



PRECISION
HIGH
PRESSURE

Valves, Fittings and Tubing for Hydrogen Service



QUALITY CONTROL
PRODUCTS



About Us

Precision High Pressure is an American manufacturer and innovator of high-pressure valves, valve systems, fittings, and tubing with pressures up to 100,000 psi. Our products are required to perform under critical conditions of pressure, flow, and cleanliness in order to satisfy the demanding technical requirements of industries across the globe.

PHP's primary markets served include on and offshore oil exploration and extraction, hydrogen generation and refueling stations, power generation, industrial gases, waterjet blasting/cutting, and a wide variety of OEM applications where accurate and safe control of high pressure gases and liquids is important.



Needle Valves for 20,000 PSI

Specifications

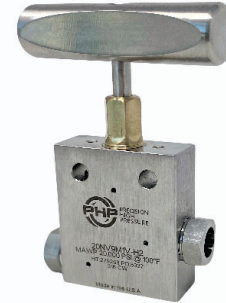
- ATEX compliant
- Cone & Threaded Connections with MAWP up to 20,000 PSI (1379 bar)
- Standard Temperature Ratings: -100°F to 400°F (-73°C to 204°C) with optional extended housing for -423° F (-253°C)

Options

- -LT: low temp. extended housing for -423° F (-253°C)
- Pneumatic actuators, see next page

Materials

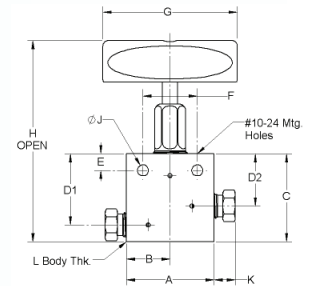
- Body - SS316/316L CW
- Packing – Glass filled Teflon
- Handle – Stainless steel or aluminum available
- Lower Stem - SS316/316L CW
- Additional lower stem materials available by request



2-Way Straight

Dimensions in. (mm)

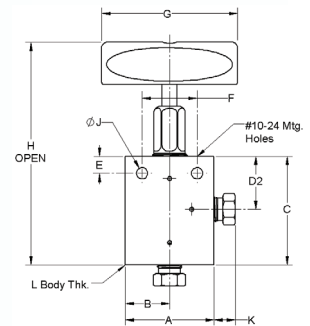
| Connection Size OD in. | Connection Type | Part Number | Orifice in. (mm) | CV | A | B | C | D1 | D2 | E | F | G | H | J | K | L |
|------------------------|---|--------------|------------------|------|--------------|-------------|--------------|-------------|-------------|-------------|-------------|---------------|--------------|-------------|-------------|-------------|
| 1/4" | Medium Pressure Cone & Thread 20,000 PSI MAWP | 20NV4M1V-H2 | 0.125 (3.2) | 0.31 | 2.00 (50.8) | 1.00 (25.4) | 2.00 (50.8) | 1.63 (41.3) | 1.19 (30.2) | 0.38 (9.7) | 1.24 (31.5) | 3.00 (76.2) | 4.84 (123.0) | 0.25 (6.4) | 0.38 (9.7) | 1.00 (25.4) |
| 3/8" | | 20NV6M1V-H2 | 0.203 (5.1) | 0.75 | 2.00 (50.8) | 1.00 (25.4) | 2.00 (50.8) | 1.63 (41.3) | 1.19 (30.2) | 0.38 (9.7) | 1.24 (31.5) | 3.00 (76.2) | 4.84 (123.0) | 0.25 (6.4) | 0.48 (12.2) | 1.00 (25.4) |
| 9/16" | | 20NV9M1V-H2 | 0.312 (7.9) | 1.75 | 2.50 (63.5) | 1.25 (31.8) | 2.88 (73.2) | 2.38 (60.5) | 1.75 (44.5) | 0.50 (12.7) | 1.38 (35.0) | 4.00 (102.0) | 5.46 (138.7) | 0.34 (8.7) | 0.68 (17.3) | 1.00 (25.4) |
| 3/4" | | 20NV12M1V-H2 | 0.438 (11.1) | 2.80 | 3.00 (76.2) | 1.50 (38.1) | 3.75 (95.3) | 3.00 (76.2) | 2.25 (57.2) | 0.62 (15.7) | 1.75 (44.5) | 8.07 (102.9) | 7.07 (179.6) | 0.44 (11.2) | 0.59 (15.0) | 1.38 (35.1) |
| 1" | | 20NV16M1V-H2 | 0.562 (14.3) | 5.20 | 4.12 (104.6) | 2.06 (52.3) | 4.75 (120.7) | 3.75 (95.3) | 2.82 (71.6) | 1.12 (28.4) | 2.50 (63.5) | 10.29 (261.4) | 8.96 (227.6) | 0.56 (14.2) | 0.74 (18.8) | 1.74 (44.5) |



