

20D Series Double Ferrule Tube Fittings

20,000 psig (1379 bar)



Fittings

Tubing

Quick Couplings

Line Filters

Valves

Sour Service Products


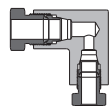

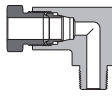

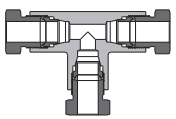

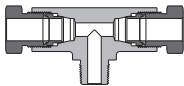
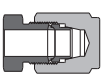
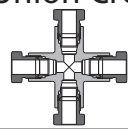
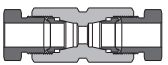
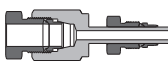

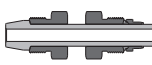
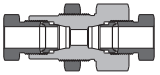
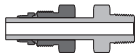
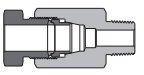
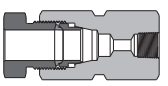
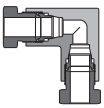
Subsea Valves

Tools and Installation Instructions

Technical Information

Part Number Crossover Charts

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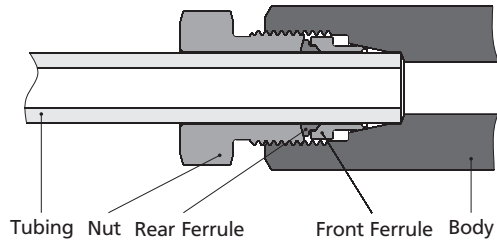
Features

- ⦿ Working pressure up to 20,000 psig (1379 bar)
- ⦿ Easy and quick connection to T15 and T20D series tubing, tubing sizes available in 1/8", 1/4", 3/8", 1/2", 9/16" and 3/4"
- ⦿ High tensile 316 stainless steel material
- ⦿ Nut threads coated with molybdenum disulfide-based lubricant to minimize the friction
- ⦿ Long tube-support area to improve vibration resistance and line loads
- ⦿ Every fitting marked with size, material and heat number
- ⦿ EC-79 type approval for 70 MPa hydrogen system application

Standard Materials of Construction

| Component | Material |
|-----------------------|---------------------|
| <i>Body, ferrules</i> | 316 stainless steel |
| Nut | 316 stainless steel |

Wetted components listed in italics.



Working Pressure

- ⦿ Working pressure is determined by the lowest working pressure of the ends.

Tube Ends

The working pressure of tube ends at ambient temperature is determined by the working pressure of the T15 and T20D Series tubing used. For details, please refer to "Working Pressure at Ambient Temperature" on B-06 and B-09.

Male SAE O-ring Ends

Working pressure for male SAE O-ring end connections listed in this catalog is 10,000 psig (690 bar).

NPT Ends

| NPT Size in. | Working Pressure psig (bar) |
|--------------|-----------------------------|
| 1/8 | 15,000 (1034) |
| 1/4 | |
| 3/8 | |
| 1/2 | |
| 3/4 | 10,000 (690) |
| 1 | |

T20D Series Tubing

| Tube O.D. in. | Wall Thickness Tolerance in. | Working Pressure ^① psig (bar) |
|---------------|------------------------------|--|
| 1/4 | 0.065 | 20,000 (1379) |
| 3/8 | 0.083 | |
| 1/2 | 0.109 | |
| 9/16 | 0.125 | |
| 3/4 | 0.165 | |
| | | |

① Working pressures are calculated from an S value of 50,000 psi (344 MPa) at -20 to 100°F (-28 to 38°C) for ASME B31.3 Chapter IX High Pressure Piping.

Working Temperature

| Connection Type | Working Temperature Range, °F (°C) |
|----------------------|---|
| Tube Ends | -325 to 800 (-198 to 427) |
| Male SAE O-ring Ends | 0 to 400 (-17.8 to 204) ^① |
| NPT Ends | -325 to 400 (-198 to 204) ^{②③} |

① The ends are supplied with a fluorocarbon FKM O-ring as standard, other materials of O-rings available.

② Always use proper thread sealants on tapered pipe threads.

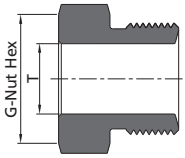
③ The data are based on the working temperature range of the thread sealants. For the working temperature above 400°F (204°C), please contact FITOK Group or our authorized distributors.

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| Part Number Crossover Charts |

Ordering Information and Dimensions

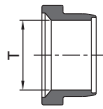
Dimensions are for reference only and are subject to change.

Nuts



| Tube | | |
|-------------------|-----------------|----------------------|
| T - Tube O.D. in. | Ordering Number | Dimensions, in. (mm) |
| | | G |
| 1/8 | SS-N-DFF2 | 0.37 (9.5) |
| 1/4 | SS-N-DFF4 | 0.63 (15.9) |
| 3/8 | SS-N-DFF6 | 0.75 (19.1) |
| 1/2 | SS-N-DFF8 | 0.94 (23.8) |
| 9/16 | SS-N-DFF9 | 1.06 (27.0) |
| 3/4 | SS-N-DFF12 | 1.38 (34.9) |

Front Ferrules



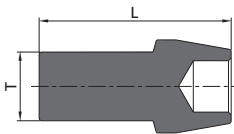
| Tube | |
|-------------------|-----------------|
| T - Tube O.D. in. | Ordering Number |
| 1/8 | SS-FF-DFF2 |
| 1/4 | SS-FF-DFF4 |
| 3/8 | SS-FF-DFF6 |
| 1/2 | SS-FF-DFF8 |
| 9/16 | SS-FF-DFF9 |
| 3/4 | SS-FF-DFF12 |

Rear Ferrules



| Tube | |
|-------------------|-----------------|
| T - Tube O.D. in. | Ordering Number |
| 1/8 | SS-RF-DFF2 |
| 1/4 | SS-RF-DFF4 |
| 3/8 | SS-RF-DFF6 |
| 1/2 | SS-RF-DFF8 |
| 9/16 | SS-RF-DFF9 |
| 3/4 | SS-RF-DFF12 |

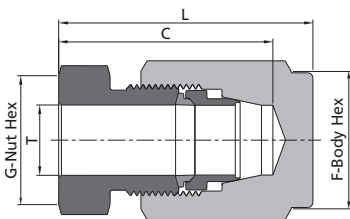
Plugs^①



| Tube | | |
|-------------------|-----------------|----------------------|
| T - Tube O.D. in. | Ordering Number | Dimensions, in. (mm) |
| | | L |
| 1/8 | SS-TP-DFF2 | 0.95 (24.2) |
| 1/4 | SS-TP-DFF4 | 1.20 (30.4) |
| 3/8 | SS-TP-DFF6 | 1.19 (30.2) |
| 1/2 | SS-TP-DFF8 | 1.36 (34.6) |
| 9/16 | SS-TP-DFF9 | 1.73 (44.0) |
| 3/4 | SS-TP-DFF12 | 2.30 (58.3) |

^① When using plug, ferrules are not required.

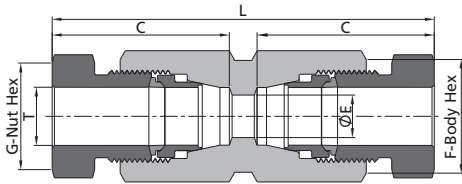
Caps



| Tube | | | | | |
|-------------------|-----------------|----------------------|-------------|-------------|-------------|
| T - Tube O.D. in. | Ordering Number | Dimensions, in. (mm) | | | |
| | | L | C | F | G |
| 1/8 | SS-DTC-DFF2 | 1.22 (31.1) | 1.07 (27.2) | 0.50 (12.7) | 0.37 (9.5) |
| 1/4 | SS-DTC-DFF4 | 1.70 (43.1) | 1.38 (35.2) | 0.63 (15.9) | 0.63 (15.9) |
| 3/8 | SS-DTC-DFF6 | 1.76 (44.8) | 1.42 (36.1) | 0.75 (19.1) | 0.75 (19.1) |
| 1/2 | SS-DTC-DFF8 | 1.85 (47.0) | 1.56 (39.6) | 1.00 (25.4) | 0.94 (23.8) |
| 9/16 | SS-DTC-DFF9 | 2.46 (62.6) | 1.93 (49.0) | 1.13 (28.6) | 1.06 (27.0) |
| 3/4 | SS-DTC-DFF12 | 3.22 (81.9) | 2.49 (63.3) | 1.50 (38.1) | 1.38 (34.9) |

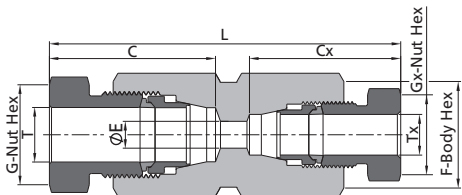
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Unions



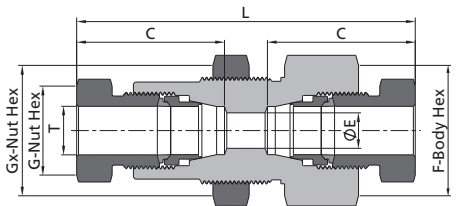
| Tube | | Dimensions, in. (mm) | | | | |
|-------------------|-----------------|----------------------|-------------|-------------|-------------|-------------|
| T - Tube O.D. in. | Ordering Number | L | C | E | F | G |
| 1/8 | SS-DU-DFF2 | 2.45 (62.2) | 1.07 (27.2) | 0.09 (2.4) | 0.50 (12.7) | 0.37 (9.5) |
| 1/4 | SS-DU-DFF4 | 3.00 (76.2) | 1.38 (35.2) | 0.19 (4.8) | 0.63 (15.9) | 0.63 (15.9) |
| 3/8 | SS-DU-DFF6 | 3.07 (77.9) | 1.42 (36.1) | 0.25 (6.4) | 0.75 (19.1) | 0.75 (19.1) |
| 1/2 | SS-DU-DFF8 | 3.36 (85.4) | 1.56 (39.6) | 0.37 (9.5) | 1.00 (25.4) | 0.94 (23.8) |
| 9/16 | SS-DU-DFF9 | 4.11 (104.4) | 1.93 (49.0) | 0.41 (10.4) | 1.13 (28.6) | 1.06 (27.0) |
| 3/4 | SS-DU-DFF12 | 5.38 (136.7) | 2.49 (63.3) | 0.56 (14.2) | 1.50 (38.1) | 1.38 (34.9) |

Reducing Unions



| Tube | | | Dimensions, in. (mm) | | | | | | |
|-------------------|--------------------|------------------|----------------------|-------------|-------------|------------|-------------|-------------|-------------|
| T - Tube O.D. in. | Tx - Tube O.D. in. | Ordering Number | L | C | Cx | E | F | G | Gx |
| 1/4 | 1/8 | SS-DU-DFF4-DFF2 | 2.73 (69.4) | 1.39 (35.2) | 1.07 (27.2) | 0.09 (2.4) | 0.63 (15.9) | 0.63 (15.9) | 0.37 (9.5) |
| 3/8 | 1/8 | SS-DU-DFF6-DFF2 | 2.77 (70.3) | 1.42 (36.1) | 1.07 (27.2) | 0.09 (2.4) | 0.75 (19.1) | 0.75 (19.1) | 0.37 (9.5) |
| 3/8 | 1/4 | SS-DU-DFF6-DFF4 | 3.06 (77.6) | 1.42 (36.1) | 1.39 (35.2) | 0.19 (4.8) | 0.75 (19.1) | 0.75 (19.1) | 0.63 (15.9) |
| 1/2 | 1/4 | SS-DU-DFF8-DFF4 | 3.35 (85.1) | 1.56 (39.6) | 1.39 (35.2) | 0.19 (4.8) | 1.00 (25.4) | 0.94 (23.8) | 0.63 (15.9) |
| 1/2 | 3/8 | SS-DU-DFF8-DFF6 | 3.32 (84.3) | 1.56 (39.6) | 1.42 (36.1) | 0.25 (6.4) | 1.00 (25.4) | 0.94 (23.8) | 0.75 (19.1) |
| 9/16 | 1/2 | SS-DU-DFF9-DFF8 | 4.04 (102.5) | 1.93 (49.0) | 1.56 (39.6) | 0.37 (9.5) | 1.13 (28.6) | 1.06 (27.0) | 0.94 (23.8) |
| 3/4 | 1/2 | SS-DU-DFF12-DFF8 | 4.73 (120.2) | 2.49 (63.3) | 1.56 (39.6) | 0.37 (9.5) | 1.50 (38.1) | 1.38 (34.9) | 0.94 (23.8) |

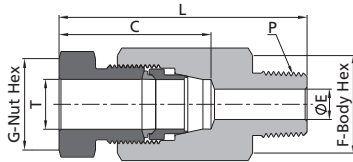
Bulkhead Unions



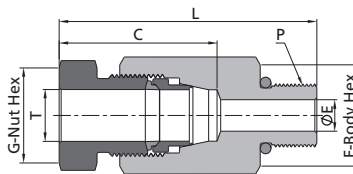
| Tube | | Dimensions, in. (mm) | | | | | | | |
|-------------------|-----------------|----------------------|-------------|-------------|-------------|-------------|-------------|-----------------|-------------------------|
| T - Tube O.D. in. | Ordering Number | L | C | E | F | G | Gx | Panel Hole Size | Maximum Panel Thickness |
| 1/8 | SS-DBU-DFF2 | 2.95 (75.0) | 1.07 (27.2) | 0.09 (2.4) | 0.75 (19.1) | 0.37 (9.5) | 0.81 (20.6) | 0.69 (17.5) | 0.38 (9.7) |
| 1/4 | SS-DBU-DFF4 | 3.27 (83.1) | 1.38 (35.2) | 0.19 (4.8) | 1.00 (25.4) | 0.63 (15.9) | 1.06 (27.0) | 0.94 (23.9) | 0.38 (9.7) |
| 3/8 | SS-DBU-DFF6 | 3.21 (81.6) | 1.42 (36.1) | 0.25 (6.4) | 1.00 (25.4) | 0.75 (19.1) | 1.06 (27.0) | 0.94 (23.9) | 0.38 (9.7) |
| 1/2 | SS-DBU-DFF8 | 3.93 (99.8) | 1.56 (39.6) | 0.37 (9.5) | 1.38 (34.9) | 0.94 (23.8) | 1.38 (34.9) | 1.13 (28.6) | 0.38 (9.7) |
| 9/16 | SS-DBU-DFF9 | 4.64 (117.8) | 1.93 (49.0) | 0.41 (10.4) | 1.63 (41.3) | 1.06 (27.0) | 1.63 (41.3) | 1.33 (33.7) | 0.38 (9.7) |
| 3/4 | SS-DBU-DFF12 | 5.82 (147.9) | 2.49 (63.3) | 0.56 (14.2) | 1.87 (47.6) | 1.38 (34.9) | 1.87 (47.6) | 1.64 (41.7) | 0.38 (9.7) |

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Male Connectors

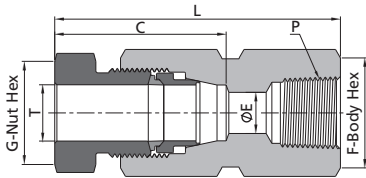


| Tube | | | NPT Thread | | | | |
|-------------------|------------------|-------------------|----------------------|-------------|-------------|-------------|-------------|
| T - Tube O.D. in. | P - NPT Size in. | Ordering Number | Dimensions, in. (mm) | | | | |
| | | | L | C | E | F | G |
| 1/8 | 1/8 | SS-DCM-DFF2-NS2 | 1.60 (40.6) | 1.07 (27.2) | 0.09 (2.4) | 0.50 (12.7) | 0.37 (9.5) |
| 1/8 | 1/4 | SS-DCM-DFF2-NS4 | 1.72 (43.8) | 1.07 (27.2) | 0.09 (2.4) | 0.56 (14.3) | 0.37 (9.5) |
| 1/8 | 3/8 | SS-DCM-DFF2-NS6 | 1.72 (43.8) | 1.07 (27.2) | 0.09 (2.4) | 0.69 (17.5) | 0.37 (9.5) |
| 1/4 | 1/8 | SS-DCM-DFF4-NS2 | 1.95 (49.5) | 1.39 (35.2) | 0.19 (4.8) | 0.63 (15.9) | 0.63 (15.9) |
| 1/4 | 1/4 | SS-DCM-DFF4-NS4 | 2.08 (52.8) | 1.39 (35.2) | 0.19 (4.8) | 0.63 (15.9) | 0.63 (15.9) |
| 1/4 | 3/8 | SS-DCM-DFF4-NS6 | 2.08 (52.8) | 1.39 (35.2) | 0.19 (4.8) | 0.69 (17.5) | 0.63 (15.9) |
| 1/4 | 1/2 | SS-DCM-DFF4-NS8 | 2.32 (59.0) | 1.39 (35.2) | 0.19 (4.8) | 0.87 (22.2) | 0.63 (15.9) |
| 3/8 | 1/4 | SS-DCM-DFF6-NS4 | 2.17 (55.1) | 1.42 (36.1) | 0.25 (6.4) | 0.75 (19.1) | 0.75 (19.1) |
| 3/8 | 3/8 | SS-DCM-DFF6-NS6 | 2.17 (55.1) | 1.42 (36.1) | 0.25 (6.4) | 0.75 (19.1) | 0.75 (19.1) |
| 3/8 | 1/2 | SS-DCM-DFF6-NS8 | 2.30 (58.3) | 1.42 (36.1) | 0.25 (6.4) | 0.87 (22.2) | 0.75 (19.1) |
| 1/2 | 1/4 | SS-DCM-DFF8-NS4 | 2.53 (64.3) | 1.56 (39.6) | 0.25 (6.4) | 1.00 (25.4) | 0.94 (23.8) |
| 1/2 | 3/8 | SS-DCM-DFF8-NS6 | 2.53 (64.3) | 1.56 (39.6) | 0.31 (7.9) | 1.00 (25.4) | 0.94 (23.8) |
| 1/2 | 1/2 | SS-DCM-DFF8-NS8 | 2.65 (67.4) | 1.56 (39.6) | 0.37 (9.5) | 1.00 (25.4) | 0.94 (23.8) |
| 1/2 | 3/4 | SS-DCM-DFF8-NS12 | 2.53 (64.3) | 1.56 (39.6) | 0.37 (9.5) | 1.06 (27.0) | 0.94 (23.8) |
| 9/16 | 1/4 | SS-DCM-DFF9-NS4 | 3.03 (77.0) | 1.93 (49.0) | 0.25 (6.4) | 1.13 (28.6) | 1.06 (27.0) |
| 9/16 | 1/2 | SS-DCM-DFF9-NS8 | 3.11 (79.1) | 1.93 (49.0) | 0.38 (9.6) | 1.13 (28.6) | 1.06 (27.0) |
| 3/4 | 1/2 | SS-DCM-DFF12-NS8 | 3.74 (95.1) | 2.49 (63.3) | 0.38 (9.6) | 1.50 (38.1) | 1.38 (34.9) |
| 3/4 | 3/4 | SS-DCM-DFF12-NS12 | 3.74 (95.1) | 2.49 (63.3) | 0.56 (14.2) | 1.50 (38.1) | 1.38 (34.9) |
| 3/4 | 1 | SS-DCM-DFF12-NS16 | 3.83 (97.4) | 2.49 (63.3) | 0.56 (14.2) | 1.50 (38.1) | 1.38 (34.9) |



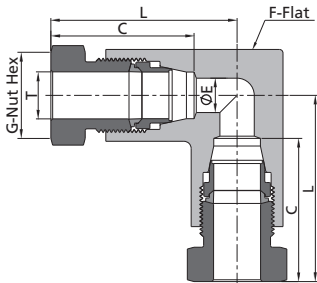
| Tube | | | Male SAE O-ring | | | | |
|-------------------|------------------------|-----------------|----------------------|-------------|------------|-------------|-------------|
| T - Tube O.D. in. | P - SAE/MS Thread Size | Ordering Number | Dimensions, in. (mm) | | | | |
| | | | L | C | E | F | G |
| 1/8 | 7/16-20 | SS-DCM-DFF2-SH7 | 1.60 (40.6) | 1.07 (27.2) | 0.09 (2.4) | 0.56 (14.3) | 0.37 (9.5) |
| 1/8 | 9/16-18 | SS-DCM-DFF2-SH9 | 1.66 (42.2) | 1.07 (27.2) | 0.09 (2.4) | 0.69 (17.5) | 0.37 (9.5) |
| 1/4 | 7/16-20 | SS-DCM-DFF4-SH7 | 2.04 (51.7) | 1.39 (35.2) | 0.18 (4.5) | 0.63 (15.9) | 0.63 (15.9) |
| 1/4 | 9/16-18 | SS-DCM-DFF4-SH9 | 2.07 (52.7) | 1.39 (35.2) | 0.19 (4.8) | 0.69 (17.5) | 0.63 (15.9) |
| 3/8 | 7/16-20 | SS-DCM-DFF6-SH7 | 2.09 (53.0) | 1.42 (36.1) | 0.18 (4.5) | 0.75 (19.1) | 0.75 (19.1) |
| 3/8 | 9/16-18 | SS-DCM-DFF6-SH9 | 2.13 (54.0) | 1.42 (36.1) | 0.25 (6.4) | 0.75 (19.1) | 0.75 (19.1) |
| 1/2 | 7/16-20 | SS-DCM-DFF8-SH7 | 2.49 (63.3) | 1.56 (39.6) | 0.18 (4.5) | 1.00 (25.4) | 0.94 (23.8) |
| 1/2 | 9/16-18 | SS-DCM-DFF8-SH9 | 2.49 (63.3) | 1.56 (39.6) | 0.30 (7.5) | 1.00 (25.4) | 0.94 (23.8) |

Female Connectors



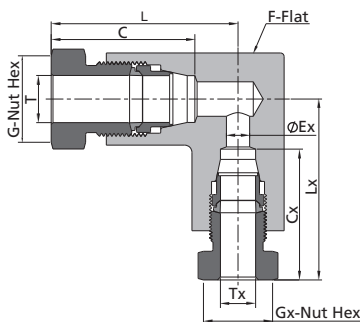
| Tube | | | NPT Thread | | | | |
|-------------------|------------------|-------------------|----------------------|-------------|-------------|-------------|-------------|
| T - Tube O.D. in. | P - NPT Size in. | Ordering Number | Dimensions, in. (mm) | | | | |
| | | | L | C | E | F | G |
| 1/8 | 1/8 | SS-DCF-DFF2-FNS2 | 1.97 (50.1) | 1.07 (27.2) | 0.09 (2.4) | 0.63 (15.9) | 0.37 (9.5) |
| 1/8 | 1/4 | SS-DCF-DFF2-FNS4 | 2.01 (53.3) | 1.07 (27.2) | 0.09 (2.4) | 0.94 (23.8) | 0.37 (9.5) |
| 1/4 | 1/4 | SS-DCF-DFF4-FNS4 | 2.33 (59.1) | 1.38 (35.2) | 0.19 (4.8) | 0.94 (23.8) | 0.63 (15.9) |
| 3/8 | 1/4 | SS-DCF-DFF6-FNS4 | 2.29 (58.1) | 1.42 (36.1) | 0.25 (6.4) | 0.94 (23.8) | 0.75 (19.1) |
| 1/2 | 1/4 | SS-DCF-DFF8-FNS4 | 2.78 (70.6) | 1.56 (39.6) | 0.37 (9.5) | 1.00 (25.4) | 0.94 (23.8) |
| 1/2 | 1/2 | SS-DCF-DFF8-FNS8 | 3.03 (77.0) | 1.56 (39.6) | 0.37 (9.5) | 1.38 (34.9) | 0.94 (23.8) |
| 3/4 | 1/2 | SS-DCF-DFF12-FNS8 | 3.85 (97.8) | 2.49 (63.3) | 0.56 (14.2) | 1.50 (38.1) | 1.38 (34.9) |

Union Elbows



| Tube | | Dimensions, in. (mm) | | | | |
|-------------------|-----------------|----------------------|-------------|-------------|-------------|-------------|
| T - Tube O.D. in. | Ordering Number | L | C | E | F | G |
| 1/8 | SS-DLU-DFF2 | 1.29 (32.7) | 1.07 (27.2) | 0.09 (2.4) | 0.63 (15.9) | 0.37 (9.5) |
| 1/4 | SS-DLU-DFF4 | 1.70 (43.1) | 1.38 (35.2) | 0.19 (4.8) | 0.63 (15.9) | 0.63 (15.9) |
| 3/8 | SS-DLU-DFF6 | 1.67 (42.4) | 1.42 (36.1) | 0.25 (6.4) | 0.75 (19.1) | 0.75 (19.1) |
| 1/2 | SS-DLU-DFF8 | 2.03 (51.6) | 1.56 (39.6) | 0.37 (9.5) | 1.00 (25.4) | 0.94 (23.8) |
| 9/16 | SS-DLU-DFF9 | 2.43 (61.8) | 1.93 (49.0) | 0.41 (10.4) | 1.38 (34.9) | 1.06 (27.0) |
| 3/4 | SS-DLU-DFF12 | 3.11 (79.1) | 2.49 (63.3) | 0.56 (14.2) | 1.50 (38.1) | 1.38 (34.9) |

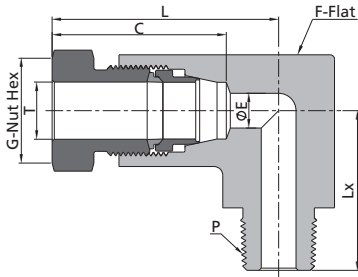
Union Reducing Elbows



| Tube | | | Dimensions, in. (mm) | | | | | | | |
|-------------------|--------------------|-------------------|----------------------|-------------|-------------|-------------|------------|-------------|-------------|-------------|
| T - Tube O.D. in. | Tx - Tube O.D. in. | Ordering Number | L | Lx | C | Cx | Ex | F | G | Gx |
| 1/4 | 1/8 | SS-DLU-DFF4-DFF2 | 1.70 (43.1) | 1.37 (34.7) | 1.38 (35.2) | 1.07 (27.2) | 0.09 (2.4) | 0.63 (15.9) | 0.63 (15.9) | 0.37 (9.5) |
| 3/8 | 1/8 | SS-DLU-DFF6-DFF2 | 1.67 (42.4) | 1.33 (33.7) | 1.42 (36.1) | 1.07 (27.2) | 0.09 (2.4) | 0.75 (19.1) | 0.75 (19.1) | 0.37 (9.5) |
| 3/8 | 1/4 | SS-DLU-DFF6-DFF4 | 1.67 (42.4) | 1.70 (43.1) | 1.42 (36.1) | 1.38 (35.2) | 0.19 (4.8) | 0.75 (19.1) | 0.75 (19.1) | 0.63 (15.9) |
| 1/2 | 1/4 | SS-DLU-DFF8-DFF4 | 2.03 (51.6) | 1.95 (49.5) | 1.56 (39.6) | 1.38 (35.2) | 0.19 (4.8) | 0.94 (23.8) | 1.00 (25.4) | 0.63 (15.9) |
| 1/2 | 3/8 | SS-DLU-DFF8-DFF6 | 2.03 (51.6) | 1.96 (49.8) | 1.56 (39.6) | 1.42 (36.1) | 0.25 (6.4) | 0.94 (23.8) | 1.00 (25.4) | 0.75 (19.1) |
| 9/16 | 1/2 | SS-DLU-DFF9-DFF8 | 2.43 (61.8) | 2.37 (60.2) | 1.93 (49.0) | 1.56 (39.6) | 0.37 (9.5) | 1.38 (34.9) | 1.06 (27.0) | 0.94 (23.8) |
| 3/4 | 1/2 | SS-DLU-DFF12-DFF8 | 3.11 (79.1) | 2.49 (63.3) | 2.49 (63.3) | 1.56 (39.6) | 0.37 (9.5) | 1.50 (38.1) | 1.38 (34.9) | 0.94 (23.8) |

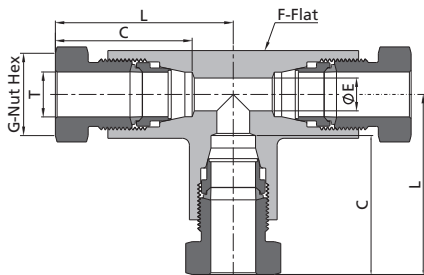
| |
|-------------------------------------|
| Fittings |
| Tubing |
| Quick Couplings |
| Line Filters |
| Valves |
| Sour Service Products |
| Subsea Valves |
| Tools and Installation Instructions |
| Technical Information |
| Part Number Crossover Charts |

Male Elbows



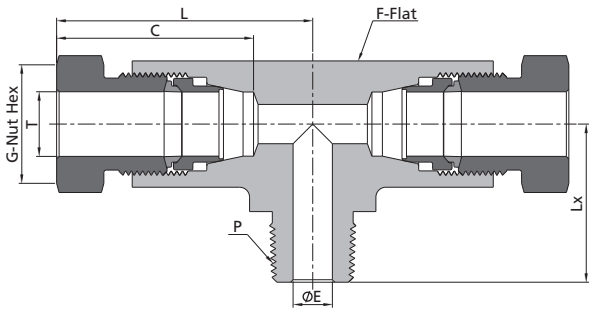
| Tube | | | NPT Thread | | | | | | |
|-------------------|------------------|-------------------|----------------------|-------------|-------------|-------------|-------------|-------------|--|
| T - Tube O.D. in. | P - NPT Size in. | Ordering Number | Dimensions, in. (mm) | | | | | | |
| | | | L | Lx | C | E | F | G | |
| 1/8 | 1/8 | SS-DLM-DFF2-NS2 | 1.29 (32.7) | 0.79 (20.0) | 1.07 (27.2) | 0.09 (2.4) | 0.63 (15.9) | 0.37 (9.5) | |
| 1/8 | 1/4 | SS-DLM-DFF2-NS4 | 1.39 (35.3) | 1.00 (25.4) | 1.07 (27.2) | 0.09 (2.4) | 0.63 (15.9) | 0.37 (9.5) | |
| 1/8 | 3/8 | SS-DLM-DFF2-NS6 | 1.47 (37.4) | 1.00 (25.4) | 1.07 (27.2) | 0.09 (2.4) | 0.75 (19.1) | 0.37 (9.5) | |
| 1/4 | 1/4 | SS-DLM-DFF4-NS4 | 1.70 (43.1) | 0.94 (23.8) | 1.38 (35.2) | 0.19 (4.8) | 0.63 (15.9) | 0.63 (15.9) | |
| 1/4 | 3/8 | SS-DLM-DFF4-NS6 | 1.70 (43.1) | 1.00 (25.4) | 1.38 (35.2) | 0.19 (4.8) | 0.75 (19.1) | 0.63 (15.9) | |
| 1/4 | 1/2 | SS-DLM-DFF4-NS8 | 1.70 (43.1) | 1.38 (34.9) | 1.38 (35.2) | 0.19 (4.8) | 1.00 (25.4) | 0.63 (15.9) | |
| 3/8 | 1/4 | SS-DLM-DFF6-NS4 | 1.67 (42.4) | 1.00 (25.4) | 1.42 (36.1) | 0.25 (6.4) | 0.75 (19.1) | 0.75 (19.1) | |
| 3/8 | 3/8 | SS-DLM-DFF6-NS6 | 1.67 (42.4) | 1.06 (27.0) | 1.42 (36.1) | 0.25 (6.4) | 0.75 (19.1) | 0.75 (19.1) | |
| 3/8 | 1/2 | SS-DLM-DFF6-NS8 | 1.67 (42.4) | 1.38 (34.9) | 1.42 (36.1) | 0.25 (6.4) | 1.00 (25.4) | 0.75 (19.1) | |
| 1/2 | 1/4 | SS-DLM-DFF8-NS4 | 2.03 (51.6) | 1.19 (30.2) | 1.56 (39.6) | 0.25 (6.4) | 1.00 (25.4) | 0.94 (23.8) | |
| 1/2 | 3/8 | SS-DLM-DFF8-NS6 | 2.03 (51.6) | 1.19 (30.2) | 1.56 (39.6) | 0.31 (7.9) | 1.00 (25.4) | 0.94 (23.8) | |
| 1/2 | 1/2 | SS-DLM-DFF8-NS8 | 2.03 (51.6) | 1.38 (34.9) | 1.56 (39.6) | 0.37 (9.5) | 1.00 (25.4) | 0.94 (23.8) | |
| 9/16 | 1/2 | SS-DLM-DFF9-NS8 | 2.43 (61.8) | 1.56 (39.5) | 1.93 (49.0) | 0.38 (9.6) | 1.38 (34.9) | 1.06 (27.0) | |
| 3/4 | 1/2 | SS-DLM-DFF12-NS8 | 3.11 (79.1) | 1.73 (44.0) | 2.49 (63.3) | 0.38 (9.6) | 1.50 (38.1) | 1.38 (34.9) | |
| 3/4 | 3/4 | SS-DLM-DFF12-NS12 | 3.11 (79.1) | 1.73 (44.0) | 2.49 (63.3) | 0.56 (14.2) | 1.50 (38.1) | 1.38 (34.9) | |

Union Tees



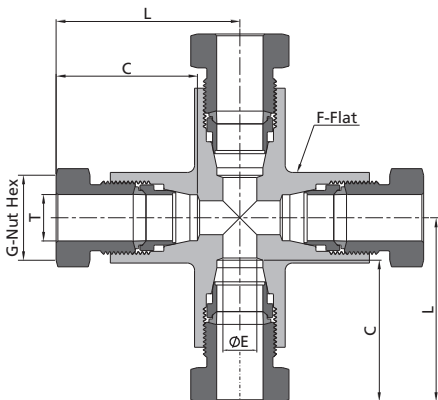
| Tube | | Dimensions, in. (mm) | | | | |
|-------------------|-----------------|----------------------|-------------|-------------|-------------|-------------|
| T - Tube O.D. in. | Ordering Number | L | C | E | F | G |
| 1/8 | SS-DT-DFF2 | 1.37 (34.7) | 1.07 (27.2) | 0.09 (2.4) | 0.63 (15.9) | 0.37 (9.5) |
| 1/4 | SS-DT-DFF4 | 1.70 (43.1) | 1.38 (35.2) | 0.19 (4.8) | 0.63 (15.9) | 0.63 (15.9) |
| 3/8 | SS-DT-DFF6 | 1.67 (42.4) | 1.42 (36.1) | 0.25 (6.4) | 0.75 (19.1) | 0.75 (19.1) |
| 1/2 | SS-DT-DFF8 | 2.03 (51.6) | 1.56 (39.6) | 0.37 (9.5) | 1.00 (25.4) | 0.94 (23.8) |
| 9/16 | SS-DT-DFF9 | 2.43 (61.8) | 1.93 (49.0) | 0.41 (10.4) | 1.38 (34.9) | 1.06 (27.0) |
| 3/4 | SS-DT-DFF12 | 3.11 (79.1) | 2.49 (63.3) | 0.56 (14.2) | 1.50 (38.1) | 1.38 (34.9) |

Male Branch Tees



| Tube | | | NPT Thread | | | | | | |
|-------------------|------------------|------------------------|----------------------|-------------|-------------|-------------|-------------|-------------|--|
| T - Tube O.D. in. | P - NPT Size in. | Ordering Number | Dimensions, in. (mm) | | | | | | |
| | | | L | Lx | C | E | F | G | |
| 1/8 | 1/8 | SS-DT-DFF2-DFF2-NS2 | 1.37 (34.7) | 0.79 (20.0) | 1.07 (27.2) | 0.09 (2.4) | 0.63 (15.9) | 0.37 (9.5) | |
| 1/8 | 1/4 | SS-DT-DFF2-DFF2-NS4 | 1.37 (34.7) | 1.00 (25.4) | 1.07 (27.2) | 0.09 (2.4) | 0.63 (15.9) | 0.37 (9.5) | |
| 1/4 | 1/8 | SS-DT-DFF4-DFF4-NS2 | 1.70 (43.1) | 0.81 (20.6) | 1.38 (35.2) | 0.19 (4.8) | 0.63 (15.9) | 0.63 (15.9) | |
| 1/4 | 1/4 | SS-DT-DFF4-DFF4-NS4 | 1.70 (43.1) | 1.00 (25.4) | 1.38 (35.2) | 0.19 (4.8) | 0.63 (15.9) | 0.63 (15.9) | |
| 3/8 | 1/4 | SS-DT-DFF6-DFF6-NS4 | 1.67 (42.4) | 1.06 (27.0) | 1.42 (36.1) | 0.25 (6.4) | 0.75 (19.1) | 0.75 (19.1) | |
| 1/2 | 1/4 | SS-DT-DFF8-DFF8-NS4 | 2.03 (51.6) | 1.19 (30.2) | 1.56 (39.6) | 0.25 (6.4) | 1.00 (25.4) | 0.94 (23.8) | |
| 1/2 | 3/8 | SS-DT-DFF8-DFF8-NS6 | 2.03 (51.6) | 1.19 (30.2) | 1.56 (39.6) | 0.31 (7.9) | 1.00 (25.4) | 0.94 (23.8) | |
| 3/4 | 3/4 | SS-DT-DFF12-DFF12-NS12 | 3.11 (79.1) | 1.73 (44.0) | 2.49 (63.3) | 0.56 (14.2) | 1.50 (38.1) | 1.38 (34.9) | |

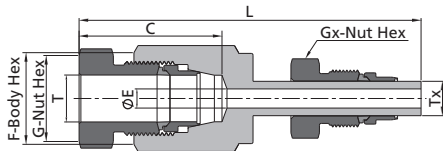
Union Crosses



| Tube | | Dimensions, in. (mm) | | | | |
|-------------------|-----------------|----------------------|-------------|-------------|-------------|-------------|
| T - Tube O.D. in. | Ordering Number | L | C | E | F | G |
| 1/8 | SS-DX-DFF2 | 1.37 (34.7) | 1.07 (27.2) | 0.09 (2.4) | 0.63 (15.9) | 0.37 (9.5) |
| 1/4 | SS-DX-DFF4 | 1.70 (43.1) | 1.38 (35.2) | 0.19 (4.8) | 0.63 (15.9) | 0.63 (15.9) |
| 3/8 | SS-DX-DFF6 | 1.67 (42.4) | 1.42 (36.1) | 0.25 (6.4) | 0.75 (19.1) | 0.75 (19.1) |
| 1/2 | SS-DX-DFF8 | 2.03 (51.6) | 1.56 (39.6) | 0.37 (9.5) | 1.00 (25.4) | 0.94 (23.8) |
| 9/16 | SS-DX-DFF9 | 2.43 (61.8) | 1.93 (49.0) | 0.41 (10.4) | 1.38 (34.9) | 1.06 (27.0) |
| 3/4 | SS-DX-DFF12 | 3.01 (76.4) | 2.49 (63.3) | 0.56 (14.2) | 1.50 (38.1) | 1.38 (34.9) |

| |
|-------------------------------------|
| Fittings |
| Tubing |
| Quick Couplings |
| Line Filters |
| Valves |
| Sour Service Products |
| Subsea Valves |
| Tools and Installation Instructions |
| Technical Information |
| Part Number Crossover Charts |

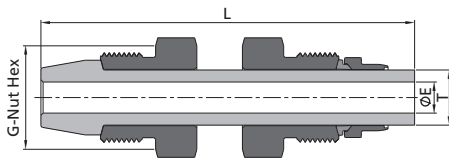
Reducers^①



| Tube | | | Dimensions, in. (mm) | | | | | | |
|-------------------|--------------------|------------------|----------------------|-------------|-------------|-------------|-------------|-------------|--|
| T - Tube O.D. in. | Tx - Tube O.D. in. | Ordering Number | L | C | E | F | G | Gx | |
| 1/4 | 3/8 | SS-DR-DFF4-DFT6 | 3.20 (82.1) | 1.38 (35.2) | 0.19 (4.8) | 0.63 (15.9) | 0.63 (15.9) | 0.75 (19.1) | |
| 1/4 | 1/2 | SS-DR-DFF4-DFT8 | 3.37 (85.5) | 1.38 (35.2) | 0.19 (4.8) | 0.63 (15.9) | 0.63 (15.9) | 0.94 (23.8) | |
| 3/8 | 1/2 | SS-DR-DFF6-DFT8 | 3.43 (87.1) | 1.42 (36.1) | 0.25 (6.4) | 0.75 (19.1) | 0.75 (19.1) | 0.94 (23.8) | |
| 1/2 | 3/8 | SS-DR-DFF8-DFT6 | 3.53 (89.7) | 1.56 (39.6) | 0.21 (5.3) | 1.00 (25.4) | 0.94 (23.8) | 0.75 (19.1) | |
| 1/2 | 3/4 | SS-DR-DFF8-DFT12 | 5.13 (130.4) | 1.56 (39.6) | 0.37 (9.5) | 1.00 (25.4) | 0.94 (23.8) | 1.38 (34.9) | |
| 9/16 | 3/4 | SS-DR-DFF9-DFT12 | 5.32 (135.1) | 1.93 (49.0) | 0.41 (10.4) | 1.13 (28.6) | 1.06 (27.0) | 1.38 (34.9) | |
| 3/4 | 9/16 | SS-DR-DFF12-DFT9 | 5.46 (138.6) | 2.49 (63.3) | 0.31 (7.9) | 1.50 (38.1) | 1.38 (34.9) | 1.06 (27.0) | |

① The right ends of reducers will be preassembled with ferrules before shipping. Please follow the Reinstallation Instructions in H-06 when installing the reducers.

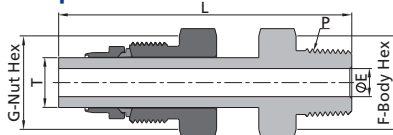
Port Connectors^①



| Tube | | Dimensions, in. (mm) | | |
|-------------------|-----------------|----------------------|-------------|-------------|
| T - Tube O.D. in. | Ordering Number | L | E | G |
| 1/8 | SS-DP-DFF2 | 2.06 (52.2) | 0.06 (1.6) | 0.37 (9.5) |
| 1/4 | SS-DP-DFF4 | 2.66 (67.5) | 0.12 (3.0) | 0.63 (15.9) |
| 3/8 | SS-DP-DFF6 | 2.72 (69.0) | 0.21 (5.3) | 0.75 (19.1) |
| 1/2 | SS-DP-DFF8 | 3.04 (77.3) | 0.28 (7.1) | 0.94 (23.8) |
| 9/16 | SS-DP-DFF9 | 3.80 (96.5) | 0.31 (7.9) | 1.06 (27.0) |
| 3/4 | SS-DP-DFF12 | 4.83 (122.8) | 0.42 (10.7) | 1.38 (34.9) |

① The port connectors will be preassembled with ferrules before shipping. Please follow the Reinstallation Instructions in H-06 when installing the port connectors.

Adapters^①



| Tube | | | NPT Thread | | | |
|-------------------|--------------|-------------------|----------------------|-------------|-------------|-------------|
| T - Tube O.D. in. | P - NPT Size | Ordering Number | Dimensions, in. (mm) | | | |
| | | | L | E | F | G |
| 1/4 | 1/4 | SS-DAM-DFT4-NS4 | 2.30 (58.5) | 0.12 (3.0) | 0.56 (14.3) | 0.63 (15.9) |
| 3/8 | 1/4 | SS-DAM-DFT6-NS4 | 2.38 (60.4) | 0.21 (5.3) | 0.56 (14.3) | 0.75 (19.1) |
| 3/8 | 1/2 | SS-DAM-DFT6-NS8 | 2.67 (67.9) | 0.21 (5.3) | 0.87 (22.2) | 0.75 (19.1) |
| 1/2 | 1/4 | SS-DAM-DFT8-NS4 | 2.55 (64.8) | 0.25 (6.4) | 0.56 (14.3) | 0.94 (23.8) |
| 1/2 | 1/2 | SS-DAM-DFT8-NS8 | 2.84 (72.2) | 0.28 (7.1) | 0.87 (22.2) | 0.94 (23.8) |
| 9/16 | 1/2 | SS-DAM-DFT9-NS8 | 3.64 (92.4) | 0.31 (7.9) | 0.87 (22.2) | 1.06 (27.0) |
| 3/4 | 3/4 | SS-DAM-DFT12-NS12 | 4.22 (107.1) | 0.39 (10.0) | 1.06 (27.0) | 1.38 (34.9) |

① The adapters will be preassembled with ferrules before shipping. Please follow the Reinstallation Instructions in H-06 when installing the adapters.

Installation Instructions

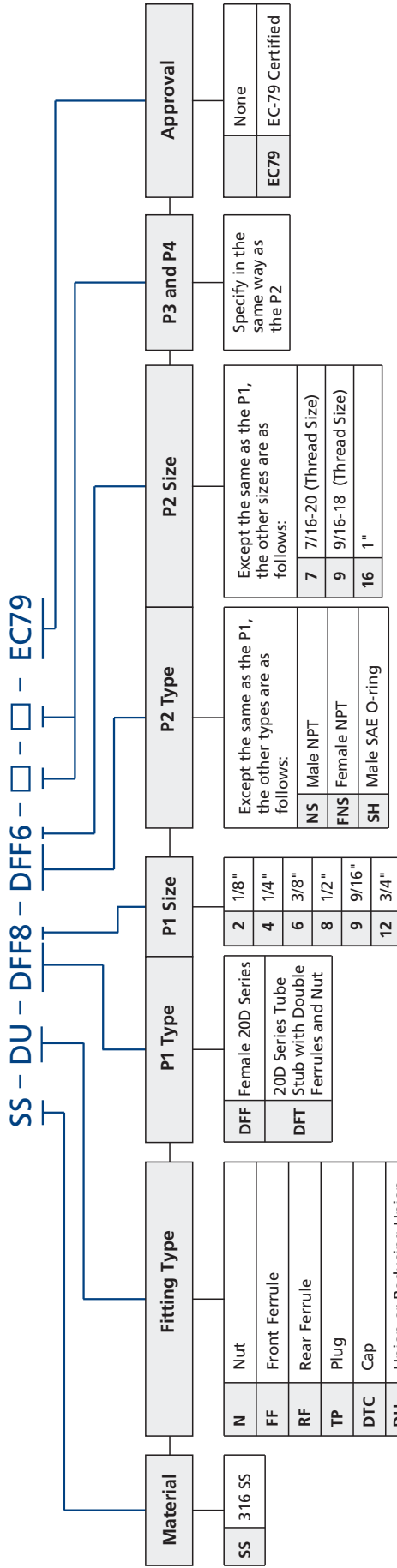
Please see H-05.

Connection Information

Please see I-02.

Fittings
 Tubing
 Quick Couplings
 Line Filters
 Valves
 Sour Service Products
 Subsea Valves
 Tools and Installation Instructions
 Technical Information
 Part Number Crossover Charts

Ordering Number Description



NOTES: 1. For more details regarding 20D Series connection, please see **Connection Information** on I-02.

2. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.

| | | | | | | | | | |
|------------------------------|-----------------------|-------------------------------------|---------------|-----------------------|--------|--------------|-----------------|--------|----------|
| Part Number Crossover Charts | Technical Information | Tools and Installation Instructions | Subsea Valves | Sour Service Products | Valves | Line Filters | Quick Couplings | Tubing | Fittings |
|------------------------------|-----------------------|-------------------------------------|---------------|-----------------------|--------|--------------|-----------------|--------|----------|

20M Series Medium Pressure Fittings

20,000 psig (1379 bar)

| |
|-------------------------------------|
| Fittings |
| Tubing |
| Quick Couplings |
| Line Filters |
| Valves |
| Sour Service Products |
| Subsea Valves |
| Tools and Installation Instructions |
| Technical Information |
| Part Number Crossover Charts |



Contents

Glands - MG



A-15

Collars - MCO



A-15

Plugs - MTP



A-16

Caps - MTC



A-16

Unions - MU



A-16

Reducing Unions - MU



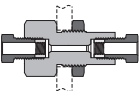
A-17

Unions (Slip Type) - MSU



A-17

Bulkhead Unions - MBU



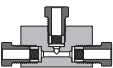
A-18

Union Elbows - MLU



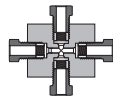
A-18

Union Tees - MT



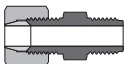
A-19

Union Crosses - MX



A-19

Anti-vibration Gland Assemblies - MAV



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[Ordering Number Description](#)

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Fittings

Tubing

Quick Couplings

Line Filters

Valves

Sour Service Products

Subsea Valves

Tools and Installation Instructions

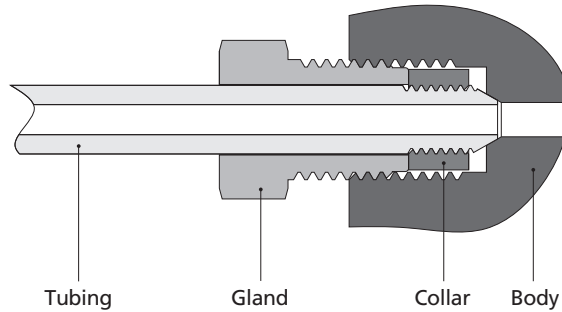
Technical Information

Part Number Crossover Charts

Features

- ⦿ Working pressure: 20,000 psig (1379 bar)
- ⦿ Working temperature range: -423°F to 1200°F (-252°C to 649°C)
- ⦿ Use with T20M series tubing as standard, tubing sizes available in 1/4", 3/8", 9/16", 3/4" and 1"
- ⦿ High tensile 316 stainless steel material
- ⦿ Every fitting marked with size, material and heat number

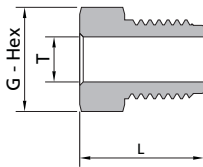
Construction



Ordering Information and Dimensions

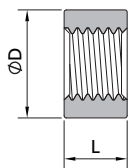
Dimensions are for reference only and are subject to change.

Glands



| Tube | | | |
|-------------------|-----------------|----------------------|-------------|
| T - Tube O.D. in. | Ordering Number | Dimensions, in. (mm) | |
| | | G | L |
| 1/4 | SS-MG-MF4 | 0.50 (12.7) | 0.58 (14.7) |
| 3/8 | SS-MG-MF6 | 0.63 (15.9) | 0.73 (18.5) |
| 9/16 | SS-MG-MF9 | 0.94 (23.8) | 0.88 (22.4) |
| 3/4 | SS-MG-MF12 | 1.19 (30.2) | 1.00 (25.4) |
| 1 | SS-MG-MF16 | 1.38 (34.9) | 1.38 (35.1) |

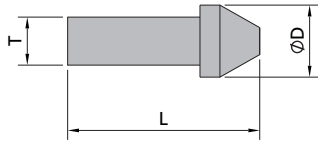
Collars



| Tube | | | |
|-------------------|-----------------|----------------------|-------------|
| T - Tube O.D. in. | Ordering Number | Dimensions, in. (mm) | |
| | | D | L |
| 1/4 | SS-MCO-MF4 | 0.38 (9.7) | 0.22 (5.6) |
| 3/8 | SS-MCO-MF6 | 0.47 (11.9) | 0.25 (6.4) |
| 9/16 | SS-MCO-MF9 | 0.72 (18.3) | 0.31 (7.9) |
| 3/4 | SS-MCO-MF12 | 0.94 (23.8) | 0.37 (9.4) |
| 1 | SS-MCO-MF16 | 1.25 (31.8) | 0.50 (12.7) |

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 Technical Information
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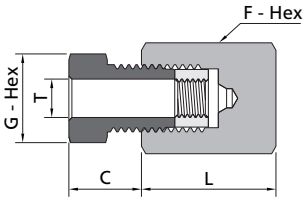
Plugs^①



| Tube | | | |
|-------------------|-----------------|----------------------|-------------|
| T - Tube O.D. in. | Ordering Number | Dimensions, in. (mm) | |
| | | D | L |
| 1/4 | SS-MTP-MF4 | 0.38 (9.7) | 0.94 (23.8) |
| 3/8 | SS-MTP-MF6 | 0.47 (11.9) | 1.18 (30.0) |
| 9/16 | SS-MTP-MF9 | 0.72 (18.3) | 1.40 (35.6) |
| 3/4 | SS-MTP-MF12 | 0.94 (23.8) | 1.69 (42.9) |
| 1 | SS-MTP-MF16 | 1.25 (31.8) | 2.20 (55.9) |

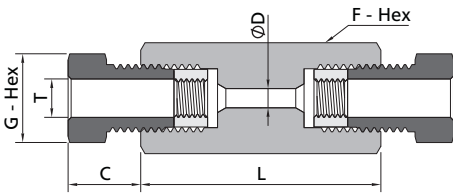
① When using plug, collar is not required.

Caps



| Tube | | | | | |
|-------------------|-----------------|----------------------|-------------|-------------|-------------|
| T - Tube O.D. in. | Ordering Number | Dimensions, in. (mm) | | | |
| | | L | C | G | F |
| 1/4 | SS-MTC-MF4 | 0.81 (20.6) | 0.38 (9.7) | 0.50 (12.7) | 0.63 (15.9) |
| 3/8 | SS-MTC-MF6 | 1.13 (28.6) | 0.44 (11.2) | 0.63 (15.9) | 0.75 (19.1) |
| 9/16 | SS-MTC-MF9 | 1.38 (34.9) | 0.55 (14.0) | 0.94 (23.8) | 1.00 (25.4) |
| 3/4 | SS-MTC-MF12 | 1.75 (44.5) | 0.60 (15.2) | 1.19 (30.2) | 1.38 (34.9) |
| 1 | SS-MTC-MF16 | 2.25 (57.2) | 0.74 (18.7) | 1.38 (34.9) | 1.75 (44.5) |

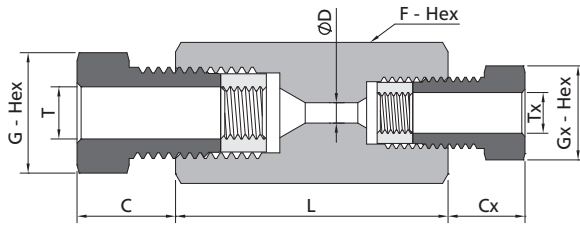
Unions



| Tube | | | | | | |
|-------------------|-----------------|----------------------|-------------|-------------|-------------|-------------|
| T - Tube O.D. in. | Ordering Number | Dimensions, in. (mm) | | | | |
| | | L | C | D | G | F |
| 1/4 | SS-MU-MF4 | 1.62 (41.1) | 0.38 (9.7) | 0.11 (2.8) | 0.50 (12.7) | 0.63 (15.9) |
| 3/8 | SS-MU-MF6 | 1.75 (44.5) | 0.44 (11.2) | 0.20 (5.1) | 0.63 (15.9) | 0.75 (19.1) |
| 9/16 | SS-MU-MF9 | 2.14 (54.3) | 0.55 (14.0) | 0.31 (7.9) | 0.94 (23.8) | 1.00 (25.4) |
| 3/4 | SS-MU-MF12 | 2.50 (63.5) | 0.60 (15.2) | 0.44 (11.1) | 1.19 (30.2) | 1.38 (34.9) |
| 1 | SS-MU-MF16 | 3.50 (88.9) | 0.74 (18.7) | 0.56 (14.3) | 1.38 (34.9) | 1.75 (44.5) |

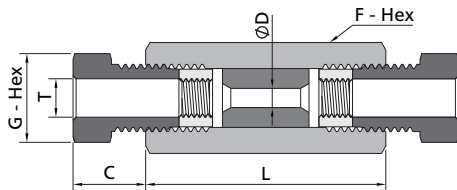
| |
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Reducing Unions



| Tube | | | Dimensions, in. (mm) | | | | | | | |
|-------------------|--------------------|-----------------|----------------------|-------------|-------------|-------------|-------------|-------------|-------------|--|
| T - Tube O.D. in. | Tx - Tube O.D. in. | Ordering Number | L | C | Cx | D | G | Gx | F | |
| 3/8 | 1/4 | SS-MU-MF6-MF4 | 1.75 (44.5) | 0.44 (11.2) | 0.38 (9.7) | 0.11 (2.8) | 0.63 (15.9) | 0.50 (12.7) | 0.75 (19.1) | |
| 9/16 | 1/4 | SS-MU-MF9-MF4 | 2.00 (50.8) | 0.55 (14.0) | 0.38 (9.7) | 0.11 (2.8) | 0.94 (23.8) | 0.50 (12.7) | 1.00 (25.4) | |
| 9/16 | 3/8 | SS-MU-MF9-MF6 | 2.00 (50.8) | 0.55 (14.0) | 0.44 (11.2) | 0.20 (5.1) | 0.94 (23.8) | 0.63 (15.9) | 1.00 (25.4) | |
| 3/4 | 1/4 | SS-MU-MF12-MF4 | 2.25 (57.2) | 0.60 (15.2) | 0.38 (9.7) | 0.11 (2.8) | 1.19 (30.2) | 0.50 (12.7) | 1.38 (34.9) | |
| 3/4 | 3/8 | SS-MU-MF12-MF6 | 2.25 (57.2) | 0.60 (15.2) | 0.44 (11.2) | 0.20 (5.1) | 1.19 (30.2) | 0.63 (15.9) | 1.38 (34.9) | |
| 3/4 | 9/16 | SS-MU-MF12-MF9 | 2.50 (63.5) | 0.60 (15.2) | 0.55 (14.0) | 0.31 (7.9) | 1.19 (30.2) | 0.94 (23.8) | 1.38 (34.9) | |
| 1 | 1/4 | SS-MU-MF16-MF4 | 2.75 (69.9) | 0.74 (18.7) | 0.38 (9.7) | 0.11 (2.8) | 1.38 (34.9) | 0.50 (12.7) | 1.75 (44.5) | |
| 1 | 3/8 | SS-MU-MF16-MF6 | 2.88 (73.0) | 0.74 (18.7) | 0.44 (11.2) | 0.20 (5.1) | 1.38 (34.9) | 0.63 (15.9) | 1.75 (44.5) | |
| 1 | 9/16 | SS-MU-MF16-MF9 | 3.00 (76.2) | 0.74 (18.7) | 0.55 (14.0) | 0.31 (7.9) | 1.38 (34.9) | 0.94 (23.8) | 1.75 (44.5) | |
| 1 | 3/4 | SS-MU-MF16-MF12 | 3.00 (76.2) | 0.74 (18.7) | 0.60 (15.2) | 0.44 (11.1) | 1.38 (34.9) | 1.19 (30.2) | 1.75 (44.5) | |

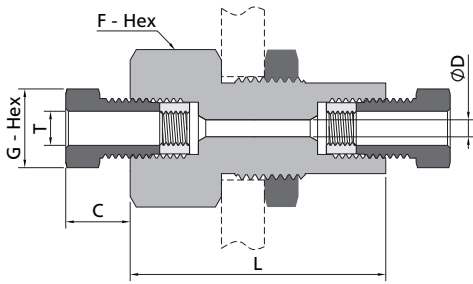
Unions (Slip Type)



| Tube | | | Dimensions, in. (mm) | | | | |
|-------------------|-----------------|-------------|----------------------|-------------|-------------|-------------|--|
| T - Tube O.D. in. | Ordering Number | L | C | D | G | F | |
| 1/4 | SS-MSU-MF4 | 1.62 (41.1) | 0.38 (9.7) | 0.11 (2.8) | 0.50 (12.7) | 0.63 (15.9) | |
| 3/8 | SS-MSU-MF6 | 1.75 (44.5) | 0.44 (11.2) | 0.20 (5.1) | 0.63 (15.9) | 0.75 (19.1) | |
| 9/16 | SS-MSU-MF9 | 2.14 (54.3) | 0.55 (14.0) | 0.31 (7.9) | 0.94 (23.8) | 1.00 (25.4) | |
| 3/4 | SS-MSU-MF12 | 2.50 (63.5) | 0.60 (15.2) | 0.44 (11.1) | 1.19 (30.2) | 1.38 (34.9) | |
| 1 | SS-MSU-MF16 | 3.50 (88.9) | 0.74 (18.7) | 0.56 (14.3) | 1.38 (34.9) | 1.75 (44.5) | |

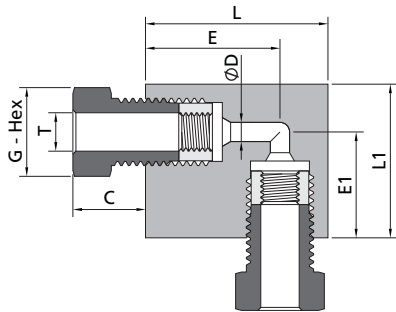
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Bulkhead Unions



| Tube | | Dimensions, in. (mm) | | | | | | |
|-------------------|-----------------|----------------------|-------------|-------------|-------------|-------------|-----------------|----------------------|
| T - Tube O.D. in. | Ordering Number | L | C | D | G | F | Panel Hole Size | Max. Panel Thickness |
| 1/4 | SS-MBU-MF4 | 1.88 (47.8) | 0.38 (9.7) | 0.11 (2.8) | 0.50 (12.7) | 1.00 (25.4) | 0.81 (20.6) | 0.38 (9.7) |
| 3/8 | SS-MBU-MF6 | 2.00 (50.8) | 0.44 (11.2) | 0.20 (5.1) | 0.63 (15.9) | 1.06 (27.0) | 0.94 (23.9) | 0.38 (9.7) |
| 9/16 | SS-MBU-MF9 | 2.38 (60.5) | 0.55 (14.0) | 0.31 (7.9) | 0.94 (23.8) | 1.38 (34.9) | 1.13 (28.6) | 0.38 (9.7) |
| 3/4 | SS-MBU-MF12 | 2.62 (66.5) | 0.60 (15.2) | 0.44 (11.1) | 1.19 (30.2) | 1.88 (47.6) | 1.69 (42.9) | 0.38 (9.7) |
| 1 | SS-MBU-MF16 | 3.50 (88.9) | 0.74 (18.7) | 0.56 (14.3) | 1.38 (34.9) | 2.13 (54.0) | 1.94 (49.3) | 0.38 (9.7) |

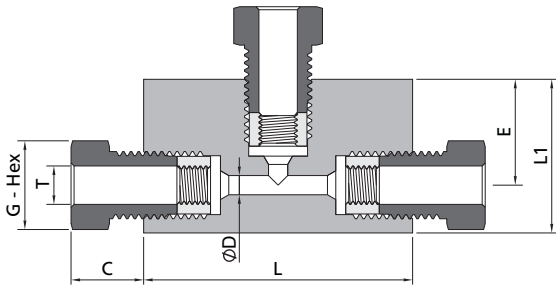
Union Elbows



| Tube | | Dimensions, in. (mm) | | | | | | | |
|-------------------|-----------------|----------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| T - Tube O.D. in. | Ordering Number | C | D | G | L | E | L1 | E1 | Thickness |
| 1/4 | SS-MLU-MF4 | 0.38 (9.7) | 0.11 (2.8) | 0.50 (12.7) | 1.12 (28.4) | 0.75 (19.1) | 1.12 (28.4) | 0.75 (19.1) | 0.63 (15.9) |
| 3/8 | SS-MLU-MF6 | 0.44 (11.2) | 0.20 (5.1) | 0.63 (15.9) | 1.38 (34.9) | 1.00 (25.4) | 1.38 (34.9) | 1.00 (25.4) | 0.75 (19.1) |
| 9/16 | SS-MLU-MF9 | 0.55 (14.0) | 0.31 (7.9) | 0.94 (23.8) | 1.75 (44.5) | 1.25 (31.8) | 1.75 (44.5) | 1.25 (31.8) | 1.00 (25.4) |
| 3/4 | SS-MLU-MF12 | 0.60 (15.2) | 0.44 (11.1) | 1.19 (30.2) | 2.25 (57.2) | 1.50 (38.1) | 2.25 (57.2) | 1.50 (38.1) | 1.38 (34.9) |
| 1 | SS-MLU-MF16 | 0.74 (18.7) | 0.56 (14.3) | 1.38 (34.9) | 3.00 (76.2) | 2.06 (52.3) | 3.00 (76.2) | 2.06 (52.3) | 1.75 (44.5) |

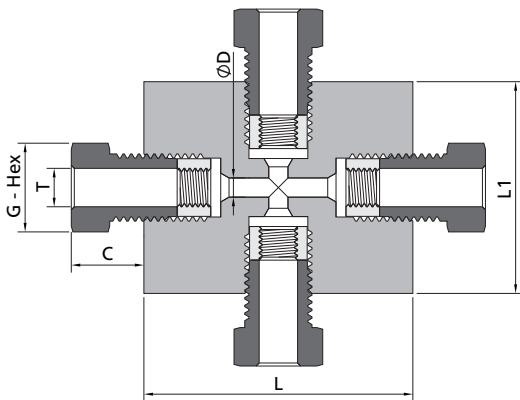
| |
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Union Tees



| Tube | | Dimensions, in. (mm) | | | | | | |
|-------------------|-----------------|----------------------|-------------|-------------|--------------|-------------|-------------|-------------|
| T - Tube O.D. in. | Ordering Number | C | D | G | L | L1 | E | Thickness |
| 1/4 | SS-MT-MF4 | 0.38 (9.7) | 0.11 (2.8) | 0.50 (12.7) | 1.50 (38.1) | 1.12 (28.4) | 0.75 (19.1) | 0.63 (15.9) |
| 3/8 | SS-MT-MF6 | 0.44 (11.2) | 0.20 (5.1) | 0.63 (15.9) | 2.00 (50.8) | 1.38 (34.9) | 1.00 (25.4) | 0.75 (19.1) |
| 9/16 | SS-MT-MF9 | 0.55 (14.0) | 0.31 (7.9) | 0.94 (23.8) | 2.50 (63.5) | 1.75 (44.5) | 1.25 (31.8) | 1.00 (25.4) |
| 3/4 | SS-MT-MF12 | 0.60 (15.2) | 0.44 (11.1) | 1.19 (30.2) | 3.00 (76.2) | 2.25 (57.2) | 1.50 (38.1) | 1.38 (34.9) |
| 1 | SS-MT-MF16 | 0.74 (18.7) | 0.56 (14.3) | 1.38 (34.9) | 4.12 (104.6) | 3.00 (76.2) | 2.06 (52.3) | 1.75 (44.5) |

Union Crosses



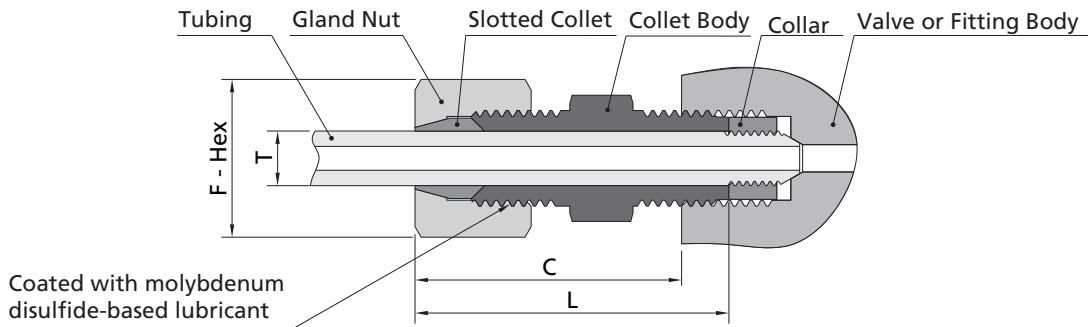
| Tube | | Dimensions, in. (mm) | | | | | |
|-------------------|-----------------|----------------------|-------------|-------------|--------------|--------------|-------------|
| T - Tube O.D. in. | Ordering Number | C | D | G | L | L1 | Thickness |
| 1/4 | SS-MX-MF4 | 0.38 (9.7) | 0.11 (2.8) | 0.50 (12.7) | 1.50 (38.1) | 1.50 (38.1) | 0.63 (15.9) |
| 3/8 | SS-MX-MF6 | 0.44 (11.2) | 0.20 (5.1) | 0.63 (15.9) | 2.00 (50.8) | 2.00 (50.8) | 0.75 (19.1) |
| 9/16 | SS-MX-MF9 | 0.55 (14.0) | 0.31 (7.9) | 0.94 (23.8) | 2.50 (63.5) | 2.50 (63.5) | 1.00 (25.4) |
| 3/4 | SS-MX-MF12 | 0.60 (15.2) | 0.44 (11.1) | 1.19 (30.2) | 3.00 (76.2) | 3.00 (76.2) | 1.38 (34.9) |
| 1 | SS-MX-MF16 | 0.74 (18.7) | 0.56 (14.3) | 1.38 (34.9) | 4.12 (104.6) | 4.12 (104.6) | 1.75 (44.5) |

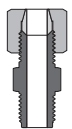
Anti-vibration Gland Assemblies

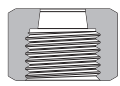
Working pressure: 20,000 psig (1379 bar)


Tubing systems may be subject to extreme vibration or shock. In such applications, these assemblies provide the same reliable connection as standard FITOK glands to essentially prolong vibrational fatigue life.


A complete ordering number for anti-vibration gland assembly (for example: SS-MAV-MF4) includes gland nut, slotted collet and collet body. These three parts can also be ordered separately, as shown in the tables below. To order components with anti-vibration gland assemblies, add "-AV" to ordering number.



| Tube | | | | | |
|---|-------------------|-----------------|----------------------|-------------|-------------|
| Anti-vibration Gland Assemblies | T - Tube O.D. in. | Ordering Number | Dimensions, in. (mm) | | |
| | | | L | C | F |
|  | 1/4 | SS-MAV-MF4 | 1.24 (31.6) | 1.05 (26.7) | 0.63 (15.9) |
| | 3/8 | SS-MAV-MF6 | 1.50 (38.1) | 1.22 (30.9) | 0.81 (20.6) |
| | 9/16 | SS-MAV-MF9 | 1.78 (45.2) | 1.42 (36.0) | 0.94 (23.8) |
| | 3/4 | SS-MAV-MF12 | 2.00 (50.8) | 1.61 (40.8) | 1.38 (34.9) |
| | 1 | SS-MAV-MF16 | 2.38 (60.5) | 1.74 (44.3) | 1.50 (38.1) |

| Tube | | |
|---|-------------------|-----------------|
| Gland Nut | T - Tube O.D. in. | Ordering Number |
|  | 1/4 | SS-MAV-MF4-N |
| | 3/8 | SS-MAV-MF6-N |
| | 9/16 | SS-MAV-MF9-N |
| | 3/4 | SS-MAV-MF12-N |
| | 1 | SS-MAV-MF16-N |

| Tube | | |
|---|-------------------|-----------------|
| Slotted Collet | T - Tube O.D. in. | Ordering Number |
|  | 1/4 | SS-MAV-MF4-SC |
| | 3/8 | SS-MAV-MF6-SC |
| | 9/16 | SS-MAV-MF9-SC |
| | 3/4 | SS-MAV-MF12-SC |
| | 1 | SS-MAV-MF16-SC |

| Tube | | |
|---|-------------------|-----------------|
| Collet Body | T - Tube O.D. in. | Ordering Number |
|  | 1/4 | SS-MAV-MF4-B |
| | 3/8 | SS-MAV-MF6-B |
| | 9/16 | SS-MAV-MF9-B |
| | 3/4 | SS-MAV-MF12-B |
| | 1 | SS-MAV-MF16-B |

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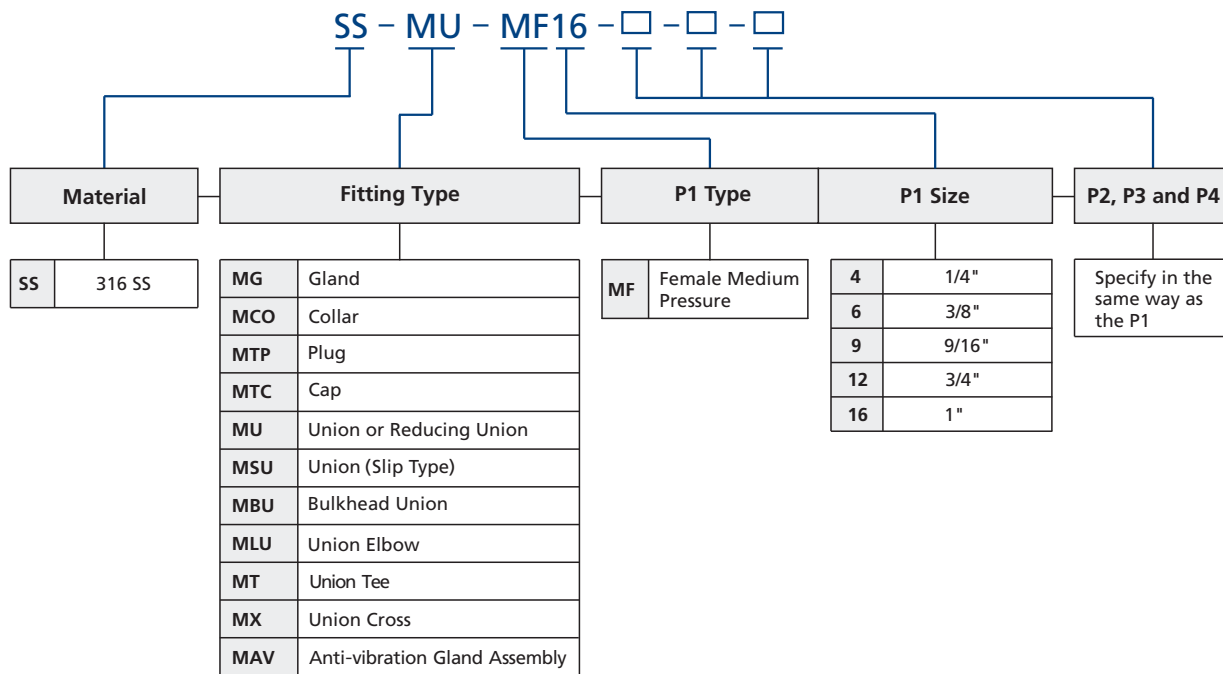
Installation Instructions

Please see H-07.

Connection Information

Please see I-02.

Ordering Number Description



- NOTES: 1. For more details regarding Medium Pressure connection, please see **Connection Information** on I-02.
2. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.

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60 Series High Pressure Fittings

60,000 psig (4137 bar)



| | | | | | | | | | |
|------------------------------|-----------------------|-------------------------------------|---------------|-----------------------|--------|--------------|-----------------|--------|----------|
| Part Number Crossover Charts | Technical Information | Tools and Installation Instructions | Subsea Valves | Sour Service Products | Valves | Line Filters | Quick Couplings | Tubing | Fittings |
|------------------------------|-----------------------|-------------------------------------|---------------|-----------------------|--------|--------------|-----------------|--------|----------|

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Glands - HG



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[Installation Instructions](#)

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Collars - HCO



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[Connection Information](#)

[I-02](#)

Plugs - HTP



A-24

[Ordering Number Description](#)

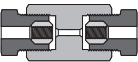
[A-28](#)

Caps - HTC



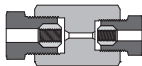
A-25

Unions - HUN



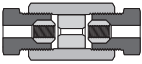
A-25

Reducing Unions - HUN



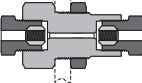
A-25

Unions (Slip Type) - HSU



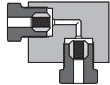
A-26

Bulkhead Unions - HBU



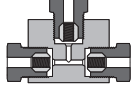
A-26

Union Elbows - HLU



A-26

Union Tees - HT



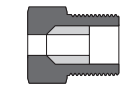
A-27

Union Crosses - HX



A-27

Anti-vibration Gland Assemblies - HAV

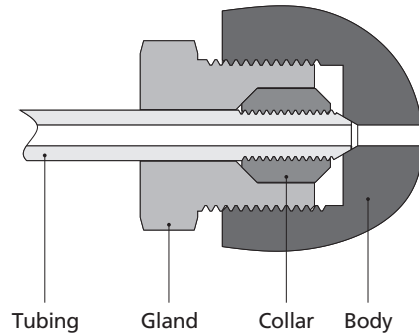


A-27

Features

- ⦿ Working pressure: 60,000 psig (4137 bar)
- ⦿ Working temperature range: -423°F to 1200°F (-252°C to 649°C)
- ⦿ Use with T60 series tubing as standard, tubing sizes available in 1/4", 3/8" and 9/16"
- ⦿ High tensile 316 stainless steel material
- ⦿ Every fitting marked with size, material and heat number

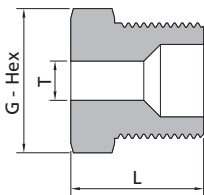
Construction



Ordering Information and Dimensions

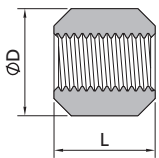
Dimensions are for reference only and are subject to change.

Glands



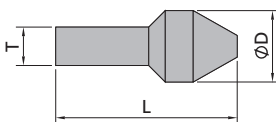
| Tube | | | |
|-------------------------|-----------------|----------------------|-------------|
| T - Tube O.D. in. | Ordering Number | Dimensions, in. (mm) | |
| | | G | L |
| 1/4 | SS-HG-HF4 | 0.63 (15.9) | 0.82 (20.8) |
| 3/8 | SS-HG-HF6 | 0.81 (20.6) | 1.13 (28.7) |
| 9/16 | SS-HG-HF9 | 1.19 (30.2) | 1.50 (38.1) |

Collars



| Tube | | | |
|-------------------------|-----------------|----------------------|-------------|
| T - Tube O.D. in. | Ordering Number | Dimensions, in. (mm) | |
| | | D | L |
| 1/4 | SS-HCO-HF4 | 0.38 (9.6) | 0.38 (9.6) |
| 3/8 | SS-HCO-HF6 | 0.50 (12.7) | 0.54 (13.7) |
| 9/16 | SS-HCO-HF9 | 0.81 (20.6) | 0.62 (15.8) |

Plugs^①

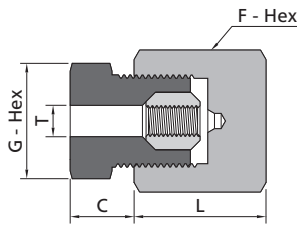


| Tube | | | |
|-------------------------|-----------------|----------------------|-------------|
| T - Tube O.D. in. | Ordering Number | Dimensions, in. (mm) | |
| | | D | L |
| 1/4 | SS-HTP-HF4 | 0.38 (9.6) | 1.04 (26.4) |
| 3/8 | SS-HTP-HF6 | 0.50 (12.7) | 1.35 (34.3) |
| 9/16 | SS-HTP-HF9 | 0.81 (20.6) | 1.89 (48.0) |

① When using plug, collar is not required.

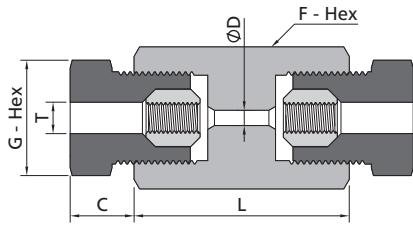
| |
|-------------------------------------|
| Fittings |
| Tubing |
| Quick Couplings |
| Line Filters |
| Valves |
| Sour Service Products |
| Subsea Valves |
| Tools and Installation Instructions |
| Technical Information |
| Part Number Crossover Charts |

Caps



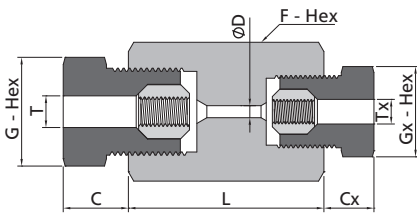
| Tube | | Dimensions, in. (mm) | | | | |
|-------------------|-----------------|----------------------|-------------|-------------|-------------|--|
| T - Tube O.D. in. | Ordering Number | L | C | G | F | |
| 1/4 | SS-HTC-HF4 | 0.75 (19.1) | 0.47 (11.9) | 0.63 (15.9) | 0.75 (19.1) | |
| 3/8 | SS-HTC-HF6 | 1.13 (28.6) | 0.61 (15.6) | 0.81 (20.6) | 1.00 (25.4) | |
| 9/16 | SS-HTC-HF9 | 1.38 (34.9) | 0.95 (24.1) | 1.19 (30.2) | 1.38 (34.9) | |

Unions



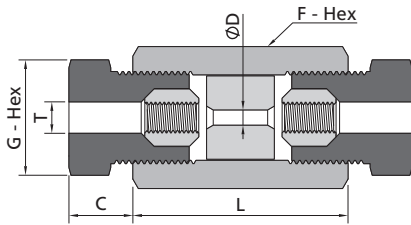
| Tube | | Dimensions, in. (mm) | | | | |
|-------------------|-----------------|----------------------|-------------|------------|-------------|-------------|
| T - Tube O.D. in. | Ordering Number | L | C | D | G | F |
| 1/4 | SS-HUN-HF4 | 1.38 (34.9) | 0.47 (11.9) | 0.09 (2.3) | 0.63 (15.9) | 0.75 (19.1) |
| 3/8 | SS-HUN-HF6 | 1.75 (44.5) | 0.61 (15.6) | 0.13 (3.3) | 0.81 (20.6) | 1.00 (25.4) |
| 9/16 | SS-HUN-HF9 | 2.19 (55.6) | 0.95 (24.1) | 0.19 (4.8) | 1.19 (30.2) | 1.38 (34.9) |

Reducing Unions



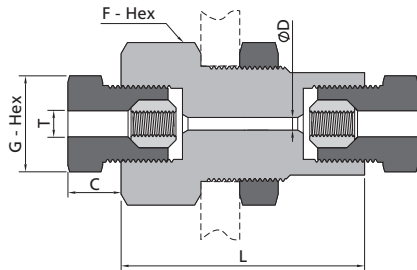
| Tube | | | Dimensions, in. (mm) | | | | | | |
|-------------------|--------------------|-----------------|----------------------|-------------|-------------|------------|-------------|-------------|-------------|
| T - Tube O.D. in. | Tx - Tube O.D. in. | Ordering Number | L | C | Cx | D | G | Gx | F |
| 3/8 | 1/4 | SS-HUN-HF6-HF4 | 1.63 (41.3) | 0.61 (15.6) | 0.47 (11.9) | 0.09 (2.3) | 0.81 (20.6) | 0.63 (15.9) | 1.00 (25.4) |
| 9/16 | 1/4 | SS-HUN-HF9-HF4 | 1.75 (44.5) | 0.95 (24.1) | 0.47 (11.9) | 0.09 (2.3) | 1.19 (30.2) | 0.63 (15.9) | 1.38 (34.9) |
| 9/16 | 3/8 | SS-HUN-HF9-HF6 | 2.00 (50.8) | 0.95 (24.1) | 0.61 (15.6) | 0.13 (3.3) | 1.19 (30.2) | 0.81 (20.6) | 1.38 (34.9) |

Unions (Slip Type)



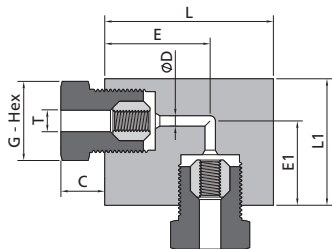
| Tube | | Dimensions, in. (mm) | | | | |
|-------------------|-----------------|----------------------|-------------|------------|-------------|-------------|
| T - Tube O.D. in. | Ordering Number | L | C | D | G | F |
| 1/4 | SS-HSU-HF4 | 1.38 (34.9) | 0.47 (11.9) | 0.09 (2.3) | 0.63 (15.9) | 0.75 (19.1) |
| 3/8 | SS-HSU-HF6 | 1.75 (44.5) | 0.61 (15.6) | 0.13 (3.3) | 0.81 (20.6) | 1.00 (25.4) |
| 9/16 | SS-HSU-HF9 | 2.19 (55.6) | 0.95 (24.1) | 0.19 (4.8) | 1.19 (30.2) | 1.38 (34.9) |

Bulkhead Unions



| Tube | | Dimensions, in. (mm) | | | | | | |
|-------------------|-----------------|----------------------|-------------|------------|-------------|-------------|-----------------|----------------------|
| T - Tube O.D. in. | Ordering Number | L | C | D | G | F | Panel Hole Size | Max. Panel Thickness |
| 1/4 | SS-HBU-HF4 | 1.88 (47.8) | 0.47 (11.9) | 0.09 (2.3) | 0.63 (15.9) | 1.06 (27.0) | 0.94 (23.9) | 0.38 (9.7) |
| 3/8 | SS-HBU-HF6 | 2.38 (60.5) | 0.61 (15.6) | 0.13 (3.3) | 0.81 (20.6) | 1.38 (34.9) | 1.13 (28.6) | 0.38 (9.7) |
| 9/16 | SS-HBU-HF9 | 2.75 (69.9) | 0.95 (24.1) | 0.19 (4.8) | 1.19 (30.2) | 1.88 (47.6) | 1.69 (42.9) | 0.38 (9.7) |

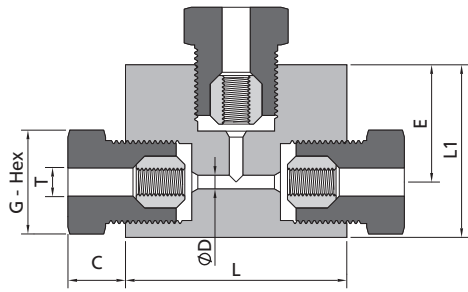
Union Elbows



| Tube | | Dimensions, in. (mm) | | | | | | | |
|-------------------|-----------------|----------------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|
| T - Tube O.D. in. | Ordering Number | C | D | G | L | E | L1 | E1 | Thickness |
| 1/4 | SS-HLU-HF4 | 0.47 (11.9) | 0.09 (2.3) | 0.63 (15.9) | 1.50 (38.1) | 0.88 (22.4) | 1.00 (25.4) | 0.62 (15.7) | 0.75 (19.1) |
| 3/8 | SS-HLU-HF6 | 0.61 (15.6) | 0.13 (3.3) | 0.81 (20.6) | 2.00 (50.8) | 1.25 (31.8) | 1.50 (38.1) | 1.00 (25.4) | 1.00 (25.4) |
| 9/16 | SS-HLU-HF9 | 0.95 (24.1) | 0.19 (4.8) | 1.19 (30.2) | 2.62 (66.5) | 1.88 (47.8) | 1.88 (47.8) | 1.12 (28.4) | 1.50 (38.1) |

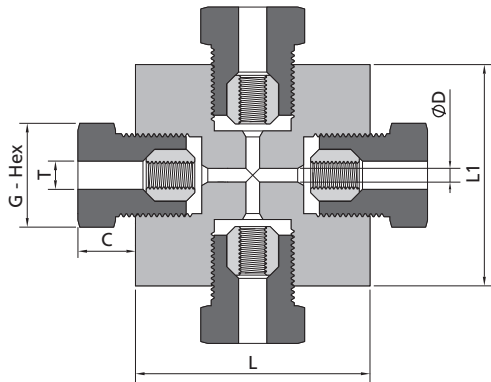
| |
|-------------------------------------|
| Fittings |
| Tubing |
| Quick Couplings |
| Line Filters |
| Valves |
| Sour Service Products |
| Subsea Valves |
| Tools and Installation Instructions |
| Technical Information |
| Part Number Crossover Charts |

Union Tees



| Tube | | | | | | | | |
|-------------------|-----------------|----------------------|------------|-------------|-------------|-------------|-------------|-------------|
| T - Tube O.D. in. | Ordering Number | Dimensions, in. (mm) | | | | | | |
| | | C | D | G | L | L1 | E | Thickness |
| 1/4 | SS-HT-HF4 | 0.47 (11.9) | 0.09 (2.3) | 0.63 (15.9) | 2.00 (50.8) | 1.25 (31.8) | 0.88 (22.4) | 0.75 (19.1) |
| 3/8 | SS-HT-HF6 | 0.61 (15.6) | 0.13 (3.3) | 0.81 (20.6) | 2.00 (50.8) | 1.56 (39.6) | 1.06 (26.9) | 1.00 (25.4) |
| 9/16 | SS-HT-HF9 | 0.95 (24.1) | 0.19 (4.8) | 1.19 (30.2) | 2.62 (66.5) | 2.12 (53.8) | 1.38 (35.0) | 1.50 (38.1) |

Union Crosses



| Tube | | | | | | | | |
|-------------------|-----------------|----------------------|------------|-------------|-------------|-------------|-------------|--|
| T - Tube O.D. in. | Ordering Number | Dimensions, in. (mm) | | | | | | |
| | | C | D | G | L | L1 | Thickness | |
| 1/4 | SS-HX-HF4 | 0.47 (11.9) | 0.09 (2.3) | 0.63 (15.9) | 2.00 (50.8) | 1.25 (31.8) | 0.75 (19.1) | |
| 3/8 | SS-HX-HF6 | 0.61 (15.6) | 0.13 (3.3) | 0.81 (20.6) | 2.00 (50.8) | 2.12 (53.8) | 1.00 (25.4) | |
| 9/16 | SS-HX-HF9 | 0.95 (24.1) | 0.19 (4.8) | 1.19 (30.2) | 2.62 (66.5) | 2.75 (69.9) | 1.50 (38.1) | |

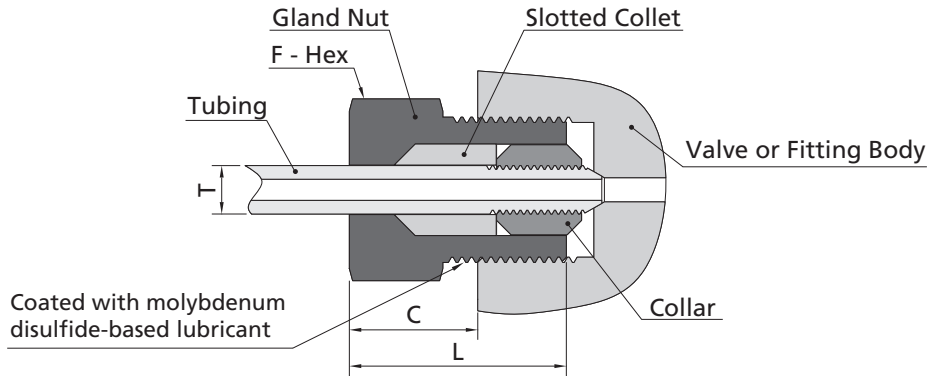
Anti-vibration Gland Assemblies

Working pressure: 60,000 psig (4137 bar)

Tubing systems may be subject to extreme vibration or shock. In such applications, these assemblies provide the same reliable connection as standard FITOK glands to essentially prolong vibrational fatigue life.

A complete ordering number for anti-vibration gland assembly (for example: SS-HAV-HF4) includes gland nut and slotted collet. These two parts can also be ordered separately, as shown in the tables below. To order components with anti-vibration gland assemblies, add "-AV" to ordering number.

Fittings
 Tubing
 Quick Couplings
 Line Filters
 Valves
 Sour Service Products
 Subsea Valves
 Tools and Installation Instructions
 Technical Information
 Part Number Crossover Charts



| Tube | | | | | |
|---------------------------------|-------------------|-----------------|----------------------|-------------|-------------|
| Anti-vibration Gland Assemblies | T - Tube O.D. in. | Ordering Number | Dimensions, in. (mm) | | |
| | | | L | C | F |
| | 1/4 | SS-HAV-HF4 | 0.81 (20.6) | 0.47 (11.9) | 0.63 (15.9) |
| | 3/8 | SS-HAV-HF6 | 1.12 (28.4) | 0.61 (15.6) | 0.81 (20.6) |
| | 9/16 | SS-HAV-HF9 | 1.50 (38.1) | 0.95 (24.1) | 1.19 (30.2) |

| Tube | | |
|-----------|-------------------|-----------------|
| Gland Nut | T - Tube O.D. in. | Ordering Number |
| | 1/4 | SS-HAV-HF4-G |
| | 3/8 | SS-HAV-HF6-G |
| | 9/16 | SS-HAV-HF9-G |

| Tube | | |
|----------------|-------------------|-----------------|
| Slotted Collet | T - Tube O.D. in. | Ordering Number |
| | 1/4 | SS-HAV-HF4-SC |
| | 3/8 | SS-HAV-HF6-SC |
| | 9/16 | SS-HAV-HF9-SC |

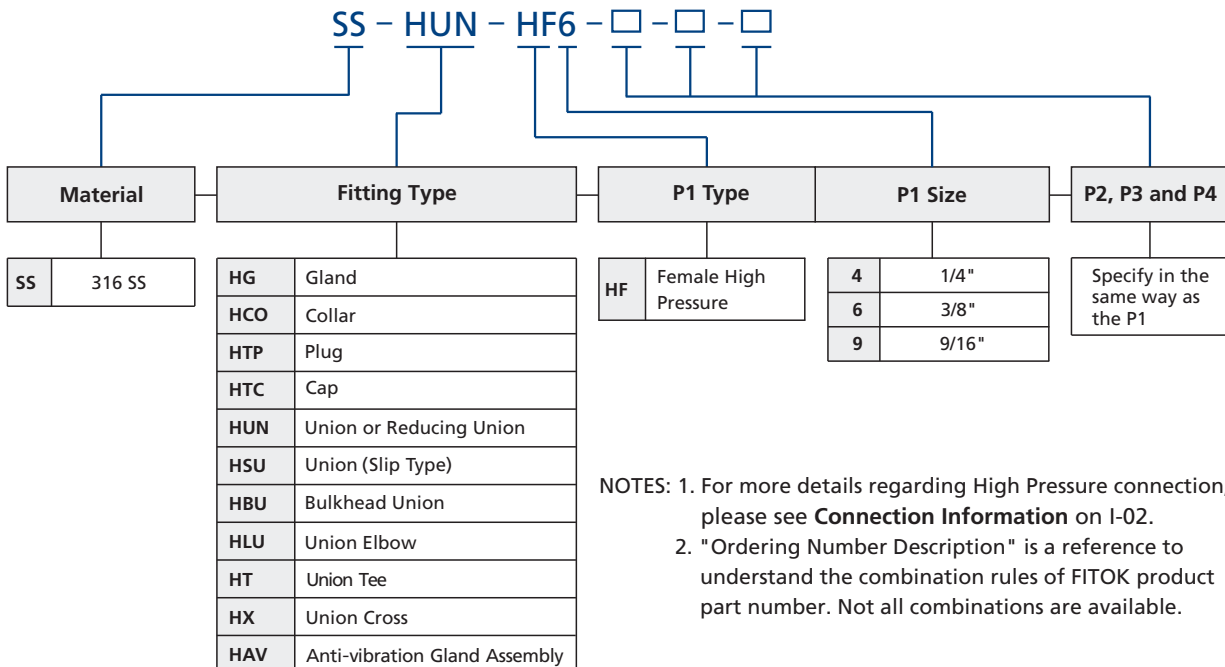
Installation Instructions

Please see H-07.

Connection Information

Please see I-02.

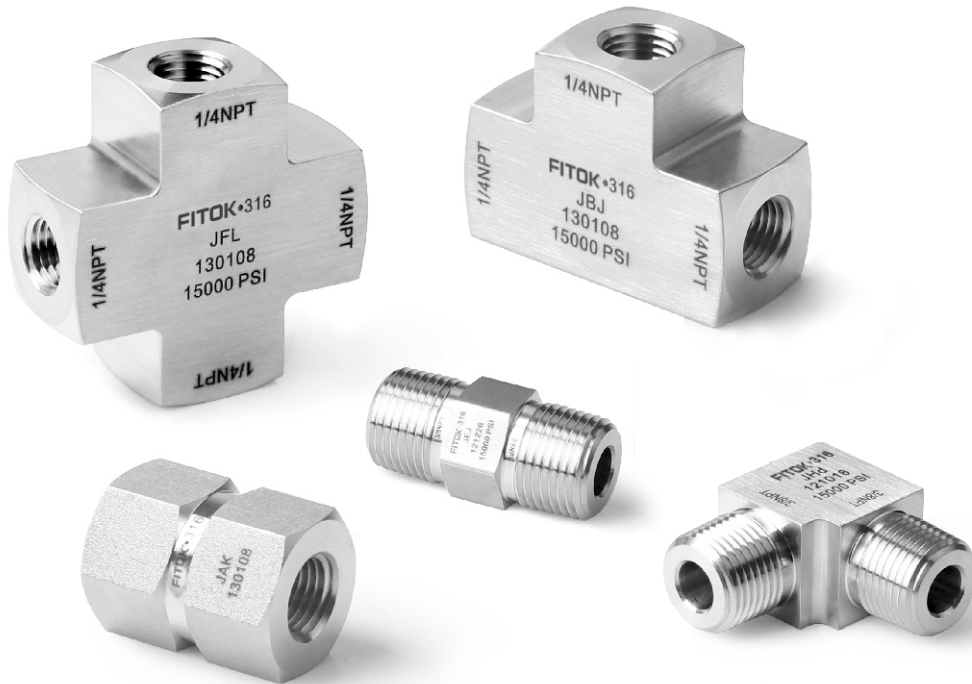
Ordering Number Description



| |
|-------------------------------------|
| Fittings |
| Tubing |
| Quick Couplings |
| Line Filters |
| Valves |
| Sour Service Products |
| Subsea Valves |
| Tools and Installation Instructions |
| Technical Information |
| Part Number Crossover Charts |

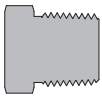
PMH Series Pipe Fittings

| |
|-------------------------------------|
| Fittings |
| Tubing |
| Quick Couplings |
| Line Filters |
| Valves |
| Sour Service Products |
| Subsea Valves |
| Tools and Installation Instructions |
| Technical Information |
| Part Number Crossover Charts |



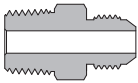
Contents

Pipe Plugs - HPP



A-32

Hex Nipples - HPN



A-33

Hex Long Nipples - HPL



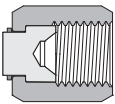
A-39

Pipe Caps - HPC



A-40

Pipe Cap Assemblies (Moveable Insert) - HMC



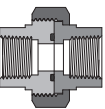
A-41

Hex Couplings - HPG



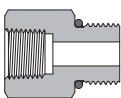
A-42

Zero-Clearance Unions - HPZ



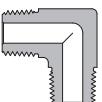
A-45

Adapters - HPA



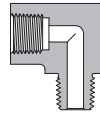
A-46

Male Elbows - HPE



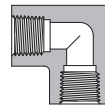
A-52

Street Elbows - HPE



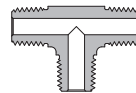
A-53

Female Elbows - HPE



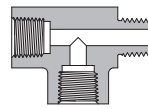
A-55

Male Tees - HPT



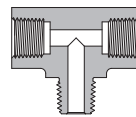
A-55

Male Street Tees - HPT



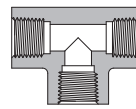
A-56

Male Branch Tees - HPT



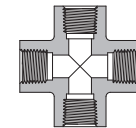
A-57

Female Tees - HPT



A-57

Female Crosses - HPX



A-58

Connection Information

I-02

Ordering Number Description

A-59

Fittings

Tubing

Quick Couplings

Line Filters

Valves

Sour Service Products

Subsea Valves

Tools and Installation Instructions

Technical Information

Part Number Crossover Charts

Features

- ⦿ High tensile 316 stainless steel as standard material, other materials available upon request
- ⦿ The hardened threads with smooth surface finishing avoid galling and help to extend the fitting service life
- ⦿ Radius junction design for elbows provides smooth flow path
- ⦿ Every fitting marked with size, material and heat number

Thread Specifications

| Connection Type | Code | Thread Type | Thread Specification |
|---------------------------|------|-------------|---|
| Male NPT | NS | NPT | ASME B1.20.1, SAE AS71051 |
| Female NPT | FNS | | |
| Male ISO Tapered Thread | RT | ISO Tapered | ISO 7-1, BS EN 10226-1, DIN EN 10226-1, JIS B0203 |
| Female ISO Tapered Thread | FRT | | |
| Male SAE O-ring | SH | SAE/MS | ASME B1.1 |
| Female SAE O-ring | US | | |
| Male JIC | JM | | |
| Female JIC | JF | | |

① For more information, please refer to **Technical Information** on Page I-02.

Working Pressure

The working pressures of pipe fittings are shown in the "**Ordering Information and Dimensions**".

Working Temperature

| Connection Type | Working Temperature Range |
|-----------------------------------|------------------------------------|
| Male or Female NPT | -325°F to 400°F (-198°C to 204°C)② |
| Male or Female ISO Tapered Thread | -325°F to 400°F (-198°C to 204°C)② |
| Male SAE O-ring | 0°F to 400°F (-17.8°C to 204°C)① |
| Female SAE O-ring | -50°F to 550°F (-45°C to 288°C) |
| Male or Female JIC | -423°F to 1200°F (-252°C to 649°C) |
| Male Type "M" | -423°F to 1200°F (-252°C to 649°C) |

① The ends are supplied with a Fluorocarbon FKM O-ring as standard, other materials of O-rings available.

② The data are based on the working temperature range of the thread sealants. For the working temperature above 400°F (204°C), please contact FITOK Group or our authorized distributors.

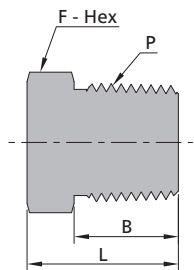
Cautions

- ⦿ Do not loosen or tighten fittings when the system is pressurized
- ⦿ Always use proper thread sealants on tapered pipe threads

Ordering Information and Dimensions

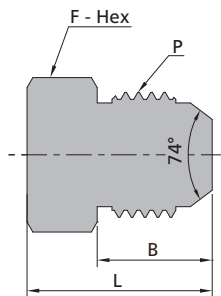
Dimensions are for reference only and are subject to change.

Pipe Plugs

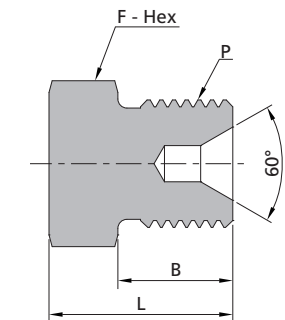


| Male NPT Threads | | | | | |
|------------------|-----------------|----------------------|-------------|-------------|-----------------------------|
| P-NPT Size, in. | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | L | F | B | |
| 1/8 | SS-HPP-NS2 | 0.63 (16.0) | 0.44 (11.1) | 0.38 (9.7) | 15000 (1034) |
| 1/4 | SS-HPP-NS4 | 0.87 (22.2) | 0.56 (14.3) | 0.56 (14.2) | 15000 (1034) |
| 3/8 | SS-HPP-NS6 | 0.93 (23.6) | 0.69 (17.5) | 0.56 (14.2) | 15000 (1034) |
| 1/2 | SS-HPP-NS8 | 1.16 (29.5) | 0.87 (22.2) | 0.75 (19.1) | 15000 (1034) |
| 3/4 | SS-HPP-NS12 | 1.25 (31.8) | 1.06 (27.0) | 0.75 (19.1) | 10000 (690) |
| 1 | SS-HPP-NS16 | 1.55 (39.3) | 1.37 (34.9) | 0.94 (23.9) | 10000 (690) |

| Male ISO Tapered Threads | | | | | |
|--------------------------|-----------------|----------------------|-------------|-------------|-----------------------------|
| P-ISO Thread Size, in. | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | L | F | B | |
| 1/8 | SS-HPP-RT2 | 0.63 (16.0) | 0.44 (11.1) | 0.38 (9.7) | 15000 (1034) |
| 1/4 | SS-HPP-RT4 | 0.87 (22.2) | 0.56 (14.3) | 0.56 (14.2) | 15000 (1034) |
| 3/8 | SS-HPP-RT6 | 0.93 (23.6) | 0.69 (17.5) | 0.56 (14.2) | 15000 (1034) |
| 1/2 | SS-HPP-RT8 | 1.16 (29.5) | 0.87 (22.2) | 0.75 (19.1) | 15000 (1034) |
| 3/4 | SS-HPP-RT12 | 1.25 (31.8) | 1.06 (27.0) | 0.75 (19.1) | 10000 (690) |
| 1 | SS-HPP-RT16 | 1.55 (39.3) | 1.37 (34.9) | 0.94 (23.9) | 10000 (690) |



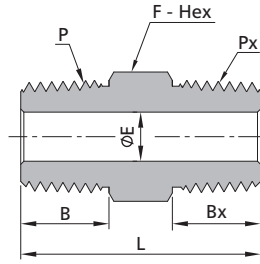
| Male JIC | | | | | |
|-----------------|-----------------|----------------------|-------------|-------------|-----------------------------|
| P-JIC Size, in. | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | L | F | B | |
| 1/4 | SS-HPP-JM4 | 0.83 (21.0) | 0.50 (12.7) | 0.55 (14.0) | 20000 (1379) |
| 3/8 | SS-HPP-JM6 | 0.89 (22.7) | 0.63 (15.9) | 0.56 (14.1) | 20000 (1379) |
| 1/2 | SS-HPP-JM8 | 1.05 (26.7) | 0.81 (20.6) | 0.66 (16.7) | 20000 (1379) |
| 5/8 | SS-HPP-JM10 | 1.19 (30.3) | 0.94 (23.8) | 0.76 (19.3) | 20000 (1379) |
| 3/4 | SS-HPP-JM12 | 1.37 (34.9) | 1.13 (28.6) | 0.86 (21.9) | 15000 (1034) |
| 1 | SS-HPP-JM16 | 1.51 (38.3) | 1.37 (34.9) | 0.91 (23.1) | 15000 (1034) |



| Male Type "M" | | | | | |
|---------------------------|-----------------|----------------------|-------------|-------------|-----------------------------|
| P-SAE/MS Thread Size, in. | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | L | F | B | |
| 9/16-18 | SS-HPP-TM9 | 0.84 (21.3) | 0.63 (15.9) | 0.50 (12.7) | 60000 (4137) |
| 3/4-16 | SS-HPP-TM12 | 1.01 (25.6) | 0.75 (19.1) | 0.63 (16.0) | 30000 (2068) |
| 7/8-14 | SS-HPP-TM14 | 1.21 (30.8) | 1.00 (25.4) | 0.76 (19.2) | 50000 (3447) |
| 1-12 | SS-HPP-TM16 | 1.10 (27.9) | 1.00 (25.4) | 0.64 (16.3) | 30000 (2068) |
| 1 5/16-12 | SS-HPP-TM21 | 1.22 (30.9) | 1.37 (34.9) | 0.62 (15.7) | 20000 (1379) |

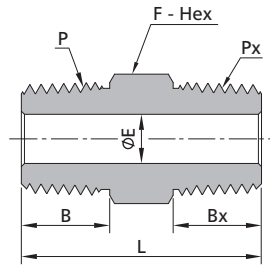
| |
|-------------------------------------|
| Fitings |
| Tubing |
| Quick Couplings |
| Line Filters |
| Valves |
| Sour Service Products |
| Subsea Valves |
| Tools and Installation Instructions |
| Technical Information |
| Part Number Crossover Charts |

Hex Nipples



| Male NPT Threads | | | | | | | | | |
|------------------|------------------|------------------|----------------------|-------------|-------------|-------------|-------------|-----------------------------|--|
| P-NPT Size, in. | Px-NPT Size, in. | Ordering Number | Dimensions, in. (mm) | | | | | Working Pressure psig (bar) | |
| | | | L | F | B | Bx | E | | |
| 1/8 | 1/8 | SS-HPN-NS2 | 1.05 (26.6) | 0.44 (11.1) | 0.38 (9.7) | 0.38 (9.7) | 0.19 (4.8) | 15000 (1034) | |
| 1/4 | 1/8 | SS-HPN-NS4-NS2 | 1.30 (32.9) | 0.56 (14.3) | 0.56 (14.2) | 0.38 (9.7) | 0.19 (4.8) | 15000 (1034) | |
| 1/4 | 1/4 | SS-HPN-NS4 | 1.47 (37.4) | 0.56 (14.3) | 0.56 (14.2) | 0.56 (14.2) | 0.25 (6.4) | 15000 (1034) | |
| 3/8 | 1/8 | SS-HPN-NS6-NS2 | 1.34 (34.1) | 0.69 (17.5) | 0.56 (14.2) | 0.38 (9.7) | 0.19 (4.8) | 15000 (1034) | |
| 3/8 | 1/4 | SS-HPN-NS6-NS4 | 1.52 (38.6) | 0.69 (17.5) | 0.56 (14.2) | 0.56 (14.2) | 0.25 (6.4) | 15000 (1034) | |
| 3/8 | 3/8 | SS-HPN-NS6 | 1.52 (38.6) | 0.69 (17.5) | 0.56 (14.2) | 0.56 (14.2) | 0.31 (7.9) | 15000 (1034) | |
| 1/2 | 1/8 | SS-HPN-NS8-NS2 | 1.58 (40.2) | 0.87 (22.2) | 0.75 (19.1) | 0.38 (9.7) | 0.19 (4.8) | 15000 (1034) | |
| 1/2 | 1/4 | SS-HPN-NS8-NS4 | 1.76 (44.7) | 0.87 (22.2) | 0.75 (19.1) | 0.56 (14.2) | 0.25 (6.4) | 15000 (1034) | |
| 1/2 | 3/8 | SS-HPN-NS8-NS6 | 1.76 (44.7) | 0.87 (22.2) | 0.75 (19.1) | 0.56 (14.2) | 0.31 (7.9) | 15000 (1034) | |
| 1/2 | 1/2 | SS-HPN-NS8 | 1.95 (49.6) | 0.87 (22.2) | 0.75 (19.1) | 0.75 (19.1) | 0.38 (9.6) | 15000 (1034) | |
| 3/4 | 1/8 | SS-HPN-NS12-NS2 | 1.67 (42.4) | 1.06 (27.0) | 0.75 (19.1) | 0.38 (9.7) | 0.22 (5.5) | 10000 (690) | |
| 3/4 | 1/4 | SS-HPN-NS12-NS4 | 1.85 (46.9) | 1.06 (27.0) | 0.75 (19.1) | 0.56 (14.2) | 0.28 (7.1) | 10000 (690) | |
| 3/4 | 3/8 | SS-HPN-NS12-NS6 | 1.85 (46.9) | 1.06 (27.0) | 0.75 (19.1) | 0.56 (14.2) | 0.38 (9.6) | 10000 (690) | |
| 3/4 | 1/2 | SS-HPN-NS12-NS8 | 2.04 (51.8) | 1.06 (27.0) | 0.75 (19.1) | 0.75 (19.1) | 0.47 (11.9) | 10000 (690) | |
| 3/4 | 3/4 | SS-HPN-NS12 | 2.04 (51.8) | 1.06 (27.0) | 0.75 (19.1) | 0.75 (19.1) | 0.58 (14.8) | 10000 (690) | |
| 1 | 1/8 | SS-HPN-NS16-NS2 | 1.96 (49.8) | 1.37 (34.9) | 0.94 (23.9) | 0.38 (9.7) | 0.22 (5.5) | 10000 (690) | |
| 1 | 1/4 | SS-HPN-NS16-NS4 | 2.14 (54.3) | 1.37 (34.9) | 0.94 (23.9) | 0.56 (14.2) | 0.28 (7.1) | 10000 (690) | |
| 1 | 3/8 | SS-HPN-NS16-NS6 | 2.14 (54.3) | 1.37 (34.9) | 0.94 (23.9) | 0.56 (14.2) | 0.38 (9.6) | 10000 (690) | |
| 1 | 1/2 | SS-HPN-NS16-NS8 | 2.33 (59.2) | 1.37 (34.9) | 0.94 (23.9) | 0.75 (19.1) | 0.47 (11.9) | 10000 (690) | |
| 1 | 3/4 | SS-HPN-NS16-NS12 | 2.33 (59.2) | 1.37 (34.9) | 0.94 (23.9) | 0.75 (19.1) | 0.58 (14.8) | 10000 (690) | |
| 1 | 1 | SS-HPN-NS16 | 2.52 (64.0) | 1.37 (34.9) | 0.94 (23.9) | 0.94 (23.9) | 0.79 (20.0) | 10000 (690) | |

Hex Nipples



| Male NPT Threads | | | Male ISO Tapered Threads | | | | | |
|------------------|-------------------------|------------------|--------------------------|-------------|-------------|-------------|-------------|-----------------------------|
| P-NPT Size, in. | Px-ISO Thread Size, in. | Ordering Number | Dimensions, in. (mm) | | | | | Working Pressure psig (bar) |
| | | | L | F | B | Bx | E | |
| 1/8 | 1/8 | SS-HPN-NS2-RT2 | 1.05 (26.6) | 0.44 (11.1) | 0.38 (9.7) | 0.38 (9.7) | 0.19 (4.8) | 15000 (1034) |
| 1/4 | 1/8 | SS-HPN-NS4-RT2 | 1.30 (32.9) | 0.56 (14.3) | 0.56 (14.2) | 0.38 (9.7) | 0.19 (4.8) | 15000 (1034) |
| 1/4 | 1/4 | SS-HPN-NS4-RT4 | 1.47 (37.4) | 0.56 (14.3) | 0.56 (14.2) | 0.56 (14.2) | 0.25 (6.4) | 15000 (1034) |
| 3/8 | 1/8 | SS-HPN-NS6-RT2 | 1.34 (34.1) | 0.69 (17.5) | 0.56 (14.2) | 0.38 (9.7) | 0.19 (4.8) | 15000 (1034) |
| 3/8 | 1/4 | SS-HPN-NS6-RT4 | 1.52 (38.6) | 0.69 (17.5) | 0.56 (14.2) | 0.56 (14.2) | 0.25 (6.4) | 15000 (1034) |
| 3/8 | 3/8 | SS-HPN-NS6-RT6 | 1.52 (38.6) | 0.69 (17.5) | 0.56 (14.2) | 0.56 (14.2) | 0.31 (7.9) | 15000 (1034) |
| 1/2 | 1/8 | SS-HPN-NS8-RT2 | 1.58 (40.2) | 0.87 (22.2) | 0.75 (19.1) | 0.38 (9.7) | 0.19 (4.8) | 15000 (1034) |
| 1/2 | 1/4 | SS-HPN-NS8-RT4 | 1.76 (44.7) | 0.87 (22.2) | 0.75 (19.1) | 0.56 (14.2) | 0.25 (6.4) | 15000 (1034) |
| 1/2 | 3/8 | SS-HPN-NS8-RT6 | 1.76 (44.7) | 0.87 (22.2) | 0.75 (19.1) | 0.56 (14.2) | 0.31 (7.9) | 15000 (1034) |
| 1/2 | 1/2 | SS-HPN-NS8-RT8 | 1.95 (49.6) | 0.87 (22.2) | 0.75 (19.1) | 0.75 (19.1) | 0.38 (9.6) | 15000 (1034) |
| 3/4 | 1/8 | SS-HPN-NS12-RT2 | 1.67 (42.4) | 1.06 (27.0) | 0.75 (19.1) | 0.38 (9.7) | 0.22 (5.5) | 10000 (690) |
| 3/4 | 1/4 | SS-HPN-NS12-RT4 | 1.85 (46.9) | 1.06 (27.0) | 0.75 (19.1) | 0.56 (14.2) | 0.28 (7.1) | 10000 (690) |
| 3/4 | 3/8 | SS-HPN-NS12-RT6 | 1.85 (46.9) | 1.06 (27.0) | 0.75 (19.1) | 0.56 (14.2) | 0.38 (9.6) | 10000 (690) |
| 3/4 | 1/2 | SS-HPN-NS12-RT8 | 2.04 (51.8) | 1.06 (27.0) | 0.75 (19.1) | 0.75 (19.1) | 0.47 (11.9) | 10000 (690) |
| 3/4 | 3/4 | SS-HPN-NS12-RT12 | 2.04 (51.8) | 1.06 (27.0) | 0.75 (19.1) | 0.75 (19.1) | 0.58 (14.8) | 10000 (690) |
| 1 | 1/8 | SS-HPN-NS16-RT2 | 1.96 (49.8) | 1.37 (34.9) | 0.94 (23.9) | 0.38 (9.7) | 0.22 (5.5) | 10000 (690) |
| 1 | 1/4 | SS-HPN-NS16-RT4 | 2.14 (54.3) | 1.37 (34.9) | 0.94 (23.9) | 0.56 (14.2) | 0.28 (7.1) | 10000 (690) |
| 1 | 3/8 | SS-HPN-NS16-RT6 | 2.14 (54.3) | 1.37 (34.9) | 0.94 (23.9) | 0.56 (14.2) | 0.38 (9.6) | 10000 (690) |
| 1 | 1/2 | SS-HPN-NS16-RT8 | 2.33 (59.2) | 1.37 (34.9) | 0.94 (23.9) | 0.75 (19.1) | 0.47 (11.9) | 10000 (690) |
| 1 | 3/4 | SS-HPN-NS16-RT12 | 2.33 (59.2) | 1.37 (34.9) | 0.94 (23.9) | 0.75 (19.1) | 0.58 (14.8) | 10000 (690) |
| 1 | 1 | SS-HPN-NS16-RT16 | 2.52 (64.0) | 1.37 (34.9) | 0.94 (23.9) | 0.94 (23.9) | 0.79 (20.0) | 10000 (690) |

Fittings

Tubing

Quick Couplings

Line Filters

Valves

Sour Service Products

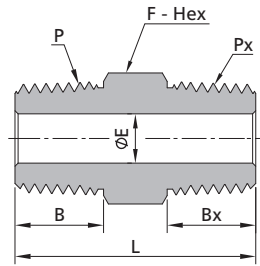
Subsea Valves

Tools and Installation Instructions

Technical Information

Part Number Crossover Charts

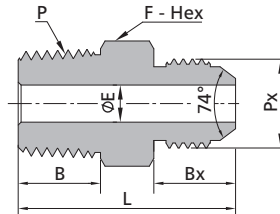
Hex Nipples



| Male ISO Tapered Threads | | | | | | | | | |
|--------------------------|-------------------------|------------------|----------------------|-------------|-------------|-------------|-------------|-----------------------------|--|
| P-ISO Thread Size, in. | Px-ISO Thread Size, in. | Ordering Number | Dimensions, in. (mm) | | | | | Working Pressure psig (bar) | |
| | | | L | F | B | Bx | E | | |
| 1/8 | 1/8 | SS-HPN-RT2 | 1.05 (26.6) | 0.44 (11.1) | 0.38 (9.7) | 0.38 (9.7) | 0.19 (4.8) | 15000 (1034) | |
| 1/4 | 1/8 | SS-HPN-RT4-RT2 | 1.30 (32.9) | 0.56 (14.3) | 0.56 (14.2) | 0.38 (9.7) | 0.19 (4.8) | 15000 (1034) | |
| 1/4 | 1/4 | SS-HPN-RT4 | 1.47 (37.4) | 0.56 (14.3) | 0.56 (14.2) | 0.56 (14.2) | 0.25 (6.4) | 15000 (1034) | |
| 3/8 | 1/8 | SS-HPN-RT6-RT2 | 1.34 (34.1) | 0.69 (17.5) | 0.56 (14.2) | 0.38 (9.7) | 0.19 (4.8) | 15000 (1034) | |
| 3/8 | 1/4 | SS-HPN-RT6-RT4 | 1.52 (38.6) | 0.69 (17.5) | 0.56 (14.2) | 0.56 (14.2) | 0.25 (6.4) | 15000 (1034) | |
| 3/8 | 3/8 | SS-HPN-RT6 | 1.52 (38.6) | 0.69 (17.5) | 0.56 (14.2) | 0.56 (14.2) | 0.31 (7.9) | 15000 (1034) | |
| 1/2 | 1/8 | SS-HPN-RT8-RT2 | 1.58 (40.2) | 0.87 (22.2) | 0.75 (19.1) | 0.38 (9.7) | 0.19 (4.8) | 15000 (1034) | |
| 1/2 | 1/4 | SS-HPN-RT8-RT4 | 1.76 (44.7) | 0.87 (22.2) | 0.75 (19.1) | 0.56 (14.2) | 0.25 (6.4) | 15000 (1034) | |
| 1/2 | 3/8 | SS-HPN-RT8-RT6 | 1.76 (44.7) | 0.87 (22.2) | 0.75 (19.1) | 0.56 (14.2) | 0.31 (7.9) | 15000 (1034) | |
| 1/2 | 1/2 | SS-HPN-RT8 | 1.95 (49.6) | 0.87 (22.2) | 0.75 (19.1) | 0.75 (19.1) | 0.38 (9.6) | 15000 (1034) | |
| 3/4 | 1/8 | SS-HPN-RT12-RT2 | 1.67 (42.4) | 1.06 (27.0) | 0.75 (19.1) | 0.38 (9.7) | 0.22 (5.5) | 10000 (690) | |
| 3/4 | 1/4 | SS-HPN-RT12-RT4 | 1.85 (46.9) | 1.06 (27.0) | 0.75 (19.1) | 0.56 (14.2) | 0.28 (7.1) | 10000 (690) | |
| 3/4 | 3/8 | SS-HPN-RT12-RT6 | 1.85 (46.9) | 1.06 (27.0) | 0.75 (19.1) | 0.56 (14.2) | 0.38 (9.6) | 10000 (690) | |
| 3/4 | 1/2 | SS-HPN-RT12-RT8 | 2.04 (51.8) | 1.06 (27.0) | 0.75 (19.1) | 0.75 (19.1) | 0.47 (11.9) | 10000 (690) | |
| 3/4 | 3/4 | SS-HPN-RT12 | 2.04 (51.8) | 1.06 (27.0) | 0.75 (19.1) | 0.75 (19.1) | 0.58 (14.8) | 10000 (690) | |
| 1 | 1/8 | SS-HPN-RT16-RT2 | 1.96 (49.8) | 1.37 (34.9) | 0.94 (23.9) | 0.38 (9.7) | 0.22 (5.5) | 10000 (690) | |
| 1 | 1/4 | SS-HPN-RT16-RT4 | 2.14 (54.3) | 1.37 (34.9) | 0.94 (23.9) | 0.56 (14.2) | 0.28 (7.1) | 10000 (690) | |
| 1 | 3/8 | SS-HPN-RT16-RT6 | 2.14 (54.3) | 1.37 (34.9) | 0.94 (23.9) | 0.56 (14.2) | 0.38 (9.6) | 10000 (690) | |
| 1 | 1/2 | SS-HPN-RT16-RT8 | 2.33 (59.2) | 1.37 (34.9) | 0.94 (23.9) | 0.75 (19.1) | 0.47 (11.9) | 10000 (690) | |
| 1 | 3/4 | SS-HPN-RT16-RT12 | 2.33 (59.2) | 1.37 (34.9) | 0.94 (23.9) | 0.75 (19.1) | 0.58 (14.8) | 10000 (690) | |
| 1 | 1 | SS-HPN-RT16 | 2.52 (64.0) | 1.37 (34.9) | 0.94 (23.9) | 0.94 (23.9) | 0.79 (20.0) | 10000 (690) | |

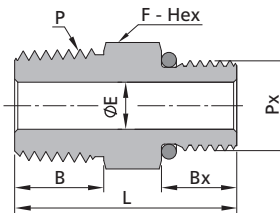
| |
|-------------------------------------|
| Fittings |
| Tubing |
| Quick Couplings |
| Line Filters |
| Valves |
| Sour Service Products |
| Subsea Valves |
| Tools and Installation Instructions |
| Technical Information |
| Part Number Crossover Charts |

Hex Nipples



| Male NPT Threads | | | Dimensions, in. (mm) | | | | | Male JIC |
|------------------|------------------|------------------|----------------------|-------------|----------------|-------------|-------------|-----------------------------|
| P-NPT Size, in. | Px-JIC Size, in. | Ordering Number | L | F | B | Bx | E | Working Pressure psig (bar) |
| | | | 1/8 | 1/4 | SS-HPN-NS2-JM4 | 1.23 (31.3) | 0.50 (12.7) | |
| 1/8 | 3/8 | SS-HPN-NS2-JM6 | 1.31 (33.4) | 0.63 (15.9) | 0.38 (9.7) | 0.56 (14.1) | 0.19 (4.8) | 15000 (1034) |
| 1/4 | 1/4 | SS-HPN-NS4-JM4 | 1.46 (37.2) | 0.56 (14.3) | 0.56 (14.2) | 0.55 (14.0) | 0.17 (4.4) | 15000 (1034) |
| 1/4 | 3/8 | SS-HPN-NS4-JM6 | 1.49 (37.9) | 0.63 (15.9) | 0.56 (14.2) | 0.56 (14.1) | 0.23 (5.8) | 15000 (1034) |
| 1/4 | 1/2 | SS-HPN-NS4-JM8 | 1.65 (41.9) | 0.81 (20.6) | 0.56 (14.2) | 0.66 (16.7) | 0.25 (6.4) | 15000 (1034) |
| 3/8 | 1/4 | SS-HPN-NS6-JM4 | 1.52 (38.4) | 0.69 (17.5) | 0.56 (14.2) | 0.55 (14.0) | 0.17(4.4) | 15000 (1034) |
| 3/8 | 3/8 | SS-HPN-NS6-JM6 | 1.52 (38.4) | 0.69 (17.5) | 0.56 (14.2) | 0.56 (14.1) | 0.23 (5.8) | 15000 (1034) |
| 3/8 | 1/2 | SS-HPN-NS6-JM8 | 1.62 (41.1) | 0.81 (20.6) | 0.56 (14.2) | 0.66 (16.7) | 0.31 (7.9) | 15000 (1034) |
| 1/2 | 1/4 | SS-HPN-NS8-JM4 | 1.75 (44.5) | 0.87 (22.2) | 0.75 (19.1) | 0.55 (14.0) | 0.17 (4.4) | 15000 (1034) |
| 1/2 | 3/8 | SS-HPN-NS8-JM6 | 1.75 (44.6) | 0.87 (22.2) | 0.75 (19.1) | 0.56 (14.1) | 0.23 (5.8) | 15000 (1034) |
| 1/2 | 1/2 | SS-HPN-NS8-JM8 | 1.86 (47.2) | 0.87 (22.2) | 0.75 (19.1) | 0.66 (16.7) | 0.31 (8.0) | 15000 (1034) |
| 1/2 | 5/8 | SS-HPN-NS8-JM10 | 1.98 (50.4) | 0.94 (23.8) | 0.75 (19.1) | 0.76 (19.3) | 0.37 (9.4) | 15000 (1034) |
| 3/4 | 1/2 | SS-HPN-NS12-JM8 | 1.94 (49.4) | 1.06 (27.0) | 0.75 (19.1) | 0.66 (16.7) | 0.39 (9.9) | 10000 (690) |
| 3/4 | 5/8 | SS-HPN-NS12-JM10 | 2.05 (52.0) | 1.06 (27.0) | 0.75 (19.1) | 0.76 (19.3) | 0.48 (12.3) | 10000 (690) |
| 3/4 | 3/4 | SS-HPN-NS12-JM12 | 2.17 (55.0) | 1.13 (28.6) | 0.75 (19.1) | 0.86 (21.9) | 0.58 (14.8) | 10000 (690) |
| 3/4 | 1 | SS-HPN-NS12-JM16 | 2.30 (58.4) | 1.37 (34.9) | 0.75 (19.1) | 0.91 (23.1) | 0.58 (14.8) | 10000 (690) |
| 1 | 3/4 | SS-HPN-NS16-JM12 | 2.44 (62.0) | 1.37 (34.9) | 0.94 (23.9) | 0.86 (21.9) | 0.61 (15.5) | 10000 (690) |
| 1 | 1 | SS-HPN-NS16-JM16 | 2.49 (63.2) | 1.37 (34.9) | 0.94 (23.9) | 0.91 (23.1) | 0.79 (20.0) | 10000 (690) |

Hex Nipples^①

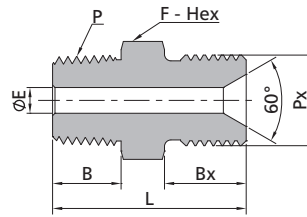


| Male NPT Threads | | | Dimensions, in. (mm) | | | | | Male SAE O-ring |
|------------------|----------------------------|------------------|----------------------|-------------|----------------|-------------|-------------|-----------------------------|
| P-NPT Size, in. | Px-SAE/MS Thread Size, in. | Ordering Number | L | F | B | Bx | E | Working Pressure psig (bar) |
| | | | 1/4 | 7/16-20 | SS-HPN-NS4-SH7 | 1.35 (34.2) | 0.56 (14.3) | |
| 1/4 | 9/16-18 | SS-HPN-NS4-SH9 | 1.43 (36.4) | 0.69 (17.5) | 0.56 (14.2) | 0.47 (12.0) | 0.28 (7.1) | 10000 (690) |
| 3/8 | 7/16-20 | SS-HPN-NS6-SH7 | 1.39 (35.4) | 0.69 (17.5) | 0.56 (14.2) | 0.43 (11.0) | 0.18 (4.5) | 10000 (690) |
| 3/8 | 9/16-18 | SS-HPN-NS6-SH9 | 1.43 (36.4) | 0.69 (17.5) | 0.56 (14.2) | 0.47 (12.0) | 0.30 (7.5) | 10000 (690) |
| 3/8 | 3/4-16 | SS-HPN-NS6-SH12 | 1.56 (39.6) | 0.87 (22.2) | 0.56 (14.2) | 0.55 (14.0) | 0.38 (9.6) | 10000 (690) |
| 1/2 | 9/16-18 | SS-HPN-NS8-SH9 | 1.67 (42.5) | 0.87 (22.2) | 0.75 (19.1) | 0.47 (12.0) | 0.30 (7.5) | 10000 (690) |
| 1/2 | 3/4-16 | SS-HPN-NS8-SH12 | 1.75 (44.5) | 0.87 (22.2) | 0.75 (19.1) | 0.55 (14.0) | 0.39 (10.0) | 10000 (690) |
| 1/2 | 7/8-14 | SS-HPN-NS8-SH14 | 1.88 (47.7) | 1.00 (25.4) | 0.75 (19.1) | 0.63 (16.0) | 0.47 (11.9) | 10000 (690) |
| 3/4 | 9/16-18 | SS-HPN-NS12-SH9 | 1.76 (44.7) | 1.06 (27.0) | 0.75 (19.1) | 0.47 (12.0) | 0.30 (7.5) | 10000 (690) |
| 3/4 | 3/4-16 | SS-HPN-NS12-SH12 | 1.84 (46.7) | 1.06 (27.0) | 0.75 (19.1) | 0.55 (14.0) | 0.39 (10.0) | 10000 (690) |
| 3/4 | 7/8-14 | SS-HPN-NS12-SH14 | 1.92 (48.7) | 1.06 (27.0) | 0.75 (19.1) | 0.63 (16.0) | 0.49 (12.5) | 10000 (690) |
| 1 | 3/4-16 | SS-HPN-NS16-SH12 | 2.13 (54.1) | 1.37 (34.9) | 0.94 (23.9) | 0.55 (14.0) | 0.39 (10.0) | 10000 (690) |
| 1 | 7/8-14 | SS-HPN-NS16-SH14 | 2.21 (56.1) | 1.37 (34.9) | 0.94 (23.9) | 0.63 (16.0) | 0.49 (12.5) | 10000 (690) |

① Male SAE O-ring Ends are supplied with a Fluorocarbon FKM O-ring as standard, other materials of O-rings available.

