

WERSA[®]

BULLETIN
NMce-2004

AIR VALVES FOR INDUSTRY SINCE 1949



SOLENOID ACTUATION
1/4 NPT or G1/4
DIRECT MOUNT TO MANY DIFFERENT ACTUATORS
10 YEAR WARRANTY

C5 Series: 3-way or 4-way, 2 or 3 position
Pneumatic Service to 115 psi (8 bar)

E5 Series: 3 way, 2 position
Pneumatic Service to 150 psi (10.3 bar)

C316 Series: Stainless Steel 3 way or 4 way, 2 position
Pneumatic Service 15 to 150 psi (1 to 10.3 bar)

DIRECT MOUNT ACTUATOR VALVES



ALUMINUM CONSTRUCTION

SERIES C5 NAMUR

3-Way/4 Way Field Convertible Solenoid Valves

General Description

The Versa C5 NAMUR mount control valve is a high flow, 5-port, solenoid/pilot valve. It is designed to mount directly to any NAMUR actuator, thus reducing actuator response time and cost of tubing, fittings, brackets, and labor. Many adaptor kits are available for non-NAMUR actuators. Consult factory for kit availability.



The 5-port design allows the C5 NAMUR to be ordered as either 4-way (for double acting actuators) or 3-way (for spring return or fail-safe actuators). The function of this valve is field convertible utilizing no special tools, gaskets, or sealants. Relocation of a port plug converts a 3-way to a 4-way, or a 4-way to a 3-way. When the 4-way valve is converted to 3-way function, the unused exhaust port becomes an actuator vent into which a filter/muffler can be installed to prevent contaminants from entering either the valve or the actuator.

Single solenoid models (for 2-position control), or double solenoid models (for 2 or 3-position control) are available. Actuator positioning is possible with the use of 3-position valves since all Versa C5 NAMUR valves are leakfree/bubbletight. A complete selection of electrical connections, area classifications, and power requirements makes the most exacting and demanding

Operating Pressures and Weights

Valve Type	Operating Pressure Range ^{††} Pneumatic	Approximate Weights	
		Ordinary Service	Hazardous Service
Single Solenoid/spring return (2-position)	15-115 psi (1-8 bar)	0.8 lbs. (363 gms.)	1.1 lbs. (500 gms.)
Double Solenoid/detented (2-position)	10-115 psi (0.7-8 bar)	1.2 lbs. (545 gms.)	1.8 lbs. (816 gms.)
Double Solenoid/spring centered (3-position)	15-115 psi (1-8 bar)	1.2 lbs. (545 gms.)	1.8 lbs. (816 gms.)

†† Pressure ranges may change based on solenoid option. See page 4.
MPa = $\frac{\text{bar}}{10}$

For higher pressure applications, consult factory.

specifications or applications easy to satisfy. Manual overrides (guarded-push to operate) are standard on all C5 NAMUR valves. Consult factory for other manual overrides available as an option.

Materials

Valve body and plunger: anodized aluminum (for stainless steel direct mount valve, consult factory)
Actuating Caps: solenoid—anodized aluminum
spring cap—synthetic resin
Valve seals: plunger and body—FKM (fluorocarbon)
pilot piston—NBR (nitrile)
valve/actuator mounting O rings—NBR (nitrile)
Pilot Piston: synthetic resin
Screws: stainless steel (except valve to actuator = carbon steel)
Port plug: brass
Solenoid parts: sleeve, plunger & spring—304 & 430F stainless steel
coils—epoxy encapsulated with 3 spade terminals (std) or 2 or 3 wire lead (opt)
coil cover— (when applicable) option:—C50 = carbon steel, painted;
—LB—XN, —LB—XX,—PC,—PC—XN,
—PC—XX, —XN,—XX= carbon steel, zinc chromate plated

Porting Size

Inlet and exhaust — 1/4 NPT or G1/4
Cylinder ports — O ring seal per NAMUR standard (For non-NAMUR actuators, consult factory)

Flow Rates

Cv = 0.75 (Kv = 11) average for all ports (48 SCFM at 100 psi; 82 Nm³/h at 7 bar).
For actuator speed rates see page 4.

