

# 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	-	$\leq 7.0 \times 10^{-7}$ mbarl/s
	External	$\leq 4.0 \times 10^{-9}$ mbarl/s	$\leq 4.0 \times 10^{-9}$ mbarl/s

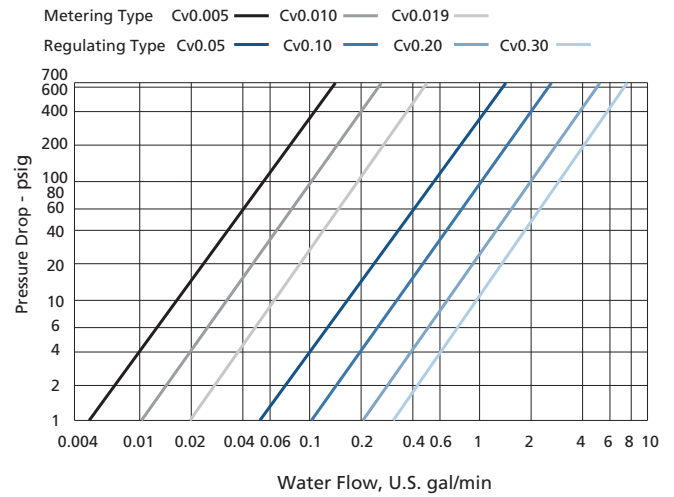
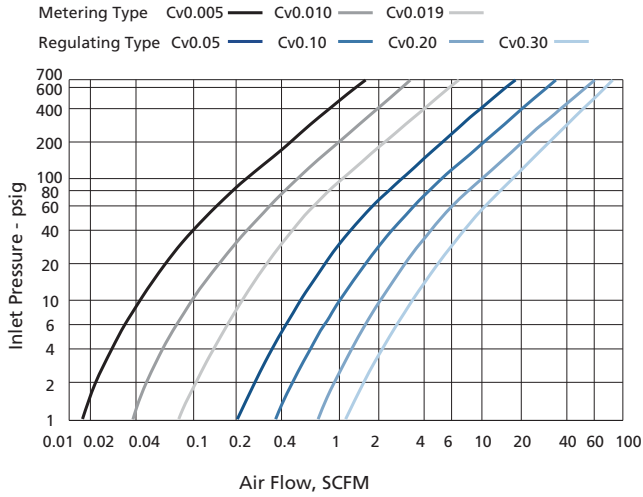
### Pressure-Temperature Ratings

Material	316 SS	
	Gasket	Welded
Body-to-Bellows Seal	Working Pressure, psig (bar)	
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)

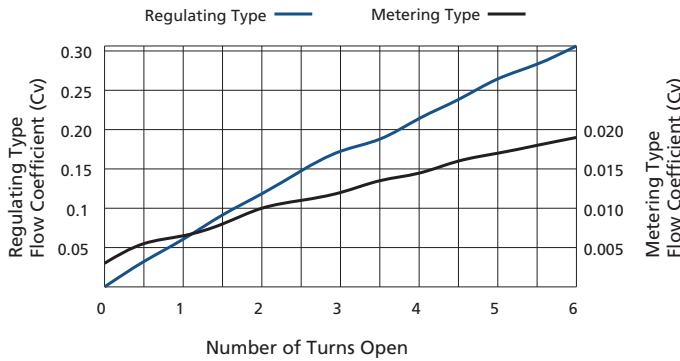
### Handle Temperature Gradient

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

## Flow Data



Flow Coefficient at Turns Open



### Factory Flow Settings

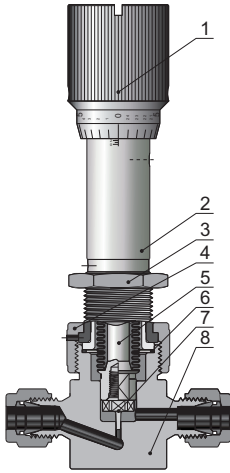
For valves with metering stem tips, with 10 psig (0.68 bar) inlet pressure and the flow rate from 10 to 15 ml/min, the handle is set at 0. Not intended for shut-off service. For valves with regulating stem tips, when valves are closed, after helium leak tested to a maximum allowable leak rate of  $7 \times 10^{-7}$  mbar·l/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).

