.220") |
| 38.10 | 1-1/2" | 1.65 (0.065") | 5.59 (0.220") |
| 50.80 | 2" | 2.11 (0.083") | 5.59 (0.220") |

| Metric Tube | | |
|---|---|---|
| **Size** | **Min. Wall** | **Max. Wall** |
| 6mm | 0.8 mm | 2.0 mm |
| 10mm | 0.8 mm | 2.5 mm |
| 12mm | 1.0 mm | 3.0 mm |
| 16mm | 1.0 mm | 3.0 mm |
| 20mm | 1.0 mm | 4.0 mm |
| 25mm | 1.0 mm | 4.0 mm |
| 30mm | 1.2 mm | 5.0 mm |
| 38mm | 1.5 mm | 6.0 mm |
| 42mm | 1.5 mm | 6.0 mm |
| 44.5mm | 1.0 mm | 4.0 mm |
| 50mm | 1.5 mm | 7.0 mm |
| 57mm | 1.0 mm | 4.0 mm |
| 60mm | 2.0 mm | 8.0 mm |

| Qualified Pipe/Tube |
|---|
| **Carbon Steel PYPLOK®**<br>ASTM A106/A53S<br>ASTM A53E/A587<br>ASTM A179<br>DIN 2391c Gr.37.4 (E235+N)<br>A135 ERW Grade A & B<br>API 5L Seamless/Electric Weld<br>MIL-T-20157" |
| **Stainless Steel PYPLOK®**<br>ASTM A312<br>ASTM A269 (EN 10216-5)<br>Types 304/304L/316/316L<br>MIL-P-1144<br>DIN 2391c Gr.52.4 (E355+N)<br>EN10217-7 (DIN 17457)<br>EN ISO 1127 (D3 and D4) |
| **Copper Nickel PYPLOK®**<br>ASTM B280<br>ASTM B75<br>MIL-T-16420<br>CuNi 90/10<br>CuNi 70/30<br>MIL-T-24107 |

**Note:** Not every pipe/tube specification has been listed. If you do not see your specification please consult your local Prochem office to confirm pipe/tube qualification.

| Allowable Outside Pipe/Tube Diameter Tolerances for PYPLOK® | | |
|---|---|---|
| NB Pipe | 1/4" to 1-1/2" | +/- 0.381 mm (0.015") |
| | 2" to 3" | +/- 0.762 mm (0.030") |
| OD Tube | 6.35 (1/4") to 9.53 mm (3/8") | +/- 0.127 mm (0.005") |
| | 12.7 (1/2") to 38.1 mm (1-1/2") | +/- 0.254 mm (0.010") |
| | 50.8 mm (2") | +/- 0.381 mm (0.015") |
| Metric Tube | 6 to 66 mm | +/- 0.254 mm (0.010") |


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# PYPLOK® Working Pressures

**THE SELECTION OF THE PROPER PYPLOK® FITTING DEPENDS ON THE PRESSURE RATING OF YOUR PIPING SYSTEM, PIPE SIZE AND TYPES OF PIPE MATERIALS WITHIN THE APPLICATION.**

### TUBE-MAC® PYPLOK® (NB, OD, METRIC)

- PYPLOK® fittings made of Type 316, Duplex and Super Duplex Stainless Steel, Carbon Steel, 70/30 CuNi (Copper Nickel).
- Used in systems with 620 bar (9000 psi) maximum operating pressure.
- Available in NB Pipe, OD Tube and Metric Tube configurations.
- Pipe fitting sizes range from 1/4" to 3" NB.
- OD fitting sizes range from 6.35 (1/4") to 50.8 mm (2") OD.
- Metric fittings sizes range from 6 to 60 mm.

## NB Pipe – DM 20 Series / DP 40 Series

| NB Pipe | Stainless Steel Pressure Ratings | | | | Carbon Steel Pressure Ratings | | | | CuNi 70/30 Pressure Ratings | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 4:1 Safety Factor | | 3:1 Safety Factor | | 4:1 Safety Factor | | 3:1 Safety Factor | | 4:1 Safety Factor | | 3:1 Safety Factor | |
| | bar | psi | bar | psi | bar | psi | bar | psi | bar | psi | bar | psi |
| 1/4" | 414 | 6000 | 552 | 8000 | 345 | 5000 | 460 | 6667 | 269 | 3896 | 358 | 5195 |
| 3/8" | 414 | 6000 | 552 | 8000 | 345 | 5000 | 460 | 6667 | 269 | 3896 | 358 | 5195 |
| 1/2" | 407 | 5900 | 543 | 7866 | 339 | 4917 | 452 | 6555 | 264 | 3831 | 352 | 5108 |
| 3/4" | 400 | 5800 | 533 | 7733 | 333 | 4833 | 444 | 6444 | 260 | 3766 | 346 | 5022 |
| 1" | 393 | 5700 | 524 | 7600 | 328 | 4750 | 437 | 6333 | 255 | 3701 | 340 | 4935 |
| 1-1/4" | 390 | 5650 | 520 | 7533 | 325 | 4708 | 433 | 6278 | 253 | 3669 | 337 | 4892 |
| 1-1/2" | 390 | 5650 | 520 | 7533 | 325 | 4708 | 433 | 6278 | 253 | 3669 | 337 | 4892 |
| 2" | 331 | 4800 | 441 | 6400 | 276 | 4000 | 368 | 5333 | 215 | 3117 | 287 | 4156 |
| 2-1/2" * | 41 | 600 | 55 | 800 | 41 | 600 | 55 | 800 | 13 | 188 | 17 | 250 |
| 3" * | 23 | 338 | 31 | 451 | 23 | 338 | 31 | 451 | 13 | 188 | 17 | 250 |

** DP 40 Low Pressure Series*

## OD Tube – DM 60 Series

| OD Tube | | Stainless Steel Pressure Ratings | | | | Carbon Steel Pressure Ratings | | | | CuNi 70/30 Pressure Ratings | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 4:1 Safety Factor | | 3:1 Safety Factor | | 4:1 Safety Factor | | 3:1 Safety Factor | | 4:1 Safety Factor | | 3:1 Safety Factor | |
| mm | inch | bar | psi | bar | psi | bar | psi | bar | psi | bar | psi | bar | psi |
| 6.35 | 1/4" | 483 | 7000 | 644 | 9333 | 402 | 5833 | 536 | 7778 | 313 | 4545 | 418 | 6060 |
| 9.53 | 3/8" | 400 | 5800 | 533 | 7733 | 333 | 4833 | 444 | 6444 | 260 | 3766 | 346 | 5022 |
| 12.7 | 1/2" | 421 | 6100 | 561 | 8133 | 351 | 5083 | 467 | 6778 | 273 | 3961 | 364 | 5281 |
| 15.88 | 5/8" | 421 | 6100 | 561 | 8133 | 351 | 5083 | 467 | 6778 | 273 | 3961 | 364 | 5281 |
| 19.05 | 3/4" | 414 | 6000 | 552 | 8000 | 345 | 5000 | 460 | 6667 | 269 | 3896 | 358 | 5195 |
| 25.4 | 1" | 400 | 5800 | 533 | 7733 | 333 | 4833 | 444 | 6444 | 260 | 3766 | 346 | 5022 |
| 31.75 | 1-1/4" | 400 | 5800 | 533 | 7733 | 333 | 4833 | 444 | 6444 | 260 | 3766 | 346 | 5022 |
| 38.1 | 1-1/2" | 390 | 5650 | 520 | 7533 | 325 | 4708 | 433 | 6278 | 253 | 3669 | 337 | 4892 |
| 50.8 | 2" | 331 | 4800 | 441 | 6400 | 276 | 4000 | 368 | 5333 | 215 | 3117 | 287 | 4156 |


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# PYPLOK® Working Pressures

## Metric Tube – DM 80 / DP 04 Series

| Stainless Steel Pressure Ratings | | | | |
|---|---|---|---|---|
| Metric Tube | 4:1 Safety Factor | | 3:1 Safety Factor | |
| | bar | psi | bar | psi |
| 6 mm | 448 | 6500 | 598 | 8666 |
| 8 mm | 428 | 6200 | 570 | 8266 |
| 10 mm | 414 | 6000 | 552 | 8000 |
| 12 mm | 400 | 5800 | 533 | 7733 |
| 16 mm | 400 | 5800 | 533 | 7733 |
| 20 mm | 390 | 5650 | 520 | 7533 |
| 25 mm | 390 | 5650 | 520 | 7533 |
| 30 mm | 390 | 5650 | 520 | 7533 |
| 38 mm | 390 | 5650 | 520 | 7533 |
| 42 mm | 390 | 5650 | 520 | 7533 |
| 50 mm | 352 | 5100 | 469 | 6800 |
| 60 mm | 331 | 4800 | 441 | 6400 |

| Carbon Steel Pressure Ratings | | | | |
|---|---|---|---|---|
| Metric Tube | 4:1 Safety Factor | | 3:1 Safety Factor | |
| | bar | psi | bar | psi |
| 6 mm | 374 | 5417 | 498 | 7222 |
| 8 mm | 356 | 5167 | 475 | 6889 |
| 10 mm | 345 | 5000 | 460 | 6667 |
| 12 mm | 333 | 4833 | 444 | 6444 |
| 16 mm | 333 | 4833 | 444 | 6444 |
| 20 mm | 325 | 4708 | 433 | 6278 |
| 25 mm | 325 | 4708 | 433 | 6278 |
| 30 mm | 325 | 4708 | 433 | 6278 |
| 38 mm | 325 | 4708 | 433 | 6278 |
| 42 mm | 325 | 4708 | 433 | 6278 |
| 50 mm | 293 | 4250 | 391 | 5667 |
| 60 mm | 276 | 4000 | 368 | 5333 |

| CuNi 70/30 Pressure Ratings | | | | |
|---|---|---|---|---|
| Metric Tube | 4:1 Safety Factor | | 3:1 Safety Factor | |
| | bar | psi | bar | psi |
| 6 mm | 291 | 4221 | 388 | 5628 |
| 8 mm | 278 | 4026 | 370 | 5368 |
| 10 mm | 269 | 3896 | 358 | 5195 |
| 12 mm | 260 | 3766 | 346 | 5022 |
| 16 mm | 260 | 3766 | 346 | 5022 |
| 20 mm | 253 | 3669 | 337 | 4892 |
| 25 mm | 253 | 3669 | 337 | 4892 |
| 30 mm | 253 | 3669 | 337 | 4892 |
| 38 mm | 253 | 3669 | 337 | 4892 |
| 42 mm | 253 | 3669 | 337 | 4892 |
| 44.5 mm* | 41 | 600 | 55 | 800 |
| 50 mm | 228 | 3312 | 305 | 4415 |
| 57 mm* | 41 | 600 | 55 | 800 |
| 60 mm | 215 | 3117 | 287 | 4156 |

** DP 04 Low Pressure Series*

# PYPLOK® Application

**PYPLOK® fittings are suitable for a wide range of applications:**

- CNG – Compressed Natural Gas
- $CO_2$ Cofferdam Inerting
- Condensate Piping
- Deluge Systems
- Down Well Coiled Tubing
- Drains and Plumbing Vent
- Ethylene Glycol/Water
- Fuel Oil and Fuel Gas
- Gases – Nitrogen, Air, Helium
- Heating Coil
- High Pressure Water Mist – Fire Suppression Systems
- Hydraulic Oil
- Low Temperature Steam
- LPG – Liquefied Petroleum Gas
- Lubrication and Grease
- Natural Gas
- Plant, Instrumentation and Utility Air
- RAD Waste Systems
- Solvents and Water Based Paints
- Steam Tracer Lines
- Waster Water

***If you don't see YOUR application ..... please contact us***


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# PYPLOK® – NB PIPE – DM 20 / DP 40 SERIES

## GENERAL CHARACTERISTICS

| Fitting Material Specifications | | Fitting Material Temperature Limits* |
|---|---|---|
| K = Stainless Steel | ASTM-A479/A182-316 | -254 to 260°C (-425 to 500°F) |
| G = Carbon Steel | ASTM-A105/A350 LF2 | -45 to 260°C (-50 to 500°F) |
| B = Copper Nickel | ASTM B466/MIL-T16420-70/30 | -267 to 260°C (-452 to 500°F) |
| D = Duplex | ASTM-A182/A479-S31803 | -51 to 260°C (-60 to 500°F) |
| Z = Super Duplex | ASTM-A182/A479-S32750 | -29 to 260°C (-20 to 500°F) |

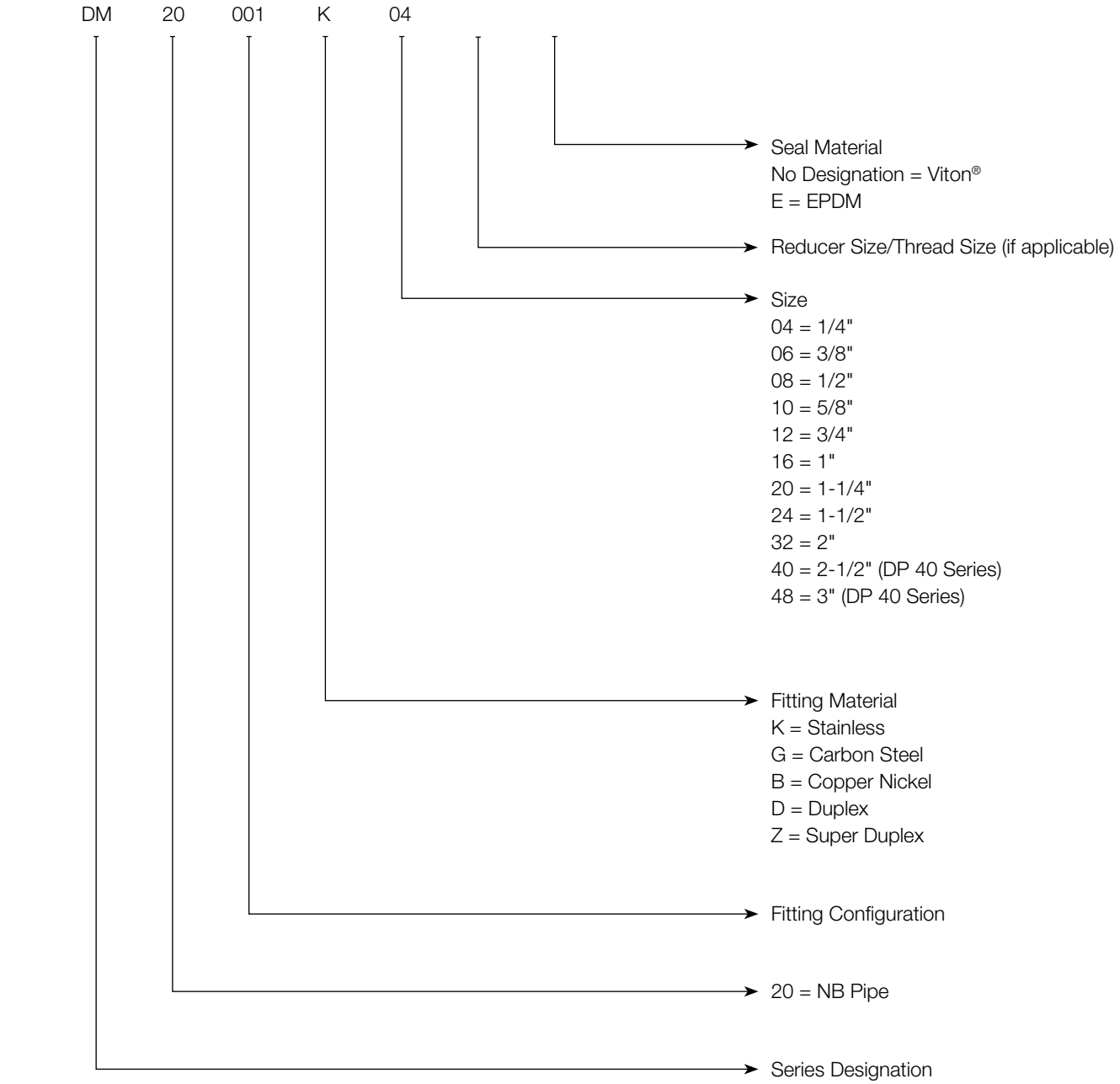
O-Ring Operating Temperature Limits ..... -26 to 205°C (-15 to 400°F) – VITON®
-42 to 260°C (-45 to 500°F) – EPDM

Fitting Size Range: .....1/4" NB to 3" NB (Note: Sizes above 2" are DP 40 Series)

Pressure Range: .....See PYPLOK® Fitting Selection page 6

** Temperatures according to ASME B31.3*

## ORDERING INFORMATION





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# NB PIPE – DM 20 / DP 40 SERIES

## FITTING CONFIGURATION GUIDE

| | | | | |
|---|---|---|---|---|
| Coupling  001 | 90° Elbow 003  003 | 45° Elbow 017  017 | Tee  004 | Reducer  101 |
| End Cap  085 | ANSI #150 – PN16  018 | ANSI #300 – PN40  019 | Male JIC 37°  055 | Female JIC 37° Swivel  054 |
| 90° Elbow Male JIC 37°  355 | Branch Tee Male JIC 37°  177 | Run Tee Male JIC 37°  178 | 90° Elbow Female JIC 37° Swivel  354 | Branch Tee Female JIC 37° Swivel  170 |
| Male ORFS  010 | Female ORFS Swivel  020 | 90° Elbow Male ORFS  011 | Branch Tee Male ORFS  013 | Run Tee Male ORFS  014 |
| 90° Elbow Female ORFS  021 | Branch Tee Female ORFS  023 | Male SAE  088 | Female SAE  087 | 90° Elbow Male SAE  105 |
| Branch Tee Male SAE  174 | Run Tee Male SAE  179 | Branch Tee Female SAE  171 | Male BSSP  153 | Female BSSP  086 |
| 90° Elbow Male BSPP  168 | Branch Tee Male BSPP  175 | Run Tee Male BSPP  180 | | |

