Pneumatic Valves & Valve Manifolds
DALE CP, LF Series

Product Catalog

ROSS®
a global family

DALE Valves & Valve Manifolds CP, LF Series

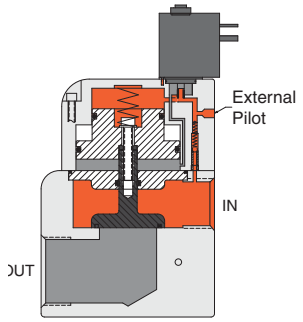
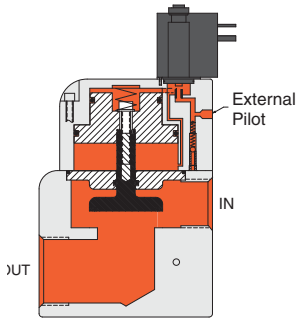
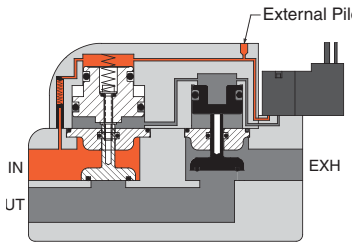
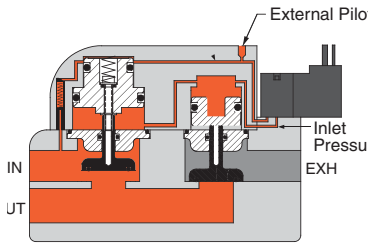
Poppet Valves Function

ROSS poppet valves pop open and closed almost instantly. Surface areas of the double piston and poppet are carefully calculated to produce strong shifting forces in both directions. This results in a design which ensures high speed, repeatability and high shifting forces.

CP Series		LF Series Valve
Valve	Valve Manifold	Valve
		

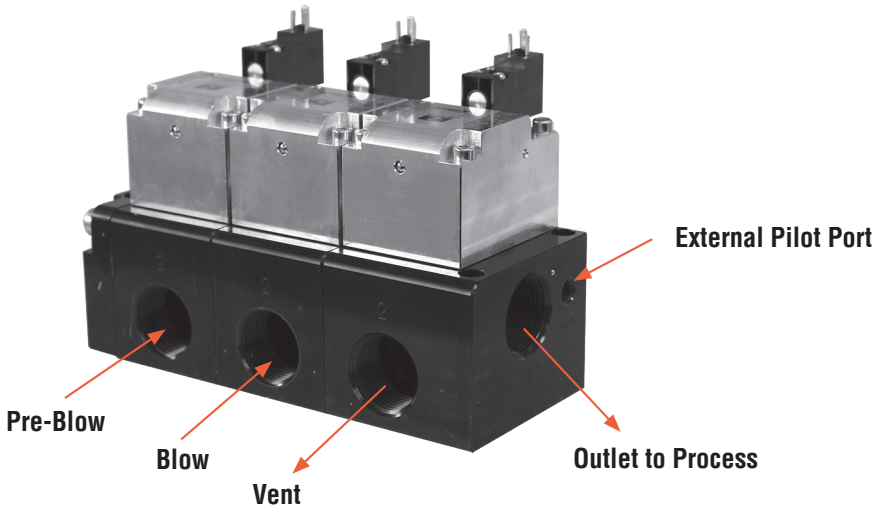
Illustration examples.

VALVE FUNCTION	SOLENOID PILOT	PRESSURE CONTROLLED	AVAILABLE INLET PORT SIZES								MAXIMUM FLOW CV (Nl/min)	MOUNTING		Page
			3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2		IN-LINE	MANIFOLD	
CP Series														
2/2	●			●		●		●		●	108 (110000)	●	●	4–13
		●		●		●		●		●	110 (110000)	●	●	
3/2	●			●		●					12 (12000)	●	●	13–20
		●		●		●					12 (12000)	●	●	
Valve Manifold Configurator														21
LF Series														
2/2	●		●	●	●	●	●	●	●	●	63 (62000)	●		22–27
		●	●	●	●	●	●	●	●	●	63 (62000)	●		
Accessories														32–34

Solenoid Pilot Controlled Valves		
	Valve Not Actuated	Valve Actuated
2/2 Normally Closed		
	Valve Not Actuated	Valve Actuated
3/2 Normally Closed		

Blow Molding Application Example

The CP compact flexible manifold design eliminates piping, reduces system volume, provides fast consistent actuation and delivers an amazing flow rate up to 100 Cv (98400 Nl/min).



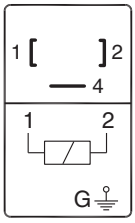
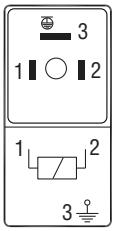
ROSS/FLEX® – Looking for a different solution?

ROSS/FLEX® Customer defined application specific solutions that reduce cost, improve productivity and provide a perfect fit.

CP Series	
Valve	**Valve Manifold**
	

Illustration examples.

Solenoid Pinouts

DIN EN 175301-803 Form A	DIN EN 175301-803 Form C
 1 - Positive 2 - Negative 3 - Ground	 1 - Positive 2 - Negative 3 - Ground

VALVE FEATURES

Poppet construction	Provides high dirt tolerance
Bidirectional flow	Surface areas of the double piston and poppet are carefully calculated to produce strong shifting forces in both directions, ensuring high speed and repeatability
High Flow	Full port flow
Pilot Supply	External or internal
Positive sealing	Dynamic sealing, self-compensating for wear
Mounting	In-line or manifold
External Pilot Supply Conversion (Solenoid Pilot Controlled Valves)	The CP Series valves can be easily field converted to external pilot supply by simply removing existing pipe plug from port X-1, and installing air supply to the X-1 port.

PRODUCT CREDENTIALS

Declaration of Conformity

EAC

Specifications

STANDARD SPECIFICATIONS						
GENERAL	Function		2/2 Valve	Normally Closed (NC)		
				Normally Open (NO)		
	Construction Design			Poppet		
	Actuation		Electrical	Solenoid Pilot Controlled		Normally Closed
						Normally Open
			Pneumatic	Pressure Controlled		Normally Closed
	Mounting		Type	In-line, Manifold		
			Orientation	Any, preferably vertical		
	Connection			Threaded Port		NPT
						G
	Manual Override	Valves	Normally Closed	All Port Sizes		Non-locking
			Normally Open	Port Size	1/2 through 1	Non-locking
					1-1/2 through 2-1/2	Locking, turn-to-lock
OPERATING CONDITIONS	Temperature		Ambient	40° to 120°F (4° to 50°C)		
			Media	40° to 175°F (4° to 80°C)		
	Flow Media			Filtered air		
				For liquid applications, consult ROSS.		
	Operating Pressure	Solenoid Pilot Controlled		30 to 145 psig (2 to 10 bar)		
		Pressure Controlled		30 to 250 psig (2 to 17.2 bar)		
	Pilot Supply Pressure		Internal	Must meet minimum operating pressure		
			External	Must be equal to or greater than inlet pressure		
ELECTRICAL DATA FOR SOLENOID PILOT	Solenoids	Valve Port Size		Current	Operating Voltage	Power Consumption (each solenoid)
		1/4 through 1		DC	24 volts	1.5 watts
				AC	110 volts, 50 Hz 120 volts, 60 HZ	50 Hz: 5.4 VA 60 Hz: 5.0 VA
		1-1/2 through 2-1/2		DC	24 volts	5.8 watts nominal, 6.5 watts maximum
				AC	110 volts, 50 Hz 120 volts, 50/60 Hz	50 Hz, 5.8 watts nominal, 6.5 watts maximum 50/60 Hz, 5.8 watts nominal, 6.5 watts maximum
		Rated for continuous duty				
	Enclosure Rating			IP65, IEC 60529		
	Electrical Connection			DIN EN 175301-803		Form A
						Form C
CONSTRUCTION MATERIAL	Valve Body			Cast Aluminum		
	Poppet			Acetal and Stainless Steel		
	Seals			Buna-N		

IMPORTANT NOTE: Please read carefully and thoroughly all of the CAUTIONS, WARNINGS on the inside back cover.

Ordering Information

2/2 Solenoid Pilot Controlled

MODEL NUMBER CONFIGURATOR — 2-Way 2-Position Valves

CP	1	4	N	B	4	7	1	01	W	

Series

Valve Function

2/2 Normally Closed	1
2/2 Normally Open	2

Revision Level

Port Thread

NPT	N
G	D

Port Size

In		Out	
1/2	4	3/8	3
		1/2	4
1	6	3/4	5
		1	6
1-1/2	8	1-1/4	7
		1-1/2	8
2-1/2	0	2	9
		2-1/2	0

Actuation

Solenoid Pilot Controlled

Pilot Supply

Internal

Coil Connection*

DIN EN 175301-803 (Leave Blank)	
Form A - M12 adapter (24 V DC only)	009

*See options for connectors or wiring kits.

Current	Voltage*	
DC	24 V	W
AC	110 V, 50 Hz 120 V, 50/60 Hz	Z
	230 V, 50/60 Hz	Y

* For other voltages consult ROSS.

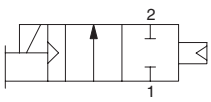
Unit Type	Number of Stations	
Valve	1	01
Valve Manifold	2	12
	3	13
	4	14
	5	15
	6	16
	7	17
	8	18
	9	19
	10	10

Model Number examples: CP14NB47501W, CP23NDB47513Y009.

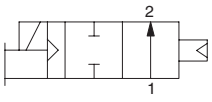
Manifolds can be ordered from two to ten stations. Complete valves-on-manifold assemblies can be ordered to fit your precise requirements.
For preassembled manifold valves with the same model number, select the part number from the configurator above.
For ordering the Dale Series CP manifold valves with different valve functions, please see page 21 for manifold configurator.