Installation, Filtration and Lubrication

Valves have no limitations on mounting orientation.
40 to 50 micron filtration and general purpose lubricating oil ISO, ASTM viscosity grade 32 recommended.
Ambient temperature range 5°F (15°C) to 125°F (50°C).

Options Suffix

Manual Override: none Standard on basic valves, guarded-push to operate.
All other options see page 4.

C5 NAMUR Valve Product Number Selector

Basic Valve Number*						
FUNCTION**	PORT SIZE	Cv (Kv)	SINGLE SOLENOID/SPRING RETURN, 2 POSITION	DOUBLE SOLENOID/DETENT, 2 POSITION	DOUBLE SOLENOID/SPRING CENTERED, 3 POSITION	
					Blocked Center	Exhaust Ports Open
4-way 5/2 & 5/3	1/4 NPT G1/4	.75 (11)	CGS-4232-NB1 -† (coil code)	CGG-4232-NB1 -† (coil code)	CXX-4233-NB1 -† (coil code)	CXX-4234-NB1 -† (coil code)
		.75 (11)	CGS-4292-NB1 -† (coil code)	CGG-4292-NB1 -† (coil code)	CXX-4293-NB1 -† (coil code)	CXX-4294-NB1 -† (coil code)
3-way** 3/2 & 3/3	1/4 NPT G1/4	.75 (11)	CGS-3232-NB1 -† (coil code)	CGG-3232-NB1 -† (coil code)	CXX-3233-NB1 -† (coil code)	CXX-3234-NB1 -† (coil code)
		.75 (11)	CGS-3292-NB1 -† (coil code)	CGG-3292-NB1 -† (coil code)	CXX-3293-NB1 -† (coil code)	CXX-3294-NB1 -† (coil code)

* All valves include O ring interface seals and #10-24 mounting screws.

For #10-32 screws change NB1 to NB2. For M5 screws change NB1 to NB3.

** 3-way is the same valve as 4-way, but is provided with a relocated cylinder port plug. See note on page 4

For coil code see page 4.
† Add suffix option here, if required.

DIRECT MOUNT ACTUATOR VALVES

SERIES E5 NAMUR 3-Way Solenoid Valves

General Description

The Versa E5 NAMUR mount control valve is an inexpensive, simple and effective 3-way direct-acting solenoid valve. It is designed to mount directly to any NAMUR actuator thus reducing cost of tubing, fittings, brackets and labor.

It is most effective on spring return or fail-safe actuators where high speed open or close is not important, but where cost is a factor. A threaded actuator vent port is standard.

Available as a 3-way, 2-position, direct solenoid, spring return only, and with most of the Versa solenoid options. See page 4.

Materials

Valve body: anodized aluminum
 Valve seals: body/plunger — NBR (nitrile)
 valve/actuator mounting O rings — NBR (nitrile)

Screws: (valve to actuator) = carbon steel

Solenoid parts: sleeve, plunger & spring— 304 & 430F stainless steel
 coils—epoxy encapsulated with 3 spade terminals (std) or 2 or 3 wire lead (opt)
 coil cover— (when applicable) option:—C50 = carbon steel, painted;
 —LB—XN, —LB—XX, —PC, —PC—XN,
 —PC—XX, —XN, —XX= carbon steel, zinc chromate plated

Operating Pressures and Weights

Valve Type	Operating Pressure Range Pneumatic	Approximate Weights	
		Ordinary Service	Hazardous Service
Single Solenoid/spring return (2-position)	0-150 psi (0-10.3 bar)	0.6 lbs. (272 gms.)	0.9 lbs. (408 gms.)

