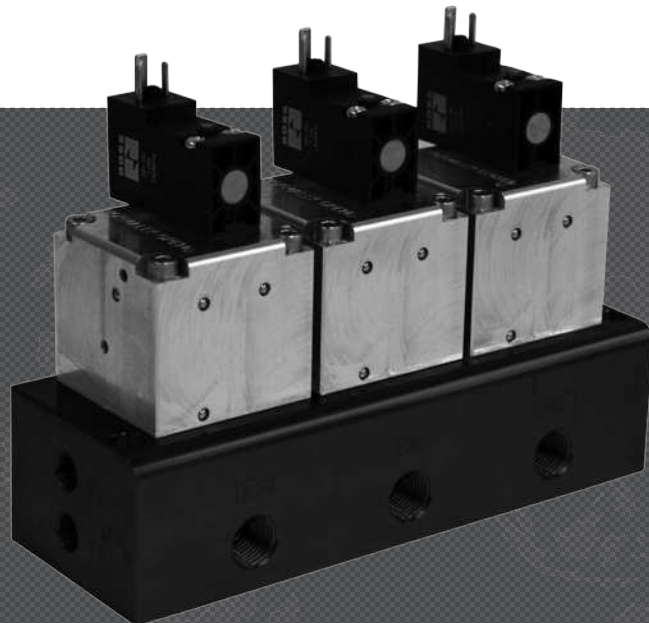




# POPPET VALVES DALE SERIES

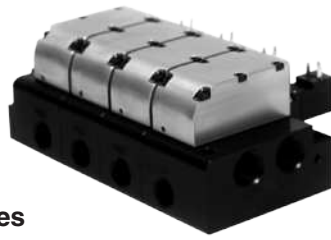
**POPPET VALVES & MANIFOLDS**  
**LEAK TIGHT VALVES & MANIFOLDS**



**ROSS CONTROLS**



CP Series

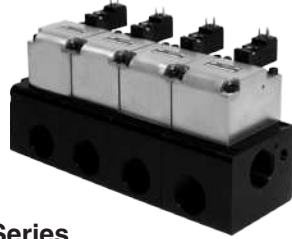


LF Series

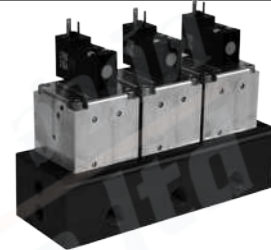
Internally or externally piloted series for use in standard pressure applications with 30 psi (2 bar) minimum operating pressure.



CX Series



LX Series



LT Series

Externally piloted only series for use in leak tight, low pressure, vacuum, and process applications.

For use in leak test applications.

Accessories



VALVE TYPE/FUNCTION	SOLENOID	PRESSURE	AVAILABLE INLET PORT SIZES										MAXIMUM FLOW Cv	MOUNTING		Page	
			1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	IN-LINE		MANIFOLD			
<b>CP SERIES Valves &amp; Manifolds</b>																	
2/2													108				D1.3 - D1.8
3/2													12.3				D1.5 - D1.10
<b>LF SERIES</b>																	
2/2													62.7				D1.11 - D1.12
<b>CX SERIES for Leak Test Applications</b>																	
2/2													108				D1.13 - D1.14
3/2													12.3				D1.15 - D1.16
2/2													108				D1.17 - D1.18
3/2													12.3				D1.19 - D1.20
<b>CX SERIES MANIFOLDS for Leak Test Applications</b>																	
2/2													108				D1.21 - D1.22
3/2													12.3				D1.23 - D1.24
2/2													108				D1.25 - D1.26
3/2													12.3				D1.23 - D1.24
<b>LX SERIES for Leak Test Applications</b>																	
2/2													62.7				D1.25 - D1.26
2/2													62.7				D1.27
<b>LT SERIES</b>																	
3/4													2.2				D1.28
<b>Valve Manifold Configurator</b>																	D1.29

2-Way 2-Position Valves, Spring Assisted Air Return									
Port Size		Internal Pilot Supply				Pilot Port Thread		Avg. C <sub>v</sub>	Weight lb (kg)
		Normally Closed		Normally Open					
		Model Number#		Model Number#					
1	2	NPT Threads	G Threads	NPT Threads	G Threads	NPT	G		
1/2	3/8	CP14NB37101W	CP14DB37101W	CP24NB37101W	CP24DB37101W	10-32 UNF	M5	3.5	1.4 (0.6)
1/2	1/2	CP14NB47101W	CP14DB47101W	CP24NB47101W	CP24DB47101W	10-32 UNF	M5	3.5	1.4 (0.6)
1	3/4	CP16NB57101W	CP16DB57101W	CP26NB57101W	CP26DB57101W	1/8-27 NPT	G1/8	12.3	3.5 (1.6)
1	1	CP16NB67101W	CP16DB67101W	CP26NB67101W	CP26DB67101W	1/8-27 NPT	G1/8	12.3	3.5 (1.6)
1½	1¼	CP18NB77101W	CP18DB77101W	CP28NB77101W	CP28DB77101W	1/8-27 NPT	G1/8	44.9	10.0 (4.6)
1½	1½	CP18NB87101W	CP18DB87101W	CP28NB87101W	CP28DB87101W	1/8-27 NPT	G1/8	44.9	10.0 (4.6)
2½	2	CP10NB97101W	CP10DB97101W	CP20NB97101W	CP20DB97101W	1/8-27 NPT	G1/8	108	19.5 (8.9)
2½	2½	CP10NB07101W	CP10DB07101W	CP20NB07101W	CP20DB07101W	1/8-27 NPT	G1/8	108	19.5 (8.9)

# Voltage: W=24 VDC; Z=110-120 VAC, 50/60 Hz, e.g., CP14NB37101Z.

1/2 thru 2½  
Normally Closed

1/2 & 1  
Normally Open

1½ & 2½  
Normally Open



Port Sizes  
3/8 & 1/2



Port Sizes  
3/4 thru 2½

### EXTERNAL PILOT SUPPLY CONVERSION:

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.

## ACCESSORIES

Electrical Connectors						
Valve Type	Port Size	Electrical Connector Form	Electrical Connectors Model Number			
			Lighted Connector Only		Lighted Connector Pre-wired*	
			24 Volts DC	120 Volts AC	24 Volts DC	120 Volts AC
2/2	1/4 - 1	EN 175301-803 Form C	2453K77-W	2453K77-Z	2476K77-W	2476K77-Z
	1½-2½	EN 175301-803 Form A	936K87-W	936K87-Z	720K77-W	720K77-Z

\*Pre-wired connectors include a 2 meter (6½ ft.) cord.

### STANDARD SPECIFICATIONS (for valves on this page):

Construction Design	Poppet	Flow Media	Filtered air <i>For liquid applications, consult ROSS.</i>
Mounting Type	In-line	Pilot Supply	Internal or External
Solenoids	Rated for continuous duty	Operating Pressure	30 to 145 psig (2 to 10 bar) Pilot Supply - Internal or External: 30 to 145 psig (2 to 10 bar) <i>When external pilot supply, pressure must be equal to or greater than inlet pressure.</i>
Voltage/Power Consumption (each solenoid)	Port Size 1/2 & 1: 24 volts DC; 1.5 watts on DC 110 volts AC, 50 Hz: 5.4 VA 120 volts AC, 60 Hz: 5.0 VA Port Size 1½ & 2½: 24 volts DC; 110 volts AC, 50 Hz; 120 volts AC, 50/60 Hz 5.8 watts nominal on AC and DC, 6.5 watts maximum on AC and DC	Construction Material	Valve Body: Cast Aluminum Poppet: Acetal & Stainless Steel Seals: Buna-N
Enclosure Rating	IP65, IEC 60529	Manual Override	Normally Closed Valves: All Sizes: Non-locking Normally Open Valves: Port Size 1/2 & 1: Non-locking Port Size 1½ & 2½: Locking, turn-to-lock
Electrical Connection	EN 175301-803 Form A or Form C connector		
Temperature	Ambient: 40° to 120°F (4° to 50°C) Media: 40° to 175°F (4° to 80°C)		

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

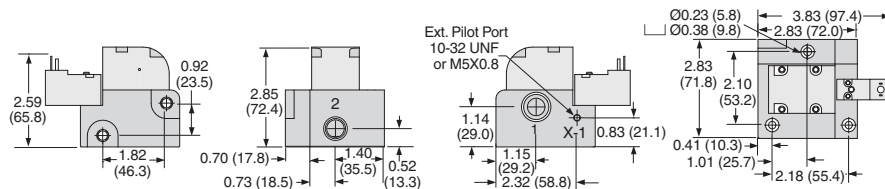


# Solenoid Pilot Controlled Valves

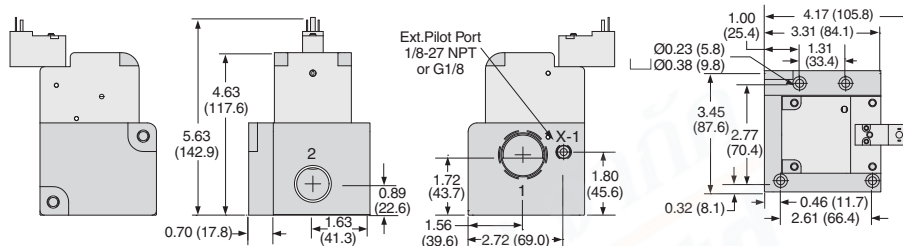
# Dale CP Series

Valve Dimensions – inches (mm)

Port Size 3/8 & 1/2

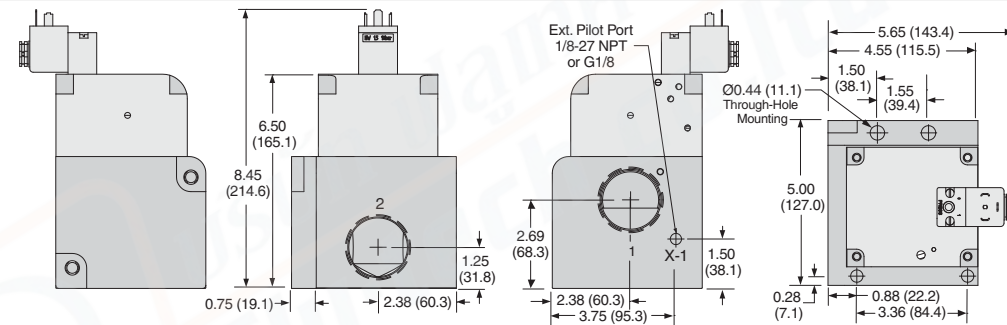


Port Size 3/4 & 1

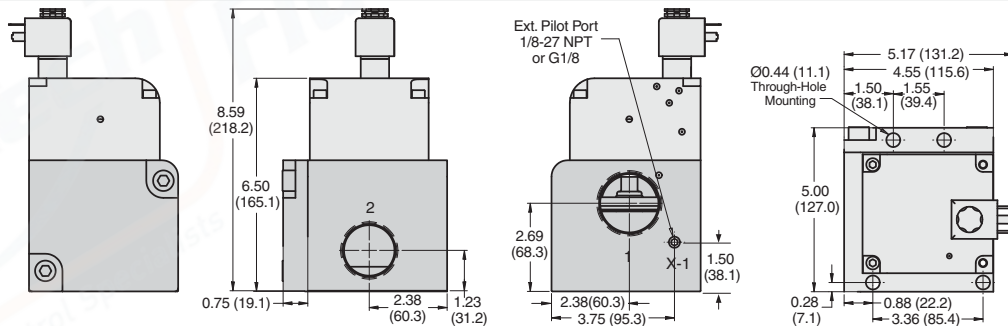


Port Size 1 1/4 & 1 1/2

Normally Closed

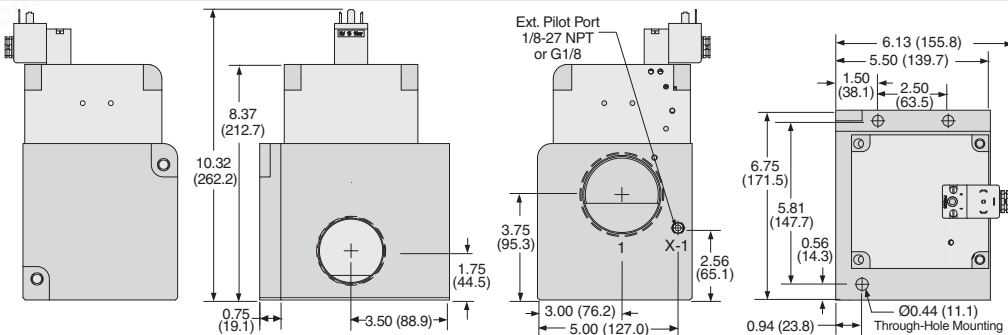


Normally Open

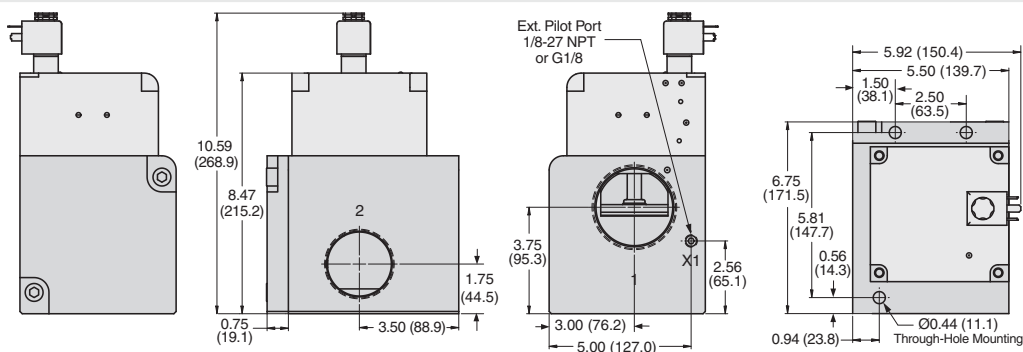


Port Size 2 & 2 1/2

Normally Closed



Normally Open



3-Way 2-Position Valves, Spring Assisted Air Return										
Port Size		Internal Pilot Supply				Pilot Port Thread		Avg. C <sub>v</sub>	Weight lb (kg)	
		Normally Closed		Normally Open						
		Model Number#		Model Number#						
1, 3	2	NPT Threads	G Threads	NPT Threads	G Threads	NPT	BSPF			
1/2	3/8	CP34NB37101W	CP34DB37101W	CP44NB37101W	CP44DB37101W	10-32 UNF	M5	3.5	1.8 (0.8)	
1/2	1/2	CP34NB47101W	CP34DB47101W	CP44NB47101W	CP44DB47101W	10-32 UNF	M5	3.5	1.8 (0.8)	
1	3/4	CP36NB57101W	CP36DB57101W	CP46NB57101W	CP46DB57101W	1/8-27 NPT	G1/8	12.3	5.3 (2.4)	
1	1	CP36NB67101W	CP36DB67101W	CP46NB67101W	CP46DB67101W	1/8-27 NPT	G1/8	12.3	5.3 (2.4)	

# Voltage: W=24 VDC; Z=110-120 VAC, 50/60 Hz, e.g., CP34NB37101Z.

1/2" & 1"  
Normally Closed

1/2"  
Normally Open

1"  
Normally Open



Port Sizes  
3/8 & 1/2



Port Sizes  
3/4 & 1

### EXTERNAL PILOT SUPPLY CONVERSION:

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.

## ACCESSORIES

### Electrical Connectors

Valve Type	Port Size	Electrical Connector Form	Electrical Connectors Model Number			
			Lighted Connector Only		Lighted Connector Pre-wired*	
			24 Volts DC	120 Volts AC	24 Volts DC	120 Volts AC
3/2	1/2	EN 175301-803 Form C	2453K77-W	2453K77-Z	2476K77-W	2476K77-Z
	1	EN 175301-803 Form A	936K87-W	936K87-Z	720K77-W	720K77-Z

\*Pre-wired connectors include a 2 meter (6½ ft.) cord.