Valve Schematic

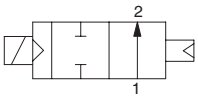
Normally Closed



Normally Open

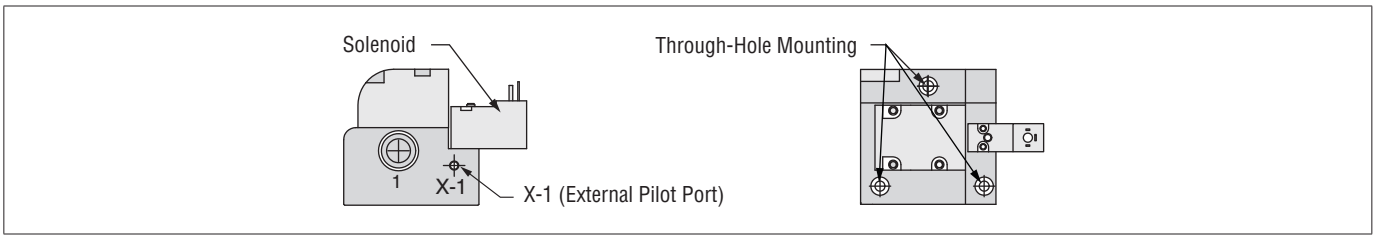


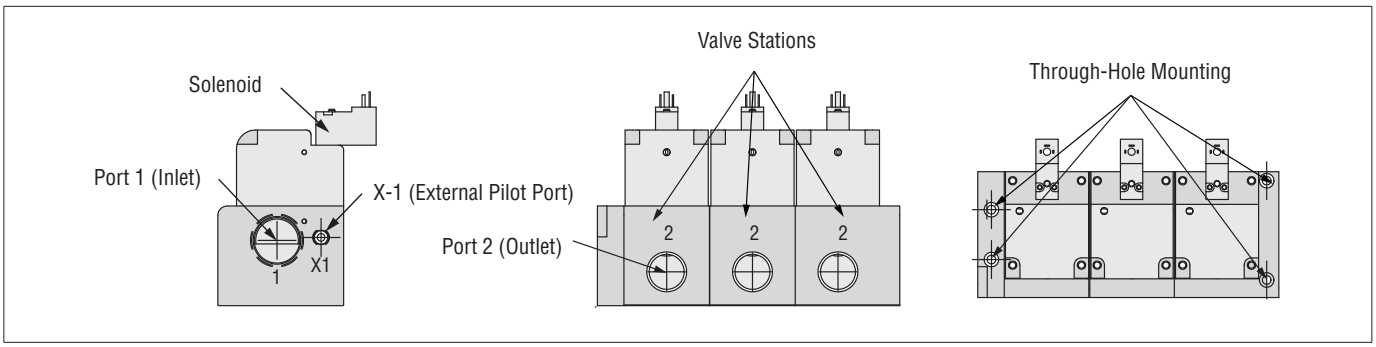
1/2 &1



1-1/2 & 2-1/2

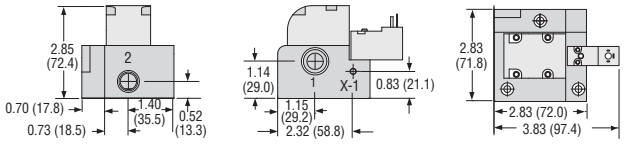
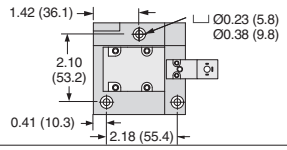
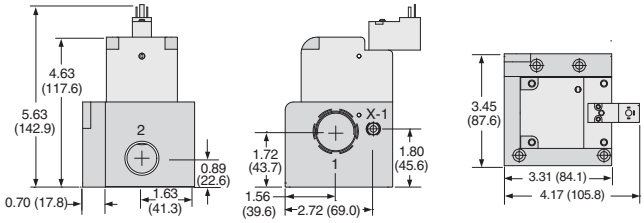
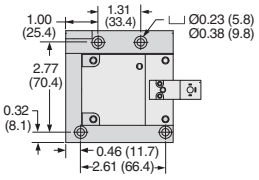
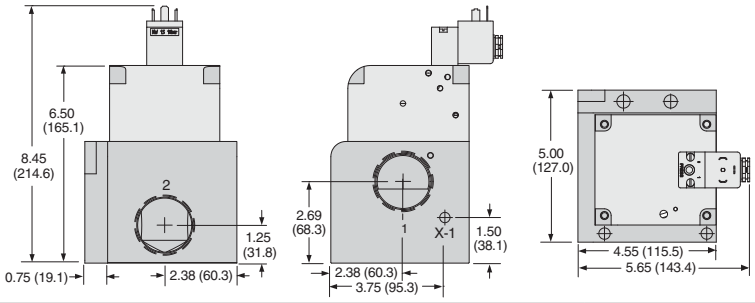
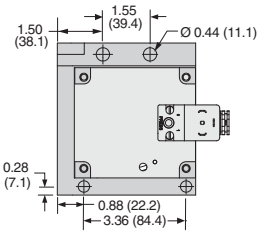
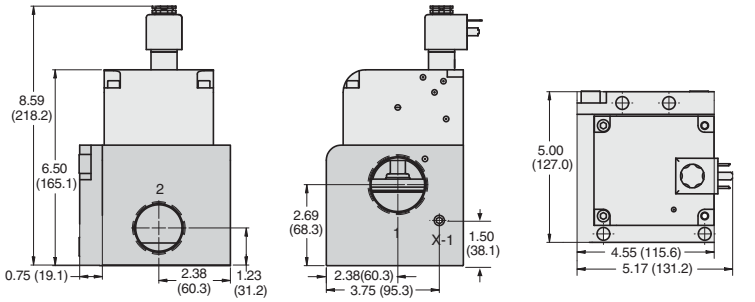
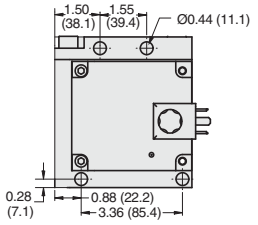
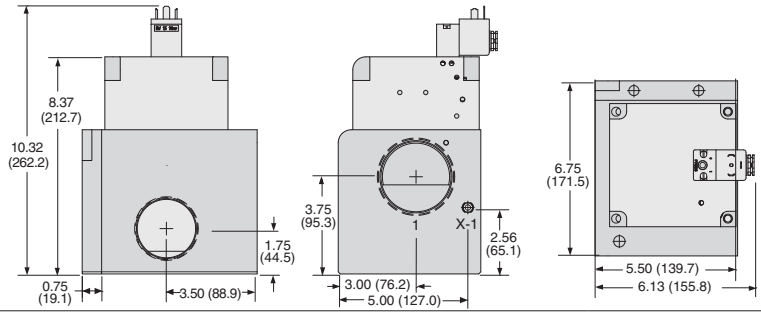
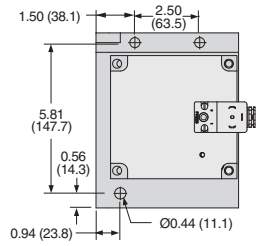
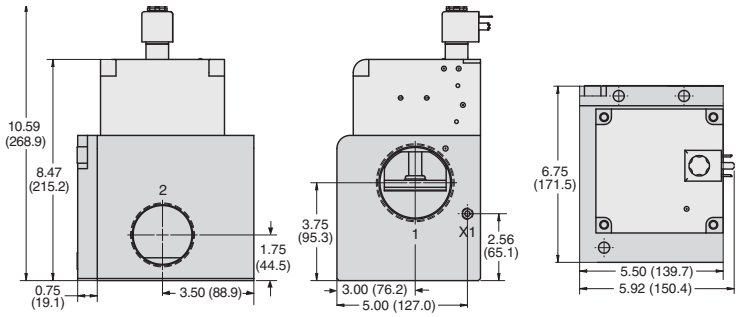
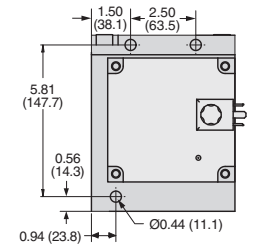
Size		Pilot Port Thread Size (X-1)		Flow C_v (Nl/min)		≈ Weight lb (kg)
Port 1	Port 2	NPT	G	Valve	Manifold	Valve
1/2	3/8	10-32 UNF	M5	3.5 (3400)	3.7 (3600)	1.4 (0.6)
	1/2					
1	3/4	1/8-27 NPT	G1/8	12.3 (12000)	13.7 (13000)	3.5 (1.6)
	1					
1-1/2	1-1/4	1/8-27 NPT	G1/8	44.9 (44000)	44.9 (44000)	10.0 (4.6)
	1-1/2					
2-1/2	2	1/8-27 NPT	G1/8	108 (110000)	108 (110000)	19.5 (8.9)
	2-1/2					





Technical Data

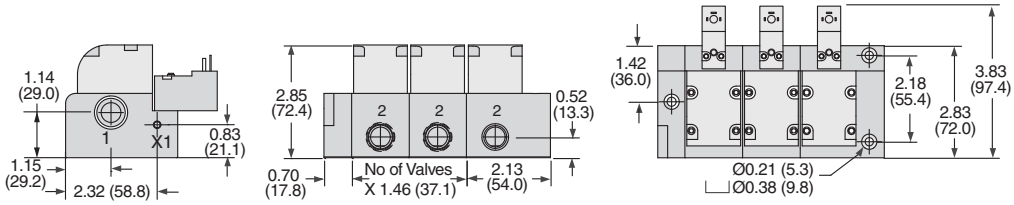
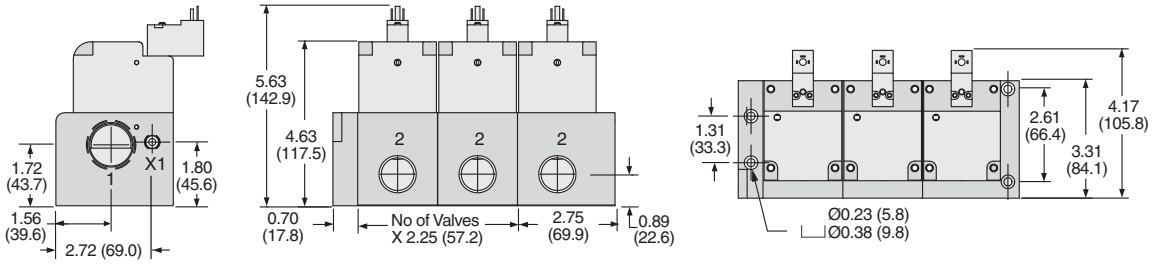
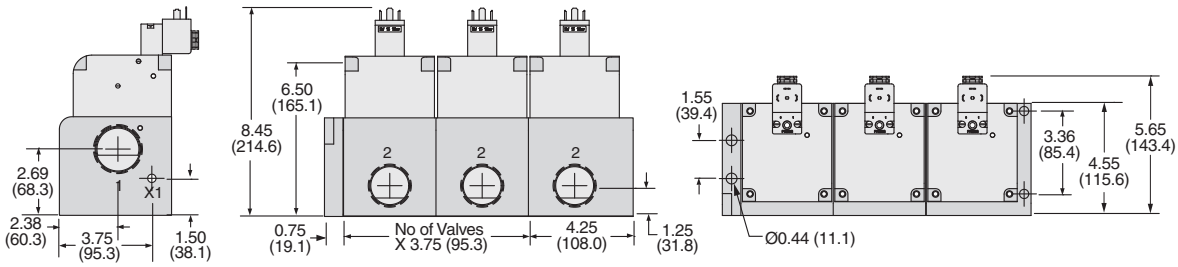
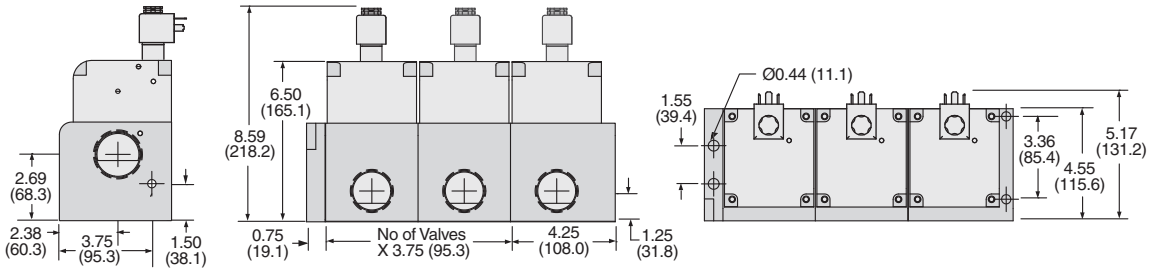
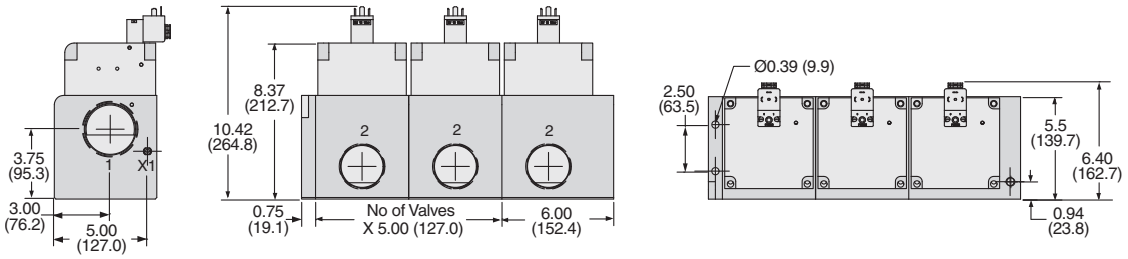
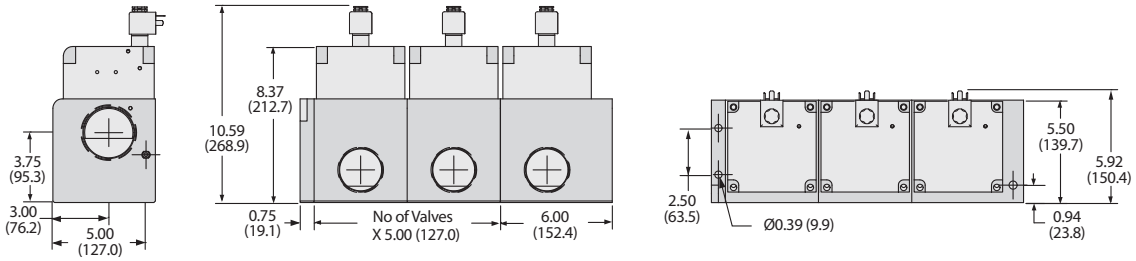
DIMENSIONS — Inches (mm)