2-Way Angle

Dimensions in. (mm)

| Connection Size OD in. | Connection Type | Part Number | Orifice in. (mm) | CV | A | B | C | D1 | D2 | E | F | G | H | J | K | L |
|------------------------|---|--------------|------------------|------|--------------|-------------|--------------|----|-------------|-------------|-------------|---------------|--------------|-------------|-------------|-------------|
| 1/4" | Medium Pressure Cone & Thread 20,000 PSI MAWP | 20NV4M2V-H2 | 0.125 (3.2) | 0.47 | 2.00 (50.8) | 1.00 (25.4) | 2.44 (62.0) | | 1.19 (30.2) | 0.38 (9.7) | 1.24 (31.5) | 3.00 (76.2) | 5.28 (134.1) | 0.25 (6.4) | 0.38 (9.7) | 1.00 (25.4) |
| 3/8" | | 20NV6M2V-H2 | 0.203 (5.1) | 1.13 | 2.00 (50.8) | 1.00 (25.4) | 2.44 (62.0) | | 1.19 (30.2) | 0.38 (9.7) | 1.24 (31.5) | 3.00 (76.2) | 5.28 (134.1) | 0.25 (6.4) | 0.48 (12.2) | 1.00 (25.4) |
| 9/16" | | 20NV9M2V-H2 | 0.312 (7.9) | 2.63 | 2.50 (63.5) | 1.25 (31.8) | 3.38 (85.9) | | 1.75 (44.5) | 0.50 (12.7) | 1.38 (35.0) | 4.00 (102.0) | 5.96 (151.4) | 0.34 (8.7) | 0.68 (17.3) | 1.00 (25.4) |
| 3/4" | | 20NV12M2V-H2 | 0.438 (11.1) | 4.20 | 3.00 (76.2) | 1.50 (38.1) | 4.25 (108.0) | | 2.25 (57.2) | 0.62 (15.7) | 1.75 (44.5) | 8.07 (102.9) | 7.56 (192.0) | 0.44 (11.2) | 0.59 (15.0) | 1.38 (35.1) |
| 1" | | 20NV16M2V-H2 | 0.562 (14.3) | 7.80 | 4.12 (104.6) | 2.06 (52.3) | 5.13 (130.3) | | 2.82 (71.6) | 1.12 (28.4) | 2.50 (63.5) | 10.29 (261.4) | 9.45 (240.0) | 0.56 (14.2) | 0.74 (18.8) | 1.74 (44.5) |



*Other configurations available by request

Air Actuators for Needle Valves

Air Actuators allow for remote operation of needle valves using air pressure. PHP's actuators feature direct mount technology which eliminates the need for brackets. This reduces the overall size of the valve, increases reliability, simplifies installation and maintenance.

Specifications

- ATEX compliant
- Anodized aluminum housing
- 1/8" FNPT position adjustable Air Inlet
- Open/Close position indicator standard

Configurations

- Normally Closed - Air is required to open valve
- Normally Open - Air is required to close valve

Ordering Example: 20NV6M1V-NC5-H2

| Valve Model | MAWP/Required PSI | Normally Closed (Air-to-Open) | | | Normally Open (Air-to-Close) | | |
|-------------|---------------------------------------|-------------------------------|---------------|---------------|------------------------------|---------------|---------------|
| | | NC5 | NC6 | NC5 | NO5 | NO6 | NO8 |
| NV4M | Valve MAWP psi (bar) | 20,000 (1739) | | | 20,000 (1739) | | |
| | Actuator air inlet pressure psi (bar) | 100 (7.0) | | | 100 (7.0) | | |
| NV6M | Valve MAWP psi (bar) | 20,000 (1739) | | | 20,000 (1739) | | |
| | Actuator air inlet pressure psi (bar) | 100 (7.0) | | | 90 (6.2) | | |
| NV9M | Valve MAWP psi (bar) | 10,000 (689) | 20,000 (1379) | | 17,000 (1172) | 20,000 (1379) | |
| | Actuator air inlet pressure psi (bar) | 110 (7.6) | 100 (7.0) | | 110 (7.6) | 80 (5.5) | |
| NV12M | Valve MAWP psi (bar) | | | 17,000 (1172) | | | 20,000 (1379) |
| | Actuator air inlet pressure psi (bar) | | | 90 (6.2) | | | 100 (7.0) |
| NV16M | Valve MAWP psi (bar) | | | 10,000 (689) | | | 13,000 (896) |
| | Actuator air inlet pressure psi (bar) | | | 100 (7.0) | | | 100 (7.0) |