### Silencers

Port Size	Thread Type	Model Number		Avg. C <sub>v</sub>	Dimensions inches (mm)		Weight lb (kg)
		NPT Threads	R/Rp Threads		Width	Length	
1/2	Male	5500A4003	D5500A4003	4.7	1.3 (32)	3.6 (91)	0.2 (0.1)
1	Male	5500A6003	D5500A6003	14.6	2.0 (51)	5.4 (138)	0.6 (0.3)

**Pressure Range:** 0 to 290 psig (0 to 20 bar) maximum. **Flow Media:** Filtered air.

### STANDARD SPECIFICATIONS (for valves on this page):

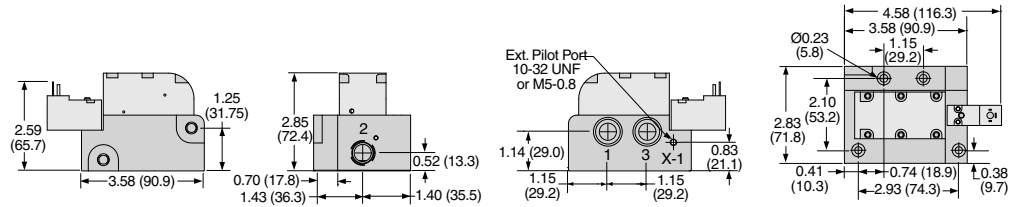
Construction Design	Poppet	Flow Media	Filtered air <i>For liquid applications, consult ROSS.</i>
Mounting Type	In-line	Pilot Supply	Internal or External
Solenoids	Rated for continuous duty	Operating Pressure	30 to 145 psig (2 to 10 bar) Pilot Supply - Internal or External: 30 to 145 psig (2 to 10 bar) <i>When external pilot supply, pressure must be equal to or greater than inlet pressure.</i>
Voltage/Power Consumption (each solenoid)	Port Size 1/2: 24 volts DC; 1.5 watts on DC 110 volts AC, 50 Hz: 5.4 VA; 120 volts AC, 60 Hz: 5.0 VA Port Size 1: 24 volts DC; 110 volts AC, 50 Hz; 120 volts AC, 50/60 Hz 5.8 watts nominal on AC and DC, 6.5 watts maximum on AC and DC	Construction Material	Valve Body: Cast Aluminum Poppet: Acetal & Stainless Steel Seals: Buna-N
Enclosure Rating	IP65, IEC 60529	Manual Override	Normally Closed Valves: All Sizes; Non-locking Normally Open Valves: Port Size 1/2: Non-locking Port Size 1: Locking, turn-to-lock
Electrical Connection	EN 175301-803 Form A or Form C connector		
Temperature	Ambient: 40° to 120°F (4° to 50°C) Media: 40° to 175°F (4° to 80°C)		

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



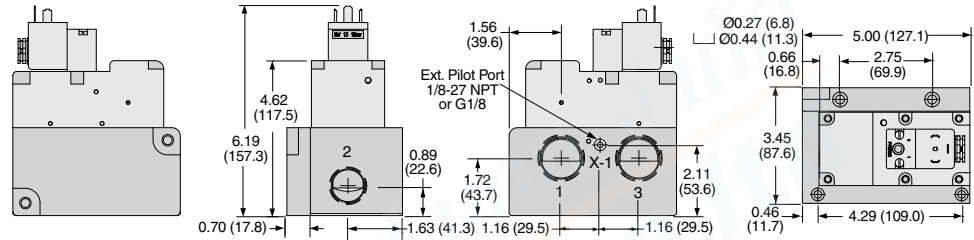
## Valve Dimensions – inches (mm)

### Port Size 3/8 & 1/2

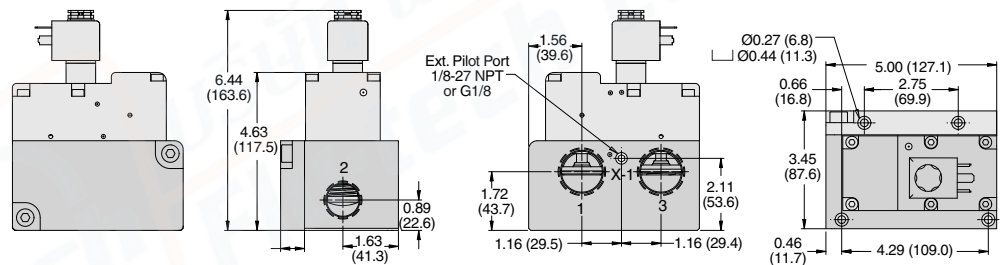


### Port Size 3/4 & 1

#### Normally Closed



#### Normally Open



## ROSS/FLEX® Looking for a different solution?

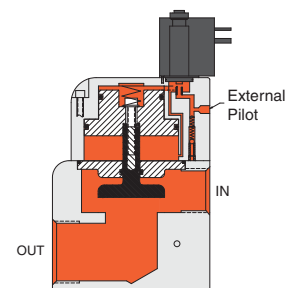
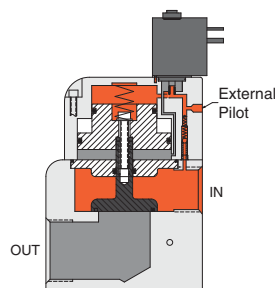
ROSS/FLEX® Customer defined application specific solutions that reduce cost, improve productivity and provide a perfect fit.

## Valve Operation Overview

### 1 - Valve Not Actuated

### 2 - Valve Actuated

**2/2 Normally Closed**



# Solenoid Pilot Controlled Valve Manifolds

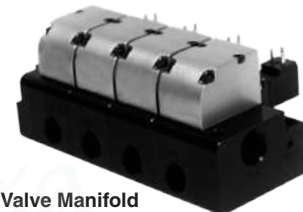
# Dale CP Series

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 model number from the table below. For ordering the Dale CP Series manifold valves with different valve functions, please see page B1.24 for manifold configurator.

2-Way 2-Position Valves, Spring Assisted Air Return								
Port Size		Internal Pilot Supply				Pilot Port Thread		Avg. C <sub>v</sub>
		Normally Closed		Normally Open				
		Model Number#*		Model Number#*				
1	2	NPT Threads	G Threads	NPT Threads	G Threads	NPT	G	
1/2	3/8	CP14NB3711XW	CP14DB3711XW	CP24NB3711XW	CP24DB3711XW	10-32 UNF	M5	3.7
1/2	1/2	CP14NB4711XW	CP14DB4711XW	CP24NB4711XW	CP24DB4711XW	10-32 UNF	M5	3.7
1	3/4	CP16NB5711XW	CP16DB5711XW	CP26NB5711XW	CP26DB5711XW	1/8-27 NPT	G1/8	13.7
1	1	CP16NB6711XW	CP16DB6711XW	CP26NB6711XW	CP26DB6711XW	1/8-27 NPT	G1/8	13.7
1½	1¼	CP18NB7711XW	CP18DB7711XW	CP28NB7711XW	CP28DB7711XW	1/8-27 NPT	G1/8	44.9
1½	1½	CP18NB8711XW	CP18DB8711XW	CP28NB8711XW	CP28DB8711XW	1/8-27 NPT	G1/8	44.9
2½	2	CP10NB9711XW	CP10DB9711XW	CP20NB9711XW	CP20DB9711XW	1/8-27 NPT	G1/8	108
2½	2½	CP10NB0711XW	CP10DB0711XW	CP20NB0711XW	CP20DB0711XW	1/8-27 NPT	G1/8	108

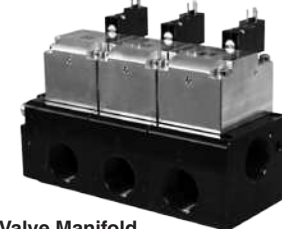
<p>1/2" thru 2½" Normally Closed</p>	<p>1/2" &amp; 1" Normally Open</p>	<p>1½" &amp; 2½" Normally Open</p>
--------------------------------------	------------------------------------	------------------------------------



Valve Manifold Ports 3/8 & 1/2



Valve Manifold Ports 3/4 & 1



Valve Manifold Ports 1¼ thru 2½

# Voltage: W=24 VDC; Z=110-120 VAC, 50/60 Hz, e.g., CP14NB3711XZ.

\*X Number of Stations – To indicate the number of stations desired, for 2 to 9 stations, replace X in the model number with the specific number of stations, for 10 stations replace X with 0, e.g., CP14NB37114W (4 = 4 Stations), CP14NB37110W, (0 = 10 Stations).

Contact ROSS for 1 station valve manifolds or refer to single CX Valve product page.

## EXTERNAL PILOT SUPPLY CONVERSION:

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.

## ACCESSORIES - Electrical Connectors

Valve Type	Port Size	Electrical Connector Form	Electrical Connectors Model Number			
			Lighted Connector Only		Lighted Connector Pre-wired*	
			24 Volts DC	120 Volts AC	24 Volts DC	120 Volts AC
2/2	1/4 - 1	EN 175301-803 Form C	2453K77-W	2453K77-Z	2476K77-W	2476K77-Z
	1½-2½	EN 175301-803 Form A	936K87-W	936K87-Z	720K77-W	720K77-Z

\*Pre-wired connectors include a 2 meter (6½ ft.) cord.

## STANDARD SPECIFICATIONS (for valves on this page):

Construction Design	Poppet	Flow Media	Filtered air <i>For liquid applications, consult ROSS.</i>
Mounting Type	In-line	Pilot Supply	Internal or External
Solenoids	Rated for continuous duty	Operating Pressure	30 to 145 psig (2 to 10 bar) Pilot Supply - Internal or External: 30 to 145 psig (2 to 10 bar) <i>When external pilot supply, pressure must be equal to or greater than inlet pressure.</i>
Voltage/Power Consumption (each solenoid)	Port Size 1/2 & 1: 24 volts DC; 1.5 watts on DC 110 volts AC, 50 Hz: 5.4 VA 120 volts AC, 60 Hz: 5.0 VA Port Size 1½ & 2½: 24 volts DC; 110 volts AC, 50 Hz; 120 volts AC, 50/60 Hz 5.8 watts nominal on AC and DC, 6.5 watts maximum on AC and DC	Construction Material	Valve Body: Cast Aluminum Poppet: Acetal & Stainless Steel Seals: Buna-N
Enclosure Rating	IP65, IEC 60529	Manual Override	Normally Closed Valves: All Sizes; Non-locking Normally Open Valves: Port Size 1/2 & 1: Non-locking Port Size 1½ & 2½: Locking, turn-to-lock
Electrical Connection	EN 175301-803 Form A or Form C connector		
Temperature	Ambient: 40° to 120°F (4° to 50°C) Media: 40° to 175°F (4° to 80°C)		

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

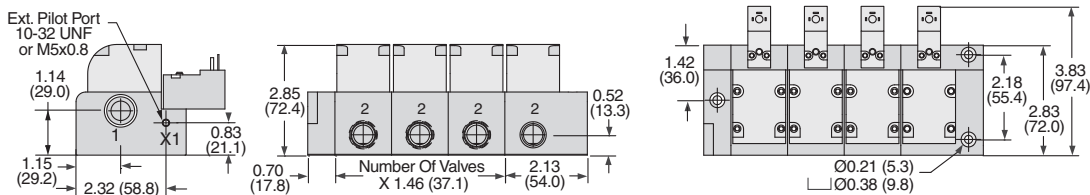


# Solenoid Pilot Controlled Valve Manifolds

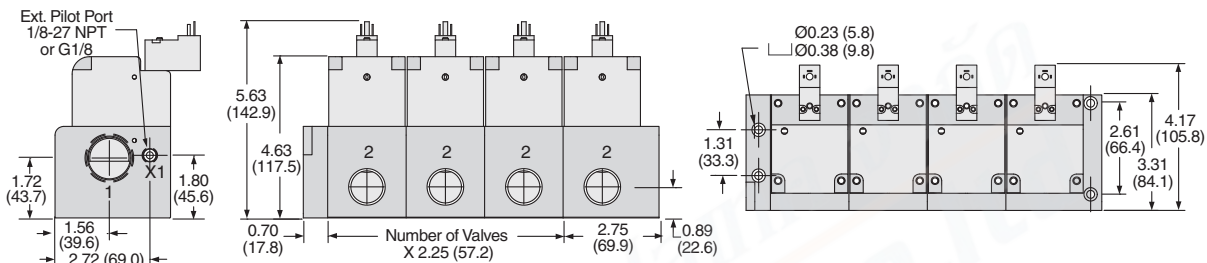
# Dale CP Series

## Dimensions – inches (mm)

### Port Size 3/8 & 1/2

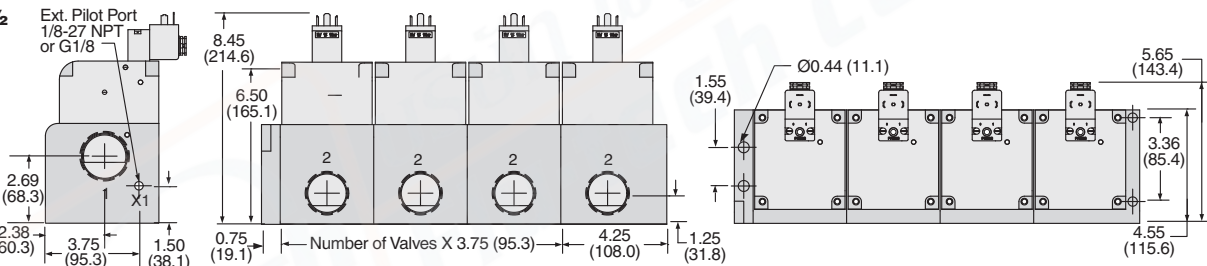


### Port Size 3/4 & 1

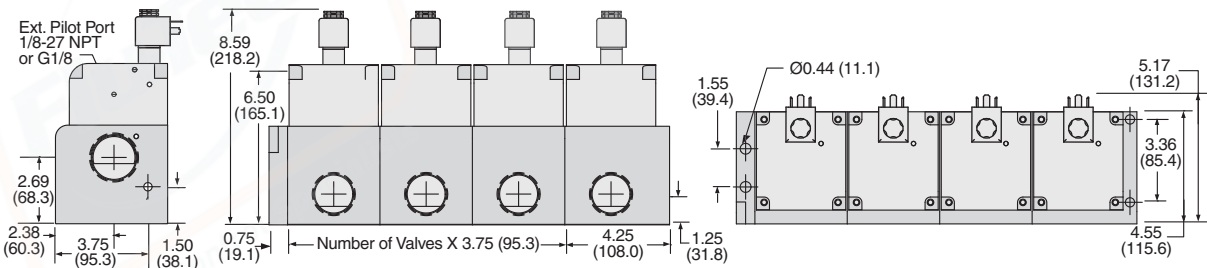


### Port Size 1 1/4 & 1 1/2

#### Normally Closed

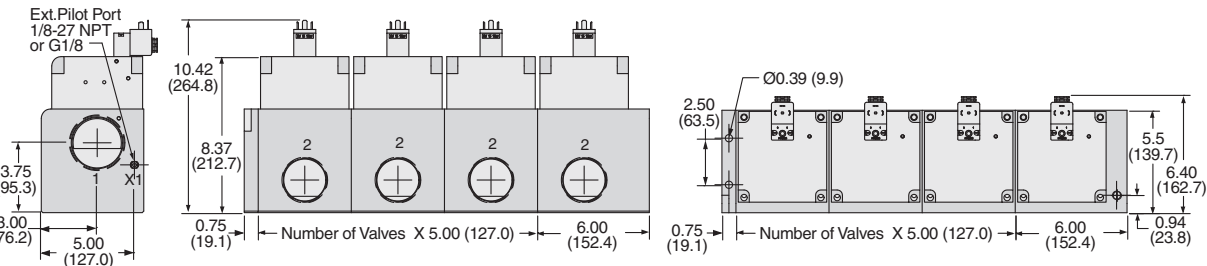


#### Normally Open

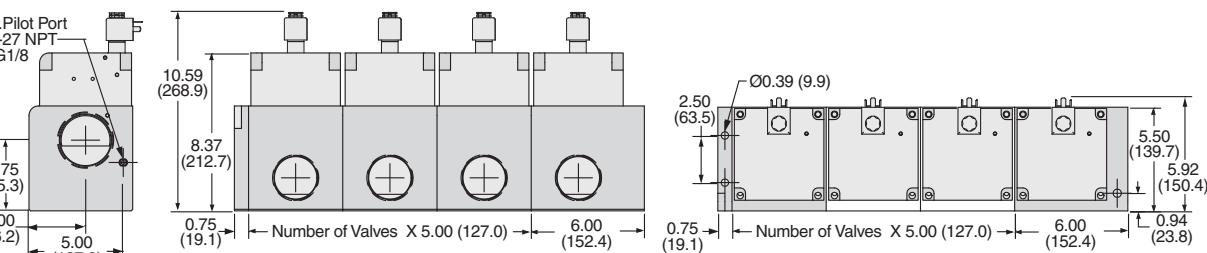


### Port Size 2 & 2 1/2

#### Normally Closed



#### Normally Open





# Solenoid Pilot Controlled Valve Manifolds

# Dale CP Series

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 model number from the table below. For ordering the Dale CP Series manifold valves with different valve functions, please see page B1.24 for manifold configurator.

