

Warning, Offer of Sale

 **WARNING**

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Offer of Sale

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Table of Contents

Control Panel Products	A Control Panel Products
LV / EZ Lockout Valves	B LV / EZ Lockout Valves
Integrated Fittings	C Integrated Fittings
Accessories	D Accessories
Safety Guide, Offer of Sale	E Safety Guide, Offer of Sale

Notes

Control Panel Products

Section A



Basic Features	A2	Dimensions & Assembly.....	A7
Push Button Bodies.....	A3	Legend Plates, Specifications	A8
Push Buttons	A4	Mounting.....	A9
Selector Switches.....	A5	Visual Indicators 22mm (7/8")	A10
Valve Bodies & Accessories.....	A6	Two-Hand Controls.....	A11-A12

A

Basic Features

Push Buttons

Selector Switches

Valve Bodies & Accessories

Visual Indicators

Foot Pedal Operated Switches

Two Hand Controls

Basic Features

A

Basic Features

Push Buttons

Selector Switches

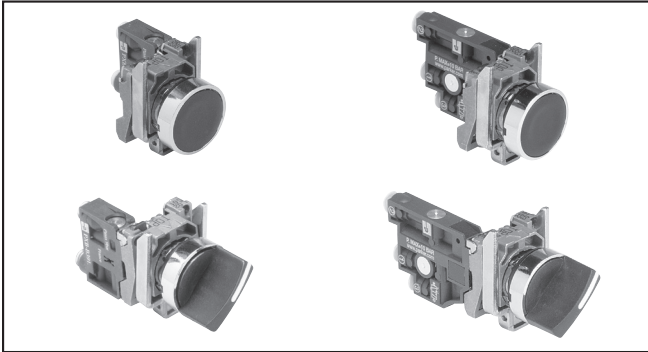
Valve Bodies & Accessories

Visual Indicators

Foot Pedal Operated Switches

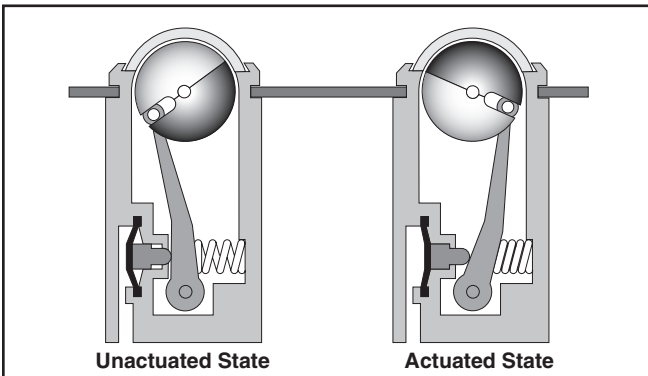
Two Hand Controls

HUMAN-MACHINE DIALOG requires devices such as push buttons and selector switches to provide command inputs. A wide variety of these devices is available to meet most application needs. Both pneumatic and electrical switch bodies are available to match system technology. All of these devices use the 22 mm (7/8") mounting standard.



PNEUMATIC VISUAL INDICATORS

An indicator ball is rotated by a pneumatic input, changing the visible color. The ball sits behind a clear plastic window, providing a wide field of view. The visual indicators are available in five brightly colored Day-Glow paints for increased visibility. Like push buttons and selector switches, visual indicators use the 22mm (7/8") mounting standard.



MODULAR PNEUMATIC / ELECTRIC PUSH BUTTONS

As with electrical contact switches, pneumatic valve modules can be mounted on a number of different operating heads.

- Pneumatic normally non passing (NNP) is equivalent to electrical normally open (N.O.).
- Pneumatic normally passing (NP) is equivalent to electrical normally closed (N.C.).

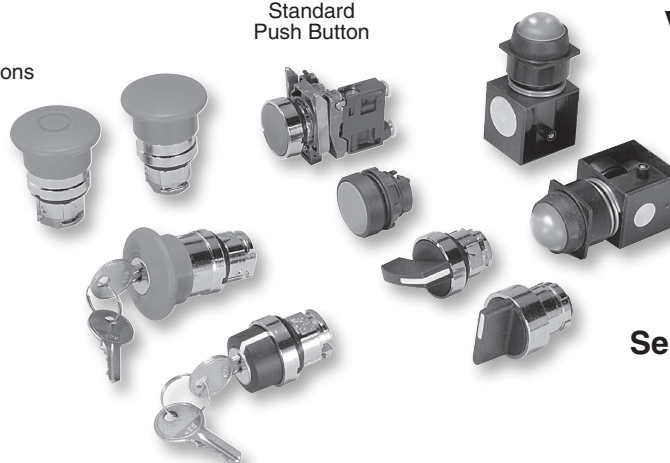
Note: Electrical switches can be stacked, but the rear connection on pneumatic switches prevents stacking. Therefore, when mixing electrical and pneumatic switch bodies on the same operator, the pneumatic switch must be mounted last.



Push Buttons
Spring Return or Latching
Mushroom Headed Push Buttons

Standard Push Button

Visual indicators

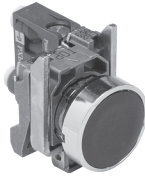


Selector Switches

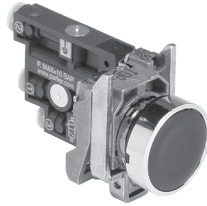
2 or 3 Positions,
Fixed or
Return To Center

With 3/2 Valve Bodies 5/32" Instant Straight Connections

Flush Push Buttons



PXBB3111BA2



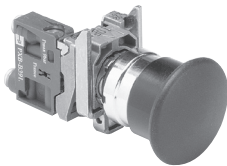
PXBB4131BA2

Part Number	Color	Function	Type of Switching*
PXBB3111BA2	Black	Spring Return	NNP
PXBB3111BA3	Green		
PXBB3111BA4	Red		
PXBB3251BA2	Black	Spring Return	NNP+NP
PXBB4131BA2	Black	Spring Return	Single Universal 3-Way
PXBB4131BA3	Green		
PXBB4131BA4	Red		
PXBB4231BA2	Black	Spring Return	Dual Universal 3-Way

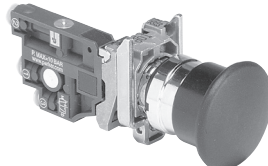
* Type of switching: Universal 3-way: valve can be connected either as NP or NNP as required by connecting the primary air supply to port 1 or port 3.

Note: Mount up to three valves on mounting ring.

Mushroom Head Push Buttons (40mm Diameter)



PXBB3111BC2



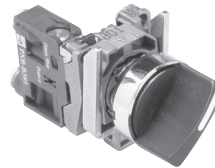
PXBB4131BC2

Part Number	Color	Function	Type of Switching*
PXBB3111BC2	Black	Spring Return	NNP
PXBB3111BT4	Red	Push-Pul	
PXBB3121BT4	Red	Push-Pull	NP
PXBB4131BC2	Black	Spring Return	Single Universal 3-Way
PXBB4131BT4	Red	Push-Pull	

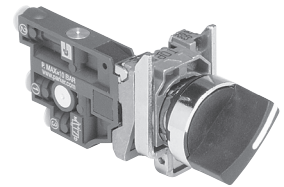
* Type of switching: Universal 3-way: valve can be connected either as NP or NNP as required by connecting the primary air supply to port 1 or port 3.

Note: Mount up to three valves on mounting ring.

Selector Switches



PXBB3111BD2



PXBB4131BD2

Part Number	Color	Function	Type of Switching*
PXBB3111BD2	Black	2 Maintained	NNP
PXBB3211BD2	Black	Positions with	NNP+NNP
PXBB3251BD2	Black	Std. Handle	NNP+NP
PXBB3211BD3	Black	3 Maintained Positions with Std. Handle	NNP+NNP
PXBB3251BD3	Black		NNP+NP
PXBB3211BJ5	Black	3 Positions, Spring Return to Center with Long Handle	NNP+NNP
PXBB4131BD2	Black	2 Maintained Positions with Std. Handle	Single Universal 3-Way
PXBB4231BD2	Black	2 Maintained Positions with Std. Handle	Dual Universal 3-Way
PXBB4231BD3	Black	3 Maintained Positions with Std. Handle	Dual Universal 3-Way
PXBB4231BJ5	Black	3 Position, Spring to Center with Long Handle	Dual Universal 3-Way

* Type of switching: Universal 3-way: valve can be connected either as NP or NNP as required by connecting the primary air supply to port 1 or port 3.

BOLD ITEMS ARE MOST POPULAR.

A

Basic Features

Push Buttons

Selector Switches

Valve Bodies & Accessories

Visual Indicators

Foot Pedal Operated Switches

Two Hand Controls

For Use With PXBB Valve Bodies and ZBE Electrical Switch Bodies

A

Basic Features

Push Buttons

Selector Switches

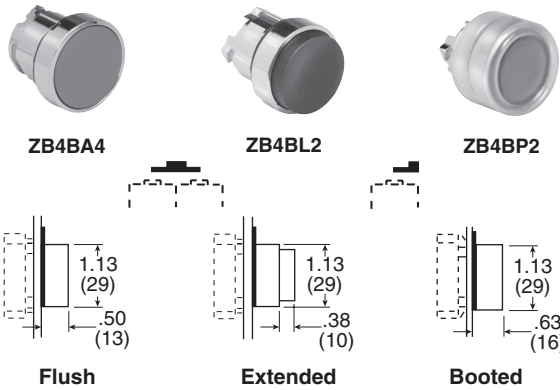
Valve Bodies & Accessories

Visual Indicators

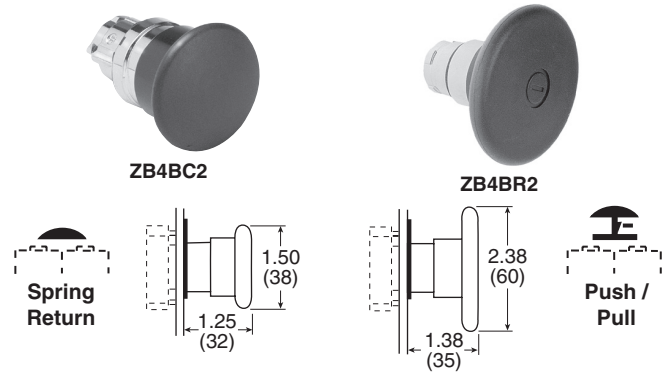
Foot Pedal Operated Switches

Two Hand Controls

Push Buttons



Mushroom Head Push Buttons



Plastic Head ZB5**	Metal Head ZB4*	Color	Function	Description
ZB5AA2	ZB4BA2	Black	Spring Return	Flush
ZB5AA3	ZB4BA3	Green		
ZB5AA4	ZB4BA4	Red		
—	ZB4BA5	Yellow		
—	ZB4BA6	Blue		
ZB5AL2	ZB4BL2	Black	Spring Return	Extended
ZB5AL3	ZB4BL3	Green		
ZB5AL4	ZB4BL4	Red		
—	ZB4BL5	Yellow		
—	ZB4BP2	Black	Spring Return	Booted
—	ZB4BP3	Green		
—	ZB4BP4	Red		

Part Number*	Color	Function	Description
ZB4BC2	Black	Spring Return	Ø 40mm Head
ZB4BC3	Green		
ZB4BC4	Red		
ZB4BT2	Black	Latching Push-Pull	
ZB4BT3	Green		
ZB4BT84	Red		
ZB4BR2	Black	Spring Return	Ø 60mm Head
ZB4BR3	Green		
ZB4BR4	Red		

* ZB4*** Model Numbers are Metal Head Operators

* ZB4*** Model Numbers are Metal Head Operators
 ** ZB5*** Model Numbers are Plastic Head Operators

Push / Push Buttons



ZB4BH02

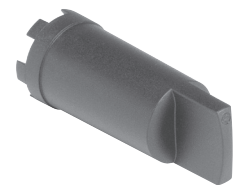
Part Number*	Color	Function	Description
ZB4BH02	Black	Detent 2-Position	Flush
ZB4BH03	Green		
ZB4BH04	Red		

* ZB4**** Model Numbers are Metal Head Operators

Mounting Accessories



ZB2BZ19



ZB5AZ905

Part Number	Color	Description
ZB2BZ19	Black Plastic	Guard for 60mm Mushroom Heads
ZB5AZ905	—	Plastic Head (ZB5) Mounting Nut Tightening Tool

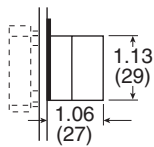
BOLD ITEMS ARE MOST POPULAR.

For Use With PXBB Variable Composition Switch Bodies

Selector Switches



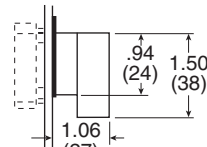
ZB4BD3



Standard Selector



ZB4BJ3

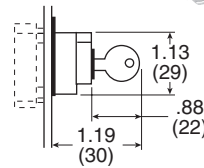


Knob Lever

Key Operated Selectors



ZB4BG2



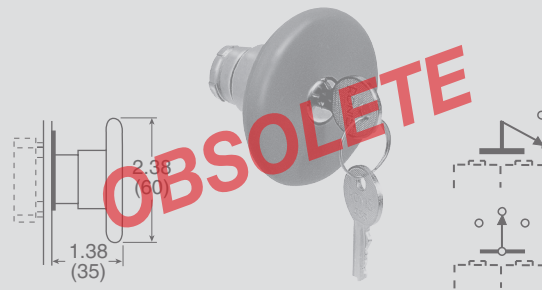
Standard Black Handle		
Part Number*	Description	Function
ZB4BD2	Maintained	2-Positions
ZB4BD4	Spring Return from Right to Left	
ZB4BD3	Maintained	3-Positions
ZB4BD5	Spring Return to Center from Left and Right	
ZB4BD7	Maintained Right Spring Return from Left to Center	3-Positions
ZB4BD8	Maintained Left Spring Return from Right to Center	3-Positions
Long Black Handle		
ZB4BJ2	Maintained	2-Positions
ZB4BJ4	Spring Return from Right to Left	
ZB4BJ3	Maintained	3-Positions
ZB4BJ5	Spring Return to Center from Left and Right	

* ZB4*** Model Numbers are Metal Head Operators

Key Operated		
Part Number*	Key Withdrawal	Function
ZB4BG2	Left	2 Maintained Positions
ZB4BG4	Left and Right	
ZB4BG3	Center	3 Maintained Positions
ZB4BG5	Left and Right	
ZB4BG7	Center	3-Positions 2 Spring Return to Center

* ZB4*** Model Numbers are Metal Head Operators

Mushroom Head Push Buttons with Key Select



ZB4BS24

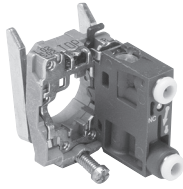
Part Number*	Color	Function	Description
ZB4BS54	Red	Latching Turn to Release	Ø 40mm Head
ZB4BS14	Red	Key Latching	
ZB4BS64	Red	Latching Turn to Release	Ø 60mm Head
ZB4BS24	Red	Key Latching	

* ZB4**** Model Numbers are Metal Head Operators

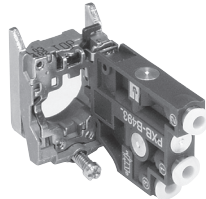
BOLD ITEMS ARE MOST POPULAR.

For Use With 22mm (7/8") Metal Operating Heads 5/32" Instant Connections

3/2 Valve Bodies with Mounting Ring



PXBB3111B



PXBB4131B

Part Number	Connections	Function	Type of Switching*
PXBB3111B	5/32" Instant	3/2	NNP
PXBB3121B	5/32" Instant	3/2	NP
PXBB4131B	5/32" Instant	3/2	Universal 3-Way

Note: • Mount up to 3 valves on mounting ring for push buttons.
 • Mount up to 2 valves on mounting ring for selector switches,
 Valves **cannot** be mounted in center position.

Specifications

Air Quality –
 Standard Shop Air, Lubricated or Dry..... 40 µm Filtration

Flow –
 PXBB3•..... Cv=.08
 PXBB4•..... Cv=.18

Materials –
 Body Polyamide
 Operating Head Zinc Alloy & Plastic
 Operating Positions All Positions

Operating Pressure –
 PXBB3•..... 15 to 115 PSIG (1 to 9 bar)
 PXBB4•..... 15 to 145 PSIG (1 to 10 bar)

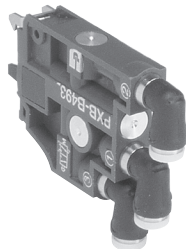
Ports5/32" Instant for Semi-Rigid Nylon or Polyurethane Tube

Temperature –
 Operating.....5°F to 140°F (-15°C to + 60°C)

Additional Valve Bodies



PXBB3911



PXBB4932



PXBB4931

Part Number	Connections	Function	Type of Switching*
PXBB3911	5/32" Instant Straight	3/2	NNP
PXBB3912	5/32" Instant Swivel		
PXBB3921	5/32" Instant Straigh	3/2	NP
PXBB3922	5/32" Instant Swivel		
PXBB4931	5/32" Instant Straight	3/2	Universal 3-Way
PXBB4932	5/32" Instant Swivel		

BOLD ITEMS ARE MOST POPULAR.

A

Basic Features

Push Buttons

Selector Switches

Valve Bodies & Accessories

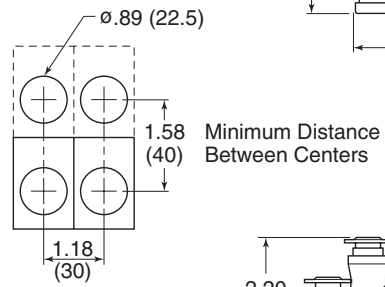
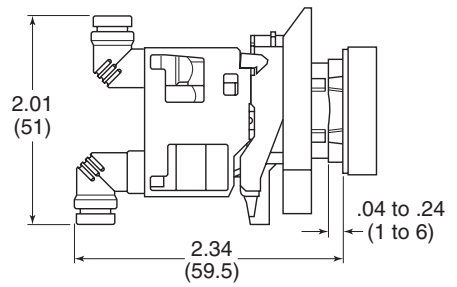
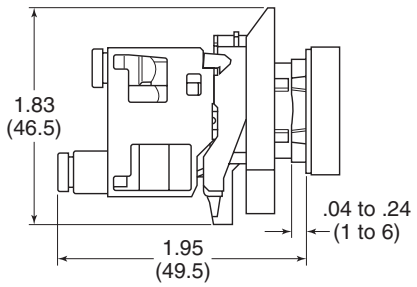
Visual Indicators

Foot Pedal Operated Switches

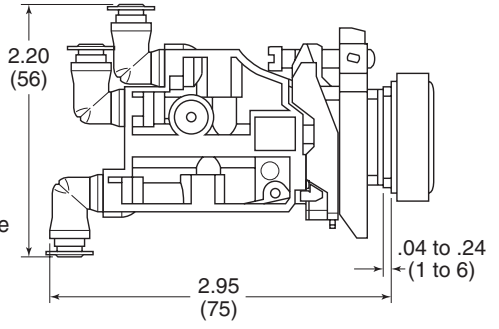
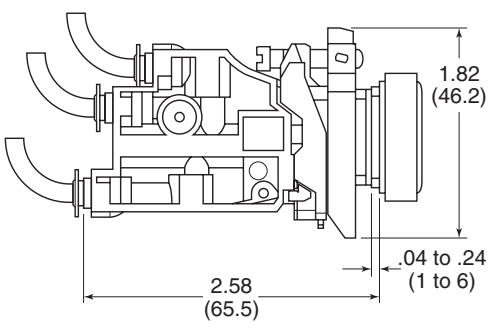
Two Hand Controls

Dimensions & Assembly

PXB-B3 Dimensions



PXB-B4 Dimensions

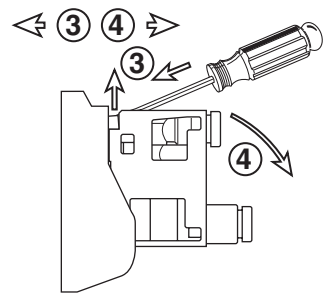
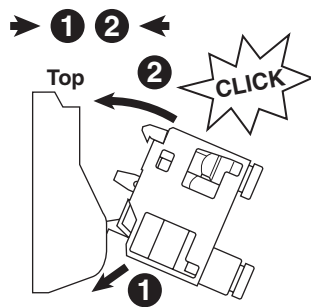


Tube Bending Radius For PXBB3 and PXBB4

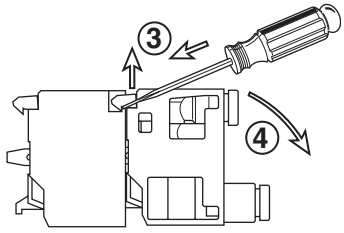
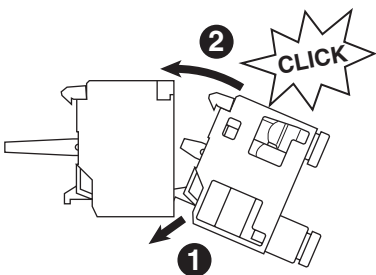
- 4 mm O.D. x 2 mm I.D. Tube = Minimum 0.39 (10) Radius
- 4 mm O.D. x 2.7 mm I.D. Tube = Minimum 0.59 (15) Radius

Assembly

Assembling PXB Valves On Mounting Block



Assembling PXB Valves On the Back of the Electrical Contact



A
Basic Features
Push Buttons
Selector Switches
Valve Bodies & Accessories
Visual Indicators
Foot Pedal Operated Switches
Two Hand Controls

A

Basic Features

Push Buttons

Selector Switches

Valve Bodies & Accessories

Visual Indicators

Foot Pedal Operated Switches

Two Hand Controls

For Push Buttons and Visual Indicators

Legend Plates for PXBB Devices (22mm)



ZBY****

Part Number	Description
Without Text For Customer Engraving	
ZBY2101	Black / Red Background (White Letters)
ZBY4101	Yellow / White Background (Black Letters)
With Text For Push Buttons	
ZBY2303	Start
ZBY2304	Stop
ZBY2305	Forward
ZBY2306	Reverse
ZBY2307	Up
ZBY2308	Down
ZBY2309	Right
ZBY2310	Left
ZBY2311	On
ZBY2312	Off
ZBY2313	Open
ZBY2314	Close
ZBY2321	Inch
ZBY2323	Reset
ZBY2326	Power On
ZBY2327	Slow
ZBY2328	Fast
ZBY2330	Emergency Stop
ZBY2334	Run
With Text For 2-Position Selectors	
ZBY2367	Off On
With Text For 3-Position Selectors	
ZBY2387	Hand Off Auto

Blank Legend Plates for Inscription

For PXBB Devices (2 lines of 11 characters maximum) Please indicate the required text when ordering. (Allow 3 weeks for delivery)	
Part Number	Description
ZBY2002	Black Background / White Letters

For 22mm Visual Indicators Only

2 lines of 11 characters maximum

Please indicate the required text when ordering.
(Allow 3 weeks for delivery)

Part Number	Description
ZB2BY2002	Black Background / White Letters

Accessories



ZBE101

Electrical Switch Bodies

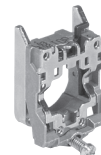
When combined with pneumatic valves, these contact blocks allow different forms of power to be provided from a single push button. Can be mounted with both types of valves PXBB3 / PXBB4.

Electrical Specification: 240V, 10Amp

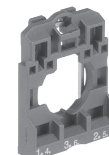
Part Number	Type of Contact
ZBE101	Normally Open (NO)
ZBE102	Normally Closed (NC)

Note: Plastic Mounting Ring ZB5AZ009 to be used with ZB5 Plastic Operating Heads.