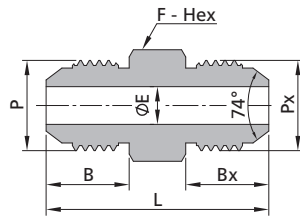
| |
|-------------------------------------|
| Fittings |
| Tubing |
| Quick Couplings |
| Line Filters |
| Valves |
| Sour Service Products |
| Subsea Valves |
| Tools and Installation Instructions |
| Technical Information |
| Part Number Crossover Charts |

Hex Nipples



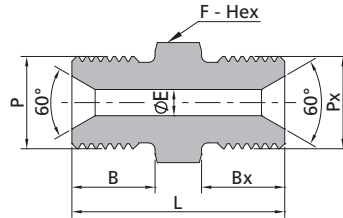
| Male NPT Threads | | | | Male Type "M" | | | | | |
|------------------|----------------------------|------------------|----------------------|---------------|-------------|-------------|-------------|-----------------------------|--|
| P-NPT Size, in. | Px-SAE/MS Thread Size, in. | Ordering Number | Dimensions, in. (mm) | | | | | Working Pressure psig (bar) | |
| | | | L | F | B | Bx | E | | |
| 1/8 | 9/16-18 | SS-HPN-NS2-TM9 | 1.22 (31.0) | 0.63 (15.9) | 0.38 (9.7) | 0.50 (12.7) | 0.09 (2.4) | 15000 (1034) | |
| 1/8 | 3/4-16 | SS-HPN-NS2-TM12 | 13.9 (35.3) | 0.75 (19.1) | 0.38 (9.7) | 0.63 (16.0) | 0.19 (4.8) | 15000 (1034) | |
| 1/4 | 9/16-18 | SS-HPN-NS4-TM9 | 1.40 (35.5) | 0.63 (15.9) | 0.56 (14.2) | 0.50 (12.7) | 0.09 (2.4) | 15000 (1034) | |
| 1/4 | 3/4-16 | SS-HPN-NS4-TM12 | 1.57 (39.8) | 0.75 (19.1) | 0.56 (14.2) | 0.63 (16.0) | 0.25 (6.4) | 15000 (1034) | |
| 1/4 | 7/8-14 | SS-HPN-NS4-TM14 | 1.77 (45.0) | 1.00 (25.4) | 0.56 (14.2) | 0.76 (19.2) | 0.15 (3.8) | 15000 (1034) | |
| 3/8 | 9/16-18 | SS-HPN-NS6-TM9 | 1.42 (36.1) | 0.69 (17.5) | 0.56 (14.2) | 0.50 (12.7) | 0.09 (2.4) | 15000 (1034) | |
| 3/8 | 3/4-16 | SS-HPN-NS6-TM12 | 1.57 (39.8) | 0.75 (19.1) | 0.56 (14.2) | 0.63 (16.0) | 0.29 (7.4) | 15000 (1034) | |
| 3/8 | 7/8-14 | SS-HPN-NS6-TM14 | 1.96 (49.9) | 1.00 (25.4) | 0.56 (14.2) | 0.76 (19.2) | 0.15 (3.8) | 15000 (1034) | |
| 1/2 | 9/16-18 | SS-HPN-NS8-TM9 | 1.66 (42.2) | 0.87 (22.2) | 0.75 (19.1) | 0.50 (12.7) | 0.09 (2.4) | 15000 (1034) | |
| 1/2 | 3/4-16 | SS-HPN-NS8-TM12 | 1.79 (45.5) | 0.87 (22.2) | 0.75 (19.1) | 0.63 (16.0) | 0.29 (7.4) | 15000 (1034) | |
| 1/2 | 7/8-14 | SS-HPN-NS8-TM14 | 1.96 (49.9) | 1.00 (25.4) | 0.75 (19.1) | 0.76 (19.2) | 0.15 (3.8) | 15000 (1034) | |
| 1/2 | 1-12 | SS-HPN-NS8-TM16 | 1.85 (47.0) | 1.00 (25.4) | 0.75 (19.1) | 0.64 (16.3) | 0.38 (9.6) | 15000 (1034) | |
| 3/4 | 9/16-18 | SS-HPN-NS12-TM9 | 1.75 (44.4) | 1.06 (27.0) | 0.75 (19.1) | 0.50 (12.7) | 0.09 (2.4) | 10000 (690) | |
| 3/4 | 3/4-16 | SS-HPN-NS12-TM12 | 1.88 (47.7) | 1.06 (27.0) | 0.75 (19.1) | 0.63 (16.0) | 0.29 (7.4) | 10000 (690) | |
| 3/4 | 7/8-14 | SS-HPN-NS12-TM14 | 2.00 (50.9) | 1.06 (27.0) | 0.75 (19.1) | 0.76 (19.2) | 0.15 (3.8) | 10000 (690) | |
| 3/4 | 1-12 | SS-HPN-NS12-TM16 | 1.89 (48.0) | 1.06 (27.0) | 0.75 (19.1) | 0.64 (16.3) | 0.39 (10.0) | 10000 (690) | |
| 1 | 1-12 | SS-HPN-NS16-TM16 | 2.18 (55.4) | 1.37 (34.9) | 0.94 (23.9) | 0.64 (16.3) | 0.39 (10.0) | 10000 (690) | |
| 1 | 1 5/16-12 | SS-HPN-NS16-TM21 | 2.16 (54.8) | 1.37 (34.9) | 0.94 (23.9) | 0.62 (15.7) | 0.69 (17.5) | 10000 (690) | |

Hex Nipples



| Male JIC | | | | Dimensions, in. (mm) | | | | | Working Pressure psig (bar) |
|-----------------|------------------|------------------|-------------|----------------------|-------------|-------------|-------------|--------------|-----------------------------|
| P-JIC Size, in. | Px-JIC Size, in. | Ordering Number | L | F | B | Bx | E | | |
| 1/4 | 1/4 | SS-HPN-JM4 | 1.40 (35.6) | 0.50 (12.7) | 0.55 (14.0) | 0.55 (14.0) | 0.17 (4.4) | 20000 (1379) | |
| 3/8 | 1/4 | SS-HPN-JM6-JM4 | 1.48 (37.7) | 0.63 (15.9) | 0.56 (14.1) | 0.55 (14.0) | 0.17 (4.4) | 20000 (1379) | |
| 3/8 | 3/8 | SS-HPN-JM6 | 1.49 (37.8) | 0.63 (15.9) | 0.56 (14.1) | 0.56 (14.1) | 0.23 (5.8) | 20000 (1379) | |
| 1/2 | 3/8 | SS-HPN-JM8-JM6 | 1.65 (41.8) | 0.81 (20.6) | 0.66 (16.7) | 0.56 (14.1) | 0.23 (5.8) | 20000 (1379) | |
| 1/2 | 1/2 | SS-HPN-JM8 | 1.75 (44.4) | 0.81 (20.6) | 0.66 (16.7) | 0.66 (16.7) | 0.31 (8.0) | 20000 (1379) | |
| 5/8 | 3/8 | SS-HPN-JM10-JM6 | 1.79 (45.4) | 0.94 (23.8) | 0.76 (19.3) | 0.56 (14.1) | 0.23 (5.8) | 20000 (1379) | |
| 5/8 | 1/2 | SS-HPN-JM10-JM8 | 1.89 (48.0) | 0.94 (23.8) | 0.76 (19.3) | 0.66 (16.7) | 0.31 (8.0) | 20000 (1379) | |
| 5/8 | 5/8 | SS-HPN-JM10 | 1.99 (50.6) | 0.94 (23.8) | 0.76 (19.3) | 0.76 (19.3) | 0.37 (9.4) | 20000 (1379) | |
| 3/4 | 1/2 | SS-HPN-JM12-JM8 | 2.07 (52.6) | 1.13 (28.6) | 0.86 (21.9) | 0.66 (16.7) | 0.31 (8.0) | 15000 (1034) | |
| 3/4 | 5/8 | SS-HPN-JM12-JM10 | 2.17 (55.2) | 1.13 (28.6) | 0.86 (21.9) | 0.76 (19.3) | 0.37 (9.4) | 15000 (1034) | |
| 3/4 | 3/4 | SS-HPN-JM12 | 2.28 (57.8) | 1.13 (28.6) | 0.86 (21.9) | 0.86 (21.9) | 0.46 (11.6) | 15000 (1034) | |
| 1 | 5/8 | SS-HPN-JM16-JM10 | 2.31 (58.6) | 1.37 (34.9) | 0.91 (23.1) | 0.76 (19.3) | 0.37 (9.4) | 15000 (1034) | |
| 1 | 3/4 | SS-HPN-JM16-JM12 | 2.41 (61.2) | 1.37 (34.9) | 0.91 (23.1) | 0.86 (21.9) | 0.46 (11.6) | 15000 (1034) | |
| 1 | 1 | SS-HPN-JM16 | 2.46 (62.4) | 1.37 (34.9) | 0.91 (23.1) | 0.91 (23.1) | 0.57 (14.6) | 15000 (1034) | |

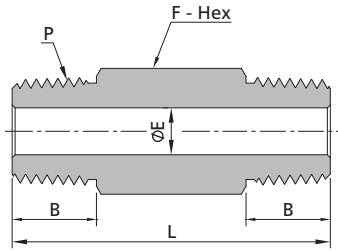
Hex Nipples



| Male Type "M" | | | Dimensions, in. (mm) | | | | | Male Type "M" |
|----------------------------|----------------------------|------------------|----------------------|-------------|-------------|-------------|-------------|-----------------------------|
| Px-SAE/MS Thread Size, in. | Px-SAE/MS Thread Size, in. | Ordering Number | L | F | B | Bx | E | Working Pressure psig (bar) |
| | | | | | | | | |
| 3/4-16 | 9/16-18 | SS-HPN-TM12-TM9 | 1.51 (38.3) | 0.75 (19.1) | 0.63 (16.0) | 0.50 (12.7) | 0.09 (2.4) | 30000 (2068) |
| 3/4-16 | 3/4-16 | SS-HPN-TM12 | 1.64 (41.6) | 0.75 (19.1) | 0.63 (16.0) | 0.63 (16.0) | 0.29 (7.4) | 30000 (2068) |
| 7/8-14 | 9/16-18 | SS-HPN-TM14-TM9 | 1.71 (43.5) | 1.00 (25.4) | 0.76 (19.2) | 0.50 (12.7) | 0.09 (2.4) | 50000 (3447) |
| 7/8-14 | 3/4-16 | SS-HPN-TM14-TM12 | 1.84 (46.8) | 1.00 (25.4) | 0.76 (19.2) | 0.63 (16.0) | 0.15 (3.8) | 30000 (2068) |
| 7/8-14 | 7/8-14 | SS-HPN-TM14 | 1.97 (50.0) | 1.00 (25.4) | 0.76 (19.2) | 0.76 (19.2) | 0.15 (3.8) | 50000 (3447) |
| 1-12 | 9/16-18 | SS-HPN-TM16-TM9 | 1.60 (40.6) | 1.00 (25.4) | 0.64 (16.3) | 0.50 (12.7) | 0.09 (2.4) | 30000 (2068) |
| 1-12 | 3/4-16 | SS-HPN-TM16-TM12 | 1.73 (43.9) | 1.00 (25.4) | 0.64 (16.3) | 0.63 (16.0) | 0.29 (7.4) | 30000 (2068) |
| 1-12 | 7/8-14 | SS-HPN-TM16-TM14 | 1.85 (47.1) | 1.00 (25.4) | 0.64 (16.3) | 0.76 (19.2) | 0.15 (3.8) | 30000 (2068) |
| 1-12 | 1-12 | SS-HPN-TM16 | 1.74 (44.2) | 1.00 (25.4) | 0.64 (16.3) | 0.64 (16.3) | 0.39 (10.0) | 30000 (2068) |
| 1 5/16-12 | 1-12 | SS-HPN-TM21-TM16 | 1.86 (47.2) | 1.37 (34.9) | 0.62 (15.7) | 0.64 (16.3) | 0.39 (10.0) | 20000 (1379) |
| 1 5/16-12 | 1 5/16-12 | SS-HPN-TM21 | 1.83 (46.6) | 1.37 (34.9) | 0.62 (15.7) | 0.62 (15.7) | 0.69 (17.5) | 20000 (1379) |

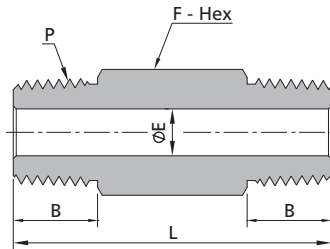
| |
|-------------------------------------|
| Fittings |
| Tubing |
| Quick Couplings |
| Line Filters |
| Valves |
| Sour Service Products |
| Subsea Valves |
| Tools and Installation Instructions |
| Technical Information |
| Part Number Crossover Charts |

Hex Long Nipples



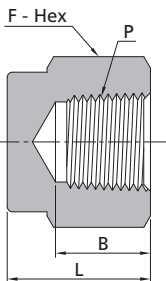
| Male NPT Threads | | | | | | |
|------------------|-----------------|----------------------|-------------|-------------|-------------|-----------------------------|
| P-NPT Size, in. | Ordering Number | Dimensions, in. (mm) | | | | Working Pressure psig (bar) |
| | | L | F | B | E | |
| 1/8 | SS-HPL-NS2-1.5 | 1.50 (38.1) | 0.44 (11.1) | 0.38 (9.7) | 0.19 (4.8) | 15000 (1034) |
| 1/8 | SS-HPL-NS2-2 | 2.00 (50.8) | 0.44 (11.1) | 0.38 (9.7) | 0.19 (4.8) | 15000 (1034) |
| 1/8 | SS-HPL-NS2-2.5 | 2.50 (63.5) | 0.44 (11.1) | 0.38 (9.7) | 0.19 (4.8) | 15000 (1034) |
| 1/8 | SS-HPL-NS2-3 | 3.00 (76.2) | 0.44 (11.1) | 0.38 (9.7) | 0.19 (4.8) | 15000 (1034) |
| 1/4 | SS-HPL-NS4-2 | 2.00 (50.8) | 0.56 (14.3) | 0.56 (14.2) | 0.25 (6.4) | 15000 (1034) |
| 1/4 | SS-HPL-NS4-2.5 | 2.50 (63.5) | 0.56 (14.3) | 0.56 (14.2) | 0.25 (6.4) | 15000 (1034) |
| 1/4 | SS-HPL-NS4-3 | 3.00 (76.2) | 0.56 (14.3) | 0.56 (14.2) | 0.25 (6.4) | 15000 (1034) |
| 1/4 | SS-HPL-NS4-4 | 4.00 (101.6) | 0.56 (14.3) | 0.56 (14.2) | 0.25 (6.4) | 15000 (1034) |
| 3/8 | SS-HPL-NS6-2 | 2.00 (50.8) | 0.69 (17.5) | 0.56 (14.2) | 0.31 (7.9) | 15000 (1034) |
| 3/8 | SS-HPL-NS6-2.5 | 2.50 (63.5) | 0.69 (17.5) | 0.56 (14.2) | 0.31 (7.9) | 15000 (1034) |
| 3/8 | SS-HPL-NS6-3 | 3.00 (76.2) | 0.69 (17.5) | 0.56 (14.2) | 0.31 (7.9) | 15000 (1034) |
| 3/8 | SS-HPL-NS6-4 | 4.00 (101.6) | 0.69 (17.5) | 0.56 (14.2) | 0.31 (7.9) | 15000 (1034) |
| 1/2 | SS-HPL-NS8-3 | 3.00 (76.2) | 0.87 (22.2) | 0.75 (19.1) | 0.38 (9.6) | 15000 (1034) |
| 1/2 | SS-HPL-NS8-4 | 4.00 (101.6) | 0.87 (22.2) | 0.75 (19.1) | 0.38 (9.6) | 15000 (1034) |
| 1/2 | SS-HPL-NS8-6 | 6.00 (152.4) | 0.87 (22.2) | 0.75 (19.1) | 0.38 (9.6) | 15000 (1034) |
| 3/4 | SS-HPL-NS12-3 | 3.00 (76.2) | 1.06 (27.0) | 0.75 (19.1) | 0.58 (14.8) | 10000 (690) |
| 3/4 | SS-HPL-NS12-4 | 4.00 (101.6) | 1.06 (27.0) | 0.75 (19.1) | 0.58 (14.8) | 10000 (690) |
| 3/4 | SS-HPL-NS12-6 | 6.00 (152.4) | 1.06 (27.0) | 0.75 (19.1) | 0.58 (14.8) | 10000 (690) |
| 3/4 | SS-HPL-NS12-8 | 8.00 (203.2) | 1.06 (27.0) | 0.75 (19.1) | 0.58 (14.8) | 10000 (690) |
| 1 | SS-HPL-NS16-3 | 3.00 (76.2) | 1.37 (34.9) | 0.94 (23.9) | 0.79 (20.0) | 10000 (690) |
| 1 | SS-HPL-NS16-4 | 4.00 (101.6) | 1.37 (34.9) | 0.94 (23.9) | 0.79 (20.0) | 10000 (690) |
| 1 | SS-HPL-NS16-6 | 6.00 (152.4) | 1.37 (34.9) | 0.94 (23.9) | 0.79 (20.0) | 10000 (690) |
| 1 | SS-HPL-NS16-8 | 8.00 (203.2) | 1.37 (34.9) | 0.94 (23.9) | 0.79 (20.0) | 10000 (690) |

Hex Long Nipples



| Male ISO Tapered Threads | | | | | | |
|--------------------------|-----------------|----------------------|-------------|-------------|-------------|-----------------------------|
| P-ISO Thread Size, in. | Ordering Number | Dimensions, in. (mm) | | | | Working Pressure psig (bar) |
| | | L | F | B | E | |
| 1/8 | SS-HPL-RT2-1.5 | 1.50 (38.1) | 0.44 (11.1) | 0.38 (9.7) | 0.19 (4.8) | 15000 (1034) |
| 1/8 | SS-HPL-RT2-2 | 2.00 (50.8) | 0.44 (11.1) | 0.38 (9.7) | 0.19 (4.8) | 15000 (1034) |
| 1/8 | SS-HPL-RT2-2.5 | 2.50 (63.5) | 0.44 (11.1) | 0.38 (9.7) | 0.19 (4.8) | 15000 (1034) |
| 1/8 | SS-HPL-RT2-3 | 3.00 (76.2) | 0.44 (11.1) | 0.38 (9.7) | 0.19 (4.8) | 15000 (1034) |
| 1/4 | SS-HPL-RT4-2 | 2.00 (50.8) | 0.56 (14.3) | 0.56 (14.2) | 0.25 (6.4) | 15000 (1034) |
| 1/4 | SS-HPL-RT4-2.5 | 2.50 (63.5) | 0.56 (14.3) | 0.56 (14.2) | 0.25 (6.4) | 15000 (1034) |
| 1/4 | SS-HPL-RT4-3 | 3.00 (76.2) | 0.56 (14.3) | 0.56 (14.2) | 0.25 (6.4) | 15000 (1034) |
| 1/4 | SS-HPL-RT4-4 | 4.00 (101.6) | 0.56 (14.3) | 0.56 (14.2) | 0.25 (6.4) | 15000 (1034) |
| 3/8 | SS-HPL-RT6-2 | 2.00 (50.8) | 0.69 (17.5) | 0.56 (14.2) | 0.31 (7.9) | 15000 (1034) |
| 3/8 | SS-HPL-RT6-2.5 | 2.50 (63.5) | 0.69 (17.5) | 0.56 (14.2) | 0.31 (7.9) | 15000 (1034) |
| 3/8 | SS-HPL-RT6-3 | 3.00 (76.2) | 0.69 (17.5) | 0.56 (14.2) | 0.31 (7.9) | 15000 (1034) |
| 3/8 | SS-HPL-RT6-4 | 4.00 (101.6) | 0.69 (17.5) | 0.56 (14.2) | 0.31 (7.9) | 15000 (1034) |
| 1/2 | SS-HPL-RT8-3 | 3.00 (76.2) | 0.87 (22.2) | 0.75 (19.1) | 0.38 (9.6) | 15000 (1034) |
| 1/2 | SS-HPL-RT8-4 | 4.00 (101.6) | 0.87 (22.2) | 0.75 (19.1) | 0.38 (9.6) | 15000 (1034) |
| 1/2 | SS-HPL-RT8-6 | 6.00 (152.4) | 0.87 (22.2) | 0.75 (19.1) | 0.38 (9.6) | 15000 (1034) |
| 3/4 | SS-HPL-RT12-3 | 3.00 (76.2) | 1.06 (27.0) | 0.75 (19.1) | 0.58 (14.8) | 10000 (690) |
| 3/4 | SS-HPL-RT12-4 | 4.00 (101.6) | 1.06 (27.0) | 0.75 (19.1) | 0.58 (14.8) | 10000 (690) |
| 3/4 | SS-HPL-RT12-6 | 6.00 (152.4) | 1.06 (27.0) | 0.75 (19.1) | 0.58 (14.8) | 10000 (690) |
| 3/4 | SS-HPL-RT12-8 | 8.00 (203.2) | 1.06 (27.0) | 0.75 (19.1) | 0.58 (14.8) | 10000 (690) |
| 1 | SS-HPL-RT16-3 | 3.00 (76.2) | 1.37 (34.9) | 0.94 (23.9) | 0.79 (20.0) | 10000 (690) |
| 1 | SS-HPL-RT16-4 | 4.00 (101.6) | 1.37 (34.9) | 0.94 (23.9) | 0.79 (20.0) | 10000 (690) |
| 1 | SS-HPL-RT16-6 | 6.00 (152.4) | 1.37 (34.9) | 0.94 (23.9) | 0.79 (20.0) | 10000 (690) |
| 1 | SS-HPL-RT16-8 | 8.00 (203.2) | 1.37 (34.9) | 0.94 (23.9) | 0.79 (20.0) | 10000 (690) |

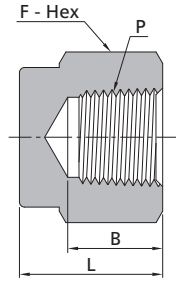
Pipe Caps



| Female NPT Threads | | | | | | |
|--------------------|-----------------|----------------------|-------------|-------------|-----------------------------|--|
| P-NPT Size, in. | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) | |
| | | L | F | B | | |
| 1/8 | SS-HPC-FNS2 | 0.75 (19.1) | 0.63 (15.9) | 0.41 (10.4) | 15000 (1034) | |
| 1/4 | SS-HPC-FNS4 | 0.91 (23.1) | 0.94 (23.8) | 0.59 (15.0) | 15000 (1034) | |
| 3/8 | SS-HPC-FNS6 | 1.03 (26.2) | 1.13 (28.6) | 0.59 (15.0) | 15000 (1034) | |
| 1/2 | SS-HPC-FNS8 | 1.34 (34.0) | 1.37 (34.9) | 0.78 (19.8) | 15000 (1034) | |
| 3/4 | SS-HPC-FNS12 | 1.62 (36.6) | 1.50 (38.1) | 0.81 (20.6) | 10000 (690) | |
| 1 | SS-HPC-FNS16 | 1.62 (41.1) | 44.5 (1.75) | 1.00 (25.4) | 10000 (690) | |

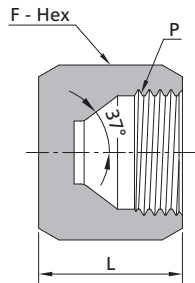
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Pipe Caps



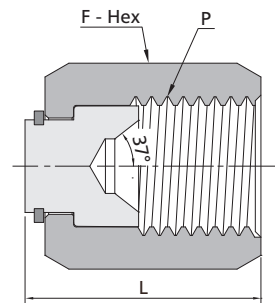
| Female ISO Tapered Threads | | | | | |
|----------------------------|-----------------|----------------------|-------------|-------------|-----------------------------|
| P-ISO Thread Size, in. | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | L | F | B | |
| 1/8 | SS-HPC-FRT2 | 0.75 (19.1) | 0.63 (15.9) | 0.41 (10.4) | 15000 (1034) |
| 1/4 | SS-HPC-FRT4 | 0.91 (23.1) | 0.94 (23.8) | 0.59 (15.0) | 15000 (1034) |
| 3/8 | SS-HPC-FRT6 | 1.03 (26.2) | 1.13 (28.6) | 0.59 (15.0) | 15000 (1034) |
| 1/2 | SS-HPC-FRT8 | 1.34 (34.0) | 1.37 (34.9) | 0.78 (19.8) | 15000 (1034) |
| 3/4 | SS-HPC-FRT12 | 1.62 (36.6) | 1.50 (38.1) | 0.81 (20.6) | 10000 (690) |
| 1 | SS-HPC-FRT16 | 1.62 (41.1) | 1.75 (44.5) | 1.00 (25.4) | 10000 (690) |

Pipe Caps



| Female JIC | | | | |
|-----------------|-----------------|----------------------|-------------|-----------------------------|
| P-JIC Size, in. | Ordering Number | Dimensions, in. (mm) | | Working Pressure psig (bar) |
| | | L | F | |
| 1/4 | SS-HPC-JF4 | 0.63 (16.1) | 0.56 (14.3) | 20000 (1379) |
| 3/8 | SS-HPC-JF6 | 0.72 (18.3) | 0.69 (17.5) | 20000 (1379) |
| 1/2 | SS-HPC-JF8 | 0.85 (21.6) | 0.87 (22.2) | 20000 (1379) |
| 5/8 | SS-HPC-JF10 | 0.98 (24.9) | 1.00 (25.4) | 20000 (1379) |
| 3/4 | SS-HPC-JF12 | 1.06 (26.8) | 1.25 (31.8) | 15000 (1034) |
| 1 | SS-HPC-JF16 | 1.18 (30.0) | 1.50 (38.1) | 15000 (1034) |

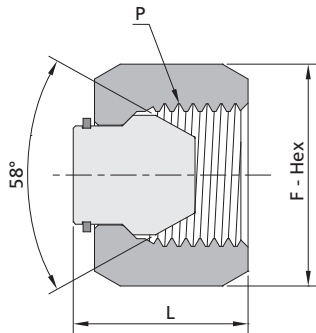
Pipe Cap Assemblies (Moveable Insert)



| Moveable Insert Female JIC | | | | |
|----------------------------|-----------------|----------------------|-------------|-----------------------------|
| P-JIC Size, in. | Ordering Number | Dimensions, in. (mm) | | Working Pressure psig (bar) |
| | | L | F | |
| 1/4 | SS-HMC-JF4 | 0.70 (17.8) | 0.56 (14.3) | 20000 (1379) |
| 3/8 | SS-HMC-JF6 | 0.81 (20.5) | 0.69 (17.5) | 20000 (1379) |
| 1/2 | SS-HMC-JF8 | 0.94 (23.9) | 0.87 (22.2) | 20000 (1379) |
| 5/8 | SS-HMC-JF10 | 1.07 (27.1) | 1.00 (25.4) | 20000 (1379) |
| 3/4 | SS-HMC-JF12 | 1.24 (31.6) | 1.25 (31.8) | 15000 (1034) |
| 1 | SS-HMC-JF16 | 1.29 (32.8) | 1.50 (38.1) | 15000 (1034) |

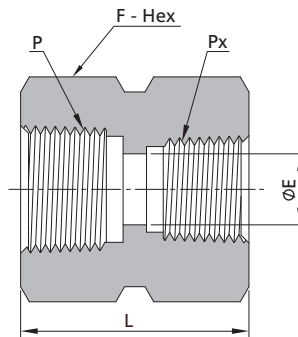
Fittings
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Pipe Cap Assemblies (Moveable Insert)



| Moveable Insert Female Type "M" | | | | | |
|---------------------------------|-----------------|----------------------|-------------|-----------------------------|--|
| P-SAE/MS Thread Size, in. | Ordering Number | Dimensions, in. (mm) | | Working Pressure psig (bar) | |
| | | L | F | | |
| 9/16-18 | SS-HMC-TM9 | 0.85 (21.6) | 0.69 (17.5) | 60000 (4137) | |
| 3/4-16 | SS-HMC-TM12 | 0.91 (23.1) | 1.00 (25.4) | 30000 (2068) | |
| 7/8-14 | SS-HMC-TM14 | 1.28 (32.5) | 1.19 (30.2) | 50000 (3447) | |
| 1-12 | SS-HMC-TM16 | 1.25 (31.8) | 1.25 (31.8) | 30000 (2068) | |
| 1 1/16-12 | SS-HMC-TM21 | 1.18 (30.0) | 1.50 (38.1) | 20000 (1379) | |

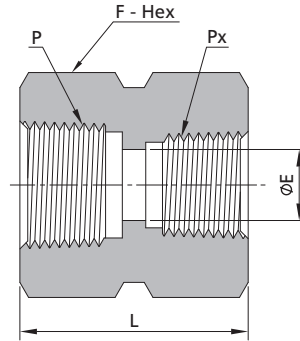
Hex Couplings



| Female NPT Threads | | | | | | |
|--------------------|------------------|--------------------|----------------------|-------------|-------------|-----------------------------|
| P-NPT Size, in. | Px-NPT Size, in. | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | | L | F | E | |
| 1/8 | 1/8 | SS-HPG-FNS2 | 0.94 (23.8) | 0.63 (15.9) | 0.31 (8.0) | 15000 (1034) |
| 1/4 | 1/8 | SS-HPG-FNS4-FNS2 | 1.14 (28.9) | 0.94 (23.8) | 0.31 (8.0) | 15000 (1034) |
| 1/4 | 1/4 | SS-HPG-FNS4 | 1.32 (33.5) | 0.94 (23.8) | 0.41 (10.4) | 15000 (1034) |
| 3/8 | 1/8 | SS-HPG-FNS6-FNS2 | 1.14 (28.9) | 1.13 (28.6) | 0.31 (8.0) | 15000 (1034) |
| 3/8 | 1/4 | SS-HPG-FNS6-FNS4 | 1.32 (33.5) | 1.13 (28.6) | 0.41 (10.4) | 15000 (1034) |
| 3/8 | 3/8 | SS-HPG-FNS6 | 1.32 (33.5) | 1.13 (28.6) | 0.54 (13.8) | 15000 (1034) |
| 1/2 | 1/8 | SS-HPG-FNS8-FNS2 | 1.35 (34.2) | 1.37 (34.9) | 0.31 (8.0) | 15000 (1034) |
| 1/2 | 1/4 | SS-HPG-FNS8-FNS4 | 1.53 (38.8) | 1.37 (34.9) | 0.41 (10.4) | 15000 (1034) |
| 1/2 | 3/8 | SS-HPG-FNS8-FNS6 | 1.53 (38.8) | 1.37 (34.9) | 0.54 (13.8) | 15000 (1034) |
| 1/2 | 1/2 | SS-HPG-FNS8 | 1.72 (43.8) | 1.37 (34.9) | 0.67 (17.0) | 15000 (1034) |
| 3/4 | 1/8 | SS-HPG-FNS12-FNS2 | 1.40 (35.5) | 1.50 (38.1) | 0.31 (8.0) | 10000 (690) |
| 3/4 | 1/4 | SS-HPG-FNS12-FNS4 | 1.58 (40.1) | 1.50 (38.1) | 0.41 (10.4) | 10000 (690) |
| 3/4 | 3/8 | SS-HPG-FNS12-FNS6 | 1.58 (40.1) | 1.50 (38.1) | 0.54 (13.8) | 10000 (690) |
| 3/4 | 1/2 | SS-HPG-FNS12-FNS8 | 1.79 (45.4) | 1.50 (38.1) | 0.67 (17.0) | 10000 (690) |
| 3/4 | 3/4 | SS-HPG-FNS12 | 1.84 (46.7) | 1.50 (38.1) | 0.88 (22.3) | 10000 (690) |
| 1 | 1/8 | SS-HPG-FNS16-FNS2 | 1.59 (40.5) | 1.75 (44.5) | 0.31 (8.0) | 10000 (690) |
| 1 | 1/4 | SS-HPG-FNS16-FNS4 | 1.76 (44.8) | 1.75 (44.5) | 0.41 (10.4) | 10000 (690) |
| 1 | 3/8 | SS-HPG-FNS16-FNS6 | 1.76 (44.8) | 1.75 (44.5) | 0.54 (13.8) | 10000 (690) |
| 1 | 1/2 | SS-HPG-FNS16-FNS8 | 1.96 (49.7) | 1.75 (44.5) | 0.67 (17.0) | 10000 (690) |
| 1 | 3/4 | SS-HPG-FNS16-FNS12 | 2.00 (50.7) | 1.75 (44.5) | 0.88 (22.3) | 10000 (690) |
| 1 | 1 | SS-HPG-FNS16 | 2.19 (55.5) | 1.75 (44.5) | 1.11 (28.1) | 10000 (690) |

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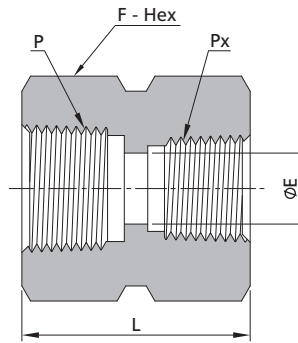
Hex Couplings



| Female NPT Threads | | | Female ISO Tapered Threads | | | |
|--------------------|-------------------------|--------------------|----------------------------|-------------|-------------|-----------------------------|
| P-NPT Size, in. | Px-ISO Thread Size, in. | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | | L | F | E | |
| 1/8 | 1/8 | SS-HPG-FNS2-FRT2 | 0.94 (23.8) | 0.63 (15.9) | 0.31 (8.0) | 15000 (1034) |
| 1/4 | 1/8 | SS-HPG-FNS4-FRT2 | 1.14 (28.9) | 0.94 (23.8) | 0.31 (8.0) | 15000 (1034) |
| 1/4 | 1/4 | SS-HPG-FNS4-FRT4 | 1.32 (33.5) | 0.94 (23.8) | 0.41 (10.4) | 15000 (1034) |
| 3/8 | 1/8 | SS-HPG-FNS6-FRT2 | 1.14 (28.9) | 1.13 (28.6) | 0.31 (8.0) | 15000 (1034) |
| 3/8 | 1/4 | SS-HPG-FNS6-FRT4 | 1.32 (33.5) | 1.13 (28.6) | 0.41 (10.4) | 15000 (1034) |
| 3/8 | 3/8 | SS-HPG-FNS6-FRT6 | 1.32 (33.5) | 1.13 (28.6) | 0.54 (13.8) | 15000 (1034) |
| 1/2 | 1/8 | SS-HPG-FNS8-FRT2 | 1.35 (34.2) | 1.37 (34.9) | 0.31 (8.0) | 15000 (1034) |
| 1/2 | 1/4 | SS-HPG-FNS8-FRT4 | 1.53 (38.8) | 1.37 (34.9) | 0.41 (10.4) | 15000 (1034) |
| 1/2 | 3/8 | SS-HPG-FNS8-FRT6 | 1.53 (38.8) | 1.37 (34.9) | 0.54 (13.8) | 15000 (1034) |
| 1/2 | 1/2 | SS-HPG-FNS8-FRT8 | 1.72 (43.8) | 1.37 (34.9) | 0.67 (17.0) | 15000 (1034) |
| 3/4 | 1/8 | SS-HPG-FNS12-FRT2 | 1.40 (35.5) | 1.50 (38.1) | 0.31 (8.0) | 10000 (690) |
| 3/4 | 1/4 | SS-HPG-FNS12-FRT4 | 1.58 (40.1) | 1.50 (38.1) | 0.41 (10.4) | 10000 (690) |
| 3/4 | 3/8 | SS-HPG-FNS12-FRT6 | 1.58 (40.1) | 1.50 (38.1) | 0.54 (13.8) | 10000 (690) |
| 3/4 | 1/2 | SS-HPG-FNS12-FRT8 | 1.79 (45.4) | 1.50 (38.1) | 0.69 (17.4) | 10000 (690) |
| 3/4 | 3/4 | SS-HPG-FNS12-FRT12 | 1.84 (46.7) | 1.50 (38.1) | 0.88 (22.3) | 10000 (690) |
| 1 | 1/8 | SS-HPG-FNS16-FRT2 | 1.59 (40.5) | 1.75 (44.5) | 0.31 (8.0) | 10000 (690) |
| 1 | 1/4 | SS-HPG-FNS16-FRT4 | 1.76 (44.8) | 1.75 (44.5) | 0.41 (10.4) | 10000 (690) |
| 1 | 3/8 | SS-HPG-FNS16-FRT6 | 1.76 (44.8) | 1.75 (44.5) | 0.54 (13.8) | 10000 (690) |
| 1 | 1/2 | SS-HPG-FNS16-FRT8 | 1.96 (49.7) | 1.75 (44.5) | 0.69 (17.4) | 10000 (690) |
| 1 | 3/4 | SS-HPG-FNS16-FRT12 | 2.00 (50.7) | 1.75 (44.5) | 0.90 (22.8) | 10000 (690) |
| 1 | 1 | SS-HPG-FNS16-FRT16 | 2.19 (55.5) | 1.75 (44.5) | 1.11 (28.1) | 10000 (690) |

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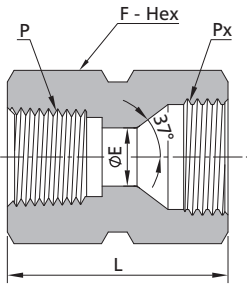
Hex Couplings



| Female ISO Tapered Threads | | | | | | |
|----------------------------|-------------------------|--------------------|----------------------|-------------|-------------|-----------------------------|
| P-ISO Thread Size, in. | Px-ISO Thread Size, in. | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | | L | F | E | |
| 1/8 | 1/8 | SS-HPG-FRT2 | 0.94 (23.8) | 0.63 (15.9) | 0.31 (8.0) | 15000 (1034) |
| 1/4 | 1/8 | SS-HPG-FRT4-FRT2 | 1.14 (28.9) | 0.94 (23.8) | 0.31 (8.0) | 15000 (1034) |
| 1/4 | 1/4 | SS-HPG-FRT4 | 1.32 (33.5) | 0.94 (23.8) | 0.41 (10.4) | 15000 (1034) |
| 3/8 | 1/8 | SS-HPG-FRT6-FRT2 | 1.14 (28.9) | 1.13 (28.6) | 0.31 (8.0) | 15000 (1034) |
| 3/8 | 1/4 | SS-HPG-FRT6-FRT4 | 1.32 (33.5) | 1.13 (28.6) | 0.41 (10.4) | 15000 (1034) |
| 3/8 | 3/8 | SS-HPG-FRT6 | 1.32 (33.5) | 1.13 (28.6) | 0.54 (13.8) | 15000 (1034) |
| 1/2 | 1/8 | SS-HPG-FRT8-FRT2 | 1.35 (34.2) | 1.37 (34.9) | 0.31 (8.0) | 15000 (1034) |
| 1/2 | 1/4 | SS-HPG-FRT8-FRT4 | 1.53 (38.8) | 1.37 (34.9) | 0.41 (10.4) | 15000 (1034) |
| 1/2 | 3/8 | SS-HPG-FRT8-FRT6 | 1.53 (38.8) | 1.37 (34.9) | 0.54 (13.8) | 15000 (1034) |
| 1/2 | 1/2 | SS-HPG-FRT8 | 1.72 (43.8) | 1.37 (34.9) | 0.69 (17.4) | 15000 (1034) |
| 3/4 | 1/8 | SS-HPG-FRT12-FRT2 | 1.40 (35.5) | 1.50 (38.1) | 0.31 (8.0) | 10000 (690) |
| 3/4 | 1/4 | SS-HPG-FRT12-FRT4 | 1.58 (40.1) | 1.50 (38.1) | 0.41 (10.4) | 10000 (690) |
| 3/4 | 3/8 | SS-HPG-FRT12-FRT6 | 1.58 (40.1) | 1.50 (38.1) | 0.54 (13.8) | 10000 (690) |
| 3/4 | 1/2 | SS-HPG-FRT12-FRT8 | 1.79 (45.4) | 1.50 (38.1) | 0.90 (22.8) | 10000 (690) |
| 3/4 | 3/4 | SS-HPG-FRT12 | 1.84 (46.7) | 1.50 (38.1) | 1.13 (28.7) | 10000 (690) |
| 1 | 1/8 | SS-HPG-FRT16-FRT2 | 1.59 (40.5) | 1.75 (44.5) | 0.31 (8.0) | 10000 (690) |
| 1 | 1/4 | SS-HPG-FRT16-FRT4 | 1.76 (44.8) | 1.75 (44.5) | 0.41 (10.4) | 10000 (690) |
| 1 | 3/8 | SS-HPG-FRT16-FRT6 | 1.76 (44.8) | 1.75 (44.5) | 0.54 (13.8) | 10000 (690) |
| 1 | 1/2 | SS-HPG-FRT16-FRT8 | 1.96 (49.7) | 1.75 (44.5) | 0.69 (17.4) | 10000 (690) |
| 1 | 3/4 | SS-HPG-FRT16-FRT12 | 2.00 (50.7) | 1.75 (44.5) | 0.90 (22.8) | 10000 (690) |
| 1 | 1 | SS-HPG-FRT16 | 2.19 (55.5) | 1.75 (44.5) | 1.13 (28.7) | 10000 (690) |

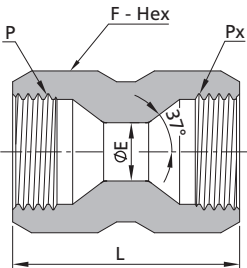
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| Fittings |
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Hex Couplings



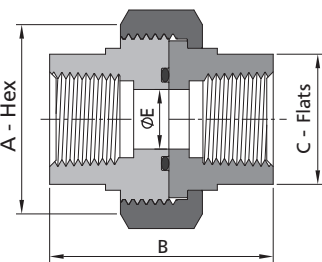
| Female NPT Threads | | | Female JIC | | | |
|--------------------|------------------|------------------|----------------------|-------------|-------------|-----------------------------|
| P-NPT Size, in. | Px-JIC Size, in. | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | | L | F | E | |
| 1/8 | 1/4 | SS-HPG-FNS2-JF4 | 1.12 (28.4) | 0.63 (15.9) | 0.17 (4.3) | 15000 (1034) |
| 1/4 | 1/4 | SS-HPG-FNS4-JF4 | 1.33 (33.7) | 0.94 (23.8) | 0.17 (4.3) | 15000 (1034) |
| 1/4 | 3/8 | SS-HPG-FNS4-JF6 | 1.36 (34.5) | 0.94 (23.8) | 0.30 (7.5) | 15000 (1034) |
| 3/8 | 1/4 | SS-HPG-FNS6-JF4 | 1.33 (33.7) | 1.13 (28.6) | 0.17 (4.3) | 15000 (1034) |
| 3/8 | 3/8 | SS-HPG-FNS6-JF6 | 1.36 (34.5) | 1.13 (28.6) | 0.30 (7.5) | 15000 (1034) |
| 3/8 | 1/2 | SS-HPG-FNS6-JF8 | 1.44 (36.5) | 1.13 (28.6) | 0.39 (9.9) | 15000 (1034) |
| 1/2 | 3/8 | SS-HPG-FNS8-JF6 | 1.56 (39.7) | 1.37 (34.9) | 0.30 (7.5) | 15000 (1034) |
| 1/2 | 1/2 | SS-HPG-FNS8-JF8 | 1.64 (41.7) | 1.37 (34.9) | 0.39 (9.9) | 15000 (1034) |
| 1/2 | 5/8 | SS-HPG-FNS8-JF10 | 1.74 (44.1) | 1.37 (34.9) | 0.48 (12.3) | 15000 (1034) |

Hex Couplings



| Female JIC | | | Working Pressure psig (bar) | | | |
|-----------------|------------------|------------------|-----------------------------|-------------|-------------|-----------------------------|
| P-JIC Size, in. | Px-JIC Size, in. | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | | L | F | E | |
| 1/4 | 1/4 | SS-HPG-JF4 | 1.24 (31.5) | 0.56 (14.3) | 0.17 (4.3) | 20000 (1379) |
| 3/8 | 1/4 | SS-HPG-JF6-JF4 | 1.27 (32.3) | 0.69 (17.5) | 0.17 (4.3) | 20000 (1379) |
| 3/8 | 3/8 | SS-HPG-JF6 | 1.33 (33.8) | 0.69 (17.5) | 0.30 (7.5) | 20000 (1379) |
| 1/2 | 3/8 | SS-HPG-JF8-JF6 | 1.39 (35.4) | 0.87 (22.2) | 0.30 (7.5) | 20000 (1379) |
| 1/2 | 1/2 | SS-HPG-JF8 | 1.48 (37.6) | 0.87 (22.2) | 0.39 (9.9) | 20000 (1379) |
| 5/8 | 1/2 | SS-HPG-JF10-JF8 | 1.57 (40.0) | 1.00 (25.4) | 0.39 (9.9) | 20000 (1379) |
| 5/8 | 5/8 | SS-HPG-JF10 | 1.68 (42.6) | 1.00 (25.4) | 0.48 (12.3) | 20000 (1379) |
| 3/4 | 5/8 | SS-HPG-JF12-JF10 | 1.74 (44.1) | 1.37 (34.8) | 0.48 (12.3) | 15000 (1034) |
| 3/4 | 3/4 | SS-HPG-JF12 | 1.80 (45.8) | 1.25 (31.8) | 0.61 (15.5) | 15000 (1034) |
| 1 | 3/4 | SS-HPG-JF16-JF12 | 1.89 (48.1) | 1.50 (38.1) | 0.61 (15.5) | 15000 (1034) |
| 1 | 1 | SS-HPG-JF16 | 1.97 (50.1) | 1.50 (38.1) | 0.84 (21.4) | 15000 (1034) |

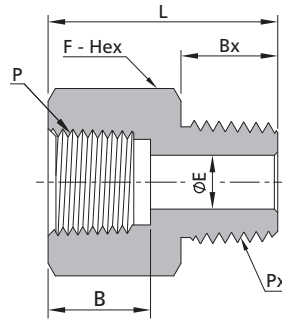
Zero-Clearance Unions^①



| Female NPT Threads | | Working Pressure psig (bar) | | | | |
|--------------------|-----------------|-----------------------------|-------------|-------------|-------------|-----------------------------|
| P-NPT Size, in. | Ordering Number | Dimensions, in. (mm) | | | | Working Pressure psig (bar) |
| | | A | B | C | E | |
| 1/8 | SS-HPZ-FNS2 | 1.06 (27.0) | 1.75 (44.5) | 0.62 (15.8) | 0.31 (8.0) | 15000 (1034) |
| 1/4 | SS-HPZ-FNS4 | 1.50 (38.1) | 2.00 (50.8) | 0.94 (23.8) | 0.41 (10.4) | 15000 (1034) |
| 3/8 | SS-HPZ-FNS6 | 1.75 (44.5) | 2.25 (57.2) | 1.12 (28.5) | 0.54 (13.8) | 15000 (1034) |
| 1/2 | SS-HPZ-FNS8 | 2.00 (50.8) | 2.50 (63.5) | 1.37 (34.9) | 0.67 (17.0) | 15000 (1034) |
| 3/4 | SS-HPZ-FNS12 | 2.25 (57.2) | 2.75 (69.9) | 1.50 (38.1) | 0.88 (22.3) | 10000 (690) |

① Working temperature range with Fluorocarbon FKM O-rings: 0°F to 400°F (-17.8°C to 204°C), other materials of O-rings available.

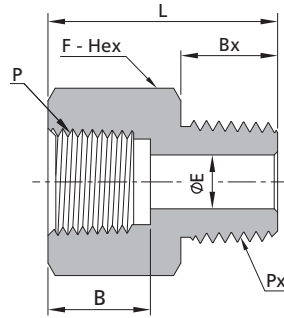
Adapters



| Female NPT Threads | | | Dimensions, in. (mm) | | | | | | Male NPT Threads |
|--------------------|------------------|-------------------|----------------------|-------------|-------------|-------------|-------------|-----------------------------|------------------|
| P-NPT Size, in. | Px-NPT Size, in. | Ordering Number | L | F | B | Bx | E | Working Pressure psig (bar) | |
| 1/8 | 1/8 | SS-HPA-FNS2-NS2 | 0.96 (24.5) | 0.63 (15.9) | 0.41 (10.4) | 0.38 (9.7) | 0.19 (4.8) | 15000 (1034) | |
| 1/8 | 1/4 | SS-HPA-FNS2-NS4 | 1.13 (28.8) | 0.63 (15.9) | 0.41 (10.4) | 0.56 (14.2) | 0.25 (6.4) | 15000 (1034) | |
| 1/8 | 3/8 | SS-HPA-FNS2-NS6 | 1.14 (29.0) | 0.69 (17.5) | 0.41 (10.4) | 0.56 (14.2) | 0.31 (7.9) | 15000 (1034) | |
| 1/8 | 1/2 | SS-HPA-FNS2-NS8 | 1.08 (27.4) | 0.87 (22.2) | 0.41 (10.4) | 0.75 (19.1) | 0.31 (8.0) | 15000 (1034) | |
| 1/8 | 3/4 | SS-HPA-FNS2-NS12 | 1.08 (27.4) | 1.06 (27.0) | 0.41 (10.4) | 0.75 (19.1) | 0.31 (8.0) | 10000 (690) | |
| 1/4 | 1/8 | SS-HPA-FNS4-NS2 | 1.25 (31.8) | 0.94 (23.8) | 0.59 (15.0) | 0.38 (9.7) | 0.19 (4.8) | 15000 (1034) | |
| 1/4 | 1/4 | SS-HPA-FNS4-NS4 | 1.37 (34.9) | 0.94 (23.8) | 0.59 (15.0) | 0.56 (14.2) | 0.25 (6.4) | 15000 (1034) | |
| 1/4 | 3/8 | SS-HPA-FNS4-NS6 | 1.37 (34.9) | 0.94 (23.8) | 0.59 (15.0) | 0.56 (14.2) | 0.31 (7.9) | 15000 (1034) | |
| 1/4 | 1/2 | SS-HPA-FNS4-NS8 | 1.58 (40.1) | 0.94 (23.8) | 0.59 (15.0) | 0.75 (19.1) | 0.38 (9.6) | 15000 (1034) | |
| 1/4 | 3/4 | SS-HPA-FNS4-NS12 | 1.34 (34.1) | 1.06 (27.0) | 0.59 (15.0) | 0.75 (19.1) | 0.41 (10.4) | 10000 (690) | |
| 1/4 | 1 | SS-HPA-FNS4-NS16 | 1.62 (41.1) | 1.37 (34.9) | 0.59 (15.0) | 0.94 (23.9) | 0.41 (10.4) | 10000 (690) | |
| 3/8 | 1/4 | SS-HPA-FNS6-NS4 | 1.42 (36.0) | 1.13 (28.6) | 0.59 (15.0) | 0.56 (14.2) | 0.25 (6.4) | 15000 (1034) | |
| 3/8 | 3/8 | SS-HPA-FNS6-NS6 | 1.42 (36.0) | 1.13 (28.6) | 0.59 (15.0) | 0.56 (14.2) | 0.31 (7.9) | 15000 (1034) | |
| 3/8 | 1/2 | SS-HPA-FNS6-NS8 | 1.61 (41.0) | 1.13 (28.6) | 0.59 (15.0) | 0.75 (19.1) | 0.38 (9.6) | 15000 (1034) | |
| 3/8 | 3/4 | SS-HPA-FNS6-NS12 | 1.61 (41.0) | 1.06 (27.0) | 0.59 (15.0) | 0.75 (19.1) | 0.54 (13.8) | 10000 (690) | |
| 3/8 | 1 | SS-HPA-FNS6-NS16 | 1.47 (37.3) | 1.37 (34.9) | 0.59 (15.0) | 0.94 (23.9) | 0.54 (13.8) | 10000 (690) | |
| 1/2 | 1/4 | SS-HPA-FNS8-NS4 | 1.72 (43.1) | 1.37 (34.9) | 0.78 (19.8) | 0.56 (14.2) | 0.25 (6.4) | 15000 (1034) | |
| 1/2 | 3/8 | SS-HPA-FNS8-NS6 | 1.72 (43.1) | 1.37 (34.9) | 0.78 (19.8) | 0.56 (14.2) | 0.31 (7.9) | 15000 (1034) | |
| 1/2 | 1/2 | SS-HPA-FNS8-NS8 | 1.89 (48.0) | 1.37 (34.9) | 0.78 (19.8) | 0.75 (19.1) | 0.38 (9.6) | 15000 (1034) | |
| 1/2 | 3/4 | SS-HPA-FNS8-NS12 | 1.89 (48.0) | 1.19 (30.2) | 0.78 (19.8) | 0.75 (19.1) | 0.58 (14.8) | 10000 (690) | |
| 1/2 | 1 | SS-HPA-FNS8-NS16 | 2.08 (52.8) | 1.37 (34.9) | 0.78 (19.8) | 0.94 (23.9) | 0.67 (17.0) | 10000 (690) | |
| 3/4 | 1/2 | SS-HPA-FNS12-NS8 | 1.89 (48.1) | 1.50 (38.1) | 0.81 (20.6) | 0.75 (19.1) | 0.47 (11.9) | 10000 (690) | |
| 3/4 | 3/4 | SS-HPA-FNS12-NS12 | 1.89 (48.1) | 1.50 (38.1) | 0.81 (20.6) | 0.75 (19.1) | 0.58 (14.8) | 10000 (690) | |
| 3/4 | 1 | SS-HPA-FNS12-NS16 | 2.08 (52.9) | 1.50 (38.1) | 0.81 (20.6) | 0.94 (23.9) | 0.79 (20.0) | 10000 (690) | |
| 1 | 1/2 | SS-HPA-FNS16-NS8 | 2.10 (53.3) | 1.75 (44.5) | 1.00 (25.4) | 0.75 (19.1) | 0.47 (11.9) | 10000 (690) | |
| 1 | 3/4 | SS-HPA-FNS16-NS12 | 2.10 (53.3) | 1.75 (44.5) | 1.00 (25.4) | 0.75 (19.1) | 0.58 (14.8) | 10000 (690) | |
| 1 | 1 | SS-HPA-FNS16-NS16 | 2.29 (58.1) | 1.75 (44.5) | 1.00 (25.4) | 0.94 (23.9) | 0.79 (20.0) | 10000 (690) | |

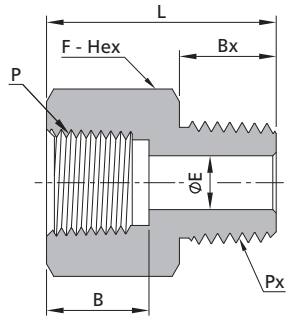
- Fittings
- Tubing
- Quick Couplings
- Line Filters
- Valves
- Sour Service Products
- Subsea Valves
- Tools and Installation Instructions
- Technical Information
- Part Number Crossover Charts

Adapters



| Female NPT Threads | | | Male ISO Tapered Threads | | | | | | |
|--------------------|-------------------------|-------------------|--------------------------|-------------|-------------|-------------|-------------|-----------------------------|--|
| P-NPT Size, in. | Px-ISO Thread Size, in. | Ordering Number | Dimensions, in. (mm) | | | | | Working Pressure psig (bar) | |
| | | | L | F | B | Bx | E | | |
| 1/8 | 1/8 | SS-HPA-FNS2-RT2 | 0.96 (24.5) | 0.63 (15.9) | 0.41 (10.4) | 0.38 (9.7) | 0.19 (4.8) | 15000 (1034) | |
| 1/8 | 1/4 | SS-HPA-FNS2-RT4 | 1.13 (28.8) | 0.63 (15.9) | 0.41 (10.4) | 0.56 (14.2) | 0.25 (6.4) | 15000 (1034) | |
| 1/8 | 3/8 | SS-HPA-FNS2-RT6 | 1.14 (29.0) | 0.69 (17.5) | 0.41 (10.4) | 0.56 (14.2) | 0.31 (7.9) | 15000 (1034) | |
| 1/8 | 1/2 | SS-HPA-FNS2-RT8 | 1.08 (27.4) | 0.87 (22.2) | 0.41 (10.4) | 0.75 (19.1) | 0.31 (8.0) | 15000 (1034) | |
| 1/8 | 3/4 | SS-HPA-FNS2-RT12 | 1.08 (27.4) | 1.06 (27.0) | 0.41 (10.4) | 0.75 (19.1) | 0.31 (8.0) | 10000 (690) | |
| 1/4 | 1/8 | SS-HPA-FNS4-RT2 | 1.25 (31.8) | 0.94 (23.8) | 0.59 (15.0) | 0.38 (9.7) | 0.19 (4.8) | 15000 (1034) | |
| 1/4 | 1/4 | SS-HPA-FNS4-RT4 | 1.37 (34.9) | 0.94 (23.8) | 0.59 (15.0) | 0.56 (14.2) | 0.25 (6.4) | 15000 (1034) | |
| 1/4 | 3/8 | SS-HPA-FNS4-RT6 | 1.37 (34.9) | 0.94 (23.8) | 0.59 (15.0) | 0.56 (14.2) | 0.31 (7.9) | 15000 (1034) | |
| 1/4 | 1/2 | SS-HPA-FNS4-RT8 | 1.58 (40.1) | 0.94 (23.8) | 0.59 (15.0) | 0.75 (19.1) | 0.38 (9.6) | 15000 (1034) | |
| 1/4 | 3/4 | SS-HPA-FNS4-RT12 | 1.34 (34.1) | 1.06 (27.0) | 0.59 (15.0) | 0.75 (19.1) | 0.41 (10.4) | 10000 (690) | |
| 1/4 | 1 | SS-HPA-FNS4-RT16 | 1.62 (41.1) | 1.37 (34.9) | 0.59 (15.0) | 0.94 (23.9) | 0.41 (10.4) | 10000 (690) | |
| 3/8 | 1/4 | SS-HPA-FNS6-RT4 | 1.42 (36.0) | 1.13 (28.6) | 0.59 (15.0) | 0.56 (14.2) | 0.25 (6.4) | 15000 (1034) | |
| 3/8 | 3/8 | SS-HPA-FNS6-RT6 | 1.42 (36.0) | 1.13 (28.6) | 0.59 (15.0) | 0.56 (14.2) | 0.31 (7.9) | 15000 (1034) | |
| 3/8 | 1/2 | SS-HPA-FNS6-RT8 | 1.61 (41.0) | 1.13 (28.6) | 0.59 (15.0) | 0.75 (19.1) | 0.38 (9.6) | 15000 (1034) | |
| 3/8 | 3/4 | SS-HPA-FNS6-RT12 | 1.61 (41.0) | 1.06(27.0) | 0.59 (15.0) | 0.75 (19.1) | 0.54 (13.8) | 10000 (690) | |
| 3/8 | 1 | SS-HPA-FNS6-RT16 | 1.47 (37.3) | 1.37 (34.9) | 0.59 (15.0) | 0.94 (23.9) | 0.54 (13.8) | 10000 (690) | |
| 1/2 | 1/4 | SS-HPA-FNS8-RT4 | 1.72 (43.1) | 1.37 (34.9) | 0.78 (19.8) | 0.56 (14.2) | 0.25 (6.4) | 15000 (1034) | |
| 1/2 | 3/8 | SS-HPA-FNS8-RT6 | 1.72 (43.1) | 1.37 (34.9) | 0.78 (19.8) | 0.56 (14.2) | 0.31 (7.9) | 15000 (1034) | |
| 1/2 | 1/2 | SS-HPA-FNS8-RT8 | 1.89 (48.0) | 1.37 (34.9) | 0.78 (19.8) | 0.75 (19.1) | 0.38 (9.6) | 15000 (1034) | |
| 1/2 | 3/4 | SS-HPA-FNS8-RT12 | 1.89 (48.0) | 1.19 (30.2) | 0.78 (19.8) | 0.75 (19.1) | 0.58 (14.8) | 10000 (690) | |
| 1/2 | 1 | SS-HPA-FNS8-RT16 | 2.08 (52.8) | 1.37 (34.9) | 0.78 (19.8) | 0.94 (23.9) | 0.67 (17.0) | 10000 (690) | |
| 3/4 | 1/2 | SS-HPA-FNS12-RT8 | 1.89 (48.1) | 1.50 (38.1) | 0.81 (20.6) | 0.75 (19.1) | 0.47 (11.9) | 10000 (690) | |
| 3/4 | 3/4 | SS-HPA-FNS12-RT12 | 1.89 (48.1) | 1.50 (38.1) | 0.81 (20.6) | 0.75 (19.1) | 0.58 (14.8) | 10000 (690) | |
| 3/4 | 1 | SS-HPA-FNS12-RT16 | 2.08 (52.9) | 1.50 (38.1) | 0.81 (20.6) | 0.94 (23.9) | 0.79 (20.0) | 10000 (690) | |
| 1 | 1/2 | SS-HPA-FNS16-RT8 | 2.10 (53.3) | 1.75 (44.5) | 1.00 (25.4) | 0.75 (19.1) | 0.47 (11.9) | 10000 (690) | |
| 1 | 3/4 | SS-HPA-FNS16-RT12 | 2.10 (53.3) | 1.75 (44.5) | 1.00 (25.4) | 0.75 (19.1) | 0.58 (14.8) | 10000 (690) | |
| 1 | 1 | SS-HPA-FNS16-RT16 | 2.29 (58.1) | 1.75 (44.5) | 1.00 (25.4) | 0.94 (23.9) | 0.79 (20.0) | 10000 (690) | |

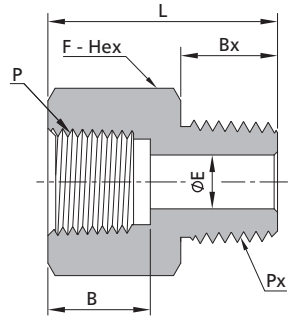
Adapters



| Female ISO Tapered Threads | | | Male ISO Tapered Threads | | | | | |
|----------------------------|-------------------------|-------------------|--------------------------|-------------|-------------|-------------|-------------|-----------------------------|
| P-ISO Thread Size, in. | Px-ISO Thread Size, in. | Ordering Number | Dimensions, in. (mm) | | | | | Working Pressure psig (bar) |
| | | | L | F | B | Bx | E | |
| 1/8 | 1/8 | SS-HPA-FRT2-RT2 | 0.96 (24.5) | 0.63 (15.9) | 0.41 (10.4) | 0.38 (9.7) | 0.19 (4.8) | 15000 (1034) |
| 1/8 | 1/4 | SS-HPA-FRT2-RT4 | 1.13 (28.8) | 0.63 (15.9) | 0.41 (10.4) | 0.56 (14.2) | 0.25 (6.4) | 15000 (1034) |
| 1/8 | 3/8 | SS-HPA-FRT2-RT6 | 1.14 (29.0) | 0.69 (17.5) | 0.41 (10.4) | 0.56 (14.2) | 0.31 (7.9) | 15000 (1034) |
| 1/8 | 1/2 | SS-HPA-FRT2-RT8 | 1.08 (27.4) | 0.87 (22.2) | 0.41 (10.4) | 0.75 (19.1) | 0.31 (8.0) | 15000 (1034) |
| 1/8 | 3/4 | SS-HPA-FRT2-RT12 | 1.08 (27.4) | 1.06 (27.0) | 0.41 (10.4) | 0.75 (19.1) | 0.31 (8.0) | 10000 (690) |
| 1/4 | 1/8 | SS-HPA-FRT4-RT2 | 1.25 (31.8) | 0.94 (23.8) | 0.59 (15.0) | 0.38 (9.7) | 0.19 (4.8) | 15000 (1034) |
| 1/4 | 1/4 | SS-HPA-FRT4-RT4 | 1.37 (34.9) | 0.94 (23.8) | 0.59 (15.0) | 0.56 (14.2) | 0.25 (6.4) | 15000 (1034) |
| 1/4 | 3/8 | SS-HPA-FRT4-RT6 | 1.37 (34.9) | 0.94 (23.8) | 0.59 (15.0) | 0.56 (14.2) | 0.31 (7.9) | 15000 (1034) |
| 1/4 | 1/2 | SS-HPA-FRT4-RT8 | 1.58 (40.1) | 0.94 (23.8) | 0.59 (15.0) | 0.75 (19.1) | 0.38 (9.6) | 15000 (1034) |
| 1/4 | 3/4 | SS-HPA-FRT4-RT12 | 1.34 (34.1) | 1.06 (27.0) | 0.59 (15.0) | 0.75 (19.1) | 0.41 (10.4) | 10000 (690) |
| 1/4 | 1 | SS-HPA-FRT4-RT16 | 1.62 (41.1) | 1.37 (34.9) | 0.59 (15.0) | 0.94 (23.9) | 0.41 (10.4) | 10000 (690) |
| 3/8 | 1/4 | SS-HPA-FRT6-RT4 | 1.42 (36.0) | 1.13 (28.6) | 0.59 (15.0) | 0.56 (14.2) | 0.25 (6.4) | 15000 (1034) |
| 3/8 | 3/8 | SS-HPA-FRT6-RT6 | 1.42 (36.0) | 1.13 (28.6) | 0.59 (15.0) | 0.56 (14.2) | 0.31 (7.9) | 15000 (1034) |
| 3/8 | 1/2 | SS-HPA-FRT6-RT8 | 1.61 (41.0) | 1.13 (28.6) | 0.59 (15.0) | 0.75 (19.1) | 0.38 (9.6) | 15000 (1034) |
| 3/8 | 3/4 | SS-HPA-FRT6-RT12 | 1.61 (41.0) | 1.06 (27.0) | 0.59 (15.0) | 0.75 (19.1) | 0.54 (13.8) | 10000 (690) |
| 3/8 | 1 | SS-HPA-FRT6-RT16 | 1.47 (37.3) | 1.37 (34.9) | 0.59 (15.0) | 0.94 (23.9) | 0.54 (13.8) | 10000 (690) |
| 1/2 | 1/4 | SS-HPA-FRT8-RT4 | 1.72 (43.1) | 1.37 (34.9) | 0.78 (19.8) | 0.56 (14.2) | 0.25 (6.4) | 15000 (1034) |
| 1/2 | 3/8 | SS-HPA-FRT8-RT6 | 1.72 (43.1) | 1.37 (34.9) | 0.78 (19.8) | 0.56 (14.2) | 0.31 (7.9) | 15000 (1034) |
| 1/2 | 1/2 | SS-HPA-FRT8-RT8 | 1.89 (48.0) | 1.37 (34.9) | 0.78 (19.8) | 0.75 (19.1) | 0.38 (9.6) | 15000 (1034) |
| 1/2 | 3/4 | SS-HPA-FRT8-RT12 | 1.89 (48.0) | 1.19 (30.2) | 0.78 (19.8) | 0.75 (19.1) | 0.58 (14.8) | 10000 (690) |
| 1/2 | 1 | SS-HPA-FRT8-RT16 | 2.08 (52.8) | 1.37 (34.9) | 0.78 (19.8) | 0.94 (23.9) | 0.69 (17.4) | 10000 (690) |
| 3/4 | 1/2 | SS-HPA-FRT12-RT8 | 1.89 (48.1) | 1.50 (38.1) | 0.81 (20.6) | 0.75 (19.1) | 0.47 (11.9) | 10000 (690) |
| 3/4 | 3/4 | SS-HPA-FRT12-RT12 | 1.89 (48.1) | 1.50 (38.1) | 0.81 (20.6) | 0.75 (19.1) | 0.58 (14.8) | 10000 (690) |
| 3/4 | 1 | SS-HPA-FRT12-RT16 | 2.08 (52.9) | 1.50 (38.1) | 0.81 (20.6) | 0.94 (23.9) | 0.79 (20.0) | 10000 (690) |
| 1 | 1/2 | SS-HPA-FRT16-RT8 | 2.10 (53.3) | 1.75 (44.5) | 1.00 (25.4) | 0.75 (19.1) | 0.47 (11.9) | 10000 (690) |
| 1 | 3/4 | SS-HPA-FRT16-RT12 | 2.10 (53.3) | 1.75 (44.5) | 1.00 (25.4) | 0.75 (19.1) | 0.58 (14.8) | 10000 (690) |
| 1 | 1 | SS-HPA-FRT16-RT16 | 2.29 (58.1) | 1.75 (44.5) | 1.00 (25.4) | 0.94 (23.9) | 0.79 (20.0) | 10000 (690) |

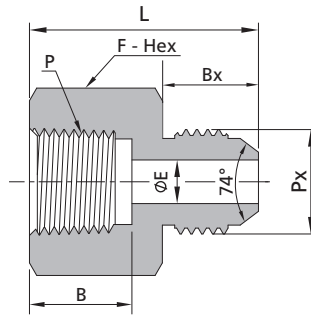
- Fittings
- Tubing
- Quick Couplings
- Line Filters
- Valves
- Sour Service Products
- Subsea Valves
- Tools and Installation Instructions
- Technical Information
- Part Number Crossover Charts

Adapters



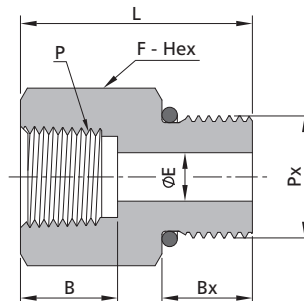
| Female ISO Tapered Threads | | | Dimensions, in. (mm) | | | | | Male NPT Threads | |
|----------------------------|------------------|-------------------|----------------------|-------------|-------------|-------------|-------------|-----------------------------|--|
| P-ISO Thread Size, in. | Px-NPT Size, in. | Ordering Number | L | F | B | Bx | E | Working Pressure psig (bar) | |
| | | | | | | | | | |
| 1/8 | 1/8 | SS-HPA-FRT2-NS2 | 0.96 (24.5) | 0.63 (15.9) | 0.41 (10.4) | 0.38 (9.7) | 0.19 (4.8) | 15000 (1034) | |
| 1/8 | 1/4 | SS-HPA-FRT2-NS4 | 1.13 (28.8) | 0.63 (15.9) | 0.41 (10.4) | 0.56 (14.2) | 0.25 (6.4) | 15000 (1034) | |
| 1/8 | 3/8 | SS-HPA-FRT2-NS6 | 1.14 (29.0) | 0.69 (17.5) | 0.41 (10.4) | 0.56 (14.2) | 0.31 (7.9) | 15000 (1034) | |
| 1/8 | 1/2 | SS-HPA-FRT2-NS8 | 1.08 (27.4) | 0.87 (22.2) | 0.41 (10.4) | 0.75 (19.1) | 0.31 (8.0) | 15000 (1034) | |
| 1/8 | 3/4 | SS-HPA-FRT2-NS12 | 1.08 (27.4) | 1.06 (27.0) | 0.41 (10.4) | 0.75 (19.1) | 0.31 (8.0) | 10000 (690) | |
| 1/4 | 1/8 | SS-HPA-FRT4-NS2 | 1.25 (31.8) | 0.94 (23.8) | 0.59 (15.0) | 0.38 (9.7) | 0.19 (4.8) | 15000 (1034) | |
| 1/4 | 1/4 | SS-HPA-FRT4-NS4 | 1.37 (34.9) | 0.94 (23.8) | 0.59 (15.0) | 0.56 (14.2) | 0.25 (6.4) | 15000 (1034) | |
| 1/4 | 3/8 | SS-HPA-FRT4-NS6 | 1.37 (34.9) | 0.94 (23.8) | 0.59 (15.0) | 0.56 (14.2) | 0.31 (7.9) | 15000 (1034) | |
| 1/4 | 1/2 | SS-HPA-FRT4-NS8 | 1.58 (40.1) | 0.94 (23.8) | 0.59 (15.0) | 0.75 (19.1) | 0.38 (9.6) | 15000 (1034) | |
| 1/4 | 3/4 | SS-HPA-FRT4-NS12 | 1.34 (34.1) | 1.06 (27.0) | 0.59 (15.0) | 0.75 (19.1) | 0.41 (10.4) | 10000 (690) | |
| 1/4 | 1 | SS-HPA-FRT4-NS16 | 1.62 (41.1) | 1.37 (34.9) | 0.59 (15.0) | 0.94 (23.9) | 0.41 (10.4) | 10000 (690) | |
| 3/8 | 1/4 | SS-HPA-FRT6-NS4 | 1.42 (36.0) | 1.13 (28.6) | 0.59 (15.0) | 0.56 (14.2) | 0.25 (6.4) | 15000 (1034) | |
| 3/8 | 3/8 | SS-HPA-FRT6-NS6 | 1.42 (36.0) | 1.13 (28.6) | 0.59 (15.0) | 0.56 (14.2) | 0.31 (7.9) | 15000 (1034) | |
| 3/8 | 1/2 | SS-HPA-FRT6-NS8 | 1.61 (41.0) | 1.13 (28.6) | 0.59 (15.0) | 0.75 (19.1) | 0.38 (9.6) | 15000 (1034) | |
| 3/8 | 3/4 | SS-HPA-FRT6-NS12 | 1.61 (41.0) | 1.06 (27.0) | 0.59 (15.0) | 0.75 (19.1) | 0.54 (13.8) | 10000 (690) | |
| 3/8 | 1 | SS-HPA-FRT6-NS16 | 1.47 (37.3) | 1.37 (34.9) | 0.59 (15.0) | 0.94 (23.9) | 0.54 (13.8) | 10000 (690) | |
| 1/2 | 1/4 | SS-HPA-FRT8-NS4 | 1.72 (43.1) | 1.37 (34.9) | 0.78 (19.8) | 0.56 (14.2) | 0.25 (6.4) | 15000 (1034) | |
| 1/2 | 3/8 | SS-HPA-FRT8-NS6 | 1.72 (43.1) | 1.37 (34.9) | 0.78 (19.8) | 0.56 (14.2) | 0.31 (7.9) | 15000 (1034) | |
| 1/2 | 1/2 | SS-HPA-FRT8-NS8 | 1.89 (48.0) | 1.37 (34.9) | 0.78 (19.8) | 0.75 (19.1) | 0.38 (9.6) | 15000 (1034) | |
| 1/2 | 3/4 | SS-HPA-FRT8-NS12 | 1.89 (48.0) | 1.19 (30.2) | 0.78 (19.8) | 0.75 (19.1) | 0.58 (14.8) | 10000 (690) | |
| 1/2 | 1 | SS-HPA-FRT8-NS16 | 2.08 (52.8) | 1.37 (34.9) | 0.78 (19.8) | 0.94 (23.9) | 0.69 (17.4) | 10000 (690) | |
| 3/4 | 1/2 | SS-HPA-FRT12-NS8 | 1.89 (48.1) | 1.50 (38.1) | 0.81 (20.6) | 0.75 (19.1) | 0.47 (11.9) | 10000 (690) | |
| 3/4 | 3/4 | SS-HPA-FRT12-NS12 | 1.89 (48.1) | 1.50 (38.1) | 0.81 (20.6) | 0.75 (19.1) | 0.58 (14.8) | 10000 (690) | |
| 3/4 | 1 | SS-HPA-FRT12-NS16 | 2.08 (52.9) | 1.50 (38.1) | 0.81 (20.6) | 0.94 (23.9) | 0.79 (20.0) | 10000 (690) | |
| 1 | 1/2 | SS-HPA-FRT16-NS8 | 2.10 (53.3) | 1.75 (44.5) | 1.00 (25.4) | 0.75 (19.1) | 0.47 (11.9) | 10000 (690) | |
| 1 | 3/4 | SS-HPA-FRT16-NS12 | 2.10 (53.3) | 1.75 (44.5) | 1.00 (25.4) | 0.75 (19.1) | 0.58 (14.8) | 10000 (690) | |
| 1 | 1 | SS-HPA-FRT16-NS16 | 2.29 (58.1) | 1.75 (44.5) | 1.00 (25.4) | 0.94 (23.9) | 0.79 (20.0) | 10000 (690) | |

Adapters



| Female NPT Threads | | | Dimensions, in. (mm) | | | | | Male JIC |
|--------------------|------------------|-------------------|----------------------|-------------|-------------|-------------|-------------|-----------------------------|
| P-NPT Size, in. | Px-JIC Size, in. | Ordering Number | L | F | B | Bx | E | Working Pressure psig (bar) |
| 1/8 | 1/4 | SS-HPA-FNS2-JM4 | 1.09 (27.8) | 0.63 (15.9) | 0.41 (10.4) | 0.55 (14.0) | 0.17 (4.4) | 15000 (1034) |
| 1/4 | 1/4 | SS-HPA-FNS4-JM4 | 1.37 (34.9) | 0.94 (23.8) | 0.59 (15.0) | 0.55 (14.0) | 0.17 (4.4) | 15000 (1034) |
| 1/4 | 3/8 | SS-HPA-FNS4-JM6 | 1.32 (33.5) | 0.94 (23.8) | 0.59 (15.0) | 0.56 (14.1) | 0.23 (5.8) | 15000 (1034) |
| 3/8 | 3/8 | SS-HPA-FNS6-JM6 | 1.37 (34.8) | 1.13 (28.6) | 0.59 (15.0) | 0.56 (14.1) | 0.23 (5.8) | 15000 (1034) |
| 3/8 | 1/2 | SS-HPA-FNS6-JM8 | 1.47 (37.4) | 1.13 (28.6) | 0.59 (15.0) | 0.66 (16.7) | 0.31 (8.0) | 15000 (1034) |
| 1/2 | 1/2 | SS-HPA-FNS8-JM8 | 1.72 (43.6) | 1.37 (34.9) | 0.78 (19.8) | 0.66 (16.7) | 0.31 (8.0) | 15000 (1034) |
| 1/2 | 5/8 | SS-HPA-FNS8-JM10 | 1.82 (46.2) | 1.37 (34.9) | 0.78 (19.8) | 0.76 (19.3) | 0.41 (10.4) | 15000 (1034) |
| 1/2 | 3/4 | SS-HPA-FNS8-JM12 | 1.92 (48.8) | 1.37 (34.9) | 0.78 (19.8) | 0.86 (21.9) | 0.46 (11.6) | 15000 (1034) |
| 3/4 | 3/4 | SS-HPA-FNS12-JM12 | 1.89 (47.9) | 1.50 (38.1) | 0.81 (20.6) | 0.86 (21.9) | 0.61 (15.5) | 10000 (690) |
| 1 | 1 | SS-HPA-FNS16-JM16 | 2.18 (55.3) | 1.75 (44.5) | 1.00 (25.4) | 0.91 (23.1) | 0.84 (21.4) | 10000 (690) |

Adapters^①

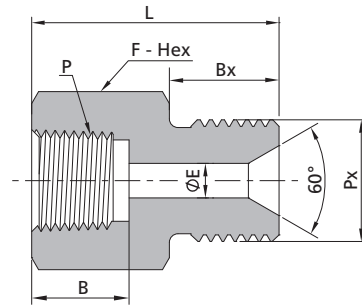


| Female NPT Threads | | | Dimensions, in. (mm) | | | | | Male SAE O-ring |
|--------------------|----------------------------|-------------------|----------------------|-------------|-------------|-------------|-------------|-----------------------------|
| P-NPT Size, in. | Px-SAE/MS Thread Size, in. | Ordering Number | L | F | B | Bx | E | Working Pressure psig (bar) |
| 1/4 | 7/16-20 | SS-HPA-FNS4-SH7 | 1.20 (30.5) | 0.75 (19.1) | 0.59 (15.0) | 0.43 (11.0) | 0.18 (4.5) | 10000 (690) |
| 3/8 | 9/16-18 | SS-HPA-FNS6-SH9 | 1.29 (32.7) | 0.94 (23.8) | 0.59 (15.0) | 0.47 (12.0) | 0.30 (7.5) | 10000 (690) |
| 1/2 | 3/4-16 | SS-HPA-FNS8-SH12 | 1.61 (40.9) | 1.19 (30.2) | 0.78 (19.8) | 0.55 (14.0) | 0.39 (10.0) | 10000 (690) |
| 3/4 | 7/8-14 | SS-HPA-FNS12-SH14 | 1.67 (42.5) | 1.50 (38.1) | 0.81 (20.6) | 0.63 (16.0) | 0.49 (12.5) | 10000 (690) |

① Male SAE O-ring Ends are supplied with a Fluorocarbon FKM O-ring as standard, other materials of O-rings available.

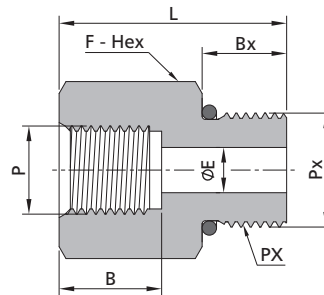
Fittings
 Tubing
 Quick Couplings
 Line Filters
 Valves
 Sour Service Products
 Subsea Valves
 Tools and Installation Instructions
 Technical Information
 Part Number Crossover Charts

Adapters



| Female NPT Threads | | | Dimensions, in. (mm) | | | | | Male Type "M" |
|--------------------|----------------------------|-------------------|----------------------|-------------|-------------|-------------|-------------|-----------------------------|
| P-NPT Size, in. | Px-SAE/MS Thread Size, in. | Ordering Number | L | F | B | Bx | E | Working Pressure psig (bar) |
| 1/8 | 9/16-18 | SS-HPA-FNS2-TM9 | 1.13 (28.6) | 0.63 (15.9) | 0.41 (10.4) | 0.50 (12.7) | 0.09 (2.4) | 15000 (1034) |
| 1/4 | 9/16-18 | SS-HPA-FNS4-TM9 | 1.37 (34.9) | 0.94 (23.8) | 0.59 (15.0) | 0.50 (12.7) | 0.09 (2.4) | 15000 (1034) |
| 1/4 | 3/4-16 | SS-HPA-FNS4-TM12 | 1.50 (38.1) | 0.94 (23.8) | 0.59 (15.0) | 0.63 (16.0) | 0.29 (7.4) | 15000 (1034) |
| 3/8 | 9/16-18 | SS-HPA-FNS6-TM9 | 1.44 (36.5) | 1.13 (28.6) | 0.59 (15.0) | 0.50 (12.7) | 0.09 (2.4) | 15000 (1034) |
| 3/8 | 3/4-16 | SS-HPA-FNS6-TM12 | 1.56 (39.7) | 1.13 (28.6) | 0.59 (15.0) | 0.63 (16.0) | 0.29 (7.4) | 15000 (1034) |
| 1/2 | 9/16-18 | SS-HPA-FNS8-TM9 | 1.63 (41.3) | 1.37 (34.9) | 0.78 (19.8) | 0.50 (12.7) | 0.09 (2.4) | 15000 (1034) |
| 1/2 | 3/4-16 | SS-HPA-FNS8-TM12 | 1.75 (44.4) | 1.37 (34.9) | 0.78 (19.8) | 0.63 (16.0) | 0.29 (7.4) | 15000 (1034) |
| 1/2 | 7/8-14 | SS-HPA-FNS8-TM14 | 1.87 (47.6) | 1.37 (34.9) | 0.78 (19.8) | 0.76 (19.2) | 0.15 (3.8) | 15000 (1034) |
| 3/4 | 1-12 | SS-HPA-FNS12-TM16 | 1.87 (47.6) | 1.50 (38.1) | 0.81 (20.6) | 0.64 (16.3) | 0.39 (10.0) | 10000 (690) |
| 1 | 1 5/16-12 | SS-HPA-FNS16-TM21 | 2.06 (52.4) | 1.75 (44.5) | 1.00 (25.4) | 0.62 (15.7) | 0.69 (17.5) | 10000 (690) |

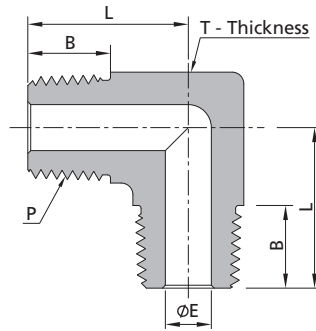
Adapters^①



| Female SAE O-ring | | | Dimensions, in. (mm) | | | | | Male SAE O-ring |
|---------------------------|----------------------------|------------------|----------------------|-------------|-------------|-------------|-------------|-----------------------------|
| P-SAE/MS Thread Size, in. | Px-SAE/MS Thread Size, in. | Ordering Number | L | F | B | Bx | E | Working Pressure psig (bar) |
| 7/16-20 | 9/16-18 | SS-HPA-US7-SH9 | 1.25 (31.8) | 0.81 (20.6) | 0.55 (14.0) | 0.47 (12.0) | 0.18 (4.5) | 10000 (690) |
| 7/16-20 | 3/4-16 | SS-HPA-US7-SH12 | 1.25 (31.8) | 0.87 (22.2) | 0.55 (14.0) | 0.55 (14.0) | 0.18 (4.5) | 10000 (690) |
| 9/16-18 | 3/4-16 | SS-HPA-US9-SH12 | 1.42 (36.0) | 1.00 (25.4) | 0.61 (15.5) | 0.55 (14.0) | 0.30 (7.5) | 10000 (690) |
| 9/16-18 | 7/8-14 | SS-HPA-US9-SH14 | 1.42 (36.0) | 1.00 (25.4) | 0.61 (15.5) | 0.63 (16.0) | 0.30 (7.5) | 10000 (690) |
| 3/4-16 | 7/8-14 | SS-HPA-US12-SH14 | 1.65 (41.8) | 30.2 (30.2) | 0.69 (17.5) | 0.63 (16.0) | 0.39 (10.0) | 10000 (690) |

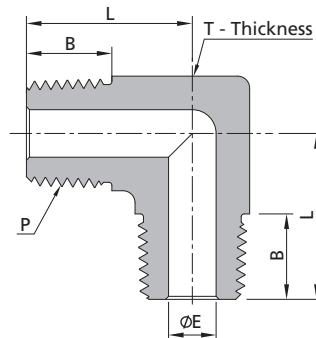
① Male SAE O-ring Ends are supplied with a Fluorocarbon FKM O-ring as standard, other materials of O-rings available.

Male Elbows



| Male NPT Threads | | | | | | |
|------------------|-----------------|----------------------|-------------|-------------|-------------|-----------------------------|
| P-NPT Size, in. | Ordering Number | Dimensions, in. (mm) | | | | Working Pressure psig (bar) |
| | | L | B | E | T | |
| 1/8 | SS-HPE-NS2 | 0.75 (19.1) | 0.38 (9.7) | 0.19 (4.8) | 0.50 (12.7) | 15000 (1034) |
| 1/4 | SS-HPE-NS4 | 1.00 (25.4) | 0.56 (14.2) | 0.25 (6.4) | 0.63 (15.9) | 15000 (1034) |
| 3/8 | SS-HPE-NS6 | 1.10 (28.0) | 0.56 (14.2) | 0.31 (7.9) | 0.75 (19.1) | 15000 (1034) |
| 1/2 | SS-HPE-NS8 | 1.44 (36.6) | 0.75 (19.1) | 0.38 (9.6) | 1.00 (25.4) | 15000 (1034) |
| 3/4 | SS-HPE-NS12 | 1.56 (39.6) | 0.75 (19.1) | 0.58 (14.8) | 1.37 (34.9) | 10000 (690) |
| 1 | SS-HPE-NS16 | 1.89 (48.0) | 0.94 (23.9) | 0.79 (20.0) | 1.50 (38.1) | 10000 (690) |

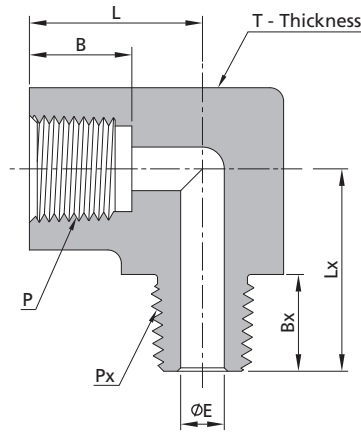
Male Elbows



| Male ISO Tapered Pipe Threads | | | | | | |
|-------------------------------|-----------------|----------------------|-------------|-------------|-------------|-----------------------------|
| P-ISO Thread Size, in. | Ordering Number | Dimensions, in. (mm) | | | | Working Pressure psig (bar) |
| | | L | B | E | T | |
| 1/8 | SS-HPE-RT2 | 0.75 (19.1) | 0.38 (9.7) | 0.19 (4.8) | 0.50 (12.7) | 15000 (1034) |
| 1/4 | SS-HPE-RT4 | 1.00 (25.4) | 0.56 (14.2) | 0.25 (6.4) | 0.63 (15.9) | 15000 (1034) |
| 3/8 | SS-HPE-RT6 | 1.10 (28.0) | 0.56 (14.2) | 0.31 (7.9) | 0.75 (19.1) | 15000 (1034) |
| 1/2 | SS-HPE-RT8 | 1.44 (36.6) | 0.75 (19.1) | 0.38 (9.6) | 1.00 (25.4) | 15000 (1034) |
| 3/4 | SS-HPE-RT12 | 1.56 (39.6) | 0.75 (19.1) | 0.58 (14.8) | 1.37 (34.9) | 10000 (690) |
| 1 | SS-HPE-RT16 | 1.89 (48.0) | 0.94 (23.9) | 0.79 (20.0) | 1.50 (38.1) | 10000 (690) |

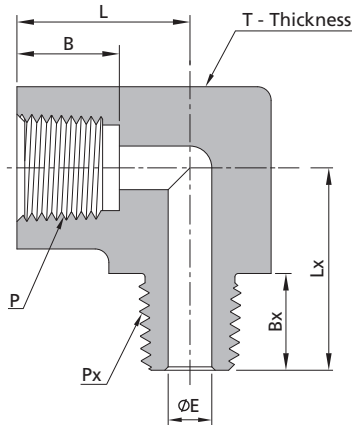
| |
|-------------------------------------|
| Fittings |
| Tubing |
| Quick Couplings |
| Line Filters |
| Valves |
| Sour Service Products |
| Subsea Valves |
| Tools and Installation Instructions |
| Technical Information |
| Part Number Crossover Charts |

Street Elbows



| Female NPT Threads | | | Male NPT Threads | | | | | | |
|--------------------|------------------|-------------------|----------------------|-------------|-------------|-------------|-------------|-------------|-----------------------------|
| P-NPT Size, in. | Px-NPT Size, in. | Ordering Number | Dimensions, in. (mm) | | | | | | Working Pressure psig (bar) |
| | | | L | B | E | Lx | Bx | T | |
| 1/8 | 1/8 | SS-HPE-FNS2-NS2 | 0.75 (19.1) | 0.41 (10.4) | 0.19 (4.8) | 0.75 (19.1) | 0.38 (9.7) | 0.63 (15.9) | 15000 (1034) |
| 1/8 | 1/4 | SS-HPE-FNS2-NS4 | 0.78 (19.8) | 0.41 (10.4) | 0.25 (6.4) | 1.00 (25.4) | 0.56 (14.2) | 0.63 (15.9) | 15000 (1034) |
| 1/8 | 3/8 | SS-HPE-FNS2-NS6 | 0.95 (24.2) | 0.41 (10.4) | 0.31 (7.9) | 1.07 (27.2) | 0.56 (14.2) | 0.75 (19.1) | 15000 (1034) |
| 1/4 | 1/4 | SS-HPE-FNS4-NS4 | 1.00 (25.4) | 0.59 (15.0) | 0.25 (6.4) | 1.06 (27.0) | 0.56 (14.2) | 0.75 (19.1) | 15000 (1034) |
| 1/4 | 3/8 | SS-HPE-FNS4-NS6 | 1.00 (25.4) | 0.59 (15.0) | 0.31 (7.9) | 1.06 (27.0) | 0.56 (14.2) | 0.75 (19.1) | 15000 (1034) |
| 1/4 | 1/2 | SS-HPE-FNS4-NS8 | 1.15 (29.1) | 0.59 (15.0) | 0.38 (9.6) | 1.40 (35.5) | 0.75 (19.1) | 1.00 (25.4) | 15000 (1034) |
| 3/8 | 3/8 | SS-HPE-FNS6-NS6 | 1.20 (30.6) | 0.59 (15.0) | 0.31 (7.9) | 1.20 (30.6) | 0.56 (14.2) | 1.00 (25.4) | 15000 (1034) |
| 3/8 | 1/2 | SS-HPE-FNS6-NS8 | 1.20 (30.6) | 0.59 (15.0) | 0.38 (9.6) | 1.38 (35.0) | 0.75 (19.1) | 1.00 (25.4) | 15000 (1034) |
| 3/8 | 3/4 | SS-HPE-FNS6-NS12 | 1.23 (31.2) | 0.59 (15.0) | 0.54 (13.8) | 1.56 (39.6) | 0.75 (19.1) | 1.37 (34.9) | 10000 (690) |
| 1/2 | 1/2 | SS-HPE-FNS8-NS8 | 1.50 (38.1) | 0.78 (19.8) | 0.38 (9.6) | 1.61 (40.8) | 0.75 (19.1) | 1.37 (34.9) | 15000 (1034) |
| 1/2 | 3/4 | SS-HPE-FNS8-NS12 | 1.43 (36.2) | 0.78 (19.8) | 0.58 (14.8) | 1.61 (40.8) | 0.75 (19.1) | 1.37 (34.9) | 10000 (690) |
| 1/2 | 1 | SS-HPE-FNS8-NS16 | 1.45 (36.9) | 0.78 (19.8) | 0.67 (17.0) | 1.86 (47.3) | 0.94 (23.9) | 1.37 (34.9) | 10000 (690) |
| 3/4 | 3/4 | SS-HPE-FNS12-NS12 | 1.50 (38.1) | 0.81 (20.6) | 0.58 (14.8) | 1.77 (44.9) | 0.75 (19.1) | 1.50 (38.1) | 10000 (690) |
| 3/4 | 1 | SS-HPE-FNS12-NS16 | 1.63 (41.4) | 0.81 (20.6) | 0.79 (20.0) | 1.86 (47.3) | 0.94 (23.9) | 1.50 (38.1) | 10000 (690) |
| 1 | 1 | SS-HPE-FNS16-NS16 | 1.91 (48.5) | 1.00 (25.4) | 0.79 (20.0) | 2.07 (52.5) | 0.94 (23.9) | 1.75 (44.5) | 10000 (690) |

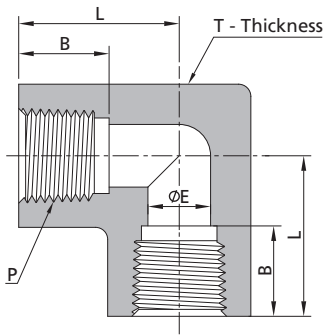
Street Elbows



| Female ISO Tapered Pipe Threads | | | Male ISO Tapered Threads | | | | | | |
|---------------------------------|-------------------------|-------------------|--------------------------|-------------|-------------|-------------|-------------|-------------|-----------------------------|
| P-ISO Thread Size, in. | Px-ISO Thread Size, in. | Ordering Number | Dimensions, in. (mm) | | | | | | Working Pressure psig (bar) |
| | | | L | B | E | Lx | Bx | T | |
| 1/8 | 1/8 | SS-HPE-FRT2-RT2 | 0.75 (19.1) | 0.41 (10.4) | 0.19 (4.8) | 0.75 (19.1) | 0.38 (9.7) | 0.63 (15.9) | 15000 (1034) |
| 1/8 | 1/4 | SS-HPE-FRT2-RT4 | 0.78 (19.8) | 0.41 (10.4) | 0.25 (6.4) | 1.00 (25.4) | 0.56 (14.2) | 0.63 (15.9) | 15000 (1034) |
| 1/8 | 3/8 | SS-HPE-FRT2-RT6 | 0.95 (24.2) | 0.41 (10.4) | 0.31 (7.9) | 1.07 (27.2) | 0.56 (14.2) | 0.75 (19.1) | 15000 (1034) |
| 1/4 | 1/4 | SS-HPE-FRT4-RT4 | 1.00 (25.4) | 0.59 (15.0) | 0.25 (6.4) | 1.06 (27.0) | 0.56 (14.2) | 0.75 (19.1) | 15000 (1034) |
| 1/4 | 3/8 | SS-HPE-FRT4-RT6 | 1.00 (25.4) | 0.59 (15.0) | 0.31 (7.9) | 1.06 (27.0) | 0.56 (14.2) | 0.75 (19.1) | 15000 (1034) |
| 1/4 | 1/2 | SS-HPE-FRT4-RT8 | 1.15 (29.1) | 0.59 (15.0) | 0.38 (9.6) | 1.40 (35.5) | 0.75 (19.1) | 1.00 (25.4) | 15000 (1034) |
| 3/8 | 3/8 | SS-HPE-FRT6-RT6 | 1.20 (30.6) | 0.59 (15.0) | 0.31 (7.9) | 1.20 (30.6) | 0.56 (14.2) | 1.00 (25.4) | 15000 (1034) |
| 3/8 | 1/2 | SS-HPE-FRT6-RT8 | 1.20 (30.6) | 0.59 (15.0) | 0.38 (9.6) | 1.38 (35.0) | 0.75 (19.1) | 1.00 (25.4) | 15000 (1034) |
| 3/8 | 3/4 | SS-HPE-FRT6-RT12 | 1.23 (31.2) | 0.59 (15.0) | 0.54 (13.8) | 1.56 (39.6) | 0.75 (19.1) | 1.37 (34.9) | 10000 (690) |
| 1/2 | 1/2 | SS-HPE-FRT8-RT8 | 1.50 (38.1) | 0.78 (19.8) | 0.38 (9.6) | 1.61 (40.8) | 0.75 (19.1) | 1.37 (34.9) | 15000 (1034) |
| 1/2 | 3/4 | SS-HPE-FRT8-RT12 | 1.43 (36.2) | 0.78 (19.8) | 0.58 (14.8) | 1.61 (40.8) | 0.75 (19.1) | 1.37 (34.9) | 10000 (690) |
| 1/2 | 1 | SS-HPE-FRT8-RT16 | 1.45 (36.9) | 0.78 (19.8) | 0.67 (17.0) | 1.86 (47.3) | 0.94 (23.9) | 1.37 (34.9) | 10000 (690) |
| 3/4 | 3/4 | SS-HPE-FRT12-RT12 | 1.50 (38.1) | 0.81 (20.6) | 0.58 (14.8) | 1.77 (44.9) | 0.75 (19.1) | 1.50 (38.1) | 10000 (690) |
| 3/4 | 1 | SS-HPE-FRT12-RT16 | 1.63 (41.4) | 0.81 (20.6) | 0.79 (20.0) | 1.86 (47.3) | 0.94 (23.9) | 1.50 (38.1) | 10000 (690) |
| 1 | 1 | SS-HPE-FRT16-RT16 | 1.91 (48.5) | 1.00 (25.4) | 0.79 (20.0) | 2.07 (52.5) | 0.94 (23.9) | 1.75 (44.5) | 10000 (690) |

- Fittings
- Tubing
- Quick Couplings
- Line Filters
- Valves
- Sour Service Products
- Subsea Valves
- Tools and Installation Instructions
- Technical Information
- Part Number Crossover Charts

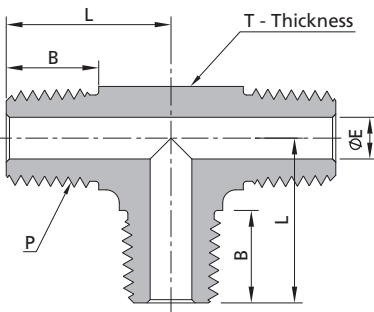
Female Elbows



| Female NPT Threads | | | | | | |
|--------------------|-----------------|----------------------|-------------|-------------|-------------|-----------------------------|
| P-NPT Size, in. | Ordering Number | Dimensions, in. (mm) | | | | Working Pressure psig (bar) |
| | | L | B | E | T | |
| 1/8 | SS-HPE-FNS2 | 0.75 (19.1) | 0.41 (10.4) | 0.31 (8.0) | 0.63 (15.9) | 15000 (1034) |
| 1/4 | SS-HPE-FNS4 | 1.00 (25.4) | 0.59 (15.0) | 0.41 (10.4) | 0.75 (19.1) | 15000 (1034) |
| 3/8 | SS-HPE-FNS6 | 1.20 (30.6) | 0.59 (15.0) | 0.54 (13.8) | 1.00 (25.4) | 15000 (1034) |
| 1/2 | SS-HPE-FNS8 | 1.50 (38.1) | 0.78 (19.8) | 0.67 (17.0) | 1.37 (34.9) | 15000 (1034) |
| 3/4 | SS-HPE-FNS12 | 1.50 (38.1) | 0.81 (20.6) | 0.88 (22.3) | 1.50 (38.1) | 10000 (690) |
| 1 | SS-HPE-FNS16 | 1.91 (48.5) | 1.00 (25.4) | 1.11 (28.1) | 1.75 (44.5) | 10000 (690) |

| Female ISO Tapered Threads | | | | | | |
|----------------------------|-----------------|----------------------|-------------|-------------|-------------|-----------------------------|
| P-ISO Thread Size, in. | Ordering Number | Dimensions, in. (mm) | | | | Working Pressure psig (bar) |
| | | L | B | E | T | |
| 1/8 | SS-HPE-FRT2 | 0.75 (19.1) | 0.41 (10.4) | 0.31 (8.0) | 0.63 (15.9) | 15000 (1034) |
| 1/4 | SS-HPE-FRT4 | 1.00 (25.4) | 0.59 (15.0) | 0.41 (10.4) | 0.75 (19.1) | 15000 (1034) |
| 3/8 | SS-HPE-FRT6 | 1.20 (30.6) | 0.59 (15.0) | 0.54 (13.8) | 1.00 (25.4) | 15000 (1034) |
| 1/2 | SS-HPE-FRT8 | 1.50 (38.1) | 0.78 (19.8) | 0.69 (17.4) | 1.37 (34.9) | 15000 (1034) |
| 3/4 | SS-HPE-FRT12 | 1.50 (38.1) | 0.81 (20.6) | 0.90 (22.8) | 1.50 (38.1) | 10000 (690) |
| 1 | SS-HPE-FRT16 | 1.91 (48.5) | 1.00 (25.4) | 1.13 (28.7) | 1.75 (44.5) | 10000 (690) |

Male Tees

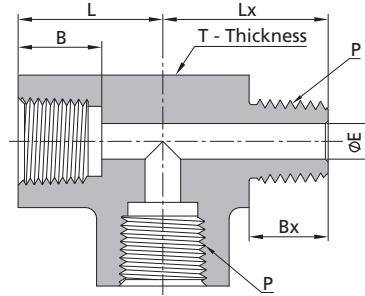


| Male NPT Threads | | | | | | |
|------------------|-----------------|----------------------|-------------|-------------|-------------|-----------------------------|
| P-NPT Size, in. | Ordering Number | Dimensions, in. (mm) | | | | Working Pressure psig (bar) |
| | | L | B | E | T | |
| 1/8 | SS-HPT-NS2 | 0.75 (19.1) | 0.38 (9.7) | 0.19 (4.8) | 0.50 (12.7) | 15000 (1034) |
| 1/4 | SS-HPT-NS4 | 1.00 (25.4) | 0.56 (14.2) | 0.25 (6.4) | 0.63 (15.9) | 15000 (1034) |
| 3/8 | SS-HPT-NS6 | 1.10 (28.0) | 0.56 (14.2) | 0.31 (7.9) | 0.75 (19.1) | 15000 (1034) |
| 1/2 | SS-HPT-NS8 | 1.44 (36.6) | 0.75 (19.1) | 0.38 (9.6) | 1.00 (25.4) | 15000 (1034) |
| 3/4 | SS-HPT-NS12 | 1.56 (39.6) | 0.75 (19.1) | 0.58 (14.8) | 1.37 (34.9) | 10000 (690) |
| 1 | SS-HPT-NS16 | 1.89 (48.0) | 0.94 (23.9) | 0.79 (20.0) | 1.50 (38.1) | 10000 (690) |

| Male ISO Tapered Threads | | | | | | |
|--------------------------|-----------------|----------------------|-------------|-------------|-------------|-----------------------------|
| P-ISO Thread Size, in. | Ordering Number | Dimensions, in. (mm) | | | | Working Pressure psig (bar) |
| | | L | B | E | T | |
| 1/8 | SS-HPT-RT2 | 0.75 (19.1) | 0.38 (9.7) | 0.19 (4.8) | 0.50 (12.7) | 15000 (1034) |
| 1/4 | SS-HPT-RT4 | 1.00 (25.4) | 0.56 (14.2) | 0.25 (6.4) | 0.63 (15.9) | 15000 (1034) |
| 3/8 | SS-HPT-RT6 | 1.10 (28.0) | 0.56 (14.2) | 0.31 (7.9) | 0.75 (19.1) | 15000 (1034) |
| 1/2 | SS-HPT-RT8 | 1.44 (36.6) | 0.75 (19.1) | 0.38 (9.6) | 1.00 (25.4) | 15000 (1034) |
| 3/4 | SS-HPT-RT12 | 1.56 (39.6) | 0.75 (19.1) | 0.58 (14.8) | 1.37 (34.9) | 10000 (690) |
| 1 | SS-HPT-RT16 | 1.89 (48.0) | 0.94 (23.9) | 0.79 (20.0) | 1.50 (38.1) | 10000 (690) |

| |
|-------------------------------------|
| Fittings |
| Tubing |
| Quick Couplings |
| Line Filters |
| Valves |
| Sour Service Products |
| Subsea Valves |
| Tools and Installation Instructions |
| Technical Information |
| Part Number Crossover Charts |

Male Street Tees

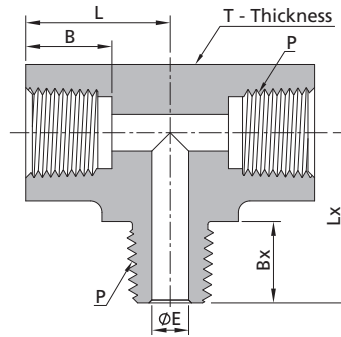


| NPT Threads | | | | | | | | |
|-----------------|-------------------------|----------------------|-------------|-------------|-------------|-------------|-------------|-----------------------------|
| P-NPT Size, in. | Ordering Number | Dimensions, in. (mm) | | | | | | Working Pressure psig (bar) |
| | | L | B | Lx | Bx | E | T | |
| 1/8 | SS-HPT-FNS2-NS2-FNS2 | 0.75 (19.1) | 0.41 (10.4) | 0.75 (19.1) | 0.38 (9.7) | 0.19 (4.8) | 0.63 (15.9) | 15000 (1034) |
| 1/4 | SS-HPT-FNS4-NS4-FNS4 | 1.00 (25.4) | 0.59 (15.0) | 1.06 (27.0) | 0.56 (14.2) | 0.25 (6.4) | 0.75 (19.1) | 15000 (1034) |
| 3/8 | SS-HPT-FNS6-NS6-FNS6 | 1.20 (30.6) | 0.59 (15.0) | 1.20 (30.6) | 0.56 (14.2) | 0.31 (7.9) | 1.00 (25.4) | 15000 (1034) |
| 1/2 | SS-HPT-FNS8-NS8-FNS8 | 1.50 (38.1) | 0.78 (19.8) | 1.61 (40.8) | 0.75 (19.1) | 0.38 (9.6) | 1.37 (34.9) | 15000 (1034) |
| 3/4 | SS-HPT-FNS12-NS12-FNS12 | 1.50 (38.1) | 0.81 (20.6) | 1.77 (44.9) | 0.75 (19.1) | 0.58 (14.8) | 1.50 (38.1) | 10000 (690) |
| 1 | SS-HPT-FNS16-NS16-FNS16 | 1.91 (48.5) | 1.00 (25.4) | 2.07 (52.5) | 0.94 (23.9) | 0.79 (20.0) | 1.75 (44.5) | 10000 (690) |

| ISO Tapered Pipe Threads | | | | | | | | |
|--------------------------|-------------------------|----------------------|-------------|-------------|-------------|-------------|-------------|-----------------------------|
| P-ISO Thread Size, in. | Ordering Number | Dimensions, in. (mm) | | | | | | Working Pressure psig (bar) |
| | | L | B | Lx | Bx | E | T | |
| 1/8 | SS-HPT-FRT2-RT2-FRT2 | 0.75 (19.1) | 0.41 (10.4) | 0.75 (19.1) | 0.38 (9.7) | 0.19 (4.8) | 0.63 (15.9) | 15000 (1034) |
| 1/4 | SS-HPT-FRT4-RT4-FRT4 | 1.00 (25.4) | 0.59 (15.0) | 1.06 (27.0) | 0.56 (14.2) | 0.25 (6.4) | 0.75 (19.1) | 15000 (1034) |
| 3/8 | SS-HPT-FRT6-RT6-FRT6 | 1.20 (30.6) | 0.59 (15.0) | 1.20 (30.6) | 0.56 (14.2) | 0.31 (7.9) | 1.00 (25.4) | 15000 (1034) |
| 1/2 | SS-HPT-FRT8-RT8-FRT8 | 1.50 (38.1) | 0.78 (19.8) | 1.61 (40.8) | 0.75 (19.1) | 0.38 (9.6) | 1.37 (34.9) | 15000 (1034) |
| 3/4 | SS-HPT-FRT12-RT12-FRT12 | 1.50 (38.1) | 0.81 (20.6) | 1.77 (44.9) | 0.75 (19.1) | 0.58 (14.8) | 1.50 (38.1) | 10000 (690) |
| 1 | SS-HPT-FRT16-RT16-FRT16 | 1.91 (48.5) | 1.00 (25.4) | 2.07 (52.5) | 0.94 (23.9) | 0.79 (20.0) | 1.75 (44.5) | 10000 (690) |

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|-------------------------------------|
| Fittings |
| Tubing |
| Quick Couplings |
| Line Filters |
| Valves |
| Sour Service Products |
| Subsea Valves |
| Tools and Installation Instructions |
| Technical Information |
| Part Number Crossover Charts |

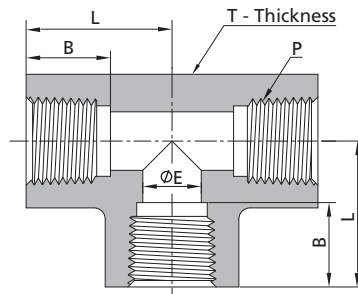
Male Branch Tees



| P-NPT Threads | | Dimensions, in. (mm) | | | | | | Working Pressure psig (bar) |
|-----------------|-------------------------|----------------------|-------------|-------------|-------------|-------------|-------------|--------------------------------|
| P-NPT Size, in. | Ordering Number | L | B | Lx | Bx | E | T | |
| 1/8 | SS-HPT-FNS2-FNS2-NS2 | 0.75 (19.1) | 0.41 (10.4) | 0.75 (19.1) | 0.38 (9.7) | 0.19 (4.8) | 0.63 (15.9) | 15000 (1034) |
| 1/4 | SS-HPT-FNS4-FNS4-NS4 | 1.00 (25.4) | 0.59 (15.0) | 1.06 (27.0) | 0.56 (14.2) | 0.25 (6.4) | 0.75 (19.1) | 15000 (1034) |
| 3/8 | SS-HPT-FNS6-FNS6-NS6 | 1.20 (30.6) | 0.59 (15.0) | 1.20 (30.6) | 0.56 (14.2) | 0.31 (7.9) | 1.00 (25.4) | 15000 (1034) |
| 1/2 | SS-HPT-FNS8-FNS8-NS8 | 1.50 (38.1) | 0.78 (19.8) | 1.61 (40.8) | 0.75 (19.1) | 0.38 (9.6) | 1.37 (34.9) | 15000 (1034) |
| 3/4 | SS-HPT-FNS12-FNS12-NS12 | 1.50 (38.1) | 0.81 (20.6) | 1.77 (44.9) | 0.75 (19.1) | 0.58 (14.8) | 1.50 (38.1) | 10000 (690) |
| 1 | SS-HPT-FNS16-FNS16-NS16 | 1.91 (48.5) | 1.00 (25.4) | 2.07 (52.5) | 0.94 (23.9) | 0.79 (20.0) | 1.75 (44.5) | 10000 (690) |

| ISO Tapered Pipe Threads | | Dimensions, in. (mm) | | | | | | Working Pressure psig (bar) |
|--------------------------|-------------------------|----------------------|-------------|-------------|-------------|-------------|-------------|--------------------------------|
| P-ISO Thread Size, in. | Ordering Number | L | B | Lx | Bx | E | T | |
| 1/8 | SS-HPT-FRT2-FRT2-RT2 | 0.75 (19.1) | 0.41 (10.4) | 0.75 (19.1) | 0.38 (9.7) | 0.19 (4.8) | 0.63 (15.9) | 15000 (1034) |
| 1/4 | SS-HPT-FRT4-FRT4-RT4 | 1.00 (25.4) | 0.59 (15.0) | 1.06 (27.0) | 0.56 (14.2) | 0.25 (6.4) | 0.75 (19.1) | 15000 (1034) |
| 3/8 | SS-HPT-FRT6-FRT6-RT6 | 1.20 (30.6) | 0.59 (15.0) | 1.20 (30.6) | 0.56 (14.2) | 0.31 (7.9) | 1.00 (25.4) | 15000 (1034) |
| 1/2 | SS-HPT-FRT8-FRT8-RT8 | 1.50 (38.1) | 0.78 (19.8) | 1.61 (40.8) | 0.75 (19.1) | 0.38 (9.6) | 1.37 (34.9) | 15000 (1034) |
| 3/4 | SS-HPT-FRT12-FRT12-RT12 | 1.50 (38.1) | 0.81 (20.6) | 1.77 (44.9) | 0.75 (19.1) | 0.58 (14.8) | 1.50 (38.1) | 10000 (690) |
| 1 | SS-HPT-FRT16-FRT16-RT16 | 1.91 (48.5) | 1.00 (25.4) | 2.07 (52.5) | 0.94 (23.9) | 0.79 (20.0) | 1.75 (44.5) | 10000 (690) |

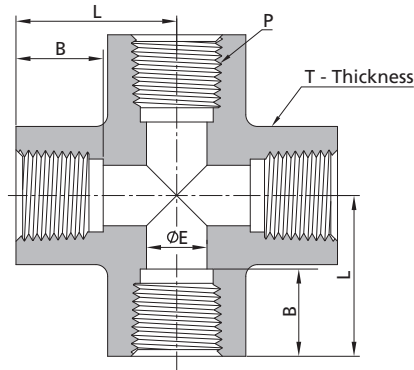
Female Tees



| Female NPT Threads | | Dimensions, in. (mm) | | | | Working Pressure psig (bar) |
|--------------------|-----------------|----------------------|-------------|-------------|-------------|--------------------------------|
| P-NPT Size, in. | Ordering Number | L | B | E | T | |
| 1/8 | SS-HPT-FNS2 | 0.75 (19.1) | 0.41 (10.4) | 0.31 (8.0) | 0.63 (15.9) | 15000 (1034) |
| 1/4 | SS-HPT-FNS4 | 1.00 (25.4) | 0.59 (15.0) | 0.41 (10.4) | 0.75 (19.1) | 15000 (1034) |
| 3/8 | SS-HPT-FNS6 | 1.20 (30.6) | 0.59 (15.0) | 0.54 (13.8) | 1.00 (25.4) | 15000 (1034) |
| 1/2 | SS-HPT-FNS8 | 1.50 (38.1) | 0.78 (19.8) | 0.67 (17.0) | 1.37 (34.9) | 15000 (1034) |
| 3/4 | SS-HPT-FNS12 | 1.50 (38.1) | 0.81 (20.6) | 0.88 (22.3) | 1.50 (38.1) | 10000 (690) |
| 1 | SS-HPT-FNS16 | 1.91 (48.5) | 1.00 (25.4) | 1.11 (28.1) | 1.75 (44.5) | 10000 (690) |

| Female ISO Tapered Pipe Threads | | | | | | |
|---------------------------------|-----------------|----------------------|-------------|-------------|-------------|-----------------------------|
| P-ISO Thread Size, in. | Ordering Number | Dimensions, in. (mm) | | | | Working Pressure psig (bar) |
| | | L | B | E | T | |
| 1/8 | SS-HPT-FRT2 | 0.75 (19.1) | 0.41 (10.4) | 0.31 (8.0) | 0.63 (15.9) | 15000 (1034) |
| 1/4 | SS-HPT-FRT4 | 1.00 (25.4) | 0.59 (15.0) | 0.41 (10.4) | 0.75 (19.1) | 15000 (1034) |
| 3/8 | SS-HPT-FRT6 | 1.20 (30.6) | 0.59 (15.0) | 0.54 (13.8) | 1.00 (25.4) | 15000 (1034) |
| 1/2 | SS-HPT-FRT8 | 1.50 (38.1) | 0.78 (19.8) | 0.69 (17.4) | 1.37 (34.9) | 15000 (1034) |
| 3/4 | SS-HPT-FRT12 | 1.50 (38.1) | 0.81 (20.6) | 0.90 (22.8) | 1.50 (38.1) | 10000 (690) |
| 1 | SS-HPT-FRT16 | 1.91 (48.5) | 1.00 (25.4) | 1.13 (28.7) | 1.75 (44.5) | 10000 (690) |

Female Crosses



| Female NPT Threads | | | | | | |
|--------------------|-----------------|----------------------|-------------|-------------|-------------|-----------------------------|
| P-NPT Size, in. | Ordering Number | Dimensions, in. (mm) | | | | Working Pressure psig (bar) |
| | | L | B | E | T | |
| 1/8 | SS-HPX-FNS2 | 0.75 (19.1) | 0.41 (10.4) | 0.31 (8.0) | 0.63 (15.9) | 15000 (1034) |
| 1/4 | SS-HPX-FNS4 | 1.00 (25.4) | 0.59 (15.0) | 0.41 (10.4) | 0.75 (19.1) | 15000 (1034) |
| 3/8 | SS-HPX-FNS6 | 1.20 (30.6) | 0.59 (15.0) | 0.54 (13.8) | 1.00 (25.4) | 15000 (1034) |
| 1/2 | SS-HPX-FNS8 | 1.50 (38.1) | 0.78 (19.8) | 0.67 (17.0) | 1.37 (34.9) | 15000 (1034) |
| 3/4 | SS-HPX-FNS12 | 1.50 (38.1) | 0.81 (20.6) | 0.88 (22.3) | 1.50 (38.1) | 10000 (690) |
| 1 | SS-HPX-FNS16 | 1.91 (48.5) | 1.00 (25.4) | 1.11 (28.1) | 1.75 (44.5) | 10000 (690) |

| Female ISO Tapered Pipe Threads | | | | | | |
|---------------------------------|-----------------|----------------------|-------------|-------------|-------------|-----------------------------|
| P-ISO Thread Size, in. | Ordering Number | Dimensions, in. (mm) | | | | Working Pressure psig (bar) |
| | | L | B | E | T | |
| 1/8 | SS-HPX-FRT2 | 0.75 (19.1) | 0.41 (10.4) | 0.31 (8.0) | 0.63 (15.9) | 15000 (1034) |
| 1/4 | SS-HPX-FRT4 | 1.00 (25.4) | 0.59 (15.0) | 0.41 (10.4) | 0.75 (19.1) | 15000 (1034) |
| 3/8 | SS-HPX-FRT6 | 1.20 (30.6) | 0.59 (15.0) | 0.54 (13.8) | 1.00 (25.4) | 15000 (1034) |
| 1/2 | SS-HPX-FRT8 | 1.50 (38.1) | 0.78 (19.8) | 0.69 (17.4) | 1.37 (34.9) | 15000 (1034) |
| 3/4 | SS-HPX-FRT12 | 1.50 (38.1) | 0.81 (20.6) | 0.90 (22.8) | 1.50 (38.1) | 10000 (690) |
| 1 | SS-HPX-FRT16 | 1.91 (48.5) | 1.00 (25.4) | 1.13 (28.7) | 1.75 (44.5) | 10000 (690) |

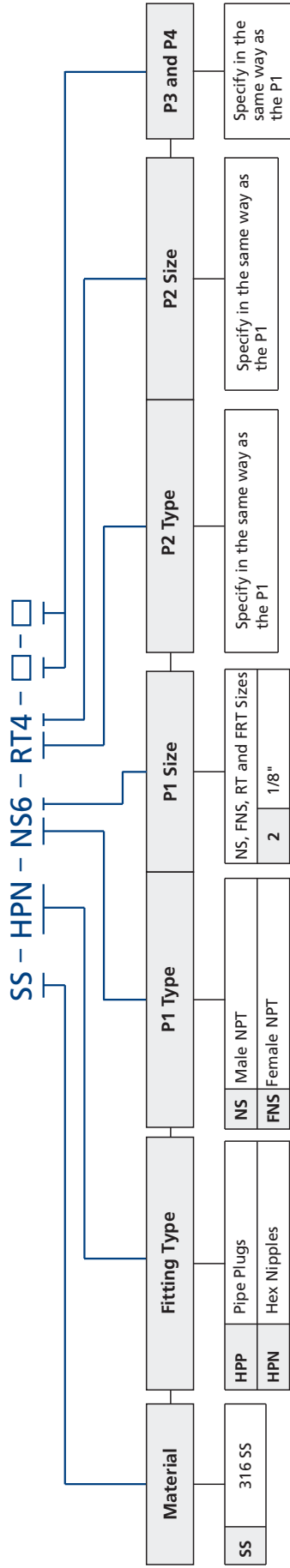
NOTE: All dimensions are for reference only and subject to change.

Connection Information

Please see I-02.

| |
|-------------------------------------|
| Fittings |
| Tubing |
| Quick Couplings |
| Line Filters |
| Valves |
| Sour Service Products |
| Subsea Valves |
| Tools and Installation Instructions |
| Technical Information |
| Part Number Crossover Charts |

Ordering Number Description



| P1 Size | |
|----------------------------|-----------|
| NS, FNS, RT and FRT Sizes | |
| 2 | 1/8" |
| 4 | 1/4" |
| 6 | 3/8" |
| 8 | 1/2" |
| 12 | 3/4" |
| 16 | 1" |
| SH, US and TM Thread Sizes | |
| 7 | 7/16-20 |
| 9 | 9/16-18 |
| 12 | 3/4-16 |
| 14 | 7/8-14 |
| 16 | 1-12 |
| 21 | 1 5/16-12 |
| JM and JF Sizes | |
| 4 | 1/4" |
| 6 | 3/8" |
| 8 | 1/2" |
| 10 | 5/8" |
| 12 | 3/4" |
| 16 | 1" |

| P1 Type | |
|---------|---------------------------|
| NS | Male NPT |
| FNS | Female NPT |
| RT | Male ISO Tapered Thread |
| FRT | Female ISO Tapered Thread |
| SH | Male SAE O-ring |
| US | Female SAE O-ring |
| JM | Male JIC |
| JF | Female JIC |
| TM | Male Type "M" |

| Fitting Type | |
|--------------|---------------------------------------|
| HPP | Pipe Plugs |
| HPN | Hex Nipples |
| HPL | Hex Long Nipples |
| HPC | Pipe Caps |
| HMC | Pipe Cap Assemblies (Moveable Insert) |
| HPG | Hex Couplings |
| HPZ | Zero-Clearance Unions |
| HPA | Adapters |
| HPE | Elbows |
| HPT | Tees |
| HPX | Crosses |

NOTE: "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.

AMH Series Adapter Fittings



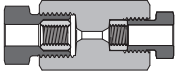
| |
|-------------------------------------|
| Fittings |
| Tubing |
| Quick Couplings |
| Line Filters |
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| Sour Service Products |
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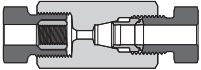
Female to Female - FFC

Female High Pressure to Female Medium Pressure



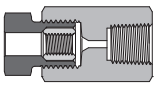
A-63

Female High Pressure to Female 20D Series



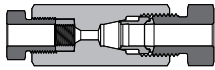
A-64

Female High Pressure to Female NPT



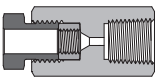
A-64

Female Medium Pressure to Female 20D Series



A-65

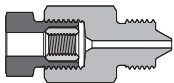
Female Medium Pressure to Female NPT



A-66

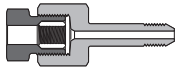
Female to Male - FMA

Female High Pressure to Male High Pressure



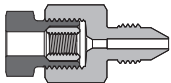
A-67

Female High Pressure to High Pressure Coned and Threaded Nipples



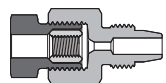
A-67

Female High Pressure to Male Medium Pressure



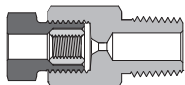
A-68

Female High Pressure to Male 20D Series



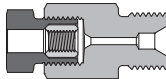
A-68

Female High Pressure to Male NPT



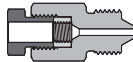
A-69

Female High Pressure to Male Type "M"



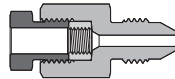
A-69

Female Medium Pressure to Male High Pressure



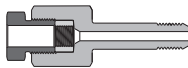
A-70

Female Medium Pressure to Male Medium Pressure



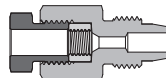
A-71

Female Medium Pressure to Medium Pressure Coned and Threaded Nipples



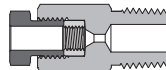
A-72

Female Medium Pressure to Male 20D Series



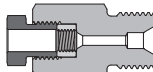
A-73

Female Medium Pressure to Male NPT



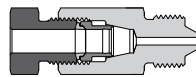
A-74

Female Medium Pressure to Male Type "M"



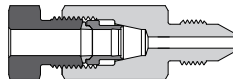
A-75

Female 20D Series to Male High Pressure



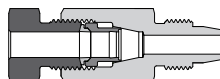
A-75

Female 20D Series to Male Medium Pressure



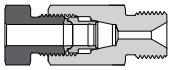
A-76

Female 20D Series to Male 20D Series



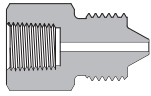
A-77

Female 20D Series to Male Type "M"



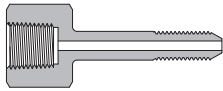
A-77

Female NPT to Male High Pressure



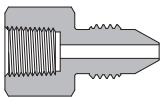
A-78

Female NPT to High Pressure Coned and Threaded Nipples



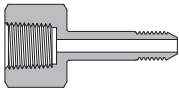
A-79

Female NPT to Male Medium Pressure



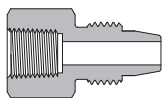
A-80

Female NPT to Medium Pressure Coned and Threaded Nipples



A-81

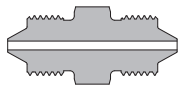
Female NPT to Male 20D Series



A-82

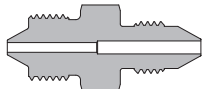
Male to Male - MMA

Male High Pressure to Male High Pressure



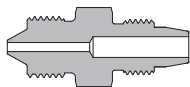
A-83

Male High Pressure to Male Medium Pressure



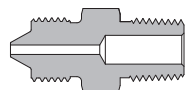
A-83

Male High Pressure to Male 20D Series



A-84

Male High Pressure to Male NPT



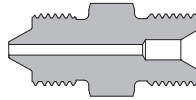
A-84

Male High Pressure to Male JIC



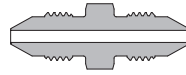
A-85

Male High Pressure to Male Type "M"



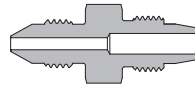
A-85

Male Medium Pressure to Male Medium Pressure



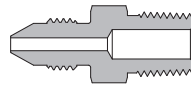
A-86

Male Medium Pressure to Male 20D Series



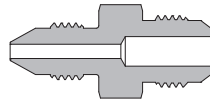
A-87

Male Medium Pressure to Male NPT



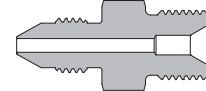
A-88

Male Medium Pressure to Male JIC



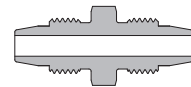
A-89

Male Medium Pressure to Male Type "M"



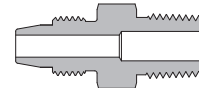
A-90

Male 20D Series to Male 20D Series



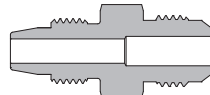
A-91

Male 20D Series to Male NPT



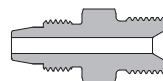
A-92

Male 20D Series to Male JIC



A-93

Male 20D Series to Male Type "M"



A-94

Ordering Number Description

A-95

Fittings

Tubing

Quick Couplings

Line Filters

Valves

Sour Service Products

Subsea Valves

Tools and Installation Instructions

Technical Information

Part Number Crossover Charts

Features

- High tensile 316 stainless steel as standard material, other materials available upon request
- Every fitting marked with size, material and heat number

Working Pressure

The working pressure of AMH series adapter fittings is shown in the "Ordering Information and Dimensions".

Connection Information

Please see I-02.

Cautions

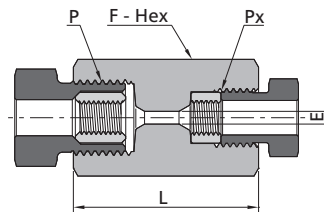
- Do not loosen or tighten fittings when the system is pressurized
- Always use proper thread sealants on tapered pipe threads

Ordering Information and Dimensions

Dimensions are for reference only and are subject to change.