Porting Size

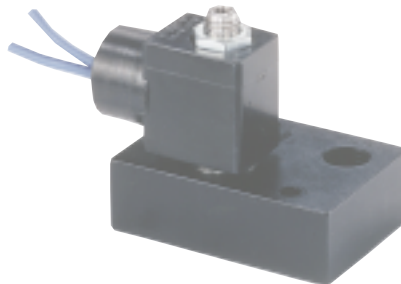
Inlet and Vent -1/4 NPT or G1/4
 Exhaust -#10-32 (1/8 NPT or G1/8 available)
 Cylinder ports -O ring seal for NAMUR standard
 (For non-NAMUR actuators, consult factory)

Installation, Filtration and Lubrication

Valves have no limitations on mounting orientation.
 40 to 50 micron filtration and general purpose lubricating oil ISO, ASTM viscosity grade 32 recommended.
 Ambient temperature range 5°F (15°C) to 125°F (50°C).

Flow Rates

Cv = 0.08 (Kv = 1.2) average for all ports
 (5 SCFM at 100 psi; 8.5 Nm³/h at 7 bar).
 For actuator speed rates see page 4.

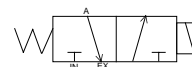


Options

See page 4.

E5 NAMUR Valve Product Number Selector

			Basic Valve Number*	
FUNCTION	PORT SIZE	Cv (Kv)	SINGLE SOLENOID/SPRING RETURN 2-POSITION	
3-way	1/4 NPT	.08 (1.2)	E5SM-3011-34-NB1 -†- (coil code)	
3/2	G1/4	.08 (1.2)	E5SM-3071-34-NB1 -†- (coil code)	



For coil code see page 4.
 †Add suffix option here, if required.

* All valves include O ring interface seals and #10-24 mounting screws.
 For #10-32 screws change NB1 to NB2.
 For M5 screws change NB1 to NB3.

Versa exercises diligence to assure that information contained in this catalog is correct, but does not accept responsibility for any errors or omissions. Versa also reserves the right to change or delete data or products at any time without prior notification. To be sure the data you require is correct, consult factory.



