

MDC SERIES

Manual (MDC), Quarter Turn (MDCQ),
Pneumatic (MDCA), High Pressure (MDCH)
Ultra-High Purity Diaphragm Valves



MDC SERIES



These MDC 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:

- **Lower cost**
- **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**

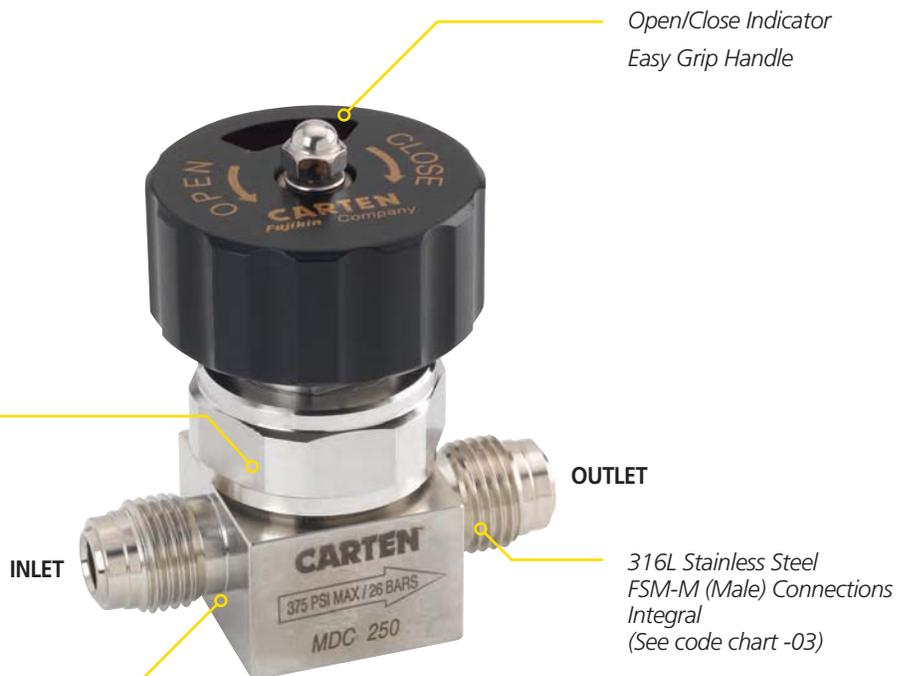
MDC Series Product Features

- Diaphragm Design for Ultra-High Purity Service and High Cycle Life
- Highest Cv
- Ultra-High Purity Stainless Steel 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 N₂ Gas Environment
- Manual or Air Actuated Available
- Electropolished Wetted Surfaces to 10 Ra Max (Optional surface finishes available)

MDC Construction Materials

Nickel Alloy Diaphragm
PCTFE/Vespel® Seat Insert

316L Stainless Steel
Barstock Body



Open/Close Indicator
Easy Grip Handle

OUTLET

316L Stainless Steel
FSM-M (Male) Connections
Integral
(See code chart -03)

MDC 250

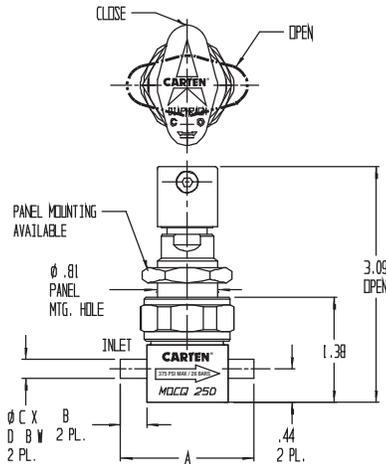
MDC Series Technical Data

MATERIAL OF CONSTRUCTION	Wetted Areas	316L Stainless Steel, Nickel Alloy, PCTFE	
	Non-Wetted Areas	316L Stainless Steel, Aluminum	
MAXIMUM OPERATING PRESSURE	MDC/MDCQ 250	Vacuum to 250 psig (17.2 bar)	
	MDCA 250	Vacuum to 150 psig (10.3 bar)	
MAXIMUM OPERATING TEMPERATURE	PCTFE Seat	-22°F (-30°C) to 180°F (82°C)	
	Vespe [®] Seat*	181°F (83°C) to 302°F (150°C)	
FLOW COEFFICIENT (C _v)	Model	C _v Value	
	MDC/MDCQ/MDCA 250	0.30 (0.33 with FSM fittings)	
	MDC/MDCQ/MDCA 375	0.60	
	MDC/MDCQ/MDCA 500	0.70	
CYCLE LIFE & ACTUATOR PRESSURE	Model	Cycle Life	Actuator Pressure
	MDC 250	>20,000@250 psig (17.2 bar)	NA
	MDCQ 250	>20,000@250 psig (17.2 bar)	NA
	MDCA 250	>4,000,000@150 psig (10.3 bar)	58 psig (4.0 bar) -87 psig (6.0 bar)
HELIUM LEAK TEST	Inboard	1 x 10 ⁻¹⁰ Pa-m ³ /sec (1 x 10 ⁻⁹ atm-cc/sec Helium)	
	Across the Seat	1 x 10 ⁻¹⁰ Pa-m ³ /sec (1 x 10 ⁻⁹ atm-cc/sec Helium)	
	Outboard Pressure Test	1 x 10 ⁻⁷ Pa-m ³ /sec (1 x 10 ⁻⁶ atm-cc/sec Helium)	
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 ₂ gas environment.		
STANDARD FINISH	Electropolished to 10 Ra Max (0.25 Ra μm) on all wetted surfaces		
OPTIONS	Testing: Particle, Moisture, THC, O ₂ , SEM, ESCA, and AES FSM type ends sizes - 3/8" and 1/2" Purge fitting type and location Surface finish-5 Ra optional Handwheel colors available High temperature Vespe [®] seat		

