



Product Summary



CRANE®

CRANE Instrumentation & Sampling, HOKE®
PO Box 4866 • Spartanburg, SC 29305-4866
(864) 574-7966 • www.hoke.com

Tube Fittings

In the early 1960's, HOKE® firmly established its leadership position and took the industry by storm, introducing the GYROLOK® tube fitting. To this day, the GYROLOK® design offers unique advantages and benefits to users that are unmatched in the industry, especially for severe service applications.

GYROLOK® Key Design Benefits:

1. Controlled Ferrule Drive and Sizing Angle

The only fitting with a mechanical safety stop to prevent against over tightening and allows for multiple remakes.

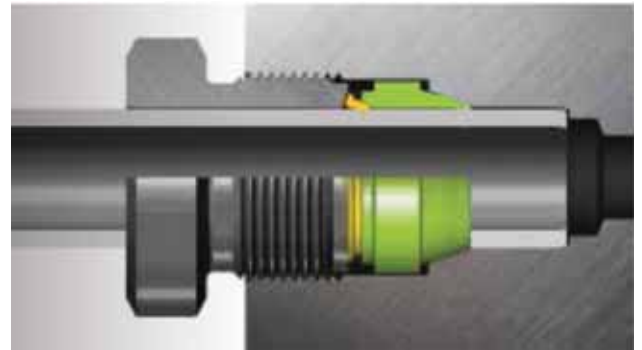
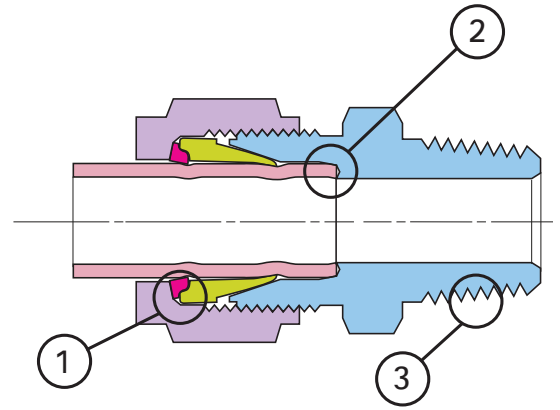
2. Butt Seal

The only fitting to have an additional seal where the tube meets the fitting body, reducing dead space in the fitting, reducing the possibility of crevice corrosion attack and providing an extra level of protection against leaks.

3. Special high tolerance NPT thread specification

Ensures maximum thread engagement for a safer, more robust connection.

Materials supported are 316 SS, MONEL®, INCONEL®, INCOLOY® 825, HASTELLOY® C, Titanium, Duplex 2205 SS, Super-Duplex 2507 SS, 254 SMO and Brass. Available in both Metric and Imperial sizes 3-38mm and 1/16-2" in multiple configurations.



Precision Pipe Fittings

A complete line of precision pipe fittings are available featuring NPT, SAE or welded ends. Configurations include nipples, couplings, adaptors, reducers, elbows, tees and crosses.



Instrument Valves

Types of valves available are ball, needle, check, packless (bellows & diaphragm), pneumatic actuated, relief, bleed, toggle, plug, metering, excess flow, manifolds, gauge, hand, and DBB in sizes from 1/16" to 1".

A variety of handle and elastomer options are offered. Available connections come in either Metric or Imperial sizes, with threaded or tube fitting ends. Available in multiple configurations.

Valve Types Including:

- Trunnion
- Panel Mount
- Low Profile
- Bi-directional
- Multi-directional
- Full port
- High cycle
- Zero leak
- 3-piece bolted
- Fire safe
- Industrial
- Forged body
- Bar Stock

Materials Supported:

- 316 SS
- MONEL®
- INCONEL®
- INCOLOY® 825
- HASTELLOY® C
- Titanium
- Duplex 2205 SS
- Super-Duplex 2507 SS
- 254 SMO
- Brass

Key Design Benefits Include:

- Innovative leak proof design
- Low torque operation
- Highest quality
- High cycle options for extended service life
- Dynapak® or energized seals minimize fugitive emissions



Actuators

Compact Space Saver® electric and pneumatic actuators are available in a variety of designs for the complete line of HOKE® valves. 90° and 180° operations are available.

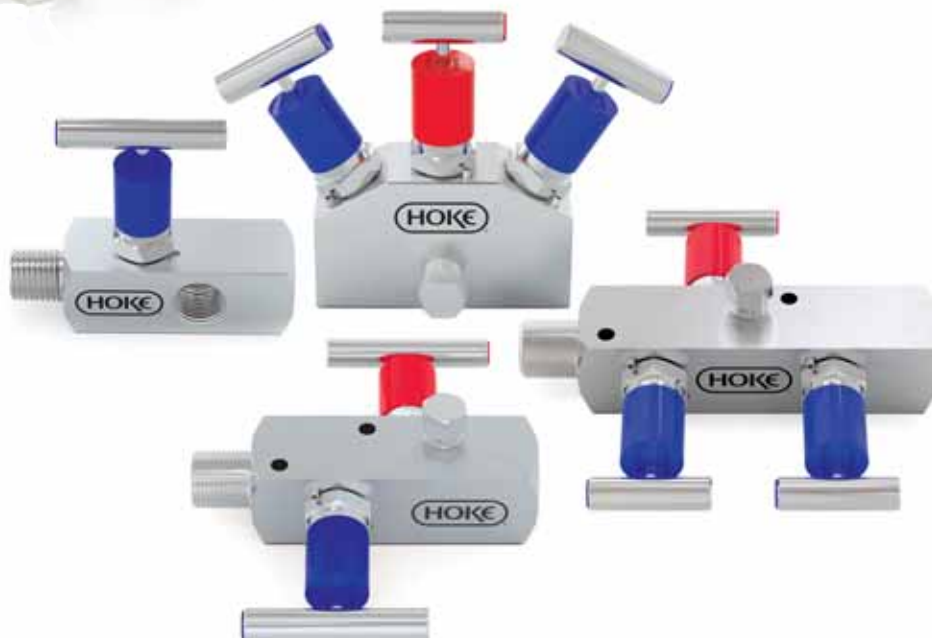
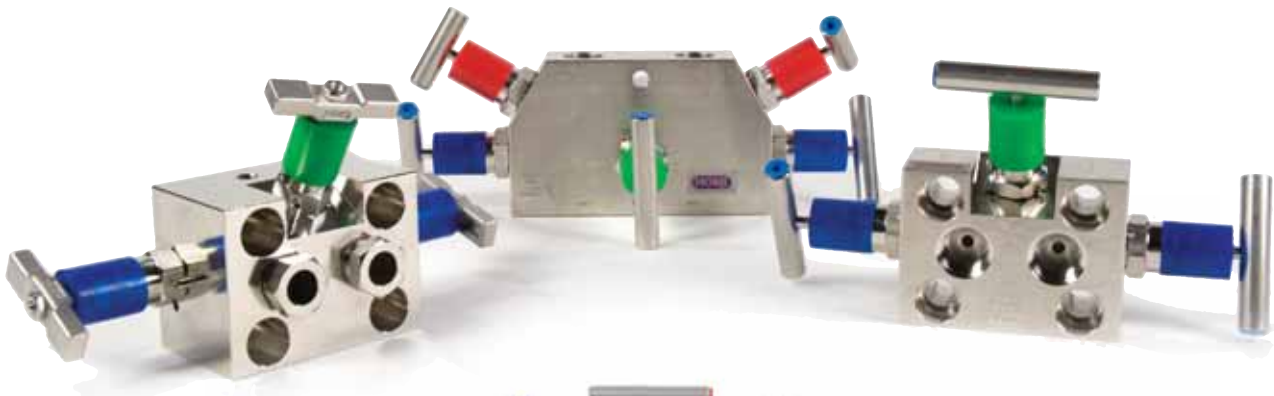
Hand Valves, Gauge Valves, DBB Valves & Manifolds

A complete line of manifolds have been designed to provide the safest possible connection and mounting of instruments. We offer a variety of precision engineered valves and 2, 3, and 5-valve manifold, gauge valves and manifolds in direct and remote mount styles with vent configurations to meet most flow, pressure and level measurement application requirements, including integral/ GYROLOK® tube fitting connections, eliminating the requirement to add male connectors.

Features Include:

- Full 316/316L Dual Certified stainless steel components.
- Full compliance of NACE MR-01-75 specifications.
- Laser engraved identification.
- HOKE® close tolerance NPT threads to ensure maximum engagement with mating threaded components
- Available with integral/GYROLOK® tube fitting connections on certain models.
- NORSOK M-650 approved mills available.
- Optional mounting bracket kits available.
- Optional anti-tamper and locking handles and round wheel handles available.
- Optional tube adaptors available.

Materials supported are MONEL®, Duplex, Super Duplex, Titanium, HASTELLOY®, Alloys 625, 825, 6Mo. Available connections come in either Metric or Imperial sizes up to 2", with threaded or tube fitting ends. Available in multiple configurations.



Flanges, Flange Adaptors and Monoflanges

GYROLOK® Flanges and Monoflanges provide a simple interface between pipe flanges and instrument fittings, eliminating the need for pipe threading or welding. Typically used to minimize the size and weight of the pipe-valve assemblies used for primary and/or secondary isolation, vent and calibration. Most of our designs incorporate a GYROLOK® Tube Fitting with a standard flange assembly. The high quality flange end is dimensioned to meet ANSI B16.5 Pressure Classes 150, 300, 600, 1500, and 2500.

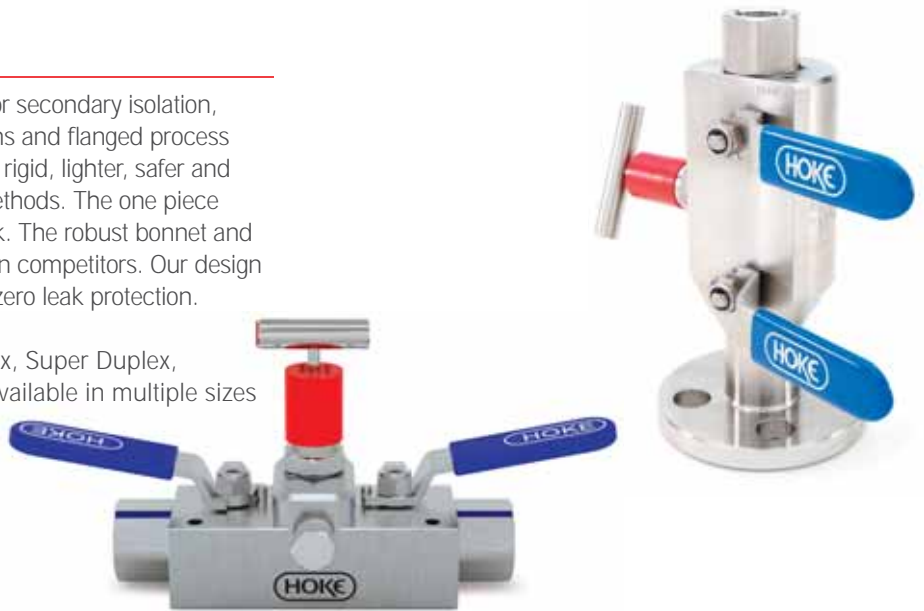
Materials supported are MONEL®, 316 SS, Duplex, Super Duplex, Titanium, HASTELLOY®, Alloys 625, 825, 6Mo. Available in multiple sizes and configurations.



HOKEBlock® Valves

These valves are used specifically for primary and/or secondary isolation, vent and calibration access, or sampling applications and flanged process piping. Our HOKEBlock® valves are more compact, rigid, lighter, safer and more cost effective than the conventional piping methods. The one piece rugged construction is less prone to corrosive attack. The robust bonnet and stem design have longer life and less break risk than competitors. Our design incorporates Integral / GYROLOK® connections for zero leak protection.

Materials supported are MONEL®, 316 SS, Duplex, Super Duplex, Titanium, HASTELLOY®, Alloys 625, 825, 6Mo. Available in multiple sizes and configurations.



Hydraulic Regulators

The HOKE® Hydraulic Pressure Regulator is a compact, durable, highly accurate and stable regulator for application in hydraulic systems. It offers a number of useful features that make it the right choice for use in systems requiring accurate pressure control, integrated and accurate spill control, low operating torques and reliable functioning/sealing over an extended service period in applications involving pressures up to 690 barg / 10,000psig.

Material supported is 316SS.



Training

Training is one of the best ways we can deliver value to your organization. With almost 100 years of history, we have a variety of training programs, support tools, and reference materials available. Your local HOKE® representative can come to your location and deliver a program customized to fit your needs. By teaching proper preparation and installation procedures, we ensure maximum product performance, minimizing leaks and optimizing safety.



Instrumentation Specialists:

Instrumentation is our core business. Years of experience have taught us that precise flow control is a complex process, not a commodity. Selecting, applying, and validating instrumentation products can be a confusing and difficult task for those involved. We want you to spend your time and focus on your core business and optimize your resources, not to become an instrumentation expert. That's what we are. Our approach is to focus on the whole process in order to satisfy all your individual stakeholders (safety, finance, purchasing, inventory control, installation technicians, engineers and instrumentation specialists) requirements. We are The Small Bore Instrumentation Specialists you can trust. Ask your local distributor how we can deliver value to your organization.

Certifications and Design

We maintain all relevant certifications and approvals for global code registrations. Our designs are verified by our internal engineers using the latest tools, including the state-of-the-art three dimensional Finite Element Analysis (FEA) tool. Customer drawings of our products are readily available on our website www.hoke.com in both 2D and 3D in a variety of CAD formats. Our manufacturing facility is ISO 9001 certified.

- ISO: 9001:2000
- TPED & PED
- DOT-3A
- DOT-3B
- DOT-3BN
- DOT-3E
- ECE
- R110
- American Gas Association
- Canadian Gas Association
- ASME
- Det Norske Veritas
- ATEX
- CSA
- TRANSPORT-CANADA
- IECEx
- GOST
- HSE
- ACI
- TSSA
- KEMA
- NACE, MR-01-75
- ASTM
- NORSOK

Other Products

CRANE manufactures a variety of other HOKE® products that support a complete instrumentation offering. Safety changer nut and ferrule sets (SCNF) are an installer's ally, providing a safe easy, correct way to reuse existing fittings and valves with GYROLOK® components. We also offer a full line of DOT and TPED certified transport cylinders. Instrument HQC quick connects with color coded interlocks are also available. Micron filters, spare parts, repair kits, multiple handle options, locking handle kits, mounting kits and more are also available. Check out our website www.hoke.com for our full instrumentation product offerings.



Tools/Accessories

We offer a complete line of complimentary tools and accessories to ensure safe and correct installation. The GYROLOK® Marking Tool (GMT) is a reliable tool to easily verify that all components are present, tubing has been properly inserted and the fitting has been sufficiently tightened. The manual presetting tool (PST) makes it easier to install fittings in hard-to-reach locations. The Hydraulic Presetting Tool (HPST) eases the installation of large diameter tube fittings. HOKE's Leak Detective® makes it simple to check for leaks in gas lines.



The Small Bore Instrumentation Specialists



We specialize in small bore instrumentation products up to 2" that deliver benchmark performance quality & safety; provide the broadest array of superior alloy offerings in the market; decades of proven success in a wide range of industries; a roster of "who's who" customers & projects globally; original "Best Solution" engineering & designs; and are focused on continuous improvement in all aspects of our business.

Proudly Distributed By:

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SAMPLING Inc.
405 Centura Ct.
Spartanburg, SC 29305, USA
Tel: 1-864-574-7966
PO Box 4866, Spartanburg, SC
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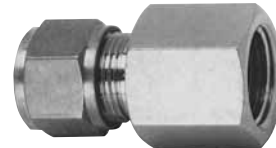
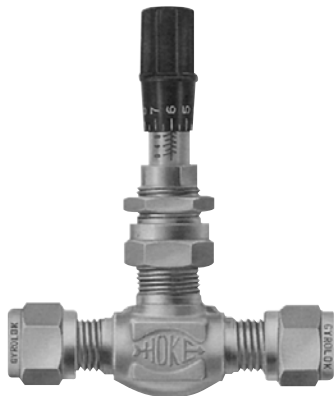
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HOKE® Condensed Catalog

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For Your Safety

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. When selecting products, the total system design must be considered to ensure safe, trouble-free performance. Material compatibility, product ratings and application details should be considered in the selection. Improper selection or use of products described herein can cause personal injury or property damage.

Contact your authorized HOKE® sales and service representative for information about additional sizes and special alloys.

SAFETY WARNING:

HOKE® products are designed for installation only by professional suitably qualified licensed system installers experienced in the applications and environments for which the products are intended. These products are intended for integration into a system. Where these products are to be used with flammable or hazardous media, precautions must be taken by the system designer and installer to ensure the safety of persons and property. Flammable or hazardous media pose risks associated with fire or explosion, as well as burning, poisoning or other injury or death to persons and/or destruction of property. The system designer and installer must provide for the capture and control of such substances from any vents in the product(s). The system installer must not permit any leakage or uncontrolled escape of hazardous or flammable substances. The system operator must be trained to follow appropriate precautions and must inspect and maintain the system and its components including the product(s) and at regular intervals in accordance with timescales recommended by the supplier to prevent unacceptable wear or failure.

Needle Valves

Forged Body Needle Valves 1700 Series



Applications:

- Cylinder valves
- Panel board instrumentation
- Pilot plants for corrosive liquids and high pressures
- Research laboratories

Maximum Operating Pressure:

- 6000 psig @ 70° F
(414 barg @ 21° C)

Operating Temperature Range:

- -65° F to +450° F (-54° C to +232° C)

Orifice Size:

- .187" (4.8 mm)

C_v Factors:

- .31

Features:

- Choice of 316 stainless steel or MONEL®
- Choice of metal or plastic handle
- Dyna-Pak® packing below stem threads provides leak-tight service
- Non-rotating stem point prevents galling and extends valve life
- Hardened thread gland provides long cycle life

Bar Stock Needle Valves 2100 Series



Applications:

- Hydraulic systems
- High temperature service to 600° F
- Gas sampling
- Test stands

Maximum Operating Pressure:

- 6000 psig @ 70° F
(414 barg @ 21° C)

Operating Temperature Range:

- -65° F to +600° F (-54° C to +316° C)

Orifice Sizes:

- .188" to .313" (4.8 mm to 8.0 mm)

C_v Factors:

- .40 to 1.20

Features:

- Variety of materials—brass, 316 stainless steel, carbon steel
- Choice of all-metal stem point or non-rotating replaceable PCTFE tip for long seat life
- Choice of Dyna-Pak® packing or high temperature packing to 600° F (316° C)
- 1/8" to 1/2" end connections

Bar Stock Needle Valves 2200 Series



Applications:

- Corrosive handling
- Sampling systems
- Metering service

Maximum Operating Pressure:

- 5000 psig @ 70° F
(345 barg @ 21° C)

Operating Temperature Range:

- -65° F to +450° F (-54° C to +232° C)

Orifice Sizes:

- .086" to .313" (2.2 mm to 8.0 mm)

C_v Factors:

- .12 to 1.40

Features:

- Corrosion-resistant 316 stainless steel
- Dyna-Pak® packing below stem threads prevents thread lubricant wash out
- Vee-point stem option for moderate metering
- HASTELLOY® C-276 stem point

Needle Valves

Severe Service Needle Valves 2219 Series

Applications:

- Steam service in power plants
- Hot condensates

Maximum Operating Pressure:

- 6000 psig @ 70° F (414 barg @ 21° C)

Operating Temperature Range:

- -100° F to + 1000° F @ 1750 psig max.
-75° C to + 538° C @ 120 bar max.

Orifice Sizes:

- 0.170", 0.250", 0.312", and 0.437"
(4.3mm, 6.4mm, 7.9mm, and 11.1mm)

C_v Factors*:

- 0.47, 1.09, and 1.20

Features:

- Designed for high pressure / high temperature use
- Meets ANSI 900# specifications
- Grafoil® packing below threads isolates threads from media.
- Non-rotating stem tip prevents galling
- Bubble-tight leak testing at both seat and packing
- Leak-tight fractional end connections available up to 1"; metric end connections up to 25mm



* C_v factor for 0.437" orifice not available at time of publication

Needle Valves for Sour Gas Service 2700 Series

Applications:Maximum Operating

- Refineries
- Chemical processing
- Oil & Gas drilling

Maximum Operating Pressure:

- 6000 psig @ 70° F
(414 barg @ 21° C)

Operating Temperature Range:

- -65° F to +450° F (-54° C to +232° C)

Orifice Size:

- .187" (4.8mm)

C_v Factor:

- .60

Features:

- All wetted components constructed of high chrome, high nickel austenitic stainless steel for uniform chemical corrosion resistance including hydrogen sulfide
- 316 stainless steel body
- Lock pin secures packing nut for safety
- Dyna-Pak® packing below the stem threads prevents fluid from contacting stem threads
- 17-4PH stainless steel non-rotating stem tip for extended cycle life
- All valves tested for bubble-tight leakage at both seat and packing



Forged Body Needle Valves 2800 Series

Applications:

- High temperature service to 700° F
- Corrosives
- Reactive and hot condensates

Maximum Operating Pressure:

- 4000 psig @ 70° F
(276 barg @ 21° C)
- 2500 psig @ 700° F
(172 barg @ 370° C)

Maximum Operating Temperature:

- 700° F (371° C)

Orifice Size:

- .312" (7.9 mm)

C_v Factor:

- 1.10

Features:

- 316 stainless steel forged body
- Union bonnet design provides maximum reliability
- 17-4PH stainless steel non-rotating stem tip
- Grafoil® packing for high temperature service
- Stem backseat for added safety



Needle Valves



Forged Body Needle Valves 3700, 3800, 3900 Series

Applications:

- Instrument air lines
- Gas sampling lines
- Test stands

Maximum Operating Pressure:

- 5000 psig @ 70° F
(345 barg @ 21° C)

Operating Temperature Range:

- -65° F to +450° F (-54° C to +232° C)

Orifice Sizes:

- .060" to .312" (1.5 mm to 7.9 mm)

C_v Factors:

- .07 to 1.10

Features:

- Variety of materials—brass, 316 stainless steel, carbon steel
- Dyna-Pak® packing provides leak-tight seal and low operating torque
- Choice of PCTFE, regulating, Vee-point, or blunt stem tips
- Panel mounting possible without packing disruption
- Globe and angle patterns

Metering Valves



Milli-Mite® Forged Metering Valves 1300 Series

Applications:

- Fine metering for gas or vapor analysis
- Sampling and analyzing water and air pollution
- Chromatographs and mass spectrometers

Maximum Operating Pressure:

- 5000 psig @ 70° F
(345 barg @ 21° C)

Operating Temperature Range:

- -65° F to +450° F (-54° C to +232° C)

Orifice Sizes:

- .047" (1.19 mm)

C_v Factors:

- .010 (1° stem)
- .024 (3° stem)

Features:

- Choice of brass or 316 stainless steel
- Accurate metering and consistent reproducibility of flow settings
- Precision orifice and close thread tolerances eliminate hysteresis
- Micrometer vernier handle provides visual control and precise flow settings
- Dyna-Pak® packing below stem threads provides leak-tight service

Micro-Mite® Forged Metering Valves 1600 Series

Applications:

- Chromatography
- Mass spectroscopy
- Sampling and fine metering
- Pollution-analyzing instrumentation

Maximum Operating Pressure:

- 5000 psig @ 70° F
(345 barg @ 21° C)

Operating Temperature Range:

- -20° F to +250° F (-29° C to +121° C)

Orifice Sizes:

- .031" (.79mm)

C_v Factor:

- .0008

Features:

- Choice of brass or 316 stainless steel
- Low internal volume for accurate flow
- New dial indicator provides instant reading of stem position
- Non-rotating stem provides smooth flow pattern
- Ideal repeatability of flow settings
- O-ring seals below stem thread



Metering Valves

Bar Stock Metering Valves 2300 Series

Applications:

- Metering liquids and gases
- Laboratory sampling
- Gas chromatographs and analyzers

Maximum Operating Pressure:

- 3000 psig @ 70° F
(207 barg @ 21° C)

Operating Temperature Range:

- -60° F to +250° F (-51° C to +121° C)

Orifice Sizes:

- .062" (1.57 mm)
- .125" (3.17 mm)

C_v Factors:

- .012 (.062" orifice, 1° stem)
- .086 (.062" orifice, 8° stem)
- .30 (.125" orifice, 8° stem)

Features:

- Choice of brass or 316 stainless steel
- Spring-loaded stem prevents galling and possible orifice enlargement
- PCTFE seat allows positive shutoff
- 1° stem is available for fine metering
- Panel mounting is standard on all valves
- Optional micrometer handle



Ball Valves

2- and 3-Way 3-Piece Bolted Ball Valves 7 Series

Applications:

- Chemical processing
- Petroleum refining
- Gas distribution
- Sampling systems
- Hydraulic fluids
- Steam service
- Chlorine service

Operating Pressure Range:

- 2-Way
 - Vacuum to 2500 psig @ 70° F
(172 barg @ 21° C)
- 3-Way
 - Vacuum to 1500 psig @ 70° F
(103 barg @ 21° C)

Operating Temperature Range:

- -65° F to +500° F (-54° C to +260° C)

Orifice Sizes:

- 2-Way - 0.09" to 0.88"
(2.3 mm to 22.4 mm)
- 3-Way - 0.09" to 0.63"
(2.3 mm to 16.0 mm)

C_v Factors:

- 2-Way - 1.0 to 38
- 3-Way - 1.0 to 9

Features:

- Energized PTFE stem seal compensates for temperature and pressure with zero leakage to over 50,000 cycles
- Live-loaded seats provide zero leakage and long cycle life
- Safety—blowout-proof, grounded stem prevents static charge build-up
- Fully encapsulated bolts
- Enclosed seats and seal reduce cold flow and extend operating pressure range
- Remote actuation packages available

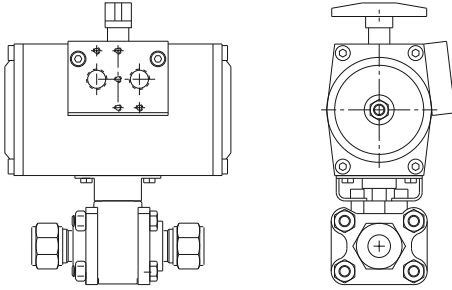


Ball Valves

Pneumatic Actuators for 7 Series Ball Valves

Operating Temperature Range:

- standard: -4° F to +194° F (-20° C to +90° C)
- optional high temperature model to +320° F (+160° C)



Features:

- Available in Double Acting (air to open and air to close) or Spring Return (normally open or normally closed) models.
- Durable construction stands up to harsh environmental conditions, increasing durability and reliability.
- Compact size provides greater installation flexibility in tight spaces.
- Field assembled valve / actuator option provides simple conversion of manual valve to pneumatic operation. This increases flexibility and decreases installation costs.
- Top mounted actuator allows for conversion from manual valve to pneumatic operation without disrupting packing. Ensuring leak-tightness and improving reliability.
- Long cycle life results in reduced maintenance requirements and lower cost of ownership.

High Cycle Ball Valves D, DL, T, TL Series



Applications:

- Instrumentation lines liquid or gas
- Pressure test stands high or low pressure
- Sampling systems

Maximum Operating Pressure:

- 316 SS and MONEL®:
 - D & DL Series: 6000 psig @ 70° F (414 barg @ 21° C)
 - T & TL Series: 3000 psig @ 70° F (207 barg @ 21° C)
- Brass:
 - D, DL, T, & TL Series: 3000 psig @ 70° F (414 barg @ 21° C)

Cycle Life:

D, T = 50,000; DL, TL = 100,000

Operating Temperature Range:

- -40° F to +350° F (-40° C to +177° C)

Orifice Sizes

- .093" – .250" (2.4 mm–6.4 mm)

C_v Factors

- .23–1.44

Features:

- Delta stem seal (DL) and spring-loaded PTFE seal (TL) provide high cycle life over 100,000 cycles.
- Live-loaded seats compensate for wear and temperature cycling with zero leakage.
- Static-grounded stem prevents static discharge for safety.
- Bi-directional (D & T)
- Uni-directional (DL & TL)
- Optional factory-assembled actuator ensures lower installed cost.

Ball Valves

Ultramite™ Forged Body Ball Valves 70 Series

Applications:

- High pressure test stands
- Sampling lines
- Instrument lines
- Analyzer labs

Maximum Operating Pressure:

- 6000 psig @ 70° F
(414 barg @ 21° C)

Operating Temperature Range:

- -40° F to +350° F (-40° C to +177° C)

Orifice Sizes:

- .093" to .375" (2.4 mm to 9.5 mm)

C_v Factors:

- .15 to 1.4

Features:

- Variety of materials—brass, 316 stainless steel, MONEL®
- Oval trip-proof handle gives visual flow indication
- Floating ball uses system pressure to assist sealing and reduce operating torque
- Fixed end fittings to prevent accidental disassembly



Flomite® 2-way Integral Panel Mount 71 Series

Applications:

- High pressure instrument lines
- Gas sampling lines
- Chromatographs
- Hydraulic test stands

Maximum Operating Pressure:

- 6000 psig @ 70° F
(414 barg @ 21° C)

Operating Temperature Range:

- -20° F to +425° F (-29° C to +218° C)

Orifice Sizes:

- .093" to .250" (2.4 mm to 6.4 mm)

C_v Factors:

- .23 to 1.40

Features:

- Variety of materials brass, 316 stainless steel, MONEL®
- Floating ball uses system pressure to assist sealing and reduce operating torque
- Dyna-Pak® packing provides long, trouble-free service and low operating torque
- Quarter-turn handle gives visual flow indication
- Forged body for extra strength
- Dual seats provide leak-tight bi-directional sealing



Selectomite® 3-Way Ball Valves 71 and 76 Series

Applications:

- Instrument air lines
- Sampling systems

Maximum Operating Pressure:

- 6000 psig @ 70° F
(414 barg @ 21° C)

Operating Temperature Range:

- -40° F to +350° F (-40° C to +177° C)

Orifice Sizes:

- .093" to .187" (2.4 mm to 4.8 mm)

C_v Factors:

- .15 to .57

Features:

- Choice of brass or 316 stainless steel
- Dyna-Pak® packing provides trouble-free service and low operating torque
- Encapsulated TFE or Nylatron® seats eliminate cold flow and distortion
- Handle indicates flow direction



Ball Valves

Rotoball® 2-Way Ball Valves 72 Series



Applications:

- Hydraulic test stands
- Handling slurries
- Pilot plants
- Pneumatic systems

Maximum Operating Pressure:

- 5000 psig @ 70° F
(345 barg @ 21° C)

Operating Temperature Range:

- -20° F to +350° F (-29° C to +177° C)

Orifice Size:

- .375" (9.5 mm)

C_v Factor:

- 3.4

Features:

- Choice of brass, 316 stainless steel, or MONEL®
- Choice of Viton® O-rings or TFE washers for improved corrosive / temperature compatibility
- Encapsulated TFE seats eliminate cold flow and distortion
- Dual seats provide leak-tight bi-directional flow
- Nylon oval handle or optional metal lever handle
- Blowout-proof stem

Space Saver® Air Actuators 0700 Series



Applications:

- Compact interlocking of multiple actuators
- Ideal for instrumentation panels
- Actuates small and mid-sized ball valves

Maximum Operating Pressure:

- 125 psig @ 70° F (9 barg @ 21° C)

Operating Temperature Range:

- 0° F to +400° F (-18° C to +204° C)

Features:

- Small envelope (2¼" × 2¾" × 3½")
- Can actuate two valves simultaneously
- Multiple mounting options
- Uses standard shop air
- Available in spring return and double acting modes
- 90° and 180° operation

Electrically Operated Air Actuators 0100 Series



Applications:

- Automated instrument and process systems
- Test areas
- Corrosive atmospheres

Voltage:

- AC – 115 VAC/60 cycles
- DC – 24 VDC

Rated Current:

- AC – 1.6 amps
- DC – .63 amps

Cycle Time:

- AC/DC – 2.5 seconds per 90° of travel

Power Consumption:

- AC – 57 watts
- DC – 15 watts

Features:

- Position indicator switches are standard
- Compact design for small-space installation
- Weatherproof enclosures
- Thermal overload relay prevents motor burnout
- Manual override allows for manual valve operation

Ball Valves

Multimite® 4- and 5-Way Trunnion Valves 79 Series

Applications:

- Distribution systems
- Manifold switching
- Sampling systems

Maximum Operating Pressure:

- 6000 psig @ 70° F
(414 barg @ 21° C)

Operating Temperature Range:

- 0° F to +350° F (-18° C to +179° C)

Orifice Sizes:

- .166" and .187" (4.2 mm and 4.8 mm)

C_v Factors:

- .47 to .66

Features:

- Corrosion-resistant 316 stainless steel
- Trunnion bearings eliminate galling
- Blowout-proof stem
- Spring-loaded ball engages every 90° to indicate full port position
- Choice of PTFE or Nylatron® seats



Plug Valves

Quarter-Turn Plug Valves 7300 Series

Applications:

- Instrument air lines
- Test benches
- Sampling lines
- Pilot plant instrumentation
- Low pressure air lines

Maximum Operating Pressure:

- 3000 psig @ 70° F
(207 barg @ 21° C)

Operating Temperature Range:

- -20° F to +400° F (-29° C to +204° C)

Orifice Sizes:

- .093" to .187" (2.4 mm to 4.8 mm)

C_v Factor:

- .74

Features:

- Choice of brass or 316 stainless steel
- Oval trip-proof handle provides visual flow indication
- Dual retaining rings prevent accidental plug removal
- Throttling capabilities
- Vented version for down stream venting
- Retainer allows 1000 psig (69 barg) reverse operating pressure



Rising Stem Plug Valve: 7400 Series

Applications:

- Lines containing small solid impurities
- Instrumentation lines containing viscous fluids or slurries
- Systems requiring routine cleaning
- Systems requiring flow regulation and full flow capabilities

Maximum Operating Pressure:

- 6000 psig @ 70° F
(414 barg @ 21° C)

Operating Temperature Range:

- -20° F to +250° F (-29° C to +121° C)

Orifice Sizes:

- .187" and .250" (4.7 mm and 6.3 mm)

C_v Factors:

- .83 and 1.20

End Connections:

- ¼" to ½" NPT

Features:

- Back seating is standard
- High C_v and rodability
- Flow regulation similar to that of a needle valve
- Helps reduce fugitive emissions
- Extended valve life
- Replaceable seat



Fluid Control Components

Forged Body Toggle Valves 1500 Series



Applications:

- Chromatographs and mass spectrometers
- Test benches
- Coolant lines

Maximum Operating Pressure:

- 200 psig @ 70° F
(14 barg @ 21° C)

Operating Temperature Range:

- -20° F to +300° F (-29° C to +149° C)

Orifice Sizes:

- .125" to .219" (3.2 mm to 5.6 mm)

C_v Factors:

- .23 to .60

Features:

- Brass or 316 stainless steel
- Elastomeric seals for vacuum service
- Toggle handle provides instant on-off control
- Compact design

Relief Valves R6000 Series



Applications:

- Beverage dispensing equipment
- Gas pilot plants
- Petrochemical test labs
- Offshore platform heating lines
- Pharmaceutical sterilization and packaging systems

Maximum Operating Pressure:

- 5 psig to 6000 psig (0-414 barg)

Operating Temperature Range:

- -70° to +550° F (-57° to +288° C)

Orifice Sizes:

- 0.082", 0.094", 0.188" (2.1 mm, 2.4 mm, 4.8 mm)

Relief Ranges ΔP:

- 5 - 550 psig (0 - 38 barg)
- 150 - 2500 psig (10 - 172 barg)
- 150 - 5000 (10 - 345 barg)
- 5000 - 6000 psig (345 - 414 barg)

Features:

- 316 stainless steel body
- Narrow pressure ranges can be factory pre-set
- Can be used with any liquid or gas service
- Caps and bonnets are pre-drilled for lock wire
- PED certification and CE marking standard for all models

Ball and Poppet Check Valves 6100 & 6200 Series



Applications:

- Prevention of reversed flow
- Locking pressure in hydraulic cylinders
- Vent valve to purge system

Maximum Operating Pressure:

- 6000 psig @ 70° F
(414 barg @ 21° C)

Operating Temperature Range:

- -40° F to +350° F
(-40° C to +177° C)

Cracking Pressures:

- 1/3, 2, 10 and 25 psig (.02, .14, .69 and 1.7 barg)

Orifice Sizes:

- .187" and .422" (4.8 mm and 10.7 mm)

C_v Factors:

- .3 and 2.4

Features:

- Variety of materials—brass, 316 stainless steel, MONEL®
- Ball and poppet designs are standard
- Poppet models provide large flow with minimum chatter and fluctuation
- Ball models provide fast open-close response
- O-ring seat provides leak-tight shut-off

Fluid Control Components

Check Valves CVH Series

Applications:

- Back pressure protection
- Prevents reverse flow
- Protection of solenoids, analyzers, regulators, etc.

Maximum Operating Pressure:

- 0 to 6000 psig (0 to 414 barg)

Operating Temperature Range:

- -65° F to +550° F
(-54° C to +288° C)

End Connection Sizes:

- 1/8" to 1", 6 mm to 25 mm

Crack Pressures:

- .5 to 20 psig (.03 to 1.4 barg)

C_v Factors:

- .32 to 7.4

Features:

- Resilient O-ring seat provides cushioned quiet closing and zero leakage
- Floating O-ring is continually cleaned: contaminants do not prohibit sealing
- Various materials of construction: can be used with any liquid or gas service
- Full flow with minimal restriction for maximum C_v rates



Excess Flow Valve: XVH Series

Applications:

- Gas delivery systems
- Analyzer sample lines
- Cabinet purge gas systems
- Differential pressure cell lines

Maximum Operating Pressure:

- Zero to 6000 psig (414 barg)

Operating Temperature Range:

- -320° F to +900° F
(-196° C to +482° C)

End Connection Sizes:

- 1/4", 3/8", 1/2", 6 mm through 14 mm

Features:

- Flow switches that automatically close if a flow spike occurs, preventing uncontrolled release of system fluid
- Automatic and manual reset poppets
- Can be used with any liquid or gas service
- Anti-clog wire prevents clogging of bleed port



Inline -, Removable- and Bypass Micron Filters 6300 Series

Applications:

- Trapping of foreign particles
- Protection of sensitive equipment
- System purging
- Pressure Damping

Maximum Operating Pressure:

- Brass
 - 3000 psig @ 70° F (207 barg @ 21° C)
- Stainless steel
 - 5000 psig @ 70° F (345 barg @ 21° C)

Operating Temperature Range:

- -60° F to +450° F (-51° C to +232° C)

Filtering Range:

- 2 to 55 microns

C_v Factors:

- .006 to .420

Features:

- Choice of brass or 316 stainless steel bodies
- 316 stainless steel elements
- Choice 6310 inline, 6320 removable, or 6330 bypass series
- Bypass models permit purging and sampling of process fluid



6310 Inline Series



6330 Bypass Series (6320 is similar, except no outlet on top)

Packless Valves



Air Actuated Bellows Valves 0300 Series

Applications:

- High purity
- Diffusion furnaces
- Gas panels

Operating Pressure Ranges:

- Actuator: 50 to 150 psig @ 70° F (3.4 to 10.3 barg @ 21° C)
- Valve: vacuum to 350 psig (24 bar – Normally Open)
- Valve: vacuum to 200 psig (14 bar – Normally Closed)

Operating Temperature Range:

- -40° F to +250° F (-40° C to +121° C)

Orifice Size:

- .170" (4.3 mm)

C_v Factor:

- .28

Internal Volume:

- .08 cubic inches (1.3 cc)

Features:

- Compact design for small-space installations
- Valve body made of corrosion-resistant 316 stainless steel
- Actuator body made of lightweight aluminum
- Choice of Normally Open or Normally Closed models
- Replaceable PCTFE seat extends valve life



Bellows Sealed Valves 4100 Series

Applications:

- Critical gas analysis
- Reactive and toxic fluids
- Vacuum systems bake-out

Maximum Operating Pressure:

- High vacuum (10⁻⁵ torr) to 1000 psig @ 600° F (69 barg @ 316° C)

Operating Temperature Range:

- -40° F to +600° F (-40° C to +316° C)

Orifice Sizes:

- .059" and .170" (1.5 mm and 4.3 mm)

C_v Factors:

- .06 and .35

Internal Volume:

- .08 cubic inches (1.3 cc)

Features:

- Choice of brass or 316 stainless steel
- Choice of blunt, Vee-point, or PCTFE tips
- Removable nylon handle for high temperature bake-out
- Bellows silver-soldered to body



Bellows Sealed Valves 4200 Series

Applications:

- Critical gas analysis
- Reactive and toxic fluids
- Cryogenics
- High vacuum systems

Maximum Operating Pressure:

- High vacuum (10⁻⁵ torr) to 2000 psig @ 600° F (138 barg @ 316° C)

Operating Temperature Range:

- -320° F to +1200° F (-195° C to +649° C)

Orifice Size:

- .156" (4.0 mm)

C_v Factors:

- .33 and .36

Internal Volume:

- .18 cubic inches (3.0 cc)

Features:

- Corrosion-resistant 316 stainless steel
- Positive plug return prevents plug from sticking
- Torque not transmitted to bellows
- Secondary seal in upper bonnet for added protection
- Heavy-duty bellows for long life

Packless Valves

Bellows Sealed Valves 4500 Series

Applications:

- High vacuum systems
- Laboratories
- Critical gas analysis

Maximum Operating Pressure:

- High vacuum (10^{-5} torr) to 300 psig @ 250° F (21 barg @ 121° C)

Operating Temperature Range:

- -20° F to +250° F (-29° C to +121° C)

Orifice Sizes:

- .156" and .281" (4 mm and 7.1 mm)

C_v Factor:

- .70

Internal Volume:

- .08 cubic inches (1.3 cc)

Features:

- Choice of brass or MONEL®
- Protective handle limits escape of process fluid in case bellows ruptures
- Encapsulated PCTFE seat
- Bellows is sealed to body with PCTFE gasket
- Bellows assembly is easily replaced



Diaphragm Valves 4600 Series

Applications:

- High temperature bake-out systems
- High vacuum systems

Maximum Operating Pressure:

- High vacuum (10^{-5} torr) to 300 psig @ 70° F (21 barg @ 21° C)

Operating Temperature Range:

- -65° F to 600° F (-54° C to +316° C)

Orifice Size:

- .125" (3.2 mm)

C_v Factor:

- .2

Internal Volume:

- .11 cubic inches (1.8 cc)

Features:

- MONEL® construction
- Diaphragm provides low internal volume and low dead space
- Compact size for small-space installations
- Gasket and welded models



2-Way Diaphragm Valves DV1 Series

Applications:

- Analytical Instrumentation
- Petrochemical
- Pharmaceutical
- Chemical

Maximum Operating Pressure:

- Vacuum (50 torr) to 3600 psig (248 barg)

Operating Temperature Range:

- -40° F to +400° F (-40° C to +204° C)

Orifice Size:

- .110" (2.8 mm)

C_v Factors:

- 0.17

Low Valve Internal Volume:

- 0.16 cc

Features:

- Totally free of springs, bellows, packing, O-rings and lubricants in process wetted area
- Metal-to-metal seals to atmosphere: no leaching of undesirable elements into the flow stream
- Elgiloy® diaphragms insure the utmost in corrosion resistance and life span



Manifolds

General Purpose Manifolds



Instrument Manifolds 2-, 3-, 5-Valve

Application:

- Differential pressure transmitters
- Chemical
- Pharmaceutical
- Petrochemical

Operating Temperature Range:

- PTFE: -0° F to +392° F (-18° C to +200° C)
- Grafoil®: -0° F to +842° F (-18° C to +450° C)

Maximum Operating Pressures:

- PTFE packing:
6000 psig @ 212°F (414 barg @ 100°C)
- Grafoil® packing:
6000 psig @ 212°F (414 barg @ 100°C)
3300 psig @ 842°F (288 barg @ 450°C)

Features:

- Remote (or pipe) mounting can be independently mounted
- Direct (or flange) mounted manifolds reduces the number of connections and possible leak points
- 2, 3, or 5 valve manifolds offer various levels of process control & measurement
- Backseat stem
- One-piece non-rotating stem tip minimizes seat galling

Special Application Manifolds

Trifold™ Needle Valve Manifold

Application:

- Differential pressure transmitters with 2.125 inch center to center process connections.

Maximum Operating Pressure:

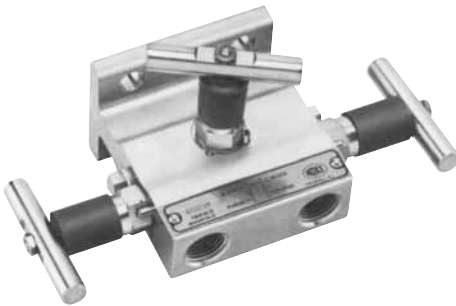
- 6000 psig @ 70° F (414 barg @ 21° C)

Operating Temperature Range:

- -65° F to +600° F (-54° C to +316° C)

Features:

- Purge ports provided on process side of block valves for applications requiring continuous purging
- Dyna-Pak TFE or high-temperature 600° F Graph-Lock /TFE wafer packing is standard.
- Non-rotating hardened metal stem tip
- Replaceable 316 stainless steel seats prolong manifold life
- Dyna-Pak® PTFE wafer or high temperature graphite / PTFE packing
- Choose pipe or flange outlet models



Rotofold® Ball Valve Manifold

Application:

- Block process impulse lines and perform equalizing functions

Maximum Operating Pressure:

- 6000 psig @ 70° F (414 barg @ 21° C)

Operating Temperature Range:

- 0° F to 300° F (-18° C to +149° C)

Features:

- Flange can be reversed for direct mounting to an integral orifice type transmitter
- Replaceable PCTFE seats extend valve life
- Rod through block valves
- Quarter-turn handle gives visual flow indication
- Cam handles ensure proper valve sequencing



Special Applications Manifolds

Pentafold® 5-Valve Manifold

Application:

- Differential pressure transmitters when applied to gas flow measurement

Maximum Operating Pressure:

- 6000 psig @ 70° F
(414 barg @ 21° C)

Operating Temperature Range:

- 0° F to 300° F (-18° C to +149° C)

Features:

- Static or vent ports provided on instrument side
- Replaceable ball seats and stem tips extend service life, reducing cost
- Threaded mounting hole provide on all models
- TFE standard packing on all valves



Sampling Cylinders

Spun Sampling Cylinders

Applications:

- Hydrocarbon sampling
- High vacuum systems
- Chemical reaction vessels

Maximum Operating Pressure:

- 1800 psig (124 barg)

Features:

- Choice of 7 capacities ranging from 75 cc to 3785 cc (1 gallon)
- Manufactured to DOT 3A or 3E requirements
- All interior surfaces are sandblasted for a uniform surface
- 316 Stainless Steel construction



Formed Sampling Cylinders

Applications:

- Hydrocarbon sampling
- Gas sampling
- Snubbers in reactor feed lines

Maximum Operating Pressure:

- 5000 psig @ 70° F
(345 barg @ 21° C)

Features:

- Choice of 12 different capacities, 10 ml to 4 gallons
- Fabricated from seamless drawn tubing with increased thickness in the threaded area
- All models are internally sand-blasted
- Single- and double-ended cylinders are standard
- Variety of materials—304 stainless steel, MONEL®, and various exotics available upon request



Sampling Cylinders



Safety Relief Devices: 6700 Series

Application:

- Over-pressure protection for HOKE® sampling cylinders

BURSTING DISK MODELS

Operating Pressure Ranges:

- 1400 to 1600 psig @ 70° F (97 to 110 barg @ 21° C)
- 1800 to 2000 psig @ 70° F (124 to 138 barg @ 21° C)
- 2600 to 3000 psig @ 70° F (179 to 207 barg @ 21° C)
- 3500 to 4100 psig @ 70° F (241 to 283 barg @ 21° C)
- 5400 to 6200 psig @ 70° F (372 to 428 barg @ 21° C)

SPRING RELIEF MODELS

Operating Pressure Ranges:

- 350 to 400 psig @ 70° F (24 to 28 barg @ 21° C)
- 540 to 600 psig @ 70° F (37 to 41 barg @ 21° C)

Operating Temperature Range (Both Models):

- -20° F to +250° F (-29° C to +121° C)

Features:

- Spring relief models reseal after venting excess pressure
- INCONEL® rupture discs and 316 stainless steel body for increased corrosion resistance
- Color-coded discs meet requirements of CGA-S1.1

Analytical Products



73S Series Selector Valves

Applications:

- Process analyzers
- Instrumentation
- Gas chromatography

Maximum Operating Pressure:

- 500 psig @ 70° F (34.5 barg @ 21° C)
- 200 psig @ 350° F (13.8 barg @ 175° C)

Operating Temperature Range:

- -40° F to +350° F (-40° C to +177° C)

Orifice Sizes:

- .051" to .093" (1.30 mm – 2.36 mm)

C_v Factor:

- .071 maximum

Features:

- 5-way or 7-way configuration
- Wide temperature range
- Sliding seal principles
- Bi-directional flow
- GYROLOK® Tube Fitting or female NPT connections

Chromatography Fittings



Applications:

- Gas or liquid chromatography
- Analytical equipment

Maximum Operating Pressure:

- Rated for working pressures higher than the tubing recommended for use

Operating Temperature Range:

- -325° F to +800° F (-198° C to +427° C)

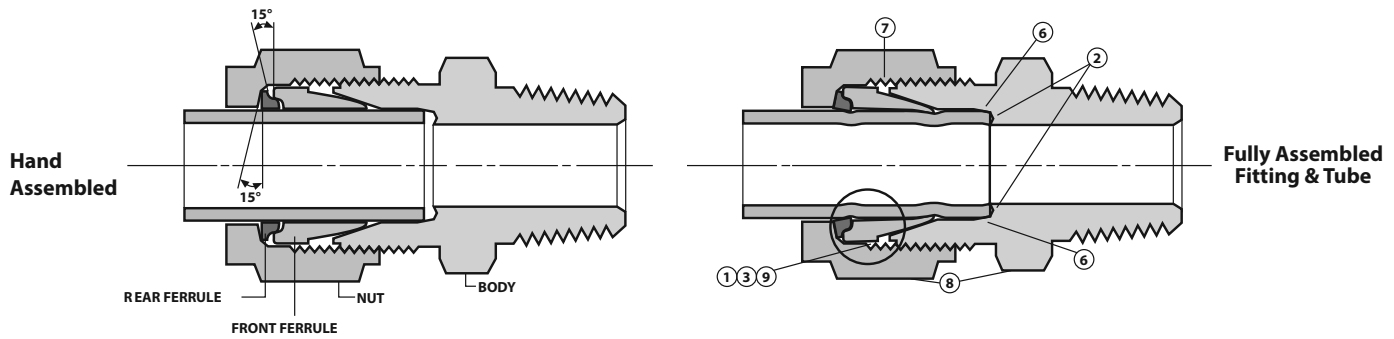
Orifice Sizes:

- .013" - .052" (0.33 mm – 1.32 mm)

Features:

- Low dead volume
- Controlled ferrule drive
- Interchangeability
- Press-fit or drop-in frits

GYROLOK® Features and Benefits



| FEATURES | EXPLANATION | BENEFITS |
|---|---|--|
| 1. CONTROLLED FERRULE DRIVE | Roll-in locking action of rear ferrule: During fitting makeup, 15° angles close — between the rear ferrule and nut, and between the rear ferrule and front ferrule — thus preventing overstressing of tubing or excessively reducing tubing inside diameter. Front ferrule shoulder: Front ferrule shoulder prevents body expansion and nut jamming, caused by over-tightening. | Provides maximum user safety under high pressure/vibration conditions. Prevents overstressing, which causes tubing failure and possible injury. System efficiency is improved by maximizing flow. Provides unmatched remake life. Maximizes value and economy. |
| 2. BUTT SEAL | Provides a secondary seal and eliminates dead space. | Maximizes fitting leak integrity and user safety. Can seal with scratched tubing. Increases accuracy in sampling applications. Reduces pump-down time in vacuum applications. |
| 3. HOKE® VALVES WITH GYROLOK® END FITTINGS | Controlled ferrule drive prevents end connection expansion, thus prolonging valve life and eliminating the need to use female-ended valves with separate fittings. Eliminates a possible leak path and extends valve life. | Long product life and maximum value. Safety and economy. |
| 4. GYROLOK® SAFETY CHANGER NUT AND FERRULE SETS | Nut and ferrule sets supplied on rods, already correctly oriented. (Not necessary to handle ferrules when replacing components.) | Safest, simplest device for component replacement. |
| 5. GYROGAGE | Marks tubing to show that tubing has been properly inserted into fitting, and that fitting has been properly tightened. | Maximum safety resulting from ability to verify correct tube insertion and proper tightening. |
| 6. SIZING ANGLE | Slight taper in the base of the tube socket reduces possibility of tube sticking | Less tube sticking during disassembly saves time and money |
| 7. SILVER-PLATED NUT THREADS | Silver-plating extends fitting life by preventing galling, up to 1200° F (649° C). | Extended product life at extreme temperatures. |
| 8. MATERIAL TRACEABILITY ON FITTING BODY AND NUT | Bodies and nuts made of 316 Stainless Steel and MONEL® are heat code traceable to Certified Material Test Reports. | Traceability provides added safety. Certified Material Test Reports are available for review and verification. |
| 9. PFA FERRULE COATING | Front ferrules—Sizes larger than 1" (25mm) are PFA coated. | Increased resistance to media and atmospheric corrosion. |
| 10. SPECIAL HIGH TOLERANCE NPT THREAD | ANSI Standard B1.20.1 - Basic + ¼ to Basic +1. | Provides a Safer more robust connection: 63% tighter tolerance with up to six thread engagement, reduced galling and vibration |

GYROLOK®

General Information

The GYROLOK® Design

GYROLOK® Tube Fittings have been carefully designed and manufactured to provide a wide range of outstanding leak-tight application capabilities.

Materials:

GYROLOK® fittings are available as standard in brass, 304 stainless steel, 316 stainless steel and MONEL®:

316 Stainless Steel Forgings: ASTM A-182
 Brass Bar Stock, Alloy 360: ASTM B-16
 316 Stainless Steel Bar Stock: ASTM A-479
 MONEL® Forgings, Alloy 400: QQ-N-281
 Brass Forgings, Alloy 377: QQ-B-626
 MONEL® Bar Stock, Alloy 405: QQ-N-281
 Brass Bar Stock, Alloy 353: ASTM B-453
 MONEL® Bar Stock, Alloy K500: QQ-N-286

HOKE® fittings are also available for custom orders in special shapes and special materials:

HASTELLOY® C-276: HC
 INCONEL®: INC
 Titanium: TI
 Duplex 2205: DX3
 Super Duplex 2507: D50
 254 SMO: 6MO

Contact your local HOKE® Distributor for further information.

Certified Material Test Reports (CMTRs):

Bodies and nuts of GYROLOK® fittings in all materials other than brass are heat code traceable. To obtain CMTRs for these components, place separate orders for such items and specify "CMTRs required on all items".

Pressure Rating:

GYROLOK® fitting ends⁽¹⁾ are rated for working pressures **higher** than the tubing recommended for use with GYROLOK®.

⁽¹⁾ Note: Pressure ratings may vary for other fitting ends.

Tubing should not be utilized at pressures above its maximum allowable working pressure. Check the HOKE® Tubing Data Charts for specific information. If no pressure is identified for a given size and wall thickness of tubing, that tubing is not considered suitable for the use with tube fittings.

Vacuum Rating:

GYROLOK® offers deep vacuum capability. With good quality tubing, GYROLOK® fittings will be leak-tight at vacuum levels of 10⁻⁹ torr while tested with a leakage sensitivity of 10⁻⁹ sccs.

CAUTION: (For stainless steel) Intermittent use to 1200° F (649° C) is possible, however, prolonged exposure to temperatures over 800° F (427° C) is not recommended.

Temperature:

GYROLOK® fittings provide safe, reliable performance from cryogenic temperatures to high temperature bake-out levels, depending on material.

- 316 stainless steel: -325° F to +800° F (-198° C to +427° C)
- Brass (copper tubing): -325° F to +400° F (-198° C to +204° C)
- MONEL®: -325° F to +800° F (-198° C to +427° C)

Pipe Thread Information

GYROLOK® tube fittings are available with NPT (National Pipe Taper), BSP/ISO (British Standard Pipe / International Standards Organization) or unified screw threads.

Straight or Parallel Threads

| Specification(s) | Type | Part Number or Suffix Designation | Sealing Method |
|---|--------|---|---|
| American Standard unified screw threads | Male | Fitting type ends in S, as in COS or AOS | Generally utilizes an elastomer O-ring to provide sealing |
| RP to ISO 228/1 BS 2779 JIS B0202 | Male | Modifier is B, following the unit of measure for fractional (E) or metric (M), as in 6CM4316EB | Metal-to-metal sealing to DIN 3852, Form B |
| RS to ISO 228/1 BS 2779 JIS B0202 | Male | Modifier is A, following the unit of measure for fractional (E) or metric (M), as in 6CM4316EA | Utilizes a sealing washer to provide sealing. Reference DIN 3852, Form A ** |
| RG to ISO 228/1 BS 2779 JIS B0202 | Female | Modifier is Z, following the unit of measure for fractional (E) or metric (M), as in 6CF4316EZ | Sealing form meets DIN 3852, Form Z |

** Female RP or RS ends available with Form X.


Tapered Thread Information

| Specification(s) | Type | Part Number or Suffix Designation | Sealing Method |
|---|---------------------------|---|---|
| NPT | M/F | Fitting type ends in M or F, as in CM or CF | Seal is made on the thread. Thread sealant is required. |
| RT to ISO 7/1 BS 21 JIS B0203 DIN 2999 | M/F M/F M/F Male | Modifier is C, following the unit of measure for fractional (E) or metric (M), as in 6CM4316EC | Seal is made on the thread. Thread sealant is required. The BSP/ISO thread utilizes a different angle and the number of threads per inch may differ from NPT. Reference DIN 3852, form C. |

GYROLOK® Tube Fittings at a Glance

Fittings


Male Connector **CM** 

Male Thermocouple Connector **CMT** 

Female Connector **CF** 


Union **U** 

Reducing Union **RU** 

Reducer **R** 

Male Adapter **AM** 

Female Adapter **AF** 

Port Connector and Reducing Port Connector **PC** 

Bulkhead Adapter **BA** 

Male Bulkhead Connector **BCM** 

Female Bulkhead Connector **BCF** 

Bulkhead Union **BU** 


Male Elbow **LM** 

Female Elbow **LF** 

Union Elbow **LU** 


Male Run Tee **TMT** 

Male Branch Tee **TTM** 

Female Run Tee **TFT** 

Female Branch Tee **TTF** 

Union Tee **TTT** 

Heat Exchanger Tee **XT** 

Union Cross **C** 

Cap **CP** 

Plug **P** 

Tube Insert **TI** 

Lapped Flange Connector **CLF** 

Pre-setting Tool **PST** 

Fittings with O-ring Seals

O-ring Male Connector **COM** 

O-ring Straight Connector **COS** 

GYROLOK® Tube Fittings at a Glance

| | | |
|---------------------|------------|---|
| O-ring Male Adapter | AOM |  |
|---------------------|------------|---|

| | | |
|-------------------------|------------|---|
| O-ring Straight Adapter | AOS |  |
|-------------------------|------------|---|

Fittings with Weld Ends

| | | |
|-----------------------|-----------|---|
| Socket Weld Connector | CW |  |
|-----------------------|-----------|---|

| | | |
|---------------------|------------|---|
| Butt Weld Connector | CBW |  |
|---------------------|------------|---|

| | | |
|-------------------|-----------|---|
| Socket Weld Elbow | LW |  |
|-------------------|-----------|---|

| | | |
|-----------------|------------|--|
| Butt Weld Elbow | LBW |  |
|-----------------|------------|--|

Fittings with AN Ends

| | | |
|----------|------------|---|
| AN Union | UAN |  |
|----------|------------|---|

| | | |
|-----------------|-------------|---|
| O-ring AN Union | UANO |  |
|-----------------|-------------|---|

| | | |
|-------------------|-------------|---|
| Bulkhead AN Union | BUAN |  |
|-------------------|-------------|---|

| | | |
|------------|------------|---|
| AN Adapter | AAN |  |
|------------|------------|---|

Fittings with BSP/ISO Threads

| | | |
|-----------------------------|--------------|---|
| Male Connector with RP Ends | CM/EB |  |
|-----------------------------|--------------|---|

| | | |
|-----------------------------|--------------|---|
| Male Connector with RS Ends | CM/EA |  |
|-----------------------------|--------------|---|

| | | |
|-----------------------------|--------------|---|
| Male Connector with RT Ends | CM/EC |  |
|-----------------------------|--------------|---|

| | | |
|-------------------------------|--------------|---|
| Female Connector with RG Ends | CF/EZ |  |
|-------------------------------|--------------|---|

| | | |
|-------------------------------|--------------|---|
| Female Connector with RT Ends | CF/EC |  |
|-------------------------------|--------------|---|

| | | |
|---------------------------|--------------|---|
| Male Adapter with RS Ends | AM/EA |  |
|---------------------------|--------------|---|

| | | |
|---------------------------|--------------|---|
| Male Adapter with RT Ends | AM/EC |  |
|---------------------------|--------------|---|

| | | |
|-----------------------------|--------------|---|
| Female Adapter with RG Ends | AF/EZ |  |
|-----------------------------|--------------|---|

| | | |
|-----------------------------|--------------|---|
| Female Adapter with RT Ends | AF/EC |  |
|-----------------------------|--------------|---|

| | | |
|-------------------------|--------------|--|
| Male Elbow with RT Ends | LM/EC |  |
|-------------------------|--------------|--|

Spare Parts

| | | |
|-----|----------|---|
| Nut | N |  |
|-----|----------|---|

| | | |
|--------------|-----------|---|
| Bulkhead Nut | BN |  |
|--------------|-----------|---|

| | | |
|-------------|-----------|---|
| Knurled Nut | KN |  |
|-------------|-----------|---|

| | | |
|---------------|-----------|---|
| Front Ferrule | FF |  |
|---------------|-----------|---|

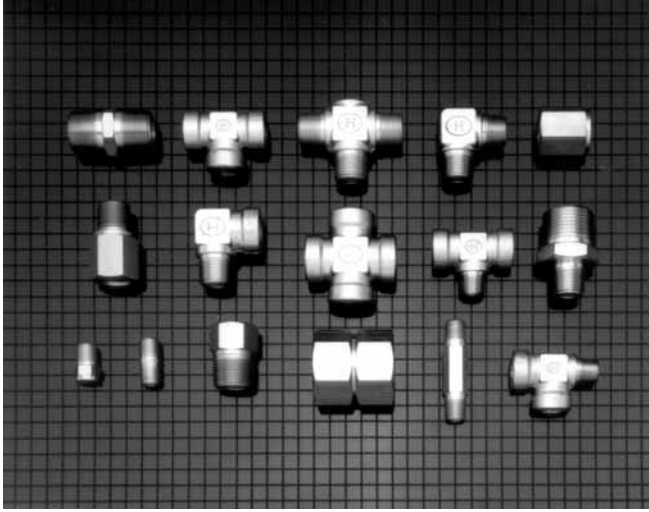
| | | |
|--------------|-----------|---|
| Rear Ferrule | FR |  |
|--------------|-----------|---|

| | | |
|--------|-------------|---|
| Screen | SCRN |  |
|--------|-------------|---|

| | | |
|-----------------------------|------------|---|
| Safety Changer Ferrule Sets | SCF |  |
|-----------------------------|------------|---|

| | | |
|-------------------------------------|-------------|---|
| Safety Changer Nut and Ferrule Sets | SCNF |  |
|-------------------------------------|-------------|---|

Precision Instrument Pipe Fitting



Design:

HOKE® Precision Instrument Pipe Fittings are machined from bar stock or forgings in brass or heat traceable 316 stainless steel. The fitting design incorporates an NPT thread as standard and meets the requirements of ANSI B 31.1 Power Piping Code, ANSI B 31.1 Chemical Plant and Petroleum Refinery Piping, and Section VIII of ASME Boiler & Pressure Vessel Code.

Available sizes include 1/8", 1/4", 3/8", 1/2", 3/4" and 1" threads, which exceed the requirements of ANSI B 1.20.1 for (NPT) tapered pipe threads. Protective end caps prevent damage to exposed threads.

Adapters, bushings, caps, couplings, crosses, elbows, nipples, plugs and tees are designed to fit most applications.

Materials:

HOKE® Precision Instrument Pipe Fittings are available as standard in brass and 316 stainless steel.

- | | |
|----------------------------------|------------|
| • 316 stainless steel Forgings: | ASTM A-182 |
| • 316 stainless steel Bar Stock: | ASTM A-479 |
| • Brass Forgings, Alloy 377: | QQ-B-626 |
| • Brass Bar Stock, Alloy 353 | ASTM B-453 |
| • Brass Bar Stock, Alloy 360: | ASTM B-16 |

Features:

- Fitting design meets the requirements of ANSI B 31.1 Power Piping Code, ANSI B 31.1 Chemical Plant and Petroleum Refinery Piping, and Section VII of ASME Boiler and Pressure Vessel Code.
- Fittings are machined from materials, which meet ASTM specifications.
- 316 stainless steel fittings are heat traceable.
- Available in wide variety of shapes and sizes.
- Threads exceed the requirements of ANSI B 1.20.1 for tapered pipe threads (NPT).
- Protective end caps prevent damage to exposed threads.

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The Small Bore Instrumentation Specialists



We specialize in small bore instrumentation products up to 2" that deliver benchmark performance quality & safety; provide the broadest array of superior alloy offerings in the market; decades of proven success in a wide range of industries; a roster of "who's who" customers & projects globally; original "Best Solution" engineering & designs; and are focused on continuous improvement in all aspects of our business.

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CRANE INSTRUMENTATION &
SAMPLING Inc.
405 Centura Ct.
Spartanburg, SC 29305, USA
Tel: 1-864-574-7966
PO Box 4866, Spartanburg, SC
29305-4866 USA

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GYROLOK® Tube Fittings



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GYROLOK®



CRANE Instrumentation & Sampling, HOKE®
 PO Box 4866 • Spartanburg, SC 29305-4866
 (864) 574-7966 • www.hoke.com

For Your Safety

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. When selecting products, the total system design must be considered to ensure safe, trouble-free performance. Material compatibility, product ratings and application details should be considered in the selection. Improper selection or use of products described herein can cause personal injury or property damage.

Contact your authorized HOKE® sales and service representative for information about additional sizes and special alloys.

SAFETY WARNING:

HOKE® products are designed for installation only by professional suitably qualified licensed system installers experienced in the applications and environments for which the products are intended. These products are intended for integration into a system. Where these products are to be used with flammable or hazardous media, precautions must be taken by the system designer and installer to ensure the safety of persons and property. Flammable or hazardous media pose risks associated with fire or explosion, as well as burning, poisoning or other injury or death to persons and/or destruction of property. The system designer and installer must provide for the capture and control of such substances from any vents in the product(s). The system installer must not permit any leakage or uncontrolled escape of hazardous or flammable substances. The system operator must be trained to follow appropriate precautions and must inspect and maintain the system and its components including the product(s) and at regular intervals in accordance with timescales recommended by the supplier to prevent unacceptable wear or failure.



GYROLOK® Tube Fittings



9 Decades of Product Excellence

Samuel W. HOKE began manufacturing small gas flow control valves for jewelers' torches in 1925. At the same time, he also laid the foundation for a top international fluid control products company, HOKE® Incorporated.

In the early 1940's, S.W. HOKE produced the forerunners of today's HOKE® valves, masterfully crafted with the highest quality materials.

In the early 1960's, HOKE® Incorporated (HOKE®) took the industry by storm, introducing the GYROLOK® Tube Fitting. To this day, no other manufacturer has been able to improve upon its unique design.

Over the years, HOKE® built a first-class reputation for designing and manufacturing state-of-the-art products. In striving for maximum quality and value, HOKE® set the industry standards for product safety, operability, durability and reliability.

CRANE continues this product excellence for all global customers.

Training and Engineering Support










CRANE offers extensive training designed to ensure that your craftspeople thoroughly understand how a GYROLOK® fitting functions. By teaching proper tubing preparation and installation procedures, maximum performance is assured.

CRANE will take the time to assist our customers in finding the GYROLOK® fitting that is right for their specific needs. Ask your HOKE® distributor for details regarding HOKE's valve and fitting installation workshop and additional support materials.






GYROLOK®

Fitting Locator






To connect tubing to a female thread, use:

| PROFILE | PART NUMBER - DESCRIPTION | TUBE OPTIONS | THREAD CONNECTION | PAGE LOCATION |
|---|---|---------------------------|-------------------------|---------------|
|  | CM - Male Connector | Fractional or metric tube | NPT/RT threads | 12 |
|  | CM/ - Male Connector | Fractional or metric tube | RP/RS threads | 15, 16 |
|  | BCM - Bulkhead Connector, Male | Fractional or metric tube | NPT thread | 13 |
|  | CMS - Male Connector, SAE | Fractional tube | SAE/MS straight threads | 13 |
|  | LCMS - Long Male Connector, SAE | Fractional tube | SAE/MS straight threads | 13 |
|  | COS - O-ring Straight Connector | Fractional tube | O-ring straight thread | 14 |
|  | COM - O-ring Male Connector | Fractional tube | Female pipe thread | 14 |
|  | LM - Male Elbow | Fractional or metric tube | NPT/RT/RS/RT threads | 17, 18 |
|  | LMF - 45° Male Elbow | Fractional tube | NPT thread | 19 |
|  | LMFS - 45° Positionable Male Elbow | Fractional tube | SAE/MS straight threads | 19 |


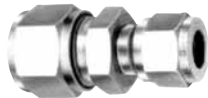






To connect tubing to a female thread, use:

| PROFILE | PART NUMBER - DESCRIPTION | TUBE OPTIONS | THREAD CONNECTION | PAGE LOCATION |
|---|--|------------------------------|----------------------------|---------------|
|  | LMS - 45° Positionable Male Elbow | Fractional or metric tube | SAE/MS straight threads | 19 |
|  | TTM - Male Branch Tee | Fractional or metric tube | NPT thread | 20 |
|  | TMT - Male Run Tee | Fractional or metric tube | NPT thread | 21 |
|  | TST - Positionable Male Run Tee | Fractional tube | SAE/MS straight threads | 21 |
|  | TTS - Positionable Male Branch Tee | Fractional or metric tube | SAE/MS straight threads | 21 |





To connect tubing to a male thread, use:

| PROFILE | PART NUMBER - DESCRIPTION | TUBE OPTIONS | THREAD CONNECTION | PAGE LOCATION |
|---|--|------------------------------|-------------------|---------------|
|  | CF - Female Connector | Fractional or metric tube | NPT/RT/RG threads | 22, 23, 24 |
|  | BCF - Bulkhead Connector, Female | Fractional or metric tube | NPT thread | 25 |
|  | LF - Female Elbow | Fractional or metric tube | NPT/RT threads | 26 |
|  | TFT - Female Run Tee | Fractional or metric tube | NPT thread | 27 |
|  | TTF - Female Branch Tee | Fractional or metric tube | NPT thread | 27 |





To connect two or more tubes together, use:

| PROFILE | PART NUMBER - DESCRIPTION | TUBE OPTIONS | THREAD CONNECTION | PAGE LOCATION |
|---|------------------------------------|---------------------------|-------------------|---------------|
|  | U - Union | Fractional or metric tube | — | 28 |
|  | RU - Reducing Union | Fractional or metric tube | — | 29 |
|  | BU - Bulkhead Union | Fractional or metric tube | — | 30 |
|  | LU - Union Elbow | Fractional or metric tube | — | 31 |
|  | TTT - Union Tee | Fractional or metric tube | — | 31 |
|  | TTT_B - Reducing Run Tees | Fractional tube | — | 32 |
|  | TTTB - Reducing Branch Tees | Fractional or metric tube | — | 32 |
|  | C - Union Cross | Fractional or metric tube | — | 33 |


To connect tubing to a 37° flare, use:

| PROFILE | PART NUMBER - DESCRIPTION | TUBE OPTIONS | THREAD CONNECTION | PAGE LOCATION |
|---|----------------------------------|---------------------|-------------------|---------------|
|  | UAN - Union, AN | Fractional tube | Flared tube | 34 |
|  | UANO - Union, AN O-ring | Fractional tube | Flared tube | 34 |
|  | BUAN - Bulkhead Union, AN | Fractional tube | Flared tube | 34 |
|  | AAN - Adaptor, AN | AN to GYROLOK® port | Flared tube | 35 |



To connect tubing to a welding system, use:

| PROFILE | PART NUMBER - DESCRIPTION | TUBE OPTIONS | THREAD CONNECTION | PAGE LOCATION |
|---|--|-----------------------------------|-------------------|---------------|
|  | CW - Tube Socket Weld Connector | Fractional tube | — | 35 |
|  | LW - Tube Socket Weld Elbow | Fractional or metric tube | — | 35 |
|  | CBW - Butt Weld Connector | Fractional or metric tube to pipe | — | 36 |
|  | LBW - Butt Weld Elbow | Fractional or metric tube to pipe | — | 36 |



To reduce fitting size, use:

| PROFILE | PART NUMBER - DESCRIPTION | TUBE OPTIONS | THREAD CONNECTION | PAGE LOCATION |
|--|---------------------------|-----------------------------------|-------------------|---------------|
|  | R - Reducer | Fractional or metric tube to port | — | 37, 38 |








To connect tube fittings together, use:

| PROFILE | PART NUMBER - DESCRIPTION | TUBE OPTIONS | THREAD CONNECTION | PAGE LOCATION |
|---|-------------------------------------|---------------------------|-------------------|---------------|
|  | PC - Port Connector | Fractional or metric tube | — | 39 |
|  | PC - Reducing Port Connector | Fractional or metric tube | — | 39 |








To cap a tube or plug a fitting, use:

| PROFILE | PART NUMBER - DESCRIPTION | TUBE OPTIONS | THREAD CONNECTION | PAGE LOCATION |
|---|---------------------------|---------------------------|-------------------|---------------|
|  | CP - Cap | Fractional or metric tube | — | 40 |
|  | P - Plug | Fractional or metric tube | — | 40 |





As spare parts, use:

| PROFILE | PART NUMBER - DESCRIPTION | TUBE OPTIONS | THREAD CONNECTION | PAGE LOCATION |
|---|--|---------------------------|-------------------|---------------|
|  | FR - Rear Ferrules (Also, available in Nylon) | Fractional or metric tube | — | 47 |
|  | FF - Front Ferrules (Also, available in Nylon) | Fractional or metric tube | — | 47 |
|  | N - Nut | Fractional or metric tube | — | 47 |
|  | KN - Knurled Nut | Fractional tube | — | 48 |
|  | BN - Bulkhead Nut | Fractional or metric tube | — | 48 |
|  | SCNF - Safety Changer Nut & Ferrule Sets | Fractional tube | — | 48 |
|  | SCF - Safety Changer Ferrule Sets | Fractional or metric tube | — | 48 |








For specific applications, use:

| PROFILE | PART NUMBER - DESCRIPTION | TUBE OPTIONS | THREAD CONNECTION | PAGE LOCATION |
|---|--|---------------------------|-------------------|---------------|
|  | CMT - Male Thermocouple Connector | Fractional or metric tube | NPT/RT Threads | 41 |
|  | Chromatography Fittings | Fractional or metric tube | — | 52, 53 |
|  | CLF - Lapped Joint Flange Connector | Fractional or metric tube | — | 50 |
|  | XT - Heat Exchanger Tee | — | — | 42 |
|  | DU, DCM - Dielectric Fittings | Fractional or metric tube | — | 51 |
|  | Calibration Fittings | Fractional tube to | — | 50 |
|  | TI - Tube Inserts | Fractional or metric tube | — | 49 |

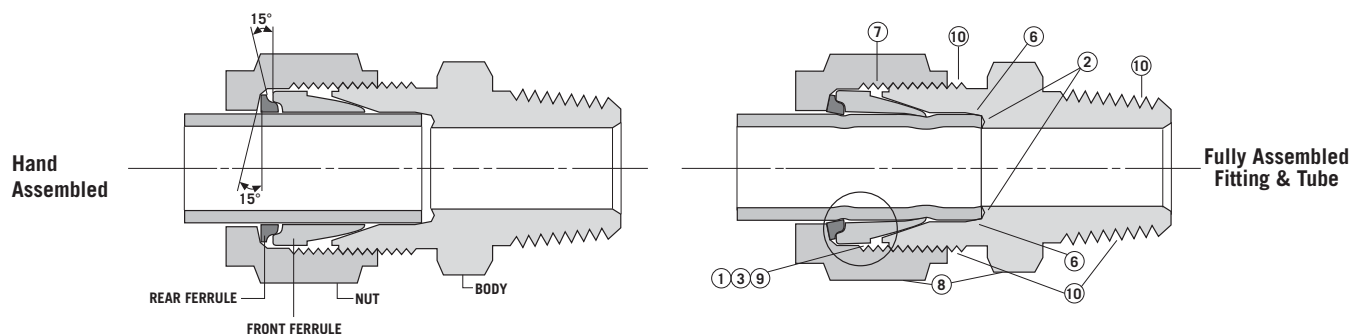
Tools & Accessories, use:

| PROFILE | PART NUMBER - DESCRIPTION | TUBE OPTIONS | THREAD CONNECTION | PAGE LOCATION |
|---|--------------------------------------|---------------------------|-------------------|---------------|
|  | GMT - GYROLOK® Marking Tool | Fractional or metric tube | — | 54 |
|  | PST - Pre-setting Tool | — | — | 54 |
|  | LD - Leak Detective | — | — | 55 |
|  | HPST - Hydraulic Pre-set Tool | Fractional or metric tube | — | 56 |

GYROLOK® Adapters, use:

| PROFILE | PART NUMBER - DESCRIPTION | TUBE OPTIONS | THREAD CONNECTION | PAGE LOCATION |
|---|--------------------------------------|---------------------------|-------------------------|---------------|
|  | AM - Male Adapter | Fractional or metric tube | NPT/RT threads | 43 |
|  | AM/ - Male Adapter | Fractional or metric tube | RT/RS/RG threads | 44 |
|  | AOS - O-ring Straight Adaptor | Fractional tube | Female straight thread | 44 |
|  | AMS - Male Adapter, SAE | Fractional tube | SAE/MS straight threads | 44 |
|  | BA - Bulkhead Adapter | Fractional or metric tube | — | 38 |
|  | AOM - O-Ring Male Adapter | Fractional or metric tube | Female pipe thread | 44 |
|  | AF - Female Adapter | Fractional or metric tube | NPT/RT/RG threads | 45, 46 |

GYROLOK® Features & Benefits



| FEATURES | EXPLANATION | BENEFITS |
|--|---|--|
| 1. CONTROLLED FERRULE DRIVE | Roll-in locking action of rear ferrule: During fitting makeup, 15° angles close — between the rear ferrule and nut, and between the rear ferrule and front ferrule — thus preventing overstressing of tubing or excessively reducing tubing inside diameter. Front ferrule shoulder: Front ferrule shoulder prevents body expansion and nut jamming, caused by over-tightening. | Provides maximum user safety under high pressure/vibration conditions. Prevents overstressing, which causes tubing failure and possible injury. System efficiency is improved by maximizing flow. Provides unmatched remake life. Maximizes value and economy. |
| 2. BUTT SEAL | Provides a secondary seal and eliminates dead space. | Maximizes fitting leak integrity and user safety. Can seal with scratched tubing. Increases accuracy in sampling applications. Reduces pump-down time in vacuum applications. |
| 3. HOKE® VALVES WITH INTEGRAL GYROLOK® END FITTINGS | Controlled ferrule drive prevents end connection expansion, thus prolonging valve life and eliminating the need to use female-ended valves with separate fittings. Eliminates a possible leak path and extends valve life. | Long product life and maximum value. Safety and economy. |
| 4. GYROLOK® SAFETY CHANGER NUT AND FERRULE SETS | Nut and ferrule sets supplied on rods, already correctly oriented. (Not necessary to handle ferrules when replacing components.) | Safest, simplest device for component replacement. |
| 5. GMT | Marks tubing to show that tubing has been properly inserted into fitting, and that fitting has been properly tightened. | Maximum safety resulting from ability to verify correct tube insertion and proper tightening. |
| 6. SIZING ANGLE | Slight taper in the base of the tube socket reduces possibility of tube sticking | Less tube sticking during disassembly saves time and money |
| 7. SILVER-PLATED NUT THREADS | Silver-plating extends fitting life by preventing galling, up to 1200° F. | Extended product life at extreme temperatures. |
| 8. MATERIAL TRACEABILITY ON FITTING BODY AND NUT | Bodies and nuts made of 316 Stainless Steel and MONEL® are heat code traceable to Certified Material Test Reports. | Traceability provides added safety. Certified Material Test Reports are available for review and verification. |
| 9. PFA FERRULE COATING | Front ferrules—Sizes larger than 1" (25mm) are PFA coated. | Increased resistance to media and atmospheric corrosion. |
| 10. SPECIAL HIGH TOLERANCE NPT THREAD | ANSI Standard B1.20.1 - Basic + 1/4 to Basic +1. | Provides a Safer more robust connection: 63% tighter tolerance with up to six thread engagement, reduced galling and vibration |

The GYROLOK® Design

GYROLOK® Tube Fittings have been carefully designed and manufactured to provide outstanding leak-tight integrity in a wide range of applications.

Materials

GYROLOK® fittings are available in:

| | |
|---------------------------------|---------------------|
| Brass: | BR |
| 304 Stainless Steel: | 304/304L |
| 316 Stainless Steel: | 316/316L |
| MONEL®: | M |
| HASTELLOY® C-276: | HC |
| Duplex 2205: | DX3 |
| INCONEL® Alloy: | 625 |
| INCONEL® Alloy: | 825 |
| Super Duplex 2507: | D50 |
| Titanium: | TI |
| 254 SMO: | 6MO |
| 316/316L SS Forgings: | ASTM A-182/SA182 |
| 304/304L SS Forgings: | ASTM A-182/SA182 |
| Brass Bar Stock, Alloy 360: | ASTM B-16 |
| 316/316L SS Bar Stock: | ASTM A-479/SA479 |
| 304/304L SS Bar Stock: | ASTM A-479/SA479 |
| MONEL® Forgings, Alloy 400: | QQ-N-281 |
| Brass Forgings, Alloy 377: | QQ-B-626/ASTM B-283 |
| MONEL® Bar Stock, Alloy 405: | QQ-N-281 |
| Brass Bar Stock, Alloy 353: | ASTM B-453 |

Contact your local HOKE® distributor for further information.

Certified Material Text Reports (CMTRs)

Bodies and nuts of GYROLOK® fittings in all materials other than Brass are heat code traceable. To obtain CMTRs for these components, place separate orders for such items and specify "CMTRs required on all items".

Pressure Rating

GYROLOK® fitting ends are rated for working pressures higher than the tubing recommended for use with GYROLOK®. Under no circumstances should tubing be utilized at pressures above its maximum allowable working pressure. Refer to the HOKE® Tubing Data Charts for specific information. If no pressure is identified for a given tube size and tube wall thickness, that tubing is not considered suitable for use with GYROLOK® tube fittings. Pressure ratings may vary for the other fitting end if it is not GYROLOK® (i.e. NPT or O-Ring Seal). For general working pressure ratings for NPT fittings ends, refer to the HOKE® Pipe Fittings catalog. The user must determine whether both the GYROLOK® side and the non-GYROLOK® side working pressure ratings are suitable with the system pressure. For more information on GYROLOK® pressure ratings, contact your local distributor, or HOKE® directly.

PFA Coating

Stainless steel front ferrules larger than 1" and 25 mm are PFA coated.

Vacuum Rating

GYROLOK® offers deep vacuum capability. With good quality tubing, GYROLOK® fittings will be leak-tight at vacuum levels of 10^{-6} torr while tested with a leakage sensitivity of 10^{-9} scc

Temperature

GYROLOK® fittings provide safe, reliable performance from cryogenic temperatures to high temperature bake out levels, depending on material.

316 Stainless Steel: -325° F to +800° F
(-200° C to +426° C)*

Stainless steel front ferrules larger than 1" and 25mm are PFA coated. Applications above 450° F (232° C) require silver-plated front ferrules and uncoated rear ferrules. To order extended temperature fittings, add **-HT** to the basic part number.

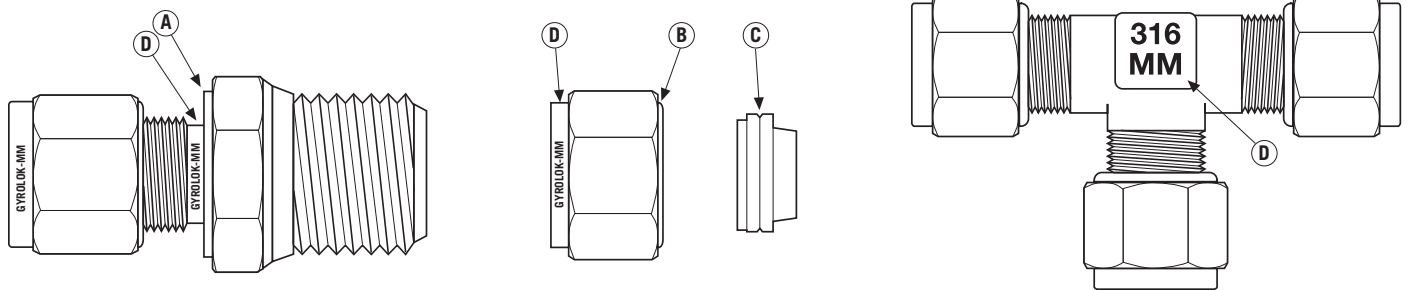
Brass (copper tubing): -325° F to +400° F
(-200° C to +203° C)

MONEL®: -325° F to +800° F
(-200° C to +426° C)

* CAUTION: (for Stainless Steel):

Intermittent use to 1200° F (649° C) is possible, however prolonged exposure to temperatures over 800° F (426° C) is not recommended.

Identifying Metric GYROLOK® Products



Metric GYROLOK® products have certain features which allow you to identify them from fractional products.

A. Step Machined on Body Hex

Straight bodies with a metric GYROLOK® end have a step on the tube fitting side of the hex.

B. Short Shank on Nut

Metric nuts have a short shank on the threaded end.

C. Groove in Front Ferrule

Metric front ferrules of brass or 316 stainless steel have a groove in the shoulder. For other materials, see D.

D. MM Marking

The metric designation "MM" is stamped on:

- metric nuts and straight bodies—after the GYROLOK® trademark
- metric elbows, tees and crosses—on the side opposite the HOKE® logo
- front ferrules made from materials other than brass or 316 stainless steel—after material identification.

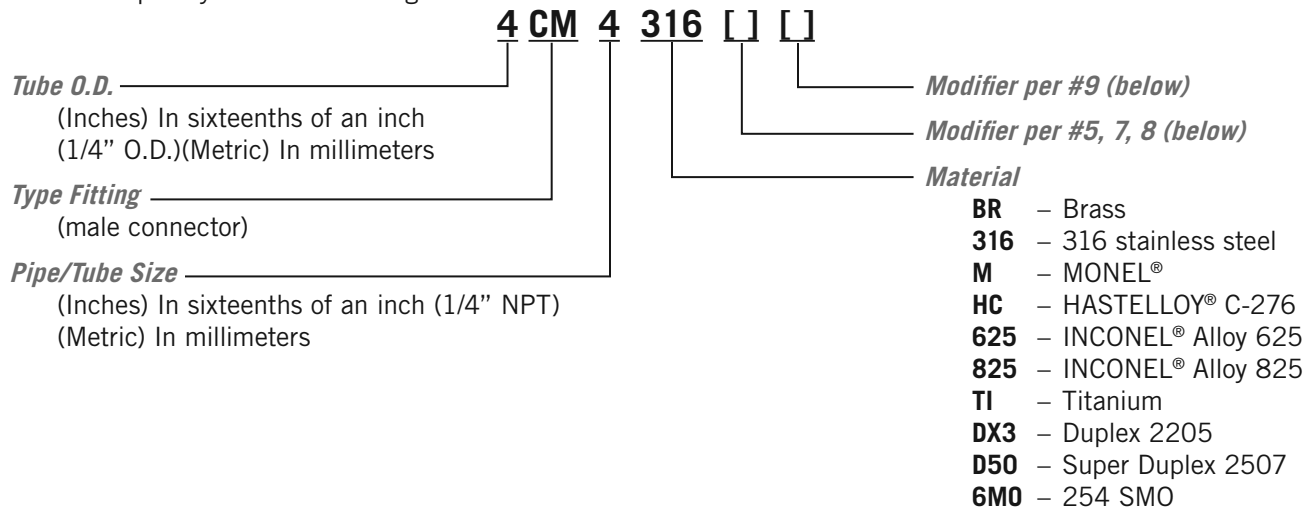
E. Color Coding

Blue boxes designate metric parts and accessories, including Safety Changer packaging.

General Information

How to Order

The GYROLOK® numbering system is a completely descriptive system that's easy to understand. Each part number describes completely assembled fittings.



1. The first number (4) identifies the tube O.D. size. For example, **4** = 4/16" for fractional fittings. **4** = 4mm for metric fittings. If there is no 5th group, sizes are fractional.
2. The letter group, (CM) identifies the type of fitting (Male Connector). See fitting locator, pages 2 and 3.
3. The third group, a number (4), is only necessary if the second tube connection size is different from the first tube O.D. size. For pipe sizes, a number is always required.
4. Material is identified in the fourth group.
5. With the exception of branch tees, the fifth group, if present, contains two letter codes. The first letter designates the unit of measure for the first number in the part number—i.e, **E** for fractional, **M** for metric. The second letter indicates the unit of measure (E or M), or thread type, for the second number in the part number. If there is no 5th group, all sizes are fractional.

Examples:

4CM4 316 = 1/4 tube x 1/4 NPT male connector, 316 stainless steel

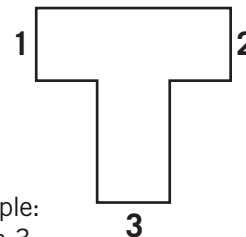
6RU3 BR ME = 6mm tube x 3/16 tube reducing union, brass

8LM4 316 EC = 1/2 tube x 1/4 male RT, male elbow, 316 stainless steel

Unit of measure/end connector codes:

A = RS male ends **M** = Metric tube, in millimeters
B = RP male ends **X** = RS/RP female ends
C = RT ends **Z** = RG female ends
E = fractional unit of measure in 1/16th of an inch

6. Tee part numbering: TEES are described by first the run (1 and 2) and next the branch (3), for example:
 - TTM** describes a tee that has tube connections at 1 and 2 and a male pipe thread at position 3.
 - TFT** describes a tee that has tube connections at 1 and 3 and a female pipe thread at position 2.



7. Fittings cleaned for oxygen service: To order, add **HPS18** to the end of basic fitting part number.
Example: **4CM4316HPS18**
8. Fittings cleaned for nuclear service: To order, add **HPS90** to the end of basic fitting part number.
Example: **4CM4316HPS90**

9. O-ring designator - Viton® (45) is standard for SAE fittings. In the event no material is specified, Viton will be supplied. Buna (21) is standard for other fittings with O-rings. Alternative O-ring materials are available, including silicone (01), and Buna-N (23). Example **6CMS631623**

Thread Connections Available with GYROLOK® Fittings

Pipe Thread Information

GYROLOK® tube fittings are available with NPT (National Pipe Taper), BSP/ISO (British Standard Pipe/International Standards Organization), SAE or unified screw threads.

Tapered Threads

| Specifications | Type | Part Number or Suffix Designation | Sealing Method |
|---|------|--|---|
| NPT | M/F | Fitting type ends in M or F, as in CM or CF | Seal is made on the thread. Thread sealant is required. |
| RT to ISO 7/1 • BS 21 • JIS B0203 • DIN 2999 | M/F | Modifier is C, following the unit of measure for fractional (E) or metric (M), as in 6CM4316EC | Seal is made on the thread. Thread sealant is required. The BSP/ISO thread utilizes a different angle and the number of threads per inch may differ from NPT. Reference DIN 3852, Form C. |
| | M/F | | |
| | M/F | | |
| | Male | | |

Straight and Parallel Threads

| Specifications | Type | Part Number or Suffix Designation | Sealing Method |
|---|--------|--|---|
| American Standard unified screw threads | Male | Fitting type ends in S, as in COS or AOS. | Generally utilizes an elastomer O-ring to provide sealing. |
| RP to ISO 228/1 • BS 2779 • JIS B0202 | Male | Modifier is B, following the unit of measure for fractional (E) or metric (M), as in 6CM4316EB | Metal to metal sealing to DIN 3852, Form B.** |
| RS to ISO 228/1 • BS 2779 • JIS B0202 | Male | Modifier is A, following the unit of measure for fractional (E) or metric (M), as in 6CM4316EA | Utilizes a sealing washer to provide sealing. Reference DIN 3852, Form A.** |
| RG to ISO 228/1 • BS 2779 • JIS B0202 | Female | Modifier is Z, following the unit of measure for fraction (E) or metric (M), as in 6CF4316EZ | Sealing form meets DIN 16288, Form Z. |

** Female RP or RS end available with Form X.

GYROLOK® Fittings with SAE Ends

SAE Straight Thread O-Ring Seal Fittings

GYROLOK®'s SAE Straight Thread O-Ring Seal Fittings are designed and manufactured to SAE standards defined below for use in many different applications including hydraulics and natural gas vehicles. HOKE's SAE Straight Thread O-Ring Fittings are supplied with Viton O-rings.

Fittings available include: Tube to SAE straight connectors, positionable SAE elbows and tees, and SAE reducers.

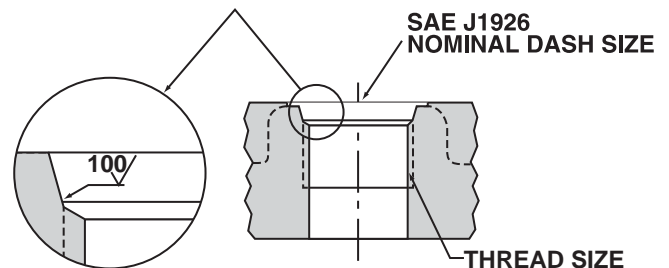
Thread and O-ring Sizes in inches

| Nominal Tube O.D. | Port Size | Thread Size | O-ring Size # |
|-------------------|-----------|-------------|---------------|
| 1/8 | 2 | 5/16 - 24 | 902 |
| 1/4 | 4 | 7/16 - 20 | 904 |
| 3/8 | 6 | 9/16 - 18 | 906 |
| 1/2 | 8 | 3/4 - 16 | 908 |
| 5/8 | 10 | 7/8 - 14 | 910 |
| 3/4 | 12 | 1 1/16 - 12 | 912 |
| 1 | 16 | 1 5/16 - 12 | 916 |

SAE Specifications

HOKE's SAE Straight Thread O-Ring Seal Fittings are designed and manufactured to meet SAE Standards as follows:

- Male or External Fitting End Dimensions: SAE J514
- Straight Threads: SAE J475 (equivalent to ANSI B1.1 or ISO R725)
- Female or Internal Straight Thread Boss: SAE J1926 (see diagram below)



Installation Instructions

Positionable End Connections

1. Assure that the locknut is fully raised.
2. Turn the external SAE end clockwise into the internal boss until the metal washer is in contact with the boss.
3. Orient the GYROLOK® end to the proper direction by now turning the fitting *counterclockwise* up to a *maximum* of 1 turn.
4. While supporting the body wrench pad with a backup wrench, tighten the locknut until the washer is snug against the face of the boss.

GYROLOK® Assembly Instructions, see page 58.

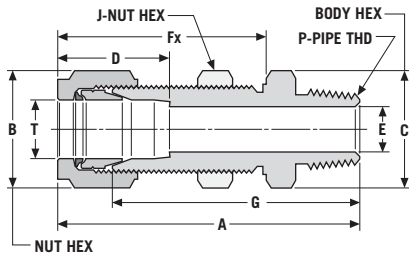
Bulkhead Connector, Male: BCM

connects **fractional** tube to female NPT threads



Metric fitting shown

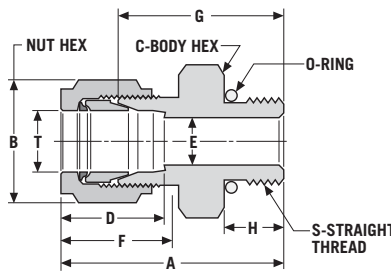
| Part Number* | T P | | Dimensions — inches | | | | | | | | Panel Hole Size | Max. Panel Thickness |
|--------------|-----------|-----------|---------------------|------------|------------|-----|-----|------|------|------------|-----------------|----------------------|
| | Tube O.D. | Pipe Size | A | B Hex Flat | C Hex Flat | D | E | Fx | G | J Hex Flat | | |
| 2BCM2[] | 1/8 | 1/8 | 1.88 | 7/16 | 1/2 | .56 | .09 | 1.28 | 1.56 | 1/2 | .33 | .44 |
| 2BCM4[] | 1/8 | 1/4 | 2.06 | 7/16 | 9/16 | .56 | .09 | 1.28 | 1.75 | 1/2 | .33 | .44 |
| 3BCM2[] | 3/16 | 1/8 | 1.91 | 1/2 | 9/16 | .59 | .13 | 1.31 | 1.59 | 9/16 | .39 | .47 |
| 4BCM2[] | 1/4 | 1/8 | 1.98 | 9/16 | 5/8 | .64 | .19 | 1.36 | 1.66 | 5/8 | .45 | .47 |
| 4BCM4[] | 1/4 | 1/4 | 2.17 | 9/16 | 5/8 | .64 | .19 | 1.36 | 1.84 | 5/8 | .45 | .47 |
| 6BCM4[] | 3/8 | 1/4 | 2.31 | 11/16 | 3/4 | .72 | .28 | 1.50 | 1.97 | 3/4 | .58 | .53 |
| 6BCM6[] | 3/8 | 3/8 | 2.33 | 11/16 | 3/4 | .72 | .28 | 1.52 | 1.97 | 3/4 | .58 | .53 |
| 6BCM8[] | 3/8 | 1/2 | 2.53 | 11/16 | 15/16 | .7 | .28 | 1.50 | 2.19 | 3/4 | .58 | .53 |
| 8BCM6[] | 1/2 | 3/8 | 2.56 | 7/8 | 15/16 | .97 | .41 | 1.72 | 2.09 | 15/16 | .77 | .59 |
| 8BCM8[] | 1/2 | 1/2 | 2.75 | 7/8 | 15/16 | .97 | .42 | 1.72 | 2.28 | 15/16 | .77 | .59 |



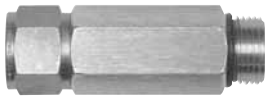
Bulkhead Connector, Male: BCM/ME

connects **metric** tube to female NPT threads

| Part Number* | T P | | Dimensions — mm | | | | | | | | Panel Hole Size | Max. Panel Thickness |
|--------------|-----------|-----------|-----------------|------------|------------|------|------|------|------|------------|-----------------|----------------------|
| | Tube O.D. | Pipe Thd. | A | B Hex Flat | C Hex Flat | D | E | Fx | G | J Hex Flat | | |
| 3BCM2[]ME | 3 | 1/8 | 48.0 | 11.1 | 12.5 | 14.3 | 2.2 | 32.5 | 40.0 | 12.7 | 8.3 | 12.0 |
| 6BCM2[]ME | 6 | 1/8 | 50.5 | 14.3 | 15.9 | 16.3 | 3.8 | 34.6 | 42.2 | 15.9 | 11.5 | 13.0 |
| 6BCM4[]ME | 6 | 1/4 | 55.2 | 14.3 | 15.9 | 16.3 | 3.8 | 34.6 | 46.8 | 15.9 | 11.5 | 13.0 |
| 6BCM6[]ME | 6 | 3/8 | 55.1 | 14.3 | 17.5 | 16.3 | 3.8 | 34.6 | 46.8 | 15.9 | 11.5 | 13.0 |
| 6BCM8[]ME | 6 | 1/2 | 60.7 | 14.3 | 22.2 | 16.3 | 3.8 | 34.6 | 52.3 | 15.9 | 11.5 | 13.0 |
| 8BCM4[]ME | 8 | 1/4 | 57.0 | 15.9 | 15.9 | 16.7 | 5.8 | 36.6 | 50.0 | 17.5 | 13.1 | 14.0 |
| 10BCM2[]ME | 10 | 1/8 | 54.2 | 19.1 | 19.1 | 17.5 | 7.8 | 37.3 | 46.3 | 19.1 | 16.5 | 14.0 |
| 10BCM4[]ME | 10 | 1/4 | 59.0 | 19.1 | 19.1 | 17.5 | 6.6 | 37.3 | 51.1 | 19.1 | 16.5 | 14.0 |
| 10BCM6[]ME | 10 | 3/8 | 59.0 | 19.1 | 19.1 | 17.5 | 7.9 | 37.3 | 51.1 | 19.1 | 16.5 | 14.0 |
| 12BCM6[]ME | 12 | 3/8 | 66.0 | 22.2 | 23.8 | 24.6 | 9.9 | 43.7 | 54.1 | 23.8 | 19.5 | 16.0 |
| 12BCM8[]ME | 12 | 1/2 | 69.9 | 22.2 | 23.8 | 24.6 | 9.9 | 43.7 | 57.9 | 23.8 | 19.5 | 16.0 |
| 14BCM8[]ME | 14 | 1/2 | 72.0 | 23.8 | 23.8 | 22.2 | 11.9 | 41.1 | 59.0 | 23.8 | 19.5 | 16.0 |
| 16BCM8[]ME | 16 | 1/2 | 70.7 | 25.4 | 27.0 | 25.0 | 12.7 | 43.7 | 59.5 | 27.0 | 22.5 | 14.0 |
| 18BCM8[]ME | 18 | 1/2 | 76.0 | 28.6 | 30.0 | 25.4 | 12.7 | 48.0 | 64.0 | 30.2 | 26.0 | 17.0 |
| 22BCM8[]ME | 22 | 1/2 | 81.0 | 31.8 | 33.5 | 27.0 | 12.7 | 53.0 | 68.0 | 33.3 | 29.5 | 24.0 |
| 25BCM8[]ME | 25 | 1/2 | 88.0 | 38.1 | 40.0 | 33.3 | 12.7 | 60.0 | 73.0 | 39.7 | 33.8 | 24.0 |



To specify O-ring material for SAE fittings, see page 10.



Male Connector, SAE: CMS

connects **fractional** tube to SAE straight thread boss

| Part Number* | T S | | Dimensions — inches | | | | | | | O-ring Uniform Size # | |
|--------------|-------|-----------|---------------------|------------|------------|------|------|------|------|-----------------------|-----|
| | Tube | S | A | B Hex Flat | C Hex Flat | D | E | F | G | | H |
| 2CMS2[] | 1/8 | 5/16-24 | 1.25 | 7/16 | 7/16 | .56 | .09 | .67 | .94 | .30 | 902 |
| 4CMS4[] | 1/4 | 7/16-20 | 1.41 | 9/16 | 9/16 | .64 | .19 | .77 | 1.08 | .36 | 904 |
| 4CMS6[] | 1/4 | 9/16-18 | 1.47 | 9/16 | 11/16 | .64 | .19 | .77 | 1.14 | .39 | 906 |
| 4CMS8[] | 1/4 | 3/4-16 | 1.55 | 9/16 | 7/8 | .64 | .19 | .77 | 1.22 | .44 | 908 |
| 4CMS10[] | 1/4 | 7/8-14 | 1.67 | 9/16 | 1 | .64 | .19 | .77 | 1.34 | .50 | 910 |
| 6CMS4[] | 3/8 | 7/16-20 | 1.56 | 11/16 | 3/4 | .72 | .19 | .83 | 1.22 | .36 | 904 |
| 6CMS6[] | 3/8 | 9/16-18 | 1.63 | 11/16 | 3/4 | .72 | .28 | .83 | 1.27 | .39 | 906 |
| 6CMS8[] | 3/8 | 3/4-16 | 1.61 | 11/16 | 7/8 | .72 | .28 | .83 | 1.27 | .44 | 908 |
| 6CMS10[] | 3/8 | 7/8-14 | 1.73 | 11/16 | 1 | .72 | .28 | .83 | 1.38 | .50 | 910 |
| 8CMS6[] | 1/2 | 9/16-18 | 1.72 | 7/8 | 13/16 | .97 | .30 | .92 | 1.25 | .39 | 906 |
| 8CMS8[] | 1/2 | 3/4-16 | 1.70 | 7/8 | 7/8 | .97 | .42 | .92 | 1.25 | .44 | 908 |
| 8CMS12[] | 1/2 | 1 1/16-12 | 1.98 | 7/8 | 1 1/4 | .97 | .42 | .92 | 1.52 | .59 | 912 |
| 10CMS10[] | 5/8 | 7/8-14 | 1.83 | 1 | 1 | 1 | .50 | .92 | 1.39 | .50 | 910 |
| 12CMS8[] | 3/4 | 3/4-16 | 1.91 | 1 1/8 | 1 1/16 | 1 | .42 | .97 | 1.45 | .44 | 908 |
| 12CMS12[] | 3/4 | 1 1/16-12 | 2.03 | 1 1/8 | 1 1/4 | 1 | .66 | .97 | 1.59 | .59 | 912 |
| 16CMS12[] | 1 | 1 1/16-12 | 2.19 | 1 1/2 | 1 3/8 | 1.31 | .66 | 1.08 | 1.63 | .59 | 912 |
| 16CMS16[] | 1 | 1 5/16-12 | 2.25 | 1 1/2 | 1 1/2 | 1.31 | .88 | 1.08 | 1.69 | .59 | 916 |
| 20CMS20[] | 1 1/4 | 1 5/8-12 | 2.69 | 1 7/8 | 1 7/8 | 1.62 | 1.09 | 1.53 | 1.82 | .59 | 920 |
| 24CMS24[] | 1 1/2 | 1 7/8-12 | 3.06 | 2 1/4 | 2 1/8 | 1.97 | 1.34 | 1.78 | 1.99 | .59 | 924 |
| 32CMS32[] | 2 | 2 1/2-12 | 4 | 3 | 2 3/4 | 2.66 | 1.81 | 2.47 | 2.53 | .59 | 932 |

Long Male Connector, SAE: LCMS

connects **fractional** tube to SAE straight thread boss

| Part Number* | T S | | Dimensions — inches | | | | | | | O-ring Uniform Size # | |
|--------------|-----------|-----------|---------------------|------------|------------|------|-----|------|------|-----------------------|-----|
| | Tube O.D. | S | A | B Hex Flat | C Hex Flat | D | E | F | G | | H |
| 4LCMS4[] | 1/4 | 7/16-20 | 2.30 | 9/16 | 9/16 | .64 | .19 | .77 | 1.97 | .36 | 904 |
| 6LCMS6[] | 3/8 | 9/16-18 | 2.55 | 11/16 | 3/4 | .72 | .28 | .83 | 2.19 | .39 | 906 |
| 8LCMS8[] | 1/2 | 3/4-16 | 3.05 | 7/8 | 7/8 | .97 | .42 | .92 | 2.58 | .44 | 908 |
| 12LCMS12[] | 3/4 | 1 1/16-12 | 3.92 | 1 1/8 | 1 1/4 | 1 | .66 | .97 | 3.48 | .59 | 912 |
| 16LCMS16[] | 1 | 1 5/16-12 | 4.42 | 1 1/2 | 1 1/2 | 1.31 | .88 | 1.08 | 3.86 | .59 | 916 |

* [] see page 9 for material specifications.

O-ring Installation Instructions

GYROLOK® O-ring seal fittings are used for direct connection to existing pipe thread or straight thread ports—which have a smooth, flat surface perpendicular to the threaded port. O-ring seal fittings provide leak-tight sealing on both vacuum and high pressure systems. In the pipe thread version, a special short thread insures against thread interference.

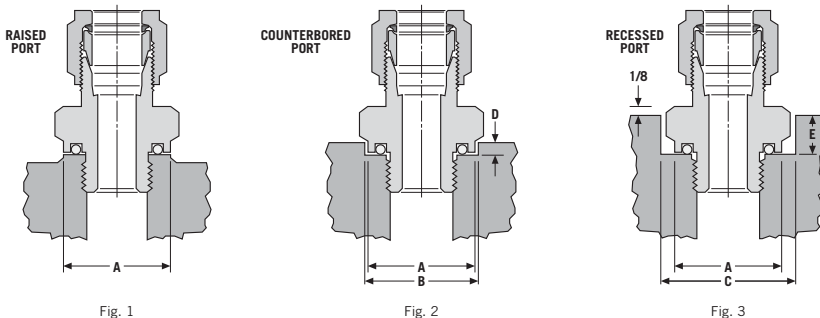
The standard Buna N O-ring is completely contained in a precision groove, to prevent O-ring extrusion at high pressure. The precision groove also provides a controlled squeeze for a vacuum-tight seal.

The chart lists pertinent dimensions useful with O-ring seal connectors and adapters.

Note: When installing an O-ring port:

1. Hand-thread until the O-ring compresses on the port end.
2. Snug the fitting to the port with a wrench to completely compress the O-ring.
3. Always use a back-up wrench to hold the O-ring seal fitting body, when connecting or disconnecting a GYROLOK® end.

To specify O-ring material, see page 10.



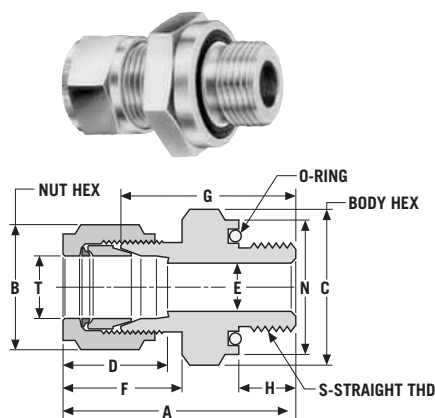
Mounting Dimensions For O-ring Seal Connectors and Adapters

| Straight Thread Size* | Pipe Thread Size** | Diameter | | | Depth | |
|-----------------------|--------------------|-------------------------|-------------------------------|-------------------------------|-----------------|-----------------------------|
| | | A Min. Flat for Sealing | B Min. for Clearance (Fig. 2) | C Min. for Clearance (Fig. 3) | D Max. (Fig. 2) | E Max. for Adapter (Fig. 3) |
| 5/16-24 | — | 1/2 | 9/16 | 21/32 | 3/32 | 3/32 |
| 3/8-24 | — | 17/32 | 21/32 | 3/4 | 3/32 | 1/8 |
| 7/16-20 | — | 11/16 | 25/32 | 7/8 | 3/32 | 5/32 |
| 1/2-20 | — | 3/4 | 29/32 | 1 1/32 | 3/32 | 11/64 |
| 9/16-18 | — | 13/16 | 31/32 | 1 3/32 | 3/32 | 11/64 |
| 3/4-16 | — | 1 | 1 5/32 | 1 5/16 | 3/32 | 7/32 |
| 7/8-14 | — | 1 7/32 | 1 11/32 | 1 17/32 | 3/32 | 5/16 |
| 1 1/16-12 | — | 1 13/32 | 1 17/32 | 1 3/4 | 3/32 | 11/32 |
| 1 5/16-12 | — | 1 11/16 | 1 25/32 | 2 1/32 | 3/32 | 7/16 |
| — | 1/8 NPT | 11/16 | 25/32 | 7/8 | 3/32 | 9/64 |
| — | 1/4 NPT | 13/16 | 31/32 | 1 3/32 | 3/32 | 11/64 |
| — | 3/8 NPT | 1 | 1 5/32 | 1 5/16 | 3/32 | 3/16 |
| — | 1/2 NPT | 1 7/32 | 1 11/32 | 1 17/32 | 3/32 | 5/16 |
| — | 3/4 NPT | 1 13/32 | 1 17/32 | 1 3/4 | 3/32 | 3/8 |
| — | 1 NPT | 1 11/16 | 1 25/32 | 2 1/32 | 3/32 | 27/64 |

Dimensions for reference only. Subject to change in inches.

O-ring Straight Connector: COS

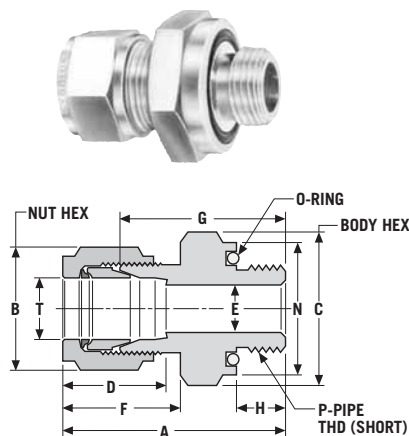
connects **fractional** tube to female straight thread



| Part Number* | T Tube | | S Thread | | Dimensions — inches | | | | | | | | | | | O-ring | |
|--------------|--------|-----------|----------|------------|---------------------|------|-----|------|------|-----|------|------|------|--|--|--------|--|
| | O.D. | Size | A | B Hex Flat | C Hex Flat | D | E | F | G | H | N | I.D. | O.D. | | | | |
| 1COS[] | 1/16 | 5/16-24 | 1.13 | 5/16 | 9/16 | .41 | .05 | .48 | .91 | .34 | .56 | .31 | .44 | | | | |
| 2COS[] | 1/8 | 5/16-24 | 1.25 | 7/16 | 9/16 | .56 | .09 | .67 | 1.03 | .34 | .56 | .31 | .44 | | | | |
| 3COS[] | 3/16 | 3/8-24 | 1.41 | 1/2 | 5/8 | .59 | .13 | .70 | 1.09 | .38 | .63 | .38 | .50 | | | | |
| 4COS[] | 1/4 | 7/16-20 | 1.55 | 9/16 | 3/4 | .64 | .19 | .77 | 1.22 | .41 | .75 | .44 | .63 | | | | |
| 6COS[] | 3/8 | 9/16-18 | 1.72 | 11/16 | 15/16 | .72 | .28 | .83 | 1.38 | .47 | .94 | .56 | .75 | | | | |
| 8COS6[] | 1/2 | 9/16-18 | 1.88 | 7/8 | 15/16 | .97 | .30 | .92 | 1.41 | .47 | .94 | .58 | .78 | | | | |
| 8COS[] | 1/2 | 3/4-16 | 1.88 | 7/8 | 1 1/8 | .97 | .42 | .92 | 1.41 | .47 | 1.13 | .75 | .94 | | | | |
| 10COS[] | 5/8 | 7/8-14 | 2.09 | 1 | 1 5/16 | 1 | .50 | .92 | 1.50 | .47 | 1.31 | .88 | 1.13 | | | | |
| 12COS[] | 3/4 | 1 1/16-12 | 2.09 | 1 1/8 | 1 1/2 | 1 | .66 | .97 | 1.66 | .56 | 1.50 | 1.06 | 1.31 | | | | |
| 14COS[] | 7/8 | 1 1/16-12 | 2.09 | 1 1/4 | 1 1/2 | 1.06 | .72 | .97 | 1.66 | .56 | 1.50 | 1.06 | 1.31 | | | | |
| 16COS[] | 1 | 1 5/16-12 | 2.38 | 1 1/2 | 1 3/4 | 1.31 | .88 | 1.08 | 1.81 | .56 | 1.75 | 1.31 | 1.56 | | | | |

O-ring Male Connector: COM

connects **fractional** tube to female NPT threads

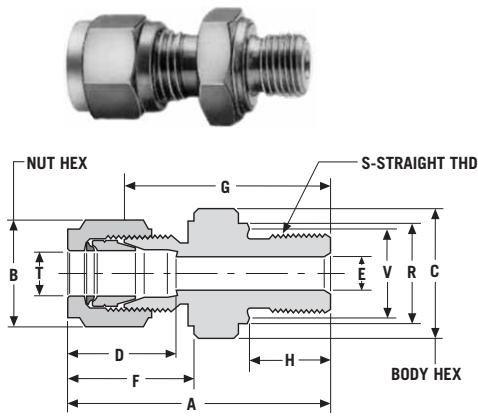


| Part Number* | T Tube | | P Pipe | | Dimensions — inches | | | | | | | | | | | O-ring | |
|--------------|--------|------|--------|------------|---------------------|------|-----|------|------|-----|------|------|------|--|--|--------|--|
| | O.D. | Thd. | A | B Hex Flat | C Hex Flat | D | E | F | G | H | N | I.D. | O.D. | | | | |
| 1COM2[] | 1/16 | 1/8 | 1.06 | 5/16 | 3/4 | .41 | .05 | .48 | .84 | .28 | .75 | .44 | .63 | | | | |
| 2COM2[] | 1/8 | 1/8 | 1.34 | 7/16 | 3/4 | .56 | .09 | .67 | 1.03 | .28 | .75 | .44 | .63 | | | | |
| 2COM4[] | 1/8 | 1/4 | 1.47 | 7/16 | 15/16 | .56 | .09 | .67 | 1.16 | .38 | .94 | .56 | .75 | | | | |
| 3COM2[] | 3/16 | 1/8 | 1.38 | 1/2 | 3/4 | .59 | .13 | .70 | 1.06 | .28 | .75 | .44 | .63 | | | | |
| 3COM4[] | 3/16 | 1/4 | 1.50 | 1/2 | 15/16 | .59 | .13 | .70 | 1.19 | .38 | .94 | .56 | .75 | | | | |
| 4COM2[] | 1/4 | 1/8 | 1.42 | 9/16 | 3/4 | .64 | .19 | .77 | 1.09 | .28 | .75 | .44 | .63 | | | | |
| 4COM4[] | 1/4 | 1/4 | 1.55 | 9/16 | 15/16 | .64 | .19 | .77 | 1.22 | .38 | .94 | .56 | .75 | | | | |
| 4COM6[] | 1/4 | 3/8 | 1.61 | 9/16 | 1 1/8 | .64 | .19 | .77 | 1.28 | .41 | 1.13 | .75 | .94 | | | | |
| 6COM2[] | 3/8 | 1/8 | 1.50 | 11/16 | 3/4 | .72 | .19 | .83 | 1.16 | .28 | .75 | .44 | .63 | | | | |
| 6COM4[] | 3/8 | 1/4 | 1.63 | 11/16 | 15/16 | .72 | .28 | .83 | 1.28 | .38 | .94 | .56 | .75 | | | | |
| 6COM6[] | 3/8 | 3/8 | 1.69 | 11/16 | 1 1/8 | .72 | .28 | .83 | 1.34 | .41 | 1.13 | .75 | .94 | | | | |
| 6COM8[] | 3/8 | 1/2 | 1.91 | 11/16 | 1 5/16 | .72 | .28 | .83 | 1.56 | .53 | 1.31 | .88 | 1.13 | | | | |
| 8COM4[] | 1/2 | 1/4 | 1.75 | 7/8 | 15/16 | .97 | .28 | .92 | 1.28 | .38 | .94 | .56 | .75 | | | | |
| 8COM6[] | 1/2 | 3/8 | 1.81 | 7/8 | 1 1/8 | .97 | .41 | .92 | 1.34 | .41 | 1.13 | .75 | .94 | | | | |
| 8COM8[] | 1/2 | 1/2 | 2.03 | 7/8 | 1 5/16 | .97 | .41 | .92 | 1.56 | .53 | 1.31 | .88 | 1.13 | | | | |
| 10COM8[] | 5/8 | 1/2 | 2 | 1 | 1 5/16 | 1 | .50 | .92 | 1.56 | .53 | 1.31 | .88 | 1.13 | | | | |
| 10COM12[] | 5/8 | 3/4 | 2.09 | 1 | 1 1/2 | 1 | .50 | .92 | 1.66 | .56 | 1.50 | 1.06 | 1.31 | | | | |
| 12COM8[] | 3/4 | 1/2 | 2 | 1 1/8 | 1 5/16 | 1 | .55 | .97 | 1.56 | .53 | 1.31 | .88 | 1.13 | | | | |
| 12COM12[] | 3/4 | 3/4 | 2.09 | 1 1/8 | 1 1/2 | 1 | .63 | .97 | 1.66 | .56 | 1.50 | 1.06 | 1.31 | | | | |
| 16COM12[] | 1 | 3/4 | 2.31 | 1 1/2 | 1 1/2 | 1.31 | .63 | 1.08 | 1.75 | .56 | 1.50 | 1.06 | 1.31 | | | | |
| 16COM16[] | 1 | 1 | 2.38 | 1 1/2 | 1 3/4 | 1.31 | .88 | 1.08 | 1.91 | .66 | 1.75 | 1.31 | 1.56 | | | | |

* [] see page 9 for material specifications.

Male Connector: CM/EB

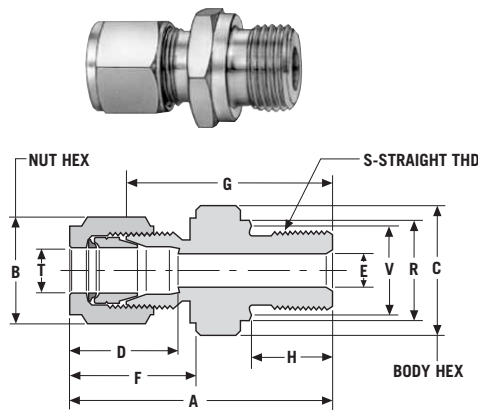
connects **fractional** tube with RP parallel threads



| Part Number* | T | | S | | Dimensions — inches | | | | | | | | | | |
|--------------|-----------|-----------|------|-------|---------------------|-----|-----|-----|------|-----|------|-----|--|--|--|
| | Tube O.D. | Thd. Size | A | B | C | D | E | F | G | H | R | V | | | |
| 2CM2[]EB | 1/8 | 1/8 | 1.25 | 7/16 | 5/8 | .56 | .09 | .67 | .94 | .31 | .55 | .52 | | | |
| 2CM4[]EB | 1/8 | 1/4 | 1.42 | 7/16 | 3/4 | .56 | .09 | .67 | 1.11 | .47 | .70 | .67 | | | |
| 4CM2[]EB | 1/4 | 1/8 | 1.34 | 9/16 | 5/8 | .64 | .19 | .77 | 1.02 | .31 | .55 | .52 | | | |
| 4CM4[]EB | 1/4 | 1/4 | 1.52 | 9/16 | 3/4 | .64 | .19 | .77 | 1.19 | .47 | .70 | .67 | | | |
| 4CM6[]EB | 1/4 | 3/8 | 1.55 | 9/16 | 15/16 | .64 | .19 | .77 | 1.22 | .47 | .86 | .83 | | | |
| 4CM8[]EB | 1/4 | 1/2 | 1.67 | 9/16 | 1 1/16 | .64 | .19 | .77 | 1.34 | .55 | 1.03 | .98 | | | |
| 6CM4[]EB | 3/8 | 1/4 | 1.61 | 11/16 | 3/4 | .72 | .28 | .83 | 1.23 | .47 | .70 | .67 | | | |
| 6CM6[]EB | 3/8 | 3/8 | 1.64 | 11/16 | 15/16 | .72 | .28 | .83 | 1.27 | .47 | .86 | .83 | | | |

Male Connector: CM/MB

connects **metric** tube with RP parallel threads



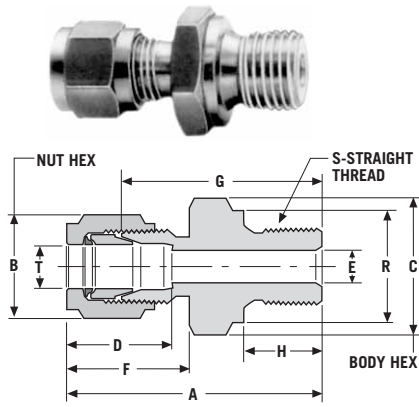
| Part Number* | T | | S | | Dimensions—mm | | | | | | | | | | |
|--------------|-----------|------|------|------|---------------|------|------|------|------|------|------|------|--|--|--|
| | Tube O.D. | Thd. | A | B | C | D | E | F | G | H | R | V | | | |
| 3CM2[]MB | 3 | 1/8 | 32.8 | 11.1 | 14.3 | 14.3 | 2.2 | 17.1 | 24.9 | 8.0 | 14.0 | 13.0 | | | |
| 3CM4[]MB | 3 | 1/4 | 37.2 | 11.1 | 19.1 | 14.3 | 2.2 | 17.1 | 29.2 | 12.0 | 18.0 | 17.0 | | | |
| 6CM2[]MB | 6 | 1/8 | 35.8 | 14.3 | 14.3 | 16.3 | 3.8 | 19.5 | 27.4 | 8.0 | 14.0 | 13.0 | | | |
| 6CM4[]MB | 6 | 1/4 | 40.1 | 14.3 | 19.1 | 16.3 | 3.8 | 19.5 | 31.8 | 12.0 | 18.0 | 17.0 | | | |
| 6CM6[]MB | 6 | 3/8 | 40.1 | 14.3 | 22.2 | 16.3 | 3.8 | 19.5 | 31.8 | 12.0 | 22.0 | 21.0 | | | |
| 6CM8[]MB | 6 | 1/2 | 43.4 | 14.3 | 27.0 | 16.3 | 3.8 | 19.5 | 35.1 | 14.0 | 26.0 | 25.0 | | | |
| 8CM2[]MB | 8 | 1/8 | 34.7 | 15.9 | 14.3 | 16.7 | 4.6 | 19.1 | 26.7 | 8.0 | 14.0 | 13.0 | | | |
| 8CM4[]MB | 8 | 1/4 | 39.5 | 15.9 | 19.1 | 16.7 | 5.8 | 19.1 | 31.5 | 12.0 | 18.0 | 17.0 | | | |
| 8CM6[]MB | 8 | 3/8 | 40.5 | 15.9 | 22.0 | 16.7 | 5.8 | 19.1 | 32.5 | 12.0 | 22.0 | 21.0 | | | |
| 8CM8[]MB | 8 | 1/2 | 43.1 | 15.9 | 27.0 | 16.7 | 5.8 | 19.1 | 35.1 | 14.0 | 26.0 | 25.0 | | | |
| 8CM12[]MB | 8 | 3/4 | 45.0 | 15.9 | 33.5 | 16.7 | 6.0 | 19.1 | 37.0 | 12.0 | 32.0 | 30.0 | | | |
| 10CM2[]MB | 10 | 1/8 | 36.9 | 19.1 | 17.5 | 17.5 | 4.6 | 19.8 | 29.0 | 8.0 | 14.0 | 13.0 | | | |
| 10CM4[]MB | 10 | 1/4 | 41.0 | 19.1 | 19.1 | 17.5 | 5.8 | 19.8 | 33.0 | 12.0 | 18.0 | 17.0 | | | |
| 10CM6[]MB | 10 | 3/8 | 41.5 | 19.1 | 24.0 | 17.5 | 7.4 | 19.8 | 33.5 | 12.0 | 22.0 | 21.0 | | | |
| 10CM8[]MB | 10 | 1/2 | 44.1 | 19.1 | 27.0 | 17.5 | 7.9 | 19.8 | 36.1 | 14.0 | 26.0 | 25.0 | | | |
| 12CM4[]MB | 12 | 1/4 | 44.5 | 22.2 | 22.2 | 24.6 | 7.0 | 23.4 | 32.5 | 12.0 | 18.0 | 17.0 | | | |
| 12CM6[]MB | 12 | 3/8 | 45.0 | 22.2 | 24.0 | 24.6 | 10.0 | 23.4 | 33.0 | 12.0 | 22.0 | 21.0 | | | |
| 12CM8[]MB | 12 | 1/2 | 47.5 | 22.2 | 27.0 | 24.6 | 9.9 | 23.4 | 35.6 | 14.0 | 26.0 | 25.0 | | | |
| 12CM12[]MB | 12 | 3/4 | 49.5 | 22.2 | 33.3 | 24.6 | 9.9 | 23.4 | 37.6 | 16.0 | 32.0 | 30.0 | | | |
| 14CM4[]MB | 14 | 1/4 | 41.9 | 23.8 | 22.2 | 22.2 | 7.0 | 21.0 | 32.5 | 12.0 | 18.0 | 17.0 | | | |
| 14CM6[]MB | 14 | 3/8 | 42.4 | 23.8 | 22.2 | 22.2 | 9.9 | 21.0 | 33.0 | 12.0 | 22.0 | 21.0 | | | |
| 14CM8[]MB | 14 | 1/2 | 45.2 | 23.8 | 27.0 | 22.2 | 11.9 | 21.0 | 35.8 | 14.0 | 26.0 | 25.0 | | | |
| 15CM8[]MB | 15 | 1/2 | 46.6 | 23.8 | 27.0 | 22.2 | 12.7 | 21.8 | 36.3 | 14.0 | 26.0 | 25.0 | | | |
| 16CM6[]MB | 16 | 3/8 | 44.9 | 25.4 | 23.8 | 25.0 | 9.9 | 23.4 | 33.8 | 12.0 | 22.0 | 21.0 | | | |
| 16CM8[]MB | 16 | 1/2 | 47.5 | 25.4 | 27.0 | 25.0 | 12.7 | 23.4 | 36.3 | 14.0 | 26.0 | 25.0 | | | |
| 16CM12[]MB | 16 | 3/4 | 49.5 | 25.4 | 33.3 | 25.0 | 12.7 | 23.4 | 38.4 | 16.0 | 32.0 | 30.0 | | | |
| 18CM8[]MB | 18 | 1/2 | 47.3 | 28.6 | 27.0 | 25.4 | 12.7 | 24.6 | 37.3 | 14.0 | 26.0 | 25.0 | | | |
| 18CM12[]MB | 18 | 3/4 | 49.1 | 28.6 | 33.3 | 25.4 | 15.8 | 24.6 | 37.1 | 16.0 | 32.0 | 30.0 | | | |
| 20CM8[]MB | 20 | 1/2 | 52.5 | 31.8 | 30.2 | 31.0 | 11.9 | 27.0 | 38.6 | 14.0 | 26.0 | 25.0 | | | |
| 22CM8[]MB | 22 | 1/2 | 50.6 | 31.8 | 30.2 | 27.0 | 12.6 | 24.6 | 39.4 | 14.0 | 26.0 | 25.0 | | | |
| 22CM12[]MB | 22 | 3/4 | 52.6 | 31.8 | 33.3 | 27.0 | 17.9 | 24.6 | 41.4 | 16.0 | 32.0 | 30.0 | | | |
| 22CM16[]MB | 22 | 1 | 54.6 | 31.8 | 41.3 | 27.0 | 17.9 | 24.6 | 43.4 | 18.0 | 39.0 | 37.0 | | | |
| 25CM12[]MB | 25 | 3/4 | 59.9 | 38.1 | 34.9 | 33.3 | 18.1 | 27.4 | 45.5 | 16.0 | 32.0 | 30.0 | | | |
| 25CM16[]MB | 25 | 1 | 57.6 | 38.1 | 41.3 | 33.3 | 21.7 | 27.4 | 43.2 | 18.0 | 39.0 | 37.0 | | | |

RP parallel thread ends are typically used with a flat gasket to seal.

* [] see page 9 for material specifications.

Male Connector: CM/EA

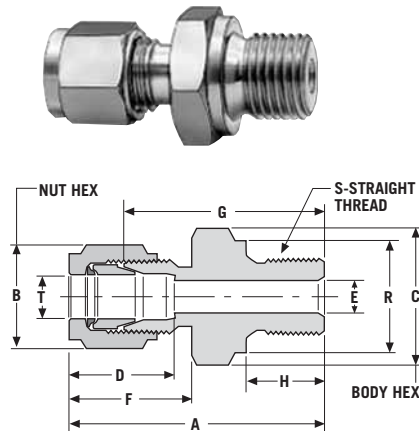
connects fractional tube with RS parallel threads



| Part Number* | T S | | Dimensions — inches | | | | | | | | |
|--------------|-----------|-----------|---------------------|-------|--------|------|-----|------|------|-----|------|
| | Tube O.D. | Thd. Size | A | B | C | D | E | F | G | H | R |
| 2CM2[]EA | 1/8 | 1/8 | 1.19 | 7/16 | 9/16 | .56 | .09 | .67 | .72 | .31 | .55 |
| 2CM4[]EA | 1/8 | 1/4 | 1.41 | 7/16 | 3/4 | .56 | .09 | .67 | 1.09 | .47 | .70 |
| 2CM6[]EA | 1/8 | 3/8 | 1.47 | 7/16 | 7/8 | .56 | .09 | .67 | 1.16 | .47 | .86 |
| 4CM2[]EA | 1/4 | 1/8 | 1.30 | 9/16 | 9/16 | .64 | .19 | .77 | .97 | .31 | .55 |
| 4CM4[]EA | 1/4 | 1/4 | 1.48 | 9/16 | 3/4 | .64 | .19 | .77 | 1.16 | .47 | .70 |
| 4CM6[]EA | 1/4 | 3/8 | 1.55 | 9/16 | 7/8 | .64 | .19 | .77 | 1.22 | .47 | .86 |
| 4MC8[]EA | 1/4 | 1/2 | 1.67 | 9/16 | 1 1/16 | .64 | .19 | .77 | 1.34 | .55 | 1.03 |
| 6CM4[]EA | 3/8 | 1/4 | 1.61 | 11/16 | 3/4 | .72 | .28 | .83 | 1.25 | .47 | .70 |
| 6CM6[]EA | 3/8 | 3/8 | 1.61 | 11/16 | 7/8 | .72 | .28 | .83 | 1.25 | .47 | .86 |
| 6CM8[]EA | 3/8 | 1/2 | 1.73 | 11/16 | 1 1/16 | .72 | .28 | .83 | 1.38 | .55 | 1.03 |
| 8CM4[]EA | 1/2 | 1/4 | 1.75 | 7/8 | 13/16 | .97 | .23 | .92 | 1.25 | .47 | .70 |
| 8CM6[]EA | 1/2 | 3/8 | 1.75 | 7/8 | 7/8 | .97 | .23 | .92 | 1.25 | .47 | .86 |
| 8CM8[]EA | 1/2 | 1/2 | 1.72 | 7/8 | 1 1/16 | .97 | .23 | .92 | 1.38 | .55 | 1.03 |
| 12CM8[]EA | 3/4 | 1/2 | 1.88 | 1 1/8 | 1 1/16 | 1 | .39 | .97 | 1.50 | .55 | 1.03 |
| 12CM12[]EA | 3/4 | 3/4 | 1.92 | 1 1/8 | 1 5/16 | 1 | .39 | .97 | 1.48 | .63 | 1.27 |
| 16CM8[]EA | 1 | 1/2 | 2 | 1 1/2 | 1 3/8 | 1.31 | .47 | 1.08 | 1.44 | .55 | 1.03 |
| 16CM16[]EA | 1 | 1 | 2.23 | 1 1/2 | 1 5/8 | 1.31 | .70 | 1.08 | 1.67 | .70 | 1.53 |

Male Connector: CM/MA

connects metric tube with RS parallel threads



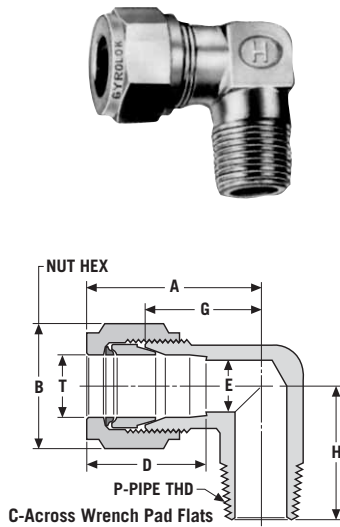
| Part Number* | T S | | Dimensions — mm | | | | | | | | |
|--------------|-----------|-----------|-----------------|------------|------------|------|------|------|------|------|------|
| | Tube Size | Thd. Size | A | B Hex Flat | C Hex Flat | D | E | F | G | H | R |
| 3CM2[]MA | 3 | 1/8 | 32.8 | 11.1 | 14.3 | 14.3 | 2.2 | 17.1 | 24.9 | 8.0 | 14.0 |
| 3CM4[]MA | 3 | 1/4 | 37.2 | 11.1 | 19.1 | 14.3 | 2.2 | 17.1 | 29.2 | 12.0 | 18.0 |
| 6CM2[]MA | 6 | 1/8 | 35.8 | 14.3 | 14.3 | 16.3 | 3.8 | 19.5 | 27.4 | 8.0 | 14.0 |
| 6CM4[]MA | 6 | 1/4 | 40.1 | 14.3 | 19.1 | 16.3 | 3.8 | 19.5 | 31.8 | 12.0 | 18.0 |
| 6CM6[]MA | 6 | 3/8 | 40.1 | 14.3 | 22.2 | 16.3 | 3.8 | 19.5 | 31.8 | 12.0 | 22.0 |
| 6CM8[]MA | 6 | 1/2 | 43.4 | 14.3 | 27.0 | 16.3 | 3.8 | 19.5 | 35.1 | 14.0 | 26.0 |
| 8CM2[]MA | 8 | 1/8 | 34.7 | 15.9 | 14.3 | 16.7 | 5.8 | 19.1 | 26.7 | 8.0 | 14.0 |
| 8CM4[]MA | 8 | 1/4 | 39.5 | 15.9 | 19.1 | 16.7 | 5.8 | 19.1 | 31.5 | 12.0 | 18.0 |
| 8CM6[]MA | 8 | 3/8 | 43.0 | 15.9 | 22.0 | 16.7 | 5.8 | 19.1 | 35.0 | 12.0 | 22.0 |
| 8CM8[]MA | 8 | 1/2 | 43.1 | 15.9 | 27.0 | 16.7 | 5.8 | 19.1 | 35.0 | 14.0 | 26.0 |
| 8CM12[]MA | 8 | 3/4 | 48.0 | 15.9 | 33.0 | 16.7 | 6.5 | 19.1 | 38.0 | 12.0 | 32.0 |
| 10CM2[]MA | 10 | 1/8 | 37.0 | 19.1 | 17.5 | 17.5 | 4.6 | 19.8 | 29.0 | 8.0 | 14.0 |
| 10CM4[]MA | 10 | 1/4 | 41.0 | 19.1 | 19.0 | 17.5 | 5.8 | 19.8 | 33.0 | 12.0 | 18.0 |
| 10CM6[]MA | 10 | 3/8 | 44.0 | 19.1 | 22.0 | 17.5 | 6.0 | 19.8 | 36.0 | 12.0 | 22.0 |
| 10CM8[]MA | 10 | 1/2 | 44.1 | 19.1 | 27.0 | 17.5 | 7.9 | 19.8 | 36.1 | 14.0 | 26.0 |
| 12CM4[]MA | 12 | 1/4 | 44.5 | 22.2 | 22.2 | 24.6 | 5.8 | 23.4 | 32.5 | 12.0 | 18.0 |
| 12CM6[]MA | 12 | 3/8 | 47.5 | 22.2 | 22.0 | 24.6 | 6.0 | 23.4 | 35.5 | 12.0 | 22.0 |
| 12CM8[]MA | 12 | 1/2 | 47.5 | 22.2 | 27.0 | 24.6 | 9.9 | 23.4 | 35.6 | 14.0 | 26.0 |
| 12CM12[]MA | 12 | 3/4 | 49.5 | 22.2 | 33.3 | 24.6 | 9.9 | 23.4 | 37.6 | 16.0 | 33.0 |
| 14CM4[]MA | 14 | 1/4 | 41.9 | 23.8 | 22.2 | 22.2 | 5.8 | 21.0 | 32.5 | 12.0 | 18.0 |
| 14CM6[]MA | 14 | 3/8 | 42.4 | 23.8 | 22.2 | 22.2 | 7.8 | 21.0 | 33.0 | 12.0 | 22.0 |
| 14CM8[]MA | 14 | 1/2 | 45.2 | 23.8 | 27.0 | 22.2 | 11.9 | 21.0 | 35.8 | 14.0 | 26.0 |
| 15CM8[]MA | 15 | 1/2 | 46.6 | 23.8 | 27.0 | 22.2 | 12.7 | 21.8 | 36.3 | 14.0 | 26.0 |
| 16CM6[]MA | 16 | 3/8 | 45.0 | 25.4 | 23.8 | 25.0 | 7.8 | 23.4 | 33.8 | 12.0 | 22.0 |
| 16CM8[]MA | 16 | 1/2 | 47.5 | 25.4 | 27.0 | 25.0 | 12.7 | 23.4 | 36.3 | 14.0 | 26.0 |
| 16CM12[]MA | 16 | 3/4 | 49.5 | 25.4 | 33.3 | 25.0 | 12.7 | 23.4 | 38.4 | 16.0 | 32.0 |
| 18CM8[]MA | 18 | 1/2 | 47.3 | 28.6 | 27.0 | 25.4 | 11.4 | 24.6 | 37.3 | 14.0 | 26.0 |
| 18CM12[]MA | 18 | 3/4 | 49.1 | 28.6 | 33.3 | 25.4 | 15.3 | 24.6 | 39.1 | 16.0 | 32.0 |
| 20CM8[]MA | 20 | 1/2 | 52.5 | 31.8 | 30.2 | 31.0 | 11.9 | 27.0 | 38.6 | 14.0 | 26.0 |
| 22CM8[]MA | 22 | 1/2 | 50.6 | 31.8 | 30.2 | 27.0 | 11.4 | 24.6 | 39.4 | 14.0 | 26.0 |
| 22CM12[]MA | 22 | 3/4 | 52.6 | 31.8 | 33.3 | 27.0 | 15.8 | 24.6 | 41.4 | 16.0 | 32.0 |
| 22CM16[]MA | 22 | 1 | 54.6 | 31.8 | 41.3 | 27.0 | 17.9 | 24.6 | 43.4 | 18.0 | 39.0 |
| 25CM12[]MA | 25 | 3/4 | 59.9 | 38.1 | 34.9 | 33.3 | 17.9 | 27.4 | 45.5 | 16.0 | 32.0 |
| 25CM16[]MA | 25 | 1 | 57.6 | 38.1 | 41.3 | 33.3 | 17.9 | 27.4 | 43.2 | 18.0 | 39.0 |

RS parallel thread ends are typically used with a gasket having a bonded elastomer seal. RP-type gaskets may also be used.

* [] see page 9 for material specifications.

Male Elbow: LM

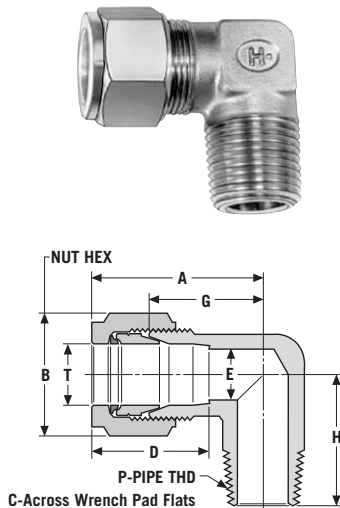
connects **fractional** tube to female NPT thread



| Part Number* | T | | P | | Dimensions — inches | | | | | |
|--------------|-----------|---------------|------|------------|---------------------|------|------|------|------|--|
| | Tube O.D. | Male NPT Size | A | B Hex Flat | C | D | E | G | H | |
| 1LM1[] | 1/16 | 1/16 | .78 | 5/16 | 7/16 | .41 | .05 | .56 | .72 | |
| 1LM2[] | 1/16 | 1/8 | .78 | 5/16 | 7/16 | .41 | .05 | .56 | .88 | |
| 2LM1[] | 1/8 | 1/16 | .97 | 7/16 | 7/16 | .56 | .09 | .66 | .72 | |
| 2LM2[] | 1/8 | 1/8 | .97 | 7/16 | 7/16 | .56 | .09 | .66 | .72 | |
| 2LM4[] | 1/8 | 1/4 | 1.09 | 7/16 | 1/2 | .56 | .09 | .78 | .94 | |
| 3LM2[] | 3/16 | 1/8 | 1 | 1/2 | 7/16 | .59 | .13 | .69 | .75 | |
| 3LM4[] | 3/16 | 1/4 | 1 | 1/2 | 1/2 | .59 | .13 | .72 | .94 | |
| 4LM2[] | 1/4 | 1/8 | 1.05 | 9/16 | 7/16 | .64 | .19 | .72 | .78 | |
| 4LM4[] | 1/4 | 1/4 | 1.11 | 9/16 | 1/2 | .64 | .19 | .78 | 1 | |
| 4LM6[] | 1/4 | 3/8 | 1.20 | 9/16 | 11/16 | .64 | .19 | .88 | 1.13 | |
| 4LM8[] | 1/4 | 1/2 | 1.33 | 9/16 | 13/16 | .64 | .42 | 1 | 1.25 | |
| 6LM2[] | 3/8 | 1/8 | 1.19 | 11/16 | 1/2 | .72 | .28 | .84 | .88 | |
| 6LM4[] | 3/8 | 1/4 | 1.19 | 11/16 | 1/2 | .72 | .28 | .84 | 1 | |
| 6LM6[] | 3/8 | 3/8 | 1.28 | 11/16 | 11/16 | .72 | .28 | .94 | 1.13 | |
| 6LM8[] | 3/8 | 1/2 | 1.38 | 11/16 | 13/16 | .72 | .28 | 1.03 | 1.25 | |
| 8LM4[] | 1/2 | 1/4 | 1.44 | 7/8 | 11/16 | .97 | .30 | .97 | 1.13 | |
| 8LM6[] | 1/2 | 3/8 | 1.44 | 7/8 | 11/16 | .97 | .41 | .97 | 1.13 | |
| 8LM8[] | 1/2 | 1/2 | 1.50 | 7/8 | 11/16 | .97 | .42 | 1.03 | 1.31 | |
| 8LM12[] | 1/2 | 3/4 | 1.56 | 7/8 | 1 | .97 | .72 | 1.06 | 1.50 | |
| 10LM6[] | 5/8 | 3/8 | 1.47 | 1 | 13/16 | 1 | .41 | 1.03 | 1.25 | |
| 10LM8[] | 5/8 | 1/2 | 1.47 | 1 | 13/16 | 1 | .50 | 1.03 | 1.38 | |
| 12LM8[] | 3/4 | 1/2 | 1.59 | 1 1/8 | 1 | 1 | .50 | 1.16 | 1.50 | |
| 12LM12[] | 3/4 | 3/4 | 1.59 | 1 1/8 | 1 | 1 | .66 | 1.16 | 1.50 | |
| 14LM12[] | 7/8 | 3/4 | 1.72 | 1 1/4 | 1 1/4 | 1.06 | .72 | 1.28 | 1.50 | |
| 16LM12[] | 1 | 3/4 | 1.88 | 1 1/2 | 1 1/4 | 1.31 | .72 | 1.31 | 1.66 | |
| 16LM16[] | 1 | 1 | 1.88 | 1 1/2 | 1 1/4 | 1.31 | .88 | 1.31 | 1.84 | |
| 20LM20[] | 1 1/4 | 1 1/4 | 2.62 | 1 7/8 | 1 11/16 | 1.53 | 1.09 | 1.75 | 1.88 | |
| 24LM24[] | 1 1/2 | 1 1/2 | 3.07 | 2 1/4 | 2 | 1.78 | 1.34 | 2 | 2.38 | |
| 32LM32[] | 2 | 2 | 4.22 | 3 | 2 3/4 | 2.47 | 1.81 | 2.75 | 2.78 | |

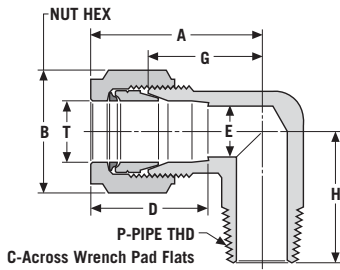
Male Elbow: LM/ME, LM/MC

connects **metric** tube with NPT or RT tapered threads



| Part Number* | T | | P | | Dimensions — mm | | | | | |
|--------------|-------------|------------|-----------|---------------|-----------------|------------|------|------|---|--|
| | NPT Threads | RT Threads | Tube O.D. | Male NPT Size | A | B Hex Flat | C | D | E | |
| 3LM2[]ME | 3LM2[]MC | 3 | 1/8 | 24.7 | 11.1 | 11.0 | 14.3 | 2.2 | | |
| 3LM4[]ME | 3LM4[]MC | 3 | 1/4 | 27.8 | 11.1 | 13.7 | 14.3 | 2.2 | | |
| 4LM2[]ME | 4LM2[]MC | 4 | 1/8 | 25.3 | 12.7 | 11.7 | 15.1 | 2.3 | | |
| 4LM4[]ME | 4LM4[]MC | 4 | 1/4 | 25.3 | 12.7 | 13.7 | 15.1 | 2.3 | | |
| 6LM2[]ME | 6LM2[]MC | 6 | 1/8 | 26.3 | 14.3 | 11.7 | 16.3 | 3.8 | | |
| 6LM4[]ME | 6LM4[]MC | 6 | 1/4 | 28.2 | 14.3 | 13.7 | 16.3 | 3.8 | | |
| 6LM6[]ME | 6LM6[]MC | 6 | 3/8 | 30.6 | 14.3 | 17.2 | 16.3 | 3.8 | | |
| 6LM8[]ME | 6LM8[]MC | 6 | 1/2 | 33.8 | 14.3 | 21.3 | 16.3 | 3.8 | | |
| 8LM2[]ME | 8LM2[]MC | 8 | 1/8 | 28.6 | 15.9 | 12.7 | 16.7 | 5.8 | | |
| 8LM4[]ME | 8LM4[]MC | 8 | 1/4 | 28.6 | 15.9 | 13.7 | 16.7 | 5.8 | | |
| 8LM6[]ME | 8LM6[]MC | 8 | 3/8 | 31.0 | 15.9 | 17.2 | 16.7 | 5.8 | | |
| 8LM8[]ME | 8LM8[]MC | 8 | 1/2 | 34.2 | 15.9 | 21.4 | 16.7 | 5.8 | | |
| 10LM2[]ME | 10LM2[]MC | 10 | 1/8 | 31.9 | 19.1 | 17.5 | 17.5 | 4.6 | | |
| 10LM4[]ME | 10LM4[]MC | 10 | 1/4 | 32.6 | 19.1 | 17.8 | 17.5 | 7.1 | | |
| 10LM6[]ME | 10LM6[]MC | 10 | 3/8 | 31.8 | 19.1 | 17.2 | 17.5 | 7.9 | | |
| 10LM8[]ME | 10LM8[]MC | 10 | 1/2 | 34.1 | 19.1 | 21.3 | 17.5 | 7.9 | | |
| 12LM4[]ME | 12LM4[]MC | 12 | 1/4 | 36.6 | 22.2 | 17.8 | 24.6 | 7.1 | | |
| 12LM6[]ME | 12LM6[]MC | 12 | 3/8 | 36.6 | 22.2 | 17.8 | 24.6 | 9.9 | | |
| 12LM8[]ME | 12LM8[]MC | 12 | 1/2 | 38.1 | 22.2 | 21.3 | 24.6 | 9.9 | | |
| 12LM12[]ME | 12LM12[]MC | 12 | 3/4 | 41.3 | 22.2 | 26.7 | 24.6 | 9.9 | | |
| 14LM6[]ME | 14LM6[]MC | 14 | 3/8 | 35.6 | 23.8 | 20.6 | 22.2 | 10.2 | | |
| 14LM8[]ME | 14LM8[]MC | 14 | 1/2 | 35.6 | 23.8 | 20.7 | 22.2 | 12.7 | | |
| 15LM8[]ME | 15LM8[]MC | 15 | 1/2 | 36.5 | 23.8 | 20.7 | 22.2 | 12.7 | | |
| 16LM6[]ME | 16LM6[]MC | 16 | 3/8 | 37.3 | 25.4 | 20.6 | 25.0 | 10.2 | | |
| 16LM8[]ME | 16LM8[]MC | 16 | 1/2 | 37.3 | 25.4 | 21.5 | 25.0 | 12.7 | | |
| 16LM12[]ME | 16LM12[]MC | 16 | 3/4 | 40.6 | 25.4 | 26.7 | 25.0 | 12.7 | | |
| 18LM8[]ME | 18LM8[]MC | 18 | 1/2 | 39.5 | 28.6 | 24.9 | 25.4 | 12.7 | | |
| 18LM12[]ME | 18LM12[]MC | 18 | 3/4 | 39.3 | 28.6 | 25.4 | 25.4 | 15.8 | | |
| 20LM8[]ME | 20LM8[]MC | 20 | 1/2 | 46.4 | 31.8 | 31.8 | 31.0 | 12.7 | | |
| 20LM12[]ME | 20LM12[]MC | 20 | 3/4 | 46.4 | 31.8 | 31.8 | 31.0 | 16.7 | | |
| 22LM8[]ME | 22LM8[]MC | 22 | 1/2 | 43.7 | 31.8 | 31.8 | 27.0 | 12.6 | | |
| 22LM12[]ME | 22LM12[]MC | 22 | 3/4 | 44.5 | 31.8 | 31.8 | 27.0 | 17.9 | | |
| 22LM16[]ME | 22LM16[]MC | 22 | 1 | 43.7 | 31.8 | 33.3 | 27.0 | 17.9 | | |
| 25LM12[]ME | 25LM12[]MC | 25 | 3/4 | 47.7 | 38.1 | 31.8 | 33.3 | 18.1 | | |
| 25LM16[]ME | 25LM16[]MC | 25 | 1 | 47.7 | 38.1 | 33.3 | 33.3 | 21.7 | | |

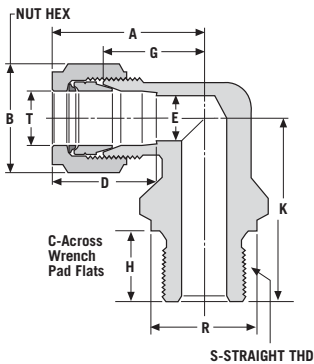
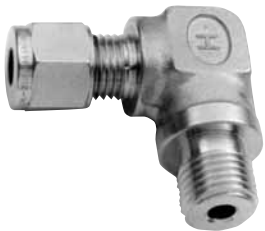
* [] see page 9 for material specifications.



Male Elbow: LM/EC

connects **fractional** tube with RT tapered threads

| Part Number* | T Tube O.D. | P Pipe Thd. | Dimensions — inches | | | | | | |
|--------------|-------------|-------------|---------------------|------------|-------|-----|-----|------|------|
| | | | A | B Hex Flat | C | D | E | G | H |
| 4LM2[]EC | 1/4 | 1/8 | 1.05 | 9/16 | 7/16 | .64 | .19 | .72 | .78 |
| 4LM4[]EC | 1/4 | 1/4 | 1.11 | 9/16 | 1/2 | .64 | .19 | .78 | 1 |
| 8LM4[]EC | 1/2 | 1/4 | 1.44 | 7/8 | 11/16 | .97 | .30 | .97 | 1.13 |
| 8LM6[]EC | 1/2 | 3/8 | 1.44 | 7/8 | 11/16 | .97 | .41 | .97 | 1.13 |
| 8LM8[]EC | 1/2 | 1/2 | 1.50 | 7/8 | 13/16 | .97 | .42 | 1.03 | 1.31 |

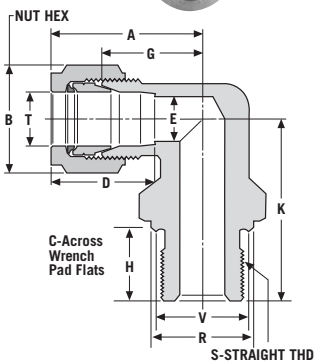
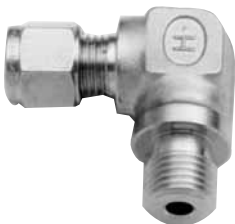


Male Elbow: LM/MA

connects **metric** with RS parallel threads

| Part Number* | T Tube O.D. | S Straight Thd. | Dimensions — mm | | | | | | | | |
|--------------|-------------|-----------------|-----------------|------------|------|------|------|------|------|------|------|
| | | | A | B Hex Flat | C | D | E | G | H | K | R |
| 6LM4[]MA | 6 | 1/4 | 33.0 | 14.3 | 17.3 | 16.3 | 3.8 | 24.6 | 12.0 | 27.9 | 18.0 |
| 8LM4[]MA | 8 | 1/4 | 34.2 | 15.9 | 20.5 | 16.7 | 7.6 | 26.2 | 12.0 | 34.3 | 18.0 |
| 10LM4[]MA | 10 | 1/4 | 32.6 | 19.1 | 16.7 | 17.5 | 5.8 | 24.6 | 12.0 | 28.7 | 18.0 |
| 10LM8[]MA | 10 | 1/2 | 37.2 | 19.1 | 20.5 | 17.5 | 7.9 | 29.2 | 14.0 | 38.1 | 26.0 |
| 12LM4[]MA | 12 | 1/4 | 38.1 | 22.2 | 22.3 | 24.6 | 5.8 | 26.2 | 12.0 | 34.3 | 18.0 |
| 12LM8[]MA | 12 | 1/2 | 40.6 | 22.2 | 20.5 | 24.6 | 9.9 | 28.7 | 14.0 | 38.1 | 26.0 |
| 16LM6[]MA | 16 | 3/8 | 40.6 | 25.4 | 26.1 | 25.0 | 7.8 | 29.5 | 12.0 | 38.1 | 22.0 |
| 16LM8[]MA | 16 | 1/2 | 40.6 | 25.4 | 20.5 | 25.0 | 11.8 | 29.5 | 14.0 | 38.1 | 26.0 |
| 22LM12[]MA | 22 | 3/4 | 43.7 | 31.8 | 28.5 | 27.0 | 15.8 | 32.5 | 16.0 | 44.5 | 32.0 |

RS parallel thread ends are typically used with a gasket having a bonded elastomer seal. RP-type gaskets may also be used.



Male Elbow: LM/MB

connects **metric** with RP parallel threads

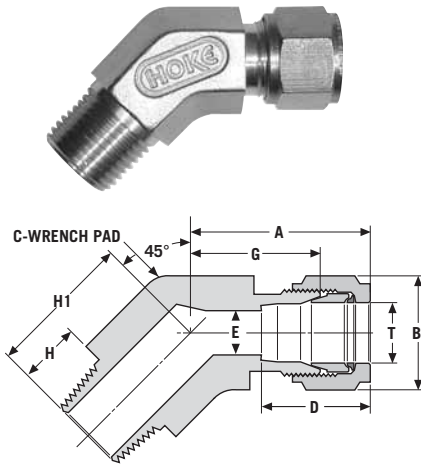
| Part Number* | T Tube O.D. | S Straight Thd. | Dimensions — mm | | | | | | | | | |
|--------------|-------------|-----------------|-----------------|------------|------|------|-----|------|------|------|------|------|
| | | | A | B Hex Flat | C | D | E | G | H | K | R | V |
| 6LM2[]MB | 6 | 1/8 | 29.0 | 14.3 | 12.6 | 16.3 | 3.8 | 20.6 | 8.0 | 21.8 | 14.0 | 13.0 |
| 6LM4[]MB | 6 | 1/4 | 29.0 | 14.3 | 12.6 | 16.3 | 3.8 | 20.6 | 12.0 | 29.0 | 18.0 | 17.0 |

RP parallel thread ends are typically used with a flat gasket to seal.

* [] see page 9 for material specifications.

45° Male Elbow: LMF

connects **fractional** tube to female NPT thread

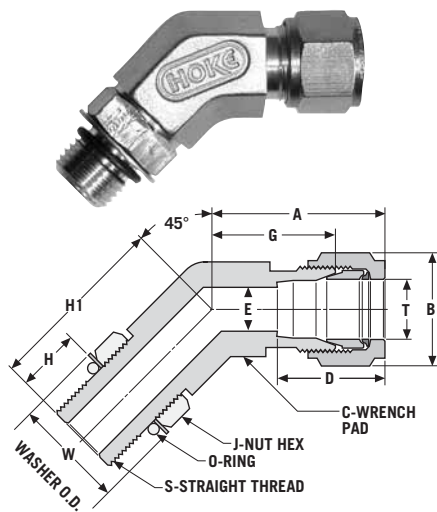


| Part Number* | T P | | Dimensions — inches | | | | | | | |
|--------------|-----------|-----------|---------------------|-----|-----|-----|-----|------|-----|------|
| | Tube O.D. | Pipe Thd. | A | B | C | D | E | G | H | H1 |
| 4LMF2[] | 1/4 | 1/8 | 1.05 | .56 | .50 | .64 | .19 | .72 | .38 | .78 |
| 4LMF4[] | 1/4 | 1/4 | 1.11 | .56 | .63 | .64 | .19 | .78 | .56 | 1 |
| 6LMF2[] | 3/8 | 1/8 | 1.19 | .69 | .63 | .72 | .28 | .84 | .38 | .88 |
| 6LMF4[] | 3/8 | 1/4 | 1.19 | .69 | .63 | .72 | .28 | .84 | .56 | 1 |
| 6LMF6[] | 3/8 | 3/8 | 1.28 | .69 | .81 | .72 | .28 | .94 | .56 | 1.13 |
| 8LMF6[] | 1/2 | 3/8 | 1.44 | .88 | .81 | .97 | .41 | .97 | .56 | 1.13 |
| 8LMF8[] | 1/2 | 1/2 | 1.53 | .88 | .94 | .97 | .42 | 1.06 | .75 | 1.38 |

To specify O-ring material for SAE fittings, see page 10.

45° Male Elbow, SAE, Positionable: LMFS

connects **fractional** tube to SAE straight thread boss

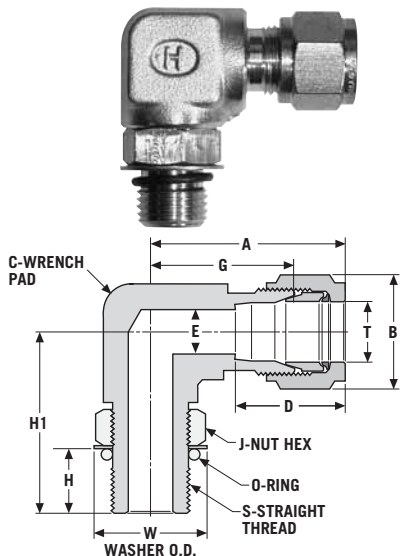


Dimensions — inches

| Part Number* | T | S | A | B | C | D | E | G | H | H1 | J | | W | O-ring Uniform Size # |
|--------------|-----|-----------|------|-------|-------|------|-----|------|-----|------|-------|------|-----|-----------------------|
| | | | | | | | | | | | Hex | Flat | | |
| 4LMFS4[] | 1/4 | 7/16-20 | 1.05 | 9/16 | 1/2 | .64 | .19 | .78 | .39 | 1.05 | 9/16 | .66 | 904 | |
| 6LMFS6[] | 3/8 | 9/16-18 | 1.19 | 11/16 | 5/8 | .72 | .28 | .84 | .44 | 1.14 | 11/16 | .80 | 906 | |
| 8LMFS8[] | 1/2 | 3/4-16 | 1.44 | 7/8 | 13/16 | .97 | .42 | .97 | .50 | 1.30 | 7/8 | 1.02 | 908 | |
| 12LMFS12[] | 3/4 | 1 1/16-12 | 1.59 | 1 1/8 | 1 1/8 | 1 | .66 | 1.16 | .66 | 1.73 | 1 1/4 | 1.44 | 912 | |
| 16LMFS16[] | 1 | 1 5/16-12 | 1.88 | 1 7/8 | 1 3/8 | 1.31 | .88 | 1.31 | .66 | 1.86 | 1 1/2 | 1.73 | 916 | |

Male Elbow, SAE, Positionable: LMS

connects **fractional** tube to SAE straight thread boss



Dimensions — inches

| Part Number* | T | S | A | B | C | D | E | G | H | H1 | J | | W | O-ring Uniform Size # |
|--------------|-------|-----------|------|-------|---------|------|------|------|-----|------|-------|------|-----|-----------------------|
| | | | | | | | | | | | Hex | Flat | | |
| 4LMS4[] | 1/4 | 7/16-20 | 1.17 | 9/16 | 1/2 | .64 | .19 | .84 | .39 | 1.03 | 9/16 | .66 | 904 | |
| 4LMS6[] | 1/4 | 9/16-18 | 1.31 | 9/16 | 13/16 | .64 | .19 | .98 | .44 | 1.25 | 11/16 | .80 | 906 | |
| 6LMS6[] | 3/8 | 9/16-18 | 1.38 | 11/16 | 13/16 | .72 | .28 | 1.03 | .44 | 1.25 | 11/16 | .80 | 906 | |
| 6LMS8[] | 3/8 | 3/4-16 | 1.41 | 11/16 | 1 | .72 | .28 | 1.06 | .50 | 1.48 | 7/8 | 1.02 | 908 | |
| 8LMS8[] | 1/2 | 3/4-16 | 1.59 | 7/8 | 1 | .97 | .42 | 1.13 | .50 | 1.45 | 7/8 | 1.02 | 908 | |
| 12LMS12[] | 3/4 | 1 1/16-12 | 1.69 | 1 1/8 | 1 1/4 | 1 | .66 | 1.25 | .66 | 1.94 | 1 1/4 | 1.44 | 912 | |
| 16LMS16[] | 1 | 1 5/16-12 | 1.88 | 1 1/2 | 1 1/4 | 1.31 | .88 | 1.31 | .66 | 2.05 | 1 1/2 | 1.73 | 916 | |
| 20LMS20[] | 1 1/4 | 1 5/8-12 | 2.67 | 1 7/8 | 1 11/16 | 1.62 | 1.09 | 1.80 | .66 | 2.29 | 1 7/8 | 2.16 | 920 | |
| 24LMS24[] | 1 1/2 | 1 7/8-12 | 3.07 | 2 1/4 | 2 | 1.97 | 1.34 | 2 | .66 | 2.38 | 2 1/8 | 2.45 | 924 | |

* [] see page 9 for material specifications.

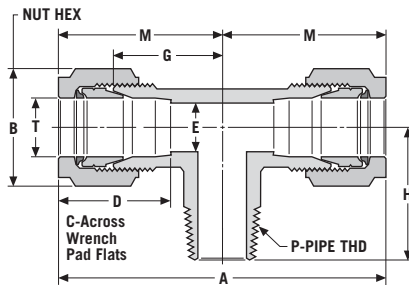
Male Branch: TTM

connects fractional tube to female NPT threads

| Part Number* | T P | | Dimensions — inches | | | | | | | |
|--------------|-----------|----------------|---------------------|------------|-------|------|-----|------|------|------|
| | Tube O.D. | Male Pipe Size | A | B Hex Flat | C | D | E | G | H | M |
| 1TTM1[] | 1/16 | 1/16 | 1.56 | 5/16 | 7/16 | .41 | .05 | .56 | .72 | .78 |
| 2TTM2[] | 1/8 | 1/8 | 1.94 | 7/16 | 7/16 | .56 | .09 | .66 | .72 | .97 |
| 2TTM4[] | 1/8 | 1/4 | 2 | 7/16 | 1/2 | .56 | .09 | .69 | .84 | 1 |
| 3TTM2[] | 3/16 | 1/8 | 2 | 1/2 | 7/16 | .59 | .13 | .69 | .75 | 1 |
| 4TTM2[] | 1/4 | 1/8 | 2.09 | 9/16 | 7/16 | .64 | .19 | .72 | .78 | 1.05 |
| 4TTM4[] | 1/4 | 1/4 | 2.22 | 9/16 | 1/2 | .64 | .19 | .78 | 1.03 | 1.11 |
| 6TTM4[] | 3/8 | 1/4 | 2.38 | 11/16 | 1/2 | .72 | .28 | .84 | 1 | 1.19 |
| 6TTM6[] | 3/8 | 3/8 | 2.59 | 11/16 | 11/16 | .72 | .28 | .94 | 1.13 | 1.30 |
| 6TTM8[] | 3/8 | 1/2 | 2.75 | 11/16 | 13/16 | .72 | .28 | 1.03 | 1.31 | 1.38 |
| 8TTM4[] | 1/2 | 1/4 | 2.88 | 7/8 | 11/16 | .97 | .28 | .97 | 1 | 1.44 |
| 8TTM6[] | 1/2 | 3/8 | 2.88 | 7/8 | 11/16 | .97 | .41 | .97 | 1.13 | 1.44 |
| 8TTM8[] | 1/2 | 1/2 | 3 | 7/8 | 13/16 | .97 | .42 | 1.03 | 1.31 | 1.50 |
| 10TTM6[] | 5/8 | 3/8 | 2.94 | 1 | 13/16 | 1 | .41 | 1.03 | 1.38 | 1.47 |
| 10TTM8[] | 5/8 | 1/2 | 2.94 | 1 | 13/16 | 1 | .50 | 1.03 | 1.38 | 1.47 |
| 12TTM8[] | 3/4 | 1/2 | 3.23 | 1 1/8 | 1 | 1 | .69 | 1.16 | 1.50 | 1.61 |
| 12TTM12[] | 3/4 | 3/4 | 3.19 | 1 1/8 | 1 | 1 | .66 | 1.16 | 1.50 | 1.59 |
| 14TTM12[] | 7/8 | 3/4 | 3.44 | 1 1/4 | 1 1/4 | 1.06 | .72 | 1.28 | 1.50 | 1.72 |
| 16TTM12[] | 1 | 3/4 | 3.75 | 1 1/2 | 1 1/4 | 1.31 | .72 | 1.31 | 1.66 | 1.88 |
| 16TTM16[] | 1 | 1 | 3.75 | 1 1/2 | 1 1/4 | 1.31 | .88 | 1.31 | 1.84 | 1.88 |



Metric fitting shown



Male Branch Tee: TTM/ME

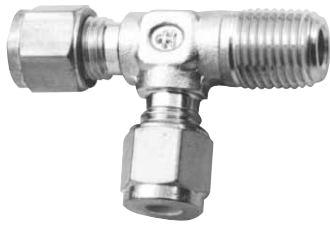
connects metric tube to female NPT threads

| Part Number* | T P | | Dimensions — mm | | | | | | | |
|--------------|-----------|----------------|-----------------|------------|------|------|------|------|------|------|
| | Tube O.D. | Male Pipe Thd. | A | B Hex Flat | C | D | E | G | H | M |
| 3TTM2[]ME | 3 | 1/8 | 49.4 | 11.1 | 11.1 | 14.3 | 2.2 | 16.8 | 18.3 | 24.7 |
| 4TTM2[]ME | 4 | 1/8 | 50.7 | 12.7 | 11.1 | 15.1 | 2.3 | 17.5 | 19.1 | 25.4 |
| 4TTM4[]ME | 4 | 1/4 | 50.7 | 12.7 | 12.7 | 15.1 | 2.3 | 17.5 | 21.3 | 25.4 |
| 6TTM2[]ME | 6 | 1/8 | 53.3 | 14.3 | 11.1 | 16.3 | 3.8 | 18.3 | 19.8 | 26.7 |
| 6TTM4[]ME | 6 | 1/4 | 56.3 | 14.3 | 12.7 | 16.3 | 3.8 | 19.8 | 26.2 | 28.2 |
| 6TTM6[]ME | 6 | 3/8 | 61.4 | 14.3 | 17.5 | 16.3 | 3.8 | 22.4 | 28.7 | 30.7 |
| 8TTM2[]ME | 8 | 1/8 | 57.2 | 15.9 | 12.7 | 16.7 | 4.7 | 20.6 | 20.6 | 28.6 |
| 8TTM4[]ME | 8 | 1/4 | 57.2 | 15.9 | 12.7 | 16.7 | 5.9 | 20.6 | 25.4 | 28.6 |
| 8TTM6[]ME | 8 | 3/8 | 62.2 | 15.9 | 17.5 | 16.7 | 5.9 | 23.1 | 28.7 | 31.1 |
| 8TTM8[]ME | 8 | 1/2 | 68.3 | 15.9 | 20.7 | 16.7 | 5.9 | 26.2 | 33.3 | 34.2 |
| 10TTM2[]ME | 10 | 1/8 | 65.2 | 19.1 | 17.5 | 17.5 | 4.7 | 24.6 | 25.4 | 32.6 |
| 10TTM4[]ME | 10 | 1/4 | 65.2 | 19.1 | 12.7 | 17.5 | 7.5 | 24.6 | 25.4 | 32.6 |
| 10TTM6[]ME | 10 | 3/8 | 65.2 | 19.1 | 17.5 | 17.5 | 8.0 | 24.6 | 28.7 | 32.6 |
| 10TTM8[]ME | 10 | 1/2 | 68.3 | 19.1 | 20.7 | 17.5 | 8.0 | 26.2 | 33.3 | 34.1 |
| 12TTM4[]ME | 12 | 1/4 | 73.2 | 22.2 | 17.5 | 24.6 | 7.5 | 24.6 | 28.7 | 36.6 |
| 12TTM6[]ME | 12 | 3/8 | 73.2 | 22.2 | 17.5 | 24.6 | 10.0 | 24.6 | 28.7 | 36.6 |
| 12TTM8[]ME | 12 | 1/2 | 76.2 | 22.2 | 20.7 | 24.6 | 10.0 | 26.2 | 33.3 | 38.1 |

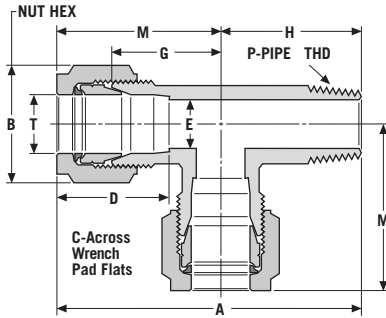
* [] see page 9 for material specifications.

Male Run Tee: TMT

connects **fractional** tube to female NPT thread



Metric fitting shown



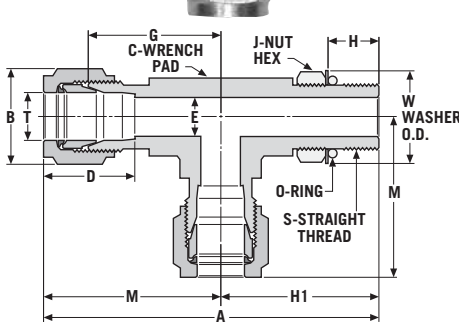
Male Run Tee: TMT/ME

connects **metric** tube to female NPT threads

| Part Number* | T | | Dimensions — mm | | | | | | | |
|--------------|-----------|-----------|-----------------|------------|------|------|------|------|------|------|
| | Tube O.D. | Pipe Thd. | A | B Hex Flat | | C | D | E | G | H |
| 3TMT2[]ME | 3 | 1/8 | 43.0 | 11.1 | 11.1 | 14.3 | 2.2 | 16.8 | 18.3 | 24.7 |
| 6TMT2[]ME | 6 | 1/8 | 46.4 | 14.3 | 11.1 | 16.3 | 3.8 | 18.2 | 17.8 | 26.6 |
| 6TMT4[]ME | 6 | 1/4 | 54.1 | 14.3 | 12.7 | 16.3 | 3.8 | 19.8 | 25.9 | 28.2 |
| 6TMT6[]ME | 6 | 3/8 | 59.4 | 14.3 | 17.5 | 16.3 | 3.8 | 22.4 | 28.7 | 30.7 |
| 6TMT8[]ME | 6 | 1/2 | 67.0 | 14.3 | 20.7 | 16.3 | 3.8 | 25.4 | 33.3 | 33.8 |
| 8TMT2[]ME | 8 | 1/8 | 49.3 | 15.9 | 12.7 | 16.7 | 4.7 | 20.6 | 20.6 | 28.6 |
| 8TMT4[]ME | 8 | 1/4 | 58.0 | 15.9 | 17.5 | 16.7 | 5.9 | 21.6 | 25.4 | 32.6 |
| 10TMT2[]ME | 10 | 1/8 | 58.0 | 19.1 | 17.5 | 17.5 | 4.7 | 24.6 | 25.4 | 32.6 |
| 10TMT4[]ME | 10 | 1/4 | 61.1 | 19.1 | 17.5 | 17.5 | 7.5 | 24.6 | 25.4 | 32.6 |
| 10TMT6[]ME | 10 | 3/8 | 61.3 | 19.1 | 17.5 | 17.5 | 8.0 | 24.6 | 28.7 | 32.6 |
| 12TMT4[]ME | 12 | 1/4 | 61.9 | 22.2 | 17.5 | 24.6 | 7.5 | 24.6 | 25.4 | 36.5 |
| 12TMT8[]ME | 12 | 1/2 | 71.5 | 22.2 | 19.8 | 24.6 | 10.0 | 26.2 | 33.3 | 38.2 |

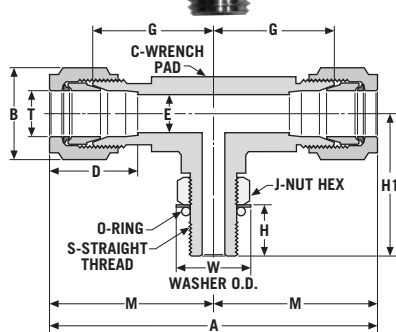
Tee, SAE Run, Positionable: TST

connects **fractional** tube to SAE straight thread boss



Tee, SAE Branch, Positionable: TTS

connects **fractional** tube to SAE straight thread boss



| Part Number* | T | | Dimensions — inches | | | | | | | | J Hex Flat |
|--------------|-----------|-----------|---------------------|-------|------|------|-----|------|-----|------|------------|
| | Tube O.D. | S | A | B | C | D | E | G | H | H1 | |
| 4TST4[] | 1/4 | 7/16-20 | 2.13 | 9/16 | .50 | .64 | .19 | .78 | .39 | 1.03 | 9/16 |
| 6TST6[] | 3/8 | 9/16-18 | 2.63 | 11/16 | .81 | .72 | .28 | 1.03 | .44 | 1.25 | 11/16 |
| 8TST8[] | 1/2 | 3/4-16 | 3.05 | 7/8 | 1 | .97 | .42 | 1.13 | .50 | 1.45 | 7/8 |
| 12TST12[] | 3/4 | 1 1/16-12 | 3.63 | 1 1/8 | 1.25 | 1 | .66 | 1.25 | .66 | 1.94 | 1 1/4 |
| 16TST16[] | 1 | 1 5/16-12 | 3.92 | 1 7/8 | 1.25 | 1.31 | .88 | 1.31 | .66 | 2.05 | 1 1/2 |

To specify O-ring material for SAE fittings, see page 10.

| Part Number* | T | | Dimensions — inches | | | | | | | | J Hex Flat |
|--------------|-----------|-----------|---------------------|-------|------|------|-----|------|-----|------|------------|
| | Tube O.D. | S | A | B | C | D | E | G | H | H1 | |
| 4TTS4[] | 1/4 | 7/16-20 | 2.22 | 9/16 | .50 | .64 | .19 | .78 | .39 | 1.03 | 9/16 |
| 6TTS6[] | 3/8 | 9/16-18 | 2.75 | 11/16 | .81 | .72 | .28 | 1.03 | .44 | 1.25 | 11/16 |
| 8TTS8[] | 1/2 | 3/4-16 | 3.19 | 7/8 | 1 | .97 | .42 | 1.13 | .50 | 1.45 | 7/8 |
| 12TTS12[] | 3/4 | 1 1/16-12 | 3.38 | 1 1/8 | 1.25 | 1 | .66 | 1.25 | .66 | 1.94 | 1 1/4 |
| 16TTS16[] | 1 | 1 5/16-12 | 3.75 | 1 7/8 | 1.25 | 1.31 | .88 | 1.31 | .66 | 2.05 | 1 1/2 |

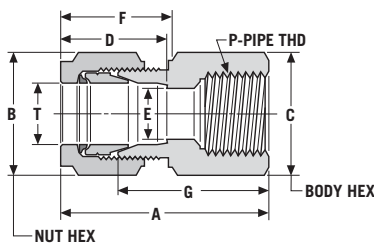
* [] see page 9 for material specifications.

Female Connector: CF

connects fractional tube to male NPT threads



Metric fitting shown



| Part Number* | T | | P | | Dimensions — inches | | | | | |
|--------------|-----------|-----------------|------|-------|---------------------|------|------|------|------|--|
| | Tube O.D. | Female NPT Size | A | B | C | D | E | F | G | |
| 1CF1[] | 1/16 | 1/16 | 1 | 5/16 | 7/16 | .41 | .05 | .48 | .78 | |
| 1CF2[] | 1/16 | 1/8 | 1.03 | 5/16 | 9/16 | .41 | .05 | .48 | .81 | |
| 2CF2[] | 1/8 | 1/8 | 1.19 | 7/16 | 9/16 | .56 | .09 | .67 | .88 | |
| 2CF4[] | 1/8 | 1/4 | 1.38 | 7/16 | 3/4 | .56 | .09 | .67 | 1.06 | |
| 3CF2[] | 3/16 | 1/8 | 1.22 | 1/2 | 9/16 | .59 | .13 | .70 | .91 | |
| 3CF4[] | 3/16 | 1/4 | 1.41 | 1/2 | 3/4 | .59 | .13 | .70 | 1.09 | |
| 4CF2[] | 1/4 | 1/8 | 1.25 | 9/16 | 9/16 | .69 | .19 | .77 | .94 | |
| 4CF4[] | 1/4 | 1/4 | 1.44 | 9/16 | 3/4 | .69 | .19 | .77 | 1.13 | |
| 4CF6[] | 1/4 | 3/8 | 1.50 | 9/16 | 7/8 | .69 | .19 | .77 | 1.19 | |
| 4CF8[] | 1/4 | 1/2 | 1.70 | 9/16 | 1 1/16 | .69 | .19 | .77 | 1.38 | |
| 6CF2[] | 3/8 | 1/8 | 1.34 | 11/16 | 5/8 | .72 | .28 | .83 | 1 | |
| 6CF4[] | 3/8 | 1/4 | 1.53 | 11/16 | 3/4 | .72 | .28 | .83 | 1.19 | |
| 6CF6[] | 3/8 | 3/8 | 1.59 | 11/16 | 7/8 | .72 | .28 | .83 | 1.25 | |
| 6CF8[] | 3/8 | 1/2 | 1.78 | 11/16 | 1 1/16 | .72 | .28 | .83 | 1.44 | |
| 6CF12[] | 3/8 | 3/4 | 1.92 | 11/16 | 1 1/4 | .72 | .28 | .83 | 1.56 | |
| 8CF4[] | 1/2 | 1/4 | 1.72 | 7/8 | 13/16 | .97 | .42 | .92 | 1.25 | |
| 8CF6[] | 1/2 | 3/8 | 1.72 | 7/8 | 7/8 | .97 | .42 | .92 | 1.25 | |
| 8CF8[] | 1/2 | 1/2 | 1.91 | 7/8 | 1 1/16 | .97 | .42 | .92 | 1.44 | |
| 8CF12[] | 1/2 | 3/4 | 2.06 | 7/8 | 1 1/4 | .97 | .42 | .92 | 1.59 | |
| 8CF16[] | 1/2 | 1 | 2.50 | 7/8 | 1 5/8 | .97 | .42 | .92 | 1.94 | |
| 10CF6[] | 5/8 | 3/8 | 1.69 | 1 | 15/16 | 1 | .50 | .92 | 1.25 | |
| 10CF8[] | 5/8 | 1/2 | 1.88 | 1 | 1 1/16 | 1 | .50 | .92 | 1.44 | |
| 12CF8[] | 3/4 | 1/2 | 1.94 | 1 1/8 | 1 1/16 | 1 | .66 | .97 | 1.25 | |
| 12CF12[] | 3/4 | 3/4 | 2 | 1 1/8 | 1 1/4 | 1 | .66 | .97 | 1.56 | |
| 14CF12[] | 7/8 | 3/4 | 2 | 1 1/4 | 1 1/4 | 1.06 | .72 | .97 | 1.56 | |
| 16CF12[] | 1 | 3/4 | 2.19 | 1 1/2 | 1 3/8 | 1.31 | .88 | 1.08 | 1.63 | |
| 16CF16[] | 1 | 1 | 2.53 | 1 1/2 | 1 5/8 | 1.31 | .88 | 1.08 | 1.97 | |
| 20CF20[] | 1 1/4 | 1 1/4 | 2.98 | 1 7/8 | 2 1/8 | 1.62 | 1.09 | 1.53 | 1 | |
| 24CF24[] | 1 1/2 | 1 1/2 | 3.28 | 2 1/4 | 2 3/8 | 1.97 | 1.34 | 1.78 | 1.09 | |
| 32CF32[] | 2 | 2 | 4 | 3 | 2 7/8 | 2.66 | 1.81 | 2.47 | 1.12 | |

Female Connector: CF/ME

connects metric tube to male NPT threads

| Part Number* | T | | P | | Dimensions—mm | | | | | |
|--------------|-----------|-----------------|------|------|---------------|------|------|------|------|--|
| | Tube O.D. | Female NPT Size | A | B | C | D | E | F | G | |
| 3CF2[]ME | 3 | 1/8 | 32.1 | 11.1 | 14.5 | 14.3 | 2.2 | 17.1 | 24.1 | |
| 3CF4[]ME | 3 | 1/4 | 34.9 | 11.1 | 19.1 | 14.3 | 2.2 | 17.1 | 27.0 | |
| 6CF2[]ME | 6 | 1/8 | 31.9 | 14.3 | 14.5 | 16.3 | 3.8 | 19.5 | 23.9 | |
| 6CF4[]ME | 6 | 1/4 | 36.4 | 14.3 | 19.1 | 16.3 | 3.8 | 19.5 | 28.5 | |
| 6CF6[]ME | 6 | 3/8 | 39.6 | 14.3 | 22.2 | 16.3 | 3.8 | 19.5 | 31.2 | |
| 6CF8[]ME | 6 | 1/2 | 43.3 | 14.3 | 27.0 | 16.3 | 3.8 | 19.5 | 35.0 | |
| 8CF2[]ME | 8 | 1/8 | 32.6 | 15.9 | 14.3 | 16.7 | 5.8 | 19.1 | 24.6 | |
| 8CF4[]ME | 8 | 1/4 | 37.4 | 15.9 | 19.1 | 16.7 | 5.8 | 19.1 | 29.4 | |
| 8CF6[]ME | 8 | 3/8 | 38.2 | 15.9 | 22.2 | 16.7 | 5.8 | 19.1 | 30.2 | |
| 8CF8[]ME | 8 | 1/2 | 44.5 | 15.9 | 27.0 | 16.7 | 5.8 | 19.1 | 36.5 | |
| 10CF2[]ME | 10 | 1/8 | 33.4 | 19.1 | 17.5 | 17.5 | 7.9 | 19.8 | 25.4 | |
| 10CF4[]ME | 10 | 1/4 | 38.1 | 19.1 | 19.1 | 17.5 | 7.9 | 19.8 | 30.2 | |
| 10CF6[]ME | 10 | 3/8 | 39.7 | 19.1 | 22.2 | 17.5 | 7.9 | 19.8 | 31.8 | |
| 10CF8[]ME | 10 | 1/2 | 44.5 | 19.1 | 27.0 | 17.5 | 7.9 | 19.8 | 36.5 | |
| 12CF4[]ME | 12 | 1/4 | 43.7 | 22.2 | 20.6 | 24.6 | 9.9 | 23.4 | 31.8 | |
| 12CF6[]ME | 12 | 3/8 | 43.7 | 22.2 | 20.6 | 24.6 | 9.9 | 23.4 | 31.8 | |
| 12CF8[]ME | 12 | 1/2 | 48.5 | 22.2 | 27.0 | 24.6 | 9.9 | 23.4 | 36.5 | |
| 12CF12[]ME | 12 | 3/4 | 52.4 | 22.2 | 31.8 | 24.6 | 9.9 | 23.4 | 40.5 | |
| 14CF4[]ME | 14 | 1/4 | 41.1 | 23.8 | 23.8 | 22.2 | 11.9 | 21.0 | 31.2 | |
| 14CF8[]ME | 14 | 1/2 | 45.9 | 23.8 | 27.0 | 22.2 | 11.9 | 21.0 | 36.5 | |
| 15CF8[]ME | 15 | 1/2 | 46.3 | 23.8 | 27.0 | 22.2 | 12.7 | 21.8 | 36.0 | |
| 16CF8[]ME | 16 | 1/2 | 47.7 | 25.4 | 27.0 | 25.0 | 12.7 | 23.4 | 36.5 | |
| 16CF12[]ME | 16 | 3/4 | 53.0 | 25.4 | 32.0 | 25.0 | 12.7 | 23.4 | 41.0 | |
| 18CF8[]ME | 18 | 1/2 | 48.1 | 28.6 | 27.0 | 25.4 | 15.8 | 24.6 | 38.1 | |
| 18CF12[]ME | 18 | 3/4 | 49.8 | 28.6 | 31.8 | 25.4 | 15.8 | 24.6 | 39.9 | |
| 20CF8[]ME | 20 | 1/2 | 52.5 | 31.8 | 30.2 | 31.0 | 16.7 | 27.0 | 38.6 | |
| 20CF12[]ME | 20 | 3/4 | 53.5 | 31.8 | 31.8 | 31.0 | 16.7 | 27.0 | 39.6 | |
| 22CF8[]ME | 22 | 1/2 | 49.3 | 31.8 | 33.3 | 27.0 | 17.8 | 24.6 | 38.1 | |
| 22CF12[]ME | 22 | 3/4 | 53.8 | 31.8 | 33.3 | 27.0 | 17.8 | 24.6 | 42.7 | |
| 22CF16[]ME | 22 | 1 | 61.0 | 31.8 | 41.5 | 27.0 | 17.8 | 24.6 | 50.0 | |
| 25CF8[]ME | 25 | 1/2 | 55.8 | 38.1 | 34.9 | 33.3 | 11.9 | 27.4 | 41.4 | |
| 25CF12[]ME | 25 | 3/4 | 56.0 | 38.1 | 35.0 | 33.3 | 21.7 | 27.4 | 41.0 | |
| 25CF16[]ME | 25 | 1 | 64.4 | 38.1 | 41.3 | 33.3 | 21.7 | 27.4 | 50.0 | |

* [] see page 9 for material specifications.

Female Connector: CF/EZ

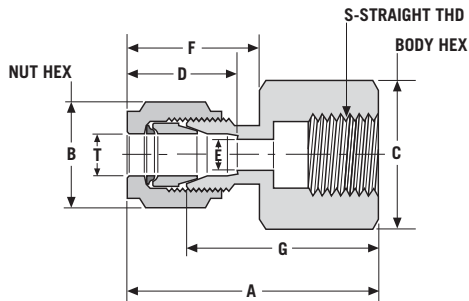
connects **fractional** tube with RG parallel threads

| Part Number* | Dimensions – inches | | | | | | | | |
|--------------|---------------------|-------------|------|------------|------------|-----|-----|-----|------|
| | T Tube O.D. | S Thd. Size | A | B Hex Flat | C Hex Flat | D | E | F | G |
| 2CF2[]EZ | 1/8 | 1/8 | 1.33 | 7/16 | 5/8 | .56 | .09 | .67 | 1.02 |
| 2CF4[]EZ | 1/8 | 1/4 | 1.45 | 7/16 | 3/4 | .56 | .09 | .67 | 1.14 |
| 4CF[]EZ | 1/4 | 1/4 | 1.50 | 9/16 | 3/4 | .64 | .19 | .77 | 1.17 |
| 4CF8[]EZ | 1/4 | 1/2 | 1.89 | 9/16 | 1 1/16 | .64 | .19 | .77 | 1.56 |
| 6CF4[]EZ | 3/8 | 1/4 | 1.55 | 11/16 | 3/4 | .72 | .28 | .83 | 1.20 |
| 6CF8[]EZ | 3/8 | 1/2 | 1.78 | 11/16 | 1 1/16 | .72 | .28 | .83 | 1.44 |
| 8CF4[]EZ | 1/2 | 1/4 | 1.80 | 7/8 | 13/16 | .97 | .22 | .92 | 1.33 |
| 8CF8[]EZ | 1/2 | 1/2 | 2.05 | 7/8 | 1 1/16 | .97 | .28 | .92 | 1.58 |

RG female thread ends require a gasket inserted into the flat bottom of the thread. The male end, when assembled, exerts pressure on the gasket, creating a seal.