Female to Female - FFC

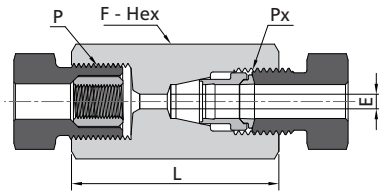
Female High Pressure to Female Medium Pressure



| Female High Pressure | | | Female Medium Pressure | | | |
|----------------------|---------------|-----------------|------------------------|-------------|------------|-----------------------------|
| P-Connection | Px-Connection | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | | L | F | E | |
| HF4 | MF4 | SS-FFC-HF4-MF4 | 1.37 (34.9) | 0.75 (19.1) | 0.09 (2.4) | 20000 (1379) |
| HF4 | MF6 | SS-FFC-HF4-MF6 | 1.56 (39.7) | 0.75 (19.1) | 0.09 (2.4) | 20000 (1379) |
| HF4 | MF9 | SS-FFC-HF4-MF9 | 1.81 (46.0) | 1.00 (25.4) | 0.09 (2.4) | 20000 (1379) |
| HF4 | MF12 | SS-FFC-HF4-MF12 | 2.06 (52.4) | 1.37 (34.9) | 0.09 (2.4) | 20000 (1379) |
| HF4 | MF16 | SS-FFC-HF4-MF16 | 2.56 (65.1) | 1.75 (44.5) | 0.09 (2.4) | 20000 (1379) |
| HF6 | MF4 | SS-FFC-HF6-MF4 | 1.63 (41.3) | 1.00 (25.4) | 0.11 (2.8) | 20000 (1379) |
| HF6 | MF6 | SS-FFC-HF6-MF6 | 1.81 (46.0) | 1.00 (25.4) | 0.13 (3.2) | 20000 (1379) |
| HF6 | MF9 | SS-FFC-HF6-MF9 | 2.06 (52.4) | 1.00 (25.4) | 0.13 (3.2) | 20000 (1379) |
| HF6 | MF12 | SS-FFC-HF6-MF12 | 2.31 (58.7) | 1.37 (34.9) | 0.13 (3.2) | 20000 (1379) |
| HF6 | MF16 | SS-FFC-HF6-MF16 | 2.81 (71.4) | 1.75 (44.5) | 0.13 (3.2) | 20000 (1379) |
| HF9 | MF4 | SS-FFC-HF9-MF4 | 1.81 (46.0) | 1.37 (34.9) | 0.11 (2.8) | 20000 (1379) |
| HF9 | MF6 | SS-FFC-HF9-MF6 | 1.94 (49.2) | 1.37 (34.9) | 0.19 (4.8) | 20000 (1379) |
| HF9 | MF9 | SS-FFC-HF9-MF9 | 2.25 (57.2) | 1.37 (34.9) | 0.19 (4.8) | 20000 (1379) |
| HF9 | MF12 | SS-FFC-HF9-MF12 | 2.44 (61.9) | 1.37 (34.9) | 0.19 (4.8) | 20000 (1379) |
| HF9 | MF16 | SS-FFC-HF9-MF16 | 3.00 (76.2) | 1.75 (44.5) | 0.19 (4.8) | 20000 (1379) |

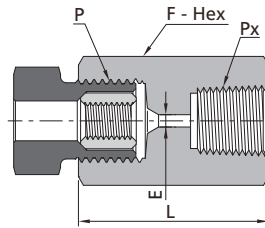
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Female High Pressure to Female 20D Series



| Female High Pressure | | | Female 20D Series | | | |
|----------------------|---------------|-----------------|----------------------|-------------|------------|--------------------------------|
| P-Connection | Px-Connection | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | | L | F | E | |
| HF4 | DFF2 | SS-FFC-HF4-DFF2 | 1.35(34.2) | 0.75 (19.1) | 0.09 (2.4) | 20000 (1379) |
| HF4 | DFF4 | SS-FFC-HF4-DFF4 | 1.67(42.3) | 0.75 (19.1) | 0.09 (2.4) | 20000 (1379) |
| HF4 | DFF6 | SS-FFC-HF4-DFF6 | 1.76(44.7) | 0.75 (19.1) | 0.09 (2.4) | 20000 (1379) |
| HF4 | DFF8 | SS-FFC-HF4-DFF8 | 1.93(49.1) | 1.00 (25.4) | 0.09 (2.4) | 20000 (1379) |
| HF6 | DFF2 | SS-FFC-HF6-DFF2 | 1.66(42.1) | 1.00 (25.4) | 0.09 (2.4) | 20000 (1379) |
| HF6 | DFF4 | SS-FFC-HF6-DFF4 | 1.92(48.7) | 1.00 (25.4) | 0.13 (3.2) | 20000 (1379) |
| HF6 | DFF6 | SS-FFC-HF6-DFF6 | 1.94(49.4) | 1.00 (25.4) | 0.13 (3.2) | 20000 (1379) |
| HF6 | DFF8 | SS-FFC-HF6-DFF8 | 2.18(55.4) | 1.00 (25.4) | 0.13 (3.2) | 20000 (1379) |
| HF9 | DFF2 | SS-FFC-HF9-DFF2 | 1.85(46.9) | 1.37 (34.9) | 0.09 (2.4) | 20000 (1379) |
| HF9 | DFF4 | SS-FFC-HF9-DFF4 | 2.04(51.8) | 1.37 (34.9) | 0.19 (4.8) | 20000 (1379) |
| HF9 | DFF6 | SS-FFC-HF9-DFF6 | 2.13(54.2) | 1.37 (34.9) | 0.19 (4.8) | 20000 (1379) |
| HF9 | DFF8 | SS-FFC-HF9-DFF8 | 2.31(58.6) | 1.37 (34.9) | 0.19 (4.8) | 20000 (1379) |

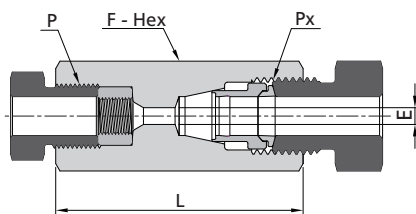
Female High Pressure to Female NPT



| Female High Pressure | | | Female NPT | | | |
|----------------------|---------------|------------------|----------------------|-------------|------------|--------------------------------|
| P-Connection | Px-Connection | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | | L | F | E | |
| HF4 | FNS2 | SS-FFC-HF4-FNS2 | 1.37 (34.9) | 0.75 (19.1) | 0.09 (2.4) | 15000 (1034) |
| HF4 | FNS4 | SS-FFC-HF4-FNS4 | 1.63 (41.3) | 0.94 (23.8) | 0.09 (2.4) | 15000 (1034) |
| HF4 | FNS6 | SS-FFC-HF4-FNS6 | 1.63 (41.3) | 1.13 (28.6) | 0.09 (2.4) | 15000 (1034) |
| HF4 | FNS8 | SS-FFC-HF4-FNS8 | 2.00 (50.8) | 1.37 (34.9) | 0.09 (2.4) | 15000 (1034) |
| HF4 | FNS12 | SS-FFC-HF4-FNS12 | 2.00 (50.8) | 1.50 (38.1) | 0.09 (2.4) | 10000 (690) |
| HF4 | FNS16 | SS-FFC-HF4-FNS16 | 2.37 (60.3) | 1.75 (44.5) | 0.09 (2.4) | 10000 (690) |
| HF6 | FNS2 | SS-FFC-HF6-FNS2 | 1.63 (41.3) | 1.00 (25.4) | 0.13 (3.2) | 15000 (1034) |
| HF6 | FNS4 | SS-FFC-HF6-FNS4 | 1.87 (47.6) | 1.00 (25.4) | 0.13 (3.2) | 15000 (1034) |
| HF6 | FNS6 | SS-FFC-HF6-FNS6 | 1.87 (47.6) | 1.13 (28.6) | 0.13 (3.2) | 15000 (1034) |
| HF6 | FNS8 | SS-FFC-HF6-FNS8 | 2.13 (54.0) | 1.37 (34.9) | 0.13 (3.2) | 15000 (1034) |
| HF6 | FNS12 | SS-FFC-HF6-FNS12 | 2.13 (54.0) | 1.50 (38.1) | 0.13 (3.2) | 10000 (690) |
| HF6 | FNS16 | SS-FFC-HF6-FNS16 | 2.25 (57.2) | 1.75 (44.5) | 0.13 (3.2) | 10000 (690) |
| HF9 | FNS2 | SS-FFC-HF9-FNS2 | 1.81 (46.0) | 1.37 (34.9) | 0.19 (4.8) | 15000 (1034) |
| HF9 | FNS4 | SS-FFC-HF9-FNS4 | 2.00 (50.8) | 1.37 (34.9) | 0.19 (4.8) | 15000 (1034) |
| HF9 | FNS6 | SS-FFC-HF9-FNS6 | 2.00 (50.8) | 1.37 (34.9) | 0.19 (4.8) | 15000 (1034) |
| HF9 | FNS8 | SS-FFC-HF9-FNS8 | 2.37 (60.3) | 1.37 (34.9) | 0.19 (4.8) | 15000 (1034) |
| HF9 | FNS12 | SS-FFC-HF9-FNS12 | 2.37 (60.3) | 1.50 (38.1) | 0.19 (4.8) | 10000 (690) |
| HF9 | FNS16 | SS-FFC-HF9-FNS16 | 2.50 (63.5) | 1.75 (44.5) | 0.19 (4.8) | 10000 (690) |

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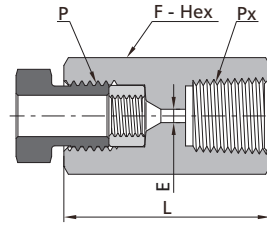
Female Medium Pressure to Female 20D Series



| Female Medium Pressure | | | | Female 20D Series | | | |
|------------------------|---------------|------------------|----------------------|-------------------|-----------|--------------------------------|--|
| P-Connection | Px-Connection | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) | |
| | | | L | F | E | | |
| MF4 | DFF2 | SS-FFC-MF4-DFF2 | 1.41(35.8) | 0.63(15.9) | 0.09(2.4) | 20000(1379) | |
| MF4 | DFF4 | SS-FFC-MF4-DFF4 | 1.67(42.3) | 0.63(15.9) | 0.11(2.8) | 20000(1379) | |
| MF4 | DFF6 | SS-FFC-MF4-DFF6 | 1.76(44.7) | 0.75(19.1) | 0.11(2.8) | 20000(1379) | |
| MF4 | DFF8 | SS-FFC-MF4-DFF8 | 1.93(49.1) | 1.00(25.4) | 0.11(2.8) | 20000(1379) | |
| MF6 | DFF2 | SS-FFC-MF6-DFF2 | 1.59(40.5) | 0.75(19.1) | 0.09(2.4) | 20000(1379) | |
| MF6 | DFF4 | SS-FFC-MF6-DFF4 | 1.85(47.1) | 0.75(19.1) | 0.19(4.8) | 20000(1379) | |
| MF6 | DFF6 | SS-FFC-MF6-DFF6 | 1.89(47.9) | 0.75(19.1) | 0.20(5.2) | 20000(1379) | |
| MF6 | DFF8 | SS-FFC-MF6-DFF8 | 2.06(52.2) | 1.00(25.4) | 0.20(5.2) | 20000(1379) | |
| MF9 | DFF2 | SS-FFC-MF9-DFF2 | 1.85(46.9) | 1.00(25.4) | 0.09(2.4) | 20000(1379) | |
| MF9 | DFF4 | SS-FFC-MF9-DFF4 | 2.04(51.8) | 1.00(25.4) | 0.19(4.8) | 20000(1379) | |
| MF9 | DFF6 | SS-FFC-MF9-DFF6 | 2.07(52.6) | 1.00(25.4) | 0.25(6.4) | 20000(1379) | |
| MF9 | DFF8 | SS-FFC-MF9-DFF8 | 2.24(57.0) | 1.00(25.4) | 0.31(7.9) | 20000(1379) | |
| MF12 | DFF6 | SS-FFC-MF12-DFF6 | 2.39(60.6) | 1.37(34.9) | 0.25(6.4) | 20000(1379) | |
| MF12 | DFF8 | SS-FFC-MF12-DFF8 | 2.43(61.8) | 1.37(34.9) | 0.37(9.5) | 20000(1379) | |
| MF16 | DFF8 | SS-FFC-MF16-DFF8 | 2.99(76.0) | 1.75(44.5) | 0.37(9.5) | 20000(1379) | |

- Fittings
- Tubing
- Quick Couplings
- Line Filters
- Valves
- Sour Service Products
- Subsea Valves
- Tools and Installation Instructions
- Technical Information
- Part Number Crossover Charts

Female Medium Pressure to Female NPT

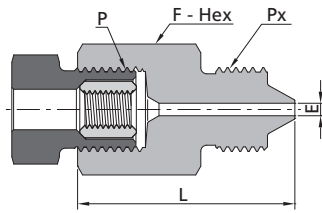


| Female Medium Pressure | | | Female NPT | | | |
|------------------------|----------------------------|-------------------|----------------------|-------------|-------------|--------------------------------|
| P-Connection | P _x -Connection | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | | L | F | E | |
| MF4 | FNS2 | SS-FFC-MF4-FNS2 | 1.37 (34.9) | 0.63 (15.9) | 0.11 (2.8) | 15000 (1034) |
| MF4 | FNS4 | SS-FFC-MF4-FNS4 | 1.63 (41.3) | 0.94 (23.8) | 0.11 (2.8) | 15000 (1034) |
| MF4 | FNS6 | SS-FFC-MF4-FNS6 | 1.63 (41.3) | 1.13 (28.6) | 0.11 (2.8) | 15000 (1034) |
| MF4 | FNS8 | SS-FFC-MF4-FNS8 | 2.00 (50.8) | 1.37 (34.9) | 0.11 (2.8) | 15000 (1034) |
| MF6 | FNS2 | SS-FFC-MF6-FNS2 | 1.50 (38.1) | 0.75 (19.1) | 0.20 (5.1) | 15000 (1034) |
| MF6 | FNS4 | SS-FFC-MF6-FNS4 | 1.75 (44.5) | 0.94 (23.8) | 0.20 (5.1) | 15000 (1034) |
| MF6 | FNS6 | SS-FFC-MF6-FNS6 | 1.81 (46.0) | 1.13 (28.6) | 0.20 (5.1) | 15000 (1034) |
| MF6 | FNS8 | SS-FFC-MF6-FNS8 | 2.13 (54.0) | 1.37 (34.9) | 0.20 (5.1) | 15000 (1034) |
| MF6 | FNS12 | SS-FFC-MF6-FNS12 | 2.25 (57.2) | 1.50 (38.1) | 0.20 (5.1) | 10000 (690) |
| MF9 | FNS2 | SS-FFC-MF9-FNS2 | 1.63 (41.3) | 1.00 (25.4) | 0.31 (7.9) | 15000 (1034) |
| MF9 | FNS4 | SS-FFC-MF9-FNS4 | 2.00 (50.8) | 1.00 (25.4) | 0.31 (7.9) | 15000 (1034) |
| MF9 | FNS6 | SS-FFC-MF9-FNS6 | 2.00 (50.8) | 1.13 (28.6) | 0.31 (7.9) | 15000 (1034) |
| MF9 | FNS8 | SS-FFC-MF9-FNS8 | 2.25 (57.2) | 1.37 (34.9) | 0.31 (7.9) | 15000 (1034) |
| MF9 | FNS12 | SS-FFC-MF9-FNS12 | 2.25 (57.2) | 1.50 (38.1) | 0.31 (7.9) | 10000 (690) |
| MF9 | FNS16 | SS-FFC-MF9-FNS16 | 2.63 (66.7) | 1.75 (44.5) | 0.31 (7.9) | 10000 (690) |
| MF12 | FNS2 | SS-FFC-MF12-FNS2 | 1.75 (44.5) | 1.37 (34.9) | 0.32 (8.1) | 15000 (1034) |
| MF12 | FNS4 | SS-FFC-MF12-FNS4 | 2.00 (50.8) | 1.37 (34.9) | 0.41 (10.4) | 15000 (1034) |
| MF12 | FNS6 | SS-FFC-MF12-FNS6 | 2.37 (60.3) | 1.37 (34.9) | 0.44 (11.1) | 15000 (1034) |
| MF12 | FNS8 | SS-FFC-MF12-FNS8 | 2.63 (66.7) | 1.37 (34.9) | 0.44 (11.1) | 15000 (1034) |
| MF12 | FNS12 | SS-FFC-MF12-FNS12 | 2.63 (66.7) | 1.50 (38.1) | 0.44 (11.1) | 10000 (690) |
| MF12 | FNS16 | SS-FFC-MF12-FNS16 | 2.63 (66.7) | 1.75 (44.5) | 0.44 (11.1) | 10000 (690) |
| MF16 | FNS4 | SS-FFC-MF16-FNS4 | 2.37 (60.3) | 1.75 (44.5) | 0.41 (10.4) | 15000 (1034) |
| MF16 | FNS6 | SS-FFC-MF16-FNS6 | 2.50 (63.5) | 1.75 (44.5) | 0.55 (13.9) | 15000 (1034) |
| MF16 | FNS8 | SS-FFC-MF16-FNS8 | 3.00 (76.2) | 1.75 (44.5) | 0.56 (14.3) | 15000 (1034) |
| MF16 | FNS12 | SS-FFC-MF16-FNS12 | 3.00 (76.2) | 1.75 (44.5) | 0.56 (14.3) | 10000 (690) |
| MF16 | FNS16 | SS-FFC-MF16-FNS16 | 3.00 (76.2) | 1.75 (44.5) | 0.56 (14.3) | 10000 (690) |

| |
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| Fittings |
| Tubing |
| Quick Couplings |
| Line Filters |
| Valves |
| Sour Service Products |
| Subsea Valves |
| Tools and Installation Instructions |
| Technical Information |
| Part Number Crossover Charts |

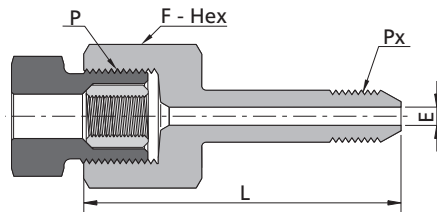
Female to Male - FMA

Female High Pressure to Male High Pressure



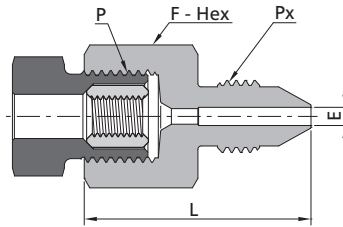
| Female High Pressure | | | Male High Pressure | | | |
|----------------------|---------------|-----------------|----------------------|-------------|------------|--------------------------------|
| P-Connection | Px-Connection | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | | L | F | E | |
| HF4 | HM4 | SS-FMA-HF4-HM4 | 1.44 (36.5) | 0.75 (19.1) | 0.08 (2.1) | 60000 (4137) |
| HF4 | HM6 | SS-FMA-HF4-HM6 | 1.69 (42.9) | 0.81 (20.6) | 0.09 (2.4) | 60000 (4137) |
| HF4 | HM9 | SS-FMA-HF4-HM9 | 1.75 (44.5) | 1.19 (30.2) | 0.09 (2.4) | 60000 (4137) |
| HF6 | HM4 | SS-FMA-HF6-HM4 | 1.75 (44.5) | 1.00 (25.4) | 0.08 (2.1) | 60000 (4137) |
| HF6 | HM6 | SS-FMA-HF6-HM6 | 2.00 (50.8) | 1.00 (25.4) | 0.13 (3.2) | 60000 (4137) |
| HF6 | HM9 | SS-FMA-HF6-HM9 | 2.13 (54.0) | 1.19 (30.2) | 0.13 (3.2) | 60000 (4137) |
| HF9 | HM4 | SS-FMA-HF9-HM4 | 2.06 (52.4) | 1.37 (34.9) | 0.08 (2.1) | 60000 (4137) |
| HF9 | HM6 | SS-FMA-HF9-HM6 | 2.37 (60.3) | 1.37 (34.9) | 0.13 (3.2) | 60000 (4137) |
| HF9 | HM9 | SS-FMA-HF9-HM9 | 2.50 (63.5) | 1.37 (34.9) | 0.19 (4.8) | 60000 (4137) |

Female High Pressure to High Pressure Coned and Threaded Nipples



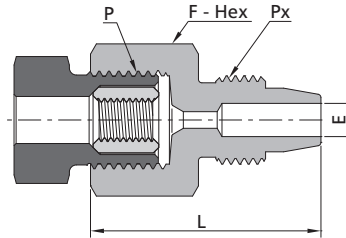
| Female High Pressure | | | High Pressure Coned and Threaded Nipples | | | |
|----------------------|---------------|-----------------|--|-------------|------------|--------------------------------|
| P-Connection | Px-Connection | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | | L | F | E | |
| HF4 | HCT4 | SS-FMA-HF4-HCT4 | 1.93 (49.0) | 0.75 (19.1) | 0.08 (2.1) | 60000 (4137) |
| HF4 | HCT6 | SS-FMA-HF4-HCT6 | 2.32 (59.0) | 0.75 (19.1) | 0.09 (2.4) | 60000 (4137) |
| HF4 | HCT9 | SS-FMA-HF4-HCT9 | 2.91 (74.0) | 0.75 (19.1) | 0.09 (2.4) | 60000 (4137) |
| HF6 | HCT4 | SS-FMA-HF6-HCT4 | 2.20 (56.0) | 1.00 (25.4) | 0.08 (2.1) | 60000 (4137) |
| HF6 | HCT6 | SS-FMA-HF6-HCT6 | 2.60 (66.0) | 1.00 (25.4) | 0.13 (3.2) | 60000 (4137) |
| HF6 | HCT9 | SS-FMA-HF6-HCT9 | 3.19 (81.0) | 1.00 (25.4) | 0.13 (3.2) | 60000 (4137) |
| HF9 | HCT4 | SS-FMA-HF9-HCT4 | 2.48 (63.0) | 1.38 (34.9) | 0.08 (2.1) | 60000 (4137) |
| HF9 | HCT6 | SS-FMA-HF9-HCT6 | 2.87 (73.0) | 1.38 (34.9) | 0.13 (3.2) | 60000 (4137) |
| HF9 | HCT9 | SS-FMA-HF9-HCT9 | 3.46 (88.0) | 1.38 (34.9) | 0.19 (4.8) | 60000 (4137) |

Female High Pressure to Male Medium Pressure



| Female High Pressure | | | Male Medium Pressure | | | |
|----------------------|---------------|-----------------|----------------------|-------------|------------|--------------------------------|
| P-Connection | Px-Connection | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | | L | F | E | |
| HF4 | MM4 | SS-FMA-HF4-MM4 | 1.37 (34.9) | 0.75 (19.1) | 0.09 (2.4) | 20000 (1379) |
| HF4 | MM6 | SS-FMA-HF4-MM6 | 1.50 (38.1) | 0.75 (19.1) | 0.09 (2.4) | 20000 (1379) |
| HF4 | MM9 | SS-FMA-HF4-MM9 | 1.69 (42.9) | 0.94 (23.8) | 0.09 (2.4) | 20000 (1379) |
| HF4 | MM12 | SS-FMA-HF4-MM12 | 1.75 (44.5) | 1.19 (30.2) | 0.09 (2.4) | 20000 (1379) |
| HF4 | MM16 | SS-FMA-HF4-MM16 | 2.37 (60.3) | 1.50 (38.1) | 0.09 (2.4) | 20000 (1379) |
| HF6 | MM4 | SS-FMA-HF6-MM4 | 1.67 (42.3) | 1.00 (25.4) | 0.11 (2.8) | 20000 (1379) |
| HF6 | MM6 | SS-FMA-HF6-MM6 | 1.81 (46.0) | 1.00 (25.4) | 0.13 (3.2) | 20000 (1379) |
| HF6 | MM9 | SS-FMA-HF6-MM9 | 1.94 (49.2) | 1.00 (25.4) | 0.13 (3.2) | 20000 (1379) |
| HF6 | MM12 | SS-FMA-HF6-MM12 | 2.13 (54.0) | 1.19 (30.2) | 0.13 (3.2) | 20000 (1379) |
| HF6 | MM16 | SS-FMA-HF6-MM16 | 2.50 (63.5) | 1.50 (38.1) | 0.13 (3.2) | 20000 (1379) |
| HF9 | MM4 | SS-FMA-HF9-MM4 | 1.87 (47.6) | 1.37 (34.9) | 0.11 (2.8) | 20000 (1379) |
| HF9 | MM6 | SS-FMA-HF9-MM6 | 2.00 (50.8) | 1.37 (34.9) | 0.19 (4.8) | 20000 (1379) |
| HF9 | MM9 | SS-FMA-HF9-MM9 | 2.19 (55.6) | 1.37 (34.9) | 0.19 (4.8) | 20000 (1379) |
| HF9 | MM12 | SS-FMA-HF9-MM12 | 2.37 (60.3) | 1.37 (34.9) | 0.19 (4.8) | 20000 (1379) |
| HF9 | MM16 | SS-FMA-HF9-MM16 | 2.81 (71.4) | 1.50 (38.1) | 0.19 (4.8) | 20000 (1379) |

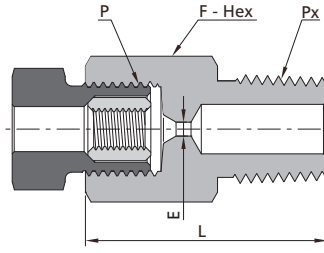
Female High Pressure to Male 20D Series



| Female High Pressure | | | Male 20D Series | | | |
|----------------------|---------------|-----------------|----------------------|-------------|------------|--------------------------------|
| P-Connection | Px-Connection | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | | L | F | E | |
| HF4 | DFM2 | SS-FMA-HF4-DFM2 | 1.31 (33.2) | 0.75 (19.1) | 0.09 (2.4) | 20000 (1379) |
| HF4 | DFM4 | SS-FMA-HF4-DFM4 | 1.43 (36.3) | 0.75 (19.1) | 0.09 (2.4) | 20000 (1379) |
| HF4 | DFM6 | SS-FMA-HF4-DFM6 | 1.46 (37.0) | 0.75 (19.1) | 0.09 (2.4) | 20000 (1379) |
| HF4 | DFM8 | SS-FMA-HF4-DFM8 | 1.54 (39.0) | 0.94 (23.8) | 0.09 (2.4) | 20000 (1379) |
| HF6 | DFM2 | SS-FMA-HF6-DFM2 | 1.56 (39.5) | 1.00 (25.4) | 0.09 (2.4) | 20000 (1379) |
| HF6 | DFM4 | SS-FMA-HF6-DFM4 | 1.68 (42.7) | 1.00 (25.4) | 0.13 (3.2) | 20000 (1379) |
| HF6 | DFM6 | SS-FMA-HF6-DFM6 | 1.71 (43.4) | 1.00 (25.4) | 0.13 (3.2) | 20000 (1379) |
| HF6 | DFM8 | SS-FMA-HF6-DFM8 | 1.85 (47.0) | 1.00 (25.4) | 0.13 (3.2) | 20000 (1379) |
| HF9 | DFM2 | SS-FMA-HF9-DFM2 | 1.87 (47.5) | 1.37 (34.9) | 0.09 (2.4) | 20000 (1379) |
| HF9 | DFM4 | SS-FMA-HF9-DFM4 | 1.87 (47.5) | 1.37 (34.9) | 0.19 (4.8) | 20000 (1379) |
| HF9 | DFM6 | SS-FMA-HF9-DFM6 | 1.89 (48.1) | 1.37 (34.9) | 0.19 (4.8) | 20000 (1379) |
| HF9 | DFM8 | SS-FMA-HF9-DFM8 | 2.04 (51.7) | 1.37 (34.9) | 0.19 (4.8) | 20000 (1379) |

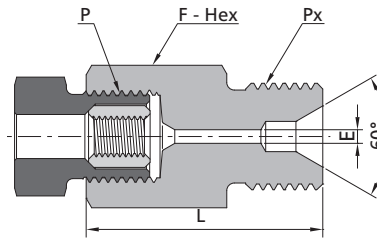
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|-------------------------------------|
| Fittings |
| Tubing |
| Quick Couplings |
| Line Filters |
| Valves |
| Sour Service Products |
| Subsea Valves |
| Tools and Installation Instructions |
| Technical Information |
| Part Number Crossover Charts |

Female High Pressure to Male NPT



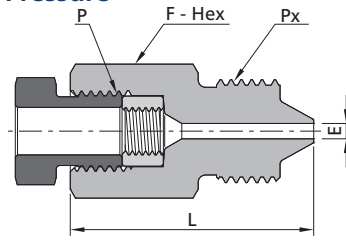
| Female High Pressure | | | Male NPT | | | |
|----------------------|---------------|-----------------|----------------------|-------------|------------|-----------------------------|
| P-Connection | Px-Connection | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | | L | F | E | |
| HF4 | NS2 | SS-FMA-HF4-NS2 | 1.25 (31.8) | 0.75 (19.1) | 0.09 (2.4) | 15000 (1034) |
| HF4 | NS4 | SS-FMA-HF4-NS4 | 1.37 (34.9) | 0.75 (19.1) | 0.09 (2.4) | 15000 (1034) |
| HF4 | NS6 | SS-FMA-HF4-NS6 | 1.37 (34.9) | 0.75 (19.1) | 0.09 (2.4) | 15000 (1034) |
| HF4 | NS8 | SS-FMA-HF4-NS8 | 1.50 (38.1) | 0.87 (22.2) | 0.09 (2.4) | 15000 (1034) |
| HF4 | NS12 | SS-FMA-HF4-NS12 | 1.75 (44.5) | 1.06 (27.0) | 0.09 (2.4) | 10000 (690) |
| HF6 | NS2 | SS-FMA-HF6-NS2 | 1.50 (38.1) | 1.00 (25.4) | 0.13 (3.2) | 15000 (1034) |
| HF6 | NS4 | SS-FMA-HF6-NS4 | 1.63 (41.3) | 1.00 (25.4) | 0.13 (3.2) | 15000 (1034) |
| HF6 | NS6 | SS-FMA-HF6-NS6 | 1.63 (41.3) | 1.00 (25.4) | 0.13 (3.2) | 15000 (1034) |
| HF6 | NS8 | SS-FMA-HF6-NS8 | 1.75 (44.5) | 1.00 (25.4) | 0.13 (3.2) | 15000 (1034) |
| HF6 | NS12 | SS-FMA-HF6-NS12 | 2.00 (50.8) | 1.06 (27.0) | 0.13 (3.2) | 10000 (690) |
| HF6 | NS16 | SS-FMA-HF6-NS16 | 2.00 (50.8) | 1.37 (34.9) | 0.13 (3.2) | 10000 (690) |
| HF9 | NS2 | SS-FMA-HF9-NS2 | 1.63 (41.3) | 1.37 (34.9) | 0.19 (4.8) | 15000 (1034) |
| HF9 | NS4 | SS-FMA-HF9-NS4 | 1.75 (44.5) | 1.37 (34.9) | 0.19 (4.8) | 15000 (1034) |
| HF9 | NS6 | SS-FMA-HF9-NS6 | 1.75 (44.5) | 1.37 (34.9) | 0.19 (4.8) | 15000 (1034) |
| HF9 | NS8 | SS-FMA-HF9-NS8 | 1.87 (47.6) | 1.37 (34.9) | 0.19 (4.8) | 15000 (1034) |
| HF9 | NS12 | SS-FMA-HF9-NS12 | 2.13 (54.0) | 1.37 (34.9) | 0.19 (4.8) | 10000 (690) |
| HF9 | NS16 | SS-FMA-HF9-NS16 | 2.25 (57.2) | 1.37 (34.9) | 0.19 (4.8) | 10000 (690) |

Female High Pressure to Male Type "M"



| Female High Pressure | | | Male Type "M" | | | |
|----------------------|---------------|-----------------|----------------------|-------------|------------|-----------------------------|
| P-Connection | Px-Connection | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | | L | F | E | |
| HF4 | TM9 | SS-FMA-HF4-TM9 | 1.25 (31.8) | 0.75 (19.1) | 0.09 (2.4) | 60000 (4137) |
| HF4 | TM12 | SS-FMA-HF4-TM12 | 1.38 (35.0) | 0.75 (19.1) | 0.09 (2.4) | 30000 (2068) |
| HF4 | TM14 | SS-FMA-HF4-TM14 | 1.56 (39.7) | 1.00 (25.4) | 0.09 (2.4) | 50000 (3447) |
| HF4 | TM16 | SS-FMA-HF4-TM16 | 1.37 (34.9) | 1.00 (25.4) | 0.09 (2.4) | 30000 (2068) |
| HF6 | TM9 | SS-FMA-HF6-TM9 | 1.50 (38.1) | 1.00 (25.4) | 0.09 (2.4) | 60000 (4137) |
| HF6 | TM12 | SS-FMA-HF6-TM12 | 1.63 (41.3) | 1.00 (25.4) | 0.13 (3.2) | 30000 (2068) |
| HF6 | TM14 | SS-FMA-HF6-TM14 | 1.81 (46.0) | 1.00 (25.4) | 0.13 (3.2) | 50000 (3447) |
| HF6 | TM16 | SS-FMA-HF6-TM16 | 1.64 (41.6) | 1.00 (25.4) | 0.13 (3.2) | 30000 (2068) |
| HF6 | TM21 | SS-FMA-HF6-TM21 | 1.56 (39.7) | 1.37 (34.9) | 0.13 (3.2) | 20000 (1379) |
| HF9 | TM14 | SS-FMA-HF9-TM14 | 2.00 (50.8) | 1.37 (34.9) | 0.15 (3.8) | 50000 (3447) |
| HF9 | TM16 | SS-FMA-HF9-TM16 | 1.81 (46.0) | 1.37 (34.9) | 0.19 (4.8) | 30000 (2068) |
| HF9 | TM21 | SS-FMA-HF9-TM21 | 1.81 (46.0) | 1.37 (34.9) | 0.19 (4.8) | 20000 (1379) |

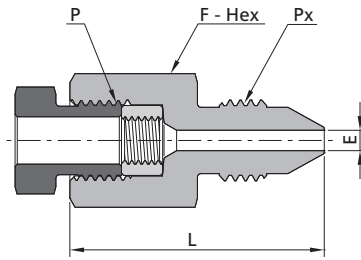
Female Medium Pressure to Male High Pressure



| Female Medium Pressure | | | Male High Pressure | | | |
|------------------------|---------------|-----------------|----------------------|-------------|------------|--------------------------------|
| P-Connection | Px-Connection | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | | L | F | E | |
| MF4 | HM4 | SS-FMA-MF4-HM4 | 1.31 (33.3) | 0.63 (15.9) | 0.08 (2.1) | 20000 (1379) |
| MF4 | HM6 | SS-FMA-MF4-HM6 | 1.50 (38.1) | 0.81 (20.6) | 0.11 (2.8) | 20000 (1379) |
| MF4 | HM9 | SS-FMA-MF4-HM9 | 1.63 (41.3) | 1.19 (30.2) | 0.11 (2.8) | 20000 (1379) |
| MF6 | HM4 | SS-FMA-MF6-HM4 | 1.50 (38.1) | 0.75 (19.1) | 0.08 (2.1) | 20000 (1379) |
| MF6 | HM6 | SS-FMA-MF6-HM6 | 1.69 (42.9) | 0.81 (20.6) | 0.13 (3.2) | 20000 (1379) |
| MF6 | HM9 | SS-FMA-MF6-HM9 | 1.75 (44.5) | 1.19 (30.2) | 0.19 (4.8) | 20000 (1379) |
| MF9 | HM4 | SS-FMA-MF9-HM4 | 1.81 (46.0) | 1.00 (25.4) | 0.08 (2.1) | 20000 (1379) |
| MF9 | HM6 | SS-FMA-MF9-HM6 | 2.13 (54.0) | 1.00 (25.4) | 0.13 (3.2) | 20000 (1379) |
| MF9 | HM9 | SS-FMA-MF9-HM9 | 2.13 (54.0) | 1.19 (30.2) | 0.19 (4.8) | 20000 (1379) |
| MF12 | HM4 | SS-FMA-MF12-HM4 | 2.25 (57.2) | 1.37 (34.9) | 0.08 (2.1) | 20000 (1379) |
| MF12 | HM6 | SS-FMA-MF12-HM6 | 2.50 (63.5) | 1.37 (34.9) | 0.13 (3.2) | 20000 (1379) |
| MF12 | HM9 | SS-FMA-MF12-HM9 | 2.50 (63.5) | 1.37 (34.9) | 0.19 (4.8) | 20000 (1379) |
| MF16 | HM4 | SS-FMA-MF16-HM4 | 2.94 (74.6) | 1.75 (44.5) | 0.08 (2.1) | 20000 (1379) |
| MF16 | HM6 | SS-FMA-MF16-HM6 | 3.13 (79.4) | 1.75 (44.5) | 0.13 (3.2) | 20000 (1379) |
| MF16 | HM9 | SS-FMA-MF16-HM9 | 3.19 (81.0) | 1.75 (44.5) | 0.19 (4.8) | 20000 (1379) |

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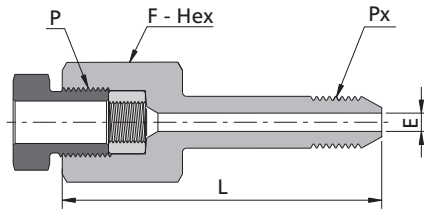
Female Medium Pressure to Male Medium Pressure



| Female Medium Pressure | | | Male Medium Pressure | | | |
|------------------------|---------------|------------------|----------------------|-------------|-------------|--------------------------------|
| P-Connection | Px-Connection | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | | L | F | E | |
| MF4 | MM4 | SS-FMA-MF4-MM4 | 1.37 (34.9) | 0.63 (15.9) | 0.11 (2.8) | 20000 (1379) |
| MF4 | MM6 | SS-FMA-MF4-MM6 | 1.50 (38.1) | 0.63 (15.9) | 0.11 (2.8) | 20000 (1379) |
| MF4 | MM9 | SS-FMA-MF4-MM9 | 1.63 (41.3) | 0.94 (23.8) | 0.11 (2.8) | 20000 (1379) |
| MF4 | MM12 | SS-FMA-MF4-MM12 | 1.75 (44.5) | 1.19 (30.2) | 0.11 (2.8) | 20000 (1379) |
| MF4 | MM16 | SS-FMA-MF4-MM16 | 2.37 (60.3) | 1.50 (38.1) | 0.11 (2.8) | 20000 (1379) |
| MF6 | MM4 | SS-FMA-MF6-MM4 | 1.69 (42.9) | 0.75 (19.1) | 0.11 (2.8) | 20000 (1379) |
| MF6 | MM6 | SS-FMA-MF6-MM6 | 1.69 (42.9) | 0.75 (19.1) | 0.20 (5.2) | 20000 (1379) |
| MF6 | MM9 | SS-FMA-MF6-MM9 | 1.87 (47.6) | 0.94 (23.8) | 0.20 (5.2) | 20000 (1379) |
| MF6 | MM12 | SS-FMA-MF6-MM12 | 1.94 (49.2) | 1.19 (30.2) | 0.20 (5.2) | 20000 (1379) |
| MF6 | MM16 | SS-FMA-MF6-MM16 | 2.37 (60.3) | 1.50 (38.1) | 0.20 (5.2) | 20000 (1379) |
| MF9 | MM4 | SS-FMA-MF9-MM4 | 1.94 (49.2) | 1.00 (25.4) | 0.11 (2.8) | 20000 (1379) |
| MF9 | MM6 | SS-FMA-MF9-MM6 | 2.06 (52.4) | 1.00 (25.4) | 0.20 (5.2) | 20000 (1379) |
| MF9 | MM9 | SS-FMA-MF9-MM9 | 2.13 (54.0) | 1.00 (25.4) | 0.31 (7.9) | 20000 (1379) |
| MF9 | MM12 | SS-FMA-MF9-MM12 | 2.25 (57.2) | 1.19 (30.2) | 0.31 (7.9) | 20000 (1379) |
| MF9 | MM16 | SS-FMA-MF9-MM16 | 2.50 (63.5) | 1.50 (38.1) | 0.31 (7.9) | 20000 (1379) |
| MF12 | MM4 | SS-FMA-MF12-MM4 | 2.19 (55.6) | 1.37 (34.9) | 0.11 (2.8) | 20000 (1379) |
| MF12 | MM6 | SS-FMA-MF12-MM6 | 2.31 (58.7) | 1.37 (34.9) | 0.20 (5.2) | 20000 (1379) |
| MF12 | MM9 | SS-FMA-MF12-MM9 | 2.44 (61.9) | 1.37 (34.9) | 0.31 (7.9) | 20000 (1379) |
| MF12 | MM12 | SS-FMA-MF12-MM12 | 2.56 (65.1) | 1.37 (34.9) | 0.44 (11.1) | 20000 (1379) |
| MF12 | MM16 | SS-FMA-MF12-MM16 | 2.94 (74.6) | 1.50 (38.1) | 0.44 (11.1) | 20000 (1379) |
| MF16 | MM9 | SS-FMA-MF16-MM9 | 3.06 (77.8) | 1.75 (44.5) | 0.31 (7.9) | 20000 (1379) |
| MF16 | MM12 | SS-FMA-MF16-MM12 | 3.19 (81.0) | 1.75 (44.5) | 0.44 (11.1) | 20000 (1379) |
| MF16 | MM16 | SS-FMA-MF16-MM16 | 3.50 (88.9) | 1.75 (44.5) | 0.56 (14.3) | 20000 (1379) |

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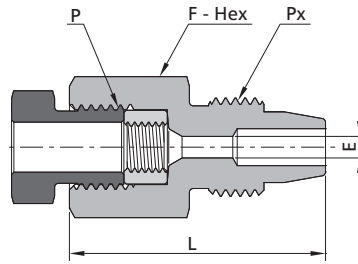
Female Medium Pressure to Medium Pressure Coned and Threaded Nipples



| Female Medium Pressure | | | Medium Pressure Coned and Threaded Nipples | | | |
|------------------------|---------------|-------------------|--|-------------|-------------|--------------------------------|
| P-Connection | Px-Connection | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | | L | F | E | |
| MF4 | MCT4 | SS-FMA-MF4-MCT4 | 1.63 (41.4) | 0.63 (15.9) | 0.11 (2.8) | 20000 (1379) |
| MF4 | MCT6 | SS-FMA-MF4-MCT6 | 1.88 (47.8) | 0.63 (15.9) | 0.11 (2.8) | 20000 (1379) |
| MF4 | MCT9 | SS-FMA-MF4-MCT9 | 2.09 (53.1) | 0.63 (17.5) | 0.11 (2.8) | 20000 (1379) |
| MF6 | MCT4 | SS-FMA-MF6-MCT4 | 1.89 (48.0) | 0.75 (19.1) | 0.11 (2.8) | 20000 (1379) |
| MF6 | MCT6 | SS-FMA-MF6-MCT6 | 2.14 (54.4) | 0.75 (19.1) | 0.20 (5.2) | 20000 (1379) |
| MF6 | MCT9 | SS-FMA-MF6-MCT9 | 2.35 (59.7) | 0.75 (19.1) | 0.20 (5.2) | 20000 (1379) |
| MF9 | MCT4 | SS-FMA-MF9-MCT4 | 2.20 (56.0) | 1.00 (25.4) | 0.11 (2.8) | 20000 (1379) |
| MF9 | MCT6 | SS-FMA-MF9-MCT6 | 2.46 (62.4) | 1.00 (25.4) | 0.20 (5.2) | 20000 (1379) |
| MF9 | MCT9 | SS-FMA-MF9-MCT9 | 2.67 (67.7) | 1.00 (25.4) | 0.31 (7.9) | 20000 (1379) |
| MF9 | MCT12 | SS-FMA-MF9-MCT12 | 2.91 (74.0) | 1.00 (25.4) | 0.31 (7.9) | 20000 (1379) |
| MF9 | MCT16 | SS-FMA-MF9-MCT16 | 3.45 (87.6) | 1.03 (28.4) | 0.31 (7.9) | 20000 (1379) |
| MF12 | MCT9 | SS-FMA-MF12-MCT9 | 2.94 (74.7) | 1.38 (34.9) | 0.31 (7.9) | 20000 (1379) |
| MF12 | MCT12 | SS-FMA-MF12-MCT12 | 3.19 (81.0) | 1.38 (34.9) | 0.44 (11.1) | 20000 (1379) |
| MF12 | MCT16 | SS-FMA-MF12-MCT16 | 3.72 (94.6) | 1.38 (34.9) | 0.44 (11.1) | 20000 (1379) |
| MF16 | MCT9 | SS-FMA-MF16-MCT9 | 3.49 (88.7) | 1.75 (44.5) | 0.31 (7.9) | 20000 (1379) |
| MF16 | MCT12 | SS-FMA-MF16-MCT12 | 3.74 (95.0) | 1.75 (44.5) | 0.44 (11.1) | 20000 (1379) |
| MF16 | MCT16 | SS-FMA-MF16-MCT16 | 4.28 (108.6) | 1.75 (44.5) | 0.56 (14.3) | 20000 (1379) |

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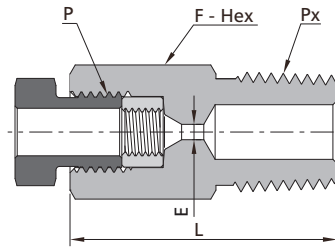
Female Medium Pressure to Male 20D Series



| Female Medium Pressure | | | Male 20D Series | | | |
|------------------------|---------------|------------------|----------------------|-------------|------------|--------------------------------|
| P-Connection | Px-Connection | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | | L | F | E | |
| MF4 | DFM2 | SS-FMA-MF4-DFM2 | 1.31 (33.2) | 0.63 (15.9) | 0.09 (2.4) | 20000 (1379) |
| MF4 | DFM4 | SS-FMA-MF4-DFM4 | 1.43 (36.3) | 0.63 (15.9) | 0.11 (2.8) | 20000 (1379) |
| MF4 | DFM6 | SS-FMA-MF4-DFM6 | 1.46 (37.0) | 0.75 (19.1) | 0.11 (2.8) | 20000 (1379) |
| MF4 | DFM8 | SS-FMA-MF4-DFM8 | 1.47 (37.4) | 0.94 (23.8) | 0.11 (2.8) | 20000 (1379) |
| MF6 | DFM2 | SS-FMA-MF6-DFM2 | 1.62 (41.1) | 0.75 (19.1) | 0.09 (2.4) | 20000 (1379) |
| MF6 | DFM4 | SS-FMA-MF6-DFM4 | 1.62 (41.1) | 0.75 (19.1) | 0.19 (4.8) | 20000 (1379) |
| MF6 | DFM6 | SS-FMA-MF6-DFM6 | 1.65 (41.8) | 0.75 (19.1) | 0.20 (5.2) | 20000 (1379) |
| MF6 | DFM8 | SS-FMA-MF6-DFM8 | 1.72 (43.8) | 0.94 (23.8) | 0.20 (5.2) | 20000 (1379) |
| MF9 | DFM2 | SS-FMA-MF9-DFM2 | 1.87 (47.5) | 1.00 (25.4) | 0.09 (2.4) | 20000 (1379) |
| MF9 | DFM4 | SS-FMA-MF9-DFM4 | 1.99 (50.6) | 1.00 (25.4) | 0.19 (4.8) | 20000 (1379) |
| MF9 | DFM6 | SS-FMA-MF9-DFM6 | 2.02 (51.3) | 1.00 (25.4) | 0.25 (6.4) | 20000 (1379) |
| MF9 | DFM8 | SS-FMA-MF9-DFM8 | 2.04 (51.7) | 1.00 (25.4) | 0.31 (7.9) | 20000 (1379) |
| MF12 | DFM2 | SS-FMA-MF12-DFM2 | 2.18 (55.4) | 1.37 (34.9) | 0.09 (2.4) | 20000 (1379) |
| MF12 | DFM4 | SS-FMA-MF12-DFM4 | 2.31 (58.6) | 1.37 (34.9) | 0.19 (4.8) | 20000 (1379) |
| MF12 | DFM6 | SS-FMA-MF12-DFM6 | 2.27 (57.7) | 1.37 (34.9) | 0.25 (6.4) | 20000 (1379) |
| MF12 | DFM8 | SS-FMA-MF12-DFM8 | 2.41 (61.3) | 1.37 (34.9) | 0.37 (7.9) | 20000 (1379) |
| MF16 | DFM2 | SS-FMA-MF16-DFM2 | 2.74 (69.7) | 1.75 (44.5) | 0.09 (2.4) | 20000 (1379) |
| MF16 | DFM4 | SS-FMA-MF16-DFM4 | 2.87 (72.9) | 1.75 (44.5) | 0.19 (4.8) | 20000 (1379) |
| MF16 | DFM6 | SS-FMA-MF16-DFM6 | 2.89 (73.5) | 1.75 (44.5) | 0.25 (6.4) | 20000 (1379) |
| MF16 | DFM8 | SS-FMA-MF16-DFM8 | 2.97 (75.5) | 1.75 (44.5) | 0.37 (9.5) | 20000 (1379) |

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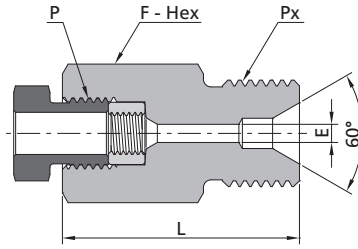
Female Medium Pressure to Male NPT



| Female Medium Pressure | | | Male NPT | | | |
|------------------------|---------------|------------------|----------------------|-------------|-------------|--------------------------------|
| P-Connection | Px-Connection | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | | L | F | E | |
| MF4 | NS2 | SS-FMA-MF4-NS2 | 1.19 (30.2) | 0.63 (15.9) | 0.11 (2.8) | 15000 (1034) |
| MF4 | NS4 | SS-FMA-MF4-NS4 | 1.37 (34.9) | 0.63 (15.9) | 0.11 (2.8) | 15000 (1034) |
| MF4 | NS6 | SS-FMA-MF4-NS6 | 1.37 (34.9) | 0.69 (17.5) | 0.11 (2.8) | 15000 (1034) |
| MF4 | NS8 | SS-FMA-MF4-NS8 | 1.37 (34.9) | 0.87 (22.2) | 0.11 (2.8) | 15000 (1034) |
| MF4 | NS12 | SS-FMA-MF4-NS12 | 1.75 (44.5) | 1.06 (27.0) | 0.11 (2.8) | 10000 (690) |
| MF6 | NS2 | SS-FMA-MF6-NS2 | 1.37 (34.9) | 0.75 (19.1) | 0.19 (4.8) | 15000 (1034) |
| MF6 | NS4 | SS-FMA-MF6-NS4 | 1.50 (38.1) | 0.75 (19.1) | 0.20 (5.2) | 15000 (1034) |
| MF6 | NS6 | SS-FMA-MF6-NS6 | 1.50 (38.1) | 0.75 (19.1) | 0.20 (5.2) | 15000 (1034) |
| MF6 | NS8 | SS-FMA-MF6-NS8 | 1.63 (41.3) | 0.87 (22.2) | 0.20 (5.2) | 15000 (1034) |
| MF6 | NS12 | SS-FMA-MF6-NS12 | 1.75 (44.5) | 1.06 (27.0) | 0.20 (5.2) | 10000 (690) |
| MF6 | NS16 | SS-FMA-MF6-NS16 | 2.00 (50.8) | 1.37 (34.9) | 0.20 (5.2) | 10000 (690) |
| MF9 | NS2 | SS-FMA-MF9-NS2 | 1.75 (44.5) | 1.00 (25.4) | 0.19 (4.8) | 15000 (1034) |
| MF9 | NS4 | SS-FMA-MF9-NS4 | 1.75 (44.5) | 1.00 (25.4) | 0.25 (6.4) | 15000 (1034) |
| MF9 | NS6 | SS-FMA-MF9-NS6 | 1.75 (44.5) | 1.00 (25.4) | 0.31 (7.9) | 15000 (1034) |
| MF9 | NS8 | SS-FMA-MF9-NS8 | 1.94 (49.2) | 1.00 (25.4) | 0.31 (7.9) | 15000 (1034) |
| MF9 | NS12 | SS-FMA-MF9-NS12 | 2.00 (50.8) | 1.06 (27.0) | 0.31 (7.9) | 10000 (690) |
| MF9 | NS16 | SS-FMA-MF9-NS16 | 2.25 (57.2) | 1.37 (34.9) | 0.31 (7.9) | 10000 (690) |
| MF12 | NS4 | SS-FMA-MF12-NS4 | 2.00 (50.8) | 1.37 (34.9) | 0.25 (6.4) | 15000 (1034) |
| MF12 | NS6 | SS-FMA-MF12-NS6 | 2.00 (50.8) | 1.37 (34.9) | 0.31 (7.9) | 15000 (1034) |
| MF12 | NS8 | SS-FMA-MF12-NS8 | 2.19 (55.6) | 1.37 (34.9) | 0.38 (9.6) | 15000 (1034) |
| MF12 | NS12 | SS-FMA-MF12-NS12 | 2.25 (57.2) | 1.37 (34.9) | 0.44 (11.1) | 10000 (690) |
| MF12 | NS16 | SS-FMA-MF12-NS16 | 2.63 (66.7) | 1.37 (34.9) | 0.44 (11.1) | 10000 (690) |
| MF16 | NS4 | SS-FMA-MF16-NS4 | 2.87 (73.0) | 1.75 (44.5) | 0.25 (6.4) | 15000 (1034) |
| MF16 | NS6 | SS-FMA-MF16-NS6 | 2.87 (73.0) | 1.75 (44.5) | 0.31 (7.9) | 15000 (1034) |
| MF16 | NS8 | SS-FMA-MF16-NS8 | 2.87 (73.0) | 1.75 (44.5) | 0.38 (9.6) | 15000 (1034) |
| MF16 | NS12 | SS-FMA-MF16-NS12 | 2.87 (73.0) | 1.75 (44.5) | 0.56 (14.3) | 10000 (690) |
| MF16 | NS16 | SS-FMA-MF16-NS16 | 3.06 (77.8) | 1.75 (44.5) | 0.56 (14.3) | 10000 (690) |

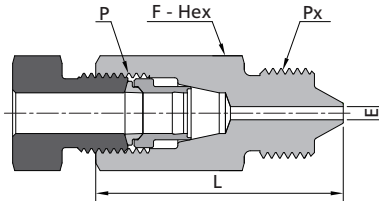
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Female Medium Pressure to Male Type "M"



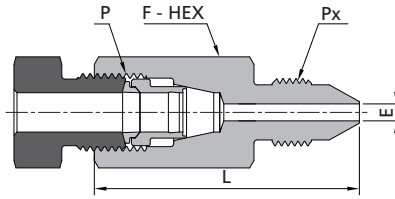
| Female Medium Pressure | | | Male Type "M" | | | |
|------------------------|---------------|------------------|----------------------|-------------|-------------|--------------------------------|
| P-Connection | Px-Connection | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | | L | F | E | |
| MF4 | TM9 | SS-FMA-MF4-TM9 | 1.19 (30.2) | 0.63 (15.9) | 0.09 (2.4) | 20000 (1379) |
| MF4 | TM12 | SS-FMA-MF4-TM12 | 1.31 (33.3) | 0.75 (19.1) | 0.11 (2.8) | 20000 (1379) |
| MF4 | TM14 | SS-FMA-MF4-TM14 | 1.50 (38.1) | 1.00 (25.4) | 0.11 (2.8) | 20000 (1379) |
| MF6 | TM9 | SS-FMA-MF6-TM9 | 1.37 (34.9) | 0.75 (19.1) | 0.09 (2.4) | 20000 (1379) |
| MF6 | TM12 | SS-FMA-MF6-TM12 | 1.50 (38.1) | 0.75 (19.1) | 0.09 (2.4) | 20000 (1379) |
| MF6 | TM14 | SS-FMA-MF6-TM14 | 1.63 (41.3) | 1.00 (25.4) | 0.15 (3.8) | 20000 (1379) |
| MF6 | TM16 | SS-FMA-MF6-TM16 | 1.63 (41.3) | 1.00 (25.4) | 0.20 (5.2) | 20000 (1379) |
| MF9 | TM9 | SS-FMA-MF9-TM9 | 1.69 (42.9) | 1.00 (25.4) | 0.09 (2.4) | 20000 (1379) |
| MF9 | TM12 | SS-FMA-MF9-TM12 | 1.81 (46.0) | 1.00 (25.4) | 0.29 (7.4) | 20000 (1379) |
| MF9 | TM14 | SS-FMA-MF9-TM14 | 1.94 (49.2) | 1.00 (25.4) | 0.15 (3.8) | 20000 (1379) |
| MF9 | TM16 | SS-FMA-MF9-TM16 | 1.81 (46.0) | 1.00 (25.4) | 0.31 (7.9) | 20000 (1379) |
| MF9 | TM21 | SS-FMA-MF9-TM21 | 1.81 (46.0) | 1.37 (34.9) | 0.31 (7.9) | 20000 (1379) |
| MF12 | TM14 | SS-FMA-MF12-TM14 | 2.19 (55.6) | 1.37 (34.9) | 0.15 (3.8) | 20000 (1379) |
| MF12 | TM16 | SS-FMA-MF12-TM16 | 2.13 (54.0) | 1.37 (34.9) | 0.39 (10.0) | 20000 (1379) |
| MF12 | TM21 | SS-FMA-MF12-TM21 | 2.00 (50.8) | 1.37 (34.9) | 0.44 (11.1) | 20000 (1379) |
| MF16 | TM21 | SS-FMA-MF16-TM21 | 2.56 (65.1) | 1.75 (44.5) | 0.56 (14.3) | 20000 (1379) |

Male 20D Series to Male High Pressure



| Male 20D Series | | | Male High Pressure | | | |
|-----------------|---------------|-----------------|----------------------|-------------|------------|--------------------------------|
| P-Connection | Px-Connection | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | | L | F | E | |
| DFF2 | HM4 | SS-FMA-DFF2-HM4 | 1.22(31.0) | 0.63 (15.9) | 0.08 (2.1) | 20000 (1379) |
| DFF2 | HM6 | SS-FMA-DFF2-HM6 | 1.47(37.3) | 0.81 (20.6) | 0.09 (2.4) | 20000 (1379) |
| DFF2 | HM9 | SS-FMA-DFF2-HM9 | 1.78(45.3) | 1.19 (30.2) | 0.09 (2.4) | 20000 (1379) |
| DFF4 | HM4 | SS-FMA-DFF4-HM4 | 1.54(39.1) | 0.63 (15.9) | 0.08 (2.1) | 20000 (1379) |
| DFF4 | HM6 | SS-FMA-DFF4-HM6 | 1.73(43.9) | 0.81 (20.6) | 0.13 (3.2) | 20000 (1379) |
| DFF4 | HM9 | SS-FMA-DFF4-HM9 | 1.79(45.5) | 1.19 (30.2) | 0.19 (4.8) | 20000 (1379) |
| DFF6 | HM4 | SS-FMA-DFF6-HM4 | 1.70(43.1) | 0.75 (19.1) | 0.08 (2.1) | 20000 (1379) |
| DFF6 | HM6 | SS-FMA-DFF6-HM6 | 1.89(47.9) | 0.81 (20.6) | 0.13 (3.2) | 20000 (1379) |
| DFF6 | HM9 | SS-FMA-DFF6-HM9 | 1.76(44.7) | 1.19 (30.2) | 0.19 (4.8) | 20000 (1379) |
| DFF8 | HM4 | SS-FMA-DFF8-HM4 | 1.87(47.5) | 1.00 (25.4) | 0.08 (2.1) | 20000 (1379) |
| DFF8 | HM6 | SS-FMA-DFF8-HM6 | 2.06(52.2) | 1.00 (25.4) | 0.13 (3.2) | 20000 (1379) |
| DFF8 | HM9 | SS-FMA-DFF8-HM9 | 2.06(52.2) | 1.19 (30.2) | 0.19 (4.8) | 20000 (1379) |

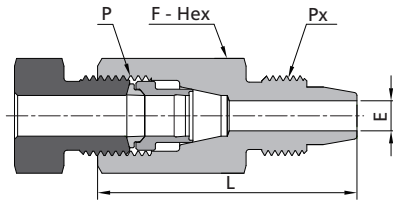
Female 20D Series to Male Medium Pressure



| Female 20D Series | | | Male Medium Pressure | | | |
|-------------------|---------------|------------------|----------------------|-------------|------------|-----------------------------|
| P-Connection | Px-Connection | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | | L | F | E | |
| DFF2 | MM4 | SS-FMA-DFF2-MM4 | 1.35(34.2) | 0.50 (12.7) | 0.09 (2.4) | 20000 (1379) |
| DFF2 | MM6 | SS-FMA-DFF2-MM6 | 1.41(35.8) | 0.63 (15.9) | 0.09 (2.4) | 20000 (1379) |
| DFF2 | MM9 | SS-FMA-DFF2-MM9 | 1.66(42.1) | 0.94 (23.8) | 0.09 (2.4) | 20000 (1379) |
| DFF2 | MM12 | SS-FMA-DFF2-MM12 | 1.91(48.5) | 1.19 (30.2) | 0.09 (2.4) | 20000 (1379) |
| DFF2 | MM16 | SS-FMA-DFF2-MM16 | 2.53(64.3) | 1.50 (38.1) | 0.09 (2.4) | 20000 (1379) |
| DFF4 | MM4 | SS-FMA-DFF4-MM4 | 1.67(42.3) | 0.63 (15.9) | 0.11 (2.8) | 20000 (1379) |
| DFF4 | MM6 | SS-FMA-DFF4-MM6 | 1.79(45.5) | 0.63 (15.9) | 0.19 (4.8) | 20000 (1379) |
| DFF4 | MM9 | SS-FMA-DFF4-MM9 | 1.73(43.9) | 0.94 (23.8) | 0.19 (4.8) | 20000 (1379) |
| DFF4 | MM12 | SS-FMA-DFF4-MM12 | 1.92(48.7) | 1.19 (30.2) | 0.19 (4.8) | 20000 (1379) |
| DFF4 | MM16 | SS-FMA-DFF4-MM16 | 2.54(64.5) | 1.50 (38.1) | 0.19 (4.8) | 20000 (1379) |
| DFF6 | MM4 | SS-FMA-DFF6-MM4 | 1.82(46.3) | 0.75 (19.1) | 0.11 (2.8) | 20000 (1379) |
| DFF6 | MM6 | SS-FMA-DFF6-MM6 | 1.89(47.9) | 0.75 (19.1) | 0.20 (5.2) | 20000 (1379) |
| DFF6 | MM9 | SS-FMA-DFF6-MM9 | 1.94(49.4) | 0.94 (23.8) | 0.25 (6.4) | 20000 (1379) |
| DFF6 | MM12 | SS-FMA-DFF6-MM12 | 2.01(51.0) | 1.19 (30.2) | 0.25 (6.4) | 20000 (1379) |
| DFF6 | MM16 | SS-FMA-DFF6-MM16 | 2.51(63.7) | 1.50 (38.1) | 0.25 (6.4) | 20000 (1379) |
| DFF8 | MM4 | SS-FMA-DFF8-MM4 | 1.93(49.1) | 1.00 (25.4) | 0.11 (2.8) | 20000 (1379) |
| DFF8 | MM6 | SS-FMA-DFF8-MM6 | 2.12(53.8) | 1.00 (25.4) | 0.20 (5.2) | 20000 (1379) |
| DFF8 | MM9 | SS-FMA-DFF8-MM9 | 2.24(57.0) | 1.00 (25.4) | 0.31 (7.9) | 20000 (1379) |
| DFF8 | MM12 | SS-FMA-DFF8-MM12 | 2.24(57.0) | 1.19 (30.2) | 0.37 (9.5) | 20000 (1379) |
| DFF8 | MM16 | SS-FMA-DFF8-MM16 | 2.68(68.1) | 1.50 (38.1) | 0.37 (9.5) | 20000 (1379) |

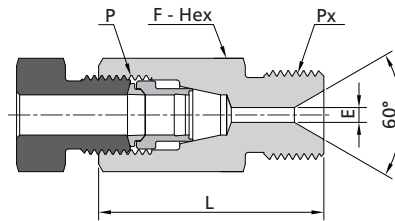
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Female 20D Series to Male 20D Series



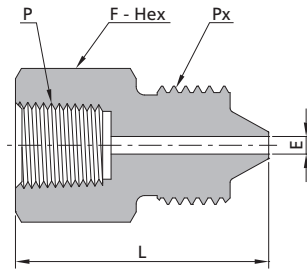
| Female 20D Series | | | Male 20D Series | | | |
|-------------------|---------------|------------------|----------------------|-------------|------------|--------------------------------|
| P-Connection | Px-Connection | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | | L | F | E | |
| DFF2 | DFM2 | SS-FMA-DFF2-DFM2 | 1.34(34.0) | 0.50 (12.7) | 0.09 (2.4) | 20000 (1379) |
| DFF2 | DFM4 | SS-FMA-DFF2-DFM4 | 1.40(35.6) | 0.63 (15.9) | 0.09 (2.4) | 20000 (1379) |
| DFF2 | DFM6 | SS-FMA-DFF2-DFM6 | 1.37(34.7) | 0.75 (19.1) | 0.09 (2.4) | 20000 (1379) |
| DFF2 | DFM8 | SS-FMA-DFF2-DFM8 | 1.63(41.4) | 0.94 (23.8) | 0.09 (2.4) | 20000 (1379) |
| DFF4 | DFM2 | SS-FMA-DFF4-DFM2 | 1.72(43.7) | 0.63 (15.9) | 0.09 (2.4) | 20000 (1379) |
| DFF4 | DFM4 | SS-FMA-DFF4-DFM4 | 1.78(45.3) | 0.63 (15.9) | 0.19 (4.8) | 20000 (1379) |
| DFF4 | DFM6 | SS-FMA-DFF4-DFM6 | 1.75(44.4) | 0.75 (19.1) | 0.19 (4.8) | 20000 (1379) |
| DFF4 | DFM8 | SS-FMA-DFF4-DFM8 | 1.83(46.4) | 0.94 (23.8) | 0.19 (4.8) | 20000 (1379) |
| DFF6 | DFM2 | SS-FMA-DFF6-DFM2 | 1.81(46.1) | 0.75 (19.1) | 0.09 (2.4) | 20000 (1379) |
| DFF6 | DFM4 | SS-FMA-DFF6-DFM4 | 1.94(49.3) | 0.75 (19.1) | 0.19 (4.8) | 20000 (1379) |
| DFF6 | DFM6 | SS-FMA-DFF6-DFM6 | 1.91(48.4) | 0.75 (19.1) | 0.25 (6.4) | 20000 (1379) |
| DFF6 | DFM8 | SS-FMA-DFF6-DFM8 | 1.92(48.8) | 0.94 (23.8) | 0.25 (6.4) | 20000 (1379) |
| DFF8 | DFM2 | SS-FMA-DFF8-DFM2 | 1.93(48.9) | 1.00 (25.4) | 0.09 (2.4) | 20000 (1379) |
| DFF8 | DFM4 | SS-FMA-DFF8-DFM4 | 2.05(52.1) | 1.00 (25.4) | 0.19 (4.8) | 20000 (1379) |
| DFF8 | DFM6 | SS-FMA-DFF8-DFM6 | 2.07(52.7) | 1.00 (25.4) | 0.25 (6.4) | 20000 (1379) |
| DFF8 | DFM8 | SS-FMA-DFF8-DFM8 | 2.15(54.7) | 1.00 (25.4) | 0.37 (9.5) | 20000 (1379) |

Female 20D Series to Male Type "M"



| Female 20D Series | | | Male Type "M" | | | |
|-------------------|---------------|------------------|----------------------|-------------|------------|--------------------------------|
| P-Connection | Px-Connection | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | | L | F | E | |
| DFF2 | TM9 | SS-FMA-DFF2-TM9 | 1.22(31.0) | 0.63 (15.9) | 0.09 (2.4) | 20000 (1379) |
| DFF2 | TM12 | SS-FMA-DFF2-TM12 | 1.28(32.6) | 0.75 (19.1) | 0.09 (2.4) | 20000 (1379) |
| DFF4 | TM9 | SS-FMA-DFF4-TM9 | 1.54(39.1) | 0.63 (15.9) | 0.09 (2.4) | 20000 (1379) |
| DFF4 | TM12 | SS-FMA-DFF4-TM12 | 1.60(40.7) | 0.75 (19.1) | 0.19 (4.8) | 20000 (1379) |
| DFF4 | TM14 | SS-FMA-DFF4-TM14 | 1.79(45.5) | 1.00 (25.4) | 0.15 (3.8) | 20000 (1379) |
| DFF6 | TM9 | SS-FMA-DFF6-TM9 | 1.63(41.5) | 0.75 (19.1) | 0.09 (2.4) | 20000 (1379) |
| DFF6 | TM12 | SS-FMA-DFF6-TM12 | 1.76(44.7) | 0.75 (19.1) | 0.25 (6.4) | 20000 (1379) |
| DFF6 | TM14 | SS-FMA-DFF6-TM14 | 1.89(47.9) | 1.00 (25.4) | 0.15 (3.8) | 20000 (1379) |
| DFF6 | TM16 | SS-FMA-DFF6-TM16 | 1.76(44.7) | 1.00 (25.4) | 0.25 (6.4) | 20000 (1379) |
| DFF8 | TM9 | SS-FMA-DFF8-TM9 | 1.81(45.9) | 1.00 (25.4) | 0.09 (2.4) | 20000 (1379) |
| DFF8 | TM12 | SS-FMA-DFF8-TM12 | 1.81(45.9) | 1.00 (25.4) | 0.29 (7.4) | 20000 (1379) |
| DFF8 | TM14 | SS-FMA-DFF8-TM14 | 2.00(50.7) | 1.00 (25.4) | 0.15 (3.8) | 20000 (1379) |
| DFF8 | TM16 | SS-FMA-DFF8-TM16 | 1.93(49.1) | 1.00 (25.4) | 0.37 (9.5) | 20000 (1379) |
| DFF8 | TM21 | SS-FMA-DFF8-TM21 | 1.93(49.1) | 1.37 (34.9) | 0.37 (9.5) | 20000 (1379) |

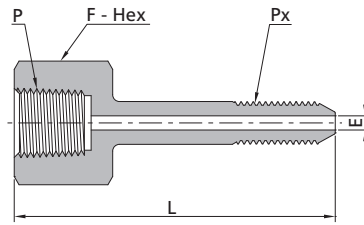
Female NPT to Male High Pressure



| Female NPT | | | Male High Pressure | | | |
|--------------|---------------|------------------|----------------------|-------------|------------|--------------------------------|
| P-Connection | Px-Connection | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | | L | F | E | |
| FNS2 | HM4 | SS-FMA-FNS2-HM4 | 1.19 (30.2) | 0.63 (15.9) | 0.08 (2.1) | 15000 (1034) |
| FNS2 | HM6 | SS-FMA-FNS2-HM6 | 1.37 (34.9) | 0.81 (20.6) | 0.13 (3.2) | 15000 (1034) |
| FNS2 | HM9 | SS-FMA-FNS2-HM9 | 1.63 (41.3) | 1.19 (30.2) | 0.19 (4.8) | 15000 (1034) |
| FNS4 | HM4 | SS-FMA-FNS4-HM4 | 1.37 (34.9) | 0.94 (23.8) | 0.08 (2.1) | 15000 (1034) |
| FNS4 | HM6 | SS-FMA-FNS4-HM6 | 1.63 (41.3) | 0.94 (23.8) | 0.13 (3.2) | 15000 (1034) |
| FNS4 | HM9 | SS-FMA-FNS4-HM9 | 1.75 (44.5) | 1.19 (30.2) | 0.19 (4.8) | 15000 (1034) |
| FNS6 | HM4 | SS-FMA-FNS6-HM4 | 1.44 (36.5) | 1.13 (28.6) | 0.08 (2.1) | 15000 (1034) |
| FNS6 | HM6 | SS-FMA-FNS6-HM6 | 1.69 (42.9) | 1.13 (28.6) | 0.13 (3.2) | 15000 (1034) |
| FNS6 | HM9 | SS-FMA-FNS6-HM9 | 1.81 (46.0) | 1.19 (30.2) | 0.19 (4.8) | 15000 (1034) |
| FNS8 | HM4 | SS-FMA-FNS8-HM4 | 1.69 (42.9) | 1.37 (34.9) | 0.08 (2.1) | 15000 (1034) |
| FNS8 | HM6 | SS-FMA-FNS8-HM6 | 1.94 (49.2) | 1.37 (34.9) | 0.13 (3.2) | 15000 (1034) |
| FNS8 | HM9 | SS-FMA-FNS8-HM9 | 2.13 (54.0) | 1.37 (34.9) | 0.19 (4.8) | 15000 (1034) |
| FNS12 | HM4 | SS-FMA-FNS12-HM4 | 1.75 (44.5) | 1.50 (38.1) | 0.08 (2.1) | 10000 (690) |
| FNS12 | HM6 | SS-FMA-FNS12-HM6 | 2.00 (50.8) | 1.50 (38.1) | 0.13 (3.2) | 10000 (690) |
| FNS12 | HM9 | SS-FMA-FNS12-HM9 | 2.19 (55.6) | 1.50 (38.1) | 0.19 (4.8) | 10000 (690) |
| FNS16 | HM4 | SS-FMA-FNS16-HM4 | 2.00 (50.8) | 1.75 (44.5) | 0.08 (2.1) | 10000 (690) |
| FNS16 | HM6 | SS-FMA-FNS16-HM6 | 2.25 (57.2) | 1.75 (44.5) | 0.13 (3.2) | 10000 (690) |
| FNS16 | HM9 | SS-FMA-FNS16-HM9 | 2.44 (61.9) | 1.75 (44.5) | 0.19 (4.8) | 10000 (690) |

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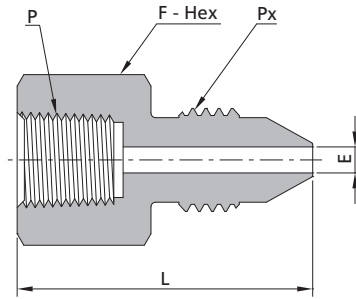
Female NPT to High Pressure Coned and Threaded Nipples



| Female NPT | | | High Pressure Coned and Threaded Nipples | | | |
|--------------|---------------|-------------------|--|-------------|------------|--------------------------------|
| P-Connection | Px-Connection | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | | L | F | E | |
| FNS2 | HCT4 | SS-FMA-FNS2-HCT4 | 1.87 (47.6) | 0.63 (15.9) | 0.08 (2.1) | 15000 (1034) |
| FNS2 | HCT6 | SS-FMA-FNS2-HCT6 | 2.19 (55.6) | 0.63 (15.9) | 0.13 (3.2) | 15000 (1034) |
| FNS4 | HCT4 | SS-FMA-FNS4-HCT4 | 2.13 (54.0) | 0.94 (23.8) | 0.08 (2.1) | 15000 (1034) |
| FNS4 | HCT6 | SS-FMA-FNS4-HCT6 | 2.50 (63.5) | 0.94 (23.8) | 0.13 (3.2) | 15000 (1034) |
| FNS4 | HCT9 | SS-FMA-FNS4-HCT9 | 3.06 (77.8) | 0.94 (23.8) | 0.19 (4.8) | 15000 (1034) |
| FNS6 | HCT4 | SS-FMA-FNS6-HCT4 | 2.13 (54.0) | 1.13 (28.6) | 0.08 (2.1) | 15000 (1034) |
| FNS6 | HCT6 | SS-FMA-FNS6-HCT6 | 2.50 (63.5) | 1.13 (28.6) | 0.13 (3.2) | 15000 (1034) |
| FNS6 | HCT9 | SS-FMA-FNS6-HCT9 | 3.13 (79.4) | 1.13 (28.6) | 0.19 (4.8) | 15000 (1034) |
| FNS8 | HCT4 | SS-FMA-FNS8-HCT4 | 2.37 (60.3) | 1.37 (34.9) | 0.08 (2.1) | 15000 (1034) |
| FNS8 | HCT6 | SS-FMA-FNS8-HCT6 | 2.75 (69.9) | 1.37 (34.9) | 0.13 (3.2) | 15000 (1034) |
| FNS8 | HCT9 | SS-FMA-FNS8-HCT9 | 3.31 (84.2) | 1.37 (34.9) | 0.19 (4.8) | 15000 (1034) |
| FNS12 | HCT4 | SS-FMA-FNS12-HCT4 | 2.44 (61.9) | 1.50 (38.1) | 0.08 (2.1) | 10000 (690) |
| FNS12 | HCT6 | SS-FMA-FNS12-HCT6 | 2.81 (71.4) | 1.50 (38.1) | 0.13 (3.2) | 10000 (690) |
| FNS12 | HCT9 | SS-FMA-FNS12-HCT9 | 3.38 (85.8) | 1.50 (38.1) | 0.19 (4.8) | 10000 (690) |
| FNS16 | HCT4 | SS-FMA-FNS16-HCT4 | 2.69 (68.3) | 1.75 (44.5) | 0.08 (2.1) | 10000 (690) |
| FNS16 | HCT6 | SS-FMA-FNS16-HCT6 | 3.10 (78.8) | 1.75 (44.5) | 0.13 (3.2) | 10000 (690) |
| FNS16 | HCT9 | SS-FMA-FNS16-HCT9 | 3.69 (93.8) | 1.75 (44.5) | 0.19 (4.8) | 10000 (690) |

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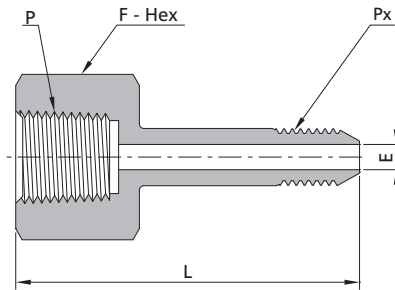
Female NPT to Male Medium Pressure



| Female NPT | | | Male Medium Pressure | | | |
|--------------|---------------|-------------------|----------------------|-------------|-------------|--------------------------------|
| P-Connection | Px-Connection | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | | L | F | E | |
| FNS2 | MM4 | SS-FMA-FNS2-MM4 | 1.25 (31.8) | 0.63 (15.9) | 0.11 (2.8) | 15000 (1034) |
| FNS2 | MM6 | SS-FMA-FNS2-MM6 | 1.37 (34.9) | 0.63 (15.9) | 0.20 (5.2) | 15000 (1034) |
| FNS2 | MM9 | SS-FMA-FNS2-MM9 | 1.50 (38.1) | 0.94 (23.8) | 0.31 (7.9) | 15000 (1034) |
| FNS2 | MM12 | SS-FMA-FNS2-MM12 | 1.75 (44.5) | 1.19 (30.2) | 0.31 (7.9) | 15000 (1034) |
| FNS2 | MM16 | SS-FMA-FNS2-MM16 | 2.37 (60.3) | 1.50 (38.1) | 0.31 (7.9) | 15000 (1034) |
| FNS4 | MM4 | SS-FMA-FNS4-MM4 | 1.50 (38.0) | 0.94 (23.8) | 0.11 (2.8) | 15000 (1034) |
| FNS4 | MM6 | SS-FMA-FNS4-MM6 | 1.63 (41.3) | 0.94 (23.8) | 0.20 (5.2) | 15000 (1034) |
| FNS4 | MM9 | SS-FMA-FNS4-MM9 | 1.75 (44.5) | 0.94 (23.8) | 0.31 (7.9) | 15000 (1034) |
| FNS4 | MM12 | SS-FMA-FNS4-MM12 | 1.87 (47.6) | 1.19 (30.2) | 0.41 (10.4) | 15000 (1034) |
| FNS4 | MM16 | SS-FMA-FNS4-MM16 | 2.37 (60.3) | 1.50 (38.1) | 0.41 (10.4) | 15000 (1034) |
| FNS6 | MM4 | SS-FMA-FNS6-MM4 | 1.50 (38.1) | 1.13 (28.6) | 0.11 (2.8) | 15000 (1034) |
| FNS6 | MM6 | SS-FMA-FNS6-MM6 | 1.69 (42.9) | 1.13 (28.6) | 0.20 (5.2) | 15000 (1034) |
| FNS6 | MM9 | SS-FMA-FNS6-MM9 | 1.81 (46.0) | 1.13 (28.6) | 0.31 (7.9) | 15000 (1034) |
| FNS6 | MM12 | SS-FMA-FNS6-MM12 | 2.00 (50.8) | 1.19 (30.2) | 0.44 (11.1) | 15000 (1034) |
| FNS6 | MM16 | SS-FMA-FNS6-MM16 | 2.37 (60.3) | 1.50 (38.1) | 0.56 (14.3) | 15000 (1034) |
| FNS8 | MM4 | SS-FMA-FNS8-MM4 | 1.75 (44.5) | 1.37 (34.9) | 0.11 (2.8) | 15000 (1034) |
| FNS8 | MM6 | SS-FMA-FNS8-MM6 | 1.87 (47.6) | 1.37 (34.9) | 0.20 (5.2) | 15000 (1034) |
| FNS8 | MM9 | SS-FMA-FNS8-MM9 | 2.06 (52.4) | 1.37 (34.9) | 0.31 (7.9) | 15000 (1034) |
| FNS8 | MM12 | SS-FMA-FNS8-MM12 | 2.19 (55.6) | 1.37 (34.9) | 0.44 (11.1) | 15000 (1034) |
| FNS8 | MM16 | SS-FMA-FNS8-MM16 | 2.56 (65.1) | 1.50 (38.1) | 0.56 (14.3) | 15000 (1034) |
| FNS12 | MM4 | SS-FMA-FNS12-MM4 | 1.81 (46.0) | 1.50 (38.1) | 0.11 (2.8) | 10000 (690) |
| FNS12 | MM6 | SS-FMA-FNS12-MM6 | 1.94 (49.2) | 1.50 (38.1) | 0.20 (5.2) | 10000 (690) |
| FNS12 | MM9 | SS-FMA-FNS12-MM9 | 2.13 (54.0) | 1.50 (38.1) | 0.31 (7.9) | 10000 (690) |
| FNS12 | MM12 | SS-FMA-FNS12-MM12 | 2.31 (58.7) | 1.50 (38.1) | 0.44 (11.1) | 10000 (690) |
| FNS12 | MM16 | SS-FMA-FNS12-MM16 | 2.75 (69.9) | 1.50 (38.1) | 0.56 (14.3) | 10000 (690) |
| FNS16 | MM4 | SS-FMA-FNS16-MM4 | 2.06 (52.4) | 1.75 (44.5) | 0.11 (2.8) | 10000 (690) |
| FNS16 | MM6 | SS-FMA-FNS16-MM6 | 2.19 (55.6) | 1.75 (44.5) | 0.20 (5.2) | 10000 (690) |
| FNS16 | MM9 | SS-FMA-FNS16-MM9 | 2.44 (61.9) | 1.75 (44.5) | 0.31 (7.9) | 10000 (690) |
| FNS16 | MM12 | SS-FMA-FNS16-MM12 | 2.56 (63.5) | 1.75 (44.5) | 0.44 (11.1) | 10000 (690) |
| FNS16 | MM16 | SS-FMA-FNS16-MM16 | 3.06 (77.8) | 1.75 (44.5) | 0.56 (14.3) | 10000 (690) |

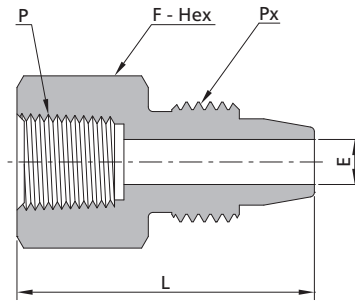
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Female NPT to Medium Pressure Coned and Threaded Nipples



| Female NPT | | | Medium Pressure Coned and Threaded Nipples | | | |
|--------------|---------------|--------------------|--|-------------|-------------|-----------------------------|
| P-Connection | Px-Connection | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | | L | F | E | |
| FNS2 | MCT4 | SS-FMA-FNS2-MCT4 | 1.50 (38.1) | 0.63 (15.9) | 0.11 (2.8) | 15000 (1034) |
| FNS2 | MCT6 | SS-FMA-FNS2-MCT6 | 1.75 (44.5) | 0.63 (15.9) | 0.20 (5.2) | 15000 (1034) |
| FNS2 | MCT9 | SS-FMA-FNS2-MCT9 | 1.94 (49.2) | 0.63 (15.9) | 0.31 (7.9) | 15000 (1034) |
| FNS2 | MCT12 | SS-FMA-FNS2-MCT12 | 2.13 (54.0) | 0.87 (22.2) | 0.31 (7.9) | 15000 (1034) |
| FNS2 | MCT16 | SS-FMA-FNS2-MCT16 | 2.81 (71.4) | 1.13 (28.6) | 0.31 (7.9) | 15000 (1034) |
| FNS4 | MCT4 | SS-FMA-FNS4-MCT4 | 1.75 (44.5) | 0.94 (23.8) | 0.11 (2.8) | 15000 (1034) |
| FNS4 | MCT6 | SS-FMA-FNS4-MCT6 | 2.00 (50.8) | 0.94 (23.8) | 0.20 (5.2) | 15000 (1034) |
| FNS4 | MCT9 | SS-FMA-FNS4-MCT9 | 2.19 (55.6) | 0.94 (23.8) | 0.31 (7.9) | 15000 (1034) |
| FNS4 | MCT12 | SS-FMA-FNS4-MCT12 | 2.44 (61.9) | 0.94 (23.8) | 0.41 (10.4) | 15000 (1034) |
| FNS4 | MCT16 | SS-FMA-FNS4-MCT16 | 2.94 (74.6) | 1.13 (28.6) | 0.41 (10.4) | 15000 (1034) |
| FNS6 | MCT6 | SS-FMA-FNS6-MCT6 | 2.06 (52.4) | 1.13 (28.6) | 0.20 (5.2) | 15000 (1034) |
| FNS6 | MCT9 | SS-FMA-FNS6-MCT9 | 2.25 (57.2) | 1.13 (28.6) | 0.31 (7.9) | 15000 (1034) |
| FNS6 | MCT12 | SS-FMA-FNS6-MCT12 | 2.50 (63.5) | 1.13 (28.6) | 0.44 (11.1) | 15000 (1034) |
| FNS6 | MCT16 | SS-FMA-FNS6-MCT16 | 3.00 (76.2) | 1.13 (28.6) | 0.56 (14.3) | 15000 (1034) |
| FNS8 | MCT9 | SS-FMA-FNS8-MCT9 | 2.50 (63.5) | 1.37 (34.9) | 0.31 (7.9) | 15000 (1034) |
| FNS8 | MCT12 | SS-FMA-FNS8-MCT12 | 2.75 (69.9) | 1.37 (34.9) | 0.44 (11.1) | 15000 (1034) |
| FNS8 | MCT16 | SS-FMA-FNS8-MCT16 | 3.25 (82.6) | 1.37 (34.9) | 0.56 (14.3) | 15000 (1034) |
| FNS12 | MCT9 | SS-FMA-FNS12-MCT9 | 2.56 (65.1) | 1.50 (38.1) | 0.31 (7.9) | 10000 (690) |
| FNS12 | MCT12 | SS-FMA-FNS12-MCT12 | 2.81 (71.4) | 1.50 (38.1) | 0.44 (11.1) | 10000 (690) |
| FNS12 | MCT16 | SS-FMA-FNS12-MCT16 | 3.39 (86.0) | 1.50 (38.1) | 0.56 (14.3) | 10000 (690) |
| FNS16 | MCT12 | SS-FMA-FNS16-MCT12 | 3.13 (79.4) | 1.75 (44.5) | 0.44 (11.1) | 10000 (690) |
| FNS16 | MCT16 | SS-FMA-FNS16-MCT16 | 3.63 (92.2) | 1.75 (44.5) | 0.56 (14.3) | 10000 (690) |

Female NPT to Male 20D Series

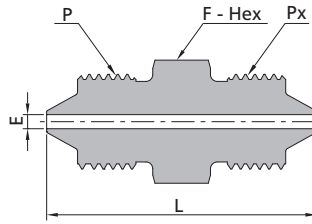


| Female NPT | | | Male 20D Series | | | |
|--------------|---------------|-------------------|----------------------|-------------|------------|--------------------------------|
| P-Connection | Px-Connection | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | | L | F | E | |
| FNS2 | DFM2 | SS-FMA-FNS2-DFM2 | 1.24 (31.6) | 0.63 (15.9) | 0.09 (2.4) | 15000 (1034) |
| FNS2 | DFM4 | SS-FMA-FNS2-DFM4 | 1.37 (34.7) | 0.63 (15.9) | 0.19 (4.8) | 15000 (1034) |
| FNS2 | DFM6 | SS-FMA-FNS2-DFM6 | 1.39 (35.4) | 0.75 (19.1) | 0.25 (6.4) | 15000 (1034) |
| FNS2 | DFM8 | SS-FMA-FNS2-DFM8 | 1.47 (37.4) | 0.94 (23.8) | 0.37 (9.5) | 15000 (1034) |
| FNS4 | DFM2 | SS-FMA-FNS4-DFM2 | 1.43 (36.3) | 0.94 (23.8) | 0.09 (2.4) | 15000 (1034) |
| FNS4 | DFM4 | SS-FMA-FNS4-DFM4 | 1.62 (41.1) | 0.94 (23.8) | 0.19 (4.8) | 15000 (1034) |
| FNS4 | DFM6 | SS-FMA-FNS4-DFM6 | 1.65 (41.8) | 0.94 (23.8) | 0.25 (6.4) | 15000 (1034) |
| FNS4 | DFM8 | SS-FMA-FNS4-DFM8 | 1.72 (43.8) | 0.94 (23.8) | 0.37 (9.5) | 15000 (1034) |
| FNS6 | DFM2 | SS-FMA-FNS6-DFM2 | 1.56 (39.5) | 1.13 (28.6) | 0.09 (2.4) | 15000 (1034) |
| FNS6 | DFM4 | SS-FMA-FNS6-DFM4 | 1.68 (42.7) | 1.13 (28.6) | 0.19 (4.8) | 15000 (1034) |
| FNS6 | DFM6 | SS-FMA-FNS6-DFM6 | 1.71 (43.4) | 1.13 (28.6) | 0.25 (6.4) | 15000 (1034) |
| FNS6 | DFM8 | SS-FMA-FNS6-DFM8 | 1.85 (47.0) | 1.13 (28.6) | 0.37 (9.5) | 15000 (1034) |
| FNS8 | DFM2 | SS-FMA-FNS8-DFM2 | 1.74 (44.3) | 1.37 (34.9) | 0.09 (2.4) | 15000 (1034) |
| FNS8 | DFM4 | SS-FMA-FNS8-DFM4 | 1.87 (47.5) | 1.37 (34.9) | 0.19 (4.8) | 15000 (1034) |
| FNS8 | DFM6 | SS-FMA-FNS8-DFM6 | 1.96 (49.7) | 1.37 (34.9) | 0.25 (6.4) | 15000 (1034) |
| FNS8 | DFM8 | SS-FMA-FNS8-DFM8 | 2.04 (51.7) | 1.37 (34.9) | 0.37 (9.5) | 15000 (1034) |
| FNS12 | DFM2 | SS-FMA-FNS12-DFM2 | 1.81 (45.9) | 1.50 (38.1) | 0.09 (2.4) | 10000 (690) |
| FNS12 | DFM4 | SS-FMA-FNS12-DFM4 | 1.99 (50.6) | 1.50 (38.1) | 0.19 (4.8) | 10000 (690) |
| FNS12 | DFM6 | SS-FMA-FNS12-DFM6 | 2.02 (51.3) | 1.50 (38.1) | 0.25 (6.4) | 10000 (690) |
| FNS12 | DFM8 | SS-FMA-FNS12-DFM8 | 2.10 (53.3) | 1.50 (38.1) | 0.37 (9.5) | 10000 (690) |
| FNS16 | DFM2 | SS-FMA-FNS16-DFM2 | 2.12 (53.8) | 1.75 (44.5) | 0.09 (2.4) | 10000 (690) |
| FNS16 | DFM4 | SS-FMA-FNS16-DFM4 | 2.24 (57.0) | 1.75 (44.5) | 0.19 (4.8) | 10000 (690) |
| FNS16 | DFM6 | SS-FMA-FNS16-DFM6 | 2.27 (57.7) | 1.75 (44.5) | 0.25 (6.4) | 10000 (690) |
| FNS16 | DFM8 | SS-FMA-FNS16-DFM8 | 2.35 (59.7) | 1.75 (44.5) | 0.37 (9.5) | 10000 (690) |

- Fittings
- Tubing
- Quick Couplings
- Line Filters
- Valves
- Sour Service Products
- Subsea Valves
- Tools and Installation Instructions
- Technical Information
- Part Number Crossover Charts

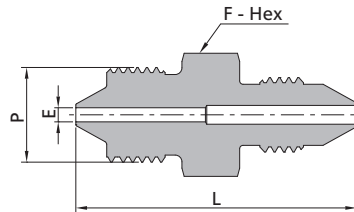
Male to Male - MMA

Male High Pressure to Male High Pressure



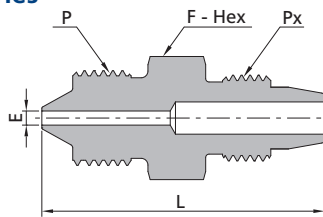
| Male High Pressure | | | Male High Pressure | | | |
|--------------------|---------------|-----------------|----------------------|-------------|------------|-----------------------------|
| P-Connection | Px-Connection | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | | L | F | E | |
| HM4 | HM4 | SS-MMA-HM4 | 1.63 (41.3) | 0.63 (15.9) | 0.08 (2.1) | 60000 (4137) |
| HM6 | HM4 | SS-MMA-HM6-HM4 | 1.94 (49.2) | 0.81 (20.6) | 0.08 (2.1) | 60000 (4137) |
| HM6 | HM6 | SS-MMA-HM6 | 2.19 (55.6) | 0.81 (20.6) | 0.13 (3.2) | 60000 (4137) |
| HM9 | HM4 | SS-MMA-HM9-HM4 | 2.19 (55.6) | 1.19 (30.2) | 0.08 (2.1) | 60000 (4137) |
| HM9 | HM6 | SS-MMA-HM9-HM6 | 2.50 (63.5) | 1.19 (30.2) | 0.13 (3.2) | 60000 (4137) |
| HM9 | HM9 | SS-MMA-HM9 | 2.63 (66.7) | 1.19 (30.2) | 0.19 (4.8) | 60000 (4137) |

Male High Pressure to Male Medium Pressure



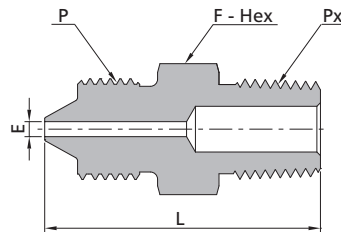
| Male High Pressure | | | Male Medium Pressure | | | |
|--------------------|---------------|-----------------|----------------------|-------------|------------|-----------------------------|
| P-Connection | Px-Connection | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | | L | F | E | |
| HM4 | MM4 | SS-MMA-HM4-MM4 | 1.69 (42.9) | 0.63 (15.9) | 0.08 (2.1) | 20000 (1379) |
| HM4 | MM6 | SS-MMA-HM4-MM6 | 1.81 (46.0) | 0.63 (15.9) | 0.08 (2.1) | 20000 (1379) |
| HM4 | MM9 | SS-MMA-HM4-MM9 | 2.06 (52.4) | 0.94 (23.8) | 0.08 (2.1) | 20000 (1379) |
| HM4 | MM12 | SS-MMA-HM4-MM12 | 2.37 (60.3) | 1.19 (30.2) | 0.08 (2.1) | 20000 (1379) |
| HM4 | MM16 | SS-MMA-HM4-MM16 | 2.94 (74.6) | 1.50 (38.1) | 0.08 (2.1) | 20000 (1379) |
| HM6 | MM4 | SS-MMA-HM6-MM4 | 2.00 (50.8) | 0.81 (20.6) | 0.11 (2.8) | 20000 (1379) |
| HM6 | MM6 | SS-MMA-HM6-MM6 | 2.13 (54.0) | 0.81 (20.6) | 0.13 (3.2) | 20000 (1379) |
| HM6 | MM9 | SS-MMA-HM6-MM9 | 2.37 (60.3) | 0.94 (23.8) | 0.13 (3.2) | 20000 (1379) |
| HM6 | MM12 | SS-MMA-HM6-MM12 | 2.63 (66.7) | 1.19 (30.2) | 0.13 (3.2) | 20000 (1379) |
| HM6 | MM16 | SS-MMA-HM6-MM16 | 3.13 (79.4) | 1.50 (38.1) | 0.13 (3.2) | 20000 (1379) |
| HM9 | MM4 | SS-MMA-HM9-MM4 | 2.25 (57.2) | 1.19 (30.2) | 0.11 (2.8) | 20000 (1379) |
| HM9 | MM6 | SS-MMA-HM9-MM6 | 2.44 (61.9) | 1.19 (30.2) | 0.19 (4.8) | 20000 (1379) |
| HM9 | MM9 | SS-MMA-HM9-MM9 | 2.63 (66.7) | 1.19 (30.2) | 0.19 (4.8) | 20000 (1379) |
| HM9 | MM12 | SS-MMA-HM9-MM12 | 2.80 (71.0) | 1.19 (30.2) | 0.19 (4.8) | 20000 (1379) |
| HM9 | MM16 | SS-MMA-HM9-MM16 | 3.31 (84.2) | 1.50 (38.1) | 0.19 (4.8) | 20000 (1379) |

Male High Pressure to Male 20D Series



| Male High Pressure | | | Male 20D Series | | | |
|--------------------|---------------|-----------------|----------------------|-------------|------------|-----------------------------|
| P-Connection | Px-Connection | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | | L | F | E | |
| HM4 | DFM2 | SS-MMA-HM4-DFM2 | 1.60(40.6) | 0.63 (15.9) | 0.08 (2.1) | 20000 (1379) |
| HM4 | DFM4 | SS-MMA-HM4-DFM4 | 1.75(44.5) | 0.63 (15.9) | 0.08 (2.1) | 20000 (1379) |
| HM4 | DFM6 | SS-MMA-HM4-DFM6 | 1.81(45.9) | 0.75 (19.1) | 0.08 (2.1) | 20000 (1379) |
| HM4 | DFM8 | SS-MMA-HM4-DFM8 | 2.02(51.2) | 0.94 (23.8) | 0.08 (2.1) | 20000 (1379) |
| HM6 | DFM2 | SS-MMA-HM6-DFM2 | 1.93(49.0) | 0.81 (20.6) | 0.09 (2.4) | 20000 (1379) |
| HM6 | DFM4 | SS-MMA-HM6-DFM4 | 2.08(52.9) | 0.81 (20.6) | 0.13 (3.2) | 20000 (1379) |
| HM6 | DFM6 | SS-MMA-HM6-DFM6 | 2.10(53.3) | 0.81 (20.6) | 0.13 (3.2) | 20000 (1379) |
| HM6 | DFM8 | SS-MMA-HM6-DFM8 | 2.37(60.1) | 0.94 (23.8) | 0.13 (3.2) | 20000 (1379) |
| HM9 | DFM2 | SS-MMA-HM9-DFM2 | 2.24(56.8) | 1.19 (30.2) | 0.09 (2.4) | 20000 (1379) |
| HM9 | DFM4 | SS-MMA-HM9-DFM4 | 2.39(60.7) | 1.19 (30.2) | 0.19 (4.8) | 20000 (1379) |
| HM9 | DFM6 | SS-MMA-HM9-DFM6 | 2.41(61.1) | 1.19 (30.2) | 0.19 (4.8) | 20000 (1379) |
| HM9 | DFM8 | SS-MMA-HM9-DFM8 | 2.54(64.4) | 1.19 (30.2) | 0.19 (4.8) | 20000 (1379) |

Male High Pressure to Male NPT



| Male High Pressure | | | Male NPT | | | |
|--------------------|---------------|-----------------|----------------------|-------------|------------|-----------------------------|
| P-Connection | Px-Connection | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | | L | F | E | |
| HM4 | NS2 | SS-MMA-HM4-NS2 | 1.37 (34.9) | 0.63 (15.9) | 0.08 (2.1) | 15000 (1034) |
| HM4 | NS4 | SS-MMA-HM4-NS4 | 1.56 (39.7) | 0.63 (15.9) | 0.08 (2.1) | 15000 (1034) |
| HM4 | NS6 | SS-MMA-HM4-NS6 | 1.56 (39.7) | 0.69 (17.5) | 0.08 (2.1) | 15000 (1034) |
| HM4 | NS8 | SS-MMA-HM4-NS8 | 1.81 (46.0) | 0.87 (22.2) | 0.08 (2.1) | 15000 (1034) |
| HM4 | NS12 | SS-MMA-HM4-NS12 | 1.87 (47.6) | 1.06 (27.0) | 0.08 (2.1) | 10000 (690) |
| HM4 | NS16 | SS-MMA-HM4-NS16 | 2.19 (55.6) | 1.37 (34.9) | 0.08 (2.1) | 10000 (690) |
| HM6 | NS2 | SS-MMA-HM6-NS2 | 1.69 (42.9) | 0.81 (20.6) | 0.13 (3.2) | 15000 (1034) |
| HM6 | NS4 | SS-MMA-HM6-NS4 | 1.87 (47.6) | 0.81 (20.6) | 0.13 (3.2) | 15000 (1034) |
| HM6 | NS6 | SS-MMA-HM6-NS6 | 1.87 (47.6) | 0.81 (20.6) | 0.13 (3.2) | 15000 (1034) |
| HM6 | NS8 | SS-MMA-HM6-NS8 | 2.06 (52.4) | 0.87 (22.2) | 0.13 (3.2) | 15000 (1034) |
| HM6 | NS12 | SS-MMA-HM6-NS12 | 2.13 (54.0) | 1.06 (27.0) | 0.13 (3.2) | 10000 (690) |
| HM6 | NS16 | SS-MMA-HM6-NS16 | 2.44 (61.9) | 1.37 (34.9) | 0.13 (3.2) | 10000 (690) |
| HM9 | NS2 | SS-MMA-HM9-NS2 | 2.00 (50.8) | 1.19 (30.2) | 0.19 (4.8) | 15000 (1034) |
| HM9 | NS4 | SS-MMA-HM9-NS4 | 2.13 (54.0) | 1.19 (30.2) | 0.19 (4.8) | 15000 (1034) |
| HM9 | NS6 | SS-MMA-HM9-NS6 | 2.13 (54.0) | 1.19 (30.2) | 0.19 (4.8) | 15000 (1034) |
| HM9 | NS8 | SS-MMA-HM9-NS8 | 2.37 (60.3) | 1.19 (30.2) | 0.19 (4.8) | 15000 (1034) |
| HM9 | NS12 | SS-MMA-HM9-NS12 | 2.37 (60.3) | 1.19 (30.2) | 0.19 (4.8) | 10000 (690) |
| HM9 | NS16 | SS-MMA-HM9-NS16 | 2.63 (66.7) | 1.37 (34.9) | 0.19 (4.8) | 10000 (690) |

Fittings

Tubing

Quick Couplings

Line Filters

Valves

Sour Service Products

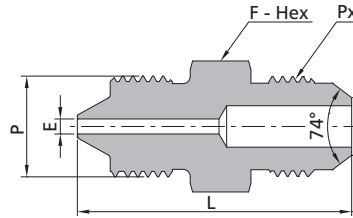
Subsea Valves

Tools and Installation Instructions

Technical Information

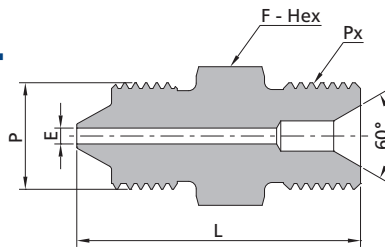
Part Number Crossover Charts

Male High Pressure to Male JIC



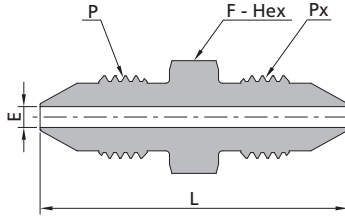
| Male High Pressure | | | Male JIC | | | |
|--------------------|---------------|-----------------|----------------------|-------------|------------|-----------------------------|
| P-Connection | Px-Connection | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | | L | F | E | |
| HM4 | JM4 | SS-MMA-HM4-JM4 | 1.51 (38.4) | 0.63 (15.9) | 0.08 (2.1) | 20000 (1379) |
| HM4 | JM6 | SS-MMA-HM4-JM6 | 1.56 (39.7) | 0.63 (15.9) | 0.08 (2.1) | 20000 (1379) |
| HM4 | JM8 | SS-MMA-HM4-JM8 | 1.69 (42.9) | 0.81 (20.6) | 0.08 (2.1) | 20000 (1379) |
| HM4 | JM10 | SS-MMA-HM4-JM10 | 1.81 (46.0) | 0.94 (23.8) | 0.08 (2.1) | 20000 (1379) |
| HM4 | JM12 | SS-MMA-HM4-JM12 | 2.00 (50.8) | 1.13 (28.6) | 0.08 (2.1) | 15000 (1034) |
| HM4 | JM16 | SS-MMA-HM4-JM16 | 2.13 (54.0) | 1.37 (34.9) | 0.08 (2.1) | 15000 (1034) |
| HM6 | JM4 | SS-MMA-HM6-JM4 | 1.81 (46.0) | 0.81 (20.6) | 0.13 (3.2) | 20000 (1379) |
| HM6 | JM6 | SS-MMA-HM6-JM6 | 1.81 (46.0) | 0.81 (20.6) | 0.13 (3.2) | 20000 (1379) |
| HM6 | JM8 | SS-MMA-HM6-JM8 | 1.94 (49.2) | 0.81 (20.6) | 0.13 (3.2) | 20000 (1379) |
| HM6 | JM10 | SS-MMA-HM6-JM10 | 2.06 (52.4) | 0.94 (23.8) | 0.13 (3.2) | 20000 (1379) |
| HM6 | JM12 | SS-MMA-HM6-JM12 | 2.25 (57.2) | 1.13 (28.6) | 0.13 (3.2) | 15000 (1034) |
| HM6 | JM16 | SS-MMA-HM6-JM16 | 2.37 (60.3) | 1.37 (34.9) | 0.13 (3.2) | 15000 (1034) |
| HM9 | JM4 | SS-MMA-HM9-JM4 | 2.13 (54.0) | 1.19 (30.2) | 0.17 (4.4) | 20000 (1379) |
| HM9 | JM6 | SS-MMA-HM9-JM6 | 2.13 (54.0) | 1.19 (30.2) | 0.19 (4.8) | 20000 (1379) |
| HM9 | JM8 | SS-MMA-HM9-JM8 | 2.25 (57.2) | 1.19 (30.2) | 0.19 (4.8) | 20000 (1379) |
| HM9 | JM10 | SS-MMA-HM9-JM10 | 2.37 (60.3) | 1.19 (30.2) | 0.19 (4.8) | 20000 (1379) |
| HM9 | JM12 | SS-MMA-HM9-JM12 | 2.44 (61.9) | 1.19 (30.2) | 0.19 (4.8) | 15000 (1034) |
| HM9 | JM16 | SS-MMA-HM9-JM16 | 2.56 (65.0) | 1.37 (34.9) | 0.19 (4.8) | 15000 (1034) |

Male High Pressure to Male Type "M"



| Male High Pressure | | | Male Type "M" | | | |
|--------------------|---------------|-----------------|----------------------|-------------|------------|-----------------------------|
| P-Connection | Px-Connection | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | | L | F | E | |
| HM4 | TM9 | SS-MMA-HM4-TM9 | 1.46 (37.1) | 0.63 (15.9) | 0.08 (2.1) | 60000 (4137) |
| HM4 | TM12 | SS-MMA-HM4-TM12 | 1.63 (41.4) | 0.75 (19.1) | 0.08 (2.1) | 30000 (2068) |
| HM4 | TM14 | SS-MMA-HM4-TM14 | 1.83 (46.6) | 1.00 (25.4) | 0.08 (2.1) | 50000 (3447) |
| HM4 | TM16 | SS-MMA-HM4-TM16 | 1.72 (43.7) | 1.00 (25.4) | 0.08 (2.1) | 30000 (2068) |
| HM4 | TM21 | SS-MMA-HM4-TM21 | 1.84 (46.7) | 1.37 (34.9) | 0.08 (2.1) | 20000 (1379) |
| HM6 | TM9 | SS-MMA-HM6-TM9 | 1.77 (44.9) | 0.81 (20.6) | 0.09 (2.4) | 60000 (4137) |
| HM6 | TM12 | SS-MMA-HM6-TM12 | 1.90 (48.2) | 0.81 (20.6) | 0.13 (3.2) | 30000 (2068) |
| HM6 | TM14 | SS-MMA-HM6-TM14 | 2.09 (53.0) | 1.00 (25.4) | 0.13 (3.2) | 50000 (3447) |
| HM6 | TM16 | SS-MMA-HM6-TM16 | 1.97 (50.1) | 1.00 (25.4) | 0.13 (3.2) | 30000 (2068) |
| HM6 | TM21 | SS-MMA-HM6-TM21 | 2.09 (53.1) | 1.37 (34.9) | 0.13 (3.2) | 20000 (1379) |
| HM9 | TM9 | SS-MMA-HM9-TM9 | 2.07 (52.6) | 1.19 (30.2) | 0.09 (2.4) | 60000 (4137) |
| HM9 | TM12 | SS-MMA-HM9-TM12 | 2.20 (55.9) | 1.19 (30.2) | 0.19 (4.8) | 30000 (2068) |
| HM9 | TM14 | SS-MMA-HM9-TM14 | 2.33 (59.1) | 1.19 (30.2) | 0.15 (3.8) | 50000 (3447) |
| HM9 | TM16 | SS-MMA-HM9-TM16 | 2.21 (56.2) | 1.19 (30.2) | 0.19 (4.8) | 30000 (2068) |
| HM9 | TM21 | SS-MMA-HM9-TM21 | 2.26 (57.4) | 1.37 (34.9) | 0.19 (4.8) | 20000 (1379) |

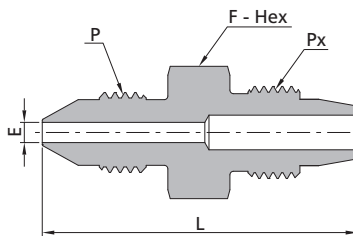
Male Medium Pressure to Male Medium Pressure



| Male Medium Pressure | | | Male Medium Pressure | | | |
|----------------------|---------------|------------------|----------------------|-------------|-------------|-----------------------------|
| P-Connection | Px-Connection | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | | L | F | E | |
| MM4 | MM4 | SS-MMA-MM4 | 1.63 (41.3) | 0.50 (12.7) | 0.11 (2.8) | 20000 (1379) |
| MM6 | MM4 | SS-MMA-MM6-MM4 | 1.87 (47.6) | 0.63 (15.9) | 0.11 (2.8) | 20000 (1379) |
| MM6 | MM6 | SS-MMA-MM6 | 2.00 (50.8) | 0.63 (15.9) | 0.20 (5.2) | 20000 (1379) |
| MM9 | MM4 | SS-MMA-MM9-MM4 | 2.13 (54.0) | 0.94 (23.8) | 0.11 (2.8) | 20000 (1379) |
| MM9 | MM6 | SS-MMA-MM9-MM6 | 2.31 (58.7) | 0.94 (23.8) | 0.20 (5.2) | 20000 (1379) |
| MM9 | MM9 | SS-MMA-MM9 | 2.50 (63.5) | 0.94 (23.8) | 0.31 (7.9) | 20000 (1379) |
| MM12 | MM4 | SS-MMA-MM12-MM4 | 2.44 (61.9) | 1.19 (30.2) | 0.11 (2.8) | 20000 (1379) |
| MM12 | MM6 | SS-MMA-MM12-MM6 | 2.56 (65.1) | 1.19 (30.2) | 0.20 (5.2) | 20000 (1379) |
| MM12 | MM9 | SS-MMA-MM12-MM9 | 2.75 (69.9) | 1.19 (30.2) | 0.31 (7.9) | 20000 (1379) |
| MM12 | MM12 | SS-MMA-MM12 | 2.94 (74.6) | 1.19 (30.2) | 0.44 (11.1) | 20000 (1379) |
| MM16 | MM4 | SS-MMA-MM16-MM4 | 3.00 (76.2) | 1.50 (38.1) | 0.11 (2.8) | 20000 (1379) |
| MM16 | MM6 | SS-MMA-MM16-MM6 | 3.13 (79.4) | 1.50 (38.1) | 0.20 (5.2) | 20000 (1379) |
| MM16 | MM9 | SS-MMA-MM16-MM9 | 3.31 (84.2) | 1.50 (38.1) | 0.31 (7.9) | 20000 (1379) |
| MM16 | MM12 | SS-MMA-MM16-MM12 | 3.44 (87.4) | 1.50 (38.1) | 0.44 (11.1) | 20000 (1379) |
| MM16 | MM16 | SS-MMA-MM16 | 3.94 (100.2) | 1.50 (38.1) | 0.56 (14.3) | 20000 (1379) |

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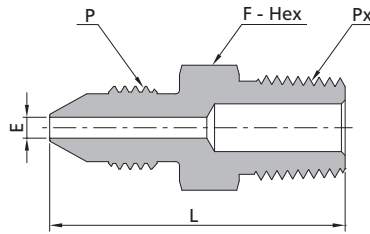
Male Medium Pressure to Male 20D Series



| Male Medium Pressure | | | | Male 20D Series | | | |
|----------------------|---------------|------------------|----------------------|-----------------|------------|--------------------------------|--|
| P-Connection | Px-Connection | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) | |
| | | | L | F | E | | |
| MM4 | DFM2 | SS-MMA-MM4-DFM2 | 1.62(41.2) | 0.50 (12.7) | 0.09 (2.4) | 20000 (1379) | |
| MM4 | DFM4 | SS-MMA-MM4-DFM4 | 1.81(46.1) | 0.63 (15.9) | 0.11 (2.8) | 20000 (1379) | |
| MM4 | DFM6 | SS-MMA-MM4-DFM6 | 1.87(47.5) | 0.75 (19.1) | 0.11 (2.8) | 20000 (1379) | |
| MM4 | DFM8 | SS-MMA-MM4-DFM8 | 2.08(52.8) | 0.94 (23.8) | 0.11 (2.8) | 20000 (1379) | |
| MM6 | DFM2 | SS-MMA-MM6-DFM2 | 1.81(45.9) | 0.63 (15.9) | 0.09 (2.4) | 20000 (1379) | |
| MM6 | DFM4 | SS-MMA-MM6-DFM4 | 1.96(49.8) | 0.63 (15.9) | 0.19 (4.8) | 20000 (1379) | |
| MM6 | DFM6 | SS-MMA-MM6-DFM6 | 2.02(51.2) | 0.75 (19.1) | 0.20 (5.2) | 20000 (1379) | |
| MM6 | DFM8 | SS-MMA-MM6-DFM8 | 2.22(56.5) | 0.94 (23.8) | 0.20 (5.2) | 20000 (1379) | |
| MM9 | DFM2 | SS-MMA-MM9-DFM2 | 2.11(53.7) | 0.94 (23.8) | 0.09 (2.4) | 20000 (1379) | |
| MM9 | DFM4 | SS-MMA-MM9-DFM4 | 2.27(57.6) | 0.94 (23.8) | 0.19 (4.8) | 20000 (1379) | |
| MM9 | DFM6 | SS-MMA-MM9-DFM6 | 2.28(58.0) | 0.94 (23.8) | 0.25 (6.4) | 20000 (1379) | |
| MM9 | DFM8 | SS-MMA-MM9-DFM8 | 2.41(61.3) | 0.94 (23.8) | 0.31 (7.9) | 20000 (1379) | |
| MM12 | DFM2 | SS-MMA-MM12-DFM2 | 2.38(60.5) | 1.19 (30.2) | 0.09 (2.4) | 20000 (1379) | |
| MM12 | DFM4 | SS-MMA-MM12-DFM4 | 2.54(64.4) | 1.19 (30.2) | 0.19 (4.8) | 20000 (1379) | |
| MM12 | DFM6 | SS-MMA-MM12-DFM6 | 2.55(64.8) | 1.19 (30.2) | 0.25 (6.4) | 20000 (1379) | |
| MM12 | DFM8 | SS-MMA-MM12-DFM8 | 2.68(68.1) | 1.19 (30.2) | 0.37 (9.5) | 20000 (1379) | |
| MM16 | DFM2 | SS-MMA-MM16-DFM2 | 2.93(74.3) | 1.50 (38.1) | 0.09 (2.4) | 20000 (1379) | |
| MM16 | DFM4 | SS-MMA-MM16-DFM4 | 3.08(78.2) | 1.50 (38.1) | 0.19 (4.8) | 20000 (1379) | |
| MM16 | DFM6 | SS-MMA-MM16-DFM6 | 3.09(78.6) | 1.50 (38.1) | 0.37 (9.5) | 20000 (1379) | |
| MM16 | DFM8 | SS-MMA-MM16-DFM8 | 3.22(81.9) | 1.50 (38.1) | 0.37 (9.5) | 20000 (1379) | |

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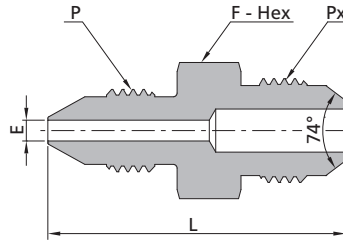
Male Medium Pressure to Male NPT



| Male Medium Pressure | | | Male NPT | | | |
|----------------------|---------------|------------------|----------------------|-------------|-------------|--------------------------------|
| P-Connection | Px-Connection | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | | L | F | E | |
| MM4 | NS2 | SS-MMA-MM4-NS2 | 1.37 (34.9) | 0.50 (12.7) | 0.11 (2.8) | 15000 (1034) |
| MM4 | NS4 | SS-MMA-MM4-NS4 | 1.56 (39.7) | 0.56 (14.3) | 0.11 (2.8) | 15000 (1034) |
| MM4 | NS6 | SS-MMA-MM4-NS6 | 1.63 (41.3) | 0.69 (17.5) | 0.11 (2.8) | 15000 (1034) |
| MM4 | NS8 | SS-MMA-MM4-NS8 | 1.87 (47.6) | 0.87 (22.2) | 0.11 (2.8) | 15000 (1034) |
| MM4 | NS12 | SS-MMA-MM4-NS12 | 1.94 (49.2) | 1.06 (27.0) | 0.11 (2.8) | 10000 (690) |
| MM4 | NS16 | SS-MMA-MM4-NS16 | 2.25 (57.2) | 1.37 (34.9) | 0.11 (2.8) | 10000 (690) |
| MM6 | NS2 | SS-MMA-MM6-NS2 | 1.56 (39.7) | 0.63 (15.9) | 0.19 (4.8) | 15000 (1034) |
| MM6 | NS4 | SS-MMA-MM6-NS4 | 1.75 (44.5) | 0.63 (15.9) | 0.20 (5.2) | 15000 (1034) |
| MM6 | NS6 | SS-MMA-MM6-NS6 | 1.75 (44.5) | 0.69 (17.5) | 0.20 (5.2) | 15000 (1034) |
| MM6 | NS8 | SS-MMA-MM6-NS8 | 2.00 (50.8) | 0.87 (22.2) | 0.20 (5.2) | 15000 (1034) |
| MM6 | NS12 | SS-MMA-MM6-NS12 | 2.06 (52.4) | 1.06 (27.0) | 0.20 (5.2) | 10000 (690) |
| MM6 | NS16 | SS-MMA-MM6-NS16 | 2.37 (60.3) | 1.37 (34.9) | 0.20 (5.2) | 10000 (690) |
| MM9 | NS2 | SS-MMA-MM9-NS2 | 1.87 (47.6) | 0.94 (23.8) | 0.19 (4.8) | 15000 (1034) |
| MM9 | NS4 | SS-MMA-MM9-NS4 | 2.06 (52.4) | 0.94 (23.8) | 0.25 (6.4) | 15000 (1034) |
| MM9 | NS6 | SS-MMA-MM9-NS6 | 2.06 (52.4) | 0.94 (23.8) | 0.31 (7.9) | 15000 (1034) |
| MM9 | NS8 | SS-MMA-MM9-NS8 | 2.25 (57.2) | 0.94 (23.8) | 0.31 (7.9) | 15000 (1034) |
| MM9 | NS12 | SS-MMA-MM9-NS12 | 2.31 (58.7) | 1.06 (27.0) | 0.31 (7.9) | 10000 (690) |
| MM9 | NS16 | SS-MMA-MM9-NS16 | 2.56 (65.1) | 1.37 (34.9) | 0.31 (7.9) | 10000 (690) |
| MM12 | NS2 | SS-MMA-MM12-NS2 | 2.13 (54.0) | 1.19 (30.2) | 0.19 (4.8) | 15000 (1034) |
| MM12 | NS4 | SS-MMA-MM12-NS4 | 2.31 (58.7) | 1.19 (30.2) | 0.25 (6.4) | 15000 (1034) |
| MM12 | NS6 | SS-MMA-MM12-NS6 | 2.31 (58.7) | 1.19 (30.2) | 0.31 (7.9) | 15000 (1034) |
| MM12 | NS8 | SS-MMA-MM12-NS8 | 2.50 (63.5) | 1.19 (30.2) | 0.38 (9.6) | 15000 (1034) |
| MM12 | NS12 | SS-MMA-MM12-NS12 | 2.50 (63.5) | 1.19 (30.2) | 0.44 (11.1) | 10000 (690) |
| MM12 | NS16 | SS-MMA-MM12-NS16 | 2.75 (69.9) | 1.37 (34.9) | 0.44 (11.1) | 10000 (690) |
| MM16 | NS2 | SS-MMA-MM16-NS2 | 2.69 (68.3) | 1.50 (38.1) | 0.19 (4.8) | 15000 (1034) |
| MM16 | NS4 | SS-MMA-MM16-NS4 | 2.81 (71.4) | 1.50 (38.1) | 0.25 (6.4) | 15000 (1034) |
| MM16 | NS6 | SS-MMA-MM16-NS6 | 2.81 (71.4) | 1.50 (38.1) | 0.31 (7.9) | 15000 (1034) |
| MM16 | NS8 | SS-MMA-MM16-NS8 | 3.06 (77.8) | 1.50 (38.1) | 0.38 (9.6) | 15000 (1034) |
| MM16 | NS12 | SS-MMA-MM16-NS12 | 3.06 (82.6) | 1.50 (38.1) | 0.56 (14.3) | 10000 (690) |
| MM16 | NS16 | SS-MMA-MM16-NS16 | 3.25 (82.6) | 1.50 (38.1) | 0.56 (14.3) | 10000 (690) |

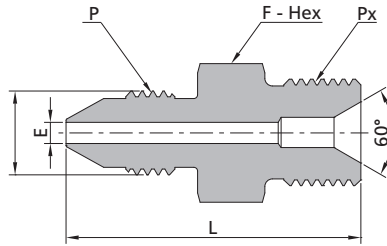
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Male Medium Pressure to Male JIC



| Male Medium Pressure | | | Male JIC | | | |
|----------------------|---------------|------------------|----------------------|-------------|-------------|--------------------------------|
| P-Connection | Px-Connection | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | | L | F | E | |
| MM4 | JM4 | SS-MMA-MM4-JM4 | 1.50 (38.1) | 0.50 (12.7) | 0.11 (2.8) | 20000 (1379) |
| MM4 | JM6 | SS-MMA-MM4-JM6 | 1.63 (41.3) | 0.63 (15.9) | 0.11 (2.8) | 20000 (1379) |
| MM4 | JM8 | SS-MMA-MM4-JM8 | 1.75 (44.5) | 0.81 (20.6) | 0.11 (2.8) | 20000 (1379) |
| MM4 | JM10 | SS-MMA-MM4-JM10 | 1.87 (47.6) | 0.94 (23.8) | 0.11 (2.8) | 20000 (1379) |
| MM4 | JM12 | SS-MMA-MM4-JM12 | 2.06 (52.4) | 1.13 (28.6) | 0.11 (2.8) | 15000 (1034) |
| MM4 | JM16 | SS-MMA-MM4-JM16 | 2.19 (55.6) | 1.37 (34.9) | 0.11 (2.8) | 15000 (1034) |
| MM6 | JM4 | SS-MMA-MM6-JM4 | 1.75 (44.5) | 0.63 (15.9) | 0.17 (4.4) | 20000 (1379) |
| MM6 | JM6 | SS-MMA-MM6-JM6 | 1.75 (44.5) | 0.63 (15.9) | 0.20 (5.2) | 20000 (1379) |
| MM6 | JM8 | SS-MMA-MM6-JM8 | 1.87 (47.6) | 0.81 (20.6) | 0.20 (5.2) | 20000 (1379) |
| MM6 | JM10 | SS-MMA-MM6-JM10 | 2.06 (52.4) | 0.94 (23.8) | 0.20 (5.2) | 20000 (1379) |
| MM6 | JM12 | SS-MMA-MM6-JM12 | 2.25 (57.2) | 1.13 (28.6) | 0.20 (5.2) | 15000 (1034) |
| MM6 | JM16 | SS-MMA-MM6-JM16 | 2.37 (60.3) | 1.37 (34.9) | 0.20 (5.2) | 15000 (1034) |
| MM9 | JM4 | SS-MMA-MM9-JM4 | 2.00 (50.8) | 0.94 (23.8) | 0.17 (4.4) | 20000 (1379) |
| MM9 | JM6 | SS-MMA-MM9-JM6 | 2.06 (52.4) | 0.94 (23.8) | 0.23 (5.8) | 20000 (1379) |
| MM9 | JM8 | SS-MMA-MM9-JM8 | 2.13 (54.0) | 0.94 (23.8) | 0.31 (7.9) | 20000 (1379) |
| MM9 | JM10 | SS-MMA-MM9-JM10 | 2.25 (57.2) | 0.94 (23.8) | 0.31 (7.9) | 20000 (1379) |
| MM9 | JM12 | SS-MMA-MM9-JM12 | 2.44 (61.9) | 1.13 (28.6) | 0.31 (7.9) | 15000 (1034) |
| MM9 | JM16 | SS-MMA-MM9-JM16 | 2.56 (65.1) | 1.37 (34.9) | 0.31 (7.9) | 15000 (1034) |
| MM12 | JM4 | SS-MMA-MM12-JM4 | 2.31 (58.7) | 1.19 (30.2) | 0.17 (4.4) | 20000 (1379) |
| MM12 | JM6 | SS-MMA-MM12-JM6 | 2.31 (58.7) | 1.19 (30.2) | 0.23 (5.8) | 20000 (1379) |
| MM12 | JM8 | SS-MMA-MM12-JM8 | 2.37 (60.3) | 1.19 (30.2) | 0.31 (7.9) | 20000 (1379) |
| MM12 | JM10 | SS-MMA-MM12-JM10 | 2.50 (63.5) | 1.19 (30.2) | 0.37 (9.4) | 20000 (1379) |
| MM12 | JM12 | SS-MMA-MM12-JM12 | 2.63 (66.7) | 1.19 (30.2) | 0.44 (11.1) | 15000 (1034) |
| MM12 | JM16 | SS-MMA-MM12-JM16 | 2.69 (68.3) | 1.37 (34.9) | 0.44 (11.1) | 15000 (1034) |
| MM16 | JM4 | SS-MMA-MM16-JM4 | 2.81 (71.4) | 1.50 (38.1) | 0.17 (4.4) | 20000 (1379) |
| MM16 | JM6 | SS-MMA-MM16-JM6 | 2.81 (71.4) | 1.50 (38.1) | 0.23 (5.8) | 20000 (1379) |
| MM16 | JM8 | SS-MMA-MM16-JM8 | 2.94 (74.6) | 1.50 (38.1) | 0.31 (7.9) | 20000 (1379) |
| MM16 | JM10 | SS-MMA-MM16-JM10 | 3.06 (77.8) | 1.50 (38.1) | 0.37 (9.4) | 20000 (1379) |
| MM16 | JM12 | SS-MMA-MM16-JM12 | 3.13 (79.4) | 1.50 (38.1) | 0.46 (11.6) | 15000 (1034) |
| MM16 | JM16 | SS-MMA-MM16-JM16 | 3.19 (81.0) | 1.50 (38.1) | 0.56 (14.3) | 15000 (1034) |

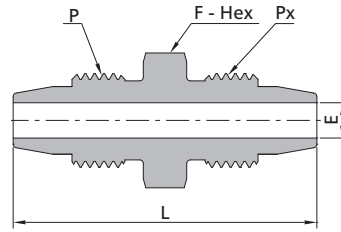
Male Medium Pressure to Male Type "M"



| Male Medium Pressure | | | Male Type "M" | | | |
|----------------------|---------------|------------------|----------------------|-------------|-------------|-----------------------------|
| P-Connection | Px-Connection | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | | L | F | E | |
| MM4 | TM9 | SS-MMA-MM4-TM9 | 1.52 (38.7) | 0.63 (15.9) | 0.09 (2.4) | 20000 (1379) |
| MM4 | TM12 | SS-MMA-MM4-TM12 | 1.69 (43.0) | 0.75 (19.1) | 0.11 (2.8) | 20000 (1379) |
| MM4 | TM14 | SS-MMA-MM4-TM14 | 1.90 (48.2) | 1.00 (25.4) | 0.11 (2.8) | 20000 (1379) |
| MM4 | TM16 | SS-MMA-MM4-TM16 | 1.78 (45.3) | 1.00 (25.4) | 0.11 (2.8) | 20000 (1379) |
| MM4 | TM21 | SS-MMA-MM4-TM21 | 1.90 (48.3) | 1.37 (34.9) | 0.11 (2.8) | 20000 (1379) |
| MM6 | TM9 | SS-MMA-MM6-TM9 | 1.67 (42.4) | 0.63 (15.9) | 0.09 (2.4) | 20000 (1379) |
| MM6 | TM12 | SS-MMA-MM6-TM12 | 1.84 (46.7) | 0.75 (19.1) | 0.20 (5.2) | 20000 (1379) |
| MM6 | TM14 | SS-MMA-MM6-TM14 | 2.04 (51.9) | 1.00 (25.4) | 0.15 (3.8) | 20000 (1379) |
| MM6 | TM16 | SS-MMA-MM6-TM16 | 1.93 (49.0) | 1.00 (25.4) | 0.20 (5.2) | 20000 (1379) |
| MM6 | TM21 | SS-MMA-MM6-TM21 | 2.05 (52.0) | 1.37 (34.9) | 0.20 (5.2) | 20000 (1379) |
| MM9 | TM9 | SS-MMA-MM9-TM9 | 1.95 (49.6) | 0.94 (23.8) | 0.09 (2.4) | 20000 (1379) |
| MM9 | TM12 | SS-MMA-MM9-TM12 | 2.08 (52.9) | 0.94 (23.8) | 0.29 (7.4) | 20000 (1379) |
| MM9 | TM14 | SS-MMA-MM9-TM14 | 2.23 (56.7) | 1.00 (25.4) | 0.15 (3.8) | 20000 (1379) |
| MM9 | TM16 | SS-MMA-MM9-TM16 | 2.12 (53.8) | 1.00 (25.4) | 0.31 (7.9) | 20000 (1379) |
| MM9 | TM21 | SS-MMA-MM9-TM21 | 2.24 (56.8) | 1.37 (34.9) | 0.31 (7.9) | 20000 (1379) |
| MM12 | TM9 | SS-MMA-MM12-TM9 | 2.22 (56.3) | 1.19 (30.2) | 0.09 (2.4) | 20000 (1379) |
| MM12 | TM12 | SS-MMA-MM12-TM12 | 2.35 (59.6) | 1.19 (30.2) | 0.29 (7.4) | 20000 (1379) |
| MM12 | TM14 | SS-MMA-MM12-TM14 | 2.47 (62.8) | 1.19 (30.2) | 0.15 (3.8) | 20000 (1379) |
| MM12 | TM16 | SS-MMA-MM12-TM16 | 2.36 (59.9) | 1.19 (30.2) | 0.39 (10.0) | 20000 (1379) |
| MM12 | TM21 | SS-MMA-MM12-TM21 | 2.41 (61.1) | 1.37 (34.9) | 0.44 (11.1) | 20000 (1379) |
| MM16 | TM9 | SS-MMA-MM16-TM9 | 2.77 (70.3) | 1.50 (38.1) | 0.09 (2.4) | 20000 (1379) |
| MM16 | TM12 | SS-MMA-MM16-TM12 | 2.90 (73.6) | 1.50 (38.1) | 0.29 (7.4) | 20000 (1379) |
| MM16 | TM14 | SS-MMA-MM16-TM14 | 3.02 (76.8) | 1.50 (38.1) | 0.15 (3.8) | 20000 (1379) |
| MM16 | TM16 | SS-MMA-MM16-TM16 | 2.91 (73.9) | 1.50 (38.1) | 0.39 (10.0) | 20000 (1379) |
| MM16 | TM21 | SS-MMA-MM16-TM21 | 2.89 (73.3) | 1.50 (38.1) | 0.56 (14.3) | 20000 (1379) |

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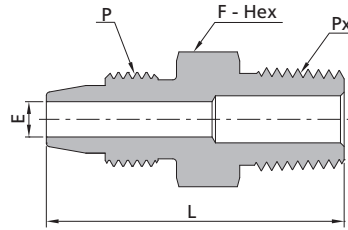
Male 20D Series to Male 20D Series



| Male 20D Series | | | | Male 20D Series | | | |
|-----------------|---------------|------------------|----------------------|-----------------|------------|--------------------------------|--|
| P-Connection | Px-Connection | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) | |
| | | | L | F | E | | |
| DFM2 | DFM2 | SS-MMA-DFM2 | 1.60 (40.6) | 0.50 (12.7) | 0.09 (2.4) | 20000 (1379) | |
| DFM4 | DFM2 | SS-MMA-DFM4-DFM2 | 1.79 (45.5) | 0.63 (15.9) | 0.09 (2.4) | 20000 (1379) | |
| DFM4 | DFM4 | SS-MMA-DFM4 | 1.94 (49.4) | 0.63 (15.9) | 0.19 (4.8) | 20000 (1379) | |
| DFM6 | DFM2 | SS-MMA-DFM6-DFM2 | 1.85 (46.9) | 0.75 (19.1) | 0.09 (2.4) | 20000 (1379) | |
| DFM6 | DFM4 | SS-MMA-DFM6-DFM4 | 2.00 (50.8) | 0.75 (19.1) | 0.19 (4.8) | 20000 (1379) | |
| DFM6 | DFM6 | SS-MMA-DFM6 | 2.02 (51.2) | 0.75 (19.1) | 0.25 (6.4) | 20000 (1379) | |
| DFM8 | DFM2 | SS-MMA-DFM8-DFM2 | 2.06 (52.2) | 0.94 (23.8) | 0.09 (2.4) | 20000 (1379) | |
| DFM8 | DFM4 | SS-MMA-DFM8-DFM4 | 2.21 (56.1) | 0.94 (23.8) | 0.19 (4.8) | 20000 (1379) | |
| DFM8 | DFM6 | SS-MMA-DFM8-DFM6 | 2.22 (56.5) | 0.94 (23.8) | 0.25 (6.4) | 20000 (1379) | |
| DFM8 | DFM8 | SS-MMA-DFM8 | 2.35 (59.8) | 0.94 (23.8) | 0.37 (9.5) | 20000 (1379) | |

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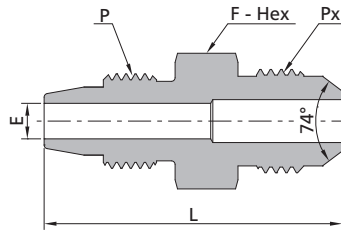
Male 20D Series to Male NPT



| Male 20D Series | | | Male NPT | | | |
|-----------------|---------------|------------------|----------------------|-------------|------------|--------------------------------|
| P-Connection | Px-Connection | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | | L | F | E | |
| DFM2 | NS2 | SS-MMA-DFM2-NS2 | 1.32 (33.5) | 0.50 (12.7) | 0.09 (2.4) | 15000 (1034) |
| DFM2 | NS4 | SS-MMA-DFM2-NS4 | 1.52 (38.5) | 0.56 (14.3) | 0.09 (2.4) | 15000 (1034) |
| DFM2 | NS6 | SS-MMA-DFM2-NS6 | 1.56 (39.5) | 0.69 (17.5) | 0.09 (2.4) | 15000 (1034) |
| DFM2 | NS8 | SS-MMA-DFM2-NS8 | 1.82 (46.4) | 0.87 (22.2) | 0.09 (2.4) | 15000 (1034) |
| DFM2 | NS12 | SS-MMA-DFM2-NS12 | 1.90 (48.4) | 1.06 (27.0) | 0.09 (2.4) | 10000 (690) |
| DFM2 | NS16 | SS-MMA-DFM2-NS16 | 2.19 (55.7) | 1.37 (34.9) | 0.09 (2.4) | 10000 (690) |
| DFM4 | NS2 | SS-MMA-DFM4-NS2 | 1.51 (38.4) | 0.63 (15.9) | 0.19 (4.8) | 15000 (1034) |
| DFM4 | NS4 | SS-MMA-DFM4-NS4 | 1.69 (42.9) | 0.63 (15.9) | 0.19 (4.8) | 15000 (1034) |
| DFM4 | NS6 | SS-MMA-DFM4-NS6 | 1.71 (43.4) | 0.69 (17.5) | 0.19 (4.8) | 15000 (1034) |
| DFM4 | NS8 | SS-MMA-DFM4-NS8 | 1.98 (50.3) | 0.87 (22.2) | 0.19 (4.8) | 15000 (1034) |
| DFM4 | NS12 | SS-MMA-DFM4-NS12 | 2.06 (52.3) | 1.06 (27.0) | 0.19 (4.8) | 10000 (690) |
| DFM4 | NS16 | SS-MMA-DFM4-NS16 | 2.35 (59.6) | 1.37 (34.9) | 0.19 (4.8) | 10000 (690) |
| DFM6 | NS2 | SS-MMA-DFM6-NS2 | 1.57(39.8) | 0.75 (19.1) | 0.19 (4.8) | 15000 (1034) |
| DFM6 | NS4 | SS-MMA-DFM6-NS4 | 1.74 (44.3) | 0.75 (19.1) | 0.25 (6.4) | 15000 (1034) |
| DFM6 | NS6 | SS-MMA-DFM6-NS6 | 1.74 (44.3) | 0.75 (19.1) | 0.25 (6.4) | 15000 (1034) |
| DFM6 | NS8 | SS-MMA-DFM6-NS8 | 1.99 (50.7) | 0.87 (22.2) | 0.25 (6.4) | 15000 (1034) |
| DFM6 | NS12 | SS-MMA-DFM6-NS12 | 2.07 (52.7) | 1.06 (27.0) | 0.25 (6.4) | 10000 (690) |
| DFM6 | NS16 | SS-MMA-DFM6-NS16 | 2.36 (60.0) | 1.37 (34.9) | 0.25 (6.4) | 10000 (690) |
| DFM8 | NS2 | SS-MMA-DFM8-NS2 | 1.78 (45.1) | 0.94 (23.8) | 0.19 (4.8) | 15000 (1034) |
| DFM8 | NS4 | SS-MMA-DFM8-NS4 | 1.95 (49.6) | 0.94 (23.8) | 0.25 (6.4) | 15000 (1034) |
| DFM8 | NS6 | SS-MMA-DFM8-NS6 | 1.95 (49.6) | 0.94 (23.8) | 0.31 (7.9) | 15000 (1034) |
| DFM8 | NS8 | SS-MMA-DFM8-NS8 | 2.14 (54.5) | 0.94 (23.8) | 0.37 (9.5) | 15000 (1034) |
| DFM8 | NS12 | SS-MMA-DFM8-NS12 | 2.20 (56.0) | 1.06 (27.0) | 0.37 (9.5) | 10000 (690) |
| DFM8 | NS16 | SS-MMA-DFM8-NS16 | 2.49 (63.3) | 1.37 (34.9) | 0.37 (9.5) | 10000 (690) |

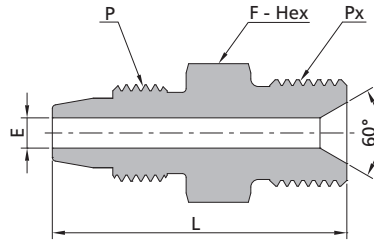
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Male 20D Series to Male JIC



| Male 20D Series | | | | Male JIC | | | |
|-----------------|---------------|------------------|----------------------|-------------|------------|--------------------------------|--|
| P-Connection | Px-Connection | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) | |
| | | | L | F | E | | |
| DFM2 | JM4 | SS-MMA-DFM2-JM4 | 1.49 (37.8) | 0.50 (12.7) | 0.09 (2.4) | 20000 (1379) | |
| DFM2 | JM6 | SS-MMA-DFM2-JM6 | 1.53 (38.9) | 0.63 (15.9) | 0.09 (2.4) | 20000 (1379) | |
| DFM2 | JM8 | SS-MMA-DFM2-JM8 | 1.71 (43.5) | 0.81 (20.6) | 0.09 (2.4) | 20000 (1379) | |
| DFM2 | JM10 | SS-MMA-DFM2-JM10 | 1.85 (47.1) | 0.94 (23.8) | 0.09 (2.4) | 20000 (1379) | |
| DFM2 | JM12 | SS-MMA-DFM2-JM12 | 2.04 (51.7) | 1.13 (28.6) | 0.09 (2.4) | 15000 (1034) | |
| DFM2 | JM16 | SS-MMA-DFM2-JM16 | 2.16 (54.9) | 1.37 (34.9) | 0.09 (2.4) | 15000 (1034) | |
| DFM4 | JM4 | SS-MMA-DFM4-JM4 | 1.68 (42.7) | 0.63 (15.9) | 0.17 (4.4) | 20000 (1379) | |
| DFM4 | JM6 | SS-MMA-DFM4-JM6 | 1.69 (42.8) | 0.63 (15.9) | 0.19 (4.8) | 20000 (1379) | |
| DFM4 | JM8 | SS-MMA-DFM4-JM8 | 1.87 (47.4) | 0.81 (20.6) | 0.19 (4.8) | 20000 (1379) | |
| DFM4 | JM10 | SS-MMA-DFM4-JM10 | 2.01 (51.0) | 0.94 (23.8) | 0.19 (4.8) | 20000 (1379) | |
| DFM4 | JM12 | SS-MMA-DFM4-JM12 | 2.19 (55.6) | 1.13 (28.6) | 0.19 (4.8) | 15000 (1034) | |
| DFM4 | JM16 | SS-MMA-DFM4-JM16 | 2.31 (58.8) | 1.37 (34.9) | 0.19 (4.8) | 15000 (1034) | |
| DFM6 | JM4 | SS-MMA-DFM6-JM4 | 1.74 (44.1) | 0.75 (19.1) | 0.17 (4.4) | 20000 (1379) | |
| DFM6 | JM6 | SS-MMA-DFM6-JM6 | 1.74 (44.2) | 0.75 (19.1) | 0.23 (5.8) | 20000 (1379) | |
| DFM6 | JM8 | SS-MMA-DFM6-JM8 | 1.88 (47.8) | 0.81 (20.6) | 0.25 (6.4) | 20000 (1379) | |
| DFM6 | JM10 | SS-MMA-DFM6-JM10 | 2.02 (51.4) | 0.94 (23.8) | 0.25 (6.4) | 20000 (1379) | |
| DFM6 | JM12 | SS-MMA-DFM6-JM12 | 2.20(56.0) | 1.13 (28.6) | 0.25 (6.4) | 15000 (1034) | |
| DFM6 | JM16 | SS-MMA-DFM6-JM16 | 2.33(59.2) | 1.37 (34.9) | 0.25 (6.4) | 15000 (1034) | |
| DFM8 | JM4 | SS-MMA-DFM8-JM4 | 1.94 (49.4) | 0.94 (23.8) | 0.17 (4.4) | 20000 (1379) | |
| DFM8 | JM6 | SS-MMA-DFM8-JM6 | 1.95 (49.5) | 0.94 (23.8) | 0.23 (5.8) | 20000 (1379) | |
| DFM8 | JM8 | SS-MMA-DFM8-JM8 | 2.05 (52.1) | 0.94 (23.8) | 0.31 (8.0) | 20000 (1379) | |
| DFM8 | JM10 | SS-MMA-DFM8-JM10 | 2.15(54.7) | 0.94 (23.8) | 0.37 (9.4) | 20000 (1379) | |
| DFM8 | JM12 | SS-MMA-DFM8-JM12 | 2.33 (59.3) | 1.13 (28.6) | 0.37 (9.5) | 15000 (1034) | |
| DFM8 | JM16 | SS-MMA-DFM8-JM16 | 2.46 (62.5) | 1.37 (34.9) | 0.37 (9.5) | 15000 (1034) | |

Male 20D Series to Male Type "M"



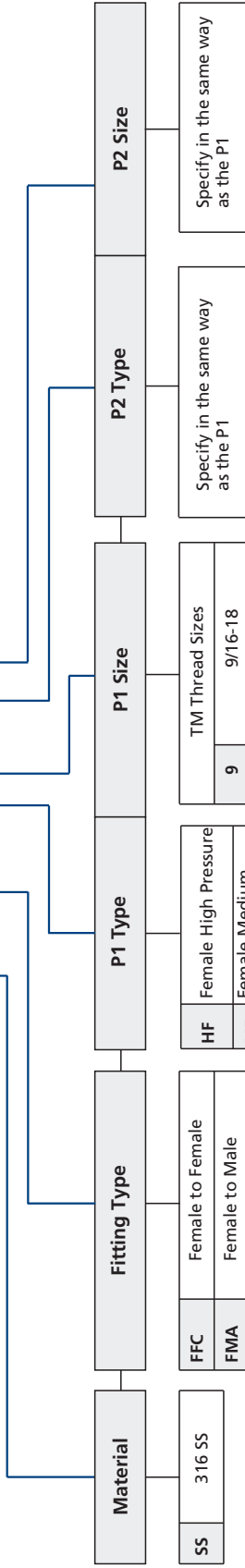
| Male 20D Series | | | Male Type "M" | | | |
|-----------------|---------------|------------------|----------------------|-------------|------------|--------------------------------|
| P-Connection | Px-Connection | Ordering Number | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
| | | | L | F | E | |
| DFM2 | TM9 | SS-MMA-DFM2-TM9 | 1.48(37.5) | 0.63 (15.9) | 0.09 (2.4) | 20000 (1379) |
| DFM2 | TM12 | SS-MMA-DFM2-TM12 | 1.65(41.8) | 0.75 (19.1) | 0.09 (2.4) | 20000 (1379) |
| DFM2 | TM14 | SS-MMA-DFM2-TM14 | 1.87(47.5) | 1.00 (25.4) | 0.09 (2.4) | 20000 (1379) |
| DFM2 | TM16 | SS-MMA-DFM2-TM16 | 1.76(44.6) | 1.00 (25.4) | 0.09 (2.4) | 20000 (1379) |
| DFM2 | TM21 | SS-MMA-DFM2-TM21 | 1.87(47.5) | 1.37 (34.9) | 0.09 (2.4) | 20000 (1379) |
| DFM4 | TM9 | SS-MMA-DFM4-TM9 | 1.63(41.4) | 0.63 (15.9) | 0.09 (2.4) | 20000 (1379) |
| DFM4 | TM12 | SS-MMA-DFM4-TM12 | 1.80(45.7) | 0.75 (19.1) | 0.19 (4.8) | 20000 (1379) |
| DFM4 | TM14 | SS-MMA-DFM4-TM14 | 2.02(51.4) | 1.00 (25.4) | 0.15 (3.8) | 20000 (1379) |
| DFM4 | TM16 | SS-MMA-DFM4-TM16 | 1.91(48.5) | 1.00 (25.4) | 0.19 (4.8) | 20000 (1379) |
| DFM4 | TM21 | SS-MMA-DFM4-TM21 | 2.02(51.4) | 1.37 (34.9) | 0.19 (4.8) | 20000 (1379) |
| DFM6 | TM9 | SS-MMA-DFM6-TM9 | 1.69(42.8) | 0.75 (19.1) | 0.09 (2.4) | 20000 (1379) |
| DFM6 | TM12 | SS-MMA-DFM6-TM12 | 1.81(46.1) | 0.75 (19.1) | 0.25 (6.4) | 20000 (1379) |
| DFM6 | TM14 | SS-MMA-DFM6-TM14 | 2.04(51.8) | 1.00 (25.4) | 0.15 (3.8) | 20000 (1379) |
| DFM6 | TM16 | SS-MMA-DFM6-TM16 | 1.93(48.9) | 1.00 (25.4) | 0.25 (6.4) | 20000 (1379) |
| DFM6 | TM21 | SS-MMA-DFM6-TM21 | 2.04(51.8) | 1.37 (34.9) | 0.25 (6.4) | 20000 (1379) |
| DFM8 | TM9 | SS-MMA-DFM8-TM9 | 1.89(48.1) | 0.94 (23.8) | 0.09 (2.4) | 20000 (1379) |
| DFM8 | TM12 | SS-MMA-DFM8-TM12 | 2.02(51.4) | 0.94 (23.8) | 0.29 (7.4) | 20000 (1379) |
| DFM8 | TM14 | SS-MMA-DFM8-TM14 | 2.17(55.1) | 1.00 (25.4) | 0.15 (3.8) | 20000 (1379) |
| DFM8 | TM16 | SS-MMA-DFM8-TM16 | 2.06(52.2) | 1.00 (25.4) | 0.37 (9.5) | 20000 (1379) |
| DFM8 | TM21 | SS-MMA-DFM8-TM21 | 2.17(55.1) | 1.37 (34.9) | 0.37 (9.5) | 20000 (1379) |

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|------------------------------|-----------------------|-------------------------------------|---------------|-----------------------|--------|--------------|-----------------|--------|----------|
| Part Number Crossover Charts | Technical Information | Tools and Installation Instructions | Subsea Valves | Sour Service Products | Valves | Line Filters | Quick Couplings | Tubing | Fittings |
|------------------------------|-----------------------|-------------------------------------|---------------|-----------------------|--------|--------------|-----------------|--------|----------|

Ordering Number Description

SS – FMA – HF6 – MM9



| | | | |
|----------|--------------|--------------|------------------|
| Material | SS | 316 SS | |
| | Fitting Type | FFC | Female to Female |
| | | FMA | Female to Male |
| | MMA | Male to Male | |

| | | | | | |
|---------|-----|--|---------|----|-------------|
| P1 Type | HF | Female High Pressure | P1 Size | 9 | 9/16-18 |
| | MF | Female Medium Pressure | | 12 | 3/4-16 |
| | DFF | Female 20D Series | | 14 | 7/8-14 |
| | FNS | Female NPT | | 16 | 1-12 |
| | JF | Female JIC | | 21 | 1 5/16-12 |
| | | | | | Other Sizes |
| | HIM | Male High Pressure | | 2 | 1/8" |
| | HCT | High Pressure Coned and Threaded Nipples | | 4 | 1/4" |
| | MM | Male Medium Pressure | | 6 | 3/8" |
| | MCT | Medium Pressure Coned and Threaded Nipples | | 8 | 1/2" |
| | DFM | Male 20D Series | | 9 | 9/16" |
| | NS | Male NPT | | 10 | 5/8" |
| | JM | Male JIC | | 12 | 3/4" |
| | TM | Male Type "M" | | 16 | 1" |

- NOTES: 1. For more details regarding 20D Series and Medium/High Pressure connections, please see **Connection Information** on I-02.
2. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.