Port Size	2/2 Valves	Mounting Details
3/8 & 1/2 NC & NO		
3/4 & 1 NC & NO		
1-1/4 & 1-1/2 NC		
1-1/4 & 1-1/2 NO		
2 & 2-1/2 NC		
2 & 2-1/2 NO		

Downloadable CAD models available.

DIMENSIONS

Inches (mm)

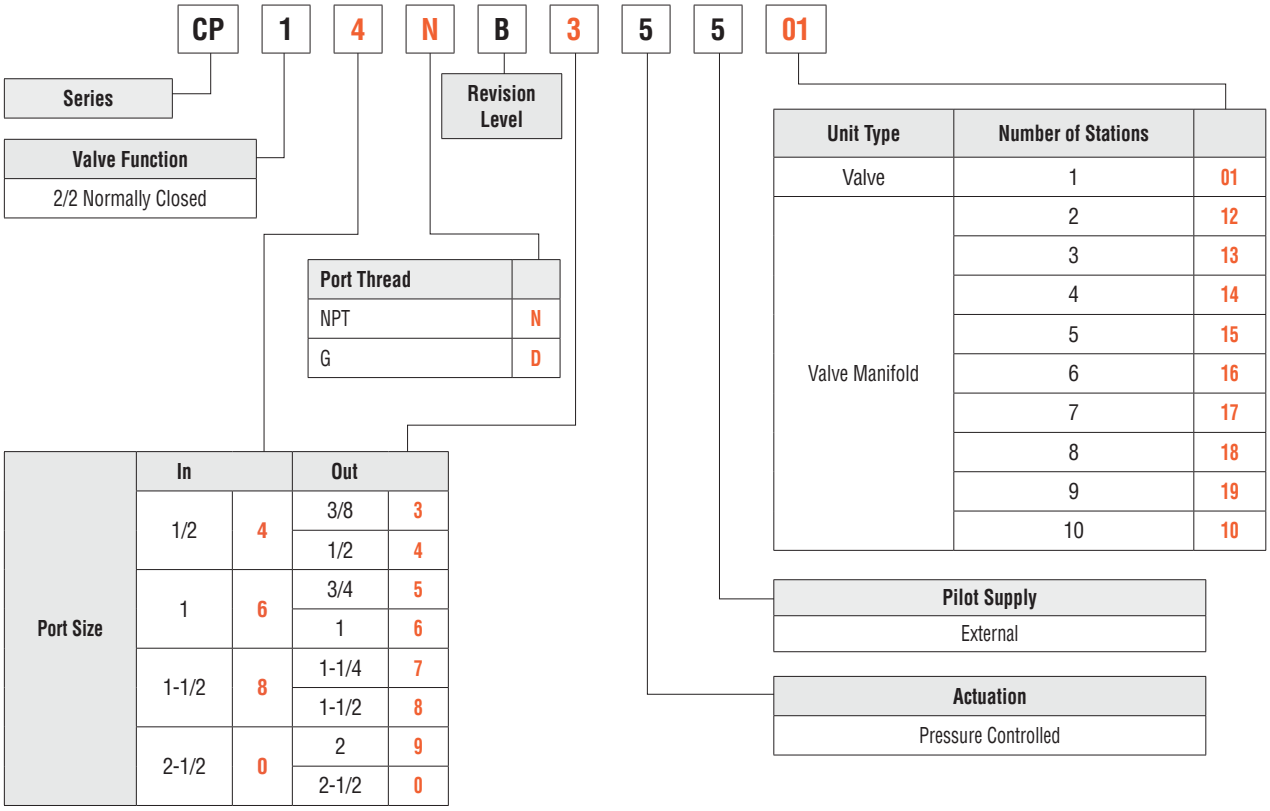
Port Size	2/2 Valve Manifolds
3/8 & 1/2 NC & NO	
3/4 & 1 NC & NO	
1-1/4 & 1-1/2 NC	
1-1/4 & 1-1/2 NO	
2 & 2-1/2 NC	
2 & 2-1/2 NO	

Downloadable CAD models available.

Ordering Information

2/2 Pressure Controlled

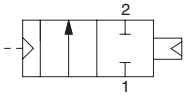
MODEL NUMBER CONFIGURATOR — 2-Way 2-Position Valves



Model Number examples: CP14NB45501, CP23NDB45512.

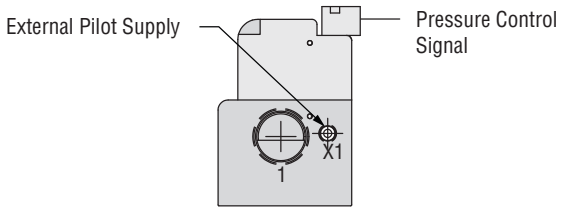
Manifolds can be ordered from two to ten stations. Complete valves-on-manifold assemblies can be ordered to fit your precise requirements.
For preassembled manifold valves with the same model number, select the part number from the configurator above.
For ordering the Dale Series CP manifold valves with different valve functions, please see page 21 for manifold configurator.

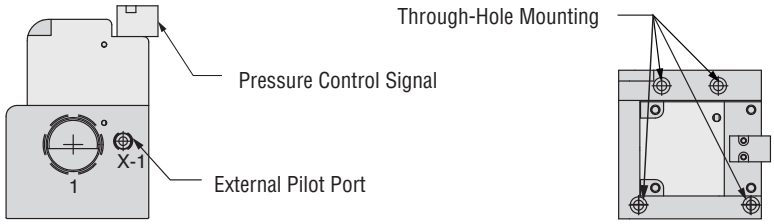
Size		Pilot Port Thread Size (X-1)		Flow C_V (Nl/min)		Weight ≈ lb (kg)
Port 1	Port 2	NPT	G	Valve	Manifold	Valve
1/2	3/8	10-32 UNF	M5	3.5 (3400)	3.7 (3600)	1.4 (0.6)
	1/2					
1	3/4	1/8-27 NPT	G1/8	12.3 (12000)	13.7 (13000)	3.5 (1.6)
	1					
1-1/2	1-1/4	1/8-27 NPT	G1/8	44.9 (44000)	44.9 (44000)	10.0 (4.6)
	1-1/2					
2-1/2	2	1/8-27 NPT	G1/8	108 (110000)	108 (110000)	19.5 (8.9)
	2-1/2					

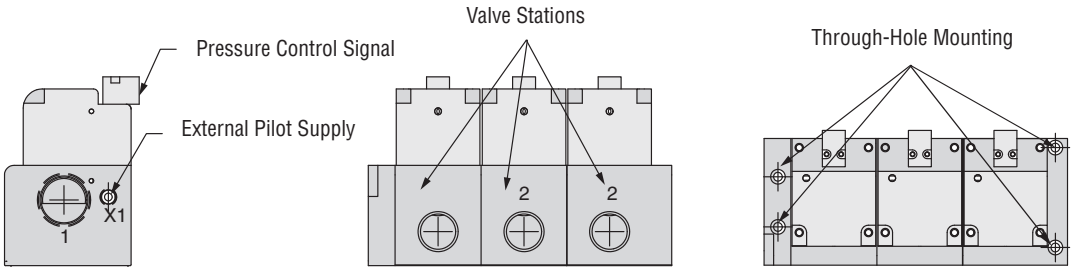
Valve Schematic	Normally Closed	

NOTE

The Dale Series pressure controlled valves require both an external pilot supply and a control signal to operate the valve. When a pressure control signal is applied the valve shifts to the open position.

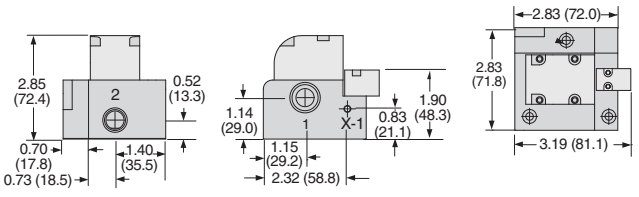
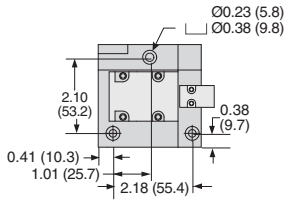
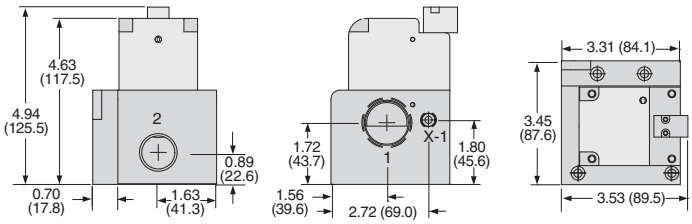
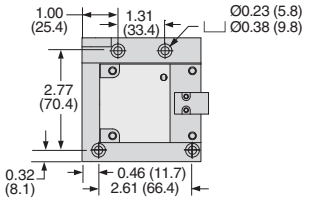
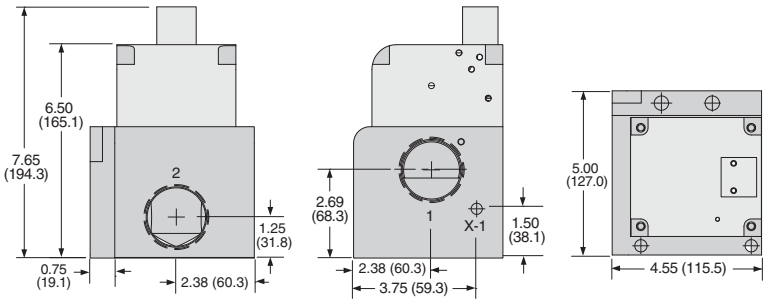
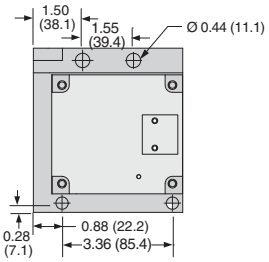
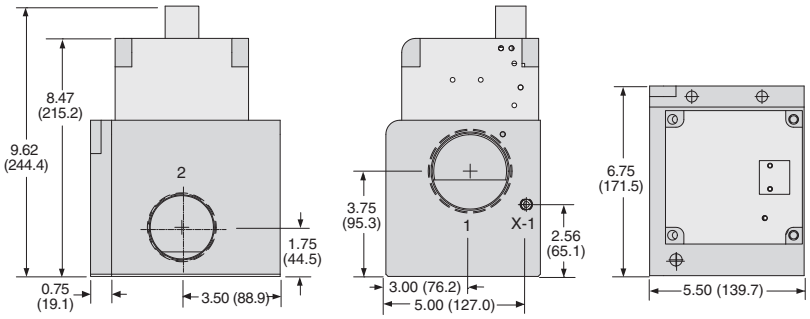
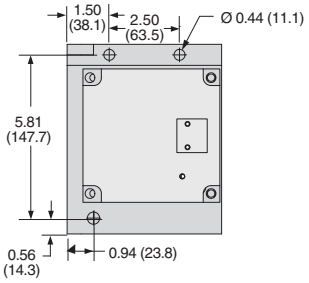