Fractional fitting shown



Female Connector: CF/MZ

connects **metric** tube with RG parallel threads

| Part Number* | Dimensions – mm | | | | | | | | |
|--------------|-----------------|-------------|------|------------|------------|------|-----|------|------|
| | T Tube O.D. | S Thd. Size | A | B Hex Flat | C Hex Flat | D | E | F | G |
| 3CF4[]MZ | 3 | 1/4 | 38.1 | 11.1 | 19.0 | 14.3 | 2.4 | 17.1 | 30.1 |
| 6CF4[]MZ | 6 | 1/4 | 39.0 | 14.3 | 22.2 | 16.3 | 4.0 | 19.5 | 30.7 |
| 6CF8[]MZ | 6 | 1/2 | 45.3 | 14.3 | 27.0 | 16.3 | 4.0 | 19.5 | 40.0 |
| 8CF4[]MZ | 8 | 1/4 | 35.6 | 15.9 | 19.1 | 16.7 | 5.9 | 19.1 | 27.6 |
| 8CF8[]MZ | 8 | 1/2 | 44.8 | 15.9 | 27.0 | 16.7 | 5.9 | 19.1 | 36.8 |
| 10CF4[]MZ | 10 | 1/4 | 36.4 | 19.1 | 19.1 | 17.5 | 5.5 | 19.8 | 28.4 |
| 10CF8[]MZ | 10 | 1/2 | 44.9 | 19.1 | 27.0 | 17.5 | 7.0 | 19.8 | 36.9 |
| 12CF4[]MZ | 12 | 1/4 | 46.4 | 22.2 | 22.2 | 24.6 | 5.5 | 23.4 | 34.4 |
| 12CF8[]MZ | 12 | 1/2 | 52.3 | 22.2 | 27.0 | 24.6 | 7.0 | 23.4 | 40.4 |
| 14CF8[]MZ | 14 | 1/2 | 49.2 | 23.8 | 27.0 | 22.2 | 7.0 | 21.0 | 39.8 |
| 16CF8[]MZ | 16 | 1/2 | 55.5 | 25.4 | 27.0 | 25.0 | 7.0 | 23.4 | 44.4 |
| 18CF8[]MZ | 18 | 1/2 | 56.2 | 28.6 | 30.2 | 25.4 | 7.0 | 24.6 | 46.3 |
| 20CF8[]MZ | 20 | 1/2 | 59.3 | 31.8 | 30.2 | 31.0 | 7.0 | 27.0 | 45.5 |
| 22CF8[]MZ | 22 | 1/2 | 56.6 | 31.8 | 30.2 | 27.0 | 7.0 | 24.6 | 45.4 |
| 25CF8[]MZ | 25 | 1/2 | 64.9 | 38.1 | 34.9 | 33.3 | 7.0 | 27.4 | 50.5 |

* [] see page 9 for material specifications.

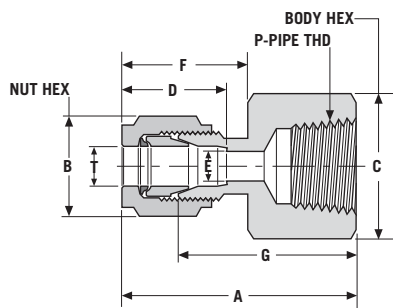
Female Connector: CF/EC

connects **fractional** tube with RT tapered threads



Fractional fitting shown

| Part Number* | T Tube O.D. | P Pipe Thd. | Dimensions—Inches | | | | | | |
|--------------|-------------------|-------------------|-------------------|---------------|---------------|-----|-----|-----|------|
| | | | A | B Hex Flat | C Hex Flat | D | E | F | G |
| 4CF2[]EC | 1/4 | 1/8 | 1.25 | 9/16 | 9/16 | .64 | .19 | .77 | .94 |
| 4CF4[]EC | 1/4 | 1/4 | 1.44 | 9/16 | 3/4 | .64 | .19 | .77 | 1.13 |
| 4CF6[]EC | 1/4 | 3/8 | 1.50 | 9/16 | 7/8 | .64 | .19 | .77 | 1.19 |
| 4CF8[]EC | 1/4 | 1/2 | 1.70 | 9/16 | 1 1/16 | .64 | .19 | .77 | 1.38 |
| 6CF4[]EC | 3/8 | 1/4 | 1.53 | 11/16 | 3/4 | .72 | .28 | .83 | 1.19 |
| 6CF6[]EC | 3/8 | 3/8 | 1.59 | 11/16 | 7/8 | .72 | .28 | .83 | 1.25 |
| 6CF8[]EC | 3/8 | 1/2 | 1.78 | 11/16 | 1 1/16 | .72 | .28 | .83 | 1.44 |
| 8CF4[]EC | 1/2 | 1/4 | 1.72 | 7/8 | 13/16 | .97 | .42 | .92 | 1.25 |
| 8CF6[]EC | 1/2 | 3/8 | 1.72 | 7/8 | 7/8 | .97 | .42 | .92 | 1.25 |
| 8CF8[]EC | 1/2 | 1/2 | 1.91 | 7/8 | 1 1/16 | .97 | .42 | .92 | 1.44 |
| 10CF8[]EC | 5/8 | 1/2 | 1.88 | 1 | 1 1/16 | 1 | .50 | .92 | 1.44 |



Female Connector: CF/MC

connects **metric** tube with RT tapered threads

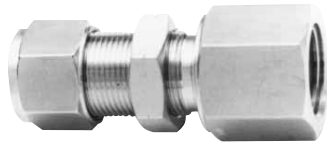
| Part Number* | T Tube O.D. | P Pipe Thd. | Dimensions—mm | | | | | | |
|--------------|-------------------|-------------------|---------------|---------------|---------------|------|------|------|------|
| | | | A | B Hex Flat | C Hex Flat | D | E | F | G |
| 3CF2[]MC | 3 | 1/8 | 32.1 | 11.1 | 14.5 | 14.3 | 2.2 | 17.1 | 24.1 |
| 3CF4[]MC | 3 | 1/4 | 34.9 | 11.1 | 19.1 | 14.3 | 2.2 | 17.1 | 27.0 |
| 6CF2[]MC | 6 | 1/8 | 31.9 | 14.3 | 14.5 | 16.3 | 3.8 | 19.5 | 23.9 |
| 6CF4[]MC | 6 | 1/4 | 36.4 | 14.3 | 19.1 | 16.3 | 3.8 | 19.5 | 28.5 |
| 6CF6[]MC | 6 | 3/8 | 39.6 | 14.3 | 22.2 | 16.3 | 3.8 | 19.5 | 31.2 |
| 6CF8[]MC | 6 | 1/2 | 43.3 | 14.3 | 27.0 | 16.3 | 3.8 | 19.5 | 35.0 |
| 8CF2[]MC | 8 | 1/8 | 32.6 | 15.9 | 14.3 | 16.7 | 5.8 | 19.1 | 24.6 |
| 8CF4[]MC | 8 | 1/4 | 37.4 | 15.9 | 19.1 | 16.7 | 5.8 | 19.1 | 29.4 |
| 8CF6[]MC | 8 | 3/8 | 38.2 | 15.9 | 22.2 | 16.7 | 5.8 | 19.1 | 30.2 |
| 8CF8[]MC | 8 | 1/2 | 44.5 | 15.9 | 27.0 | 16.7 | 5.8 | 19.1 | 36.5 |
| 10CF2[]MC | 10 | 1/8 | 33.4 | 19.1 | 17.5 | 17.5 | 7.9 | 19.8 | 25.4 |
| 10CF4[]MC | 10 | 1/4 | 38.1 | 19.1 | 19.1 | 17.5 | 7.9 | 19.8 | 30.2 |
| 10CF6[]MC | 10 | 3/8 | 39.7 | 19.1 | 22.2 | 17.5 | 7.9 | 19.8 | 31.8 |
| 10CF8[]MC | 10 | 1/2 | 44.5 | 19.1 | 27.0 | 17.5 | 7.9 | 19.8 | 36.5 |
| 12CF4[]MC | 12 | 1/4 | 43.7 | 22.2 | 20.6 | 24.6 | 9.9 | 23.4 | 31.8 |
| 12CF6[]MC | 12 | 3/8 | 43.7 | 22.2 | 20.6 | 24.6 | 9.9 | 23.4 | 31.8 |
| 12CF8[]MC | 12 | 1/2 | 48.5 | 22.2 | 27.0 | 24.6 | 9.9 | 23.4 | 36.5 |
| 12CF12[]MC | 12 | 3/4 | 52.4 | 22.2 | 31.8 | 24.6 | 9.9 | 23.4 | 40.5 |
| 14CF4[]MC | 14 | 1/4 | 41.1 | 23.8 | 23.8 | 22.2 | 11.9 | 21.0 | 31.2 |
| 14CF8[]MC | 14 | 1/2 | 45.9 | 23.8 | 27.0 | 22.2 | 11.9 | 21.0 | 36.5 |
| 15CF8[]MC | 15 | 1/2 | 46.3 | 23.8 | 27.0 | 22.2 | 12.7 | 21.8 | 36.0 |
| 16CF8[]MC | 16 | 1/2 | 47.7 | 25.4 | 27.0 | 25.0 | 12.7 | 23.4 | 36.5 |
| 16CF12[]MC | 16 | 3/4 | 53.0 | 25.4 | 32.0 | 25.0 | 12.7 | 23.4 | 41.0 |
| 18CF8[]MC | 18 | 1/2 | 48.1 | 28.6 | 27.0 | 25.4 | 15.8 | 24.6 | 38.1 |
| 18CF12[]MC | 18 | 3/4 | 49.8 | 28.6 | 31.8 | 25.4 | 15.8 | 24.6 | 39.9 |
| 20CF8[]MC | 20 | 1/2 | 52.5 | 31.8 | 30.2 | 31.0 | 16.7 | 27.0 | 38.6 |
| 20CF12[]MC | 20 | 3/4 | 53.5 | 31.8 | 31.8 | 31.0 | 16.7 | 27.0 | 39.6 |
| 22CF8[]MC | 22 | 1/2 | 49.3 | 31.8 | 33.3 | 27.0 | 17.8 | 24.6 | 38.1 |
| 22CF12[]MC | 22 | 3/4 | 53.8 | 31.8 | 33.3 | 27.0 | 17.8 | 24.6 | 42.7 |
| 22CF16[]MC | 22 | 1 | 61.0 | 31.8 | 41.5 | 27.0 | 17.8 | 24.6 | 50.0 |
| 25CF8[]MC | 25 | 1/2 | 55.8 | 38.1 | 34.9 | 33.3 | 11.9 | 27.4 | 41.4 |
| 25CF12[]MC | 25 | 3/4 | 56.0 | 38.1 | 35.0 | 33.3 | 21.7 | 27.4 | 41.0 |
| 25CF16[]MC | 25 | 1 | 64.4 | 38.1 | 41.3 | 33.3 | 21.7 | 27.4 | 50.0 |

* [] see page 9 for material specifications.

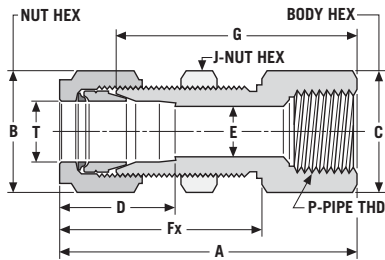
Bulkhead Connector, Female: BCF

connects **fractional** tube to male NPT thread

| Part Number* | T | P | Dimensions — inches | | | | | | | | Panel Hole Size | Max. Panel Thickness |
|--------------|-----------|---------------|---------------------|------------|------------|-----|-----|------|------|------------|-----------------|----------------------|
| | Tube O.D. | Male NPT Size | A | B Hex Flat | C Hex Flat | D | E | Fx | G | J Hex Flat | | |
| 2BCF2[] | 1/8 | 1/8 | 1.81 | 7/16 | 9/16 | .56 | .09 | 1.28 | 1.50 | 1/2 | .33 | .44 |
| 4BCF2[] | 1/4 | 1/8 | 1.89 | 9/16 | 5/8 | .64 | .19 | 1.36 | 1.56 | 5/8 | .45 | .47 |
| 4BCF4[] | 1/4 | 1/4 | 2.08 | 9/16 | 3/4 | .64 | .19 | 1.40 | 1.75 | 5/8 | .45 | .47 |
| 6BCF2[] | 3/8 | 1/8 | 2.22 | 11/16 | 3/4 | .72 | .28 | 1.50 | 1.88 | 3/4 | .58 | .53 |
| 6BCF4[] | 3/8 | 1/4 | 2.22 | 11/16 | 3/4 | .72 | .28 | 1.50 | 1.88 | 3/4 | .58 | .53 |
| 6BCF6[] | 3/8 | 3/8 | 2.28 | 11/16 | 7/8 | .72 | .28 | 1.50 | .94 | 3/4 | .58 | .53 |
| 8BCF4[] | 1/2 | 1/4 | 2.44 | 7/8 | 15/16 | .97 | .42 | 1.72 | 1.97 | 15/16 | .77 | .59 |
| 8BCF6[] | 1/2 | 3/8 | 2.50 | 7/8 | 15/16 | .97 | .42 | 1.72 | 2.03 | 15/16 | .77 | .59 |
| 8BCF8[] | 1/2 | 1/2 | 2.69 | 7/8 | 1 1/16 | .97 | .42 | 1.72 | 2.22 | 15/16 | .77 | .59 |
| 10BCF8[] | 5/8 | 1/2 | 2.69 | 1 | 1 1/16 | 1 | .50 | 1.72 | 2.25 | 1 1/16 | .89 | .56 |



Metric fitting shown



Bulkhead Connector, Female: BCF/ME

connects **metric** tube to male NPT threads

| Part Number* | T | P | Dimensions—mm | | | | | | | | Panel Hole Size | Max. Panel Thickness |
|--------------|-----------|---------------|---------------|------------|------------|------|------|------|------|------------|-----------------|----------------------|
| | Tube O.D. | Male NPT Size | A | B Hex Flat | C Hex Flat | D | E | Fx | G | J Hex Flat | | |
| 3BCF2[]ME | 3 | 1/8 | 46.0 | 11.1 | 14.5 | 14.3 | 2.5 | 32.5 | 38.0 | 12.7 | 8.3 | 12.0 |
| 6BCF2[]ME | 6 | 1/8 | 48.0 | 14.3 | 14.3 | 16.3 | 3.9 | 34.6 | 39.6 | 15.9 | 11.5 | 13.0 |
| 6BCF4[]ME | 6 | 1/4 | 53.8 | 14.3 | 19.1 | 16.3 | 3.9 | 34.6 | 45.5 | 15.9 | 11.5 | 13.0 |
| 8BCF4[]ME | 8 | 1/4 | 55.0 | 15.9 | 17.5 | 16.7 | 6.0 | 36.5 | 47.0 | 17.5 | 13.1 | 14.0 |
| 10BCF4[]ME | 10 | 1/4 | 55.6 | 19.1 | 19.1 | 17.5 | 7.9 | 37.3 | 47.6 | 19.1 | 16.5 | 14.0 |
| 12BCF6[]ME | 12 | 3/8 | 63.0 | 22.2 | 24.0 | 24.6 | 10.0 | 44.0 | 52.0 | 23.8 | 19.5 | 16.0 |
| 12BCF8[]ME | 12 | 1/2 | 68.3 | 22.2 | 26.9 | 24.6 | 9.9 | 43.7 | 56.4 | 23.8 | 19.5 | 16.0 |
| 14BCF8[]ME | 14 | 1/2 | 68.0 | 23.8 | 24.0 | 22.2 | 12.0 | 41.1 | 56.0 | 23.8 | 19.5 | 16.0 |
| 16BCF8[]ME | 16 | 1/2 | 68.3 | 25.4 | 26.9 | 25.0 | 12.6 | 43.7 | 57.2 | 27.0 | 22.5 | 14.0 |
| 18BCF8[]ME | 18 | 1/2 | 72.0 | 28.6 | 30.0 | 25.4 | 12.6 | 48.0 | 61.0 | 30.2 | 26.0 | 17.0 |
| 22BCF8[]ME | 22 | 1/2 | 77.0 | 31.8 | 33.5 | 27.0 | 12.6 | 53.0 | 65.0 | 33.3 | 29.5 | 24.0 |
| 25BCF8[]ME | 25 | 1/2 | 84.0 | 38.1 | 40.0 | 33.3 | 12.6 | 60.0 | 70.0 | 39.7 | 33.8 | 24.0 |

* [] see page 9 for material specifications.

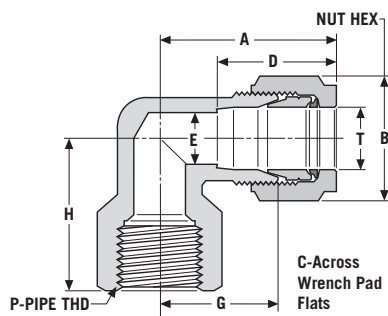
Female Elbow: LF

connects fractional tube to male NPT threads



Metric fitting shown

| Part Number* | T P | | Dimensions — inches | | | | | | | |
|--------------|-----------|-----------|---------------------|-------|---------|------|-----|------|------|---|
| | Tube O.D. | Pipe Size | A | B | | C | D | E | G | H |
| 1LF1[] | 1/16 | 1/16 | .78 | 5/16 | 7/16 | .41 | .05 | .56 | .75 | |
| 1LF2[] | 1/16 | 1/8 | .84 | 5/16 | 1/2 | .41 | .05 | .63 | .75 | |
| 2LF2[] | 1/8 | 1/8 | 1 | 7/16 | 1/2 | .56 | .09 | .69 | .75 | |
| 2LF4[] | 1/8 | 1/4 | 1.13 | 7/16 | 11/16 | .56 | .09 | .81 | .84 | |
| 3LF2[] | 3/16 | 1/8 | 1.03 | 1/2 | 1/2 | .59 | .13 | .72 | .75 | |
| 4LF2[] | 1/4 | 1/8 | 1.08 | 9/16 | 1/2 | .64 | .19 | .75 | .81 | |
| 4LF4[] | 1/4 | 1/4 | 1.20 | 9/16 | 11/16 | .64 | .19 | .88 | .84 | |
| 4LF6[] | 1/4 | 3/8 | 1.33 | 9/16 | 13/16 | .64 | .19 | 1 | .84 | |
| 4LF8[] | 1/4 | 1/2 | 1.45 | 9/16 | 1 | .64 | .19 | 1.13 | 1.13 | |
| 6LF2[] | 3/8 | 1/8 | 1.81 | 11/16 | 1/2 | .72 | .28 | .84 | .69 | |
| 6LF4[] | 3/8 | 1/4 | 1.28 | 11/16 | 11/16 | .72 | .28 | .94 | .84 | |
| 6LF6[] | 3/8 | 3/8 | 1.38 | 11/16 | 13/16 | .72 | .28 | 1.03 | .84 | |
| 6LF8[] | 3/8 | 1/2 | 1.48 | 11/16 | 1 | .72 | .28 | 1.13 | 1.13 | |
| 8LF4[] | 1/2 | 1/4 | 1.44 | 7/8 | 11/16 | .97 | .42 | .97 | .91 | |
| 8LF6[] | 1/2 | 3/8 | 1.50 | 7/8 | 13/16 | .97 | .42 | 1.03 | .91 | |
| 8LF8[] | 1/2 | 1/2 | 1.59 | 7/8 | 1 | .97 | .42 | 1.13 | 1.13 | |
| 8LF12[] | 1/2 | 3/4 | 1.66 | 7/8 | 1 1/4 | .97 | .42 | 1.19 | 1.25 | |
| 10LF6[] | 5/8 | 3/8 | 1.47 | 1 | 13/16 | 1 | .50 | 1.03 | .91 | |
| 10LF8[] | 5/8 | 1/2 | 1.56 | 1 | 1 | 1 | .50 | 1.13 | 1.13 | |
| 12LF8[] | 3/4 | 1/2 | 1.59 | 1 1/8 | 1 | 1 | .66 | 1.16 | 1.13 | |
| 12LF12[] | 3/4 | 3/4 | 1.34 | 1 1/8 | 1 1/4 | 1 | .66 | 1.25 | 1.25 | |
| 14LF12[] | 7/8 | 3/4 | 1.69 | 1 1/4 | 1 1/4 | 1.06 | .72 | 1.25 | 1.25 | |
| 16LF12[] | 1 | 3/4 | 1.88 | 1 1/2 | 1 1/4 | 1.31 | .88 | 1.31 | 1.25 | |
| 16LF16[] | 1 | 1 | 2.06 | 1 1/2 | 1 11/16 | 1.31 | .88 | 1.50 | 1.50 | |



Female Elbow: LF/ME, LF/MC

connects metric tube to male NPT or RT tapered threads

| Part Number* | T P | | Dimensions—mm | | | | | | | | | |
|--------------|-------------|------------|---------------|-----------|------|------|------|------|------|------|---|---|
| | NPT Threads | RT Threads | Tube O.D. | Pipe Size | A | B | | C | D | E | G | H |
| 3LF2[]ME | 3LF2[]MC | 3 | 1/8 | 25.5 | 11.1 | 12.6 | 14.3 | 2.2 | 17.5 | 17.1 | | |
| 3LF4[]ME | 3LF4[]MC | 3 | 1/4 | 25.0 | 11.1 | 12.6 | 14.3 | 2.3 | 17.5 | 21.5 | | |
| 4LF4[]ME | 4LF4[]MC | 4 | 1/4 | 30.2 | 12.7 | 17.3 | 15.1 | 2.3 | 22.4 | 21.3 | | |
| 6LF2[]ME | 6LF2[]MC | 6 | 1/8 | 27.4 | 14.3 | 12.6 | 16.3 | 3.8 | 19.1 | 20.6 | | |
| 6LF4[]ME | 6LF4[]MC | 6 | 1/4 | 30.7 | 14.3 | 17.3 | 16.3 | 3.8 | 22.4 | 21.3 | | |
| 6LF6[]ME | 6LF6[]MC | 6 | 3/8 | 33.8 | 14.3 | 20.5 | 16.3 | 3.8 | 25.4 | 21.3 | | |
| 6LF8[]ME | 6LF8[]MC | 6 | 1/2 | 37.1 | 14.3 | 25.3 | 16.3 | 3.8 | 28.7 | 28.7 | | |
| 8LF2[]ME | 8LF2[]MC | 8 | 1/8 | 27.8 | 15.9 | 12.6 | 16.7 | 5.8 | 19.8 | 16.0 | | |
| 8LF4[]ME | 8LF4[]MC | 8 | 1/4 | 31.1 | 15.9 | 17.3 | 16.7 | 5.8 | 23.1 | 22.4 | | |
| 8LF6[]ME | 8LF6[]MC | 8 | 3/8 | 29.0 | 15.9 | 20.5 | 16.7 | 5.8 | 23.1 | 23.1 | | |
| 10LF2[]ME | 10LF2[]MC | 10 | 1/8 | 31.9 | 19.1 | 17.3 | 17.5 | 7.9 | 23.9 | 21.3 | | |
| 10LF4[]ME | 10LF4[]MC | 10 | 1/4 | 31.9 | 19.1 | 17.3 | 17.5 | 7.9 | 23.9 | 21.3 | | |
| 10LF6[]ME | 10LF6[]MC | 10 | 3/8 | 34.1 | 19.1 | 20.5 | 17.5 | 7.9 | 26.2 | 21.3 | | |
| 10LF8[]ME | 10LF8[]MC | 10 | 1/2 | 36.7 | 19.1 | 25.3 | 17.5 | 7.9 | 28.7 | 28.7 | | |
| 12LF4[]ME | 12LF4[]MC | 12 | 1/4 | 36.6 | 22.2 | 17.3 | 24.6 | 7.5 | 24.6 | 21.3 | | |
| 12LF6[]ME | 12LF6[]MC | 12 | 3/8 | 38.1 | 22.2 | 20.5 | 24.6 | 9.9 | 26.2 | 23.1 | | |
| 12LF8[]ME | 12LF8[]MC | 12 | 1/2 | 40.6 | 22.2 | 25.3 | 24.6 | 9.9 | 28.7 | 28.7 | | |
| 14LF8[]ME | 14LF8[]MC | 14 | 1/2 | 37.0 | 23.8 | 21.0 | 22.2 | 12.0 | 25.0 | 28.5 | | |
| 16LF8[]ME | 16LF8[]MC | 16 | 1/2 | 40.9 | 25.4 | 25.3 | 25.0 | 12.7 | 29.7 | 28.7 | | |
| 18LF8[]ME | 18LF8[]MC | 18 | 1/2 | 39.4 | 28.6 | 25.3 | 25.4 | 15.8 | 29.5 | 28.7 | | |
| 18LF12[]ME | 18LF12[]MC | 18 | 3/4 | 41.7 | 28.6 | 31.6 | 25.4 | 15.8 | 31.8 | 31.8 | | |
| 22LF8[]ME | 22LF8[]MC | 22 | 1/2 | 44.0 | 31.8 | 25.3 | 27.0 | 17.9 | 29.5 | 28.5 | | |
| 22LF12[]ME | 22LF12[]MC | 22 | 3/4 | 44.0 | 31.8 | 31.6 | 27.0 | 17.9 | 33.5 | 32.0 | | |
| 25LF12[]ME | 25LF12[]MC | 25 | 3/4 | 47.5 | 38.1 | 31.6 | 33.3 | 21.7 | 33.5 | 32.0 | | |
| 25LF16[]ME | 25LF16[]MC | 25 | 1 | 52.0 | 38.1 | 38.5 | 33.3 | 21.7 | 38.0 | 38.0 | | |

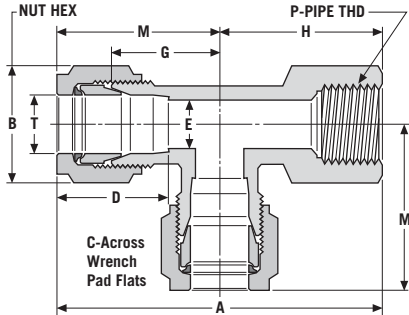
* [] see page 9 for material specifications.

Female Run Tee: TFT

connects fractional tube to male NPT threads



Fractional fitting shown



| Part Number* | T P | | Dimensions — inches | | | | | | | |
|--------------|-----------|-----------|---------------------|------------|---------|------|-----|------|------|------|
| | Tube O.D. | Pipe Size | A | B Hex Flat | C | D | E | G | H | M |
| 1TFT1[] | 1/16 | 1/16 | 1.53 | 5/16 | 7/16 | .41 | .05 | .56 | .75 | .78 |
| 2TFT2[] | 1/8 | 1/8 | 1.75 | 7/16 | 1/2 | .56 | .09 | .69 | .75 | 1 |
| 3TFT2[] | 3/16 | 1/8 | 1.81 | 1/2 | 1/2 | .59 | .13 | .75 | .75 | 1.06 |
| 4TFT2[] | 1/4 | 1/8 | 1.83 | 9/16 | 1/2 | .64 | .19 | .75 | .75 | 1.08 |
| 4TFT4[] | 1/4 | 1/4 | 2.11 | 9/16 | 11/16 | .64 | .19 | .94 | .84 | 1.27 |
| 6TFT4[] | 3/8 | 1/4 | 2.23 | 11/16 | 11/16 | .72 | .28 | .94 | .84 | 1.28 |
| 6TFT6[] | 3/8 | 3/8 | 2.30 | 11/16 | 13/16 | .72 | .28 | 1.03 | .91 | 1.39 |
| 8TFT4[] | 1/2 | 1/4 | 2.41 | 7/8 | 11/16 | .97 | .42 | .97 | .97 | 1.44 |
| 8TFT6[] | 1/2 | 3/8 | 2.53 | 7/8 | 13/16 | .97 | .42 | 1.03 | .91 | 1.50 |
| 8TFT8[] | 1/2 | 1/2 | 2.66 | 7/8 | 1 | .97 | .42 | 1.06 | 1.13 | 1.53 |
| 10TFT8[] | 5/8 | 1/2 | 2.69 | 1 | 1 | 1 | .50 | 1.13 | 1.13 | 1.56 |
| 12TFT8[] | 3/4 | 1/2 | 2.73 | 1 1/8 | 1 | 1 | .66 | 1.16 | 1.13 | 1.61 |
| 12TFT12[] | 3/4 | 3/4 | 2.94 | 1 1/8 | 1 1/4 | 1 | .66 | 1.25 | 1.25 | 1.69 |
| 14TFT12[] | 7/8 | 3/4 | 2.94 | 1 1/4 | 1 1/4 | 1.06 | .72 | 1.25 | 1.25 | 1.69 |
| 16TFT12[] | 1 | 3/4 | 3.13 | 1 1/2 | 1 1/4 | 1.31 | .88 | 1.94 | 1.25 | 1.88 |
| 16TFT16[] | 1 | 1 | 3.56 | 1 1/2 | 1 11/16 | 1.31 | .88 | 1.50 | 1.50 | 2.06 |

Female Run Tee: TFT/ME

connects metric tube to male NPT threads

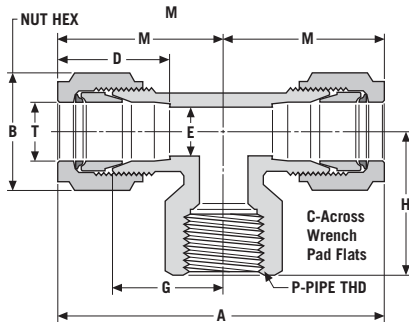
| Part Number* | T S | | Dimensions — mm | | | | | | | |
|--------------|-----------|-----------|-----------------|------------|------|------|-----|------|------|------|
| | Tube O.D. | Pipe Thd. | A | B Hex Flat | C | D | E | G | H | M |
| 3TTF2[]ME | 3 | 1/8 | 44.0 | 11.1 | 12.7 | 14.3 | 3.3 | 17.5 | 19.1 | 25.5 |
| 6TTF2[]ME | 6 | 1/8 | 46.5 | 14.3 | 12.7 | 16.3 | 3.8 | 19.1 | 19.1 | 27.4 |
| 6TTF4[]ME | 6 | 1/4 | 52.1 | 14.3 | 17.5 | 16.3 | 3.8 | 22.4 | 21.3 | 30.7 |
| 6TTF8[]ME | 6 | 1/2 | 63.2 | 14.3 | 25.4 | 16.3 | 3.8 | 26.2 | 28.7 | 34.5 |
| 10TTF2[]ME | 10 | 1/8 | 57.3 | 19.1 | 17.5 | 17.5 | 7.9 | 24.6 | 24.6 | 32.6 |
| 10TTF4[]ME | 10 | 1/4 | 57.3 | 19.1 | 17.5 | 17.5 | 7.9 | 24.6 | 24.6 | 32.6 |
| 10TTF6[]ME | 10 | 3/8 | 57.3 | 19.1 | 20.7 | 17.5 | 7.9 | 26.2 | 23.1 | 34.1 |
| 10TTF8[]ME | 10 | 1/2 | 63.6 | 19.1 | 25.4 | 17.5 | 7.9 | 26.9 | 28.7 | 34.9 |
| 12TTF4[]ME | 12 | 1/4 | 56.0 | 22.2 | 17.5 | 24.6 | 9.9 | 23.0 | 21.3 | 30.7 |
| 12TTF8[]ME | 12 | 1/2 | 67.5 | 22.2 | 25.4 | 24.6 | 9.9 | 27.0 | 28.6 | 38.9 |

Female Branch Tee: TTF

connects fractional tube to male NPT threads



Fractional fitting shown



| Part Number* | T P | | Dimensions — inches | | | | | | | |
|--------------|-----------|-----------|---------------------|------------|---------|------|-----|------|------|------|
| | Tube O.D. | Pipe Size | A | B Hex Flat | C | D | E | G | H | M |
| 1TTF1[] | 1/16 | 1/16 | 1.56 | 5/16 | 7/16 | .41 | .05 | .56 | .75 | .78 |
| 2TTF2[] | 1/8 | 1/8 | 2 | 7/16 | 1/2 | .56 | .09 | .69 | .75 | 1 |
| 3TTF2[] | 3/16 | 1/8 | 2.13 | 1/2 | 1/2 | .59 | .13 | .75 | .75 | 1.06 |
| 4TTF2[] | 1/4 | 1/8 | 2.16 | 9/16 | 1/2 | .64 | .19 | .75 | .75 | 1.08 |
| 4TTF4[] | 1/4 | 1/4 | 2.53 | 9/16 | 11/16 | .64 | .19 | .94 | .84 | 1.27 |
| 6TTF4[] | 3/8 | 1/4 | 2.56 | 11/16 | 11/16 | .72 | .28 | .94 | .84 | 1.28 |
| 6TTF6[] | 3/8 | 3/8 | 2.78 | 11/16 | 13/16 | .72 | .28 | 1.03 | .91 | 1.39 |
| 6TTF8[] | 3/8 | 1/2 | 2.47 | 11/16 | 1 | .72 | .28 | 1.06 | 1.13 | 1.41 |
| 8TTF4[] | 1/2 | 1/4 | 2.88 | 7/8 | 11/16 | .97 | .42 | .97 | .91 | 1.44 |
| 8TTF6[] | 1/2 | 3/8 | 3 | 7/8 | 13/16 | .97 | .42 | 1.03 | .91 | 1.50 |
| 8TTF8[] | 1/2 | 1/2 | 3.06 | 7/8 | 1 | .97 | .42 | 1.06 | 1.13 | 1.53 |
| 10TTF8[] | 5/8 | 1/2 | 3.13 | 1 | 1 | 1 | .50 | 1.13 | 1.13 | 1.56 |
| 12TTF8[] | 3/4 | 1/2 | 3.20 | 1 1/8 | 1 | 1 | .66 | 1.16 | 1.13 | 1.61 |
| 12TTF12[] | 3/4 | 3/4 | 3.38 | 1 1/8 | 1 1/4 | 1 | .66 | 1.25 | 1.25 | 1.69 |
| 14TTF12[] | 7/8 | 3/4 | 3.44 | 1 1/4 | 1 1/4 | 1.06 | .72 | 1.25 | 1.25 | 1.72 |
| 16TTF12[] | 1 | 3/4 | 3.75 | 1 1/2 | 1 1/4 | 1.31 | .88 | 1.31 | 1.25 | 1.88 |
| 16TTF16[] | 1 | 1 | 4.13 | 1 1/2 | 1 11/16 | 1.31 | .88 | 1.50 | 1.50 | 2.06 |

Female Branch Tee: TTF/ME

connects metric tube to male NPT threads

| Part Number* | T P | | Dimensions — mm | | | | | | | |
|--------------|-----------|-----------|-----------------|------------|------|------|------|------|------|------|
| | Tube O.D. | Pipe Thd. | A | B Hex Flat | C | D | E | G | H | M |
| 3TTF2[]ME | 3 | 1/8 | 51.0 | 11.1 | 12.7 | 14.3 | 2.3 | 17.5 | 19.1 | 25.5 |
| 4TTF2[]ME | 4 | 1/8 | 50.7 | 12.7 | 12.7 | 15.1 | 2.3 | 17.5 | 19.1 | 25.4 |
| 4TTF4[]ME | 4 | 1/4 | 60.3 | 12.7 | 17.5 | 15.1 | 2.3 | 22.4 | 21.3 | 30.2 |
| 6TTF2[]ME | 6 | 1/8 | 54.8 | 14.3 | 12.7 | 16.3 | 3.8 | 19.1 | 19.1 | 27.4 |
| 6TTF4[]ME | 6 | 1/4 | 61.4 | 14.3 | 17.5 | 16.3 | 3.8 | 22.4 | 21.3 | 30.7 |
| 6TTF6[]ME | 6 | 3/8 | 67.5 | 14.3 | 20.7 | 16.3 | 3.8 | 25.4 | 23.1 | 33.8 |
| 6TTF8[]ME | 6 | 1/2 | 69.0 | 14.3 | 25.4 | 16.3 | 3.8 | 26.2 | 28.7 | 34.5 |
| 8TTF2[]ME | 8 | 1/8 | 55.6 | 15.9 | 12.7 | 16.7 | 5.8 | 19.8 | 19.1 | 27.8 |
| 8TTF4[]ME | 8 | 1/4 | 62.2 | 15.9 | 17.5 | 16.7 | 5.8 | 23.1 | 22.4 | 31.1 |
| 10TTF2[]ME | 10 | 1/8 | 62.2 | 19.1 | 17.5 | 17.5 | 7.9 | 24.6 | 23.1 | 32.6 |
| 10TTF4[]ME | 10 | 1/4 | 62.2 | 19.1 | 17.5 | 17.5 | 7.9 | 24.6 | 23.1 | 32.6 |
| 10TTF6[]ME | 10 | 3/8 | 68.3 | 19.1 | 20.7 | 17.5 | 7.9 | 26.2 | 23.1 | 34.1 |
| 10TTF8[]ME | 10 | 1/2 | 69.8 | 19.1 | 25.4 | 17.5 | 7.9 | 26.9 | 28.7 | 34.9 |
| 12TTF4[]ME | 12 | 1/4 | 73.0 | 22.2 | 20.7 | 24.6 | 10.0 | 24.6 | 23.1 | 36.6 |
| 12TTF8[]ME | 12 | 1/2 | 81.3 | 22.2 | 25.4 | 24.6 | 10.0 | 28.7 | 28.7 | 40.6 |
| 16TTF8[]ME | 16 | 1/2 | 81.7 | 25.4 | 25.4 | 25.0 | 12.7 | 29.7 | 28.7 | 40.9 |

* [] see page 9 for material specifications.

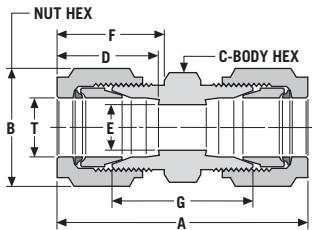
Union: U

connects **fractional** tubes

| Part Number* | T Tube O.D. | Dimensions – inches | | | | | | |
|--------------|-------------------|---------------------|-------|--------|------|------|------|------|
| | | A | B | C | D | E | F | G |
| 1U [] | 1/16 | 1.13 | 5/16 | 5/16 | .41 | .05 | .48 | .69 |
| 2U [] | 1/8 | 1.50 | 7/16 | 7/16 | .56 | .09 | .67 | .88 |
| 3U [] | 3/16 | 1.61 | 1/2 | 7/16 | .59 | .13 | .70 | .98 |
| 4U [] | 1/4 | 1.75 | 9/16 | 1/2 | .64 | .19 | .77 | 1.09 |
| 6U [] | 3/8 | 1.89 | 11/16 | 5/8 | .72 | .28 | .83 | 1.20 |
| 8U [] | 1/2 | 2.16 | 7/8 | 13/16 | .97 | .42 | .92 | 1.22 |
| 10U [] | 5/8 | 2.16 | 1 | 15/16 | 1 | .50 | .92 | 1.28 |
| 12U [] | 3/4 | 2.28 | 1 1/8 | 1 1/16 | 1 | .66 | .97 | 1.41 |
| 14U [] | 7/8 | 2.28 | 1 1/4 | 1 3/16 | 1.06 | .72 | .97 | 1.41 |
| 16U [] | 1 | 2.73 | 1 1/2 | 1 3/8 | 1.31 | .88 | 1.08 | 1.59 |
| 20U [] | 1 1/4 | 3.63 | 1 7/8 | 1 3/4 | 1.62 | 1.09 | 1.53 | 1.89 |
| 24U [] | 1 1/2 | 4.25 | 2 1/4 | 2 1/8 | 1.97 | 1.34 | 1.78 | 2.11 |
| 32U [] | 2 | 5.88 | 3 | 2 3/4 | 2.66 | 1.81 | 2.47 | 2.94 |



Fractional fitting shown



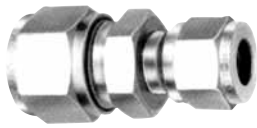
Union: U/MM

connects **metric** tubes

| Part Number* | T Tube O.D. | Dimensions – mm | | | | | | |
|--------------|-------------------|-----------------|---------------|---------------|------|------|------|------|
| | | A | B Hex Flat | C Hex Flat | D | E | F | G |
| 3U []MM | 3 | 40.8 | 11.1 | 11.1 | 14.3 | 2.2 | 17.1 | 24.9 |
| 4U []MM | 4 | 42.7 | 12.7 | 11.1 | 15.1 | 2.2 | 17.9 | 27.0 |
| 6U []MM | 6 | 45.7 | 14.3 | 12.7 | 16.3 | 3.8 | 19.5 | 28.9 |
| 8U []MM | 8 | 45.6 | 15.9 | 14.3 | 16.7 | 5.8 | 19.1 | 29.6 |
| 10U []MM | 10 | 46.9 | 19.1 | 17.5 | 17.5 | 7.9 | 19.8 | 30.9 |
| 12U []MM | 12 | 54.8 | 22.2 | 20.6 | 24.6 | 9.9 | 23.4 | 30.9 |
| 14U []MM | 14 | 50.5 | 23.8 | 22.2 | 22.2 | 11.9 | 21.0 | 31.8 |
| 15U []MM | 15 | 42.1 | 23.8 | 22.2 | 22.2 | 12.7 | 21.8 | 31.8 |
| 16U []MM | 16 | 54.8 | 25.4 | 23.8 | 25.0 | 12.7 | 23.4 | 32.5 |
| 18U []MM | 18 | 55.6 | 28.6 | 27.0 | 25.4 | 15.8 | 24.6 | 35.7 |
| 20U []MM | 20 | 63.5 | 31.8 | 30.2 | 31.0 | 16.7 | 27.0 | 35.8 |
| 22U []MM | 22 | 60.3 | 31.8 | 30.2 | 27.0 | 19.9 | 24.6 | 37.9 |
| 25U []MM | 25 | 69.3 | 38.1 | 34.9 | 33.3 | 21.7 | 27.4 | 40.5 |
| 30U []MM | 30 | 92.7 | 50.8 | 46 | 39.6 | 26.2 | 39.2 | 49.5 |
| 32U []MM | 32 | 97.3 | 50.8 | 46 | 42 | 28.6 | 41.6 | 51.3 |
| 38U []MM | 38 | 113.6 | 60.3 | 55 | 49.4 | 33.7 | 47.9 | 58.4 |

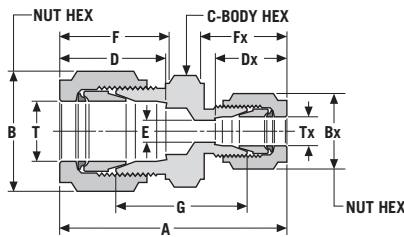
* [] see page 9 for material specifications.

Reducing Union: RU connects fractional tubes



Fractional fitting shown

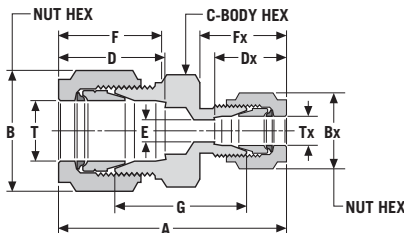
| Part Number* | T Tube | | Tx Tube | | Dimensions – inches | | | | | | | |
|--------------|--------|-------|---------|----------|---------------------|------------|------|------|------|------|------|------|
| | O.D. | O.D. | A | Hex Flat | Bx Hex Flat | C Hex Flat | D | Dx | E | F | Fx | G |
| 2RU1[] | 1/8 | 1/16 | 1.30 | 7/16 | 5/16 | 7/16 | .56 | .41 | .05 | .67 | .48 | .77 |
| 3RU1[] | 3/16 | 1/16 | 1.34 | 1/2 | 5/16 | 7/16 | .59 | .41 | .05 | .70 | .48 | .81 |
| 3RU2[] | 3/16 | 1/8 | 1.55 | 1/2 | 7/16 | 7/16 | .59 | .56 | .09 | .70 | .67 | .92 |
| 4RU1[] | 1/4 | 1/16 | 1.48 | 9/16 | 5/16 | 1/2 | .64 | .41 | .05 | .77 | .48 | .94 |
| 4RU2[] | 1/4 | 1/8 | 1.66 | 9/16 | 7/16 | 1/2 | .64 | .56 | .09 | .77 | .67 | 1.02 |
| 4RU3[] | 1/4 | 3/16 | 1.67 | 9/16 | 1/2 | 1/2 | .64 | .70 | .13 | .77 | .70 | 1.03 |
| 6RU1[] | 3/8 | 1/16 | 1.50 | 11/16 | 5/16 | 5/8 | .72 | .41 | .05 | .83 | .48 | .94 |
| 6RU2[] | 3/8 | 1/8 | 1.77 | 11/16 | 7/16 | 5/8 | .72 | .56 | .09 | .83 | .67 | 1.09 |
| 6RU4[] | 3/8 | 1/4 | 1.83 | 11/16 | 9/16 | 5/8 | .72 | .64 | .19 | .83 | .77 | 1.16 |
| 8RU2[] | 1/2 | 1/8 | 1.94 | 7/8 | 7/16 | 13/16 | .97 | .56 | .09 | .92 | .67 | 1.16 |
| 8RU4[] | 1/2 | 1/4 | 1.95 | 7/8 | 9/16 | 13/16 | .97 | .64 | .19 | .92 | .77 | 1.16 |
| 8RU6[] | 1/2 | 3/8 | 2.03 | 7/8 | 11/16 | 13/16 | .97 | .72 | .30 | .92 | .83 | 1.22 |
| 10RU6[] | 5/8 | 3/8 | 2.05 | 1 | 11/16 | 15/16 | 1 | .72 | .30 | .92 | .83 | 1.25 |
| 10RU8[] | 5/8 | 1/2 | 2.16 | 1 | 7/8 | 15/16 | 1 | .97 | .42 | .92 | .92 | 1.25 |
| 12RU4[] | 3/4 | 1/4 | 2.16 | 1 1/8 | 9/16 | 1 1/16 | 1 | .64 | .19 | .97 | .77 | 1.36 |
| 12RU6[] | 3/4 | 3/8 | 2.22 | 1 1/8 | 11/16 | 1 1/16 | 1 | .72 | .30 | .97 | .83 | 1.41 |
| 12RU8[] | 3/4 | 1/2 | 2.25 | 1 1/8 | 7/8 | 1 1/16 | 1 | .97 | .42 | .97 | .92 | 1.34 |
| 12RU10[] | 3/4 | 5/8 | 2.25 | 1 1/8 | 1 | 1 1/16 | 1 | 1 | .50 | .97 | .92 | 1.38 |
| 14RU12[] | 7/8 | 3/4 | 2.33 | 1 1/4 | 1 1/8 | 1 3/16 | 1.06 | 1 | .66 | .97 | .97 | 1.44 |
| 16RU8[] | 1 | 1/2 | 2.61 | 1 1/2 | 7/8 | 1 3/8 | 1.31 | .97 | .42 | 1.08 | .92 | 1.56 |
| 16RU12[] | 1 | 3/4 | 2.55 | 1 1/2 | 1 1/8 | 1 3/8 | 1.31 | 1 | .66 | 1.08 | .97 | 1.53 |
| 16RU14[] | 1 | 7/8 | 2.58 | 1 1/2 | 1 1/4 | 1 3/8 | 1.31 | 1.06 | .72 | 1.08 | .97 | 1.56 |
| 32RU24[] | 2 | 1 1/2 | 5.18 | 3 | 2 1/4 | 2 3/4 | 2.64 | 1.97 | 1.34 | 2.46 | 1.78 | 2.65 |



Reducing Union: RU/MM connects metric tubes

| Part Number* | T Tube | | Tx Tube | | Dimensions – mm | | | | | | | |
|--------------|--------|------|---------|----------|-----------------|------------|------|------|------|------|------|------|
| | O.D. | O.D. | A | Hex Flat | Bx Hex Flat | C Hex Flat | D | Dx | E | F | Fx | G |
| 4RU3[]MM | 4 | 3 | 41.6 | 12.7 | 11.1 | 11.1 | 15.1 | 14.3 | 2.2 | 17.9 | 17.1 | 25.8 |
| 6RU3[]MM | 6 | 3 | 43.2 | 14.3 | 11.1 | 12.7 | 16.3 | 14.3 | 2.2 | 19.5 | 17.1 | 26.9 |
| 6RU4[]MM | 6 | 4 | 44.0 | 14.3 | 12.7 | 12.7 | 16.3 | 15.1 | 2.3 | 19.5 | 17.9 | 27.8 |
| 8RU4[]MM | 8 | 4 | 43.6 | 15.9 | 12.7 | 14.3 | 16.7 | 15.1 | 2.3 | 19.1 | 17.9 | 27.6 |
| 8RU6[]MM | 8 | 6 | 46.1 | 15.9 | 14.3 | 14.3 | 16.7 | 16.3 | 3.8 | 19.1 | 19.5 | 29.7 |
| 10RU6[]MM | 10 | 6 | 46.2 | 19.1 | 14.3 | 17.5 | 17.5 | 16.3 | 3.8 | 19.8 | 19.5 | 29.9 |
| 10RU8[]MM | 10 | 8 | 45.7 | 19.1 | 15.9 | 17.5 | 17.5 | 16.7 | 5.8 | 19.8 | 19.1 | 29.7 |
| 12RU6[]MM | 12 | 6 | 49.7 | 22.2 | 14.3 | 20.6 | 24.6 | 16.3 | 3.8 | 23.4 | 19.5 | 29.4 |
| 12RU8[]MM | 12 | 8 | 50.4 | 22.2 | 15.9 | 20.6 | 24.6 | 16.7 | 5.8 | 23.4 | 19.1 | 30.5 |
| 12RU10[]MM | 12 | 10 | 50.9 | 22.2 | 19.1 | 20.6 | 24.6 | 17.5 | 7.9 | 23.4 | 19.8 | 30.9 |
| 14RU8[]MM | 14 | 8 | 47.2 | 23.8 | 15.9 | 22.2 | 22.2 | 16.7 | 5.8 | 21.0 | 19.1 | 29.8 |
| 14RU10[]MM | 14 | 10 | 48.3 | 23.8 | 19.1 | 22.2 | 22.2 | 17.5 | 7.9 | 21.0 | 19.8 | 30.9 |
| 14RU12[]MM | 14 | 12 | 52.3 | 23.8 | 22.2 | 22.2 | 22.2 | 24.6 | 9.9 | 21.0 | 23.4 | 30.9 |
| 16RU10[]MM | 16 | 10 | 50.9 | 25.4 | 19.1 | 23.8 | 25.0 | 17.5 | 7.9 | 23.4 | 19.8 | 31.8 |
| 16RU12[]MM | 16 | 12 | 54.8 | 25.4 | 22.2 | 23.8 | 25.0 | 24.6 | 9.9 | 23.4 | 23.4 | 31.8 |
| 18RU12[]MM | 18 | 12 | 57.5 | 28.6 | 22.2 | 27.0 | 25.4 | 24.6 | 9.9 | 24.6 | 23.4 | 35.6 |
| 18RU16[]MM | 18 | 16 | 57.4 | 28.6 | 25.4 | 27.0 | 25.4 | 25.0 | 12.7 | 24.6 | 23.4 | 36.3 |
| 22RU12[]MM | 22 | 12 | 59.5 | 31.8 | 22.2 | 30.1 | 27.0 | 24.6 | 9.9 | 24.6 | 23.4 | 36.3 |
| 22RU18[]MM | 22 | 18 | 61.1 | 31.8 | 28.6 | 34.9 | 27.0 | 25.4 | 15.8 | 24.6 | 24.6 | 40.0 |
| 25RU12[]MM | 25 | 12 | 66.0 | 38.1 | 22.2 | 34.9 | 33.3 | 24.6 | 9.9 | 27.4 | 23.4 | 39.6 |
| 25RU18[]MM | 25 | 18 | 64.0 | 38.1 | 28.6 | 34.9 | 33.3 | 25.4 | 15.8 | 27.4 | 24.6 | 39.6 |

Reducing Union: RU/ME connects metric tubes to fractional tubes

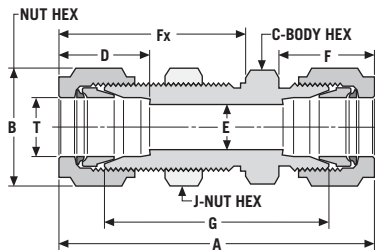


| Part Number* | T Tube | | Tx Tube | | Dimensions – mm | | | | | | | |
|--------------|--------|------|---------|----------|-----------------|------------|------|------|------|------|------|------|
| | O.D. | O.D. | A | Hex Flat | Bx Hex Flat | C Hex Flat | D | Dx | E | F | Fx | G |
| 3RU1[]ME | 3 | 1/16 | 36.1 | 11.1 | 7.9 | 11.1 | 14.3 | 10.3 | 1.2 | 17.1 | 12.3 | 22.6 |
| 3RU2[]ME | 3 | 1/8 | 38.0 | 11.1 | 11.1 | 11.1 | 14.3 | 14.3 | 2.2 | 17.1 | 17.1 | 22.0 |
| 3RU4[]ME | 3 | 1/4 | 42.5 | 11.1 | 14.3 | 12.5 | 14.3 | 16.3 | 2.5 | 17.1 | 19.5 | 26.0 |
| 4RU2[]ME | 4 | 1/8 | 40.6 | 12.7 | 11.1 | 11.1 | 15.1 | 14.3 | 2.2 | 17.9 | 17.1 | 24.8 |
| 4RU4[]ME | 4 | 1/4 | 43.0 | 12.7 | 14.3 | 12.7 | 15.1 | 16.3 | 2.2 | 17.9 | 19.5 | 26.0 |
| 6RU1[]ME | 6 | 1/16 | 37.5 | 14.3 | 7.9 | 12.7 | 16.3 | 10.3 | 1.2 | 19.5 | 12.3 | 23.5 |
| 6RU2[]ME | 6 | 1/8 | 43.2 | 14.3 | 11.1 | 12.7 | 16.3 | 14.3 | 2.2 | 19.5 | 17.1 | 26.9 |
| 6RU4[]ME | 6 | 1/4 | 44.7 | 14.3 | 14.3 | 12.7 | 16.3 | 16.3 | 3.8 | 19.5 | 19.5 | 27.9 |
| 6RU8[]ME | 6 | 1/2 | 49.7 | 14.3 | 22.2 | 20.6 | 16.3 | 24.6 | 3.8 | 19.5 | 23.4 | 29.4 |
| 8RU2[]ME | 8 | 1/8 | 42.9 | 15.9 | 11.1 | 14.3 | 16.7 | 14.3 | 2.2 | 19.1 | 17.1 | 26.9 |
| 8RU3[]ME | 8 | 3/16 | 43.2 | 15.9 | 12.7 | 14.3 | 16.7 | 15.1 | 3.1 | 19.1 | 17.9 | 27.2 |
| 8RU4[]ME | 8 | 1/4 | 44.8 | 15.9 | 14.3 | 14.3 | 16.7 | 16.3 | 4.6 | 19.1 | 19.5 | 28.5 |
| 8RU6[]ME | 8 | 3/8 | 42.7 | 15.9 | 17.5 | 15.9 | 16.7 | 18.3 | 5.9 | 19.5 | 23.4 | 29.4 |
| 8RU8[]ME | 8 | 1/2 | 50.9 | 15.9 | 22.2 | 20.6 | 16.7 | 24.6 | 5.8 | 19.1 | 23.4 | 31.0 |
| 8RU10[]ME | 8 | 5/8 | 50.1 | 15.9 | 25.4 | 23.8 | 16.7 | 25.4 | 5.8 | 19.1 | 23.4 | 31.0 |
| 10RU2[]ME | 10 | 1/8 | 43.5 | 19.1 | 11.1 | 17.5 | 17.5 | 14.3 | 2.3 | 19.8 | 17.1 | 27.5 |
| 10RU4[]ME | 10 | 1/4 | 46.8 | 19.1 | 14.3 | 17.5 | 17.5 | 16.3 | 4.6 | 19.8 | 19.5 | 30.5 |
| 10RU6[]ME | 10 | 3/8 | 46.8 | 19.1 | 17.5 | 17.5 | 17.5 | 18.3 | 7.4 | 19.8 | 21.0 | 30.0 |
| 10RU8[]ME | 10 | 1/2 | 50.3 | 19.1 | 22.2 | 20.6 | 17.5 | 24.6 | 7.9 | 19.8 | 23.4 | 30.4 |
| 10RU10[]ME | 10 | 5/8 | 50.9 | 19.1 | 25.4 | 23.8 | 17.5 | 25.4 | 7.9 | 19.8 | 23.4 | 31.8 |
| 12RU4[]ME | 12 | 1/4 | 49.5 | 22.2 | 14.3 | 20.6 | 24.6 | 16.3 | 4.8 | 23.4 | 19.5 | 29.5 |
| 12RU6[]ME | 12 | 3/8 | 50.1 | 22.2 | 17.5 | 20.6 | 24.6 | 18.3 | 7.4 | 23.4 | 21.0 | 29.4 |
| 12RU8[]ME | 12 | 1/2 | 54.9 | 22.2 | 22.2 | 20.6 | 24.6 | 24.6 | 9.9 | 23.4 | 23.4 | 31.0 |
| 16RU10[]ME | 16 | 5/8 | 55.0 | 25.4 | 25.4 | 23.8 | 25.0 | 25.4 | 12.7 | 23.4 | 23.4 | 32.5 |
| 16RU12[]ME | 16 | 3/4 | 57.5 | 25.4 | 28.6 | 27.0 | 25.0 | 25.4 | 12.7 | 23.4 | 24.6 | 35.0 |
| 18RU12[]ME | 18 | 3/4 | 57.0 | 28.6 | 28.6 | 27.0 | 25.4 | 25.4 | 15.8 | 24.6 | 24.6 | 35.5 |

* [] see page 9 for material specifications.

Bulkhead Union: BU connects **fractional** tubes

| Part Number* | T Tube O.D. | Dimensions – inches | | | | | | | | | Panel Hole Size | Max. Panel Thickness |
|--------------|-------------|---------------------|------------|------------|------|------|------|------|------|------------|-----------------|----------------------|
| | | A | B Hex Flat | C Hex Flat | D | E | F | Fx | G | J Hex Flat | | |
| 1BU [] | 1/16 | 1.50 | 5/16 | 7/16 | .41 | .05 | .48 | .91 | 1 | 3/8 | .20 | 11/32 |
| 2BU [] | 1/8 | 2.13 | 7/16 | 1/2 | .56 | .09 | .67 | 1.19 | 1.50 | 1/2 | .33 | 7/16 |
| 3BU [] | 3/16 | 2.22 | 1/2 | 9/16 | .59 | .13 | .70 | 1.31 | 1.59 | 9/16 | .39 | 15/32 |
| 4BU [] | 1/4 | 2.34 | 9/16 | 5/8 | .64 | .19 | .77 | 1.36 | 1.69 | 5/8 | .45 | 15/32 |
| 6BU [] | 3/8 | 2.56 | 11/16 | 3/4 | .72 | .28 | .83 | 1.50 | 1.88 | 3/4 | .58 | 17/32 |
| 8BU [] | 1/2 | 2.94 | 7/8 | 15/16 | .97 | .42 | .92 | 1.72 | 2 | 15/16 | .77 | 19/32 |
| 10BU [] | 5/8 | 2.94 | 1 | 1 1/16 | 1 | .50 | .92 | 1.72 | 2.06 | 1 1/16 | .89 | 9/16 |
| 12BU [] | 3/4 | 3.19 | 1 1/8 | 1 3/16 | 1 | .66 | .97 | 1.91 | 2.31 | 1 3/16 | 1.02 | 21/32 |
| 14BU [] | 7/8 | 3.41 | 1 1/4 | 1 5/16 | 1.06 | .72 | .97 | 2.09 | 2.53 | 1 5/16 | 1.14 | 25/32 |
| 16BU [] | 1 | 3.95 | 1 1/2 | 1 9/16 | 1.31 | .88 | 1.08 | 2.34 | 2.81 | 1 9/16 | 1.33 | 1 1/32 |
| 24BU [] | 1 1/2 | 5.48 | 2 1/4 | 2 1/4 | 1.97 | 1.34 | 1.78 | 3.01 | 3.34 | 2 1/4 | 1.95 | 3/4 |
| 32BU [] | 2 | 7.10 | 3 | 2 3/4 | 2.66 | 1.81 | 2.47 | 3.69 | 4.16 | 3 | 2.64 | 3/4 |

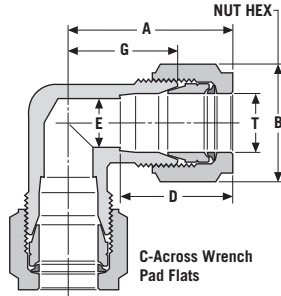

Fractional fitting shown

Bulkhead Union: BU/MM connects **metric** tubes

| Part Number* | T Tube O.D. | Dimensions – mm | | | | | | | | | Panel Hole Size | Max. Panel Thickness |
|--------------|-------------|-----------------|------------|------------|------|------|------|------|------|------------|-----------------|----------------------|
| | | A | B Hex Flat | C Hex Flat | D | E | F | Fx | G | J Hex Flat | | |
| 3BU []MM | 3 | 56.3 | 11.1 | 12.7 | 14.3 | 2.2 | 17.1 | 32.5 | 40.4 | 12.7 | 8.3 | 12.0 |
| 4BU []MM | 4 | 58.1 | 12.7 | 14.3 | 15.1 | 2.3 | 17.9 | 33.2 | 42.4 | 14.3 | 10.0 | 12.0 |
| 6BU []MM | 6 | 60.8 | 14.3 | 15.9 | 16.3 | 3.8 | 19.5 | 34.6 | 44.1 | 15.9 | 11.5 | 13.0 |
| 8BU []MM | 8 | 64.0 | 15.9 | 17.5 | 16.7 | 5.8 | 19.1 | 36.6 | 48.0 | 17.5 | 13.1 | 14.0 |
| 10BU []MM | 10 | 64.2 | 19.1 | 19.1 | 17.5 | 7.9 | 19.8 | 37.3 | 48.2 | 19.1 | 16.5 | 14.0 |
| 12BU []MM | 12 | 74.7 | 22.2 | 23.8 | 24.6 | 9.9 | 23.4 | 43.7 | 50.8 | 23.8 | 19.5 | 16.0 |
| 14BU []MM | 14 | 69.6 | 23.8 | 25.4 | 22.2 | 11.9 | 21.0 | 41.1 | 50.8 | 23.8 | 21.0 | 16.0 |
| 15BU []MM | 15 | 72.5 | 23.8 | 25.4 | 22.2 | 12.7 | 21.8 | 42.1 | 51.9 | 23.8 | 21.0 | 16.0 |
| 16BU []MM | 16 | 74.7 | 25.4 | 27.0 | 25.0 | 12.7 | 23.4 | 43.7 | 52.4 | 27.0 | 22.5 | 14.0 |
| 18BU []MM | 18 | 78.7 | 28.6 | 30.2 | 25.4 | 15.8 | 24.6 | 48.0 | 58.7 | 30.2 | 26.0 | 17.0 |
| 20BU []MM | 20 | 92.0 | 31.8 | 33.3 | 31.0 | 16.7 | 27.0 | 41.8 | 64.3 | 33.3 | 29.0 | 20.0 |
| 22BU []MM | 22 | 89.0 | 31.8 | 33.3 | 27.0 | 17.9 | 24.6 | 53.0 | 66.6 | 33.3 | 29.5 | 24.0 |
| 25BU []MM | 25 | 100.7 | 38.1 | 39.7 | 33.3 | 21.7 | 27.4 | 60.0 | 71.9 | 39.7 | 33.8 | 24.0 |

* [] see page 9 for material specifications.



Metric fitting shown



Union Elbow: LU connects fractional tubes

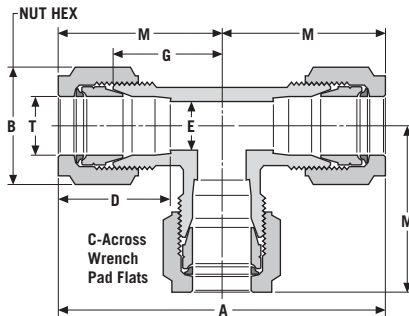
| Part Number* | T Tube O.D. | Dimensions – inches | | | | | |
|--------------|-------------|---------------------|----------|---------|------|------|------|
| | | A | Hex Flat | C | D | E | G |
| 1LU[] | 1/16 | .78 | 5/16 | 7/16 | .41 | .05 | .56 |
| 2LU[] | 1/8 | .97 | 7/16 | 7/16 | .56 | .09 | .66 |
| 3LU[] | 3/16 | 1 | 1/2 | 7/16 | .59 | .13 | .69 |
| 4LU[] | 1/4 | 1.05 | 9/16 | 7/16 | .64 | .19 | .72 |
| 6LU[] | 3/8 | 1.19 | 11/16 | 1/2 | .72 | .28 | .84 |
| 8LU[] | 1/2 | 1.44 | 7/8 | 11/16 | .97 | .42 | .97 |
| 10LU[] | 5/8 | 1.47 | 1 | 13/16 | 1 | .50 | .03 |
| 12LU[] | 3/4 | 1.59 | 1 1/8 | 1 | 1 | .66 | .16 |
| 14LU[] | 7/8 | 1.72 | 1 1/4 | 1 1/4 | 1.06 | .72 | .28 |
| 16LU[] | 1 | 1.88 | 1 1/2 | 1 1/4 | 1.31 | .88 | .31 |
| 20LU[] | 1 1/4 | 2.67 | 1 7/8 | 1 11/16 | 1.62 | 1.09 | 1.75 |
| 24LU[] | 1 1/2 | 3.07 | 2 1/4 | 2 | 1.97 | 1.34 | 2 |
| 32LU32[] | 2 | 4.22 | 3 | 2 3/4 | 2.66 | 1.81 | 2.75 |

Union Elbow: LU/MM connects metric tubes

| Part Number* | T Tube O.D. | Dimensions – mm | | | | | |
|--------------|-------------|-----------------|----------|------|------|------|------|
| | | A | Hex Flat | C | D | E | G |
| 3LU[]MM | 3 | 24.6 | 11.1 | 11.0 | 14.3 | 2.2 | 16.7 |
| 4LU[]MM | 4 | 25.3 | 12.7 | 11.0 | 15.1 | 2.3 | 17.5 |
| 6LU[]MM | 6 | 26.6 | 14.3 | 11.0 | 16.3 | 3.8 | 18.3 |
| 8LU[]MM | 8 | 28.6 | 15.9 | 12.6 | 16.7 | 5.8 | 20.6 |
| 10LU[]MM | 10 | 32.6 | 19.1 | 17.3 | 17.5 | 7.9 | 24.6 |
| 12LU[]MM | 12 | 36.6 | 22.2 | 17.3 | 24.6 | 9.9 | 24.6 |
| 14LU[]MM | 14 | 34.0 | 23.8 | 17.3 | 22.2 | 11.9 | 24.6 |
| 15LU[]MM | 15 | 36.5 | 23.8 | 17.4 | 22.2 | 12.7 | 26.2 |
| 16LU[]MM | 16 | 37.3 | 25.4 | 20.5 | 25.0 | 12.7 | 26.2 |
| 18LU[]MM | 18 | 39.3 | 28.6 | 25.3 | 25.4 | 15.8 | 29.4 |
| 20LU[]MM | 20 | 46.4 | 31.8 | 31.8 | 31.0 | 16.7 | 32.5 |
| 22LU[]MM | 22 | 43.7 | 31.8 | 31.6 | 27.0 | 17.9 | 32.5 |
| 25LU[]MM | 25 | 47.8 | 38.1 | 31.6 | 33.3 | 21.8 | 33.3 |
| 30LU[]MM | 30 | 69.9 | 50.8 | 46 | 39.2 | 26.2 | 48.3 |
| 32LU[]MM | 32 | 72.3 | 50.8 | 46 | 41.6 | 28.6 | 49.3 |
| 38LU[]MM | 38 | 84 | 60.3 | 55 | 47.9 | 33.7 | 56.4 |



Metric fitting shown



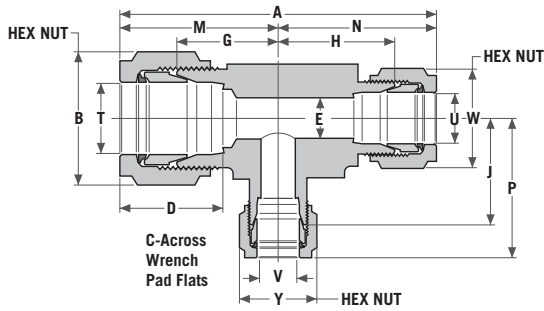
Union Tee: TTT connects fractional tubes

| Part Number* | T Tube O.D. | Dimensions – inches | | | | | | |
|--------------|-------------|---------------------|----------|---------|------|------|------|------|
| | | A | Hex Flat | C | D | E | G | M |
| 1TTT[] | 1/16 | 1.56 | 5/16 | 7/16 | .41 | .05 | .56 | .78 |
| 2TTT[] | 1/8 | 1.94 | 7/16 | 7/16 | .56 | .09 | .66 | .97 |
| 3TTT[] | 3/16 | 2 | 1/2 | 7/16 | .59 | .13 | .69 | 1 |
| 4TTT[] | 1/4 | 2.04 | 9/16 | 7/16 | .64 | .19 | .72 | 1.05 |
| 6TTT[] | 3/8 | 2.38 | 11/16 | 1/2 | .72 | .28 | .84 | 1.19 |
| 8TTT[] | 1/2 | 2.88 | 7/8 | 11/16 | .97 | .42 | .97 | 1.44 |
| 10TTT[] | 5/8 | 2.94 | 1 | 13/16 | 1 | .50 | 1.03 | 1.47 |
| 12TTT[] | 3/4 | 3.19 | 1 1/8 | 1 | 1 | .66 | 1.16 | 1.59 |
| 14TTT[] | 7/8 | 3.44 | 1 1/4 | 1 1/4 | 1.06 | .72 | 1.28 | 1.72 |
| 16TTT[] | 1 | 3.75 | 1 1/2 | 1 1/4 | 1.31 | .88 | 1.31 | 1.88 |
| 20TTT[] | 1 1/4 | 5.24 | 1 7/8 | 1 11/16 | 1.53 | 1.09 | 1.75 | 2.62 |
| 24TTT[] | 1 1/2 | 6.14 | 2 1/4 | 2 | 1.78 | 1.34 | 2 | 3.07 |
| 32TTT[] | 2 | 8.44 | 3 | 2 3/4 | 2.50 | 1.81 | 2.75 | 4.22 |

Union Tee: TTT/MM connects metric tubes

| Part Number* | T Tube O.D. | Dimensions – mm | | | | | | |
|--------------|-------------|-----------------|----------|------|------|------|------|------|
| | | A | Hex Flat | C | D | E | G | M |
| 3TTT[]MM | 3 | 49.4 | 11.1 | 11.1 | 14.3 | 2.2 | 16.8 | 24.7 |
| 4TTT[]MM | 4 | 50.7 | 12.7 | 11.1 | 15.1 | 2.2 | 17.5 | 25.4 |
| 6TTT[]MM | 6 | 53.3 | 14.3 | 11.1 | 16.3 | 3.8 | 18.3 | 26.7 |
| 8TTT[]MM | 8 | 57.2 | 15.9 | 12.7 | 16.7 | 5.8 | 20.6 | 28.6 |
| 10TTT[]MM | 10 | 65.2 | 19.1 | 17.5 | 17.5 | 7.9 | 24.6 | 32.6 |
| 12TTT[]MM | 12 | 73.2 | 22.2 | 17.5 | 24.6 | 9.9 | 24.6 | 36.6 |
| 14TTT[]MM | 14 | 71.1 | 23.8 | 20.7 | 22.2 | 11.9 | 26.2 | 35.6 |
| 15TTT[]MM | 15 | 72.9 | 23.8 | 20.7 | 22.2 | 12.7 | 26.2 | 36.5 |
| 16TTT[]MM | 16 | 74.6 | 25.4 | 20.7 | 25.0 | 12.7 | 26.2 | 37.3 |
| 18TTT[]MM | 18 | 78.9 | 28.6 | 25.4 | 25.4 | 15.8 | 29.5 | 39.4 |
| 20TTT[]MM | 20 | 92.7 | 31.8 | 31.8 | 31.0 | 16.7 | 32.5 | 46.4 |
| 22TTT[]MM | 22 | 87.4 | 31.8 | 31.8 | 27.0 | 17.9 | 32.5 | 43.7 |
| 25TTT[]MM | 25 | 95.4 | 38.1 | 31.8 | 33.3 | 21.7 | 33.3 | 47.7 |
| 30TTT[]MM | 30 | 139.7 | 50.8 | 46 | 39.2 | 26.2 | 48.3 | 69.9 |
| 32TTT[]MM | 32 | 144.6 | 50.8 | 46 | 41.6 | 28.6 | 49.3 | 72.3 |
| 38TTT[]MM | 38 | 168 | 60.3 | 55 | 47.9 | 33.7 | 56.4 | 84 |

* [] see page 9 for material specifications.



Reducing Run Tee: TTT_B

connects **fractional** tubes

| Part Number* | Dimensions — inches | | | | | | | | | | | | | | | |
|---------------|---------------------|-------|----------|------------|-------|------|------|-----|------|------|------|------|------|------|------------|------------|
| | T Tube O.D. | U Run | V Branch | B Hex Flat | | C | D | E | G | H | J | M | N | P | W Hex Flat | Y Hex Flat |
| 10TTT8BR6[] | 5/8 | 1/2 | 3/8 | 2.94 | 1 | .81 | 1.11 | .42 | 1.03 | 1 | 1.02 | 1.47 | 1.47 | 1.36 | 7/8 | 11/16 |
| 12TTT10BR6[] | 3/4 | 5/8 | 3/8 | 3.16 | 1 1/8 | 1 | 1.09 | .50 | 1.16 | 1.12 | 1.11 | 1.60 | 1.56 | 1.45 | 1 1/8 | 11/16 |
| 12TTT10BR8[] | 3/4 | 5/8 | 1/2 | 3.16 | 1 1/8 | 1 | 1.09 | .50 | 1.16 | 1.12 | 1.09 | 1.60 | 1.56 | 1.56 | 1 1/8 | 7/8 |
| 16TTT10BR6[] | 1 | 5/8 | 3/8 | 3.60 | 1 1/2 | 1.25 | 1.40 | .50 | 1.31 | 1.29 | 1.28 | 1.87 | 1.73 | 1.62 | 1 1/8 | 11/16 |
| 16TTT10BR8[] | 1 | 5/8 | 1/2 | 3.60 | 1 1/2 | 1.25 | 1.40 | .50 | 1.31 | 1.29 | 1.26 | 1.87 | 1.73 | 1.73 | 1 1/8 | 7/8 |
| 16TTT12BR6[] | 1 | 3/4 | 3/8 | 3.62 | 1 1/2 | 1.25 | 1.40 | .66 | 1.31 | 1.31 | 1.28 | 1.87 | 1.75 | 1.62 | 11/16 | 11/16 |

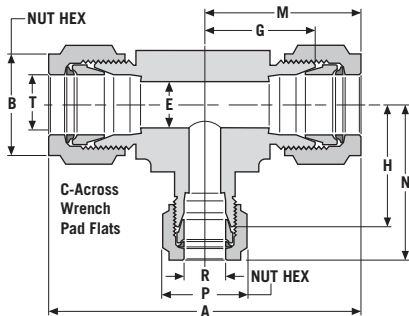


Fractional fitting shown

Reducing Branch Tee: TTTB

connects **fractional** tubes

| Part Number* | Dimensions — inches | | | | | | | | | | | |
|--------------|---------------------|----------|------|------------|------|------|------|------|------|------|-------|------------|
| | T Tube O.D. | R Branch | A | B Hex Flat | | C | E | G | H | M | N | P Hex Flat |
| 6TTTB8[] | 3/8 | 1/2 | 2.57 | 11/16 | .68 | .28 | .94 | .97 | 1.44 | 1.44 | 7/8 | |
| 8TTTB6[] | 1/2 | 3/8 | 2.88 | 7/8 | .68 | .42 | .97 | .99 | 1.33 | 1.33 | 11/16 | |
| 10TTTB6[] | 5/8 | 3/8 | 2.94 | 1 | .81 | .50 | 1.03 | 1.02 | 1.36 | 1.36 | 11/16 | |
| 10TTTB8[] | 5/8 | 1/2 | 2.94 | 1 | .81 | .50 | 1.03 | 1 | 1.47 | 1.47 | 7/8 | |
| 12TTTB6[] | 3/4 | 3/8 | 3.20 | 1 1/8 | 1 | .66 | 1.16 | 1.11 | 1.45 | 1.45 | 11/16 | |
| 12TTTB8[] | 3/4 | 1/2 | 3.20 | 1 1/8 | 1 | .66 | 1.16 | 1.09 | 1.56 | 1.56 | 7/8 | |
| 16TTTB6[] | 1 | 3/8 | 3.75 | 1 1/2 | 1.25 | .88 | 1.31 | 1.28 | 1.62 | 1.62 | 11/16 | |
| 16TTTB8[] | 1 | 1/2 | 3.75 | 1 1/2 | 1.25 | .88 | 1.31 | 1.26 | 1.73 | 1.73 | 7/8 | |
| 20TTTB16[] | 1 1/4 | 1 | 5.27 | 1 7/8 | 1.68 | 1.11 | 1.75 | 1.69 | 2.65 | 2.29 | 1 1/2 | |
| 24TTTB16[] | 1 1/2 | 1 | 6.17 | 2 1/4 | 1.68 | 1.33 | 2 | 1.88 | 3.08 | 2.48 | 1 1/2 | |
| 32TTTB16[] | 2 | 1 | 8.41 | 3 | 2.75 | 1.80 | 2.75 | 2.31 | 4.21 | 2.90 | 1 1/2 | |
| 32TTTB24[] | 2 | 1 1/2 | 8.41 | 3 | 2.75 | 1.80 | 2.75 | 2.75 | 4.21 | 3.85 | 2 1/4 | |



Reducing Union Tee: TTTB/MM

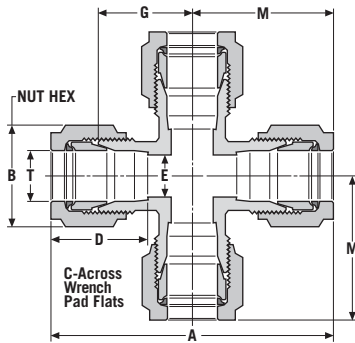
connects **metric** tubes

| Part Number* | Dimensions — mm | | | | | | | | | | |
|---------------|-----------------|----------|-------|------------|----|------|------|------|------|-------|----|
| | T Tube O.D. | R Branch | A | B Hex Flat | | C | E | G | H | M | N |
| 32TTTB25316MM | 32 | 25 | 144.6 | 50.8 | 46 | 28.6 | 49.3 | 49.1 | 72.3 | 449.1 | 38 |

* [] see page 9 for material specifications.



Fractional fitting shown



Union Cross: C connects **fractional** tubes

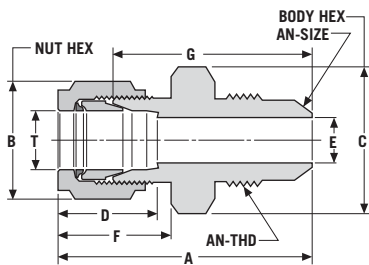
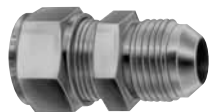
| Part Number* | Dimensions – inches | | | | | | |
|--------------|---------------------|------|------------|--------|------|-----|-----------|
| | T Tube O.D. | A | B Hex Flat | C | D | E | G M |
| 1C [] | 1/16 | 1.56 | 5/16 | 7/16 | .41 | .05 | .56 .78 |
| 2C [] | 1/8 | 1.94 | 7/16 | 7/16 | .56 | .09 | .66 .97 |
| 3C [] | 3/16 | 2 | 1/2 | 7/16 | .59 | .13 | .69 1 |
| 4C [] | 1/4 | 2.14 | 9/16 | 7/16 | .64 | .19 | .72 1.08 |
| 6C [] | 3/8 | 2.38 | 11/16 | 1/2 | .72 | .28 | .84 1.19 |
| 8C [] | 1/2 | 2.88 | 7/8 | 11/16 | .97 | .42 | .97 1.44 |
| 10C [] | 5/8 | 2.94 | 1 | 1 1/16 | 1 | .50 | 1.03 1.47 |
| 12C [] | 3/4 | 3.19 | 1 1/8 | 1 3/16 | 1 | .66 | 1.16 1.59 |
| 14C [] | 7/8 | 3.44 | 1 1/4 | 1 7/16 | 1.06 | .72 | 1.28 1.72 |
| 16C [] | 1 | 3.75 | 1 1/2 | 1 7/16 | 1.31 | .88 | 1.31 1.88 |

Union Cross: C/MM connects **metric** tubes

| Part Number* | Dimensions – mm | | | | | | |
|--------------|-----------------|------|------------|------|------|------|-----------|
| | T Tube O.D. | A | B Hex Flat | C | D | E | G M |
| 3C []MM | 3 | 49.2 | 11.1 | 11.1 | 14.3 | 2.2 | 16.7 24.6 |
| 4C []MM | 4 | 50.5 | 12.7 | 11.1 | 15.1 | 2.3 | 17.5 25.3 |
| 6C []MM | 6 | 53.2 | 14.3 | 11.1 | 16.3 | 3.8 | 18.2 26.6 |
| 8C []MM | 8 | 57.2 | 15.9 | 12.7 | 16.7 | 5.8 | 20.6 28.6 |
| 10C []MM | 10 | 65.1 | 19.1 | 17.5 | 17.5 | 7.9 | 24.6 32.6 |
| 12C []MM | 12 | 73.1 | 22.2 | 17.5 | 24.6 | 9.9 | 24.6 36.5 |
| 14C []MM | 14 | 69.6 | 23.8 | 20.7 | 22.2 | 11.0 | 25.4 34.8 |
| 15C []MM | 15 | 77.8 | 23.8 | 20.7 | 22.2 | 12.7 | 26.2 38.9 |
| 16C []MM | 16 | 74.8 | 25.4 | 20.7 | 25.0 | 12.7 | 26.2 37.4 |
| 18C []MM | 18 | 78.6 | 29.6 | 25.4 | 25.4 | 15.8 | 29.4 39.3 |
| 20C []MM | 20 | 92.7 | 31.8 | 31.8 | 31.0 | 16.7 | 32.5 46.4 |
| 22C []MM | 22 | 88.0 | 31.8 | 31.8 | 27.0 | 17.9 | 32.5 43.7 |
| 25C []MM | 25 | 95.0 | 38.1 | 31.8 | 33.3 | 21.7 | 33.3 43.7 |

* [] see page 9 for material specifications.

AN Fittings



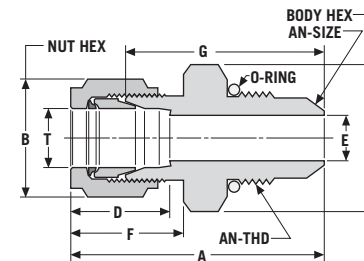
Union, AN: UAN

connects fractional tube to flared tube

UAN Application:
GYROLOK® with AND 10056 or MS 33656, 37° flare connections for use with flared tubing.

UAN **Mating Part**

| Part Number* | T | | Dimensions — inches | | | | | | | | |
|--------------|-----------|---------|---------------------|------|------------|------------|------|-----|------|------|--|
| | Tube O.D. | AN Size | AN Thread | A | B Hex Flat | C Hex Flat | D | E | F | G | |
| 1UAN4[] | 1/16 | 1/4 | 7/16-20 | 1.22 | 5/16 | 1/2 | .41 | .05 | .48 | 1 | |
| 2UAN2[] | 1/8 | 1/8 | 5/16-24 | 1.19 | 7/16 | 7/16 | .56 | .06 | .67 | .97 | |
| 2UAN4[] | 1/8 | 1/4 | 7/16-20 | 1.44 | 7/16 | 1/2 | .56 | .09 | .67 | 1.13 | |
| 3UAN3[] | 3/16 | 3/16 | 3/8-24 | 1.38 | 1/2 | 7/16 | .59 | .13 | .70 | 1.06 | |
| 4UAN4[] | 1/4 | 1/4 | 7/16-20 | 1.52 | 9/16 | 1/2 | .64 | .17 | .77 | 1.19 | |
| 6UAN4[] | 3/8 | 1/4 | 7/16-20 | 1.61 | 11/16 | 5/8 | .72 | .17 | .83 | 1.27 | |
| 6UAN6[] | 3/8 | 3/8 | 9/16-18 | 1.63 | 11/16 | 5/8 | .72 | .30 | .83 | 1.28 | |
| 8UAN8[] | 1/2 | 1/2 | 3/4-16 | 1.88 | 7/8 | 13/16 | .97 | .39 | .92 | 1.41 | |
| 10UAN10[] | 5/8 | 5/8 | 7/8-14 | 1.97 | 1 | 15/16 | 1 | .48 | .92 | 1.53 | |
| 12UAN12[] | 3/4 | 3/4 | 1 1/16-12 | 2.16 | 1 1/8 | 1 1/8 | 1 | .61 | .97 | 1.72 | |
| 16UAN16[] | 1 | 1 | 1 5/16-12 | 2.50 | 1 1/2 | 1 3/8 | 1.31 | .84 | 1.08 | 1.94 | |



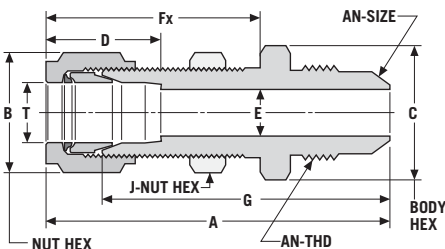
Union, AN O-ring: UANO

connects fractional tube to flared tube

UANO Application:
GYROLOK® with AND 10056 or MS 33656 for gasket sealing with AND 10050 or MS 16142 ports.

UANO **Mating Part**

| Part Number* | T | | Dimensions — inches | | | | | | | | |
|--------------|-----------|---------|---------------------|------|-------|-------|-----|-----|-----|------|--|
| | Tube O.D. | AN Size | AN Thread | A | B | C | D | E | F | G | |
| 2UAN02[] | 1/8 | 1/8 | 5/16-24 UNF-3A | 1.28 | 7/16 | 9/16 | .56 | .06 | .67 | .97 | |
| 2UAN04[] | 1/8 | 1/4 | 7/16-20 UNF-3A | 1.44 | 7/16 | 11/16 | .56 | .09 | .67 | 1.13 | |
| 4UAN04[] | 1/4 | 1/4 | 7/16-20 UNF-3A | 1.52 | 9/16 | 11/16 | .64 | .17 | .77 | 1.19 | |
| 4UAN06[] | 1/4 | 3/8 | 9/16-18 UNF-3A | 1.58 | 9/16 | 13/16 | .64 | .19 | .77 | 1.25 | |
| 6UAN04[] | 3/8 | 1/4 | 7/16-20 UNF-3A | 1.61 | 11/16 | 11/16 | .72 | .17 | .83 | 1.27 | |
| 6UAN06[] | 3/8 | 3/8 | 9/16-18 UNF-3A | 1.63 | 11/16 | 13/16 | .72 | .28 | .83 | 1.28 | |
| 8UAN08[] | 1/2 | 1/2 | 3/4-16 UNF-3A | 1.88 | 7/8 | 1 | .97 | .39 | .92 | 1.41 | |



Bulkhead Union, AN: BUAN

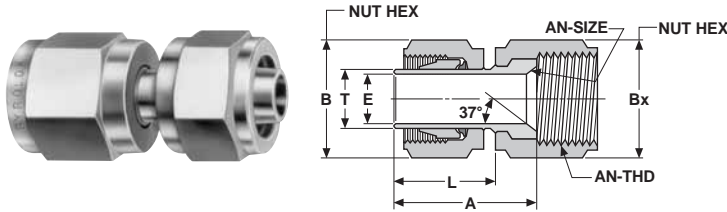
connects fractional tube to flared tube

BUAN Application:
GYROLOK® bulkhead configuration AND 10056 or MS 33656, 37° flare connection for use with flared tubing.

BUAN **Mating Part**

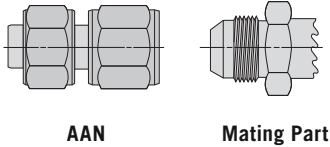
| Part Number* | T | | Dimensions — inches | | | | | | | | | | Max. Panel Hole | Max. Panel Thick. |
|--------------|-----------|---------|---------------------|------|-------|-------|------|-----|------|------|--------|---------|-----------------|-------------------|
| | Tube O.D. | AN Size | AN Thread | A | B | C | D | E | Fx | G | J | | | |
| 2BUAN2[] | 1/8 | 1/8 | 5/16-24 | 1.92 | 7/16 | 9/16 | .56 | .06 | 1.28 | 1.61 | 1/2 | 21/64 | 7/16 | |
| 2BUAN4[] | 1/8 | 1/4 | 7/16-20 | 2.08 | 7/16 | 9/16 | .56 | .09 | 1.28 | 1.77 | 1/2 | 21/64 | 7/16 | |
| 3BUAN3[] | 3/16 | 3/16 | 3/8-24 | 2.09 | 1/2 | 11/16 | .59 | .13 | 1.31 | 1.78 | 9/16 | 25/64 | 15/32 | |
| 4BUAN4[] | 1/4 | 1/4 | 7/16-20 | 2.16 | 9/16 | 11/16 | .64 | .17 | 1.36 | 1.83 | 5/8 | 29/64 | 15/32 | |
| 6BUAN4[] | 3/8 | 1/4 | 7/16-20 | 2.31 | 11/16 | 3/4 | .72 | .17 | 1.50 | 1.97 | 3/4 | 37/64 | 17/32 | |
| 6BUAN6[] | 3/8 | 3/8 | 9/16-18 | 2.31 | 11/16 | 13/16 | .72 | .28 | 1.50 | 1.97 | 3/4 | 37/64 | 17/32 | |
| 8BUAN8[] | 1/2 | 1/2 | 3/4-16 | 2.66 | 7/8 | 1 | .97 | .39 | 1.72 | 2.19 | 15/16 | 49/64 | 19/32 | |
| 10BUAN10[] | 5/8 | 5/8 | 7/8-14 | 2.80 | 1 | 1 1/8 | 1 | .48 | 1.72 | 2.36 | 1 1/16 | 57/64 | 9/16 | |
| 12BUAN12[] | 3/4 | 3/4 | 1 1/16-12 | 3.34 | 1 1/8 | 1 3/8 | 1 | .61 | 1.91 | 2.70 | 1 3/16 | 1 1/64 | 21/32 | |
| 16BUAN16[] | 1 | 1 | 1 5/16-12 | 3.72 | 1 1/2 | 1 5/8 | 1.31 | .84 | 2.34 | 3.16 | 1 9/16 | 1 21/64 | 1 1/32 | |

* [] see page 9 for material specifications.



AAN Application:

GYROLOK® tube stub with ferrules pre-set with 37° flare connection for use with AND 10056 or MS 33656 ends.



AAN

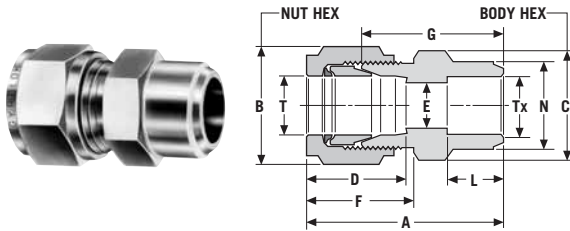
Mating Part

Note: The tube stub end comes with pre-set GYROLOK® ferrules. To assemble, follow GYROLOK® remake instructions, page 58.

Adapter, AN: AAN

connects **fractional** GYROLOK® port to flared tube

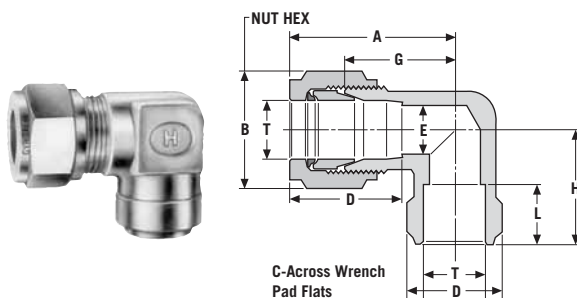
| Part Number* | T | | Dimensions — inches | | | | | |
|--------------|-----------|---------|---------------------|------|------------|-------------|-----|------|
| | Tube O.D. | AN Size | AN Thread | A | B Hex Flat | Bx Hex Flat | E | L |
| 2AAN2[] | 1/8 | 1/8 | 5/16-24 | .92 | 7/16 | 3/8 | .09 | .61 |
| 2AAN4[] | 1/8 | 1/4 | 7/16-20 | .91 | 7/16 | 9/16 | .09 | .61 |
| 3AAN3[] | 3/16 | 3/16 | 3/8-24 | 1 | 1/2 | 7/16 | .13 | .67 |
| 4AAN4[] | 1/4 | 1/4 | 7/16-20 | 1 | 9/16 | 9/16 | .19 | .70 |
| 6AAN6[] | 3/8 | 3/8 | 9/16-18 | 1.17 | 11/16 | 11/16 | .28 | .78 |
| 8AAN8[] | 1/2 | 1/2 | 3/4-16 | 1.44 | 7/8 | 7/8 | .39 | .98 |
| 10AAN10[] | 5/8 | 5/8 | 7/8-14 | 1.53 | 1 | 1 | .50 | 1.09 |
| 12AAN12[] | 3/4 | 3/4 | 1 1/16-12 | 1.59 | 1 1/8 | 1 1/4 | .59 | 1.14 |
| 16AAN16[] | 1 | 1 | 1 5/16-12 | 1.84 | 1 1/2 | 1 1/2 | .80 | 1.31 |



Tube Socket Weld Connector: CW

connects **fractional** tubes

| Part Number* | T | | Dimensions — inches | | | | | | | | |
|--------------|-----------|--------------|---------------------|------------|------------|------|-----|------|------|-----|------|
| | Tube O.D. | Tx Tube O.D. | A | B Hex Flat | C Hex Flat | D | E | F | G | L | N |
| 2CW2[] | 1/8 | 1/8 | 1.19 | 7/16 | 7/16 | .56 | .09 | .67 | .88 | .25 | .31 |
| 3CW3[] | 3/16 | 3/16 | 1.27 | 1/2 | 7/16 | .59 | .13 | .70 | .95 | .28 | .38 |
| 4CW4[] | 1/4 | 1/4 | 1.36 | 9/16 | 1/2 | .64 | .19 | .77 | 1.03 | .31 | .44 |
| 4CW6[] | 1/4 | 3/8 | 1.42 | 9/16 | 5/8 | .64 | .19 | .77 | 1.09 | .47 | .61 |
| 6CW6[] | 3/8 | 3/8 | 1.53 | 11/16 | 5/8 | .72 | .30 | .83 | 1.19 | .38 | .63 |
| 8CW6[] | 1/2 | 3/8 | 1.69 | 7/8 | 13/16 | .97 | .28 | .92 | 1.22 | .47 | .61 |
| 8CW8[] | 1/2 | 1/2 | 1.69 | 7/8 | 13/16 | .97 | .42 | .92 | 1.22 | .50 | .75 |
| 10CW10[] | 5/8 | 5/8 | 1.69 | 1 | 15/16 | 1 | .50 | .92 | 1.25 | .56 | .88 |
| 12CW12[] | 3/4 | 3/4 | 1.75 | 1 1/8 | 1 1/16 | 1 | .66 | .97 | 1.31 | .56 | 1.06 |
| 16CW16[] | 1 | 1 | 2.16 | 1 1/2 | 1 3/8 | 1.31 | .88 | 1.08 | 1.59 | .75 | 1.31 |



Tube Socket Weld Elbow: LW

connects **fractional** tubes

| Part Number* | T | | Dimensions — inches | | | | | | | |
|--------------|-----------|------|---------------------|-------|------|-----|------|------|-----|------|
| | Tube O.D. | A | B Hex Flat | C | D | E | G | H | L | N |
| 2LW2[] | 1/8 | .97 | 7/16 | 7/16 | .56 | .09 | .66 | .66 | .25 | .48 |
| 3LW3[] | 3/16 | 1 | 1/2 | 7/16 | .59 | .13 | .69 | .69 | .28 | .48 |
| 4LW4[] | 1/4 | 1.05 | 9/16 | 7/16 | .64 | .19 | .72 | .72 | .31 | .48 |
| 6LW6[] | 3/8 | 1.19 | 11/16 | 1/2 | .72 | .28 | .84 | .84 | .38 | .61 |
| 8LW8[] | 1/2 | 1.44 | 7/8 | 11/16 | .97 | .42 | .97 | .97 | .50 | .83 |
| 10LW10[] | 5/8 | 1.47 | 1 | 13/16 | 1 | .50 | 1.03 | 1.03 | .56 | .95 |
| 12LW12[] | 3/4 | 1.59 | 1 1/8 | 1 | 1 | .66 | 1.16 | 1.16 | .56 | 1.13 |
| 16LW16[] | 1 | 1.88 | 1 1/2 | 1 1/4 | 1.31 | .88 | 1.31 | 1.31 | .75 | 1.38 |

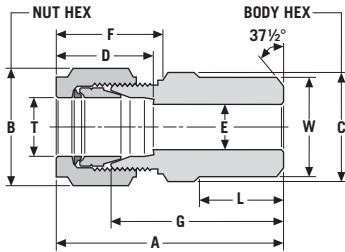
* [] see page 9 for material specifications.

Butt Weld Connector: CBW

connects fractional tube to pipe



Metric fitting shown



| Part Number* | T Tube O.D. | W Butt Weld O.D. | Nom. Pipe Size | Dimensions — inches | | | | | | | |
|--------------|-------------|------------------|----------------|---------------------|------------|------------|------|------|------|------|------|
| | | | | A | B Hex Flat | C Hex Flat | D | E | F | G | L |
| 2CBW2[] | 1/8 | .41 | 1/8 | 1.22 | 7/16 | 7/16 | .56 | .22 | .67 | .91 | .38 |
| 3CBW2[] | 3/16 | .41 | 1/8 | 1.27 | 1/2 | 7/16 | .59 | .22 | .70 | .95 | .38 |
| 4CBW2[] | 1/4 | .41 | 1/8 | 1.33 | 9/16 | 1/2 | .64 | .22 | .77 | 1 | .38 |
| 4CBW4[] | 1/4 | .54 | 1/4 | 1.52 | 9/16 | 9/16 | .64 | .30 | .77 | 1.19 | .56 |
| 6CBW4[] | 3/8 | .54 | 1/4 | 1.63 | 11/16 | 5/8 | .72 | .30 | .83 | 1.28 | .56 |
| 6CBW6[] | 3/8 | .68 | 3/8 | 1.63 | 11/16 | 11/16 | .72 | .42 | .83 | 1.28 | .56 |
| 6CBW8[] | 3/8 | .84 | 1/2 | 1.84 | 11/16 | 7/8 | .72 | .55 | .83 | 1.50 | .75 |
| 8CBW4[] | 1/2 | .54 | 1/4 | 1.69 | 7/8 | 13/16 | .97 | .30 | .92 | 1.22 | .56 |
| 8CBW6[] | 1/2 | .68 | 3/8 | 1.78 | 7/8 | 13/16 | .97 | .42 | .92 | 1.31 | .56 |
| 8CBW8[] | 1/2 | .84 | 1/2 | 1.97 | 7/8 | 7/8 | .97 | .55 | .92 | 1.50 | .75 |
| 10CBW8[] | 5/8 | .84 | 1/2 | 1.97 | 1 | 15/16 | 1 | .55 | .97 | 1.53 | .75 |
| 12CBW12[] | 3/4 | 1.05 | 3/4 | 2.03 | 1 1/8 | 1 1/16 | 1 | .78 | .97 | 1.59 | .75 |
| 16CBW16[] | 1 | 1.32 | 1 | 2.53 | 1 1/2 | 1 3/8 | 1.31 | 1 | 1.08 | 1.97 | .94 |
| 20CBW20[] | 1 1/4 | 1.66 | 1 1/4 | 3.04 | 2 | 1 3/4 | 1.62 | 1.09 | 1.53 | 2.17 | .94 |
| 24CBW24[] | 1 1/2 | 1.90 | 1 1/2 | 3.50 | 2 1/4 | 2 1/8 | 1.97 | 1.34 | 1.78 | 2.43 | 1.03 |
| 32CBW32[] | 2 | 2.38 | 2 | 4.47 | 3 | 2 3/4 | 2.66 | 1.88 | 2.47 | 3 | 1.06 |

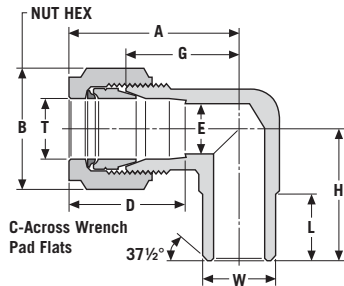
Butt Weld Connector: CBW/ME

connects metric tube to pipe

| Part Number* | T Tube O.D. | W Butt Weld O.D. | Nom. Pipe Size | Dimensions — mm | | | | | | | |
|--------------|-------------|------------------|----------------|-----------------|------------|------------|------|------|------|------|------|
| | | | | A | B Hex Flat | C Hex Flat | D | E | F | G | L |
| 3CBW2[]ME | 3 | 10.3 | 1/8 | 31.0 | 11.1 | 11.1 | 14.3 | 2.2 | 17.1 | 23.0 | 9.5 |
| 4CBW2[]ME | 4 | 10.3 | 1/8 | 34.1 | 12.7 | 11.1 | 15.1 | 2.4 | 17.9 | 26.3 | 9.5 |
| 6CBW2[]ME | 6 | 10.3 | 1/8 | 35.0 | 14.3 | 12.7 | 16.3 | 3.8 | 19.5 | 26.7 | 9.5 |
| 6CBW4[]ME | 6 | 13.7 | 1/4 | 39.9 | 14.3 | 14.3 | 16.3 | 3.8 | 19.5 | 31.5 | 14.3 |
| 8CBW2[]ME | 8 | 10.3 | 1/8 | 34.5 | 15.9 | 14.3 | 16.7 | 3.8 | 19.1 | 26.5 | 9.5 |
| 8CBW4[]ME | 8 | 13.7 | 1/4 | 39.4 | 15.9 | 14.3 | 16.7 | 5.8 | 19.1 | 31.4 | 14.3 |
| 8CBW6[]ME | 8 | 17.2 | 3/8 | 39.4 | 15.9 | 17.5 | 16.7 | 5.8 | 19.1 | 31.4 | 14.2 |
| 8CBW8[]ME | 8 | 21.5 | 1/2 | 45.0 | 15.9 | 22.2 | 16.7 | 5.8 | 19.1 | 37.0 | 19.1 |
| 10CBW4[]ME | 10 | 13.7 | 1/4 | 40.5 | 19.1 | 17.5 | 17.5 | 7.7 | 19.8 | 32.5 | 14.3 |
| 10CBW6[]ME | 10 | 17.2 | 3/8 | 41.5 | 19.1 | 17.5 | 17.5 | 7.9 | 19.8 | 33.5 | 14.2 |
| 10CBW8[]ME | 10 | 21.3 | 1/2 | 46.1 | 19.1 | 22.2 | 17.5 | 7.9 | 19.8 | 38.1 | 19.1 |
| 12CBW4[]ME | 12 | 13.7 | 1/4 | 43.7 | 22.2 | 20.6 | 24.6 | 7.7 | 23.4 | 31.8 | 14.3 |
| 12CBW6[]ME | 12 | 17.2 | 3/8 | 44.0 | 22.2 | 22.2 | 24.6 | 7.9 | 23.4 | 32.0 | 14.2 |
| 12CBW8[]ME | 12 | 21.3 | 1/2 | 50.0 | 22.2 | 22.2 | 23.5 | 13.9 | 23.4 | 38.4 | 19.1 |
| 12CBW12[]ME | 12 | 26.7 | 3/4 | 51.8 | 22.2 | 27.0 | 24.6 | 9.9 | 23.4 | 39.9 | 19.1 |
| 14CBW8[]ME | 14 | 21.3 | 1/2 | 47.5 | 23.8 | 22.2 | 22.2 | 11.9 | 21.0 | 38.1 | 19.1 |
| 16CBW8[]ME | 16 | 21.3 | 1/2 | 50.0 | 25.4 | 23.8 | 25.0 | 12.7 | 23.4 | 38.9 | 19.1 |
| 18CBW8[]ME | 18 | 21.3 | 1/2 | 51.2 | 28.6 | 27.0 | 25.4 | 13.8 | 24.6 | 41.3 | 19.1 |
| 22CBW16[]ME | 22 | 33.4 | 1 | 57.4 | 31.8 | 34.9 | 27.0 | 17.9 | 24.6 | 46.2 | 23.8 |
| 25CBW16[]ME | 25 | 33.4 | 1 | 64.0 | 38.1 | 34.9 | 33.3 | 21.7 | 27.4 | 50.0 | 23.8 |



Metric fitting shown



Butt Weld Elbow: LBW

connects fractional tube to pipe

| Part Number* | T Tube O.D. | W Butt Weld O.D. | Nom. Pipe Size | Dimensions — inches | | | | | | | |
|--------------|-------------|------------------|----------------|---------------------|------------|-------|------|-----|------|------|-----|
| | | | | A | B Hex Flat | C | D | E | G | H | L |
| 2LBW2[] | 1/8 | .41 | 1/8 | .97 | 7/16 | 7/16 | .56 | .09 | .66 | .72 | .41 |
| 3LBW2[] | 3/16 | .41 | 1/8 | 1 | 1/2 | 7/16 | .59 | .13 | .69 | .75 | .45 |
| 4LBW2[] | 1/4 | .41 | 1/8 | 1.05 | 9/16 | 7/16 | .64 | .19 | .72 | .78 | .48 |
| 4LBW4[] | 1/4 | .54 | 1/4 | 1.11 | 9/16 | 1/2 | .64 | .19 | .78 | .94 | — |
| 6LBW4[] | 3/8 | .54 | 1/4 | 1.19 | 11/16 | 1/2 | .72 | .28 | .84 | 1 | — |
| 8LBW6[] | 1/2 | .68 | 3/8 | 1.44 | 7/8 | 11/16 | .97 | .42 | .97 | 1.13 | — |
| 8LBW8[] | 1/2 | .84 | 1/2 | 1.50 | 7/8 | 13/16 | .97 | .42 | 1.03 | 1.31 | — |
| 10LBW8[] | 5/8 | .84 | 1/2 | 1.47 | 1 | 13/16 | 1 | .50 | 1.03 | 1.38 | — |
| 12LBW12[] | 3/4 | 1.05 | 3/4 | 1.59 | 1 1/8 | 13/16 | 1 | .66 | 1.16 | 1.50 | — |
| 16LBW12[] | 1 | 1.05 | 3/4 | 1.88 | 1 1/2 | 1 1/4 | 1.31 | .88 | 1.31 | 1.66 | .86 |
| 16LBW16[] | 1 | 1.32 | 1 | 1.88 | 1 1/2 | 1 1/4 | 1.31 | .88 | 1.31 | 1.84 | — |

Butt Weld Elbow: LBW/ME

connects metric to pipe

| Part Number* | T Tube O.D. | W Butt Weld O.D. | Nom. Pipe Size | Dimensions — mm | | | | | | | |
|--------------|-------------|------------------|----------------|-----------------|------------|------|------|------|------|------|------|
| | | | | A | B Hex Flat | C | D | E | G | H | L |
| 3LBW2[]ME | 3 | 10.3 | 1/8 | 25.0 | 11.1 | 11.0 | 14.3 | 2.2 | 17.0 | 19.0 | 9.5 |
| 6LBW2[]ME | 6 | 10.3 | 1/8 | 26.5 | 14.3 | 11.0 | 16.3 | 3.8 | 18.5 | 20.0 | 9.5 |
| 6LBW4[]ME | 6 | 13.7 | 1/4 | 28.0 | 14.3 | 12.5 | 16.3 | 3.8 | 18.5 | 25.5 | 14.3 |
| 12LBW12[]ME | 12 | 26.7 | 3/4 | 38.1 | 22.2 | 25.4 | 24.6 | 9.9 | 26.2 | 38.1 | 19.1 |
| 16LBW8[]ME | 16 | 21.3 | 1/2 | 37.5 | 25.4 | 21.5 | 25.0 | 12.7 | 26.0 | 33.5 | 19.1 |
| 18LBW8[]ME | 18 | 21.3 | 1/2 | 39.4 | 28.6 | 25.4 | 25.4 | 13.9 | 29.5 | 38.1 | 19.1 |

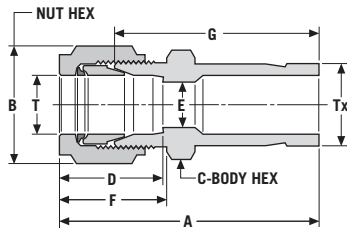
* [] see page 9 for material specifications.

Reducer: R connects **fractional** tube to fractional port

| Part Number* | T Tube | | Tx Tube | | Dimensions – inches | | | | |
|--------------|--------|-------|---------|----------|---------------------|------|------|------|------|
| | O.D. | O.D. | A | Hex Flat | Hex Flat | D | E | F | G |
| 1R2[] | 1/16 | 1/8 | 1.28 | 5/16 | 5/16 | .41 | .05 | .48 | 1.06 |
| 1R4[] | 1/16 | 1/4 | 1.34 | 5/16 | 5/16 | .41 | .05 | .48 | 1.13 |
| 2R3[] | 1/8 | 3/16 | 1.50 | 7/16 | 7/16 | .56 | .09 | .67 | 1.19 |
| 2R4[] | 1/8 | 1/4 | 1.53 | 7/16 | 7/16 | .56 | .09 | .67 | 1.22 |
| 2R6[] | 1/8 | 3/8 | 1.63 | 7/16 | 7/16 | .56 | .09 | .67 | 1.31 |
| 2R8[] | 1/8 | 1/2 | 1.84 | 7/16 | 9/16 | .56 | .09 | .67 | 1.53 |
| 3R4[] | 3/16 | 1/4 | 1.59 | 1/2 | 7/16 | .59 | .13 | .70 | 1.28 |
| 3R6[] | 3/16 | 3/8 | 1.67 | 1/2 | 7/16 | .59 | .13 | .70 | 1.36 |
| 3R8[] | 3/16 | 1/2 | 1.88 | 1/2 | 9/16 | .59 | .13 | .70 | 1.56 |
| 4R2[] | 1/4 | 1/8 | 1.58 | 9/16 | 1/2 | .64 | .05 | .77 | 1.25 |
| 4R4[] | 1/4 | 1/4 | 1.64 | 9/16 | 1/2 | .64 | .19 | .77 | 1.31 |
| 4R6[] | 1/4 | 3/8 | 1.73 | 9/16 | 1/2 | .64 | .19 | .77 | 1.41 |
| 4R8[] | 1/4 | 1/2 | 1.95 | 9/16 | 9/16 | .64 | .19 | .77 | 1.63 |
| 4R10[] | 1/4 | 5/8 | 2.05 | 9/16 | 11/16 | .64 | .19 | .77 | 1.72 |
| 4R12[] | 1/4 | 3/4 | 2.14 | 9/16 | 13/16 | .64 | .19 | .77 | 1.81 |
| 6R4[] | 3/8 | 1/4 | 1.73 | 11/16 | 5/8 | .72 | .19 | .83 | 1.38 |
| 6R6[] | 3/8 | 3/8 | 1.86 | 11/16 | 5/8 | .72 | .28 | .83 | 1.52 |
| 6R8[] | 3/8 | 1/2 | 1.03 | 11/16 | 5/8 | .72 | .28 | .83 | 1.69 |
| 6R10[] | 3/8 | 5/8 | 2.13 | 11/16 | 11/16 | .72 | .28 | .83 | 1.78 |
| 6R12[] | 3/8 | 3/4 | 2.22 | 11/16 | 13/16 | .72 | .28 | .83 | 1.88 |
| 6R14[] | 3/8 | 7/8 | 2.25 | 11/16 | 15/16 | .72 | .28 | .83 | 1.91 |
| 6R16[] | 3/8 | 1 | 2.45 | 11/16 | 1 1/16 | .72 | .28 | .83 | 2.11 |
| 8R4[] | 1/2 | 1/4 | 1.84 | 7/8 | 13/16 | .97 | .13 | .92 | 1.38 |
| 8R6[] | 1/2 | 3/8 | 1.94 | 7/8 | 13/16 | .97 | .25 | .92 | 1.47 |
| 8R8[] | 1/2 | 1/2 | 2.20 | 7/8 | 13/16 | .97 | .39 | .92 | 1.73 |
| 8R10[] | 1/2 | 5/8 | 2.28 | 7/8 | 13/16 | .97 | .42 | .92 | 1.81 |
| 8R12[] | 1/2 | 3/4 | 2.34 | 7/8 | 13/16 | .97 | .42 | .92 | 1.88 |
| 8R16[] | 1/2 | 1 | 2.56 | 7/8 | 1 1/16 | .97 | .42 | .92 | 2.09 |
| 10R12[] | 5/8 | 3/4 | 2.31 | 1 | 15/16 | 1 | .50 | .92 | 1.88 |
| 10R14[] | 5/8 | 7/8 | 2.38 | 1 | 15/16 | 1 | .50 | .92 | 1.94 |
| 10R16[] | 5/8 | 1 | 2.50 | 1 | 1 1/16 | 1 | .50 | .92 | 2.06 |
| 12R14[] | 3/4 | 7/8 | 2.50 | 1 1/8 | 1 1/16 | 1 | .66 | .97 | 2.06 |
| 12R16[] | 3/4 | 1 | 2.56 | 1 1/8 | 1 1/16 | 1 | .66 | .97 | 2.13 |
| 14R16[] | 7/8 | 1 | 2.56 | 1 1/4 | 1 3/16 | 1.06 | .72 | .97 | 2.13 |
| 16R24[] | 1 | 1 1/2 | 3.51 | 1 1/2 | 1 5/8 | 1.23 | .88 | 1.04 | 3.03 |
| 20R24[] | 1 1/4 | 1 1/2 | 4.10 | 2 1/4 | 1 7/8 | 1.62 | 1.09 | 1.53 | 3.23 |
| 20R32[] | 1 1/4 | 2 | 4.93 | 3 | 2 1/4 | 1.62 | 1.09 | 1.53 | 4.06 |
| 24R32[] | 1 1/2 | 2 | 5.17 | 3 | 2 1/4 | 1.97 | 1.34 | 1.78 | 4.10 |



Fractional fitting shown

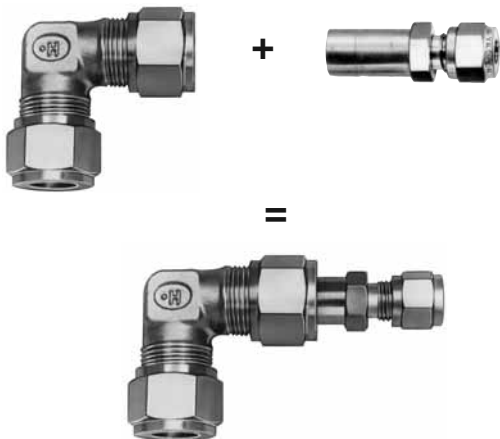


Reducer: R/MM connects **metric** tube to metric port

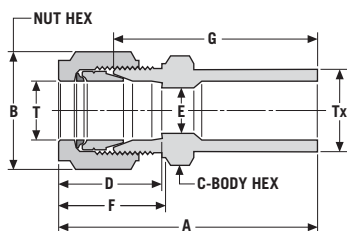
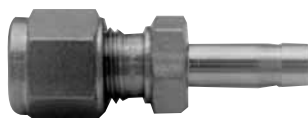
| Part Number* | T Tube | | Tx Tube | | Dimensions – mm | | | | |
|--------------|--------|------|---------|----------|-----------------|------|------|------|------|
| | O.D. | O.D. | A | Hex Flat | Hex Flat | D | E | F | G |
| 3R4[]MM | 3 | 4 | 41.1 | 11.1 | 11.1 | 14.3 | 2.2 | 17.1 | 33.2 |
| 3R6[]MM | 3 | 6 | 41.1 | 11.1 | 11.1 | 14.3 | 2.2 | 17.1 | 33.2 |
| 3R10[]MM | 3 | 10 | 43.8 | 11.1 | 12.7 | 14.3 | 2.2 | 17.1 | 35.8 |
| 4R6[]MM | 4 | 6 | 41.9 | 12.7 | 11.1 | 15.1 | 2.3 | 17.9 | 34.1 |
| 4R8[]MM | 4 | 8 | 43.8 | 12.7 | 12.7 | 15.1 | 2.3 | 17.9 | 35.9 |
| 4R10[]MM | 4 | 10 | 44.5 | 12.7 | 12.7 | 15.1 | 2.3 | 17.9 | 36.7 |
| 6R3[]MM | 6 | 3 | 42.1 | 14.3 | 12.7 | 16.3 | 2.1 | 19.5 | 33.8 |
| 6R4[]MM | 6 | 4 | 42.9 | 14.3 | 12.7 | 16.3 | 2.3 | 19.5 | 34.6 |
| 6R8[]MM | 6 | 8 | 45.3 | 14.3 | 12.7 | 16.3 | 3.8 | 19.5 | 37.0 |
| 6R10[]MM | 6 | 10 | 46.1 | 14.3 | 12.7 | 16.3 | 3.8 | 19.5 | 37.7 |
| 6R12[]MM | 6 | 12 | 50.7 | 14.3 | 14.3 | 16.3 | 3.8 | 19.5 | 42.4 |
| 6R18[]MM | 6 | 18 | 55.1 | 14.3 | 20.6 | 16.3 | 3.8 | 19.5 | 46.7 |
| 8R6[]MM | 8 | 6 | 43.8 | 15.9 | 15.9 | 16.7 | 4.4 | 19.1 | 35.8 |
| 8R8[]MM | 8 | 8 | 44.8 | 15.9 | 14.3 | 16.7 | 5.8 | 19.1 | 36.8 |
| 8R10[]MM | 8 | 10 | 45.6 | 15.9 | 14.3 | 16.7 | 5.8 | 19.1 | 37.6 |
| 8R12[]MM | 8 | 12 | 50.2 | 15.9 | 14.3 | 16.7 | 5.8 | 19.1 | 42.2 |
| 8R16[]MM | 8 | 16 | 54.5 | 15.9 | 17.5 | 16.7 | 5.8 | 19.1 | 46.5 |
| 10R2[]MM | 10 | 2 | 44.2 | 19.1 | 17.5 | 17.5 | 1.0 | 19.8 | 36.2 |
| 10R6[]MM | 10 | 6 | 44.2 | 19.1 | 17.5 | 17.5 | 4.4 | 19.8 | 36.2 |
| 10R8[]MM | 10 | 8 | 45.8 | 19.1 | 17.5 | 17.5 | 6.2 | 19.8 | 37.8 |
| 10R12[]MM | 10 | 12 | 51.3 | 19.1 | 17.5 | 17.5 | 7.9 | 19.8 | 43.4 |
| 10R16[]MM | 10 | 16 | 54.7 | 19.1 | 17.5 | 17.5 | 7.9 | 19.8 | 46.7 |
| 10R18[]MM | 10 | 18 | 54.0 | 19.1 | 20.6 | 17.5 | 7.9 | 19.8 | 47.0 |
| 10R25[]MM | 10 | 25 | 62.8 | 19.1 | 27.0 | 17.5 | 7.9 | 19.8 | 54.9 |
| 12R6[]MM | 12 | 6 | 49.3 | 22.2 | 20.6 | 24.6 | 4.4 | 23.4 | 37.3 |
| 12R8[]MM | 12 | 8 | 50.3 | 22.2 | 20.6 | 24.6 | 6.2 | 23.4 | 38.4 |
| 12R10[]MM | 12 | 10 | 51.8 | 22.2 | 20.6 | 24.6 | 7.6 | 23.4 | 39.9 |
| 12R16[]MM | 12 | 16 | 56.0 | 22.2 | 20.6 | 24.6 | 9.9 | 23.4 | 46.0 |
| 12R18[]MM | 12 | 18 | 59.2 | 22.2 | 20.6 | 24.6 | 9.9 | 23.4 | 47.2 |
| 12R22[]MM | 12 | 22 | 62.2 | 22.2 | 23.8 | 24.6 | 9.9 | 23.4 | 50.3 |
| 12R25[]MM | 12 | 25 | 67.6 | 22.2 | 28.6 | 24.6 | 9.9 | 23.4 | 55.6 |
| 14R12[]MM | 14 | 12 | 53.5 | 23.8 | 22.2 | 22.2 | 9.1 | 21.0 | 44.1 |
| 15R12[]MM | 15 | 12 | 55.0 | 23.8 | 22.2 | 22.2 | 9.1 | 21.8 | 44.7 |
| 16R12[]MM | 16 | 12 | 57.4 | 25.4 | 23.8 | 25.0 | 9.1 | 23.4 | 46.2 |
| 18R10[]MM | 18 | 10 | 53.1 | 28.6 | 27.0 | 25.4 | 12.6 | 24.6 | 43.2 |
| 18R12[]MM | 18 | 12 | 56.7 | 28.6 | 27.0 | 25.4 | 9.1 | 24.6 | 46.7 |
| 18R16[]MM | 18 | 16 | 57.0 | 28.6 | 27.0 | 25.4 | 9.9 | 24.6 | 47.0 |
| 18R22[]MM | 18 | 22 | 61.9 | 28.6 | 27.0 | 25.4 | 15.8 | 24.6 | 51.9 |
| 18R25[]MM | 18 | 25 | 64.0 | 28.6 | 30.0 | 25.4 | 15.8 | 24.6 | 54.0 |
| 25R32[]MM | 25 | 32 | 89.1 | 38.1 | 38.1 | 31.3 | 21.8 | 26.5 | 76.8 |
| 30R25[]MM | 30 | 25 | 89.7 | 50.8 | 46.0 | 38.0 | 19.5 | 41.2 | 67.4 |
| 32R10[]MM | 32 | 10 | 76.1 | 50.8 | 46.0 | 42.3 | 7.6 | 42.9 | 52.6 |
| 32R25[]MM | 32 | 25 | 91.7 | 50.8 | 46.0 | 42.3 | 19.5 | 42.9 | 68.2 |
| 38R25[]MM | 38 | 25 | 100.6 | 60.3 | 55.6 | 49.4 | 19.5 | 49.5 | 73.0 |

Reducing Assemblies Made With GYROLOK® Fittings

Use the GYROLOK® Reducer to reduce the size of an existing fitting, there by providing more flexibility in a variety of installations. It comes with a GYROLOK® fitting on one end and a machined tube stub on the other.

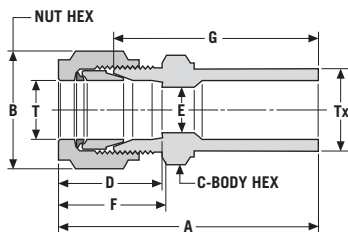


* [] see page 9 for material specifications.



Reducer: R/ME connects **metric** tube to fractional port

| Part Number* | T Tube O.D. | Tx Tube O.D. | Dimensions — mm | | | | | | |
|--------------|-------------|--------------|-----------------|------------|------------|------|------|------|------|
| | | | A | B Hex Flat | C Hex Flat | D | E | F | G |
| 3R2[]ME | 3 | 1/8 | 39.0 | 11.1 | 11.1 | 14.3 | 2.2 | 17.1 | 30.0 |
| 3R4[]ME | 3 | 1/4 | 40.0 | 11.1 | 11.1 | 14.3 | 2.2 | 17.1 | 31.0 |
| 3R6[]ME | 3 | 3/8 | 43.0 | 11.1 | 12.7 | 14.3 | 2.2 | 17.1 | 34.0 |
| 4R4[]ME | 4 | 1/4 | 41.4 | 12.7 | 11.1 | 15.1 | 2.3 | 17.9 | 33.5 |
| 6R2[]ME | 6 | 1/8 | 41.1 | 14.3 | 12.7 | 16.3 | 3.8 | 19.5 | 32.8 |
| 6R4[]ME | 6 | 1/4 | 42.6 | 14.3 | 12.7 | 16.3 | 3.8 | 19.5 | 34.2 |
| 6R6[]ME | 6 | 3/8 | 44.9 | 14.3 | 12.7 | 16.3 | 3.8 | 19.5 | 36.6 |
| 6R8[]ME | 6 | 1/2 | 49.8 | 14.3 | 14.3 | 16.3 | 3.8 | 19.5 | 41.4 |
| 6R10[]ME | 6 | 5/8 | 52.0 | 14.3 | 17.5 | 16.3 | 4.6 | 19.5 | 43.6 |
| 8R6[]ME | 8 | 3/8 | 45.1 | 15.9 | 14.3 | 16.7 | 5.9 | 19.1 | 37.1 |
| 8R8[]ME | 8 | 1/2 | 49.2 | 15.9 | 14.3 | 16.7 | 5.8 | 19.1 | 41.2 |
| 8R10[]ME | 8 | 5/8 | 53.5 | 15.9 | 17.5 | 16.7 | 5.8 | 19.1 | 45.5 |
| 10R6[]ME | 10 | 3/8 | 45.7 | 19.1 | 17.5 | 17.5 | 7.0 | 19.8 | 37.7 |
| 10R8[]ME | 10 | 1/2 | 50.6 | 19.1 | 17.5 | 17.5 | 7.9 | 19.8 | 42.6 |
| 10R10[]ME | 10 | 5/8 | 53.8 | 19.1 | 17.5 | 17.5 | 7.9 | 19.8 | 45.8 |
| 12R8[]ME | 12 | 1/2 | 56.4 | 22.2 | 20.6 | 24.6 | 9.9 | 23.4 | 44.5 |
| 12R12[]ME | 12 | 3/4 | 61.5 | 22.2 | 20.6 | 24.6 | 9.9 | 23.4 | 49.5 |
| 18R12[]ME | 18 | 3/4 | 61.0 | 28.6 | 27.0 | 25.4 | 15.0 | 24.6 | 51.1 |
| 25R16[]ME | 25 | 1 | 64.0 | 38.1 | 27.0 | 33.3 | 13.8 | 27.4 | 54.0 |



Reducer: R/EM connects **fractional** tube to metric port

| Part Number* | T Tube O.D. | Tx Tube O.D. | Dimensions — inches | | | | | | |
|--------------|-------------|--------------|---------------------|------------|------------|------|-----|------|------|
| | | | A | B Hex Flat | C Hex Flat | D | E | F | G |
| 1R3[]EM | 1/16 | 3 | 33.5 | 7.9 | 7.9 | 10.3 | 1.2 | 12.3 | 27.9 |
| 1R8[]EM | 1/16 | 8 | 37.3 | 7.9 | 11.1 | 10.3 | 1.2 | 12.3 | 31.8 |
| 2R6[]EM | 1/8 | 6 | 38.9 | 11.1 | 11.1 | 14.3 | 4.5 | 17.1 | 30.9 |
| 4R3[]EM | 1/4 | 3 | 42.1 | 14.3 | 12.7 | 16.3 | 2.1 | 19.5 | 33.8 |
| 4R8[]EM | 1/4 | 8 | 45.2 | 14.3 | 12.7 | 16.3 | 4.6 | 19.5 | 36.8 |
| 4R10[]EM | 1/4 | 10 | 46.1 | 14.3 | 12.7 | 16.3 | 4.6 | 19.5 | 37.7 |
| 4R12[]EM | 1/4 | 12 | 50.7 | 14.3 | 14.3 | 16.3 | 4.6 | 19.5 | 42.4 |
| 4R18[]EM | 1/4 | 18 | 54.1 | 14.3 | 20.6 | 16.3 | 4.6 | 19.5 | 45.7 |



Metric fitting shown

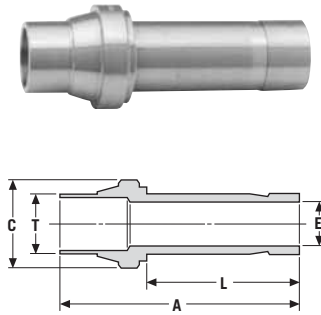
Bulkhead Adapter: BA connects **fractional** tube to fractional port

| Part Number* | T Tube O.D. | Dimensions — inches | | | | | | | | | | Panel Hole Size | Max. Panel Thick. |
|--------------|-------------|---------------------|------------|------------|------|-----|------|------|------------|------|------|-----------------|-------------------|
| | | A | B Hex Flat | C Hex Flat | D | E | Fx | G | J Hex Flat | L | | | |
| 2BA2[] | 1/8 | 2.09 | 7/16 | 1/2 | .56 | .09 | 1.28 | 1.72 | 1/2 | .63 | .33 | 7/16 | |
| 3BA3[] | 3/16 | 2.16 | 1/2 | 9/16 | .59 | .13 | 1.31 | 1.84 | 9/16 | .66 | .39 | 15/32 | |
| 4BA4[] | 1/4 | 2.27 | 9/16 | 5/8 | .64 | .19 | 1.36 | 1.94 | 5/8 | .69 | .45 | 15/32 | |
| 6BA6[] | 3/8 | 2.50 | 11/16 | 3/4 | .72 | .28 | 1.50 | 2.16 | 3/4 | .78 | .58 | 17/32 | |
| 8BA8[] | 1/2 | 2.94 | 7/8 | 15/16 | .97 | .39 | 1.72 | 2.47 | 15/16 | .97 | .77 | 17/32 | |
| 10BA10[] | 5/8 | 3.09 | 1 | 1 1/16 | 1 | .50 | 1.72 | 2.66 | 1 1/16 | 1.08 | .89 | 9/16 | |
| 12BA12[] | 3/4 | 3.38 | 1 1/8 | 1 3/16 | 1 | .59 | 1.91 | 2.94 | 1 3/16 | 1.13 | 1.02 | 21/32 | |
| 14BA14[] | 7/8 | 3.63 | 1 1/4 | 1 5/16 | 1.06 | .69 | 2.09 | 3.19 | 1 5/16 | 1.19 | 1.14 | 25/32 | |
| 16BA16[] | 1 | 4.14 | 1 1/2 | 1 9/16 | 1.08 | .80 | 2.34 | 3.58 | 1 9/16 | 1.38 | 1.33 | 1 1/32 | |

Bulkhead Adapter: BA/MM connects **metric** tube to metric port

| Part Number* | T Tube O.D. | Dimensions — mm | | | | | | | | | | Panel Hole Size | Max. Panel Thick. |
|--------------|-------------|-----------------|------------|------------|------|------|------|------|------------|------|------|-----------------|-------------------|
| | | A | B Hex Flat | C Hex Flat | D | E | Fx | G | J Hex Flat | L | | | |
| 3BA3[]MM | 3 | 55.1 | 11.1 | 12.7 | 14.3 | 2.1 | 32.5 | 47.1 | 12.7 | 15.9 | 8.3 | 12.0 | |
| 4BA4[]MM | 4 | 56.7 | 12.7 | 14.3 | 15.1 | 2.3 | 33.2 | 48.9 | 14.3 | 16.7 | 10.0 | 12.0 | |
| 6BA6[]MM | 6 | 58.7 | 14.3 | 15.9 | 16.3 | 3.8 | 34.6 | 50.3 | 15.9 | 17.3 | 11.5 | 13.0 | |
| 8BA8[]MM | 8 | 62.9 | 15.9 | 17.5 | 16.7 | 5.8 | 36.6 | 54.9 | 17.5 | 19.1 | 13.1 | 14.0 | |
| 10BA10[]MM | 10 | 64.1 | 19.1 | 19.1 | 17.5 | 7.5 | 37.3 | 56.1 | 19.1 | 19.9 | 16.5 | 14.0 | |
| 12BA12[]MM | 12 | 75.4 | 22.2 | 23.8 | 24.6 | 9.1 | 43.7 | 63.5 | 23.8 | 24.5 | 19.5 | 16.0 | |
| 14BA14[]MM | 14 | 75.0 | 23.8 | 23.8 | 22.2 | 11.9 | 41.1 | 63.0 | 23.8 | 24.5 | 19.5 | 16.0 | |
| 16BA16[]MM | 16 | 79.0 | 25.4 | 27.0 | 25.0 | 12.7 | 43.7 | 68.0 | 27.0 | 27.3 | 22.5 | 14.0 | |
| 18BA18[]MM | 18 | 86.0 | 28.6 | 30.0 | 25.4 | 13.8 | 48.0 | 75.0 | 30.2 | 28.2 | 26.0 | 17.0 | |
| 22BA22[]MM | 22 | 92.0 | 31.8 | 33.5 | 27.0 | 17.9 | 53.0 | 81.0 | 33.3 | 30.0 | 29.5 | 24.0 | |
| 25BA25[]MM | 25 | 105.0 | 38.1 | 40.0 | 33.3 | 18.1 | 60.0 | 91.0 | 39.7 | 35.4 | 33.8 | 24.0 | |

* [] see page 9 for material specifications.



Port Connector: PC

connects two **fractional** ports

| PART NUMBER* | T TUBE OD | DIMENSIONS – INCHES | | | |
|--------------|-----------------|---------------------|------|------|------|
| | | A | C | E | L |
| 1PC[] | 1/16 | 0.74 | 0.13 | 0.03 | 0.54 |
| 2PC[] | 1/8 | 1.10 | 0.25 | 0.09 | 0.73 |
| 3PC[] | 3/16 | 1.10 | 0.32 | 0.19 | 0.74 |
| 4PC[] | 1/4 | 1.24 | 0.38 | 0.19 | 0.84 |
| 6PC[] | 3/8 | 1.33 | 0.50 | 0.28 | 0.88 |
| 8PC[] | 1/2 | 1.92 | 0.69 | 0.39 | 1.23 |
| 10PC[] | 5/8 | 1.96 | 0.82 | 0.50 | 1.25 |
| 12PC[] | 3/4 | 1.83 | 0.94 | 0.59 | 1.13 |
| 14PC[] | 7/8 | 2.20 | 1.10 | 0.69 | 1.38 |
| 16PC[] | 1.0 | 2.57 | 1.20 | 0.80 | 1.63 |

Port Connector: PC/MM

connects two **metric** ports

| PART NUMBER* | T TUBE OD | DIMENSIONS – MM | | | |
|--------------|-----------------|-----------------|------|------|------|
| | | A | C | E | L |
| 3PC[]MM | 3 | 27.9 | 6.4 | 2.2 | 18.3 |
| 4PC[]MM | 4 | 26.1 | 7.6 | 2.4 | 16.7 |
| 6PC[]MM | 6 | 31.4 | 9.3 | 2.8 | 21.2 |
| 8PC[]MM | 8 | 31.1 | 11.1 | 6.4 | 20.7 |
| 10PC[]MM | 10 | 34.2 | 13.2 | 7.6 | 22.6 |
| 12PC[]MM | 12 | 48.6 | 17.5 | 9.2 | 31.0 |
| 14PC[]MM | 14 | 43.2 | 19.1 | 11.1 | 27.0 |
| 15PC[]MM | 15 | 44.5 | 19.1 | 11.9 | 28.6 |
| 16PC[]MM | 16 | 50.4 | 20.7 | 12.7 | 31.8 |
| 18PC[]MM | 18 | 51.4 | 23.8 | 13.9 | 33.3 |
| 20PC[]MM | 20 | 60.6 | 26.9 | 15.1 | 41.3 |
| 22PC[]MM | 22 | 54.1 | 26.9 | 17.1 | 34.4 |
| 25PC[]MM | 25 | 66.0 | 31.5 | 19.5 | 41.7 |

GYROLOK® ended ball valve using port connector for close connection to another port.



Installation Instructions

For Port Connector and Reducing Port Connector, see page 59

Reducing Port Connector: PC

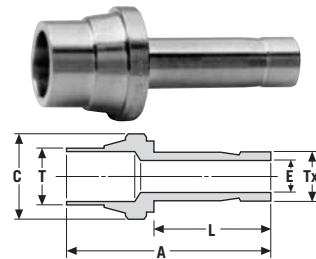
connects two **fractional** ports

| Part Number* | T Tube O.D. | Tx Tube O.D. | Dimensions – inches | | | |
|--------------|-------------------|--------------------|---------------------|-----|-----|------|
| | | | A | C | E | L |
| 2PC1[] | 1/8 | 1/16 | .84 | .25 | .03 | .47 |
| 4PC1[] | 1/4 | 1/16 | .95 | .38 | .03 | .56 |
| 4PC2[] | 1/4 | 1/8 | 1.06 | .38 | .06 | .66 |
| 6PC2[] | 3/8 | 1/8 | 1.16 | .50 | .09 | .70 |
| 6PC4[] | 3/8 | 1/4 | 1.22 | .50 | .19 | .78 |
| 8PC4[] | 1/2 | 1/4 | 1.47 | .69 | .13 | .77 |
| 8PC6[] | 1/2 | 3/8 | 1.55 | .69 | .25 | .83 |
| 12PC8[] | 3/4 | 1/2 | 2 | .94 | .33 | 1.14 |

Reducing Port Connector: PC/MM

connects two **metric** ports

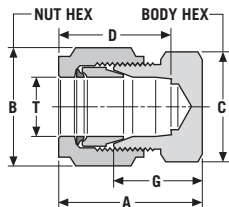
| Part Number* | T Tube O.D. | Tx Tube O.D. | Dimensions – mm | | | |
|--------------|-------------------|--------------------|-----------------|------|------|------|
| | | | A | C | E | L |
| 6PC3[]MM | 6 | 3 | 29.9 | 9.3 | 2.1 | 18.1 |
| 8PC6[]MM | 8 | 6 | 29.4 | 11.2 | 4.4 | 19.0 |
| 10PC6[]MM | 10 | 6 | 31.1 | 13.2 | 4.4 | 19.8 |
| 10PC8[]MM | 10 | 8 | 33.7 | 13.2 | 6.4 | 22.2 |
| 12PC6[]MM | 12 | 6 | 39.0 | 17.5 | 4.4 | 21.2 |
| 12PC8[]MM | 12 | 8 | 40.6 | 17.5 | 6.4 | 23.0 |
| 12PC10[]MM | 12 | 10 | 39.4 | 17.5 | 7.5 | 21.7 |
| 16PC12[]MM | 16 | 12 | 50.2 | 20.7 | 9.2 | 31.5 |
| 18PC16[]MM | 18 | 16 | 50.4 | 24.0 | 12.7 | 32.3 |
| 22PC18[]MM | 22 | 18 | 53.6 | 27.5 | 13.9 | 34.0 |
| 25PC18[]MM | 25 | 18 | 58.4 | 32.0 | 13.9 | 34.1 |



* [] see page 9 for material specifications.



Fractional shown



Cap: CP

caps end of fractional tube

| Part Number* | T Tube O.D. | Dimensions — inches | | | | |
|--------------|-------------|---------------------|------------|------------|------|------|
| | | A | B Hex Flat | C Hex Flat | D | G |
| 1CP [] | 1/16 | .66 | 5/16 | 5/16 | .41 | .44 |
| 2CP [] | 1/8 | .91 | 7/16 | 7/16 | .56 | .53 |
| 3CP [] | 3/16 | .89 | 1/2 | 7/16 | .59 | .58 |
| 4CP [] | 1/4 | .95 | 9/16 | 1/2 | .64 | .63 |
| 6CP [] | 3/8 | 1.06 | 11/16 | 5/8 | .72 | .72 |
| 8CP [] | 1/2 | 1.28 | 7/8 | 13/16 | .97 | .81 |
| 10CP [] | 5/8 | 1.33 | 1 | 15/16 | 1 | .89 |
| 12CP [] | 3/4 | 1.36 | 1 1/8 | 1 1/16 | 1 | .92 |
| 14CP [] | 7/8 | 1.41 | 1 1/4 | 1 3/16 | 1.06 | .97 |
| 16CP [] | 1 | 1.77 | 1 1/2 | 1 3/8 | 1.31 | 1.20 |
| 20CP [] | 1 1/4 | 2.10 | 1 7/8 | 1 3/4 | 1.53 | 1.23 |
| 24CP [] | 1 1/2 | 2.54 | 2 1/4 | 2 1/8 | 1.78 | 1.47 |
| 32CP [] | 2 | 3.41 | 3 | 2 3/4 | 2.47 | 1.94 |

Tube Cap: CP/MM

caps end of metric tube

| Part Number* | T Tube O.D. | Dimensions — mm | | | | |
|--------------|-------------|-----------------|------------|------------|------|------|
| | | A | B Hex Flat | C Hex Flat | D | G |
| 3CP []MM | 3 | 22.8 | 11.1 | 11.1 | 14.3 | 14.8 |
| 4CP []MM | 4 | 23.6 | 12.7 | 11.1 | 15.1 | 15.8 |
| 6CP []MM | 6 | 25.3 | 14.3 | 12.7 | 16.3 | 16.9 |
| 8CP []MM | 8 | 25.1 | 15.9 | 14.3 | 16.7 | 17.1 |
| 10CP []MM | 10 | 26.2 | 19.1 | 17.5 | 17.5 | 18.3 |
| 12CP []MM | 12 | 32.6 | 22.2 | 20.6 | 24.6 | 20.6 |
| 14CP []MM | 14 | 31.6 | 23.8 | 22.2 | 22.2 | 22.2 |
| 15CP []MM | 15 | 31.9 | 23.8 | 22.2 | 22.2 | 21.5 |
| 16CP []MM | 16 | 35.0 | 25.4 | 23.8 | 25.0 | 23.9 |
| 18CP []MM | 18 | 33.4 | 28.6 | 27.0 | 25.4 | 23.4 |
| 20CP []MM | 20 | 40.0 | 31.8 | 30.2 | 31.0 | 25.2 |
| 22CP []MM | 22 | 35.8 | 31.8 | 30.2 | 27.0 | 24.6 |
| 25CP []MM | 25 | 45.9 | 38.1 | 34.9 | 33.3 | 31.5 |
| 30CP []MM | 30 | 53.4 | 50.8 | 46 | 39.6 | 31.8 |
| 32CP []MM | 32 | 55.8 | 50.8 | 46 | 42 | 32.8 |
| 38CP []MM | 38 | 65.4 | 60.3 | 55 | 49.4 | 37.8 |

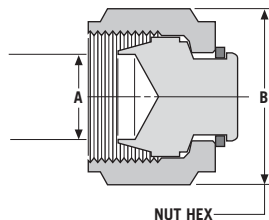
Cap Assembled to Tubing

Assembly Instructions:

1. Insert tube into cap.
2. Follow standard GYROLOK® assembly instructions, page 58.



Fractional shown



Plug: P fractional for GYROLOK® ports

| Part Number* | Dimensions — inches | |
|--------------|---------------------|------------|
| | A Fitting Size | B Hex Size |
| 1P [] | 1/16 | 5/16 |
| 2P [] | 1/8 | 7/16 |
| 3P [] | 3/16 | 1/2 |
| 4P [] | 1/4 | 9/16 |
| 6P [] | 3/8 | 11/16 |
| 8P [] | 1/2 | 7/8 |
| 10P [] | 5/8 | 1 |
| 12P [] | 3/4 | 1 1/8 |
| 14P [] | 7/8 | 1 1/4 |
| 16P [] | 1 | 1 1/2 |
| 20P [] | 1 1/4 | 1 7/8 |
| 24P [] | 1 1/2 | 2 1/4 |
| 32P [] | 2 | 3 |

Plug: P/MM metric for GYROLOK® ports

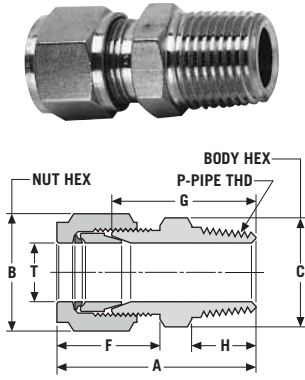
| Part Number* | Dimensions — mm | |
|--------------|-----------------|------------|
| | A Fitting Size | B Hex Size |
| 3P []MM | 3 | 11.1 |
| 4P []MM | 4 | 12.7 |
| 6P []MM | 6 | 14.3 |
| 8P []MM | 8 | 15.9 |
| 10P []MM | 10 | 19.1 |
| 12P []MM | 12 | 22.2 |
| 14P []MM | 14 | 23.8 |
| 15P []MM | 15 | 23.8 |
| 16P []MM | 16 | 25.4 |
| 18P []MM | 18 | 28.6 |
| 20P []MM | 20 | 31.8 |
| 22P []MM | 22 | 31.8 |
| 25P []MM | 25 | 38.1 |
| 30P []MM | 30 | 50.8 |
| 32P []MM | 32 | 50.8 |
| 38P []MM | 38 | 60.3 |

Usage Instructions, see page 59.

Plug Assembled to GYROLOK® Body

* [] see page 9 for material specifications.

Male Thermocouple Connector: CMT (Fractional)



| Part Number* | T P | | Dimensions — inches | | | | | |
|--------------|-------|-------|---------------------|----------|----------|------|------|-----|
| | Tube | Pipe | B | | C | | F | G |
| | O.D. | Thd. | A | Hex Flat | Hex Flat | F | G | H |
| 1CMT1[] | 1/16 | 1/16 | .97 | 5/16 | 5/16 | .48 | .75 | .38 |
| 1CMT2[] | 1/16 | 1/8 | 1.13 | 5/16 | 7/16 | .48 | .81 | .38 |
| 1CMT4[] | 1/16 | 1/4 | 1.22 | 5/16 | 9/16 | .48 | 1 | .56 |
| 2CMT2[] | 1/8 | 1/8 | 1.22 | 7/16 | 7/16 | .67 | .91 | .38 |
| 2CMT4[] | 1/8 | 1/4 | 1.44 | 7/16 | 9/16 | .67 | 1.13 | .56 |
| 3CMT2[] | 3/16 | 1/8 | 1.27 | 1/2 | 7/16 | .70 | .95 | .38 |
| 3CMT4[] | 3/16 | 1/4 | 1.50 | 1/2 | 9/16 | .70 | 1.19 | .56 |
| 4CMT2[] | 1/4 | 1/8 | 1.33 | 9/16 | 1/2 | .77 | 1 | .38 |
| 4CMT4[] | 1/4 | 1/4 | 1.52 | 9/16 | 9/16 | .77 | 1.19 | .56 |
| 4CMT6[] | 1/4 | 3/8 | 1.58 | 9/16 | 11/16 | .77 | 1.25 | .56 |
| 4CMT8[] | 1/4 | 1/2 | 1.80 | 9/16 | 7/8 | .77 | 1.47 | .75 |
| 6CMT4[] | 3/8 | 1/4 | 1.64 | 11/16 | 5/8 | .83 | 1.28 | .56 |
| 6CMT6[] | 3/8 | 3/8 | 1.63 | 11/16 | 11/16 | .83 | 1.28 | .56 |
| 6CMT8[] | 3/8 | 1/2 | 1.84 | 11/16 | 7/8 | .83 | 1.50 | .75 |
| 8CMT8[] | 1/2 | 1/2 | 1.97 | 7/8 | 7/8 | .92 | 1.50 | .75 |
| 12CMT12[] | 3/4 | 3/4 | 2.08 | 1 1/8 | 1 1/16 | .97 | 1.63 | .75 |
| 20CMT20[] | 1 1/4 | 1 1/4 | 3.06 | 1 7/8 | 1 7/8 | 1.56 | 2.17 | .94 |

The CMT body does not contain a sizing angle or butt seal. As a result, the thermocouple can be extended beyond the fitting's NPT thread end.

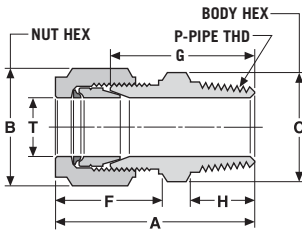
Example: GYROLOK® CMT assembled to thermocouple.



Assembly Instruction:

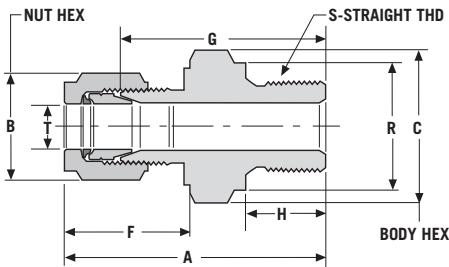
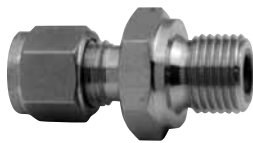
Because the thermocouple is not bottomed out within the fitting body, follow these simple steps before carrying out GYROLOK® assembly instructions on page 58.

1. Position the length of the thermocouple to extend past the fitting's NPT end.
2. Once correctly positioned, carefully hold thermocouple in place to prevent shifting during assembly



Male Thermocouple Connector: CMT/ME, CMT/MC (Metric) Metric Tube with NPT or RT tapered threads

| Part Number* | | T | P | Dimensions — mm | | | | | | |
|--------------|------------|------|------|-----------------|----------|----------|------|------|------|---|
| NPT Threads | RT Threads | Tube | Pipe | B | | C | | F | G | H |
| | | O.D. | Thd. | A | Hex Flat | Hex Flat | F | G | H | |
| 6CMT2[]ME | 6CMT2[]MC | 6 | 1/8 | 34.8 | 14.3 | 12.7 | 19.5 | 26.4 | 9.5 | |
| 6CMT4[]ME | 6CMT4[]MC | 6 | 1/4 | 39.5 | 14.3 | 14.3 | 19.5 | 31.2 | 14.3 | |
| 8CMT4[]ME | 8CMT4[]MC | 8 | 1/4 | 39.8 | 15.9 | 14.3 | 19.1 | 31.8 | 14.2 | |



Male Thermocouple Connector: CMT/MA (Metric) Metric Tube with RS parallel threads

| Part Number* | | T | S | Dimensions — mm | | | | | | | |
|--------------|----------|------|------|-----------------|----------|----------|------|------|------|------|---|
| Tube | Straight | O.D. | Thd. | B | | C | | F | G | H | R |
| | | | | A | Hex Flat | Hex Flat | F | G | H | R | |
| 6CMT4[]MA | | 6 | 1/4 | 40.1 | 14.3 | 19.1 | 19.5 | 31.8 | 12.0 | 18.0 | |

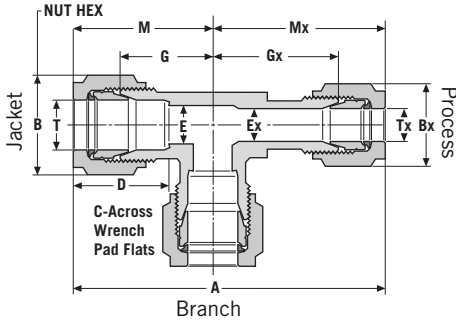
RS parallel thread ends are typically used with a gasket having a bonded elastomer seal. RP-type gaskets may also be used.

* [] see page 9 for material specifications.

Heat Exchanger Tee: XT



| Part Number* | T Tube | | Dimensions — inches | | | | | | | | | | |
|--------------|--------|------|---------------------|----------|------|-------|-----|-----|-----|-----|-----|------|------|
| | O.D. | O.D. | A | Hex Flat | Bx | C | D | E | Ex | G | Gx | M | Mx |
| 4XT2[]BR4 | 1/4 | 1/8 | 2.02 | 9/16 | 7/16 | 7/16 | .64 | .19 | .13 | .72 | .66 | 1.05 | .97 |
| 8XT4[]BR4 | 1/2 | 1/4 | 2.73 | 7/8 | 9/16 | 11/16 | .97 | .42 | .25 | .97 | .97 | 1.44 | 1.30 |
| 8XT4[]BR8 | 1/2 | 1/4 | 2.73 | 7/8 | 9/16 | 11/16 | .97 | .42 | .25 | .97 | .91 | 1.44 | 1.23 |



Special Ordering Instructions:

Heat Exchanger Tees are available in other fractional and metric sizes by special order. Ask your HOKE® distributor for price and availability information. Specify “Heat Exchanger Tee” followed by quantity and the desired tube connection sizes.

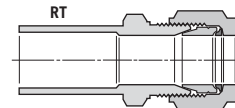
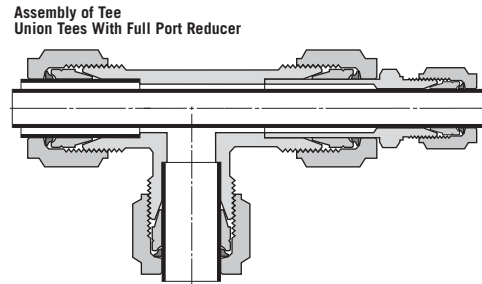
Example: 8XT4[]BR8

1. Jacket and tubing O.D.
2. Process tubing O.D.
3. Specify material
4. Branch tubing O.D.
5. Metric

Standard Fitting

- 1/2"
- 1/4"
- *
- 1/2"
-

Heat Exchanger Tee Made With GYROLOK® Tube Fittings



Heat exchanger tees made with GYROLOK® tube fittings can provide additional flexibility as well as reduce costly fitting inventories.

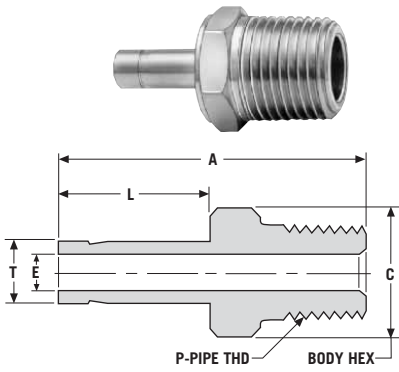
Ordering Instructions

Heat Exchanger Tees can be created with standard union tees and full port reducers to allow process tubing to be inserted into and through the jacket tubing.

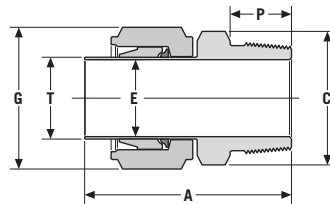
To order a full port reducer, add the letter “T” to the core reducer part number.

Example: 8RT12316

* [] see page 9 for material specifications.



20AM20Q [] shown



Over 1 inch and over 25 mm Male Adapters feature pre-set ferrules. Follow GYROLOK® Reassembly instructions, page 58.

Male Adapter: AM (Fractional)

| Part Number* | T | | P | | Dimensions — inches | | |
|--------------|-----------|---------------|------|----------|---------------------|------|--|
| | Tube O.D. | Male NPT Size | A | Hex Flat | E | L | |
| 1AM1 [] | 1/16 | 1/16 | 1 | 5/16 | .03 | .47 | |
| 1AM2 [] | 1/16 | 1/8 | 1 | 7/16 | .03 | .47 | |
| 2AM2 [] | 1/8 | 1/8 | 1.16 | 7/16 | .09 | .63 | |
| 2AM4 [] | 1/8 | 1/4 | 1.34 | 9/16 | .09 | .63 | |
| 3AM2 [] | 3/16 | 1/8 | 1.19 | 7/16 | .13 | .66 | |
| 3AM4 [] | 3/16 | 1/4 | 1.38 | 9/16 | .13 | .66 | |
| 4AM2 [] | 1/4 | 1/8 | 1.25 | 7/16 | .19 | .69 | |
| 4AM4 [] | 1/4 | 1/4 | 1.44 | 9/16 | .19 | .69 | |
| 4AM6 [] | 1/4 | 3/8 | 1.47 | 11/16 | .19 | .69 | |
| 4AM8 [] | 1/4 | 1/2 | 1.69 | 7/8 | .19 | .69 | |
| 6AM2 [] | 3/8 | 1/8 | 1.38 | 7/16 | .28 | .78 | |
| 6AM4 [] | 3/8 | 1/4 | 1.56 | 9/16 | .28 | .78 | |
| 6AM6 [] | 3/8 | 3/8 | 1.56 | 11/16 | .28 | .78 | |
| 6AM8 [] | 3/8 | 1/2 | 1.78 | 7/8 | .28 | .78 | |
| 8AM4 [] | 1/2 | 1/4 | 1.75 | 9/16 | .39 | .97 | |
| 8AM6 [] | 1/2 | 3/8 | 1.78 | 11/16 | .39 | .97 | |
| 8AM8 [] | 1/2 | 1/2 | 1.97 | 7/8 | .39 | .97 | |
| 8AM12 [] | 1/2 | 3/4 | 1.98 | 1 1/16 | .39 | .97 | |
| 10AM6 [] | 5/8 | 3/8 | 1.89 | 11/16 | .50 | 1.08 | |
| 10AM8 [] | 5/8 | 1/2 | 2.08 | 7/8 | .50 | 1.08 | |
| 10AM12 [] | 5/8 | 3/4 | 2.14 | 1 1/16 | .50 | 1.08 | |
| 12AM8 [] | 3/4 | 1/2 | 2.13 | 7/8 | .59 | 1.13 | |
| 12AM12 [] | 3/4 | 3/4 | 2.16 | 1 1/16 | .59 | 1.13 | |
| 12AM16 [] | 3/4 | 1 | 2.31 | 1 3/8 | .59 | 1.13 | |
| 14AM12 [] | 7/8 | 3/4 | 2.22 | 1 1/16 | .69 | 1.19 | |
| 16AM12 [] | 1 | 3/4 | 2.39 | 1 1/16 | .80 | 1.38 | |
| 16AM16 [] | 1 | 1 | 2.61 | 1 3/8 | .80 | 1.38 | |
| 20AM20 [] | 1 1/4 | 1 1/4 | 3.16 | 1 3/4 | 1.09 | 1.72 | |
| 24AM24 [] | 1 1/2 | 1 1/2 | 3.72 | 2 1/8 | 1.31 | 2.06 | |
| 32AM32 [] | 2 | 2 | 4.70 | 2 3/4 | 1.75 | 2.76 | |

Male Adapter: AM/MC/ME (Metric) with RT Ends

| Part Number* | T | | P | | Dimensions — mm | | |
|--------------|--------------|-----------|-----|----------|-----------------|------|------|
| | Tube O.D. | Pipe Thd. | A | Hex Flat | E | L | |
| 3AM2 []MC | 3AM2 []ME | 3 | 1/8 | 31.2 | 11.1 | 2.1 | 15.9 |
| 3AM4 []MC | 3AM4 []ME | 3 | 1/4 | 36.7 | 13.7 | 2.1 | 15.9 |
| 4AM2 []MC | 4AM2 []ME | 4 | 1/8 | 32.0 | 11.1 | 2.3 | 16.7 |
| 4AM4 []MC | 4AM4 []ME | 4 | 1/4 | 36.8 | 14.3 | 2.3 | 16.7 |
| 6AM2 []MC | 6AM2 []ME | 6 | 1/8 | 32.6 | 11.1 | 4.4 | 17.3 |
| 6AM4 []MC | 6AM4 []ME | 6 | 1/4 | 37.4 | 14.3 | 4.4 | 17.3 |
| 6AM6 []MC | 6AM6 []ME | 6 | 3/8 | 37.2 | 17.5 | 4.4 | 17.3 |
| 6AM8 []MC | 6AM8 []ME | 6 | 1/2 | 42.7 | 22.2 | 4.4 | 17.3 |
| 8AM2 []MC | 8AM2 []ME | 8 | 1/8 | 34.3 | 11.1 | 4.4 | 19.1 |
| 8AM4 []MC | 8AM4 []ME | 8 | 1/4 | 39.9 | 14.3 | 6.2 | 19.1 |
| 8AM6 []MC | 8AM6 []ME | 8 | 3/8 | 39.9 | 17.5 | 6.2 | 19.1 |
| 8AM8 []MC | 8AM8 []ME | 8 | 1/2 | 46.2 | 22.2 | 6.2 | 19.1 |
| 10AM2 []MC | 10AM2 []ME | 10 | 1/8 | 35.9 | 11.1 | 4.6 | 19.8 |
| 10AM4 []MC | 10AM4 []ME | 10 | 1/4 | 39.9 | 14.3 | 7.5 | 19.8 |
| 10AM6 []MC | 10AM6 []ME | 10 | 3/8 | 40.1 | 17.5 | 7.5 | 19.8 |
| 10AM8 []MC | 10AM8 []ME | 10 | 1/2 | 45.2 | 22.2 | 7.5 | 19.8 |
| 12AM4 []MC | 12AM4 []ME | 12 | 1/4 | 45.5 | 14.3 | 7.0 | 24.5 |
| 12AM6 []MC | 12AM6 []ME | 12 | 3/8 | 46.3 | 17.5 | 9.1 | 24.5 |
| 12AM8 []MC | 12AM8 []ME | 12 | 1/2 | 49.9 | 22.2 | 9.1 | 24.5 |
| 14AM4 []MC | 14AM4 []ME | 14 | 1/4 | 45.1 | 19.1 | 7.1 | 24.5 |
| 14AM6 []MC | 14AM6 []ME | 14 | 3/8 | 45.1 | 19.1 | 10.2 | 24.5 |
| 14AM8 []MC | 14AM8 []ME | 14 | 1/2 | 49.9 | 22.2 | 11.0 | 24.5 |
| 15AM8 []MC | 15AM8 []ME | 15 | 1/2 | 50.8 | 22.2 | 11.9 | 24.5 |
| 16AM6 []MC | 16AM6 []ME | 16 | 3/8 | 48.0 | 17.5 | 12.6 | 27.3 |
| 16AM8 []MC | 16AM8 []ME | 16 | 1/2 | 52.7 | 22.2 | 12.6 | 27.3 |
| 16AM12 []MC | 16AM12 []ME | 16 | 3/4 | 54.0 | 27.0 | 12.6 | 27.3 |
| 16AM16 []MC | 16AM16 []ME | 16 | 1 | 58.6 | 34.9 | 12.6 | 27.3 |
| 18AM6 []MC | 18AM6 []ME | 18 | 3/8 | 55.0 | 17.5 | 13.8 | 28.2 |
| 18AM8 []MC | 18AM8 []ME | 18 | 1/2 | 60.0 | 22.2 | 13.8 | 28.2 |
| 18AM12 []MC | 18AM12 []ME | 18 | 3/4 | 55.4 | 27.0 | 13.8 | 28.2 |
| 20AM8 []MC | 20AM8 []ME | 20 | 1/2 | 60.7 | 22.2 | 12.6 | 33.4 |
| 20AM12 []MC | 20AM12 []ME | 20 | 3/4 | 60.5 | 27.0 | 15.1 | 33.4 |
| 22AM8 []MC | 22AM8 []ME | 22 | 1/2 | 53.0 | 27.0 | 15.8 | 30.0 |
| 22AM12 []MC | 22AM12 []ME | 22 | 3/4 | 61.0 | 27.0 | 15.8 | 30.0 |
| 25AM8 []MC | 25AM8 []ME | 25 | 1/2 | 61.0 | 27.0 | 12.6 | 35.4 |
| 25AM12 []MC | 25AM12 []ME | 25 | 3/4 | 66.8 | 27.0 | 15.8 | 36.0 |
| 25AM16 []MC | 25AM16 []ME | 25 | 1 | 66.8 | 34.9 | 19.5 | 35.5 |

Eliminate Alignment Problems—Use Adapters

Female Pipe Port



Example: Need to join tubing and a female NPT port at 90° angle to one another.

Male Elbow



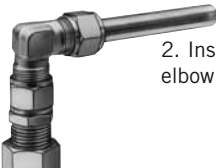
Problem: With the NPT end properly torqued, the tube fitting end of a male elbow may not properly line up with the tubing.

Male Adapter



Solution: Use a male adapter and union elbow. Tighten pipe thread of male adapter to convert the female port into a tube stub end.

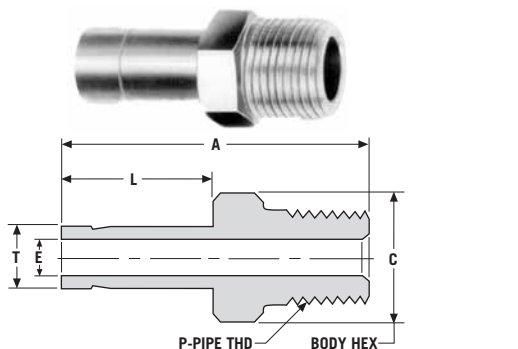
Union Elbow



Assembly:
1. To connect union elbow to adapter, hold elbow pointing in desired direction and follow standard GYROLOK® assembly Instructions on page 58.

2. Insert tubing into other end of the union elbow and properly connect tubing.

* [] see page 9 for material specifications.



Male Adapter: AM/EC (Fractional)

connects fractional port to female RT tapered threads

| Part Number* | T | P | Dimensions — inches | | | |
|--------------|-----------|-----------|---------------------|----------|-----|-----|
| | Tube O.D. | Pipe Thd. | A | Hex Flat | E | L |
| 4AM2[]EC | 1/4 | 1/8 | 1.25 | 7/16 | .19 | .69 |
| 4AM4[]EC | 1/4 | 1/4 | 1.44 | 9/16 | .19 | .69 |
| 6AM4[]EC | 3/8 | 1/4 | 1.56 | 9/16 | .28 | .78 |
| 6AM6[]EC | 3/8 | 3/8 | 1.56 | 11/16 | .28 | .78 |
| 6AM8[]EC | 3/8 | 1/2 | 1.78 | 7/8 | .28 | .78 |
| 8AM8[]EC | 1/2 | 1/2 | 1.97 | 7/8 | .39 | .97 |

Male Adapter: AM/EA

connects fractional port to female RS parallel threads

| Part Number* | T | S | Dimensions — inches | | | | | |
|--------------|-----------|-----------|---------------------|----------|-----|-----|-----|------|
| | Tube O.D. | Thd. Size | A | Hex Flat | E | H | L | R |
| 4AM2[]EA | 1/4 | 1/8 | 1.31 | 5/8 | .19 | .31 | .69 | .55 |
| 4AM4[]EA | 1/4 | 1/4 | 1.39 | 3/4 | .19 | .47 | .69 | .70 |
| 6AM6[]EA | 3/8 | 3/8 | 1.53 | 15/16 | .28 | .47 | .78 | .86 |
| 8AM8[]EA | 1/2 | 1/2 | 1.86 | 1 3/32 | .39 | .55 | .97 | 1.03 |

Male Adapter: AM/MB

connects metric port to female ISO straight thread

| Part Number* | T | S | Dimensions — mm | | | | | | |
|--------------|-----------|-----------|-----------------|----------|-----|------|------|------|------|
| | Tube O.D. | Thd. Size | A | Hex Flat | E | H | L | R | V |
| 6AM4[]MB | 6 | 1/4 | 38.1 | 19.1 | 4.4 | 12.0 | 17.3 | 18.0 | 17.0 |
| 12AM8[]MB | 12 | 1/2 | 40.1 | 27.0 | 9.1 | 14.0 | 24.5 | 26.0 | 25.0 |

O-ring Male Adapter: AOM

connects fractional port to female NPT threads

| Part Number* | T | P | Dimensions — inches | | | | | | O-ring | |
|--------------|-----------|-----------|---------------------|----------|-----|-----|-----|------|--------|-------|
| | Tube O.D. | Pipe Size | A | Hex Flat | E | H | L | N | I.D. | O.D. |
| 1AOM2[] | 1/16 | 1/8 | 1.03 | 3/4 | .03 | .28 | .47 | .75 | 7/16 | 5/8 |
| 2AOM2[] | 1/8 | 1/8 | 1.23 | 3/4 | .09 | .28 | .63 | .75 | 7/16 | 5/8 |
| 2AOM4[] | 1/8 | 1/4 | 1.36 | 15/16 | .09 | .38 | .63 | .94 | 9/16 | 3/4 |
| 3AOM2[] | 3/16 | 1/8 | 1.25 | 3/4 | .13 | .28 | .66 | .75 | 7/16 | 5/8 |
| 3AOM4[] | 3/16 | 1/4 | 1.38 | 15/16 | .13 | .38 | .66 | .94 | 9/16 | 3/4 |
| 4AOM2[] | 1/4 | 1/8 | 1.31 | 3/4 | .13 | .28 | .69 | .75 | 7/16 | 5/8 |
| 4AOM4[] | 1/4 | 1/4 | 1.44 | 15/16 | .19 | .38 | .69 | .94 | 9/16 | 3/4 |
| 4AOM6[] | 1/4 | 3/8 | 1.50 | 1 1/8 | .19 | .41 | .69 | 1.13 | 3/4 | 15/16 |
| 6AOM2[] | 3/8 | 1/8 | 1.38 | 3/4 | .25 | .28 | .78 | .75 | 7/16 | 5/8 |
| 6AOM4[] | 3/8 | 1/4 | 1.52 | 15/16 | .28 | .38 | .78 | .94 | 9/16 | 3/4 |

O-ring Male Adapter: AOM/ME

connects metric port to female NPT threads

| Part Number* | T | P | Dimensions — mm | | | | | | O-ring | |
|--------------|-----------|-----------|-----------------|----------|-----|------|------|------|--------|------|
| | Tube O.D. | Pipe Size | A | Hex Flat | E | H | L | N | I.D. | O.D. |
| 6AOM2[]ME | 6 | 1/8 | 32.8 | 19.1 | 4.4 | 7.3 | 17.3 | 18.6 | 11.5 | 16.6 |
| 6AOM4[]ME | 6 | 1/4 | 37.6 | 23.8 | 4.4 | 9.7 | 17.3 | 23.4 | 14.7 | 19.7 |
| 10AOM4[]ME | 10 | 1/4 | 40.1 | 23.8 | 7.0 | 9.7 | 19.8 | 23.4 | 14.7 | 19.7 |
| 10AOM6[]ME | 10 | 3/8 | 40.9 | 28.6 | 7.5 | 10.4 | 19.8 | 28.1 | 19.4 | 24.5 |
| 12AOM6[]ME | 12 | 3/8 | 45.2 | 28.6 | 9.1 | 10.4 | 24.5 | 28.1 | 19.4 | 24.3 |
| 12AOM8[]ME | 12 | 1/2 | 50.8 | 33.3 | 9.1 | 13.6 | 24.4 | 32.9 | 25.6 | 25.9 |

O-ring Straight Adapter: AOS

connects fractional port to female O-ring straight thread

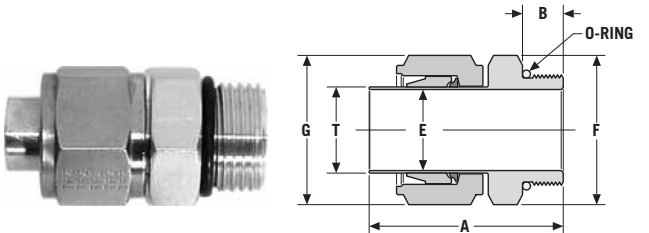
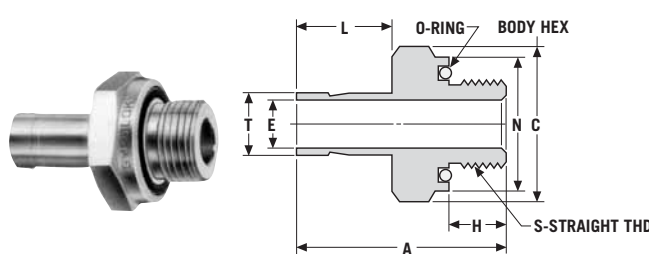
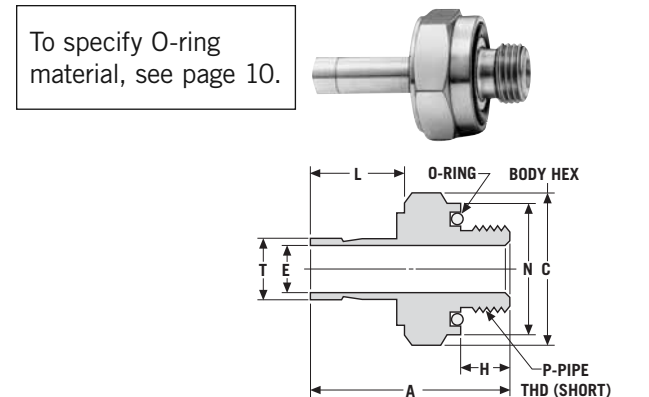
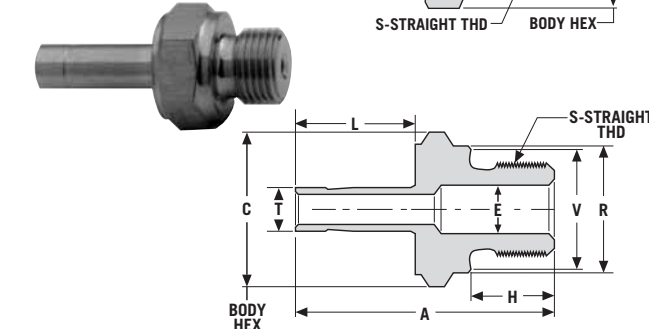
| Part Number* | T | S | Dimensions — inches | | | | | | O-ring | |
|--------------|-----------|-----------|---------------------|----------|-----|-----|-----|------|--------|------|
| | Tube O.D. | Thd. Size | A | Hex Flat | E | H | L | N | I.D. | O.D. |
| 1AOS[] | 1/16 | 5/16-24 | 1.06 | 9/16 | .03 | .34 | .47 | .56 | .31 | .44 |
| 2AOS[] | 1/8 | 5/16-24 | 1.25 | 9/16 | .09 | .34 | .63 | .56 | .31 | .44 |
| 3AOS[] | 3/16 | 3/8-24 | 1.34 | 5/8 | .13 | .38 | .66 | .63 | .38 | .50 |
| 4AOS[] | 1/4 | 7/16-20 | 1.44 | 3/4 | .19 | .41 | .69 | .75 | .44 | .63 |
| 6AOS[] | 3/8 | 9/16-18 | 1.61 | 15/16 | .28 | .47 | .78 | .94 | .56 | .75 |
| 8AOS[] | 1/2 | 3/4-16 | 1.84 | 1 1/8 | .39 | .47 | .97 | 1.13 | .75 | .94 |

Male SAE Adapter: AMS

connects fractional port to SAE/MS straight thread boss

| Part Number | T | Dimensions — inches | | | | | | | |
|-------------|-----------|---------------------|------|-----|------|-------|------|--------|--|
| | Tube O.D. | S | A | B | E | F | G | O-ring | |
| 20AMS20316 | 1 1/4 | 1 5/8-12 | 2.81 | .59 | 1.17 | 1 7/8 | 1.88 | -920 | |
| 24AMS24316 | 1 1/2 | 1 7/8-12 | 3.28 | .59 | 1.30 | 2 1/8 | 2.25 | -924 | |
| 32AMS32316 | 2 | 2 1/2-12 | 4.24 | .59 | 1.75 | 2 3/4 | 3 | -932 | |

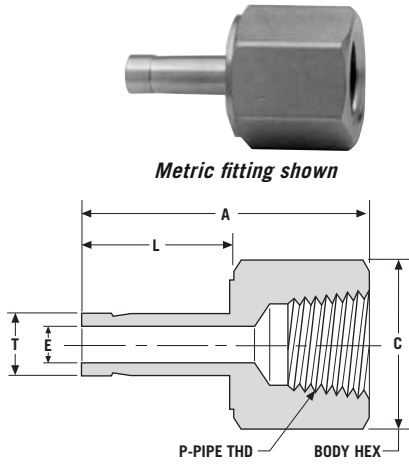
To specify O-ring material, see page 10.



* [] see page 9 for material specifications.

Female Adapter: AF

connects fractional port to male NPT thread

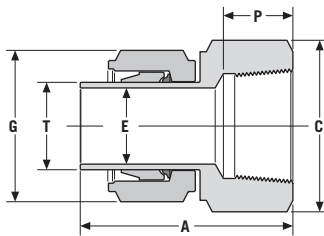


Metric fitting shown

| Part Number* | T Tube O.D. | P Pipe Size | Dimensions — inches | | | | |
|--------------|-------------------|-------------------|---------------------|---------------|------|---------------|------|
| | | | A | C Hex Flat | E | G Hex Flat | L |
| 2AF2[] | 1/8 | 1/8 | 1.14 | 9/16 | .09 | — | .63 |
| 2AF4[] | 1/8 | 1/4 | 1.31 | 3/4 | .09 | — | .63 |
| 3AF2[] | 3/16 | 1/8 | 1.25 | 9/16 | .13 | — | .66 |
| 3AF4[] | 3/16 | 1/4 | 1.41 | 3/4 | .13 | — | .66 |
| 4AF2[] | 1/4 | 1/8 | 1.22 | 9/16 | .19 | — | .69 |
| 4AF4[] | 1/4 | 1/4 | 1.41 | 3/4 | .19 | — | .69 |
| 4AF6[] | 1/4 | 3/8 | 1.44 | 7/8 | .19 | — | .69 |
| 4AF8[] | 1/4 | 1/2 | 1.63 | 1 1/16 | .19 | — | .69 |
| 6AF2[] | 3/8 | 1/8 | 1.31 | 9/16 | .28 | — | .78 |
| 6AF4[] | 3/8 | 1/4 | 1.50 | 3/4 | .28 | — | .78 |
| 6AF6[] | 3/8 | 3/8 | 1.53 | 7/8 | .28 | — | .78 |
| 6AF8[] | 3/8 | 1/2 | 1.72 | 1 1/16 | .28 | — | .78 |
| 8AF4[] | 1/2 | 1/4 | 1.69 | 3/4 | .39 | — | .97 |
| 8AF6[] | 1/2 | 3/8 | 1.72 | 7/8 | .39 | — | .97 |
| 8AF8[] | 1/2 | 1/2 | 1.91 | 1 1/16 | .39 | — | .97 |
| 10AF6[] | 5/8 | 3/8 | 1.81 | 7/8 | .50 | — | 1.08 |
| 10AF8[] | 5/8 | 1/2 | 2 | 1 1/16 | .50 | — | 1.08 |
| 10AF12[] | 5/8 | 3/4 | 2.09 | 1 1/4 | .50 | — | 1.08 |
| 12AF8[] | 3/4 | 1/2 | 2.06 | 1 1/16 | .59 | — | 1.13 |
| 12AF12[] | 3/4 | 3/4 | 2.13 | 1 1/4 | .59 | — | 1.13 |
| 12AF16[] | 3/4 | 1 | 2.44 | 1 5/8 | .59 | — | 1.13 |
| 14AF12[] | 7/8 | 3/4 | 2.19 | 1 1/4 | .69 | — | 1.19 |
| 16AF8[] | 1 | 1/2 | 2.28 | 1 1/16 | .80 | — | 1.38 |
| 16AF12[] | 1 | 3/4 | 2.38 | 1 1/4 | .80 | — | 1.38 |
| 16AF16[] | 1 | 1 | 2.63 | 1 5/8 | .80 | — | 1.38 |
| 20AF20[] | 1 1/4 | 1 1/4 | 3.06 | 2 1/8 | 1.09 | 1 7/8 | — |
| 24AF24[] | 1 1/2 | 1 1/2 | 3.50 | 2 3/8 | 1.31 | 2 | — |
| 32AF32[] | 2 | 2 | 4.53 | 2 7/8 | 1.75 | 3 | — |



20AF20[] shown



Over 1 inch and over 25 mm Female Adapters feature pre-set ferrules. Use the GYROLOK® remake instructions, page 58.

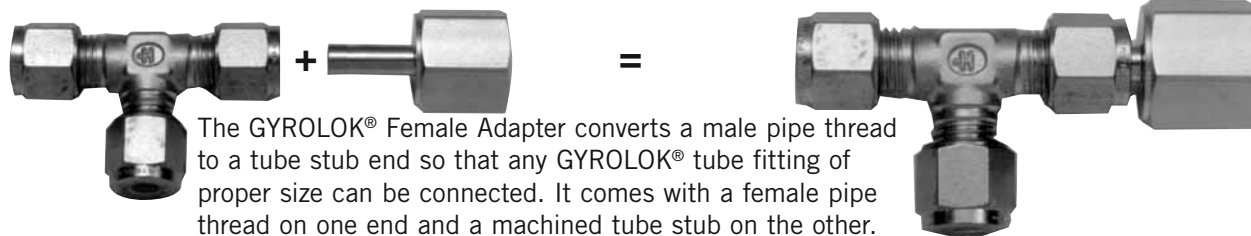
Female Adapter: AF/ME

connects metric port to male NPT thread

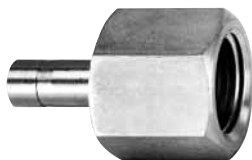
| Part Number* | T Tube O.D. | P Pipe Size | Dimensions — mm | | | |
|--------------|-------------------|-------------------|-----------------|---------------|------|------|
| | | | A | C Hex Flat | E | L |
| 3AF2[]ME | 3 | 1/8 | 28.8 | 14.3 | 2.1 | 15.9 |
| 3AF4[]ME | 3 | 1/4 | 33.3 | 19.1 | 2.1 | 15.9 |
| 6AF2[]ME | 6 | 1/8 | 30.9 | 14.3 | 4.4 | 17.3 |
| 6AF4[]ME | 6 | 1/4 | 35.7 | 19.1 | 4.4 | 17.3 |
| 6AF6[]ME | 6 | 3/8 | 36.5 | 22.2 | 4.4 | 17.3 |
| 6AF8[]ME | 6 | 1/2 | 41.3 | 27.0 | 4.4 | 17.3 |
| 8AF2[]ME | 8 | 1/8 | 32.8 | 14.3 | 6.2 | 19.1 |
| 8AF4[]ME | 8 | 1/4 | 37.5 | 19.1 | 6.2 | 19.1 |
| 8AF6[]ME | 8 | 3/8 | 40.4 | 22.2 | 6.2 | 19.1 |
| 8AF8[]ME | 8 | 1/2 | 43.9 | 27.0 | 6.2 | 19.1 |
| 10AF2[]ME | 10 | 1/8 | 33.3 | 14.3 | 7.5 | 19.8 |
| 10AF4[]ME | 10 | 1/4 | 38.1 | 19.1 | 7.5 | 19.8 |
| 10AF6[]ME | 10 | 3/8 | 38.9 | 22.2 | 7.5 | 19.8 |
| 10AF8[]ME | 10 | 1/2 | 43.7 | 27.0 | 7.5 | 19.8 |
| 12AF4[]ME | 12 | 1/4 | 42.9 | 19.1 | 9.1 | 24.5 |
| 12AF6[]ME | 12 | 3/8 | 44.7 | 22.2 | 9.1 | 24.5 |
| 12AF8[]ME | 12 | 1/2 | 48.4 | 27.0 | 9.1 | 24.5 |
| 12AF12[]ME | 12 | 3/4 | 53.3 | 31.8 | 9.1 | 24.5 |
| 14AF4[]ME | 14 | 1/4 | 43.0 | 19.1 | 10.2 | 24.5 |
| 14AF8[]ME | 14 | 1/2 | 47.5 | 27.0 | 11.0 | 24.5 |
| 15AF8[]ME | 15 | 1/2 | 48.4 | 27.0 | 11.9 | 24.5 |
| 16AF6[]ME | 16 | 3/8 | 46.0 | 22.2 | 12.6 | 27.3 |
| 16AF8[]ME | 16 | 1/2 | 50.8 | 27.0 | 12.6 | 27.3 |
| 16AF12[]ME | 16 | 3/4 | 53.0 | 31.8 | 12.6 | 27.3 |
| 18AF6[]ME | 18 | 3/8 | 49.0 | 22.2 | 13.8 | 28.2 |
| 18AF8[]ME | 18 | 1/2 | 51.8 | 27.0 | 13.8 | 28.2 |
| 18AF12[]ME | 18 | 3/4 | 56.0 | 31.8 | 13.8 | 28.2 |
| 20AF8[]ME | 20 | 1/2 | 57.2 | 27.0 | 15.1 | 33.4 |
| 20AF12[]ME | 20 | 3/4 | 58.7 | 31.8 | 15.1 | 33.4 |
| 22AF8[]ME | 22 | 1/2 | 54.0 | 27.0 | 15.8 | 30.0 |
| 22AF12[]ME | 22 | 3/4 | 56.0 | 31.8 | 15.8 | 30.0 |
| 25AF8[]ME | 25 | 1/2 | 60.0 | 27.0 | 19.3 | 35.5 |
| 25AF12[]ME | 25 | 3/4 | 61.7 | 31.8 | 19.3 | 35.5 |
| 25AF16[]ME | 25 | 1 | 67.2 | 41.3 | 19.5 | 35.5 |

* [] see page 9 for material specifications.

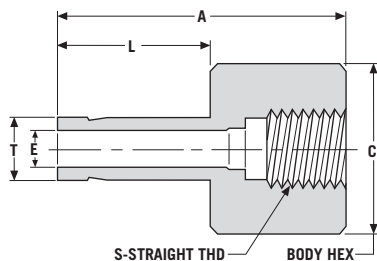
Union Tee Plus Adapter Assemblies Help Eliminate Costly Inventory



The GYROLOK® Female Adapter converts a male pipe thread to a tube stub end so that any GYROLOK® tube fitting of proper size can be connected. It comes with a female pipe thread on one end and a machined tube stub on the other. By using adapters with union tees, you'll need fewer male or female branch tees and run tees.



Fractional fitting shown



Female Adapter: AF/EZ

connects **fractional** port to male RG parallel threads (gauge)

| Part Number* | T | | S | | | | Dimensions — inches | | |
|--------------|-----------|-----------|------|----------|-----|-----|---------------------|--|--|
| | Tube O.D. | Thd. Size | A | Hex Flat | E | L | C | | |
| 4AF4[]EZ | 1/4 | 1/4 | 1.42 | 3/4 | .19 | .69 | | | |
| 4AF8[]EZ | 1/4 | 1/2 | 1.83 | 1 1/16 | .19 | .69 | | | |
| 8AF4[]EZ | 1/2 | 1/4 | 1.53 | 3/4 | .22 | .97 | | | |
| 8AF8[]EZ | 1/2 | 1/2 | 2 | 1 1/16 | .28 | .97 | | | |

Female Adapter: AF/MZ

connects **metric** port to male RG parallel threads (gauge)

| Part Number* | T | | S | | | | Dimensions — mm | | |
|--------------|-----------|---------------|------|----------|------|------|-----------------|--|--|
| | Tube O.D. | Straight Thd. | A | Hex Flat | E | L | C | | |
| 6AF4[]MZ | 6 | 1/4 | 37.0 | 19.1 | 4.5 | 17.3 | | | |
| 6AF8[]MZ | 6 | 1/2 | 46.3 | 27.0 | 4.5 | 17.3 | | | |
| 8AF4[]MZ | 8 | 1/4 | 35.7 | 19.1 | 6.4 | 19.1 | | | |
| 8AF8[]MZ | 8 | 1/2 | 47.2 | 27.0 | 6.4 | 19.1 | | | |
| 10AF4[]MZ | 10 | 1/4 | 36.5 | 19.1 | 7.0 | 19.8 | | | |
| 10AF8[]MZ | 10 | 1/2 | 47.4 | 30.2 | 7.0 | 19.8 | | | |
| 12AF4[]MZ | 12 | 1/4 | 41.2 | 19.1 | 9.2 | 24.5 | | | |
| 12AF8[]MZ | 12 | 1/2 | 46.7 | 27.0 | 9.2 | 24.5 | | | |
| 14AF8[]MZ | 14 | 1/2 | 46.7 | 27.0 | 11.1 | 24.5 | | | |
| 16AF8[]MZ | 16 | 1/2 | 49.5 | 27.0 | 12.7 | 27.3 | | | |
| 18AF8[]MZ | 18 | 1/2 | 56.1 | 27.0 | 13.9 | 27.9 | | | |
| 22AF8[]MZ | 22 | 1/2 | 57.9 | 27.0 | 17.0 | 29.7 | | | |
| 25AF8[]MZ | 25 | 1/2 | 63.7 | 27.0 | 19.4 | 35.5 | | | |

RG female thread ends require a gasket inserted into the bottom of the port. The male end, when assembled, exerts pressure on the gasket, creating a seal.

Female Adapter: AF/EC

connects **fractional** port to male RT tapered threads

| Part Number* | T | | S | | | | Dimensions — inches | | |
|--------------|-----------|-----------|------|----------|-----|-----|---------------------|--|--|
| | Tube O.D. | Thd. Size | A | Hex Flat | E | L | C | | |
| 4AF2[]EC | 1/4 | 1/8 | 1.22 | 9/16 | .19 | .69 | | | |
| 4AF4[]EC | 1/4 | 1/4 | 1.41 | 3/4 | .19 | .69 | | | |
| 6AF6[]EC | 3/8 | 3/8 | 1.53 | 7/8 | .28 | .78 | | | |
| 8AF8[]EC | 1/2 | 1/2 | 1.91 | 1 1/16 | .39 | .97 | | | |

Female Adapter: AF/MC

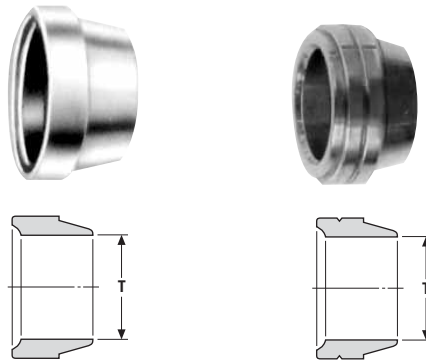
connects **metric** port to male RT tapered threads

| Part Number* | T | | P | | | | Dimensions — mm | | |
|--------------|-----------|-----------|------|----------|-----|------|-----------------|--|--|
| | Tube O.D. | Pipe Thd. | A | Hex Flat | E | L | C | | |
| 3AF2[]MC | 3 | 1/8 | 28.8 | 14.3 | 2.1 | 15.9 | | | |
| 3AF4[]MC | 3 | 1/4 | 33.3 | 19.1 | 2.1 | 15.9 | | | |
| 6AF2[]MC | 6 | 1/8 | 30.9 | 14.3 | 4.4 | 17.3 | | | |
| 6AF4[]MC | 6 | 1/4 | 35.7 | 19.1 | 4.4 | 17.3 | | | |
| 6AF6[]MC | 6 | 3/8 | 36.5 | 22.2 | 4.4 | 17.3 | | | |
| 6AF8[]MC | 6 | 1/2 | 41.3 | 27.0 | 4.4 | 17.3 | | | |
| 8AF2[]MC | 8 | 1/8 | 32.8 | 14.3 | 6.2 | 19.1 | | | |
| 8AF4[]MC | 8 | 1/4 | 37.5 | 19.1 | 6.2 | 19.1 | | | |
| 8AF6[]MC | 8 | 3/8 | 40.4 | 22.2 | 6.2 | 19.1 | | | |
| 8AF8[]MC | 8 | 1/2 | 43.9 | 27.0 | 6.2 | 19.1 | | | |
| 10AF2[]MC | 10 | 1/8 | 33.3 | 14.3 | 7.5 | 19.8 | | | |
| 10AF4[]MC | 10 | 1/4 | 38.1 | 19.1 | 7.5 | 19.8 | | | |
| 10AF6[]MC | 10 | 3/8 | 38.9 | 22.2 | 7.5 | 19.8 | | | |
| 10AF8[]MC | 10 | 1/2 | 43.7 | 27.0 | 7.5 | 19.8 | | | |
| 12AF4[]MC | 12 | 1/4 | 42.9 | 19.1 | 9.1 | 24.5 | | | |
| 12AF6[]MC | 12 | 3/8 | 44.7 | 22.2 | 9.1 | 24.5 | | | |
| 12AF8[]MC | 12 | 1/2 | 48.4 | 27.0 | 9.1 | 24.5 | | | |
| 12AF12[]MC | 12 | 3/4 | 53.3 | 31.8 | 9.1 | 24.5 | | | |

* [] see page 9 for material specifications.

Front Ferrule: FF (Fractional)

| Part Number* | T Tube O.D.—inches |
|--------------|-----------------------|
| 1FF[] | 1/16 |
| 2FF[] | 1/8 |
| 3FF[] | 3/16 |
| 4FF[] | ¼ |
| 6FF[] | 3/8 |
| 8FF[] | ½ |
| 10FF[] | 5/8 |
| 12FF[] | ¾ |
| 14FF[] | 7/8 |
| 16FF[] | 1 |
| 20FF[] | 1¼ |
| 24FF[] | 1½ |
| 32FF[] | 2 |



Front Ferrule FF/MM (Metric)

| Part Number* | T Tube O.D.—mm |
|--------------|-------------------|
| 3FF[JMM] | 3 |
| 4FF[JMM] | 4 |
| 6FF[JMM] | 6 |
| 8FF[JMM] | 8 |
| 10FF[JMM] | 10 |
| 12FF[JMM] | 12 |
| 14FF[JMM] | 14 |
| 15FF[JMM] | 15 |
| 16FF[JMM] | 16 |
| 18FF[JMM] | 18 |
| 20FF[JMM] | 20 |
| 22FF[JMM] | 22 |
| 25FF[JMM] | 25 |
| 30FF[JMM] | 30 |
| 32FF[JMM] | 32 |
| 38FF[JMM] | 38 |

Rear Ferrule: FR (Fractional)

| Part Number* | T Tube O.D.—inches |
|--------------|-----------------------|
| 1FR[] | 1/16 |
| 2FR[] | 1/8 |
| 3FR[] | 3/16 |
| 4FR[] | ¼ |
| 6FR[] | 3/8 |
| 8FR[] | ½ |
| 10FR[] | 5/8 |
| 12FR[] | ¾ |
| 14FR[] | 7/8 |
| 16FR[] | 1 |
| 20FR[] | 1¼ |
| 24FR[] | 1½ |
| 32FR[] | 2 |



Rear Ferrule FR/MM (Metric)

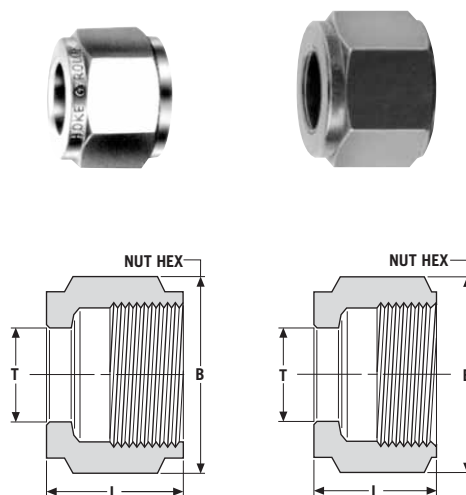
| Part Number* | T Tube O.D.—mm |
|--------------|-------------------|
| 3FR[JMM] | 3 |
| 4FR[JMM] | 4 |
| 6FR[JMM] | 6 |
| 8FR[JMM] | 8 |
| 10FR[JMM] | 10 |
| 12FR[JMM] | 12 |
| 14FR[JMM] | 14 |
| 15FR[JMM] | 15 |
| 16FR[JMM] | 16 |
| 18FR[JMM] | 18 |
| 20FR[JMM] | 20 |
| 22FR[JMM] | 22 |
| 25FR[JMM] | 25 |
| 30FR[JMM] | 30 |
| 32FR[JMM] | 32 |
| 38FR[JMM] | 38 |

Nylon front and rear ferrules are available in both fractional and metric.