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# PYPLOK® – OD TUBE – DM 60 SERIES

## GENERAL CHARACTERISTICS

| Fitting Material Specifications | | Fitting Material Temperature Limits* |
|---|---|---|
| K = Stainless Steel | ASTM-A479/A182-316 | -254 to 260°C (-425 to 500°F) |
| G = Carbon Steel | ASTM-A105/A350 LF2 | -45 to 260°C (-50 to 500°F) |
| B = Copper Nickel | ASTM B466/MIL-T16420-70/30 | -267 to 260°C (-452 to 500°F) |
| D = Duplex | ASTM-A182/A479-S31803 | -51 to 260°C (-60 to 500°F) |
| Z = Super Duplex | ASTM-A182/A479-S32750 | -29 to 260°C (-20 to 500°F) |

O-Ring Operating Temperature Limits ..... -26 to 205°C (-15 to 400°F) – VITON®
-42 to 260°C (-45 to 500°F) – EPDM

Fitting Size Range: .....6.35 (1/4") to 50.8 mm (2") OD

Pressure Range: .....See PYPLOK® Fitting Selection page 6

** Temperatures according to ASME B31.3*

## ORDERING INFORMATION

DM 60 001 K 04

- Seal Material
  - No Designation = Viton®
  - E = EPDM
- Reducer Size/Thread Size (if applicable)
- Size
  - 04 = 6.35 (1/4")
  - 06 = 9.53 (3/8")
  - 08 = 12.7 (1/2")
  - 10 = 15.8 (5/8")
  - 12 = 19.1 (3/4")
  - 16 = 25.4 (1")
  - 20 = 31.8 (1-1/4")
  - 24 = 38.1 (1-1/2")
  - 32 = 50.8 (2")
- Fitting Material
  - K = Stainless
  - G = Carbon Steel
  - B = Copper Nickel
  - D = Duplex
  - Z = Super Duplex
- Fitting Configuration
- 60 = OD Tube
- Series Designation


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# OD TUBE – DM 60 SERIES

## FITTING CONFIGURATION GUIDE

| | | | | |
|---|---|---|---|---|
| Coupling  001 | 90° Elbow  003 | 45° Elbow  017 | Tee  004 | Reducer  101 |
| End Cap  085 | Male JIC 37°  055 | Female JIC 37° Swivel  054 | 90° Elbow Male JIC 37°  355 | Branch Tee Male JIC 37°  177 |
| Run Tee Male JIC 37°  178 | 90° Elbow Female JIC 37° Swivel  354 | Branch Tee Female JIC 37° Swivel  170 | Male ORFS  010 | Female ORFS Swivel  020 |
| 90° Elbow Male ORFS  011 | Branch Tee Male ORFS  013 | Run Tee Male ORFS  014 | 90° Elbow Female ORFS  021 | Branch Tee Female ORFS  023 |
| Male SAE  088 | Female SAE  087 | 90° Elbow Male SAE  105 | Branch Tee Male SAE  174 | Run Tee Male SAE  179 |
| Male NPT  056 | Female NPT  060 | 90° Elbow Male NPT  057 | Branch Tee Male NPT  176 | Run Tee Male NPT  181 |
| SAE Code 61 Flange  091 | SAE Code 62 Flange  092 | SAE Code 61 Split Flange  093 | SAE Code 62 Split Flange  094 | SAE Code 61 Tapped Flange  095 |
| SAE Code 62 Tapped Flange  096 | Cross Fitting with 2 SAE Ports  220 | Cross Fitting with 4 SAE Ports  240 | | |

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# PYPLOK® – METRIC TUBE – DM 80 / DP 04 SERIES

## GENERAL CHARACTERISTICS

| Fitting Material Specifications | | Fitting Material Temperature Limits* |
|---|---|---|
| K = Stainless Steel | ASTM-A479/A182-316 | -254 to 260°C (-425 to 500°F) |
| G = Carbon Steel | ASTM-A105/A350 LF2 | -45 to 260°C (-50 to 500°F) |
| B = Copper Nickel | ASTM B466/MIL-T16420-70/30 | -267 to 260°C (-452 to 500°F) |
| D = Duplex | ASTM-A182/A479-S31803 | -51 to 260°C (-60 to 500°F) |
| Z = Super Duplex | ASTM-A182/A479-S32750 | -29 to 260°C (-20 to 500°F) |

O-Ring Operating Temperature Limits ..... -26 to 205°C (-15 to 400°F) – VITON®
-42 to 260°C (-45 to 500°F) – EPDM

Fitting Size Range: .....6 to 60 mm

Pressure Range: .....See PYPLOK® Fitting Selection page 7

** Temperatures according to ASME B31.3*

## ORDERING INFORMATION

DM 80 001 K 06

- Seal Material
  - No Designation = Viton®
  - E = EPDM
- Reducer Size/Thread Size (if applicable)
- Size
  - 06 = 6 mm
  - 08 = 8 mm
  - 10 = 10 mm
  - 12 = 12 mm
  - 15 = 15 mm
  - 16 = 16 mm
  - 18 = 18 mm
  - 20 = 20 mm
  - 22 = 22 mm
  - 25 = 25 mm
  - 28 = 28 mm
  - 30 = 30 mm
  - 35 = 35 mm
  - 38 = 38 mm
  - 42 = 42 mm
  - 44.5 = 44.5 mm (DP 04 Series)
  - 57 = 57 mm (DP 04 Series
  - 50 = 50 mm
  - 60 = 60 mm
- Fitting Material
  - K = Stainless
  - G = Carbon Steel
  - B = Copper Nickel
  - D = Duplex
  - Z = Super Duplex
- Fitting Configuration
- 80 = Metric Tube
- Series Designation


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# METRIC TUBE – DM 80 / DP 04 SERIES

## FITTING CONFIGURATION GUIDE

| | | | | |
|---|---|---|---|---|
| Coupling  001 | 90° Elbow  003 | 45° Elbow  017 | Tee  004 | Reducer  101 |
| End Cap  085 | Male JIC 37°  055 | Female JIC 37° Swivel  054 | 90° Elbow Male JIC 37°  355 | Branch Tee Male JIC 37°  177 |
| Run Tee Male JIC 37°  178 | 90° Elbow Female JIC 37° Swivel  354 | Branch Tee Female JIC 37° Swivel  170 | Male BSSP  153 | Female BSSP  086 |
| 90° Elbow Male BSPP  168 | Branch Tee Male BSPP  175 | Run Tee Male BSPP  180 | Branch Tee Female BSPP  172 | Male DIN 24°  066 |
| Female DIN 24° Swivel  068 | | | | |

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## Tube-Mac®

# Non-welded Flange Connections

## 37° Flare and Retain Ring

**The standard connection styles offered conform to SAE/ISO flanges along with Tube-Mac® proprietary flanges. Other flange patterns may also be available.**

There are two methods of attaching the flanges to the pipe

**A) Flaring the pipe to 37˚**

**B) Grooving the pipe to accept a retain ring.**

The determination of which method to use is based on pressure and flow requirements. The flared system being the most cost effective.

Normally the retain ring system is used for very high pressures and larger heavy wall pipe sizes.

The flanges on both methods can be rotated prior to bolting up thus eliminating the need to be concerned on which axis of the pipe the fitter aligns the flange holes. It also allows at times the flange cap screws to be installed in more confined spaces.

Welding or threading of the flanges to the pipe is eliminated.

**INDUSTRY BENEFITS FROM THE FEATURES OF A TUBE-MAC® QUALITY ALTERNATIVE PIPING SYSTEM.**

**Features:**

- Qualified customer representatives
- State-of-the-art CAD systems
- World class facilities
- High quality piping and components
- CNC Machining
- Custom Manufacturing
- International Capabilities
- Quality people

**Benefits:**

- Overall installed cost savings
- Proven leak-free system for over 35 years
- Improved flow characteristics
- Ease of installation
- No welding
- No acid cleaning



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# Cone and Flange Pressure Ratings and Ordering Information

| Flange Size | NB Pipe Size | Part Number O-Ring Face Cone Inserts* | Part Number Flat Face Cone Inserts* | METRIC Tube Size | Part Number O-Ring Face Cone Inserts* | Part Number Flat Face Cone Inserts* | FFCM-34 Flange Pressure Rating SAE Code 61 | Bolt Size | FFCM-64 Flange Pressure Rating SAE Code 62 | Bolt Size | FFCM-74 Flange Pressure Rating ISO 6164 | Bolt Size |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/2" (050) | 1/2" SCH 40 | CO-SCH40-050 | CF-SCH40-050 | 20 x 2.0 | CO-20X2-050 | CF-20X2-050 | 350 bar | M8 | 420 bar | M8 | Not Available | N/A |
| | 1/2" SCH 80 | CO-SCH80-050 | CF-SCH80-050 | 20 x 2.5 | CO-20X2.5-050 | CF-20X2.5-050 | | | | | | |
| | | | | 25 x 2.5 | CO-25X2.5-050 | CF-25X2.5-050 | | | | | | |
| | | | | 25 x 3.0 | CO-25X3-050 | CF-25X3-050 | | | | | | |
| 3/4" (075) | 3/4" SCH 40 | CO-SCH40-075 | CF-SCH40-075 | 20 x 2.0 | CO-20X2-075 | CF-20X2-075 | 350 bar | M10 | 420 bar | M10 | Not Available | N/A |
| | 3/4" SCH 80 | CO-SCH80-075 | CF-SCH80-075 | 20 x 2.5 | CO-20X2.5-075 | CF-20X2.5-075 | | | | | | |
| | | | | 25 x 2.5 | CO-25X2.5-075 | CF-25X2.5-075 | | | | | | |
| | | | | 25 x 3.0 | CO-25X3-075 | CF-25X3-075 | | | | | | |
| | | | | 30 x 3.0 | CO-30X3-075 | CF-30X3-075 | | | | | | |
| 1" (100) | 1" SCH 40 | CO-SCH40-100 | CF-SCH40-100 | 25 x 2.5 | CO-25X2.5-100 | CF-25X2.5-100 | 350 bar | M10 | 420 bar | M12 | Not Available | N/A |
| | 1" SCH 80 | CO-SCH80-100 | CF-SCH80-100 | 25 x 3.0 | CO-25X3-100 | CF-25X3-100 | | | | | | |
| | | | | 30 x 3.0 | CO-30X3-100 | CF-30X3-100 | | | | | | |
| | | | | 30 x 4.0 | CO-30X4-100 | CF-30X4-100 | | | | | | |
| | | | | 38 x 4.0 | CO-38X4-100 | CF-38X4-100 | | | | | | |
| 1-1/4" (125) | 1-1/4" SCH 40 | CO-SCH40-125 | CF-SCH40-125 | 30 x 3.0 | CO-30X3-125 | CF-30X3-125 | 275 bar | M10 | 420 bar | M12 | Not Available | N/A |
| | 1-1/4" SCH 80 | CO-SCH80-125 | CF-SCH80-125 | 30 x 4.0 | CO-30X4-125 | CF-30X4-125 | | | | | | |
| | | | | 38 x 4.0 | CO-38X4-125 | CF-38X4-125 | | | | | | |
| | | | | 38 x 5.0 | CO-38X5-125 | CF-38X5-125 | | | | | | |
| | | | | 42 x 4.0 | CO-42X4-125 | CF-42X4-125 | | | | | | |
| 1-1/2" (150) | 1-1/2" SCH 40 | CO-SCH40-150 | CF-SCH40-150 | 38 x 4.0 | CO-38X4-150 | CF-38X4-150 | 210 bar | M12 | 420 bar | M16 | Not Available | N/A |
| | 1-1/2" SCH 80 | CO-SCH80-150 | CF-SCH80-150 | 38 x 5.0 | CO-38X5-150 | CF-38X5-150 | | | | | | |
| | 1-1/2" SCH 160 | CO-SCH160-150 | CF-SCH160-150 | 42 x 4.0 | CO-42X4-150 | CF-42X4-150 | | | | | | |
| | | | | 50 x 5.0 | CO-50X5-150 | CF-50X5-150 | | | | | | |
| 2" (200) | 2" SCH 40 | CO-SCH40-200 | CF-SCH40-200 | 50 x5.0 | CO-50X5-200 | CF-50X5-200 | 210 bar | M12 | 420 bar | M20 | 400 bar | M16 |
| | 2" SCH 80 | CO-SCH80-200 | CF-SCH80-200 | 60 x 5.0 | CO-60X5-200 | CF-60X5-200 | | | | | | |
| | 2" SCH 160 | CO-SCH160-200 | CF-SCH160-200 | 60 x 6.0 | CO-60X6-200 | CF-60X6-200 | | | | | | |
| 2-1/2" (250) | 2-1/2" SCH 40 | CO-SCH40-250 | CF-SCH40-250 | 60 x 5.0 | CO-60X5-250 | CF-60X5-250 | 175 bar | M12 | Not Available | N/A | 400 bar | M20 |
| | 2-1/2" SCH 80 | CO-SCH80-250 | CF-SCH80-250 | 73 x 5.0 | CO-73X5-250 | CF-73X5-250 | | | | | | |
| | 2-1/2" SCH 160 | CO-SCH160-250 | CF-SCH160-250 | 73 x 7.0 | CO-73X7-250 | CF-73X7-250 | | | | | | |
| | | | | 75 x 5.0 | CO-75X5-250 | CF-75X5-250 | | | | | | |
| | | | | 75 x 7.0 | CO-75X7-250 | CF-75X7-250 | | | | | | |
| 3" (300) | 3" SCH 40 | CO-SCH40-300 | CF-SCH40-300 | 73 x 5.0 | CO-73X5-300 | CF-73X5-300 | 140 bar | M16 | Not Available | N/A | 400 bar | M24 |
| | 3" SCH 80 | CO-SCH80-300 | CF-SCH80-300 | 73 x 7.0 | CO-73X7-300 | CF-73X7-300 | | | | | | |
| | | | | 75 x 5.0 | CO-75X5-300 | CF-75X5-300 | | | | | | |
| | | | | 75 x 7.0 | CO-75X7-300 | CF-75X7-300 | | | | | | |
| | | | | 90 x 5.0 | CO-90X5-300 | CF-90X5-300 | | | | | | |
| | | | | 90 x 7.0 | CO-90X7-300 | CF-90X7-300 | | | | | | |
| 3-1/2" (350) | 3-1/2" SCH 40 | CO-SCH40-350 | CF-SCH40-350 | 100 x 6.0 | CO-100X6-350 | CF-100X6-350 | 35 bar | M16 | Not Available | N/A | 400 bar | N/A |
| | 3-1/2" SCH 80 | CO-SCH80-350 | CF-SCH80-350 | 100 x 8.0 | CO-100X8-350 | CF-100X8-350 | | | | | | |
| 4" (400) | 4" SCH 40 | CO-SCH40-400 | CF-SCH40-400 | 115 x 6.0 | CO-115X6-400 | CF-115X6-400 | 35 bar | M16 | Not Available | N/A | 400 bar | M30 |
| | 4" SCH 80 | CO-SCH80-400 | CF-SCH80-400 | 115 x 8.0 | CO-115X8-400 | CF-115X8-400 | | | | | | |

* Add -SS for Stainless Steel Parts

To order flanges, use the Flange part number followed by the size designator.
For example a 2" FFCM-34 flange would be “FFCM-34-200”

TUBE/PIPE PRESSURE RATINGS MAY BE LOWER THAN FLANGE RATINGS. PROPER TUBE/PIPE SELECTION IS REQUIRED

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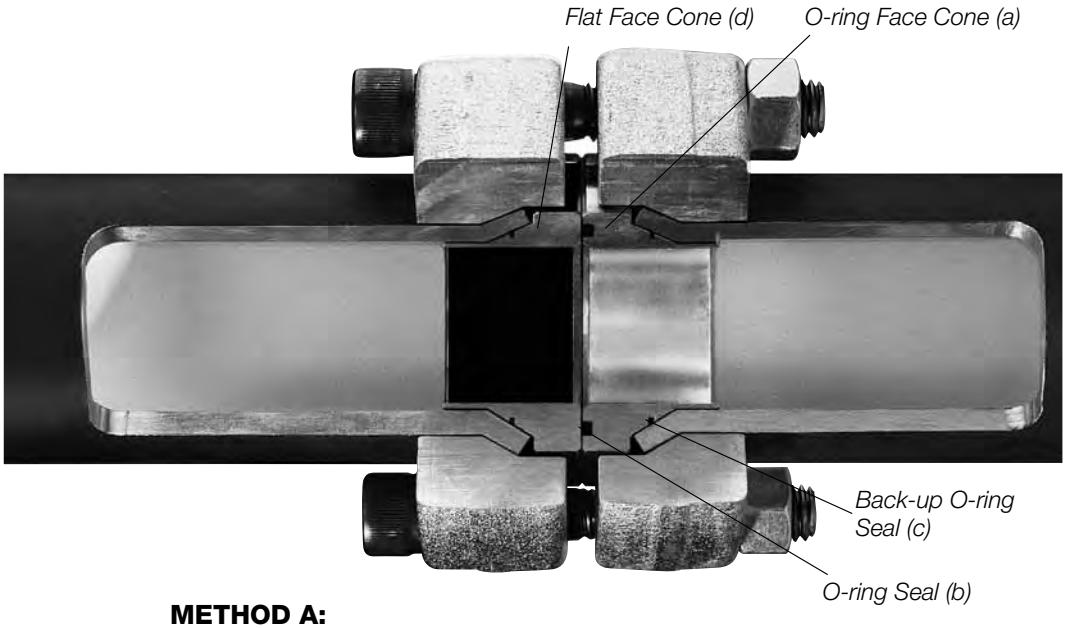
# Tube-Mac®

# 37° Flare

## Method A: Flare Connection

**METHOD A**
**(FLARED SYSTEM)**




### METHOD A:

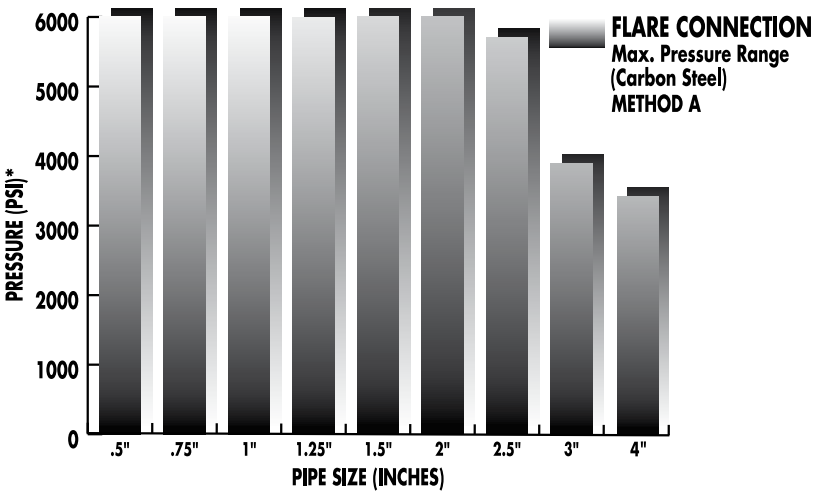
The flared configuration is based on flaring the pipe ends to 37˚ and utilising two internal cones. O-ring face cone (a) with o-ring seal (b) and Flat face cone (d). Both internal cones have back-up o-rings (c).

