

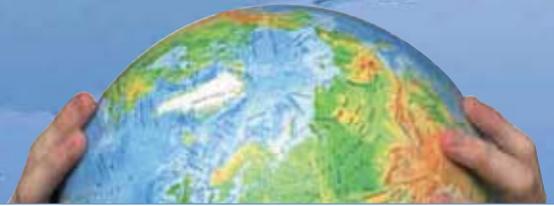
**CARTEN**<sup>®</sup>  
Ultra High Purity Valves

# MD SERIES

Manual (MD), Quarter Turn (MDQ),  
Pneumatic (MDA), High Pressure (MDH)  
Ultra-High Purity Mini-diaphragm Valves



# MD SERIES



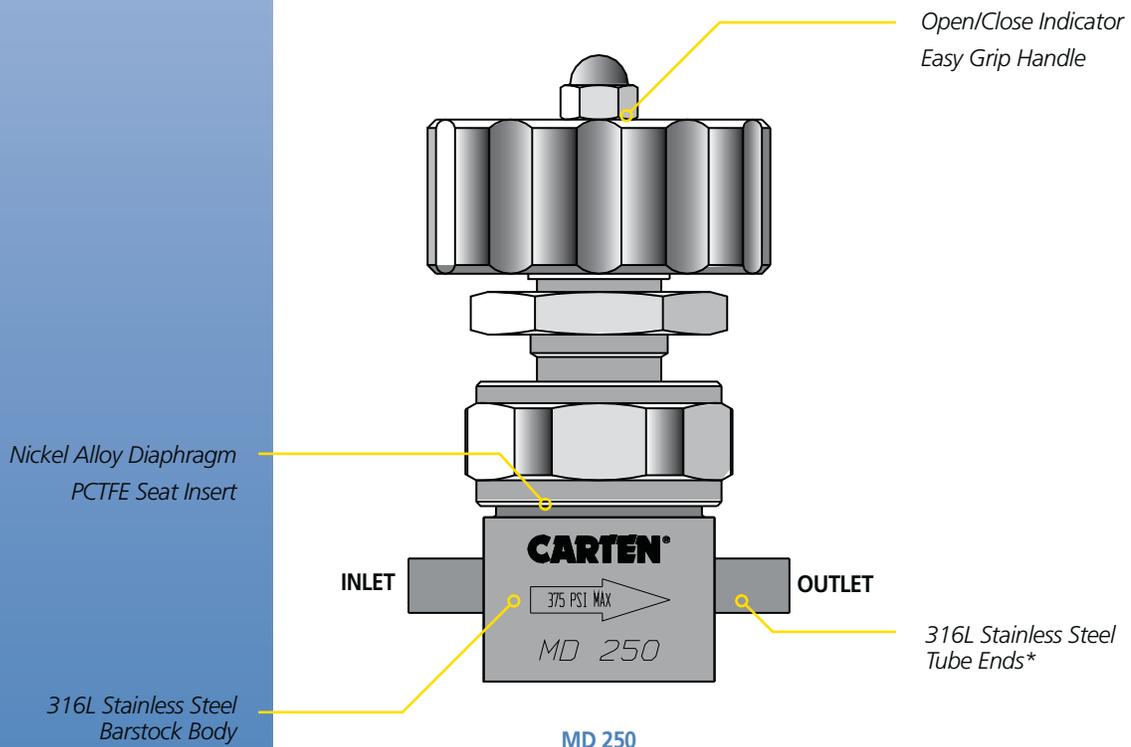
These MD Series valves are designed for high performance gas- and chemical-distribution systems where purity, combined with the lowest overall operating costs, are required. Applications for this valve include:

- **Gas cabinets, valve manifold boxes, and gas isolation boxes**
- **Point-of-connection gas sticks**
- **Processing tools**
- **Bubbler systems including canister isolation valves**
- **Bulk gas system purge valve**