## Product Technology Grade

Product Grade Technology	Standard Cleaning and Packaging	Special Cleaning and Packaging (F2)
Material/Specification	316 SS/ASTM A479	
Wetted Surface Roughness	Ra 15 µin. (0.38 µm)	
Polishing	Mechanical Polishing	
Process Specification	FC-01 Standard Cleaning and Packaging	FC-02 Special Cleaning and Packaging
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

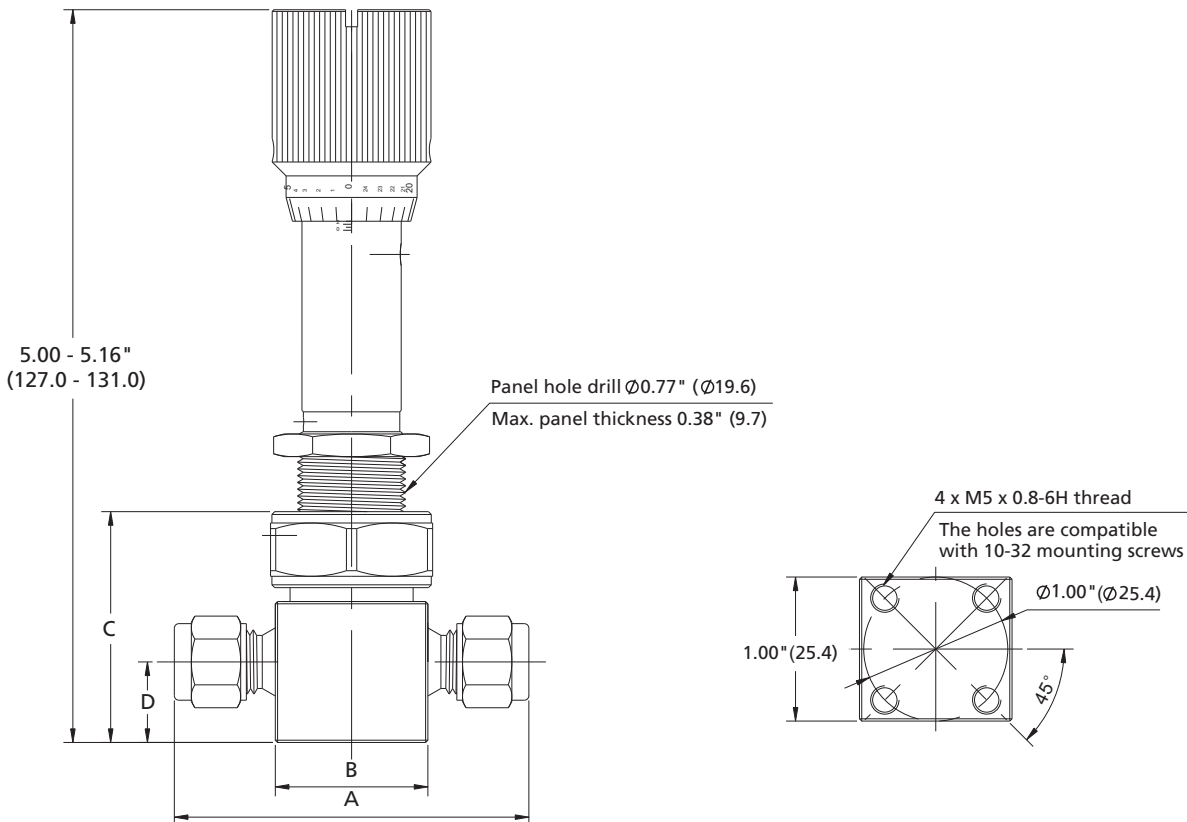


Item	Component	Material/Specification
1	Handle	6061/ASTM B211
2	Bonnet	304 SS/ASTM A479
3	Panel nut	304 SS/ASTM A479
4	Nut	304 SS/ASTM A479
5	Bellows assembly	316 SS/ASTM A240/ASTM A479
6	Gasket	Silver-plated 316L SS/ASTM A269
7	Stem tip	316 SS/ASTM A479
8	Body	316 SS/ASTM A479