Normally Closed (Air-to-Open)

Normally Open (Air-to-Close)



Ball Valves for Hydrogen Service

Specifications

- Cone & Threaded Connections with MAWP up to 15,000 PSI (1034 bar)
- Standard Temperature Ratings: -40°F to 250°F (-40°C to 121°C)

Features

- ATEX compliant
- Tested to 100,000 cycles at 15,000 PSI with no leakage or failures
- Two-piece stem and trunnion design ensures uniform seat stress
- Fixed end adapters minimizes the chance of misadjustment during installation
- Double stem o-rings with triple backup rings
- Pneumatic actuator option available

Materials

- Body - SS316/316L CW
- Trunnion –SS316/316L CW
- End adapters - SS316/316L CW
- O-rings – V1090 compound FKM (Viton)
- Seat seal - PEEK PVX



0.250" Orifice 2-Way Trunnion

| Connection Size OD in. | Connection Type | Part Number | Orifice in. (mm) | MAWP (psi) |
|------------------------|-------------------------------|----------------|------------------|---------------|
| 1/4" | Medium Pressure Cone & Thread | 15BVHD4T4MF-H2 | 0.250 (6.4) | 15,000 (1034) |
| 3/8" | | 15BVHD4T6MF-H2 | 0.250 (6.4) | 15,000 (1034) |
| 9/16" | | 15BVHD4T9MF-H2 | 0.250 (6.4) | 15,000 (1034) |

0.375" Orifice 2-Way Trunnion

| Connection Size OD in. | Connection Type | Part Number | Orifice in. (mm) | MAWP (psi) |
|------------------------|-------------------------------|-----------------|------------------|---------------|
| 9/16" | Medium Pressure Cone & Thread | 15BVHD6T9MF-H2 | 0.375 (9.5) | 15,000 (1034) |
| 3/4" | | 15BVHD6T12MF-H2 | 0.375 (9.5) | 15,000 (1034) |
| 1" | | 15BVHD6T16MF-H2 | 0.375 (9.5) | 15,000 (1034) |

Block and Bleed Needle Valves

Specifications

- Cone & Threaded Connections with MAWP up to 20,000 PSI (1379 bar)
- Standard Temperature Ratings: -100°F to 400°F (-73°C to 204°C)

Materials

- Body - SS316/316L CW
- Packing – Glass filled Teflon
- Handle – Stainless steel or aluminum available
- Lower Stem - SS316/316L CW
- Additional lower stem materials available by request

Single Block and Bleed

Needle x Needle

| Inlet/Outlet Connection | Vent Connection | Part Number | Flow Orifice in. (mm) | Vent Orifice in. (mm) | MAWP (psi) |
|-------------------------|-----------------|---------------|-----------------------|-----------------------|------------|
| 1/4" MP | 1/4" MP | 20SBN4M4MV-H2 | 0.125 (3.2) | 0.125 (3.2) | 20,000 |
| 3/8" MP | 1/4" MP | 20SBN6M4MV-H2 | 0.203 (5.1) | 0.125 (3.2) | 20,000 |
| 9/16" MP | 1/4" MP | 20SBN9M4MV-H2 | 0.312 (7.9) | 0.125 (3.2) | 20,000 |



Double Block and Bleed

Needle x Needle x Needle

| Inlet/Outlet Connection | Vent Connection | Part Number | Flow Orifice in. (mm) | Vent Orifice in. (mm) | MAWP (psi) |
|-------------------------|-----------------|---------------|-----------------------|-----------------------|------------|
| 1/4" MP | 1/4" MP | 20DBN4M4MV-H2 | 0.125 (3.2) | 0.125 (3.2) | 20,000 |
| 3/8" MP | 1/4" MP | 20DBN6M4MV-H2 | 0.203 (5.1) | 0.125 (3.2) | 20,000 |
| 9/16" MP | 1/4" MP | 20DBN9M4MV-H2 | 0.312 (7.9) | 0.125 (3.2) | 20,000 |

