

Bellows-Sealed Metering Valves

MU Series

Features

- ⦿ Reset spring design with no backlash for precise, repeatable flow settings
- ⦿ Micrometer handle measures stem position in 0.0008 in. (0.02 mm) increments
- ⦿ Valves open to maximum flow in six turns
- ⦿ Metering and regulating stem tips available
- ⦿ Modular design to reduce maintenance cost
- ⦿ Slotted handle tops enable adjustment with a screwdriver
- ⦿ Lock screw secures flow settings



Technical Data

| Stem Type | | Metering | Regulating |
|--------------------------|----------|--|--|
| Flow Coefficient (Cv) | | 0.019 | 0.30 |
| Max. Working Pressure | | 700 psig (48.2 bar) | |
| Max. Working Temperature | | 900 °F (482 °C) | |
| Leak Rate (Helium) | Internal | - | $\leq 7.0 \times 10^{-7}$ std cm ³ /s |
| | External | $\leq 4.0 \times 10^{-9}$ std cm ³ /s | $\leq 4.0 \times 10^{-9}$ std cm ³ /s |

Pressure-Temperature Ratings

| Material | 316 SS | |
|-----------------------|------------------------------|------------|
| | Gasket | Welded |
| Temperature °F (°C) | Working Pressure, psig (bar) | |
| -20 (-28) to 100 (38) | 700 (48.2) | 700 (48.2) |
| 200 (93) | 610 (42.0) | 610 (42.0) |
| 300 (148) | 530 (36.5) | 530 (36.5) |
| 400 (204) | 450 (31.0) | 450 (31.0) |
| 500 (260) | 375 (25.8) | 375 (25.8) |
| 600 (315) | 300 (20.6) | 300 (20.6) |
| 650 (343) | - | 260 (17.9) |
| 700 (371) | - | 230 (15.8) |
| 750 (398) | - | 200 (13.7) |
| 800 (426) | - | 160 (11.0) |
| 850 (354) | - | 130 (8.9) |
| 900 (482) | - | 100 (6.8) |

Handle Temperature Gradient

| Stem Tip Temperature °F (°C) | Handle Temperature °F (°C) |
|------------------------------|----------------------------|
| 600 (315) | 217 (103) |
| 900 (482) | 316 (158) |

Fittings

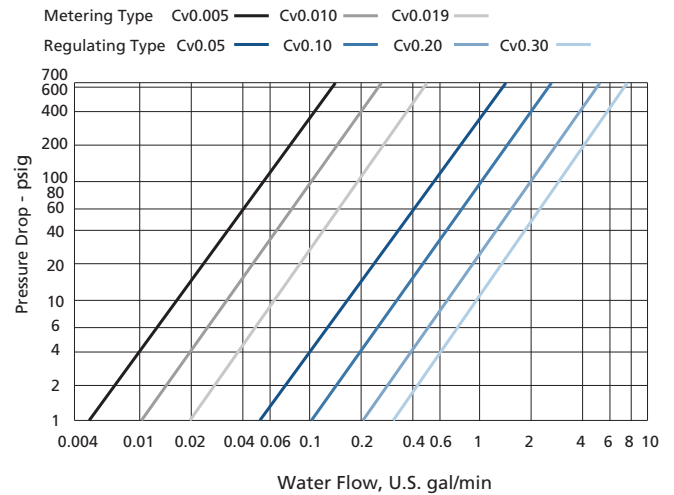
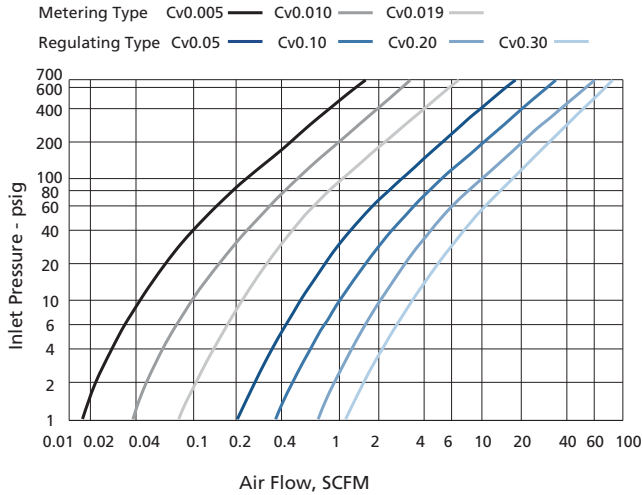
Valves