SERIES C5 NAMUR & SERIES E5 NAMUR

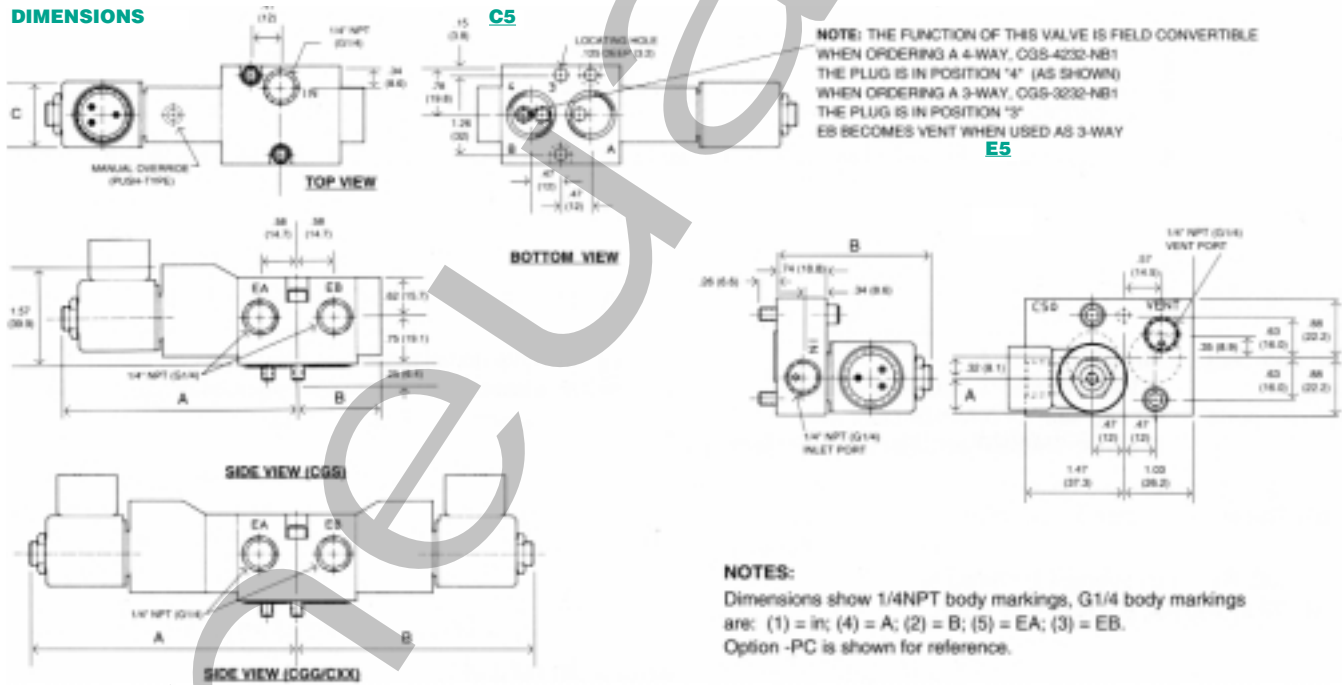
NAMUR OPTIONS			VOLTAGES & COIL CODES**			
DESCRIPTION	SUFFIX DETAIL*	VALVE TYPE		NOMINAL COIL POWER		
		C5	E5			
NON-HAZARDOUS SERVICE	Spade Terminals (standard)	None			AC=8.5 W DC=10.5 W	
	Strain Relief mini-DIN type connector, cord grip PG9 1/2 NPT conduit mini-DIN type connector 1/2 NPT conduit, watertight, NEMA 4	-HC -HCC -228L	24V60 (A024) 110V50 (E110) 220V50 (E220) 240V50 (E240)	12VDC (D012) 24VDC (D024) 48VDC (D048)		
HAZARDOUS SERVICE	1/2 NPT conduit, general purpose, NEMA 1,2,3 1/2 NPT conduit, watertight, NEMA 4 & 4X	-C50 -PC			AC=6 W DC=7 W	
	Hazardous Locations, 1/2 NPT conduit, NEMA 7 & 9, UL listed, CSA approved -watertight, dusttight, NEMA 4, 4X, 7 & 9, UL listed, CSA approved Flameproof, M20x1.5 conduit, Zone 1 & 2 ATEX, IP66	-XX -PC-XX -XN	24V60 (A024) 110V50 (E110) 220V50 (E220) 240V50 (E240)	12VDC (D012) 24VDC (D024) 48VDC (D048)	AC=5.6 W DC=7.2 W	
	Hazardous Locations, low power, 1/2 NPT conduit, NEMA 7 & 9, UL listed, CSA approved Flameproof, low power, M20x1.5 conduit, Zone 1 & 2 ATEX, IP66	-LB-XX -LB-XN	12V60 (A012) 24V60 (A024) 48V60 (A048) 120V60 (A120) 240V60 (A240)	6VDC (D006) 12VDC (D012) 24VDC (D024) 48VDC (D048) 120VDC (D120)	AC or DC =1.8 W	
	Hazardous Locations, strain relief mini-DIN type connector, cord grip PG 9 1/2 NPT conduit entry, -Factory Mutual/CSA approved	-HC-XISC -HCC-XISC	24VDC (D024) system voltage	not available	DC=1.6 W max	

* Add option number to basic valve number as suffix.

** Add coil code# to end of valve number.

For other options, voltages, or Versa's Direct Mount NAMUR Subplate for 1/4" brass V Series, please consult factory.

DIMENSIONS



NAMUR DIMENSIONS: INCHES (mm)		Solenoid Option													
Valve Type	Standard, -228L			-027, -043			-C50, -PC			-XX, -XN			-XISP		
	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
CGS	3.71 (94.2)	1.31 (33.3)	.885 (22.5)	3.45 (87.6)	1.31 (33.3)	.875 (22.2)	3.71 (94.2)	1.31 (33.3)	1.04 (26.4)	3.79 (96.3)	1.31 (33.3)	1.45 (36.8)	3.53 (89.7)	1.31 (33.3)	1.15 (29.2)
CGG/CXX	4.21 (106.9)	3.71 (94.2)	.885 (22.5)	3.96 (100.6)	3.45 (87.6)	.875 (22.2)	4.21 (106.9)	3.71 (94.2)	1.04 (26.4)	4.29 (109.0)	3.79 (96.3)	1.45 (36.8)	4.03 (102.4)	3.53 (89.7)	1.15 (29.2)