3-Way 2-Position Valves, Spring Assisted Air Return									
Port Size		Internal Pilot Supply				Pilot Port Thread		Avg. C <sub>v</sub>	
		Normally Closed		Normally Open					
		Model Number#*		Model Number#*					
1, 3	2	NPT Threads	G Threads	NPT Threads	G Threads	NPT	G		
1/2	3/8	CP34NB3711XW	CP34DB3711XW	CP44NB3711XW	CP44DB3711XW	10-32 UNF	M5	3.6	
1/2	1/2	CP34NB4711XW	CP34DB4711XW	CP44NB4711XW	CP44DB4711XW	10-32 UNF	M5	3.6	
1	3/4	CP36NB5711XW	CP36DB5711XW	CP46NB5711XW	CP46DB5711XW	1/8-27 NPT	G1/8	12.3	
1	1	CP36NB6711XW	CP36DB6711XW	CP46NB6711XW	CP46DB6711XW	1/8-27 NPT	G1/8	12.3	

# Voltage: W=24 VDC; Z=110-120 VAC, 50/60 Hz, e.g., CP14NB3711XZ.  
 \*X Number of Stations – To indicate the number of stations desired, for 2 to 9 stations, replace X in the model number with the specific number of stations, for 10 stations replace X with 0, e.g., CP14NB37114W (4 = 4 Stations), CP14NB37110W, (0 = 10 Stations).  
 Contact ROSS for 1 station valve manifolds or refer to single CX Valve product page.

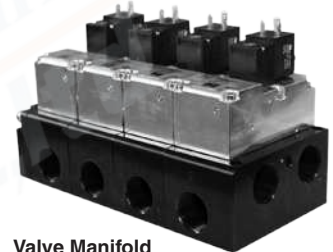
1/2" & 1" Normally Closed

1/2" Normally Open

1" Normally Open



Valve Manifold Ports 3/8 & 1/2



Valve Manifold Ports 3/4 & 1

## EXTERNAL PILOT SUPPLY CONVERSION:

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.

## ACCESSORIES

Electrical Connectors						
Valve Type	Port Size	Electrical Connector Form	Electrical Connectors Model Number			
			Lighted Connector Only		Lighted Connector Pre-wired*	
			24 Volts DC	120 Volts AC	24 Volts DC	120 Volts AC
3/2	1/2	EN 175301-803 Form C	2453K77-W	2453K77-Z	2476K77-W	2476K77-Z
	1	EN 175301-803 Form A	936K87-W	936K87-Z	720K77-W	720K77-Z

\*Pre-wired connectors include a 2 meter (6½ ft.) cord.

Silencers							
Port Size	Thread Type	Model Number		Avg. C <sub>v</sub>	Dimensions inches (mm)		Weight lb (kg)
		NPT Threads	G Threads		Width	Length	
1/2	Male	5500A4003	D5500A4003	4.7	1.3 (32)	3.6 (91)	0.2 (0.1)
1	Male	5500A6003	D5500A6003	14.6	2.0 (51)	5.4 (138)	0.6 (0.3)

**Pressure Range:** 0 to 290 psig (0 to 20 bar) maximum. **Flow Media:** Filtered air.

## STANDARD SPECIFICATIONS (for valves on this page):

Construction Design	Poppet	Flow Media	Filtered air <i>For liquid applications, consult ROSS.</i>
Mounting Type	In-line	Pilot Supply	Internal or External
Solenoids	Rated for continuous duty	Operating Pressure	30 to 145 psig (2 to 10 bar) Pilot Supply - Internal or External: 30 to 145 psig (2 to 10 bar) <i>When external pilot supply, pressure must be equal to or greater than inlet pressure.</i>
Voltage/Power Consumption (each solenoid)	Port Size 1/2: 24 volts DC; 1.5 watts on DC 110 volts AC, 50 Hz: 5.4 VA; 120 volts AC, 60 Hz: 5.0 VA Port Size 1: 24 volts DC; 110 volts AC, 50 Hz; 120 volts AC, 50/60 Hz 5.8 watts nominal on AC and DC, 6.5 watts maximum on AC and DC	Construction Material	Valve Body: Cast Aluminum Poppet: Acetal & Stainless Steel Seals: Buna-N
Enclosure Rating	IP65, IEC 60529	Manual Override	Normally Closed Valves: All Sizes; Non-locking Normally Open Valves: Port Size 1/2: Non-locking Port Size 1: Locking, turn-to-lock
Electrical Connection	EN 175301-803 Form A or Form C connector		
Temperature	Ambient: 40° to 120°F (4° to 50°C) Media: 40° to 175°F (4° to 80°C)		

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

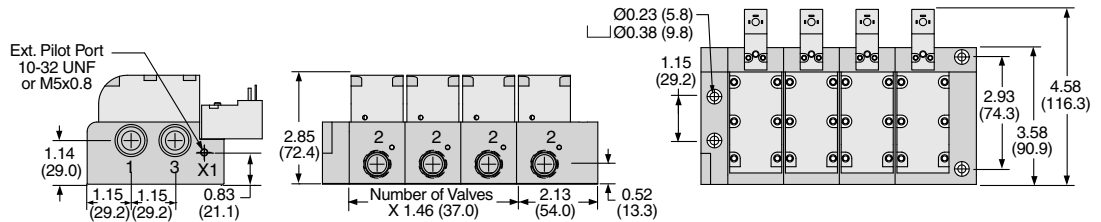


# Solenoid Pilot Controlled Valve Manifolds

# Dale CP Series

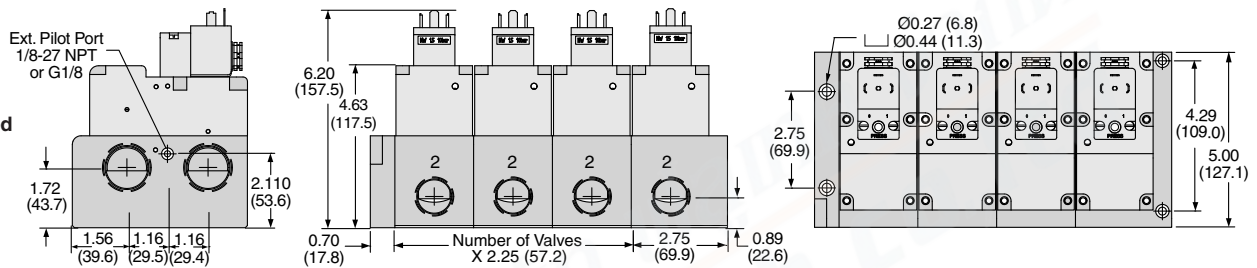
## Dimensions – inches (mm)

### Port Size 3/8 & 1/2

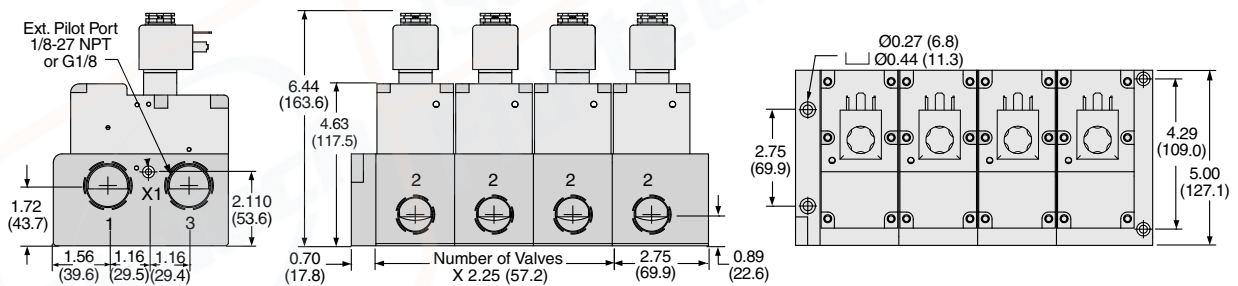


### Port Size 3/4 & 1

#### Normally Closed



#### Normally Open

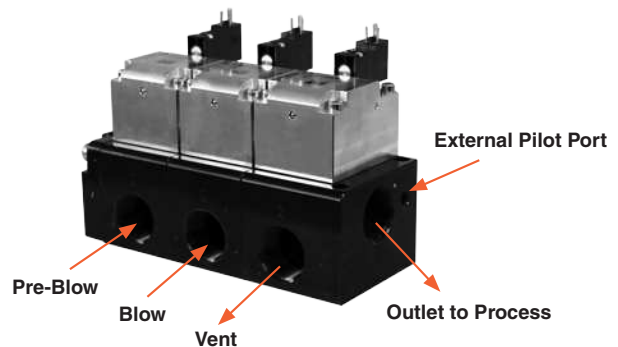


## ROSS/FLEX® Looking for a different solution?

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

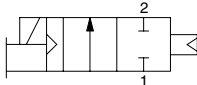
## Blow Molding Application Example

The CP & CX compact flexible manifold design eliminates piping, reduces system volume, provides fast consistent actuation and delivers an amazing flow rate up to 100 Cv.

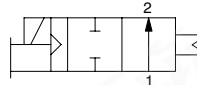


2-Way 2-Position Valves, Spring Assisted Air Return									
Port Size		Internal Pilot Supply				Pilot Port Thread		Avg. C <sub>v</sub>	Weight lb (kg)
		Normally Closed		Normally Open					
		Model Number#		Model Number#					
1	2	NPT Threads	G Threads	NPT Threads	G Threads	NPT	G		
3/8	3/8	LF13NB37101W	LF13DB37101W	LF23NB37101W	LF23DB37101W	1/8-27 NPT	G1/8	3.6	1.5 (0.7)
1/2	1/2	LF14NB47101W	LF14DB47101W	LF24NB47101W	LF24DB47101W	1/8-27 NPT	G1/8	3.6	1.5 (0.7)
3/4	3/4	LF15NB57101W	LF15DB57101W	LF25NB57101W	LF25DB57101W	1/8-27 NPT	G1/8	12.2	3.5 (1.6)
1	1	LF16NB67101W	LF16DB67101W	LF26NB67101W	LF26DB67101W	1/8-27 NPT	G1/8	12.2	3.5 (1.6)
1¼	1¼	LF17NB77101W	LF17DB77101W	LF27NB77101W	LF27DB77101W	1/8-27 NPT	G1/8	36.1	9.3 (4.2)
1½	1½	LF18NB87101W	LF18DB87101W	LF28NB87101W	LF28DB87101W	1/8-27 NPT	G1/8	36.1	9.3 (4.2)
2	2	LF19NB97101W	LF19DB97101W	LF29NB97101W	LF29DB97101W	1/8-27 NPT	G1/8	62.7	19.3 (8.8)
2½	2½	LF10NB07101W	LF10DB07101W	LF20NB07101W	LF20DB07101W	1/8-27 NPT	G1/8	62.7	19.3 (8.8)

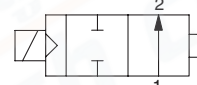
# Voltage: W=24 VDC; Z=110-120 VAC, 50/60 Hz, e.g., LF13NB37101Z.



Normally Closed



3/8" thru 1" Normally Open



1¼" thru 2½" Normally Open



Ports 3/8 thru 1



Ports 1¼ thru 2½

The LF Series provides superior performance over a diaphragm valve with a rugged poppet design, bi-directional flow and high cycle life.



The LF & LX Series provides superior performance over a ball valve with solenoid actuation, shifting speed, cycle life, and most important, a cost effective alternative.

Diaphragm Valve

Improved Performance

Cost Effective Ball Valve

**EXTERNAL PILOT SUPPLY CONVERSION:** 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.

ACCESSORIES – Electrical Connectors						
Valve Type	Port Size	Electrical Connector Form	Electrical Connectors Model Number			
			Lighted Connector Only		Lighted Connector Pre-wired*	
			24 Volts DC	120 Volts AC	24 Volts DC	120 Volts AC
2/2	3/8 - 1	EN 175301-803 Form C	2453K77-W	2453K77-Z	2476K77-W	2476K77-Z
	1¼-2½	EN 175301-803 Form A	936K87-W	936K87-Z	720K77-W	720K77-Z

\*Pre-wired connectors include a 2 meter (6½ ft.) cord.

**STANDARD SPECIFICATIONS** (for valves on this page):

Construction Design	Poppet	Flow Media	Filtered air <i>For liquid applications, consult ROSS.</i>
Mounting Type	In-line	Pilot Supply	Internal or External
Solenoids	Rated for continuous duty	Operating Pressure	30 to 145 psig (2 to 10 bar) Pilot Supply - Internal or External: 30 to 145 psig (2 to 10 bar) <i>When external pilot supply, pressure must be equal to or greater than inlet pressure.</i>
Voltage/Power Consumption (each solenoid)	Port Size 3/8 thru 1: 24 volts DC; 1.5 watts on DC 110 volts AC, 50 Hz: 5.4 VA 120 volts AC, 60 Hz: 5.0 VA Port Size 1½ thru 2½: 24 volts DC; 110 volts AC, 50 Hz; 120 volts AC, 50/60 Hz 5.8 watts nominal on AC and DC, 6.5 watts maximum on AC and DC	Construction Material	Valve Body: Cast Aluminum Poppet: Acetal & Stainless Steel Seals: Buna-N
Enclosure Rating	IP65, IEC 60529	Manual Override	Normally Closed Valves: All Sizes; Non-locking Normally Open Valves: Port Size 1/2 & 1: Non-locking Port Size 1½ & 2½: Locking, turn-to-lock
Electrical Connection	EN 175301-803 Form A or Form C connector		
Temperature	Ambient: 40° to 120°F (4° to 50°C) Media: 40° to 175°F (4° to 80°C)		

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

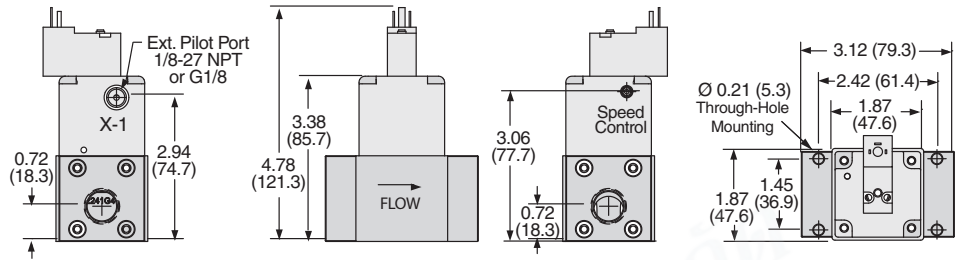


# Solenoid Pilot Controlled Valves

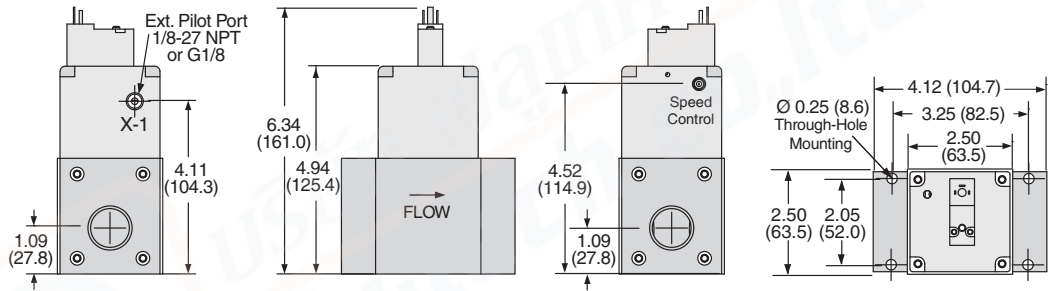
# Dale LF Series

Valve Dimensions – inches (mm)