Metal Mounting Ring ZB4BZ009 to be used with ZB4 Metal Operating Heads.



Metal: ZB4BZ009



Plastic: ZB5AZ009

Mounting Ring for Valve Bodies, Switch Bodies and Operating Heads

To make up a complete push button with one to three switching elements with 5/32" instant connections, use this mounting block and select the operating heads and bodies in this Section.

Part Number	Description
ZB4BZ009	Metal Mounting Ring
ZB5AZ009	Plastic Mounting Ring

To make up a complete selector switch with one or two switching elements with 5/32" instant connections, use this mounting block and select the operating heads and bodies in this Section.

Part Number	Description
ZB4BZ009	Metal Mounting Ring
ZB5AZ009	Plastic Mounting Ring

Note: To release push button from mounting ring, pull lever on top of mounting ring up and remove push button operator. To assemble push button operator to mounting ring, align arrows and snap into place.

BOLD ITEMS ARE MOST POPULAR.

Functionality Explanation

Fluid Power		Universal Description	Electrical	
Function	Symbol		Function	Symbol
Normally Closed (N.C.)		Normally Non-Passing (NNP)	Normally Open (N.O.)	
			Normally Closed (N.C.)	
Normally Open (N.O.)		Normally Passing (NP)		

Type of Switching: Universal 3-Way: Valve can be connected either as NP or NNP as required by connecting the primary air supply to port 1 or port 3.

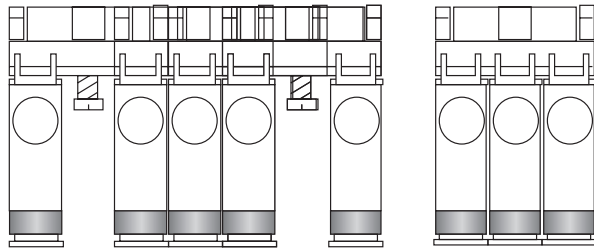


- NNP: Normally Non-Passing.
- NP: Normally Passing.
- NNP + NNP: Double Switch Body, Both Normally Non-Passing.
- NNP + NP: Normally Non passing and Normally-Passing.
- NP + NP: Both Normally Passing.

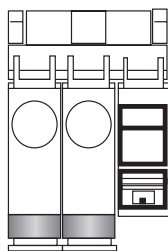
Combination of Output Devices on a Single Mounting Block

Up to 3 output devices (valves or electrical contacts) can be mounted side by side on 1 mounting block.

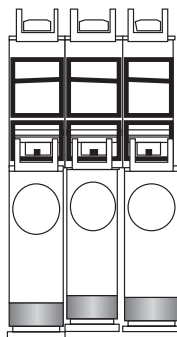
Note: The central position can only be activated by push button heads.



Electrical Contacts and Valves can be Combined Either Side by Side, or by Mounting the Valve on the Back of the Electrical Contact.

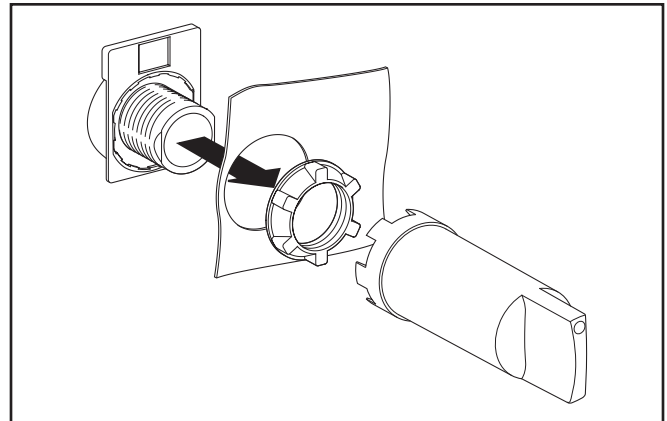


Side by Side Combination

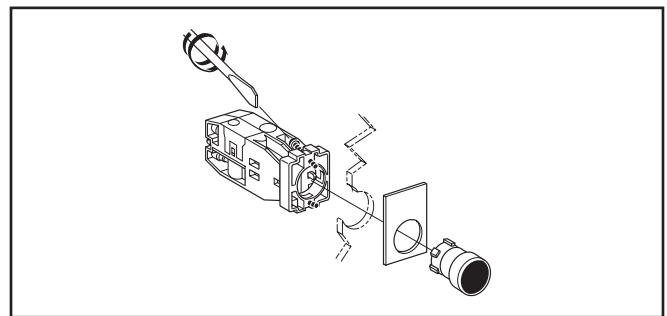


Combination by Mounting Valves On the Back of the Electrical Contact

Assembling Output Devices and Heads on ZB5 Series Mounting Block



Replacement Old Style Mounting



A

Basic Features

Push Buttons

Selector Switches

Valve Bodies & Accessories

Visual Indicators

Foot Pedal Operated Switches

Two Hand Controls

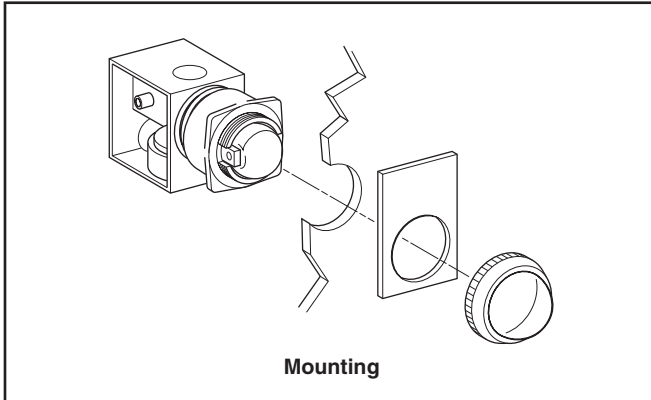
A
Basic Features
Push Buttons
Selector Switches
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Visual Indicators
Foot Pedal Operated Switches
Two Hand Controls

With 5/32" Instant Connections

22mm Visual Indicators



PXVF131



Black Plastic Bezel		
Part Number "ON" Indicator	Part Number "OFF" Indicator	Color
PXVF131	PXVF1213	Green
PXVF141	PXVF1214	Red
PXVF151	PXVF1215	Yellow
PXVF161	PXVF1216	Blue
PXVF111	PXVF1211	White

Notes:

- The Pneumatic Indicators are black in one position and colored in the other. The colored position corresponds either to the presence of a pressure ("ON" Indicator) or the absence of pressure ("OFF" Indicator).
- For Legend Plates, see page F9.

Specifications

Air Quality –
 Standard Shop Air, Lubricated or Dry, 40µm Filtration

Materials –
 Body Polyamide
 Operating Head Zinc Alloy & Plastic

Number of Operations with Dry Air at 90 PSI (6 bar) and 68°F (20°C) - Frequency 1 Hz 1 million Operations
 Mushroom Head 300,000 Operations

Operating Positions All Positions

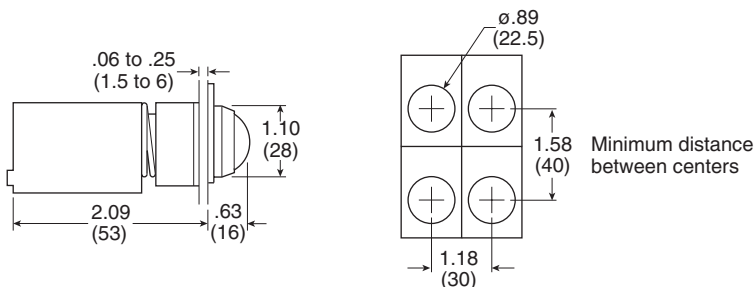
Operating Pressure 15 to 115 PSIG (1 to 8 bar)

Ports –
 Standard: 5/32" Instant for Semi- Rigid Nylon or Polyurethane Tube
 10-32 UNF Available.

Temperature –
 Operating 32°F to 122°F (0°C to + 50°C)
 Storage -22°F to 140°F (-30°C to +60°C)

Dimensions

PXVF1••



Pre-Assembled Two-Hand Control Enclosure

Features

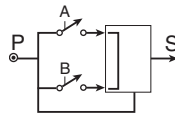
- The pre-assembled two-hand control enclosure occupies both hands of an operator by requiring nearly simultaneous operation of two pushbuttons
- Poppet – snap-acting (no spools)
- Same air as in cylinders – Filtration: 40 micron
- No lubrication required



PXP-C111-A

Part Number	Connections
PXP-C111-A	5/32" Instant

Operation



- Output “S” will appear only if “A” and “B” are simultaneously operated (within .5 seconds or less of each other).
- If the operator actuates only one pushbutton, either “A” or “B”, or if both “A” and “B” are actuated but at an interval greater than .5 seconds, output “S” will not appear.
- Output “S” is regenerated by supply “P”. Output “S” will therefore disappear if supply “P” is cut off.
- Output “S” will disappear if either “A” or “B” is released.
- If output “S” disappears for any reason, “A” and “B” must be nearly simultaneously actuated to again provide output “S”.
- Since output “S” is regenerated it appears sharply, at full force (snap-acting), and is quickly exhausted upon deactivation. In addition the module is not affected by the length or diameter of tubing used for output “S”.

General Characteristics

Operating Pressure 40 to 120 PSI (3 to 8 bar)

Permissible Fluids –

Air or neutral gas 40 micron filtration, lubricated or dry

Flow at 90 PSI (6 bar) 7 SCFM (200 l/mn ANR)

Operating Temperature -5°F to 140°F (-15°C to 60°C)
 Below 40°F (5°C), an air dryer is required

Storage Temperature -40°F to 160°F (-40°C to 70°C)

Number of operations with dry air at 90 PSI (6 bar), 68°F (20°C), frequency 1 Hz 1 Million Operations

Vibration resistance –

Conforms to section 19-2 of bureau Véritas regulations.... (November 1987)

Materials –

Body..... Glass Filled Nylon

Operating Head Zinc Alloy and Plastic

Connections:..... 5/32" instant

Mounting Approvals:

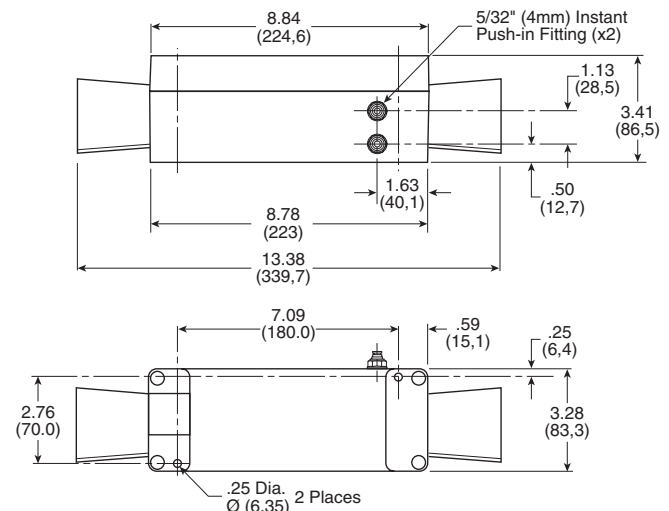
- In accordance with European Standard EN 574 - September 1996
- Conforms to the model that has obtained CE Type Test Certificate No. 02526 520 4631 0397

WARNING

These devices should **NOT** be used in any application involving rotary clutch presses. Two hand control modules do not of themselves insure the safety of any machine. Users and original equipment manufacturers are responsible for making sure that installations meet all relevant safety regulations.

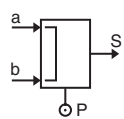
Dimensions

Inches (mm)



Control Module & Repair Parts

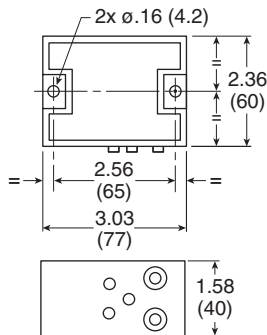
Two-Hand Control Module



PXPA11

Part Number	Connections
PXPA11	5/32" Instant

Dimensions



PXPA11

Specifications

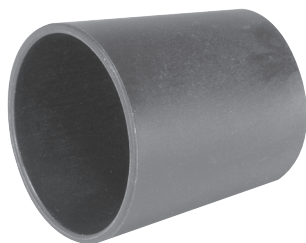
Air Quality –
 Standard Shop Air, Lubricated or Dry, 40µm Filtration
 Flow at 90 PSI (6 bar) in SCFM (l/mn ANR) 7 (200)
 Materials –
 Body Polyamide
 Operating Head Zinc Alloy & Plastic
 Nominal Bore Ø in Inches (mm) 7/64" (2.5)
 Number of Operations with Dry Air at 90 PSI (6 bar) and
 68°F (20°C) - Frequency 1 Hz 1 million Operations
 Operating Positions All Positions
 Operating Pressure 40 to 115 PSIG (3 to 8 bar)
 Ports –
 5/32" Instant for Semi-Rigid Nylon or Polyurethane Tube
 Temperature –
 Operating 32°F to 122°F (0°C to + 50°C)
 Storage -22°F to 140°F (-30°C to + 60°C)
 Vibration resistance:
 Conforms to section 19-2 of bureau Véritas regulations
 (November 1987)

WARNING

These devices should **NOT** be used in any application involving rotary clutch presses. Two hand control modules do not of themselves insure the safety of any machine. Users and original equipment manufacturers are responsible for making sure that installations meet all relevant safety regulations.

Notes: These two-hand control modules provide an output signal upon nearly concurrent operation of two pushbuttons.

Two-Hand Control Module Guard



PPRL15

Part Number	Base Component
PPRL15	PXPC111

Two Hand Repair Parts

Part Number	Quantity Required	Description
PXPA11	1	Control Module
PXBB3111B	2	Valve Body & Mounting Ring
ZB4BR*	2	Push Button
PPRL15	2	Control Module Guard

* 2 = Black, 3 = Green, 4 = Red

LV & EZ Series

Lockout Valves,
3-Way, 3-Port, 2-Position

B

LV Series

EZ Series

Section B






"LV" & "EZ" Series.....	B2	"EZ" Series	
"LV" Series		Basic Features	B7
Basic Features	B3	Applications.....	B7
Applications.....	B3	Mounting	B7
Mounting	B3	Dimensions	B7
Ordering Information	B4	Operation	B8
Dimensions		Ordering Information	B8
Compact.....	B5	Flow	B9
Standard	B5	"LV" & "EZ" Series Accessories	B9
High Flow.....	B5		
Stainless Steel	B6		

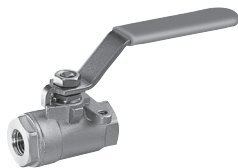
Bold text part numbers are standard.
Standard text part numbers may have longer lead times.

B
 LV Series
 EZ Series

Parker is protecting your most valuable assets...

 <p>Standard 190.147</p>	<ul style="list-style-type: none"> • This applies to the servicing and maintenance of a machine or equipment. • Any new, replacement, repair, or renovation to a machine must include an energy isolation device that can accept a lock out device. • Lock out devices should not be used for any other purposes • Verification of energy isolation is required
 <p>Standard Z244</p>	<ul style="list-style-type: none"> • This applies to all machines • Lockout / tagout is the primary method of hazardous energy control • Machines shall be designed, manufactured, supplied, and installed with energy isolating devices
	<ul style="list-style-type: none"> • B11.0 applies to a broad range of machines, B11.TR6 is specific to machine tools, and B155.1 is specific to packaging and converting machines • Energy isolating device shall: <ul style="list-style-type: none"> – Be capable of being locked in the OFF position only – Be easy to operate – Have an exhaust port equal or greater than its supply port – Have a pressure indicator that is visible to an operator to verify line is relieved of pressure

...By offering the best in pneumatic safety for machine maintenance:



Traditional Ball Valve

- Not a dedicated energy isolation device
- Not a full exhaust port
- No verification of line exhaust
- Can be locked ON
- Not easily identifiable



Parker Solution

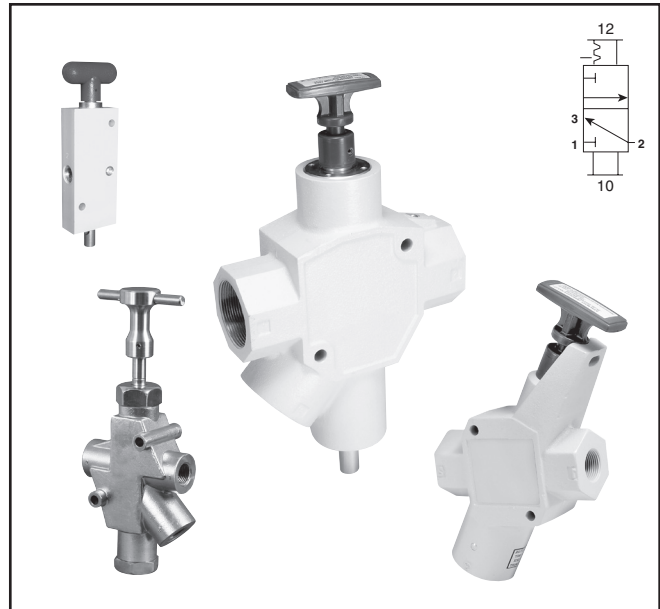
- ✓ Dedicated energy isolation device
- ✓ Full exhaust port
- ✓ Verification of line exhaust
- ✓ Only lockable in OFF position
- ✓ Easily identifiable

LV Series

Features

Lockout valves are installed in pneumatic drop legs, or individual pneumatic control lines. In accordance with OSHA procedures, lockout valves are used during maintenance and service procedures of pneumatically (air) operated equipment.

- Used for compliance with OSHA 29 CFR part 1910
- 1/4" to 2" pipe sizes. NPT or BSPP
- Yellow cast aluminum body with red handle or stainless steel (NACE MR0175 / ISO 15156)
- Inline or surface mountable
- Built in port for pressure verification to meet ANSI B11 and PMMI B155 requirements
- Fluorocarbon slipper seals for easy shifting, even after long periods of inactivity



Material specifications

Description	LV	LVSS
Body:	Cast aluminum alloy	Stainless steel
Handle:	Plastic	Stainless steel
Spool:	Aluminum	Stainless steel
Seals:	Carboxylated nitrile	Fluorocarbon
Detent spring:	Stainless steel	Stainless steel
Grease:	Magnalube G [†]	Magnalube G [†]

[†] Trademark Magnalube

Operating information

Operating pressure:	LV	LVSS
Compact	15 to 145 PSIG	–
Standard	15 to 300 PSIG	15 to 300 PSIG
High flow	15 to 300 PSIG	–
Operating temperature:	40°F to 175°F	30°F to 175°F
Operating media:	Clean, dry, compressed air (5 micron)	

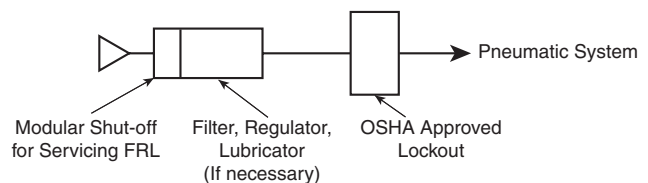
Applications

Lockout valves are installed in pneumatic drop legs, or individual pneumatic control lines (see Figure 1). In accordance with OSHA procedures, lockout valves are used during maintenance and service procedures of pneumatically (air) operated equipment. Prior to servicing, the red handle is pressed inward, blocking pressure and relieving all downstream air pressure. A padlock is installed through the locking hasp, Preventing accidental actuation during the maintenance procedure. Following maintenance, the padlock is removed and the red handle is pulled outward, returning air pressure to the system. (For complete Lockout / Tagout procedures, consult OSHA Standard 29 CFR Part 1910 in U.S. Federal Register/Vol. 54 No. 169, Friday, September 1, 1989 / Page 36644.)

Mounting

Valves can be inline mounted or surface mounted using the two mounting holes provided in the valve body. Mount valves in plain view with the handle oriented for accessibility.

Placement of Lockout Device



Basic Features

**LV Series Valves
Lockout Valves**

B

LV Series

EZ Series

Compact



Port in / out	Port exhaust	Wt (lb)	Part number *
1/4	3/8	0.9	LV2N3B
3/8	3/8	0.9	LV3N3B

* For BSPP ports, change 4th digit from "N" to "B"

High Flow



Port in / out	Port exhaust	Wt (lb)	Part number *
1-1/2	2	8.2	LVBNCB
2	2	8.2	LVCNCB

* For BSPP ports, change 4th digit from "N" to "B"

Standard



Port in / out	Port exhaust	Wt (lb)	Part number *
3/8	3/4	2.0	LV3N6B
1/2	3/4	2.0	LV4N6B
3/4	3/4	2.0	LV6N6B
3/4	1-1/4	3.2	LV6NAB
1	1-1/4	3.2	LV8NAB
1-1/4	1-1/4	3.2	LVANAB

* For BSPP ports, change 4th digit from "N" to "B"

Stainless Steel



Port in / out	Port exhaust	Wt (lb)	Part number *
1/4	1/4	3.8	LV2N2BSS
3/8	1/2	6.0	LV3N4BSS
1/2	1/2	6.0	LV4N4BSS
3/4	1	13	LV6N8BSS
1	1	13	LV8N8BSS
1-1/2	2	35	LVBNCBSS
2	2	35	LVCNCBSS

* For BSPP ports, change 4th digit from "N" to "B"

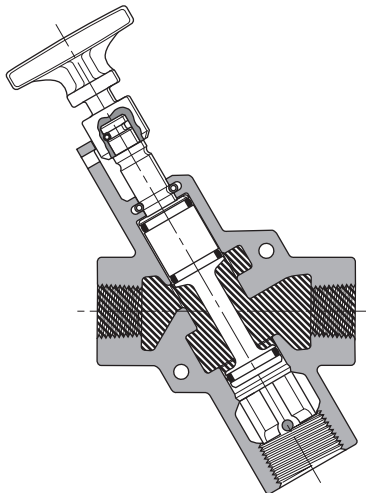
Operation

Normal Machine Operation – Valve Open

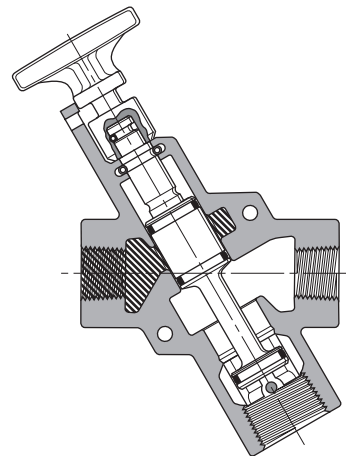
With the handle pulled outward. Inlet Port 1 is open to outlet Port 2. Exhaust Port 3 is blocked.

Lockout Operation – Valve Closed

With the handle pushed inward. Inlet Port 1 is blocked. Outlet Port 2 is open to Exhaust Port 3.