Check Valves for 20,000 PSI

Specifications

- Cone & Threaded Connections with MAWP up to 20,000 PSI (1379 bar)
- Standard Temperature Ratings: -65°F to 250°F (-54°C to 121°C) with options for -423° F to +1200°F (-253°C to +648°C)
- Nominal Cracking Pressure 20 PSI (1 bar) +/-30%

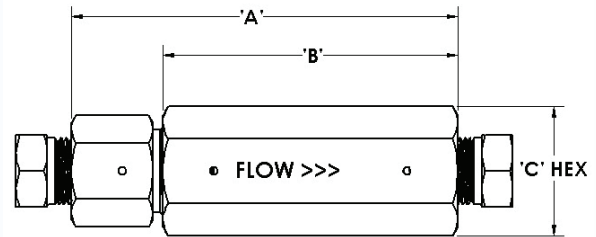
Materials

- Body - SS316/316L CW
- Seal – PEEK 450G
- Poppet- SS316/316L CW



Dimensions in. (mm)

| Connection Size OD in. | Connection Type | Part Number | Orifice in. (mm) | CV | A | B | C |
|------------------------|---|--------------|------------------|------|--------------|--------------|-------------|
| 1/4" | Medium Pressure Cone & Thread 20,000 PSI MAWP | 20CV4MFS-H2 | 0.125 (3.2) | 0.25 | 3.07 (78.0) | 2.50 (63.5) | 1.00 (25.4) |
| 3/8" | | 20CV6MFS-H2 | 0.219 (5.6) | 0.80 | 3.48 (88.4) | 2.66 (66.0) | 1.13 (28.7) |
| 9/16" | | 20CV9MFS-H2 | 0.359 (9.1) | 2.30 | 4.76 (120.9) | 3.50 (88.9) | 1.38 (35.1) |
| 3/4" | | 20CV12MFS-H2 | 0.516 (13.1) | 3.40 | 5.63 (143.0) | 4.38 (111.3) | 1.75 (44.5) |
| 1" | | 20CV16MFS-H2 | 0.688 (17.5) | 7.40 | 7.00 (177.8) | 5.25 (133.4) | 2.13 (54.1) |



Sintered Cup Filters for 20,000 PSI

Cup Filters offer maximum filtration surface area for removal of contaminating particles from the fluid system. They may be used in systems which require high flow rates with minimal pressure drop.

Specifications

- Cone & Threaded Connections with MAWP up to 20,000 PSI (1379 bar)
- 5, 10, 20, 40 and 100 micron filter elements available

Materials

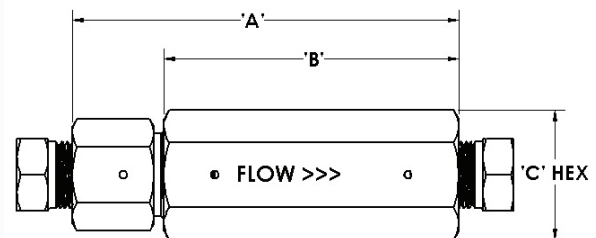
- Body - SS316/316L CW
- Filter Element - 300 series stainless steel

Ordering Information

- *-10: 10 Micron Filter
- Example: 20CF9MF-10

Dimensions in. (mm)

| Connection Size OD in. | Connection Type | Part Number | Orifice in. (mm) | Effective area of Filter Element | A | B | C |
|------------------------|---|-------------|------------------|--|--------------|--------------|-------------|
| 1/4" | Medium Pressure Cone & Thread 20,000 PSI MAWP | 20CF4MF-* | 0.125 (3.2) | 13.70 in ² 348 mm ² | 3.07 (78.0) | 2.50 (63.5) | 1.00 (25.4) |
| 3/8" | | 20CF6MF-* | 0.219 (5.6) | 25.16 in ² 639 mm ² | 3.48 (88.4) | 2.66 (66.0) | 1.13 (28.7) |
| 9/16" | | 20CF9MF-* | 0.359 (9.1) | 37.32 in ² 948 mm ² | 4.76 (120.9) | 3.50 (88.9) | 1.38 (35.1) |
| 3/4" | | 20CF12MF-* | 0.516 (13.1) | 44.45 in ² 1129 mm ² | 5.63 (143.0) | 4.38 (111.3) | 1.75 (44.5) |
| 1" | | 20CF16MF-* | 0.688 (17.5) | 123.43 in ² 3135 mm ² | 7.00 (177.8) | 5.25 (133.4) | 2.13 (54.1) |