Pressure Gauges

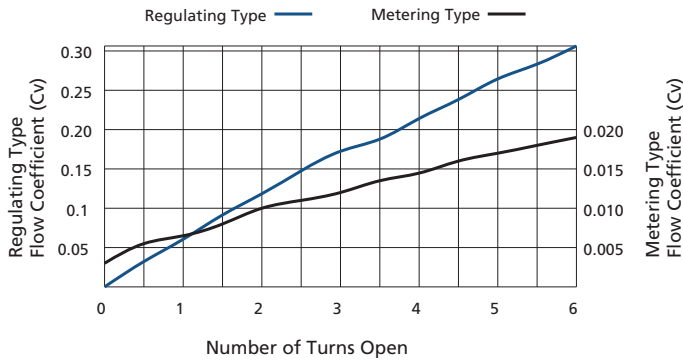
Integrated Systems and Others

Process Specification

Flow Data



Flow Coefficient at Turns Open



Factory Flow Settings

For valves with metering stem tips, with 10 psig (0.68 bar) inlet pressure and the flow rate from 10 to 15 ml/min, the handle is set at 0 and the valves are not intended for shut-off service.

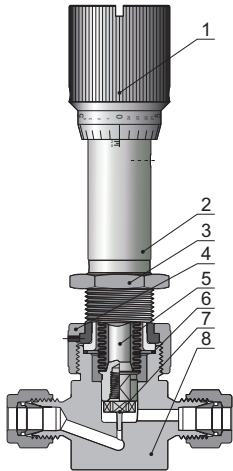
For valves with regulating stem tips, when valves are closed, after helium leak tested to a maximum allowable leak rate of 7×10^{-7} std cm^3/s , the handle is set at 0.

Note: Valves with regulating stem tips and welded seal are not recommended for shut-off service above 600°F (315°C).

Process Specification

| Process Specification Technology | Standard Cleaning and Packaging (FC-01) | Special Cleaning and Packaging (FC-02) |
|----------------------------------|---|---|
| Material/Specification | 316 SS/ASTM A479 | |
| Wetted Surface Roughness | Ra 15 $\mu\text{in.}$ (0.38 μm) | |
| Polishing | Machine finished | |
| Cleaning | Thrice degreasing ultrasonic cleaning | Special cleaning with non - ozone-depleting chemicals |
| Assembly Environment | At atmosphere | In specially cleaned areas |
| Packaging | Individually bagged | Double bagged |

