

Manifold Mounted Miniature Cartridge Valves

2-Way & 3-Way Direct Acting Miniature Cartridge Valves



General Description:

The manifold mounted miniature Cartridge Valve is offered in two- and three-way models with a stainless steel body. It offers a space-saving approach, with no manifold orifices to machine or press in, since the orifice is integral to the cartridge valve. Ultimately, less machining means lower manifold costs.

These cartridge valves come fully assembled with no loose parts – the sleeve, plunger, spring and orifice are pressed together as one unit.

Installation

Valves can be mounted in any position. The preferred orientation is with the coil vertical and upright.

Standard Materials of Construction

Please refer to page D8.

Compatible Fluids

Lubricated Air, Inert Gases, Water, Light Oil (300 SSU) and additional fluids compatible with materials of construction.

Use of non-lubricated gaseous media can affect valve life.

Electrical Characteristics:

Standard Voltages:

AC – 24/60
120/60–110/50
240/60–220/50

DC – 12, 24

For other voltages – consult factory



Specialty

Coil Classification:

Class F standard
Class H available

AC & DC coils are interchangeable on the same pressure vessel.

Agency Approvals:

Standard valves with NEMA 4X are C-UL-US Listed or Recognized. For additional details, consult factory.

Maximum Ambient Temperature

135°F (AC)/125°F (DC)

In absence of moisture, applications at temps as low as -20°F are possible. Please refer to page D8 for details.

Applications:

- Analyzers and diagnostic equipment
- Medical and dental equipment
- Beverage dispensing and vending machines
- Humidification and misting equipment
- Pneumatic positioning
- Automatic dispensing equipment
- Irrigation equipment
- Instrumentation panels
- Lubrication equipment
- Refrigerant reclaim
- Automotive diagnostics/service

2-Way Small Direct Acting - Normally Closed - Stainless Steel

Port Size NPT	Orifice Size in.	Flow Factor Cv	Operating Pressure Differential (MOPD) PSI					Max. Media Temp. °F	Seal	Pressure Vessel Number	Reference	
			Min.	Air, Inert Gas	Water	Light Oil	Watt				Coil	Valve
AC TECHNICAL SPECIFICATIONS CONTINUED												
1/8	3/64	0.06	0	950	950	950	8.5	240	FKM	209CL5EV4	9	D1
1/8	1/16	0.10	0	625	625	625	8.5	240	FKM	209CL5GV4	9	D1
1/8	5/64	0.15	0	450	450	450	8.5	240	FKM	209CL5JV4	9	D1
1/8	3/32	0.22	0	320	320	320	8.5	240	FKM	209CL5LV4	9	D1
1/8	7/64	0.28	0	245	245	245	8.5	240	FKM	209CL5MV4	9	D1
1/8	1/8	0.32	0	175	175	175	8.5	240	FKM	209CL5PV4	9	D1
1/8	5/32	0.38	0	100	100	100	8.5	240	FKM	209CL5QV4	9	D1

DC TECHNICAL SPECIFICATIONS CONTINUED

1/8	3/64	0.06	0	390	390	390	8	240	FKM	209CL5EV4	9	D1
1/8	1/16	0.10	0	255	255	255	8	240	FKM	209CL5GV4	9	D1
1/8	5/64	0.15	0	180	180	180	8	240	FKM	209CL5JV4	9	D1
1/8	3/32	0.22	0	130	130	130	8	240	FKM	209CL5LV4	9	D1
1/8	7/64	0.28	0	100	100	100	8	240	FKM	209CL5MV4	9	D1
1/8	1/8	0.32	0	60	60	60	8	240	FKM	209CL5PV4	9	D1
1/8	5/32	0.38	0	30	30	30	8	240	FKM	209CL5QV4	9	D1

2-Way Small Direct Acting - Normally Open - Stainless Steel

Port Size NPT	Orifice Size in.	Flow Factor Cv	Operating Pressure Differential (MOPD) PSI					Max. Media Temp. °F	Seal	Pressure Vessel Number	Reference	
			Min.	Air, Inert Gas	Water	Light Oil	Watt				Coil	Valve
AC TECHNICAL SPECIFICATIONS CONTINUED												
1/8	1/32	0.02	0	375	375	375	10	240	FKM	209FL5AV4	9	D2
1/8	3/64	0.06	0	230	230	230	10	240	FKM	209FL5EV4	9	D2
1/8	1/16	0.10	0	150	150	150	10	240	FKM	209FL5GV4	9	D2
1/8	5/64	0.14	0	105	105	105	10	240	FKM	209FL5JV4	9	D2
1/8	3/32	0.20	0	80	80	80	10	240	FKM	209FL5LV4	9	D2