P1 P2

P1 and P2 shall be described in the following orders:

- Ⓒ Describe the female end first if there is any
- Ⓒ For female connections: HF□ - MF□ - DFF□ - FNS□ - JF□
- Ⓒ For male connections: HM□ - HCT□ - MM□ - MCT□ - DFM□ - NS□ - JM□ - TM□
- Ⓒ Describe in descending order according to sizes if the end connection types are the same
- Ⓒ Describe the end of P1 if all end connections are the same

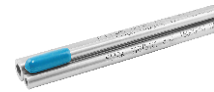
"Two-piece" Design

Ordering number with designator "HCP", "MCP", "DCP" and "SCP" are for "two-piece" male to male and female to male adapter fittings. They are identical to the "one-piece" design in length. They can be ordered by using "HCP", "MCP", "DCP" and "SCP" to take the place of "HM", "MM", "DFM" and "SFM".

For example: Ordering number of "one-piece" : SS-MMA-HM6-DFM4
The corresponding ordering number of "Two-piece" : SS-MMA-HCP6-DCP4.

Tubing

T15 Series Tubing



B-05

T20D Series Tubing



B-08

T20M Series Tubing



B-10

T60 Series Tubing



B-13

Tubing





T15, T20D, T20M, T60 Series

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| T20M Series Tubing |  | B-10 |
| T60 Series Tubing |  | B-13 |

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Connections

- ✓ Recommended application
- Applicable but not optimal
- Limited application subject to confirmation from FITOK
- × Not applicable

| Connection | Series | T15 | T20D | T20M | T60 |
|---|--------|----------------|------|------|-----|
| 15S Series Single Ferrule Tube Fittings | | ✓ ^① | × | × | × |
| 20D Series Double Ferrule Tube Fittings | | ✓ | ✓ | × | × |
| 20M Series Medium Pressure Fittings | | × | × | ✓ | □ |
| 60 Series High Pressure Fittings | | × | × | × | ✓ |

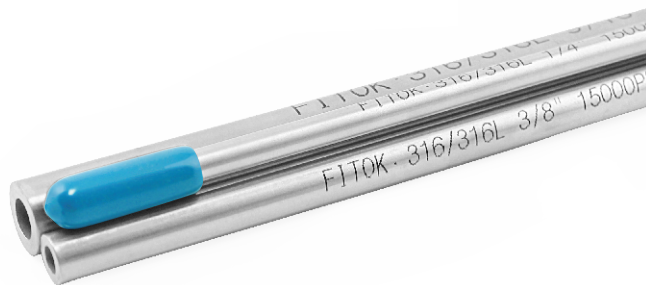
① Only T15 series annealed tubing is for use with 15S Series Single Ferrule Tube Fittings.
 15S Series Single Ferrule Tube Fittings catalog is individually available in soft copy.

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T15 Series Tubing

Features

- Material: 316/316L
- Working pressure up to 15,000 psig (1034 bar)
- Working temperature: -325°F to 800°F (-198°C to 427°C)
- Annealed seamless or cold-drawn 1/8-hard seamless tubing
- For use with FITOK 20D series double ferrule tube fittings
- Marked with brand, material grade, specification, pressure, annealing code and heat number
- Standard length: 20 ft and 6 m



Materials

| UNS | Grade | FITOK Designator | Composition % | | | | | | | |
|---------------|----------|------------------|---------------|-------|--------|-------|-------|-------|-------|---------|
| | | | C | Mn | P | S | Si | Cr | Ni | Mo |
| S31600/S31603 | 316/316L | SS | ≤0.035 | ≤2.00 | ≤0.045 | ≤0.03 | ≤1.00 | 16-18 | 10-14 | 2.0-3.0 |

Mechanical Properties

Cold-drawn 1/8-hard Seamless Tubing

| UNS | Grade | Yield Strength ksi | Tensile Strength ksi | Elongation % | Hardness |
|---------------|----------|--------------------|----------------------|--------------|----------|
| S31600/S31603 | 316/316L | 75 to 110 | 105 to 140 | ≥20 | ≤26 HRC |

Annealed Seamless Tubing

| UNS | Grade | Yield Strength ksi | Tensile Strength ksi | Elongation % | Hardness |
|---------------|----------|--------------------|----------------------|--------------|----------|
| S31600/S31603 | 316/316L | ≥30 | ≥75 | ≥30 | ≤90 HRB |

Dimensional Tolerance

| Tube O.D. in. | O.D. Tolerance in. | Wall Thickness Tolerance % |
|---------------|--------------------|----------------------------|
| 1/8 | +/-0.003 | +/-10 |
| 1/4 | +/-0.005 | |
| 3/8 | | |
| 1/2 | | |
| 9/16 | | |
| 3/4 | | |

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Working Pressure at Ambient Temperature

Cold-drawn 1/8-hard Seamless Tubing

| Tube O.D. in. | Wall Thickness in. | Working Pressure psig (bar) ^① |
|---------------|--------------------|--|
| 1/4 | 0.065 | 15,000 (1034) |
| 3/8 | 0.083 | |
| 1/2 | 0.109 | |
| 9/16 | 0.125 | |
| 3/4 | 0.165 | |

① Working pressures are calculated from an S value of 35,000 psi (241 MPa) at -20 to 100°F (-28 to 38°C) for ASME B31.3.

Annealed Seamless Tubing

| Tube O.D. in. | Wall Thickness in. | Working Pressure psig (bar) ^① |
|---------------|--------------------|--|
| 1/8 | 0.037 | 15,000 (1034) |
| 1/4 | 0.083 | 15,000 (1034) |
| | 0.065 | 10,300 (710) |
| 3/8 | 0.118 | 15,000 (1034) |
| | 0.095 | 10,000 (690) |
| 1/2 | 0.156 | 15,000 (1034) |
| | 0.134 | 11,200 (772) |
| 9/16 | 0.188 | 15,000 (1034) |
| 3/4 | 0.240 | 15,000 (1034) |
| | 0.188 | 10,000 (690) |

① Working pressures are calculated from an S value of 20,000 psi (138 MPa) at -20 to 100°F (-28 to 38°C) for ASME B31.3.

Elevated Temperature Factors

| Temperature | | Factor |
|-------------|-----|--------|
| °F | °C | |
| 100 | 38 | 1.00 |
| 200 | 93 | |
| 300 | 149 | |
| 400 | 204 | 0.96 |
| 500 | 260 | 0.89 |
| 600 | 316 | 0.85 |
| 700 | 371 | 0.81 |
| 800 | 427 | 0.79 |

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Ordering Information

Cold-drawn 1/8-hard Seamless Tubing

| Tube O.D. in. | Wall Thickness in. | Ordering Number ^{①②} | |
|------------------|-----------------------|-------------------------------|------------------|
| | | 6M | 20 |
| 1/4 | 0.065 | SS-T15-4-065-6M | SS-T15-4-065-20 |
| 3/8 | 0.083 | SS-T15-6-083-6M | SS-T15-6-083-20 |
| 1/2 | 0.109 | SS-T15-8-109-6M | SS-T15-8-109-20 |
| 9/16 | 0.125 | SS-T15-9-125-6M | SS-T15-9-125-20 |
| 3/4 | 0.165 | SS-T15-12-165-6M | SS-T15-12-165-20 |

① In the ordering number, "6M" designates tubing length of 6 meters; "20" designates tubing length of 20 feet.

② Custom shorter length available upon request.

Annealed Seamless Tubing

| Tube O.D. in. | Wall Thickness in. | Ordering Number ^{①②} | |
|------------------|-----------------------|-------------------------------|--------------------|
| | | 6M | 20 |
| 1/8 | 0.037 | SS-T15-A-2-037-6M | SS-T15-A-2-037-20 |
| 1/4 | 0.083 | SS-T15-A-4-083-6M | SS-T15-A-4-083-20 |
| | 0.065 | SS-T15-A-4-065-6M | SS-T15-A-4-065-20 |
| 3/8 | 0.118 | SS-T15-A-6-118-6M | SS-T15-A-6-118-20 |
| | 0.095 | SS-T15-A-6-095-6M | SS-T15-A-6-095-20 |
| 1/2 | 0.156 | SS-T15-A-8-156-6M | SS-T15-A-8-156-20 |
| | 0.134 | SS-T15-A-8-134-6M | SS-T15-A-8-134-20 |
| 9/16 | 0.188 | SS-T15-A-9-188-6M | SS-T15-A-9-188-20 |
| 3/4 | 0.240 | SS-T15-A-12-240-6M | SS-T15-A-12-240-20 |
| | 0.188 | SS-T15-A-12-188-6M | SS-T15-A-12-188-20 |

① In the ordering number, "6M" designates tubing length of 6 meters; "20" designates tubing length of 20 feet.

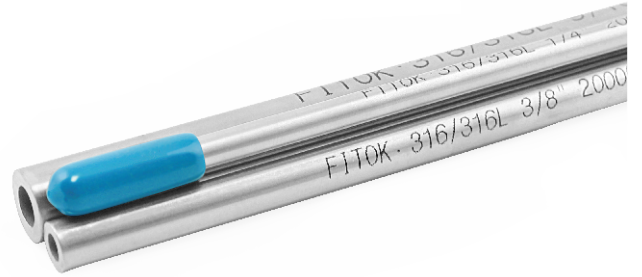
② Custom shorter length available upon request.

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T20D Series Tubing

Features

- Material: 316/316L
- Working pressure up to 20,000 psig (1379 bar)
- Working temperature: -325°F to 800°F (-198°C to 427°C)
- Cold-drawn 1/8-hard seamless tubing
- For use with FITOK 20D series double ferrule tube fittings
- Marked with brand, material grade, specification, pressure and heat number
- Standard length: 20 ft and 6 m



Materials

| UNS | Grade | FITOK Designator | Composition % | | | | | | | |
|---------------|----------|------------------|---------------|-------|--------|-------|-------|-------|-------|---------|
| | | | C | Mn | P | S | Si | Cr | Ni | Mo |
| S31600/S31603 | 316/316L | SS | ≤0.035 | ≤2.00 | ≤0.045 | ≤0.03 | ≤1.00 | 16-18 | 10-14 | 2.0-3.0 |

Mechanical Properties

| UNS | Grade | Yield Strength ksi | Tensile Strength ksi | Elongation % | Hardness |
|---------------|----------|--------------------|----------------------|--------------|----------|
| S31600/S31603 | 316/316L | 75 to 110 | 105 to 140 | ≥20 | ≤26 HRC |

Dimensional Tolerance

| Tube O.D. in. | O.D. Tolerance in. | Wall Thickness Tolerance % |
|---------------|--------------------|----------------------------|
| 1/4 | +/-0.005 | +/-10 |
| 3/8 | | |
| 1/2 | | |
| 9/16 | | |
| 3/4 | | |

Working Pressure at Ambient Temperature

| Tube O.D. in. | Wall Thickness Tolerance in. | Working Pressure ^① psig (bar) |
|------------------|------------------------------------|---|
| 1/4 | 0.065 | 20,000 (1379) |
| 3/8 | 0.083 | |
| 1/2 | 0.109 | |
| 9/16 | 0.125 | |
| 3/4 | 0.165 | |

① Working pressures are calculated from an S value of 50,000 psi (344 MPa) at -20 to 100°F (-28 to 38°C) for ASME B31.3 Chapter IX High Pressure Piping.

Elevated Temperature Factors

| Temperature | | Factor |
|-------------|-----|--------|
| °F | °C | |
| 100 | 38 | 1.00 |
| 200 | 93 | |
| 300 | 149 | |
| 400 | 204 | 0.96 |
| 500 | 260 | 0.89 |
| 600 | 316 | 0.85 |
| 700 | 371 | 0.81 |
| 800 | 427 | 0.79 |

Ordering Information

| Tube O.D. in. | Wall Thickness in. | Ordering Number ^{①②} | |
|------------------|-----------------------|-------------------------------|-------------------|
| 1/4 | 0.065 | SS-T20D-4-065-6M | SS-T20D-4-065-20 |
| 3/8 | 0.083 | SS-T20D-6-083-6M | SS-T20D-6-083-20 |
| 1/2 | 0.109 | SS-T20D-8-109-6M | SS-T20D-8-109-20 |
| 9/16 | 0.125 | SS-T20D-9-125-6M | SS-T20D-9-125-20 |
| 3/4 | 0.165 | SS-T20D-12-165-6M | SS-T20D-12-165-20 |

① In the ordering number, "6M" designates tubing length of 6 meters; "20" designates tubing length of 20 feet.

② Custom shorter length available upon request.

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T20M Series Tubing

Features

- Material: 316/316L
- Working pressure up to 20,000 psig (1379 bar)
- Working temperature: -423°F to 1200°F (-252°C to 649°C)
- Cold-drawn seamless tubing
- For use with FITOK 20M series medium pressure fittings
- Marked with brand, material grade, specification, pressure, and heat number
- Supplied in fractional sizes up to 20 ft and metric sizes up to 6 m. Nipples in custom length available



Materials

| UNS | Grade | FITOK Designator | Composition % | | | | | | | |
|---------------|----------|------------------|---------------|-------|--------|-------|-------|-------|-------|---------|
| | | | C | Mn | P | S | Si | Cr | Ni | Mo |
| S31600/S31603 | 316/316L | SS | ≤0.035 | ≤2.00 | ≤0.045 | ≤0.03 | ≤1.00 | 16-18 | 10-14 | 2.0-3.0 |

Dimensional Tolerance

| Tube O.D. in. | O.D. Tolerance in. | Tube I.D. in. | I.D. Tolerance in. |
|---------------|--------------------|---------------|--------------------|
| 1/4 | -0.002/-0.007 | 0.109 | 0/-0.005 |
| 3/8 | | 0.203 | |
| 9/16 | | 0.312 | |
| 3/4 | -0.005/-0.01 | 0.438 | +/-0.005 |
| 1 | | 0.562 | |

Pressure-Temperature Ratings

| Working Pressure psig (bar) | | | | |
|--------------------------------|---------------|---------------|---------------|---------------|
| -423 to 100°F (-252 to 37.8°C) | 200°F (93°C) | 400°F (204°C) | 600°F (316°C) | 800°F (427°C) |
| 20,000 (1379) | 20,000 (1379) | 19,250 (1327) | 18,050 (1244) | 16,800 (1158) |

If tubing is used at temperatures above 800°F (427°C) or reused thereafter, working pressures for tubing in the following table shall apply.

| Working Pressure psig (bar) | | | | | |
|---------------------------------|---------------|---------------|---------------|----------------|----------------|
| -423 to 200°F (-252 to 93°C) | 400°F (204°C) | 600°F (316°C) | 800°F (427°C) | 1000°F (538°C) | 1200°F (649°C) |
| 8,050 (555) | 7,400 (510) | 6,800 (469) | 6,300 (434) | 6,200 (427) | 2,900 (200) |

Ordering Information

Cold-drawn Seamless Tubing

| Tube O.D. in. | Tube I.D. in. | Ordering Number ^{①②} | |
|------------------|------------------|-------------------------------|---------------|
| 1/4 | 0.109 | SS-T20M-4-6M | SS-T20M-4-20 |
| 3/8 | 0.203 | SS-T20M-6-6M | SS-T20M-6-20 |
| 9/16 | 0.312 | SS-T20M-9-6M | SS-T20M-9-20 |
| 3/4 | 0.438 | SS-T20M-12-6M | SS-T20M-12-20 |
| 1 | 0.562 | SS-T20M-16-6M | SS-T20M-16-20 |

① In the ordering number, "6M" designates tubing length of 6 meters; "20" designates tubing length of 20 feet.

② Custom shorter length available upon request.

For tubing bend radius, please see **Working Pressure vs. Bend Radius Curve** on I-07.

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Line Filters

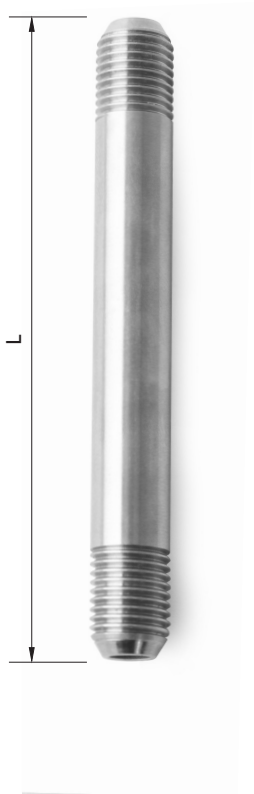
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Coned and Threaded Nipples



| Tube O.D. in. | Tube I.D. in. | Length L ^① in. (mm) | Ordering Number |
|------------------|------------------|-----------------------------------|-----------------|
| 1/4 | 0.109 | 3.00 (76.2) | SS-T20M-4CT-3 |
| | | 4.00 (101.6) | SS-T20M-4CT-4 |
| | | 6.00 (152.4) | SS-T20M-4CT-6 |
| | | 8.00 (203.2) | SS-T20M-4CT-8 |
| | | 10.0 (254.0) | SS-T20M-4CT-10 |
| | | 12.0 (304.8) | SS-T20M-4CT-12 |
| 3/8 | 0.203 | 3.00 (76.2) | SS-T20M-6CT-3 |
| | | 4.00 (101.6) | SS-T20M-6CT-4 |
| | | 6.00 (152.4) | SS-T20M-6CT-6 |
| | | 8.00 (203.2) | SS-T20M-6CT-8 |
| | | 10.0 (254.0) | SS-T20M-6CT-10 |
| | | 12.0 (304.8) | SS-T20M-6CT-12 |
| 9/16 | 0.312 | 4.00 (101.6) | SS-T20M-9CT-4 |
| | | 6.00 (152.4) | SS-T20M-9CT-6 |
| | | 8.00 (203.2) | SS-T20M-9CT-8 |
| | | 10.0 (254.0) | SS-T20M-9CT-10 |
| | | 12.00 (304.8) | SS-T20M-9CT-12 |
| 3/4 | 0.438 | 4.00 (101.6) | SS-T20M-12CT-4 |
| | | 6.00 (152.4) | SS-T20M-12CT-6 |
| | | 8.00 (203.2) | SS-T20M-12CT-8 |
| | | 10.0 (254.0) | SS-T20M-12CT-10 |
| | | 12.0 (304.8) | SS-T20M-12CT-12 |
| 1 | 0.562 | 6.00 (152.4) | SS-T20M-16CT-6 |
| | | 8.00 (203.2) | SS-T20M-16CT-8 |
| | | 10.0 (254.0) | SS-T20M-16CT-10 |
| | | 12.0 (304.8) | SS-T20M-16CT-12 |

① Nipples in custom length available upon request.
 Tubing of certain sizes can be coned and threaded by manual coning and threading tools to make nipples. For more details, please see **Tools** on H-03.

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T60 Series Tubing

Features

- Material: 316/316L
- Working pressure up to 60,000 psig (4137 bar)
- Working temperature: -423°F to 1200°F (-252°C to 649°C)
- Cold-drawn seamless tubing
- For use with FITOK 60 series high pressure fittings
- Marked with brand, material grade, specification, pressure, and heat number
- Supplied in fractional sizes up to 20 ft and metric sizes up to 6 m. Nipples in custom length available



Materials

| UNS | Grade | FITOK Designator | Composition % | | | | | | | |
|---------------|----------|------------------|---------------|-------|--------|-------|-------|-------|-------|---------|
| | | | C | Mn | P | S | Si | Cr | Ni | Mo |
| S31600/S31603 | 316/316L | SS | ≤0.035 | ≤2.00 | ≤0.045 | ≤0.03 | ≤1.00 | 16-18 | 10-14 | 2.0-3.0 |

Dimensional Tolerance

| Tube O.D. in. | O.D. Tolerance in. | Tube I.D. in. | I.D. Tolerance in. |
|---------------|--------------------|---------------|--------------------|
| 1/4 | -0.002/-0.007 | 0.083 | 0/-0.005 |
| 3/8 | -0.005/-0.01 | 0.125 | |
| 9/16 | | 0.188 | |

Pressure-Temperature Ratings

| Working Pressure psig (bar) | | | | |
|--------------------------------|---------------|---------------|---------------|---------------|
| -423 to 100°F (-252 to 37.8°C) | 200°F (93°C) | 400°F (204°C) | 600°F (316°C) | 800°F (427°C) |
| 60,000 (4137) | 60,000 (4137) | 57,750 (3982) | 54,250 (3740) | 50,700 (3496) |

If tubing is used at temperatures above 800°F (427°C) or reused thereafter, working pressures for tubing in the following table shall apply.

| Working Pressure psig (bar) | | | | | |
|------------------------------|---------------|---------------|---------------|----------------|----------------|
| -423 to 200°F (-252 to 93°C) | 400°F (204°C) | 600°F (316°C) | 800°F (427°C) | 1000°F (538°C) | 1200°F (649°C) |
| 24,200 (1669) | 22,200 (1531) | 20,500 (1413) | 18,850 (1300) | 18,600 (1282) | 8,750 (603) |

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Ordering Information

Cold-drawn Seamless Tubing

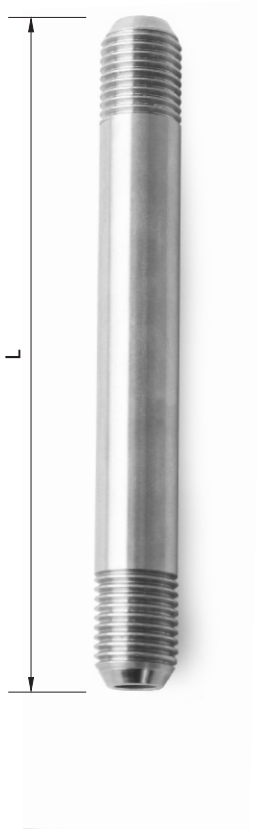
| Tube O.D. in. | Tube I.D. in. | Ordering Number ^{①②} | |
|------------------|------------------|-------------------------------|-------------|
| 1/4 | 0.083 | SS-T60-4-6M | SS-T60-4-20 |
| 3/8 | 0.125 | SS-T60-6-6M | SS-T60-6-20 |
| 9/16 | 0.188 | SS-T60-9-6M | SS-T60-9-20 |

① In the ordering number, "6M" designates tubing length of 6 meters; "20" designates tubing length of 20 feet.

② Custom shorter length available upon request.

For tubing bend radius, please see **Working Pressure vs. Bend Radius Curve** on I-07.

Coned and Threaded Nipples



| Tube O.D. in. | Tube I.D. in. | Length L ^① in. (mm) | Ordering Number |
|------------------|------------------|-----------------------------------|-----------------|
| 1/4 | 0.083 | 2.75 (69.9) | SS-T60-4CT-2.75 |
| | | 3.00 (76.2) | SS-T60-4CT-3 |
| | | 4.00 (101.6) | SS-T60-4CT-4 |
| | | 6.00 (152.4) | SS-T60-4CT-6 |
| | | 8.00 (203.2) | SS-T60-4CT-8 |
| | | 10.0 (254.0) | SS-T60-4CT-10 |
| | | 12.0 (304.8) | SS-T60-4CT-12 |
| 3/8 | 0.125 | 3.00 (76.2) | SS-T60-6CT-3 |
| | | 4.00 (101.6) | SS-T60-6CT-4 |
| | | 6.00 (152.4) | SS-T60-6CT-6 |
| | | 8.00 (203.2) | SS-T60-6CT-8 |
| | | 10.0 (254.0) | SS-T60-6CT-10 |
| | | 12.0 (304.8) | SS-T60-6CT-12 |
| 9/16 | 0.188 | 4.00 (101.6) | SS-T60-9CT-4 |
| | | 6.00 (152.4) | SS-T60-9CT-6 |
| | | 8.00 (203.2) | SS-T60-9CT-8 |
| | | 10.0 (254.0) | SS-T60-9CT-10 |
| | | 12.0 (304.8) | SS-T60-9CT-12 |

① Nipples in custom length available upon request.

Tubing of certain sizes can be coned and threaded by manual coning and threading tools to make nipples. For more details, please see **Tools** on H-03.

Quick Couplings

Quick Couplings



C-02

Quick Couplings

HQP Series: 10,000 psig (690 bar)

HQB Series: 10,000 psig (690 bar)

HQS Series: 20,000 psig (1379 bar)

HQC Series: 30,000 psig (2068 bar)



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| HQS Series | C-08 |
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HQP Series

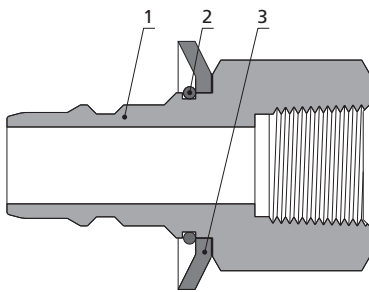
Features

- ⦿ Working pressure: 10,000 psig (690 bar)
- ⦿ Fluorocarbon FKM O-ring for operation from 0°F to 400°F (-17.8°C to 204°C); other O-ring materials available
- ⦿ Stem and body material: high tensile 316 Stainless Steel
- ⦿ Push-and-pull type quick coupling without check valve, incapable of withstanding any pressure when disconnected
- ⦿ Flow coefficient (Cv) up to 8.2
- ⦿ Sturdy locking mechanism with large contact area to ensure reliable stem retainment
- ⦿ Slip sleeve lock design prevents accidental disconnection

Cautions

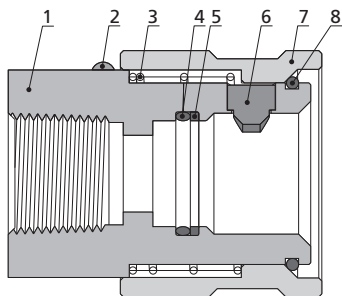
- ⦿ Do not disconnect or connect quick couplings when system is pressurized
- ⦿ Do not rotate quick couplings when connected
- ⦿ Take care to protect the nipple and coupler when disconnected

Standard Materials of Construction



Nipple

| Item | Component | Material Grade |
|------|-------------|-----------------|
| 1 | <i>Stem</i> | 316 SS |
| 2 | Wire Ring | Stainless Steel |
| 3 | Pull Piece | 316 SS |



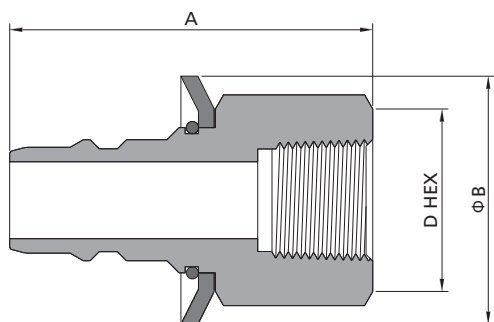
Coupler

| Item | Component | Material Grade |
|------|----------------|------------------|
| 1 | <i>Body</i> | 316 SS |
| 2 | Pin | Stainless Steel |
| 3 | Spring | 300 Series SS |
| 4 | <i>O-ring</i> | Fluorocarbon FKM |
| 5 | Retaining Ring | PTFE |
| 6 | Locking Block | Stainless Steel |
| 7 | Slip Sleeve | 316 SS |
| 8 | Wire Ring | Stainless Steel |

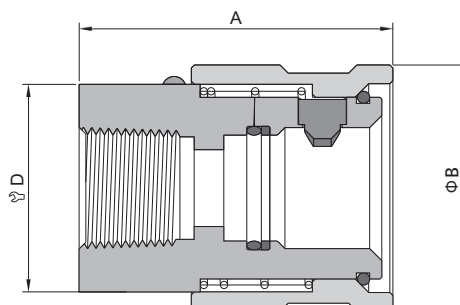
Wetted component listed in italics.

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Ordering Information and Dimensions



Nipple



Coupler

| Type | Ordering Number | Connection | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
|---------|-----------------|------------|----------------------|-------------|-------------|--------------------------------|
| | | | A | B | D | |
| Nipple | HQPSS-FNS6-NP | FNS6 | 2.17 (55.0) | 1.59 (40.4) | 1.19 (30.2) | 10,000 (690) |
| | HQPSS-FNS8-NP | FNS8 | 2.36 (60.0) | 1.59 (40.4) | 1.19 (30.2) | |
| Coupler | HQPSS-FNS6-CP | FNS6 | 2.05 (52.0) | 1.59 (40.4) | 1.19 (30.2) | |
| | HQPSS-FNS8-CP | FNS8 | 2.05 (52.0) | 1.59 (40.4) | 1.19 (30.2) | |

NOTE: All dimensions are shown for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

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HQB Series

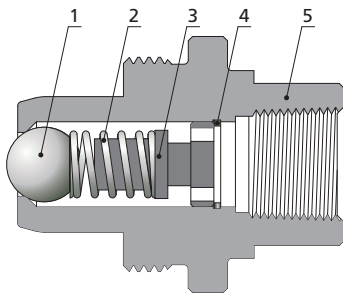
Features

- ⦿ Working Pressure: 10,000 psig (690 bar)
- ⦿ Fluorocarbon FKM O-ring for operation from 0°F to 400°F (-17.8°C to 204°C); other O-ring materials available
- ⦿ S17400 Stainless Steel stem and high tensile 316 Stainless Steel body
- ⦿ Screw type quick coupling with check valve, capable of withstanding full pressure when disconnected
- ⦿ Flow coefficient (Cv) up to 0.53
- ⦿ Check valve with metal ball sealing, without guarantee of full gas impermeability

Cautions

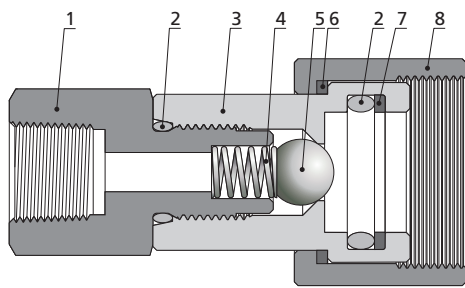
- ⦿ Do not disconnect or connect quick couplings when system is pressurized
- ⦿ Finger tighten the threads to "face-to-face" station when connected
- ⦿ Take care to protect the nipple and coupler when disconnected

Standard Materials of Construction



Nipple

| Item | Component | Material Grade |
|------|-----------------------|------------------------|
| 1 | <i>Ball</i> | <i>Stainless Steel</i> |
| 2 | <i>Spring</i> | <i>300 Series SS</i> |
| 3 | <i>Seat</i> | <i>316 SS</i> |
| 4 | <i>Retaining Ring</i> | <i>Stainless Steel</i> |
| 5 | <i>Stem</i> | <i>S17400 SS</i> |



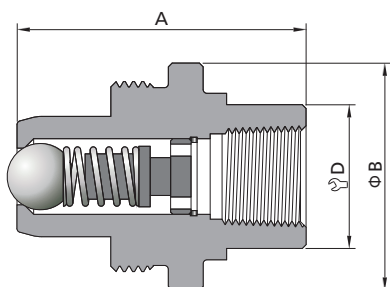
Coupler

| Item | Component | Material Grade |
|-------------------------|-----------------------|---------------------------|
| 1 | <i>Body</i> | <i>316 SS</i> |
| 2 | <i>O-ring</i> | <i>Fluorocarbon FKM</i> |
| 3 | <i>Housing</i> | <i>S17400 SS</i> |
| 4 | <i>Spring</i> | <i>300 Series SS</i> |
| 5 | <i>Ball</i> | <i>Stainless Steel</i> |
| 6 | <i>Ring</i> | <i>C63000</i> |
| 7 | <i>Retaining Ring</i> | <i>PTFE</i> |
| 8 | <i>Nut</i> | <i>S17400 SS</i> |
| <i>Sealant adhesive</i> | | <i>Anaerobic adhesive</i> |

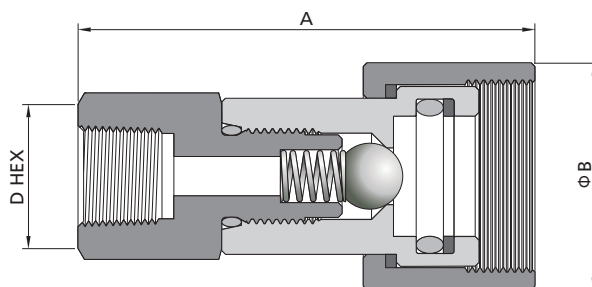
Wetted component listed in italics.

| |
|-------------------------------------|
| Fittings |
| Tubing |
| Quick Couplings |
| Line Filters |
| Valves |
| Sour Service Products |
| Subsea Valves |
| Tools and Installation Instructions |
| Technical Information |
| Part Number Crossover Charts |

Ordering Information and Dimensions



Nipple



Coupler

| Type | Ordering Number | Connection | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
|---------|-----------------|------------|----------------------|-------------|-------------|--------------------------------|
| | | | A | B | D | |
| Nipple | HQB4P-FNS4-NP | FNS4 | 1.54 (39.2) | 1.18 (30.0) | 0.75 (19.0) | 10,000 (690) |
| | HQB4P-FNS6-NP | FNS6 | 1.54 (39.2) | 1.18 (30.0) | 0.94 (23.8) | |
| Coupler | HQB4P-FNS4-CP | FNS4 | 2.46 (62.4) | 1.18 (30.0) | 0.87 (22.2) | |
| | HQB4P-FNS6-CP | FNS6 | 2.46 (62.4) | 1.18 (30.0) | 0.94 (23.8) | |

NOTE: All dimensions are shown for reference only and are subject to change. Other dimensions are available upon request.

| |
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| Fittings |
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HQS Series

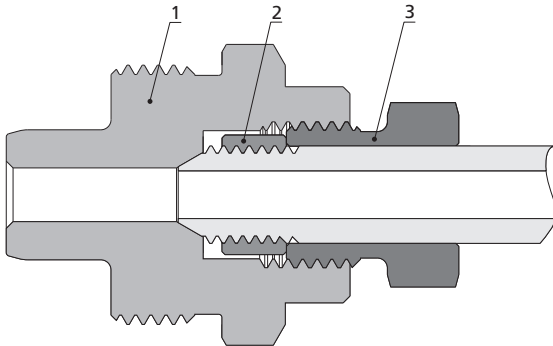
Features

- ⦿ Working pressure up to 20,000 psig (1379 bar)
- ⦿ Fluorocarbon FKM O-ring for operation from 0°F to 400°F (-17.8°C to 204°C); other O-ring materials available
- ⦿ High tensile 316 Stainless Steel stem and S17400 Stainless Steel body
- ⦿ Screw type quick coupling without check valve, incapable of withstanding any pressure when disconnected
- ⦿ Flow coefficient (Cv) up to 33.4

Cautions

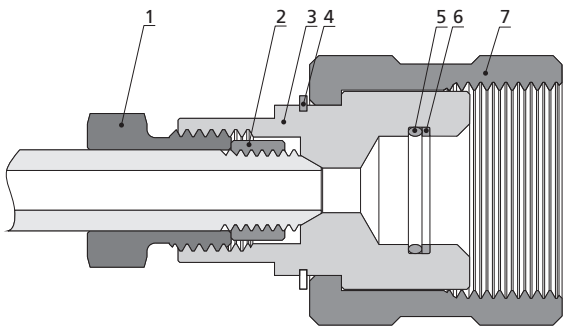
- ⦿ Do not disconnect or connect quick couplings when system is pressurized
- ⦿ Finger tighten the threads to "face-to-face" station when connected
- ⦿ Take care to protect the nipple and coupler when disconnected

Standard Materials of Construction



Nipple

| Item | Component | Material Grade |
|------|-----------|---------------------------------|
| 1 | Stem | 316 SS |
| 2 | Collar | 316 SS (For tubing connections) |
| 3 | Gland | 316 SS (For tubing connections) |



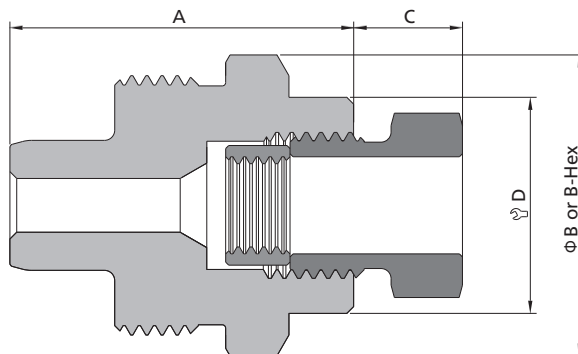
Coupler

| Item | Component | Material Grade |
|------|----------------|---------------------------------|
| 1 | Gland | 316 SS (For tubing connections) |
| 2 | Collar | 316 SS (For tubing connections) |
| 3 | Body | S17400 SS |
| 4 | Circlip | Stainless Steel |
| 5 | O-ring | Fluorocarbon FKM |
| 6 | Retaining Ring | PTFE |
| 7 | Nut | 316 SS |

Wetted component listed in italics

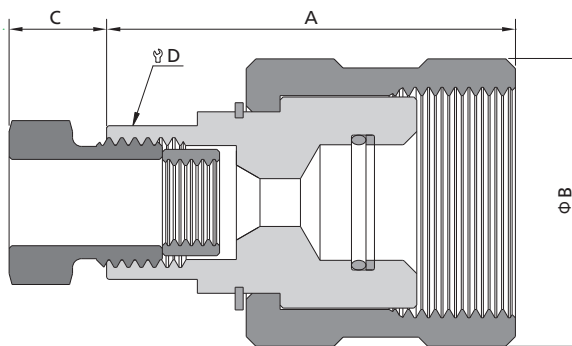
- Fittings
- Tubing
- Quick Couplings
- Line Filters
- Valves
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- Subsea Valves
- Tools and Installation Instructions
- Technical Information
- Part Number Crossover Charts

Ordering Information and Dimensions



Nipple

| Type | Ordering Number | Connection | Dimensions, in. (mm) | | | | Working Pressure psig (bar) |
|--------|-----------------|------------|----------------------|-------------|-------------|-------------|--------------------------------|
| | | | A | B | C | D | |
| Nipple | HQSSS-MF9-NP | MF9 | 2.40 (61.0) | 1.74 (44.2) | 0.55 (14.0) | 1.25 (31.8) | 20,000 (1379) |
| | HQSSS-FNS8-NP | FNS8 | 2.40 (61.0) | 1.74 (44.2) | / | 1.25 (31.8) | 15,000 (1034) |
| | HQSSS-FNS12-NP | FNS12 | 2.48 (63.0) | 2.00 (50.8) | / | / | 10,000 (690) |
| | HQSSS-FNS16-NP | FNS16 | 2.60 (66.0) | 2.25 (57.2) | / | / | 10,000 (690) |



Coupler

| Type | Ordering Number | Connection | Dimensions, in. (mm) | | | | Working Pressure psig (bar) |
|---------|-----------------|------------|----------------------|-------------|-------------|-------------|--------------------------------|
| | | | A | B | C | D | |
| Coupler | HQSSS-MF9-CP | MF9 | 2.61 (66.3) | 1.91 (48.4) | 0.55 (14.0) | 1.00 (25.4) | 20,000 (1379) |
| | HQSSS-FNS8-CP | FNS8 | 2.61 (66.3) | 1.91 (48.4) | / | 1.00 (25.4) | 15,000 (1034) |
| | HQSSS-FNS12-CP | FNS12 | 3.03 (77.0) | 2.38 (60.4) | / | 1.38 (34.9) | 10,000 (690) |
| | HQSSS-FNS16-CP | FNS16 | 3.24 (82.4) | 2.57 (65.4) | / | 1.63 (41.3) | 10,000 (690) |

NOTE: All dimensions are shown for reference only and are subject to change. Other dimensions are available upon request.

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| Fittings |
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| Part Number Crossover Charts |

HQC Series

HQC Series Couplers

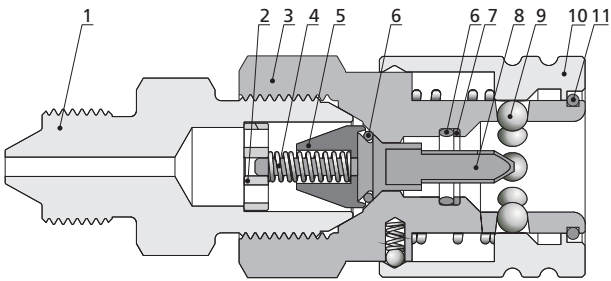
Features

- ⦿ Working pressure up to 30,000 psig (2068 bar)
- ⦿ Fluorocarbon FKM O-ring for operation from 0°F to 400°F (-17.8°C to 204°C); other O-ring materials available
- ⦿ Body material: S17400 Stainless Steel
- ⦿ Push-and-pull type coupler with check valve, capable of withstanding full pressure when disconnected
- ⦿ Flow coefficient (Cv) up to 0.66

Cautions

- ⦿ Do not disconnect or connect quick couplings when system is pressurized
- ⦿ Do not rotate quick couplings when connected
- ⦿ Take care to protect the nipple and coupler when disconnected

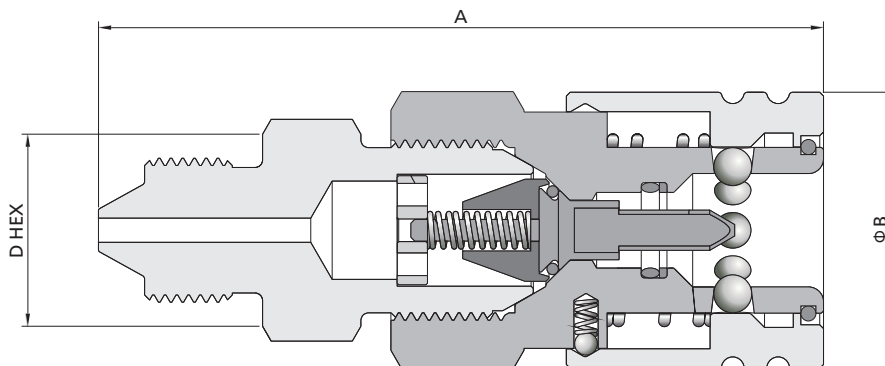
Standard Materials of Construction



| Item | Component | Material Grade |
|------|-------------------|-------------------------|
| 1 | <i>Body</i> | <i>S17400 SS</i> |
| 2 | <i>Seat</i> | <i>316 SS</i> |
| 3 | <i>Housing</i> | <i>S17400 SS</i> |
| 4 | <i>Spring</i> | <i>300 Series SS</i> |
| 5 | <i>Valve Head</i> | <i>316 SS</i> |
| 6 | <i>O-ring</i> | <i>Fluorocarbon FKM</i> |
| 7 | Retaining Ring | PTFE |
| 8 | <i>Valve Stem</i> | <i>316 SS</i> |
| 9 | Ball | Stainless Steel |
| 10 | Sleeve | 316 SS |
| 11 | Wire Ring | Stainless Steel |

Wetted component listed in italics.

Ordering Information and Dimensions



| |
|-------------------------------------|
| Fittings |
| Tubing |
| Quick Couplings |
| Line Filters |
| Valves |
| Sour Service Products |
| Subsea Valves |
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| Technical Information |
| Part Number Crossover Charts |

| Type | Ordering Number | Connection | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
|---------|-----------------|------------|----------------------|-------------|-------------|--------------------------------|
| | | | A | B | D | |
| Coupler | HQC4P-NS4-CP | NS4 | 3.48 (88.5) | 1.39 (35.4) | 1.00 (25.4) | 15,000 (1034) |
| | HQC4P-NS6-CP | NS6 | 3.48 (88.5) | 1.39 (35.4) | 1.00 (25.4) | 15,000 (1034) |
| | HQC4P-NS8-CP | NS8 | 3.68 (93.5) | 1.39 (35.4) | 1.00 (25.4) | 15,000 (1034) |
| | HQC4P-FNS4-CP | FNS4 | 3.17 (80.5) | 1.39 (35.4) | 1.00 (25.4) | 15,000 (1034) |
| | HQC4P-FNS6-CP | FNS6 | 3.27 (83.0) | 1.39 (35.4) | 1.13 (28.6) | 15,000 (1034) |
| | HQC4P-FNS8-CP | FNS8 | 3.56 (90.5) | 1.39 (35.4) | 1.38 (34.9) | 15,000 (1034) |
| | HQC4P-JM4-CP | JM4 | 3.48 (88.5) | 1.39 (35.4) | 1.00 (25.4) | 20,000 (1379) |
| | HQC4P-JM6-CP | JM6 | 3.48 (88.5) | 1.39 (35.4) | 1.00 (25.4) | 20,000 (1379) |
| | HQC4P-JM8-CP | JM8 | 3.58 (91.0) | 1.39 (35.4) | 1.00 (25.4) | 20,000 (1379) |
| | HQC4P-MM4-CP | MM4 | 3.62 (92.0) | 1.39 (35.4) | 1.00 (25.4) | 20,000 (1379) |
| | HQC4P-MM6-CP | MM6 | 3.76 (95.5) | 1.39 (35.4) | 1.00 (25.4) | 20,000 (1379) |
| | HQC4P-MM9-CP | MM9 | 3.95 (100.5) | 1.39 (35.4) | 1.00 (25.4) | 20,000 (1379) |
| | HQC4P-HM4-CP | HM4 | 3.54 (90.0) | 1.39 (35.4) | 1.00 (25.4) | 30,000 (2068) |
| | HQC4P-HM6-CP | HM6 | 3.80 (96.5) | 1.39 (35.4) | 1.00 (25.4) | 30,000 (2068) |
| | HQC4P-HM9-CP | HM9 | 3.98 (101.0) | 1.39 (35.4) | 1.19 (30.2) | 30,000 (2068) |
| | HQC4P-TM9-CP | TM9 | 3.43 (87.0) | 1.39 (35.4) | 1.00 (25.4) | 30,000 (2068) |
| | HQC4P-TM12-CP | TM12 | 3.56 (90.5) | 1.39 (35.4) | 1.00 (25.4) | 30,000 (2068) |
| | HQC4P-TM16-CP | TM16 | 3.56 (90.5) | 1.39 (35.4) | 1.00 (25.4) | 30,000 (2068) |

NOTE: All dimensions are shown for reference only and are subject to change. Other dimensions are available upon request.

Fittings

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Quick Couplings

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Tools and Installation Instructions

Technical Information

Part Number Crossover Charts

HQC Series Nipples with Check Valve

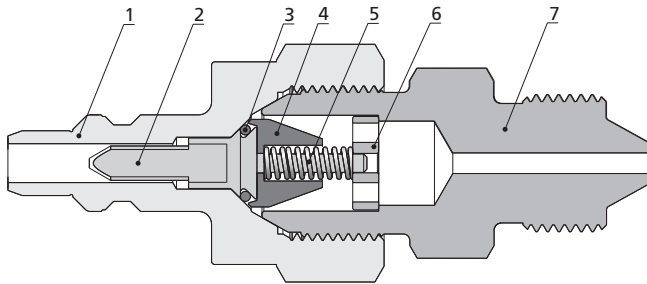
Features

- ⦿ Working pressure up to 30,000 psig (2068 bar)
- ⦿ Fluorocarbon FKM O-ring for operation from 0°F to 400°F (-17.8°C to 204°C); other O-ring materials available
- ⦿ Stem material: S17400 Stainless Steel
- ⦿ Push-and-pull type nipple with check valve, capable of withstanding full pressure when disconnected
- ⦿ Flow coefficient (Cv) up to 0.66

Cautions

- ⦿ Do not disconnect or connect quick couplings when system is pressurized
- ⦿ Do not rotate quick couplings when connected
- ⦿ Take care to protect the nipple and coupler when disconnected

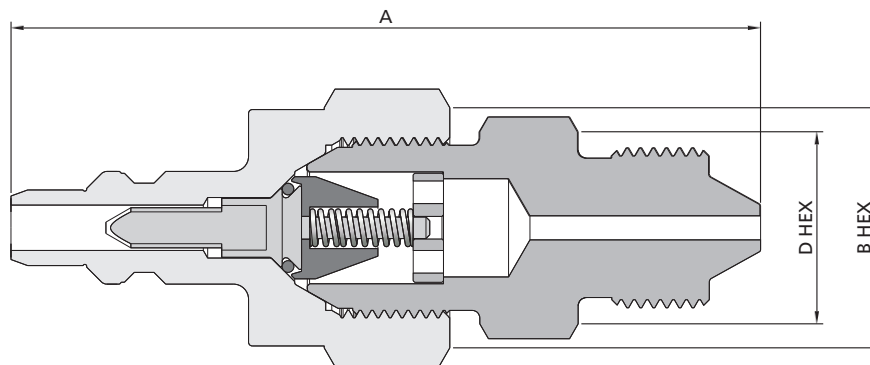
Standard Materials of Construction



| Item | Component | Material Grade |
|------|-------------------|-------------------------|
| 1 | <i>Stem</i> | <i>S17400 SS</i> |
| 2 | <i>Valve Stem</i> | <i>316 SS</i> |
| 3 | <i>O-ring</i> | <i>Fluorocarbon FKM</i> |
| 4 | <i>Valve Head</i> | <i>316 SS</i> |
| 5 | <i>Spring</i> | <i>300 Series SS</i> |
| 6 | <i>Seat</i> | <i>316 SS</i> |
| 7 | <i>Body</i> | <i>S17400</i> |

Wetted component listed in italics.

Ordering Information and Dimensions



| Type | Ordering Number | Connection | Dimensions, in. (mm) | | | Working Pressure psig (bar) |
|--------|-----------------|------------|----------------------|-------------|-------------|--------------------------------|
| | | | A | B | D | |
| Nipple | HQC4P-NS4-NP | NS4 | 3.52 (89.5) | 1.25 (31.8) | 1.00 (25.4) | 15,000 (1034) |
| | HQC4P-NS6-NP | NS6 | 3.52 (89.5) | 1.25 (31.8) | 1.00 (25.4) | 15,000 (1034) |
| | HQC4P-NS8-NP | NS8 | 3.70 (94.0) | 1.25 (31.8) | 1.00 (25.4) | 15,000 (1034) |
| | HQC4P-FNS4-NP | FNS4 | 3.19 (81.0) | 1.25 (31.8) | 1.00 (25.4) | 15,000 (1034) |
| | HQC4P-FNS6-NP | FNS6 | 3.31 (84.0) | 1.25 (31.8) | 1.13 (28.6) | 15,000 (1034) |
| | HQC4P-FNS8-NP | FNS8 | 3.58 (91.0) | 1.25 (31.8) | 1.38 (34.9) | 15,000 (1034) |
| | HQC4P-JM4-NP | JM4 | 3.50 (89.0) | 1.25 (31.8) | 1.00 (25.4) | 20,000 (1379) |
| | HQC4P-JM6-NP | JM6 | 3.50 (89.0) | 1.25 (31.8) | 1.00 (25.4) | 20,000 (1379) |
| | HQC4P-JM8-NP | JM8 | 3.43 (92.0) | 1.25 (31.8) | 1.00 (25.4) | 20,000 (1379) |
| | HQC4P-MM4-NP | MM4 | 3.64 (92.5) | 1.25 (31.8) | 1.00 (25.4) | 20,000 (1379) |
| | HQC4P-MM6-NP | MM6 | 3.80 (96.5) | 1.25 (31.8) | 1.00 (25.4) | 20,000 (1379) |
| | HQC4P-MM9-NP | MM9 | 3.98 (101.0) | 1.25 (31.8) | 1.00 (25.4) | 20,000 (1379) |
| | HQC4P-HM4-NP | HM4 | 3.58 (91.0) | 1.25 (31.8) | 1.00 (25.4) | 30,000 (2068) |
| | HQC4P-HM6-NP | HM6 | 3.84 (97.5) | 1.25 (31.8) | 1.00 (25.4) | 30,000 (2068) |
| | HQC4P-HM9-NP | HM9 | 4.02 (102.0) | 1.25 (31.8) | 1.19 (30.2) | 30,000 (2068) |
| | HQC4P-TM9-NP | TM9 | 3.46 (88.0) | 1.25 (31.8) | 1.00 (25.4) | 30,000 (2068) |
| | HQC4P-TM12-NP | TM12 | 3.58 (91.0) | 1.25 (31.8) | 1.00 (25.4) | 30,000 (2068) |
| | HQC4P-TM16-NP | TM16 | 3.60 (91.5) | 1.25 (31.8) | 1.00 (25.4) | 30,000 (2068) |

NOTE: All dimensions are shown for reference only and are subject to change. Other dimensions are available upon request.

Fittings

Tubing

Quick Couplings

Line Filters

Valves

Sour Service
Products

Subsea Valves

Tools and
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Crossover Charts

HQC Series Nipples without Check Valve

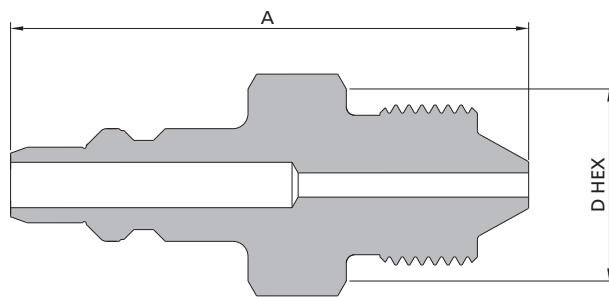
Features

- ⦿ Working pressure up to 30,000 psig (2068 bar)
- ⦿ Stem material: S17400 Stainless Steel
- ⦿ Push-and-pull type nipple without check valve, incapable of withstanding any pressure when disconnected
- ⦿ Flow coefficient (Cv) up to 0.66

Cautions

- ⦿ Do not disconnect or connect quick couplings when system is pressurized
- ⦿ Do not rotate quick couplings when connected
- ⦿ Take care to protect the nipple and coupler when disconnected

Ordering Information and Dimensions



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| Technical Information |
| Part Number Crossover Charts |

| Type | Ordering Number | Connection | Dimensions, in. (mm) | | Working Pressure psig (bar) |
|--------|-----------------|------------|----------------------|-------------|--------------------------------|
| | | | A | D | |
| Nipple | HQC4P-NS4-NPO | NS4 | 2.25 (57.1) | 1.00 (25.4) | 15,000 (1034) |
| | HQC4P-NS6-NPO | NS6 | 2.25 (57.1) | 1.00 (25.4) | 15,000 (1034) |
| | HQC4P-NS8-NPO | NS8 | 2.44 (62.0) | 1.00 (25.4) | 15,000 (1034) |
| | HQC4P-FNS4-NPO | FNS4 | 2.05 (52.0) | 1.00 (25.4) | 15,000 (1034) |
| | HQC4P-FNS6-NPO | FNS6 | 2.09 (53.0) | 1.13 (28.6) | 15,000 (1034) |
| | HQC4P-FNS8-NPO | FNS8 | 2.36 (60.0) | 1.38 (34.9) | 15,000 (1034) |
| | HQC4P-JM4-NPO | JM4 | 2.24 (56.9) | 1.00 (25.4) | 20,000 (1379) |
| | HQC4P-JM6-NPO | JM6 | 2.24 (57.0) | 1.00 (25.4) | 20,000 (1379) |
| | HQC4P-JM8-NPO | JM8 | 2.35 (59.6) | 1.00 (25.4) | 20,000 (1379) |
| | HQC4P-MM4-NPO | MM4 | 2.37 (60.3) | 1.00 (25.4) | 20,000 (1379) |
| | HQC4P-MM6-NPO | MM6 | 2.52 (64.0) | 1.00 (25.4) | 20,000 (1379) |
| | HQC4P-MM9-NPO | MM9 | 2.69 (68.3) | 1.00 (25.4) | 20,000 (1379) |
| | HQC4P-HM4-NPO | HM4 | 2.31 (58.7) | 1.00 (25.4) | 30,000 (2068) |
| | HQC4P-HM6-NPO | HM6 | 2.56 (65.1) | 1.00 (25.4) | 30,000 (2068) |
| | HQC4P-HM9-NPO | HM9 | 2.81 (71.4) | 1.19 (30.2) | 30,000 (2068) |
| | HQC4P-TM9-NPO | TM9 | 2.19 (55.6) | 1.00 (25.4) | 30,000 (2068) |
| | HQC4P-TM12-NPO | TM12 | 2.32 (58.9) | 1.00 (25.4) | 30,000 (2068) |
| | HQC4P-TM16-NPO | TM16 | 2.33 (59.2) | 1.00 (25.4) | 30,000 (2068) |

NOTE: All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

Fittings

Tubing

Quick Couplings

Line Filters

Valves

Sour Service Products

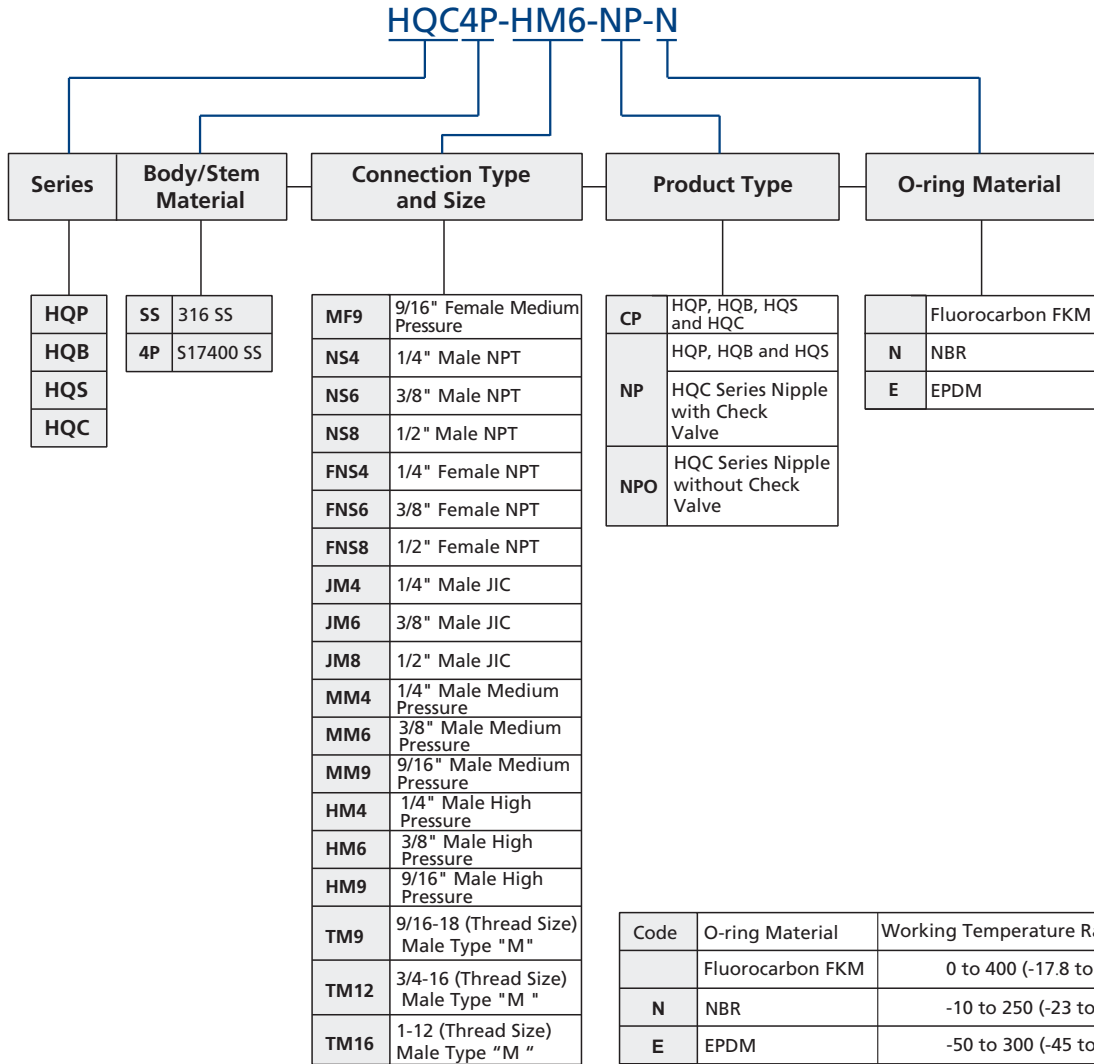
Subsea Valves

Tools and Installation Instructions

Technical Information

Part Number Crossover Charts

Ordering Number Description



- NOTES: 1. For more details regarding Medium/High Pressure connections, please see **Connection Information** on I-02.
 2. "Ordering Number Description" is a reference to understand the combination rules of FITOK Product Part Number. Not all combinations are available.

Line Filters

Line Filters



D-02

Line Filters

- 10FD, 10FC Series Line Filters: 10,000 psig (690 bar)
- 15FD, 15FC Series Line Filters: 15,000 psig (1034 bar)
- 20FD, 20FC Series Line Filters: 20,000 psig (1379 bar)
- 60FD, 60FC Series Line Filters: 60,000 psig (4137 bar)



| |
|-------------------------------------|
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| Tubing |
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| Line Filters |
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Contents

10FD Series

Dual-Disc Line Filters D-04

10FC Series

Cup-Type Line Filters D-05

15FD Series

Dual-Disc Line Filters D-06

15FC Series

Cup-Type Line Filters D-08

20FD Series

Dual-Disc Line Filters D-10

20FC Series

Cup-Type Line Filters D-11

60FD Series

Dual-Disc Line Filters D-12

60FC Series

Cup-Type Line Filters D-13

Ordering Number Description

D-14

Fittings

Tubing

Quick Couplings

Line Filters

Valves

Sour Service Products

Subsea Valves

Tools and Installation Instructions

Technical Information

Part Number Crossover Charts

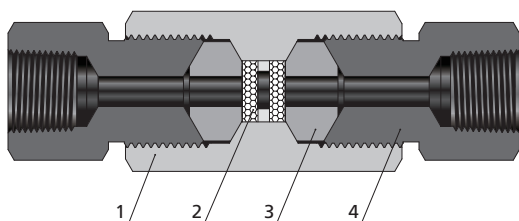
10FD Series: 10,000 psig (690 bar)

Dual-Disc Line Filters

Features

- ⦿ Working temperature range: -60°F to 400°F (-50°C to 204°C)
- ⦿ 3/4" and 1" female NPT available
- ⦿ Dual-disc design allows the upstream filter element to trap the large particulate contaminants before they can reach and clog the smaller pore-size downstream element
- ⦿ Downstream/upstream element nominal pore size: 5/10, 10/35 and 35/65 μm; other element combinations available on request
- ⦿ Easy to replace filter elements
- ⦿ Pressure differential not to exceed 1000 psig (69 bar) in a flowing condition

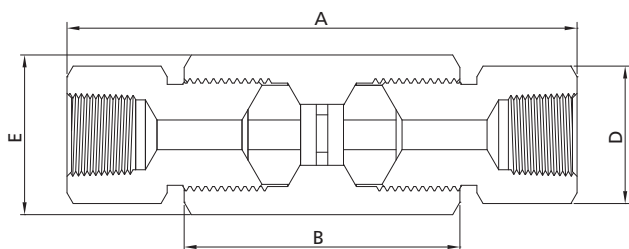
Standard Materials of Construction



| Item | Component | Material Grade |
|------|-----------------------|----------------------|
| 1 | <i>Body</i> | 316 SS |
| 2 | <i>Filter Element</i> | Sintered 316 SS |
| 3 | <i>Cover</i> | 316 SS |
| 4 | <i>Gland Nut</i> | 316 SS |
| | Lubricant | Molybdenum disulfide |

Wetted component listed in italics.

Ordering Information and Dimensions



| Ordering Number | Connection | Orifice in. (mm) | Nominal Pore Size (μm) | Effective Filter Element Area in. ² (mm ²) | Dimensions, in. (mm) | | | | Working Pressure psig (bar) |
|-------------------|------------|------------------|------------------------|---|----------------------|-------------|-------------|-------------|-----------------------------|
| | | | | | A | B | D (Hex) | E (Hex) | |
| 10FDSS-FNS12-0510 | FNS12 | 0.36 (9.1) | 5/10 | 0.44 (286.5) | 5.59 (142.0) | 3.06 (77.8) | 1.50 (38.1) | 1.75 (44.5) | 10,000 (690) |
| 10FDSS-FNS12-1035 | | | 10/35 | | | | | | |
| 10FDSS-FNS12-3565 | | | 35/65 | | | | | | |
| 10FDSS-FNS16-0510 | FNS16 | 0.56 (14.3) | 5/10 | 0.89 (572.6) | 6.66 (169.1) | 3.63 (92.1) | 1.75 (44.5) | 1.88 (47.7) | 10,000 (690) |
| 10FDSS-FNS16-1035 | | | 10/35 | | | | | | |
| 10FDSS-FNS16-3565 | | | 35/65 | | | | | | |

NOTES: 1. The element nominal pore size is calculated from measured minimum pressure required to force the first bubble of gas through the test filter element (under the standardized conditions) impregnated with a liquid.
 2. Dimensions are for reference only and are subject to change.

| |
|-------------------------------------|
| Fittings |
| Tubing |
| Quick Couplings |
| Line Filters |
| Valves |
| Sour Service Products |
| Subsea Valves |
| Tools and Installation Instructions |
| Technical Information |
| Part Number Crossover Charts |

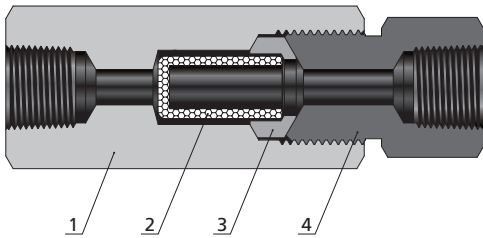
10FC Series: 10,000 psig (690 bar)

Cup-Type Line Filters

Features

- Working temperature range: -60°F to 400°F (-50°C to 204°C)
- 3/4" and 1" female NPT available
- Cup design to offer about six times the effective filter area as compared to disc-type units, and recommended in systems requiring both maximum filter surface area and high flow rates
- Nominal pore sizes for filter elements: 5, 35 and 65 μm
- Easy to replace filter elements
- Pressure differential not to exceed 1000 psig (69 bar) in a flowing condition

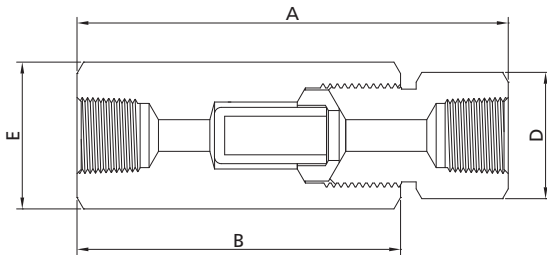
Standard Materials of Construction



| Item | Component | Material Grade |
|------|-----------------------|------------------------|
| 1 | <i>Body</i> | 316 SS |
| 2 | <i>Filter Element</i> | <i>Sintered 316 SS</i> |
| 3 | <i>Cover</i> | 316 SS |
| 4 | <i>Gland Nut</i> | 316 SS |
| | Lubricant | Molybdenum disulfide |

Wetted component listed in italics.

Ordering Information and Dimensions



| Ordering Number | Connection | Orifice in. (mm) | Nominal Pore Size (μm) | Effective Filter Element Area in. ² (mm ²) | Dimensions, in. (mm) | | | | Working Pressure psig (bar) |
|-----------------|------------|------------------|-------------------------------------|---|----------------------|--------------|-------------|-------------|-----------------------------|
| | | | | | A | B | D (Hex) | E (Hex) | |
| 10FCSS-FNS12-5 | FNS12 | 0.52 (13.1) | 5 | 2.65 (1709.7) | 5.14 (130.6) | 3.87 (98.4) | 1.50 (38.1) | 1.75 (44.5) | 10,000 (690) |
| 10FCSS-FNS12-35 | | | 35 | | | | | | |
| 10FCSS-FNS12-65 | | | 65 | | | | | | |
| 10FCSS-FNS16-5 | FNS16 | 0.69 (17.5) | 5 | 5.00 (3225.8) | 6.39 (162.3) | 4.87 (123.8) | 1.75 (44.5) | 1.88 (47.7) | 10,000 (690) |
| 10FCSS-FNS16-35 | | | 35 | | | | | | |
| 10FCSS-FNS16-65 | | | 65 | | | | | | |

- NOTES: 1. The element nominal pore size is calculated from measured minimum pressure required to force the first bubble of gas through the test filter element (under the standardized conditions) impregnated with a liquid.
2. Dimensions are for reference only and are subject to change.

15FD Series: 15,000 psig (1034 bar)

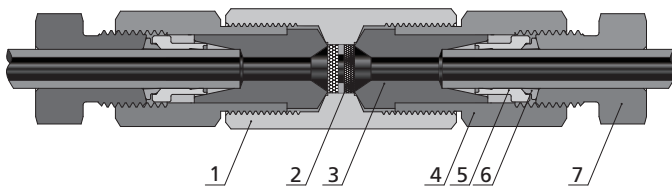
Dual-Disc Line Filters

Features

- ⦿ Working temperature range:
 Tubing connection: -60°F to 660°F (-50°C to 350°C)
 Pipe connection: -60°F to 400°F (-50°C to 204°C)
- ⦿ Connection types and sizes:
 1/8", 1/4", 3/8" and 1/2" O.D. tubing
 1/8", 1/4", 3/8" and 1/2" Female NPT
- ⦿ Dual-disc design allows the upstream filter element to trap the large particulate contaminants before they can reach and clog the smaller pore-size downstream element
- ⦿ Downstream/upstream element nominal pore size: 5/10, 10/35 and 35/65 µm; other element combinations available on request
- ⦿ Easy to replace filter elements
- ⦿ Pressure differential not to exceed 1000 psig (69 bar) in a flowing condition

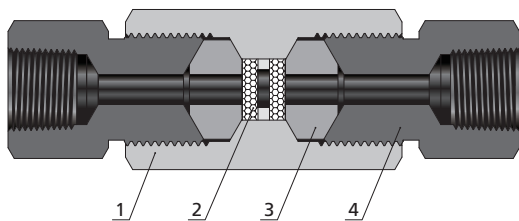
Standard Materials of Construction

Tubing Connection



| Item | Component | Material Grade |
|------|-----------------------|----------------------|
| 1 | <i>Body</i> | 316 SS |
| 2 | <i>Filter Element</i> | Sintered 316 SS |
| 3 | <i>Cover</i> | 316 SS |
| 4 | <i>Gland Nut</i> | 316 SS |
| 5 | <i>Front Ferrule</i> | 316 SS |
| 6 | <i>Rear Ferrule</i> | 316 SS |
| 7 | <i>Nut</i> | 316 SS |
| | Lubricant | Molybdenum disulfide |

Pipe Connection



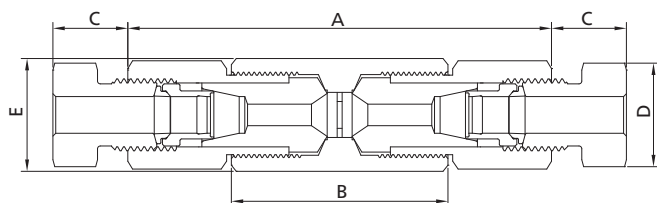
| Item | Component | Material Grade |
|------|-----------------------|----------------------|
| 1 | <i>Body</i> | 316 SS |
| 2 | <i>Filter Element</i> | Sintered 316 SS |
| 3 | <i>Cover</i> | 316 SS |
| 4 | <i>Gland Nut</i> | 316 SS |
| | Lubricant | Molybdenum disulfide |

Wetted component listed in italics.

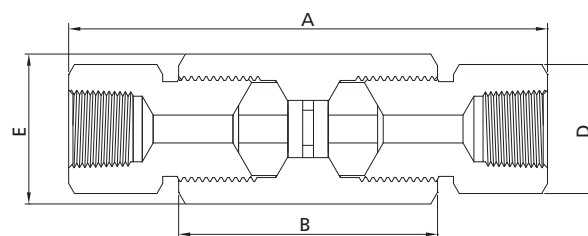
| |
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| Fittings |
| Tubing |
| Quick Couplings |
| Line Filters |
| Valves |
| Subsea Valves |
| Tools and Installation Instructions |
| Technical Information |
| Part Number Crossover Charts |

Ordering Information and Dimensions

Tubing Connection



Pipe Connection



| Ordering Number | Connection | Orifice in. (mm) | Nominal Pore Size (μm) | Effective Filter Element Area in. ² (mm ²) | Dimensions, in. (mm) | | | | | Working Pressure psig (bar) |
|------------------|------------|---------------------|---|---|----------------------|----------------|----------------|----------------|----------------|--------------------------------|
| | | | | | A | B | C | D (Hex) | E (Hex) | |
| 15FDSS-DFF2-0510 | DFF2 | 0.09 (2.4) | 5/10 | 0.06 (38.7) | 2.38 (60.5) | 1.50 (38.1) | 0.44 (11.2) | 0.37 (9.5) | 0.63 (15.9) | 15,000 (1034) |
| 15FDSS-DFF2-1035 | | | 10/35 | | | | | | | |
| 15FDSS-DFF2-3565 | | | 35/65 | | | | | | | |
| 15FDSS-DFF4-0510 | DFF4 | 0.13 (3.2) | 5/10 | 0.15 (96.8) | 3.17 (80.5) | 2.00 (50.8) | 0.52 (13.3) | 0.63 (15.9) | 0.81 (20.6) | 15,000 (1034) |
| 15FDSS-DFF4-1035 | | | 10/35 | | | | | | | |
| 15FDSS-DFF4-3565 | | | 35/65 | | | | | | | |
| 15FDSS-DFF6-0510 | DFF6 | 0.13 (3.2) | 5/10 | 0.15 (96.8) | 3.36 (85.4) | 2.19 (55.6) | 0.54 (13.6) | 0.75 (19.1) | 1.00 (25.4) | 15,000 (1034) |
| 15FDSS-DFF6-1035 | | | 10/35 | | | | | | | |
| 15FDSS-DFF6-3565 | | | 35/65 | | | | | | | |
| 15FDSS-DFF8-0510 | DFF8 | 0.19 (4.8) | 5/10 | 0.25 (161.3) | 4.30 (109.1) | 2.94 (74.6) | 0.60 (15.3) | 0.94 (23.8) | 1.19 (30.2) | 15,000 (1034) |
| 15FDSS-DFF8-1035 | | | 10/35 | | | | | | | |
| 15FDSS-DFF8-3565 | | | 35/65 | | | | | | | |
| 15FDSS-FNS2-0510 | FNS2 | 0.13 (3.2) | 5/10 | 0.06 (38.7) | 2.79 (70.8) | 1.50 (38.1) | — | 0.63 (15.9) | 0.63 (15.9) | 15,000 (1034) |
| 15FDSS-FNS2-1035 | | | 10/35 | | | | | | | |
| 15FDSS-FNS2-3565 | | | 35/65 | | | | | | | |
| 15FDSS-FNS4-0510 | FNS4 | 0.19 (4.8) | 5/10 | 0.15 (96.8) | 4.15 (105.5) | 2.19 (55.6) | — | 0.94 (23.8) | 1.00 (25.4) | 15,000 (1034) |
| 15FDSS-FNS4-1035 | | | 10/35 | | | | | | | |
| 15FDSS-FNS4-3565 | | | 35/65 | | | | | | | |
| 15FDSS-FNS6-0510 | FNS6 | 0.19 (4.8) | 5/10 | 0.15 (96.8) | 4.15 (105.5) | 2.19 (55.6) | — | 1.13 (28.6) | 1.13 (28.6) | 15,000 (1034) |
| 15FDSS-FNS6-1035 | | | 10/35 | | | | | | | |
| 15FDSS-FNS6-3565 | | | 35/65 | | | | | | | |
| 15FDSS-FNS8-0510 | FNS8 | 0.31 (7.9) | 5/10 | 0.25 (161.3) | 5.27 (133.8) | 2.94 (74.6) | — | 1.38 (35.0) | 1.38 (35.0) | 15,000 (1034) |
| 15FDSS-FNS8-1035 | | | 10/35 | | | | | | | |
| 15FDSS-FNS8-3565 | | | 35/65 | | | | | | | |

- NOTES: 1. The element nominal pore size is calculated from measured minimum pressure required to force the first bubble of gas through the test filter element (under the standardized conditions) impregnated with a liquid.
2. Dimensions are for reference only and are subject to change.

15FC Series: 15,000 psig (1034 bar)

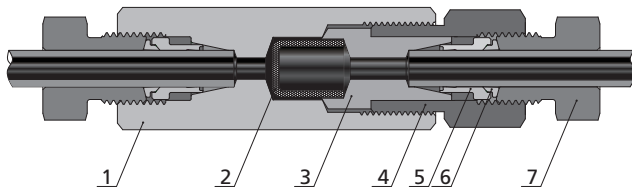
Cup-Type Line Filters

Features

- ⦿ Working temperature range:
 Tubing connection: -60°F to 660°F (-50°C to 350°C)
 Pipe connection: -60°F to 400°F (-50°C to 204°C)
- ⦿ Connection types and sizes:
 1/8", 1/4", 3/8" and 1/2" O.D. tubing
 1/8", 1/4", 3/8" and 1/2" Female NPT
- ⦿ Cup design to offer about six times the effective filter area as compared to disc-type units, and recommended in systems requiring both maximum filter surface area and high flow rates
- ⦿ Nominal pore sizes for filter elements: 5, 35 and 65 μm
- ⦿ Easy to replace filter elements
- ⦿ Pressure differential not to exceed 1000 psig (69 bar) in a flowing condition

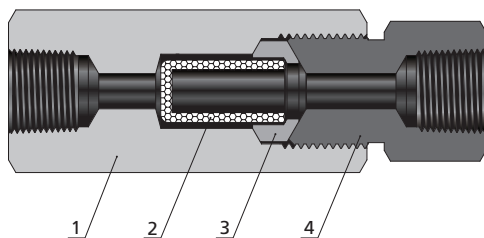
Standard Materials of Construction

Tubing Connection



| Item | Component | Material Grade |
|------|-----------------------|------------------------|
| 1 | <i>Body</i> | 316 SS |
| 2 | <i>Filter Element</i> | <i>Sintered 316 SS</i> |
| 3 | <i>Cover</i> | 316 SS |
| 4 | <i>Gland Nut</i> | 316 SS |
| 5 | <i>Front Ferrule</i> | 316 SS |
| 6 | <i>Rear Ferrule</i> | 316 SS |
| 7 | <i>Nut</i> | 316 SS |
| | Lubricant | Molybdenum disulfide |

Pipe Connection



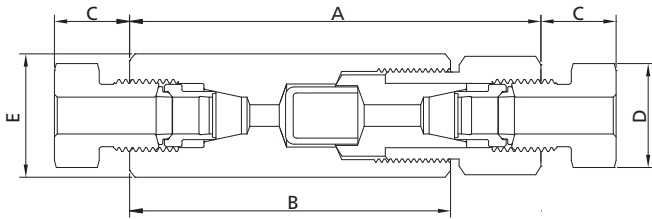
| Item | Component | Material Grade |
|------|-----------------------|------------------------|
| 1 | <i>Body</i> | 316 SS |
| 2 | <i>Filter Element</i> | <i>Sintered 316 SS</i> |
| 3 | <i>Cover</i> | 316 SS |
| 4 | <i>Gland Nut</i> | 316 SS |
| | Lubricant | Molybdenum disulfide |

Wetted component listed in italics.

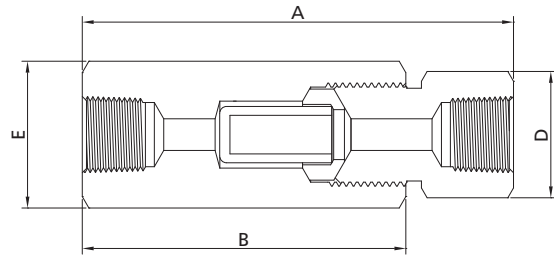
| |
|-------------------------------------|
| Fittings |
| Tubing |
| Quick Couplings |
| Line Filters |
| Valves |
| Subsea Valves |
| Tools and Installation Instructions |
| Technical Information |
| Part Number Crossover Charts |

Ordering Information and Dimensions

Tubing Connection



Pipe Connection



| Ordering Number | Connection | Orifice in. (mm) | Nominal Pore Size (µm) | Effective Filter Element Area in. ² (mm ²) | Dimensions, in. (mm) | | | | | Working Pressure psig (bar) |
|-----------------|------------|------------------|------------------------|---|----------------------|----------------|----------------|----------------|----------------|-----------------------------|
| | | | | | A | B | C | D (Hex) | E (Hex) | |
| 15FCSS-DFF4-5 | DFF4 | 0.19 (4.8) | 5 | 0.81 (522.6) | 3.34 (84.8) | 2.72 (69.0) | 0.52 (13.3) | 0.63 (15.9) | 0.81 (20.6) | 15,000 (1034) |
| 15FCSS-DFF4-35 | | | 35 | | | | | | | |
| 15FCSS-DFF4-65 | | | 65 | | | | | | | |
| 15FCSS-DFF6-5 | DFF6 | 0.31 (7.9) | 5 | 0.81 (522.6) | 3.51 (89.2) | 2.95 (75.0) | 0.54 (13.6) | 0.75 (19.1) | 1.00 (25.4) | 15,000 (1034) |
| 15FCSS-DFF6-35 | | | 35 | | | | | | | |
| 15FCSS-DFF6-65 | | | 65 | | | | | | | |
| 15FCSS-DFF8-5 | DFF8 | 0.44 (11.1) | 5 | 1.53 (987.1) | 4.30 (109.2) | 3.62 (92.0) | 0.60 (15.3) | 0.94 (23.8) | 1.38 (35.0) | 15,000 (1034) |
| 15FCSS-DFF8-35 | | | 35 | | | | | | | |
| 15FCSS-DFF8-65 | | | 65 | | | | | | | |
| 15FCSS-FNS2-5 | FNS2 | 0.13 (3.2) | 5 | 0.38 (245.0) | 2.58 (65.6) | 1.94 (49.2) | — | 0.63 (15.9) | 0.63 (15.9) | 15,000 (1034) |
| 15FCSS-FNS2-35 | | | 35 | | | | | | | |
| 15FCSS-FNS2-65 | | | 65 | | | | | | | |
| 15FCSS-FNS4-5 | FNS4 | 0.31 (7.9) | 5 | 0.81 (522.6) | 3.66 (93.0) | 2.69 (68.3) | — | 0.94 (23.8) | 1.00 (25.4) | 15,000 (1034) |
| 15FCSS-FNS4-35 | | | 35 | | | | | | | |
| 15FCSS-FNS4-65 | | | 65 | | | | | | | |
| 15FCSS-FNS6-5 | FNS6 | 0.31 (7.9) | 5 | 0.81 (522.6) | 3.66 (93.0) | 2.69 (68.3) | — | 1.13 (28.6) | 1.13 (28.6) | 15,000 (1034) |
| 15FCSS-FNS6-35 | | | 35 | | | | | | | |
| 15FCSS-FNS6-65 | | | 65 | | | | | | | |
| 15FCSS-FNS8-5 | FNS8 | 0.44 (11.1) | 5 | 1.53 (987.1) | 4.55 (115.6) | 3.37 (85.7) | — | 1.38 (35.0) | 1.38 (35.0) | 15,000 (1034) |
| 15FCSS-FNS8-35 | | | 35 | | | | | | | |
| 15FCSS-FNS8-65 | | | 65 | | | | | | | |

- NOTES: 1. The element nominal pore size is calculated from measured minimum pressure required to force the first bubble of gas through the test filter element (under the standardized conditions) impregnated with a liquid.
2. Dimensions are for reference only and are subject to change.

Fittings

Tubing

Quick Couplings

Line Filters

Valves

Sour Service Products

Subsea Valves

Tools and Installation Instructions

Technical Information

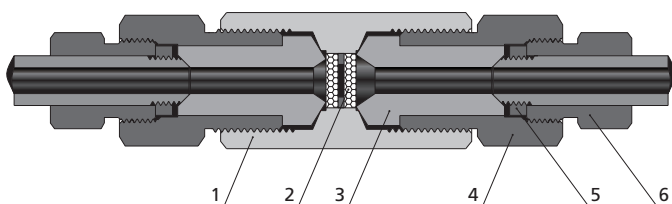
Part Number Crossover Charts

20FD Series: 20,000 psig (1379 bar) Dual-Disc Line Filters

Features

- Working temperature range: -60°F to 660°F (-50°C to 350°C)
- Tubing size available in 9/16"
- Dual-disc design allows the upstream filter element to trap the large particulate contaminants before they can reach and clog the smaller pore-size downstream element
- Downstream/upstream element nominal pore size: 5/10, 10/35 and 35/65 µm; other element combinations available on request
- Easy to replace filter elements
- Pressure differential not to exceed 1000 psig (69 bar) in a flowing condition

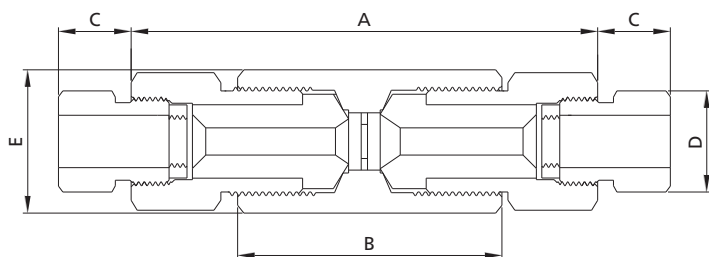
Standard Materials of Construction



| Item | Component | Material Grade |
|-----------|-----------------------|----------------------|
| 1 | <i>Body</i> | 316 SS |
| 2 | <i>Filter Element</i> | Sintered 316 SS |
| 3 | <i>Cover</i> | 316 SS |
| 4 | Gland Nut | 316 SS |
| 5 | Collar | 316 SS |
| 6 | Gland | 316 SS |
| Lubricant | | Molybdenum disulfide |

Wetted component listed in italics.

Ordering Information and Dimensions



| Ordering Number | Connection | Orifice in. (mm) | Nominal Pore Size (µm) | Effective Filter Element Area in. ² (mm ²) | Dimensions, in. (mm) | | | | | Working Pressure psig (bar) |
|-----------------|------------|------------------|------------------------|---|----------------------|-------------|-------------|-------------|-------------|-----------------------------|
| | | | | | A | B | C | D (Hex) | E (Hex) | |
| 20FDSS-MF9-0510 | MF9 | 0.31 (7.9) | 5/10 | 0.25 (161.3) | 4.30 (109.2) | 2.94 (74.6) | 0.55 (14.0) | 0.94 (23.8) | 1.38 (35.0) | 20,000 (1379) |
| 20FDSS-MF9-1035 | | | 10/35 | | | | | | | |
| 20FDSS-MF9-3565 | | | 35/65 | | | | | | | |

- NOTES: 1. The element nominal pore size is calculated from measured minimum pressure required to force the first bubble of gas through the test filter element (under the standardized conditions) impregnated with a liquid.
2. Dimensions are for reference only and are subject to change.

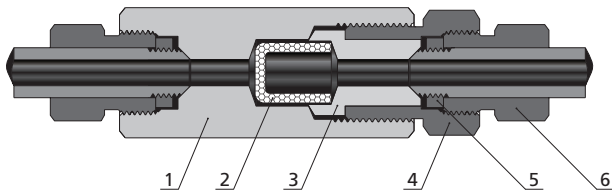
20FC Series: 20,000 psig (1379 bar)

Cup-Type Line Filters

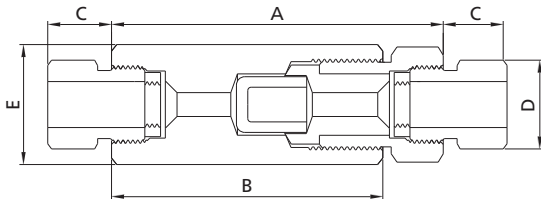
Features

- Working temperature range: -60°F to 660°F (-50°C to 350°C)
- Tubing sizes available in 1/4", 3/8", 9/16", 3/4" and 1"
- Cup design to offer about six times the effective filter area as compared to disc-type units, and recommended in systems requiring both maximum filter surface area and high flow rates
- Nominal pore sizes for filter elements: 5, 35 and 65 μm
- Easy to replace filter elements
- Pressure differential not to exceed 1000 psig (69 bar) in a flowing condition

Standard Materials of Construction



Ordering Information and Dimensions



| Item | Component | Material Grade |
|-----------|----------------|----------------------|
| 1 | Body | 316 SS |
| 2 | Filter Element | Sintered 316 SS |
| 3 | Cover | 316 SS |
| 4 | Gland Nut | 316 SS |
| 5 | Collar | 316 SS |
| 6 | Gland | 316 SS |
| Lubricant | | Molybdenum disulfide |

Wetted component listed in italics.

| Ordering Number | Connection | Orifice in. (mm) | Nominal Pore Size (μm) | Effective Filter Element Area in. ² (mm ²) | Dimensions, in. (mm) | | | | | Working Pressure psig (bar) |
|-----------------|------------|------------------|-------------------------------------|---|----------------------|--------------|-------------|-------------|-------------|-----------------------------|
| | | | | | A | B | C | D (Hex) | E (Hex) | |
| 20FCSS-MF4-5 | MF4 | 0.13 (3.2) | 5 | 0.81 (522.6) | 2.94 (74.1) | 2.50 (63.5) | 0.38 (9.7) | 0.50 (12.7) | 0.81 (20.6) | 20,000 (1379) |
| 20FCSS-MF4-35 | | | 35 | | | | | | | |
| 20FCSS-MF4-65 | | | 65 | | | | | | | |
| 20FCSS-MF6-5 | MF6 | 0.22 (5.5) | 5 | 0.81 (522.6) | 3.12 (79.3) | 2.62 (66.6) | 0.44 (11.2) | 0.63 (15.9) | 1.00 (25.4) | 20,000 (1379) |
| 20FCSS-MF6-35 | | | 35 | | | | | | | |
| 20FCSS-MF6-65 | | | 65 | | | | | | | |
| 20FCSS-MF9-5 | MF9 | 0.36 (9.1) | 5 | 1.53 (987.1) | 4.18 (106.2) | 3.50 (88.9) | 0.55 (14.0) | 0.94 (23.8) | 1.38 (35.0) | 20,000 (1379) |
| 20FCSS-MF9-35 | | | 35 | | | | | | | |
| 20FCSS-MF9-65 | | | 65 | | | | | | | |
| 20FCSS-MF12-5 | MF12 | 0.52 (13.1) | 5 | 2.65 (1709.7) | 5.50 (139.7) | 4.75 (120.7) | 0.60 (15.2) | 1.19 (30.2) | 1.75 (44.5) | 20,000 (1379) |
| 20FCSS-MF12-35 | | | 35 | | | | | | | |
| 20FCSS-MF12-65 | | | 65 | | | | | | | |
| 20FCSS-MF16-5 | MF16 | 0.69 (17.5) | 5 | 5.00 (3225.8) | 6.62 (168.2) | 5.75 (146.1) | 0.74 (18.7) | 1.38 (35.0) | 2.12 (54.0) | 20,000 (1379) |
| 20FCSS-MF16-35 | | | 35 | | | | | | | |
| 20FCSS-MF16-65 | | | 65 | | | | | | | |

- NOTES: 1. The element nominal pore size is calculated from measured minimum pressure required to force the first bubble of gas through the test filter element (under the standardized conditions) impregnated with a liquid.
2. Dimensions are for reference only and are subject to change.

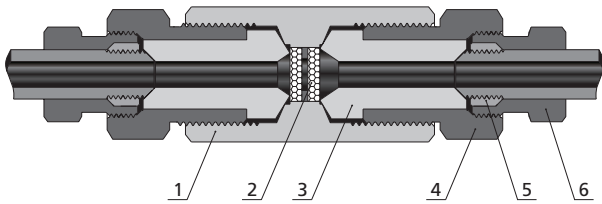
60FD Series: 60,000 psig (4137 bar)

Dual-Disc Line Filters

Features

- ⦿ Working temperature range: -60°F to 660°F (-50°C to 350°C)
- ⦿ Tubing sizes available in 1/4", 3/8" and 9/16"
- ⦿ Dual-disc design allows the upstream filter element to trap the large particulate contaminants before they can reach and clog the smaller pore-size downstream element
- ⦿ Downstream/upstream element nominal pore size: 5/10, 10/35 and 35/65 µm; other element combinations available on request
- ⦿ Easy to replace filter elements
- ⦿ Pressure differential not to exceed 1000 psig (69 bar) in a flowing condition

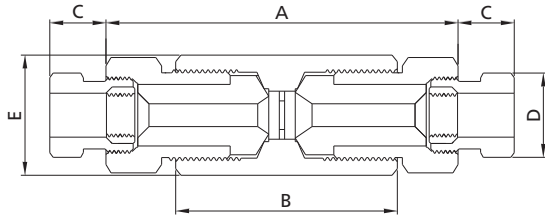
Standard Materials of Construction



| Item | Component | Material Grade |
|------|-----------------------|----------------------|
| 1 | <i>Body</i> | 316 SS |
| 2 | <i>Filter Element</i> | Sintered 316 SS |
| 3 | <i>Cover</i> | 316 SS |
| 4 | Gland Nut | 316 SS |
| 5 | Collar | 316 SS |
| 6 | Gland | 316 SS |
| | Lubricant | Molybdenum disulfide |

Wetted component listed in italics.

Ordering Information and Dimensions



| Ordering Number | Connection | Orifice in. (mm) | Nominal Pore Size (µm) | Effective Filter Element Area in. ² (mm ²) | Dimensions, in. (mm) | | | | | Working Pressure psig (bar) |
|-----------------|------------|------------------|------------------------|---|----------------------|-------------|-------------|-------------|-------------|-----------------------------|
| | | | | | A | B | C | D (Hex) | E (Hex) | |
| 60FDSS-HF4-0510 | HF4 | 0.09 (2.4) | 5/10 | 0.07 (45.2) | 4.73 (120.1) | 3.00 (76.2) | 0.47 (11.9) | 0.63 (15.9) | 1.19 (30.2) | 60,000 (4137) |
| 60FDSS-HF4-1035 | | | 10/35 | | | | | | | |
| 60FDSS-HF4-3565 | | | 35/65 | | | | | | | |
| 60FDSS-HF6-0510 | HF6 | 0.13 (3.2) | 5/10 | 0.07 (45.2) | 5.12 (130.2) | 3.00 (76.2) | 0.61 (15.8) | 0.75 (19.1) | 1.19 (30.2) | 60,000 (4137) |
| 60FDSS-HF6-1035 | | | 10/35 | | | | | | | |
| 60FDSS-HF6-3565 | | | 35/65 | | | | | | | |
| 60FDSS-HF9-0510 | HF9 | 0.19 (4.8) | 5/10 | 0.15 (96.8) | 5.81 (147.6) | 3.38 (85.9) | 0.95 (24.1) | 1.19 (30.2) | 1.50 (38.1) | 60,000 (4137) |
| 60FDSS-HF9-1035 | | | 10/35 | | | | | | | |
| 60FDSS-HF9-3565 | | | 35/65 | | | | | | | |

- NOTES: 1. The element nominal pore size is calculated from measured minimum pressure required to force the first bubble of gas through the test filter element (under the standardized conditions) impregnated with a liquid.
 2. Dimensions are for reference only and are subject to change.

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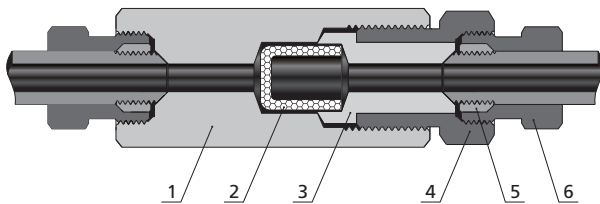
60FC Series: 60,000 psig (4137 bar)

Cup-Type Line Filters

Features

- Working temperature range: -60°F to 660°F (-50°C to 350°C)
- Tubing sizes available in 1/4", 3/8" and 9/16"
- Cup design to offer about six times the effective filter area as compared to disc-type units, and recommended in systems requiring both maximum filter surface area and high flow rates
- Nominal pore sizes for filter elements: 5, 35 and 65 μm
- Easy to replace filter elements
- Pressure differential not to exceed 1000 psig (69 bar) in a flowing condition

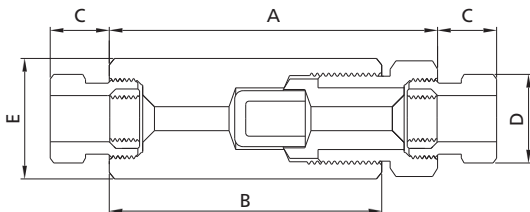
Standard Materials of Construction



| Item | Component | Material Grade |
|------|-----------------------|----------------------|
| 1 | <i>Body</i> | 316 SS |
| 2 | <i>Filter Element</i> | Sintered 316 SS |
| 3 | <i>Cover</i> | 316 SS |
| 4 | <i>Gland Nut</i> | 316 SS |
| 5 | <i>Collar</i> | 316 SS |
| 6 | <i>Gland</i> | 316 SS |
| | Lubricant | Molybdenum disulfide |

Wetted component listed in italics.

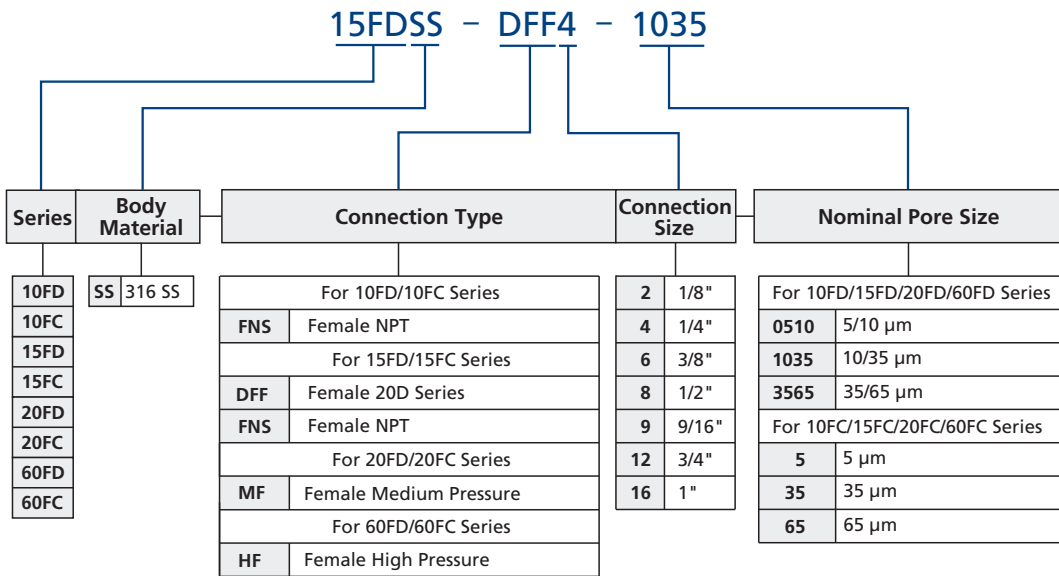
Ordering Information and Dimensions



| Ordering Number | Connection | Orifice in. (mm) | Nominal Pore Size (μm) | Effective Filter Element Area in. ² (mm ²) | Dimensions, in. (mm) | | | | | Working Pressure psig (bar) |
|-----------------|------------|------------------|-------------------------------------|---|----------------------|-----------------|----------------|----------------|----------------|-----------------------------|
| | | | | | A | B | C | D (Hex) | E (Hex) | |
| 60FCSS-HF4-5 | HF4 | 0.09 (2.4) | 5 | 1.29 (832.3) | 4.19 (106.4) | 3.38 (85.9) | 0.47 (11.9) | 0.63 (15.9) | 1.38 (35.0) | 60,000 (4137) |
| 60FCSS-HF4-35 | | | 35 | | | | | | | |
| 60FCSS-HF4-65 | | | 65 | | | | | | | |
| 60FCSS-HF6-5 | HF6 | 0.13 (3.2) | 5 | 1.29 (832.3) | 4.62 (117.4) | 3.62 (91.9) | 0.61 (15.6) | 0.75 (19.1) | 1.38 (35.0) | 60,000 (4137) |
| 60FCSS-HF6-35 | | | 35 | | | | | | | |
| 60FCSS-HF6-65 | | | 65 | | | | | | | |
| 60FCSS-HF9-5 | HF9 | 0.19 (4.8) | 5 | 1.29 (832.3) | 5.25 (133.4) | 4.06 (103.1) | 0.95 (24.1) | 1.19 (30.2) | 1.50 (38.1) | 60,000 (4137) |
| 60FCSS-HF9-35 | | | 35 | | | | | | | |
| 60FCSS-HF9-65 | | | 65 | | | | | | | |

- NOTES: 1. The element nominal pore size is calculated from measured minimum pressure required to force the first bubble of gas through the test filter element (under the standardized conditions) impregnated with a liquid.
2. Dimensions are for reference only and are subject to change.

Ordering Number Description

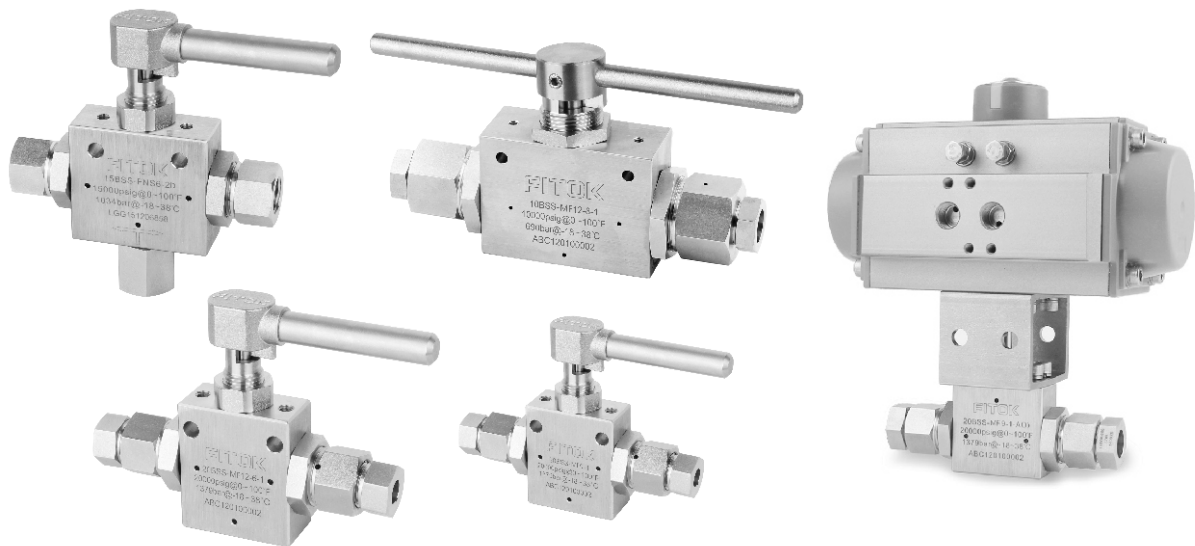


- NOTES: 1. For more details regarding 20D Series and Medium/High Pressure connections, please see **Connection Information** on I-02.
2. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.

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Ball Valves and Pneumatic Ball Valves

10B Series: 10,000 psig (690 bar)
15B Series: 15,000 psig (1034 bar)
20B Series: 20,000 psig (1379 bar)



| |
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| Ordering Number Description | E-10 |

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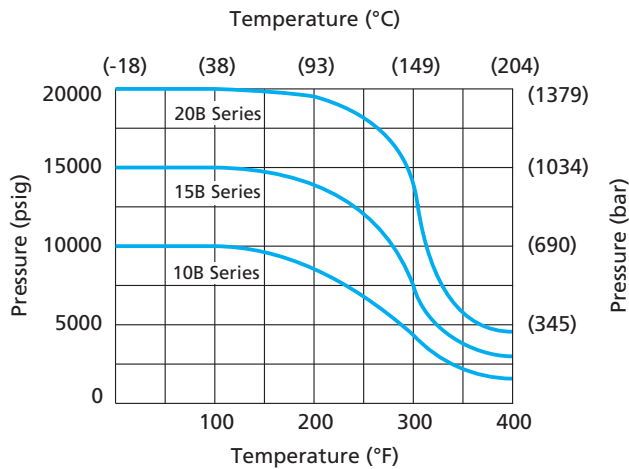
Technical Information

Part Number Crossover Charts

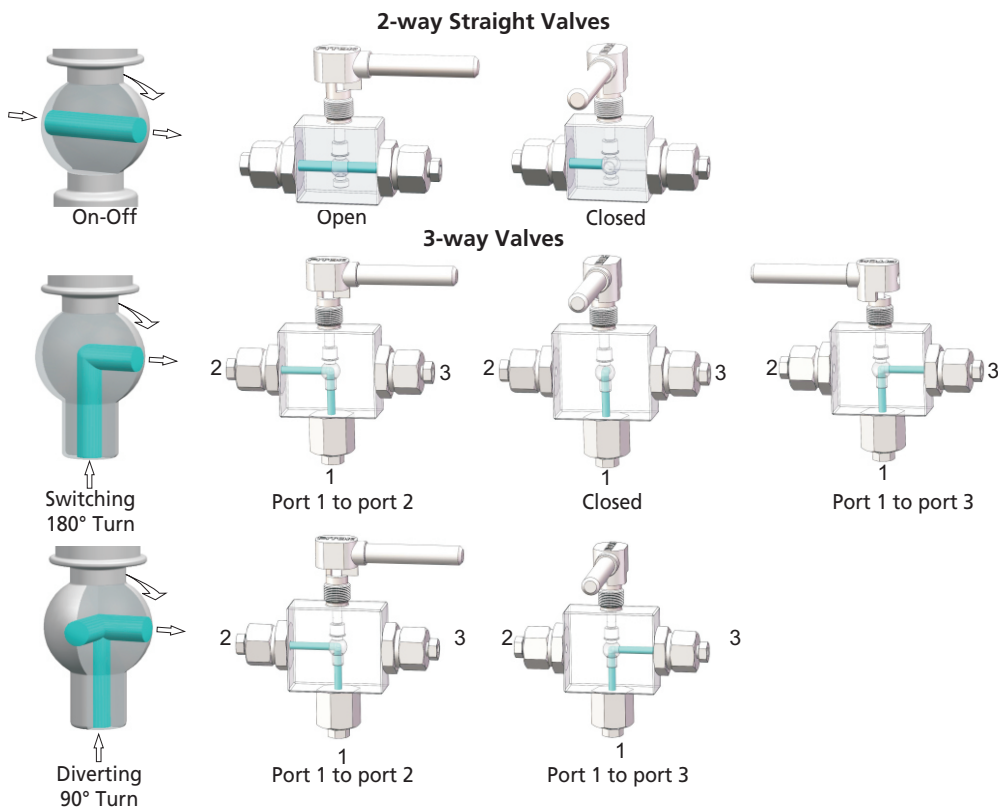
Features

- Working pressure up to 20,000 psig (1379 bar)
- Fluorocarbon FKM O-ring for operation from 0°F to 400°F (-17.8°C to 204°C); other O-ring materials available
- High tensile 316 Stainless Steel as body material
- PEEK seats offer excellent resistance to chemicals, heat and abrasion
- Trunnion mounted stem design
- Full-port flow path to minimize pressure drop
- 2-way and 3-way valve configurations
- Bidirectional flow for 2-way valves
- Wide selection of tube and pipe end fittings available
- Pneumatic actuator optional with air pressure from 80 psig to 116 psig (5.5 bar to 8 bar)

Pressure vs. Temperature Curve



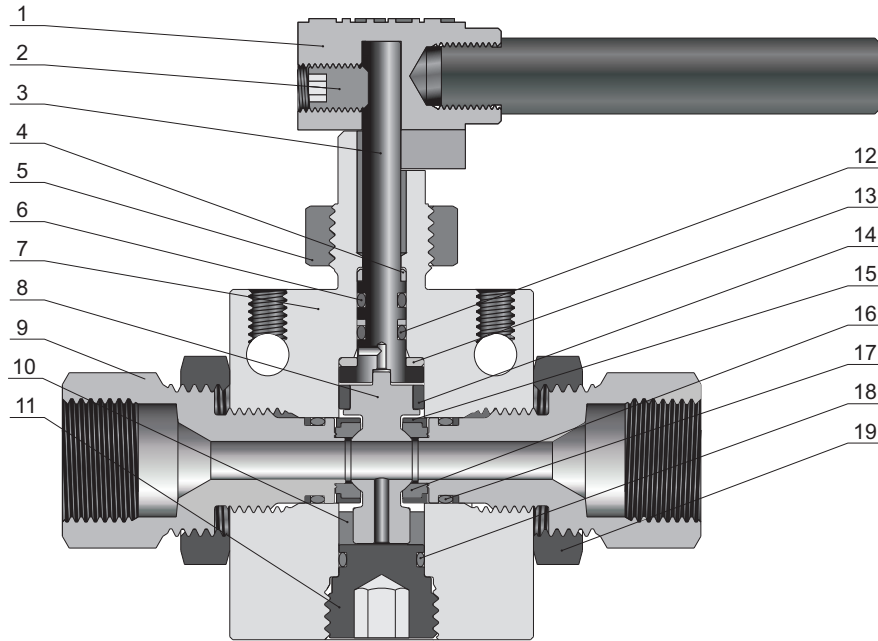
Flow Configuration



NOTE: The maximum allowable working pressure drops if the side connection works as inlet.

Standard Materials of Construction

2-way Straight Valves



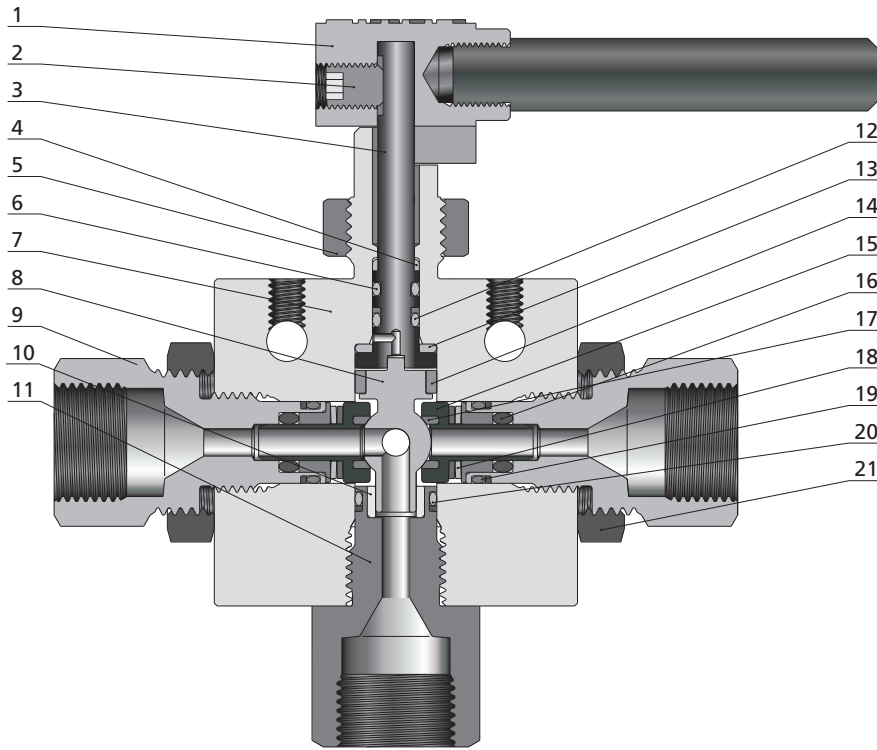
| Item | Component | Material Grade |
|-----------|--------------------------|--|
| 1 | Handle | Stainless Steel |
| 2 | Set Screw | Stainless Steel |
| 3 | <i>Stem</i> | <i>316 SS</i> |
| 4 | Stem Backup | PEEK |
| 5 | Panel Nut | 316 SS |
| 6 | Stem O-Ring | Fluorocarbon FKM |
| 7 | <i>Body</i> | <i>316 SS</i> |
| 8 | <i>Ball</i> | <i>316 SS</i> |
| 9 | <i>Seat Gland</i> | <i>316 SS</i> |
| 10 | <i>Ball Bearing</i> | <i>PEEK</i> |
| 11 | <i>Plug</i> | <i>316 SS</i> |
| 12 | <i>Stem O-Ring</i> | <i>Fluorocarbon FKM</i> |
| 13 | <i>Thrust Washer</i> | <i>PEEK</i> |
| 14 | <i>Ball Bearing</i> | <i>PEEK</i> |
| 15 | <i>Seat Retainer</i> | <i>316 SS</i> |
| 16 | <i>Seat</i> | <i>PEEK</i> |
| 17 | <i>Seat Gland O-Ring</i> | <i>Fluorocarbon FKM</i> |
| 18 | <i>Plug O-Ring</i> | <i>Fluorocarbon FKM</i> |
| 19 | Lock Nut | 316 SS |
| Lubricant | | Molybdenum Disulfide/Fluorinated-based |

Wetted components listed in italics.

| |
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3-way Valves

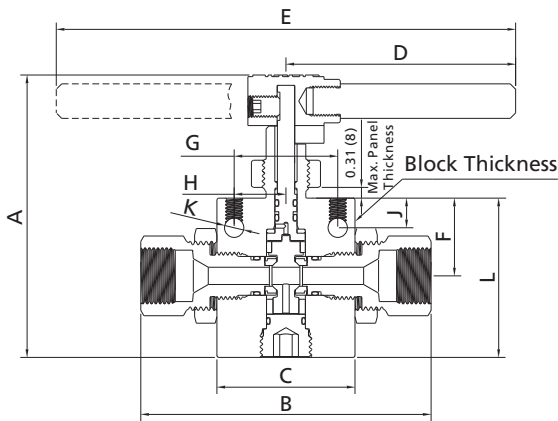


| Item | Component | Material Grade |
|------|-----------------------------|--|
| 1 | Handle | Stainless Steel |
| 2 | Set Screw | Stainless Steel |
| 3 | Stem | 316 SS |
| 4 | Stem Backup | PEEK |
| 5 | Panel Nut | 316 SS |
| 6 | Stem O-Ring | Fluorocarbon FKM |
| 7 | <i>Body</i> | 316 SS |
| 8 | <i>Ball</i> | 316 SS |
| 9 | <i>Seat Gland</i> | 316 SS |
| 10 | <i>Ball Bearing</i> | Copper Alloy |
| 11 | <i>Bottom Gland</i> | 316 SS |
| 12 | <i>Stem O-Ring</i> | Fluorocarbon FKM |
| 13 | <i>Thrust Washer</i> | PEEK |
| 14 | <i>Ball Bearing</i> | PEEK |
| 15 | <i>Seat Retainer</i> | S17400 |
| 16 | <i>Seat</i> | Carbon Filled PEEK |
| 17 | <i>Seat Retainer O-Ring</i> | Fluorocarbon FKM |
| 18 | <i>Belleville Washer</i> | S17700 |
| 19 | <i>Seat Gland O-Ring</i> | Fluorocarbon FKM |
| 20 | <i>Bottom Gland O-Ring</i> | Fluorocarbon FKM |
| 21 | Lock Nut | 316 SS |
| | Lubricant | Molybdenum Disulfide/Fluorinated-based |

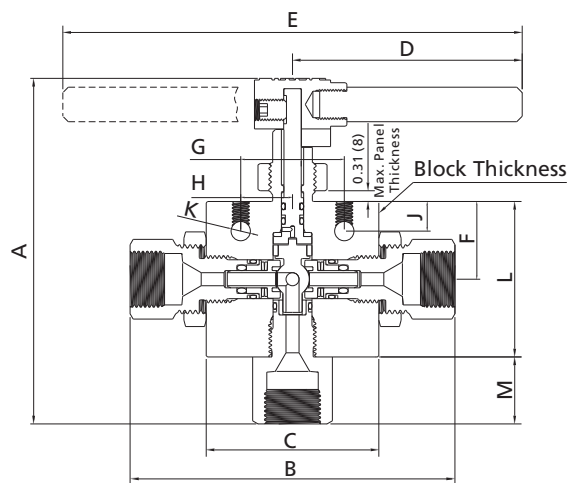
Wetted components listed in italics.