Technical Data

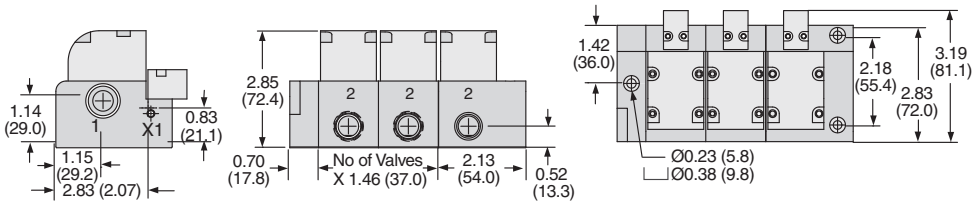
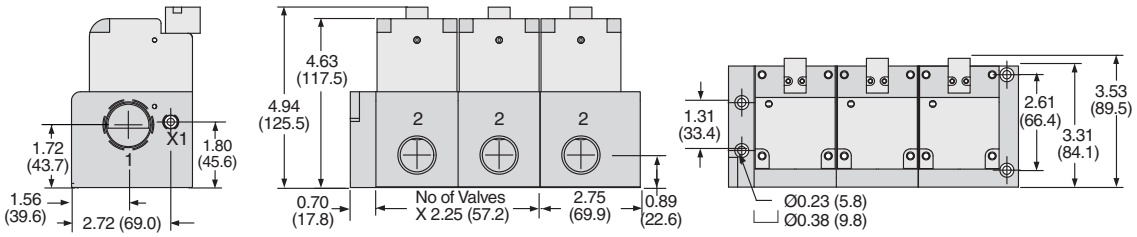
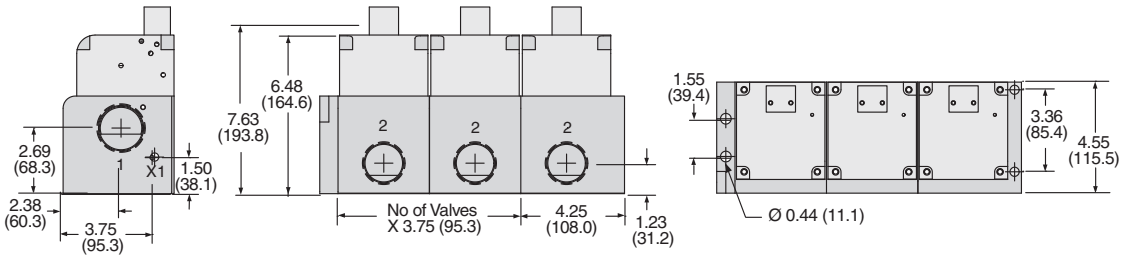
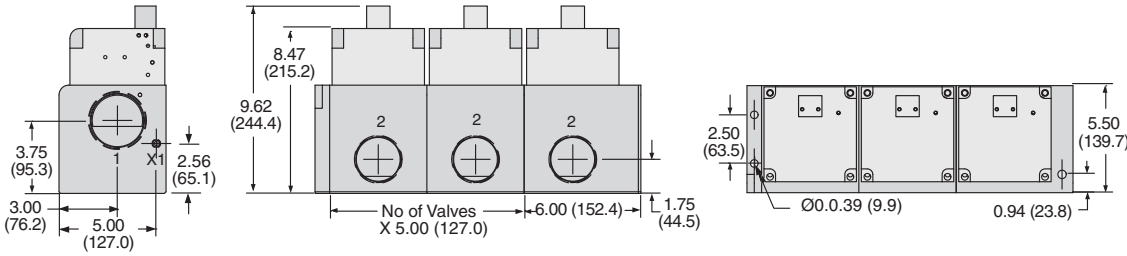
DIMENSIONS — Inches (mm)

Port Size	2/2 Valves	Mounting Details
3/8 & 1/2		
3/4 & 1		
1-1/4 & 1-1/2		
2 & 2-1/2		

Downloadable CAD models available.

DIMENSIONS

Inches (mm)

Port Size	2/2 Valve Manifolds
3/8 & 1/2	
3/4 & 1	
1-1/4 & 1-1/2	
2 & 2-1/2	

Downloadable CAD models available.

3/2 Valves & Valve Manifolds – CP Series
Product Overview

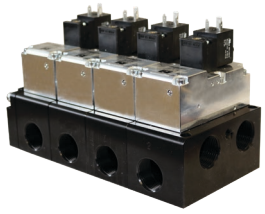
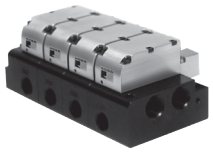
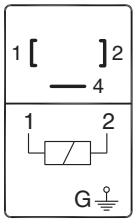
Solenoid Pilot Controlled		Pressure Controlled	
Valve	Valve Manifold	Valve	Valve Manifold
			

Illustration examples.

Solenoid Pinouts

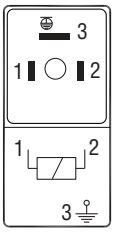
DIN EN 175301-803

Form A



1 - Positive
2 - Negative
3 - Ground

Form C



1 - Positive
2 - Negative
3 - Ground

VALVE FEATURES

Poppet construction	Provides high dirt tolerance
Bidirectional flow	Surface areas of the double piston and poppet are carefully calculated to produce strong shifting forces in both directions, ensuring high speed and repeatability
High Flow	Full port flow
Pilot Supply	External or internal
Positive sealing	Dynamic sealing, self-compensating for wear
Mounting	In-line or manifold
External Pilot Supply Conversion (Solenoid Pilot Controlled Valves)	The CP Series valves can be easily field converted to external pilot supply by simply removing existing pipe plug from port X-1, and installing air supply to the X-1 port.

PRODUCT CREDENTIALS

Declaration of Conformity

EAC

STANDARD SPECIFICATIONS

GENERAL	Function			3/2 Valve	Normally Closed (NC)	
					Normally Open (NO)	
	Construction Design				Poppet	
	Actuation			Electrical	Solenoid Pilot Controlled	Normally Closed
						Normally Open
				Pneumatic	Pressure Controlled	Normally Closed
	Mounting		Type		In-line, Manifold	
			Orientation		Any, preferably vertical	
	Connection				Threaded Port	NPT
						G
	Manual Override	Normally Closed	All Port Sizes		Non-locking	
		Normally Open	Port Size	3/8 & 1/2	Non-locking	
				3/4 & 1	Locking, turn-to-lock	
OPERATING CONDITIONS	Temperature		Ambient		40° to 120°F (4° to 50°C)	
			Media		40° to 175°F (4° to 80°C)	
	Flow Media				Filtered air	
					For liquid applications, consult ROSS.	
	Operating Pressure		Solenoid Pilot Controlled		50 to 145 psig (3.4 to 10 bar)	
			Pressure Controlled		50 to 250 psig (3.4 to 17.2 bar)	
	Pilot Supply Pressure		Internal	Must meet minimum operating pressure		
			External	Must be equal to or greater than inlet pressure		

ELECTRICAL DATA FOR SOLENOID PILOT	Solenoids	Valve Port Size	Current	Operating Voltage	Power Consumption (each solenoid)
		3/8 & 1/2	DC	24 volts	1.5 watts
			AC	110 volts, 50 Hz 120 volts, 60 HZ	50 Hz: 5.4 VA 60 Hz: 5.0 VA
		3/4 & 1	DC	24 volts	5.8 watts nominal, 6.5 watts maximum
			AC	110 volts, 50 Hz 120 volts, 50/60 Hz	50 Hz, 5.8 watts nominal, 6.5 watts maximum 50/60 Hz, 5.8 watts nominal, 6.5 watts maximum
		Rated for continuous duty			
	Enclosure Rating				IP65, IEC 60529
	Electrical Connection				DIN EN 175301-803 Form A
					DIN EN 175301-803 Form C

CONSTRUCTION MATERIAL	Valve Body	Cast Aluminum
	Poppet	Acetal and Stainless Steel
	Seals	Buna-N

IMPORTANT NOTE: Please read carefully and thoroughly all of the CAUTIONS, WARNINGS on the inside back cover.

Ordering Information

3/2 Solenoid Pilot Controlled Valves

MODEL NUMBER CONFIGURATOR — 3-Way 2-Position Valves

CP	3	4	N	B	4	7	1	01	W	
Series	Valve Function	Port Size	Port Thread	Revision Level	Port Size	Actuation	Pilot Supply	Unit Type / Number of Stations	Current / Voltage	Coil Connection

Valve Function	
3/2 Normally Closed	3
3/2 Normally Open	4

Port Thread	
NPT	N
G	D

Port Size	In		Out	
	1/2	4	3/8	3
			1/2	4
	1	6	3/4	5
			1	6

Actuation
Solenoid Pilot Controlled

Pilot Supply
Internal

Unit Type	Number of Stations	
Valve	1	01
Valve Manifold	2	12
	3	13
	4	14
	5	15
	6	16
	7	17
	8	18
	9	19
	10	10

Current	Voltage*	
DC	24 V	W
AC	110 V, 50 Hz 120 V, 50/60 Hz	Z
	230 V, 50/60 Hz	Y

* For other voltages consult ROSS.

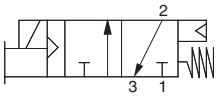
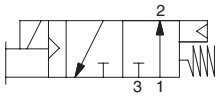
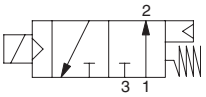
Coil Connection*	
DIN EN 175301-803 (Leave Blank)	
Form A - M12 adapter (24 V DC only)	009

*See options for connectors or wiring kits.

Model Number examples: CP34NB47501W, CP23NDB47512Y009.

