

Bellows-Sealed Metering Valves

MU Series

Introduction

MU Series Bellows-Sealed Metering Valves are precise flow controllers suitable for high purity and ultra high purity applications. The vernier handle allows for precise flow adjustment, while the precision metal bellows ensure stable flow. The all-metal flow path design is both corrosion-resistant and high-temperature resistant. Available with metering and regulating stem tips, these stem tips are easy to replace.

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	
Max. Working Pressure		700 psig (48.2 bar)	
Max. Working Temperature		900 °F (482 °C)	
Leak Rate (Helium)	Internal	-	≤7.0×10 ⁻⁷ std·cm ³ /s
	External	≤4.0×10 ⁻⁹ std·cm ³ /s	

Pressure-Temperature Ratings

Material		
316 SS		
Body-to-Bellows Seal	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)

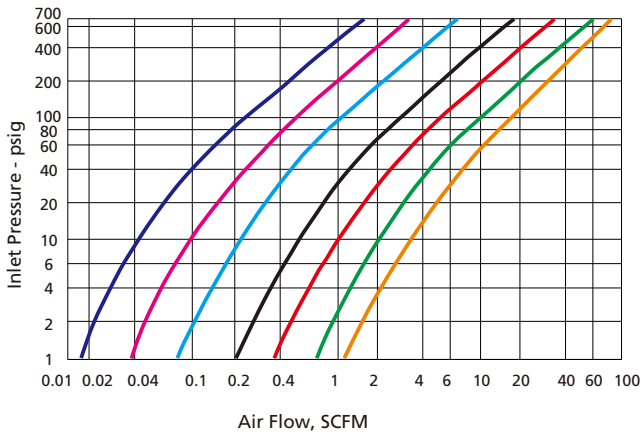


Handle Temperature Gradient

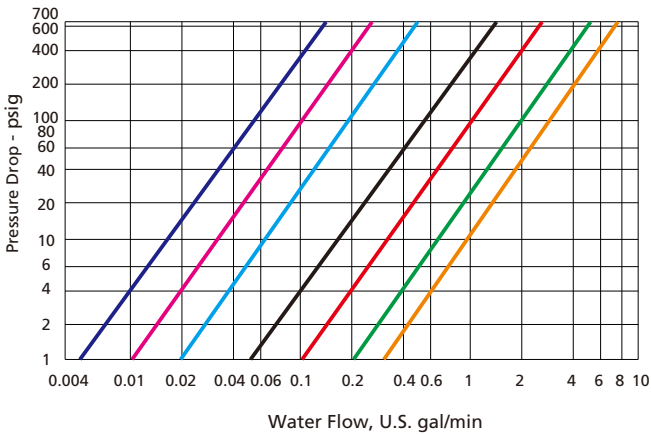
Stem Tip Temperature °F (°C)	Handle Temperature °F (°C)
600 (315)	217 (103)
900 (482)	316 (158)

Flow Data

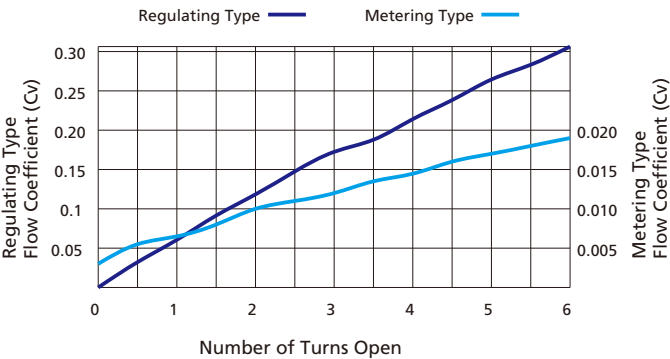
Metering Type Cv 0.005 Cv 0.010 Cv 0.019
Regulating Type Cv 0.05 Cv 0.10 Cv 0.20 Cv 0.30



Metering Type Cv 0.005 Cv 0.010 Cv 0.019
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Flow Coefficient at Turns Open

