

# METERING BALL VALVES

MBV SERIES



Patent No.  
8590569



VALVES & ACTUATORS



## METERING BALL VALVE (MBV) SERIES

### FEATURES

- On/Off and Metering service
- PFA Encapsulated Ball Stem design
- Panel Mounting as standard
- MAWP 2000 psi (137 Barg)
- MAWT 300°F (150°C)
- End Connections: LET-LOK 1/16", 1/8", 1/4", 3/8"; FNPT 1/8"; MNPT 1/8"; Male Face Seal 1/4"
- 1°, 3° and 5° Stem Taper for required flow control
- Stem with Stopper shoulder for long life service

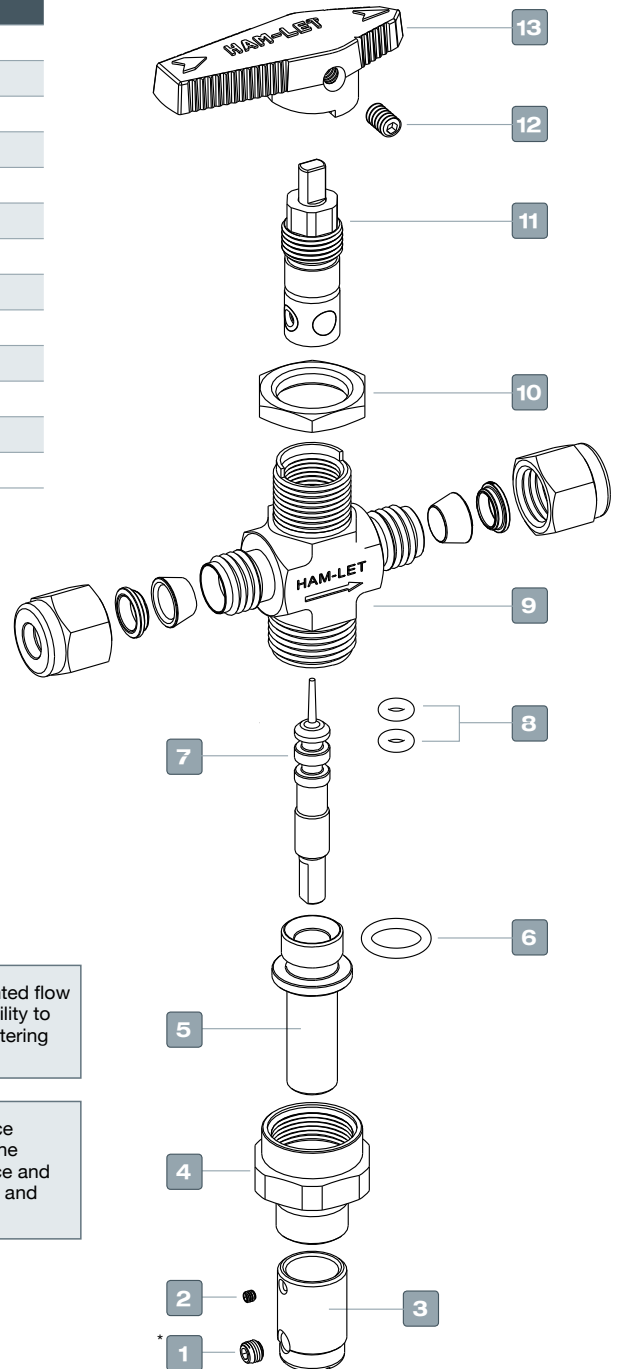
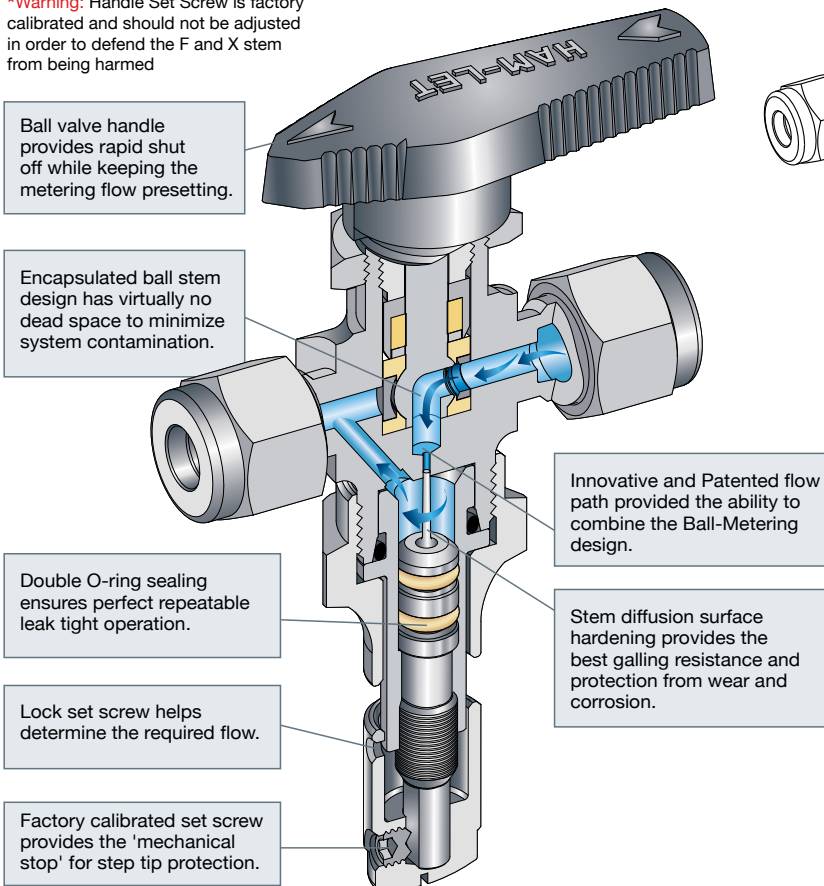
### GENERAL