The flange is slipped onto the pipe before flaring, after flaring the cone is located into the pipe. Bolting the connection together draws the flared pipe and cone in contact with each other providing an elastomer seal at the flare and at the face.

**FLARE CONNECTION FEATURES**

- Size range 1/2" to 4" NB
- Sizes up to 8" available on request
- Metric sizes available
- Pressures to 414 bar (6000 psi)
- Safety Factor - min. 3:1

**Maximum allowable working pressures are based on the lower of the pipe rating per ANSI B31.3 or the connection rating. (Stainless Steel Optional)*





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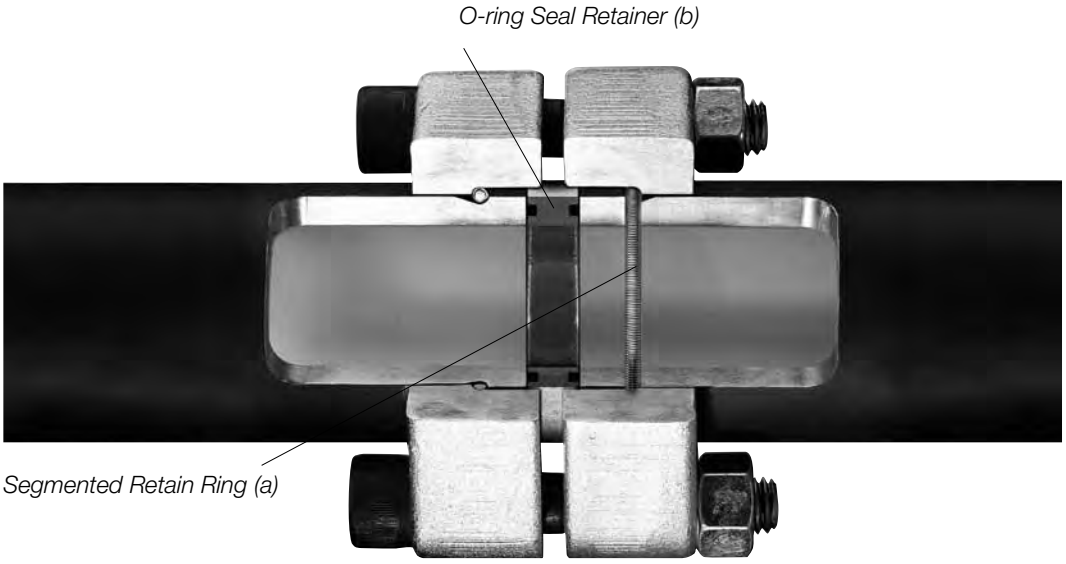
# Tube-Mac®

# Retain Ring

## Method B: Retain Ring Connection

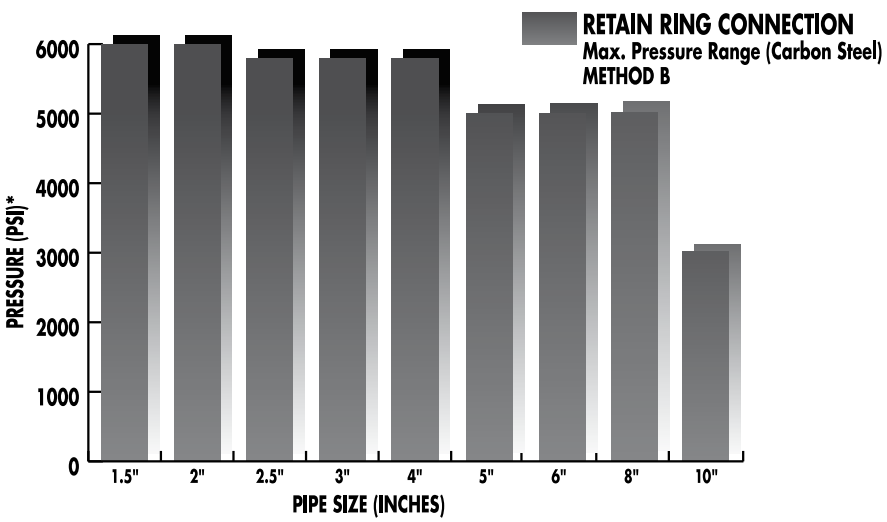



**METHOD B**
**(RETAIN RING SYSTEM)**

### METHOD B:

The retain ring configuration uses heavy wall pipe and has a machined butt end face, along with an annular groove on the outside diameter.

After machining, the flange is slipped onto the pipe and a retain ring (a) which consists of a segmented stainless steel ring bound by a spiral wound stainless steel spring is sprung over the outside diameter of the pipe, nesting in the annular groove. Bolting the connection together draws the flanges against the retain rings with the o-ring seal retainer (b) captive within the connection.




**RETAIN RING CONNECTION FEATURES**

- Size range 1-1/2" to 10" NB
- Metric sizes available
- Pressures to 414 bar (6000 psi)
- Safety Factor - min. 3:1

**Maximum allowable working pressures are based on the lower of the pipe rating per ANSI B31.3 or the connection rating. (Stainless Steel Optional)*

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# Seamless Steel Tubes
## for precision applications

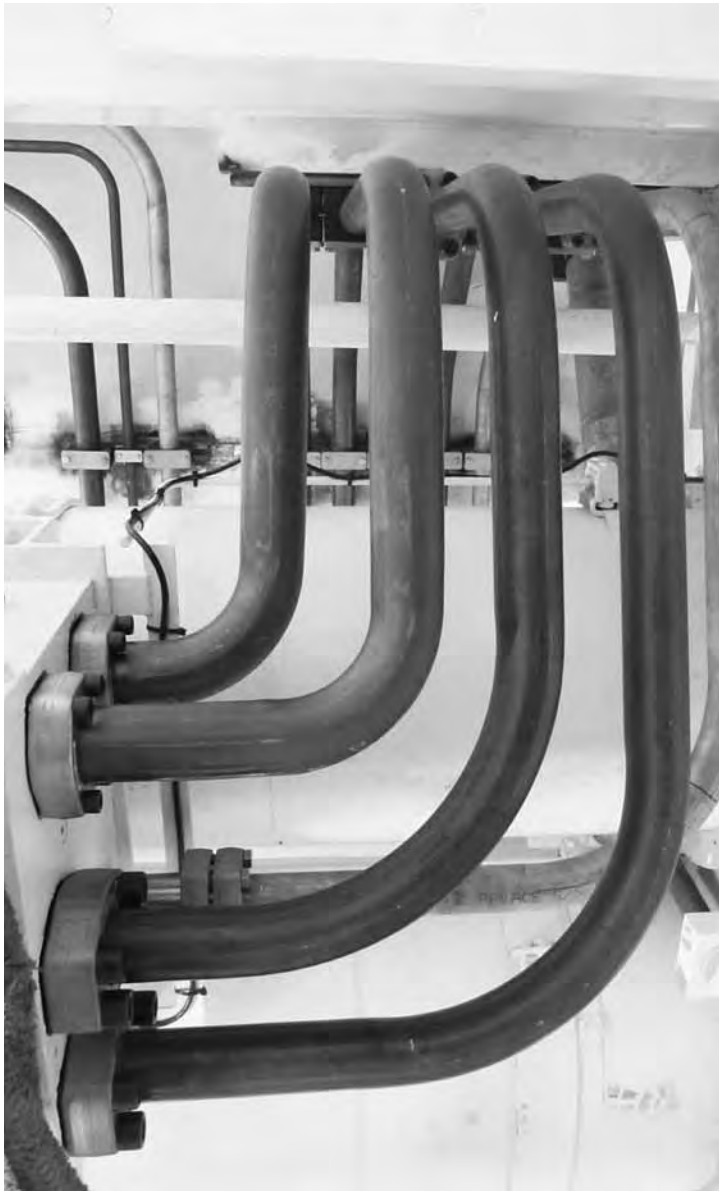
**EN10305-4: Seamless cold drawn tubes for hydraulic, grease/lubrication and pneumatic power systems**

**NBK Phosphated and Oiled High Quality Bendable and Flareable Cold Drawn Seamless Carbon Steel**

For hydraulic applications, steel tubes are commonly used with a phosphate external coating which also provides corrosion resistance.

Other more corrosion resistant materials such as 304, 316 and Duplex Stainless Steels are also available for use with flared and retained ring systems.

- European Origin of Material
- E235+N (ST 37.4 NBK)
- E355+N (ST 52.4 NBK)
- Phosphated Internally and Externally
- Oiled Internally and Externally
- 6,000 mm (6 m) (-0, +50 mm)
- Ends Plugged with Plastic Caps
- Certification on EN 10204 3.1
- Continuous Marking along the length including Heat Number



**NOTES:**

***The only material acceptable for use with Tube-Mac® 37° Flare Systems is EN10305-4 (DIN2391c NBK)***

***The allowable working pressure of the system may be less than the allowable working pressure of the tube***

**CHEMICAL COMPOSITION % OF E355 + N (1.0580) ST52.4**

| C | Si | Mn | P | S |
|---|---|---|---|---|
| max 0.22 | max 0.55 | max 1.6 | max 0.045 | max 0.045 |

**CHEMICAL COMPOSITION % OF E235 + N (1.0308) ST37.4**

| C | Si | Mn | P | S |
|---|---|---|---|---|
| max 0.17 | max 0.35 | max 1.2 | max 0.045 | max 0.045 |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# Ordering Information

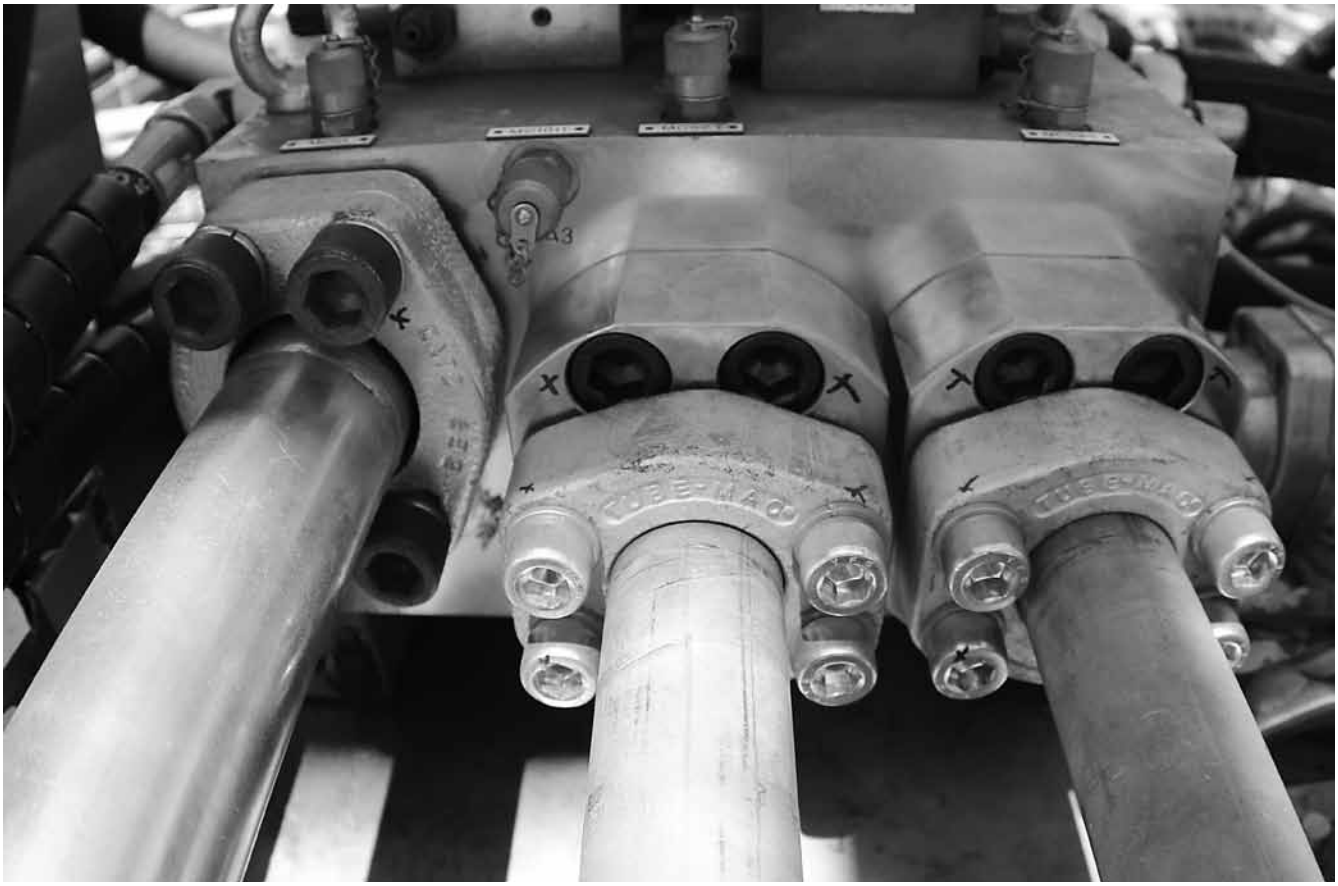
### E355+N ST 52.4

| Part Number | Description | Bore Diameter (mm) | Weight (kg/m) | Working Pressure (bar)* |
|---|---|---|---|---|
| T030.0X04.0XMSPN | 30.0mm OD x 4.0mm WT Hydraulic Tube Seamless Steel E355+N EN10305-4 ST52.4 NBK Phosphated & Oiled | 22 | 2.57 | 424 |
| T038.0X04.0XMSPN | 38.0mm OD x 4.0mm WT Hydraulic Tube Seamless Steel E355+N EN10305-4 ST52.4 NBK Phosphated & Oiled | 30 | 3.36 | 327 |
| T050.0X05.0XMSPN | 50.0mm OD x 5.0mm WT Hydraulic Tube Seamless Steel E355+N EN10305-4 ST52.4 NBK Phosphated & Oiled | 40 | 5.56 | 315 |
| T060.0X05.0XMSPN | 60.0mm OD x 5.0mm WT Hydraulic Tube Seamless Steel E355+N EN10305-4 ST52.4 NBK Phosphated & Oiled | 50 | 6.79 | 259 |
| T060.0X08.0XMSPN | 60.0mm OD x 8.0mm WT Hydraulic Tube Seamless Steel E355+N EN10305-4 ST52.4 NBK Phosphated & Oiled | 46 | 10.27 | 445 |
| T066.0X08.5XMSPN | 66.0mm OD x 8.5mm WT Hydraulic Tube Seamless Steel E355+N EN10305-4 ST52.4 NBK Phosphated & Oiled | 49 | 12.07 | 429 |
| T080.0X10.0XMSPN | 80.0mm OD x 10.0mm WT Hydraulic Tube Seamless Steel E355+N EN10305-4 ST52.4 NBK Phosphated & Oiled | 60 | 17.28 | 418 |

### E235+N ST 37.4

| Part Number | Description | Bore Diameter (mm) | Weight (kg/m) | Working Pressure (bar)* |
|---|---|---|---|---|
| T050.0X03.0XLSPN | 50.0mm OD x 03.0mm WT Hydraulic Tube Seamless Steel E235+N EN10305-4 ST37.4 NBK Phosphated & Oiled | 44 | 4.38 | 115 |
| T060.0X03.0XLSPN | 60.0mm OD x 03.0mm WT Hydraulic Tube Seamless Steel E235+N EN10305-4 ST37.4 NBK Phosphated & Oiled | 54 | 4.22 | 95 |

** Working pressures are based on a minimum bending radius of 3D according to DNV*



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# Stainless Steel Tube

Prochem leads the field in the supply of high quality hydraulic tube for offshore and onshore applications.