Fittings for 20,000 PSI

Specifications

- Cone & Threaded Connections with MAWP up to 20,000 PSI (1379 bar)
- Fittings come standard with glands and collars when applicable

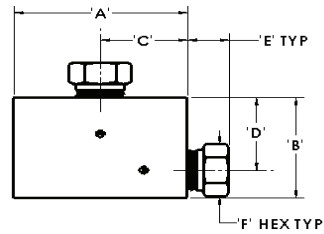
Materials

- SS316/316L CW

Elbow

Dimensions in. (mm)

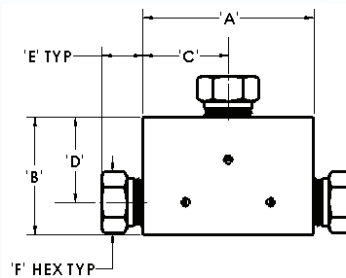
| Connection Size OD in. | Part Number | A | B | C | D | E | F | Block Thickness |
|------------------------|-------------|-----------------|----------------|----------------|----------------|----------------|----------------|-----------------|
| 1/4" | 20L4MF | 1.50 (38.1) | 1.13 (28.7) | 0.75 (19.1) | 0.75 (19.1) | 0.35 (8.9) | 0.50 (12.7) | 0.62 (15.7) |
| 3/8" | 20L6MF | 2.00 (50.8) | 1.38 (35.1) | 1.00 (25.4) | 1.00 (25.4) | 0.47 (11.9) | 0.62 (15.7) | 0.75 (19.1) |
| 9/16" | 20L9MF | 2.50 (63.5) | 1.75 (44.5) | 1.25 (31.8) | 1.25 (31.8) | 0.66 (16.8) | 0.88 (22.4) | 1.00 (25.4) |
| 3/4" | 20L12MF | 3.00 (76.2) | 2.25 (57.2) | 1.50 (38.1) | 1.50 (38.1) | 0.55 (14.0) | 1.18 (30.0) | 1.38 (35.1) |
| 1" | 20L16MF | 4.12 (104.6) | 3.00 (76.2) | 2.06 (52.3) | 2.06 (52.3) | 0.69 (17.5) | 1.38 (35.1) | 1.75 (44.5) |



Tee

Dimensions in. (mm)

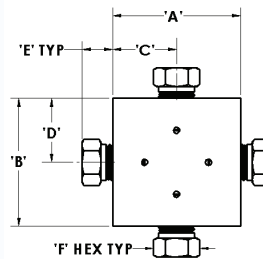
| Connection Size OD in. | Part Number | A | B | C | D | E | F | Block Thickness |
|------------------------|-------------|-----------------|----------------|----------------|----------------|----------------|----------------|-----------------|
| 1/4" | 20T4MF | 1.50 (38.1) | 1.13 (28.7) | 0.75 (19.1) | 0.75 (19.1) | 0.35 (8.9) | 0.50 (12.7) | 0.62 (15.7) |
| 3/8" | 20T6MF | 2.00 (50.8) | 1.38 (35.1) | 1.00 (25.4) | 1.00 (25.4) | 0.47 (11.9) | 0.62 (15.7) | 0.75 (19.1) |
| 9/16" | 20T9MF | 2.50 (63.5) | 1.75 (44.5) | 1.25 (31.8) | 1.25 (31.8) | 0.66 (16.8) | 0.88 (22.4) | 1.00 (25.4) |
| 3/4" | 20T12MF | 3.00 (76.2) | 2.25 (57.2) | 1.50 (38.1) | 1.50 (38.1) | 0.55 (14.0) | 1.18 (30.0) | 1.38 (35.1) |
| 1" | 20T16MF | 4.12 (104.6) | 3.00 (76.2) | 2.06 (52.3) | 2.06 (52.3) | 0.69 (17.5) | 1.38 (35.1) | 1.75 (44.5) |