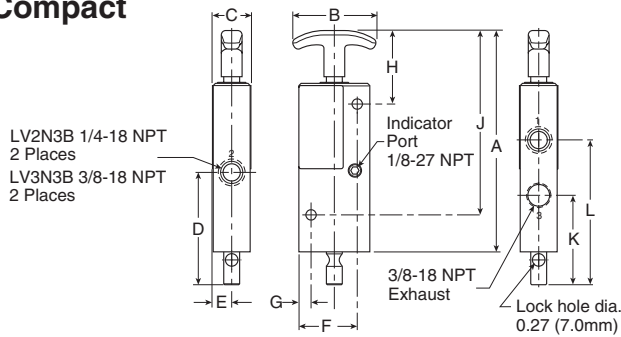
LV Series Shown Open



LV Series Shown Closed

LV Dimensions

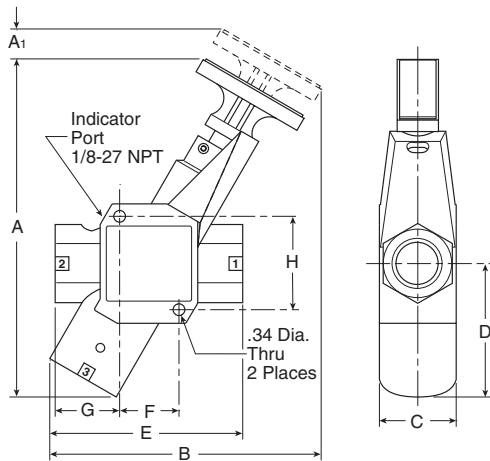
Compact



Compact LV Series, 3/8" Exhaust Ports Inches (mm)

A 6.50 (165)	B 2.25 (57)	C 1.05 (27)	D 3.04 (77)	E .51 (13)	F 1.58 (40)
G .33 (8)	H 1.99 (51)	J 4.99 (127)	K 2.42 (62)	L 3.92 (100)	

Standard



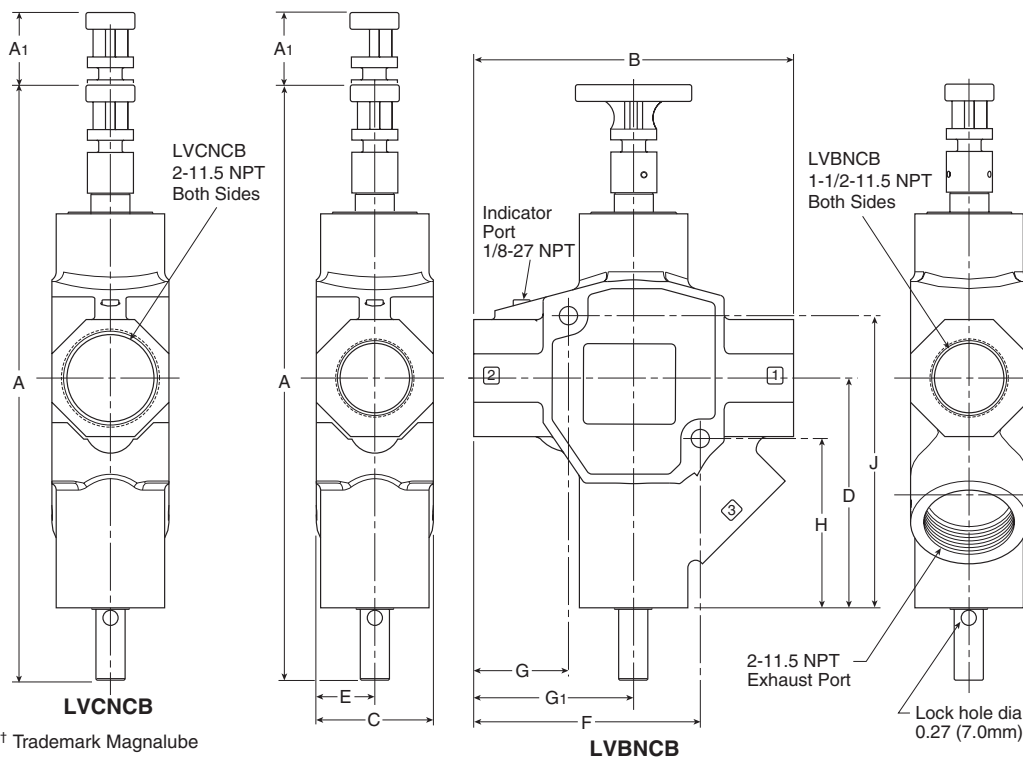
Standard LV Series, 3/4" Exhaust Port Inches (mm)

A 8.32 (211)	A1 0.64 (16)	B 6.60 (168)	C 2.00 (51)	D 3.06 (78)	E 4.24 (108)
F 1.32 (111)	G 1.56 (40)	H 2.21 (56)			

Standard LV Series, 1-1/4" Exhaust Port Inches (mm)

A 9.91 (252)	A1 0.85 (22)	B 7.95 (202)	C 2.25 (57)	D 3.91 (99)	E 5.65 (144)
F 1.74 (44)	G 1.89 (48)	H 2.74 (70)			

High Flow



High Flow LV Series, 2" Exhaust Ports Inches (mm)

A 14.82 (376)	A1 1.87 (47)
B 8.20 (208)	C 3.00 (76)
D 5.89 (150)	E 1.50 (38)
F 5.81 (148)	G 2.43 (62)
G1 4.10 (104)	H 4.34 (110)
J 7.49 (190)	

† Trademark Magnalube

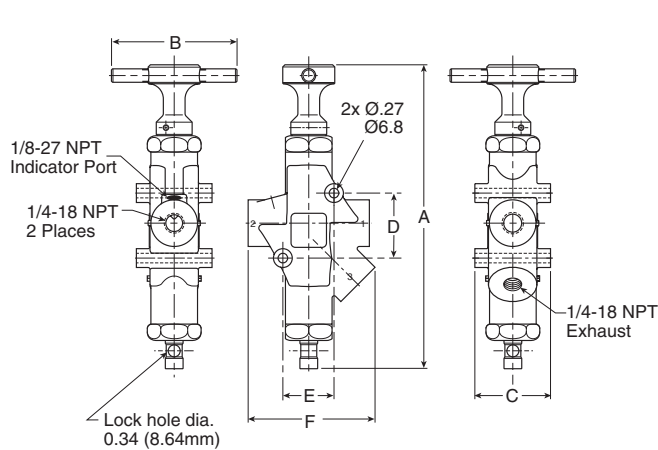
B
LV Series
EZ Series

Stainless Steel Dimensions

B

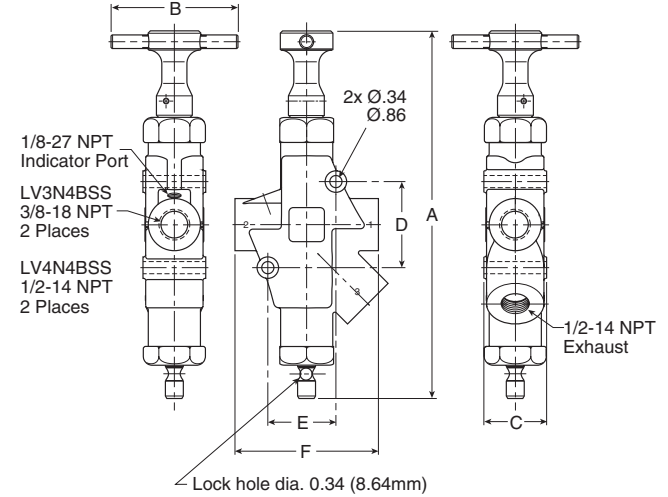
LV Series

EZ Series



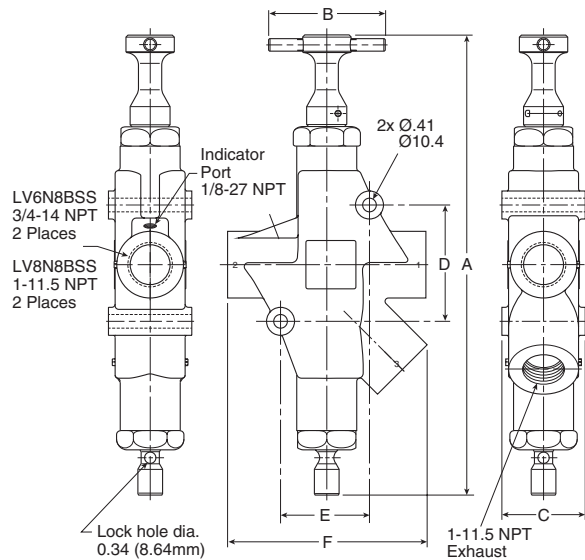
Stainless Steel LV Series, 1/4" Exhaust Port
inches (mm)

A	B	C	D	E	F
8.47 (215)	3.50 (89)	2.11 (54)	1.81 (46)	1.43 (36)	3.54 (90)



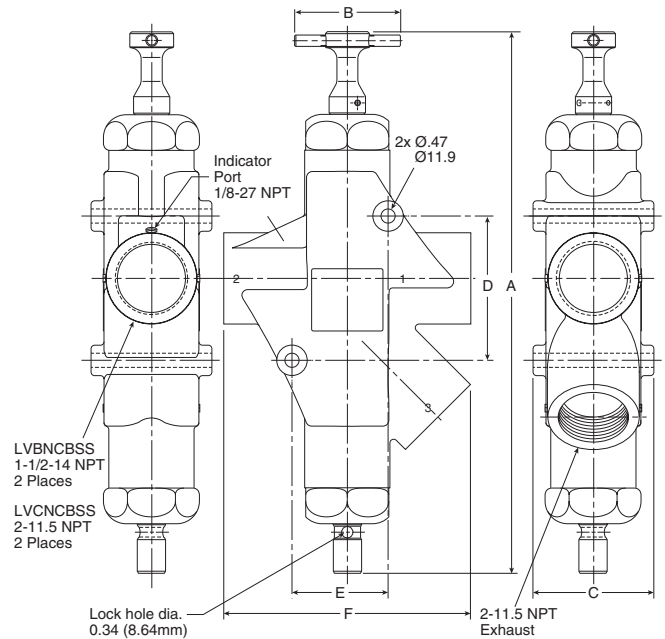
Stainless Steel LV Series, 1/2" Exhaust Port
inches (mm)

A	B	C	D	E	F
10.24 (260)	3.50 (89)	1.75 (45)	2.40 (61)	1.90 (48)	4.00 (102)



Stainless Steel LV Series, 1" Exhaust Port
inches (mm)

A	B	C	D	E	F
13.80 (351)	3.50 (89)	2.50 (64)	3.49 (89)	2.67 (68)	5.99 (152)



Stainless Steel LV Series, 2" Exhaust Port
inches (mm)

A	B	C	D	E	F
17.92 (455)	3.50 (89)	4.00 (102)	4.77 (121)	3.18 (81)	8.16 (207)

EZ Series

Features

- Combines lockout and soft-start functions in a single unit
- Used in systems for compliance with OSHA standard 29 CFR part 1910
- 3/8 Inch to 1-1/4 inch pipe sizes
- Cv's from 3.7 To 13.7
- 3/4 and 1-1/4 inch: exhaust ports available
- Exhaust port threaded for installation of silencer or line for remote exhausting
- Inline or surface mountable
- Yellow cast aluminum body with red handle. Blue dot on body indicates EZ Series valve
- Fluorocarbon slipper seals for easy shifting, even after long periods of inactivity

Material specifications

Description	EZ
Body:	Cast aluminum alloy
Handle:	Plastic
Spool:	Aluminum
Seals:	Carboxylated nitrile
Detent spring:	Stainless steel
Grease:	Magnalube G [†]

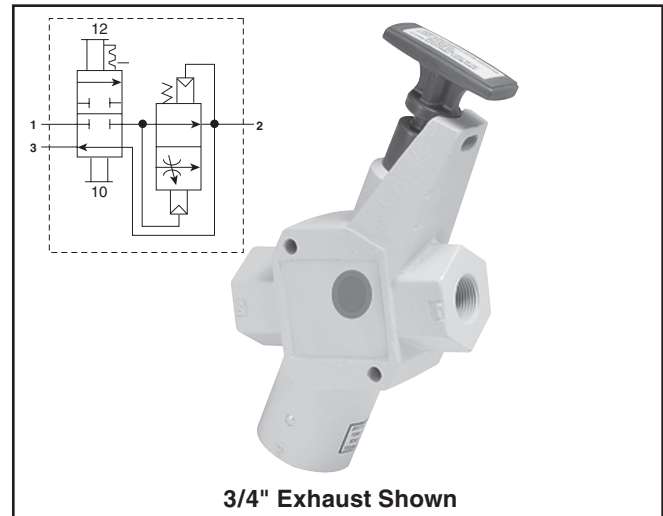
[†] Trademark Magnalube

Applications

EZ valves are installed in pneumatic drop legs, or individual pneumatic control lines (see Figure 1). In accordance with OSHA procedures, EZ valves are used during maintenance and service procedures of pneumatically (air) operated equipment. Prior to servicing, the red handle is pressed inward, blocking pressure and relieving all downstream air pressure. A padlock is installed through the locking hasp, preventing accidental actuation during the maintenance procedure. Following maintenance, the padlock is removed and the red handle is pulled outward, gradually returning air pressure to the system. (For complete Lockout / Tagout procedures, consult OSHA Standard 29 CFR Part 1910 in U.S. Federal Register/ Vol. 54 No. 169, Friday, September 1, 1989 / Page 36644.)

Mounting

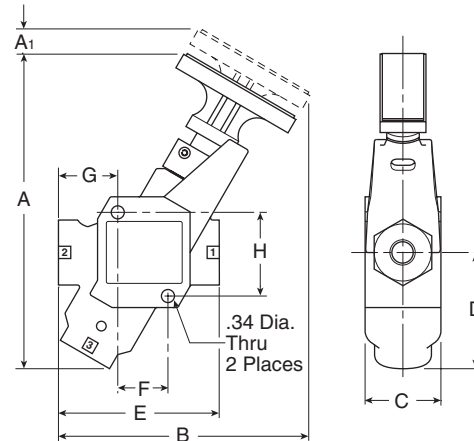
Valves can be inline mounted or surface mounted using the two 11/32" mounting holes provided in the valve body. Mount valves in plain view with the handle oriented for accessibility.



Operating information

Operating pressure:	15 to 300 PSIG
Operating temperature:	40°F to 175°F
Operating media:	Clean, dry, compressed air (5 micron)

EZ Dimensions



EZ Series, 3/4" Exhaust Port Inches (mm)

A	A1	B	C	D	E
8.32 (211)	0.64 (16)	6.60 (168)	2.00 (51)	3.06 (78)	4.24 (108)
F	G	H			
1.32 (111)	1.56 (40)	2.21 (56)			

EZ Series, 1-1/4" Exhaust Port Inches (mm)

A	A1	B	C	D	E
9.91 (252)	0.85 (22)	7.95 (202)	2.25 (57)	3.91 (99)	5.65 (144)
F	G	H			
1.74 (44)	1.89 (48)	2.74 (70)			

Basic Features

EZ Series



Port in / out	Port exhaust	Wt (lb)	Part Number *
3/8	3/4	2.1	EZ03NB6
1/2	3/4	2.1	EZ04NB6
3/4	3/4	2.1	EZ06NB6
3/4	1-1/4	3.2	EZ06NBA
1	1-1/4	3.2	EZ08NBA
1-1/4	1-1/4	3.2	EZ0ANBA

* For BSPP ports, change 5th digit from "N" to "B"

B

LV Series

EZ Series

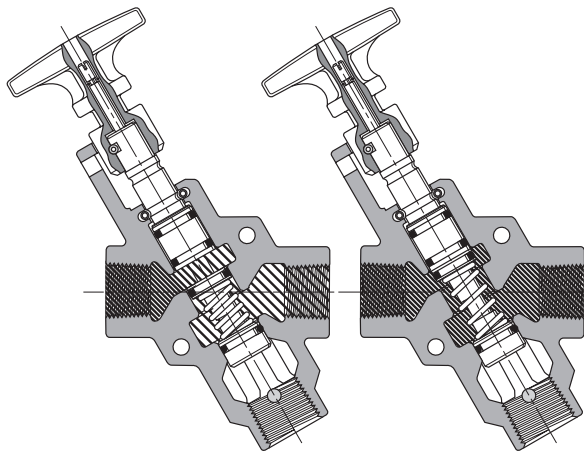
Operation

Normal Machine Operation – Valve Open

When the red handle is pulled outward, the adjustable needle valve (accessed through the top of the handle) setting determines the rate of pressure buildup. When downstream pressure reaches the full flow described in the specifications below, Inlet Port 1 is open to outlet Port 2. Exhaust Port 3 is blocked.

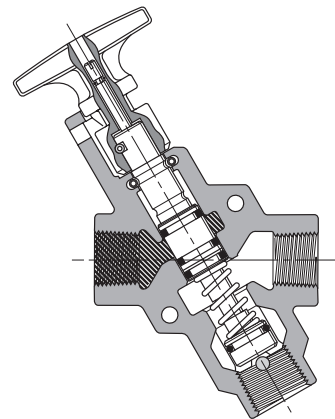
Lockout Operation – Valve Closed

When the red handle is pushed inward, the Inlet Port 1 is blocked. Downstream air is exhausted through Exhaust Port 3.



Open
Pressure Building Up

Open
Full Flow



Closed

Technical Information

Flow

Compact LV Series Part Number	Port In / Out	scfm In / Out	Port Exh	scfm Exh
LV2N3B	1/4	41.8	3/8	40.7
LV3N3B	3/8	60.7	3/8	60.7

Standard LV Series Part Number	Port In / Out	scfm In / Out	Port Exh	scfm Exh
LV3N6B	3/8	107.7	3/4	81.1
LV4N6B	1/2	161.4	3/4	90.9
LV6N6B	3/4	187.7	3/4	93.2
LV6NAB	3/4	297.7	1-1/4	204
LV8NAB	1	375	1-1/4	216
LVANAB	1-1/4	436.4	1-1/4	221

High FLOW LV Series Part Number	Port In / Out	scfm In / Out	Port Exh	scfm Exh
LVBNCB	1-1/2	761.4	2	1156
LVCNCB	2	918.2	2	1186

EZ Series Part Number	Port In / Out	scfm In / Out	Port Exh	scfm Exh
EZ03NB6	3/8	136.4	3/4	181
EZ04NB6	1/2	161.4	3/4	189
EZ06NB6	3/4	181.9	3/4	216
EZ06NBA	3/4	272.7	1-1/4	248
EZ08NBA	1	311.4	1-1/4	273
EZOANBA	1-1/4	368.2	1-1/4	291

Stainless LV Series Part Number	Port In / Out	scfm In / Out	Port Exh	scfm Exh
LV2N2BSS	1/4	48.6	1/4	47.2
LV3N4BSS	3/8	131.6	1/2	142
LV4N4BSS	1/2	131.6	1/2	142
LV6N8BSS	3/4	325	1	386
LV8N8BSS	1	325	1	386
LVBNCBSS	1-1/2	889	2	1023
LVCNCBSS	2	889	2	1023

NOTE: Exhaust flow rates calculated using inlet pressure 100 psig (6.7 bar), pressure drop 5 psi (0.34 bar), air temp 68°F (20°C), and 36% relative humidity.

LV / EZ Accessories

Corrosion resistant mufflers for harsh environments



Port Size	Construction	Threads*	Dimensions In. (mm)		Part Number
			Width	Length	
1/4	Stainless steel	Male	0.56 (14.2)	1.75 (44.5)	5500A2004
1/2	Stainless steel	Male	0.87 (22.1)	2.75 (69.7)	5500A4004
1	Stainless steel	Male	1.31 (33.3)	3.87 (98.3)	5500A6004
2	Nickel plated	Male	2.37 (60.2)	5.50 (139.7)	5500A9004

* NPT threads only

High Flow Silencers



Part Number *	ES25MC	ES37MC	ES50MC	ES75MC	ES100MC	ES125MC	ES150MC	ES200MC
Pipe size	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2
Flow (scfm)	129	219	549	893	1013	1486	1580	1580
Hex In. (mm)	0.63 (16)	1.00 (25)	1.00 (25)	1.62 (41)	1.62 (41)	—	—	2.99 (76)
Length In. (mm)	1.85 (47)	3.31 (84)	3.31 (84)	4.56 (116)	4.56 (116)	5.69 (145)	5.69 (145)	7.68 (195)

* NPT ports standard, for BSPT ports, add a "B" after the "S"

Pop-up Pressure Indicator



Brass – Part # 988A30 – Can be used on all LV or EZ series to provide visual verification of line exhaust



Stainless – Part# 1155H30 – Can be used on SS LV series to provide visual verification of line exhaust

Pressure Switch



- Part # PPS1-2C3-RHM (DIN 9.4mm connector)
- Part # PPS1-2C3-RWL (18" leads)
- Signal verification of line exhaust
- Field adjustable set point

Notes

B

LV Series

EZ Series

Integrated Fittings

Section C



Product Index

Compact Flow Controls

Miniature Flow Controls

Swivel Flow Controls

Plug-In Flow Controls

In-Line Flow Controls

Metal Flow Controls




































Check Valves
















Blocking Valves

Threshold Sensors

Product Index	C2-C3	In-line Flow Control Valves	C12-C15
Compact Flow Control Valves	C4-C5	Compact Metal Flow Control Valves.....	C16-C17
Miniature Flow Control Valves	C6-C7	Check Valves	C18-C20
Swivel Outlet Flow Control Valves.....	C8-C9	Blocking Flow Controls Valves.....	C22-C23
Plug-in Flow Control Valves.....	C10-C11	Threshold Sensor	C24-C25

	Product Index
Compact Flow Controls	Compact Flow Controls
Miniature Flow Controls	Miniature Flow Controls
Swivel Flow Controls	Swivel Flow Controls
Plug-In Flow Controls	Plug-In Flow Controls
In-Line Flow Controls	In-Line Flow Controls
Metal Flow Controls	Metal Flow Controls
Check Valves	Check Valves
Blocking Valves	Blocking Valves
Threshold Sensors	Threshold Sensors

Compact Flow Control Valves	FCC731 Meter Out  Page C4	FCC731 Meter Out - BSPP  Page C4	FCCB731 Bi-Directional Flow Control  Page C5	FCCB731 Bi-directional Flow Control - BSPP  Page C5	FCKC731 Knobless Meter Out Flow Control  Page C5
	FCKC731 Knobless Flow Control - BSPP  Page C5	FCKCB731 Knobless Bi-directional Flow Control - BSPP  Page C5	Miniature Flow Control Valves	FCM731 Meter Out Flow Control  Page C7	FCM731 Flow Control - BSPP  Page C7
FCMK731 Knobless Mini Meter Out Flow Control  Page C7	Swivel Outlet Flow Control Valves	FCCS731 Compact Swivel Outlet Flow Control  Page C9		FCMS731 Mini Swivel Outlet Flow Control  Page C9	FCMS731 Miniature Swivel Outlet - BSPP  Page C9
Plug-In Flow Control Valves		FCMSP731 Mini Flow Control  Page C11	FCMSP701 Miniature Flow Control  Page C11	FCCSP731 Compact Flow Control  Page C11	In-Line Flow Control Valves
	FCB832 Bi-directional Flow Control  Page C13	FC832 Flow Control  Page C13	FCB832 Bi-directional Flow Control  Page C13	FCPM832 Panel Mountable Flow Control  Page C13	
337 Series Micrometer Flow Control Valves  Page C14	337 Series Micrometer Flow Control Valves - BSPP  Page C14	338 Series Bi-directional Flow Control Valves  Page C14	338 Series Bi-directional Flow Control Valves - BSPP  Page C14	3250 Series Flow Control Valves  Page C15	3250 Series Flow Control Valves - BSPP  Page C15
3250 Series Flow Control Valves  Page C15	3250 Series Flow Control Valves - BSPP  Page C15	Compact Metal Flow Control Valves	3251 Series Right Angle Flow Control Valves  Page C17	FC705 Push-to-Connect Metal Flow Control  Page C17	FC701 Push-to-Connect Metal Flow Control - BSPP  Page C17
FC708 Threaded Port Meter Out Flow Control  Page C17	FC702 Threaded Port Metal Flow Control - BSPP  Page C17		Flow Control Check Valves	32PLCK In-Line Check Valve  Page C19	32PLCK In-Line Check Valve  Page C19

W68PLCKI Male Check Valve Meter In  Page C19	68PLCK Male Check Valve Meter Out - BSPP  Page C19	68PLCKI Male Check Valve Meter In - BSPP  Page C19	VC Check Valve  Page C19	339 Series Check Valve  Page C20	339 Series Check Valve - BSPP  Page C20
3047 Series Check Valve  Page C20	Blocking Flow Control Valves	FC601 Push-to-Connect Lock Out Valves  Page C23	FC601 Push-to-Connect Lock-Out Valve - BSPP  Page C23	FC602 Threaded Port Lock Out Valves  Page C23	FC608 Threaded Port Lock-Out Valve - BSPP  Page C23
Threshold Sensor		PSBJ731 Pneumatic - 5/32 Pilot  Page C25	PSBJ731 Pneumatic - 4mm Pilot  Page C25	PSPJ731 Pneumatic - 10-32 Pilot  Page C25	PSBJ708 Pneumatic - M5 Pilot  Page C25

C
Product Index
Compact Flow Controls
Miniature Flow Controls
Swivel Flow Controls
Plug-In Flow Controls
In-Line Flow Controls
Metal Flow Controls
Check Valves
Blocking Valves
Threshold Sensors

Features

Materials Of Construction	
Body (Depending upon the Model):	<ul style="list-style-type: none"> • Glass reinforced nylon 6.6 • Brass
Gripping Ring:	Stainless Steel
Adjustment Screws	Nickel-plated brass
Locking Nut:	Nickel-plated brass
Base:	Nickel-plated brass



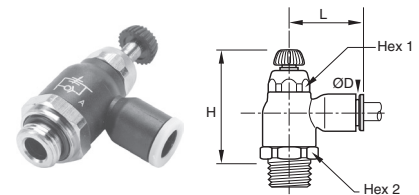
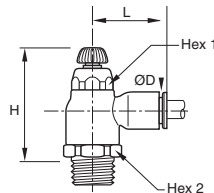
Nomenclature	
Example: FCC731-4-2	Attribute:
FC	Flow control
C	Compact
7	Right angle
3	Nylon body
1	Tube x Pipe
4	1/4 Tube O.D.
2	1/8 Pipe thread

Applicable Tube	
Tube O.D.	1/8, 5/32, 1/4, 3/8
Tube O.D. (mm)	4, 6, 8, 10, 12

Specifications	
Pressure Range:	15 to 145 PSI
Temperature Ranges:	30° to 160°F
Working Fluid:	Compressed air

Compact flow control regulators ensure excellent performance of flow and are perfectly suited for reduced spaces due to their small size. The sensitivity of the adjustment screw provides very precise air flow control and regulation. A locking nut guarantees stability of adjustment against vibration tampering of the flow setting.