DC TECHNICAL SPECIFICATIONS CONTINUED

1/8	1/32	0.02	0	375	375	375	8	240	FKM	209FL5AV4	9	D2
1/8	3/64	0.06	0	230	230	230	8	240	FKM	209FL5EV4	9	D2
1/8	1/16	0.10	0	150	150	150	8	240	FKM	209FL5GV4	9	D2
1/8	5/64	0.14	0	105	105	105	8	240	FKM	209FL5JV4	9	D2
1/8	3/32	0.20	0	80	80	80	8	240	FKM	209FL5LV4	9	D2



3-Way Small Direct Acting - Normally Closed - Stainless Steel

Port Size NPT	Orifice Size In.		Flow Factor Cv		Operating Pressure Differential (MOPD) PSI					Max. Media Temp. °F	Seal	Pressure Vessel Number	Reference	
	In	Exh.	In	Exh.	Min.	Air, Inert Gas	Water	Light Oil	Watt				Coil	Valve
AC TECHNICAL SPECIFICATIONS														
1/8	1/32	1/32	0.02	0.02	0	250	250	250	10	240	FKM	309CL5AV4	9	D2
1/8	3/64	3/64	0.05	0.05	0	200	200	200	10	240	FKM	309CL5EV4	9	D2
1/8	1/16	1/16	0.09	0.10	0	130	130	130	10	240	FKM	309CL5GV4	9	D2
1/8	5/64	5/64	0.15	0.14	0	90	90	90	10	240	FKM	309CL5JV4	9	D2
1/8	3/32	3/32	0.19	0.20	0	75	75	75	10	240	FKM	309CL5LV4	9	D2
1/8	7/64	3/32	0.25	0.20	0	50	50	50	10	240	FKM	309CL5MV4	9	D2
1/8	1/8	3/32	0.32	0.20	0	40	40	40	10	240	FKM	309CL5PV4	9	D2
1/8	5/32	3/32	0.38	0.20	0	25	25	25	10	240	FKM	309CL5QV4	9	D2

DC TECHNICAL SPECIFICATIONS

1/8	1/32	1/32	0.02	0.02	0	250	250	250	8	240	FKM	309CL5AV4	9	D2
1/8	3/64	3/64	0.05	0.05	0	200	200	200	8	240	FKM	309CL5EV4	9	D2
1/8	1/16	1/16	0.09	0.10	0	130	130	130	8	240	FKM	309CL5GV4	9	D2
1/8	5/64	5/64	0.15	0.14	0	90	90	90	8	240	FKM	309CL5JV4	9	D2
1/8	3/32	3/32	0.19	0.20	0	75	75	75	8	240	FKM	309CL5LV4	9	D2
1/8	7/64	3/32	0.25	0.20	0	50	50	50	8	240	FKM	309CL5MV4	9	D2
1/8	1/8	3/32	0.32	0.20	0	40	40	40	8	240	FKM	309CL5PV4	9	D2
1/8	5/32	3/32	0.38	0.20	0	25	25	25	8	240	FKM	309CL5QV4	9	D2

3-Way Small Direct Acting - Normally Open - Stainless Steel

Port Size NPT	Orifice Size In.		Flow Factor Cv		Operating Pressure Differential (MOPD) PSI					Max. Media Temp. °F	Seal	Pressure Vessel Number	Reference	
	In	Exh.	In	Exh.	Min.	Air, Inert Gas	Water	Light Oil	Watt				Coil	Valve
AC TECHNICAL SPECIFICATIONS														
1/8	1/32	1/32	0.02	0.02	0	375	375	375	10	240	FKM	309FL5AV4	9	D2
1/8	3/64	3/64	0.05	0.05	0	230	230	230	10	240	FKM	309FL5EV4	9	D2
1/8	1/16	1/16	0.10	0.09	0	150	150	150	10	240	FKM	309FL5GV4	9	D2
1/8	5/64	5/64	0.14	0.15	0	105	105	105	10	240	FKM	309FL5JV4	9	D2
1/8	3/32	3/32	0.20	0.19	0	80	80	80	10	240	FKM	309FL5LV4	9	D2
DC TECHNICAL SPECIFICATIONS														
1/8	1/32	1/32	0.02	0.02	0	375	375	375	8	240	FKM	309FL5AV4	9	D2
1/8	3/64	3/64	0.05	0.05	0	230	230	230	8	240	FKM	309FL5EV4	9	D2
1/8	1/16	1/16	0.10	0.09	0	150	150	150	8	240	FKM	309FL5GV4	9	D2
1/8	5/64	5/64	0.14	0.15	0	105	105	105	8	240	FKM	309FL5JV4	9	D2
1/8	3/32	3/32	0.20	0.19	0	80	80	80	8	240	FKM	309FL5LV4	9	D2