## THEORETICAL WORKING PRESSURE FOR SEAMLESS TUBE TP316/316L

### 316 (Seamless) -253 to 38°C

| | | Wall Thickness | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Size** | | inch | 0.028 | 0.036 | 0.048 | 0.064 | 0.083 | 0.109 | 0.128 |
| mm | inch | mm | 0.71 | 0.91 | 1.22 | 1.63 | 2.11 | 2.77 | 3.25 |
| 3.18 | 1/8" | psi | 8,579 | 12,083 | 19,185 | | | | |
| | | kPa | 59,110 | 83,254 | 132,188 | | | | |
| 4.76 | 3/16" | psi | 5,883 | 7,153 | 10,389 | | | | |
| | | kPa | 40,534 | 49,282 | 71,581 | | | | |
| 6.35 | 1/4" | psi | 4,311 | 5,682 | 7,199 | 10,464 | 15,363 | | |
| | | kPa | 29,700 | 39,150 | 49,603 | 72,097 | 105,848 | | |
| 7.94 | 5/16" | psi | 3,401 | 4,460 | 6,129 | 7,836 | 11,060 | | |
| | | kPa | 23,436 | 30,730 | 42,229 | 53,990 | 76,205 | | |
| 9.53 | 3/8" | psi | | 3,671 | 5,017 | 6,274 | 8,679 | | |
| | | kPa | | 25,290 | 34,566 | 43,230 | 59,797 | | |
| 12.7 | 1/2" | psi | | 2,711 | 3,681 | 5,031 | 6,726 | 8,539 | |
| | | kPa | | 18,678 | 25,362 | 34,667 | 46,343 | 58,834 | |
| 15.88 | 5/8" | psi | | 2,149 | 2,907 | 3,953 | 5,249 | 6,474 | |
| | | kPa | | 14,806 | 20,029 | 27,233 | 36,166 | 44,604 | |
| 19.05 | 3/4" | psi | | 1,780 | 2,402 | 3,255 | 4,304 | 5,809 | ***5,887*** |
| | | kPa | | 12,264 | 16,549 | 22,424 | 29,654 | 40,023 | ***40,562*** |
| 25.4 | 1" | psi | | | 1,781 | 2,403 | 3,161 | 4,235 | ***4,741*** |
| | | kPa | | | 12,269 | 16,555 | 21,780 | 29,181 | ***32,665*** |
| 31.75 | 1-1/4" | psi | | | | ***1,906*** | ***2,500*** | ***3,335*** | ***3,726*** |
| | | kPa | | | | ***13,131*** | ***17,224*** | ***22,980*** | ***25,673*** |
| 38.1 | 1-1/2" | psi | | | | ***1,574*** | ***2,060*** | ***2,741*** | ***3,058*** |
| | | kPa | | | | ***10,844*** | ***14,196*** | ***18,886*** | ***21,072*** |
| 50.8 | 2" | psi | | | | ***1,173*** | ***1,532*** | ***2,032*** | ***2,263*** |
| | | kPa | | | | ***8,083*** | ***10,556*** | ***13,997*** | ***15,593*** |

**TUBE WORKING PRESSURE NOTES:**

Tube working pressures have been calculated in accordance with ASME B31.3
Where Thickness < Diameter/6, the formula 304.1.2 3a has been used. Where Thickness ≥ Diameter/6, the formula K304.1.2 35c has been used.

For TP316

S = 20,000 psi Y = 0.4 W = 1 E = 1 c0 has been neglected

Tube Outside Diameter and Wall Thickness Tolerances have been considered when calculating the working pressures.

Numbers in standard text have been calculated based on ASTM A269/213 tolerances

***Numbers in bold italic text have been calculated based on ASTM A269 tolerances***

**The Allowable Working Pressures calculated are a guide only. As there are variables that will alter the Allowable Working Pressure of the tube, it is the ultimate responsibility of the customer to verify that the tube is suitable for the application.**

***This table does not advise suitability for use with compression fittings. The purchaser must refer to the compression fitting manufacturers tubing data charts for size and wall thickness suitability.***


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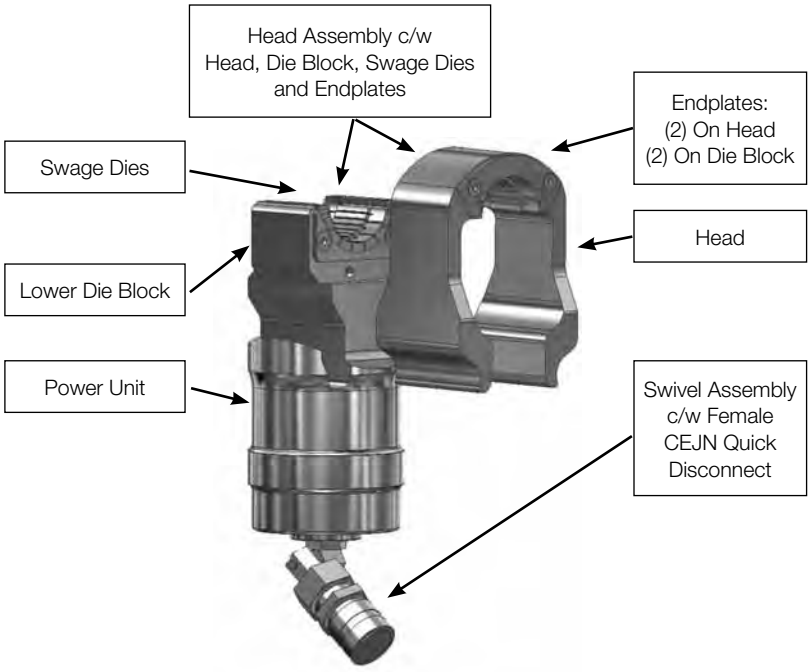
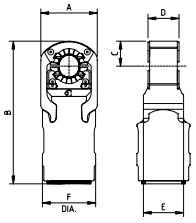
# PYPLOK® Tooling

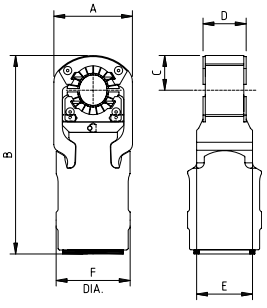



## Tooling Dimensions



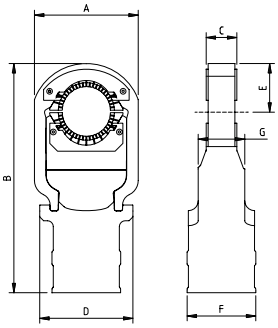

### MODEL 10

| | Head Series |
|---|---|
| | 01 |
| A | 34 |
| B | 11 |
| C | 16 |
| D | 24 |
| E | 33 |
| F | 41 |



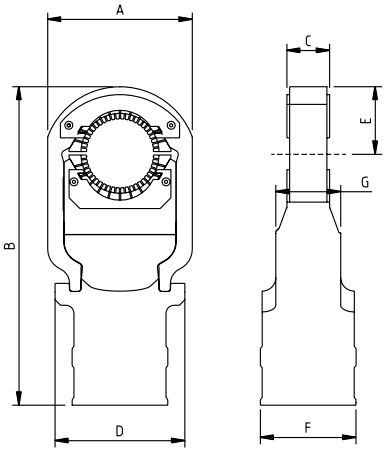

### MODEL 40

| | Head Series | |
|---|---|---|
| | 00 | 02 |
| A | 84 | 89 |
| B | 214 | 224 |
| C | 35 | 141 |
| D | 34 | 49 |
| E | 64 | 63 |
| F | 84 | 84 |




### MODEL 55

| | Head Series |
|---|---|
| | 01 |
| A | 132 |
| B | 252 |
| C | 49 |
| D | 152 |
| E | 94 |
| F | 105 |
| G | 76 |




### MODEL 70

| | Head Series | |
|---|---|---|
| | 01 | 02 |
| A | 170 | 192 |
| B | 372 | 386 |
| C | 43 | 51 |
| D | 150 | 150 |
| E | 77 | 77 |
| F | 112 | 112 |
| G | 76 | 76 |

ALL DIMENSIONS IN MM

SEE PAGES 22 - 25 FOR CORRECT HEAD SERIES SELECTION.

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# NB PIPE – DM 20 / DP 40 SERIES – TOOL PARTS MATRIX (NEW GENERATION TOOL)

*Head Assembly Includes: Die Set, Die Block, Head, Endplates and Endplate Bolts

## MODEL 40 POWER UNIT – DLT40MAPW0000

| Size | Fitting Series | Inspection Gauge | Die Set | Die Block | Head | Upper Endplates | Lower Endplates | Endplate Bolts | Head Assembly* |
|---|---|---|---|---|---|---|---|---|---|
| **MODEL 40 - 00' SERIES** | | | | | | | | | |
| 1/4" | **DM 20 Series NB Pipe** | DLT40PYIG3804 | DLT40PYDI3804 | DLT40MADA0000 | DLT40MAHD0000 | DLT40PYEU0000 | DLT40PYEL0000 | MS51595-61 10-24 x 3/8" Flat Socket Cap | DLT40PYHA3804 |
| 3/8" | | DLT40PYIG3806 | DLT40PYDI3806 | | | | | | DLT40PYHA3806 |
| **MODEL 40 - 02' SERIES** | | | | | | | | | |
| 1/2" | **DM 20 Series NB Pipe** | DLT40PYIG3808 | DLT40PYDI3808 | DLT40MADA0002 | DLT40MAHD0002 | DLT40PYEU0002 | DLT40PYEL0002 | MS51595-61 10-24 x 3/8" Flat Socket Cap | DLT40PYHA3808 |
| 3/4" | | DLT40PYIG3812 | DLT40PYDI3812 | | | | | | DLT40PYHA3812 |

## MODEL 55 POWER UNIT - DLT55MAPW0000

| Size | Fitting Series | Inspection Gauge | Die Set | Die Block | Head | Upper Endplates | Lower Endplates | Endplate Bolts | Head Assembly* |
|---|---|---|---|---|---|---|---|---|---|
| **MODEL 40 - 00' SERIES** | | | | | | | | | |
| 1/2" | **DM 20 Series NB Pipe** | DLT40PYIG3808 | DLT55PYDI3808 | DLT55MADA0001 | DLT55MAHD0001 | DLT55PYEU0001 | DLT55PYEL0001 | MS51595-61 10-24 x 3/8" Flat Socket Cap | DLT55PYHA3808 |
| 3/4" | | DLT40PYIG3812 | DLT55PYDI3812 | | | | | | DLT55PYHA3812 |
| 1" | | DLT55PYIG3816 | DLT55PYDI3816 | | | | | | DLT55PYHA3816 |
| 1-1/4" | | DLT55PYIG3820 | DLT55PYDI3820 | | | | | | DLT55PYHA3820 |
| 1-1/2" | | DLT55PYIG3824 | DLT55PYDI3824 | | | | | | DLT55PYHA3824 |

## MODEL 70 POWER UNIT - DLT70MAPW0000

| Size | Fitting Series | Inspection Gauge | Die Set | Die Block | Head | Upper Endplates | Lower Endplates | Endplate Bolts | Head Assembly* |
|---|---|---|---|---|---|---|---|---|---|
| **MODEL 70 - 01' SERIES** | | | | | | | | | |
| 1" | **DM 20 Series NB Pipe** | DLT55PYIG3816 | DLT70PYDI3816 | DLT70MADA0001 | DLT70MAHD0001 | DLT70PYEU0001 | DLT70PYEL0001 | MS51595-61 10-24 x 3/8" Flat Socket Cap | DLT70PYHA3816 |
| 1-1/4" | | DLT55PYIG3820 | DLT70PYDI3820 | | | | | | DLT70PYHA3820 |
| 1-1/2" | | DLT55PYIG3824 | DLT70PYDI3824 | | | | | | DLT70PYHA3824 |
| 2" | | DLT70PYIG3832 | DLT70PYDI3832 | | | | | | DLT70PYHA3832 |
| **MODEL 70 - 02' SERIES** | | | | | | | | | |
| 2-1/2" | **DP 40 Series Low Pressure NB Pipe** | DLT70PYIG4040 | DLT70PYDI4040 | DLT70MADA0002 | DLT70MAHD0002 | DLT70PYEU0002 | DLT70PYEL0002 | MS51595-61 10-24 x 3/8" Flat Socket Cap | DLT70PYHA4040 |
| 3" | | DLT70PYIG4048 | DLT70PYDI4048 | | | | | | DLT70PYHA4048 |

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# OD TUBE – DM 60 SERIES – TOOL PARTS MATRIX (NEW GENERATION TOOL)

*Head Assembly Includes: Die Set, Die Block, Head, Endplates and Endplate Bolts

## MODEL 10 POWER UNIT - DLT10MAPW0000

| Size | | Fitting Series | Inspection Gauge | Die Set | Die Block | Head | Upper Inboard | Lower Outboard | Lower Inboard | Lower Outboard | Head Assembly* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | inch | | | | | | | | | | |
| MODEL 10 - 01' SERIES | | | | | | | | | | | |
| 6.35 | 1/4" | DM 60 Series OD Imperial Tube | DLT10PYIG3704 | DLT10PYDI3704 | DLT10MADA0001 | DLT10MAHD0001 | DLT10PSEU4006 | DLT10PYFU704 | DLT10PSEL4006 | DLT10PSFL4006 | DLT10PYHA3704 |

## MODEL 40 POWER UNIT - DLT40MAPW0000

| Size | | Fitting Series | Inspection Gauge | Die Set | Die Block | Head | Upper Endplates | Lower Endplates | Endplate Bolts | Head Assembly* |
|---|---|---|---|---|---|---|---|---|---|---|
| mm | inch | | | | | | | | | |
| MODEL 40 - 00' SERIES | | | | | | | | | | |
| 9.53 | 3/8" | DM 60 Series OD Imperial Tube | DLT40PYIG3706 | DLT40PYDI3706 | DLT40MADA0000 | DLT40MAHD0000 | DLT40PYEU0000 | DLT40PYEL0000 | MS51595-61 10-24 x 3/8" Flat Socket Cap | DLT40PYHA3706 |
| 12.7 | 1/2" | | DLT40PYIG3708 | DLT40PYDI3708 | | | | | | DLT40PYHA3708 |
| 15.88 | 5/8" | | DLT40PYIG3710 | DLT40PYDI3916 | | | | | | DLT40PYHA3916 |
| MODEL 40 - 02' SERIES | | | | | | | | | | |
| 19.05 | 3/4" | DM 60 Series OD Imperial Tube | DLT40PYIG3712 | DLT40PYDI3712 | DLT40MADA0002 | DLT40MAHD0002 | DLT40PYEU0002 | DLT40PYEL0002 | MS51595-61 10-24 x 3/8" Flat Socket Cap | DLT40PYHA3712 |
| 25.4 | 1" | | DLT40PYIG3716 | DLT40PYDI3716 | | | | | | DLT40PYHA3716 |

## MODEL 55 POWER UNIT - DLT55MAPW0000

| Size | | Fitting Series | Inspection Gauge | Die Set | Die Block | Head | Upper Endplates | Lower Endplates | Endplate Bolts | Head Assembly* |
|---|---|---|---|---|---|---|---|---|---|---|
| mm | inch | | | | | | | | | |
| MODEL 55 - 01' SERIES | | | | | | | | | | |
| 25.4 | 1" | DM 60 Series OD Imperial Tube | DLT40PYIG3716 | DLT55PYDI3716 | DLT55MADA0001 | DLT55MAHD0001 | DLT55PYEU0001 | DLT55PYEL0001 | MS51595-61 10-24 x 3/8" Flat Socket Cap | DLT55PYHA3716 |
| 31.75 | 1-1/4" | | DLT55PYIG3720 | DLT55PYDI3720 | | | | | | DLT55PYHA3720 |
| 38.1 | 1-1/2" | | DLT55PYIG3724 | DLT55PYDI3724 | | | | | | DLT55PYHA3724 |
| 50.8 | 2" | | DLT55PYIG3732 | DLT55PYDI3824 | | | | | | DLT55PYHA3824 |

# METRIC TUBE – DM 80 / DP 04 SERIES – TOOL PARTS MATRIX (NEW GENERATION TOOL)

*Head Assembly Includes: Die Set, Die Block, Head, Endplates and Endplate Bolts

## MODEL 10 POWER UNIT - DLT10MAPW0000

| Size | Fitting Series | Inspection Gauge | Die Set | Die Block | Head | Upper Inboard | Upper Outboard | Lower Inboard | Lower Outboard | Head Assembly* |
|---|---|---|---|---|---|---|---|---|---|---|
| **MODEL 10 - 01' SERIES** | | | | | | | | | | |
| 6 mm | **DM 80 Series Metric Tube** | DLT10PYIG3906 | DLT10PYDI3704 | DLT10MADA0001 | DLT10MAHD0001 | DLT10PSEU4006 | DLT10PYFU704 | DLT10PSEL4006 | DLT10PSFL4006 | DLT10PYHA3704 |
| 8 mm | | DLT10PYIG3908 | DLT10PYDI3908 | | | | | | | DLT10PYHA3908 |

## MODEL 40 POWER UNIT - DLT40MAPW0000

| Size | Fitting Series | Inspection Gauge | Die Set | Die Block | Head | Upper Endplates | Lower Endplates | Endplate Bolts | Head Assembly* |
|---|---|---|---|---|---|---|---|---|---|
| **MODEL 40 - 00' SERIES** | | | | | | | | | |
| 10 mm | **DM 80 Series Metric Tube** | DLT40PYIG3910 | DLT40PYDI3910 | DLT40MADA0000 | DLT40MAHD0000 | DLT40PYEU0000 | DLT40PYEL0000 | MS51595-61 10-24 x 3/8" Flat Socket Cap | DLT40PYHA3910 |
| 12 mm | | DLT40PYIG3912 | DLT40PYDI3912 | | | | | | DLT40PYHA3912 |
| 14 mm | | DLT40PYIG3914 | DLT40PYDI3804 | | | | | | DLT40PYHA3804 |
| 15 mm | | DLT40PYIG3915 | DLT40PYDI3916 | | | | | | DLT40PYHA3916 |
| 16 mm | | DLT40PYIG3916 | DLT40PYDI3916 | | | | | | DLT40PYHA3916 |
| 18 mm | | DLT40PYIG3918 | DLT40PYDI3806 | | | | | | DLT40PYHA3806 |
| 20 mm | | DLT40PYIG3920 | DLT40PYDI3920 | | | | | | DLT40PYHA3920 |
| **MODEL 40 - 02' SERIES** | | | | | | | | | |
| 22 mm | **DM 80 Series Metric Tube** | DLT40PYIG3922 | DLT40PYDI3808 | DLT40MADA0002 | DLT40MAHD0002 | DLT40PYEU0002 | DLT40PYEL0002 | MS51595-61 10-24 x 3/8" Flat Socket Cap | DLT40PYHA3808 |
| 25 mm | | DLT40PYIG3925 | DLT40PYDI3925 | | | | | | DLT40PYHA3925 |
| 28 mm | | DLT40PYIG3928 | DLT40PYDI3812 | | | | | | DLT40PYHA3812 |
| 30 mm | | DLT40PYIG3930 | DLT40PYDI3930 | | | | | | DLT40PYHA3930 |