Major Materials of Construction

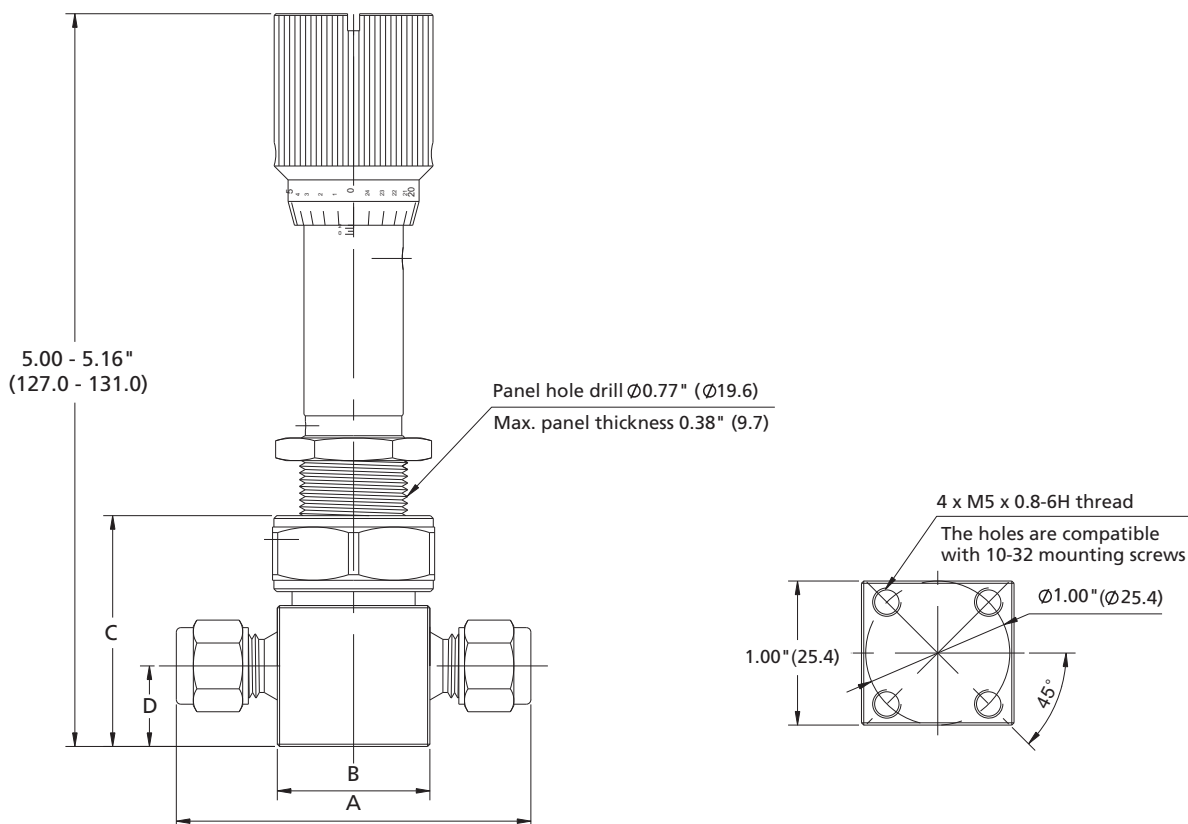


| Item | Component | Material/Specification |
|------|------------------|---------------------------------|
| 1 | Handle | 6061/ASTM B211 |
| 2 | Bonnet | 304 SS/ASTM A479 |
| 3 | Panel Nut | 304 SS/ASTM A479 |
| 4 | Nut | 304 SS/ASTM A479 |
| 5 | Bellows Assembly | 316 SS/ASTM A240/ASTM A479 |
| 6 | Gasket | Silver-Plated 316L SS/ASTM A269 |
| 7 | Stem Tip | 316 SS/ASTM A479 |
| 8 | Body | 316 SS/ASTM A479 |

Ordering Information and Dimensions

Dimensions

Dimensions, in inches (millimeters), are for reference only and are subject to change.