3-Way Small Direct Acting - Universal - Stainless Steel

Port Size NPT	Orifice Size In.		Flow Factor Cv		Operating Pressure Differential (MOPD) PSI					Max. Media Temp. °F	Seal	Pressure Vessel Number	Reference	
	In	Exh.	In	Exh.	Min.	Air, Inert Gas	Water	Light Oil	Watt				Coil	Valve
AC TECHNICAL SPECIFICATIONS														
1/8	1/32	1/32	0.020	0.020	0	200	200	200	10	240	FKM	309UL5AV4	9	230
1/8	3/64	3/64	0.050	0.050	0	150	150	150	10	240	FKM	309UL5EV4	9	230
1/8	1/16	1/16	0.090	0.100	0	100	100	100	10	240	FKM	309UL5GV4	9	230
1/8	5/64	5/64	0.150	0.140	0	70	70	70	10	240	FKM	309UL5JV4	9	230
1/8	3/32	3/32	0.190	0.200	0	50	50	50	10	240	FKM	309UL5LV4	9	230
1/8	7/64	3/32	0.250	0.200	0	40	40	40	10	240	FKM	309UL5MV4	9	230
1/8	1/8	3/32	0.320	0.200	0	30	30	30	10	240	FKM	309UL5PV4	9	230
1/8	5/32	3/32	0.380	0.200	0	20	20	20	10	240	FKM	309UL5QV4	9	230

DC TECHNICAL SPECIFICATIONS														
1/8	1/32	1/32	0.020	0.020	0	200	200	200	8	240	FKM	309UL5AV4	9	230
1/8	3/64	3/64	0.050	0.050	0	150	150	150	8	240	FKM	309UL5EV4	9	230
1/8	1/16	1/16	0.090	0.100	0	100	100	100	8	240	FKM	309UL5GV4	9	230
1/8	5/64	5/64	0.150	0.140	0	70	70	70	8	240	FKM	309UL5JV4	9	230
1/8	3/32	3/32	0.190	0.200	0	50	50	50	8	240	FKM	309UL5LV4	9	230
1/8	7/64	3/32	0.250	0.200	0	40	40	40	8	240	FKM	309UL5MV4	9	230
1/8	1/8	3/32	0.320	0.200	0	30	30	30	8	240	FKM	309UL5PV4	9	230
1/8	5/32	3/32	0.380	0.200	0	20	20	20	8	240	FKM	309UL5QV4	9	230

Port Marking Arrangement

Function		over seat body flow	under seat body flow	sleeve
2-Way normally closed	Marking Function	2 inlet	1 outlet	-
2-Way normally open	Marking Function	2 inlet	-	3 outlet
Port Marking Arrangement				
Function		over seat body flow	under seat body flow	sleeve
3-Way normally closed	Marking Function	2 outlet	1 inlet	3 exhaust
3-Way normally open	Marking Function	2 outlet	1 exhaust	3 inlet
3-Way universal	Marking Function	2 common	1 NC	3 NO

Product Features:

- Space saving approach
- Less manifold machining means lower manifold cost
- No manifold orifices to machine or press in
- Cartridge valves are 100% tested
- Easy to assemble and disassemble with a 5/32" hex wrench to a torque of 25-35 in-lbs.
- Available with all coil options from Chart 9 in coil section.