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# METRIC TUBE – DM 80 / DP 04 SERIES – TOOL PARTS MATRIX (NEW GENERATION TOOL)

*Head Assembly Includes: Die Set, Die Block, Head, Endplates and Endplate Bolts

## MODEL 55 POWER UNIT – DLT55MAPW0000

| Size | Fitting Series | Inspection Gauge | Die Set | Die Block | Head | Upper Endplates | Lower Endplates | Endplate Bolts | Head Assembly* |
|---|---|---|---|---|---|---|---|---|---|
| **MODEL 55 - 01' SERIES** | | | | | | | | | |
| 30 mm | **DM 80 Series Metric Tube** | DLT40PYIG3930 | DLT55PYDI3930 | DLT55MADA0001 | DLT55MAHD0001 | DLT55PYEU0001 | DLT55PYEL0001 | MS51595-61 10-24 x 3/8" Flat Socket Cap | DLT55PYHA3930 |
| 35 mm | | DLT40PYIG3935 | DLT55PYDI3816 | | | | | | DLT55PYHA3816 |
| 38 mm | | DLT55PYIG3938 | DLT55PYDI3724 | | | | | | DLT55PYHA3724 |
| 42 mm | | DLT55PYIG3942 | DLT55PYDI3820 | | | | | | DLT55PYHA3820 |
| 50 mm | | DLT55PYIG3950 | DLT55PYDI3824 | | | | | | DLT55PYHA3824 |
| 44.5 mm | **DP 04 Series Low Pressure Metric Tube** | DLT55PYIG4244 | DLT55PYDI3944 | DLT56MADA0001 | DLT55MAHD0001 | DLT55PYEU0001 | DLT55PYEL0001 | MS51595-61 10-24 x 3/8" Flat Socket Cap | DLT55PYHA3944 |
| **MODEL 55 - 02' SERIES** | | | | | | | | | |
| 57 mm | **DP 04 Series Low Pressure Metric Tube** | DLT55PYIG4257 | DLT55PYDI3957 | DLT56MADA0002 | DLT55MAHD0002 | DLT55PYFU4032<br>DLT55PYEU4032 | DLT55PYEL4032<br>DLT55PYFL4032 | MS51595-61 10-24 x 3/8" Flat Socket Cap | DLT55PYHA3957 |

## MODEL 70 POWER UNIT - DLT70MAPW0000

| Size | Fitting Series | Inspection Gauge | Die Set | Die Block | Head | Upper Endplates | Lower Endplates | Endplate Bolts | Head Assembly* |
|---|---|---|---|---|---|---|---|---|---|
| **MODEL 70 - 01' SERIES** | | | | | | | | | |
| 42 mm | **DM 80 Series Metric Tube** | DLT55PYIG3942 | DLT70PYDI3820 | DLT70MADA0001 | DLT70MAHD0001 | DLT70PYEU0001 | DLT70PYEL0001 | MS51595-61 10-24 x 3/8" Flat Socket Cap | DLT70PYHA3820 |
| 50 mm | | DLT55PYIG3950 | DLT70PYDI3824 | | | | | | DLT70PYHA3824 |
| 60 mm | | DLT70PYIG3960 | DLT70PYDI3832 | | | | | | DLT70PYHA3832 |

# Tube-Mac®
# Flaring Tooling

## FLARING MACHINE

**Part Number: TFM-01-220** (220V/10/50Hz)
Weight: 417 kg

Available for hire or purchase.
Contact Prochem for details.

### FLARING PIN

| Part Number | Sizes |
|---|---|
| TL-0011A | 1/2" to 1" NB Pipe<br>6.35 (1/2") to 31.75 mm (1-1/4") OD Tube<br>12 to 30 mm Metric Tube |
| TL-0012A | 1-1/4" and 1-1/2" NB Pipe<br>38.1 (1-1/2") to 50.8 mm (2") OD Tube<br>38 to 50 mm Metric Tube |
| TL-0013A | 2" and 2-1/2" NB Pipe<br>60 mm and 75 mm Metric Tube |
| TL-0014A | 3" NB Pipe<br>90 mm Metric Tube |
| TL-0017A | 3-1/2" NB Pipe<br>100 mm Metric Tube |
| TL-0018A | 4" NB Pipe<br>115 mm Metric Tube |

### METRIC TUBE DIE

| Part Number | Description |
|---|---|
| PFD-M12 | 12 mm die |
| PFD-M16 | 16 mm die |
| PFD-M20 | 20 mm die |
| PFD-M25 | 25 mm die |
| PFD-M30 | 30 mm die |
| PFD-M38 | 38 mm die |
| PFD-M42 | 42 mm die |
| PFD-M50 | 50 mm die |
| PFD-M60 | 60 mm die |
| PFD-M75 | 75 mm die |
| PFD-M90 | 90 mm die |
| PFD-M100 | 100 mm die |
| PFD-M115 | 115 mm die |

### SPARE SHAFT SUPPORT

| Part Number | Description |
|---|---|
| 32304 | Inner Shaft Support |
| NJ2305E.TVP2 | Outer Shaft Support |
| TFM01-SK | Spare Seal Kit |

### NB PIPE DIE

| Part Number | Description |
|---|---|
| PFD-050 | 1/2" die |
| PFD-075 | 3/4" die |
| PFD-100 | 1" die |
| PFD-125 | 1-1/4" die |
| PFD-150 | 1-1/2" die |
| PFD-200 | 2" die |
| PFD-250 | 2-1/2" die |
| PFD-300 | 3" die |
| PFD-350 | 3-1/2" die |
| PFD-400 | 4" die |

### OD TUBE DIE

| Part Number | Description |
|---|---|
| TFD-050 | 6.35 mm (1/2") die |
| TFD-075 | 19.05 mm (3/4") die |
| TFD-100 | 25.4 mm (1") die |
| TFD-125 | 31.75 mm (1-1/4") die |
| TFD-150 | 38.1 mm (1-1/2") die |
| TFD-200 | 50.8 mm (2") die |


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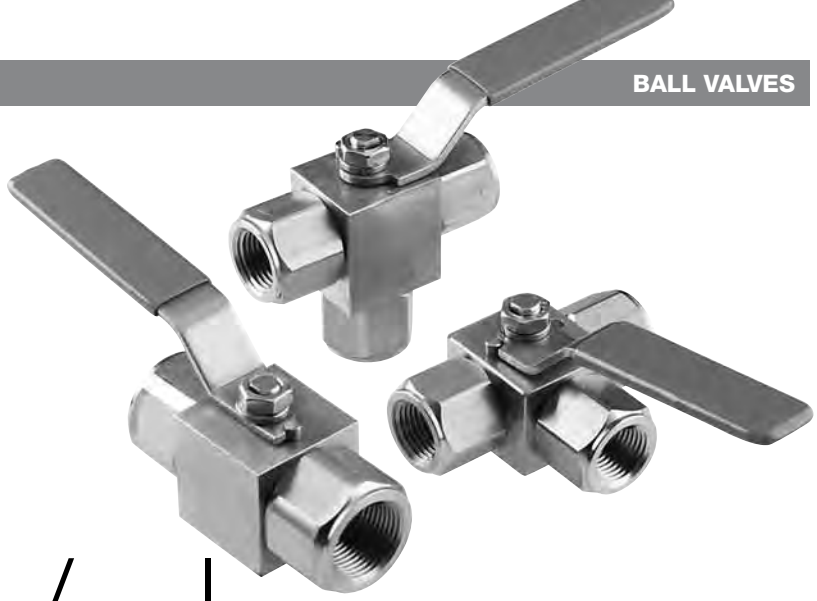

# Stainless Steel Ball Valves

## 3 Piece 2-way HP Series

### DESIGN FEATURES

- Pressure rating 6,895 kPa (1,000 psi) or 41,369 kPa (6,000 psi).
- Flexible three piece design.
- Internally loaded blow-out proof stem.
- Floating ball for positive shut-off.
- Low operating torque.
- Smooth 1/4 turn action.
- Replaceable seats and seals.
- Choice of lever or pointer handles.
- Locking kit available.
- Wide range of end connections.
- Panel mounting option.
- 100% factory tested.
- Can be easily actuated.
- Fully traceable material.
- Standard materials 316 Stainless Steel.
- Alternative materials available on request.

The original versatile ball valve, constructed as three piece, enabling a wide range of ends to be fitted to the standard centre section e.g. female/female, male/female, also easy to actuate with any actuator.

**PART NUMBERING AND ORDERING TABLE**

| Valve Series | Size | Threads | Material | Handle | Options |
|---|---|---|---|---|---|
| H - 6,895 kPa (1,000 psi)<br><br>HP - 41,369 kPa (6,000 psi) | 8 - 1/4"<br>10 - 3/8"<br>15 - 1/2"<br>20 - 3/4"<br>25 - 1"<br>32 - 1-1/4"<br>40 - 1-1/2"<br>50 - 2" | N - NPT<br>P - BSPP<br>T - BSPT | A - Ali/Bronze<br>C - C/Steel<br>D - Duplex SS<br>H - Hastelloy®<br>I - Incoloy®<br>M - Monel®<br>S - 316 SS<br>T - Titanium<br>X - Special<br>Z - Zirconium | PH - Pointer<br>SH - Spanner/Flat Handle | ACT - Actuator use<br>AE - Actuated electric<br>DA - Double acting<br>EP - Ends pinned<br>LK - Locking<br>PM - Panel Mount<br>SR - Spring return |

Typical Part Number: HP | 15 | N | S | SH

(41,369 kPa (6,000 psi) rated 15 (1/2") NPT 316 S/Steel Ball Valve with spanner/flat handle).

*Hastelloy, Incoloy and Monel are registered trademarks.*

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# Stainless Steel Ball Valves

## 3-way 3HP Series

### DESIGN FEATURES

- Pressure rating 6,895 kPa (1,000 psi) or 41,369 kPa (6,000 psi).
- Flexible three piece design.
- Side or bottom entry.
- Internally loaded blow-out proof stem.
- Floating ball for positive shut-off.
- Low operating torque.
- Smooth 1/4 turn action.
- Replaceable seats and seals.
- Choice of lever or pointer handles.
- Locking kit available.
- Wide range of end connections.
- Panel mounting option.
- 100% factory tested.
- Can be easily actuated.
- Fully traceable material.
- Standard materials 316 Stainless Steel.
- Alternative materials available on request.

This range of 3-way diverter valves has been developed with flexibility of end connections to suit your requirements. Available with either side or bottom entry inlet.

**PART NUMBERING AND ORDERING TABLE**

| Valve Series | Size | Threads | Material | Handle | Options |
|---|---|---|---|---|---|
| H - 6,895 kPa (1,000 psi)<br><br>HP - 41,369 kPa (6,000 psi) | 8 - 1/4"<br>10 - 3/8"<br>15 - 1/2"<br>20 - 3/4"<br>25 - 1" | N - NPT<br>P - BSPP<br>T - BSPT<br>C1- Single ferrule<br>C2- Twin ferrule | A - Ali/Bronze<br>C - C/Steel<br>D - Duplex SS<br>H - Hastelloy®<br>I - Incoloy®<br>M - Monel®<br>S - 316 SS<br>T - Titanium<br>X - Special<br>Z - Zirconium | PH - Pointer<br>SH - Spanner/ Flat Handle | ACT - Actuator use<br>AE - Actuated electric<br>DA - Double acting<br>EP - Ends pinned<br>LK - Locking<br>PM - Panel Mount<br>SR - Spring return |

Typical Part Number: 3H | 10 | N | S | SH

(6,895 kPa (1,000 psi) rated 10 (3/8") NPT 316 S/Steel Ball Valve with spanner/flat handle).

*Hastelloy, Incoloy and Monel are registered trademarks.*



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# Stainless Steel HIGH PRESSURE Ball Valves

## 3 piece 2-way HX Series

### DESIGN FEATURES

- Pressure rating 68,950 kPa (10,000 psi).
- Flexible three piece design.
- Internally loaded blow-out proof stem.
- Floating ball for positive shut-off.
- Low operating torque.
- Smooth 1/4 turn action.
- Replaceable seats and seals.
- Choice of lever or pointer handles.
- Locking kit available.
- Wide range of end connections.
- Panel mounting option.
- 100% factory tested.
- Can be easily actuated.
- Fully traceable material.
- Standard materials 316 Stainless Steel.
- Alternative materials available on request.

A robust high pressure valve, constructed as three piece, with high performance seats and seals, enabling a wide range of ends to be fitted to the standard centre section eg. female/female, male/female, also easy to actuate with any actuator.

**PART NUMBERING AND ORDERING TABLE**

| Valve Series | Size | Threads | Material | Handle | Options |
|---|---|---|---|---|---|
| HX - 68,950 kPa (10,000 psi) | 8 - 1/4"<br>10 - 3/8"<br>15 - 1/2"<br>20 - 3/4"<br>25 - 1" | N - NPT<br>P - BSPP<br>T - BSPT | A - Ali/Bronze<br>C - C/Steel<br>D - Duplex SS<br>H - Hastelloy®<br>I - Incoloy®<br>M - Monel®<br>S - 316 SS<br>T - Titanium<br>X - Special<br>Z - Zirconium | PH - Pointer<br>SH - Spanner/Flat Handle | ACT - Actuator use<br>AE - Actuated electric<br>DA - Double acting<br>EP - Ends pinned<br>LK - Locking<br>PM - Panel Mount<br>SR - Spring return |

Typical Part Number: HX | 15 | N | S | SH

(68,950 kPa (10,000 psi) rated 15 (1/2") NPT 316 S/Steel Ball Valve with spanner/flat handle).

*Hastelloy, Incoloy and Monel are registered trademarks.*

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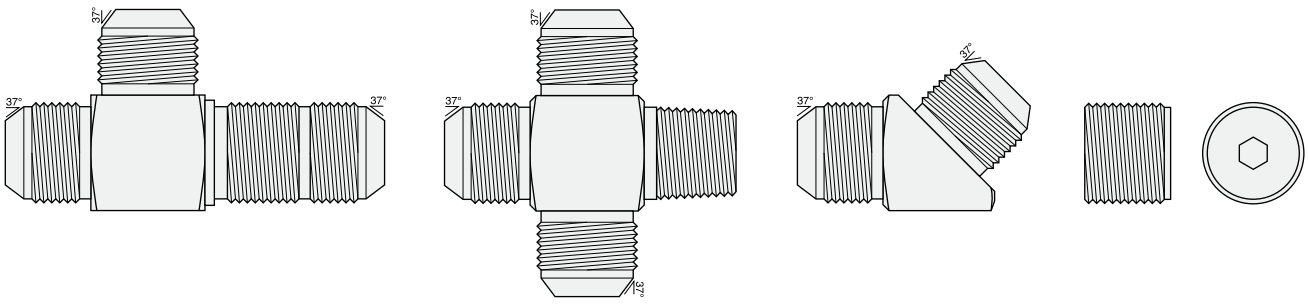
# 37° JIC Stainless Steel Fittings

**Prochem manufactures and supplies an extensive range of JIC Fittings and Adaptors in all configurations.**

Prochem 37° JIC Fittings and Adaptors provide a straightforward, positive, mechanical seal. They have been used for many years for reliable sealing in commercial, industrial and military applications. All Prochem 37° JIC Fittings are manufactured in accordance with the Society of Automotive Engineers J514. They are proven to supply dependable, reusable connections under a wide range of operating conditions including extremes of vibration, temperature and shock.