## MD Series Product Features

- Diaphragm Design for Ultra-High Purity Service and High Cycle Life
- Highest Cv
- Ultra-High Purity Stainless Steel/PCTFE Gas Construction
- Minimal Dead Space for Faster Dry Down and Reduced Purge Times
- Industry Leading Design in Ultra-High Purity Gas Containment
- 1/4" Standard Metal Face Seal Fittings or Butt Weld End Connections
- Field Retrofit Manual or Air Actuated
- Visible Position Indication of Valve
- Assembled and Tested in Class 10 Cleanroom
- Purged and Final Packaged in Class 1 Cleanroom. Double-Bag Packaging with Ultra-High Purity N<sub>2</sub> Gas Environment
- Manual or Air Actuated Available
- Electropolished Wetted Surfaces to 10 Ra Max (Optional surface finishes available)

## MD Construction Materials



\*See corresponding Code Chart for tube sizes, purge types and locations.

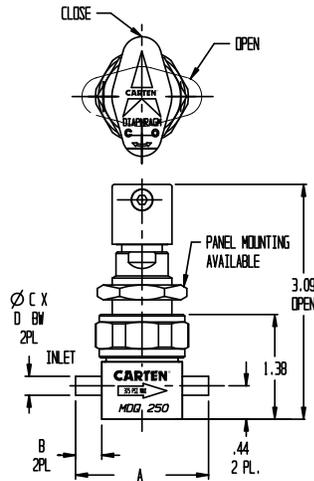
# MD Series Technical Data

MATERIAL OF CONSTRUCTION	Wetted Areas	316L Stainless Steel, Nickel Alloy, PCTFE	
	Non-Wetted Areas	316L Stainless Steel	
MAXIMUM OPERATING PRESSURE	MD/MDQ 250	Vacuum to 375 psig (25.8 bar)	
	MDA 250	Vacuum to 250 psig (0-17.2 bar)	
MAXIMUM OPERATING TEMPERATURE	MD/MDQ 250	180° F (82° C)	
	MDA 250	180° F (82° C)	
FLOW COEFFICIENT (C <sub>v</sub> ), CYCLE LIFE & ACTUATOR PRESSURE	Model	Cv Value	Cycle Life
	MD 250 MDQ 250 MDA 250	0.3 (0.33 with FSM fittings)	>20,000@150 psi >20,000@150 psi >10,000,000
HELIUM LEAK TEST	Inboard	1 x 10 <sup>-11</sup> Pa-m <sup>3</sup> /s (1 x 10 <sup>-10</sup> atm-cc (He)/s)	
	Across the Seat Outboard Pressure Test	1 x 10 <sup>-10</sup> Pa-m <sup>3</sup> /s (1 x 10 <sup>-9</sup> atm-cc (He)/s) 1 x 10 <sup>-7</sup> Pa-m <sup>3</sup> /s (1 x 10 <sup>-6</sup> atm-cc (He)/s)	
CLEANLINESS	Assembled and tested in Class 10 cleanroom. Purged and final packaged in Class 1 cleanroom. Double-bag packaging (2 mil nylon inner bag, 6 mil polyethylene outer bag) with Ultra-High Purity N <sub>2</sub> gas environment.		
STANDARD FINISH	Electropolished to 10 Ra Max (0.25 Ra μm) on all wetted surfaces		
OPTIONS	Surface finish-5 Ra optional Testing: Particle, Moisture, THC, O <sub>2</sub> , SEM, ESCA, and AES	Purge fitting type and location Handwheel color	

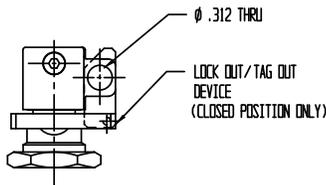
Specifications are subject to change without notice.