Dimensions

2-way Straight Valves



3-way Valves

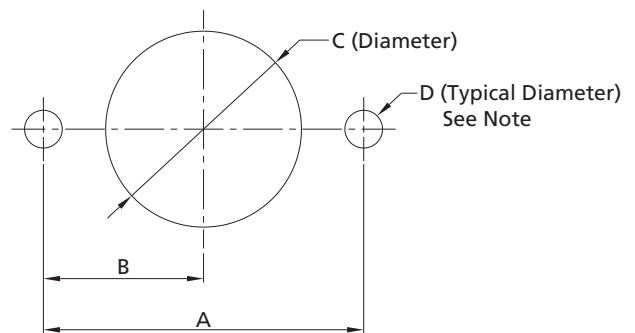


| Flow Pattern | Orifice | Dimensions, in. (mm) | | | | | | | | | | | | |
|--------------|---------|----------------------|--------------|--------------|--------------|---------------|-------------|-------------|-------------|-------------|------------|-------------|-------------|-----------------|
| | | A | B | C | D | E | F | G | H | J | K | L | M | Block Thickness |
| 2-way | 1/4" | 4.09 (103.9) | 4.19 (106.5) | 2.00 (50.8) | 3.33 (84.5) | / | 1.13 (28.6) | 1.50 (38.1) | 0.75 (19.1) | 0.43 (10.9) | 0.28 (7.1) | 2.31 (58.6) | / | 1.00 (25.4) |
| | 3/8" | 4.84 (121.0) | 5.53 (140.3) | 3.00 (76.2) | 4.96 (126.0) | / | 1.38 (34.9) | 2.00 (50.8) | 1.00 (25.4) | 0.41 (10.3) | 0.28 (7.1) | 2.95 (74.9) | / | 1.38 (34.9) |
| | 1/2" | 5.39 (136.8) | 7.73 (196.5) | 4.12 (104.6) | / | 10.25 (260.0) | 1.66 (42.2) | 3.00 (76.2) | 1.50 (38.1) | 0.50 (12.7) | 0.28 (7.1) | 3.52 (89.4) | / | 1.75 (44.5) |
| 3-way | 3/16" | 5.00 (127.0) | 4.70 (119.5) | 2.50 (63.5) | 3.33 (84.5) | / | 1.13 (28.6) | 1.50 (38.1) | 0.75 (19.1) | 0.43 (10.9) | 0.28 (7.1) | 2.25 (57.2) | 0.48 (12.3) | 1.00 (25.4) |
| | 3/8" | 5.88 (149.3) | 5.53 (140.3) | 3.00 (76.2) | 4.96 (126.0) | / | 1.38 (34.9) | 2.00 (50.8) | 1.00 (25.4) | 0.41 (10.3) | 0.28 (7.1) | 2.87 (73.0) | 1.89 (30.2) | 1.38 (34.9) |
| | 1/2" | 6.91 (175.6) | 7.77 (197.4) | 4.12 (104.6) | / | 10.25 (260.0) | 1.66 (42.2) | 3.00 (76.2) | 1.50 (38.1) | 0.50 (12.7) | 0.28 (7.1) | 3.34 (84.9) | 1.70 (43.2) | 1.75 (44.5) |

NOTE: All dimensions are for reference only and are subject to change.

Panel Mounting Dimensions

| Flow Pattern | Orifice | Dimensions, in. (mm) | | | |
|--------------|---------|----------------------|-------------|-------------|------------|
| | | A | B | C | D |
| 2-way | 1/4" | 1.50 (38.1) | 0.75 (19.1) | 0.75 (19.1) | 0.28 (7.1) |
| | 3/8" | 2.00 (50.8) | 1.00 (25.4) | 1.13 (28.6) | 0.28 (7.1) |
| | 1/2" | 3.00 (76.2) | 1.50 (38.1) | 1.44 (36.5) | 0.28 (7.1) |
| 3-way | 3/16" | 1.50 (38.1) | 0.75 (19.1) | 0.75 (19.1) | 0.28 (7.1) |
| | 3/8" | 2.00 (50.8) | 1.00 (25.4) | 1.13 (28.6) | 0.28 (7.1) |
| | 1/2" | 3.00 (76.2) | 1.50 (38.1) | 1.44 (36.5) | 0.28 (7.1) |



NOTES: 1. Body mounting 1/4-20 thread.
2. All dimensions are for reference only and are subject to change.

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Ordering Information and Dimensions

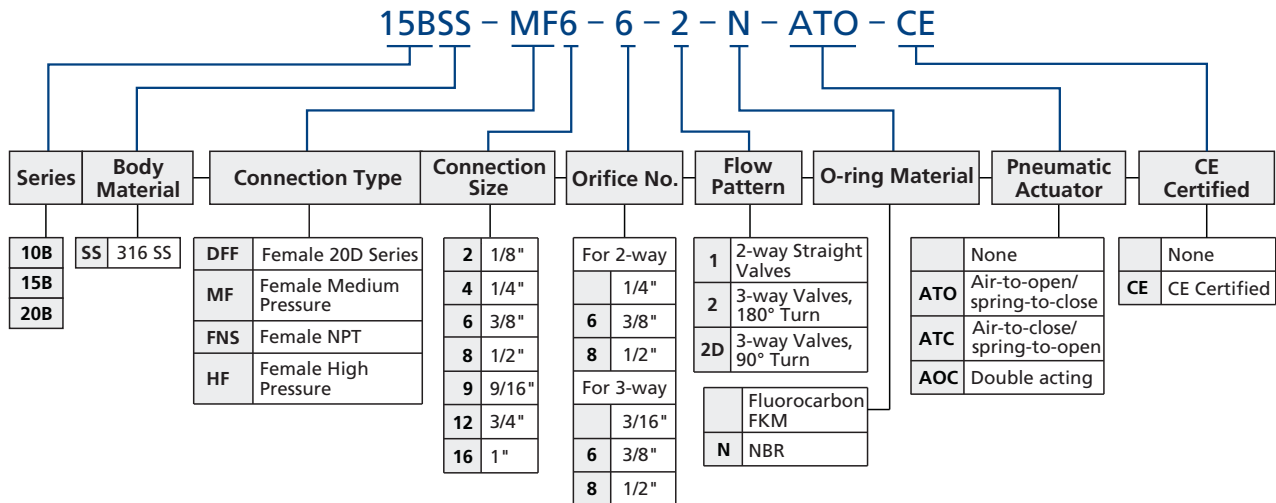
| | Series | Flow Pattern | Orifice | Connection | Orifice Size in. (mm) | Cv | Ordering Number | Working Pressure psig (bar) | | | | | | | | | |
|-------------------------------------|-------------|-----------------------|------------|--------------|-----------------------|----------------|-----------------|-------------------------------|-------------------------------------|-------------------------------|---------------------------------|-------------------------------------|------|-------------|------|--------------|---------------|
| Fittings | 10B | 2-way | 1/2" | MF12 | 0.5 (12.7) | 10.2 | 10BSS-MF12-8-1 | 10,000 (690) | | | | | | | | | |
| | | | | MF16 | 0.5 (12.7) | 10.2 | 10BSS-MF16-8-1 | | | | | | | | | | |
| | | | | FNS12 | 0.5 (12.7) | 10.2 | 10BSS-FNS12-8-1 | | | | | | | | | | |
| | | | | FNS16 | 0.5 (12.7) | 10.2 | 10BSS-FNS16-8-1 | | | | | | | | | | |
| Tubing | | 10B | 3-way | 1/2" | MF12 | 0.5 (12.7) | 4.4 | | 10BSS-MF12-8-2 10BSS-MF12-8-2D | | | | | | | | |
| | | | | | MF16 | 0.5 (12.7) | 4.4 | | 10BSS-MF16-8-2 10BSS-MF16-8-2D | | | | | | | | |
| | | | | | FNS12 | 0.5 (12.7) | 4.4 | | 10BSS-FNS12-8-2 10BSS-FNS12-8-2D | | | | | | | | |
| | | | | | FNS16 | 0.5 (12.7) | 4.4 | | 10BSS-FNS16-8-2 10BSS-FNS16-8-2D | | | | | | | | |
| Quick Couplings | | | | | 10B | 3-way | 1/2" | | FNS12 | 0.5 (12.7) | 4.4 | 10BSS-FNS12-8-2 10BSS-FNS12-8-2D | | | | | |
| | | | | | | | | | FNS16 | 0.5 (12.7) | 4.4 | 10BSS-FNS16-8-2 10BSS-FNS16-8-2D | | | | | |
| | | | | | | | | | Line Filters | 15B | 2-way | 1/4" | DFF2 | 0.094 (2.4) | 0.26 | 15BSS-DFF2-1 | 15,000 (1034) |
| | | | | | | | | | | | | | DFF4 | 0.19 (4.8) | 1.27 | 15BSS-DFF4-1 | |
| DFF6 | 0.25 (6.35) | | 1.51 | 15BSS-DFF6-1 | | | | | | | | | | | | | |
| DFF8 | 0.25 (6.35) | | 1.51 | 15BSS-DFF8-1 | | | | | | | | | | | | | |
| FNS2 | 0.25 (6.35) | | 1.51 | 15BSS-FNS2-1 | | | | | | | | | | | | | |
| FNS4 | 0.25 (6.35) | | 1.51 | 15BSS-FNS4-1 | | | | | | | | | | | | | |
| Valves | 15B | 2-way | 3/8" | FNS6 | | 0.25 (6.35) | 1.51 | 15BSS-FNS6-1 | | | | | | | | | |
| | | | | FNS8 | | 0.25 (6.35) | 1.51 | 15BSS-FNS8-1 | | | | | | | | | |
| DFF8 | | | | 0.375 (9.5) | | 3.51 | 15BSS-DFF8-6-1 | | | | | | | | | | |
| DFF9 | | | | 0.375 (9.5) | | 3.51 | 15BSS-DFF9-6-1 | | | | | | | | | | |
| FNS4 | | | | 0.375 (9.5) | 3.51 | 15BSS-FNS4-6-1 | | | | | | | | | | | |
| FNS6 | | | | 0.375 (9.5) | 3.51 | 15BSS-FNS6-6-1 | | | | | | | | | | | |
| Sour Service Products | | 15B | 2-way | 1/2" | FNS8 | 0.375 (9.5) | 3.51 | 15BSS-FNS8-6-1 | | | | | | | | | |
| | | | | | DFF12 | 0.5 (12.7) | 10.2 | 15BSS-DFF12-8-1 | | | | | | | | | |
| MF12 | | | | | 0.5 (12.7) | 10.2 | 15BSS-MF12-8-1 | | | | | | | | | | |
| MF16 | | | | | 0.5 (12.7) | 10.2 | 15BSS-MF16-8-1 | | | | | | | | | | |
| Subsea Valves | | | | | 15B | 3-way | 3/16" | DFF2 | 0.094 (2.4) | 0.13 | 15BSS-DFF2-2 15BSS-DFF2-2D | | | | | | |
| | | | | | | | | DFF4 | 0.125 (3.2) | 0.22 | 15BSS-DFF4-2 15BSS-DFF4-2D | | | | | | |
| | DFF6 | | 0.19 (4.8) | 0.5 | | | | 15BSS-DFF6-2 15BSS-DFF6-2D | | | | | | | | | |
| | DFF8 | | 0.19 (4.8) | 0.5 | | | | 15BSS-DFF8-2 15BSS-DFF8-2D | | | | | | | | | |
| | FNS2 | | 0.19 (4.8) | 0.5 | | | | 15BSS-FNS2-2 15BSS-FNS2-2D | | | | | | | | | |
| | FNS4 | | 0.19 (4.8) | 0.5 | | | | 15BSS-FNS4-2 15BSS-FNS4-2D | | | | | | | | | |
| Tools and Installation Instructions | 15B | | 3-way | 3/16" | | | FNS6 | 0.19 (4.8) | 0.5 | 15BSS-FNS6-2 15BSS-FNS6-2D | | | | | | | |
| | | | | | | | FNS8 | 0.19 (4.8) | 0.5 | 15BSS-FNS8-2 15BSS-FNS8-2D | | | | | | | |
| | | Technical Information | | | | | 3-way | 3/8" | DFF8 | 0.33 (8.3) | 2.1 | 15BSS-DFF8-6-2 15BSS-DFF8-6-2D | | | | | |
| | | | | | | | | | DFF9 | 0.33 (8.3) | 2.1 | 15BSS-DFF9-6-2 15BSS-DFF9-6-2D | | | | | |
| MF6 | | | | | | | | | 0.2 (5.2) | 0.81 | 15BSS-MF6-6-2 15BSS-MF6-6-2D | | | | | | |
| MF9 | | | | | | | | | 0.31 (7.9) | 1.9 | 15BSS-MF9-6-2 15BSS-MF9-6-2D | | | | | | |
| Part Number Crossover Charts | | 15B | 3-way | 3/8" | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |

Ordering Information and Dimensions (continue)

| Series | Flow Pattern | Orifice | Connection | Orifice Size in. (mm) | Cv | Ordering Number | Working Pressure psig (bar) | | |
|--------|--------------|---------------|--------------|-----------------------|---------------|-----------------|-----------------------------|--------------|---------------|
| 15B | 3-way | 3/8" | MF12 | 0.33 (8.3) | 2.1 | 15BSS-MF12-6-2 | 15,000 (1034) | | |
| | | | | | | 15BSS-MF12-6-2D | | | |
| | | | FNS4 | 0.33 (8.3) | 2.1 | 15BSS-FNS4-6-2 | | | |
| | | | | | | 15BSS-FNS4-6-2D | | | |
| | | | FNS6 | 0.33 (8.3) | 2.1 | 15BSS-FNS6-6-2 | | | |
| | | | | | | 15BSS-FNS6-6-2D | | | |
| | | | FNS8 | 0.33 (8.3) | 2.1 | 15BSS-FNS8-6-2 | | | |
| | | | | | | 15BSS-FNS8-6-2D | | | |
| 20B | 2-way | 1/4" | DFF4 | 0.19 (4.8) | 1.27 | 20BSS-DFF4-1 | 20,000 (1379) | | |
| | | | DFF6 | 0.25 (6.35) | 1.51 | 20BSS-DFF6-1 | | | |
| | | | DFF8 | 0.25 (6.35) | 1.51 | 20BSS-DFF8-1 | | | |
| | | | MF4 | 0.11 (2.8) | 0.36 | 20BSS-MF4-1 | | | |
| | | | MF6 | 0.2 (5.2) | 1.23 | 20BSS-MF6-1 | | | |
| | | | MF9 | 0.25 (6.35) | 1.51 | 20BSS-MF9-1 | | | |
| | | | HF4 | 0.094 (2.4) | 0.26 | 20BSS-HF4-1 | | | |
| | | | HF6 | 0.125 (3.2) | 0.47 | 20BSS-HF6-1 | | | |
| | | HF9 | 0.19 (4.8) | 1.05 | 20BSS-HF9-1 | | | | |
| | | 3/8" | DFF8 | 0.375 (9.5) | 3.51 | 20BSS-DFF8-6-1 | | | |
| | | | DFF9 | 0.375 (9.5) | 3.51 | 20BSS-DFF9-6-1 | | | |
| | | | MF6 | 0.2 (5.2) | 1.23 | 20BSS-MF6-6-1 | | | |
| | | | MF9 | 0.31 (7.9) | 2.93 | 20BSS-MF9-6-1 | | | |
| | | | MF12 | 0.375 (9.5) | 3.51 | 20BSS-MF12-6-1 | | | |
| | | | 3-way | 3/16" | DFF4 | 0.125 (3.2) | | 0.22 | 20BSS-DFF4-2 |
| | | | | | | | | | 20BSS-DFF4-2D |
| | DFF6 | | | | 0.19 (4.8) | 0.5 | | 20BSS-DFF6-2 | |
| | | 20BSS-DFF6-2D | | | | | | | |
| | DFF8 | 0.19 (4.8) | | 0.5 | 20BSS-DFF8-2 | | | | |
| | | | | | 20BSS-DFF8-2D | | | | |
| | MF4 | 0.11 (2.8) | | 0.17 | 20BSS-MF4-2 | | | | |
| | | | | | 20BSS-MF4-2D | | | | |
| | MF6 | 0.19 (4.8) | | 0.5 | 20BSS-MF6-2 | | | | |
| | | | | | 20BSS-MF6-2D | | | | |
| | MF9 | 0.19 (4.8) | | 0.5 | 20BSS-MF9-2 | | | | |
| | | | | | 20BSS-MF9-2D | | | | |
| | HF4 | 0.094 (2.4) | 0.13 | 20BSS-HF4-2 | | | | | |
| | | | | 20BSS-HF4-2D | | | | | |
| HF6 | | 0.125 (3.2) | 0.22 | 20BSS-HF6-2 | | | | | |
| | | | | 20BSS-HF6-2D | | | | | |
| HF9 | 0.19 (4.8) | 0.5 | 20BSS-HF9-2 | | | | | | |
| | | | 20BSS-HF9-2D | | | | | | |

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Ordering Number Description



- NOTES: 1. For more details regarding 20D Series and Medium/High Pressure connections, please see **Connection Information** on I-02.
2. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.

| Code | O-ring Material | Working Temperature Range, °F (°C) |
|------|------------------|------------------------------------|
| | Fluorocarbon FKM | 0 to 400 (-17.8 to 204) |
| N | NBR | -10 to 250 (-23 to 121) |

Needle Valves and Pneumatic Needle Valves

10N Series: 10,000 psig (690 bar)

15N Series: 15,000 psig (1034 bar)

20N Series: 20,000 psig (1379 bar)

30N Series: 30,000 psig (2068 bar)

60N Series: 60,000 psig (4137 bar)



| |
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Contents

Needle Valves

| | | |
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| Fittings | 10N Series: 10,000 psig (690 bar) | E-13 |
| Tubing | 15N Series: 15,000 psig (1034 bar) | E-19 |
| Quick Couplings | 20N Series: 20,000 psig (1379 bar) | E-26 |
| Line Filters | 30N Series: 30,000 psig (2068 bar) | E-31 |
| Valves | 60N Series: 60,000 psig (4137 bar) | E-35 |
| Sour Service Products | Pneumatic Needle Valves | |
| Subsea Valves | Piston Style Air to Open (Normally Closed) | E-39 |
| Tools and Installation Instructions | Piston Style Air to Close (Normally Open) | E-45 |
| Technical Information | Ordering Number Description | E-49 |
| Part Number Crossover Charts | | |

Pneumatic Needle Valves

Needle Valves

10N Series: 10,000 psig (690 bar)

Features

- ⦿ High tensile 316 Stainless Steel for the valve body and S17400 Stainless Steel for lower stem
- ⦿ Metal-to-metal seating to achieve ideal shutoff, longer stem/seat service lifetime for abrasive flow, excellent corrosion resistance and greater durability for repeated on/off cycles
- ⦿ Non-rotating stem and bar stock body design
- ⦿ Easy to assemble and replace packing
- ⦿ Reliable packing gland locking device
- ⦿ Options for Vee or Regulating stem tips
- ⦿ Five flow patterns available

Technical Data

| Connection Size | Connection | Orifice in. (mm) | Cv | Working Pressure psig (bar) | Working Temperature Range |
|--------------------------------|------------|------------------|------|-----------------------------|-----------------------------|
| 9/16" Female Medium Pressure | MF9 | 0.359 (9.12) | 1.75 | 10,000 (690) | -100°F~1200°F (-73°C~649°C) |
| 3/4" Female Medium Pressure | MF12 | 0.516 (13.10) | 2.80 | 10,000 (690) | |
| 1" Female Medium Pressure | MF16 | 0.688 (17.48) | 5.20 | 10,000 (690) | |
| 3/4" Female NPT | FNS12 | 0.437 (11.10) | 2.50 | 10,000 (690) | -100°F~400°F (-73°C~204°C) |
| 3/4" Female ISO Tapered Thread | FRT12 | | | | |
| 1" Female NPT | FNS16 | 0.562 (14.27) | 4.40 | 10,000 (690) | |
| 1" Female ISO Tapered Thread | FRT16 | | | | |

NOTES: 1. Cv values shown are for 2-way straight valve pattern. For 2-way angle pattern, increase Cv value by about 50% (Based on water).

2. Packing Options

PTFE is the standard packing material, RPTFE glass, Graphite and extended stuffing box with Graphite also available. Graphite packing not recommended for Hydrogen or Helium service.

PTFE: -100°F~450°F (-73°C~232°C)

RPTFE glass: -100°F~600°F (-73°C~316°C)

Graphite: 0°F~800°F (-17.8°C~427°C)

Extended stuffing box with Graphite: -100°F~1200°F (-73°C~649°C)

Fittings

Tubing

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Valves

Sour Service Products

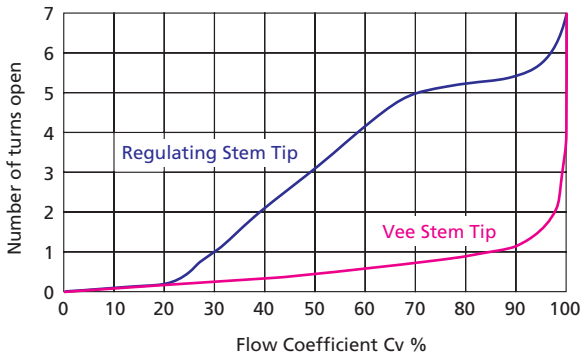
Subsea Valves

Tools and Installation Instructions

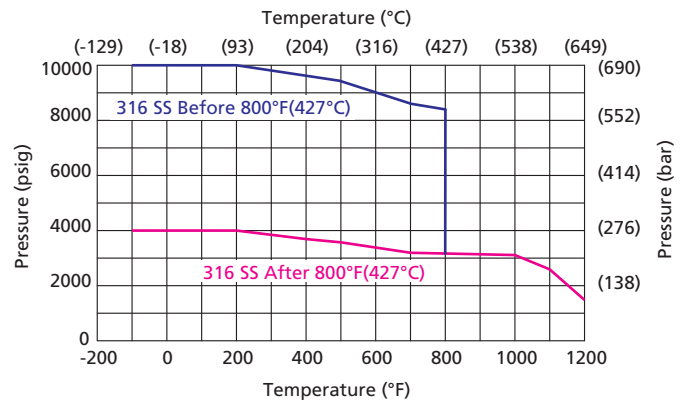
Technical Information

Part Number Crossover Charts

Flow Data at 100°F (38°C)

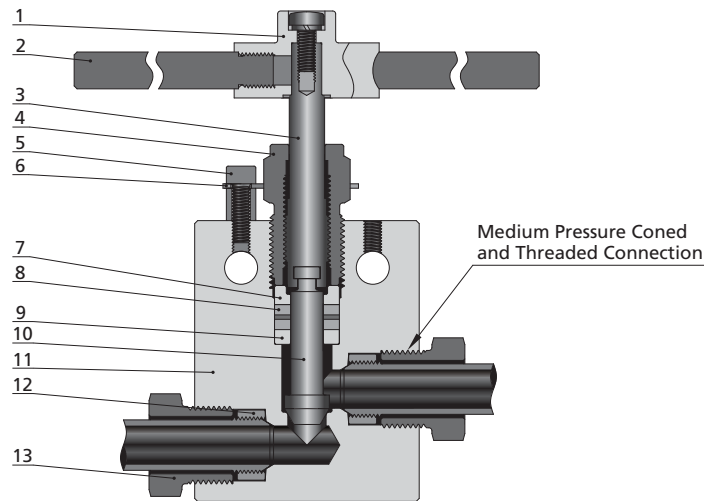


Pressure vs. Temperature Curve



NOTE: When temperature exceeds 800°F (427°C), use the pink curve as its cold-worked rating for future operating of the components.

Standard Materials of Construction

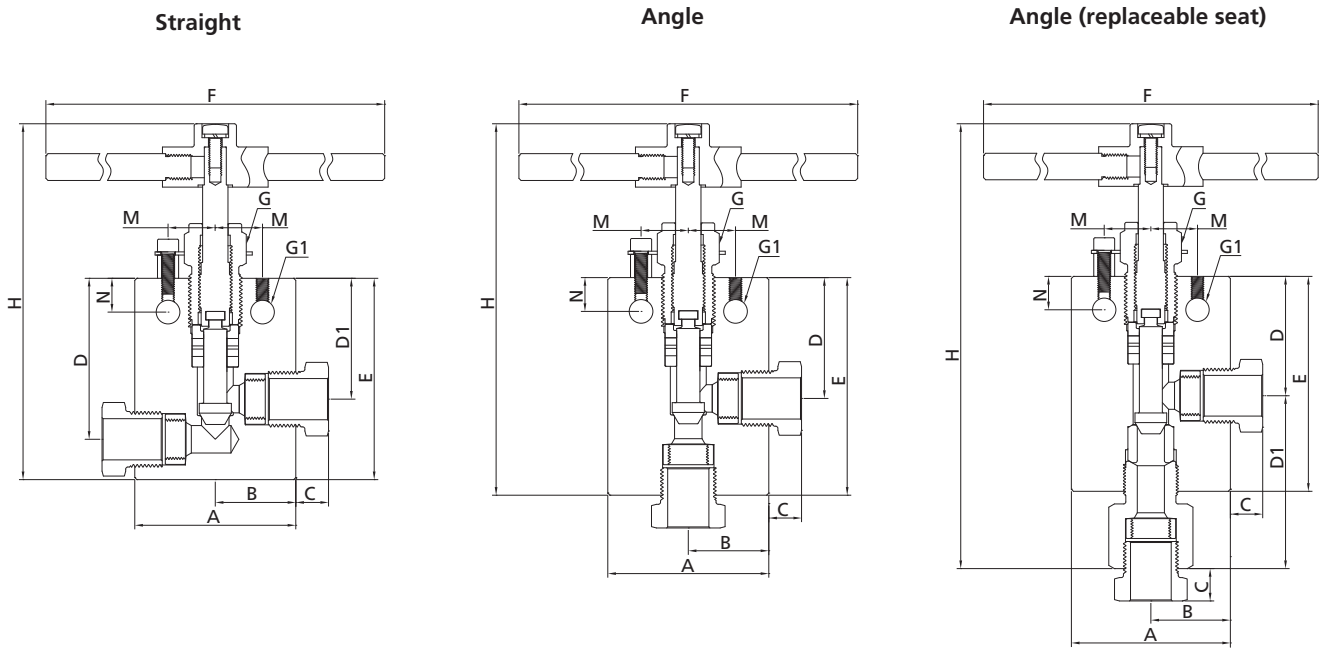


| Item | Component | Material Grade |
|------|-----------------------|--|
| 1 | Handle Head | Stainless steel |
| 2 | Handle | Stainless steel |
| 3 | Upper Stem | 316 SS |
| 4 | Packing Gland | C63000 |
| 5 | Locking Screw | Stainless steel |
| 6 | Locking Plate | 304 SS |
| 7 | Packing Ring | C63000 |
| 8 | <i>Packing</i> | <i>PTFE/RPTFE glass/Graphite/Extended stuffing box with Graphite</i> |
| 9 | <i>Packing Washer</i> | <i>S17400</i> |
| 10 | <i>Lower Stem</i> | <i>S17400</i> |
| 11 | <i>Body</i> | <i>316 SS</i> |
| 12 | Collar | 316 SS (For tubing connections) |
| 13 | Gland | 316 SS (For tubing connections) |
| | Lubricant | Molybdenum disulfide |

Wetted component listed in italics.

- Fittings
- Tubing
- Quick Couplings
- Line Filters
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Ordering Information and Dimensions (Tubing Connection, 2-Way)



| Straight | | | | | | | | | | | | | | | |
|-----------------|------------|------------------|----------------------|----------------|----------------|----------------|----------------|-----------------|------------------|----------------|----------------|-----------------|----------------|----------------|----------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 10NSS-MF9-1 | MF9 | 0.359 (9.12) | 2.50 (63.5) | 1.25 (31.8) | 0.55 (14.0) | 2.38 (60.5) | 1.75 (44.5) | 2.88 (73.2) | 4.00 (101.6) | 1.00 (25.4) | 0.34 (8.6) | 6.20 (157.4) | 0.69 (17.5) | 0.50 (12.7) | 1.00 (25.4) |
| 10NSS-MF12-1 | MF12 | 0.516 (13.11) | 3.00 (76.2) | 1.50 (38.1) | 0.60 (15.2) | 3.00 (76.2) | 2.25 (57.2) | 3.75 (95.3) | 10.25 (260.4) | 1.19 (30.2) | 0.44 (11.2) | 7.24 (183.8) | 0.88 (22.4) | 0.63 (16.0) | 1.38 (35.1) |
| 10NSS-MF16-1 | MF16 | 0.688 (17.48) | 4.12 (104.6) | 2.06 (52.3) | 0.74 (18.7) | 3.75 (95.3) | 2.81 (71.4) | 4.63 (117.6) | 10.25 (260.4) | 1.62 (41.2) | 0.56 (14.2) | 9.33 (237.1) | 1.25 (31.8) | 1.13 (28.7) | 1.75 (44.5) |

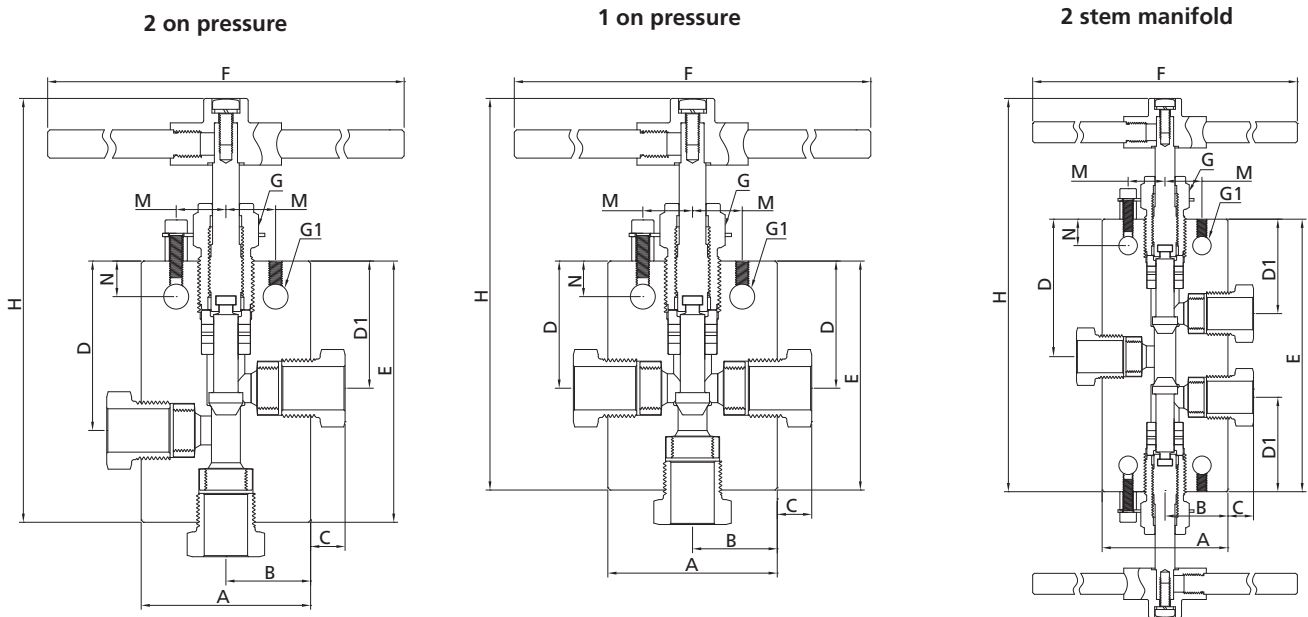
| Angle | | | | | | | | | | | | | | | |
|-----------------|------------|------------------|----------------------|----------------|----------------|----------------|-----------------|------------------|----------------|----------------|-----------------|----------------|----------------|----------------|-----------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 10NSS-MF9-2 | MF9 | 0.359 (9.12) | 2.50 (63.5) | 1.25 (31.8) | 0.55 (14.0) | 1.75 (44.5) | 3.38 (85.9) | 4.00 (101.6) | 1.00 (25.4) | 0.34 (8.6) | 6.70 (170.3) | 0.69 (17.5) | 0.50 (12.7) | 1.00 (25.4) | |
| 10NSS-MF12-2 | MF12 | 0.516 (13.11) | 3.00 (76.2) | 1.50 (38.1) | 0.60 (15.2) | 2.25 (57.2) | 4.25 (107.9) | 10.25 (260.4) | 1.19 (30.2) | 0.44 (11.2) | 7.73 (196.4) | 0.88 (22.4) | 0.63 (16.0) | 1.38 (35.1) | |
| 10NSS-MF16-2 | MF16 | 0.688 (17.48) | 4.12 (104.6) | 2.06 (52.3) | 0.74 (18.7) | 2.81 (71.4) | 5.12 (130.1) | 10.25 (260.4) | 1.62 (41.2) | 0.56 (14.2) | 9.95 (252.6) | 1.25 (31.8) | 1.13 (28.7) | 1.75 (44.5) | |

| Angle (replaceable seat) | | | | | | | | | | | | | | | |
|--------------------------|------------|------------------|----------------------|----------------|----------------|----------------|-----------------|-----------------|------------------|----------------|----------------|------------------|----------------|----------------|----------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 10NSS-MF9-3 | MF9 | 0.359 (9.12) | 2.50 (63.5) | 1.25 (31.8) | 0.55 (14.0) | 1.75 (44.5) | 2.50 (63.5) | 3.38 (85.9) | 4.00 (101.6) | 1.00 (25.4) | 0.34 (8.6) | 7.57 (192.4) | 0.69 (17.5) | 0.50 (12.7) | 1.00 (25.4) |
| 10NSS-MF12-3 | MF12 | 0.516 (13.11) | 3.00 (76.2) | 1.50 (38.1) | 0.60 (15.2) | 2.25 (57.2) | 3.19 (81.1) | 4.25 (107.9) | 10.25 (260.4) | 1.19 (30.2) | 0.44 (11.2) | 8.92 (226.8) | 0.88 (22.4) | 0.63 (16.0) | 1.38 (35.1) |
| 10NSS-MF16-3 | MF16 | 0.688 (17.48) | 4.12 (104.6) | 2.06 (52.3) | 0.74 (18.7) | 2.81 (71.4) | 4.11 (104.5) | 5.25 (133.3) | 10.25 (260.4) | 1.62 (41.2) | 0.56 (14.2) | 11.62 (295.4) | 1.25 (31.8) | 1.13 (28.7) | 1.75 (44.5) |

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Ordering Information and Dimensions (Tubing Connection, 3-Way)

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| Quick Couplings |
| Line Filters |
| Valves |
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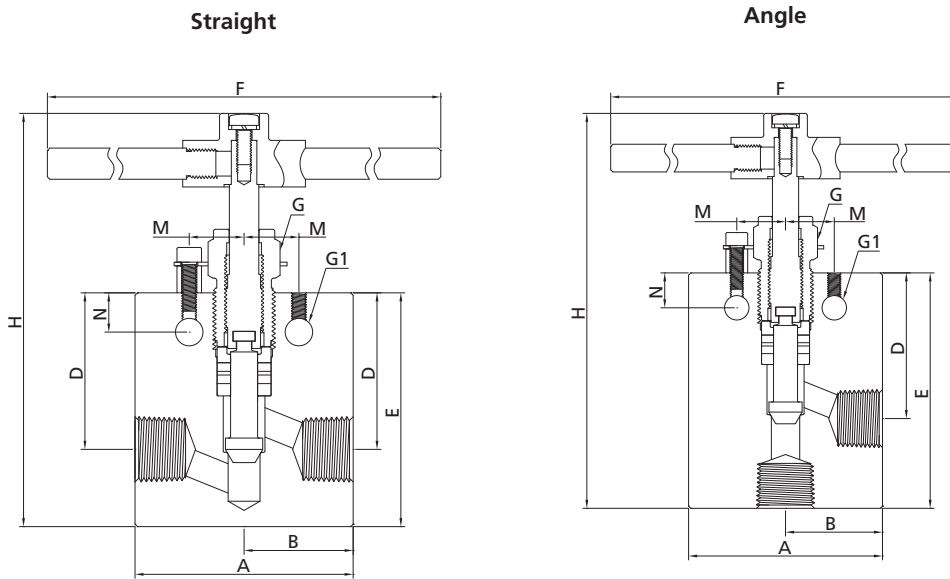


| 2 on pressure | | | | | | | | | | | | | | | |
|-----------------|------------|------------------|----------------------|-------------|-------------|-------------|-------------|--------------|---------------|-------------|-------------|---------------|-------------|-------------|-------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 10NSS-MF9-4 | MF9 | 0.359 (9.12) | 2.50 (63.5) | 1.25 (31.8) | 0.55 (14.0) | 2.38 (60.5) | 1.75 (44.5) | 3.63 (92.1) | 4.00 (101.6) | 1.00 (25.4) | 0.34 (8.6) | 6.95 (176.5) | 0.69 (17.5) | 0.50 (12.7) | 1.00 (25.4) |
| 10NSS-MF12-4 | MF12 | 0.516 (13.11) | 3.00 (76.2) | 1.50 (38.1) | 0.60 (15.2) | 3.00 (76.2) | 2.25 (57.2) | 4.63 (117.5) | 10.25 (260.4) | 1.19 (30.2) | 0.44 (11.2) | 8.11 (206.0) | 0.88 (22.4) | 0.63 (16.0) | 1.38 (35.1) |
| 10NSS-MF16-4 | MF16 | 0.688 (17.48) | 4.12 (104.6) | 2.06 (52.3) | 0.74 (18.7) | 3.75 (95.3) | 2.81 (71.4) | 5.88 (149.4) | 10.25 (260.4) | 1.62 (41.2) | 0.56 (14.2) | 10.58 (268.7) | 1.25 (31.8) | 1.13 (28.7) | 1.75 (44.5) |

| 1 on pressure | | | | | | | | | | | | | | | |
|-----------------|------------|------------------|----------------------|-------------|-------------|-------------|----|--------------|---------------|-------------|-------------|--------------|-------------|-------------|-------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 10NSS-MF9-5 | MF9 | 0.359 (9.12) | 2.50 (63.5) | 1.25 (31.8) | 0.55 (14.0) | 1.75 (44.5) | / | 3.38 (85.9) | 4.00 (101.6) | 1.00 (25.4) | 0.34 (8.6) | 6.70 (170.3) | 0.69 (17.5) | 0.50 (12.7) | 1.00 (25.4) |
| 10NSS-MF12-5 | MF12 | 0.516 (13.11) | 3.00 (76.2) | 1.50 (38.1) | 0.60 (15.2) | 2.25 (57.2) | / | 4.25 (107.9) | 10.25 (260.4) | 1.19 (30.2) | 0.44 (11.2) | 7.73 (196.4) | 0.88 (22.4) | 0.63 (16.0) | 1.38 (35.1) |
| 10NSS-MF16-5 | MF16 | 0.688 (17.48) | 4.12 (104.6) | 2.06 (52.3) | 0.74 (18.7) | 2.81 (71.4) | / | 5.12 (130.1) | 10.25 (260.4) | 1.62 (41.2) | 0.56 (14.2) | 9.95 (252.6) | 1.25 (31.8) | 1.13 (28.7) | 1.75 (44.5) |

| 2 stem manifold | | | | | | | | | | | | | | | |
|-----------------|------------|------------------|----------------------|-------------|-------------|-------------|-------------|--------------|---------------|-------------|-------------|---------------|-------------|-------------|-------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 10NSS-MF9-6 | MF9 | 0.359 (9.12) | 2.50 (63.5) | 1.25 (31.8) | 0.55 (14.0) | 2.56 (65.1) | 1.75 (44.5) | 5.13 (130.2) | 4.00 (101.6) | 1.00 (25.4) | 0.34 (8.6) | 8.45 (214.6) | 0.69 (17.5) | 0.50 (12.7) | 1.00 (25.4) |
| 10NSS-MF12-6 | MF12 | 0.516 (13.11) | 3.00 (76.2) | 1.50 (38.1) | 0.60 (15.2) | 3.25 (82.6) | 2.25 (57.2) | 6.50 (165.1) | 10.25 (260.4) | 1.19 (30.2) | 0.44 (11.2) | 9.98 (253.5) | 0.88 (22.4) | 0.63 (16.0) | 1.38 (35.1) |
| 10NSS-MF16-6 | MF16 | 0.688 (17.48) | 4.12 (104.6) | 2.06 (52.3) | 0.74 (18.7) | 3.75 (95.3) | 2.81 (71.4) | 7.50 (190.5) | 10.25 (260.4) | 1.62 (41.2) | 0.56 (14.2) | 12.20 (310.1) | 1.25 (31.8) | 1.13 (28.7) | 1.75 (44.5) |

Ordering Information and Dimensions (Pipe Connection, 2-Way)

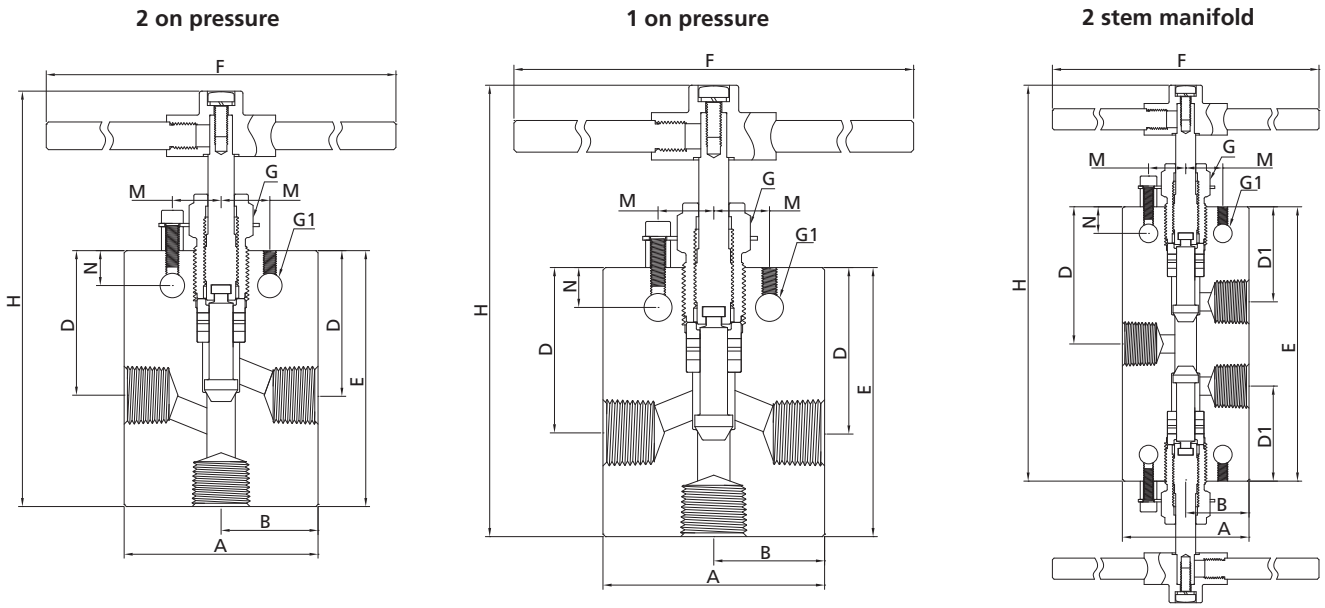


| Straight | | | | | | | | | | | | | | | |
|-----------------|------------|------------------|----------------------|----------------|---|----------------|----|-----------------|------------------|----------------|----------------|-----------------|----------------|----------------|----------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 10NSS-FNS12-1 | FNS12 | 0.437 (11.10) | 3.50 (88.9) | 1.75 (44.5) | / | 2.63 (66.8) | / | 3.75 (95.3) | 10.25 (260.4) | 1.19 (30.2) | 0.44 (11.2) | 7.42 (188.6) | 0.88 (22.4) | 0.63 (16.0) | 1.75 (44.5) |
| 10NSS-FRT12-1 | FRT12 | | | | | | | | | | | | | | |
| 10NSS-FNS16-1 | FNS16 | 0.562 (14.27) | 4.12 (104.6) | 2.06 (52.3) | / | 3.31 (84.1) | / | 4.62 (117.4) | 10.25 (260.4) | 1.62 (41.2) | 0.56 (14.2) | 9.45 (240.1) | 1.25 (31.8) | 1.13 (28.7) | 1.75 (44.5) |
| 10NSS-FRT16-1 | FRT16 | | | | | | | | | | | | | | |

| Angle | | | | | | | | | | | | | | | |
|-----------------|------------|------------------|----------------------|----------------|---|----------------|----|-----------------|------------------|----------------|----------------|-----------------|----------------|----------------|----------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 10NSS-FNS12-2 | FNS12 | 0.437 (11.10) | 3.50 (88.9) | 1.75 (44.5) | / | 2.63 (66.8) | / | 4.25 (107.9) | 10.25 (260.4) | 1.19 (30.2) | 0.44 (11.2) | 7.92 (201.3) | 0.88 (22.4) | 0.63 (16.0) | 1.75 (44.5) |
| 10NSS-FRT12-2 | FRT12 | | | | | | | | | | | | | | |
| 10NSS-FNS16-2 | FNS16 | 0.562 (14.27) | 4.12 (104.6) | 2.06 (52.3) | / | 3.31 (84.1) | / | 5.12 (130.1) | 10.25 (260.4) | 1.64 (41.2) | 0.56 (14.2) | 9.94 (252.5) | 1.25 (31.8) | 1.13 (28.7) | 1.75 (44.5) |
| 10NSS-FRT16-2 | FRT16 | | | | | | | | | | | | | | |

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Ordering Information and Dimensions (Pipe Connection, 3-Way)



| 2 on pressure | | | | | | | | | | | | | | | |
|-----------------|------------|------------------|----------------------|----------------|---|----------------|----|-----------------|------------------|----------------|----------------|------------------|----------------|----------------|----------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 10NSS-FNS12-4 | FNS12 | 0.437 (11.10) | 3.50 (88.9) | 1.75 (44.5) | / | 2.63 (66.8) | / | 4.62 (117.4) | 10.25 (260.4) | 1.19 (30.2) | 0.44 (11.2) | 8.40 (213.4) | 0.88 (22.4) | 0.63 (16.0) | 1.75 (44.5) |
| 10NSS-FRT12-4 | FRT12 | | | | | | | | | | | | | | |
| 10NSS-FNS16-4 | FNS16 | 0.562 (14.27) | 4.12 (104.6) | 2.06 (52.3) | / | 3.31 (84.1) | / | 5.88 (149.4) | 10.25 (260.4) | 1.64 (41.2) | 0.56 (14.2) | 10.70 (271.7) | 1.25 (31.8) | 1.13 (28.7) | 1.75 (44.5) |
| 10NSS-FRT16-4 | FRT16 | | | | | | | | | | | | | | |

| 1 on pressure | | | | | | | | | | | | | | | |
|-----------------|------------|------------------|----------------------|----------------|---|----------------|----|-----------------|------------------|----------------|----------------|-----------------|----------------|----------------|----------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 10NSS-FNS12-5 | FNS12 | 0.437 (11.10) | 3.50 (88.9) | 1.75 (44.5) | / | 2.63 (66.8) | / | 4.25 (107.9) | 10.25 (260.4) | 1.19 (30.2) | 0.44 (11.2) | 7.92 (201.3) | 0.88 (22.4) | 0.63 (16.0) | 1.75 (44.5) |
| 10NSS-FRT12-5 | FRT12 | | | | | | | | | | | | | | |
| 10NSS-FNS16-5 | FNS16 | 0.562 (14.27) | 4.12 (104.6) | 2.06 (52.3) | / | 3.31 (84.1) | / | 5.12 (130.1) | 10.25 (260.4) | 1.62 (41.2) | 0.56 (14.2) | 9.94 (252.5) | 1.25 (31.8) | 1.13 (28.7) | 1.75 (44.5) |
| 10NSS-FRT16-5 | FRT16 | | | | | | | | | | | | | | |

| 2 stem manifold | | | | | | | | | | | | | | | |
|-----------------|------------|------------------|----------------------|----------------|---|----------------|-----------------|-----------------|------------------|----------------|----------------|------------------|----------------|----------------|----------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 10NSS-FNS12-6 | FNS12 | 0.437 (11.10) | 3.50 (88.9) | 1.75 (44.5) | / | 3.25 (82.6) | 2.25 (57.2) | 6.50 (165.1) | 10.25 (260.4) | 1.19 (30.2) | 0.44 (11.2) | 10.28 (261.2) | 0.88 (22.4) | 0.63 (16.0) | 1.75 (44.5) |
| 10NSS-FRT12-6 | FRT12 | | | | | | | | | | | | | | |
| 10NSS-FNS16-6 | FNS16 | 0.562 (14.27) | 4.12 (104.6) | 2.06 (52.3) | / | 3.75 (95.3) | 2.81 (71.42) | 7.50 (190.5) | 10.25 (260.4) | 1.62 (41.2) | 0.56 (14.2) | 12.32 (313.0) | 1.25 (31.8) | 1.13 (28.7) | 1.75 (44.5) |
| 10NSS-FRT16-6 | FRT16 | | | | | | | | | | | | | | |

- NOTES: 1. G is the drill dimension of packing gland mounting hole.
 2. G1 is the dimension of bracket mounting hole.
 3. Panel mounting drill size: 0.25" all valves.
 4. H is the dimension of stem in closed position.
 5. All dimensions for reference only and subject to change. For dimensions not shown above, please contact FITOK group or our authorized distributors.

15N Series: 15,000 psig (1034 bar)

Features

- ⦿ High tensile 316 Stainless Steel for valve body and S17400 Stainless Steel for lower stem
- ⦿ Metal-to-metal seating achieves ideal shutoff, longer stem/seat service lifetime for abrasive flow, excellent corrosion resistance and greater durability for repeated on/off cycles
- ⦿ Non-rotating stem and bar stock body design
- ⦿ Easy to assemble and replace packing
- ⦿ Reliable locking for packing gland
- ⦿ Options for Vee or Regulating stem tips
- ⦿ Five flow patterns available

Technical Data

| Connection Size | Connection | Orifice in. (mm) | Cv | Working Pressure psig (bar) | Working Temperature Range |
|-------------------------------------|------------|------------------|------|-----------------------------|----------------------------|
| 1/8" Female 20D Series Tube Fitting | DFF2 | 0.094 (2.39) | 0.12 | 15, 000 (1034) | -100°F~800°F (-73°C~427°C) |
| 1/4" Female 20D Series Tube Fitting | DFF4 | 0.188 (4.77) | 0.65 | 15, 000 (1034) | |
| 3/8" Female 20D Series Tube Fitting | DFF6 | 0.250 (6.35) | 0.95 | 15, 000 (1034) | |
| 1/2" Female 20D Series Tube Fitting | DFF8 | 0.375 (9.53) | 1.90 | 15, 000 (1034) | |
| 1/8" Female NPT | FNS2 | 0.078 (1.98) | 0.11 | 15, 000 (1034) | -100°F~400°F (-73°C~204°C) |
| 1/8" Female ISO Tapered Thread | FRT2 | | | | |
| 1/4" Female NPT | FNS4 | 0.203 (5.16) | 0.63 | 15, 000 (1034) | |
| 1/4" Female ISO Tapered Thread | FRT4 | | | | |
| 3/8" Female NPT | FNS6 | 0.219 (5.56) | 0.75 | 15, 000 (1034) | |
| 3/8" Female ISO Tapered Thread | FRT6 | | | | |
| 1/2" Female NPT | FNS8 | 0.312 (7.92) | 1.30 | 15, 000 (1034) | |
| 1/2" Female ISO Tapered Thread | FRT8 | | | | |

NOTES: 1. Cv values shown are for 2-way straight valve pattern. For 2-way angle pattern, increase Cv value by 50% (Based on water).

2. Packing Options

PTFE is the standard packing material, RPTFE glass and Graphite also available. Graphite packing not recommended for Hydrogen or Helium service.

PTFE: -100°F~450°F (-73°C~232°C)

RPTFE glass: -100°F~600°F (-73°C~316°C)

Graphite: 0°F~800°F (-17.8°C~427°C)

Fittings

Tubing

Quick Couplings

Line Filters

Valves

Sour Service Products

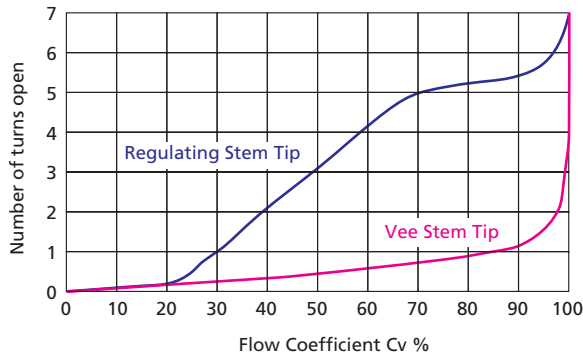
Subsea Valves

Tools and Installation Instructions

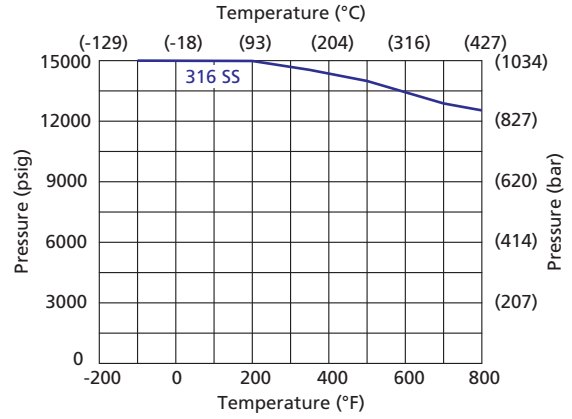
Technical Information

Part Number Crossover Charts

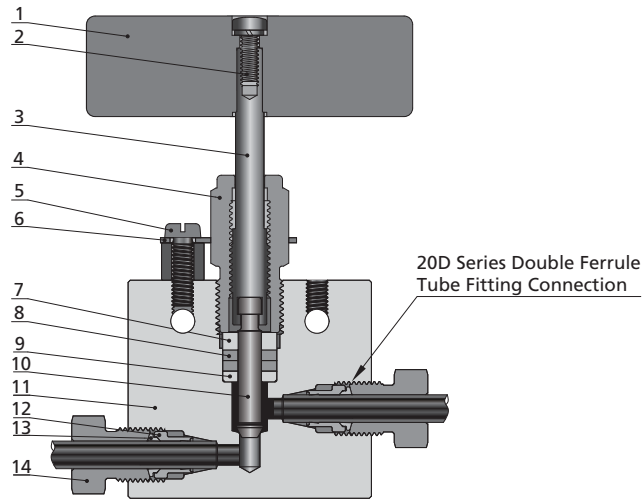
Flow Data at 100°F (38°C)



Pressure vs. Temperature Curve



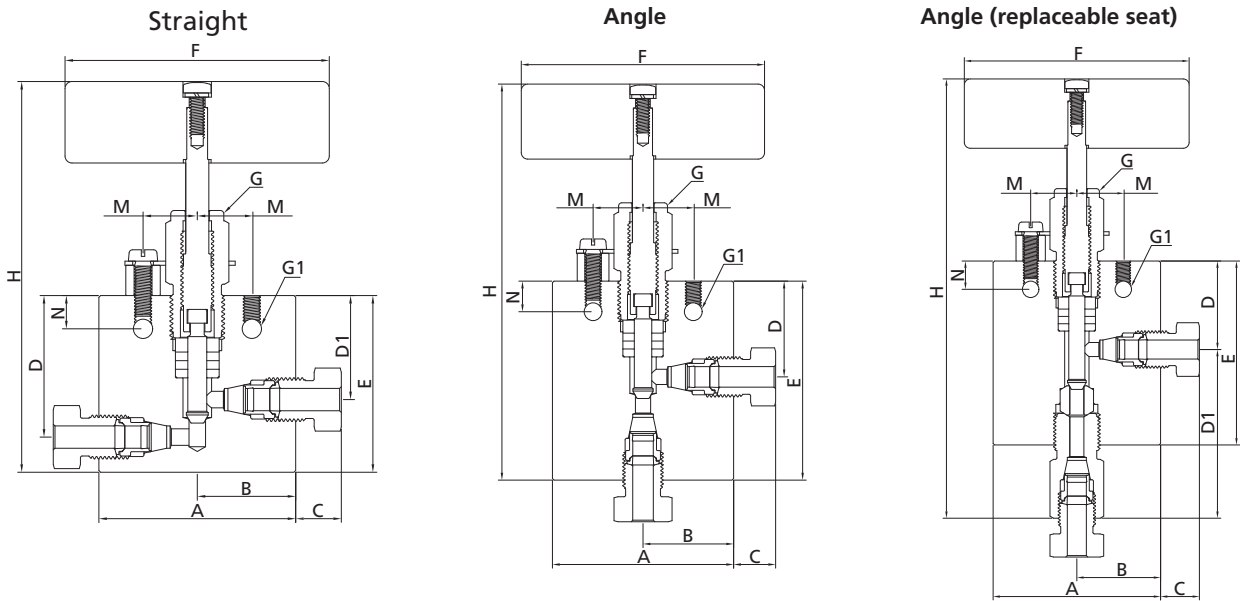
Standard Materials of Construction



| Item | Component | Material Grade |
|------|-----------------------|--|
| 1 | Handle | Stainless steel |
| 2 | Handle Screw | Stainless steel |
| 3 | Upper Stem | 316 SS |
| 4 | Packing Gland | C63000 |
| 5 | Locking Screw | Stainless steel |
| 6 | Locking Plate | 304 SS |
| 7 | Packing Ring | C63000 |
| 8 | <i>Packing</i> | <i>PTFE/RPTFE/Graphite</i> |
| 9 | <i>Packing Washer</i> | <i>S17400</i> |
| 10 | <i>Lower Stem</i> | <i>S17400</i> |
| 11 | <i>Body</i> | <i>316 SS</i> |
| 12 | <i>Front Ferrule</i> | <i>316 SS (For tubing connections)</i> |
| 13 | <i>Rear Ferrule</i> | <i>316 SS (For tubing connections)</i> |
| 14 | <i>Nut</i> | <i>316 SS (For tubing connections)</i> |
| | Lubricant | Molybdenum disulfide |

Wetted component listed in italics.

Ordering Information and Dimensions (Tubing Connection, 2-Way)



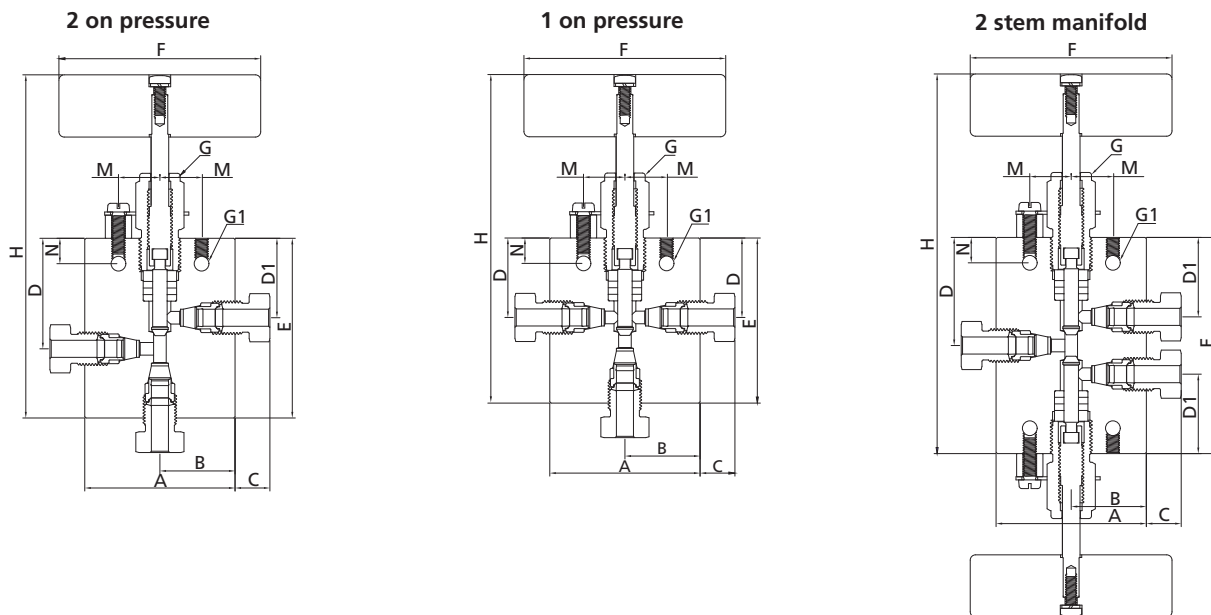
| Straight | | | | | | | | | | | | | | | |
|-----------------|------------|------------------|----------------------|-------------|-------------|-------------|-------------|-------------|--------------|-------------|------------|--------------|-------------|-------------|-------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 15NSS-DFF2-1 | DFF2 | 0.094 (2.39) | 1.81 (46.1) | 0.91 (23.1) | 0.44 (11.2) | 1.06 (27.0) | 0.81 (20.6) | 1.38 (35.0) | 1.75 (44.5) | 0.62 (15.8) | 0.17 (4.3) | 3.13 (79.6) | 0.56 (14.2) | 0.31 (7.9) | 0.62 (15.8) |
| 15NSS-DFF4-1 | DFF4 | 0.188 (4.77) | 2.33 (59.2) | 1.17 (29.6) | 0.52 (13.3) | 1.62 (41.2) | 1.19 (30.2) | 2.00 (50.8) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 4.90 (124.5) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 15NSS-DFF6-1 | DFF6 | 0.250 (6.35) | 2.27 (57.6) | 1.13 (28.8) | 0.54 (13.6) | 1.62 (41.2) | 1.19 (30.2) | 2.00 (50.8) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 4.97 (126.3) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 15NSS-DFF8-1 | DFF8 | 0.375 (9.53) | 2.86 (72.7) | 1.43 (36.4) | 0.60 (15.3) | 2.37 (60.3) | 1.75 (44.5) | 2.88 (73.2) | 4.00 (101.6) | 1.00 (25.4) | 0.34 (8.6) | 6.21 (157.7) | 0.69 (17.5) | 0.50 (12.7) | 1.00 (25.4) |

| Angle | | | | | | | | | | | | | | | |
|-----------------|------------|------------------|----------------------|-------------|-------------|-------------|----|-------------|--------------|-------------|------------|--------------|-------------|-------------|-------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 15NSS-DFF2-2 | DFF2 | 0.094 (2.39) | 1.81 (46.1) | 0.91 (23.1) | 0.44 (11.2) | 0.81 (20.6) | / | 1.72 (43.6) | 1.75 (44.5) | 0.62 (15.8) | 0.17 (4.3) | 3.47 (88.2) | 0.56 (14.2) | 0.31 (7.9) | 0.62 (15.8) |
| 15NSS-DFF4-2 | DFF4 | 0.188 (4.77) | 2.33 (59.2) | 1.17 (29.6) | 0.52 (13.3) | 1.19 (30.2) | / | 2.60 (66.0) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 5.50 (139.7) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 15NSS-DFF6-2 | DFF6 | 0.250 (6.35) | 2.27 (57.6) | 1.13 (28.8) | 0.54 (13.6) | 1.19 (30.2) | / | 2.56 (65.0) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 5.53 (140.5) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 15NSS-DFF8-2 | DFF8 | 0.375 (9.53) | 2.86 (72.7) | 1.43 (36.4) | 0.60 (15.3) | 1.75 (44.5) | / | 3.56 (90.5) | 4.00 (101.6) | 1.00 (25.4) | 0.34 (8.6) | 6.89 (175.0) | 0.69 (17.5) | 0.50 (12.7) | 1.00 (25.4) |

| Angle (replaceable seat) | | | | | | | | | | | | | | | |
|--------------------------|------------|------------------|----------------------|-------------|-------------|-------------|-------------|-------------|--------------|-------------|------------|--------------|-------------|-------------|-------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 15NSS-DFF2-3 | DFF2 | 0.094 (2.39) | 1.81 (46.1) | 0.91 (23.1) | 0.44 (11.2) | 0.81 (20.6) | 1.44 (36.5) | 1.56 (39.7) | 1.75 (44.5) | 0.62 (15.8) | 0.17 (4.3) | 4.00 (101.6) | 0.56 (14.2) | 0.31 (7.9) | 0.62 (15.8) |
| 15NSS-DFF4-3 | DFF4 | 0.188 (4.77) | 2.33 (59.2) | 1.17 (29.6) | 0.52 (13.3) | 1.19 (30.2) | 2.05 (52.0) | 2.25 (57.2) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 6.13 (155.8) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 15NSS-DFF6-3 | DFF6 | 0.250 (6.35) | 2.27 (57.6) | 1.13 (28.8) | 0.54 (13.6) | 1.19 (30.2) | 2.32 (59.0) | 2.25 (57.2) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 6.48 (164.7) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 15NSS-DFF8-3 | DFF8 | 0.375 (9.53) | 2.86 (72.7) | 1.43 (36.4) | 0.60 (15.3) | 1.75 (44.5) | 2.68 (68.1) | 3.25 (82.6) | 4.00 (101.6) | 1.00 (25.4) | 0.34 (8.6) | 7.72 (196.1) | 0.69 (17.5) | 0.50 (12.7) | 1.00 (25.4) |

Fittings
Tubing
Quick Couplings
Line Filters
Valves
Sour Service Products
Subsea Valves
Tools and Installation Instructions
Technical Information
Part Number Crossover Charts

Ordering Information and Dimensions (Tubing Connection, 3-Way)



2 on pressure

| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
|-----------------|------------|------------------|----------------------|----------------|----------------|----------------|----------------|----------------|-----------------|----------------|---------------|-----------------|----------------|----------------|----------------|
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 15NSS-DFF2-4 | DFF2 | 0.094 (2.39) | 1.81 (46.1) | 0.91 (23.1) | 0.44 (11.2) | 1.06 (27.0) | 0.81 (20.6) | 1.85 (46.9) | 1.75 (44.5) | 0.62 (15.8) | 0.17 (4.3) | 3.60 (91.5) | 0.56 (14.2) | 0.31 (7.9) | 0.62 (15.8) |
| 15NSS-DFF4-4 | DFF4 | 0.188 (4.77) | 2.33 (59.2) | 1.17 (29.6) | 0.52 (13.3) | 1.62 (41.2) | 1.19 (30.2) | 2.79 (70.8) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 5.56 (144.5) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 15NSS-DFF6-4 | DFF6 | 0.250 (6.35) | 2.27 (57.6) | 1.13 (28.8) | 0.54 (13.6) | 1.62 (41.2) | 1.19 (30.2) | 2.76 (70.0) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 5.73 (145.5) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 15NSS-DFF8-4 | DFF8 | 0.375 (9.53) | 2.86 (72.7) | 1.43 (36.4) | 0.60 (15.3) | 2.37 (60.3) | 1.75 (44.5) | 3.80 (96.6) | 4.00 (101.6) | 1.00 (25.4) | 0.34 (8.6) | 7.14 (181.3) | 0.69 (17.5) | 0.50 (12.7) | 1.00 (25.4) |

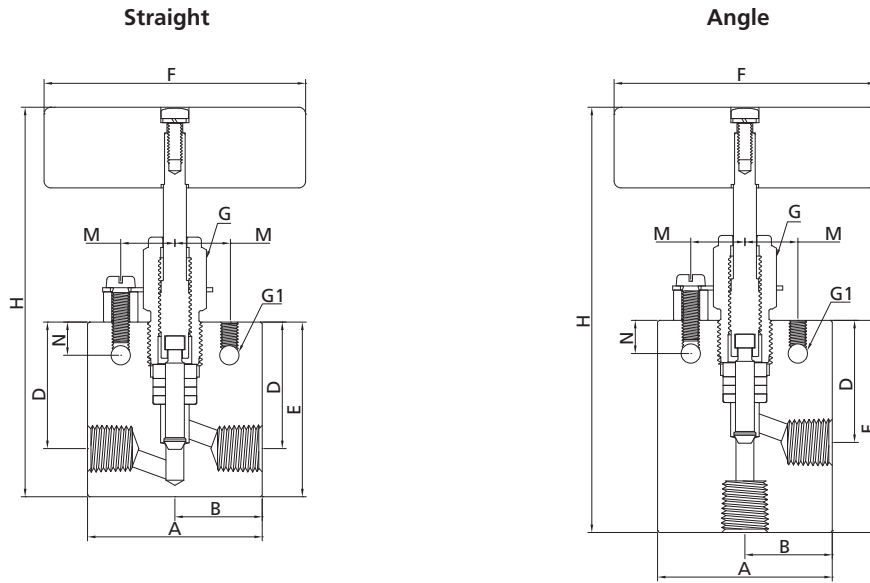
1 on pressure

| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
|-----------------|------------|------------------|----------------------|----------------|----------------|----------------|----|----------------|-----------------|----------------|---------------|-----------------|----------------|----------------|----------------|
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 15NSS-DFF2-5 | DFF2 | 0.094 (2.39) | 1.81 (46.1) | 0.91 (23.1) | 0.44 (11.2) | 0.81 (20.6) | / | 1.72 (43.6) | 1.75 (44.5) | 0.62 (15.8) | 0.17 (4.3) | 3.47 (88.2) | 0.56 (14.2) | 0.31 (7.9) | 0.62 (15.8) |
| 15NSS-DFF4-5 | DFF4 | 0.188 (4.77) | 2.33 (59.2) | 1.17 (29.6) | 0.52 (13.3) | 1.19 (30.2) | / | 2.60 (66.0) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 5.50 (139.7) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 15NSS-DFF6-5 | DFF6 | 0.250 (6.35) | 2.27 (57.6) | 1.13 (28.8) | 0.54 (13.6) | 1.19 (30.2) | / | 2.56 (65.0) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 5.53 (140.5) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 15NSS-DFF8-5 | DFF8 | 0.375 (9.53) | 2.86 (72.7) | 1.43 (36.4) | 0.60 (15.3) | 1.75 (44.5) | / | 3.56 (90.5) | 4.00 (101.6) | 1.00 (25.4) | 0.34 (8.6) | 6.89 (175.0) | 0.69 (17.5) | 0.50 (12.7) | 1.00 (25.4) |

2 stem manifold

| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
|-----------------|------------|------------------|----------------------|----------------|----------------|----------------|----------------|-----------------|-----------------|----------------|---------------|-----------------|----------------|----------------|----------------|
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 15NSS-DFF2-6 | DFF2 | 0.094 (2.39) | 1.81 (46.1) | 0.91 (23.1) | 0.44 (11.2) | 1.13 (28.6) | 0.81 (20.6) | 2.25 (57.2) | 1.75 (44.5) | 0.62 (15.8) | 0.17 (4.3) | 4.00 (101.8) | 0.56 (14.2) | 0.31 (7.9) | 0.62 (15.8) |
| 15NSS-DFF4-6 | DFF4 | 0.188 (4.77) | 2.33 (59.2) | 1.17 (29.6) | 0.52 (13.3) | 1.69 (42.9) | 1.19 (30.2) | 3.38 (85.8) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 6.28 (159.6) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 15NSS-DFF6-6 | DFF6 | 0.250 (6.35) | 2.27 (57.6) | 1.13 (28.8) | 0.54 (13.6) | 1.69 (42.9) | 1.19 (30.2) | 3.38 (85.8) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 6.35 (161.3) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 15NSS-DFF8-6 | DFF8 | 0.375 (9.53) | 2.86 (72.7) | 1.43 (36.4) | 0.60 (15.3) | 2.56 (65.1) | 1.75 (44.5) | 5.13 (130.2) | 4.00 (101.6) | 1.00 (25.4) | 0.34 (8.6) | 8.45 (214.7) | 0.69 (17.5) | 0.50 (12.7) | 1.00 (25.4) |

Ordering Information and Dimensions (Pipe Connection, 2-Way)



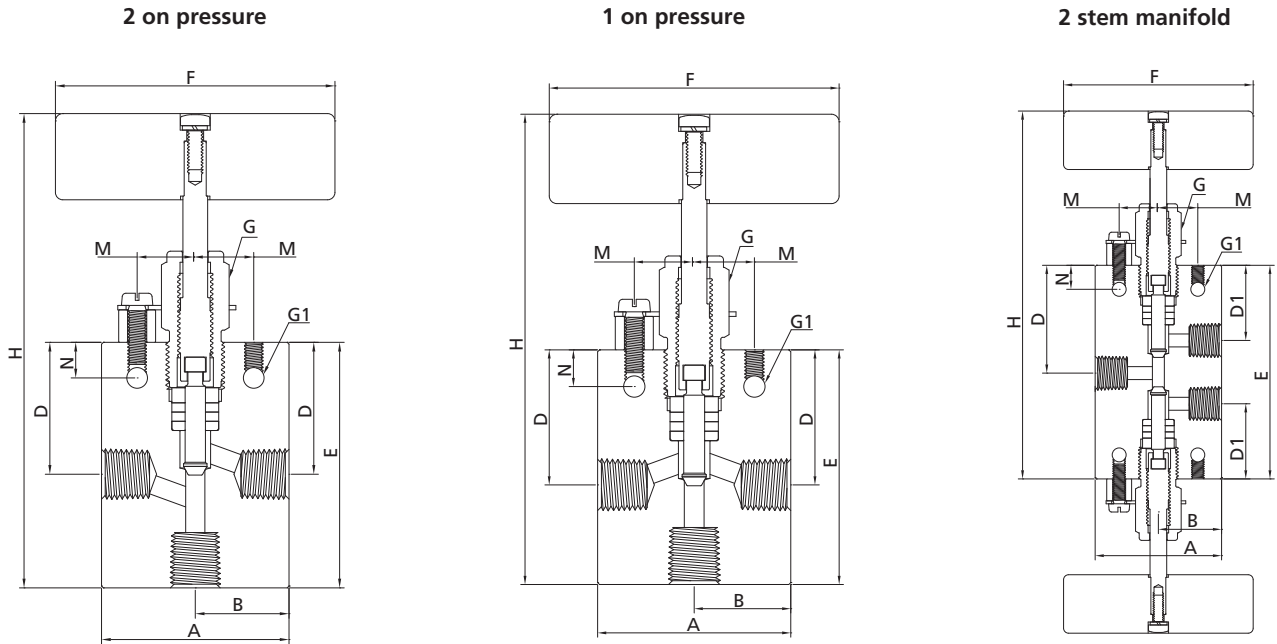
| Straight | | | | | | | | | | | | | | | |
|-----------------|------------|------------------|----------------------|-------------|---|-------------|----|-------------|--------------|-------------|------------|--------------|-------------|-------------|-------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 15NSS-FNS2-1 | FNS2 | 0.078 (1.98) | 1.50 (38.1) | 0.75 (19.1) | / | 0.82 (20.6) | / | 1.25 (31.8) | 1.75 (44.5) | 0.62 (15.8) | 0.17 (4.3) | 3.00 (76.4) | 0.56 (14.2) | 0.31 (7.9) | 0.63 (15.9) |
| 15NSS-FRT2-1 | FRT2 | | | | | | | | | | | | | | |
| 15NSS-FNS4-1 | FNS4 | 0.203 (5.2) | 2.00 (50.8) | 1.00 (25.4) | / | 1.41 (35.8) | / | 2.00 (50.8) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 4.89 (124.1) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 15NSS-FRT4-1 | FRT4 | | | | | | | | | | | | | | |
| 15NSS-FNS6-1 | FNS6 | 0.219 (5.56) | 2.50 (63.5) | 1.25 (31.8) | / | 1.41 (35.8) | / | 2.00 (50.8) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 4.82 (122.5) | 0.62 (15.8) | 0.38 (9.7) | 1.00 (25.4) |
| 15NSS-FRT6-1 | FRT6 | | | | | | | | | | | | | | |
| 15NSS-FNS8-1 | FNS8 | 0.312 (7.92) | 3.00 (76.2) | 1.50 (38.1) | / | 2.06 (52.3) | / | 2.88 (73.2) | 4.00 (101.6) | 1.00 (25.4) | 0.34 (8.6) | 6.18 (157.2) | 0.69 (17.5) | 0.50 (12.7) | 1.38 (35.1) |
| 15NSS-FRT8-1 | FRT8 | | | | | | | | | | | | | | |

| Angle | | | | | | | | | | | | | | | |
|-----------------|------------|------------------|----------------------|-------------|---|-------------|----|-------------|--------------|-------------|------------|--------------|-------------|-------------|-------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 15NSS-FNS2-2 | FNS2 | 0.078 (1.98) | 1.50 (38.1) | 0.75 (19.1) | / | 0.81 (20.6) | / | 1.38 (34.9) | 1.75 (44.5) | 0.62 (15.8) | 0.17 (4.3) | 3.13 (79.5) | 0.56 (14.2) | 0.31 (7.9) | 0.63 (15.9) |
| 15NSS-FRT2-2 | FRT2 | | | | | | | | | | | | | | |
| 15NSS-FNS4-2 | FNS4 | 0.203 (5.2) | 2.00 (50.8) | 1.00 (25.4) | / | 1.41 (35.8) | / | 2.44 (62.0) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 5.33 (135.4) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 15NSS-FRT4-2 | FRT4 | | | | | | | | | | | | | | |
| 15NSS-FNS6-2 | FNS6 | 0.219 (5.56) | 2.50 (63.5) | 1.25 (31.8) | / | 1.41 (35.8) | / | 2.44 (62.0) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 5.34 (135.7) | 0.62 (15.8) | 0.38 (9.7) | 1.00 (25.4) |
| 15NSS-FRT6-2 | FRT6 | | | | | | | | | | | | | | |
| 15NSS-FNS8-2 | FNS8 | 0.312 (7.92) | 3.00 (76.2) | 1.50 (38.1) | / | 2.06 (52.3) | / | 3.38 (85.9) | 4.00 (101.6) | 1.00 (25.4) | 0.34 (8.6) | 6.69 (169.9) | 0.69 (17.5) | 0.50 (12.7) | 1.38 (35.1) |
| 15NSS-FRT8-2 | FRT8 | | | | | | | | | | | | | | |

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Ordering Information and Dimensions (Pipe Connection, 3-Way)

| |
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| 2 on pressure | | | | | | | | | | | | | | | |
|-----------------|------------|------------------|----------------------|--------|---|--------|----|--------|---------|--------|-------|----------|--------|--------|-----------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 15NSS-FNS2-4 | FNS2 | 0.078 (1.98) | 1.50 | 0.75 | / | 0.82 | / | 1.57 | 1.75 | 0.62 | 0.17 | 3.33 | 0.56 | 0.31 | 0.63 |
| 15NSS-FRT2-4 | FRT2 | | (38.1) | (19.1) | | (20.6) | | (40.0) | (44.5) | (15.8) | (4.3) | (84.6) | (14.2) | (7.9) | (15.9) |
| 15NSS-FNS4-4 | FNS4 | 0.203 (5.2) | 2.00 | 1.00 | / | 1.41 | / | 2.62 | 3.00 | 0.75 | 0.22 | 5.51 | 0.62 | 0.38 | 0.75 |
| 15NSS-FRT4-4 | FRT4 | | (50.8) | (25.4) | | (35.8) | | (66.6) | (76.2) | (19.1) | (5.6) | (140.0) | (15.8) | (9.7) | (19.1) |
| 15NSS-FNS6-4 | FNS6 | 0.219 (5.56) | 2.50 | 1.25 | / | 1.41 | / | 2.62 | 3.00 | 0.75 | 0.22 | 5.47 | 0.62 | 0.38 | 1.00 |
| 15NSS-FRT6-4 | FRT6 | | (63.5) | (31.8) | | (35.8) | | (66.6) | (76.2) | (19.1) | (5.6) | (138.9) | (15.8) | (9.7) | (25.4) |
| 15NSS-FNS8-4 | FNS8 | 0.312 (7.92) | 3.00 | 1.50 | / | 2.06 | / | 3.62 | 4.00 | 1.00 | 0.34 | 6.94 | 0.69 | 0.50 | 1.38 |
| 15NSS-FRT8-4 | FRT8 | | (76.2) | (38.1) | | (52.3) | | (92.0) | (101.6) | (25.4) | (8.6) | (176.26) | (17.5) | (12.7) | (35.1) |

| 1 on pressure | | | | | | | | | | | | | | | |
|-----------------|------------|------------------|----------------------|--------|---|--------|----|--------|---------|--------|-------|---------|--------|--------|-----------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 15NSS-FNS2-5 | FNS2 | 0.078 (1.98) | 1.50 | 0.75 | / | 0.82 | / | 1.38 | 1.75 | 0.62 | 0.17 | 3.13 | 0.56 | 0.31 | 0.63 |
| 15NSS-FRT2-5 | FRT2 | | (38.1) | (19.1) | | (20.6) | | (35.0) | (44.5) | (15.8) | (4.3) | (79.5) | (14.2) | (7.9) | (15.9) |
| 15NSS-FNS4-5 | FNS4 | 0.203 (5.2) | 2.00 | 1.00 | / | 1.41 | / | 2.44 | 3.00 | 0.75 | 0.22 | 5.33 | 0.62 | 0.38 | 0.75 |
| 15NSS-FRT4-5 | FRT4 | | (50.8) | (25.4) | | (35.8) | | (62.0) | (76.2) | (19.1) | (5.6) | (135.4) | (15.8) | (9.7) | (19.1) |
| 15NSS-FNS6-5 | FNS6 | 0.219 (5.56) | 2.50 | 1.25 | / | 1.41 | / | 2.44 | 3.00 | 0.75 | 0.22 | 5.34 | 0.62 | 0.38 | 1.00 |
| 15NSS-FRT6-5 | FRT6 | | (63.5) | (31.8) | | (35.8) | | (62.0) | (76.2) | (19.1) | (5.6) | (135.7) | (15.8) | (9.7) | (25.4) |
| 15NSS-FNS8-5 | FNS8 | 0.312 (7.92) | 3.00 | 1.50 | / | 2.06 | / | 3.38 | 4.00 | 1.00 | 0.34 | 6.69 | 0.69 | 0.50 | 1.38 |
| 15NSS-FRT8-5 | FRT8 | | (76.2) | (38.1) | | (52.3) | | (85.9) | (101.6) | (25.4) | (8.6) | (169.9) | (17.5) | (12.7) | (35.1) |

| 2 stem manifold | | | | | | | | | | | | | | | |
|-----------------|------------|------------------|----------------------|----------------|---|----------------|----------------|-----------------|-----------------|----------------|---------------|-----------------|----------------|----------------|----------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 15NSS-FNS2-6 | FNS2 | 0.078 (1.98) | 1.50 (38.1) | 0.75 (19.1) | / | 1.00 (25.6) | 0.68 (17.2) | 2.02 (51.2) | 1.75 (44.5) | 0.62 (15.8) | 0.17 (4.3) | 3.77 (95.8) | 0.56 (14.2) | 0.31 (7.9) | 0.63 (15.9) |
| 15NSS-FRT2-6 | FRT2 | | | | | | | | | | | | | | |
| 15NSS-FNS4-6 | FNS4 | 0.203 (5.2) | 2.00 (50.8) | 1.00 (25.4) | / | 1.69 (42.9) | 1.19 (30.2) | 3.38 (85.9) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 6.27 (159.2) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 15NSS-FRT4-6 | FRT4 | | | | | | | | | | | | | | |
| 15NSS-FNS6-6 | FNS6 | 0.219 (5.56) | 2.50 (63.5) | 1.25 (31.8) | / | 1.69 (42.9) | 1.19 (30.2) | 3.38 (85.9) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 6.22 (158.1) | 0.62 (15.8) | 0.38 (9.7) | 1.00 (25.4) |
| 15NSS-FRT6-6 | FRT6 | | | | | | | | | | | | | | |
| 15NSS-FNS8-6 | FNS8 | 0.312 (7.92) | 3.00 (76.2) | 1.50 (38.1) | / | 2.56 (65.1) | 1.75 (44.5) | 5.12 (130.1) | 4.00 (101.6) | 1.00 (25.4) | 0.34 (8.6) | 8.43 (214.2) | 0.69 (17.5) | 0.50 (12.7) | 1.38 (35.1) |
| 15NSS-FRT8-6 | FRT8 | | | | | | | | | | | | | | |

- NOTES: 1. G is the drill dimension of packing gland mounting hole.
 2. G1 is the dimension of bracket mounting hole.
 3. Panel mounting drill size: 0.25" all valves.
 4. H is the dimension of stem in closed position.
 5. All dimensions for reference only and subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

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20N Series: 20,000 psig (1379 bar)

Features

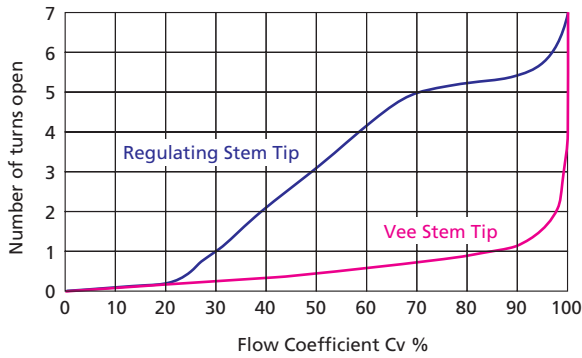
- ⦿ High tensile 316 Stainless Steel for valve body and S17400 Stainless Steel for lower stem
- ⦿ Metal-to-metal seating achieves ideal shutoff, longer stem/seat service lifetime for abrasive flow, excellent corrosion resistance and greater durability for repeated on/off cycles
- ⦿ Non-rotating stem and bar stock body design
- ⦿ Easy to assemble and replace packing
- ⦿ Reliable locking for packing gland
- ⦿ Options for Vee or Regulating stem tips
- ⦿ Five flow patterns available

Technical Data

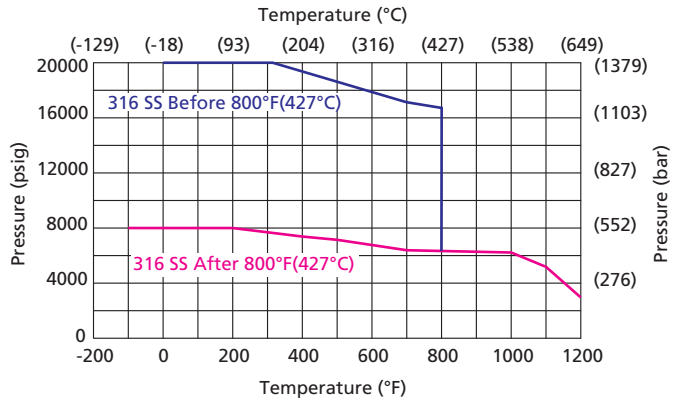
| Tube O.D. in. | Connection | Orifice in. (mm) | Cv | Working Pressure psig (bar) | Working Temperature Range |
|------------------|------------|---------------------|------|--------------------------------|-----------------------------|
| 1/4 | MF4 | 0.125 (3.18) | 0.31 | 20,000 (1379) | -100°F~1200°F (-73°C~649°C) |
| 3/8 | MF6 | 0.204 (5.18) | 0.68 | 20,000 (1379) | |
| 9/16 | MF9 | 0.312 (7.92) | 1.30 | 20,000 (1379) | |
| 3/4 | MF12 | 0.438 (11.13) | 2.50 | 20,000 (1379) | |
| 1 | MF16 | 0.562 (14.27) | 4.40 | 20,000 (1379) | |

- NOTES: 1. Cv values shown are for 2-way straight valve pattern. For 2-way angle pattern, increase Cv value by 50% (Based on water).
2. Packing Options
 PTFE is the standard packing material, RPTFE glass, Graphite and extended stuffing box with Graphite also available. Graphite packing not recommended for Hydrogen or Helium service.
 PTFE: -100°F~450°F (-73°C~232°C)
 RPTFE glass: -100°F~600°F (-73°C~316°C)
 Graphite: 0°F~800°F (-17.8°C~427°C)
 Extended stuffing box with Graphite: -100°F~1200°F (-73°C~649°C)

Flow Data at 100°F (38°C)

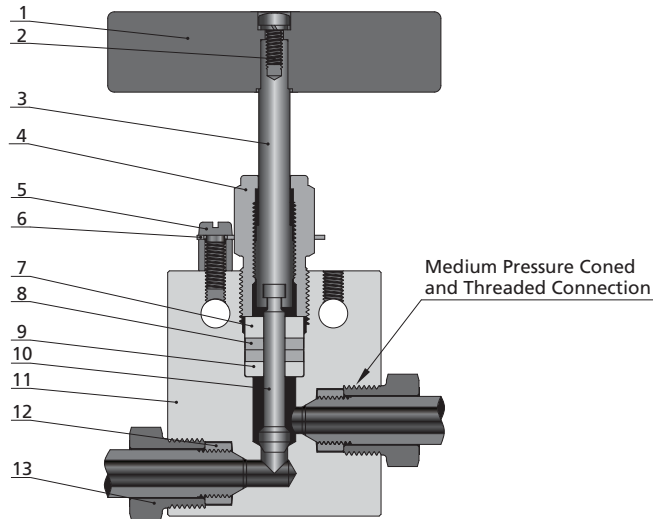


Pressure vs. Temperature Curve



NOTE: When temperature exceeds 800°F (427°C), use the pink curve as its cold-worked rating for future operating of the components.

Standard Materials of Construction

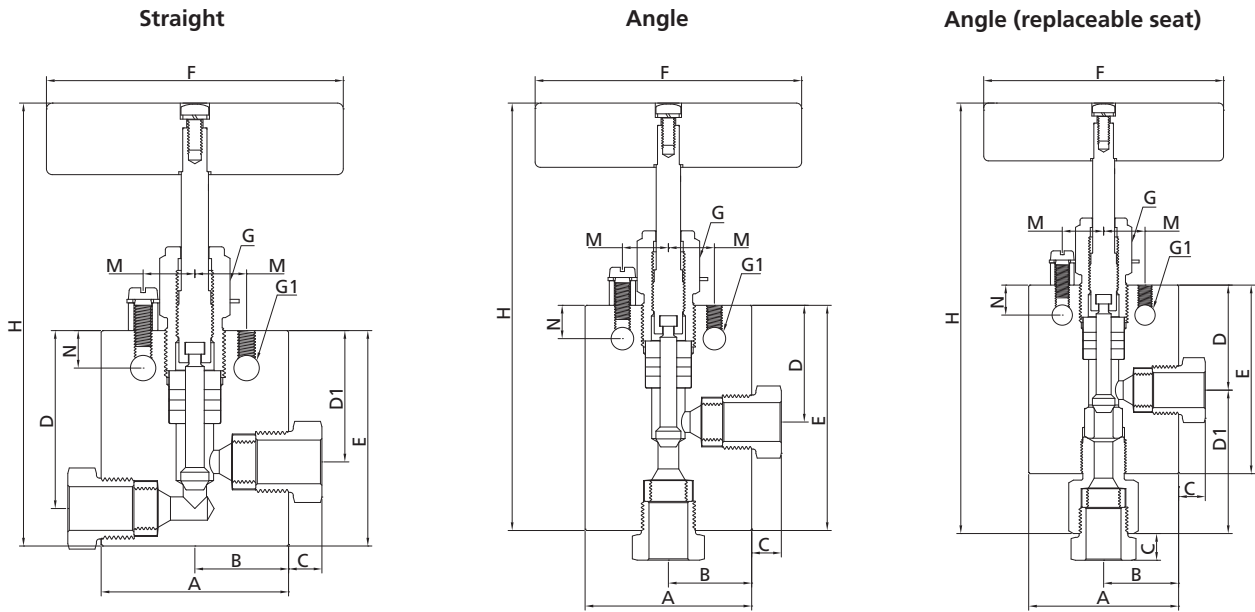


| Item | Component | Material Grade |
|------|-----------------------|--|
| 1 | Handle | Stainless steel |
| 2 | Handle Screw | Stainless steel |
| 3 | Upper Stem | 316 SS |
| 4 | Packing Gland | C63000 |
| 5 | Locking Screw | Stainless steel |
| 6 | Locking Plate | 304 SS |
| 7 | Packing Ring | C63000 |
| 8 | <i>Packing</i> | <i>PTFE/RPTFE glass/Graphite/Extended stuffing box with Graphite</i> |
| 9 | <i>Packing Washer</i> | <i>S17400</i> |
| 10 | <i>Lower Stem</i> | <i>S17400</i> |
| 11 | <i>Body</i> | <i>316 SS</i> |
| 12 | Collar | 316 SS (For tubing connections) |
| 13 | Gland | 316 SS (For tubing connections) |
| | Lubricant | Molybdenum disulfide |

Wetted component listed in italics.

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Ordering Information and Dimensions (Tubing Connection, 2-Way)

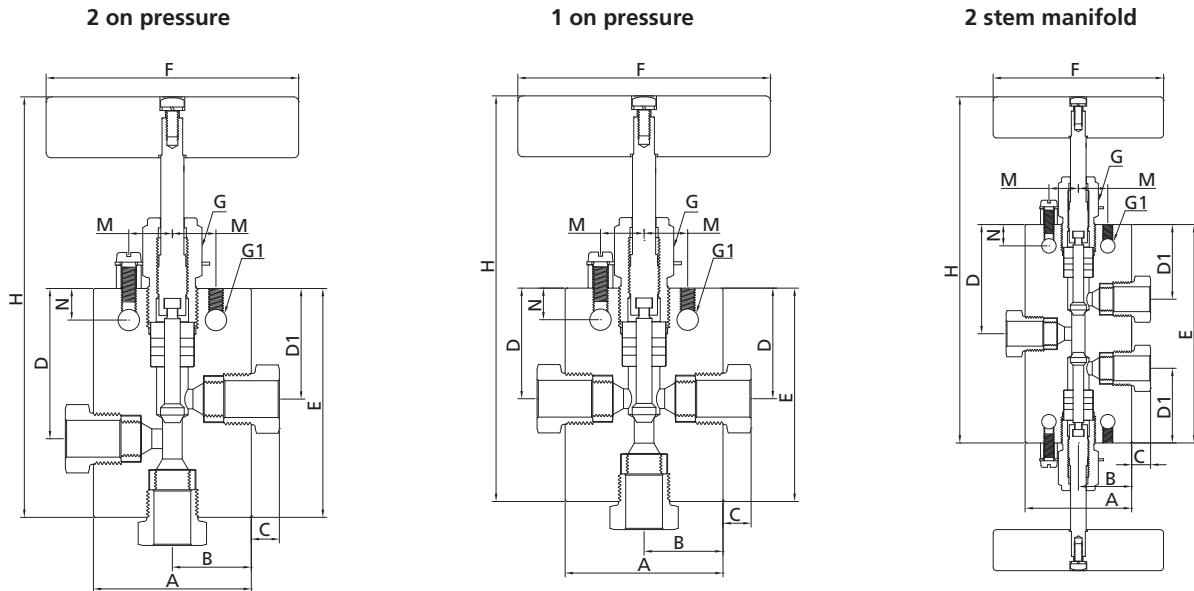


| Straight | | | | | | | | | | | | | | | |
|-----------------|------------|------------------|----------------------|-------------|-------------|-------------|-------------|--------------|---------------|-------------|-------------|--------------|-------------|-------------|-------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 20NSS-MF4-1 | MF4 | 0.125 (3.18) | 2.00 (50.8) | 1.00 (25.4) | 0.38 (9.7) | 1.62 (41.2) | 1.19 (30.2) | 2.00 (50.8) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 4.85 (123.1) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 20NSS-MF6-1 | MF6 | 0.204 (5.18) | 2.00 (50.8) | 1.00 (25.4) | 0.44 (11.2) | 1.62 (41.2) | 1.19 (30.2) | 2.00 (50.8) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 4.89 (124.2) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 20NSS-MF9-1 | MF9 | 0.312 (7.92) | 2.50 (63.5) | 1.25 (31.8) | 0.55 (14.0) | 2.37 (60.3) | 1.75 (44.5) | 2.88 (73.2) | 4.00 (101.6) | 1.00 (25.4) | 0.34 (8.6) | 6.18 (157.2) | 0.69 (17.5) | 0.50 (12.7) | 1.00 (25.4) |
| 20NSS-MF12-1 | MF12 | 0.438 (11.13) | 3.00 (76.2) | 1.50 (38.1) | 0.60 (15.2) | 3.00 (76.2) | 2.25 (57.2) | 3.75 (95.3) | 10.25 (260.4) | 1.19 (30.2) | 0.44 (11.2) | 7.37 (187.2) | 0.88 (22.4) | 0.63 (16.0) | 1.38 (35.1) |
| 20NSS-MF16-1 | MF16 | 0.562 (14.27) | 4.12 (104.6) | 2.06 (52.3) | 0.74 (18.7) | 3.75 (95.3) | 2.81 (71.4) | 4.63 (117.6) | 10.25 (260.4) | 1.62 (41.2) | 0.56 (14.2) | 9.45 (240.1) | 1.25 (31.8) | 1.13 (28.7) | 1.75 (44.5) |

| Angle | | | | | | | | | | | | | | | |
|-----------------|------------|------------------|----------------------|-------------|-------------|-------------|-------------|--------------|---------------|-------------|-------------|--------------|-------------|-------------|-------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 20NSS-MF4-2 | MF4 | 0.125 (3.18) | 2.00 (50.8) | 1.00 (25.4) | 0.38 (9.7) | 1.19 (30.2) | 1.19 (30.2) | 2.44 (61.9) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 5.28 (134.2) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 20NSS-MF6-2 | MF6 | 0.204 (5.18) | 2.00 (50.8) | 1.00 (25.4) | 0.44 (11.2) | 1.19 (30.2) | 1.19 (30.2) | 2.44 (61.9) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 5.33 (135.4) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 20NSS-MF9-2 | MF9 | 0.312 (7.92) | 2.50 (63.5) | 1.25 (31.8) | 0.55 (14.0) | 1.75 (44.5) | 1.75 (44.5) | 3.38 (85.9) | 4.00 (101.6) | 1.00 (25.4) | 0.34 (8.6) | 6.69 (170.0) | 0.69 (17.5) | 0.50 (12.7) | 1.00 (25.4) |
| 20NSS-MF12-2 | MF12 | 0.438 (11.13) | 3.00 (76.2) | 1.50 (38.1) | 0.60 (15.2) | 2.25 (57.2) | 2.25 (57.2) | 4.25 (108.0) | 10.25 (260.4) | 1.19 (30.2) | 0.44 (11.2) | 7.87 (199.9) | 0.88 (22.4) | 0.63 (16.0) | 1.38 (35.1) |
| 20NSS-MF16-2 | MF16 | 0.562 (14.27) | 4.12 (104.6) | 2.06 (52.3) | 0.74 (18.7) | 2.81 (71.4) | 2.81 (71.4) | 5.12 (130.1) | 10.25 (260.4) | 1.62 (41.2) | 0.56 (14.2) | 9.94 (252.6) | 1.25 (31.8) | 1.13 (28.7) | 1.75 (44.5) |

| Angle (replaceable seat) | | | | | | | | | | | | | | | |
|--------------------------|------------|------------------|----------------------|-------------|-------------|-------------|--------------|--------------|---------------|-------------|-------------|---------------|-------------|-------------|-------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 20NSS-MF4-3 | MF4 | 0.125 (3.18) | 2.00 (50.8) | 1.00 (25.4) | 0.38 (9.7) | 1.19 (30.2) | 2.13 (54.0) | 2.25 (57.2) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 6.10 (154.9) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 20NSS-MF6-3 | MF6 | 0.204 (5.18) | 2.00 (50.8) | 1.00 (25.4) | 0.44 (11.2) | 1.19 (30.2) | 2.13 (54.0) | 2.25 (57.2) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 6.16 (156.5) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 20NSS-MF9-3 | MF9 | 0.312 (7.92) | 2.50 (63.5) | 1.25 (31.8) | 0.55 (14.0) | 1.75 (44.5) | 2.50 (63.5) | 3.13 (79.4) | 4.00 (101.6) | 1.00 (25.4) | 0.34 (8.6) | 7.58 (192.1) | 0.69 (17.5) | 0.50 (12.7) | 1.00 (25.4) |
| 20NSS-MF12-3 | MF12 | 0.438 (11.13) | 3.00 (76.2) | 1.50 (38.1) | 0.60 (15.2) | 2.25 (57.2) | 3.44 (87.4) | 4.25 (108.0) | 10.25 (260.4) | 1.19 (30.2) | 0.44 (11.2) | 9.30 (236.3) | 0.88 (22.4) | 0.63 (16.0) | 1.38 (35.1) |
| 20NSS-MF16-3 | MF16 | 0.562 (14.27) | 4.12 (104.6) | 2.06 (52.3) | 0.74 (18.7) | 2.81 (71.4) | 4.22 (107.4) | 5.25 (133.4) | 10.25 (260.4) | 1.62 (41.2) | 0.56 (14.2) | 11.86 (301.3) | 1.25 (31.8) | 1.13 (28.7) | 1.75 (44.5) |

Ordering Information and Dimensions (Tubing Connection, 3-Way)



| 2 on pressure | | | | | | | | | | | | | | | |
|-----------------|------------|------------------|----------------------|-------------|-------------|-------------|-------------|--------------|---------------|-------------|-------------|---------------|-------------|-------------|-------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 20NSS-MF4-4 | MF4 | 0.125 (3.18) | 2.00 (50.8) | 1.00 (25.4) | 0.38 (9.7) | 1.63 (41.3) | 1.19 (30.2) | 2.63 (66.7) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 5.47 (139.0) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 20NSS-MF6-4 | MF6 | 0.204 (5.18) | 2.00 (50.8) | 1.00 (25.4) | 0.44 (11.2) | 1.63 (41.3) | 1.19 (30.2) | 2.63 (66.7) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 5.52 (140.1) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 20NSS-MF9-4 | MF9 | 0.312 (7.92) | 2.50 (63.5) | 1.25 (31.8) | 0.55 (14.0) | 2.37 (60.3) | 1.75 (44.5) | 3.63 (92.1) | 4.00 (101.6) | 1.00 (25.4) | 0.34 (8.6) | 6.94 (176.3) | 0.69 (17.5) | 0.50 (12.7) | 1.00 (25.4) |
| 20NSS-MF12-4 | MF12 | 0.438 (11.13) | 3.00 (76.2) | 1.50 (38.1) | 0.60 (15.2) | 3.00 (76.2) | 2.25 (57.2) | 4.63 (117.5) | 10.25 (260.4) | 1.19 (30.2) | 0.44 (11.2) | 8.24 (209.4) | 0.88 (22.4) | 0.63 (16.0) | 1.38 (35.1) |
| 20NSS-MF16-4 | MF16 | 0.562 (14.27) | 4.12 (104.6) | 2.06 (52.3) | 0.74 (18.7) | 3.75 (95.3) | 2.81 (71.4) | 5.88 (149.4) | 10.25 (260.4) | 1.62 (41.2) | 0.56 (14.2) | 10.70 (271.9) | 1.25 (31.8) | 1.13 (28.7) | 1.75 (44.5) |

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E-30 Needle Valves and Pneumatic Needle Valves

| 1 on pressure | | | | | | | | | | | | | | | |
|-----------------|------------|------------------|----------------------|----------------|----------------|----------------|----|-----------------|------------------|----------------|----------------|-----------------|----------------|----------------|----------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 20NSS-MF4-5 | MF4 | 0.125 (3.18) | 2.00 (50.8) | 1.00 (25.4) | 0.38 (9.7) | 1.19 (30.2) | | 2.44 (61.9) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 5.28 (134.2) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 20NSS-MF6-5 | MF6 | 0.204 (5.18) | 2.00 (50.8) | 1.00 (25.4) | 0.44 (11.2) | 1.19 (30.2) | | 2.44 (61.9) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 5.33 (135.4) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 20NSS-MF9-5 | MF9 | 0.312 (7.92) | 2.50 (63.5) | 1.25 (31.8) | 0.55 (14.0) | 1.75 (44.5) | | 3.38 (85.9) | 4.00 (101.6) | 1.00 (25.4) | 0.34 (8.6) | 6.69 (170.0) | 0.69 (17.5) | 0.50 (12.7) | 1.00 (25.4) |
| 20NSS-MF12-5 | MF12 | 0.438 (11.13) | 3.00 (76.2) | 1.50 (38.1) | 0.60 (15.2) | 2.25 (57.2) | | 4.25 (108.0) | 10.25 (260.4) | 1.19 (30.2) | 0.44 (11.2) | 7.87 (199.9) | 0.88 (22.4) | 0.63 (16.0) | 1.38 (35.1) |
| 20NSS-MF16-5 | MF16 | 0.562 (14.27) | 4.12 (104.6) | 2.06 (52.3) | 0.74 (18.7) | 2.81 (71.4) | | 5.12 (130.1) | 10.25 (260.4) | 1.62 (41.2) | 0.56 (14.2) | 9.94 (252.6) | 1.25 (31.8) | 1.13 (28.7) | 1.75 (44.5) |

| 2 stem manifold | | | | | | | | | | | | | | | |
|-----------------|------------|------------------|----------------------|----------------|----------------|----------------|----------------|-----------------|------------------|----------------|----------------|------------------|----------------|----------------|----------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 20NSS-MF4-6 | MF4 | 0.125 (3.18) | 2.00 (50.8) | 1.00 (25.4) | 0.38 (9.7) | 1.69 (42.9) | 1.19 (30.2) | 3.38 (85.7) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 6.23 (158.1) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 20NSS-MF6-6 | MF6 | 0.204 (5.18) | 2.00 (50.8) | 1.00 (25.4) | 0.44 (11.2) | 1.69 (42.9) | 1.19 (30.2) | 3.38 (85.7) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 6.24 (158.6) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 20NSS-MF9-6 | MF9 | 0.312 (7.92) | 2.50 (63.5) | 1.25 (31.8) | 0.55 (14.0) | 2.56 (65.1) | 1.75 (44.5) | 5.13 (130.2) | 4.00 (101.6) | 1.00 (25.4) | 0.34 (8.6) | 8.44 (214.4) | 0.69 (17.5) | 0.50 (12.7) | 1.00 (25.4) |
| 20NSS-MF12-6 | MF12 | 0.438 (11.13) | 3.00 (76.2) | 1.50 (38.1) | 0.60 (15.2) | 3.00 (76.2) | 2.25 (57.2) | 6.50 (165.1) | 10.25 (260.4) | 1.19 (30.2) | 0.44 (11.2) | 10.11 (257.0) | 0.88 (22.4) | 0.63 (16.0) | 1.38 (35.1) |
| 20NSS-MF16-6 | MF16 | 0.562 (14.27) | 4.12 (104.6) | 2.06 (52.3) | 0.74 (18.7) | 3.75 (95.3) | 2.81 (71.4) | 7.50 (190.5) | 10.25 (260.4) | 1.62 (41.2) | 0.56 (14.2) | 12.32 (313.0) | 1.25 (31.8) | 1.13 (28.7) | 1.75 (44.5) |

- NOTES: 1. G is the drill dimension of packing gland mounting hole.
 2. G1 is the dimension of bracket mounting hole.
 3. Panel mounting drill size: 0.25" all valves.
 4. H is the dimension of stem in closed position.
 5. All dimensions for reference only and subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

30N Series: 30,000 psig (2068 bar)

Features

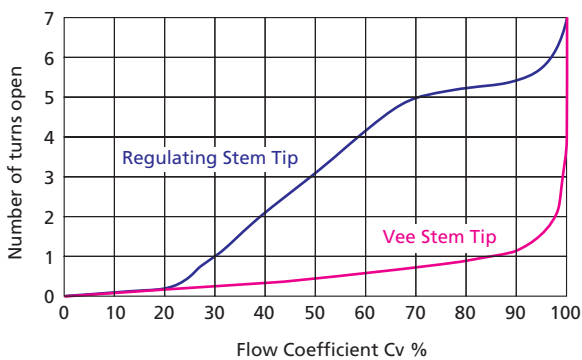
- ⦿ High tensile 316 Stainless Steel for valve body and S17400 Stainless Steel for lower stem
- ⦿ Metal-to-metal seating achieves ideal shutoff, longer stem/seat service lifetime for abrasive flow, excellent corrosion resistance and greater durability for repeated on/off cycles
- ⦿ Non-rotating stem and bar stock body design
- ⦿ Easy to assemble and replace packing
- ⦿ Reliable packing gland locking device
- ⦿ Options for Vee or Regulating stem tips
- ⦿ Five flow patterns available

Technical Data

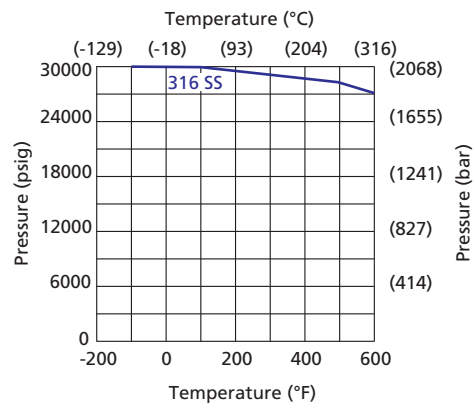
| Tube O.D. in. | Connection | Orifice in. (mm) | Cv | Working Pressure psig (bar) | Working Temperature Range |
|---------------|------------|------------------|------|-----------------------------|----------------------------|
| 1/4 | HF4 | 0.094 (2.39) | 0.12 | 30,000 (2068) | -100°F~600°F (-73°C~316°C) |
| 3/8 | HF6 | 0.125 (3.18) | 0.23 | 30,000 (2068) | |
| 9/16 | HF9 | 0.125 (3.18) | 0.33 | 30,000 (2068) | |

NOTES: 1. Cv values shown are for 2-way straight valve pattern. For 2-way angle pattern, increase Cv value by 50% (Based on water).
 2. Packing Options
 PTFE is the standard packing material, RPTFE glass also available
 PTFE: -100°F~450°F (-73°C~232°C)
 RPTFE glass: -100°F~600°F(-73°C~316°C)

Flow Data at 100°F (38°C)

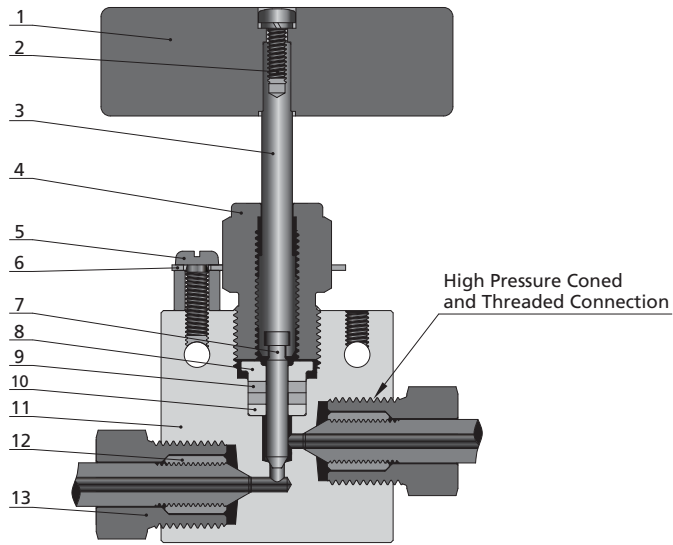


Pressure vs. Temperature Curve



- Fittings
- Tubing
- Quick Couplings
- Line Filters
- Valves
- Sour Service Products
- Subsea Valves
- Tools and Installation Instructions
- Technical Information
- Part Number Crossover Charts

Standard Materials of Construction

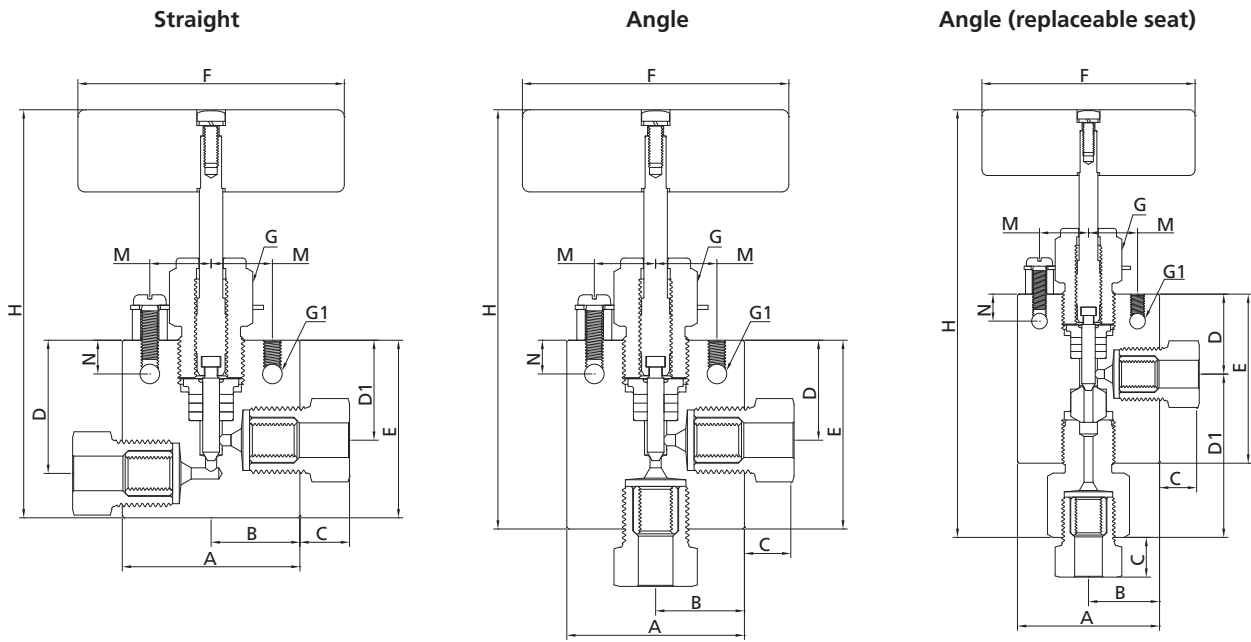


| Item | Component | Material Grade |
|------|-----------------------|----------------------|
| 1 | Handle | Stainless steel |
| 2 | Handle Screw | Stainless steel |
| 3 | Upper Stem | 316 SS |
| 4 | Packing Gland | C63000 |
| 5 | Locking Screw | Stainless steel |
| 6 | Locking Plate | 304 SS |
| 7 | <i>Lower Stem</i> | <i>S17400</i> |
| 8 | Packing Ring | C63000 |
| 9 | <i>Packing</i> | <i>PTFE / RPTFE</i> |
| 10 | <i>Packing Washer</i> | <i>S17400</i> |
| 11 | <i>Body</i> | <i>316 SS</i> |
| 12 | Collar | 316 SS |
| 13 | Gland | 316 SS |
| | Lubricant | Molybdenum disulfide |

Wetted component listed in italics.

| |
|-------------------------------------|
| Fittings |
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| Technical Information |
| Part Number Crossover Charts |

Ordering Information and Dimensions (Tubing Connection, 2-Way)



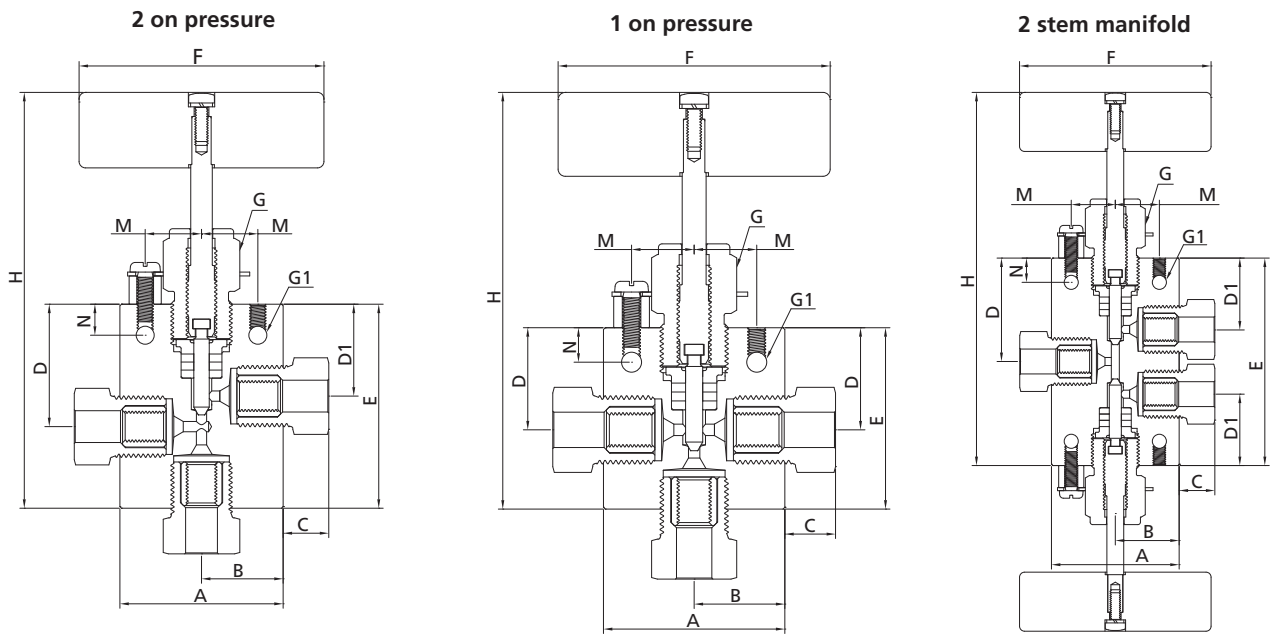
| Straight | | | | | | | | | | | | | | | |
|-----------------|------------|------------------|----------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------|--------------|-------------|------------|-------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 30NSS-HF4-1 | HF4 | 0.094 (2.39) | 2.00 (50.8) | 1.00 (25.4) | 0.47 (11.9) | 1.50 (38.1) | 1.12 (28.5) | 2.00 (50.8) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 4.69 (119.1) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 30NSS-HF6-1 | HF6 | 0.125 (3.18) | 2.00 (50.8) | 1.00 (25.4) | 0.61 (15.6) | 1.50 (38.1) | 1.12 (28.5) | 2.00 (50.8) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 4.69 (119.1) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 30NSS-HF9-1 | HF9 | 0.125 (3.18) | 2.62 (66.6) | 1.31 (33.3) | 0.95 (24.1) | 1.56 (39.6) | 1.12 (28.5) | 2.44 (62.0) | 3.00 (76.2) | 1.00 (25.4) | 0.28 (7.1) | 5.13 (130.3) | 0.69 (17.5) | 0.38 (9.7) | 1.50 (38.1) |

| Angle | | | | | | | | | | | | | | | |
|-----------------|------------|------------------|----------------------|-------------|-------------|-------------|----|-------------|-------------|-------------|------------|--------------|-------------|------------|-------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 30NSS-HF4-2 | HF4 | 0.094 (2.39) | 2.00 (50.8) | 1.00 (25.4) | 0.47 (11.9) | 1.12 (28.5) | / | 2.00 (50.8) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 4.69 (119.1) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 30NSS-HF6-2 | HF6 | 0.125 (3.18) | 2.00 (50.8) | 1.00 (25.4) | 0.61 (15.6) | 1.12 (28.5) | / | 2.25 (57.2) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 4.95 (125.7) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 30NSS-HF9-2 | HF9 | 0.125 (3.18) | 2.62 (66.6) | 1.31 (33.3) | 0.95 (24.1) | 1.12 (28.5) | / | 2.44 (62.0) | 3.00 (76.2) | 1.00 (25.4) | 0.28 (7.1) | 5.13 (130.3) | 0.69 (17.5) | 0.38 (9.7) | 1.50 (38.1) |

| Angle (replaceable seat) | | | | | | | | | | | | | | | |
|--------------------------|------------|------------------|----------------------|-------------|-------------|-------------|--------------|-------------|-------------|-------------|------------|--------------|-------------|------------|-------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 30NSS-HF4-3 | HF4 | 0.094 (2.39) | 2.00 (50.8) | 1.00 (25.4) | 0.47 (11.9) | 1.12 (28.5) | 2.06 (52.3) | 2.38 (60.5) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 5.88 (149.2) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 30NSS-HF6-3 | HF6 | 0.125 (3.18) | 2.00 (50.8) | 1.00 (25.4) | 0.61 (15.6) | 1.12 (28.5) | 2.31 (58.67) | 2.38 (60.5) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 6.12 (155.4) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 30NSS-HF9-3 | HF9 | 0.125 (3.18) | 2.62 (66.6) | 1.31 (33.3) | 0.95 (24.1) | 1.12 (28.6) | 2.57 (65.3) | 2.46 (62.4) | 3.00 (76.2) | 1.00 (25.4) | 0.28 (7.1) | 6.39 (162.4) | 0.69 (17.5) | 0.38 (9.7) | 1.50 (38.1) |

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Ordering Information and Dimensions (Tubing Connection, 3-Way)



| 2 on pressure | | | | | | | | | | | | | | | |
|-----------------|------------|------------------|----------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------|--------------|-------------|------------|-------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 30NSS-HF4-4 | HF4 | 0.094 (2.39) | 2.00 (50.8) | 1.00 (25.4) | 0.47 (11.9) | 1.50 (38.1) | 1.12 (28.5) | 2.12 (53.9) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 4.81 (122.1) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 30NSS-HF6-4 | HF6 | 0.125 (3.18) | 2.00 (50.8) | 1.00 (25.4) | 0.61 (15.6) | 1.50 (38.1) | 1.12 (28.5) | 2.50 (63.5) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 5.19 (131.9) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 30NSS-HF9-4 | HF9 | 0.125 (3.18) | 2.62 (66.6) | 1.31 (33.3) | 0.95 (24.1) | 1.56 (39.6) | 1.12 (28.5) | 2.88 (73.2) | 3.00 (76.2) | 1.00 (25.4) | 0.28 (7.1) | 5.57 (141.5) | 0.69 (17.5) | 0.38 (9.7) | 1.50 (38.1) |

| 1 on pressure | | | | | | | | | | | | | | | |
|-----------------|------------|------------------|----------------------|-------------|-------------|-------------|----|-------------|-------------|-------------|------------|--------------|-------------|------------|-------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 30NSS-HF4-5 | HF4 | 0.094 (2.39) | 2.00 (50.8) | 1.00 (25.4) | 0.47 (11.9) | 1.12 (28.5) | | 2.00 (50.8) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 4.69 (119.1) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 30NSS-HF6-5 | HF6 | 0.125 (3.18) | 2.00 (50.8) | 1.00 (25.4) | 0.61 (15.6) | 1.12 (28.5) | | 2.25 (57.2) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 4.95 (125.7) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 30NSS-HF9-5 | HF9 | 0.125 (3.18) | 2.62 (66.6) | 1.31 (33.3) | 0.95 (24.1) | 1.12 (28.5) | | 2.44 (62.0) | 3.00 (76.2) | 1.00 (25.4) | 0.28 (7.1) | 5.13 (130.3) | 0.69 (17.5) | 0.38 (9.7) | 1.50 (38.1) |

| 2 stem manifold | | | | | | | | | | | | | | | |
|-----------------|------------|------------------|----------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------|--------------|-------------|------------|-------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 30NSS-HF4-6 | HF4 | 0.094 (2.39) | 2.00 (50.8) | 1.00 (25.4) | 0.47 (11.9) | 1.53 (38.9) | 1.12 (28.5) | 3.06 (77.7) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 5.75 (146.0) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 30NSS-HF6-6 | HF6 | 0.125 (3.18) | 2.00 (50.8) | 1.00 (25.4) | 0.61 (15.6) | 1.62 (41.2) | 1.12 (28.5) | 3.25 (82.6) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 5.94 (150.9) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 30NSS-HF9-6 | HF9 | 0.125 (3.18) | 2.62 (66.6) | 1.31 (33.3) | 0.95 (24.1) | 1.88 (47.8) | 1.12 (28.5) | 3.75 (95.3) | 3.00 (76.2) | 1.00 (25.4) | 0.28 (7.1) | 6.44 (163.6) | 0.69 (17.5) | 0.38 (9.7) | 1.50 (38.1) |

- NOTES: 1. G is the drill dimension of packing gland mounting hole.
 2. G1 is the dimension of bracket mounting hole.
 3. Panel mounting drill size: 0.25" all valves.
 4. H is the dimension of stem in closed position.
 5. All dimensions for reference only and subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

60N Series: 60,000 psig (4137 bar)

Features

- ⦿ High tensile 316 Stainless Steel for valve body and S17400 Stainless Steel for lower stem
- ⦿ Metal-to-metal seating achieves ideal shutoff, longer stem/seat service lifetime for abrasive flow, excellent corrosion resistance and greater durability for repeated on/off cycles
- ⦿ Non-rotating stem and bar stock body design
- ⦿ Easy to assemble and replace packing
- ⦿ Reliable packing gland locking device
- ⦿ Options for Vee or Regulating stem tips
- ⦿ Five flow patterns available

Technical Data

| Tube O.D. in. | Connection | Orifice in. (mm) | Cv | Working Pressure psig (bar) | Working Temperature Range |
|---------------|------------|------------------|------|-----------------------------|----------------------------|
| 1/4 | HF4 | 0.063 (1.59) | 0.08 | 60,000 (4137) | -100°F~600°F (-73°C~316°C) |
| 3/8 | HF6 | 0.063 (1.59) | 0.09 | 60,000 (4137) | |
| 9/16 | HF9 | 0.078 (1.98) | 0.14 | 60,000 (4137) | |

NOTES: 1. Cv values shown are for 2-way straight valve pattern. For 2-way angle pattern, increase Cv value by 50% (Based on water).