A wide range of end configurations are suitable for many Hydraulic applications

**Fittings can be specially manufactured to suit customer's requirements in a variety of stainless and special alloys.**





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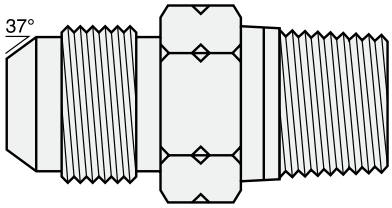
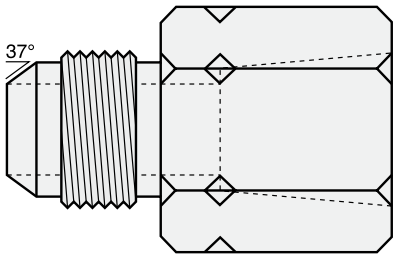


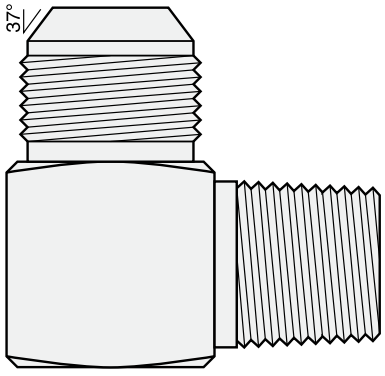

**Connector Male JIC/NPT**

| PART NUMBER | DESCRIPTION |
|---|---|
| JCM04X02NA | 7/16-20 JIC X 6NPT MALE 316 |
| JCM04X04NA | 7/16-20 JIC X 8NPT MALE 316 |
| JCM04X06NA | 7/16-20 JIC X 10NPT MALE 316 |
| JCM04X08NA | 7/16-20 JIC X 15NPT MALE 316 |
| JCM06X02NA | 9/16-18 JIC X 6NPT MALE 316 |
| JCM06X04NA | 9/16-18 JIC X 8NPT MALE 316 |
| JCM06X06NA | 9/16-18 JIC X 10NPT MALE 316 |
| JCM06X08NA | 9/16-18 JIC X 15NPT MALE 316 |
| JCM08X06NA | 3/4-16 JIC X 10NPT MALE 316 |
| JCM08X08NA | 3/4-16 JIC X 15NPT MALE 316 |
| JCM08X12NA | 3/4-16 JIC X 20NPT MALE 316 |
| JCM10X08NA | 7/8-14 JIC X 15NPT MALE 316 |
| JCM12X08NA | 1 1/16-12 JIC X 15NPT MALE 316 |
| JCM12X12NA | 1 1/16-12 JIC X 20NPT MALE 316 |
| JCM12X16NA | 1 1/16-12 JIC X 25NPT MALE 316 |
| JCM16X12NA | 1 5/16-12 JIC X 20NPT MALE 316 |
| JCM16X16NA | 1 5/16-12 JIC X 25NPT MALE 316 |




**Connector Female JIC/NPT**

| PART NUMBER | DESCRIPTION |
|---|---|
| JCF04X04NA | 7/16-20 JIC X 8NPT FEMALE 316 |
| JCF06X04NA | 9/16-18 JIC X 8NPT FEMALE 316 |
| JCF06X06NA | 9/16-18 JIC X 10NPT FEMALE 316 |
| JCF06X08NA | 9/16-18 JIC X 15NPT FEMALE 316 |
| JCF08X08NA | 3/4-16 JIC X 15NPT FEMALE 316 |
| JCF10X08NA | 7/8-14 JIC X 15NPT FEMALE 316 |
| JCF12X12NA | 1 1/16-12 JIC X 20NPT FEMALE 316 |
| JCF16X16NA | 1 5/16-12 JIC X 25NPT FEMALE 316 |




**Elbow 90°Male JIC/NPT**

| PART NUMBER | DESCRIPTION |
|---|---|
| JLM04X02NA | 7/16-20 JIC X 6NPT ELBOW 90° MALE 316 |
| JLM04X04NA | 7/16-20 JIC X 8NPT ELBOW 90° MALE 316 |
| JLM06X02NA | 9/16-18 JIC X 6NPT ELBOW 90° MALE 316 |
| JLM06X04NA | 9/16-18 JIC X 8NPT ELBOW 90° MALE 316 |
| JLM06X06NA | 9/16-18 JIC X 10NPT ELBOW 90° MALE 316 |
| JLM08X04NA | 3/4-16 JIC X 8NPT ELBOW 90° MALE 316 |
| JLM08X06NA | 3/4-16 JIC X 10NPT ELBOW 90° MALE 316 |
| JLM08X08NA | 3/4-16 JIC X 15NPT ELBOW 90° MALE 316 |
| JLM10X06NA | 7/8-14 JIC X 10NPT ELBOW 90° MALE 316 |
| JLM10X08NA | 7/8-14 JIC X 15NPT ELBOW 90° MALE 316 |
| JLM12X08NA | 1 1/16-12 JIC X 15NPT ELBOW 90° MALE 316 |
| JLM12X12NA | 1 1/16-12 JIC X 20NPT ELBOW 90° MALE 316 |
| JLM16X08NA | 1 5/16-12 JIC X 15NPT ELBOW 90° MALE 316 |
| JLM16X12NA | 1 5/16-12 JIC X 20NPT ELBOW 90° MALE 316 |
| JLM16X16NA | 1 5/16-12 JIC X 25NPT ELBOW 90° MALE 316 |
| JLM20X20NA | 1 5/8-12 JIC X 32NPT ELBOW 90° MALE 316 |
| JLM24X24NA | 1 7/8-12 JIC X 40NPT ELBOW 90° MALE 316 |

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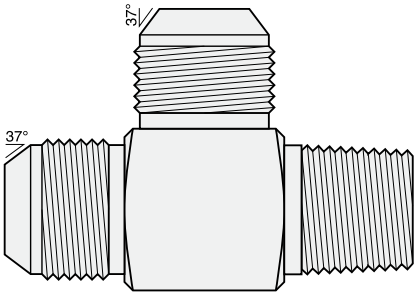
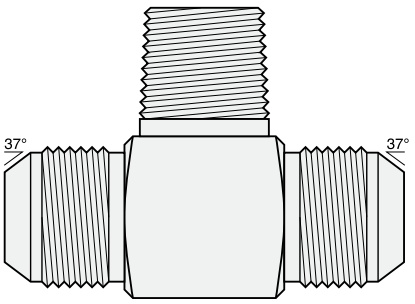


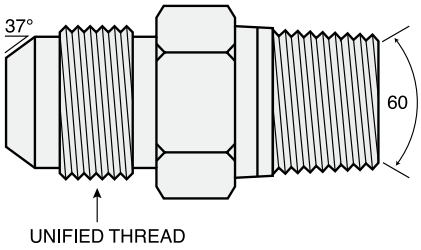

**Run Tee Male JIC/NPT**

| PART NUMBER | DESCRIPTION |
|---|---|
| JTMT04X02NA | 7/16-20 JIC X 6NPT X 7/16-20 JIC RUN TEE MALE 316 |
| JTMT04X04NA | 7/16-20 JIC X 8NPT X 7/16-20 JIC RUN TEE MALE 316 |
| JTMT06X04NA | 9/16-18 JIC X 8NPT X 9/16-18 JIC RUN TEE MALE 316 |
| JTMT06X06NA | 9/16-18 JIC X 10NPT X 9/16-18 JIC RUN TEE MALE 316 |
| JTMT08X06NA | 3/4-16 JIC X 10NPT X 3/4-16 JIC RUN TEE MALE 316 |
| JTMT08X08NA | 3/4-16 JIC X 15NPT X 3/4-16 JIC RUN TEE MALE 316 |
| JTMT10X08NA | 7/8-14 JIC X 15NPT X 7/8-14 JIC RUN TEE MALE 316 |
| JTMT12X12NA | 1 1/16-12 JIC X 20NPT X 1 1/16-12 JIC RUN TEE MALE 316 |



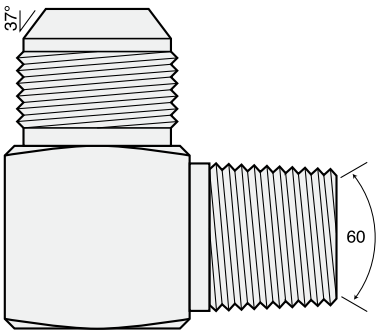

**Branch Tee Male JIC/NPT**

| PART NUMBER | DESCRIPTION |
|---|---|
| JTTM04X02NA | 7/16-20 JIC X 7/16-20 JIC X 6NPT BRANCH TEE MALE 316 |
| JTTM04X04NA | 7/16-20 JIC X 7/16-20 JIC X 8NPT BRANCH TEE MALE 316 |
| JTTM06X04NA | 9/16-18 JIC X 9/16-18 JIC X 8NPT BRANCH TEE MALE 316 |
| JTTM06X06NA | 9/16-18 JIC X 9/16-18 JIC X 10NPT BRANCH TEE MALE 316 |
| JTTM08X06NA | 3/4-16 JIC X 3/4-16 JIC X 10NPT BRANCH TEE MALE 316 |
| JTTM08X08NA | 3/4-16 JIC X 3/4-16 JIC X 15NPT BRANCH TEE MALE 316 |
| JTTM10X08NA | 7/8-14 JIC X 7/8-14 JIC X 15NPT BRANCH TEE MALE 316 |
| JTTM12X12NA | 1 1/16-12 JIC X 1 1/16-12 JIC X 20NPT BRANCH TEE MALE 316 |




**Connector Male JIC/R-BSPT**

| PART NUMBER | DESCRIPTION |
|---|---|
| JCM04x02EA | 7/16-20 JIC X R6 BSPT MALE 316 |
| JCM04x04EA | 7/16-20 JIC X R8 BSPT MALE 316 |
| JCM04x06EA | 7/16-20 JIC X R10 BSPT MALE 316 |
| JCM04x08EA | 7/16-20 JIC X R15 BSPT MALE 316 |
| JCM06x02EA | 9/16-18 JIC X R6 BSPT MALE 316 |
| JCM06x04EA | 9/16-18 JIC X R8 BSPT MALE 316 |
| JCM06x06EA | 9/16-18 JIC X R10 BSPT MALE 316 |
| JCM06x08EA | 9/16-18 JIC X R15 BSPT MALE 316 |
| JCM08x06EA | 3/4-16 JIC X R10 BSPT MALE 316 |
| JCM08x08EA | 3/4-16 JIC X R15 BSPT MALE 316 |
| JCM08x12EA | 3/4-16 JIC X R20 BSPT MALE 316 |
| JCM10x08EA | 7/8-14 JIC X R15 BSPT MALE 316 |
| JCM12x08EA | 1 1/16-12 JIC X R15 BSPT MALE 316 |
| JCM12x12EA | 1 1/16-12 JIC X R20 BSPT MALE 316 |
| JCM12x16EA | 1 1/16-12 JIC X R25 BSPT MALE 316 |
| JCM16x12EA | 1 5/16-12 JIC X R20 BSPT MALE 316 |
| JCM16x16EA | 1 5/16-12 JIC X R25 BSPT MALE 316 |




**Elbow 90° Male JIC/R-BSPT**

| PART NUMBER | DESCRIPTION |
|---|---|
| JLM04X02EA | 7/16-20 JIC X R6 BSPT ELBOW 90° MALE 316 |
| JLM04X04EA | 7/16-20 JIC X R8 BSPT ELBOW 90° MALE 316 |
| JLM06X04EA | 9/16-18 JIC X R8 BSPT ELBOW 90° MALE 316 |
| JLM06X06EA | 9/16-18 JIC X R10 BSPT ELBOW 90° MALE 316 |
| JLM08X06EA | 3/4-16 JIC X R10 BSPT ELBOW 90° MALE 316 |
| JLM08X08EA | 3/4-16 JIC X R15 BSPT ELBOW 90° MALE 316 |
| JLM10X08EA | 7/8-14 JIC X R15 BSPT ELBOW 90° MALE 316 |
| JLM12X12EA | 1 1/16-12 JIC X R20 BSPT ELBOW 90° MALE 316 |
| JLM16X16EA | 1 5/16-12 JIC X R25 BSPT ELBOW 90° MALE 316 |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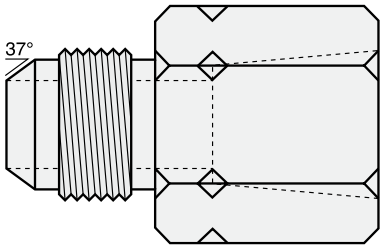
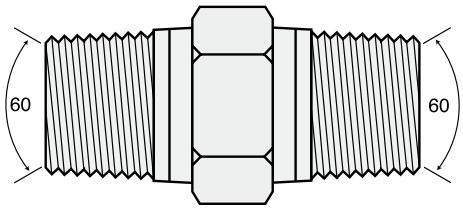


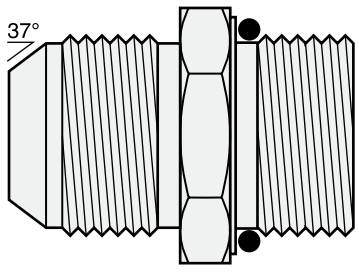

**Connector Female JIC/Rc-BSPT**

| PART NUMBER | DESCRIPTION |
|---|---|
| JCF04X04EA | 7/16-20 JIC X Rc8 BSPT FEMALE 316 |
| JCF06X04EA | 9/16-18 JIC X Rc8 BSPT FEMALE 316 |
| JCF06X06EA | 9/16-18 JIC X Rc10 BSPT FEMALE 316 |
| JCF06X08EA | 9/16-18 JIC X Rc15 BSPT FEMALE 316 |
| JCF08X08EA | 3/4-16 JIC X Rc15 BSPT FEMALE 316 |
| JCF10X08EA | 7/8-14 JIC X Rc15 BSPT FEMALE 316 |
| JCF12X12EA | 1 1/16-12 JIC X Rc20 BSPT FEMALE 316 |
| JCF16X16EA | 1 5/16-12 JIC X Rc25 BSPT FEMALE 316 |




**Hex Nipple Male R-BSPT**

| PART NUMBER | DESCRIPTION |
|---|---|
| BSPC HN 008A X 60 | R8 BSPT X 60° CONE CL3000 HEX NIPPLE 316 |
| BSPC HN 010A X 60 | R10 BSPT X 60° CONE CL3000 HEX NIPPLE 316 |
| BSPC HN 015A X 60 | R15 BSPT X 60° CONE CL3000 HEX NIPPLE 316 |
| BSPC HN 020A X 60 | R20 BSPT X 60° CONE CL3000 HEX NIPPLE 316 |
| BSPC HN 025A X 60 | R25 BSPT X 60° CONE CL3000 HEX NIPPLE 316 |
| BSPC HN 032A X 60 | R32 BSPT X 60° CONE CL3000 HEX NIPPLE 316 |
| BSPC HN 040A X 60 | R40 BSPT X 60° CONE CL3000 HEX NIPPLE 316 |
| BSPC HN 050A X 60 | R50 BSPT X 60° CONE CL3000 HEX NIPPLE 316 |




**Connector Male O Ring Seal JIC/UNO**

| PART NUMBER | DESCRIPTION |
|---|---|
| JCMO04X04A | 7/16-20 JIC X 7/16-20 ORB CONNECTOR MALE O RING 316 |
| JCMO06X04A | 9/16-18 JIC X 7/16-20 ORB CONNECTOR MALE O RING 316 |
| JCMO06X06A | 9/16-18 JIC X 9/16-18 ORB CONNECTOR MALE O RING 316 |
| JCMO08X06A | 3/4-16 JIC X 9/16-18 ORB CONNECTOR MALE O RING 316 |
| JCMO08X08A | 3/4-16 JIC X 3/4-16 ORB CONNECTOR MALE O RING 316 |
| JCMO08X10A | 3/4-16 JIC X 7/8-14 ORB CONNECTOR MALE O RING 316 |
| JCMO10X06A | 7/8-14 JIC X 9/16-18 ORB CONNECTOR MALE O RING 316 |
| JCMO10X08A | 7/8-14 JIC X 3/4-16 ORB CONNECTOR MALE O RING 316 |
| JCMO10X10A | 7/8-14 JIC X 7/8-14 ORB CONNECTOR MALE O RING 316 |
| JCMO12X08A | 1 1/16-12 JIC X 3/4-16 ORB CONNECTOR MALE O RING 316 |
| JCMO12X10A | 1 1/16-12 JIC X 7/8-14 ORB CONNECTOR MALE O RING 316 |
| JCMO12X12A | 1 1/16-12 JIC X 1 1/16-12 ORB CONNECTOR MALE O RING 316 |
| JCMO16X12A | 1 5/16-12 JIC X 1 1/16-12 ORB CONNECTOR MALE O RING 316 |
| JCMO16X16A | 1 5/16-12 JIC X 1 5/16-12 ORB CONNECTOR MALE O RING 316 |

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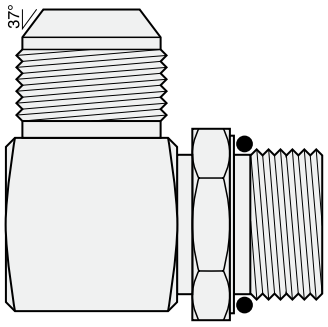
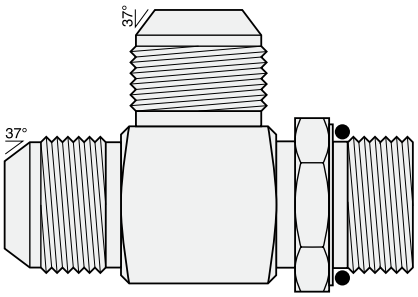


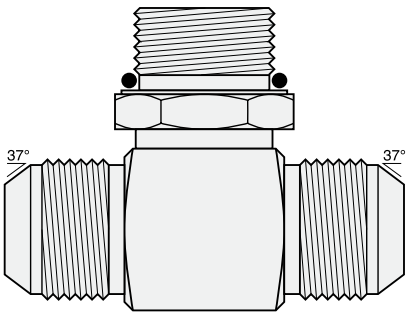

**Elbow 90° Male O Ring Seal JIC/UNO**

| PART NUMBER | DESCRIPTION |
|---|---|
| JLMO04X04A | 7/16-20 JIC X 7/16-20 ORB ELBOW 90° MALE O RING 316 |
| JLMO06X04A | 9/16-18 JIC X 7/16-20 ORB ELBOW 90° MALE O RING 316 |
| JLMO06X06A | 9/16-18 JIC X 9/16-18 ORB ELBOW 90° MALE O RING 316 |
| JLMO08X08A | 3/4-16 JIC X 3/4-16 ORB ELBOW 90° MALE O RING 316 |
| JLMO08X10A | 3/4-16 JIC X 7/8-14 ORB ELBOW 90° MALE O RING 316 |
| JLMO10X08A | 7/8-14 JIC X 3/4-16 ORB ELBOW 90° MALE O RING 316 |
| JLMO10X10A | 7/8-14 JIC X 7/8-14 ORB ELBOW 90° MALE O RING 316 |
| JLMO12X08A | 1 1/16-12 JIC X 3/4-16 ORB ELBOW 90° MALE O RING 316 |
| JLMO12X12A | 1 1/16-12 JIC X 1 1/16-12 ORB ELBOW 90° MALE O RING 316 |
| JLMO16X16A | 1 5/16-12 JIC X 1 5/16-12 ORB ELBOW 90° MALE O RING 316 |



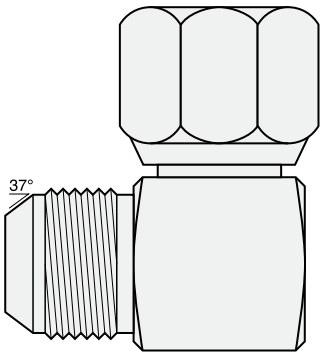

**Tee Run Male O Ring JIC/UNO**

| PART NUMBER | DESCRIPTION |
|---|---|
| JTMTO 04X04A | 7/16-20 JIC X 7/16-20 ORB X 7/16-20 JIC MALE O RING RUN TEE 316 |
| JTMTO 06X06A | 9/16-18 JIC X 9/16-18 ORB X 9/16-18 JIC MALE O RING RUN TEE 316 |
| JTMTO 08X08A | 3/4-16 JIC X 3/4-16 ORB X 3/4-16 JIC MALE O RING RUN TEE 316 |
| JTMTO 10X10A | 7/8-14 JIC X 7/8-14 ORB X 7/8-14 JIC MALE O RING RUN TEE 316 |
| JTMTO 12X12A | 1 1/16-12 JIC X 1 1/16-12 ORB X 1 1/16-12 JIC MALE O RING RUN TEE 316 |
| JTMTO 16X16A | 1 5/16-12 JIC X 1 5/16-12 ORB X 1 5/16-12 JIC MALE O RING RUN TEE 316 |