Note: Stainless steel front ferrules larger than 1" and 25mm are PFA coated.

Nut: N (Fractional)

| Part Number* | T Tube O.D. | Dimensions—inches | |
|--------------|----------------|-------------------|------|
| | | B | L |
| 1N[] | 1/16 | 5/16 | 0.33 |
| 2N[] | 1/8 | 7/16 | 0.52 |
| 3N[] | 3/16 | ½ | 0.52 |
| 4N[] | ¼ | 9/16 | 0.53 |
| 6N[] | 3/8 | 11/16 | 0.59 |
| 8N[] | ½ | 7/8 | 0.70 |
| 10N[] | 5/8 | 1 | 0.70 |
| 12N[] | ¾ | 11/8 | 0.72 |
| 14N[] | 7/8 | 1¼ | 0.78 |
| 16N[] | 1 | 1½ | 0.78 |
| 20N[] | 1¼ | 17/8 | 1.25 |
| 24N[] | 1½ | 2¼ | 1.50 |
| 32N[] | 2 | 3 | 2.06 |



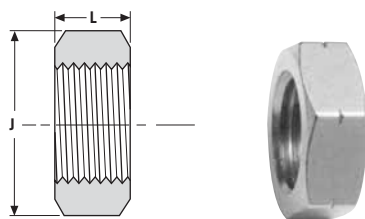
Nut: N/MM (Metric)

| Part Number* | T Tube O.D. | Dimensions—mm | |
|--------------|----------------|---------------|------|
| | | B | L |
| 3N[JMM] | 3 | 11.1 | 13.1 |
| 4N[JMM] | 4 | 12.7 | 13.3 |
| 6N[JMM] | 6 | 14.3 | 13.4 |
| 8N[JMM] | 8 | 15.9 | 14.1 |
| 10N[JMM] | 10 | 19.1 | 15.0 |
| 12N[JMM] | 12 | 22.2 | 17.9 |
| 14N[JMM] | 14 | 23.8 | 16.8 |
| 15N[JMM] | 15 | 23.8 | 16.8 |
| 16N[JMM] | 16 | 25.4 | 17.8 |
| 18N[JMM] | 18 | 28.6 | 18.4 |
| 20N[JMM] | 20 | 31.8 | 20.0 |
| 22N[JMM] | 22 | 31.8 | 20.0 |
| 25N[JMM] | 25 | 38.1 | 21.3 |
| 30N[JMM] | 30 | 50.8 | 32.8 |
| 32N[JMM] | 32 | 50.8 | 34.4 |
| 38N[JMM] | 38 | 60.3 | 40.6 |

* [] see page 9 for material specifications.

Bulkhead Nut: BN (Fractional)

| Part Number* | Dimensions—Inches | |
|--------------|-------------------|-------|
| | L | J |
| 1BN [] | 1/8 | 3/8 |
| 2BN [] | 7/32 | 1/2 |
| 3BN [] | 7/32 | 9/16 |
| 4BN [] | 1/4 | 5/8 |
| 6BN [] | 17/64 | 3/4 |
| 8BN [] | 5/16 | 15/16 |
| 10BN [] | 23/64 | 11/16 |
| 12BN [] | 13/32 | 13/16 |
| 14BN [] | 13/32 | 15/16 |
| 16BN [] | 13/32 | 19/16 |
| 24BN [] | 1/2 | 2 1/4 |
| 32BN [] | 1/2 | 2 3/4 |

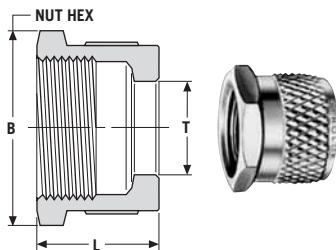


Bulkhead Nut: BN/MM (Metric)

| Part Number* | Fitting Size mm | Dimensions—mm | |
|--------------|-----------------|---------------|------|
| | | L | J |
| 2BN [] | 3 | 5.5 | 12.7 |
| 3BN [] | 4 | 5.5 | 14.3 |
| 4BN [] | 6 | 6.4 | 15.9 |
| 8BN []MM | 8 | 6.4 | 17.5 |
| 10BN []MM | 10 | 6.7 | 19.1 |
| 8BN [] | 12 | 7.9 | 23.8 |
| 14BN []MM | 14 or 15 | 7.9 | 23.8 |
| 10BN [] | 16 | 9.1 | 27.0 |
| 12BN [] | 18 | 10.3 | 30.2 |
| 14BN [] | 20 or 22 | 10.3 | 33.3 |
| 16BN [] | 25 | 10.3 | 39.7 |

Knurled Nut: KN (Fractional)

| Part Number* | T Tube O.D. | Dimensions—Inches | |
|--------------|----------------|-------------------|------|
| | | B | L |
| 1KN [] | 1/16 | 5/16 | 0.36 |
| 2KN [] | 1/8 | 7/16 | 0.52 |
| 3KN [] | 3/16 | 1/2 | 0.52 |
| 4KN [] | 1/4 | 9/16 | 0.53 |
| 6KN [] | 3/8 | 11/16 | 0.59 |
| 8KN [] | 1/2 | 7/8 | 0.70 |
| 10KN [] | 5/8 | 1 | 0.70 |
| 12KN [] | 3/4 | 11/8 | 0.72 |
| 14KN [] | 7/8 | 1 1/4 | 0.78 |
| 16KN [] | 1 | 1 1/2 | 0.78 |



Screen: SCR N

| GYROLOK® | | |
|----------|-----|------|
| 4SCRN316 | 1/4 | 0.05 |
| 6SCRN316 | 3/8 | 0.05 |



Use to prevent insects from entering open vent lines.

Usage Instructions:

1. Substitute screen for rear ferrule in an open GYROLOK®-ended line. (No tubing connected.)
2. Finger-tighten nut.

GYROLOK® Fittings are available with knurled nuts and nylon ferrules for use with polyethylene tubing. Hand-tightening allows for quick, easy assembly and disassembly, while providing a leak-tight seal, ideally suited for laboratory hookups. Use such fittings with glass and other hard wall tubing materials.

To order, simply add **KNN** to the basic part number.

Example: **4CM4** with a knurled nut and nylon ferrules would be **4CM4KNN**.

Safety Changer Nut & Ferrule Sets: SCNF



Each **SCNF** contains 5 nut and ferrule sets. A nut and ferrule set consists of 1 nut, 1 front ferrule and 1 rear ferrule.

Provides a safe, easy, correct way to reuse existing fittings and valves with new GYROLOK® components. Color coding differentiates metric and fractional parts and materials.

Fractional

| Part Number* | Nut & Ferrule Sets/Changer | Tube O.D.—Inches |
|--------------|----------------------------|------------------|
| 1SCNF [] | 5 | 1/16 |
| 2SCNF [] | 5 | 1/8 |
| 3SCNF [] | 5 | 3/16 |
| 4SCNF [] | 5 | 1/4 |
| 6SCNF [] | 5 | 3/8 |
| 8SCNF [] | 5 | 1/2 |
| 10SCNF [] | 5 | 5/8 |
| 12SCNF [] | 5 | 3/4 |
| 16SCNF [] | 5 | 1 |

Metric

| Part Number* | Nut & Ferrule Sets/Changer | Tube O.D.—mm |
|--------------|----------------------------|--------------|
| 3SCNF []MM | 5 | 3 |
| 6SCNF []MM | 5 | 6 |
| 8SCNF []MM | 5 | 8 |
| 10SCNF []MM | 5 | 10 |
| 12SCNF []MM | 5 | 12 |



Color Coded Package:

- Green: Fractional Brass, Fractional 316 Stainless Steel
- Blue: Metric

How to Order

Add designated material to part number. For example:

- Brass = **BR**
- 316 Stainless Steel = **316**
- MONEL® = **M**

Example: 2SCNF316 (5 nut and ferrule sets for 1/8" tubing in 316 Stainless Steel.)

Safety Changer Ferrule Sets: SCF



Each **SCF** contains 10 ferrule sets as noted. A ferrule set consists of 1 front ferrule and 1 rear ferrule.

Fractional

| Part Number* | Nut & Ferrule Sets/Changer | Tube O.D.—Inches |
|--------------|----------------------------|------------------|
| 1SCF [] | 10 | 1/16 |
| 2SCF [] | 10 | 1/8 |
| 3SCF [] | 10 | 3/16 |
| 4SCF [] | 10 | 1/4 |
| 6SCF [] | 10 | 3/8 |
| 8SCF [] | 10 | 1/2 |
| 10SCF [] | 10 | 5/8 |
| 12SCF [] | 10 | 3/4 |
| 16SCF [] | 10 | 1 |

Metric

| Part Number* | Nut & Ferrule Sets/Changer | Tube O.D.—mm |
|--------------|----------------------------|--------------|
| 3SCF []MM | 10 | 3 |
| 6SCF []MM | 10 | 6 |
| 8SCF []MM | 10 | 8 |
| 10SCF []MM | 10 | 10 |
| 12SCF []MM | 10 | 12 |

* [] see page 9 for material specifications.

Tube Inserts

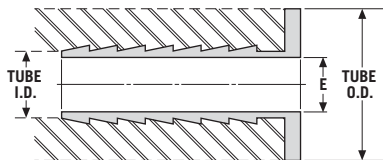
GYROLOK® tube fittings may be used with various types of plastic tube material without any special preparation. Use tube inserts to support soft types of tubing, such as Tygon or polyvinyl chloride, prior to insertion into a GYROLOK® end. See chart at right for recommendations.

Usage Instructions

1. Fully insert Tube Insert into plastic tubing, where appropriate.
2. If using standard nut, follow standard GYROLOK® assembly instructions, page 58 Manual Assembly Instructions.
3. For finger-tight assembly, standard Brass fittings are available with knurled nuts and nylon ferrules.

Example:

| 4 | TI | 2 | 316 |
|---|-------------------------------|---|---------------------------------------|
| Tube O.D. in sixteenths of an inch — 1/4" | Type Fitting (Tube Insert) | Tube I.D. in sixteenths of an inch — 1/8" (Except .170 I.D.) | Material Brass = BR 316SS = 316 |



| Tubing Material | Front Ferrule | Rear Ferrule | Tube Insert Usage |
|----------------------------------|---------------|---------------|-----------------------|
| Polyethylene | Metal | Metal | Not normally required |
| | Nylon | Nylon | |
| Nylon | Metal | Metal | Not normally required |
| | Nylon | Nylon | |
| PTFE | Metal | Metal | Not normally required |
| | PTFE | PTFE or Metal | |
| Rigid PVC | Metal | Metal | None |
| | PTFE* | PTFE* | |
| Soft Polyvinyl Chloride or Tygon | Metal | Metal | Recommended |
| | Nylon | Nylon | |

* Limited gripping, metal provides tighter grip for higher pressures.

| Part Number* | Tube O.D. | Pipe Size | Dimensions — |
|--------------|-----------|-----------|--------------|
| | | | inches E |
| 3T12[] | 3/16 | 1/8 | .09 |
| 4T12[] | 1/4 | 1/8 | .09 |
| 4T1.170[] | 1/4 | .170 | .11 |
| 4T13[] | 1/4 | 3/16 | .13 |
| 6T13[] | 3/8 | 3/16 | .13 |
| 6T14[] | 3/8 | 1/4 | .19 |
| 8T14[] | 1/2 | 1/4 | .19 |
| 8T16[] | 1/2 | 3/8 | .28 |
| 10T16[] | 5/8 | 3/8 | .28 |
| 10T18[] | 5/8 | 1/2 | .42 |
| 12T18[] | 3/4 | 1/2 | .42 |
| 12T110[] | 3/4 | 5/8 | .50 |
| 14T110[] | 7/8 | 5/8 | .50 |
| 14T112[] | 7/8 | 3/4 | .66 |
| 16T112[] | 1 | 3/4 | .66 |
| 16T114[] | 1 | 7/8 | .72 |

Tube Insert: TI/MM (Metric)

| Part Number* | T Tube O.D. | Tube I.D. | Dimensions — |
|--------------|-------------------|--------------|--------------|
| | | | mm E |
| 6T14[]MM | 6 | 4 | 2.2 |
| 8T16[]MM | 8 | 6 | 4.3 |
| 10T18[]MM | 10 | 8 | 6.3 |
| 12T110[]MM | 12 | 10 | 7.9 |

Tube Insert: TI/ME (Metric)

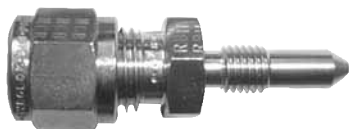
| Part Number* | T Tube O.D. | Tube I.D. | Dimensions — |
|--------------|-------------------|--------------|--------------|
| | | | mm E |
| 8T14[]ME | 8 | 1/4 | 4.7 |



GYROLOK® Used With Plastic Tubing and Tube Insert

* [] see page 9 for material specifications.

GYROLOK® Calibration Fittings



GYROLOK® Calibration Fittings save time and money by reducing the time required to calibrate differential pressure transmitters. HOKE's calibration fittings, constructed of 316 Stainless Steel, combine a straight thread and conical metal-to-metal sealing surface on one end with a 1/4" GYROLOK® tube fitting on the other. This design allows the technician to easily calibrate the transmitter – in place – without removing the pipe plug/bleed port tap assemblies. No PTFE tape is required. GYROLOK®'s exclusive Controlled Ferrule Drive increases value – extending cycle life.

Features

Straight Thread/Metal-to-Metal Sealing:

Controlled Ferrule Drive:

Butt Seal:

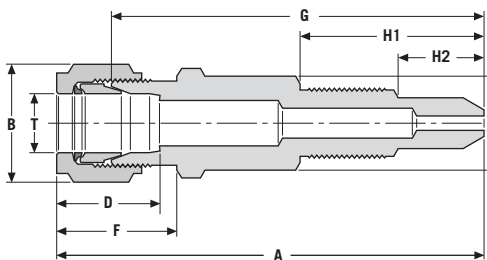
Sizing Angle:

Nut and Ferrule Safety Changer:

Benefits

- Ease of installation
- Greatly extends remake life
- Protects tubing from overstressing
- Maximizes seal integrity and user safety
- Reduces tube sticking
- Safe, simple component replacement

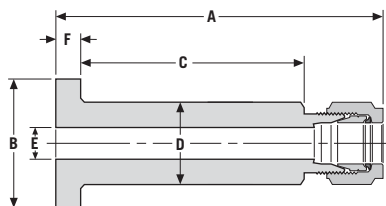
Dimensions (Fractional)



| Part Number | T | | Dimensions – inches | | | | | | | | |
|-------------|-----------|-----------------|---------------------|------|-----|-------|------|-------|---------|-------|-------|
| | Tube O.D. | Straight Thread | A | B | C | D | E | F | G | H1 | H2 |
| CM005[] | 1/4 | 1/4-28 | 1 23/32 | 9/16 | 1/2 | 41/64 | 1/16 | 49/64 | 1 13/32 | 25/32 | 27/64 |
| CM009[] | 1/4 | 5/16-24 | 2 11/32 | 9/16 | 1/2 | 41/64 | 1/16 | 49/64 | 2 1/32 | 1 | 25/64 |

CM005 – For use with Honeywell transmitters
 CM009 – For use with Rosemount or Foxboro transmitters

Lapped Flange Connector



Lapped Flange Connector: CLF (Fractional)

| Part Number | T | | Dimensions – inches | | | | | | | Finish |
|-------------|-----------|-------------|---------------------|------|------|-----|-----|-----|----------------------------|--------|
| | Tube O.D. | Flange Seal | A | B | C | D | E | F | | |
| 4CLFA[] | 1/4 | A | 3.33 | 1.38 | 2.28 | .88 | .19 | .25 | 3.2 – 6.3 Micrometer (Ra) | |
| 4CLFB[] | 1/4 | B | 3.33 | 1.38 | 2.28 | .88 | .19 | .25 | 6.3 – 12.5 Micrometer (Ra) | |
| 6CLFA[] | 3/8 | A | 3.34 | 1.38 | 2.28 | .88 | .28 | .25 | 3.2 – 6.3 Micrometer (Ra) | |
| 6CLFB[] | 3/8 | B | 3.34 | 1.38 | 2.28 | .88 | .28 | .25 | 6.3 – 12.5 Micrometer (Ra) | |
| 8CLFA[] | 1/2 | A | 3.47 | 1.38 | 2.28 | .88 | .42 | .25 | 3.2 – 6.3 Micrometer (Ra) | |
| 8CLFB[] | 1/2 | B | 3.47 | 1.38 | 2.28 | .88 | .42 | .25 | 6.3 – 12.5 Micrometer (Ra) | |

Lapped Flange Connector: CLF/MM (Metric)

| Part Number | T | | Dimensions – mm | | | | | | | Finish |
|-------------|-----------|-------------|-----------------|------|------|------|-----|-----|--------------------------|--------|
| | Tube O.D. | Flange Seal | A | B | C | D | E | F | | |
| 10CLFA[]MM | 10 | A | 84.1 | 34.9 | 57.9 | 22.2 | 7.1 | 6.4 | 3.2–6.3 Micrometer (Ra) | |
| 10CLFB[]MM | 10 | B | 84.1 | 34.9 | 57.9 | 22.2 | 7.1 | 6.4 | 6.3–12.5 Micrometer (Ra) | |

Flange Seal A

Flange Seal B



Smooth



Serrated / Concentric

The Lapped Flange Connector is used to allow safe and easy connections between process lines and instruments. The basic, one-piece unit consists of a GYROLOK® tube connection end and a 1/2" lap joint pipe flange. The flange end is dimensioned to meet "ANSI 2500" flange specifications. Available in "Smooth" or "Serrated/Concentric" seal faces, and in 316 Stainless Steel or MONEL®.

* [] see page 9 for material specifications.

HOKE® Dielectric Tube Fittings



The GYROLOK® Dielectric Tube Fittings are for use in applications where electrical current flowing through a pipe or tube line must be interrupted to protect vital instrumentation and metering equipment.

Features

- Thermoplastic Insulators with:
- Resistance in excess of 10^8 ohms at 70° F (21° C) and 50% relative humidity.
 - Resistance in excess of 10^6 ohms at 100° F (38° C) and 90% relative humidity.

Metal components made of 316 Stainless Steel:

Appropriate orifice for fitting size (e.g. .358" orifice in 1/2" fitting):

GYROLOK® tube fitting ends:

Benefits

- Maximum safety and protection to critical monitoring station instrumentation.
- Long component life in rugged environment.
- Maximum flow capability provided by all sizes of GYROLOK® Dielectric tube fittings.
- The unique value and performance offered by GYROLOK®.

Technical Data

- Body Construction Materials: • 316 Stainless Steel
- Insulator: • Molded Thermoplastic
- O-ring Material: • 90 Durometer Viton
- Back-up Washer: • PTFE

- Electrical Resistance of Insulators: • $7.0 \times 10^8 \Omega$ @ 10 Volts DC @ 70° F and 50% relative humidity
 • $1.0 \times 10^6 \Omega$ @ 10 Volts DC @ 100° F and 90% relative humidity
- Pressure Rating: • 5000 PSIG @ 70° F (34,470kPa @ 21° C)
- Temperature Rating: • -40° F to +200° F (-40° C to +93° C)

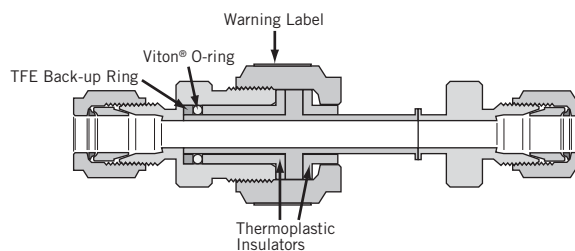
Design

The Dielectric Tube Fitting must perform three primary functions:

- Electrical insulation
- Reliable fluid containment
- Appropriate flow for line size

In the HOKE® design, the insulation function is performed by thermoplastic insulators which provide performance unequaled by any similar product.

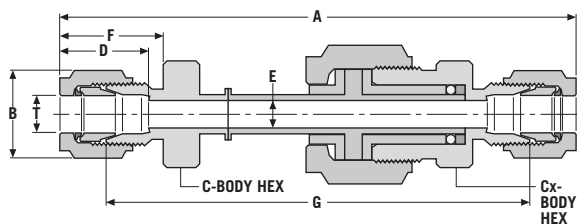
A Viton O-ring and PTFE back up ring provide the containment function within the fitting. GYROLOK®'s 2-ferrule system provides sealing with the impulse line tubing.



Appropriate flow for line size is achieved by providing the appropriate inside diameter for tubing size. See "E" dimensions in Dimensional Table.

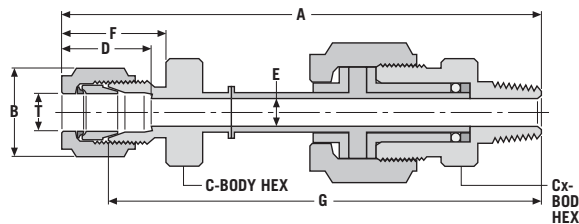
WARNING: A "NO WRENCHING" label is placed on the hex of the nut in the insulation sections. Do not disconnect the labeled nut or allow this section to be torqued without proper backup. NPT connections (where applicable) must be installed prior to final tube connections.

Dielectric Unions: DU

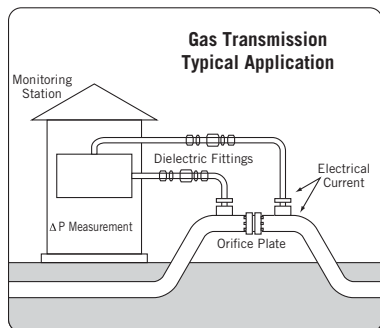


| Part No. | T Tube O.D. | Dimensions — inches | | | | | | | |
|----------|-------------|---------------------|-------|------------|-------------|-----|-----|-----|------|
| | | A | B | C Hex Flat | Cx Hex Flat | D | E | F | G |
| 4DU316 | 1/4 | 3.78 | 9/16 | 1/2 | 11/16 | .64 | .19 | .77 | 3.12 |
| 6DU316 | 3/8 | 3.89 | 11/16 | 5/8 | 13/16 | .71 | .26 | .80 | 3.23 |
| 8DU316 | 1/2 | 4.12 | 7/8 | 13/16 | 15/16 | .96 | .36 | .91 | 3.21 |

Dielectric Male Connectors: DCM



| Part No. | T Tube O.D. | Dimensions — inches | | | | | | | |
|----------|-------------|---------------------|-------|------------|-------------|-----|-----|-----|------|
| | | A | B | C Hex Flat | Cx Hex Flat | D | E | F | G |
| 6DCM4316 | 3/8 | 3.65 | 11/16 | 5/8 | 13/16 | .71 | .26 | .80 | 3.33 |



Application

Commonly used in the Natural Gas Transmission industry, the Dielectric Fitting will prevent current flow resulting from Impressed Current Cathodic Protection Systems, static electricity or even lightning strikes, from reaching sensitive monitoring station equipment.

Impressed Current Cathodic Protection Systems involve the application of a low voltage, low amperage direct current to a pipeline and eventual transfer of corrosive effects to a typically underground anode bed.

If the current flow is not interrupted before reaching the monitoring station critical equipment could be damaged or rendered inaccurate.

By installing GYROLOK®'s Dielectric Tube Fitting on impulse lines between the pipeline and the monitoring station, current flow is interrupted while full fluid flow is permitted.

HOKE® Chromatography Fittings



GYROLOK® tube fittings for use in gas or liquid chromatography applications are available in a variety of user-required configurations. HOKE's Chromatography Fittings feature low dead volumes, male nut designs, as well as configurations utilizing either press-fit or drop-in frits. For user convenience, both frit versions are available in a number of micron sizes. By combining the needs of the Chromatography Fitting with key GYROLOK® features, such as controlled ferrule drive, the GYROLOK® Chromatography Fitting offers capabilities and performance that are unmatched in the industry.

Pressure Ratings

GYROLOK® Chromatography fittings are rated for working pressures higher than the tubing recommended for use. Refer to HOKE's Tubing Data Charts for specific information. (Contact factory for current version)

Temperature Ratings

316 Stainless Steel: -325° F to +800° F (-200° C to +425° C)

Note: Intermittent use to 1200° F is possible, however prolonged exposure to temperatures over 800° F is not recommended.

Features

Low Dead Volume:

Press-fit or Drop-in Frits:

Conical Diffusion Angle:

Male Nut Configuration:

Fritless Configurations:

Controlled Ferrule Drive:

Interchangeability:

Benefits

- Accurate analysis and measurement
- Filter elements can be ordered factory installed (press-fit) or for field installation (drop-in)
- 4 micron sizes are offered as standard, other sizes can be provided
- Perform final filtering function for low volume fluids
- Press-fit frit design reduces internal volume
- Assures fluid contact over a greater surface, extending frit life while reducing unfiltered volume
- Reduced internal volume
- For use with G.C. columns or L.C.'s with screens
- Long product life with outstanding remakeability
- Fittings are interchangeable with those of certain other manufacturers (consult factory)

How to Order—Dielectric Fittings

| 2 | F | U | M | P | 1 | 316 |
|--|--|---|---|---|--------------------------------|---------------------------------|
| Tube O.D. in 1/16 of an inch; 2=2/16"=1/8" | Nut Type M = male F = female size 2 nut is female | Fitting Type U = union RU = reducing union CM = male connector | Nut Type M = male F = female only used if different nut type is used | Press-Fit Frit size P = .5 micron R = 2 micron T = 5 micron V = 10 micron | Tube Size in 1/16's of an inch | Material 316 stainless steel |

Dimension Tables

Drop-In Frit

| Part No. | Column O.D. |
|--------------|-------------|
| 4FRIT * 316 | 1/4 |
| 6FRIT * 316 | 3/8 |
| 8FRIT * 316 | 1/2 |
| 16FRIT * 316 | 1 |

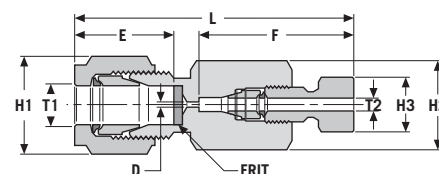
* Frit designator in microns: E=2.0, G=5.0, I=10.
Assign appropriate letter code for desired size.

FOR YOUR SAFETY

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. IMPROPER SELECTION OR USE OF PRODUCTS DESCRIBED HEREIN CAN CAUSE PERSONAL INJURY OR PROPERTY DAMAGE.

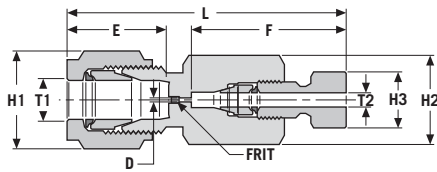
Column End Fitting (for use with drop-in frit)

| Part No. | T1 x T2 Tube Sizes | Dimensions — inches | | | | | | |
|-----------|-----------------------|---------------------|-----------|----------------|----------------|----------------|--------|-------|
| | | L Length | D Dia. | H1 Hex Size | H2 Hex Size | H3 Hex Size | E Dim | F Dim |
| 4FUM1316 | 1/4 x 1/16 | 1.57 | 0.020 | 9/16 | 1/2 | 1/4 | 41/64 | 51/64 |
| 6FUM1316 | 3/8 x 1/16 | 1.65 | 0.020 | 11/16 | 5/8 | 1/4 | 23/32 | 51/64 |
| 8FUM1316 | 1/2 x 1/16 | 1.93 | 0.030 | 7/8 | 13/16 | 1/4 | 31/32 | 51/64 |
| 16FUM1316 | 1 x 1/16 | 2.30 | 0.030 | 1 1/2 | 1 3/8 | 1/4 | 1 5/16 | 51/64 |



* [] see page 9 for material specifications.

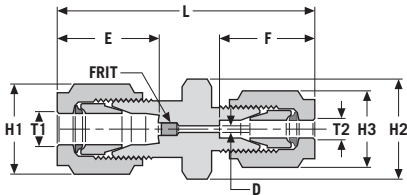
Column End Fitting (with press-fit frit)



| Part No. | T1 x T2 Tube Sizes | L Length | D Dia. | Dimensions — inches | | | E Dim | F Dim |
|-------------|-----------------------|-------------|-----------|---------------------|----------------|----------------|----------|----------|
| | | | | H1 Hex Size | H2 Hex Size | H3 Hex Size | | |
| 2FUM[*]1316 | 1/8 X 1/16 | 1.50 | 0.013 | 7/16 | 7/16 | 1/4 | 9/16 | 51/64 |
| 4FUM[*]1316 | 1/4 X 1/16 | 1.57 | 0.013 | 9/16 | 1/2 | 1/4 | 41/64 | 51/64 |
| 6FUM[*]1316 | 3/8 X 1/16 | 1.64 | 0.013 | 11/16 | 5/8 | 1/4 | 23/32 | 51/64 |

* Frit designator in microns: P=0.5, R=2.0, T=5.0, V=10. Assign letter code to complete part number.

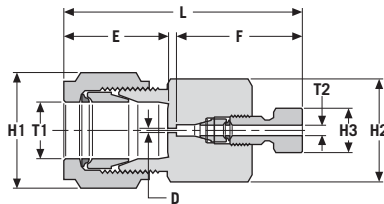
Union (with press-fit frit)



| Part No. | T1 x T2 Tube Sizes | L Length | D Dia. | Dimensions — inches | | | E Dim | F Dim |
|-----------|-----------------------|-------------|-----------|---------------------|----------------|----------------|----------|----------|
| | | | | H1 Hex Size | H2 Hex Size | H3 Hex Size | | |
| 2FRUM1316 | 1/8 X 1/16 | 1.41 | 0.020 | 7/16 | 7/16 | 5/16 | 9/16 | 13/32 |
| 4FRUM1316 | 1/4 X 1/16 | 1.47 | 0.020 | 9/16 | 1/2 | 5/16 | 41/64 | 13/32 |
| 6FRUM1316 | 3/8 X 1/16 | 1.56 | 0.020 | 11/16 | 5/8 | 5/16 | 23/32 | 13/32 |

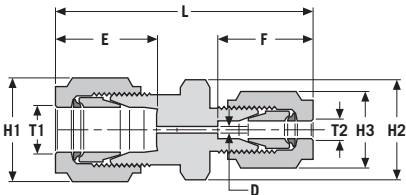
* Frit designator in microns: P=0.5, R=2.0, T=5.0, V=10. Assign letter code to complete part number.

Column End Fitting



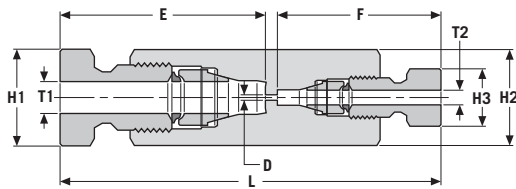
| Part No. | T1 x T2 Tube Sizes | L Length | D Dia. | Dimensions — inches | | | E Dim | F Dim |
|-----------|-----------------------|-------------|-----------|---------------------|----------------|----------------|----------|----------|
| | | | | H1 Hex Size | H2 Hex Size | H3 Hex Size | | |
| 2FRUM1316 | 1/8 X 1/16 | 1.41 | 0.013 | 7/16 | 7/16 | 1/4 | 9/16 | 51/64 |
| 4FRUM1316 | 1/4 X 1/16 | 1.48 | 0.013 | 9/16 | 1/2 | 1/4 | 41/64 | 51/64 |
| 6FRUM1316 | 3/8 X 1/16 | 1.56 | 0.013 | 11/16 | 5/8 | 1/4 | 23/32 | 51/64 |

Reducing Union



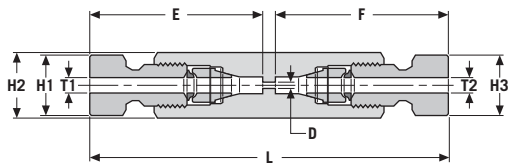
| Part No. | T1 x T2 Tube Sizes | L Length | D Dia. | Dimensions — inches | | | E Dim | F Dim |
|----------|-----------------------|-------------|-----------|---------------------|----------------|----------------|----------|----------|
| | | | | H1 Hex Size | H2 Hex Size | H3 Hex Size | | |
| 2FRU1316 | 1/8 X 1/16 | 1.33 | 0.020 | 7/16 | 7/16 | 5/16 | 9/16 | 13/32 |
| 4FRU1316 | 1/4 X 1/16 | 1.47 | 0.020 | 9/16 | 1/2 | 5/16 | 41/64 | 13/32 |
| 6FRU1316 | 3/8 X 1/16 | 1.56 | 0.020 | 11/16 | 5/8 | 5/16 | 23/32 | 13/32 |

Reducing Union (male nut)



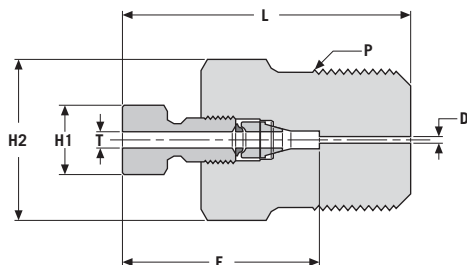
| Part No. | T1 x T2 Tube Sizes | L Length | D Dia. | Dimensions — inches | | | E Dim | F Dim |
|----------|-----------------------|-------------|-----------|---------------------|----------------|----------------|----------|----------|
| | | | | H1 Hex Size | H2 Hex Size | H3 Hex Size | | |
| 2MRU1316 | 1/8 X 1/16 | 1.91 | 0.013 | 3/8 | 7/16 | 1/4 | 1 1/16 | 51/64 |

Union (male nut)



| Part No. | T1 x T2 Tube Sizes | L Length | D Dia. | Dimensions — inches | | | E Dim | F Dim |
|----------|-----------------------|-------------|-----------|---------------------|----------------|----------------|----------|----------|
| | | | | H1 Hex Size | H2 Hex Size | H3 Hex Size | | |
| 1MU316 | 1/16 X 1/16 | 1.84 | 0.013 | 1/4 | 5/16 | 1/4 | 51/64 | 51/64 |
| 2MU316 | 1/8 X 1/8 | 2.18 | 0.052 | 3/8 | 7/16 | 3/8 | 1 1/16 | 1 1/16 |

Male Connector (male nut)



| Part No. | T Tube Size | P Pipe Size | L Length | D Dia. | Dimensions — inches | | E Dim |
|----------|----------------|----------------|-------------|-----------|---------------------|----------------|----------|
| | | | | | H1 Hex Size | H2 Hex Size | |
| 1MCM1316 | 1/16 | 1/16 NPT | 0.880 | 0.013 | 1/4 | 5/16 | 51/64 |
| 1MCM2316 | 1/16 | 1/8 NPT | 0.940 | 0.013 | 1/4 | 7/16 | 51/64 |
| 1MCM4316 | 1/16 | 1/4 NPT | 1.160 | 0.013 | 1/4 | 9/16 | 51/64 |

Note: All dimensions are for reference only.

GYROLOK® Marking Tool

Tube fitting users have long recognized that proper tube and tube fitting system function requires good tubing preparation followed by the use of correct installation procedures. Improper ferrule set in any flareless tube and fitting system may be the result of burrs created during the tube cutting process, improper tube insertion into the fitting, or inadequate tightening of the fitting nut. In order to maximize tube and fitting system performance and safety, HOKE® offers several tool options combined with detailed installer training. The GYROLOK® Marking Tool provides the installer with an economical means of ensuring both proper tubing insertion into the fitting and adequate nut tightening.



Standard GMT



Three-In-One GMT
(468GMT and 61012-GMTMM)

Usage Instructions

1. Squarely cut tubing, preferably with a tube cutter, and then deburr both inside and outside diameters as necessary.
2. Firmly insert tubing into the tool as far as possible.
3. Mark the tubing, as shown, with a Sharpie Ultrafine Point model 37001 marker. Take care to position perpendicular to the tool as shown for correct marking position.
4. Firmly insert the marked tubing into the GYROLOK® fitting to which it will be assembled. Finger-tighten the nut if below 12MM, tube tight if 12MM and above. As viewed from the side, the mark should NOT be visible at this point. If not visible, continue to step 5. If any part of the mark is visible above the GYROLOK® nut after finger-tightening below 12MM, tube tight if 12MM and above, the tubing is either not properly seated within the fitting or a ferrule is missing. Disassemble and determine cause.
5. If the mark is not visible after finger-tightening, continue by following appropriate GYROLOK® assembly instructions for tubing O.D. and wall thickness.

Part Numbers

| SIZE | PART NUMBER | SIZE | PART NUMBER |
|------------------|-------------|-----------------|-------------|
| 1/8" | 2GMT | 6MM | 6GMTMM |
| 1/4" | 4GMT | 8MM | 8GMTMM |
| 3/8" | 6GMT | 10MM | 10GMTMM |
| 1/2" | 8GMT | 12MM | 12GMTMM |
| 5/8" | 10GMT | 14MM | 14GMTMM |
| 3/4" | 12GMT | 15MM | 15GMTMM |
| 1" | 16GMT | 16MM | 16GMTMM |
| 1/4", 3/8", 1/2" | 468GMT | 18MM | 18GMTMM |
| | | 20MM | 20GMTMM |
| | | 22MM | 22GMTMM |
| | | 25MM | 25GMTMM |
| | | 6MM, 10MM, 12MM | 61012-GMTMM |

Pre-setting Tool: PST

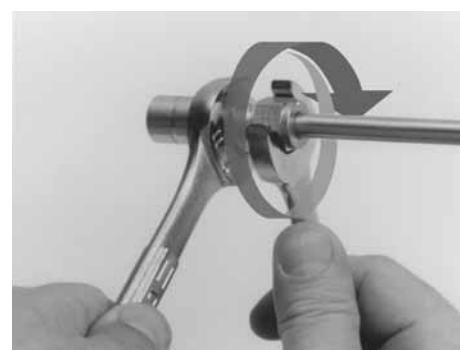
Used strictly for pre-assembling ferrules to tubing.

Fractional

| Part Number* | Tube O.D. | Dimensions — inches | |
|--------------|-----------|---------------------|--------------|
| | | Length | Across Flats |
| 1PST | 1/16 | 2.25 | 3/8 |
| 2PST | 1/8 | 1.94 | 11/16 |
| 3PST | 3/16 | 2 | 1/2 |
| 4PST | 1/4 | 1.94 | 11/16 |
| 6PST | 3/8 | 1.97 | 11/16 |
| 8PST | 1/2 | 2 | 7/8 |
| 12PST | 3/4 | 2.50 | 1 1/8 |
| 16PST | 1 | 2.50 | 1 1/2 |

Metric

| Part Number* | Tube O.D. | Dimensions — mm | |
|--------------|-----------|-----------------|--------------|
| | | Length | Across Flats |
| 3PSTMM | 3 | 49.2 | 17.3 |
| 6PSTMM | 6 | 49.0 | 17.3 |
| 8PSTMM | 8 | 50.0 | 17.3 |
| 10PSTMM | 10 | 50.8 | 17.3 |
| 12PSTMM | 12 | 50.8 | 22.0 |
| 14PSTMM | 14 | 50.8 | 22.0 |
| 16PSTMM | 16 | 63.5 | 28.4 |
| 18PSTMM | 18 | 63.5 | 28.4 |
| 20PSTMM | 20 | 63.5 | 28.4 |
| 22PSTMM | 22 | 63.5 | 37.9 |
| 25PSTMM | 25 | 63.5 | 37.9 |



Usage Instructions

1. Place PST in vice.
2. Loosely assemble nut and ferrules to PST. Use GYROLOK® Safety Changer Nut & Ferrule Sets.
3. Follow standard GYROLOK® assembly instructions to set ferrules onto tubing, see page 58.
4. Loosen nut and remove tubing with pre-set ferrules and nut.
5. With pre-set ferrules and nut in permanent location, reassemble tubing by following GYROLOK® reassembly instructions on page 58.

Note: Threads of pre-setting tools should be lubricated the very first time and relubricated every tenth time thereafter.

* [] see page 9 for material specifications.

Leak Detectives Products



HOKE's Leak Detective products are used to detect leaks in pressurized gas systems. Use the Leak Detective to locate fugitive gas emissions in compressed air, oxygen, helium, hydrogen, nitrogen, natural gas, acetylene, and propane systems.

The Leak Detective is manufactured to meet specification MIL-L-25567D and is available in two types. Type 1 is for regular temperature applications 27° F to 200° F (-3° C to 95° C) while Type 2 is for colder application from -65° F to 200° F (-55° C to 95° C). The Leak Detective is packaged as standard in 8 ounce (230 ml) bottles or 1 gallon (4 liter) containers. A tracer tube is provided with each small bottle. 5 gallon containers and 55 gallon drums can also be provided upon request.



Packaging

Standard

8 ounce
1 gallon
230 ml
4 liter

Options

2 ounce
5 gallon
55 gallon drum

Benefits

- Safety:**
- Oxygen compatible and manufactured in accordance with MIL-L-25567D
 - Meets requirements of ASME Section V for composition and purity
- Certifications:**
- Material Safety Data Sheets (MSDS) available
- Helps eliminate fugitive emissions:**
- Verifies leak-tight systems
- Cleanliness:**
- Leaves virtually no residue

Technical Data

Specification

- Complies with MIL-L-25567D

Operating Temperatures

- Type 1: 27° F to 200° F (-3° C to 95° C)
- Type 2: -65° F to 200° F (-55° C to 95° C)

Usage Instructions

1. Extend 12" tracer tube
2. Direct solution
3. Squeeze bottle
4. Inspect system for foaming that indicates leakage

Ordering Information

| PARTNUMBER | TYPE | LABEL LANGUAGE | SIZE |
|------------|------|--------------------|----------|
| 1LDE8OZ | 1 | English | 8 ounce |
| 1LDE1G | 1 | English | 1 gallon |
| 2LDE8OZ | 2 | English | 8 ounce |
| 2LDE1G | 2 | English | 1 gallon |
| 1LDEF230 | 1 | English/ French | 230 ml |
| 1LDEF4L | 1 | English/ French | 4 liter |
| 2LDEF230 | 2 | English/ French | 230 ml |
| 2LDEF4L | 2 | English/ French | 4 liter |
| 1LDS230 | 1 | Spanish | 230 ml |
| 1LDS4L | 1 | Spanish | 4 liter |
| 2LDS230 | 2 | Spanish | 230 ml |
| 2LDS4L | 2 | Spanish | 4 liter |

Hydraulic Pre-Setting Tool (HPST)



Larger tube fittings often require more effort to assemble properly than can be consistently achieved using hand wrenches. HOKE® offers a portable Hydraulic Pre-setting Tool to make the assembly of larger fittings:

- **Safer.** The Hydraulic Pre-setting Tool helps assure consistently correct assembly of larger fittings.
- **Simpler.** Interchangeable die sets allow easy conversion from one tube and fitting size to another.
- **More cost-efficient.** Using the Hydraulic Pre-setting Tool extends fitting life and reduces assembly time.

Using the portable Hydraulic Pre-setting Tool, the GYROLOK® nut and ferrule system is initially set onto the tubing. The pre-set fitting and tube assembly is then easily installed by following the GYROLOK® reassembly instructions.

| Features | Benefits |
|---|---|
| One basic pre-setting head for all sizes: | • Provides versatility and value by covering sizes from ½” through 2” and 12mm through 50mm. |
| Interchangeable die sets: | • Allows easy conversion from one tube and fitting size to another. |
| 10,000 PSI hydraulic pump: | • Provides the force necessary for consistent, fast, and simple fitting assembly. |
| Carrying case: | • Rugged steel carrying case offers easy transportation as well as a single storage location for all tool components. |

How It Works



GYROLOK® nut and ferrule system components are assembled onto Hydraulic Pre-Setting Tool. Hand pump is operated until indicator arm releases.



Pre-set tube assembly is ready for installation per HOKE's published instructions.

How to Order

HOKE's Hydraulic Pre-Setting Tool, Pump and Ram Assembly. Carrying case is included. Carrying case has room for 6 die sets.

Order Part# **3HPST**, which includes:

- 3HPST assembly (see above picture)
- Grey indicator nut (use for 5/8” (14mm) thru 2” (38 mm) fittings)
- Black indicator nut (use for 1/2” (12mm) fittings ONLY)
- Black Case
- Enerpac Pump
- Die-Fixing bolt
- 5mm Allen Wrench
- Adjusting wrenches

Die Sets - Consists of one die and one jig for an individual tube size.



Jig



Die

2DJS - 12 MM

TUBE SIZE

Tube O.D. in 1/16”
Tube O.D. in mm (with “MM” suffix)

METRIC DESIGNATION (MILLIMETERS)

| FRACTIONAL TUBE SIZE | PART NUMBER | METRIC TUBE SIZE | PART NUMBER |
|----------------------|-------------|------------------|-------------|
| 1/2” | 2DJS-8 | 12 MM | 2DJS-12MM |
| 5/8” | 2DJS-10 | 14 MM | 2DJS-14MM |
| 3/4” | 2DJS-12 | 16 MM | 2DJS-16MM |
| 7/8” | 2DJS-14 | 18 MM | 2DJS-18MM |
| 1” | 2DJS-16 | 20 MM | 2DJS-20MM |
| 1-1/4” | 2DJS-20 | 22 MM | 2DJS-22MM |
| 1-1/2” | 2DJS-24 | 25 MM | 2DJS-25MM |
| 2” | 2DJS-32 | 28 MM | 2DJS-28MM |
| | | 30 MM | 2DJS-30MM |
| | | 32 MM | 2DJS-32MM |
| | | 38 MM | 2DJS-38MM |
| | | 50 MM | 2DJS-50MM |

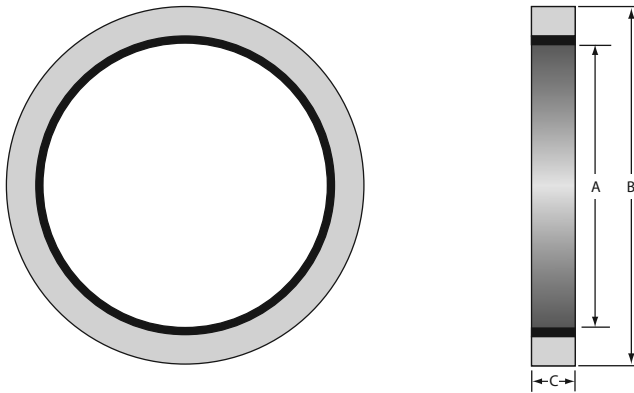
GYROLOK® RS Bonded Seals

RS Bonded Seals

RS bonded gaskets create a seal with DIN 3852, Type A (RS) parallel threads. Gasket outer rings are available in both 316 stainless steel and zinc plated carbon steel. The inner ring, bonded to the outer ring, consists of either Buna-N or fluorocarbon FKM. To order, specify pipe size, outer ring, and inner ring material.

Note: For use only with GYROLOK® RS fittings

| BSP PIPE SIZE | DIMENSIONS (INCHES) | | |
|---------------|---------------------|------|------|
| | A | B | C |
| 1/8" | 0.41 | 0.63 | 0.08 |
| 1/4" | 0.54 | 0.81 | 0.08 |
| 3/8" | 0.68 | 0.94 | 0.08 |
| 1/2" | 0.85 | 1.13 | 0.09 |
| 3/4" | 1.06 | 1.38 | 0.09 |
| 1" | 1.33 | 1.69 | 0.09 |



How to Order

[8] – RSG – [316] [B]

- Inner Ring**
B Buna-N
V Fluoroelastomer FKM
- Outer Ring**
316 316 stainless steel
CS Carbon steel, zinc plated
- BSP Pipe Sizes**
2 G 1/8" A
4 G 1/4" A
6 G 3/8" A
8 G 1/2" A
12 G 3/4" A
16 G 1" A



Assembly Instructions

**0-1/2" (12mm)
MANUAL ASSEMBLY**

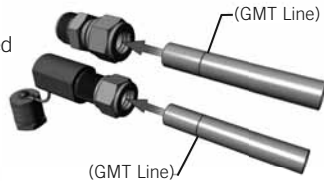
**1/2" – 1" (12mm-25mm)
MANUAL OR HPST ASSEMBLY**
based on installation conditions

**Above 1" (25mm)
HPST ASSEMBLY REQUIRED**
Consult factory as needed

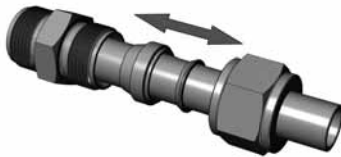
Manual Assembly Instructions

Use of a PST (Manual Pre Setting Tool) is **recommended**. GYROLOK® Marking Tool (GMT) is **strongly recommended**.

Fully insert a correctly cut, deburred tube into the PST or fitting body until the tube rests on the sizing angle.



Holding the tube in the PST or Body, extract the nut and ferrules to visually ensure both ferrules are correctly oriented.



Once correct ferrule orientation is confirmed, thread & rotate the nut onto the PST or Body until hand-tight. The GMT witness line should **NOT** be visible.



Establish a reference point for wrench tightening by marking both the fitting body and nut.



While supporting the PST or fitting body, tighten the nut with a wrench 1 1/4 turns. The pre-set or make-up is now complete. Confirm that the GMT witness line is now visible.



GYROLOK® MARKING TOOL (GMT) INSTRUCTIONS

Insert the correctly cut and deburred tube into the GMT as far as possible.



Mark the tubing as shown with an Ultra-Fine Point, Chloride-Free pen (recommended Sharpie Model 37001). Take care to position the marker perpendicular to the GMT, or insufficient ferrule set could occur.

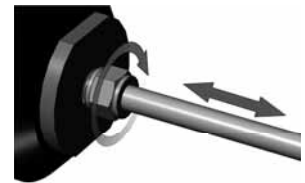


HPST Assembly Instructions

GYROLOK® Marking Tool (GMT) is **strongly recommended**.

Ensure the HPST Tooling Set is installed with the proper indicator nut.

Fully insert a correctly cut, deburred tube into the HPST head. Visually ensure both ferrules are correctly oriented. Thread & rotate the nut until hand-tight.



Set the indicator arm in the operating position by rotating the Indicator Nut counter-clockwise until it stops.



Pump the handle until the indicator arm releases. **CAUTION:** Stop pumping immediately after the arm releases, as over-pumping may cause the tube to swell and stick. Pre-setting is now complete.



Insert the end with pre-set ferrules and nut into the fitting. Thread and rotate the nut until hand-tight. While supporting the fitting body, tighten the nut with a wrench 1/2 turn for tubing up to 1" (25mm). For tubing greater than 1" (25mm) 3/4 turn is required. The initial fitting make-up is now complete.



REMAKE INSTRUCTIONS

Firmly insert end with the correctly set ferrules & nut into the fitting. Thread & rotate the nut until hand-tight. The GMT witness line should **NOT** be visible.



While supporting the fitting body, tighten the nut with a wrench 1/4 turn.



PLUGS & PORT CONNECTORS

Remove and discard ferrules. Firmly insert the plug or port connector into the end connection and hand-tighten the nut.

While supporting the fitting body, tighten the nut with a wrench ¼ turn.

TUBE ADAPTERS & REDUCERS

For this type of fitting please follow the Manual Assembly Instructions.

MALE NUT (INTEGRAL) PST INSTRUCTIONS

For this type of fitting please follow the Manual Assembly Instructions. After PST is used, assemble fitting to body and follow standard Remake Instructions.

Integral GYROLOK® Assembly Instructions (1/2" and below)

MANUAL ASSEMBLY INSTRUCTIONS

1

Fig. 1

Fully insert the tube into the manifold body.

2

Fig. 2

Holding the tube in place, loosen the nut until it can be pulled over the tube. Extract the ferrules from the manifold body to ensure the front and rear ferrules are in the correct orientation (see Fig. 2). Once correct ferrule orientation is confirmed, slide the nut into place and finger tighten the nut.

3

Fig. 3

Make sure the nut is finger-tight and then establish a consistent point for the wrench tightening by marking the tube and nut.

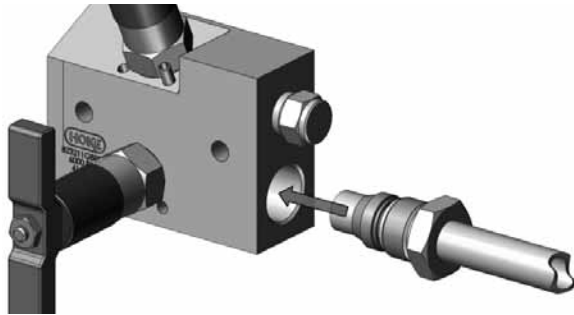
4

Fig. 4

With the manifold supported use a wrench to turn the nut 1-1/4 turns, clockwise, from the finger-tight position. When finished, the mark line on the nut should be 90 degrees clockwise from the marked line on the tubing. Assembly is complete.

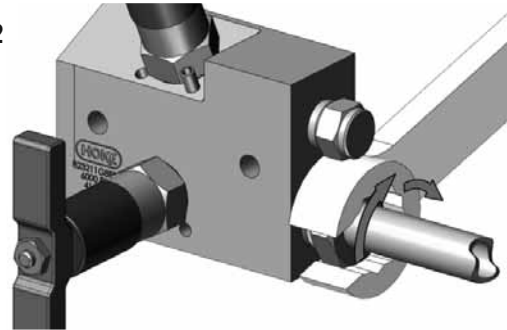
REMAKE INSTRUCTIONS

1



Insert the tube with the nut and ferrule assembly attached. Tighten the nut finger-tight.

2



With the manifold supported use a wrench to turn the nut clockwise until there is a sudden rise in torque and then make an additional 1/8 of a turn.



We Care About Your Safety

WARNING

Improper selection or use of products described herein can cause Personal injury or property damage

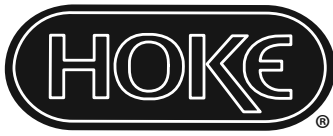
Product information described herein is offered for use by the system designer and user.

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.

Always contact your local HOKE® Distributor with any questions you may have before pressurizing and operating the product.

Safety Instructions

1. Do not tighten or loosen any part of a fitting or valve when the system is pressurized. Make sure the system is un-pressurized when tightening or loosening a fitting or valve connection.
2. Do not loosen GYROLOK® nut or any product component in order to relieve or bleed down system pressure.
3. Do not exceed pressure-temperature specifications stated in the appropriate catalog.
4. When the application involves use of a toxic or hazardous fluid, exercise extra caution during operation and maintenance.
5. Before assembling new, unused GYROLOK® tube fitting ends, loosen the GYROLOK® nut before inserting the tube to allow full insertion of the tube to the base of the body bore.
6. Always use tubing that is compatible with the fitting or valve material. Tubing appropriate for use with HOKE® products is described in Tubing Data Charts. For example, use 316 Stainless Steel fittings with 316 Stainless Steel tubing.
7. Always leave a length of straight tube between the tube bend and the fitting. A tube bent too close to the fitting connection may be a source of leakage.
8. During assembly of the GYROLOK® tube end, always hold the fitting or valve body with one wrench while separately wrench tightening the GYROLOK® nut. Follow the same precaution when disassembling.
9. Always use a HOKE® tube insert (basic part number "TI") when assembling a GYROLOK® fitting to soft, pilable plastic tubing.
10. Always use proper thread lubricants or sealants on tapered pipe threads. Note that thread sealants may have lower temperature ratings than the basic fitting.
11. When installing an NPT ended valve, hold the valve body near the connection with one wrench, while separately wrench tightening the mating pipe. Turn the pipe, not the valve. Follow the same precaution when disconnecting.
12. Do not hold the valve handle when tightening an end connection.
13. Do not use excessive force to open or close a ball valve e.g. do not use a handle extension.
14. On initial installation, valves may require an adjustment of the packing nut due to storage variations, systems parameters, and cold flow properties of TFE.



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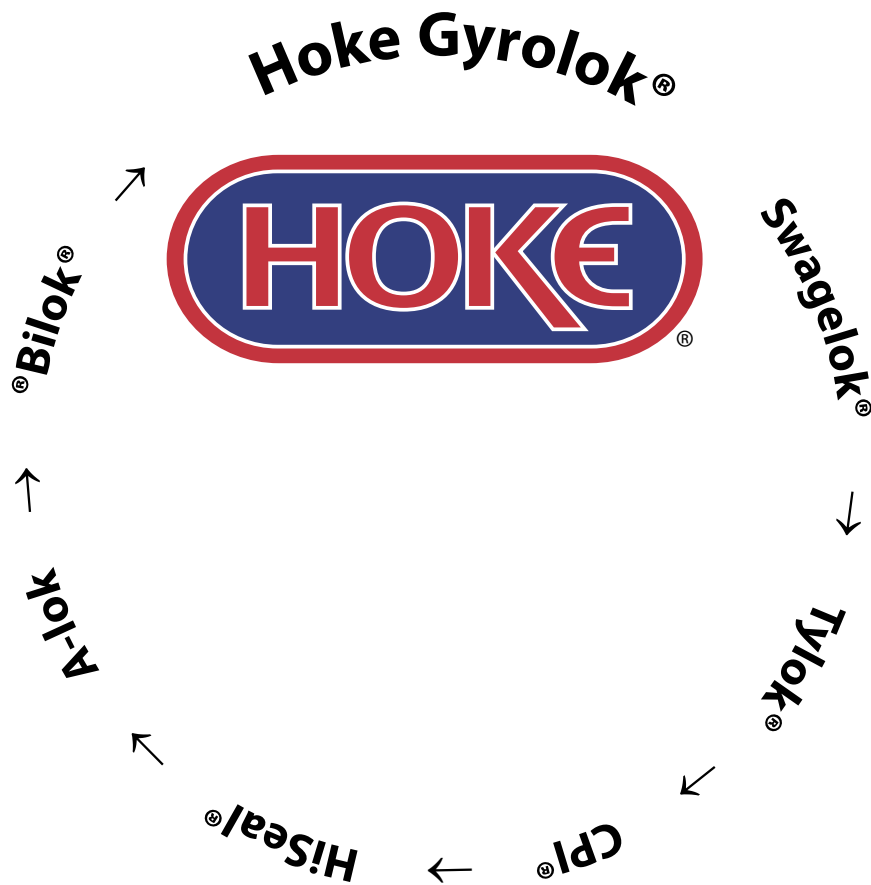
CRANE INSTRUMENTATION &
SAMPLING Inc.
405 Centura Ct.
Spartanburg, SC 29305, USA
Tel: 1-864-574-7966
PO Box 4866, Spartanburg, SC
29305-4866 USA

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Gyrolok® Flareless Tube Fittings

Part Number Cross Reference Chart



cross reference

HOKE Incorporated
405 Centura Court • PO Box 4866 (29305) • Spartanburg, SC 29303
Phone (864) 574-7966 Fax (864) 587-5608
www.hoke.com • sales@hoke.com

A-Lok® — Parker Hannifin Corp.
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| GYROLOK | SWAGelok | PARKER CPI | PARKER A-LOK | BI-LOK | TYIOK | IMPERIAL HI-SEAL |
|---------------------------------|--------------|-------------|--------------|-----------|-------------|------------------|
| Adapter to AN Connection | | | | | | |
| 2AAN2 | 200-A-2ANF | 2-2X6HBZ6 | 2 x 6TU2 | DAN 2-2 | N.A. | F-02 x 02 |
| 2AAN4 | 200-A-4ANP | 2-4X6HBZ6 | 2 x 6TU4 | DAN 2-4 | N.A. | 734-F-02 x 04 |
| 4AAN4 | 400-A-4ANF | 4-4x6HBZ6 | 4 x 6TU4 | DAN 4-4 | N.A. | 734-F-04 x 04 |
| 6AAN6 | 600-A-6ANF | 6-6X6HBZ6 | 6 x 6TU6 | DAN 6-6 | N.A. | 734-F-06 x 06 |
| 8AAN8 | 810-A-8ANF | 8-8X6HBZ6 | 8 x 6TU8 | DAN 8-8 | N.A. | 734-F-08 x 08 |
| 12AAN12 | 1210-A-12ANF | 1212X6HBZ6 | 12x6TU12 | DAN 12-12 | N.A. | 734-F-12 x 12 |
| 16AAN16 | 1610-A-16ANF | 16-16X6HBZ6 | 16X6TU16 | DAN 16-16 | N.A. | 734-F-16 x 16 |
| Adapter-Female | | | | | | |
| 2AF2 | 2-TA-7-2* | 2-2T2HQ | 2FA2N | DHC 2-2 | 2-1ATPF-2 | 723-F-02 x 02 |
| 2AF4 | 2-TA-7-4* | 2-4T2HG | 2FA4N | DHC 2-4 | 2-1ATPF-4 | 723-F-02 x 04 |
| 4AF2 | 4-TA-7-2* | 4-2T2HG | 4FA2N | DHC 4-2 | 4-1ATPF-2 | 723-F-04 x 02 |
| 4AF4 | 4-TA-7-4* | 4-4T2HG | 4FA4N | DHC 4-4 | 4-1ATPF-4 | 723-F-04 x 04 |
| 4AF6 | 4-TA-7-6* | 4-6T2HG | 4FA6N | DHC 4-6 | 4-1ATPF-6 | 723-F-04 x 06 |
| 4AF8 | 4-TA-7-8* | 4-8T2HG | 4FA8N | DHC 4-8 | 4-1ATPF-8 | 723-F-04 x 08 |
| 5AF4 (use 8mm) | 5-TA-7-4* | 5-4T2HG | 5FA4N | DHC 5-4 | 5-1ATPF-4 | 723-F-05 x 04 |
| 6AF2 | 6-TA-7-2* | 6-2T2HG | 6FA2N | DHC 6-2 | 6-1ATPF-2 | 723-F-06 x 02 |
| 6AF4 | 6-TA-7-4* | 6-4T2HG | 6FA4N | DHC 6-4 | 6-1ATPF-4 | 723-F-06 x 04 |
| 6AF6 | 6-TA-7-6* | 6-6T2HG | 6FA6N | DHC 6-6 | 6-1ATPF-6 | 723-F-06 x 06 |
| 6AF8 | 6-TA-7-8* | 6-8T2HG | 6FA8N | DHC 6-8 | 6-1ATPF-8 | 723-F-06 x 08 |
| "AF4 | 8-TA-7-4* | 8-4T2HG | 8FA4N | DHC 8-4 | 8-1ATPF-4 | 723-F-08 x 04 |
| 8AF6 | 8-TA-7-6* | 8-6T2HG | 8FA6N | DHC 8-6 | 8-1ATPF-6 | 723-F-08 x 06 |
| 8AF8 | 8-TA-7-8* | 8-8T2HG | 8FA8N | DHC 8-8 | 8-1ATPF-8 | 723-F-08 x 08 |
| 10AF6 | 10-TA-7-6* | 10-6T2HG | 10FA6N | DHC 10-6 | 10-1ATPF-6 | 723-F-10 x 06 |
| 10AF8 | 10-TA-7-8* | 10-8T2HG | 10FA8N | DHC 10-8 | 10-1ATPF-8 | 723-F-10 x 08 |
| 12AF8 | 12-TA-7-8* | 12-8T2HG | 12FA8N | DHC 12-8 | 12-1ATPF-8 | 723-F-12 x 08 |
| 12AF12 | 12-TA-7-12* | 12-12T2HG | 12FA12N | DHC 12-12 | 12-1ATPF-12 | 723-F-12 x 12 |
| 16AF12 | 16-TA-7-12* | 16-12T2HG | 16FA12N | DHC 16-12 | 16-1ATPF-12 | 723-F-16 x 12 |
| 16AF16 | 16-TA-7-16* | 16-16T2HG | 16FA16N | DHC 16-16 | 16-1ATPF-16 | 723-F-16 x 16 |
| Adapter-Male | | | | | | |
| 1AM1 | 1-TA-1-1* | 1-1T2HF | 1MA1N | DHA1-1 | 1-1ATPM-1 | 722-F-01 x 01 |
| 1AM2 | 1-TA-1-2* | 1-2T2HF | 1MA2N | DHA1-2 | 1-1ATPM-2 | 722-F-01 x 02 |
| 2AM2 | 2-TA-1-2* | 2-2T2HF | 2MA2N | DHA2-2 | 2-1ATPM-2 | 722-F-02 x 02 |
| 2AM4 | 2-TA-1-4* | 2-4T2HF | 2MA4N | DHA2-4 | 2-1ATPM-4 | 722-F-02 x 04 |
| 3AM2 | 3-TA-1-2* | 3-2T2HF | 3MA2N | DHA3-2 | 3-1ATPM-2 | 722-P-03 x 02 |
| 3AM4 | 3-TA-1-4* | 3-4T2HF | 3MA4N | DHA3-4 | 3-1ATPM-4 | 722-F-03 x 04 |
| 4AM2 | 4-TA-1-2* | 4-2T2HF | 4MA2N | DHA4-2 | 4-1ATPM-2 | 722-F-04 x 02 |
| 4AM4 | 4-TA-1-4* | 4-4T2HF | 4MA4N | DHA4-4 | 4-1ATPM-4 | 722-F-04 x 04 |
| 4AM6 | 4-TA-1-6* | 4-6T2HF | 4MA6N | DHA4-6 | 4-1ATPM-6 | 722-F-04 x 06 |
| 4AM8 | 4-TA-1-8* | 4-8T2HF | 4MA8N | DHA4-8 | 4-1ATPM-8 | 722-F-04 x 08 |
| 5AM4 (use 8mm) | 5-TA-1-4* | 5-4T2HF | 5MA4N | DHA5-4 | 5-1ATPM-4 | 722-F-05 x 04 |
| 6AM2 | 6-TA-1-2* | 6-2T2HF | 6MA2N | DHA6-2 | 6-1ATPM-2 | 722-F-06 x 02 |
| 6AM4 | 6-TA-1-4* | 6-4T2HF | 6MA4N | DHA6-4 | 6-1ATPM-4 | 722-F-06 x 04 |
| 6AM6 | 6-TA-1-6* | 6-6T2HF | 6MA6N | DHA6-6 | 6-1ATPM-6 | 722-F-06 x 06 |
| 6AM8 | 6-TA-1-8* | 6-8T2HF | 6MA8N | DHA6-8 | 6-1ATPM-8 | 722-F-06 x 08 |
| 8AM4 | 8-TA-1-4* | 8-4T2HF | 8MA4N | DHA8-4 | 8-1ATPM-4 | 722-F-08 x 04 |
| 8AM6 | 8-TA-1-6* | 8-6T2HF | 8MA6N | DHA8-6 | 8-1ATPM-6 | 722-F-08 x 06 |
| 8AM8 | 8-TA-1-8* | 8-8T2HF | 8MA8N | DHA8-8 | 8-1ATPM-8 | 722-F-08 x 08 |

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| Adapter-Male (cont) | | | | | | |
| 10AM6 | 10-TA-1-6* | 10-6T2HF | 10MA6N | DHA10-6 | 10-1ATPM-6 | 722-F-10 x 06 |
| 10AM8 | 10-TA-1-8* | 10-8T2HF | 10MA8N | DHA10-8 | 10-1ATPM-8 | 722-F-10 x 08 |
| 10AM12 | 10-TA-1-12* | 10-12T2HF | 10MA12N | DHA10-12 | 10-1ATPM-12 | 722-F-10 x 12 |
| 12AM8 | 12-TA-1-8* | 12-8T2HF | 12MA8N | DHA12-8 | 12-1ATPM-8 | 722-F-12 x 08 |
| 12AM12 | 12-TA-1-12* | 12-12T2HF | 12MA12N | DHA12-12 | 12-1ATPM-12 | 722-F-12 x 12 |
| 12AM16 | 12-TA-1-16* | 12-16T2HF | 12MA16N | DHA12-16 | 12-1ATPM-16 | 722-F-12 x 16 |
| 14AM12 | 14-TA-1-12* | 14-12T2HF | 14MA12N | DHA14-12 | 14-1ATPM-12 | 722-F-14 x 12 |
| 16AM12 | 16-TA-1-12* | 16-12T2HF | 16MA12N | DHA16-12 | 16-1ATPM-12 | 722-F.16 x 12 |
| 16AM16 | 16-TA-1-16* | 16-16T2HF | 16MA16N | DHA16-16 | 16-1ATPM-16 | 722-F-16 x 16 |
| * Cajon part number. | | | | | | |
| Adapter "0" Ring - Male NPT Short | | | | | | |
| 4AOM4 | N.A. | 4-4T2HOF5 | 4M3TU4 | N.A. | N.A. | N.A. |
| Adapter "0" Ring Straight Thread | | | | | | |
| 2AOS | 2-TA-OR-ST* | 2-2 T2HOA5 | 2M2TU2 | N.A. | N.A. | N.A. |
| 4AOS | 4-TA-OR-ST* | 4-4 T2HOA5 | 4M2TU4 | N.A. | N.A. | N.A. |
| 5AOS (use 8mm) | 5-TA-OR-ST* | 5-5 T2HOA5 | 5M2TU5 | N.A. | N.A. | N.A. |
| 6AOS | 6-TA-OR-ST* | 6-6 T2HOA5 | 6M2TU6 | N.A. | N.A. | N.A. |
| 8AOS | 8-TA-OR-ST* | 8-8 T2HOA5 | 8M2TU8 | N.A. | N.A. | N.A. |
| Bulkhead Adapter | | | | | | |
| 2BA2 | 200-R1-2 | 2-2T2H2BZ | 2TUBC2 | DSE2 | 2-1 BHA-2 | 785-F-02 |
| 4BA4 | 400-R1-4 | 4-4T2H2BZ | 4TUBC4 | DSE3 | 4-1BHA-4 | 785-F-04 |
| 5BA5(use 8mm) | 500-R1-5 | 5-5T2H2BZ | 5TUBC5 | DSE5 | 5-1BHA-5 | 785-F-05 |
| 6BA6 | 600-R1-6 | 6-6T2H2BZ | 6TUBC6 | DSE6 | 6-1BHA-6 | 785-F-06 |
| 8BA8 | 810-R1-8 | 8-8T2H2BZ | 8TUBC8 | DSE8 | 8-1BHA-8 | 785-F-08 |
| 12BA12 | 1210-R1-12 | 12-12T2H2BZ | 12TUBC12 | DSE12 | 12-1BHA-12 | 785-F-12 |
| Bulkhead Connector Female | | | | | | |
| 2BCF2 | 200-71-2 | 2-2GH2BZ | 2FBC2N | DSS2-2 | 2-1BHFP-2 | 786-F-02 x 02 |
| 4BCF2 | 400-71-2 | 4-2GH2BZ | 4FBC2N | DSS4-2 | 4-1BHFP-2 | 786-F-04 x 02 |
| 4BCF4 | 400-71-4 | 4-4GH2BZ | 4FBC4N | DSS4-4 | 4-1BHFP-4 | 786-F-04 x 04 |
| 6BCF4 | 600-71-4 | 6-4GH2BZ | 6FBC4N | DSS6-4 | 6-1BHFP-4 | 786-F-02 x 04 |
| 6BCF6 | 600-71-6 | 6-6GH2BZ | 6FBC6N | DSS6-6 | 6-1BHFP-6 | 786-F-06 x 06 |
| 8BCF6 | 810-71-6 | 8-6GH2BZ | 8FBC6N | DSS8-6 | 8-1BHFP-6 | 786-F-08 x 06 |
| 8BCF8 | 810-71-8 | 8-8GH2BZ | 8FBC8N | DSS8-8 | 8-1BHFP-8 | 786-F-08 x 08 |
| 10BCF8 | 1010-71-8 | 10-8GH2BZ | 10FBC8N | DSS10-8 | 10-1BHFP-8 | 786-F-10 x 08 |
| Bulkhead Connector Male | | | | | | |
| 2BCM2 | 200-11-2 | 2-2FH2BZ | 2MBC2N | DSC2-2 | 2-1BHMP-2 | 788-F-02 x 02 |
| 4BCM2 | 400-11-2 | 4-2FH2BZ | 4MBC2N | DSC4-2 | 4-1BHMP-2 | 788-F-04 x 02 |
| 4BCM4 | 400-11-4 | 4-4FH2BZ | 4MBC4N | DSC4-4 | 4-1BHMP-4 | 788-F-04 x 04 |
| 6BCM4 | 600-11-4 | 6-4FH2BZ | 6MBC4N | DSC6-4 | 6-1BHMP-4 | 788-F-06 x 04 |
| 6BCM6 | 600-11-6 | 6-6FH2BZ | 6MBC6N | DSC6-6 | 6-1BHMP-6 | 788-F-06 x 06 |
| 8BCM6 | 810-11-6 | 8-6FH2BZ | 8MBC6N | DSC8-6 | 8-1BHMP-6 | 788-F-08 x 06 |
| 8BCM8 | 810-11-8 | 8-8FH2BZ | 8MBC8N | DSC8-8 | 8-1BHMP-8 | 788-F-08 x 08 |
| Bulkhead Union | | | | | | |
| 1BU | 100-61 | 1-1WBZ | 1BC1 | DSU1 | 1-1BHU | 782-F-01 |
| 2BU | 200-61 | 2-2WBZ | 2BC2 | DSU2 | 2-1 BHU | 782-F-02 |
| 3BU | 300-61 | 3-3WBZ | 3BC3 | DSU3 | 3-1 BHU | 782-F-03 |
| 4BU | 400-61 | 4-4WBZ | 4BC4 | DSU4 | 4-1 BHU | 782-F-04 |

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| Bulkhead Union (cont) | | | | | | |
| 5BU | 500-61 | 5-5WBZ | 5BC5 | DSU5 | 5-1 BHU | 782-F-05 |
| 6BU | 600-61 | 6-6WBZ | 6BC6 | DSU6 | 6-1 BHU | 782-F-06 |
| 8BU | 810-61 | 8-8WBZ | 8BC8 | DSU8 | 8-1 BHU | 782-F-08 |
| 10BU | 1010-61 | 10-10WBZ | 10BC10 | DSU10 | 10-1 BHU | 782-F-10 |
| 12BU | 1210-61 | 12-12WBZ | 12BC12 | DSU12 | 12-1BHU | 782-F-12 |
| 16BU | 1610-61 | 16-16WBZ | 16BC16 | DSU16 | 16-1 BHU | 782-F-16 |
| Bulkhead Union to AN | | | | | | |
| 2BUAN2 | 200-61-2AN | 2-2 x H2BZ | 2 x ABC2 | DUE2-2 | 2-1BUANF-2 | 733-F-02 x 02 |
| 2BUAN4 | 200-61-4AN | 4-2 x H2BZ | 2 x ABC4 | DUE2-4 | N.A. | 733-F-02 x 04 |
| 4BUAN4 | 400-61-4AN | 4-4 x H2BZ | 4 x ABC4 | DUE4-4 | 4-1BUANF-4 | 733-F-04 x 04 |
| 6BUAN4 | 600-61-4AN | 4-6 x H2BZ | 4 x ABC6 | DUE6-4 | N.A. | 733-F-06 x 04 |
| 6BUAN6 | 600-61-6AN | 6-6 x H2BZ | 6 x ABC6 | DUE6-6 | 6-1BUANF-6 | 733-F-06 x 06 |
| 8BUAN8 | 810-61-8AN | 8-8 x H2BZ | 8xABC 8 | DUE8-8 | N.A. | 733-F-08 x 08 |
| 12BUAN12 | 1210-61-12AN | 12-12 x H2BZ | 12xABC12 | DUE12-12 | N.A. | 733-F-12 x 12 |
| Tube Cross | | | | | | |
| 1C | 100-4 | 1KBZ | 1ECR1 | DXA1 | 1-4CR | 752-F-01 |
| 2C | 200-4 | 2KBZ | 2ECR2 | DXA2 | 2-4CR | 752-F-02 |
| 3C | 300-4 | 3KBZ | 3ECR3 | DXA3 | 3-4CR | 752-F-03 |
| 4C | 400-4 | 4KBZ | 4ECR4 | DXA4 | 4-4CR | 752-F-04 |
| 6C | 600-4 | 6KBZ | 6ECR6 | DXA6 | 6-4CR | 752-F-06 |
| 8C | 810-4 | 8KBZ | 8ECR8 | DXA8 | 8-4CR | 752-F-08 |
| 10C | 1010-4 | 10KBZ | 10ECR10 | DXA10 | 10-4CR | 752-F-10 |
| 12C | 1210-4 | 12KBZ | 12ECR12 | DXA12 | 12-4CR | 752-F-12 |
| 16C | 1610-4 | 16KBZ | 16ECR16 | DXA16 | 16-4CR | 752-F-16 |
| Connector - Butt Weld | | | | | | |
| 2CBW2 | 200-1-2W | 2-2ZHBW2* | 2- $\frac{1}{8}$ "-BWC2 | DCB2-2 | 2-1 BWMC-2 | N.A. |
| 4CBW2 | 400-1-2W | 4-2ZHBW2* | 4- $\frac{1}{8}$ "-BWC2 | DCB4-2 | 4-1BWMC-2 | N.A. |
| 4CBW4 | 400-1-4W | 4-4ZHBW2* | 4- $\frac{1}{4}$ "-BWC4 | DCB4-4 | 4-1BWMC-4 | N.A. |
| 6CBW4 | 600-1-4W | 6-4ZHBW2* | 6- $\frac{1}{4}$ "-BWC4 | DCB6-4 | 6-1BWMC-4 | N.A. |
| 6CBW6 | 600-1-6W | 6-6ZHBW2* | 6- $\frac{3}{8}$ "-BWC6 | DCB6-6 | 6-1BWMC-6 | N.A. |
| 6CBW8 | 600-1-8W | 6-8ZHBW2* | 6- $\frac{1}{2}$ "-BWC8 | DCB6-8 | 6-1BWMC-8 | N.A. |
| 8CBW6 | 810-1-6W | 8-6ZHBW2* | 8- $\frac{3}{8}$ "-BWC6 | DCB8-6 | 8-1 BWMC-6 | N.A. |
| 8CBW8 | 810-1-8W | 8-8ZHBW2* | 8- $\frac{1}{2}$ "-BWC8 | DCB8-8 | 8-1 BWMC-8 | N.A. |
| 12CBW12 | 1210-1-12W | 12-12ZHBW2* | 12- $\frac{3}{4}$ "-BWC12 | DCB12-12 | 12-1BWMC-12 | N.A. |
| 16CBW16 | 1610-1-16W | 16-16ZHBW2* | 16-1"-BWC16 | DCB16-16 | 16-1BWMC-16 | N.A. |
| Connector Female | | | | | | |
| 1CF1 | 100-7-1 | 1-1 GBZ | 1FSC1N | DSA1-1 | 1-1FC-1 | 766-F-01 x 01 |
| 2CF2 | 200-7-2 | 2-2GBZ | 2FSC2N | DSA2-2 | 2-1FC-2 | 766-F-02 x 02 |
| 2CF4 | 200-7-4 | 2-4GBZ | 2FSC4N | DSA2-4 | 2-1FC-4. | 766-F-02 x 04 |
| 3CF2 | 300-7-2 | 3-2GBZ | 3FSC2N | DSA3-2 | 3-1FC-2 | 766-F-03 x 02 |
| 3CF4 | 300-7-4 | 3-4GBZ | 3FSC4N | DSA3-4 | 3-1FC-4 | 766-F-03 x 04 |
| 4CF2 | 400-7-2 | 4-2GBZ | 4FSC2N | DSA4-2 | 4-1FC-2 | 766-F-04 x 02 |
| 4CF4 | 400-7-4 | 4-4GBZ | 4FSC4N | DSA4-4 | 4-1FC-4 | 766-F-04 x 04 |
| 4CF6 | 400-7-6 | 4-6GBZ | 4FSC6N | DSA4-6 | 4-1FC-6 | 766-F-04 x 06 |
| 4CF8 | 400-7-8 | 4-8GBZ | 4FSC8N | DSA4-8 | 4-1FC-8 | 766-F-04 x 08 |
| 5CF2 (use 8mm) | 500-7-2 | 5-2GBZ | 5FSC2N | DSA5-2 | 5-1FC-2 | 766-F-05 x 02 |
| 5CF4 (use 8mm) | 500-7-4 | 5-4GBZ | 5FSC4N | DSA5-4 | 5-1FC-4 | 766-F-05 x 04 |

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| Connector Female (cont) | | | | | | |
| 6CF2 | 600-7-2 | 6-2GBZ | 6FSC2N | DSA6-2 | 6-1FC-2 | 766-F-06 x 02 |
| 6CF4 | 600-7-4 | 6-4GBZ | 6FSC4N | DSA6-4 | 6-1FC-4 | 766-F-06 x 04 |
| 6CF6 | 600-7-6 | 6-6GBZ | 6FSC6N | DSA6-6 | 6-1FC-6 | 766-F-06 x 06 |
| 6CF8 | 600-7-8 | 6-8GBZ | 6FSC8N | DSA6-8 | 6-1FC-8 | 766-F-06 x 08 |
| 6CF12 | 600-7-12 | 6-12GBZ | 6FSC12N | DSA6-12 | 6-1FC-12 | 766-F-06 x 12 |
| 8CF4 | 810-7-4 | 8-4GBZ | 8FSC4N | DSA8-4 | 8-1 FC-4 | 766-F-08 x 04 |
| 8CF6 | 810-7-6 | 8-6GBZ | 8FSC6N | DSA8-6 | 8-1FC-6 | 766-F-08 x 06 |
| 8CF8 | 810-7-8 | 8-8GBZ | 8FSC8N | DSA8-8 | 8-1FC-8 | 766-F-08 x 08 |
| 8CF12 | 810-7-12 | 8-12GBZ | 8FSC12N | DSA8-12 | 8-1FC-12 | 766-F-08 x 12 |
| 10CF6 | 1010-7-6 | 10-6GBZ | 10FSC6N | DSA10-6 | 10-1FC-6 | 766-F-10 x 06 |
| 10CF8 | 1010-7-8 | 10-8GBZ | 10FSC8N | DSA10-8 | 10-1FC-8 | 766-F-10 x 08 |
| 12CF8 | 1210-7-8 | 12-8GBZ | 12FSC8N | DSA12-8 | 12-1FC-8 | 766-F-12 x 08 |
| 12CF12 | 1210-7-12 | 12-12GBZ | 12FSC12N | DSA12-12 | 12-1FC-12 | 766-F-12 x 12 |
| 14CF12 | 1410-7-12 | 14-12GBZ | 12FSC12N | DSA14-12 | 14-1FC-12 | 766-F-14 x 12 |
| 16CF12 | 1610-7-12 | 16-12GBZ | 16FSC12N | DSA16-12 | 16-1FC-12 | 766-F-16 x 12 |
| 16CF16 | 1610-7-16 | 16-16GBZ | 16FSC16N | DSA16-16 | 16-1FC-16 | 766-F-16 x 16 |
| *Weld-Lok Part Numbers | | | | | | |
| Connector Male | | | | | | |
| 1CM1 | 100-1-1 | 1-1 FBZ | 1MSC1N | DCT1-1 | 1-1MC-1 | 768-F-01 x 01 |
| 1CM2 | 100-1-2 | 1-2FBZ | 1MSC2N | DCT1-2 | 1-1MC-2 | 768-F.01 x 02 |
| ,CM4 | 100-1-4 | 1-4FBZ | 1MSC4N | DCT1-4 | 1-1MC-4 | 768-F-01 x 04 |
| 2CM1 | 200-1-1 | 2-1 FBZ | 2MSC1N | DCT2-1 | 2-1MC-1 | 768-F-02 x 01 |
| 2CM2 | 200-1-2 | 2-2FBZ | 2MSC2N | DCT2-2 | 2-1MC-2 | 768-F-02 x 02 |
| 2CM4 | 200-1-4 | 2-4FBZ | 2MSC4N | DCT2-4 | 2-1MC-4 | 768-F-02 x 04 |
| 3CM2 | 300-1-2 | 3-2FBZ | 3MSC2N | DCT3-2 | 3-1MC-2 | 768-F-03 x 02 |
| 3CM4 | 300-1-4 | 3-4FBZ | 3MSC4N | DCT3-4 | 3-1MC-4 | 768-F-03 x 04 |
| 4CM1 | 400-1-1 | 4-1 FBZ | 4MSC1N | DCT4-1 | 4-1MC-1 | 768-F-04 x 01 |
| 4CM2 | 400-1-2 | 4-2FBZ | 4MSC2N | DCT4-2 | 4-1MC-2 | 768-F-04 x 02 |
| 4CM4 | 400-1-4 | 4-4FBZ | 4MSC4N | DCT4-4 | 4-1MC-4 | 768-F-04 x 04 |
| 4CM6 | 400-1-6 | 4-6FBZ | 4MSC6N | DCT4-6 | 4-1 MC-6 | 768-F-04 x 06 |
| 4CM8 | 400-1-8 | 4-8FBZ | 4MSC8N | DCT4-8 | 4-1MC-8 | 768-F-04 x 08 |
| 5CM2 (use 8mm) | 500-1-2 | 5-2FBZ | 5MSC2N | DCT5-2 | 5-1MC-2 | 768-F-05 x 02 |
| 5CM4 (use 8mm) | 500-1-4 | 5-4FBZ | 5MSC4N | DCT5-4 | 5-1MC-4 | 768-F-05 x 04 |
| 6CM2 | 600-1-2 | 6-2FBZ | 6MSC2N | DCT6-2 | 6-1MC-2 | 768-F-06 x 02 |
| 6CM4 | 600-1-4 | 6-4FBZ | 6MSC4N | DCT6-4 | 6-1MC-4 | 768-F-06 x 04 |
| 6CM6 | 600-1-6 | 6-6FBZ | 6MSC6N | DCT6-6 | 6-1 MC-6 | 768-F-06 x 06 |
| 6CM8 | 600-1-8 | 6-8FBZ | 6MSC8N | DCT6-8 | 6-1 MC-8 | 768-F-06 x 08 |
| 6CM12 | 600-1-12 | 6-12FBZ | 6MSC12N | DCT6-12 | 6-1MC-12 | 768-F-06 x 12 |
| 8CM2 | 810-1-2 | 8-2FBZ | 8MSC2N | DCT8-2 | 8-1MC-2 | 768-F-08 x 02 |
| 8CM4 | 810-1-4 | 8-4FBZ | 8MSC4N | DCT8-4 | 8-1 MC-4 | 768-F-08 x 04 |
| 8CM6 | 810-1-6 | 8-6FBZ | 8MSC6N | DCT8-6 | 8-1 MC-6 | 768-F-08 x 06 |
| 8CM8 | 810-1-8 | 8-8FBZ | 8MSC8N | DCT8-8 | 8-1 MC-8 | 768-F-08 x 08 |
| 8CM12 | 810-1-12 | 8-12FBZ | 8MSC12N | DCT8-12 | 8-1MC-12 | 768-F-08 x 12 |
| 8CM16 | 810-1-16 | 8-16FBZ | 8MSC16N | DCT8-16 | 8-1MC-16 | 768-F-08 x 16 |
| 10CM6 | 1010-1-6 | 10-6FBZ | 10MSC6N | DCT10-6 | 10-1 MC-6 | 768-F-10 x 06 |
| 10CM8 | 1010-1-8 | 10-8FBZ | 10MSC8N | DCT10-8 | 10-1 MC.8 | 768-F-10 x 08 |
| 10CM12 | 1010-1-12 | 10-12FBZ | 10MSC12N | DCT10-12 | 10-1MC-12 | 768-F-10 x 12 |

| GYROLOK | SWAGelok | PARKER CPI | PARKER A-LOK | BI-LOK | TYIOK | IMPERIAL HI-SEAL |
|---|-------------|------------|--------------|----------|--------------|------------------|
| Connector Male (cont) | | | | | | |
| 12CM8 | 1210-1-8 | 12-8FBZ | 12MSC8N | DCT12-8 | 12-1 MC-8 | 768-F-12 x 08 |
| 12CM12 | 1210-1-12 | 12-12FBZ | 12MSC12N | DCT12-12 | 12-1MC-12 | 768-F-12 x 12 |
| 12CM16 | 1210-1-16 | 12-16FBZ | 12MSC16N | DCT12-16 | 12-1MC-16 | 768-F-12 x 16 |
| 14CM12 | 1410-1-12 | 14-12FBZ | 14MSC12N | DCT14-12 | 14-1MC-12 | 768-F-14 x 12 |
| 16CM8 | 1010-1-8 | 16-8FBZ | 16MSC8N | DCT16-8 | 16-1 MC-8 | 768-F-16 x 08 |
| 16CM12 | 1610-1-12 | 16-12FBZ | 16MSC12N | DCT16-12 | 16-1MC-12 | 768-F-16 x 12 |
| 16CM16 | 1610-1-16 | 16-16FBZ | 16MSC16N | DCT16-16 | 16-1MC-16 | 768-F-16 x 16 |
| Connector Male Thermocouple | | | | | | |
| 1CMT1 | 100-1-1BT | 1-1FH4BZ | 1MTC1N | N.A. | 1-1MC-1BT | N.A. |
| 1CMT2 | 100-1-2BT | 1-2FH4BZ | 1MTC2N | N.A. | 1-1MC-2BT | 780-F-01 x 02 |
| 2CMT2 | 200-1-2BT | 2-2FH4BZ | 2MTC2N | N.A. | 2-1 MC-2BT | 780-F-02 x 02 |
| 2CMT4 | 200-1-4BT | 2-4FH4BZ | 2MTC4N | N.A. | 2-1MC-4BT | 780-F-02 x 04 |
| 3CMT2 | 300-1-2BT | 3-2FH4BZ | 3MTC2N | N.A. | 3-1 MC-2BT | 780-F-03 x 02 |
| 3CMT4 | 300-1-4BT | 3-4FH4BZ | 3MTC4N | N.A. | 3-1MC-4BT | 780-F-03 x 04 |
| 4CMT2 | N.A. | 4-2FH4BZ | 4MTC2N | N.A. | 4-1 MC-2BT | 780-F-04 x 02 |
| 4CMT4 | 400-1-4BT | 4-4FH4BZ | 4MTC4N | N.A. | 4-1MC-4BT | 780-F-04 x 04 |
| 4CMT6 | 400-1-6BT | 4-6FH4BZ | 4MTC6N | N.A. | 4-1MC-6BT | 780-F-04 x 06 |
| 4CMT8 | 400-1-8BT | 4-8FH4BZ | 4MTC8N | N.A. | 4-1MC-8BT | 780-F-04 x 08 |
| 5CMT4 (use 8mm) | 500-1-4BT | 5-4FH4BZ | 5MTC4N | N.A. | 5-1MC-4BT | 780-F-05 x 04 |
| 6CMT4 | 600-1-4BT | 6-4FH4BZ | 6MTC4N | N.A. | 6-1MC-4BT | 780-F-06 x 04 |
| 6CMT6 | 600-1-6BT | 6-6FH4BZ | 6MTC6N | N.A. | 6-1MC-6BT | 780-F-06 x 06 |
| 6CMT8 | 600-1-8BT | 6-8FH4BZ | 6MTC8N | N.A. | 6-1MC-8BT | 780-F-06 x 08 |
| 8CMT8 | 810-1-8BT | 8-8FH4BZ | 8MTC8N | N.A. | 8-1MC-8BT | 780-F-08 x 08 |
| 12CMT12 | 1210-1-12BT | 12-12FH4BZ | 12MTC12N | N.A. | 12-1 MC-12BT | 780-F-12 x 12 |
| 16CMT16 | 1610-1-16BT | 16-16FH4BZ | 16MTC16N | N.A. | 16-1MC-16BT | N.A. |
| Connector "0" Ring - Male NPT -Short | | | | | | |
| 2COM2 | 200-1-2-0 R | 2-2ZHB5 | 2M3SC2 | DCM2-2 | 2-1MC-20RT | N.A. |
| 2COM4 | 200-1-4-OR | 2-4ZHB5 | 2M3SC4 | DCM2-4 | 2-1MC-40RT | N.A. |
| 4COM2 | 400-1-2-OR | 4-2ZHB5 | 4M3SC2 | DCM4-2 | 4-1MC-20RT | N.A. |
| 4COM4 | 400-1-4-OR | 4-4ZHB5 | 4M3SC4 | DCM4-4 | 4-1MC-40RT | N.A. |
| 4COM6 | 400-1-6-OR | 4-6ZHB5 | 4M3SC6 | DCM4-6 | 4-1MC-60RT | N.A. |
| 6COM2 | 600-1-2-OR | 6-2ZHB5 | 6M3SC2 | DCM6-2 | 6-1MC-20RT | N.A. |
| 6COM4 | 600-1-4-OR | 6-4ZHB5 | 6M3SC4 | DCM6-6 | 6-1MC-40RT | N.A. |
| 6COM6 | 600-1-6-OR | 6-6ZHB5 | 6M3SC6 | DCM6-6 | 6-1 MC-60RT | N.A. |
| 8COM4 | 810-1-4-OR | 8-4ZHB5 | 8M3SC4 | DCM8-4 | 8-8MC-40RT | N.A. |
| 8COM8 | 810-1-8-OR | 8-8ZHB5 | 8M3SC8 | DCM8-8 | 8-8MC-80RT | N.A. |
| Connector "0" Ring Straight Thread | | | | | | |
| 1COS | 100-1-OR | 1-1ZHBA5 | 1M1SC1 | DC01-1 | 1-1MC-ORS | N.A. |
| 2COS | 200-1-OR | 2-2ZHBA5 | 2M1SC2 | DC02-2 | 2-1MC-ORS | N.A. |
| 3COS | 300-1-OR | 3-3ZHBA5 | 3M1SC3 | DC03-3 | 3-1MC-ORS | N.A. |
| 4COS | 400-1-OR | 4-4ZHBA5 | 4M1SC4 | DC04-4 | 4-1MC-ORS | N.A. |
| 6COS | 600-1-OR | 6-6ZHBA5 | 6M1SC6 | DC06-6 | 6-1MC-ORS | N.A. |
| 8COS | 810-1-OR | 8-8ZHBA5 | 8M1SC8 | DC08-8 | 8-1MC-ORS | N.A. |
| 12COS | 1210-1-OR | 12-12ZHBA5 | 12M1SC12 | DC012-12 | 12-1MC-ORS | N.A. |
| 16COS | 1610-1-OR | 16-16ZHBA5 | 16M1SC16 | DC016-16 | 16-1MC-ORS | N.A. |

| GYROLOK | SWAGELOK | PARKER CPI | PARKER A-LOK | BI-LOK | TYIOK | IMPERIAL HI-SEAL |
|------------------------------|----------|------------|--------------|--------|------------|------------------|
| CAP | | | | | | |
| 1CP | 100-C | 1PNBZ | 1BLEN1 | DCA1 | 1-1 CAP | N.A. |
| 2CP | 200-C | 2PNBZ | 2BLEN2 | DCA2 | 2-1 CAP | N.A. |
| 3CP | 300-C | 3PNBZ | 3BLEN3 | DCA3 | 3-1 CAP | N.A. |
| 4CP | 400-C | 4PNBZ | 4BLEN4 | DCA4 | 4-1 CAP | N.A. |
| 5CP (use 8mm) | 500-C | 5PNBZ | 5BLEN5 | DCA5 | 5-1 CAP | N.A. |
| 6CP | 600-C | 6PNBZ | 6BLEN6 | DCA6 | 6-1 CAP | N.A. |
| 8CP | 810-C | 8PNBZ | 8BLEN8 | DCA8 | 8-1 CAP | N.A. |
| 10CP | 1010-C | 10PNBZ | 10BLEN10 | DCA10 | 10-1CAP | N.A. |
| 12CP | 1210-C | 12PNBZ | 12BLEN12 | DCA12 | 12-1 CAP | N.A. |
| 14CP | 1410-C | 14PNBZ | 14BLEN14 | DCA14 | 14-1 CAP | N.A. |
| 16CP | 1610-C | 16PNBZ | 16BLEN16 | DCA16 | 16-1 CAP | N.A. |
| Connector Socket Weld | | | | | | |
| 2CW2 | 200-6-2W | 2-2ZHBW | 2-2-SWC | DCW2 | 2-1SWTMC-2 | N.A. |
| 4CW4 | 400-6-4W | 4-4ZHBW | 4-4-SWC | DCW4 | 4-1SWTMC-4 | N.A. |
| 6CW6 | 600-6-6W | 6-6ZHBW | 6-6-SWC | DCW6 | 6-1SWTMC-6 | N.A. |
| 8CW8 | 800-6-8W | 8-8ZHBW | 8-8-SWC | DCW8 | 8-1SWTMC-8 | N.A. |
| Ferrule Front | | | | | | |
| 1FF | 103-1 | 1TZ | 1FF1 | DOF1 | FC-1 | 760-F-01 |
| 2FF | 203-1 | 2TZ | 2FF2 | DOF2 | FC-2 | 760-F-02 |
| 3FF | 303-1 | 3TZ | 3FF3 | DOF3 | FC-3 | 760-F-03 |
| 4FF | 403-1 | 4TZ | 4FF4 | DOF4 | FC-4 | 760-F-04 |
| 5FF (use 8mm) | 503-1 | 5TZ | 5FF5 | DOF5 | FC-5 | 760-F-05 |
| 6FF | 603-1 | 6TZ | 6 FF6 | DOF6 | FC-6 | 760-F-06 |
| 8FF | 813-1 | 8TZ | 8FF8 | DOF8 | FC-8 | 760-F-08 |
| 10FF | 1013-1 | 10TZ | 10FF10 | DOF10 | FC-10 | 760-F-10 |
| 12FF | 1213-1 | 12TZ | 12FF12 | DOF12 | FC-12 | 760-F-12 |
| 14FF | 1413-1 | 14TZ | 14FF14 | DOF14 | FC-14 | 760-F-14 |
| 16FF | 1613-1 | 16TZ | 16FF16 | DOF16 | FC-16 | 760-F-16 |
| Ferrule Rear | | | | | | |
| 1FR | 104-1 | N.A. | 1BF1 | DOB1 | RC-1 | N.A. |
| 2FR | 204-1 | N.A. | 2BF2 | DOB2 | RC-2 | N.A. |
| 3FR | 304-1 | N.A. | 3BF3 | DOBS | RC-3 | N.A. |
| 4FR | 404-1 | N.A. | 4BF4 | DOB4 | RC-4 | N.A. |
| 5FR (use 8mm) | 504-1 | N.A. | 5BF5 | DOBS | RC-5 | N.A. |
| 6FR | 604-1 | N.A. | 6BF6 | DOB6 | RC-6 | N.A. |
| 8PR | 814-1 | N.A. | 8BF8 | DOB8 | RC-8 | N.A. |
| 10FR | 1014-1 | N.A. | 10BF10 | DOB10 | RC-10 | N.A. |
| 12FR | 1214-1 | N.A. | 12BF12 | DOB12 | RC-12 | N.A. |
| 14FR | 1414-1 | N.A. | 14BF14 | DOB14 | RC-14 | N.A. |
| 16FR | 1614-1 | N.A. | 16BF16 | DOB16 | RC-16 | N.A. |
| Knurled Nut | | | | | | |
| 1KN | 102-1K | N.A. | N.A. | N.A. | 1-1 KN | N.A. |
| 2KN | 202-1 K | 2BZP | 2NUK2 | N.A. | 2-1 KN | N.A. |
| 3KN | 302-1K | 3BZP | 3NUK3 | N.A. | 3-1 KN | N.A. |
| 4KN | 402-1K | 4BZP | 4NUK4 | N.A. | 4-1 KN | N.A. |
| 5KN (use 8mm) | 502-1K | N.A. | N.A. | N.A. | 5-1 KN | N.A. |
| 6KN | 602-1 K | 6BZP | 6NUK6 | N.A. | 6-1 KN | N.A. |

| GYROLOK | SWAGELOK | PARKER CPI | PARKER A-LOK | BI-LOK | TYIOK | IMPERIAL HI-SEAL |
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| Knurled Nut (cont) | | | | | | |
| 8KN | 812-1K | 8BZP | 8NUK8 | N.A. | 8-1 KN | N.A. |
| 10KN | 1012-1K | N.A. | N.A. | N.A. | N.A. | N.A. |
| 12KN | 1212-1K | N.A. | N.A. | N.A. | 12-1 KN | N.A. |
| 14KN | 1412-1K | N.A. | N.A. | N.A. | N.A. | N.A. |
| 16KN | 1612-1K | N.A. | N.A. | N.A. | 16-1 KN | N.A. |
| Elbow Butt Weld | | | | | | |
| 2LBW2 | 200-2-2W | 2- $\frac{1}{8}$ "ZEBWZ* | 2- $\frac{1}{8}$ "BWECE | DLB2-2 | 2-2BWEL-2 | N.A. |
| 4LBW2 | 400-2-2W | 4- $\frac{1}{4}$ "ZEBWZ* | 4- $\frac{1}{4}$ "BWECE | DLB4-2 | 4-2BWEL-2 | N.A. |
| 4LBW4 | 400-2-4W | 4- $\frac{1}{4}$ "ZEBWZ* | 4- $\frac{1}{4}$ "BWECE | DLB4-4 | 4-2BWEL-4 | N.A. |
| 6LBW4 | 600-2-4W | 6- $\frac{1}{4}$ "ZEBWZ* | 6- $\frac{1}{4}$ "BWECE | DLB6-4 | 6-2BWEL-4 | N.A. |
| 8LBW8 | 810-2-8W | 8- $\frac{1}{2}$ "ZEBWZ* | 8- $\frac{1}{2}$ "BWECE | DLB8-8 | 8-2BWEL-8 | N.A. |
| Elbow Female | | | | | | |
| 1LF2 | 100-8-2 | 1-2DBZ | 1FEL2N | DLF1-2 | 1-2FE-2 | 770-F-01 x 02 |
| 2LF2 | 200-8-2 | 2-2DBZ | 2FEL2N | DLF2-2 | 2-2FE-2 | 770-F-02 x 02 |
| 2LF4 | N.A. | 2-4DBZ | 2FEL4N | DLF2-4 | N.A. | N.A. |
| 3LF2 | 300-8-2 | 3-2DBZ | 3FEL2N | DLF3-2 | 3-2FE-2 | 770-F-03 x 02 |
| 4LF2 | 400-8-2 | 4-2DBZ | 4FEL2N | DLF4-2 | 4-2FE-2 | 770-F-04 x 02 |
| 4LF4 | 400-8-4 | 4-4DBZ | 4FEL4N | DLF4-4 | 4-2FE-4 | 770-F-04 x 04 |
| 4LF6 | 400-8-6 | 4-6DBZ | 4FEL6N | DLF4-6 | 4-2FE-6 | 770-F-04 x 06 |
| 4LF8 | 400-8-8 | 4-8DBZ | 4FEL8N | DLF4-8 | 4-2FE-8 | 770-F-04 x 08 |
| 5LF4 (use 8mm) | 500-8-4 | 5-4DBZ | 5FEL4N | DLF5-4 | 5-2FE-4 | 770-F-05 x 04 |
| 6LF2 | 600-8-2 | 6-2DBZ | 6FEL2N | DLF6-2 | 6-2FE-2 | 770-F-06 x 02 |
| 6LF4 | 600-8-4 | 6-4DBZ | 6FEL4N | DLF6-4 | 6-2FE-4 | 770-F-06 x 04 |
| 6LF6 | 600-8-6 | 6-6DBZ | 6FEL6N | DLF6-6 | 6-2FE-6 | 770-F-06 x 06 |
| 6LF8 | 600-8-8 | 6-8DBZ | 6FEL8N | DLF6-8 | 6-2FE-8 | 770-F-06 x 08 |
| 8LF4 | 810-8-4 | 8-4DBZ | 8FEL4N | DLF8-4 | 8-2FE-4 | 770-F-08 x 04 |
| 8LP6 | 810-8-6 | 8-6DBZ | 8FEL6N | DLF8-6 | 8-2FE-6 | 770-F-08 x 06 |
| 8LF8 | 810-8-8 | 8-8DBZ | 8FEL8N | DLF8-8 | 8-2FE-8 | 770-F-08 x 08 |
| 8LF12 | 810-8-12 | 8-12DBZ | 8FEL12N | DLF8-12 | 8-2FE-12 | 770-F-08 x 12 |
| 10LF6 | 1010-8-6 | 10-6DBZ | 10FEL6N | DLF10-6 | 10-2FE-6 | 770-F-10 x 06 |
| 10LF8 | 1010-8-8 | 10-8DBZ | 10FEL8N | DLF10-8 | 10-2FE-8 | 770-F-10 x 08 |
| 12LF8 | 1210-8-8 | 12-8DBZ | 12FEL8N | DLF12-8 | 12-2FE-8 | 770-F-12 x 08 |
| 12LF12 | 1210-8-12 | 12-12DBZ | 12FEL12N | DLF12-12 | 12-2FE-12 | 770-F-12 x 12 |
| 16LF12 | 1610-8-12 | 16-12DBZ | 16FEL12N | DLF16-12 | 16-2FE-12 | 770-F-16 x 12 |
| *Weld-Lok part numbers | | | | | | |
| Elbow Male | | | | | | |
| 1LM1 | 100-2-1 | 1-1 CBZ | 1MSEL1N | DLN1-1 | 1-2ME-1 | 769-F-01 x 01 |
| 1LM2 | 100-2-2 | 1-2CBZ | 1MSEL2N | DLN1-2 | 1-2ME-2 | 769-F-01 x 02 |
| 2LM2 | 200-2-2 | 2-2CBZ | 2MSEL2N | DLN2-2 | 2-2ME-2 | 769-F-02 x 02 |
| 2LM4 | 200-2-4 | 2-4CBZ | 2MSEL4N | DLN2-4 | 2-2ME-4 | 769-F-02 x 04 |
| 3LM2 | 300-2-2 | 3-2CBZ | 3MSEL2N | DLN3-2 | 3-2ME-2 | 769-F-03 x 02 |
| 4LM2 | 400-2-2 | 4-2CBZ | 4MSEL2N | DLN4-2 | 4-2ME-2 | 769-F-04 x 02 |
| 4LM4 | 400-2-4 | 4-4CBZ | 4MSEL4N | DLN4-4 | 4-2ME-4 | 769-F-04 x 04 |
| 4LM6 | 400-2-6 | 4-6CBZ | 4MSEL6N | DLN4-6 | 4-2ME-6 | 769-F-04 x 06 |
| 4LM8 | 400-2-8 | 4-8CBZ | 4MSEL8N | DLN4-8 | 4-2ME-8 | 769-F-04 x 08 |
| 5LM2 (use 8mm) | 500-2-2 | 5-2CBZ | 5MSEL2N | DLN5-2 | 5-2ME-2 | 769-F-05 x 02 |
| 5LM4 (use 8mm) | 500-2-4 | 5-4CBZ | 5MSEL4N | DLN5-4 | 5-2ME-4 | 769-F-05 x 04 |

| GYROLOK | SWAGELOK | PARKER CPI | PARKER A-LOK | BI-LOK | TYIOK | IMPERIAL HI-SEAL |
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| Elbow Male (cont) | | | | | | |
| 6LM2 | 600-2-2 | 6-2CBZ | 6MSEL2N | DLN6-2 | 6-2ME-2 | 769-F-06 x 02 |
| 6LM4 | 600-2-4 | 6-4CBZ | 6MSEL4N | DLN6-4 | 6-2ME-4 | 769-F-06 x 04 |
| 6LM6 | 600-2-6 | 6-6CBZ | 6MSEL6N | DLN6-6 | 6-2ME-6 | 769-F-06 x 06 |
| 6LM8 | 600-2-8 | 6-8CBZ | 6MSEL8N | DLN6-8 | 6-2ME-8 | 769-F-06 x 08 |
| 8LM4 | 810-2-4 | 8-4CBZ | 8MSEL4N | DLN8-4 | 8-2ME-4 | 769-F-08 x 04 |
| 8LM6 | 810-2-6 | 8-6CBZ | 8MSEL6N | DLN8-6 | 8-2ME-6 | 769-F-08 x 06 |
| 8LM8 | 810-2-8 | 8-8CBZ | 8MSEL8N | DLN8-8 | 8-2ME-8 | 769-F-08 x 08 |
| 8LM12 | 810-2-12 | 8-12CBZ | 8MSEL12N | DLN8-12 | 8-2ME-12 | 769-F-08 x 12 |
| 10LM6 | 1010-2-6 | 10-6CBZ | 10MSEL6N | DLN10-6 | 10-2ME-6 | 769-F-10 x 06 |
| 10LM8 | 1010-2-8 | 10-8CBZ | 10MSEL8N | DLN10-8 | 10-2ME-8 | 769-F-10 x 08 |
| 12LM8 | 1210-2-8 | 12-8CBZ | 12MSEL8N | DLN12-8 | 12-2ME-8 | 769-F-12 x 08 |
| 12LM12 | 1210-2-12 | 12-12CBZ | 12MSEL12N | DLN12-12 | 12-2ME-12 | 769-F-12 x 12 |
| 14LM12 | 1410-2-12 | 14-12CBZ | 14MSEL12N | DLN14-12 | 14-2ME-12 | 769-F-14 x 12 |
| 16LM12 | 1610-2-12 | 16-12CBZ | 16MSEL12N | DLN16-12 | 16-2ME-12 | 769-F-16 x 12 |
| 16LM16 | 1610-2-16 | 16-16CBZ | 16MSEL16N | DLN16-16 | 16-2ME-16 | 769-F-16 x 16 |
| Elbow Union | | | | | | |
| 1LU | 100-9 | 1-1EBZ | 1EE1 | DLA1 | 1-2ELU-1 | 765-F-01 |
| 2LU | 200-9 | 2-2EBZ | 2EE2 | DLA2 | 2-2ELU-2 | 765-F-02 |
| 3LU | 300-9 | 3-3EBZ | 3EE3 | DLA3 | 3-2ELU-3 | 765-F-03 |
| 4LU | 400-9 | 4-4EBZ | 4EE4 | DLA4 | 4-2ELU-4 | 765-F-04 |
| 5LU (use 8mm) | 500-9 | 5-5EBZ | 5EE5 | DLA5 | 5-2ELU-5 | 765-F-05 |
| 6LU | 600-9 | 6-6EBZ | 6EE6 | DLA6 | 6-2ELU-6 | 765-F-06 |
| 8LU | 810-9 | 8-8EBZ | 8EE8 | DLA8 | 8-2ELU-8 | 765-F-08 |
| 10LU | 1010-9 | 10-10EBZ | 10EE10 | DLA10 | 10-2ELU-10 | 765-F-10 |
| 12LU | 1210-9 | 12-12EBZ | 12EE12 | DLA12 | 12-2ELU-12 | 765-F-12 |
| 14LU | 1410-9 | 14-14EBZ | 14EE14 | DLA14 | 14-2ELU-14 | 765-F-14 |
| 16LU | 1610-9 | 16-16EBZ | 16EE16 | DLA16 | 16-2ELU-16 | 765-F-16 |
| Elbow Socket Weld | | | | | | |
| 2LW2 | 200-9-2TSW | 2-2ZEBW | 2-2SWEC | DLW2 | 2-2SWEL | N.A. |
| 3LW3 | 300-9-3TSW | 3-3ZEBW | 3-3SWEC | DLW3 | 3-3SWEL | N.A. |
| 4LW4 | 400-9-4TSW | 4-4ZEBW | 4-4SWEC | DLW4 | 4-4SWEL | N.A. |
| 6LW6 | 600-9-6TSW | 3-6ZEBW | 6-6SWEC | DLW6 | 6-6SWEL | N.A. |
| 8LW8 | 810-9-8TSW | 8-8ZEBW | 8-8SWEC | DLW8 | 8-8SWEL | N.A. |
| 10LW10 | 1010-9-1 OTSW | 10-10ZEBW | 10-10SWEC | DLW10 | 10-10SWEL | N.A. |
| 12LW12 | 1210-9-12TSW | 12-12ZEBW | 12-12SWEC | DLW12 | 12-12SWEL | N.A. |
| 16LW16 | 1610-9-16TSW | 16-16ZEBW | 16-16SWEC | DLW16 | 16-16SWEL | N.A. |
| Nut | | | | | | |
| 1N | 102-1 | 1BZ | 1NU1 | DNA1 | N-1 | 761-F-01 |
| 2N | 202-1 | 2BZ | 2NU2 | DNA2 | N-2 | 761-F-02 |
| 3N | 302-1 | 3BZ | 3NU3 | DNA3 | N-3 | 761-F-03 |
| 4N | 402-1 | 4BZ | 4NU4 | DNA4 | N-4 | 761-F-04 |
| 5N (use 8mm) | 502-1 | 5BZ | 5NU5 | DNA5 | N-5 | 761-F-05 |
| 6N | 602-1 | 6BZ | 6NU6 | DNA6 | N-6 | 761-F-06 |
| 8N | 812 | 8BZ | 8NU8 | DNA8 | N-8 | 761-F-08 |
| 10N | 1012-1 | 10BZ | 10NU10 | DNA10 | N-10 | 761-F-10 |
| 12N | 1212-1 | 12BZ | 12NU12 | DNA12 | N-12 | 761-F-12 |
| 14N | 1412-1 | 14BZ | 14NU14 | DNA14 | N-14 | 761-F-14 |
| 16N | 1612-1 | 16BZ | 16NU16 | DNA16 | N-16 | 761-F-16 |

| GYROLOK | SWAGelok | PARKER CPI | PARKER A-LOK | BI-LOK | TYIOK | IMPERIAL HI-SEAL |
|------------------------|-----------|------------|--------------|---------|-------------|------------------|
| Plug | | | | | | |
| 1P | 100-P | 1FNZ | 1BLP1 | DBA1 | 1-1FPUJG | 708-F-01 |
| 2P | 200-P | 2FNZ | 2BLP2 | DBA2 | 2-1FPLUG | 708-F-02 |
| 3P | 300-P | 3FNZ | 3BLP3 | DBA3 | 3-1FPLUG | 708-F-03 |
| 4P | 400-P | 4FNZ | 4BLP4 | DBA4 | 4-1FPLUG | 708-F-04 |
| 5P (use 8mm) | 500-P | 5FNZ | 5BLP5 | DBA5 | 5-1FPLUG | 708-F-05 |
| 6P | 600-P | 6FNZ | 6BLP6 | DBA6 | 6-1FPLUG | 708-F-06 |
| 8P | 810-P | 8FNZ | 8BLP8 | DBA8 | 8-1FPLUG | 708-F-08 |
| 10P | 1010-P | 10FNZ | 10BLP10 | DBA10 | 10-1FPLUG | 708-F-10 |
| 12P | 1210-P | 12FNZ | 12BLP12 | DBA12 | 12-1FPLUG | 708-F-12 |
| 16P | 1610-P | 16FNZ | 16BLP16 | DBA16 | 16-1FPLUG | 708-F-16 |
| Port Connectors | | | | | | |
| 2PC | 201-PC | 2-2ZPC | 2PC2 | DPC2 | N.A. | N.A. |
| 4PC | 401-PC | 4-4ZPC | 4PC4 | DPC4 | N.A. | N.A. |
| 4PC2 | 401-PC-2 | 4-2ZPC | 4PC2 | N.A. | N.A. | N.A. |
| 6PC | 601-PC | 6-6ZPC | 6PC6 | DPC6 | N.A. | N.A. |
| 6PC4 | 601-PC-4 | 6-4ZPC | 6PC4 | N.A. | N.A. | N.A. |
| 8PC | 801-PC | 8-8ZPC | 8PC6 | DPC8 | N.A. | N.A. |
| 8PC4 | 811-PC-4 | 8-4ZPC | 8PC4 | N.A. | N.A. | N.A. |
| 8PC6 | 811-PC-6 | 8-6ZPC | 8PC6 | N.A. | N.A. | N.A. |
| 12PC | 1211-PC | 12-12ZPC | 12PC12 | DPC12 | N.A. | N.A. |
| 12PC8 | 1211-PC-8 | 12-8ZPC | 12PC8 | N.A. | N.A. | N.A. |
| Reducer | | | | | | |
| 1R2 | 100-R-2 | 2-1TRBZ | 2TUR1 | DRE1-2 | 1-1RATT-2 | 783-F-02 x 01 |
| 1R4 | 100-R-4 | 4-1TRBZ | N.A. | DRE1-4 | 1-1RATT-4 | N.A. |
| 2R3 | 200-R-3 | 3-2TRBZ | 3TUR2 | DRE2-3 | 2-1RATT-3 | 783-F-03 x 02 |
| 2R4 | 200-R-4 | 4-2TRBZ | 4TUR2 | DRE2-4 | 2-1RATT-4 | 783-F-04 x 02 |
| 2R6 | 200-R-6 | 6-2TRBZ | 6TUR2 | DRE2-6 | 2-1RATT-6 | 783-F-06 x 02 |
| 2R8 | 200-R-8 | 8-2TRBZ | 8TUR2 | DRE2-8 | 2-1RATT-8 | 783-F-08 x 02 |
| 3R4 | 300-R-4 | 4-3TRBZ | 4TUR3 | DRE3-4 | 3-1RATT-4 | 783-F-04 x 03 |
| 3R6 | 300-R-6 | 6-3TRBZ | 6TUR3 | DRE3-6 | 3-1 RATT-6 | 783-F-06 x 03 |
| 3R8 | 300-R-8 | 8-3TRBZ | 8TUR3 | DRE3-8 | 3-1RATT-8 | 783-F-08 x 03 |
| 4R2 | 400-R-2 | 2-4TRBZ | 2TUR4 | DRE4-2 | 4-1RATT-2 | 783-F-02 x 04 |
| 4R5 (use 8mm) | 400-R-5 | 5-4TRBZ | 5TUR4 | DRE4-5 | 4-1 RATT-5 | 783-F-05 x 04 |
| 4R6 | 400-R-6 | 6-4TRBZ | 6TUR4 | DRE4-6 | 4-1 RATT-6 | 783-F-06 x 04 |
| 4R8 | 400-R-8 | 8-4TRBZ | 8TUR4 | DRE4-8 | 4-1RATT-8 | 783-F-08 x 04 |
| 4R10 | 400-R-10 | 10-4TRBZ | 10TUR4 | DRE4-10 | 4-1RATT-10 | 783-F-10 x 04 |
| 4R12 | 400-R-12 | 12-4TRBZ | 12TUR4 | DRE4-12 | 4-1RATT-12 | 783-F-12 x 04 |
| 5R6 (use 8mm) | 500-R-6 | 6-5TRBZ | 6TUR5 | DRE5-6 | 5-1 RATT-6 | 783-F-06 x 05 |
| 6R4 | 600-R-4 | 4-6TRBZ | 4TUR6 | DRE6-4 | 6-1RATT-4 | 783-F-04 x 06 |
| 6R8 | 600-R-8 | 8-6TRBZ | 8TUR6 | DRE6-8 | 6-1RATT-8 | 783-F-08 x 06 |
| 6R10 | 600-R-10 | 10-6TRBZ | 10TUR6 | DRE6-10 | 6-1 RATT-10 | 783-F-10 x 06 |
| 6R12 | 600-R-12 | 12-6TRBZ | 12TUR6 | DRE6-12 | 6-1RATT-12 | 783-F-12 x 06 |
| 8R4 | 800-R-4 | 4-8TRBZ | 4TUR8 | DRE8-4 | 8-1RATT-4 | 783-F-08 x 06 |
| 8R6 | 810-R-6 | 6-8TRBZ | 6TUR8 | DRE8-6 | 8-1 RATT-6 | 783-F-06 x 08 |
| 8R10 | 810-R-10 | 10-8TRBZ | 10TUR8 | DRE8-10 | 8-1 RATT-10 | 783-F-10 x 08 |
| 8R12 | 810-R-22 | 12-8TRBZ | 12TUR8 | DRE8-12 | 8-1RATT-12 | 783-F-12 x 08 |
| 8R16 | 810-R-16 | 16-8TRBZ | 16TUR8 | DRE8-16 | 8-1 RATT-16 | 783-F-16 x 08 |

| GYROLOK | SWAGELOK | PARKER CPI | PARKER A-LOK | BI-LOK | TYIOK | IMPERIAL HI-SEAL |
|-----------------------|-------------|--------------|--------------|----------|-------------|------------------|
| Reducer (cont) | | | | | | |
| 10R12 | 1010-R-12 | 12-10TRBZ | 12TUR10 | DRE10-12 | 10-1RATT-12 | 783-F-12 x 10 |
| 10R16 | 1010-R-16 | 16-10TRBZ | 16TUR10 | DRE10-16 | 10-1RATT-16 | 783-F-16 x 10 |
| 12R16 | 1210-R-16 | 16-12TRBZ | 16TUR12 | DRE12-16 | 12-1RATT-16 | 783-F-16 x 12 |
| Reducing Union | | | | | | |
| 2RU1 | 200-6-1 | 2-1 HBZ | 2SC1 | DUR2-1 | 2-1RU-1 | 756-F-02 x 01 |
| 3RU1 | 300-6-1 | 3-1 HBZ | N.A. | DUR3-1 | 3-1RU-1 | N.A. |
| 3RU2 | 300-6-2 | 3-2HBZ | 3SC2 | DUR3-2 | 3-1RU-2 | 756-F-03 x 02 |
| 4RU1 | 400-6-1 | 4-1 HBZ | 4SC1 | DUR4-1 | 4-1RU-1 | 756-F-04 x 01 |
| 4RU2 | 400-6-2 | 4-2HBZ | 4SC2 | DUR4-2 | 4-1RU-2 | 756-F-04 x 02 |
| 4RU3 | 400-6-3 | 4-3 HBZ | 4SC3 | DUR4-3 | 4-1RU-3 | 756-F-04 x 03 |
| 5RU4 (use 8mm) | 500-6-4 | 5-4HBZ | 5SC4 | DUR5-4 | 5-1RU-4 | 756-F-05 x 04 |
| 6RU2 | 600-6-2 | 6-2HBZ | 6SC2 | DUR6-2 | 6-1RU-2 | 756-F-06 x 02 |
| 6RU4 | 600-6-4 | 6-4HBZ | 6SC4 | DUR6-4 | 6-1RU-4 | 756-F-06 x 04 |
| 6RU5 (use 8mm) | 600-6-5 | 6-5HBZ | 6SC5 | DUR6-5 | 6-1RU-5 | 756-F-06 x 05 |
| 8RU2 | 810-6-2 | 8-2 HBZ | 8SC2 | DUR8-2 | 8-1RU-2 | 756-F-08 x 02 |
| 8RU4 | 810-6-4 | 8-4HBZ | 8SC4 | DUR8-4 | 8-1RU-4 | 756-F-08 x 04 |
| 8RU6 | 810-6-6 | 8-6HBZ | 8SC6 | DUR8-6 | 8-1RU-6 | 756-F-08 x 06 |
| 10RU61 | 1010-6-6 | N.A. | 10SC6 | DUR10-6 | N.A. | N.A. |
| 10RU8 | 1010-6-8 | 10-8HBZ | 10SC8 | DUR10-8 | 10-1 RU-8 | 756-F-10 x 08 |
| 12RU4 | 1210-6-4 | 12-4HBZ | 12SC4 | DUR12-4 | 12-1RU-4 | 756-F-12 x 04 |
| 12RU6 | 1210-6-6 | 12-6HBZ | 12SC6 | DUR12-6 | 12-1RU-6 | 756-F-12 x 06 |
| 12RU8 | 1210-6-8 | 12-8HBZ | 12SC8 | DUR12-8 | 12-1 RU-8 | 756-F-12 x 08 |
| 12RU10 | 1210-6-10 | 12-10HBZ | 12SC10 | DUR12-10 | 12-1RU-10 | 756-F-12 x 10 |
| 16RU8 | 1610-6-8 | 16-8HBZ | 16SC8 | DUR16-8 | 16-1 RU-8 | 756-F-16 x 08 |
| 16RU12 | 1610-6-12 | 16-12HBZ | 16SC12 | DUR16-12 | 16-1RU-12 | 756-F-16 x 12 |
| TFT Tee | | | | | | |
| 2TFT2 | 200-3TFT | 2-2-2MBZ | 2FRT2N | DTF2-2 | 2-3TFT-2 | 767-F-02 x 02 |
| 4TFT2 | 400-3TFT | 4-2-4MBZ | 4FRT2N | DTF4-2 | 4-3TFT-2 | 767-F-04 x 02 |
| 4TFT4 | 400-3-4TFT | 4-4-4MBZ | 4FRT4N | DTF4-4 | 4-3TFT-4 | 767-F-04 x 04 |
| 6TFT4 | 600-3TFT | 6-4-6MBZ | 6FRT4N | DTF6-4 | 6-3TFT-4 | 767-F-06 x 04 |
| 6TFT6 | 600-3-6TFT | 6-6-6MBZ | 6FRT6N | DTF6-6 | 6-3TFT-6 | 767-F-06 x 06 |
| 8TFT6 | 810-3TFT | 8-6-8MBZ | 8FRT6N | DTF8-6 | 8-3TFT-6 | 767-F-08 x 06 |
| 8TFT8 | 810-3-8TFT | 8-8-8 MBZ | 8FRT8N | DTF8-8 | 8-3TFT-8 | 767-F-08 x 08 |
| 10TFT8 | 1010-3TFT | 10-8-10MBZ | 10FRT8N | DTF10-8 | 10-3TFT-8 | 767-F-10 x 08 |
| 12TFT8 | 1210-3-8TFT | 12-8-12 MBZ | 12FRT8N | DTF12-8 | 12-3TFT-8 | 767-F-12 x 08 |
| 12TFT12 | 1210-3TFT | 12-12-12MBZ | 12FRT12N | DTF12-12 | 12-3TFT-12 | 767-F-12 x 12 |
| 16TFT12 | N.A. | 16-12-16MBZ | 16FRT12N | DTF16-12 | 16-3TFT-12 | 767-F-16 x 12 |
| 16TFT16 | N.A. | 16-16-16 MBZ | 16FRT16N | DTF16-16 | 16-3TFT-16 | 767-F-16 x 16 |
| TMT Tee | | | | | | |
| 2TMT2 | 200-3TMT | 2-2-2RBZ | 2MRT2N | DTK2-2 | 2-3TMT-2 | 771-F-02 x 02 |
| 3TMT2 | 300-3TMT | 3-2-3RBZ | 3MRT2N | DTK3-2 | 3-3TMT-2 | 771-F-03 x 02 |
| 4TMT2 | 400-3TMT | 4-2-4RBZ | 4MRT2N | DTK4-2 | 4-3TMT-2 | 771-F-04 x 02 |
| 4TMT4 | 400-3-4TMT | 4-4-4RBZ | 4MRT4N | DTK4-4 | 4-3TMT-4 | 771-F-04 x 04 |
| 5TMT2 (use 8mm) | 500-3TMT | 5-2-5 RBZ | 5MRT2N | DTK5-2 | 5-3TMT-2 | 771-F-05 x 02 |
| 6TMT4 | 600-3TMT | 6-4-6RBZ | 6MRT6N | DTK6-4 | 6-3TMT-4 | 771-F-06 x 04 |
| 6TMT6 | 600-3-6TMT | 6-6-6RBZ | 6MRT6N | DTK6-6 | 6-3TMT-6 | 771-F-06 x 06 |
| 8TMT6 | 810-3TMT | 8-6-8RBZ | 8MRT6N | DTK8-6 | 8-3TMT-6 | 771-F-08 x 06 |

| GYROLOK | SWAGELOK | PARKER CPI | PARKER A-LOK | BI-LOK | TYIOK | IMPERIAL HI-SEAL |
|-----------------------|--------------|--------------|--------------|----------|------------|------------------|
| TMT Tee (cont) | | | | | | |
| 8TMT8 | 810-3TMT | 8-8-8RBZ | 8MRT8N | DTK8-8 | 8-3TMT-8 | 771-F-08 x 08 |
| 10TMT10 | 1010-3TMT | 10-8-10RBZ | 10MRT8N | DTK10-8 | 10-3TMT-8 | 771-F-10 x 08 |
| 12TMT12 | 1210-3TMT | 12-12-12RBZ | 12MRT12N | DTK12-12 | 12-3TMT-12 | 771-F-12 x 12 |
| 16TMT16 | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. |
| TTF Tee | | | | | | |
| 2TTF2 | 200-3TTF | 2-2-20BZ | 2FBT2N | DTH2-2 | 2-3TTF-2 | 777-F-02 x 02 |
| 3TTF2 | N.A. | 3-3-20BZ | 3FBT2N | DTH3-2 | 3-3TTF-2 | 777-F-03 x 02 |
| 4TTF2 | 400-3TTF | 4-4-20BZ | 4FBT2N | DTH4-2 | 4-3TTF-2 | 777-F-04 x 02 |
| 4TTF4 | 400-3-4TTF | 4-4-40BZ | 4FBT4N | DTH4-4 | 4-3TTF-4 | 777-F-04 x 04 |
| 6TTF4 | 600-3TTF | 6-6-40BZ | 6FBT4N | DTH6-4 | 6-3TTF-4 | 777-F-06 x 04 |
| 6TTF6 | N.A. | 6-6-60BZ | 6FBT6N | DTH6-6 | 6-3TTF-6 | 777-F-06 x 06 |
| 8TTF4 | 810-3-4TTF | 8-8-40BZ | 8FBT4N | DTH8-4 | 8-3TTF-4 | 777-F-08 x 04 |
| uTTF6 | 810-3TTF | 8-8-60BZ | 8FBT6N | DTH8-6 | 8-3TTF-6 | 777-F-08 x 06 |
| 8TTF8 | 810-3-8TTF | 8-8-80BZ | 8FBT8N | DTH8-8 | 8-3TTF-8 | 777-F-08 x 08 |
| 10TTF8 | 1010-3TTF | 10-10-80BZ | 10FBT8N | DTH10-8 | 10-3TTF-8 | 777-F-10 x 08 |
| 12TTF8 | N.A. | 12-12-80BZ | 12FBT8N | DTH12-8 | 12-3TTF-8 | 777-F-12 x 08 |
| 12TTF12 | 1210-3TTF | 12-12-120BZ | 12FBT12N | DTH12-12 | 12-3TTF-12 | 777-F-12 x 12 |
| 14TTF12 | N.A. | 14-14-120BZ | 14FBT12N | DTH14-12 | 14-3TTF-12 | 777-F-14 x 12 |
| 16TTF12 | 1610-3-12TTF | 16-16-120BZ | 16FBT12N | DTH16-12 | 16-3TTF-12 | 777-F-16 x 12 |
| 16TTF16 | 1610-3TTF | 16-16-160BZ | 16FBT16N | DTH16-16 | 16-3TTF-16 | 777-F-16 x 16 |
| TTM Tee | | | | | | |
| 2TTM2 | 200-3TTM | 2-2-2SBZ | 2MBT2N | DTN2-2 | 2-3TTM-2 | 772-F-02 x 02 |
| 2TTM4 | 200-3-4TTM | 2-2-4SBZ | 2MBT4N | DTN2-4 | 2-3TTM-4 | 772-F-02 x 04 |
| 3TTM2 | 300-3TTM | 3-3-2SBZ | 3MBT2N | DTN3-2 | 3-3TTM-2 | 772-F-03 x 02 |
| 4TTM2 | 400-3TTM | 4-4-2SBZ | 4MBT2N | DTN4-2 | 4-3TTM-2 | 772-F-04 x 02 |
| 4TTM4 | 400-3-4TTM | 4-4-4SBZ | 4MBT4N | DTN4-4 | 4-3TTM-4 | 772-F-04 x 04 |
| 5TTM2 (use 8mm) | 500-3TTM | 5-5-2SBZ | 5MBT2N | DTN5-2 | 5-3TTM-2 | 772-F-05 x 02 |
| 6TTM4 | 600-3TTM | 6-6-4SBZ | 6MBT4N | DTN6-4 | 6-3TTM-4 | 772-F-06 x 04 |
| 6TTM6 | 600-3-6TTM | 6-6-6SBZ | 6MBT6N | DTN6-6 | 6-3TTM-6 | 772-F-06 x 06 |
| 8TTM4 | N.A. | 8-8-4SBZ | 8MBT4N | DTN8-4 | 8-3TTM-4 | 772-F-08 x 04 |
| 8TTM6 | 810-3-8TTM | 8-8-6SBZ | 8MBT6N | DTN8-6 | 8-3TTM-6 | 772-F-08 x 06 |
| 8TTM8 | 810-3-8TTM | 8-8-8SBZ | 8MBT8N | DTN8-8 | 8-3TTM-8 | 772-F-08 x 08 |
| 10TTM8 | 1010-3TTM | 10-10-8SBZ | 10MBT8N | DTN10-8 | 10-3TTM-8 | 772-F-10 x 08 |
| 12TTM8 | N.A. | 12-12-8SBZ | 12MBT8N | DTN12-8 | 12-3TTM-8 | 772-F-12 x 08 |
| 12TTM12 | 1210-3TTM | 12-12-12SBZ | 12MBT12N | DTN12-12 | 12-3TTM-12 | 772-F-12 x 12 |
| 16TTM12 | N.A. | 16-16-12SBZ | 16MBT12N | DTN16-12 | 16-3TTM-12 | 772-F-16 x 12 |
| 16TTM16 | N.A. | 16-16-16SBZ | 16MBT16N | DTN16-16 | 16-3TTM-16 | 772-F-16 x 16 |
| All tube Tee | | | | | | |
| 1TTT | 100-3 | 1-1-1JBZ | 1ET1 | DTA1 | 1-3TTT-1 | 764-F-01 |
| 2TTT | 200-3 | 2-2-2 JBZ | 2ET2 | DTA2 | 2-3TTT-2 | 764-F-01 |
| 3TTT | 300-3 | 3-3-3JBZ | 3ET3 | DTA3 | 3-3TTT-2 | 764-F-01 |
| 4TTT | 400-3 | 4-4-4 JBZ | 4ET4 | DTA4 | 4-3TTT-4 | 764-F-01 |
| 5TT (use 8mm) | 500-3 | 5-5-5JBZ | 5ET5 | DTA5 | 5-3TTT-5 | 764-F-01 |
| 6TTT | 600-3 | 6-6-6 JBZ | 6ET6 | DTA6 | 6-3TTT-6 | 764-F-06 |
| 8TTT | 810-3 | 8-8-8 JBZ | 8ET8 | DTA8 | 8-3-nT-8 | 764-F-08 |
| 10TTT | 1010-3 | 10-10-1 OJBZ | 10ET10 | DTA10 | 10-3TTT-10 | 764-F-10 |
| 12TTT | 1210-3 | 12-12-12JBZ | 12ET12 | DTA12 | 12-3TTT-12 | 764-F-12 |

| GYROLOK | SWAGELOK | PARKER CPI | PARKER A-LOK | BI-LOK | TYIOK | IMPERIAL HI-SEAL |
|---------------------|-------------|--------------|--------------|----------|------------|------------------|
| All tube Tee | | | | | | |
| 14TTT | 1410-3 | 14-14-14JBZ | 14ET14 | DTA14 | 14-3TTT-14 | 764-F-14 |
| 16TTT | 1610-3 | 16-16-16JBZ | 16ET16 | DTA16 | 16-3TTT-16 | 764-F-16 |
| Tube Insert | | | | | | |
| 3TI2 | 305-2 | N.A. | N.A. | N.A. | N.A. | N.A. |
| 4TI2 | 405-2 | 4TIZ(.125) | 4TIZ(.125) | N.A. | N.A. | N.A. |
| 4TI .170 | 405-.170 | 4TIZ(.170) | 4TIZ(.170) | N.A. | N.A. | N.A. |
| 4TI3 | 405-3 | 4TIZ(.188) | 4TIZ(.188) | N.A. | N.A. | N.A. |
| 5TI3 (use 8mm) | 505-3 | 5TIZ(.188) | 5TIZ (.188) | N.A. | N.A. | N.A. |
| 5TI4 (use 8mm) | 505-4 | 5TIZ (.250) | 5TIZ (.250) | N.A. | N.A. | N.A. |
| 6TI3. | 605-3 | 6TIZ (.188) | 6TIZ (.188) | N.A. | N.A. | N.A. |
| 6TI4 | 605-4 | 6TIZ (.250) | 6TIZ (.250) | N.A. | N.A. | N.A. |
| 8TI4 | 815-4 | 8TIZ (.250) | 8TIZ (.250) | N.A. | N.A. | N.A. |
| 8TI6 | 815-6 | 8TIZ(.375) | 8TIZ (.375) | N.A. | N.A. | N.A. |
| 10TI6 | 1015-6 | 10TIZ(.375) | 10TIZ(.375) | N.A. | N.A. | N.A. |
| 10TI8 | 1015-8 | 10TIZ(.500) | 10TIZ(.500) | N.A. | N.A. | N.A. |
| 2TI18 | 1215-8 | 12TIZ(.500) | 12TIZ(.500) | N.A. | N.A. | N.A. |
| 12TI10 | 1215-10 | 12TIZ(.625) | 12TIZ(.625) | N.A. | N.A. | N.A. |
| 16TI2 | 1615-12 | 16TIZ (.750) | 16TIZ (.750) | N.A. | N.A. | N.A. |
| 16TI14 | 1615-14 | 16TIZ (.875) | 16TIZ(.875) | N.A. | N.A. | N.A. |
| Union | | | | | | |
| 1U | 100-6 | 1-1 HBZ | 1SC1 | DUA1 | 1-1U | 762-F-01 |
| 2U | 200-6 | 2-2 HBZ | 2SC2 | DUA2 | 2-1U | 762-F-02 |
| 3U | 300-6 | 3-3 HBZ | 3SC3 | DUA3 | 3-1U | 762-F-03 |
| 4U | 400-6 | 4-4 HBZ | 4SC4 | DUA4 | 4-1U | 762-F-04 |
| 5U (use 8mm) | 500-6 | 5-5 HBZ | 5SC5 | DUA5 | 5-1U | 762-F-05 |
| 6U | 600-6 | 6-6 HBZ | 6SC6 | DUA6 | 6-1 U | 762-F-06 |
| 8U | 810-6 | 8-8 HBZ | 8SC8 | DUA8 | 8-1U | 762-F-08 |
| 10U | 1010-6 | 10-10 HBZ | 10SC10 | DUA10 | 10-1U | 762-F-10 |
| 12U | 1210-6 | 12-12 HBZ | 12SC12 | DUA12 | 12-1U | 762-F-12 |
| 14U | 1410-6 | 14-14 HBZ | 14SC14 | DUA14 | 14-1U | 762-F-14 |
| 16U | 1610-6 | 16-16 HBZ | 16SC16 | DUA16 | 16-1 U | 762-F-16 |
| Union AN | | | | | | |
| 1UAN4 | 100-6-4AN | 1-4 XHBZ | N.A. | DUC1-4 | N.A. | N.A. |
| 2UAN2 | 200-6-2AN | 2-2 XHBZ | 2 x ASC2 | DUC2-2 | 2-1UANF-2 | N.A. |
| 2UAN4 | 200-6-4AN | 2-4 XHBZ | 4 x ASC2 | DUC2-4 | N.A. | N.A. |
| 4UAN4 | 400-6-4AN | 4-4 XHBZ | 4 x ASC4 | DUC4-4 | 4-1UANF-4 | 792-F-04 X 04 |
| 6UAN4 | 600-6-4AN | 6-4 XHBZ | 4 x ASC6 | DUC6-4 | N.A. | N.A. |
| 6UAN6 | 600-6-6AN | 6-6 XHBZ | 6 x ASC6 | DUC6-6 | 6-1UANF-6 | 792-F-06 X 06 |
| 8UAN8 | 810-6-8AN | 8-8 XHBZ | 8 x ASC8 | DUC8-8 | 8-1UANF-8 | 792-F-08 x 08 |
| 12UAN12 | 1210-6-12AN | 12-12 XHBZ | 12 x ASC12 | DUC12-12 | N.A. | N.A. |
| 16UAN16 | 1610-6-16AN | 16-16 XHBZ | 16 x ASC16 | DUC16-16 | N.A. | N.A. |
| SCF | | | | | | |
| 2SCF | 200-SETS | N.A. | N.A. | N.A. | N.A. | N.A. |
| 4SCF | 400-SETS | N.A. | N.A. | N.A. | N.A. | N.A. |
| 6SCF | 600-SETS | N.A. | N.A. | N.A. | N.A. | N.A. |
| 8SCF | 810-SETS | N.A. | N.A. | N.A. | N.A. | N.A. |

Hoke Gyrolok®

| GYROLOK | SWAGELOK | PARKER CPI | PARKER A-LOK | BI-LOK | TYIOK | IMPERIAL HI-SEAL |
|-------------|----------|------------|--------------|--------|-------|------------------|
| SCNF | | | | | | |
| 2SCNF | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. |
| 4SCNF | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. |
| 6SCNF | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. |
| 8SCNF | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. |



CIRCOR Instrumentation Technologies

405 Centura Court
Spartanburg, SC 29303
Tel (864) 574-7966
Fax (864) 587-5608

Circle Seal Controls, Inc.

2301 Wardlow Circle
Corona, CA 92880
Tel (951) 270-6200
Fax (951) 270-6201
www.circle-seal.com

GO Regulator

405 Centura Court
Spartanburg, SC 29303
Tel (864) 574-7966
Fax (864) 587-5608
www.goreg.com

HOKE, Inc.

405 Centura Court
Spartanburg, SC 29303
Tel (864) 574-7966
Fax (864) 587-5608
www.hoke.com

CIRCOR Instrumentation, Ltd.

1-3 Bouverie Road
Harrow
Middlesex, HA1 4HB
UK
Tel +44 (0) 20 8423 0113
Fax +44 (0) 20 8864 7008
www.circor.co.uk

HOKE Controls

1901 Lynx Place
Ontario, CA 91761
Tel (909) 923-3770
Fax (909) 923-2550

Panels Plus

1901 Lynx Place
Ontario, CA 91761
Tel (909) 923-3770
Fax (909) 923-2550
www.circor-panelsplus.com

CIRCOR Tech

405 Centura Court
Spartanburg, SC 29303
Tel (864) 574-7966
Fax (864) 587-5608
www.circortech.com

HOKE GmbH

Weitzesweg 11
Postfach 15 41
D-61118 Bad Vilbel-Dortelweil
Germany
Tel +49 6101 82 56 0
Fax +49 6101 82 56 40
www.hoke.de

TOMCO

405 Centura Court
Spartanburg, SC 29303
Tel (864) 574-7966
Fax (864) 587-5608
www.tomcoquickcouplers.com

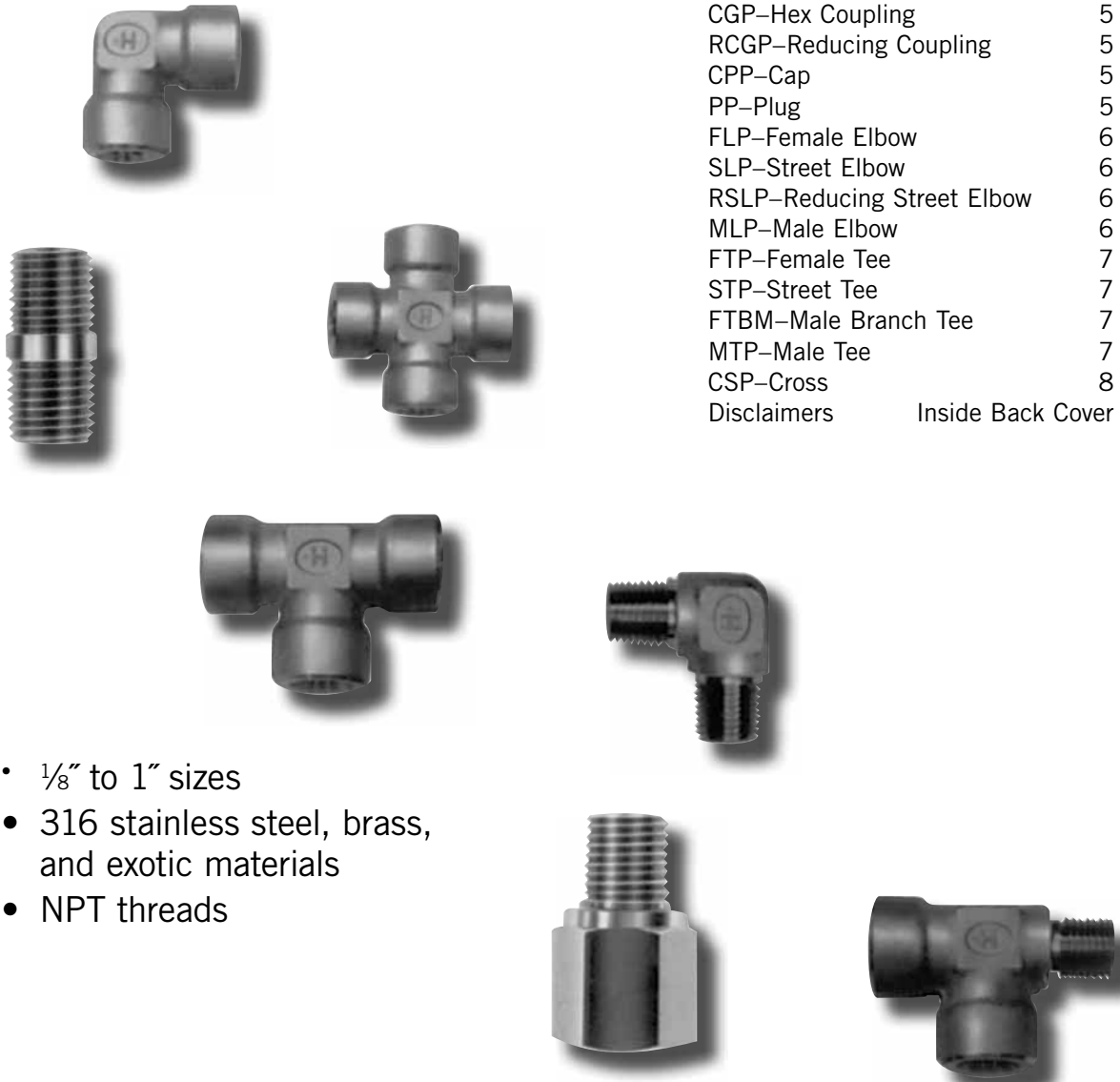
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Precision Pipe Fittings

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- 1/8" to 1" sizes
- 316 stainless steel, brass, and exotic materials
- NPT threads

precision pipe fittings

For Your Safety

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. When selecting products, the total system design must be considered to ensure safe, trouble-free performance. Material compatibility, product ratings and application details should be considered in the selection. Improper selection or use of products described herein can cause personal injury or property damage.

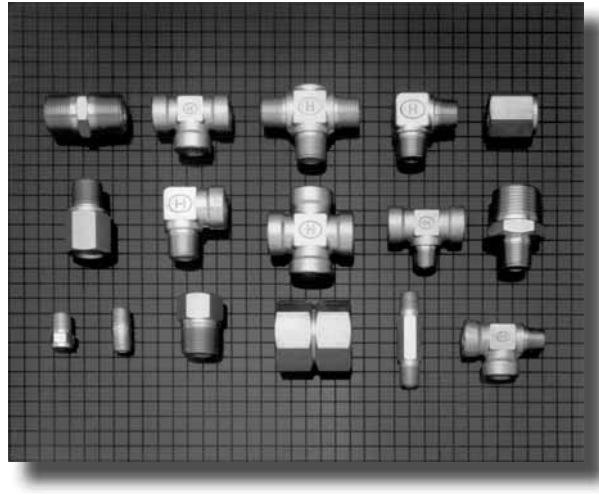
Contact your authorized HOKE® sales and service representative for information about additional sizes and special alloys.

SAFETY WARNING:

HOKE® products are designed for installation only by professional suitably qualified licensed system installers experienced in the applications and environments for which the products are intended. These products are intended for integration into a system. Where these products are to be used with flammable or hazardous media, precautions must be taken by the system designer and installer to ensure the safety of persons and property. Flammable or hazardous media pose risks associated with fire or explosion, as well as burning, poisoning or other injury or death to persons and/or destruction of property. The system designer and installer must provide for the capture and control of such substances from any vents in the product(s). The system installer must not permit any leakage or uncontrolled escape of hazardous or flammable substances. The system operator must be trained to follow appropriate precautions and must inspect and maintain the system and its components including the product(s) and at regular intervals in accordance with timescales recommended by the supplier to prevent unacceptable wear or failure. We recommend that the regulators will be serviced every 5 Years after first installation.

HOKE® Precision Instrument Pipe Fittings

HOKE® Precision Instrument Pipe Fittings are manufactured with high quality NPT tapered threads in a wide variety of configurations to provide broad application capabilities.



precision pipe fittings

Threads

Threads utilized on HOKE® Precision Instrument Pipe fittings are National Pipe Taper (NPT) which exceed the requirements of ANSI B1.20.1.

Pressure Ratings

Pressure ratings for temperatures up to 100° F are identified for each individual pipe fitting in the dimensional data charts.

Temperature*

Temperatures noted below apply to basic fitting capabilities. In all cases consideration must also be given to the type of thread sealant used. For example, PTFE tape has a maximum temperature rating of 450° F.

- 316 stainless steel: -325° F to +1200° F
(-198° C to +648° C)
- Brass: -325° F to +400° F
(-198° C to +204° C)

Materials

HOKE® Precision Pipe Fittings are available as standard in Brass and 316 Stainless Steel. HOKE® pipe fittings can also be supplied in other materials including, MONEL®, HASTELLOY® C, Inconel and Titanium and in special shapes. Specifications for standard materials are:

| | |
|-------------------------------|------------|
| 316 Stainless Steel Forgings | ASTM A-182 |
| 316 Stainless Steel Bar Stock | ASTM A-479 |
| Brass Forgings, Alloy 377 | QQ-B-626 |
| Brass Bar Stock, Alloy 353 | ASTM B-453 |
| Brass Bar Stock, Alloy 360 | QQ-B-626 |

Heat Traceability

HOKE®'s 316 Stainless Steel Precision Instrument Pipe Fittings are heat code traceable. To obtain certified material test reports (CMTR'S) for these components, place separate orders for such items and specify "CMTR'S required".

** Prolonged exposure to temperature over 800° F is not recommended.*

Precision Instrument Pipe Fittings

HOKE® Pipe Fitting Part Numbering

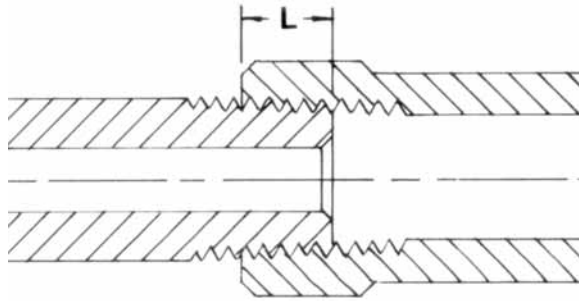
The part numbering system for HOKE® Precision Instrument Pipe Fittings is completely descriptive and easily understood.

Example:

| PIPE SIZE IN SIXTEENTHS OF AN INCH | PIPE FITTING TYPE | PIPE SIZE (IF DIFFERENT) IN SIXTEENTHS OF AN INCH | MATERIAL BRASS – BR 316 SS – 316 EXAMPLE: 4RAP2316 |
|------------------------------------|-------------------|---|---|
| 4 | RAP | 2 | 316 |
| ¼ NPT | Reducing Adapter | ¼ NPT | 316 Stainless Steel |

Assembly Instructions

To ensure a leak-tight seal, the use of a pipe thread sealant is recommended. One commonly utilized technique is PTFE Tape. The chart below provides information regarding the recommended tape width and the approximate number of threads which should be wrapped

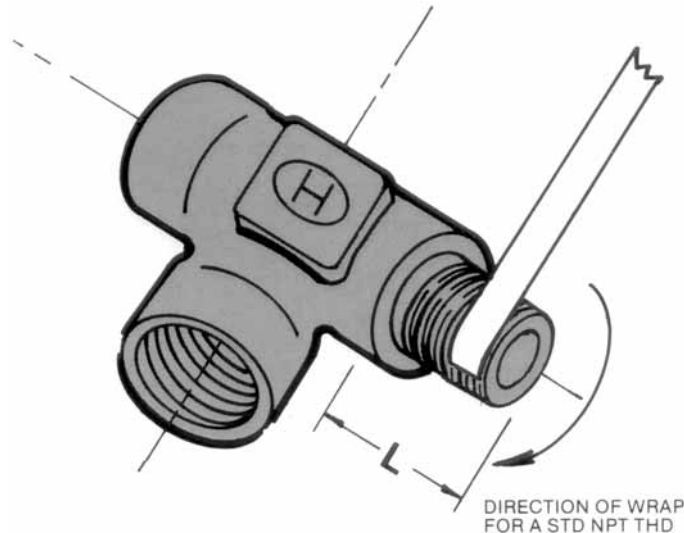


| NOMINAL PIPE SIZE | RECOMMENDED TAPE WIDTH | EFFECTIVE THREAD LENGTH (EXTERNAL) L* | APPROX. # OF THREADS |
|-------------------|------------------------|---------------------------------------|----------------------|
| ⅛ | ⅛–¼ | ¼ | 7 |
| ¼ | ¼ | ⅜ | 7½ |
| ⅜ | ¼ | ⅜ | 7½ |
| ½ | ¼–½ | ½ | 7½ |
| ¾ | ¼–½ | ⅞ | 7½ |
| 1 | ¼–½ | 1⅛ | 8 |

* ISA Handbook of Control Valves. Note: Dimensions are in inches. The Pipe Thread Sealants may have lower temperature capabilities than the basic fitting.

Example: For a ¼ NPT, "L" = ⅜"

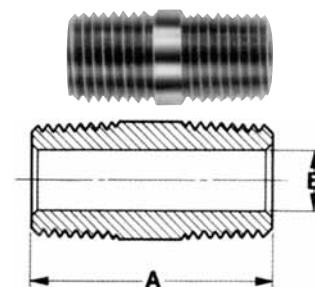
Approximate number of threads which should be wrapped = 7½



Precision Instrument Pipe Fittings

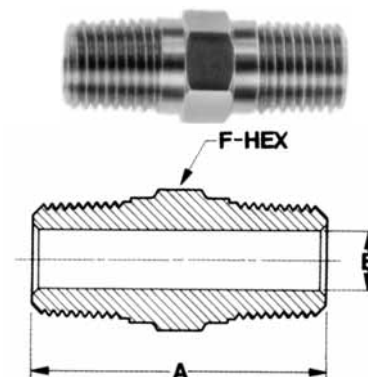
CNP Close Nipple (male NPT both ends)

| ORDER BY PART NUMBER | PIPE SIZE | | DIMENSIONS | | WORKING PRESSURE (PSIG) | |
|----------------------|-----------|------|------------------|-------|-------------------------|--|
| | MALE | A | E (MIN. OPENING) | BRASS | 316SS | |
| 4CNP - [] | ¼ | 1.13 | .28 | 6600 | 8600 | |
| 6CNP - [] | ⅜ | 1.13 | .37 | 6100 | 8000 | |
| 8CNP - [] | ½ | 1.50 | .42 | 7100 | 9300 | |
| 12CNP - [] | ¾ | 1.50 | .62 | 5500 | 7300 | |



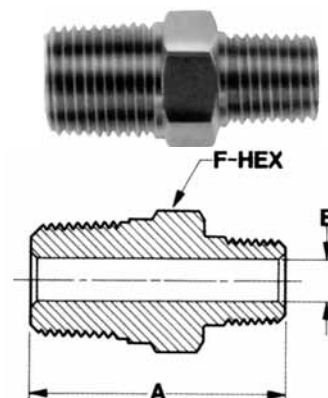
NP Hex Nipple (male NPT both ends)

| ORDER BY PART NUMBER | PIPE SIZE | | DIMENSIONS | | | WORKING PRESSURE (PSIG) | |
|----------------------|-----------|------|------------|-------|--------|-------------------------|--|
| | MALE | A | E MIN | F HEX | BRASS | 316SS | |
| 1NP - [] | ⅛ | 1.20 | .09 | ⅜ | 10,900 | 14,200 | |
| 2NP - [] | ¼ | 1.20 | .18 | ⅞ | 7900 | 10,300 | |
| 4NP - [] | ½ | 1.58 | .28 | ⅞ | 6600 | 8600 | |
| 6NP - [] | ¾ | 1.61 | .37 | 1½ | 6100 | 8000 | |
| 8NP - [] | 1 | 1.98 | .46 | ⅞ | 6100 | 7900 | |
| 12NP - [] | 1½ | 2.01 | .62 | 1½ | 5500 | 7300 | |
| 16NP - [] | 2 | 2.28 | .87 | 1¾ | 4200 | 5500 | |



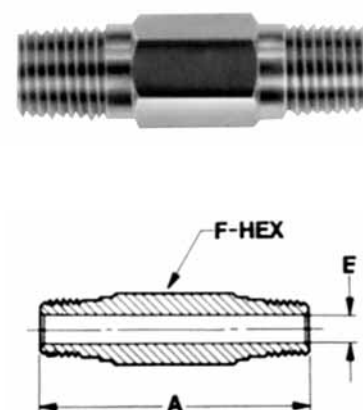
RNP Hex Reducing Nipple (male NPT to reduced male NPT)

| ORDER BY PART NUMBER | PIPE SIZE | | DIMENSIONS | | | WORKING PRESSURE (PSIG) | |
|----------------------|-----------|--------------|------------|-------|-------|-------------------------|--------|
| | MALE | REDUCED MALE | A | E MIN | F HEX | BRASS | 316SS |
| 2RNP1 - [] | ¼ | ⅛ | 1.11 | .09 | ⅜ | 10,900 | 14,200 |
| 4RNP2 - [] | ½ | ¼ | 1.32 | .18 | ⅞ | 7900 | 10,300 |
| 6RNP4 - [] | ¾ | ¼ | 1.50 | .28 | 1½ | 6600 | 8600 |
| 8RNP4 - [] | 1 | ¼ | 1.69 | .28 | ⅞ | 6600 | 8600 |
| 8RNP6 - [] | 1 | ⅜ | 1.69 | .37 | ⅞ | 6100 | 8000 |
| 12RNP6 - [] | 1½ | ⅜ | 1.72 | .37 | 1½ | 6100 | 8000 |
| 12RNP8 - [] | 1½ | ½ | 1.90 | .43 | 1½ | 6800 | 8900 |
| 16RNP8 - [] | 2 | ½ | 2.17 | .43 | 1¾ | 6800 | 8900 |
| 16RNP12 - [] | 2 | ¾ | 2.27 | .62 | 1¾ | 5500 | 7300 |

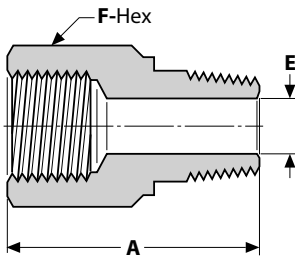
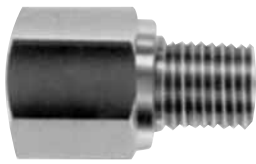


LNP Hex Long Nipple (male NPT both ends)

| ORDER BY PART NUMBER | PIPE SIZE | | DIMENSIONS | | | WORKING PRESSURE (PSIG) | |
|----------------------|-----------|-----|------------|-------|-------|-------------------------|--|
| | MALE | A | E MIN | F HEX | BRASS | 316SS | |
| 2LNP - []/200 | ⅛ | 2.0 | .18 | ⅜ | 7900 | 10,300 | |
| 2LNP - []/250 | ⅛ | 2.5 | .18 | ⅜ | 7900 | 10,300 | |
| 4LNP - []/200 | ¼ | 2.0 | .28 | ⅞ | 6600 | 8600 | |
| 4LNP - []/250 | ¼ | 2.5 | .28 | ⅞ | 6600 | 8600 | |
| 4LNP - []/300 | ¼ | 3.0 | .28 | ⅞ | 6600 | 8600 | |
| 4LNP - []/400 | ¼ | 4.0 | .28 | ⅞ | 6600 | 8600 | |
| 6LNP - []/200 | ⅜ | 2.0 | .37 | 1½ | 6100 | 8000 | |
| 6LNP - []/250 | ⅜ | 2.5 | .37 | 1½ | 6100 | 8000 | |
| 6LNP - []/400 | ⅜ | 4.0 | .37 | 1½ | 6100 | 8000 | |
| 8LNP - []/300 | ½ | 3.0 | .46 | ⅞ | 6000 | 7900 | |
| 12LNP - []/300 | ¾ | 3.0 | .62 | 1½ | 5500 | 7300 | |
| 16LNP - []/300 | 1 | 3.0 | .87 | 1¾ | 4200 | 5500 | |
| 16LNP - []/400 | 1 | 4.0 | .87 | 1¾ | 4200 | 5500 | |

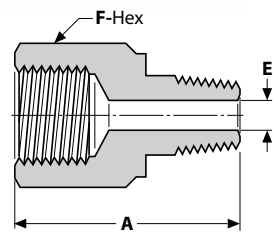


Precision Instrument Pipe Fittings



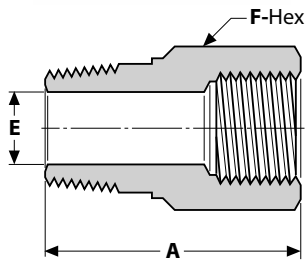
AP Adapter (female NPT same size male NPT)

| ORDER BY PART NUMBER | PIPE SIZE | | DIMENSIONS | | | WORKING PRESSURE (PSIG) | |
|----------------------|-----------|--|------------|-------|--------|-------------------------|-------|
| | MALE | | A | E MIN | F HEX | BRASS | 316SS |
| 2AP - [] | 1/8 | | 1.00 | .18 | 7/16 | 5100 | 6700 |
| 4AP - [] | 1/4 | | 1.37 | .28 | 3/4 | 5300 | 6900 |
| 6AP - [] | 3/8 | | 1.56 | .37 | 7/8 | 4200 | 5500 |
| 8AP - [] | 1/2 | | 1.90 | .46 | 1 1/16 | 3900 | 5100 |
| 12AP - [] | 3/4 | | 1.96 | .65 | 1 1/4 | 3000 | 3900 |



RAP Reducing Adapter (female NPT to reduced male NPT)

| ORDER BY PART NUMBER | PIPE SIZE | | DIMENSIONS | | | WORKING PRESSURE (PSIG) | |
|----------------------|-----------|------|------------|-------|--------|-------------------------|-------|
| | FEMALE | MALE | A | E MIN | F HEX | BRASS | 316SS |
| 4RAP2 - [] | 1/4 | 1/8 | 1.25 | .18 | 3/4 | 5300 | 6900 |
| 6RAP2 - [] | 3/8 | 1/8 | 1.31 | .18 | 7/8 | 4200 | 5500 |
| 6RAP4 - [] | 3/8 | 1/4 | 1.50 | .28 | 7/8 | 4200 | 5500 |
| 8RAP4 - [] | 1/2 | 1/4 | 1.75 | .28 | 1 1/16 | 3900 | 5100 |
| 8RAP6 - [] | 1/2 | 3/8 | 1.75 | .37 | 1 1/16 | 3900 | 5100 |
| 12RAP4 - [] | 3/4 | 1/4 | 1.83 | .28 | 1 1/4 | 3000 | 3900 |
| 12RAP6 - [] | 3/4 | 3/8 | 1.83 | .37 | 1 1/4 | 3000 | 3900 |
| 12RAP8 - [] | 3/4 | 1/2 | 2.00 | .46 | 1 1/4 | 3000 | 3900 |
| 16RAP8 - [] | 1 | 1/2 | 2.37 | .46 | 1 5/8 | 3400 | 4500 |
| 16RAP12 - [] | 1 | 3/4 | 2.37 | .62 | 1 5/8 | 3400 | 4500 |



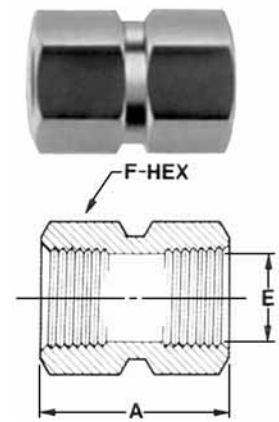
RBP Reducing Bushing (male NPT to reduced female NPT)

| ORDER BY PART NUMBER | PIPE SIZE | | DIMENSIONS | | | WORKING PRESSURE (PSIG) | |
|----------------------|-----------|--------|------------|-------|--------|-------------------------|--------|
| | MALE | FEMALE | A | E MIN | F HEX | BRASS | 316SS |
| 2RBP1 - [] | 1/8 | 1/16 | 1.00 | .24 | 7/16 | 5500 | 7200 |
| 4RBP2 - [] | 1/4 | 1/8 | 1.00 | .33 | 9/16 | 4900 | 6400 |
| 6RBP2 - [] | 3/8 | 1/8 | 1.12 | .33 | 3/4 | 7600 | 9900 |
| 6RBP4 - [] | 3/8 | 1/4 | 1.12 | .43 | 3/4 | 4700 | 6100 |
| 8RBP4 - [] | 1/2 | 1/4 | 1.16 | .43 | 7/8 | 6900 | 9100 |
| 8RBP6 - [] | 1/2 | 3/8 | 1.16 | .56 | 7/8 | 3900 | 5200 |
| 12RBP4 - [] | 3/4 | 1/4 | 1.22 | .43 | 1 1/16 | 8700 | 11,400 |
| 12RBP6 - [] | 3/4 | 3/8 | 1.56 | .56 | 1 1/16 | 6400 | 8400 |
| 12RBP8 - [] | 3/4 | 1/2 | 1.56 | .69 | 1 1/16 | 3900 | 5100 |
| 16RBP8 - [] | 1 | 1/2 | 1.56 | .69 | 1 3/8 | 6900 | 9000 |
| 16RBP12 - [] | 1 | 3/4 | 1.75 | .90 | 1 3/8 | 3900 | 5100 |

Precision Instrument Pipe Fittings

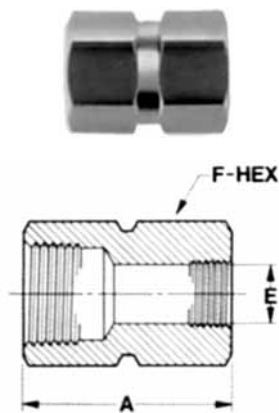
CGP Hex Coupling (female NPT both ends)

| ORDER BY PART NUMBER | PIPE SIZE | | DIMENSIONS | | | WORKING PRESSURE (PSIG) | |
|----------------------|-----------|--|------------|-------|--------|-------------------------|-------|
| | FEMALE | | A | E MIN | F HEX | BRASS | 316SS |
| 2CGP - [] | 1/8 | | .81 | .33 | 9/16 | 5100 | 6700 |
| 4CGP - [] | 1/4 | | 1.13 | .43 | 3/4 | 5300 | 6900 |
| 6CGP - [] | 3/8 | | 1.25 | .56 | 7/8 | 4200 | 5500 |
| 8CGP - [] | 1/2 | | 1.50 | .69 | 1 1/16 | 3900 | 5100 |
| 12CGP - [] | 3/4 | | 1.63 | .90 | 1 1/4 | 3000 | 3900 |
| 16CGP - [] | 1 | | 2.00 | 1.13 | 1 5/8 | 3400 | 4500 |



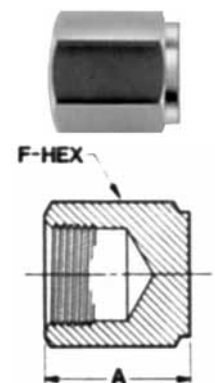
RCGP Reducing Coupling (female NPT to reduced female NPT)

| ORDER BY PART NUMBER | PIPE SIZE | | DIMENSIONS | | | WORKING PRESSURE (PSIG) | |
|----------------------|-----------|--------|------------|-------|--------|-------------------------|-------|
| | FEMALE | FEMALE | A | E MIN | F HEX | BRASS | 316SS |
| 4RCGP2 - [] | 1/4 | 1/8 | 1.13 | .33 | 3/4 | 5300 | 6900 |
| 6RCGP4 - [] | 3/8 | 1/4 | 1.37 | .43 | 7/8 | 4200 | 5500 |
| 8RCGP4 - [] | 1/2 | 1/4 | 1.50 | .43 | 1 1/16 | 3900 | 5100 |
| 8RCGP6 - [] | 1/2 | 3/8 | 1.50 | .56 | 1 1/16 | 3900 | 5100 |
| 12RCGP4 - [] | 3/4 | 1/4 | 1.72 | .43 | 1 1/4 | 3000 | 3900 |
| 12RCGP6 - [] | 3/4 | 3/8 | 1.72 | .56 | 1 1/4 | 3000 | 3900 |
| 12RCGP8 - [] | 3/4 | 1/2 | 1.72 | .69 | 1 1/4 | 3000 | 3900 |
| 16RCGP8 - [] | 1 | 1/2 | 2.31 | .69 | 1 5/8 | 3400 | 4500 |
| 16RCGP12 - [] | 1 | 3/4 | 2.37 | .90 | 1 5/8 | 3400 | 4500 |



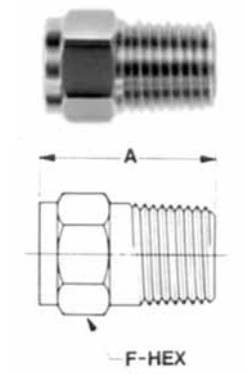
CPP Cap (female NPT)

| ORDER BY PART NUMBER | PIPE SIZE | | DIMENSIONS | | WORKING PRESSURE (PSIG) | |
|----------------------|-----------|--|------------|--------|-------------------------|-------|
| | FEMALE | | A | F HEX | BRASS | 316SS |
| 2CPP - [] | 1/8 | | .69 | 9/16 | 5100 | 6700 |
| 4CPP - [] | 1/4 | | .88 | 3/4 | 5300 | 6900 |
| 6CPP - [] | 3/8 | | 1.03 | 7/8 | 4200 | 5500 |
| 8CPP - [] | 1/2 | | 1.25 | 1 1/16 | 3900 | 5100 |
| 12CPP - [] | 3/4 | | 1.43 | 1 1/4 | 3000 | 3900 |
| 16CPP - [] | 1 | | 1.62 | 1 5/8 | 3400 | 4500 |

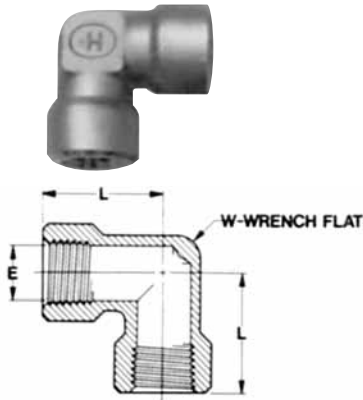


PP Plug (male NPT)

| ORDER BY PART NUMBER | PIPE SIZE | | DIMENSIONS | |
|----------------------|-----------|--|------------|--------|
| | MALE | | A | F HEX |
| 1PP - [] | 1/16 | | .73 | 5/16 |
| 2PP - [] | 1/8 | | .75 | 7/16 |
| 4PP - [] | 1/4 | | .94 | 9/16 |
| 6PP - [] | 3/8 | | 1.00 | 1 1/16 |
| 8PP - [] | 1/2 | | 1.25 | 7/8 |
| 12PP - [] | 3/4 | | 1.31 | 1 1/16 |
| 16PP - [] | 1 | | 1.72 | 1 3/8 |

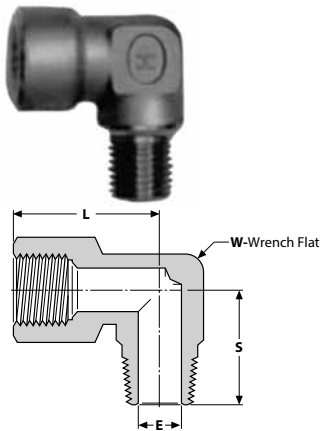


Precision Instrument Pipe Fittings



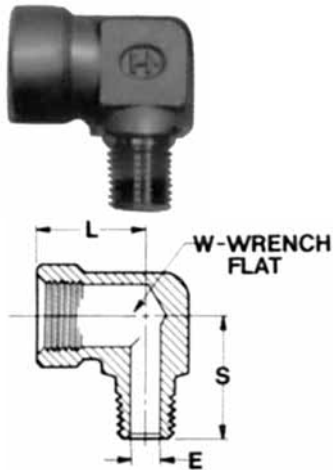
FLP Female Elbow (female NPT both ends)

| ORDER BY PART NUMBER | PIPE SIZE | | DIMENSIONS | | | WORKING PRESSURE (PSIG) | |
|----------------------|-----------|--|------------|-------|------|-------------------------|-------|
| | FEMALE | | L | E MIN | W | BRASS | 316SS |
| 2FLP - [] | 1/8 | | .75 | .33 | .50 | 3200 | 4200 |
| 4FLP - [] | 1/4 | | .84 | .43 | .68 | 4000 | 5300 |
| 6FLP - [] | 3/8 | | 1.00 | .56 | .81 | 3200 | 4200 |
| 8FLP - [] | 1/2 | | 1.13 | .69 | 1.00 | 3100 | 4100 |
| 12FLP - [] | 3/4 | | 1.25 | .90 | 1.26 | 3000 | 3900 |



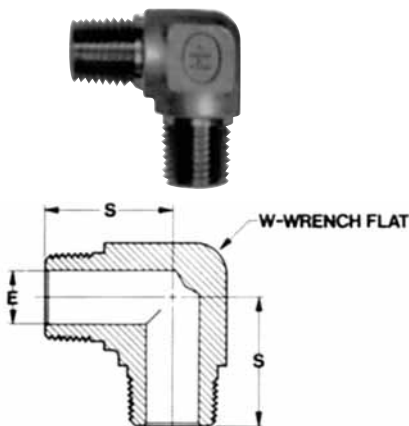
SLP Street Elbow (female to male NPT)

| ORDER BY PART NUMBER | PIPE SIZE | | DIMENSIONS | | | WORKING PRESSURE (PSIG) | | |
|----------------------|-----------|--|------------|------|-------|-------------------------|-------|-------|
| | FEMALE | | L | S | E MIN | W | BRASS | 316SS |
| 1SLP - [] | 1/16 | | .75 | .71 | .12 | .43 | 5500 | 7200 |
| 2SLP - [] | 1/8 | | .75 | .87 | .18 | .50 | 3200 | 4200 |
| 4SLP - [] | 1/4 | | .84 | 1.13 | .28 | .68 | 4000 | 5300 |
| 6SLP - [] | 3/8 | | .84 | 1.25 | .37 | .81 | 3200 | 4200 |
| 8SLP - [] | 1/2 | | 1.13 | 1.50 | .50 | 1.00 | 3100 | 4100 |
| 12SLP - [] | 3/4 | | 1.25 | 1.56 | .62 | 1.25 | 3000 | 3900 |



RSLP Reducing Street Elbow (female NPT reduced male NPT)

| ORDER BY PART NUMBER | PIPE SIZE | | DIMENSIONS | | | | WORKING PRESSURE (PSIG) | |
|----------------------|-----------|--------------|------------|------|-------|------|-------------------------|-------|
| | FEMALE | REDUCED MALE | L | S | E MIN | W | BRASS | 316SS |
| 6RSLP4 - [] | 3/8 | 1/4 | .91 | 1.13 | .28 | .81 | 3200 | 4200 |
| 8RSLP4 - [] | 1/2 | 1/4 | 1.13 | 1.40 | .28 | 1.00 | 3100 | 4100 |
| 8RSLP6 - [] | 1/2 | 3/8 | 1.13 | 1.25 | .37 | 1.00 | 3100 | 4100 |



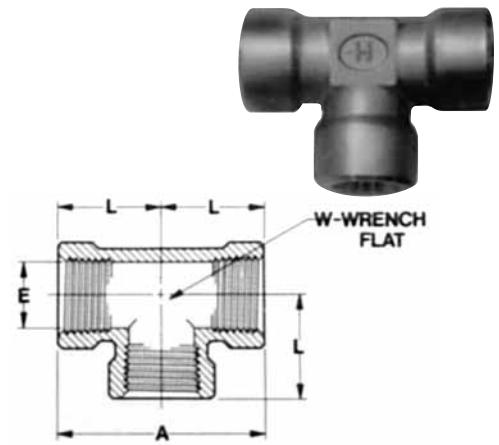
MLP Male Elbow (male NPT both ends)

| ORDER BY PART NUMBER | PIPE SIZE | | DIMENSIONS | | | WORKING PRESSURE (PSIG) | |
|----------------------|-----------|--|------------|-------|------|-------------------------|--------|
| | MALE | | S | E MIN | W | BRASS | 316SS |
| 2MLP - [] | 1/8 | | .72 | .18 | .43 | 7900 | 10,300 |
| 4MLP - [] | 1/4 | | 1.00 | .28 | .68 | 6600 | 8600 |
| 6MLP - [] | 3/8 | | 1.00 | .37 | .68 | 6100 | 8000 |
| 8MLP - [] | 1/2 | | 1.18 | .50 | 1.00 | 5300 | 7000 |
| 12MLP - [] | 3/4 | | 1.50 | .62 | 1.25 | 5500 | 7300 |

Precision Instrument Pipe Fittings

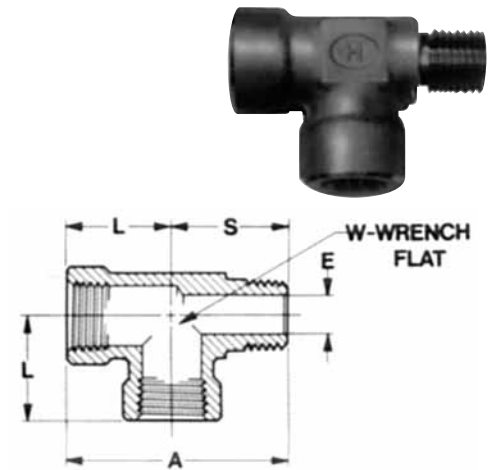
FTP Female Tee (female NPT all ports)

| ORDER BY PART NUMBER | PIPE SIZE | DIMENSIONS | | | | WORKING PRESSURE (PSIG) | |
|----------------------|-----------|------------|------|-------|------|-------------------------|-------|
| | FEMALE | A | L | E MIN | W | BRASS | 316SS |
| 2FTP - [] | 1/8 | 1.50 | .75 | .33 | .50 | 3500 | 4600 |
| 4FTP - [] | 1/4 | 1.68 | .84 | .43 | .68 | 4000 | 5300 |
| 6FTP - [] | 3/8 | 2.00 | 1.00 | .56 | .81 | 3200 | 4200 |
| 8FTP - [] | 1/2 | 2.25 | 1.13 | .70 | 1.00 | 3100 | 4100 |
| 12FTP - [] | 3/4 | 2.76 | 1.38 | .90 | 1.36 | 4000 | 5200 |



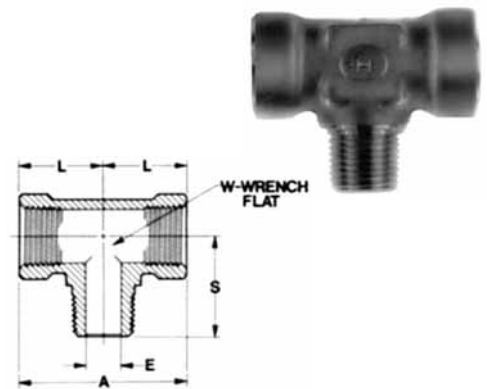
STP Street Tee (female by male run/female branch)

| ORDER BY PART NUMBER | PIPE SIZE | DIMENSIONS | | | | | WORKING PRESSURE (PSIG) | |
|----------------------|-----------|------------|------|------|-------|------|-------------------------|-------|
| | | A | L | S | E MIN | W | BRASS | 316SS |
| 2STP - [] | 1/8 | 1.53 | .75 | .78 | .18 | .50 | 3500 | 4600 |
| 4STP - [] | 1/4 | 1.86 | .84 | 1.02 | .28 | .68 | 4000 | 5300 |
| 6STP - [] | 3/8 | 2.13 | 1.00 | 1.13 | .37 | .81 | 3200 | 4200 |
| 8STP - [] | 1/2 | 2.47 | 1.13 | 1.34 | .50 | 1.00 | 3100 | 4100 |
| 12STP - [] | 3/4 | 3.16 | 1.44 | 1.72 | .62 | 1.69 | 6500 | 8500 |



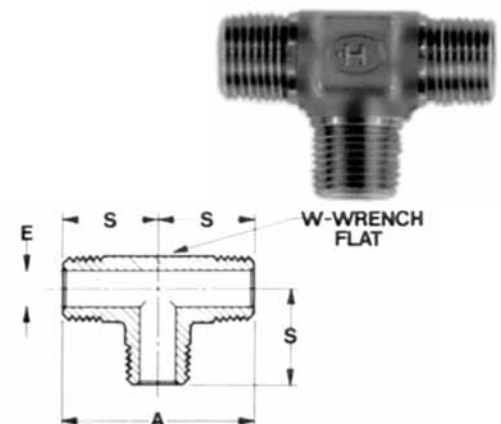
FTBM Male Branch Tee (female run/male branch)

| ORDER BY PART NUMBER | PIPE SIZE | DIMENSIONS | | | | | WORKING PRESSURE (PSIG) | |
|----------------------|-----------|------------|------|------|-------|------|-------------------------|-------|
| | | A | L | S | E MIN | W | BRASS | 316SS |
| 2FT/BM2 - [] | 1/8 | 1.68 | .84 | .82 | .18 | .69 | 7100 | 9300 |
| 4FT/BM4 - [] | 1/4 | 1.68 | .84 | 1.00 | .28 | .69 | 4000 | 5300 |
| 6FT/BM6 - [] | 3/8 | 2.00 | 1.00 | 1.13 | .37 | .81 | 3200 | 4200 |
| 8FT/BM8 - [] | 1/2 | 2.25 | 1.13 | 1.39 | .50 | 1.00 | 3100 | 4100 |

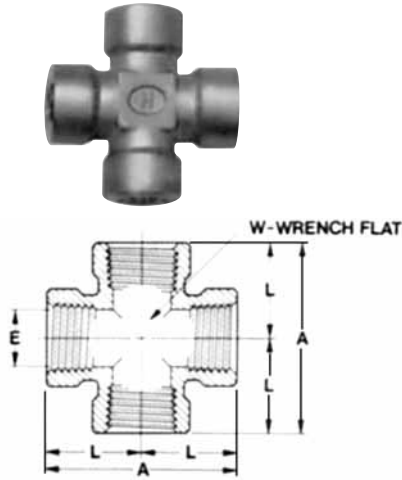


MTP Male Tee (male NPT all ports)

| ORDER BY PART NUMBER | PIPE SIZE | DIMENSIONS | | | | WORKING PRESSURE (PSIG) | |
|----------------------|-----------|------------|------|-------|------|-------------------------|--------|
| | MALE | A | S | E MIN | W | BRASS | 316SS |
| 2MTP - [] | 1/8 | 1.50 | .75 | .18 | .43 | 7900 | 10,300 |
| 4MTP - [] | 1/4 | 2.00 | 1.00 | .28 | .68 | 6600 | 8600 |
| 6MTP - [] | 3/8 | 2.00 | 1.00 | .37 | .68 | 6100 | 8000 |
| 8MTP - [] | 1/2 | 2.44 | 1.22 | .50 | 1.00 | 5300 | 7000 |
| 12MTP - [] | 3/4 | 3.00 | 1.50 | .62 | 1.25 | 5500 | 7300 |



Precision Instrument Pipe Fittings



CSP Cross

| ORDER BY PART NUMBER | PIPE SIZE | DIMENSIONS | | | | WORKING PRESSURE (PSIG) | |
|----------------------|-----------|------------|------|-------|------|-------------------------|-------|
| | FEMALE | A | L | E MIN | W | BRASS | 316SS |
| 2CSP - [] | 1/8 | 1.50 | .75 | .34 | .62 | 6200 | 8100 |
| 4CSP - [] | 1/4 | 1.68 | .84 | .44 | .68 | 6100 | 8000 |
| 6CSP - [] | 3/8 | 2.00 | 1.00 | .58 | 1.06 | 6400 | 8400 |
| 8CSP - [] | 1/2 | 2.25 | 1.13 | .72 | 1.06 | 3800 | 5000 |

Safety Instructions

1. Do not tighten or loosen any part of a fitting or valve when the system is pressurized. Make sure the system is not pressurized when tightening or loosening a fitting or valve connection.
2. Do not loosen GYROLOK® nut or any product component in order to relieve or bleed down system pressure.
3. Do not exceed pressure-temperature specifications stated in the appropriate catalog.
4. When the application involves use of a toxic or hazardous fluid, exercise extra caution during operation and maintenance.
5. Before assembling new, unused GYROLOK® tube fitting ends, loosen the GYROLOK® nut before inserting the tube to allow full insertion of the tube to the base of the body bore.
6. Always use tubing that is compatible with the fitting or valve material. Tubing appropriate for use with HOKE® products is described in HOKE®'s Tubing Data Charts. For example, use 316 Stainless Steel fittings with 316 Stainless Steel tubing.
7. Always leave a length of straight tube between the tube bend and the fitting. A tube bent too close to the fitting connection may be a source of leakage.
8. During assembly of the GYROLOK® tube end, always hold the fitting or valve body with one wrench while separately wrench tightening the GYROLOK® nut. Follow the same precaution when disassembling.
9. Always use a HOKE® tube insert (basic part number "T1") when assembling a GYROLOK® fitting to soft, pliable plastic tubing.
10. Always use proper thread lubricants or sealants on tapered pipe threads. Note that thread sealants may have lower temperature ratings than the basic fitting.
11. When installing an NPT ended valve, hold the valve body near the connection with one wrench, while separately wrench tightening the mating pipe. Turn the pipe, not the valve. Follow the same precaution when disconnecting.
12. Do not hold the valve handle when tightening an end connection.
13. Do not use excessive force to open or close a Ball Valve, e.g., Do not use a handle extension.
14. On initial installation, valves may require an adjustment of the packing nut due to storage variations, systems parameters, and cold flow properties of TFE.

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Instrumentation Specialists



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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. When selecting products, the total system design must be considered to ensure safe, trouble-free performance. Material compatibility, product ratings and application details should be considered in the selection. Improper selection or use of products described herein can cause personal injury or property damage.

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SAFETY WARNING:

HOKE® products are designed for installation only by professional suitably qualified licensed system installers experienced in the applications and environments for which the products are intended. These products are intended for integration into a system. Where these products are to be used with flammable or hazardous media, precautions must be taken by the system designer and installer to ensure the safety of persons and property. Flammable or hazardous media pose risks associated with fire or explosion, as well as burning, poisoning or other injury or death to persons and/or destruction of property. The system designer and installer must provide for the capture and control of such substances from any vents in the product(s). The system installer must not permit any leakage or uncontrolled escape of hazardous or flammable substances. The system operator must be trained to follow appropriate precautions and must inspect and maintain the system and its components including the product(s) and at regular intervals in accordance with timescales recommended by the supplier to prevent unacceptable wear or failure.



HQC Series

Instrumentation Quick Couplings



Typical Applications

- Laboratories
- University labs
- Gas distribution
- Biopharmaceutical

Technical Data

| | |
|-------------------------------|----------------------|
| CONSTRUCTION | 316 Stainless steel* |
| NOMINAL FLOW SIZES | 1/4", 3/8", 1/2" |
| MAXIMUM OPERATING TEMPERATURE | 3600 psi |
| C _v FACTORS | .31 - 1.86 |

* Other Alloys available - consult factory.

Features & Benefits

- Leak tight sealing is achieved through multiple o-ring seals located in the couplers. Viton® is standard.
- Poppet valves with dependable, integral o-ring seals are standard in coupler and plug in double-end-shutoff applications. In single-end-shutoff applications the poppet valve is installed in the body half.
- Valve guides align valves exactly to the coupler's valve seat preventing chance of leakage when in a disconnected mode.
- Locking mechanisms in bodies provide smooth positive sleeve engagement. A firm grip of the plug portion of the coupling assembly is assured with HOKE's Xylan®-coated stainless locking tabs.
- 316 stainless steel springs
- GYROLOK® nut and ferrule system provides leak-tight end connection.
- Keyed sleeves for all sizes
- HOKE® HQC Series quick couplers are interchangeable with Swagelok® and Parker®.
- Special High Tolerance NPT Thread

quick couplings

HQC Series Instrumentation Quick Couplings

Rated Working Pressure (psi)

| BODY SIZE | STAINLESS STEEL PRODUCTS | | |
|------------------------|--------------------------|------|------|
| | 1/4" | 3/8" | 1/2" |
| CONNECTED POSITION | 3600 | 1500 | 750 |
| DISCONNECTED POSITION | 3600 | 1500 | 750 |
| CONNECT UNDER PRESSURE | 250 | 250 | 250 |

Spillage/Air Inclusion

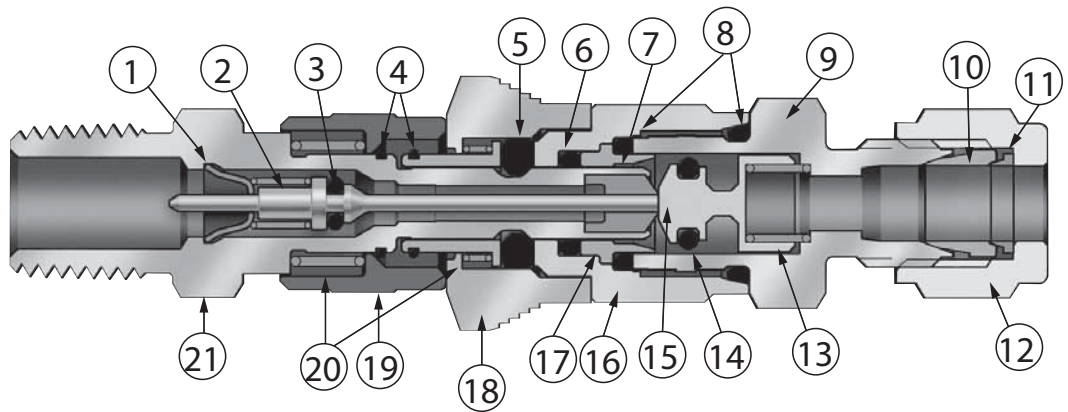
| | AIR INCLUSION | SPILLAGE |
|------|---------------------|---------------------|
| | HQC4 | 0.3 cm ³ |
| HQC6 | 1.0 cm ³ | 1.0 cm ³ |
| HQC8 | 3.0 cm ³ | 3.0 cm ³ |

Materials of Construction

| | STAINLESS STEEL PRODUCTS |
|----------------------------|--|
| MACHINED PARTS | Stainless Steel AISI type 316 |
| SPRING AND RETAINING RINGS | Stainless Steel AISI type 316 |
| SEALS | O-rings: Viton® is standard +20° F to +400° F |

Standard seal lubrication is Krytox®.