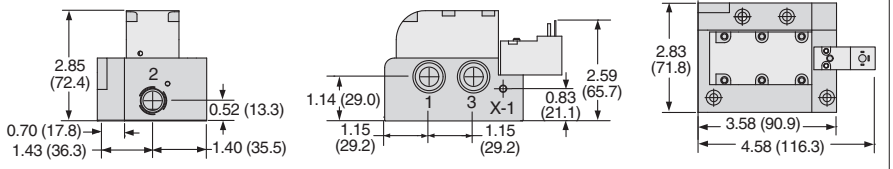
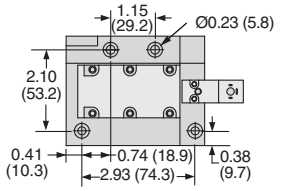
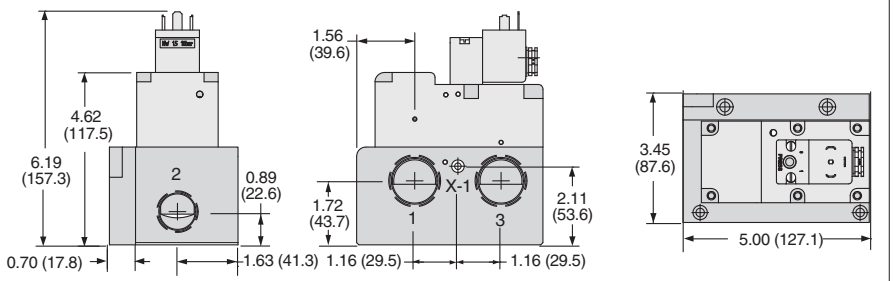
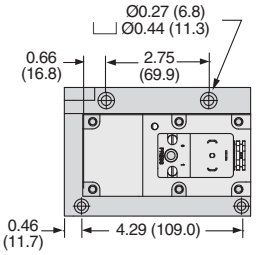
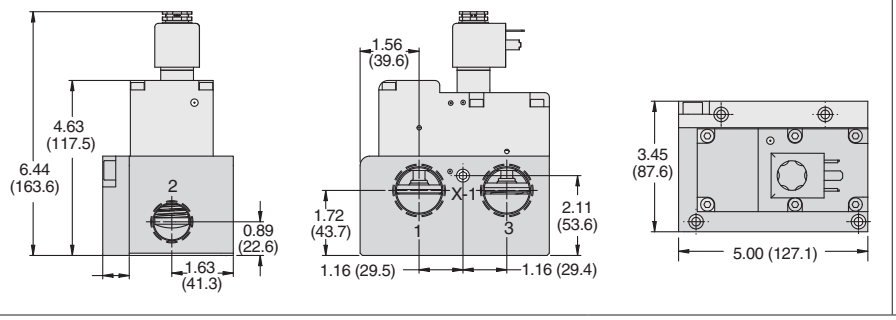
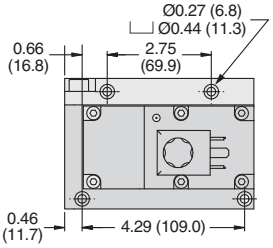
Manifolds can be ordered from two to ten stations. Complete valves-on-manifold assemblies can be ordered to fit your precise requirements.
For preassembled manifold valves with the same model number, select the part number from the configurator above.
For ordering the Dale Series CP manifold valves with different valve functions, please see page 21 for manifold configurator.

Valve Schematic

Normally Closed	Normally Open	
		
1/2 through 1	1/2	1

Size			Pilot Port Thread Size (X-1)		Flow C_V (Nl/min)		Weight l ≈ b (kg)
Port 1	Port 2	Port 3	NPT	G	Valve	Manifold	Valve
1/2	3/8	3/8	10-32 UNF	M5	3.5 (3400)	3.7 (3600)	1.4 (0.6)
	1/2	1/2					
1	3/4	3/4	1/8-27 NPT	G1/8	12.3 (12100)	13.7 (13000)	3.5 (1.6)
	1	1					

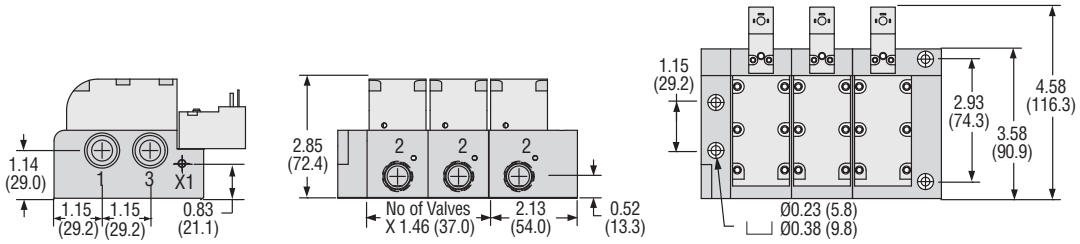
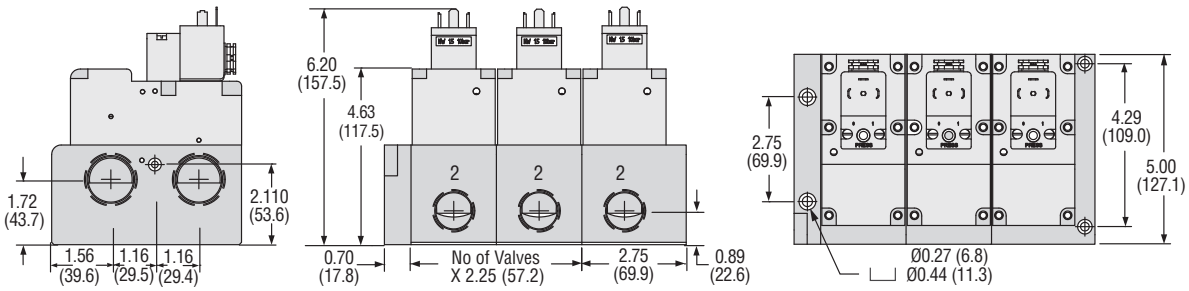
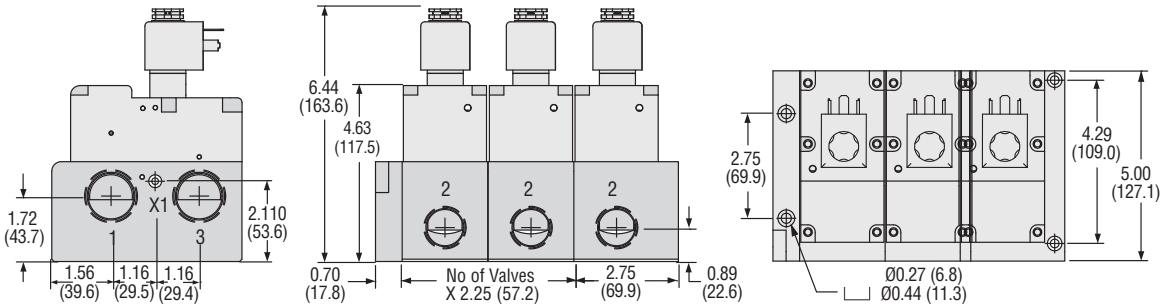
DIMENSIONS — Inches (mm)

Port Size	3/2 Valves	Mounting Details
3/8 & 1/2 NC & NO		
3/4 & 1 NC		
3/4 & 1 NO		

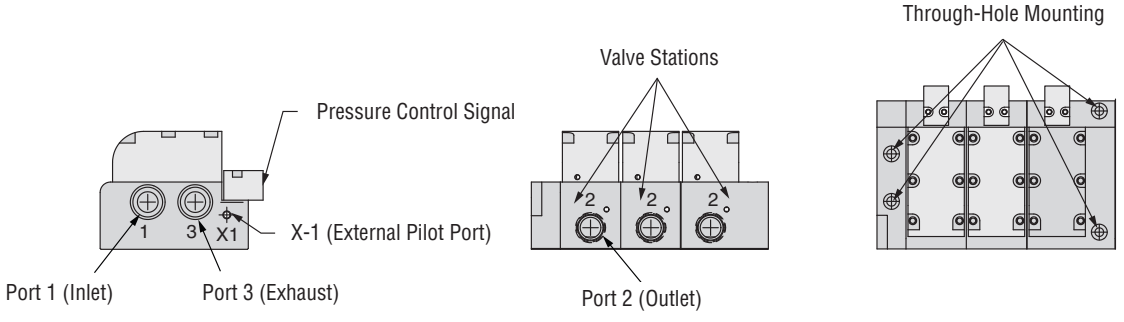
Downloadable CAD models available.

Technical Data

DIMENSIONS — Inches (mm)

Port Size	3/2 Valve Manifolds
3/8 & 1/2 NC & NO	
3/4 & 1 NC	
3/4 & 1 NO	

Downloadable CAD models available.



3/2 Pressure Controlled Valves

MODEL NUMBER CONFIGURATOR — 3-Way 2-Position Valves

CP	3	4	N	B	4	5	5	01

Series

Default Position

Normally Closed

Revision Level

Port Thread	
NPT	N
G	D

Port Size	In		Out	
	1/2	4	3/8	3
			1/2	4
	1	6	3/4	5
			1	6

Unit Type	Number of Stations	
Valve	–	01
Valve Manifold	2	12
	3	13
	4	14
	5	15
	6	16
	7	17
	8	18
	9	19
	10	10

Pilot Supply

External

Actuation

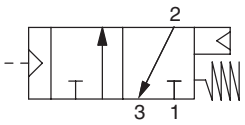
Pressure Controlled

Model Number examples: CP34NB455101, CP33DB455113.

Manifolds can be ordered from two to ten stations. Complete valves-on-manifold assemblies can be ordered to fit your precise requirements. For preassembled manifold valves with the same model number, select the part number from the configurator above.
For ordering the Dale Series CP manifold valves with different valve functions, please see page 21 for manifold configurator.