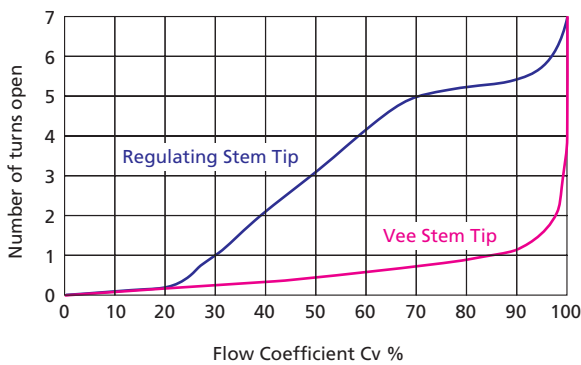
2. Packing Options

Nylon is the standard packing material, RPTFE glass also available

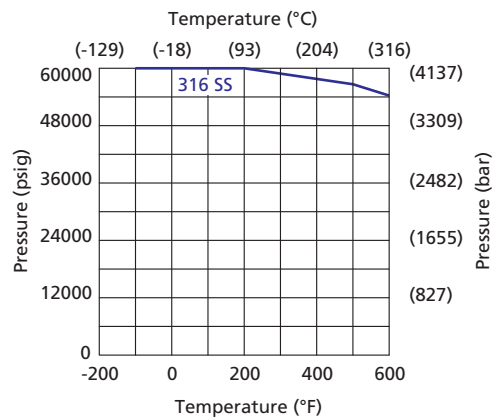
Nylon: 40°F~230°F (4.4°C~110°C)

RPTFE glass: -100°F~600°F (-73°C~316°C)

Flow Data at 100°F (38°C)

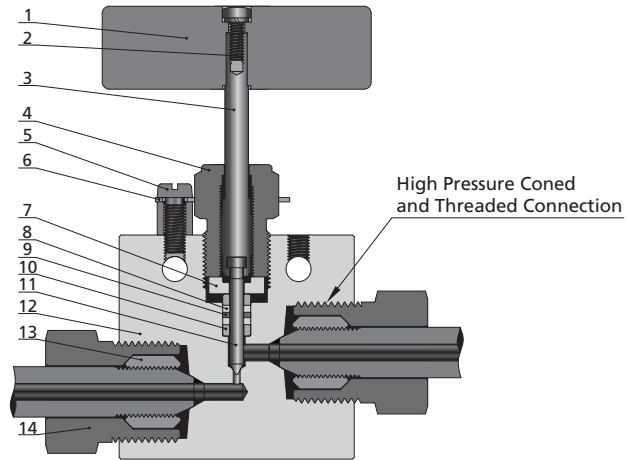


Pressure vs. Temperature Curve



- Fittings
- Tubing
- Quick Couplings
- Line Filters
- Valves
- Sour Service Products
- Subsea Valves
- Tools and Installation Instructions
- Technical Information
- Part Number Crossover Charts

Standard Materials of Construction

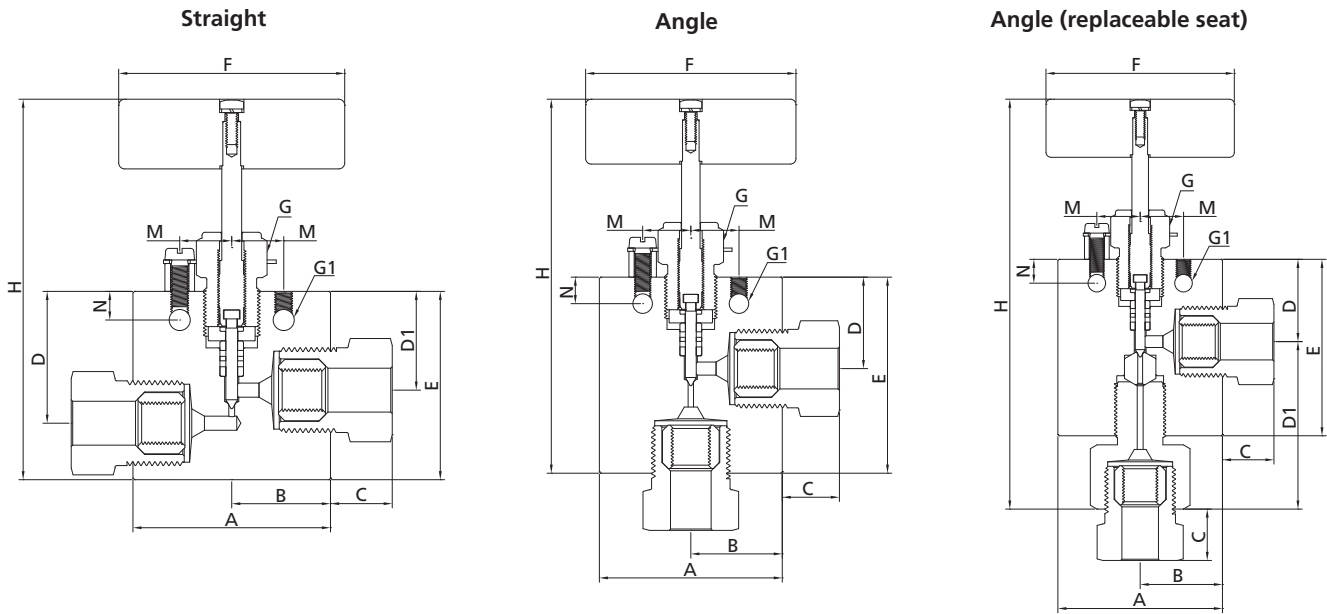


| Item | Component | Material Grade |
|------|-----------------------|----------------------|
| 1 | Handle | Stainless steel |
| 2 | Handle Screw | Stainless steel |
| 3 | Upper Stem | 316 SS |
| 4 | Packing Gland | C63000 |
| 5 | Locking Screw | Stainless steel |
| 6 | Locking Plate | 304 SS |
| 7 | Packing Ring | <i>S17400</i> |
| 8 | <i>Packing</i> | <i>Nylon/IRPTFE</i> |
| 9 | <i>Retaining Ring</i> | <i>PEEK</i> |
| 10 | <i>Packing Washer</i> | <i>S17400</i> |
| 11 | <i>Lower Stem</i> | <i>S17400</i> |
| 12 | <i>Body</i> | <i>316 SS</i> |
| 13 | Collar | 316 SS |
| 14 | Gland | 316 SS |
| | Lubricant | Molybdenum disulfide |

Wetted component listed in italics.

| |
|-------------------------------------|
| Fittings |
| Tubing |
| Quick Couplings |
| Line Filters |
| Valves |
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| Technical Information |
| Part Number Crossover Charts |

Ordering Information and Dimensions (Tubing Connection, 2-Way)



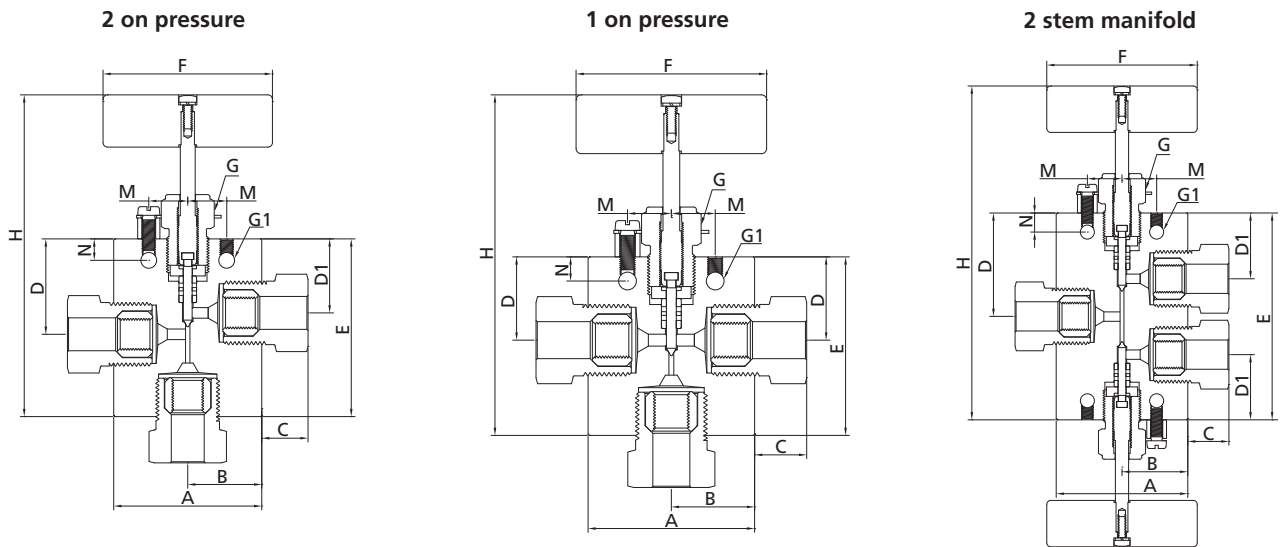
| Straight | | | | | | | | | | | | | | | |
|-----------------|------------|------------------|----------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------|--------------|-------------|------------|-------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 60NSS-HF4-1 | HF4 | 0.063 (1.59) | 2.00 (50.8) | 1.00 (25.4) | 0.47 (11.9) | 1.69 (42.9) | 1.31 (33.3) | 2.13 (54.0) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 4.77 (121.1) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 60NSS-HF6-1 | HF6 | 0.063 (1.59) | 2.00 (50.8) | 1.00 (25.4) | 0.61 (15.6) | 1.69 (42.9) | 1.31 (33.3) | 2.25 (57.2) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 4.89 (124.3) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 60NSS-HF9-1 | HF9 | 0.078 (1.98) | 2.62 (66.6) | 1.31 (33.3) | 0.95 (24.1) | 1.75 (44.5) | 1.31 (33.3) | 2.50 (63.5) | 3.00 (76.2) | 1.00 (25.4) | 0.28 (7.1) | 5.14 (130.6) | 0.69 (17.5) | 0.38 (9.7) | 1.50 (38.1) |

| Angle | | | | | | | | | | | | | | | |
|-----------------|------------|------------------|----------------------|-------------|-------------|-------------|----|-------------|-------------|-------------|------------|--------------|-------------|------------|-------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 60NSS-HF4-2 | HF4 | 0.063 (1.59) | 2.00 (50.8) | 1.00 (25.4) | 0.47 (11.9) | 1.31 (33.3) | / | 2.38 (60.5) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 5.02 (127.5) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 60NSS-HF6-2 | HF6 | 0.063 (1.59) | 2.00 (50.8) | 1.00 (25.4) | 0.61 (15.6) | 1.31 (33.3) | / | 2.62 (66.6) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 5.26 (133.5) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 60NSS-HF9-2 | HF9 | 0.078 (1.98) | 2.62 (66.6) | 1.31 (33.3) | 0.95 (24.1) | 1.31 (33.3) | / | 2.81 (71.4) | 3.00 (76.2) | 1.00 (25.4) | 0.28 (7.1) | 5.45 (138.5) | 0.69 (17.5) | 0.38 (9.7) | 1.50 (38.1) |

| Angle (replaceable seat) | | | | | | | | | | | | | | | |
|--------------------------|------------|------------------|----------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------|--------------|-------------|------------|-------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 60NSS-HF4-3 | HF4 | 0.063 (1.59) | 2.00 (50.8) | 1.00 (25.4) | 0.47 (11.9) | 1.31 (33.3) | 2.12 (53.9) | 2.62 (66.6) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 6.07 (154.1) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 60NSS-HF6-3 | HF6 | 0.063 (1.59) | 2.00 (50.8) | 1.00 (25.4) | 0.61 (15.6) | 1.31 (33.3) | 2.36 (59.9) | 2.62 (66.6) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 6.30 (160.1) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 60NSS-HF9-3 | HF9 | 0.078 (1.98) | 2.62 (66.6) | 1.31 (33.3) | 0.95 (24.1) | 1.31 (33.3) | 2.68 (68.8) | 2.62 (66.6) | 3.00 (76.2) | 1.00 (25.4) | 0.28 (7.1) | 6.65 (168.9) | 0.69 (17.5) | 0.38 (9.7) | 1.50 (38.1) |

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Ordering Information and Dimensions (Tubing Connection, 3-Way)



| 2 on pressure | | | | | | | | | | | | | | | |
|-----------------|------------|------------------|----------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------|--------------|-------------|------------|-------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 60NSS-HF4-4 | HF4 | 0.063 (1.59) | 2.00 (50.8) | 1.00 (25.4) | 0.47 (11.9) | 1.69 (42.9) | 1.31 (33.3) | 2.38 (60.5) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 5.26 (133.6) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 60NSS-HF6-4 | HF6 | 0.063 (1.59) | 2.00 (50.8) | 1.00 (25.4) | 0.61 (15.6) | 1.69 (42.9) | 1.31 (33.3) | 2.75 (68.9) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 5.34 (135.8) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 60NSS-HF9-4 | HF9 | 0.078 (1.98) | 2.62 (66.6) | 1.31 (33.3) | 0.95 (24.1) | 1.75 (44.5) | 1.31 (33.3) | 3.03 (77.0) | 3.00 (76.2) | 1.00 (25.4) | 0.28 (7.1) | 5.67 (143.9) | 0.69 (17.5) | 0.38 (9.7) | 1.50 (38.1) |

| 1 on pressure | | | | | | | | | | | | | | | |
|-----------------|------------|------------------|----------------------|-------------|-------------|-------------|----|-------------|-------------|-------------|------------|--------------|-------------|------------|-------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 60NSS-HF4-5 | HF4 | 0.063 (1.59) | 2.00 (50.8) | 1.00 (25.4) | 0.47 (11.9) | 1.31 (33.3) | / | 2.38 (60.5) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 5.02 (127.5) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 60NSS-HF6-5 | HF6 | 0.063 (1.59) | 2.00 (50.8) | 1.00 (25.4) | 0.61 (15.6) | 1.31 (33.3) | / | 2.62 (66.6) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 5.26 (133.5) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 60NSS-HF9-5 | HF9 | 0.078 (1.98) | 2.62 (66.6) | 1.31 (33.3) | 0.95 (24.1) | 1.31 (33.3) | / | 2.81 (71.4) | 3.00 (76.2) | 1.00 (25.4) | 0.28 (7.1) | 5.45 (138.5) | 0.69 (17.5) | 0.38 (9.7) | 1.50 (38.1) |

| 2 stem manifold | | | | | | | | | | | | | | | |
|-----------------|------------|------------------|----------------------|-------------|-------------|--------------|-------------|--------------|-------------|-------------|------------|--------------|-------------|------------|-------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 60NSS-HF4-6 | HF4 | 0.063 (1.59) | 2.00 (50.8) | 1.00 (25.4) | 0.47 (11.9) | 1.72 (43.69) | 1.31 (33.3) | 3.44 (87.4) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 6.08 (154.5) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 60NSS-HF6-6 | HF6 | 0.063 (1.59) | 2.00 (50.8) | 1.00 (25.4) | 0.61 (15.6) | 1.88 (47.8) | 1.31 (33.3) | 3.75 (95.3) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 6.39 (162.3) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 60NSS-HF9-6 | HF9 | 0.078 (1.98) | 2.62 (66.6) | 1.31 (33.3) | 0.95 (24.1) | 2.06 (52.3) | 1.31 (33.3) | 4.12 (104.6) | 3.00 (76.2) | 1.00 (25.4) | 0.28 (7.1) | 6.76 (171.8) | 0.69 (17.5) | 0.38 (9.7) | 1.50 (38.1) |

- NOTES: 1. G is the drill dimension of packing gland mounting hole.
 2. G1 is the dimension of bracket mounting hole.
 3. Panel mounting drill size: 0.25" all valves.
 4. H is the dimension of stem in closed position.
 5. All dimensions for reference only and subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

Pneumatic Needle Valves

Piston Style Air to Open (Normally Closed)

Features

- ⦿ Air-to-open with spring return
- ⦿ Positive shut-off with metal-to-metal seating
- ⦿ Easy stem replacement
- ⦿ Standard stem position indicator
- ⦿ High actuator cycle life
- ⦿ Anodized aluminum actuator to provide good corrosion and wear resistance
- ⦿ Tested to 100,000 cycles at 100 psig (6.9 bar) with no leakage, no signs of wear or fatigue

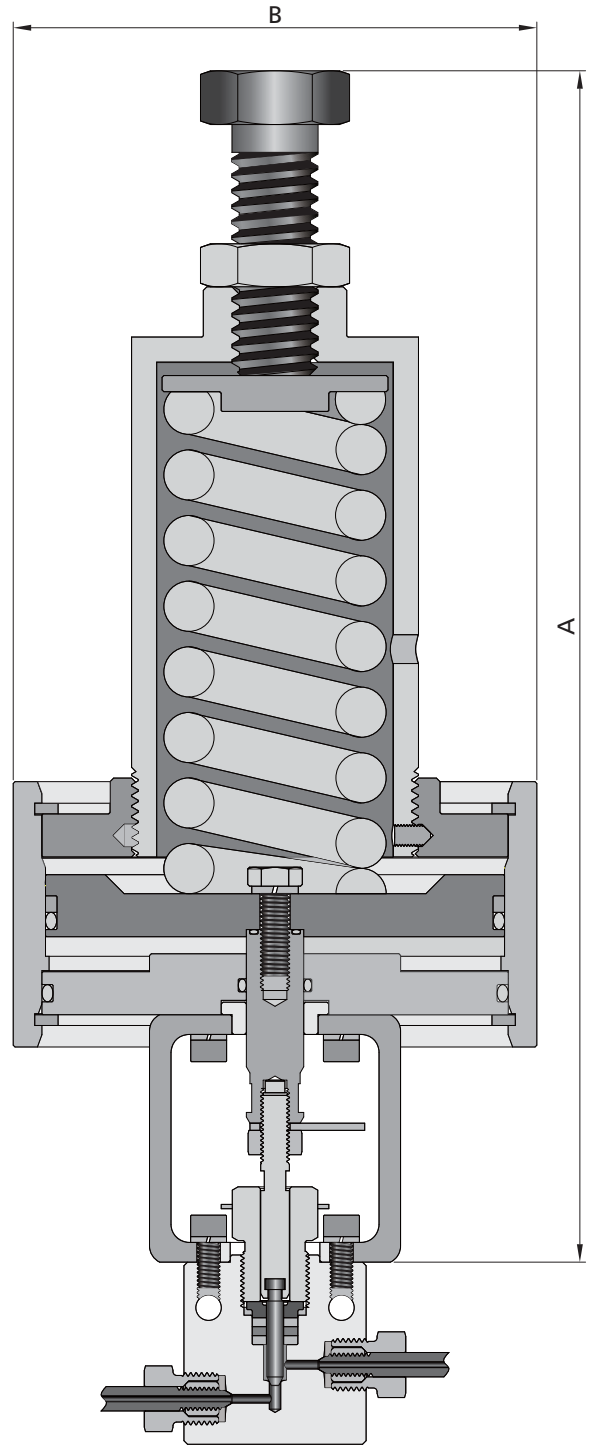
Technical Data

| | | |
|---|--|--------------------------|
| Maximum working pressure for air operator | | 100 psig (6.9 bar) |
| Air operator temperature range | | -10°F~200°F (-23°C~93°C) |
| Air operator material | Cylinder, piston, cover plates, spring housing | Anodized Aluminum |
| | Yoke | Stainless Steel |
| | O-ring | NBR |
| Air inlet connection | | 1/8" or 3/8" Female NPT |

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| Part Number Crossover Charts |

Dimensions

| Basic Ordering Number | Air Inlet Connection | Area of Piston sq.in. (sq. cm) | A in. (mm) | B in. (mm) | |
|-----------------------|----------------------|--------------------------------|----------------|---------------|--------------|
| 10NSS-MF9-X-ATO | 1/8" NPT | 51.20 (330.3) | 16.24 (412.5) | 6.54 (166.0) | |
| 10NSS-MF12-X-ATO | | 92.58 (597.3) | 20.72 (526.3) | 8.58 (218.0) | |
| 10NSS-MF16-X-ATO | 3/8" NPT | 112.55 (726.1) | 24.12 (612.7) | 9.57 (243.0) | |
| 10NSS-FNS12-X-ATO | 1/8" NPT | 92.58 (597.3) | 20.72 (526.3) | 8.58 (218.0) | |
| 10NSS-FRT12-X-ATO | | 92.58 (597.3) | 20.72 (526.3) | 8.58 (218.0) | |
| 10NSS-FNS16-X-ATO | 3/8" NPT | 112.55 (726.1) | 24.12 (612.7) | 9.57 (243.0) | |
| 10NSS-FRT16-X-ATO | | 112.55 (726.1) | 24.12 (612.7) | 9.57 (243.0) | |
| 15NSS-DF2-X-ATO | 1/8" NPT | 7.79 (50.3) | 8.56 (217.3) | 3.62 (92.0) | |
| 15NSS-DF4-X-ATO | | 19.95 (128.7) | 13.08 (332.3) | 5.75 (146.0) | |
| 15NSS-DF6-X-ATO | | 19.95 (128.7) | 13.08 (332.3) | 5.75 (146.0) | |
| 15NSS-DF8-X-ATO | | 51.20 (330.3) | 16.24 (412.5) | 6.54 (166.0) | |
| 15NSS-FNS2-X-ATO | | 7.79 (50.3) | 8.56 (217.3) | 3.62 (92.0) | |
| 15NSS-FRT2-X-ATO | | 7.79 (50.3) | 8.56 (217.3) | 3.62 (92.0) | |
| 15NSS-FNS4-X-ATO | | 19.95 (128.7) | 13.08 (332.3) | 5.75 (146.0) | |
| 15NSS-FRT4-X-ATO | | 19.95 (128.7) | 13.08 (332.3) | 5.75 (146.0) | |
| 15NSS-FNS6-X-ATO | | 19.95 (128.7) | 13.08 (332.3) | 5.75 (146.0) | |
| 15NSS-FRT6-X-ATO | | 19.95 (128.7) | 13.08 (332.3) | 5.75 (146.0) | |
| 15NSS-FNS8-X-ATO | | 51.20 (330.3) | 16.24 (412.5) | 6.54 (166.0) | |
| 15NSS-FRT8-X-ATO | | 51.20 (330.3) | 16.24 (412.5) | 6.54 (166.0) | |
| 20NSS-MF4-X-ATO | 1/8" NPT | 19.95 (128.7) | 13.08 (332.3) | 5.75 (146.0) | |
| 20NSS-MF6-X-ATO | | 19.95 (128.7) | 13.08 (332.3) | 5.75 (146.0) | |
| 20NSS-MF9-X-ATO | | 51.20 (330.3) | 16.24 (412.5) | 6.54 (166.0) | |
| 20NSS-MF12-X-ATO | | 92.58 (597.3) | 20.72 (526.3) | 8.58 (218.0) | |
| 20NSS-MF16-X-ATO | | 3/8" NPT | 112.55 (726.1) | 24.12 (612.7) | 9.57 (243.0) |
| 30NSS-HF4-X-ATO | | 1/8" NPT | 19.95 (128.7) | 13.08 (332.3) | 5.75 (146.0) |
| 30NSS-HF6-X-ATO | | | 19.95 (128.7) | 13.08 (332.3) | 5.75 (146.0) |
| 30NSS-HF9-X-ATO | | | 19.95 (128.7) | 13.08 (332.3) | 5.75 (146.0) |
| 60NSS-HF4-X-ATO | | | 19.95 (128.7) | 13.08 (332.3) | 5.75 (146.0) |
| 60NSS-HF6-X-ATO | | | 19.95 (128.7) | 13.08 (332.3) | 5.75 (146.0) |
| 60NSS-HF9-X-ATO | | | 19.95 (128.7) | 13.08 (332.3) | 5.75 (146.0) |



- NOTES: 1. -X: Designator of valve flow patterns. Valves are available in 5 different flow patterns (-1 to -6). For details, please refer to the FITOK Needle Valves catalog.
 2. A is the dimension of stem in closed position.
 3. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

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| Part Number Crossover Charts |

Air Operator Technical Data

10N Series: 10,000 psig (690 bar)

| Basic Ordering Number | | System Pressure KSI (MPa) | | | | | | | | | | Flow Coefficient (Cv) |
|--|---------------------------------|---------------------------|----------------|----------------|----------------|--|--|--|--|--|--|-----------------------|
| | | 1-4 (6.9-27.6) | 6 (41.4) | 8 (55.2) | 10 (69.0) | | | | | | | |
| 10NSS-MF9-X-ATO | Air Pressure psig (bar) | 40 (2.8) | 50 (3.5) | 60 (4.1) | 65 (4.5) | | | | | | | 1.75 |
| | Spring Pre-Compression in. (mm) | 0.17 (4.2) | 0.25 (6.3) | 0.33 (8.4) | 0.41 (10.5) | | | | | | | |
| | Stem Travel in. (mm) | 0.26 (6.5) | 0.26 (6.5) | 0.26 (6.5) | 0.26 (6.5) | | | | | | | |
| 10NSS-MF12-X-ATO | Air Pressure psig (bar) | 45 (3.1) | 50 (3.5) | 60 (4.1) | 70 (4.8) | | | | | | | 2.80 |
| | Spring Pre-Compression in. (mm) | 0.23 (5.8) | 0.34 (8.7) | 0.46 (11.6) | 0.57 (14.5) | | | | | | | |
| | Stem Travel in. (mm) | 0.36 (9.2) | 0.36 (9.2) | 0.36 (9.2) | 0.36 (9.2) | | | | | | | |
| 10NSS-MF16-X-ATO | Air Pressure psig (bar) | 50 (3.5) | 60 (4.1) | 70 (4.8) | 80 (5.5) | | | | | | | 5.20 |
| | Spring Pre-Compression in. (mm) | 0.29 (7.4) | 0.44 (11.1) | 0.58 (14.8) | 0.73 (18.5) | | | | | | | |
| | Stem Travel in. (mm) | 0.41 (10.3) | 0.41 (10.3) | 0.41 (10.3) | 0.41 (10.3) | | | | | | | |
| 10NSS-FNS12-X-ATO 10NSS-FRT12-X-ATO | Air Pressure psig (bar) | 40 (2.8) | 45 (3.1) | 50 (3.5) | 60 (4.1) | | | | | | | 2.09 |
| | Spring Pre-Compression in. (mm) | 0.17 (4.4) | 0.26 (6.5) | 0.34 (8.7) | 0.43 (10.9) | | | | | | | |
| | Stem Travel in. (mm) | 0.36 (9.2) | 0.36 (9.2) | 0.36 (9.2) | 0.36 (9.2) | | | | | | | |
| 10NSS-FNS16-X-ATO 10NSS-FRT16-X-ATO | Air Pressure psig (bar) | 45 (3.1) | 50 (3.5) | 60 (4.1) | 65 (4.5) | | | | | | | 4.40 |
| | Spring Pre-Compression in. (mm) | 0.20 (5.1) | 0.30 (7.7) | 0.41 (10.3) | 0.51 (12.9) | | | | | | | |
| | Stem Travel in. (mm) | 0.41 (10.3) | 0.41 (10.3) | 0.41 (10.3) | 0.41 (10.3) | | | | | | | |

NOTES: 1. -X: Designator of valve flow patterns. Valves are available in 5 different flow patterns (-1 to -6). For details, please refer to the FITOK Needle Valves catalog.

2. Cv values shown are for 2-way straight valve pattern. For 2-way angle pattern, increase Cv value by 50% (Based on water).

3. All dimensions are for reference only and are subject to change.

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| Service Products |
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| Technical Information |
| Part Number Crossover Charts |

E-42 Needle Valves and Pneumatic Needle Valves

15N Series: 15,000 psig (1034 bar)

| Fittings | Basic Ordering Number | System Pressure KSI (MPa) | | | | | | | | Flow Coefficient (Cv) | |
|-------------------------------------|--------------------------------------|---------------------------------|---------------|---------------|----------------|----------------|----------------|----------------|--|-----------------------|--|
| | | 1-6 (6.9-41.4) | 8 (55.2) | 10 (69.0) | 12 (82.7) | 14 (96.5) | 15 (103.4) | | | | |
| Tubing | 15NSS-DF2-X-ATO | Air Pressure psig (bar) | 60 (4.1) | 65 (4.5) | 75 (5.2) | 80 (5.5) | 90 (6.2) | 95 (6.6) | | | 0.10 |
| | | Spring Pre-Compression in. (mm) | 0.10 (2.5) | 0.13 (3.3) | 0.16 (4.1) | 0.19 (4.9) | 0.22 (5.7) | 0.24 (6.1) | | | |
| | | Stem Travel in. (mm) | 0.14 (3.5) | 0.14 (3.5) | 0.14 (3.5) | 0.14 (3.5) | 0.14 (3.5) | 0.14 (3.5) | | | |
| Quick Couplings | 15NSS-DF4-X-ATO 15NSS-DF6-X-ATO | Air Pressure psig (bar) | 50 (3.5) | 55 (3.8) | 60 (4.1) | 65 (4.5) | 70 (4.8) | 75 (5.2) | | | 0.54 (15NSS-DF4-X-ATO) 0.95 (15NSS-DF6-X-ATO) |
| | | Spring Pre-Compression in. (mm) | 0.11 (2.9) | 0.15 (3.8) | 0.19 (4.8) | 0.23 (5.8) | 0.26 (6.7) | 0.28 (7.2) | | | |
| | | Stem Travel in. (mm) | 0.19 (4.9) | 0.19 (4.9) | 0.19 (4.9) | 0.19 (4.9) | 0.19 (4.9) | 0.19 (4.9) | | | |
| Line Filters | 15NSS-DF8-X-ATO | Air Pressure psig (bar) | 50 (3.5) | 60 (4.1) | 70 (4.8) | 75 (5.2) | 85 (5.9) | 90 (6.2) | | | 1.90 |
| | | Spring Pre-Compression in. (mm) | 0.27 (6.8) | 0.36 (9.1) | 0.45 (11.4) | 0.54 (13.6) | 0.63 (15.9) | 0.67 (17.0) | | | |
| | | Stem Travel in. (mm) | 0.26 (6.5) | 0.26 (6.5) | 0.26 (6.5) | 0.26 (6.5) | 0.26 (6.5) | 0.26 (6.5) | | | |
| Valves | 15NSS-FNS2-X-ATO 15NSS-FRT2-X-ATO | Air Pressure psig (bar) | 60 (4.1) | 65 (4.5) | 75 (5.2) | 80 (5.5) | 90 (6.2) | 95 (6.6) | | | 0.07 |
| | | Spring Pre-Compression in. (mm) | 0.10 (2.5) | 0.13 (3.3) | 0.16 (4.1) | 0.19 (4.9) | 0.22 (5.7) | 0.24 (6.1) | | | |
| | | Stem Travel in. (mm) | 0.14 (3.5) | 0.14 (3.5) | 0.14 (3.5) | 0.14 (3.5) | 0.14 (3.5) | 0.14 (3.5) | | | |
| Sour Service Products | 15NSS-FNS4-X-ATO 15NSS-FRT4-X-ATO | Air Pressure psig (bar) | 50 (3.5) | 55 (3.8) | 60 (4.1) | 65 (4.5) | 70 (4.8) | 75 (5.2) | | | 0.47 |
| | | Spring Pre-Compression in. (mm) | 0.11 (2.9) | 0.15 (3.8) | 0.19 (4.8) | 0.23 (5.8) | 0.26 (6.7) | 0.28 (7.2) | | | |
| | | Stem Travel in. (mm) | 0.19 (4.9) | 0.19 (4.9) | 0.19 (4.9) | 0.19 (4.9) | 0.19 (4.9) | 0.19 (4.9) | | | |
| Subsea Valves | 15NSS-FNS6-X-ATO 15NSS-FRT6-X-ATO | Air Pressure psig (bar) | 50 (3.5) | 55 (3.8) | 60 (4.1) | 65 (4.5) | 70 (4.8) | 75 (5.2) | | | 0.59 |
| | | Spring Pre-Compression in. (mm) | 0.11 (2.9) | 0.15 (3.8) | 0.19 (4.8) | 0.23 (5.8) | 0.26 (6.7) | 0.28 (7.2) | | | |
| | | Stem Travel in. (mm) | 0.19 (4.9) | 0.19 (4.9) | 0.19 (4.9) | 0.19 (4.9) | 0.19 (4.9) | 0.19 (4.9) | | | |
| Tools and Installation Instructions | 15NSS-FNS8-X-ATO 15NSS-FRT8-X-ATO | Air Pressure psig (bar) | 45 (3.1) | 50 (3.5) | 60 (4.1) | 65 (4.5) | 70 (4.8) | 75 (5.2) | | | 1.04 |
| | | Spring Pre-Compression in. (mm) | 0.20 (5.0) | 0.26 (6.6) | 0.33 (8.3) | 0.39 (9.9) | 0.46 (11.6) | 0.49 (12.4) | | | |
| | | Stem Travel in. (mm) | 0.26 (6.5) | 0.26 (6.5) | 0.26 (6.5) | 0.26 (6.5) | 0.26 (6.5) | 0.26 (6.5) | | | |

NOTES: 1. -X: Designator of valve flow patterns. Valves are available in 5 different flow patterns (-1 to -6). For details, please refer to the FITOK Needle Valves catalog.

2. Cv values shown are for 2-way straight valve pattern. For 2-way angle pattern, increase Cv value by 50% (Based on water).

3. All dimensions are for reference only and are subject to change.

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20N Series: 20,000 psig (1379 bar)

| Basic Ordering Number | | System Pressure KSI (MPa) | | | | | | | | | | Flow Coefficient (Cv) | |
|------------------------------------|---------------------------------|---------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-----------------------|--|
| | | 1-4 (6.9-27.6) | 6 (41.4) | 8 (55.2) | 10 (69.0) | 12 (82.7) | 14 (96.5) | 16 (110.3) | 18 (124.1) | 20 (137.9) | | | |
| 20NSS-MF4-X-ATO 20NSS-MF6-X-ATO | Air Pressure psig (bar) | 40 (2.8) | 50 (3.5) | 55 (3.8) | 60 (4.1) | 65 (4.5) | 70 (4.8) | 75 (5.2) | 80 (5.5) | 90 (6.2) | | | 0.29 (20NSS-MF4-X-ATO) 0.62 (20NSS-MF6-X-ATO) |
| | Spring Pre-Compression in. (mm) | 0.07 (1.9) | 0.11 (2.9) | 0.15 (3.8) | 0.19 (4.8) | 0.23 (5.8) | 0.26 (6.7) | 0.30 (7.7) | 0.34 (8.6) | 0.38 (9.6) | | | |
| | Stem Travel in. (mm) | 0.19 (4.9) | 0.19 (4.9) | 0.19 (4.9) | 0.19 (4.9) | 0.19 (4.9) | 0.19 (4.9) | 0.19 (4.9) | 0.19 (4.9) | 0.19 (4.9) | 0.19 (4.9) | | |
| 20NSS-MF9-X-ATO | Air Pressure psig (bar) | 40 (2.8) | 45 (3.1) | 50 (3.5) | 60 (4.1) | 65 (4.5) | 70 (4.8) | 75 (5.2) | 80 (5.5) | 90 (6.2) | | | 1.30 |
| | Spring Pre-Compression in. (mm) | 0.13 (3.3) | 0.20 (5.0) | 0.26 (6.6) | 0.33 (8.3) | 0.39 (9.9) | 0.46 (11.6) | 0.52 (13.2) | 0.59 (14.9) | 0.65 (16.5) | | | |
| | Stem Travel in. (mm) | 0.26 (6.5) | 0.26 (6.5) | 0.26 (6.5) | 0.26 (6.5) | 0.26 (6.5) | 0.26 (6.5) | 0.26 (6.5) | 0.26 (6.5) | 0.26 (6.5) | 0.26 (6.5) | | |
| 20NSS-MF12-X-ATO | Air Pressure psig (bar) | 40 (2.8) | 45 (3.1) | 50 (3.5) | 60 (4.1) | 65 (4.5) | 70 (4.8) | 75 (5.2) | 85 (5.9) | 90 (6.2) | | | 2.41 |
| | Spring Pre-Compression in. (mm) | 0.17 (4.4) | 0.26 (6.5) | 0.34 (8.7) | 0.43 (10.9) | 0.52 (13.1) | 0.60 (15.3) | 0.69 (17.4) | 0.77 (19.6) | 0.86 (21.8) | | | |
| | Stem Travel in. (mm) | 0.36 (9.2) | 0.36 (9.2) | 0.36 (9.2) | 0.36 (9.2) | 0.36 (9.2) | 0.36 (9.2) | 0.36 (9.2) | 0.36 (9.2) | 0.36 (9.2) | 0.36 (9.2) | | |
| 20NSS-MF16-X-ATO | Air Pressure psig (bar) | 45 (3.1) | 50 (3.5) | 60 (4.1) | 65 (4.5) | 70 (4.8) | 80 (5.5) | 85 (5.9) | 95 (6.6) | 100 (6.9) | | | 4.40 |
| | Spring Pre-Compression in. (mm) | 0.20 (5.1) | 0.30 (7.7) | 0.41 (10.3) | 0.51 (12.9) | 0.61 (15.4) | 0.71 (18.0) | 0.81 (20.6) | 0.91 (23.1) | 1.01 (25.7) | | | |
| | Stem Travel in. (mm) | 0.41 (10.3) | 0.41 (10.3) | 0.41 (10.3) | 0.41 (10.3) | 0.41 (10.3) | 0.41 (10.3) | 0.41 (10.3) | 0.41 (10.3) | 0.41 (10.3) | 0.41 (10.3) | | |

- NOTES:1. -X: Designator of valve flow patterns. Valves are available in 5 different flow patterns (-1 to -6). For details, please refer to the FITOK Needle Valves catalog.
 2. Cv values shown are for 2-way straight valve pattern. For 2-way angle pattern, increase Cv value by 50% (Based on water).
 3. All dimensions are for reference only and are subject to change.

30N Series: 30,000 psig (2068 bar)

| Basic Ordering Number | | System Pressure KSI (MPa) | | | | | | | | | | | Flow Coefficient (Cv) |
|---|---------------------------------|---------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|----------------|----------------|---|
| | | 1-10 (6.9-69.0) | 12 (82.7) | 14 (96.5) | 16 (110.3) | 18 (124.1) | 20 (137.9) | 22 (151.7) | 24 (165.5) | 26 (179.3) | 28 (193.1) | 30 (206.8) | |
| 30NSS-HF4-X-ATO 30NSS-HF6-X-ATO 30NSS-HF9-X-ATO | Air Pressure psig (bar) | 55 (3.8) | 60 (4.1) | 65 (4.5) | 65 (4.5) | 70 (4.8) | 75 (5.2) | 80 (5.5) | 85 (5.9) | 90 (6.2) | 95 (6.6) | 100 (6.9) | 0.12 (30NSS-HF4-X-ATO) 0.22 (30NSS-HF6-X-ATO) 0.31 (30NSS-HF9-X-ATO) |
| | Spring Pre-Compression in. (mm) | 0.14 (3.8) | 0.18 (4.6) | 0.21 (5.4) | 0.24 (6.1) | 0.27 (6.9) | 0.30 (7.7) | 0.33 (8.4) | 0.36 (9.2) | 0.39 (10) | 0.42 (10.7) | 0.45 (11.5) | |
| | Stem Travel in. (mm) | 0.19 (4.9) | 0.19 (4.9) | 0.19 (4.9) | 0.19 (4.9) | 0.19 (4.9) | 0.19 (4.9) | 0.19 (4.9) | 0.19 (4.9) | 0.19 (4.9) | 0.19 (4.9) | 0.19 (4.9) | |

- NOTES:1. -X: Designator of valve flow patterns (-1 to -6). For details, please refer to the FITOK Needle Valves catalog.
 2. Cv values shown are for 2-way straight valve pattern. For 2-way angle pattern, increase Cv value by 50% (Based on water).
 3. All dimensions are for reference only and are subject to change.

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E-44 Needle Valves and Pneumatic Needle Valves

60N Series: 60,000 psig (4137 bar)

| Basic Ordering Number | | System Pressure KSI (MPa) | | | | | | | | | | Flow Coefficient (Cv) | |
|---|------------------------------------|---------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|----------------|----------------|-----------------------|---------------------------|
| | | 1-15 (6.9-103.4) | 20 (137.9) | 25 (172.4) | 30 (206.8) | 35 (241.3) | 40 (275.8) | 45 (310.3) | 50 (344.7) | 55 (379.2) | 60 (413.7) | | |
| 60NSS-HF4-X-ATO 60NSS-HF6-X-ATO 60NSS-HF9-X-ATO | Air Pressure psig (bar) | 55 (3.8) | 65 (4.5) | 65 (4.5) | 75 (5.2) | 75 (5.2) | 85 (5.9) | 95 (6.6) | 95 (6.6) | 95 (6.6) | 95 (6.6) | | 0.08 (60NSS-HF4-X-ATO) |
| | Spring Pre-Compression in. (mm) | 0.12 (3.2) | 0.19 (4.8) | 0.19 (4.8) | 0.25 (6.4) | 0.25 (6.4) | 0.31 (7.9) | 0.38 (9.7) | 0.38 (9.7) | 0.44 (11.2) | 0.50 (12.7) | | 0.09 (60NSS-HF6-X-ATO) |
| | Stem Travel in. (mm) | 0.19 (4.9) | 0.19 (4.9) | 0.19 (4.9) | 0.19 (4.9) | 0.19 (4.9) | 0.19 (4.9) | 0.19 (4.9) | 0.19 (4.9) | 0.19 (4.9) | 0.19 (4.9) | 0.13 (3.2) | 0.14 (60NSS-HF9-X-ATO) |

NOTES: 1. -X: Designator of valve flow patterns. Valves are available in 5 different flow patterns (-1 to -6). For details, please refer to the FITOK Needle Valves catalog.

2. Cv values shown are for 2-way straight valve pattern. For 2-way angle pattern, increase Cv value by 50% (Based on water).

3. All dimensions are for reference only and are subject to change.

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Piston Style Air to Close (Normally Open)

Features

- ⦿ Air-to-close with spring return
- ⦿ Positive shut-off with metal-to-metal seating
- ⦿ Easy stem replacement
- ⦿ Standard stem position indicator
- ⦿ High actuator cycle life
- ⦿ Anodized aluminum actuator to provide good corrosion and wear resistance
- ⦿ Tested to 100,000 cycles at 100 psig (6.9 bar) with no leakage, no signs of wear or fatigue

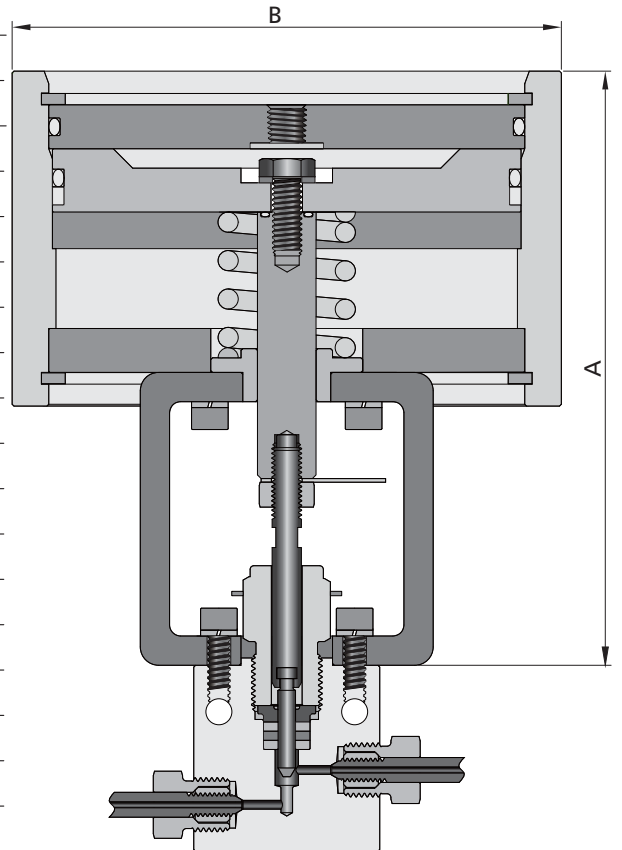
Technical Data

| | | |
|---|--|--------------------------|
| Maximum working pressure for air operator | | 100 psig (6.9 bar) |
| Air operator temperature range | | -10°F~200°F (-23°C~93°C) |
| Air operator material | Cylinder, piston, cover plates, spring housing | Anodized Aluminum |
| | Yoke | Stainless Steel |
| | O-ring | NBR |
| Air inlet connection | | 1/8" or 3/8" Female NPT |

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Dimensions

| | Basic Ordering Number | Air Inlet Connection | Area of Piston sq.in. (sq. cm) | A in. (mm) | B in. (mm) |
|-------------------------------------|-----------------------|----------------------|--------------------------------|---------------|--------------|
| Fittings | 10NSS-MF9-X-ATC | 1/8" NPT | 51.20 (330.3) | 8.27 (210.0) | 6.54 (166.0) |
| | 10NSS-MF12-X-ATC | | 92.58 (597.3) | 10.55 (268.0) | 8.58 (218.0) |
| Tubing | 10NSS-MF16-X-ATC | 3/8" NPT | 112.55 (726.1) | 12.77 (324.4) | 9.57 (243.0) |
| | 10NSS-FNS12-X-ATC | 1/8" NPT | 92.58 (597.3) | 10.55 (268.0) | 8.58 (218.0) |
| 10NSS-FRT12-X-ATC | 92.58 (597.3) | | 10.55 (268.0) | 8.58 (218.0) | |
| Quick Couplings | 10NSS-FNS16-X-ATC | 3/8" NPT | 112.55 (726.1) | 12.77 (324.4) | 9.57 (243.0) |
| | 10NSS-FRT16-X-ATC | | 112.55 (726.1) | 12.77 (324.4) | 9.57 (243.0) |
| Line Filters | 15NSS-DFF2-X-ATC | 1/8" NPT | 7.79 (50.3) | 8.56 (217.3) | 3.62 (92.0) |
| | 15NSS-DFF4-X-ATC | | 19.95 (128.7) | 5.94 (151.0) | 5.75 (146.0) |
| | 15NSS-DFF6-X-ATC | | 19.95 (128.7) | 5.94 (151.0) | 5.75 (146.0) |
| | 15NSS-DFF8-X-ATC | | 51.20 (330.3) | 8.27 (210.0) | 6.54 (166.0) |
| | 15NSS-FNS2-X-ATC | | 7.79 (50.3) | 8.56 (217.3) | 3.62 (92.0) |
| | 15NSS-FRT2-X-ATC | | 7.79 (50.3) | 8.56 (217.3) | 3.62 (92.0) |
| Valves | 15NSS-FNS4-X-ATC | 1/8" NPT | 19.95 (128.7) | 5.94 (151.0) | 5.75 (146.0) |
| | 15NSS-FRT4-X-ATC | | 19.95 (128.7) | 5.94 (151.0) | 5.75 (146.0) |
| | 15NSS-FNS6-X-ATC | | 19.95 (128.7) | 5.94 (151.0) | 5.75 (146.0) |
| | 15NSS-FRT6-X-ATC | | 19.95 (128.7) | 5.94 (151.0) | 5.75 (146.0) |
| | 15NSS-FNS8-X-ATC | | 51.20 (330.3) | 8.27 (210.0) | 6.54 (166.0) |
| | 15NSS-FRT8-X-ATC | | 51.20 (330.3) | 8.27 (210.0) | 6.54 (166.0) |
| | 20NSS-MF4-X-ATC | | 19.95 (128.7) | 5.94 (151.0) | 5.75 (146.0) |
| | 20NSS-MF6-X-ATC | | 19.95 (128.7) | 5.94 (151.0) | 5.75 (146.0) |
| | 20NSS-MF9-X-ATC | | 51.20 (330.3) | 8.27 (210.0) | 6.54 (166.0) |
| | 20NSS-MF12-X-ATC | | 92.58 (597.3) | 10.55 (268.0) | 8.58 (218.0) |
| Subsea Valves | 20NSS-MF16-X-ATC | 3/8" NPT | 112.55 (726.1) | 12.77 (324.4) | 9.57 (243.0) |
| | 30NSS-HF4-X-ATC | 1/8" NPT | 19.95 (128.7) | 5.94 (151.0) | 5.75 (146.0) |
| | 30NSS-HF6-X-ATC | | 19.95 (128.7) | 5.94 (151.0) | 5.75 (146.0) |
| 30NSS-HF9-X-ATC | 19.95 (128.7) | | 5.94 (151.0) | 5.75 (146.0) | |
| Tools and Installation Instructions | 60NSS-HF4-X-ATC | 1/8" NPT | 19.95 (128.7) | 5.94 (151.0) | 5.75 (146.0) |
| | 60NSS-HF6-X-ATC | | 19.95 (128.7) | 5.94 (151.0) | 5.75 (146.0) |
| | 60NSS-HF9-X-ATC | | 19.95 (128.7) | 5.94 (151.0) | 5.75 (146.0) |



NOTES: 1. -X: Designator of valve flow patterns. Valves are available in 5 different flow patterns (-1 to -6). For details please refer to the FITOK Needle Valves catalog.
 2. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

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Air Operator Technical Data

10N Series: 10,000 psig (690 bar)

| Basic Ordering Number | | System Pressure KSI (MPa) | | | | | | | | Stem Travel in. (mm) | Flow Coefficient (Cv) |
|--|----------------------------|---------------------------|-------------|-------------|--------------|--|--|--|--|----------------------|-----------------------|
| | | 1-4 (6.9-27.6) | 6 (41.4) | 8 (55.2) | 10 (69.0) | | | | | | |
| 10NSS-MF9-X-ATC | Air Pressure psig (bar) | 25 (1.7) | 35 (2.4) | 40 (2.8) | 50 (3.5) | | | | | 0.24 (6.0) | 1.75 |
| 10NSS-MF12-X-ATC | Air Pressure psig (bar) | 25 (1.7) | 35 (2.4) | 45 (3.1) | 50 (3.5) | | | | | 0.35 (9.0) | 2.80 |
| 10NSS-MF16-X-ATC | Air Pressure psig (bar) | 30 (2.1) | 40 (2.8) | 50 (3.5) | 60 (4.2) | | | | | 0.39 (10.0) | 5.20 |
| 10NSS-FNS12-X-ATC 10NSS-FRT12-X-ATC | Air Pressure psig (bar) | 25 (1.7) | 30 (2.1) | 35 (2.4) | 40 (2.8) | | | | | 0.35 (9.0) | 2.09 |
| 10NSS-FNS16-X-ATC 10NSS-FRT16-X-ATC | Air Pressure psig (bar) | 25 (1.7) | 30 (2.1) | 40 (2.8) | 45 (3.1) | | | | | 0.39 (10.0) | 3.40 |

NOTES: 1. -X: Designator of valve flow patterns. Valves are available in 5 different flow patterns (-1 to -6).

For details please refer to the FITOK Needle Valves catalog.

2. Cv values shown are for 2-way straight valve pattern. For 2-way angle pattern, increase Cv value by 50% (Based on water).

3. All dimensions are for reference only and are subject to change.

15N Series: 15,000 psig (1034 bar)

| Basic Ordering Number | | System Pressure KSI (MPa) | | | | | | | | Stem Travel in. (mm) | Flow Coefficient (Cv) | | |
|--------------------------------------|----------------------------|---------------------------|-------------|-------------|--------------|--------------|--------------|---------------|--|----------------------|-----------------------|---------------|------|
| | | 1-4 (6.9-27.6) | 6 (41.4) | 8 (55.2) | 10 (69.0) | 12 (82.7) | 14 (96.5) | 15 (103.4) | | | | | |
| 15NSS-DFF2-X-ATC | Air Pressure psig (bar) | 45 (3.1) | 55 (3.8) | 60 (4.2) | 70 (4.8) | 75 (5.2) | 85 (5.9) | 90 (6.2) | | | | 0.12 (3.0) | 0.10 |
| 15NSS-DFF4-X-ATC | Air Pressure psig (bar) | 30 (2.1) | 35 (2.4) | 40 (2.8) | 50 (3.5) | 55 (3.8) | 60 (4.2) | 60 (4.2) | | | | 0.19 (4.9) | 0.54 |
| 15NSS-DFF6-X-ATC | Air Pressure psig (bar) | | | | | | | | | | | | 0.95 |
| 15NSS-DFF8-X-ATC | Air Pressure psig (bar) | 25 (1.7) | 35 (2.4) | 45 (3.1) | 50 (3.5) | 60 (4.2) | 70 (4.8) | 75 (5.2) | | | | 0.24 (6.0) | 1.90 |
| 15NSS-FNS2-X-ATC 15NSS-FRT2-X-ATC | Air Pressure psig (bar) | 65 (4.5) | 75 (5.2) | 80 (5.5) | 90 (6.2) | 95 (6.6) | 100 (6.9) | 100 (6.9) | | | | 0.12 (3.0) | 0.07 |
| 15NSS-FNS4-X-ATC 15NSS-FRT4-X-ATC | Air Pressure psig (bar) | 30 (2.1) | 35 (2.4) | 40 (2.8) | 50 (3.5) | 55 (3.8) | 60 (4.2) | 60 (4.2) | | | | 0.19 (4.9) | 0.47 |
| 15NSS-FNS6-X-ATC 15NSS-FRT6-X-ATC | Air Pressure psig (bar) | 30 (2.1) | 35 (2.4) | 40 (2.8) | 50 (3.5) | 55 (3.8) | 60 (4.2) | 60 (4.2) | | | | 0.19 (4.9) | 0.59 |
| 15NSS-FNS8-X-ATC 15NSS-FRT8-X-ATC | Air Pressure psig (bar) | 20 (1.4) | 30 (2.1) | 35 (2.4) | 40 (2.8) | 45 (3.1) | 55 (3.8) | 55 (3.8) | | | | 0.24 (6.0) | 1.04 |

NOTES: 1. -X: Designator of valve flow patterns. Valves are available in 5 different flow patterns (-1 to -6). For details, please refer to the FITOK Needle Valves catalog.

2. Cv values shown are for 2-way straight valve pattern. For 2-way angle pattern, increase Cv value by 50% (Based on water).

3. All dimensions are for reference only and are subject to change.

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E-48 Needle Valves and Pneumatic Needle Valves

20N Series: 20,000 psig (1379 bar)

| Basic Ordering Number | | System Pressure KSI (MPa) | | | | | | | | | | Stem Travel in. (mm) | Flow Coefficient (Cv) |
|-----------------------|----------------------------|---------------------------|-------------|-------------|--------------|--------------|--------------|---------------|---------------|---------------|--|----------------------|-----------------------|
| | | 1-4 (6.9-27.6) | 6 (41.4) | 8 (55.2) | 10 (69.0) | 12 (82.7) | 14 (96.5) | 16 (110.3) | 18 (124.1) | 20 (137.9) | | | |
| 20NSS-MF4-X-ATC | Air Pressure psig (bar) | 30 (2.1) | 35 (2.4) | 40 (2.8) | 50 (3.5) | 55 (3.8) | 60 (4.2) | 65 (4.5) | 70 (4.8) | 75 (5.2) | | 0.19 (4.9) | 0.29 |
| 20NSS-MF6-X-ATC | | | | | | | | | | | | | 0.62 |
| 20NSS-MF9-X-ATC | Air Pressure psig (bar) | 20 (1.4) | 30 (2.1) | 35 (2.4) | 40 (2.8) | 45 (3.1) | 55 (3.8) | 60 (4.2) | 65 (4.5) | 70 (4.8) | | 0.24 (6.0) | 1.30 |
| 20NSS-MF12-X-ATC | Air Pressure psig (bar) | 25 (1.7) | 30 (2.1) | 35 (2.4) | 40 (2.8) | 45 (3.1) | 55 (3.8) | 60 (4.2) | 65 (4.5) | 70 (4.8) | | 0.35 (9.0) | 2.41 |
| 20NSS-MF16-X-ATC | Air Pressure psig (bar) | 25 (1.7) | 30 (2.1) | 40 (2.8) | 45 (3.1) | 55 (3.8) | 60 (4.2) | 65 (4.5) | 75 (5.2) | 80 (5.5) | | 0.39 (10.0) | 3.40 |

- NOTES: 1. -X: Designator of valve flow patterns. Valves are available in 5 different flow patterns (-1 to -6). For details, please refer to the FITOK Needle Valves catalog.
 2. Cv values shown are for 2-way straight valve pattern. For 2-way angle pattern, increase Cv value by 50% (Based on water).
 3. All dimensions are for reference only and are subject to change.

30N Series: 30,000 psig (2068 bar)

| Basic Ordering Number | | System Pressure KSI (MPa) | | | | | | | | | | Stem Travel in. (mm) | Flow Coefficient (Cv) |
|-----------------------|----------------------------|---------------------------|--------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|----------------------|-----------------------|
| | | 1-12 (6.9-82.7) | 14 (96.5) | 16 (110.3) | 18 (124.1) | 20 (137.9) | 22 (151.7) | 24 (165.7) | 26 (179.3) | 28 (193.1) | 30 (206.8) | | |
| 30NSS-HF4-X-ATC | Air Pressure psig (bar) | 45 (3.1) | 50 (3.5) | 55 (3.8) | 60 (4.1) | 65 (4.5) | 70 (4.8) | 75 (5.2) | 80 (5.5) | 85 (5.9) | 85 (5.9) | 0.19 (4.9) | 0.12 |
| 30NSS-HF6-X-ATC | | | | | | | | | | | | | 0.22 |
| 30NSS-HF9-X-ATC | | | | | | | | | | | | | 0.31 |

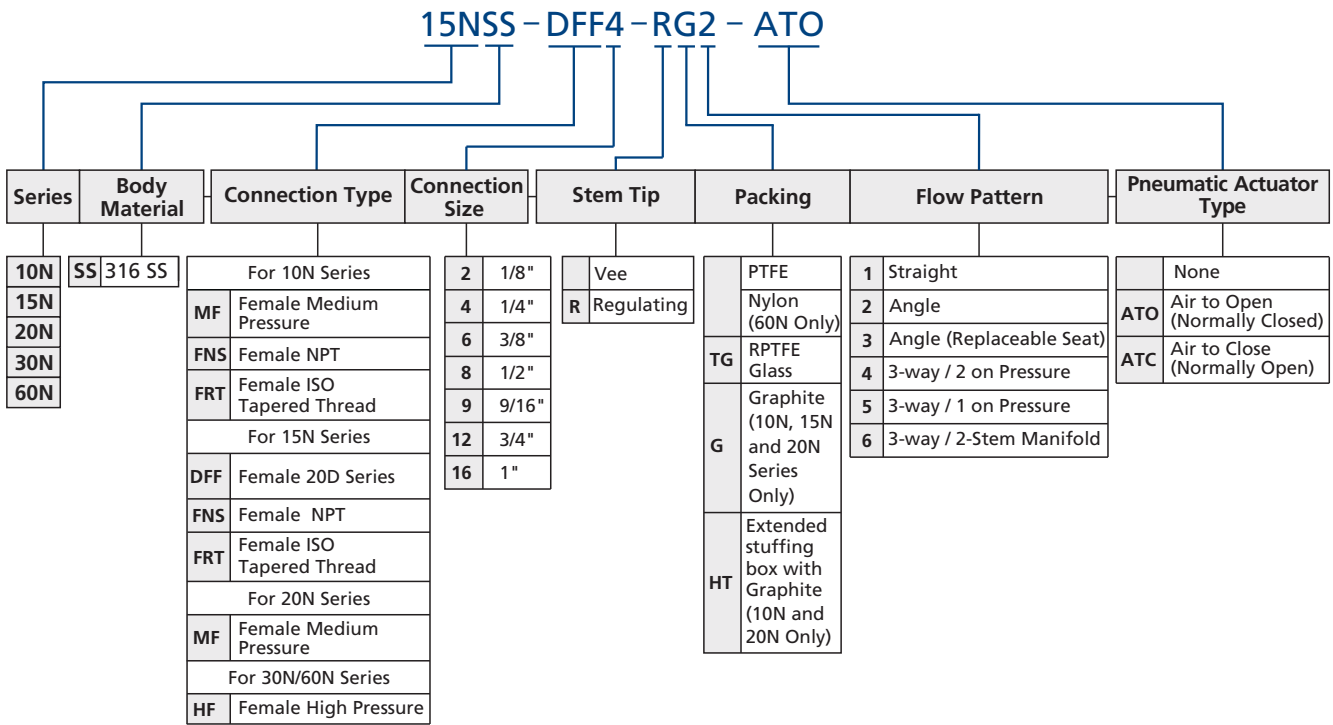
- NOTES: 1. -X: Designator of valve flow patterns. Valves are available in 5 different flow patterns (-1 to -6). For details, please refer to the FITOK Needle Valves catalog.
 2. Cv values shown are for 2-way straight valve pattern. For 2-way angle pattern, increase Cv value by 50% (Based on water).
 3. All dimensions are for reference only and are subject to change.

60N Series: 60,000 psig (4137 bar)

| Basic Ordering Number | | System Pressure KSI (MPa) | | | | | | | | | | Stem Travel in. (mm) | Flow Coefficient (Cv) |
|-----------------------|----------------------------|---------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|--|----------------------|-----------------------|
| | | 1-20 (6.9-137.9) | 25 (172.4) | 30 (206.8) | 35 (241.3) | 40 (275.8) | 45 (310.3) | 50 (344.7) | 55 (379.2) | 60 (413.7) | | | |
| 60NSS-HF4-X-ATC | Air Pressure psig (bar) | 35 (2.4) | 40 (2.8) | 50 (3.5) | 55 (3.8) | 65 (4.5) | 70 (4.8) | 75 (5.2) | 85 (5.9) | 90 (6.2) | | 0.19 (4.9) | 0.08 |
| 60NSS-HF6-X-ATC | | | | | | | | | | | | | 0.09 |
| 60NSS-HF9-X-ATC | | | | | | | | | | | | | 0.14 |

- NOTES: 1. -X: Designator of valve flow patterns. Valves are available in 5 different flow patterns (-1 to -6). For details, please refer to the FITOK Needle Valves catalog.
 2. Cv values shown are for 2-way straight valve pattern. For 2-way angle pattern, increase Cv value by 50% (Based on water).
 3. All dimensions are for reference only and are subject to change.

Ordering Number Description

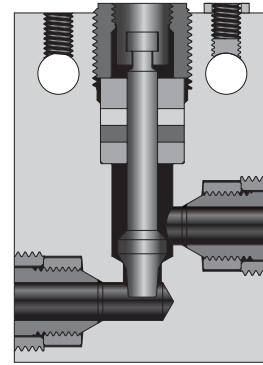
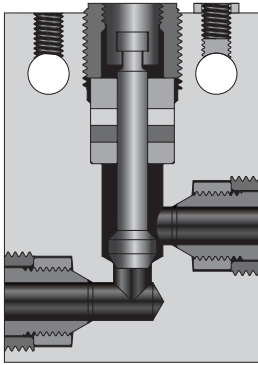


- NOTES: 1. Pneumatic needle valves are on/off valves, and will not regulate flow. It is not recommended to order pneumatic valves with regulating stems.
 2. For more details regarding 20D Series and Medium/High Pressure connections, please see **Connection Information** on I-02.
 3. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.

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Stem Types

Two types of stems are offered by FITOK: Vee and Regulating. Both Vee and Regulating stems are interchangeable on most valves and provide bubble-tight shut-off against liquids and gases.



Vee Stem

The Vee stem is used for direct on-off, metal-to-metal shut-off with quick-opening flow characteristics.

Regulating Stem

In some applications, more precise flow control is required than is possible with a Vee stem. For these cases, FITOK offers a non-rotating, two-piece regulating stem which can be used for both control and shut-off.

| |
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Check Valves

10C, 10CO Series: 10,000 psig (690 bar)

15C, 15CO Series: 15,000 psig (1034 bar)

20C, 20CO Series: 20,000 psig (1379 bar)

60C, 60CO Series: 60,000 psig (4137 bar)



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| Tubing | Pipe O-ring Check Valves | E-53 |
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| Line Filters | Pipe Ball Check Valves | E-54 |
| Valves | <h2>15C Series</h2> | |
| Sour Service Products | O-ring Check Valves | E-55 |
| Subsea Valves | Pipe O-ring Check Valves | E-56 |
| Tools and Installation Instructions | <h2>15CO Series</h2> | |
| Technical Information | Ball Check Valves | E-57 |
| Part Number Crossover Charts | Pipe Ball Check Valves | E-58 |
| | <h2>20C Series</h2> | |
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| | Ball Check Valves | E-60 |
| | <h2>60C Series</h2> | |
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| | <h2>60CO Series</h2> | |
| | Ball Check Valves | E-62 |
| | <h2>Ordering Number Description</h2> | |
| | | E-63 |

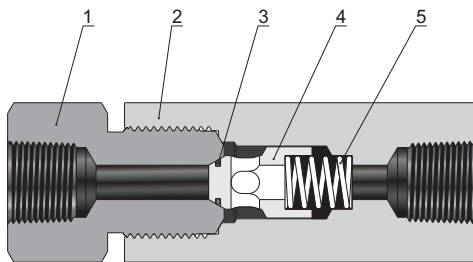
10C Series: 10,000 psig (690 bar)

Pipe O-ring Check Valves

Features

- Cracking pressure: 14 psig~26 psig (0.966 bar~1.794 bar)
- Fluorocarbon FKM O-ring for operation from 0°F to 400°F (-17.8°C to 204°C); other materials of O-rings available
- Provide unidirectional flow and tight shut-off for liquids and gases with high reliability. When differential drops below cracking pressure, valve shuts off (Not for use as relief valve)
- Resilient O-ring seat design for noise-free closing and zero leakage

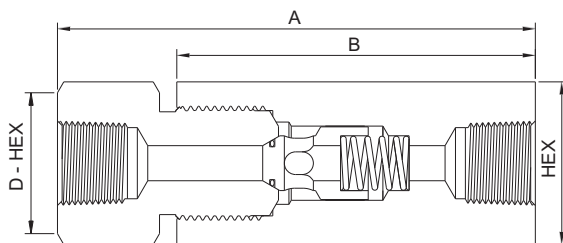
Standard Materials of Construction



| Item | Component | Material Grade |
|------|--------------------|--|
| 1 | <i>Cover Gland</i> | <i>316 SS</i> |
| 2 | <i>Valve Body</i> | <i>316 SS</i> |
| 3 | <i>O-ring</i> | <i>Fluorocarbon FKM</i> |
| 4 | <i>Poppet</i> | <i>316 SS</i> |
| 5 | <i>Spring</i> | <i>300 Series Stainless Steel</i> |
| | Lubricant | Molybdenum Disulfide/Fluorinated-based |

Wetted components listed in italics.

Ordering Information and Dimensions



| Ordering Number | Connection | Orifice in. (mm) | Cv | Dimensions, in. (mm) | | | | Working Pressure psig (bar) |
|-----------------|------------|------------------|------|----------------------|--------------|-------------|-------------|-----------------------------|
| | | | | A | B | D - HEX | HEX | |
| 10CSS-FNS12 | FNS12 | 0.52 (13.21) | 4.70 | 6.11 (155.3) | 4.75 (120.7) | 1.5 (38.1) | 1.75 (44.5) | 10,000 (690) |
| 10CSS-FNS16 | FNS16 | 0.69 (17.53) | 7.40 | 7.33 (186.2) | 5.75 (146.1) | 1.75 (44.5) | 1.88 (47.8) | 10,000 (690) |

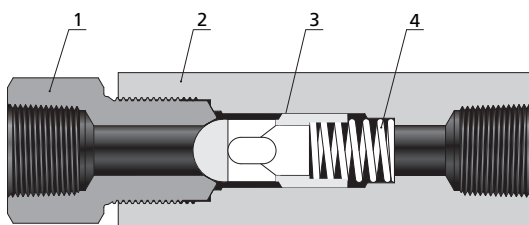
- NOTES: 1. For other pipe connections, please refer to 15C Series Pipe O-ring Check Valves for details.
2. Dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

10CO Series: 10,000 psig (690 bar) Pipe Ball Check Valves

Features

- ⦿ Working temperature range: -110°F to 400°F (-79°C to 204°C)
- ⦿ Prevent reverse flow where leak-tight shut-off is not mandatory (Not for use as relief valve)
- ⦿ An integral design of the ball and poppet to assure positive, in-line seating without "chatter".
Poppet designed essentially for axial flow with minimum pressure drop
- ⦿ Optional materials of cover gland and ball poppet for longer life

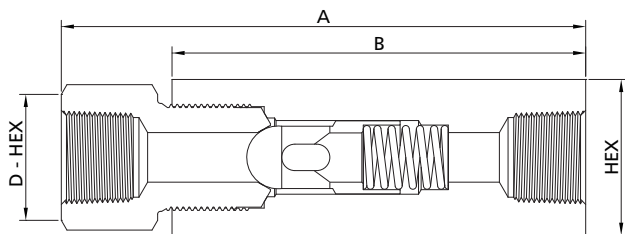
Standard Materials of Construction



| Item | Component | Material Grade |
|------|--------------------|--|
| 1 | <i>Cover Gland</i> | 316 SS |
| 2 | <i>Valve Body</i> | 316 SS |
| 3 | <i>Ball Poppet</i> | 316 SS |
| 4 | <i>Spring</i> | 300 Series Stainless Steel |
| | Lubricant | Molybdenum Disulfide/Fluorinated-based |

Wetted components listed in italics.

Ordering Information and Dimensions



| Ordering Number | Connection | Orifice in. (mm) | Cv | Dimensions, in. (mm) | | | | Working Pressure psig (bar) |
|-----------------|------------|------------------|------|----------------------|--------------|-------------|-------------|-----------------------------|
| | | | | A | B | D - HEX | HEX | |
| 10COSS-FNS12 | FNS12 | 0.52 (13.21) | 4.70 | 6.11 (155.3) | 4.75 (120.7) | 1.5 (38.1) | 1.75 (44.5) | 10,000 (690) |
| 10COSS-FNS16 | FNS16 | 0.69 (17.53) | 7.40 | 7.33 (186.2) | 5.75 (146.1) | 1.75 (44.5) | 1.88 (47.8) | 10,000 (690) |

- NOTES: 1. For other pipe connections, please refer to 15CO Series Pipe Ball Check Valves for details.
2. Dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

| |
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| Fittings |
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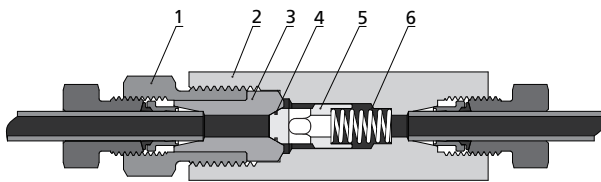
15C Series: 15,000 psig (1034 bar)

O-ring Check Valves

Features

- Cracking pressure: 14 psig~26 psig (0.966 bar~1.794 bar)
- Fluorocarbon FKM O-ring for operation from 0°F to 400°F (-17.8°C to 204°C); other materials of O-rings available
- Tubing sizes available in 1/4", 3/8" and 1/2"
- Provide unidirectional flow and tight shut-off for liquids and gases with high reliability.
When differential drops below cracking pressure, valve shuts off (Not for use as relief valve)
- Resilient O-ring seat design for noise-free closing and zero leakage

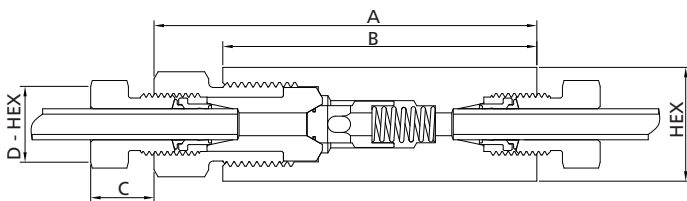
Standard Materials of Construction



| Item | Component | Material Grade |
|------|-------------|--|
| 1 | Cover Gland | 316 SS |
| 2 | Valve Body | 316 SS |
| 3 | Cover | 316SS |
| 4 | O-ring | Fluorocarbon FKM |
| 5 | Poppet | 316 SS |
| 6 | Spring | 300 Series Stainless Steel |
| | Lubricant | Molybdenum Disulfide/Fluorinated-based |

Wetted components listed in italics.

Ordering Information and Dimensions



| Ordering Number | Connection | Orifice in. (mm) | Cv | Dimensions, in. (mm) | | | | | Working Pressure psig (bar) |
|-----------------|------------|------------------|------|----------------------|-------------|-------------|-------------|-------------|-----------------------------|
| | | | | A | B | C | D - HEX | HEX | |
| 15CSS-DFF4 | DFF4 | 0.188 (4.78) | 0.63 | 3.35 (85) | 2.72 (69.2) | 0.52 (13.3) | 0.63 (16.0) | 0.81 (20.6) | 15,000 (1034) |
| 15CSS-DFF6 | DFF6 | 0.250 (6.35) | 1.70 | 3.72 (94.6) | 3.13 (79.6) | 0.53 (13.5) | 0.75 (19.1) | 1.00 (25.4) | 15,000 (1034) |
| 15CSS-DFF8 | DFF8 | 0.375 (9.53) | 3.40 | 4.41 (112.0) | 3.68 (93.5) | 0.60 (15.3) | 0.93 (23.6) | 1.38 (35.1) | 15,000 (1034) |

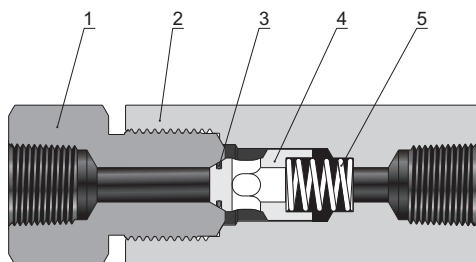
NOTE: Dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

Pipe O-ring Check Valves

Features

- Cracking pressure: 14 psig~26 psig (0.966 bar~1.794 bar)
- Fluorocarbon FKM O-ring for operation from 0°F to 400°F (-17.8°C to 204°C); other materials of O-rings available
- Provide unidirectional flow and tight shut-off for liquids and gases with high reliability. When differential drops below cracking pressure, valve shuts off (Not for use as relief valve)
- Resilient O-ring seat design for noise-free closing and zero leakage

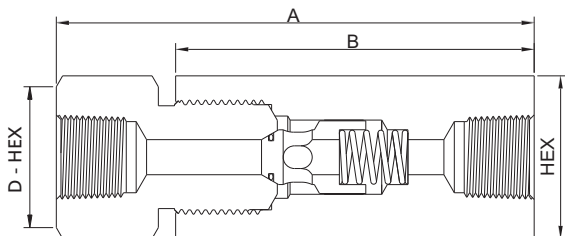
Standard Materials of Construction



| Item | Component | Material Grade |
|------|--------------------|--|
| 1 | <i>Cover Gland</i> | 316 SS |
| 2 | <i>Valve Body</i> | 316 SS |
| 3 | <i>O-ring</i> | Fluorocarbon FKM |
| 4 | <i>Poppet</i> | 316 SS |
| 5 | <i>Spring</i> | 300 Series Stainless Steel |
| | Lubricant | Molybdenum Disulfide/Fluorinated-based |

Wetted components listed in italics.

Ordering Information and Dimensions



| Ordering Number | Connection | Orifice in. (mm) | Cv | Dimensions, in. (mm) | | | | Working Pressure psig (bar) |
|-----------------|------------|------------------|------|----------------------|-------------|-------------|-------------|-----------------------------|
| | | | | A | B | D - HEX | HEX | |
| 15CSS-FNS4 | FNS4 | 0.12 (3.05) | 0.28 | 3.30 (83.8) | 2.38 (60.3) | 0.94 (23.8) | 0.94 (23.8) | 15,000 (1034) |
| 15CSS-FNS6 | FNS6 | 0.22 (5.59) | 0.84 | 3.95 (100.3) | 2.88 (73.2) | 1.13 (28.6) | 1.13 (28.6) | 15,000 (1034) |
| 15CSS-FNS8 | FNS8 | 0.36 (9.12) | 2.30 | 5.07 (128.9) | 3.88 (98.6) | 1.38 (34.9) | 1.38 (34.9) | 15,000 (1034) |

NOTE: Dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

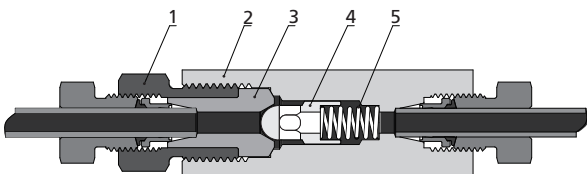
15CO Series: 15,000 psig (1034 bar)

Ball Check Valves

Features

- ⦿ Working temperature range: -110°F to 800°F (-79°C to 427°C)
- ⦿ Tubing sizes available in 1/4", 3/8" and 1/2"
- ⦿ Prevent reverse flow where leak-tight shut-off is not mandatory (Not for use as relief valve)
- ⦿ An integral design of the ball and poppet to assure positive, in-line seating without "chatter".
Poppet designed essentially for axial flow with minimum pressure drop
- ⦿ Optional materials of cover and ball poppet for longer life

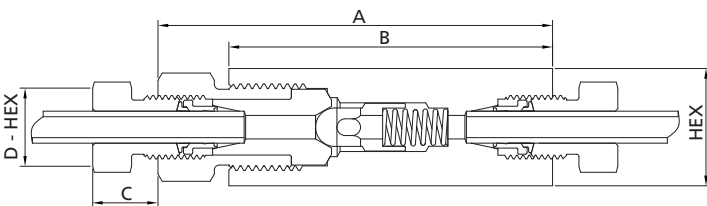
Standard Materials of Construction



| Item | Component | Material Grade |
|------|-------------|--|
| 1 | Cover Gland | 316 SS |
| 2 | Valve Body | 316 SS |
| 3 | Cover | 316 SS |
| 4 | Ball Poppet | 316 SS |
| 5 | Spring | 300 Series Stainless Steel |
| | Lubricant | Molybdenum Disulfide/Fluorinated-based |

Wetted components listed in italics.

Ordering Information and Dimensions



| Ordering Number | Connection | Orifice in. (mm) | Cv | Dimensions, in. (mm) | | | | | Working Pressure psig (bar) |
|-----------------|------------|------------------|------|----------------------|-------------|-------------|-------------|-------------|-----------------------------|
| | | | | A | B | C | D - HEX | HEX | |
| 15COSS-DFF4 | DFF4 | 0.188 (4.78) | 0.63 | 3.35 (85) | 2.72 (69.2) | 0.52 (13.3) | 0.63 (16.0) | 0.81 (20.6) | 15,000 (1034) |
| 15COSS-DFF6 | DFF6 | 0.250 (6.35) | 1.70 | 3.72 (94.6) | 3.13 (79.6) | 0.53 (13.5) | 0.75 (19.1) | 1.00 (25.4) | 15,000 (1034) |
| 15COSS-DFF8 | DFF8 | 0.375 (9.53) | 3.40 | 4.41 (112.0) | 3.68 (93.5) | 0.60 (15.3) | 0.93 (23.6) | 1.38 (35.1) | 15,000 (1034) |

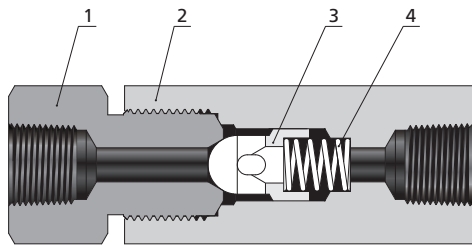
NOTE: Dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

Pipe Ball Check Valves

Features

- Working temperature range: -110°F to 400°F (-79°C to 204°C)
- Prevent reverse flow where leak-tight shut-off is not mandatory (Not for use as relief valve)
- An integral design of the ball and poppet to assure positive, in-line seating without "chatter".
Poppet is designed essentially for axial flow with minimum pressure drop
- Optional materials of cover gland and ball poppet for longer life

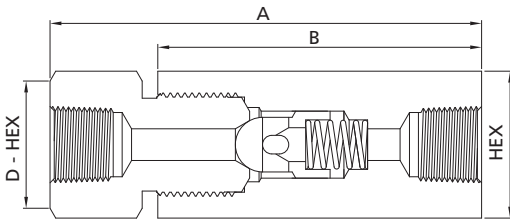
Standard Materials of Construction



| Item | Component | Material Grade |
|------|--------------------|--|
| 1 | <i>Cover Gland</i> | 316 SS |
| 2 | <i>Valve Body</i> | 316 SS |
| 3 | <i>Ball Poppet</i> | 316 SS |
| 4 | <i>Spring</i> | 300 Series Stainless Steel |
| | Lubricant | Molybdenum Disulfide/Fluorinated-based |

Wetted components listed in italics.

Ordering Information and Dimensions



| Ordering Number | Connection | Orifice in. (mm) | Cv | Dimensions, in. (mm) | | | | Working Pressure psig (bar) |
|-----------------|------------|------------------|------|----------------------|-------------|-------------|-------------|-----------------------------|
| | | | | A | B | D - HEX | HEX | |
| 15COSS-FNS4 | FNS4 | 0.12 (3.05) | 0.28 | 3.30 (83.8) | 2.38 (60.3) | 0.94 (23.8) | 0.94 (23.8) | 15,000 (1034) |
| 15COSS-FNS6 | FNS6 | 0.22 (5.59) | 0.84 | 3.95 (100.3) | 2.88 (73.2) | 1.13 (28.6) | 1.13 (28.6) | 15,000 (1034) |
| 15COSS-FNS8 | FNS8 | 0.36 (9.12) | 2.30 | 5.07 (128.9) | 3.88 (98.6) | 1.38 (34.9) | 1.38 (34.9) | 15,000 (1034) |

NOTE: Dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

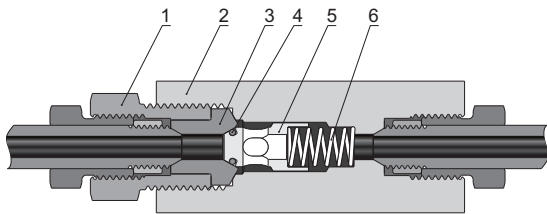
20C Series: 20,000 psig (1379 bar)

O-ring Check Valves

Features

- Cracking pressure: 14 psig~26 psig (0.966 bar~1.794 bar)
- Fluorocarbon FKM O-ring for operation from 0°F to 400°F (-17.8°C to 204°C);
other materials of O-rings available
- Tubing sizes available from 1/4" to 1"
- Provide unidirectional flow and tight shut-off for liquids and gases with high reliability.
When differential drops below cracking pressure, valve shuts off (Not for use as relief valve)
- Resilient O-ring seat design for noise-free closing and zero leakage

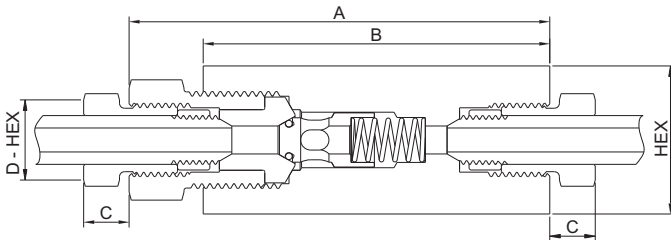
Standard Materials of Construction



| Item | Component | Material Grade |
|-----------|-------------|--|
| 1 | Cover Gland | 316 SS |
| 2 | Valve Body | 316 SS |
| 3 | Cover | 316 SS |
| 4 | O-ring | Fluorocarbon FKM |
| 5 | Poppet | 316 SS |
| 6 | Spring | 300 Series Stainless Steel |
| Lubricant | | Molybdenum Disulfide/Fluorinated-based |

Wetted components listed in italics.

Ordering Information and Dimensions



| Ordering Number | Connection | Orifice in. (mm) | Cv | Dimensions, in. (mm) | | | | | Working Pressure psig (bar) |
|-----------------|------------|------------------|------|----------------------|--------------|-------------|-------------|-------------|-----------------------------|
| | | | | A | B | C | D - HEX | HEX | |
| 20CSS-MF4 | MF4 | 0.125 (3.18) | 0.28 | 2.94 (74.7) | 2.50 (63.5) | 0.38 (9.7) | 0.50 (12.7) | 0.81 (20.6) | 20,000 (1379) |
| 20CSS-MF6 | MF6 | 0.218 (5.54) | 0.84 | 3.12 (79.3) | 2.62 (66.6) | 0.44 (11.2) | 0.62 (15.8) | 1.00 (25.4) | 20,000 (1379) |
| 20CSS-MF9 | MF9 | 0.359 (9.12) | 2.30 | 4.18 (106.2) | 3.50 (88.9) | 0.55 (14.0) | 0.94 (23.9) | 1.38 (35.1) | 20,000 (1379) |
| 20CSS-MF12 | MF12 | 0.516 (13.11) | 4.70 | 5.50 (139.7) | 4.75 (120.7) | 0.60 (15.2) | 1.19 (30.2) | 1.75 (44.5) | 20,000 (1379) |
| 20CSS-MF16 | MF16 | 0.688 (17.48) | 7.40 | 6.91 (175.6) | 5.75 (146.1) | 0.74 (18.8) | 1.38 (35.1) | 2.12 (53.9) | 20,000 (1379) |

NOTE: Dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

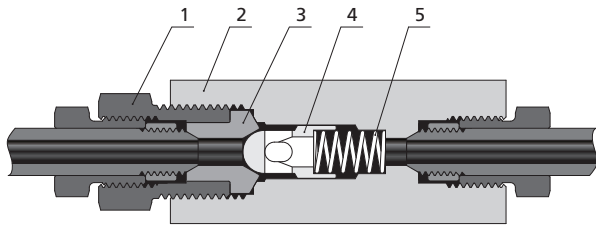
20CO Series: 20,000 psig (1379 bar)

Ball Check Valves

Features

- Working temperature range: -110°F to 1200°F (-79°C to 649°C)
- Tubing sizes available from 1/4" to 1"
- Prevent reverse flow where leak-tight shut-off is not mandatory (Not for use as relief valve)
- An integral design of the ball and poppet to assure positive, in-line seating without "chatter".
Poppet is designed essentially for axial flow with minimum pressure drop
- Optional materials of cover and ball poppet for longer life

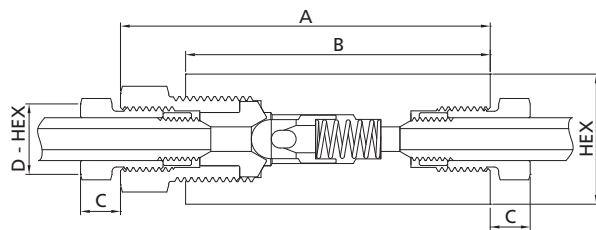
Standard Materials of Construction



| Item | Component | Material Grade |
|------|-------------|--|
| 1 | Cover Gland | 316 SS |
| 2 | Valve Body | 316 SS |
| 3 | Cover | 316 SS |
| 4 | Ball Poppet | 316 SS |
| 5 | Spring | 300 Series Stainless Steel |
| | Lubricant | Molybdenum Disulfide/Fluorinated-based |

Wetted components listed in italics.

Ordering Information and Dimensions



| Ordering Number | Connection | Orifice in. (mm) | Cv | Dimensions, in. (mm) | | | | | Working Pressure psig (bar) |
|-----------------|------------|------------------|------|----------------------|--------------|-------------|-------------|-------------|-----------------------------|
| | | | | A | B | C | D - HEX | HEX | |
| 20COSS-MF4 | MF4 | 0.125 (3.18) | 0.28 | 2.94 (74.7) | 2.50 (63.5) | 0.38 (9.7) | 0.50 (12.7) | 0.81 (20.6) | 20,000 (1379) |
| 20COSS-MF6 | MF6 | 0.218 (5.54) | 0.84 | 3.12 (79.3) | 2.62 (66.6) | 0.44 (11.2) | 0.62 (15.8) | 1.00 (25.4) | 20,000 (1379) |
| 20COSS-MF9 | MF9 | 0.359 (9.12) | 2.30 | 4.18 (106.2) | 3.50 (88.9) | 0.55 (14.0) | 0.94 (23.9) | 1.38 (35.1) | 20,000 (1379) |
| 20COSS-MF12 | MF12 | 0.516 (13.11) | 4.70 | 5.50 (139.7) | 4.75 (120.7) | 0.60 (15.2) | 1.19 (30.2) | 1.75 (44.5) | 20,000 (1379) |
| 20COSS-MF16 | MF16 | 0.688 (17.48) | 7.40 | 6.91 (175.6) | 5.75 (146.1) | 0.74 (18.8) | 1.38 (35.1) | 2.12 (53.9) | 20,000 (1379) |

NOTE: Dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

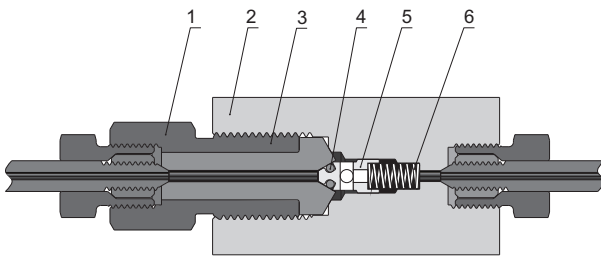
60C Series: 60,000 psig (4137 bar)

O-ring Check Valves

Features

- Cracking pressure: 14 psig~26 psig (0.966 bar~1.794 bar)
- Fluorocarbon FKM O-ring for operation from 0°F to 400°F (-17.8°C to 204°C); other materials of O-rings available
- Tubing sizes available from 1/4" to 9/16"
- Provide unidirectional flow and tight shut-off for liquids and gases with high reliability. When differential drops below cracking pressure, valve shuts off (Not for use as relief valve)
- Resilient O-ring seat design for noise-free closing and zero leakage

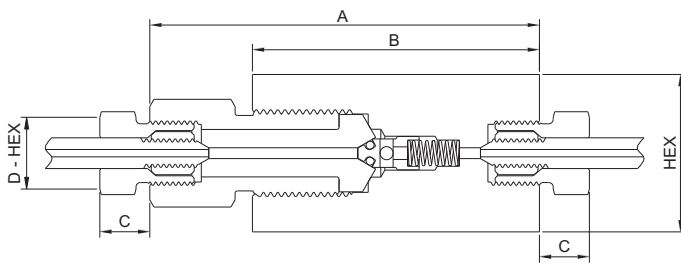
Standard Materials of Construction



| Item | Component | Material Grade |
|------|-------------|--|
| 1 | Cover Gland | 316 SS |
| 2 | Valve Body | 316 SS |
| 3 | Cover | 316 SS |
| 4 | O-ring | Fluorocarbon FKM |
| 5 | Poppet | 316 SS |
| 6 | Spring | 300 Series Stainless Steel |
| | Lubricant | Molybdenum Disulfide/Fluorinated-based |

Wetted components listed in italics.

Ordering Information and Dimensions



| Ordering Number | Connection | Orifice in. (mm) | Cv | Dimensions, in. (mm) | | | | | Working Pressure psig (bar) |
|-----------------|------------|------------------|------|----------------------|----------------|----------------|----------------|----------------|-----------------------------|
| | | | | A | B | C | D - HEX | HEX | |
| 60CSS-HF4 | HF4 | 0.094 (2.39) | 0.15 | 3.38 (85.9) | 2.50 (63.5) | 0.47 (11.9) | 0.63 (16.0) | 1.18 (30.0) | 60,000 (4137) |
| 60CSS-HF6 | HF6 | 0.125 (3.18) | 0.28 | 3.86 (98.1) | 2.80 (71.1) | 0.61 (15.5) | 0.81 (20.6) | 1.18 (30.0) | 60,000 (4137) |
| 60CSS-HF9 | HF9 | 0.187 (4.75) | 0.63 | 4.62 (117.4) | 3.38 (85.9) | 0.95 (24.1) | 1.12 (28.5) | 1.50 (38.1) | 60,000 (4137) |

NOTE: Dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

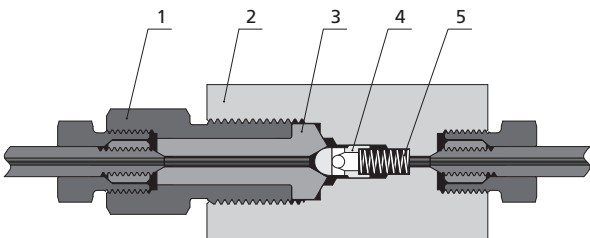
60CO Series: 60,000 psig (4137 bar)

Ball Check Valves

Features

- ⦿ Working temperature range: -110°F to 1200°F (-79°C to 649°C)
- ⦿ Tubing sizes available from 1/4" to 9/16"
- ⦿ Prevent reverse flow where leak-tight shut-off is not mandatory (Not for use as relief valve)
- ⦿ An integral design of the ball and poppet to assure positive, in-line seating without "chatter".
 Poppet is designed essentially for axial flow with minimum pressure drop
- ⦿ Optional materials of cover and ball poppet for longer life

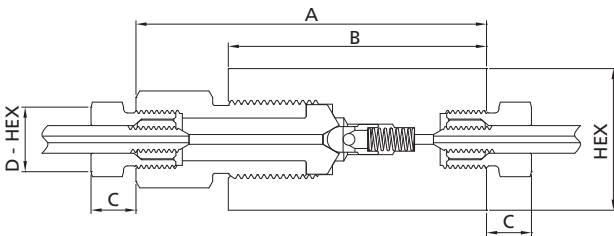
Standard Materials of Construction



| Item | Component | Material Grade |
|------|-------------|--|
| 1 | Cover Gland | 316 SS |
| 2 | Valve Body | 316 SS |
| 3 | Cover | 316 SS |
| 4 | Ball Poppet | 316 SS |
| 5 | Spring | 300 Series Stainless Steel |
| | Lubricant | Molybdenum Disulfide/Fluorinated-based |

Wetted components listed in italics.

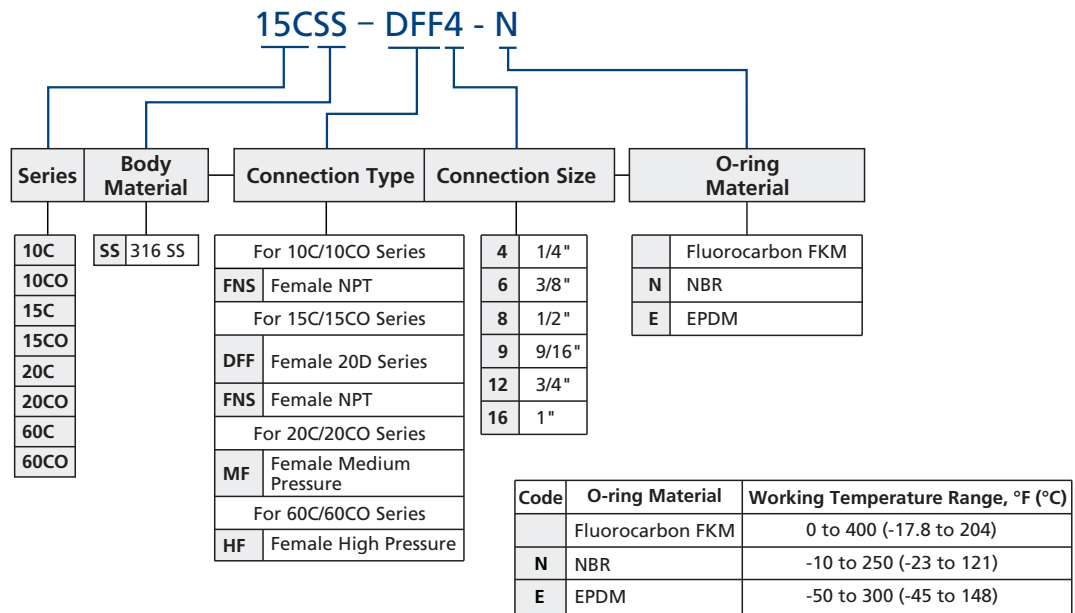
Ordering Information and Dimensions



| Ordering Number | Connection | Orifice in. (mm) | Cv | Dimensions, in. (mm) | | | | | Working Pressure psig (bar) |
|-----------------|------------|------------------|------|----------------------|-------------|-------------|--------------|-------------|-----------------------------|
| | | | | A | B | C | D - HEX | HEX | |
| 60COSS-HF4 | HF4 | 0.094 (2.39) | 0.15 | 3.38 (85.9) | 2.50 (63.5) | 0.47 (11.9) | 0.63 (16.0) | 1.18 (30.0) | 60,000 (4137) |
| 60COSS-HF6 | HF6 | 0.125 (3.18) | 0.28 | 3.86 (98.1) | 2.80 (71.1) | 0.61 (15.5) | 0.81 (20.6) | 1.18 (30.0) | 60,000 (4137) |
| 60COSS-HF9 | HF9 | 0.187 (4.75) | 0.63 | 4.62 (117.4) | 3.38 (85.9) | 0.95 (24.1) | 1.19 (30.16) | 1.50 (38.1) | 60,000 (4137) |

NOTE: Dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

Ordering Number Description



NOTES: 1. For more details regarding 20D Series and Medium/High Pressure connections, please see **Connection Information** on I-02.
 2. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.

| |
|-------------------------------------|
| Fittings |
| Tubing |
| Quick Couplings |
| Line Filters |
| Valves |
| Sour Service Products |
| Subsea Valves |
| Tools and Installation Instructions |
| Technical Information |
| Part Number Crossover Charts |

Excess Flow Valves

15EF Series: 15,000 psig (1034 bar)

20EF Series: 20,000 psig (1379 bar)

60EF Series: 60,000 psig (4137 bar)



| |
|-------------------------------------|
| Fittings |
| Tubing |
| Quick Couplings |
| Line Filters |
| Valves |
| Sour Service Products |
| Subsea Valves |
| Tools and Installation Instructions |
| Technical Information |

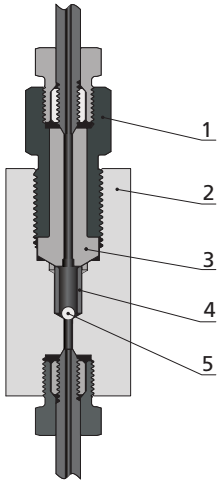
Contents

| | | |
|-------------------------------------|---|------|
| Fittings | Features | E-66 |
| Tubing | Standard Materials of Construction | E-66 |
| Quick Couplings | Ordering Information and Dimensions | E-66 |
| Line Filters | Ordering Number Description | E-67 |
| Valves | | |
| Sour Service Products | | |
| Subsea Valves | | |
| Tools and Installation Instructions | | |
| Technical Information | | |

Features

- ⦿ Working temperature range:
 - 15EF Series (NPT ends): -110°F to 400°F (-79°C to 204°C)
 - 15EF Series (DFF ends): -110°F to 800°F (-79°C to 427°C)
 - 20EF and 60EF Series: -110°F to 1200°F (-79°C to 649°C)
- ⦿ Protect pressure gauges and pressure instruments from sudden surges in flow or venting in the event of line failure
- ⦿ Equalize the pressure across the ball, and the ball will drop and reset automatically
- ⦿ The valve must be installed in vertical position with arrow on valve body pointing up
- ⦿ Valve body made of high tensile 316 stainless steel for maximum wear and corrosion resistance
- ⦿ Optional materials of cover and ball for longer life

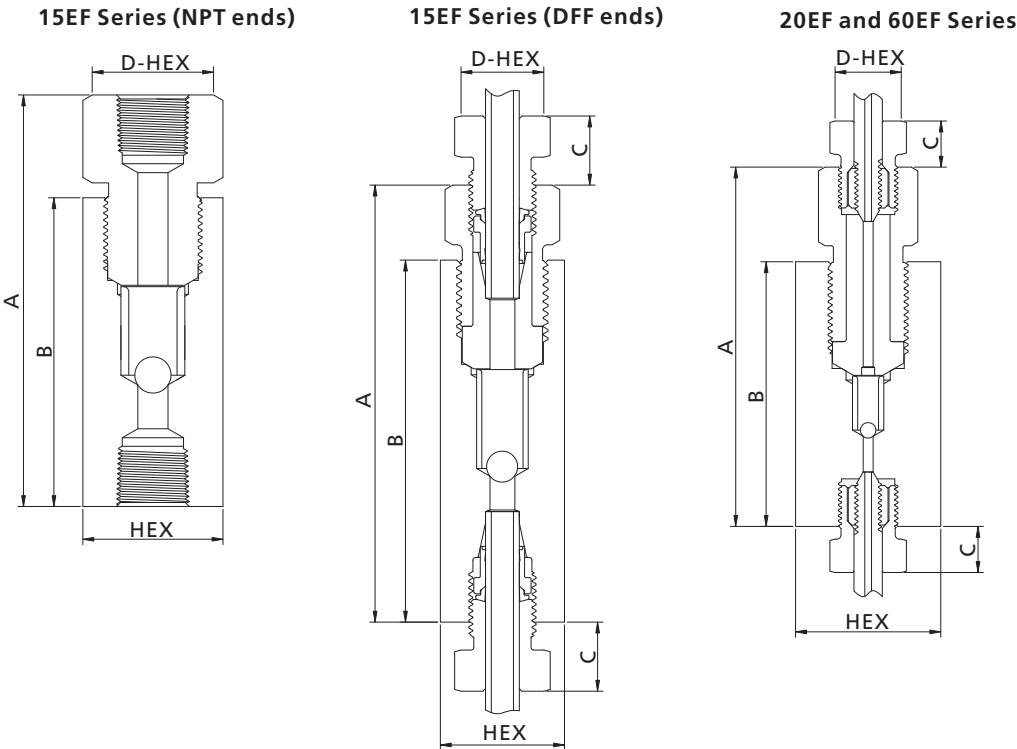
Standard Materials of Construction



| Item | Component | Material Grade |
|------|-------------------|--|
| 1 | Cover Gland | 316 SS |
| 2 | <i>Valve Body</i> | <i>316 SS</i> |
| 3 | <i>Cover</i> | <i>316 SS</i> |
| 4 | <i>Sleeve</i> | <i>316 SS</i> |
| 5 | <i>Ball</i> | <i>Stainless Steel</i> |
| | Lubricant | Molybdenum Disulfide/Fluorinated-based |

Wetted components listed in italics.

Ordering Information and Dimensions

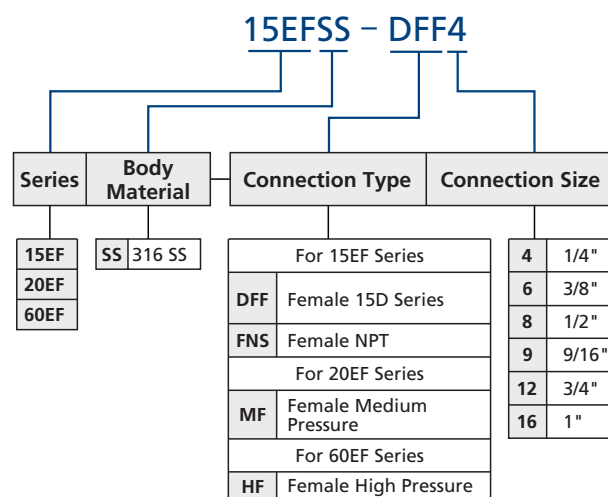


| |
|-------------------------------------|
| Fittings |
| Tubing |
| Quick Couplings |
| Line Filters |
| Valves |
| Source Service Products |
| Subsea Valves |
| Tools and Installation Instructions |
| Technical Information |

| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | Working Pressure psig (bar) |
|-----------------|------------|------------------|----------------------|--------------|-------------|--------------|-------------|-----------------------------|
| | | | A | B | C | D - HEX | HEX | |
| 15EFSS-DFF4 | DFF4 | 0.188 (4.78) | 3.35 (85) | 2.72 (69.2) | 0.52 (13.3) | 0.63 (16.0) | 0.81 (20.6) | 15,000 (1034) |
| 15EFSS-DFF6 | DFF6 | 0.250 (6.35) | 3.72 (94.6) | 3.13 (79.6) | 0.53 (13.5) | 0.75 (19.1) | 1.00 (25.4) | 15,000 (1034) |
| 15EFSS-DFF8 | DFF8 | 0.375 (9.53) | 4.41 (112.0) | 3.68 (93.5) | 0.60 (15.3) | 0.93 (23.6) | 1.38 (35.1) | 15,000 (1034) |
| 15EFSS-FNS4 | FNS4 | 0.12 (3.05) | 3.30 (83.8) | 2.38 (60.3) | / | 0.94 (23.8) | 0.94 (23.8) | 15,000 (1034) |
| 15EFSS-FNS6 | FNS6 | 0.22 (5.59) | 3.95 (100.3) | 2.88 (73.2) | / | 1.13 (28.6) | 1.13 (28.6) | 15,000 (1034) |
| 15EFSS-FNS8 | FNS8 | 0.36 (9.12) | 5.07 (128.9) | 3.88 (98.6) | / | 1.38 (34.9) | 1.38 (34.9) | 15,000 (1034) |
| 20EFSS-MF4 | MF4 | 0.125 (3.18) | 2.94 (74.7) | 2.50 (63.5) | 0.38 (9.7) | 0.50 (12.7) | 0.81 (20.6) | 20,000 (1379) |
| 20EFSS-MF6 | MF6 | 0.218 (5.54) | 3.12 (79.3) | 2.62 (66.6) | 0.44 (11.2) | 0.62 (15.8) | 1.00 (25.4) | 20,000 (1379) |
| 20EFSS-MF9 | MF9 | 0.359 (9.12) | 4.18 (106.2) | 3.50 (88.9) | 0.55 (14.0) | 0.94 (23.9) | 1.38 (35.1) | 20,000 (1379) |
| 20EFSS-MF12 | MF12 | 0.516 (13.11) | 5.50 (139.7) | 4.75 (120.7) | 0.60 (15.2) | 1.19 (30.2) | 1.75 (44.5) | 20,000 (1379) |
| 20EFSS-MF16 | MF16 | 0.688 (17.48) | 6.91 (175.6) | 5.75 (146.1) | 0.74 (18.8) | 1.38 (35.1) | 2.12 (53.9) | 20,000 (1379) |
| 60EFSS-HF4 | HF4 | 0.094 (2.39) | 3.38 (85.9) | 2.50 (63.5) | 0.47 (11.9) | 0.63 (16.0) | 1.18 (30.0) | 60,000 (4137) |
| 60EFSS-HF6 | HF6 | 0.125 (3.18) | 3.86 (98.1) | 2.80 (71.1) | 0.61 (15.5) | 0.81 (20.6) | 1.18 (30.0) | 60,000 (4137) |
| 60EFSS-HF9 | HF9 | 0.187 (4.75) | 4.62 (117.4) | 3.38 (85.9) | 0.95 (24.1) | 1.19 (30.16) | 1.50 (38.1) | 60,000 (4137) |

NOTE: All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

Ordering Number Description



NOTES: 1. For more details regarding 15D Series and Medium/High Pressure connections, please see **Connection Information** on I-02.

2. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.

Metering Valves

MS, MV, ML and MH Series

Needle Valves
Metering Valves



Features

MS Series

- ⦿ Working pressure up to: 2000 psig (138 bar)
- ⦿ Working temperature: -10°F to 400°F (-23°C to 204°C)
- ⦿ Orifice size: 0.032" (0.81 mm)
- ⦿ Max. flow coefficient (Cv): 0.004
- ⦿ Stem taper: 1°
- ⦿ Turns to open: 9 to 12
- ⦿ Shutoff service: not available
- ⦿ Variety of end connections
- ⦿ Panel mountable
- ⦿ Flow pattern: straight, angle, cross and double
- ⦿ Handle type: knurled, vernier and slotted
- ⦿ Variety of materials available for valve body



MV and ML Series

- ⦿ Working pressure up to: 1000 psig (69 bar)
- ⦿ Working temperature: -10°F to 400°F (-23°C to 204°C)
- ⦿ Max. flow coefficients (Cv):
 - MV series: 0.03
 - ML series: 0.15
- ⦿ Orifice sizes:
 - MV series: 0.056" (1.42 mm)
 - ML series: 0.128" (3.25 mm)
- ⦿ Stem taper:
 - MV series: 3°
 - ML series: 6.5°
- ⦿ Turns to open:
 - MV series: 8 to 10
 - ML series: 10 to 11
- ⦿ Shutoff service:
 - MV series: not available
 - ML series: available
- ⦿ Variety of end connections
- ⦿ Panel mountable
- ⦿ Flow pattern: straight, angle, cross (MV Series) and double (MV Series)
- ⦿ Handle type:
 - MV series: knurled, vernier and slotted
 - ML series: round and vernier
- ⦿ Variety of materials available for valve body

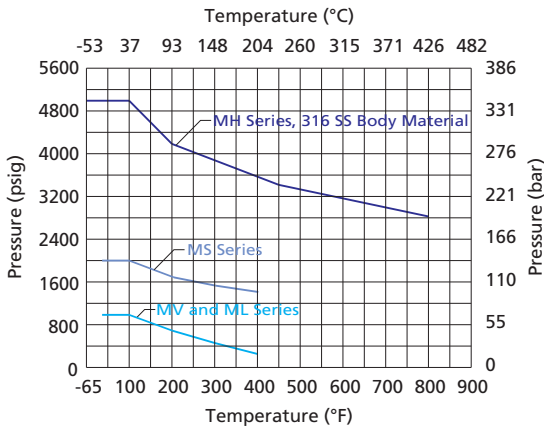


MH Series

- ⦿ Working pressure up to: 5000 psig (345 bar)
- ⦿ Working temperature: -65°F to 850°F (-54°C to 454°C)
- ⦿ Orifice size: 0.062" (1.6 mm)
- ⦿ Max. flow coefficient(Cv): 0.04
- ⦿ Stem taper: 2°
- ⦿ Shutoff service: available
- ⦿ Variety of end connections
- ⦿ Turns to open: 9 to 10
- ⦿ Panel mountable
- ⦿ Flow pattern: straight and angle
- ⦿ Handle type: round circular and vernier
- ⦿ Variety of materials available for valve body



Pressure vs. Temperature



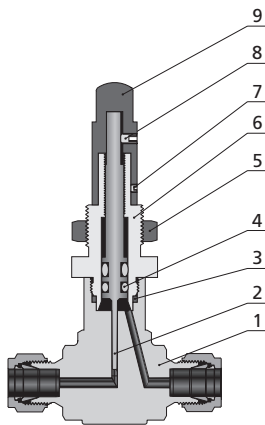
1. Graphs are based on Fluorocarbon and Graphite (for MH Series).
2. Contact FITOK Group or our authorized distributors for curve graph of other materials.

Temperature Ranges for Different seal Materials

| Seal Material | Temperature Range °F (°C) |
|---------------------------------------|---------------------------|
| O-Ring (for MS, MV, ML Series) | |
| Buna N (NBR) | -10 to 212 (-23 to 100) |
| Ethylene Propylene (EPDM) | -10 to 300 (-23 to 148) |
| Fluorocarbon (FKM) | -10 to 400 (-23 to 204) |
| Kalrez (FFKM) | -10 to 527 (-23 to 275) |
| Neoprene (CR) | -10 to 250 (-23 to 121) |
| Stem Packing (for MH Series) | |
| PTFE | -65 to 450 (-54 to 232) |
| Graphite | -65 to 850 (-54 to 454) |

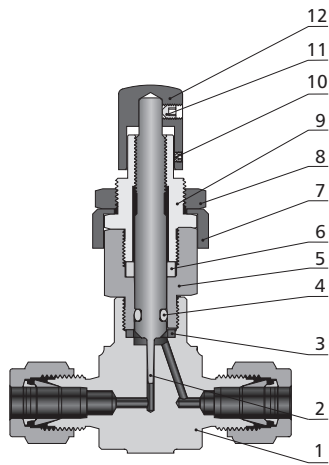
Standard Materials of Construction

MS Series



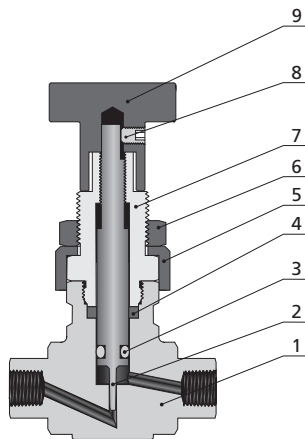
| Component | | Valve Body Material Grade/ASTM Specification | |
|-----------|-----------------|--|---------------------------------------|
| | | 316 SS | Brass |
| 1 | Body | 316 SS/A182 | Silver-mist chrome-plated C37700/B283 |
| 2 | Stem | 316 SS/A479 | |
| 3 | Body Seal | Fluorocarbon FKM | |
| 4 | O-ring | Fluorocarbon FKM | |
| 5 | Panel Mount Nut | Stainless steel | Silver-mist chrome-plated C36000/B16 |
| 6 | Bonnet | 316 SS/A479 | Silver-mist chrome-plated C36000/B16 |
| 7 | Lock Screw | Stainless steel | |
| 8 | Handle Screw | Stainless steel | |
| 9 | Handle | 316 SS/A276 | Silver-mist chrome-plated C36000/B16 |

MV Series



| Component | | Valve Body Material Grade/ASTM Specification | |
|-----------|-----------------|--|---------------------------------------|
| | | 316 SS | Brass |
| 1 | Body | 316 SS/A182 | Silver-mist chrome-plated C37700/B283 |
| 2 | Stem | 316 SS/A479 | |
| 3 | Body Seal | Fluorocarbon FKM | |
| 4 | O-ring | Fluorocarbon FKM | |
| 5 | Body Extension | 316 SS/A479 | Silver-mist chrome-plated C36000/B16 |
| 6 | Stem Guide Ring | PTFE/D1710 | |
| 7 | Bonnet Sleeve | Stainless steel | |
| 8 | Panel Mount Nut | 316 SS/A276 | Silver-mist chrome-plated C36000/B16 |
| 9 | Bonnet | 316 SS/A479 | Silver-mist chrome-plated C36000/B16 |
| 10 | Lock Screw | Stainless steel | |
| 11 | Handle Screw | Stainless steel | |
| 12 | Handle | 316 SS/A276 | Silver-mist chrome-plated C36000/B16 |

ML Series

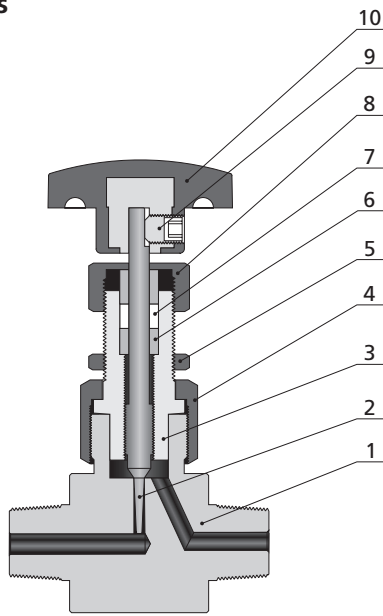


| Component | | Valve Body Material Grade/ASTM Specification | |
|-----------|-----------------|--|---------------------------------------|
| | | 316 SS | Brass |
| 1 | Body | 316 SS/A182 | Silver-mist chrome-plated C37700/B283 |
| 2 | Stem | Hardened 316 SS/A479 | |
| 3 | O-ring | Fluorocarbon FKM | |
| 4 | Stem Guide Ring | PTFE/D1710 | |
| 5 | Bonnet Sleeve | Stainless steel | |
| 6 | Panel Mount Nut | 316 SS/A276 | Silver-mist chrome-plated C36000/B16 |
| 7 | Bonnet | 316 SS/A479 | Silver-mist chrome-plated C36000/B16 |
| 8 | Handle Screw | Stainless steel | |
| 9 | Handle | Anodized aluminium | |

1. Lubricants: Silicone-based

2. Contact FITOK Group or our authorized distributors for other materials.

MH Series



| Component | | Material Grade/ASTM Specification |
|-----------|-----------------|-----------------------------------|
| 1 | Body | 316 SS/A479 |
| 2 | Stem | 440C SS/A276 |
| 3 | Bonnet | 316 SS/A479 |
| 4 | Union Nut | 316 SS/A276 |
| 5 | Panel Mount Nut | Stainless steel |
| 6 | Packing Gland | 316 SS/A276 |
| 7 | Packing | PTFE/D1710 |
| 8 | Union Nut | 316 SS/A276 |
| 9 | Handle Screw | Stainless steel |
| 10 | Handle | Nylon |

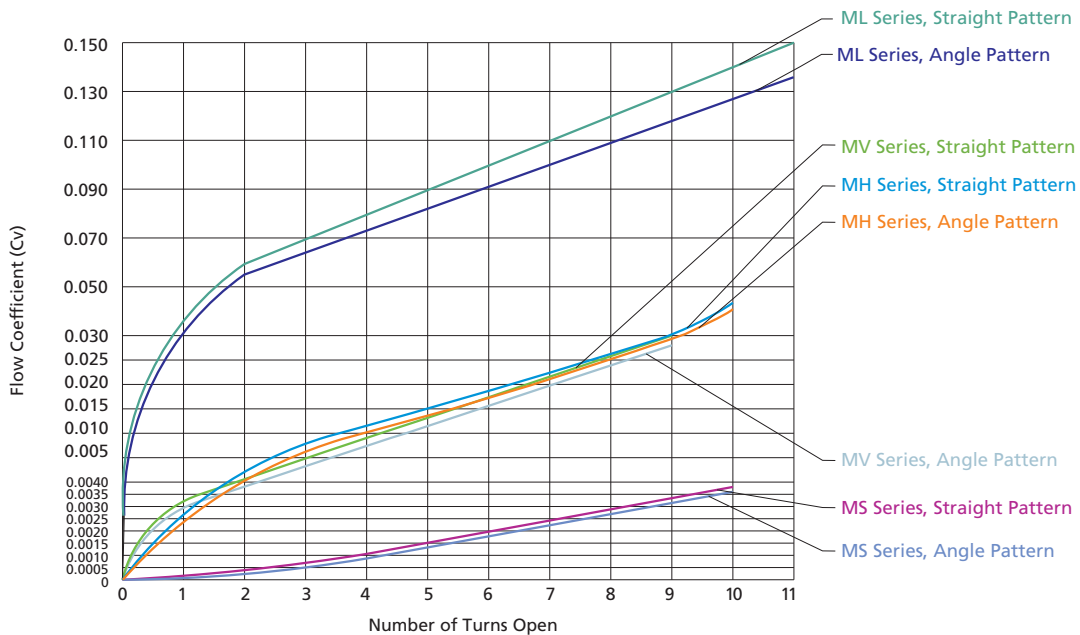
Lubricant:Silicone-based

Needle Valves
Metering Valves

Flow Data in full open position at 70°F (20°C)

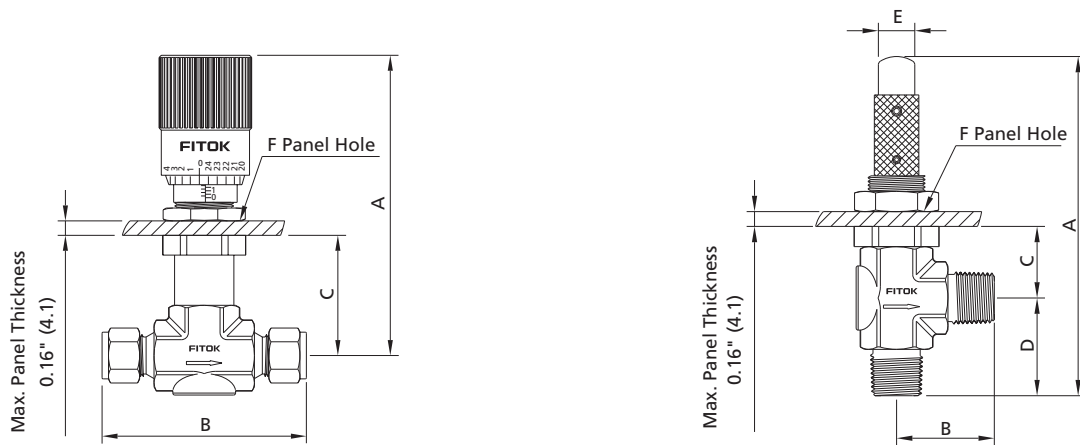
| Pressure Drop to Atmosphere psig (bar) | MS Series (CV: 0.004) | | MV Series (CV: 0.03) | | ML Series (CV: 0.15) | | MH Series (CV: 0.04) | |
|--|---|---------------------------------|---|---------------------------------|---|---------------------------------|---|---------------------------------|
| | Air Flow std ft ³ /min (std L/min) | Water Flow U.S. gal/min (L/min) | Air Flow std ft ³ /min (std L/min) | Water Flow U.S. gal/min (L/min) | Air Flow std ft ³ /min (std L/min) | Water Flow U.S. gal/min (L/min) | Air Flow std ft ³ /min (std L/min) | Water Flow U.S. gal/min (L/min) |
| 10 (0.69) | 0.04 (1.1) | 0.01 (0.03) | 0.33 (9.3) | 0.09 (0.34) | 2.00 (56.6) | 0.51 (1.90) | 0.45 (12.7) | 0.12 (0.45) |
| 50 (3.45) | 0.10 (2.8) | 0.02 (0.07) | 0.90 (25.4) | 0.21 (0.79) | 6.40 (181) | 1.20 (4.50) | 1.20 (33.9) | 0.28 (1.00) |
| 100 (6.90) | 0.20 (5.6) | 0.04 (0.15) | 1.50 (42.4) | 0.30 (1.10) | 11.40 (323) | 1.70 (6.40) | 2.10 (59.4) | 0.40 (1.50) |

Flow Coefficient at Turns to Open



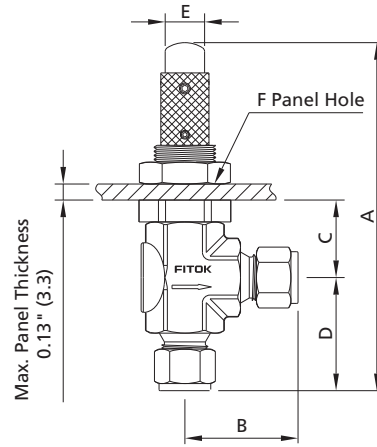
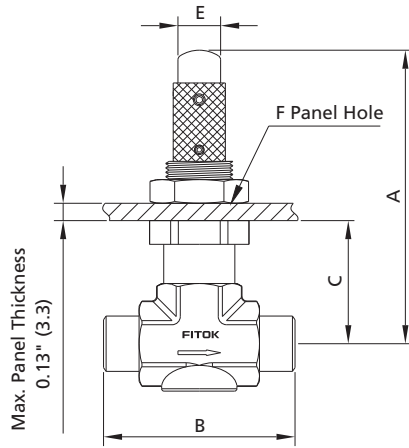
Dimensions

MS Series



| Basic Ordering Number | Connection Type and Size | | Dimensions, in. (mm) | | | | | |
|-------------------------|--------------------------|----------------|----------------------|-------------|-------------|-------------|------------|-------------|
| | Inlet | Outlet | A | B | C | D | E | F |
| Straight Pattern | | | | | | | | |
| MS□□-FL1- | 1/16" FITOK | 1/16" FITOK | 2.34 (59.4) | 1.56 (39.6) | 0.92 (23.4) | — | 0.38 (9.6) | 0.45 (11.4) |
| MS□□-FL2- | 1/8" FITOK | 1/8" FITOK | | | | | | |
| MS□□-FL4- | 1/4" FITOK | 1/4" FITOK | | | | | | |
| MS□□-ML3- | 3 mm FITOK | 3 mm FITOK | | | | | | |
| MS□□-ML6- | 6 mm FITOK | 6 mm FITOK | | | | | | |
| MS□□-FR4- | 1/4 Male FR | 1/4 Male FR | 2.06 (52.3) | | | | | |
| Angle Pattern | | | | | | | | |
| MS□□-FL1- | 1/16" FITOK | 1/16" FITOK | 2.96 (75.2) | 0.81 (20.6) | 0.92 (23.4) | 0.81 (20.6) | 0.38 (9.6) | 0.45 (11.4) |
| MS□□-FL2- | 1/8" FITOK | 1/8" FITOK | 3.07 (78.0) | 0.98 (24.9) | | | | |
| MS□□-FL4- | 1/4" FITOK | 1/4" FITOK | 3.11 (79.0) | 1.02 (25.9) | | | | |
| MS□□-ML3- | 3 mm FITOK | 3 mm FITOK | 3.07 (78.0) | 0.98 (24.9) | | 0.98 (24.9) | | |
| MS□□-FNS2- | 1/8 Female NPT | 1/8 Female NPT | | | | | | |

MV and ML Series



| Basic Ordering Number | Connection Type and Size | | Dimensions, in. (mm) | | | | | |
|-----------------------|--------------------------|--------|----------------------|---|---|---|---|---|
| | Inlet | Outlet | A | B | C | D | E | F |

Straight Pattern

| | | | | | | | | |
|------------|----------------|----------------|-------------|-------------|-------------|---|-------------|-------------|
| MV□□-FL2- | 1/8" FITOK | 1/8" FITOK | 2.64 (67.1) | 2.02 (51.3) | 1.52 (38.5) | — | 0.50 (12.7) | 0.58 (14.7) |
| MV□□-FL4- | 1/4" FITOK | 1/4" FITOK | | 2.20 (55.9) | | | | |
| MV□□-ML3- | 3 mm FITOK | 3 mm FITOK | | 2.02 (51.3) | | | | |
| MV□□-ML6- | 6 mm FITOK | 6 mm FITOK | | 2.20 (55.9) | | | | |
| MV□□-NS2- | 1/8 Male NPT | 1/8 Male NPT | | 1.60 (40.6) | | | | |
| MV□□-NS4- | 1/4 Male NPT | 1/4 Male NPT | | 1.96 (49.8) | | | | |
| MV□□-FNS2- | 1/8 Female NPT | 1/8 Female NPT | | 1.94 (49.3) | | | | |
| MV□□-FR4- | 1/4 Male FR | 1/4 Male FR | | 2.06 (52.3) | | | | |

Angle Pattern

| | | | | | | | | |
|------------|----------------|----------------|-------------|-------------|-------------|-------------|-------------|-------------|
| MV□□-FL2- | 1/8" FITOK | 1/8" FITOK | 3.65 (92.8) | 1.01 (25.7) | 1.07 (27.2) | 1.01 (25.7) | 0.50 (12.7) | 0.58 (14.7) |
| MV□□-FL4- | 1/4" FITOK | 1/4" FITOK | 3.74 (95.0) | 1.10 (27.9) | | 1.10 (27.9) | | |
| MV□□-ML3- | 3 mm FITOK | 3 mm FITOK | 3.65 (92.8) | 1.01 (25.7) | | 1.01 (25.7) | | |
| MV□□-ML6- | 6 mm FITOK | 6 mm FITOK | 3.74 (95.0) | 1.10 (27.9) | | 1.10 (27.9) | | |
| MV□□-NS2- | 1/8 Male NPT | 1/8 Male NPT | 3.44 (87.4) | 0.80 (20.3) | | 0.80 (20.3) | | |
| MV□□-NS4- | 1/4 Male NPT | 1/4 Male NPT | 3.62 (92.0) | 0.98 (24.9) | | 0.98 (24.9) | | |
| MV□□-FNS2- | 1/8 Female NPT | 1/8 Female NPT | 3.61 (91.7) | 0.97 (24.6) | | 0.97 (24.6) | | |
| MV□□-FR4- | 1/4 Male FR | 1/4 Male FR | | | | | | |

| Basic Ordering Number | Connection Type and Size | | Dimensions, in. (mm) | | | | | |
|-----------------------|--------------------------|--------|----------------------|---|---|---|---|---|
| | Inlet | Outlet | A | B | C | D | E | F |

Straight Pattern

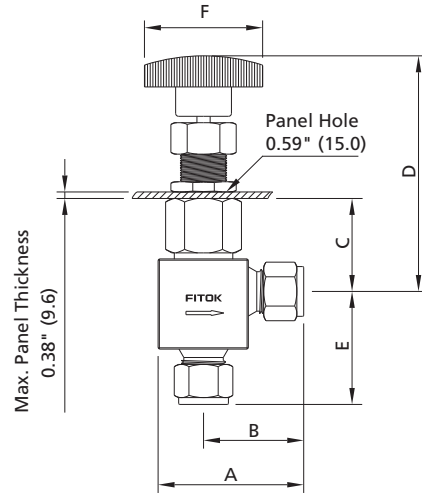
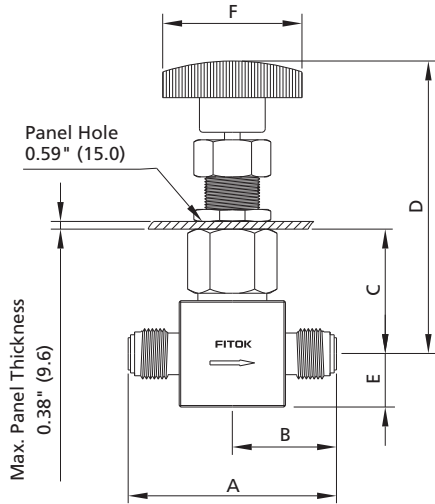
| | | | | | | | | |
|-----------|--------------|--------------|-------------|-------------|-------------|---|-------------|-------------|
| ML□□-FL4- | 1/4" FITOK | 1/4" FITOK | 2.72 (69.1) | 2.34 (59.4) | 1.26 (32.0) | — | 1.13 (28.7) | 0.58 (14.7) |
| ML□□-FL6- | 3/8" FITOK | 3/8" FITOK | | 2.46 (62.5) | | | | |
| ML□□-ML6- | 6 mm FITOK | 6 mm FITOK | | 2.34 (59.4) | | | | |
| ML□□-NS4- | 1/4 Male NPT | 1/4 Male NPT | | 2.00 (50.8) | | | | |

Angle Pattern

| | | | | | | | | |
|-----------|------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|
| ML□□-FL4- | 1/4" FITOK | 1/4" FITOK | 3.89 (98.8) | 1.17 (29.7) | 1.26 (32.0) | 1.17 (29.7) | 1.13 (28.7) | 0.58 (14.7) |
| ML□□-ML6- | 6 mm FITOK | 6 mm FITOK | | | | | | |

B-110 Metering Valves

MH Series

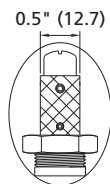


| Basic Ordering Number | Connection Type and Size | | Dimensions, in. (mm) | | | | | |
|-------------------------|--------------------------|----------------|----------------------|-------------|-------------|-------------|-------------|-------------|
| | Inlet | Outlet | A | B | C | D | E | F |
| Straight Pattern | | | | | | | | |
| MH□□-FL4- | 1/4" FITOK | 1/4" FITOK | 2.40 (61.0) | 1.20 (30.5) | 1.09 (27.7) | 3.86 (98.0) | 0.38 (9.6) | 1.38 (35.1) |
| MH□□-ML6- | 6 mm FITOK | 6 mm FITOK | | | | | 0.40 (10.1) | |
| MH□□-FNS2- | 1/8 Female NPT | 1/8 Female NPT | 2.00 (50.8) | 1.00 (25.4) | | | | |
| MH□□-FNS4- | 1/4 Female NPT | 1/4 Female NPT | 2.06 (52.3) | 1.03 (26.2) | | | | |
| Angle Pattern | | | | | | | | |
| MH□□-FL4- | 1/4" FITOK | 1/4" FITOK | 1.54 (39.1) | 1.16 (29.5) | 1.09 (27.7) | 3.86 (98.0) | 1.48 (37.6) | 1.38 (35.1) |
| MH□□-ML6- | 6 mm FITOK | 6 mm FITOK | | | | | 1.00 (25.4) | |
| MH□□-FNS2- | 1/8 Female NPT | 1/8 Female NPT | 1.28 (32.5) | 0.91 (23.1) | | | | |
| MH□□-FNS4- | 1/4 Female NPT | 1/4 Female NPT | | | | | | |

Optional Handles

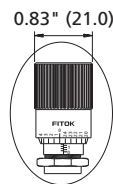
Slotted Handle

- ⦿ Flow setting adjustment is available with a screwdriver
- ⦿ Ideal for installation where handle is difficult to access
- ⦿ Available for MS and MV series



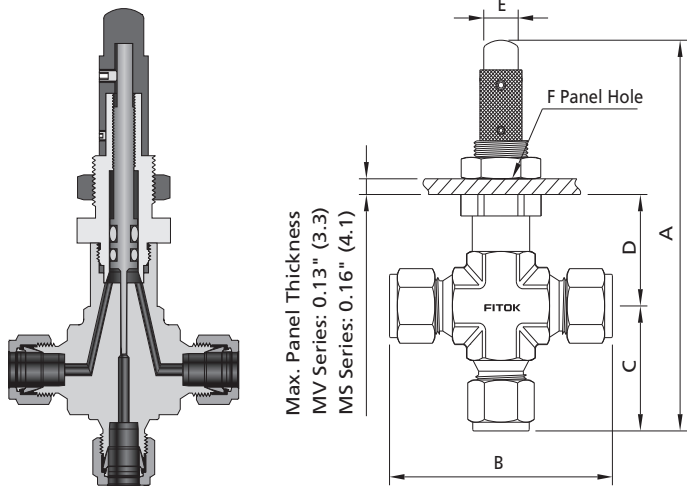
Vernier Handle

- ⦿ Precise graduated aluminum alloy handle
- ⦿ Repeatable flow setting
- ⦿ Adjustment accurate to 1/25 turn (1/1000 of an inch)
- ⦿ Available for all series

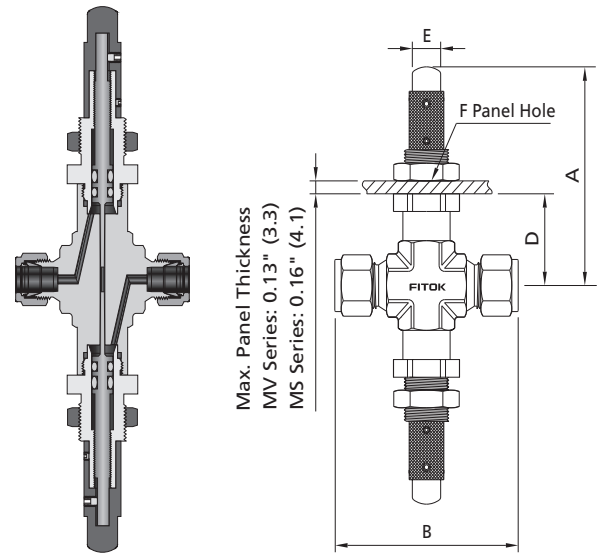


Optional Patterns

Cross Pattern



Double Pattern



1. Fluid flows between side ports around stem in any stem position.
2. Fluid flows through branch port can be metered in both directions.