Cross

Dimensions in. (mm)

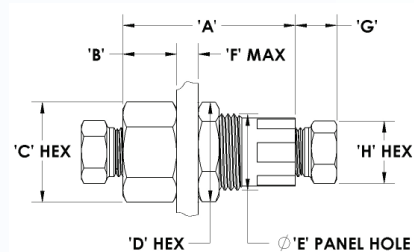
| Connection Size OD in. | Part Number | A | B | C | D | E | F | Block Thickness |
|------------------------|-------------|-----------------|-----------------|----------------|----------------|----------------|----------------|-----------------|
| 1/4" | 20X4MF | 1.50 (38.1) | 1.50 (38.1) | 0.75 (19.1) | 0.75 (19.1) | 0.35 (8.9) | 0.50 (12.7) | 0.62 (15.7) |
| 3/8" | 20X6MF | 2.00 (50.8) | 2.00 (50.8) | 1.00 (25.4) | 1.00 (25.4) | 0.47 (11.9) | 0.62 (15.7) | 0.75 (19.1) |
| 9/16" | 20X9MF | 2.50 (63.5) | 2.50 (63.5) | 1.25 (31.8) | 1.25 (31.8) | 0.66 (16.8) | 0.88 (22.4) | 1.00 (25.4) |
| 3/4" | 20X12MF | 3.00 (76.2) | 3.00 (76.2) | 1.50 (38.1) | 1.50 (38.1) | 0.55 (14.0) | 1.18 (30.0) | 1.38 (35.1) |
| 1" | 20X16MF | 4.12 (104.6) | 4.12 (104.6) | 2.06 (52.3) | 2.06 (52.3) | 0.69 (17.5) | 1.38 (35.1) | 1.75 (44.5) |



Bulkhead

Dimensions in. (mm)

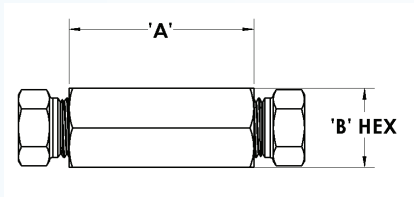
| Connection Size OD in. | Part Number | A | B | C | D | E | F | G |
|------------------------|-------------|----------------|----------------|----------------|----------------|----------------|---------------|-------------|
| 1/4" | 20BU4MF | 2.00 (50.8) | 0.53 (13.5) | 1.00 (25.4) | 1.00 (25.4) | 0.88 (22.4) | 0.38 (9.7) | 0.38 (9.7) |
| 3/8" | 20BU6MF | 2.00 (50.8) | 0.62 (15.7) | 1.00 (25.4) | 1.00 (25.4) | 0.94 (23.9) | 0.38 (9.7) | 0.44 (11.2) |
| 9/16" | 20BU9MF | 2.62 (66.5) | 0.78 (19.8) | 1.38 (35.1) | 1.38 (35.1) | 1.25 (31.8) | 0.38 (9.7) | 0.53 (13.5) |
| 3/4" | 20BU12MF | 2.62 (66.5) | 0.91 (23.1) | 1.88 (47.8) | 1.88 (47.8) | 1.69 (42.9) | 0.38 (9.7) | 0.62 (15.7) |
| 1" | 20BU16MF | 3.50 (88.9) | 1.50 (38.1) | 2.13 (54.0) | 2.13 (54.0) | 2.00 (50.8) | 0.38 (9.7) | 0.72 (18.3) |



Fittings for 20,000 PSI

Coupling Dimensions in. (mm)

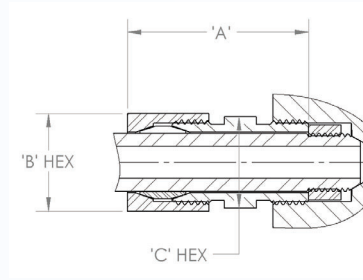
| Connection Size OD in. | Part Number | A | B |
|------------------------|-------------|----------------|----------------|
| 1/4" | 20CU4MF | 1.50 (38.1) | 0.63 (16.0) |
| 3/8" | 20CU6MF | 1.75 (44.5) | 0.75 (19.1) |
| 9/16" | 20CU9MF | 2.12 (63.5) | 1.00 (25.4) |
| 3/4" | 20CU12MF | 2.50 (63.5) | 1.38 (35.1) |
| 1" | 20CU16MF | 3.50 (88.9) | 1.75 (44.5) |