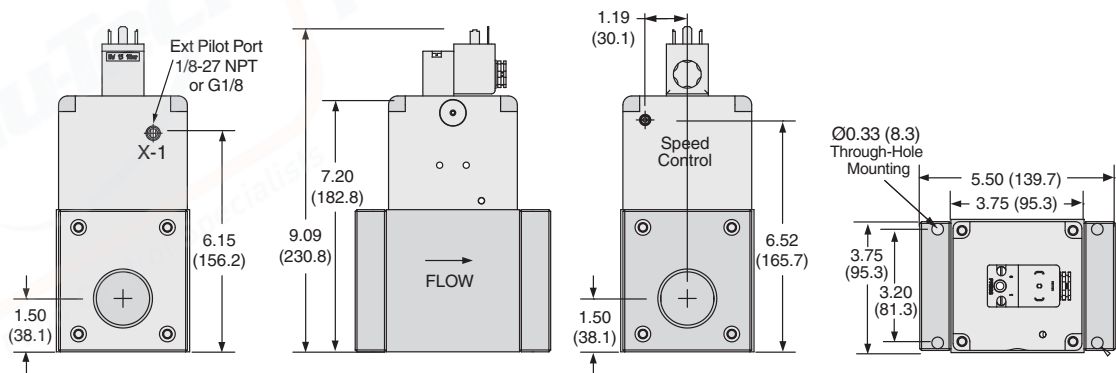
Port Size 3/8 & 1/2



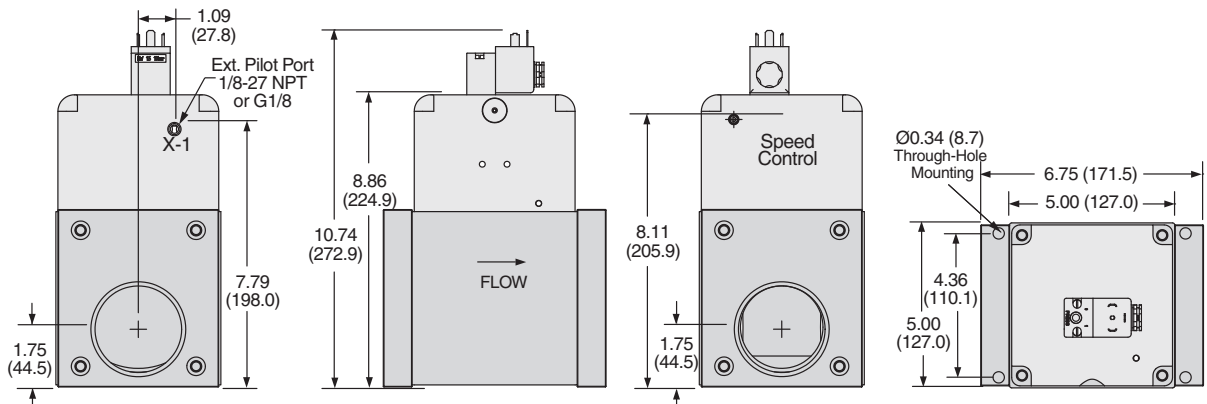
Port Size 3/4 & 1



Port Size 1 1/4 & 1 1/2



Port Size 2 & 2 1/2

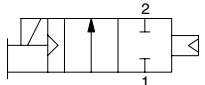


# Solenoid Pilot Controlled Valves

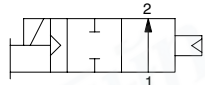
# Leak Tight Dale CX Series

2-Way 2-Position Valves, Air Return									
Port Size		External Pilot Supply				Pilot Port Thread		Avg. C <sub>v</sub>	Weight lb (kg)
		Normally Closed		Normally Open					
		Model Number#		Model Number#					
1	2	NPT Threads	G Threads	NPT Threads	G Threads	NPT	G		
1/4	1/4	CX12NB27501W	CX12DB27501W	CX22NB27501W	CX22DB27501W	10-32 UNF	M5	0.9	1.3 (0.6)
1/2	3/8	CX14NB37501W	CX14DB37501W	CX24NB37501W	CX24DB37501W	10-32 UNF	M5	3.5	1.4 (0.6)
1/2	1/2	CX14NB47501W	CX14DB47501W	CX24NB47501W	CX24DB47501W	10-32 UNF	M5	3.5	1.4 (0.6)
1	3/4	CX16NB57501W	CX16DB57501W	CX26NB57501W	CX26DB57501W	1/8-27 NPT	G1/8	12.3	3.5 (1.6)
1	1	CX16NB67501W	CX16DB67501W	CX26NB67501W	CX26DB67501W	1/8-27 NPT	G1/8	12.3	3.5 (1.6)
1½	1¼	CX18NB77501W	CX18DB77501W	CX28NB77501W	CX28DB77501W	1/8-27 NPT	G1/8	44.9	10.0 (4.6)
1½	1½	CX18NB87501W	CX18DB87501W	CX28NB87501W	CX28DB87501W	1/8-27 NPT	G1/8	44.9	10.0 (4.6)
2½	2	CX10NB97501W	CX10DB97501W	CX20NB97501W	CX20DB97501W	1/8-27 NPT	G1/8	108	19.5 (8.9)
2½	2½	CX10NB07501W	CX10DB07501W	CX20NB07501W	CX20DB07501W	1/8-27 NPT	G1/8	108	19.5 (8.9)

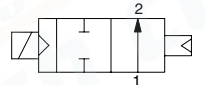
# Voltage: W=24 VDC; Z=110-120 VAC, 50/60 Hz, e.g., CX12NB27501Z.



1/4" thru 2½" Normally Closed



1/4" thru 1" Normally Open



1½" & 2½" Normally Open

**Note: The CX Series valves on this page require an external pilot supply.**



Port Sizes  
3/8 & 1/2



Port Sizes  
1/4, 3/4 thru 2½

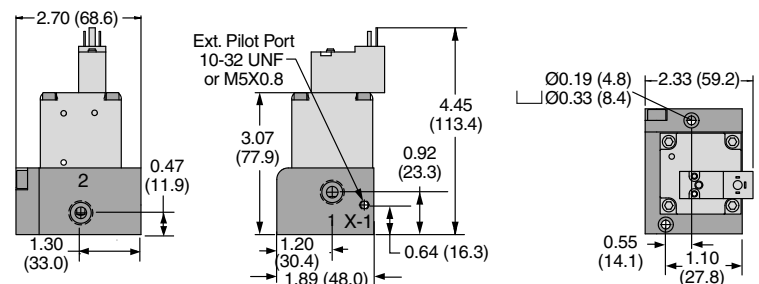
## ACCESSORIES – Electrical Connectors

Valve Type	Port Size	Electrical Connector Form	Electrical Connectors Model Number			
			Lighted Connector Only		Lighted Connector Pre-wired*	
			24 Volts DC	120 Volts AC	24 Volts DC	120 Volts AC
2/2	1/4 - 1	EN 175301-803 Form C	2453K77-W	2453K77-Z	2476K77-W	2476K77-Z
	1½-2½	EN 175301-803 Form A	936K87-W	936K87-Z	720K77-W	720K77-Z

\*Pre-wired connectors include a 2 meter (6½ ft.) cord.

## Valve Dimensions – inches (mm)

### Port Size 1/4



See page D1.14 for all size valves dimensions on this page.

## STANDARD SPECIFICATIONS (for valves on this page):

Construction Design	Poppet	Pilot Supply	External
Mounting Type	In-line	Operating Pressure	Port Size 1/4: Vacuum to 250 psig (vacuum to 17.2 bar) Port Size 1½ thru 2½: Vacuum to 145 psig (vacuum to 10 bar) Pilot Supply - External: Port Size 1/4: 70 to 145 psig (5 to 10 bar) Port Size 1½ thru 2½: 30 to 145 psig (2 to 10 bar) <i>Pilot supply pressure must be equal to or greater than inlet pressure.</i>
Solenoids	Rated for continuous duty	Construction Material	Valve Body: Cast Aluminum Poppet: Acetal & Stainless Steel Seals: Buna-N
Voltage/Power Consumption (each solenoid)	Port Size 1/4 thru 1: 24 volts DC; 1.5 watts on DC 110 volts AC, 50 Hz: 5.4 VA 120 volts AC, 60 Hz: 5.0 VA Port Size 1½ thru 2½: 24 volts DC; 110 volts AC, 50 Hz; 120 volts AC, 50/60 Hz 5.8 watts nominal on AC and DC, 6.5 watts maximum on AC and DC	Manual Override	Normally Closed Valves: All Sizes; Non-locking Normally Open Valves: Port Size 1/2 & 1: Non-locking Port Size 1½ & 2½: Locking, turn-to-lock
Enclosure Rating	IP65, IEC 60529		
Electrical Connection	EN 175301-803 Form A or Form C connector		
Temperature	Ambient: 40° to 120°F (4° to 50°C) Media: 40° to 175°F (4° to 80°C)		
Flow Media	Filtered air <i>For liquid applications, consult ROSS.</i>		

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

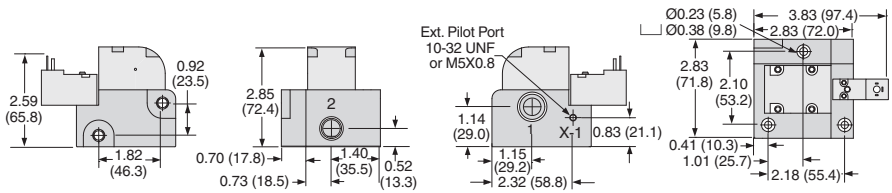


# Solenoid Pilot Controlled Valves

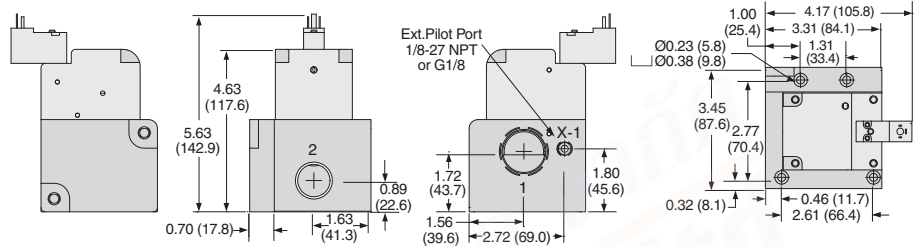
# Leak Tight Dale CX Series

Valve Dimensions – inches (mm)

Port Size 3/8 & 1/2

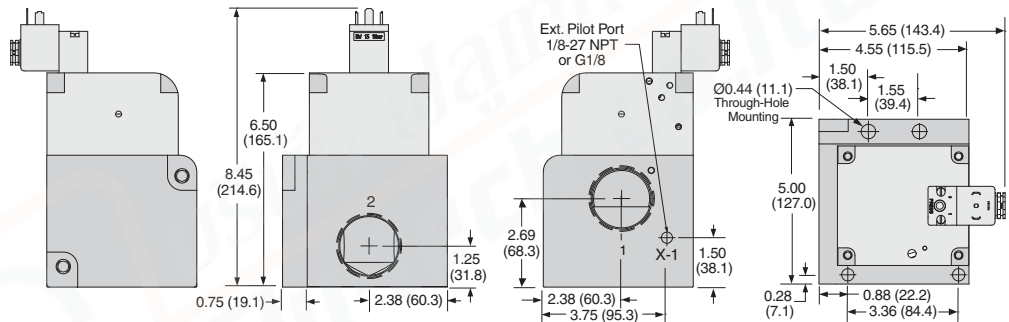


Port Size 3/4 & 1

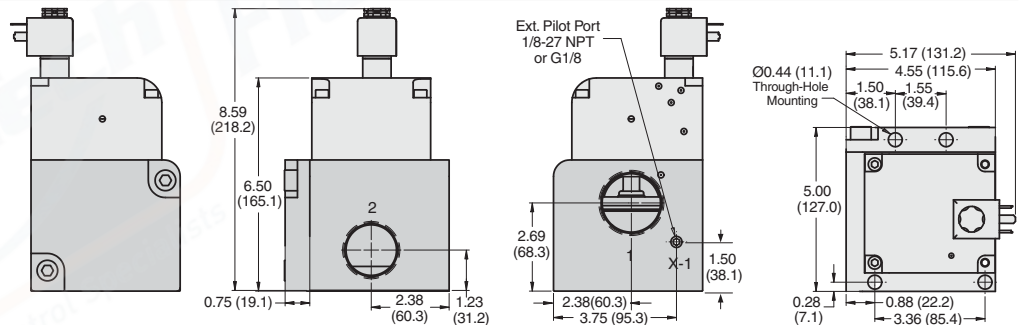


Port Size 1 1/4 & 1 1/2

Normally Closed

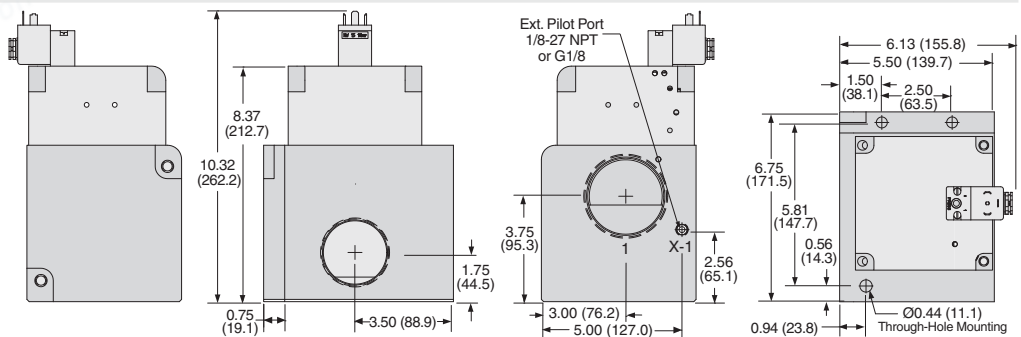


Normally Open

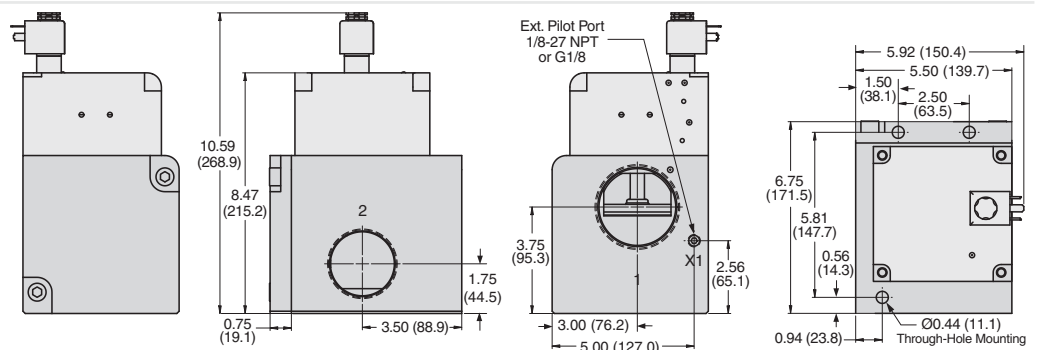


Port Size 2 & 2 1/2

Normally Closed



Normally Open

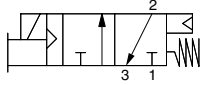


# Solenoid Pilot Controlled Valves

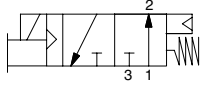
# Leak Tight Dale CX Series

3-Way 2-Position Valves, Spring Assisted Air Return									
Port Size		External Pilot Supply				Pilot Port Thread		Avg. C <sub>v</sub>	Weight lb (kg)
		Normally Closed		Normally Open					
		Model Number#*		Model Number#*					
1, 3	2	NPT Threads	G Threads	NPT Threads	G Threads	NPT	G		
1/2	3/8	CX34NB37501W	CX34DB37501W	CX44NB37501W	CX44DB37501W	10-32 UNF	M5	3.5	1.8 (0.8)
1/2	1/2	CX34NB47501W	CX34DB47501W	CX44NB47501W	CX44DB47501W	10-32 UNF	M5	3.5	1.8 (0.8)
1	3/4	CX36NC57501W	CX36DC57501W	CX46NC57501W	CX46DC57501W	1/8-27 NPT	G1/8	12.3	5.3 (2.4)
1	1	CX36NC67501W	CX36DC67501W	CX46NC67501W	CX46DC67501W	1/8-27 NPT	G1/8	12.3	5.3 (2.4)

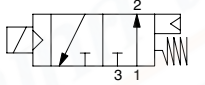
# Voltage: W=24 VDC; Z=110-120 VAC, 50/60 Hz, e.g., CX34NB37501Z.



1/2" & 1" Normally Closed



1/2" Normally Open



1" Normally Open

**Note: The CX Series valves on this page require an external pilot supply.**



Port Sizes 3/8 & 1/2



Port Sizes 3/4 & 1

## ACCESSORIES

### Electrical Connectors

Valve Type	Port Size	Electrical Connector Form	Electrical Connectors Model Number			
			Lighted Connector Only		Lighted Connector Pre-wired*	
			24 Volts DC	120 Volts AC	24 Volts DC	120 Volts AC
3/2	1/2	EN 175301-803 Form C	2453K77-W	2453K77-Z	2476K77-W	2476K77-Z
	1	EN 175301-803 Form A	936K87-W	936K87-Z	720K77-W	720K77-Z

\*Pre-wired connectors include a 2 meter (6½ ft.) cord.