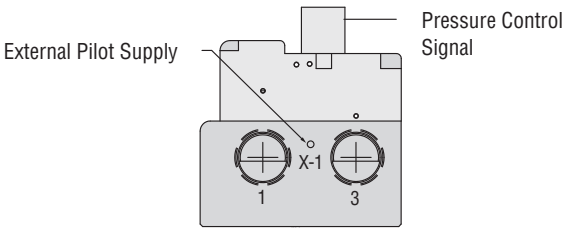
Size			Pilot Port Thread Size (X-1)		Flow C_v (Nl/min)		Weight ≈ lb (kg)
Port 1	Port 2	Port 3	NPT	G	Valve	Manifold	Valve
1/2	3/8	3/8	10-32 UNF	M5	3.5 (3400)	3.7 (3600)	1.4 (0.6)
	1/2	1/2					
1	3/4	3/4	1/8-27 NPT	G1/8	12.3 (12000)	13.7 (134000)	3.5 (1.6)
	1	1					

Valve Schematic — **Normally Closed**

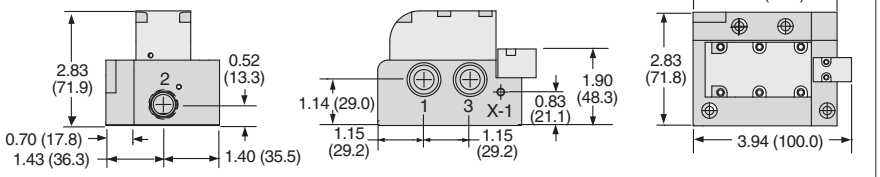
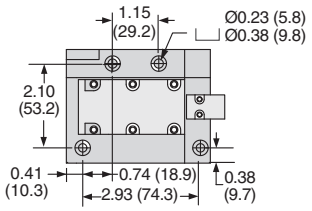
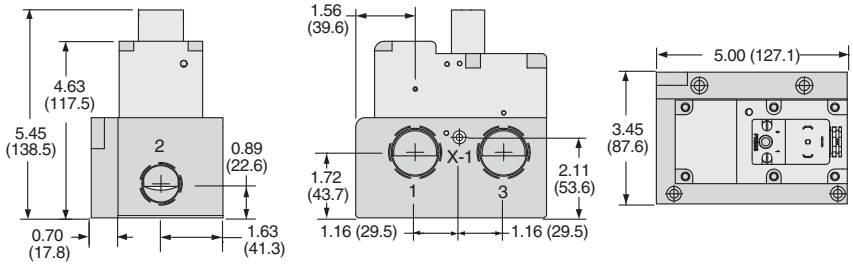
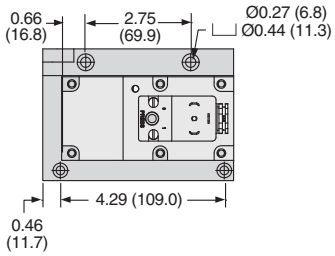


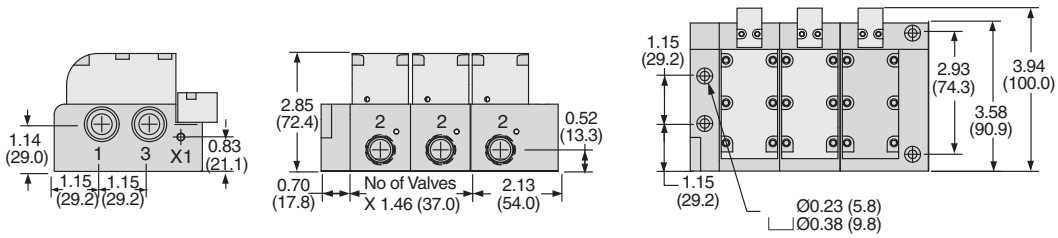
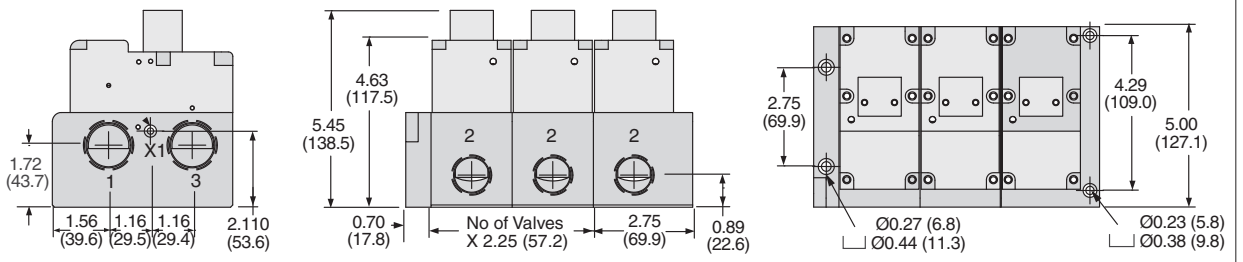
NOTE

The Dale Series pressure controlled valves require both an external pilot supply and a control signal to operate the valve. When a pressure control signal is applied the valve shifts to the open position.

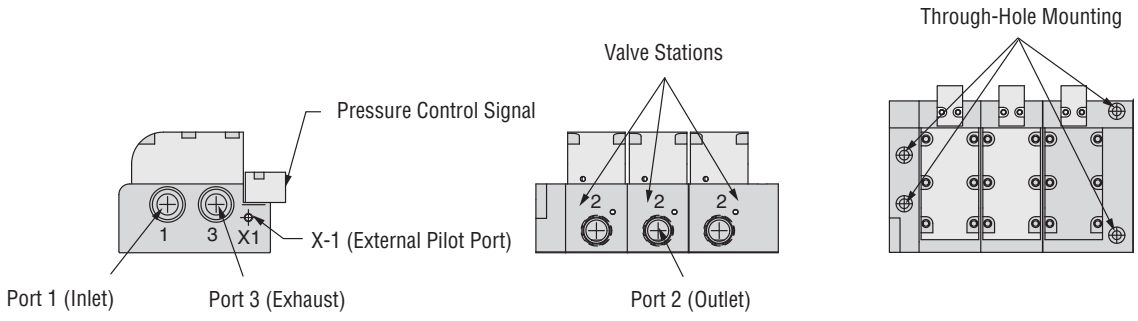


DIMENSIONS — Inches (mm)

Port Size	3/2 Valves	Mounting Details
3/8-1/2		
3/4-1		

Port Size	3/2 Valve Manifolds
3/8-1/2	
3/4-1	

Downloadable CAD models available.



Valve Manifolds CP Series

This form can be used when your application requires a CP Series valve manifold with different valve functions to provide you with complete valve manifold assemblies to fit your precise requirements.

Manifolds can be ordered from two to ten stations. For other combinations, contact ROSS for more information.

# of Stations	2	3	4	5	6	7	8	9	10
	☐	☐	☐	☐	☐	☐	☐	☐	☐

Port Thread	**NPT**	☐	**G**	☐
Valve Series	**CP**	☐		
Valve Type	**2/2**	☐	**3/2**	☐

Valve Position Number	Valve Model Number*
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

*Refer to CP Valve product pages for Valve Model Numbers. Enter "Blank" to indicate base with blocking plate.

Compatible Combinations

- Solenoid Pilot Controlled & Pressure Controlled Valves
- 24 volts DC & 110 or 120 volts AC Solenoid Pilot Valves
- Different port 2 sizes with same port 1 size (i.e., valve 1 = 1/2" port 1 & 3/8" port 2, valve 2 = 1/2" port 1 & 1/2" port 2)

Example:

Valve Position Number	Valve Model Number**
1	CP34NB37511W
2	CP34NB37511W
3	CP44NB37511W
4	CP44NB37511W
5	Blank
6	CP34NB47511W
7	CP34NB47511W
8	CP44NB35511
9	
10	

**Example given for an eight station manifold.

Name:_____ **Date:**_____

Company Name:_____

Address:_____

City, State, Zip Code:_____

Tel:_____ **e-mail:**_____

Fax completed form to 1-706-356-3600 or e-mail to **custsvc@rosscontrols.com** to obtain pre-assemble model number, price, and delivery.

2/2 Valves

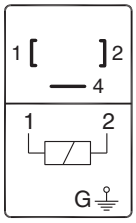
Solenoid Pilot Controlled	Pressure Controlled
	

Illustration examples.

Solenoid Pinouts

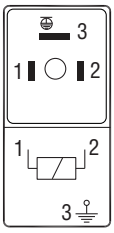
DIN EN 175301-803

Form A



1 - Positive
2 - Negative
3 - Ground

Form C



1 - Positive
2 - Negative
3 - Ground

VALVE FEATURES

Poppet construction	Provides high dirt tolerance
Bidirectional flow	Surface areas of the double piston and poppet are carefully calculated to produce strong shifting forces in both directions, ensuring high speed and repeatability
High Flow	Full port flow
Pilot Supply	External or internal
Positive sealing	Dynamic sealing, self-compensating for wear
Mounting	In-line
External Pilot Supply Conversion (Solenoid Pilot Controlled Valves)	The LF Series valves can be easily field converted to external pilot supply by simply removing existing pipe plug from port X-1, and installing air supply to the X-1 port.

PRODUCT CREDENTIALS

Declaration of Conformity

EAC

STANDARD SPECIFICATIONS						
GENERAL	Function			2/2 Valve	Normally Closed (NC)	
					Normally Open (NO)	
	Construction Design				Poppet	
	Actuation			Electrical	Solenoid Pilot Controlled	Normally Closed
						Normally Open
				Pneumatic	Pressure Controlled	Normally Closed
	Mounting	Type			Inline, Manifold	
		Orientation			Any, preferably vertical	
	Connection				Threaded Port	NPT
						G
	Manual Override	Normally Closed	All Port Sizes		Non-locking	
		Normally Open	Port Size	3/8 through 1	Non-locking	
				1-1/2 through 2-1/2	Locking, turn-to-lock	
OPERATING CONDITIONS	Temperature			Ambient	40° to 120°F (4° to 50°C)	
				Media	40° to 175°F (4° to 80°C)	
	Flow Media				Filtered air	
					For liquid applications, consult ROSS.	
	Operating Pressure	Solenoid Pilot Controlled			Vacuum to 145 psig (vacuum to 10 bar)	
					External Pilot Supply	30 to 145 psig (2 to 10 bar)
		Pressure Controlled			Vacuum to 250 psig (vacuum to 17.2 bar)	
					External Pilot Supply	30 to 250 psig (2 to 17.2 bar)
	Pilot Supply Pressure		Internal		Must meet minimum operating pressure	
			External		Must be equal to or greater than inlet pressure	

ELECTRICAL DATA FOR SOLENOID PILOT	Solenoids			Rated for continuous duty
	Valve Port Size	Current	Operating Voltage	Power Consumption (each solenoid)
	1/4 through 1	DC	24 volts	1.5 watts
		AC	110 volts, 50 Hz 120 volts, 60 HZ	50 Hz: 5.4 VA 60 Hz: 5.0 VA
	1-1/2 through 2-1/2	DC	24 volts	5.8 watts nominal, 6.5 watts maximum
		AC	110 volts, 50 Hz 120 volts, 50/60 Hz	50 Hz, 5.8 watts nominal, 6.5 watts maximum 50/60 Hz, 5.8 watts nominal, 6.5 watts maximum
	Enclosure Rating			IP65, IEC 60529
	Electrical Connection			DIN EN 175301-803 Form A
				DIN EN 175301-803 Form C

CONSTRUCTION MATERIAL	Valve Body	Cast Aluminum
	Poppet	Acetal and Stainless Steel
	Seals	Buna-N

IMPORTANT NOTE: Please read carefully and thoroughly all of the CAUTIONS, WARNINGS on the inside back cover.

Ordering Information

2/2 Solenoid Pilot Controlled

MODEL NUMBER CONFIGURATOR — 2-Way 2-Position Valves

LF	1	4	N	B	4	7	1	01	W	
Series	Valve Function	Port Size	Port Thread	Revision Level	Port Size	Actuation	Pilot Supply	Unit Type	Current / Voltage*	Coil Connection*

Series: LF

Valve Function

2/2 Normally Closed	1
2/2 Normally Open	2

Port Size

	In		Out	
Port Size	1/2	3	3/8	3
		4	1/2	4
	1	5	3/4	5
		6	1	6
	1-1/2	7	1-1/4	7
		8	1-1/2	8
	2-1/2	9	2	9
		0	2-1/2	0

Port Thread

NPT	N
G	D

Revision Level: B

Port Size: 4

Actuation: 7 — Solenoid Pilot Controlled

Pilot Supply: 1 — Internal

Unit Type: 01 — Valve

Current / Voltage*

Current	Voltage*	
DC	24 V	W
AC	110 V, 50 Hz 120 V, 50/60 Hz	Z
	230 V, 50/60 Hz	Y

* For other voltages consult ROSS.