NAMUR DIMENSIONS: INCHES (mm)		Solenoid Option					
Valve Type	STANDARD, -228L		-C50, -PC		-XX, -XN		
	A	B	A	B	A	B	
E5	.44 (11.2)	2.31 (58.7)	.52 (13.2)	2.31 (58.7)	.73 (18.4)	2.39 (60.7)	

		ACTUATOR VOLUME in ³ (cm ³)									
Valve Type		5 (82)	10 (164)	25 (410)	50 (820)	100 (1640)	150 (2460)	200 (3280)	400 (6560)	600 (9840)	1000 (16400)
ACTUATOR CYCLE TIME IN SECONDS	C5	.32	.36	.47	.63	.98	1.3	1.7	3.1	4.5	7.2
	E5	.46	.64	1.1	2.0	3.9	5.7	7.5	--	--	--

For double-acting actuators (open & close), use volumes from selected actuator specifications and the chart for estimated speed. The times indicated are per shift. For spring return actuators, use open volume to obtain time from chart. Actuator spring loading may affect shift time.

Slower speeds (adjustable) can always be accomplished by using Versa's Bleed Control Valves in the control valve exhaust port.

The above chart represents approximate actuator operation times under average load conditions at 80 psi (5.5 bar). Due to differing designs of quarter-turn actuators, breakaway friction, loading, internal airflow, inlet piping, fittings and exhaust port options, the values shown are intended as an estimate. Faster or slower times may actually be achieved.



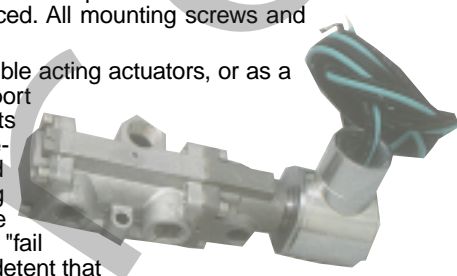
DIRECT MOUNT ACTUATOR VALVES

SERIES C316 NAMUR Stainless Steel 3 or 4 Way Solenoid Valves

General Description

The Versa C316 Series stainless steel NAMUR mount actuator control valve is a high flow, bubbletight, 5-port solenoid valve. It is designed to mount directly to any NAMUR actuator, thus reducing actuator response time and space. Installed costs are also lower as the need for tubing, fittings, brackets and assembly labor are greatly reduced. All mounting screws and seals are included with the valve.

The 5-port design allows the C316 NAMUR valve to be ordered as either a 4-way for double acting actuators, or as a 3-way for spring return actuators. When the 3-way function is utilized, the unused exhaust port becomes an actuator vent where a filter/muffler can be installed to prevent contaminants from entering either the valve or the actuator. The 5-port design allows the user to independently control actuator speed in either open or close direction by utilizing speed or bleed controls. Single or double solenoid 2-position models are available. Single solenoid spring return models utilize an air assisted spring return feature, assuring a positive return. Double solenoid valves may be used in applications where a momentary signal is required or in a "fail in last shifted position" actuator application. Double solenoid models are equipped with a detent that maintains the valve in the last shifted position, even in high vibration applications. All solenoid actuators are solenoid/pilot type, which allows the use of smaller solenoids resulting in lower power consumption. This design assures a positive shift when the valve is energized and reduces the chance of coil burnout. Manual override for single or double solenoid valves is available as an option.



Materials

Valve body, actuating caps & internal parts: 316L stainless steel

Valve seals: FKM (fluorocarbon)

Screws: stainless steel

Solenoid parts: 304, 430F & 302 stainless steel internal parts; coil/solenoid housing per solenoid option selected

Operating Pressure and Weights

Valve Type	*Operating Pressure Range Pneumatic	Approximate Weights		
		General Service	Hazardous Service	
			(-XX, -XN, -XIS_)	(-XMA_, -XIF_)
Single Solenoid-Spring return	25 to 150 psi (1.8 to 10.3 bar)	1.3lbs (590 gms)	1.6 lbs (725 gms)	2.5 lbs (1130 gms)
Double Solenoid	15 to 150 psi (1 to 10.3 bar)	1.9lbs (860 gms)	2.6 lbs (1180 gms)	4.3 lbs (1950 gms)

* For applications above 125 psi (8.6 bar) exhaust flow controls or mufflers are recommended.