The Shut-off Metering Ball Valve Series provides the highest degree of precision metering for moderate pressure applications. This series features innovative and unique shut-off capability and allows full control of the process from complete shut-off to extra fine regulation. A choice of three precision stem tapers enables metering at flow capacities as low as CV= 0.001 with up to 11 handle turns. This valve is the ultimate solution for precision flow control.

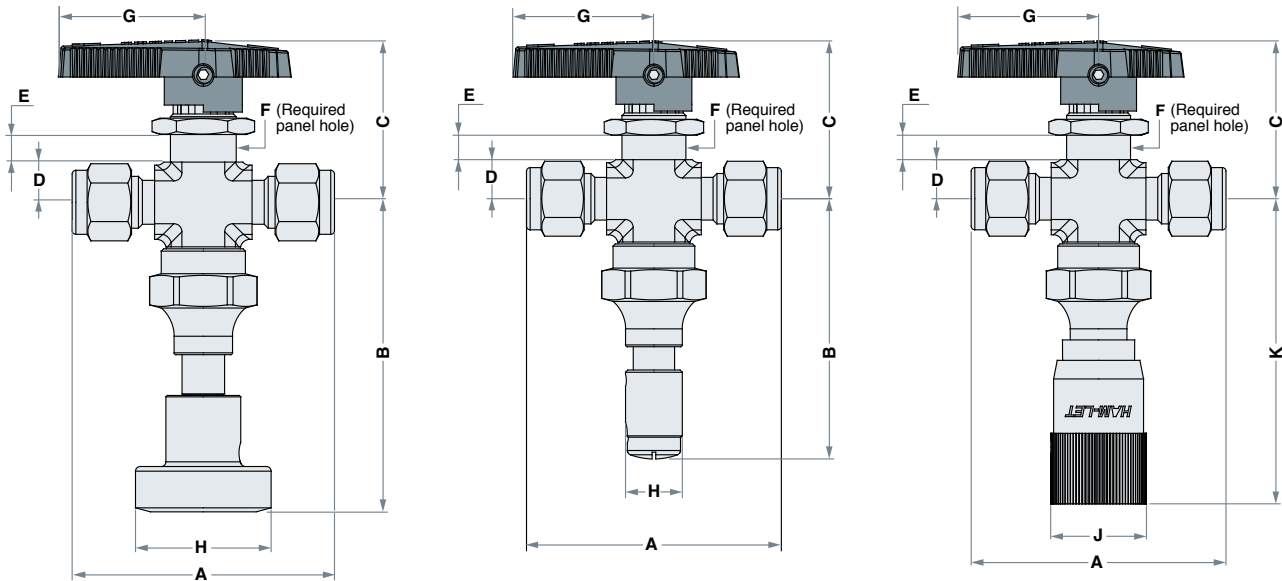
#### MATERIAL OF CONSTRUCTION

No.	Component	Qty.	Material
1	Handle Set Screw*	1	18-8 Stainless Steel
2	Flow Fixing Screw	1	18-8 Stainless Steel
3	Handle	1	St.St. ASTM A-276
4	Bonnet Nut	1	St.St. ASTM A-276
5	Bonnet	1	St.St. ASTM A-276
6	O-Ring	1	Fluorocarbon FKM
7	Stem	1	St.St. 174PH/A564
8	O-Ring	2	Fluorocarbon FKM
9	Body	1	St.St. ASTM A-182
10	Panel Nut	1	St.St. ASTM A-276
11	Ball Stem assembly	1	St.St. ASTM A-276 + PFA
12	Set Screw	1	St.St.304
13	Handle	1	Nylon + Glass Fiber

**\*Warning:** Handle Set Screw is factory calibrated and should not be adjusted in order to defend the F and X stem from being harmed



## METERING BALL VALVE DIMENSIONS



Basic Ordering Number	Stem Taper Angle	Orifice		Cv	End Connections	A		B		C		D		E		F		G		H		J		K	
		mm	in			mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