### Silencers

Port Size	Thread Type	Model Number		Avg. C <sub>v</sub>	Dimensions inches (mm)		Weight lb (kg)
		NPT Threads	R/Rp Threads		Width	Length	
1/2	Male	5500A4003	D5500A4003	4.7	1.3 (32)	3.6 (91)	0.2 (0.1)
1	Male	5500A6003	D5500A6003	14.6	2.0 (51)	5.4 (138)	0.6 (0.3)

**Pressure Range:** 0 to 290 psig (0 to 20 bar) maximum. **Flow Media:** Filtered air.

### STANDARD SPECIFICATIONS (for valves on this page):

Construction Design	Poppet	Flow Media	Filtered air
Mounting Type	In-line	Pilot Supply	External
Solenoids	Rated for continuous duty	Operating Pressure	Vacuum to 145 psig (vacuum to 10 bar)
Voltage/Power Consumption (each solenoid)	Port Size 1/2: 24 volts DC; 1.5 watts on DC 110 volts AC, 50 Hz: 5.4 VA 120 volts AC, 60 Hz: 5.0 VA	Construction Material	Pilot Supply - External: 50 to 145 psig (3.4 to 10 bar) <i>Pilot supply pressure must be equal to or greater than inlet pressure.</i>
	Port Size 1: 24 volts DC; 110 volts AC, 50 Hz; 120 volts AC, 50/60 Hz 5.8 watts nominal on AC and DC, 6.5 watts maximum on AC and DC		
Enclosure Rating	IP65, IEC 60529	Manual Override	Normally Closed Valves: All Sizes: Non-locking Normally Open Valves: Port Size 1/2: Non-locking Port Size 1: Locking, turn-to-lock
Electrical Connection	EN 175301-803 Form A or Form C connector		
Temperature	Ambient: 40° to 120°F (4° to 50°C) Media: 40° to 175°F (4° to 80°C)		

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

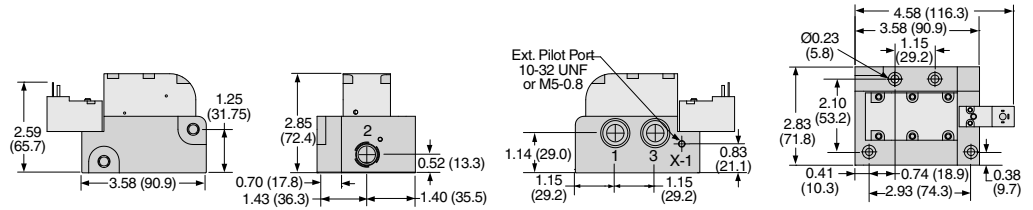


# Solenoid Pilot Controlled Valves

# Leak Tight Dale CX Series

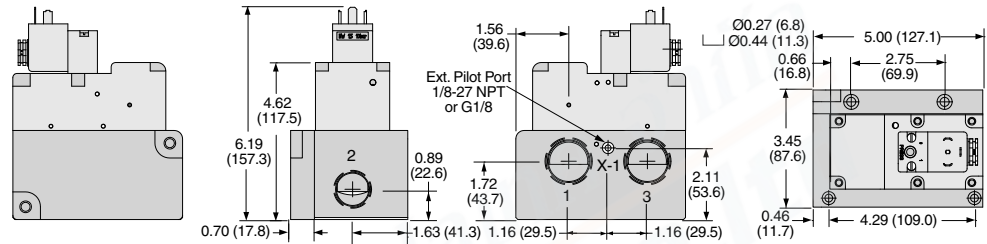
## Valve Dimensions – inches (mm)

### Port Size 3/8 & 1/2

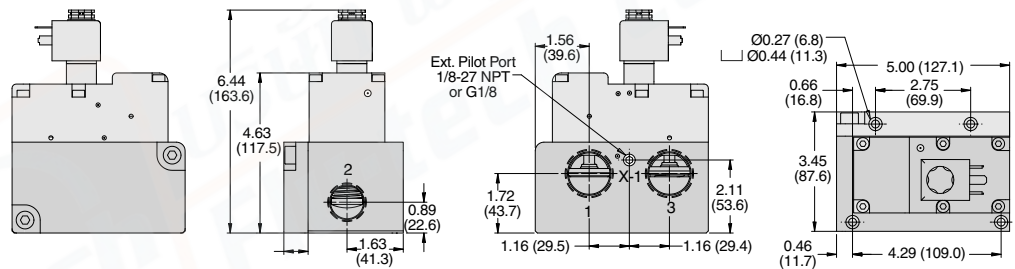


### Port Size 3/4 & 1

#### Normally Closed



#### Normally Open

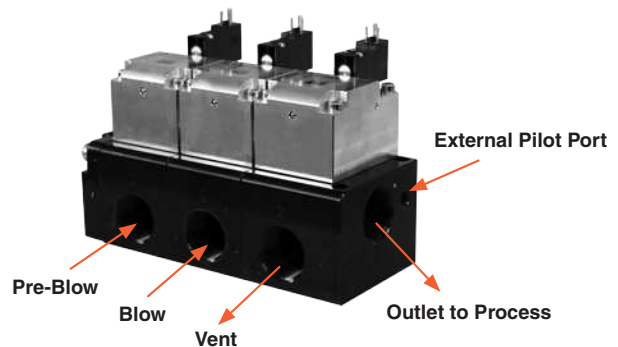


## ROSS/FLEX® Looking for a different solution?

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

## Blow Molding Application Example

The CP & CX compact flexible manifold design eliminates piping, reduces system volume, provides fast consistent actuation and delivers an amazing flow rate up to 100 Cv.

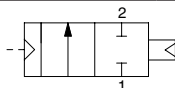




# Pressure Controlled Valves

# Leak Tight Dale CX Series

2-Way 2-Position Valves, Air Return							
Port Size		External Pilot Supply		Pilot Port Thread		Avg. C <sub>v</sub>	Weight lb (kg)
		Normally Closed					
		Model Number*					
1	2	NPT Threads	G Threads	NPT	G		
1/2	3/8	CX14NB35501	CX14DB35501	10-32 UNF	M5	3.5	1.4 (0.6)
1/2	1/2	CX14NB45501	CX14DB45501	10-32 UNF	M5	3.5	1.4 (0.6)
1	3/4	CX16NB55501	CX16DB55501	1/8-27 NPT	G1/8	12.3	3.5 (1.6)
1	1	CX16NB65501	CX16DB65501	1/8-27 NPT	G1/8	12.3	3.5 (1.6)
1½	1¼	CX18NB75501	CX18DB75501	1/8-27 NPT	G1/8	44.9	10.0 (4.6)
1½	1½	CX18NB85501	CX18DB85501	1/8-27 NPT	G1/8	44.9	10.0 (4.6)
2½	2	CX10NB95501	CX10DB95501	1/8-27 NPT	G1/8	108	19.5 (8.9)
2½	2½	CX10NB05501	CX10DB05501	1/8-27 NPT	G1/8	108	19.5 (8.9)



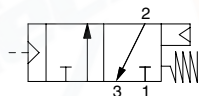
Port Sizes 3/8 & 1/2



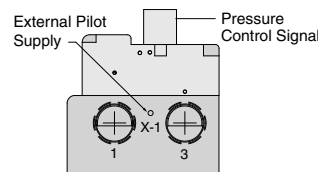
Port Sizes 3/4 thru 2½



3-Way 2-Position Valves, Spring Assisted Air Return							
Port Size		External Pilot Supply		Pilot Port Thread		Avg. C <sub>v</sub>	Weight lb (kg)
		Normally Closed					
		Model Number*					
1, 3	2	NPT Threads	G Threads	NPT	G		
1/2	3/8	CX34NB35501	CX34DB35501	10-32 UNF	M5	3.5	1.4 (0.6)
1/2	1/2	CX34NB45501	CX34DB45501	10-32 UNF	M5	3.5	1.4 (0.6)
1	3/4	CX36NC55501	CX36DC55501	1/8-27 NPT	G1/8	12.3	3.5 (1.6)
1	1	CX36NC65501	CX36DC65501	1/8-27 NPT	G1/8	12.3	3.5 (1.6)



**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.



## ACCESSORIES FOR 3/2 VALVES

Silencers							
Port Size	Thread Type	Model Number		Avg. C <sub>v</sub>	Dimensions inches (mm)		Weight lb (kg)
		NPT Threads	R/Rp Threads		Width	Length	
1/2	Male	5500A4003	D5500A4003	4.7	1.3 (32)	3.6 (91)	0.2 (0.1)
1	Male	5500A6003	D5500A6003	14.6	2.0 (51)	5.4 (138)	0.6 (0.3)

**Pressure Range:** 0 to 290 psig (0 to 20 bar) maximum. **Flow Media:** Filtered air.

## STANDARD SPECIFICATIONS (for valves on this page):

Construction Design	Poppet	Operating Pressure	Vacuum to 250 psig (vacuum to 17.2 bar)
Mounting Type	In-line		Pilot Supply: 2/2 Valves: 30 to 250 psig (2 to 17.2 bar) 3/2 Valves: 50 to 250 psig (3.4 to 17.2 bar) <i>Pilot supply pressure must be equal to or greater than inlet pressure.</i>
Temperature	Ambient: 40° to 120°F (4° to 50°C) Media: 40° to 175°F (4° to 80°C)	Construction Material	Valve Body: Cast Aluminum Poppet: Acetal & Stainless Steel Seals: Buna-N
Flow Media	Filtered air <i>For liquid applications, consult ROSS.</i>		
Pilot Supply	External		

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



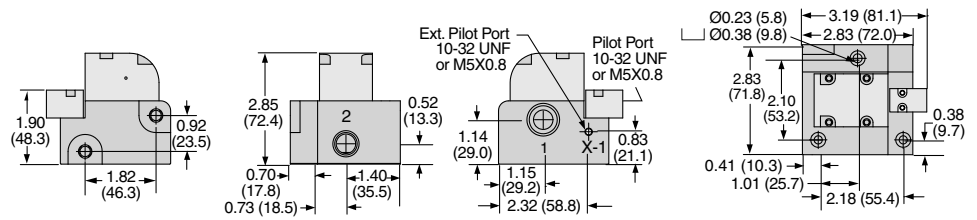
# Pressure Controlled Valves

# Leak Tight Dale CX Series

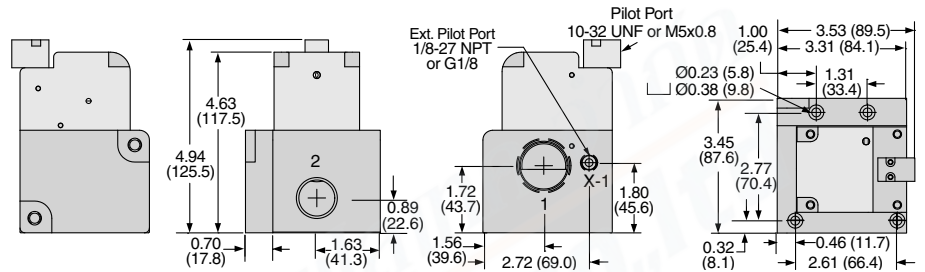
Valve Dimensions – inches (mm)

## 2/2 Valves

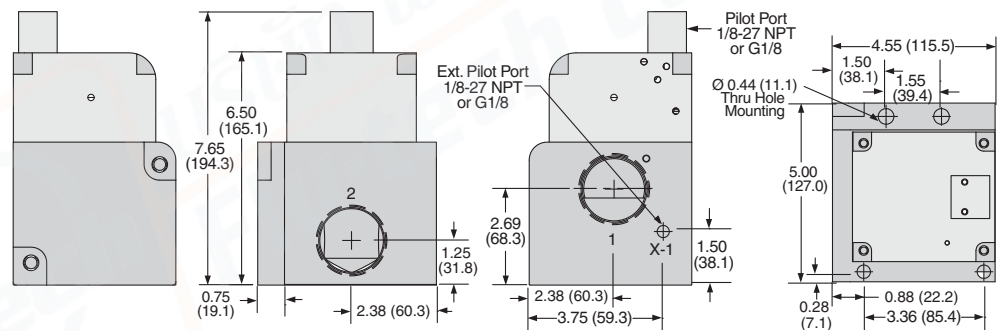
Port Size 3/8 & 1/2



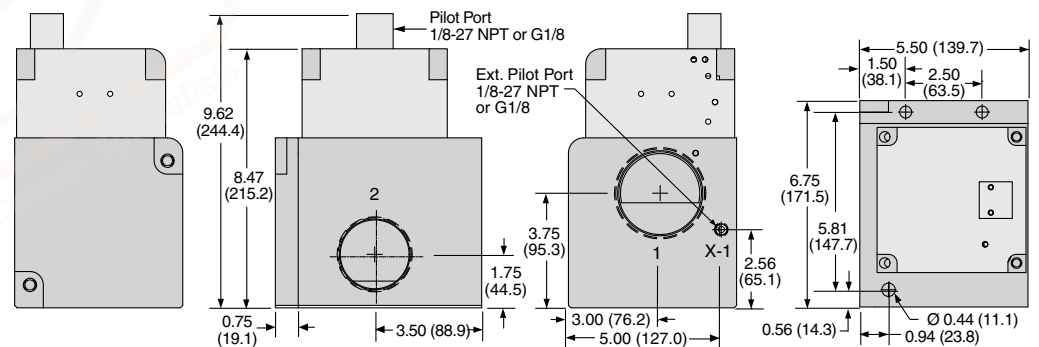
Port Size 3/4 & 1



Port Size 1 1/4 & 1 1/2

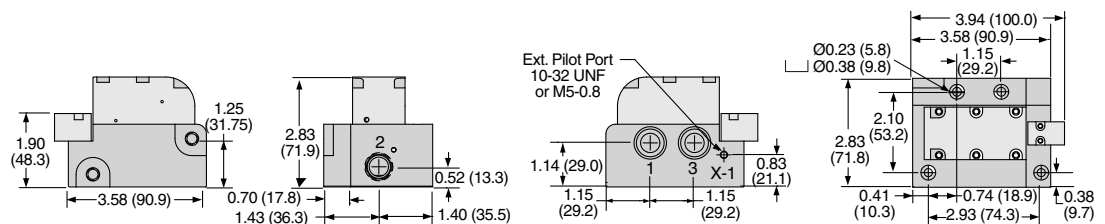


Port Size 2 & 2 1/2

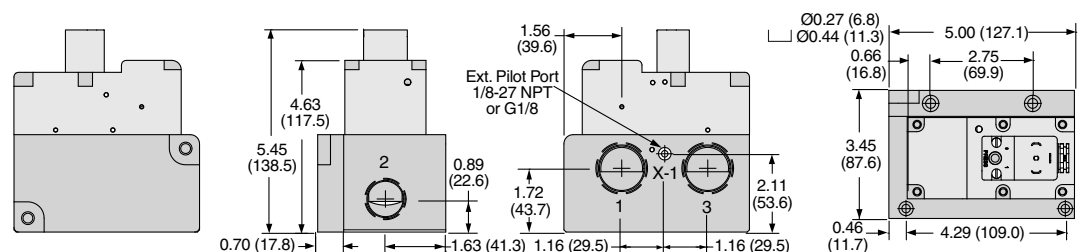


## 3/2 Valves

Port Size 3/8 & 1/2



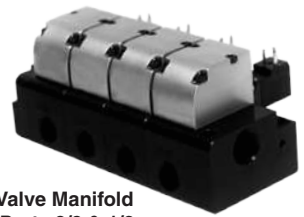
Port Size 3/4 & 1



# Solenoid Pilot Controlled Valve Manifolds

## Leak Tight Dale CX Series

Manifolds can be ordered from two (2) to ten (10) 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 model number from the table below. For ordering the Dale CX Series manifold valves with different valve functions, please see page B1.24 for manifold configurator.



Valve Manifold Ports 3/8 & 1/2



Valve Manifold Ports 3/4 & 1



Valve Manifold Ports 1/4, 1/4 thru 2 1/2

2-Way 2-Position Valves, Air Return								
Port Size		External Pilot Supply				Pilot Port Thread		Avg. C <sub>v</sub>
		Normally Closed		Normally Open				
		Model Number#*		Model Number#*				
1	2	NPT Threads	G Threads	NPT Threads	G Threads	NPT	G	
1/4	1/4	CX12NB2751XW	CX12DB2751XW	CX22NB2751XW	CX22DB2751XW	10-32 UNF	M5	0.9
1/2	3/8	CX14NB3751XW	CX14DB3751XW	CX24NB3751XW	CX24DB3751XW	10-32 UNF	M5	3.5
1/2	1/2	CX14NB4751XW	CX14DB4751XW	CX24NB4751XW	CX24DB4751XW	10-32 UNF	M5	3.5
1	3/4	CX16NB5751XW	CX16DB5751XW	CX26NB5751XW	CX26DB5751XW	1/8-27 NPT	G1/8	12.3
1	1	CX16NB6751XW	CX16DB6751XW	CX26NB6751XW	CX26DB6751XW	1/8-27 NPT	G1/8	12.3
1 1/2	1 1/4	CX18NB7751XW	CX18DB7751XW	CX28NB7751XW	CX28DB7751XW	1/8-27 NPT	G1/8	44.9
1 1/2	1 1/2	CX18NB8751XW	CX18DB8751XW	CX28NB8751XW	CX28DB8751XW	1/8-27 NPT	G1/8	44.9
2 1/2	2	CX10NB9751XW	CX10DB9751XW	CX20NB9751XW	CX20DB9751XW	1/8-27 NPT	G1/8	108
2 1/2	2 1/2	CX10NB0751XW	CX10DB0751XW	CX20NB0751XW	CX20DB0751XW	1/8-27 NPT	G1/8	108

<p>1/4" thru 2 1/2" Normally Closed</p>	<p>1/4" thru 1" Normally Open</p>	<p>1 1/2" &amp; 2 1/2" Normally Open</p>
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# Voltage: W=24 VDC; Z=110-120 VAC, 50/60 Hz, e.g., e.g., CX12NB2751XZ.