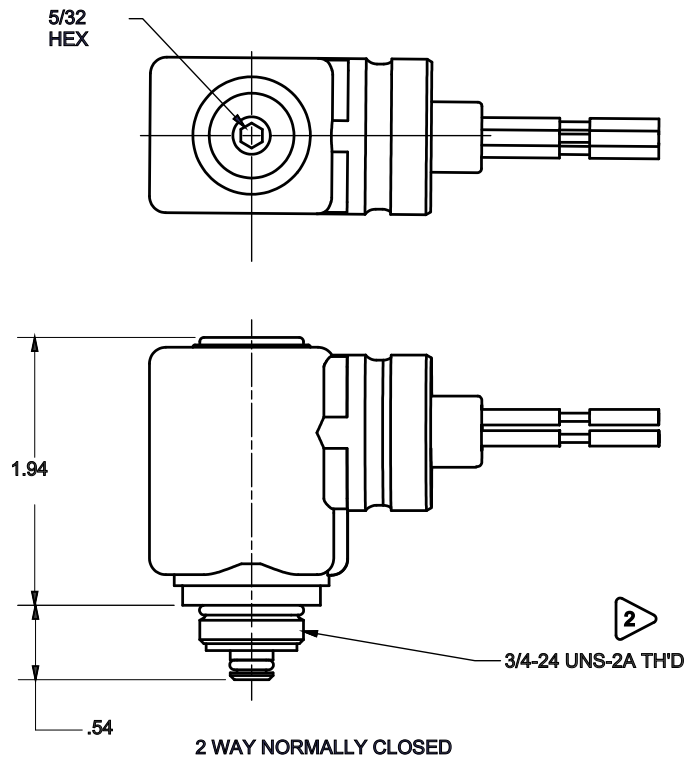


Specialty

Valve Reference D1



2-Way Normally Closed
(209CLxx)

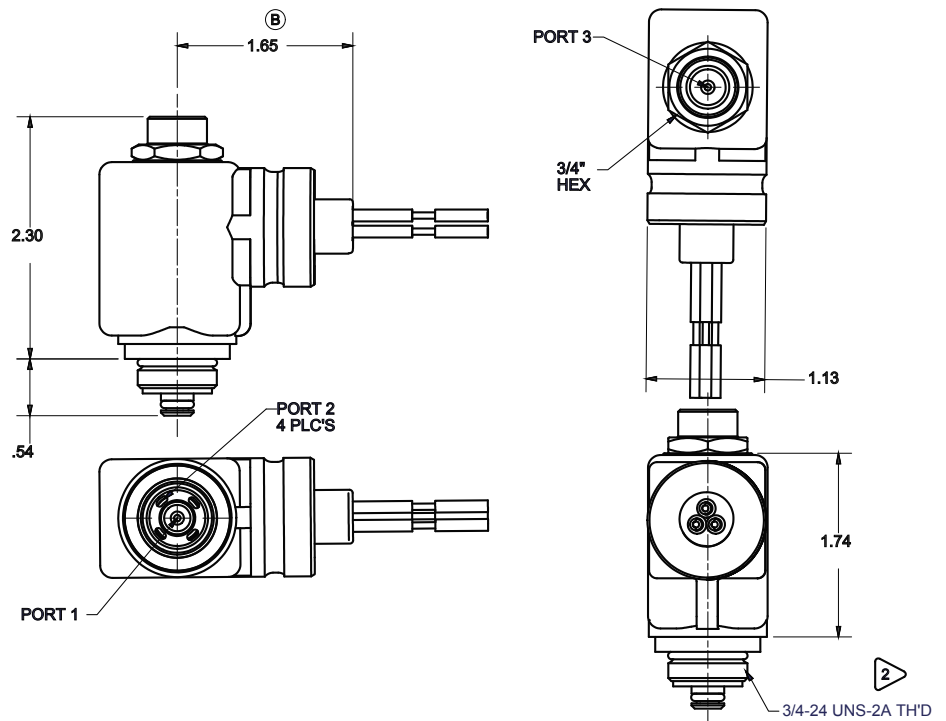


2 Manifold cavity for 3/4-24 UNS-2B thread per VMR-0462
(See page D8)

Valve Reference D2



2-Way Normally Open (209FLxx)
3-Way Normally Closed (309CLxx)
3-Way Normally Open (309FLxx)
3-Way Universal (309ULxx)



2 Manifold cavity for 3/4-24 UNS-2B thread per VMR-0462
(See page D8)

2-Way Miniature Direct Acting Cartridge Mounted Valve Materials of Construction**

Product*	Wattage	Type	Sleeve Port Size	Body	Sleeve Tube	Sleeve Stop	Sleeve Flange	"Plunger Blank"	Plunger Spring	Shading Ring	Max. Ambient Temp.
209CL5	8.5 (AC)	2WNC	-	303SS	304SS	430FR	430FR	430FR	18-8SS	Copper	135°F
209CL5	8 (DC)	2WNC	-	303SS	304SS	430FR	430FR	430FR	18-8SS	Copper	125°F
209FL5	10 (AC)	2WNC	1/8	303SS	304SS	430FR	430FR	430FR	18-8SS	Copper	135°F
209FL5	8 (DC)	2WNC	1/8	303SS	304SS	430FR	430FR	430FR	18-8SS	Copper	125°F

* Shows the first 6 digits of the pressure vessel part number.

** Maximum ambient temperature shown is the rating when valve is operating at the maximum fluid temperature as shown in the product sections for each of the valves in this catalog.