MBV-H	5°	3.3	0.13	max	1/8" LET-LOK®	54.6	2.15	65.7	2.59	34.8	1.37	8.6	0.34	5.9	0.23	15.1	0.59	31	1.22	29	1.14	21.1	0.83	72	2.83
					1/4" LET-LOK	56.1	2.21	65.7	2.59	34.8	1.37	8.6	0.34	5.9	0.23	15.1	0.59	31	1.22	29	1.14	21.1	0.83	72	2.83
					3MM LET-LOK	54.6	2.15	65.7	2.59	34.8	1.37	8.6	0.34	5.9	0.23	15.1	0.59	31	1.22	29	1.14	21.1	0.83	72	2.83
					6MM LET-LOK®	56.1	2.21	65.7	2.59	34.8	1.37	8.6	0.34	5.9	0.23	15.1	0.59	31	1.22	29	1.14	21.1	0.83	72	2.83
					1/8" Female NPT	41.4	1.63	65.7	2.59	34.8	1.37	8.6	0.34	5.9	0.23	15.1	0.59	31	1.22	29	1.14	21.1	0.83	72	2.83
					1/4" Male Face Seal	54.1	2.13	65.7	2.59	34.8	1.37	8.6	0.34	5.9	0.23	15.1	0.59	31	1.22	29	1.14	21.1	0.83	72	2.83
					3/8" LET-LOK®	64.92	2.55	65.7	2.59	34.8	1.37	8.6	0.34	5.9	0.23	15.1	0.59	31	1.22	29	1.14	21.1	0.83	72	2.83
					1/8" Male NPT	41.8	1.64	65.7	2.59	34.8	1.37	8.6	0.34	5.9	0.23	15.1	0.59	31	1.22	29	1.14	21.1	0.83	72	2.83
MBV-F	3°	1.4	0.055	max	1/8" LET-LOK®	54.6	2.15	60	2.36	34.8	1.37	8.6	0.34	5.9	0.23	15.1	0.59	31	1.22	12.5	0.49	21.1	0.83	72	2.83
					1/4" LET-LOK®	56.1	2.21	60	2.36	34.8	1.37	8.6	0.34	5.9	0.23	15.1	0.59	31	1.22	12.5	0.49	21.1	0.83	72	2.83
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MBV-X	1°	0.8	0.03	max	1/8" LET-LOK®	54.6	2.15	60	2.36	34.8	1.37	8.6	0.34	5.9	0.23	15.1	0.59	31	1.22	12.5	0.49	21.1	0.83	72	2.83
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Dimensions are for reference only, and are subject to change.