- Product Index
- Compact Flow Controls
- Miniature Flow Controls
- Swivel Flow Controls
- Plug-in Flow Controls
- In-Line Flow Controls
- Metal Flow Controls
- Check Valves
- Blocking Valves
- Threshold Sensors

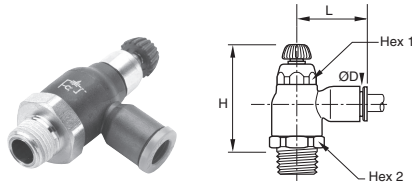


FCC731 Compact Meter Out

Part No.	Tube Size (In)	NPT	Hex 1 (In)	Hex 2 (In)	H Open	H Closed	L
FCC731-5/32-2	5/32	1/8	0.63	0.39	1.67	1.44	0.85
FCC731-5/32-4	5/32	1/4	0.63	0.39	1.67	1.44	0.85
FCC731-4-2	1/4	1/8	0.63	0.39	1.67	1.44	0.85
FCC731-4-4	1/4	1/4	0.63	0.39	1.67	1.44	0.85
FCC731-6-4	3/8	1/4	0.91	0.67	2.03	1.71	1.22
FCC731-6-6	3/8	3/8	0.91	0.67	2.03	1.71	1.22

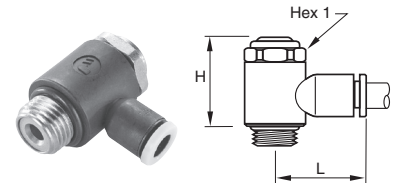
FCC731 Compact Meter Out - BSPP

Part No.	Tube Size (mm)	BSPT	Hex 1 (mm)	Hex 2 (mm)	H Closed	H Open	L
FCC731-4M-2G	4	1/8	10	16	38.0	44.0	22.0
FCC731-6M-2G	6	1/8	10	16	38.0	44.0	22.0
FCC731-6M-4G	6	1/4	10	16	36.5	42.5	22.0
FCC731-8M-2G	8	1/8	14	19	41.5	48.0	28.0
FCC731-8M-4G	8	1/4	14	19	41.5	48.0	28.0
FCC731-8M-6G	8	3/8	14	19	41.5	48.0	28.0
FCC731-10M-4G	10	1/4	17	23	45.5	53.5	31.5
FCC731-10M-6G	10	3/8	17	23	45.5	54.0	31.5
FCC731-12M-6G	12	3/8	17	23	45.5	54.0	35.0
FCC731-12M-8G	12	1/2	17	24	45.5	54.0	35.0



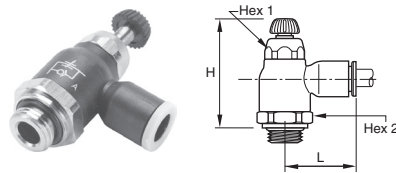
FCCB731 Compact Bi-Directional Flow Control

Part No.	Tube Size (In)	NPT	Hex 1 (In)	Hex 2 (In)	H Open	H Closed	L
FCCB731-5/32-2	5/32	1/8	0.63	0.39	1.67	1.44	0.85
FCCB731-4-2	1/4	1/8	0.63	0.39	1.67	1.44	0.85
FCCB731-4-4	1/4	1/4	0.63	0.39	1.67	1.44	0.85



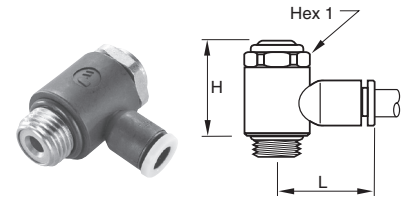
FCKC731 Knobless Compact Flow Control - BSPP

Part No.	Tube Size (mm)	BSPP / M5	Hex 1 (mm)	H	L
FCKC731-4M-M5	4	M5x0.8	8.0	17.5	17.0
FCKC731-4M-2G	4	1/8	13.0	25.0	19.0
FCKC731-6M-M5	6	M5x0.8	8.0	17.5	19.0
FCKC731-6M-2G	6	1/8	13.0	25.0	21.0
FCKC731-6M-4G	6	1/4	17.0	26.5	22.0
FCKC731-8M-2G	8	1/8	13.0	25.0	26.0
FCKC731-8M-4G	8	1/4	17.0	26.5	27.0
FCKC731-8M-6G	8	3/8	20.0	37.5	29.0
FCKC731-10M-4G	10	1/4	17.0	26.5	29.0
FCKC731-10M-6G	10	3/8	20.0	37.5	31.0
FCKC731-10M-8G	10	1/2	23.0	43.0	37.0
FCKC731-12M-6G	12	3/8	20.0	37.5	6.8
FCKC731-12M-8G	12	1/2	23.0	43.0	37.0



FCCB731 Compact Bi-directional Flow Control - BSPP

Part No.	Tube Size (mm)	BSPP	Hex 1 (mm)	Hex 2 (mm)	H Closed	H Open	L
FCCB731-4M-2G	4	1/8	10	16	38.0	44.0	22.0
FCCB731-6M-2G	6	1/8	10	16	38.0	44.0	22.0
FCCB731-6M-4G	6	1/4	10	16	36.5	42.5	22.0
FCCB731-8M-2G	8	1/8	14	19	41.5	48.0	28.0
FCCB731-8M-4G	8	1/4	14	19	41.5	48.0	28.0
FCCB731-8M-6G	8	3/8	14	19	41.5	48.0	28.0



FCKCB731 Knobless Bi-directional Flow Control - BSPP

Part No.	Tube Size (mm)	BSPP / M5	Hex 1 (mm)	H	L
FCKCB731-4M-M5	4	M5x0.8	8	17.5	17.0
FCKCB731-4M-2G	4	1/8	13	25.0	19.0
FCKCB731-6M-M5	6	M5x0.8	8	17.5	19.0
FCKCB731-6M-2G	6	1/8	13	25.0	21.0
FCKCB731-6M-4G	6	1/4	17	26.5	22.0
FCKCB731-8M-2G	8	1/8	13	25.0	26.0
FCKCB731-8M-4G	8	1/4	17	26.5	27.0
FCKCB731-8M-6G	8	3/8	20	37.5	29.0

FCKC731 Knobless Meter Out Flow Control

Part No.	Tube Size (In)	NPT / UNF	Hex 1 (mm)	H	L
FCKC731-2-0	1/8	10-32		0.69	0.65
FCKC731-2-2	1/8	1/8	13	0.79	0.75
FCKC731-5/32-0	5/32	10-32		0.69	0.65
FCKC731-5/32-2	5/32	1/8	13	0.79	0.75
FCKC731-4-0	1/4	10-32		0.69	0.77
FCKC731-4-2	1/4	1/8	13	0.79	0.85
FCKC731-4-4	1/4	1/4	17	1.04	0.89
FCKC731-5-2	5/16	1/8	13	0.79	1.02
FCKC731-5-4	5/16	1/4	17	1.04	1.06
FCKC731-6-4	3/8	1/4	17	1.04	1.14
FCKC731-6-6	3/8	3/8	20	1.14	1.36

C	Product Index
	Compact Flow Controls
	Miniature Flow Controls
	Swivel Flow Controls
	Plug-In Flow Controls
	In-Line Flow Controls
	Metal Flow Controls
	Check Valves
	Blocking Valves
	Threshold Sensors

Features

Materials of Construction	
Body (Depending upon the Model):	<ul style="list-style-type: none"> • Glass reinforced nylon 6.6 • Brass
Gripping Ring:	Stainless Steel
Adjustment Screws	Nickel-plated brass
Locking Nut:	Nickel-plated brass
Base:	Nickel-plated brass

Nomenclature	
Example: FCM731-4-2	Attribute:
FC	Flow control
M	Miniature
7	Right angle
3	Nylon body
1	Tube x pipe
4	1/4 Tube O.D.
2	1/8 Pipe thread

Applicable Tube	
Tube O.D.	1/8, 5/32, 1/4
Tube O.D. (mm)	3, 4, 6, 8

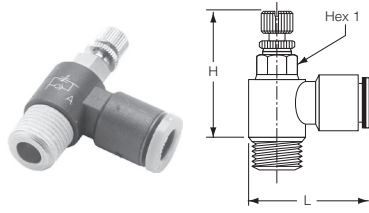
Specifications	
Pressure Range:	15 to 145 PSI
Temperature Ranges:	30° to 160°F
Working Fluid:	Compressed air



The miniature flow control regulator is especially adapted for all very small sized pneumatic applications (micro-pneumatic in particular). They are specifically designed for use with small bore cylinders (pancake / flat cylinders). Miniature flow control regulators are available in meter out, meter in and bi-directional versions.

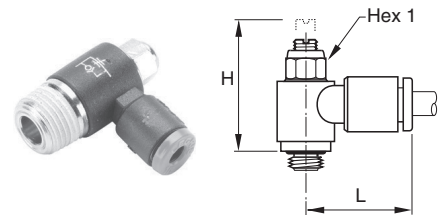
C

Product Index
 Compact Flow Controls
 Miniature Flow Controls
 Swivel Flow Controls
 Plug-in Flow Controls
 In-Line Flow Controls
 Metal Flow Controls
 Check Valves
 Blocking Valves
 Threshold Sensors



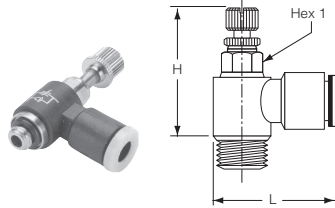
FCM731 Miniature Meter Out Flow Control

Part No.	Tube Size (In)	NPT	Hex 1 mm	H Open	H Closed	L
FCM731-2-0	1/8	10-32	6	1.14	0.91	0.67
FCM731-2-2	1/8	1/8	7	1.41	1.26	0.69
FCM731-5/32-0	5/32	10-32	6	1.02	0.93	0.67
FCM731-5/32-2	5/32	1/8	7	1.16	1.06	0.71
FCM731-4-0	1/4	10-32	6	1.02	0.93	0.73
FCM731-4-2	1/4	1/8	7	1.16	1.06	0.75
FCM731-4-4	1/4	1/4	8	1.28	1.18	0.77



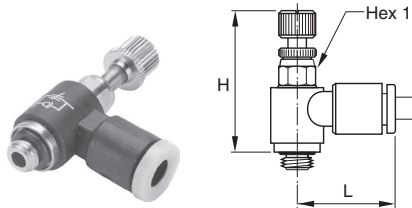
FCMK731 Knobless Mini Meter Out Flow Control

Part No.	Tube Size (In)	NPT	Hex 1 mm	H Open	H Closed	L
FCMK731-2-0	1/8	10-32	6	0.79	0.65	0.65
FCMK731-2-2	1/8	1/8	6	0.85	0.71	0.71
FCMK731-5/32-0	5/32	10-32	6	0.79	0.65	0.65
FCMK731-5/32-2	5/32	1/8	6	0.85	0.71	0.71
FCMK731-4-0	1/4	10-32	6	0.79	0.65	0.65
FCMK731-4-2	1/4	1/8	6	0.85	0.71	0.73
FCMK731-4-4	1/4	1/4	6	0.97	0.83	0.73



FCM731 Miniature Flow Control - BSPP

Part No.	Tube Size (mm)	BSPP	Hex 1	H Closed	H Open	L
FCM731-3M-M3	3	M3x0.5	6	23.5	26.0	17.0
FCM731-3M-M5	3	M5x0.8	6	23.5	26.0	17.0
FCM731-4M-M3	4	M3x0.5	6	23.5	26.0	16.5
FCM731-4M-M5	4	M5x0.8	6	23.5	26.0	17.0
FCM731-4M-2G	4	1/8	7	27.0	29.5	18.0
FCM731-6M-M5	6	M5x0.8	6	23.5	26.0	18.0
FCM731-6M-2G	6	1/8	7	27.0	29.5	18.5
FCM731-6M-4G	6	1/4	8	30.0	32.5	19.0
FCM731-8M-2G	8	1/8	13	26.5	31.0	26.0
FCM731-8M-4G	8	1/4	16	29.0	34.0	27.5
FCM731-8M-6G	8	3/8	20	36.0	42.0	29.0



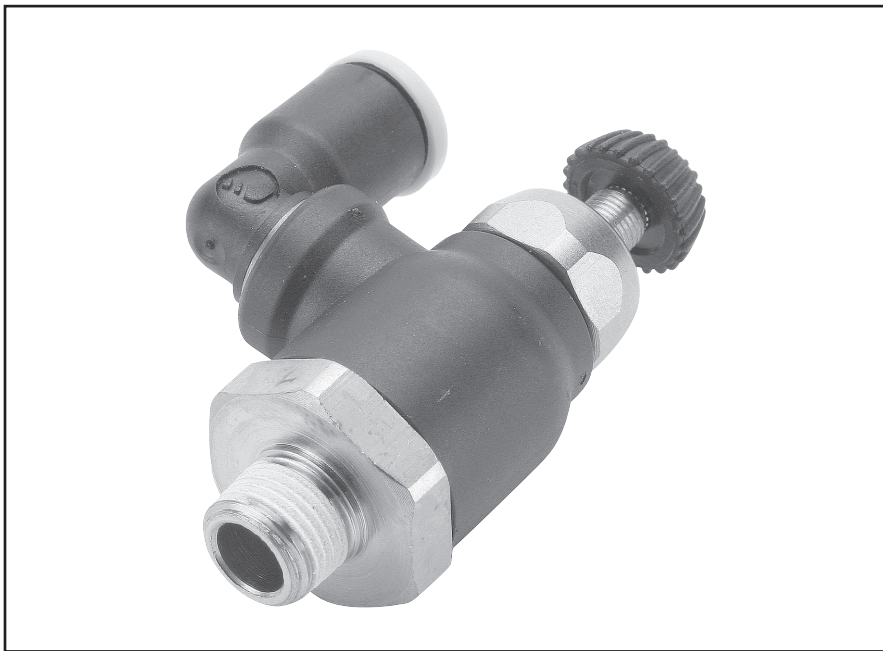
FCMB731 Miniature Bi-directional Flow Control - BSPP

Part No.	Tube Size (mm)	BSPP	Hex 1	H Closed	H Open	L
FCMB731-4M-M5	4	M5x0.8	6	23.5	26.0	16.5
FCMB731-4M-2G	4	1/8	7	27.0	29.5	17.0
FCMB731-6M-M5	6	M5x0.8	6	23.5	26.0	18.0
FCMB731-6M-2G	6	1/8	7	27.0	29.5	18.0
FCMB731-6M-4G	6	1/4	8	30.0	32.5	18.5

C	Product Index
Compact Flow Controls	
Miniature Flow Controls	
Swivel Flow Controls	
Plug-In Flow Controls	
In-Line Flow Controls	
Metal Flow Controls	
Check Valves	
Blocking Valves	
Threshold Sensors	

Features

Materials of Construction	
Body:	Glass reinforced nylon 6.6
Gripping Ring:	Stainless Steel
Adjustment Screws	Nickel-plated brass
Locking Nut:	Nickel-plated brass
Base:	Nickel-plated brass



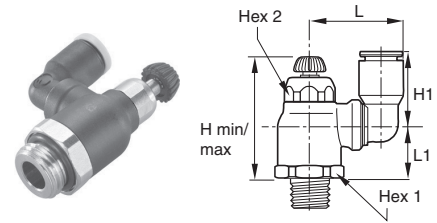
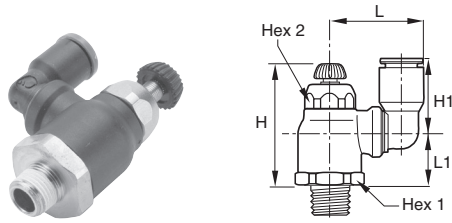
Nomenclature	
Example: FCMS731-5/32-2	Attribute:
FC	Flow control
M	Miniature
s	Swivel outlet
7	Right angle
3	Nylon body
1	Tube x pipe
5/32	5/32 Tube O.D.
2	1/8 Pipe thread

Flow control regulators with “swivel outlet” are especially designed to allow a vertical or angled tube exit where access is restricted. The swivel outlet comes with instant push-in connection to ease installation. Flow control regulators with swivel outlet are available in meter out and meter in versions.

Applicable Tube	
Tube O.D.	5/32, 1/4, 3/8
Tube O.D. (mm)	4, 6, 8, 10, 12

Specifications	
Pressure Range:	15 to 145 PSI
Temperature Ranges:	30° to 160°F
Working Fluid:	Compressed air

C	Product Index
	Compact Flow Controls
C	Miniature Flow Controls
	Swivel Flow Controls
C	Plug-in Flow Controls
	In-Line Flow Controls
C	Metal Flow Controls
	Check Valves
C	Blocking Valves
	Threshold Sensors

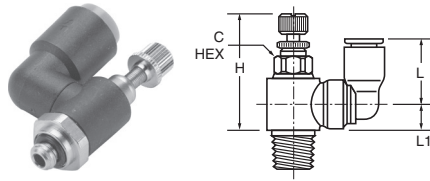


FCCS731 Compact Swivel Outlet Flow Control

Part No.	Tube Size (in)	NPT	Hex 1 mm	Hex 2 mm	H Closed	H Open	H1	L	L1
FCCS731-4-2	1/4	1/8	19	10	1.87	2.09	0.63	0.93	0.65
FCCS731-4-4	1/4	1/4	19	14	1.79	1.99	0.73	1.00	0.89
FCCS731-6-4	3/8	1/4	23	17	1.93	2.20	1.04	1.34	0.97
FCCS731-6-6	3/8	3/8	23	17	1.93	2.20	1.04	1.34	0.97

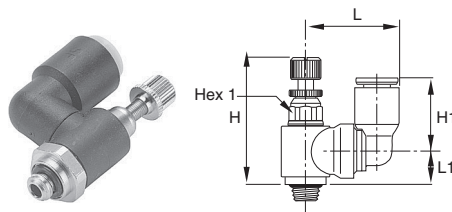
FCCS731 Compact Swivel Outlet - BSPP

Part No.	Tube Size (mm)	BSPP	Hex 1 mm	Hex 2 mm	H Closed	H Open	H1	L	L1
FCCS731-6M-2G	6	1/8	16	10	38.0	44.0	16.0	23.5	18.0
FCCS731-6M-4G	6	1/4	16	10	36.5	42.5	16.0	23.5	16.5
FCCS731-8M-2G	8	1/8	19	14	41.5	48.0	23.0	28.0	19.0
FCCS731-8M-4G	8	1/4	19	14	41.5	48.0	23.0	28.0	19.5
FCCS731-8M-6G	10	3/8	19	14	41.5	48.0	23.0	28.0	17.5
FCCS731-10M-4G	10	1/4	23	17	45.5	53.5	26.5	35.0	21.0
FCCS731-10M-6G	10	3/8	23	17	45.5	54.0	26.5	35.0	21.5
FCCS731-12M-6G	12	3/8	23	17	45.5	54.0	31.0	38.0	21.5
FCCS731-12M-8G	12	1/2	23	17	45.5	54.0	31.0	38.0	21.0



FCMS731 Mini Swivel Outlet Flow Control

Part No.	Tube Size (in)	NPT	Hex 1 mm	H Closed	H Open	H1	L	L1
FCMS731-5/32-0	5/32	10-32	6	0.96	1.08	0.55	0.73	0.26
FCMS731-5/32-2	5/32	1/8	8	1.08	1.20	0.55	0.73	0.33



FCMS731 Miniature Swivel Outlet - BSPP

Part No.	Tube Size (mm)	BSPP	Hex 1 mm	H Closed	H Open	H1	L	L1
FCMS731-4M-M5	4	M5x0.8	6	24.5	27.5	14.5	19.5	6.5
FCMS731-4M-2G	4	1/8	7	27.5	31.0	14.5	20.0	8.5
FCMS731-6M-M5	6	M5x0.8	6	24.5	27.5	16.0	21.5	6.5
FCMS731-6M-2G	6	1/8	7	27.5	31.0	16.0	22.0	8.5

C	Product Index
Compact Flow Controls	Product Index
Miniature Flow Controls	Product Index
Swivel Flow Controls	Product Index
Plug-In Flow Controls	Product Index
In-Line Flow Controls	Product Index
Metal Flow Controls	Product Index
Check Valves	Product Index
Blocking Valves	Product Index
Threshold Sensors	Product Index

Features

Materials of Construction	
Body:	Glass reinforced nylon 6.6
Gripping Ring:	Stainless Steel
Adjustment Screws	Nickel-plated brass
Locking Nut:	Nickel-plated brass
Tailpiece:	Nickel-plated brass



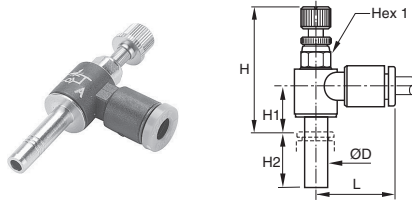
Nomenclature	
Example:	Attribute:
FCMS731-5/32-2	
FC	Flow control
M	Miniature
7	Right angle
3	Nylon body
1	Tube x pipe
4	1/4 Tube O.D.
2	1/8 Pipe thread

Plug-in flow control regulators can be directly mounted into existing fittings and allow very compact installations. They are particularly suited for mounting in manifolds using cartridges. Their design and function give equal performance to that of flow control regulators with threaded connections.