## MD Series Typical Valve Dimensions

### MDQ 250-01/-02/-08/-09-LV

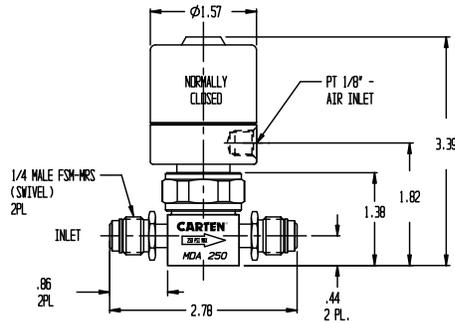


### OPTIONAL LOCK OUT/TAG OUT DEVICE

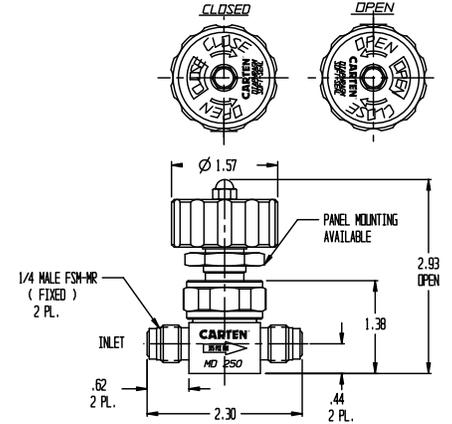


Code	A	B	C	D
-01	1.75	.345	.250	.035
-02	1.61	.275	.250	.035
-08	1.75	.345	.375	.035
-09	2.26	.600	.500	.049

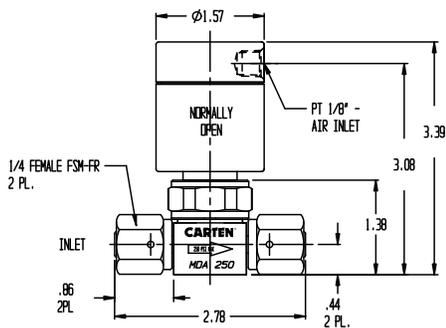
### MDA 250-04-LV-NC



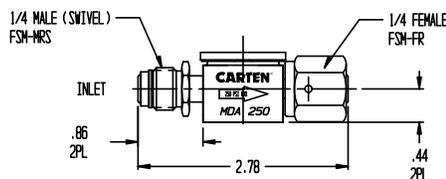
### MD 250-03-LV



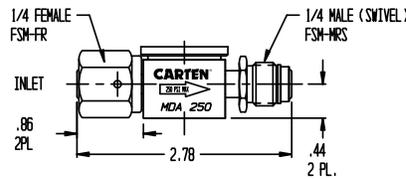
### MDA 250-05-LV-NO



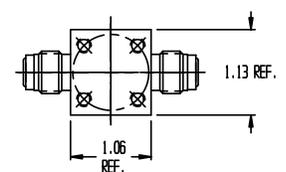
### (-06) END CONNECTION TYPE



### (-07) END CONNECTION TYPE



### TYPICAL BOTTOM MOUNTING



NOTE 1: All tolerances are ±0.06 in. (±1.52mm) unless otherwise stated.

NOTE 2: Dimensional drawings shown are for reference only. Please contact CARTEN® for customer drawings.