- 1 Spider
- 2 Poppet
- 3 O-ring
- 4 Retaining ring
- 5 Locking tabs
- 6 Plug seal
- 7 Poppet guide
- 8 O-rings
- 9 Body
- 10 GYROLOK® front ferrule
- 11 GYROLOK® rear ferrule
- 12 GYROLOK® nut
- 13 Spring
- 14 O-ring
- 15 Poppet
- 16 Body housing
- 17 Body seat
- 18 Body sleeve
- 19 Plug sleeve
- 20 Spring
- 21 Plug

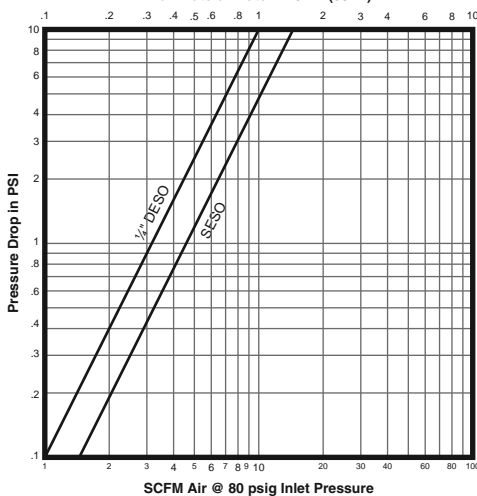


Flow

HQC4 SERIES

Max. Connect/Disconnect: 250 psig

Flow Rate of Water in GPM (68° F)

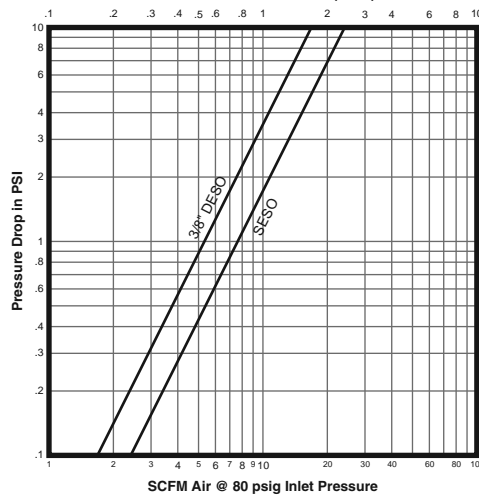


DESO C_v = .31
SESO C_v = .45
MAXIMUM FLOW RATE 4 GPM

HQC6 SERIES

Max. Connect/Disconnect: 250 psig

Flow Rate of Water in GPM (68° F)

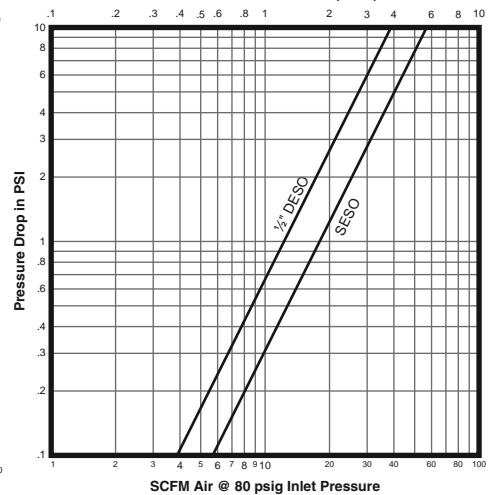


DESO C_v = .53
SESO C_v = .74
MAXIMUM FLOW RATE 6 GPM

HQC8 SERIES

Max. Connect/Disconnect: 250 psig

Flow Rate of Water in GPM (68° F)



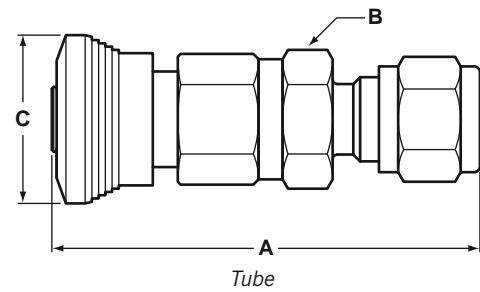
DESO C_v = 1.26
SESO C_v = 1.86
MAXIMUM FLOW RATE 10 GPM

HQC Series Instrumentation Quick Couplings

Dimensions: Body Assemblies with Valves

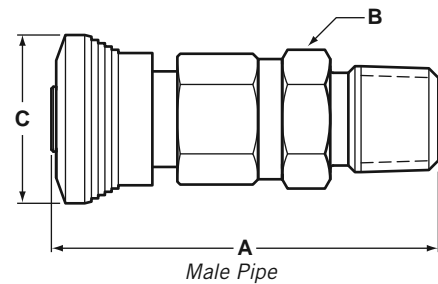
Tube

| SERIES | BODY SIZE | TUBE SIZE | PART NO. | A | B HEX | C |
|--------|-----------|-----------|-----------------|--------|--------|--------|
| HQC4 | ¼ | ⅝ | HQC4-B-2-316 | 2.18 | 0.63 | 0.88 |
| HQC4 | ¼ | ¼ | HQC4-B-4-316 | 2.22 | 0.63 | 0.88 |
| HQC4 | ¼ | 6mm | HQC4-B-6MO-316 | 56.4mm | 16.0mm | 22.4mm |
| HQC6 | ⅜ | ⅜ | HQC6-B-6-316 | 2.70 | 0.75 | 1.00 |
| HQC6 | ⅜ | 10mm | HQC6-B-10MO-316 | 68.6mm | 19.1mm | 25.4mm |
| HQC8 | ½ | ½ | HQC8-B-8-316 | 3.24 | 0.94 | 1.13 |
| HQC8 | ½ | 12mm | HQC8-B-12MO-316 | 82.3mm | 23.9mm | 28.7mm |



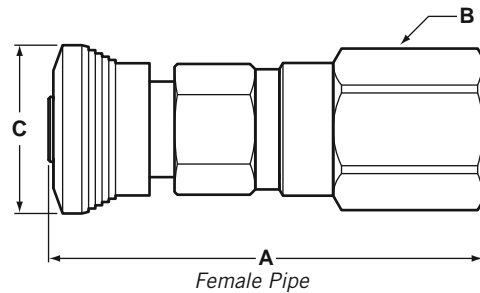
Male Pipe

| SERIES | BODY SIZE | PIPE THREAD | PART NO. | A | B HEX | C |
|--------|-----------|-------------|----------------|------|-------|------|
| HQC4 | ¼ | ⅝ NPT | HQC4-B-2M-316 | 1.83 | 0.63 | 0.88 |
| HQC4 | ¼ | ¼ NPT | HQC4-B-4M-316 | 2.01 | 0.63 | 0.88 |
| HQC4 | ¼ | ¼ BSPT | HQC4-B-4MT-316 | 2.01 | 0.63 | 0.88 |
| HQC6 | ⅜ | ¼ NPT | HQC6-B-4M-316 | 2.43 | 0.75 | 1.00 |
| HQC6 | ⅜ | ⅜ NPT | HQC6-B-6M-316 | 2.43 | 0.75 | 1.00 |
| HQC6 | ⅜ | ⅜ BSPT | HQC6-B-6MT-316 | 2.43 | 0.75 | 1.00 |
| HQC8 | ½ | ½ NPT | HQC8-B-8M-316 | 2.83 | 0.94 | 1.13 |
| HQC8 | ½ | ½ BSPT | HQC8-B-8MT-316 | 2.83 | 0.94 | 1.13 |



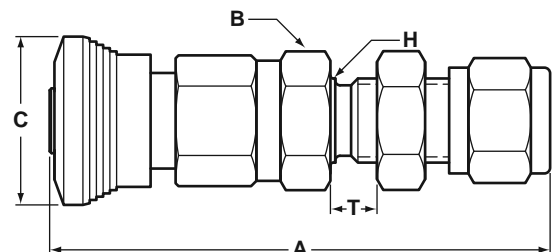
Female Pipe

| SERIES | BODY SIZE | PIPE THREAD | PART NO. | A | B HEX | C |
|--------|-----------|-------------|----------------|------|-------|------|
| HQC4 | ¼ | ⅝ NPT | HQC4-B-2F-316 | 2.10 | 0.63 | 0.88 |
| HQC4 | ¼ | ¼ NPT | HQC4-B-4F-316 | 2.26 | 0.75 | 0.88 |
| HQC4 | ¼ | ¼ BSPT | HQC4-B-4FT-316 | 2.26 | 0.75 | 0.88 |
| HQC6 | ⅜ | ¼ NPT | HQC6-B-4F-316 | 2.60 | 0.75 | 1.00 |
| HQC6 | ⅜ | ⅜ NPT | HQC6-B-6F-316 | 2.63 | 0.88 | 1.00 |
| HQC6 | ⅜ | ⅜ BSPT | HQC6-B-6FT-316 | 2.63 | 0.88 | 1.00 |
| HQC8 | ½ | ½ NPT | HQC8-B-8F-316 | 3.25 | 1.06 | 1.13 |
| HQC8 | ½ | ½ BSPT | HQC8-B-8FT-316 | 3.25 | 1.06 | 1.13 |



Bulkhead Tube

| SERIES | BODY SIZE | TUBE SIZE | PART NO. | A | B HEX | C |
|--------|-----------|-----------|------------------|--------|--------|--------|
| HQC4 | ¼ | ¼ | HQC4-B1-4-316 | 2.59 | 0.63 | 0.88 |
| HQC4 | ¼ | 6mm | HQC4-B1-6MO-316 | 65.8mm | 16.0mm | 22.4mm |
| HQC6 | ⅜ | ⅜ | HQC6-B1-6-316 | 3.02 | 0.75 | 1.00 |
| HQC6 | ⅜ | 10mm | HQC6-B1-10MO-316 | 76.7mm | 19.1mm | 25.4mm |



Note: All dimensions in inches unless specified as 'mm' (millimeters).

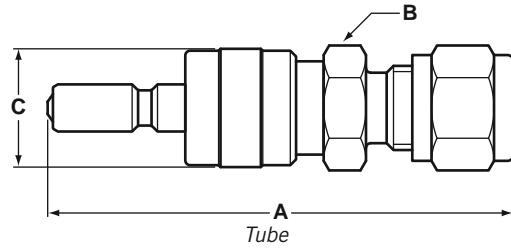
Bulkhead Tube
For 'H' and 'T' dimensions, see page 5

HQC Series Instrumentation Quick Couplings

Dimensions: Plugs, Non-valved, Single End Shutoff (SES0)

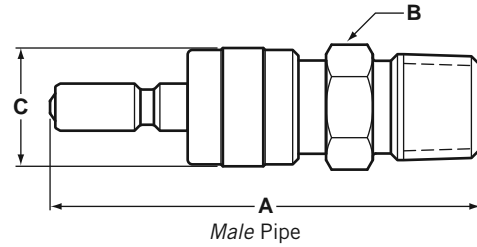
Tube

| SERIES | BODY SIZE | TUBE SIZE | PART NO. | A | B HEX | C |
|--------|-----------|-----------|-----------------|---------|--------|--------|
| HQC4 | ¼ | ¼ | HQC4-S-2-316 | 2.95 | 0.56 | 0.62 |
| HQC4 | ¼ | ¼ | HQC4-S-4-316 | 2.42 | 0.56 | 0.62 |
| HQC4 | ¼ | 6mm | HQC4-S-6MO-316 | 79.2mm | 14.2mm | 15.7mm |
| HQC6 | ¾ | ¾ | HQC6-S-6-316 | 2.60 | 0.69 | 0.74 |
| HQC6 | ¾ | 10mm | HQC6-S-10MO-316 | 67.1mm | 19.1mm | 18.8mm |
| HQC8 | ½ | ½ | HQC8-S-8-316 | 3.15 | 0.88 | 0.88 |
| HQC8 | ½ | 12mm | HQC8-S-12MO-316 | 100.1mm | 22.4mm | 22.4mm |



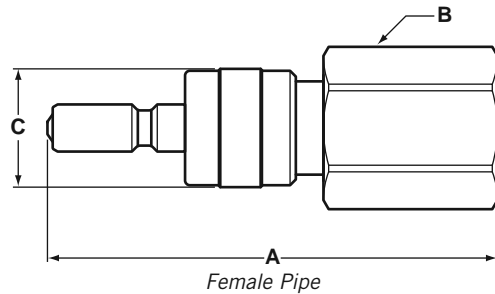
Male Pipe

| SERIES | BODY SIZE | PIPE THREAD | PART NO. | A | B HEX | C |
|--------|-----------|-------------|----------------|------|-------|------|
| HQC4 | ¼ | ¼ NPT | HQC4-S-2M-316 | 2.06 | 0.56 | 0.62 |
| HQC4 | ¼ | ¼ NPT | HQC4-S-4M-316 | 2.24 | 0.56 | 0.62 |
| HQC4 | ¼ | ¼ BSPT | HQC4-S-4MT-316 | 2.24 | 0.56 | 0.62 |
| HQC6 | ¾ | ¼ NPT | HQC6-S-4M-316 | 2.33 | 0.75 | 0.74 |
| HQC6 | ¾ | ¾ NPT | HQC6-S-6M-316 | 2.33 | 0.75 | 0.74 |
| HQC6 | ¾ | ¾ BSPT | HQC6-S-6MT-316 | 2.33 | 0.75 | 0.74 |
| HQC8 | ½ | ½ NPT | HQC8-S-8M-316 | 2.87 | 0.88 | 0.88 |
| HQC8 | ½ | ½ BSPT | HQC8-S-8MT-316 | 2.87 | 0.88 | 0.88 |



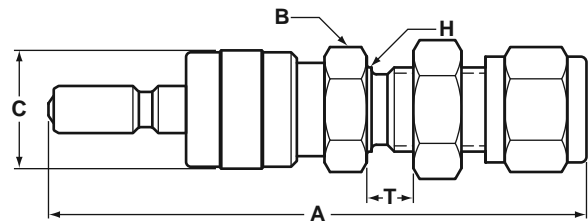
Female Pipe

| SERIES | BODY SIZE | PIPE THREAD | PART NO. | A | B HEX | C |
|--------|-----------|-------------|----------------|------|-------|------|
| HQC4 | ¼ | ¼ NPT | HQC4-S-2F-316 | 2.21 | 0.56 | 0.62 |
| HQC4 | ¼ | ¼ NPT | HQC4-S-4F-316 | 2.34 | 0.75 | 0.62 |
| HQC4 | ¼ | ¼ BSPT | HQC4-S-4FT-316 | 2.34 | 0.75 | 0.62 |
| HQC6 | ¾ | ¼ NPT | HQC6-S-4F-316 | 2.51 | 0.75 | 0.74 |
| HQC6 | ¾ | ¾ NPT | HQC6-S-6F-316 | 2.53 | 0.88 | 0.74 |
| HQC6 | ¾ | ¾ BSPT | HQC6-S-6FT-316 | 2.53 | 0.88 | 0.74 |
| HQC8 | ½ | ½ NPT | HQC8-S-8F-316 | 3.12 | 1.06 | 0.88 |
| HQC8 | ½ | ½ BSPT | HQC8-S-8FT-316 | 3.12 | 1.06 | 0.88 |



Bulkhead Tube

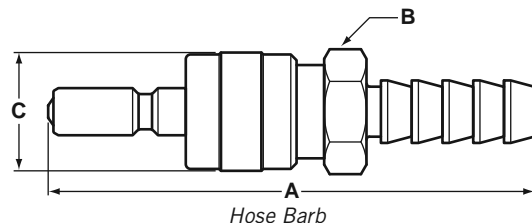
| SERIES | BODY SIZE | TUBE SIZE | PART NO. | A | B HEX | C |
|--------|-----------|-----------|------------------|--------|--------|--------|
| HQC4 | ¼ | ¼ | HQC4-S1-4-316 | 2.80 | 0.56 | 0.62 |
| HQC4 | ¼ | 6mm | HQC4-S1-6MO-316 | 88.8mm | 14.2mm | 15.7mm |
| HQC6 | ¾ | ¾ | HQC6-S1-6-316 | 3.24 | 0.69 | 0.74 |
| HQC6 | ¾ | 10mm | HQC6-S1-10MO-316 | 82.3mm | 19.1mm | 18.8mm |



Bulkhead Tube
For 'H' and 'T' dimensions, see page 5

Hose Barb

| SERIES | BODY SIZE | HOSE | PART NO. | A | B HEX | C |
|--------|-----------|------|---------------|------|-------|------|
| HQC6 | ¾ | ¾ | HQC6-S-6H-316 | 2.66 | 0.69 | 0.74 |



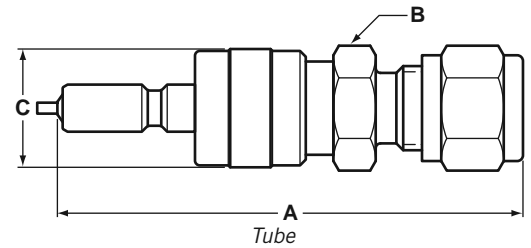
Note: All dimensions in inches unless specified as 'mm' (millimeters).

HQC Series Instrumentation Quick Couplings

Dimensions: Plugs, Valved, Double End Shutoff (DESO)

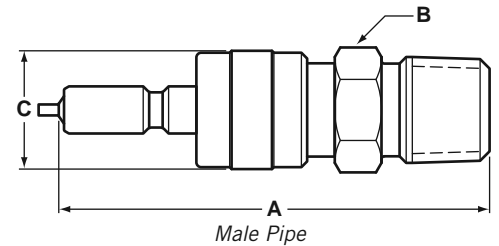
Tube

| SERIES | BODY SIZE | TUBE SIZE | PART NO. | A | B HEX | C |
|--------|-----------|-----------|-----------------|---------|--------|--------|
| HQC4 | ¼ | ½ | HQC4-D-2-316 | 2.95 | 0.56 | 0.62 |
| HQC4 | ¼ | ¼ | HQC4-D-4-316 | 2.42 | 0.56 | 0.62 |
| HQC4 | ¼ | 6mm | HQC4-D-6MO-316 | 79.2mm | 14.2mm | 15.7mm |
| HQC6 | ¾ | ¾ | HQC6-D-6-316 | 2.60 | 0.69 | 0.74 |
| HQC6 | ¾ | 10mm | HQC6-D-10MO-316 | 67.1mm | 19.1mm | 18.8mm |
| HQC8 | ½ | ½ | HQC8-D-8-316 | 3.15 | 0.88 | 0.88 |
| HQC8 | ½ | 12mm | HQC8-D-12MO-316 | 100.1mm | 22.4mm | 22.4mm |



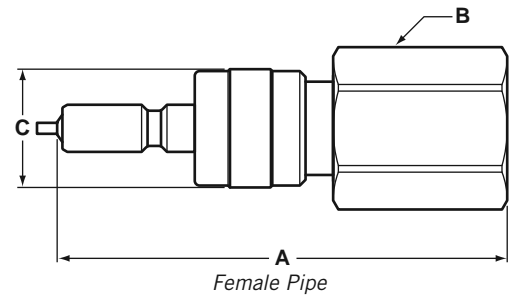
Male Pipe

| SERIES | BODY SIZE | PIPE THREAD | PART NO. | A | B HEX | C |
|--------|-----------|-------------|----------------|------|-------|------|
| HQC4 | ¼ | ½ NPT | HQC4-D-2M-316 | 2.06 | 0.56 | 0.62 |
| HQC4 | ¼ | ¼ NPT | HQC4-D-4M-316 | 2.24 | 0.56 | 0.62 |
| HQC4 | ¼ | ¼ BSPT | HQC4-D-4MT-316 | 2.24 | 0.56 | 0.62 |
| HQC6 | ¾ | ¼ NPT | HQC6-D-4M-316 | 2.34 | 0.75 | 0.74 |
| HQC6 | ¾ | ¾ NPT | HQC6-D-6M-316 | 2.34 | 0.75 | 0.74 |
| HQC6 | ¾ | ¾ BSPT | HQC6-D-6MT-316 | 2.34 | 0.75 | 0.74 |
| HQC8 | ½ | ½ NPT | HQC8-D-8M-316 | 2.87 | 0.88 | 0.88 |
| HQC8 | ½ | ½ BSPT | HQC8-D-8MT-316 | 2.87 | 0.88 | 0.88 |



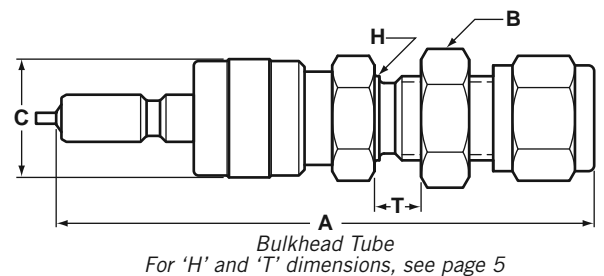
Female Pipe

| SERIES | BODY SIZE | PIPE THREAD | PART NO. | A | B HEX | C |
|--------|-----------|-------------|----------------|------|-------|------|
| HQC4 | ¼ | ½ NPT | HQC4-D-2F-316 | 2.21 | 0.56 | 0.62 |
| HQC4 | ¼ | ¼ NPT | HQC4-D-4F-316 | 2.34 | 0.75 | 0.62 |
| HQC4 | ¼ | ¼ BSPT | HQC4-D-4FT-316 | 2.34 | 0.75 | 0.62 |
| HQC6 | ¾ | ¼ NPT | HQC6-D-4F-316 | 2.51 | 0.75 | 0.74 |
| HQC6 | ¾ | ¾ NPT | HQC6-D-6F-316 | 2.53 | 0.88 | 0.74 |
| HQC6 | ¾ | ¾ BSPT | HQC6-D-6FT-316 | 2.53 | 0.88 | 0.74 |
| HQC8 | ½ | ½ NPT | HQC8-D-8F-316 | 3.12 | 1.06 | 0.88 |
| HQC8 | ½ | ½ BSPT | HQC8-D-8FT-316 | 3.12 | 1.06 | 0.88 |



Bulkhead Tube

| SERIES | BODY SIZE | TUBE SIZE | PART NO. | A | B HEX | C |
|--------|-----------|-----------|------------------|--------|--------|--------|
| HQC4 | ¼ | ¼ | HQC4-D1-4-316 | 2.80 | 0.56 | 0.62 |
| HQC4 | ¼ | 6mm | HQC4-D1-6MO-316 | 88.8mm | 14.2mm | 15.7mm |
| HQC6 | ¾ | ¾ | HQC6-D1-6-316 | 3.24 | 0.69 | 0.74 |
| HQC6 | ¾ | 10mm | HQC6-D1-10MO-316 | 82.3mm | 19.1mm | 18.8mm |



Bulkhead Tube
For 'H' and 'T' dimensions, see page 5

Note: All dimensions in inches unless specified as 'mm' (millimeters).

HQC Series Instrumentation Quick Couplings

HOKE Color-Coded Keyed Quick Couplers

HOKE® keyed quick couplers will fit only mating keyed components, preventing accidental mixing of fluid or pressure lines.

Body and plug assemblies are numbered and color-coded for positive identification.

HOKE® keyed HQC Series quick couplers are interchangeable with Swagelok® and Parker® components of the same style. For example, the HOKE® K1 body sleeve will fit a Swagelok® K1 plug sleeve of the same size.



| KEY NUMBER | COLOR | HQC4 | | HQC6 | | HQC8 | |
|------------|--------|------------------|------------------|------------------|------------------|------------------|------------------|
| | | BODY SLEEVE O.D. | PLUG SLEEVE O.D. | BODY SLEEVE O.D. | PLUG SLEEVE O.D. | BODY SLEEVE O.D. | PLUG SLEEVE O.D. |
| K1 | Black | 0.96 | 0.82 | 1.13 | 0.99 | 1.26 | 1.10 |
| K2 | Orange | 0.99 | 0.85 | 1.16 | 1.02 | 1.29 | 1.14 |
| K3 | Green | 1.02 | 0.88 | 1.19 | 1.05 | 1.32 | 1.17 |
| K4 | Yellow | 1.05 | 0.91 | 1.22 | 1.08 | 1.35 | 1.20 |
| K5 | Blue | 1.08 | 0.94 | 1.24 | 1.11 | 1.38 | 1.23 |
| K6 | White | 1.11 | 0.97 | 1.28 | 1.14 | 1.41 | 1.26 |
| K7 | Purple | 1.14 | 1.00 | 1.31 | 1.17 | 1.44 | 1.29 |
| K8 | Brown | 1.17 | 1.03 | 1.34 | 1.20 | 1.47 | 1.32 |

Keys K1–K5 are standard stock items. For keys K6–K8, consult the factory.

Panel Mount Dimensions

from Bulkhead drawings on pages 2, 3, and 4

| | BULKHEAD SIZE | H | T |
|------|---------------|------------|-----------------|
| | | PANEL HOLE | PANEL THICKNESS |
| HQC4 | ½" GYROLOK® | 0.328" | 0.250" max. |
| | ¼" GYROLOK® | 0.469" | 0.250" max. |
| | 6mm GYROLOK® | 11.9mm | 6.3mm max. |
| HQC6 | ¼" GYROLOK® | 0.469" | 0.250" max. |
| | ⅜" GYROLOK® | 0.594" | 2.70" max. |
| | 10mm GYROLOK® | 15.1mm | 6.9mm max. |
| HQC8 | ½" GYROLOK® | 0.781" | 0.260" max. |

HQC Series Instrumentation Quick Couplings

How to Order

Standard items in bold.

HQC4 – B1 – 4 F – K1 – 316 – 203

BODY SIZE

HQC4 ¼"
HQC6 ⅜"
HQC8 ½"

COMPONENT

B Body
B1 Bulkhead body
D Plug valved
D1 Plug valved bulkhead
S Plug non-valved
S1 Plug non-valved bulkhead

PORT SIZE

| | |
|-------------|------------------|
| 2 ⅛" | 6MO 6mm |
| 4 ¼" | 8MO 8mm |
| 6 ⅜" | 10MO 10mm |
| 8 ½" | 12MO 12mm |

SEAL OPTIONS

Blank Standard seal (Viton®)
203 Kalrez®
204 Ethylene Propylene
205 Buna N
206 Neoprene

MATERIALS

316 Stainless steel

OPTIONS

Blank No options
C Oxygen clean
K1-K8 Keyed sleeves (see page 6)

PORT CONFIGURATIONS

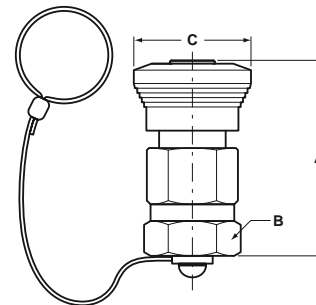
Blank Tube fitting
F Female NPT
FT Female British taper pipe
H Hose barb
M Male NPT
MT Male British taper pipe

Standard seal lubricant is Krytox®.

Accessories

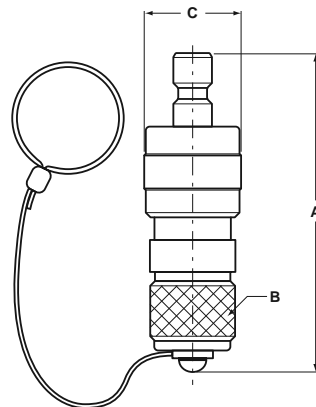
Dust Caps

| SERIES | BODY SIZE | PART NO. | A | B HEX | C |
|--------|-----------|-------------------|------|-------|------|
| HQC4 | ¼" | HQC4-C-316 | 1.45 | 0.63 | 0.88 |
| HQC6 | ⅜" | HQC6-C-316 | 1.45 | 0.75 | 1.00 |
| HQC8 | ½" | HQC8-C-316 | 1.65 | 0.94 | 1.13 |

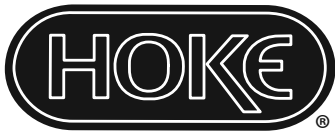


Dust Plugs

| SERIES | BODY SIZE | PART NO. | A | B HEX | C |
|--------|-----------|-------------------|------|-------|------|
| HQC4 | ¼" | HQC4-P-316 | 1.88 | 0.57 | 0.62 |
| HQC6 | ⅜" | HQC6-P-316 | 1.98 | 0.63 | 0.74 |
| HQC8 | ½" | HQC8-P-316 | 2.25 | 0.75 | 0.88 |



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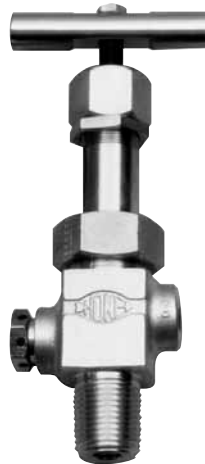
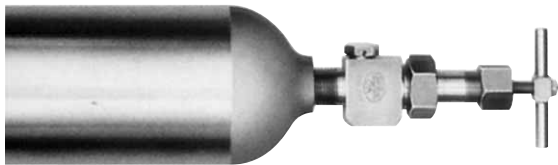
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Formed Sampling Cylinders and Accessories

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sampling cylinders



CRANE Instrumentation & Sampling, HOKE®
PO Box 4866 • Spartanburg, SC 29305-4866
(864) 574-7966 • www.hoke.com

For Your Safety

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. When selecting products, the total system design must be considered to ensure safe, trouble-free performance. Material compatibility, product ratings and application details should be considered in the selection. Improper selection or use of products described herein can cause personal injury or property damage.

Contact your authorized HOKE® sales and service representative for information about additional sizes and special alloys.

SAFETY WARNING:

HOKE® products are designed for installation only by professional suitably qualified licensed system installers experienced in the applications and environments for which the products are intended. These products are intended for integration into a system. Where these products are to be used with flammable or hazardous media, precautions must be taken by the system designer and installer to ensure the safety of persons and property. Flammable or hazardous media pose risks associated with fire or explosion, as well as burning, poisoning or other injury or death to persons and/or destruction of property. The system designer and installer must provide for the capture and control of such substances from any vents in the product(s). The system installer must not permit any leakage or uncontrolled escape of hazardous or flammable substances. The system operator must be trained to follow appropriate precautions and must inspect and maintain the system and its components including the product(s) and at regular intervals in accordance with timescales recommended by the supplier to prevent unacceptable wear or failure.

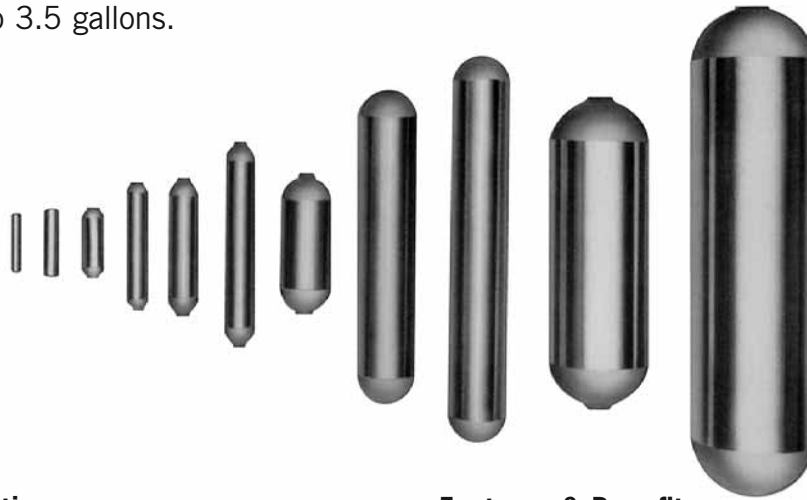


Formed Sampling Cylinders & Accessories

HOKE® Sampling Cylinders are designed and manufactured to stringent U.S. Department of Transportation (DOT) specifications to provide long performance life and maximum safety to the user.

These cylinders are fabricated from seamless tubing or pipe with increased wall thickness in the threaded area, which prevents expansion when valves are installed. Completely formed ends maximize strength and eliminate potential leak paths. Internal sandblasting removes surface imperfections and removes foreign particles.

Single- and double-ended cylinders are available as standard in a variety of capacities from 10 milliliters to 3.5 gallons.



Typical Applications

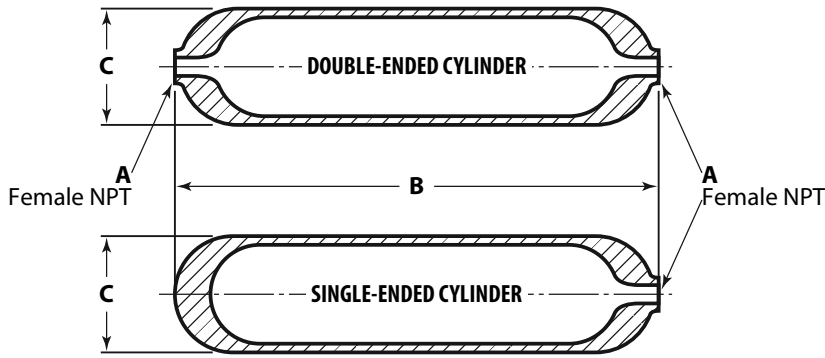
- Sampling hydrocarbons in refineries and petrochemical plants
- Grab sampling for chromatographic analysis
- Snubbers in reactor feed lines
- Surge accumulators in High Pressure Gas Systems
- High Vacuum Systems as experimental chambers and molecular sieves
- Chemical reaction vessels

Features & Benefits

- Choice of 12 different capacities from 10 mL through 3.5 gallons.
- Cylinder ends come in 1/8", 1/4", 3/8" and 1/2" NPT female connections (depends on capacity).
- Standard cylinders are formed from seamless drawn 304 SS, 316 SS or MONEL® pipe or tubing.
- Precision spinning operation eliminates internal pockets and provides easy flow of the sample.
- All models are internally sandblasted to remove surface imperfections and eliminate foreign particles.
- Single- and double-ended cylinders in most capacities are available as standard.
- Rugged wall thickness – extra strength around threads.
- Cylinders may be ordered with valves, relief devices, dip tubes, carrying handles, collar and flanges and end caps.
- The interior of HOKE® cylinders are available with a special FEP lining which provides excellent lubricity and very low permeability. To order, add "TL" following the cylinder part number. Restek®, Silcosteel®, and Sulfinert® surface treatments available for many sizes. Consult factory.
- Special High Tolerance NPT Thread

sampling cylinders

Formed Sampling Cylinders



Formed Cylinders: 316 Stainless Steel only

Pressure ratings up to 5000 psig can be supplied as a special. Consult the factory for quotation of any cylinder rated above 1800 psig.

When testing to ASME specifications is required, contact HOKE® for quotation and specify maximum pressure and temperature

To learn more about DOT-rated Cylinders, please read HOKE® Spun Sampling Cylinders catalog, **Part #79006**.

Other Materials

Cylinders manufactured from other materials are available. Contact HOKE® for quotation.

PTFE-lined Cylinders

The interior of HOKE® cylinders are available with a special FEP lining which provides excellent lubricity and very low permeability. To order add "TL" following the cylinder part number.

How to Order

To order a HOKE® Sampling Cylinder, specify the model number based on capacity required, single- or double-end connections and end connection size.

Dimensions & How to Order

| PRESSURE RATING psig [bar] | INTERNAL VOLUME | A inch FEMALE NPT | ORDERING NUMBERS | | DIMENSIONS inch | | WEIGHT lb (kg) |
|---|--------------------|-------------------------|------------------|---------------------------------|-----------------|-----------------------|-------------------|
| | | | SINGLE ENDED | DOUBLE ENDED | B LENGTH | C OUTSIDE DIAMETER | |
| 304 Stainless Steel, 400 psig [28 bar] | | | | | | | |
| 400 [28] | 1000 mL | ½ | * | 8LD1000 | 10.5 [627] | 3.5 [89] | 4.5 [2.0] |
| | 2250 mL | ½ | * | 8LD2250 | 15.25 [387] | 4.0 [102] | 7.0 [3.0] |
| | 3000 mL | ½ | * | 8LD3000 | 19.5 [489] | 4.0 [104] | 8.4 [3.8] |
| | 1 gal. | ½ | * | 8LD1G | 23.75 [603] | 4.0 [104] | 10.25 [4.6] |
| 304 Stainless Steel, 1800 psig [124 bar] | | | | | | | |
| 1800 [124] | 75 mL | ¼ | | 4HS75 4HD75 | 5 [127] | 1.5 [38] | 0.75 [0.33] |
| | 75 mL | ⅜ | | 6HS75 6HD75 | 5 [127] | 1.5 [38] | 0.75 [0.33] |
| | 150 mL | ¼ | | 4HS150 4HD150 | 9 [229] | 1.5 [38] | 1.38 [0.61] |
| | 150 mL | ⅜ | | 6HS150 6HD150 | 9 [229] | 1.5 [38] | 1.38 [0.61] |
| | 300 mL | ¼ | | 4HS300 4HD300 | 9.75 [248] | 2.0 [51] | 2.0 [0.9] |
| | 300 mL | ⅜ | | 6HS300 6HD300 | 9.75 [248] | 2.0 [51] | 2.0 [0.9] |
| | 500 mL | ¼ | | 4HS500 4HD500 | 14.5 [368] | 2.0 [51] | 3.0 [1.4] |
| | 500 mL | ⅜ | | 6HS500 6HD500 | 14.5 [368] | 2.0 [51] | 3.0 [1.4] |
| | 1000 mL | ½ | | 8HS1000 8HD1000 | 11.0 [279] | 3.5 [89] | 7.25 [3.3] |
| | 2250 mL | ½ | | 8HS2250 8HD2250 | 17 [432] | 4.0 [102] | 13.4 [6.0] |
| | 3000 mL | ½ | | 8HS3000 8HD3000 | 22 [559] | 4.0 [102] | 16.75 [7.6] |
| | 1 gal. | ½ | | 8HS1G 8HD1G | 26.75 [679] | 4.0 [102] | 20.6 [9.3] |
| | 2.2 gal. | ½ | — | 8HD2.2G | 24.25 [616] | 6.641 [169] | 65.57 [29.7] |
| | 3.5 gal. | ½ | — | 8HD3.5G | 37 [940] | 6.641 [169] | 94.71 [43] |
| 316 Stainless Steel, 1800 psig [124 bar] | | | | | | | |
| 1800 [124] | 10 mL | ⅛ | | 2HSY10 2HDY10 | 4 [102] | 0.625 [16] | 0.125 [0.06] |
| | 30 mL | ¼ | | 4HSY30 4HDY30 | 4.75 [121] | 1.0 [25] | 0.44 [0.20] |
| | 75 mL | ¼ | | — 4HDY75 | 4.75 [121] | 1.5 [38] | 0.75 [0.34] |
| | 150 mL | ¼ | | — 4HDY150 | 9 [229] | 1.5 [38] | 1.4 [0.6] |
| | 300 mL | ¼ | | — 4HDY300 | 9.5 [241] | 2.0 [51] | 2.0 [0.9] |
| | 500 mL | ¼ | | — 4HDY500 | 14.5 [368] | 2.0 [51] | 2.9 [1.3] |
| MONEL®** | | | | | | | |
| 5000 [345] | 95 mL | ¼ | | 4HSM95 4HDM95 | 5.25 [133] | 121/32 [42] | 1.5 [0.7] |
| | 150 mL | ¼ | | 4HSM150 4HDM150 | 6.5 [165] | 129/32 [48] | 2.4 [1.0] |
| | 300 mL | ¼ | | 4HSM300 4HDM300 | 11.75 [298] | 129/32 [48] | 4.0 [1.8] |
| | 500 mL | ¼ | | 4HSM500 4HDM500 | 19.5 [495] | 129/32 [48] | 6.13 [2.8] |
| 3500 [241] | 1000 mL | ¼ | | 4HSM1000 4HDM1000 | 11.5 [292] | 3.5 [89] | 11.4 [5.0] |

* For single-ended applications, order double-ended cylinder with plug part number **502B**.

** Standard models are non-DOT rated

Cylinders Accessories & Valves

Collars, Flanges, Caps, Carrying Handles

To enable the user to safely transport pressurized samples, HOKE® offers a variety of collar and flange assemblies, protective end caps and carrying handles. Collars can only be assembled at the HOKE® factory.

Other accessories can come completely assembled to a cylinder or may be ordered for field installation.

To order, specify the cylinder part number followed by the part number of the accessory.

| Carrying Handles, Valve Protection End Caps | | | | | | |
|---|----------------|----------------------------|----------------------------|----------------------------|---------------------|--------------------|
| ORDER BY CATALOG PART NUMBER | | | CYLINDER NUMBER | | DIMENSIONS | |
| COLLAR & FLANGE ASSY. # | END CAP PART # | CARRYING HANDLE KIT PART # | HIGH PRESSURE | LOW PRESSURE | A OUTSIDE DIAMETER | B |
| 81744-1 | 3107 | 80228-1 | 4HD300 6HD300 4HD500 | 4HD300 6HD300 4HD500 | 2 in 51 mm | 6 5/8 in 168 mm |
| 81744-1 | 3107 | 80228-1 | 6HD500 | 6HD500 | 2 in 51 mm | 6 5/8 in 168 mm |
| 80226-1 | 3107 | 80229-1 | 8HD1000 | 8HD1000 | 3 1/2 in 89 mm | 6 5/8 in 168 mm |
| 80227-1 | 3107 | 80230-1 | 8HD2250 | 8HD2250 | 4 in 102 mm | 6 5/8 in 168 mm |
| 80227-1 | 3107 | 80230-1 | 8HD3000 | 8HD3000 | 4 in 102 mm | 6 5/8 in 168 mm |
| 80227-1 | 3107 | 80230-1 | 8HD1G | 8HD1G | 4 in 102 mm | 6 5/8 in 168 mm |
| 81533-1 | 3107 | 80350-1 | 8HD2 1/2 GF | — | 6 5/8 in 168 mm | 6 5/8 in 168 mm |
| 81533-1 | 3107 | 80350-1 | 8HD4GF | — | 8 in 203 mm | 6 5/8 in 168 mm |
| 1756 | 3107 | 80228-1 | 4HDM150 | — | 1 29/32 in 48 mm | 6 5/8 in 168 mm |
| 1756 | 3107 | 80228-1 | 4HDM300 | — | 1 29/32 in 48 mm | 6 5/8 in 168 mm |
| 1756 | 3107 | 80228-1 | 4HDM500 | — | 1 29/32 in 48 mm | 6 5/8 in 168 mm |

All angle pattern valves shown in this catalog can be used with protective end caps. The globe pattern valves **3752M4Y2** shown on page 12 are the only globe pattern valves which can be used with protective end caps.

Dip Tubes

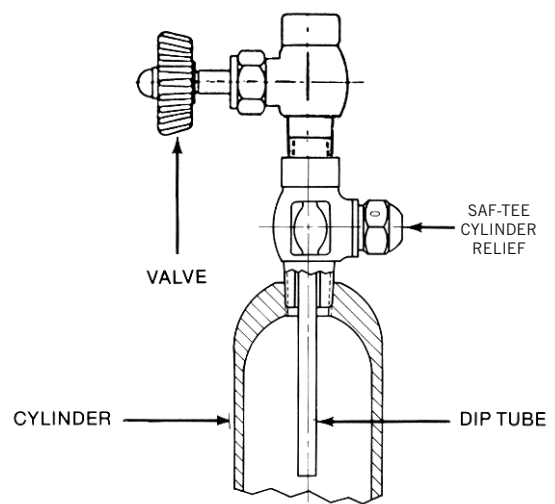
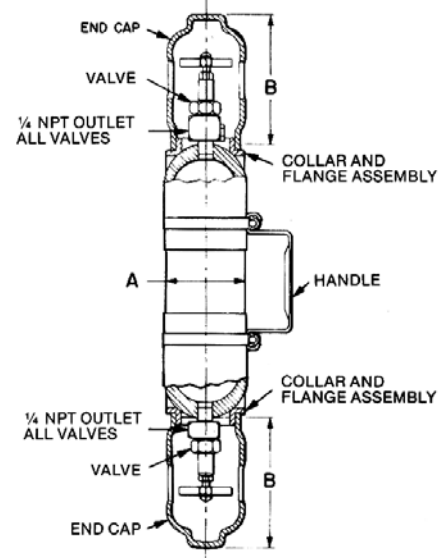
Dip tubes provide a vapor space of the specified volume in cylinders containing liquefied gases, allowing the liquid to expand as the temperature increases. Without adequate vapor space, a small temperature increase can cause the liquid to expand, increasing the pressure dramatically.

Refer to local regulations and other appropriate guidelines for safe cylinder filling limits for your application.

Dip tubes may be ordered in outages of 10, 20 and 30% to provide a respective filled capacity of 90, 80 or 70%. A 30% outage tube would “dip” into a cylinder to a point equivalent to the liquid level of a cylinder filled to 70% of its capacity. Dip tubes in other outages can also be ordered, contact the factory.

To ensure leak-tight performance, dip tubes must be properly welded to a fitting, valve, or relief device.

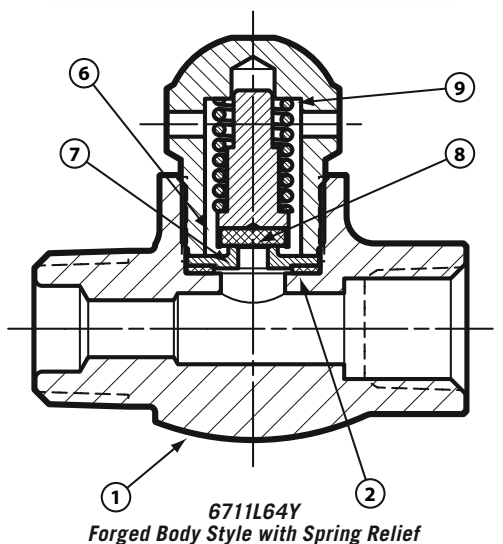
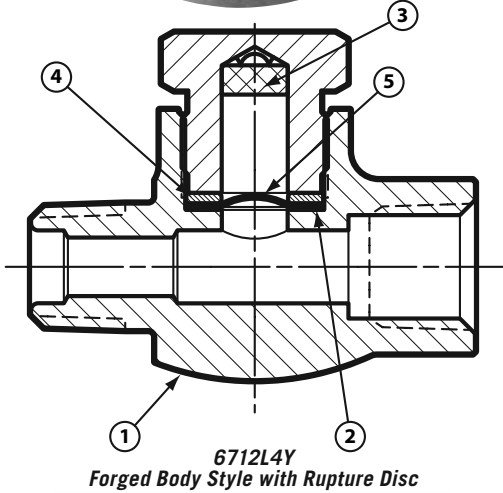
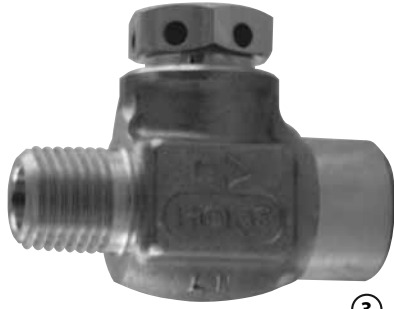
When ordering dip tubes on valves without cylinders, the cylinder model number or capacity must be identified.



Typical Dip Tube Installation

Cylinder Accessories & Valves

Safety Relief Devices



Saf-tee™ relief devices can be used with HOKE® sampling cylinders as an inexpensive safety device or as a pipe size adapter for connecting valves in the make-up of cylinder assemblies.

Two basic models are available to satisfy most pressure ranges. Spring relief models are recommended for applications where re-closure is required.

Rupture Disc models are supplied with a pre-bulged rupture disc which provides excellent resistance to a broad range of corrosive materials. A slip ring is placed between the vented hold-down plug and rupture disc to prevent damage due to torque transmission during assembly. A safety screen minimizes fragment release through the plug vents. The maximum operating system pressure should be limited to 80% of the nominal rating of the rupture disc for static operating pressure and ambient temperature. It should be limited to 70% if pressure pulsations occur or used at elevated temperature. The burst tolerance is within the ASME code guidelines.

Technical Data

OPERATING TEMPERATURE RANGE: -20° F to +250° F (-29° C to +121° C)

Materials of Construction

| KEY | DESCRIPTION | RUPTURE DISC MODELS | SPRING RELIEF MODELS |
|-----|---------------|---------------------|----------------------|
| 1 | Body | 316SS | 316SS |
| 2 | Gasket | PCTFE | PCTFE |
| 3 | Safety Screen | 316SS | — |
| 4 | Slip Ring | 316SS | — |
| 5 | Rupture Disc | INCONEL® | — |
| 6 | Seat Holder | 303SS | 303SS |
| 7 | Seat Ring | 316SS | 316SS |
| 8 | Seat | Viton® | Viton® |
| 9 | Spring | 18-8SS | 6712L4Y |

Rupture Disc Models

| INLET NPT MALE | OUTLET NPT FEMALE | ORDER BY NUMBER | ADD CODE LETTER | REPLACEMENT RUPTURE DISC KIT |
|----------------|-------------------|-----------------|--------------------|------------------------------|
| ¼ | ¼ | 6712L4Y | D - 1400-1600 psi | SP6712K1 |
| 3/8 | ¼ | 6712L64Y | G - 1800-2000 psi | SP6712K2 |
| | | | E* - 2600-3000 psi | SP6712K3 |
| | | | F - 3500-4100 psi | SP6712K4** |
| | | | H - 5400-6200 psi | SP6712K5** |

* Normally supplied with DOT 3E-1800 and DOT 3A-1800

** Special order only. Please contact HOKE® for details.

Rupture Disc Kits

Replacement rupture disc kits include rupture disc, safety screen, slip ring, gasket and instruction sheet (see page 5).

Spring Relief Models

| INLET NPT MALE | OUTLET NPT FEMALE | ORDER BY NUMBER | ADD CODE LETTER |
|----------------|-------------------|-----------------|------------------|
| ¼ | ¼ | 6711L4Y | C - 350-400 psi |
| ¾ | ¼ | 6711L64Y | D* - 540-600 psi |

Ordering Instructions

1. Determine whether the relief range you require is served by a spring relief or a rupture disc model.
2. Order by part number, followed by code of the desired range. For example: **No. 6712L4YD**.
3. Replacement rupture disc kits may be ordered by part number shown in the rupture disc model chart.

Cylinder Accessories & Valves

Rupture Disc Replacement Instructions

1. Disassembly:

Loosen And Remove Safety Plug (5) And Cup Screen (2) Disassemble Remaining Components. Older Models May Not Contain A Cup Screen Or Slip Ring.

2. Cleaning:

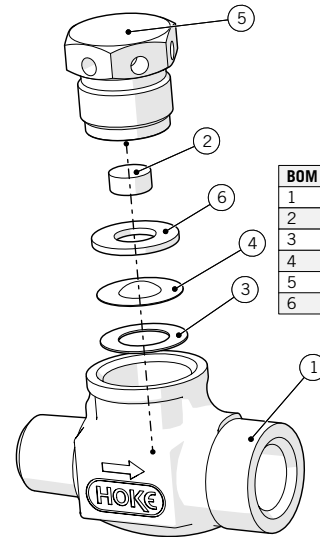
Clean All Metal Parts Thoroughly With Acetone Or Other Suitable Solvent. Clean Non-Metallic Parts With Any Detergent Type Cleaner That Meets Mil-D-16791, Type 1.

3. Lubrication:

Lubricate Safety Plug (5) Threads Lightly With Krytox 206 Or Equivalent.

4. Assembly:

Assemble Gasket (3), Then Rupture Disc (4)* With Its Convex (Bulged) Side Facing Toward The Safety Plug (5), The Slip Ring (6), And The Safety Plug (5) With Cup Screen (2). Torque Safety Plug (5) To 100-150 In-Lbs.



| BOM ID | Description | Qty |
|--------|--------------|-----|
| 1 | Body | 1 |
| 2 | Cup Screen | 1 |
| 3 | Gasket | 1 |
| 4 | Rupture Disc | 1 |
| 5 | Safety Plug | 1 |
| 6 | Slip Ring | 1 |

Note:

The Rupture Disc Assembly Should Be Tested At 70% Of Its Rated Pressure Prior To Placing It Into Service.

Caution: Do Not Exceed 70% Of Rating During Test.

* **Do Not Use Any Rupture Disc (4) That Is Bent, Nicked, Dented, Or Otherwise Damaged.**

Spring Relief, Seat, Seat Ring, and Gasket Replacement Instructions

1. Disassembly:

Loosen and remove Safety Bushing (4) and disassemble remaining components.

2. Cleaning:

Clean all metal parts thoroughly with Acetone or other suitable solvent. Clean non-metallic parts with any detergent type cleaner that meets MIL-D-16791, type 1.

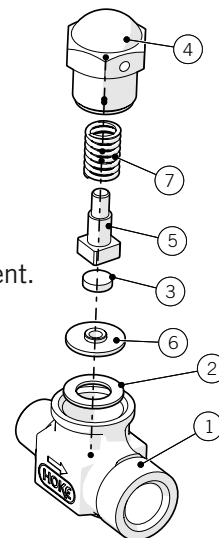
3. Lubrication:

Lubricate Safety Bushing (4) threads lightly with Krytox 206 or equivalent.

4. Assembly:

Caution: Only use spring rated same as original spring range as ordered from factory. Ensure that the seat/seat holder are centered on the seat ring during assembly.

Assemble gasket (2), seat ring (6) with seat outward (as shown) seat holder with seat (3&5), spring (7), and safety bushing (4). Torque safety bushing (4) to 100-150 in-lbs.



Spring Relief Spare Parts

| | |
|---------|----------------------|
| 1105-7B | Spring (350-400 PSI) |
| 3004-4V | Seat |
| 3004-5Y | Seat Ring |
| 3004-6 | Gasket |
| 510-16A | Spring (540-600PSI) |

| BOM ID | Description | Qty |
|--------|----------------|-----|
| 1 | BODY | 1 |
| 2 | GASKET | 1 |
| 3 | SEAT | 1 |
| 4 | SAFETY BUSHING | 1 |
| 5 | SEAT HOLDER | 1 |
| 6 | SEAT RING | 1 |
| 7 | SPRING | 1 |

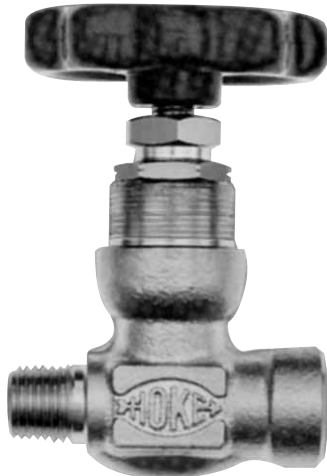
Note:

The Spring Relief Valves should be tested to ensure that the required release pressure is achieved after assembly. If release pressure does not fall in range, consult factory.

Cylinder Valves

1700 Series Heavy Duty Cylinder Valves

Heavy duty compact line of 316 stainless steel and MONEL® forged body globe pattern valves features an integral bonnet suitable for ¼" and ⅜" NPT ended cylinders.



1711L4Y

Features

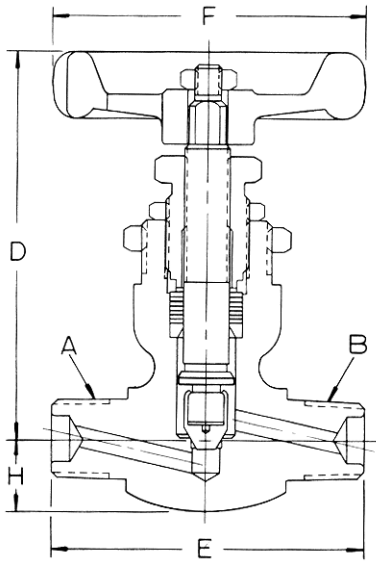
- Dyna-Pak packing provides a leak-tight seal with low operating torque
- Packing below stem threads prevents fluid from contacting threads
- Non-rotating hardened 17-4PH stainless steel or replaceable PCTFE stem tip prevents galling and extends valve life
- Hardened 450 stainless steel or MONEL® combination packing nut and thread gland for long stem thread cycle life
- Lock-nut secures packing nut, preventing accidental removal
- Flat wrench pads on body for easy valve installation
- Integral stem backstop for added safety

Technical Data

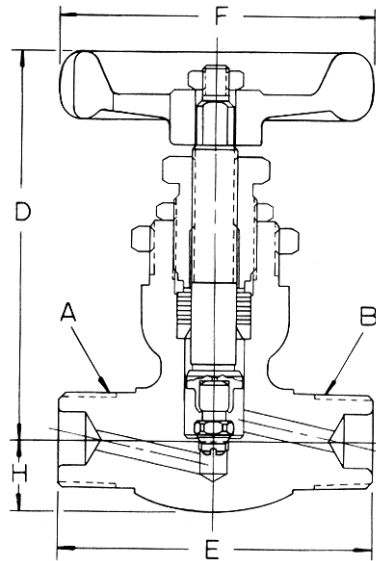
| | |
|-----------------------------------|--|
| MAXIMUM OPERATING PRESSURE | 6000 psig [414 barg] |
| TEMPERATURE RANGE | -65° F to +450° F [-54° C to +232° C] (metal stem tip) -20° F to +250° F [-29° C to +121° C] (PCTFE stem tip) |
| ORIFICE SIZE | 0.187 |
| Cv FACTOR | 0.45 |

Materials of Constructions

| DESCRIPTION | | 316SS Valves | MONEL® Valves |
|------------------|------|------------------|-------------------|
| BODY | | 316SS | MONEL® |
| STEM | | 316SS | MONEL® |
| STEM TIP | SOFT | PCTFE | PCTFE |
| | HARD | 17-4 PHSS | MONEL® |
| DYNA-PAK PACKING | | TFE/316SS Wafers | TFE/MONEL® Wafers |
| HANDLE | | Aluminum | Aluminum |



1711[]



1751[]

Dimensions & How to Order 1700 Series Globe Pattern Valves

| BASIC MATERIAL | STEM TIP | END CONNECTIONS | | ORDERING NUMBER | DIMENSIONS inch (mm) | | | |
|----------------|----------|-----------------|--------------|-----------------|----------------------|---------|---------|--------|
| | | INLET A | OUTLET B | | D | E | F | H |
| 316 SS | Metal | ¼ NPT Male | ¼ NPT Male | 1711M4Y | 3 (76) | 2⅜ (56) | 2⅝ (54) | ⅞ (12) |
| | Metal | ¼ NPT Male | ¼ NPT Female | 1711L4Y | 3 (76) | 2⅝ (54) | 2⅝ (54) | ⅞ (12) |
| | PCTFE | ⅜ NPT Male | ⅜ NPT Male | 1751M6Y | 3 (76) | 2⅜ (56) | 1⅞ (48) | ⅞ (12) |
| MONEL® | Metal | ¼ NPT Male | ¼ NPT Male | 1711M4M | 3 (76) | 2⅜ (56) | 2⅝ (54) | ⅞ (12) |
| | PCTFE | ¼ NPT Male | ¼ NPT Male | 1751M4M | 3 (76) | 2⅜ (56) | 2⅜ (56) | ⅞ (12) |

Dimensions are for reference only and are subject to change

Cylinder Valves

1900 Series Cylinder Valves



1935L64Y

This durable line of angle pattern valves features a low profile shrouded handle which protects the valve against damage. Dyna-Pak TFE wafer packing provides a leak tight seal with low operating torque even at 6000 psi (414 bar) pressure.

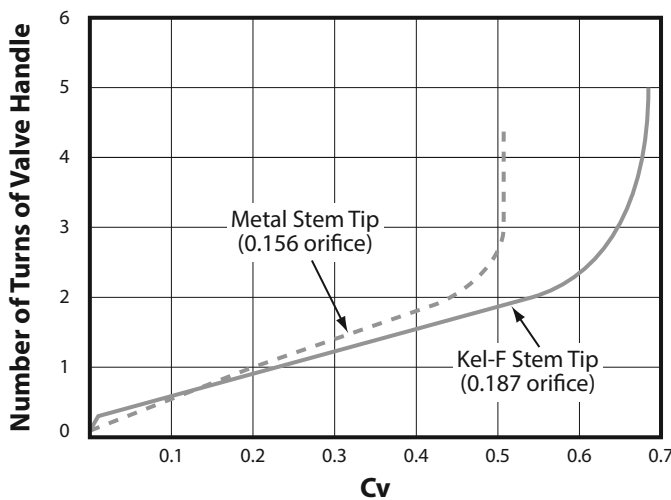
Features

- 316SS or MONEL® construction
- Low profile aluminum shrouded stem handle protects stem against damage
- Dyna-Pak packing provides leak tight seal with low operating torque
- Packing below the stem threads prevents process fluid from contacting stem threads
- Non-rotating hardened 17-4PH stainless steel or replaceable PCTFE stem tip prevents galling and extends valve life
- Hardened 450 stainless steel combination packing nut and thread gland for long stem thread cycle life
- Integral stem backseat provides added safety and prevents accidental removal of stem
- Variety of end connections satisfy most cylinder valve applications
- Bonnet lock prevents accidental removal of threaded bonnet
- Angle flow pattern
- Lock-nut secures packing nut against accidental removal
- Flat wrench pads on body for easy valve installation
- Integral stem backstop for added safety

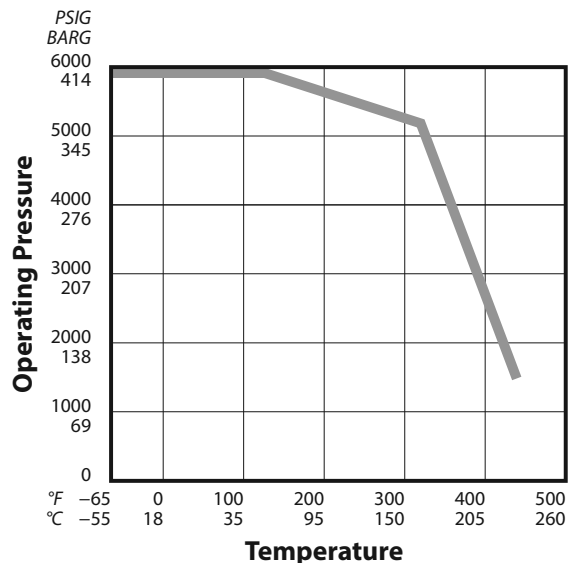
| Technical Data | |
|-----------------------------|--|
| MAXIMUM OPERATING PRESSURE | 6000 psig (414 bar) |
| OPERATING TEMPERATURE RANGE | -65° F to +450° F [-54° C to +232° C] (metal stem tip) -20° F to +250° F [-29° C to +121° C] (PCTFE stem tip) |
| ORIFICE | Metal Stem Tip - 0.156 PCTFE Stem Tip - 0.187 |
| CV FACTOR | Metal Stem Tip - 0.42 PCTFE Stem Tip - 0.63 |

| Materials of Construction | | |
|---------------------------|------------------|-------------------|
| DESCRIPTION | 316SS VALVES | MONEL® VALVES |
| Body | 316SS | MONEL® |
| Stem | 316SS | MONEL® |
| Stem Tip | Soft | PCTFE |
| | Hard | MONEL® |
| Packing (Dyna-Pak) | TFE/316SS Wafers | TFE/MONEL® Wafers |
| Handle | Aluminum | Aluminum |

Handle Turns vs Cv

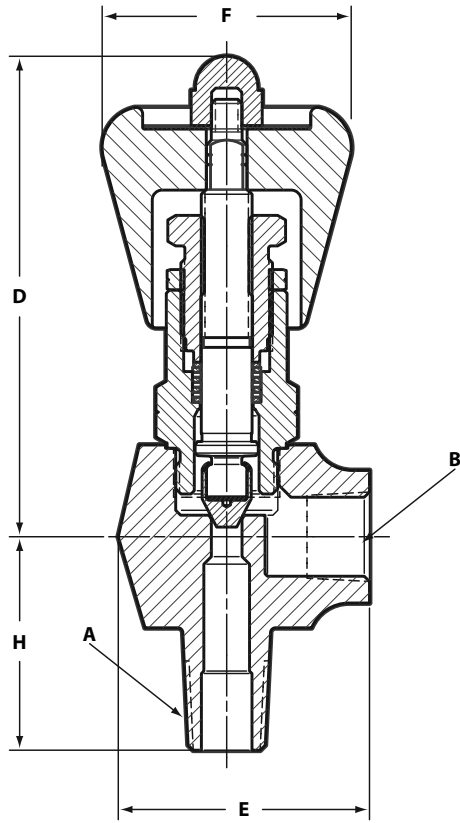


Pressure Temperature Curve

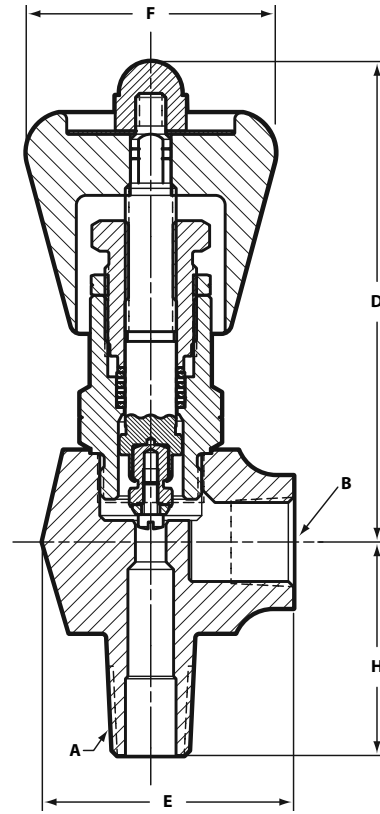


Cylinder Valves

1900 Series Cylinder Valves



1925L [Y]



1965L [I]

Dimensions & How to Order 1900 Series Angle Pattern Valves

| BASIC MATERIAL | STEM TIP | END CONNECTIONS | | ORDERING NUMBER | DIMENSIONS, IN. [MM] | | | |
|----------------|----------|-----------------|--------------|-----------------|----------------------|---------|---------|---------|
| | | INLET A | OUTLET B | | D | E | F | H |
| 316 SS | Metal | ¼ NPT Male | ¼ NPT Female | 1925L4Y | 3⅞ [81] | 1½ [38] | 1¾ [44] | 1⅝ [33] |
| | PCTFE | ¼ NPT Male | ¼ NPT Female | 1965L4Y | 3⅞ [81] | 1½ [38] | 1¾ [44] | 1⅝ [33] |
| | Metal | ⅜ NGT Male* | ¼ NPT Female | 1925L64Y | 3⅞ [81] | 1½ [38] | 1¾ [44] | 1⅝ [35] |
| | PCTFE | ⅜ NGT Male* | ¼ NPT Female | 1965L64Y | 3⅞ [81] | 1½ [38] | 1¾ [44] | 1⅝ [35] |
| MONEL® | PCTFE | ¼ NPT Male | ¼ NPT Female | 1965L4M | 3⅞ [81] | 1½ [38] | 1¾ [44] | 1⅝ [33] |

* NGT Male Ended Valves: Screw thread standard per Federal Services Handbook H-28, section 9. These threads allow longer thread engagement into the cylinder.

Dimensions are for reference only and are subject to change

Cylinder Valves

2400 Series 1/2" Cylinder Valves



2464L84Y
with rupture disc



2466L84Y
with spring relief

2400 Series 316 stainless steel, forged body angle pattern valves, come with a union bonnet for increased safety and ease of maintenance.

Available with pressure rupture discs or spring relief devices as an integral part of the valve.

Features

- Forged body union bonnet design for ease of maintenance and maximum reliability
- Non-rotating hardened 17-4PH stainless steel tip prevents galling and extends valve life
- Dyna-Pak packing below stem threads prevents lubricant washout & contamination of process fluids
- Stem backseat provides added safety
- Available with integral rupture disc or spring relief. See page 5 for gasket, spring, seat, and rupture disc replacement instructions.

Technical Data

| | |
|-----------------------------------|--|
| MAXIMUM OPERATING PRESSURE | 5000 psig [345 barg] |
| TEMPERATURE RANGE | Metal stem tip: -40° F to +350° F (-40° C to +177° C) TFE stem tip: -20° F to +250° F (-29° C to +121° C) All burst discs & spring relief devices: -20° F to +250° F (-29° C to +121° C) |
| ORIFICE SIZE | 0.312 |
| Cv FACTOR | 2.2 |

Materials of Constructions

| | |
|--------------------------|--------|
| BODY & BONNET | 316SS |
| STEM | 17-4PH |
| THREAD GLAND | 416SS |
| PACKING NUT | 303SS |
| RING GLAND | 303SS |

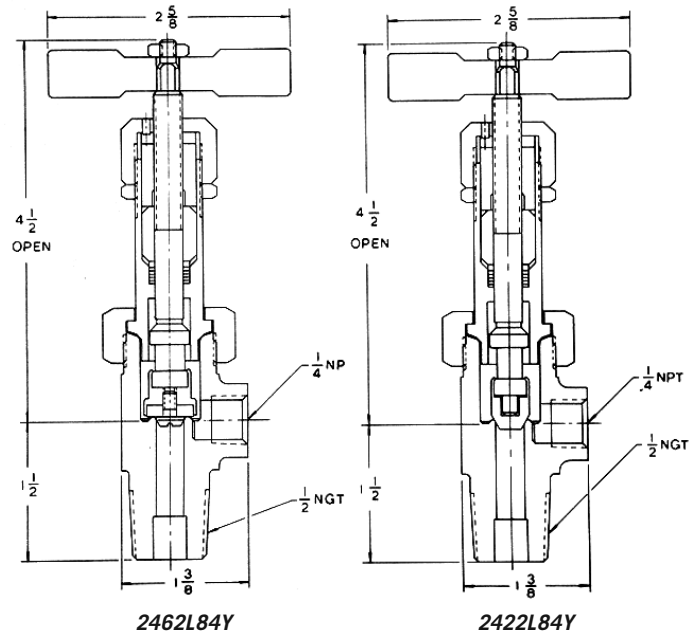


2462L84Y

Cylinder Valves

| Valves with Rupture Discs | | | | | |
|---------------------------|----------------|----------------------|----------------|------------------|-------------------|
| INLET | OUTLET | ORDER BY PART NUMBER | | ADD CODE LETTER | RUPTURE DISC KITS |
| | | PTFE PACKING | | | |
| | | PTFE STEM TIP | METAL STEM TIP | | |
| | | | | D 1400-1600 psi | SP6712K1 |
| | | | | G 1800-2000 psi | SP6712K2 |
| 1/2 NGT Male | 1/4 NPT Female | 2464L84Y | 2424L84Y | E* 2600-3000 psi | SP6712K3 |
| | | | | F 3500-4100 psi | SP6712K4** |
| | | | | H 5400-6200 psi | SP6712K5** |

* Normally supplied with DOT 3E-1800 and DOT 3A-1800
 ** Special order only. Please contact HOKE® factory.



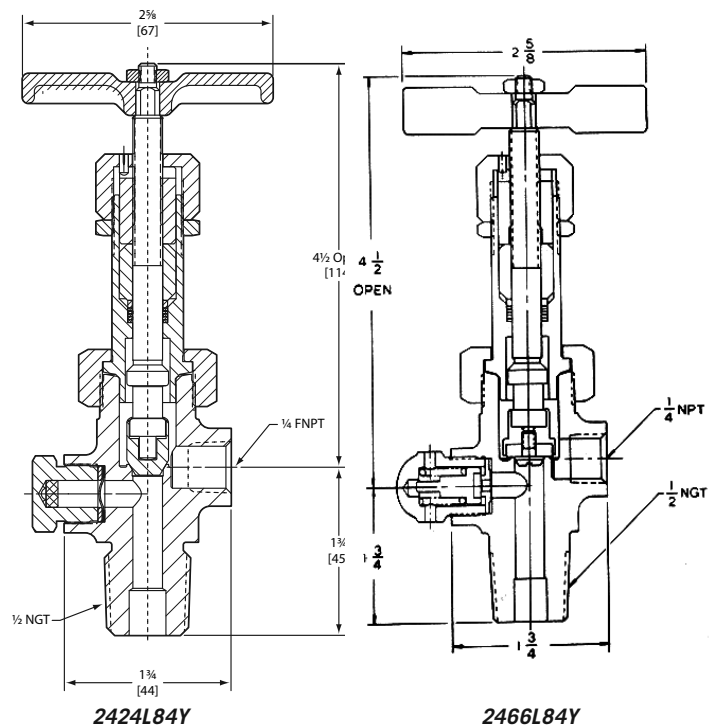
| Valves without Relief Devices | | | |
|-------------------------------|----------------|----------------------|----------------|
| INLET | OUTLET | ORDER BY PART NUMBER | |
| | | PTFE PACKING | |
| | | PTFE STEM TIP | METAL STEM TIP |
| 1/2 NGT Male | 1/4 NPT Female | 2462L84Y | 2422L84Y |

| Valves with Spring Relief Devices | | | | |
|-----------------------------------|----------------|----------------------|----------------|-----------------|
| INLET | OUTLET | ORDER BY PART NUMBER | | ADD CODE LETTER |
| | | PTFE PACKING | | |
| | | PTFE STEM TIP | METAL STEM TIP | |
| 1/2 NGT Male | 1/4 NPT Female | 2466L84Y | 2426L84Y | C 350-400 psi |
| | | | | D* 540-600 psi |

* Normally supplied with DOT 38-400

Ordering Instructions for Valves with Relief Devices

1. Determine whether the relief range you require is served by a spring relief or a rupture disc model.
2. Order by part number, followed by code of the desired range. For example: **No. 2424L84YD.**



Cylinder Valves

3700 & 3800 Series Cylinder Valves



Angle 3802L4Y



Globe 3752M4Y1

The 3700 & 3800 Series forged body cylinder valves are supplied in stainless steel for cylinders with 1/8" through 3/8" NPT threads.

Features

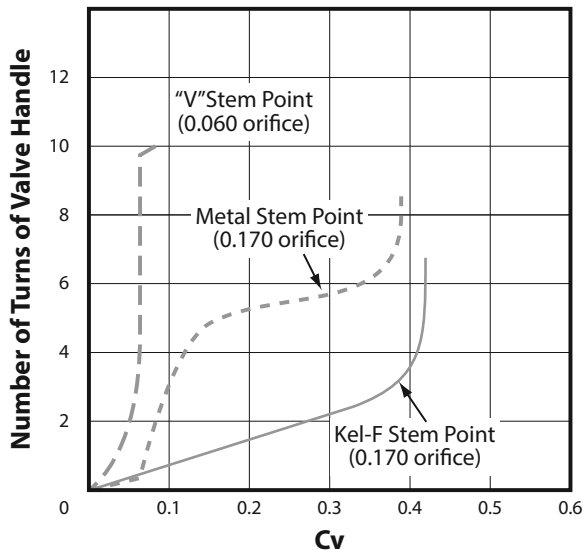
- Compact size for restricted areas
- Dyna-Pak packing provides a leak-tight seal and low operating torque
- Integral bonnet design
- Ergonomic black ABS plastic handle
- Flat wrench pads on body for easy valve installation
- Replaceable PCTFE stem tip or integral metal stem tip
- Choice of 303 or 316 stainless steel construction
- Globe or angle flow patterns
- **3752M4Y[]** Series are designed for use with cylinder protective caps and collars on 300 and 500 mL size cylinders. Low profile and extended end allows the valve and handwheel to clear the cap and cylinder collar

| Technical Data | |
|------------------------------------|--|
| MAXIMUM OPERATING PRESSURE: | 5000 psig (345 bar) |
| TEMPERATURE RANGE: | -65° F to +450° F (metal stem tip) -20° F to +250° F (PCTFE stem tip) |
| ORIFICE SIZES: | 0.060, 0.170, 0.219 |
| Cv FACTOR: | 0.07 to 0.55 |

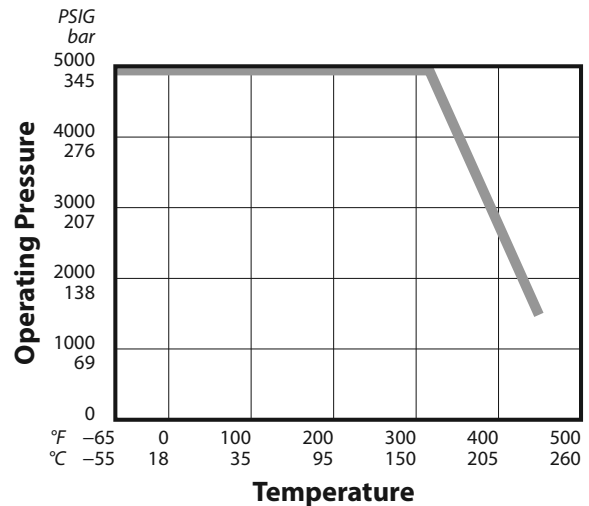
| Materials of Construction | | |
|---------------------------|--------------|--------------|
| DESCRIPTION | 303SS VALVES | 316SS VALVES |
| Body | 303SS | 316SS |
| Stem | 316SS | 316SS |
| Stem Tip (Softseat) | PCTFE | PCTFE |
| Dyna-Pak Packing | PTFE/316SS | PTFE/316SS |
| Handle* | ABS | ABS |

* 303 stainless steel metal handle is provided on models **3752M4Y[]**

Handle Turns vs. Cv

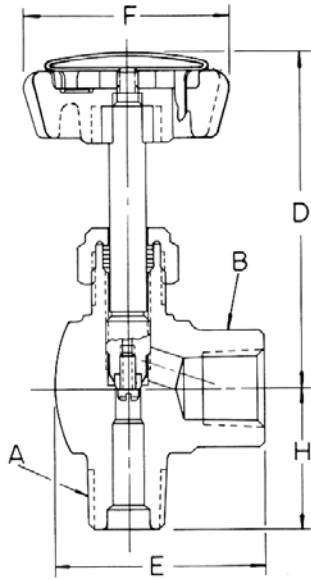


Pressure-Temperature Curve

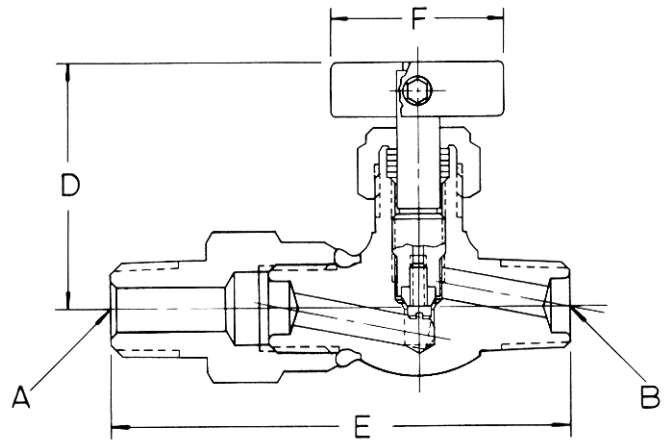


Cylinder Valves

3700 & 3800 Series Cylinder Valves



Angle 3862L64Y



Globe 3752M4Y1

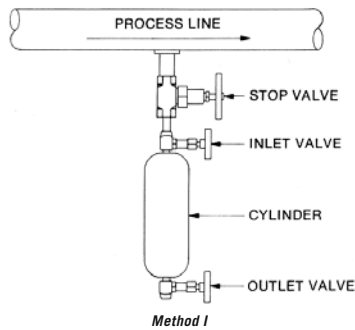
Dimensions & How to Order 3700 & 3800 Series Cylinder Valves

| BASIC MATERIAL | CV | STEM TIP | END CONNECTIONS | | ORDERING NUMBER | DIMENSIONS inch [mm] | | | | |
|---|------|--------------|---|---|------------------|--------------------------------------|--------------------------------------|-----------|-------------------------------------|--|
| | | | INLET A | OUTLET B | | D | E | F | H | |
| Globe Pattern Orifice Size 0.060 | | | | | | | | | | |
| 316 SS | 0.07 | Metal V-stem | ¼ NPT Male | ¼ NPT Male | 3732M4Y | 2 ³ / ₁₆ [56] | 1 ³ / ₄ [44] | 1.57 [40] | 2 ⁵ / ₆₄ [10] | |
| Globe Pattern Orifice Size 0.170 | | | | | | | | | | |
| 303 SS | 0.35 | PCTFE | ¼ NPT Male | ¼ NPT Male | 3752M4S | 2 ¹ / ₈ [54] | 2 [51] | 1.57 [40] | 3 ³ / ₈ [10] | |
| | | PCTFE | ¼ NPT Male | ¼ NPT Female | 3852L4S | 2 ¹¹ / ₁₆ [68] | 1 ⁷ / ₈ [48] | 1.57 [40] | ½ [13] | |
| | | Metal | ¼ NPT Male | ¼ GYROLOK® | 3712H4Y | 2 ¹ / ₈ [54] | 1 ⁷ / ₈ [48] | 1.57 [40] | 3 ³ / ₈ [10] | |
| | | PCTFE | ¼ NPT Male | ¼ GYROLOK® | 3752H4Y | 2 ¹ / ₈ [54] | 1 ⁷ / ₈ [48] | 1.57 [40] | 3 ³ / ₈ [10] | |
| 316 SS | 0.35 | Metal | ¼ NPT Male | ¼ NPT Male | 3712M4Y | 2 ¹ / ₈ [54] | 2 [51] | 1.57 [40] | 3 ³ / ₈ [10] | |
| | | PCTFE | ¼ NPT Male | ¼ NPT Male | 3752M4Y | 2 ¹ / ₈ [54] | 2 [51] | 1.57 [40] | 3 ³ / ₈ [10] | |
| | | PCTFE | ¼ NPT Male | ¼ NPT Male | 3752M4Y2* | 1 ¹³ / ₁₆ [46] | 2 ³ / ₄ [70] | 1 [25] | — | |
| | | PCTFE | 3 ⁸ / ₁₆ NPT Male | 3 ⁸ / ₁₆ NPT Male | 3852M6Y | 2 ¹³ / ₁₆ [71] | 1 ⁷ / ₈ [48] | 1.57 [40] | ½ [13] | |
| | | PCTFE | ½ NPT Male | ¼ NPT Male | 3752M4Y1* | 1 ¹³ / ₁₆ [46] | 3 [76] | 1 [25] | — | |
| Globe Pattern Orifice Size 0.219 | | | | | | | | | | |
| 316 SS | 0.55 | Metal | 3 ⁸ / ₁₆ NPT Male | 3 ⁸ / ₁₆ NPT Male | 3812M6Y | 2 ²⁹ / ₃₂ [71] | 2 ⁹ / ₁₆ [65] | 1.57 [40] | 3 ¹ / ₆₄ [12] | |
| Angle Pattern Orifice Size 0.170 | | | | | | | | | | |
| 316 SS | 0.5 | Metal | ¼ NPT Male | ¼ GYROLOK® | 3722H4Y | 2 ¹ / ₈ [54] | 1 ¹⁹ / ₃₂ [40] | 1.57 [40] | 7 ⁷ / ₈ [22] | |
| | | Metal | ¼ NPT Male | ¼ NPT Female | 3802L4Y | 2 ¹¹ / ₁₆ [68] | 1 ²⁷ / ₆₄ [36] | 1.57 [40] | 3 ¹ / ₃₂ [25] | |
| | | PCTFE | ¼ NPT Male | ¼ NPT Female | 3862L4Y | 2 ¹¹ / ₁₆ [68] | 1 ²⁷ / ₆₄ [36] | 1.57 [40] | 3 ¹ / ₃₂ [25] | |
| | | Metal | 3 ⁸ / ₁₆ NPT Male | ¼ NPT Female | 3802L64Y | 2 ¹¹ / ₁₆ [68] | 1 ²⁷ / ₆₄ [36] | 1.57 [40] | 3 ¹ / ₃₂ [25] | |
| | | PCTFE | 3 ⁸ / ₁₆ NPT Male | ¼ NPT Female | 3862L64Y | 2 ¹¹ / ₁₆ [68] | 1 ²⁷ / ₆₄ [36] | 1.57 [40] | 1 [25] | |

* Models **3752M4Y[]** are designed for use with cylinder protective caps and collars on 300 and 500 ml. cylinders. Dimensions are for reference only and are subject to change

Formed Sampling Cylinders

How to Collect Samples from Process Lines



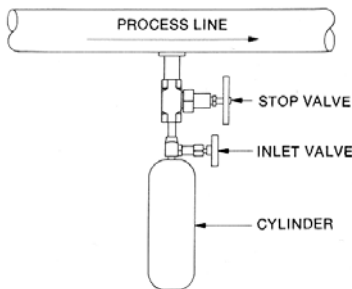
Method I

It is often difficult to obtain pure samples of process fluids for laboratory analysis. To insure accuracy and safety of your sample, DOT regulations, elimination of contaminants, cost and simplicity of operation must be considered.

Here are four methods of collecting samples which we as manufacturers and suppliers of sampling cylinders and valves have seen successfully used.

Method I: Water Displacement

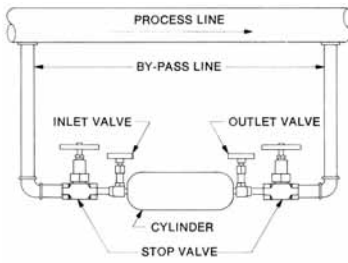
1. Use a double-ended HOKE® cylinder (either the LD or HD styles depending upon pressure requirements) with sufficient capacity and equip it with suitable HOKE® valves.
2. Fill the cylinder with water so that all contaminants in the cylinder are removed by displacement.
3. Attach cylinder to process line and open process line stop valve.
4. Open both valves on sampling cylinder, the inlet valve wider than the outlet and allow the process fluid to displace the water in cylinder.
5. When cylinder is filled (this is indicated when process fluid begins flowing out cylinder outlet valve), close outlet valve and then both inlet and stop valves and remove cylinder from process line.
6. Transport cylinder to laboratory and bleed off samples as required.



Method II

Method II: Evacuate Cylinder by Vacuum

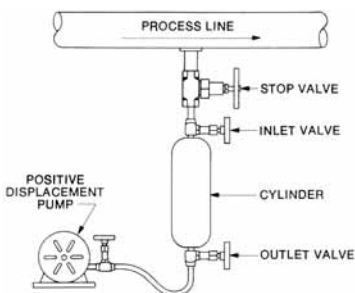
1. Use either a double or single ended cylinder with valves, preferably packless type. Helium leak tested to insure leak tightness.
2. Evacuate the cylinder to remove contaminants.
3. Attach cylinder to process line.
4. Open inlet valve and draw off desired sample.
5. Close valve and remove cylinder from process line.
6. Draw samples from cylinder as required on mass spectrometer.



Method III

Method III: In Line By-pass of Process Line

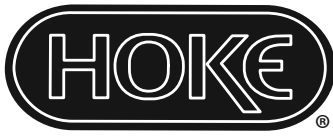
1. Establish by-pass line or parallel line to main process line with facilities to insert sampling cylinder.
2. Insert double-ended cylinder in by-pass line.
3. Open both inlet and outlet cylinder valves wide and allow process fluid to flow through by-pass line and cylinder.
4. Permit flow to continue running until accurate sample is established.
5. Close valves and remove cylinder from process line.
6. Draw sample from cylinder when required.



Method IV

Method IV: Positive Displacement

1. Use a double-ended cylinder equipped with suitable valves.
2. Attach one end of the cylinder to the process line and the other to a positive displacement pump which draws uniformly over a period of time.
3. Open process line and cylinder valves and begin drawing off a uniform sample over an established period of time.
4. When time period is completed, close valves and remove cylinder from process line.
5. Sample gathered is an example of fluid passed through process line over a given period.



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We specialize in small bore instrumentation products up to 2" that deliver benchmark performance quality & safety; provide the broadest array of superior alloy offerings in the market; decades of proven success in a wide range of industries; a roster of "who's who" customers & projects globally; original "Best Solution" engineering & designs; and are focused on continuous improvement in all aspects of our business.

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CRANE INSTRUMENTATION &
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405 Centura Ct.
Spartanburg, SC 29305, USA
Tel: 1-864-574-7966
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29305-4866 USA

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General Purpose Ball Valves

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Family Features

- 2-, 3-, 4-, and 5-way designs
- Working pressures up to 6000 psig (414 bar)
- Low operating torque
- Wide variety of end connections

ball valves



CRANE Instrumentation & Sampling, HOKE®
PO Box 4866 • Spartanburg, SC 29305-4866
(864) 574-7966 • www.hoke.com

For Your Safety

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. When selecting products, the total system design must be considered to ensure safe, trouble-free performance. Material compatibility, product ratings and application details should be considered in the selection. Improper selection or use of products described herein can cause personal injury or property damage.

Contact your authorized HOKE® sales and service representative for information about additional sizes and special alloys.

SAFETY WARNING:

HOKE® products are designed for installation only by professional suitably qualified licensed system installers experienced in the applications and environments for which the products are intended. These products are intended for integration into a system. Where these products are to be used with flammable or hazardous media, precautions must be taken by the system designer and installer to ensure the safety of persons and property. Flammable or hazardous media pose risks associated with fire or explosion, as well as burning, poisoning or other injury or death to persons and/or destruction of property. The system designer and installer must provide for the capture and control of such substances from any vents in the product(s). The system installer must not permit any leakage or uncontrolled escape of hazardous or flammable substances. The system operator must be trained to follow appropriate precautions and must inspect and maintain the system and its components including the product(s) and at regular intervals in accordance with timescales recommended by the supplier to prevent unacceptable wear or failure.



General Purpose Ball Valves at a Glance

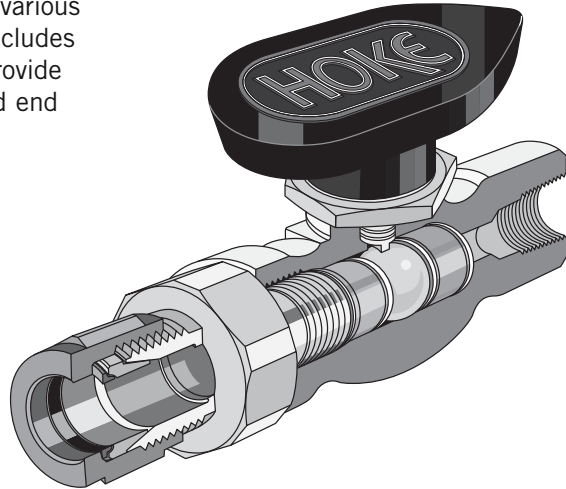
HOKE® ball valves provide a wide range of capabilities for various applications. The HOKE® general purpose ball valve line includes 2-, 3-, 4- and 5-way designs. Ball and trunnion designs provide a wide range of pressure capabilities. GYROLOK® and fixed end connections are also available.

Select a ball or trunnion valve for:

- simple operation
- visual indication of flow
- full porting for maximum flow
- rodability
- long cycle life

Choose a 2-way ball valve for quick, quarter-turn, on-off service. A 3-way ball valve employs 180° operation for diverting flow from one line to another. 4-way valves are dual switching valves, changing two flow paths at the same time. 5-way, or diverter, valves allow flow through any of four possible paths.

Before making your valve selection, be sure to consider the system pressure, operating temperature, required flow and materials of construction. If your application requires a valve not available in this catalog, contact your HOKE® stocking distributor or the factory.



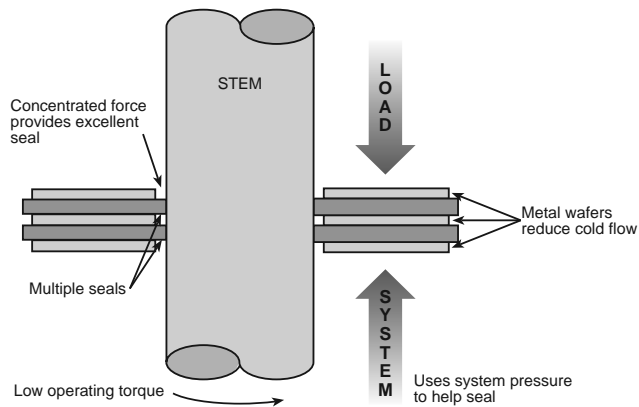
Dyna-Pak® Stem Packing System

Dyna-Pak® provides superior sealing performance while reducing maintenance costs. Consisting of alternate wafers of TFE and metal spacers, stem leakage is virtually eliminated while the problems associated with TFE cold flow are minimized.

As the packing nut is tightened, metal spacers squeeze the TFE wafers, driving the TFE into the stem. At the stem, forces are concentrated and the TFE wafers provide multiple line seals. In addition to squeezing the TFE wafers, the metal spacers help contain the TFE and drastically reduce its ability to creep.







Dyna-Pak® packing has the ability to:

- Utilize system pressure to increase effectiveness in eliminating leakage.
- Provide reduced operating torque.
- Help eliminate fugitive emissions.
- Reduce the need for frequent packing adjustments.
- Operate in temperatures from -65° to $+450^{\circ}$ F (-54° to $+232^{\circ}$ C).



ball valves

General Purpose Ball Valves at a Glance

| | SERIES | DESCRIPTION/APPLICATIONS | FEATURES | STANDARD BODY MATERIAL |
|---|--|---|---|--|
| 2-WAY BALL VALVES | | | | |
|  | Flomite® 71 Series (pg. 4) | <ul style="list-style-type: none"> On-off service High pressure and temperature Long cycle life Corrosive fluids | <ul style="list-style-type: none"> Dyna-Pak® packing Encapsulated seats Micro finished ball | Brass 316 stainless steel MONEL® HASTELLOY® C-276 |
|  | Rotoball® 72 Series (pg. 9) | <ul style="list-style-type: none"> On-off service High cycle life High flow | <ul style="list-style-type: none"> Encapsulated seats Blowout-proof stem Trip-proof handle | Brass 316 stainless steel MONEL® |
| WELDED END 2-WAY AND 3-WAY BALL VALVES | | | | |
|  | Ultramite™ 70 Series (pg. 12) | <ul style="list-style-type: none"> On-off service (2-Way valves) Switching & diverting (3-Way valves) High pressure High flow | <ul style="list-style-type: none"> Fixed end fitting Trip-proof handle Floating ball design Dyna-Pak® packing | Brass 316 stainless steel MONEL® |
| 3-WAY BALL AND TRUNNION VALVES | | | | |
|  | Selectomite® 71 and 76 Series Ball Valves (pg. 19) | <ul style="list-style-type: none"> Switching & diverting Corrosive fluids High cycle life | <ul style="list-style-type: none"> Dyna-Pak® packing Encapsulated TFE seats | Brass 316 stainless steel MONEL® |
|  | Selectomite® 76 Series Trunnion Valves (pg. 23) | <ul style="list-style-type: none"> High pressure switching High cycle life High pressure | <ul style="list-style-type: none"> 3-Way trunnion design Spring-loaded seats Blowout-proof stem | 316 stainless steel |
| 4- AND 5- WAY TRUNNION VALVES | | | | |
|  | Multimite® 79 Series (pg. 26) | <ul style="list-style-type: none"> 4-Way or 5-Way operation High cycle life High pressure | <ul style="list-style-type: none"> 4- and 5-Way trunnion design Spring-loaded seats Blowout-proof stem | 316 stainless steel |

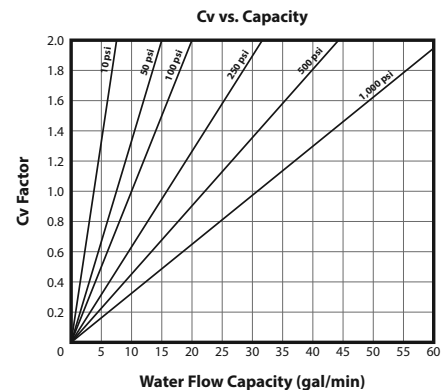
Flow Capacity of HOKE® Ball Valves

To determine the C_v or flow of a liquid @ 60° F (16° C):

$$C_v = \frac{\text{GPM}}{\sqrt{\frac{\Delta p}{\text{S.G.}}}} \quad \text{or} \quad \text{GPM} = C_v \sqrt{\frac{\Delta p}{\text{S.G.}}}$$

where:

- $p = p_1 - p_2$
- p_1 = inlet pressure in psia
- p_2 = outlet pressure in psia
- GPM = flow in gallons per minute
- S.G. = specific gravity of liquid where water = 1.0 @ 60° F (16° C)



General Purpose Ball Valves at a Glance

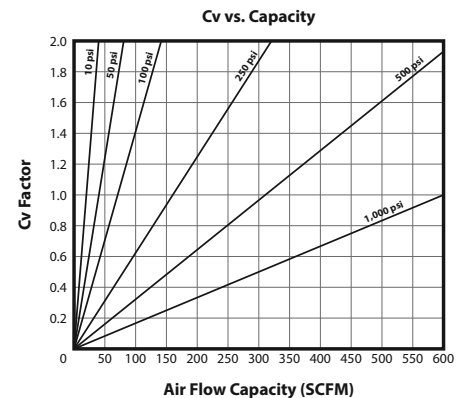
| MAX. OPERATING PRESSURE @ 70° F (21° C) | OPERATING TEMP. RANGE | CV FLOW RANGE (VARIES W/ END CONN.) | ORIFICE SIZES | STANDARD END CONNECTIONS |
|---|--|--|--|---|
| 2-WAY BALL VALVES | | | | |
| 6000 psig (414 bar) | -40° F to 480° F (-40° C to 249° C) | 0.23 to 1.40 | 0.093" to 0.250" (2.4 mm to 6.4 mm) | 1/8, 1/4, 3/8, 1/2 GYROLOK® tube fittings 1/4 Male NPT 1/4 Male NPT x 1/4 Female NPT 1/8, 1/4, 1/2 Female NPT 3, 6, 8, 10, 12 mm GYROLOK® tube fittings |
| 5000 psig (345 bar) | -20° F to 350° F (-29° C to 177° C) | 3.4 | 0.375" (9.5 mm) | 1/2 GYROLOK® tube fittings 3/8, 1/2 Female NPT 12 mm GYROLOK® tube fittings |
| FIXED END 2-WAY AND 3-WAY BALL VALVES | | | | |
| 6000 psig (414 bar) | -40° F to 350° F (-40° C to 177° C) | 0.15 to 3.4 | 0.23" to 0.375" (2.4 mm to 9.5 mm) | 1/8, 1/4, 3/8 GYROLOK® tube fittings 1/4 Male NPT x 1/4 Female NPT 1/4, 3/8, 1/2 Female NPT |
| 7065 Series: 500 psig (34.5 bar) | 0° F to 350° F (-18° C to 177° C) | 0.15 to 0.57 | 0.093" to 0.187" | GYROLOK® 1/4 Female NPT |
| 3-WAY BALL AND TRUNNION VALVES | | | | |
| 6000 psig (414 bar) | -40° F to 350° F (-40° C to 177° C) | .015 to 0.57 | 0.125" to 0.187" (3.2 mm to 4.8 mm) | 1/8, 1/4, 3/8 GYROLOK® tube fittings 1/8, 1/4 Female NPT 3, 6, 8 mm GYROLOK® tube fittings |
| 6000 psig (414 bar) | 0° F to 350° F (-18° C to 177° C) | 0.56 | 0.187" (4.8 mm) | 1/4, 3/8, 1/2 GYROLOK® tube fittings 1/4 Female NPT |
| 4- AND 5- WAY TRUNNION VALVES | | | | |
| 6000 psig (414 bar) | 0° F to 350° F (-18° C to 177° C) | 0.47 to 0.66 | 0.166" to 0.187" (4.2 mm to 4.8 mm) | 1/4 GYROLOK® tube fittings 1/4 Female NPT |

Flow Capacity of HOKE® Ball Valves

To determine the Cv or flow of a **gas** @ 70° F (21° C):

$$Cv = \frac{SCFH}{1360} \sqrt{\frac{(\Delta p) (p_1)}{(460 + T) (S.G.)}} \quad \text{or} \quad SCFH = 1360 Cv \sqrt{\frac{(\Delta p) (p_1)}{(460 + T) (S.G.)}}$$

where: $\Delta p = p_1 - p_2$
 $p_1 =$ inlet pressure in psia
 $p_2 =$ outlet pressure in psia
 SCFH = flow in standard cubic feet per hour
 S.G. = specific gravity of gas where air = 1.0 @ 70° F (21° C) and 14.7 psia
 T = temperature in ° F





Flomite® 71 Series

2-way Integral Panel Mount Ball Valves

Used for quick on-off service with a visual indication of flow, HOKE®'s 2-way ball valves offer orifice sizes up to 0.25" (6.4mm). Flomite® valves feature a floating ball design, encapsulated replaceable seats and check seals to ensure leak-tight service and extended service life.



Typical Applications

- Instrument panels
- High pressure instrument lines
- Gas sampling in pilot plants
- Full flow and shutoff in chromatographs
- Hydraulic test stands
- Gas sampling cylinders
- Handling corrosive and viscous fluids

Technical Data

| | |
|------------------------------------|--|
| BODY MATERIAL* | 316 stainless steel, brass, MONEL® |
| OPERATING PRESSURE RANGE*** | Moderate vacuum** to 6000 psig (414 bar) @ 70° F (414 bar @ 21° C) |
| OPERATING TEMPERATURE RANGE | -20° F to +425° F (-29° C to +218° C) 7122 and 7142: -40° F to +350° F (-40° C to +177° C) |
| ORIFICE SIZES | 0.093" to 0.250" (2.4 to 6.4mm) |
| Cv FACTORS | 0.23 to 1.40 |
| END CONNECTIONS | 1/2" to 1/2" GYROLOK® 1/8" to 1/2" NPT 3 to 12mm GYROLOK® |

* Consult factory for other materials

** Moderate vacuum is 10⁻³ to 20 torr.

*** Maximum pressure rating depends on valve series.

Features & Benefits

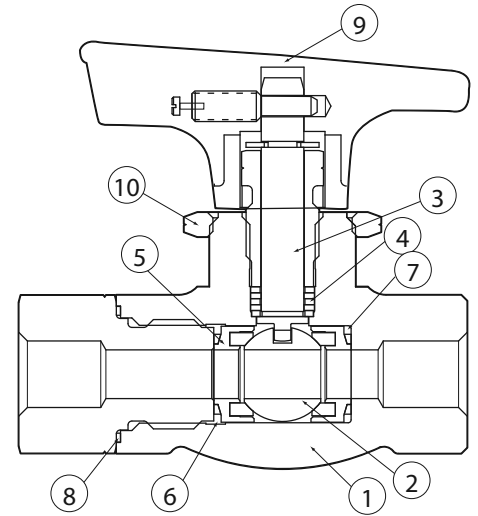
- Quarter turn handle provides a visual indication of on/off valve position, improving safety.
- Dual encapsulated TFE seats and microfinished ball ensure a leak tight seal. This combination provides greater valve reliability.
- Dyna-Pak® packing provides a leak-tight seal with low operating torque in vacuum or high pressure applications, helping to prevent fugitive emissions.
- Floating ball provides pressure-assisted sealing and temperature wear compensation for longer valve cycle life and greater value.
- A wide variety of GYROLOK® end fittings or pipe fittings provide the correct fitting option for the application.
- Special High Tolerance NPT Thread

ball valves

Flomite® 71 Series

Materials of Construction

| DESCRIPTION | BRASS | 316 STAINLESS STEEL | MONEL® |
|---|--|--|-------------------|
| 1 Body | Brass | 316 stainless steel | MONEL® |
| 2 Ball | 316 stainless steel | 316 stainless steel | MONEL® |
| 3 Stem | 316 stainless steel | 316 stainless steel | MONEL® |
| 4 Stem packing 7188 Series | — | Dyneon™ TFM 1700 | — |
| Other valves | TFE/316 stainless steel wafers | TFE/316 stainless steel wafers | TFE/MONEL® wafers |
| 5 Seats: 7115 & 7155 Series 7122 & 7142 Series 7188 Series | PCTFE TFE — | PCTFE TFE Filled TFE | PCTFE TFE — |
| 6 Seat retainers | 316 stainless steel | 316 stainless steel | MONEL® |
| 7 Seat washers† 7115, 7155 & 7188 Series 7122 & 7142 Series | Viton® TFE | Viton® TFE | Viton® TFE |
| 8 End fitting gaskets 7188 Series Other valves | — TFE | Dyneon™ TFM 1700 TFE | — TFE |
| 9 Handle | Nylon | Nylon | Nylon |
| 10 Panel mounting nut* 7115 Series Other valves | 316 stainless steel 316 stainless steel | 316 stainless steel 316 stainless steel | MONEL® MONEL® |

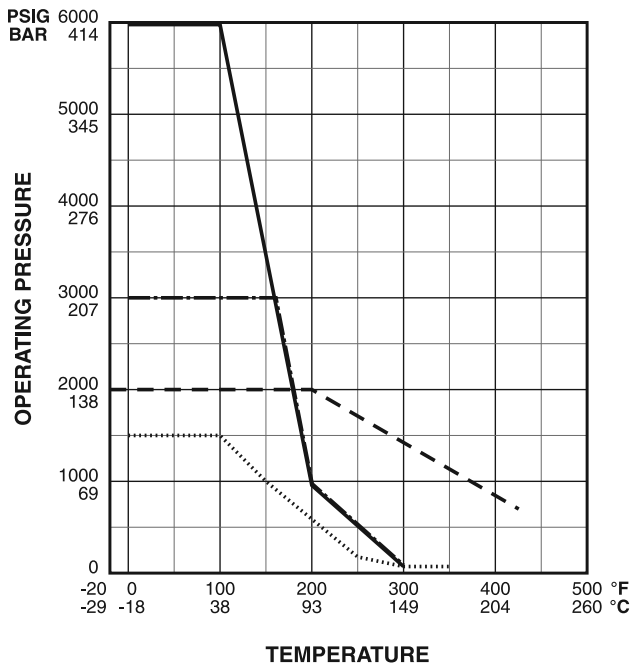


All 6000 psig valves come with long red handles for reduced operating force. All other models have a short blue handle.

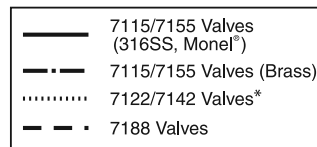
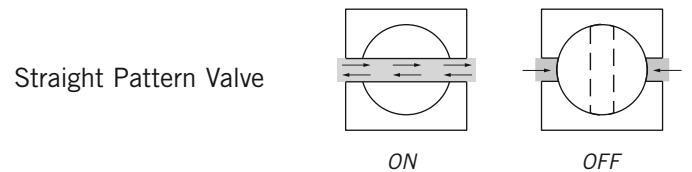
† Other elastomers are available upon request. Contact your local distributor for details.

* Not included for connection size F8Y.

Pressure vs. Temperature Curve



Flow Diagrams 2-way valve



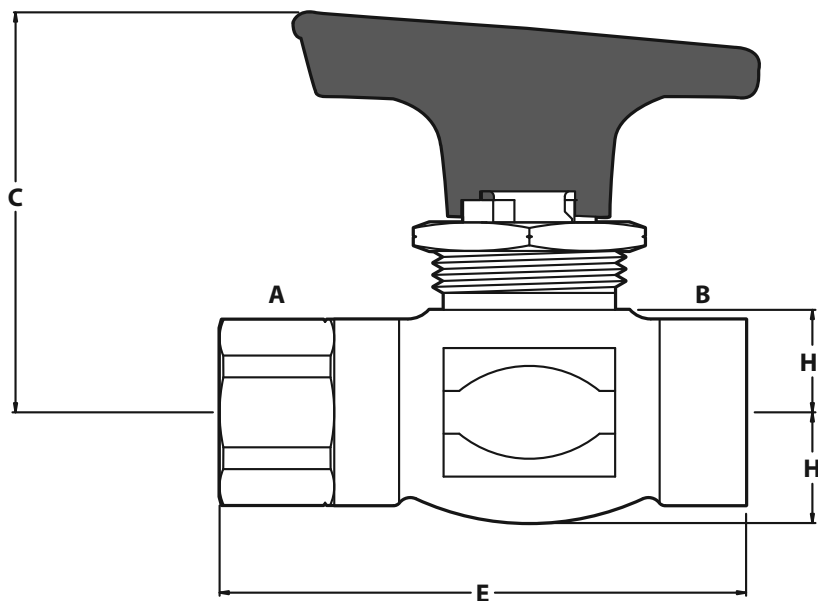
* Minimum temperature -40° F (-40° C)

Flomite® 71 Series

Dimensions

| INLET A | OUTLET B | UNIT | ORIFICE | C | E | H | H' | PANEL MOUNTING | |
|-----------------|-----------------|------|---------|---------------------------------|---------------------------------|--------------------------------|--------------------------------|----------------|--------------------------------|
| | | | | | | | | MAX. THICKNESS | HOLE SIZE |
| 1/8" GYROLOK® | 1/8" GYROLOK® | inch | 0.093 | 1 ⁹ / ₃₂ | 2 ¹⁹ / ₃₂ | 1 ³ / ₃₂ | 1 ¹ / ₃₂ | 3/16 | 1 ⁹ / ₃₂ |
| | | mm | 2.4 | 33 | 66 | 10 | 9 | 5 | 15 |
| 1/8" female NPT | 1/8" female NPT | inch | 0.125 | 1 ⁹ / ₃₂ | 1 ³ / ₃₂ | 1 ³ / ₃₂ | 1 ¹ / ₃₂ | 3/16 | 1 ⁹ / ₃₂ |
| | | mm | 3.2 | 33 | 50 | 10 | 9 | 5 | 15 |
| 1/8" female NPT | 1/8" female NPT | inch | 0.250 | 1 ¹⁹ / ₃₂ | 2 ¹ / ₄ | 1/2 | 7/16 | 1/4 | 4 ⁹ / ₆₄ |
| | | mm | 6.4 | 41 | 58 | 13 | 11 | 6 | 19 |
| 1/4" GYROLOK® | 1/4" GYROLOK® | inch | 0.125 | 1 ⁹ / ₃₂ | 2 ¹ / ₁₆ | 1 ³ / ₃₂ | 1 ¹ / ₃₂ | 3/16 | 1 ⁹ / ₃₂ |
| | | mm | 3.2 | 33 | 68 | 10 | 9 | 5 | 15 |
| 1/4" GYROLOK® | 1/4" GYROLOK® | inch | 0.187 | 1 ¹⁹ / ₃₂ | 3 ³ / ₃₂ | 1/2 | 7/16 | 1/4 | 4 ⁹ / ₆₄ |
| | | mm | 4.7 | 41 | 78 | 13 | 11 | 6 | 19 |
| 1/4" male NPT | 1/4" GYROLOK® | inch | 0.187 | 1 ³ / ₄ | 2 ⁷ / ₈ | 1/2 | 7/16 | 1/4 | 4 ⁹ / ₆₄ |
| | | mm | 4.7 | 45 | 73 | 13 | 11 | 6 | 19 |
| 1/4" male NPT | 3/8" GYROLOK® | inch | 0.250 | 1 ³ / ₄ | 2 ⁷ / ₈ | 1/2 | 7/16 | 1/4 | 4 ⁹ / ₆₄ |
| | | mm | 6.4 | 45 | 73 | 13 | 1 | 6 | 19 |
| 1/4" male NPT | 1/4" male NPT | inch | 0.187 | 1 ¹⁹ / ₃₂ | 2 ¹ / ₃₂ | 1/2 | 7/16 | 1/4 | 4 ⁹ / ₆₄ |
| | | mm | 4.7 | 41 | 64 | 13 | 11 | 6 | 19 |
| 1/4" male NPT | 1/4" female NPT | inch | 0.250 | 1 ³ / ₄ | 2 ¹ / ₃₂ | 1/2 | 7/16 | 1/4 | 4 ⁹ / ₆₄ |
| | | mm | 6.4 | 45 | 64 | 13 | 1 | 6 | 19 |
| 1/4" female NPT | 1/4" female NPT | inch | 0.250 | 1 ³ / ₄ | 2 ¹ / ₁₆ | 1/2 | 7/16 | 1/4 | 4 ⁹ / ₆₄ |
| | | mm | 6.4 | 45 | 62 | 13 | 11 | 6 | 19 |
| 3/8" GYROLOK® | 3/8" GYROLOK® | inch | 0.250 | 1 ³ / ₄ | 3 ¹ / ₄ | 1/2 | 7/16 | 1/4 | 4 ⁹ / ₆₄ |
| | | mm | 6.4 | 45 | 83 | 13 | 11 | 6 | 19 |
| 1/2" GYROLOK® | 1/2" GYROLOK® | inch | 0.250 | 1 ²⁹ / ₃₂ | 4 ¹ / ₈ | 1/2 | 7/16 | 1/4 | 4 ⁹ / ₆₄ |
| | | mm | 6.4 | 49 | 106 | 13 | 11 | 6 | 19 |
| 3mm GYROLOK® | 3mm GYROLOK® | inch | 0.093 | 1 ⁹ / ₃₂ | 2 ¹⁹ / ₃₂ | 1 ³ / ₃₂ | 1 ¹ / ₃₂ | 3/16 | 1 ⁹ / ₃₂ |
| | | mm | 2.4 | 33 | 66 | 10 | 9 | 5 | 15 |
| 6mm GYROLOK® | 6mm GYROLOK® | inch | 0.125 | 1 ⁹ / ₃₂ | 2 ¹ / ₁₆ | 1 ³ / ₃₂ | 1 ¹ / ₃₂ | 3/16 | 1 ⁹ / ₃₂ |
| | | mm | 3.2 | 33 | 68 | 10 | 9 | 5 | 15 |
| 6mm GYROLOK® | 6mm GYROLOK® | inch | 0.187 | 1 ¹⁹ / ₃₂ | 3 ³ / ₃₂ | 1/2 | 7/16 | 1/4 | 4 ⁹ / ₆₄ |
| | | mm | 4.7 | 41 | 78 | 13 | 11 | 6 | 19 |
| 8mm GYROLOK® | 8mm GYROLOK® | inch | 0.250 | 1 ³ / ₄ | 3 ¹ / ₄ | 1/2 | 7/16 | 1/4 | 4 ⁹ / ₆₄ |
| | | mm | 6.4 | 45 | 83 | 13 | 11 | 6 | 19 |
| 10mm GYROLOK® | 10mm GYROLOK® | inch | 0.250 | 1 ³ / ₄ | 3 ⁷ / ₈ | 1/2 | 7/16 | 1/4 | 4 ⁹ / ₆₄ |
| | | mm | 6.4 | 45 | 79 | 13 | 11 | 6 | 19 |
| 12mm GYROLOK® | 12mm GYROLOK® | inch | 0.250 | 1 ⁷ / ₈ | 4 | 1/2 | 7/16 | 1/4 | 4 ⁹ / ₆₄ |
| | | mm | 6.4 | 48 | 103 | 13 | 11 | 6 | 19 |

Dimensions for reference only, subject to change.



Flomite® 71 Series

How to Order Standard Valves

Flomite® 7115 & 7155 Series PCTFE Seats—Viton® Washers

Brass: Pressure to 3000 psig (207 bar)

316 Stainless Steel/MONEL®: Pressure to 6000 psig

Temperature range: 0° F to 300° F (–18° C to 149° C)

| END CONNECTIONS | | ORDER BY PART NUMBER | | | ORIFICE | Cv |
|-----------------|-----------------|----------------------|---------------|---------|---------|------|
| INLET | OUTLET | BRASS | 316 ST. STEEL | MONEL® | | |
| 1/8" GYROLOK® | 1/8" GYROLOK® | 7155G2B | 7155G2Y | — | 0.093 | 0.23 |
| 1/8" female NPT | 1/8" female NPT | 7155F2B | 7155F2Y | — | 0.125 | 0.40 |
| 1/8" female NPT | 1/8" female NPT | — | 7115F2Y | — | 0.250 | 1.40 |
| 1/4" GYROLOK® | 1/4" GYROLOK® | 7155G4B | 7155G4Y | — | 0.125 | 0.40 |
| 1/4" GYROLOK® | 1/4" GYROLOK® | 7115G4B | 7115G4Y | 7115G4M | 0.187 | 0.80 |
| 1/4" male NPT | 1/4" GYROLOK® | 7115H4B | 7115H4Y | — | 0.187 | 0.80 |
| 1/4" male NPT | 1/4" female NPT | 7115L4B | 7115L4Y | — | 0.250 | 1.40 |
| 1/4" female NPT | 1/4" female NPT | 7115F4B | 7115F4Y | 7115F4M | 0.250 | 1.40 |
| 3/8" GYROLOK® | 3/8" GYROLOK® | 7115G6B | 7115G6Y | — | 0.250 | 1.40 |
| 1/2" GYROLOK® | 1/2" GYROLOK® | 7115G8B | 7115G8Y | — | 0.250 | 1.40 |
| 1/2" female NPT | 1/2" female NPT | 7115F8B | 7115F8Y | — | 0.250 | 1.40 |
| 3mm GYROLOK® | 3mm GYROLOK® | — | 7155G3YMM | — | 0.093 | 0.23 |
| 6mm GYROLOK® | 6mm GYROLOK® | — | 7155G6YMM | — | 0.125 | 0.40 |
| 6mm GYROLOK® | 6mm GYROLOK® | — | 7115G6YMM | — | 0.187 | 0.80 |
| 8mm GYROLOK® | 8mm GYROLOK® | — | 7115G8YMM | — | 0.250 | 1.40 |
| 10mm GYROLOK® | 10mm GYROLOK® | — | 7115G10YMM | — | 0.250 | 1.40 |
| 12mm GYROLOK® | 12mm GYROLOK® | — | 7115G12YMM | — | 0.250 | 1.40 |



7155G2Y

Flomite® 7122 & 7142 Series TFE Seats—TFE Washers

Pressure to 1500 psig (103 bar)

Temperature range: –40° F to +350° F (–40° C to +176° C)

| END CONNECTIONS | | ORDER BY PART NUMBER | | | ORIFICE | Cv |
|-----------------|-----------------|----------------------|---------------|---------|---------|------|
| INLET | OUTLET | BRASS | 316 ST. STEEL | MONEL® | | |
| 1/8" GYROLOK® | 1/8" GYROLOK® | 7142G2B | 7142G2Y | — | 0.093 | 0.23 |
| 1/8" female NPT | 1/8" female NPT | 7142F2B | 7142F2Y | — | 0.125 | 0.40 |
| 1/4" GYROLOK® | 1/4" GYROLOK® | 7142G4B | 7142G4Y | — | 0.125 | 0.40 |
| 1/4" GYROLOK® | 1/4" GYROLOK® | 7122G4B | 7122G4Y | 7122G4M | 0.187 | 0.80 |
| 1/4" male NPT | 1/4" GYROLOK® | 7122H4B | 7122H4Y | — | 0.187 | 0.80 |
| 1/4" male NPT | 3/8" GYROLOK® | — | 7122H46Y | — | 0.250 | 1.40 |
| 1/4" male NPT | 1/4" male NPT | — | 7122M4Y | — | 0.250 | 1.40 |
| 1/4" male NPT | 1/4" female NPT | 7122L4B | 7122L4Y | — | 0.250 | 1.40 |
| 1/4" female NPT | 1/4" female NPT | 7122F4B | 7122F4Y | 7122F4M | 0.250 | 1.40 |
| 3/8" GYROLOK® | 3/8" GYROLOK® | 7122G6B | 7122G6Y | — | 0.250 | 1.40 |
| 1/2" GYROLOK® | 1/2" GYROLOK® | — | 7122G8Y | — | 0.250 | 1.40 |
| 3mm GYROLOK® | 3mm GYROLOK® | — | 7142G3YMM | — | 0.093 | 0.23 |
| 6mm GYROLOK® | 6mm GYROLOK® | — | 7142G6YMM | — | 0.125 | 0.40 |
| 6mm GYROLOK® | 6mm GYROLOK® | — | 7122G6YMM | — | 0.187 | 0.80 |
| 8mm GYROLOK® | 8mm GYROLOK® | — | 7122G8YMM | — | 0.250 | 1.40 |
| 10mm GYROLOK® | 10mm GYROLOK® | — | 7122G10YMM | — | 0.250 | 1.40 |



7122F4B

Flomite® 7188 Series Filled TFE Seats—Viton® Washers

Pressure to 2000 psig (138 bar)

Temperature range: –20° F to +425° F (–29° C to +218° C)

| END CONNECTIONS | | ORDER BY PART NUMBER | ORIFICE | CV |
|-----------------|-----------------|----------------------|---------|------|
| INLET | OUTLET | 316 STAINLESS STEEL | | |
| 1/4" GYROLOK® | 1/4" GYROLOK® | 7188G4Y | 0.187 | 0.80 |
| 1/4" female NPT | 1/4" female NPT | 7188F4Y | 0.250 | 1.40 |
| 3/8" GYROLOK® | 3/8" GYROLOK® | 7188G6Y | 0.250 | 0.80 |
| 1/2" GYROLOK® | 1/2" GYROLOK® | 7188G8Y | 0.250 | 0.80 |



7188F4Y

Flomite® 71 Series

Ordering Options



Metal Handles

Metal handles can be ordered for Flomite® 71 Series 2-way valves with an orifice of 0.187" or 0.250". To order, specify kit **7100K13** following the valve number (Example: **7155G2Y-7100K13**).

Color-coded Handles

Color-coded handles are available for Flomite® 71 Series valves. Order by the part numbers listed below.

| HANDLE COLOR | 7115, 7122 & 7188 SERIES | 7142 & 7155 SERIES |
|--------------|--------------------------|--------------------|
| Red | 95683-030 | 97346-030 |
| Blue | 95683-031 | 97346-031 |
| Black | 95683-032 | 97346-032 |
| Green | 95683-033 | 97346-033 |
| Orange | 95683-034 | 97346-034 |

Handle Locking Kit

Safety lockout kits are available for applications which must conform to Code of Federal Regulations 29CFR Part 1910, OSHA Safety and Health Act, and other international regulations. Valves can be locked in either an opened or closed position with the stainless steel upper and lower locking plates. Lock with readily available padlocks or commercially available multiple lockout devices. Locking kits include the locking plates and assembly instructions. To order a safety lockout kit for 7115, 7122 and 7188 Series valves, specify kit **7100K18**.



Spare Parts

Spare parts and repair kits are available for all ball valves. Please contact your distributor for specific information.

Cleaning and Testing

When ordering, please specify if oxygen cleaning or helium leak testing is required.

Additional Sizes

Additional sizes and options are available on special request. Please consult your local HOKE® distributor.



Rotoball® 72 Series

2-way Low Profile Ball Valves

HOKE®'s bar stock 2-way ball valves include a 0.375" (9.5 mm) orifice. Rotoball® valves feature a floating ball design, encapsulated seats, and a trip-proof handle for safe, leak-tight service and long service life.



Typical Applications

- Hydraulic test stands
- Handling slurries
- Refinery pilot plants
- Pneumatic systems
- Corrosives handling

Technical Data

| | |
|---|--|
| BODY MATERIAL* | 316 stainless steel, brass, MONEL® |
| OPERATING PRESSURE RANGE @ 70° F (21° C) | 7222 Series Moderate vacuum** to 2000 psig (138 bar) 7223 Series Moderate vacuum** to 5000 psig (345 bar) |
| OPERATING TEMPERATURE RANGE | -20° F to +350° F (-29° C to +177° C) |
| ORIFICE SIZE | 0.375 (9.5mm) |
| CV FACTOR | 3.4 |
| END CONNECTIONS | ½" GYROLOK® ¾" to 1½" female NPT 12mm GYROLOK® |

* Consult factory for other materials

** Moderate vacuum is 10^{-3} to 10^{-5} torr.

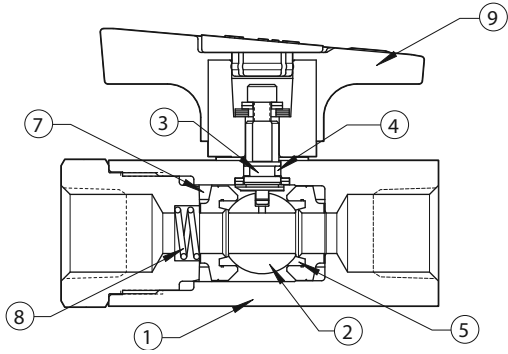
Features & Benefits

- Oval trip-proof handle helps prevent accidental actuation.
- Quarter turn handle provides a visual indication of on/off valve position, improving safety.
- Blowout-proof stem for added safety
- Dual encapsulated TFE seats and microfinished ball ensure a leak tight seal. This combination provides greater valve reliability.
- Floating ball provides pressure-assisted sealing and temperature wear compensation for longer valve cycle life and greater value.
- TFE seats with TFE or Viton® washers provide excellent corrosion resistance, providing the correct material for the application.
- A wide variety of GYROLOK® end fittings and pipe fittings provide the correct fitting option for the application.
- Special High Tolerance NPT Thread

ball valves

Rotoball® 72 Series

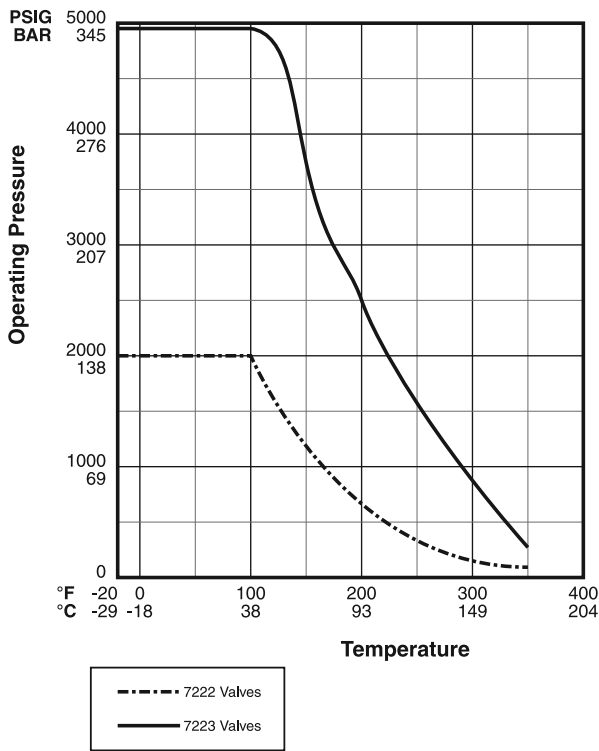
Materials of Construction



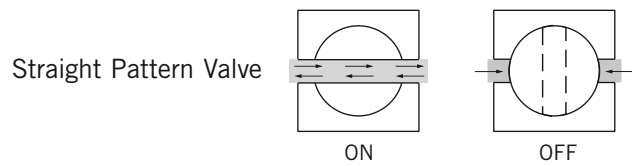
| DESCRIPTION | BRASS | 316 STAINLESS STEEL | MONEL® |
|------------------|---------------------|---------------------|--------|
| 1 Body | Brass | 316 stainless steel | MONEL® |
| 2 Ball | 316 stainless steel | 316 stainless steel | MONEL® |
| 3 Stem | 316 stainless steel | 316 stainless steel | MONEL® |
| 4 Stem packing† | Viton® | Viton® | Viton® |
| 5 Seats | TFE | TFE | TFE |
| 6 Seat retainers | 316 stainless steel | 316 stainless steel | MONEL® |
| 7 Seat washers† | | | |
| 7222 Series | TFE | TFE | TFE |
| 7223 Series* | — | Viton® | — |
| 8 Spring | 316 stainless steel | 316 stainless steel | MONEL® |
| 9 Handle | Nylon | Nylon | Nylon |

† Other elastomers are available upon request. Contact your local distributor
 * 7223 only available in 316 stainless steel body

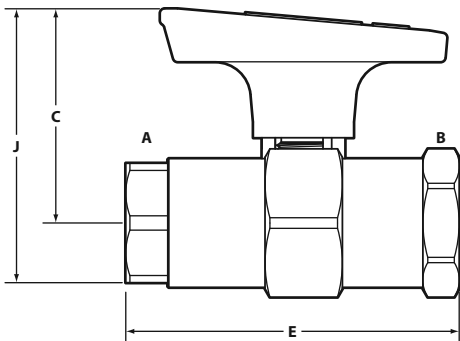
Pressure vs. Temperature Curve



Flow Diagrams 2-way valve



Dimensions



| INLET A & OUTLET B | C | E | J |
|--------------------|------------|-------|--------|
| 3/8" female NPT | inch 1 1/8 | 3 1/2 | 2 5/16 |
| | mm 48 | 89 | 65 |
| 1/2" female NPT | inch 1 1/8 | 3 1/2 | 2 5/16 |
| | mm 48 | 89 | 65 |
| 1/2" GYROLOK® | inch 1 1/8 | 4 1/8 | 2 5/16 |
| | mm 48 | 124 | 65 |
| 12mm GYROLOK® | inch 1 1/8 | 4 1/8 | 2 5/16 |
| | mm 48 | 124 | 65 |

Dimensions for reference only, subject to change.

Rotoball® 72 Series

How to Order Standard Valves

Rotoball® 7222 Series Pressure to 2000 psig (138 bar), TFE Seats—TFE Washers

| END CONNECTIONS INLET & OUTLET | ORDER BY PART NUMBER | | | ORIFICE | Cv |
|-----------------------------------|----------------------|---------------|---------|---------|-----|
| | BRASS | 316 ST. STEEL | MONEL® | | |
| 3/8" female NPT | — | 7222F6Y | — | 0.375 | 3.4 |
| 1/2" female NPT | 7222F8B | 7222F8Y | 7222F8M | 0.375 | 3.4 |
| 1/2" GYROLOK® | 7222G8B | 7222G8Y | 7222G8M | 0.375 | 3.4 |
| 12mm GYROLOK® | — | 7222G12YMM | — | 0.375 | 3.4 |



7223F8Y

Rotoball® 7223 Series Pressure to 5000 psig (345 bar), TFE Seats—Viton® Washers

| END CONNECTIONS INLET & OUTLET | ORDER BY PART NUMBER | | | ORIFICE | Cv |
|-----------------------------------|----------------------|--|--|---------|-----|
| | 316 STAINLESS STEEL | | | | |
| 3/8" female NPT | 7223F6Y | | | 0.375 | 3.4 |
| 1/2" female NPT | 7223F8Y | | | 0.375 | 3.4 |
| 1/2" GYROLOK® | 7223G8Y | | | 0.375 | 3.4 |
| 12mm GYROLOK® | 7223G12YMM | | | 0.375 | 3.4 |

Ordering Options

Metal Lever Handle

A metal lever handle is available for Rotoball® 7222 and 7223 Series valves. To order, specify 90043-1 with plug button 5982.



7223F8Y with Metal Lever Handle

Handle Locking Kit

Safety lockout kits are available for applications which must conform to Code of Federal Regulations 29CFR Part 1910, OSHA Safety and Health Act, and other international regulations. Valves can be locked in either the opened or closed position with the stainless steel upper and lower locking plates. Lock with readily available padlocks or commercially available multiple lockout devices. Locking kits include the locking plates and assembly instructions. To order a safety lockout kit for Rotoball® 72 Series valves, specify kit **7200K7**.



Ball Valve with Handle Lock

Panel Mounting

To order panel mounting, specify kit **7200K1**.

Spare Parts

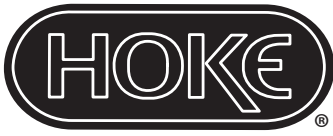
Spare parts and repair kits are available for all ball valves. Please contact your distributor for specific information.

Cleaning and Testing

When ordering, please specify if oxygen cleaning or helium leak testing is required.

Additional Sizes

Additional sizes and options are available on special request. Please consult your local HOKE® distributor.



Ultramite™ 70 Series

Fixed End 2- and 3-way Ball Valves

Ultramite™ 70 Series valves are designed to guard against accidental disassembly. The tamper-proof fixed end fittings are welded in place, with the exception of the 7065 Series which are pinned.



Typical Applications

- High pressure test stands
- Sampling lines
- Instrument lines
- Analyzer labs

Technical Data

| | |
|-------------------------------------|-------------------------------------|
| BODY MATERIAL* | 316 stainless steel, brass, MONEL® |
| MAXIMUM OPERATING PRESSURE** | 6000 psig @ 70° F (414 bar @ 21° C) |
| OPERATING TEMPERATURE RANGE | 0° F to +350° F (-18° C to +177° C) |
| ORIFICE SIZES | 0.093 to 0.375 (2.3 to 9.5mm) |
| Cv FACTORS | 0.15 to 1.40 |

* Consult factory for other materials

** Depending on individual series.

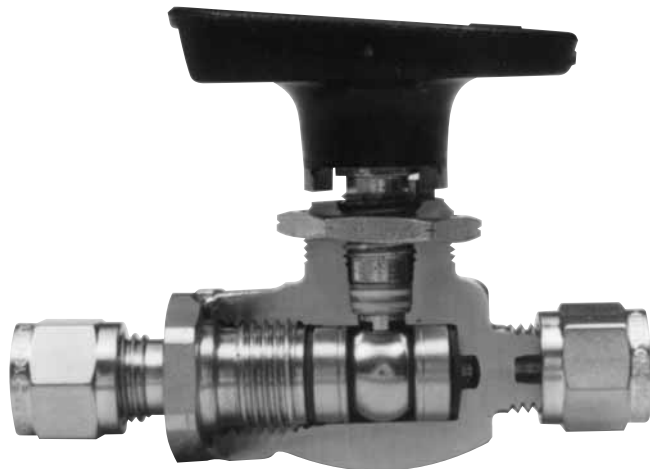
Features & Benefits

- Fixed end fittings prevent accidental disassembly, enhancing safety.
- Floating ball provides pressure-assisted sealing and temperature wear compensation for longer valve cycle life and greater value.
- Encapsulated seats extend cycle life, reducing cost of ownership.
- Check seals improve leak tightness thereby increasing seat life.
- Oval trip-proof handle helps prevent accidental actuation. Quarter turn handle provides a visual indication of on/off valve position, improving safety.
- Special High Tolerance NPT Thread

ball valves

Ultramite™ 70 Series

Ultramite™ 7015, 7022 Series (2-way valves)



Cv Factors: 0.23 to 1.40

Typical Applications

- High pressure test stands
- Sampling lines
- Instrument lines
- Analyzer labs

Technical Data

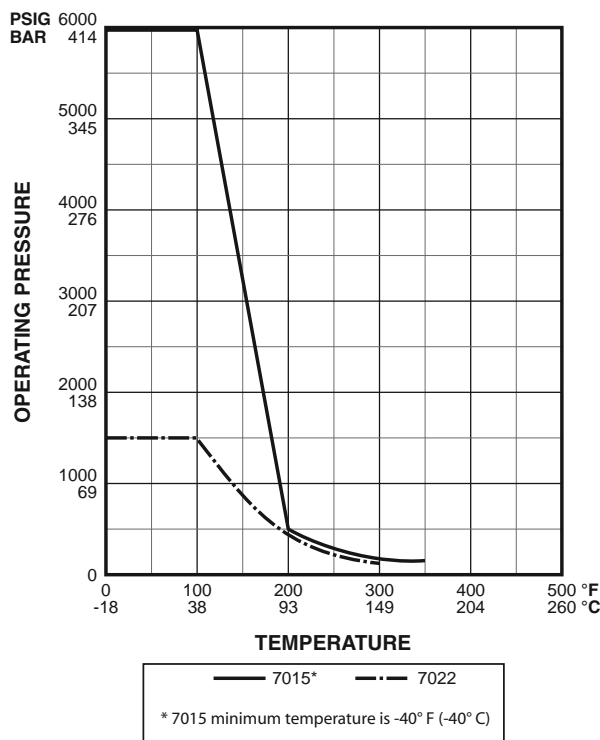
| | |
|---|--|
| BODY MATERIAL | 316 stainless steel, brass, MONEL® |
| OPERATING PRESSURE RANGE @ 70° F (21° C) | 7015: Moderate vacuum* to 6000 psig (414 bar) 7022: Moderate vacuum* to 1500 psig (103 bar) |
| OPERATING TEMPERATURE RANGE | 7015: 0° F to +350° F (-18° C to +177° C) 7022: 0° F to +350° F (-18° C to +177° C) |
| ORIFICE SIZES | 0.093" to 0.250" (2.3 to 6.3mm) |
| Cv FACTORS | 0.23 to 1.40 |
| END CONNECTIONS | ½" to ¾" GYROLOK® ¼" NPT |

* Moderate vacuum is 10⁻³ to 20 torr.

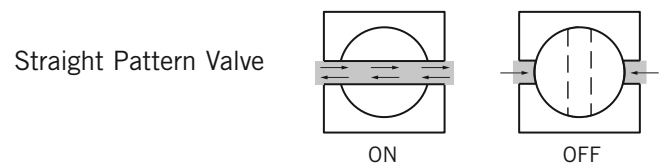
Features & Benefits

- Fixed end fittings prevent accidental disassembly, enhancing safety.
- Oval trip-proof handle helps prevent accidental actuation. Quarter turn handle provides a visual indication of on/off valve position, providing improved safety.
- Dual encapsulated TFE seats and microfinished ball ensure a bidirectional, leak tight seal. This provides greater valve versatility and operator peace of mind.
- Floating ball provides pressure-assisted sealing and temperature wear compensation for longer valve cycle life and greater value.
- Dyna-Pak® packing provides a leak-tight seal with low operating torque in vacuum or high pressure applications, helping to eliminate fugitive emissions.
- A wide variety of GYROLOK® end fittings or pipe fittings provide the correct fitting option for the application.

Pressure vs. Temperature Curve

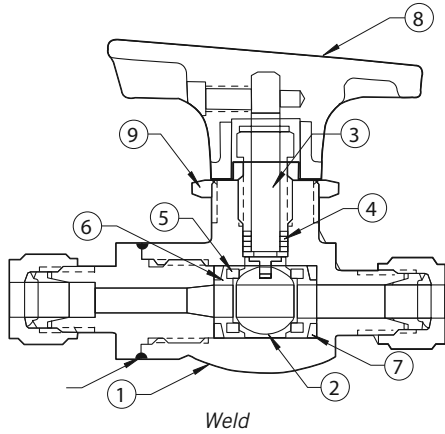


Flow Diagrams 2-way valve



Ultramite™ 70 Series

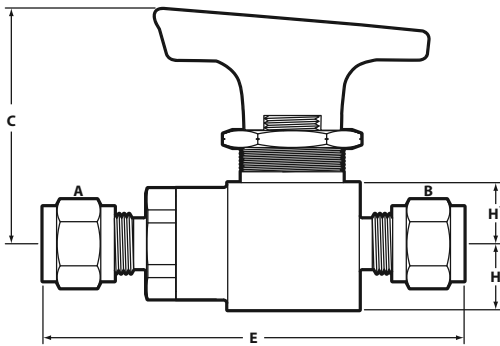
Materials of Construction



| DESCRIPTION | BRASS | 316 ST. STEEL | MONEL® |
|----------------------|--------------------------------|--------------------------------|-------------------|
| 1 Body | Brass | 316 stainless steel | MONEL® |
| 2 Ball | 316 stainless steel | 316 stainless steel | MONEL® |
| 3 Stem | 316 stainless steel | 316 stainless steel | MONEL® |
| 4 Stem packing | TFE/316 stainless steel wafers | TFE/316 stainless steel wafers | TFE/MONEL® wafers |
| 5 Seats | | | |
| 7015 Series | — | PCTFE | — |
| 7022 Series | TFE | TFE | TFE |
| 6 Seat retainers | 316 stainless steel | 316 stainless steel | MONEL® |
| 7 Seat washers† | | | |
| 7015 Series | — | Viton® | — |
| 7022 Series | TFE | TFE | TFE |
| 8 Handle | Nylon | Nylon | Nylon |
| 9 Panel mounting nut | 316 stainless steel | 316 stainless steel | MONEL® |

† Other elastomers are available upon request. Contact your local distributor.

Dimensions



| INLET A | OUTLET B | | C | E | H | H1 |
|-----------------|-----------------|------|---------|---------|-------|--------|
| 1/8" GYROLOK® | 1/8" GYROLOK® | inch | 1 13/32 | 2 19/32 | 13/32 | 1 1/32 |
| | | mm | 36 | 66 | 10 | 9 |
| 1/4" GYROLOK® | 1/4" GYROLOK® | inch | 1 3/4 | 3 1/16 | 1/2 | 7/16 |
| | | mm | 44 | 78 | 13 | 11 |
| 1/4" male NPT | 1/4" GYROLOK® | inch | 1 7/8 | 2 7/8 | 1/2 | 7/16 |
| | | mm | 48 | 73 | 13 | 11 |
| 1/4" male NPT | 1/4" male NPT | inch | 1 7/8 | 2 17/32 | 1/2 | 7/16 |
| | | mm | 48 | 64 | 13 | 11 |
| 1/4" male NPT | 1/4" female NPT | inch | 1 7/8 | 2 17/32 | 1/2 | 7/16 |
| | | mm | 48 | 64 | 13 | 11 |
| 1/4" female NPT | 1/4" female NPT | inch | 1 3/4 | 2 7/16 | 1/2 | 7/16 |
| | | mm | 44 | 62 | 13 | 11 |
| 3/8" GYROLOK® | 3/8" GYROLOK® | inch | 1 3/4 | 3 3/32 | 1/2 | 7/16 |
| | | mm | 44 | 82 | 13 | 11 |

Panel Mounting

Panel hole: for 1/8" GYROLOK® 1 9/32" (15mm) diameter
for all other models 4 9/64" (19mm) diameter

Panel thickness: for 1/8" GYROLOK® 3/16" (5mm) diameter
for all other models 1/4" (6mm) diameter

Dimensions for reference only, subject to change.

How to Order Standard Valves



7022F4B

Ultramite™ 7015 Series Pressure to 6000 psig (414 bar), PCTFE Seats—Viton® washers

Temperature range: 0° F to 300° F (–18° C to +149° C)

| END CONNECTIONS | | ORDER BY PART NUMBER | | |
|-----------------|-----------------|----------------------|---------|------|
| INLET | OUTLET | 316 ST. STEEL | ORIFICE | Cv |
| 1/4" GYROLOK® | 1/4" GYROLOK® | 7015G4Y | 0.187 | 0.80 |
| 1/4" male NPT | 1/4" GYROLOK® | 7015H4Y | 0.187 | 0.80 |
| 1/4" male NPT | 1/4" female NPT | 7015L4Y | 0.250 | 1.40 |
| 1/4" female NPT | 1/4" female NPT | 7015F4Y | 0.250 | 1.40 |
| 3/8" GYROLOK® | 3/8" GYROLOK® | 7015G6Y | 0.250 | 1.40 |

Ultramite™ 7022 Series Pressure to 1500 psig (103 bar),

TFE Seats—TFE Washers

Temperature range: 0° F to 350° F (–18° C to +177° C)

| END CONNECTIONS | | ORDER BY PART NUMBER | | | ORIFICE | Cv |
|-----------------|-----------------|----------------------|---------------|---------|---------|------|
| INLET | OUTLET | BRASS | 316 ST. STEEL | MONEL® | | |
| 1/8" GYROLOK® | 1/8" GYROLOK® | — | 7022G2Y | — | 0.093 | 0.23 |
| 1/4" GYROLOK® | 1/4" GYROLOK® | 7022G4B | 7022G4Y | 7022G4M | 0.187 | 0.80 |
| 1/4" male NPT | 1/4" GYROLOK® | — | 7022H4Y | — | 0.187 | 0.80 |
| 1/4" male NPT | 1/4" male NPT | — | 7022M4Y | — | 0.250 | 1.40 |
| 1/4" male NPT | 1/4" female NPT | 7022L4B | 7022L4Y | — | 0.250 | 1.40 |
| 1/4" female NPT | 1/4" female NPT | 7022F4B | 7022F4Y | 7022F4M | 0.250 | 1.40 |
| 3/8" GYROLOK® | 3/8" GYROLOK® | 7022G6B | 7022G6Y | 7022G6M | 0.250 | 1.40 |

Ultramite™ 70 Series

Ultramite™ 7092, 7093 Series (2-way Valves)



Cv Factor: 3.4

Features & Benefits

- Fixed end fittings prevent accidental disassembly, enhancing safety.
- Oval trip-proof handle helps prevent accidental actuation. Quarter turn handle provides a visual indication of on/off valve position, providing improved safety.
- Dual encapsulated TFE seats and microfinished ball ensure a leak tight seal. This provides greater valve reliability and operator peace of mind.
- Floating ball provides pressure-assisted sealing and temperature wear compensation for longer valve cycle life and greater value.

Typical Applications

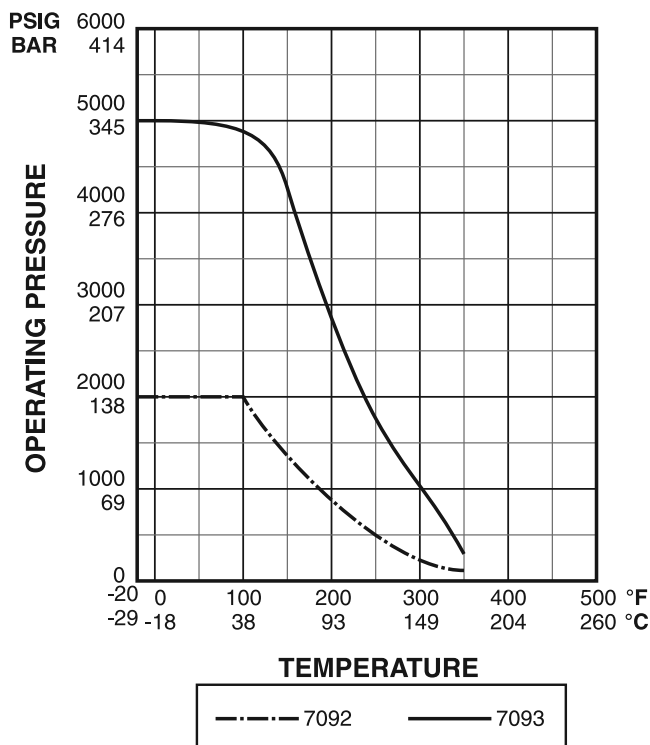
- Slurry handling
- Refinery pilot plants
- Pneumatic systems
- Corrosives handling

Technical Data

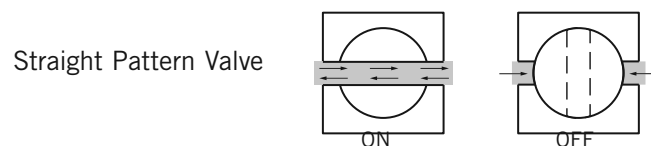
| | |
|---|--|
| BODY MATERIAL | 316 stainless steel, brass, MONEL® |
| OPERATING PRESSURE RANGE @ 70° F (21° C) | 7092 Series Moderate vacuum* to 2000 psig (138 bar) 7093 Series Moderate vacuum* to 5000 psig (345 bar) |
| OPERATING TEMPERATURE RANGE | -20° F to +350° F (-29° C to +177° C) (both series) |
| ORIFICE SIZE | 0.375" (9.5mm) |
| Cv FACTOR | 3.4 |
| END CONNECTIONS | ½" GYROLOK® ¾" to ½" NPT |

* Moderate vacuum is 10⁻³ to 20 torr.

Pressure vs. Temperature Curve

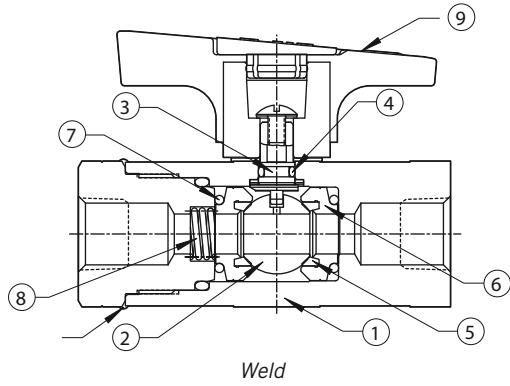


Flow Diagrams 2-way valve



Ultramite™ 70 Series

Materials of Construction

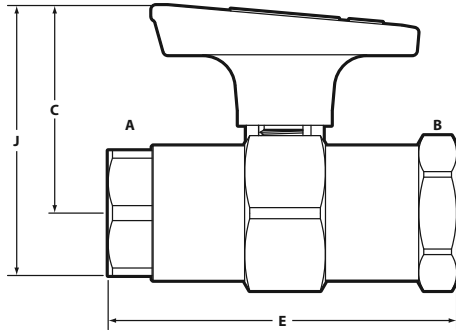


| DESCRIPTION | BRASS | 316 STAINLESS STEEL | MONEL® |
|------------------|---------------------|---------------------|--------|
| 1 Body | Brass | 316 stainless steel | MONEL® |
| 2 Ball | 316 stainless steel | 316 stainless steel | MONEL® |
| 3 Stem | 316 stainless steel | 316 stainless steel | MONEL® |
| 4 Stem packing† | Viton® | Viton® | Viton® |
| 5 Seats | TFE | TFE | TFE |
| 6 Seat retainers | 316 stainless steel | 316 stainless steel | MONEL® |
| 7 Seat washers† | | | |
| 7092 Series | TFE | TFE | TFE |
| 7093 Series* | — | Viton® | — |
| 8 Spring | 316 stainless steel | 316 stainless steel | MONEL® |
| 9 Handle | Nylon | Nylon | Nylon |

† Other elastomers are available upon request. Contact your local distributor

* 7093 series only available in 316 stainless steel

Dimensions



| INLET A | OUTLET B | | C | E | J |
|-----------------|-----------------|------|-------|-------|--------|
| 3/8" female NPT | 3/8" female NPT | inch | 1 7/8 | 3 1/2 | 2 9/16 |
| | | mm | 48 | 89 | 65 |
| 1/2" female NPT | 1/2" female NPT | inch | 1 7/8 | 3 1/2 | 2 9/16 |
| | | mm | 48 | 89 | 65 |
| 1/2" GYROLOK® | 1/2" GYROLOK® | inch | 1 7/8 | 4 7/8 | 2 9/16 |
| | | mm | 48 | 124 | 65 |

Dimensions for reference only, subject to change.

Ordering Options



Optional metal lever handle

Metal Lever Handle

A metal lever handle is available for 7092 and 7093 Series valves. To order, specify **90043-1** with plug button 5982.

Panel Mounting

Panel mounting is available for 7092 and 7093 valves by specifying kit **7200K1**.

How to Order Standard Valves



7093F8Y

Ultramite™ 7092 Series Pressure to 2000 psig (138 bar), TFE Seats—TFE Washers

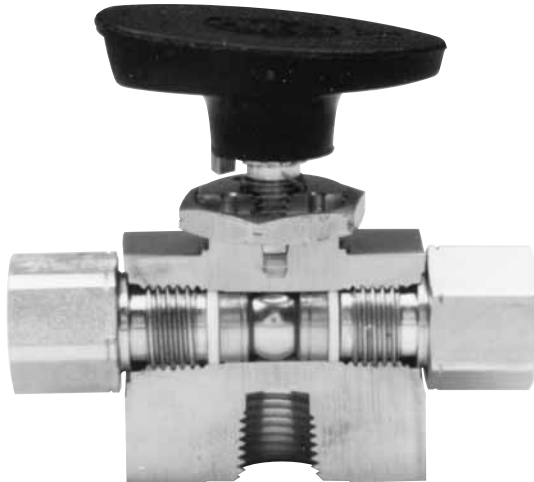
| END CONNECTIONS | | ORDER BY PART NUMBER | | | | |
|-----------------|-----------------|----------------------|---------------|---------|---------|-----|
| INLET | OUTLET | BRASS | 316 ST. STEEL | MONEL® | ORIFICE | Cv |
| 3/8" female NPT | 3/8" female NPT | — | 7092F6Y | 7092F6M | 0.375 | 3.4 |
| 1/2" female NPT | 1/2" female NPT | 7092F8B | 7092F8Y | 7092F8M | 0.375 | 3.4 |
| 1/2" GYROLOK® | 1/2" GYROLOK® | 7092G8B | 7092G8Y | 7092G8M | 0.375 | 3.4 |

Ultramite™ 7093 Series Pressure to 5000 psig (345 bar), TFE Seats—Viton® Washers

| END CONNECTIONS | | ORDER BY PART NUMBER | | | | |
|-----------------|-----------------|----------------------|---------------|---------|---------|-----|
| INLET | OUTLET | BRASS | 316 ST. STEEL | MONEL® | ORIFICE | Cv |
| 3/8" female NPT | 3/8" female NPT | — | 7093F6Y | 7093F6M | 0.375 | 3.4 |
| 1/2" female NPT | 1/2" female NPT | — | 7093F8Y | 7093F8M | 0.375 | 3.4 |
| 1/2" GYROLOK® | 1/2" GYROLOK® | — | 7093G8Y | 7093G8M | 0.375 | 3.4 |

Ultramite™ 70 Series

Ultramite™ 7065 Series (3-way Valve)



Cv Factors: 0.15 to 0.57

Features & Benefits

- Welded ends secure the end fittings preventing accidental disassembly, enhancing safety.
- Oval trip-proof handle helps prevent accidental actuation for safer operation. The handle also serves as a visual indicator of the port in use, or closed position for increased safety.
- Dyna-Pak® packing provides a leak-tight seal with low operating torque in vacuum or high pressure applications, helping to prevent fugitive emissions.

The Ultramite™ 7065 3-way ball valve uses 180° handle rotation for diverting flow from one line to another. The oval handle points to the port in use. When the handle is perpendicular to the valve body it is in the shutoff position.

Typical Applications

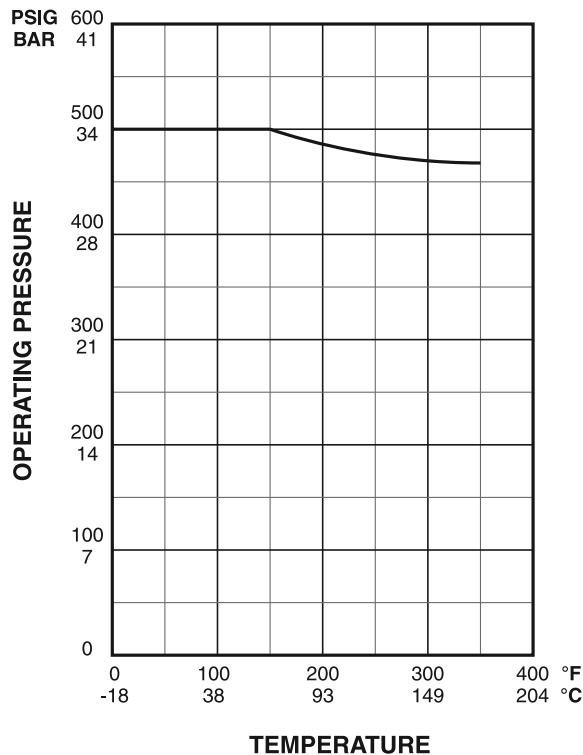
- Analyzer labs
- Sampling systems
- Fluid diverting/switching

Technical Data

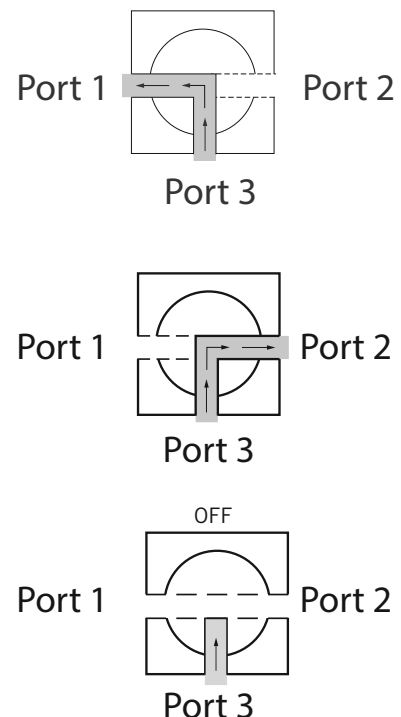
| | |
|------------------------------------|---|
| BODY MATERIAL | 316 stainless steel, brass, MONEL® |
| OPERATING PRESSURE RANGE | Moderate vacuum* to 500 psig @ 70° F (34.5 bar @ 21° C) |
| OPERATING TEMPERATURE RANGE | 0° F to +350° F (-18° C to +177° C) |
| ORIFICE SIZE | 0.187" (4.8mm) |
| Cv FACTORS | 0.15 to 0.57 |
| END CONNECTIONS | ½" to ¾" GYROLOK® ¼" NPT |

* Moderate vacuum is 10⁻³ to 20 torr.

Pressure vs. Temperature Curve

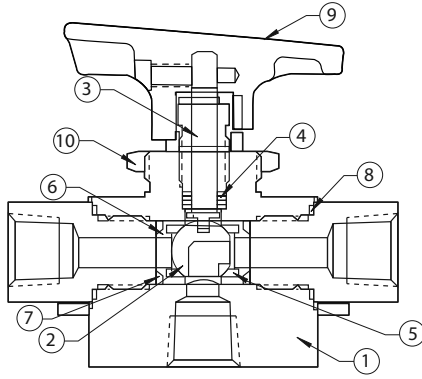


Flow Diagrams 3-way valve



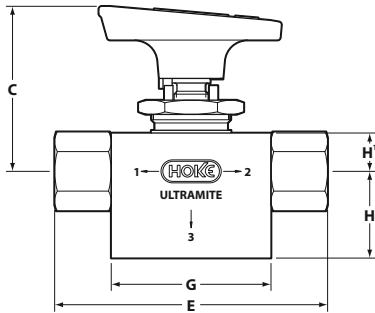
Ultramite™ 70 Series

Materials of Construction



| | DESCRIPTION | BRASS | 316 STAINLESS STEEL | MONEL® |
|----|----------------------|--------------------------------|--------------------------------|-------------------|
| 1 | Body | Brass | 316 stainless steel | MONEL® |
| 2 | Ball | 316 stainless steel | 316 stainless steel | MONEL® |
| 3 | Stem | 316 stainless steel | 316 stainless steel | MONEL® |
| 4 | Stem packing | TFE/316 stainless steel wafers | TFE/316 stainless steel wafers | TFE/MONEL® wafers |
| 5 | Seats | TFE | TFE | TFE |
| 6 | Seat retainers | 316 stainless steel | 316 stainless steel | MONEL® |
| 7 | Seat washers | TFE | TFE | TFE |
| 8 | End fittings gaskets | TFE | TFE | TFE |
| 9 | Handle | Nylon | Nylon | Nylon |
| 10 | Panel mounting nut | 316 stainless steel | 316 Stainless Steel | MONEL® |

Dimensions



| END CONNECTIONS | | C | E | G | H | H' |
|-----------------|------|---------|--------|-------|--------|------|
| 1/8" GYROLOK® | inch | 1 15/16 | 3 7/16 | 1 3/4 | 2 | 7/16 |
| | mm | 49 | 87 | 44 | 51 | 11 |
| 1/4" GYROLOK® | inch | 1 15/16 | 3 3/8 | 1 3/4 | 2 1/16 | 7/16 |
| | mm | 49 | 92 | 44 | 52 | 11 |
| 1/4" female NPT | inch | 1 3/4 | 3 | 1 3/4 | 1 9/16 | 7/16 |
| | mm | 44 | 76 | 44 | 24 | 11 |
| 3/8" GYROLOK® | inch | 1 15/16 | 3 7/8 | 1 3/4 | 2 3/16 | 7/16 |
| | mm | 49 | 98 | 44 | 56 | 11 |

Panel Mounting

Panel hole: 57/64" (23mm) diameter

Panel thickness: 3/16" (5mm) diameter

Dimensions for reference only, subject to change.

How to Order



7065F4Y

Ultramite™ 7065 Series Pressure to 500 psig (35 bar)

| END CONNECTIONS | | ORDER BY PART NUMBER | | | | |
|-----------------|-----------------|----------------------|---------------|---------|---------|------|
| INLET | OUTLET | BRASS | 316 ST. STEEL | MONEL® | ORIFICE | Cv |
| 1/8" GYROLOK® | 1/8" GYROLOK® | 7065G2B | 7065G2Y | — | 0.093 | 0.15 |
| 1/4" GYROLOK® | 1/4" GYROLOK® | 7065G4B | 7065G4Y | 7065G4M | 0.187 | 0.57 |
| 1/4" female NPT | 1/4" female NPT | 7065F4B | 7065F4Y | 7065F4M | 0.187 | 0.57 |
| 3/8" GYROLOK® | 3/8" GYROLOK® | 7065G6B | 7065G6Y | 7065G6M | 0.187 | 0.57 |

Ultramite™ 70 Series Ball Valve Options

Handle Locking Kit

Safety lockout kits are available for applications which must conform to Code of Federal Regulations 29CFR Part 1910, OSHA

Safety and Health Act, and other international regulations. Valves can be locked in either an opened or closed position with the stainless steel upper and lower locking plates. Lock with readily available padlocks or commercially available multiple lockout devices. Locking kits include the locking plates and assembly instructions. To order a safety lockout kit for Ultramite™ 7015 and 7022 Series valves, specify kit **7100K18**; for Ultramite™ 7092 and 7093 Series valves, specify kit **7200K7**; for 7065 Series valve, specify kit **7600K1**.

Cleaning and Testing

When ordering, please specify if oxygen cleaning or helium leak testing is required.

Additional Sizes

Additional sizes and options are available on special request. Please consult your local HOKE® distributor.



Selectomite® 71 and 76 Series

3-way Ball Valves

Selectomite® 3-way ball valves use 180° operation for diverting flow from one line to another. The handle points to the side port in use; when perpendicular to the side ports, it indicates the shutoff position.



Typical Applications

- Instrument air lines
- Sampling systems
- 2-way gauge readout of line pressure
- Manual cylinder actuation

Technical Data

| | |
|------------------------------------|--|
| BODY MATERIAL* | 316 stainless steel, brass, MONEL® |
| OPERATING PRESSURE RANGE*** | Moderate vacuum** to 6000 psig @ 70° F (414 bar @ 21° C) |
| OPERATING TEMPERATURE RANGE | 7165 Series -40° F to +350° F (-40° C to +177° C) 7177 Series 0° F to +350° F (-18° C to +177° C) 7671, 7673 Series -40° F to +250° F (-40° C to +121° C) |
| ORIFICE SIZES | 0.093" to 0.187" (2.4 to 4.8mm) |
| Cv FACTORS | 0.15 to 0.57 |
| END CONNECTIONS | ½" to ½" GYROLOK® ½" to ¼" NPT 3 to 8mm GYROLOK® |

* Consult factory for other materials

** Moderate vacuum is 10⁻³ to 20 torr. Pressure rating is for inlet through Port 3. For side loading (inlet at Port 1 or 2), see note under How to Order table for each series on page 21 and 22. For differential pressures up to 6000 psig, see Selectomite® 76 Series 3-way trunnion valves.

***Depending on valve series.

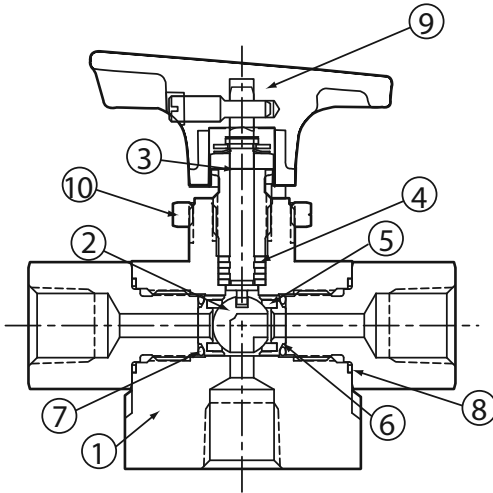
Features & Benefits

- Handle points to port in use or to closed position, providing a visual cue and improved safety.
- Dyna-Pak® packing provides a leak-tight seal with low operating torque in vacuum or high pressure applications, helping to prevent fugitive emissions.
- Dual encapsulated TFE seats and microfinished ball ensure a leak tight seal. This combination provides greater valve reliability.
- TFE seats and washers provide excellent corrosion resistance, providing the correct material for the application.
- A wide variety of GYROLOK® end fittings or pipe fittings provide the correct fitting option for the application.
- Special High Tolerance NPT Thread

ball valves

Selectomite® 71 and 76 Series

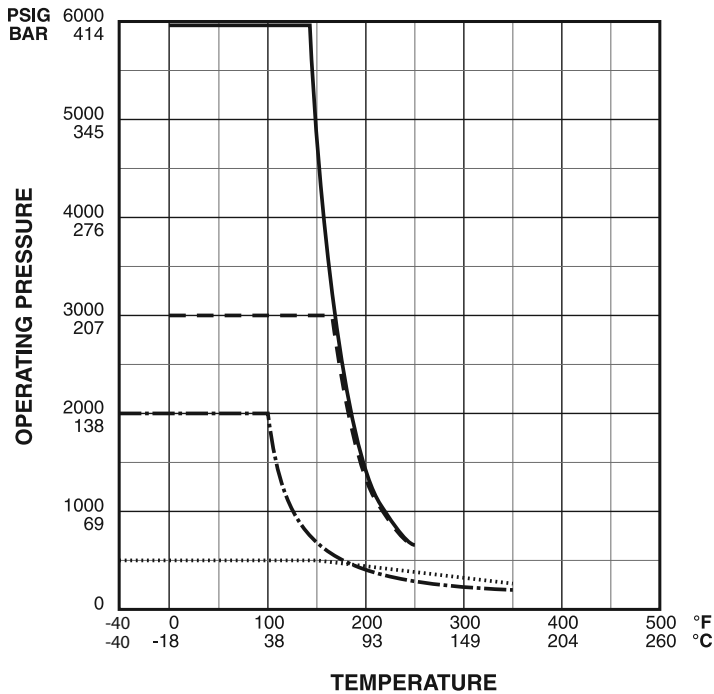
Materials of Construction



| DESCRIPTION | BRASS | 316 STAINLESS STEEL | MONEL® |
|-----------------------|--------------------------------|--------------------------------|-------------------|
| 1 Body | Brass | 316 stainless steel | MONEL® |
| 2 Ball | 316 stainless steel | 316 stainless steel | MONEL® |
| 3 Stem | 316 stainless steel | 316 stainless steel | MONEL® |
| 4 Stem packing | TFE/316 stainless steel wafers | TFE/316 stainless steel wafers | TFE/MONEL® wafers |
| 5 Seats | | | |
| 7165, 7177 Series | TFE | TFE | TFE |
| 7671 Series | Nylatron® | — | — |
| 7673 Series | — | Nylatron® | — |
| 6 Seat retainers | 316 stainless steel | 316 stainless steel | MONEL® |
| 7 Seat washers† | | | |
| 7177, 7673 Series | — | Viton® | — |
| 7165 Series | TFE | TFE | TFE |
| 7671 Series | Buna-N | — | — |
| 8 End fitting gaskets | TFE | TFE | TFE |
| 9 Handle | Nylon | Nylon | Nylon |
| 10 Panel mounting nut | 316 stainless steel | 316 stainless steel | MONEL® |

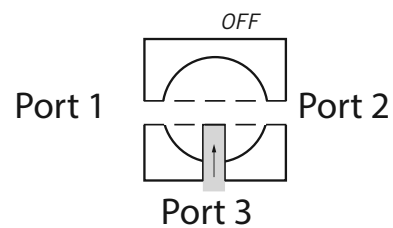
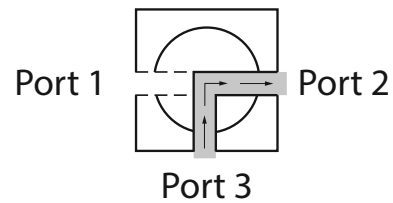
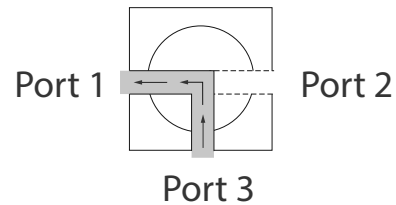
† Other elastomers are available upon request. Contact your local distributor

Pressure vs. Temperature Curve



..... 7165 Valves
 - · - · 7177 Valves
 - - - 7671 Valves
 ——— 7673 Valves

Flow Diagrams 3-way valve



Selectomite® 71 and 76 Series

Dimensions

Selectomite® 7177 Series

| END CONNECTIONS | | C | E | G | H | H' |
|-----------------|------|---------------------------------|--------------------------------|-------------------------------|---------------------------------|--------------------------------|
| 1/8" GYROLOK® | inch | 1 ²⁷ / ₆₄ | 2 ⁷ / ₈ | 1 ¹ / ₄ | 1 ²³ / ₃₂ | 2 ³ / ₆₄ |
| | mm | 36 | 73 | 32 | 44 | 9 |
| 1/8" female NPT | inch | 1 ²⁷ / ₆₄ | 2 ¹ / ₄ | 1 ¹ / ₄ | 3/4 | 2 ³ / ₆₄ |
| | mm | 36 | 57 | 32 | 19 | 9 |
| 1/4" GYROLOK® | inch | 1 ²⁷ / ₆₄ | 3 ³ / ₃₂ | 1 ¹ / ₄ | 1 ¹³ / ₁₆ | 2 ³ / ₆₄ |
| | mm | 36 | 78 | 32 | 46 | 9 |
| 3mm GYROLOK® | inch | 1 ²⁷ / ₆₄ | 2 ⁷ / ₈ | 1 ¹ / ₄ | 1 ²³ / ₃₂ | 2 ³ / ₆₄ |
| | mm | 36 | 73 | 32 | 44 | 9 |
| 6mm GYROLOK® | inch | 1 ²⁷ / ₆₄ | 3 ³ / ₃₂ | 1 ¹ / ₄ | 1 ¹³ / ₁₆ | 2 ³ / ₆₄ |
| | mm | 36 | 78 | 32 | 46 | 9 |

Panel mounting

Panel hole: 1⁹/₃₂" (15.1mm) diameter

Panel thickness: 3/16" (4.8mm) diameter

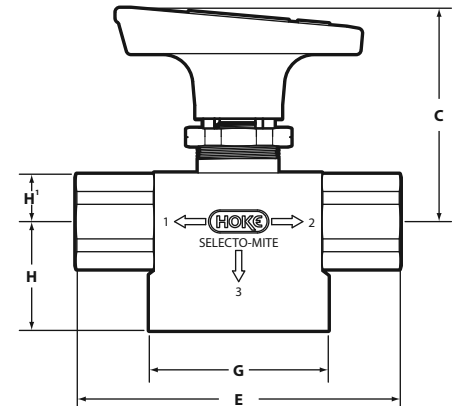
Selectomite® 7165, 7671, 7673 Series

| END CONNECTIONS | | C | E | G | H | H' |
|-----------------|------|---------------------------------|--------------------------------|-------------------------------|--------------------------------|------|
| 1/8" GYROLOK® | inch | 1 ¹⁵ / ₁₆ | 3 ⁷ / ₁₆ | 1 ³ / ₄ | 2 | 7/16 |
| | mm | 49 | 87 | 44 | 51 | 11 |
| 1/4" GYROLOK® | inch | 1 ¹⁵ / ₁₆ | 3 ³ / ₈ | 1 ³ / ₄ | 2 ¹ / ₁₆ | 7/16 |
| | mm | 49 | 92 | 44 | 52 | 11 |
| 1/4" female NPT | inch | 1 ³ / ₄ | 3 | 1 ³ / ₄ | 1 ⁹ / ₁₆ | 7/16 |
| | mm | 44 | 76 | 44 | 24 | 11 |
| 3/8" GYROLOK® | inch | 1 ¹⁵ / ₁₆ | 3 ⁷ / ₈ | 1 ³ / ₄ | 2 ³ / ₁₆ | 7/16 |
| | mm | 49 | 98 | 44 | 56 | 11 |
| 3mm GYROLOK® | inch | 1 ¹⁵ / ₁₆ | 3 ⁷ / ₁₆ | 1 ³ / ₄ | 2 | 7/16 |
| | mm | 49 | 87 | 44 | 51 | 11 |
| 6mm GYROLOK® | inch | 1 ¹⁵ / ₁₆ | 3 ³ / ₈ | 1 ³ / ₄ | 2 ¹ / ₁₆ | 7/16 |
| | mm | 49 | 92 | 44 | 52 | 11 |
| 8mm GYROLOK® | inch | 1 ¹⁵ / ₁₆ | 3 ⁷ / ₈ | 1 ³ / ₄ | 2 ³ / ₁₆ | 7/16 |
| | mm | 49 | 98 | 44 | 56 | 11 |

Panel mounting

Panel hole: 5⁷/₆₄" (22.6mm) diameter

Panel thickness: 3/16" (4.8mm) diameter



Dimensions for reference only, subject to change.

How to Order Standard Valves

Selectomite® 7165 Series Pressure to 500 psig (34 bar), TFE Seats—TFE Washers

| END CONNECTIONS | ORDER BY PART NUMBER | | | | Cv |
|-----------------|----------------------|---------------|---------|----------------|-------|
| | BRASS | 316 ST. STEEL | MONEL® | ORIFICE | |
| 1/8" GYROLOK® | 7165G2B | 7165G2Y | — | 0.093" (2.4mm) | 0.15‡ |
| 1/4" GYROLOK® | 7165G4B | 7165G4Y | 7165G4M | 0.187" (4.7mm) | 0.57 |
| 1/4" female NPT | 7165F4B | 7165F4Y | 7165F4M | 0.187" (4.7mm) | 0.57 |
| 3/8" GYROLOK® | 7165G6B | 7165G6Y | — | 0.187" (4.7mm) | 0.57 |
| 1/2" GYROLOK® | 7165G8B | 7165G8Y | 7165G8M | 0.189" (4.8mm) | 0.57 |
| 3mm GYROLOK® | — | 7165G3YMM | — | 0.093" (2.4mm) | 0.15‡ |
| 6mm GYROLOK® | — | 7165G6YMM | — | 0.187" (4.7mm) | 0.57 |
| 8mm GYROLOK® | — | 7165G8YMM | — | 0.187" (4.7mm) | 0.57 |

NOTE: Maximum differential pressure between side ports is 500 psig (34 barg).

‡ Orifice restricted by end connection.



7165G4B

Selectomite® 71 and 76 Series

How to Order Standard Valves (continued)



7177G2Y

Selectomite® 7177 Series Pressure to 2000 psig (138 bar) TFE Seats—Viton® Washers

| END CONNECTIONS | ORDER BY PART NUMBER | | |
|-----------------|----------------------|----------------|-------------------|
| | 316 STAINLESS STEEL | ORIFICE | Cv |
| ½" GYROLOK® | 7177G2Y | 0.093" (2.4mm) | 0.15 [‡] |
| ½" female NPT | 7177F2Y | 0.125" (3.2mm) | 0.30 |
| ¼" GYROLOK® | 7177G4Y | 0.125" (3.2mm) | 0.30 |
| 3mm GYROLOK® | 7177G3YMM | 0.125" (3.2mm) | 0.15 [‡] |
| 6mm GYROLOK® | 7177G6YMM | 0.093" (2.4mm) | 0.15 [‡] |

Note: Maximum differential pressure between side ports is 1500 psig (103 bar).

‡ Orifice restricted by end connection.

Selectomite® 7671 Series Pressure to 3000 psig (207 bar) Nylatron® Seats—Buna-N Washers

| END CONNECTIONS | ORDER BY PART NUMBER | | |
|-----------------|----------------------|----------------|------|
| | BRASS | ORIFICE | Cv |
| ¼" GYROLOK® | 7671G4B | 0.187" (4.7mm) | 0.53 |
| ¼" female NPT | 7671F4B | 0.187" (4.7mm) | 0.57 |
| ½" GYROLOK® | 7671G8B | 0.188" (4.8mm) | 0.53 |

Note: Maximum differential pressure between side ports is 1500 psig (103 bar).



7673F4Y

Selectomite® 7673 Series Pressure to 6000 psig (414 bar) Nylatron® Seats—Viton® Washers

| END CONNECTIONS | ORDER BY PART NUMBER | | |
|-----------------|----------------------|----------------|------|
| | 316 STAINLESS STEEL | ORIFICE | Cv |
| ¼" GYROLOK® | 7673G4Y | 0.187" (4.7mm) | 0.57 |
| ¼" female NPT | 7673F4Y | 0.187" (4.7mm) | 0.57 |
| ⅜" GYROLOK® | 7673G6Y | 0.187" (4.7mm) | 0.57 |
| ½" GYROLOK® | 7673G8Y | 0.187" (4.7mm) | 0.66 |
| 6mm GYROLOK® | 7673G6YMM | 0.187" (4.7mm) | 0.57 |

Note: Maximum differential pressure between side ports is 1500 psig (103 bar).



Selectomite® 76 Series

3-way Trunnion Valves

Developed for high pressure, side-loading applications, the 316 stainless steel trunnion is supported and held securely in position by two composite bearings. Encapsulated Nylatron® seats provide a positive seal, resulting in leak-tight sealing between all ports to 6000 psig differential, reducing operating torque and increasing cycle life. The handle points to the side port in use; when perpendicular to the side ports, it indicates the shutoff position.



Typical Applications

- Compressed natural gas dispensing
- Instrument air lines
- Sampling systems
- 2-way gauge readout of line pressure
- Down hole control systems on offshore drilling platforms

Features & Benefits

- Blowout-proof stem for added safety
- Trunnion design assures leak-tight sealing at full 6000 psig (414 bar) differential pressure for high pressure applications.
- Handle points to port in use or to closed position, providing a visual cue and improved safety.
- Encapsulated dual Nylatron® seats and Viton® stem seals ensure a leak tight seal. This combination provides greater valve reliability.
- Special High Tolerance NPT Thread

Technical Data

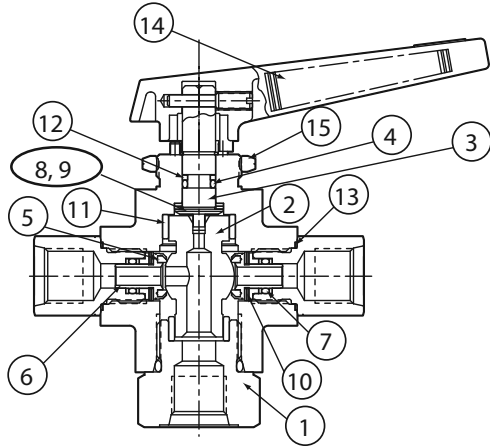
| | |
|---|--|
| BODY MATERIAL* | 316 stainless steel, brass, MONEL® |
| MAXIMUM OPERATING PRESSURE @ 70° F (21° C) | 7644 Series 6000 psig(414 bar) 7654 Series 2000 psig(138 bar) |
| OPERATING TEMPERATURE RANGE | 7644 Series 0° F to +250° F (-18° C to +121° C) 7654 Series 0° F to +350° F (-18° C to +177° C) |
| ORIFICE SIZE | 0.187" (4.8mm) |
| Cv FACTOR | 0.56 |
| END CONNECTIONS | ¼" to ¾" GYROLOK® ¼" female NPT |

* Consult factory for other materials

ball valves

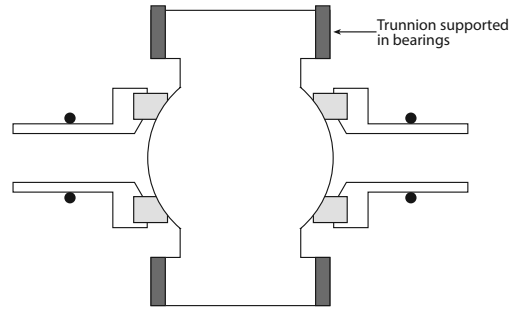
Selectomite® 76 Series

Materials of Construction



| DESCRIPTION | MATERIAL |
|------------------------|---------------------|
| 1 Body | 316 stainless steel |
| 2 Trunnion | 316 stainless steel |
| 3 Stem | 316 stainless steel |
| 4 Stem packing† | Viton® |
| 5 Seats | |
| 7644 Series | Nylatron® |
| 7654 Series | TFE |
| 6 Seat retainers | 316 stainless steel |
| 7 Seat washers† | Viton® |
| 8 Thrust washer | Nylatron® |
| 9 Spacer | 316 stainless steel |
| 10 Belleville washers | 316 stainless steel |
| 11 Bearings | Nylon/TFE |
| 12 Backup ring | TFE |
| 13 End fitting gaskets | TFE |
| 14 Handle | Nylon |
| 15 Panel mounting nut | 316 stainless steel |

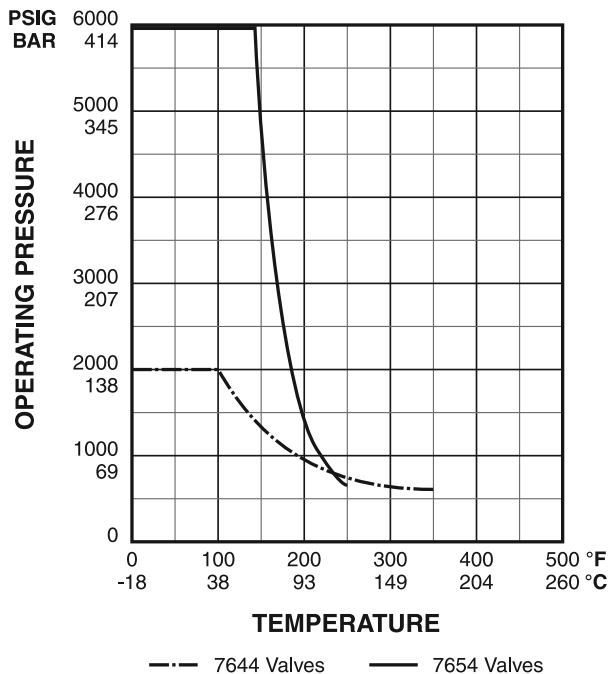
† Other elastomers are available upon request. Contact your local distributor.



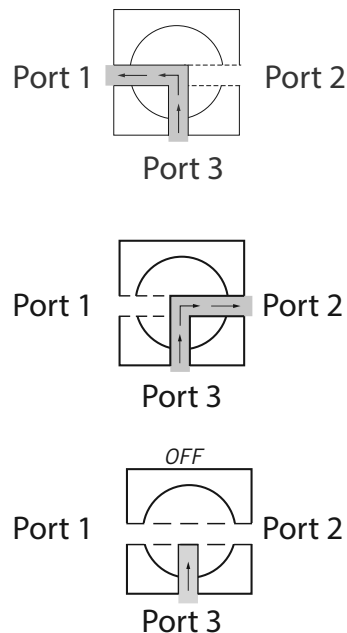
Trunnion Design

While the floating ball is superior in 2-way and many 3-way designs, the trunnion is the preferred choice in 4- and 5-way valves and higher pressure 3-way valves because of the fluid dynamics. The design of the trunnion allows it to be secured in position with composite bearings, assuring a very precise relationship between the trunnion and seats. As a result, trunnion 3-, 4- and 5-way valves have few limitations on pressure ratings.

Pressure vs. Temperature Curve



Flow Diagrams 3-way valve



Selectomite® 76 Series

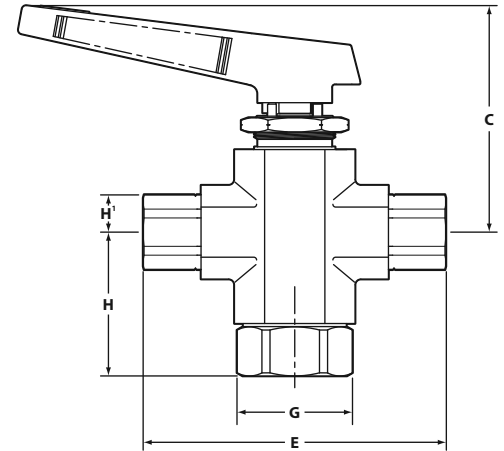
Dimensions

| END CONNECTIONS | | C | E | G | H | H ¹ |
|-----------------|------|----|-----|----|---------------------------------|--------------------------------|
| ¼" GYROLOK® | inch | 2½ | 4 | 1⅛ | 2¾ | 2 ⁹ / ₃₂ |
| | mm | 64 | 102 | 27 | 70 | 23 |
| ¼" female NPT | inch | 2½ | 3⅜ | 1⅛ | 1⅞ | 2 ⁹ / ₃₂ |
| | mm | 64 | 84 | 27 | 40 | 23 |
| ⅜" GYROLOK® | inch | 2½ | 4⅜ | 1⅛ | 2 ²⁹ / ₃₂ | 2 ⁹ / ₃₂ |
| | mm | 64 | 104 | 27 | 71 | 23 |

Panel mounting

Panel hole = 5⁷/₆₄" (22.6mm) diameter

Panel thickness = 3¹/₁₆" (4.8mm) diameter



How to Order Standard Valves

Selectomite® 7644 Series Pressure to 6000 psig (414 bar)

Nylatron® Seats for service to 250° F (121° C)

| END CONNECTIONS | ORDER BY PART NUMBER | | ORIFICE | Cv |
|-----------------|----------------------|--|----------------|------|
| | 316 STAINLESS STEEL | | | |
| ¼" GYROLOK® | 7644G4Y | | 0.187" (4.7mm) | 0.56 |
| ¼" female NPT | 7644F4Y | | 0.187" (4.7mm) | 0.56 |
| ⅜" GYROLOK® | 7644G6Y | | 0.187" (4.7mm) | 0.56 |

Selectomite® 7654 Series Pressure to 2000 psig (138 bar)

TFE Seats for service to 350° F

| END CONNECTIONS | ORDER BY PART NUMBER | | ORIFICE | Cv |
|-----------------|----------------------|--|----------------|------|
| | 316 STAINLESS STEEL | | | |
| ¼" GYROLOK® | 7654G4Y | | 0.187" (4.7mm) | 0.56 |
| ¼" female NPT | 7654F4Y | | 0.187" (4.7mm) | 0.56 |



7644F4Y

Ordering Options

Electric and Pneumatic Actuators

For remote control of Selectomite® 76 Series valves, order an electric or pneumatic actuator. Electric actuators are supplied in either 115 VAC or 24 VDC with weatherproof or explosion-proof housings. Pneumatically actuated ball valves using HOKE®'s rack and pinion actuator can be used for both 90° and 180° double acting and spring return applications. Refer to HOKE®'s Actuator Catalog (79005) or contact your local factory-authorized distributor for more details.

Spare Parts

Spare parts and repair kits are available for all ball valves. Please contact your distributor for specific information.

Cleaning and Testing

When ordering, please specify if oxygen cleaning or helium leak testing is required.

Additional Sizes

Additional sizes and options are available on special request. Please consult your local HOKE® distributor.





Multimite® 79 Series

4- and 5-way Trunnion Valves

Multimite® 4-way, or dual switching valves allow two distinct flow paths to be used at the same time. The 5-way, or diverter valves offer the same functionality as 3-way valves except with four alternate paths.



Typical Applications

4-way valves

- Actuator cycling
- Pressure selecting and venting
- Alternate sampling and distribution

5-way valves

- Sampling systems
- Distribution systems
- Instrument range selection

Technical Data

| | |
|---|--|
| BODY MATERIAL* | 316 stainless steel, MONEL® |
| OPERATING PRESSURE RANGE @ 70° F (21° C) | TFE Seats Moderate vacuum** to 2000 psig (138 bar) Nylatron® Seats Moderate vacuum** to 6000 psig (414 bar) |
| OPERATING TEMPERATURE RANGE | <ul style="list-style-type: none"> • TFE seats: 0° F to +350° F (-18° C to +177° C) • Nylatron® seats: 0° to +250° F (-18° C to +121° C) |
| ORIFICE SIZES | <ul style="list-style-type: none"> • 4-way models: 0.166" (4.2mm) • 5-way models: 0.187" (4.7mm) |
| Cv FACTORS | 0.47 to 0.66 |
| END CONNECTIONS | 1/4" GYROLOK® 1/4" female NPT |

* Consult factory for other materials
** Moderate vacuum is 10⁻³ to 20 torr

Features & Benefits

- Blowout-proof stem for added safety
- Spring-loaded detent engages every 90° to indicate full port position, increasing operator confidence.
- Trunnion bearings eliminate galling, increasing valve life and reducing cost of ownership.
- A wide variety of GYROLOK® end fittings or pipe fittings provide the correct fitting option for the application.
- Special High Tolerance NPT Thread

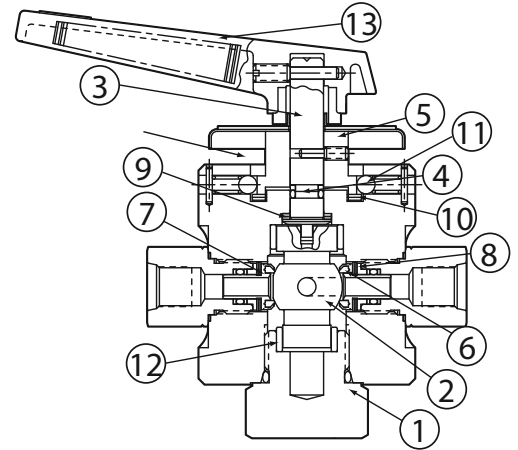
ball valves

Multimite® 79 Series

Materials of Construction

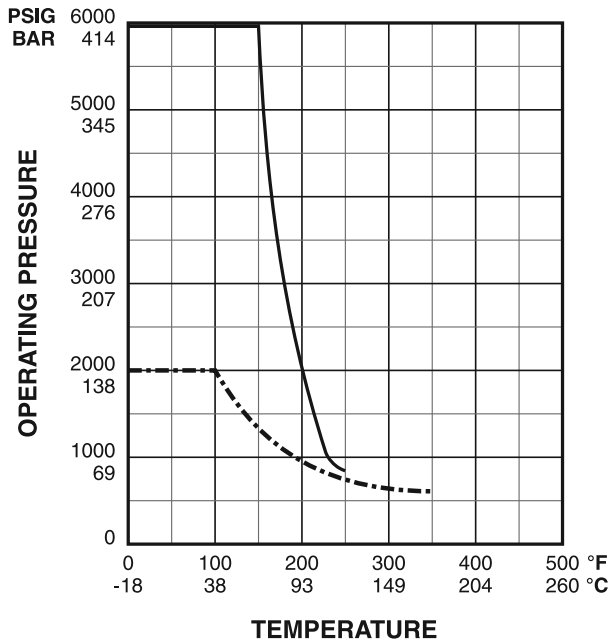
| DESCRIPTION | 2000 PSIG MODELS | 6000 PSIG MODELS |
|----------------------------|-------------------------------|--|
| 1 Body | 316 stainless steel | 316 stainless steel |
| 2 Trunnion | 316 stainless steel | 316 stainless steel |
| 3 Stem | 316 stainless steel | 316 stainless steel |
| 4 Stem packing† | Viton® | Viton® |
| 5 Stem bushing | 316 stainless steel | 316 stainless steel |
| 6 Seats | TFE | Nylatron® |
| 7 Seat retainers | 316 stainless steel | 316 stainless steel |
| 8 Seat washers† | Viton® | Viton® |
| 9 Thrust washer | Rulon® | Nylatron® |
| 10 Friction & wave washers | Nylon & 302 stainless steel | Nylon & 302 stainless steel |
| 11 Spring & ball detent | 302 stainless steel & 440 CSS | 302 stainless steel & 440 CSS |
| 12 Bearings | TFE | Nylon/TFE (fiberglass filament wound backing) |
| 13 Handle | Nylon | Nylon |

† Other elastomers are available upon request. Contact your local distributor.



Panel Mounting

Pressure vs. Temperature Curve



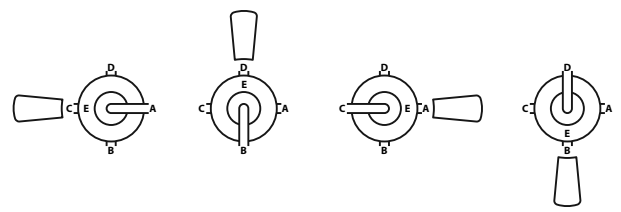
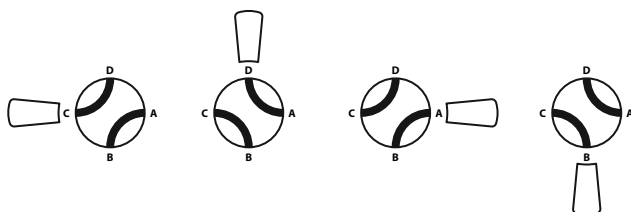
----- 7911/7931 Valves ——— 7921/7941 Valves

Flow Diagrams 4-way & 5-way

Flow Patterns

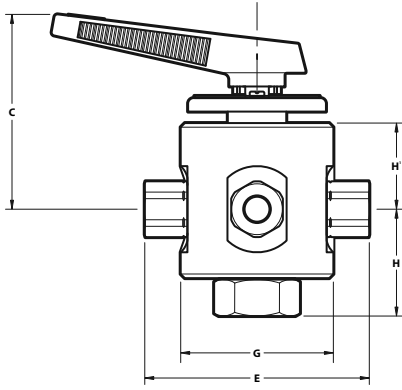
4-way models indicate ports connected

5-way models indicate side ports in use



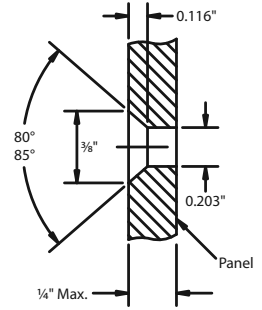
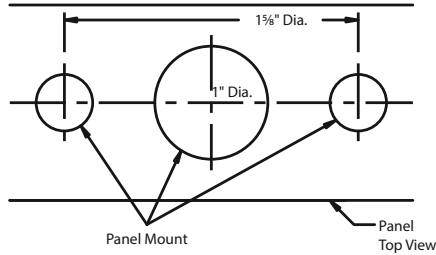
Multimite® 79 Series

Dimensions



| END CONNECTIONS | | C | E | G | H | H ¹ |
|---------------------------------|------|----|---------------------------------|----|--------------------------------|----------------|
| ¼" GYROLOK® for 4-way valves | inch | 2⅞ | 3 ²⁹ / ₃₂ | 2¼ | 1 ⁹ / ₁₆ | 1¼ |
| | mm | 73 | 99 | 57 | 40 | 32 |
| ¼" GYROLOK® for 5-way valves | inch | 2⅞ | 3 ²⁹ / ₃₂ | 2¼ | 2½ | 1¼ |
| | mm | 73 | 99 | 57 | 64 | 32 |
| ¼" female NPT (4- and 5-way) | inch | 2⅞ | 3¼ | 2¼ | 1 ⁹ / ₁₆ | 1¼ |
| | mm | 73 | 83 | 57 | 40 | 32 |

Panel Mounting Dimensions



Dimensions for reference only, subject to change.

How to Order Standard Valves



7911G4Y



7931G4Y

Multimite® 7911, 7921 Series 4-way Models

| END CONNECTIONS | ORDER BY PART NUMBER | | ORIFICE | Cv |
|-----------------|---|---|----------------|------|
| | 2000 PSIG @ 350° F (138 BAR/177° C) TFE SEATS | 6000 PSIG @ 250° F (414 BAR/121° C) NYLATRON® SEATS | | |
| ¼" GYROLOK® | 7911G4Y | 7921G4Y | 0.166" (4.2mm) | 0.47 |
| ¼" female NPT | 7911F4Y | 7921F4Y | 0.166" (4.2mm) | 0.54 |

Multimite® 7931, 7941 Series 5-way Models

| END CONNECTIONS | ORDER BY PART NUMBER | | ORIFICE | Cv |
|-----------------|---|---|----------------|------|
| | 2000 PSIG @ 350° F (138 BAR/177° C) TFE SEATS | 6000 PSIG @ 250° F (414 BAR/121° C) NYLATRON® SEATS | | |
| ¼" GYROLOK® | 7931G4Y | 7941G4Y | 0.187" (4.7mm) | 0.51 |
| ¼" female NPT | 7931F4Y | 7941F4Y | 0.187" (4.7mm) | 0.66 |

Multimite® 79 Series

Ordering Options



Electric Actuators

For remote control of Multimite® 79 Series valves, order an electric actuator. Electric actuators are supplied in either 115 VAC or 24 VDC with weatherproof or explosion-proof housings. Refer to HOKE®'s Actuator Catalog (79005) or contact your local factory-authorized distributor for more details.