Anti-Vibration Assemblies

| Connection Size OD in. | Part Number | A | B | C |
|------------------------|-------------|----------------|----------------|----------------|
| 1/4" | 20AV4M | 1.14 (29.0) | 0.62 (15.7) | 0.62 (15.7) |
| 3/8" | 20AV6M | 1.42 (36.1) | 0.75 (19.1) | 0.75 (19.1) |
| 9/16" | 20AV9M | 1.74 (44.2) | 0.94 (23.9) | 0.94 (23.9) |
| 3/4" | 20AV12M | 1.97 (50.0) | 1.38 (35.1) | 1.38 (35.1) |
| 1" | 20AV16M | 2.34 (59.4) | 1.50 (38.1) | 1.50 (38.1) |

Dimensions in. (mm)



Connection Components

| Connection Size OD in. | Gland | Collar | Cap | Plug | Tube Nipple |
|------------------------|---------|---------|---------|---------|-------------|
| 1/4" | 20GL4M | 20CL4M | 20CA4M | 20PL4M | 20N4M-* |
| 3/8" | 20GL6M | 20CL6M | 20CA6M | 20PL6M | 20N6M-* |
| 9/16" | 20GL12M | 20CL9M | 20CA9M | 20PL9M | 20N9M-* |
| 3/4" | 20GL12M | 20CL12M | 20CA12M | 20PL12M | 20N12M-* |
| 1" | 20GL16M | 20CL16M | 20CA16M | 20PL16M | 20N16M-* |

* Insert desired length in.

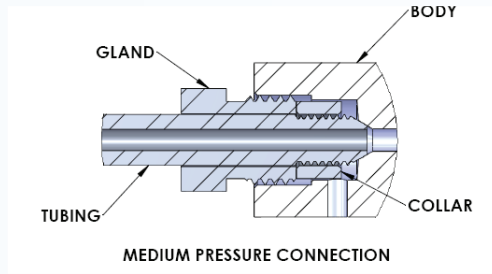
316SS/316L Stainless Steel Tubing

| Connection Size OD in. | Part Number | OD in. (mm) | ID in. (mm) | Wall Thickness in. (mm) | MAWP (psi) |
|------------------------|-------------|--------------|--------------|-------------------------|------------|
| 1/4" | 20TU4M | 0.250 (6.4) | 0.109 (2.8) | 0.070 (1.8) | 20,000 |
| 3/8" | 20TU6M | 0.375 (9.5) | 0.203 (5.2) | 0.086 (2.2) | 20,000 |
| 9/16" | 20TU9M | 0.563 (14.2) | 0.312 (7.9) | 0.125 (3.2) | 20,000 |
| 3/4" | 20TU12M | 0.750 (19.1) | 0.438 (11.1) | 0.156 (3.9) | 20,000 |
| 1" | 20TU16M | 1.00 (25.4) | 0.562 (14.3) | 0.219 (5.6) | 20,000 |

Torque Tables

Collar and Gland Minimum Required Torque

| Connection Size OD in. | Torque ft/lbs (Nm) |
|------------------------|--------------------|
| 1/4" MP | 20 (27) |
| 3/8" MP | 30 (41) |
| 9/16" MP | 55 (75) |
| 3/4" MP | 90 (122) |
| 1" MP | 125 (170) |



Needle Valve Packing Gland Required Torque

| Valve Model | Torque ft/lbs (Nm) |
|-------------|--------------------|
| 20NV4M | 70 (95) |
| 20NV6M | 70 (95) |
| 20NV9M | 105 (142) |
| 20NV12M | 85 (115) |
| 20NV16M | 95 (129) |

Air Operated Needle Valve Packing Gland Required Torque

| Valve Model | Torque ft/lbs (Nm) |
|-------------|--------------------|
| 20NV4M | 55 (75) |
| 20NV6M | 55 (75) |
| 20NV9M | 65 (88) |
| 20NV12M | 100 (136) |
| 20NV16M | 115 (156) |

Check Valve Gland Required Torque

| Valve Model | Torque ft/lbs (Nm) |
|-------------|--------------------|
| 20CV4MFS | 70 (95) |
| 20CV6MFS | 70 (95) |
| 20CV9MFS | 80 (108) |
| 20CV12MFS | 110 (149) |
| 20CV16MFS | 150 (203) |