Applicable Tube	
Tube O.D.	1/8, 5/32, 1/4
Tube O.D. (mm)	4, 6, 8, 10, 12

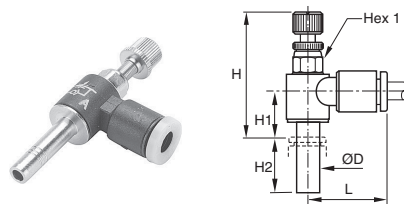
Specifications	
Pressure Range:	15 to 145 PSI
Temperature Ranges:	30° to 160°F
Working Fluid:	Compressed air

C	Product Index
	Compact Flow Controls
C	Miniature Flow Controls
	Swivel Flow Controls
C	Plug-In Flow Controls
	In-Line Flow Controls
C	Metal Flow Controls
	Check Valves
C	Blocking Valves
	Threshold Sensors



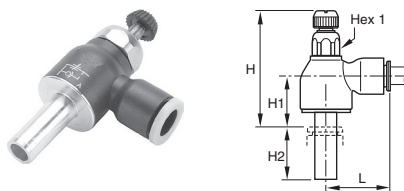
FCMS731 Plug-In Mini Flow Control

Part No.	Tube Size (In)	Hex 1 mm	H Open	H Closed	H1	H2	L
FCMS731-2	1/8	6	1.04	0.94	0.12	0.59	0.67
FCMS731-5/32	5/32	6	1.10	1.00	0.37	0.61	0.67
FCMS731-4	1/4	7	1.18	1.08	0.12	0.73	0.73



FCMS701 - Plug-In Miniature Flow Control

Part No.	Tube Size (mm)	Hex 1 mm	H Closed	H Open	H1	H2	L
FCMS701-4M	4	6	25.5	28.0	9.5	15.5	17.0
FCMS701-6M	6	7	27.5	29.0	10.5	17.0	18.5



FCCSP731 Plug-In Compact Flow Control

Part No.	Tube Size (mm)	Hex 1 mm	H Closed	H Open	H1	H2	L
FCCSP731-6M	6	10	35.0	41.0	14.0	17.0	22.0
FCCSP731-8M	8	14	39.5	46.5	16.0	21.5	28.0
FCCSP731-10M	10	17	43.5	51.5	17.5	24.5	31.5
FCCSP731-12M	12	17	43.0	51.0	17.0	27.0	31.5



Product Index

Compact Flow Controls

Miniature Flow Controls

Swivel Flow Controls

Plug-In Flow Controls

In-Line Flow Controls

Metal Flow Controls

Check Valves

Blocking Valves

Threshold Sensors

Features

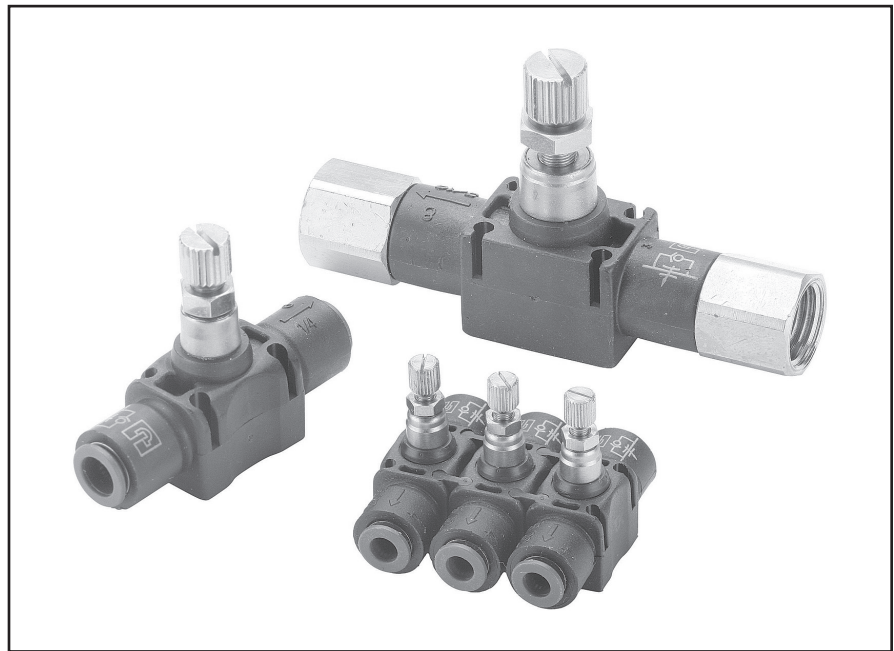
**Integrated Fittings
In-Line Flow Control Valves**

Materials of Construction	
Body:	Glass reinforced nylon 6.6
Gripping Ring:	Stainless Steel
Adjustment Screws	Nickel-plated brass
Locking Nut:	Nickel-plated brass
Tailpiece:	Nickel-plated brass

Nomenclature	
Example: FCMS731-5/32-2	Attribute:
FC	Flow control
M	Miniature
8	In-line
3	Nylon body
2	Tube x pipe
4	1/4 Tube O.D.

Applicable Tube	
Tube O.D.	5/32, 1/4, 5/16, 3/8, 1/2
Tube O.D. (mm)	4, 6, 8, 10, 12

Specifications	
Pressure Range:	15 to 145 PSI
Temperature Ranges:	30° to 160°F
Working Fluid:	Compressed air



In-line flow controls are unidirectional flow control valves. Intake air flows freely through the flow control; exhaust air is metered out through a specially designed adjustment screw. An arrow on the body of the valve indicates the direction of controlled flow. They can be easily added to existing circuitry. Simply splice it into the cylinder port line.

They can be used individually or they may be stacked together using two joining clips.

C

Product Index

Compact Flow Controls

Miniature Flow Controls

Swivel Flow Controls

Plug-in Flow Controls

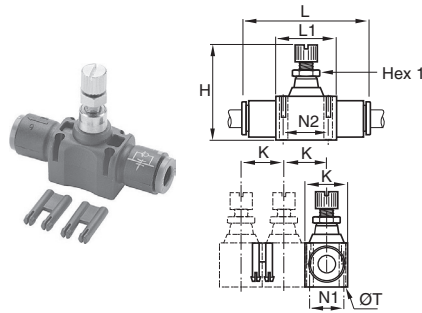
In-Line Flow Controls

Metal Flow Controls

Check Valves

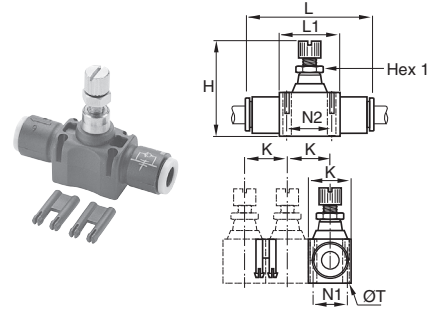
Blocking Valves

Threshold Sensors



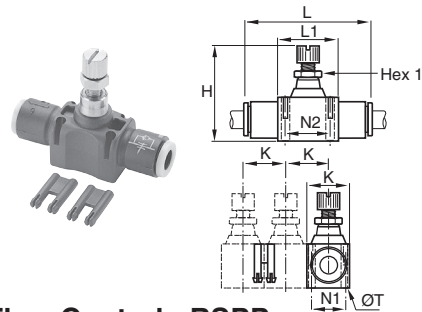
FC832 In-Line Flow Control

Part No.	Tube Size (In)	Hex 1 mm	H Closed	H Open	K	L	L1	N1	N2	T
FC832-5/32	5/32	5	1.15	1.31	0.47	1.52	0.59	0.31	0.43	0.09
FC832-4	1/4	8	1.54	1.74	0.66	2.00	0.90	0.43	0.66	0.12
FC832-5	5/16	11	1.73	1.97	0.73	2.38	1.02	0.49	0.79	0.13
FC832-6	3/8	14	2.03	2.38	0.94	2.87	1.29	0.62	1.01	1.60
FC832-8	1/2	14	2.24	2.63	1.09	3.35	1.37	0.78	1.07	0.16



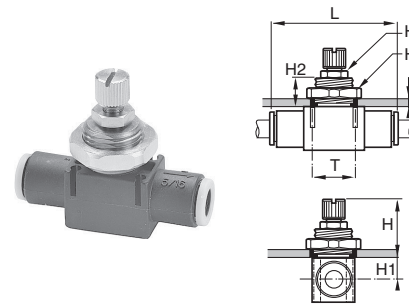
FCB832 In-Line Bi-directional Flow Control - BSPP

Part No.	Tube Size (mm)	Hex 1 mm	H Closed	H Open	K	L	L1	N1	N2	T
FCB832-4M	4	5	29.5	33.5	12.0	39.0	15.0	8.0	11.0	2.2
FCB832-6M	6	8	39.5	44.5	17.0	54.0	23.0	11.0	17.0	3.2
FCB832-8M	8	11	44.0	50.0	18.5	60.5	26.0	12.5	20.0	3.2



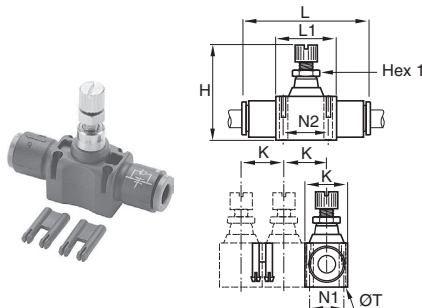
FC832 In-Line Flow Control - BSPP

Part No.	Tube Size (mm)	Hex 1 mm	H Closed	H Open	K	L	L1	N1	N2	T
FC832-4M	4	5	29.5	33.5	12.0	39.0	15.0	8.0	11.0	2.2
FC832-6M	6	8	39.5	44.5	17.0	54.0	23.0	11.0	17.0	3.2
FC832-8M	8	11	44.0	50.0	18.5	60.5	26.0	12.5	20.0	3.2
FC832-10M	10	14	52.0	61.0	24.0	76.0	33.0	16.0	26.0	4.2
FC832-12M	12	14	57.5	67.5	28.0	86.0	35.0	20.0	27.5	4.2



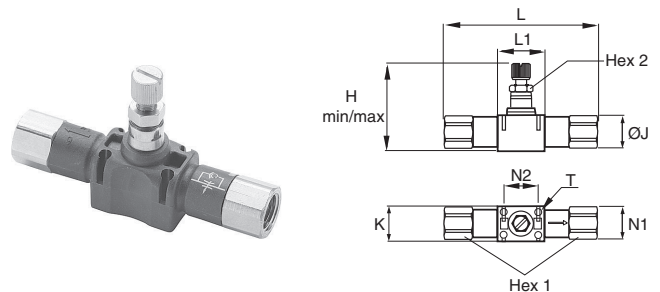
FCPM832 In-Line Panel Mountable Flow Control - BSPP

Part No.	Tube Size (mm)	Hex 1 (mm)	Hex 2 (mm)	H Closed	H Open	K	L	H1	H2	T
FCPM832-4M	4	14		21.5	25.5	6.0	39.0	6.5	11.0	10.5
FCPM832-6M	6	19		27.5	32.5	7.0	54.0	7.5	13.5	16.5
FCPM832-8M	8	24	11	28.5	34.5	7.0	60.5	9.0	13.5	18.5
FCPM832-10M	10	30	14	29.5	38.5	7.0	76.0	11.5	13.5	24.5
FCPM832-12M	12	32	14	32.0	42.0	8.0	86.0	12.5	15.5	27.5



FCB832 In-Line Bi-directional Flow Control

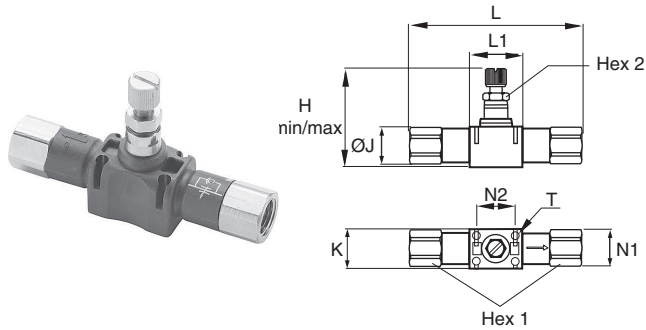
Part No.	Tube Size (In)	Hex 1 mm	H Closed	H Open	K	L	L1	N1	N2	T
FCB832-5/32	5/32	5	1.15	1.31	0.47	1.52	0.59	0.31	0.43	0.09
FCB832-4	1/4	8	1.54	1.74	0.66	2.00	0.90	0.43	0.66	0.12
FCB832-5	5/16	11	1.73	1.97	0.73	2.38	1.02	0.49	0.79	0.13



FC836 Threaded In-Line Flow Control

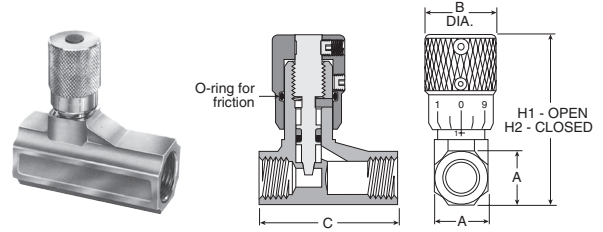
Part No.	NPT	Hex 1 (mm)	Hex 2 (mm)	H Closed	H Open	K	L	L1	N1	N2	T
FC836-2	1/8	13	8.00	1.56	1.75	0.67	2.70	0.91	0.43	0.67	0.12
FC836-4	1/4	16	11.00	1.73	1.97	0.73	3.27	1.02	0.49	0.79	0.12
FC836-6	3/8	22	14.00	2.05	2.40	0.94	3.82	1.30	0.63	1.02	0.16
FC836-8	1/2	24	14.00	2.26	2.66	1.10	4.76	1.38	0.79	1.08	0.16

C	Product Index
	Compact Flow Controls
	Miniature Flow Controls
	Swivel Flow Controls
	Plug-In Flow Controls
	In-Line Flow Controls
	Metal Flow Controls
	Check Valves
	Blocking Valves
	Threshold Sensors



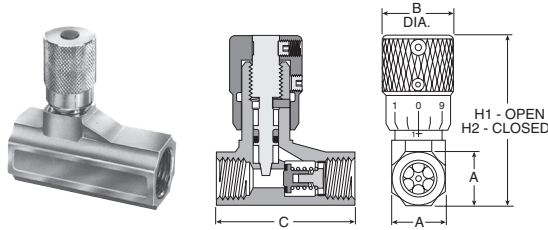
FC836 Threaded In-Line Flow Control - BSPP

Part No.	BSPP	Hex 1 (mm)	Hex 2 (mm)	H Closed	H Open	K	L	N1	N2	T
FC836-2G	1/8"	13	8	39.5	44.5	17.0	68.5	11.0	17.0	3.2
FC836-4G	1/4"	16	11	44.0	50.0	18.5	83.0	12.5	20.0	3.2
FC836-6G	3/8"	19	14	52.0	61.0	24.0	97.0	16.0	26.0	4.2
FC836-8G	1/2"	24	14	57.5	67.5	28.0	121.0	20.0	27.5	4.2



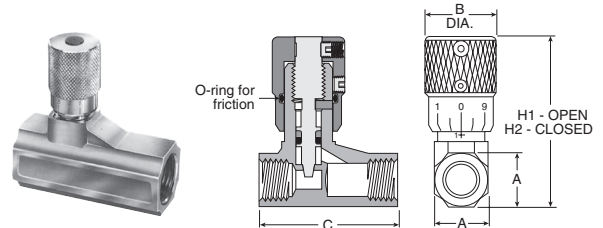
338 Bi-directional Flow Control Valves

Part No.	Port Size	A	B	C	H1	H2
00338 1100	1/8"	9/16"	0.75	1.47	2.03	1.81
00338 1101	1/4"	11/16"	0.75	1.47	2.28	2.03
00338 1102	3/8"	7/8"	0.88	2.31	2.84	2.53
00338 1103	1/2"	1-3/16"	1.06	3.25	3.62	3.22
00338 1104	3/4"	1-3/8"	1.06	3.25	3.72	3.31



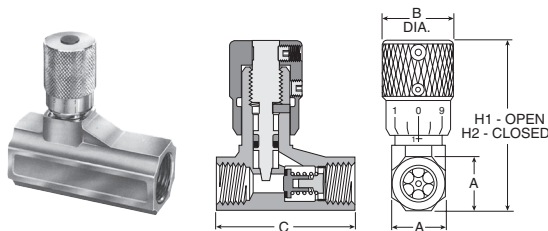
337 Micrometer Flow Control Valves

Part No.	Port Size	A	B	C	H1	H2
00337 1000	1/8"	9/16"	0.75	1.47	2.03	1.81
00337 1001	1/4"	11/16"	0.75	1.47	2.28	2.03
00337 1002	3/8"	7/8"	0.88	2.31	2.84	2.53
00337 1003	1/2"	1-3/16"	1.06	3.25	3.62	3.22
00337 1004	3/4"	1-3/8"	1.06	3.25	3.72	3.31



338 Bi-directional Flow Control Valves - BSPP

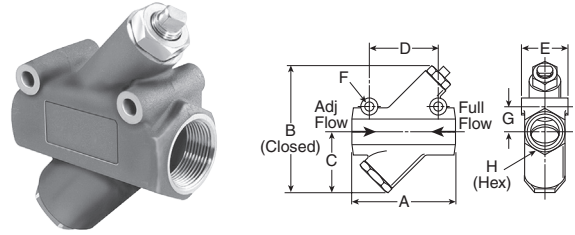
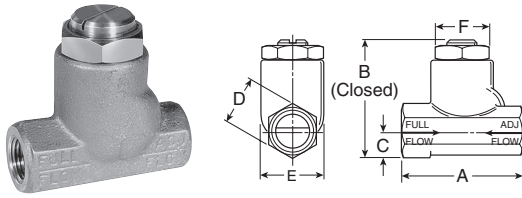
Part No.	Port Size	A	B	C	H1	H2
00338G1100	1/8"	9/16"	0.75	1.47	2.03	1.81
00338G1101	1/4"	11/16"	0.75	1.47	2.28	2.03



337 Micrometer Flow Control Valves - BSPP

Part No.	Port Size	A	B	C	H1	H2
00337G1000	1/8"	9/16"	0.75	1.47	2.03	1.81
00337G1001	1/4"	11/16"	0.75	1.47	2.28	2.03

C	Product Index
	Compact Flow Controls
Miniature Flow Controls	
Swivel Flow Controls	
Plug-in Flow Controls	
In-Line Flow Controls	
Metal Flow Controls	
Check Valves	
Blocking Valves	
Threshold Sensors	

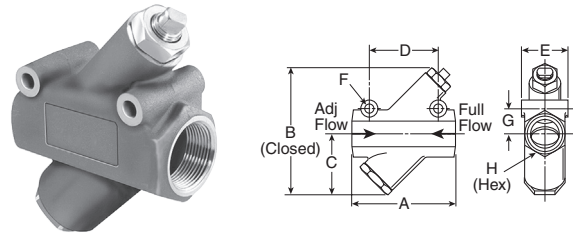
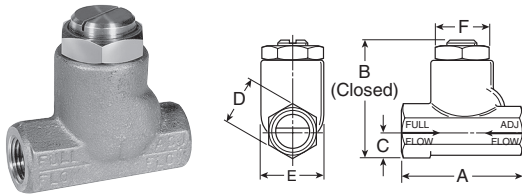


3250 Flow Control Valves

Part No.	Port Size	A	B	C	D	E	F
03250 0119	1/8"	1.75	1.56	0.37	0.62	0.81	0.68
03250 0219	1/4"	2.33	1.97	0.44	0.75	1.09	0.94
03250 0319	3/8"	2.66	2.44	0.56	1.00	1.38	1.19
03250 0419	1/2"	3.11	3.06	0.75	1.25	1.63	1.38
03250 0519	3/4"	3.56	3.69	0.88	1.50	2.00	1.75

3250 Flow Control Valves

Part No.	Port Size	A	B	C	D	E	F	G	H
03250 1000	1"	5.00	6.50	3.00	3.25	2.25	.39	1.31	2.13
03250 1250	1-1/4"	5.00	6.50	3.00	3.25	2.25	.39	1.31	2.13
03250 1500	1-1/2"	5.88	8.00	3.75	3.50	2.50	.39	1.50	2.38



3250 Flow Control Valves - BSPP

Part No.	Port Size	A	B	C	D	E	F
3250G0119	1/8"	1.75	1.56	0.37	0.62	0.81	0.68
3250G0219	1/4"	2.33	1.97	0.44	0.75	1.09	0.94
3250G0319	3/8"	2.66	2.44	0.56	1.00	1.38	1.19
3250G0419	1/2"	3.11	3.06	0.75	1.25	1.63	1.38
3250G0519	3/4"	3.56	3.69	0.88	1.50	2.00	1.75

3250 Flow Control Valves - BSPP

Part No.	Port Size	A	B	C	D	E	F	G	H
3250G1000	1"	5.00	6.50	3.00	3.25	2.25	.39	1.31	2.13
3250G1250	1-1/4"	5.00	6.50	3.00	3.25	2.25	.39	1.31	2.13
3250G1500	1-1/2"	5.88	8.00	3.75	3.50	2.50	.39	1.50	2.38



Product Index

Compact Flow Controls

Miniature Flow Controls

Swivel Flow Controls

Plug-In Flow Controls

In-Line Flow Controls

Metal Flow Controls

Check Valves

Blocking Valves

Threshold Sensors

Features

Materials of Construction	
Body:	Treated Brass
Gripping Ring:	Stainless Steel
Adjustment Screws	Nickel-plated brass
Locking Nut:	Nickel-plated brass
Tailpiece:	Nickel-plated brass



Nomenclature	
Example: FCMS731-5/32-2	Attribute:
FC	Flow control
7	Right angle
0	Brass body
1	Tube x pipe
4	1/4 Tube O.D.
2	1/8 Pipe thread

Applicable Tube	
Tube O.D.	1/8, 5/32, 1/4, 3/8
Tube O.D. (mm)	4, 6, 8, 10, 12, 14

Specifications	
Pressure Range:	15 to 145 PSI
Temperature Ranges:	30° to 160°F
Working Fluid:	Compressed air

Metal flow control regulators are suited for use in severe conditions (temperatures, sparks, abrasion, etc). The screw and locking nut have been designed for easy manipulation, by hand. Adjustment can be made with a screwdriver and locking by use of a wrench.