Spare Parts

Spare parts and repair kits are available for all ball valves. Please contact your distributor for specific information.

Cleaning and Testing

When ordering, please specify if oxygen cleaning or helium leak testing is required.

Additional Sizes

Additional sizes and options are available on special request. Please consult your local HOKE® distributor.

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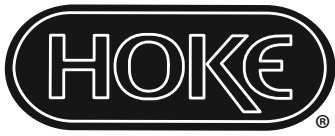
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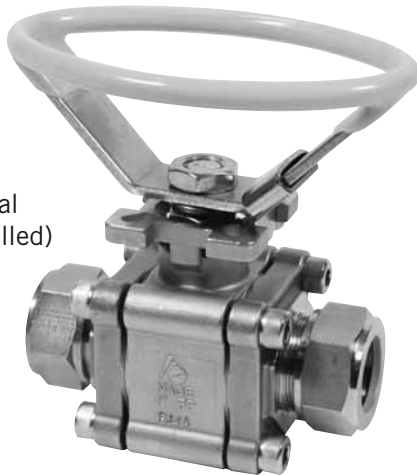


CRANE INSTRUMENTATION &
SAMPLING Inc.
405 Centura Ct.
Spartanburg, SC 29305, USA
Tel: 1-864-574-7966
PO Box 4866, Spartanburg, SC
29305-4866 USA

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Industrial Ball Valves



(Optional Oval Handle-Uninstalled)

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| Thread Specification High Tolerance | | |
| Disclaimers | Inside Back Cover | |

industrial ball valves

Family Features

- Low Pressure Design for Non-Critical Service
- Includes High Tolerance NPT Thread or Unique GYROLOK® Tube Connections
- Stainless Steel Construction
- Locking Handles



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For Your Safety

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. When selecting products, the total system design must be considered to ensure safe, trouble-free performance. Material compatibility, product ratings and application details should be considered in the selection. Improper selection or use of products described herein can cause personal injury or property damage.

Contact your authorized HOKE® sales and service representative for information about additional sizes and special alloys.

SAFETY WARNING:

HOKE® products are designed for installation only by professional suitably qualified licensed system installers experienced in the applications and environments for which the products are intended. These products are intended for integration into a system. Where these products are to be used with flammable or hazardous media, precautions must be taken by the system designer and installer to ensure the safety of persons and property. Flammable or hazardous media pose risks associated with fire or explosion, as well as burning, poisoning or other injury or death to persons and/or destruction of property. The system designer and installer must provide for the capture and control of such substances from any vents in the product(s). The system installer must not permit any leakage or uncontrolled escape of hazardous or flammable substances. The system operator must be trained to follow appropriate precautions and must inspect and maintain the system and its components including the product(s) and at regular intervals in accordance with timescales recommended by the supplier to prevent unacceptable wear or failure.

2-Piece Standard Port Ball Valves

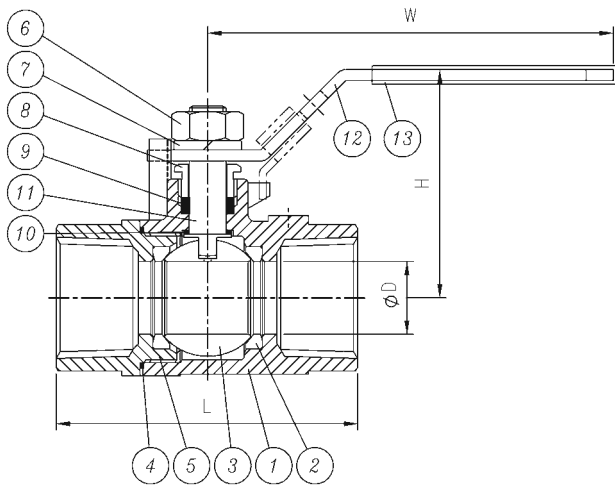
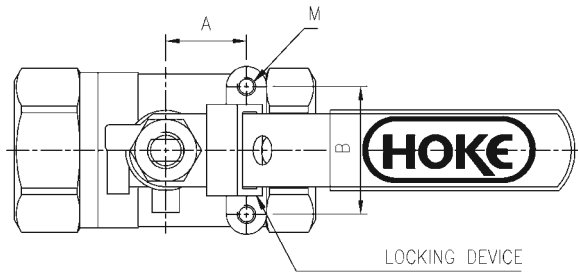
Threaded Ends, 2000 PSI (138 Bar) W.O.G.

Features

- Reinforced TFE seats increase durability
- Adjustable packing gland
- Bottom-loaded blow-out proof stem
- Basic design complies with ANSI B16.34 & EN 12516-1
- High Tolerance NPT Thread Specification
- Tested according to API 598
- Lever Style handle with locking device
- Part Number and Brand embossed on the body
- Tapped Mounting Pad

Family Features

- Low Pressure Design for Non-Critical Service
- Includes High Tolerance NPT Thread or Unique GYROLOK® Tube Connections
- Stainless Steel Construction
- Locking Handles

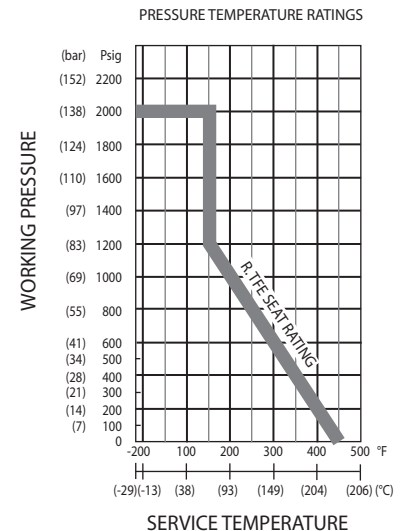


Materials List

| PARTS S- | 7510F (X)Y |
|----------|----------------------------|
| 1 | Body ASTM A351-CF8M/316 |
| 2 | Seat Reinforced PTFE |
| 3 | Ball ASTM A351-CF8M/316 |
| 4 | Gasket PTFE |
| 5 | End Cap ASTM A351-CF8M/316 |
| 6 | Handle Nut AISI 304 |
| 7 | Handle Washer AISI 304 |
| 8 | Gland AISI 304 |
| 9 | Stem Packing PTFE |
| 10 | Thrust Washer PTFE |
| 11 | Stem ASTM A276-316 |
| 12 | Handle AISI 304 |
| 13 | Handle Cover PVC |

How To Order:

| PART # | SIZE | ØD | L | A | B | H | W | M |
|----------|------------|------|------|------|------|------|------|----------|
| 7510F4Y | inch - ¼" | 0.37 | 2.09 | 0.50 | 1.12 | 2.13 | 3.80 | 10-24UNC |
| 7510F6Y | inch - ⅜" | 0.37 | 2.09 | 0.50 | 1.12 | 2.13 | 3.80 | 10-24UNC |
| 7510F8Y | inch - ½" | 0.49 | 2.38 | 0.50 | 1.12 | 2.13 | 3.80 | 10-24UNC |
| 7510F12Y | inch - ¾" | 0.59 | 2.70 | 0.50 | 1.12 | 2.24 | 3.80 | 10-24UNC |
| 7510F16Y | inch - 1" | 0.79 | 3.25 | 0.87 | 1.38 | 2.46 | 4.47 | 10-24UNC |
| 7510F20Y | inch - 1¼" | 0.98 | 3.58 | 0.93 | 1.38 | 2.87 | 5.47 | 10-24UNC |
| 7510F24Y | inch - 1½" | 1.26 | 3.94 | 0.93 | 1.50 | 3.09 | 5.47 | ¼-20UNC |
| 7510F32Y | inch - 2" | 1.50 | 4.61 | 0.93 | 1.50 | 3.48 | 6.67 | ¼-20UNC |

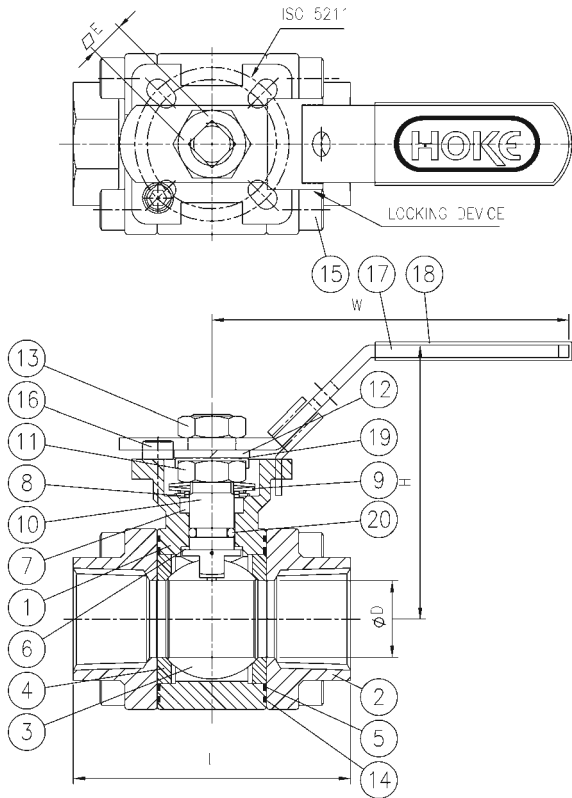


3-Piece Full Port Ball Valves

Threaded Ends, 1/4"-1/2": 3000PSI (207 Bar) W.O.G.,
 3/4"-1": 2000PSI (138 Bar) W.O.G. Enclosed Bolt
 Type, ISO 5211 Direct Actuator Mounting Pad

Features

- Strengthened construction fully complied with ASME/ANSI B16.34 secures 3000 psi/2000 psi working pressure rating.
- Fully encapsulated bolts are protected from the environment for extended service life.
- Live-loaded packing gland design for self-adjustment of packing compression.
- Equalized cavity pressure hole drilled in the stem slot of ball.
- Bottom-loaded blow-out proof stem.
- Pressure equalizing seats
- Basic design complies with ANSI B16.34.
- Tested according to API 598
- High tolerance NPT Thread Specification
- Part number and brand embossed on body
- **Optional oval handle available (uninstalled)**

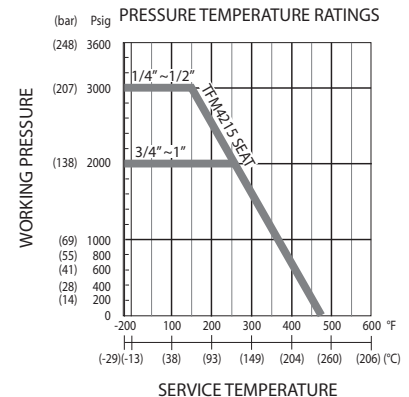


Materials List

| PARTS - | 7520F (XY) |
|---------|----------------------------|
| 1 | Body ASTM A351-CF8M/316 |
| 2 | End Cap ASTM A351-CF8M/316 |
| 3 | Ball ASTM A351-CF8M/316 |
| 4 | Seat TFM4215 |
| 5 | Gasket PTFE |
| 6 | Thrust Washer PTFE |
| 7 | Stem Packing Graphite |
| 8 | Gland AISI 304 |
| 9 | Belleville Washer AISI 301 |
| 10 | Stem ASTM A276-316 |
| 11 | Packing Nut AISI 304 |
| 12 | Spring Washer AISI 304 |
| 13 | Handle Nut AISI 304 |
| 14 | Gasket Graphite |
| 15 | Bolt AISI 304 |
| 16 | Stop Screw AISI 304 |
| 17 | Handle AISI 304 |
| 18 | Handle Cover PVC |
| 19 | Nut Lock AISI 304 |
| 20 | O-Ring Viton |

How To Order

| PART # | SIZE | ØD | L | E | H | W | ISO 5211 | OPTIONAL OVAL HANDLE |
|----------|-------------|------|------|------|------|------|----------|----------------------|
| 7520F4Y | inch - 1/4" | 0.43 | 2.62 | 0.35 | 2.68 | 5.41 | F03-F04 | 7520F4Y-OH |
| 7520F6Y | inch - 3/8" | 0.49 | 2.62 | 0.35 | 2.68 | 5.41 | F03-F04 | 7520F6Y-OH |
| 7520F8Y | inch - 1/2" | 0.59 | 2.76 | 0.35 | 2.68 | 5.41 | F03-F04 | 7520F8Y-OH |
| 7520F12Y | inch - 3/4" | 0.59 | 3.15 | 0.35 | 2.78 | 5.41 | F03-F04 | 7520F12Y-OH |
| 7520F16Y | inch - 1" | 1.00 | 3.54 | 0.43 | 3.50 | 6.60 | F04-F05 | 7520F16Y-OH |



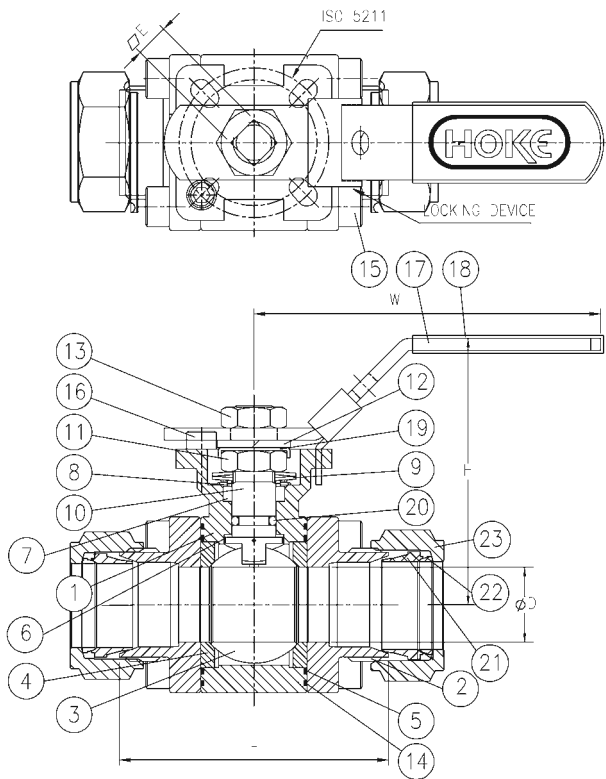
3-Piece Full Port Ball Valves

GYROLOK® End Tube Fittings, 1/4" - 1/2": 3000PSI (207 Bar)
 W.O.G., 3/4"-1": 2000PSI (138 Bar) W.O.G.
 Enclosed Bolt Type, ISO 5211 Direct
 Actuator Mounting Pad



Features

- Strengthened construction fully complied with ASME/ANSI B16.34 secures 3000 psi/2000 psi working pressure rating.
- Fully encapsulated bolts are protected from the environment for extended service life.
- Live-loaded packing gland design for self-adjustment of packing compression.
- Equalized cavity pressure hole drilled in the stem slot of ball.
- Bottom-loaded blow-out proof stem.
- Pressure equalizing seats
- Basic design complies with ANSI B16.34.
- Tested according to API 598
- GYROLOK® Tube Fitting End Connections
- Part number and brand embossed on body
- **Optional oval handle available (uninstalled)**

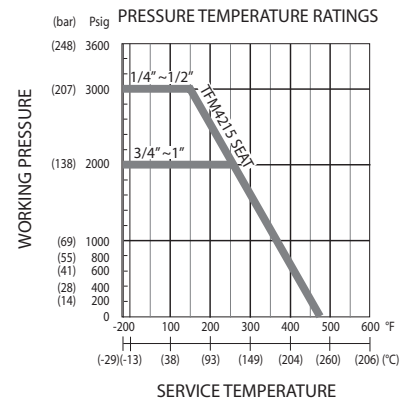


Materials List

| PARTS S- | 7520G (X)Y |
|----------|----------------------------|
| 1 | Body ASTM A351-CF8M/316 |
| 2 | End Cap ASTM A351-CF8M/316 |
| 3 | Ball ASTM A351-CF8M/316 |
| 4 | Seat TFM4215 |
| 5 | Gasket PTFE |
| 6 | Thrust Washer PTFE |
| 7 | Stem Packing Graphite |
| 8 | Gland AISI 304 |
| 9 | Belleville Washer AISI 301 |
| 10 | Stem ASTM A276-316 |
| 11 | Packing Nut AISI 304 |
| 12 | Spring Washer AISI 304 |
| 13 | Handle Nut AISI 304 |
| 14 | Gasket Graphite |
| 15 | Bolt AISI 304 |
| 16 | Stop Screw AISI 304 |
| 17 | Handle AISI 304 |
| 18 | Handle Cover PVC |
| 19 | Nut Lock AISI 304 |
| 20 | O-Ring Viton |

How To Order

| PART # | SIZE | ØD | L | E | H | W | ISO 5211 | OPTIONAL OVAL HANDLE |
|----------|-------------|------|------|------|------|------|----------|----------------------|
| 7520G4Y | inch - 1/4" | 0.43 | 2.62 | 0.35 | 2.68 | 5.41 | F03-F04 | 7520G4Y-OH |
| 7520G6Y | inch - 3/8" | 0.49 | 2.62 | 0.35 | 2.68 | 5.41 | F03-F04 | 7520G6Y-OH |
| 7520G8Y | inch - 1/2" | 0.59 | 2.76 | 0.35 | 2.68 | 5.41 | F03-F04 | 7520G8Y-OH |
| 7520G12Y | inch - 3/4" | 0.59 | 3.15 | 0.35 | 2.78 | 5.41 | F03-F04 | 7520G12Y-OH |
| 7520G16Y | inch - 1" | 1.00 | 3.54 | 0.43 | 3.50 | 6.60 | F04-F05 | 7520G16Y-OH |



NPT High Tolerance Thread Specification

NPT Engagement using High Tolerance HOKE® NPT Connections has 5-6 threads engaged when fully tightened.



**HOKE® High Tolerance
NPT Thread**

NPT Engagement using ANSI/ASME B1.20.1 Pipe Thread Standard has only 3-4 threads engaged when fully tightened.



**Standard B1.20.1
NPT Thread**

Tube Fittings

In the early 1960's, HOKE® took the industry by storm, introducing the GYROLOK® tube fitting. To this day, the design features offer unique advantages and benefits to users that are unmatched in the industry.

Key GYROLOK® Design Benefits:

1) Controlled Ferrule Drive and Sizing Angle

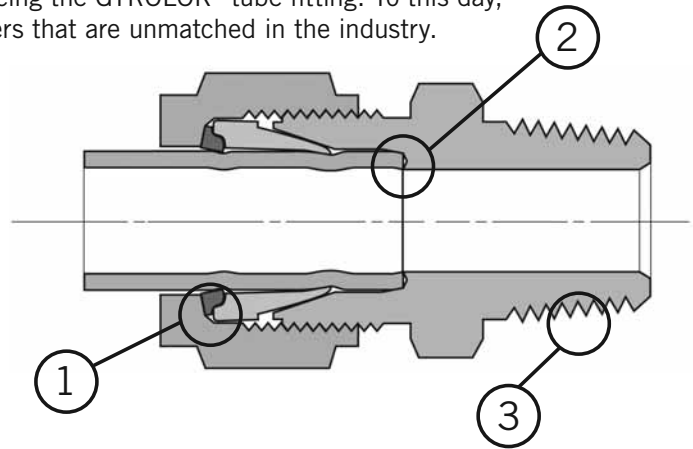
- Avoids risks associated with over-tightening and allows for multiple remakes

2) Butt Seal

- Provides an extra level of protection against leaks

3) Special high tolerance NPT thread specification

- Ensures maximum thread engagement for a safer, more robust connection.



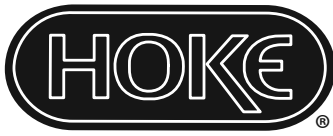
Custom Options

Please consult factory for other materials, bore sizes, handle options and connection options.

The actual pressure ratings for any alternative option will vary from those stated – please consult with factory for your specific requirements.

The specification of any alternative material, connection or tubing is critical to the overall performance of the system.

Caution should be exercised by the user to ensure proper selection in accordance with actual operating or design conditions.



The Small Bore Instrumentation Specialists



We specialize in small bore instrumentation products up to 2" that deliver benchmark performance quality & safety; provide the broadest array of superior alloy offerings in the market; decades of proven success in a wide range of industries; a roster of "who's who" customers & projects globally; original "Best Solution" engineering & designs; and are focused on continuous improvement in all aspects of our business.

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High Cycle Ball Valves

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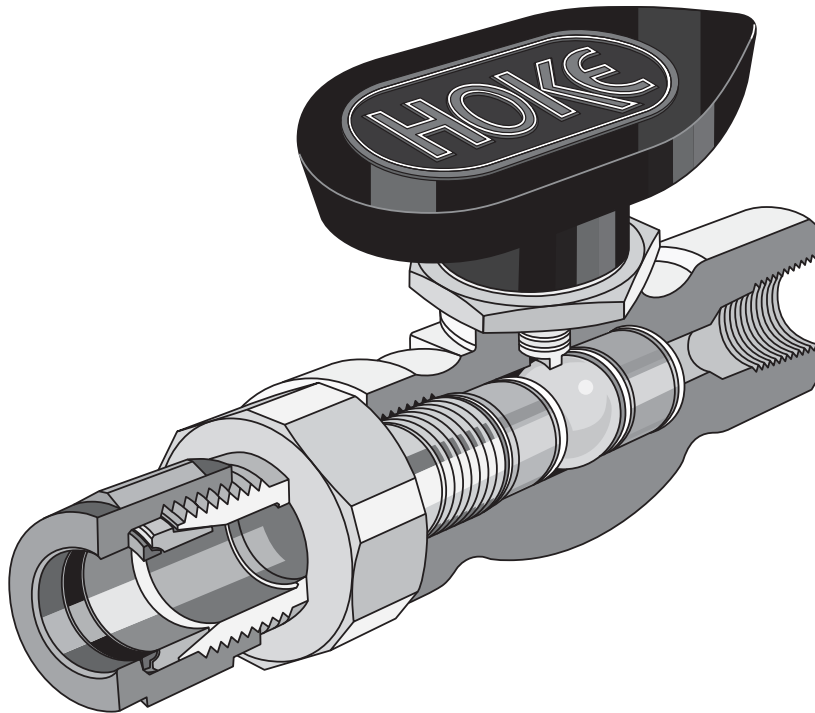
ball valves

Family Features

- Rated up to 100,000 cycles
- Working pressures up to 6000 psig (414 bar)
- Working temperatures up to 500° F (260° C)
- Wide range of end connections



High Cycle Ball Valves at a Glance



| <i>Index</i> | |
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| 7 Series—Fire Safe | 31 |
| 2-way, 3-Piece Bolted Ball Valves | |

HOKE High Cycle ball valves are designed for repeatable, zero leakage sealing when control conditions demand valve actuation exceeding 50,000 cycles. Their unique stem- and seat designs provide packless-free operation and ease of maintenance.

HOKE High Cycle ball valves provide a wide range of capabilities for demanding applications. Temperature limits range from -65° F (-54° C) to 500° (260° C). Operating pressure limits run as high as 6000 psig (414 bar) for the D/DL Series valves. Choose a 2-way ball valve for fast, quarter-turn on-off operation. Alternatively, a 3-way ball valve such as the HOKE 7 Series employs 180° operation for diverting flow from one line to another. In situations where fire propagation is an issue, HOKE offers the 7 Series Fire Safe ball valve.

Before making your high cycle ball valve selection, be sure to consider the system pressure, operating temperature, required flow and materials of construction. If your application requires a ball valve not listed in this catalog, contact your local HOKE stocking distributor, or the factory.

Family Features





- Rated up to 100,000 cycles
- Working pressures up to 6000 psig (414 bar)
- Working temperatures up to 500° F (260° C)
- Wide range of end connections

HOKE Inc.

PO Box 4866 • Spartanburg, SC 29305-4866
Phone (864) 574-7966 Fax (864) 587-5608
www.hoke.com • Sales-hoke@circor.com

ball valves

High Cycle Ball Valves at a Glance

| SERIES | DESCRIPTION/APPLICATIONS | FEATURES | STANDARD BODY MATERIAL | |
|--|--|---|---|--|
|  | D, DL, T & TL Series High Cycle, Zero Leak Ball Valves 2-way Ball Valves (page 5) | <ul style="list-style-type: none"> DL/TL Series - 100K cycles D/T Series - 50K cycles D/DL Series - High pressure | <ul style="list-style-type: none"> Live-loaded seats (DL & TL) Bi-directional (T & D) Uni-directional (DL & TL) | 316 stainless steel Brass (DL/T/TL) Monel® |
|  | 7223D Series High Performance Rotoball® 2-way Ball Valves (page 13) | <ul style="list-style-type: none"> CNG fuel stations CNG vehicles Hydrogen fuel cells Pilot plants | <ul style="list-style-type: none"> Bi-directional Blow-out proof stem Extended life cycle | 316 stainless steel Monel® R-405 |
|  | 7 Series 2- and 3-way 3-piece Bolted Ball Valves (page 17) | <ul style="list-style-type: none"> On-off service High cycle life High flow | <ul style="list-style-type: none"> Removable valve center Live-loaded stem and seat seals compensate for thermal cycling and wear with zero leakage Blow-out proof stem | 316L stainless steel |
|  | 7 Series – Fire Safe 2-way, 3-piece Bolted Ball Valve (page 32) | <ul style="list-style-type: none"> High flow, high safety Chemical processing Petroleum refining Gas distribution Hydraulic fluids | <ul style="list-style-type: none"> Design retards propagation of downstream fire Meets API 607 4th edition requirements Bottom-loaded, blow-out proof stem Fully encapsulated bolts | 316 stainless steel, grade CF8M |

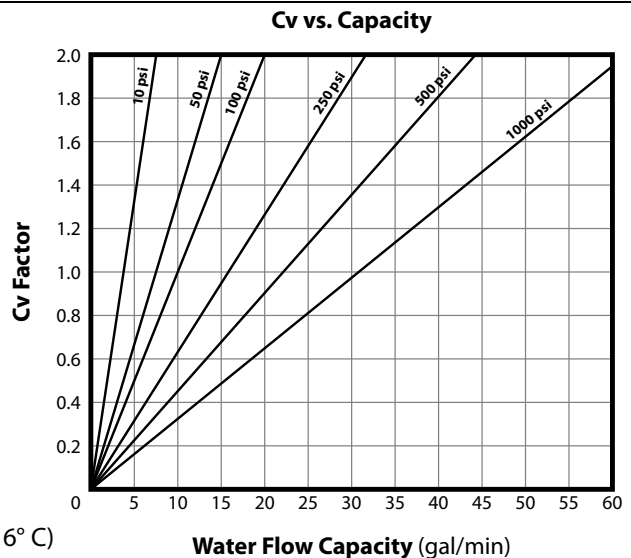
Liquid Flow capacity of HOKE Ball Valves

To determine the Cv or flow of a **liquid** @ 60° F (16° C):

$$Cv = \frac{GPM}{\sqrt{\frac{\Delta p}{S.G.}}} \quad \text{or} \quad GPM = Cv \sqrt{\frac{\Delta p}{S.G.}}$$

where:

- $\Delta p = p_1 - p_2$
- p_1 = inlet pressure in psia
- p_2 = outlet pressure in psia
- GPM = flow in gallons per minute
- S.G. = specific gravity of liquid where water = 1.0 @ 60° F (16° C)



High Cycle Ball Valves at a Glance

| MAX. OPERATING PRESSURE @70° F (21° C) | OPERATING TEMPERATURE RANGE | Cv FLOW RANGE (VARIES W/ END CONNECTION) | ORIFICE SIZES | STANDARD END CONNECTIONS |
|--|---|---|--|--|
| 316 SS and Monel® D & DL: 6000 psig (414 bar) T: 1500 psig (103 bar) TL: 3000 psig (207 bar) | -40° F to +350° F (-40° C to +177° C) | 0.023 to 1.44 | 0.093" to 0.250" (2.36 mm to 6.35 mm) | 1/8", 1/4", 3/8", 1/2" GYROLOK® 1/4" male NPT × 1/4" GYROLOK® 1/4" female NPT 6 mm, 8 mm, 10 mm GYROLOK® |
| Brass DL: 3000 psig (207 bar) T: 1500 psig (103 bar) TL: 3000 psig (207 bar) | | | | |
| 5000 psig (345 bar) | -65° F to +400° F (-54° C to +204° C) | 3.4 | 0.375" (9.35 mm) | 3/8", 1/2" GYROLOK® 3/8", 1/2" female NPT 3/8", 1/2" SAE 12 mm GYROLOK® |
| 2500 psig (172 bar) | FKM (Viton®) -20° F to +450° F (-29° C to +232° C) Curved Disc Springs -65° F to +500° F (-54° C to +260° C) | 1.0 to 0.38 | 0.19" to 0.81" (4.8 mm to 20.6 mm) | 1/8", 1/4", 3/8", 1/2", 3/4", 1" GYROLOK® 1/4", 3/8", 1/2", 3/4", 1" female NPT 6, 8, 10, 12, 18, 20, 22, 25mm GYROLOK® 1/4", 3/8", 1/2", 3/4", 1" tube socket weld 1/4", 3/8", 1/2", 3/4", 1" pipe socket weld 1/4", 3/8", 1/2", 3/4", 1" pipe butt weld |
| vacuum to 1500 psig (103 bar) | -40° F to +500° F (-40° C to +260° C) | 4.5 to 38 | 0.28" to 0.88" (7.1 mm to 22.3 mm) | 3/8", 1/2", 3/4", 1" GYROLOK® 3/8", 1/2", 3/4", 1" female NPT 3/8", 1/2", 3/4", 1" tube socket weld 3/8", 1/2", 3/4", 1" pipe socket weld 3/8", 1/2", 3/4", 1" pipe butt weld 12 mm, 18 mm, 25 mm GYROLOK® |

Gas Flow capacity of HOKE Ball Valves

To determine the Cv or flow of a **gas** @ 70° F (21° C):

$$Cv = \frac{SCFH}{1360 \sqrt{\frac{(\Delta p) (p_1)}{(460 + T) (S.G.)}}} \quad \text{or} \quad SCFH = 1360 Cv \sqrt{\frac{(\Delta p) (p_1)}{(460 + T) (S.G.)}}$$

where:

$$\Delta p = p_1 - p_2$$

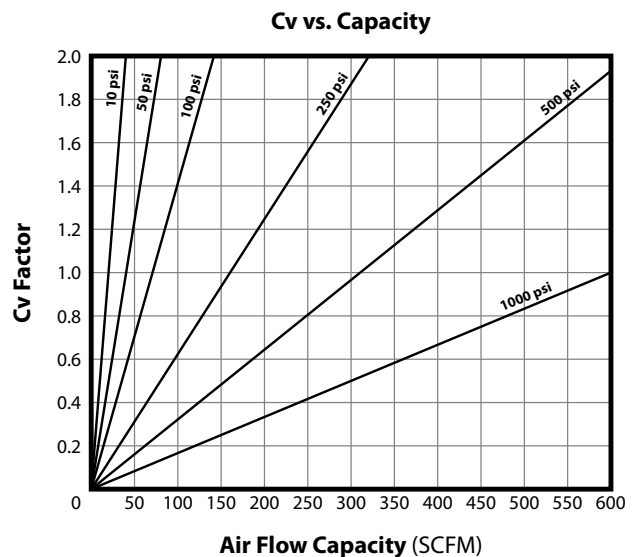
p_1 = inlet pressure in psia

p_2 = outlet pressure in psia

SCFH = flow in standard cubic feet per hour

S.G. = specific gravity of gas where air = 1.0 @ 70° F (21° C) and 14.7 psia

T = temperature in ° F





D & T Series

Bi-directional, High Cycle, Zero Leak Ball Valves

HOKE's DL/TL ball valves are uni-directional, high cycle valves that exceed 100,000 cycles with zero seat leakage.** In applications where bi-directional flow is required, HOKE D and T series valves exceed 50,000 cycles. HOKE ball valves can be ordered in brass, 316 stainless steel or Monel® materials with a manual handle as standard.

For remote actuation, factory-assembled HOKE Space Saver™ Actuators are available. D, DL, T and TL series valves can be ordered with welded end fittings to prevent accidental disassembly or with gasketed end fittings, if valve rebuild becomes necessary.

DL & TL Series

Uni-directional, High Cycle, Zero Leak Ball Valves



Technical Data

| | |
|-------------------------------------|---|
| BODY MATERIAL* | 316 stainless steel, brass, Monel® |
| CYCLE LIFE | D, T = 50,000; DL, TL = 100,000 |
| MAXIMUM OPERATING PRESSURE | <ul style="list-style-type: none"> • 316 stainless steel and Monel® <ul style="list-style-type: none"> D & DL: 6000 psig @ 70° C (414 bar @ 21° C) T: 1500 psig @ 70° C (207 bar @ 21° C) TL: 3000 psig @ 70° C (207 bar @ 21° C) • Brass <ul style="list-style-type: none"> DL & TL: 3000 psig @ 70° C (207 bar @ 21° C) T: 1500 psig @ 70° C (207 bar @ 21° C) |
| PROOF PRESSURE SAFETY FACTOR | 2:1 |
| BURST PRESSURE SAFETY FACTOR | 4:1 |
| TEMPERATURE RANGE | -40° F to +350° F (-40° C to +177° C)** |
| ORIFICE SIZES | 0.093" to 0.250" (2.36mm to 6.35mm) |
| Cv FACTORS | 0.023 to 1.44 |

* Consult factory for other materials

** Depending on seat, seal, and washer material selected. See page 11 for ordering details

Features & Benefits

Delta stem seal (D & DL)

- Improved cycle life
- No packing adjustment required
- Rated to 6000 psig (414 bar)
- Low operating torque for ease of operation

Spring-loaded PTFE seal (T & TL)

- Compensates for wear and thermal cycling with zero leakage, providing excellent durability and reliability.

Choice of end-fittings for versatility

- 70 Series – welded
- 71 Series – gasketed

Live-loaded seats (DL & TL)

- Compensates for wear and thermal cycling with zero leakage, providing excellent durability and reliability.
- Ensures leak-tight performance over entire pressure range simplifying ball valve specification and installation, saving time and expense.

Static – grounded stem

- Prevents static discharge for added safety

Quarter-turn handle

- Quick on/off simplifies operation and saves time.
- Directional handle provides quick visual indication of orifice, improves operator efficiency and safety.
- Special High Tolerance NPT Thread

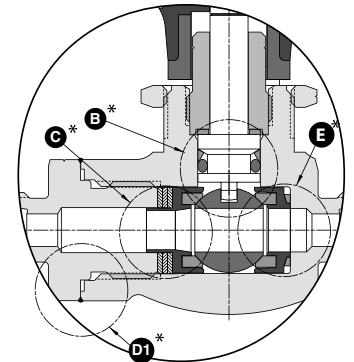
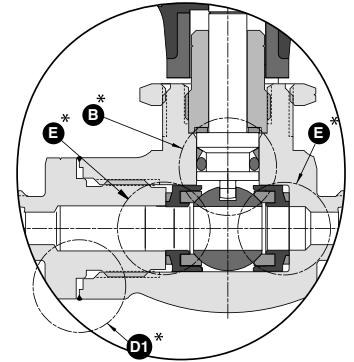
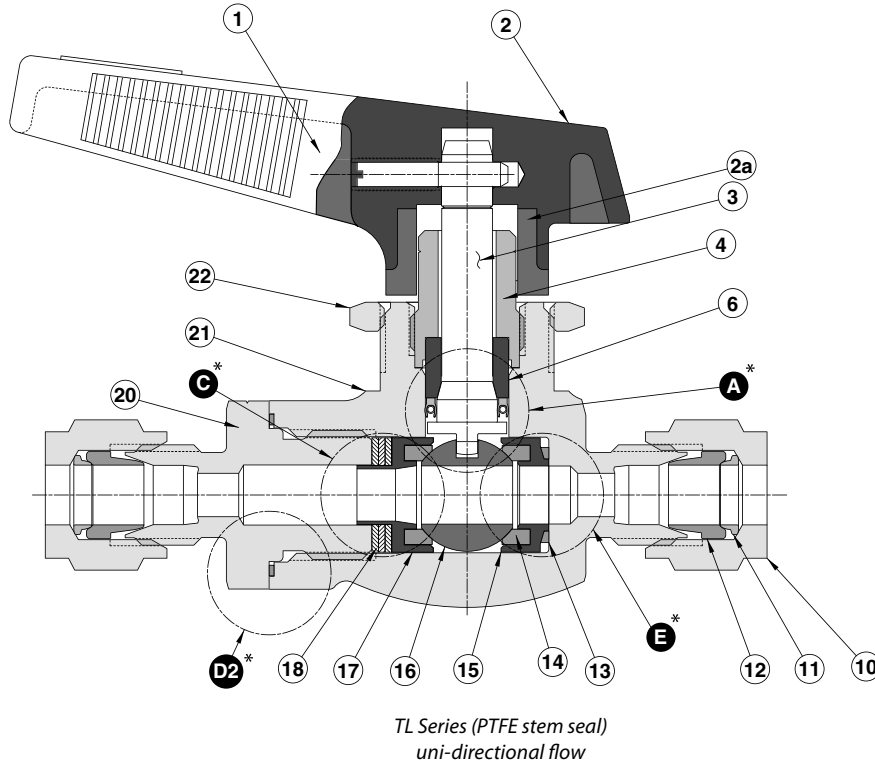
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ball valves

D, DL, T, TL Series

Materials of Construction



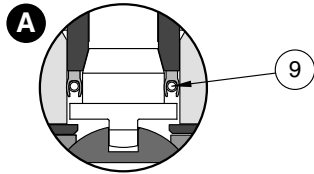
* Refer to page 7 for details

| DESCRIPTION | D, DL VALVES | | | T, TL VALVES | | |
|--------------------------------|---------------------|--------------------------------|--------|---------------------|---------------------------------|--------|
| | 316 STAINLESS STEEL | BASIC VALVE MATERIAL MONEL® | BRASS | 316 STAINLESS STEEL | BASIC VALVE MATERIAL MONEL® | BRASS |
| 1 Handle pin | | 316 stainless steel | | | 316 stainless steel | |
| 2 Handle | | Nylon | | | Nylon | |
| 2a Handle insert | | 316L stainless steel | | | 316L stainless steel | |
| 3 Stem | 316 SS | Monel® R-405 | 316 SS | 316 SS | Monel® R-405 | 316 SS |
| 4 Stem retainer | 316 SS | Monel® R-405 | Brass | 316 SS | Monel® R-405 | Brass |
| 5 Thrust washer (D & DL) | | PEEK™ | | | — | |
| 6 Stem guide (T & TL) | | — | | | 15% Graphite-filled PTFE | |
| 7 Delta backup ring (D & DL) | | PTFE | | | — | |
| 8 O-ring (D & DL) | | FKM (Viton®) | | | — | |
| 9 Energized PTFE seal (T & TL) | | — | | | Graphite-filled PTFE / Elgiloy® | |
| 10 GYROLOK® Nut (both ends) | 316 SS | Monel® R-405 | Brass | 316 SS | Monel® R-405 | Brass |
| 11 Rear ferrule | 316 SS | Monel® R-405 | Brass | 316 SS | Monel® R-405 | Brass |
| 12 Front ferrule | 316 SS | Monel® R-405 | Brass | 316 SS | Monel® R-405 | Brass |
| 13 Washer | | PTFE | | | PTFE | |
| 14 Seat | | PCTFE | | | 15% Graphite-filled PTFE | |
| 15 Downstream seat retainer | 316 SS | Monel® R-405 | Brass | 316 SS | Monel® R-405 | Brass |
| 16 Ball | 316 SS | Monel® R-405 | 316 SS | 316 SS | Monel® R-405 | 316 SS |
| 17 Upstream seat retainer | 316 SS | Monel® R-405 | Brass | 316 SS | Monel® R-405 | Brass |
| 18 Spring washers (3) | 316 SS | Inconel® | 316 SS | 316 SS | Inconel® | 316 SS |
| 19 Gasket (71 Series) | | PTFE | | | PTFE | |
| 20 End fitting | 316 SS | Monel® R-405 | Brass | 316 SS | Monel® R-405 | Brass |
| 21 Body | 316 SS | Monel® 400 | Brass | 316 SS | Monel® 400 | Brass |
| 22 Mounting nut | 316 SS | Monel® R-405 | Brass | 316 SS | Monel® R-405 | Brass |

D, DL, T, TL Series

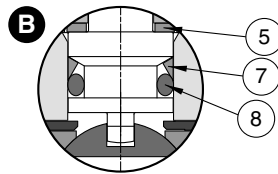
Distinctions

T & TL Series valves come with...



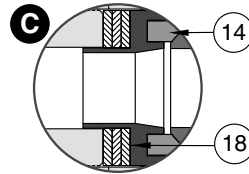
Energized PTFE Seal

D & DL Series valves come with...



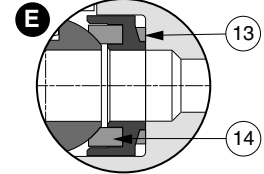
Delta Stem Seal

TL & DL Series valves come with...



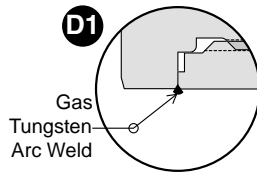
Spring-loaded Seats-Inlet
TL & DL have "E" Outlet
(uni-directional flow)

D & T Series valves come with...

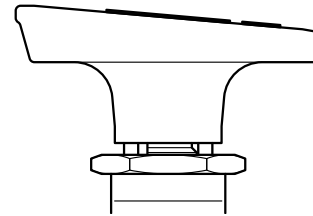


PCTFE Seats-
Inlet and Outlet
(bi-directional flow)

70 Series valves come with...

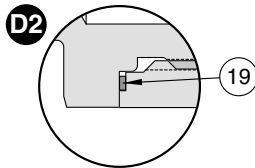


Welded End Fittings
(prevents accidental disassembly)

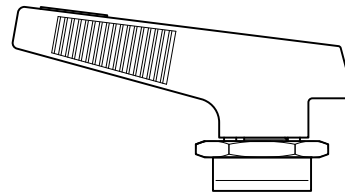


Nylon Oval Handle
(prevents accidental cycling of valve)

71 Series valves come with...



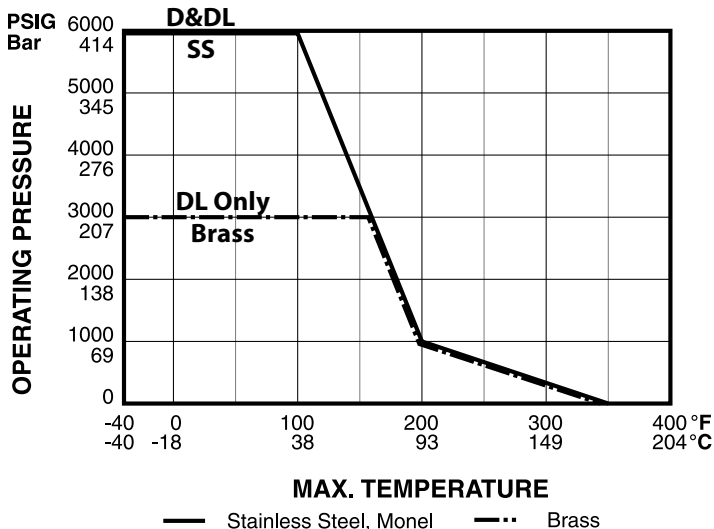
Gasketed End Fittings
(allows for rebuilding)



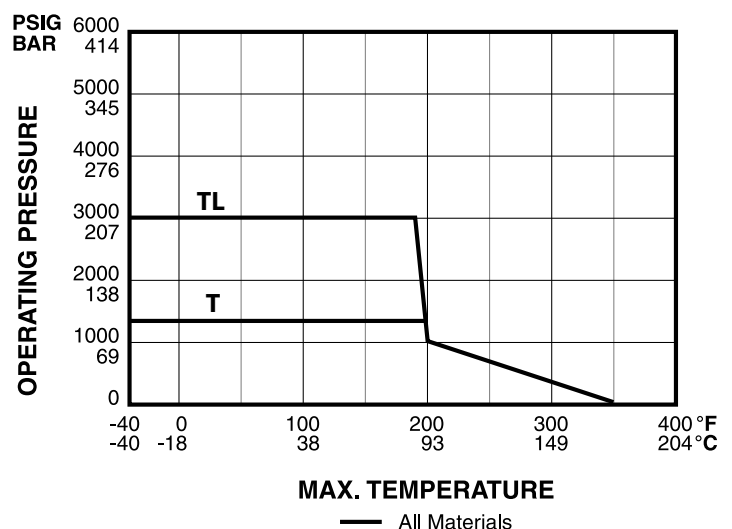
Nylon Lever Handle
(maximum visual indication of valve position)

Pressure vs. Temperature Charts

D & DL Valves



T & TL Valves

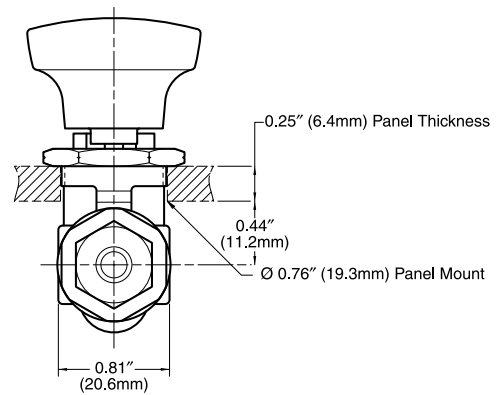
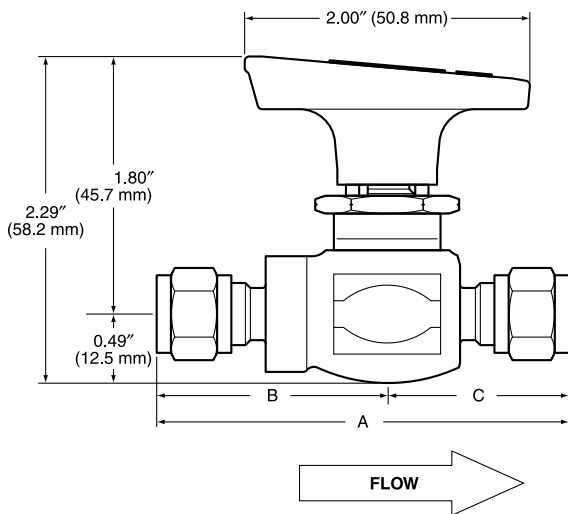


D, DL, T, TL Series

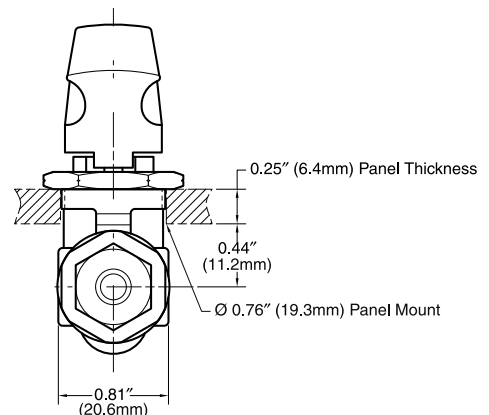
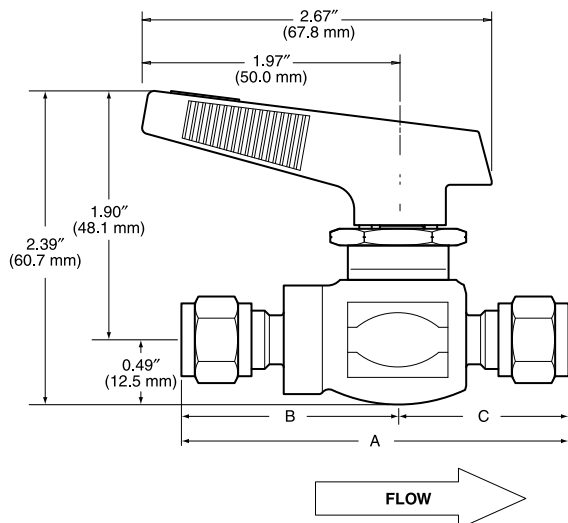
Dimensions

| PART NUMBER | END CONNECTIONS | ORIFICE | Cv | A | B | C | |
|-------------|-----------------------------------|---------|-------|------|------|------|------|
| G2 | 1/8" GYROLOK® × 1/8" GYROLOK® | inch | 0.093 | 0.23 | 2.96 | 1.72 | 1.24 |
| | | mm | 2.36 | | 75.2 | 43.7 | 31.5 |
| G4 | 1/4" GYROLOK® × 1/4" GYROLOK® | inch | 0.187 | 0.8 | 3.11 | 1.82 | 1.29 |
| | | mm | 4.75 | | 79.0 | 46.2 | 32.8 |
| G6 | 3/8" GYROLOK® × 3/8" GYROLOK® | inch | 0.250 | 1.44 | 3.08 | 1.78 | 1.30 |
| | | mm | 6.35 | | 78.2 | 45.2 | 33.0 |
| H4 | 1/4" male NPT × 1/4" GYROLOK® | inch | 0.187 | 0.8 | 2.84 | 1.56 | 1.28 |
| | | mm | 4.75 | | 72.1 | 39.6 | 32.5 |
| F4 | 1/4" female NPT × 1/4" female NPT | inch | 0.250 | 1.44 | 2.40 | 1.46 | 0.94 |
| | | mm | 6.35 | | 61.0 | 37.1 | 23.9 |
| L4 | 1/4" male NPT × 1/4" female NPT | inch | 0.250 | 1.44 | 2.52 | 1.58 | 0.94 |
| | | mm | 6.35 | | 64.0 | 40.1 | 23.9 |
| Z6 | 6mm GYROLOK® × 6mm GYROLOK® | inch | 0.156 | 0.56 | 3.06 | 1.78 | 1.28 |
| | | mm | 3.96 | | 77.7 | 45.2 | 32.5 |
| Z8 | 8mm GYROLOK® × 8mm GYROLOK® | inch | 0.234 | 1.14 | 3.12 | 1.84 | 1.28 |
| | | mm | 5.94 | | 79.3 | 46.7 | 32.5 |
| Z10 | 10mm GYROLOK® × 10mm GYROLOK® | inch | 0.250 | 1.44 | 3.19 | 1.89 | 1.30 |
| | | mm | 6.35 | | 81.0 | 48.0 | 33.0 |

70 Series (Welded End Fittings)



71 Series (Gasketed End Fittings)



D, DL, T, TL Series

HOKE Space Saver™ Pneumatic Actuators

For remote control of HOKE D/DL/T/TL ball valves, order a pneumatic actuator. Pneumatically-actuated ball valves incorporating HOKE's Space Saver™ actuators can be used for both double acting and spring return applications. D/DL/T/TL ball valves may be ordered from the factory pre-assembled with HOKE Space Saver™ actuators. See page 12 for basic ordering information. Electric actuators are also available. Electric actuators are supplied in either 115 VAC or 24 VDC with weatherproof or explosion-proof housings. Refer to HOKE's *Actuator Catalog* (79005) or contact your local factory-authorized distributor for more details.

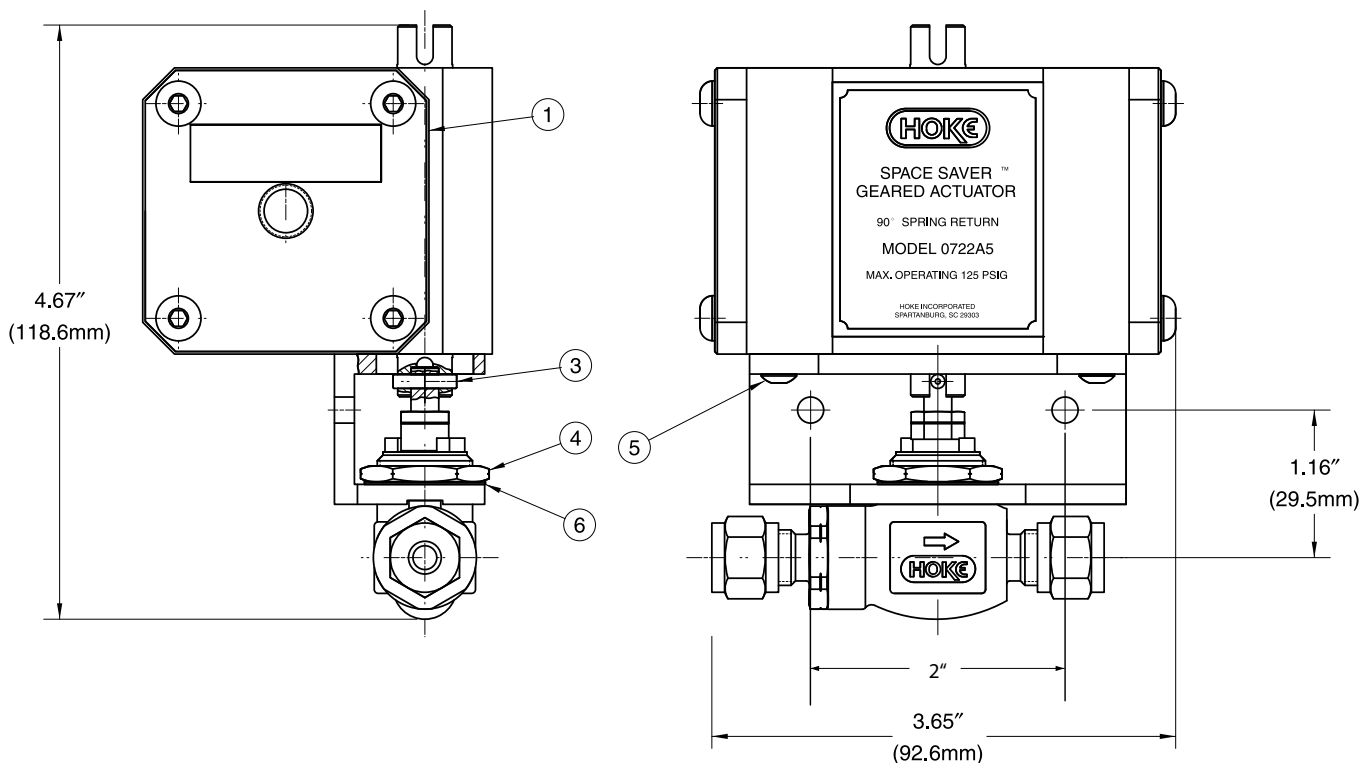
Pneumatic Actuator Specifications

| | |
|---------------------------------------|-------------------------------------|
| MAXIMUM OPERATING AIR PRESSURE | 125 psig (9 bar) |
| MINIMUM OPERATING AIR PRESSURE | 40 psig (3 bar) |
| TEMPERATURE RANGE* | 0° F to +400° F (-18° C to +204° C) |

* Maximum valve temperature is 350° F, depending on seat, seal, and washer material selected. See page 11 for details.

Materials of Construction

| DESCRIPTION | QUANTITY | MATERIAL |
|--------------------------------|----------|----------------------|
| 1 Actuator | 1 | Aluminum |
| 2 Mounting bracket (not shown) | 1 | Aluminum |
| 3 Groove pin | 1 | 18-8 stainless steel |
| 4 Lock nut | 1 | 316 stainless steel |
| 5 Button head cap screw | 4 | 316 stainless steel |
| 6 Lock washer | 1 | 300 stainless steel |



To Order for Field Assembly:

| Part No. | Description |
|----------|---------------------------------|
| 0700K3 | Mounting Kit for 70 & 71 Series |

Actuators

| | |
|--------|--|
| 0722A5 | Spring Return 0° F to +400° F (-18° C to +204° C) standard |
| 0760A5 | Double Acting 0° F to +400° F (-18° C to +204° C) standard |
| 0722A3 | Spring Return -50° F to 250° F optional |
| 0760A3 | Double Acting -45° C to 121° C optional |

Note: Actuator and mounting kit are included when ordering the factory-assembled option. Use the part numbers listed above when ordering actuator or mounting kit separately. "A5" actuators are standard when a factory-assembled valve and actuator are ordered. For "A3" actuators ordered as factory-assembled on HOKE ball valves, please consult the factory.

D, DL, T, TL Series

How to Order: Standard Valves

Use the following list to order standard valves that are readily available from the factory. If your application requires a customized valve, use the "Build to Order" matrix on page 11.

Refer to page 6 for a complete list of Materials of Construction.

| END CONNECTIONS ALL PORTS | ACTUATION METHOD | PACKING MATERIAL | MAXIMUM PRESSURE | END FITTING TO BODY CONNECTION | END CONNECTION SIZE | BODY MATERIAL | PART NUMBER* |
|---------------------------|-------------------------------|---------------------------|------------------------------------|---------------------------------|---------------------|-----------------|----------------|
| GYROLOK® | Lever handle | PTFE & FKM (Viton®) | 6000 psig (414 bar) | Gasketed 71 Series, D/DL Series | 1/8" | stainless steel | 7115G2YDL(D) |
| | | | | | 1/4" | stainless steel | 7115G4YDL(D) |
| | | | | | 1/4" | Monel® | 7115G4MDL(D) |
| | | | | | 3/8" | stainless steel | 7115G6YDL(D) |
| | | | | | 1/2" | stainless steel | 7115G8YDL(D) |
| | | | | | 6mm | stainless steel | 7115Z6YDL(D) |
| | | | | | 8mm | stainless steel | 7115Z8YDL(D) |
| | | | | | 10mm | stainless steel | 7115Z10YDL(D) |
| | | | | | 10mm | Monel® | 7115Z10MDL(D) |
| GYROLOK® | Lever Handle | PTFE Graphite Filled PTFE | 1500 psig T 3000 psig TL (207 bar) | Gasketed 71 Series, T/TL Series | 1/8" | stainless steel | 7122G2YTL(T) |
| | | | | | 1/4" | stainless steel | 7122G4YTL(T) |
| | | | | | 1/4" | Monel | 7122G4MTL(T) |
| | | | | | 3/8" | stainless steel | 7122G6YTL(T) |
| | | | | | 1/2" | stainless steel | 7122G8YTL(T) |
| | | | | | 6mm | stainless steel | 7122Z6YTL(T) |
| | | | | | 8mm | stainless steel | 7122Z8YTL(T) |
| | | | | | 10mm | stainless steel | 7122Z10YTL(T) |
| | | | | | 10mm | Monel | 7122Z10MTL(T) |
| GYROLOK® | Normally Closed Spring Return | PTFE & FKM (Viton®) | 6000 psig (414 bar) | Gasketed 71 Series, D/DL Series | 1/8" | stainless steel | 7115G2YDLC(D) |
| | | | | | 1/4" | stainless steel | 7115G4YDLC(D) |
| | | | | | 1/4" | Monel® | 7115G4MDLC(D) |
| | | | | | 3/8" | stainless steel | 7115G6YDLC(D) |
| | | | | | 1/2" | stainless steel | 7115G8YDLC(D) |
| | | | | | 6mm | stainless steel | 7115Z6YDLC(D) |
| | | | | | 8mm | stainless steel | 7115Z8YDLC(D) |
| | | | | | 10mm | stainless steel | 7115Z10YDLC(D) |
| | | | | | 10mm | Monel® | 7115Z10MDLC(D) |
| GYROLOK® | Normally Closed Spring Return | PTFE Graphite Filled PTFE | 1500 psig T 3000 psig TL (207 bar) | Gasketed 71 Series, T/TL Series | 1/8" | stainless steel | 7122G2YTLC(T) |
| | | | | | 1/4" | stainless steel | 7122G4YTLC(T) |
| | | | | | 1/4" | Monel | 7122G4MTLC(T) |
| | | | | | 3/8" | stainless steel | 7122G6YTLC(T) |
| | | | | | 1/2" | stainless steel | 7122G8YTLC(T) |
| | | | | | 6mm | stainless steel | 7122Z6YTLC(T) |
| | | | | | 8mm | stainless steel | 7122Z8YTLC(T) |
| | | | | | 10mm | stainless steel | 7122Z10YTLC(T) |
| | | | | | 10mm | Monel | 7122Z10MTLC(T) |
| GYROLOK® | Oval Handle | PTFE & FKM (Viton®) | 6000 psig (414 bar) | Welded 70 Series, D/DL Series | 1/8" | stainless steel | 7015G2YDL(D) |
| | | | | | 1/4" | stainless steel | 7015G4YDL(D) |
| | | | | | 1/4" | Monel | 7015G4MDL(D) |
| | | | | | 3/8" | stainless steel | 7015G6YDL(D) |
| | | | | | 1/2" | stainless steel | 7015G8YDL(D) |
| | | | | | 6mm | stainless steel | 7015Z6YDL(D) |
| | | | | | 8mm | stainless steel | 7015Z8YDL(D) |
| | | | | | 10mm | stainless steel | 7015Z10YDL(D) |
| | | | | | 10mm | Monel | 7015Z10MDL(D) |
| GYROLOK® | Oval handle | PTFE | 1500 psig T 3000 psig TL (207 bar) | Welded 70 Series, T/TL Series | 1/8" | stainless steel | 7022G2YTL(T) |
| | | | | | 1/4" | stainless steel | 7022G4YTL(T) |
| | | | | | 1/4" | Monel® | 7022G4MTL(T) |
| | | | | | 3/8" | stainless steel | 7022G6YTL(T) |
| | | | | | 1/2" | stainless steel | 7022G8YTL(T) |
| | | | | | 6mm | stainless steel | 7022Z6YTL(T) |
| | | | | | 8mm | stainless steel | 7022Z8YTL(T) |
| | | | | | 10mm | stainless steel | 7022Z10YTL(T) |
| | | | | | 10mm | Monel® | 7022Z10MTL(T) |

* For D (or T) Series bidirectional valves, delete "L" in part number

D, DL, T, TL Series

How to Order: Standard Valves

| END CONNECTIONS ALL PORTS | ACTUATION METHOD | PACKING MATERIAL | MAXIMUM PRESSURE | END FITTING TO BODY CONNECTION | END CONNECTION SIZE | BODY MATERIAL | PART NUMBER* |
|---------------------------|-------------------------------|---------------------------|--|---------------------------------|---------------------|-----------------|----------------|
| GYROLOK® | Normally Closed Spring Return | PTFE & FKM (Viton®) | 6000 psig (414 bar) | Welded 70 Series, D/DL series | 1/8" | stainless steel | 7015G2YDLC(D) |
| | | | | | 1/4" | stainless steel | 7015G4YDLC(D) |
| | | | | | 1/4" | Monel | 7015G4MDLC(D) |
| | | | | | 3/8" | stainless steel | 7015G6YDLC(D) |
| | | | | | 1/2" | stainless steel | 7015G8YDLC(D) |
| | | | | | 6mm | stainless steel | 7015Z6YDLC(D) |
| | | | | | 8mm | stainless steel | 7015Z8DLC(D) |
| | | | | | 10mm | stainless steel | 7015Z10YDLC(D) |
| GYROLOK® | Normally Closed Spring Return | PTFE | 1500 psig T 3000 psig TL (207 bar) | Welded 70 Series, T/TL Series | 1/8" | stainless steel | 7022G2YTLC(T) |
| | | | | | 1/4" | stainless steel | 7022G4YTLC(T) |
| | | | | | 1/4" | Monel® | 7022G4MTLC(T) |
| | | | | | 3/8" | stainless steel | 7022G6YTLC(T) |
| | | | | | 1/2" | stainless steel | 7022G8TLCC(T) |
| | | | | | 6mm | stainless steel | 7022Z6YTLC(T) |
| | | | | | 8mm | stainless steel | 7022Z8YTLC(T) |
| | | | | | 10mm | stainless steel | 7022Z10YTLC(T) |
| Female NPT | Lever handle | PTFE & FKM (Viton®) | 6000 psig (414 bar) | Gasketed 71 Series, D/DL Series | 1/4" | stainless steel | 7115F4YDL(D) |
| | | | | | 1/4" | Monel® | 7115F4MDL(D) |
| | Lever Handle | PTFE Graphite Filled PTFE | 1500 psig T 3000 psig TL (207 bar) | Gasketed 71 Series, T/TL Series | 1/4" | stainless steel | 7122F4YTL(T) |
| | | | | | 1/4" | Monel | 7122F4MTL(T) |
| | Normally Closed Spring Return | PTFE Graphite Filled PTFE | 1500 psig T 3000 psig TL (207 bar) | Gasketed 71 Series, T/TL Series | 1/4" | stainless steel | 7122F4YTLC(T) |
| | Normally Closed Spring Return | PTFE & FKM (Viton®) | 6000 psig (414 bar) | Gasketed 71 Series, D/DL Series | 1/4" | stainless steel | 7115F4YDLC(D) |
| | Oval Handle | PTFE & FKM (Viton®) | 6000 psig (414 bar) | Welded 70 Series, D/DL Series | 1/4" | stainless steel | 7015F4YDL(D) |
| | Oval handle | PTFE | 1500 psig T 3000 psig TL (207 bar) | Welded 70 Series, T/TL Series | 1/4" | stainless steel | 7022F4YTL(T) |
| | Normally Closed Spring Return | PTFE & FKM (Viton®) | 6000 psig (414 bar) | Welded 70 Series, D/DL Series | 1/4" | stainless steel | 7015F4YDLC(D) |
| | | | | | 1/4" | Monel | 7015F4MDLC(D) |
| | | PTFE | 1500 psig T 3000 psig TL (207 bar) | Welded 70 Series, T/TL Series | 1/4" | stainless steel | 7022F4YTLC(T) |
| | | | | | 1/4" | Monel | 7022F4MTLC(T) |

* For D (or T) Series bidirectional valves, delete "L" in part number

Repair Kits

71 Series – DL

Kit includes delta backup ring, stem, PEEK® seat & washer, O-ring, and instructions

SP71DL21

| Seals | |
|-------|---------|
| 21 | Buna-N |
| 50 | Viton® |
| 64 | Kalrez® |

71 Series – TL

Kit includes stem guide, seat, packing material, and instructions.

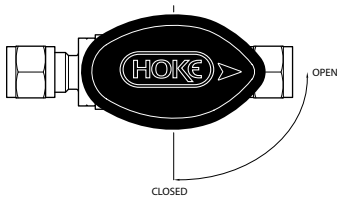
SP71TL

D, DL, T, TL Series

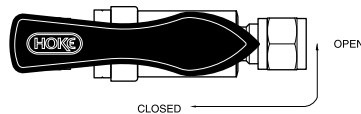
How to Order: Build-to-Order

Use the matrix below to customize your D, DL, T, TL ball valves. Use the chart on page 9 to order standard, readily available valves. **Standard items in bold.**

| | | | | | | | |
|---|-----------|-----------|-----------|----------|----------|----------|--|
| | 71 | 15 | G4 | Y | D | L | |
| VALVE SERIES | | | | | | | FACTORY ASSEMBLED ACTUATOR OPTION** |
| 71 Gasketed-end fitting 70 Welded-end fitting | | | | | | | Blank-Manual Nylon Handle • 70 Series: Oval • 71 Series: Lever |
| SEATS, SEALS & WASHERS | | | | | | | C Normally closed actuator (0722A5) O Normally open actuator (0722A5) D Double acting (0760A5) |
| 14 D and DL valves only -40° F to +500° F Seats: PCTFE (-40° C to +260° C) Washers: PTFE Delta back-up ring: PTFE O-ring: Kalrez® | | | | | | | DENOTES "LIVE-LOADED SEATS" L Live loaded seat (uni-directional flow) (Leave blank for D or T series bi-directional flow) |
| 15 D and DL valves only -40° F to +350° F Seats: PCTFE (-40° C to +177° C) Washers: PTFE Delta back-up ring: PTFE O-ring: FKM (Viton®) | | | | | | | STEM SEAL TYPE D Delta stem seal (D or DL valve only) T Energized PTFE seal (T or TL valve only) |
| 16 D and DL valves only -40° F to +250° F Seats: PCTFE (-40° C to +121° C) Washers: PTFE Delta back-up ring: PTFE O-ring: Buna N | | | | | | | BASIC MATERIAL* Y 316 stainless steel B Brass M Monel® |
| 22 T and TL valves only -40° F to +350° F Seats: PTFE (-40° C to +177° C) Washers: PTFE Back-up ring: PTFE Energized PTFE seal: Graphite-filled PTFE/Elgiloy® | | | | | | | CONNECTION TYPE & SIZE G2 1/8" GYROLOK® inlet, 1/8" GYROLOK® outlet G4 1/4" GYROLOK® inlet, 1/4" GYROLOK® outlet G6 3/8" GYROLOK® inlet, 3/8" GYROLOK® outlet G8 1/2" GYROLOK® inlet, 1/2" GYROLOK® outlet H4 1/4" male NPT inlet, 1/4" GYROLOK® outlet F4 1/4" female NPT inlet, 1/4" female NPT outlet F6 3/8" female NPT inlet, 3/8" GYROLOK® outlet F8 1/2" female NPT inlet, 1/2" GYROLOK® outlet L4 1/4" male NPT inlet, 1/4" female NPT outlet Z6 6mm GYROLOK® inlet, 6mm GYROLOK® outlet Z8 8mm GYROLOK® inlet, 8mm GYROLOK® outlet Z10 10mm GYROLOK® inlet, 10mm GYROLOK® outlet |



70 Series handle
(black nylon)

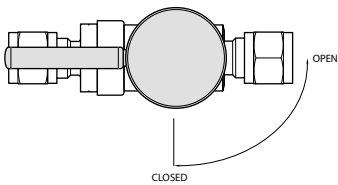


71 Series handle
(red nylon)

* Consult factory for other materials

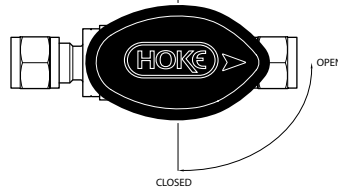
** To order "A3" actuators, please contact the factory

Optional Handles



Metal Handles

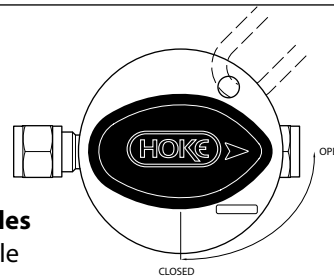
316 stainless steel handles are available for 70 & 71 Series. To order, specify kit 7100K13.



Color-coded Oval Nylon Handles

Color-coded handles are available for 70 Series Valves. Order by the part number listed below.

- Red** 95683-030
- Blue** 95683-031
- Black** 95683-032
- Green** 95683-033
- Orange** 95683-034



Handle Locking Kit

Safety lockout kits are available for applications which must conform to Code of Federal Regulations 29CFR Part 1910, OSHA Safety and Health Act and other international regulations. Valves can be locked in either an opened or closed position with the stainless steel upper and lower locking plates. Lock with readily available padlocks or commercially available multiple lockout devices. Locking kits include the locking plates and assembly instructions. To order a safety lockout kit, specify kit 7100K18.



7223D Series

High Performance Rotoball® Valve; Bi-Directional Flow

The 7223D Series is designed for demanding high cycle actuation applications. The high performance Rotoball® valve is ideally suited for manual and actuated CNG and alternative fuel applications.



Typical Applications

- CNG fuel stations
- CNG vehicles
- Hydrogen fuel cells
- Hydrogen vehicles
- Test stands
- Pilot plants

Technical Data

| | |
|------------------------------------|---------------------------------------|
| BODY MATERIAL* | 316 stainless steel, Monel® |
| MAXIMUM OPERATING PRESSURE | 5000 psig (345 bar) @ 70° F (21° C) |
| OPERATING TEMPERATURE RANGE | -65° F to +350° F (-54° C to +177° C) |
| ORIFICE | 0.375" (9.35mm) |
| Cv FACTOR | 3.4 |
| END CONNECTIONS | GYROLOK® , NPT, SAE |
| PROOF PRESSURE | 10,000 psig (690 bar) @ 70° F (21° C) |

* Consult factory for other materials

Features & Benefits

- Blowout-proof stem for added safety
- High performance Delta stem seal design for extended cycle life and reduced cost of ownership.
- Variety of end connections for greater system design flexibility
- Variety of O-rings available to meet specific system / media requirements.
- Special High Tolerance NPT Thread

ball valves

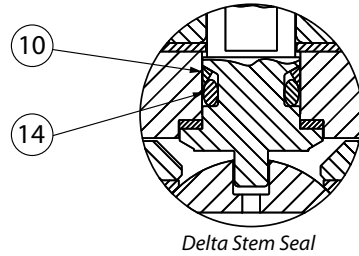
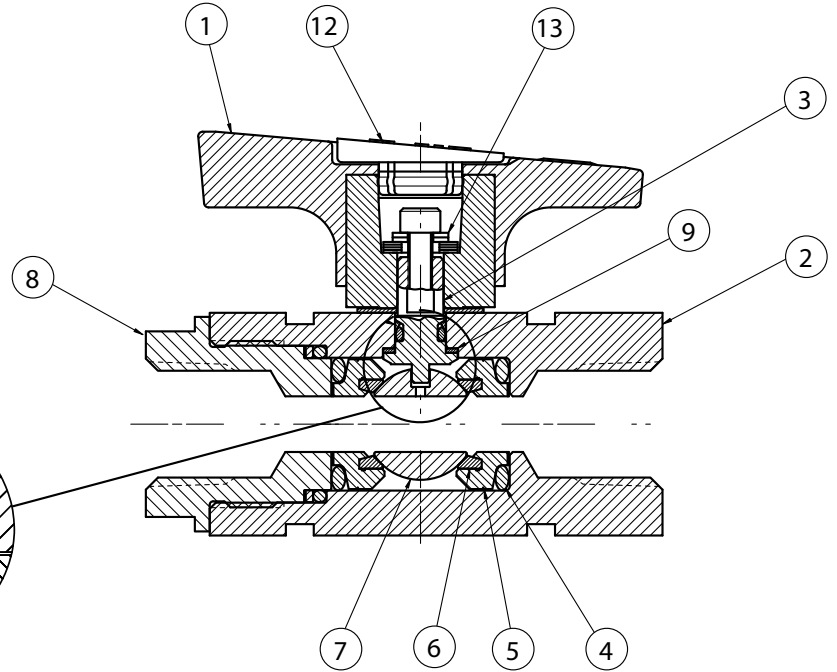
HOKE Inc.

PO Box 4866 • Spartanburg, SC 29305-4866
Phone (864) 574-7966 Fax (864) 587-5608
www.hoke.com • Sales-hoke@circor.com

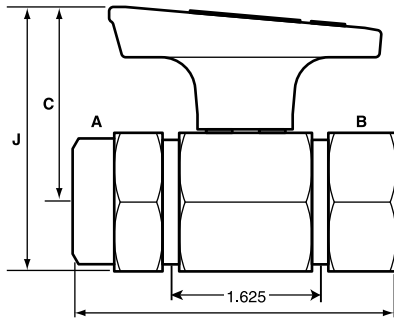
7223D Series

Materials of Construction

| DESCRIPTION | MATERIAL |
|-----------------|-------------------------------------|
| 1 Handle | Nylon |
| 2 Body | 316 stainless steel, Monel® R-405 |
| 3 Stem | 316 stainless steel, Monel® R-405 |
| 4 O-ring | See O-ring selection chart, page 14 |
| 5 Seat retainer | 316 stainless steel, Monel® |
| 6 Seat | Virgin PTFE |
| 7 Ball | 316 stainless steel, Monel® R-405 |
| 8 Plug | 316 stainless steel, Monel® |
| 9 Thrust washer | PEEK™ |
| 10 Back-up ring | PTFE |
| 11 Spring pin | 302 stainless steel |
| 12 Hole plug | Nylon |
| 13 Washer | 316 stainless steel |
| 14 O-ring | See O-ring materials chart, page 14 |

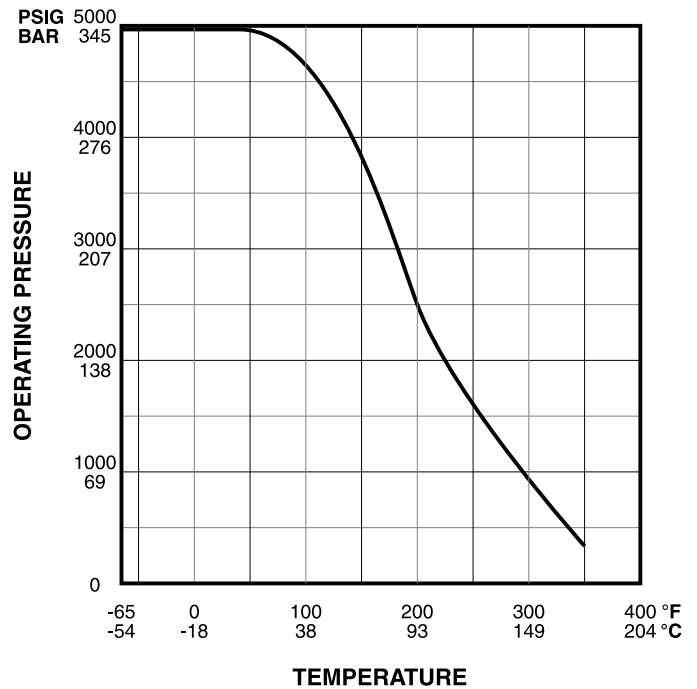


Dimensions Chart



| INLET A & OUTLET B | | C | E | J |
|--------------------|------|-----|-----|-----|
| ¾ Female NPT | inch | 1 ½ | 3 ½ | 2 ⅞ |
| | mm | 48 | 89 | 65 |
| ½ Female NPT & SAE | inch | 1 ½ | 3 ½ | 2 ⅞ |
| | mm | 48 | 89 | 65 |
| ½ GYROLOK® | inch | 1 ½ | 4 ¾ | 2 ⅞ |
| | mm | 48 | 124 | 65 |
| 12mm GYROLOK® | inch | 1 ½ | 4 ¾ | 2 ⅞ |
| | mm | 48 | 124 | 65 |

Pressure vs. Temperature Curve



7223D Series

How to Order

Standard items in bold

7223 F 6 Y D 50 EA

CONNECTION CONFIGURATION

- F Female NPT
- FS SAE
- G **GYROLOK®**
- Z Metric **GYROLOK®**

CONNECTION SIZE

- 6 3/8"
- 8 1/2"
- 12 12mm

BASIC MATERIAL

- M Monel®
- Y 316 stainless steel**

ACTUATORS—FACTORY ASSEMBLED

(omit for manual valve)

- WA 115 VAC weatherproof
- EA 115 VAC explosion-proof
- WD 24 VDC weatherproof
- NO 90° spring return, normally open
- NC90° spring return, normally closed
- DA90° double acting

O-RING MATERIAL (refer to chart below)

- 20 Buna N
- 50 Viton®**
- 64 Kalrez®

D Denotes Delta Stem Seal

Actuator & Mounting Kit Part Numbers

| OPTION | ACTUATOR | MOUNTING KIT |
|--------|----------|-----------------|
| WA | 0112L2 | 0112K7200 |
| EA | 0112Y6 | Consult Factory |
| WD | 0172L2 | Consult Factory |
| NO | 07L90SR3 | LMKT7223 |
| NC 90° | 07L90SR3 | LMKT7223 |
| DA 90° | 07L90DA | LMKT7223 |



Actuators

O-Ring Materials

| MATERIAL | OPERATING TEMPERATURE | |
|----------|-----------------------|---------------|
| | °F | °C |
| Buna N | -65° to +250° | -54° to +121° |
| Viton® | -20° to +400° | -29° to +204° |
| Kalrez® | +20° to +400° | -7° to +204° |

7223D Series

Ordering Options

Metal Lever Handle

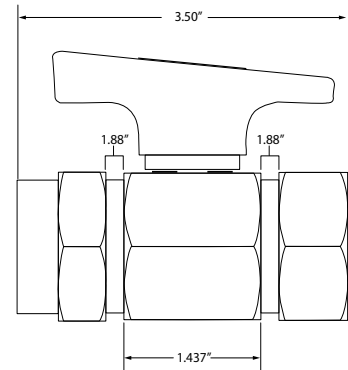
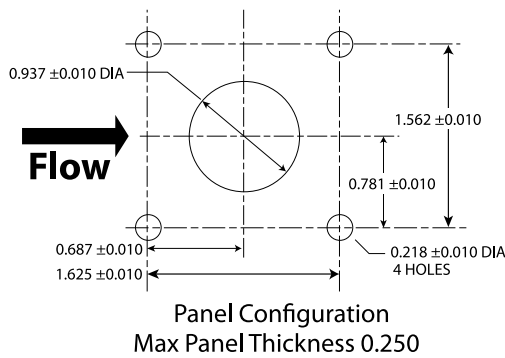
A red metal lever handle is available for the 7223D Series. To order specify 90043-1 with plug button 5982.

Handle Locking Kit

Safety lockout kits are available for applications which must conform to Code of Federal Regulations 29CFR Part 1910; OSHA Safety and Health Act and other international regulations. Valves can be locked in either an opened or closed position with the stainless steel upper and lower locking plates. Secure the valve with readily available padlocks or commercially available multiple lockout devices. Locking kits include the locking plates and assembly instructions. To order the safety lockout kit for Rotoball® 7223D Series specify kit 7200K7.

Panel Mounting

To order panel mounting kit, specify 7200K1.



Electric and Pneumatic Actuators

For remote control of Rotoball® 7223D Series valves, order an electric or pneumatic actuator. Electric actuators are supplied in either 115 VAC or 24 VDC with weatherproof or explosion-proof housings. Pneumatically actuated ball valves incorporating HOKE's rack and pinion actuators can be used for both double acting and spring return applications. Refer to HOKE's *Actuator Catalog* (79005) or contact your local factory-authorized distributor for more details.



Actuators

Spare Parts

Spare parts and repair kits are available for all ball valves.

Kit includes stem, Delta backup ring, seat and retainer, O-rings, backup ring and thrust washers.

| | |
|-----------------------|-------------------------|
| SP7223D Y 50 | |
| MATERIAL | O-RING COMPONENT |
| M Monel® R405 | 20 Buna N |
| Y 316 stainless steel | 50 Viton® |
| | 64 Kalrez® |

Cleaning and Testing

When ordering, please specify if oxygen cleaning or helium leak testing is required.



7 Series

2- and 3-way 3-piece Bolted Ball Valves

HOKE 7 Series high performance, bi-directional ball valves exceed 50,000 cycles* with zero leakage**. The 7 Series includes an energized PTFE stem seal and live loaded seats which require no adjustment over the life of the valve. 2-way valves can be configured for uni-directional flow by replacing standard seat rings with opposing curved disc spring seats. 7 series come standard in 316 stainless steel, and special alloys when requested. A variety of handles and remote actuation packages are available.



Technical Data

| | |
|------------------------------------|---------------------------------------|
| BODY MATERIAL | 316 stainless steel |
| CYCLE LIFE | Exceeds 50,000 |
| MAXIMUM OPERATING PRESSURE | 2500 psig @70° F (172 bar @ 21° C) |
| OPERATING TEMPERATURE RANGE | -65° F to +500° F (-29° C to +232° C) |
| ORIFICE | 0.19 to 0.81" (4.8 to 6mm) |
| Cv FACTORS | 1.0 to 38 |

Features & Benefits

Energized PTFE stem seal

- Exceeds 50,000 cycles, reducing costs of ownership*
- No packing adjustments required, providing operator peace of mind
- Low operating torque for ease of operation

Live-loaded seats

- Compensate for wear and temperature cycling with zero leakage, providing excellent durability and reliability.**
- Ensure leak-tight performance over entire pressure range simplifying ball valve specification and installation, saving time and expense.
- Optional vented ball equalizes pressure between ball orifice and center body cavity

Static -grounded stem

- Prevents static discharge for added safety
- Quarter turn handle provides a visual indication of on/off valve position, improving safety
- Stem flats provide visual indication of valve position, improving safety
- Bottom-loaded stem prevents stem blowout for added safety

- Optional trip-proof or latching / locking handle prevents accidental opening or closing of the valve for greater security and safety
- Fully encapsulated bolts are protected from the environment, extending valve life and reducing costs

Valves are designed, manufactured and tested in compliance with: ANSI/ASME B16.34 (valves: flanged, threaded, and welding end†), API 608 (metal ball valves: flanged, threaded and welding end), API 598 (valve inspection and test), and MSS SP-99 (instrument valves)

- Industry standards ensure reliability and integrity of components and systems

Top-mount actuators and brackets are designed and manufactured in compliance with ISO 5211 (industrial valve: part-turn actuator attachment)

- Allow HOKE 7 Series to easily interchange with a wide variety of pneumatic actuators
- Allow user to easily convert manual valve to pneumatic operation in the field
- Special High Tolerance NPT Thread

* For best results use a filter upstream of the valve. Dirty, erosive and corrosive fluids may affect the cycle life of the valve. Cycle life is based on working pressures less than 150 psig.

** Zero leakage per API 598.

† When B16.34 (option B) is selected, testing is conducted in accordance with these specifications.

HOKE Inc.

PO Box 4866 • Spartanburg, SC 29305-4866
Phone (864) 574-7966 Fax (864) 587-5608
www.hoke.com • Sales-hoke@circor.com

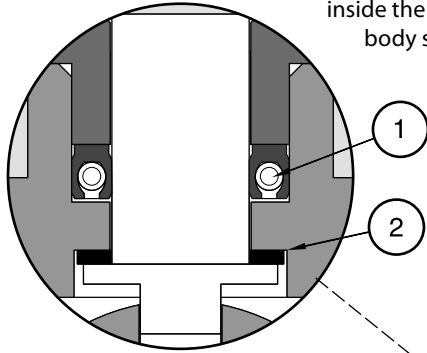
ball valves

7 Series

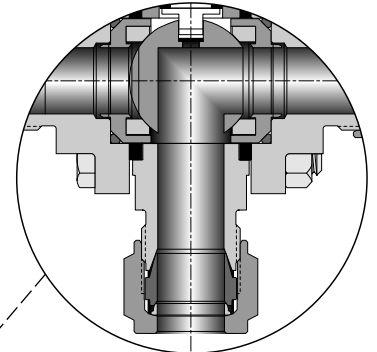
Materials of Construction

Energized PTFE Stem Seal Circular Elgiloy® spring contained within an inverted cup-shaped PTFE packing ring applies constant dynamic radial force.

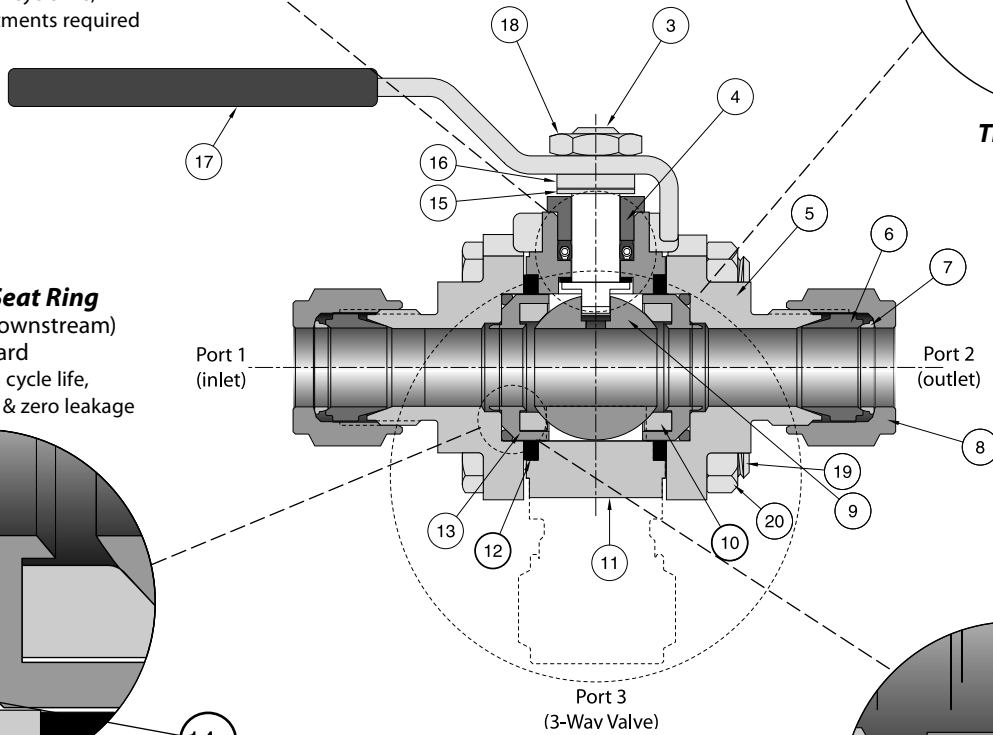
- *Low pressure operation:* Spring applies constant dynamic radial force from inside the PTFE cup, effecting a constant dynamic seal against stem and body stuffing box.
- *High pressure operation:* Rising system pressure increases the force applied from inside the PTFE cup, effecting a constant dynamic seal against stem and body stuffing box.
- *Thermal cycling and wear:* Spring applies constant dynamic radial force from inside the PTFE cup, compensating for expansion and contraction of components due to thermal cycling and wear.



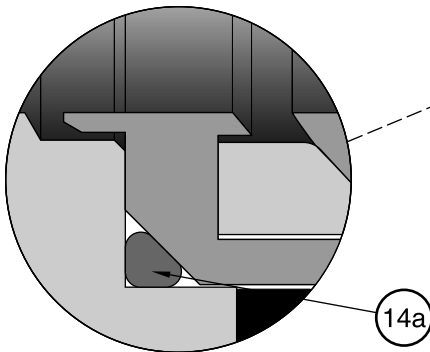
Energized PTFE Seal
Provides high cycle life,
no packing adjustments required



Third Port View
3-way Valve



Energized Seat Ring
(Upstream & Downstream)
Standard
Provides high cycle life,
bi-directional flow & zero leakage

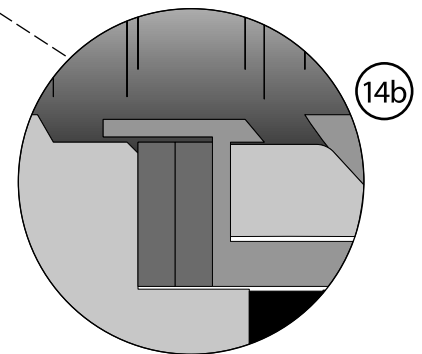


Energized Seat Rings Compressed O-rings apply constant dynamic force to the seat packing.

- *Low pressure operation:* Due to their resilient characteristics compressed O-rings apply constant dynamic force to the seats which make a leak tight seal against the ball.
- *High pressure operation:* Rising system pressure pushes the floating ball against the downstream seat enhancing the constant dynamic force generated by the O-rings which results in a leak-tight seal.
- *Thermal cycling and wear:* Due to their resilient characteristics compressed O-rings apply constant dynamic force to the seats, compensating for expansion and contraction of components due to thermal cycling and wear.
- *Bi-directional flow:* Energized seat rings utilizing compressed O-rings allow control of process fluid in both directions.

Optional Spring Loaded Seats Opposing curved disc spring seats (upstream only) in lieu of standard seat ring allow unidirectional flow.

- Available for 2-way valves only.
- Provide high cycle life and zero leakage.
- Located on upstream side only, no seat assembly is located on downstream side of ball for this option.



7 Series

Materials of Construction

316 Stainless Steel Valve with 'G' Seat and Seal Material – 15% Graphite filled PTFE (standard)

| | DESCRIPTION | COMPONENT MATERIAL | GRADE/ASTM SPECIFICATION |
|-----|--|-------------------------------|--------------------------|
| 1 | Energized PTFE stem seal* | Graphite-filled PTFE/Elgiloy® | — |
| 2 | Thrust washer* | PEEK™ | — |
| 3 | Stem* | 316 stainless steel | A479 |
| 4 | Spacer | PEEK™ | — |
| 5 | Adapter ends* | 316 stainless steel | CF3M/A351 |
| 6 | Ferrule, front* | 316 stainless steel | A479 |
| 7 | Ferrule, rear | 316 stainless steel | A479 |
| 8 | GYROLOK® nut | 316 stainless steel | A479 |
| 9 | Ball* | 316 stainless steel | A479 |
| 10 | Seat* | Graphite-filled PTFE | — |
| 11 | Body* | 316 stainless steel | CF3M/A351 |
| 12 | Body seal* | PTFE | — |
| 13 | Seat retainer* | 316 stainless steel | A479 |
| 14a | Energized seat ring (standard)* | FKM (Viton®) | MIL-R-83248 |
| 14b | Energized seat ring: curved disc springs (optional)* | 316 stainless steel | — |
| 15 | Retaining ring | Stainless steel | PH15-7 MO |
| 16 | Handle spacer | 316 stainless steel | A479 |
| 17 | Handle | 316 stainless steel | A240 |
| 18 | Stem nut | 316 stainless steel | ASTM A194 Grade 8 |
| 19 | Body bolt | 316 stainless steel | ASTM A193 B8 |
| 20 | Body nut | 316 stainless steel | ASTM A193 B8 |
| | Handle stop roll pin (not shown, 7D Series only) | 420 stainless steel | — |
| | Lubricant: Energized PTFE stem seal | non silicone-based | Krytox® 104 |
| | Lubricant: stem | non silicone-based | Krytox® 104 |
| | Lubricant: seat | non silicone-based | Krytox® 206 |

* Wetted component

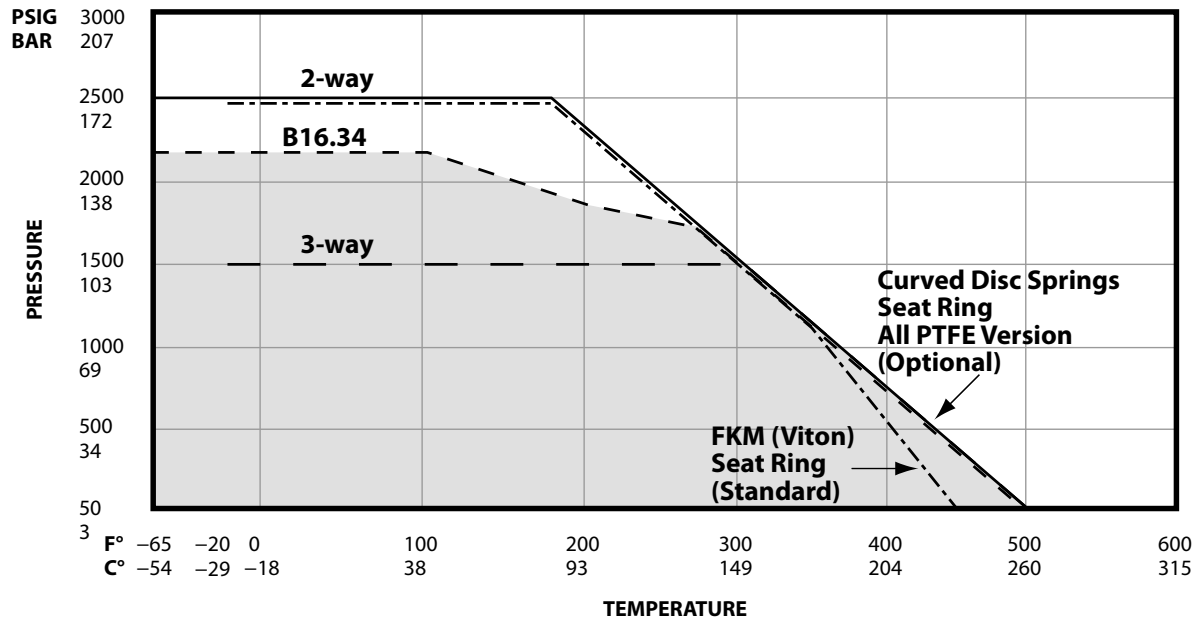
Technical Data (Standard)

| | |
|--|---|
| SEAT | 15% Graphite-filled PTFE |
| BODY SEAL | PTFE |
| ENERGIZED STEM SEAL | Graphite-filled PTFE / Elgiloy® |
| THRUST WASHER | PEEK™ |
| MAXIMUM OPERATING PRESSURE* | 2500 psig @ 70° F (172 bar @ 21° C) |
| TEMPERATURE RANGE (LIMITED BY SEAT RING MATERIAL) | FKM (Viton®): -20° F to +450° F (-29° C to +232° C) Curved Disc Springs: -65° F to +500° F (-54° C to +260° C) |

* 3-way valves are limited to 1500 psig (103 bar)

Pressure vs. Temperature Curves

'G' Seat and Seal Material – 15% Graphite filled PTFE (Standard)

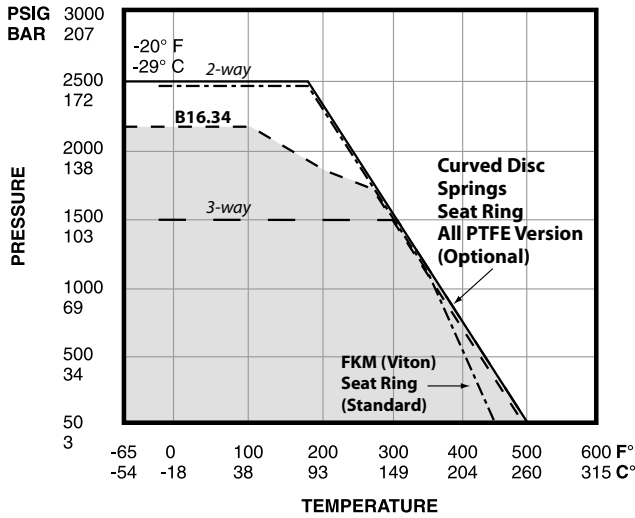


7 Series

Pressure vs. Temperature Curves

These optional seat and seal materials are available through the 'Build to Order' matrix on pages 26 and 27.

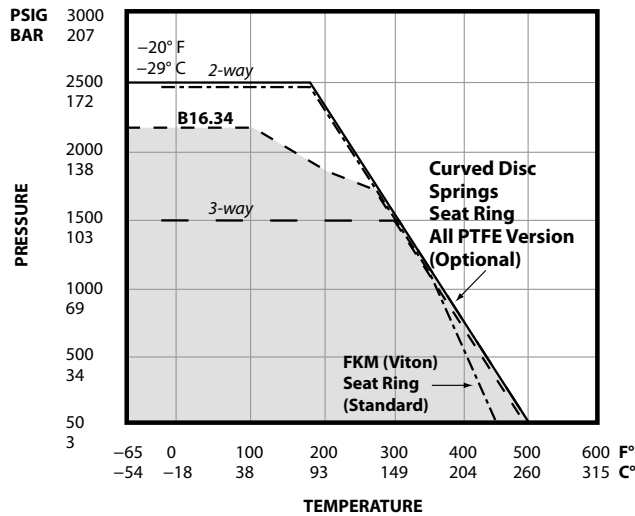
'T' Seat and Seal Material –PTFE (Optional)



| | |
|---|---|
| SEAT | PTFE |
| BODY SEAL | PTFE |
| ENERGIZED STEM SEAL | Graphite-filled PTFE / Elgiloy® |
| THRUST WASHER | PEEK™ |
| MAXIMUM OPERATING PRESSURE* | 2500 psig @ 70° F (172 bar @ 21° C) |
| TEMPERATURE RANGE (LIMITED BY SEAT RING MATERIAL) | FKM (Viton®): -20° F to +450° F (-29° C to +232° C) Curved Disc Springs: -65° F to +500° F (-54° C to +260° C) |

* 3-way valves limited to 1500 psig (103 bar).

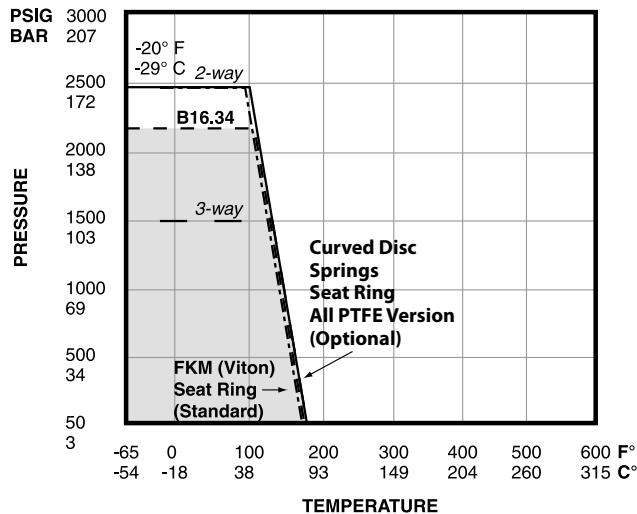
'P' Seat and Seal Material –PEEK™ (Optional)



| | |
|---|---|
| SEAT | PEEK™ |
| BODY SEAL | PTFE |
| ENERGIZED STEM SEAL | Graphite-filled PTFE / Elgiloy® |
| THRUST WASHER | PEEK™ |
| MAXIMUM OPERATING PRESSURE* | 2500 psig @ 70° F (172 bar @ 21° C) |
| TEMPERATURE RANGE (LIMITED BY SEAT RING MATERIAL) | FKM (Viton®): -20° F to +450° F (-29° C to +232° C) Curved Disc Springs: -65° F to +500° F (-54° C to +260° C) |

* 3-way valves limited to 1500 psig (103 bar).

'U' Seat and Seal Material –UHMWPE (Optional)



| | |
|---|---|
| SEAT | UHMWPE |
| BODY SEAL | PTFE |
| ENERGIZED STEM SEAL | Graphite-filled PTFE / Elgiloy® |
| THRUST WASHER | PEEK™ |
| MAXIMUM OPERATING PRESSURE* | 2500 psig @ 70° F (172 bar @ 21° C) |
| TEMPERATURE RANGE (LIMITED BY SEAT RING MATERIAL) | FKM (Viton®): -20° F to +180° F (-29° C to +82° C) Curved Disc Springs: -65° F to +180° F (-54° C to +82° C) |

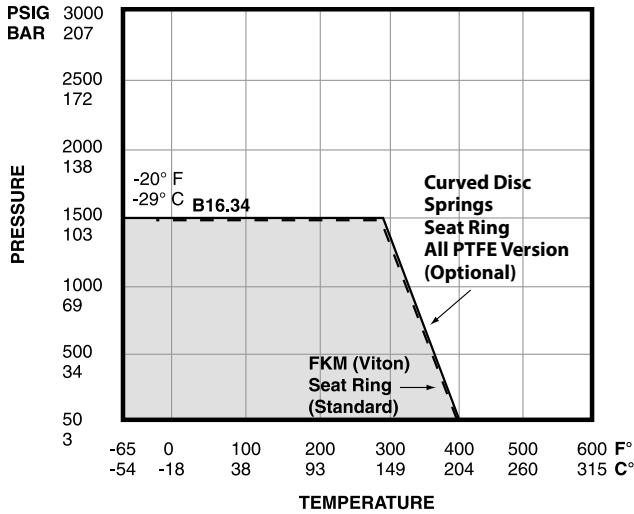
* 3-way valves limited to 1500 psig (103 bar).

7 Series

Pressure vs. Temperature Curves

These optional seat and seal materials are available through the 'Build to Order' matrix on pages 26 and 27.

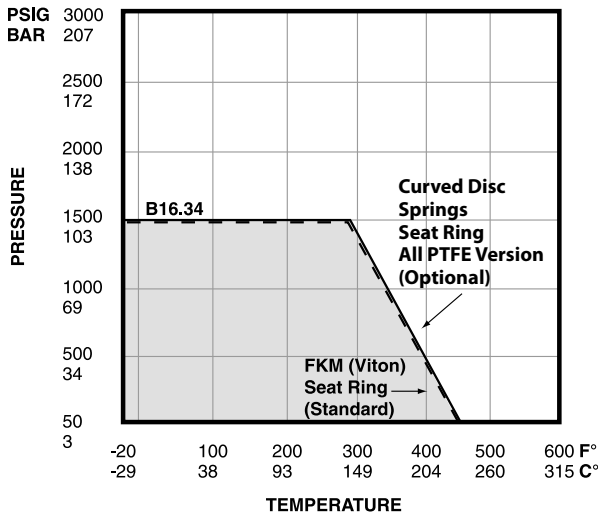
'V' Seat and Seal Material –Virgin TFE (Optional)



| | |
|---|---|
| SEAT | TFE (virgin) |
| BODY SEAL | PTFE |
| ENERGIZED STEM SEAL | Graphite-filled PTFE / Elgiloy® |
| THRUST WASHER | PEEK™ |
| MAXIMUM OPERATING PRESSURE* | 1500 psig @ 70° F (103 bar @ 21° C) |
| TEMPERATURE RANGE (LIMITED BY SEAT RING MATERIAL) | FKM (Viton®): -20° F to +400° F (-29° C to +204° C) Curved Disc Springs: -65° F to +400° F (-54° C to +204° C) |

* 3-way valves limited to 1500 psig (103 bar).

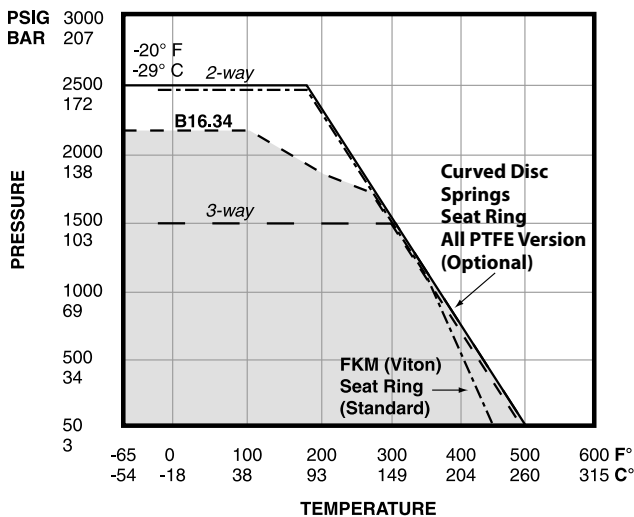
'O' Seat and Seal Material –PTFE/FKM O-ring (Optional)



| | |
|---|---|
| SEAT | PTFE |
| BODY SEAL | FKM (Viton®) o-ring |
| ENERGIZED STEM SEAL | Graphite-filled PTFE / Elgiloy® |
| THRUST WASHER | PEEK™ |
| MAXIMUM OPERATING PRESSURE* | 1500 psig @ 70° F (103 bar @ 21° C) |
| TEMPERATURE RANGE (LIMITED BY SEAT RING MATERIAL) | FKM (Viton®): -20° F to +450° F (-29° C to +232° C) Curved Disc Springs: -20° F to +450° F (-29° C to +232° C) |

* 3-way valves limited to 1500 psig (103 bar).

'R' Seat and Seal Material –PTFE/Reinforced PTFE (Optional)



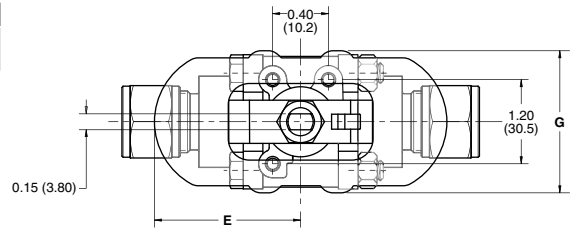
| | |
|---|---|
| SEAT | PTFE |
| BODY SEAL | PTFE |
| ENERGIZED STEM SEAL | Graphite-filled PTFE / Elgiloy® |
| THRUST WASHER | Reinforced PTFE |
| MAXIMUM OPERATING PRESSURE* | 2500 psig @ 70° F (172 bar @ 21° C) |
| TEMPERATURE RANGE (LIMITED BY SEAT RING MATERIAL) | FKM (Viton®): -20° F to +450° F (-29° C to +232° C) Curved Disc Springs: -65° F to +500° F (-54° C to +260° C) |

* 3-way valves limited to 1500 psig (103 bar).

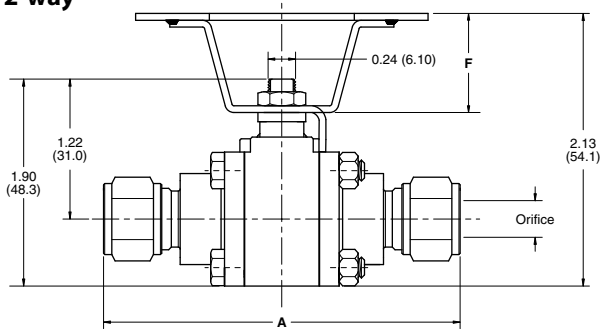
7 Series

Dimensions: 7D Series (Cv Range = 1.0 to 3.8)

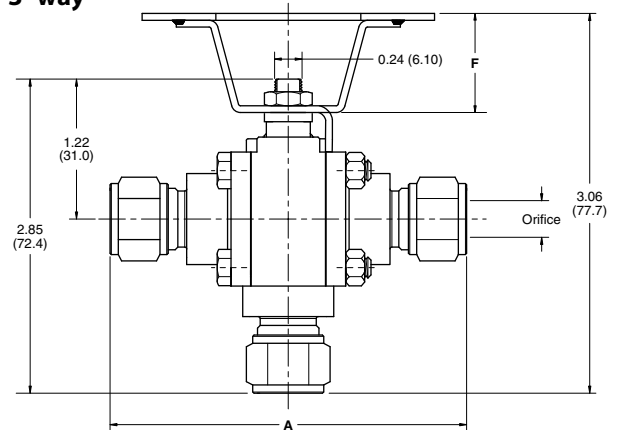
| | 2-WAY | 3-WAY |
|---------------------|----------------------------------|----------------------------------|
| ORIFICE SIZE | 0.09" - 0.28" (2.3mm - 7.1mm) | 0.09" - 0.20" (2.3mm - 5.1mm) |
| Cv RANGE | 1.0 - 3.8 | 1.0 - 1.7 |



2-way



3-way



7D Series (Cv Range 1.0 to 3.8)

| END CONNECTIONS | 2-WAY | | | 3-WAY | | | A |
|------------------------------|--------------|----------|-----|--------------|----------|-----|----------------------|
| | BALL ORIFICE | ORIFICE* | Cv | BALL ORIFICE | ORIFICE* | Cv | |
| 1/8" GYROLOK® | 0.28" | 0.09" | 1.0 | 0.20" | 0.09" | 1.0 | inch 3.38 mm 85.9 |
| 1/4" GYROLOK® | 0.28" | 0.19" | 1.8 | 0.20" | 0.19" | 1.7 | inch 3.38 mm 85.9 |
| 3/8" GYROLOK® | 0.28" | 0.28" | 3.8 | 0.20" | 0.20" | 1.7 | inch 3.38 mm 85.9 |
| 6mm GYROLOK® | 0.28" | 0.16" | 1.3 | 0.20" | 0.16" | 1.7 | inch 3.35 mm 85.1 |
| 8mm GYROLOK® | 0.28" | 0.23" | 2.6 | 0.20" | 0.20" | 1.7 | inch 3.35 mm 85.1 |
| 10mm GYROLOK® | 0.28" | 0.28" | 3.8 | 0.20" | 0.20" | 1.7 | inch 3.43 mm 87.1 |
| 1/4" female NPT | 0.28" | 0.28" | 3.8 | 0.20" | 0.20" | 1.7 | inch 2.29 mm 58.2 |
| 1/4" male NPT | 0.28" | 0.28" | 3.8 | 0.20" | 0.20" | 1.7 | inch 3.55 mm 90.2 |
| 1/4" Vaculok™ | 0.28" | 0.28" | 3.8 | 0.20" | 0.20" | 1.7 | inch 3.59 mm 91.2 |
| 1/4" tube socket weld | 0.28" | 0.26" | 3.4 | 0.20" | 0.20" | 1.7 | inch 2.30 mm 58.4 |
| 3/8" tube socket weld | 0.28" | 0.28" | 3.8 | 0.20" | 0.20" | 1.7 | inch 2.50 mm 63.5 |
| 6mm tube socket weld | 0.28" | 0.25" | 3.1 | 0.20" | 0.20" | 1.7 | inch 2.50 mm 63.5 |
| 8mm tube socket weld | 0.28" | 0.28" | 3.8 | 0.20" | 0.20" | 1.7 | inch 2.50 mm 63.5 |
| 10mm tube socket weld | 0.28" | 0.28" | 3.8 | 0.20" | 0.20" | 1.7 | inch 2.50 mm 63.5 |
| 1/4" pipe butt weld sch 40 | 0.28" | 0.28" | 3.8 | 0.20" | 0.20" | 1.7 | inch 1.97 mm 50.0 |
| 3/8" pipe butt weld sch 40 | 0.28" | 0.28" | 3.8 | 0.20" | 0.20" | 1.7 | inch 1.97 mm 50.0 |
| 1/4" pipe socket weld sch 80 | 0.28" | 0.28" | 3.8 | 0.20" | 0.20" | 1.7 | inch 2.35 mm 59.7 |
| 1/4" pipe butt weld sch 80 | 0.28" | 0.28" | 3.8 | 0.20" | 0.20" | 1.7 | inch 1.97 mm 50.0 |
| 3/8" pipe butt weld sch 80 | 0.28" | 0.28" | 3.8 | 0.20" | 0.20" | 1.7 | inch 1.97 mm 50.0 |

Handles

Oval handle
E 1.44" (36.6mm)
F 0.57" (14.5mm)
G 1.50" (38.1mm)

Lever handle
E 2.25" (57.2mm)
F 0.42" (10.8mm)
G 0.38" (9.65mm)

Consult factory for additional end connection sizes.

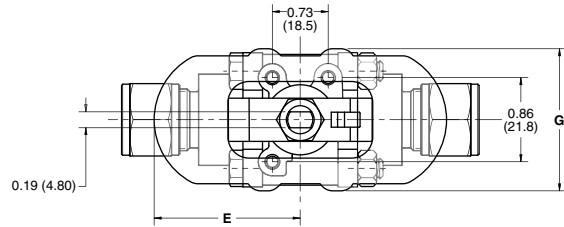
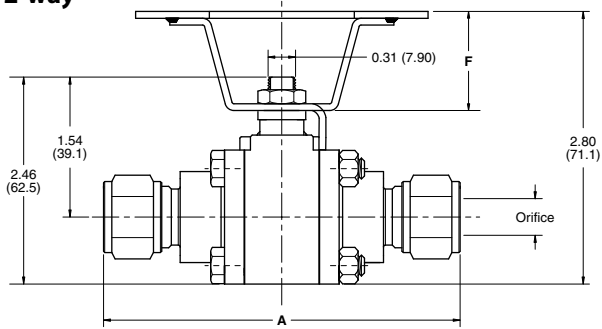
* Orifice diameter and flow rate listed for the total valve. The most restrictive orifice may be either the ball or the end connection orifice. Dimensions for reference only, subject to change.

7 Series

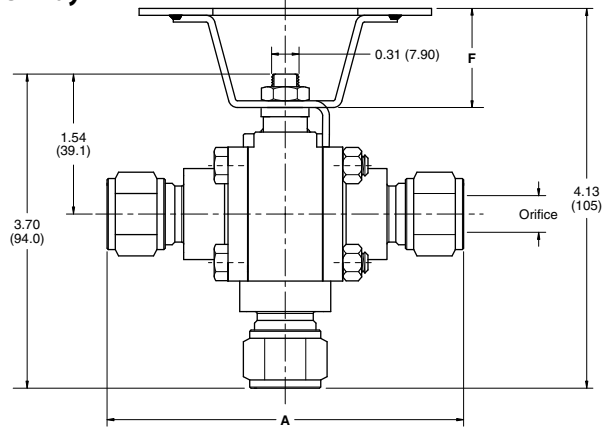
Dimensions: 7E Series (Cv Range = 4.0 to 12.5)

| | 2-WAY | 3-WAY |
|---------------------|-----------------------------------|-----------------------------------|
| ORIFICE SIZE | 0.30" - 0.50" (7.6mm - 12.7mm) | 0.30" - 0.42" (7.6mm - 10.7mm) |
| Cv RANGE | 4.5 - 12.5 | 4.0 |

2-way



3-way



7E Series (Cv Range = 4.0 to 12.5)

| END CONNECTIONS | 2-WAY | | | 3-WAY | | | A |
|----------------------------|--------------|----------|------|--------------|----------|-----|----------------------|
| | BALL ORIFICE | ORIFICE* | Cv | BALL ORIFICE | ORIFICE* | Cv | |
| 3/8" GYROLOK® | 0.50" | 0.30" | 4.5 | 0.42" | 0.30" | 4.0 | inch 3.31 mm 84.1 |
| 1/2" GYROLOK® | 0.50" | 0.42" | 7.5 | 0.42" | 0.42" | 4.0 | inch 3.80 mm 96.5 |
| 3/4" GYROLOK® | 0.50" | 0.50" | 12.5 | 0.42" | 0.42" | 4.0 | inch 3.80 mm 96.5 |
| 12mm GYROLOK® | 0.50" | 0.39" | 7.0 | 0.42" | 0.39" | 4.0 | inch 3.80 mm 96.5 |
| 18mm GYROLOK® | 0.50" | 0.50" | 12.5 | 0.42" | 0.42" | 4.0 | inch 3.80 mm 96.5 |
| 3/8" female NPT | 0.50" | 0.50" | 12.5 | 0.42" | 0.42" | 4.0 | inch 3.25 mm 82.5 |
| 1/2" female NPT | 0.50" | 0.50" | 12.5 | 0.42" | 0.42" | 4.0 | inch 3.25 mm 82.5 |
| 1/2" Vaculok™ | 0.50" | 0.50" | 12.5 | 0.42" | 0.42" | 4.0 | inch 3.27 mm 83.1 |
| 3/8" tube socket weld | 0.50" | 0.30" | 4.5 | 0.42" | 0.30" | 4.0 | inch 2.36 mm 59.9 |
| 1/2" tube socket weld | 0.50" | 0.42" | 7.5 | 0.42" | 0.42" | 4.0 | inch 2.36 mm 59.9 |
| 3/4" tube socket weld | 0.50" | 0.50" | 12.5 | 0.42" | 0.42" | 4.0 | inch 2.36 mm 59.9 |
| 12mm tube socket weld | 0.50" | 0.42" | 7.5 | 0.42" | 0.42" | 4.0 | inch 2.36 mm 59.9 |
| 18mm tube socket weld | 0.50" | 0.50" | 12.5 | 0.42" | 0.42" | 4.0 | inch 2.36 mm 59.9 |
| 3/8" pipe socket weld | 0.50" | 0.50" | 12.5 | 0.42" | 0.42" | 4.0 | inch 2.36 mm 59.9 |
| 1/2" pipe socket weld | 0.50" | 0.50" | 12.5 | 0.42" | 0.42" | 4.0 | inch 2.36 mm 59.9 |
| 3/8" pipe butt weld sch 40 | 0.50" | 0.42" | 7.5 | 0.42" | 0.42" | 4.0 | inch 2.10 mm 53.3 |
| 1/2" pipe butt weld sch 40 | 0.50" | 0.50" | 12.5 | 0.42" | 0.42" | 4.0 | inch 2.10 mm 53.3 |
| 3/8" pipe butt weld sch 80 | 0.50" | 0.42" | 7.5 | 0.42" | 0.42" | 4.0 | inch 2.10 mm 53.3 |
| 1/2" pipe butt weld sch 80 | 0.50" | 0.50" | 12.5 | 0.42" | 0.42" | 4.0 | inch 2.10 mm 53.3 |

Handles

Oval handle

E 2.14" (54.4mm)
F 1.50" (38.1mm)
G 2.08" (52.8mm)

Lever handle

E 3.72" (94.5mm)
F 0.62" (15.7mm)
G 0.63" (15.9mm)

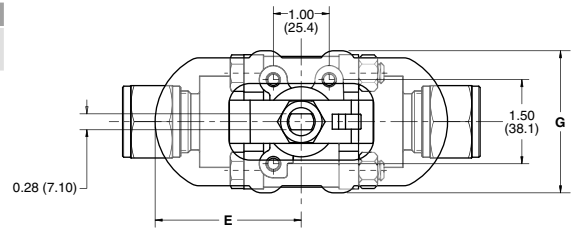
Consult factory for additional end connection sizes.

* Orifice diameter and flow rate listed for the total valve. The most restrictive orifice may be either the ball or the end connection orifice. Dimensions for reference only, subject to change.

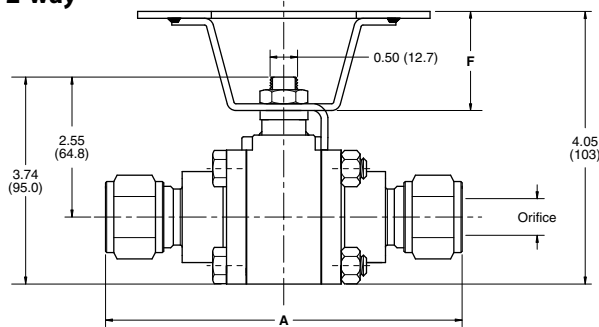
7 Series

Dimensions: 7F Series (Cv Range = 7.5 to 38.0)

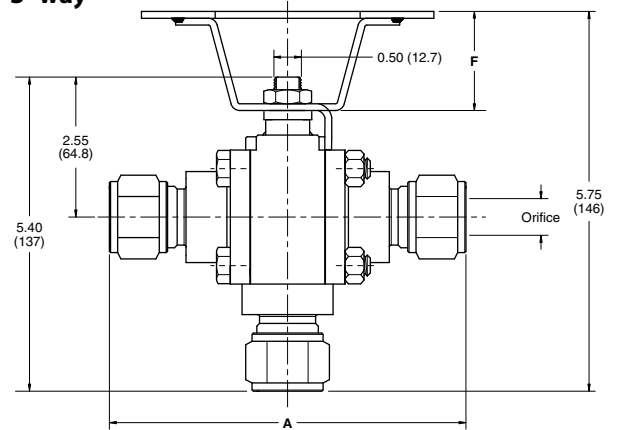
| | 2-WAY | 3-WAY |
|---------------------|------------------------------------|------------------------------------|
| ORIFICE SIZE | 0.42" - 0.88" (10.7mm - 22.4mm) | 0.42" - 0.63" (10.7mm - 16.0mm) |
| Cv RANGE | 7.5 - 38.0 | 9.0 |



2-way



3-way



7F Series (Cv Range = 7.5 to 38.0)

| END CONNECTIONS | 2-WAY | | | 3-WAY | | | A |
|--------------------------|--------------|----------|------|--------------|----------|-----|----------------------|
| | BALL ORIFICE | ORIFICE* | Cv | BALL ORIFICE | ORIFICE* | Cv | |
| 1" GYROLOK® | 0.88" | 0.88" | 38.0 | 0.63" | 0.63" | 9.0 | inch 5.60 mm 142 |
| 25mm GYROLOK® | 0.88" | 0.88" | 38.0 | 0.63" | 0.63" | 9.0 | inch 3.69 mm 93.7 |
| ¾" female NPT sch 80 | 0.88" | 0.88" | 38.0 | 0.63" | 0.63" | 9.0 | inch 3.69 mm 93.7 |
| 1" female NPT sch 80 | 0.88" | 0.88" | 38.0 | 0.63" | 0.63" | 9.0 | inch 3.45 mm 87.6 |
| 1" tube socket weld | 0.88" | 0.88" | 38.0 | 0.63" | 0.63" | 9.0 | inch 3.45 mm 87.6 |
| 25mm tube socket weld | 0.88" | 0.88" | 38.0 | 0.63" | 0.63" | 9.0 | inch 3.45 mm 87.6 |
| ¾" pipe socket weld | 0.88" | 0.88" | 38.0 | 0.63" | 0.63" | 9.0 | inch 3.45 mm 87.6 |
| 1" pipe socket weld | 0.88" | 0.88" | 38.0 | 0.63" | 0.63" | 9.0 | inch 3.45 mm 87.6 |
| ¾" pipe butt weld sch 40 | 0.88" | 0.75" | 27.0 | 0.63" | 0.63" | 9.0 | inch 3.45 mm 87.6 |
| 1" pipe butt weld sch 40 | 0.88" | 0.88" | 38.0 | 0.63" | 0.63" | 9.0 | inch 3.45 mm 87.6 |
| ¾" pipe butt weld sch 80 | 0.88" | 0.75" | 27.0 | 0.63" | 0.63" | 9.0 | inch 3.45 mm 87.6 |
| 1" pipe butt weld sch 80 | 0.88" | 0.88" | 38.0 | 0.63" | 0.63" | 9.0 | inch 3.45 mm 87.6 |

Handles

Oval handle
E 2.61" (66.3mm)
F 1.75" (44.4mm)
G 2.54" (64.5mm)

Lever handle
E 5.44" (138mm)
F 0.80" (20.4mm)
G 0.75" (19.0mm)

Consult factory for additional end connection sizes.

* Orifice diameter and flow rate listed for the total valve. The most restrictive orifice may be either the ball or the end connection orifice. Dimensions for reference only, subject to change.

7 Series

Accessories: Handles

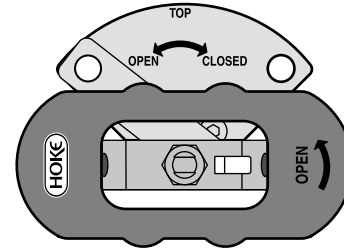
Lever Handle*



Handle Option "K"
316 Stainless Steel

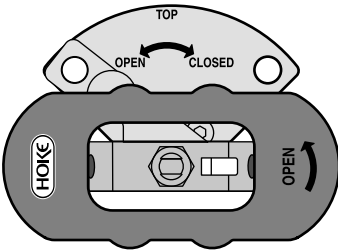
* Standard handle for 7 Series

Oval Locking Handle



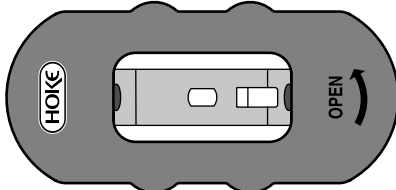
Handle Option "N"
316 Stainless Steel

Oval Locking/Latching Handle



Handle Option "L"
316 Stainless Steel

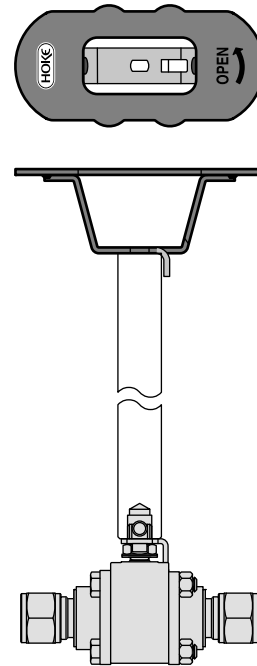
Oval Handle



Handle Option "M" and "N"

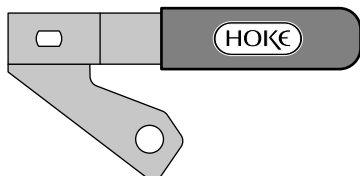
M – Zinc-plated carbon steel
N – 316 stainless steel

Oval Extended Handle*



Handle Option "4"
316 Stainless Steel

Locking Lever Handle



Handle Option "S"
316 Stainless Steel

7 Series

How to Order: Standard Valves

Use the following list to order standard valves that are readily available from your local HOKE distributor. If your application requires a customized valve, use the 'Build to Order' matrix on page 26 for 2-way valves or page 27 for 3-way valves.

All valves listed in this matrix are built with the following components as standard:

- 316 stainless steel body*
- 15% graphite-filled PTFE seat*
- PTFE body seal*
- Graphite-filled PTFE/316 stainless steel energized stem seal*
- PEEK™ thrust washer*
- 316 stainless steel body bolt
- 316 stainless steel ball*
- 316 stainless steel handle
- FKM (Viton®) seat rings*
- Standard cleaning

* Wetted components

2-way Valves

| END CONNECTION (ALL PORTS) | END CONNECTION SIZE | ACTUATION METHOD | PART NUMBER |
|----------------------------|---|---|------------------|
| GYROLOK® | 1/4" | Lever handle | 7D2GG04G04YKS20V |
| | 3/8" | Lever handle | 7D2GG06G06YKS20V |
| | 1/2" | Lever handle | 7E2GG08G08YKS20V |
| | 3/4" | Lever handle | 7E2GG12G12YKS20V |
| | 1" | Lever handle | 7F2GG16G16YKS20V |
| | 1/4" | Oval handle | 7D2GG04G04YNS20V |
| | 3/8" | Oval handle | 7D2GG06G06YNS20V |
| | 1/2" | Oval handle | 7E2GG08G08YNS20V |
| | 3/4" | Oval handle | 7E2GG12G12YNS20V |
| | 1" | Oval handle | 7F2GG16G16YNS20V |
| | 1/4" | Normally closed spring return pneumatic | 7D2GG04G04Y6S20V |
| | 3/8" | Normally closed spring return pneumatic | 7D2GG06G06Y6S20V |
| | 1/2" | Normally closed spring return pneumatic | 7E2GG08G08Y6S20V |
| | 3/4" | Normally closed spring return pneumatic | 7E2GG12G12Y6S20V |
| 1" | Normally closed spring return pneumatic | 7F2GG16G16Y6S20V | |
| Female NPT | 1/4" | Lever handle | 7D2GF04F04YKS20V |
| | 3/8" | Lever handle | 7D2GF06F06YKS20V |
| | 1/2" | Lever handle | 7E2GF08F08YKS20V |
| | 3/4" | Lever handle | 7F2GF12F12YKS20V |
| | 1" | Lever handle | 7F2GF16F16YKS20V |
| | 1/4" | Oval handle | 7D2GF04F04YNS20V |
| | 3/8" | Oval handle | 7D2GF06F06YNS20V |
| | 1/2" | Oval handle | 7E2GF08F08YNS20V |
| | 3/4" | Oval handle | 7F2GF12F12YNS20V |
| | 1" | Oval handle | 7F2GF16F16YNS20V |
| | 1/4" | Normally closed spring return pneumatic | 7D2GF04F04Y6S20V |
| | 3/8" | Normally closed spring return pneumatic | 7D2GF06F06Y6S20V |
| | 1/2" | Normally closed spring return pneumatic | 7E2GF08F08Y6S20V |
| | 3/4" | Normally closed spring return pneumatic | 7F2GF12F12Y6S20V |
| 1" | Normally closed spring return pneumatic | 7F2GF16F16Y6S20V | |

3-way Valves

| END CONNECTION (ALL PORTS) | END CONNECTION SIZE | ACTUATION METHOD | PART NUMBER |
|----------------------------|-------------------------------------|-------------------------------------|--------------------|
| GYROLOK® | 1/4" | Lever handle | 7D3GG04G04G04YKS2V |
| | 3/8" | Lever handle | 7D3GG06G06G06YKS2V |
| | 1/2" | Lever handle | 7E3GG08G08G08YKS2V |
| | 3/4" | Lever handle | 7E3GG12G12G12YKS2V |
| | 1" | Lever handle | 7F3GG16G16G16YKS2V |
| | 1/4" | Oval handle | 7D3GG04G04G04YNS2V |
| | 3/8" | Oval handle | 7D3GG06G06G06YNS2V |
| | 1/2" | Oval handle | 7E3GG08G08G08YNS2V |
| | 3/4" | Oval handle | 7E3GG12G12G12YNS2V |
| | 1" | Oval handle | 7F2GG16G16G16YNS2V |
| | 1/4" | Double acting pneumatic (switching) | 7D3GG04G04G04Y5S2V |
| | 3/8" | Double acting pneumatic (switching) | 7D3GG06G06G06Y5S2V |
| | 1/2" | Double acting pneumatic (switching) | 7E3GG08G08G08Y5S2V |
| | 3/4" | Double acting pneumatic (switching) | 7E3GG12G12G12Y5S2V |
| 1" | Double acting pneumatic (switching) | 7F3GG16G16G16Y5S2V | |

7 Series

How to Order: Build to Order for 2-way Valves

Use the matrix below to customize your 7 Series valve. Use the chart on page 25 to order standard, readily available 7 Series valves. **Standard items in bold.**

7E2 G G08 G08 Y K S 2 0 V

SERIES NUMBER

7D2 Cv Range 1.0 to 3.8
7E2 Cv Range 4.0 to 12.5
7F2 Cv Range 7.5 to 38.0
 (See pages 21-23)

SEAT & SEAL MATERIAL

G 15% Graphite filled PTFE
T PTFE
P PEEK™
U UHMWPE
V Virgin TFE
O PTFE/FKM O-ring
R PTFE/Reinforced PTFE washer

Consult factory if valve is actuated pneumatically

Inlet PORT END
See 'Inlet / Outlet Ports' table below

Outlet PORT END
See 'Inlet / Outlet Ports' table below

WETTED METAL COMPONENTS

Y 316 stainless steel (standard)
H Hastelloy® C-276
M Monel® 400
 Consult factory for other materials

ACTUATION OPTIONS

Lever Handles (see page 24)

K 316 stainless steel (standard)
S 316 stainless steel, locking

ANSI B16.34
Blank-Standard
B ANSI/ASME B16.34 Class 800*

SEAT RINGS

V FKM (Viton®) (standard)
K Kalrez® (-58° to +450° F / -50° to +232° C)
E EPDM (-65° to +250° F / -54° to +121° C)
Blank Seat rings are replaced with 2 opposing curved disc springs on upstream side. Valve becomes unidirectional when selecting this option. (Refer to drawing on bottom of page 17.)

Ball

0 Standard ball
1 Upstream vented ball, 316 stainless steel
2 Steam trap test valve
 (Note: Cannot be used in 7D Valves)

BODY BOLT, BODY NUT, AND STEM NUT

2 316 stainless steel
3 316 stainless steel -NACE compliant***

CLEANING OPTIONS
 See page 27 for details

S Standard cleaning per HPS-1 and -2
A Industrial oxygen cleaning per HPS-18
B Chlorine service cleaning per HPS-172

*** Per NACE MR0175/ISO15156, the user must determine if this product is satisfactory for use in its intended environment.

Ergonomic Oval Handles (see page 24)

- L** 316 stainless steel, latching/locking
- M** Zinc-plated carbon steel
- N** 316 stainless steel
- 3** 316 stainless steel, locking
- 4** 316 stainless steel, extended (standard length = 4")**

Pneumatic Actuator†

- 5** Double acting (air to open/air to close)
- 6** Normally closed (spring returned)
- 7** Normally open (spring returned)

* Valves proof tested to 1.5x working pressure and tagged per B16.34.
 ** Consult factory for additional lengths.
 † Refer to page 29 for specifications.

Inlet / Outlet Ports

| SERIES | SIZE | GYROLOK® | FEMALE NPT | TUBE SOCKET WELD | TUBE BUTT WELD | PIPE SOCKET WELD | SCH 80 PIPE BUTT WELD | SCH 40 PIPE BUTT WELD |
|--------|------|----------|------------|------------------|----------------|------------------|-----------------------|-----------------------|
| 7D2 | 1/8" | G02 | — | — | — | — | — | — |
| | 1/4" | G04 | F04 | T04 | — | P04 | B04 | H04 |
| | 3/8" | G06 | — | T06 | — | — | B06 | H06 |
| | 6mm | Z06 | — | W06 | — | — | — | — |
| | 8mm | Z08 | — | W08 | — | — | — | — |
| | 10mm | Z10 | — | W10 | — | — | — | — |

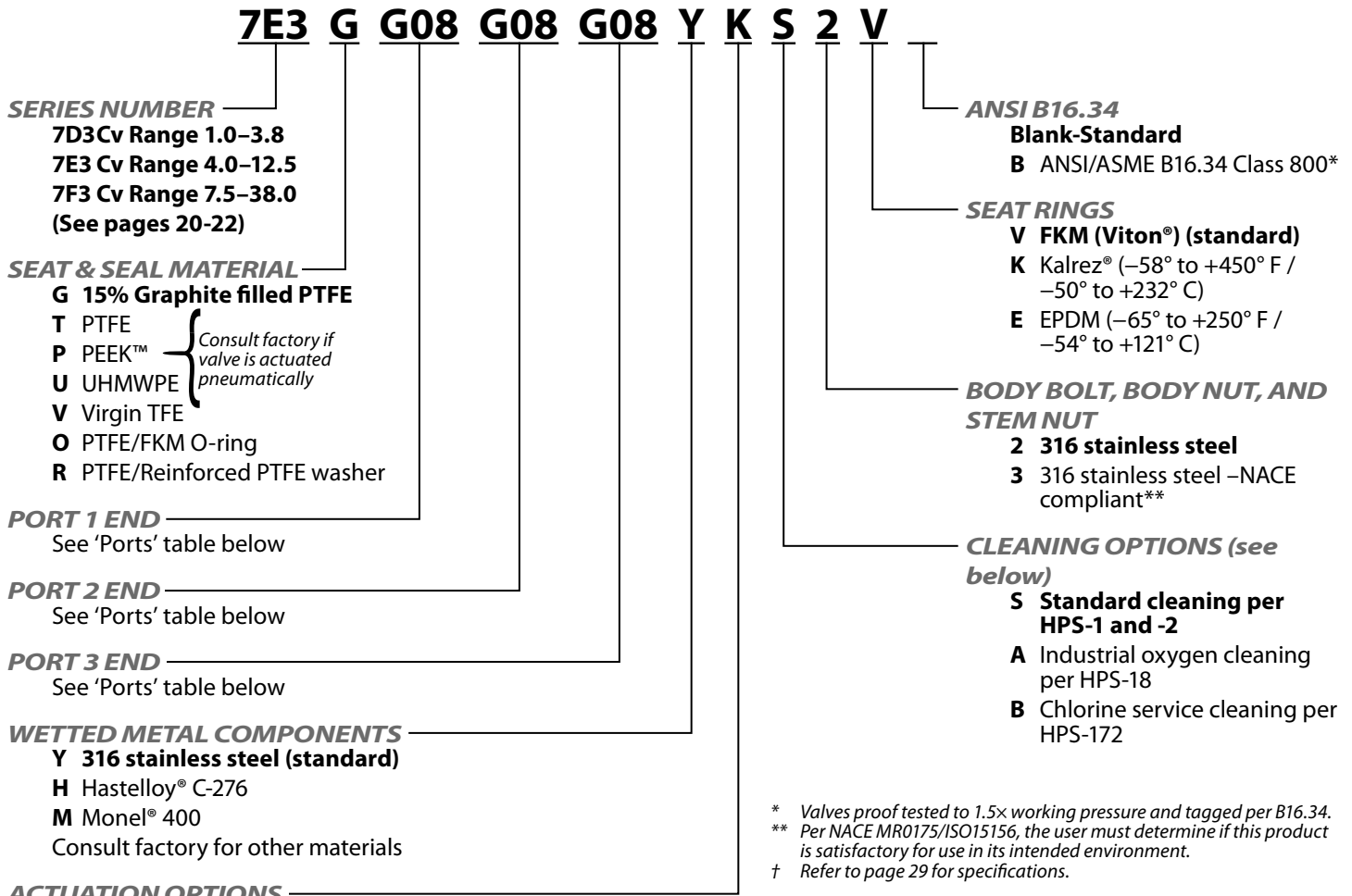
Inlet / Outlet Ports

| SERIES | SIZE | GYROLOK® | FEMALE NPT | TUBE SOCKET WELD | TUBE BUTT WELD | PIPE SOCKET WELD | SCH 80 PIPE BUTT WELD | SCH 40 PIPE BUTT WELD |
|--------|------|----------|------------|------------------|----------------|------------------|-----------------------|-----------------------|
| 7E2 | 1/4" | G04 | F04 | T04 | S04 | — | B04 | — |
| | 3/8" | G06 | F06 | T06 | S06 | P06 | B06 | H06 |
| | 1/2" | G08 | F08 | T08 | S08 | P08 | B08 | H08 |
| | 5/8" | G10 | — | T10 | — | — | — | — |
| | 3/4" | G12 | — | T12 | S12 | — | — | — |
| | 1" | — | — | — | S16 | — | — | — |
| | 6mm | Z06 | — | W06 | — | — | — | — |
| | 8mm | Z08 | — | W08 | — | — | — | — |
| | 10mm | Z10 | — | W10 | — | — | — | — |
| | 12mm | Z12 | — | W12 | — | — | — | — |
| | 14mm | Z14 | — | W14 | — | — | — | — |
| | 15mm | Z15 | — | W15 | — | — | — | — |
| 7F2 | 16mm | Z16 | — | W16 | — | — | — | — |
| | 18mm | Z18 | — | W18 | — | — | — | — |
| | 3/4" | G12 | F12 | T12 | — | P12 | B12 | H12 |
| | 7/8" | G14 | — | — | — | — | — | — |
| | 1" | G16 | F16 | T16 | — | P16 | B16 | H16 |
| | 18mm | Z18 | — | — | — | — | — | — |
| | 20mm | Z20 | — | — | — | — | — | — |
| | 22mm | Z22 | — | — | — | — | — | — |
| | 25mm | Z25 | — | W25 | — | — | — | — |

7 Series

How to Order: Build to Order for 3-way Valves

Use the matrix below to customize your 7 Series valve. Use the chart on page 25 to order standard, readily available 7 Series valves. **Standard items in bold.**



Port 1 / Port 2 / Port 3

| SERIES | SIZE | GYROLOK® | FEMALE NPT | TUBE SOCKET WELD | TUBE BUTT WELD | PIPE SOCKET WELD | SCH 80 PIPE BUTT WELD | SCH 40 PIPE BUTT WELD |
|--------|------|----------|------------|------------------|----------------|------------------|-----------------------|-----------------------|
| 7D3 | ¼" | G02 | — | — | — | — | — | — |
| | ¼" | G04 | F04 | T04 | — | P04 | B04 | H04 |
| | ⅜" | G06 | — | T06 | — | — | B06 | H06 |
| | 6mm | Z06 | — | W06 | — | — | — | — |
| | 8mm | Z08 | — | W08 | — | — | — | — |
| 7E3 | 10mm | Z10 | — | W10 | — | — | — | — |
| | 12mm | Z12 | — | W12 | — | — | — | — |
| | 14mm | Z14 | — | W14 | — | — | — | — |
| | 15mm | Z15 | — | W15 | — | — | — | — |
| | 16mm | Z16 | — | W16 | — | — | — | — |
| | 18mm | Z18 | — | W18 | — | — | — | — |
| | 1" | — | — | — | S16 | — | — | — |
| | ¾" | G04 | F04 | T04 | S04 | — | B04 | — |
| | ⅜" | G06 | F06 | T06 | — | P06 | B06 | H06 |
| | ½" | G08 | F08 | T08 | — | P08 | B08 | H08 |
| 7F3 | ⅝" | G10 | — | T10 | — | — | — | — |
| | ¾" | G12 | — | T12 | — | — | — | — |
| | 1" | — | — | — | — | — | — | — |
| | 6mm | Z06 | — | W06 | — | — | — | — |
| | 8mm | Z08 | — | W08 | — | — | — | — |
| | 10mm | Z10 | — | W10 | — | — | — | — |
| | 12mm | Z12 | — | W12 | — | — | — | — |
| 7F3 | 18mm | Z18 | — | — | — | — | — | — |
| | 20mm | Z20 | — | — | — | — | — | — |
| | 22mm | Z22 | — | — | — | — | — | — |
| | 25mm | Z25 | — | W25 | — | — | — | — |
| | ¾" | G12 | F12 | T12 | — | P12 | B12 | H12 |
| | ⅝" | G14 | — | — | — | — | — | — |

Cleaning Options

- HPS-1** Cleaning procedure to remove oil and grease from metal valve parts with solvent vapor- and solvent ultrasonic vapor degreasers.
- HPS-2** Cleaning procedure to remove dirt, oil, and grease from non-metallic parts with non-ionic detergent and water solution.
- HPS-18** Cleaning procedure to remove oil, grease, and other contaminants from the valve and fitting components prior to assembly for industrial oxygen service.
- HPS-172** Procedure to clean and package valve parts and assemblies for use with dry chlorine gas or liquid.

7 Series – Accessories

NEMA 7 Position Monitor

Fully compatible with HOKE 07L Series pneumatic actuators, the NEMA 7 position monitor provides both electrical and visual verification of valve status. This device is especially useful in hard to reach areas including exhaust stacks, tanks, and areas where digital feedback is not readily available.

Features & Benefits

- Aluminum housing with powder-coated epoxy finish provides rugged protection for years of maintenance free service
- 90° Black/Yellow indicator provides clear position indication
- Separate 3/4" female threaded conduit openings for installation flexibility
- Setting system utilizes an internal leaf spring design that precisely positions and locks onto a splined shaft
- Cam system is easy to adjust, and includes a 303 stainless steel 1/4" NAMUR shaft
- Hermetically-sealed switches offer high level protection from moisture, shock, and corrosive environments for long life, accuracy and reliability

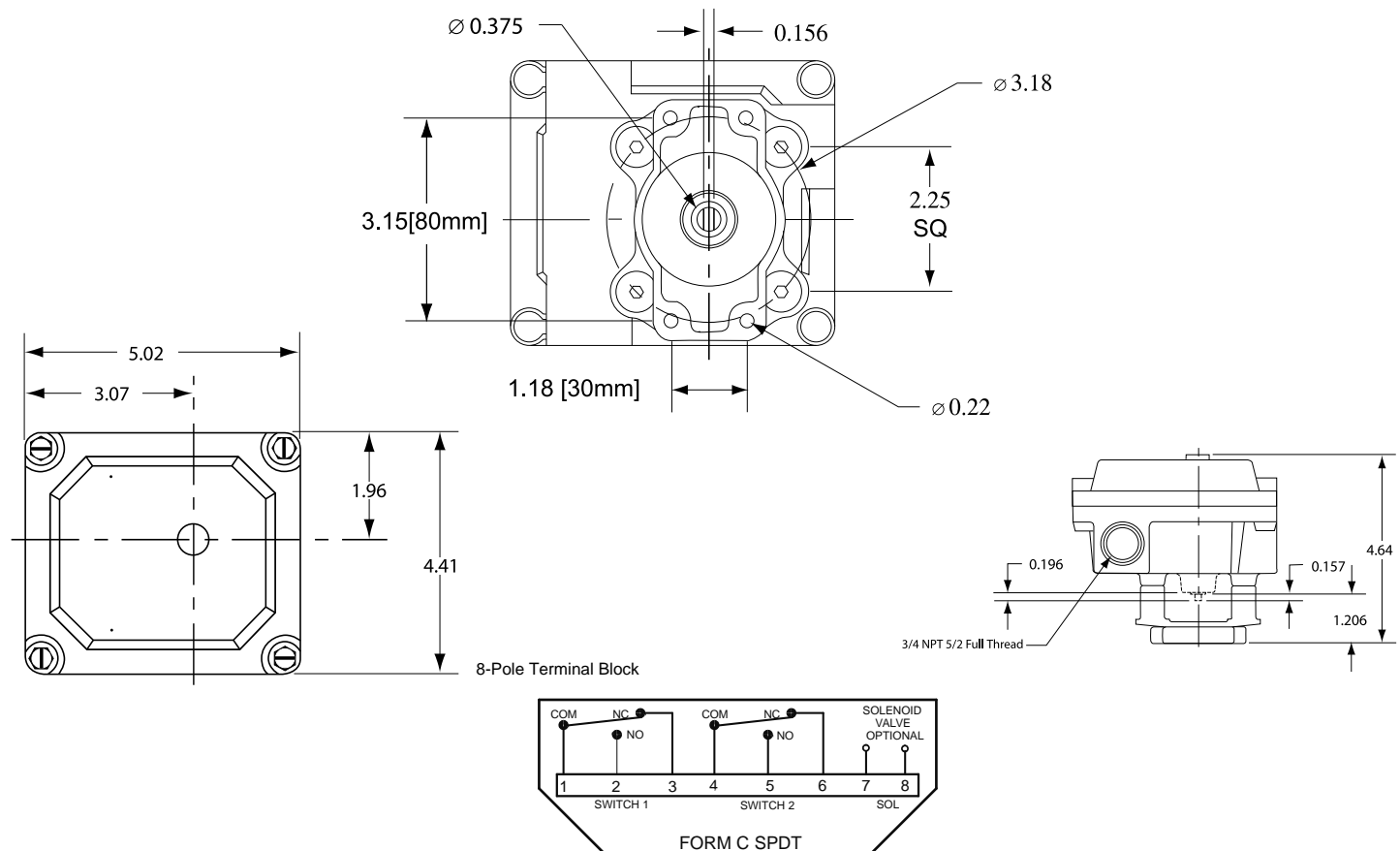


Technical Data

| | |
|-----------------------------|-------------------------------------|
| HOUSING | NEMA 7 Aluminum |
| BEARINGS | 316 stainless steel |
| PROXIMITY SWITCHES | 2 switches, 3-amps |
| VOLTAGE | 120 Volts AC/DC |
| WATTAGE | 100 Watts |
| OPERATING TEMPERATURE RANGE | -40° F to 257° F (-40° C to 125° C) |
| TERMINAL TYPE | 8-pole fixed terminal strip |
| MOUNTING | 80mm x 20mm NAMUR mounting |

For field installation order number: ZASAC-21110

To order factory installation, add "/ZASAC-21110 to end of 7 Series part number



7 Series

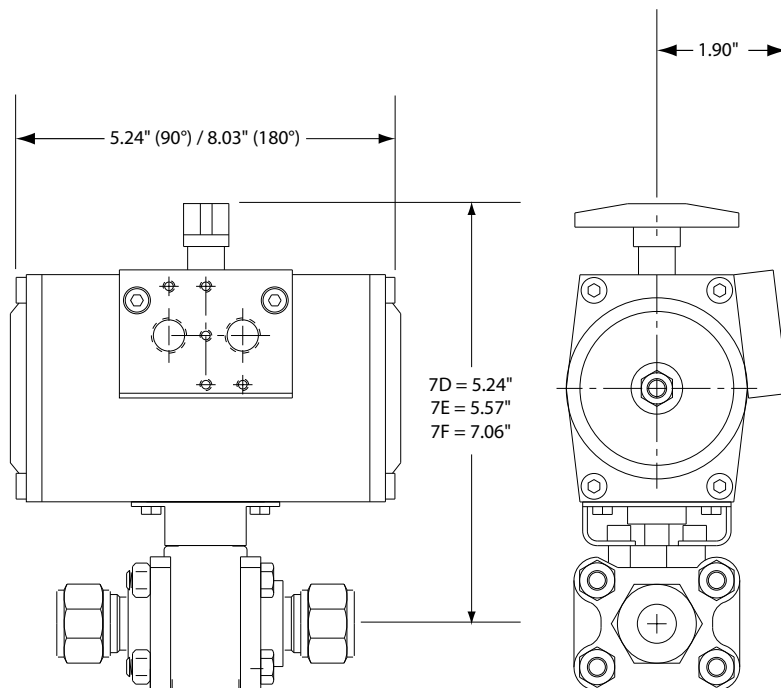
Pneumatic Actuators

For remote actuation of 7 Series Ball Valves, order a pneumatic actuator and mounting kit for field assembly (see below) or use the "How to Order" guide on page 26 for factory assembly. Actuators for 7 Series are available in Double Acting (air to open and air to close) or Spring Return (normally open or normally closed) versions.

Features & Benefits

- Durable construction stands up to harsh environmental conditions, increasing durability and reliability.
- Compact size provides greater installation flexibility in tight spaces.
- Field assembled valve/actuator option provides simple conversion of manual valve to pneumatic operation. This increases flexibility and decreases installation costs.
- Top mounted actuator allows for conversion from manual valve to pneumatic operation without disrupting packing. Ensuring leak-tightness and improving reliability.
- Long cycle life results in reduced maintenance requirements and lower cost of ownership.

Limit switches, electro-pneumatic and electric actuators are available upon request. Please consult your local distributor.



How to Order: Actuators and Mounting Kits

Actuator Pressure Requirements (Double Acting)

| VALVE SERIES | DESCRIPTION | ACTUATOR PART NUMBER | MOUNTING KIT PART NUMBER | OPERATING TORQUE (IN LBS) FOR ACTUATOR INLET PRESSURE | | | | |
|--------------|----------------------|----------------------|--------------------------|---|---------|---------|----------|----------|
| | | | | 40 PSIG | 60 PSIG | 80 PSIG | 100 PSIG | 120 PSIG |
| 7D2 | Double acting (90°) | 07L90DA/ISO | 7DM05K | 151 | 227 | 302 | 378 | 453 |
| 7E2 | Double acting (90°) | 07L90DA/ISO | 7EM05K | | | | | |
| 7F2 | Double acting (90°) | 07L90DA/ISO | 7FL07K | | | | | |
| 7D3 | Double acting (180°) | 07L180DA/ISO | 7DM05K | | | | | |
| 7E3 | Double acting (180°) | 07L180DA/ISO | 7EM05K | | | | | |
| 7F3 | Double acting (180°) | 07L180DA/ISO | 7FL07K | | | | | |

Standard actuator operating temperature = -4° to $+194^{\circ}$ F (-20° C to $+90^{\circ}$ C); optional high temperature version to $+320^{\circ}$ F ($+160^{\circ}$ C).

Actuator Pressure Requirements (Spring Return)

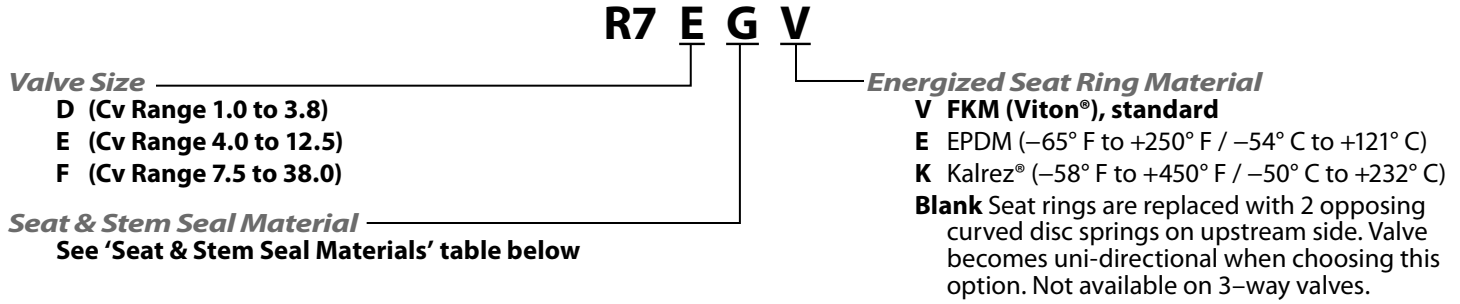
| VALVE SERIES | DESCRIPTION | ACTUATOR PART NUMBER | MOUNTING KIT PART NUMBER | OPERATING TORQUE (IN LBS) FOR ACTUATOR INLET PRESSURE | | | | | | | | | | CLOSING FORCE (IN LBS) |
|--------------|---------------|----------------------|--------------------------|---|-----|---------|-----|---------|-----|----------|-----|----------|-----|------------------------|
| | | | | 40 PSIG | | 60 PSIG | | 80 PSIG | | 100 PSIG | | 120 PSIG | | |
| | | | | START | END | START | END | START | END | START | END | START | END | |
| 7D2 | Spring Return | 07L90SR2/ISO | 7DM05K | 69 | 93 | 144 | 168 | 218 | 242 | 293 | 317 | 367 | 391 | 38 |
| 7E2 | Spring Return | 07L90SR2/ISO | 7EM05K | | | | | | | | | | | |
| 7F2 | Spring Return | 07L90SR2/ISO | 7FL07K | | | | | | | | | | | |
| 7D3 | Spring Return | 07L180SR2/ISO | 7DM05K | | | | | | | | | | | |
| 7E3 | Spring Return | 07L180SR2/ISO | 7EM05K | | | | | | | | | | | |
| 7F3 | Spring Return | 07L180SR2/ISO | 7FL07K | | | | | | | | | | | |

Standard actuator operating temperature = -4° to $+194^{\circ}$ F (-20° C to $+90^{\circ}$ C); optional high temperature version to $+320^{\circ}$ F ($+160^{\circ}$ C).

7 Series

Valve Spare Parts

Kit contents: Seats, energized PTFE stem seals, thrust washer, body seal, TFR-61 rebuild instructions. **Standard items in bold.**



Seat & Stem Seal Materials

| DESIGNATOR | SEAT | ENERGIZED STEM SEALS | BODY SEAL | THRUST WASHER |
|---------------------|---------------------------------|--------------------------------------|---------------------|---------------|
| G (standard) | 15% graphite-filled PTFE | Graphite-filled PTFE/Elgiloy® | PTFE | PTFE |
| O | PTFE | Graphite-filled PTFE/Elgiloy® | FKM (Viton®) o-ring | PEEK™ |
| P | PEEK™ | Graphite-filled PTFE/Elgiloy® | PTFE | PEEK™ |
| R | PTFE | Graphite-filled PTFE/Elgiloy® | PTFE | PTFE |
| T | PTFE | Graphite-filled PTFE/Elgiloy® | PTFE | PEEK™ |
| U | UHMWPE | Graphite-filled PTFE/Elgiloy® | PTFE | PEEK™ |
| V | TFE (Viton®) | Graphite-filled PTFE/Elgiloy® | PTFE | PEEK™ |



7 Series—Fire Safe

2-way, 3-piece Bolted Ball Valves

HOKE's 7 Series Fire Safe Valves meet demanding application requirements in the production environment of chemical and petrochemical processing facilities. These valves have been tested to and meet the requirements of API 607, 4th edition for soft-seated valves. API 607 measures the ability of a closed soft-seated ball valve to retard the propagation of a fire (downstream and to atmosphere). The 7 Series Fire Safe Valves offer high flow, safety, and flexibility in a variety of end connections and sizes. This series is available in fractional sizes from ½" to 1" and in metric sizes from 12mm to 25mm in tube and pipe ends.



Typical Applications

- Chemical processing
- Petroleum refining
- Gas distribution
- Hydraulic fluids

Technical Data

| | |
|------------------------------------|--|
| BODY MATERIAL* | 316 stainless steel, grade CF8M |
| MAXIMUM OPERATING PRESSURE | 1500 psig @ 70° F (103 bar @ 21° C) |
| OPERATING TEMPERATURE RANGE | -40° F to +500° F (-40° C to +260° C) |
| ORIFICE SIZE | 0.28" to 0.88" (7.1mm to 22.3mm) |
| Cv FACTORS | 4.5 to 38 |
| END CONNECTIONS | GYROLOK ® tube fittings, female NPT, tube socket weld, pipe socket weld, pipe butt weld |

* Consult factory for other materials

Features & Benefits

- Bottom-loaded stem prevents stem blowout for added safety.
- Fully encapsulated bolts are protected from the environment, extending valve life and reducing costs.
- Optional trip-proof or latching/locking handle prevents accidental opening or closing of the valve for a secure process.
- Optional fuse plugs are available on actuators for added safety.
- Fire-safe design retards the propagation of a fire downstream or to the atmosphere, enhancing safety and increasing the range of possible applications.
- Handle provides a visual indicator of whether valve is in the open or closed position, enhancing safety.
- Stem flats provide visual indication of valve position, improving safety.
- Actuators can be mounted to valves without disrupting the packing, seats or seals. Installation time and costs are minimized.
- Special High Tolerance NPT Thread

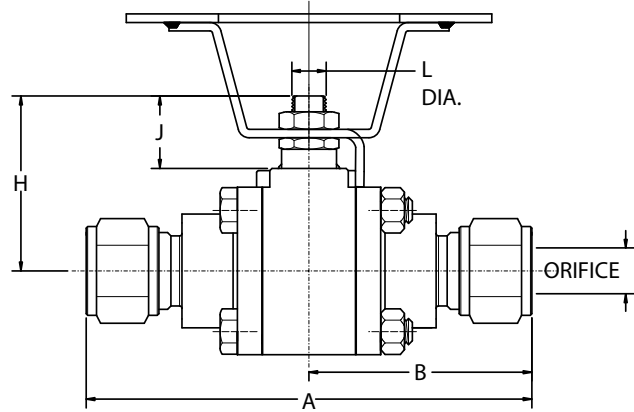
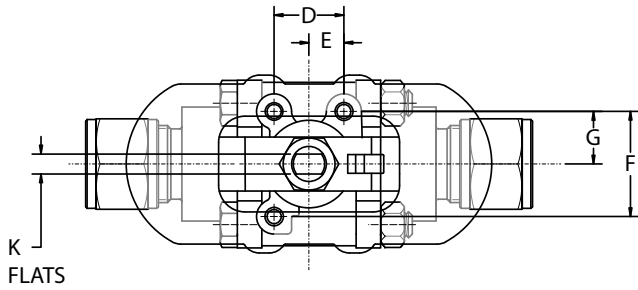
HOKE Inc.

PO Box 4866 • Spartanburg, SC 29305-4866
Phone (864) 574-7966 Fax (864) 587-5608
www.hoke.com • Sales-hoke@circor.com

ball valves

7 Series – Fire Safe

Dimensions



7EF Series (C_v Range 4.5 - 12.5)

| END CONNECTION | ORIFICE | C _v | A | B | D | E | F | G | H | J | K | L |
|------------------------------|---------|----------------|-------|-------|--------|-------|-------|--------|--------|--------|-------|-------|
| 3/8" GYROLOK® | 0.30" | 4.5 | 3.31" | 1.70" | | | | | | | | |
| 1/2" GYROLOK® | 0.42" | 7.5 | 3.80" | 1.90" | | | | | | | | |
| 3/4" GYROLOK® | 0.50" | 12.5 | 3.80" | 1.90" | | | | | | | | |
| 12mm GYROLOK® | 0.39" | 7.0 | 3.80" | 1.90" | | | | | | | | |
| 18mm GYROLOK® | 0.50" | 12.5 | 3.80" | 1.90" | | | | | | | | |
| 3/8" FNPT sch 80 | 0.50" | 12.5 | 3.25" | 1.67" | | | | | | | | |
| 1/2" FNPT sch 80 | 0.50" | 15 | 3.25" | 1.67" | | | | | | | | |
| 3/8" tube socket weld | 0.30" | 4.5 | 2.36" | 1.18" | 0.73" | 0.37" | 0.35" | 0.43" | 1.54" | 0.59" | 0.19" | 0.31" |
| 1/2" tube socket weld | 0.42" | 7.5 | 2.36" | 1.18" | 18.5mm | 9.4mm | 8.9mm | 10.9mm | 39.1mm | 15.0mm | 4.8mm | 7.9mm |
| 3/4" tube socket weld | 0.50" | 12.5 | 2.36" | 1.18" | | | | | | | | |
| 12mm tube socket weld | 0.42" | 7.5 | 2.36" | 1.18" | | | | | | | | |
| 18mm tube socket weld | 0.50" | 12.5 | 2.36" | 1.18" | | | | | | | | |
| 3/8" pipe socket weld sch 80 | 0.50" | 12.5 | 2.36" | 1.18" | | | | | | | | |
| 1/2" pipe socket weld sch 80 | 0.50" | 12.5 | 2.36" | 1.18" | | | | | | | | |
| 3/8" pipe butt weld sch 80 | 0.42" | 7.5 | 2.10" | 1.05" | | | | | | | | |
| 1/2" pipe butt weld sch 80 | 0.50" | 12.5 | 2.10" | 1.05" | | | | | | | | |

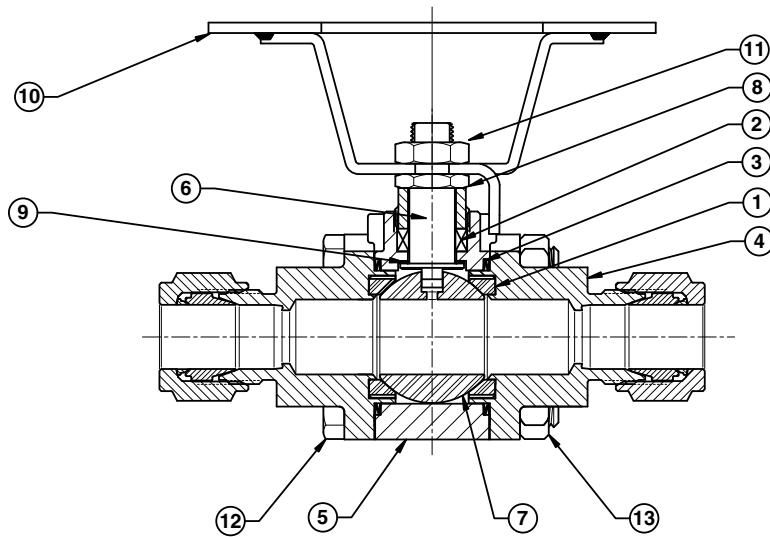
7FF Series (C_v Range 27 - 38)

| END CONNECTION | ORIFICE | C _v | A | B | D | E | F | G | H | J | K | L |
|------------------------------|---------|----------------|-------|-------|---------|--------|--------|--------|--------|--------|-------|--------|
| 1" GYROLOK® | 0.88" | 38 | 5.60" | 2.80" | | | | | | | | |
| 25mm GYROLOK® | 0.88" | 38 | 5.60" | 2.80" | | | | | | | | |
| 3/4" FNPT sch 80 | 0.88" | 38 | 3.69" | 1.85" | | | | | | | | |
| 1" FNPT sch 80 | 0.88" | 38 | 3.69" | 1.85" | | | | | | | | |
| 1" tube socket weld | 0.88" | 38 | 3.45" | 1.73" | 1.00" | 0.50" | 1.50" | 0.75" | 2.20" | 0.80" | 0.28" | 0.50" |
| 25mm tube socket weld | 0.88" | 38 | 3.45" | 1.73" | 25.4 mm | 12.7mm | 38.1mm | 19.1mm | 55.9mm | 20.3mm | 7.1mm | 12.7mm |
| 3/4" pipe socket weld sch 80 | 0.88" | 38 | 3.45" | 1.73" | | | | | | | | |
| 1" pipe socket weld sch 80 | 0.88" | 38 | 3.45" | 1.73" | | | | | | | | |
| 3/4" pipe butt weld sch 80 | 0.75" | 27 | 3.45" | 1.73" | | | | | | | | |
| 1" pipe butt weld sch 80 | 0.88" | 38 | 3.45" | 1.73" | | | | | | | | |

Note: Orifice dimension and C_v are listed for the total valve.
Dimensions for reference only, subject to change.

7 Series – Fire Safe

Materials of Construction



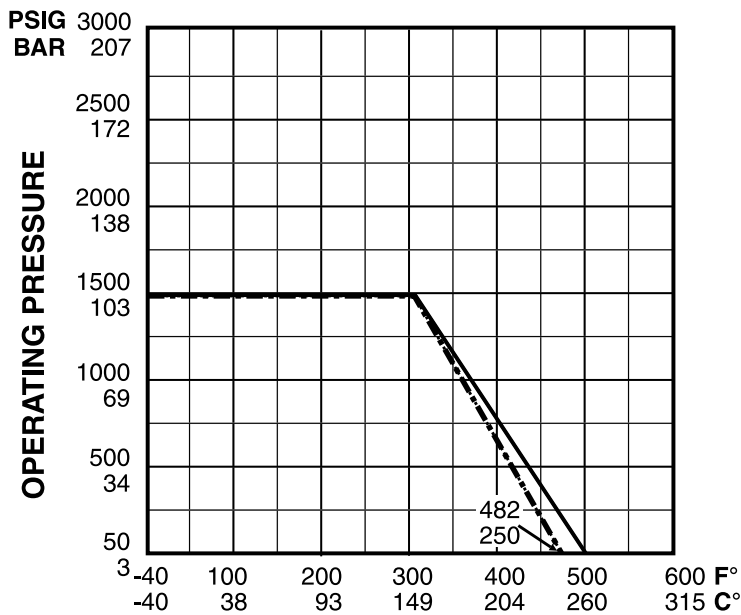
| # | DESCRIPTION | MATERIAL |
|----|----------------|----------------------------------|
| 1 | Seat* | PTFE** |
| 2 | Packing* | Grafoil® |
| 3 | Body seal* | 316 stainless steel, PTFE coated |
| 4 | End plate* | 316 stainless steel, grade CF3M |
| 5 | Body* | 316 stainless steel, grade CF8M |
| 6 | Stem* | 316 stainless steel |
| 7 | Ball* | 316 stainless steel |
| 8 | Packing nut | 316 stainless steel |
| 9 | Thrust washer* | PTFE or PEEK™ |
| 10 | Handle | 316 stainless steel |
| 11 | Stem nut | 316 stainless steel |
| 12 | Body bolt | 316 stainless steel |
| 13 | Body nut | 316 stainless steel |

Other materials available upon request.

* Wetted Components

** PTFE seat is modified to reduce cold flow and increase durability without losing inert property.

Pressure vs. Temperature Chart



TEMPERATURE

----- PEEK® Seat

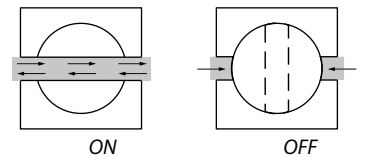
———— PTFE Seat

| SEAT | BODY SEAL | PACKING | THRUST WASHER |
|---------|-----------------------------|----------|---------------|
| T PTFE* | Stainless steel PTFE coated | Grafoil® | PTFE |
| P PEEK™ | Stainless steel PTFE coated | Grafoil® | PEEK™ |

* PTFE seat is modified to reduce cold flow and increase durability without losing inert property

Flow Diagrams – 2-way valve

Straight Pattern Valve



ON

OFF

7 Series – Fire Safe

How to Order

Standard items in bold.

7EF T G08 G08 Y 0 S 1 0

SERIES NUMBER

7EF Cv Range 4.5 - 12.5
7FF Cv Range 27 - 38

SEAT & SEAL MATERIAL

See 'Seat & Seal Materials' table below

P1 INLET PORT END

See 'Port End Type' table below

P2 OUTLET PORT END

See 'Port End Type' table below

BODY & END PLATE MATERIAL

Y 316 stainless steel
 Consult factory for other materials

MISCELLANEOUS OPTIONS

0 None
 1 Upstream vented ball

NUT, BOLT, STEM NUT & LOCKING BRACKET OPTIONS

1 316 stainless steel, per ASTM A193 B8M
 2 316 stainless steel - NACE compliant**

CLEANING OPTIONS

S Standard cleaning per HPS-1 & -2
 A Industrial oxygen cleaning per HPS-18
 B Chlorine service cleaning per HPS-172

ACTUATION OPTIONS

0 316 stainless steel lever handle
 1 316 stainless steel locking lever
 2 316 stainless steel oval handle
 3 316 stainless steel locking oval handle
 4 316 stainless steel extended oval handle
 5 Actuator, double acting
 6 Actuator, spring return normally closed
 7 Actuator, spring return normally open
 8 Actuator, spring return normally closed with fuse plug
 L 316 stainless steel oval latching handle

** Per NACE MR0175/ISO 15156 the user must determine if this product is satisfactory for use in its intended environment.

Seat & Seal Materials

| | SEAT | BODY SEAL | PACKING | THRUST WASHER |
|---|-------|-----------------------------|----------|---------------|
| T | PTFE* | Stainless steel PTFE coated | Grafoil® | PTFE |
| P | PEEK™ | Stainless steel PTFE coated | Grafoil® | PEEK™ |

* PTFE seat is modified to reduce cold flow and increase durability without losing inert properties.

P1 Inlet / P2 Outlet Ports End Type

| SERIES | SIZE | GYROLOK® | FEMALE NPT | TUBE SOCKET WELD | PIPE SOCKET WELD | PIPE BUTT WELD |
|--------|------|----------|------------|------------------|------------------|----------------|
| 7EF | ¾" | G06 | F06 | T06 | P06 | B06 |
| | ½" | G08 | F08 | T08 | P08 | B08 |
| | ¾" | G12 | — | T12 | — | — |
| | 12mm | Z12 | — | W12 | — | — |
| | 18mm | Z18 | — | W18 | — | — |
| 7FF | ¾" | — | F12 | — | P12 | B12 |
| | 1" | G16 | F16 | T16 | P16 | B16 |
| | 25mm | Z25 | — | W25 | — | — |

Cleaning Options

- HPS-1** Cleaning procedure to remove oil and grease from metal valve parts with solvent vapor- and solvent ultrasonic vapor degreasers.
- HPS-2** Cleaning procedure to remove dirt, oil, and grease from non-metallic parts with non-ionic detergent and water solution.
- HPS-18** Cleaning procedure to remove oil, grease, and other contaminants from the valve and fitting components prior to assembly for industrial oxygen service.
- HPS-172** Procedure to clean and package valve parts and assemblies for use with dry chlorine gas or liquid.

For Your Safety

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. Improper selection or use of products described herein can cause personal injury or property damage.

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CIRCOR

INSTRUMENTATION TECHNOLOGIES



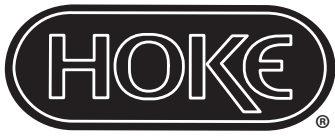
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7G Series

2- and 3-way Ball Valves
Multi-directional Flow



instrumentation ball valves



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Contact your authorized HOKE® sales and service representative for information about additional sizes and special alloys.

SAFETY WARNING:

HOKE® products are designed for installation only by professional suitably qualified licensed system installers experienced in the applications and environments for which the products are intended. These products are intended for integration into a system. Where these products are to be used with flammable or hazardous media, precautions must be taken by the system designer and installer to ensure the safety of persons and property. Flammable or hazardous media pose risks associated with fire or explosion, as well as burning, poisoning or other injury or death to persons and/or destruction of property. The system designer and installer must provide for the capture and control of such substances from any vents in the product(s). The system installer must not permit any leakage or uncontrolled escape of hazardous or flammable substances. The system operator must be trained to follow appropriate precautions and must inspect and maintain the system and its components including the product(s) and at regular intervals in accordance with timescales recommended by the supplier to prevent unacceptable wear or failure



7G Series

2- and 3-way Ball Valves
Multi-directional Flow



Typical Applications

- Hydraulic test stands
- High pressure test stands
- Viscous media handling
- Gas and liquid applications
- Pilot plants in refineries and chemical plants
- Measurement and regulating equipment

Technical Data

| | |
|---------------------------------|--|
| BODY MATERIAL | 316 stainless steel |
| MAXIMUM OPERATING PRESSURE | 3000 psig (207 barg) |
| PROOF PRESSURE SAFETY FACTOR | 2:1 |
| BURSTING PRESSURE SAFETY FACTOR | 4:1 |
| TEMPERATURE RANGE | -20°F to +475° F (-29°C to +232° C) |
| ORIFICE SIZES | 0.156" (4mm) to 0.316" (8mm) |
| INSTRUMENT PANEL DIAMETER* | 0.80" (20mm) |
| INSTRUMENT PANEL THICKNESS* | 0.24" (6mm) |

* Panel mount not available for 1/2" and 18mm fittings

** Contact factory for other seat materials

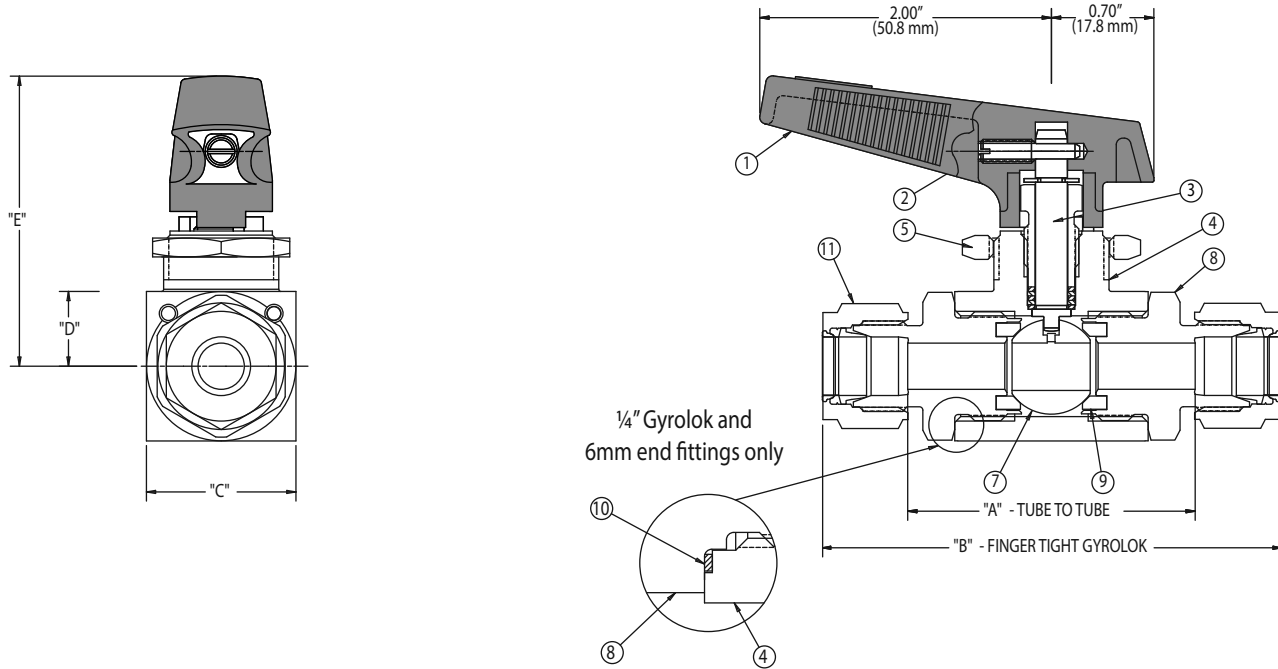
Features

- Floating ball valve provides shut off or controls flow directions (3-way)
- Panel mounting is standard for all end fitting sizes except 1/2" and 18mm end connections
- Reliable housing construction incorporates metal seals
- Dyna-Pak® packing provides a leak-tight seal with low operating torque in vacuum or high pressure applications, helping to prevent fugitive emissions
- Handle points to port in use or to closed position, providing a visual cue and improved safety
- Multi-directional flow throughout entire operating pressure range
- Fractional GYROLOK® and female NPT end fittings up to 1/2"; metric GYROLOK® up to 18mm
- Pressure assisted sealing, no sealing adjustment required
- Virgin TFE seat and seal design**
- Special High Tolerance NPT Thread

7G 2-way Ball Valves

Bi-directional Flow

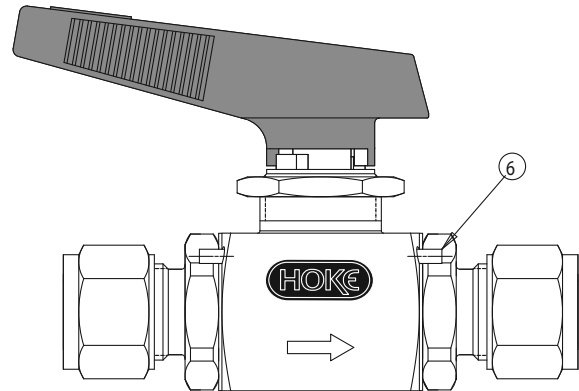
Materials and Dimensions



Materials of Construction

| | DESCRIPTION | MATERIAL |
|----|-------------------|---------------------------|
| 1 | RED LEVER HANDLE | Nylon |
| 2 | HANDLE PIN | 316 stainless steel |
| 3 | STEM ASSEMBLY | 316 stainless steel, PTFE |
| 4 | BODY | 316 stainless steel |
| 5 | PANEL NUT | 316 stainless steel |
| 6 | PIN | 316 stainless steel |
| 7 | BALL | 316 stainless steel |
| 8 | END FITTING | 316 stainless steel |
| 9 | SEAT | Virgin TFE |
| 10 | WASHER* | 316 stainless steel |
| 11 | NUT & FERRULE SET | 316 stainless steel |

* 1/4" Gyrolok and 6mm end fittings only



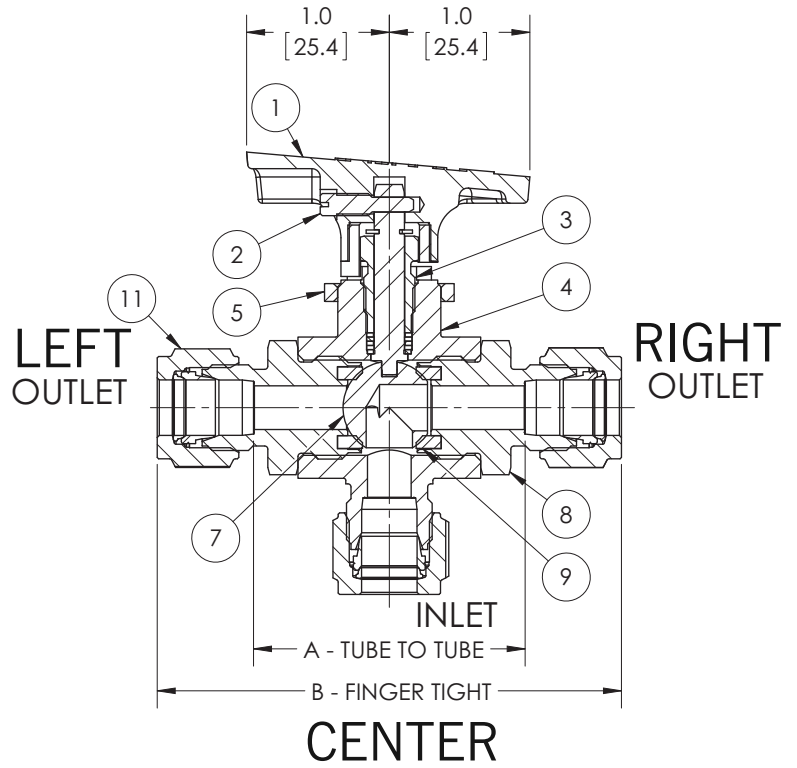
Dimensions

| INLET F / OUTLET G | A | B | C | D | E | ORIFICE | CV |
|--------------------|-------------|--------------|-------------|-------------|-------------|---------------|------|
| 1/4" FEMALE NPT | NA | 2.08 (53mm) | 1.02 (26mm) | 0.51 (13mm) | 2.01 (51mm) | 0.316 (8.0mm) | 2.45 |
| 3/8" FEMALE NPT | NA | 2.78 (71mm) | 1.02 (26mm) | 0.51 (13mm) | 2.01 (51mm) | 0.316 (8.0mm) | 2.45 |
| 1/2" FEMALE NPT | NA | 3.22 (82mm) | 1.02 (26mm) | 0.51 (13mm) | 2.01 (51mm) | 0.316 (8.0mm) | 2.45 |
| 1/4" GYROLOK® | 1.97 (50mm) | 3.24 (82mm) | .87 (22mm) | 0.43 (11mm) | 1.92 (49mm) | 0.187 (4.8mm) | 0.80 |
| 3/8" GYROLOK | 2.01 (51mm) | 3.43 (87mm) | 1.02 (26mm) | 0.51 (13mm) | 2.01 (51mm) | 0.282 (7.2mm) | 1.12 |
| 1/2" GYROLOK | 1.84 (47mm) | 3.80 (96mm) | 1.02 (26mm) | 0.51 (13mm) | 2.01 (51mm) | 0.316 (8.0mm) | 2.45 |
| 6mm GYROLOK | 1.98 (50mm) | 3.24 (82mm) | 0.87 (22mm) | 0.51 (13mm) | 1.92 (49mm) | 0.156 (4.0mm) | 0.53 |
| 8mm GYROLOK | 2.02 (51mm) | 3.31 (84mm) | 1.02 (26mm) | 0.43 (11mm) | 2.01 (51mm) | 0.316 (8.0mm) | 2.45 |
| 10mm GYROLOK | 1.97 (50mm) | 3.36 (85mm) | 1.02 (26mm) | 0.51 (13mm) | 2.01 (51mm) | 0.316 (8.0mm) | 2.45 |
| 12mm GYROLOK | 1.79 (46mm) | 3.65 (93mm) | 1.02 (26mm) | 0.51 (13mm) | 2.01 (51mm) | 0.316 (8.0mm) | 2.45 |
| 18mm GYROLOK | 1.87 (47mm) | 3.92 (100mm) | 1.02 (26mm) | 0.51 (13mm) | 2.01 (51mm) | 0.316 (8.0mm) | 2.45 |

7G 3-way Ball Valves

Multi-directional Flow

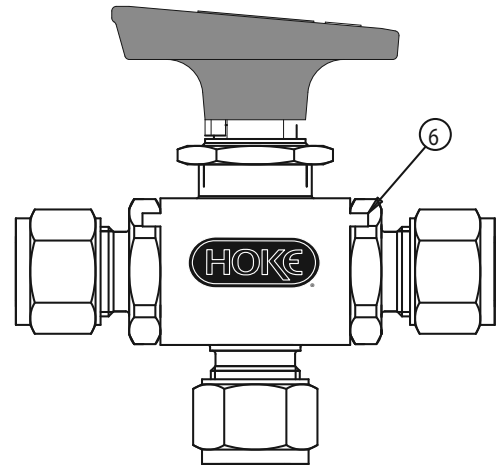
Materials and Dimensions



Materials of Construction

| | DESCRIPTION | MATERIAL |
|----|-------------------|---------------------------|
| 1 | LEVER HANDLE | Nylon |
| 2 | HANDLE PIN | 316 stainless steel |
| 3 | STEM ASSEMBLY | 316 stainless steel, PTFE |
| 4 | BODY | 316 stainless steel |
| 5 | PANEL NUT | 316 stainless steel |
| 6 | PIN | 316 stainless steel |
| 7 | BALL | 316 stainless steel |
| 8 | END FITTING | 316 stainless steel |
| 9 | SEAT | Virgin TFE |
| 10 | WASHER* | 316 stainless steel |
| 11 | NUT & FERRULE SET | 316 stainless steel |

* ¼" GYROLOK® and 6mm end fittings only



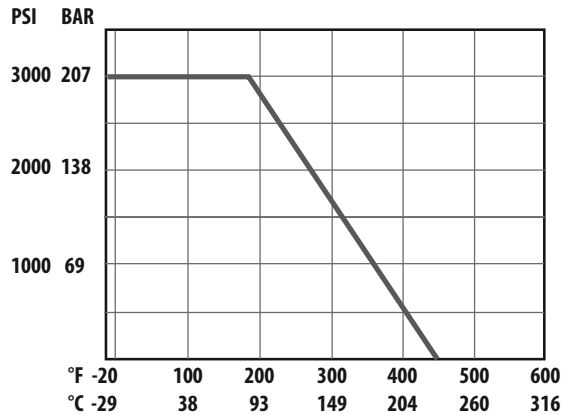
Dimensions

| INLET H / OUTLET J | A | B | C | D | E | ORIFICE | Cv |
|--------------------|-------------|--------------|-------------|-------------|-------------|---------------|------|
| ¼" FEMALE NPT | NA | 2.08 (53mm) | 1.02 (26mm) | 0.51 (13mm) | 2.01 (51mm) | 0.316 (8.0mm) | 2.45 |
| ⅜" FEMALE NPT | NA | 2.78 (71mm) | 1.02 (26mm) | 0.51 (13mm) | 2.01 (51mm) | 0.316 (8.0mm) | 2.45 |
| ½" FEMALE NPT | NA | 3.22 (82mm) | 1.02 (26mm) | 0.51 (13mm) | 2.01 (51mm) | 0.316 (8.0mm) | 2.45 |
| ¼" GYROLOK® | 1.97 (50mm) | 3.24 (82mm) | 0.87 (22mm) | 0.43 (11mm) | 1.92 (49mm) | 0.187 (4.8mm) | 0.80 |
| ⅜" GYROLOK® | 2.01 (51mm) | 3.43 (87mm) | 1.02 (26mm) | 0.51 (13mm) | 2.01 (51mm) | 0.282 (7.2mm) | 1.12 |
| ½" GYROLOK® | 1.84 (47mm) | 3.80 (96mm) | 1.02 (26mm) | 0.51 (13mm) | 2.01 (51mm) | 0.316 (8.0mm) | 2.45 |
| 6mm GYROLOK® | 1.98 (50mm) | 3.24 (82mm) | 0.87 (22mm) | 0.51 (13mm) | 1.92 (49mm) | 0.156 (4.0mm) | 0.53 |
| 8mm GYROLOK® | 2.02 (51mm) | 3.31 (84mm) | 1.02 (26mm) | 0.43 (11mm) | 2.01 (51mm) | 0.316 (8.0mm) | 2.45 |
| 10mm GYROLOK® | 1.97 (50mm) | 3.36 (85mm) | 1.02 (26mm) | 0.51 (13mm) | 2.01 (51mm) | 0.316 (8.0mm) | 2.45 |
| 12mm GYROLOK® | 1.79 (46mm) | 3.65 (93mm) | 1.02 (26mm) | 0.51 (13mm) | 2.01 (51mm) | 0.316 (8.0mm) | 2.45 |
| 18mm GYROLOK® | 1.87 (47mm) | 3.92 (100mm) | 1.02 (26mm) | 0.51 (13mm) | 2.01 (51mm) | 0.316 (8.0mm) | 2.45 |

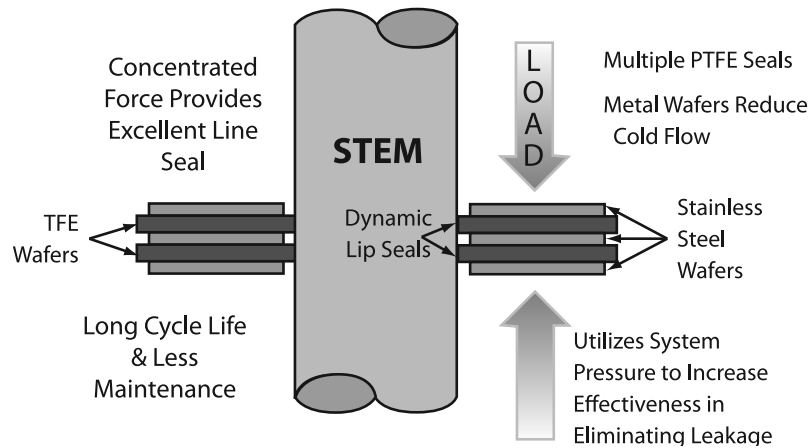
7G 2- and 3-way Ball Valves

Multi-directional Flow

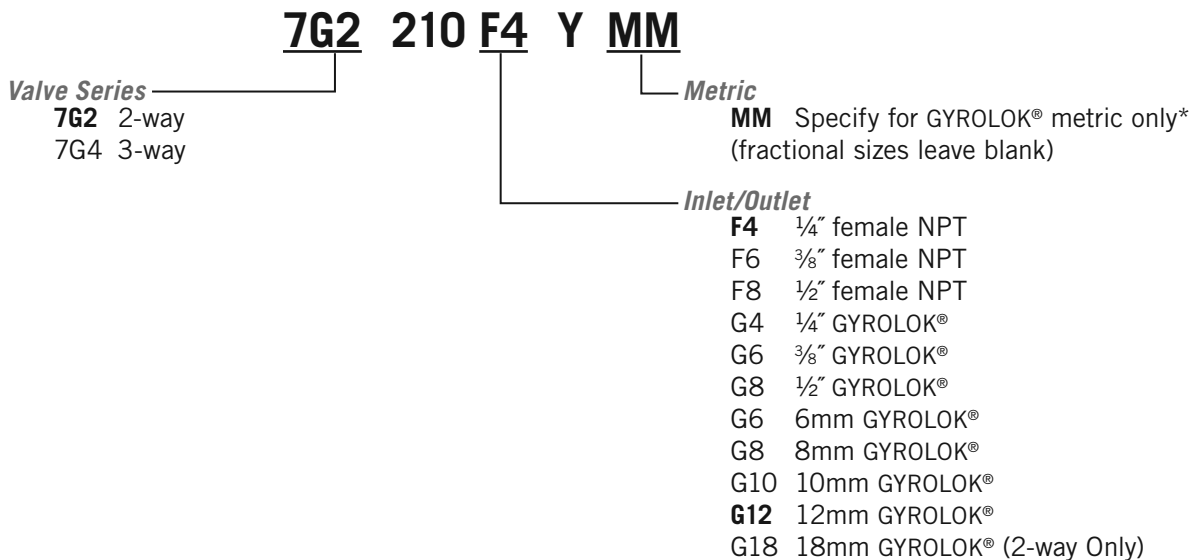
Pressure Temperature Curve

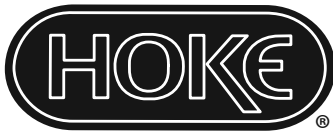


Dyna-Pak® Stem Packing



How to Order





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7C Series Ball Valves

Rated to 6000 psi

Multiple Connection Sizes

Low Operating Torque

SAFETY. INTEGRITY. RELIABILITY.