## TESTING

The H, F and X Series metering ball valve designs have been tested for Proof and Burst.

Every MBV - H, F & X metering valve is factory tested with Nitrogen at 1000 psig (69 bar) for proper assembly, using leak detection.

## FLOW SETTING

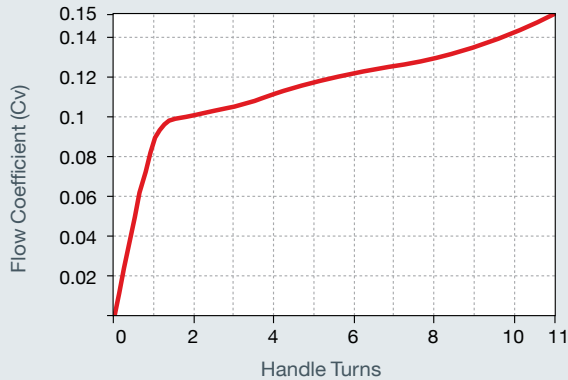
**MBV-H** series metering valve is tested for bubble tight shut-off at 100 psig (6.8 bar) differential pressure.

**MBV-F** series metering valve handle dead stop is set at 4 to 10 std cm<sup>3</sup>/min with 5 psig (0.34 bar) inlet pressure.

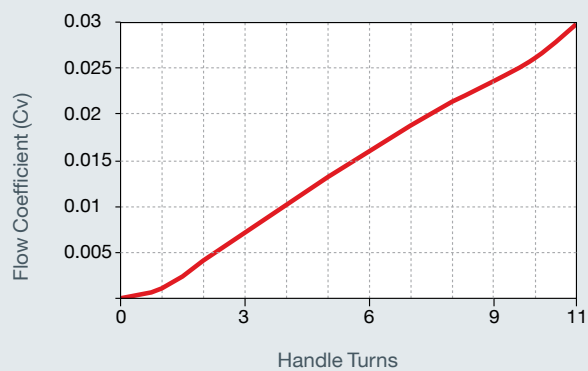
**MBV-X** series metering valve handle dead stop is set at 4 to 10 std cm<sup>3</sup>/min with 15 psig (1.0 bar) inlet pressure.

## FLOW DATA AT 70°F (20°C)

MBV-H METERING BALL VALVE 5° STEM



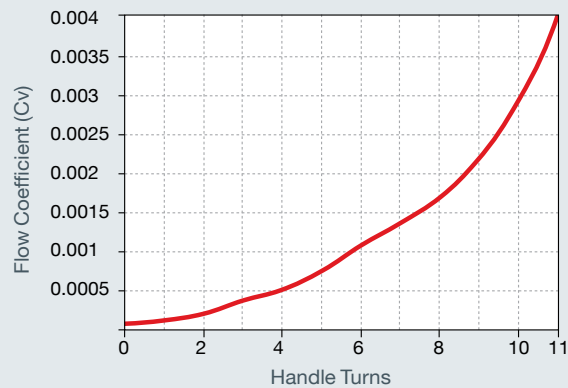
MBV-F METERING BALL VALVE 3° STEM



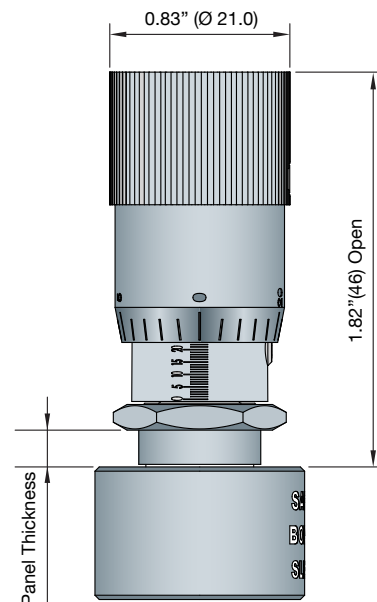
	Pressure Drop to Atmosphere psi (bar)	Water Flow U.S gal/min (L/min)	Air Flow std ft <sup>3</sup> / min (std L / min)
Maximum Flow Coefficient (Cv) 0.13	10 (0.68)	0.47 (1.7)	1.6 (45.3)
	50 (3.4)	1.0 (3.7)	4.5 (127)
	100 (6.8)	1.5 (5.6)	7.9 (223)