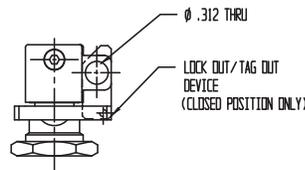
Specifications are subject to change without notice.
* Vespe[®] is a registered trademark of DuPont Company.

MDC Series Typical Valve Dimensions

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

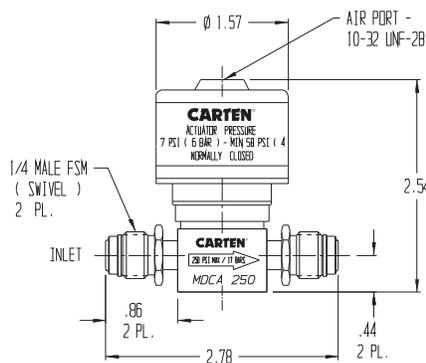


OPTIONAL LOCK OUT/TAG OUT DEVICE

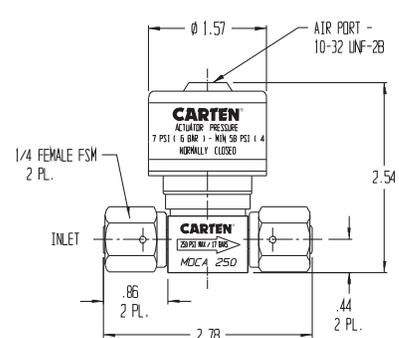


Code	A	B	C	D
-01	1.75	.345	.250	.035
-02	1.61	.275	.250	.035
-08	1.75	.345	.375	.035
-09	2.26	.600	.500	.049

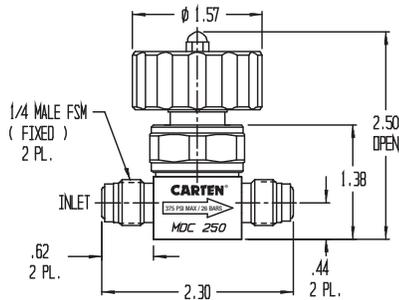
MDCA 250-04-LV-NC



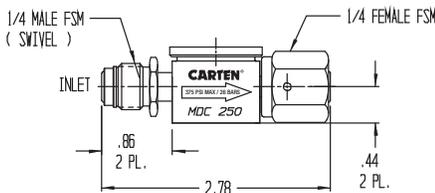
MDCA 250-05-LV-NO



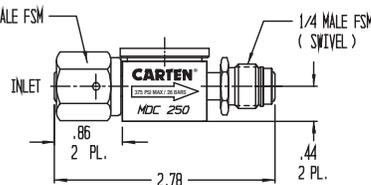
MDC 250-03-LV



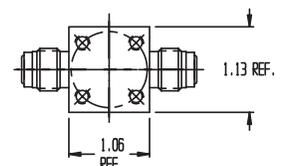
(-06) END CONNECTION TYPE



(-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.

MDCH SERIES

The MDCH 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**

MDCH 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)