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HOKE® 7C Series Ball Valve

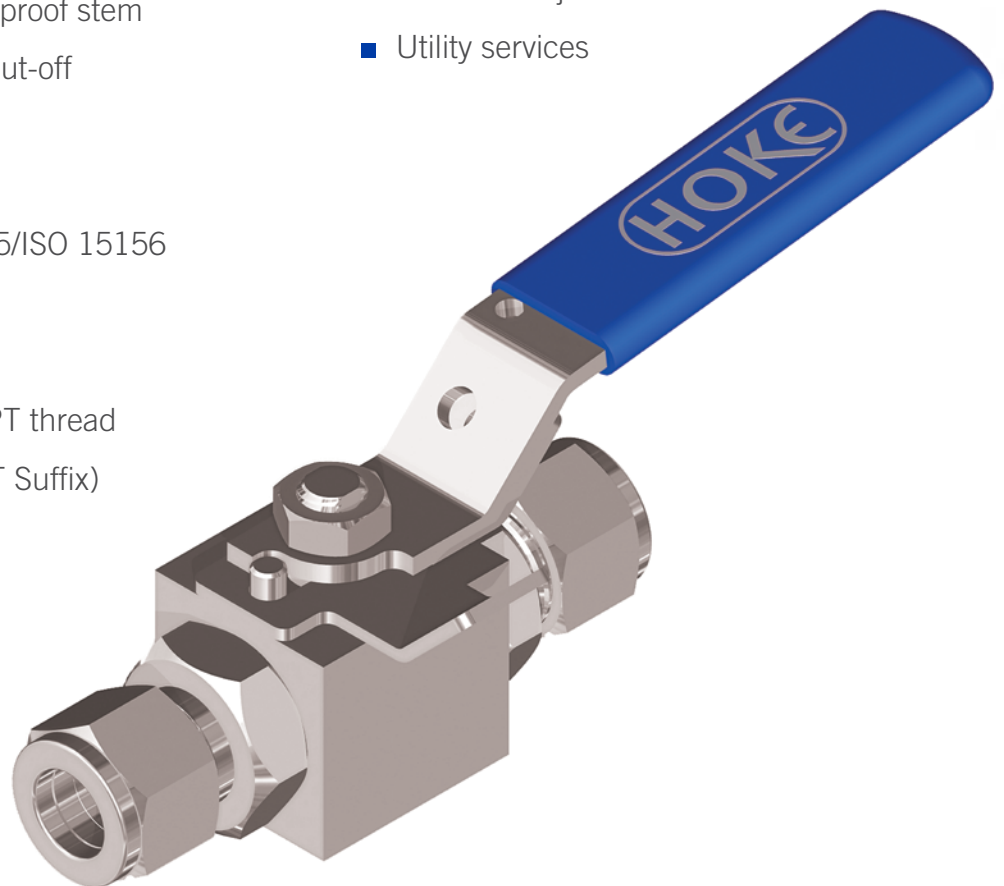
HOKE's 7C ball valve is designed for a range of media up to 6,000 psi. Its internally loaded blow-out proof stem and floating ball for positive shut-off along with its other features offer a robust, compact and easy to operate valve solution. The 7C is available in ¼" thru 1" NPT and integral / GYROLOK® tube connections. Please consult factory for additional material options.

DESIGN FEATURES

- Female NPT connections
- Integral / GYROLOK® tube connections
- Sizes ¼", 3/8", 1/2", 3/4" and 1"
- Working pressures up to 6,000 psi
- Maximum operating temperature 150 C°
- Internally loaded blow-out proof stem
- Floating ball for positive shut-off
- Low operating torque
- Smooth 1/4 turn actuation
- 316 SS to NACE MR-01-75/ISO 15156
- Replaceable seats & seals
- Full material traceability
- Special High Tolerance NPT thread
- Locking Plate Optional (-LT Suffix)

TYPICAL APPLICATIONS

- Controls & instrumentation isolation and venting
- Hydrocarbon Gas & Liquid service
- Hydraulic applications
- Wellhead Control Panels
- Chemical Injection Skids
- Utility services

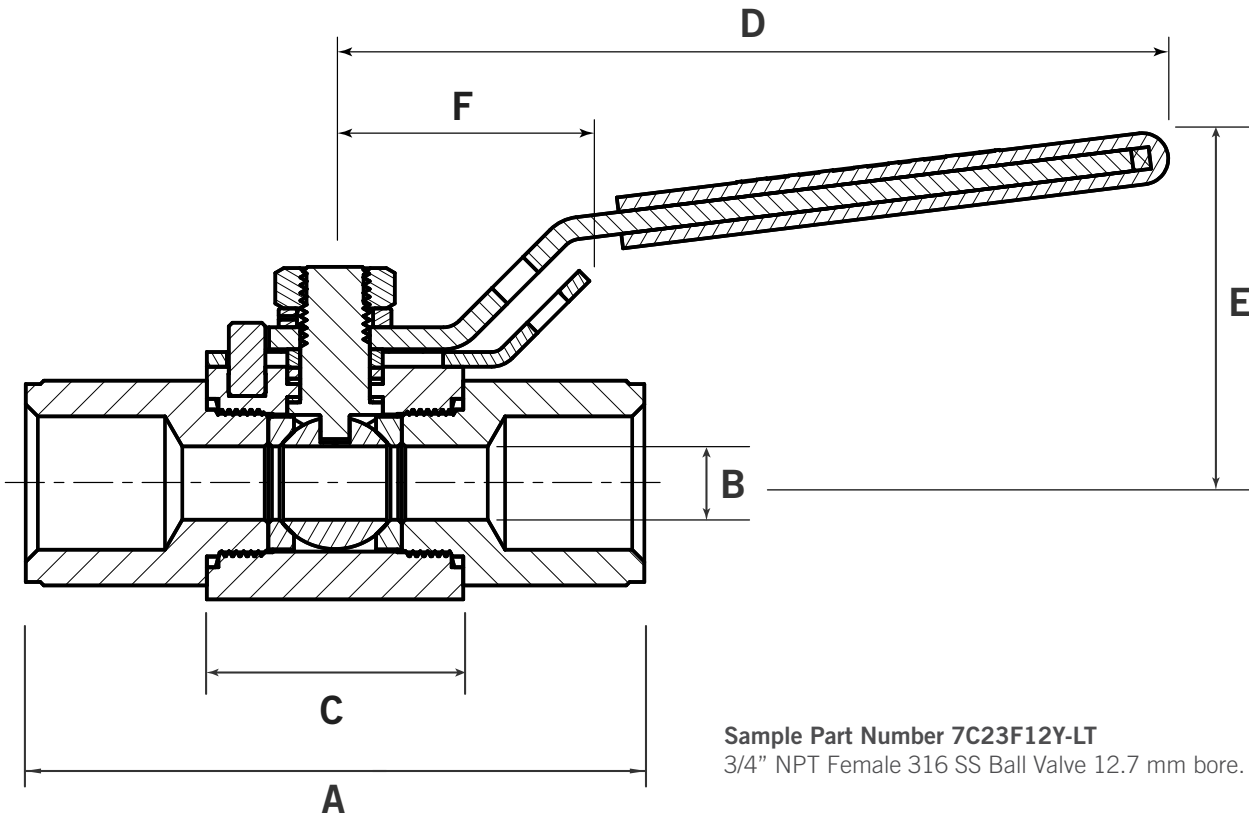


7C Series Ball Valve - Female NPT Connection



7C Series Ball Valve - Female NPT Connection

Specifications & Dimensions



TO ORDER CHOOSE PART NUMBER WITH YOUR REQUIRED SPECIFICATIONS.

Specifications and dimensions in inches and (millimeters)

For reference only and subject to change

| Part Number | Description | A | B | C | D | E | WT Kgs | CV _{US} |
|-------------|-------------|------------|-------------|-------------|------------|-----------|--------|------------------|
| 7C23F4Y | 1/4" F NPT | 2.76 (70) | .39 (10) | 1.26 (32) | 4.52 (115) | 1.85 (47) | 0.457 | 7.5 |
| 7C23F6Y | 3/8" F NPT | 2.99 (76) | .39 (10) | 1.26 (32) | 4.52 (115) | 1.81 (46) | 0.463 | 7.5 |
| 7C23F8Y | 1/2" F NPT | 3.31 (84) | .39 (10) | 1.25 (31.8) | 4.48 (114) | 1.81 (46) | 0.501 | 7.5 |
| 7C23F12Y | 3/4" F NPT | 3.50 (89) | .50 (12.7) | 1.25 (31.8) | 4.48 (114) | 1.93 (49) | 0.755 | 12.0 |
| 7C23F16Y | 1" F NPT | 4.37 (111) | .75 (19.05) | 2.0 (50.8) | 7.72 (196) | 2.72 (69) | 1.669 | 32.0 |

To order locking plate option, add -LT to valve part number.

Custom Options

Please consult factory for other materials, bore sizes, handle options and connection options.

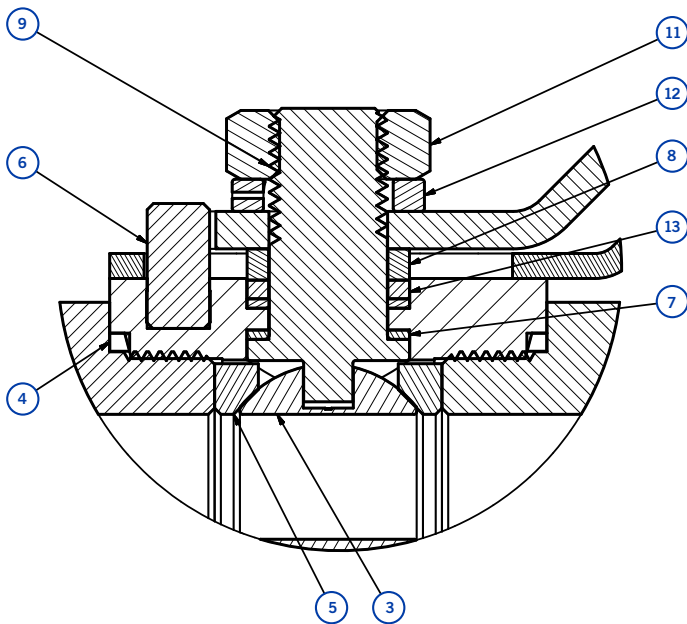
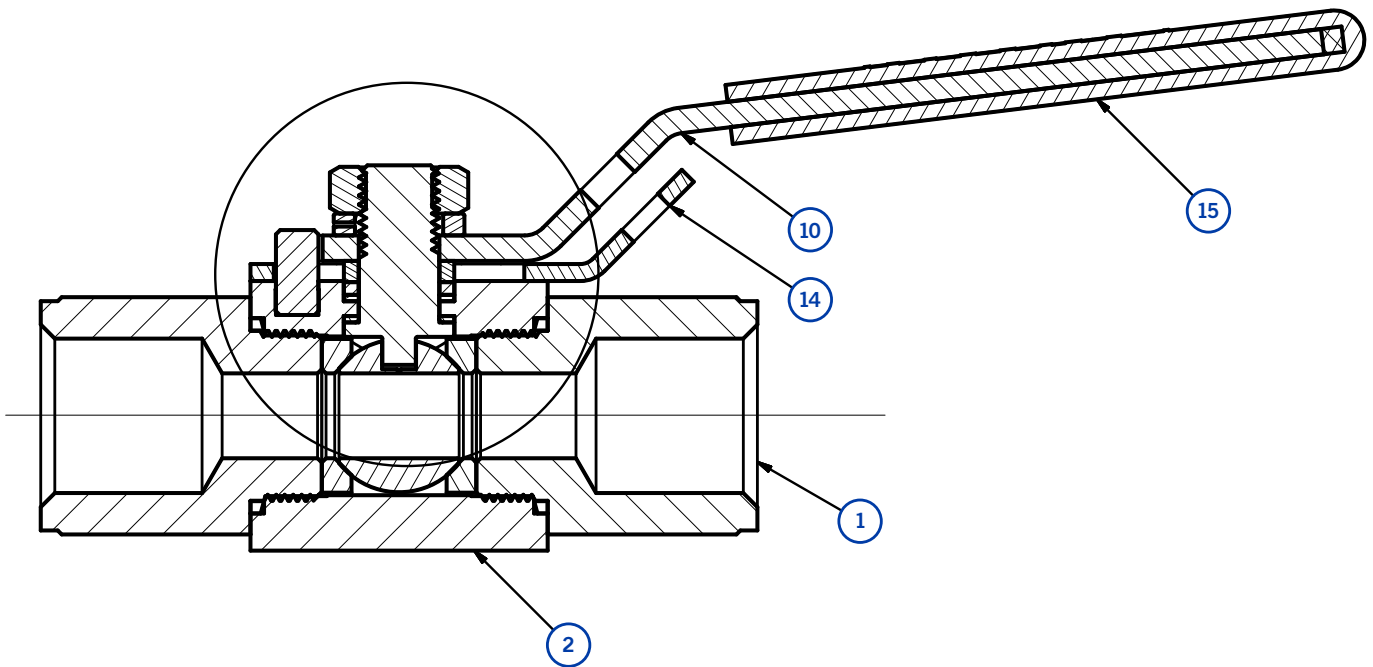
The actual pressure ratings for any alternative option will vary from those stated – please consult with factory for your specific requirements.

The specification of any alternative material, connection or tubing is critical to the overall performance of the system.

Caution should be exercised by the user to ensure proper selection in accordance with actual operating or design conditions.

7C Series Ball Valve - Female NPT Connection

Materials of Construction Shown with Optional Locking Plate



MATERIALS OF CONSTRUCTION

| ITEM | QTY | DESCRIPTION | MATERIAL |
|------|-----|------------------------|-------------|
| 1 | 2 | NPT ENDCAP | AISI 316 SS |
| 2 | 1 | BODY | AISI 316 SS |
| 3 | 1 | BALL | AISI 316 SS |
| 4 | 2 | BODY SEAL | PTFE |
| 5 | 2 | SEAT-PVDF | PVDF |
| 6 | 1 | STOP PIN PANEL MOUNT | AISI 316 SS |
| 7 | 2 | STEM SEAL | RTFE |
| 8 | 1 | STEM SPACER | AISI 316 SS |
| 9 | 1 | STEM | AISI 316 SS |
| 10 | 1 | R H LEVER HANDLE | AISI 316 SS |
| 11 | 1 | UNF HALF NUT | A4 St Steel |
| 12 | 1 | SQ SECT SPRING WASHER | A4 St Steel |
| 13 | 1 | ACTUATED STEM SPACER | AISI 316 SS |
| 14 | 1 | LOCKING PLATE | AISI 316 SS |
| 15 | 1 | SMALL BLUE SLEEVE-HOKE | PVC Plastic |

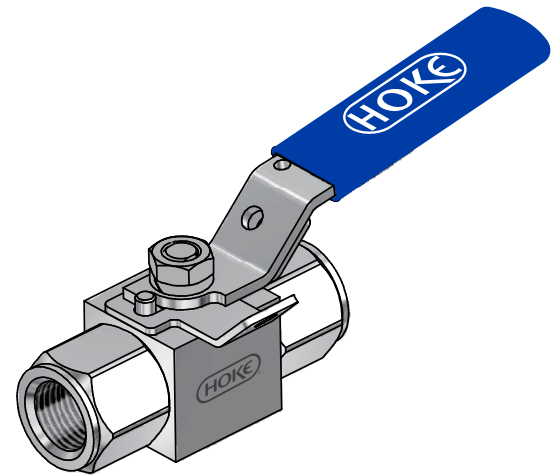
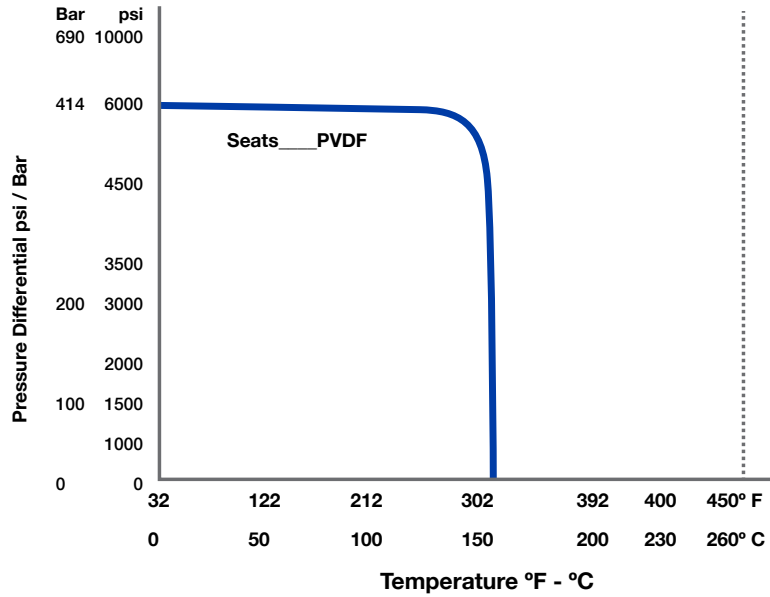
Sample Part Number 7C23F8Y-LT

1/2" NPT Female 316 SS Ball Valve 10 mm bore.

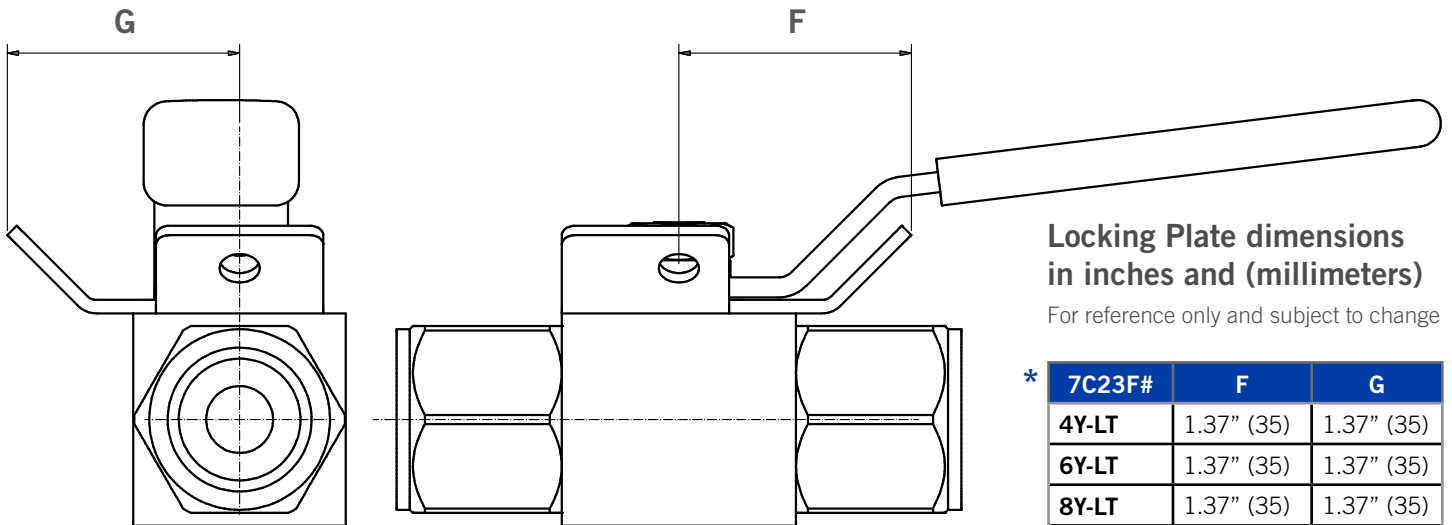
7C Series Ball Valve- Female NPT Connection

Operating Specifications

7C Series Pressure / Temperature Graph



| TECHNICAL DATA | | |
|---------------------------|---------------------|---------|
| MAX. OPERATING PRESSURE | 6000 PSI | 414 BAR |
| MAX OPERATING TEMPERATURE | 302 °F | 150 °C |
| MIN OPERATING TEMPERATURE | -22 °F | -30 °C |
| BASIC MATERIAL | 316 STAINLESS STEEL | |



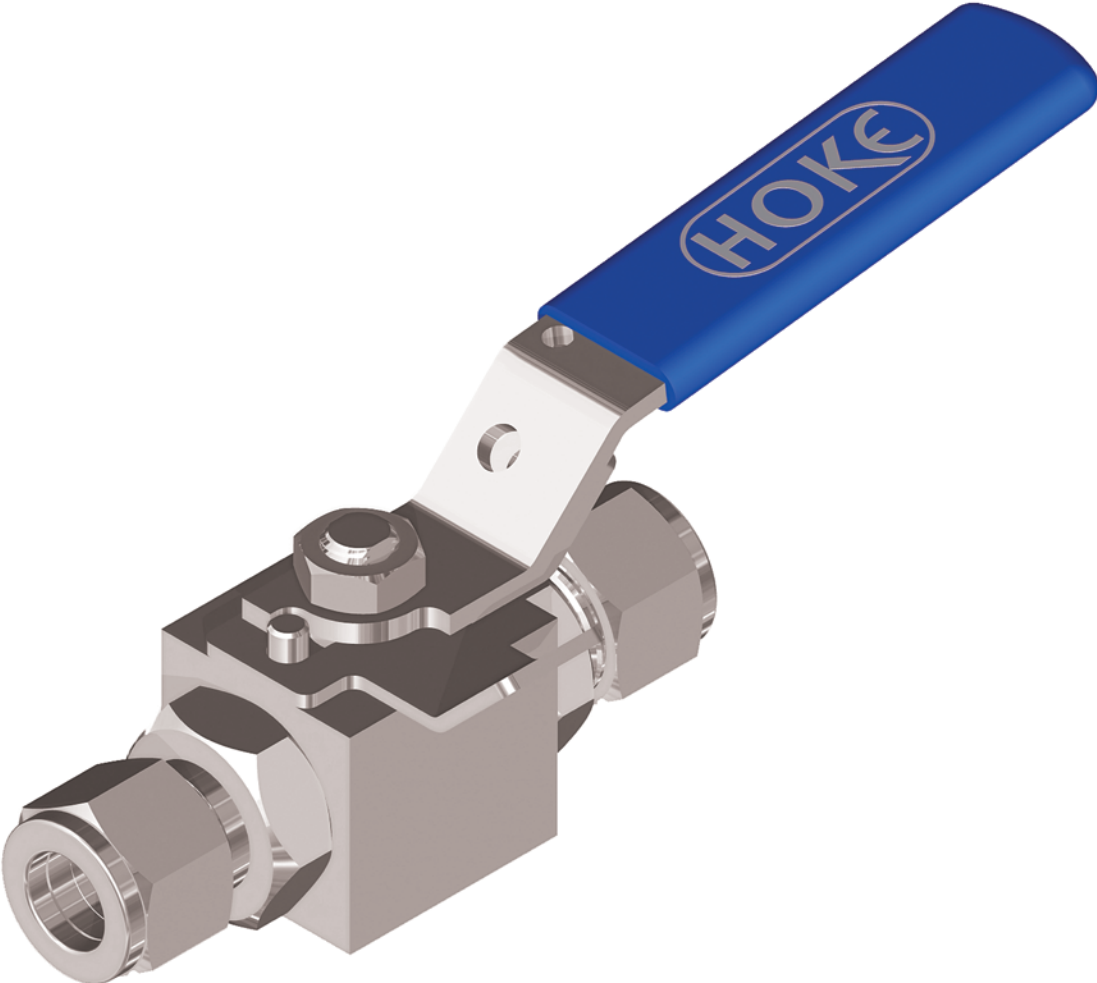
Locking Plate dimensions in inches and (millimeters)

For reference only and subject to change

| * 7C23F# | F | G |
|----------|------------|------------|
| 4Y-LT | 1.37" (35) | 1.37" (35) |
| 6Y-LT | 1.37" (35) | 1.37" (35) |
| 8Y-LT | 1.37" (35) | 1.37" (35) |
| 12Y-LT | 1.37" (35) | 1.37" (35) |
| 16Y-LT | 1.89" (48) | 1.89" (48) |

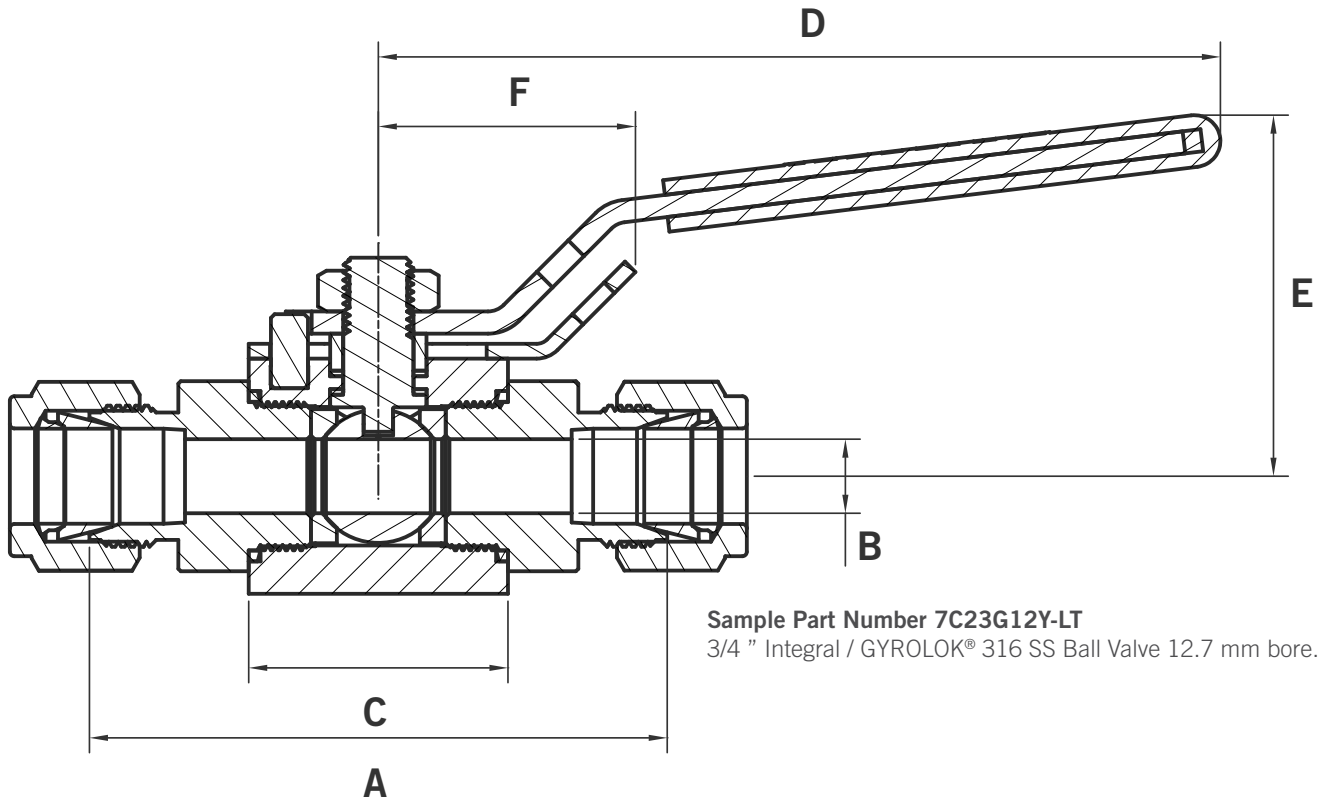
*To order locking plate option, add -LT to valve part number as shown

7C Series Ball Valve - Integral / GYROLOK® Tube Connections



7C Series Ball Valve - Integral / GYROLOK® Tube Connections

Specifications & Dimensions



TO ORDER CHOOSE PART NUMBER WITH YOUR REQUIRED SPECIFICATIONS.

Specifications and dimensions in inches and (millimeters)

For reference only and subject to change

| Part Number | Description | A | B | C | D | E | F | WT Kgs | CV _{us} |
|-------------|-------------|-------------|---------------|------------|-------------|------------|------------|--------|------------------|
| 7C23G4Y | 1/4" | 2.83" (72) | 0.39" (10) | 1.37" (35) | 4.52" (115) | 2.16" (55) | 1.37" (35) | 0.45 | 7.5 |
| 7C23G6Y | 3/8" | 2.95" (75) | 0.39" (10) | 1.37" (35) | 4.52" (115) | 2.16" (55) | 1.37" (35) | 0.46 | 7.5 |
| 7C23G8Y | 1/2" | 2.95" (75) | 0.39" (10) | 1.37" (5) | 4.52" (115) | 2.16" (55) | 1.37" (35) | 0.50 | 7.5 |
| 7C23G12Y | 3/4" | 2.99" (76) | 0.50" (12.7) | 1.37" (35) | 4.52" (115) | 2.40" (61) | 1.37" (35) | 0.75 | 12.0 |
| 7C23G16Y | 1" | 4.13" (105) | 0.75" (19.05) | 2.04" (38) | 7.72" (196) | 2.63" (67) | 1.89" (48) | 1.6 | 32.0 |

For locking handle option, add -LT to valve part number.

Custom Options

Please consult factory for other materials, bore sizes, handle options and connection options.

The actual pressure ratings for any alternative option will vary from those stated – please consult with factory for your specific requirements.

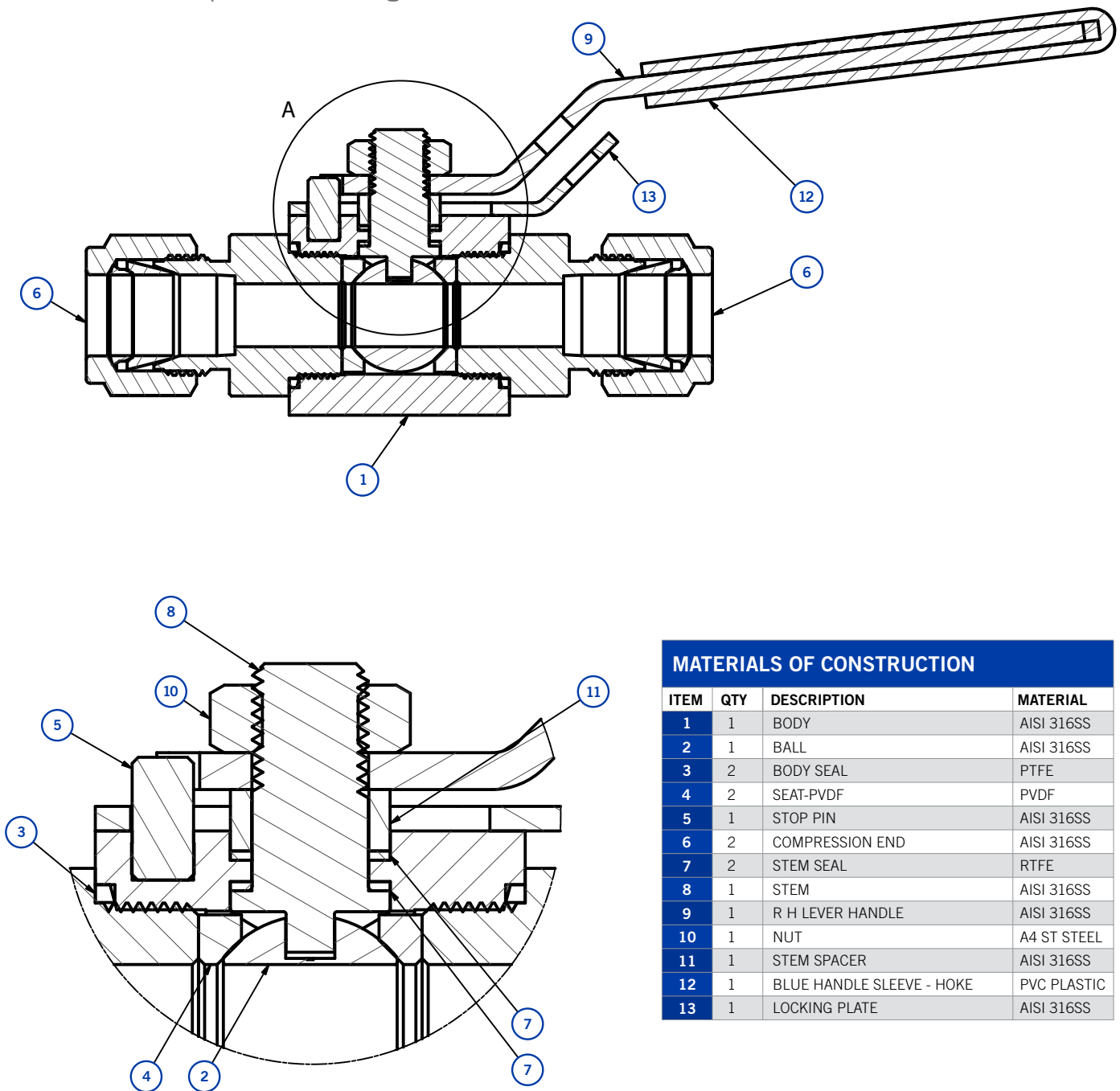
The specification of any alternative material, connection or tubing is critical to the overall performance of the system.

Caution should be exercised by the user to ensure proper selection in accordance with actual operating or design conditions.

7C Series Ball Valve - Integral / GYROLOK® Tube Connections

Materials of Construction

Shown with Optional Locking Plate



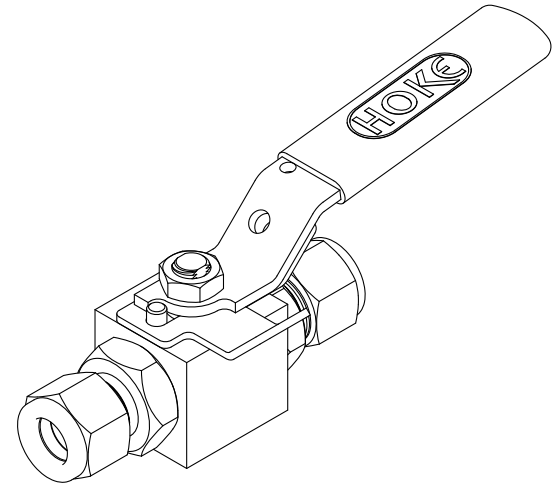
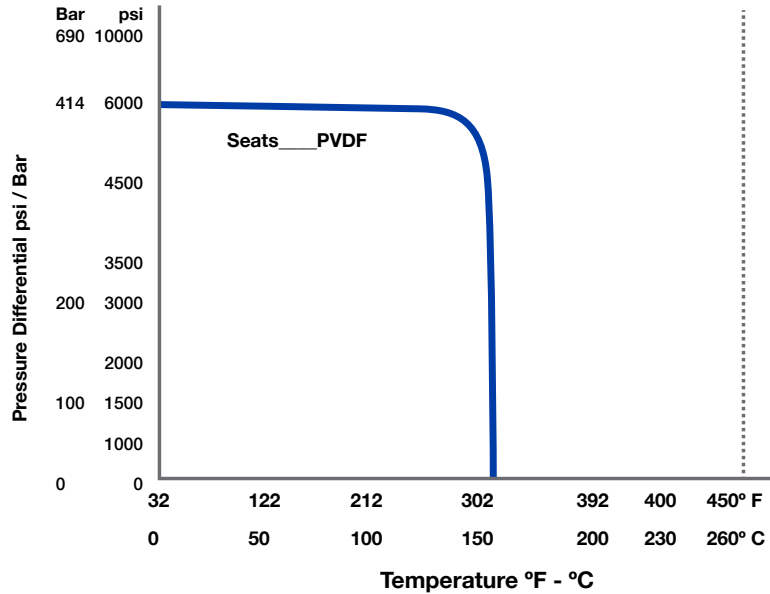
Sample Part Number 7C23G8Y-LT

1/2" Integral / GYROLOK® 316 SS Ball Valve 10mm bore.

7C Series Ball Valve - Integral / GYROLOK® Tube Connections

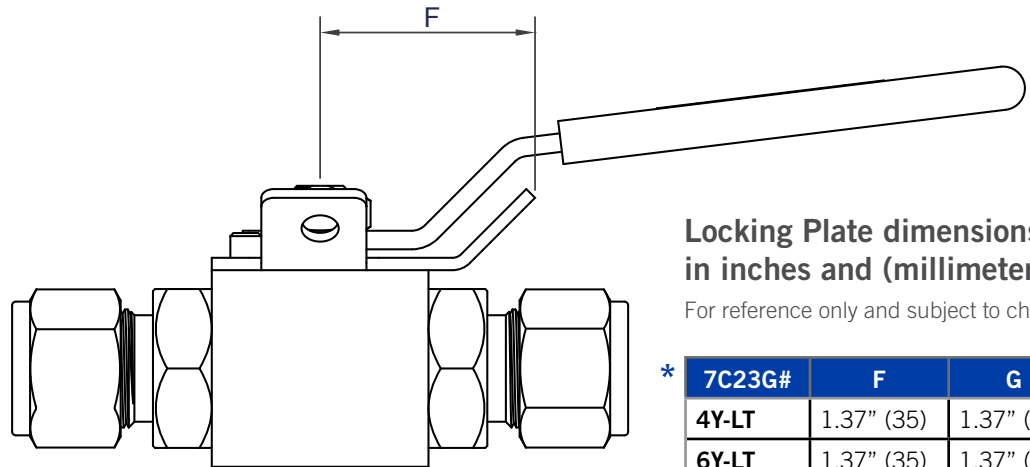
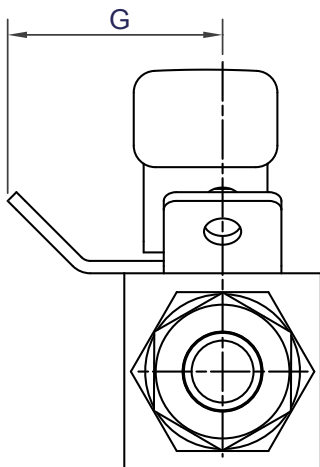
Operating Specifications

7C Series Pressure / Temperature Graph



TECHNICAL DATA

| | | |
|---------------------------|---------------------|---------|
| MAX. OPERATING PRESSURE | 6000 PSI | 414 BAR |
| MAX OPERATING TEMPERATURE | 302 °F | 150 °C |
| MIN OPERATING TEMPERATURE | -22 °F | -30 °C |
| BASIC MATERIAL | 316 STAINLESS STEEL | |

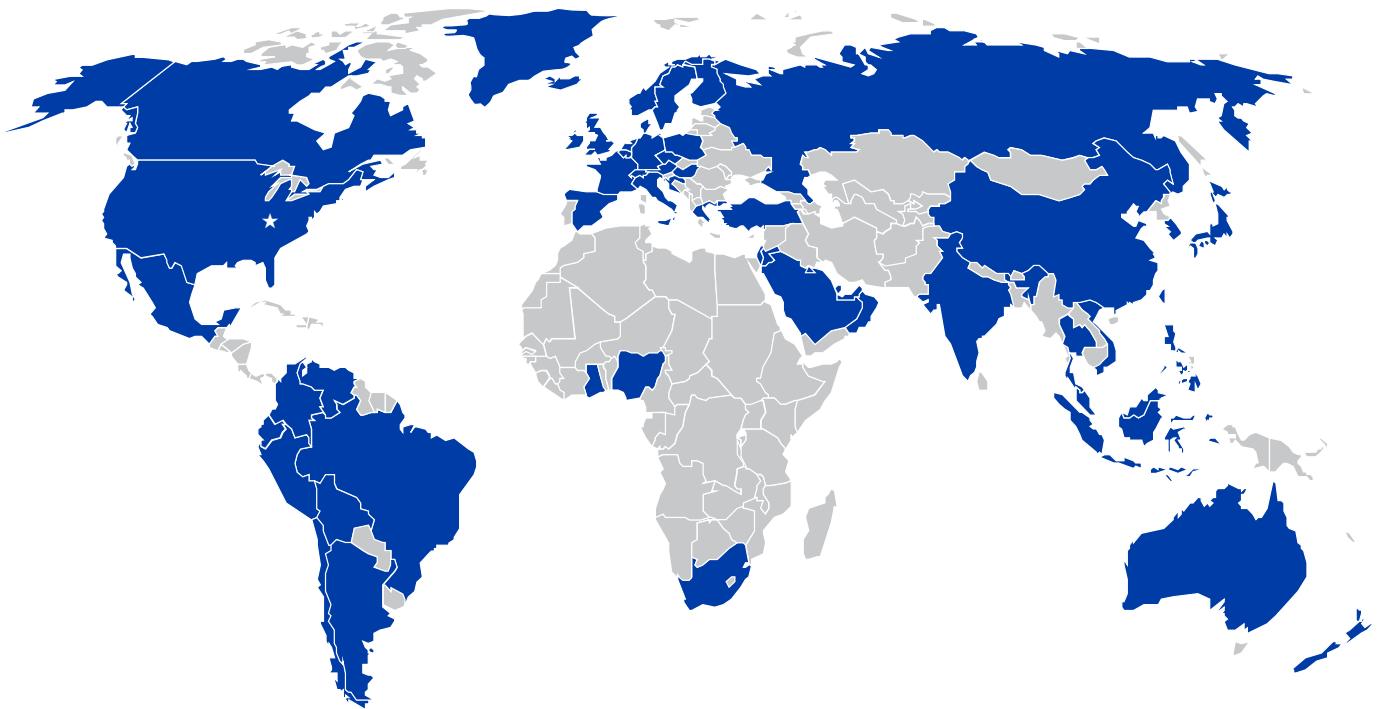


Locking Plate dimensions in inches and (millimeters)

For reference only and subject to change

| * 7C23G# | F | G |
|----------|------------|------------|
| 4Y-LT | 1.37" (35) | 1.37" (35) |
| 6Y-LT | 1.37" (35) | 1.37" (35) |
| 8Y-LT | 1.37" (35) | 1.37" (35) |
| 12Y-LT | 1.37" (35) | 1.37" (35) |
| 16Y-LT | 1.89" (48) | 1.89" (48) |

*To order locking plate option, add -LT to valve part number as shown



The HOKE® Brand is just one product offering manufactured and supplied by CIRCOR Instrumentation, an ISO 9001:2008 registered facility headquartered in Spartanburg, SC, USA, a division of CIRCOR International (NYSE:CIR).

HOKE distributors are worldwide.

Contact us or visit our website to locate the nearest distributor to assure your projects are consistently implemented across the globe with the greatest Safety, Integrity and Reliability.



PO Box 4866
Spartanburg, SC 29305-4866
Tel +1-864-574-7966
Fax +1-864-587-5608
www.hoke.com
sales-hoke@circor.com

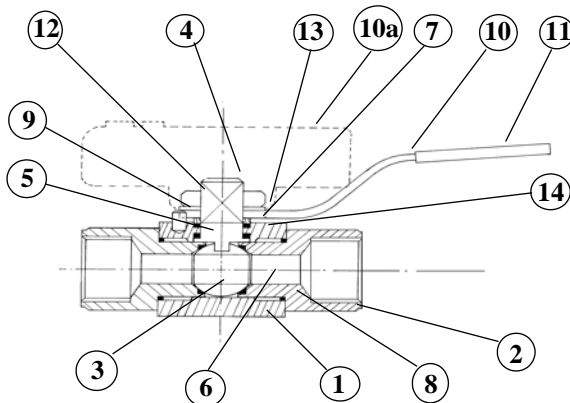
Our headquarters and manufacturing facilities are located at:
405 Centura Ct.
Spartanburg, SC, USA,
29303-6603

7C Series HIGH PRESSURE Ball Valves

10,000 psi [Pn 690] Rated

DESIGN FEATURES

- * Robust HIGH pressure design
- * Internally loaded blow-out proof stem
- * Floating ball for positive shut-off
- * LOW operating torque
- * Smooth 1/4 turn action
- * Flexible 3 piece design
- * 316 ss to NACE specification
- * Range of end connections
- * Replaceable seats & seals
- * Ease of maintenance
- * Full material traceability
- * Choice of lever or pointer handles
- * Panel mounting option
- * Can be easily actuated
- * Locking kit available



| ITEM | COMPONENT | MATERIAL |
|------|----------------|-----------------|
| 1 | BODY | 316 S 11 * |
| 2 | END CONNECTORS | 316 S 11 * |
| 3 | BALL | 316 S 11 * |
| 4 | STEM | 316 S 11 * |
| 5 | STEM SEAL | PVDF |
| 6 | SEAT | PEEK |
| 7 | TOP SEAL | RTFE |
| 8 | BODY SEALS | PTFE/VITON |
| 9 | PIN | STAINLESS STEEL |
| 10 | LEVER HANDLE | STAINLESS STEEL |
| 10 | POINTER HANDLE | MAZAK 3 |
| 11 | HANDLE SLEEVE | PVC |
| 12 | NUT | A4 ss |
| 13 | WASHER | A4 ss |
| 14 | SPACER | 316 SS |

Sample Part Number 7C23F8Y-AA

1/2" NPT 316 St. St. Ball Valve, 10mm Bore - 10,000 psi/Pn 690 Rated fitted with Lever handle.

| VALVE PART NUMBER and ORDERING TABLE | | | | | | |
|--------------------------------------|------|-----------|--|--|--------------------------------------|---|
| Valve Series | Bore | Size | Threads | * Material | Handle | Options |
| 7C 10,000 psi/Pn690 | 10 | 08 - 1/4" | NF - NPT Female NM - NPT Male PF - BSPP Female PM - BSPP Male TF - BSPT Female TM - BSPT Male | D - 31803 Duplex H - Hasteloy J - 6Mo M - Monel S - 316 SS T - Titanium U - 32760 S.Duplex | St St Lever Handle as Standard | -SR Spring Return -DA Double Acting -EA Electric -PM Panel Mount -LK Locking -ACT Actuator use |
| | | 10 - 3/8" | | | | |
| | | 15 - 1/2" | | | | |
| | 13 | 20 - 3/4" | | | | |
| | 19 | 25 - 1" | | | | |

Valve Part Number for FULL BORE - USE BORE size equal to thread size e.g. 7C23F8Y-AA

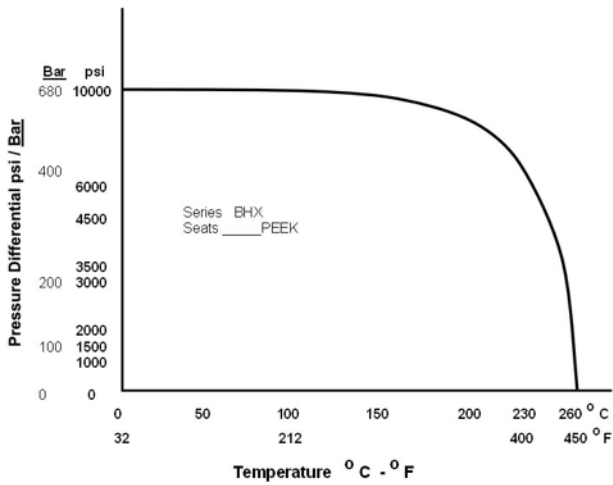
Valves have Stainless Steel Lever Handles as standard. Alloy valves will be round bodied in lieu of Square.



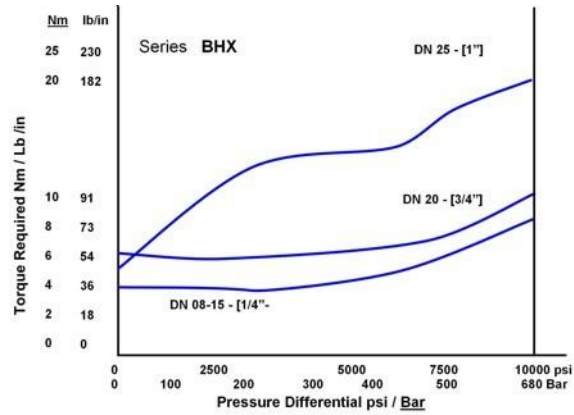
7C Series HIGH PRESSURE Ball Valves

TECHNICAL SPECIFICATIONS SHEET

PRESSURE/TEMPERATURE GRAPH



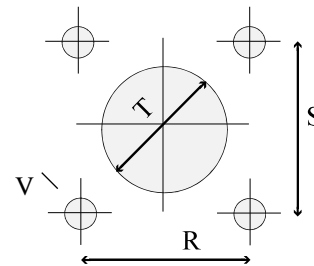
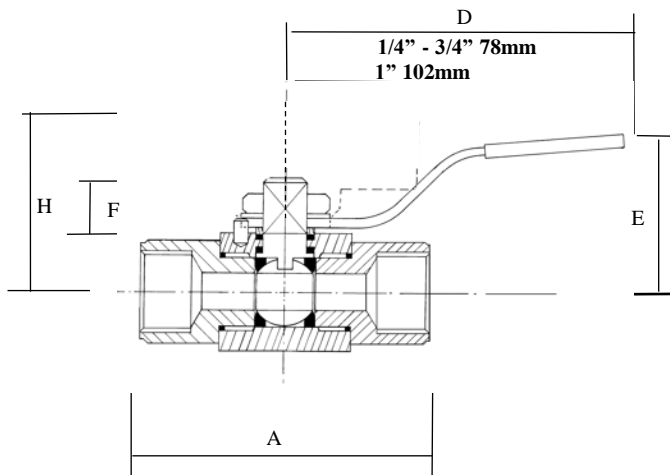
TORQUE INFORMATION



PANEL MOUNT DETAILS *

* Option to be specified when ordering

We recommend the use of Countersink Head screws when panel mounting our valve. Panel thickness to be Max 3mm. For larger sizes,



1/4" - 1/2" VALVES ARE M4 x 6 mm DEEP
3/4" VALVE ARE M5 x 6 mm DEEP
1" VALVE ARE M6 x 8 mm DEEP

| Valve Size | VALVE SIZES and DIMENSION TABLE [mm] Rounded for clarity | | | | | | | | | | | WEIGHT Kgs | | |
|------------|--|-------|----------|------|-----|----|----|---------------------|----|------------------------|-----|---------------|----------|----------|
| | A | | B ϕ | C Sq | D | E | F | G $\phi \times A/F$ | H | Panel Mount Dimensions | | | | |
| | BSPP | TAPER | | | | | | | | R & S | ISO | | T ϕ | V ϕ |
| 08 - 1/4" | 81 | 81 | 10 | 32 | 115 | 45 | 14 | 3/8"-7.0 | 49 | 25.5 | N/A | 30 | 5 | 0.50 |
| 10 - 3/8" | 85 | 87 | 10 | 32 | 115 | 45 | 14 | 3/8"-7.0 | 49 | 25.5 | N/A | 30 | 5 | 0.52 |
| 15 - 1/2" | 93 | 95 | 10 | 32 | 115 | 45 | 14 | 3/8"-7.0 | 49 | 25.5 | N/A | 30 | 5 | 0.60 |
| 20 - 3/4" | 100 | 100 | 12.7 | 38 | 115 | 50 | 12 | 3/8"-7.0 | 52 | 25.5 | F03 | 30 | 5.5 | 0.80 |
| 25 - 1" | 120 | 122 | 20 | 50 | 165 | 60 | 22 | 12 x 9.0 | -- | 35.4 | F05 | 44 | 6.5 | 1.65 |

We reserve the right to change specifications stated in this leaflet due to our continuing programme of development.

For FULL BORE Valves, use the dimensions of the next larger size. ie for 1/2" Full Bore use 3/4" Dimensions.

Valve seats are tested at 10% above rated pressure [BS EN12266-1]. Using any higher test pressure will damage the seats. Use the valve half open on system tests above rated seat pressure.

Valves in Special Materials and/or Alloys will be round bodied in lieu of square. Panel Mount styles will have a machined flat below the handle to facilitate mounting.

CIRCOR

HOKE®



Space Saver™ Actuators

Air Actuated 0700 Series



Space Saver™



CRANE Instrumentation & Sampling, HOKE®
PO Box 4866 • Spartanburg, SC 29305-4866
(864) 574-7966 • www.hoke.com

For Your Safety

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. When selecting products, the total system design must be considered to ensure safe, trouble-free performance. Material compatibility, product ratings and application details should be considered in the selection. Improper selection or use of products described herein can cause personal injury or property damage.

Contact your authorized HOKE® sales and service representative for information about additional sizes and special alloys.

SAFETY WARNING:

HOKE® products are designed for installation only by professional suitably qualified licensed system installers experienced in the applications and environments for which the products are intended. These products are intended for integration into a system. Where these products are to be used with flammable or hazardous media, precautions must be taken by the system designer and installer to ensure the safety of persons and property. Flammable or hazardous media pose risks associated with fire or explosion, as well as burning, poisoning or other injury or death to persons and/or destruction of property. The system designer and installer must provide for the capture and control of such substances from any vents in the product(s). The system installer must not permit any leakage or uncontrolled escape of hazardous or flammable substances. The system operator must be trained to follow appropriate precautions and must inspect and maintain the system and its components including the product(s) and at regular intervals in accordance with timescales recommended by the supplier to prevent unacceptable wear or failure.



Space Saver™

Air Actuated 0700 Series

This line of space saving pneumatic actuators is designed to provide safe, reliable control of most HOKE® Flomite®, Selectomite®, and DL/TL ball valves. For added flexibility, Space Saver actuators may be operated with many types of clean gases including air, natural gas, and nitrogen. Spring return and double acting versions are available for either 90° or 180° actuation. All Space Saver actuators come standard with a manual override feature for emergency operation.



Typical Applications

- Chemical
- Petrochemical
- Oil and Gas Drilling
- Research and Development
- Environmental Control
- Instrumentation Panels

Technical Data

| | |
|-----------------------------|--|
| Housing Material | Polyurethane coated aluminum |
| Maximum Operating Pressure | 125 psig (9 bar) |
| Air Supply Connection* | ½ Female NPT |
| Operating Temperature Range | A6L Actuators– -40° to 250° F (-40° to 121° C) A6H Actuators– 0° to 400° F (-18° to 204° C) |
| Cycle time** | 1 second (dependent on air supply) |
| Cycle Life | 250,000 cycles minimum |
| Weight | 1.7 lbs. (0.75 kg) |

* The air line supplying and venting the actuator must not restrict airflow. Orifice size of air supply valves should be 3/32" minimum (2.4 mm) to assure full actuator torque output.

** Cycle time should not exceed 10 cycles per minute when operating continuously. DL or TL ball valves are recommended for higher cycle times.

Features & Benefits

Saves space

- Compact dimensions (2.25" x 2.75" x 3.5")
- One Space Saver actuator can operate two valves simultaneously
- HOKE® DL and TL ball valves are available for high cycle applications
- Available as 90°/180° spring return and double acting
- Operates with many clean gases (air, natural gas, nitrogen) for added flexibility
- Minimal number of moving parts for reduced maintenance
- Corrosion resistant polyurethane coated aluminum housing for added durability
- High burst strength for enhanced safety
- Manual override for emergency operation
- Rapid response time of one second or less per cycle
- Unique piston gear drive assembly allows for wide range of uses
- Choice of two operating temperature ranges (A3, A5 models)
- Special High Tolerance NPT Thread

Space Saver™

Space Saver™

Specifications

Materials of Construction

- Electroless Nickel Plated Body
- Anodized aluminum and PTFE coated geared piston
- 316 stainless steel geared output shaft
- Filled PTFE shaft bearing
- Nitrile seals (A6L models)
- Viton® seals (A6H models)
- Alloy steel springs with corrosion resistant coating

Torque Specifications

0713A6L/H 180° Spring Return

| INLET PRESSURE (PSIG/BAR) | AIR SIDE TORQUE OUTPUT (IN/LBS / NM) | | SPRING SIDE TORQUE OUTPUT (IN/LBS / NM) | |
|---------------------------|--------------------------------------|---------|---|---------|
| | AIR START | AIR END | AIR START | AIR END |
| 50/3 | 18/2 | 7/1 | 16/2 | 6/1 |
| 60/4 | 23/3 | 13/2 | 16/2 | 6/1 |
| 70/5 | 28/3 | 17/2 | 16/2 | 6/1 |
| 80/6 | 34/4 | 22/3 | 16/2 | 6/1 |
| 90/6 | 42/5 | 27/3 | 16/2 | 6/1 |
| 100/7 | 46/5 | 31/4 | 16/2 | 6/1 |
| 120/8 | 56/6 | 42/5 | 16/2 | 6/1 |

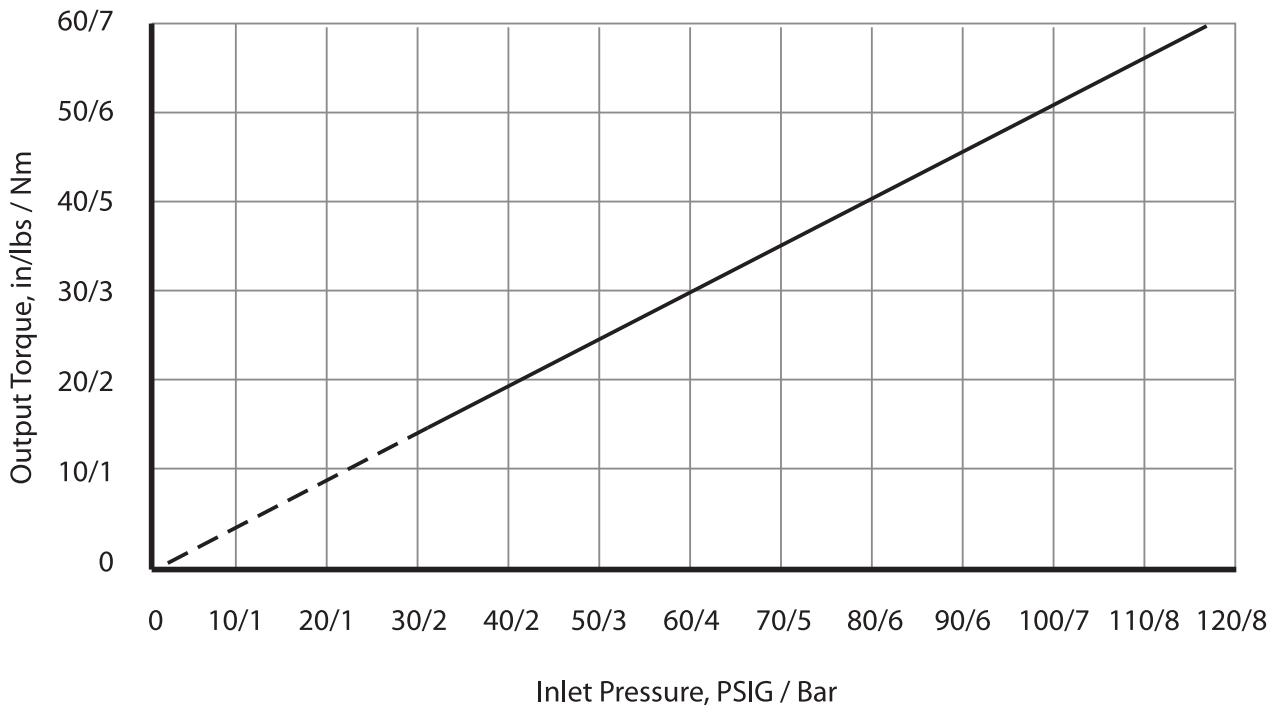
Minimum inlet pressure to obtain 180° rotation = 50 psig (3 bar)

0713A6L/H, 0722A6L/H 90° Spring Return

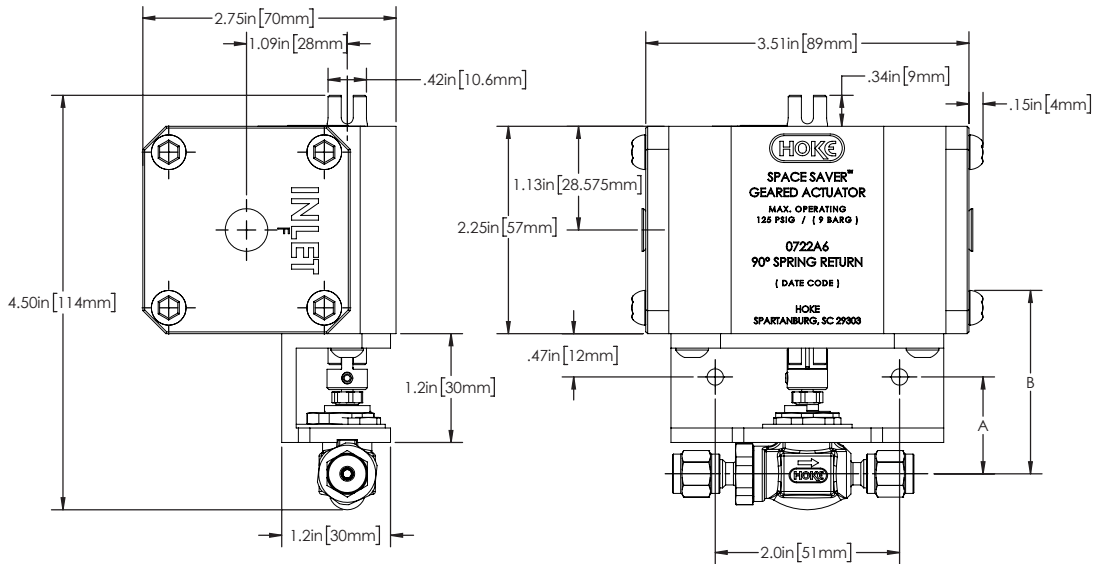
| INLET PRESSURE (PSIG) | AIR SIDE TORQUE OUTPUT (IN/LBS / NM) | | SPRING SIDE TORQUE OUTPUT (IN/LBS / NM) | |
|-----------------------|--------------------------------------|---------|---|---------|
| | AIR START | AIR END | AIR START | AIR END |
| 60 | 9/1 | 5/1 | 30/3 | 20/2 |
| 70 | 16/2 | 10/1 | 30/3 | 20/2 |
| 80 | 20/2 | 13/2 | 30/3 | 20/2 |
| 90 | 26/3 | 18/2 | 30/3 | 20/2 |
| 100 | 30/3 | 20/2 | 30/3 | 20/2 |
| 120 | 40/5 | 30/3 | 30/3 | 20/2 |

Minimum inlet pressure to obtain 90° rotation = 60 psig (4 bar)

0750 (180°), 0760 (90°) Double Acting



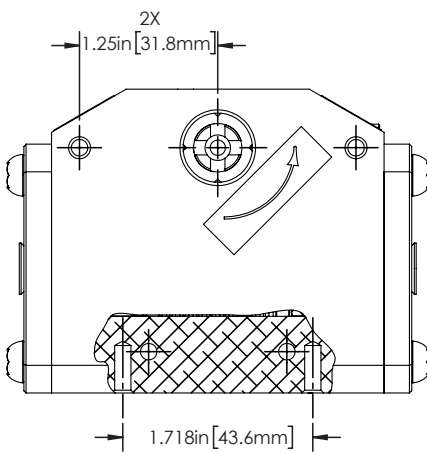
Space Saver™



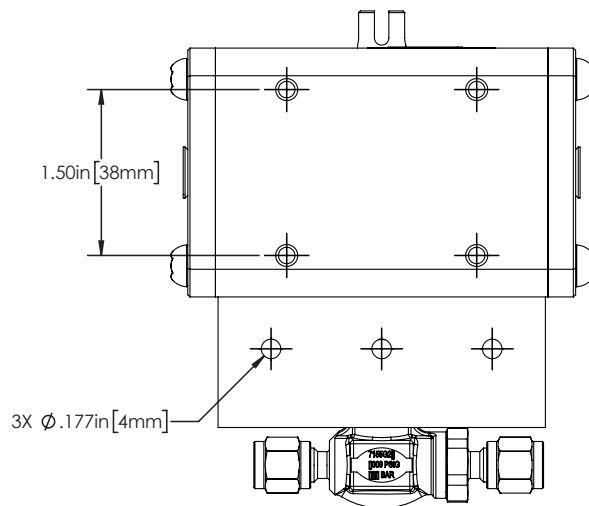
These diagrams above and table below show mounting dimensions and specifications for Space Saver actuators with 1- and 2-valve configurations. All Space Saver actuators and mounting bracket dimensions above are the same across all models.

Mounting Dimensions

| SPACE SAVER P/N | 1 BALL VALVE | 2 BALL VALVES | A | B |
|---------------------------------|--------------|---------------|--------------------|---------------------|
| 0722A6L/H 90° Spring Return | 7142 | 7142 | $\frac{59}{64}$ " | $1 \frac{57}{64}$ " |
| | 7155 | 7155 | 23 mm | 48 mm |
| | 7115 | --- | $1 \frac{1}{32}$ " | 2" |
| 0713A6L/H 180° Spring Return | 7122 | 7122 | 26 mm | 50.8 mm |
| | 7177 | 7177 | $\frac{59}{64}$ " | $1 \frac{57}{64}$ " |
| 0760A6L/H 90° Double Acting | 7165 | --- | 1" | $1 \frac{31}{32}$ " |
| | 7142 | 7142 | 23 mm | 48 mm |
| 0750A6L/H 180° Double Acting | 7155 | 7155 | 23 mm | 48 mm |
| | 7115 | --- | $1 \frac{1}{32}$ " | 2" |
| | 7122 | 7122 | 26 mm | 51 mm |
| 0750A6L/H 180° Double Acting | 7177 | 7177 | $\frac{59}{64}$ " | $1 \frac{57}{64}$ " |
| | 7671 | 7671 | 1" | $1 \frac{31}{32}$ " |
| | 7673 | 7673 | 25 mm | 50 mm |
| | 7165 | 7165 | 25 mm | 50 mm |



0700 Series Actuator Front View



0700 Series Actuator End View

Space Saver™

The 0700 Series single actuator offers the capability of operating up to two 2-way ball valves simultaneously.



Cut-away of 0700 Series showing unique piston/gear drive assembly design.

How to Order

| NUMBER OF VALVES PER ACTUATOR* | ACTUATOR TYPE | SPACE SAVER PART NUMBER | USE WITH BALL VALVE PART NUMBER** | MOUNTING KIT NUMBER | REQUIRED ACTUATION PRESSURE |
|--------------------------------|--------------------|-------------------------|-----------------------------------|---------------------|-----------------------------|
| 1 | 180° Double Acting | 0750A6L/H | 7165 □ □ □ | 0700K1 | 30 psig (2 bar) |
| | | 0750A6L/H | 7671 □ □ □ | 0700K1 | 40 psig (2 bar) |
| | | 0750A6L/H | 7673 □ □ □ | 0700K1 | 40 psig (2 bar) |
| | | 0750A6L/H | 7177 □ □ □ | 0700K2 | 20 psig (1 bar) |
| 2* | 180° Double Acting | 0750A6L/H | 7165 □ □ □ | 0700K1 | 50 psig (3 bar) |
| | | 0750A6L/H | 7671 □ □ □ | 0700K1 | 60 psig (4 bar) |
| | | 0750A6L/H | 7673 □ □ □ | 0700K1 | 60 psig (4 bar) |
| | | 0750A6L/H | 7177 □ □ □ | 0700K2 | 25 psig (2 bar) |
| 1 | 180° Spring Return | 0713A6L/H | 7165 □ □ □ | 0700K1 | 60 psig (4 bar) |
| | | 0713A6L/H | 7177 □ □ □ | 0700K2 | 40 psig (2 bar) |
| 2* | 180° Spring Return | 0713A6L/H | 7177 □ □ □ | 0700K2 | 50 psig (3 bar) |
| | | 0713A6L/H | 7177 □ □ □ | 0700K2 | 50 psig (3 bar) |
| 1 | 90° Spring Return | 0722A6L/H | 7115 □ □ □ | 0700K3 | 80 psig (6 bar) |
| | | 0722A6L/H | 7122 □ □ □ | 0700K3 | 70 psig (5 bar) |
| | | 0722A6L/H | 7142 □ □ □ | 0700K2 | 60 psig (4 bar) |
| | | 0722A6L/H | 7155 □ □ □ | 0700K2 | 65 psig (4 bar) |
| 2* | 90° Spring Return | 0722A6L/H | 7122 □ □ □ | 0700K3 | 90 psig (6 bar) |
| | | 0722A6L/H | 7142 □ □ □ | 0700K2 | 70 psig (5 bar) |
| | | 0722A6L/H | 7155 □ □ □ | 0700K2 | 75 psig (5 bar) |
| | | 0722A6L/H | --- | 0700K3 | 80 psig (6 bar) |
| 1 | 90° Double Acting | 0760A6L/H | 7115 □ □ □ DL □ | 0700K3 | 80 psig (6 bar) |
| | | 0760A6L/H | 7122 □ □ □ T L □ | 0700K3 | 70 psig (5 bar) |
| | | 0760A6L/H | 7022 □ □ □ T L □ | 0700K3 | 70 psig (5 bar) |
| 1 | 90° Double Acting | 0760A6L/H | 7115 □ □ □ | 0700K3 | 30 psig (2 bar) |
| | | 0760A6L/H | 7122 □ □ □ | 0700K3 | 25 psig (2 bar) |
| | | 0760A6L/H | 7142 □ □ □ | 0700K2 | 20 psig (1 bar) |
| | | 0760A6L/H | 7155 □ □ □ | 0700K2 | 20 psig (1 bar) |
| 2* | 90° Double Acting | 0760A6L/H | --- | 0700K3 | 30 psig (2 bar) |
| | | 0760A6L/H | 7122 □ □ □ | 0700K3 | 25 psig (2 bar) |
| | | 0760A6L/H | 7142 □ □ □ | 0700K2 | 20 psig (1 bar) |
| | | 0760A6L/H | 7155 □ □ □ | 0700K2 | 20 psig (1 bar) |

* Two valve mounting kits required for two valve operation.

** 7165, 7177, and 7673 Series not recommended for high cycle applications.

FACTORY ASSEMBLY

To order factory assembled, additional information is required

- For Spring Return 90° actuators, normally open or normally closed must be specified.
- For Spring Return 180° actuators, spring return position must be indicated on order.
- Order must also state “factory assembled.”
- For general ball valve model numbers, please see above or page 3. For specific information on ball valves, refer to HOKE®’s High Cycle Ball Valve Catalog #79067. DL or TL Series ball valves should be used for high cycle applications.
- Example: **0722A6L/H** normally open actuator with **7115G6Y** ball valve and **0700K3** mounting kit, factory assembled.

Field Assembly

To order the valve and actuator for field assembly, the valve number, actuator number and mounting kit number must be specified. Example: **7122F4Y TL** ball valve with **0722A6L/H** actuator and **0700K3** Mounting Kit, for field assembly.



The Small Bore Instrumentation Specialists



We specialize in small bore instrumentation products up to 2" that deliver benchmark performance quality & safety; provide the broadest array of superior alloy offerings in the market; decades of proven success in a wide range of industries; a roster of "who's who" customers & projects globally; original "Best Solution" engineering & designs; and are focused on continuous improvement in all aspects of our business.

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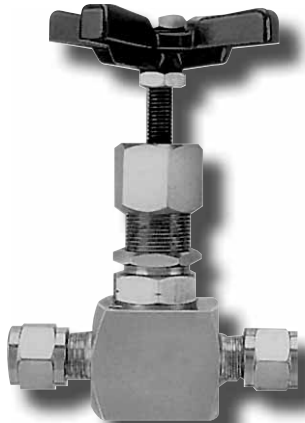
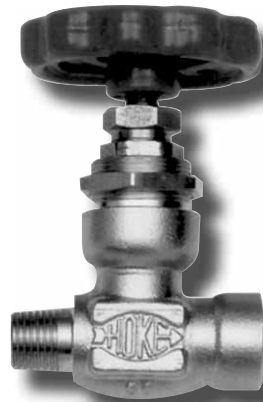
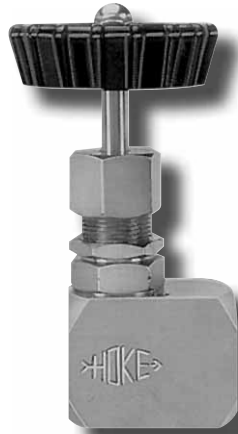


CRANE INSTRUMENTATION &
SAMPLING Inc.
405 Centura Ct.
Spartanburg, SC 29305, USA
Tel: 1-864-574-7966
PO Box 4866, Spartanburg, SC
29305-4866 USA

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Needle Valves



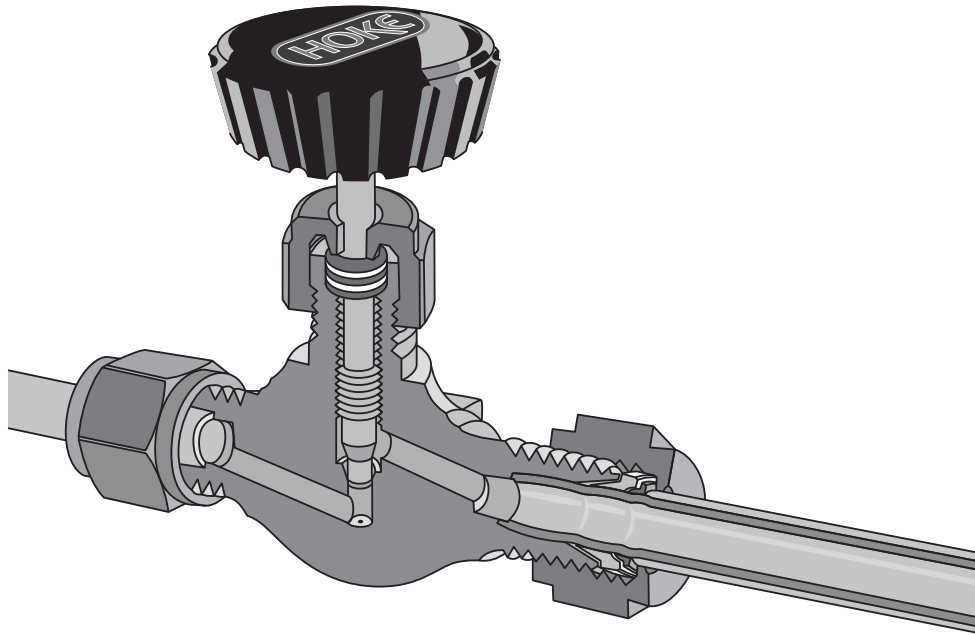
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needle valves



Needle Valves at a Glance



HOKE manufactures a complete line of precision needle valves. Before making your valve selection, be sure to consider the system pressure, operating temperature, required flow and materials of construction. If your application requires a valve not available in this catalog, please contact your HOKE stocking distributor or call HOKE at (864) 574-7966.

In addition to the needle valves in this catalog, HOKE manufactures other lines of specialty needle valves:








- Cylinder valves provide safe flow control for filling and draining cylinders. Valves are available with burst disks, spring relief devices, and metal or PCTFE stem tips. For more information, refer to HOKE's Sampling Cylinders and Accessories catalog (PN 79008).
- Gauge valves are typically used for calibration, isolation, and bleeding of gauges and other instruments. They allow for safe installation and removal of instruments and provide multiple mounting positions. For more information, refer to HOKE's Fluid Control Component catalog (PN 79020).
- Plug valves are used in applications where instant on/off service is necessary. HOKE plug valves are available in quarter-turn (7300 series) or rising stem (7400 series) models. Both designs include a straight through bore, which provides maximum flow and rodability. For more information, refer to the 7300 series catalog (PN 79039) and the 7400 series Catalog (PN 78165).

needle valves

HOKE Inc.

PO Box 4866 • Spartanburg, SC 29305-4866
Phone (864) 574-7966 Fax (864) 587-5608
www.hoke.com • Sales-hoke@circor.com

Needle Valves at a Glance

| | SERIES | DESCRIPTION/APPLICATIONS | FEATURES | STANDARD BODY MATERIAL |
|---|---|--|---|--|
|  | 1700 Series (pg. 5) | <ul style="list-style-type: none"> • Panel board instrumentation • Pressure gauge valves • Sampling systems • Research laboratories • Oxygen service • Corrosive or high pressure service • Cylinder Valves | <ul style="list-style-type: none"> • Dyna-Pak® packing • Long cycle life • Broad selection of fitting connections | 316 stainless steel Monel® |
|  | 2100 Series (pg. 8) | <ul style="list-style-type: none"> • Hydraulic systems • High temperature service • Gas sampling • Test stands | <ul style="list-style-type: none"> • Choice of Dyna-Pak® or Graph-Lock® high temperature packing • High pressure capability • Choice of all metal stem or metal stem with PCTFE stem tip | Brass 316 stainless steel Carbon steel |
|  | 2200 Series (pg. 12) | <ul style="list-style-type: none"> • Corrosive handling • Sampling systems • Metering service | <ul style="list-style-type: none"> • Long service life • Extended temperature range • Dyna-Pak® packing | 316 stainless steel |
|  | 2219 Series (pg. 16) | <ul style="list-style-type: none"> • Severe service applications • Steam service in power plants • Hot condensates | <ul style="list-style-type: none"> • Meets ANSI 900# specifications • High pressure/high temperature design • Bubble-tight leak testing at both seat and packing | 316 stainless steel |
|  | 2700 Series (pg. 20) | <ul style="list-style-type: none"> • Sour gas service • Refineries • Chemical processing • Oil and gas drilling | <ul style="list-style-type: none"> • Dyna-Pak® packing • Corrosion resistance • Extended life cycle | 316 stainless steel |
|  | 2800 Series (pg. 23) | <ul style="list-style-type: none"> • High temperature service • Corrosive handling • Reactive and hot condensates | <ul style="list-style-type: none"> • High temperature service • Extended life cycle • Choice of various connections | 316 stainless steel |
|  | 3700, 3800 and 3900 Series (pg. 26) | <ul style="list-style-type: none"> • Instrument air lines • Sampling • Gas chromatography • Cylinder valves • Test stands | <ul style="list-style-type: none"> • Choice of stem tips • Dyna-Pak® packing • Broad selection of connection options • Optional color-coded handles for fluid identification | Brass 316 stainless steel Carbon steel Monel® |

Needle Valves at a Glance

| MAX. OPERATING PRESSURE @70° F (21° C) | OPERATING TEMP. RANGE | C _v FLOW RANGE (VARIES W/ END CONN.) | ORIFICE SIZES | STANDARD END CONNECTIONS |
|---|--|---|--|---|
| 6000 psig (414 Bar) | Metal stem tip: -65° F to +450° F (-54° C to +232° C) PCTFE stem tip: -20° F to +250° F (-29° C to +121° C) | 0.31 | 0.187" (4.8 mm) | ¼", ⅜", ½" GYROLOK® ¼" Male NPT ¼" Female NPT 8 mm GYROLOK® |
| Brass: 3000 psig (207 Bar) Stainless steel: 6000 psig (414 Bar) Carbon steel: 5000 psig (345 Bar) | Dyna-Pak®/metal stem tip: -65° F to +450° F (-54° C to +232° C) Dyna-Pak®/PCTFE stem tip: -20° F to +250° F (-29° C to +121° C) Graph-Lock®/metal stem tip: -60° F to +600° F (-51° C to +316° C) | 0.40 to 1.20 | 0.188" to 0.313" (4.8 mm to 8.0 mm) | ¼", ⅜", ½" GYROLOK® ½" Male NPT ¼", ⅜", ½" Female NPT |
| 5000 psig (345 Bar) | -65° F to +450° F (-54° C to +232° C) | 0.12 to 1.4 | 0.086" to 0.313" (2.2 mm to 8.0 mm) | ¼", ⅜", ½" GYROLOK® ½" Male NPT ¼", ⅜", ½" Female NPT 10, and 12 mm GYROLOK® |
| 6000 psig (414 bar) | -100 to +1000 (-75 to +538) | 0.47, 1.09, 1.20 (Cv factor for 0.437" orifice not available at time of publication) | 0.170" (4.3 mm), 0.250" (6.4 mm), 0.312" (7.9 mm) 0.437" (11.1 mm) | ¼", ½", ¾", 1" GYROLOK® ¼", ½", ¾", 1" Female NPT 3/8", ½", ¾", 1" Tube socket weld 3/8", ½", ¾", 1" NPS socket weld 12 mm, 22 mm, 25 mm GYROLOK® |
| 6000 psig (414 Bar) | -65° F to 450° F (-54° C to 232° C) | 0.60 | 0.187" (4.8 mm) | ½" Male NPT x ½" Female NPT ½" Female NPT x ½" Female NPT |
| Grafoil® packing: 2500 psig (172 Bar) Dyna-Pak® packing: 5000 psig (345 Bar) | Grafoil® packing: -100° F to +700° F (-75° C to +370° C) Dyna-Pak® packing: -40° F to +450° F (-40° C to +232° C) | 1.10 | 0.312" (7.9 mm) | ¼", ⅜", ½" GYROLOK® ½" Female NPT ½" Socket weld |
| 316 SS, CS & Monel®: 5000 psig (345 Bar) Brass: 3000 psig (207 Bar) | Metal stem tip: -65° F to +450° F (-54° C to +232° C) PCTFE stem tip: -20° F to +250° F (-29° C to +121° C) | 0.07 to 1.1 | 0.06" to 0.312" (1.5 mm to 7.9 mm) | ⅛", ¼", ⅜", ½" GYROLOK® ⅛", ¼", ⅜" Male NPT ⅛", ¼", ½" Female NPT 3, 6, 8, 10, and 12 mm GYROLOK® |

Needle Valves at a Glance

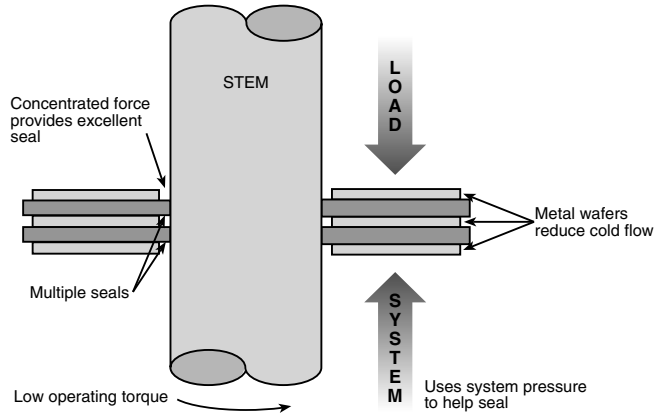
Dyna-Pak® Stem Packing System

Dyna-Pak® provides superior sealing performance while reducing maintenance costs. Consisting of alternate wafers of TFE and metal spacers, stem leakage is virtually eliminated while the problems associated with TFE cold flow are minimized.

As the packing nut is tightened, metal spacers squeeze the TFE wafers, driving the TFE against the stem. At the stem, forces are concentrated and the TFE wafers provide multiple line seals. In addition to squeezing the TFE wafers, the metal spacers help contain the TFE and drastically reduce its ability to creep.

Dyna-Pak® packing has the ability to:

- Utilize system pressure to increase effectiveness in eliminating leakage
- Provide reduced operating torque
- Help eliminate fugitive emissions
- Reduce the need for frequent packing adjustments
- Operate in temperatures from -65° to +450° F (-54° to +232° C)



HOKE Needle Valves are Offered With a Choice of Stem Tip Options to Provide Greater Flexibility



Blunt Vee-Point The blunt vee-point stem tip provides full flow with only a few turns of the valve handle



Regulating The regulating stem tip has a gradually tapered tip which allows for greater control of flow.



Non-rotating Metal Stem Tip A non-rotating stem tip is typically used in high cycle applications to extend the service life of the valve. Its purpose is to prevent galling in the seat and on the stem tip. As the valve is closed, the stem tip contacts the valve seat, and is driven straight into it without rotating.



Vee-Point The vee-point stem tip is used to provide leak-tight shutoff in small orifice valves.



PCTFE A PCTFE stem tip requires a lower seating torque than a metal stem tip. It will provide full flow through the valve with only a few handle turns. The PCTFE tip is replaceable and has a maximum temperature of +250° F (+121° C)



Non-rotating PCTFE Stem Tip A non-rotating PCTFE stem tip operates in the same fashion as the non-rotating metal stem tip but requires less seating torque.

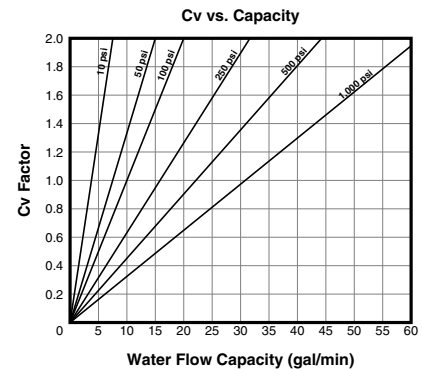
Flow capacity of HOKE Needle Valves

The Cv factor is a flow coefficient expressing the rate of flow in gallons per minute of 60° F (16° C) water with a pressure drop of 1 psi across the valve. The flow is dependent on the inlet and outlet pressures, temperature, specific gravity and the Cv coefficient.

To determine the Cv or flow of a **liquid** @ 60° F (16° C):

$$Cv = \frac{GPM}{\sqrt{\frac{\Delta p}{S.G.}}} \quad \text{or} \quad GPM = Cv \sqrt{\frac{\Delta p}{S.G.}}$$

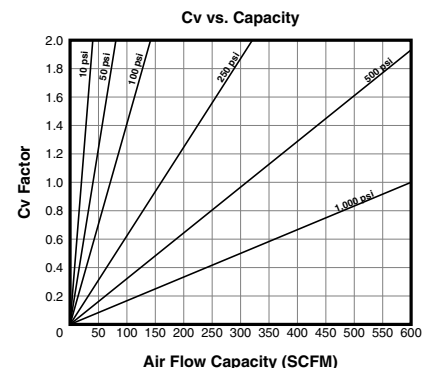
where: $\Delta p = p_1 - p_2$
 $p_1 =$ inlet pressure in psia
 $p_2 =$ outlet pressure in psia
 GPM = flow in gallons per minute
 S.G. = specific gravity of liquid where water = 1 @ 60° F (16° C)



To determine the Cv or flow of a **gas** @ 70° F (21° C):

$$Cv = \frac{SCFH}{1360 \sqrt{\frac{(\Delta p)(p_1)}{(460 + T)(S.G.)}}} \quad \text{or} \quad SCFH = 1360 Cv \sqrt{\frac{(\Delta p)(p_1)}{(460 + T)(S.G.)}}$$

where: $\Delta p = p_1 - p_2$
 $p_1 =$ inlet pressure in psia
 $p_2 =$ outlet pressure in psia
 SCFH = flow in standard cubic feet per hour
 S.G. = specific gravity of gas where air = 1 @ 70° F (21° C) and 14.7 psia
 T = temperature in ° F



Note: Maximum effective Δp for compressible fluids is $\frac{1}{2}p_1$.



1700 Series

Forged Body, Integral Bonnet Needle Valves

These affordable valves are suited for a wide variety of process control applications. Non-rotating stainless steel or replaceable PCTFE stem tips reduce galling. Dyna-Pak® packing below the stem threads prevents fugitive emissions.



Typical Applications

- Cylinder valves
- Panel board instrumentation
- Pressure gauge valves
- Sampling systems
- Research laboratories
- Oxygen service
- Corrosive or high pressure service

Technical Data

| | |
|------------------------------------|--|
| BODY* | 316 stainless steel, Monel® |
| MAXIMUM OPERATING PRESSURE | 6000 psig @ 70° F (414 Bar @ 21° C) |
| OPERATING TEMPERATURE RANGE | <i>Metal stem tip</i> -65° to +450° F (-54° to +232° C) <i>PCTFE stem tip</i> -20° to +250° F (-29° to +121° C) |
| ORIFICE | 0.187" (4.8mm) |
| Cv FACTOR | 0.31 |

* Consult factory for other materials

Features & Benefits

Safety

- Lock nut secures packing nut to prohibit accidental removal

Long cycle life

- Packing below stem threads prevents fluid from contacting the stem threads
- Non-rotating hardened 17-4PH stainless steel, Monel® or replaceable PCTFE stem tip is combined with a hardened 450 stainless steel - or Monel® thread gland to reduce galling

Helps eliminate fugitive emissions

- Dyna-Pak® packing provides a leak-tight seal with low operating torque

Reliability

- All valves are tested for bubble-tight leakage at both seat and packing

Installation variety

- Broad selection of male NPT, female NPT, and HOKE **GYROLOK**® fractional or metric tube fitting connections

Panel mounting

- Panel mounting is standard on all models
- Special High Tolerance NPT Thread

needle valves

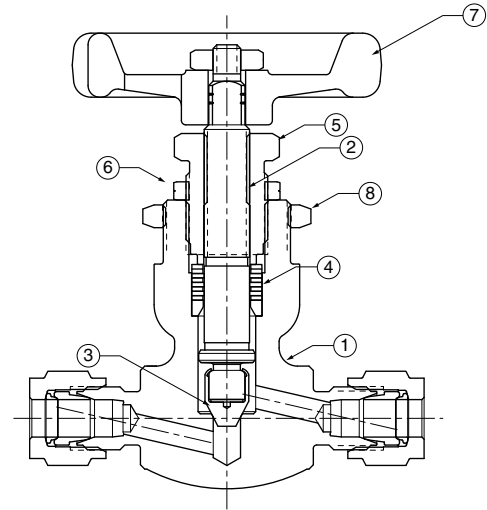
HOKE Inc.

PO Box 4866 • Spartanburg, SC 29305-4866
Phone (864) 574-7966 Fax (864) 587-5608
www.hoke.com • Sales-hoke@circor.com

1700 Series

Materials of Construction

| DESCRIPTION | 316 STAINLESS STEEL | MONEL® |
|----------------------|--------------------------------|---------------------|
| 1 Body | 316 stainless steel | Monel® |
| 2 Stem | 316 stainless steel | Monel® |
| <i>Stem tip</i> | | |
| 3 Soft | PCTFE | PCTFE |
| 3 Hard | 17-4PH stainless steel | Monel® |
| 4 Stem packing | TFE/316 stainless steel wafers | TFE/Monel® wafers |
| 5 Thread gland | 450 stainless steel | Monel® |
| 6 Lock nut | 316 stainless steel | 316 stainless steel |
| <i>Handle</i> | | |
| 7 1711 Series | Aluminum | Aluminum |
| 7 1751 Series | ABS | ABS |
| 8 Panel mounting nut | Nickel-plated brass | Nickel-plated brass |



Dimensions

1700 Series: Globe Pattern

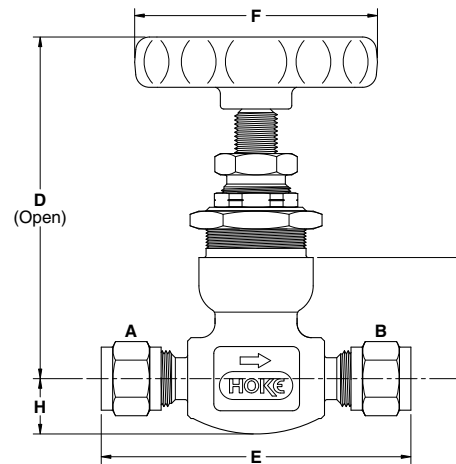
| INLET A | OUTLET B | | D | E | F | H | H' |
|---------------|---------------|------|----|----|----|----|----|
| ¼" GYROLOK® | ¼" GYROLOK® | inch | 3 | 2½ | 2½ | ½ | 1½ |
| | | mm | 76 | 52 | 54 | 13 | 27 |
| ¼" male NPT | ¼" male NPT | inch | 3 | 2¾ | 2½ | ½ | 1½ |
| | | mm | 76 | 56 | 54 | 13 | 27 |
| ¼" male NPT | ¼" female NPT | inch | 3 | 2½ | 2½ | ½ | 1½ |
| | | mm | 76 | 54 | 54 | 13 | 27 |
| ¼" female NPT | ¼" female NPT | inch | 3 | 2½ | 2½ | ½ | 1½ |
| | | mm | 76 | 52 | 54 | 13 | 27 |
| ⅜" GYROLOK® | ⅜" GYROLOK® | inch | 3 | 2½ | 2½ | ½ | 1½ |
| | | mm | 76 | 54 | 54 | 13 | 27 |
| 8mm GYROLOK® | 8mm GYROLOK® | inch | 3 | 2½ | 2½ | ½ | 1½ |
| | | mm | 76 | 68 | 54 | 13 | 27 |

Dimensions for reference only, subject to change.

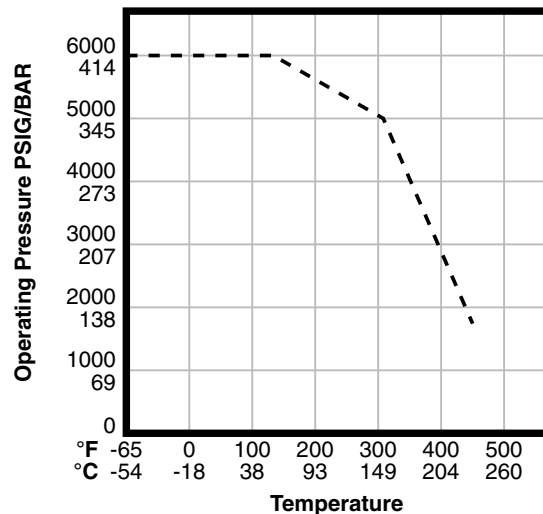
Panel mounting dimensions

Panel hole = 5/16" (22.6 mm) diameter

Panel thickness = 1/4" (6.4 mm) maximum

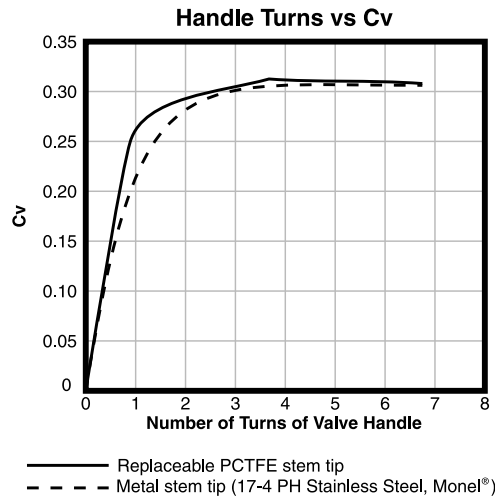


Pressure vs. Temperature Curve



1700 Series

Flow Curves



How to Order: Standard Valves



1711L4Y: Globe pattern

1700 Series: Globe Pattern

Metal stem tip for service to +450° F (+232° C)

0.187" (4.7mm) orifice/0.31 Cv

| END CONNECTIONS | | ORDER BY PART NUMBER | |
|-----------------|---------------|----------------------|---------|
| INLET | OUTLET | 316 STAINLESS STEEL | MONEL® |
| ¼" GYROLOK® | ¼" GYROLOK® | 1711G4Y | — |
| ¼" male NPT | ¼" male NPT | 1711M4Y | 1711M4M |
| ¼" male NPT | ¼" female NPT | 1711L4Y | — |
| ¼" female NPT | ¼" female NPT | 1711F4Y | 1711F4M |
| ⅜" GYROLOK® | ⅜" GYROLOK® | 1711G6Y | — |
| 8mm GYROLOK® | 8mm GYROLOK® | 1711G8YMM | — |

NOTE: For applications requiring TPED/PED certification, add a CE suffix to part number. Example: 1711 G4Y-CE.



1751G4Y: Globe pattern

1700 Series: Globe Pattern

PCTFE stem tip for service to +250° F (+121° C)

0.187" (4.7mm) orifice/0.31 Cv

| END CONNECTIONS | | ORDER BY PART NUMBER | |
|-----------------|---------------|----------------------|---------|
| INLET | OUTLET | 316 STAINLESS STEEL | MONEL® |
| ¼" GYROLOK® | ¼" GYROLOK® | 1751G4Y | — |
| ¼" male NPT | ¼" male NPT | 1751M4Y | 1751M4M |
| ¼" male NPT | ¼" female NPT | 1751L4Y | — |
| ¼" female NPT | ¼" female NPT | 1751F4Y | 1751F4M |
| ⅜" GYROLOK® | ⅜" GYROLOK® | 1751G6Y | — |
| 8mm GYROLOK® | 8mm GYROLOK® | 1751G8YMM | — |

FOR YOUR SAFETY

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. IMPROPER SELECTION OR USE OF PRODUCTS DESCRIBED HEREIN CAN CAUSE PERSONAL INJURY OR PROPERTY DAMAGE.

Ordering Options

Spare Parts

Spare parts and repair kits are available for all needle valves. Please contact your distributor for specific information.

Cleaning and Testing

When ordering, please specify if oxygen cleaning or helium leak testing is required.

Additional Sizes

Additional sizes and options are available on special request. Please consult your local HOKE distributor.



2100 Series

Bar Stock, Screwed Bonnet Needle Valves

This panel mountable, two-piece design is available in globe and angle patterns for flexibility of installation. Dyna-Pak® packing provides leak-tight sealing with low operating torque. Optional Graph-Lock® packing is available for high-temperature applications. The safety back-seating prevents accidental removal of the stem.



Typical Applications

- Hydraulic systems
- High temperature service to +600° F (+316° C)
- Gas sampling
- Test stands

Technical Data

| | |
|------------------------------------|--|
| BODY* | 316 stainless steel, carbon steel, brass |
| MAXIMUM OPERATING PRESSURE | <i>Stainless steel</i> 6000 psig @ 70° F (414 Bar @ 21° C) <i>Carbon steel</i> 5000 psig @ 70° F (345 Bar @ 21° C) <i>Brass</i> 3000 psig @ 70° F (207 Bar @ 21° C) |
| OPERATING TEMPERATURE RANGE | <i>Dyna-Pak®/Metal stem tip</i> -65° to +450° F (-54° to +232° C) <i>Dyna-Pak®/PCTFE stem tip</i> -20° to +250° F (-29° to +121° C) <i>Graph-Lock®/Metal stem tip</i> -60° to 600° F (-51° to 316° C) |
| ORIFICE SIZES | 0.188" (4.8mm), 0.250" (6.4mm), 0.313" (8.0mm) |
| Cv FACTORS | 0.40 to 1.20 |

* Consult factory for other materials

Features & Benefits

Safety

- Back seating provides added sealing protection
- Lock pin prevents accidental bonnet disengagement

High pressure capability

- 316 stainless steel valve maximum working pressure is 6000 psig (414 Bar)

Extended temperature range

- Choice of Dyna-Pak® packing or high temperature Graph-Lock® packing

Versatile

- Choice of regulating stem tip or metal stem with nonrotating replaceable PCTFE stem tip, with a variety of end connections

Reliability

- All valves are tested for bubble-tight leakage at both seat and packing

Panel mounting

- Panel mounting is standard on all models
- Special High Tolerance NPT Thread

needle valves

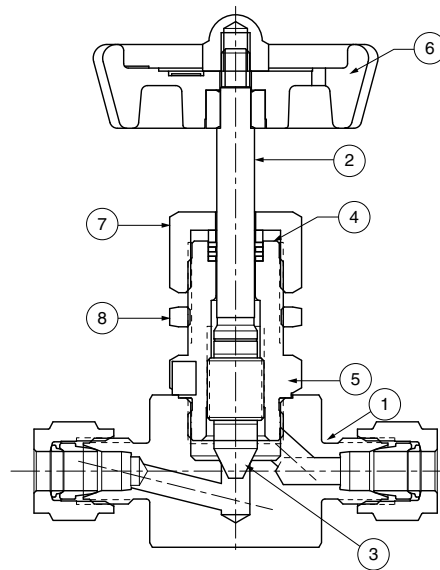
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PO Box 4866 • Spartanburg, SC 29305-4866
Phone (864) 574-7966 Fax (864) 587-5608
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2100 Series

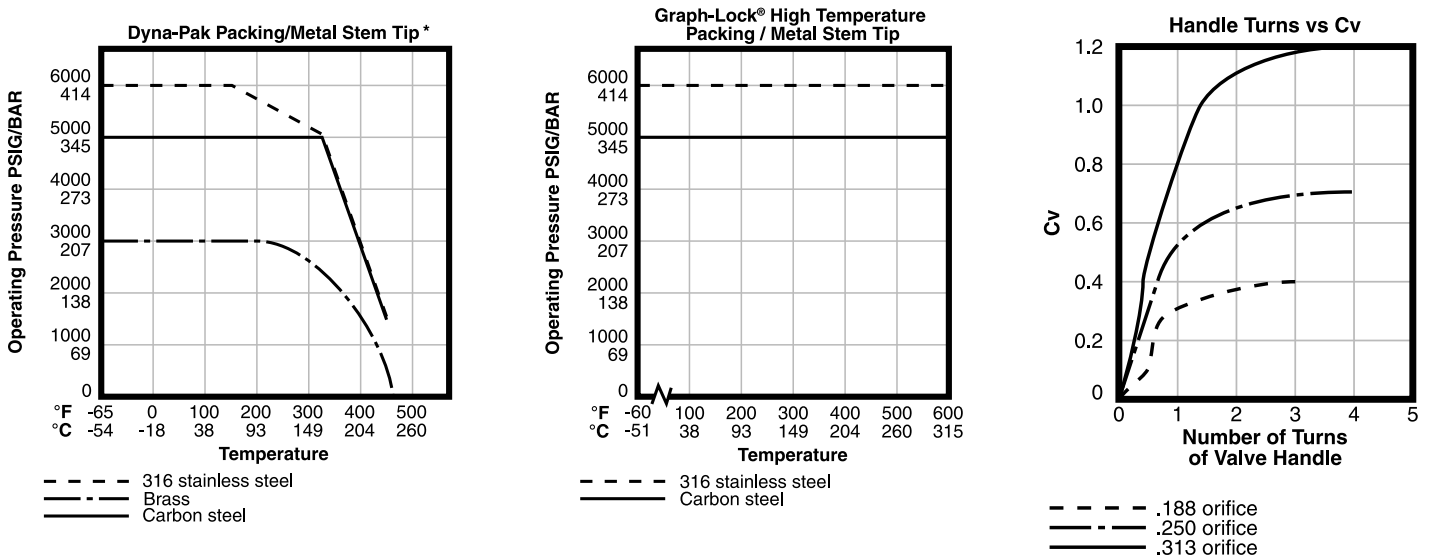
Materials of Construction

| | DESCRIPTION | BRASS | 316 STAINLESS STEEL | CARBON STEEL |
|---|---------------------------|---------------------|--------------------------------|--------------------------------|
| 1 | Body | Brass | 316 stainless steel | Carbon steel |
| 2 | Stem | 316 stainless steel | 316 stainless steel | Carbon steel |
| 3 | Stem tip | PCTFE | PCTFE | PCTFE |
| | soft | 316 stainless steel | 316 stainless steel | 316 stainless steel |
| 4 | Stem packing | TFE/brass wafers | TFE/316 stainless steel wafers | TFE/316 stainless steel wafers |
| | Dyna-Pak® packing | — | Graph-Lock® TFE wafers | Graph-Lock® TFE wafers |
| 5 | Bonnet | Brass | 316 stainless steel | Carbon steel |
| 6 | Handle | ABS wheel, black | ABS wheel, black | ABS wheel, black |
| | Valve w/Dyna-Pak® packing | — | Aluminum cross, red | Aluminum cross, red |
| 7 | Packing nut | Brass | 316 stainless steel | Carbon steel |
| 8 | Panel mounting nut | Nickel-plated brass | Nickel-plated brass | Nickel-plated brass |



Regulating stem tip shown

Pressure vs. Temperature Curves



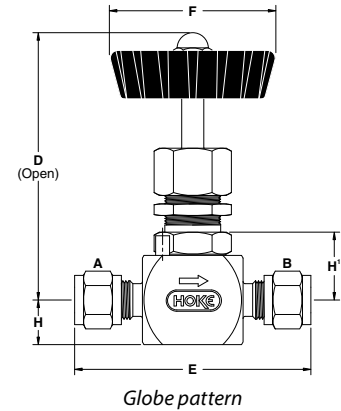
*Curves for PCTFE stem tip are the same as above but limited to -20° to +250°F (-29° to +121 °C)

2100 Series

Dimensions

2100 Series: Globe Pattern

| INLET A | OUTLET B | | D | E | F | | | H | H ¹ |
|-----------------|-----------------|------|--------|--------|-----------|-----------|--------------|-----|----------------|
| | | | | | HARD SEAT | SOFT SEAT | METAL HANDLE | | |
| 1/4" GYROLOK® | 1/4" GYROLOK® | inch | 3/4 | 2 1/16 | 1 7/8 | — | — | 1/2 | 2 5/32 |
| | | mm | 83 | 68 | 48 | — | — | 13 | 20 |
| 1/4" female NPT | 1/4" female NPT | inch | 3/4 | 2 | 1 7/8 | 1 3/8 | 2 3/8 | 1/2 | 3/4 |
| | | mm | 83 | 51 | 48 | 35 | 60 | 13 | 19 |
| 3/8" GYROLOK® | 3/8" GYROLOK® | inch | 3 5/16 | 2 1/16 | 1 7/8 | 1 7/8 | — | 1/2 | 3/4 |
| | | mm | 84 | 68 | 48 | 48 | — | 13 | 19 |
| 1/2" GYROLOK® | 1/2" GYROLOK® | inch | 3 5/16 | 2 3/16 | 1 7/8 | — | — | 1/2 | 3/4 |
| | | mm | 84 | 75 | 48 | — | — | 13 | 19 |
| 1/2" male NPT | 1/2" female NPT | inch | 3 3/4 | 2 3/4 | 1 7/8 | — | — | 5/8 | 3 1/32 |
| | | mm | 95 | 70 | 48 | — | — | 16 | 25 |
| 1/2" female NPT | 1/2" female NPT | inch | 3 3/4 | 2 1/2 | 2 3/8 | 1 7/8 | 2 3/8 | 5/8 | 1 5/16 |
| | | mm | 95 | 64 | 60 | 48 | 60 | 16 | 24 |



Globe pattern

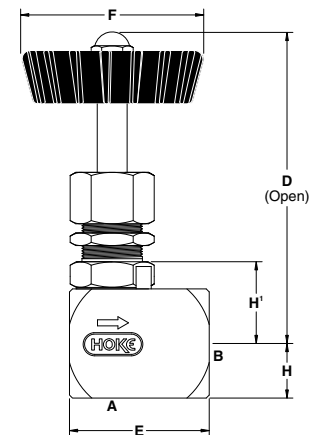
Dimensions for reference only, subject to change.

* Use metal handle dimensions for high temperature, 2118 Series valves.

2100 Series: Angle Pattern

| INLET A | OUTLET B | | D | E | F | | H | H ¹ |
|-----------------|-----------------|------|--------|--------|-----------|-----------|------|----------------|
| | | | | | HARD SEAT | SOFT SEAT | | |
| 1/4" female NPT | 1/4" female NPT | inch | 3 5/16 | 1 1/16 | 1 7/8 | 1 3/8 | 5/16 | 1 3/16 |
| | | mm | 84 | 37 | 48 | 35 | 14 | 21 |
| 3/8" female NPT | 3/8" female NPT | inch | 3 3/8 | 1 1/2 | 1 7/8 | — | 5/8 | 7/8 |
| | | mm | 86 | 38 | 48 | — | 16 | 22 |

Dimensions for reference only, subject to change.



Angle pattern

Panel mounting dimensions

Panel hole for 1/2" models = 4 3/4" (19.4 mm) diameter

for all other models = 4 1/4" (16.2 mm) diameter

Panel thickness = 3/16" (4.7 mm) maximum

How to Order: Standard Valves



2118G4Y: Globe pattern

2100 Series: Globe Pattern

Metal stem tip; Dyna-Pak® packing for service to +450° F (+232° C)

| END CONNECTIONS | | ORDER BY PART NUMBER | | | ORIFICE (IN INCHES) | Cv |
|-----------------|-----------------|----------------------|---------------------|--------------|---------------------|------|
| INLET | OUTLET | BRASS | 316 STAINLESS STEEL | CARBON STEEL | | |
| 1/4" GYROLOK® | 1/4" GYROLOK® | 2112G4B | 2112G4Y | — | 0.188 | 0.40 |
| 1/4" female NPT | 1/4" female NPT | 2112F4B | 2112F4Y | 2112F4E | 0.188 | 0.40 |
| 3/8" GYROLOK® | 3/8" GYROLOK® | — | 2112G6Y | — | 0.250 | 0.70 |
| 3/8" female NPT | 3/8" female NPT | 2112F6B | 2112F6Y | — | 0.250 | 0.70 |
| 1/2" GYROLOK® | 1/2" GYROLOK® | — | 2112G8Y | — | 0.313 | 1.20 |
| 1/2" male NPT | 1/2" female NPT | — | 2112L8Y | — | 0.313 | 1.20 |
| 1/2" female NPT | 1/2" female NPT | 2112F8B | 2112F8Y | 2112F8E | 0.313 | 1.20 |

2100 Series: Globe Pattern

Metal stem tip; Graph-Lock® high temperature packing for service to +600° F (+316° C)

| END CONNECTIONS | | ORDER BY PART NUMBER | | ORIFICE (IN INCHES) | Cv |
|-----------------|-----------------|----------------------|--------------|---------------------|------|
| INLET | OUTLET | 316 STAINLESS STEEL | CARBON STEEL | | |
| 1/4" GYROLOK® | 1/4" GYROLOK® | 2118G4Y | — | 0.188 | 0.40 |
| 1/4" female NPT | 1/4" female NPT | 2118F4Y | 2118F4E | 0.188 | 0.40 |
| 3/8" female NPT | 3/8" female NPT | 2118F6Y | — | 0.250 | 0.70 |
| 1/2" female NPT | 1/2" female NPT | 2118F8Y | 2118F8E | 0.313 | 1.20 |

FOR YOUR SAFETY

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. IMPROPER SELECTION OR USE OF PRODUCTS DESCRIBED HEREIN CAN CAUSE PERSONAL INJURY OR PROPERTY DAMAGE.

2100 Series



2122F4Y: Angle pattern

2100 Series: Globe Pattern

PCTFE stem tip; Dyna-Pak® packing for service to +250° F (+121° C)

| END CONNECTIONS | | ORDER BY PART NUMBER | | ORIFICE (IN INCHES) | Cv |
|-----------------|---------------|----------------------|-------------------|------------------------|------|
| INLET | OUTLET | BRASS | 316STAINLESSSTEEL | | |
| ¼" female NPT | ¼" female NPT | — | 2152F4Y | 0.188 | 0.40 |
| ½" female NPT | ½" female NPT | 2152F8B | 2152F8Y | 0.313 | 1.20 |

2100 Series: Angle Pattern

Metal stem tip; Dyna-Pak® packing for service to +450° F (+232° C)

| END CONNECTIONS | | ORDER BY PART NUMBER | | ORIFICE (IN INCHES) | Cv |
|-----------------|---------------|----------------------|-------------------|------------------------|------|
| INLET | OUTLET | BRASS | 316STAINLESSSTEEL | | |
| ¼" female NPT | ¼" female NPT | — | 2122F4Y | 0.188 | 0.40 |
| ⅜" female NPT | ⅜" female NPT | 2122F6B | — | 0.250 | 0.70 |

Ordering Options

Spare Parts

Spare parts and repair kits are available for all needle valves. Please contact your distributor for specific information.

Cleaning and Testing

When ordering, please specify if oxygen cleaning or helium leak testing is required.

Additional Sizes

Additional sizes and options are available upon special request. Please consult your local HOKE distributor.



2200 Series

Bar Stock, Screwed Bonnet Needle Valves

Dyna-Pak® packing below the stem threads, a hardened thread gland and a Hastelloy® C-276 stem tip keep valves leak-tight while providing long cycle life. A choice of two flow capabilities enables use in a variety of severe service applications.



Typical Applications

- Corrosive handling
- Sampling systems
- Metering service

Technical Data

| | |
|------------------------------------|-------------------------------------|
| BODY* | 316 stainless steel |
| MAXIMUM OPERATING PRESSURE | 5000 psig @ 70° F (345 Bar @ 21° C) |
| OPERATING TEMPERATURE RANGE | -65° to +450° F (-54° to +232° C) |
| ORIFICE SIZES | 0.086" to 0.313" (2.2 mm to 8.0 mm) |
| Cv FACTORS | 0.12 to 1.40 |

* Consult factory for other materials

Features & Benefits

Safety

- Lock pin prevents accidental bonnet disengagement

Durability

- Hastelloy® C-276 stem tip provides long service life

Extended temperature range

- Dyna-Pak® packing

Reliability

- All valves are tested for bubble-tight leakage at both seat and packing

Extended cycle life

- Dyna-Pak® packing below stem threads prevents washing away of thread lubricant and contamination of process fluid

Installation variety

- Choose from a broad selection of male NPT, female NPT and HOKE **GYROLOK**® tube fitting connections in globe or angle patterns

Panel mounting

- Panel mounting is standard on all models
- Special High Tolerance NPT Thread

needle valves

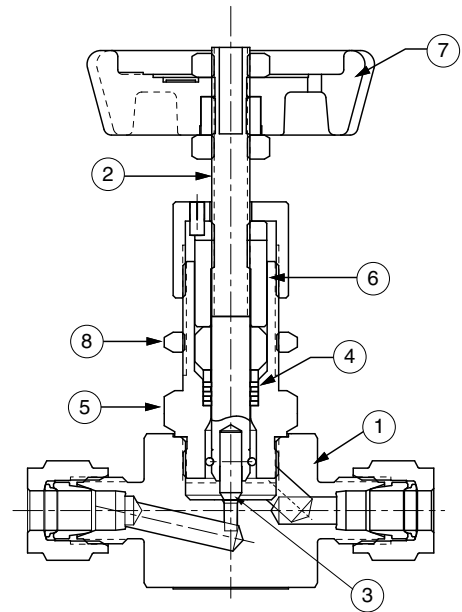
HOKE Inc.

PO Box 4866 • Spartanburg, SC 29305-4866
Phone (864) 574-7966 Fax (864) 587-5608
www.hoke.com • Sales-hoke@circor.com

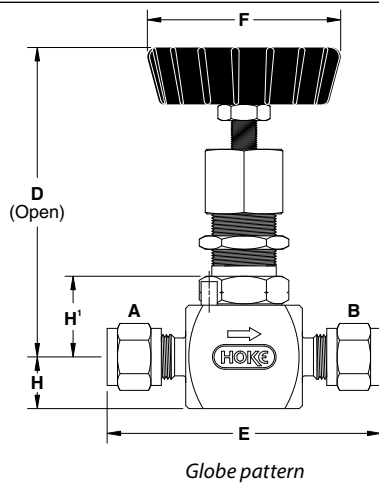
2200 Series

Materials of Construction

| DESCRIPTION | MATERIAL |
|------------------------------------|--------------------------------|
| 1 Body | 316 stainless steel |
| 2 Stem | 316 stainless steel |
| 3 Stem tip | Hastelloy® C-276 |
| 4 Stem packing | TFE/316 stainless steel wafers |
| 5 Bonnet | 316 stainless steel |
| 6 Thread gland | 416 stainless steel |
| <i>Handle</i> | |
| 7 2210, 2220 Series 2230 Series | Aluminum cross, red ABS |
| 8 Panel mounting nut | Nickel-plated brass |



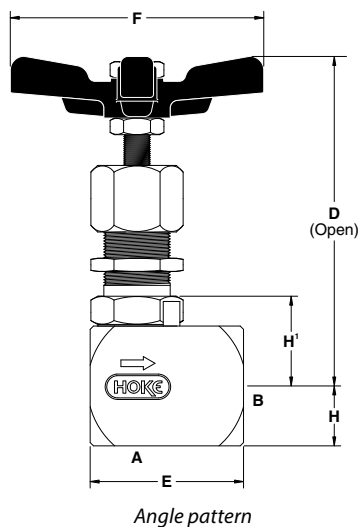
Dimensions



2200 Series: Globe Pattern

| INLET A | OUTLET B | D | E | F | H | H' |
|-----------------|-----------------|---------------|----------|-------|-----|--------|
| 1/4" GYROLOK® | 1/4" GYROLOK® | inch 3 5/16 | 2 23/32 | 2 3/8 | 1/2 | 2 5/32 |
| | | mm 84 | 67 | 60 | 13 | 20 |
| 1/4" female NPT | 1/4" female NPT | inch 3 5/16 | 2 | 2 3/8 | 1/2 | 1 3/16 |
| | | mm 84 | 51 | 60 | 13 | 21 |
| 3/8" GYROLOK® | 3/8" GYROLOK® | inch 3 1/4 | 2 1 1/16 | 2 3/8 | 1/2 | 3/4 |
| | | mm 83 | 68 | 60 | 13 | 19 |
| 3/8" female NPT | 3/8" female NPT | inch 3 5/16 | 2 | 2 3/8 | 1/2 | 1 3/16 |
| | | mm 84 | 51 | 60 | 13 | 21 |
| 1/2" GYROLOK® | 1/2" GYROLOK® | inch 3 1/4 | 2 1 5/16 | 2 3/8 | 1/2 | 2 5/32 |
| | | mm 83 | 75 | 60 | 13 | 20 |
| 1/2" male NPT | 1/4" female NPT | inch 3 5/16 | 2 1/8 | 2 3/8 | 1/2 | 1 3/16 |
| | | mm 84 | 54 | 60 | 13 | 21 |
| 1/2" female NPT | 1/2" female NPT | inch 3 1 1/16 | 2 1/2 | 2 3/8 | 5/8 | 7/8 |
| | | mm 94 | 64 | 60 | 16 | 22 |
| 10mm GYROLOK® | 10mm GYROLOK® | inch 3 5/16 | 2 1 1/16 | 2 3/8 | 1/2 | 2 5/32 |
| | | mm 84 | 68 | 60 | 13 | 20 |
| 12mm GYROLOK® | 12mm GYROLOK® | inch 3 5/16 | 2 1 5/16 | 2 3/8 | 1/2 | 3/4 |
| | | mm 84 | 75 | 60 | 13 | 19 |

Dimensions for reference only, subject to change.



2200 Series: Angle Pattern

| INLET A | OUTLET B | D | E | F | H | H' |
|-----------------|-----------------|-------------|--------|-------|-----|-----|
| 1/4" female NPT | 1/4" female NPT | inch 3 5/16 | 1 7/16 | 2 3/8 | 3/8 | 7/8 |
| | | mm 90 | 37 | 60 | 14 | 22 |

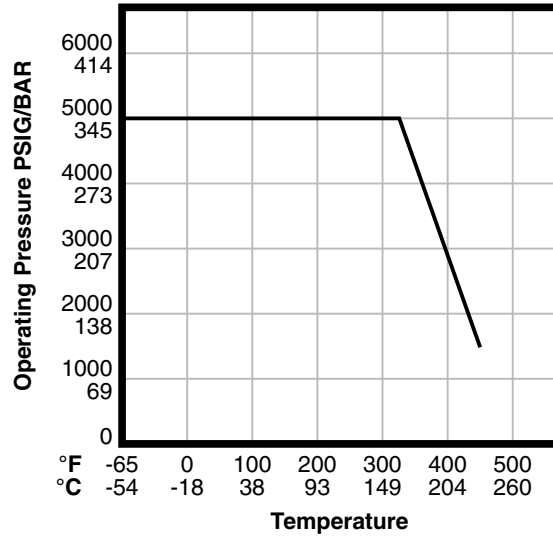
Dimensions for reference only, subject to change.

Panel mounting dimensions

Panel hole: for 1/2" models = 4 5/4" (19.4 mm) diameter
 for all other models = 4 1/4" (16.2 mm) diameter
 Panel thickness = 3/16" (4.7 mm) maximum

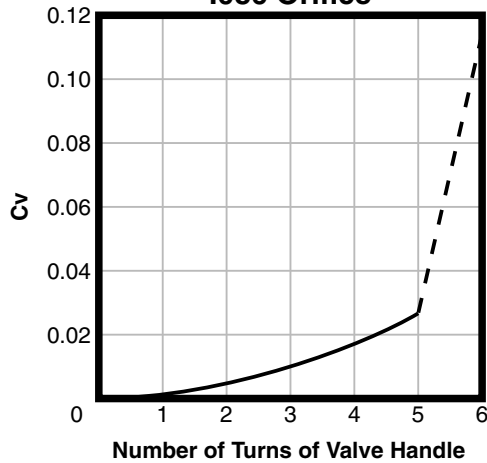
2200 Series

Pressure vs. Temperature Curve

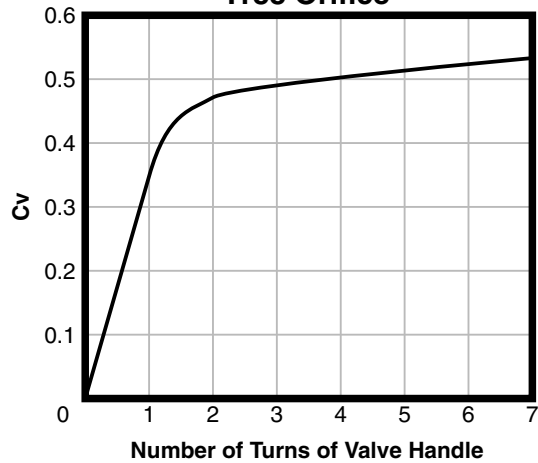


Flow Curves

**Handle Turns vs Cv
.086 Orifice**

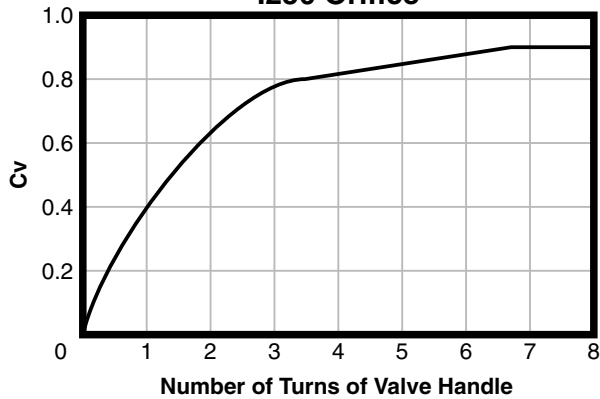


**Handle Turns vs Cv
.188 Orifice**

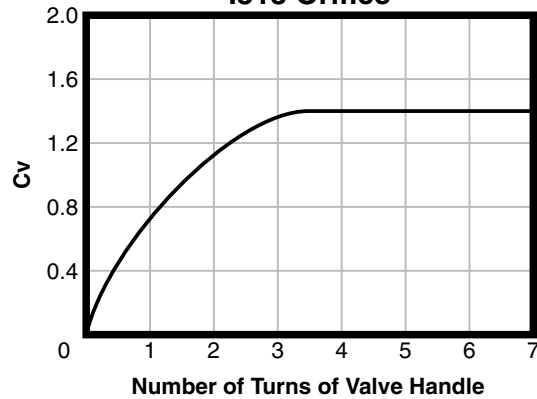


Note: Metering range of valve is within the first 5 handle turns.

**Handle Turns vs Cv
.250 Orifice**

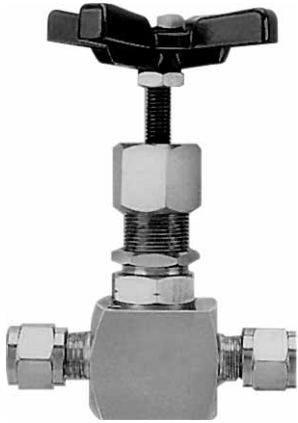


**Handle Turns vs Cv
.313 Orifice**



2200 Series

How to Order: Standard Valves



2215G6Y: Globe pattern



Regulating stem tip
(for greater control
of flow)



2225F4Y: Angle pattern



Blunt vee-point tip
(full flow with only
a few handle turns)

2200 Series: Globe Pattern

Blunt vee-point stem tip

| END CONNECTIONS | | ORDER BY PART NUMBER 316 STAINLESS STEEL | ORIFICE (INCHES) | Cv |
|-----------------|-----------------|---|---------------------|------|
| INLET | OUTLET | | | |
| 1/4" GYROLOK® | 1/4" GYROLOK® | 2215G4Y | 0.188 | 0.40 |
| 1/4" female NPT | 1/4" female NPT | 2215F4Y | 0.188 | 0.50 |
| 3/8" GYROLOK® | 3/8" GYROLOK® | 2215G6Y | 0.250 | 0.76 |
| 3/8" female NPT | 3/8" female NPT | 2215F6Y | 0.250 | 0.90 |
| 1/2" GYROLOK® | 1/2" GYROLOK® | 2215G8Y | 0.250 | 0.90 |
| 1/2" male NPT | 1/4" female NPT | 2215L84Y | 0.188 | 0.50 |
| 1/2" female NPT | 1/2" female NPT | 2215F8Y | 0.313 | 1.40 |
| 10mm GYROLOK® | 10mm GYROLOK® | 2215G10YMM | 0.250 | 0.90 |
| 12mm GYROLOK® | 12mm GYROLOK® | 2215G12YMM | 0.250 | 0.90 |

2200 Series: Globe Pattern

Regulating stem tip

| END CONNECTIONS | | ORDER BY PART NUMBER 316 STAINLESS STEEL | ORIFICE (INCHES) | Cv |
|-----------------|-----------------|---|---------------------|------|
| INLET | OUTLET | | | |
| 1/4" female NPT | 1/4" female NPT | 2232F4Y | 0.086 | 0.12 |

2200 Series: Angle Pattern

Blunt vee-point stem tip

| END CONNECTIONS | | ORDER BY PART NUMBER 316 STAINLESS STEEL | ORIFICE (INCHES) | Cv |
|-----------------|-----------------|---|---------------------|------|
| INLET | OUTLET | | | |
| 1/4" female NPT | 1/4" female NPT | 2225F4Y | 0.188 | 0.55 |

Ordering Options

Spare Parts

Spare parts and repair kits are available for all needle valves. Please contact your distributor for specific information.

Cleaning and Testing

When ordering, please specify if oxygen cleaning or helium leak testing is required.

Additional Sizes

Additional sizes and options are available on special request. Please consult your local HOKE distributor.

FOR YOUR SAFETY

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. IMPROPER SELECTION OR USE OF PRODUCTS DESCRIBED HEREIN CAN CAUSE PERSONAL INJURY OR PROPERTY DAMAGE.



2219 Series

Severe Service Needle Valves

The new HOKE 2219 Needle Valve is an excellent choice for many steam- and severe service applications. Grafoil® packing below the stem threads provides exceptional service at temperatures up to +1000° F (+538° C). The non-rotating 316 stainless steel stem tip prevents galling.



Typical Applications

- Steam service in power plants
- Hot condensates

Technical Data

| | |
|-------------------------------------|--|
| BODY MATERIAL | 316 stainless steel, carbon steel, Hastelloy® C-276, and Monel® |
| MAXIMUM OPERATING PRESSURE | 6000 psig @ 70° F (414 Bar @ 21° C) |
| PROOF PRESSURE SAFETY FACTOR | 2:1 |
| BURST PRESSURE | 4:1 |
| TEMPERATURE RANGE | -100° F to + 1000° F @ 1750 psig max. (-75° C to + 538° C @ 120 bar max.) |
| ORIFICE SIZES | 0.170", 0.250", 0.312", and 0.437" (4.3 mm, 6.4 mm, 7.9 mm, and 11.1 mm) |
| C_v FACTORS* | 0.47, 1.09, and 1.20 |

* C_v factor for 0.437" orifice not available at time of publication

Features & Benefits

- Meets ANSI 900# specifications
- Grafoil® packing below threads isolates threads from media.
- Non-rotating 316 stainless steel stem tip prevents galling
- High pressure / high temperature use
- All standard components are 316 stainless steel
- Standard 316 stainless steel cast handle
- Fractional end connections available up to 1"; metric end connections up to 25 mm
- **GYROLOK®**, female NPT, NPS-, or tube socket weld end connections
- Bubble-tight leak testing at both seat and packing
- Special High Tolerance NPT Thread

needle valves

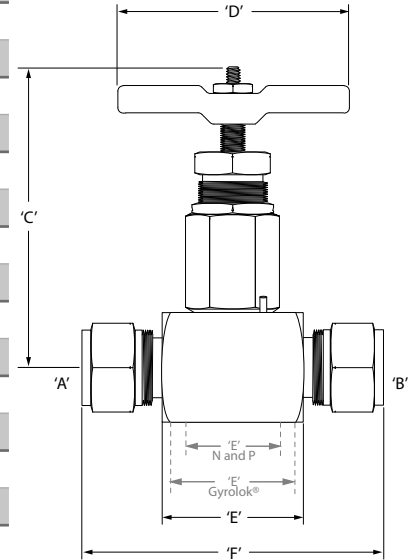
HOKE Inc.

PO Box 4866 • Spartanburg, SC 29305-4866
Phone (864) 574-7966 Fax (864) 587-5608
www.hoke.com • Sales-hoke@circor.com

2219 Series Severe Service Needle Valve

Dimensions

| INLET A | OUTLET B | ORIFICE SIZE | C | | D | E | F |
|---------------------|---------------------|------------------|------|------|------|------|------|
| | | | inch | mm | | | |
| ¼" female NPT | ¼" female NPT | 0.250" (6.4 mm) | inch | 3.4 | 2.63 | 2.25 | N/A |
| | | | mm | 86.4 | | | 66.8 |
| ½" female NPT | ½" female NPT | 0.312" (7.9 mm) | inch | 3.4 | 2.63 | 2.51 | N/A |
| | | | mm | 86.4 | | | 66.8 |
| ¾" female NPT | ¾" female NPT | 0.437" (11.1 mm) | inch | 3.55 | 2.63 | 3.50 | N/A |
| | | | mm | 89.6 | | | 66.8 |
| 1" female NPT | 1" female NPT | 0.437" (11.1 mm) | inch | 3.59 | 2.63 | 4.25 | N/A |
| | | | mm | 91.3 | | | 66.8 |
| ¼" GYROLOK® | ¼" GYROLOK® | 0.170" (4.3 mm) | inch | 3.4 | 2.63 | 1.87 | 3.15 |
| | | | mm | 86.4 | | | 66.8 |
| ½" GYROLOK® | ½" GYROLOK® | 0.250" (6.4 mm) | inch | 3.4 | 2.63 | 1.50 | 3.43 |
| | | | mm | 86.4 | | | 66.8 |
| ¾" GYROLOK® | ¾" GYROLOK® | 0.437" (11.1 mm) | inch | 3.53 | 2.63 | 2.88 | 4.87 |
| | | | mm | 89.7 | | | 66.8 |
| 1" GYROLOK® | 1" GYROLOK® | 0.437" (11.1 mm) | inch | 3.53 | 2.63 | 2.51 | 5.00 |
| | | | mm | 89.7 | | | 66.8 |
| 12 mm GYROLOK® | 12 mm GYROLOK® | 0.250" (6.4 mm) | inch | 3.40 | 2.63 | 1.51 | 3.36 |
| | | | mm | 86.4 | | | 66.8 |
| 22 mm GYROLOK® | 22 mm GYROLOK® | 0.437" (11.1 mm) | inch | 3.53 | 2.63 | 2.76 | 4.86 |
| | | | mm | 89.7 | | | 66.8 |
| 25 mm GYROLOK® | 25 mm GYROLOK® | 0.437" (11.1 mm) | inch | 3.53 | 2.63 | 2.51 | 5.11 |
| | | | mm | 89.7 | | | 66.8 |
| ⅜" tube socket weld | ⅜" tube socket weld | 0.250" (6.4 mm) | inch | 3.4 | 2.63 | 1.94 | 2.44 |
| | | | mm | 86.4 | | | 66.8 |
| ½" tube socket weld | ½" tube socket weld | 0.250" (6.4 mm) | inch | 3.40 | 2.63 | 1.94 | 2.44 |
| | | | mm | 86.4 | | | 66.8 |
| ¾" tube socket weld | ¾" tube socket weld | 0.437" (11.1 mm) | inch | 3.53 | 2.63 | 2.50 | 3.50 |
| | | | mm | 89.7 | | | 66.8 |
| 1" tube socket weld | 1" tube socket weld | 0.437" (11.1 mm) | inch | 3.53 | 2.63 | 2.50 | 3.50 |
| | | | mm | 89.7 | | | 66.8 |
| ⅜" NPS socket weld | ⅜" NPS socket weld | 0.250" (6.4 mm) | inch | 3.4 | 2.63 | 2.01 | 2.51 |
| | | | mm | 56.4 | | | 66.8 |
| ½" NPS socket weld | ½" NPS socket weld | 0.312" (7.9 mm) | inch | 3.4 | 2.63 | 1.75 | 2.51 |
| | | | mm | 86.4 | | | 66.8 |
| ¾" NPS socket weld | ¾" NPS socket weld | 0.437" (11.1 mm) | inch | 3.53 | 2.63 | 2.50 | 3.50 |
| | | | mm | 89.7 | | | 66.8 |
| 1" NPS socket weld | 1" NPS socket weld | 0.437" (11.1 mm) | inch | 3.59 | 2.63 | 2.50 | 3.50 |
| | | | mm | 91.3 | | | 66.8 |

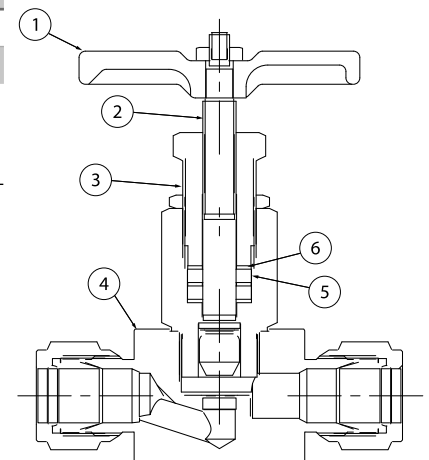


Dimensions for reference only, subject to change.

Materials of Construction*

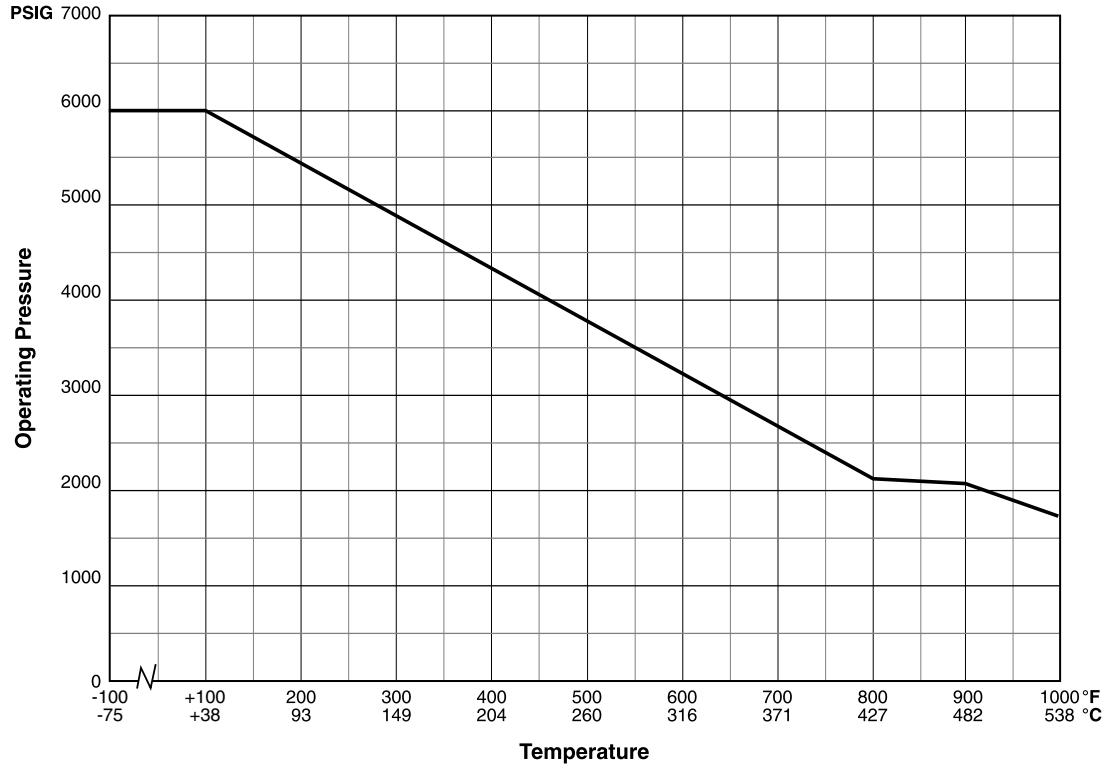
| DESCRIPTION | MATERIAL |
|------------------|---------------------|
| 1 Handle | 316 stainless steel |
| 2 Stem assembly | 316 stainless steel |
| 3 Packing nut | 316 stainless steel |
| 4 Body | 316 stainless steel |
| 5 Packing | Grafoil® |
| 6 Packing washer | 316 stainless steel |

* This listing contains standard valve information only. See page 19 for a complete list of options.



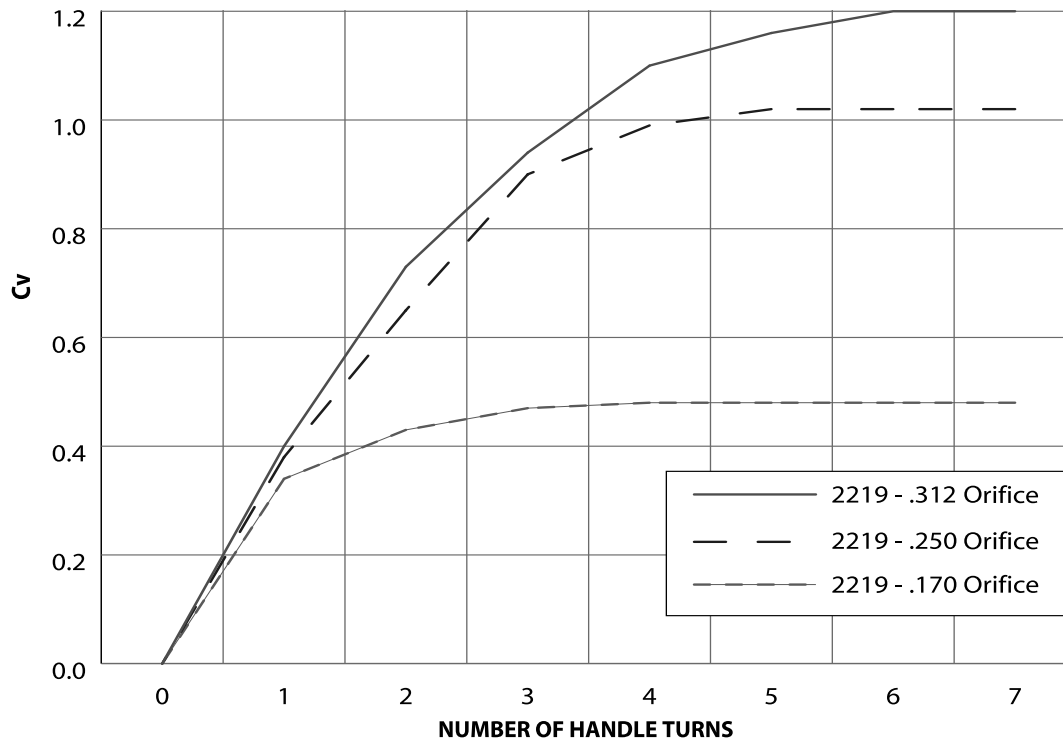
2219 Series Severe Service Needle Valve

Pressure vs. Temperature Curve



Flow Curves

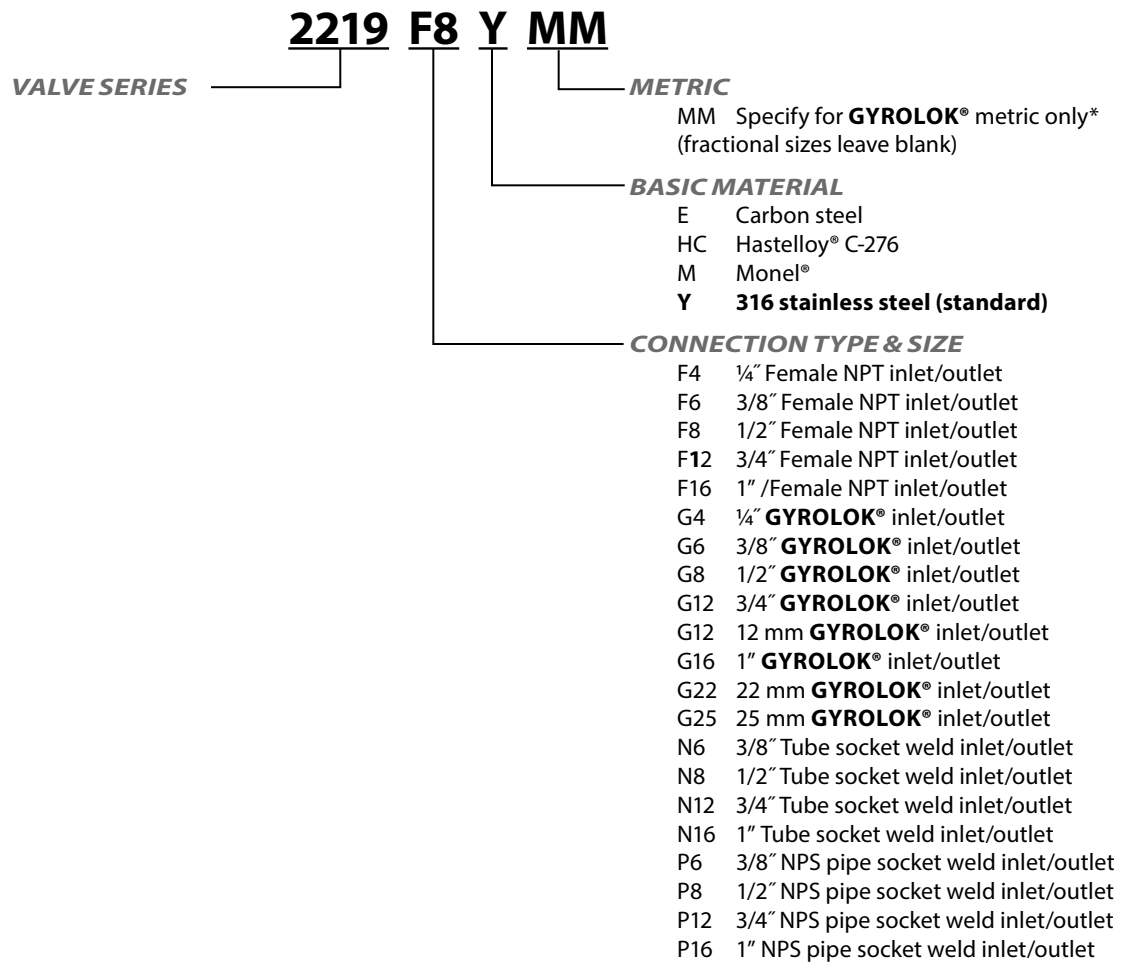
Handle Turns vs. C_v



* Data for 0.437" orifice not available at time of publication

2219 Series Severe Service Needle Valve

How to Order: Build-to-Order



* Consult factory for metric connections and additional material options.

For Your Safety

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. Improper selection or use of products described herein can cause personal injury or property damage.

GYROLOK® is a registered trademark of HOKE, Inc.

Grafoil® is a registered trademark of Union Carbide Corp.

Hastelloy® is a registered trademark of Haynes International, Inc.

Monel® is a registered trademark of Special Metals Corporation.

www.HOKE.com

www.unioncarbide.com

www.haynesintl.com

www.specialmetals.com



2700 Series

Bar Stock, Screwed Bonnet Needle Valves for Sour Gas Service

Featuring packing below the stem threads, nonrotating metal stem tip, hardened thread gland and a 316 stainless steel body, these valves are well suited for sour gas applications as well as other severe service applications.



Typical Applications

- Refineries
- Chemical processing
- Oil and gas exploration

Technical Data

| | |
|------------------------------------|-------------------------------------|
| BODY | 316 stainless steel |
| MAXIMUM OPERATING PRESSURE | 6000 psig @ 70° F (414 Bar @ 21° C) |
| OPERATING TEMPERATURE RANGE | -65° to +450° F (-54° to +232° C) |
| ORIFICE | 0.187" (4.8 mm) |
| Cv FACTOR | 0.60 |
| END CONNECTIONS | 1/2" female x 1/2" female NPT |

Features & Benefits

Safety

- Lock pin secures packing nut against accidental removal

Sour gas service

- Materials offer corrosion-resistant properties where hydrogen sulfide is present.

Corrosion resistance

- All wetted parts constructed of high chrome, high nickel austenitic stainless steel provide uniform chemical corrosion properties

Helps eliminate fugitive emissions

- Dyna-Pak® packing below the stem threads prevents fluid from contacting stem threads

Extended cycle life

- Nonrotating 17-4PH stainless steel stem tip and XM-19 stainless steel stem prevent galling

Reliability

- All valves are tested for bubble-tight leakage at both seat and packing
- Special High Tolerance NPT Thread

needle valves

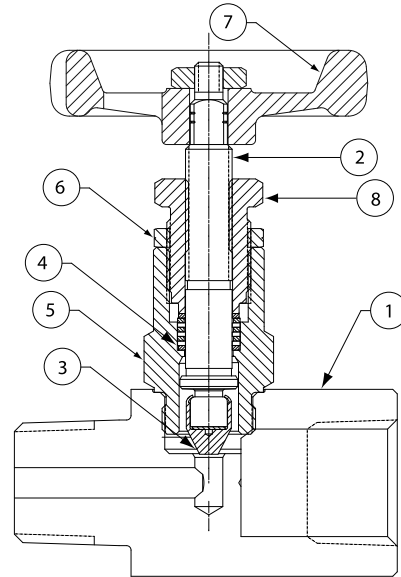
HOKE Inc.

PO Box 4866 • Spartanburg, SC 29305-4866
Phone (864) 574-7966 Fax (864) 587-5608
www.hoke.com • Sales-hoke@circor.com

2700 Series

Materials of Construction

| DESCRIPTION | MATERIALS |
|----------------|--------------------------------|
| 1 Body | 316 stainless steel |
| 2 Stem | XM-19 stainless steel |
| 3 Stem tip | 17-4PH stainless steel |
| 4 Stem packing | TFE/316 stainless steel wafers |
| 5 Bonnet | XM-19 stainless steel |
| 6 Lock nut | 316 stainless steel |
| 7 Handle | Aluminum |
| 8 Packing nut | XM-28 stainless steel |

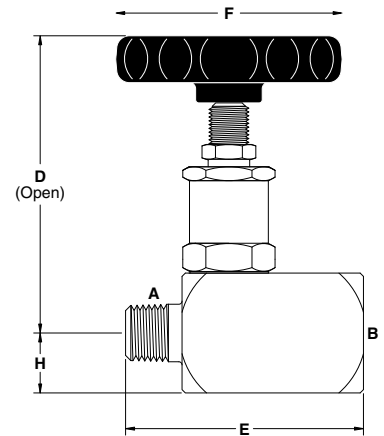


Dimensions

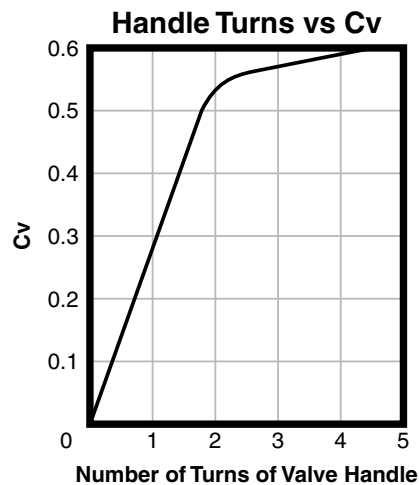
2700 Series: Globe Pattern

| INLET A | OUTLET B | | D | E | F | H |
|---------------|---------------|------|----|----|----|----|
| ½" male NPT | ½" female NPT | inch | 3⅞ | 2⅞ | 2⅞ | ⅝ |
| | | mm | 78 | 65 | 54 | 16 |
| ½" female NPT | ½" female NPT | inch | 3⅞ | 2½ | 2⅞ | ⅝ |
| | | mm | 78 | 64 | 54 | 16 |

Dimensions for reference only, subject to change.

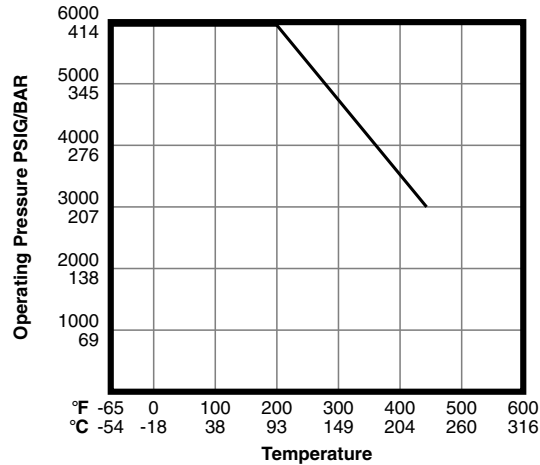


Flow Curve



2700 Series

Pressure vs. Temperature Curve



How to Order: Standard Valves

2700 Series: Globe Pattern

17-4PH stainless steel stem tip

0.187" (4.7mm) orifice/0.60 Cv

| END CONNECTIONS | | ORDER BY PART NUMBER* |
|-----------------|---------------|-----------------------|
| INLET | OUTLET | 316 STAINLESS STEEL |
| ½" male NPT | ½" female NPT | 2732L8YX |
| ½" female NPT | ½" female NPT | 2732F8YX |

* It is the end-user's responsibility to determine if this product is compatible with their sour gas application. Contact HOKE for information concerning properties.



2732L8Y: Globe pattern

FOR YOUR SAFETY

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. IMPROPER SELECTION OR USE OF PRODUCTS DESCRIBED HEREIN CAN CAUSE PERSONAL INJURY OR PROPERTY DAMAGE.

Ordering Options

Spare Parts

Spare parts and repair kits are available for all needle valves. Please contact your distributor for specific information.

Cleaning and Testing

When ordering, please specify if oxygen cleaning or helium leak testing is required.

Additional Sizes

Additional sizes and options are available on special request. Please consult your local HOKE distributor.



2800 Series

Forged Body, Union Bonnet Needle Valves

For the most severe service applications, these valves feature a stem backseat for safety, a long cycle life with high temperature capability to 700° F (370° C), and a union bonnet for safe, convenient maintenance.



Typical Applications

- High temperature service to 700° F (370° C)
- Corrosive handling
- Reactive and hot condensates

Technical Data

| | |
|------------------------------------|--|
| BODY | 316 stainless steel |
| MAXIMUM OPERATING PRESSURE | <i>Grafoil® packing:</i> <ul style="list-style-type: none">• 4000 psig @ 70° F (276 Bar @ 21° C)• 2500 psig @ 700° F (172 Bar @ 370° C) <i>Dyna-Pak® packing:</i> <ul style="list-style-type: none">• 5000 psig @ 70° F (345 Bar @ 21° C) |
| OPERATING TEMPERATURE RANGE | <i>Grafoil® packing</i> -100° to +700° F (-75° to +370° C) <i>Dyna-Pak® packing</i> -40° to +450° F (-40° to +232° C) |
| ORIFICE | 0.312" (7.9 mm) |
| Cv FACTOR | 1.10 |

Features & Benefits

Safety

- Integral stem backseat
- Union bonnet design

High temperature service

- Grafoil® packing ring located below stem threads extends service to 700° F (370° C)

Extended cycle life

- 17-4PH stainless steel hardened stem with dry film lubricant on threads and hardened thread gland for increased thread life
- Nonrotating hardened stem tip prevents galling

Reliability

- All valves are tested for bubble-tight leakage at both seat and packing

Installation variety

- Choice of HOKE **GYROLOK®** tube fittings, female NPT, or tube socket weld connections

Panel mounting

- Panel mounting is standard on all models
- Special High Tolerance NPT Thread

needle valves

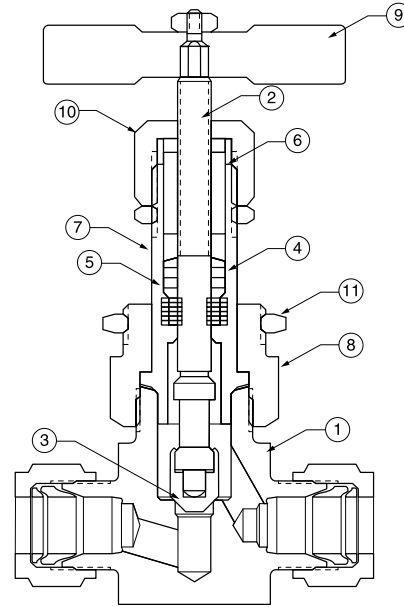
HOKE Inc.

PO Box 4866 • Spartanburg, SC 29305-4866
Phone (864) 574-7966 Fax (864) 587-5608
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2800 Series

Materials of Construction

| DESCRIPTION | MATERIAL |
|-----------------------|-------------------------------|
| 1 Body | 316 stainless steel |
| 2 Stem | 17-4PH stainless steel |
| 3 Stem tip | 17-4PH stainless steel |
| <i>Stem packing</i> | |
| 4 Grafoil® packing | Grafoil® |
| Dyna-Pak® packing | TFE/316 stainless steel wafer |
| 5 Ring gland | 316 stainless steel |
| 6 Thread gland | 416 stainless steel |
| 7 Housing | XM-19 stainless steel |
| 8 Adapter nut | 316 stainless steel |
| 9 Handle | 316 stainless steel |
| 10 Packing nut | 316 stainless steel |
| 11 Panel mounting nut | 316 stainless steel |



Dimensions

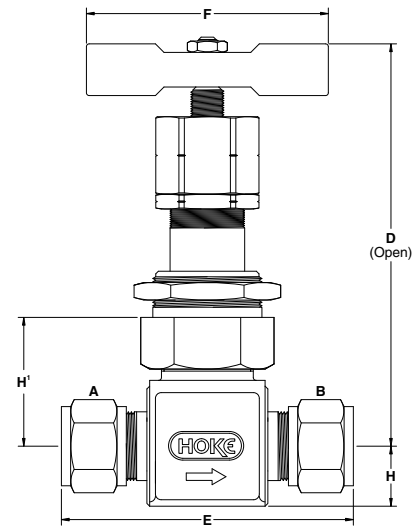
| INLET A AND OUTLET B | | D | E | F | H | H' |
|----------------------|------|-----|----|----|----|----|
| ¼" GYROLOK® | inch | 4¾ | 2½ | 2¾ | ¾ | 1½ |
| | mm | 121 | 75 | 67 | 16 | 36 |
| ⅜" GYROLOK® | inch | 4¾ | 2½ | 2¾ | ¾ | 1½ |
| | mm | 121 | 75 | 67 | 16 | 36 |
| ⅜" socket weld | inch | 4¾ | 2½ | 2¾ | ¾ | 1½ |
| | mm | 121 | 62 | 67 | 16 | 36 |
| ½" GYROLOK® | inch | 4¾ | 3½ | 2¾ | ¾ | 1½ |
| | mm | 121 | 84 | 67 | 16 | 36 |
| ½" female NPT | inch | 4¾ | 2½ | 2¾ | ¾ | 1½ |
| | mm | 121 | 62 | 67 | 16 | 36 |
| ½" socket weld | inch | 4¾ | 2½ | 2¾ | ¾ | 1½ |
| | mm | 121 | 62 | 67 | 16 | 36 |

Dimensions for reference only, subject to change.

Panel mounting

Panel hole = 1⅜" (30.2 mm) diameter

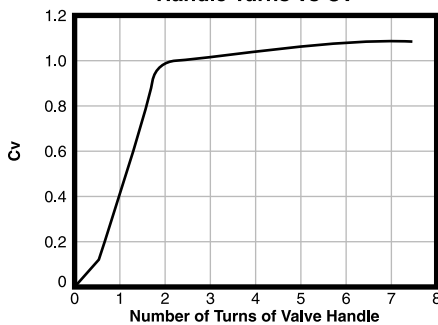
Panel thickness = ⅜" (4.7 mm) maximum



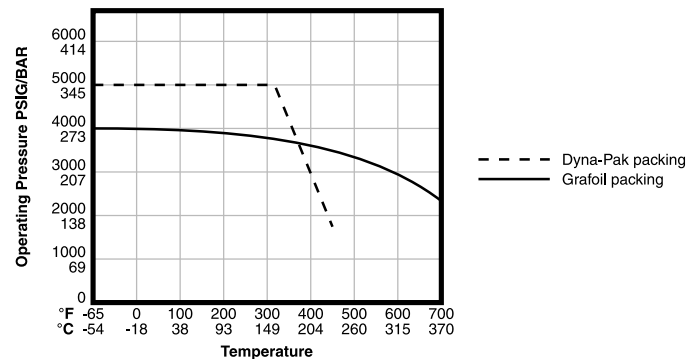
2800 Series

Curves

Handle Turns vs Cv



Pressure vs Temperature



2800 Series

How to Order: Standard Valves



2813F8Y: Globe pattern

2800 Series Globe Pattern

Metal stem tip; Dyna-Pak® packing for service to +450° F (232° C) at 1800 psi

0.312" orifice/1.10 Cv

| END CONNECTIONS | ORDER BY PART NUMBER |
|-------------------------|----------------------------|
| INLET AND OUTLET | 316 STAINLESS STEEL |
| ½" female NPT | 2813F8Y |
| ½" GYROLOK ® | 2813G8Y |



2811G8Y: Globe pattern

2800 Series Globe Pattern

Metal stem tip; Grafoil® packing for service to +700° F (371° C) at 2500 psi

0.312" orifice/1.10 Cv

| END CONNECTIONS | ORDER BY PART NUMBER |
|-------------------------|----------------------------|
| INLET AND OUTLET | 316 STAINLESS STEEL |
| ¼" GYROLOK ® | 2811G4Y |
| ⅜" GYROLOK ® | 2811G6Y |
| ⅜" socket weld | 2811N6Y |
| ½" GYROLOK ® | 2811G8Y |
| ½" female NPT | 2811F8Y |
| ½" socket weld | 2811N8Y |

FOR YOUR SAFETY

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Ordering Options

Spare Parts

Spare parts and repair kits are available for all needle valves. Please contact your distributor for specific information.

Cleaning and Testing

When ordering, please specify if oxygen cleaning or helium leak testing is required.

Additional Sizes

Additional sizes and options are available on special request. Please consult your local HOKE distributor.



3700, 3800, 3900 Series

Forged Body, Integral Bonnet Needle Valves

Offered in four different body materials, this group of valves can handle a wide range of general purpose liquid and gas applications. Six types of stem tips are available, including two styles of vee-points.



Typical Applications

- Instrument air lines
- Sampling
- Gas chromatography
- Test stands
- Cylinder valves

Technical Data

| | |
|------------------------------------|--|
| BODY* | 316 stainless steel, Monel®, carbon steel, brass |
| MAXIMUM OPERATING PRESSURE | 316 stainless steel, Monel®, carbon steel 5000 psig @ 70° F (345 Bar @ 21° C) Brass 3000 psig @ 70° F (207 Bar @ 21° C) |
| OPERATING TEMPERATURE RANGE | Metal stem tip -65° to +450° F (-54° to +232° C) PCTFE stem tip -20° to +250° F (-29° to +121° C) |
| ORIFICE SIZES | 0.060" to 0.312" (1.5 mm to 7.9 mm) |
| Cv FACTORS | 0.07 to 1.10 |

* Consult factory for other materials

Features & Benefits

Safety

- Integral bonnet provides differential thread pitch between stem threads and packing nut thread preventing accidental stem removal

Stem tip options

- A choice of PCTFE, metal, vee-point, blunt vee-point, or regulating stem tips

Helps eliminate fugitive emissions

- Dyna-Pak® packing provides a leak-tight seal with low operating torque in deep vacuum or high pressure applications

Dependability

- All valves are tested for bubble-tight leakage at both seat and packing

Installation variety

- Broad selection of male NPT, female NPT, and HOKE **GYROLOK**® fractional or metric tube fitting connections

Handle options

- Color-coded handles are available for identifying system fluids

Panel mounting available

- All models can be ordered for panel mounting

Easy maintenance

- All models can be panel mounted without packing disruption. Packing can be adjusted without removal from panel
- Special High Tolerance NPT Thread

needle valves

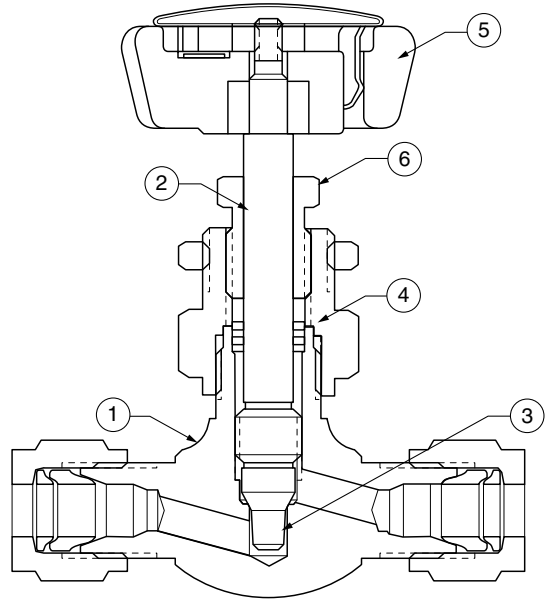
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Phone (864) 574-7966 Fax (864) 587-5608
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3700, 3800, 3900 Series

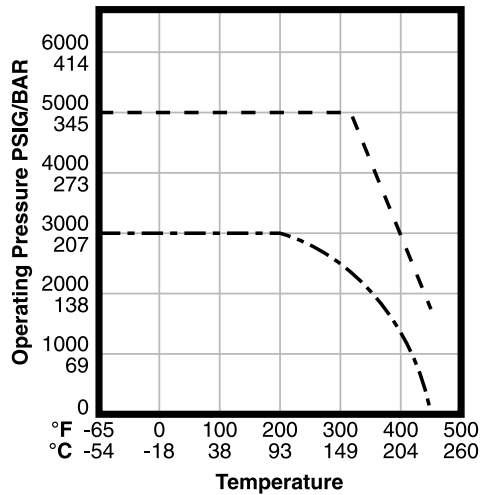
Materials of Construction

| | DESCRIPTION | BRASS | 316 STAINLESS STEEL | CARBON STEEL | MONEL® |
|---|--------------------|------------------------|--------------------------------|--------------------------------|---------------------|
| 1 | Body | Brass | 316 stainless steel | Carbon steel | Monel® |
| 2 | Stem | 316 stainless steel | 316 stainless steel | 316 stainless steel | Monel® |
| 3 | Stem tip | PCTFE | PCTFE | PCTFE | PCTFE |
| | soft | 17-4PH stainless steel | 17-4PH stainless steel | 17-4PH stainless steel | Monel® |
| 4 | Stem packing | TFE/brass wafers | TFE/316 stainless steel wafers | TFE/316 stainless steel wafers | TFE/Monel® wafers |
| 5 | Handle | ABS | ABS | ABS/aluminum | ABS |
| 6 | Panel mounting nut | Nickel-plated brass | Nickel-plated brass | Nickel-plated brass | Nickel-plated brass |



Shown with regulating stem tip

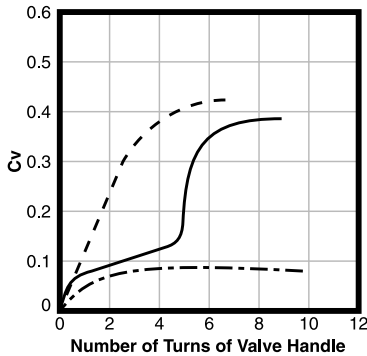
Pressure vs. Temperature Curves



--- 316 stainless steel, carbon steel, Monel®
 - - - Brass

Flow Curves

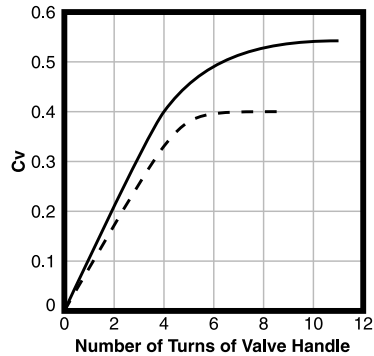
3700 Series
Handle Turns vs Cv*



--- PCTFE stem tip
 — Regulating stem tip
 - · - Vee-point tip

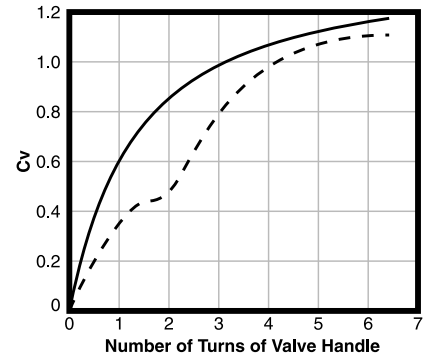
* No data currently available for blunt vee-point stem tip

3800 Series
Handle Turns vs Cv



--- PCTFE stem tip
 — Regulating stem tip

3900 Series
Handle Turns vs Cv



--- PCTFE stem tip
 — Regulating stem tip

3700, 3800, 3900 Series

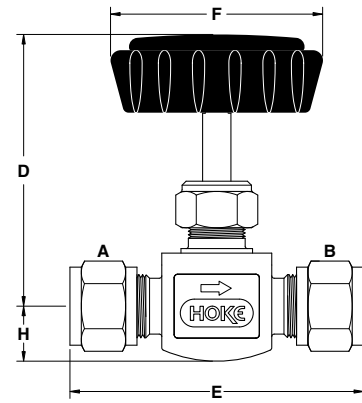
Dimensions

3700 Series: Globe Pattern

Vee-point stem tip

| INLET A | OUTLET B | | D | E | F | H |
|---------------|---------------|------|--------|-------|--------|-------|
| 1/8" male NPT | 1/8" male NPT | inch | 2 3/16 | 1 3/4 | 1 1/16 | 2 5/4 |
| | | mm | 56 | 44 | 37 | 10 |
| 1/4" GYROLOK® | 1/4" GYROLOK® | inch | 2 3/16 | 2 3/8 | 1 1/16 | 2 5/4 |
| | | mm | 56 | 60 | 37 | 10 |
| 1/4" male NPT | 1/4" male NPT | inch | 2 3/16 | 1 3/4 | 1 1/16 | 2 5/4 |
| | | mm | 56 | 44 | 37 | 10 |

Dimensions for reference only, subject to change.



3700/3800 Series globe pattern

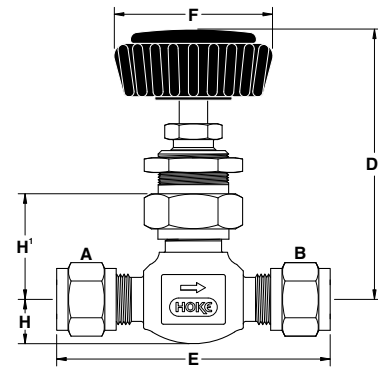
3700 Series: Globe Pattern

Regulating and PCTFE stem tips

| INLET A | OUTLET B | | D | D ^{1,*} | E | F | H | H ^{1,*} |
|-----------------|-----------------|------|--------|------------------|--------|--------|-------|------------------|
| 1/8" GYROLOK® | 1/8" GYROLOK® | inch | 2 7/32 | 2 3/4 | 2 1/8 | 1 1/16 | 1 9/4 | 1 1/2 |
| | | mm | 56 | 70 | 54 | 37 | 8 | 26 |
| 1/8" male NPT | 1/8" male NPT | inch | 2 1/8 | 2 1/2 | 1 3/4 | 1 1/16 | 2 5/4 | 1 9/16 |
| | | mm | 54 | 67 | 44 | 37 | 10 | 24 |
| 1/8" male NPT | 1/8" female NPT | inch | 2 1/8 | 2 1/2 | 1 3/4 | 1 1/16 | 2 5/4 | 1 9/16 |
| | | mm | 54 | 67 | 44 | 37 | 10 | 24 |
| 1/8" female NPT | 1/8" female NPT | inch | 2 1/8 | 2 1/2 | 1 3/4 | 1 1/16 | 2 5/4 | 1 9/16 |
| | | mm | 54 | 67 | 44 | 37 | 10 | 24 |
| 1/4" GYROLOK® | 1/4" GYROLOK® | inch | 2 1/8 | 2 1/2 | 2 3/8 | 1 1/16 | 2 5/4 | 1 9/16 |
| | | mm | 54 | 67 | 60 | 37 | 10 | 24 |
| 1/4" male NPT | 1/4" GYROLOK® | inch | 2 1/8 | 2 1/2 | 2 3/16 | 1 1/16 | 2 5/4 | 1 9/16 |
| | | mm | 54 | 67 | 56 | 37 | 10 | 24 |
| 1/4" male NPT | 1/4" male NPT | inch | 2 1/8 | 2 1/2 | 2 | 1 1/16 | 2 5/4 | 1 9/16 |
| | | mm | 54 | 67 | 51 | 37 | 10 | 24 |
| 3mm GYROLOK® | 3mm GYROLOK® | inch | 2 3/16 | 2 3/4 | 2 1/8 | 1 1/16 | 1 9/4 | 1 1/2 |
| | | mm | 56 | 70 | 54 | 37 | 8 | 26 |
| 6mm GYROLOK® | 6mm GYROLOK® | inch | 2 1/8 | 2 1/2 | 2 3/8 | 1 1/16 | 2 5/4 | 1 9/16 |
| | | mm | 54 | 67 | 60 | 37 | 10 | 24 |
| 8mm GYROLOK® | 8mm GYROLOK® | inch | 2 1/8 | 2 1/2 | 2 3/8 | 1 1/16 | 2 5/4 | 1 9/16 |
| | | mm | 54 | 67 | 60 | 37 | 10 | 24 |

Dimensions for reference only, subject to change.

* D¹ and H¹ for valves with panel mounting.



3700/3800 Series globe pattern with D Style panel mounting

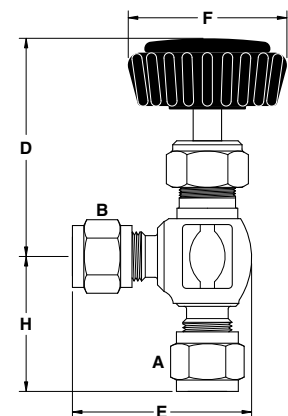
3700 Series: Angle Pattern

Regulating and PCTFE Stems

| INLET A | OUTLET B | | D | D ^{1,*} | E | F | H | H ^{1,*} |
|-----------------|-----------------|------|--------|------------------|-------|--------|--------|------------------|
| 1/8" GYROLOK® | 1/8" GYROLOK® | inch | 2 7/32 | 2 3/4 | 1 1/2 | 1 1/16 | 1 1/4 | 1 1/4 |
| | | mm | 56 | 70 | 38 | 37 | 26 | 26 |
| 1/8" male NPT | 1/8" male NPT | inch | 2 1/8 | 2 1/2 | 1 1/4 | 1 1/16 | 7/8 | 1 5/16 |
| | | mm | 54 | 67 | 32 | 37 | 22 | 24 |
| 1/8" female NPT | 1/8" female NPT | inch | 2 1/8 | 2 1/2 | 1 1/4 | 1 1/16 | 7/8 | 1 5/16 |
| | | mm | 54 | 67 | 32 | 37 | 22 | 24 |
| 1/8" male NPT | 1/4" GYROLOK® | inch | 2 1/8 | 2 1/2 | 1 1/2 | 1 1/16 | 7/8 | 1 5/16 |
| | | mm | 54 | 67 | 40 | 37 | 22 | 24 |
| 1/4" GYROLOK® | 1/4" GYROLOK® | inch | 2 1/8 | 2 1/2 | 1 1/2 | 1 1/16 | 1 3/16 | 1 5/16 |
| | | mm | 54 | 67 | 40 | 37 | 30 | 24 |
| 1/4" male NPT | 1/4" GYROLOK® | inch | 2 1/8 | 2 1/2 | 1 1/2 | 1 1/16 | 7/8 | 1 5/16 |
| | | mm | 54 | 67 | 40 | 37 | 22 | 24 |
| 1/4" male NPT | 1/4" male NPT | inch | 2 1/8 | 2 1/2 | 1 1/4 | 1 1/16 | 7/8 | 1 5/16 |
| | | mm | 54 | 67 | 32 | 37 | 22 | 24 |
| 6mm GYROLOK® | 6mm GYROLOK® | inch | 2 1/8 | 2 1/2 | 1 3/4 | 1 1/16 | 1 3/16 | 1 5/16 |
| | | mm | 54 | 67 | 40 | 37 | 30 | 24 |

Dimensions for reference only, subject to change.

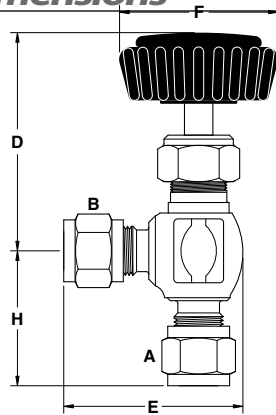
* D¹ and H¹ for valves with panel mounting.



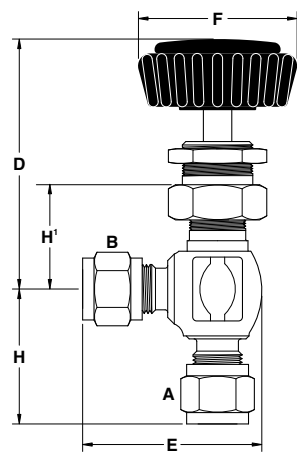
3700/3800 Series angle pattern

3700, 3800, 3900 Series

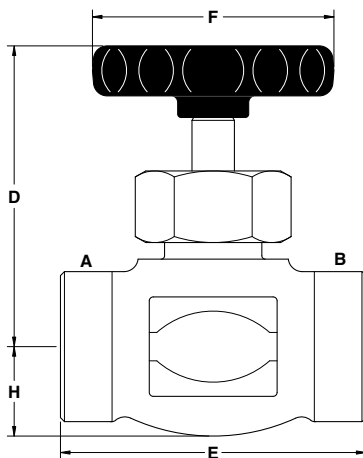
Dimensions



3700/3800 Series angle pattern



3700/3800 Series angle pattern with P-style panel mounting



3900 Series globe pattern

3800 Series: Globe Pattern

Regulating and PCTFE stem tips

| INLET A | OUTLET B | D | D ^{1*} | E | F | | H | H ^{1*} |
|-----------------|-----------------|--------------------------------------|---------------------------------|---------------------------------|-------------------------------|--------------------------------|-------------------------------|-------------------------------|
| | | | | | METAL STEM | PCTFE STEM | | |
| 1/4" male NPT | 1/4" female NPT | inch 2 ²⁵ / ₃₂ | 2 ²⁵ / ₃₂ | 1 ⁷ / ₈ | 1 ⁷ / ₈ | 1 ¹ / ₁₆ | 3 ³ / ₄ | 1 ¹ / ₄ |
| | | mm 71 | 71 | 48 | 48 | 37 | 12 | 26 |
| 1/4" female NPT | 1/4" female NPT | inch 2 ²⁵ / ₃₂ | 2 ²⁵ / ₃₂ | 1 ⁷ / ₈ | 1 ⁷ / ₈ | 1 ¹ / ₁₆ | 3 ³ / ₄ | 1 ¹ / ₄ |
| | | mm 71 | 71 | 48 | 48 | 37 | 12 | 26 |
| 1/4" male NPT | 3/8" GYROLOK® | inch 2 ²⁵ / ₃₂ | 2 ²⁵ / ₃₂ | 2 ⁷ / ₃₂ | 1 ⁷ / ₈ | — | 3 ³ / ₄ | 1 ¹ / ₄ |
| | | mm 71 | 71 | 56 | 48 | — | 12 | 26 |
| 3/8" GYROLOK® | 3/8" GYROLOK® | inch 2 ²⁵ / ₃₂ | 2 ²⁵ / ₃₂ | 2 ¹ / ₁₆ | 1 ⁷ / ₈ | 1 ¹ / ₁₆ | 3 ³ / ₄ | 1 ¹ / ₄ |
| | | mm 71 | 71 | 65 | 48 | 37 | 12 | 26 |
| 3/8" male NPT | 3/8" male NPT | inch 2 ²⁵ / ₃₂ | 2 ²⁵ / ₃₂ | 1 ⁷ / ₈ | 1 ⁷ / ₈ | 1 ¹ / ₁₆ | 3 ³ / ₄ | 1 ¹ / ₄ |
| | | mm 71 | 71 | 48 | 48 | 37 | 12 | 26 |
| 1/2" GYROLOK® | 1/2" GYROLOK® | inch 2 ²⁵ / ₃₂ | 2 ²⁵ / ₃₂ | 2 ¹³ / ₁₆ | 1 ⁷ / ₈ | 1 ¹ / ₁₆ | 3 ³ / ₄ | 1 ¹ / ₄ |
| | | mm 71 | 71 | 71 | 48 | 37 | 12 | 26 |
| 10mm GYROLOK® | 10mm GYROLOK® | inch 2 ²⁵ / ₃₂ | 2 ²⁵ / ₃₂ | 2 ¹ / ₁₆ | 1 ⁷ / ₈ | 1 ¹ / ₁₆ | 3 ³ / ₄ | 1 ¹ / ₄ |
| | | mm 71 | 71 | 65 | 48 | 37 | 12 | 26 |
| 12mm GYROLOK® | 12mm GYROLOK® | inch 2 ²⁵ / ₃₂ | 2 ²⁵ / ₃₂ | 2 ¹³ / ₁₆ | 1 ⁷ / ₈ | 1 ¹ / ₁₆ | 3 ³ / ₄ | 1 ¹ / ₄ |
| | | mm 71 | 71 | 71 | 48 | 37 | 12 | 26 |

Dimensions for reference only, subject to change.

* D¹ and H¹ for valves with panel mounting.

3800 Series: Angle Pattern

Regulating and PCTFE stem tips

| INLET A | OUTLET B | D | D ^{1*} | E | F | H | H ^{1*} |
|-----------------|-----------------|-------------------------------------|--------------------------------|-------------------------------|--------------------------------|-------------------------------|-----------------|
| 1/4" male NPT | 1/4" female NPT | inch 2 ¹ / ₁₆ | 2 ¹ / ₁₆ | 1 ² / ₄ | 1 ¹ / ₁₆ | 3 ³ / ₂ | 1 |
| | | mm 68 | 68 | 36 | 36 | 25 | 25 |
| 1/4" female NPT | 1/4" female NPT | inch 2 ¹ / ₁₆ | 2 ¹ / ₁₆ | 1 ² / ₄ | 1 ¹ / ₁₆ | 3 ³ / ₂ | 1 |
| | | mm 68 | 68 | 36 | 36 | 25 | 25 |
| 3/8" male NPT | 1/4" female NPT | inch 2 ¹ / ₁₆ | 2 ¹ / ₁₆ | 1 ² / ₄ | 1 ¹ / ₁₆ | 3 ³ / ₂ | 1 |
| | | mm 68 | 68 | 36 | 36 | 25 | 25 |

Dimensions for reference only, subject to change.

* D¹ and H¹ for valves with panel mounting.

3900 Series: Globe Pattern

Regulating and PCTFE stem tips

| INLET A | OUTLET B | D | E | F | | H | H ^{1*} |
|-----------------|-----------------|------------------------------------|--------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| | | | | METAL STEM | PCTFE STEM | | |
| 1/2" GYROLOK® | 1/2" GYROLOK® | inch 3 ⁷ / ₂ | 3 ²¹ / ₂ | 2 ¹ / ₈ | 1 ⁷ / ₈ | 2 ⁵ / ₂ | 1 ¹ / ₂ |
| | | mm 81 | 93 | 54 | 48 | 20 | 40 |
| 1/2" female NPT | 1/2" female NPT | inch 3 ⁷ / ₂ | 2 ¹ / ₁₆ | 2 ¹ / ₈ | 1 ⁷ / ₈ | 2 ⁵ / ₂ | 1 ¹ / ₂ |
| | | mm 81 | 68 | 54 | 48 | 20 | 40 |

Dimensions for reference only, subject to change.

* D¹ and H¹ for valves with panel mounting.

3700, 3800, 3900 Series

How to Order: Standard Valves

3700 Series: Globe Pattern

Vee-point stem

0.060" (1.5mm) orifice/0.07 Cv

| END CONNECTIONS | | ORDER BY PART NUMBER | |
|----------------------------------|----------------------------------|----------------------|---------------------|
| INLET | OUTLET | BRASS | 316 STAINLESS STEEL |
| 1/8" male NPT | 1/8" male NPT | 3732M2B | — |
| 1/4" GYROLOK [®] | 1/4" GYROLOK [®] | — | 3732G4Y |
| 1/4" male NPT | 1/4" male NPT | 3732M4B | 3732M4Y |

3700 Series: Globe Pattern

Blunt vee-point stem

0.170" (4.3mm) orifice/0.40 Cv

| END CONNECTIONS | | ORDER BY PART NUMBER | |
|----------------------------------|----------------------------------|----------------------|---------------------|
| INLET | OUTLET | BRASS | 316 STAINLESS STEEL |
| 1/8" male NPT | 1/8" male NPT | 3742M2B | 3742M2Y |
| 1/8" female NPT | 1/8" female NPT | 3742F2B | 3742F2Y |
| 1/4" GYROLOK [®] | 1/4" GYROLOK [®] | 3742G4B | 3742G4Y |
| 1/4" male NPT | 1/4" male NPT | 3742M4B | 3742M4Y |

3700 Series: Globe Pattern

Regulating stem tip

0.170" (4.3mm) orifice/0.35 Cv

| END CONNECTIONS | | ORDER BY PART NUMBER | | |
|----------------------------------|----------------------------------|----------------------|---------------------|--------------------|
| INLET | OUTLET | BRASS | 316 STAINLESS STEEL | MONEL [®] |
| 1/8" GYROLOK [®] | 1/8" GYROLOK [®] | 3712G2B | 3712G2Y | — |
| 1/8" male NPT | 1/8" male NPT | 3712M2B | 3712M2Y | — |
| 1/8" female NPT | 1/8" female NPT | 3712F2B | 3712F2Y | — |
| 1/4" GYROLOK [®] | 1/4" GYROLOK [®] | 3712G4B | 3712G4Y | 3712G4M |
| 1/4" male NPT | 1/4" GYROLOK [®] | 3712H4B | 3712H4Y | 3712H4M |
| 1/4" male NPT | 1/4" male NPT | 3712M4B | 3712M4Y | — |
| 3mm GYROLOK [®] | 3mm GYROLOK [®] | — | 3712G3YMM | — |
| 6mm GYROLOK [®] | 6mm GYROLOK [®] | — | 3712G6YMM | — |
| 8mm GYROLOK [®] | 8mm GYROLOK [®] | — | 3712G8YMM | — |

3700 Series: Globe Pattern

PCTFE stem tip

0.170" (4.3mm) orifice/0.40 Cv

| END CONNECTIONS | | ORDER BY PART NUMBER | | |
|----------------------------------|----------------------------------|----------------------|---------------------|--------------------|
| INLET | OUTLET | BRASS | 316 STAINLESS STEEL | MONEL [®] |
| 1/8" GYROLOK [®] | 1/8" GYROLOK [®] | — | 3752G2Y | — |
| 1/8" female NPT | 1/8" female NPT | 3752F2B | 3752F2Y | — |
| 1/4" GYROLOK [®] | 1/4" GYROLOK [®] | 3752G4B | 3752G4Y | 3752G4M |
| 1/4" male NPT | 1/4" GYROLOK [®] | 3752H4B | 3752H4Y | — |
| 1/4" male NPT | 1/4" male NPT | 3752M4B | 3752M4Y | — |
| 3mm GYROLOK [®] | 3mm GYROLOK [®] | — | 3752G3YMM | — |
| 6mm GYROLOK [®] | 6mm GYROLOK [®] | — | 3752G6YMM | — |
| 8mm GYROLOK [®] | 8mm GYROLOK [®] | — | 3752G8YMM | — |

3700 Series: Angle Pattern

Regulating stem tip

0.170" (4.3mm) orifice/0.35 Cv

| END CONNECTIONS | | ORDER BY PART NUMBER | |
|----------------------------------|----------------------------------|----------------------|---------------------|
| INLET | OUTLET | BRASS | 316 STAINLESS STEEL |
| 1/8" GYROLOK [®] | 1/8" GYROLOK [®] | — | 3722G2Y |
| 1/8" male NPT | 1/8" male NPT | 3722M2B | — |
| 1/8" female NPT | 1/8" female NPT | 3722F2B | — |
| 1/8" male NPT | 1/4" GYROLOK [®] | 3722H24B | — |
| 1/4" GYROLOK [®] | 1/4" GYROLOK [®] | — | 3722G4Y |
| 1/4" male NPT | 1/4" GYROLOK [®] | 3722H4B | 3722H4Y |
| 1/4" male NPT | 1/4" male NPT | 3722M4B | 3722M4Y |
| 6mm GYROLOK [®] | 6mm GYROLOK [®] | — | 3722G6YMM |



3712G4B: Globe pattern

FOR YOUR SAFETY

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. IMPROPER SELECTION OR USE OF PRODUCTS DESCRIBED HEREIN CAN CAUSE PERSONAL INJURY OR PROPERTY DAMAGE.



3722G4B: Angle pattern

3700, 3800, 3900 Series

How to Order: Standard Valves

3700 Series: Angle Pattern

PCTFE stem tip

0.170" (4.3mm) orifice/0.40 Cv

| END CONNECTIONS | | ORDER BY PART NUMBER | |
|-----------------|---------------|----------------------|---------------------|
| INLET | OUTLET | BRASS | 316 STAINLESS STEEL |
| 1/4" GYROLOK® | 1/4" GYROLOK® | — | 3762G4Y |
| 1/4" male NPT | 1/4" GYROLOK® | 3762H4B | 3762H4Y |
| 1/4" male NPT | 1/4" male NPT | 3762M4B | 3762M4Y |
| 6mm GYROLOK® | 6mm GYROLOK® | — | 3762G6YMM |

3800 Series: Globe Pattern

Regulating stem tip

0.219" (5.6mm) orifice/0.55 Cv

| END CONNECTIONS | | ORDER BY PART NUMBER | | |
|-----------------|-----------------|----------------------|---------------------|----------|
| INLET | OUTLET | BRASS | 316 STAINLESS STEEL | MONEL® |
| 1/4" male NPT | 1/4" female NPT | 3812L4B | 3812L4Y | — |
| 1/4" female NPT | 1/4" female NPT | 3812F4B | 3812F4Y | — |
| 1/4" male NPT | 3/8" GYROLOK® | 3812H46B | 3812H46Y | 3812H46M |
| 3/8" GYROLOK® | 3/8" GYROLOK® | 3812G6B | 3812G6Y | 3812G6M |
| 3/8" male NPT | 3/8" male NPT | 3812M6B | 3812M6Y | — |
| 1/2" GYROLOK® | 1/2" GYROLOK® | 3812G8B | 3812G8Y | 3812G8M |
| 10mm GYROLOK® | 10mm GYROLOK® | — | 3812G10YMM | — |
| 12mm GYROLOK® | 12mm GYROLOK® | — | 3812G12YMM | — |



3812F4Y: Globe pattern with D-style panel mounting

3800 Series: Globe Pattern

Vee-point stem tip

0.219" (5.6mm) orifice/0.55 Cv

| END CONNECTIONS | | ORDER BY PART NUMBER | |
|-----------------|---------------|----------------------|---------------------|
| INLET | OUTLET | BRASS | 316 STAINLESS STEEL |
| 3/8" GYROLOK® | 3/8" GYROLOK® | 3842G6B | 3842G6Y |
| 1/2" GYROLOK® | 1/2" GYROLOK® | 3842G8B | 3842G8Y |

3800 Series: Globe Pattern

PCTFE stem tip

0.170" (4.3mm) orifice/0.40 Cv

| END CONNECTIONS | | ORDER BY PART NUMBER | |
|-----------------|-----------------|----------------------|---------------------|
| INLET | OUTLET | BRASS | 316 STAINLESS STEEL |
| 1/4" male NPT | 1/4" female NPT | — | 3852L4Y |
| 1/4" female NPT | 1/4" female NPT | 3852F4B | 3852F4Y |
| 3/8" GYROLOK® | 3/8" GYROLOK® | — | 3852G6Y |
| 3/8" male NPT | 3/8" male NPT | — | 3852M6Y |
| 1/2" GYROLOK® | 1/2" GYROLOK® | — | 3852G8Y |
| 10mm GYROLOK® | 10mm GYROLOK® | — | 3852G10YMM |
| 12mm GYROLOK® | 12mm GYROLOK® | — | 3852G12YMM |



3862L4Y: Angle pattern

3800 Series: Angle Pattern

Regulating stem tip

0.170" (4.3mm) orifice/0.55 Cv

| END CONNECTIONS | | ORDER BY PART NUMBER | |
|-----------------|-----------------|----------------------|---------------------|
| INLET | OUTLET | BRASS | 316 STAINLESS STEEL |
| 1/4" male NPT | 1/4" female NPT | — | 3802L4Y |
| 1/4" female NPT | 1/4" female NPT | 3802F4B | 3802F4Y |
| 3/8" male NPT | 1/4" female NPT | — | 3802L64Y |

3800 Series: Angle Pattern

PCTFE stem tip

0.170" (4.3mm) orifice/0.55 Cv

| END CONNECTIONS | | ORDER BY PART NUMBER | |
|-----------------|-----------------|----------------------|---------------------|
| INLET | OUTLET | BRASS | 316 STAINLESS STEEL |
| 1/4" male NPT | 1/4" female NPT | — | 3862L4Y |
| 1/4" female NPT | 1/4" female NPT | 3862F4B | 3862F4Y |
| 3/8" male NPT | 1/4" female NPT | — | 3862L64Y |

FOR YOUR SAFETY

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3700, 3800, 3900 Series

How to Order: Standard Valves

3900 Series: Globe Pattern*

Regulating stem tip

0.312" (7.9mm) orifice/1.1 Cv

| END CONNECTIONS | | ORDER BY PART NUMBER | | |
|-----------------|---------------|----------------------|---------------------|--------------|
| INLET | OUTLET | BRASS | 316 STAINLESS STEEL | CARBON STEEL |
| ½" GYROLOK® | ½" GYROLOK® | — | 3912G8Y | — |
| ½" female NPT | ½" female NPT | 3912F8B | 3912F8Y | 3912F8E |

* 3912 series only available with metal handle

3900 Series: Globe Pattern

PCTFE stem tip

0.312" (7.9mm) orifice/1.1 Cv

| END CONNECTIONS | | ORDER BY PART NUMBER | | |
|-----------------|---------------|----------------------|---------------------|--------------|
| INLET | OUTLET | BRASS | 316 STAINLESS STEEL | CARBON STEEL |
| ½" GYROLOK® | ½" GYROLOK® | — | 3952G8Y | — |
| ½" female NPT | ½" female NPT | 3952F8B | 3952F8Y | 3952F8E |



3952F8Y: Globe pattern

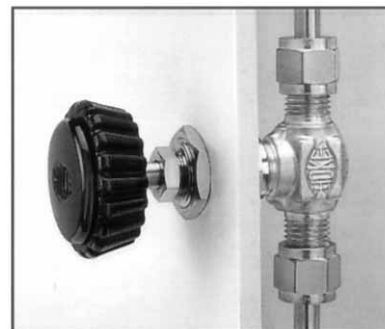
Ordering Options

Handle Options*

To order a plug button, specify a part number from below.

| COLOR | 3712, 3722, 3732, 3742, 3752, 3762, 3802, 3852, 3862 SERIES | 3812, 3842, 3952 SERIES |
|--------|---|----------------------------|
| Red | 94312-002 | 94349-002 |
| Green | 94312-003 | 94349-003 |
| Yellow | 94312-004 | 94349-004 |
| Orange | 94312-005 | 94349-005 |
| Brown | 94312-006 | 94349-006 |
| Blue | 94312-007 | 94349-007 |

* 3912 series is not available with plug button



D-style panel mounting

O-ring Packing

O-ring packing is available for all 3700 and 3800 Series valves. For Buna-N o-ring packing, specify kit number 3700K1. For Viton® o-ring packing, specify kit number 3700K2. For additional o-ring options, contact your local HOKE distributor.

Panel Mounting

3700 & 3800 Series

D-style: HOKE's factory-installed panel mounting permits valve installation without disrupting the packing. In addition, future packing adjustments may be performed while the valve is mounted. Factory-installed panel mount D-style is available for all models except the 3732 Series (globe pattern, vee-point stem). To order, add a 'D' prefix to the model number (e.g., D3712G4Y)

P-style: Panel mounting kits may be field installed on all 3700 and 3800 Series valves (including the 3732 Series). Once the kit is in place, valves may be mounted without disrupting the packing. All future packing adjustments must be performed with the valve removed from the panel. To order, specify part number 306-86A, which contains one kit.



P-style panel mounting kits

Panel mounting dimensions for 3700 & 3800 Series

Panel hole = ¼" (16.2 mm) diameter

Panel thickness = $\frac{3}{16}$ " (4.7 mm) maximum

3900 Series

P-style panel mounting kits for field installation are available. To order, specify kit number 3900K1

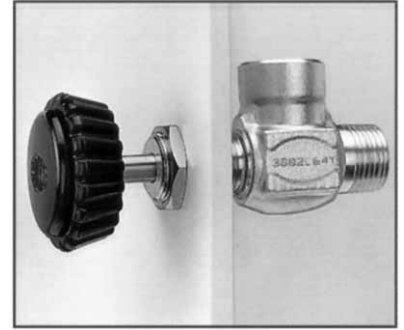
Panel mounting dimensions for 3900 Series

Panel hole = $\frac{4}{16}$ " (19.4 mm) diameter

Panel thickness = $\frac{5}{16}$ " (7.9 mm) maximum

Spare Parts

Spare parts and repair kits are available for all needle valves. Please contact your distributor for specific information.



P-style panel mounting

Cleaning and Testing

When ordering, please specify if oxygen cleaning or helium leak testing is required.

Additional Sizes

Additional sizes and options are available on special request. Please consult your local HOKE distributor.