Coil Connection*

DIN EN 175301-803 (Leave Blank)	
Form A - M12 adapter (24 V DC only)	009

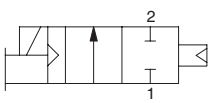
*See options for connectors or wiring kits.

Model Number examples: LF14NB47501W, LF24NB47501Y009.

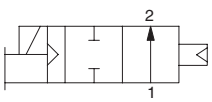
Size		Pilot Port Thread Size (X-1)		Flow C_V (Nl/min)	≈ Weight lb (kg)
Port 1	Port 2	NPT	G		
3/8	3/8	1/8-27 NPT	G1/8	3.6 (3500)	1.5 (0.7)
1/2	1/2				
3/4	3/4	1/8-27 NPT	G1/8	12.2 (12000)	3.5 (1.6)
1	1				
1-1/4	1-1/4	1/8-27 NPT	G1/8	36.1 (36000)	9.3 (4.2)
1-1/2	1-1/2				
2	2	1/8-27 NPT	G1/8	62.7 (62000)	19.3 (8.8)
2-1/2	2-1/2				

Valve Schematic

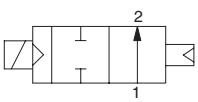
Normally Closed



Normally Open



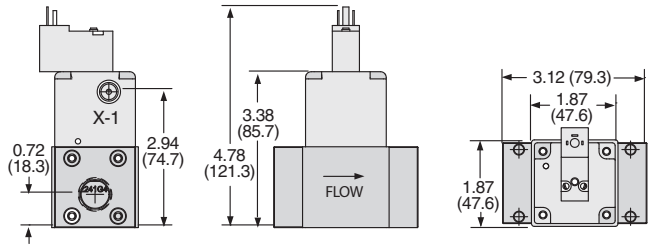
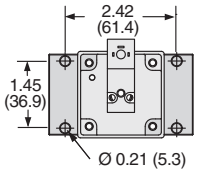
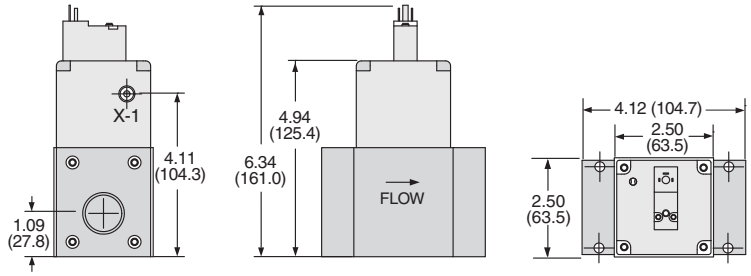
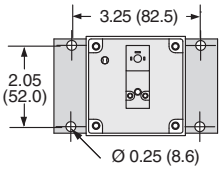
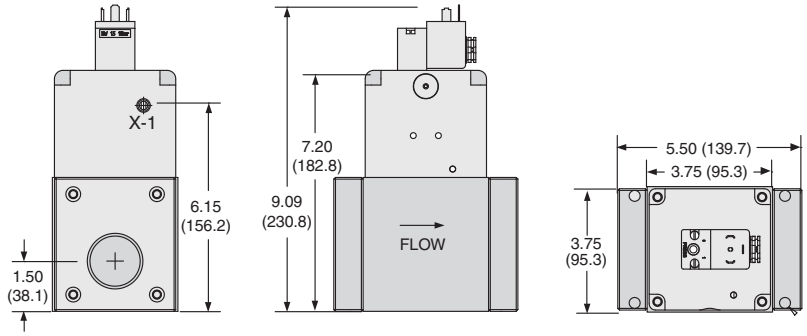
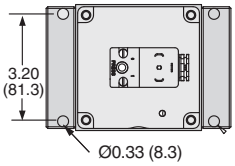
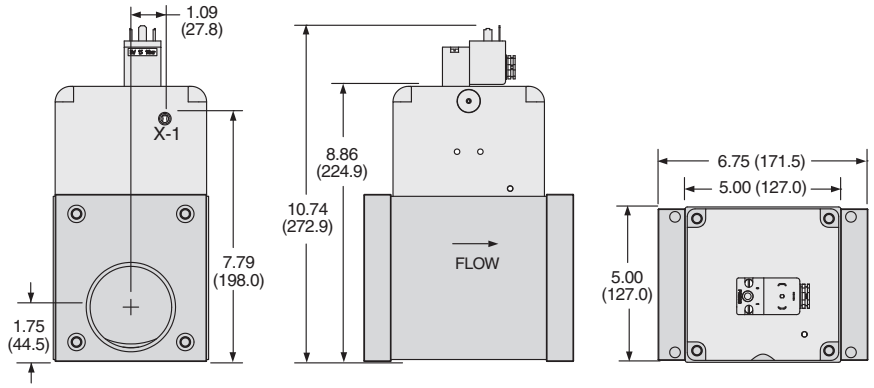
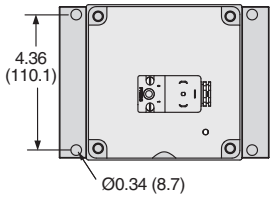
3/8 through 1



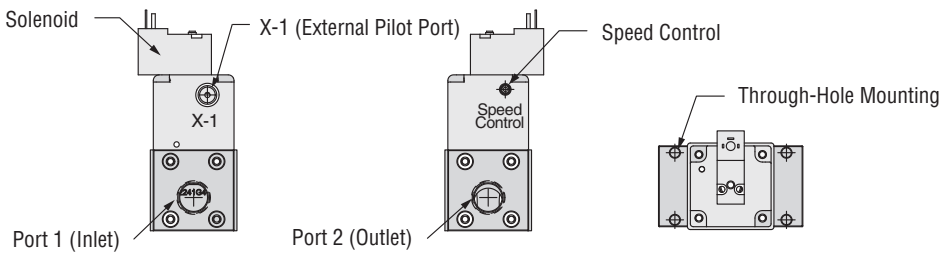
1-1/2 through 2-1/2

DIMENSIONS

Inches (mm)

Port Size	2/2 Valves	Mounting Details
3/8 - 12		
3/4 - 1		
1-1/4 & 1-1/2		
2 & 2-1/2		

Downloadable CAD models available.



Ordering Information

2/2 Pressure Controlled Valves

MODEL NUMBER CONFIGURATOR — 2-Way 2-Position Valves

LF	1	4	N	B	4	7	5	01

Series

Valve Function
2/2 Normally Closed

Revision Level

Unit Type
Valve

Pilot Supply
External

Actuation
Pressure Controlled

Port Thread	
NPT	N
G	D

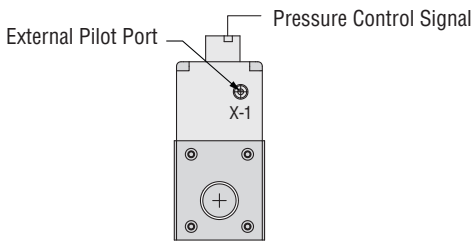
Port Size	In		Out	
	1/2	3	3/8	3
		4	1/2	4
	1	5	3/4	5
		6	1	6
	1-1/2	7	1-1/4	7
		8	1-1/2	8
	2-1/2	9	2	9
		0	2-1/2	0

Model Number examples: LF14NB47501, LF5DB57501.

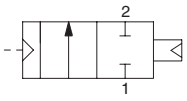
Size		Pilot Port Thread Size (X-1)		Flow C_V (Nl/min)	≈ Weight lb (kg)
Port 1	Port 2	NPT	G		
3/8	3/8	1/8-27 NPT	G1/8	3.6 (3500)	1.5 (0.7)
1/2	1/2				
3/4	3/4	1/8-27 NPT	G1/8	12.2 (12000)	3.5 (1.6)
1	1				
1-1/4	1-1/4	1/8-27 NPT	G1/8	36.1 (36000)	9.3 (4.2)
1-1/2	1-1/2				
2	2	1/8-27 NPT	G1/8	62.7 (62000)	19.3 (8.8)
2-1/2	2-1/2				

NOTE

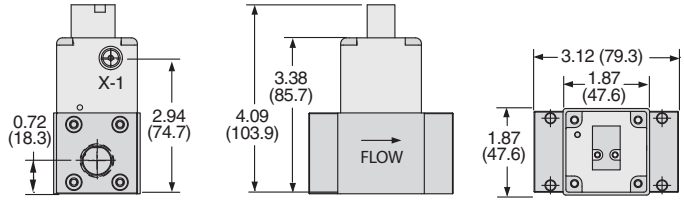
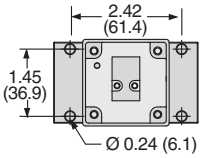
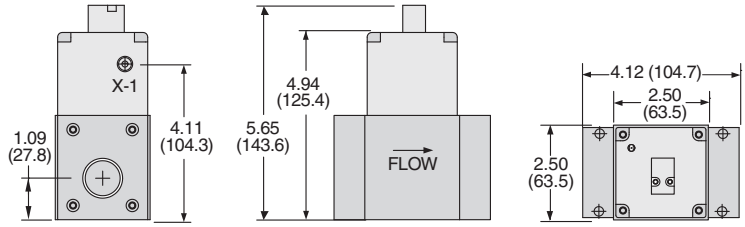
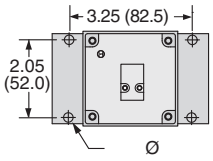
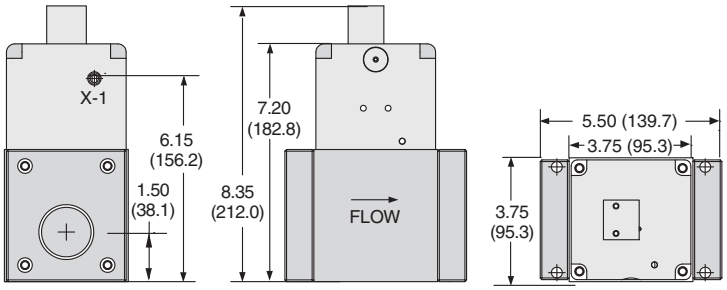
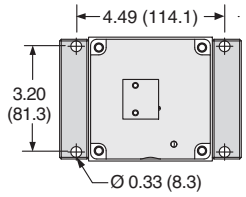
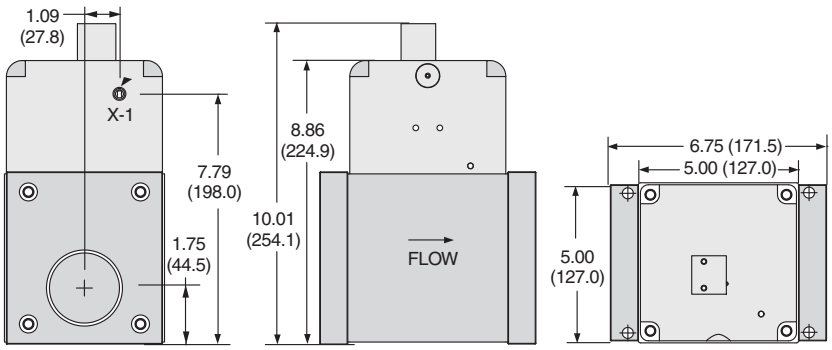
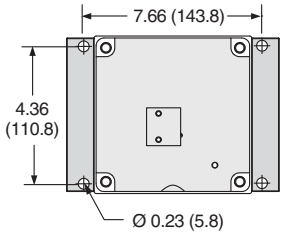
The Dale Series pressure controlled valves require both an external pilot supply and a control signal to operate the valve. When a pressure control signal is applied the valve shifts to the open position.