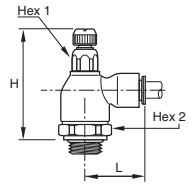
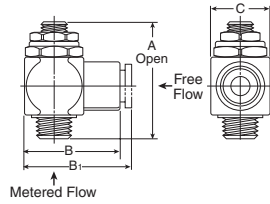
C	Product Index
	Compact Flow Controls
	Miniature Flow Controls
	Swivel Flow Controls
	Plug-In Flow Controls
	In-Line Flow Controls
	Metal Flow Controls
Check Valves	
Blocking Valves	
Threshold Sensors	



Shown with
Threaded Inlet



Shown with
Prestolok
Inlet Fitting



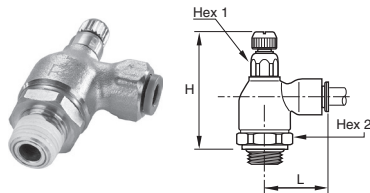
FC701 Push-to-Connect Metal Flow Control - BSSP

Part No.	Tube Size (mm)	BSSP	Hex 1	Hex 2	H Closed	H Open	L
FC701-4M-2G	4	1/8	10	19	47.0	53.0	21.0
FC701-6M-2G	6	1/8	10	19	47.0	53.0	24.5
FC701-6M-4G	6	1/4	10	19	47.5	53.0	24.5
FC701-8M-2G	8	1/8	14	19	50.0	55.0	29.0
FC701-8M-4G	8	1/4	14	19	50.0	56.0	29.0
FC701-8M-6G	8	3/8	17	25	56.0	62.0	30.5
FC701-10M-4G	10	1/4	14	19	50.0	56.0	35.0
FC701-10M-6G	10	3/8	17	25	56.0	62.0	35.0
FC701-12M-6G	12	3/8	17	25	56.0	62.0	38.0
FC701-12M-8G	12	1/2	17	25	55.0	62.0	38.0
FC701-14M-8G	14	1/2	17	25	55.0	62.0	41.0

3251 Flow Control Valves

Model Number	Thread (NPT) Male	Thread (NPT) Female	A mm	B mm	C mm	Weight		Cv	
						kg.	Adjusted Flow	Free Flow	
03251 0125	1/8	1/8	44	30	17	0.9	0.26	0.20	
03251 0250	1/4	1/4	51	36	23	2.0	0.75	0.68	
03251 0375	3/8	3/8	58	43	27	3.2	0.84	0.72	
03251 0500	1/2	1/2	68	53	32	5.0	1.64	1.41	
With Prestolok Fittings									
03251 1215	1/8	5/32	44	30	17	0.9	0.19	0.16	
03251 1225	1/8	1/4	44	30	17	0.9	0.28	0.22	
03251 2525	1/4	1/4	51	36	23	2.0	0.51	0.44	
03251 2538	1/4	3/8	51	36	23	2.0	0.62	0.53	
03251 3838	3/8	3/8	58	43	27	3.2	0.78	0.65	

CAUTION: If it is possible that the ambient temperature may fall below freezing, the medium must be moisture-free to prevent internal damage or unpredictable behavior.



FC708 Threaded Port Meter Out Flow Control

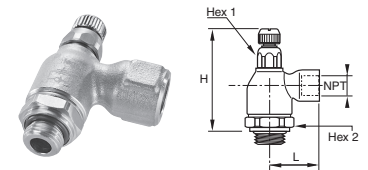
Part No.	NPT	Hex 1 mm	Hex 2 mm	H Closed	H Open	L	L1	L2
FC708-2	1/8	19	10	1.79	2.01	0.89	0.87	1.14
FC708-4	1/4	19	14	1.91	2.11	1.28	0.87	1.28
FC708-6	3/8	25	17	2.15	2.40	1.36	0.91	1.44
FC708-8	1/2	25	17	2.15	2.40	1.50	0.91	1.50

FC705 Push-to-Connect Metal Flow Control

Part No.	Tube Size (in)	NPT	Hex 1 mm	Hex 2 mm	H Closed	H Open	L
FC705-5/32-2	5/32	1/8	19	10	1.79	2.01	0.85
FC705-4-2	1/4	1/8	19	10	1.79	2.01	0.97
FC705-4-4	1/4	1/4	19	10	1.79	2.01	0.97
FC705-6-4	3/8	1/4	19	14	1.91	2.11	1.14
FC705-6-6	3/8	3/8	25	17	2.15	2.40	1.40

FC702 Threaded Port Metal Flow Control - BSSP

Part No.	BSSP	Hex 1 mm	Hex 2 mm	H Closed	H Open	L
FC702-2G	1/8	10	19	47.0	52.5	22.5
FC702-4G	1/4	14	19	50.5	55.5	32.0
FC702-6G	3/8	17	25	56.0	62.0	34.5
FC702-8G	1/2	17	25	55.0	62.0	37.5



C

Product Index

Compact Flow Controls

Miniature Flow Controls

Swivel Flow Controls

Plug-In Flow Controls

In-Line Flow Controls

Metal Flow Controls

Check Valves

Blocking Valves

Threshold Sensors

Features

Materials of Construction	
Body:	<ul style="list-style-type: none"> • 32PLCK: Nylon/nickel plated brass • 68PLCK: Nylon body with nickel-plated brass base • VC: Acetal
Gripping Ring:	Stainless Steel
O-Ring:	<ul style="list-style-type: none"> • Nitrile (32PLCK & 68PLCK) • EPDM (VC)



These in-line check valves allows air to pass in one direction while blocking flow in the other direction. Their extreme compactness and light weight make them suitable as a safety item in compressed air circuits. The body of the fitting contains an arrow to indicate the direction of flow.

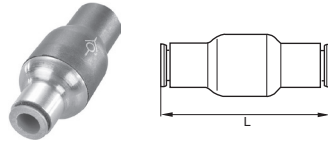
Nomenclature	
Example: W68PLCK-4-2	Attribute:
W	White thread sealant
68	Tube x Pipe
PL	Prestolok
CK	Check Valve
4	1/4 Tube O.D.
2	1/8 Pipe thread

Nomenclature	
Example: A4VC4-MG	Attribute:
A	Acetal
4	1/4 Tube O.D.
VC	Valve, Check
4	1/4 Tube O.D.
MG	Metal gripping ring

Applicable Tube	
Tube O.D.	<ul style="list-style-type: none"> • PLCK: 5/32, 1/4, 5/16, 3/8 • VC: 1/4, 5/16, 3/8
Tube O.D. (mm)	PLCK: 4, 6, 8, 10, 12

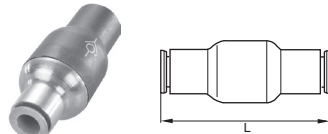
Specifications	
Pressure Range:	15 to 145 PSI
Temperature Ranges:	34°F to 150°F
Cracking Pressure:	<ul style="list-style-type: none"> • PLCK: 7 PSI • VC: 1/3 PSI
Working Fluid:	Compressed air

Product Index
Compact Flow Controls
Miniature Flow Controls
Swivel Flow Controls
Plug-in Flow Controls
In-Line Flow Controls
Metal Flow Controls
Check Valves
Blocking Valves
Threshold Sensors



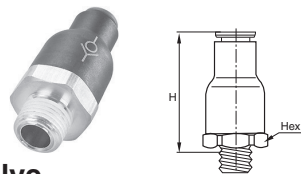
32PLCK In-Line Check Valve

Part No.	Tube Size (In)	L
32PLCK-5/32	5/32	1.52
32PLCK-4	1/4	1.61
32PLCK-5	5/16	2.03
32PLCK-6	3/8	2.50



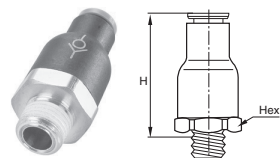
32PLCK In-Line Check Valve

Part No.	Tube Size (mm)	L
32PLCK-4M	4	38.5
32PLCK-6M	6	41.0
32PLCK-8M	8	51.5
32PLCK-10M	10	63.5
32PLCK-12M	12	66.5



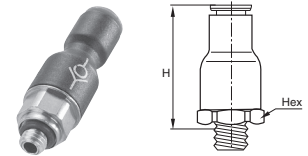
W68PLCK Male Check Valve

Part No.	Tube Size (in)	NPT / UNF	Hex (mm)	H
68PLCK-5/32-0	5/32	10-32	9	1.26
W68PLCK-5/32-2	5/32	1/8	16	1.12
W68PLCK-4-2	1/4	1/8	19	1.42
W68PLCK-4-4	1/4	1/4	19	1.42
W68PLCK-6-4	3/8	1/4	23	1.65
W68PLCK-6-6	3/8	3/8	23	1.65



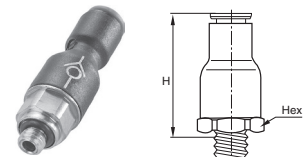
W68PLCKI Male Check Valve Meter In

Part No.	Tube Size (In)	NPT / UNF	Hex (mm)	H
68PLCKI-5/32-0	5/32	10-32	9	1.26
W68PLCKI-5/32-2	5/32	1/8	16	1.12
W68PLCKI-4-2	1/4	1/8	19	1.42
W68PLCKI-4-4	1/4	1/4	19	1.42
W68PLCKI-6-4	3/8	1/4	23	1.65
W68PLCKI-6-6	3/8	3/8	23	1.65



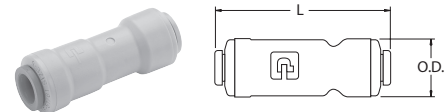
68PLCK Male Check Valve Meter Out - BSPP

Part No.	Tube Size (mm)	BSPP	Hex 1 (mm)	H
68PLCK-4M-M5	4	M5x0.8	9	32.0
68PLCK-4M-2G	4	1/8	16	28.5
68PLCK-6M-2G	6	1/8	16	30.5
68PLCK-6M-4G	6	1/4	16	30.5
68PLCK-8M-2G	8	1/8	19	36.0
68PLCK-8M-4G	8	1/4	19	36.0



68PLCKI Male Check Valve Meter In - BSPP

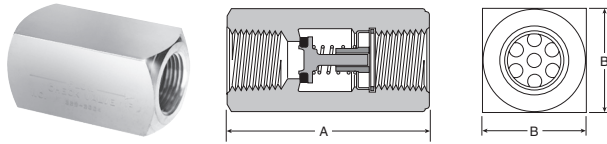
Part No.	Tube Size (mm)	BSPP	Hex 1 (mm)	H
68PLCKI-4M-M5	4	M5x0.8	9	32.0
68PLCKI-6M-2G	6	1/8	16	30.5
68PLCKI-8M-2G	8	1/8	19	36.0
68PLCKI-8M-4G	8	1/4	19	36.0
68PLCKI-10M-6G	10	3/8	23	42.0
68PLCKI-12M-6G	12	3/8	23	42.0
68PLCKI-12M-8G	12	1/2	23	44.0



VC - Check Valve

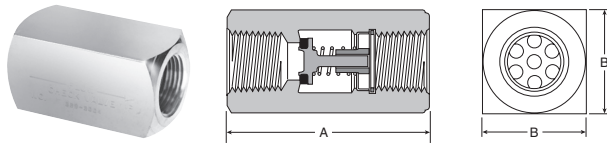
Part No.	Tube Size (In)	L	O.D.
A4VC4-MG	1/4	2.00	.66
A5VC5-MG	5/16	2.10	.70
A6VC6-MG	3/8	2.15	.80

C	Product Index
	Compact Flow Controls
	Miniature Flow Controls
	Swivel Flow Controls
	Plug-In Flow Controls
	In-Line Flow Controls
	Metal Flow Controls
	Check Valves
	Blocking Valves
	Threshold Sensors



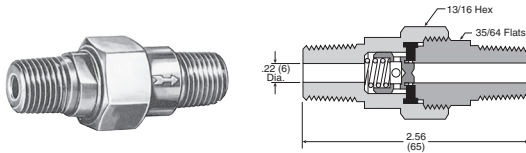
339 Check Valve

Part No.	Port Size	A	B
00339 3000	1/8"	1.22	0.56
00339 3001	1/4"	1.34	0.69
00339 3002	3/8"	2.00	0.88
00339 3003	1/2"	2.56	1.19
00339 3004	3/4"	2.66	1.38



339 Check Valve - BSPP


Part No.	Port Size	A	B
00339G3000	1/8"	1.22	0.56
00339G3001	1/4"	1.34	0.69



3047 Check Valve

Model Number	Pipe Thread
03047 0099	1/4"

- C
- Product Index
- Compact Flow Controls
- Miniature Flow Controls
- Swivel Flow Controls
- Plug-in Flow Controls
- In-Line Flow Controls
- Metal Flow Controls
- Check Valves
- Blocking Valves
- Threshold Sensors

	
Product Index	
Compact Flow Controls	
Miniature Flow Controls	
Swivel Flow Controls	
Plug-In Flow Controls	
In-Line Flow Controls	
Metal Flow Controls	
Check Valves	
Blocking Valves	
Threshold Sensors	

Features

Materials of Construction	
Body:	Treated Brass
Gripping Ring:	Stainless Steel
Seals, Diaphragm:	Nitrile

Nomenclature	
Example: FC601-4-2	Attribute:
FC	Flow control
6	Blocking
0	Brass body
1	Tube x pipe
4	1/4 Tube O.D.
2	1/8 Pipe thread

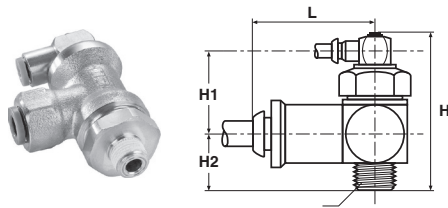
Applicable Tube	
Tube O.D.	1/8, 5/32, 1/4, 3/8
Tube O.D. (mm)	4, 6, 8, 10, 12, 14

Specifications	
Pressure Range:	15 to 145 PSI
Temperature Ranges:	-4° to 160°F
Number of Cycles	> 10 million at 68°F and 1 Hz
Leak Rate:	< 3.2 CCM
Working Fluid:	Compressed air



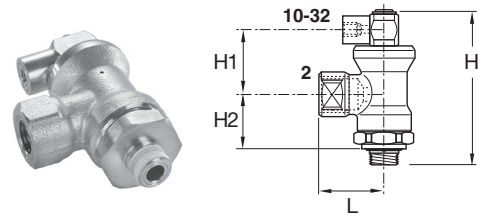
Blocking valves prevents damage to work and equipment in the event of a loss of pressure. Blocking valves which are mounted in pairs on a cylinder lock the piston by simultaneously cutting off the supply and exhaust. Functional locks are more precise and rapid when blocking valves are located on the cylinder: the volume of air in the pipework no longer needs to be taken into consideration.

	Product Index
	Compact Flow Controls
	Miniature Flow Controls
	Swivel Flow Controls
	Plug-in Flow Controls
	In-Line Flow Controls
	Metal Flow Controls
	Check Valves
	Blocking Valves
	Threshold Sensors



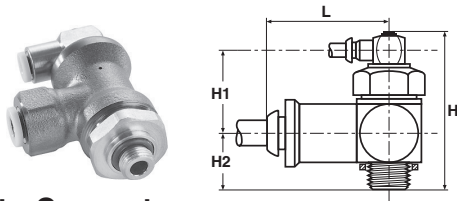
FC601 Push-to-Connect Lock-Out Valves

Part No.	Tube Size (in)	NPT	Hex (mm)	H	H1	H2	L
FC601-4-2	1/4	1/8	21	2.03	1.24	0.79	1.10
FC601-4-4	1/4	1/4	21	2.03	1.24	0.79	1.10
FC601-6-6	3/8	3/8	24	2.19	1.14	1.04	1.38
FC601-8-8	1/2	1/2	24	2.19	1.14	1.04	1.69



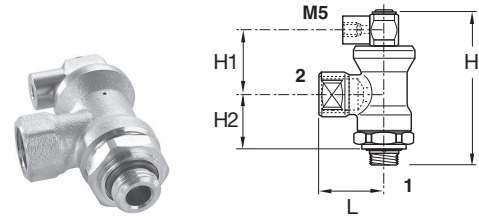
FC602 Threaded Port Lock-Out Valves

Part No.	1 NPT	2 NPT	Hex (mm)	H	H1	H2	L
FC602-2	1/4	1/8	21	2.03	1.24	0.79	1.04
FC602-4	1/4	1/4	21	2.03	1.24	0.79	1.04
FC602-6	3/8	3/8	24	2.19	1.14	1.04	1.34
FC602-8	1/2	1/2	24	2.19	1.14	1.04	1.57



FC601 Push-to-Connect Lock-Out Valve - BSPP

Part No.	Tube Size (mm)	BSPP	Hex 1 (mm)	H	H1	H2	L
FC601-6M-2G	6	1/8	21	53	24.5	21.0	28.0
FC601-6M-4G	6	1/4	21	53	24.5	21.0	28.0
FC601-8M-4G	8	1/4	21	53	24.5	21.0	28.0
FC601-8M-6G	8	3/8	24	56	25.0	23.0	34.5
FC601-10M-6G	10	3/8	24	56	25.0	23.0	35.0
FC601-12M-8G	12	1/2	24	56	25.0	23.0	37.5



FC608 Threaded Port Lock-Out Valve - BSPP

Part No.	BSPP 1	BSPP 2	Hex 1 (mm)	H	H1	H2	L
FC608-4G-2G	1/8	1/4	21	53	24.5	21.0	28.0
FC608-4G-4G	1/4	1/4	21	53	24.5	21.0	28.0
FC608-6G-6G	3/8	3/8	24	56	25.0	23.0	34.0
FC608-8G-8G	1/2	1/2	24	56	25.0	23.0	41.0



Product Index

Compact Flow Controls

Miniature Flow Controls

Swivel Flow Controls

Plug-In Flow Controls

In-Line Flow Controls

Metal Flow Controls

Check Valves

Blocking Valves

Threshold Sensors

Specifications: Models PSBJ, PSPJ	
Working Temperature:	5° to 140°F
Working Pressure:	45 to 115 PSI
Breaking Pressure:	8.5 PSI
Response Time:	3 Ms

Specifications: Model PSPE	
Working Pressure:	45 to 115 PSI
Breaking Pressure:	7 PSI
Current Rating:	5A / 250VAC - 5W / 48VDC

UL Listed Component	
Reset Pressure:	10 PSI

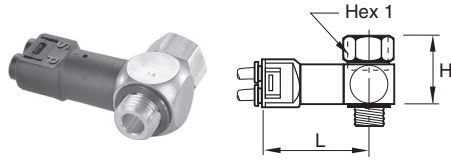


The sensor fitting detects the absence of pressure and translates it to a high pressure pneumatic output. When used to monitor the decaying or exhausting side of a pneumatic cylinder's piston, it emits a positive output. When the cylinder comes to the end of its stroke, wherever that may be, the signal emitted from the sensor can then be used to pilot the next step.

C	Product Index
	Compact Flow Controls
	Miniature Flow Controls
	Swivel Flow Controls
	Plug-in Flow Controls
	In-Line Flow Controls
	Metal Flow Controls
	Check Valves
	Blocking Valves
	Threshold Sensors

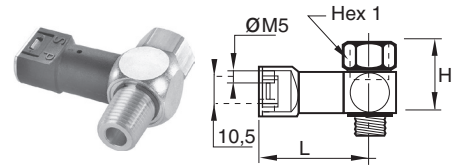
Part Numbers

**Integrated Fittings
Threshold Sensor**



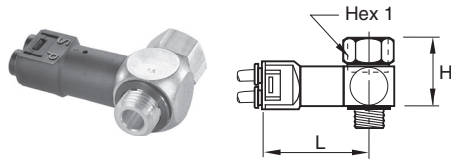
PSBJ731 Pneumatic Threshold Sensor - 5/32 Pilot

Part No.	NPT / UNF	Hex (mm)	H	L
PSBJ731-0	10-32	5/16	0.62	1.70
PSBJ731-2	1/8	9/16	0.90	1.74
PSBJ731-4	1/4	5/8	1.09	1.81
PSBJ731-6	3/8	7/8	1.13	1.91
PSBJ731-8	1/2	1	1.17	2.05



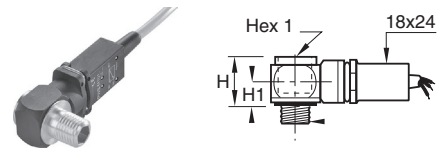
PSBJ708 Pneumatic Threshold Sensor - M5 Pilot

Part No.	BSPP	Hex 1 (mm)	H	L
PSBJ708-2G	1/8	14	23	40.5
PSBJ708-4G	1/4	17	28	42.5



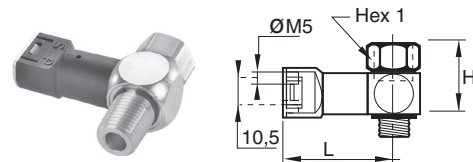
PSBJ731 Pneumatic Threshold Sensor - 4mm Pilot

Part No.	BSPP	Hex 1 (mm)	H	L
PSBJ731-M5	M5x0.8	8	16	43.5
PSBJ731-2G	1/8	14	23	44.5
PSBJ731-4G	1/4	17	28	46.5
PSBJ731-6G	3/8	22	29	49.0
PSBJ731-8G	1/2	27	30	52.5



PSPE731 Pneumatic / Electric Threshold Sensor - BSPP

Part No.	BSPP	Hex 1 (mm)	H	H1	L
PSPE731-M5	M5x0.8	8	20	10	49
PSPE731-2G	1/8	6	20	10	52
PSPE731-4G	1/4	8	20	10	54
PSPE731-6G	3/8	10	22	12	57
PSPE731-8G	1/2	12	26	14	58




PSPJ731 Pneumatic Threshold Sensor - 10-32 Pilot

Part No.	NPT	Hex 1 (mm)	H	L
PSPJ731-2	1/8	9/16	0.90	1.58
PSPJ731-4	1/4	5/8	1.09	1.66
PSPJ731-6	3/8	7/8	1.13	1.76

C	Product Index
	Compact Flow Controls
	Miniature Flow Controls
	Swivel Flow Controls
	Plug-In Flow Controls
	In-Line Flow Controls
	Metal Flow Controls
	Check Valves
	Blocking Valves
	Threshold Sensors

Notes


Product Index
Compact Flow Controls
Miniature Flow Controls
Swivel Flow Controls
Plug-In Flow Controls
In-Line Flow Controls
Metal Flow Controls
Check Valves
Blocking Valves
Threshold Sensors

Accessories

Section D

www.parker.com/accessories



D

Tanks &
Air
Chucks

Mufflers
& Silenc-
ers

Relief &
Exhaust
Valves

Pressure
Switches

AirGuard
Protection

Drain
Valves

Safety
Blow
Guns

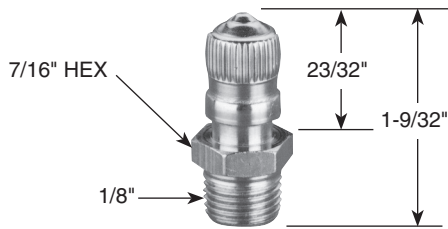
Tank Valves & Air Chucks.....	D2	Automatic Drip Leg Drain & Relief Valve.....	D8
EM Series Exhaust Mufflers.....	D3	Relief Valves - Diaphragm Type.....	D9
Muffler / Flow Controls	D3	Shuttle Valves & Quick Exhaust	D10-D12
Breather Vents	D4	Pressure Switch	D13
ES Series Silencer	D4	Drain Valves.....	D14-D15
ASN Air Line Silencer.....	D5	Safety Blow Guns.....	D16-D17
P6M Air Line Silencer	D6		
Muffler-Reclassifier ECS	D7		

Tank Valves

For tanks, steel barrels, compressors and other pneumatic containers where a dependable automatic air valve is needed. Equipped with standard valve core and sealing cap. Maximum operating pressure is 185 PSIG. Temperature range is -40°F to 220°F.