MDCH Construction Materials



MDCH Series Technical Data

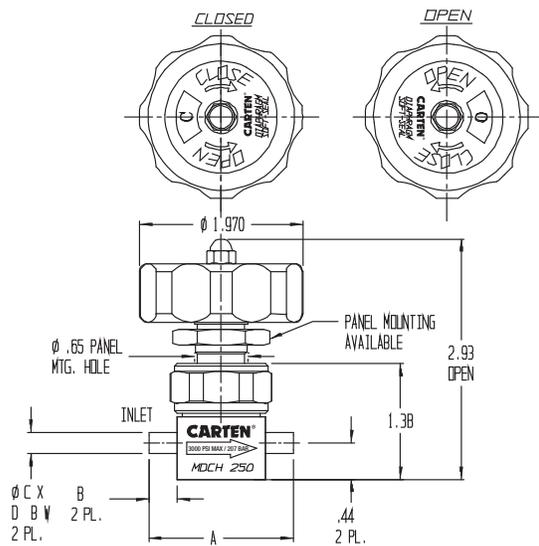
MATERIAL OF CONSTRUCTION	Wetted Areas	316L Stainless Steel, Nickel Alloy, PCTFE
	Non-Wetted areas	316L Stainless Steel, Aluminum
MAXIMUM OPERATING PRESSURE	Vacuum to 3000 psi. (207 BAR)	
MAXIMUM OPERATING TEMPERATURE	PCTFE Seat Vespe [®] Seat*	-22°F (-30°C) to 180°F (82°C) 181°F (83°C) to 302°F (150°C)
FLOW COEFFICIENT (Cv)	0.28	
HELIUM LEAK TEST	Inboard Across the Seat Outboard Pressure Test	1 x 10 ⁻¹⁰ Pa-m ³ /sec (1 x 10 ⁻⁹ atm-cc/sec Helium) 1 x 10 ⁻¹⁰ Pa-m ³ /sec (1 x 10 ⁻⁹ atm-cc/sec Helium) 1 x 10 ⁻⁷ Pa-m ³ /sec (1 x 10 ⁻⁶ atm-cc/sec Helium)
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 ₂ 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 ₂ , SEM, ESCA, and Auger Purge fitting type and location Handwheel colors available	

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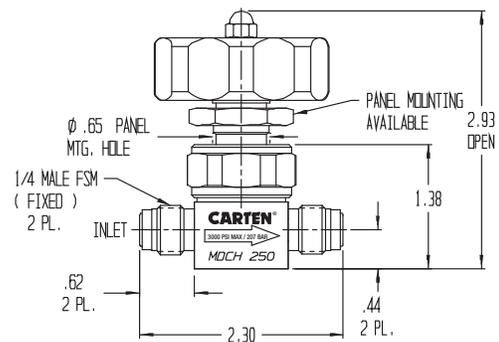
MDCH Series Typical Valve Dimensions

MDCH 250-01/02-LV

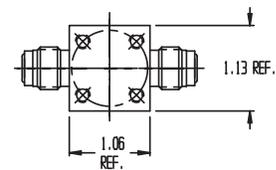


Code	A	B	C	D
-01	1.75	.345	.250	.035
-02	1.61	.275	.250	.035

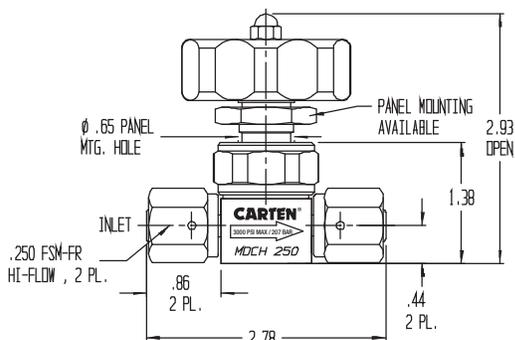
MDCH 250-03-LV



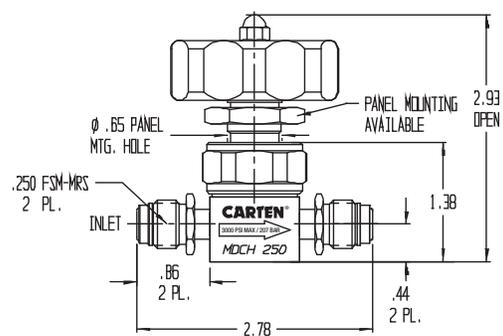
TYPICAL BOTTOM MOUNTING



MDCH 250-05-LV



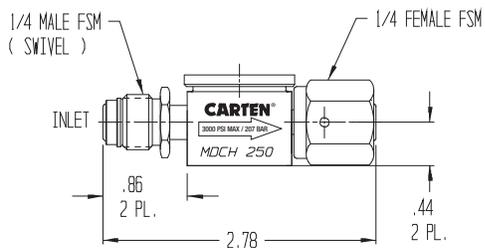
MDCH 250-04-LV



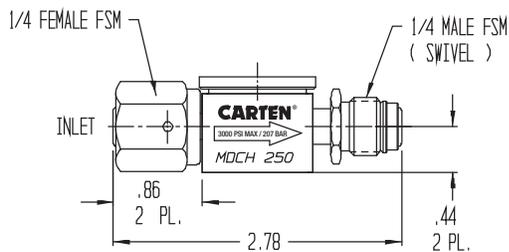
MDCH Series Typical Valve Dimensions

(continued)

MDCH 250-06-LV



MDCH-250-07-LV



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