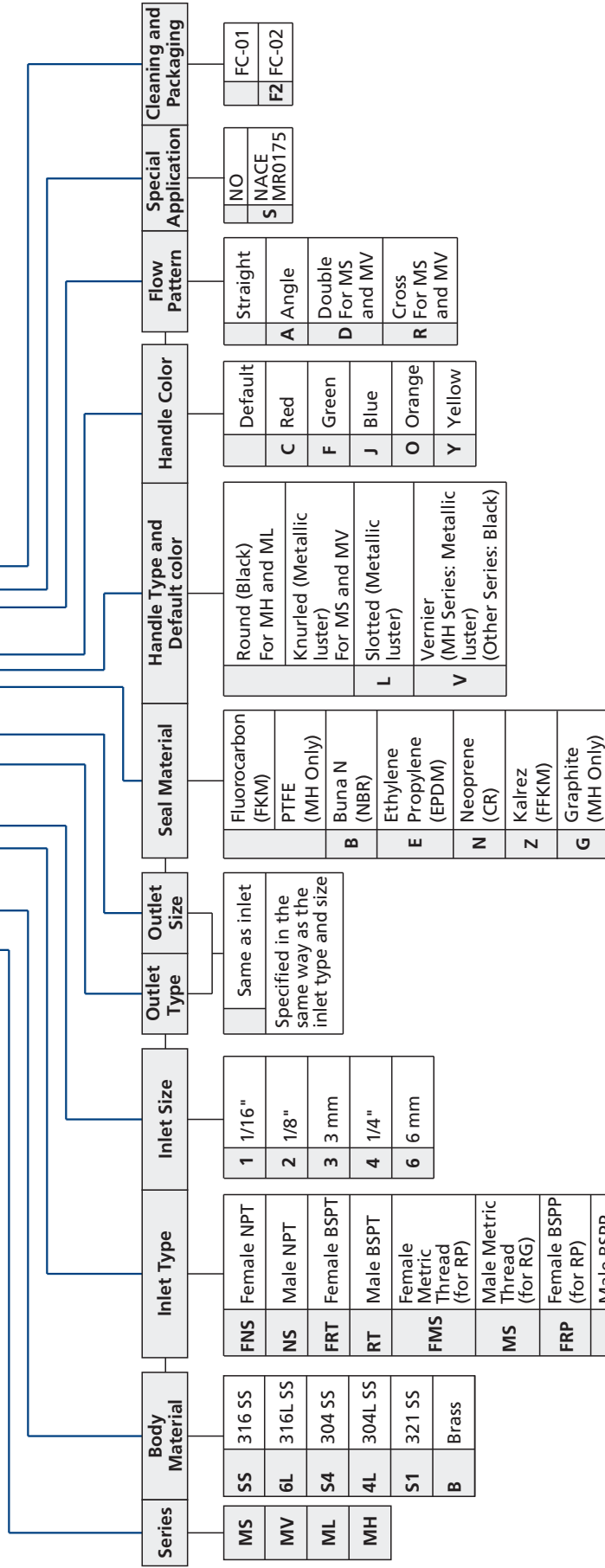
Inlet valve handle can be set and locked at desired maximum flow, outlet valve handle can be used for fine flow control up to the preset maximum of the inlet valve.

| Basic Ordering Number | Connection Type and Size | | Dimensions, in. (mm) | | | | | |
|-----------------------|--------------------------|------------|----------------------|-------------|-------------|-------------|-------------|-------------|
| | Inlet | Outlet | A | B | C | D | E | F |
| Cross Pattern | | | | | | | | |
| MS□□-FL2- | 1/8" FITOK | 1/8" FITOK | 3.32 (84.3) | 1.96 (49.8) | 0.98 (24.9) | 0.92 (23.4) | 0.38 (9.6) | 0.45 (11.4) |
| MS□□-ML3- | 3 mm FITOK | 3 mm FITOK | | | | | | |
| Double Pattern | | | | | | | | |
| MS□□-FL2- | 1/8" FITOK | 1/8" FITOK | 2.41 (61.2) | 1.90 (48.3) | — | 0.99 (25.2) | 0.38 (9.6) | 0.45 (11.4) |
| MS□□-ML3- | 3 mm FITOK | 3 mm FITOK | | | | | | |
| Cross Pattern | | | | | | | | |
| MV□□-FL4- | 1/4" FITOK | 1/4" FITOK | 3.74 (95.0) | 2.20 (55.9) | 1.10 (27.9) | 1.52 (38.5) | 0.50 (12.7) | 0.58 (14.7) |
| MV□□-ML6- | 6 mm FITOK | 6 mm FITOK | | | | | | |
| Double Pattern | | | | | | | | |
| MV□□-FL4- | 1/4" FITOK | 1/4" FITOK | 2.62 (67.1) | 2.20 (55.9) | — | 1.52 (38.5) | 0.50 (12.7) | 0.58 (14.7) |
| MV□□-ML6- | 6 mm FITOK | 6 mm FITOK | | | | | | |

1. FITOK means FITOK double ferrule tube fittings, FR means metal gasket seal fittings.
2. Sizes and types listed are standard. Other sizes and types are available upon request. For special sizes and types, refer to the ordering information.
3. Dimensions are shown with FITOK nuts finger-tightened. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

Ordering Number Description

MVSS – FL4 – ML6 – EVJ – ASF2



| Series | Body Material | Inlet Type | Inlet Size | Outlet Type | Outlet Size | Seal Material | Handle Type and Default color | Handle Color | Flow Pattern | Special Application | Cleaning and Packaging |
|--------|---------------|-----------------------------------|------------|--|--|-----------------------------|--|--------------|------------------------|---------------------|------------------------|
| MS | 316 SS | FNS Female NPT | 1 1/16" | Same as inlet | Specified in the same way as the inlet type and size | Fluorocarbon (FKM) | Round (Black) For MH and ML | C Red | Straight | NO | FC-01 |
| MV | 316L SS | NS Male NPT | 2 1/8" | | | | | | | | |
| ML | 304 SS | FRT Female BSPT | 3 3 mm | Specified in the same way as the inlet type and size | | Buna N (NBR) | Knurled (Metallic luster) For MS and MV | F Green | A Angle | NACE | F2 |
| MH | 304L SS | RT Male BSPT | 4 1/4" | | | | | | | | |
| S1 | 321 SS | FMS Female Metric Thread (for RP) | 6 6 mm | | | | | | | | |
| B | Brass | MS Male Metric Thread (for RG) | | | | | | | | | |
| | | FRP Female BSPP (for RP) | | | | | | | | | |
| | | BP Male BSPP (for RG) | | | | | L Slotted (Metallic luster) | J Blue | D Double For MS and MV | S MR0175 | |
| | | FL Fractional Tube Fitting | | | | | V Vernier (MH Series; Metallic luster) (Other Series: Black) | O Orange | R Cross For MS and MV | | |
| | | ML Metric Tube Fitting | | | | E Ethylene Propylene (EPDM) | | Y Yellow | | | |
| | | FO FO Fitting | | | | N Neoprene (CR) | | | | | |
| | | FR Male FR Fitting | | | | Z Kalrez (FFKM) | | | | | |
| | | | | | | G Graphite (MH Only) | | | | | |

Note: "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.

1. *Cleaning and Packaging:*
 FC-01: Standard cleaning and packaging for general industrial procedures.
 FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleaning requirement of ASTM G93 Level C.

Proportional Relief Valves

RV, RL and RM Series

Check Valves
Relief Valves



Proportional Relief Valves

RV, RL and RM Series

Introduction

FITOK relief valves OPEN when system pressure reaches the set pressure and CLOSE when system pressure falls below the set pressure.



Features

- ⦿ Set pressure:
 - RV series: 7 color-coded springs available for a wide range of set pressure, 50 to 6000 psig @ 70°F (3.4 to 414 bar @ 20°C)
 - RL series: 10 to 225 psig @ 70°F (0.68 to 15.5 bar @ 20°C)
 - RM series: 3 color-coded springs available for a wide range of set pressure, 50 to 1500 psig @ 70°F (3.4 to 103 bar @ 20°C)
- ⦿ Maximum outlet pressure:
 - RV series: 1500 psig (103 bar)
 - RL series: 225 psig (15.5 bar)
 - RM series: 1500 psig (103 bar)
- ⦿ Orifice size:
 - RV series: 0.14" (3.6 mm)
 - RL series: 0.19" (4.8 mm) and 0.25" (6.4 mm)
 - RM series: 0.25" (6.4 mm)
- ⦿ Back pressure
 - Back pressure is the pressure of the outlet of valves. It increases the set pressure of proportional relief valves.
 - RV and RM series: Balanced stem design to eliminate the effect of system back pressure
 - RL series: Pre-set pressure = Desired pressure - 0.8 × Back pressure
- ⦿ Working temperature: -10°F to 300°F (-23°C to 148°C)
- ⦿ Variety of end connections
- ⦿ Liquid or gas service
- ⦿ Adjustable bonnet cap and adjustable set pressure
- ⦿ Lead seal through lock wire holes to lock proportional relief valve so as to secure a set pressure effectively
- ⦿ Variety of seal materials
- ⦿ Label identifies the set pressure range

Applications

Relief valves are proportional relief valves that open gradually as the pressure increases. Consequently, they do not have a capacity rating at a given pressure rise (accumulation), and they are not certified to ASME or any other codes.

- ⚠ **Some system applications require relief valves to meet specific safety codes. The system designer and user must determine when such codes apply and whether these relief valves conform to them.**
- ⚠ **FITOK proportional relief valves should never be used as ASME Boiler and Pressure Vessel Code safety relief devices.**
- ⚠ **FITOK proportional relief valves are not "Safety Accessories" as defined in the Pressure Equipment Directive 2014/68/EU.**

Temperature Range of Sealing Materials

| O-ring Material | Temperature Ranges °F (°C) |
|---------------------|----------------------------|
| Fluorocarbon Rubber | 25 to 250 (-4 to 121) |
| Buna-N Rubber | 0 to 250 (-17 to 121) |
| Neoprene Rubber | -10 to 300 (-23 to 148) |
| EPDM | 30 to 250 (-1 to 121) |

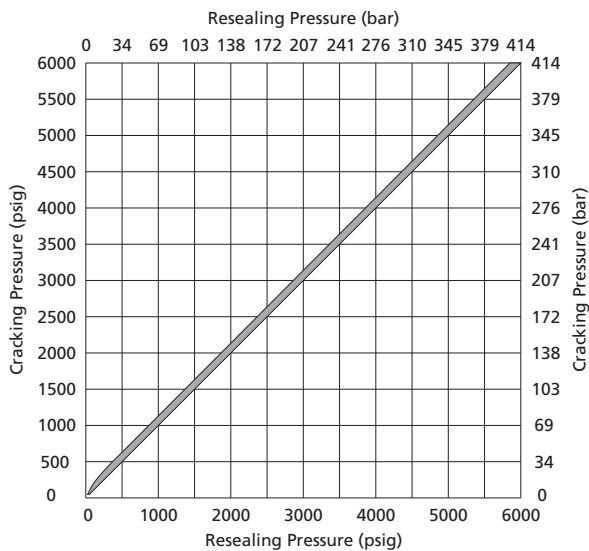
Set Pressure and Resealing Pressure

Set pressure: The set pressure is the upstream pressure at which the first indication of flow occurs. The repeatability of set pressure of each valve after initial relief is $\pm 5\%$ at room temperature.

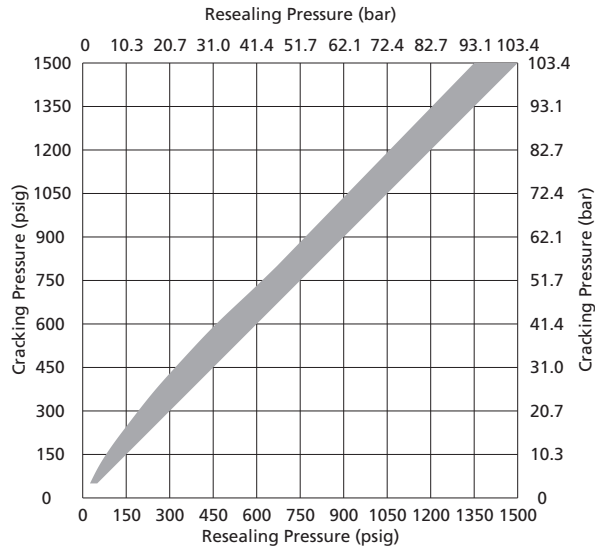
Resealing pressure: The resealing pressure is the upstream pressure at which there is no indication of flow. Resealing pressure is always lower than set pressure.

Note: For valves not acutated for a period of time, the initial relief pressure may be higher than the set pressure.

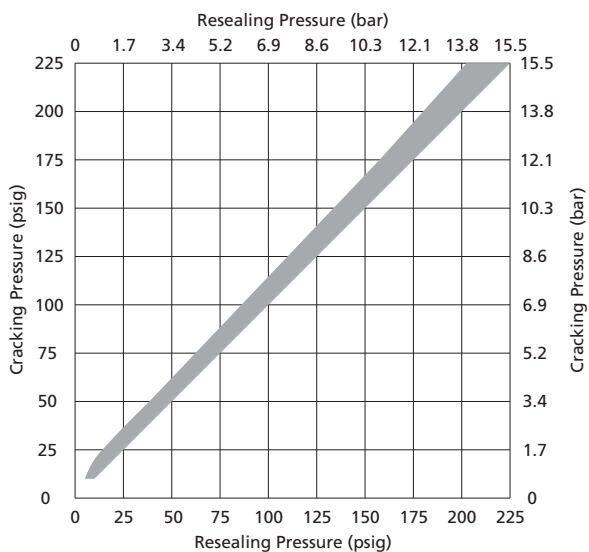
RV Series



RM Series

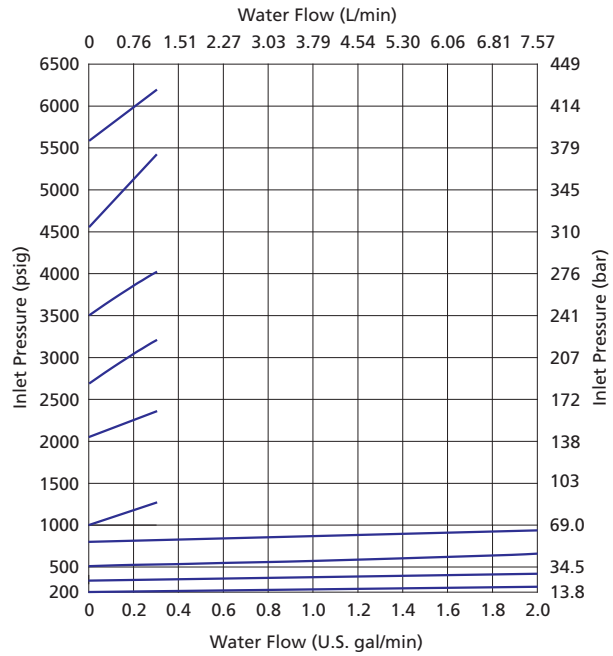
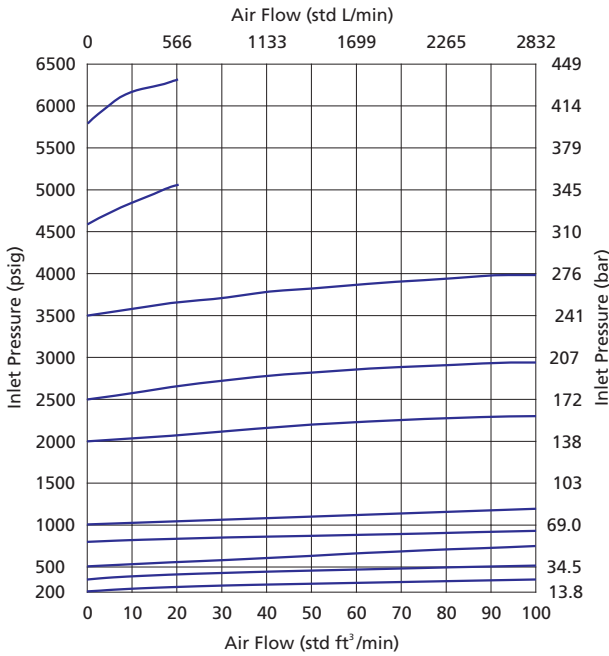


RL Series

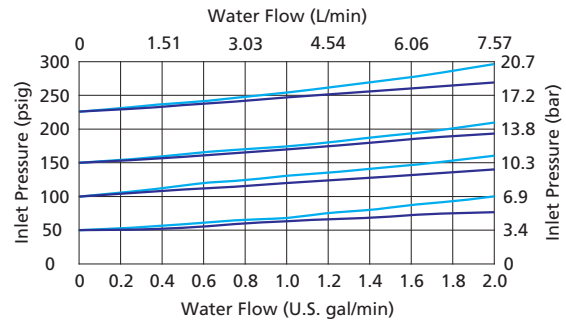
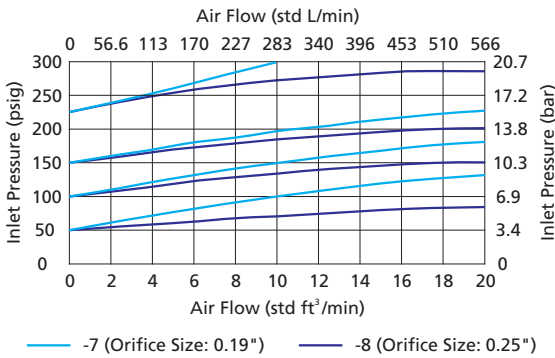


Flow Data at 70°F (20°C)

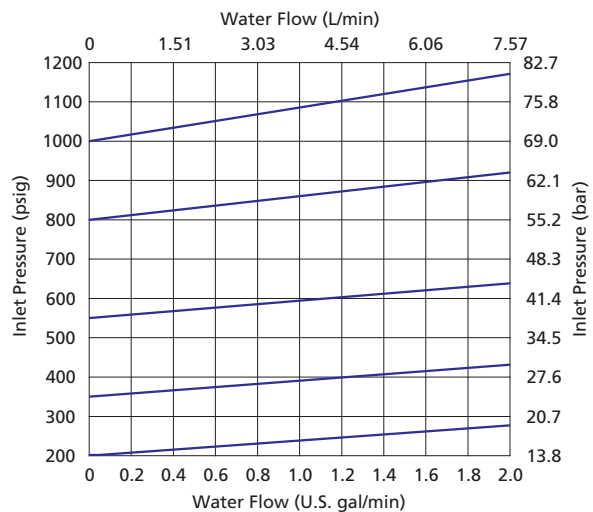
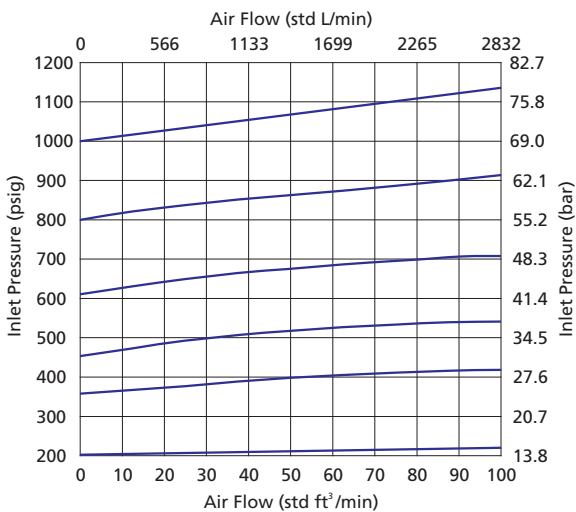
RV Series



RL Series



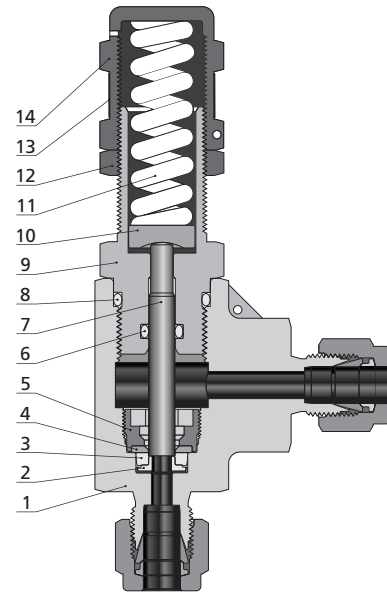
RM Series



Standard Materials of Construction

RV Series

| Component | | Material Grade/ASTM Specification |
|-----------|-----------------------|-----------------------------------|
| 1 | <i>Body</i> | 316 SS/A182 |
| 2 | <i>Seat</i> | 316 SS/A479 |
| 3 | <i>O-ring</i> | Fluorocarbon FKM |
| 4 | <i>Gasket</i> | PEEK |
| 5 | <i>Seat Retainer</i> | 316 SS/A479 |
| 6 | <i>O-ring</i> | Fluorocarbon FKM |
| 7 | <i>Stem</i> | 316 SS/A479 |
| 8 | <i>O-ring</i> | Fluorocarbon FKM |
| 9 | <i>Bonnet</i> | 316 SS/A479 |
| 10 | <i>Spring Support</i> | 316 SS/A479 |
| 11 | <i>Spring</i> | S17700 SS/AMS 5678 |
| 12 | <i>Lock Nut</i> | 17-4PH powdered metal |
| 13 | <i>Label</i> | Polyester |
| 14 | <i>Bonnet Cap</i> | 316 SS/A479 |



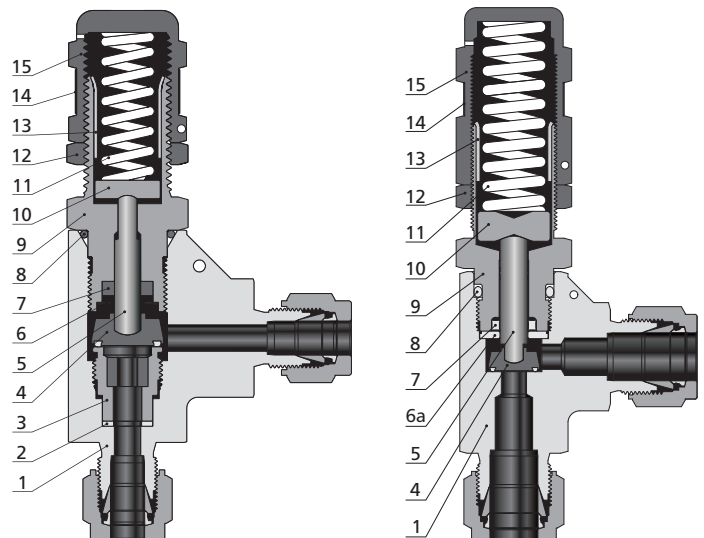
Note: Wetted components are listed in italics.

1. Lubricant: Silicone-based

2. Contact FITOK Group or our authorized distributors for other materials

RL Series

| Component | | Material Grade/ASTM Specification |
|-----------|-----------------------|-----------------------------------|
| 1 | <i>Body</i> | 316 SS/A182 |
| 2 | <i>Gasket</i> | 316 SS/A479 |
| 3 | <i>Seat</i> | 316 SS/A479 |
| 4 | <i>Bonded disc</i> | 316 SS/A479+Fluorocarbon FKM |
| 5 | <i>Stem</i> | 316 SS/A479 |
| 6 | <i>Retainer</i> | 316 SS/A479 |
| 6a | <i>Ring</i> | 316 SS/A479 |
| 7 | <i>Quad Seal</i> | Fluorocarbon FKM |
| 8 | <i>O-ring</i> | Fluorocarbon FKM |
| 9 | <i>Bonnet</i> | 316 SS/A479 |
| 10 | <i>Spring Support</i> | 316 SS/A479 |
| 11 | <i>Spring</i> | S17700 SS/AMS 5678 |
| 12 | <i>Lock Nut</i> | 17-4PH powdered metal |
| 13 | <i>Sleeve</i> | 304SS/A240 |
| 14 | <i>Label</i> | Polyester |
| 15 | <i>Bonnet Cap</i> | 316 SS/A479 |



Orifice 7
0.19 in. (4.8 mm)

Orifice 8
0.25 in. (6.4 mm)

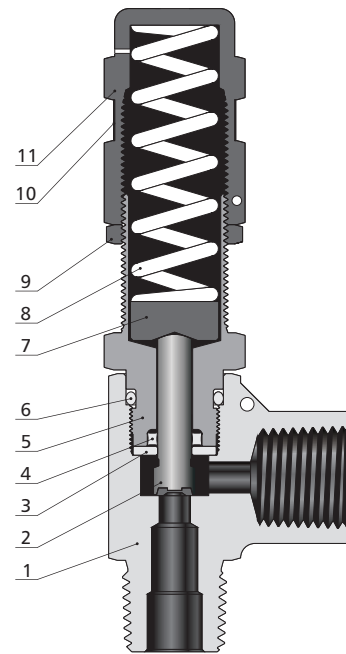
Note: Wetted components are listed in italics.

1. Lubricant: Silicone-based

2. Contact FITOK Group or our authorized distributors for other materials

RM Series

| Component | | Material Grade/ASTM Specification |
|-----------|----------------|-----------------------------------|
| 1 | Body | 316 SS/A182 |
| 2 | Stem | 316 SS/A479+Fluorocarbon FKM |
| 3 | Retainer | 316 SS/A479 |
| 4 | Seal | Fluorocarbon FKM |
| 5 | Bonnet | 316 SS/A479 |
| 6 | O-ring | Fluorocarbon FKM |
| 7 | Spring Support | 316 SS/A479 |
| 8 | Spring | S17700 SS/AMS 5678 |
| 9 | Lock Nut | 17-4PH powdered metal |
| 10 | Label | Polyester |
| 11 | Bonnet Cap | 316 SS/A479 |



Note: Wetted components are listed in italics.

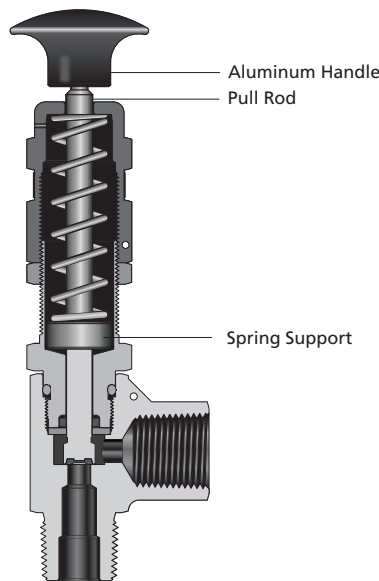
1. Lubricant: Silicone-based

2. Contact FITOK Group or our authorized distributors for other materials

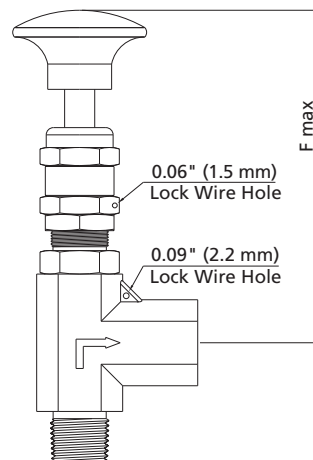
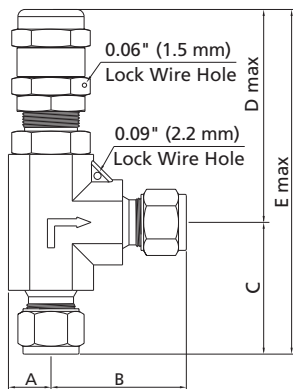
Manual Override Handles

Lift the aluminum handle with hand to open the proportional relief valve without changing the set pressure. For use with following valves :

- RV Series — set pressure range 50~1500 psig
- RL Series — set pressure range 10~225 psig
- RM Series— set pressure range 50~300 psig



Dimensions



Check Valves
Relief Valves

RV Series

| Basic Ordering Number | Connection Type and Size | | Orifice in. (mm) | Dimensions, in. (mm) | | | | | |
|-----------------------|--------------------------|-----------------|------------------|----------------------|----------------|----------------|----------------|-----------------|-----------------|
| | Inlet | Outlet | | A | B | C | Dmax | Emax | Fmax |
| RV□□-FL4-6-□ | 1/4" FITOK | 1/4" FITOK | 0.14 (3.6) | 0.46 (11.9) | 1.60 (40.6) | 1.44 (36.6) | 2.70 (68.6) | 4.14 (105.2) | 4.09 (103.9) |
| RV□□-FL6-6-□ | 3/8" FITOK | 3/8" FITOK | | | | | | | |
| RV□□-FL8-6-□ | 1/2" FITOK | 1/2" FITOK | | | | | | | |
| RV□□-ML6-6-□ | 6 mm FITOK | 6 mm FITOK | | 0.46 (11.9) | 1.60 (40.6) | 1.44 (36.6) | 2.70 (68.6) | 4.14 (105.2) | 4.09 (104.9) |
| RV□□-ML8-6-□ | 8 mm FITOK | 8 mm FITOK | | | | | | | |
| RV□□-ML12-6-□ | 12 mm FITOK | 12 mm FITOK | | | | | | | |
| RV□□-FNS4-6-□ | 1/4 Female NPT | 1/4 Female NPT | | 0.46 (11.9) | 1.17 (29.7) | 1.38 (34.9) | 2.70 (68.6) | 4.08 (103.5) | 4.28 (108.7) |
| RV□□-NS4-6-□ | 1/4 Male NPT | 1/4 Male NPT | | | | | | | |
| RV□□-FRT4-6-□ | 1/4 Female BSPT | 1/4 Female BSPT | | | | | | | |

RL Series

| Basic Ordering Number | Connection Type and Size | | Orifice in. (mm) | Dimensions, in. (mm) | | | | | |
|-----------------------|--------------------------|-----------------|------------------|----------------------|----------------|----------------|-----------------|-----------------|-----------------|
| | Inlet Size | Outlet Size | | A | B | C | D | E | F |
| RL□□-FL4-7 | 1/4" FITOK | 1/4" FITOK | 0.19 (4.8) | 0.46 (11.9) | 1.60 (40.6) | 1.44 (36.6) | | 4.14 (105.0) | 4.09 (104.0) |
| RL□□-ML6-7 | 6 mm FITOK | 6 mm FITOK | | | | | | | |
| RL□□-NS4-7 | 1/4 Male NPT | 1/4 Male NPT | | | | | | | |
| RL□□-RT4-7 | 1/4 Male BSPT | 1/4 Male BSPT | | | 1.17 (29.7) | 1.38 (34.9) | | 4.08 (103.5) | |
| RL□□-FNS4-7 | 1/4 Female NPT | 1/4 Female NPT | | | | | | | |
| RL□□-FRT4-7 | 1/4 Female BSPT | 1/4 Female BSPT | | | | | | | |
| RL□□-FL8-8 | 1/2" FITOK | 1/2" FITOK | 0.25 (6.4) | 0.54 (13.7) | 1.83 (46.5) | 1.83 (46.5) | 4.09 (104.0) | 5.92 (150.0) | 5.37 (136.0) |
| RL□□-ML12-8 | 12 mm FITOK | 12 mm FITOK | | | | | | | |
| RL□□-NS8-8 | 1/2 Male NPT | 1/2 Male NPT | | | | | | | |
| RL□□-RT8-8 | 1/2 Male BSPT | 1/2 Male BSPT | | | | | | | |
| RL□□-FNS8-8 | 1/2 Female NPT | 1/2 Female NPT | | | | | | | |
| RL□□-FRT8-8 | 1/2 Female BSPT | 1/2 Female BSPT | | | | | | | |

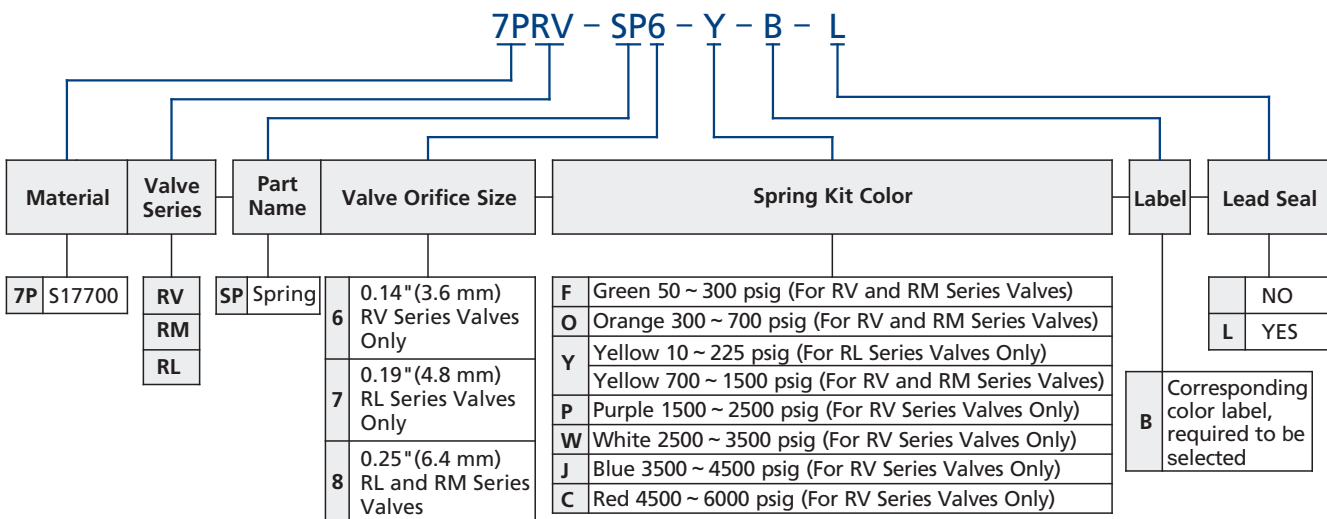
Check Valves
Relief Valves

RM Series

| Basic Ordering Number | Connection Type and Size | | Orifice in. (mm) | Dimensions, in. (mm) | | | | | |
|-----------------------|--------------------------|-----------------|------------------|----------------------|----------------|----------------|-----------------|-----------------|-----------------|
| | Inlet Size | Outlet Size | | A | B | C | D | E | F |
| RM□□-FL8-8-□ | 1/2" FITOK | 1/2" FITOK | 0.25 (6.4) | 0.54 (13.7) | 1.83 (46.5) | 1.83 (46.5) | 4.09 (104.0) | 5.92 (150.0) | 5.37 (136.0) |
| RM□□-ML12-8-□ | 12 mm FITOK | 12 mm FITOK | | | | | | | |
| RM□□-NS8-8-□ | 1/2 Male NPT | 1/2 Male NPT | | | 1.44 (36.6) | 1.44 (36.6) | 5.52 (140.0) | | |
| RM□□-RT8-8-□ | 1/2 Male BSPT | 1/2 Male BSPT | | | | | | | |
| RM□□-FNS8-8-□ | 1/2 Female NPT | 1/2 Female NPT | | | | | | | |
| RM□□-FRT8-8-□ | 1/2 Female BSPT | 1/2 Female BSPT | | | | | | | |

1. FITOK means FITOK double ferrule tube fittings.
2. Dimensions are shown with FITOK nuts finger-tightened. All dimensions are for reference only and are subject to change.
3. Sizes and types listed are standard. For other connection types and sizes, please contact FITOK Group or our authorized distributors.

Spring Kit Ordering Number Description



Note: "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.

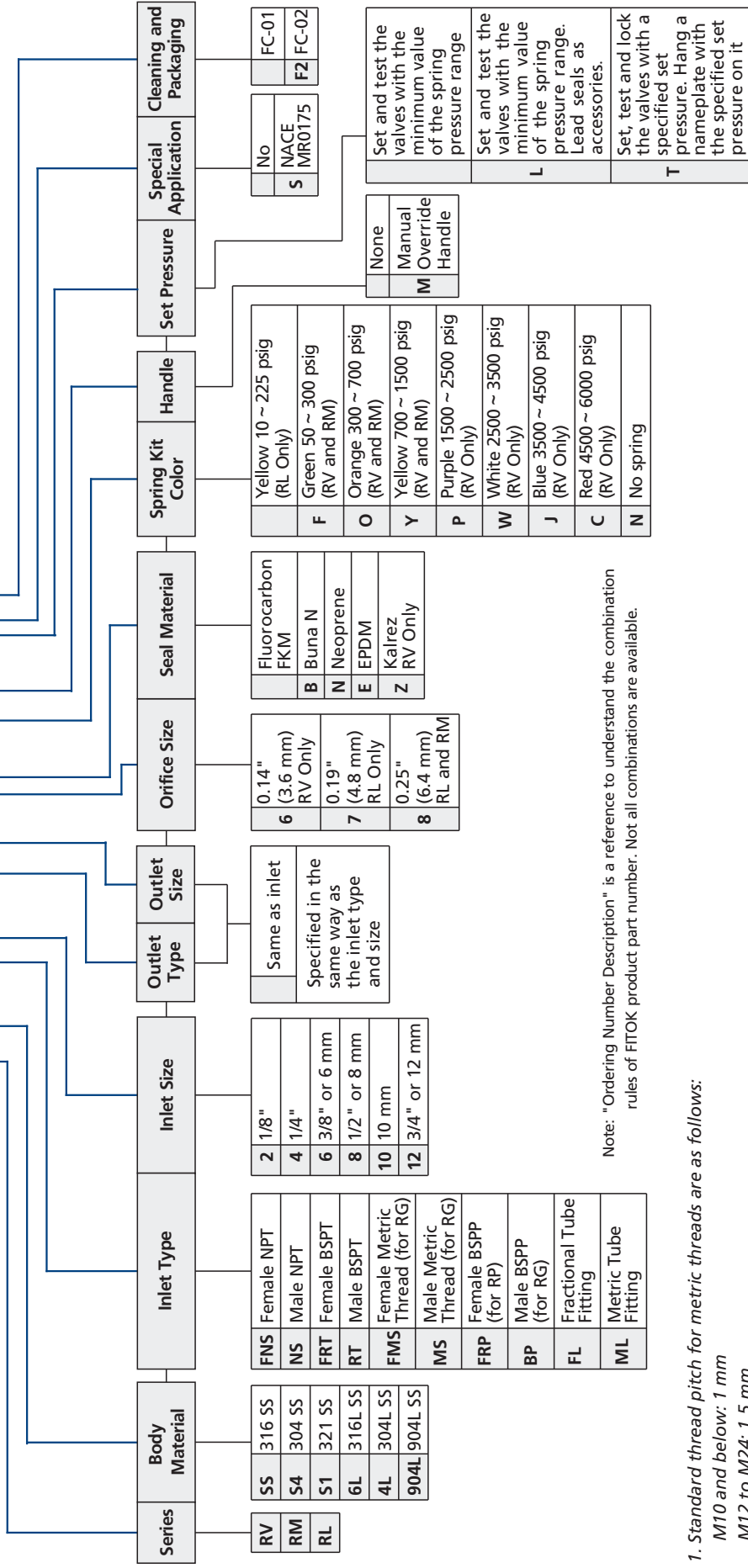
© Every spring kit includes a spring, a label and a lead seal (optional).

Check Valves
Relief Valves

Ordering Number Description

Valves

RVSS – FL6 – ML8 – 6Z – WM – TSF2



1. Standard thread pitch for metric threads are as follows:

M10 and below: 1 mm

M12 to M24: 1.5 mm

M27 and above: 2 mm

Standard thread pitch should be ignored in the ordering number, others should be specified.

2. Cleaning and Packaging:

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

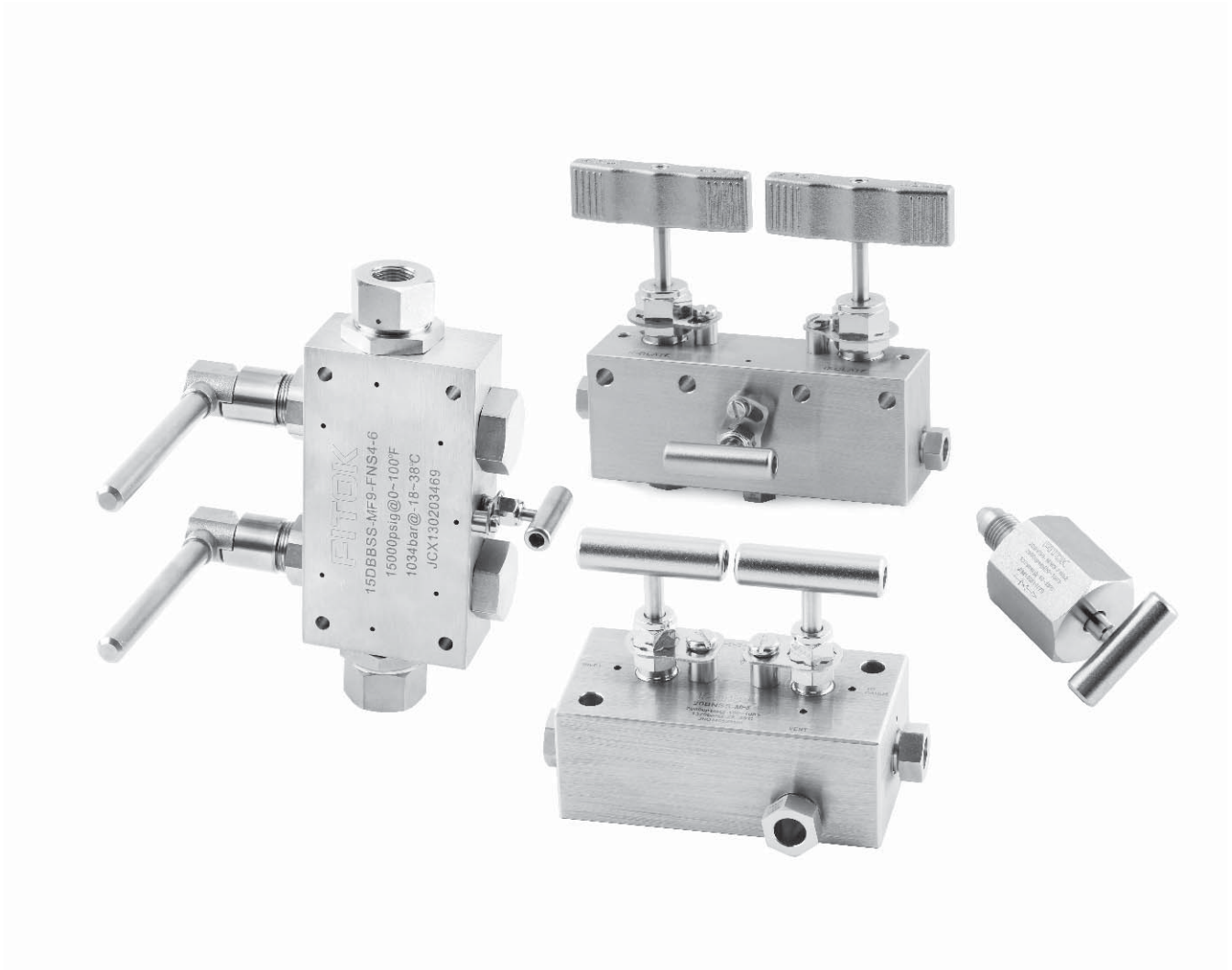
FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleaning requirement of ASTM G93 Level C.

3. The color of the manual override handle is black. For other colors, please contact FITOK Group or our authorized distributors.

4. For Proportional Relief Valves with specified set pressure on the nameplate, add the set pressure value (unit: psig) as a suffix to the ordering number.

Example: RVSS-ML6-6-F-T-116PSIG.

Bleed Valves and Block & Bleed Valves



Fittings

Tubing

Quick Couplings

Line Filters

Valves

Sour Service Products

Subsea Valves

Tools and Installation Instructions

Technical Information

Part Number Crossover Charts

Contents

| | |
|-------------------------------------|--|
| Fittings | <p>Bleed Valves</p> <p>Working pressure up to 30,000 psig (2068 bar) E-87</p> <hr/> <p>Block & Bleed Needle Valves</p> <p>Working pressure up to 20,000 psig (1379 bar) E-90</p> <hr/> <p>Double Block & Bleed Needle Valves</p> <p>Working pressure up to 20,000 psig (1379 bar) E-94</p> <hr/> <p>Double Block & Bleed Ball Valves</p> <p>Working pressure up to 15,000 psig (1034 bar) E-98</p> <hr/> |
| Tubing | |
| Quick Couplings | |
| Line Filters | |
| Valves | |
| Sour Service Products | |
| Subsea Valves | |
| Tools and Installation Instructions | |
| Technical Information | |
| Part Number Crossover Charts | |

Bleed Valves

Working pressure up to 30,000 psig (2068 bar)

Features

- ⦿ One piece hex construction compact design allows easy installation
- ⦿ Fluorocarbon FKM O-ring for operation from 0°F to 400°F (-17.8°C to 204°C)
- ⦿ 1/8" Female NPT outlet connection
- ⦿ High tensile 316 Stainless Steel body material
- ⦿ Easy to assemble and replace O-ring
- ⦿ Positive locking screw design prevents accidental removal of the stem
- ⦿ Tee handle for easy operation

Technical Data

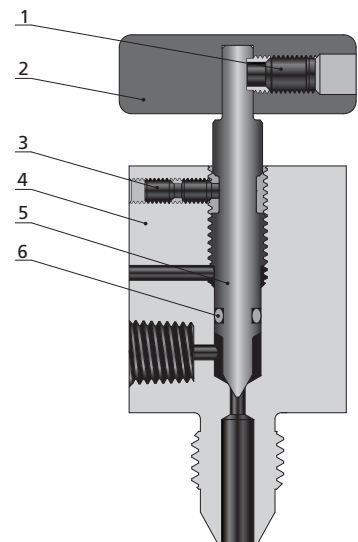
| Series | Inlet Connection | Orifice in. (mm) | Working Pressure psig (bar) |
|--------|------------------|------------------|-----------------------------|
| 15BV | DFT6 | 0.094 (2.4) | 15,000 (1034) |
| | DFT8 | 0.094 (2.4) | 15,000 (1034) |
| | DFT9 | 0.094 (2.4) | 15,000 (1034) |
| 20BV | MM6 | 0.094 (2.4) | 20,000 (1379) |
| | MM9 | 0.094 (2.4) | 20,000 (1379) |
| | MCT6 | 0.094 (2.4) | 20,000 (1379) |
| | MCT9 | 0.094 (2.4) | 20,000 (1379) |
| 30BV | HM6 | 0.094 (2.4) | 30,000 (2068) |
| | HM9 | 0.094 (2.4) | 30,000 (2068) |
| | HCT6 | 0.094 (2.4) | 30,000 (2068) |
| | HCT9 | 0.094 (2.4) | 30,000 (2068) |

- NOTES: 1. Working pressure shown is in closed position.
 2. Working pressure is 15,000 psig (1034 bar) bar in open position.
 3. A variety of end connections available on request. For connections not shown above, please contact FITOK Group or our authorized distributors.

Standard Materials of Construction

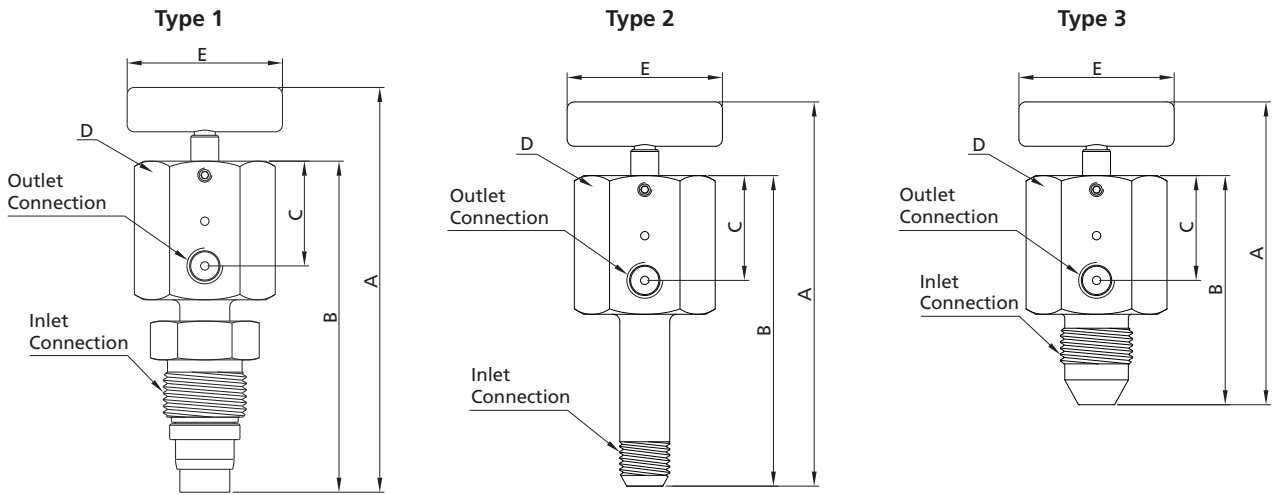
| Item | Component | Material Grade |
|------|---------------|--|
| 1 | Handle screw | Stainless steel |
| 2 | Handle | Stainless steel |
| 3 | Locking screw | Stainless steel |
| 4 | <i>Body</i> | <i>316 SS</i> |
| 5 | <i>Stem</i> | <i>S17400</i> |
| 6 | <i>O-ring</i> | <i>Fluorocarbon FKM</i> |
| | Lubricant | Molybdenum disulfide/Fluorinated-based |

Wetted components listed in italics.



| |
|-------------------------------------|
| Fittings |
| Tubing |
| Quick Couplings |
| Line Filters |
| Valves |
| Sour Service Products |
| Subsea Valves |
| Tools and Installation Instructions |
| Technical Information |
| Part Number Crossover Charts |

Ordering Information and Dimensions



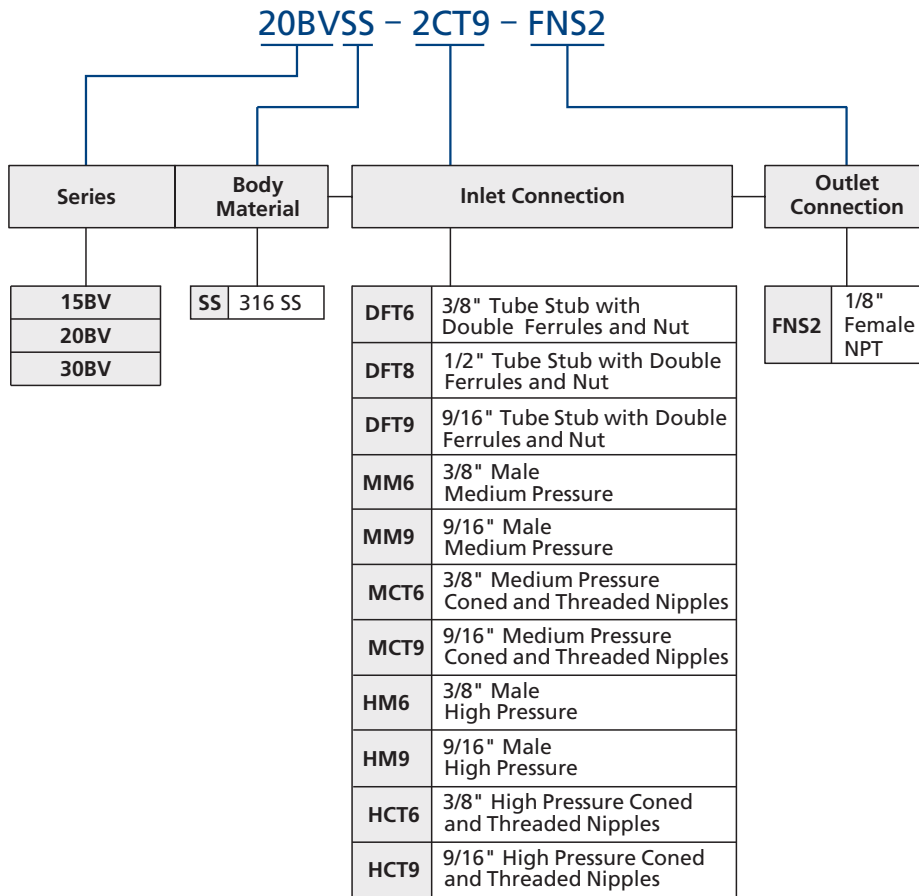
| Type 1 | | | | | | | | |
|------------------|------------------|-------------------|------------------|----------------------|-------------|-------------|-------------|-------------|
| Ordering Number | Inlet Connection | Outlet Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | |
| | | | | A | B | C | D | E |
| 15BVSS-DFT6-FNS2 | DFT6 | FNS2 | 0.094 (2.4) | 3.94 (100.1) | 3.11 (78.9) | 1.18 (30.0) | 1.37 (34.9) | 1.75 (44.5) |
| 15BVSS-DFT8-FNS2 | DFT8 | FNS2 | 0.094 (2.4) | 4.10 (104.1) | 3.26 (82.9) | 1.18 (30.0) | 1.37 (34.9) | 1.75 (44.5) |
| 15BVSS-DFT9-FNS2 | DFT9 | FNS2 | 0.094 (2.4) | 4.54 (115.4) | 3.71 (94.2) | 1.18 (30.0) | 1.37 (34.9) | 1.75 (44.5) |

| Type 2 | | | | | | | | |
|------------------|------------------|-------------------|------------------|----------------------|-------------|-------------|-------------|-------------|
| Ordering Number | Inlet Connection | Outlet Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | |
| | | | | A | B | C | D | E |
| 20BVSS-MCT6-FNS2 | MCT6 | FNS2 | 0.094 (2.4) | 3.61 (91.7) | 2.78 (70.5) | 1.18 (30.0) | 1.37 (34.9) | 1.75 (44.5) |
| 20BVSS-MCT9-FNS2 | MCT9 | FNS2 | 0.094 (2.4) | 3.82 (97.0) | 2.98 (75.8) | 1.18 (30.0) | 1.37 (34.9) | 1.75 (44.5) |
| 30BVSS-HCT6-FNS2 | HCT6 | FNS2 | 0.094 (2.4) | 4.09 (103.9) | 3.26 (82.7) | 1.18 (30.0) | 1.37 (34.9) | 1.75 (44.5) |
| 30BVSS-HCT9-FNS2 | HCT9 | FNS2 | 0.094 (2.4) | 4.68 (118.9) | 3.85 (97.7) | 1.18 (30.0) | 1.37 (34.9) | 1.75 (44.5) |

| Type 3 | | | | | | | | |
|-----------------|------------------|-------------------|------------------|----------------------|-------------|-------------|-------------|-------------|
| Ordering Number | Inlet Connection | Outlet Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | |
| | | | | A | B | C | D | E |
| 20BVSS-MM6-FNS2 | MM6 | FNS2 | 0.094 (2.4) | 3.23 (82.0) | 2.39 (60.8) | 1.18 (30.0) | 1.37 (34.9) | 1.75 (44.5) |
| 20BVSS-MM9-FNS2 | MM9 | FNS2 | 0.094 (2.4) | 3.42 (86.8) | 2.58 (65.6) | 1.18 (30.0) | 1.37 (34.9) | 1.75 (44.5) |
| 30BVSS-HM6-FNS2 | HM6 | FNS2 | 0.094 (2.4) | 3.27 (83.1) | 2.44 (61.9) | 1.18 (30.0) | 1.37 (34.9) | 1.75 (44.5) |
| 30BVSS-HM9-FNS2 | HM9 | FNS2 | 0.094 (2.4) | 3.44 (87.4) | 2.61 (66.2) | 1.18 (30.0) | 1.37 (34.9) | 1.75 (44.5) |

- NOTES: 1. D is the dimension of hex.
 2. A is the dimension of stem in closed position.
 3. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

Ordering Number Description



- NOTES: 1. For more details regarding Medium/High Pressure connections, please see **Connection Information** on I-02.
 2. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.

| |
|-------------------------------------|
| Fittings |
| Tubing |
| Quick Couplings |
| Line Filters |
| Valves |
| Sour Service Products |
| Subsea Valves |
| Tools and Installation Instructions |
| Technical Information |
| Part Number Crossover Charts |

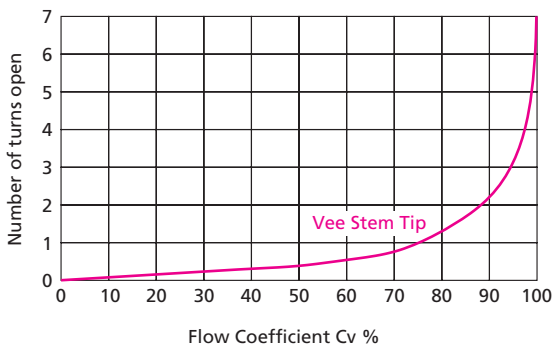
Block & Bleed Needle Valves

Working pressure up to 20,000 psig (1379 bar)

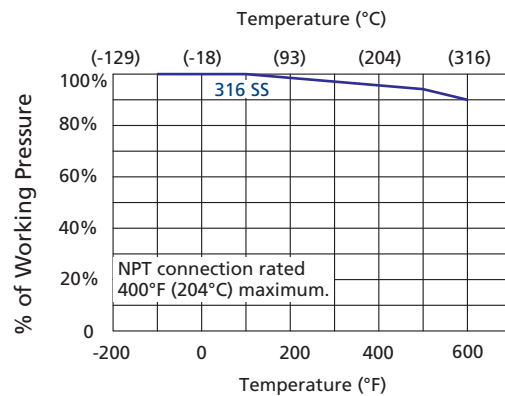
Features

- ⦿ Compact design offers advantages over configurations with multiple valves and fittings
- ⦿ Minimal space needed for installation and operation
- ⦿ Cost savings from fewer components required
- ⦿ Reduced potential for leakage
- ⦿ Metal-to-metal seating achieves ideal shutoff, longer stem/seat service lifetime for abrasive flow, excellent corrosion resistance and greater durability for repeated on/off cycles
- ⦿ Non-rotating stem and bar stock body design
- ⦿ Reliable packing gland locking device

Flow Data at 100°F (38°C)



Pressure vs. Temperature Curve



Technical Data

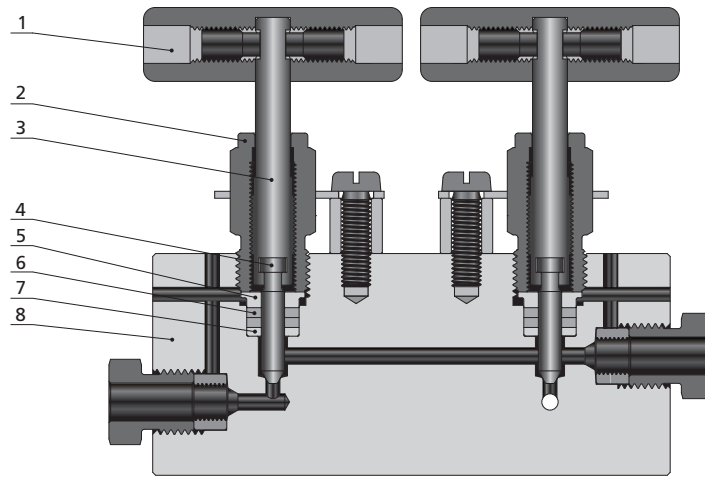
| Series | Connection | Orifice in. (mm) | Cv | Working Pressure psig (bar) |
|--------|------------|------------------|------|-----------------------------|
| 15BN | FNS4 | 0.094 (2.4) | 0.20 | 15,000 (1034) |
| | FNS6 | 0.094 (2.4) | 0.20 | 15,000 (1034) |
| 20BN | MF4 | 0.094 (2.4) | 0.20 | 20,000 (1379) |
| | MF6 | 0.094 (2.4) | 0.20 | 20,000 (1379) |

NOTES: 1. Packing Options

PTFE is the standard packing material, RPTFE glass also available.
 PTFE: -100°F~450°F (-73°C~232°C).
 RPTFE glass:-100°F~600°F (-73°C~316°C).

2. A variety of end connections are available on request . For connections not shown above, please contact FITOK Group or our authorized distributors.

Standard Materials of Construction

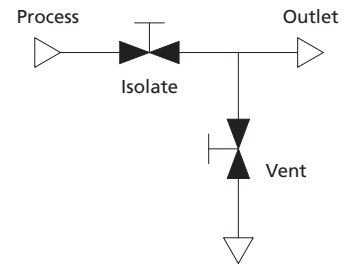
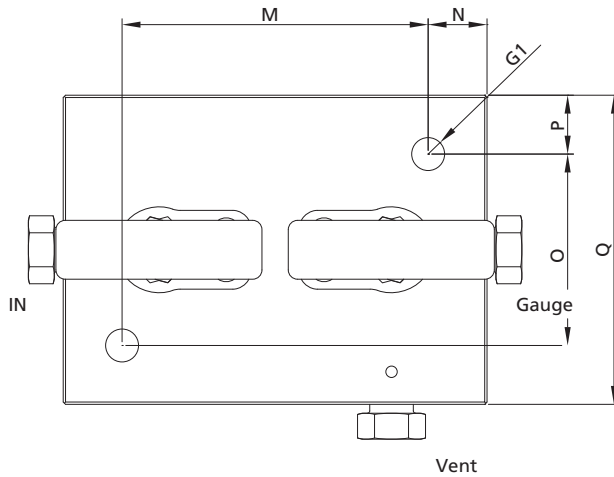
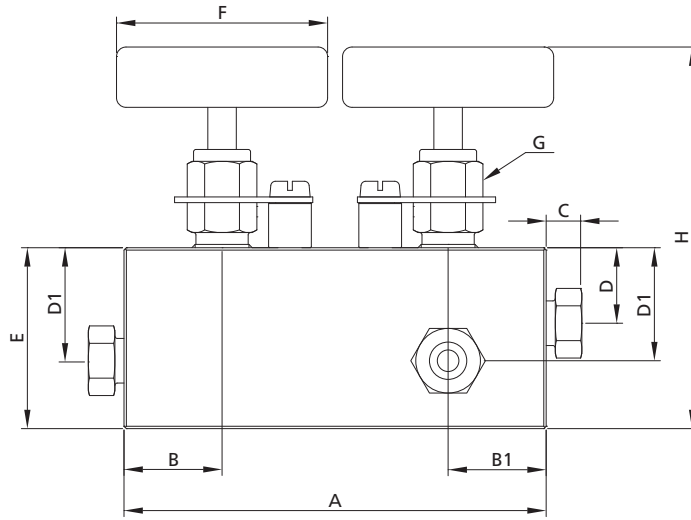


| Item | Component | Material Grade |
|------|-----------------------|----------------------|
| 1 | Handle | Stainless Steel |
| 2 | Packing Gland | C63000 |
| 3 | Upper stem | 316 SS |
| 4 | <i>Lower Stem</i> | <i>S17400</i> |
| 5 | Packing Ring | C63000 |
| 6 | <i>Packing</i> | <i>PTFE/RPTFE</i> |
| 7 | <i>Packing washer</i> | <i>S17400</i> |
| 8 | <i>Body</i> | <i>316 SS</i> |
| | Lubricant | Molybdenum disulfide |

Wetted components listed in italics.

| |
|-------------------------------------|
| Fittings |
| Tubing |
| Quick Couplings |
| Line Filters |
| Valves |
| Sour Service Products |
| Subsea Valves |
| Tools and Installation Instructions |
| Technical Information |
| Part Number Crossover Charts |

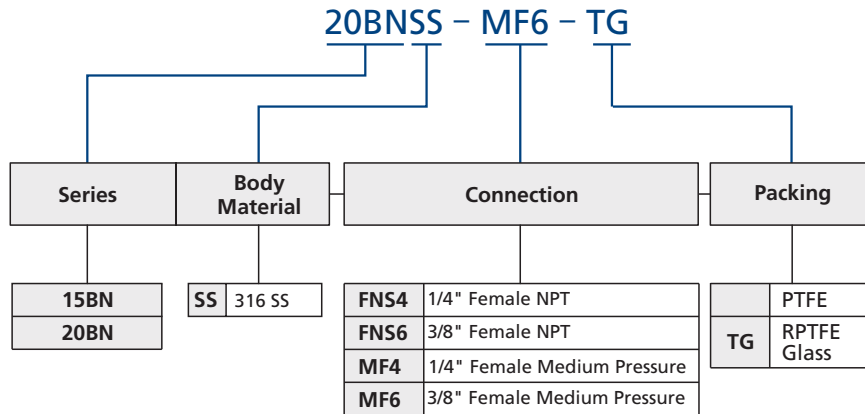
Ordering Information and Dimensions



| Dimensions | | | | | | | | | | | | | | | | | | |
|-----------------|------------|------------------|----------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|---------------|----------------|----------------|---------------|----------------|---------------|----------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | | | | |
| | | | A | B | B1 | C | D | D1 | E | F | G | G1 | H | M | N | O | P | Q |
| 15BNSS-FNS4 | FNS4 | 0.094 (2.4) | 3.78 (96.0) | 0.90 (22.9) | 1.00 (25.4) | / | 0.81 (20.6) | 1.08 (27.5) | 1.50 (38.1) | 1.75 (44.5) | 0.63 (15.9) | 0.28 (7.1) | 3.26 (82.7) | 3.03 (77.0) | 0.37 (9.5) | 1.25 (31.8) | 0.37 (9.5) | 2.00 (50.8) |
| 15BNSS-FNS6 | FNS6 | 0.094 (2.4) | 3.88 (98.5) | 1.00 (25.4) | 1.00 (25.4) | / | 0.81 (20.6) | 1.08 (27.5) | 1.58 (40.2) | 1.75 (44.5) | 0.63 (15.9) | 0.28 (7.1) | 3.34 (84.8) | 3.13 (79.5) | 0.37 (9.5) | 1.25 (31.8) | 0.37 (9.5) | 2.00 (50.8) |
| 20BNSS-MF4 | MF4 | 0.094 (2.4) | 3.5 (88.9) | 0.81 (20.6) | 0.81 (20.6) | 0.38 (9.7) | 0.81 (20.6) | 1.08 (27.5) | 1.50 (38.1) | 1.75 (44.5) | 0.63 (15.9) | 0.28 (7.1) | 3.26 (82.7) | 2.74 (69.5) | 0.37 (9.5) | 1.25 (31.8) | 0.37 (9.5) | 2.00 (50.8) |
| 20BNSS-MF6 | MF6 | 0.094 (2.4) | 3.88 (98.5) | 1.00 (25.4) | 1.00 (25.4) | 0.44 (11.2) | 0.81 (20.6) | 1.08 (27.5) | 1.50 (38.1) | 1.75 (44.5) | 0.63 (15.9) | 0.28 (7.1) | 3.26 (82.7) | 3.13 (79.5) | 0.37 (9.5) | 1.25 (31.8) | 0.37 (9.5) | 2.00 (50.8) |

- NOTES: 1. G is the drill dimension of packing gland mounting hole.
 2. G1 is the panel mounting drill size.
 3. H is the dimension of stem in closed position.
 4. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

Ordering Number Description



- NOTES: 1. For more details regarding Medium Pressure connections, please see **Connection Information** on I-02.
 2. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.

| |
|-------------------------------------|
| Fittings |
| Tubing |
| Quick Couplings |
| Line Filters |
| Valves |
| Sour Service Products |
| Subsea Valves |
| Tools and Installation Instructions |
| Technical Information |
| Part Number Crossover Charts |

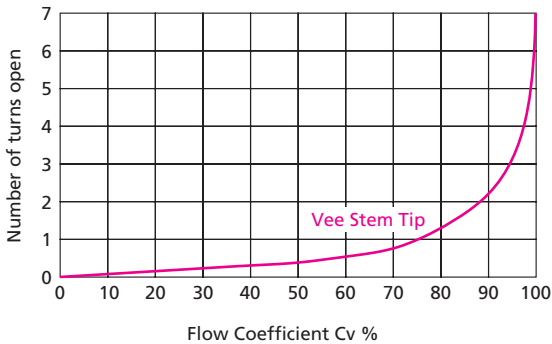
Double Block & Bleed Needle Valves

Working pressure up to 20,000 psig (1379 bar)

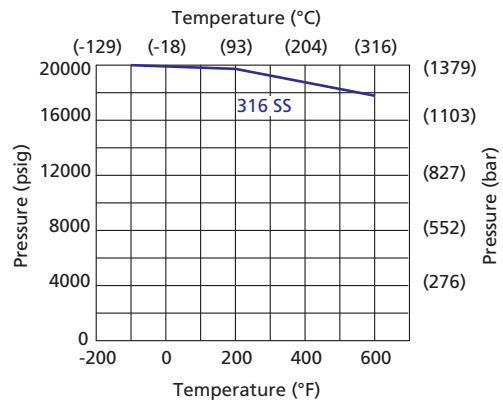
Features

- ⦿ Compact design provides large valve performance in a small package
- ⦿ Reduced potential for leakage
- ⦿ Metal-to-metal seating achieves ideal shutoff, longer stem/seat service lifetime for abrasive flow, excellent corrosion resistance and greater durability for repeated on/off cycles
- ⦿ Non-rotating stem and bar stock body design
- ⦿ Reliable packing gland locking device

Flow Data at 100°F (38°C)



Pressure vs. Temperature Curve



Technical Data

| Series | Connection Type (Inlet and Outlet) | Vent Connection | Orifice in. (mm) | Cv | Working Pressure psig (bar) |
|--------|------------------------------------|-----------------|------------------|------|-----------------------------|
| 20DBN | MF4 | MF4 | 0.094 (2.4) | 0.10 | 20,000 (1379) |
| | MF6 | MF4 | 0.094 (2.4) | 0.27 | 20,000 (1379) |
| | MF9 | MF4 | 0.094 (2.4) | 0.27 | 20,000 (1379) |
| | HF9 | MF4 | 0.094 (2.4) | 0.27 | 20,000 (1379) |

NOTES: 1. Packing Options

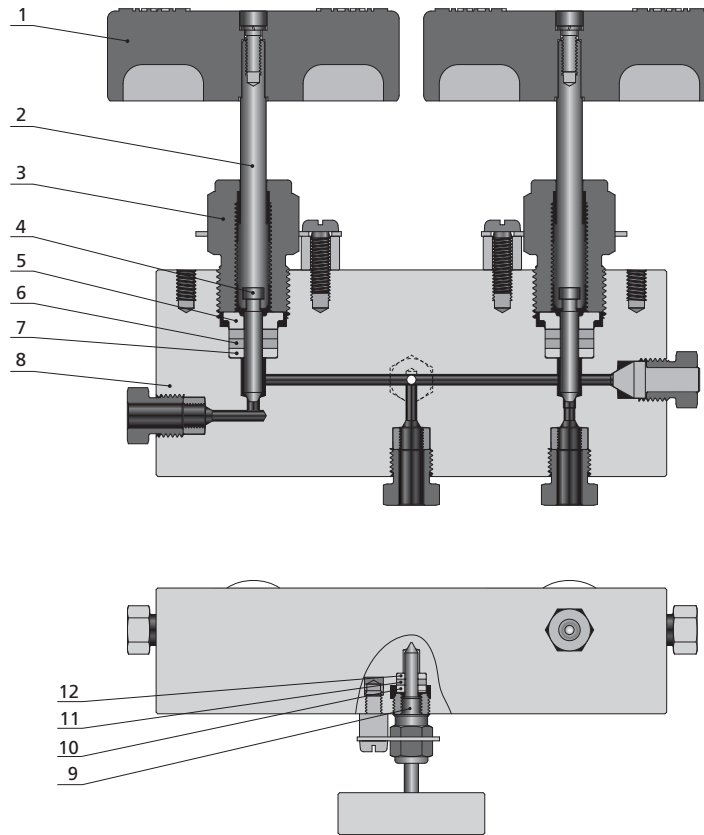
PTFE is the standard packing material, RPTFE glass also available.

PTFE: -100°F~450°F (-73°C~232°C).

RPTFE glass: -100°F~600°F (-73°C~316°C).

2. A variety of end connections are available on request. For connections not shown above, please contact FITOK Group or our authorized distributors.

Standard Materials of Construction



Bottom View

| Item | Component | Material Grade |
|------|----------------------------------|----------------------|
| 1 | Handle | Stainless steel |
| 2 | Upper stem | 316 SS |
| 3 | Packing Gland | C63000 |
| 4 | <i>Lower Stem</i> | <i>S17400</i> |
| 5 | <i>Packing Ring</i> | <i>C63000</i> |
| 6 | <i>Packing</i> | <i>PTFE/IRPTFE</i> |
| 7 | <i>Packing washer</i> | <i>S17400</i> |
| 8 | <i>Body</i> | <i>316 SS</i> |
| 9 | <i>Vent valve stem</i> | <i>S17400</i> |
| 10 | <i>Vent valve Ring</i> | <i>C63000</i> |
| 11 | <i>Vent valve Packing</i> | <i>PTFE/IRPTFE</i> |
| 12 | <i>Vent valve Packing washer</i> | <i>S17400</i> |
| | Lubricant | Molybdenum disulfide |

Wetted components listed in italics.

Fittings

Tubing

Quick Couplings

Line Filters

Valves

Sour Service Products

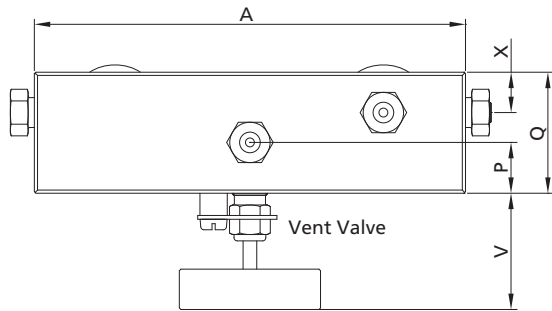
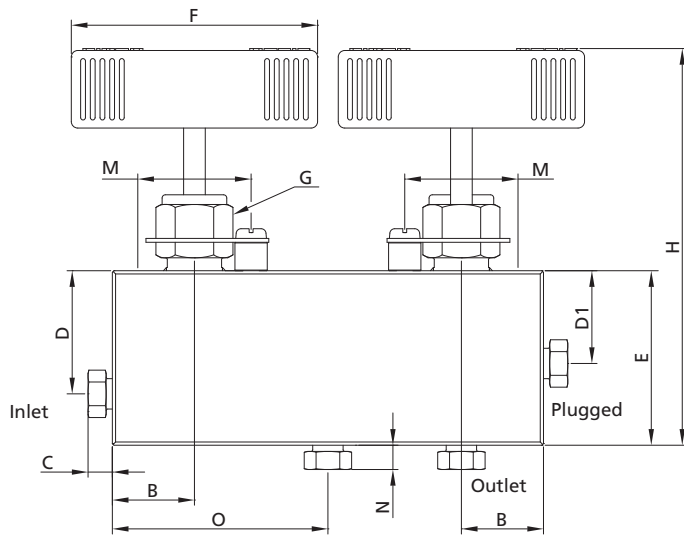
Subsea Valves

Tools and Installation Instructions

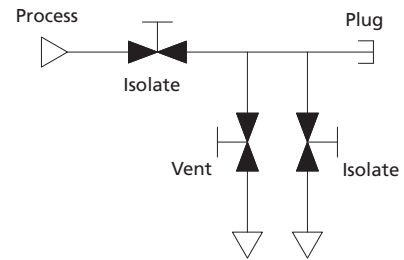
Technical Information

Part Number Crossover Charts

Ordering Information and Dimensions



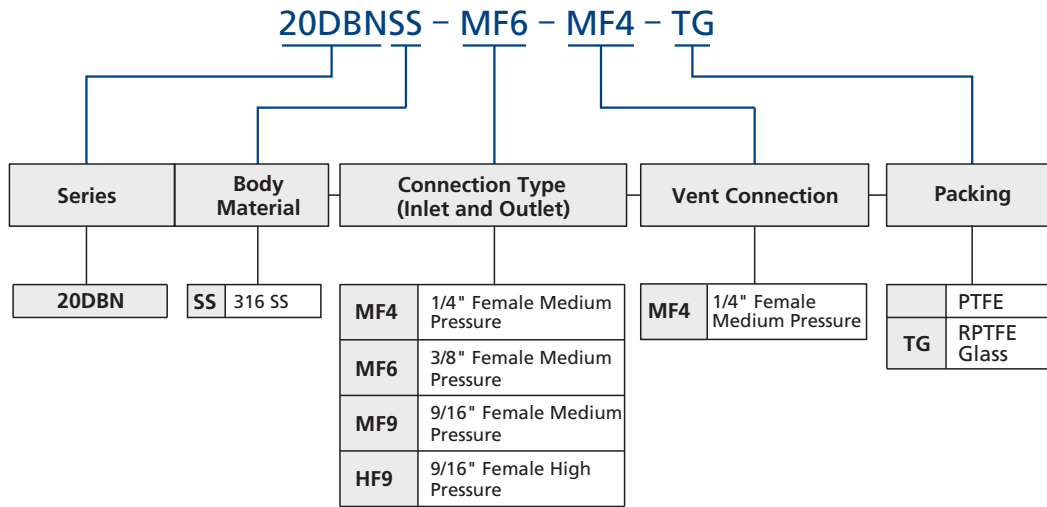
Bottom View



| Dimensions | | | | | | | | | | | | | | | | | | |
|-----------------|------------------------------------|------------------|----------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Ordering Number | Connection Type (Inlet and Outlet) | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | H | M | N | O | P | Q | V | X |
| 20DBNSS-MF4-MF4 | MF4 | 0.094 (2.4) | 5.25 (133.4) | 1.00 (25.4) | 0.38 (9.65) | 1.50 (38.1) | 1.13 (28.7) | 2.13 (54.1) | 3.00 (76.2) | 1.00 (25.4) | 4.82 (122.4) | 1.38 (35.1) | 0.50 (12.7) | 2.62 (66.7) | 0.63 (16.0) | 1.50 (38.1) | 1.47 (37.4) | 0.50 (12.7) |
| 20DBNSS-MF6-MF4 | MF6 | 0.094 (2.4) | 5.25 (133.4) | 1.00 (25.4) | 0.44 (11.2) | 1.50 (38.1) | 1.13 (28.7) | 2.13 (54.1) | 3.00 (76.2) | 1.00 (25.4) | 4.82 (122.4) | 1.38 (35.1) | 0.50 (12.7) | 2.62 (66.7) | 0.63 (16.0) | 1.50 (38.1) | 1.47 (37.4) | 0.50 (12.7) |
| 20DBNSS-MF9-MF4 | MF9 | 0.094 (2.4) | 5.88 (149.4) | 1.31 (33.3) | 0.55 (14.0) | 1.50 (38.1) | 1.13 (28.7) | 3.00 (76.2) | 3.00 (76.2) | 1.00 (25.4) | 5.69 (144.5) | 1.38 (35.1) | 0.50 (12.7) | 2.94 (74.7) | 0.63 (16.0) | 1.75 (44.5) | 1.47 (37.4) | 0.75 (19.1) |
| 20DBNSS-HF9-MF4 | HF9 | 0.094 (2.4) | 5.88 (149.4) | 1.31 (33.3) | 0.95 (24.1) | 1.50 (38.1) | 1.13 (28.7) | 3.00 (76.2) | 3.00 (76.2) | 1.00 (25.4) | 5.69 (144.5) | 1.38 (35.1) | 0.50 (12.7) | 2.94 (74.7) | 0.63 (16.0) | 1.75 (44.5) | 1.47 (37.4) | 0.75 (19.1) |

- NOTES: 1. Vent connection: 1/4" Female Medium Pressure.
 2. G is the drill dimension of packing gland mounting hole.
 3. G1 is the panel mounting drill size.
 4. H is the dimension of stem in closed position.
 5. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

Ordering Number Description



- NOTES: 1. For more details regarding Medium/High Pressure connections, please see **Connection Information** on I-02.
 2. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.

| |
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| Fittings |
| Tubing |
| Quick Couplings |
| Line Filters |
| Valves |
| Sour Service Products |
| Subsea Valves |
| Tools and Installation Instructions |
| Technical Information |
| Part Number Crossover Charts |

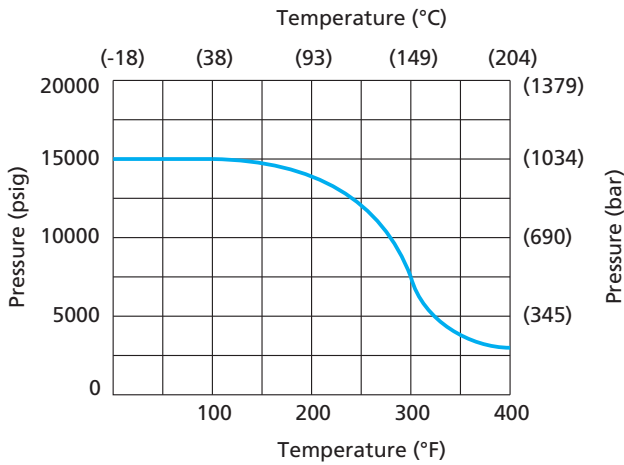
Double Block & Bleed Ball Valves

Working pressure up to 15,000 psig (1034 bar)

Features

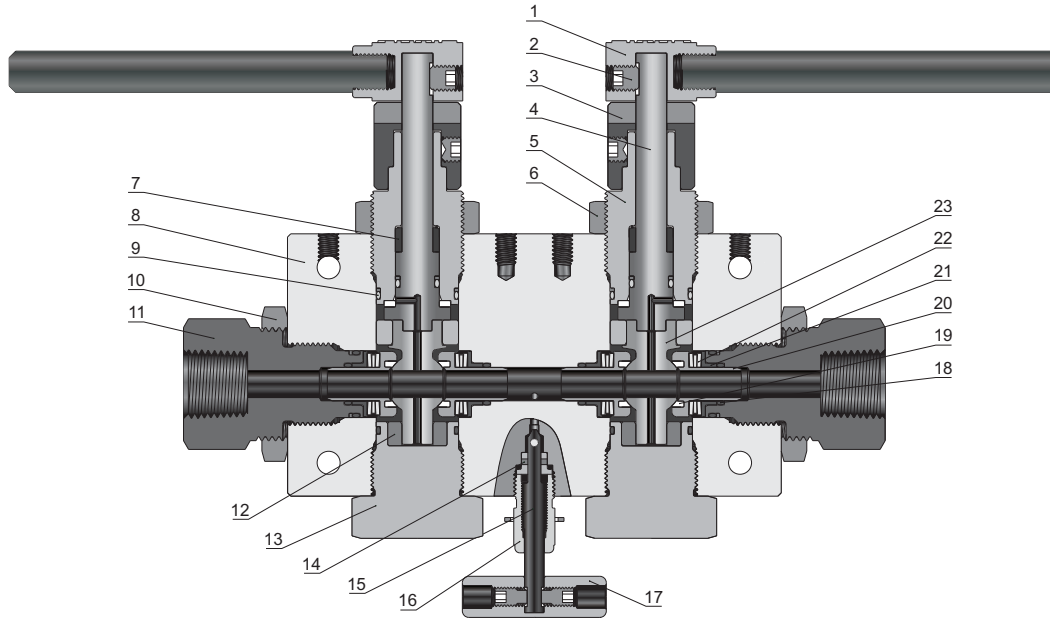
- ⦿ Working temperature range from 0°F to 400°F (-17.8°C to 204°C) with Fluorocarbon FKM O-rings; other O-ring materials available
- ⦿ High tensile 316 Stainless Steel body material
- ⦿ PEEK seats offer excellent resistance to chemicals, heat and abrasion
- ⦿ Trunnion-style ball to prevent ball blowout
- ⦿ Full-port flow path to minimize pressure drop
- ⦿ Vee-stem vent valve
- ⦿ Wide selection of tube and pipe end fittings available
- ⦿ Quarter turn from open to closed with positive stop

Pressure vs. Temperature Curve



| |
|-------------------------------------|
| Fittings |
| Tubing |
| Quick Couplings |
| Line Filters |
| Valves |
| Sour Service Products |
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| Tools and Installation Instructions |
| Technical Information |
| Part Number Crossover Charts |

Standard Materials of Construction

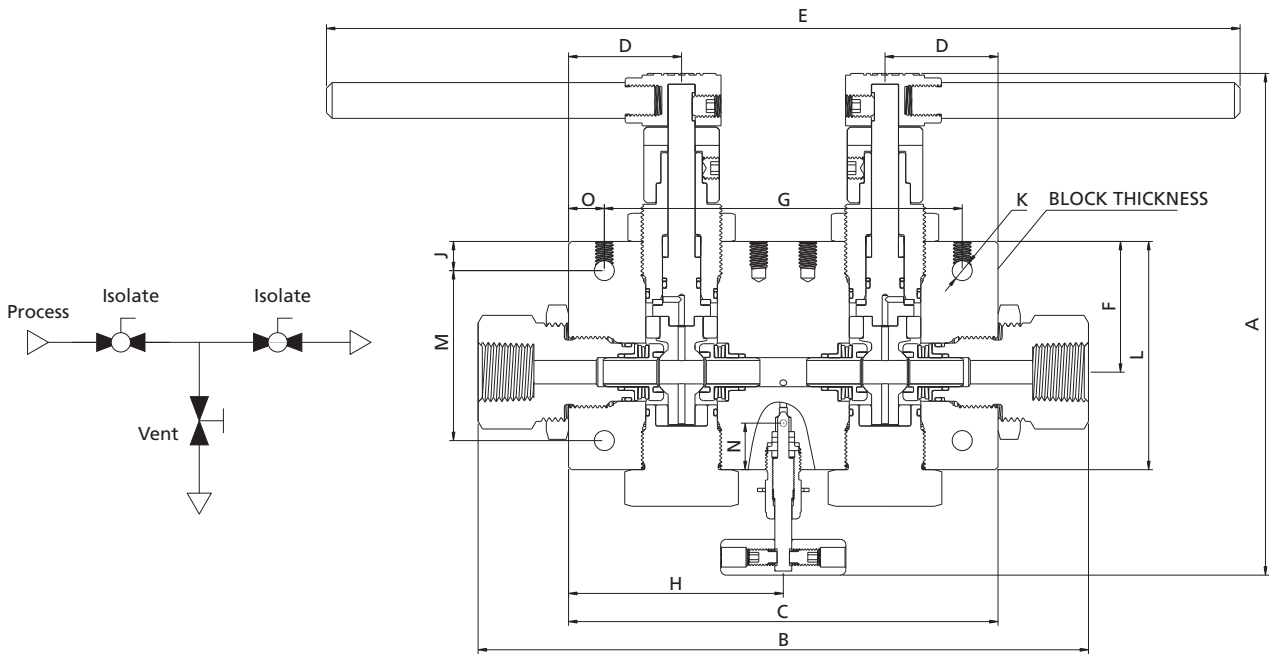


| Item | Component | Material Grade |
|------|---------------------------------|--|
| 1 | Handle | Stainless Steel |
| 2 | Set Screw | Stainless Steel |
| 3 | Stopping Device | 316 SS |
| 4 | Stem | 316 SS |
| 5 | <i>Packing Gland</i> | 316 SS |
| 6 | Locking Piece | 316 SS |
| 7 | <i>Stem Backup</i> | PEEK |
| 8 | <i>Valve Body</i> | 316 SS |
| 9 | <i>O-Ring</i> | Fluorocarbon FKM |
| 10 | Lock Nut | 316 SS |
| 11 | <i>Seat Gland</i> | 316 SS |
| 12 | <i>Bearing</i> | PEEK |
| 13 | <i>Bottom Gland</i> | 316 SS |
| 14 | <i>Vent Valve Packing</i> | PTFE |
| 15 | <i>Vent Valve Stem</i> | S17400 |
| 16 | <i>Vent Valve Packing Gland</i> | C63000 |
| 17 | <i>Vent Valve Handle</i> | Stainless Steel |
| 18 | <i>O-Ring</i> | Fluorocarbon FKM |
| 19 | <i>Seat</i> | PEEK |
| 20 | <i>Seat Retainer</i> | S17400 |
| 21 | <i>Belleville Backup</i> | S17400 |
| 22 | <i>Belleville Washers</i> | S17700 |
| 23 | <i>Ball</i> | 316 SS |
| | Lubricant | Molybdenum Disulfide/Fluorinated-based |

Wetted components listed in italics.

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Dimensions

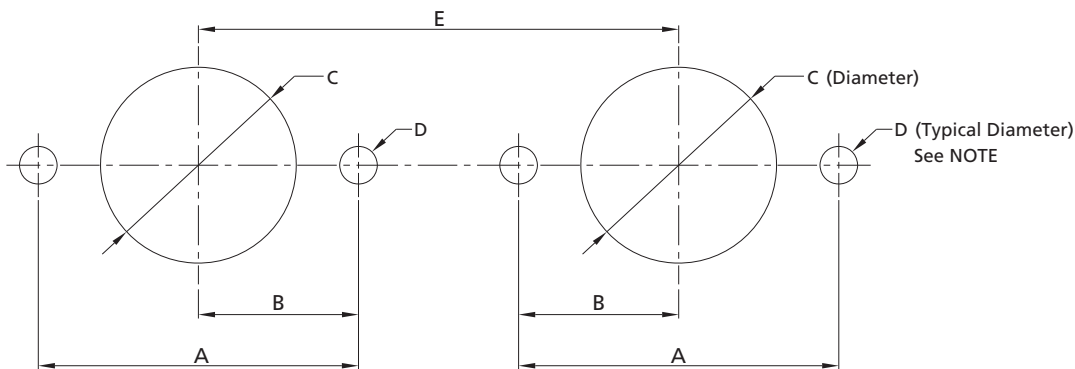


Dimensions, in. (mm)

| A | B | C | D | E | F | G | H | J | K | L | M | N ^① | O | Block Thickness |
|-----------------|-----------------|--------------|----------------|------------------|----------------|------------|-------------|----------------|---------------|--------------|----------------|----------------|---------------|-----------------|
| 7.14 (181.4) | 8.53 (216.6) | 6 (152.4) | 1.58 (40.1) | 12.76 (324.2) | 1.83 (46.4) | 5 (127) | 3 (76.2) | 0.41 (10.3) | 0.28 (7.1) | 3.19 (81) | 2.38 (60.4) | 0.65 (16.5) | 0.5 (12.7) | 1.75 (44.45) |

- NOTES: 1. N: Vent connection on back side.
2. All dimensions are for reference only and are subject to change.

Panel Mounting Dimensions



Dimensions, in. (mm)

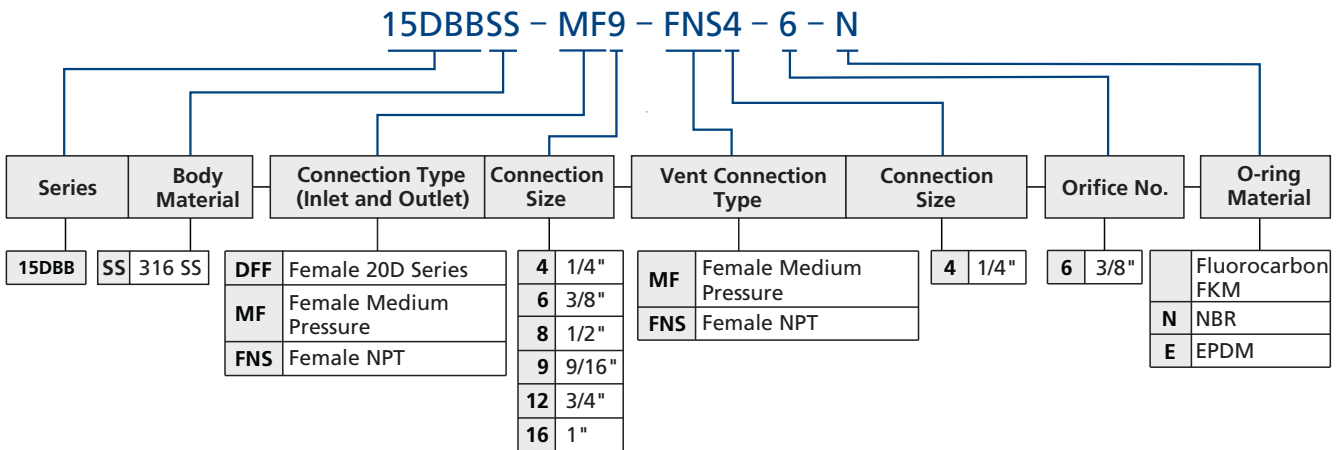
| A | B | C | D | E |
|----------------|----------------|---------------|---------------|----------------|
| 2.16 (54.8) | 1.08 (27.4) | 1.5 (38.1) | 0.28 (7.1) | 2.84 (72.2) |

- NOTES: 1. Body mounting 1/4-20 thread.
2. All dimensions are for reference only and are subject to change.

Ordering Information and Dimensions

| Series | Ordering Number | Connection Type (Inlet and Outlet) | Vent Connection | Orifice No. | Orifice Size in. (mm) | Cv | Working Pressure psig (bar) |
|--------|---------------------|------------------------------------|-----------------|-------------|-----------------------|------|-----------------------------|
| 15DBB | 15DBBSS-DFE8-FNS4-6 | DFE8 | FNS4 | 6 | 0.33 (8.3) | 2.3 | 15,000 (1034) |
| | 15DBBSS-MF4-MF4-6 | MF4 | MF4 | | 0.11 (2.8) | 0.23 | |
| | 15DBBSS-MF6-MF4-6 | MF6 | MF4 | | 0.20 (5.2) | 0.9 | |
| | 15DBBSS-MF9-MF4-6 | MF9 | MF4 | | 0.33 (8.3) | 2.3 | |
| | 15DBBSS-MF9-FNS4-6 | MF9 | FNS4 | | 0.33 (8.3) | 2.3 | |
| | 15DBBSS-MF12-MF4-6 | MF12 | MF4 | | 0.33 (8.3) | 2.3 | |
| | 15DBBSS-MF16-FNS4-6 | MF16 | FNS4 | | 0.33 (8.3) | 2.3 | |
| | 15DBBSS-FNS4-FNS4-6 | FNS4 | FNS4 | | 0.33 (8.3) | 2.3 | |
| | 15DBBSS-FNS6-FNS4-6 | FNS6 | FNS4 | | 0.33 (8.3) | 2.3 | |
| | 15DBBSS-FNS8-FNS4-6 | FNS8 | FNS4 | | 0.33 (8.3) | 2.3 | |

Ordering Number Description



- NOTES: 1. For more details regarding 20D Series and Medium Pressure connections, please see **Connection Information** on I-02.
2. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.

| Code | O-ring Material | Working temperature Range, °F (°C) |
|------|------------------|------------------------------------|
| | Fluorocarbon FKM | 0 to 400 (-17.8 to 204) |
| N | NBR | -10 to 250 (-23 to 121) |
| E | EPDM | -50 to 300 (-45 to 148) |

| |
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| Fittings |
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| Quick Couplings |
| Line Filters |
| Valves |
| Sour Service Products |
| Subsea Valves |
| Tools and Installation Instructions |
| Technical Information |
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Sour Service Products

- Fittings: 30,000 psig (2068 bar)
- Tubing: 30,000 psig (2068 bar)
- Needle Valves: 30,000 psig (2068 bar)
- Bleed Valves: 20,000 psig (1379 bar)
- Gauge Valves: 20,000 psig (1379 bar)
- Check Valves: 30,000 psig (2068 bar)



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| Tubing |
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Contents

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| | 20M Series Medium Pressure Fittings | F-05 |
| Tubing | | |
| | 60 Series High Pressure Fittings | F-06 |
| Quick Couplings | | |
| | PMH Series Pipe Fittings | F-07 |
| Line Filters | | |
| | AMH Series Adapter Fittings | F-08 |
| | T20M Series Tubing | F-10 |
| Valves | | |
| | T60 Series Tubing | F-12 |
| Sour Service Products | | |
| | Needle Valves | |
| | Working pressure up to 30,000 psig (2068 bar) | F-14 |
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| | Gauge Valves | |
| | Working pressure up to 20,000 psig (1379 bar) | F-30 |
| Technical Information | | |
| | Check Valves | |
| | Working pressure up to 30,000 psig (2068 bar) | F-34 |
| Part Number Crossover Charts | | |

FITOK designs and manufactures medium & high pressure valves, fittings and tubing for use with sour oil and gas (H₂S). These components, are referred to as FITOK type S components.

Sour Oil and Gas (H₂S) Service or Standard Service

FITOK standard grade products are offered for standard oil field service and type S components for challenging H₂S service. FITOK type S components provide optimum resistance to H₂S through the use of the specific materials and procedures.

Working Pressure

Type S components are rated for working pressure up to 30,000 psig (2068) bar at 100°F (38°C).

NACE MR0175 Compliant Materials

Standard material for type S component is annealed 316 SS and all pressure-containing materials used comply with NACE MR0175.

Fittings

Tubing

Quick Couplings

Line Filters

Valves

Sour Service Products

Subsea Valves

Tools and Installation Instructions

Technical Information

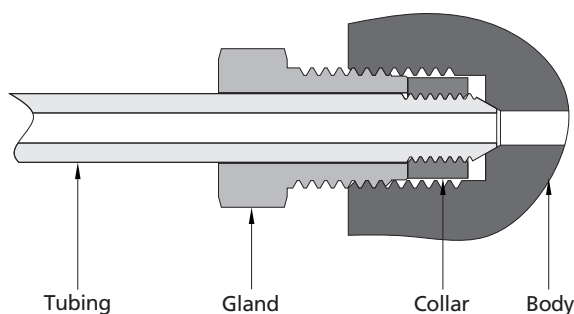
Part Number Crossover Charts

20M Series Medium Pressure Fittings

Features

- ⦿ Working pressure: 10,000 psig (690 bar)
- ⦿ Coned-and-threaded connection
- ⦿ Tube sizes available in 1/4", 3/8", 9/16", 3/4" and 1"
- ⦿ Annealed 316 Stainless Steel as standard material, other materials available upon request
- ⦿ Easy to disconnect and retighten
- ⦿ Metal-to-metal seal to provide perfect leak-tight service for working conditions from critical vacuum to medium pressure
- ⦿ Every fitting marked with size, material and heat number

Construction



Ordering Information

The structure of FITOK's type S fittings are the same as standard medium pressure fittings. To get the complete ordering number of type S medium pressure fittings, add "-S" as a suffix to the ordering number of standard medium pressure fittings. If glands and collars are not needed, add "-SWO" as a suffix.

Examples:

1. 9/16" Union, the ordering number is SS-MU-MF9-S.
2. 3/8" Tee without glands and collars, the ordering number is SS-MT-MF6-SWO.

The sizes of type S fittings are the same as standard medium pressure fittings, please refer to **20M Series Medium Pressure Fittings** on A-13.

Installation Instructions

Please see H-07.

Connection Information

Please see I-03.

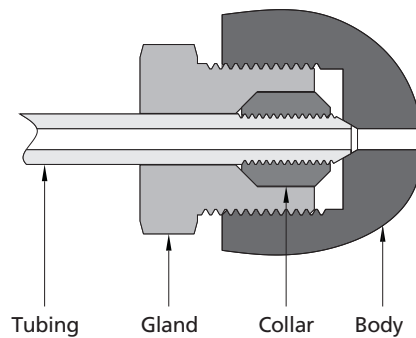
| |
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| Fittings |
| Tubing |
| Quick Couplings |
| Line Filters |
| Valves |
| Sour Service Products |
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| Tools and Installation Instructions |
| Technical Information |
| Part Number Crossover Charts |

60 Series High Pressure Fittings

Features

- ⦿ Working pressure: 30,000 psig (2068 bar)
- ⦿ Working temperature range: -423°F to 1200°F (-252°C to 649°C)
- ⦿ Coned-and-threaded connection
- ⦿ Tube sizes available in 1/4", 3/8" and 9/16"
- ⦿ Annealed 316 Stainless Steel as standard material, other materials available upon request
- ⦿ Easy to disconnect and retighten
- ⦿ Metal-to-metal seal to provide perfect leak-tight service from critical vacuum to high pressure
- ⦿ Every fitting marked with size, material and heat number

Construction



Ordering Information

The structure of FITOK's type S fittings are the same as standard high pressure fittings. To get the complete ordering number of type S high pressure fittings, add "-S" as a suffix to the ordering number of standard high pressure fittings. If glands and collars are not needed, add "-SWO" as a suffix.

Examples:

1. 9/16" Union, the ordering number is SS-HUN-HF9-S.
2. 3/8" Tee without glands and collars, the ordering number is SS-HT-HF6-SWO.

The sizes of type S fittings are the same as standard high pressure fittings, please refer to **60 Series High Pressure Fittings** on A-22.

Installation Instructions

Please see H-07.

Connection Information

Please see I-04.

Fittings

Tubing

Quick Couplings

Line Filters

Valves

Sour Service Products

Subsea Valves

Tools and Installation Instructions

Technical Information

Part Number Crossover Charts

PMH Series Pipe Fittings

Features

- ⦿ Annealed 316 Stainless Steel as standard material, other materials available upon request
- ⦿ Radius junction design with elbows provides smooth flow path
- ⦿ Every fitting marked with size, material and heat number

Working pressure

- ⦿ Working pressures of pipe fittings are dependent on the end connection with the lowest working pressure
- ⦿ Working pressures of the end connections are shown in the table below

| End Connection | Working Pressure psig (bar) | End Connection | Working Pressure psig (bar) |
|----------------|--------------------------------|----------------|--------------------------------|
| NS2/FNS2 | 10,000 (690) | RT2/FRT2 | 10,000 (690) |
| NS4/FNS4 | 10,000 (690) | RT4/FRT4 | 10,000 (690) |
| NS6/FNS6 | 10,000 (690) | RT6/FRT6 | 10,000 (690) |
| NS8/FNS8 | 10,000 (690) | RT8/FRT8 | 10,000 (690) |
| NS12/FNS12 | 10,000 (690) | RT12/FRT12 | 10,000 (690) |
| NS16/FNS16 | 10,000 (690) | RT16/FRT16 | 10,000 (690) |

Cautions

- ⦿ Do not loosen or tighten fittings when the system is pressurized
- ⦿ Always use proper thread sealants on tapered pipe threads

Ordering Information

The structure of FITOK's type S pipe fittings are the same as standard pipe fittings. To get the complete ordering number of type S pipe fittings, add "-S" as a suffix to the ordering number of standard pipe fittings. Examples: 3/8" NPT Hex Nipple, the ordering number is : SS-HPN-NS6-S.

The sizes of type S pipe fittings are the same as standard pipe fittings, please refer to **PMH Series Pipe Fittings** on A-29.

AMH Series Adapter Fittings

Features

- ⦿ Annealed 316 Stainless Steel as standard material, other materials available upon request
- ⦿ Every fitting marked with size, material and heat number

Working pressure

- ⦿ Working pressures of AMH Series Adapter Fittings are dependent on the end connection with the lowest working pressure
- ⦿ Working pressures of the end connections are shown in the table below

| End Connection | Working Pressure psig (bar) | End Connection | Working Pressure psig (bar) | End Connection | Working Pressure psig (bar) |
|-----------------|-----------------------------|----------------|-----------------------------|----------------|-----------------------------|
| MM4/MCP4/MF4 | 10,000 (690) | MCT4 | 10,000 (690) | HM4/HCP4/HF4 | 30,000 (2068) |
| MM6/MCP6/MF6 | 10,000 (690) | MCT6 | 10,000 (690) | HM6/HCP6/HF6 | 30,000 (2068) |
| MM9/MCP9/MF9 | 10,000 (690) | MCT9 | 10,000 (690) | HM9/HCP9/HF9 | 30,000 (2068) |
| MM12/MCP12/MF12 | 10,000 (690) | MCT12 | 10,000 (690) | — | — |
| MM16/MCP16/MF16 | 10,000 (690) | MCT16 | 10,000 (690) | — | — |

| End Connection | Working Pressure psig (bar) | End Connection | Working Pressure psig (bar) | End Connection | Working Pressure psig (bar) | End Connection | Working Pressure psig (bar) |
|----------------|-----------------------------|----------------|-----------------------------|----------------|-----------------------------|----------------|-----------------------------|
| HCT4 | 30,000 (2068) | NS2/FNS2 | 10,000 (690) | JM4/JF4 | 10,000 (690) | TM9 | 30,000 (2068) |
| HCT6 | 30,000 (2068) | NS4/FNS4 | 10,000 (690) | JM6/JF6 | 10,000 (690) | TM12 | 20,000 (1379) |
| HCT9 | 30,000 (2068) | NS6/FNS6 | 10,000 (690) | JM8/JF8 | 10,000 (690) | TM14 | 30,000 (2068) |
| — | — | NS8/FNS8 | 10,000 (690) | JM10/JF10 | 10,000 (690) | TM16 | 20,000 (1379) |
| — | — | NS12/FNS12 | 10,000 (690) | JM12/JF12 | 10,000 (690) | TM21 | 10,000 (690) |
| — | — | NS16/FNS16 | 10,000 (690) | JM16/JF16 | 10,000 (690) | — | — |

Cautions

- ⦿ Do not loosen or tighten fittings when the system is pressurized
- ⦿ Always use proper thread sealants on tapered pipe threads

Ordering Information

Except that DFT, DCP and DFF connections are not available, type S AMH series adapter fittings have the same connection types with standard AMH series adapter fittings. Add "-S" as a suffix to the ordering number of standard AMH series adapter fittings to get the complete ordering number of type S AMH series adapter fittings. For fittings with "MF" or "HF" connection, if glands and collars are not needed, add "-SWO" as a suffix.

Examples:

1. For adapter fittings with MM9 and NS8 connections, the ordering number is SS-MMA-MM9-NS8-S.
2. For adapter fittings with HF6 and MF4 connections, if glands and collars are not needed, the ordering number is SS-FFC-HF6-MF4-SWO.

The sizes of type S AMH series adapter fittings are the same as standard AMH series adapter fittings, please refer to **AMH Series Adapter Fittings** on A-60.

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| Line Filters |
| Valves |
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| Subsea Valves |
| Tools and Installation Instructions |
| Technical Information |
| Part Number Crossover Charts |

T20M Series Tubing

Features

- Working pressure: 10,000 psig (690 bar)
- Working temperature range: -423°F to 1200°F (-252°C to 649°C)
- Annealed 316/316L Stainless Steel as standard material, other materials available upon request
- Every tubing marked with material, size and heat number

Ordering Information

| Tube O.D. in. | Tube I.D. in. | Material Grade | Basic Ordering Number | Max./Min. O.D. in. (mm) |
|---------------|---------------|----------------------|-----------------------|---------------------------|
| 1/4 | 0.109 | Annealed 316/316L SS | SS-T20M-4- | 0.248/0.243 (6.30/6.17) |
| 3/8 | 0.203 | Annealed 316/316L SS | SS-T20M-6- | 0.370/0.365 (9.40/9.27) |
| 9/16 | 0.312 | Annealed 316/316L SS | SS-T20M-9- | 0.557/0.552 (14.15/14.02) |
| 3/4 | 0.438 | Annealed 316/316L SS | SS-T20M-12- | 0.745/0.740 (18.92/18.80) |
| 1 | 0.562 | Annealed 316/316L SS | SS-T20M-16- | 0.995/0.990 (25.27/25.14) |

To get the complete ordering number of type S tubing, add the length designator "-S" as a suffix to the basic ordering number.

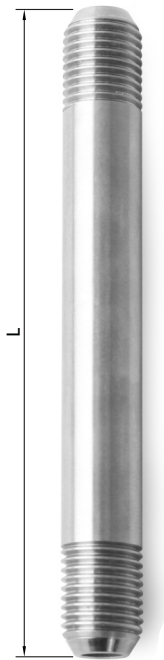
Examples:

- For 20 feet of 3/8" O.D. tubing, the complete ordering number is SS-T20M-6-20-S.
- For 6 meters of 3/4" O.D. tubing, the complete ordering number is SS-T20M-12-6M-S.

The tubing is available in random lengths but no more than 20 feet (6 meters).



Coned and Threaded Nipples



| Tube O.D. in. | Tube I.D. in. | Ordering Number | L in. (mm) |
|---------------|---------------|--------------------|-------------|
| 1/4 | 0.109 | SS-T20M-4CT-2.75-S | 2.75 (69.9) |
| 1/4 | 0.109 | SS-T20M-4CT-3-S | 3 (76.2) |
| 1/4 | 0.109 | SS-T20M-4CT-4-S | 4 (101.6) |
| 1/4 | 0.109 | SS-T20M-4CT-6-S | 6 (152.4) |
| 1/4 | 0.109 | SS-T20M-4CT-8-S | 8 (203.2) |
| 1/4 | 0.109 | SS-T20M-4CT-10-S | 10 (254.0) |
| 1/4 | 0.109 | SS-T20M-4CT-12-S | 12 (304.8) |
| 3/8 | 0.203 | SS-T20M-6CT-3-S | 3 (76.2) |
| 3/8 | 0.203 | SS-T20M-6CT-4-S | 4 (101.6) |
| 3/8 | 0.203 | SS-T20M-6CT-6-S | 6 (152.4) |
| 3/8 | 0.203 | SS-T20M-6CT-8-S | 8 (203.2) |
| 3/8 | 0.203 | SS-T20M-6CT-10-S | 10 (254.0) |
| 3/8 | 0.203 | SS-T20M-6CT-12-S | 12 (304.8) |
| 9/16 | 0.312 | SS-T20M-9CT-4-S | 4 (101.6) |
| 9/16 | 0.312 | SS-T20M-9CT-6-S | 6 (152.4) |
| 9/16 | 0.312 | SS-T20M-9CT-8-S | 8 (203.2) |
| 9/16 | 0.312 | SS-T20M-9CT-10-S | 10 (254.0) |
| 9/16 | 0.312 | SS-T20M-9CT-12-S | 12 (304.8) |
| 3/4 | 0.438 | SS-T20M-12CT-4-S | 4 (101.6) |
| 3/4 | 0.438 | SS-T20M-12CT-6-S | 6 (152.4) |
| 3/4 | 0.438 | SS-T20M-12CT-8-S | 8 (203.2) |
| 3/4 | 0.438 | SS-T20M-12CT-10-S | 10 (254.0) |
| 3/4 | 0.438 | SS-T20M-12CT-12-S | 12 (304.8) |
| 1 | 0.562 | SS-T20M-16CT-6-S | 6 (152.4) |
| 1 | 0.562 | SS-T20M-16CT-8-S | 8 (203.2) |
| 1 | 0.562 | SS-T20M-16CT-10-S | 10 (254.0) |
| 1 | 0.562 | SS-T20M-16CT-12-S | 12 (304.8) |

NOTE: Do not recommend bending of tubing.

| |
|-------------------------------------|
| Fittings |
| Tubing |
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| Part Number Crossover Charts |

T60 Series Tubing

Features

- ⦿ Working pressure: 30,000 psig (2068 bar)
- ⦿ Working temperature range: -423°F to 1200°F (-252°C to 649°C)
- ⦿ Annealed 316/316L Stainless Steel as standard material, other materials available upon request
- ⦿ Every tubing marked with material, size and heat number

Ordering Information

| Tube O.D. in. | Tube I.D. in. | Material Grade | Basic Ordering Number | Max./Min. O.D. in. (mm) |
|---------------|---------------|----------------------|-----------------------|---------------------------|
| 1/4 | 0.083 | Annealed 316/316L SS | SS-T60-4- | 0.248/0.243 (6.30/6.17) |
| 3/8 | 0.125 | Annealed 316/316L SS | SS-T60-6- | 0.370/0.365 (9.40/9.27) |
| 9/16 | 0.188 | Annealed 316/316L SS | SS-T60-9- | 0.557/0.552 (14.15/14.02) |

To get the complete ordering number of type S tubing, add the length designator "-S" as a suffix to the basic ordering number.

Examples:

1. For 20 feet of 1/4" O.D. tubing, the complete ordering number is SS-T60-4-20-S.
2. For 6 meters of 9/16" O.D. tubing, the complete ordering number is SS-T60-9-6M-S.

The tubing is available in random lengths but no more than 20 feet (6 meters).



Fittings

Tubing

Quick Couplings

Line Filters

Valves

Sour Service Products

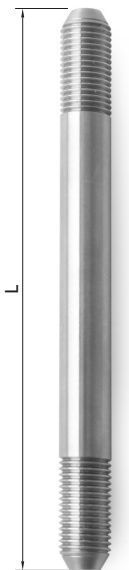
Subsea Valves

Tools and Installation Instructions

Technical Information

Part Number Crossover Charts

Coned and Threaded Nipples



| Tube O.D. in. | Tube I.D. in. | Ordering Number | L in. (mm) |
|---------------|---------------|-------------------|-------------|
| 1/4 | 0.083 | SS-T60-4CT-2.75-S | 2.75 (69.9) |
| 1/4 | 0.083 | SS-T60-4CT-3-S | 3 (76.2) |
| 1/4 | 0.083 | SS-T60-4CT-4-S | 4 (101.6) |
| 1/4 | 0.083 | SS-T60-4CT-6-S | 6 (152.4) |
| 1/4 | 0.083 | SS-T60-4CT-8-S | 8 (203.2) |
| 1/4 | 0.083 | SS-T60-4CT-10-S | 10 (254.0) |
| 1/4 | 0.083 | SS-T60-4CT-12-S | 12 (304.8) |
| 3/8 | 0.125 | SS-T60-6CT-3-S | 3 (76.2) |
| 3/8 | 0.125 | SS-T60-6CT-4-S | 4 (101.6) |
| 3/8 | 0.125 | SS-T60-6CT-6-S | 6 (152.4) |
| 3/8 | 0.125 | SS-T60-6CT-8-S | 8 (203.2) |
| 3/8 | 0.125 | SS-T60-6CT-10-S | 10 (254.0) |
| 3/8 | 0.125 | SS-T60-6CT-12-S | 12 (304.8) |
| 9/16 | 0.188 | SS-T60-9CT-4-S | 4 (101.6) |
| 9/16 | 0.188 | SS-T60-9CT-6-S | 6 (152.4) |
| 9/16 | 0.188 | SS-T60-9CT-8-S | 8 (203.2) |
| 9/16 | 0.188 | SS-T60-9CT-10-S | 10 (254.0) |
| 9/16 | 0.188 | SS-T60-9CT-12-S | 12 (304.8) |

NOTE: Do not recommend bending of tubing.

| |
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| Fittings |
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Needle Valves

Working pressure up to 30,000 psig (2068 bar)

Features

- ⦿ Annealed 316 Stainless Steel for valve body and nickel-based alloy for lower stem
- ⦿ Metal-to-metal seating achieves ideal shutoff, longer stem/seat service lifetime for abrasive flow, excellent corrosion resistance and greater durability for repeated on/off cycles
- ⦿ Non-rotating stem and bar stock body design
- ⦿ Easy to assemble and replace packing
- ⦿ Reliable packing gland locking device
- ⦿ Options for Vee or Regulating stem tips
- ⦿ Five flow patterns available

Technical Data

| 15N Series | | | | | |
|--------------------------------|------------|------------------|------|-----------------------------|----------------------------|
| Connection Size | Connection | Orifice in. (mm) | Cv | Working Pressure psig (bar) | Working Temperature Range |
| 1/8" Female NPT | FNS2 | 0.078 (1.98) | 0.11 | 10,000 (690) | -100°F~400°F (-73°C~204°C) |
| 1/8" Female ISO Tapered Thread | FRT2 | | | | |
| 1/4" Female NPT | FNS4 | 0.203 (5.16) | 0.63 | 10,000 (690) | |
| 1/4" Female ISO Tapered Thread | FRT4 | | | | |
| 3/8" Female NPT | FNS6 | 0.219 (5.56) | 0.75 | 10,000 (690) | |
| 3/8" Female ISO Tapered Thread | FRT6 | | | | |
| 1/2" Female NPT | FNS8 | 0.312 (7.92) | 1.30 | 10,000 (690) | |
| 1/2" Female ISO Tapered Thread | FRT8 | | | | |

| 20N Series | | | | | |
|---------------|------------|------------------|------|-----------------------------|----------------------------|
| Tube O.D. in. | Connection | Orifice in. (mm) | Cv | Working Pressure psig (bar) | Working Temperature Range |
| 1/4 | MF4 | 0.125 (3.18) | 0.31 | 10,000 (690) | -100°F~600°F (-73°C~316°C) |
| 3/8 | MF6 | 0.204 (5.18) | 0.68 | 10,000 (690) | |
| 9/16 | MF9 | 0.312 (7.92) | 1.30 | 10,000 (690) | |
| 3/4 | MF12 | 0.438 (11.13) | 2.50 | 10,000 (690) | |
| 1 | MF16 | 0.562 (14.27) | 4.40 | 10,000 (690) | |

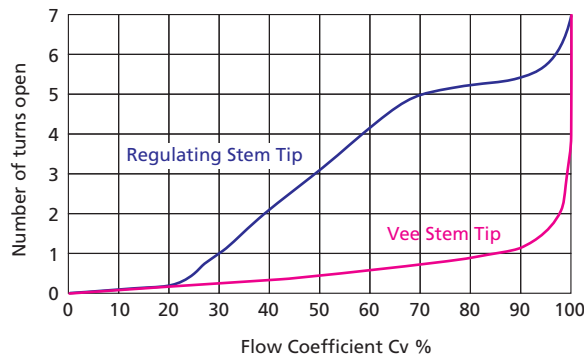
Fittings
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| 30N Series | | | | | |
|---------------|------------|------------------|------|-----------------------------|----------------------------|
| Tube O.D. in. | Connection | Orifice in. (mm) | Cv | Working Pressure psig (bar) | Working Temperature Range |
| 1/4 | HF4 | 0.094 (2.39) | 0.12 | 20,000 (1379) | -100°F~600°F (-73°C~316°C) |
| 3/8 | HF6 | 0.125 (3.18) | 0.23 | 20,000 (1379) | |
| 9/16 | HF9 | 0.125 (3.18) | 0.33 | 20,000 (1379) | |

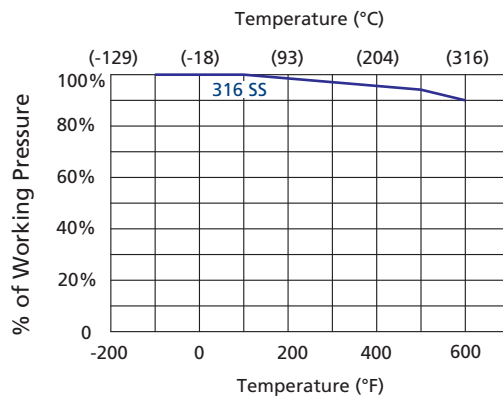
| 60N Series | | | | | |
|---------------|------------|------------------|------|-----------------------------|----------------------------|
| Tube O.D. in. | Connection | Orifice in. (mm) | Cv | Working Pressure psig (bar) | Working Temperature Range |
| 1/4 | HF4 | 0.063 (1.59) | 0.08 | 30,000 (2068) | -100°F~600°F (-73°C~316°C) |
| 3/8 | HF6 | 0.063 (1.59) | 0.09 | 30,000 (2068) | |
| 9/16 | HF9 | 0.078 (1.98) | 0.14 | 30,000 (2068) | |

NOTES: 1. Cv values shown are for 2-way straight valve pattern. For 2-way angle pattern, increase Cv value by 50% (Based on water).
 2. Packing Options
 PTFE is the standard packing material for 15N, 20N and 30N series, RPTFE glass also available.
 Packing material for 60N Series is RPTFE only.
 PTFE: -100°F~450°F (-73°C~232°C)
 RPTFE glass: -100°F~600°F (-73°C~316°C)

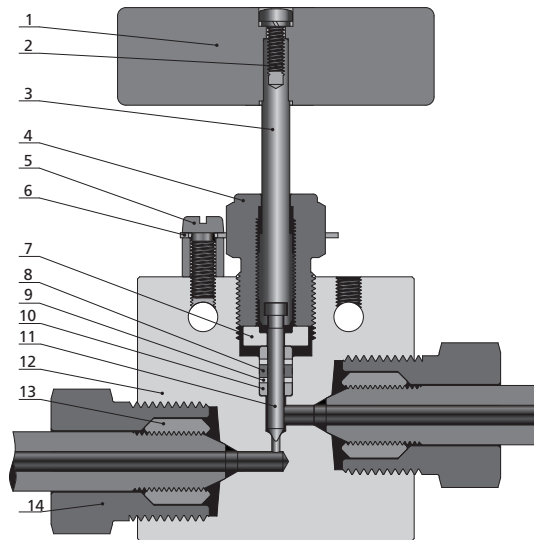
Flow Data at 100°F (38°C)



Pressure vs. Temperature Curve



Standard Materials of Construction



| Item | Component | Material Grade |
|------|-----------------------|--|
| 1 | Handle | Stainless steel |
| 2 | Handle Screw | Stainless steel |
| 3 | Upper Stem | 316 SS |
| 4 | Packing Gland | 316 SS |
| 5 | Locking Screw | Stainless steel |
| 6 | Locking Plate | 304 SS |
| 7 | Packing Ring | 316 SS (For 15N, 20N and 30N Series), S17400 (For 60N Series) |
| 8 | <i>Packing</i> | <i>PTFE/RPTFE</i> |
| 9 | <i>Retaining Ring</i> | <i>PEEK (For 60N Series Only)</i> |
| 10 | <i>Packing Washer</i> | <i>316 SS (For 15N, 20N and 30N Series), Nickel-based Alloy (For 60N Series)</i> |
| 11 | <i>Lower Stem</i> | <i>Nickel-based Alloy</i> |
| 12 | <i>Body</i> | <i>Annealed 316 SS</i> |
| 13 | Collar | Annealed 316 SS (For tube connections) |
| 14 | Gland | Annealed 316 SS (For tube connections) |
| | Lubricant | Molybdenum disulfide |

Wetted components listed in italics.