\*X Number of Stations – To indicate the number of stations desired, for 2 to 9 stations, replace X in the model number with the specific number of stations, for 10 stations replace X with 0, e.g., CX12NB27514W (4 = 4 Stations), CX12NB27510W, (0 = 10 Stations).

The CX Series valves on this page require an external pilot supply.

### ACCESSORIES – Electrical Connectors

Valve Type	Port Size	Electrical Connector Form	Electrical Connectors Model Number			
			Lighted Connector Only		Lighted Connector Pre-wired*	
			24 Volts DC	120 Volts AC	24 Volts DC	120 Volts AC
2/2	1/4 - 1	EN 175301-803 Form C	2453K77-W	2453K77-Z	2476K77-W	2476K77-Z
	1 1/2-2 1/2	EN 175301-803 Form A	936K87-W	936K87-Z	720K77-W	720K77-Z

\*Pre-wired connectors include a 2 meter (6 1/2 ft.) cord.

### STANDARD SPECIFICATIONS (for valves on this page):

Construction Design	Poppet	Flow Media	Filtered air <i>For liquid applications, consult ROSS.</i>
Mounting Type	In-line	Pilot Supply	External
Solenoids	Rated for continuous duty	Operating Pressure	Port Size 1/4: Vacuum to 145 psig (vacuum to 10 bar) Port Size 1/2 thru 2 1/2: Vacuum to 145 psig (vacuum to 10 bar) Pilot Supply - External: Port Size 1/4: 70 to 145 psig (5 to 10 bar) Port Size 1/2 thru 2 1/2: 30 to 145 psig (2 to 10 bar) <i>Pilot supply pressure must be equal to or greater than inlet pressure.</i>
Voltage/Power Consumption (each solenoid)	Port Size 1/4 thru 1: 24 volts DC; 1.5 watts on DC 110 volts AC, 50 Hz: 5.4 VA 120 volts AC, 60 Hz: 5.0 VA Port Size 1 1/2 & 2 1/2: 24 volts DC; 110 volts AC, 50 Hz; 120 volts AC, 50/60 Hz 5.8 watts nominal on AC and DC, 6.5 watts maximum on AC and DC	Construction Material	Valve Body: Cast Aluminum Poppet: Acetal & Stainless Steel Seals: Buna-N
Enclosure Rating	IP65, IEC 60529	Manual Override	Normally Closed Valves: All Sizes: Non-locking Normally Open Valves: Port Size 1/2 & 1: Non-locking Port Size 1 1/2 & 2 1/2: Locking, turn-to-lock
Electrical Connection	EN 175301-803 Form A or Form C connector		
Temperature	Ambient: 40° to 120°F (4° to 50°C) Media: 40° to 175°F (4° to 80°C)		

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

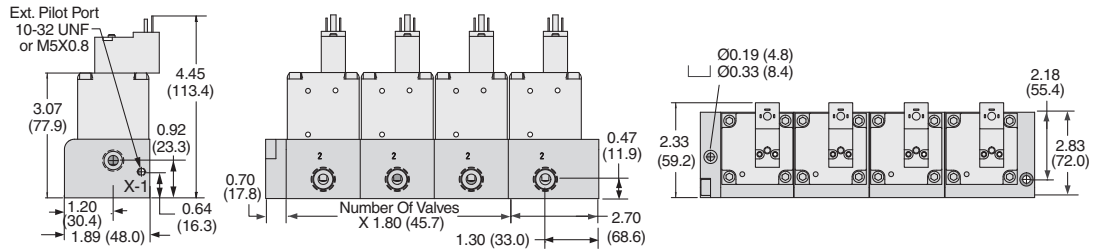


# Solenoid Pilot Controlled Valve Manifolds

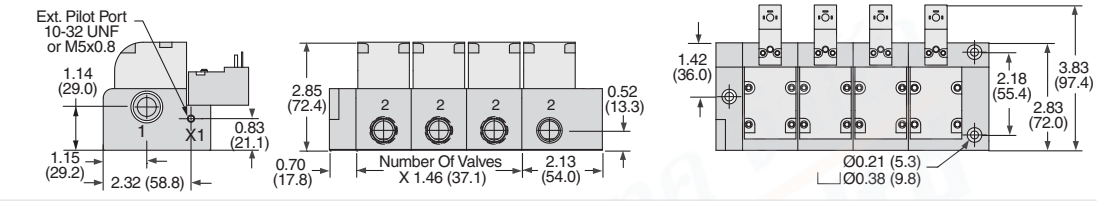
**Leak Tight  
Dale CX Series**

Dimensions – inches (mm)

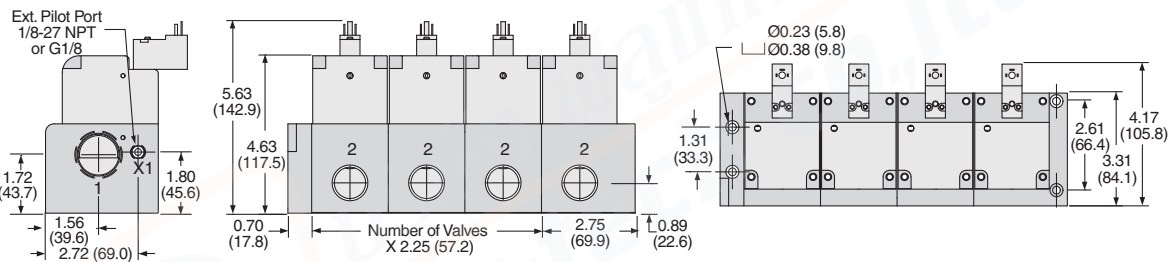
Port Size 1/4



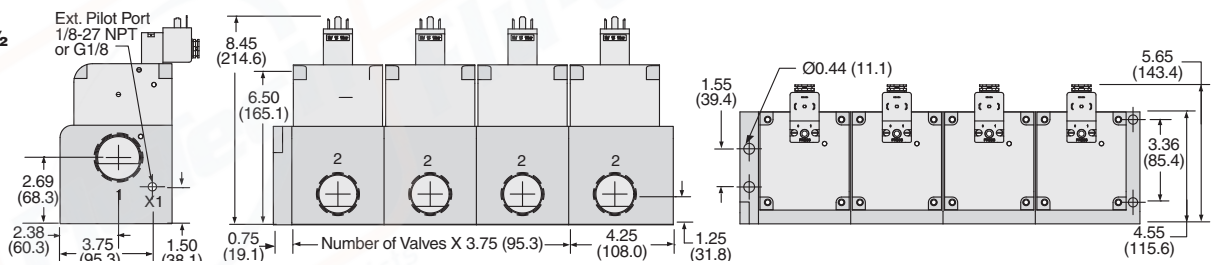
Port Size 3/8 & 1/2



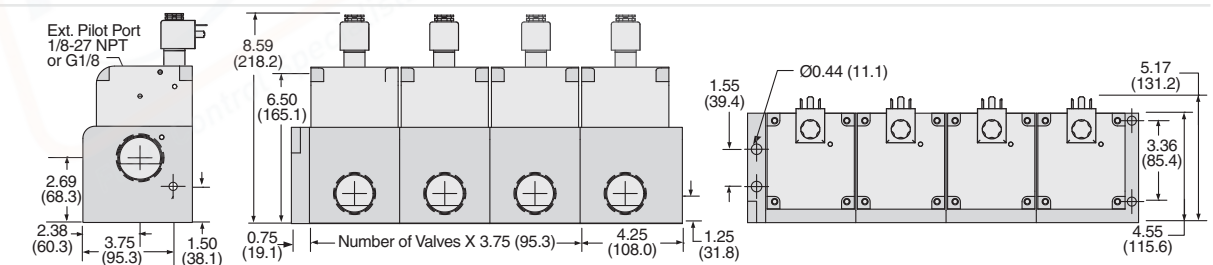
Port Size 3/4 & 1



Port Size 1 1/4 & 1 1/2

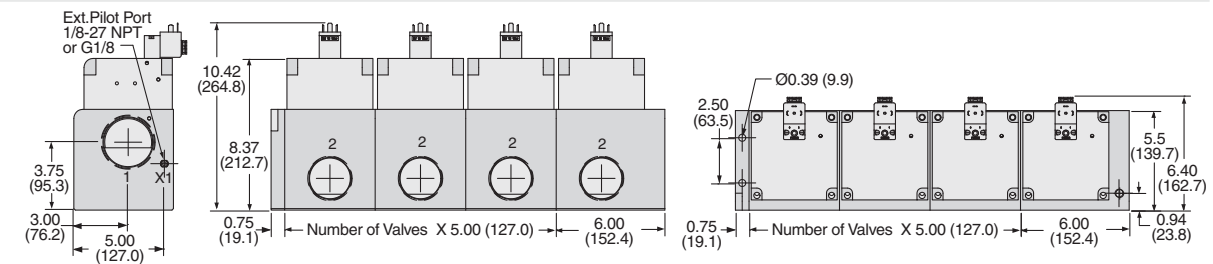


Normally Closed

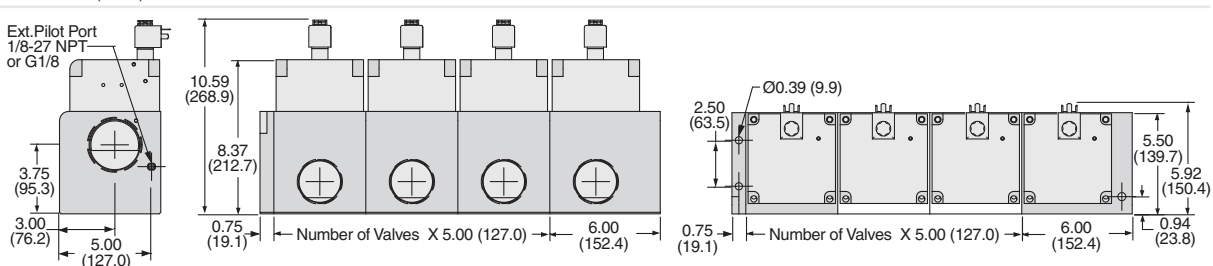


Normally Open

Port Size 2 & 2 1/2



Normally Closed



Normally Open

# Solenoid Pilot Controlled Valve Manifolds

**Leak Tight  
Dale CX Series**

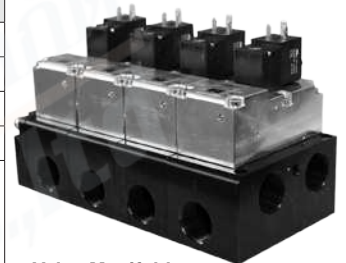
Manifolds can be ordered from two (2) to ten (10) stations. Complete valves-on-manifold assemblies can be ordered to fit your precise requirements.

For preassembled manifold valves with the same model number, select the model number from the table below.

For ordering the Dale CX Series manifold valves with different valve functions, please see page B1.24 for manifold configurator.



Valve Manifold Ports 3/8 & 1/2



Valve Manifold Ports 3/4 & 1

3-Way 2-Position Valves, Spring Assisted Air Return									
Port Size	External Pilot Supply						Pilot Port Thread		Avg. C <sub>v</sub>
	Normally Closed			Normally Open					
	Model Number#*			Model Number#*					
1, 3	2	NPT Threads		G Threads		NPT		G	
1/2	3/8	CX34NB3751XW	CX34DB3751XW	CX44NB3751XW	CX44DB3751XW	10-32 UNF	M5	3.6	
1/2	1/2	CX34NB4751XW	CX34DB4751XW	CX44NB4751XW	CX44DB4751XW	10-32 UNF	M5	3.6	
1	3/4	CX36NC5751XW	CX36DC5751XW	CX46NC5751XW	CX46DC5751XW	1/8-27 NPT	G1/8	12.3	
1	1	CX36NC6751XW	CX36DC6751XW	CX46NC6751XW	CX46DC6751XW	1/8-27 NPT	G1/8	12.3	

# Voltage: W=24 VDC; Z=110-120 VAC, 50/60 Hz, e.g., CX34NB3751XZ.  
 \*X Number of Stations – To indicate the number of stations desired, for 2 to 9 stations, replace X in the model number with the specific number of stations, for 10 stations replace X with 0, e.g., CX34NB37514W (4 = 4 Stations), CX34NB37510W, (0 = 10 Stations).

1/2" & 1" Normally Closed

1/2" Normally Open

1" Normally Open

**Note: The CX Series valves on this page require an external pilot supply.**

## ACCESSORIES

Electrical Connectors						
Valve Type	Port Size	Electrical Connector Form	Electrical Connectors Model Number			
			Lighted Connector Only		Lighted Connector Pre-wired*	
			24 Volts DC	120 Volts AC	24 Volts DC	120 Volts AC
3/2	1/2	EN 175301-803 Form C	2453K77-W	2453K77-Z	2476K77-W	2476K77-Z
	1	EN 175301-803 Form A	936K87-W	936K87-Z	720K77-W	720K77-Z

\*Pre-wired connectors include a 2 meter (6½ ft.) cord.

Silencers							
Port Size	Thread Type	Model Number		Avg. C <sub>v</sub>	Dimensions inches (mm)		Weight lb (kg)
		NPT Threads	G Threads		Width	Length	
1/2	Male	5500A4003	D5500A4003	4.7	1.3 (32)	3.6 (91)	0.2 (0.1)
1	Male	5500A6003	D5500A6003	14.6	2.0 (51)	5.4 (138)	0.6 (0.3)

**Pressure Range:** 0 to 290 psig (0 to 20 bar) maximum. **Flow Media:** Filtered air.

## STANDARD SPECIFICATIONS (for valves on this page):

Construction Design	Poppet	Flow Media	Filtered air For liquid applications, consult ROSS.
Mounting Type	In-line	Pilot Supply	External
Solenoids	Rated for continuous duty	Operating Pressure	Vacuum to 145 psig (vacuum to 10 bar) Pilot Supply - External: 50 to 145 psig (3.4 to 10 bar) Pilot supply pressure must be equal to or greater than inlet pressure.
Voltage/Power Consumption (each solenoid)	Port Size 1/2: 24 volts DC; 1.5 watts on DC 110 volts AC, 50 Hz: 5.4 VA 120 volts AC, 60 Hz: 5.0 VA Port Size 1: 24 volts DC; 110 volts AC, 50 Hz; 120 volts AC, 50/60 Hz 5.8 watts nominal on AC and DC, 6.5 watts maximum on AC and DC	Construction Material	Valve Body: Cast Aluminum Poppet: Acetal & Stainless Steel Seals: Buna-N
Enclosure Rating	IP65, IEC 60529	Manual Override	Normally Closed Valves: All Sizes; Non-locking Normally Open Valves: Port Size 1/2 & 1: Non-locking Port Size 1½ & 2½: Locking, turn-to-lock
Electrical Connection	EN 175301-803 Form A or Form C connector		
Temperature	Ambient: 40° to 120°F (4° to 50°C) Media: 40° to 175°F (4° to 80°C)		

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

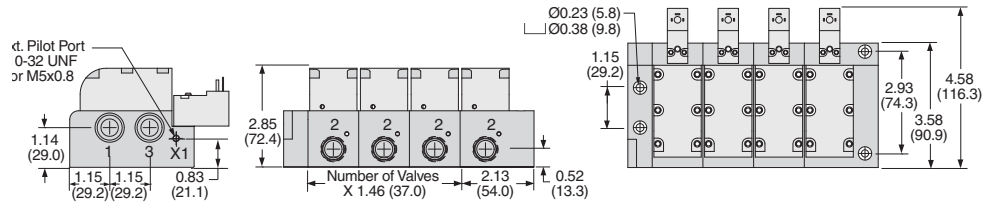


# Solenoid Pilot Controlled Valve Manifolds

# Leak Tight Dale CX Series

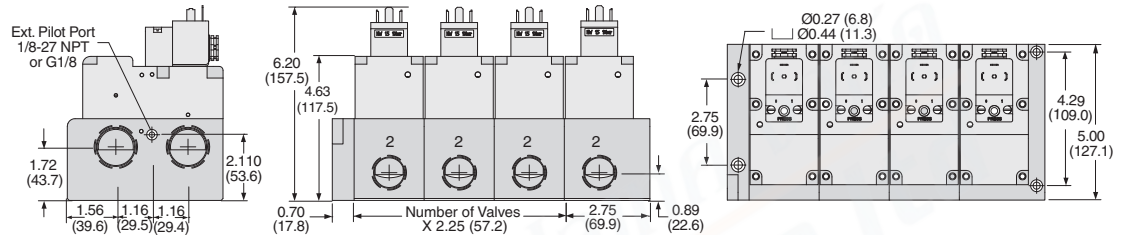
## Dimensions – inches (mm)

### Port Size 3/8 & 1/2

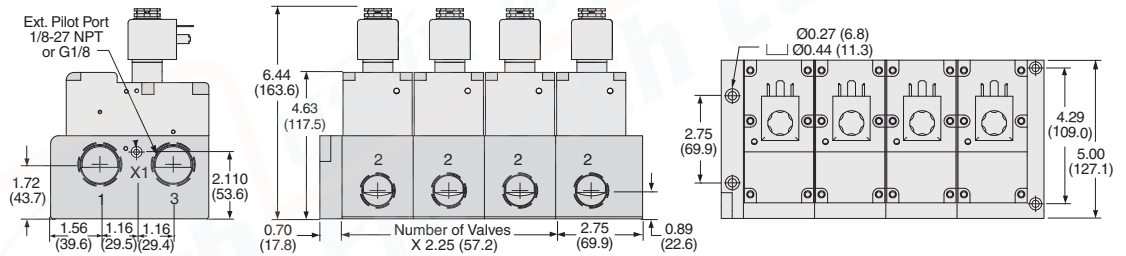


### Port Size 3/4 & 1

### Normally Closed



### Normally Open

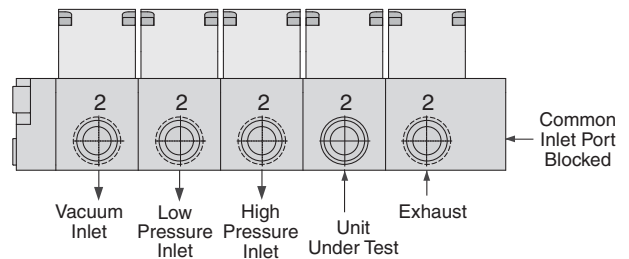


## ROSS/FLEX® Looking for a different solution?

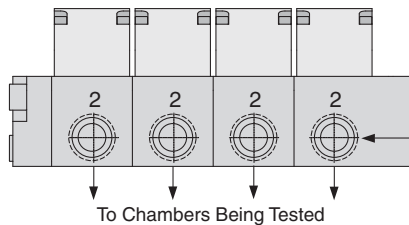
ROSS/FLEX® Customer defined application specific solutions that reduce cost, improve productivity and provide a perfect fit.