# MD SERIES

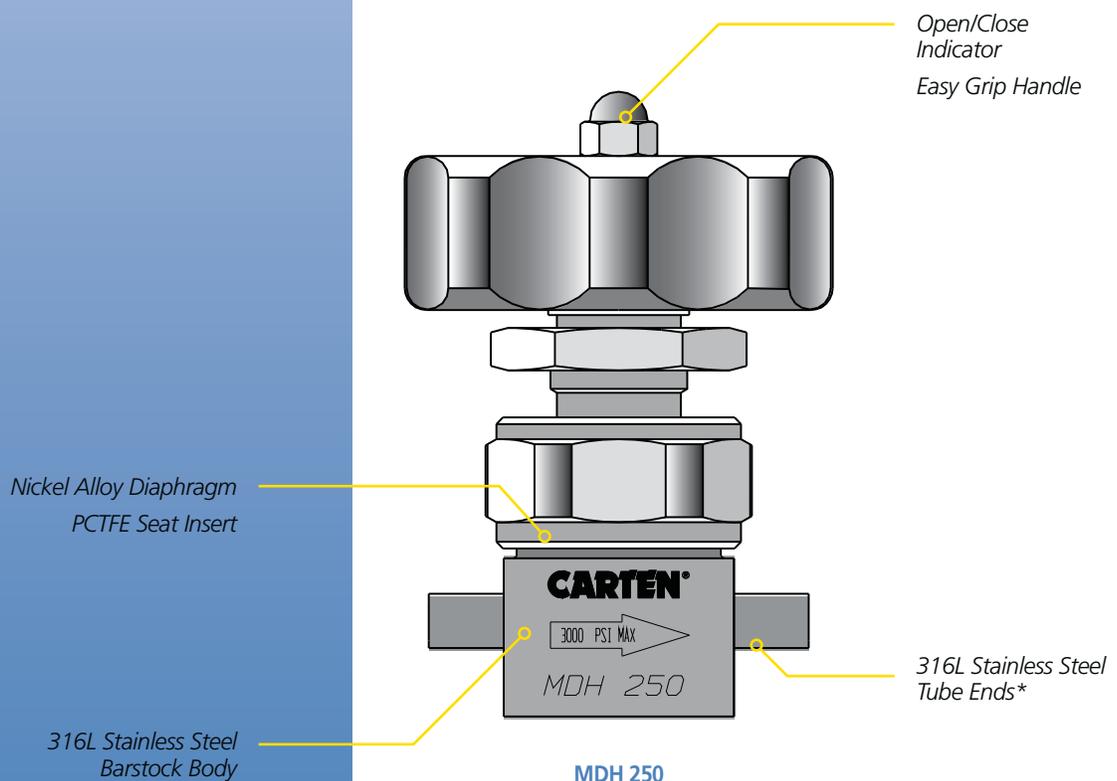
The MDH Series Valves are designed for high performance gas and chemical distribution systems where purity combined with the lowest overall operating costs, make this valve an excellent consideration for:

- **Gas cabinets, valve manifold boxes, gas isolation boxes**
- **Point of connection gas sticks**
- **Processing tools**
- **Bubbler systems including canister isolation valves**
- **Bulk gas system purge valve**

## MDH Series Product Features

- Diaphragm Design for UHP Service and High Cycle Life
- High Pressure up to 3000psi
- Highest Cv
- Minimal Dead Space for Faster Dry Down and Reduced Purge Times
- 1/4" Standard Metal Face Seal Fittings or Butt Weld End Connections
- Visible Open/Close Position Indication of Valve
- Assembled and Tested in Class 10 Cleanroom
- Purges and Final Packages in Class 1 Cleanroom
- Electropolished Wetted Surfaces to 10 Ra Max (Optional surface finishes available)

## MDH Construction Materials



\*See corresponding Code Chart for tube sizes, purge types and locations.