For Your Safety

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. Improper selection or use of products described herein can cause personal injury or property damage.

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www.hoke.com
Sales-hoke@circor.com**

**Our headquarters and ISO 9001:2008 certified
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Spartanburg, SC, USA, 29303-6603**

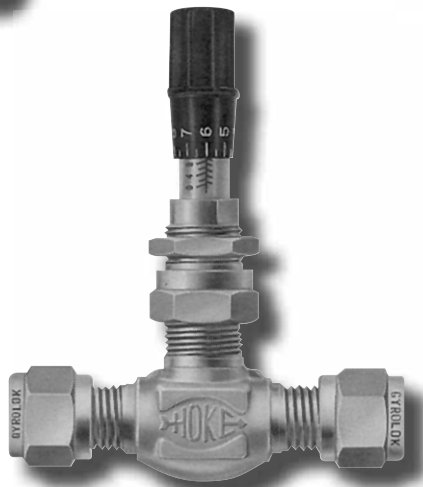
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Metering Valves

| <i>Index</i> | |
|--------------|---|
| 1300 Series | 1 |
| 1600 Series | 4 |
| 2300 Series | 8 |



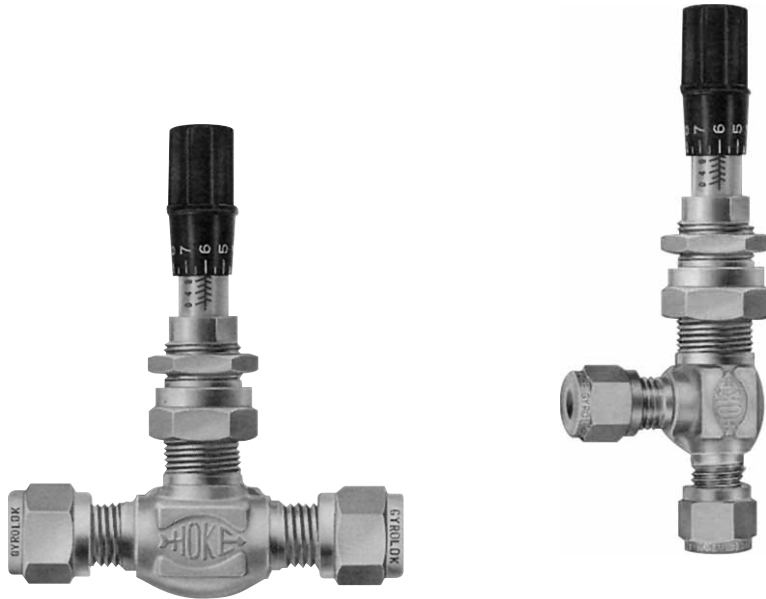
metering valves

HOKE Inc.
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Phone (864) 574-7966 Fax (864) 587-5608
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Milli-Mite® 1300 Series

Forged Metering Valves



Typical Applications

- Fine metering in medical and biochemical gas or vapor analysis
- Sampling and analyzing water and air pollution
- Chromatographs, mass spectrometers and other instruments where fine metering is required

Technical Data

| | |
|---|--|
| BODY* | 316 stainless steel, brass |
| MAXIMUM OPERATING PRESSURE @ 70° F (21° C) | Brass <ul style="list-style-type: none">• 3000 psig (207 bar) 316 stainless steel <ul style="list-style-type: none">• 5000 psig (345 bar) |
| OPERATING TEMPERATURE RANGE | Brass <ul style="list-style-type: none">-65 to 400° F (-54° to 204° C) 316 stainless steel <ul style="list-style-type: none">-65° to 450° F (-54° to 232° C) |
| ORIFICE | .047" (1.19 mm) |
| CV FACTOR | 1° stem = .010 Cv 3° stem = .024 Cv |

* Consult factory for other materials

Features & Benefits

- Metering accuracy - 18 turn displacement of stem provides unparalleled performance and repeatability
- 1° and 3° stems provide a wide flow range with ultra fine metering control
- Panel mounting is standard for all valves
- Precision orifice and close thread tolerances minimize hysteresis
- Micrometer vernier handle provides visual control and repeatable stem settings
- Dyna-Pak® wafer packing below the stem threads provides leak tight service
- Special High Tolerance NPT Thread

metering valves

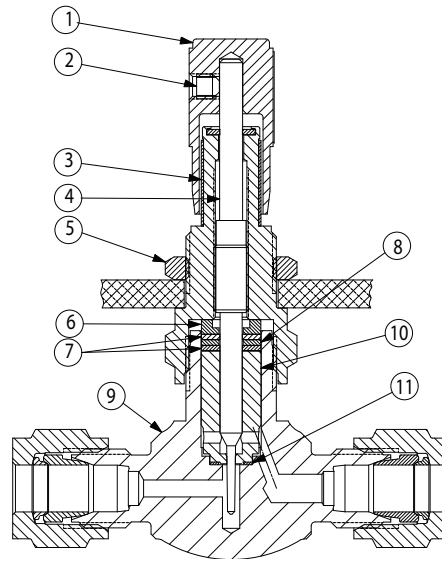
HOKE Inc.

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Phone (864) 574-7966 Fax (864) 587-5608
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Milli-Mite® 1300 Series

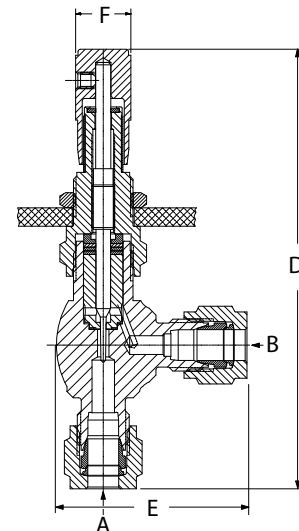
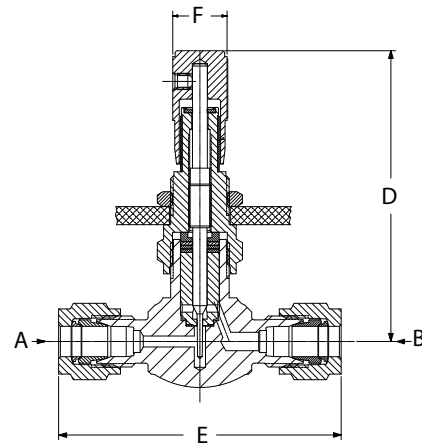
Materials of Construction

| | DESCRIPTION | MATERIAL |
|----|--------------------------|------------------------|
| 1 | Handle, black anodized | Aluminum Alloy |
| 2 | Set Screw | Alloy Steel |
| 3 | Graduated sleeve | 302 SS |
| 4 | Metering Stem | 316 stainless |
| 5 | Panel nut | Brass |
| 6 | Upper spacer | 316 stainless |
| 7 | Dyna-Pak® wafer | PTFE |
| 8 | Lower spacer | 316 stainless |
| 9 | Body | 316 stainless or brass |
| 10 | Integrated seat & spacer | 316 stainless |
| 11 | Orifice seal | PTFE |



Dimensions

| FLOW PATTERN | CONNECTIONS | | DIMENSIONS | | |
|--------------|-----------------|-----------------|----------------|---------------|--------------|
| | A INLET | B OUTLET | D | E | F |
| GLOBE | 1/8" NPT Female | 1/8" NPT Female | 2.83" 72mm | 1.75" 44mm | .50" 13mm |
| | 1/8" NPT Male | 1/8" NPT Male | 3.25" 83mm | 1.75" 44mm | |
| | 1/8" NPT Male | 1/8" GYROLOK® | 3.25" 83mm | 2.13" 54mm | |
| | 1/4" NPT Male | 1/4" NPT Male | 3.25" 83mm | 1.75" 44mm | |
| | 1/8" GYROLOK® | 1/8" GYROLOK® | 3.25" 83mm | 2.38" 60mm | |
| | 1/4" GYROLOK® | 1/4" GYROLOK® | 3.25" 83mm | 2.38" 60mm | |
| | 3mm GYROLOK® | 3mm GYROLOK® | 3.25" 83mm | 2.38" 60mm | |
| | 6mm GYROLOK® | 6mm GYROLOK® | 3.25" 83mm | 2.38" 60mm | |
| ANGLE | 1/8" NPT Female | 1/8" NPT Female | 3.75" 95mm | 1.28" 33mm | .50" 13mm |
| | 1/8" NPT Male | 1/8" GYROLOK® | 3.75" 95mm | 1.28" 33mm | |
| | 1/8" GYROLOK® | 1/8" GYROLOK® | 4.00" 102mm | 1.63" 41mm | |
| | 1/4" GYROLOK® | 1/4" GYROLOK® | 4.00" 102mm | 1.63" 41mm | |
| | 3mm GYROLOK® | 3mm GYROLOK® | 3.25" 83mm | 1.38" 41mm | |
| | 6mm GYROLOK® | 6mm GYROLOK® | 3.25" 83mm | 1.38" 41mm | |



Dimensions for reference only, subject to change.

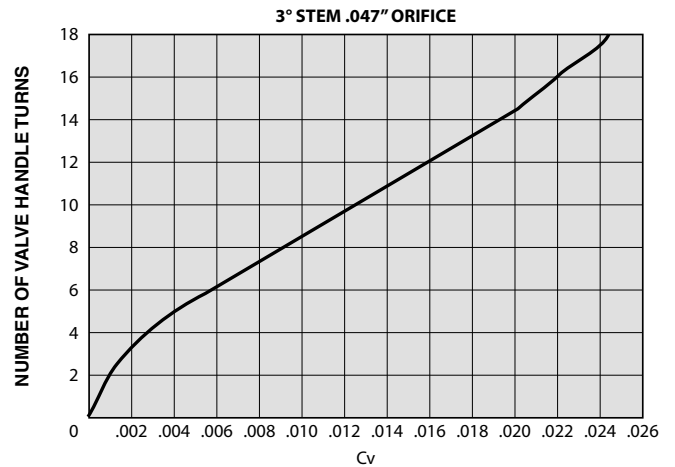
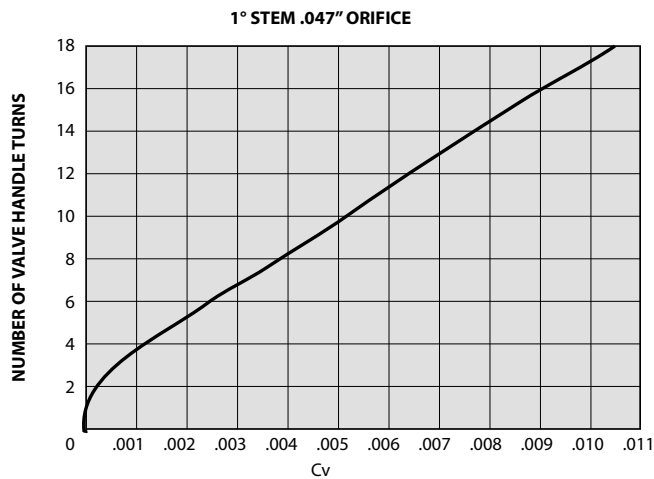
Panel mounting

Panel hole = .52" (13 mm) diameter

Panel thickness = .16" (4 mm) maximum

Milli-Mite® 1300 Series

Reference Flow Curves



How to Order

| FLOW PATTERN | CONNECTIONS | | ORDER BY NUMBER | | | |
|--------------|-----------------|-----------------|-----------------|------------|--------------|------------|
| | A INLET | B OUTLET | 316SS VALVES | | BRASS VALVES | |
| | | | 1° STEM | 3° STEM | 1° STEM | 3° STEM |
| | | | CV = 0.010 | CV = 0.024 | CV = 0.010 | CV = 0.024 |
| GLOBE | 1/8" NPT Female | 1/8" NPT Female | — | 1315F2Y | — | — |
| | 1/8" NPT Male | 1/8" GYROLOK® | — | — | 1335H2B | 1315H2B |
| | 1/8" NPT Male | 1/8" NPT Male | — | — | 1335M2B | 1315M2B |
| | 1/4" NPT Male | 1/4" NPT Male | 1335 M4Y | 1315M4Y | 1335M4B | 1315M4B |
| | 1/8" GYROLOK® | 1/8" GYROLOK® | 1335G2Y | 1315G2Y | 1335G2B | 1315G2B |
| | 1/4" GYROLOK® | 1/4" GYROLOK® | 1335G4Y | 1315G4Y | 1335G4B | 1315G4B |
| | 3mm GYROLOK® | 3mm GYROLOK® | 1335G3YMM | 1315G3YMM | — | — |
| 6mm GYROLOK® | 6mm GYROLOK® | 1335G6YMM | 1315G6YMM | — | — | |
| ANGLE | 1/8" NPT Female | 1/8" NPT Female | — | — | 1345F2B | 1325F2B |
| | 1/8" NPT Male | 1/8" GYROLOK® | 1345H2Y | 1325H2Y | 1345H2B | 1325H2B |
| | 1/8" GYROLOK® | 1/8" GYROLOK® | 1345G2Y | 1325G2Y | 1345G2B | 1325G2B |
| | 1/4" GYROLOK® | 1/4" GYROLOK® | 1345G4Y | 1325G4Y | 1345G4B | 1325G4B |
| | 3mm GYROLOK® | 3mm GYROLOK® | 1345G3YMM | 1325G3YMM | — | — |
| | 6mm GYROLOK® | 6mm GYROLOK® | 1345G6YMM | 1325G6YMM | 1345G6BMM | 1325G6BMM |
| | 1/8" NPT Female | 1/8" NPT Female | — | — | 1345F2B | — |

FOR YOUR SAFETY

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Ordering Options

Spare Parts

Spare parts and repair kits are available for all needle valves. Please contact your distributor for specific information.

Cleaning and Testing

When ordering, please specify if oxygen cleaning or helium leak testing is required.

Additional Sizes

Additional sizes and options are available on special request. Please consult your local HOKE distributor.



Micromite® 1600 Series

Forged Metering Valves



Typical Applications

- Chromatography
- Mass Spectroscopy
- Sampling and fine metering
- Pollution analyzing instrumentation

Technical Data

| | |
|---|---|
| BODY* | 316 stainless steel, brass |
| MAXIMUM OPERATING PRESSURE @ 70° F (21° C)** | Brass <ul style="list-style-type: none">• 3500 psig (242 bar) 316 stainless steel <ul style="list-style-type: none">• 5000 psig (345 bar) |
| OPERATING TEMPERATURE RANGE | -20° to +250° F (-29° to +121° C) |
| ORIFICE | 0.031" (0.79 mm) |
| CV FACTOR | 0.0008 |

* Consult factory for other materials

** Valve is not designed for shut-off. Pressure ranges for metering only

Features & Benefits

- 18 turn non-rotating stem
- Low internal volume provides low flow control
- Non-rotating stem minimizes unwanted variability of flow rate
- Unique thread design allows tapered needle portion of the stem to be withdrawn into the outer stem
- O-ring seals below the stem threads provide smooth operation and eliminate backlash
- Panel mounting is standard for all models
- Dial indicator provides repeatable positioning of stem in full turns and tenths of a turn from closed to fully open.
 - Position by finger tip rotating the knurled aluminum dial.
 - A position lock prevents accidental movement of the handle and resulting errors in flow data.
 - The size and design of the handle assembly provide an attractive appearance for equipment panels.
- Special High Tolerance NPT Thread

metering valves

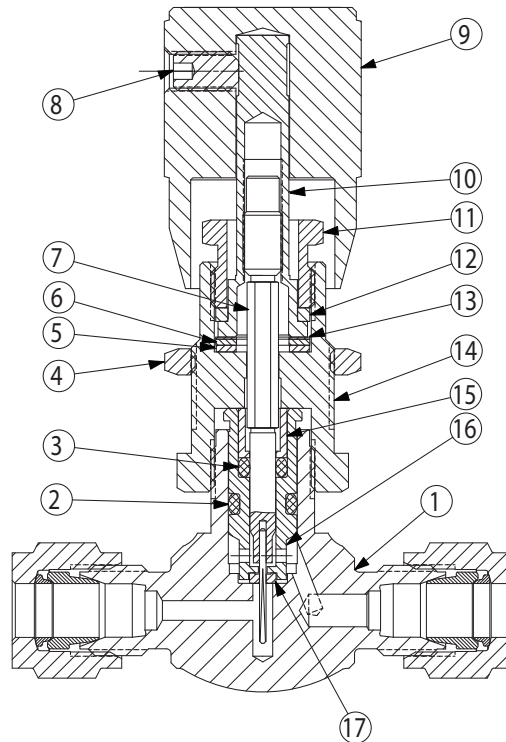
HOKE Inc.

PO Box 4866 • Spartanburg, SC 29305-4866
Phone (864) 574-7966 Fax (864) 587-5608
www.hoke.com • Sales-hoke@circor.com

Micromite® 1600 Series

Materials of Construction

| | DESCRIPTION | MATERIAL |
|----|-----------------|--------------------------|
| 1 | BODY | 316 stainless or brass |
| 2 | O-RING | Fluorelastomer or Buna-N |
| 3 | O-RING | Fluorelastomer or Buna-N |
| 4 | PANEL NUT | Brass |
| 5 | WASHER | Fluorelastomer |
| 6 | WASHER | 304 stainless |
| 7 | STEM AND PIN | 316 stainless |
| 8 | SET SCREW | Alloy steel |
| 9 | HANDLE | Aluminum |
| 10 | SPINDLE | 316 stainless |
| 11 | SCREW | 316 stainless |
| 12 | FRICTION WASHER | Delrin® AF |
| 13 | FRICTION WASHER | Glass cloth |
| 14 | BONNET | 316 stainless |
| 15 | RETAINER | PCTFE |
| 16 | GLAND | 316 stainless |
| 17 | SEAT | 316 stainless |

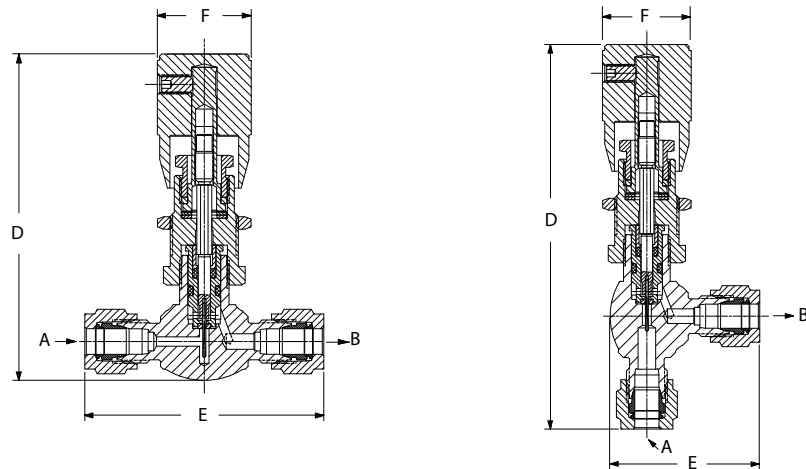


Micromite® 1600 Series

Dimensions

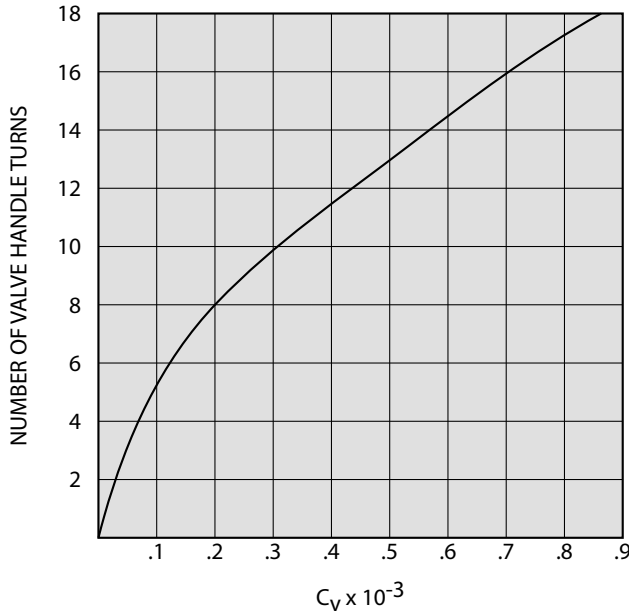
| FLOW PATTERN | CONNECTIONS | | PART NUMBER | BODY MATERIAL | O RING | DIMENSIONS | | | PANEL MOUNTING | | |
|----------------|----------------|----------------|-------------|----------------|----------------|------------|-------|-------|-------------------|-----------|-------|
| | A INLET | B OUTLET | | | | D | E | F | MAXIMUM THICKNESS | HOLE SIZE | |
| GLOBE | 1/8" FNPT | 1/8" FNPT | 1654F2BA | BRASS | Buna-N | mm | 83 | 45 | 25 | 6 | 18 |
| | | | | | | inch | 3 1/4 | 1 3/4 | 1 | 1/4 | 45/64 |
| | 1/8" MNPT | 1/8" MNPT | 1654M2BA | BRASS | Buna-N | mm | 83 | 45 | 25 | 6 | 18 |
| | | | | | | inch | 3 1/4 | 1 3/4 | 1 | 1/4 | 45/64 |
| | 1/4" MNPT | 1/4" MNPT | 1654M4BA | BRASS | Buna-N | mm | 83 | 45 | 25 | 6 | 18 |
| | | | | | | inch | 3 1/4 | 1 3/4 | 1 | 1/4 | 45/64 |
| | 1/16" GYROLOK® | 1/16" GYROLOK® | 1654G1BA | BRASS | Buna-N | mm | 83 | 60 | 73 | 6 | 18 |
| | | | | | | inch | 2 1/4 | 1 3/8 | 49 | 1/3 | 45/63 |
| | 1/8" GYROLOK® | 1/8" GYROLOK® | 1654G2BA | BRASS | Buna-N | mm | 83 | 60 | 73 | 6 | 18 |
| | | | | | | inch | 2 1/4 | 1 3/8 | 49 | 1/3 | 45/63 |
| | 1/4" GYROLOK® | 1/4" GYROLOK® | 1654G4BA | BRASS | Buna-N | mm | 83 | 60 | 73 | 6 | 18 |
| | | | | | | inch | 2 1/4 | 1 3/8 | 49 | 1/3 | 45/63 |
| | 1/8" FNPT | 1/8" FNPT | 1654F2YA | 316 SS | Buna-N | mm | 83 | 45 | 25 | 6 | 18 |
| | | | | | | inch | 3 1/4 | 1 3/4 | 1 | 1/4 | 45/64 |
| | 1/8" MNPT | 1/8" MNPT | 1654M2YA | 316 SS | Buna-N | mm | 83 | 45 | 25 | 6 | 18 |
| | | | | | | inch | 3 1/4 | 1 3/4 | 1 | 1/4 | 45/64 |
| | 1/4" MNPT | 1/4" MNPT | 1654M4YA | 316 SS | Buna-N | mm | 83 | 45 | 25 | 6 | 18 |
| | | | | | | inch | 3 1/4 | 1 3/4 | 1 | 1/4 | 45/64 |
| | 1/16" GYROLOK® | 1/16" GYROLOK® | 1654G1YA | 316 SS | Buna-N | mm | 83 | 60 | 25 | 6 | 18 |
| | | | | | | inch | 3 1/4 | 2 3/8 | 1 | 1/4 | 45/64 |
| | 1/8" GYROLOK® | 1/8" GYROLOK® | 1654G2YA | 316 SS | Buna-N | mm | 83 | 60 | 25 | 6 | 18 |
| | | | | | | inch | 3 1/4 | 2 3/8 | 1 | 1/4 | 45/64 |
| | 1/4" GYROLOK® | 1/4" GYROLOK® | 1654G4YA | 316 SS | Buna-N | mm | 83 | 60 | 25 | 6 | 18 |
| | | | | | | inch | 3 1/4 | 2 3/8 | 1 | 1/4 | 45/64 |
| 1/16" GYROLOK® | 1/16" GYROLOK® | 1656G1YA | 316 SS | Fluorelastomer | mm | 83 | 60 | 25 | 6 | 18 | |
| | | | | | inch | 3 1/4 | 2 3/8 | 1 | 1/4 | 45/64 | |
| 1/8" GYROLOK® | 1/8" GYROLOK® | 1656G2YA | 316 SS | Fluorelastomer | mm | 83 | 60 | 25 | 6 | 18 | |
| | | | | | inch | 3 1/4 | 2 3/8 | 1 | 1/4 | 45/64 | |
| 1/4" GYROLOK® | 1/4" GYROLOK® | 1656G4YA | 316 SS | Fluorelastomer | mm | 83 | 60 | 25 | 6 | 18 | |
| | | | | | inch | 3 1/4 | 2 3/8 | 1 | 1/4 | 45/64 | |
| ANGLE | 1/16" GYROLOK® | 1/16" GYROLOK® | 1666G1YA | 316 SS | Fluorelastomer | mm | 83 | 60 | 25 | 6 | 18 |
| | | | | | | inch | 3 1/4 | 2 3/8 | 1 | 1/4 | 45/64 |
| | 1/8" GYROLOK® | 1/8" GYROLOK® | 1666G2YA | 316 SS | Fluorelastomer | mm | 102 | 41 | 25 | 6 | 18 |
| | | | | | | inch | 4 | 1 5/8 | 1 | 1/4 | 45/64 |
| | 1/4" GYROLOK® | 1/4" GYROLOK® | 1666G4YA | 316 SS | Fluorelastomer | mm | 102 | 41 | 25 | 6 | 18 |
| | | | | | | inch | 4 | 1 5/8 | 1 | 1/4 | 45/64 |

Dimensions for reference only, subject to change.



Micromite® 1600 Series

Reference Flow Curve



Metering range is approximately 18 handle turns. Opening the valve beyond the metering range will increase the flow to full C_v .

How to Order

| FLOW PATTERN | CONNECTIONS | | BRASS WITH BUNA-N | 316 STAINLESS STEEL WITH BUNA-N | 316 STAINLESS WITH FLUORELASTOMER |
|--------------|----------------|----------------|-------------------|---------------------------------|-----------------------------------|
| | A Inlet | B Outlet | | | |
| GLOBE | 1/8" FNPT | 1/8" FNPT | 1654F2BA | 1654F2YA | — |
| | 1/8" MNPT | 1/8" MNPT | 1654M2BA | 1654M2YA | — |
| | 1/4" MNPT | 1/4" MNPT | 1654M4BA | 1654M4YA | — |
| | 1/16" GYROLOK® | 1/16" GYROLOK® | 1654G1BA | 1654G1YA | 1656G1YA |
| | 1/8" GYROLOK® | 1/8" GYROLOK® | 1654G2BA | 1654G2YA | 1656G2YA |
| | 1/4" GYROLOK® | 1/4" GYROLOK® | 1654G4BA | 1654G4YA | 1656G4YA |
| ANGLE | 1/16" GYROLOK® | 1/16" GYROLOK® | — | — | 1666G1YA |
| | 1/8" GYROLOK® | 1/8" GYROLOK® | — | — | 1666G2YA |
| | 1/4" GYROLOK® | 1/4" GYROLOK® | — | — | 1666G4YA |

To Order the Dial Indicator, order Kit 1600K4. If valve and kit are to be factory assembled, please note "Factory Assembled" on order

FOR YOUR SAFETY

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. IMPROPER SELECTION OR USE OF PRODUCTS DESCRIBED HEREIN CAN CAUSE PERSONAL INJURY OR PROPERTY DAMAGE.

Ordering Options

Spare Parts

Spare parts and repair kits are available for all needle valves. Please contact your distributor for specific information.

Cleaning and Testing

When ordering, please specify if oxygen cleaning or helium leak testing is required.

Additional Sizes

Additional sizes and options are available on special request. Please consult your local HOKE distributor.



2300 Series

Bar Stock Metering Valves



Typical Applications

- Metering liquids and gases on analytical equipment
- Laboratory sampling
- Gas chromatography, analyzers
- Flow meters and gauges

Technical Data

| | |
|------------------------------------|--|
| BODY* | 316 stainless steel, brass |
| MAXIMUM OPERATING PRESSURE | Brass <ul style="list-style-type: none">• 3000 psig up to 200° F (207 bar @ 93° C) 316 stainless steel <ul style="list-style-type: none">• 3000 psig 100° F (207 bar @ 38° C)• 1000 psig 250° F (68.9 bar @ 121° C) |
| OPERATING TEMPERATURE RANGE | Buna N O-ring Packing <ul style="list-style-type: none">• -40° to 200° F (-40° to 93° C) PTFE Packing <ul style="list-style-type: none">• -60° to 250° F (-51° to 121° C) |
| ORIFICE | .062", .125" (1.59 mm, 3.17 mm) |
| CV FACTOR** | 1° stem, 0.062" orifice: 0.012 8° stem, 0.062" orifice: 0.086 8° stem, 0.125" orifice: 0.30 |

* Consult factory for other materials

** Cv factors shown are based on flow through entire metering range, approximately 20 handle turns

Features & Benefits

- Micrometer vernier handle provides visual control and precise establishment of flow settings. To order, specify 2300K1 following the valve number.
- 20 turn stem displacement for fine metering
- 2 orifice sizes 0.062" (1.59mm) and 0.125" (3.17mm) are available with standard 8° stem
- Spring loaded stem in all 316 stainless steel valves prevents galling and enlargement of the orifice.
- For ultra fine metering, a 1° spring loaded stem design is available for all valves with 0.062" (1.59mm) orifice. See flow curves for details.
- Panel mounting is standard on all valves
- Bonnet lock prevents accidental disengagement of bonnet.
- Special High Tolerance NPT Thread

metering valves

HOKE Inc.

PO Box 4866 • Spartanburg, SC 29305-4866

Phone (864) 574-7966 Fax (864) 587-5608

www.hoke.com • Sales-hoke@circor.com

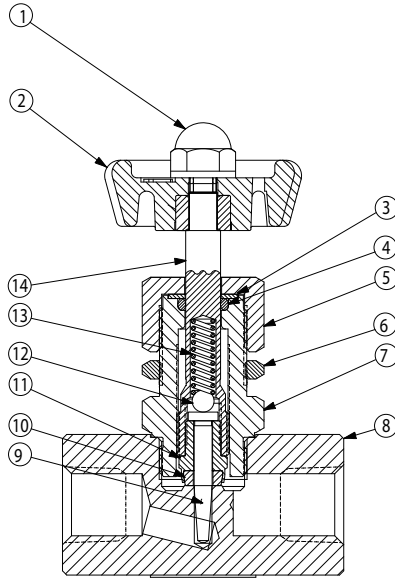
2300 Series

Materials of Construction

316 Stainless Steel Valves (PTFE Packing)

| | DESCRIPTION | MATERIAL |
|----|--------------------|---------------|
| 1 | CAP NUT (10-24) | Zinc Alloy |
| 2 | HAND WHEEL* | Nylon |
| 3 | WASHER | PTFE |
| 4 | PACKING | PTFE |
| 5 | PACKING NUT | 316 stainless |
| 6 | MOUNTING NUT | 316 stainless |
| 7 | HOUSING | 316 stainless |
| 8 | BODY | 316 stainless |
| 9 | SPINDLE POINT | 316 stainless |
| 10 | SEAT | PCTFE |
| 11 | SEAT HOLDER | 316 stainless |
| 12 | BALL | 316 stainless |
| 13 | COMPRESSION SPRING | 316 stainless |
| 14 | STEM | 316 stainless |

* Optional micrometer handle - Aluminum

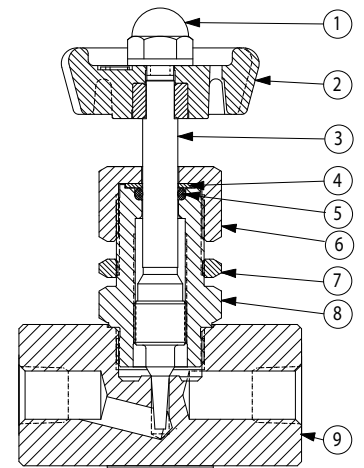


2335F[JY / 2315F[JY
stainless steel

Brass Valves (Buna-N Packing)

| | DESCRIPTION | MATERIAL |
|---|-----------------|---------------|
| 1 | CAP NUT (10-24) | Zinc Alloy |
| 2 | HAND WHEEL* | Nylon |
| 3 | STEM | 316 stainless |
| 4 | WASHER | Nylon |
| 5 | O-RING | Buna-N |
| 6 | PACKING NUT | Brass |
| 7 | MOUNTING NUT | FCB |
| 8 | HOUSING | Brass |
| 9 | BODY | Brass |

* Optional micrometer handle - Aluminum

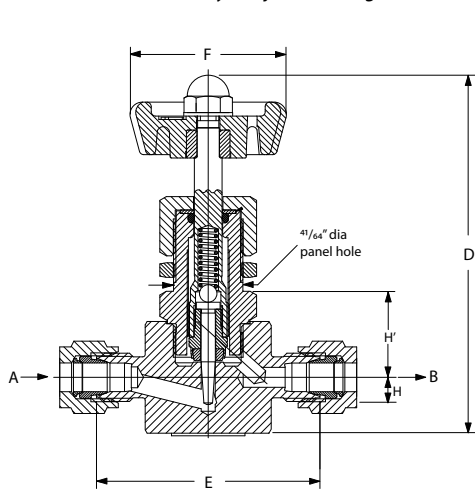


2331F[JB
Brass

Dimensions

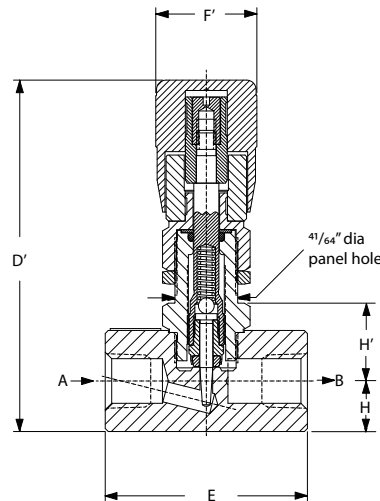
| FLOW PATTERN | A & B CONNECTIONS | PANEL MOUNTING DIMENSIONS | | | | | | | | | |
|---------------|-------------------|---------------------------|------|------|------|------|------|------|------|-----------------|-----------|
| | | | D | D' | E | F | F' | H | H' | PANEL THICKNESS | HOLE SIZE |
| GLOBE | 1/4" NPT FEMALE | inch | 3.59 | 3.88 | 2 | 1.41 | 1 | 0.5 | 0.75 | 0.13 | 0.64 |
| | | mm | 91 | 98 | 51 | 36 | 25 | 12.7 | 19 | 3 | 16 |
| | 1/8" NPT FEMALE | inch | 3.59 | 3.88 | 2 | 1.41 | 1 | 0.5 | 0.75 | 0.13 | 0.64 |
| | | mm | 91 | 98 | 51 | 36 | 25 | 12.7 | 19 | 3 | 16 |
| 1/4" GYROLOK® | inch | 3.59 | 3.88 | 2.63 | 1.41 | 1 | 0.5 | 0.75 | 0.13 | 0.64 | |
| | mm | 91 | 98 | 67 | 36 | 25 | 12.7 | 19 | 3 | 16 | |
| ANGLE | 1/4" NPT FEMALE | inch | 3.75 | 4.06 | 1.44 | 1.41 | 1 | 0.56 | 0.81 | 0.13 | 0.64 |
| | | mm | 95 | 103 | 37 | 36 | 25 | 14 | 21 | 3 | 16 |
| | 1/8" NPT FEMALE | inch | 3.75 | 4.06 | 1.44 | 1.41 | 1 | 0.56 | 0.81 | 0.13 | 0.64 |
| | | mm | 95 | 103 | 37 | 36 | 25 | 14 | 21 | 3 | 16 |

Dimensions for reference only, subject to change.



2335G[JY / 2315G[JY
316 stainless steel

HOKE Metering Valves

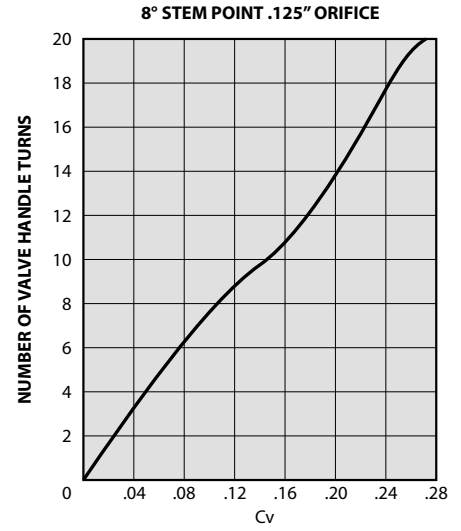
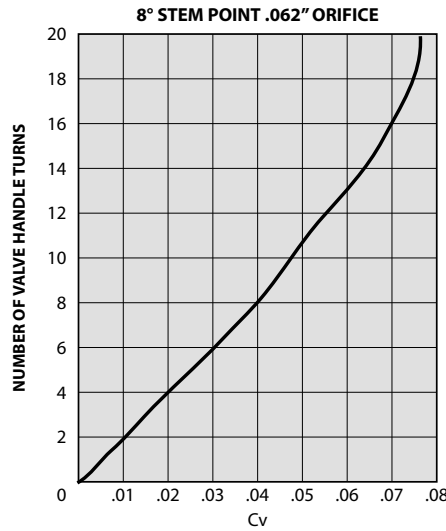
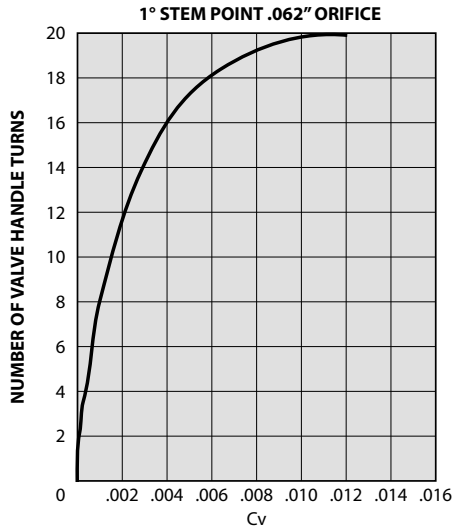


2335F4Y / 2315F4Y
316 stainless steel
(with optional micrometer handle)

HOKE Metering Valves

2300 Series

Curves



How to Order

| FLOW PATTERN | CONNECTIONS | 316 STAINLESS STEEL VALVES | | | BRASS VALVES | |
|--------------|-----------------|----------------------------|-----------------------|-----------------------|-----------------------|---------------|
| | | PTFE PACKING | | | BUNA-N O-RING PACKING | |
| | | 1° STEM SPRING LOADED | 8° STEM SPRING LOADED | 8° STEM SPRING LOADED | SOLID 8° STEM | SOLID 8° STEM |
| | | .062" ORIFICE | .062" ORIFICE | .125" ORIFICE | .062" ORIFICE | .125" ORIFICE |
| GLOBE | 1/8" NPT FEMALE | 2355F2Y | 2315F2Y | 2335F2Y | 2311F2B | 2331F2B |
| | 1/4" NPT FEMALE | 2355F4Y | 2315F4Y | 2335F4Y | 2311F4B | 2331F4B |
| | 1/4" GYROLOK® | 2355G4Y | 2315G4Y | 2335G4Y | — | 2331G4B |
| ANGLE | 1/8" NPT FEMALE | — | — | — | 2321F2B | 2341F2B |
| | 1/4" NPT FEMALE | — | — | — | 2321F4B | 2341F4B |

Ordering Options

Spare Parts

Spare parts and repair kits are available for all needle valves. Please contact your distributor for specific information.

Cleaning and Testing

When ordering, please specify if oxygen cleaning or helium leak testing is required.

Additional Sizes

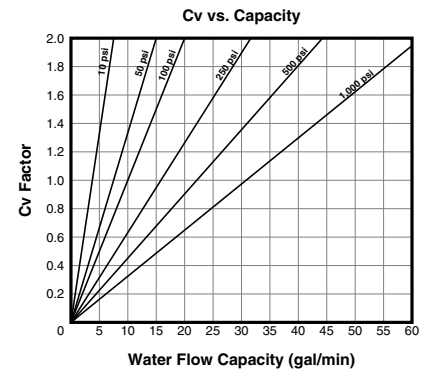
Additional sizes and options are available on special request. Please consult your local HOKE distributor.

Liquid Flow capacity of HOKE Metering Valves

To determine the Cv or flow of a **liquid** @ 60° F (16° C):

$$Cv = \frac{GPM}{\sqrt{\frac{\Delta p}{S.G.}}} \quad \text{or} \quad GPM = Cv \sqrt{\frac{\Delta p}{S.G.}}$$

where: $\Delta p = p_1 - p_2$
 p_1 = inlet pressure in psia
 p_2 = outlet pressure in psia
 GPM = flow in gallons per minute
 S.G. = specific gravity of liquid where water = 1.0 @ 60° F (16° C)

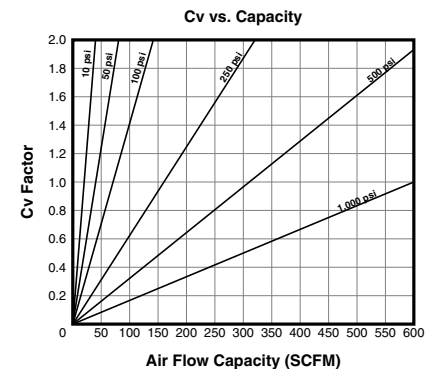


Gas Flow capacity of HOKE Metering Valves

To determine the Cv or flow of a **gas** @ 70° F (21° C):

$$Cv = \frac{SCFH}{1360 \sqrt{\frac{(\Delta p) (p_1)}{(460 + T) (S.G.)}}} \quad \text{or} \quad SCFH = 1360 Cv \sqrt{\frac{(\Delta p) (p_1)}{(460 + T) (S.G.)}}$$

where: $\Delta p = p_1 - p_2$
 p_1 = inlet pressure in psia
 p_2 = outlet pressure in psia
 SCFH = flow in standard cubic feet per hour
 S.G. = specific gravity of gas where air = 1.0 @ 70° F (21° C) and 14.7 psia
 T = temperature in ° F



Specifying metering valves for critical analytical instrumentation and applications which demand precise stem positioning requires a complete knowledge of your process conditions.

Before you start, it is important that your flow requirements be defined in terms of Cv or flow coefficient.

Cv is the valve flow coefficient expressing the rate of flow in gallons per minute of 60° F water with a pressure drop of 1 PSI across the valve. By correctly using the formula for liquids or gases, you will obtain an accurate Cv, necessary for your valve selection.

Cv should be calculated for expected variations in pressure and required flow range. The Cv range for HOKE metering valves is approximately 10 to 1. This is illustrated in the Cv vs handle turns flow curves shown with each valve series. Note that the more handle turns required to achieve a specified change in flow, the greater the valve's accuracy.

The Cv range providing best control should fall within the straight portion of the curve with the nominal value centered. Using the straight portion of the curve gives approximately the same incremental flow for each turn of the valve handle.

Once Cv requirements are determined, the following steps must be evaluated before making your final valve selection.

1. Define Pressure/Temperature Requirements

HOKE metering valves are available from moderate vacuum to 5000 psig. Operating temperatures range from -65° to 450° F. There are no restrictions on pressure drop or downstream pressure for HOKE valves, however, best performance will be obtained if the downstream pressure is more than 50% of the inlet pressure.

2. Know Your Material Requirements

Corrosion resistance should be your prime consideration when selecting materials, particularly the wetted or pressure boundary parts. There are times when the environment must also be considered in addition to the fluid media.

The pressure/temperature demands of materials are normally covered by the material manufacturer's product specifications.

HOKE products are designed using materials of similar corrosion properties whenever possible. If material selection is critical, please contact your nearby HOKE distributor. He can recommend options to help solve your problem.

3. Options

Dial Indicator and micrometer handles are available for reproducing stem positioning. The HOKE Milli-Mite 1300 series is provided with a micrometer handle as standard equipment. Other handle options are available or can be made to order.

4. Final Performance

Engineering design and manufacturing standards are critical elements of the metering valve you select and will affect its actual performance.

Total control of these quality elements at HOKE assures you of valves with excellent stem positioning repeatability, low hysteresis, and extended metering range.

CIRCOR

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Tel +1-864-574-7966
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Sales-hoke@circor.com**

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Packless Valves

Bellows & Diaphragm

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packless valves



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For Your Safety

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. When selecting products, the total system design must be considered to ensure safe, trouble-free performance. Material compatibility, product ratings and application details should be considered in the selection. Improper selection or use of products described herein can cause personal injury or property damage.

Contact your authorized HOKE® sales and service representative for information about additional sizes and special alloys.

SAFETY WARNING:

HOKE® products are designed for installation only by professional suitably qualified licensed system installers experienced in the applications and environments for which the products are intended. These products are intended for integration into a system. Where these products are to be used with flammable or hazardous media, precautions must be taken by the system designer and installer to ensure the safety of persons and property. Flammable or hazardous media pose risks associated with fire or explosion, as well as burning, poisoning or other injury or death to persons and/or destruction of property. The system designer and installer must provide for the capture and control of such substances from any vents in the product(s). The system installer must not permit any leakage or uncontrolled escape of hazardous or flammable substances. The system operator must be trained to follow appropriate precautions and must inspect and maintain the system and its components including the product(s) and at regular intervals in accordance with timescales recommended by the supplier to prevent unacceptable wear or failure.



0300 Series

Air Operated Bellows Valves

Introduction

The 0300 Series valve is designed for applications where critical leak-tight integrity and cleanliness are required. The valve can be used for both automatic or remote operation. Both normally opened (NO) and normally closed (NC) air operators are available.



packless valves

Typical Applications

- High purity/hazardous gas distribution systems
- Diffusion furnaces
- Epitaxial reactors
- Gas panels
- Purge systems
- Gas cabinets

Features & Benefits

- Operates with low air pressure and volume
- Low dead space
- Reliable shut-off
- Long cycle life insures years of maintenance free operation
- Compact design saves space in panels
- Reliable PCTFE seat increases valve life
- Normally closed (NC) or normally opened (NO) models use the same air entry position
- Special High Tolerance NPT Thread

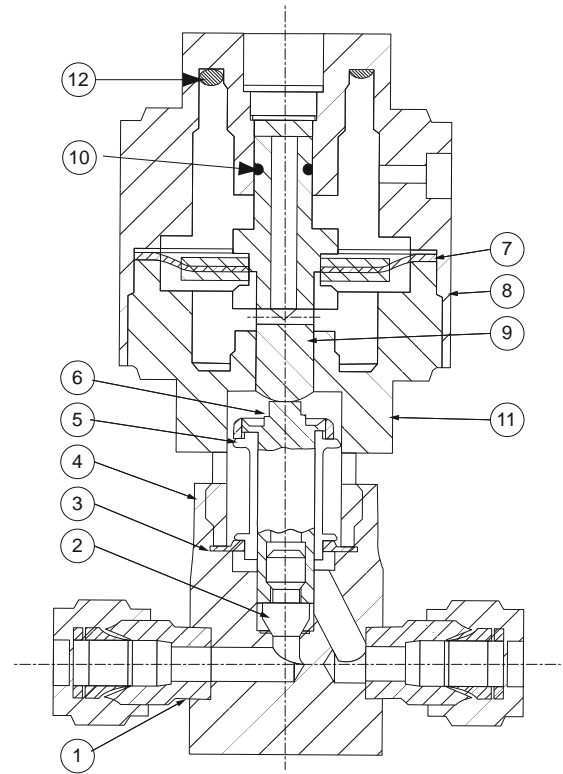
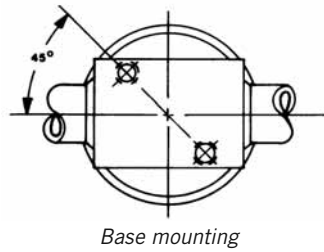
Technical Data

| | 0361 SERIES (N/C) | 0371 SERIES (N/O) |
|----------------------------------|---|--------------------|
| MAXIMUM OPERATING PRESSURE | vacuum to 200 psig | vacuum to 350 psig |
| TEMPERATURE RANGE | -40° F to +250° F (-40° C to +121° C) | |
| ORIFICE SIZE | 0.170" (4.32 mm) | |
| Cv FACTOR | 0.28 | |
| INTERNAL VOLUME | 0.08 | |
| HELIUM LEAK TEST - ENVELOPE MAX. | 0.0005 MCFH 5.2 x 10 ⁻⁹ SCC/SEC | |
| - SEAT MAX. | 0.001 MCFH 1.04 x 10 ⁻⁸ SCC/SEC | |
| BASIC MATERIAL | 316 stainless steel | |

0300 Series

Materials of Construction

| | DESCRIPTION | MATERIAL |
|----|-------------------------------|----------------------|
| 1 | GYROLOK® fitting | 316L stainless steel |
| 2 | Stem tip (replaceable) | PCTFE |
| 3 | Gasket (bellows to body seal) | PCTFE |
| 4 | Valve body | 316 stainless steel |
| 5 | Bellows | 316 stainless steel |
| 6 | Stem | 316 stainless steel |
| 7 | Diaphragm | Fairprene® |
| 8 | Bonnet | anodized aluminum |
| 9 | Diaphragm plunger | 303 stainless steel |
| 10 | O-ring seal | Buna-N® |
| 11 | Air operator body | anodized aluminum |
| 12 | Compression spring | music wire |

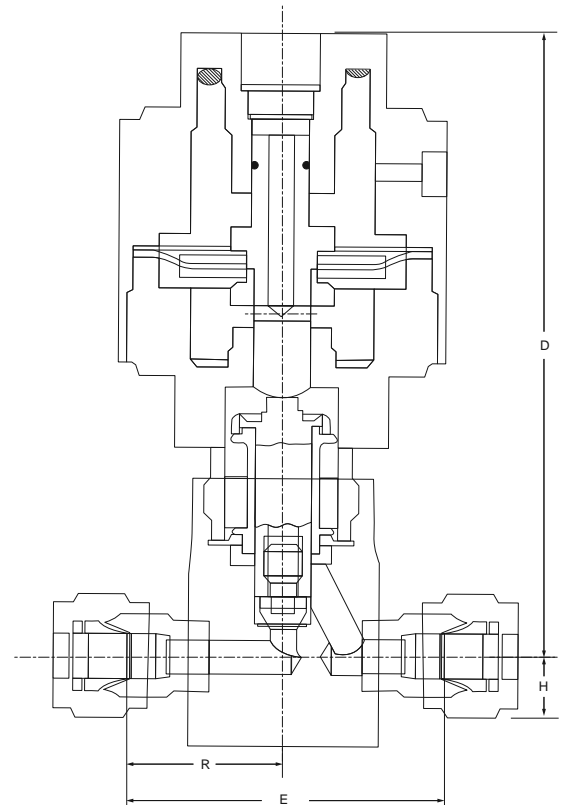


(0361G [Y shown])

Dimensions

| PART NUMBER | | D | H | E | R | BASE MOUNTING |
|-------------|------|----|----|----|----|---|
| 0361G4Y | inch | 3¼ | ½ | 2 | 1 | 2 mounting holes 10-32UNF-2B Thd. on 1" bolt circle |
| 0371G4Y | mm | 83 | 13 | 51 | 25 | |
| 0361F4Y | inch | 3¼ | ½ | 2 | 1 | |
| 0371F4Y | mm | 83 | 13 | 51 | 25 | |

Dimensions for reference only, subject to change.



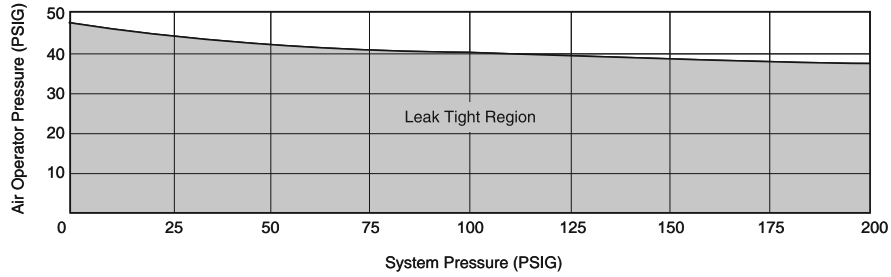
(0361G [Y shown])

0300 Series

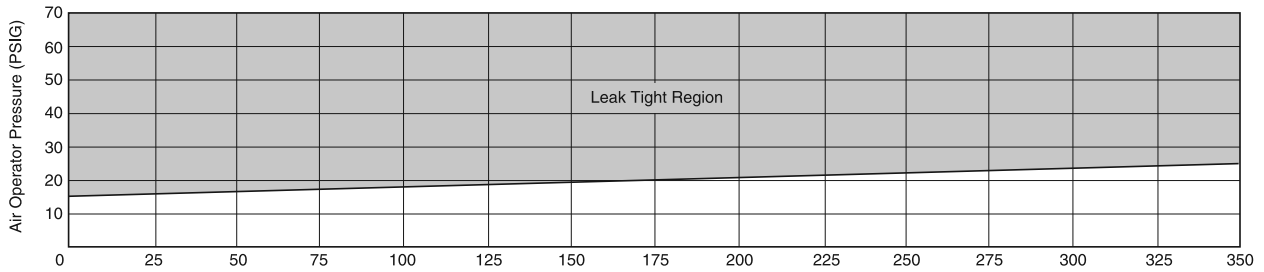
Air Operated Pressure vs. System Cracking Pressure

In process systems where fugitive emissions to atmosphere are a concern, the 0300 Series air-operated bellows valve utilizes a gasket seal between the bellows and the valve body to aid in preventing any leakage of process fluid to the atmosphere. The following graphs represent the air operator/actuator input pressure vs. the outlet system pressure. Because the air operator/actuator pressure works against a normally closed or normally open spring pressure, the leak tight region changes in relation to the valve outlet or downstream pressure. The normally closed valves, for example, have better sealing capabilities at lower operator/actuator pressures. The normally open valves work opposite to the normally closed valves.

0361 Series – Normally Closed



0371 Series – Normally Open



How to Order

Order valve by part number shown in chart.

| END CONNECTIONS | FLOW PATTERN | ORDER BY PART NUMBER | | |
|-----------------|--------------|----------------------|-----------------|---------|
| | | NORMALLY OPEN | NORMALLY CLOSED | ORIFICE |
| ¼" GYROLOK® | Straight | 0371G4Y | 0361G4Y | 0.170 |
| ¼" Female NPT | Straight | 0371F4Y | 0361F4Y | 0.170 |

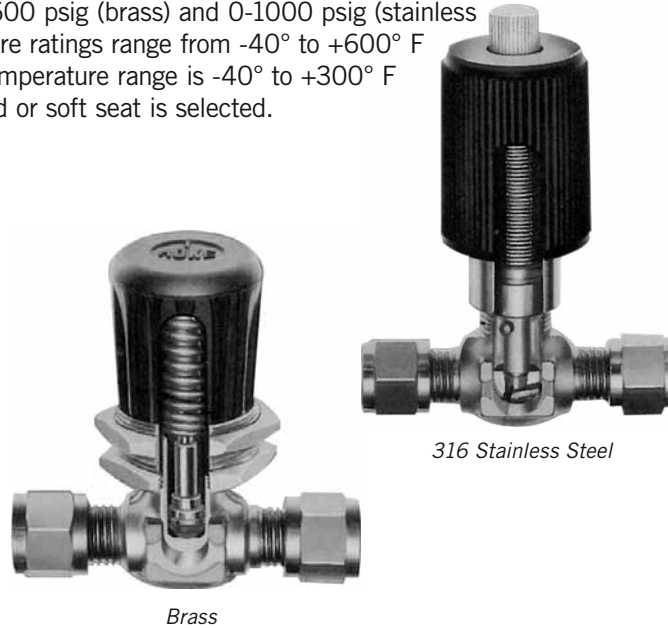


4100 Series

316 Stainless Steel or Brass Bellows Sealed Valves
 (.060"/1.5 mm or .170"/4.3 mm orifices)

Introduction

With its compact size suitable for confined spaces, the 4100 Series design includes an internal volume of only 0.08 cubic inches. Brass and 316 stainless steel bodies are available. Operating pressures range from 0 - 600 psig (brass) and 0-1000 psig (stainless steel). 316 stainless steel operating temperature ratings range from -40° to +600° F (-40° to +316° C), while the brass operating temperature range is -40° to +300° F (-40° to +149° C) depending on whether a hard or soft seat is selected.



Brass

316 Stainless Steel

packless valves

Typical Applications

Stainless steel valves

- Critical gas analysis
- High temperature liquid metals
- Handling reactive and toxic fluids
- Vacuum system bake-out

Brass valves

- Sampling systems
- Gas analysis equipment
- Laboratory service
- Instrumentation

Features & Benefits

- Low internal volume for gas analysis
- Panel mounting is available (specify kit 4100K1)

Stainless steel valves

- Choice of blunt or regulating stem points
- Seal welded bellows to body

Brass valves

- Phosphor bronze bellows silver-soldered to body and stem isolates fluid from atmosphere
- Choice of vee stem with small orifice for metering, blunt point, or PCTFE stem
- Special High Tolerance NPT Thread

Technical Data

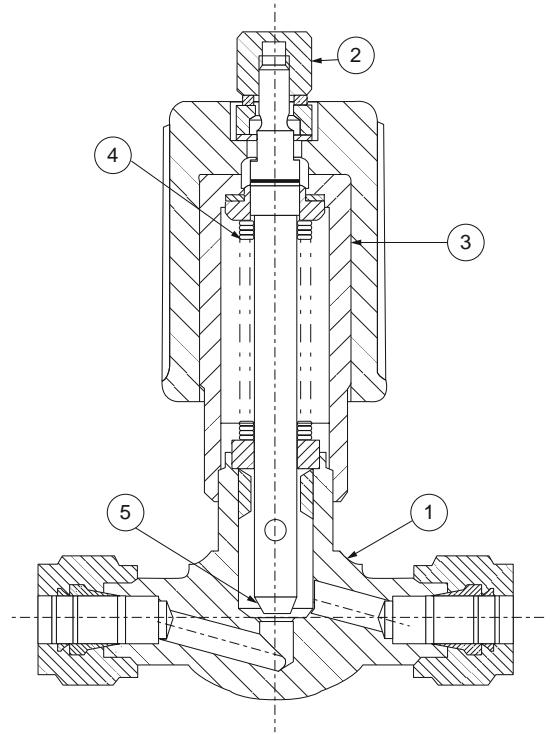
| | 316 STAINLESS STEEL | BRASS |
|-----------------------------------|--|--|
| MAXIMUM OPERATING PRESSURE | Vacuum to 1000 psig (70 kg/cm ²) | Vacuum to 600 psig @ 70° F (45 kg/cm ² @ 21° C) |
| TEMPERATURE RANGE | -40° F to +600° F (-40° C to +316° C) | Hard seat: -40° F to +300° F (-40° C to +149° C) Soft seat: -40° F to +250° F (-40° C to +121° C) |
| ORIFICE SIZE | Vee stem: 0.059 (1.5 mm) Blunt stem: 0.170 (4.3 mm) | Vee stem: 0.060 (1.5 mm) Blunt stem: 0.170 (4.3 mm) PCTFE stem: 0.170 (4.3 mm) |
| Cv FACTOR | 0.35 (maximum) | 0.35 (maximum) |
| INTERNAL VOLUME | 0.08 cubic inches | 0.08 cubic inches |

4100 Series

Materials of Construction

316 Stainless Steel

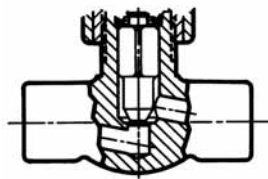
| | DESCRIPTION | MATERIAL |
|---|--------------------|----------------------|
| 1 | Body | 316 stainless steel |
| 2 | Cap nut | Brass, nickel-plated |
| 3 | Handle | Brass, nickel-plated |
| 4 | Bellows | 316 stainless steel |
| 5 | Stem point | 316 stainless steel |
| 6 | Panel mounting kit | Brass, nickel-plated |



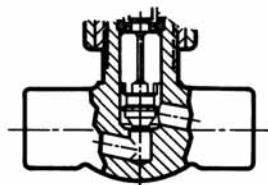
Materials of Construction

Brass

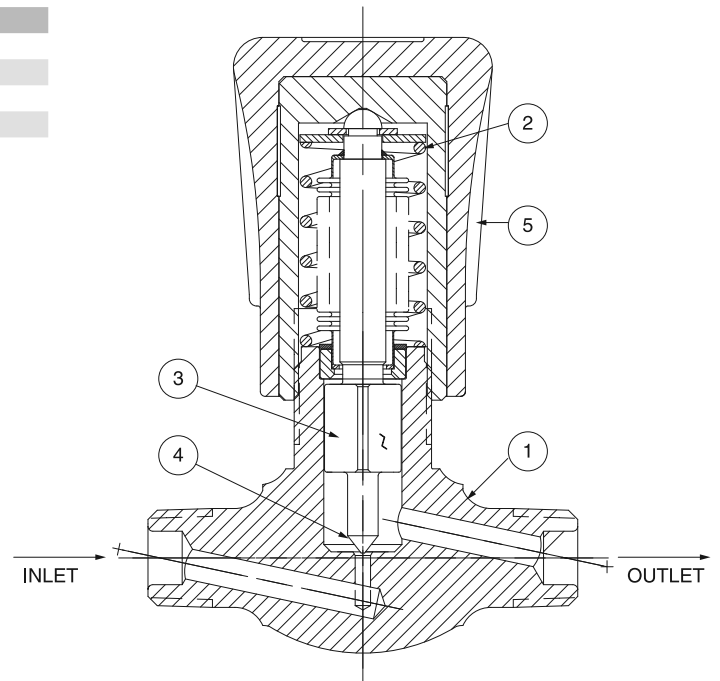
| | DESCRIPTION | MATERIAL |
|---|-------------|---|
| 1 | Body | Forged brass |
| 2 | Bellows | Phosphor bronze silver-soldered to body |
| 3 | Stem | 316 stainless steel |
| 4 | Stem tip | PCTFE |
| 5 | Handle | Nylon with brass insert |



Blunt Stem
4111M4B



PCTFE Stem
4151M4B



Vee Stem
4171M4B

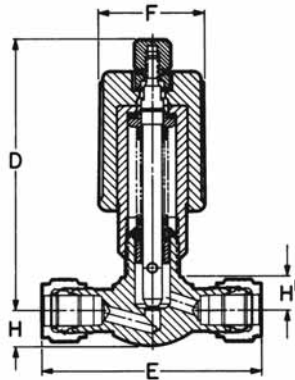
4100 Series

Dimensions

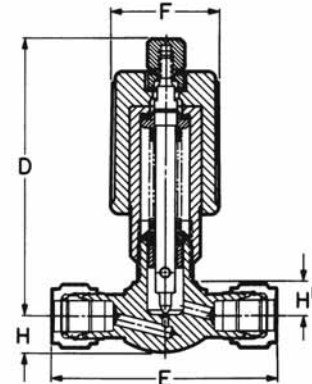
Stainless Steel

| CONNECTIONS | | D | E | F | H | H1 | PANEL MOUNTING | |
|----------------------------|------|----|-------|----|-------|-------|----------------|----------------|
| | | | | | | | HOLE SIZE | MAX. THICKNESS |
| 1/4" NPT Male | inch | 3 | 1 3/4 | 1 | 25/64 | 1 1/2 | 1 1/4 | 1/4 |
| | mm | 76 | 44 | 25 | 10 | 9 | 26 | 6 |
| 1/4" O.D. Tube GYROLOK® | inch | 3 | 2 3/8 | 1 | 25/64 | 1 1/2 | 1 1/4 | 1/4 |
| | mm | 76 | 60 | 25 | 10 | 9 | 26 | 6 |
| 6 mm GYROLOK® | inch | 3 | 2 3/8 | 1 | 25/64 | 1 1/2 | 1 1/4 | 1/4 |
| | mm | 76 | 60 | 25 | 10 | 9 | 26 | 6 |

Dimensions for reference only, subject to change.



Blunt Stem
4112G4Y



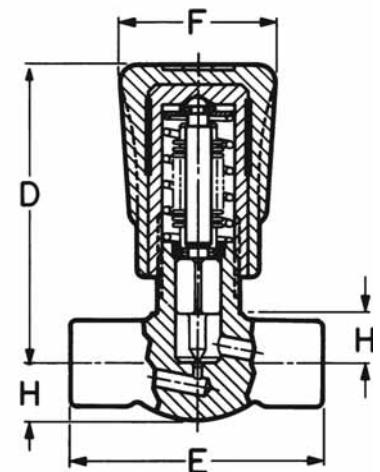
Vee Stem
4172G4Y

Dimensions

Brass

| CONNECTIONS | | D | E | F | H | H1 | PANEL MOUNTING | |
|----------------------------|------|-------|-------|--------|-------|-----|----------------|----------------|
| | | | | | | | HOLE SIZE | MAX. THICKNESS |
| 1/8" NPT Male | inch | 2 5/8 | 1 3/4 | 1 1/16 | 23/64 | 3/8 | 1 1/4 | 1/4 |
| | mm | 67 | 44 | 27 | 9 | 10 | 26 | 6 |
| 1/4" NPT Male | inch | 2 5/8 | 1 3/4 | 1 1/16 | 23/64 | 3/8 | 1 1/4 | 1/4 |
| | mm | 67 | 44 | 27 | 9 | 10 | 26 | 6 |
| 1/4" O.D. Tube GYROLOK® | inch | 2 5/8 | 1 3/4 | 1 1/16 | 23/64 | 3/8 | 1 1/4 | 1/4 |
| | mm | 67 | 60 | 27 | 9 | 10 | 26 | 6 |

Dimensions for reference only, subject to change.



Vee Stem
4171M4B

4100 Series

How to Order

Stainless Steel: Order valve by part number shown in chart.

| ORDER BY PART NUMBER | | | | |
|-----------------------|------------|------------|-----------|---------|
| CONNECTIONS | BLUNT STEM | VEE STEM | CV FACTOR | ORIFICE |
| ¼" NPT Male | 4112M4Y | — | 0.35 | 0.17 |
| ¼" O.D. Tube GYROLOK® | — | 4172G4Y | 0.059 | 0.06 |
| ¼" O.D. Tube GYROLOK® | 4112G4Y | — | 0.35 | 0.17 |
| 6 mm GYROLOK® | 4112G6Y/MM | — | 0.35 | 0.17 |
| 6 mm GYROLOK® | — | 4172G6Y/MM | 0.059 | 0.06 |
| Panel Mounting Kit | 4100K1 | 4100K1 | — | — |

Brass: Order valve by part number shown in chart.

| ORDER BY PART NUMBER | | | | | |
|-------------------------------|------------|----------|------------|-----------|---------|
| CONNECTIONS | BLUNT STEM | VEE STEM | PCTFE STEM | CV FACTOR | ORIFICE |
| ½" NPT Male | 4111M2B | — | 4151M2B | 0.35 | 0.17 |
| ½" NPT Male | — | 4171M2B | — | 0.059 | 0.06 |
| ½" NPT Male x 1/8" NPT Female | 4111L2B | — | — | 0.35 | 0.17 |
| ¼" NPT Male | 4111M4B | — | 4151M4B | 0.35 | 0.17 |
| ¼" NPT Male | — | 4171M4B | — | 0.059 | 0.06 |
| ¼" O.D. Tube GYROLOK® | — | — | 4151G4B | 0.35 | 0.17 |

Panel Mounting

To order Panel Mounting Kit, specify part number **4100K1**.



4200 Series

316 Stainless Steel Bellows Sealed Valves
(0.156"/3.962 mm orifice)

Introduction

With its wide operating temperature range of -320° to 1200° F (-196° to +649° C), the 4200 Series meets the demands of many critical fluid control conditions. Operating pressure range is 0-2000 psig. Applications include high temperature liquid metals, cryogenic service, and gas analysis.



packless valves

Typical Applications

- Critical gas analysis
- High temperature liquid metals
- Cryogenics
- Reactive and toxic fluids
- Sealing cesium or isotope containers
- High vacuum systems

Technical Data

| | |
|-----------------------------------|--|
| MAXIMUM OPERATING PRESSURE | Hard seats: 2000 psi @ 600° F (141 kg/cm ² @ 316° C) Soft seats: 500 psi @ 350° F (35 kg/cm ² @ 175° C) |
| HIGH VACUUM | to 10 ⁻⁵ Torr |
| TEMPERATURE RANGE | -320° F to +1200° F (-195° C to +632° C) |
| ORIFICE SIZE | 0.156 (3.962 mm) |
| Cv FACTOR | 0.36 (maximum) |
| INTERNAL VOLUME | 0.18 cubic inches |

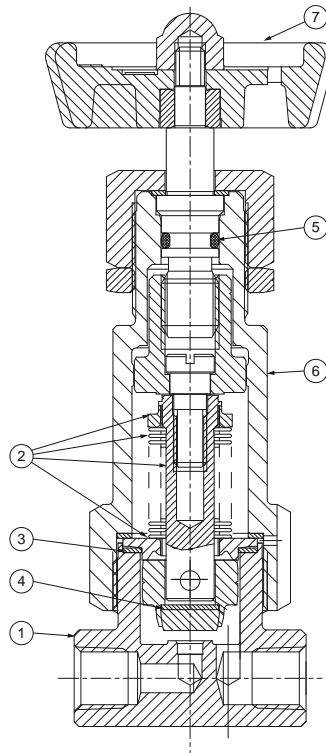
Features & Benefits

- Positive plug return on all valves prevents plug sticking in severe service
- No torque transmitted to bellows – Hex guide mates with hex broach in bonnet
- Secondary o-ring seal in upper bonnet prevents leakage if bellows is damaged
- Non-rising stem prevents galling or seizing of stem threads
- Heavy-duty welded bellows provides long cycle life and assures leak tight service. Long size bellows insures full lift and utilization of full orifice area.
- All-welded design for high-temperature and high-pressure service
- Plugs and bellows are replaceable on all gasketed types
- Valves can be base or panel mounted – add prefix “D” to part number for panel mounted
- Variety of materials and modifications
- Special High Tolerance NPT Thread

4200 Series

Materials of Construction

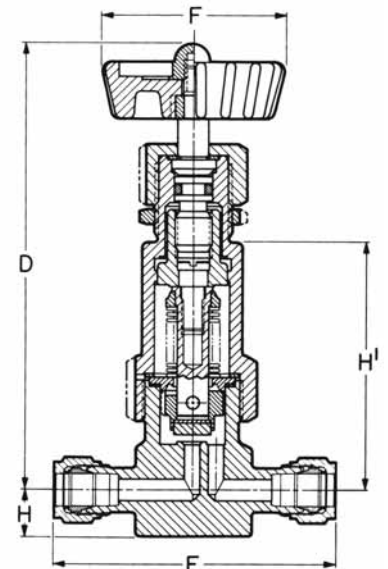
| | DESCRIPTION | 4251F2Y 4251F4Y 4251N6Y 4251G4Y | 4212F4Y | 4235Q6Y | 4213Q6Y |
|---|-----------------------|--|-----------------------------|------------------------------------|------------------------------------|
| 1 | Body, bar stock | 316 stainless steel | 316 stainless steel | 316 stainless steel | 316 stainless steel |
| 2 | Bellows assembly | 316 stainless steel | 316 stainless steel | 316 stainless steel | 316 stainless steel |
| 3 | Seal, bellows-to-body | PTFE | 316 stainless steel | 316 stainless steel seal welded | 316 stainless steel seal welded |
| 4 | Disc or plug | PTFE | 316 stainless steel | 316 stainless steel stellited | 316 stainless steel |
| 5 | Packing, secondary | O-ring seal | O-ring seal | Garlock® 908 | O-ring seal |
| 6 | Bonnet | aluminum | 303 stainless steel | 303 stainless steel | 303 stainless steel |
| 7 | Handle | Nylon wheel | aluminum cross, die cast | 303 stainless steel | aluminum cross, die cast |



Dimensions

| CONNECTIONS | D (OPEN) | E | F | H | H' | PANEL MOUNTING | | BASE MOUNTING |
|-------------|-------------|--------------------------------|-------------------------------|---------------------------------|---------------------------------|-------------------------------|--------------------------------|--------------------------------|
| | | | | | | HOLE SIZE | MAX. THICKNESS | |
| 4212F4Y | inch | 4 ⁷ / ₁₆ | 1 ¹ / ₂ | 2 ³ / ₈ | 1 ¹³ / ₃₂ | 2 ³ / ₈ | 2 ³ / ₃₂ | 3 ¹ / ₁₆ |
| | mm | 113 | 38 | 60 | 10 | 60 | 20 | 5 |
| 4251F4Y | inch | 4 ⁷ / ₁₆ | 1 ¹ / ₂ | 1 ¹³ / ₁₆ | 1 ¹³ / ₃₂ | 2 ¹ / ₂ | 2 ⁵ / ₃₂ | 3 ¹ / ₁₆ |
| | mm | 113 | 38 | 46 | 10 | 58 | 20 | 5 |
| 4251G4Y | inch | 4 ³ / ₈ | 2 ¹ / ₂ | 1 ¹³ / ₁₆ | 1 ¹⁵ / ₃₂ | 2 ¹ / ₂ | 2 ⁵ / ₃₂ | 3 ¹ / ₁₆ |
| | mm | 117 | 55 | 46 | 12 | 64 | 20 | 5 |
| 4213Q6Y | inch | 4 ³ / ₈ | 7 ¹ / ₂ | 2 ³ / ₈ | 5 ¹ / ₁₆ | 2 ¹ / ₂ | 2 ⁵ / ₃₂ | 3 ¹ / ₁₆ |
| | mm | 111 | 191 | 60 | 8 | 58 | 20 | 5 |
| 4235Q6Y | inch | 6 ¹ / ₂ | 7 ¹ / ₂ | 2 ³ / ₈ | 5 ¹ / ₁₆ | 2 ¹ / ₂ | 2 ⁵ / ₃₂ | 3 ¹ / ₁₆ |
| | mm | 165 | 191 | 67 | 8 | 58 | 20 | 5 |
| 4212G4Y | inch | 4 ³ / ₈ | 2 ¹ / ₂ | 1 ¹³ / ₁₆ | 1 ¹⁵ / ₃₂ | 2 ¹ / ₂ | 2 ⁵ / ₃₂ | 3 ¹ / ₁₆ |
| | mm | 117 | 55 | 46 | 12 | 64 | 20 | 5 |

2 mounting
holes 10-32
NF Thd.,
0.187 min. full
thd.



Dimensions for reference only, subject to change.

4200 Series

How to Order

Order valve by part number shown in chart.

| | CONNECTIONS INLET & OUTLET | ORDER BY PART NUMBER | CV FACTOR | OPERATING PRESSURE | TEMPERATURE RANGE |
|---|-------------------------------|----------------------|-----------|--------------------------------|---------------------------------------|
| PIPE ENDED MODELS | ¼" NPT Female | 4212F4Y | 0.33 | 2000 @ 600° F | -320° F to 600° F (-196° C to 316° C) |
| | | 4251F4Y | 0.36 | 500 @ 350° F | -65° F to 350° F (18° C to 177° C) |
| GYROLOK® | ¼" GYROLOK® tube fitting | 4212G4Y | 0.33 | 2000 @ 600° F | -320° F to 600° F (-196° C to 316° C) |
| | | 4251G4Y | 0.36 | 500 @ 350° F | -65° F to 350° F (18° C to 177° C) |
| SOCKET WELD MODELS | ¾" O.D. socket weld | 4212N6Y | 0.33 | 2000 @ 600° F | -320° F to 600° F (-196° C to 316° C) |
| | | 4251N6Y | 0.36 | 500 @ 350° F | -65° F to 350° F (18° C to 177° C) |
| 3" TUBE EXTENSIONS SOCKET WELD TO BODY | Socket weld to body | 4213Q6Y | 0.33 | 2000 @ 600° F 400 @ 900° F | -320° F to 900° F (196° C to 482° C) |
| | | 4235Q6Y | 0.33 | 2000 @ 600° F 250 @ 1200° F | -320° F to 1200° F (196° C to 649° C) |



Pipe ended
4212F4Y



3" Tube extensions
4235Q6Y



Socket weld
4251N6Y



4500 Series

Bellows Sealed Valves
(0.156"/3.962 mm Orifice)

Introduction

This miniature valve can be manually or remotely operated. Operating temperatures range from -20° to +250° F (-29° to +120° C), while operating pressures range from high vacuum to 300 psig. Available in brass and MONEL®, this valve can be used as a stop valve in a calibrated leak tester, and in labs where leak-tight service is necessary.



Typical Applications

- Stop valve in calibrated leak tester
- High vacuum work
- Laboratory environments demanding leak-tight service

Technical Data

| | |
|-----------------------------------|---------------------------------------|
| MAXIMUM OPERATING PRESSURE | 10 ⁻⁵ Torr to 300 psig |
| TEMPERATURE RANGE | -20° F to +250° F (-29° C to +120° C) |
| ORIFICE SIZE | 0.156 (model 4551Q6M – 0.281 orifice) |
| Cv FACTOR | 0.70 maximum |
| INTERNAL VOLUME | 0.08 cubic inches |

Features & Benefits

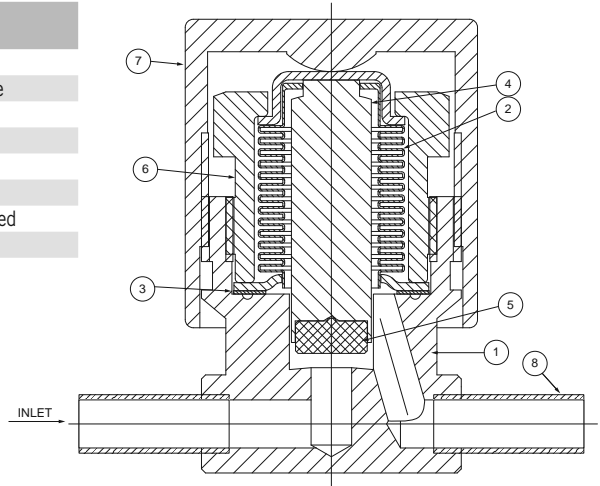
- Protective handle limits escape of process fluid if bellows ruptures
- Bellows assembly is replaced by removing cap handle and retaining nut
- PCTFE seat is fully encapsulated to prevent cold flow
- Bellows is sealed to body with a PCTFE gasket
- Bellows and stem are one-piece assembly
- Available with female NPT or silver-soldered copper tube extensions
- One of the smallest valve types and capacities available
- Air-to-open or air-to-close operators for remote actuation are available
- Valve may be base-mounted
- Special High Tolerance NPT Thread

packless valves

4500 Series

Materials of Construction

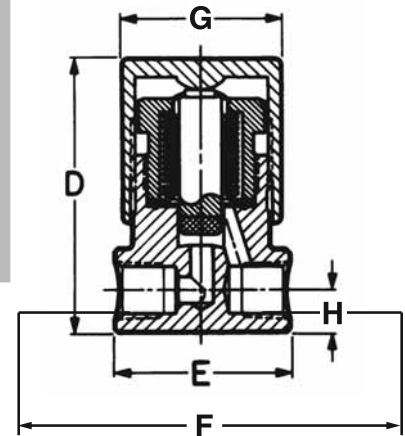
| DESCRIPTION | 4551F2B 4551Q4B | 4551Q4M |
|-------------------------|----------------------|----------------------|
| 1 Body | Brass | MONEL® |
| 2 Bellows | Phosphor bronze | Phosphor bronze |
| 3 Bellows-to-body seal | PCTFE | PCTFE |
| 4 Stem | MONEL® | MONEL® |
| 5 Plug disc | PCTFE | PCTFE |
| 6 Bellows retaining nut | Brass | Brass |
| 7 Cap | Brass, nickle-plated | Brass, nickle-plated |
| 8 Tube extension | Copper | Copper |



Dimensions

| CONNECTIONS | FLOW PATTERN | | D | E | F | G | H |
|---------------------------|--------------|------|----------|--------|----------|--------|--------|
| 1/8" NPT Female | Straight | inch | 1 29/32" | 1 1/4" | 1 1/4" | 1 1/8" | 1 9/4" |
| | | mm | 48 | 32 | 32 | 29 | 8 |
| 1/4" O.D. Tube Extensions | Straight | inch | 1 29/32" | 1 1/4" | 6 3/16" | 1 1/8" | 3/16" |
| | | mm | 48 | 32 | 173 | 29 | 5 |
| 1/4" O.D. Tube Extensions | Angle | inch | 1 29/32" | 1 1/4" | 3 13/32" | 1 1/8" | 3/16" |
| | | mm | 48 | 32 | 87 | 29 | 5 |
| 1/4" O.D. Tube Extensions | Tee | inch | 1 29/32" | 1 1/4" | 6 3/16" | 1 1/8" | 3/16" |
| | | mm | 48 | 32 | 173 | 29 | 5 |
| 3/8" O.D. Tube Extensions | Straight | inch | 3 13/32" | 1 1/4" | 9 1/4" | 1 1/8" | 3/16" |
| | | mm | 87 | 32 | 235 | 29 | 5 |

BASE MOUNTING
2 mounting holes on 3/4" dia. 8-32UNC-2B 3/16" minimum full thread



(For tube extensions only)

Dimensions for reference only, subject to change.
* Straight flow pattern view shown.

How to Order

| CONNECTIONS | FLOW PATTERN | ORDER BY PART NUMBER | | |
|---------------------------|--------------|----------------------|---------|------|
| | | BRASS | MONEL® | Cv |
| 1/8" NPT Female | Straight | 4551F2B | — | 0.21 |
| 1/4" O.D. Tube Extensions | Straight | — | 4551Q4M | 0.21 |
| 1/4" O.D. Tube Extensions | Straight | 4551Q4B | — | 0.21 |



Straight Pattern
4551F2B

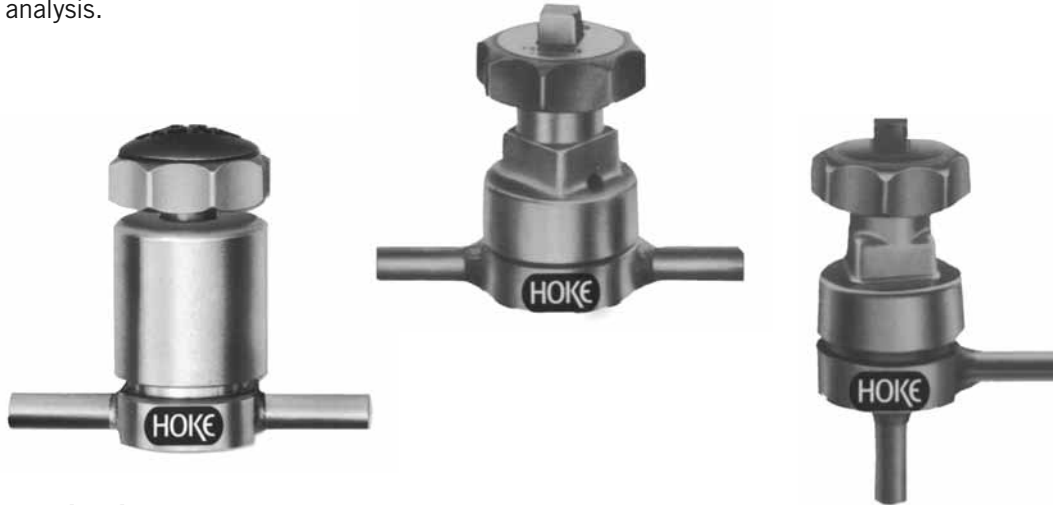


4600 Series

Gasketed & Welded Diaphragm Valves

Introduction

Available in gasketed and welded versions, this valve offers a Cv of 0.2. Operating temperature range of the welded construction version is -65° to +600° F (-54° to +316° C), permitting it to be used for high temperature bake-out. The gasketed version can be used in high vacuums, corrosive fluids, and gas analysis.



Typical Applications

- High temperature bake-out
- High vacuum
- Instrumentation
- Research labs
- Gas analysis
- Corrosive fluids

Features & Benefits

- MONEL® construction
- Diaphragm provides low internal volume and low dead space
- ¼" socket weld tube extensions
- All welded models may be used for bake-out temperatures to 600° F (316° C) – plastic handle cap must be removed
- Select from globe or angle flow patterns
- Compact size
- All models can be base mounted

Gasketed Valves

- Square drive on handle permits reach rod operation for remote areas
- Easy replacement of diaphragm assembly
- Special High Tolerance NPT Thread

Technical Data

| | GASKETED | WELDED |
|---------------------------------|---------------------------------------|---------------------------------------|
| MAXIMUM OPERATING PRESSURE | 300 psig @ 70° F (2.07 MPa @ 21° C) | vacuum to 300 psig @ 70° F |
| VACUUM | 10 ⁻⁵ Torr | — |
| TEMPERATURE RANGE | -65° F to +240° F (-54° C to +116° C) | -65° F to +600° F (-54° C to +316° C) |
| ORIFICE SIZE | 0.125 (3.2 mm) | 0.125 (3.2 mm) |
| Cv FACTOR | 0.2 | 0.2 |
| INTERNAL VOLUME | 0.11 cubic inches | 0.11 cubic inches |
| HELIUM LEAK TEST -ENVELOPE MAX. | 5 x 10 ⁻⁹ SCC/SEC | 5 x 10 ⁻⁹ SCC/SEC |
| -SEAT MAX. | 1 x 10 ⁻⁸ SCC/SEC | 1 x 10 ⁻⁸ SCC/SEC |

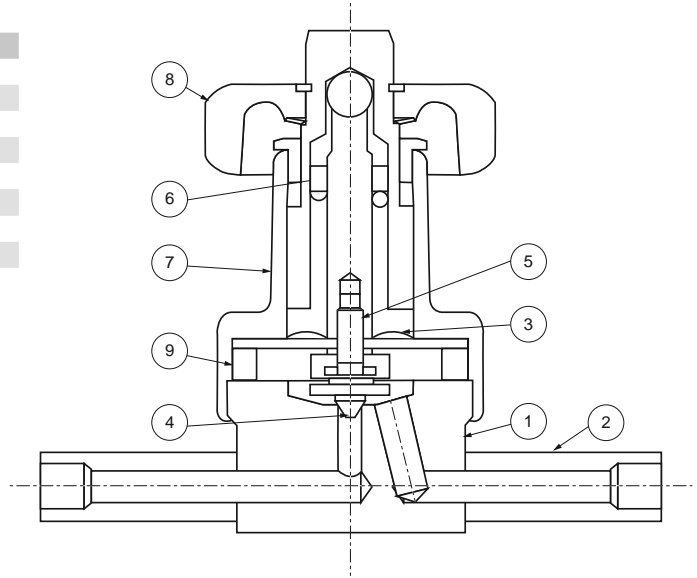
packless valves

4600 Series

Materials of Construction

Gasketed

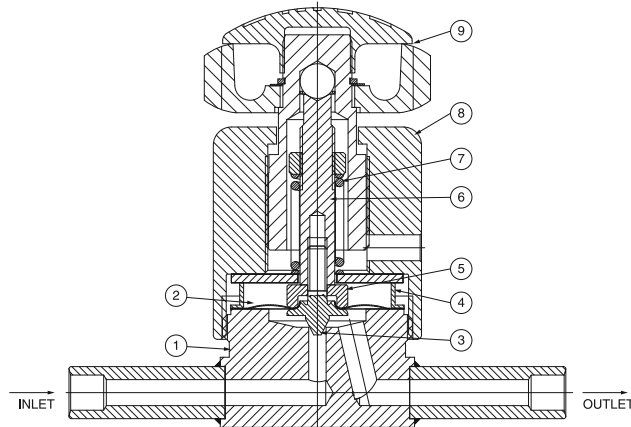
| | DESCRIPTION | MONEL® |
|---|--------------------|----------------------|
| 1 | Body | MONEL® |
| 2 | Tube extensions | MONEL® |
| 3 | Diaphragm | INCONEL® |
| 4 | Stem point | MONEL® K-500 |
| 5 | Stem | 316 stainless steel |
| 6 | Compression spring | Music wire |
| 7 | Housing | Brass, nickle-plated |
| 8 | Handle | Ni silver |
| 9 | Gasket | Aluminum |



Materials of Construction

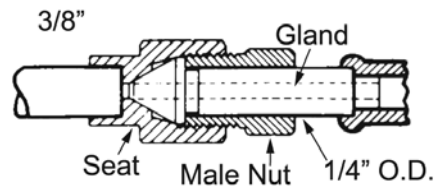
Welded

| | DESCRIPTION | MONEL® |
|---|--------------------|---------------------|
| 1 | Body | MONEL® |
| 2 | Diaphragm | INCONEL® |
| 3 | Stem point | MONEL® K-500 |
| 4 | Diaphragm ring | MONEL® |
| 5 | Diaphragm clamp | 316 stainless steel |
| 6 | Stem | 316 stainless steel |
| 7 | Compression spring | Music wire |
| 8 | Housing | 316 stainless steel |
| 9 | Handle | Ni silver |



This tube union is designed for use with all 4600 Series valves in high vacuum applications. The gland end may be connected to tubing or block with 1/4" O. D. The seat end will fit tubing or a projection of 3/8" O. D. (To order, specify part number **62076**.)

| DESCRIPTION | MATERIAL |
|-------------|-----------------|
| Seat end | MONEL® |
| Gland | MONEL® |
| Male Nut | aluminum bronze |



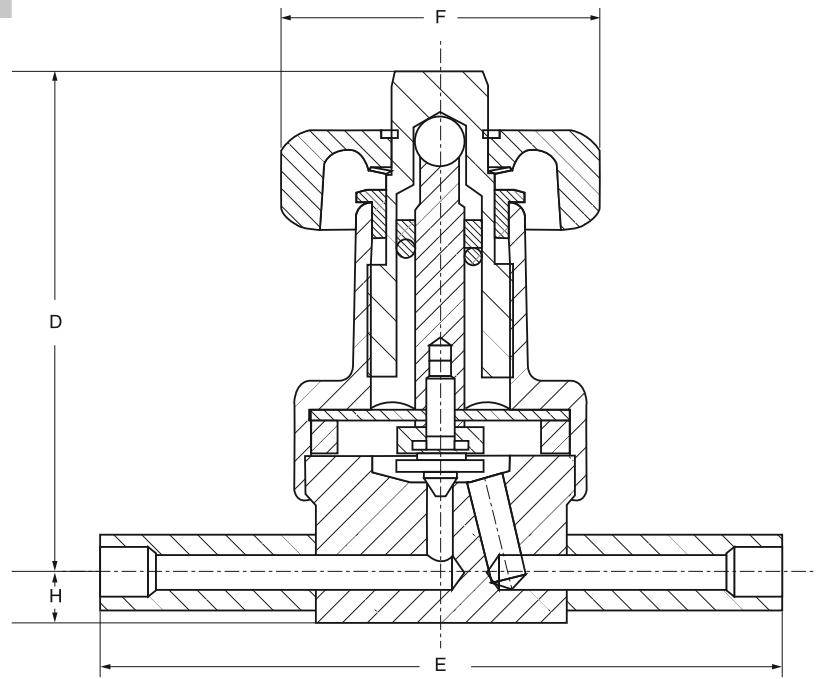
4600 Series

Dimensions

Gasketed

| PART NUMBER | D | E | F | H | BASE MOUNTING |
|-------------|------|-----------------|-----------------|-----------------|---|
| 4613N4M | inch | 2 $\frac{5}{8}$ | 3 $\frac{1}{2}$ | 1 $\frac{5}{8}$ | 2 holes on 1" dia. 1/4-20 NC Thd. Full thd. 3/8" deep |
| | mm | 66 | 89 | 41 | |
| 4623N4M | inch | 2 $\frac{5}{8}$ | 1 $\frac{3}{4}$ | 1 $\frac{5}{8}$ | Full thd. 3/8" deep |
| | mm | 66 | 44 | 41 | |

Dimensions for reference only, subject to change.



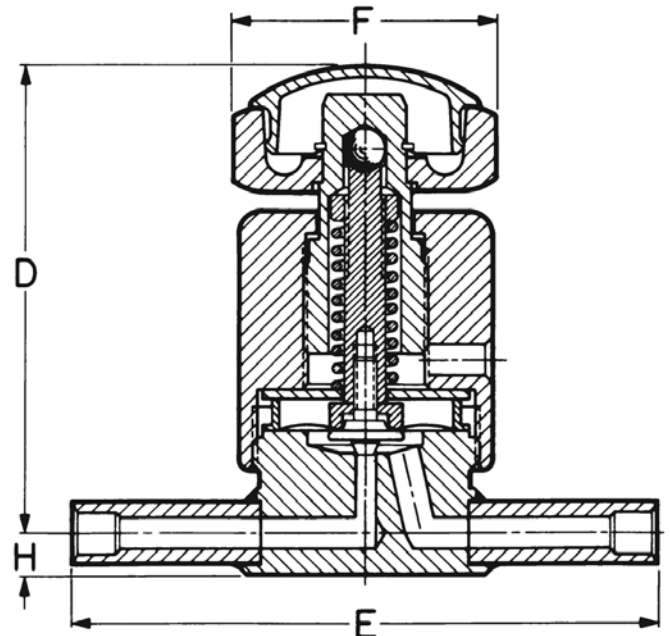
Straight flow pattern

Dimensions

Welded

| CONNECTIONS | FLOW PATTERN | D | E | F | H | BASE MOUNTING |
|----------------|--------------|------|-------------------|-----------------|-----------------|---|
| 1/4" O.D. tube | Angle | inch | 2 $\frac{13}{16}$ | 1 $\frac{3}{4}$ | 1 $\frac{5}{8}$ | 2 holes on 1" dia. 1/4-20 NC Thd. Full thd. 3/8" deep |
| | | mm | 71 | 44 | 41 | |
| 1/4" O.D. tube | Straight | inch | 2 $\frac{13}{16}$ | 3 $\frac{1}{2}$ | 1 $\frac{5}{8}$ | Full thd. 3/8" deep |
| | | mm | 71 | 89 | 41 | |

Dimensions for reference only, subject to change.



Straight flow pattern

4600 Series

How to Order

Order valve by part number shown in chart.

| | CONNECTIONS | FLOW PATTERN | ORDER BY PART NUMBER |
|----------|--------------------------------|--------------|----------------------|
| | | | MONEL® |
| GASKETED | ¼" Tube extensions | Straight | 4613N4M |
| | ¼" Tube extensions | Angle | 4623N4M |
| WELDED | ¼" Socket weld tube extensions | Straight | 4618N4M |
| | ¼" Socket weld tube extensions | Angle | 4628N4M |

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MONEL® and INCONEL® are registered trademarks of Special Metals Corporation
Fairprene® is a registered trademark of DuPont

www.goodrich.com
www.hoke.com
www.specialmetals.com
www.dupontelastomers.com



DV1 Series

2-Way Diaphragm Valves

The DV1 Series Diaphragm Valves are totally free of springs, bellows, packing, o-rings and lubricants in the process wetted area. Metal-to-metal seals to atmosphere ensure that there is no transport of undesirable elements into the flow stream, and no escaping of process material into the atmosphere. Elgiloy® diaphragms ensure the utmost in corrosion resistance and extend overall valve life.



packless valves

Typical Applications

- Analytical Instrumentation
- Petrochemical
- Pharmaceutical
- Chemical

Features & Benefits

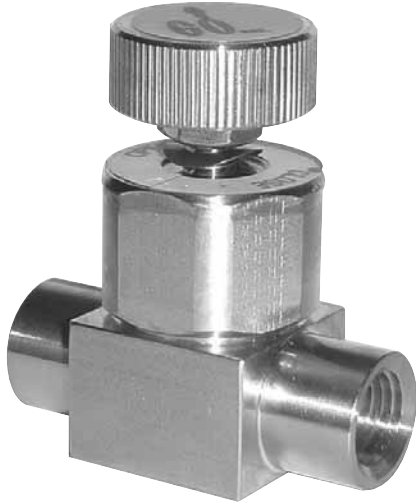
- 2-way on/off control
- Metal-to-metal seals to atmosphere to prevent leakage
- Wide variety of materials for virtually all applications
- No dynamic O-rings, springs, or lubricant in wetted flow path to eliminate sample contamination
- Very low internal volume (0.16 cc)*
- Manual ¼-plus turn or pneumatic actuation
- Pressures from vacuum (50 torr) to 3600 psig (248 bar)**
- 40µ sintered stainless steel air inlet filter extends life of pneumatic actuator

* Internal volume in machined passages of the valve body between mounting surface and sealing diaphragm(s).

** Valves cleaned for oxygen service are limited to 3000 psig (207 bar).

DV1 Series

Manual 1/4-plus Turn Valves



Technical Data

| | |
|-------------------------------|---|
| BODY | 316L stainless steel, MONEL® and HASTELLOY® C-276 |
| SEATS | PCTFE and PEEK™ |
| DIAPHRAGMS | Elgiloy® AMS 5876 |
| ORIFICE SIZE | 0.110" (2.8 mm) |
| FLOW CAPACITY | 0.17 Cv |
| VALVE INTERNAL VOLUME* | 0.16 cc |
| LEAKAGE | 1 × 10 ⁻⁹ cc/sec helium (inboard) |

* Internal volume in machined passages of the valve body between mounting surface and sealing diaphragm(s).

Operating Pressures

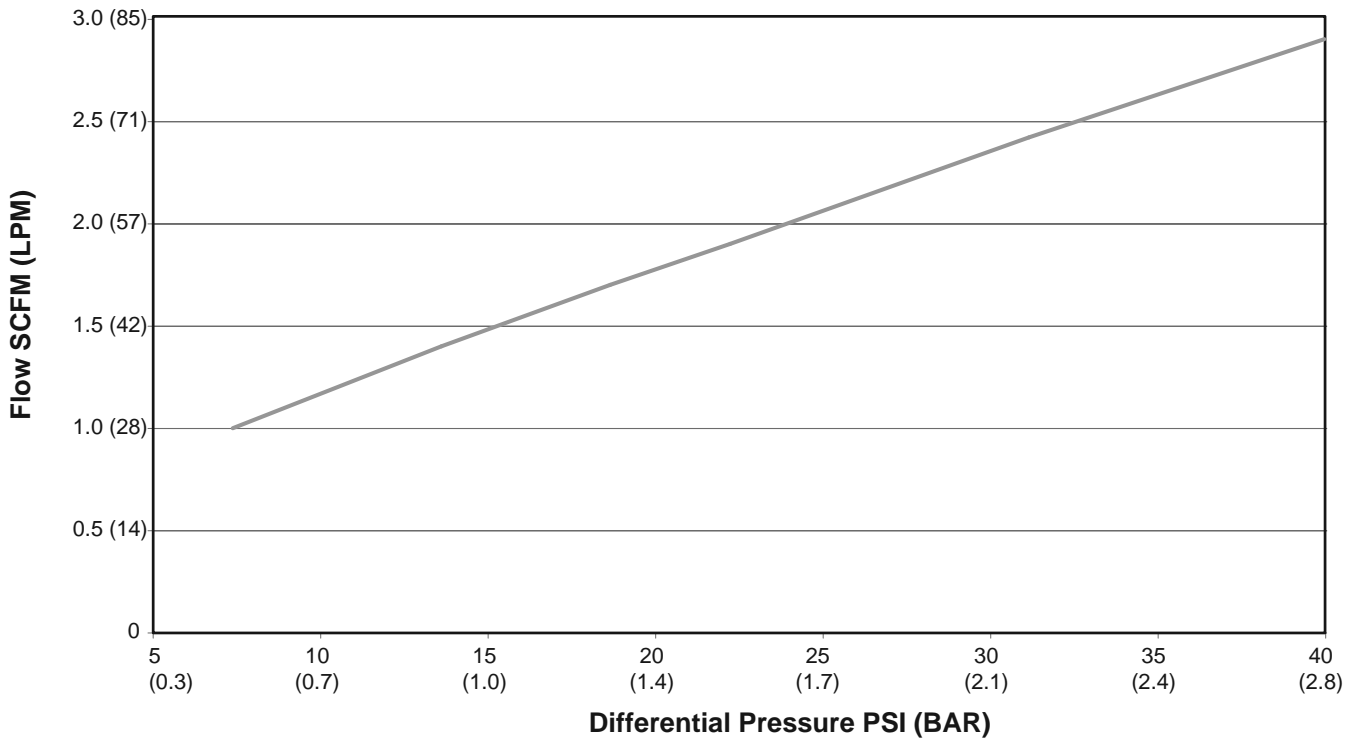
| | |
|----------------------------|---|
| OPERATING PRESSURE* | Vacuum (50 torr) to 3600 psig (248 bar) |
| PROOF PRESSURE | 7200 psig |
| BURST PRESSURE | 14,400 psig (497 barg) |

* Valves cleaned for oxygen service are limited to 3000 psig (207 bar).

Operating Temperatures

| SEAT MATERIAL | 1/4-PLUS TURN TEMPERATURE |
|---------------|---------------------------------------|
| PCTFE | -40° F to +212° F (-40° C to +100° C) |
| PEEK™ | -40° F to +400° F (-40° C to +204° C) |

Pressure vs. Flow Curve



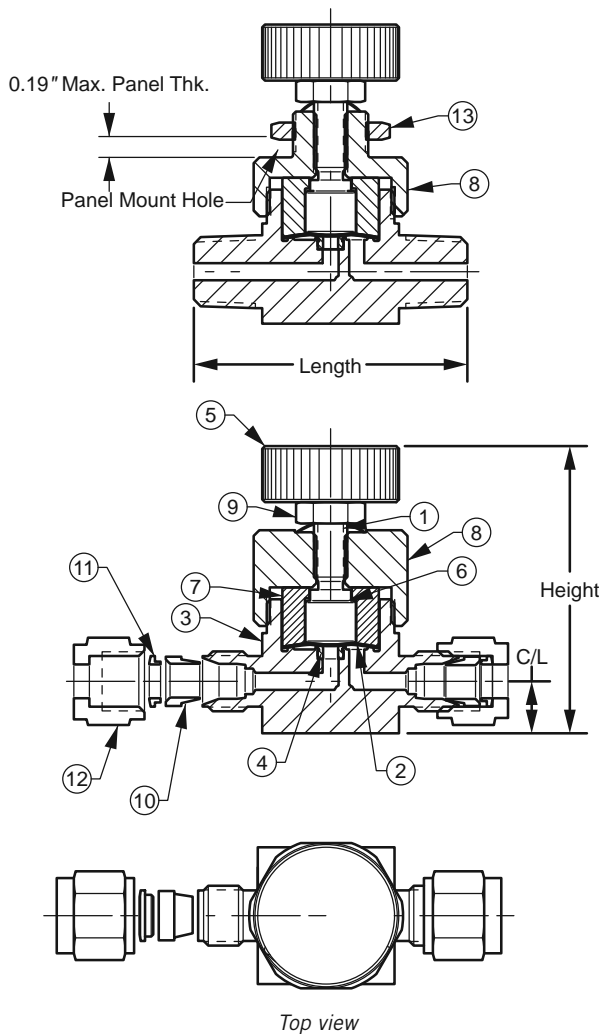
DV1 Series

Materials of Construction

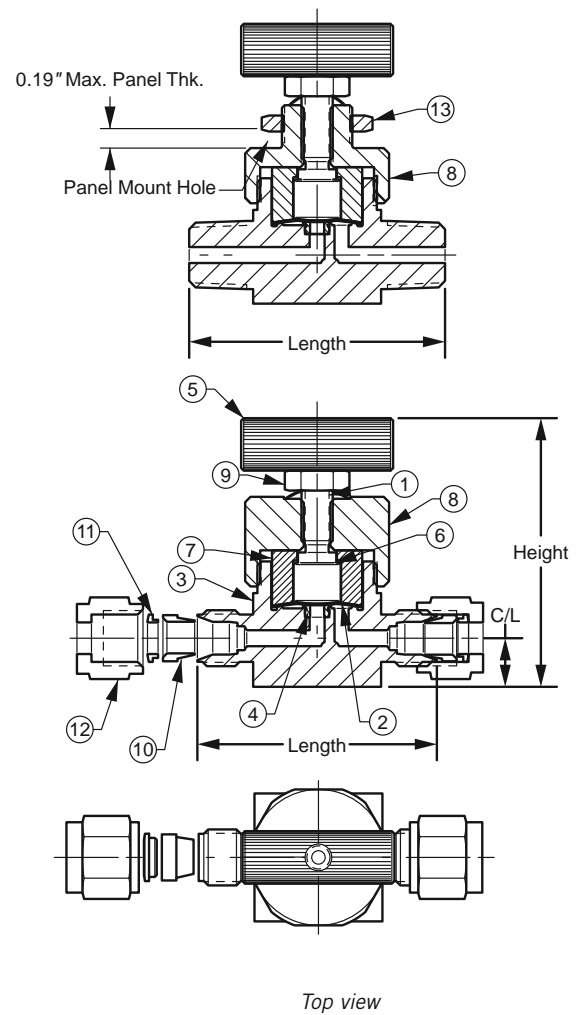
| # | PART | MATERIALS |
|----|--------------------|--|
| 1 | Stem | 17-4PH stainless steel, condition H900 |
| 2 | Diaphragm* | Elgiloy® AMS 5876 |
| 3 | Body* | 316L stainless steel, MONEL®, HASTELLOY® C-276 |
| 4 | Seat* | PCTFE, PEEK™ |
| 5 | Handle | 316 stainless steel |
| 6 | Thrust plug | Brass |
| 7 | Diaphragm retainer | 316 stainless steel |
| 8 | Bonnet | 316L stainless steel, MONEL®, HASTELLOY® C-276 |
| 9 | Handle nut | 18-8 stainless steel |
| 10 | Front ferrule* | 316L stainless steel, MONEL®, HASTELLOY® C-276 |
| 11 | Rear ferrule | 316L stainless steel, MONEL®, HASTELLOY® C-276 |
| 12 | Nut | 316L stainless steel, MONEL®, HASTELLOY® C-276 |
| 13 | Panel-mount nut | 316L stainless steel, MONEL®, HASTELLOY® C-276 |

*Wetted components

Manual ¼-plus turn Valves



Optional T-handle Valves



Dimensions

Manual ¼-plus Turn Valves

| END CONNECTION | LENGTH | HEIGHT | HANDLE RADIUS | C/L CENTER LINE | PANEL MOUNT HOLE | PANEL MOUNT THICK |
|-----------------|--------|---------|---------------|-----------------|------------------|-------------------|
| ¼" MNPT | 2.00" | 2.44" | 0.90" | 0.38" | 0.57" | 0.19" |
| ¼" FNPT | 2.00" | 2.44" | 0.90" | 0.38" | 0.57" | 0.19" |
| ½" GYROLOK® | 1.71" | 2.44" | 0.90" | 0.38" | 0.57" | 0.19" |
| ¼" GYROLOK® | 1.87" | 2.44" | 0.90" | 0.38" | 0.57" | 0.19" |
| ¼" NPT extended | 3.15" | 2.44" | 0.90" | 0.38" | 0.57" | 0.19" |
| 6mm GYROLOK® | 47.5mm | 61.98mm | 22.86mm | 9.65mm | 14.48mm | 4.83mm |
| 8mm GYROLOK® | 47.5mm | 61.98mm | 22.86mm | 9.65mm | 14.48mm | 4.83mm |

DV1 Series

Pneumatic Actuated Valves



Technical Data

| | |
|-------------------------------|--|
| BODY | 316L stainless steel, MONEL® and HASTELLOYS® C-276 |
| SEATS | PCTFE, PEEK™ |
| DIAPHRAGMS | Elgiloy® AMS 5876 |
| ORIFICE SIZE | 0.110" (2.8 mm) |
| FLOW CAPACITY | 0.17 Cv |
| VALVE INTERNAL VOLUME* | 0.16 cc |
| LEAKAGE | 1 × 10 ⁻⁹ cc/sec helium (inboard) |

* Internal volume in machined passages of the valve body between mounting surface and sealing diaphragm(s).

Operating Pressure Ratings

| | SMALL DIAMETER | MEDIUM DIAMETER | LARGE DIAMETER |
|--------------------------------|------------------------------|------------------------------|-------------------------------|
| VALVE WORKING PRESSURE* | Vacuum (50 torr) to 500 psig | Vacuum (50 torr) to 800 psig | Vacuum (50 torr) to 3600 psig |
| VALVE PROOF PRESSURE | 1000 psig | 1600 psig | 7200 psig |
| VALVE BURST PRESSURE | 2000 psig | 3600 psig | 14,400 psig |

* Valves cleaned for oxygen service are limited to 3000 psig (207 bar).

Operating Temperatures

| SEAT MATERIAL | ¼-PLUS TURN TEMPERATURE |
|---------------|---------------------------------------|
| PCTFE | -40° F to +212° F (-40° C to +100° C) |
| PEEK™ | -40° F to +400° F (-40° C to +204° C) |

Air Actuation Pressure Requirements

psig nominal

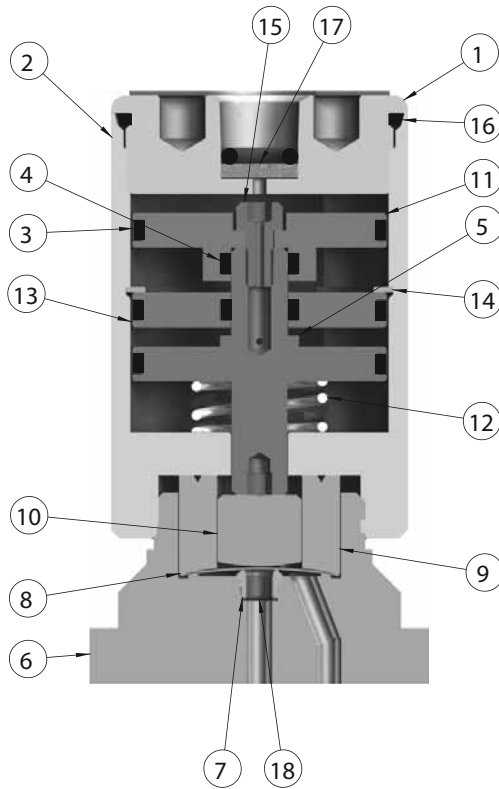
| PRESSURE | SMALL DIAMETER | MEDIUM DIAMETER | LARGE DIAMETER |
|------------------------------------|--|--|---|
| Valve Operating Pressure | Vacuum (50 torr) to 500 psig (Inlet) | Vacuum (50 torr) to 800 psig (Inlet) | Vacuum (50 torr) to 3600 psig (Inlet) |
| Actuation Pressure Normally Closed | 40 psig (3 bar) (0–250 psig process pressure) | 40 psig (3 bar) (0–250 psig process pressure) | 50 psig (0–3600 psig process pressure) |
| Actuation Pressure Normally Open | 40 psig (3 bar) (251–500 psig process pressure) | 40 psig (3 bar) (501–800 psig process pressure) | N/A |

DV1 Series

Dimensions & Materials of Construction

Dimensions are in inches (millimeters) for reference only and are subject to change.

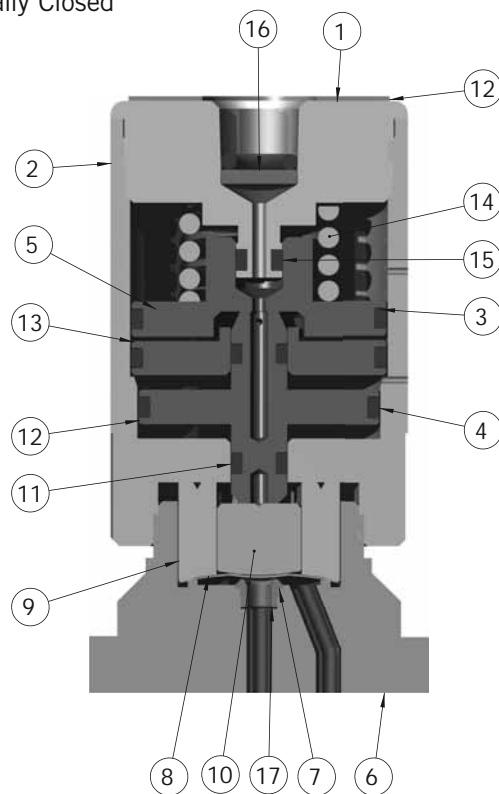
Normally Open



| # | PART | MATERIALS |
|----|--------------------|---|
| 1 | Actuator cap | Aluminum, 316L stainless steel, MONEL® & HASTELLOY® C-276 |
| 2 | Actuator | Aluminum, 316L stainless steel |
| 3 | O-ring | Viton® |
| 4 | O-ring | Viton® |
| 5 | Piston | Brass |
| 6 | Body* | 316L stainless steel, MONEL® & HASTELLOY® C-276 |
| 7 | Seat* | PCTFE or PEEK® |
| 8 | Diaphragm* | Elgiloy® AMS 5876 |
| 9 | Diaphragm retainer | 316 stainless steel |
| 10 | Thrust plug | Brass |
| 11 | Upper piston | Brass |
| 12 | Spring | 302 stainless steel |
| 13 | Chamber separator | Brass |
| 14 | Retaining ring | 302 stainless steel |
| 15 | Cap screw | Alloy steel |
| 16 | O-ring | Viton® |
| 17 | Sintered filter | 316 stainless steel, 40µ |

* Wetted components

Normally Closed



| # | PART | MATERIALS |
|----|--------------------|---|
| 1 | Actuator cap | Aluminum, 316L stainless steel, MONEL® & HASTELLOY® C-276 |
| 2 | Actuator | Aluminum, 316L stainless steel |
| 3 | O-rings | Viton® |
| 4 | O-rings | Viton® |
| 5 | Upper piston | Brass |
| 6 | Body* | 316L stainless steel, MONEL® & HASTELLOY® C-276 |
| 7 | Seat* | PCTFE (formerly Kel-F®) or PEEK™ |
| 8 | Diaphragm* | Elgiloy® AMS 5876 |
| 9 | Diaphragm retainer | 316 stainless steel |
| 10 | Thrust plug | Brass |
| 11 | O-ring | Viton® |
| 12 | Lower piston | Brass |
| 13 | Chamber separator | Brass |
| 14 | Spring | 302 stainless steel |
| 15 | O-ring | Viton® |
| 16 | Sintered filter | 316 stainless steel, 40µ |

* Wetted components

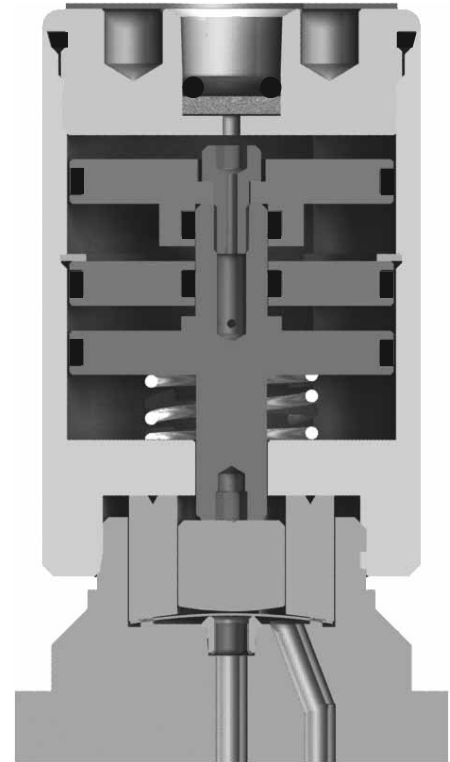
DV1 Series

Dimensions

Pneumatic Small Diameter Actuator

| END CONNECTION | LENGTH | HEIGHT | ACTUATOR DIAMETER | C/L CENTER LINE |
|-----------------|----------------|----------------|-------------------|-----------------|
| ¼" MNPT | 2.00" (5.1 cm) | 2.75" (7.0 cm) | 1.31" (3.3 cm) | 0.38" (1.0 cm) |
| ¼" FNPT | 2.00" (5.1 cm) | 2.75" (7.0 cm) | 1.31" (3.3 cm) | 0.38" (1.0 cm) |
| ½" GYROLOK® | 1.71" (4.3 cm) | 2.75" (7.0 cm) | 1.31" (3.3 cm) | 0.38" (1.0 cm) |
| ¼" GYROLOK® | 1.87" (4.8 cm) | 2.75" (7.0 cm) | 1.31" (3.3 cm) | 0.38" (1.0 cm) |
| ¼" NPT extended | 3.15" (8.0 cm) | 2.75" (7.0 cm) | 1.31" (3.3 cm) | 0.38" (1.0 cm) |
| 6mm GYROLOK® | 47.5mm | 69.85mm | 33.27mm | 9.65mm |
| 8mm GYROLOK® | 47.5mm | 69.85mm | 33.27mm | 9.65mm |

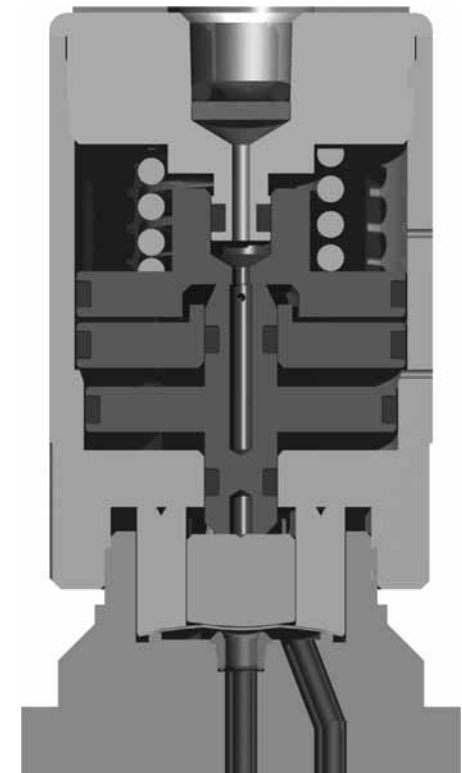
Normally Open



Pneumatic Medium Diameter Actuator

| END CONNECTION | LENGTH | HEIGHT | ACTUATOR DIAMETER | C/L CENTER LINE |
|-----------------|----------------|----------------|-------------------|-----------------|
| ¼" MNPT | 2.00" (5.1 cm) | 2.75" (7.0 cm) | 1.56" (4.0 cm) | 0.38" (1.0 cm) |
| ¼" FNPT | 2.00" (5.1 cm) | 2.75" (7.0 cm) | 1.56" (4.0 cm) | 0.38" (1.0 cm) |
| ½" GYROLOK® | 1.71" (4.3 cm) | 2.75" (7.0 cm) | 1.56" (4.0 cm) | 0.38" (1.0 cm) |
| ¼" GYROLOK® | 1.87" (4.8 cm) | 2.75" (7.0 cm) | 1.56" (4.0 cm) | 0.38" (1.0 cm) |
| ¼" NPT extended | 3.15" (8.0 cm) | 2.75" (7.0 cm) | 1.56" (4.0 cm) | 0.38" (1.0 cm) |
| 6mm GYROLOK® | 47.5mm | 69.85mm | 39.62mm | 9.65mm |
| 8mm GYROLOK® | 47.5mm | 69.85mm | 39.62mm | 9.65mm |

Normally Closed



Pneumatic Large Diameter Actuator

| END CONNECTION | LENGTH | HEIGHT | ACTUATOR DIAMETER | C/L CENTER LINE |
|-----------------|----------------|----------------|-------------------|-----------------|
| ¼" MNPT | 2.00" (5.1 cm) | 3.25" (8.3 cm) | 2.36" (6.0 cm) | 0.38" (1.0 cm) |
| ¼" FNPT | 2.00" (5.1 cm) | 3.25" (8.3 cm) | 2.36" (6.0 cm) | 0.38" (1.0 cm) |
| ½" GYROLOK® | 1.71" (4.3 cm) | 3.25" (8.3 cm) | 2.36" (6.0 cm) | 0.38" (1.0 cm) |
| ¼" GYROLOK® | 1.87" (4.8 cm) | 3.25" (8.3 cm) | 2.36" (6.0 cm) | 0.38" (1.0 cm) |
| ¼" NPT extended | 3.15" (8.0 cm) | 3.25" (8.3 cm) | 2.36" (6.0 cm) | 0.38" (1.0 cm) |
| 6mm GYROLOK® | 47.5mm | 82.55mm | 59.94mm | 9.65mm |
| 8mm GYROLOK® | 47.5mm | 82.55mm | 59.94mm | 9.65mm |

DV1 Series

How to Order

Standard items in bold

DV1 - 1 C 2 5 C F4 F4 H O H

BODY MATERIAL

- 1** 316L stainless steel
- 4** MONEL®
- 6** HASTELLOY® C-276

ACTUATION METHOD

- C** Air actuated—normally closed
- M** Manual ¼-plus turn round handle
- O** Air actuated—normally open
- T** Manual ¼-plus turn T-handle

ACTUATOR SIZE

- X** Manually operated
- 1** Air actuated—small (500 psig max.)
- 2** Air actuated—medium (800 psig max.)
- 3** Air actuated—large (3,600 psig max.)

ACTUATOR MATERIAL

- X** Manually operated
- 1** 316L stainless steel
- 5** Aluminum

MAXIMUM PROCESS PRESSURE

- A** 250 psig
- B** 500 psig
- C** 800 psig
- D** 3,600 psig (surface mount only)
- E** 2,000 psig

INLET CONNECTION TYPE*

- C1** Male GYROLOK® ¼"
- G1** GYROLOK® ¼"
- G2** GYROLOK® ⅜"
- G4** GYROLOK® ¼"
- T6** GYROLOK® 6mm
- T8** GYROLOK® 8mm
- F4** **Female NPT ¼"**
- M4** Male NPT ¼"
- B4** Female BSP/ISO 7/1 ¼"
- D4** Male BSP/ISO 7/1 ¼"
- X4** Extended, ¼" male NPT
- SM** Surface mount (ANSI/ISA SP76 compliant)
- V4** ¼" VCR®-compatible swivel female
- R4** ¼" VCR®-compatible fixed male
- W4** ¼" Tube stub
- S4** ¼" Tube socket weld

OPTION

- 0** None
- 1** Cleaned for oxygen service**
- 4** Panel mount (manual valves only)
- 6** Panel mount & cleaned for oxygen service (manual valves only)**

SEAT MATERIAL

- H** PCTFE
- Q** PEEK™

OUTLET CONNECTION TYPE*

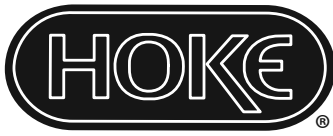
- C1** Male GYROLOK® ¼"
- G1** GYROLOK® ¼"
- G2** GYROLOK® ⅜"
- G4** GYROLOK® ¼"
- T6** GYROLOK® 6mm
- T8** GYROLOK® 8mm
- F4** **Female NPT ¼"**
- M4** Male NPT ¼"
- B4** Female BSP/ISO 7/1 ¼"
- D4** Male BSP/ISO 7/1 ¼"
- X4** Extended, ¼" male NPT
- SM** Surface mount (ANSI/ISA SP76 compliant)
- V4** ¼" VCR®-compatible swivel female
- R4** ¼" VCR®-compatible fixed male
- W4** ¼" Tube stub
- S4** ¼" Tube socket weld

* Note with the exception of male NPT and female NPT, inlet and outlet connections must be of the same type.

** Valves cleaned for oxygen service are limited to 3000 psig (207 bar). Body will be marked "cleaned for oxygen".

GYROLOK® is a registered trademark of HOKE®.
 Viton® is a registered trademark of DuPont Dow Elastomers.
 MONEL® is a registered trademark of Special Metals Corporation.
 HASTELLOY® is a registered trademark of Haynes International, Inc.
 Elgiloy® is a registered trademark of Elgiloy Specialty Metals.
 PEEK™ is a trademark of Victrex PLC.

www.HOKE.com
 www.dupontelastomers.com
 www.specialmetals.com
 www.haynesintl.com
 www.elgiloy.com
 www.victrex.com



The Small Bore Instrumentation Specialists



We specialize in small bore instrumentation products up to 2" that deliver benchmark performance quality & safety; provide the broadest array of superior alloy offerings in the market; decades of proven success in a wide range of industries; a roster of "who's who" customers & projects globally; original "Best Solution" engineering & designs; and are focused on continuous improvement in all aspects of our business.

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HM Series - Standard

Hand Valves, Gauge
Valves & Manifolds



CRANE

CRANE Instrumentation & Sampling, HOKE®
PO Box 4866 • Spartanburg, SC 29305-4866
(864) 574-7966 • www.hoke.com



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Hand Valves, Gauge Valves and Manifolds at a Glance

HOKE® offers a variety of precision engineered valves and 2, 3, and 5-valve Hand Valves, Gauge Valves & Manifolds in Direct and Remote Mount styles with vent configurations to meet most flow, pressure and level measurement application requirements. HOKE® 2-valve manifolds are designed for static pressure and liquid level applications; the 3 and 5 valve manifolds are well suited for use with most differential pressure transmitters and can accept both female and flange process impulse line connections.

HOKE® Hand Valves, Gauge Valves & Manifolds have been designed to provide the safest possible connection and mounting of instruments. Standard features include:

- Full 316/316L Dual Certified stainless steel components.
- Full compliance of NACE MR-01-75 (ISO 15156 Latest Edition) specifications.
- Laser engraved identification.
- HOKE® Close tolerance NPT threads to ensure maximum engagement with mating threaded components. (Page 26)
- Available with option of integral / GYROLOK® tube fitting connections.
Please refer to the HOKE® HM Series - Integral / GYROLOK® catalog on HOW TO ORDER.
- Choice of exotic alloys i.e., MONEL®, Duplex, Super Duplex, Titanium, HASTELLOY®, Alloys 625, 825, 6Mo.
- Optional mounting bracket kits available.
- Optional anti-tamper and locking handles and round wheel handles available.
- Direct mount manifolds with IEC 61518 Type B Outlets.

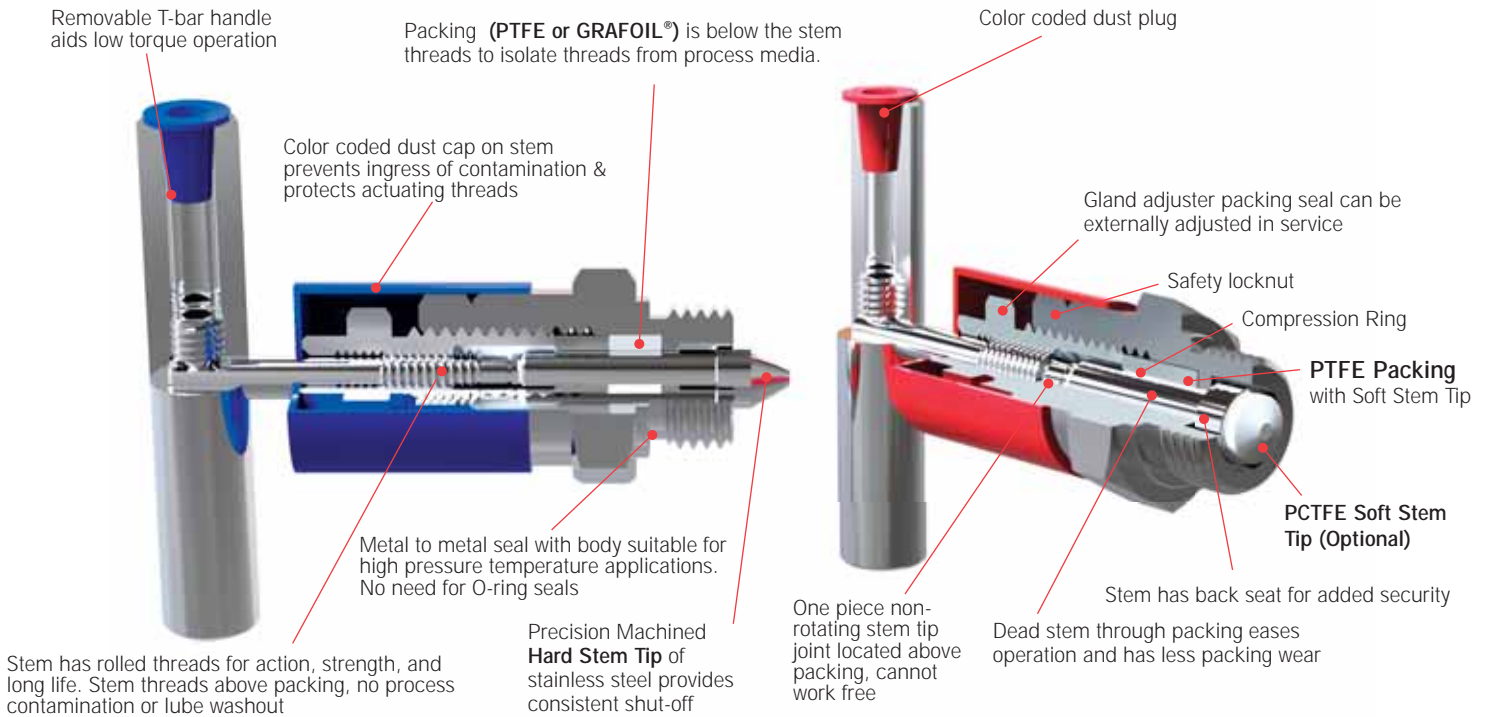
Pressure Equipment Directive.

Due to internal bore size and internal volumes up to and including 1" -inch/25mm, products offered in this catalog comply with S.E.P (Sound Engineering Practice) article 3, paragraph 3 of the Pressure Equipment Directive P.E.D. 97/23/EC and therefore CE marking is not applicable.





STANDARD VALVE HEAD ASSEMBLY Technical Specifications



Note: PCTFE Soft Stem Tip (Option) is only available with PTFE Packing

PRESSURE TEMPERATURE CHART

PTFE PACKING

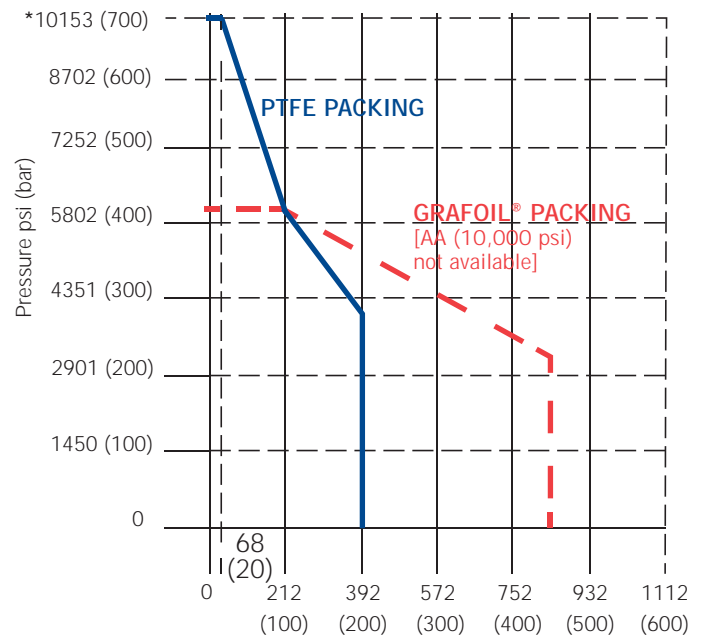
- Maximum pressure 6000 psi (413 bar) at 212° F (100° C)
- Maximum pressure 4000 psi (275 bar) at 392° F (200° C)
- (PTFE packing rated to maximum temperature of 392° F (200° C))

GRAFOIL® PACKING [AA (10,000 psi) not available]

- Maximum pressure 6000 psi (413 bar) at 212° F (100° C)
- Maximum pressure 3300 psi (230 bar) at 842° F (450° C)

OTHER FEATURES

- Hydrostatically tested to 1.5 times maximum working pressure.
- Wide variety of process connections available by arrangement.
- Bleed & blind plugs are available.
- Panel mounting valve available on request.
- PCTFE Soft tip option available for special application (Max working temperature = 120° C).
- All valves and manifolds are individually boxed for protection and storage.
- Laser engraved identification.
- Valves have trace code on body with original mill certificates available all to EN 10204-3.1.
- All special materials available from NORSOK M-650 approved mills, on request. See HOW TO ORDER.
- Ø 4.76 Standard thru bore (CV = 0.4) Fully open.
- Bonnet locking pin safely locks the bonnet to body.



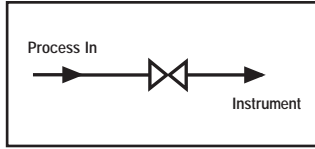
Temperature Fahrenheit (Celsius)

* 10,000 psi option available on non-direct valves. See HOW TO ORDER pages.



SINGLE BLOCK HAND VALVE MODEL-HM25

| | |
|-----------------|-------|
| ISOLATE | Blue |
| VENT | Red |
| EQUALIZE | Green |



Weight=1.1 lbs(0.5 kg)

Also available in a range of other materials and options
(See **HOW TO ORDER** Data Sheet Pg. 6).

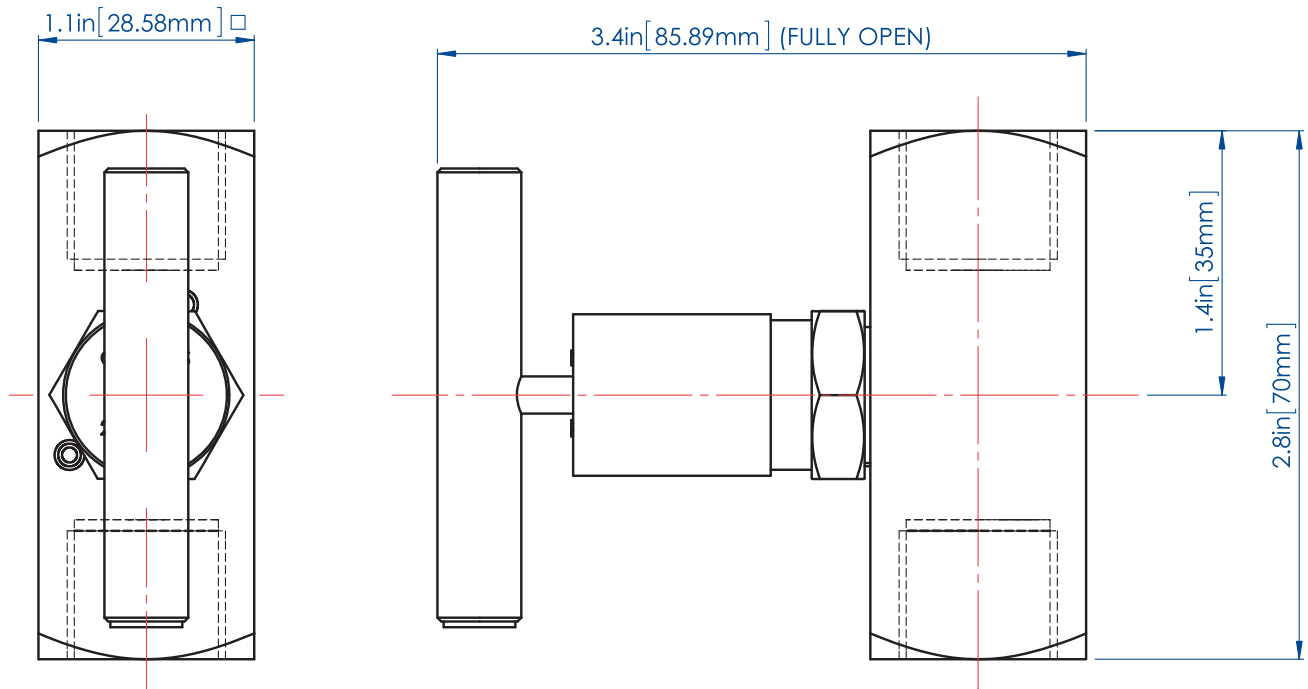
Application

High integrity instrument isolation of pressure gauges and pressure transmitters.



Female - Female Option

Valve Shown with 1/2" NPT Inlet & Outlet

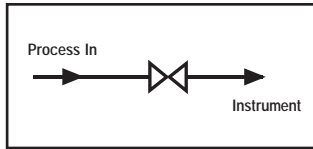


Dimensions shown in inches (millimeters) are for reference only and are subject to change.



SINGLE BLOCK HAND VALVE MODEL-HM25

| | |
|-----------------|-------|
| ISOLATE | Blue |
| VENT | Red |
| EQUALIZE | Green |



Weight=1.1 lbs(0.5 kg)

Also available in a range of other materials and options
(See **HOW TO ORDER** Data Sheet Pg. 6).

Application

High integrity instrument isolation of pressure gauges and pressure transmitters.

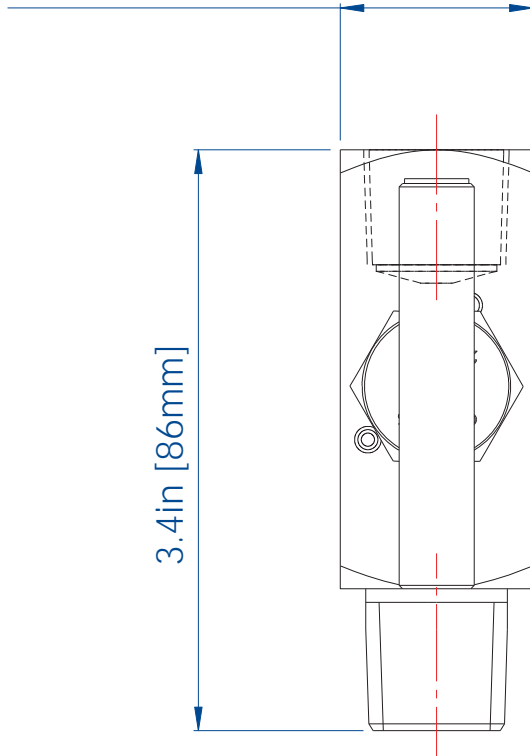


Male - Female Option

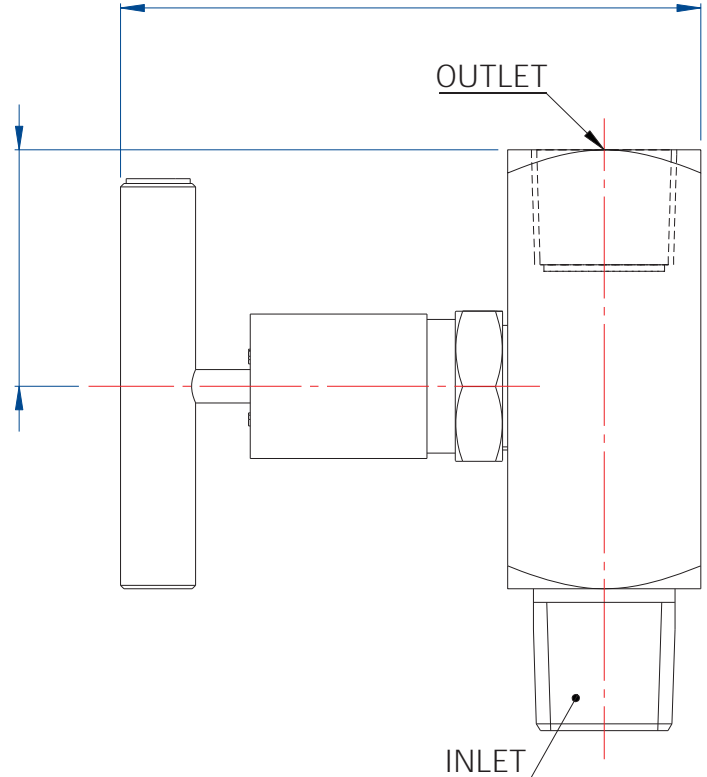
Valve Shown with 1/2" NPT Inlet & Outlet

1.1in [28.575mm]

3.4in [86mm]



3.4in [85.9mm] (FULLY OPEN)



Dimensions shown in inches (millimeters) are for reference only and are subject to change.



Ordering Multiple Options

HOKE HM Valves and Manifolds are available with a wide variety of options that enable valve configurations customized to meet specific requirements. Please select or add designators from the ordering combinations as shown below:

How To Order

Standard items in bold.

Typical Ordering Part Number

HM25 1 1 F 8 6MO AA

TIP

- 1 = Hard**
- 2 = Soft

PACKING

- 1 = PTFE**
- 2 = GRAFOIL® [AA (10,000 psi) not available]

CONNECTION

- F = Female inlet x Female outlet**
- M = Male inlet x Male outlet
- L = Male inlet x Female outlet

SIZE

- 4 = 1/4" NPT
- 6 = 3/8" NPT
- 8 = 1/2" NPT

ALLOY

- YL = 316/316L**
- HC = HASTELLOY® C276
- M = MONEL®
- D50 = Super Duplex
- TI = Titanium
- TB = Titanium Blue Anodized
- DX3 = Duplex
- 625 = 625 INCONEL®
- 825 = 825 INCONEL®
- 6MO = 6%Mo
- E = Carbon Steel

OPTIONS

- AA = 10,000 psi Rated
- AD = Anti Tamper Isolate
- AE = Lockable Isolate
- AH = BSPP Connections
- AO = Norsok M-650 Material Required
- AP = Panel nut on bonnets
- AR = Firesafe
- AT = Round Hand Wheel for Isolate
- BE = Round Hand Wheel - Lockable Isolate

Note: Keys are not included and are sold separately. Order part number HMATHDL-316 for key.

Note: The body & trim parts on all 316/316L Valves & Manifolds comply to NACE MR-01-75 & NORSOK M-650 as standard.

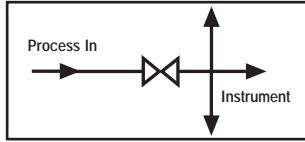
Please consult the factory or your local distributor for information on special connections, O-rings, operating pressures, & temperature ratings.

△ When selecting products for specific applications users should refer to our notice at the bottom of page 1. And the guidance of Use of Equipment on the Inside Back Cover Page.



MULTI-PORT GAUGE VALVE
MODEL-HM681

| | |
|-----------------|-------|
| ISOLATE | Blue |
| VENT | Red |
| EQUALIZE | Green |



Weight=1.76 lbs(0.8 kg)

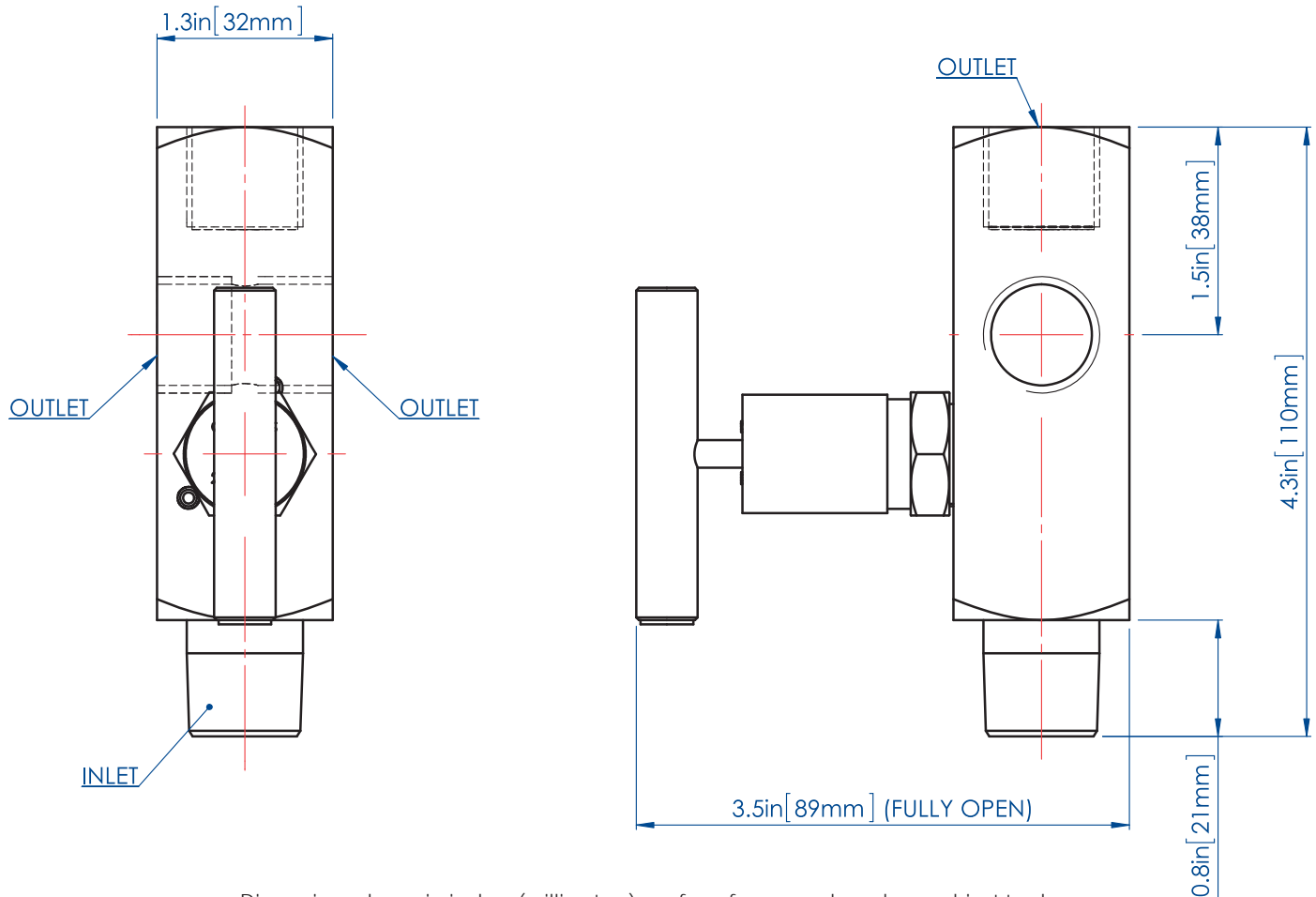
Also available in a range of other materials and options
(See **HOW TO ORDER** Data Sheet Pg. 10).

Application

High integrity instrument isolation of pressure gauges and pressure transmitters.



Valve Shown with 1/2" NPT Inlet & Outlet

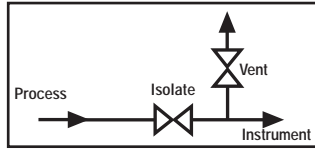


Dimensions shown in inches (millimeters) are for reference only and are subject to change.



SINGLE BLOCK & BLEED GAUGE VALVE MODEL-HM682

| | |
|-----------------|-------|
| ISOLATE | Blue |
| VENT | Red |
| EQUALIZE | Green |



Weight=2.2 lbs(1.0 kg)

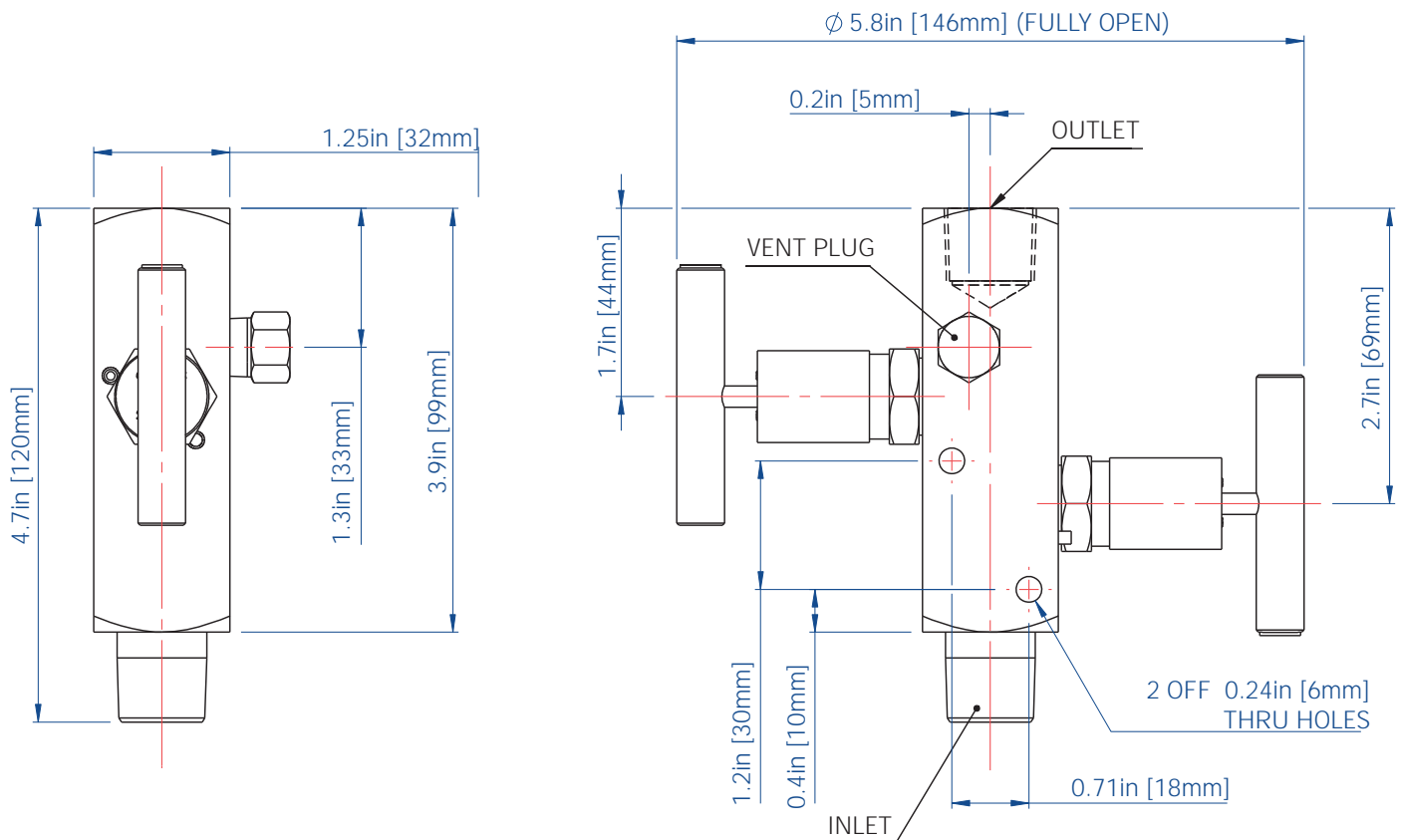
Also available in a range of other materials and options
(See **HOW TO ORDER** Data Sheet Pg. 10).

Application

High integrity instrument isolation of pressure gauges and pressure transmitters.



Valve Shown with 1/2" NPT Inlet & Outlet & 1/4" NPT Vent Plug (Supplied loose)

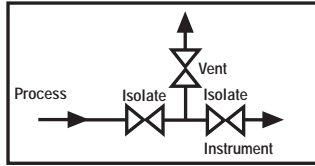


Dimensions shown in inches (millimeters) are for reference only and are subject to change.



DOUBLE BLOCK & BLEED GAUGE VALVE MODEL-HM683

| | |
|-----------------|-------|
| ISOLATE | Blue |
| VENT | Red |
| EQUALIZE | Green |



Weight=2.86 lbs(1.3 kg)

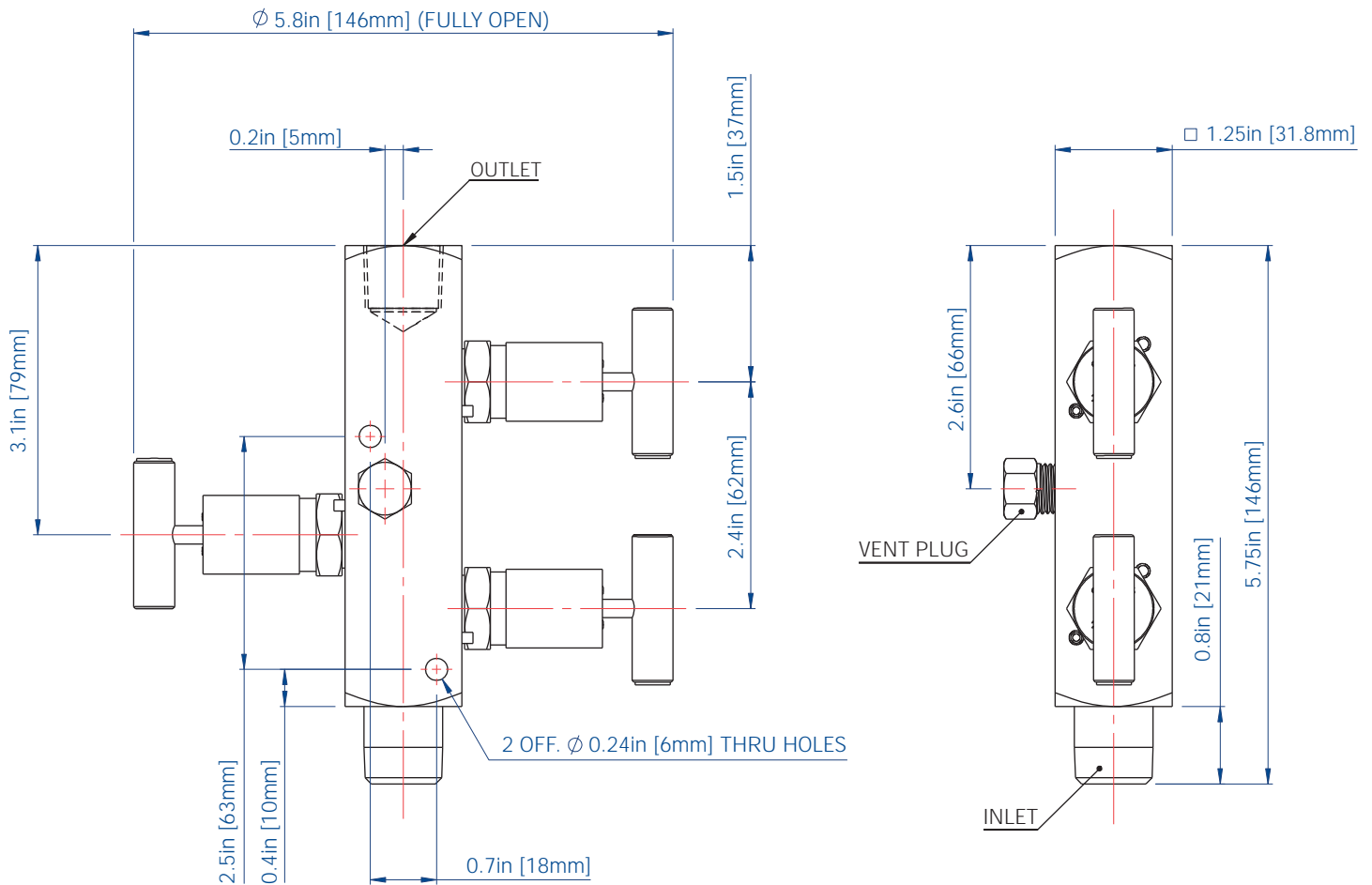
Also available in a range of other materials and options
(See **HOW TO ORDER** Data Sheet Pg. 10).

Application

High integrity instrument isolation of pressure gauges and pressure transmitters.



Valve Shown with 1/2" NPT Inlet & Outlet & 1/4" NPT Vent Plug (Supplied loose)



Dimensions shown in inches (millimeters) are for reference only and are subject to change.



Ordering Multiple Options

HOKE HM Valves and Manifolds are available with a wide variety of options that enable valve configurations customized to meet specific requirements. Please select or add designators from the ordering combinations as shown below:

How To Order

Standard items in bold.

Typical Ordering Part Number

HM68 2 1 1 F 8 6MO AA

of VALVES

- 1
- 2
- 3

TIP

- 1 = Hard
- 2 = Soft

PACKING

- 1 = PTFE
- 2 = GRAFOIL® [AA (10,000 psi) not available]

CONNECTION

- F = Female inlet X Female outlet
- M = Male inlet X Male outlet
- L = Male inlet X Female outlet

SIZE

- 4 = 1/4" NPT
- 6 = 3/8" NPT
- 8 = 1/2" NPT

ALLOY

- YL = **316/316L**
- HC = HASTELLOY® C276
- M = MONEL®
- D50 = Super Duplex
- TI = Titanium
- TB = Titanium Blue Anodized
- DX3 = Duplex
- 625 = 625 INCONEL®
- 825 = 825 INCONEL®
- 6MO = 6%Mo
- E = Carbon Steel

OPTIONS

- AA = 10,000 psi Rated
- AB = Anti Tamper Vent(s)
- AC = Lockable Vent(s)
- AD = Anti Tamper Isolate
- AE = Lockable Isolate
- AH = BSPP Connections
- AO = Norsok M-650 Material Required
- AP = Panel nut on bonnets
- AR = Firesafe
- AS = Round Hand Wheel for Vent
- AT = Round Hand Wheel for Isolate
- BC = Round Hand Wheel - Lockable Vent
- BE = Round Hand Wheel - Lockable Isolate

Note: Keys are not included and are sold separately. Order part number HMATHDL-316 for key.

Note: The body & trim parts on all 316/316L Valves & Manifolds comply to NACE MR-01-75 & NORSOK M-650 as standard.

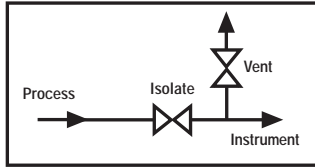
Please consult the factory or your local distributor for information on special connections. O-rings, operating pressures, & temperature ratings.

△ When selecting products for specific applications users should refer to the notice at the bottom of page 1 and the guidance of Use of Equipment on the Inside Back Cover Page.



REMOTE MOUNT 2-VALVE MANIFOLD
MODEL-HM8232

| | |
|-----------------|-------|
| ISOLATE | Blue |
| VENT | Red |
| EQUALIZE | Green |



Weight=1.98 lbs(0.9 kg)

Also available in a range of other materials and options
(See **HOW TO ORDER** Data Sheet Pg. 22).

Using the 2-valve manifold

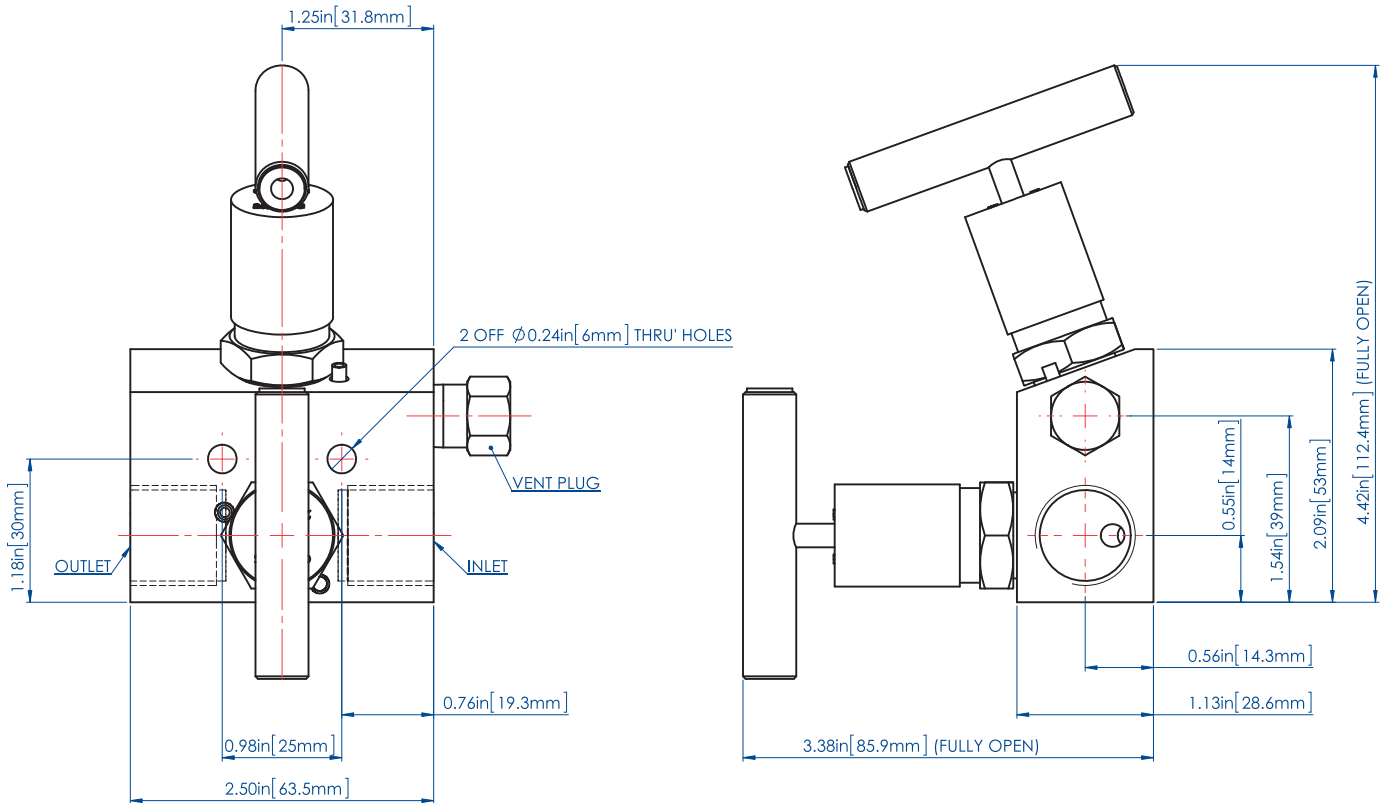
In normal operation the "isolate" valve is open while the "vent" valve is closed.
To remove the instrument, first close the "isolate" valve, then open the "vent" valve to relieve pressure upstream of the "isolate" valve.

Calibration option

By connecting a calibration gauge to the vent port, it is possible to check the calibration of the instrument without removing it from the installation.



Valve Shown with 1/2" NPT Inlet & Outlet & 1/4" NPT Vent Plug (Supplied loose)

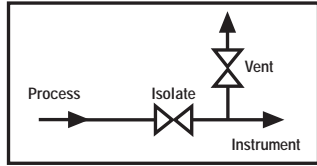


Dimensions shown in inches (millimeters) are for reference only and are subject to change.



DIRECT MOUNT 2-VALVE MANIFOLD MODEL-HM8212

| | |
|-----------------|-------|
| ISOLATE | Blue |
| VENT | Red |
| EQUALIZE | Green |



Weight=3.08 lbs(1.4 kg)

Also available in a range of other materials and options
(See **HOW TO ORDER** Data Sheet Pg. 22).

Using the 2-valve manifold

In normal operation the “isolate” valve is open while the “vent” valve is closed. To remove the instrument, first close the “isolate” valve, then open the “vent” valve to relieve pressure upstream of the “isolate” valve.

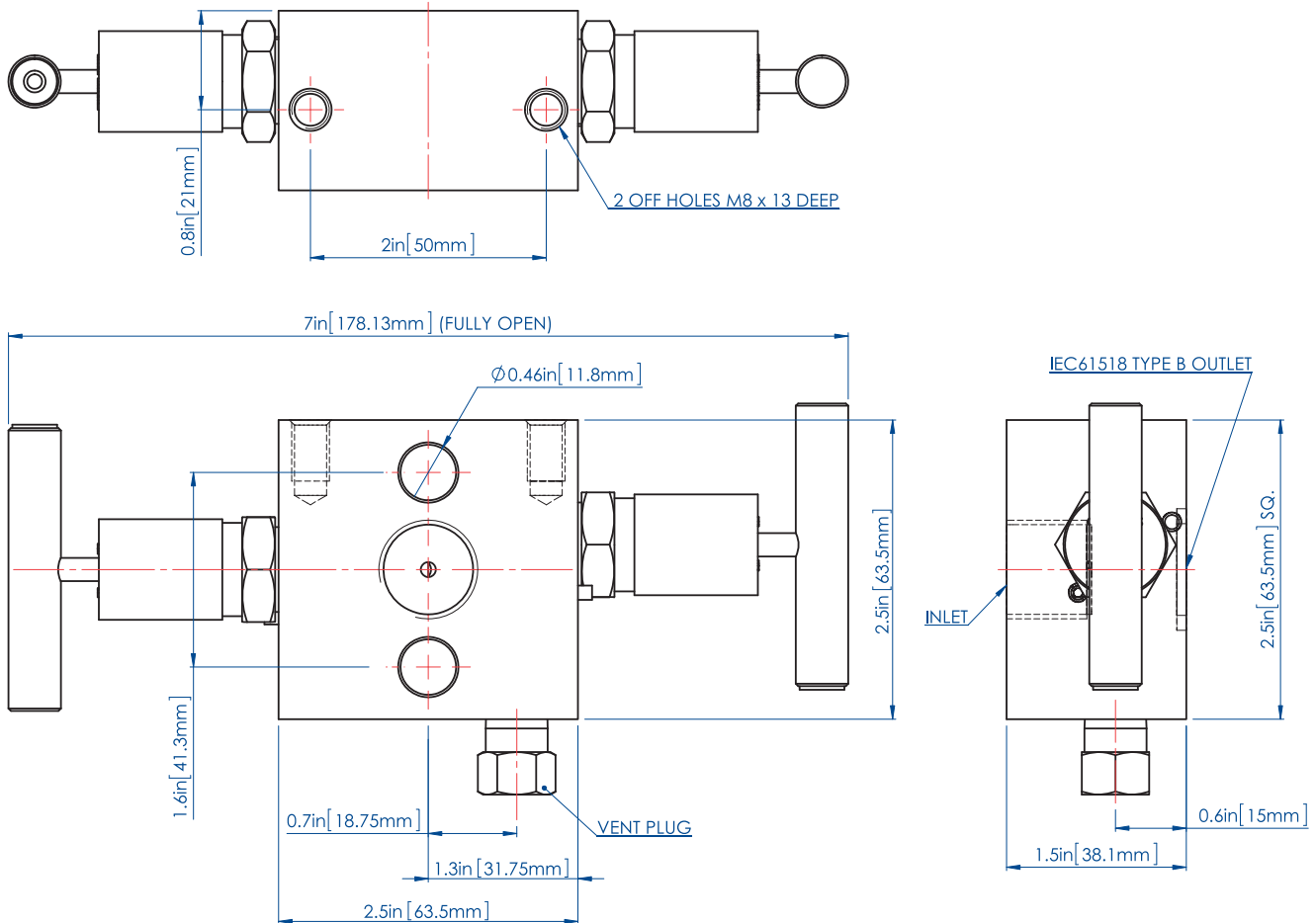
Calibration option

By connecting a calibration gauge to the vent port, it is possible to check the calibration of the instrument without removing it from the installation.



Note: Model-HM8212 NOT available with option AA — 10,000 psi

Valve Shown with 1/2" NPT Inlet & 1/4" NPT Vent Plug (Supplied loose)

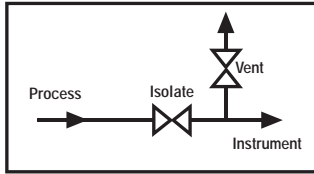


Dimensions shown in inches (millimeters) are for reference only and are subject to change.



REMOTE MOUNT 2-VALVE MANIFOLD
(FLAT FACE)
MODEL-HM8262

| | |
|-----------------|-------|
| ISOLATE | Blue |
| VENT | Red |
| EQUALIZE | Green |



Weight=2.6 lbs(1.2 kg)

Also available in a range of other materials and options
(See **HOW TO ORDER** Data Sheet Pg. 22).

Using the 2-valve manifold

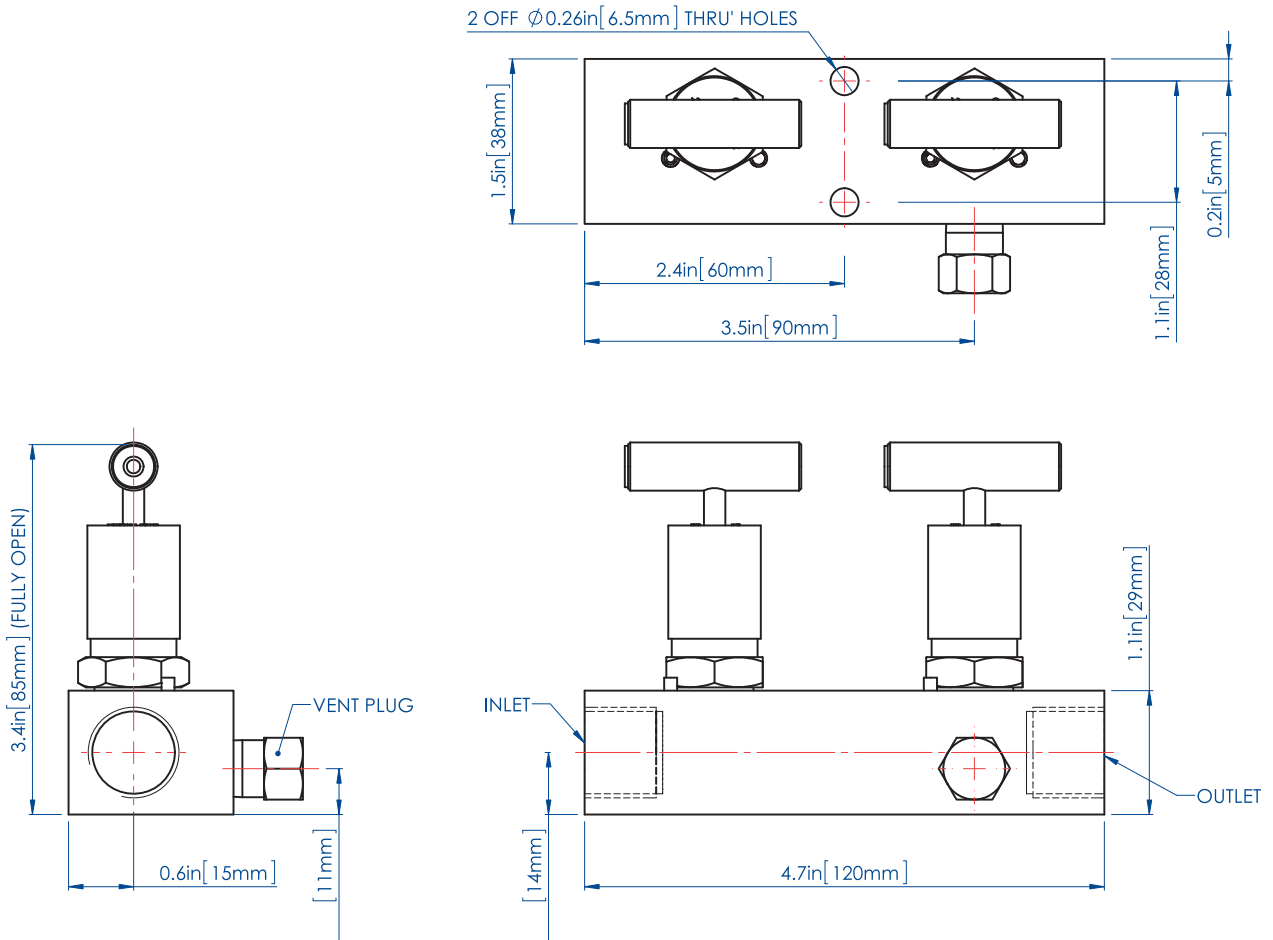
In normal operation the “isolate” valve is open while the “vent” valve is closed. To remove the instrument, first close the “isolate” valve, then open the “vent” valve to relieve pressure upstream of the “isolate” valve.

Calibration option

By connecting a calibration gauge to the vent port, it is possible to check the calibration of the instrument without removing it from the installation.



Valve Shown with 1/2" NPT Inlet & Outlet & 1/4" NPT Vent Plug (Supplied loose)

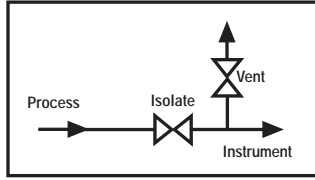


Dimensions shown in inches (millimeters) are for reference only and are subject to change.



**DIRECT MOUNT 2-VALVE MANIFOLD
(ENCLOSURE)
MODEL-HM8292**

| | |
|-----------------|-------|
| ISOLATE | Blue |
| VENT | Red |
| EQUALIZE | Green |



Weight=6.2 lbs(2.8 kg)

Also available in a range of other materials and options
(See **HOW TO ORDER** Data Sheet Pg. 22).

Using the 2-valve manifold

In normal operation the “isolate” valve is open while the “vent” valve is closed. To remove the instrument, first close the “isolate” valve, then open the “vent” valve to relieve pressure upstream of the “isolate” valve.

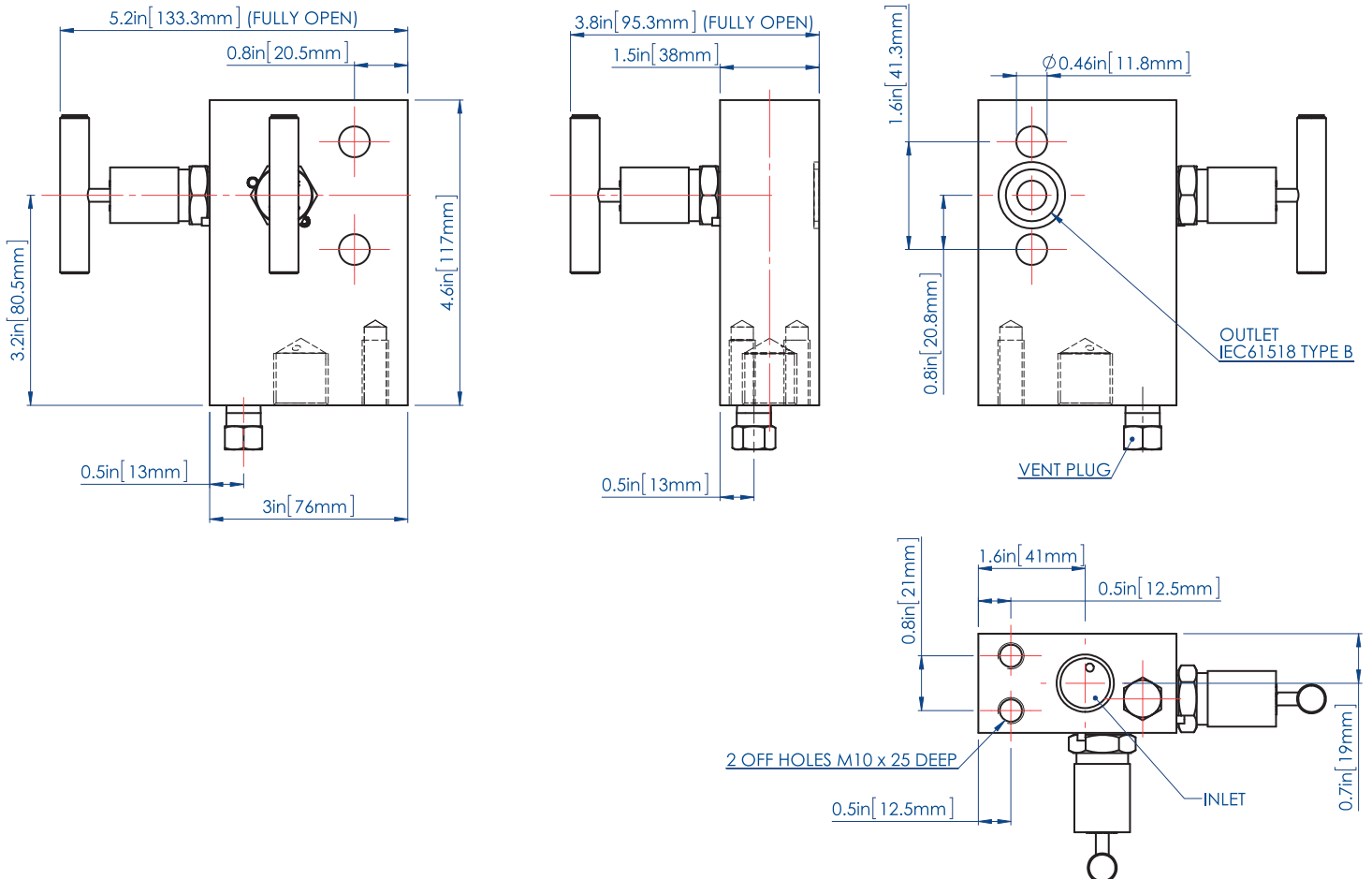
Calibration option

By connecting a calibration gauge to the vent port, it is possible to check the calibration of the instrument without removing it from the installation.



Note: Model-HM8292 NOT available with option AA — 10,000 psi

Valve Shown with ½" NPT Inlet & ¼" NPT Vent Plug (Supplied loose)

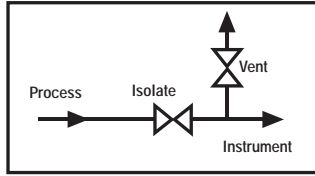


Dimensions shown in inches (millimeters) are for reference only and are subject to change.



REMOTE MOUNT 2-VALVE MANIFOLD
MODEL-HM82_GAM8
WITH 1/2" INTEGRAL GA ADAPTER

| | |
|-----------------|-------|
| ISOLATE | Blue |
| VENT | Red |
| EQUALIZE | Green |



Weight=3.3 lbs(1.5 kg)

Also available in a range of other materials and options
(See **HOW TO ORDER** Data Sheet Pg. 22).

Using the 2-valve manifold

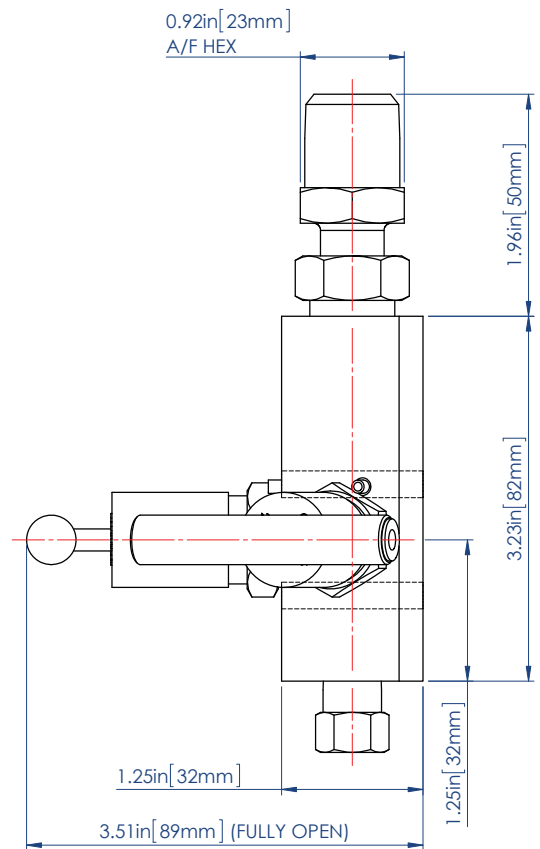
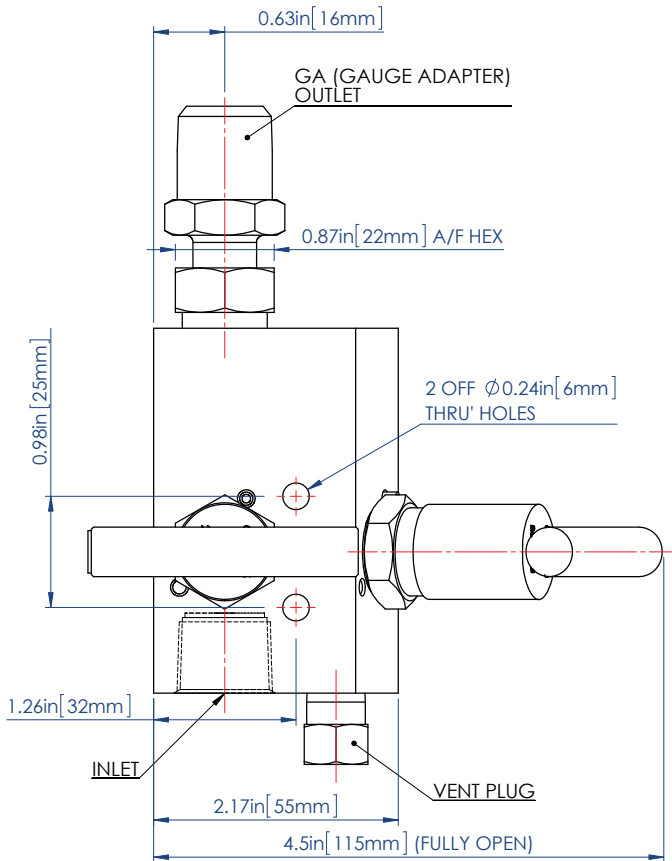
In normal operation the "isolate" valve is open while the "vent" valve is closed. To remove the instrument, first close the "isolate" valve, then open the "vent" valve to relieve pressure upstream of the "isolate" valve.

Calibration option

By connecting a calibration gauge to the vent port, it is possible to check the calibration of the instrument without removing it from the installation.



Valve Shown with 1/2" NPT Inlet & Outlet & 1/4" NPT Vent Plug (Supplied loose)

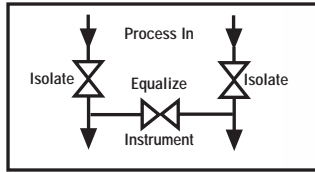


Dimensions shown in inches (millimeters) are for reference only and are subject to change.



REMOTE MOUNT 3-VALVE MANIFOLD
MODEL-HM8332

| | |
|----------|-------|
| ISOLATE | Blue |
| VENT | Red |
| EQUALIZE | Green |



Weight=3.08 lbs(1.4 kg)

Also available in a range of other materials and options
(See **HOW TO ORDER** Data Sheet Pg. 22).

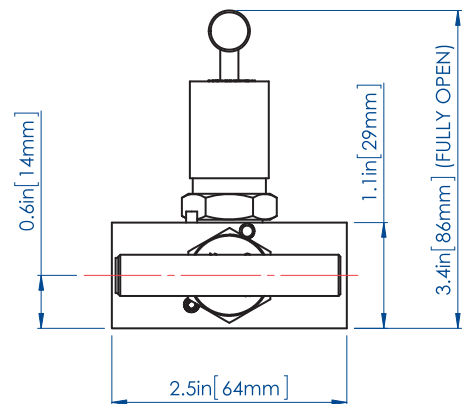
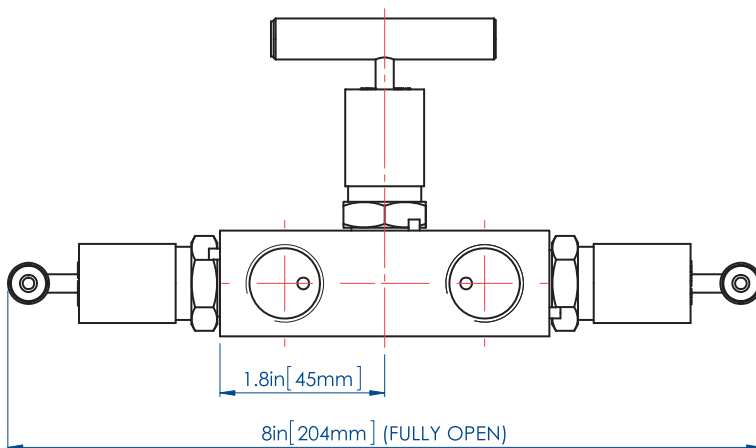
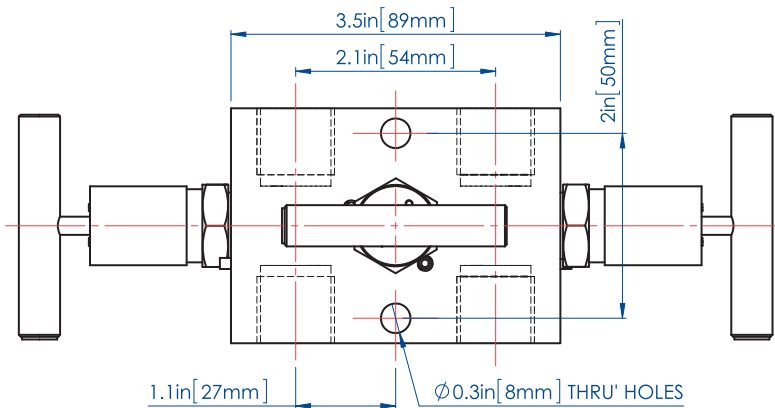
Using the 3-valve manifold

In normal operation the “isolate” valves are open while the “equalize” valve is closed.

This provides a differential pressure reading to the pressure gauge or transmitter. To zero the instrument, first close the downstream “isolate” valve then open the “equalize” valve and adjust the zero setting on the instrument.



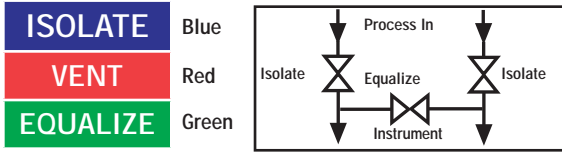
Valve Shown with 1/2" NPT Inlet & Outlet



Dimensions shown in inches (millimeters) are for reference only and are subject to change.



DIRECT MOUNT 3-VALVE MANIFOLD
MODEL-HM8312



Weight=3.52 lbs(1.6 kg)

Also available in a range of other materials and options
(See **HOW TO ORDER** Data Sheet Pg. 22).

Using the 3-valve manifold

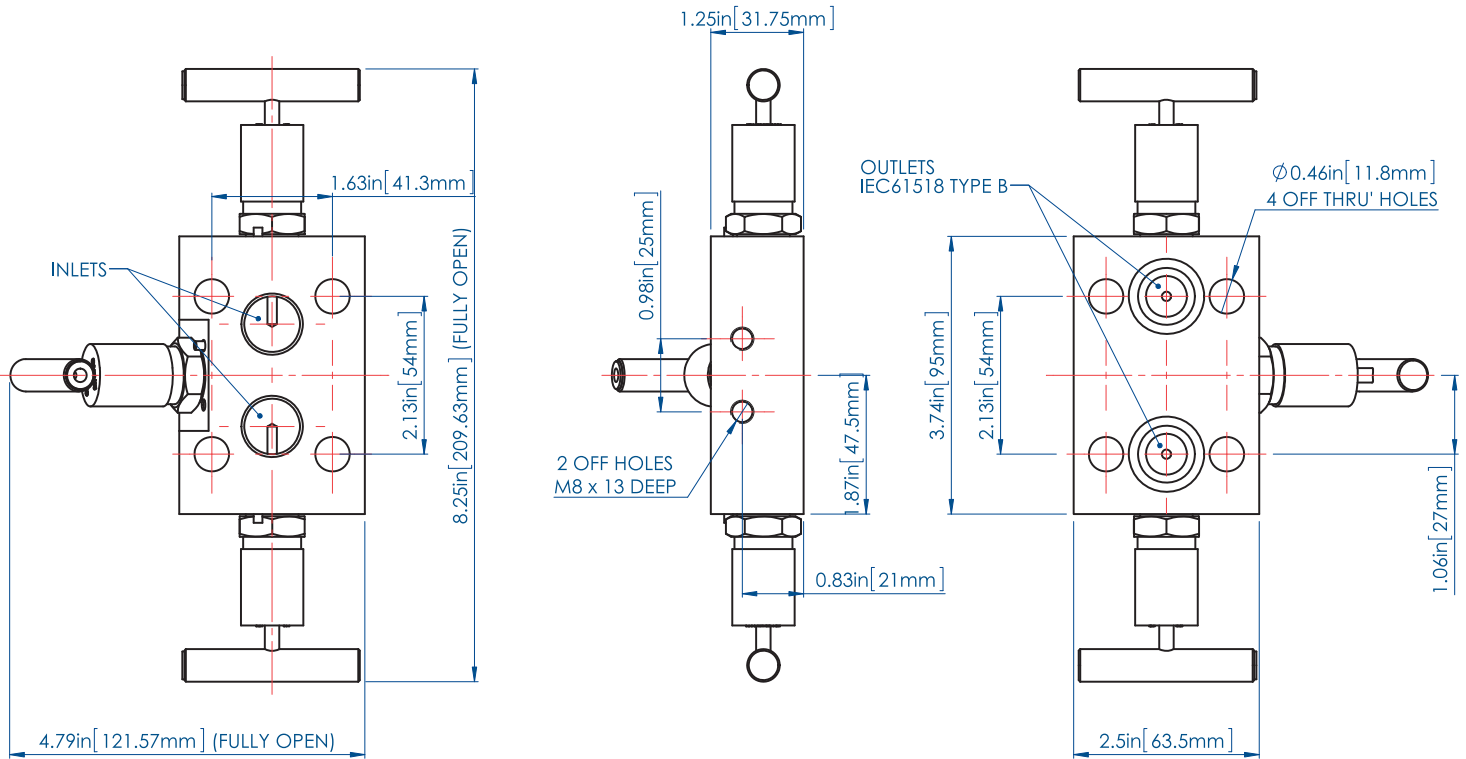
In normal operation the "isolate" valves are open while the "equalize" valve is closed.

This provides a differential pressure reading to the pressure gauge or transmitter. To zero the instrument, first close the downstream "isolate" valve then open the "equalize" valve and adjust the zero setting on the instrument.



Note: Model-HM8312 NOT available with option AA — 10,000 psi

Valve Shown with 1/2" NPT Inlet

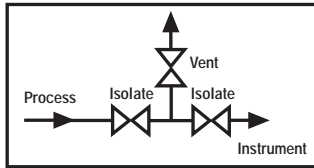


Dimensions shown in inches (millimeters) are for reference only and are subject to change.



**DOUBLE BLOCK & BLEED GAUGE VALVE
MODEL-HM8322**

| | |
|-----------------|-------|
| ISOLATE | Blue |
| VENT | Red |
| EQUALIZE | Green |



Weight=2.54 lbs(1.15 kg)

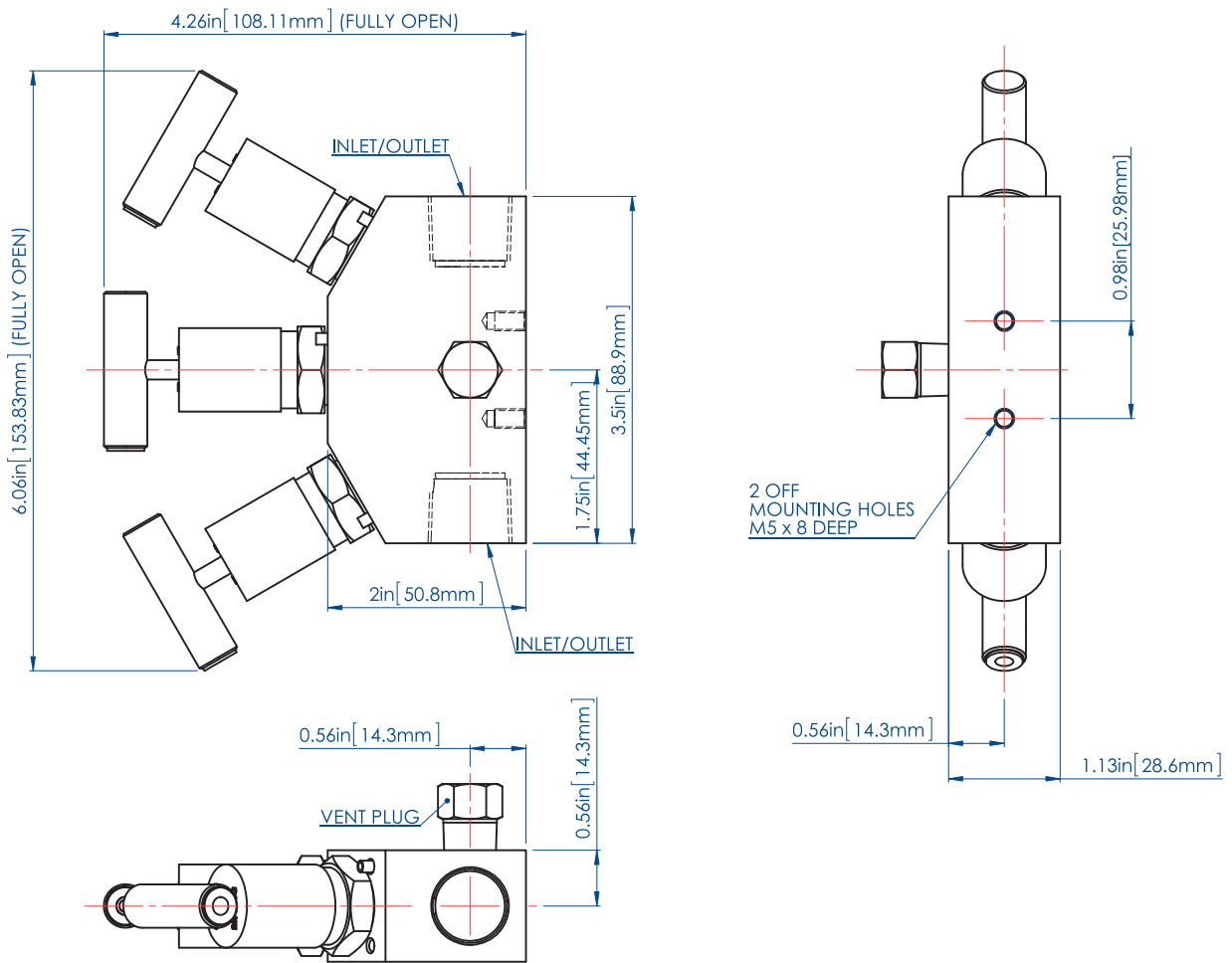
Also available in a range of other materials and options
(See **HOW TO ORDER** Data Sheet Pg. 22).