## Leak Test Systems using Dale CX & LT Series Valves

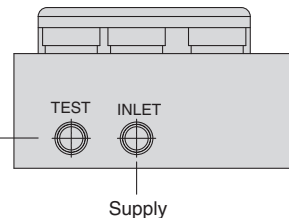
Shown below are typical manifold layouts. Many flexible, compact, manifold designs and configurations can be achieved using the Dale Series valves.



CX Series Manifold shown below:  
2/2 Valve, 4-Station, Normally Closed  
Port 1/2", 24 Volts DC  
CX14NB47514W



LT Series Manifold shown below:  
3/4, Leak Test Manifold,  
24 Volts DC  
LT32NB27500W



# Pressure Controlled Valve Manifolds

Leak Tight  
Dale CX Series

Manifolds can be ordered from two (2) to ten (10) stations.

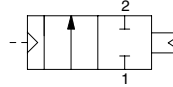
Complete valves-on-manifold assemblies can be ordered to fit your precise requirements.

For preassembled manifold valves with the same model number, select the model number from the table below.

For ordering the Dale CX Series manifold valves with different valve functions, please see page B1.24 for manifold configurator.

## 2-Way 2-Position Valves, Air Return

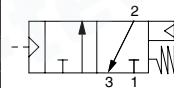
Port Size		External Pilot Supply		Pilot Port Thread		Avg. C <sub>v</sub>
		Normally Closed				
		Model Number*				
1	2	NPT Threads	G Threads	NPT	G	
1/2	3/8	CX14NB3551X	CX14DB3551X	10-32 UNF	M5	3.7
1/2	1/2	CX14NB4551X	CX14DB4551X	10-32 UNF	M5	3.7
1	3/4	CX16NB5551X	CX16DB5551X	1/8-27 NPT	G1/8	13.7
1	1	CX16NB6551X	CX16DB6551X	1/8-27 NPT	G1/8	13.7
1½	1¼	CX18NB7551X	CX18DB7551X	1/8-27 NPT	G1/8	44.9
1½	1½	CX18NB8551X	CX18DB8551X	1/8-27 NPT	G1/8	44.9
2½	2	CX10NB9551X	CX10DB9551X	1/8-27 NPT	G1/8	108
2½	2½	CX10NB0551X	CX10DB0551X	1/8-27 NPT	G1/8	108



Valve Manifold  
Ports 3/8 & 1/2

## 3-Way 2-Position Valves, Spring Assisted Air Return

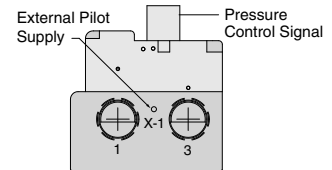
Port Size		External Pilot Supply		Pilot Port Thread		Avg. C <sub>v</sub>
		Normally Closed				
		Model Number*				
1, 3	2	NPT Threads	G Threads	NPT	BSPP	
1/2	3/8	CX34NB3551X	CX34DB3551X	10-32 UNF	M5	3.6
1/2	1/2	CX34NB4551X	CX34DB4551X	10-32 UNF	M5	3.6
1	3/4	CX36NC5551X	CX36DC5551X	1/8-27 NPT	G1/8	12.3
1	1	CX36NC6551X	CX36DC6551X	1/8-27 NPT	G1/8	12.3



Valve Manifold  
Ports 3/8 & 1/2

**\*X Number of Stations** – To indicate the number of stations desired, for 2 to 9 stations, replace X in the model number with the specific number of stations, for 10 stations replace X with 0, e.g., CX14NB35516 (4 = 4 Stations), CX14NB35510, (0 = 10 Stations).

**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.



## ACCESSORIES FOR 3/2 VALVES

Silencers							
Port Size	Thread Type	Model Number		Avg. C <sub>v</sub>	Dimensions inches (mm)		Weight lb (kg)
		NPT Threads	R/Rp Threads		Width	Length	
1/2	Male	5500A4003	D5500A4003	4.7	1.3 (32)	3.6 (91)	0.2 (0.1)
1	Male	5500A6003	D5500A6003	14.6	2.0 (51)	5.4 (138)	0.6 (0.3)

**Pressure Range:** 0 to 290 psig (0 to 20 bar) maximum. **Flow Media:** Filtered air.

**Note:** For manifolds requiring different valves types, consult ROSS.

### STANDARD SPECIFICATIONS (for valves on this page):

Construction Design	Poppet	Operating Pressure	Vacuum to 250 psig (vacuum to 17.2 bar)
Mounting Type	In-line		Pilot Supply: 2/2 Valves: 30 to 250 psig (2 to 17.2 bar) 3/2 Valves: 50 to 250 psig (3.4 to 17.2 bar) <i>Pilot supply pressure must be equal to or greater than inlet pressure.</i>
Temperature	Ambient: 40° to 120°F (4° to 50°C) Media: 40° to 175°F (4° to 80°C)	Construction Material	Valve Body: Cast Aluminum Poppet: Acetal & Stainless Steel Seals: Buna-N
Flow Media	Filtered air <i>For liquid applications, consult ROSS.</i>		
Pilot Supply	External		

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



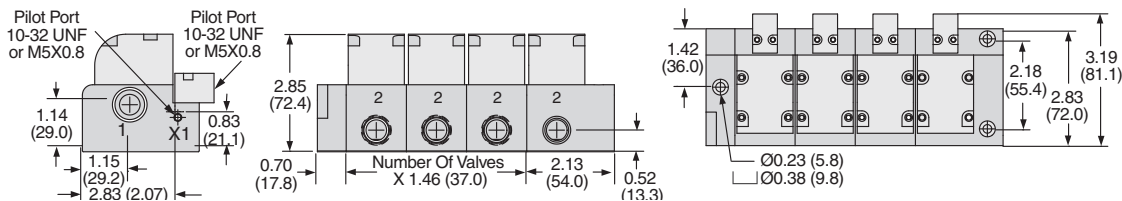
# Pressure Controlled Valve Manifolds

# Leak Tight Dale CX Series

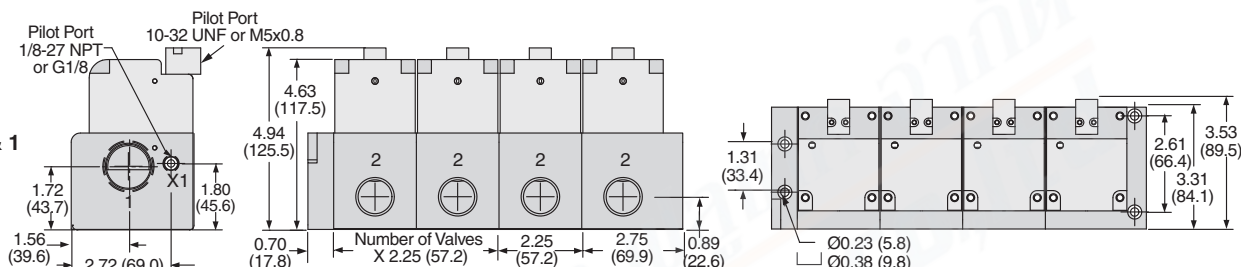
Dimensions – inches (mm)

## 2/2 Valves

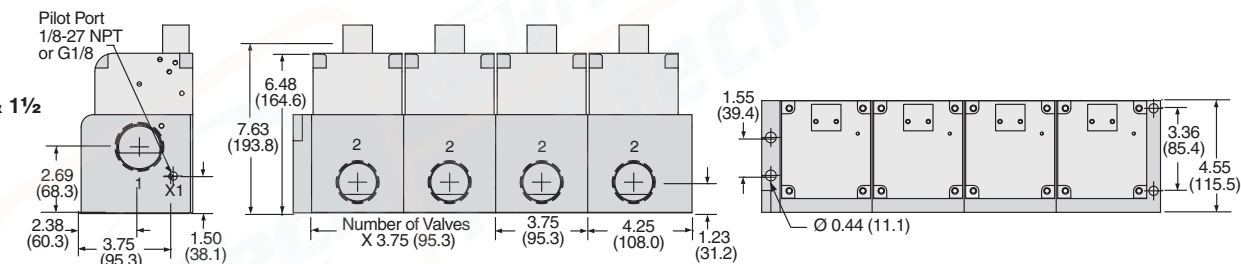
### Port Size 3/8 & 1/2



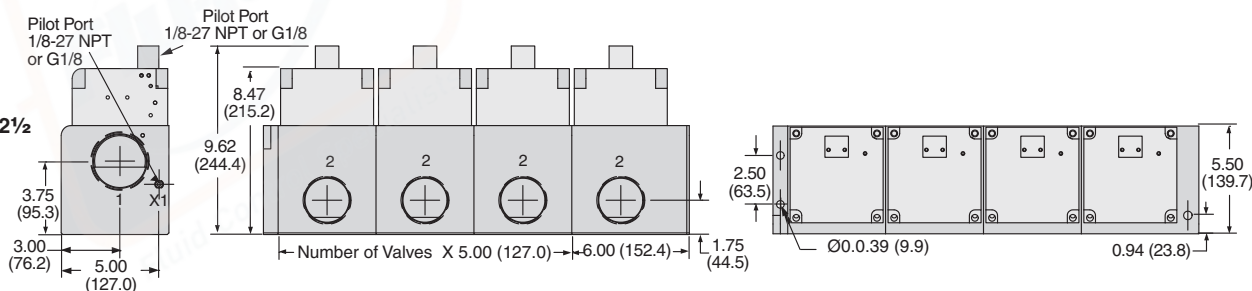
### Port Size 3/4 & 1



### Port Size 1 1/4 & 1 1/2

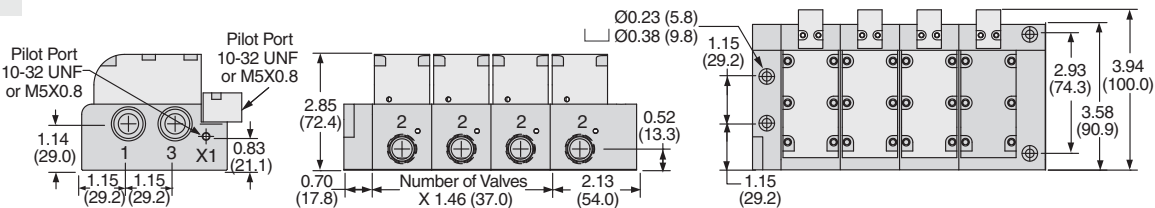


### Port Size 2 & 2 1/2

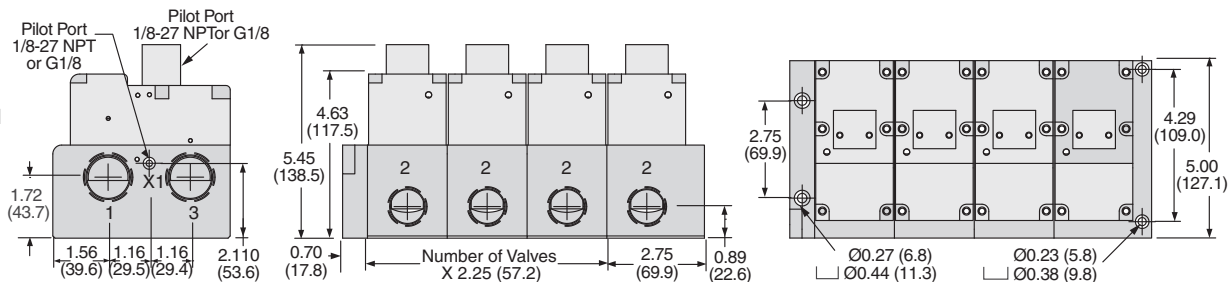


## 3/2 Valves

### Port Size 3/8 & 1/2



### Port Size 3/4 & 1



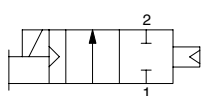


# Solenoid Pilot Controlled Valves

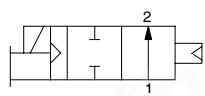
# Leak Tight Dale LX Series

2-Way 2-Position Valves, Air Return									
Port Size		External Pilot Supply				Pilot Port Thread		Avg. C <sub>v</sub>	Weight lb (kg)
		Normally Closed		Normally Open					
		Model Number#		Model Number#					
1	2	NPT Threads	G Threads	NPT Threads	G Threads	NPT	G		
3/8	3/8	LX13NB37501W	LX13DB37501W	LX23NB37501W	LX23DB37501W	1/8-27 NPT	G1/8	3.6	1.5 (0.7)
1/2	1/2	LX14NB47501W	LX14DB47501W	LX24NB47501W	LX24DB47501W	1/8-27 NPT	G1/8	3.6	1.5 (0.7)
3/4	3/4	LX15NB57501W	LX15DB57501W	LX25NB57501W	LX25DB57501W	1/8-27 NPT	G1/8	12.2	3.5 (1.6)
1	1	LX16NB67501W	LX16DB67501W	LX26NB67501W	LX26DB67501W	1/8-27 NPT	G1/8	12.2	3.5 (1.6)
1¼	1¼	LX17NB77501W	LX17DB77501W	LX27NB77501W	LX27DB77501W	1/8-27 NPT	G1/8	36.1	9.3 (4.2)
1½	1½	LX18NB87501W	LX18DB87501W	LX28NB87501W	LX28DB87501W	1/8-27 NPT	G1/8	36.1	9.3 (4.2)
2	2	LX19NB97501W	LX19DB97501W	LX29NB97501W	LX29DB97501W	1/8-27 NPT	G1/8	62.7	19.3 (8.8)
2½	2½	LX10NB07501W	LX10DB07501W	LX20NB07501W	LX20DB07501W	1/8-27 NPT	G1/8	62.7	19.3 (8.8)

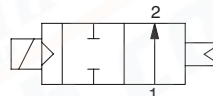
# Voltage: W=24 VDC; Z=110-120 VAC, 50/60 Hz, e.g., LX13NB37501Z.



Normally Closed



3/8" thru 1" Normally Open



1¼" & 2½" Normally Open



Ports 3/8 thru 1



Ports 1¼ thru 2½

The LF & LX Series provides superior performance over a diaphragm valve with a rugged poppet design, bi-directional flow and high cycle life.



The LF & LX Series provides superior performance over a ball valve with solenoid actuation, shifting speed, cycle life, and most important, a cost effective alternative.



Note: The LX Series valves on this page require an external pilot supply.

ACCESSORIES – Electrical Connectors						
Valve Type	Port Size	Electrical Connector Form	Electrical Connectors Model Number			
			Lighted Connector Only		Lighted Connector Pre-wired*	
			24 Volts DC	120 Volts AC	24 Volts DC	120 Volts AC
2/2	3/8 - 1	EN 175301-803 Form C	2453K77-W	2453K77-Z	2476K77-W	2476K77-Z
	1¼-2½	EN 175301-803 Form A	936K87-W	936K87-Z	720K77-W	720K77-Z

\*Pre-wired connectors include a 2 meter (6½ ft.) cord.