Porting Size

Inlet and Exhaust: 1/4 NPT

Cylinder ports: O ring mount per NAMUR standard

Flow Rate

Cv = 1.6 (Kv = 23.5)

Installation, Filtration and Lubrication

Valves have no limitation on mounting orientation.

40 to 50 micron filtration is recommended

Lubrication not required.

Ambient and media temperature range -5°F to 200°F (-20° to 93 °C)

Options

See page 6

C316 NAMUR Valve Product Number Selector

FUNCTION	Basic Valve Number*	
	SINGLE SOLENOID/SPRING RETURN, 2 POSITION	DOUBLE SOLENOID DETENT, 2 POSITION
4-way 5/2	CGS-4332-316 NE1-†-(coil code) 	CGG-4332-316 NE1-†-(coil code)
3-way 3/2	CGS-3331-316 NE1-†-(coil code) 	CGG-3331-316 NE1-†-(coil code)

*All valves include O ring interface seals and #10-24 mounting screws. For #10-32 screws change NE1 to NE2. For M5 screws change NE1 to NE3.

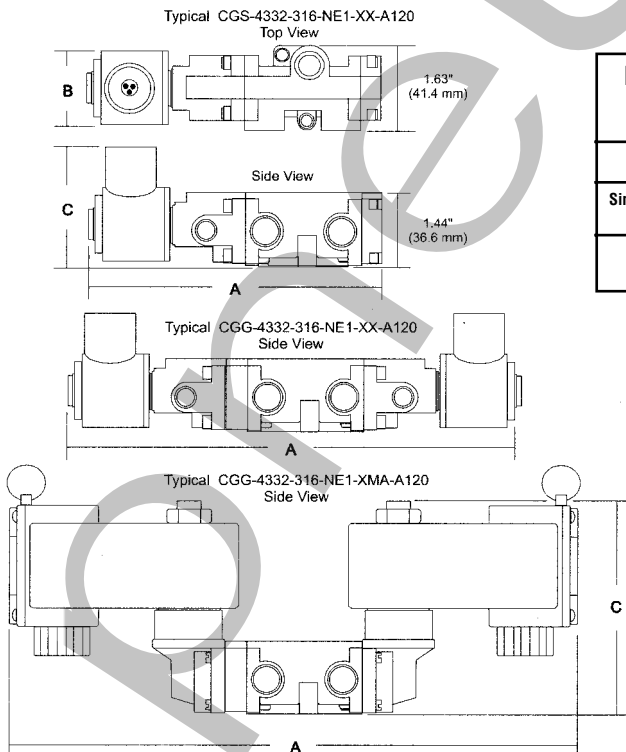
† Add suffix option here if required.

See coil code page 6.