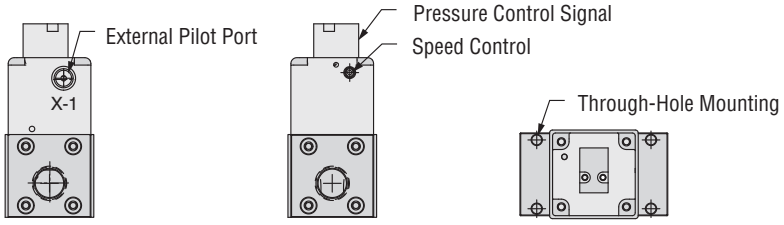
Valve Schematic	Normally Closed	



DIMENSIONS — Inches (mm)

Port Size	2/2 Valves	Mounting Details
3/8 - 12		
3/4 - 1		
1-1/4 & 1-1/2		
2 & 2-1/2		

Downloadable CAD models available.



PREWIRED ELECTRICAL CONNECTORS

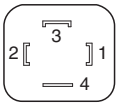
Cable with Connector without Light	Cable with Lighted Connector
	

Illustration examples.

	Valve Series	Port Size	Cable						Kit Number			
			End 1	End 2	Connection	Quantity Included	Length meters (feet)	Cord Diameter	Connector			
			Connector Type DIN EN 175301-803						Without Light	Lighted		
										24 V DC	120 V AC	230 V AC
Pre-wired Connectors	CP	1/2	Form C	Flying leads	1	1	2 (6.5)	10-mm	2449K77	2476K77-W	2476K77-Z	2476K77-Y
		1										
		1-1/2	Form A	Flying leads	1	1	2 (6.5)	10-mm	721K77	720K77-W	720K77-Z	720K77-Y
		2-1/2										
	LF	3/8	Form C	Flying leads	1	1	2 (6.5)	10-mm	2449K77	2476K77-W	2476K77-Z	2476K77-Y
		1/2										
		3/4										
		1										
		1-1/4	Form A	Flying leads	1	1	2 (6.5)	10-mm	721K77	720K77-W	720K77-Z	720K77-Y
		1-1/2										
		2										
		2-1/2										
	LT	1/4	Form C	Flying leads	1	1	2 (6.5)	10-mm	2449K77	2476K77-W	2476K77-Z	2476K77-Y
	CAUTIONS: Do not use electrical connectors with surge suppressors, as this may increase valve response time when de-actuating the solenoids.											

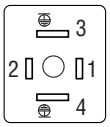
Connector Pinouts

DIN EN 175301-803 Form A



1 - Black
2 - Black
4 - Green/Yellow (Ground)

DIN EN 175301-803 Form C



1 - Brown
2 - Blue
3 - Green/Yellow (Ground)
4 - Green/Yellow (Ground)

ELECTRICAL CONNECTORS

with Cable Grip, without Light	with Cable Grip, with Light
	

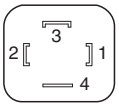
Illustration examples.

Connectors

Valve Series	Port Size	Connector			Kit Number			
		Type DIN EN 175301-803	Fitting Connection	Quantity Included	Connector			
					Without Light	Lighted		
						24 V DC	120 V AC	230 V AC
CP	1/2	Form C	Cable grip	1	2452K77	2453K77-W	2453K77-Z	2453K77-Y
	1							
	1-1/2	Form A	Cable grip	1	937K87	936K87-W	936K87-Z	936K87-Y
	2-1/2							
LF	3/8	Form C	Cable grip	1	2452K77	2453K77-W	2453K77-Z	2453K77-Y
	1/2							
	3/4							
	1							
	1-1/4	Form A	Cable grip	1	937K87	936K87-W	936K87-Z	936K87-Y
	1-1/2							
	2							
	2-1/2							
LT	1/4	Form C	Cable grip	1	2452K77	2453K77-W	2453K77-Z	2453K77-Y
CAUTIONS: Do not use electrical connectors with surge suppressors, as this may increase valve response time when de-actuating the solenoids.								

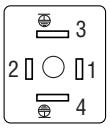
Connector Pinouts

DIN EN 175301-803 Form A



1 - Black
2 - Black
4 - Green/Yellow (Ground)

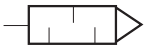
DIN EN 175301-803 Form C



1 - Brown
2 - Blue
3 - Green/Yellow (Ground)
4 - Green/Yellow (Ground)

EXHAUST SILENCER

Illustration examples.

SPECIFICATIONS	Silencer Material	Pressure Range psig (bar)	Schematic
	Aluminum	0-290 (0-20) maximum	

Port Size	Thread Type	Flow C_v (Nl/min)	Model Number		Dimensions inches (mm)		Weight ≈ lb (kg)
			NPT Thread	R/Rp Thread	Length	Hex Size (D)	
1/4	Male	2.3 (2300)	5500A2003	D5500A2003	2.2 (6)	0.81 (21)	0.07 (0.03)
1/2	Male	6.8 (6700)	5500A4003	D5500A4003	3.6 (9)	1.25 (32)	0.2 (0.1)
1	Male	18 (18000)	5500A6003	D5500A6003	5.4 (14)	2.0 (51)	0.9 (0.4)

CAUTIONS, WARNINGS And STANDARD WARRANTY

ROSS OPERATING VALVE, ROSS CONTROLS®, ROSS DECCO®, and AUTOMATIC VALVE INDUSTRIAL, collectively the "ROSS Global Family".

PRE-INSTALLATION or SERVICE

1. Before servicing a valve or other pneumatic component, be sure all sources of energy are turned off, the entire pneumatic system is shut down and exhausted, and all power sources are locked out (ref: OSHA 1910.147, EN 1037).

2. All ROSS Global Family Products, including service kits and parts, should be installed and/or serviced only by persons having training and experience with pneumatic equipment. Because any product can be tampered with and/or need servicing after installation, persons responsible for the safety of others or the care of equipment must check ROSS Global Family Products on a regular basis and perform all necessary maintenance to ensure safe operating conditions.

3. All applicable instructions should be read and complied with before using any fluid power system to prevent harm to persons or equipment. In addition, overhauled or serviced valves must be functionally tested prior to installation and use. If you have any questions, call your nearest ROSS Global Family location.

4. Each ROSS Global Family Product should be used within its specification limits. In addition, use only ROSS Group components to repair ROSS Global FamilyProducts.

WARNINGS:
Failure to follow these instructions can result in personal injury and/or property damage.

FILTRATION and LUBRICATION

1. Dirt, scale, moisture, etc., are present in virtually every air system. Although some valves are more tolerant of these contaminants than others, best performance will be realized if a filter is installed to clean the air supply, thus preventing contaminants from interfering with the proper performance of the equipment. The ROSS Global Family recommends a filter with a 5-micron rating for normal applications.

2. All standard ROSS Global Family filters and lubricators with polycarbonate plastic bowls are designed for compressed air applications only. Use the metal bowl guard, where provided, to minimize danger from high pressure fragmentation in the event of bowl failure. Do not expose these products to certain fluids, such as alcohol or liquefied petroleum gas, as they can cause bowls to rupture, creating a combustible condition and hazardous leakage. Immediately replace crazed, cracked, or deteriorated bowls.

3. Only use lubricants which are compatible with materials used in the valves and other components in the system. Normally, compatible lubricants are petroleum base oils with oxidation inhibitors, an aniline point between 180°F (82°C) and 220°F (104°C), and an ISO 32, or lighter, viscosity. Avoid oils with phosphate type additives which can harm polyurethane components, potentially leading to valve failure which risks personal injury, and/or damage to property.

WARNINGS:
Failure to follow these instructions can result in personal injury and/or property damage.

AVOID INTAKE/EXHAUST RESTRICTION

1. Do not restrict air flow in the supply line. To do so could reduce the pressure of the supply air below minimum requirements for the valve and thereby causing erratic action.

2. Do not restrict a valve's exhaust port as this can adversely affect its operation. Exhaust silencers must be resistant to clogging and must have flow capacities at least as great as the exhaust capacities of the valves. Contamination of the silencer can result in reduced flow and increased back pressure.

WARNINGS:
Failure to follow these instructions can result in personal injury and/or property damage.

SAFETY APPLICATIONS

1. Mechanical Power Presses and other potentially hazardous machinery using a pneumatically controlled clutch and brake mechanism must use a press control double valve with a monitoring device. A double valve without a self-contained monitoring device should be used only in conjunction with a control system which assures monitoring of the valve. All double valve installations involving hazardous applications should incorporate a monitoring system which inhibits further operation of the valve and machine in the event of a failure within the valve mechanism.

2. Safe Exhaust (dump) valves without a self-contained monitoring device should be used only in conjunction with a control system which assures monitoring of the valve. All Safe Exhaust valve installations should incorporate a monitoring system which inhibits further operation of the valve and machine in the event of a failure within the valve mechanism.

3. Per specifications and regulations, the ROSS L-O-X® and L-O-X® with EEZ-ON®, N06 and N16 Series operation products are defined as energy isolation devices, NOT AS EMERGENCY STOP DEVICES.

WARNINGS: ***Failure to follow these instructions can result in personal injury and/or property damage.***

STANDARD WARRANTY

All products sold by the ROSS Global Family are warranted for a one-year period [with the exception of Filters, Regulators and Lubricators ("FRLs") which are warranted for a period of seven (7) years] from the date of purchase. All products are, during their respective warranty periods, warranted to be free of defects in material and workmanship. The ROSS Global Family's obligation under this warranty is limited to repair, replacement or refund of the purchase price paid for products which the ROSS Global Family has determined, in its sole discretion, are defective. All warranties become void if a product has been subject to misuse, misapplication, improper maintenance, modification or tampering. Products for which warranty protection is sought must be returned to the ROSS Global Family freight prepaid.

THE WARRANTY EXPRESSED ABOVE IS IN LIEU OF AND EXCLUSIVE OF ALL OTHER WARRANTIES AND THE ROSS GLOBAL FAMILY EXPRESSLY DISCLAIMS ALL OTHER WARRANTIES EITHER EXPRESSED OR IMPLIED WITH RESPECT TO MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THE ROSS GLOBAL FAMILY MAKES NO WARRANTY WITH RESPECT TO ITS PRODUCTS MEETING THE PROVISIONS OF ANY GOVERNMENTAL OCCUPATIONAL SAFETY AND/OR HEALTH LAWS OR REGULATIONS. IN NO EVENT IS THE ROSS GLOBAL FAMILY LIABLE TO PURCHASER, USER, THEIR EMPLOYEES OR OTHERS FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES WHICH MAY RESULT FROM A BREACH OF THE WARRANTY DESCRIBED ABOVE OR THE USE OR MISUSE OF THE PRODUCTS. NO STATEMENT OF ANY REPRESENTATIVE OR EMPLOYEE OF THE ROSS GLOBAL FAMILY MAY EXTEND THE LIABILITY OF THE ROSS GLOBAL FAMILY AS SET FORTH HEREIN.

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