### STANDARD SPECIFICATIONS (for valves on this page):

Construction Design	Poppet	Flow Media	Filtered air <i>For liquid applications, consult ROSS.</i>
Mounting Type	In-line	Pilot Supply	External
Solenoids	Rated for continuous duty	Operating Pressure	Vacuum to 145 psig (vacuum to 10 bar) Pilot Supply - External: 30 to 145 psig (2 to 10 bar) <i>Pilot supply pressure must be equal to or greater than inlet pressure.</i>
Voltage/Power Consumption (each solenoid)	Port Size 3/8 thru 1: 24 volts DC; 1.5 watts on DC 110 volts AC, 50 Hz: 5.4 VA 120 volts AC, 60 Hz: 5.0 VA Port Size 1¼ thru 2½: 24 volts DC; 110 volts AC, 50 Hz; 120 volts AC, 50/60 Hz 5.8 watts nominal on AC and DC, 6.5 watts maximum on AC and DC	Construction Material	Valve Body: Cast Aluminum Poppet: Acetal & Stainless Steel Seals: Buna-N
Enclosure Rating	IP65, IEC 60529	Manual Override	Normally Closed Valves: All Sizes; Non-locking Normally Open Valves: Port Size 1/2 & 1: Non-locking Port Size 1½ & 2½: Locking, turn-to-lock
Electrical Connection	EN 175301-803 Form A or Form C connector		
Temperature	Ambient: 40° to 120°F (4° to 50°C) Media: 40° to 175°F (4° to 80°C)		

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

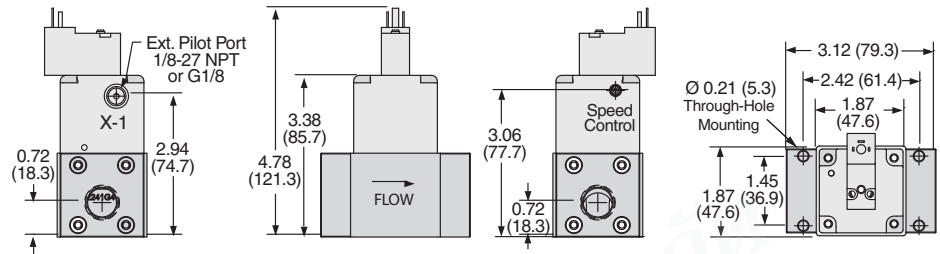


# Solenoid Pilot Controlled Valves

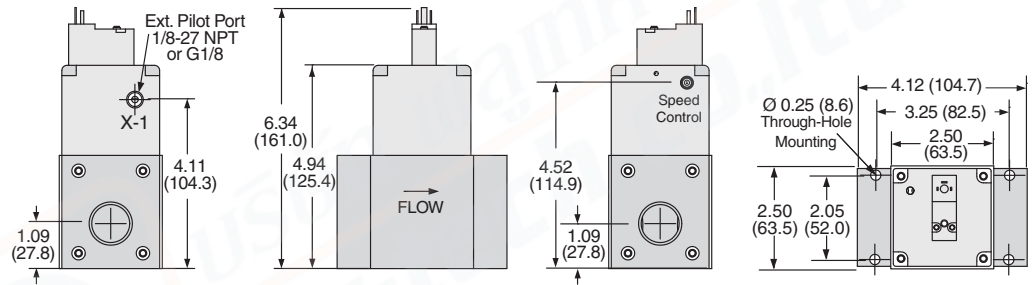
# Leak Tight Dale LX Series

Valve Dimensions – inches (mm)

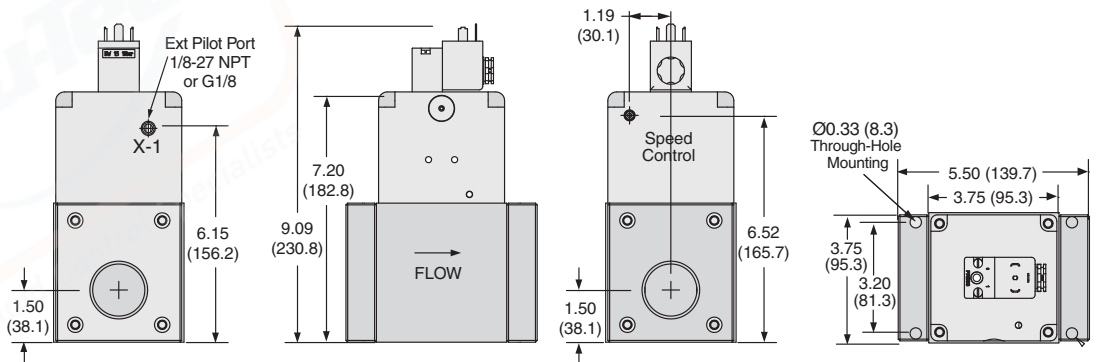
Port Size 3/8 & 1/2



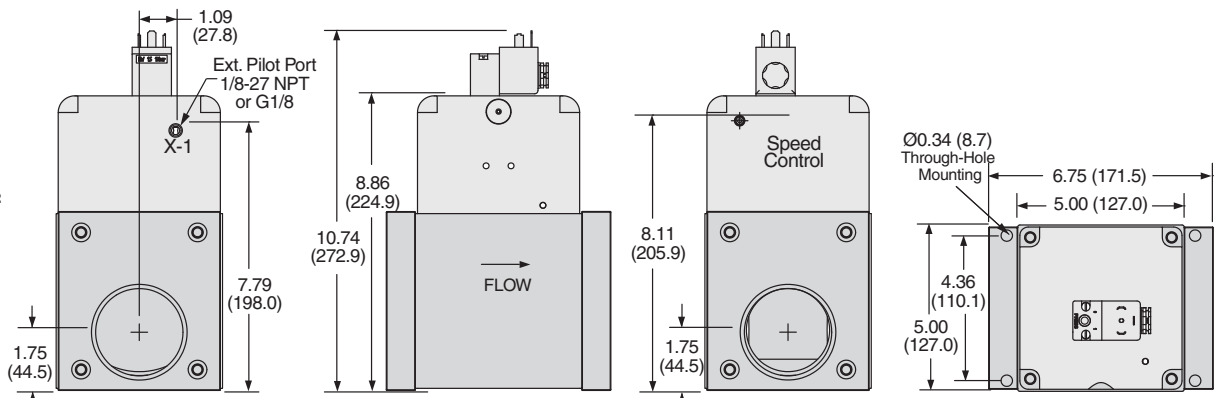
Port Size 3/4 & 1



Port Size 1 1/4 & 1 1/2



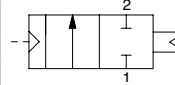
Port Size 2 & 2 1/2



# Pressure Controlled Valves

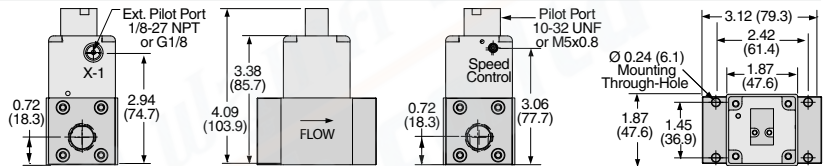
# Leak Tight Dale LX Series

2-Way 2-Position Valves, Air Return							
Port Size		External Pilot Supply		Pilot Port Thread		Avg. C <sub>v</sub>	Weight lb (kg)
		Normally Closed					
1	2	Model Number		NPT	G		
3/8	3/8	LX13NB35501	LX13DB35501	10-32 UNF	M5	3.6	1.5 (0.7)
1/2	1/2	LX14NB45501	LX14DB45501	10-32 UNF	M5	3.6	1.5 (0.7)
3/4	3/4	LX15NB55501	LX15DB55501	1/8-27 NPT	G1/8	12.2	3.5 (1.6)
1	1	LX16NB65501	LX16DB65501	1/8-27 NPT	G1/8	12.2	3.5 (1.6)
1¼	1¼	LX17NB75501	LX17DB75501	1/8-27 NPT	G1/8	36.1	9.3 (4.2)
1½	1½	LX18NB85501	LX18DB85501	1/8-27 NPT	G1/8	36.1	9.3 (4.2)
2	2	LX19NB95501	LX19DB95501	1/8-27 NPT	G1/8	62.7	19.3 (8.8)
2½	2½	LX10NB05501	LX10DB05501	1/8-27 NPT	G1/8	62.7	19.3 (8.8)

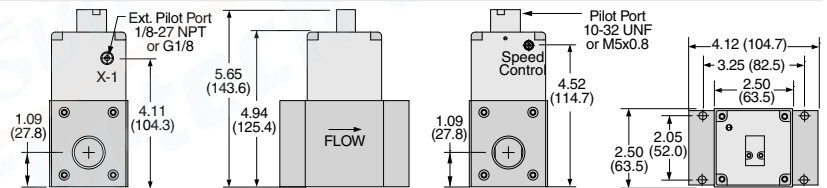


### Valve Dimensions – inches (mm)

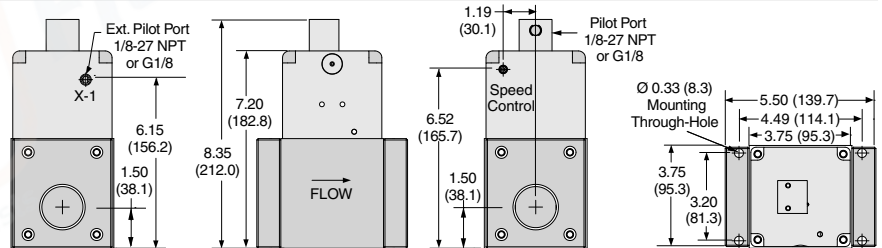
#### Port Size 3/8 & 1/2



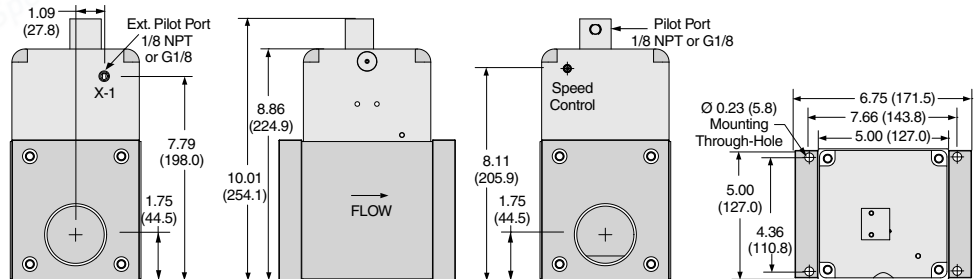
#### Port Size 3/4 & 1



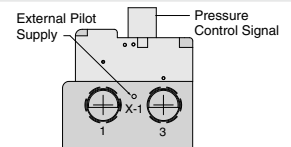
#### Port Size 1¼ & 1½



#### Port Size 2 & 2½



**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.



### STANDARD SPECIFICATIONS (for valves on this page):

Construction Design	Poppet	Operating Pressure	Vacuum to 250 psig (vacuum to 17.2 bar)
Mounting Type	In-line		Pilot Supply: 30 to 250 psig (2 to 17.2 bar)
Temperature	Ambient: 40° to 120°F (4° to 50°C)	Construction Material	Pilot supply pressure must be equal to or greater than inlet pressure.
	Media: 40° to 175°F (4° to 80°C)		Valve Body: Cast Aluminum
Flow Media	Filtered air		Poppet: Acetal & Stainless Steel
Pilot Supply	External		Seals: Buna-N

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



# Solenoid Pilot Controlled Valve Manifold

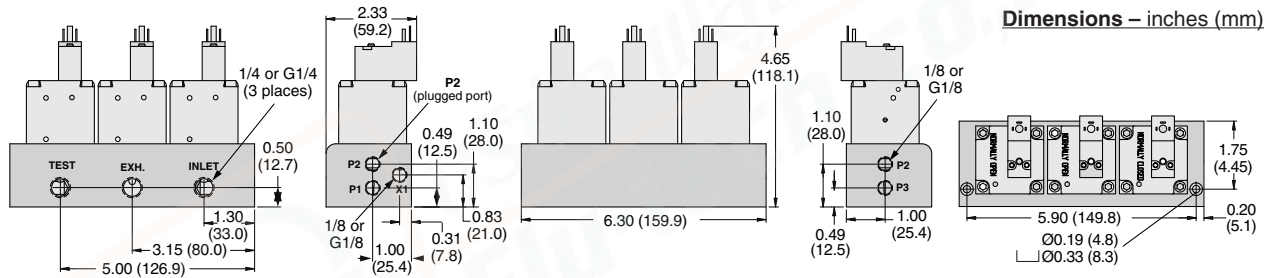
**Leak Tight  
Dale LT Series**

The LT Series valves can be field configured for flow, pressure decay, or differential pressure testing by selecting different combinations of the three sensor ports.

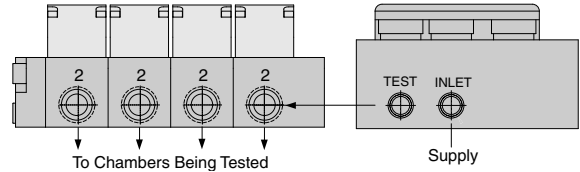


3-Way 4-Position Valve, Multi Solenoid Actuated											
Port Size			Normally Closed		Sensor Ports			Pilot Port Thread		Avg. C <sub>v</sub>	Weight lb (kg)
			Model Number#								
In	Exh.	Test	NPT Threads	G Threads	P1	P2	P3	NPT	G		
1/4	1/4	1/4	LT32NB27500W01	LT32DB27500W01	1/8	1/8	1/8	1/8 NPT	G 1/8	0.9	3.6 (1.7)

# Voltage: W=24 VDC; Z=110-120 VAC, 50/60 Hz, e.g., LT32NB27500Z01.



The CX and LT Series can be combined to simplify the most complex test circuits. The LT manifold with integrated sensor ports is the primary valve used for the fill, isolate and test functions. In this example the test port of the LT is connected to the CX manifold allowing four chambers to be tested one at a time. The flexibility of combining the LT and CX manifolds creates a compact package, reduces leak paths, and provides an all in one test solution.



## ACCESSORIES

Electrical Connectors						
Valve Type	Port Size	Electrical Connector Form	Electrical Connectors Model Number			
			Lighted Connector Only		Lighted Connector Pre-wired*	
			24 Volts DC	120 Volts AC	24 Volts DC	120 Volts AC
1/4	3/8 - 1	EN 175301-803 Form C	2453K77-W	2453K77-Z	2476K77-W	2476K77-Z

\*Pre-wired connectors include a 2 meter (6½ ft.) cord.

Silencers							
Port Size	Thread Type	Model Number		Avg. C <sub>v</sub>	Dimensions inches (mm)		Weight lb (kg)
		NPT Threads	R/Rp Threads		Width	Length	
1/4	Male	5500A2003	D5500A2003	2.1	0.9 (21)	2.2 (55)	0.1 (0.1)

**Pressure Range:** 0 to 290 psig (0 to 20 bar) maximum. **Flow Media:** Filtered air.

### STANDARD SPECIFICATIONS (for valves on this page):

Construction Design	Poppet	Flow Media	Filtered air <i>For liquid applications, consult ROSS.</i>
Mounting Type	In-line	Pilot Supply	Internal or External
Solenoids	DC power; Rated for continuous duty	Operating Pressure	2 to 145 psig (0.13 to 10 bar) Pilot Supply - Internal or External: 50 to 145 psig (3.4 to 10 bar) <i>When external pilot supply, pressure must be equal to or greater than inlet pressure.</i>
Voltage/Power Consumption (each solenoid)	24 volts DC; 1.5 watts on DC 110 volts AC, 50 Hz: 5.4 VA 120 volts AC, 60 Hz: 5.0 VA	Construction Material	Valve Body: Cast Aluminum Poppet: Acetal & Stainless Steel Seals: Buna-N
Enclosure Rating	IP65, IEC 60529		
Electrical Connection	EN 175301-803 Form A or Form C connector		
Temperature	Ambient/Media: 40° to 120°F (4° to 50°C)		

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

# CP & CX Series Assembled Valve Manifold Configurator

This form can be used when your application requires either a CP or CX 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                         CX  

Valve Type:      2/2                         3/2  

## Compatible Combinations

- Air Pilot & Solenoid Pilot 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	
2	
3	
4	
5	
6	
7	
8	
9	
10	

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

Valve Position Number	Valve Model Number**
1	CX14NB37511W
2	CX14NB37511W
3	CX24NB37511W
4	CX24NB37511W
5	Blank
6	CX14NB47511W
7	CX24NB47511W
8	CX14NB35511
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](mailto:custsvc@rosscontrols.com)  
 to obtain pre-assemble model number, price, and delivery.