3-Way Miniature Direct Acting Cartridge Mounted Valve Materials of Construction**

Product*	Watt	Type	Sleeve Port Size	Body	Sleeve Tube	Sleeve Stop	Sleeve Flange	"Plunger Blank"	Plunger Spring	Shading Ring	Max. Ambient Temp.
309CL5	10 (AC)	3WNC	1/8	303SS	304SS	430FR	430FR	430FR	18-8SS	Copper	135°F
309CL5	8 (DC)	3WNC	1/8	303SS	304SS	430FR	430FR	430FR	18-8SS	Copper	125°F
309FL5	10 (AC)	3WNO	1/8	303SS	304SS	430FR	430FR	430FR	18-8SS	Copper	135°F
309FL5	8 (DC)	3WNO	1/8	303SS	304SS	430FR	430FR	430FR	18-8SS	Copper	125°F
309UL5	10 (AC)	3WU	1/8	303SS	304SS	430FR	430FR	430FR	18-8SS	Copper	135°F
309UL5	8 (DC)	3WU	1/8	303SS	304SS	430FR	430FR	430FR	18-8SS	Copper	125°F

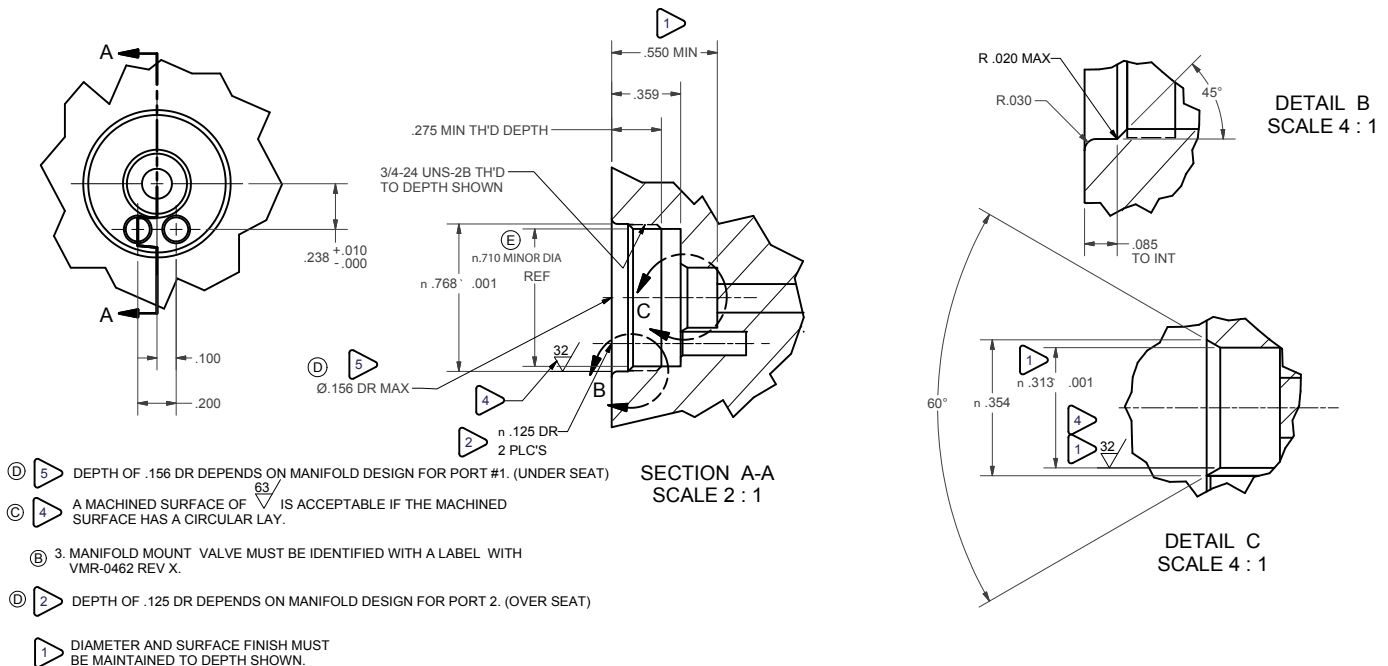
* Shows the first 6 digits of the pressure vessel part number.

** Maximum ambient temperature shown is the rating when valve is operating at the maximum fluid temperature as shown in the product sections for each of the valves in this catalog.

Specialty

VMR-0462

Cavity Dimensional Drawing



Warning: Please contact factory for the latest version of this cavity drawing before proceeding with any manifold machining.