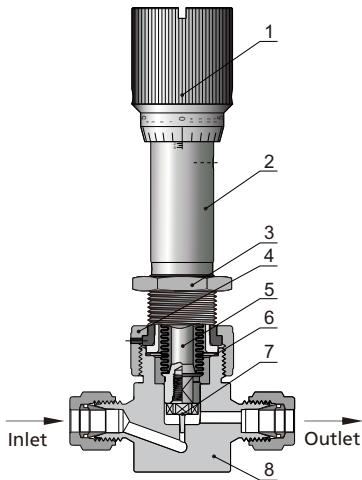


Factory Flow Settings
For valves with metering stem tips, with 10 psig (0.68 bar) inlet pressure and the flow rate from 10 to 15 ml/min, the handle is set at 0 and the valves are not intended for shut-off service.
For valves with regulating stem tips, when valves are closed, after helium leak tested to a maximum allowable leak rate of 7×10^{-7} std-cm³/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	Item	
	Standard Cleaning and Packaging Process (FC-01)	Special Cleaning and Packaging Process (FC-02)
Material	316 SS, 316L SS	
Wetted Surface Roughness	Ra 15 µin. (0.38 µm)	
Polishing Process	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

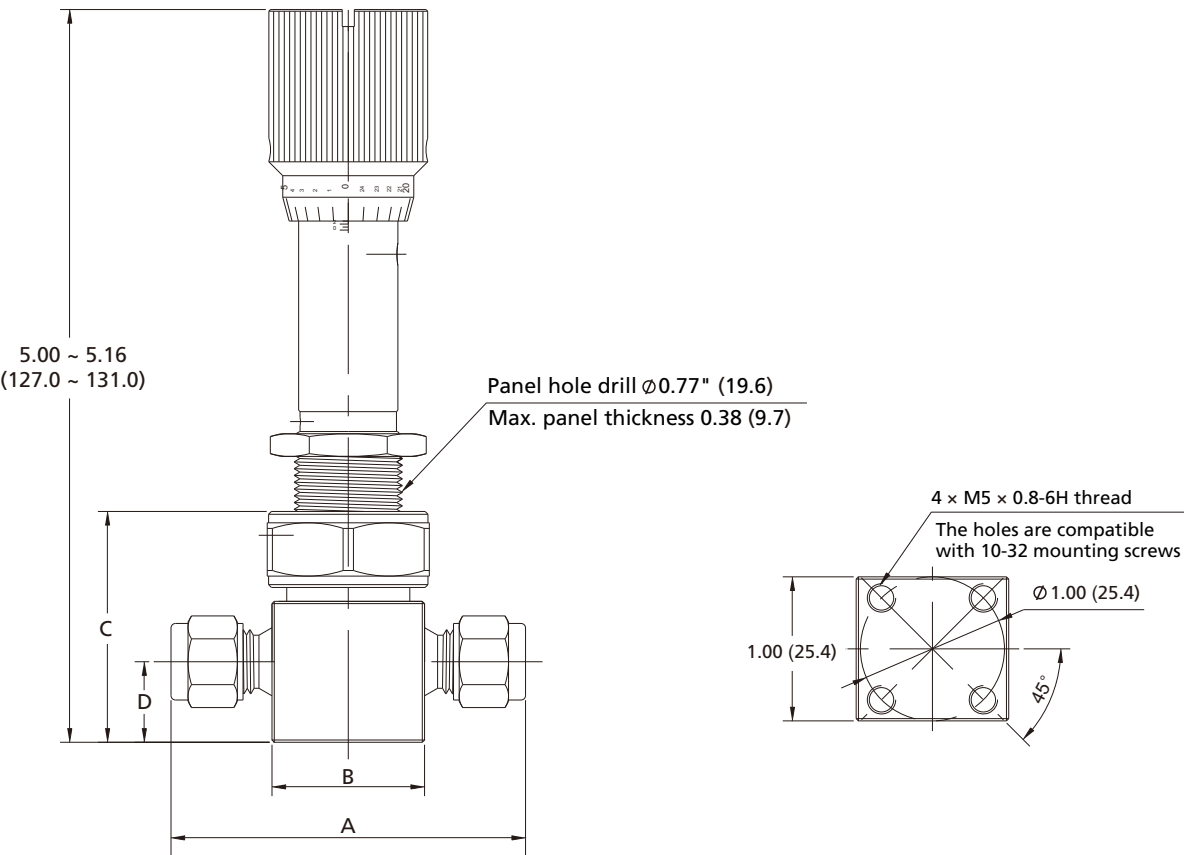


Item	Component	Material/Specification
1	Handle	6061/ASTM B211
2	Bonnet	304 SS/ASTM A479
3	Panel Nut	304 SS/ASTM A479
4	Nut	304 SS/ASTM A479
5	Bellows Assembly	316 SS/ASTM A269/ASTM A479
6	Gasket	316L SS
7	Stem Tip	316 SS or 316L SS
8	Body	316 SS or 316L SS