**Tee Branch Male O Ring JIC/UNO**

| PART NUMBER | DESCRIPTION |
|---|---|
| JTTMO 04X04A | 7/16-20 JIC X 7/16-20 JIC X 7/16-20 ORB MALE O RING BRANCH TEE 316 |
| JTTMO 06X06A | 9/16-18 JIC X 9/16-18 JIC X 9/16-18 ORB MALE O RING BRANCH TEE 316 |
| JTTMO 08X08A | 3/4-16 JIC X 3/4-16 JIC X 3/4-16 ORB MALE O RING BRANCH TEE 316 |
| JTTMO 10X10A | 7/8-14 JIC X 7/8-14 JIC X 7/8-14 ORB MALE O RING BRANCH TEE 316 |
| JTTMO 12X12A | 1 1/16-12 JIC X 1 1/16-12 JIC X 1 1/16-12 ORB MALE O RING BRANCH TEE 316 |
| JTTMO 16X16A | 1 5/16-12 JIC X 1 5/16-12 JIC X 1 5/16-12 ORB MALE O RING BRANCH TEE 316 |




**Elbow 90° JIC/Swivel Nut**

| PART NUMBER | DESCRIPTION |
|---|---|
| JLS04XA | 7/16-20 JIC MALE X 7/16-20 JIC ELBOW 90° FEMALE SWIVEL 316 |
| JLS06XA | 9/16-18 JIC MALE X 9/16-18 JIC ELBOW 90° FEMALE SWIVEL 316 |
| JLS08XA | 3/4-16 JIC MALE X 3/4-16 JIC ELBOW 90° FEMALE SWIVEL 316 |
| JLS10XA | 7/8-14 JIC MALE X 7/8-14 JIC ELBOW 90° FEMALE SWIVEL 316 |
| JLS12XA | 1 1/16-12 JIC MALE X 1 1/16-12 JIC ELBOW 90° FEMALE SWIVEL 316 |
| JLS16XA | 1 5/16-12 JIC MALE X 1 5/16-12 JIC ELBOW 90° FEMALE SWIVEL 316 |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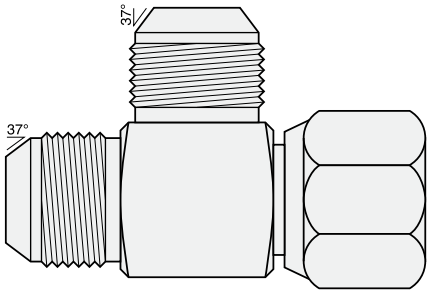
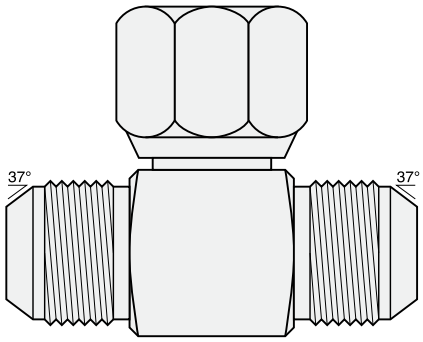


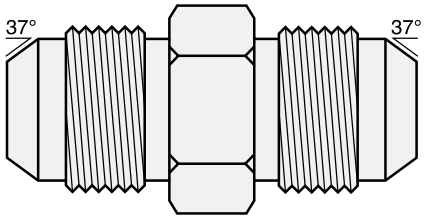

**Run Tee JIC/Swivel**

| PART NUMBER | DESCRIPTION |
|---|---|
| JTST04X04A | 7/16-20 JIC X 7/16-20 JIC X 7/16-20 JIC RUN TEE SWIVEL 316 |
| JTST06X06A | 9/16-18 JIC X 9/16-18 JIC X 9/16-18 JIC RUN TEE SWIVEL 316 |
| JTST08X08A | 3/4-16 JIC X 3/4-16 JIC X 3/4-16 JIC RUN TEE SWIVEL 316 |
| JTST10X10A | 7/8-14 JIC X 7/8-14 JIC X 7/8-14 JIC RUN TEE SWIVEL 316 |
| JTST12X12A | 1 1/16-12 JIC X 1 1/16-12 JIC X 1 1/16-12 JIC RUN TEE SWIVEL 316 |
| JTST16X16A | 1 5/16-12 JIC X 1 5/16-12 JIC X 1 5/16-12 JIC RUN TEE SWIVEL 316 |



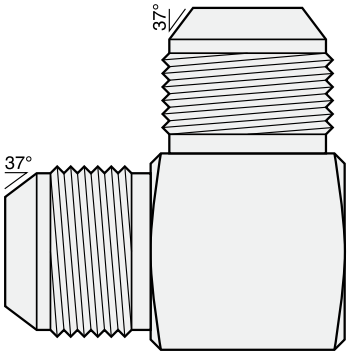

**Branch Tee JIC/Swivel**

| PART NUMBER | DESCRIPTION |
|---|---|
| JTTS04X04A | 7/16-20 JIC X 7/16-20 JIC X 7/16-20 JIC BRANCH TEE SWIVEL 316 |
| JTTS06X06A | 9/16-18 JIC X 9/16-18 JIC X 9/16-18 JIC BRANCH TEE SWIVEL 316 |
| JTTS08X08A | 3/4-16 JIC X 3/4-16 JIC X 3/4-16 JIC BRANCH TEE SWIVEL 316 |
| JTTS10X10A | 7/8-14 JIC X 7/8-14 JIC X 7/8-14 JIC BRANCH TEE SWIVEL 316 |
| JTTS12X12A | 1 1/16-12 JIC X 1 1/16-12 JIC X 1 1/16-12 JIC BRANCH TEE SWIVEL 316 |
| JTTS16X16A | 1 5/16-12 JIC X 1 5/16-12 JIC X 1 5/16-12 JIC BRANCH TEE SWIVEL 316 |




**Union Male JIC**

| PART NUMBER | DESCRIPTION |
|---|---|
| JU02A | 5/16-24 JIC UNION 316 |
| JU04A | 7/16-20 JIC UNION 316 |
| JU06A | 9/16-18 JIC UNION 316 |
| JU08A | 3/4-16 JIC UNION 316 |
| JU10A | 7/8-14 JIC UNION 316 |
| JU12A | 1 1/16-12 JIC UNION 316 |
| JU16A | 1 5/8-12 JIC UNION 316 |
| JU20A | 1 5/8-12 JIC UNION 316 |
| JU24A | 1 7/8-12 JIC UNION 316 |
| JU32A | 2 1/2-12 JIC UNION 316 |




**Elbow 90° Male Union JIC**

| PART NUMBER | DESCRIPTION |
|---|---|
| JLU04A | 7/16-20 JIC ELBOW 90° UNION 316 |
| JLU06A | 9/16-18 JIC ELBOW 90° UNION 316 |
| JLU08A | 3/4-16 JIC ELBOW 90° UNION 316 |
| JLU10A | 7/8-14 JIC ELBOW 90° UNION 316 |
| JLU12A | 1 1/16-12 JIC ELBOW 90° UNION 316 |
| JLU16A | 1 5/16-12 JIC ELBOW 90° UNION 316 |
| JLU20A | 1 5/8-12 JIC ELBOW 90° UNION 316 |
| JLU24A | 1 7/8-12 JIC ELBOW 90° UNION 316 |
| JLU32A | 2 1/2-12 JIC ELBOW 90° UNION 316 |

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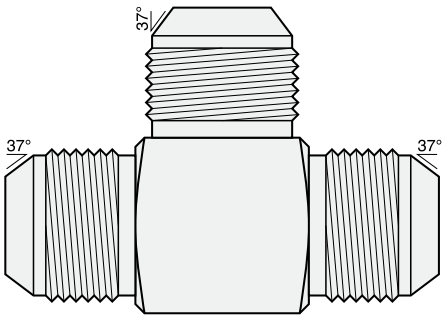
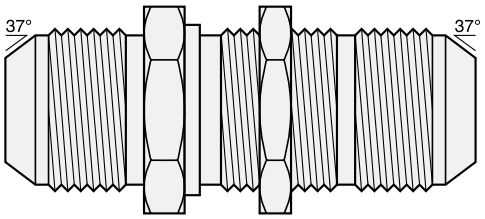


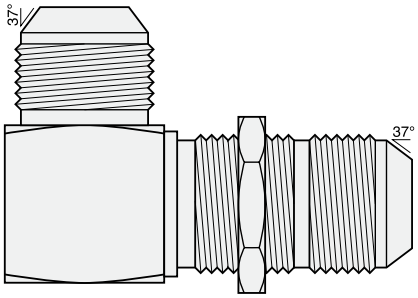

**Tee Union Male JIC**

| PART NUMBER | DESCRIPTION |
|---|---|
| JTTT02A | 5/16-24 JIC TEE UNION 316 |
| JTTT04A | 7/16-20 JIC TEE UNION 316 |
| JTTT06A | 9/16-18 JIC TEE UNION 316 |
| JTTT08A | 3/4-16 JIC TEE UNION 316 |
| JTTT10A | 7/8-14 JIC TEE UNION 316 |
| JTTT12A | 1 1/16-12 JIC TEE UNION 316 |
| JTTT16A | 1 5/16-12 JIC TEE UNION 316 |
| JTTT20A | 1 5/8-12 JIC TEE UNION 316 |
| JTTT24A | 1 7/8-12 JIC TEE UNION 316 |
| JTTT32A | 2 1/2-12 JIC TEE UNION 316 |



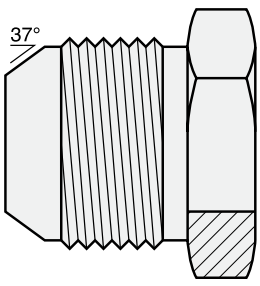

**Bulkhead Straight Male Union JIC**

| PART NUMBER | DESCRIPTION |
|---|---|
| JBU04A | 7/16-20 JIC BULKHEAD UNION 316 |
| JBU06A | 9/16-18 JIC BULKHEAD UNION 316 |
| JBU08A | 3/4-16 JIC BULKHEAD UNION 316 |
| JBU10A | 7/8-14 JIC BULKHEAD UNION 316 |
| JBU12A | 1 1/16-12 JIC BULKHEAD UNION 316 |
| JBU14A | 1 3/16-12 JIC BULKHEAD UNION 316 |
| JBU16A | 1 5/16-12 JIC BULKHEAD UNION 316 |



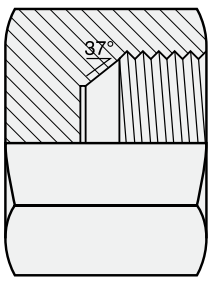

**Bulkhead Elbow 90° Male JIC**

| PART NUMBER | DESCRIPTION |
|---|---|
| JBLU04A | 7/16-20 JIC ELBOW 90° BULKHEAD UNION 316 |
| JBLU06A | 9/16-18 JIC ELBOW 90° BULKHEAD UNION 316 |
| JBLU08A | 3/4-16 JIC ELBOW 90° BULKHEAD UNION 316 |
| JBLU10A | 7/8-14 JIC ELBOW 90° BULKHEAD UNION 316 |
| JBLU12A | 1 1/16-12 JIC ELBOW 90° BULKHEAD UNION 316 |
| JBLU16A | 1 5/16-12 JIC ELBOW 90° BULKHEAD UNION 316 |




**Plug JIC Male**

| PART NUMBER | DESCRIPTION |
|---|---|
| JPH02A | 5/16-24 JIC PLUG 316 |
| JPH04A | 7/16-20 JIC PLUG 316 |
| JPHO6A | 9/16-18 JIC PLUG 316 |
| JPH08A | 3/4-16 JIC PLUG 316 |
| JPH10A | 7/8-14 JIC PLUG 316 |
| JPH12A | 1 1/16-12 JIC PLUG 316 |
| JPH16A | 1 5/16-12 JIC PLUG 316 |
| JPH20A | 1 5/8-12 JIC PLUG 316 |
| JPH24A | 1 7/8-12 JIC PLUG 316 |
| JPH32A | 2 1/2-12 JIC PLUG 316 |




**Cap Nut JIC Fixed**

| PART NUMBER | DESCRIPTION |
|---|---|
| JCH02A | 5/16-24 JIC CAP NUT 316 |
| JCH04A | 7/16-20 JIC CAP NUT 316 |
| JCH06A | 9/16-18 JIC CAP NUT 316 |
| JCH08A | 3/4-16 JIC CAP NUT 316 |
| JCH10A | 7/8-14 JIC CAP NUT 316 |
| JCH12A | 1 1/16-12 JIC CAP NUT 316 |
| JCH14A | 1 3/16-12 JIC CAP NUT 316 |
| JCH16A | 1 5/16-12 JIC CAP NUT 316 |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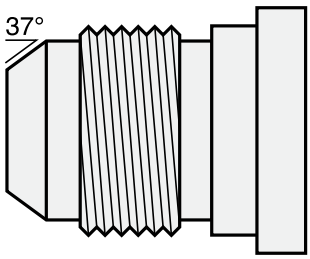
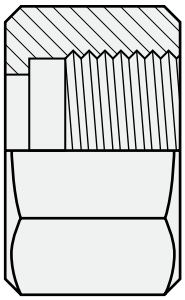


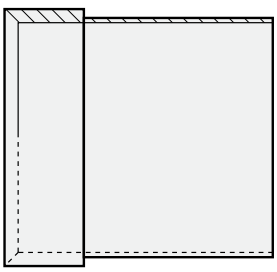

**Reducer JIC/JIC**

| PART NUMBER | DESCRIPTION |
|---|---|
| JRA06X04A | 9/16-18 JIC X 7/16-20 JIC REDUCING ADAPTOR 316 |
| JRA08X04A | 3/4-16 JIC X 7/16-20 JIC REDUCING ADAPTOR 316 |
| JRA08X06A | 3/4-16 JIC X 9/16-18 JIC REDUCING ADAPTOR 316 |
| JRA10X04A | 7/8-14 JIC X 7/16-20 JIC REDUCING ADAPTOR 316 |
| JRA10X06A | 7/8-14 JIC X 9/16-18 JIC REDUCING ADAPTOR 316 |
| JRA10X08A | 7/8-14 JIC X 3/4-16 JIC REDUCING ADAPTOR 316 |
| JRA12X04A | 1 1/16-12 JIC X 7/16-20 JIC REDUCING ADAPTOR 316 |
| JRA12X06A | 1 1/16-12 JIC X 9/16-18 JIC REDUCING ADAPTOR 316 |
| JRA12X08A | 1 1/16-12 JIC X 3/4-16 JIC REDUCING ADAPTOR 316 |
| JRA12X10A | 1 1/16-12 JIC X 7/8-14 JIC REDUCING ADAPTOR 316 |
| JRA16X08A | 1 5/16-12 JIC X 3/4-16 JIC REDUCING ADAPTOR 316 |
| JRA16X12A | 1 5/16-12 JIC X 1 1/16-12 JIC REDUCING ADAPTOR 316 |
| JRA20X12A | 1 5/8-12 JIC X 1 1/16-12 JIC REDUCING ADAPTOR 316 |
| JRA20X16A | 1 5/8-12 JIC X 1 5/16-12 JIC REDUCING ADAPTOR 316 |
| JRA24X16A | 1 7/8-12 JIC X 1 5/16-12 JIC REDUCING ADAPTOR 316 |
| JRA24X20A | 1 7/8-12 JIC X 1 5/8-12 JIC REDUCING ADAPTOR 316 |
| JRA32X24A | 2 1/2-12 JIC X 1 7/8-12 JIC REDUCING ADAPTOR 316 |



**Tube Nut**

| PART NUMBER | DESCRIPTION |
|---|---|
| JN02A | 5/16-24 JIC NUT 316 |
| JN04A | 7/16-20 JIC NUT 316 |
| JN06A | 9/16-18 JIC NUT 316 |
| JN08A | 3/4-16 JIC NUT 316 |
| JN10A | 7/8-14 JIC NUT 316 |
| JN12A | 1 1/16-12 JIC NUT 316 |
| JN14A | 1 3/16-12 JIC NUT 316 |
| JN16A | 1 5/16-12 JIC NUT 316 |
| JN20A | 1 5/8-12 JIC NUT 316 |
| JN24A | 1 7/8-12 JIC NUT 316 |
| JN32A | 2 1/2-12 JIC NUT 316 |



**Tube Sleeve**

| PART NUMBER | DESCRIPTION |
|---|---|
| JTSL02A | 5/16-24 JIC TUBE SLEEVE 316 |
| JTSL04A | 7/16-20 JIC TUBE SLEEVE 316 |
| JTSL06A | 9/16-18 JIC TUBE SLEEVE 316 |
| JTSL08A | 3/4-16 JIC TUBE SLEEVE 316 |
| JTSL10A | 7/8-14 JIC TUBE SLEEVE 316 |
| JTSL12A | 1 1/16-12 JIC TUBE SLEEVE 316 |
| JTSL14A | 1 3/16-12 JIC TUBE SLEEVE 316 |
| JTSL16A | 1 5/16-12 JIC TUBE SLEEVE 316 |
| JTSL20A | 1 5/8-12 JIC TUBE SLEEVE 316 |
| JTSL24A | 1 7/8-12 JIC TUBE SLEEVE 316 |
| JTSL32A | 2 1/2-12 JIC TUBE SLEEVE 316 |

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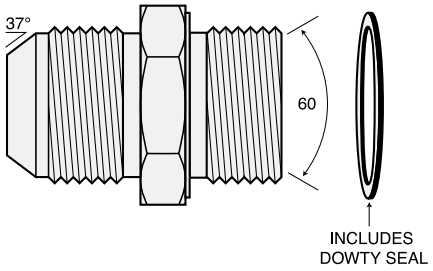


**Connector Male JIC**
**G-BSP Parallel**

| PART NUMBER | DESCRIPTION |
|---|---|
| JCM04X04GAD | 7/16-20 JIC x G8 MALE CONNECTOR inc. Dowty Seal 316 |
| JCM04X06GAD | 7/16-20 JIC x G10 MALE CONNECTOR inc. Dowty Seal 316 |
| JCM06X04GAD | 9/16-18 JIC x G8 MALE CONNECTOR inc. Dowty Seal 316 |
| JCM06X06GAD | 9/16-18 JIC x G10 MALE CONNECTOR inc. Dowty Seal 316 |
| JCM06X08GAD | 9/16-18 JIC x G15 MALE CONNECTOR inc. Dowty Seal 316 |
| JCM08X06GAD | 3/4-16 JIC x G10 MALE CONNECTOR inc. Dowty Seal 316 |
| JCM08X08GAD | 3/4-16 JIC x G15 MALE CONNECTOR inc. Dowty Seal 316 |
| JCM08X12GAD | 3/4-16 JIC x G20 MALE CONNECTOR inc. Dowty Seal 316 |
| JCM010X08GAD | 7/8-14 JIC x G15 MALE CONNECTOR inc. Dowty Seal 316 |
| JCM12X08GAD | 1 1/16-12 JIC x G15 MALE CON inc. Dowty Seal 316 |
| JCM12X12GAD | 1 1/16-12 JIC x G20 MALE CON inc. Dowty Seal 316 |
| JCM12X16GAD | 1 1/16-12 JIC x G25 MALE CON inc. Dowty Seal 316 |
| JCM16X12GAD | 1 5/16-12 JIC x G20 MALE CON inc. Dowty Seal 316 |
| JCM20X16GAD | 1 5/8-12 JIC x G25 MALE CON inc. Dowty Seal 316 |

## SAE J514 WORKING PRESSURE RATINGS

All of these Prochem manufactured fittings have been designed in accordance with SAE J1065 MAR92 with 4x safety factor and have been validated by hydrostatically testing to 4xWP for non-burst test and 2xWP for leak test. Higher pressures are possible in this Standard, if for example 3x safety factor is employed, however the Standard recommends user testing under application conditions.