Application

High integrity instrument isolation of pressure gauges and pressure transmitters.



Valve Shown with 1/2" NPT Inlet & Outlet & 1/4" NPT Vent Plug (Supplied loose)

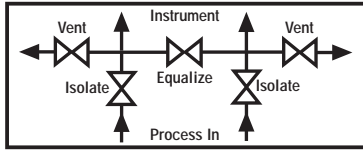


Dimensions shown in inches (millimeters) are for reference only and are subject to change.



REMOTE MOUNT 5-VALVE MANIFOLD MODEL-HM8532

| | |
|-----------------|-------|
| ISOLATE | Blue |
| VENT | Red |
| EQUALIZE | Green |



Weight=5.95 lbs(2.7 kg)

Also available in a range of other materials and options
(See **HOW TO ORDER** Data Sheet Pg. 22).

Using the 5-valve manifold

In normal operation the "isolate" valves are open while the "equalize" and "vent" valves are closed. This provides a differential pressure reading to the pressure gauge or transmitter.

To zero the instrument, first close both "vent" valves and the downstream "isolate" valve. Then open the "equalize" valve and adjust the zero setting on the instrument. To remove the instrument, first close both "isolate" valves, then open the "equalize" valves to relieve pressure between the manifold and the instrument.

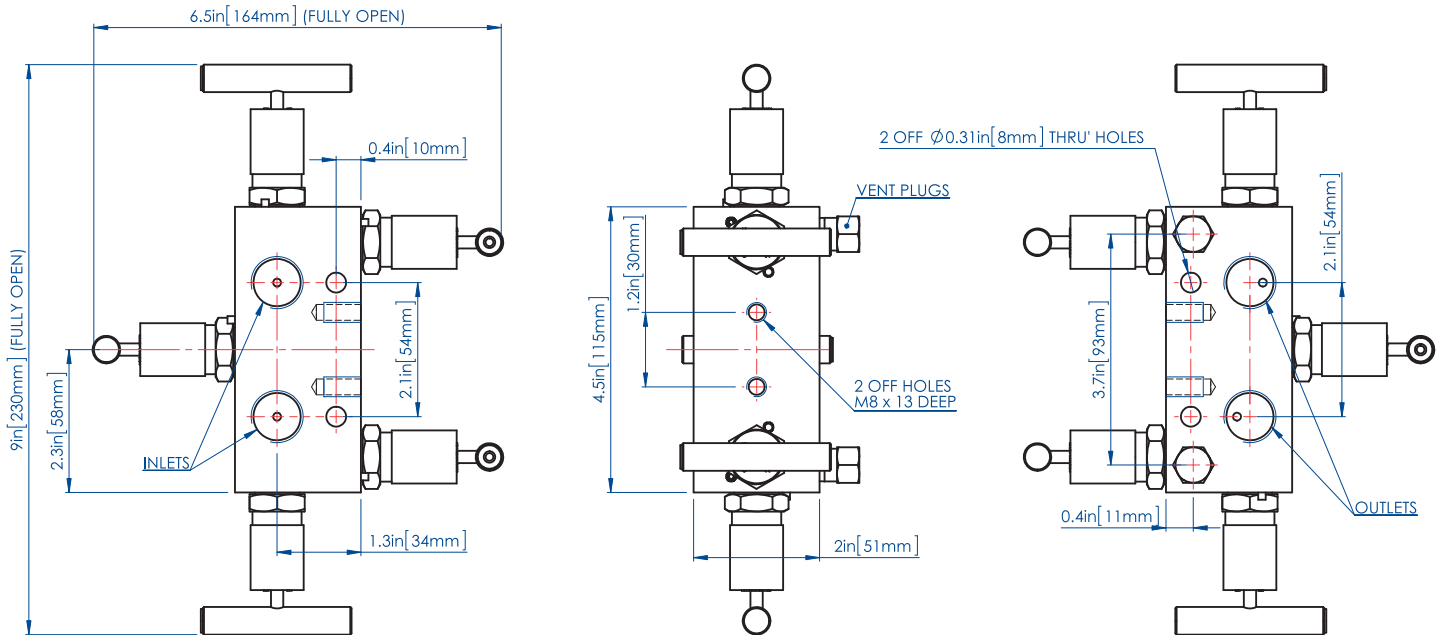
Calibration options

An option provided by 5-valve manifolds which is not available on 3-valve types is connecting the "vent" port to known pressure sources to check the calibration of the instrument.



Note: Mounting Bracket Kit not available for Model-HM8532.

Valve Shown with 1/2" NPT Inlet & Outlet & 1/4" NPT Vent Plugs (Supplied loose)

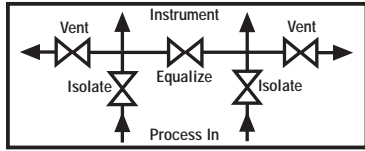


Dimensions shown in inches (millimeters) are for reference only and are subject to change.



DIRECT MOUNT 5-VALVE MANIFOLD MODEL-HM8512

| | |
|-----------------|-------|
| ISOLATE | Blue |
| VENT | Red |
| EQUALIZE | Green |



Weight=6.17 lbs(2.8 kg)

Also available in a range of other materials and options
(See **HOW TO ORDER** Data Sheet Pg. 22).

Using the 5-valve manifold

In normal operation the “isolate” valves are open while the “equalize” and “vent” valves are closed. This provides a differential pressure reading to the pressure gauge or transmitter. To zero the instrument, first close both “vent” valves and the downstream “isolate” valve. Then open the “equalize” valve and adjust the zero setting on the instrument. To remove the instrument, first close both “isolate” valves, then open the “equalize” valves to relieve pressure between the manifold and the instrument.

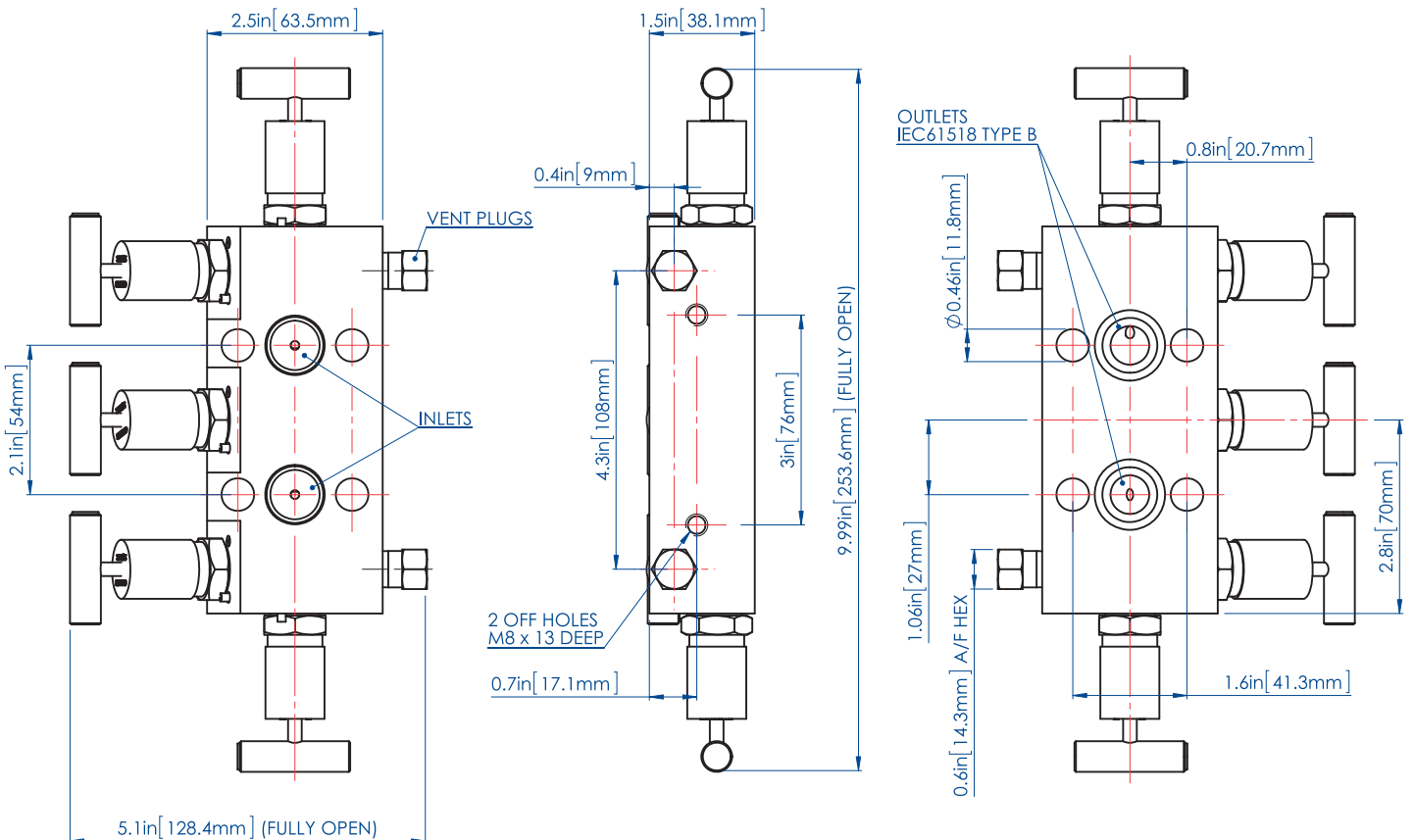
Calibration options

An option provided by 5-valve manifolds which is not available on 3-valve types is connecting the “vent” port to known pressure sources to check the calibration of the instrument.



Note: Model-HM8512 **NOT** available with option AA — 10,000 psi

Valve Shown with ½" NPT Inlet & ¼"NPT Vent Plugs (Supplied loose)



Dimensions shown in inches (millimeters) are for reference only and are subject to change.



Ordering Multiple Options

HOKE HM Valves and Manifolds are available with a wide variety of options that enable valve configurations customized to meet specific requirements. Please select or add designators from the ordering combinations as shown below:

How To Order

Standard items in bold.

Typical Ordering Part Number

HM8 3 1 2 1 1 F 8 6MO AA

of VALVES

2
3
5

TYPE

1 = Direct [AA (10,000 psi) not available]
2 = Remote - Double Block & Bleed
3 = Remote
6 = Flat Face Remote
9 = Direct Enclosure [AA (10,000 psi) not available]

FIXED

2

TIP

1 = Hard
2 = Soft

PACKING

1 = PTFE
2 = GRAFOIL® [AA (10,000 psi) not available]

ALLOY

YL = **316/316L**
HC = HASTELLOY® C276
M = MONEL®
D50 = Super Duplex
TI = Titanium
TB = Titanium Blue Anodized
DX3 = Duplex
625 = 625 INCONEL®
825 = 825 INCONEL®
6MO = 6%Mo
E = Carbon Steel

SIZE

8 = 1/2"

CONNECTION

F = Female
P = Socket Weld
G = Integral GYROLOK®
Z = Integral Metric

} HM Series - Integral GYROLOK® only.
Refer to Integral catalog.

Options

| | | |
|--|--|---|
| AA = 10,000 psi Rated (except for direct) | AJ = Std 316 Stainless Steel Bolts Supplied Bolt Clearance 16MM | AO = Norsok M-650 Material Required |
| AB = Anti Tamper Vent(s) | AK = Std 6MO Bolts Supplied Bolt Clearance 16MM | AP = Panel nut on bonnets |
| AC = Lockable Vent(s) | AL = Extended Carbon Steel Bolts Supplied (Emerson Coplanar Flange) - Bolt Clearance 30MM | AR = Firesafe |
| AD = Anti Tamper Isolate | AM = Extended 316 Stainless Steel Bolts Supplied (Emerson Coplanar Flange) - Bolt Clearance 30MM | AS = Round Hand Wheel for Vent |
| AE = Lockable Isolate | AN = Extended 6MO Bolts Supplied (Emerson Coplanar Flange) - Bolt Clearance 30MM | AT = Round Hand Wheel for Isolate |
| AF = Anti Tamper Equalize | | AW = Round Hand Wheel for Equalize |
| AG = Lockable Equalize | | BC = Round Hand Wheel - Lockable Vent |
| AH = BSPP Connections | | BE = Round Hand Wheel - Lockable Isolate |
| AI = Std Carbon Steel Bolts Supplied Bolt Clearance 16MM | | BG = Round Hand Wheel - Lockable Equalize |

Keys are not included and are sold separately. Order part number HMATHDL-316 for key.

Note: The body & trim parts on all 316/316L Valves & Manifolds comply to NACE MR-01-75 & NORSOK M-650 as standard.

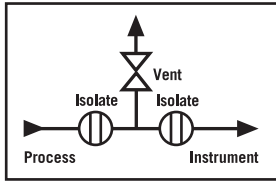
Please consult the factory or your local distributor for information on special connections. O-rings, operating pressures, & temperature ratings.

△ When selecting products for specific applications users should refer to our notice at the bottom of page 1. And the guidance of Use of Equipment on the Inside Back Cover Page.



DOUBLE BLOCK & BLEED VALVE MODEL-HBDBB7V8F316

| | |
|-----------------|-------|
| ISOLATE | Blue |
| VENT | Red |
| EQUALIZE | Green |



Weight=3.46 lbs(1.57kg)

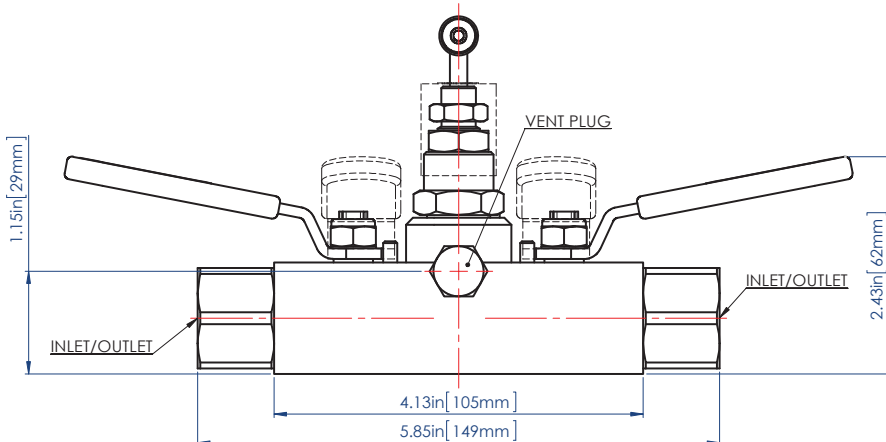
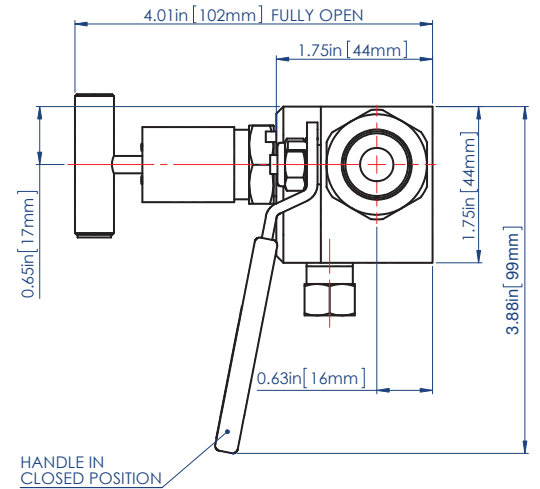
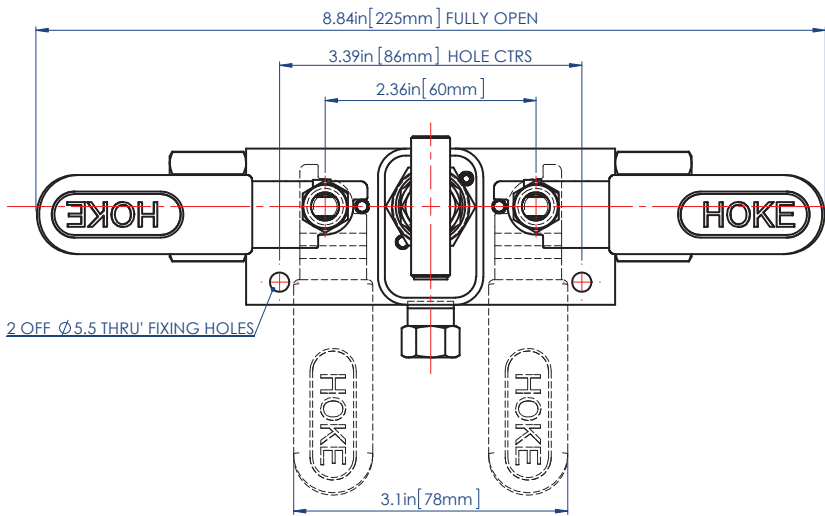
Also available in a range of other materials and options
(See **HOW TO ORDER** Data Sheet Pg. 24).

Application

High integrity instrument isolation of pressure gauges and pressure transmitters.



Note: Available with Integral GYROLOK® connections.
Consult factory.





Ordering Multiple Options

HOKE HM Valves and Manifolds are available with a wide variety of options that enable valve configurations customized to meet specific requirements. Please select or add designators from the ordering combinations as shown below:

How To Order

Standard items in bold.

Typical Ordering Part Number

HBDBB7V 8 F 316 AB

SIZE

4 = 1/4" NPT

8 = 1/2" NPT

CONNECTION

F = Female

ALLOY

YL = **316/316L**

HC = HASTELLOY® C276

M = MONEL®

D50 = Super Duplex

TI = Titanium

TB = Titanium Blue Anodized

DX3 = Duplex

625 = 625 INCONEL®

825 = 825 INCONEL®

6MO = 6%Mo

E = Carbon Steel

OPTIONS

AB = Anti Tamper Vents

AC = Lockable Vents

AO = Norsok M-650 Material Required

Note: Keys are not included and are sold separately. Order part number HMATHDL-316 for key.

Note: The body & trim parts on all 316/316L Valves & Manifolds comply to NACE MR-01-75 & NORSOK M-650 as standard.

Please consult the factory or your local distributor for information on special connections. O-rings, operating pressures, & temperature ratings.

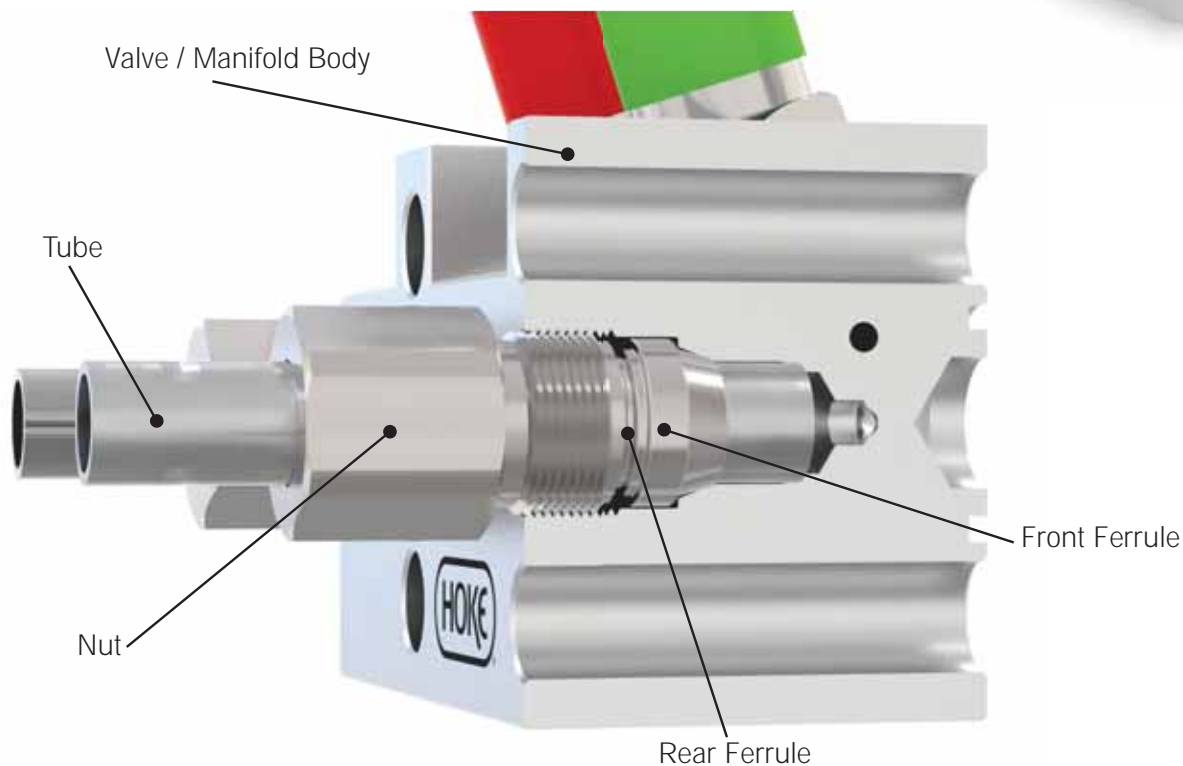
△ When selecting products for specific applications users should refer to our notice at the bottom of page 1. And the guidance of Use of Equipment on the Inside Back Cover Page.

HOKE® Integral GYROLOK® Tube Fitting Connections

Please refer to the HOKE® HM Series - Integral GYROLOK® catalog for product information, specifications and how to order integral connection versions of these valves and manifolds. **Note:** Graphic is an illustration only – please consult HOKE® for details

The HOKE® range of standard hand valves, gauge valves and manifolds are available with the option of the integral GYROLOK® tube fitting connections. The integral GYROLOK® tube fitting connection is machined directly into the body of the valve or manifold, allowing tubing to be directly connected without the use of traditional threaded (NPT, BSP) connections. The integral GYROLOK® connection provides a safer connection system for high pressure, severe, steam or sour gas service where leakage has dangerous consequences.

- Eliminates traditional threaded tubing connections
- Provides a safer and more consistent tube connection
- Saves assembly time during field assembly
- Reduces potential leak paths
- No need for sealing tape or liquid sealing compounds
- Fully field maintainable
- Successfully used for over 20 years in many offshore applications
- Available in 1/2" and 10mm tube connections



HOKE® HIGH TOLERANCE NPT THREAD

Note: Graphic is an illustration only

NPT Engagement using High Tolerance HOKE® NPT Connections has 5-6 threads engaged when fully tightened.



HOKE® High Tolerance NPT Thread

NPT Engagement using ANSI/ASME B1.20.1 Pipe Thread Standard has only 3-4 threads engaged when fully tightened.



Standard B1.20.1 NPT Thread



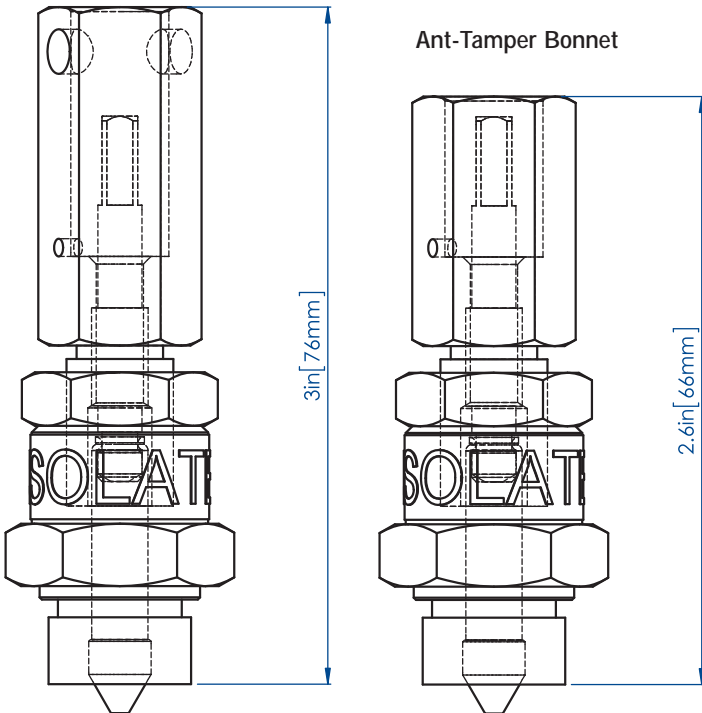
OPTION DETAIL
Anti Tamper & Lockable Bonnet
 (without padlock)



HM682 shown with Anti-Tamper and Lockable Isolate and Vent



Anti-Tamper and Lockable Bonnet (without padlock)

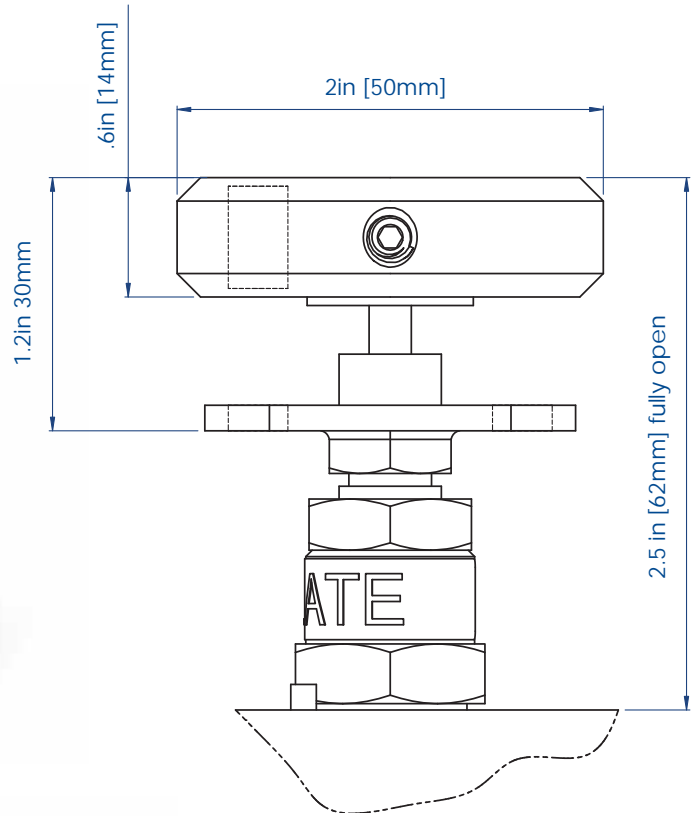


| OPTION CODES | |
|--------------|----------------------|
| AB | Anti Tamper Vents(s) |
| AC | Lockable Vent(s) |
| AD | Anti Tamper Isolate |
| AE | Lockable Isolate |
| AF | Anti Tamper Equalize |
| AG | Lockable Equalize |

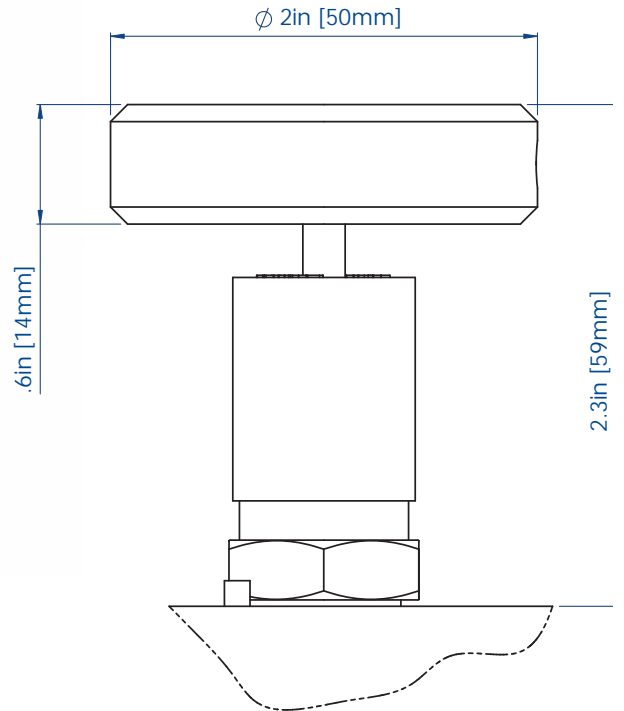


OPTION DETAIL
Round 316SS Handwheels Option

HM682 shown with round 316SS handwheel - Lockable isolate and vent



HM682 shown with round 316SS handwheel - isolate and vent



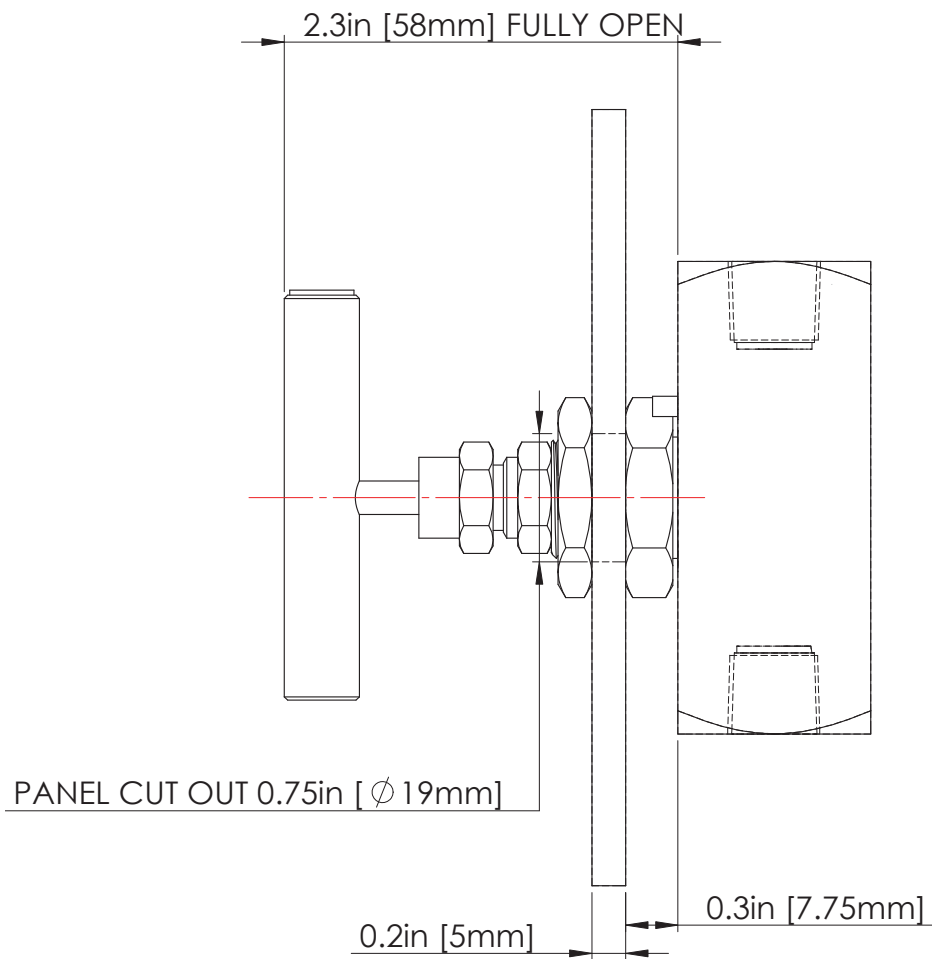
| OPTION CODES | |
|--------------|--------------------------------------|
| AS | Round Hand Wheel for Vent |
| AT | Round Hand Wheel for Isolate |
| AV | Round Hand Wheel for Equalize |
| BC | Round Hand Wheel - Lockable Vent |
| BE | Round Hand Wheel - Lockable Isolate |
| BG | Round Hand Wheel - Lockable Equalize |



OPTION DETAIL
Option AP Panel Nut on Bonnet



Model # HM25 shown
with Option AP





Mounting bracket kits enable a user to mount a manifold onto a gauge stand or a 2" (50mm) nominal bore pipe stand. Mounting kits are manufactured in stainless steel and allow the instrument to be removed without disturbing the impulse pipework connection. They also add support to the complete assembly.

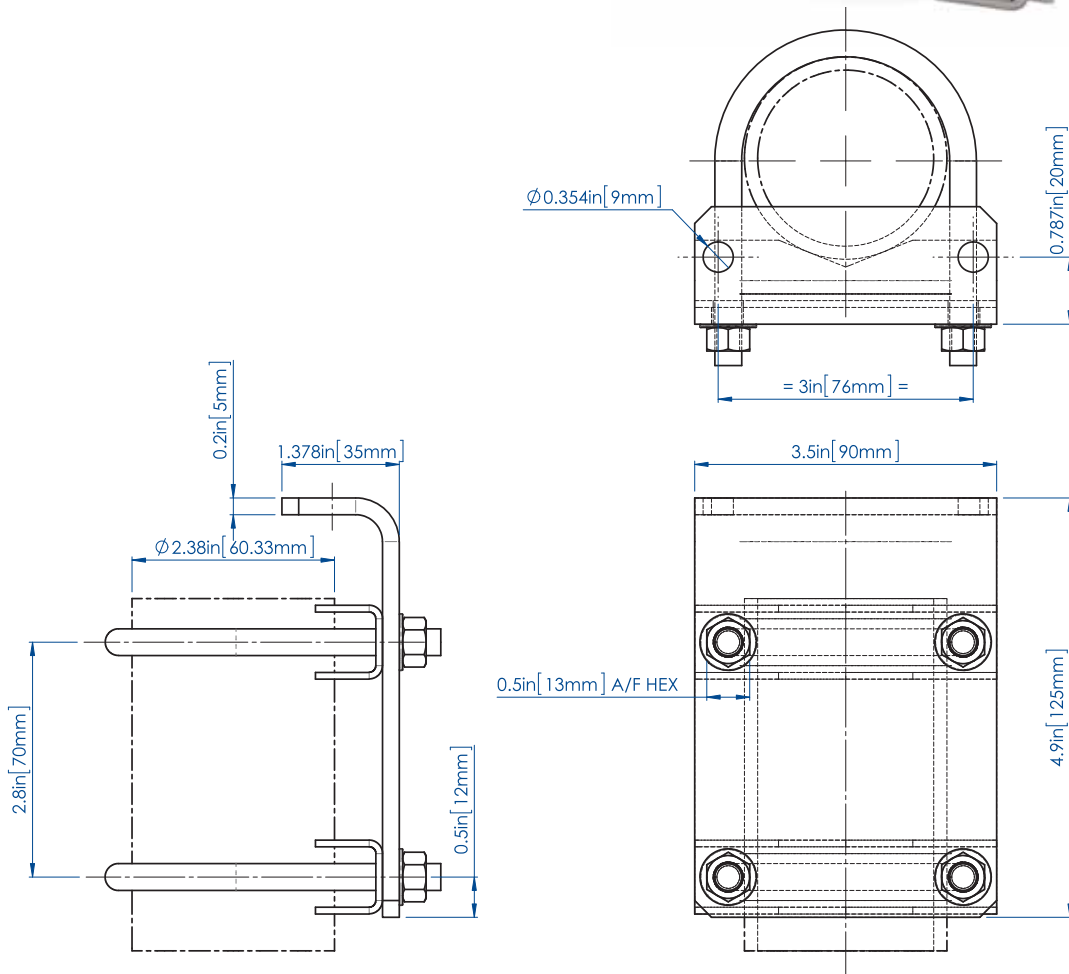


Order Part Number

HM8512BKT

Weight=2.20 lbs(1.0 kg)

Used On Model HM8512 (Direct)

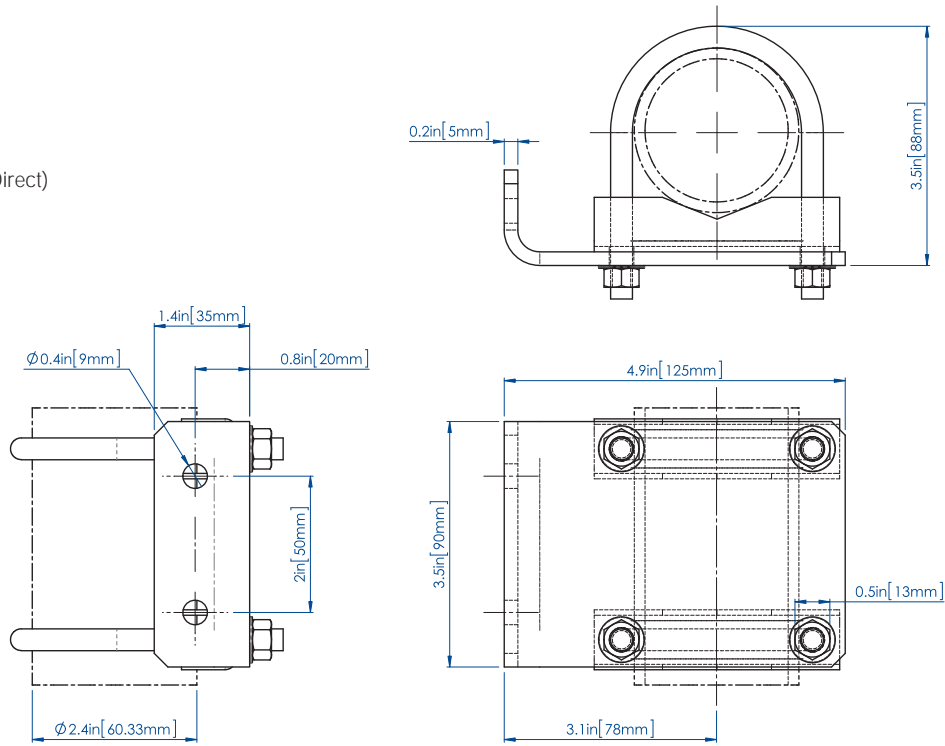


Dimensions shown in inches (millimeters) are for reference only and are subject to change.



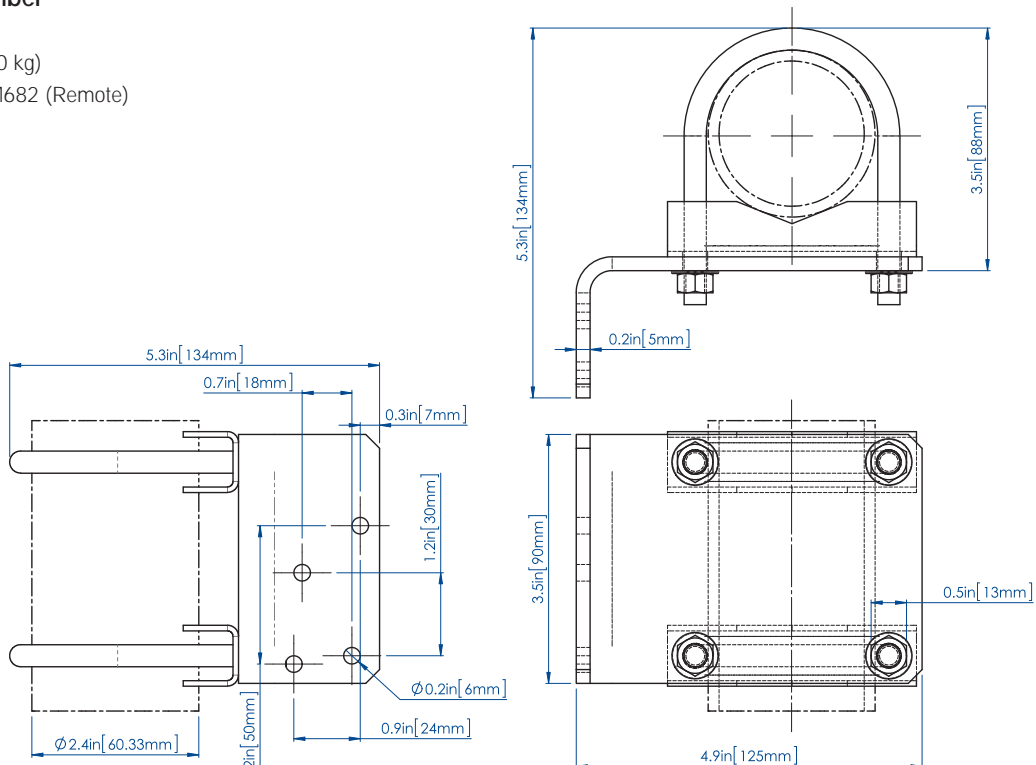
**Order Part Number
HM8000BKT**

Weight=2.20 lbs(1.0 kg)
Used On Model HM8212 (Direct)
and HM8332 (Remote)



**Order Part Number
HM682BKT**

Weight=2.20 lbs(1.0 kg)
Used On Model HM682 (Remote)

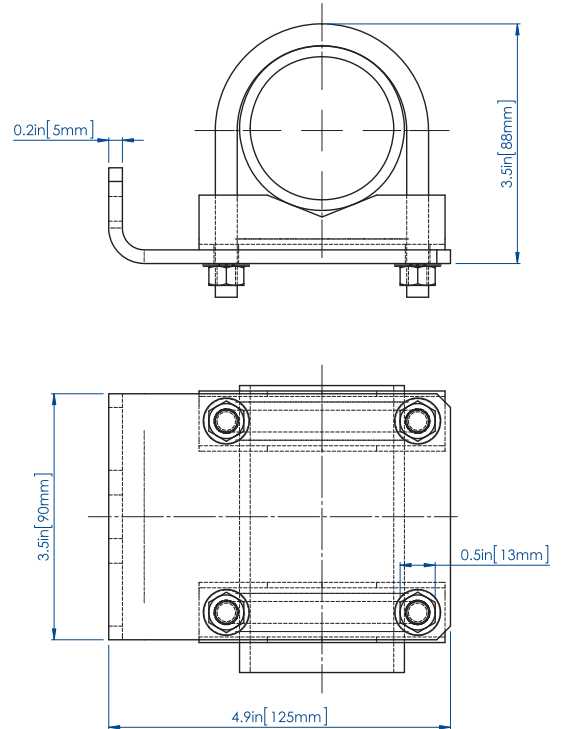
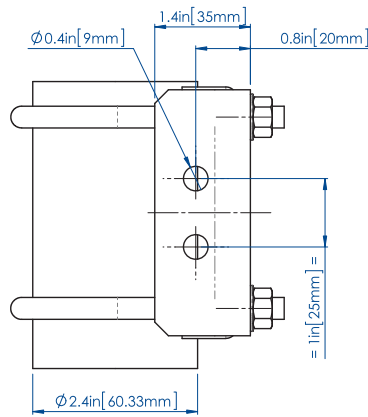


Dimensions shown in inches (millimeters) are for reference only and are subject to change.



**Order Part Number
HM8100BKT**

Weight=2.20 lbs(1.0 kg)
Used On Model HM8232 (Remote)
and HM8312 (Direct)



Dimensions shown in inches (millimeters) are for reference only and are subject to change.

△ When selecting products for specific applications users should refer to our notice at the bottom of page 1. And the guidance of Use of Equipment on the Inside Back Cover Page.



Installation & use of equipment should be done by trained personnel!

MATERIALS

- Materials must be compatible with medium.
- Pressure and temperature also have direct bearing on the correct seal & body material to be used and must be considered when specifying. See pressure/temperature ratings table contained in our printed literature.
- If in any doubt, consult HOKE®.

THREADS AND JOINTING

- All pressure connections should be leak tight and should be observed when first applying pressure.
- Recommended maximum operating pressure for each size of thread and type of material must not be exceeded. Please note the stated pressures represent the maximum applied pressure. If in doubt, consult the manufacturer.
- Care must be taken to ensure mismatch of threads does not occur.
- Mating female connections must have a pressure rating that is compatible with the pressure range of the product.
- Valves with parallel threads must have the independent seal made on the flat seating using a washer or bonded seal of material compatible with the pressure medium.
- Valves with tapered threads have the joint made by mating of the threads. It is common practice to apply jointing material to the male thread. This must be compatible with the pressure medium and applied in the correct quantity to ensure non-interference with the mating of the threads.
- NPT and other tapered thread forms when manufactured to the standard specification may not be adequate to offer sufficient thread engagement for safe use under pressure.
- Particular care must be taken to ensure the valve has the correct pressure rating for the application.

INSTALLATION

- When joining up a valve to the system, the system must not be pressurized.
- If the valve is already fitted to a gauge at time of installation, the valve should be in the closed position to prevent the build up of pressure from entering the gauge. The valve should then be opened slowly and care taken to ensure the pressure entering the gauge does not exceed its pressure rating.
- When the valve does not have a gauge fitted at time of installation (i.e., with an open port) the valve should be in the open position which will prevent build up of pressure within the valve. Care should therefore be taken to confirm that all systems are sealed before pressurizing.
- Manifolds and equalizing valves are accompanied by specific installation instructions and these should be referred to before proceeding with installation.

MAINTENANCE

- Valves etc. should be part of a planned maintenance program to ensure they continue to function properly.
- The time interval between examinations will vary depending upon site conditions, the number of opening and shutting operations etc. and should be determined in the light of experience.
- Threaded connections should be checked for leaks and tightened as required.
- If leaking through the packing is evident, loosen locknut, tighten packing compression bolt to torque rating of 13 lbs/ft (18 Nm) minimum to 18 lbs/ft (25 Nm) maximum and re-tighten locknut.

REPAIRS

- The design of these valves allows packing or whole stem assembly to be replaced without removing the valve from the system but the system must be closed down and any residual pressure exhausted in a controlled manner before proceeding.
- To replace packing: Remove handle, slacken locknut, remove compression bolt and compression gland ring. Remove packing and replace. Re-assemble in reverse order to the above and tighten to torque described above.
- To replace whole stem assembly: Remove handle and bonnet locking pin. Remove whole head assembly (N.B. To loosen - turn anti-clockwise). Slacken locknut, remove compression bolt and compression gland ring. Remove stem assembly by withdrawing downwards. Fit new stem assembly and packing. Re-assemble in reverse order to the above and tighten compression bolt to torque described above.

Re-fit head assembly to valve body and tighten to torque of 100 lbs/ft (135.58Nm) Replace locking pin. Test valve for leaks.

Note: Ensure stem is screwed fully into the bonnet before refitting to body. Fit locking pin, after testing.

- If the valve seat is damaged, the whole valve should be replaced.

SPARES

- We recommend that spares should be held in the form of whole stem assemblies.

Note: It is the responsibility of the customer to select the proper valve. If in any doubt, consult HOKE®.



The Small Bore Instrumentation Specialists



We specialize in small bore instrumentation products up to 2" that deliver benchmark performance quality & safety; provide the broadest array of superior alloy offerings in the market; decades of proven success in a wide range of industries; a roster of "who's who" customers & projects globally; original "Best Solution" engineering & designs; and are focused on continuous improvement in all aspects of our business.

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HOKE® Block Valves

Flanged Double Block & Bleed
Process to Instrument Isolation Valves

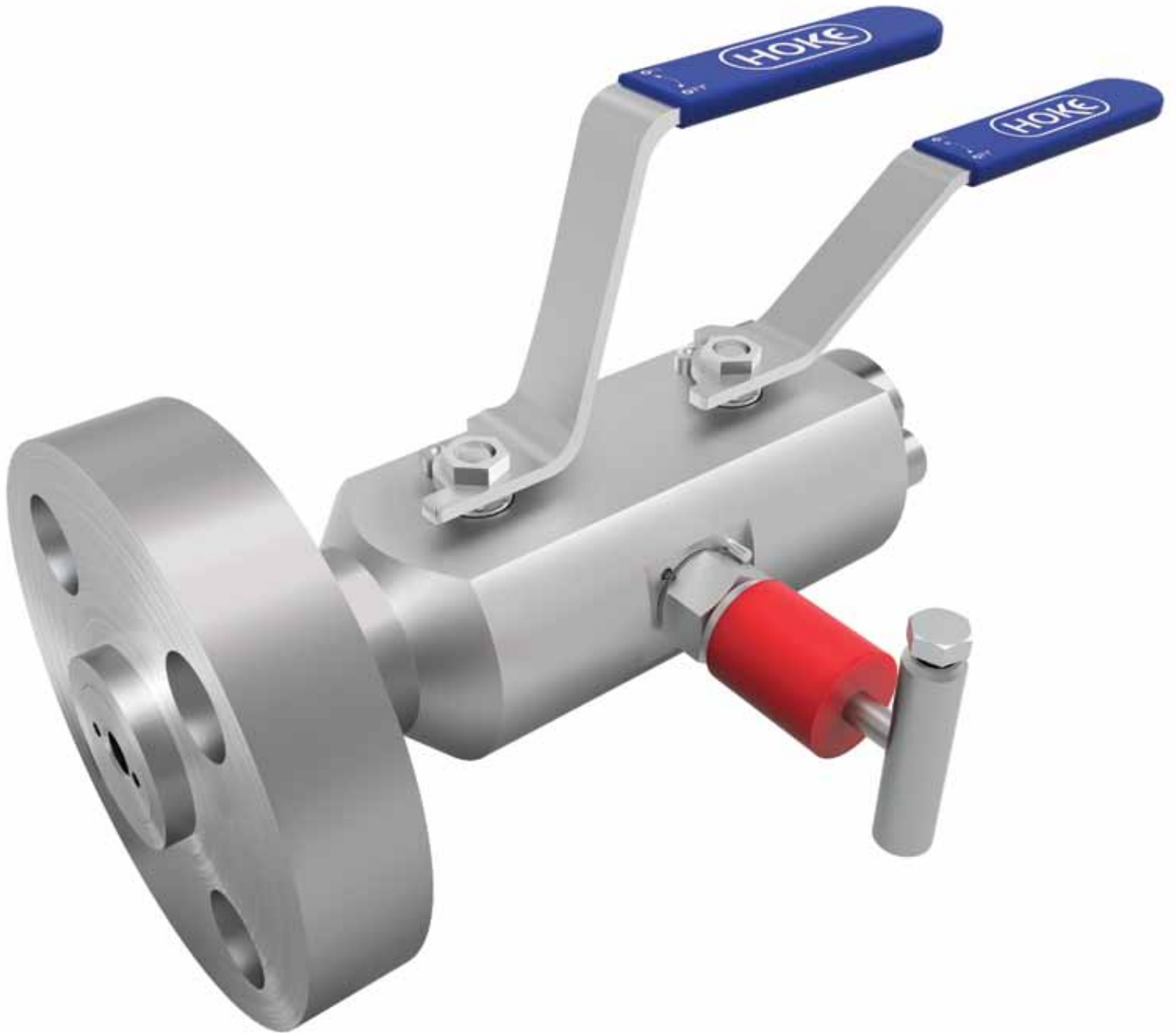


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Sample Quills & Injection Probes 13

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API 6A Flanged HOKE® Blocks - Ball and Needle 15

How to Order 16

HOKE® Block - Double Block & Bleed Valves

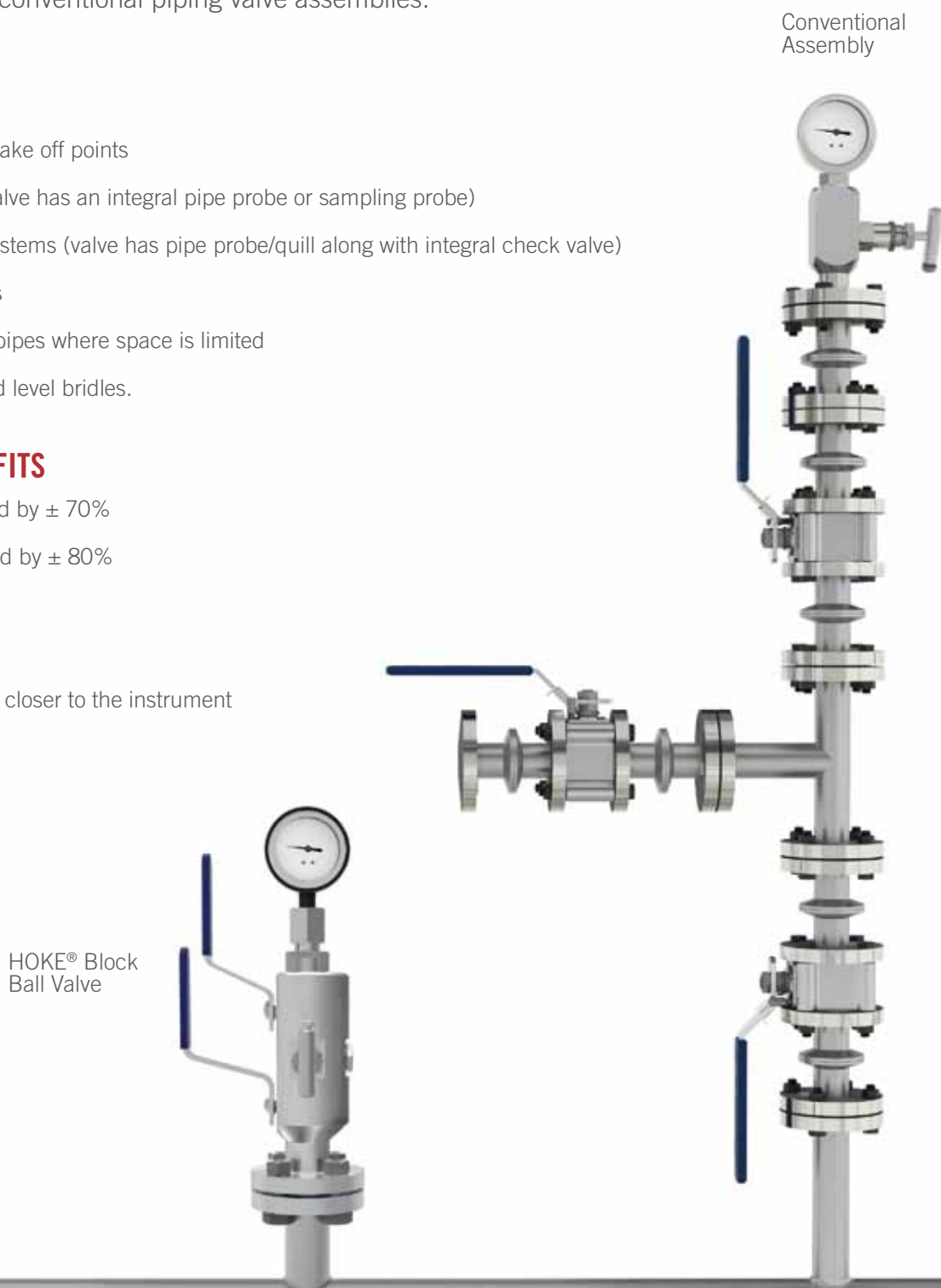
The HOKE® double block and bleed design of pressure instrument take-off points along with sampling, injection, and drain applications simplifies these designs by making them more compact, rigid, lighter, safer, and lower cost than the conventional piping valve assemblies.

APPLICATIONS

- Pressure instrument take off points
- Sampling Systems (valve has an integral pipe probe or sampling probe)
- Chemical Injection Systems (valve has pipe probe/quill along with integral check valve)
- Hydraulic power units
- Drains for tanks and pipes where space is limited
- Instrument drains and level bridles.

FEATURES & BENEFITS

- Overall length reduced by $\pm 70\%$
- Overall weight reduced by $\pm 80\%$
- Reduced labor cost
- Reduced leak points
- Brings pressure point closer to the instrument



Applications - HOKE® Block Ball Valves

HOKE® Blocks are used as a primary process/piping isolation valve to provide double block and bleed. Valves are typically used on hydrocarbon applications to minimize the size and weight of the pipe-valve assemblies associated with gauge pressure or analytical instrumentation.

Specifications

Working Pressure

- In accordance to ASME B16.5 for class 150 to 2500 along with API 6A/ISO 10423 up to 10k

Working temperatures

- 450°F (232°C) for PEEK seats, PTFE and Graphite packing (fire safe)

Sizes

- 1/2" through 3"
- 10, 15, 20, & 25 mm orifice sizes

Certification

- API 607 5th Edition (Fire Test)
- ASME VIII (pressure boundaries)
- PED
- ANSI B16.5 (flange dimensions)
- EN 10204.3.1 (material traceability)
- NORSOK (Consult factory)

Materials

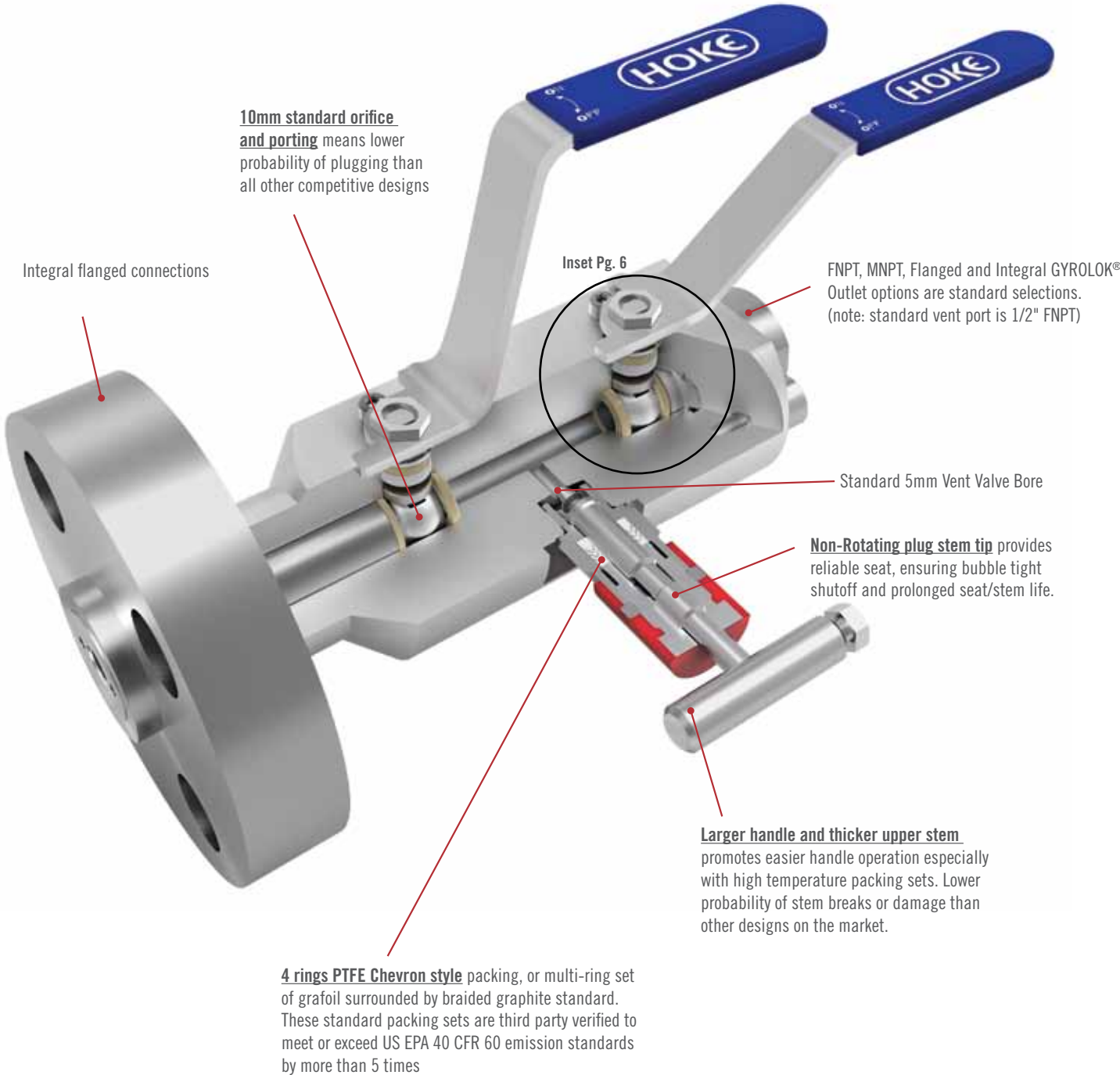
- Bar or Forged body construction



HOKE® Block advantages and benefits

- 10mm as standard for instrument applications, 15mm, 20mm, and 25mm orifice/bore also available
- Integral back seat on stem prevents stem blow out.
- Needle valve bonnet uses non-rotating stem design on vent valve to increase long life. HOKE® uses Non-Rotating Stem Tip (NRT) technology. When the stem tip contacts the seat, it stops rotating, preventing the cross scoring and eventual leaks that can occur with ball type stems.
- Adjustable , live loaded PTFE or GRAFOIL® packing on needle valves significantly reduces external leakage.
- 4 rings PTFE Chevron style packing, or multi-ring set of Grafoil surrounded by braided graphite standard on vent valve. Verified to exceed US EPA 40 CFR 60 emission standards by more than 5 times.
- Single and double flanged versions available along with NPT and Integral GYROLOK® connections.
- API 607 6th Edition (fire test) Standard (Graphite packed models only)

HOKE® Block Ball Valves



10mm standard orifice and porting means lower probability of plugging than all other competitive designs

Integral flanged connections

Inset Pg. 6

FNPT, MNPT, Flanged and Integral GYROLOK® Outlet options are standard selections. (note: standard vent port is 1/2" FNPT)

Standard 5mm Vent Valve Bore

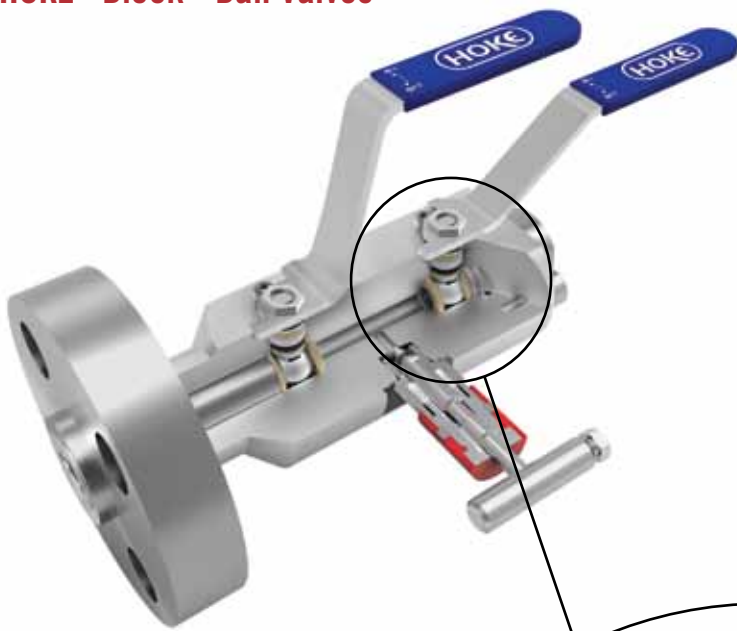
Non-Rotating plug stem tip provides reliable seat, ensuring bubble tight shutoff and prolonged seat/stem life.

Larger handle and thicker upper stem promotes easier handle operation especially with high temperature packing sets. Lower probability of stem breaks or damage than other designs on the market.

4 rings PTFE Chevron style packing, or multi-ring set of grafoil surrounded by braided graphite standard. These standard packing sets are third party verified to meet or exceed US EPA 40 CFR 60 emission standards by more than 5 times

HOKE® Block - Block & Bleed Valves

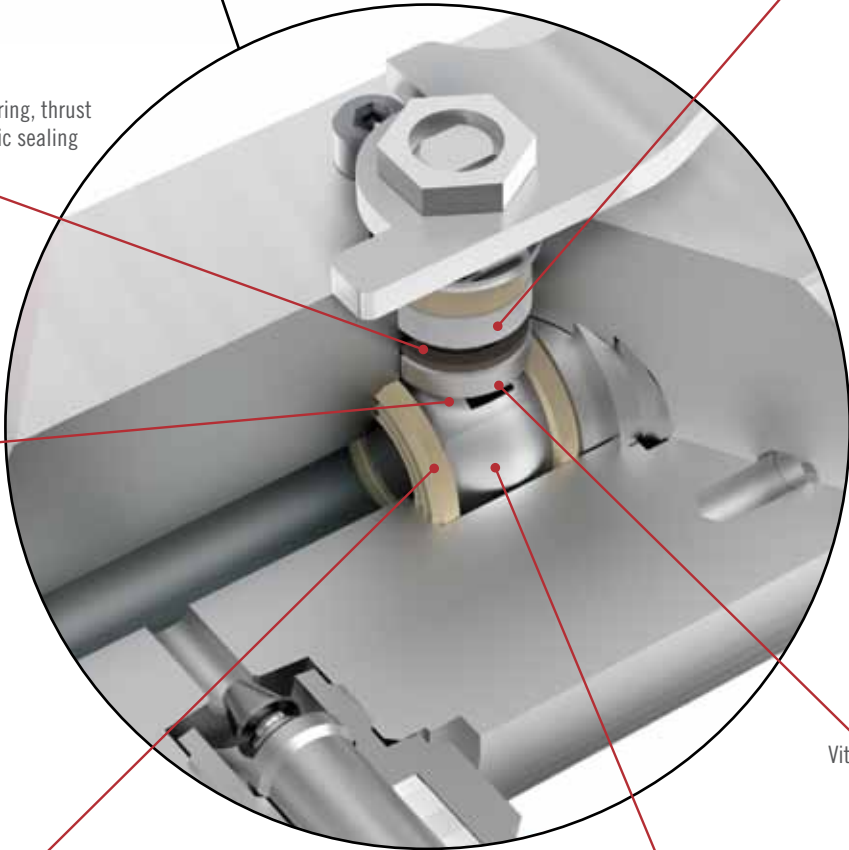
HOKE® Block - Ball Valves



Triple stem seal (packing, o-ring, thrust washer) for improved dynamic sealing

Blowout-proof stem

Adjustable, live loaded PTFE-rings or Grafoil packing



Viton® O-Ring Standard

Standard PEEK seats with serrations and optimal seat contact curvature reduce operating torque, minimize seat wear, and prevent cold flow on the 10mm and 15mm HOKE® Blocks. The larger 20mm and 25mm HOKE® Blocks utilize a flex-seat design and optimal contact curvature to reduce operating torque, minimize seat wear, and prevent cold flow

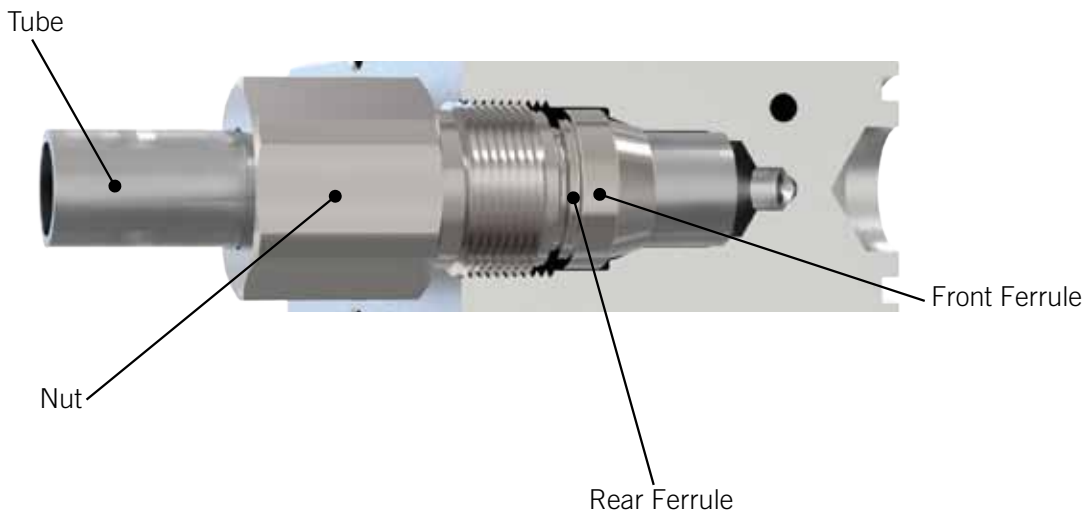
Bi-directional flow capability

HOKE® Integral / GYROLOK® Tube Fitting Connections

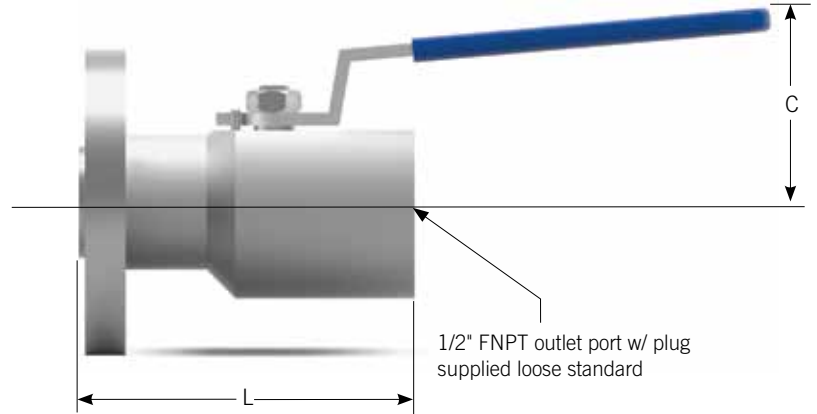
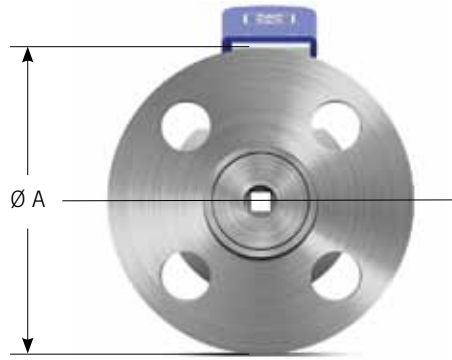
The HOKE® range of standard hand valves, gauge valves and manifolds are available with the option of the integral / GYROLOK® tube fitting connections. The integral / GYROLOK® tube fitting connection is machined directly into the body of the valve, allowing tubing to be directly connected without the use of traditional threaded (NPT, BSP) connections. The integral / GYROLOK® connection provides a safer connection system for high pressure, severe, steam or sour gas service where leakage has dangerous consequences.

An Explanation of Integral GYROLOK® Tube Fitting Connections

- Eliminates traditional threaded tubing connections
- Provides a safer and more consistent tube connection
- Saves assembly time during field assembly
- Reduces potential leak paths
- No need for sealing tape or liquid sealing compounds
- Fully field maintainable
- Successfully used for over 20 years in many offshore applications
- Available in 1/2" and 10mm tube connections

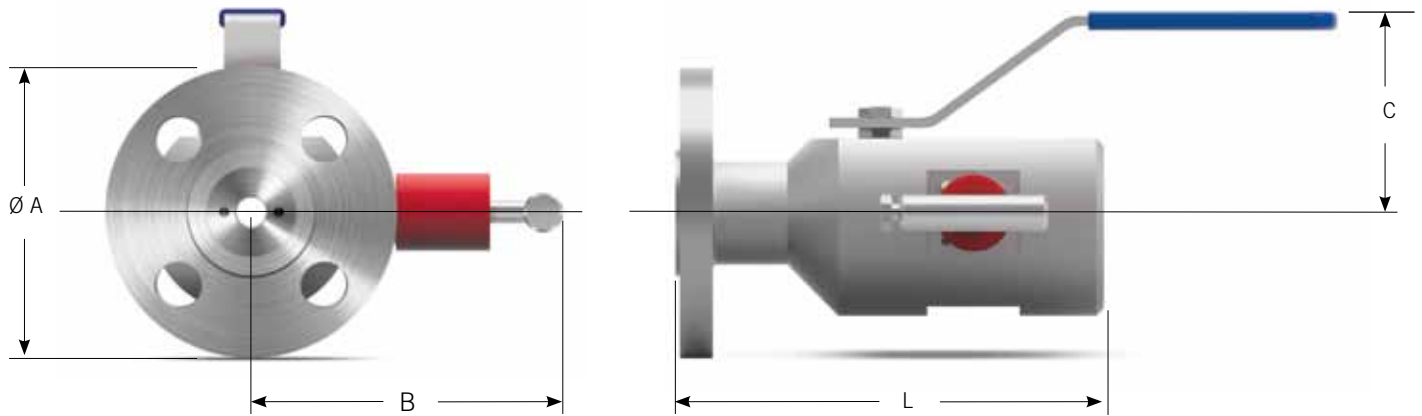


HBA1 10mm Ball Valve - Single Flange



| Flange Size | B16.34 Pressure Class | RF Single Flange (10mm) | | | | RTJ Single Flange (10mm) | | | |
|-------------|-----------------------|-------------------------|-----|-----|--------|--------------------------|-----|-----|--------|
| | | A | C | L | Weight | A | C | L | Weight |
| 1/2" | 150 | 3.50 | 2.5 | 4.1 | 7 | N/A | N/A | N/A | N/A |
| 1/2" | 300 | 3.75 | 2.5 | 4.1 | 7 | 3.75 | 2.5 | 4.1 | 7 |
| 1/2" | 600 | 3.75 | 2.5 | 4.3 | 8 | 3.75 | 2.5 | 4.3 | 8 |
| 1/2" | 900/1500 | 4.75 | 2.5 | 4.7 | 12 | 4.75 | 2.5 | 4.7 | 12 |
| 1/2" | 2500 | 5.25 | 2.5 | 5.1 | 16 | 5.25 | 2.5 | 5.1 | 16 |
| 3/4" | 150 | 3.88 | 2.5 | 4.1 | 9 | N/A | N/A | N/A | N/A |
| 3/4" | 300 | 4.62 | 2.5 | 4.1 | 9 | 4.62 | 2.5 | 4.1 | 9 |
| 3/4" | 600 | 4.62 | 2.5 | 4.5 | 11 | 4.62 | 2.5 | 4.5 | 11 |
| 3/4" | 900/1500 | 5.12 | 2.5 | 4.9 | 15 | 5.12 | 2.5 | 4.9 | 15 |
| 3/4" | 2500 | 5.50 | 2.5 | 5.1 | 19 | 5.50 | 2.5 | 5.1 | 19 |
| 1" | 150 | 4.25 | 2.5 | 4.1 | 9 | 4.25 | 2.5 | 4.1 | 9 |
| 1" | 300 | 4.88 | 2.5 | 4.1 | 12 | 4.88 | 2.5 | 4.1 | 12 |
| 1" | 600 | 4.88 | 2.5 | 4.5 | 15 | 4.88 | 2.5 | 4.5 | 15 |
| 1" | 900/1500 | 5.88 | 2.5 | 4.9 | 19 | 5.88 | 2.5 | 4.9 | 19 |
| 1" | 2500 | 6.25 | 2.5 | 5.1 | 25 | 6.25 | 2.5 | 5.1 | 25 |
| 1-1/2" | 150 | 5.00 | 2.5 | 4.3 | 14 | 5.00 | 2.5 | 4.3 | 14 |
| 1-1/2" | 300 | 6.12 | 2.5 | 4.3 | 19 | 6.12 | 2.5 | 4.3 | 19 |
| 1-1/2" | 600 | 6.12 | 2.5 | 4.7 | 22 | 6.12 | 2.5 | 4.7 | 22 |
| 1-1/2" | 900/1500 | 7.00 | 2.5 | 5.1 | 30 | 7.00 | 2.5 | 5.1 | 30 |
| 1-1/2" | 2500 | 8.00 | 2.5 | 5.9 | 50 | 8.00 | 2.5 | 5.9 | 50 |
| 2" | 150 | 6.00 | 2.5 | 4.3 | 21 | 6.00 | 2.5 | 4.3 | 21 |
| 2" | 300 | 6.50 | 2.5 | 4.5 | 25 | 6.50 | 2.5 | 4.5 | 25 |
| 2" | 600 | 6.50 | 2.5 | 4.9 | 29 | 6.50 | 2.5 | 4.9 | 29 |
| 2" | 900/1500 | 8.50 | 2.5 | 5.3 | 51 | 8.50 | 2.5 | 5.3 | 51 |
| 2" | 2500 | 9.25 | 2.5 | 5.9 | 69 | 9.25 | 2.5 | 5.9 | 69 |

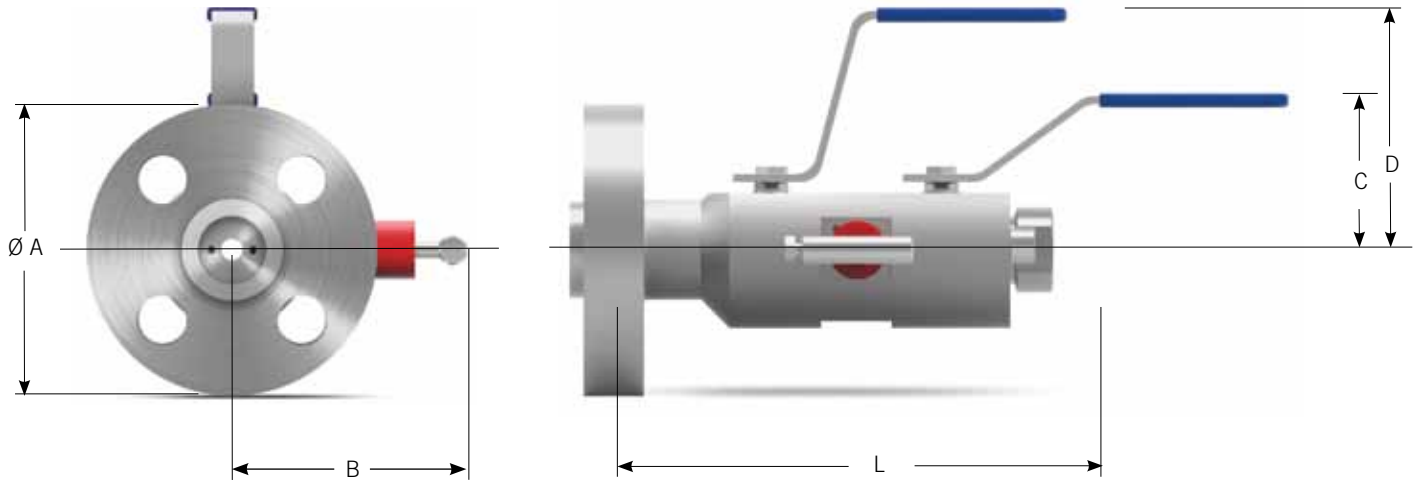
HBA2 10mm Ball Valve and Needle Bleed - Single Flange



| Flange Size | B16.34 Pressure Class | RF Single Flange (10mm) | | | | | RTJ Single Flange (10mm) | | | | |
|-------------|-----------------------|-------------------------|-----|-----|-----|--------|--------------------------|-----|-----|-----|--------|
| | | A | B* | C | L | Weight | A | B | C | L | Weight |
| 1/2" | 150 | 3.50 | 4.0 | 2.8 | 7.0 | 11 | N/A | N/A | N/A | N/A | N/A |
| 1/2" | 300 | 3.75 | 4.0 | 2.8 | 7.1 | 11 | 3.75 | 4.0 | 2.8 | 7.2 | 11 |
| 1/2" | 600 | 3.75 | 4.0 | 2.8 | 7.3 | 11 | 3.75 | 4.0 | 2.8 | 7.3 | 12 |
| 1/2" | 900/1500 | 4.75 | 4.0 | 2.8 | 7.7 | 14 | 4.75 | 4.0 | 2.8 | 7.7 | 14 |
| 1/2" | 2500 | 5.25 | 4.0 | 2.8 | 8.0 | 16 | 5.25 | 4.0 | 2.8 | 8.0 | 17 |
| 3/4" | 150 | 3.88 | 4.0 | 2.8 | 7.0 | 11 | N/A | N/A | N/A | N/A | N/A |
| 3/4" | 300 | 4.62 | 4.0 | 2.8 | 7.1 | 13 | 4.62 | 4.0 | 2.8 | 7.3 | 13 |
| 3/4" | 600 | 4.62 | 4.0 | 2.8 | 7.4 | 13 | 4.62 | 4.0 | 2.8 | 7.4 | 13 |
| 3/4" | 900/1500 | 5.12 | 4.0 | 2.8 | 7.8 | 15 | 5.12 | 4.0 | 2.8 | 7.8 | 16 |
| 3/4" | 2500 | 5.50 | 4.0 | 2.8 | 8.0 | 18 | 5.50 | 4.0 | 2.8 | 8.0 | 18 |
| 1" | 150 | 4.25 | 4.0 | 2.8 | 7.1 | 12 | 4.25 | 4.0 | 2.8 | 7.3 | 12 |
| 1" | 300 | 4.88 | 4.0 | 2.8 | 7.2 | 12 | 4.88 | 4.0 | 2.8 | 7.4 | 13 |
| 1" | 600 | 4.88 | 4.0 | 2.8 | 7.5 | 13 | 4.88 | 4.0 | 2.8 | 7.5 | 14 |
| 1" | 900/1500 | 5.88 | 4.0 | 2.8 | 7.9 | 18 | 5.88 | 4.0 | 2.8 | 7.9 | 18 |
| 1" | 2500 | 6.25 | 4.0 | 2.8 | 8.2 | 21 | 6.25 | 4.0 | 2.8 | 8.2 | 22 |
| 1-1/2" | 150 | 5.00 | 4.0 | 2.8 | 7.2 | 13 | 5.00 | 4.0 | 2.8 | 7.4 | 14 |
| 1-1/2" | 300 | 6.12 | 4.0 | 2.8 | 7.3 | 16 | 6.12 | 4.0 | 2.8 | 7.5 | 17 |
| 1-1/2" | 600 | 6.12 | 4.0 | 2.8 | 7.7 | 17 | 6.12 | 4.0 | 2.8 | 7.7 | 18 |
| 1-1/2" | 900/1500 | 7.00 | 4.0 | 2.8 | 8.0 | 23 | 7.00 | 4.0 | 2.8 | 8.0 | 24 |
| 1-1/2" | 2500 | 8.00 | 4.0 | 2.8 | 8.5 | 33 | 8.00 | 4.0 | 2.8 | 8.6 | 35 |
| 2" | 150 | 6.00 | 4.0 | 2.8 | 7.3 | 15 | 6.00 | 4.0 | 2.8 | 7.5 | 16 |
| 2" | 300 | 6.50 | 4.0 | 2.8 | 7.4 | 17 | 6.50 | 4.0 | 2.8 | 7.6 | 18 |
| 2" | 600 | 6.50 | 4.0 | 2.8 | 7.8 | 19 | 6.50 | 4.0 | 2.8 | 7.8 | 20 |
| 2" | 900/1500 | 8.50 | 4.0 | 2.8 | 8.3 | 33 | 8.50 | 4.0 | 2.8 | 8.3 | 34 |
| 2" | 2500 | 9.25 | 4.0 | 2.8 | 8.8 | 45 | 9.25 | 4.0 | 2.8 | 8.8 | 47 |

*When fully open.

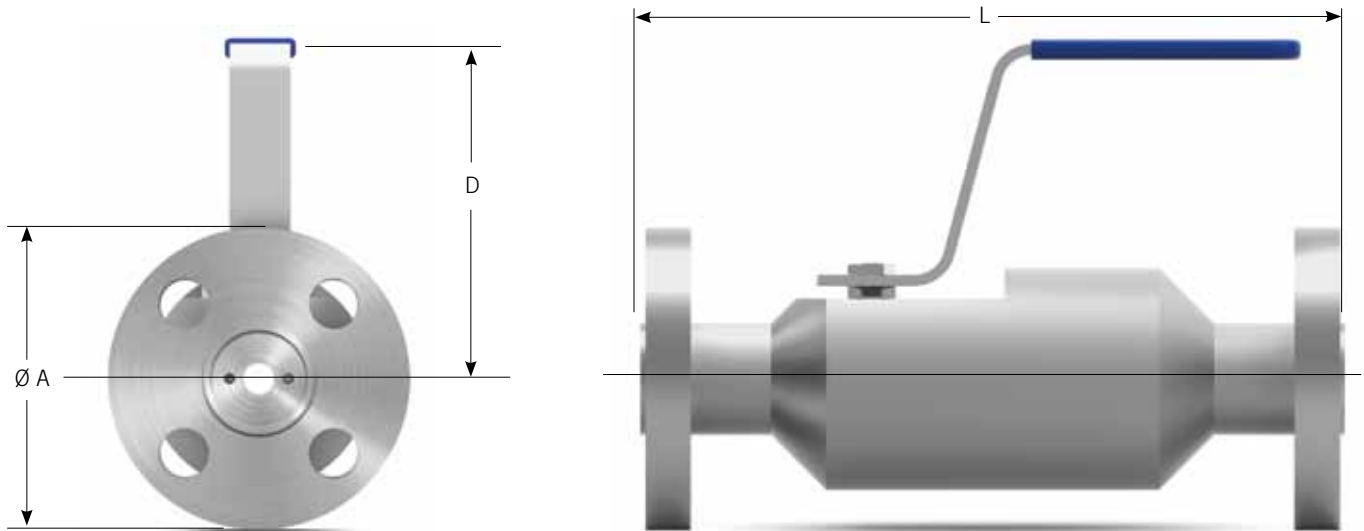
HBA3 10mm Double Ball Valve & Needle Bleed - Single Flange



| ANSI/ Flange Size | B16.34 Pressure Class | RF Single Flange (10mm) | | | | | | RTJ Single Flange (10mm) | | | | | |
|-------------------------|-----------------------------|-------------------------|-----|-----|-----|-----|--------|--------------------------|-----|-----|-----|-----|--------|
| | | A | B* | C | D | L | Weight | A | B | C | D | L | Weight |
| 1/2" | 150 | 3.50 | 4.0 | 2.8 | 4.3 | 7.0 | 11 | N/A | N/A | N/A | N/A | N/A | N/A |
| 1/2" | 300 | 3.75 | 4.0 | 2.8 | 4.3 | 7.1 | 12 | 3.75 | 4.0 | 2.8 | 4.3 | 7.2 | 12 |
| 1/2" | 600 | 3.75 | 4.0 | 2.8 | 4.3 | 7.3 | 12 | 3.75 | 4.0 | 2.8 | 4.3 | 7.3 | 12 |
| 1/2" | 900/1500 | 4.75 | 4.0 | 2.8 | 4.3 | 7.7 | 14 | 4.75 | 4.0 | 2.8 | 4.3 | 7.7 | 15 |
| 1/2" | 2500 | 5.25 | 4.0 | 2.8 | 4.3 | 8.0 | 17 | 5.25 | 4.0 | 2.8 | 4.3 | 8.0 | 18 |
| 3/4" | 150 | 3.88 | 4.0 | 2.8 | 4.3 | 7.0 | 12 | N/A | N/A | N/A | N/A | N/A | N/A |
| 3/4" | 300 | 4.62 | 4.0 | 2.8 | 4.3 | 7.1 | 13 | 4.62 | 4.0 | 2.8 | 4.3 | 7.3 | 13 |
| 3/4" | 600 | 4.62 | 4.0 | 2.8 | 4.3 | 7.4 | 13 | 4.62 | 4.0 | 2.8 | 4.3 | 7.4 | 13 |
| 3/4" | 900/1500 | 5.12 | 4.0 | 2.8 | 4.3 | 7.8 | 16 | 5.12 | 4.0 | 2.8 | 4.3 | 7.8 | 16 |
| 3/4" | 2500 | 5.50 | 4.0 | 2.8 | 4.3 | 8.0 | 18 | 5.50 | 4.0 | 2.8 | 4.3 | 8.0 | 19 |
| 1" | 150 | 4.25 | 4.0 | 2.8 | 4.3 | 7.1 | 12 | 4.25 | 4.0 | 2.8 | 4.3 | 7.3 | 113 |
| 1" | 300 | 4.88 | 4.0 | 2.8 | 4.3 | 7.2 | 13 | 4.88 | 4.0 | 2.8 | 4.3 | 7.4 | 14 |
| 1" | 600 | 4.88 | 4.0 | 2.8 | 4.3 | 7.5 | 14 | 4.88 | 4.0 | 2.8 | 4.3 | 7.5 | 14 |
| 1" | 900/1500 | 5.88 | 4.0 | 2.8 | 4.3 | 7.9 | 18 | 5.88 | 4.0 | 2.8 | 4.3 | 7.9 | 19 |
| 1" | 2500 | 6.25 | 4.0 | 2.8 | 4.3 | 8.2 | 22 | 6.25 | 4.0 | 2.8 | 4.3 | 8.2 | 22 |
| 1-1/2" | 150 | 5.00 | 4.0 | 2.8 | 4.3 | 7.2 | 14 | 5.00 | 4.0 | 2.8 | 4.3 | 7.4 | 14 |
| 1-1/2" | 300 | 6.12 | 4.0 | 2.8 | 4.3 | 7.3 | 16 | 6.12 | 4.0 | 2.8 | 4.3 | 7.5 | 17 |
| 1-1/2" | 600 | 6.12 | 4.0 | 2.8 | 4.3 | 7.7 | 18 | 6.12 | 4.0 | 2.8 | 4.3 | 7.7 | 18 |
| 1-1/2" | 900/1500 | 7.00 | 4.0 | 2.8 | 4.3 | 8.0 | 23 | 7.00 | 4.0 | 2.8 | 4.3 | 8.0 | 24 |
| 1-1/2" | 2500 | 8.00 | 4.0 | 2.8 | 4.3 | 8.5 | 34 | 8.00 | 4.0 | 2.8 | 4.3 | 8.6 | 36 |
| 2" | 150 | 6.00 | 4.0 | 2.8 | 4.3 | 7.3 | 16 | 6.00 | 4.0 | 2.8 | 4.3 | 7.5 | 17 |
| 2" | 300 | 6.50 | 4.0 | 2.8 | 4.3 | 7.4 | 18 | 6.50 | 4.0 | 2.8 | 4.3 | 7.6 | 19 |
| 2" | 600 | 6.50 | 4.0 | 2.8 | 4.3 | 7.8 | 20 | 6.50 | 4.0 | 2.8 | 4.3 | 7.8 | 21 |
| 2" | 900/1500 | 8.50 | 4.0 | 2.8 | 4.3 | 8.3 | 33 | 8.50 | 4.0 | 2.8 | 4.3 | 8.3 | 35 |
| 2" | 2500 | 9.25 | 4.0 | 2.8 | 4.3 | 8.8 | 46 | 9.25 | 4.0 | 2.8 | 4.3 | 8.8 | 48 |

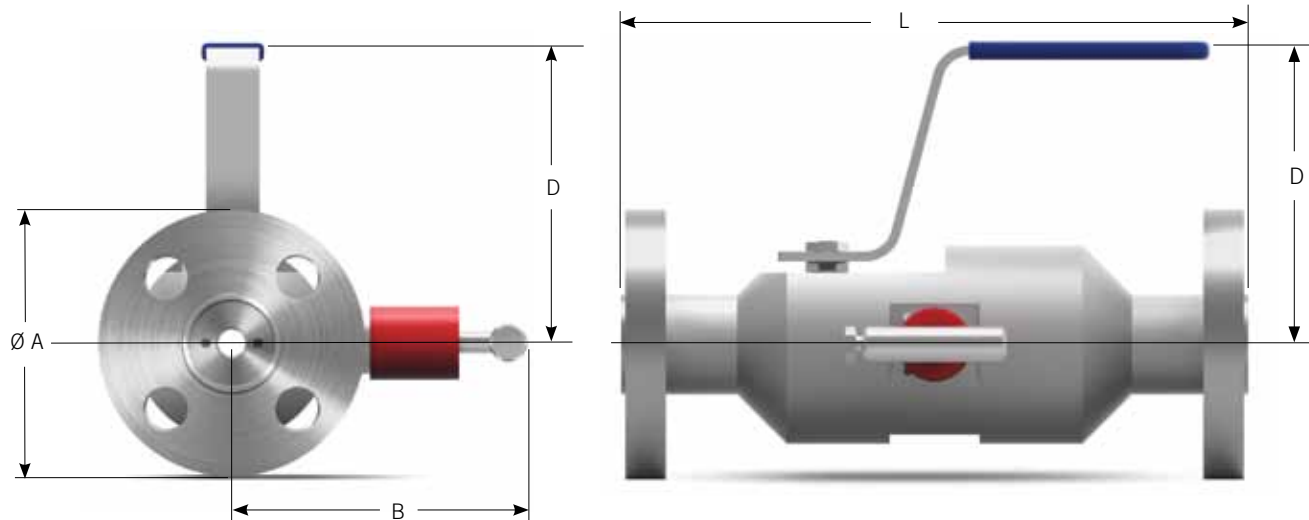
*When fully open.

HBA1 10mm Ball Valve - Double Flange



| Flange Size | B16.34 Pressure Class | RF Double Flange (10mm) | | | | RTJ Double Flange (10mm) | | | |
|-------------|-----------------------|-------------------------|-----|------|--------|--------------------------|-----|------|--------|
| | | A | D | L | Weight | A | D | L | Weight |
| 1/2" | 150 | 3.50 | 4.3 | 8.5 | 12 | NA | NA | NA | NA |
| 1/2" | 300 | 3.75 | 4.3 | 8.7 | 13 | 3.75 | 4.3 | 9.1 | 13 |
| 1/2" | 600 | 3.75 | 4.3 | 9.2 | 13 | 3.75 | 4.3 | 9.2 | 14 |
| 1/2" | 900/1500 | 4.75 | 4.3 | 9.9 | 18 | 4.75 | 4.3 | 9.9 | 19 |
| 1/2" | 2500 | 5.25 | 4.3 | 10.5 | 23 | 5.25 | 4.3 | 10.5 | 25 |
| 3/4" | 150 | 3.88 | 4.3 | 8.6 | 13 | NA | NA | NA | NA |
| 3/4" | 300 | 4.62 | 4.3 | 8.9 | 16 | 4.62 | 4.3 | 9.2 | 16 |
| 3/4" | 600 | 4.62 | 4.3 | 9.4 | 16 | 4.62 | 4.3 | 9.4 | 16 |
| 3/4" | 900/1500 | 5.12 | 4.3 | 10.1 | 21 | 5.12 | 4.3 | 10.1 | 22 |
| 3/4" | 2500 | 5.50 | 4.3 | 10.6 | 26 | 5.50 | 4.3 | 10.6 | 27 |
| 1" | 150 | 4.25 | 4.3 | 8.7 | 14 | 4.25 | 4.3 | 9.1 | 15 |
| 1" | 300 | 4.88 | 4.3 | 9.0 | 15 | 4.88 | 4.3 | 9.4 | 17 |
| 1" | 600 | 4.88 | 4.3 | 9.5 | 17 | 4.88 | 4.3 | 9.5 | 18 |
| 1" | 900/1500 | 5.88 | 4.3 | 10.4 | 26 | 5.88 | 4.3 | 10.4 | 27 |
| 1" | 2500 | 6.25 | 4.3 | 10.9 | 33 | 6.25 | 4.3 | 10.9 | 34 |
| 1-1/2" | 150 | 5.00 | 4.3 | 9.0 | 17 | 5.00 | 4.3 | 9.4 | 18 |
| 1-1/2" | 300 | 6.12 | 4.3 | 9.2 | 22 | 6.12 | 4.3 | 9.6 | 24 |
| 1-1/2" | 600 | 6.12 | 4.3 | 9.9 | 25 | 6.12 | 4.3 | 9.9 | 26 |
| 1-1/2" | 900/1500 | 7.00 | 4.3 | 10.6 | 36 | 7.00 | 4.3 | 10.6 | 38 |
| 1-1/2" | 2500 | 8.00 | 4.3 | 11.6 | 57 | 8.00 | 4.3 | 11.7 | 61 |
| 2" | 150 | 6.00 | 4.3 | 9.1 | 21 | 6.00 | 4.3 | 9.5 | 23 |
| 2" | 300 | 6.50 | 4.3 | 9.4 | 25 | 6.50 | 4.3 | 9.9 | 27 |
| 2" | 600 | 6.50 | 4.3 | 10.1 | 29 | 6.50 | 4.3 | 10.2 | 31 |
| 2" | 900/1500 | 8.50 | 4.3 | 11.1 | 56 | 8.50 | 4.3 | 11.2 | 59 |
| 2" | 2500 | 9.25 | 4.3 | 12.1 | 81 | 9.25 | 4.3 | 12.2 | 85 |

HBA2 10mm Ball Valve - Double Flange



| Flange Size | B16.34 Pressure Class | RF Double Flange (10mm) | | | | | RTJ Double Flange (10mm) | | | | |
|-------------|-----------------------|-------------------------|-----|-----|------|--------|--------------------------|-----|-----|------|--------|
| | | A | B* | D | L | Weight | A | B | D | L | Weight |
| 1/2" | 150 | 3.50 | 4.0 | 4.3 | 8.5 | 12 | N/A | N/A | N/A | NA | NA |
| 1/2" | 300 | 3.75 | 4.0 | 4.3 | 8.7 | 13 | 3.75 | 4.0 | 4.3 | 9.1 | 13 |
| 1/2" | 600 | 3.75 | 4.0 | 4.3 | 9.2 | 13 | 3.75 | 4.0 | 4.3 | 9.2 | 14 |
| 1/2" | 900/1500 | 4.75 | 4.0 | 4.3 | 9.9 | 18 | 4.75 | 4.0 | 4.3 | 9.9 | 19 |
| 1/2" | 2500 | 5.25 | 4.0 | 4.3 | 10.5 | 23 | 5.25 | 4.0 | 4.3 | 10.5 | 25 |
| 3/4" | 150 | 3.88 | 4.0 | 4.3 | 8.6 | 13 | N/A | N/A | N/A | NA | NA |
| 3/4" | 300 | 4.62 | 4.0 | 4.3 | 8.9 | 16 | 4.62 | 4.0 | 4.3 | 9.2 | 16 |
| 3/4" | 600 | 4.62 | 4.0 | 4.3 | 9.4 | 16 | 4.62 | 4.0 | 4.3 | 9.4 | 16 |
| 3/4" | 900/1500 | 5.12 | 4.0 | 4.3 | 10.1 | 21 | 5.12 | 4.0 | 4.3 | 10.1 | 22 |
| 3/4" | 2500 | 5.50 | 4.0 | 4.3 | 10.6 | 26 | 5.50 | 4.0 | 4.3 | 10.6 | 27 |
| 1" | 150 | 4.25 | 4.0 | 4.3 | 8.7 | 14 | 4.25 | 4.0 | 4.3 | 9.1 | 15 |
| 1" | 300 | 4.88 | 4.0 | 4.3 | 9.0 | 15 | 4.88 | 4.0 | 4.3 | 9.4 | 17 |
| 1" | 600 | 4.88 | 4.0 | 4.3 | 9.5 | 17 | 4.88 | 4.0 | 4.3 | 9.5 | 18 |
| 1" | 900/1500 | 5.88 | 4.0 | 4.3 | 10.4 | 26 | 5.88 | 4.0 | 4.3 | 10.4 | 27 |
| 1" | 2500 | 6.25 | 4.0 | 4.3 | 10.9 | 33 | 6.25 | 4.0 | 4.3 | 10.9 | 34 |
| 1-1/2" | 150 | 5.00 | 4.0 | 4.3 | 9.0 | 17 | 5.00 | 4.0 | 4.3 | 9.4 | 18 |
| 1-1/2" | 300 | 6.12 | 4.0 | 4.3 | 9.2 | 22 | 6.12 | 4.0 | 4.3 | 9.6 | 24 |
| 1-1/2" | 600 | 6.12 | 4.0 | 4.3 | 9.9 | 25 | 6.12 | 4.0 | 4.3 | 9.9 | 26 |
| 1-1/2" | 900/1500 | 7.00 | 4.0 | 4.3 | 10.6 | 36 | 7.00 | 4.0 | 4.3 | 10.6 | 38 |
| 1-1/2" | 2500 | 8.00 | 4.0 | 4.3 | 11.6 | 57 | 8.00 | 4.0 | 4.3 | 11.7 | 61 |
| 2" | 150 | 6.00 | 4.0 | 4.3 | 9.1 | 21 | 6.00 | 4.0 | 4.3 | 9.5 | 23 |
| 2" | 300 | 6.50 | 4.0 | 4.3 | 9.4 | 25 | 6.50 | 4.0 | 4.3 | 9.9 | 27 |
| 2" | 600 | 6.50 | 4.0 | 4.3 | 10.1 | 29 | 6.50 | 4.0 | 4.3 | 10.2 | 31 |
| 2" | 900/1500 | 8.50 | 4.0 | 4.3 | 11.1 | 56 | 8.50 | 4.0 | 4.3 | 11.2 | 59 |
| 2" | 2500 | 9.25 | 4.0 | 4.3 | 12.1 | 81 | 9.25 | 4.0 | 4.3 | 12.2 | 85 |

*When fully open.

Sample Quills & Injection Probes

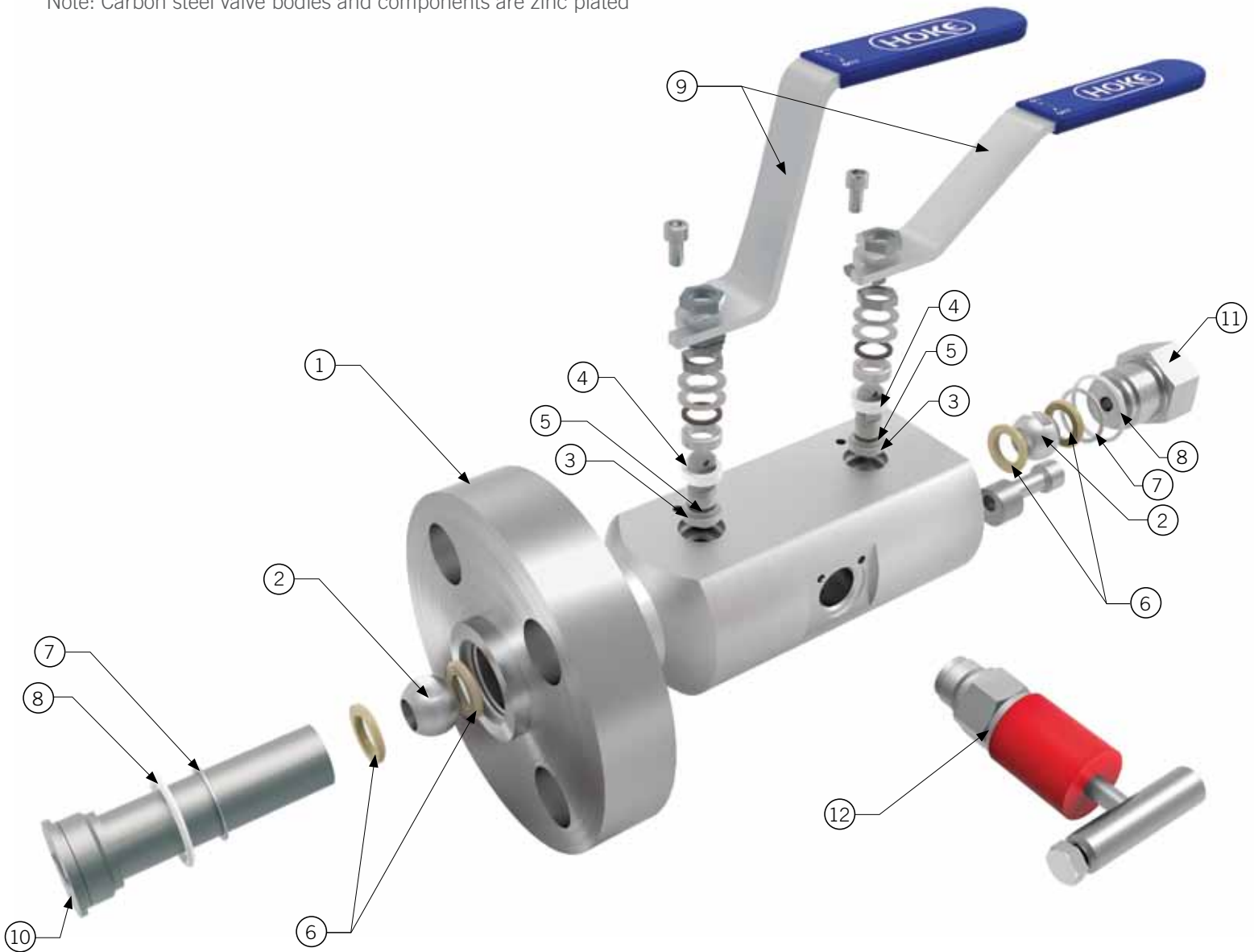
- The Sampling Probe or Injection Quill Double Block and Bleed valves are designed for safety in these hazardous applications.
- Integral check valve available.
- Custom designs and lengths available per customer application.



Materials of Construction - HOKE® Block - Ball Valve

| Item | Description | 316 SS | Carbon Steel | Exotic Alloy |
|------|-------------------|------------------------|-------------------------|---------------------|
| 1 | Body | 316L SS / 316L SS NACE | A105 / A105 NACE (Note) | Exotic |
| 2 | Ball | 316L SS / 316L SS NACE | 316 SS/316 SS NACE | Exotic |
| 3 | Ball Stem | 316L SS / 316L SS NACE | 316 SS/316 SS NACE | Exotic |
| 4 | Ball Stem Packing | PTFE or Graphite | PTFE or Graphite | PTFE or Graphite |
| 5 | Ball Stem O-ring | Viton® | Viton® | Viton® |
| 6 | Seats | PEEK or Carbon PEEK | PEEK or Carbon PEEK | PEEK or Carbon PEEK |
| 7 | Gasket-Metal | 316L SS / 316L SS NACE | 316 SS/316 SS NACE | Exotic |
| 8 | Gasket-Soft | PEEK or Carbon PEEK | PEEK or Carbon PEEK | PEEK or Carbon PEEK |
| 9 | Handle | 316 SS | 316 SS | 316 SS |
| 10 | Inlet Retainer | 316L SS / 316L SS NACE | A105 / A105 NACE (Note) | Exotic |
| 11 | Outlet Retainer | 316L SS / 316L SS NACE | A105 / A105 NACE (Note) | Exotic |
| 12 | Bleed Bonnet | 316L SS / 316L SS NACE | 316 SS/316 SS NACE | Exotic |

Note: Carbon steel valve bodies and components are zinc plated



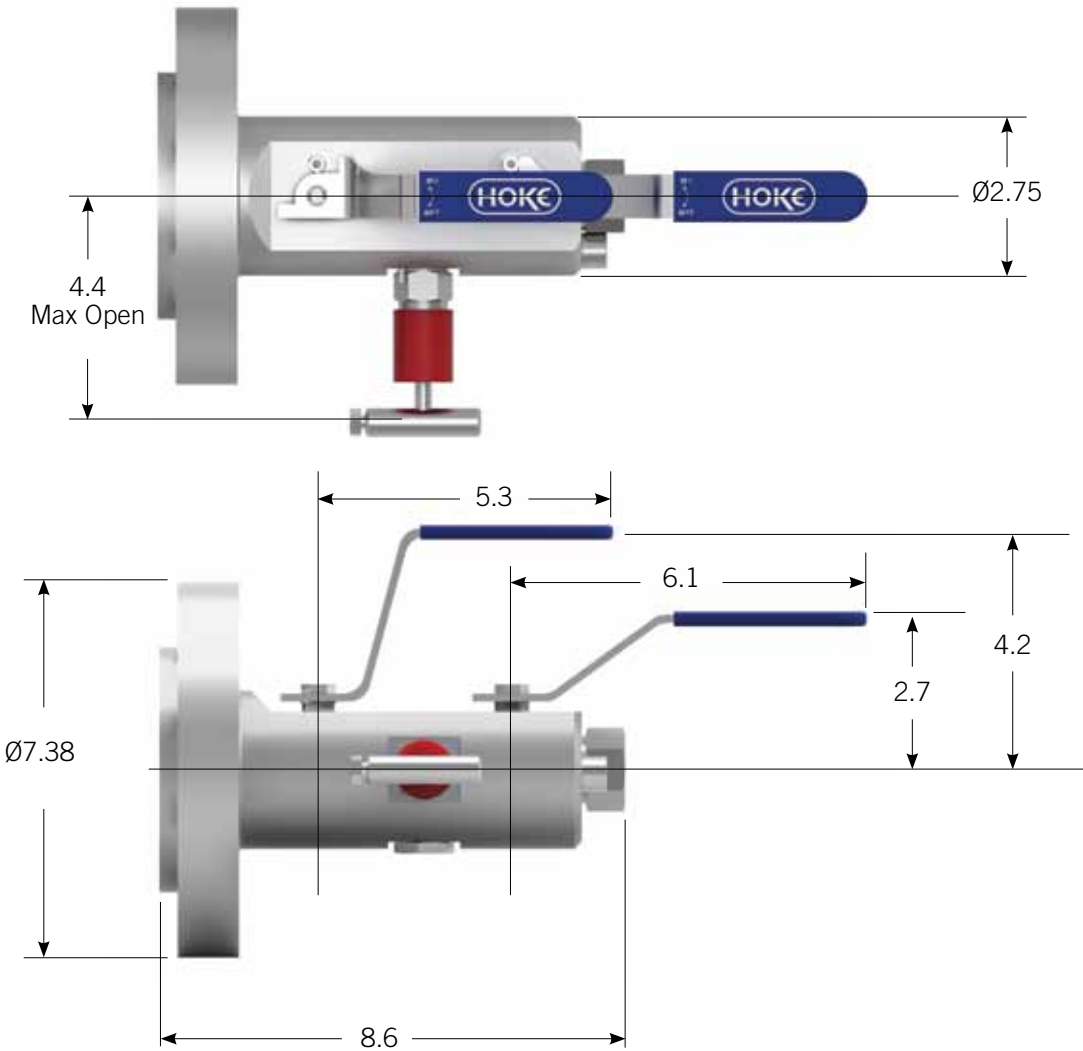
API 6A Flanged HOKE® Blocks - Double Block & Bleed

- Flange sizes of 1-13/16", 2-1/16", and 2-9/16"
- Flange types 2,000, 3,000, 5,000, and 10,000 API.
- API 607 6th addition fire safe.
- Heavy duty HOKE® valve non-rotating tip designed needle valve.
- 10mm and 15mm bore sizes are available.
- Single or double flange configurations are available.
- Large variety of materials are available (Stainless Steel, Duplex, Super-Duplex, ICONEL®, etc.)



Dimensions (API 1-13/16" 10,000 PSI Flange x 1/2" FNPT Shown)

Weight = 28lbs



HOKE® Block Ordering Information

How To Order

Typical Ordering Part Number

HB A 1 A 1 A 1 A YL 1 AB

BALL VALVE BORE

- A = 10mm Std
- B = 15mm bore
- C = 20mm bore
- D = 25mm bore

STYLE

- 1 = Single Block
- 2 = Block & Bleed
- 3 = Double Block & Bleed
- 4 = Block, Block, & Bleed

VENT VALVE

- A = OS & Y
- B = Needles
- C = Soft Seat

PACKING

- 1 = PTFE
- 2 = Graphite
- 3 = Firesafe
- 4 = Low Emission

FLANGED INLET

- A = 1/2" ANSI
- B = 3/4" ANSI
- C = 1" ANSI
- D = 1 1/2" ANSI
- E = 2" ANSI
- F = 1 13/16" API
- G = 2 1/16" API
- H = 2 9/16" API
- I = 3" ANSI

INLET FACE

- 1 = RF Smooth
- 2 = RTJ Ring Joint
- 3 = BX
- 4 = Flat Face

RATING

- 1 = 150#
- 2 = 300#
- 3 = 600#
- 4 = 900#/1500#
- 5 = 2500#
- 6 = 2,000 API
- 7 = 3000 API
- 8 = 5000 API
- 9 = 10,000 API

ALLOY

- YL = 316/316L
- DX3 = Duplex
- D50 = Super Duplex
- 625 = INCONEL® alloy 625
- 825 = INCONEL® alloy 825
- 6MO = 254 SMO
- M = MONEL® alloy 400
- HC= H C276
- Ti = Ti
- Tb = Ti w/Anodize
- CS1 = A105N
- CS2 = A350 LF2

OUTLET

- A = Flanged as Inlet
- B = 10mm Integral GYROLOK®
- C = 1/4" Integral GYROLOK®
- D = 1/2" Integral GYROLOK®
- F = 3/4" Integral GYROLOK®
- G = 1/4" Female NPT
- H = 1/2" Female NPT
- I = 3/4" Female NPT
- J = 9/16" MP
- K = 1/2" Male NPT

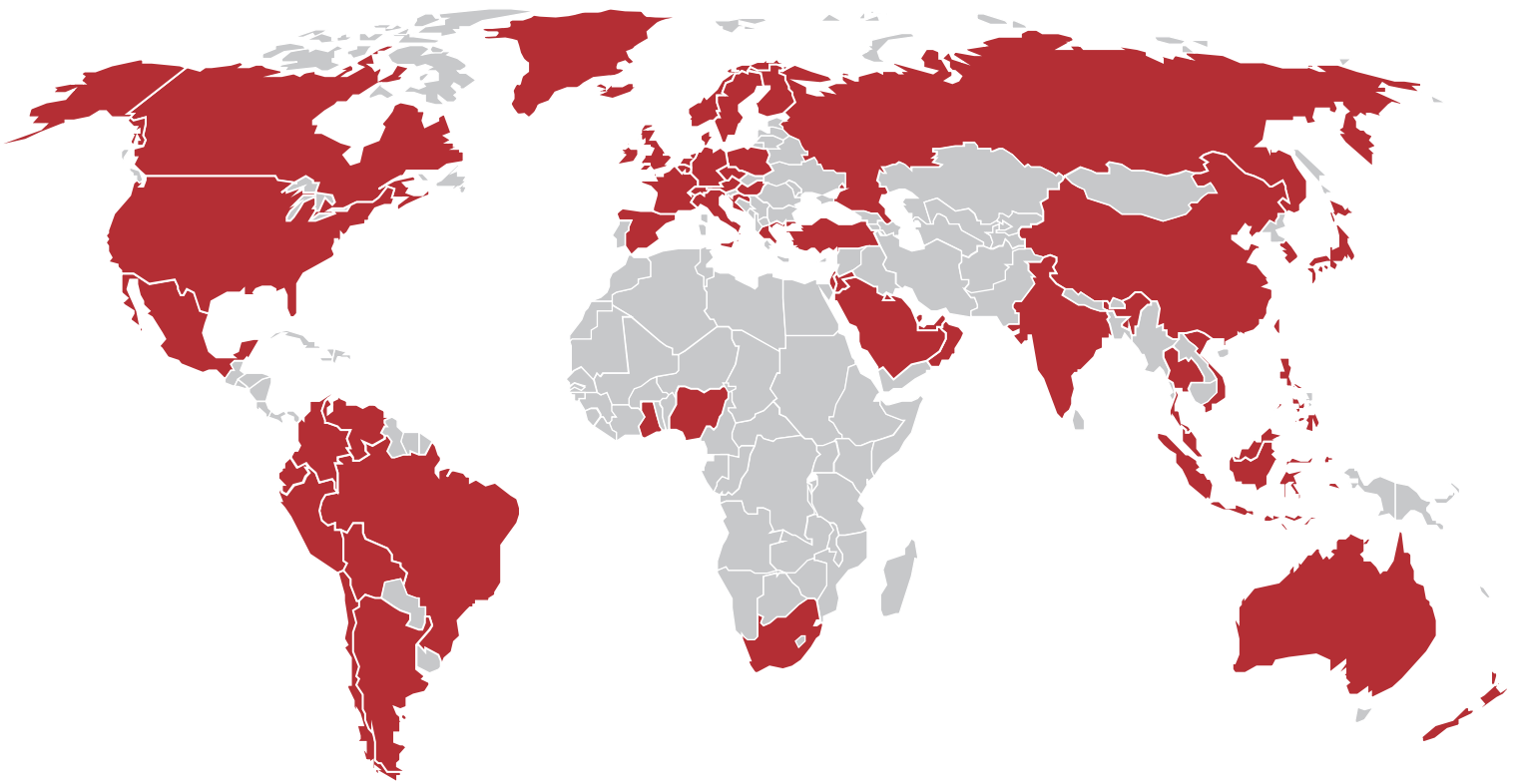
NOTE: 1/2" FNPT vent port w/ plug supplied loose standard.

Options

- AB = Anti Tamper Vent(s)*
- AC = Lockable Vent(s)*
- AD = Anti Tamper Isolate*
- AE = Lockable Isolate*
- FS = Firesafe
- AO = NORSOK M-650 Material Required

* Available only on needle bonnet

NOTES



Continuously Improving Flow Control. Worldwide.

The HOKE® Brand is just one product offering manufactured and supplied by CIRCOR Energy, an ISO 9001:2008 registered facility headquartered in Spartanburg, SC, USA, a division of CIRCOR International (NYSE:CIR).

HOKE® distributors are worldwide.

Contact us or visit our website to locate the nearest distributor to assure your projects are consistently implemented across the globe with the greatest Safety, Integrity and Reliability.



HOKE, Inc.
PO Box 4866
Spartanburg, SC 29305-4866
USA

864-574-7966
www.HOKE.com
sales-HOKE@circor.com

79042 • 06.08.15 • APS5979



HOKE® Monoflange Valves

Primary Isolation Valves



CRANE

CRANE Instrumentation & Sampling, HOKE®
PO Box 4866 • Spartanburg, SC 29305-4866
(864) 574-7966 • www.hoke.com

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HOKE® - Monoflange Valves

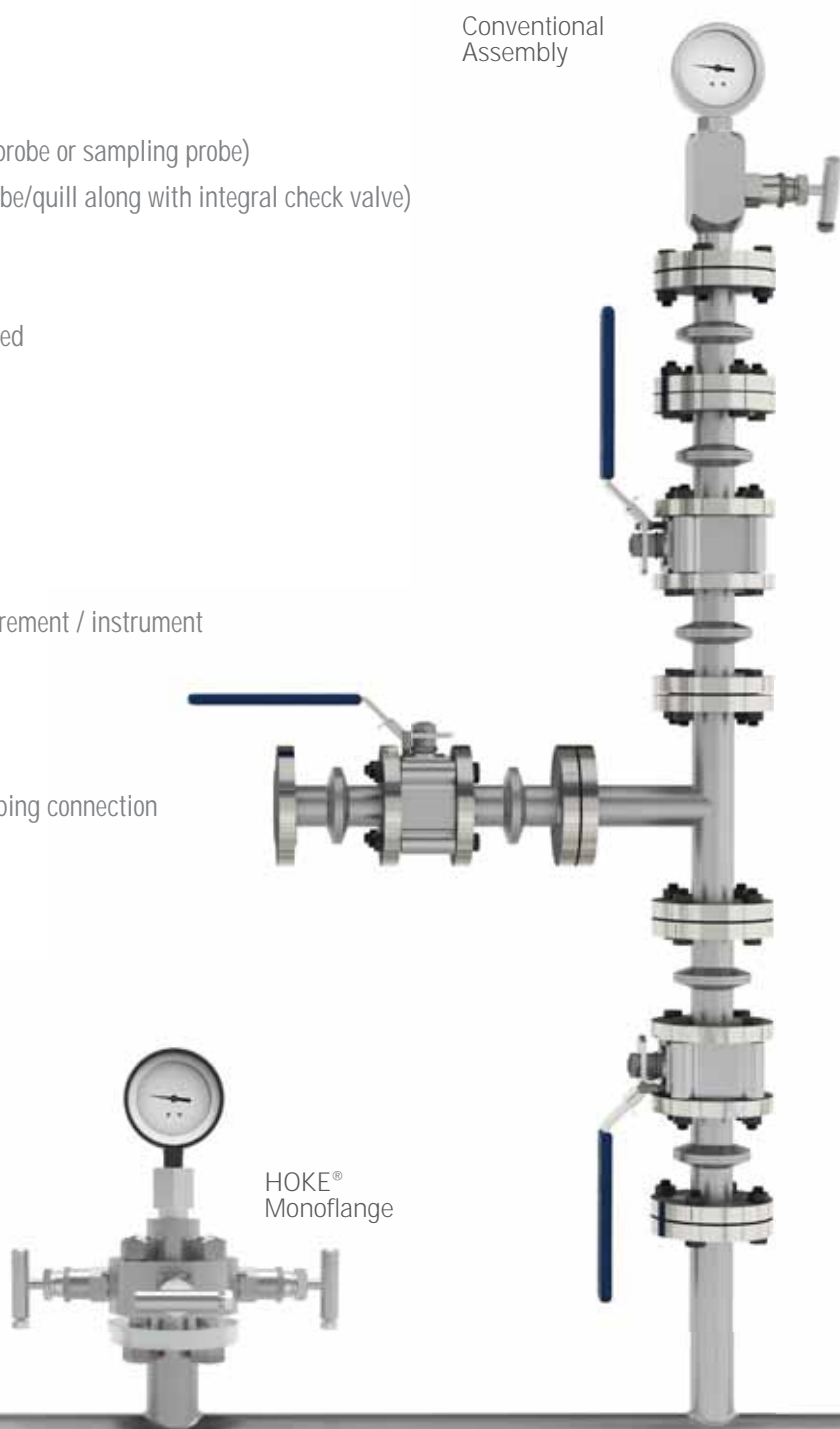
The HOKE® Monoflange is designed for pressure instrument take-off points, sampling, injection, venting and purging applications. The Monoflange simplifies these applications by making them more compact, rigid, lighter, safer, and lower cost than the conventional piping valve assemblies.

APPLICATIONS

- Primary Process Isolation Valve
- Pressure instrument take off points
- Sampling Systems (valve has an integral pipe probe or sampling probe)
- Chemical Injection Systems (valve has pipe probe/quill along with integral check valve)
- Flushing Connections
- Vent & Purge Applications
- Drains for tanks and pipes where space is limited
- Chemical Seal Applications

FEATURES & BENEFITS

- Overall length reduced by $\pm 70\%$
- Overall weight reduced by $\pm 80\%$
- Brings pressure point closer to pressure measurement / instrument
- Reduced labor cost
- Reduced leak points
- Reduced need for support brackets
- Reduced bending moment/stress on primary piping connection



Applications

Upstream Offshore/Onshore Gas and Oil production and initial processing installations. Typically used on gauge pressure instrument applications to minimize the size and weight of the pipe-valve assemblies used for primary and/or secondary isolation, vent and calibration.

- Pressure Measuring Points
- Sample Connections
- Analytical Connections

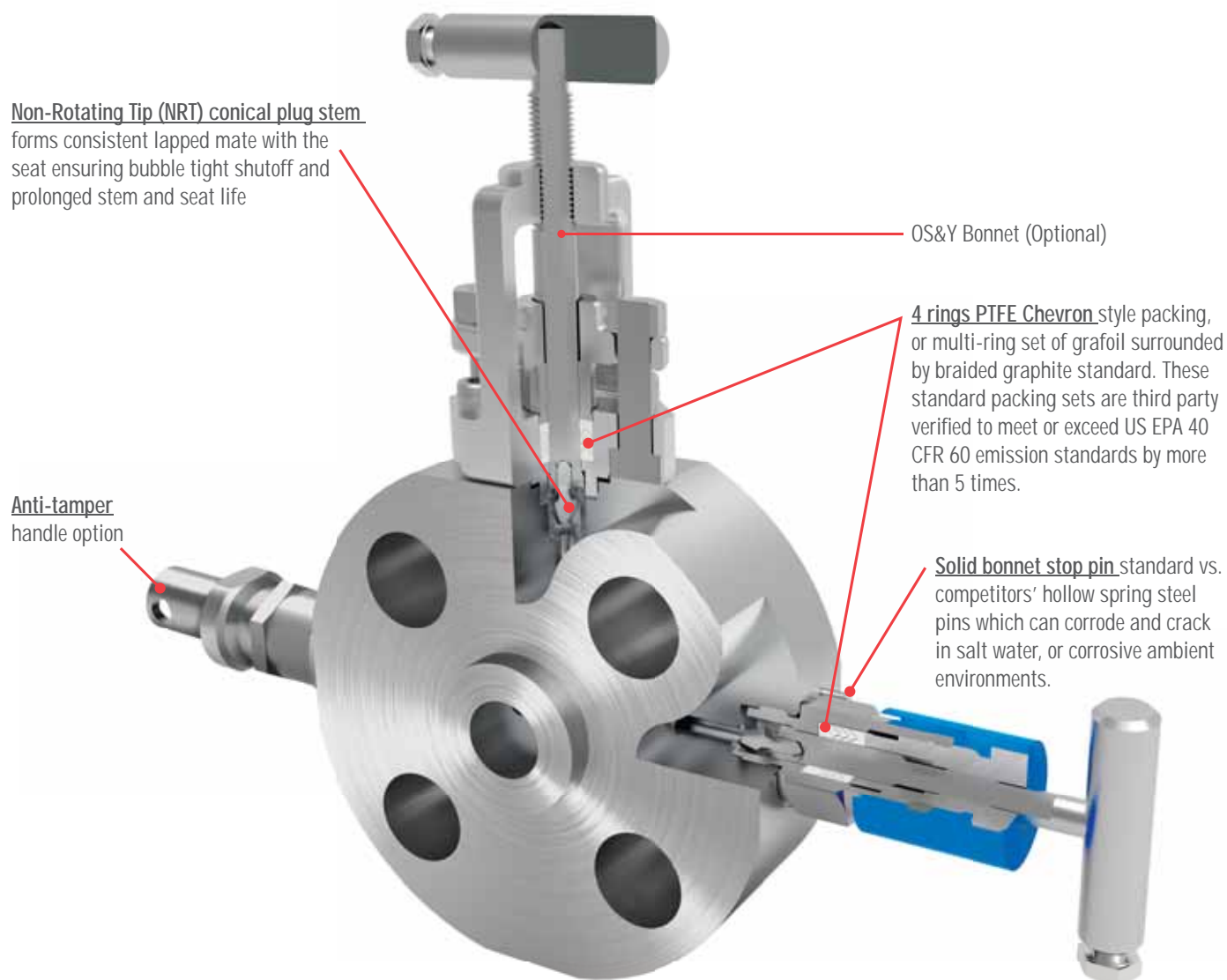
Features and Benefits

- One piece body means compact design with less leak points.
- Large variety of standard and optional materials and outlet options, mean you can select the style you need right from the catalog.
- HOKE® utilizes Non-Rotating Stem Tip (NRT) technology. When the stem tip contacts the seat, it stops rotating, preventing the cross scoring and eventual leaks that can occur with ball type stems.
- Standard Materials: A479 Type 316L and NACE, A105 Carbon Steel HASTELLOY® C276, MONEL®, INCOLOY® alloy 825, INCONEL® alloy 625, Duplex A182, Titanium.
- 0.187" (4,75 mm) standard orifice design means lower probability of plugging than competitive smaller port designs.
- Long life / Low leakage - Four rings PTFE Chevron style packing, or multi-ring set of grafoil surrounded by braided graphite standard. These standard packing sets are third party verified to exceed US EPA 40 CFR 60 emission standards by more than 5 times. Less probability of leaks mean less risk.
- High quality metal to metal shutoff meets ANSI Class VI criteria pressure Equipment Directive.
- Due to internal bore size and internal volumes up to and including 1"-inch/25mm, products offered in this catalog comply with S.E.P (Sound Engineering Practice) article 3, paragraph 3 of the Pressure Equipment Directive P.E.D. 97/23/EC and therefore CE marking is not applicable.

| Quick Spec | |
|---|---|
| Product Scope | |
| Working Pressure | In accordance with ASME B16.5 for class 150 to 2500 (API 6A for 10K pressure class available) |
| Working Temperatures | 450°F (232°C) for PTFE packing, 1000°F (528°C) for Graphite packing |
| Approvals | |
| API 607 5th Edition (fire test certified) | |
| ASME VIII (pressure boundaries) | |
| PED (Sound Engineering Practice) | |
| ASME B16.34 (bolting dimensions) | |
| EN 10204.3.1 (material traceability) | |



Monoflange Valve Features & Benefits



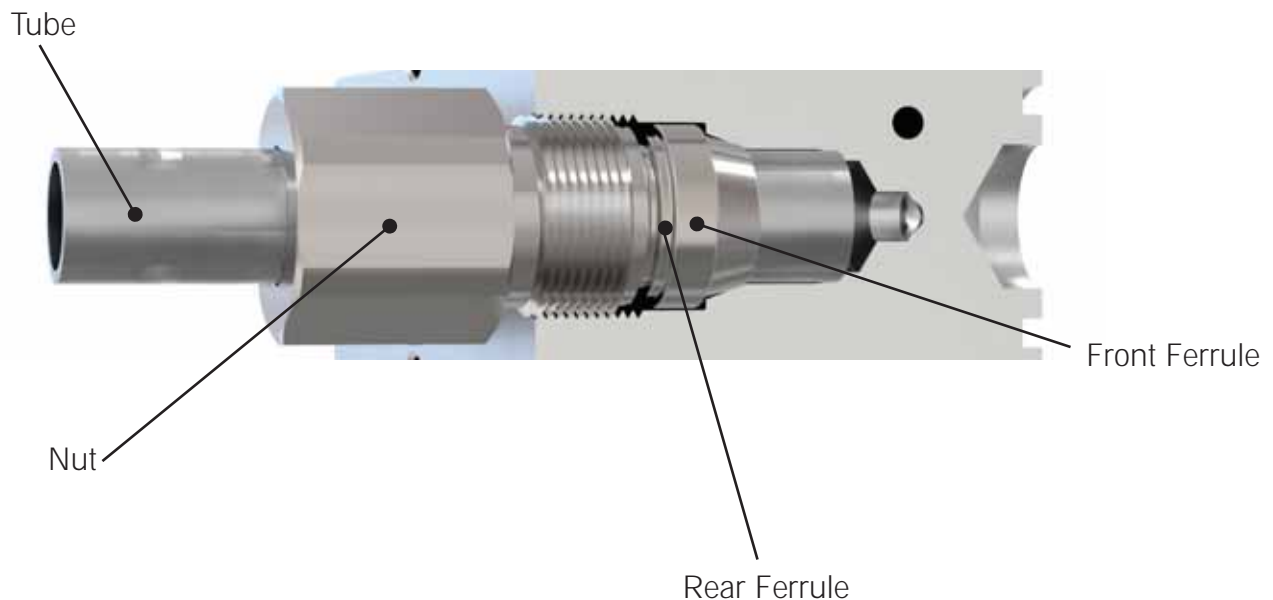
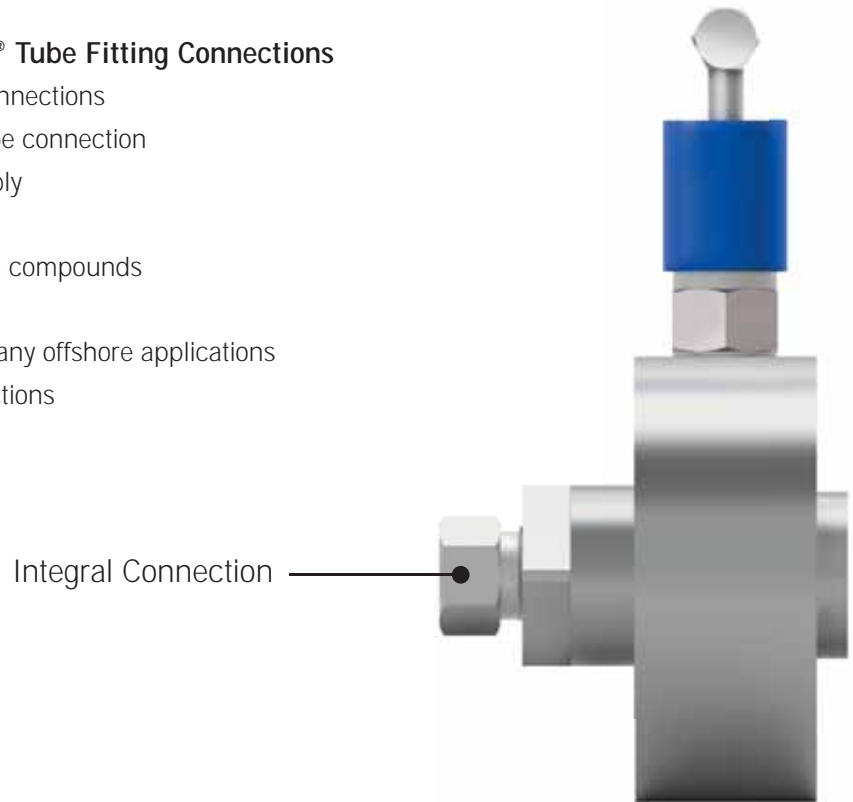
- Standard materials of construction: SST, A479 316; SST A479 316 NACE; SA479 316L, SA479 316L NACE; Carbon Steel A105; Carbon Steel, A105 NACE; Low Temp CS A350 LF2; HASTELLOY® C; INCOLOY® alloy 825; INCONEL® alloy 625; MONEL®; Duplex; Super Duplex, Titanium (Gr 2); Super Duplex A182F55;
- Screwed bonnet and OS&Y bonnets available
- Raised face (RF) and Ring Type Joint (RTJ) flange styles standard (API Flanges are available upon request)

HOKE® Integral / GYROLOK® Tube Fitting Connections

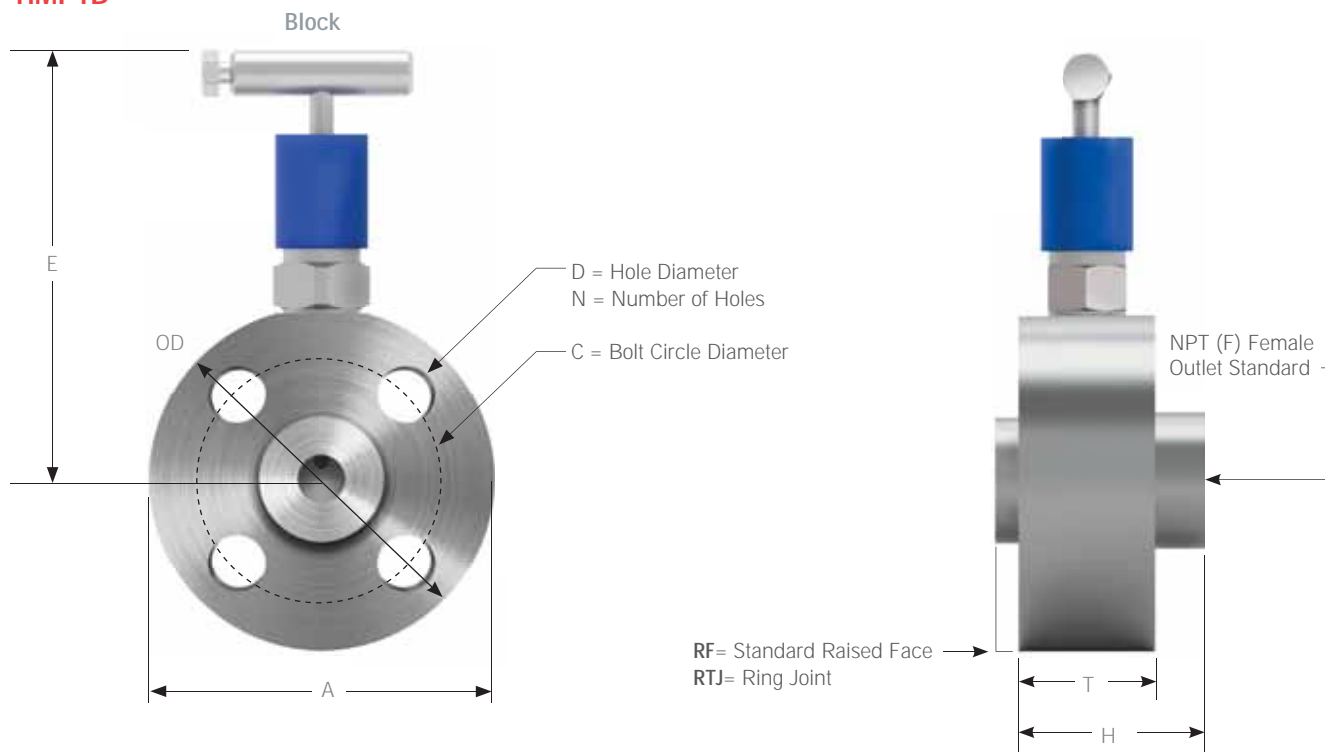
The HOKE® range of standard monoflanges are available with the option of the integral / GYROLOK® tube fitting connections. The integral / GYROLOK® tube fitting connection is machined directly into the body of the valve or manifold, allowing tubing to be directly connected without the use of traditional threaded (NPT, BSP) connections. The integral / GYROLOK® connection provides a safer connection system for high pressure, severe, steam or sour gas service where leakage has dangerous consequences.

An Explanation of Integral GYROLOK® Tube Fitting Connections

- Eliminates traditional threaded tubing connections
- Provides a safer and more consistent tube connection
- Saves assembly time during field assembly
- Reduces potential leak paths
- No need for sealing tape or liquid sealing compounds
- Fully field maintainable
- Successfully used for over 20 years in many offshore applications
- Available in 1/2" and 10mm tube connections

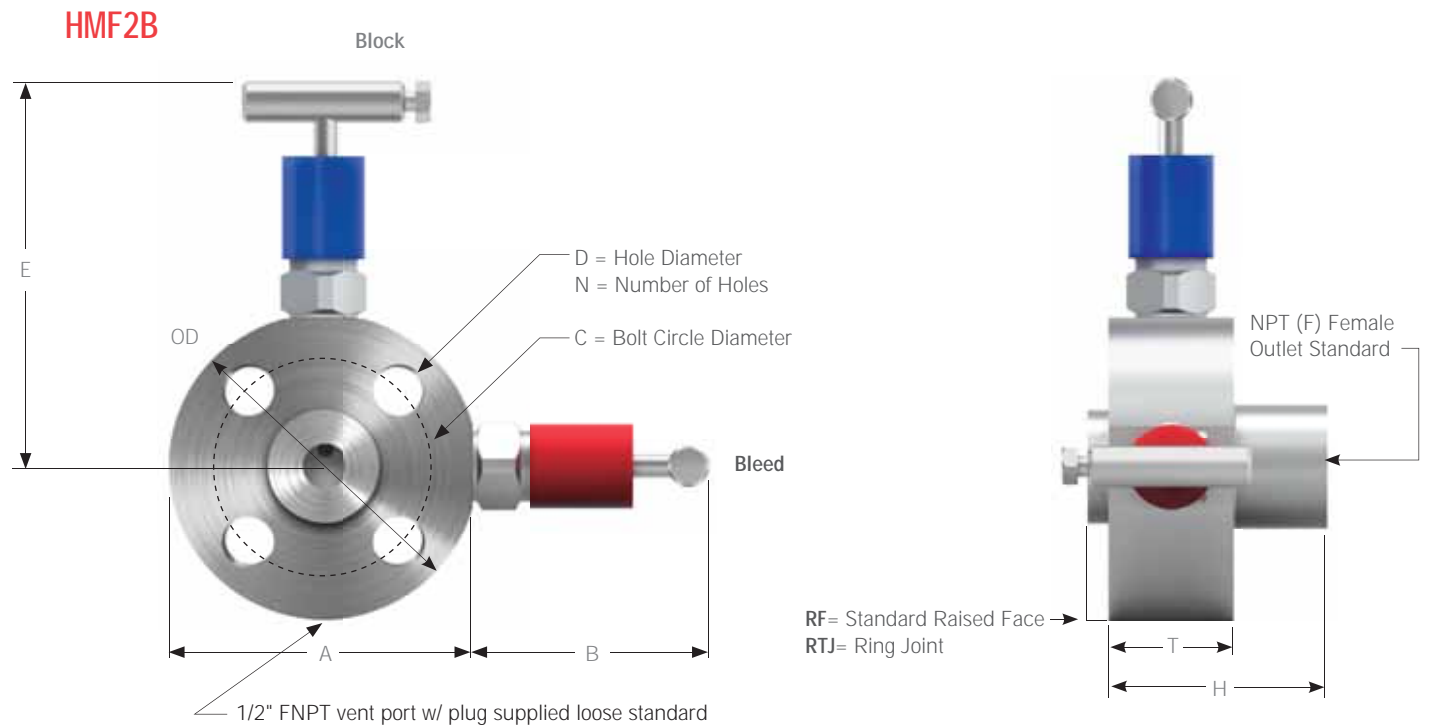


HMF1B



Standard Screwed Bonnet Dimensions (inches)

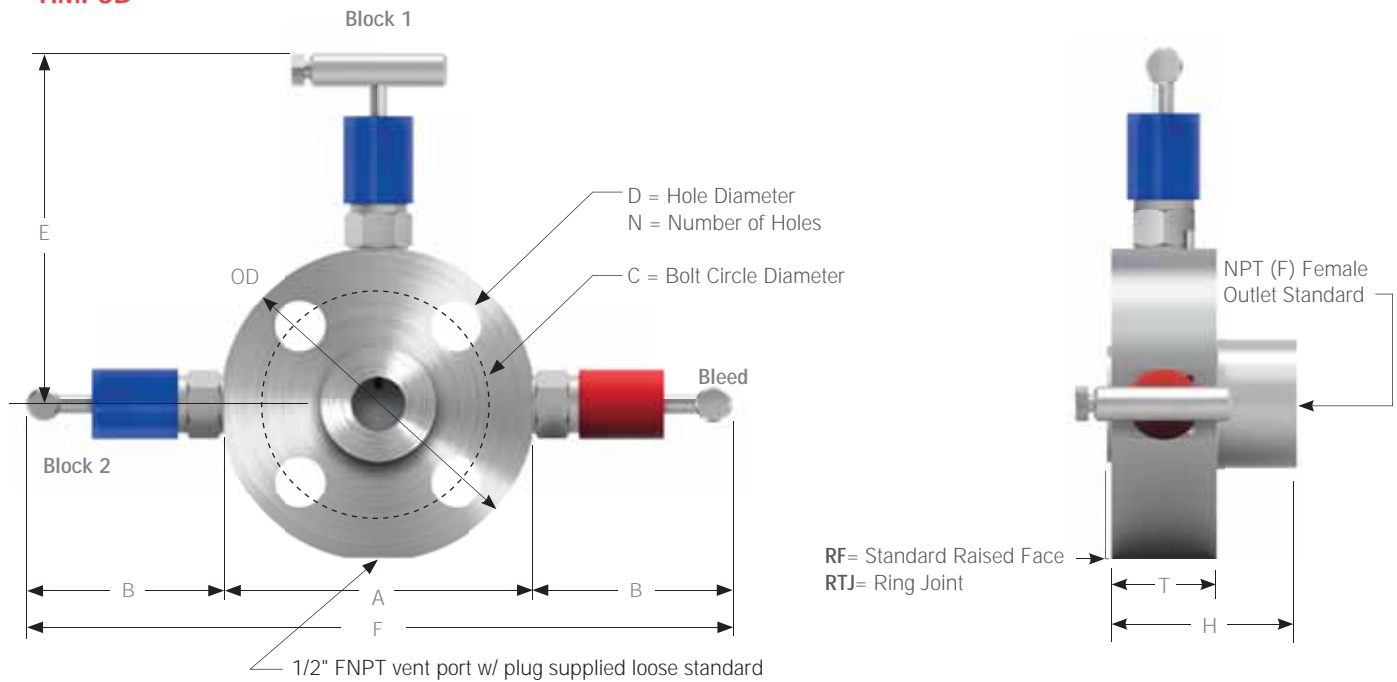
| Size | Class | RF | RTJ | A | E | D | C | N | T | H | OD |
|--------|----------|------|-------|------|------|-------|------|---|------|------|------|
| 1/2" | 150 | 0.06 | N/A | 3.40 | 4.50 | 5/8 | 2.38 | 4 | 1.50 | 2.44 | 3.50 |
| | 300 | 0.06 | 0.219 | 3.65 | 4.63 | 5/8 | 2.62 | 4 | 1.50 | 2.63 | 3.75 |
| | 600 | 0.25 | 0.219 | 3.65 | 4.63 | 5/8 | 2.62 | 4 | 1.50 | 2.63 | 3.75 |
| | 900/1500 | 0.25 | 0.250 | 4.65 | 5.13 | 7/8 | 3.25 | 4 | 1.50 | 2.63 | 4.75 |
| | 2500 | 0.25 | 0.250 | 5.15 | 5.38 | 7/8 | 3.50 | 4 | 1.50 | 2.63 | 5.25 |
| 3/4" | 150 | 0.06 | N/A | 3.78 | 4.75 | 5/8 | 2.75 | 4 | 1.50 | 2.63 | 3.88 |
| | 300 | 0.06 | 0.250 | 4.52 | 5.06 | 3/4 | 3.25 | 4 | 1.50 | 2.63 | 4.62 |
| | 600 | 0.25 | 0.250 | 4.52 | 5.06 | 3/4 | 3.25 | 4 | 1.50 | 2.63 | 4.62 |
| | 900/1500 | 0.25 | 0.250 | 5.02 | 5.31 | 7/8 | 3.50 | 4 | 1.50 | 2.63 | 5.12 |
| | 2500 | 0.25 | 0.250 | 5.40 | 5.50 | 7/8 | 3.75 | 4 | 1.50 | 2.63 | 5.50 |
| 1" | 150 | 0.06 | 0.250 | 4.15 | 4.88 | 5/8 | 3.12 | 4 | 1.50 | 2.63 | 4.25 |
| | 300 | 0.06 | 0.250 | 4.78 | 5.19 | 3/4 | 3.50 | 4 | 1.50 | 2.63 | 4.88 |
| | 600 | 0.25 | 0.250 | 4.78 | 5.19 | 3/4 | 3.50 | 4 | 1.50 | 2.63 | 4.88 |
| | 900/1500 | 0.25 | 0.250 | 5.78 | 5.88 | 1 | 3.50 | 4 | 1.50 | 2.63 | 5.88 |
| | 2500 | 0.25 | 0.250 | 6.15 | 5.88 | 1 | 4.25 | 4 | 1.50 | 2.63 | 6.25 |
| 1-1/2" | 150 | 0.06 | 0.250 | 4.90 | 5.25 | 5/8 | 3.88 | 4 | 1.50 | 2.63 | 5.00 |
| | 300 | 0.06 | 0.250 | 6.02 | 5.88 | 7/8 | 4.50 | 4 | 1.50 | 2.63 | 6.12 |
| | 600 | 0.25 | 0.250 | 6.02 | 5.88 | 7/8 | 4.50 | 4 | 1.50 | 2.63 | 6.12 |
| | 900/1500 | 0.25 | 0.250 | 6.90 | 6.25 | 1-1/8 | 4.88 | 4 | 1.50 | 2.63 | 7.00 |
| | 2500 | 0.25 | 0.312 | 7.90 | 6.75 | 1-1/4 | 5.75 | 4 | 1.75 | 2.63 | 8.00 |
| 2" | 150 | 0.06 | 0.250 | 5.90 | 5.75 | 3/4 | 4.75 | 4 | 1.50 | 2.63 | 6.00 |
| | 300 | 0.06 | 0.312 | 6.40 | 6.00 | 3/4 | 5.00 | 8 | 1.50 | 2.63 | 6.50 |
| | 600 | 0.25 | 0.312 | 6.40 | 6.00 | 3/4 | 5.00 | 8 | 1.50 | 2.63 | 6.50 |
| | 900/1500 | 0.25 | 0.312 | 8.40 | 7.00 | 1 | 6.50 | 8 | 1.50 | 2.63 | 8.50 |
| | 2500 | 0.25 | 0.312 | 9.15 | 7.38 | 1-1/8 | 6.75 | 8 | 2.00 | 3.13 | 9.25 |



Standard Screwed Bonnet Dimensions (inches)

| Size | Class | RF | RTJ | A | B* | E | D | C | N | T | H | OD |
|--------|----------|------|-------|------|------|------|-------|------|---|------|------|------|
| 1/2" | 150 | 0.06 | N/A | 3.40 | 2.94 | 4.50 | 5/8 | 2.38 | 4 | 1.50 | 2.44 | 3.50 |
| | 300 | 0.06 | 0.219 | 3.65 | 2.94 | 4.63 | 5/8 | 2.62 | 4 | 1.50 | 2.63 | 3.75 |
| | 600 | 0.25 | 0.219 | 3.65 | 2.94 | 4.63 | 5/8 | 2.62 | 4 | 1.50 | 2.63 | 3.75 |
| | 900/1500 | 0.25 | 0.250 | 4.65 | 2.94 | 5.13 | 7/8 | 3.25 | 4 | 1.50 | 2.63 | 4.75 |
| | 2500 | 0.25 | 0.250 | 5.15 | 2.94 | 5.38 | 7/8 | 3.50 | 4 | 1.50 | 2.63 | 5.25 |
| 3/4" | 150 | 0.06 | N/A | 3.78 | 2.94 | 4.75 | 5/8 | 2.75 | 4 | 1.50 | 2.63 | 3.88 |
| | 300 | 0.06 | 0.250 | 4.52 | 2.94 | 5.06 | 3/4 | 3.25 | 4 | 1.50 | 2.63 | 4.62 |
| | 600 | 0.25 | 0.250 | 4.52 | 2.94 | 5.06 | 3/4 | 3.25 | 4 | 1.50 | 2.63 | 4.62 |
| | 900/1500 | 0.25 | 0.250 | 5.02 | 2.94 | 5.31 | 7/8 | 3.50 | 4 | 1.50 | 2.63 | 5.12 |
| | 2500 | 0.25 | 0.250 | 5.40 | 2.94 | 5.50 | 7/8 | 3.75 | 4 | 1.50 | 2.63 | 5.50 |
| 1" | 150 | 0.06 | 0.250 | 4.15 | 2.94 | 4.88 | 5/8 | 3.12 | 4 | 1.50 | 2.63 | 4.25 |
| | 300 | 0.06 | 0.250 | 4.78 | 2.94 | 5.19 | 3/4 | 3.50 | 4 | 1.50 | 2.63 | 4.88 |
| | 600 | 0.25 | 0.250 | 4.78 | 2.94 | 5.19 | 3/4 | 3.50 | 4 | 1.50 | 2.63 | 4.88 |
| | 900/1500 | 0.25 | 0.250 | 5.78 | 2.94 | 5.88 | 1 | 4.00 | 4 | 1.50 | 2.63 | 5.88 |
| | 2500 | 0.25 | 0.250 | 6.15 | 2.94 | 5.88 | 1 | 4.25 | 4 | 1.50 | 2.63 | 6.25 |
| 1-1/2" | 150 | 0.06 | 0.250 | 4.90 | 2.94 | 5.25 | 5/8 | 3.88 | 4 | 1.50 | 2.63 | 5.00 |
| | 300 | 0.06 | 0.250 | 6.02 | 2.94 | 5.88 | 7/8 | 4.50 | 4 | 1.50 | 2.63 | 6.12 |
| | 600 | 0.25 | 0.250 | 6.02 | 2.94 | 5.88 | 7/8 | 4.50 | 4 | 1.50 | 2.63 | 6.12 |
| | 900/1500 | 0.25 | 0.250 | 6.90 | 2.94 | 6.25 | 1-1/8 | 4.88 | 4 | 1.50 | 2.63 | 7.00 |
| | 2500 | 0.25 | 0.312 | 7.90 | 2.94 | 6.75 | 1-1/4 | 5.75 | 4 | 1.50 | 2.63 | 8.00 |
| 2" | 150 | 0.06 | 0.250 | 5.90 | 2.94 | 5.75 | 3/4 | 4.75 | 4 | 1.50 | 2.63 | 6.00 |
| | 300 | 0.06 | 0.312 | 6.40 | 2.94 | 6.00 | 3/4 | 5.00 | 8 | 1.50 | 2.63 | 6.50 |
| | 600 | 0.25 | 0.312 | 6.40 | 2.94 | 6.00 | 3/4 | 5.00 | 8 | 1.50 | 2.63 | 6.50 |
| | 900/1500 | 0.25 | 0.312 | 8.40 | 2.94 | 7.00 | 1 | 6.50 | 8 | 1.50 | 2.63 | 8.50 |
| | 2500 | 0.25 | 0.312 | 9.15 | 2.94 | 7.38 | 1-1/8 | 6.75 | 8 | 2.00 | 3.13 | 9.25 |

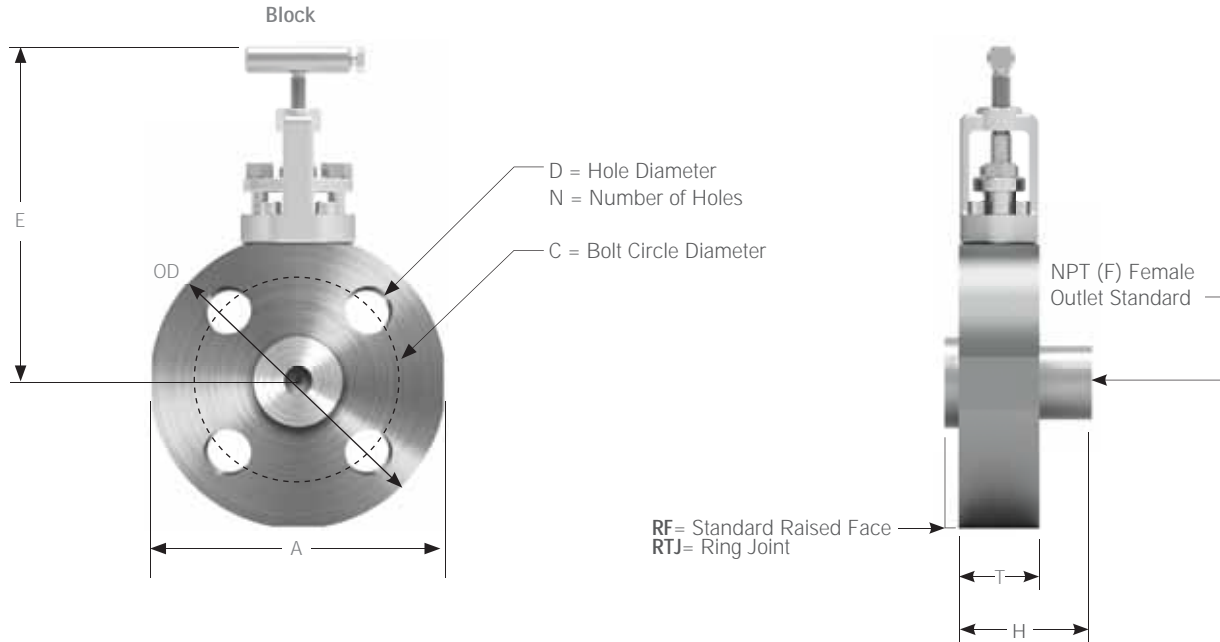
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| Standard Screwed Bonnet Dimensions (inches) | | | | | | | | | | | | | |
|---|----------|------|-------|------|------|------|-------|-------|------|---|------|------|------|
| Size | Class | RF | RTJ | A | B* | E | F | D | C | N | T | H | OD |
| 1/2" | 150 | 0.06 | N/A | 3.40 | 2.94 | 4.50 | 9.28 | 5/8 | 2.38 | 4 | 1.50 | 2.44 | 3.50 |
| | 300 | 0.06 | 0.219 | 3.65 | 2.94 | 4.63 | 9.53 | 5/8 | 2.62 | 4 | 1.50 | 2.63 | 3.75 |
| | 600 | 0.25 | 0.219 | 3.65 | 2.94 | 4.63 | 9.53 | 5/8 | 2.62 | 4 | 1.50 | 2.63 | 3.75 |
| | 900/1500 | 0.25 | 0.250 | 4.65 | 2.94 | 5.13 | 10.53 | 7/8 | 3.25 | 4 | 1.50 | 2.63 | 4.75 |
| | 2500 | 0.25 | 0.250 | 5.15 | 2.94 | 5.38 | 11.03 | 7/8 | 3.50 | 4 | 1.50 | 2.63 | 5.25 |
| 3/4" | 150 | 0.06 | N/A | 3.78 | 2.94 | 4.75 | 9.66 | 5/8 | 2.75 | 4 | 1.50 | 2.63 | 3.88 |
| | 300 | 0.06 | 0.250 | 4.52 | 2.94 | 5.06 | 10.40 | 3/4 | 3.25 | 4 | 1.50 | 2.63 | 4.62 |
| | 600 | 0.25 | 0.250 | 4.52 | 2.94 | 5.06 | 10.40 | 3/4 | 3.25 | 4 | 1.50 | 2.63 | 4.62 |
| | 900/1500 | 0.25 | 0.250 | 5.02 | 2.94 | 5.31 | 10.90 | 7/8 | 3.50 | 4 | 1.50 | 2.63 | 5.12 |
| | 2500 | 0.25 | 0.250 | 5.40 | 2.94 | 5.50 | 11.28 | 7/8 | 3.75 | 4 | 1.50 | 2.63 | 5.50 |
| 1" | 150 | 0.06 | 0.250 | 4.15 | 2.94 | 4.88 | 10.03 | 5/8 | 3.12 | 4 | 1.50 | 2.63 | 4.25 |
| | 300 | 0.06 | 0.250 | 4.78 | 2.94 | 5.19 | 10.66 | 3/4 | 3.50 | 4 | 1.50 | 2.63 | 4.88 |
| | 600 | 0.25 | 0.250 | 4.78 | 2.94 | 5.19 | 10.66 | 3/4 | 3.50 | 4 | 1.50 | 2.63 | 4.88 |
| | 900/1500 | 0.25 | 0.250 | 5.78 | 2.94 | 5.88 | 11.66 | 1 | 4.00 | 4 | 1.50 | 2.63 | 5.88 |
| | 2500 | 0.25 | 0.250 | 6.15 | 2.94 | 5.88 | 12.03 | 1 | 4.25 | 4 | 1.50 | 2.63 | 6.25 |
| 1-1/2" | 150 | 0.06 | 0.250 | 4.90 | 2.94 | 5.25 | 10.78 | 5/8 | 3.88 | 4 | 1.50 | 2.63 | 5.00 |
| | 300 | 0.06 | 0.250 | 6.02 | 2.94 | 5.88 | 11.90 | 7/8 | 4.50 | 4 | 1.50 | 2.63 | 6.12 |
| | 600 | 0.25 | 0.250 | 6.02 | 2.94 | 5.88 | 11.90 | 7/8 | 4.50 | 4 | 1.50 | 2.63 | 6.12 |
| | 900/1500 | 0.25 | 0.250 | 6.90 | 2.94 | 6.25 | 12.78 | 1-1/8 | 4.88 | 4 | 1.50 | 2.63 | 7.00 |
| | 2500 | 0.25 | 0.312 | 7.90 | 2.94 | 6.75 | 13.78 | 1-1/4 | 5.75 | 4 | 1.50 | 2.63 | 8.00 |
| 2" | 150 | 0.06 | 0.250 | 5.90 | 2.94 | 5.75 | 11.28 | 3/4 | 4.75 | 4 | 1.50 | 2.63 | 6.00 |
| | 300 | 0.06 | 0.312 | 6.40 | 2.94 | 6.00 | 12.28 | 3/4 | 5.00 | 8 | 1.50 | 2.63 | 6.50 |
| | 600 | 0.25 | 0.312 | 6.40 | 2.94 | 6.00 | 12.28 | 3/4 | 5.00 | 8 | 1.50 | 2.63 | 6.50 |
| | 900/1500 | 0.25 | 0.312 | 8.40 | 2.94 | 7.00 | 14.28 | 1 | 6.50 | 8 | 1.50 | 2.63 | 8.50 |
| | 2500 | 0.25 | 0.312 | 9.15 | 2.94 | 7.38 | 15.03 | 1-1/8 | 6.75 | 8 | 2.00 | 3.13 | 9.25 |

*When fully open.

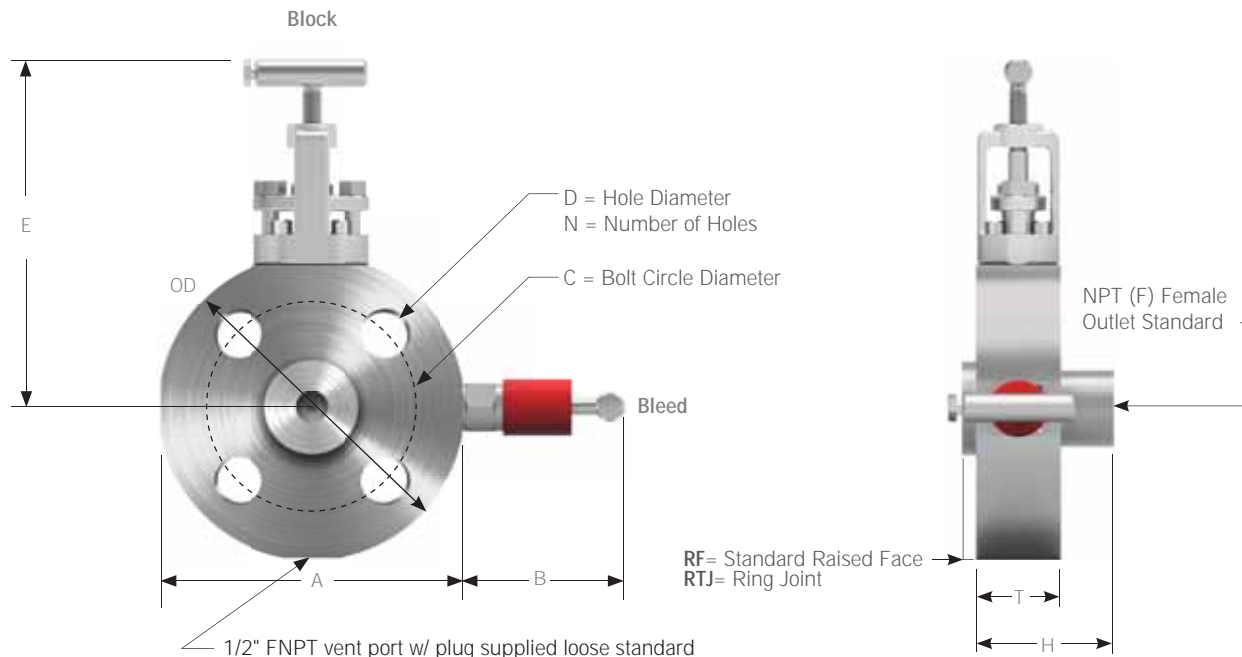
HMF1A



OS&Y Bonnet Dimensions (inches)

| Size | Class | RF | RTJ | A | E | D | C | N | T | H | OD |
|--------|----------|------|-------|------|------|-------|------|---|------|------|------|
| 1/2" | 150 | 0.06 | N/A | 3.40 | 5.50 | 5/8 | 2.38 | 4 | 1.50 | 2.44 | 3.50 |
| | 300 | 0.06 | 0.219 | 3.65 | 5.63 | 5/8 | 2.62 | 4 | 1.50 | 2.63 | 3.75 |
| | 600 | 0.25 | 0.219 | 3.65 | 5.63 | 5/8 | 2.62 | 4 | 1.50 | 2.63 | 3.75 |
| | 900/1500 | 0.25 | 0.250 | 4.65 | 6.13 | 7/8 | 3.25 | 4 | 1.50 | 2.63 | 4.75 |
| | 2500 | 0.25 | 0.250 | 5.15 | 6.38 | 7/8 | 3.50 | 4 | 1.50 | 2.63 | 5.25 |
| 3/4" | 150 | 0.06 | N/A | 3.78 | 5.75 | 5/8 | 2.75 | 4 | 1.50 | 2.63 | 3.88 |
| | 300 | 0.06 | 0.250 | 4.52 | 6.06 | 3/4 | 3.25 | 4 | 1.50 | 2.63 | 4.62 |
| | 600 | 0.25 | 0.250 | 4.52 | 6.06 | 3/4 | 3.25 | 4 | 1.50 | 2.63 | 4.62 |
| | 900/1500 | 0.25 | 0.250 | 5.02 | 6.31 | 7/8 | 3.50 | 4 | 1.50 | 2.63 | 5.12 |
| | 2500 | 0.25 | 0.250 | 5.40 | 6.50 | 7/8 | 3.75 | 4 | 1.50 | 2.63 | 5.50 |
| 1" | 150 | 0.06 | 0.250 | 4.15 | 5.88 | 5/8 | 3.12 | 4 | 1.50 | 2.63 | 4.25 |
| | 300 | 0.06 | 0.250 | 4.78 | 6.19 | 3/4 | 3.50 | 4 | 1.50 | 2.63 | 4.88 |
| | 600 | 0.25 | 0.250 | 4.78 | 6.19 | 3/4 | 3.50 | 4 | 1.50 | 2.63 | 4.88 |
| | 900/1500 | 0.25 | 0.250 | 5.78 | 6.88 | 1 | 4.00 | 4 | 1.50 | 2.63 | 5.88 |
| | 2500 | 0.25 | 0.250 | 6.15 | 6.88 | 1 | 4.25 | 4 | 1.50 | 2.63 | 6.25 |
| 1-1/2" | 150 | 0.06 | 0.250 | 4.90 | 6.25 | 5/8 | 3.88 | 4 | 1.50 | 2.63 | 5.00 |
| | 300 | 0.06 | 0.250 | 6.02 | 6.88 | 7/8 | 4.50 | 4 | 1.50 | 2.63 | 6.12 |
| | 600 | 0.25 | 0.250 | 6.02 | 6.88 | 7/8 | 4.50 | 4 | 1.50 | 2.63 | 6.12 |
| | 900/1500 | 0.25 | 0.250 | 6.90 | 7.25 | 1-1/8 | 4.88 | 4 | 1.50 | 2.63 | 7.00 |
| | 2500 | 0.25 | 0.312 | 7.90 | 7.25 | 1-1/4 | 5.75 | 4 | 1.50 | 2.69 | 8.00 |
| 2" | 150 | 0.06 | 0.250 | 5.90 | 6.75 | 3/4 | 4.75 | 4 | 1.50 | 2.63 | 6.00 |
| | 300 | 0.06 | 0.312 | 6.40 | 7.00 | 3/4 | 5.00 | 8 | 1.50 | 2.63 | 6.50 |
| | 600 | 0.25 | 0.312 | 6.40 | 7.00 | 3/4 | 5.00 | 8 | 1.50 | 2.63 | 6.50 |
| | 900/1500 | 0.25 | 0.312 | 8.40 | 8.00 | 1 | 6.50 | 8 | 1.50 | 2.63 | 8.50 |
| | 2500 | 0.25 | 0.312 | 9.15 | 8.38 | 1-1/8 | 6.75 | 8 | 2.00 | 3.13 | 9.25 |

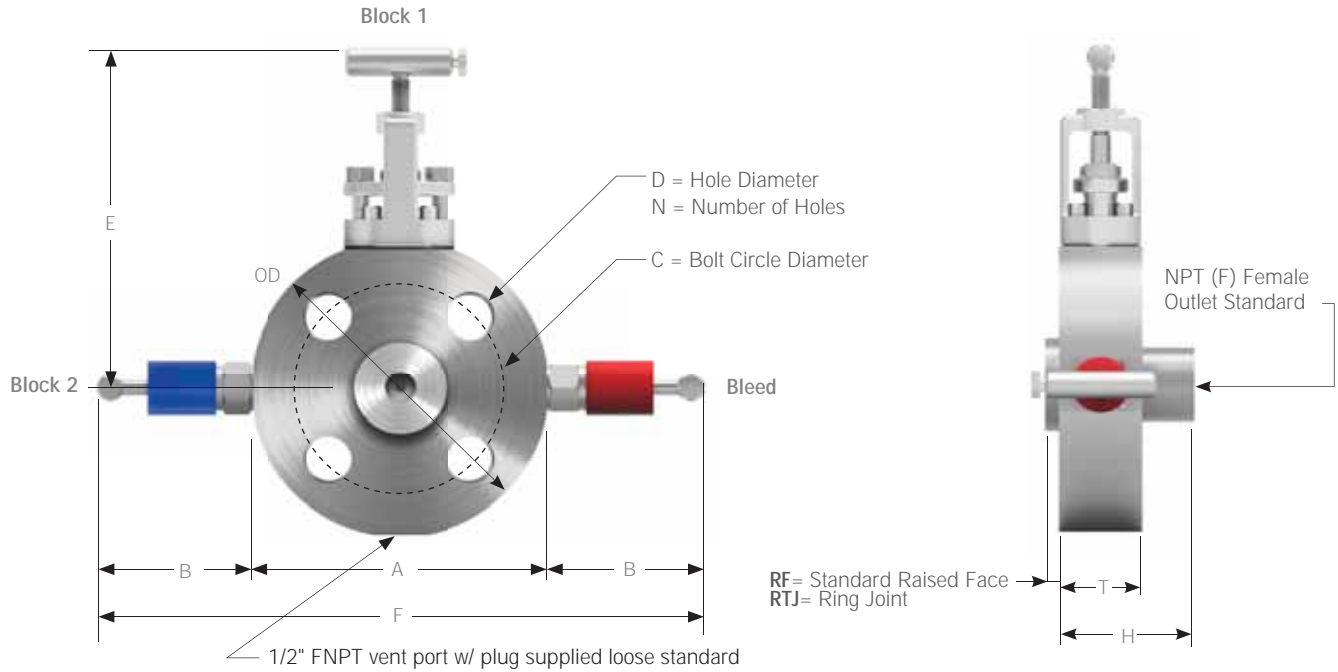
HMF2A



| OS&Y Bonnet Dimensions (inches) | | | | | | | | | | | | |
|---------------------------------|----------|------|-------|------|------|------|-------|------|---|------|------|------|
| Size | Class | RF | RTJ | A | B* | E | D | C | N | T | H | OD |
| 1/2" | 150 | 0.06 | N/A | 3.40 | 2.94 | 5.50 | 5/8 | 2.38 | 4 | 1.50 | 2.44 | 3.50 |
| | 300 | 0.06 | 0.219 | 3.65 | 2.94 | 5.63 | 5/8 | 2.62 | 4 | 1.50 | 2.63 | 3.75 |
| | 600 | 0.25 | 0.219 | 3.65 | 2.94 | 5.63 | 5/8 | 2.62 | 4 | 1.50 | 2.63 | 3.75 |
| | 900/1500 | 0.25 | 0.250 | 4.65 | 2.94 | 6.13 | 7/8 | 3.25 | 4 | 1.50 | 2.63 | 4.75 |
| | 2500 | 0.25 | 0.250 | 5.15 | 2.94 | 6.38 | 7/8 | 3.50 | 4 | 1.50 | 2.63 | 5.25 |
| 3/4" | 150 | 0.06 | N/A | 3.78 | 2.94 | 5.75 | 5/8 | 2.75 | 4 | 1.50 | 2.63 | 3.88 |
| | 300 | 0.06 | 0.250 | 4.52 | 2.94 | 6.06 | 3/4 | 3.25 | 4 | 1.50 | 2.63 | 4.62 |
| | 600 | 0.25 | 0.250 | 4.52 | 2.94 | 6.06 | 3/4 | 3.25 | 4 | 1.50 | 2.63 | 4.62 |
| | 900/1500 | 0.25 | 0.250 | 5.02 | 2.94 | 6.31 | 7/8 | 3.50 | 4 | 1.50 | 2.63 | 5.12 |
| | 2500 | 0.25 | 0.250 | 5.40 | 2.94 | 6.50 | 7/8 | 3.75 | 4 | 1.50 | 2.63 | 5.50 |
| 1" | 150 | 0.06 | 0.250 | 4.15 | 2.94 | 5.88 | 5/8 | 3.12 | 4 | 1.50 | 2.63 | 4.25 |
| | 300 | 0.06 | 0.250 | 4.78 | 2.94 | 6.19 | 3/4 | 3.50 | 4 | 1.50 | 2.63 | 4.88 |
| | 600 | 0.25 | 0.250 | 4.78 | 2.94 | 6.19 | 3/4 | 3.50 | 4 | 1.50 | 2.63 | 4.88 |
| | 900/1500 | 0.25 | 0.250 | 5.78 | 2.94 | 6.88 | 1 | 4.00 | 4 | 1.50 | 2.63 | 5.88 |
| | 2500 | 0.25 | 0.250 | 6.15 | 2.94 | 6.88 | 1 | 4.25 | 4 | 1.50 | 2.63 | 6.25 |
| 1-1/2" | 150 | 0.06 | 0.250 | 4.90 | 2.94 | 6.25 | 5/8 | 3.88 | 4 | 1.50 | 2.63 | 5.00 |
| | 300 | 0.06 | 0.250 | 6.02 | 2.94 | 6.88 | 7/8 | 4.50 | 4 | 1.50 | 2.63 | 6.12 |
| | 600 | 0.25 | 0.250 | 6.02 | 2.94 | 6.88 | 7/8 | 4.50 | 4 | 1.50 | 2.63 | 6.12 |
| | 900/1500 | 0.25 | 0.250 | 6.90 | 2.94 | 7.25 | 1-1/8 | 4.88 | 4 | 1.50 | 2.63 | 7.00 |
| | 2500 | 0.25 | 0.312 | 7.90 | 2.94 | 7.25 | 1-1/4 | 5.75 | 4 | 1.50 | 2.63 | 8.00 |
| 2" | 150 | 0.06 | 0.250 | 5.90 | 2.94 | 6.75 | 3/4 | 4.75 | 4 | 1.50 | 2.63 | 6.00 |
| | 300 | 0.06 | 0.312 | 6.40 | 2.94 | 7.00 | 3/4 | 5.00 | 8 | 1.50 | 2.63 | 6.50 |
| | 600 | 0.25 | 0.312 | 6.40 | 2.94 | 7.00 | 3/4 | 5.00 | 8 | 1.50 | 2.63 | 6.50 |
| | 900/1500 | 0.25 | 0.312 | 8.40 | 2.94 | 8.00 | 1 | 6.50 | 8 | 1.50 | 2.63 | 8.50 |
| | 2500 | 0.25 | 0.312 | 9.15 | 2.94 | 8.38 | 1-1/8 | 6.75 | 8 | 2.00 | 3.13 | 9.25 |

*When fully open.

HMF3A



OS&Y Bonnet Dimensions (inches)

| Size | Class | RF | RTJ | A | B* | E | F | D | C | N | T | H | OD |
|--------|----------|------|-------|------|------|------|-------|-------|------|---|------|------|------|
| 1/2" | 150 | 0.06 | N/A | 3.40 | 2.94 | 5.50 | 9.28 | 5/8 | 2.38 | 4 | 1.50 | 2.44 | 3.50 |
| | 300 | 0.06 | 0.219 | 3.65 | 2.94 | 5.63 | 9.53 | 5/8 | 2.62 | 4 | 1.50 | 2.63 | 3.75 |
| | 600 | 0.25 | 0.219 | 3.65 | 2.94 | 5.63 | 9.53 | 5/8 | 2.62 | 4 | 1.50 | 2.63 | 3.75 |
| | 900/1500 | 0.25 | 0.250 | 4.65 | 2.94 | 6.13 | 10.53 | 7/8 | 3.25 | 4 | 1.50 | 2.63 | 4.75 |
| | 2500 | 0.25 | 0.250 | 5.15 | 2.94 | 6.38 | 11.03 | 7/8 | 3.50 | 4 | 1.50 | 2.63 | 5.25 |
| 3/4" | 150 | 0.06 | N/A | 3.78 | 2.94 | 5.75 | 9.66 | 5/8 | 2.75 | 4 | 1.50 | 2.63 | 3.88 |
| | 300 | 0.06 | 0.250 | 4.52 | 2.94 | 6.06 | 10.40 | 3/4 | 3.25 | 4 | 1.50 | 2.63 | 4.62 |
| | 600 | 0.25 | 0.250 | 4.52 | 2.94 | 6.06 | 10.40 | 3/4 | 3.25 | 4 | 1.50 | 2.63 | 4.62 |
| | 900/1500 | 0.25 | 0.250 | 5.02 | 2.94 | 6.31 | 10.90 | 7/8 | 3.50 | 4 | 1.50 | 2.63 | 5.12 |
| | 2500 | 0.25 | 0.250 | 5.40 | 2.94 | 6.50 | 11.28 | 7/8 | 3.75 | 4 | 1.50 | 2.63 | 5.50 |
| 1" | 150 | 0.06 | 0.250 | 4.15 | 2.94 | 5.88 | 10.03 | 5/8 | 3.12 | 4 | 1.50 | 2.63 | 4.25 |
| | 300 | 0.06 | 0.250 | 4.78 | 2.94 | 6.19 | 10.66 | 3/4 | 3.50 | 4 | 1.50 | 2.63 | 4.88 |
| | 600 | 0.25 | 0.250 | 4.78 | 2.94 | 6.19 | 10.66 | 3/4 | 3.50 | 4 | 1.50 | 2.63 | 4.88 |
| | 900/1500 | 0.25 | 0.250 | 5.78 | 2.94 | 6.88 | 11.66 | 1 | 4.00 | 4 | 1.50 | 2.63 | 5.88 |
| | 2500 | 0.25 | 0.250 | 6.15 | 2.94 | 6.88 | 12.03 | 1 | 4.25 | 4 | 1.50 | 2.63 | 6.25 |
| 1-1/2" | 150 | 0.06 | 0.250 | 4.90 | 2.94 | 6.25 | 10.78 | 5/8 | 3.88 | 4 | 1.50 | 2.63 | 5.00 |
| | 300 | 0.06 | 0.250 | 6.02 | 2.94 | 6.88 | 11.90 | 7/8 | 4.50 | 4 | 1.50 | 2.63 | 6.12 |
| | 600 | 0.25 | 0.250 | 6.02 | 2.94 | 6.88 | 11.90 | 7/8 | 4.50 | 4 | 1.50 | 2.63 | 6.12 |
| | 900/1500 | 0.25 | 0.250 | 6.90 | 2.94 | 7.25 | 12.78 | 1-1/8 | 4.88 | 4 | 1.50 | 2.63 | 7.00 |
| | 2500 | 0.25 | 0.312 | 7.90 | 2.94 | 7.25 | 13.78 | 1-1/4 | 5.75 | 4 | 1.50 | 2.63 | 8.00 |
| 2" | 150 | 0.06 | 0.250 | 5.90 | 2.94 | 6.75 | 11.28 | 3/4 | 4.75 | 4 | 1.50 | 2.63 | 6.00 |
| | 300 | 0.06 | 0.312 | 6.40 | 2.94 | 7.00 | 12.28 | 3/4 | 5.00 | 8 | 1.50 | 2.63 | 6.50 |
| | 600 | 0.25 | 0.312 | 6.40 | 2.94 | 7.00 | 12.28 | 3/4 | 5.00 | 8 | 1.50 | 2.63 | 6.50 |
| | 900/1500 | 0.25 | 0.312 | 8.40 | 2.94 | 8.00 | 14.28 | 1 | 6.50 | 8 | 1.50 | 2.63 | 8.50 |
| | 2500 | 0.25 | 0.312 | 9.15 | 2.94 | 8.38 | 15.03 | 1-1/8 | 6.75 | 8 | 2.00 | 3.13 | 9.25 |

*When fully open.

HOKE® Monoflange Ordering Information

How To Order

Typical Ordering Part Number

HMF 1 A 1 A 1 A YL 1 AB

STYLE

- 1 = Single Block
- 2 = Block & Bleed
- 3 = Double Block & Bleed

PRIMARY VALVE

- A = OS & Y
- B = Needle

PACKING

- 1 = PTFE
- 2 = Graphite
- 3 = Firesafe
- 4 = Low Emission

FLANGED INLET

- A = 1/2" ANSI
- B = 3/4" ANSI
- C = 1" ANSI
- D = 1 1/2" ANSI
- E = 2" ANSI
- F = 1 13/16" API
- G = 2 1/16" API
- H = 2 9/16" API
- I = 3" ANSI

INLET FACE

- 1 = RF Smooth
- 2 = RTJ Ring Joint
- 3 = BX

RATING

- 1 = 150#
- 2 = 300#
- 3 = 600#
- 4 = 900#/1500#
- 5 = 2500#
- 6 = 2,000 API
- 7 = 3000 API
- 8 = 5000 API
- 9 = 10,000 API

ALLOY

- YL = 316/316L
- DX3 = Duplex 22% CR
- D50 = Super Duplex 25% CR
- 625 = INCONEL® alloy 625
- 825 = INCONEL® alloy 825
- 6MO = 254 SMO
- M = MONEL® alloy 400
- HC = H C276
- Ti = Ti
- Tb = Ti w/Anodize
- CS1 = A105N
- CS2 = A350 LF2

OUTLET

- B = 10mm Integral GYROLOK®
- C = 1/4" GYROLOK®
- D = 1/2" GYROLOK®
- F = 3/4" GYROLOK®
- G = 1/4" Female NPT
- H = 1/2" Female NPT
- I = 3/4" Female NPT
- J = 9/16" MP
- K = 1/2" Male NPT

NOTE: 1/2" FNPT vent port w/ plug supplied loose standard.

Options

- | | |
|---------------------------|-----------------------|
| AB = Anti Tamper Vent* | AH = BSPP Connections |
| AC = Lockable Vent* | FS = Firesafe |
| AD = Anti Tamper Isolate* | AO = NORSOK M-650 |
| AE = Lockable Isolate* | Material Required |

* Available only on needle bonnet
RIHDL-316 Key Sold Separately



The Small Bore Instrumentation Specialists



We specialize in small bore instrumentation products up to 2" that deliver benchmark performance quality & safety; provide the broadest array of superior alloy offerings in the market; decades of proven success in a wide range of industries; a roster of "who's who" customers & projects globally; original "Best Solution" engineering & designs; and are focused on continuous improvement in all aspects of our business.

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Fusible Fittings

Just one of a number of additional products to complement the main Hoke range.



For a safer system turn to Hoke guaranteed valves and fittings

Hoke Fusible Fittings are designed for use with flammable or hazardous fluids. The fitting reacts automatically when the temperature rises above a pre-set limit by means of a heat sensitive plug of eutectic material inserted in a port or used to cap a Gyrolok fitting. The plug melts to release the fluid or controlling medium providing a valve operation closing the flow of hazardous materials.

Systems which benefit from the use of fusible plugs include fire prevention systems, gas mixing systems, gas supply systems, fire alarm systems, liquid pumps and safety release systems.

- Fully compatible with **Gyrolok** twin-ferrule fitting systems
- High quality for full safety standards
- Specially developed eutectic material to ensure swift melt-down at pre-determined temperatures.

The range of eutectic material melts are colour coded and stamped as follows:-

- Black - 158°F (70°C)
- Green - 255°F (124°C)
- Red - 281°F (138°C)

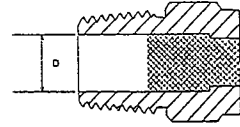
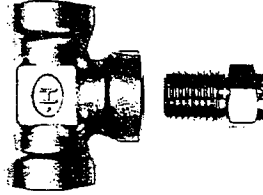
Fittings are available designed as "plug", "adapter", "cap" and "Gyrolok cap" for immediate adaptation. Sizes are 1/4", 3/8", and 1/2". Maximum working pressure is 250 psi (17 bar).

Hoke fusible plugs form an integral part of the overall Gyrolok range of twin-ferrule fittings which are also available in stainless steel and are offered in inch as well as metric sizes. Send for a fully illustrated catalogue.

Hoke products are available throughout the world from authorised distributors and subsidiary companies.

FPP

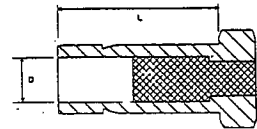
Fusible pipe plug 316
Standard pipe plug fitting



| PART NUMBER | THREAD SIZE (NPT) | OVERALL LENGTH | "D" |
|-------------|-------------------|----------------|-------|
| 4FPP | 1/4 | 15/16" | 5/16" |
| 6FPP | 3/8 | 1" | 5/16" |
| 8FPP | 1/2 | 1 1/4" | 3/8" |

FSA

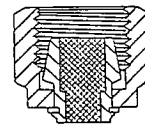
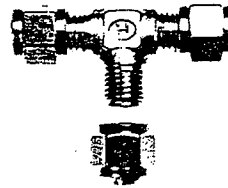
Fusible pipe component 316
Standard size to fit Gyrolok fitting



| PART NUMBER | TUBE SIZE | OVERALL LENGTH | "D" | "L" |
|-------------|-----------|----------------|--------|--------|
| 4FSA | 1/4 | 13/16" | 0.193" | 11/16" |
| 6FSA | 3/8 | 15/16" | 0.281" | 13/16" |
| 8FSA | 1/2 | 1 15/32" | 0.390" | 31/32" |

FGP

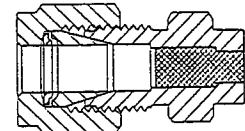
Fusible plug fitting 316
Plug for standard Gyrolok fitting



| PART NUMBER | TUBE SIZE | OVERALL LENGTH |
|-------------|-----------|----------------|
| 4FGP | 1/4 | 5/8" |
| 6FGP | 3/8 | 3/4" |
| 8FGP | 1/2 | 7/8" |

FTC

Tube cap 316
Gyrolok tube cap



| PART NUMBER | TUBE SIZE | OVERALL LENGTH |
|-------------|-----------|----------------|
| 4FTC | 1/4 | 0.78" |
| 6FTC | 3/8 | 0.87" |
| 8FTC | 1/2 | 1.10" |



HMORGP Over Range Pressure Gauge Protector

APPLICATIONS

Over Range Protectors are used to prevent a gauge from being over pressured and damaged, once the pre-set pressure is reached the Over Range Protector will prevent any further pressure from entering the instrument.

Available in a range of materials to suit your requirement

STANDARD SPECIFICATION

- Over range protector designed to protect gauges instruments etc, from surges in pressure.
 - Available in shut-off ranges from 0.4 bar to 400 bar. (HP range Available from 2.5 to 600 bar)
 - Maximum inlet pressure 600 bar. (HP 700 bar)
 - Bonnet locking pin - safely locks bonnet to body.
 - Maximum temperature 80°C, for ranges 0.4 - 2.5 bar and 110°C, for ranges 2.5 - 400 bar.
 - Can be supplied to NACE MR-01-75-Latest edition.
 - Materials:- 316 St.St., Monel, Hastelloy etc.
 - Standard seals are Viton, alternatives are available.
- Please contact sales**



Model-HMORGPL8YL-M5

How To Order

Part No = HMORGP-*Inlet Outlet Code* F, M or L -*Inlet Outlet Size*-*Material Code*-*Pressure Range Code*

Example = HMORGPL8YL-M5 (HMORGP ½" NPT Male, ½" NPT Female, 316 St. St, 200 to 400 bar)

Inlet Outlet Codes

F = Female

M = Male

L = Male X Female

Inlet Outlet Size

4 = ¼ NPT

8 = ½ NPT

Other Threads and Sizes available on request

Material Codes

YL = 316L Stainless Steel (UNS S31600 / S31603)

DX3 = DUPLEX (UNS S31803)

M = MONEL® 400 (UNS N04400)

D50 = SUPER DUPLEX (UNS S32760)

HC = HASTELLOY® C-276® (UNS N10276)

HC = HASTELLOY® C-22 (UNS N06022)

625 = INCONEL® 625 (UNS N06625)

6MO= SUPER AUSTENITIC ST.ST 6%Mo (UNS S31254)

825 = INCOLOY® 825 (UNS N08825)

TI = TITANIUM Gr.2 (UNS R50400)

Other materials available on request

Pressure Ranges

Pressure Range Codes Low (600 bar)

L = 0.4 to 2.5 bar

Pressure Range Codes Std (600 bar)

M1 = 2.5 to 6 bar

M2 = 6 to 20 bar

M3 = 20 to 70 bar

M4 = 70 to 200 bar

M5 = 200 to 400 bar

Pressure Range Codes High (700 bar)

H1 = 2.5 to 6 bar

H2 = 6 to 20 bar

H3 = 20 to 70 bar

H4 = 70 to 200 bar

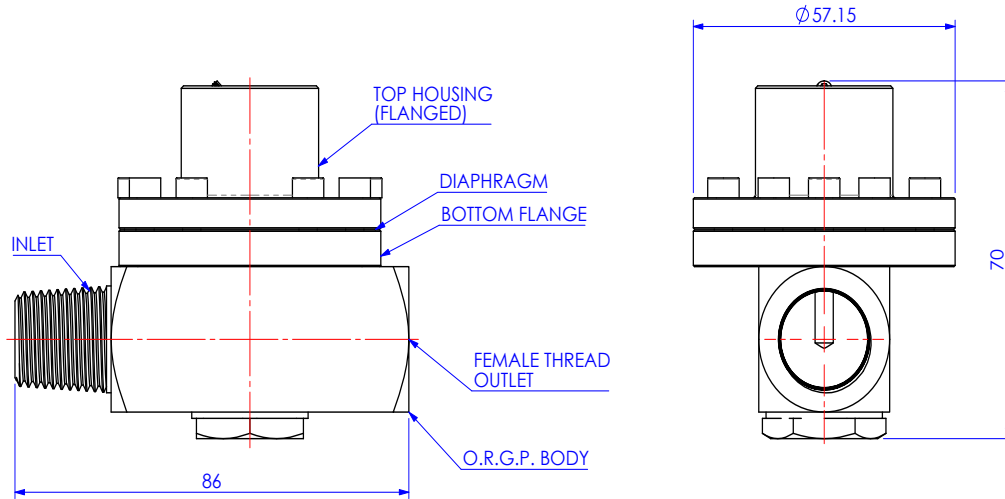
H5 = 200 to 400 bar

HP = 400 to 600 bar

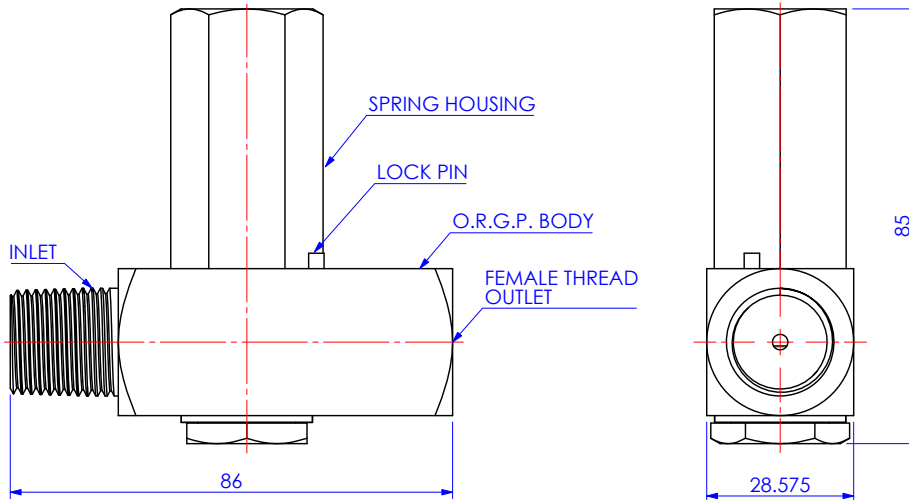


HMORGP Over Range Pressure Gauge Protector

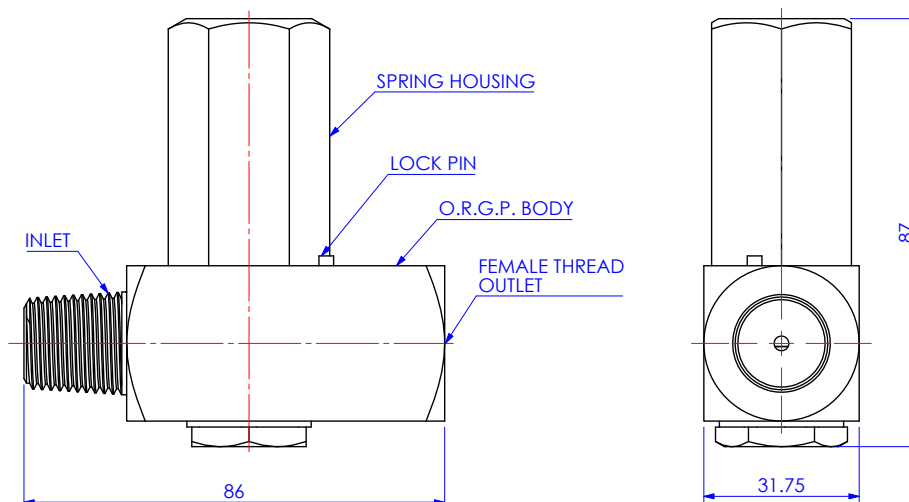
Low Pressure



Standard Pressure



High Pressure



HOKE, Inc
PO Box 4866
Spartanburg, SC 29305-4866
Phone: (864) 574-7966
Fax: (864) 587-5608

www.hoke.com
sales-hoke@circor.com





HMORGP Over Range Pressure Gauge Protector

SETTING AND TESTING

Select a test gauge with a range slightly higher than the SET POINT of the O.R.G.P. to be tested and fit to the outlet port. (The flow direction is indicated by an arrow typed on the side of the main body, the outlet is always at the point of the arrow).

- Fit the O.R.G.P and Test Gauge to the AIR PUMP using the appropriate snap connector.
- Ensure the spring plug is set to the lowest set point i.e. screwed just inside the spring body.
- Set air pump pressure to higher than the set point required but lower than the maximum scale value of the test gauge.
- Close the exhaust valve on the air pump.
- Open the inlet on the air pump to allow pressure into the O.R.G.P.
- Adjust the spring plug until the required SET POINT is obtained; lock adjusting screw by fully tightening the grub screw in the adjusting screw.
- Test the SET POINT by pressurising the O.R.G.P. this to be repeated successfully at least three times.
- **NOTE:** The tolerance of the SET POINT is +25% to -0 of set point.
- Test the RESET point of the O.R.G.P. this MUST be within -25% of the SET POINT, i.e. the O.R.G.P. MUST open within -25% of the set point.
- After successful testing of the set point, the Test Gauge fitted to the O.R.G.P. is removed and replaced by a blanking plug.



HOKE, Inc
PO Box 4866
Spartanburg, SC 29305-4866
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Fax: (864) 587-5608

www.hoke.com
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