Fittings

Tubing

Quick Couplings

Line Filters

Valves

Sour Service Products

Subsea Valves

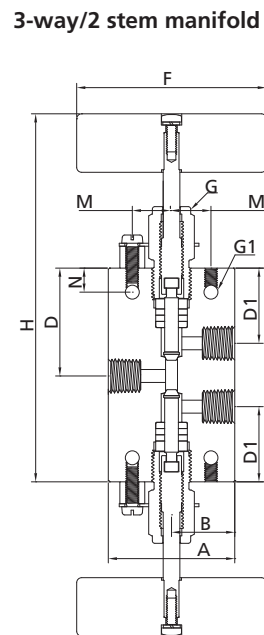
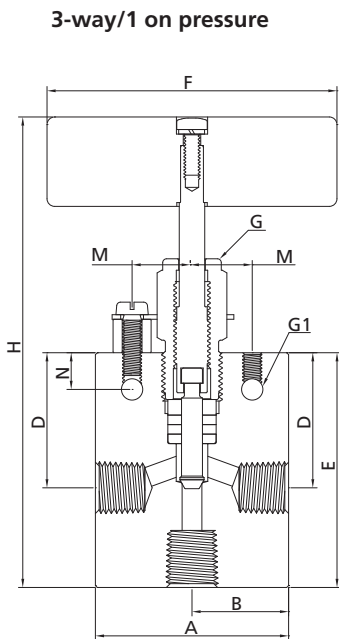
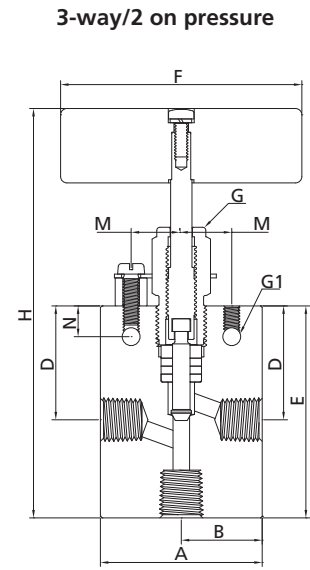
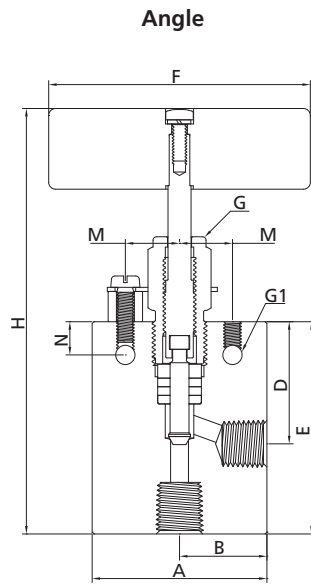
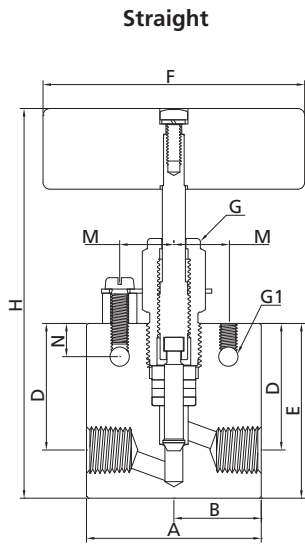
Tools and Installation Instructions

Technical Information

Part Number Crossover Charts

Ordering Information and Dimensions (Pipe Connection)

| |
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| Fittings |
| Tubing |
| Quick Couplings |
| Line Filters |
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| Tools and Installation Instructions |
| Technical Information |
| Part Number Crossover Charts |



Ordering Information and Dimensions (Pipe Connection)

| 15N Series (Straight) | | | | | | | | | | | | | | | |
|-----------------------|------------|------------------|----------------------|----------------|---|----------------|----|----------------|-----------------|----------------|---------------|-----------------|----------------|----------------|----------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 15NSS-FNS2-1-S | FNS2 | 0.078 (1.98) | 1.50 (38.1) | 0.75 (19.1) | / | 0.81 (20.6) | / | 1.25 (31.8) | 1.75 (44.5) | 0.62 (15.8) | 0.17 (4.3) | 3.00 (76.4) | 0.56 (14.2) | 0.31 (7.9) | 0.63 (15.9) |
| 15NSS-FRT2-1-S | FRT2 | | 1.50 (38.1) | 0.75 (19.1) | / | 0.81 (20.6) | / | 1.25 (31.8) | 1.75 (44.5) | 0.62 (15.8) | 0.17 (4.3) | 3.00 (76.4) | 0.56 (14.2) | 0.31 (7.9) | 0.63 (15.9) |
| 15NSS-FNS4-1-S | FNS4 | 0.203 (5.2) | 2.00 (50.8) | 1.00 (25.4) | / | 1.41 (35.8) | / | 2.00 (50.8) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 4.89 (124.1) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 15NSS-FRT4-1-S | FRT4 | | 2.00 (50.8) | 1.00 (25.4) | / | 1.41 (35.8) | / | 2.00 (50.8) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 4.89 (124.1) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 15NSS-FNS6-1-S | FNS6 | 0.219 (5.56) | 2.50 (63.5) | 1.25 (31.8) | / | 1.41 (35.8) | / | 2.00 (50.8) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 4.85 (123.1) | 0.62 (15.8) | 0.38 (9.7) | 1.00 (25.4) |
| 15NSS-FRT6-1-S | FRT6 | | 2.50 (63.5) | 1.25 (31.8) | / | 1.41 (35.8) | / | 2.00 (50.8) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 4.85 (123.1) | 0.62 (15.8) | 0.38 (9.7) | 1.00 (25.4) |
| 15NSS-FNS8-1-S | FNS8 | 0.312 (7.92) | 3.00 (76.2) | 1.50 (38.1) | / | 2.06 (52.3) | / | 2.88 (73.2) | 4.00 (101.6) | 1.00 (25.4) | 0.34 (8.6) | 6.18 (157.2) | 0.69 (17.5) | 0.50 (12.7) | 1.38 (35.1) |
| 15NSS-FRT8-1-S | FRT8 | | 3.00 (76.2) | 1.50 (38.1) | / | 2.06 (52.3) | / | 2.88 (73.2) | 4.00 (101.6) | 1.00 (25.4) | 0.34 (8.6) | 6.18 (157.2) | 0.69 (17.5) | 0.50 (12.7) | 1.38 (35.1) |

| 15N Series (Angle) | | | | | | | | | | | | | | | |
|--------------------|------------|------------------|----------------------|----------------|---|----------------|----|----------------|-----------------|----------------|---------------|-----------------|----------------|----------------|----------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 15NSS-FNS2-2-S | FNS2 | 0.078 (1.98) | 1.50 (38.1) | 0.75 (19.1) | / | 0.81 (20.6) | / | 1.38 (34.9) | 1.75 (44.5) | 0.62 (15.8) | 0.17 (4.3) | 3.13 (79.5) | 0.56 (14.2) | 0.31 (7.9) | 0.63 (15.9) |
| 15NSS-FRT2-2-S | FRT2 | | 1.50 (38.1) | 0.75 (19.1) | / | 0.81 (20.6) | / | 1.38 (34.9) | 1.75 (44.5) | 0.62 (15.8) | 0.17 (4.3) | 3.13 (79.5) | 0.56 (14.2) | 0.31 (7.9) | 0.63 (15.9) |
| 15NSS-FNS4-2-S | FNS4 | 0.203 (5.2) | 2.00 (50.8) | 1.00 (25.4) | / | 1.41 (35.8) | / | 2.44 (62.0) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 5.33 (135.4) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 15NSS-FRT4-2-S | FRT4 | | 2.00 (50.8) | 1.00 (25.4) | / | 1.41 (35.8) | / | 2.44 (62.0) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 5.33 (135.4) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 15NSS-FNS6-2-S | FNS6 | 0.219 (5.56) | 2.50 (63.5) | 1.25 (31.8) | / | 1.41 (35.8) | / | 2.44 (62.0) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 5.34 (135.7) | 0.62 (15.8) | 0.38 (9.7) | 1.00 (25.4) |
| 15NSS-FRT6-2-S | FRT6 | | 2.50 (63.5) | 1.25 (31.8) | / | 1.41 (35.8) | / | 2.44 (62.0) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 5.34 (135.7) | 0.62 (15.8) | 0.38 (9.7) | 1.00 (25.4) |
| 15NSS-FNS8-2-S | FNS8 | 0.312 (7.92) | 3.00 (76.2) | 1.50 (38.1) | / | 2.06 (52.3) | / | 3.38 (85.9) | 4.00 (101.6) | 1.00 (25.4) | 0.34 (8.6) | 6.69 (169.9) | 0.69 (17.5) | 0.50 (12.7) | 1.38 (35.1) |
| 15NSS-FRT8-2-S | FRT8 | | 3.00 (76.2) | 1.50 (38.1) | / | 2.06 (52.3) | / | 3.38 (85.9) | 4.00 (101.6) | 1.00 (25.4) | 0.34 (8.6) | 6.69 (169.9) | 0.69 (17.5) | 0.50 (12.7) | 1.38 (35.1) |

| 15N Series (3-way/2 on pressure) | | | | | | | | | | | | | | | |
|----------------------------------|------------|------------------|----------------------|----------------|---|----------------|----|----------------|-----------------|----------------|---------------|-----------------|----------------|----------------|----------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 15NSS-FNS2-4-S | FNS2 | 0.078 (1.98) | 1.50 (38.1) | 0.75 (19.1) | / | 0.81 (20.6) | / | 1.57 (40.0) | 1.75 (44.5) | 0.62 (15.8) | 0.17 (4.3) | 3.33 (84.6) | 0.56 (14.2) | 0.31 (7.9) | 0.63 (15.9) |
| 15NSS-FRT2-4-S | FRT2 | | 1.50 (38.1) | 0.75 (19.1) | / | 0.81 (20.6) | / | 1.57 (40.0) | 1.75 (44.5) | 0.62 (15.8) | 0.17 (4.3) | 3.33 (84.6) | 0.56 (14.2) | 0.31 (7.9) | 0.63 (15.9) |
| 15NSS-FNS4-4-S | FNS4 | 0.203 (5.2) | 2.00 (50.8) | 1.00 (25.4) | / | 1.41 (35.8) | / | 2.62 (66.6) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 5.51 (140.0) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 15NSS-FRT4-4-S | FRT4 | | 2.00 (50.8) | 1.00 (25.4) | / | 1.41 (35.8) | / | 2.62 (66.6) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 5.51 (140.0) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 15NSS-FNS6-4-S | FNS6 | 0.219 (5.56) | 2.50 (63.5) | 1.25 (31.8) | / | 1.41 (35.8) | / | 2.62 (66.6) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 5.47 (138.9) | 0.62 (15.8) | 0.38 (9.7) | 1.00 (25.4) |
| 15NSS-FRT6-4-S | FRT6 | | 2.50 (63.5) | 1.25 (31.8) | / | 1.41 (35.8) | / | 2.62 (66.6) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 5.47 (138.9) | 0.62 (15.8) | 0.38 (9.7) | 1.00 (25.4) |
| 15NSS-FNS8-4-S | FNS8 | 0.312 (7.92) | 3.00 (76.2) | 1.50 (38.1) | / | 2.06 (52.3) | / | 3.62 (92.0) | 4.00 (101.6) | 1.00 (25.4) | 0.34 (8.6) | 6.94 (176.2) | 0.69 (17.5) | 0.50 (12.7) | 1.38 (35.1) |
| 15NSS-FRT8-4-S | FRT8 | | 3.00 (76.2) | 1.50 (38.1) | / | 2.06 (52.3) | / | 3.62 (92.0) | 4.00 (101.6) | 1.00 (25.4) | 0.34 (8.6) | 6.94 (176.2) | 0.69 (17.5) | 0.50 (12.7) | 1.38 (35.1) |

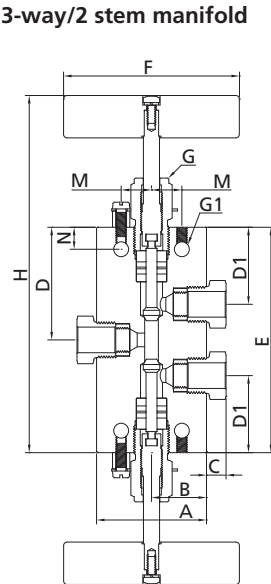
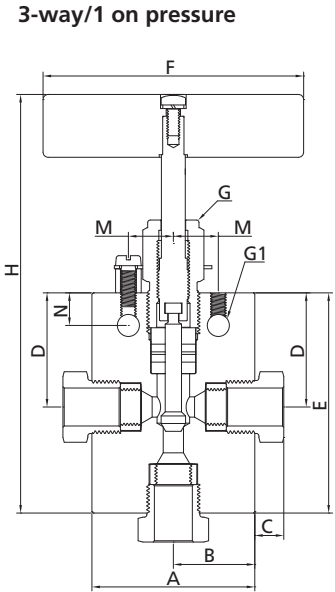
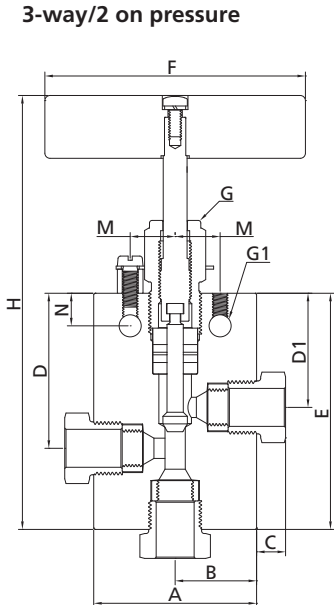
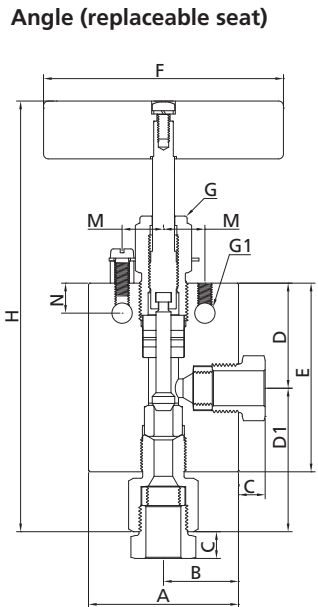
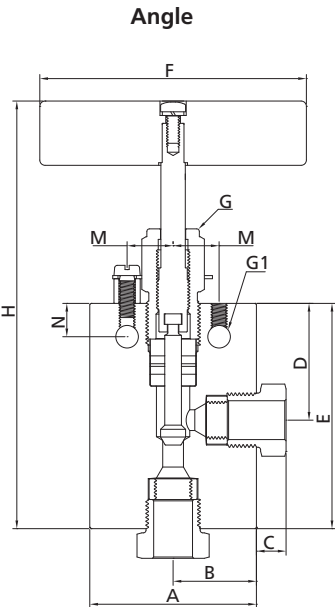
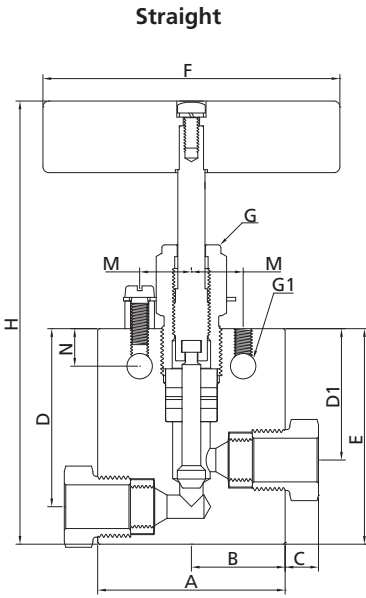
Ordering Information and Dimensions (Pipe Connection)

| 15N Series (3-way/1 on pressure) | | | | | | | | | | | | | | | |
|----------------------------------|------------|------------------|----------------------|----------------|---|----------------|----|----------------|-----------------|----------------|---------------|-----------------|----------------|----------------|----------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 15NSS-FNS2-5-S | FNS2 | 0.078 (1.98) | 1.50 (38.1) | 0.75 (19.1) | / | 0.81 (20.6) | / | 1.38 (35.0) | 1.75 (44.5) | 0.62 (15.8) | 0.17 (4.3) | 3.13 (79.5) | 0.56 (14.2) | 0.31 (7.9) | 0.63 (15.9) |
| 15NSS-FRT2-5-S | FRT2 | | 2.00 (50.8) | 1.00 (25.4) | | 1.41 (35.8) | | 2.44 (62.0) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 5.33 (135.4) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 15NSS-FNS6-5-S | FNS6 | 0.219 (5.56) | 2.50 (63.5) | 1.25 (31.8) | / | 1.41 (35.8) | / | 2.44 (62.0) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 5.34 (135.7) | 0.62 (15.8) | 0.38 (9.7) | 1.00 (25.4) |
| 15NSS-FRT6-5-S | FRT6 | | 3.00 (76.2) | 1.50 (38.1) | | 2.06 (52.3) | | 3.38 (85.9) | 4.00 (101.6) | 1.00 (25.4) | 0.34 (8.6) | 6.69 (169.9) | 0.69 (17.5) | 0.50 (12.7) | 1.38 (35.1) |
| 15NSS-FNS8-5-S | FNS8 | 0.312 (7.92) | 3.00 (76.2) | 1.50 (38.1) | / | 2.06 (52.3) | / | 3.38 (85.9) | 4.00 (101.6) | 1.00 (25.4) | 0.34 (8.6) | 6.69 (169.9) | 0.69 (17.5) | 0.50 (12.7) | 1.38 (35.1) |
| 15NSS-FRT8-5-S | FRT8 | | | | | | | | | | | | | | |

| 15N Series (3-way/2 stem manifold) | | | | | | | | | | | | | | | |
|------------------------------------|------------|------------------|----------------------|----------------|---|----------------|----------------|-----------------|-----------------|----------------|---------------|-----------------|----------------|----------------|----------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 15NSS-FNS2-6-S | FNS2 | 0.078 (1.98) | 1.50 (38.1) | 0.75 (19.1) | / | 1.00 (25.6) | 0.68 (17.2) | 2.02 (51.2) | 1.75 (44.5) | 0.62 (15.8) | 0.17 (4.3) | 3.77 (95.8) | 0.56 (14.2) | 0.31 (7.9) | 0.63 (15.9) |
| 15NSS-FRT2-6-S | FRT2 | | 2.00 (50.8) | 1.00 (25.4) | | 1.69 (42.9) | 1.19 (30.2) | 3.38 (85.9) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 6.27 (159.2) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 15NSS-FNS6-6-S | FNS6 | 0.219 (5.56) | 2.50 (63.5) | 1.25 (31.8) | / | 1.69 (42.9) | 1.19 (30.2) | 3.38 (85.9) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 6.22 (158.1) | 0.62 (15.8) | 0.38 (9.7) | 1.00 (25.4) |
| 15NSS-FRT6-6-S | FRT6 | | 3.00 (76.2) | 1.50 (38.1) | | 2.56 (65.1) | 1.75 (44.5) | 5.12 (130.1) | 4.00 (101.6) | 1.00 (25.4) | 0.34 (8.6) | 8.43 (214.2) | 0.69 (17.5) | 0.50 (12.7) | 1.38 (35.1) |
| 15NSS-FNS8-6-S | FNS8 | 0.312 (7.92) | 3.00 (76.2) | 1.50 (38.1) | / | 2.56 (65.1) | 1.75 (44.5) | 5.12 (130.1) | 4.00 (101.6) | 1.00 (25.4) | 0.34 (8.6) | 8.43 (214.2) | 0.69 (17.5) | 0.50 (12.7) | 1.38 (35.1) |
| 15NSS-FRT8-6-S | FRT8 | | | | | | | | | | | | | | |

- NOTES: 1. G is the drill dimension of packing gland mounting hole.
 2. G1 is the dimension of bracket mounting hole.
 3. panel mounting drill size: 0.25" all valves.
 4. H is the dimension of stem in closed position.
 5. All dimensions for reference only and subject to change. For dimensions not shown above, please contact FITOK group or our authorized distributors.

Ordering Information and Dimensions (Tubing Connection)



| |
|-------------------------------------|
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Ordering Information and Dimensions (Tubing Connection)

| 20N Series (Straight) | | | | | | | | | | | | | | | |
|-----------------------|------------|------------------|----------------------|----------------|----------------|----------------|----------------|-----------------|------------------|----------------|----------------|-----------------|----------------|----------------|----------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 20NSS-MF4-1-S | MF4 | 0.125 (3.18) | 2.00 (50.8) | 1.00 (25.4) | 0.38 (9.7) | 1.62 (41.2) | 1.19 (30.2) | 2.00 (50.8) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 4.85 (123.1) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 20NSS-MF6-1-S | MF6 | 0.204 (5.18) | 2.00 (50.8) | 1.00 (25.4) | 0.44 (11.2) | 1.62 (41.2) | 1.19 (30.2) | 2.00 (50.8) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 4.89 (124.2) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 20NSS-MF9-1-S | MF9 | 0.312 (7.92) | 2.50 (63.5) | 1.25 (31.8) | 0.55 (14.0) | 2.37 (60.3) | 1.75 (44.5) | 2.88 (73.2) | 4.00 (101.6) | 1.00 (25.4) | 0.34 (8.6) | 6.18 (157.2) | 0.69 (17.5) | 0.50 (12.7) | 1.00 (25.4) |
| 20NSS-MF12-1-S | MF12 | 0.438 (11.13) | 3.00 (76.2) | 1.50 (38.1) | 0.60 (15.2) | 3.00 (76.2) | 2.25 (57.2) | 3.75 (95.3) | 10.25 (260.4) | 1.19 (30.2) | 0.44 (11.2) | 7.37 (187.2) | 0.88 (22.4) | 0.63 (16.0) | 1.38 (35.1) |
| 20NSS-MF16-1-S | MF16 | 0.562 (14.27) | 4.12 (104.6) | 2.06 (52.3) | 0.74 (18.7) | 3.75 (95.3) | 2.81 (71.4) | 4.63 (117.6) | 10.25 (260.4) | 1.62 (41.2) | 0.56 (14.2) | 9.45 (240.1) | 1.25 (31.8) | 1.13 (28.7) | 1.75 (44.5) |

| 20N Series (Angle) | | | | | | | | | | | | | | | |
|--------------------|------------|------------------|----------------------|----------------|----------------|----------------|----|-----------------|------------------|----------------|----------------|-----------------|----------------|----------------|----------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 20NSS-MF4-2-S | MF4 | 0.125 (3.18) | 2.00 (50.8) | 1.00 (25.4) | 0.38 (9.7) | 1.19 (30.2) | / | 2.44 (61.9) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 5.28 (134.2) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 20NSS-MF6-2-S | MF6 | 0.204 (5.18) | 2.00 (50.8) | 1.00 (25.4) | 0.44 (11.2) | 1.19 (30.2) | / | 2.44 (61.9) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 5.33 (135.4) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 20NSS-MF9-2-S | MF9 | 0.312 (7.92) | 2.50 (63.5) | 1.25 (31.8) | 0.55 (14.0) | 1.75 (44.5) | / | 3.38 (85.9) | 4.00 (101.6) | 1.00 (25.4) | 0.34 (8.6) | 6.69 (170.0) | 0.69 (17.5) | 0.50 (12.7) | 1.00 (25.4) |
| 20NSS-MF12-2-S | MF12 | 0.438 (11.13) | 3.00 (76.2) | 1.50 (38.1) | 0.60 (15.2) | 2.25 (57.2) | / | 4.25 (108.0) | 10.25 (260.4) | 1.19 (30.2) | 0.44 (11.2) | 7.87 (199.9) | 0.88 (22.4) | 0.63 (16.0) | 1.38 (35.1) |
| 20NSS-MF16-2-S | MF16 | 0.562 (14.27) | 4.12 (104.6) | 2.06 (52.3) | 0.74 (18.7) | 2.81 (71.4) | / | 5.12 (130.1) | 10.25 (260.4) | 1.62 (41.2) | 0.56 (14.2) | 9.94 (252.6) | 1.25 (31.8) | 1.13 (28.7) | 1.75 (44.5) |

| 20N Series (Angle/replaceable seat) | | | | | | | | | | | | | | | |
|-------------------------------------|------------|------------------|----------------------|----------------|----------------|----------------|-----------------|-----------------|------------------|----------------|----------------|------------------|----------------|----------------|----------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 20NSS-MF4-3-S | MF4 | 0.125 (3.18) | 2.00 (50.8) | 1.00 (25.4) | 0.38 (9.7) | 1.19 (30.2) | 2.13 (54.0) | 2.25 (57.2) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 6.10 (154.9) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 20NSS-MF6-3-S | MF6 | 0.204 (5.18) | 2.00 (50.8) | 1.00 (25.4) | 0.44 (11.2) | 1.19 (30.2) | 2.13 (54.0) | 2.25 (57.2) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 6.16 (156.5) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 20NSS-MF9-3-S | MF9 | 0.312 (7.92) | 2.50 (63.5) | 1.25 (31.8) | 0.55 (14.0) | 1.75 (44.5) | 2.50 (63.5) | 3.13 (79.4) | 4.00 (101.6) | 1.00 (25.4) | 0.34 (8.6) | 7.58 (192.1) | 0.69 (17.5) | 0.50 (12.7) | 1.00 (25.4) |
| 20NSS-MF12-3-S | MF12 | 0.438 (11.13) | 3.00 (76.2) | 1.50 (38.1) | 0.60 (15.2) | 2.25 (57.2) | 3.44 (87.4) | 4.25 (108.0) | 10.25 (260.4) | 1.19 (30.2) | 0.44 (11.2) | 9.30 (236.3) | 0.88 (22.4) | 0.63 (16.0) | 1.38 (35.1) |
| 20NSS-MF16-3-S | MF16 | 0.562 (14.27) | 4.12 (104.6) | 2.06 (52.3) | 0.74 (18.7) | 2.81 (71.4) | 4.22 (107.4) | 5.25 (133.4) | 10.25 (260.4) | 1.62 (41.2) | 0.56 (14.2) | 11.86 (301.3) | 1.25 (31.8) | 1.13 (28.7) | 1.75 (44.5) |

Ordering Information and Dimensions (Tubing Connection)

| 20N Series (3-way/2 on pressure) | | | | | | | | | | | | | | | |
|----------------------------------|------------|------------------|----------------------|----------------|----------------|----------------|----------------|-----------------|------------------|----------------|----------------|------------------|----------------|----------------|----------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 20NSS-MF4-4-S | MF4 | 0.125 (3.18) | 2.00 (50.8) | 1.00 (25.4) | 0.38 (9.7) | 1.63 (41.3) | 1.19 (30.2) | 2.63 (66.7) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 5.47 (139.0) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 20NSS-MF6-4-S | MF6 | 0.204 (5.18) | 2.00 (50.8) | 1.00 (25.4) | 0.44 (11.2) | 1.63 (41.3) | 1.19 (30.2) | 2.63 (66.7) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 5.52 (140.1) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 20NSS-MF9-4-S | MF9 | 0.312 (7.92) | 2.50 (63.5) | 1.25 (31.8) | 0.55 (14.0) | 2.37 (60.3) | 1.75 (44.5) | 3.63 (92.1) | 4.00 (101.6) | 1.00 (25.4) | 0.34 (8.6) | 6.94 (176.3) | 0.69 (17.5) | 0.50 (12.7) | 1.00 (25.4) |
| 20NSS-MF12-4-S | MF12 | 0.438 (11.13) | 3.00 (76.2) | 1.50 (38.1) | 0.60 (15.2) | 3.00 (76.2) | 2.25 (57.2) | 4.63 (117.5) | 10.25 (260.4) | 1.19 (30.2) | 0.44 (11.2) | 8.24 (209.4) | 0.88 (22.4) | 0.63 (16.0) | 1.38 (35.1) |
| 20NSS-MF16-4-S | MF16 | 0.562 (14.27) | 4.12 (104.6) | 2.06 (52.3) | 0.74 (18.7) | 3.75 (95.3) | 2.81 (71.4) | 5.88 (149.4) | 10.25 (260.4) | 1.62 (41.2) | 0.56 (14.2) | 10.70 (271.9) | 1.25 (31.8) | 1.13 (28.7) | 1.75 (44.5) |

| 20N Series (3-way/1 on pressure) | | | | | | | | | | | | | | | |
|----------------------------------|------------|------------------|----------------------|----------------|----------------|----------------|----|-----------------|------------------|----------------|----------------|-----------------|----------------|----------------|----------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 20NSS-MF4-5-S | MF4 | 0.125 (3.18) | 2.00 (50.8) | 1.00 (25.4) | 0.38 (9.7) | 1.19 (30.2) | / | 2.44 (61.9) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 5.28 (134.2) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 20NSS-MF6-5-S | MF6 | 0.204 (5.18) | 2.00 (50.8) | 1.00 (25.4) | 0.44 (11.2) | 1.19 (30.2) | / | 2.44 (61.9) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 5.33 (135.4) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 20NSS-MF9-5-S | MF9 | 0.312 (7.92) | 2.50 (63.5) | 1.25 (31.8) | 0.55 (14.0) | 1.75 (44.5) | / | 3.38 (85.9) | 4.00 (101.6) | 1.00 (25.4) | 0.34 (8.6) | 6.69 (170.0) | 0.69 (17.5) | 0.50 (12.7) | 1.00 (25.4) |
| 20NSS-MF12-5-S | MF12 | 0.438 (11.13) | 3.00 (76.2) | 1.50 (38.1) | 0.60 (15.2) | 2.25 (57.2) | / | 4.25 (108.0) | 10.25 (260.4) | 1.19 (30.2) | 0.44 (11.2) | 7.87 (199.9) | 0.88 (22.4) | 0.63 (16.0) | 1.38 (35.1) |
| 20NSS-MF16-5-S | MF16 | 0.562 (14.27) | 4.12 (104.6) | 2.06 (52.3) | 0.74 (18.7) | 2.81 (71.4) | / | 5.12 (130.1) | 10.25 (260.4) | 1.62 (41.2) | 0.56 (14.2) | 9.94 (252.6) | 1.25 (31.8) | 1.13 (28.7) | 1.75 (44.5) |

| 20N Series (3-way/2 stem manifold) | | | | | | | | | | | | | | | |
|------------------------------------|------------|------------------|----------------------|----------------|----------------|----------------|----------------|-----------------|------------------|----------------|----------------|------------------|----------------|----------------|----------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 20NSS-MF4-6-S | MF4 | 0.125 (3.18) | 2.00 (50.8) | 1.00 (25.4) | 0.38 (9.7) | 1.69 (42.9) | 1.19 (30.2) | 3.38 (85.7) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 6.23 (158.1) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 20NSS-MF6-6-S | MF6 | 0.204 (5.18) | 2.00 (50.8) | 1.00 (25.4) | 0.44 (11.2) | 1.69 (42.9) | 1.19 (30.2) | 3.38 (85.7) | 3.00 (76.2) | 0.75 (19.1) | 0.22 (5.6) | 6.24 (158.6) | 0.62 (15.8) | 0.38 (9.7) | 0.75 (19.1) |
| 20NSS-MF9-6-S | MF9 | 0.312 (7.92) | 2.50 (63.5) | 1.25 (31.8) | 0.55 (14.0) | 2.56 (65.1) | 1.75 (44.5) | 5.13 (130.2) | 4.00 (101.6) | 1.00 (25.4) | 0.34 (8.6) | 8.44 (214.4) | 0.69 (17.5) | 0.50 (12.7) | 1.00 (25.4) |
| 20NSS-MF12-6-S | MF12 | 0.438 (11.13) | 3.00 (76.2) | 1.50 (38.1) | 0.60 (15.2) | 3.00 (76.2) | 2.25 (57.2) | 6.50 (165.1) | 10.25 (260.4) | 1.19 (30.2) | 0.44 (11.2) | 10.11 (257.0) | 0.88 (22.4) | 0.63 (16.0) | 1.38 (35.1) |
| 20NSS-MF16-6-S | MF16 | 0.562 (14.27) | 4.12 (104.6) | 2.06 (52.3) | 0.74 (18.7) | 3.75 (95.3) | 2.81 (71.4) | 7.50 (190.5) | 10.25 (260.4) | 1.62 (41.2) | 0.56 (14.2) | 12.32 (313.0) | 1.25 (31.8) | 1.13 (28.7) | 1.75 (44.5) |

Fittings

Tubing

Quick Couplings

Line Filters

Valves

Sour Service Products

Subsea Valves

Tools and Installation Instructions

Technical Information

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| 30N Series (Straight) | | | | | | | | | | | | | | | |
|-----------------------|------------|------------------|----------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|---------------|-----------------|----------------|---------------|----------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 30NSS-HF4-1-S | HF4 | 0.094 (2.39) | 2.00 (50.8) | 1.00 (25.4) | 0.47 (11.9) | 1.50 (38.1) | 1.12 (28.5) | 2.00 (50.8) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 4.69 (119.1) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 30NSS-HF6-1-S | HF6 | 0.125 (3.18) | 2.00 (50.8) | 1.00 (25.4) | 0.61 (15.6) | 1.50 (38.1) | 1.12 (28.5) | 2.00 (50.8) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 4.69 (119.1) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 30NSS-HF9-1-S | HF9 | 0.125 (3.18) | 2.62 (66.6) | 1.31 (33.3) | 0.95 (24.1) | 1.56 (39.6) | 1.12 (28.5) | 2.44 (62.0) | 3.00 (76.2) | 1.00 (25.4) | 0.28 (7.1) | 5.13 (130.3) | 0.69 (17.5) | 0.38 (9.7) | 1.50 (38.1) |

| 30N Series (Angle) | | | | | | | | | | | | | | | |
|--------------------|------------|------------------|----------------------|----------------|----------------|----------------|----|----------------|----------------|----------------|---------------|-----------------|----------------|---------------|----------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 30NSS-HF4-2-S | HF4 | 0.094 (2.39) | 2.00 (50.8) | 1.00 (25.4) | 0.47 (11.9) | 1.12 (28.5) | / | 2.00 (50.8) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 4.69 (119.1) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 30NSS-HF6-2-S | HF6 | 0.125 (3.18) | 2.00 (50.8) | 1.00 (25.4) | 0.61 (15.6) | 1.12 (28.5) | / | 2.25 (57.2) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 4.95 (125.7) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 30NSS-HF9-2-S | HF9 | 0.125 (3.18) | 2.62 (66.6) | 1.31 (33.3) | 0.95 (24.1) | 1.12 (28.5) | / | 2.44 (62.0) | 3.00 (76.2) | 1.00 (25.4) | 0.28 (7.1) | 5.13 (130.3) | 0.69 (17.5) | 0.38 (9.7) | 1.50 (38.1) |

| 30N Series (Angle/replaceable seat) | | | | | | | | | | | | | | | |
|-------------------------------------|------------|------------------|----------------------|----------------|----------------|----------------|-----------------|----------------|----------------|----------------|---------------|-----------------|----------------|---------------|----------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 30NSS-HF4-3-S | HF4 | 0.094 (2.39) | 2.00 (50.8) | 1.00 (25.4) | 0.47 (11.9) | 1.12 (28.5) | 2.06 (52.3) | 2.38 (60.5) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 5.88 (149.2) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 30NSS-HF6-3-S | HF6 | 0.125 (3.18) | 2.00 (50.8) | 1.00 (25.4) | 0.61 (15.6) | 1.12 (28.5) | 2.31 (58.67) | 2.38 (60.5) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 6.12 (155.4) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 30NSS-HF9-3-S | HF9 | 0.125 (3.18) | 2.62 (66.6) | 1.31 (33.3) | 0.95 (24.1) | 1.12 (28.6) | 2.57 (65.3) | 2.46 (62.4) | 3.00 (76.2) | 1.00 (25.4) | 0.28 (7.1) | 6.39 (162.4) | 0.69 (17.5) | 0.38 (9.7) | 1.50 (38.1) |

| 30N Series (3-way/2 on pressure) | | | | | | | | | | | | | | | |
|----------------------------------|------------|------------------|----------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|---------------|-----------------|----------------|---------------|----------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 30NSS-HF4-4-S | HF4 | 0.094 (2.39) | 2.00 (50.8) | 1.00 (25.4) | 0.47 (11.9) | 1.50 (38.1) | 1.12 (28.5) | 2.12 (53.9) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 4.81 (122.1) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 30NSS-HF6-4-S | HF6 | 0.125 (3.18) | 2.00 (50.8) | 1.00 (25.4) | 0.61 (15.6) | 1.50 (38.1) | 1.12 (28.5) | 2.50 (63.5) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 5.19 (131.9) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 30NSS-HF9-4-S | HF9 | 0.125 (3.18) | 2.62 (66.6) | 1.31 (33.3) | 0.95 (24.1) | 1.56 (39.6) | 1.12 (28.5) | 2.88 (73.2) | 3.00 (76.2) | 1.00 (25.4) | 0.28 (7.1) | 5.57 (141.5) | 0.69 (17.5) | 0.38 (9.7) | 1.50 (38.1) |

Ordering Information and Dimensions (Tubing Connection)

| 30N Series (3-way/1 on pressure) | | | | | | | | | | | | | | | |
|----------------------------------|------------|------------------|----------------------|----------------|----------------|----------------|----|----------------|----------------|----------------|---------------|-----------------|----------------|---------------|----------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 30NSS-HF4-5-S | HF4 | 0.094 (2.39) | 2.00 (50.8) | 1.00 (25.4) | 0.47 (11.9) | 1.12 (28.5) | / | 2.00 (50.8) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 4.69 (119.1) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 30NSS-HF6-5-S | HF6 | 0.125 (3.18) | 2.00 (50.8) | 1.00 (25.4) | 0.61 (15.6) | 1.12 (28.5) | / | 2.25 (57.2) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 4.95 (125.7) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 30NSS-HF9-5-S | HF9 | 0.125 (3.18) | 2.62 (66.6) | 1.31 (33.3) | 0.95 (24.1) | 1.12 (28.5) | / | 2.44 (62.0) | 3.00 (76.2) | 1.00 (25.4) | 0.28 (7.1) | 5.13 (130.3) | 0.69 (17.5) | 0.38 (9.7) | 1.50 (38.1) |

| 30N Series (3-way/2 stem manifold) | | | | | | | | | | | | | | | |
|------------------------------------|------------|------------------|----------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|---------------|-----------------|----------------|---------------|----------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 30NSS-HF4-6-S | HF4 | 0.094 (2.39) | 2.00 (50.8) | 1.00 (25.4) | 0.47 (11.9) | 1.53 (38.9) | 1.12 (28.5) | 3.06 (77.7) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 5.75 (146.0) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 30NSS-HF6-6-S | HF6 | 0.125 (3.18) | 2.00 (50.8) | 1.00 (25.4) | 0.61 (15.6) | 1.62 (41.2) | 1.12 (28.5) | 3.25 (82.6) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 5.94 (150.9) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 30NSS-HF9-6-S | HF9 | 0.125 (3.18) | 2.62 (66.6) | 1.31 (33.3) | 0.95 (24.1) | 1.88 (47.8) | 1.12 (28.5) | 3.75 (95.3) | 3.00 (76.2) | 1.00 (25.4) | 0.28 (7.1) | 6.44 (163.6) | 0.69 (17.5) | 0.38 (9.7) | 1.50 (38.1) |

| 60N Series (Straight) | | | | | | | | | | | | | | | |
|-----------------------|------------|------------------|----------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|---------------|-----------------|----------------|---------------|----------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 60NSS-HF4-TG1-S | HF4 | 0.063 (1.59) | 2.00 (50.8) | 1.00 (25.4) | 0.47 (11.9) | 1.69 (42.9) | 1.31 (33.3) | 2.13 (54.0) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 4.77 (121.1) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 60NSS-HF6-TG1-S | HF6 | 0.063 (1.59) | 2.00 (50.8) | 1.00 (25.4) | 0.61 (15.6) | 1.69 (42.9) | 1.31 (33.3) | 2.25 (57.2) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 4.89 (124.3) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 60NSS-HF9-TG1-S | HF9 | 0.078 (1.98) | 2.62 (66.6) | 1.31 (33.3) | 0.95 (24.1) | 1.75 (44.5) | 1.31 (33.3) | 2.50 (63.5) | 3.00 (76.2) | 1.00 (25.4) | 0.28 (7.1) | 5.14 (130.6) | 0.69 (17.5) | 0.38 (9.7) | 1.50 (38.1) |

| 60N Series (Angle) | | | | | | | | | | | | | | | |
|--------------------|------------|------------------|----------------------|----------------|----------------|----------------|----|----------------|----------------|----------------|---------------|-----------------|----------------|---------------|----------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 60NSS-HF4-TG2-S | HF4 | 0.063 (1.59) | 2.00 (50.8) | 1.00 (25.4) | 0.47 (11.9) | 1.31 (33.3) | / | 2.38 (60.5) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 5.02 (127.5) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 60NSS-HF6-TG2-S | HF6 | 0.063 (1.59) | 2.00 (50.8) | 1.00 (25.4) | 0.61 (15.6) | 1.31 (33.3) | / | 2.62 (66.6) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 5.26 (133.5) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 60NSS-HF9-TG2-S | HF9 | 0.078 (1.98) | 2.62 (66.6) | 1.31 (33.3) | 0.95 (24.1) | 1.31 (33.3) | / | 2.81 (71.4) | 3.00 (76.2) | 1.00 (25.4) | 0.28 (7.1) | 5.45 (138.5) | 0.69 (17.5) | 0.38 (9.7) | 1.50 (38.1) |

Fittings

Tubing

Quick Couplings

Line Filters

Valves

Sour Service Products

Subsea Valves

Tools and Installation Instructions

Technical Information

Part Number Crossover Charts

Ordering Information and Dimensions (Tubing Connection)

| 60N Series (Angle/replaceable seat) | | | | | | | | | | | | | | | |
|-------------------------------------|------------|------------------|----------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|---------------|-----------------|----------------|---------------|----------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 60NSS-HF4-TG3-S | HF4 | 0.063 (1.59) | 2.00 (50.8) | 1.00 (25.4) | 0.47 (11.9) | 1.31 (33.3) | 2.12 (53.9) | 2.62 (66.6) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 6.07 (154.1) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 60NSS-HF6-TG3-S | HF6 | 0.063 (1.59) | 2.00 (50.8) | 1.00 (25.4) | 0.61 (15.6) | 1.31 (33.3) | 2.36 (59.9) | 2.62 (66.6) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 6.30 (160.1) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 60NSS-HF9-TG3-S | HF9 | 0.078 (1.98) | 2.62 (66.6) | 1.31 (33.3) | 0.95 (24.1) | 1.31 (33.3) | 2.68 (68.8) | 2.62 (66.6) | 3.00 (76.2) | 1.00 (25.4) | 0.28 (7.1) | 6.65 (168.9) | 0.69 (17.5) | 0.38 (9.7) | 1.50 (38.1) |

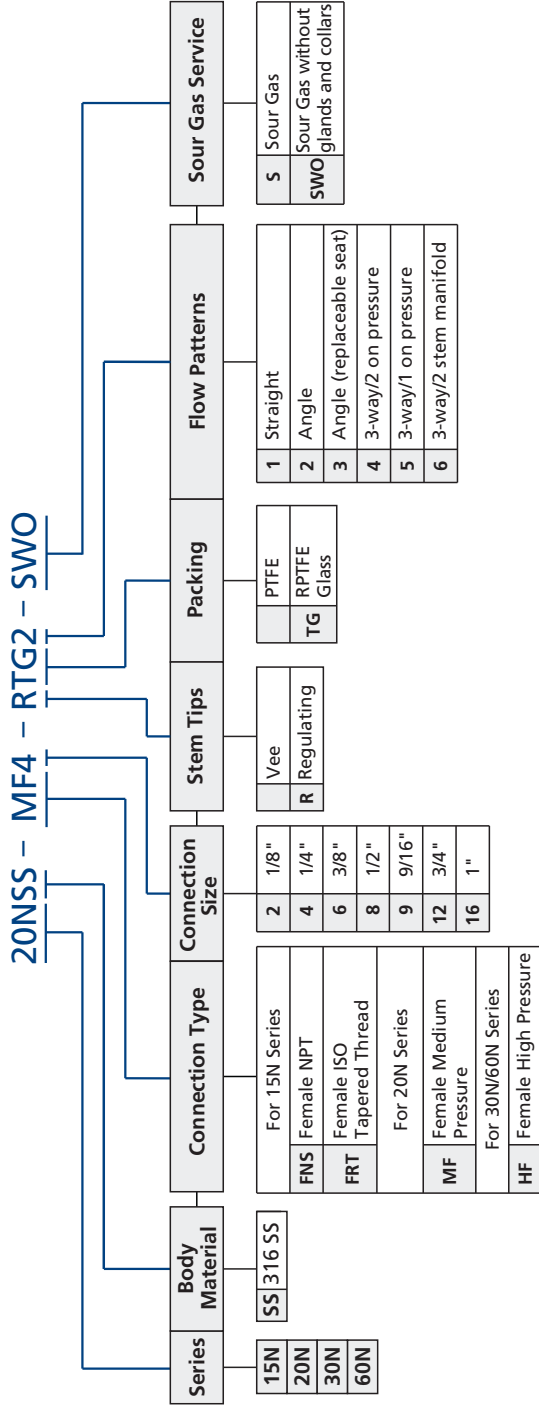
| 60N Series (3-way/2 on pressure) | | | | | | | | | | | | | | | |
|----------------------------------|------------|------------------|----------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|---------------|-----------------|----------------|---------------|----------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 60NSS-HF4-TG4-S | HF4 | 0.063 (1.59) | 2.00 (50.8) | 1.00 (25.4) | 0.47 (11.9) | 1.69 (42.9) | 1.31 (33.3) | 2.38 (60.5) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 5.26 (133.6) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 60NSS-HF6-TG4-S | HF6 | 0.063 (1.59) | 2.00 (50.8) | 1.00 (25.4) | 0.61 (15.6) | 1.69 (42.9) | 1.31 (33.3) | 2.75 (68.9) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 5.34 (135.8) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 60NSS-HF9-TG4-S | HF9 | 0.078 (1.98) | 2.62 (66.6) | 1.31 (33.3) | 0.95 (24.1) | 1.75 (44.5) | 1.31 (33.3) | 3.03 (77.0) | 3.00 (76.2) | 1.00 (25.4) | 0.28 (7.1) | 5.67 (143.9) | 0.69 (17.5) | 0.38 (9.7) | 1.50 (38.1) |

| 60N Series (3-way/1 on pressure) | | | | | | | | | | | | | | | |
|----------------------------------|------------|------------------|----------------------|----------------|----------------|----------------|----|----------------|----------------|----------------|---------------|-----------------|----------------|---------------|----------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 60NSS-HF4-TG5-S | HF4 | 0.063 (1.59) | 2.00 (50.8) | 1.00 (25.4) | 0.47 (11.9) | 1.31 (33.3) | | 2.38 (60.5) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 5.02 (127.5) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 60NSS-HF6-TG5-S | HF6 | 0.063 (1.59) | 2.00 (50.8) | 1.00 (25.4) | 0.61 (15.6) | 1.31 (33.3) | | 2.62 (66.6) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 5.26 (133.5) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 60NSS-HF9-TG5-S | HF9 | 0.078 (1.98) | 2.62 (66.6) | 1.31 (33.3) | 0.95 (24.1) | 1.31 (33.3) | | 2.81 (71.4) | 3.00 (76.2) | 1.00 (25.4) | 0.28 (7.1) | 5.45 (138.5) | 0.69 (17.5) | 0.38 (9.7) | 1.50 (38.1) |

| 60N Series (3-way/2 stem manifold) | | | | | | | | | | | | | | | |
|------------------------------------|------------|------------------|----------------------|----------------|----------------|-----------------|----------------|-----------------|----------------|----------------|---------------|-----------------|----------------|---------------|----------------|
| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | | | |
| | | | A | B | C | D | D1 | E | F | G | G1 | H | M | N | Thickness |
| 60NSS-HF4-TG6-S | HF4 | 0.063 (1.59) | 2.00 (50.8) | 1.00 (25.4) | 0.47 (11.9) | 1.72 (43.69) | 1.31 (33.3) | 3.44 (87.4) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 6.08 (154.5) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 60NSS-HF6-TG6-S | HF6 | 0.063 (1.59) | 2.00 (50.8) | 1.00 (25.4) | 0.61 (15.6) | 1.88 (47.8) | 1.31 (33.3) | 3.75 (95.3) | 3.00 (76.2) | 1.00 (25.4) | 0.22 (5.6) | 6.39 (162.3) | 0.69 (17.5) | 0.38 (9.7) | 1.00 (25.4) |
| 60NSS-HF9-TG6-S | HF9 | 0.078 (1.98) | 2.62 (66.6) | 1.31 (33.3) | 0.95 (24.1) | 2.06 (52.3) | 1.31 (33.3) | 4.12 (104.6) | 3.00 (76.2) | 1.00 (25.4) | 0.28 (7.1) | 6.76 (171.8) | 0.69 (17.5) | 0.38 (9.7) | 1.50 (38.1) |

- NOTES: 1. G is the drill dimension of packing gland mounting hole.
 2. G1 is the dimension of bracket mounting hole.
 3. Panel mounting drill size: 0.25" all valves.
 4. H is the dimension of stem in closed position.
 5. All dimensions for reference only and subject to change. For dimensions not shown above, please contact FITOK group or our authorized distributors.

Ordering Number Description



- NOTES: 1. For more details regarding Medium/High Pressure connections, please see **Connection Information** on I-02.
 2. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number.
 Not all combinations are available.

| | | | | | | | | | |
|------------------------------|-----------------------|-------------------------------------|---------------|-----------------------|--------|--------------|-----------------|--------|----------|
| Part Number Crossover Charts | Technical Information | Tools and Installation Instructions | Subsea Valves | Sour Service Products | Valves | Line Filters | Quick Couplings | Tubing | Fittings |
|------------------------------|-----------------------|-------------------------------------|---------------|-----------------------|--------|--------------|-----------------|--------|----------|

Bleed Valves

Working pressure up to 20,000 psig (1379 bar)

Features

- ⦿ One piece hex construction compact design allows easy installation
- ⦿ Working temperature range: 0°F to 400°F (-17.8°C to 204°C)
- ⦿ 1/8" Female NPT outlet connection
- ⦿ Easy to assemble and replace O-ring
- ⦿ Positive locking screw design prevents accidental removal of the stem
- ⦿ Tee handle for easy operation

Technical Data

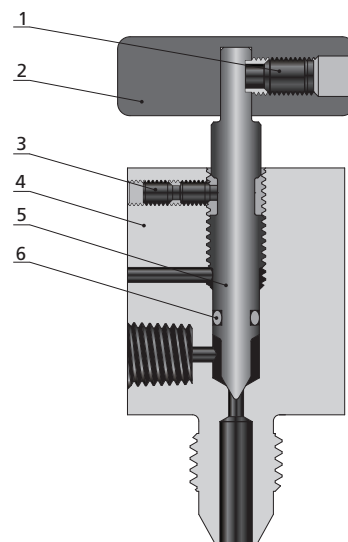
| Series | Inlet Connection | Orifice in. (mm) | Working Pressure psig (bar) |
|--------|------------------|------------------|-----------------------------|
| 20BV | MM6 | 0.094 (2.4) | 10,000 (690) |
| | MM9 | 0.094 (2.4) | 10,000 (690) |
| | MCT6 | 0.094 (2.4) | 10,000 (690) |
| | MCT9 | 0.094 (2.4) | 10,000 (690) |
| 30BV | HM6 | 0.094 (2.4) | 20,000 (1379) |
| | HM9 | 0.094 (2.4) | 20,000 (1379) |
| | HCT6 | 0.094 (2.4) | 20,000 (1379) |
| | HCT9 | 0.094 (2.4) | 20,000 (1379) |

- NOTES: 1. Working pressure shown is in closed position.
 2. Working pressure is 10,000 psig (690 bar) in open position.
 3. A variety of end connections available on request. For connections not shown above, please contact FITOK Group or our authorized distributors.

Standard Materials of Construction

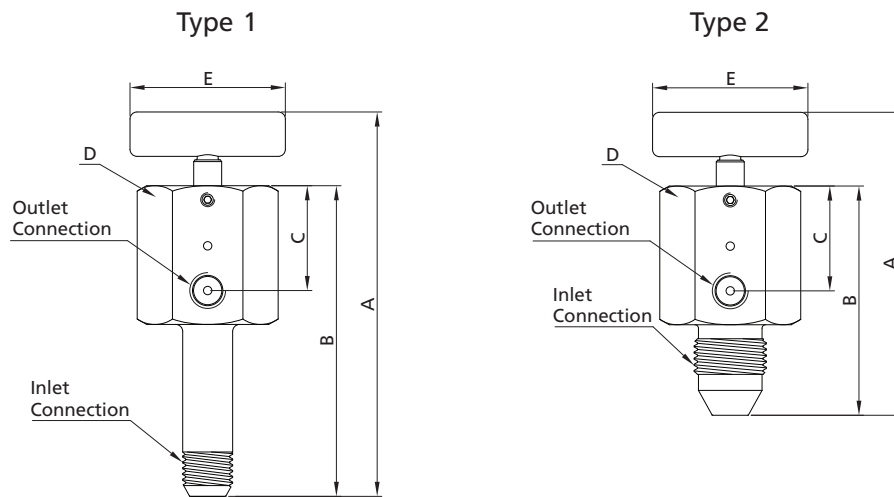
| Item | Component | Material Grade |
|------|---------------|--|
| 1 | Handle Screw | Stainless steel |
| 2 | Handle | Stainless steel |
| 3 | Locking screw | Stainless steel |
| 4 | <i>Body</i> | <i>Annealed 316 SS</i> |
| 5 | <i>Stem</i> | <i>Nickel-based Alloy</i> |
| 6 | <i>O-Ring</i> | <i>FKM</i> |
| | Lubricant | Molybdenum disulfide/Fluorinated-based |

Wetted components listed in italics.



Fittings
 Tubing
 Quick Couplings
 Line Filters
 Valves
 Sour Service Products
 Subsea Valves
 Tools and Installation Instructions
 Technical Information
 Part Number Crossover Charts

Ordering Information and Dimensions



Type 1

| Ordering Number | Inlet Connection | Outlet Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | |
|--------------------|------------------|-------------------|------------------|----------------------|----------------|----------------|----------------|----------------|
| | | | | A | B | C | D | E |
| 20BVSS-MCT6-FNS2-S | MCT6 | FNS2 | 0.094 (2.4) | 3.61 (91.7) | 2.78 (70.5) | 1.18 (30.0) | 1.37 (34.9) | 1.75 (44.5) |
| 20BVSS-MCT9-FNS2-S | MCT9 | FNS2 | 0.094 (2.4) | 3.82 (97.0) | 2.98 (75.8) | 1.18 (30.0) | 1.37 (34.9) | 1.75 (44.5) |
| 30BVSS-HCT6-FNS2-S | HCT6 | FNS2 | 0.094 (2.4) | 4.09 (103.9) | 3.26 (82.7) | 1.18 (30.0) | 1.37 (34.9) | 1.75 (44.5) |
| 30BVSS-HCT9-FNS2-S | HCT9 | FNS2 | 0.094 (2.4) | 4.68 (118.9) | 3.85 (97.7) | 1.18 (30.0) | 1.37 (34.9) | 1.75 (44.5) |

Type 2

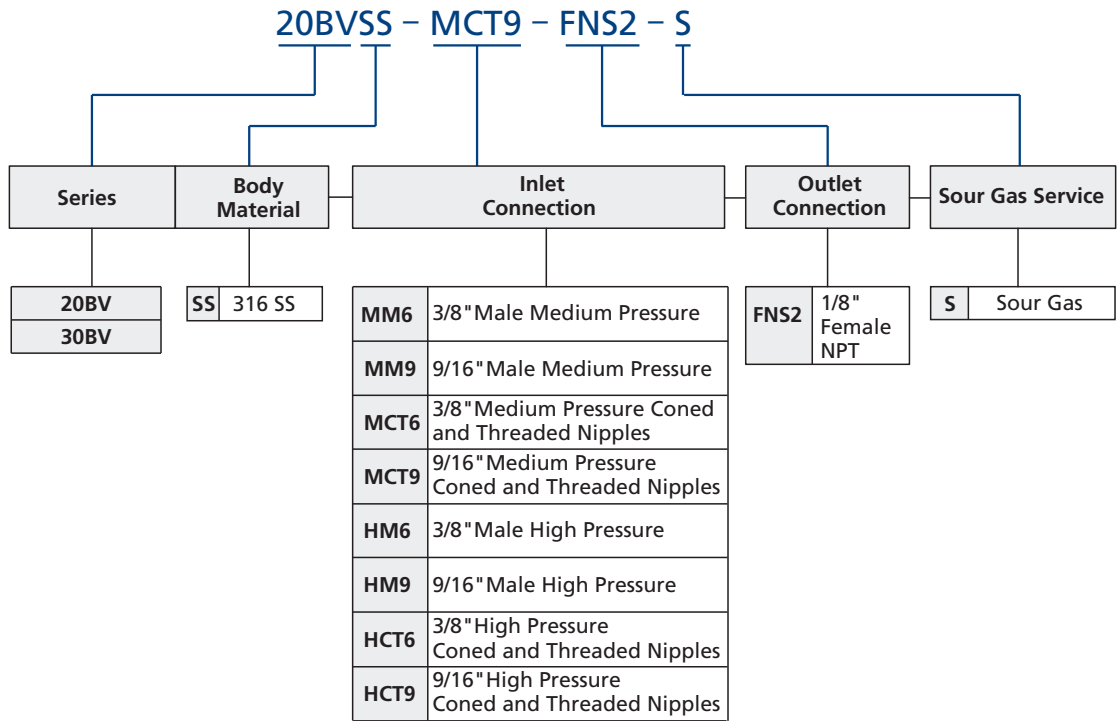
| Ordering Number | Inlet Connection | Outlet Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | |
|-------------------|------------------|-------------------|------------------|----------------------|----------------|----------------|----------------|----------------|
| | | | | A | B | C | D | E |
| 20BVSS-MM6-FNS2-S | MM6 | FNS2 | 0.094 (2.4) | 3.23 (82.0) | 2.39 (60.8) | 1.18 (30.0) | 1.37 (34.9) | 1.75 (44.5) |
| 20BVSS-MM9-FNS2-S | MM9 | FNS2 | 0.094 (2.4) | 3.42 (86.8) | 2.58 (65.6) | 1.18 (30.0) | 1.37 (34.9) | 1.75 (44.5) |
| 30BVSS-HM6-FNS2-S | HM6 | FNS2 | 0.094 (2.4) | 3.27 (83.1) | 2.44 (61.9) | 1.18 (30.0) | 1.37 (34.9) | 1.75 (44.5) |
| 30BVSS-HM9-FNS2-S | HM9 | FNS2 | 0.094 (2.4) | 3.44 (87.4) | 2.61 (66.2) | 1.18 (30.0) | 1.37 (34.9) | 1.75 (44.5) |

NOTES: 1. D is the dimension of hex.

2. A is the dimension of stem in closed position.

3. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

Ordering Number Description



- NOTES: 1. For more details regarding Medium/High Pressure connections, please see **Connection Information** on I-02.
 2. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.

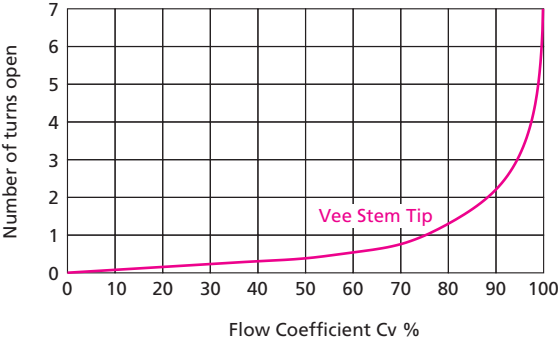
Gauge Valves

Working pressure up to 20,000 psig (1379 bar)

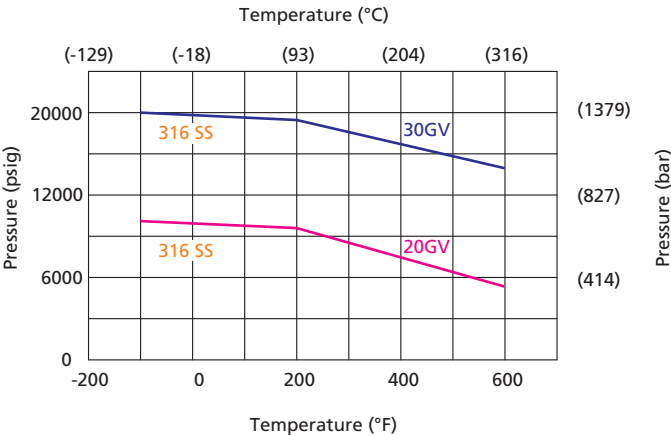
Features

- One inlet, three outlet ports.
- Metal-to-metal seating achieves ideal shutoff, longer stem/seat service lifetime for abrasive flow, excellent corrosion resistance and greater durability for repeated on/off cycles
- Reliable packing gland locking device

Flow Data at 100°F (38°C)



Pressure vs. Temperature Curve



| |
|-------------------------------------|
| Fittings |
| Tubing |
| Quick Couplings |
| Line Filters |
| Valves |
| Sour Service Products |
| Subsea Valves |
| Tools and Installation Instructions |
| Technical Information |
| Part Number Crossover Charts |

Technical Data

| Series | Connection | Orifice in. (mm) | Cv | Working Pressure psig (bar) |
|--------|------------|------------------|------|-----------------------------|
| 20GV | MF6 | 0.125 (3.18) | 0.23 | 10,000 (690) |
| | MF9 | 0.125 (3.18) | 0.23 | 10,000 (690) |
| 30GV | HF6 | 0.125 (3.18) | 0.33 | 20,000 (1379) |
| | HF9 | 0.125 (3.18) | 0.33 | 20,000 (1379) |

NOTES: 1. Packing Options

PTFE is the standard packing material, RPTFE glass also available

PTFE: -100°F~450°F (-73°C~232°C).

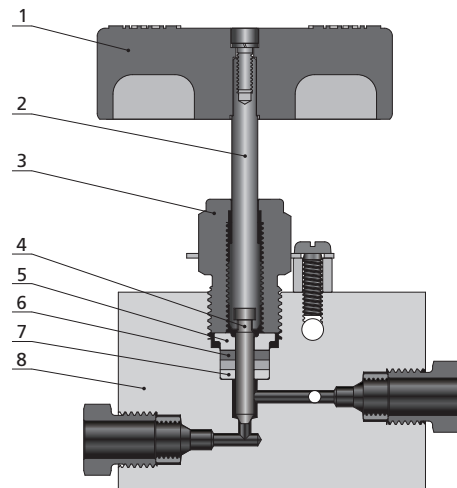
RPTFE glass: -100°F~600°F (-73°C~316°C).

2. A variety of end connections are available upon request. For connections not shown above, please contact FITOK Group or our authorized distributors.

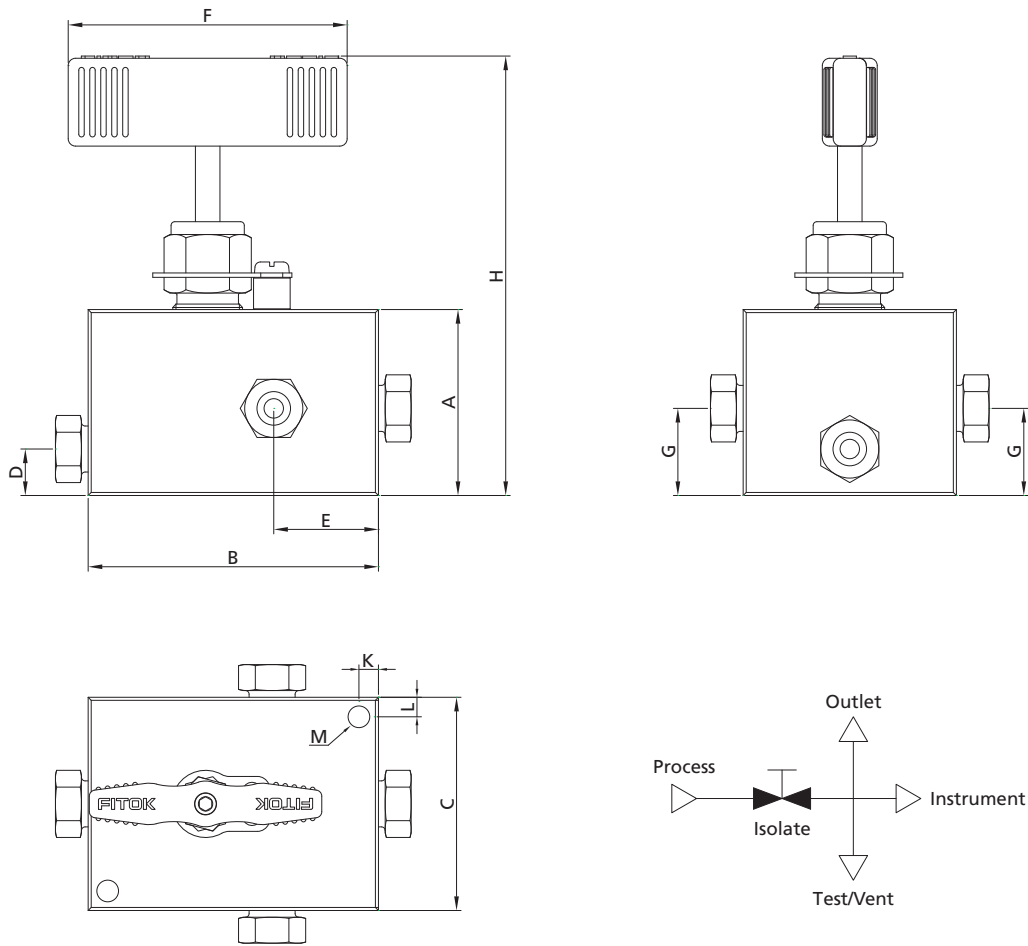
Standard Materials of Construction

| Item | Component | Material Grade |
|------|-----------------------|---------------------------|
| 1 | Handle | Stainless steel |
| 2 | Upper stem | 316 SS |
| 3 | Packing Gland | 316 SS |
| 4 | <i>Lower Stem</i> | <i>Nickel-based Alloy</i> |
| 5 | Packing Ring | 316 SS |
| 6 | <i>Packing</i> | <i>PTFE/RPTFE</i> |
| 7 | <i>Packing washer</i> | 316 SS |
| 8 | <i>Body</i> | <i>Annealed 316 SS</i> |
| | Lubricant | Molybdenum disulfide |

Wetted components listed in italics.



Ordering Information and Dimensions

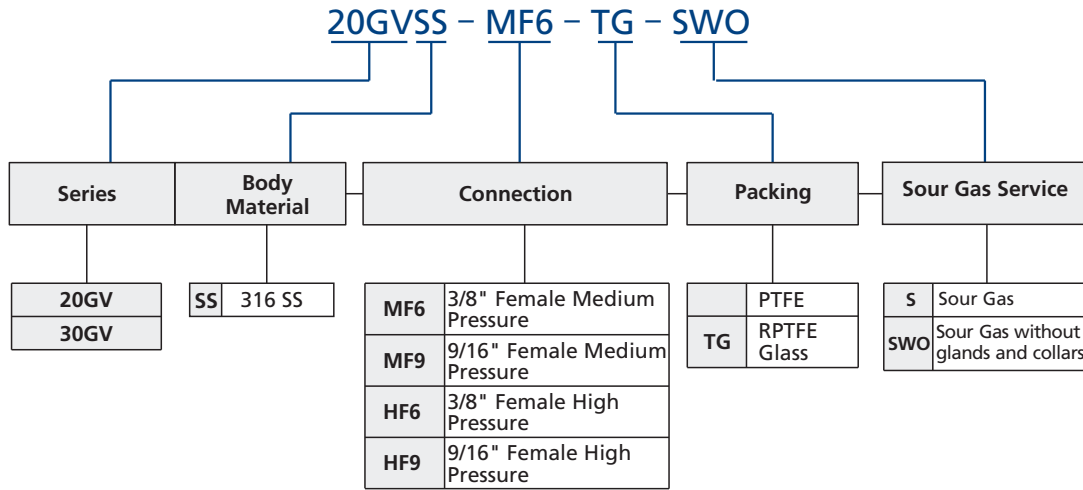


| Ordering Number | Connection | Orifice in. (mm) | Dimensions, in. (mm) | | | | | | | | | | |
|-----------------|------------|------------------|----------------------|----------------|----------------|----------------|----------------|----------------|----------------|-----------------|---------------|---------------|---------------|
| | | | A | B | C | D | E | F | G | H | K | L | M |
| 20GVSS-MF6-S | MF6 | 0.125 (3.18) | 2.00 (50.8) | 3.12 (79.3) | 2.00 (50.8) | 0.50 (12.7) | 1.13 (28.6) | 3.00 (76.2) | 0.94 (23.8) | 4.68 (118.9) | 0.38 (9.7) | 0.25 (6.4) | 0.28 (7.1) |
| 20GVSS-MF9-S | MF9 | 0.125 (3.18) | 2.00 (50.8) | 3.88 (98.6) | 2.75 (69.9) | 0.66 (16.8) | 1.38 (34.9) | 3.00 (76.2) | 0.94 (23.8) | 4.68 (118.9) | 0.38 (9.7) | 0.38 (9.7) | 0.28 (7.1) |
| 30GVSS-HF6-S | HF6 | 0.125 (3.18) | 2.00 (50.8) | 3.12 (79.3) | 2.00 (50.8) | 0.50 (12.7) | 1.13 (28.6) | 3.00 (76.2) | 0.94 (23.8) | 4.68 (118.9) | 0.38 (9.7) | 0.38 (9.7) | 0.28 (7.1) |
| 30GVSS-HF9-S | HF9 | 0.125 (3.18) | 2.00 (50.8) | 3.88 (98.6) | 2.75 (69.9) | 0.66 (16.8) | 1.38 (34.9) | 3.00 (76.2) | 0.94 (23.8) | 4.68 (118.9) | 0.38 (9.7) | 0.38 (9.7) | 0.28 (7.1) |

- NOTES: 1. M is the panel mounting drill size.
 2. H is the dimension of stem in closed position.
 3. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

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| Subsea Valves |
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| Technical Information |
| Part Number Crossover Charts |

Ordering Number Description



- NOTES: 1. For more details regarding Medium/High Pressure connections, please see **Connection Information** on I-02.
 2. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.

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Check Valves

Working pressure up to 30,000 psig (2068 bar)

Features

(Pipe) O-ring Check Valves

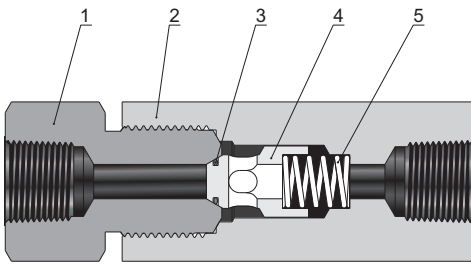
- ⦿ Provide unidirectional flow and tight shut-off for liquids and gases with high reliability (Not for use as relief valve)
- ⦿ Resilient O-ring seat design for noise-free closing and zero leakage
- ⦿ Cracking pressure: 14 psig~26 psig (0.966 bar~1.794 bar)

(Pipe) Ball Check Valves

- ⦿ Prevent reverse flow where leak-tight shut-off is not mandatory (Not for use as relief valve)
- ⦿ An integral design of the ball and poppet to assure positive, in-line seating without "chatter".
Poppet designed essentially for axial flow with minimum pressure drop

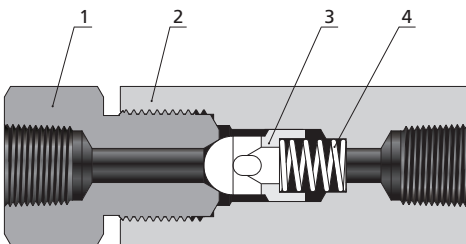
Standard Materials of Construction

15C Series Pipe O-ring Check Valves



| Item | Component | Material Grade |
|-----------|-------------|--------------------------|
| 1 | Cover Gland | Annealed stainless steel |
| 2 | Valve Body | Annealed 316 SS |
| 3 | O-ring | FKM |
| 4 | Poppet | Annealed 316 SS |
| 5 | Spring | Nickel-based Alloy |
| Lubricant | | Molybdenum disulfide |

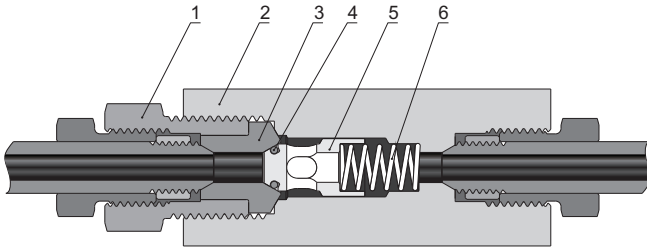
15CO Series Pipe Ball Check Valves



| Item | Component | Material Grade |
|-----------|-------------|--------------------------|
| 1 | Cover Gland | Annealed stainless steel |
| 2 | Valve Body | Annealed 316 SS |
| 3 | Ball Poppet | Nickel-based Alloy |
| 4 | Spring | |
| Lubricant | | Molybdenum disulfide |

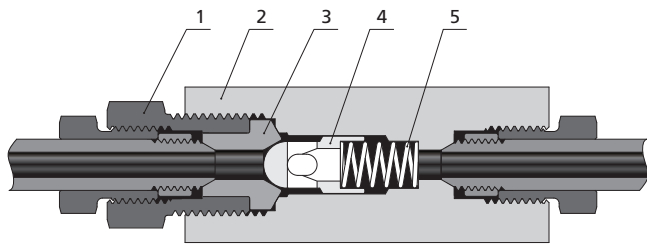
| |
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20C Series O-ring Check Valves



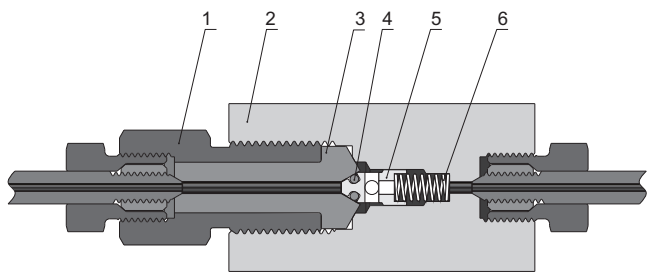
| Item | Component | Material Grade |
|------|-------------|---------------------------|
| 1 | Cover Gland | Annealed stainless steel |
| 2 | Valve Body | <i>Annealed 316 SS</i> |
| 3 | Cover | <i>Annealed 316 SS</i> |
| 4 | O-ring | <i>FKM</i> |
| 5 | Poppet | <i>Annealed 316 SS</i> |
| 6 | Spring | <i>Nickel-based Alloy</i> |
| | Lubricant | Molybdenum disulfide |

20CO Series Ball Check Valves



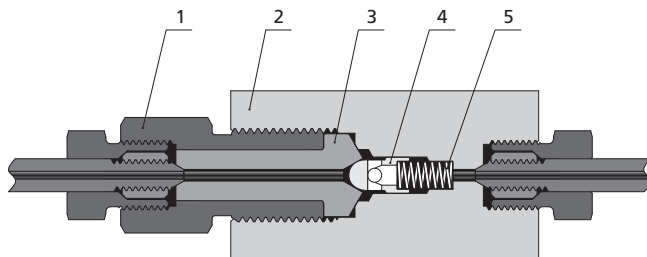
| Item | Component | Material Grade |
|------|-------------|---------------------------|
| 1 | Cover Gland | Annealed stainless steel |
| 2 | Valve Body | <i>Annealed 316 SS</i> |
| 3 | Cover | <i>Nickel-based Alloy</i> |
| 4 | Ball Poppet | |
| 5 | Spring | |
| | Lubricant | Molybdenum disulfide |

60C Series O-ring Check Valves



| Item | Component | Material Grade |
|------|-------------|---------------------------|
| 1 | Cover Gland | Annealed stainless steel |
| 2 | Valve Body | <i>Annealed 316 SS</i> |
| 3 | Cover | <i>Annealed 316 SS</i> |
| 4 | O-ring | <i>FKM</i> |
| 5 | Poppet | <i>Annealed 316 SS</i> |
| 6 | Spring | <i>Nickel-based Alloy</i> |
| | Lubricant | Molybdenum disulfide |

60CO Series Ball Check Valves



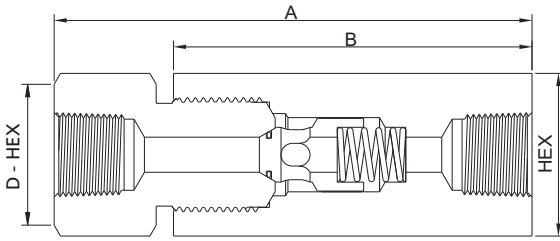
| Item | Component | Material Grade |
|------|-------------|---------------------------|
| 1 | Cover Gland | Annealed stainless steel |
| 2 | Valve Body | <i>Annealed 316 SS</i> |
| 3 | Cover | <i>Nickel-based Alloy</i> |
| 4 | Ball Poppet | |
| 5 | Spring | |
| | Lubricant | Molybdenum disulfide |

Wetted components listed in italics.

| |
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| Line Filters |
| Valves |
| Sour Service Products |
| Subsea Valves |
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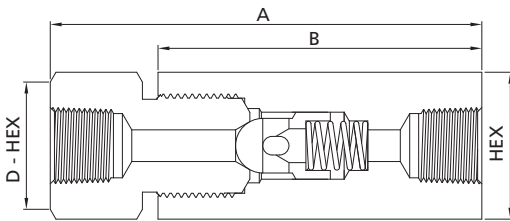
Ordering Information and Dimensions

15C Series Pipe O-ring Check Valves



| Ordering Number | Connection | Orifice in. (mm) | Cv | Dimensions, in. (mm) | | | | Working Pressure psig (bar) | Working Temperature °F (°C) |
|-----------------|------------|------------------|------|----------------------|-------------|-------------|-------------|-----------------------------|---------------------------------|
| | | | | A | B | D - HEX | HEX | | |
| 15CSS-FNS4-S | FNS4 | 0.12 (3.05) | 0.28 | 3.30 (83.8) | 2.38 (60.3) | 0.94 (23.8) | 0.94 (23.8) | 10,000 (690) | 0°F to 400°F (-17.8°C to 204°C) |
| 15CSS-FNS6-S | FNS6 | 0.22 (5.59) | 0.84 | 3.95 (100.33) | 2.88 (73.2) | 1.13 (28.6) | 1.13 (28.6) | | |
| 15CSS-FNS8-S | FNS8 | 0.36 (9.12) | 2.30 | 5.07 (128.8) | 3.88 (98.6) | 1.38 (34.9) | 1.38 (34.9) | | |

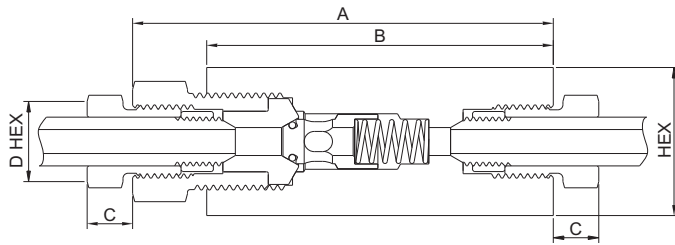
15CO Series Pipe Ball Check Valves



| Ordering Number | Connection | Orifice in. (mm) | Cv | Dimensions, in. (mm) | | | | Working Pressure psig (bar) | Working Temperature °F (°C) |
|-----------------|------------|------------------|------|----------------------|-------------|-------------|-------------|-----------------------------|----------------------------------|
| | | | | A | B | D - HEX | HEX | | |
| 15COSS-FNS4-S | FNS4 | 0.12 (3.05) | 0.28 | 3.30 (83.8) | 2.38 (60.3) | 0.94 (23.8) | 0.94 (23.8) | 10,000 (690) | -110°F to 400°F (-79°C to 204°C) |
| 15COSS-FNS6-S | FNS6 | 0.22 (5.59) | 0.84 | 3.95 (100.33) | 2.88 (73.2) | 1.13 (28.6) | 1.13 (28.6) | | |
| 15COSS-FNS8-S | FNS8 | 0.36 (9.12) | 2.30 | 5.07 (128.8) | 3.88 (98.6) | 1.38 (34.9) | 1.38 (34.9) | | |

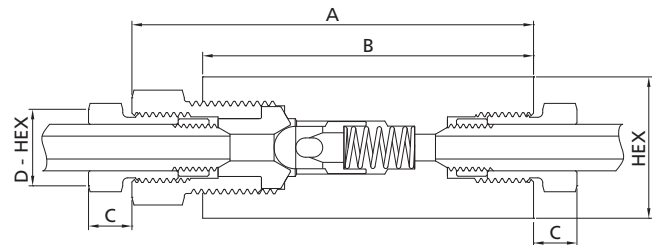
| |
|-------------------------------------|
| Fittings |
| Tubing |
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| Sour Service Products |
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| Tools and Installation Instructions |
| Technical Information |
| Part Number Crossover Charts |

20C Series O-ring Check Valves



| Ordering Number | Connection | Orifice in. (mm) | Cv | Dimensions, in. (mm) | | | | | Working Pressure psig (bar) | Working Temperature °F (°C) |
|-----------------|------------|------------------|------|----------------------|--------------|-------------|-------------|-------------|-----------------------------|---------------------------------|
| | | | | A | B | C | D - HEX | HEX | | |
| 20CSS-MF4-S | MF4 | 0.125 (3.18) | 0.28 | 2.94 (74.7) | 2.50 (63.5) | 0.38 (9.65) | 0.50 (12.7) | 0.81 (20.6) | 10,000 (690) | 0°F to 400°F (-17.8°C to 204°C) |
| 20CSS-MF6-S | MF6 | 0.218 (5.54) | 0.84 | 3.12 (79.3) | 2.62 (66.6) | 0.44 (11.2) | 0.62 (15.8) | 1.00 (25.4) | | |
| 20CSS-MF9-S | MF9 | 0.359 (9.12) | 2.30 | 4.18 (106.2) | 3.50 (88.9) | 0.55 (14.0) | 0.94 (23.9) | 1.38 (35.1) | | |
| 20CSS-MF12-S | MF12 | 0.516 (13.11) | 4.70 | 5.50 (139.7) | 4.75 (120.7) | 0.60 (15.2) | 1.19 (30.2) | 1.75 (44.5) | | |
| 20CSS-MF16-S | MF16 | 0.688 (17.48) | 7.40 | 6.91 (175.6) | 5.75 (146.1) | 0.74 (18.8) | 1.38 (35.1) | 2.12 (53.9) | | |

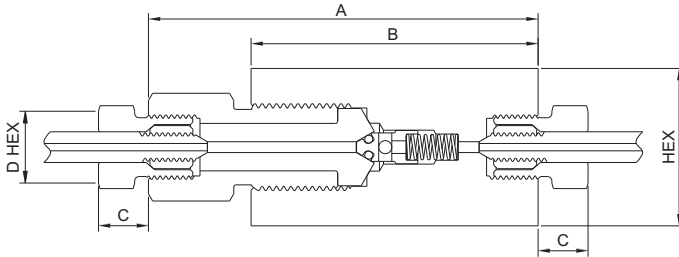
20CO Series Ball Check Valves



| Ordering Number | Connection | Orifice in. (mm) | Cv | Dimensions, in. (mm) | | | | | Working Pressure psig (bar) | Working Temperature °F (°C) |
|-----------------|------------|------------------|------|----------------------|--------------|-------------|-------------|-------------|-----------------------------|-----------------------------------|
| | | | | A | B | C | D - HEX | HEX | | |
| 20COSS-MF4-S | MF4 | 0.125 (3.18) | 0.28 | 2.94 (74.7) | 2.50 (63.5) | 0.38 (9.65) | 0.50 (12.7) | 0.81 (20.6) | 10,000 (690) | -110°F to 1200°F (-79°C to 649°C) |
| 20COSS-MF6-S | MF6 | 0.218 (5.54) | 0.84 | 3.12 (79.3) | 2.62 (66.6) | 0.44 (11.2) | 0.62 (15.8) | 1.00 (25.4) | | |
| 20COSS-MF9-S | MF9 | 0.359 (9.12) | 2.30 | 4.18 (106.2) | 3.50 (88.9) | 0.55 (14.0) | 0.94 (23.9) | 1.38 (35.1) | | |
| 20COSS-MF12-S | MF12 | 0.516 (13.11) | 4.70 | 5.50 (139.7) | 4.75 (120.7) | 0.60 (15.2) | 1.19 (30.2) | 1.75 (44.5) | | |
| 20COSS-MF16-S | MF16 | 0.688 (17.48) | 7.40 | 6.91 (175.6) | 5.75 (146.1) | 0.74 (18.8) | 1.38 (35.1) | 2.12 (53.9) | | |

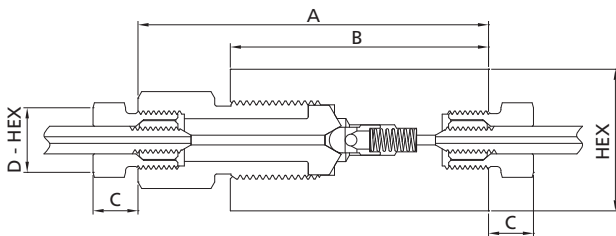
Fittings
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60C Series O-ring Check Valves



| Ordering Number | Connection | Orifice in. (mm) | Cv | Dimensions, in. (mm) | | | | | Working Pressure psig (bar) | Working Temperature °F (°C) |
|-----------------|------------|------------------|------|----------------------|--------------|-------------|-------------|-------------|-----------------------------|---------------------------------|
| | | | | A | B | C | D - HEX | HEX | | |
| 60CSS-HF4-S | HF4 | 0.094 (2.39) | 0.15 | 3.38 (85.9) | 2.50 (63.5) | 0.47 (11.9) | 0.63 (16.0) | 1.18 (30.0) | 30,000 (2068) | 0°F to 400°F (-17.8°C to 204°C) |
| 60CSS-HF6-S | HF6 | 0.125 (3.18) | 0.28 | 3.86 (98.1) | 2.80 (71.0) | 0.61 (15.5) | 0.81 (20.6) | 1.18 (30.0) | | |
| 60CSS-HF9-S | HF9 | 0.187 (4.75) | 0.63 | 4.62 (117.4) | 3.38 (85.85) | 0.95 (24.1) | 1.12 (28.5) | 1.50 (38.1) | | |

60CO Series Ball Check Valves

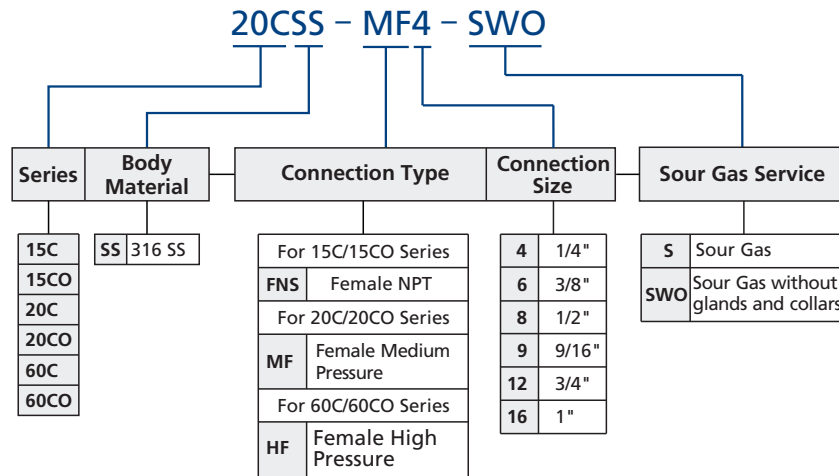


| Ordering Number | Connection | Orifice in. (mm) | Cv | Dimensions, in. (mm) | | | | | Working Pressure psig (bar) | Working Temperature °F (°C) |
|-----------------|------------|------------------|------|----------------------|--------------|-------------|-------------|-------------|-----------------------------|-----------------------------------|
| | | | | A | B | C | D - HEX | HEX | | |
| 60COSS-HF4-S | HF4 | 0.094 (2.39) | 0.15 | 3.38 (85.9) | 2.50 (63.5) | 0.47 (11.9) | 0.63 (16.0) | 1.18 (30.0) | 30,000 (2068) | -110°F to 1200°F (-79°C to 649°C) |
| 60COSS-HF6-S | HF6 | 0.125 (3.18) | 0.28 | 3.86 (98.1) | 2.80 (71.0) | 0.61 (15.5) | 0.81 (20.6) | 1.18 (30.0) | | |
| 60COSS-HF9-S | HF9 | 0.187 (4.75) | 0.63 | 4.62 (117.4) | 3.38 (85.85) | 0.95 (24.1) | 1.12 (28.5) | 1.50 (38.1) | | |

NOTE: All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

| |
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| Fittings |
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| Quick Couplings |
| Line Filters |
| Valves |
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| Part Number Crossover Charts |

Ordering Number Description



- NOTES: 1. For more details regarding Medium/High Pressure connections, please see **Connection Information** on I-02.
 2. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number.
 Not all combinations are available.

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Subsea Ball Valves

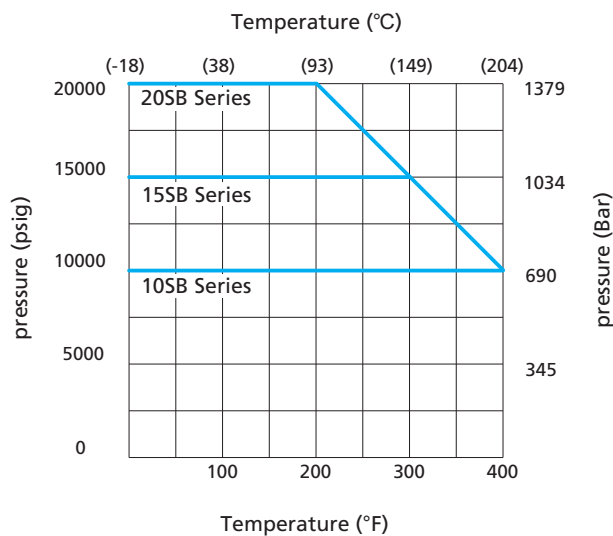
2-way Valves, 3-way Valves

Features

- Working pressure up to 20,000 psig (1379 bar)
- Maximum external pressure: 6,000 psig (414 bar)
- NBR O-ring for operation from -10 to 250°F (-23 to 121°C); other O-ring materials available
- High tensile 316 stainless steel or S17400 stainless steel as standard material for valve body
- Available to NACE MR0175
- Rapid quarter turn action to provide quick opening/closing action for easy ROV or diver operation
- PEEK seats offer excellent resistance against chemicals, heat and abrasion
- Full-port flow path to minimize pressure drop
- 2-way and 3-way valve configurations
- Bidirectional flow for 2-way valves
- Wide selection of tube and pipe end fittings available
- A variety of wetted materials optional
- Maximum water depth: 13,800 ft. (4200 m)



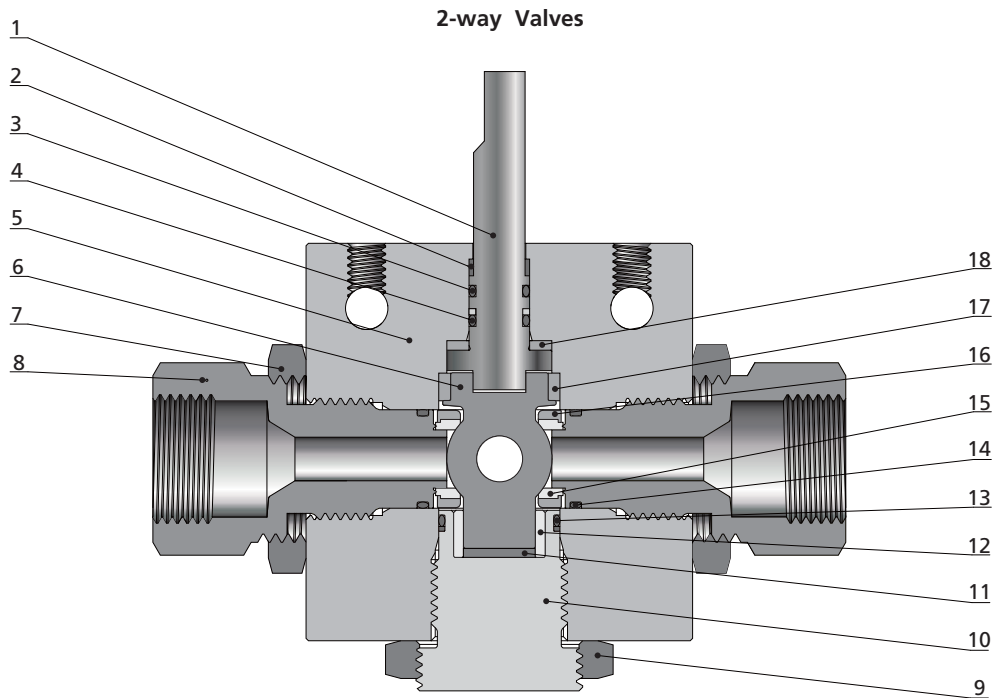
Pressure vs. Temperature Curve



NOTE: The maximum allowable working pressure drops if the side connection works as inlet.

| |
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Standard Materials of Construction

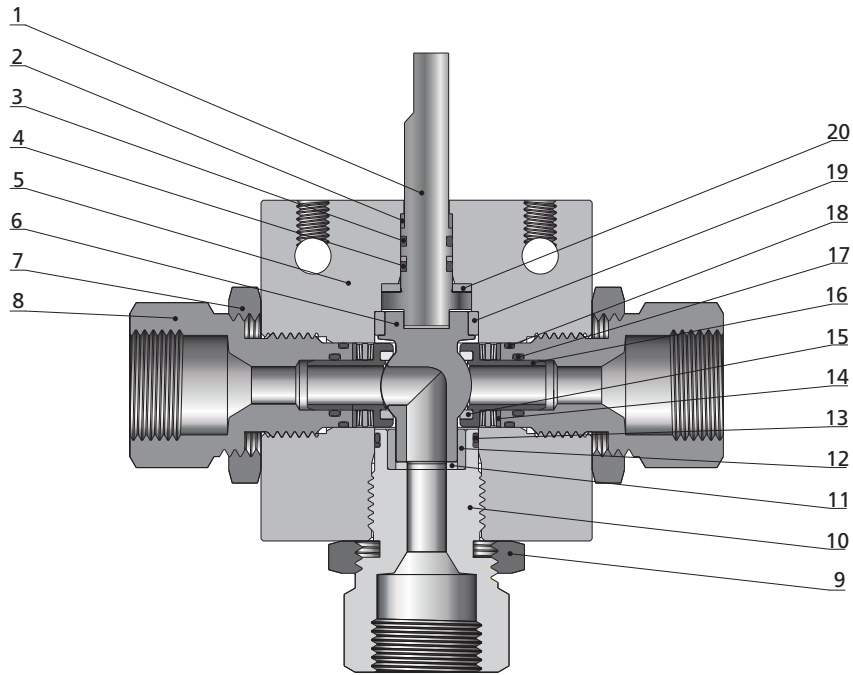


| Item | Component | Material Grade |
|------|-----------------------------|---|
| 1 | <i>Ball Stem</i> | 316 SS |
| 2 | Stem Backup | PEEK |
| 3 | O-Ring | NBR |
| 4 | <i>O-Ring</i> | NBR |
| 5 | <i>Body</i> | 316 SS / S17400 SS(For Orifice No. 16 only) |
| 6 | <i>Ball</i> | 316 SS |
| 7 | Lock Nut | 316 SS |
| 8 | <i>Seat Gland</i> | 316 SS / S17400 SS(For Orifice No. 16 only) |
| 9 | Locking Piece | 316 SS |
| 10 | <i>Bottom Gland</i> | 316 SS / S17400 SS(For Orifice No. 16 only) |
| 11 | <i>Bottom Thrust washer</i> | PEEK |
| 12 | <i>Bearing</i> | PEEK |
| 13 | <i>O-Ring</i> | NBR |
| 14 | <i>O-Ring</i> | NBR |
| 15 | <i>Seat</i> | PEEK |
| 16 | <i>Seat Retainer</i> | 316 SS |
| 17 | <i>Bearing</i> | PEEK |
| 18 | <i>Thrust Washer</i> | PEEK |
| | Lubricant | Molybdenum Disulfide/Fluorinated-based |

Wetted components listed in italics.

| |
|-------------------------------------|
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| Tubing |
| Quick Couplings |
| Line Filters |
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3-way Valves

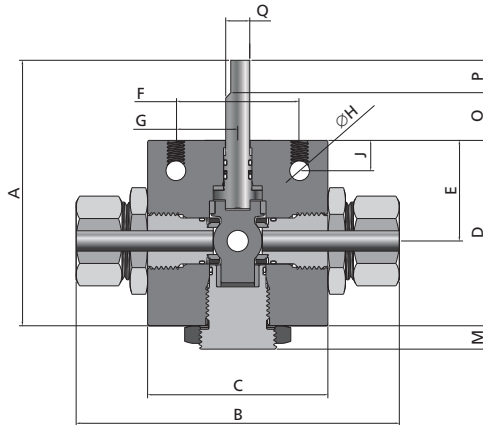


| Item | Component | Material Grade |
|------|-----------------------------|--|
| 1 | <i>Ball Stem</i> | 316 SS |
| 2 | Stem Backup | PEEK |
| 3 | O-Ring | NBR |
| 4 | <i>O-Ring</i> | NBR |
| 5 | <i>Body</i> | 316 SS |
| 6 | <i>Ball</i> | 316 SS |
| 7 | Lock Nut | 316 SS |
| 8 | <i>Seat Gland</i> | 316 SS |
| 9 | Locking Piece | 316 SS |
| 10 | <i>Bottom Gland</i> | 316 SS |
| 11 | <i>Bottom Thrust washer</i> | PEEK |
| 12 | <i>Bearing</i> | PEEK |
| 13 | <i>O-Ring</i> | NBR |
| 14 | <i>Belleville Washer</i> | S17700 |
| 15 | <i>Seat</i> | PEEK |
| 16 | <i>Seat Retainer</i> | S17700 |
| 17 | <i>O-Ring</i> | NBR |
| 18 | <i>O-Ring</i> | NBR |
| 19 | <i>Bearing</i> | PEEK |
| 20 | <i>Thrust Washer</i> | PEEK |
| | Lubricant | Molybdenum Disulfide/Fluorinated-based |

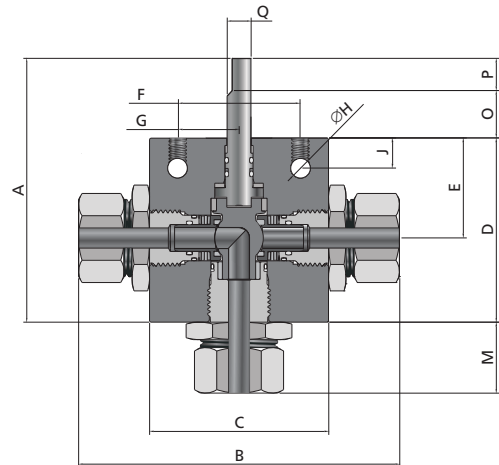
Wetted components listed in italics.

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Dimensions



2-way Valves



3-way Valves

| Dimensions, in. (mm) | | | | | | | | | | | | |
|----------------------|-------------|------------------|------------------|-----------------|-----------------|----------------|---------------|-----------------|----------------|----------------|----------------|-----------------|
| Flow Pattern | Orifice No. | A | B | C | D | E | F | G | H | J | M | Block Thickness |
| 2-way | 4 | 4.31 (109.3) | 4.20 (106.8) | 2 (50.8) | 2.53 (64.2) | 1.28 (32.5) | 1.5 (38.1) | 0.75 (19.05) | 0.28 (7.1) | 0.43 (10.9) | 0.35 (8.8) | 1 (25.4) |
| | 6 | 5.94 (150.8) | 5.53 (140.4) | 3 (76.2) | 3.43 (87.3) | 1.78 (45.2) | 2.5 (63.5) | 1.25 (31.75) | 0.31 (7.9) | 0.41 (10.3) | 0.35 (8.8) | 1.38 (34.9) |
| | 8 | 6.67 (169.5) | 7.72 (196.2) | 4.12 (104.6) | 4.23 (107.5) | 2.07 (52.4) | 3 (76.2) | 1.5 (38.1) | 0.31 (7.9) | 0.5 (12.7) | 0.61 (15.5) | 1.75 (44.5) |
| | 16 | 10.82 (274.8) | 12.30 (312.4) | 6.24 (158.6) | 6.65 (169.0) | 3.20 (81.3) | 4 (101.6) | 2 (50.8) | 0.41 (10.4) | 0.63 (15.9) | 0.89 (22.5) | 3.38 (85.7) |
| 3-way | 4 | 4.34 (110.2) | 4.70 (119.5) | 2.5 (63.5) | 2.56 (65) | 1.34 (34) | 2 (50.8) | 1 (25.4) | 0.28 (7.1) | 0.41 (10.3) | 1.1 (28) | 1 (25.4) |
| | 8 | 6.67 (169.5) | 7.72 (196.2) | 4.12 (104.6) | 4.23 (107.5) | 2.07 (52.4) | 3 (76.2) | 1.5 (38.1) | 0.31 (7.9) | 0.5 (12.7) | 1.45 (36.8) | 1.75 (44.5) |

| Dimensions, in. (mm) | | | | | |
|----------------------|-------------|-----------------|----------------|----------------|-----------------|
| Flow Pattern | Orifice No. | O | P | Q | R |
| 2-way | 4 | 1.278 (32.5) | 0.50 (12.7) | 0.25 (6.35) | 0.22 (5.48) |
| | 6 | 1.24 (31.7) | 1.25 (31.8) | 0.44 (11.1) | 0.38 (9.35) |
| | 8 | 1.56 (39.7) | 0.88 (22.2) | 0.62 (15.9) | 0.44 (11.13) |
| | 16 | 2.41 (61.3) | 1.75 (44.5) | 1.25 (31.8) | 1.00 (25.4) |
| 3-way | 4 | 1.28 (32.5) | 0.5 (12.7) | 0.25 (6.35) | 0.22 (5.49) |
| | 8 | 1.56 (39.7) | 0.88 (22.2) | 0.62 (15.9) | 0.44 (11.13) |

Ball stem connection

Orifice 4

Orifice 6/8

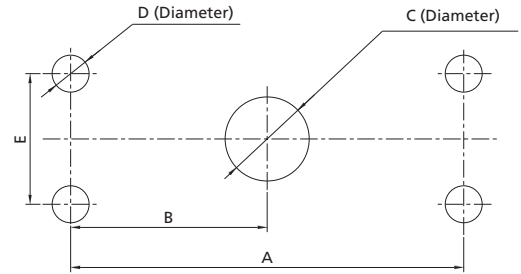
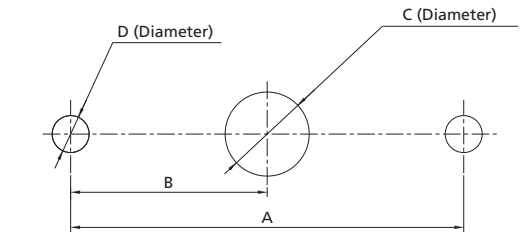
All dimensions are for reference only and are subject to change.

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Ball Valve Panel Mounting Dimensions

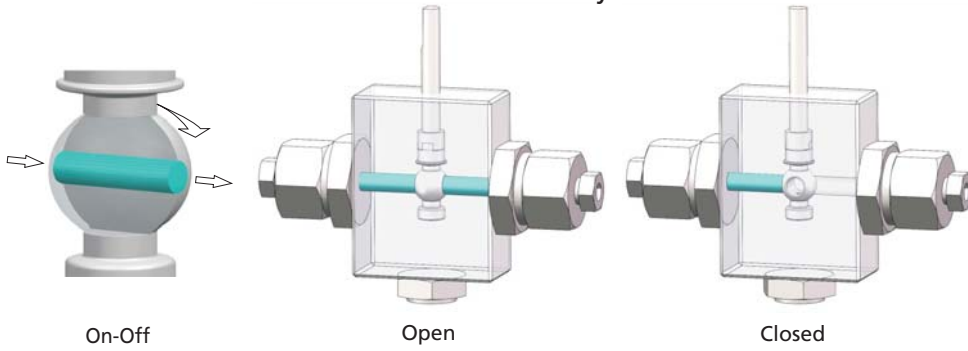
| Flow Pattern | Orifice No. | Dimensions, in. (mm) | | | |
|--------------|-------------|----------------------|-----------------|---------------|---------------|
| | | A | B | C | D |
| 2-way | 4 | 1.5 (38.1) | 0.75 (19.05) | 0.31 (7.9) | 0.28 (7.1) |
| 3-way | 4 | 2 (50.8) | 1 (25.4) | 0.31 (7.9) | 0.28 (7.1) |

| Flow Pattern | Orifice No. | Dimensions, in. (mm) | | | | |
|--------------|-------------|----------------------|-----------------|----------------|----------------|----------------|
| | | A | B | C | D | E |
| 2-way | 6 | 2.5 (63.5) | 1.25 (31.75) | 0.5 (12.7) | 0.33 (8.5) | 0.88 (22.3) |
| | 8 | 3 (76.2) | 1.5 (38.1) | 0.69 (17.5) | 0.33 (8.5) | 1 (25.4) |
| | 16 | 4 (101.6) | 2 (50.8) | 1.38 (35.0) | 0.39 (10.0) | 1.50 (38.1) |
| 3-way | 8 | 3 (76.2) | 1.5 (38.1) | 0.69 (17.5) | 0.33 (8.5) | 1 (25.4) |

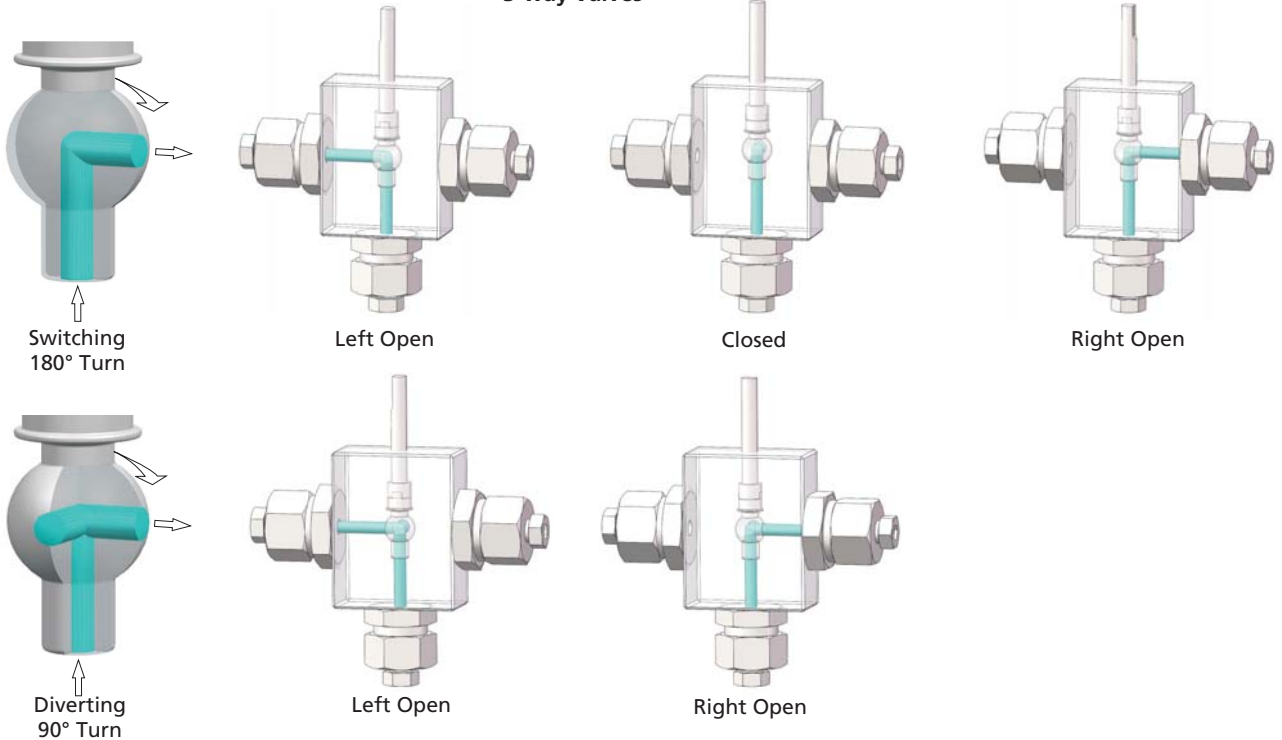


Flow Configuration

2-way Valves



3-way Valves



Ordering Information and Dimensions

| Ordering Number | Flow Pattern | Connection | Orifice No. | Orifice size in. (mm) | Cv | Working Pressure psig (bar) | |
|------------------|--------------|------------|--------------|-----------------------|--------------|-----------------------------|---------------|
| 10SBSS-MF12-8-1 | 2-way | MF12 | 8 | 0.5 (12.7) | 10.2 | 10,000 (690) | |
| 10SBSS-MF16-8-1 | | MF16 | | 0.5 (12.7) | 10.2 | | |
| 10SBSS-FNS12-8-1 | | FNS12 | | 0.5 (12.7) | 10.2 | | |
| 10SBSS-FNS16-8-1 | | FNS16 | | 0.5 (12.7) | 10.2 | | |
| 10SB4P-MF24-16-1 | | MF24 | 16 | 0.94 (23.8) | 30.0 | | |
| 10SBSS-MF12-8-2 | 3-way | MF12 | 8 | 0.5 (12.7) | 10.2 | 15,000 (1034) | |
| 15SBSS-DFF4-4-1 | 2-way | DFF4 | 4 | 0.128 (3.25) | 0.26 | | |
| 15SBSS-DFF6-4-1 | | DFF6 | | 0.25 (6.35) | 1.51 | | |
| 15SBSS-FNS4-4-1 | | FNS4 | | 0.25 (6.35) | 1.51 | | |
| 15SBSS-FNS6-4-1 | | FNS6 | | 0.25 (6.35) | 1.51 | | |
| 15SBSS-FNS8-4-1 | | FNS8 | | 0.25 (6.35) | 1.51 | | |
| 15SBSS-FNS4-6-1 | | FNS4 | 6 | 0.375 (9.52) | 3.51 | | |
| 15SBSS-FNS6-6-1 | | FNS6 | | 0.375 (9.52) | 3.51 | | |
| 15SBSS-FNS8-6-1 | | FNS8 | | 0.375 (9.52) | 3.51 | | |
| 15SBSS-MF12-8-1 | | 3-way | MF12 | 8 | 0.5 (12.7) | | 10.2 |
| 15SBSS-FNS4-4-2 | | | FNS4 | 4 | 0.188 (4.77) | | 0.5 |
| 15SBSS-FNS4-4-2D | FNS4 | | | | | | |
| 15SBSS-FNS6-4-2 | FNS6 | | 0.188 (4.77) | | 0.5 | | |
| 15SBSS-FNS6-4-2D | | | | | | | |
| 20SBSS-MF4-4-1 | 2-way | MF4 | 4 | 0.109 (2.77) | 0.36 | | 20,000 (1379) |
| 20SBSS-MF6-4-1 | | MF6 | | 0.203 (5.16) | 1.23 | | |
| 20SBSS-MF9-4-1 | | MF9 | | 0.25 (6.35) | 1.51 | | |
| 20SBSS-HF4-4-1 | | HF4 | | 0.094 (2.39) | 0.26 | | |
| 20SBSS-HF6-4-1 | | HF6 | | 0.125 (3.17) | 0.47 | | |
| 20SBSS-MF6-6-1 | | MF6 | 6 | 0.203 (5.16) | 1.23 | | |
| 20SBSS-MF9-6-1 | | MF9 | | 0.312 (7.92) | 2.93 | | |
| 20SBSS-MF12-6-1 | | MF12 | | 0.375 (9.52) | 3.51 | | |
| 20SBSS-MF4-4-2 | | 3-way | MF4 | 4 | 0.109 (2.77) | 0.17 | |
| 20SBSS-MF4-4-2D | | | | | | | |

Fittings

Tubing

Quick Couplings

Line Filters

Valves

Sour Service Products

Subsea Valves

Tools and Installation Instructions

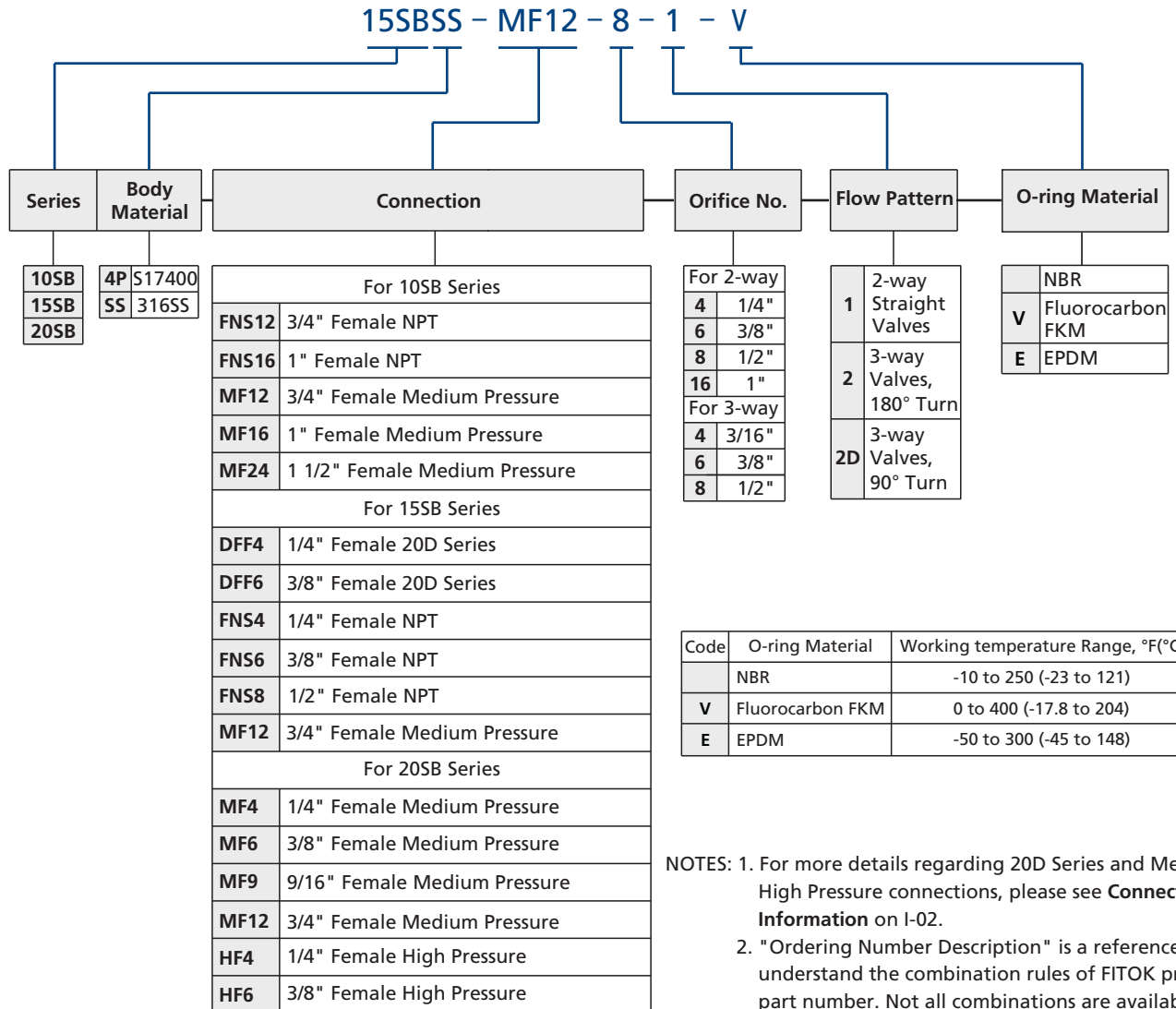
Technical Information

Part Number Crossover Charts

Ordering Information and Dimensions (continued)

| Ordering Number | Flow Pattern | Connection | Orifice No. | Orifice size in. (mm) | Cv | Working Pressure psig (bar) |
|-----------------|--------------|------------|-------------|-----------------------|------|-----------------------------|
| 20SBSS-MF6-4-2 | 3-way | MF6 | 4 | 0.188 (4.77) | 0.5 | 20,000 (1379) |
| 20SBSS-MF6-4-2D | | | | | | |
| 20SBSS-MF9-4-2 | | MF9 | | 0.188 (4.77) | 0.5 | |
| 20SBSS-MF9-4-2D | | | | | | |
| 20SBSS-HF4-4-2 | | HF4 | | 0.094 (2.39) | 0.13 | |
| 20SBSS-HF4-4-2D | | | | | | |
| 20SBSS-HF6-4-2 | | HF6 | | 0.125 (3.17) | 0.22 | |
| 20SBSS-HF6-4-2D | | | | | | |

Ordering Number Description



NOTES: 1. For more details regarding 20D Series and Medium/High Pressure connections, please see **Connection Information** on I-02.
 2. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.

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Tools

Manual Presetting Tools

To preset double ferrules onto T15 or T20D series tubing. Tubing sizes available in 1/8", 1/4", 3/8" and 1/2" O.D.

| Ordering Number | Tube O.D., in. |
|-----------------|----------------|
| PST-2D | 1/8 |
| PST-4D | 1/4 |
| PST-6D | 3/8 |
| PST-8D | 1/2 |

Hydraulic Presetting Tools

To preset double ferrules onto T15 or T20D Series tubing. Tubing sizes available in 1/2", 9/16" and 3/4" O.D.

| Ordering Number | Description |
|-----------------|---|
| HPT-DF | With full set of die heads |
| HPT-N | Without die heads The die heads can be ordered individually. |

Die Heads

| Ordering Number | Tube O.D., in. |
|-----------------|----------------|
| HPT-DFF8 | 1/2 |
| HPT-DFF9 | 9/16 |
| HPT-DFF12 | 3/4 |

Manual Coning Tools

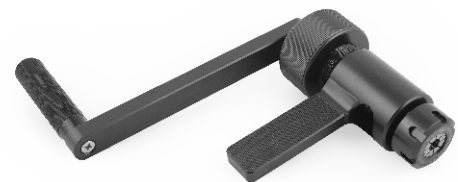
Applied in T20M and T60 series tubing for concentric cone processing. All the manual coning tools use the same basic tools on which the cutter heads and the collets of different sizes can be replaced. A complete ordering number shall include that of the basic tool, collet and cutter head. The collet and the cutter head can be ordered separately. For detailed information, please refer to the relevant instruction manual or contact FITOK Group.

| Connection | Tube O.D. x I.D. in. | Complete Ordering Number |
|------------|----------------------|--------------------------|
| MF4 | 1/4 x 0.109 | HCT-M4 |
| MF6 | 3/8 x 0.203 | HCT-M6 |
| MF9 | 9/16 x 0.312 | HCT-M9 |
| HF4 | 1/4 x 0.083 | HCT-H4 |
| HF6 | 3/8 x 0.125 | HCT-H6 |
| HF9 | 9/16 x 0.188 | HCT-H9 |

| Connection | Tube O.D. x I.D. in. | Ordering Number of Collet | Ordering Number of Cutter Head |
|------------|----------------------|---------------------------|--------------------------------|
| MF4 | 1/4 x 0.109 | HCT-4-CO | HCT-M4-DT |
| MF6 | 3/8 x 0.203 | HCT-6-CO | HCT-M6-DT |
| MF9 | 9/16 x 0.312 | HCT-9-CO | HCT-M9-DT |
| HF4 | 1/4 x 0.083 | HCT-4-CO | HCT-H4-DT |
| HF6 | 3/8 x 0.125 | HCT-6-CO | HCT-H6-DT |
| HF9 | 9/16 x 0.188 | HCT-9-CO | HCT-H9-DT |



Die Heads



Cutter Head

Collet

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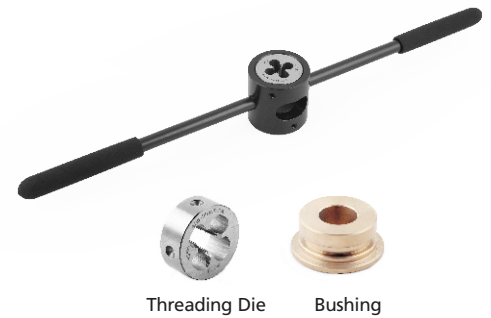
Tools and Installation Instructions

Technical Information

Part Number Crossover Charts

Manual Threading Tools

Applied in T20M and T60 series tubing for thread processing. All the manual threading tools use the same basic tools to process threads by replacing threading dies and guide bushings of different sizes. A complete ordering number shall include that of the basic tool, threading die and guide bushing. The threading die and the guide bushing can be ordered separately. For detailed information please refer to the instruction manual or contact FITOK Group.



Threading Die Bushing

| Connection | Tube O.D. x I.D. in. | Thread Size (Left Hand) | Complete Ordering Number |
|------------|----------------------|-------------------------|--------------------------|
| MF4 | 1/4 x 0.109 | 1/4-28 UNF | HTT-4 |
| MF6 | 3/8 x 0.203 | 3/8-24 UNF | HTT-6 |
| MF9 | 9/16 x 0.312 | 9/16-18 UNF | HTT-9 |
| HF4 | 1/4 x 0.083 | 1/4-28 UNF | HTT-4 |
| HF6 | 3/8 x 0.125 | 3/8-24 UNF | HTT-6 |
| HF9 | 9/16 x 0.188 | 9/16-18 UNF | HTT-9 |

| Connection | Tube O.D. x I.D. in. | Ordering Number of Threading Die | Ordering Number of Bushing |
|------------|----------------------|----------------------------------|----------------------------|
| MF4 | 1/4 x 0.109 | HTT-4-D | HTT-4-GS |
| MF6 | 3/8 x 0.203 | HTT-6-D | HTT-6-GS |
| MF9 | 9/16 x 0.312 | HTT-9-D | HTT-9-GS |
| HF4 | 1/4 x 0.083 | HTT-4-D | HTT-4-GS |
| HF6 | 3/8 x 0.125 | HTT-6-D | HTT-6-GS |
| HF9 | 9/16 x 0.188 | HTT-9-D | HTT-9-GS |

Manual Reseating Tools

The tool is used for repairing the wearing cone seat of medium and high pressure fittings or valves. A complete ordering number shall include that of the cutter, antifriction gasket, orientation nut and handle. The cutter, antifriction gasket, orientation nut and handle can be ordered separately. For detailed information, please refer to the instruction manual or contact FITOK Group.



| Connection | Complete Ordering Number | Ordering Number of Cutter |
|------------|--------------------------|---------------------------|
| MF4 | HRT-M4 | HRT-4-C |
| MF6 | HRT-M6 | HRT-6-C |
| MF9 | HRT-M9 | HRT-9-C |
| MF12 | HRT-M12 | HRT-12-C |
| MF16 | HRT-M16 | HRT-16-C |
| HF4 | HRT-H4 | HRT-4-C |
| HF6 | HRT-H6 | HRT-4-C |
| HF9 | HRT-H9 | HRT-9-C |

| Connection | Ordering Number of Antifriction Gasket | Ordering Number of Orientation Nut | Ordering Number of Handle |
|------------|--|------------------------------------|---------------------------|
| MF4 | HRT-4-G | HRT-M4-G | HRT-H-1 |
| MF6 | HRT-6-G | HRT-M6-G | HRT-H-2 |
| MF9 | HRT-9-G | HRT-M9-G | HRT-H-3 |
| MF12 | HRT-12-G | HRT-M12-G | HRT-H-4 |
| MF16 | HRT-16-G | HRT-M16-G | HRT-H-4 |
| HF4 | HRT-4-G | HRT-H4-G | HRT-H-1 |
| HF6 | HRT-4-G | HRT-H6-G | HRT-H-1 |
| HF9 | HRT-9-G | HRT-H9-G | HRT-H-3 |

Cutting Oil

Metal cutting oil is required for the operation of manual coning tools, manual threading tools and manual reseating tools. Quality cutting oil serves to reduce the heat and friction between the cutter and the metal, optimize the surface finish, and extend the life of the cutter.

FUCHS RENOFORM MZAN 51 is offered by FITOK as cutting oil.

Ordering Number: HT-CO

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Installation Instructions

Installation of 20D Series Connections

For Tube O.D. 1/8", 1/4", 3/8" and 1/2"

Without Manual Presetting Tool

1. Put the nut and ferrules onto the tubing in fixed sequence and orientation (Fig. 1).
2. Insert the tubing into the fitting body or the valve. Finger tight the nut. Make sure that the tubing rests firmly on the shoulder of the fitting body or the valve (Fig. 2).
3. Mark the nut and the fitting body or the valve (Fig. 3).
4. Hold the fitting body or the valve steady. For tube O.D. 1/8", tighten the nut 1 1/4 turns with a wrench. For tube O.D. 1/4", 3/8" and 1/2", tighten the nut 1 1/2 turns with a wrench (Fig. 4).

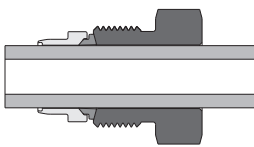


Fig.1

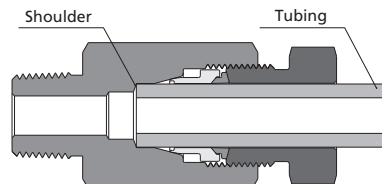


Fig.2

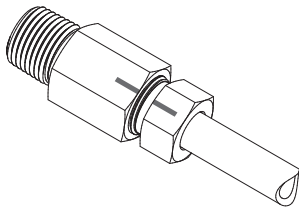


Fig.3

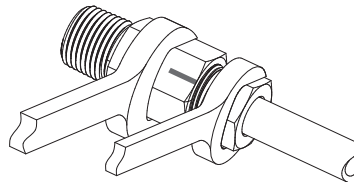


Fig.4

With Manual Presetting Tool

1. Put the nut and ferrules onto the tubing in fixed sequence and orientation (Fig. 1).
 2. Insert the tubing into the manual presetting tool. Finger tight the nut. Make sure that the tubing rests firmly on the shoulder of the presetting tool (Fig. 5).
 3. Mark the nut and the manual presetting tool (Fig. 6).
 4. Hold the manual presetting tool steady. For tube O.D. 1/8", tighten the nut 1 1/4 turns with a wrench. For tube O.D. 1/4", 3/8" and 1/2", tighten the nut 1 1/2 turns with a wrench.
 5. Loosen the nut and remove the tubing with preassembled ferrules from the manual presetting tool (Fig. 7).
- NOTE: If the tubing sticks into the manual presetting tool, remove the tubing by gently rocking it back and forth. Do not rotate the tubing.
6. Insert the tubing with preassembled ferrules into the fitting body or the valve. Finger tight the nut (Fig. 8).
 7. Tighten the nut 1/4 turn with a wrench while holding the fitting body or the valve steady.

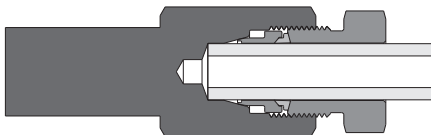


Fig.5

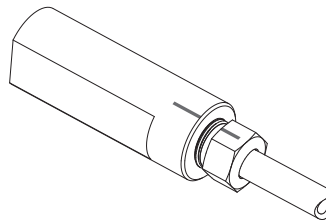


Fig.6

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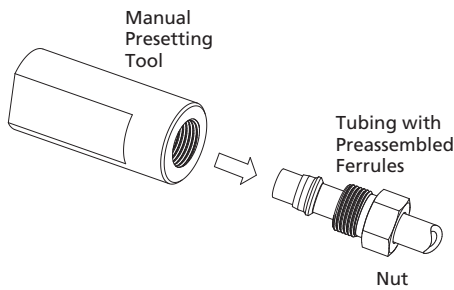


Fig.7

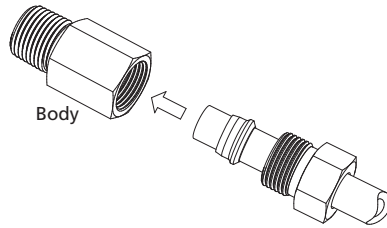


Fig.8

For Tube O.D. 1/2", 9/16" and 3/4"

1. Preassemble the ferrules onto tubing using the hydraulic presetting tool. For details, please contact FITOK for instruction manual **Hydraulic Presetting Tools**.
2. Insert the tubing with preassembled ferrules into the fitting body or the valve. Finger tight the nut.
3. Tighten the nut 1/4 turn with a wrench while holding the fitting body or the valve steady.

Reinstallation Instructions

1. Insert the tubing with preassembled ferrules into the fitting body or the valve.
2. For initial reinstallation, finger tight the nut, further wrench tighten 1/4" turn while holding the fitting body or the valve body steady. For reinstallations thereafter, starting from the final tightened position in the previous reassembly, further wrench tighten as may be necessary.

For Plugs

1. Insert the plug into the fitting body or the valve.
2. For initial installation, finger tight the nut, further wrench tighten 1/4" turn while holding the fitting body or the valve body steady. For reinstallations thereafter, starting from the final tightened position in the previous assembly, further wrench tighten as may be necessary.

Cautions

1. Do not loosen or tighten fittings when the system is pressurized.
2. When assembling a tube fitting, screw the nut while holding the body steady.
3. Do not use 20D Series nut and ferrules with any other FITOK tube fittings.

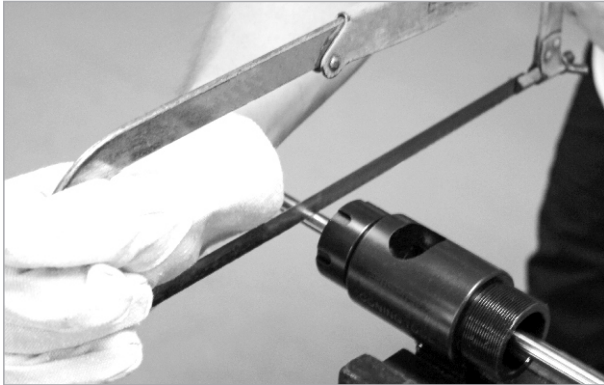
Installation of Medium & High Pressure Coned and Threaded Connections

1. Cut off tubing to desired length and deburr ends.

Note: When cutting tubing with abrasive cutting off wheel, tubing should not be over heated effecting material properties.

Tips: The housing assemblies of manual coning tool can be used to clamp the tubing.

Suitable manual reseating tool can help to deburr ends.



The length L can calculate by this way:

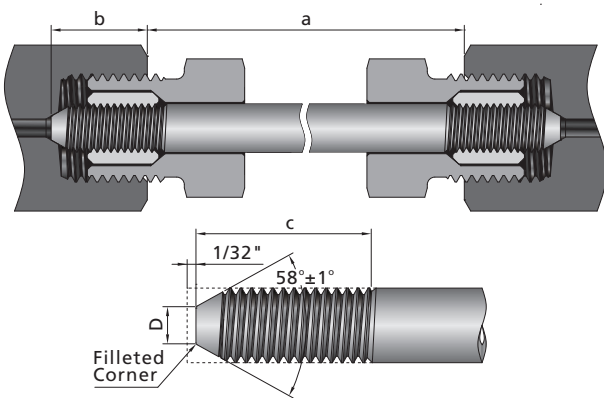


Fig.1

$$L = a + 2b + 2 \times 1/32''$$

L: Tubing length

a: Component distance

b: Tubing engagement (please see the table below)

1/32'': Standard face distance per tubing

| Rated Pressure psig (bar) | Connection Type | Tube O.D. x I.D. in. | b in.(mm) |
|------------------------------|-----------------|-------------------------|--------------|
| 20000 (1379) | MF4 | 1/4 x 0.109 | 0.55(13.97) |
| | MF6 | 3/8 x 0.203 | 0.69(17.53) |
| | MF9 | 9/16 x 0.312 | 0.84(21.34) |
| 60000 (4137) | HF4 | 1/4 x 0.083 | 0.50(12.70) |
| | HF6 | 3/8 x 0.125 | 0.69(17.53) |
| | HF9 | 9/16 x 0.188 | 0.84(21.34) |

Fittings

Tubing

Quick Couplings

Line Filters

Valves

Sour Service Products

Subsea Valves

Tools and Installation Instructions

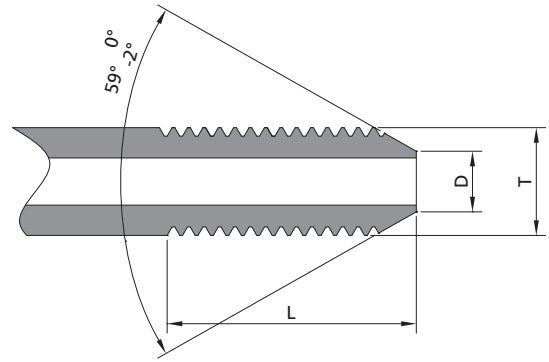
Technical Information

Part Number Crossover Charts

H-08 Tools and Installation Instructions

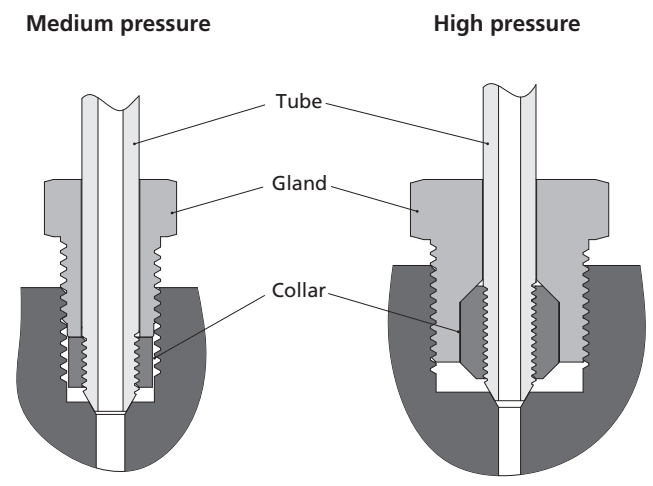
2. Process the tube end into the structure as shown on the right. For dimensions please see the table below.

Tips: For 1/4", 3/8" and 9/16" O.D. tubing, manual coning and threading tools can be used to make coned and threaded nipples.



| Tube O.D. x I.D. in. | Connection | T - Thread Size (Left Hand) | D in. (mm) | L in. (mm) |
|----------------------|------------|-----------------------------|-------------|-------------|
| 1/4 x 0.109 | MF4 | 1/4-28 UNF | 0.14 (3.6) | 0.34 (8.7) |
| 3/8 x 0.203 | MF6 | 3/8-24 UNF | 0.25 (6.4) | 0.44 (11.1) |
| 9/16 x 0.312 | MF9 | 9/16-18 UNF | 0.41 (10.3) | 0.50 (12.7) |
| 3/4 x 0.438 | MF12 | 3/4-16 UNF | 0.56 (14.3) | 0.63 (15.9) |
| 1 x 0.562 | MF16 | 1-14 UNS | 0.72 (18.3) | 0.78 (19.8) |
| 1/4 x 0.083 | HF4 | 1/4-28 UNF | 0.13 (3.2) | 0.56 (14.3) |
| 3/8 x 0.125 | HF6 | 3/8-24 UNF | 0.22 (5.6) | 0.75 (19.1) |
| 9/16 x 0.188 | HF9 | 9/16-18 UNF | 0.28 (7.1) | 0.94 (23.8) |

3. First, insert the tube through the gland, and then screw in the collar until the conical end of the tube showing 1-2 full threads.
4. If possible, coat the cone tip with a small amount of lubricant which is compatible with the system media.



5. Insert the tubing into the connecting port and finger tighten the gland.
6. Use a torque wrench to tighten the gland with the required torque shown in the table below while holding fitting body or valve steady.

| Tube O.D. x I.D. in. | Connection | Required Torque for Standard Service Products ft.-lbs. (N.m) ^① | Required Torque for Sour Service Products ft.-lbs. (N.m) ^① |
|----------------------|------------|---|---|
| 1/4 x 0.109 | MF4 | 20 (27.1) | 10 (13.6) |
| 3/8 x 0.203 | MF6 | 30 (40.6) | 15 (20.3) |
| 9/16 x 0.312 | MF9 | 55 (74.5) | 30 (40.7) |
| 3/4 x 0.438 | MF12 | 90 (122) | 45 (61.0) |
| 1 x 0.562 | MF16 | 125 (170) | 100 (135.6) |
| 1/4 x 0.083 | HF4 | 25 (33.9) | 15 (20.3) |
| 3/8 x 0.125 | HF6 | 50 (67.8) | 25 (33.9) |
| 9/16 x 0.188 | HF9 | 110 (149.1) | 55 (74.6) |

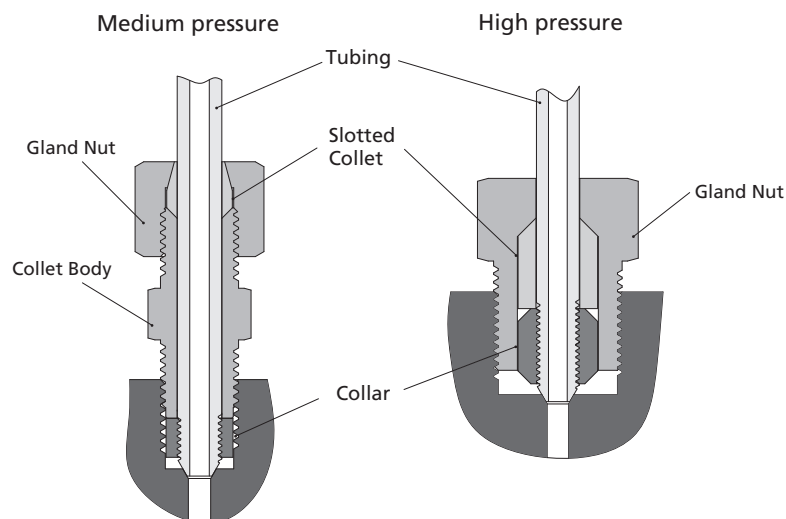
① Required torque shown is for glands without lubricant. If glands are lubricated, required torque may reduce as appropriate depending on the lubricant.

Installation of Medium & High Pressure Anti-vibration Gland Assembly

Anti-vibration Gland Assembly replaces the standard gland.

1. Insert coned and threaded tubing through the Anti-vibration Gland Assembly in the correct order as shown in the following figure, and then screw in the collar until the conical end of the tube showing 1-2 full threads.
2. For medium pressure Anti-vibration Gland Assembly, tighten collet body to required torque for standard fittings while holding fitting body or valve steady. Then finger tighten the gland nut, and tighten the gland nut 1-1/4 turns for initial installation with a wrench while holding the collet body steady. For reinstallation, tighten the gland nut with a wrench from finger tight to 3/4 turn.
3. For high pressure Anti-vibration Gland Assembly, use a torque wrench to tighten the gland nut with the required torque shown in the table below while holding fitting body or valve steady.

| Tube O.D. x I.D. in. | Connection | Required Torque ft.-lbs. (N.m) |
|----------------------|------------|--------------------------------|
| 1/4 x 0.083 | HF4 | 10 (13.6) |
| 3/8 x 0.125 | HF6 | 28 (38.0) |
| 9/16 x 0.188 | HF9 | 75 (101.7) |



NOTE: When installing, please follow the given method and required torque; otherwise it will affect the performance of the product.