V-100 Bellows-Sealed Metering Valves

Fittings

Valves

Pressure Gauges

Integrated Systems and Others

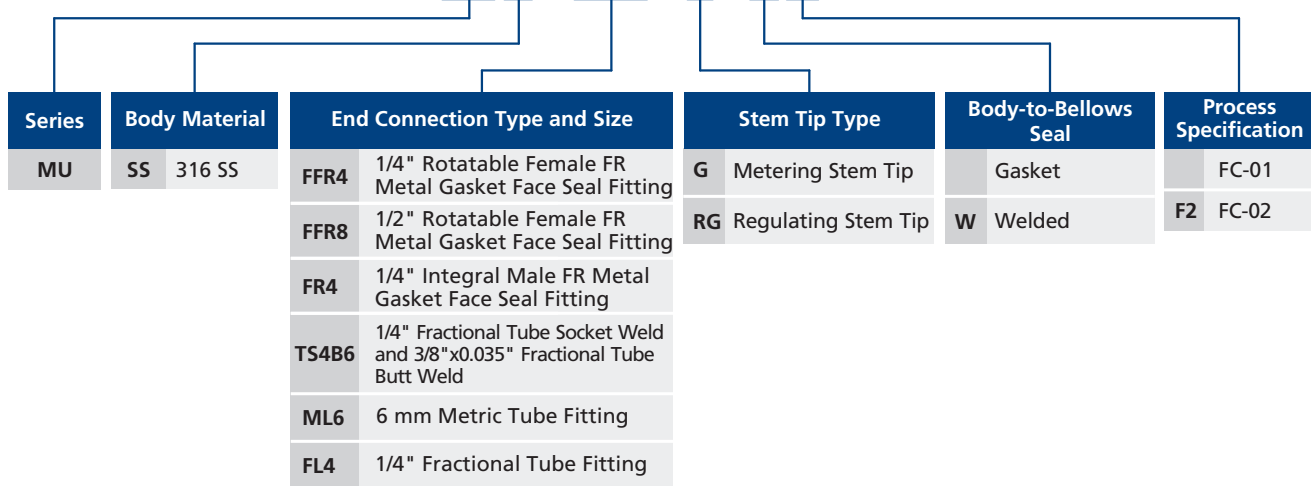
Process Specification

| Ordering Information | End Connection Type and Size | Cv | Dimensions, in. (mm) | | | |
|----------------------|---|-------|----------------------|-------------|-------------|-------------|
| | | | A | B | C | D |
| MUSS-FFR4-G-F2 | 1/4" Rotatable Female FR Metal Gasket Face Seal Fitting | 0.019 | 2.76 (70.1) | 1.00 (25.4) | 1.60 (40.7) | 0.56 (14.2) |
| MUSS-FFR8-G-F2 | 1/2" Rotatable Female FR Metal Gasket Face Seal Fitting | | 4.61 (117.0) | 1.00 (25.4) | | |
| MUSS-FFR4-RG-F2 | 1/4" Rotatable Female FR Metal Gasket Face Seal Fitting | 0.3 | 2.76 (70.1) | 1.00 (25.4) | | |
| MUSS-FFR8-RG-F2 | 1/2" Rotatable Female FR Metal Gasket Face Seal Fitting | | 4.61 (117.0) | 1.00 (25.4) | | |
| MUSS-FL4-G | 1/4" Tube Fitting | 0.019 | 2.46 (62.5) | 1.06 (26.9) | | 0.56 (14.2) |
| MUSS-ML6-G | 6 mm Tube Fitting | | | | | |
| MUSS-FL4-RG | 1/4" Tube Fitting | 0.3 | 2.46 (62.5) | 1.06 (26.9) | | |
| MUSS-ML6-RG | 6 mm Tube Fitting | | | | | |
| MUSS-FR4-G-F2 | 1/4" Integral Male FR Metal Gasket Face Seal Fitting | 0.019 | 2.24 (56.9) | 1.00 (25.4) | | 0.44 (11.2) |
| MUSS-FR4-RG-F2 | 1/4" Integral Male FR Metal Gasket Face Seal Fitting | 0.3 | | | | |
| MUSS-TS4B6-G | 1/4" Tube Socket Weld and 3/8" x 0.035" Tube Butt Weld | 0.019 | 1.68 (42.7) | 1.00 (25.4) | 0.56 (14.2) | |
| MUSS-TS4B6-RG | | 0.3 | | | | |

Note: For valves with welded body-to-bellows seal (add -W as a suffix), the dimension C will be changed to 1.57 (40.0).

Ordering Number Description

MUSS - FFR4 - G - WF2



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