Ordering Information and Dimensions

Dimensions

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



Fittings

Valves

Regulators

Filters

Tubing

Integrated Systems

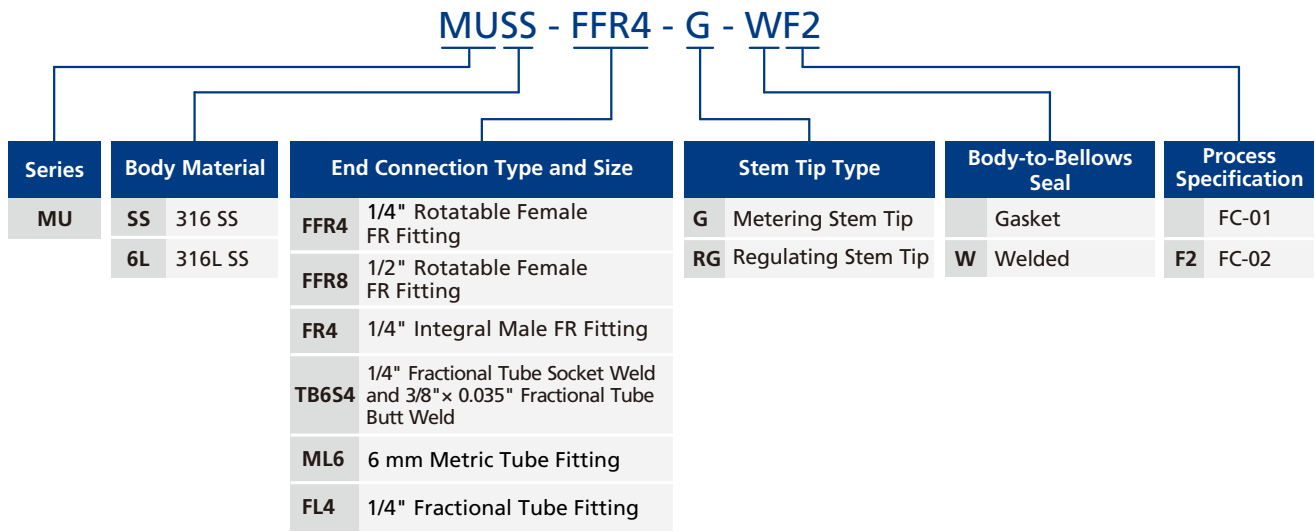
Other Products

Technical Information

Ordering Information	End Connection Type and Size	Cv	Dimensions, in. (mm)						
			A	B	C	D			
MUSS-FFR4-G-F2	1/4" Rotatable Female FR 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 Fitting		4.61 (117.0)						
MUSS-FFR4-RG-F2	1/4" Rotatable Female FR Fitting	0.3	2.76 (70.1)						
MUSS-FFR8-RG-F2	1/2" Rotatable Female FR Fitting		4.61 (117.0)						
MUSS-FL4-G	1/4" Tube Fitting	0.019	2.46 (62.5)	1.06 (26.9)		1.60 (40.7)	0.56 (14.2)		
MUSS-ML6-G	6 mm Tube Fitting								
MUSS-FL4-RG	1/4" Tube Fitting	0.3							
MUSS-ML6-RG	6 mm Tube Fitting								
MUSS-FR4-G-F2	1/4" Integral Male FR Fitting	0.019	2.24 (56.9)	1.00 (25.4)			1.60 (40.7)	0.44 (11.2)	
MUSS-FR4-RG-F2	1/4" Integral Male FR Fitting	0.3							
MUSS-TB6S4-G	1/4" Tube Socket Weld and 3/8"× 0.035" Tube Butt Weld	0.019	1.68 (42.7)	1.00 (25.4)				1.60 (40.7)	0.56 (14.2)
MUSS-TB6S4-RG		0.3							

Notes: 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



Note: "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number.
Not all combinations are available. Should you have any questions, please contact FITOK Group or our authorized distributors.