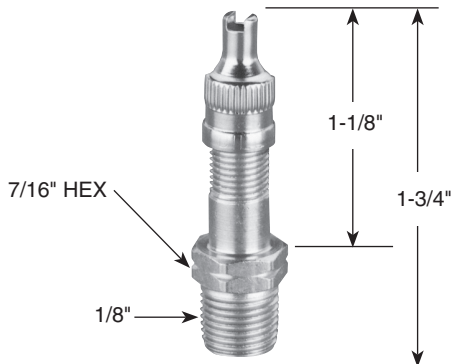
Model No. 09166 0060

Has a 1/8" pipe thread at bottom for minimum protrusion. N/P finish, dome shaped cap. Packed 25 to a box.



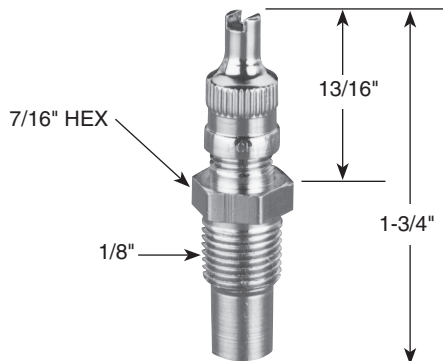
Model No. 00645 0060

A 1/8" pipe thread at bottom permits maximum protrusion. N/P finish, screwdriver type cap. Packed 25 to a box.



Model No. 01468 0006

Has a 1/8" pipe thread part way up the stem which allows for minimum protrusion. N/P finish, has screwdriver type cap. Packed 25 to a box.

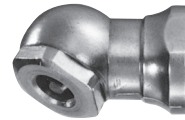


Air Chucks

For regular airlines.

Model No. 05499 0000

Ball-foot air chuck, 1/4" female port. Packed 10 to a box.



Model No. 06739 0000

Ball-foot air chuck with clip. Fits standard valve mouth. Saves holding on by hand. Has 1/4" port for connecting to hose. Packed 10 to a box.



D

Tanks & Air Chucks

Mufflers & Silencers

Relief & Exhaust Valves

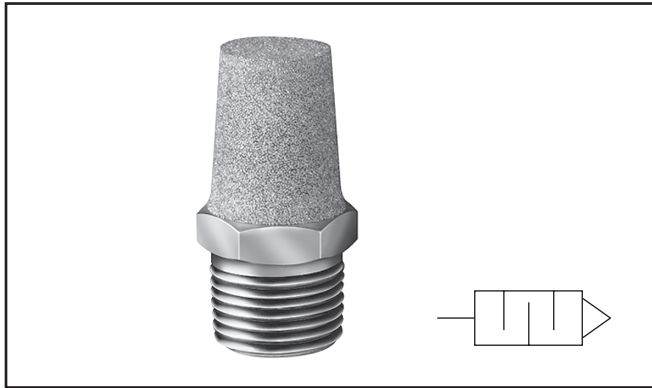
Pressure Switches

AirGuard Protection

Drain Valves

Safety Blow Guns

**EM Series – Sintered Bronze
Muffler / Filters**



General Description

Muffler / filters effectively reduce air exhaust noises to an industry accepted level with minimum flow restriction. They protect valves, impact wrenches, screw drivers and other air tools by preventing dirt and other foreign matter from entering the system. Non-corrosive. Can be cleaned with many common solvents.

Specifications

Maximum Operating Pressure250 PSIG (Air)

Operating Temperature 0° to 300°F*

* Ambient temperatures below freezing require moisture-free air. Ambient temperatures below freezing and above 180° require lubricants especially selected for suitability at these temperatures. Pneumatic valves should be used with filtered and lubricated air.

Model Number	Pipe Thread	Overall Length	Hex Size
EMM5	M5	.75	5/16"
EM12	1/8"	1.00	7/16"
EM25	1/4"	1.32	9/16"
EM37	3/8"	1.54	11/16"
EM50	1/2"	1.85	7/8"
EM75	3/4"	2.29	1-1/16"
EM100	1"	2.91	1-5/16"
EM125	1-1/4"	3.25	1-11/16"
EM150	1-1/2"	3.69	2"

Muffler / Flow Controls



General Description

Muffler / flow controls provide an acceptable exhaust noise level and effectively meter exhaust. Installed in valve exhaust ports, they control cylinder piston speeds throughout a wide range. The adjusting screw cannot be accidentally blown out, can be locked to maintain setting. Brass and bronze construction. Clean with commonly used solvents.

Specifications

Maximum Operating Pressure250 PSIG (Air)

Operating Temperature 0° to 300°F*

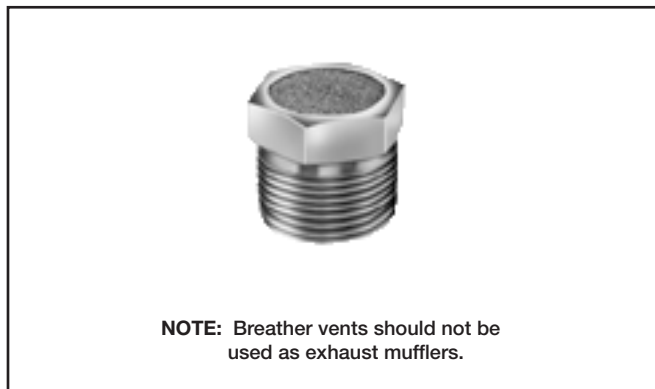
* Ambient temperatures below freezing require moisture-free air. Ambient temperatures below freezing and above 180° require lubricants especially selected for suitability at these temperatures. Pneumatic valves should be used with filtered and lubricated air.

Model Number	Pipe Thread	Overall Length	Hex Size
04502 0002	1/8"	1.15	9/16"
04504 0004	1/4"	1.42	1/2"
04506 0060	3/8"	1.49	11/16"
04508 0080	1/2"	1.77	7/8"
04512 0012	3/4"	1.98	1-1/16"
04516 0016	1"	2.15	1-5/16"

D

- Tanks & Air Chucks
- Mufflers & Silencers
- Relief & Exhaust Valves
- Pressure Switches
- AirGuard Protection
- Drain Valves
- Safety Blow Guns

Breather Vents



NOTE: Breather vents should not be used as exhaust mufflers.

General Description

These low silhouette versions of the muffler / filter are useful where space is a problem and / or to prevent contamination. Use for vacuum relief or pressure equalization in gear boxes, oil tanks, reservoirs, etc.

Specifications

Maximum Operating Pressure 150 PSIG (Air)

Operating Temperature 0° to 300°F*

Material:.....

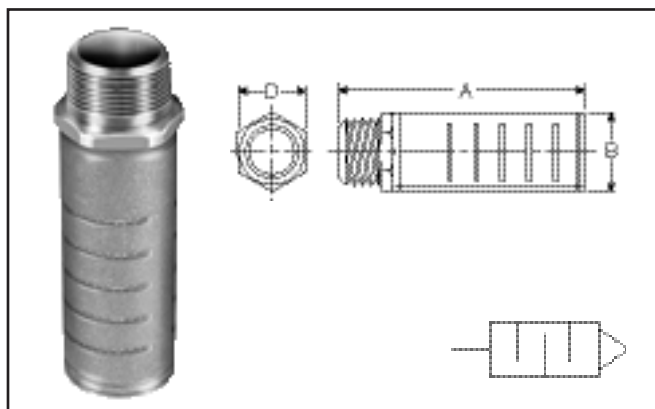
Breather vent: Sintered bronze,

Housing: Zinc plated steel

* Ambient temperatures below freezing require moisture-free air. Ambient temperatures below freezing and above 180° require lubricants especially selected for suitability at these temperatures. Pneumatic valves should be used with filtered and lubricated air.

Model Number	Pipe Thread	Overall Length	Hex Size
04702 0002	1/8"	0.44	7/16"
04704 0004	1/4"	0.63	9/16"
04706 0006	3/8"	0.75	11/16"
04708 0008	1/2"	0.88	7/8"
04712 0012	3/4"	1.00	1-1/6"
04716 0016	1"	1.31	1-5/16"
04720 0020	1-1/4"	1.41	1-11/16"
04724 0024	1-1/2"	1.50	2"

ES Series – Silencer



General Description

The silencer is designed to give superior performance in noise control with a minimum effect on air efficiency. "Trimline" design allows location in the tightest places without extra plumbing and fittings. Fits directly into the exhaust port of more than 90% of present commercial valves. Slotted body permits rapid discharge of air without undesirable back pressure. Unique nylon screen element resists dirt buildup or clogging.

Specifications

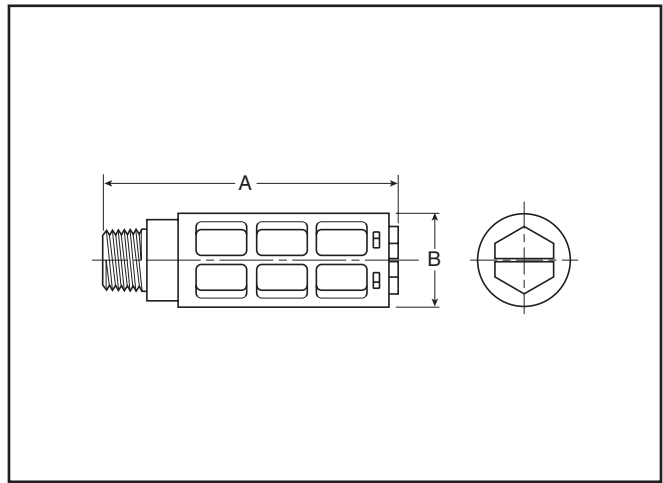
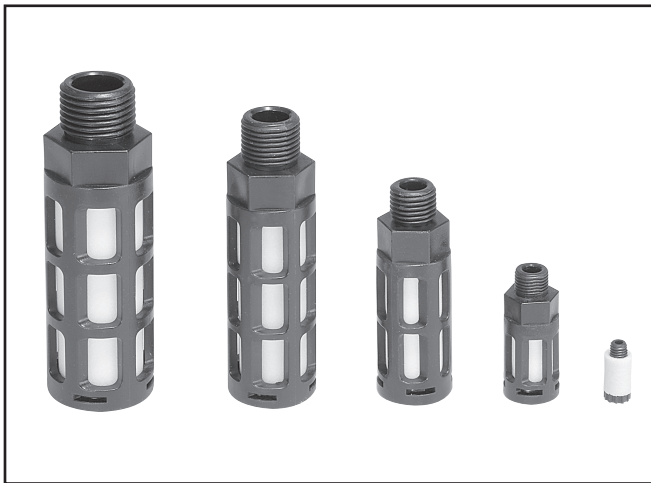
Maximum Operating Pressure 250 PSIG (Air)

Operating Temperature 0° to 300°F*

* Ambient temperatures below freezing require moisture-free air. Ambient temperatures below freezing and above 180° require lubricants especially selected for suitability at these temperatures. Pneumatic valves should be used with filtered and lubricated air.

Model Numbers		Pipe Thread	Flow SCFM @ 100 PSIG Inlet	Dimensions		
NPTF	BSPT (R)			A	B	D
ES12MC	ESB12MC	1/8"	115	1.85	0.81	0.63
ES25MC	ESB25MC	1/4"	129	1.85	0.81	0.63
ES37MC	ESB37MC	3/8"	219	3.31	1.26	1.00
ES50MC	ESB50MC	1/2"	549	3.31	1.26	1.00
ES75MC	ESB75MC	3/4"	893	4.56	2.01	1.62
ES100MC	ESB100MC	1"	1,013	4.56	2.01	1.62
ES125MC	ESB125MC	1-1/4"	1,486	5.69	2.88	—
ES150MC	ESB150MC	1-1/2"	1,580	5.69	2.88	—

D
 Tanks & Air Chucks
 Mufflers & Silencers
 Relief & Exhaust Valves
 Pressure Switches
 AirGuard Protection
 Drain Valves
 Safety Blow Guns



Features

- Compact
- Lightweight
- Easy to Install
- Excellent Noise Reduction
- Protects Components from Contamination
- NPT and BSPT Threads Available

Application

The plastic silencer is designed to give excellent noise reduction with a minimum effect on air efficiency. The "Trimline" design allows for locating the silencer in the tightest places without extra plumbing or fittings. Fits directly into the exhaust port of most commercial valves. Open surface area of element allows for rapid discharge of air without undesirable back pressure.

Part Number		Thread Size	A (mm)	B (mm)	Maximum Flow (SCFM) 100 PSIG Inlet	Sound Pressure Level (dBA)	
NPT	BSPT					20 PSIG Inlet	100 PSIG Inlet
AS-5		M5	0.43 (11)	0.32 (8)	15	69	79
ASN-6	AS-6	1/8"	1.57 (40)	0.63 (16)	51	69	81
ASN-8	AS-8	1/4"	2.56 (65)	0.83 (21)	124	67	84
ASN-10	AS-10	3/8"	3.35 (85)	0.98 (25)	247	83	98
ASN-15	AS-15	1/2"	3.74 (95)	1.18 (30)	370	69	96

Specifications

Pressure Rating.....0 to 150 PSIG
 (0 to 10 bar, 0 to 1034 kPa)

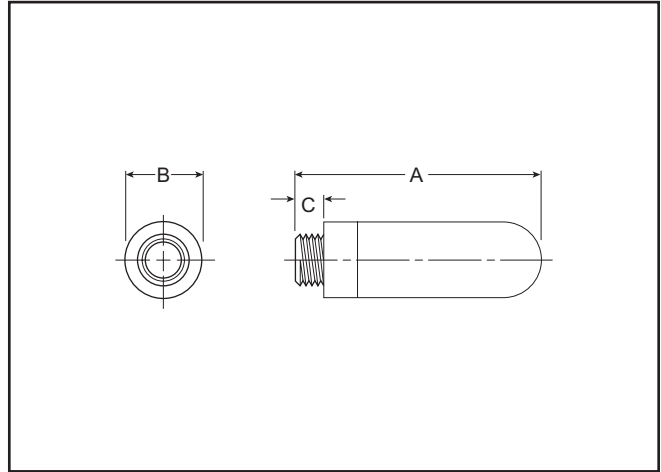
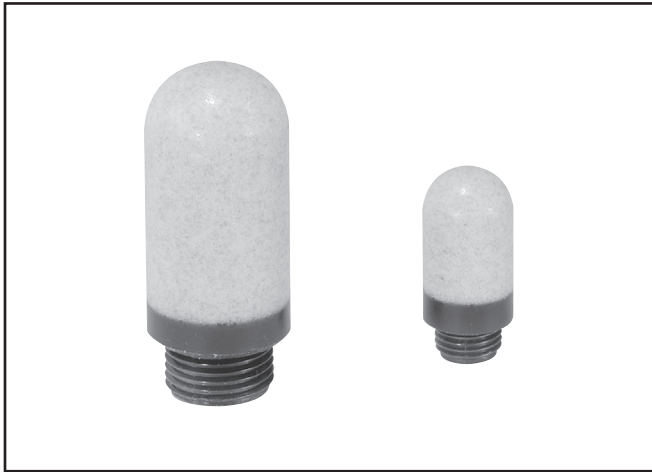
Temperature Rating 14°F to 140°F (-10°C to 60°C)

BodyAcetal (Plastic)

Element Polyethylene

D

- Tanks & Air Chucks
- Mufflers & Silencers
- Relief & Exhaust Valves
- Pressure Switches
- AirGuard Protection
- Drain Valves
- Safety Blow Guns



D

Tanks & Air Chucks
 Mufflers & Silencers
 Relief & Exhaust Valves
 Pressure Switches
 AirGuard Protection
 Drain Valves
 Safety Blow Guns

Features

- All Plastic Ultra Light Weight Versions
- High Noise Level Reduction
- Low Back Pressure Generation

Application

The plastic silencer is designed to give excellent noise reduction with a minimum effect on air efficiency. The “Trimline” design allows for locating the silencer in the tightest places without extra plumbing or fittings. Fits directly into the exhaust port of most commercial valves. Open surface area of element allows for rapid discharge of air without undesirable back pressure.

Part Number	Port Thread	A	Diameter B	C	Weight (grams)
P6M-PAC5	M5	0.91 (23)	0.26 (6,5)	0.16 (4)	0.01
P6M-PAB1	G1/8	1.14 (29)	0.55 (14)	0.24 (6)	0.02
P6M-PAB2	G1/4	1.34 (34)	0.67 (17)	0.24 (6)	0.04
P6M-PAB3	G3/8	2.36 (60)	0.98 (25)	0.35 (9)	0.06
P6M-PAB4	G1/2	2.52 (64)	0.98 (25)	0.43 (11)	0.10
P6M-PAB6	G3/4	5.51 (140)	1.50 (38)	0.55 (14)	0.50
P6M-PAB8	G1	6.30 (160)	1.89 (48)	0.79 (20)	0.62

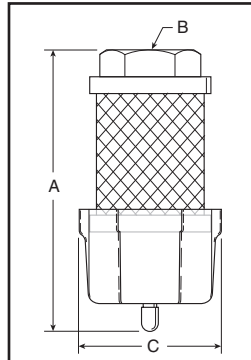
Specifications

Pressure Rating..... 0 to 246 PSIG
 (0 to 17 bar, 0 to 1700 kPa)

Temperature Rating

Plastic 14°F to 176 °F (-10°C to 80°C)
Metal..... 14°F to 165 °F (-10°C to 74°C)

Efficiency92%



Dimensions:

Model	A	B	C
ECS3	5.30 (135 mm)	1/2" NPT	2.57 (65 mm)
ECS5	7.30 (185mm)	1" NPT	2.57 (65mm)

Operation

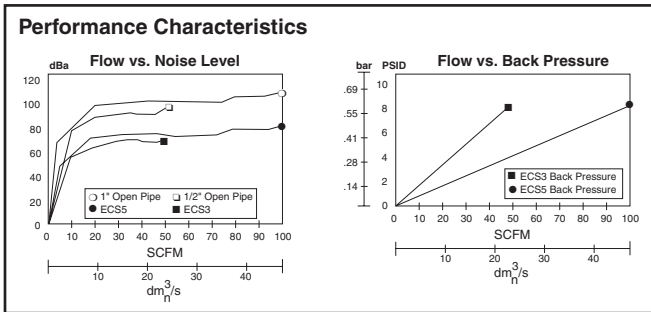
Compressor oils and lubricating oils are exhausted from valves, cylinders and air motors into the ECS. Oil aerosols are "coalesced" into larger droplets and gravity pulls them into the attached drain sump. The sump can then be drained manually or by using a 1/4" ID plastic tube drain. The air flowing into the ECS is also muffled or silenced as it enters the inside of the ECS and passes through the filter media into the atmosphere.

Proven Technology

The ECS units are constructed from the same materials that go into our oil removal coalescing filter elements.

The seamless design insures media uniformity and strength. This proven technology provides high coalescing efficiency with low pressure drop.

The filter media is supported by cylindrical perforated steel retainers both inside and out. These retainers, fully plated for excellent corrosion resistance, give the ECS units high rupture strength in either flow direction. These filters can also be used as high efficiency inlet or bypass filters for vacuum pumps, or breather elements to protect the air above critical process liquids.



Features

The ECS (Muffler-Reclassifier) eliminates unwanted oil mist and reduces exhaust noise from pneumatic valves, cylinders and air motors.

- 99.97% Oil Removal Efficiencies
- 25 dBA Noise Attenuation
- 1/2" NPT and 1" NPT
- Disposable Units
- Continuous or Plugged Drain Option
- Metal Retained Construction
- Fast Exhaust Time

Improve Overall Plant Environment

Exhaust oil mist and noise pollution have a direct impact on worker productivity.

Oil aerosol mist from lubricators and compressors is pervasive and enters the industrial plant environment through the exhaust ports of valves, cylinders and air motors. This rapidly expanding exhaust also produces sudden and excessive noise.

The ECS (Muffler-Reclassifier) is 99.97% efficient at removing the oil aerosols. The ECS also acts as a silencer to lower the dBA levels below O.S.H.A. requirements.

The result is a cleaner, quieter environment which equates to greater work productivity and safety.

ECS3 / ECS5

The ECS solves two problems inherent in compressed air exhaust from valves, cylinders and air motors - oil mist removal and noise abatement.

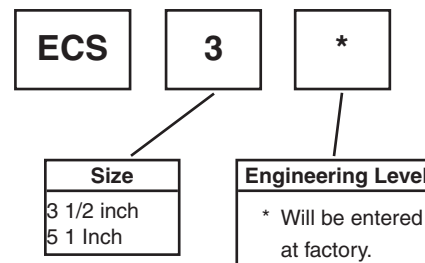
The ECS will improve your industrial plant environment, thereby improving worker productivity.

Specifications

Maximum Operating Temperature 125°F (52°C)

Maximum Line Pressure..... 100 PSIG (6.8 bar)

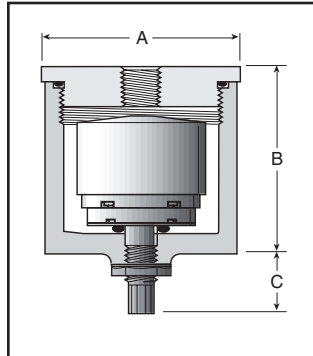
Ordering Information



D

- Tanks & Air Chucks
- Mufflers & Silencers
- Relief & Exhaust Valves
- Pressure Switches
- AirGuard Protection
- Drain Valves
- Safety Blow Guns

Automatic Drip Leg Drain



A	B	C
2.50	2.37	0.87
64 mm	60 mm	22 mm

Features

- Auto Drain Ported 1/8" to Pipe Away Liquid.
- Drain has Manual Override
- Easily Serviced without Tool
- 20-250 PSIG Range
- Compact Size

Specifications

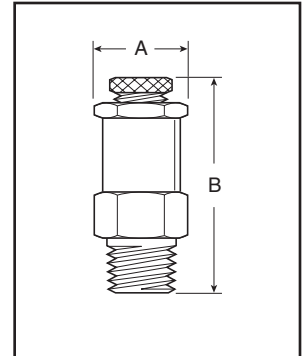
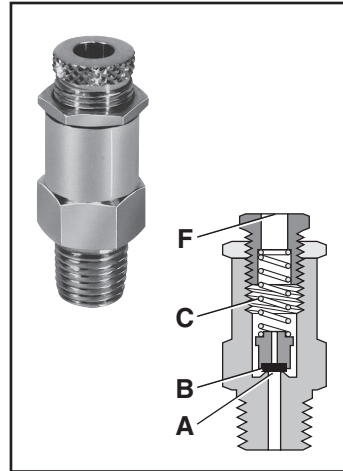
Housing & Cap	Aluminum
Port Threads	1/4" - 1/2" Top 1/8" Drain
Pressure and Temperature Ratings:	
Metal Bowl	20 to 250 PSIG (0 to 17.2 bar) 32°F to 175°F (0°C to 80°C)
Seals	Buna N

Ordering Information

Consists of Drip Leg Drain Housing WITH Auto Drain.

Model No.	Size
06D1NA	1/4"
06D3NA	1/2"

Relief Valve



A	B
0.75 Hex	1.88 - 2.25
19 mm	47.8 - 57.2 mm

Features

- Large Relief Capacity (70.39 SCFM @ 150 PSI when fully opened) in a Compact Size
- Lightweight Aluminum Construction with Resilient Seat

Application

The RV01A1N Pop Off Relief Valve is designed to protect against excessive pressure buildup in a pneumatic circuit or system.