	Pressure Drop to Atmosphere psi (bar)	Water Flow U.S gal/min (L/min)	Air Flow std ft <sup>3</sup> / min (std L / min)
Maximum Flow Coefficient (Cv) 0.03	10 (0.68)	0.09 (0.34)	0.33 (9.3)
	50 (3.4)	0.21 (0.79)	0.9 (25.4)
	100 (6.8)	0.3 (1.1)	1.5 (42.4)

MBV-X METERING BALL VALVE 1° STEM



	Pressure Drop to Atmosphere psi (bar)	Water Flow U.S gal/min (L/min)	Air Flow std ft <sup>3</sup> / min (std L / min)
Maximum Flow Coefficient (Cv) 0.004	10 (0.68)	0.01 (0.03)	0.04 (1.1)
	50 (3.4)	0.02 (0.07)	0.1 (2.8)
	100 (6.8)	0.04 (0.15)	0.2 (5.5)



## CLEANING & PACKAGING

Every MBV series Metering ball valve is cleaned in accordance with Standard Cleaning and Packaging (procedure 8184). Oxygen Clean & Lubricant Free Cleaning and packaging, in accordance with Special Cleaning and Packaging (procedure 8185), is available as an option. **Lubricant free cleaned valves** have significantly higher actuation torque.

TECHNICAL DATA							
Series	Pressure - Temperature Ratings			Orifice		Shutoff Service	Angle
	O-ring Material*	Temperature Rating °F (°C)	Pressure psig (bar)	inch	mm		
H	Buna N	-10 to 300 (-23 to 149)	2000 (137)	0.13	3.3	Yes	5°
	Ethylene Propylene	-10 to 300 (-23 to 149)					
F	Fluorocarbon FKM	-15 to 300 (-26 to 149)	2000 (137)	0.055	1.4	Yes	3°
X	Perfluor Polychloroprene (CR)	-0 to 300 (-18 to 149) -10 to 250 (-23 to 121)	2000 (137)	0.03	0.8	Yes	1°

Fluorocarbon FKM is a standard O-ring for MBV-H, F, X

## METERING HANDLE OPTIONS

### Vernier Handle



Optional for H, F & X

### Round Aluminum Handle\*



Standard for H

\* Black is Standard.  
Colored Handles are available upon request, see "Ordering Information"

### Metal Slotted Handle



Standard for F.  
Optional for H.

### Metal Slotted Handle



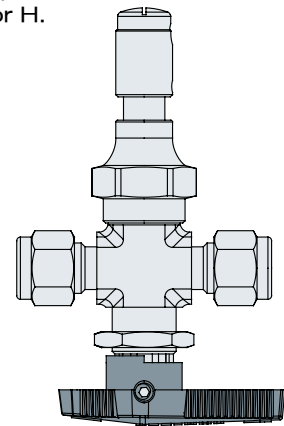
Standard for X.