Note: In the case of a fitting that is a jump size, it is recommended that the lower pressure of the two ends must be recognised as the working pressure rating for that fitting. This is also the case if the fitting has one or more different style ends. For example, straight threads to pipe threads. In this case it is also recommended that the lower pressure rating of the two different style ends must be recognised as the working pressure rating for that fitting.

| Nom SAE Dash Size | Nom Tube OD mm | Nom Tube OD inch | Straight Thread Size | Nom Pipe Size | Ridid SAE Std. Thread Unions & Bulkhead MPa | Ridid SAE Std. Thread Unions & Bulkhead psi | Adjustable SAE Std. Thread & Female Swivel MPa | Adjustable SAE Std. Thread & Female Swivel psi | Fittings with Pipe Thread MPa | Fittings with Pipe Thread psi | NPSM Std. Pipe Thread Maximum Operating Pressure MPa | NPSM Std. Pipe Thread Maximum Operating Pressure psi |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 3.18 | 0.125 | 5/16-24 | 1/8 | 34.5 | 5,000 | 34.5 | 5,000 | 34.5 | 5,000 | 34.5 | 5,000 |
| 3 | 4.76 | 0.188 | 3/8-24 | 1/8 | 34.5 | 5,000 | 34.5 | 5,000 | 34.5 | 5,000 | – | – |
| 4 | 6.35 | 0.250 | 7/16-20 | 1/8 | 34.5 | 5,000 | 31.0 | 4,500 | 34.5 | 5,000 | 34.5 | 5,000 |
| 5 | 7.94 | 0.313 | 1/2-20 | 1/8 | 34.5 | 5,000 | 27.5 | 4,000 | 34.5 | 5,000 | – | – |
| 6 | 9.52 | 0.375 | 9/16-18 | 1/4 | 34.5 | 5,000 | 27.5 | 4,000 | 27.5 | 4,000 | 27.5 | 4,000 |
| 8 | 12.70 | 0.500 | 3/4-16 | 3/8 | 31.0 | 4,500 | 27.5 | 4,000 | 21.0 | 3,000 | 24.1 | 3,500 |
| 10 | 15.88 | 0.625 | 7/8-14 | 1/2 | 24.0 | 3,500 | 21.0 | 3,000 | 21.0 | 3,000 | – | – |
| 12 | 19.05 | 0.750 | 1 1/16-12 | 3/4 | 24.0 | 3,500 | 21.0 | 3,000 | 17.0 | 2,500 | 15.5 | 2,250 |
| 14 | 22.22 | 0.875 | 1 3/16-12 | 3/4 | 21.0 | 3,000 | 17.0 | 2,500 | 17.0 | 2,500 | – | – |
| 16 | 25.40 | 1,000 | 1 5/16-12 | 1 | 21.0 | 3,000 | 17.0 | 2,500 | 14.0 | 2,000 | 13.8 | 2,000 |
| 20 | 31.75 | 1,250 | 1 5/8-12 | 1 1/4 | 17.0 | 2,500 | 14.0 | 2,000 | 8.0 | 1,150 | 11.2 | 1,625 |
| 24 | 38.10 | 1.500 | 1 7/8-12 | 1 1/2 | 14.0 | 2,000 | 10.5 | 1,500 | 7.0 | 1,000 | 8.6 | 1,250 |
| 32 | 50.30 | 2,000 | 2 1/2-12 | 2 | 1 0.5 | 1,500 | 8.0 | 1,125 | 7.0 | 1,000 | 7.8 | 1,125 |

**WARNING:** Improper selection or use of products described herein can cause personal injury or property damage. Whilst every care has been taken in preparation of the data contained in this booklet, Prochem Pipeline Products accepts no liability for the accuracy of information supplied. It is solely the responsibility of the system designer and user to select products suitable for their specific application requirements and to ensure proper installation, operation, and maintenance of these products. Material compatability, product ratings, and application details should be considered in the selection.


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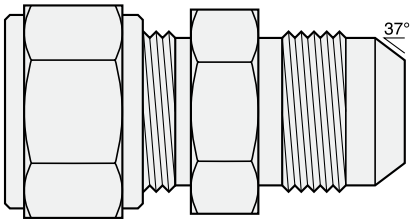
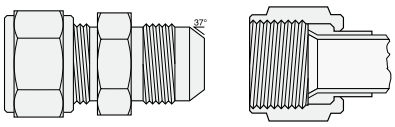
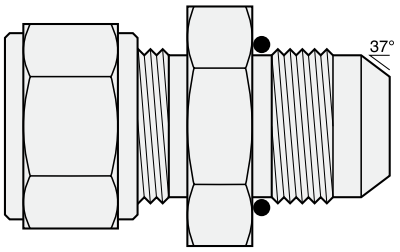



**Connector Male AN Tube OD/JIC Male**

| PART NUMBER | DESCRIPTION |
|---|---|
| 2UAN4-316 | 1/8"OD x 7/16-20 JIC MALE 316 |
| 4UAN4-316 | 1/4"OD x 7/16-20 JIC MALE 316 |
| 6UAN4-316 | 3/8"OD x 7/16-20 JIC MALE 316 |
| 6UAN6-316 | 3/8"OD x 9/16-18 JIC MALE 316 |
| 8UAN8-316 | 1/2"OD x 3/4-16 JIC MALE 316 |
| 10UAN10-316 | 5/8"OD x 7/8-14 JIC MALE 316 |
| 12UAN12-316 | 3/4"OD x 1 1/16-12 JIC MALE 316 |
| 16UAN16-316 | 1"OD x 1 5/16-12 JIC MALE 316 |

**UAN Application**
GYROLOK® with 37° flare connections.

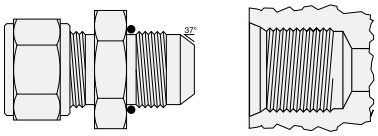


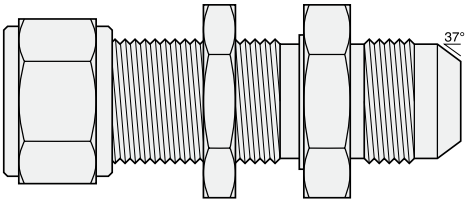




**Connector Male AN Tube OD/JIC O Ring Male**

| PART NUMBER | DESCRIPTION |
|---|---|
| 2UANO4-316 | 1/8"OD x 7/16-20 JIC O RING MALE 316 |
| 4UAN04-316 | 1/4"OD x 7/16-20 JIC O RING MALE 316 |
| 4UAN06-316 | 1/4"OD x 9/16-18 JIC O RING MALE 316 |
| 6UAN06-316 | 3/8"OD x 9/16-18 JIC O RING MALE 316 |
| 8UAN08-316 | 1/2"OD x 3/4-16 JIC O RING MALE 316 |

**UANO Application**
GYROLOK® with gasket sealing.

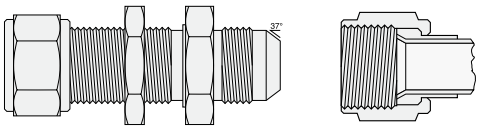


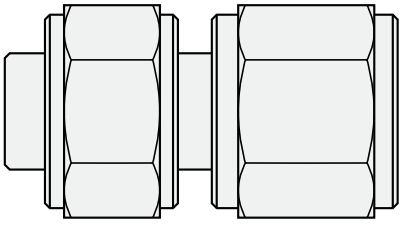




**Bulkhead Union AN Tube OD/JIC Male**

| PART NUMBER | DESCRIPTION |
|---|---|
| 2BUAN4-316 | 1/8"OD x 7/16-20 JIC BULKHEAD MALE 316 |
| 4BUAN4-316 | 1/4"OD x 7/16-20 JIC BULKHEAD MALE 316 |
| 6BUAN4-316 | 3/8"OD x 7/16-20 JIC BULKHEAD MALE 316 |
| 6BUAN6-316 | 3/8"OD x 9/16-18 JIC BULKHEAD MALE 316 |
| 8BUAN8-316 | 1/2"OD x 3/4-16 JIC BULKHEAD MALE 316 |
| 10BUAN10-316 | 5/8"OD x 7/8-14 JIC BULKHEAD MALE 316 |
| 12BUAN12-316 | 3/4"OD x 1 1/16-12 JIC BULKHEAD MALE 316 |
| 16BUAN16-316 | 1"OD x 1 5/16-12 JIC BULKHEAD MALE 316 |

**BUAN Application**
GYROLOK® Bulkhead with 37° connections.

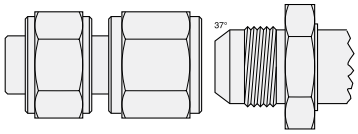


**Adaptor AN Tube OD/JIC**

| PART NUMBER | DESCRIPTION |
|---|---|
| 2AAN2-316 | 1/8"OD x 5/16-24 ADAPTER 316 |
| 2AAN4-316 | 1/8"OD x 7/16-20 ADAPTER 316 |
| 4AAN4-316 | 1/4"OD x 7/16-20 ADAPTER 316 |
| 6AAN6-316 | 3/8"OD x 9/16-18 ADAPTER 316 |
| 8AAN8-316 | 1/2"OD x 3/4-16 ADAPTER 316 |
| 10AAN10-316 | 5/8"OD x 7/8-14 ADAPTER 316 |
| 12AAN12-316 | 3/4"OD x 1 1/16-12 ADAPTER 316 |
| 16AAN16-316 | 1"OD x 1 5/16-12 ADAPTER 316 |

**AAN Application**
GYROLOK® tube stub with ferrules pre-set with 37° connection.

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# CONVERSION TABLES

## VOLUME

| Convert | into… | multiply by: |
|---|---|---|
| cc | $ft^3$ | 0.00003531 |
| | $in^3$ | 0.06102 |
| | litre | 0.001 |
| | $m^3$ | 0.000001 |
| | US quart | 0.0010567 |
| | US gallon | 0.0002642 |
| $ft^3$ | cc | 28,317 |
| | $in^3$ | 1728 |
| | litre | 28.317 |
| | $m^3$ | 0.028317 |
| | US quart | 29.92 |
| | US gallon | 7.4805 |
| $in^3$ | cc | 16.387 |
| | $ft^3$ | 0.0005787 |
| | litre | 0.016387 |
| | $m^3$ | 0.0000163 |
| | US quart | 0.01732 |
| | US gallon | 0.004329 |
| litre | cc | 1,000 |
| | $ft^3$ | 0.03531 |
| | $in^3$ | 61.023 |
| | $m^3$ | 0.001 |
| | US quart | 1.057 |
| | US gallon | 0.2642 |
| $m^3$ | cc | 1,000,000 |
| | $ft^3$ | 35.31 |
| | $in^3$ | 61,023 |
| | litre | 1,000 |
| | US quart | 1056.8 |
| | US gallon | 264.2 |
| US quart | cc | 946.25 |
| | $ft^3$ | 0.03342 |
| | $in^3$ | 57.75 |
| | litre | 0.9463 |
| | $m^3$ | 0.0009463 |
| | US gallon | 0.25 |
| US gallon | cc | 3,785 |
| | $ft^3$ | 0.1337 |
| | $in^3$ | 231 |
| | litre | 3.785 |
| | $m^3$ | 0.003785 |
| | US quart | 4 |

## TEMPERATURE

| |
|---|
| degree F = (degree C x 1.8) + 32 |
| degree C = (degree F – 32) / 1.8 |

**Certified Quality Management System**
(Australia & Singapore)

## AREA

| Convert | into… | multiply by: |
|---|---|---|
| $cm^2$ | $ft^2$ | 0.0010764 |
| | $in^2$ | 0.155 |
| | $m^2$ | 0.0001 |
| | $mm^2$ | 100 |
| $ft^2$ | $cm^2$ | 929.0304 |
| | $in^2$ | 144 |
| | $m^2$ | 0.092903 |
| | $mm^2$ | 92903.04 |
| $in^2$ | $cm^2$ | 6.4516 |
| | $ft^2$ | 0.006944 |
| | $m^2$ | 0.0006451 |
| | $mm^2$ | 645.16 |
| $m^2$ | $cm^2$ | 10,000 |
| | $ft^2$ | 10.76391 |
| | $in^2$ | 1,550 |
| | $mm^2$ | 1,000,000 |
| $mm^2$ | $cm^2$ | 0.01 |
| | $ft^2$ | 0.000010764 |
| | $in^2$ | 0.00155 |
| | $m^2$ | 0.000001 |

## PRESSURE

| Convert | into… | multiply by: |
|---|---|---|
| atm | bar | 1.01325 |
| | $kg/cm^2$ | 1.0332 |
| | PSI | 14.696 |
| | MPa | 0.101325 |
| | KPa | 101.325 |
| bar | atm | 0.98692 |
| | $kg/cm^2$ | 1.01971 |
| | PSI | 14.504 |
| | MPa | 0.1 |
| | KPa | 100 |
| $kg/cm^2$ | atm | 0.96784 |
| | bar | 0.98067 |
| | PSI | 14.223 |
| | MPa | 0.098067 |
| | KPa | 98.0665 |
| MPa | atm | 9.869232 |
| | bar | 10 |
| | $kg/cm^2$ | 10.1971 |
| | PSI | 145.04 |
| | KPa | 1,000 |
| KPa | atm | 0.009869 |
| | bar | 0.01 |
| | $kg/cm^2$ | 0.010197 |
| | PSI | 0.145037 |
| | MPa | 0.001 |
| PSI | atm | 0.068046 |
| | bar | 0.068947 |
| | $kg/cm^2$ | 0.070307 |
| | MPa | 0.0068948 |
| | KPa | 6.89475 |

## FLOW

| Convert | into… | multiply by: |
|---|---|---|
| cc/min | $ft^3$/min | 0.0000353145 |
| | gal/min US | 0.0002642 |
| | $in^3$/min | 0.061 |
| | L/min | 0.001 |
| $ft^3$/min | cc/min | 28,320 |
| | gal/min US | 7.48 |
| | $in^3$/min | 1728 |
| | L/min | 28.32 |
| gal/min US | cc/min | 3785.4 |
| | $ft^3$/min | 0.1337 |
| | $in^3$/min | 231 |
| | L/min | 3.7854 |
| $in^3$/min | cc/min | 16.39 |
| | $ft^3$/min | 0.00057 |
| | L/min | 0.016 |
| | gal/min US | 0.004 |
| L/min | cc/min | 1,000 |
| | $ft^3$/min | 0.03531 |
| | $in^3$/min | 61.02 |
| | gal/min US | 0.26417 |

## LINEAR

| Convert | into… | multiply by: |
|---|---|---|
| cm | ft | 0.032808 |
| | in | 0.3937 |
| | metres | 0.01 |
| | microns | 10,000 |
| | mm | 10 |
| ft | cm | 30.48 |
| | in | 12 |
| | metres | 0.3048 |
| | microns | 304,800 |
| | mm | 304.8 |
| in | cm | 2.54 |
| | ft | 0.08333 |
| | metres | 0.0254 |
| | microns | 25,400 |
| | mm | 25.4 |
| metres | cm | 100 |
| | ft | 3.28083 |
| | in | 39.37 |
| | microns | 1,000,000 |
| | mm | 1,000 |
| microns | cm | 0.0001 |
| | ft | 0.000003281 |
| | in | 0.00003937 |
| | metres | 0.000001 |
| | mm | 0.001 |
| mm | cm | 0.1 |
| | ft | 0.003281 |
| | in | 0.03937 |
| | metres | 0.001 |
| | microns | 1000 |



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