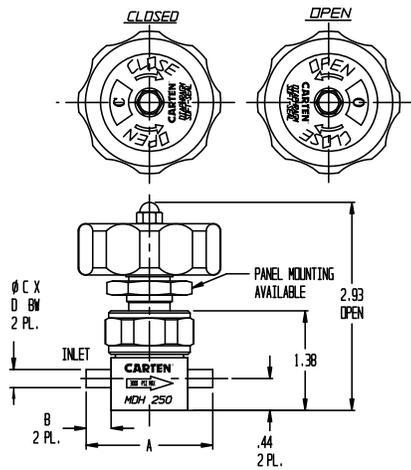
# MDH Series Technical Data

CONSTRUCTION MATERIAL	Wetted Areas	316L Stainless Steel, Nickel Alloy, PCTFE
	Non-Wetted areas	316L Stainless Steel
OPERATING PRESSURE RANGE	Vacuum to 3000 psi. (207 BAR)	
MAXIMUM TEMPERATURE	180° F (82° C)	
FLOW COEFFICIENT (Cv)	0.3 (0.33 with FSM fittings)	
HELIUM LEAK TEST	Inboard	$1 \times 10^{-11}$ Pa-m <sup>3</sup> /s ( $1 \times 10^{-10}$ atm-cc (He)/s)
	Across the Seat	$1 \times 10^{-10}$ Pa-m <sup>3</sup> /s ( $1 \times 10^{-9}$ atm-cc (He)/s)
	Outboard Pressure Test	$1 \times 10^{-7}$ Pa-m <sup>3</sup> /s ( $1 \times 10^{-6}$ atm-cc (He)/s)
CLEANLINESS	Assembled and tested in Class 10 cleanroom. Purged and final packaged in Class 1 cleanroom. Double-bag packaging (2 mil nylon inner bag, 6 mil polyethylene outer bag) with Ultra-High Purity N <sub>2</sub> gas environment.	
STANDARD FINISH	Electropolished to 10 Ra Max (0.25 Ra $\mu$ m) on all wetted surfaces	
OPTIONS	Surface finish-5 Ra optional Testing: Particle, Moisture, THC, O <sub>2</sub> , SEM, ESCA, and Auger Purge fitting type and location Handwheel color	

Specifications are subject to change without notice.

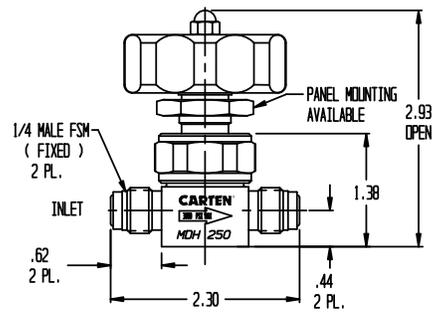
## MDH Series Typical Valve Dimensions

MDH 250-01/02/08/09-LV

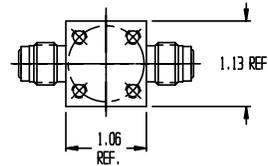


Code	A	B	C	D
-01	1.75	.345	.250	.035
-02	1.61	.275	.250	.035
-08	1.75	.345	.375	.035
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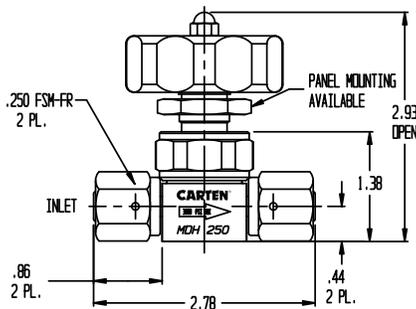
MDH 250-03-LV



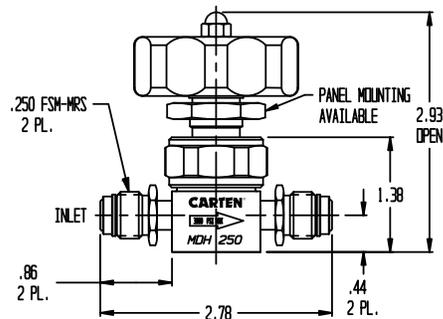
TYPICAL BOTTOM MOUNTING



MDH 250-05-LV



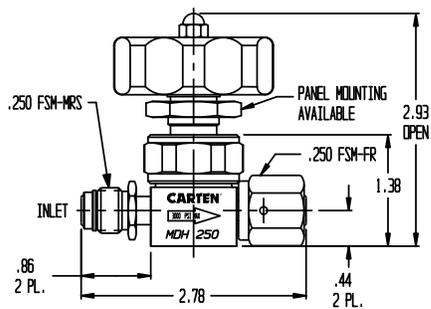
MDH 250-04-LV



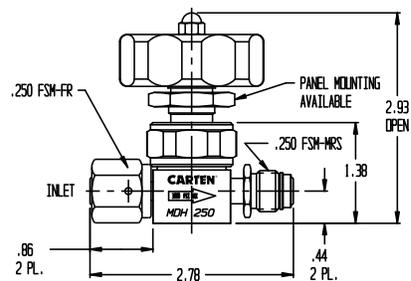
# MDH Series Typical Valve Dimensions

(continued)

MDH 250-06-LV



MDH-250-07-LV



NOTE 1: All tolerances are  $\pm 0.06$  in. ( $\pm 1.52$ mm) unless otherwise stated.

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