## BALL HANDLE OPTIONS

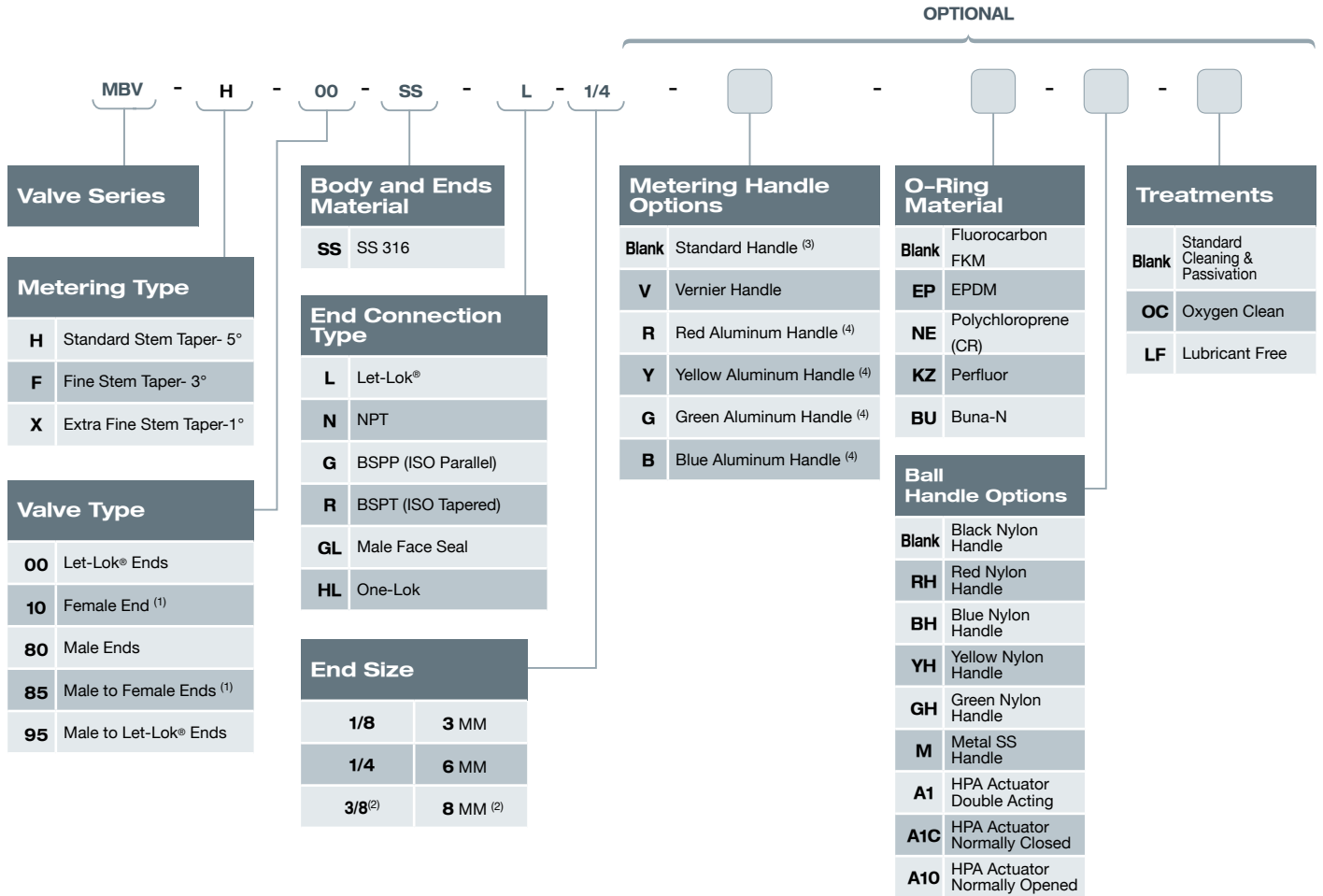


### MANUAL OPERATION

- S** - Black Handle\*
  - B** - Blue Handle
  - R** - Red Handle
  - G** - Green Handle
  - Y** - Yellow Handle
  - M** - Metal Handle
- \* Black Nylon handle is standard.



## METERING BALL VALVE ORDERING INFORMATION



- (1) Female threaded end connections available up to size 1/8"
- (2) 3/8" and 8MM size available only for Let-Lok and One-Lok end connections types.
- (3) Black Aluminum Handle is standard for H type metering ball valve.  
Metal slotted handle is standard for F & X type metering ball valve.
- (4) Colored Aluminum handles available for H type metering ball valves only.

**Warning!**

The system designer and user have the sole responsibility for selecting products suitable for their special application requirements, ensuring their safe and trouble-free installation, operation, and maintenance. Application details, material compatibility and product ratings should all be considered for each selected product. Improper selection, installation or use of products can cause property damage or personal injury.