SERIES 316 NAMUR

		Suffix Detail	Solenoid Housing Material	Voltages (Coil Codes) All options available in all voltages, except where noted. Consult factory for other voltages.	NOMINAL COIL POWER AC/DC (watts)	
GENERAL	General Purpose 1/2" NPT conduit, NEMA 1.2 & 3" 1/2" NPT conduit, watertight, NEMA 4 & 4X* Cord grip PG9 mini-DIN type connector, NEMA 4 1/2" NPT conduit mini-DIN type connector, NEMA 4 * For high temperature coil include, -HT	None -PC -HC -HCC	Carbon Steel, Painted Carbon Steel, Chromate coated Engineered polymer Engineered polymer		6.0/7.0 6.0/7.0 6.5/10.5 6.5/10.5	
	HAZARDOUS LOCATION	Hazardous Locations- UL/CSA (NEMA 7 & 9) Class I, Div 2 (A & B); Class I, Div 1 (C & D); Class II, Div 1 (E, F & G)* 1/2 NPT conduit entry, Basic standard with Low power 1.8W coil with Potted coil with Stainless steel coil housing	-XX -LB-XX -PC-XX -ST-XX	Carbon Steel, Chromate coated Carbon Steel, Chromate coated Carbon Steel, Chromate coated Stainless steel		5.6/7.2 1.8/1.8 5.6/7.2 5.6/7.2
Flameproof (d)- ATEX Zones 1 & 2, (IIB + H ₂) Category 2G, T4* M20 x 1.5 conduit entry, Basic standard with Low power 1.8W coil, T6 with Potted coil with Stainless steel coil housing		-XN -LB-XN -PC-XN -ST-XN	Carbon Steel, Chromate coated Carbon Steel, Chromate coated Carbon Steel, Chromate coated Stainless steel	12VDC (D012) 24VDC (D024) 48VDC (D048) 120V60 (A120) 110V50 (E110) 220V50 (E220) 240V60 (A240)	5.6/7.2 1.8/1.8 5.6/7.2 5.6/7.2	
Zones 1 & 2, (IIC) Category 2G with M20 x 1.5 conduit entry with 1/2 NPT conduit entry		-XDAS -XDAT	Stainless Steel w/Junction Box Stainless Steel w/Junction Box		10.0/4.0 - 10.0 10.0/4.0 - 10.0	
Encapsulated (m), Increased Safety (e)- ATEX Zones 1 & 2, (II) Category 2G with M20 x 1.5 conduit entry† with 6-12mm ø cable gland† with 1/2 NPT conduit entry† with 9-16mm ø cable gland†		-XMAA -XMFA -XMAF -XMFF	Engineered polymer Engineered polymer Engineered polymer Engineered polymer	NOTES * For high temperature coil add, -HT (included in XMA, XIF) ** 24 Volt DC only † Contact factory for other options in the series	na/4.0 na/4.0 na/4.0 na/4.0	
Hazardous Locations- FM/CSA Class I, (Group A, B, C, D); Class II, (Group E, F, G), Class III, Div 1 ** with PG9 cable gland, mini-DIN connector with 1/2 NPT conduit entry		-HC-XISC -HCC-XISC	Engineered polymer Engineered polymer		na/1.6 na/1.6	
Intrinsic Safe (ia)- ATEX Zones 0, 1 & 2, (IIC) Category 1G, T6 ** with PG9 cable gland, mini-DIN type connector with 1/2 NPT conduit entry		-HC-XISX6 -HCC-XISX6	Engineered polymer Engineered polymer		na/1.6 na/1.6	
Intrinsic Safe (ib)- ATEX Zones 1 & 2, (IIB) Category 1G with M20 x 1.5 conduit entry† with 1/2 NPT conduit entry†	-XIFA -XIFF	Engineered polymer Engineered polymer	na/0.8 na/0.8			
MISC	Manual Override, un-guarded push and hold (Not available with all solenoid options.)	-ME	N/A			
	Solenoid exhaust adapter, 1/8" NPT	-H2	N/A			

Dimensions



DIMENSIONS		SOLENOID OPTIONS								
		GENERAL SERVICE			HAZARDOUS SERVICE (-XX, -XN, -XISP)			HAZARDOUS SERVICE (-XMA, -XIF)		
Valve Type		A	B	C	A	B	C	A	B	C
Single solenoid, spring return 3-Way or 4-Way	Inches	5.62	1.44	2.33	5.67	1.44	2.33	6.59	2.56	4.27
	(mm)	(142.7)	(36.6)	(59.1)	(144)	(36.6)	(59.1)	(167.3)	(65)	(108.5)
Double solenoid 3-Way or 4-Way	Inches	8.70	1.44	2.33	8.79	1.44	2.33	10.6	2.56	4.27
	(mm)	(221)	(36.6)	(59.1)	(233.2)	(106.9)	(59.1)	(269.2)	(65)	(108.5)

For warranty information and/or any additional information with regards to installation, operation and service warnings, please consult factory.