## Ordering Information and Dimensions

### Dimensions

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

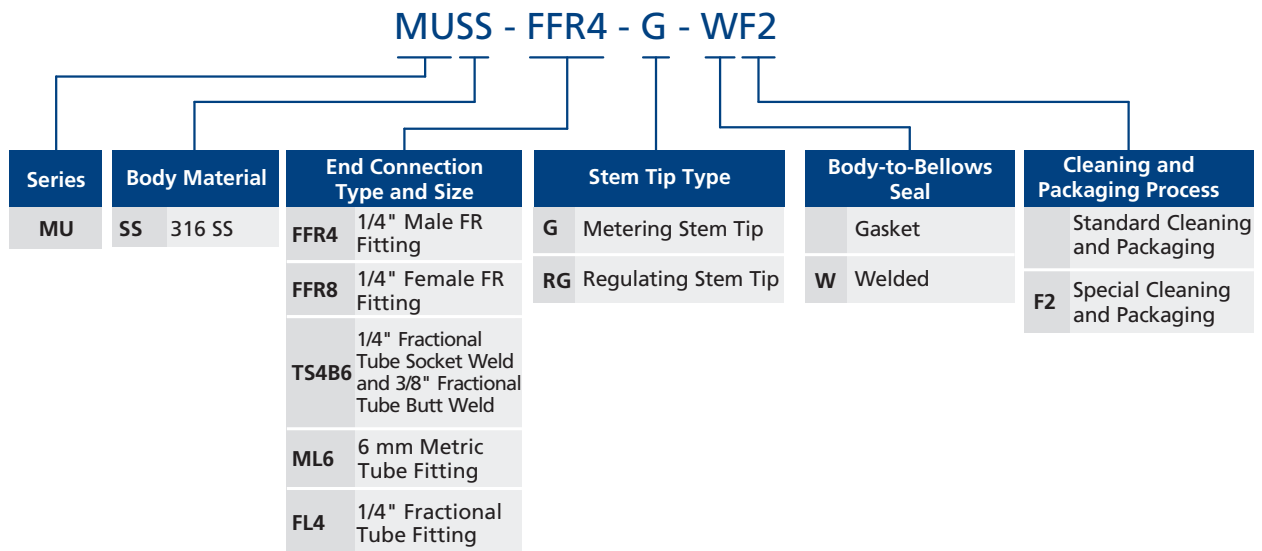


## V-73 Bellows-sealed Metering Valves

Ordering Information	End Connection Type and Size	Cv	Dimensions, in. (mm)				
			A	B	C	D	
MUSS-FFR4-G-F2	1/4" 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" Female FR Fitting		4.61 (117.0)	1.00 (25.4)			
MUSS-FFR4-RG-F2	1/4" Female FR Fitting	0.3	2.76 (70.1)	1.00 (25.4)			
MUSS-FFR8-RG-F2	1/2" Female FR 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)		0.56 (14.2)	
MUSS-ML6-RG	6 mm Tube Fitting						
MUSS-FR4-G-F2	1/4" Male FR Fitting	0.019	2.24 (56.9)	1.00 (25.4)		0.44 (11.2)	
MUSS-FR4-RG-F2	1/4" Male FR Fitting	0.3					
MUSS-TS4B6-G	1/4" Tube Socket Weld and 3/8" 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 suffix), the dimension C will be changed to 1.57 (40.0).

## Ordering Number Description



Note: MU series valves with FR end connections are standard with F2 Special Cleaning and Packaging process specification.



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