Operation*

With the relief valve mounted in a reservoir or system, the force of system pressure at (A) is offset by the force of spring (C) acting on poppet seat (B). At pressures lower than the setting, the poppet seat (B) is held against the body at (A) effecting a seal. As pressure approaches set point, the poppet begins to vent until set point is reached, at which time the poppet seat (B) lifts off the body at (A) allowing the excess pressure to vent to atmosphere at (F). When the excess pressure has been vented, the spring (C) acts on the poppet seat (B) forcing it to seat on the body at (A), sealing off the flow of air.

Specification

Body & Adjusting Screw	Aluminum
Locking Nut	Steel
Seat	Nitrile
Spring	Steel
Poppet	Plastic
Operating Temperature †	0°F to 200°F (-17°C to 93°C)
Port Threads	1/4 Inch Male
Relief Range	10 to 200 PSIG (.7 to 14 bar) with standard spring.

* Ref: 1RV100B Installation & Service Instructions

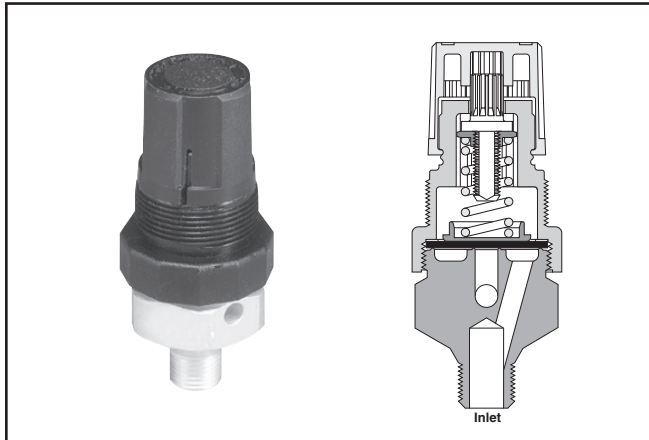
† Only if using dry air for temperatures below 32°F (0°C)

Ordering Information

RV01A1N	XXX	
	10 -200 PSI	Blank BUNA V Fluorocarbon

D
 Tanks & Air Chucks
 Mufflers & Silencers
 Relief & Exhaust Valves
 Pressure Switches & Protection
 Drain Valves
 Safety Blow Guns

130 Relief Valve



Features

- Compact, Sensitive Diaphragm-type Relief Valve
- Push-pull, Locking Knob
- Knob and Top Work the Same as a Miniature Regulator
- 130 has Lightweight Aluminum Construction
- 134 has a brass body, captured exhaust and is an Inline Type with 3 Inlet Ports and 1 Outlet Port

Applications

- Designed to Protect Against Excessive Pressure Buildup in a Pneumatic Circuit or System
- For Use where Gradual Proportional Relief is Required

Operation

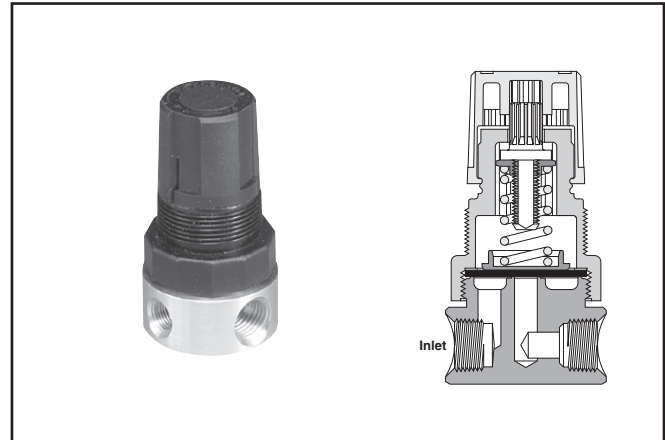
- Turn relief valve knob clockwise for maximum pressure.
- Set pressure going into relief valve at desired pressure.
- Turn relief valve knob counter-clockwise until exhaust starts to bleed.
- Turn relief valve knob clockwise until exhaust stops bleeding. Push to lock knob.

Ordering Information

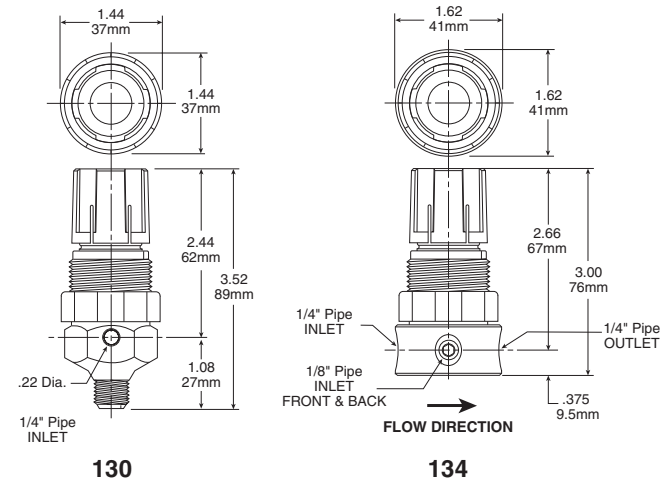
Relief Valve	Spring Range			
	0-15 PSIG	0-25 PSIG	0-50 PSIG	0-100 PSIG
130	130-02AA	130-02A	130-02B	130-02C
	130-02AAP*	130-02AP*	130-02BP*	130-02CP*
134	134-02AA	134-02A	134-02B	134-02C
	134-02AAP*	134-02AP*	134-02BP*	134-02CP*

* Panel mount nut included.

134 Relief Valve



Dimensions



Relief Valve Kits

- Bonnet Assembly KitPCKR364Y
- Panel Mount NutPR05X51

Specifications

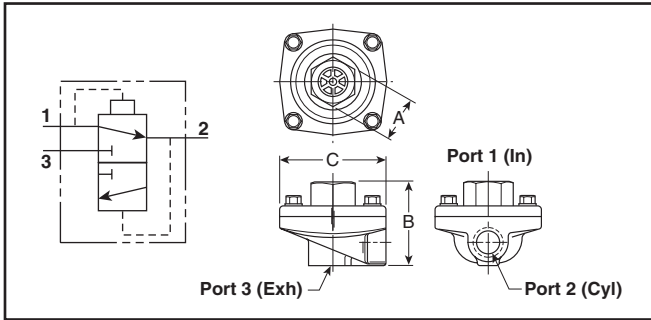
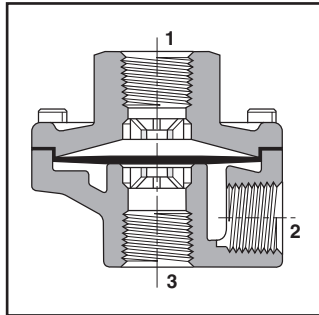
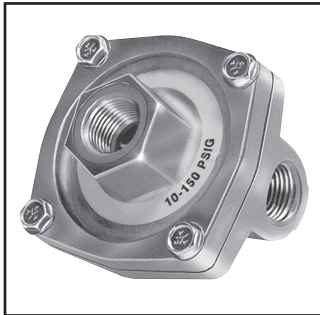
- Relief Range0 to 100 PSIG (0 to 6.9 bar)
- Maximum Inlet Pressure300 PSIG (20.7 bar)
- Operating Temperature 40°F to 120°F (4°C to 49°C)
- Port Threads:
- 130 1/4" Pipe Male Only
- 134 Inlet Port – Two 1/8" & One 1/4" Pipe
 Outlet Port – 1/4" Pipe

Materials of Construction

- Adjusting Knob Polypropylene
- Adjusting ScrewZinc-plated Steel
- Body Aluminum (130); Brass (134)
- Diaphragm / DiscBuna-N
- NutChromated Steel
- Spring Cage Acetal
- SpringZinc-plated Steel

Quick Exhaust & Shuttle Valves

OR Series – 1/8" thru 3/4" Ports



Valve Specifications

Operating Pressure (Air)

Maximum:

150 PSIG
200 PSIG for Model No. 0R37TB (PTFE diaphragm)

Minimum:

3 PSIG
50 PSIG for Model No. 0R37TB (PTFE diaphragm)

Operating Temperature:

Urethane: 0°F to 180°F* (-18°C to 80°C)
Nitrile: 0°F to 180°F* (-18°C to 80°C)
Fluorocarbon: 0°F to 400°F* (-18°C to 205°C)
PTFE: 0°F to 500°F* (-18°C to 260°C)

* Ambient temperatures below freezing require moisture-free air. Ambient temperatures below freezing and above 180° require lubricants especially selected for suitability at these temperatures. Pneumatic valves should be used with filtered and lubricated air.

Component Materials

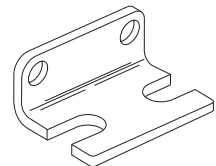
Body Material..... Die cast aluminum
Static Seals..... Nitrile standard with urethane (Others see below)
Diaphragm Standard – Urethane
Optional – Fluorocarbon, PTFE, or Nitrile (Depending on size)

Mounting Bracket Kit –

No. 036408100

(Including body screws)

For “0R12” and “0R25” sizes with 7/8” “A” Dimension.



General Information

Quick exhaust valves provide rapid exhaust of control air when placed between control valve and actuator. They can also be used as shuttle valves. Diaphragm materials are available in urethane, Nitrile, Fluorocarbon, and PTFE to meet a wide variety of operating conditions.

Model Selection, Performance Data and Dimensions

Port 1	Port		Flow (SCFM) [†]	Model Number		A	B	C	Service Kit No.
	2	3		NPTF	BSPP “G”				
STANDARD URETHANE DIAPHRAGMS (Nitrile static seals)									
1/4"	1/4"	3/8"	150	0R25NB	0RB25NB	1" Hex	2.06	2.44	033400105
	3/8"	3/8"	240	0R25PB	—	1" Hex	2.06	2.44	033400105
3/8"	3/8"	3/8"	240	0R37B	0RB37B	1" Hex	2.06	2.44	033400105
1/2"	1/2"	1/2"	450	0R50B	0RB50B	1-1/2" Hex	2.88	3.38	034750109
3/4"	3/4"	3/4"	550	0R75B	0RB75B	1-1/2" Hex	2.88	3.38	034750109
NITRILE DIAPHRAGMS (Nitrile static seals)									
1/8"	1/8"	1/8"	70	0R12B	0RB12B	7/8" Sq.	1.75	1.88	036408000
	1/8"	1/4"	70	0R12NB	0RB12NB	7/8" Sq.	1.75	1.88	036408000
1/4"	1/4"	1/4"	90	0R25B	0RB25B	7/8" Sq.	1.75	1.88	036408000
	1/4"	3/8"	90	0R25NFB	0RB25NFB	1" Hex	2.06	2.44	033408000
3/8"	3/8"	3/8"	240	0R37FB	0RB37FB	1" Hex	2.06	2.44	033408000
3/4"	3/4"	3/4"	550	0R75FB	0RB75FB	1-1/2" Hex	2.88	3.38	034759000
FLUOROCARBON DIAPHRAGMS for extended temperature operation (Fluorocarbon static seals)									
1/8"	1/8"	1/8"	70	0R12VB	0RB12VB	7/8" Sq.	1.75	1.88	036508000
	1/8"	1/4"	70	0R12NVB	0RB12NVB	7/8" Sq.	1.75	1.88	036508000
1/4"	1/4"	1/4"	90	0R25VB	0RB25VB	7/8" Sq.	1.75	1.88	036508000
3/8"	3/8"	3/8"	240	0R37VB	0RB37VB	1" Hex	2.06	2.44	033400319
1/2"	1/2"	1/2"	450	0R50VB	0RB50VB	1-1/2" Hex	2.88	3.38	034750120
3/4"	3/4"	3/4"	550	0R75VB	0RB75VB	1-1/2" Hex	2.88	3.38	034750120
PTFE DIAPHRAGMS for higher pressure and temperature (Fibre static seals)									
3/8"	3/8"	3/8"	240	0R37TB	0RB37TB	1" Hex	2.06	2.44	033400504

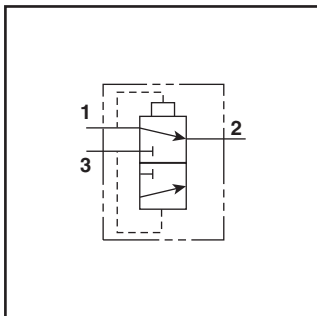
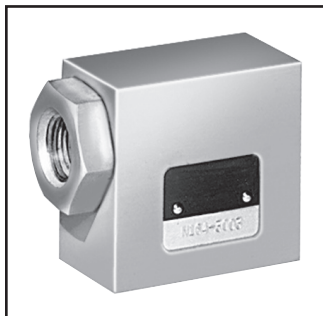
† At 100 PSIG inlet pressure with full pressure drop.

BOLD ITEMS ARE MOST POPULAR.

D
 Tanks & Air Chucks
 Mufflers & Silencers
 Relief & Exhaust Valves
 Pressure Switches
 AirGuard Protection
 Drain Valves
 Safety Blow Guns

Shuttle Valve

Accessories 1/8" to 3/8" Ports



General Information

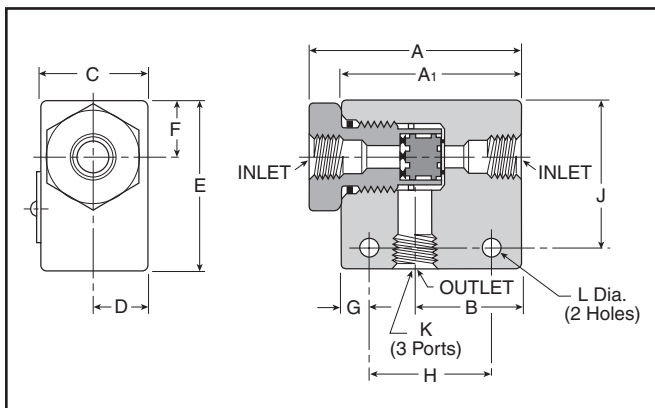
Shuttle valves determine a single pneumatic output from two separate inputs. If pressure is applied to both ports simultaneously, the valve will select the port with the higher pressure.

Valve Specifications

Maximum Operating Pressure200 PSIG Maximum
3 PSIG Minimum: Differential Pressure

Operating Temperature0° to 160°F*

* Ambient temperatures below freezing require moisture-free air. Ambient temperatures below freezing and above 180° require lubricants especially selected for suitability at these temperatures. Pneumatic valves should be used with filtered and lubricated air.



Component Materials

Body Material..... Aluminum

Internal Components..... Aluminum

Seals.....Nitrile

Model Selection and Dimensions

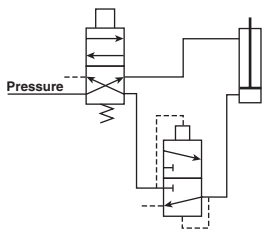
Model Number	Port Size	Dimensions											
		A	A1	B	C	D	E	F	G	H	J	K	L
N164 1001	1/8"	N/A	1.62	0.81	0.62	0.31	1.00	0.281	0.312	1.00	0.75	1/8 - 27	0.219
N164 2003	1/4"	2.50	2.12	1.25	1.25	0.62	2.00	0.67	0.265	1.25	1.35	1/4 - 18	0.219
N164 3003	3/8"	2.50	2.12	1.25	1.25	0.62	2.00	0.67	0.265	1.25	1.35	3/8 - 16	0.219

Performance Data – Flow

Model Number	Port Size	Flow (Cv)
N164 1001	1/8"	0.32
N164 2003	1/4"	1.65
N164 3003	3/8"	2.02

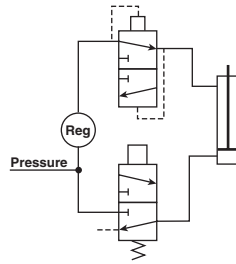
D
Tanks & Air Chucks
Mufflers & Silencers
Relief & Exhaust Valves
Pressure Switches
AirGuard Protection
Drain Valves
Safety Blow Guns

Typical “Quick Exhaust Valve” Applications



Rapid Retraction – Double Acting Cylinder

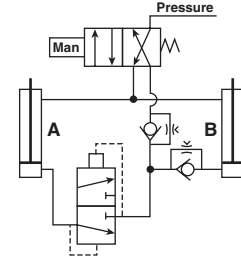
In this circuit, air is exhausted through a Quick Exhaust Valve that is **close coupled** to the cap end of the cylinder. Because the Quick Exhaust Valve has a greater exhaust capacity than the four-way Control Valve, increased cylinder speed can be accomplished with a smaller and less expensive control valve.



Dual Pressure Actuation of Double Acting Cylinder

This circuit utilizes a Quick Exhaust Valve and a three-way Control Valve to permit rapid extension of the cylinder at a high pressure. Under life.

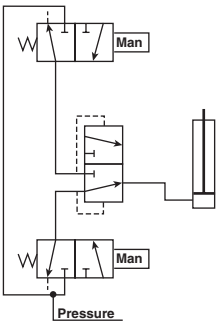
NOTE: Line pressure must be 3 or 4 times greater than rod end pressure. Effective working pressure is the differential between the cap and rod end.



Bi-Directional Control of Two Double Acting Cylinders

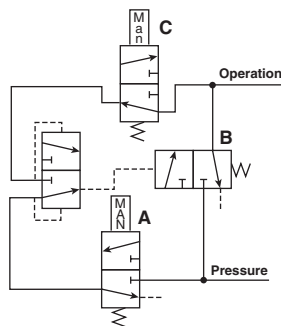
This circuit provides maximum control with a minimum of valving. A large four-way Control Valve is not needed to permit the rapid retraction of Cylinder A, as the Quick Exhaust Valve performs this function. The extension of Cylinders A and B and retraction of Cylinder B are controlled by Speed Control Valves.

Typical “Shuttle Valve” Applications



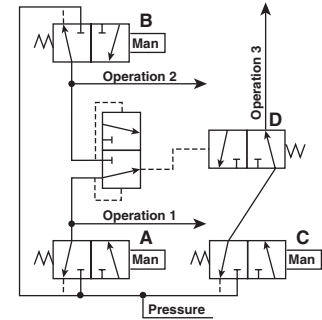
“OR” Circuit

The most common application of the Shuttle Valve is the “OR” Circuit. Here a cylinder or other work device can be actuated by either control valve. The valves can be manually or electrically actuated and located in any position.



Memory Circuit

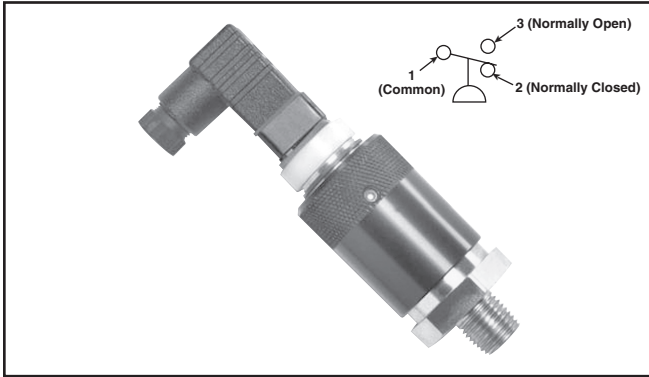
This circuit enables continuous operation once initiated. Pressure is delivered to the circuit when Valve A is actuated. This allows pressure to pass through the shuttle valve actuating Valve B. Pressure then flows through Valve B and also the other side of the shuttle valve which holds Valve B open for continuous operation. To unlock the circuit, Valve C must be opened to exhaust the circuit and allow Valve B to return to its normally closed position.



Interlock

This circuit prevents the occurrence of a specific operation while one or another operation takes place. When either Valve A or B is actuated to perform operation 1 or 2, Valve D is shifted to the closed position and prevents operation 3 from occurring.

Pressure Switch – PPS1

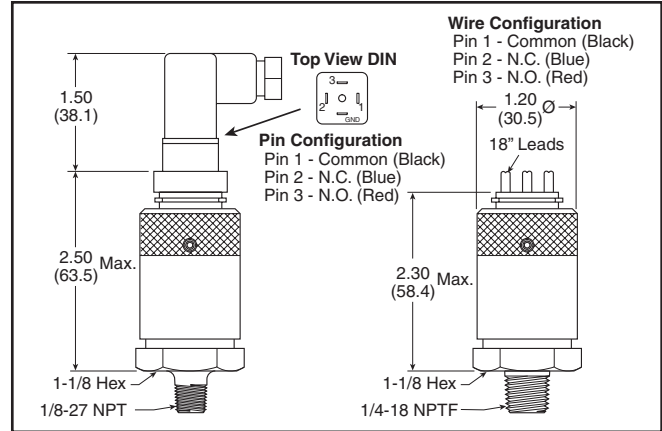
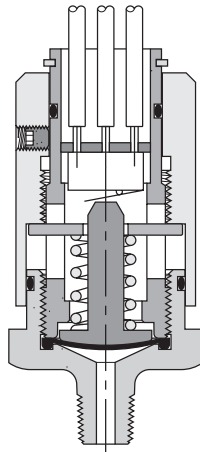


Features:

- Long life elastomer diaphragm
- High quality snap action switch
- Field adjustable
- Compact design
- Easily customized
- Quick delivery
- NEMA 4, 13

Operation

The pressure switch monitors the air pressure in your pneumatic system. When the pressure in your system either drops below or exceeds the set point pressure, an electrical output is given.



Definitions and Terminology

Repeatability — Accuracy is the maximum allowable set point deviation of a single pressure or temperature switch under one given set of environmental and operational conditions.

Single Pole Double Throw (SPDT) Switching element — A SPDT switching element has one normally open, one normally closed and one common terminal. Three terminals mean that the switch can be wired with the circuit either normally open (NO), or normally closed (NC), or both.

Dead Band — The dead band, sometimes referred to as “differential” or “hysteresis”, is the change in pressure between actuation and deactuation set points.

Ordering Information

PPS1 - 1 C 3 - R HM

Thread	Circuit	Range	Set Point Direction	Electrical Connection
1 1/4" NPT Male	C SPDT	1 3-10 PSI	R Rising	HM DIN 9.4mm
2 1/8" NPT Male		2 6-30 PSI		WL Wire Leads
17 1/4" BSPP Male		3 20-120 PSI		18"
18 1/8" BSPP Male		4 100-400 PSI†		

* Factory setting for calibration purposes
 Range 1 = 6 PSI
 Range 2 = 18 PSI
 Range 3 = 70 PSI
 Range 4 = 250 PSI

† Only available in 1/4" NPT

Note: Switch is field adjustable.

Specifications

Set Point Tolerance	±1 PSI or 5% (.07 bar)	
Temperature Range	-40F° to 220F° (-40C° to 105C°)	
Max. Operating Pressure (Ranges 1, 2, 3)	250 PSI (17.2 bar)	
Max. Operating Pressure (Range 4)	2000 PSI (137.9 bar)	
Deadband	10 - 20% of set pressure	
Current Rating	3A @ 125 VAC 2A @ 30 VDC (Resistive)	
Circuit Form	SPDT Standard	
Cycle Life	1 Million	

Materials of Construction

Adjustment Knob	Anodized Aluminum
Body	Brass
Diaphragm	Nitrile



Zero air loss condensate drains are designed for economical removal of unwanted water, oil emulsions, and other liquids. These drains will only open when liquid is present and will not allow any compressed air to escape from the system.

Operating Information

Maximum pressure	232 PSIG (16 bar)
Ambient operating temperature	35°F to 140°F (1.6°C to 60°C)
Voltages	NPT 115/50-60Hz, standard
Optional:	BSPP ports 230/50-60Hz & 24VDC

Zero Air Loss Condensate Drains

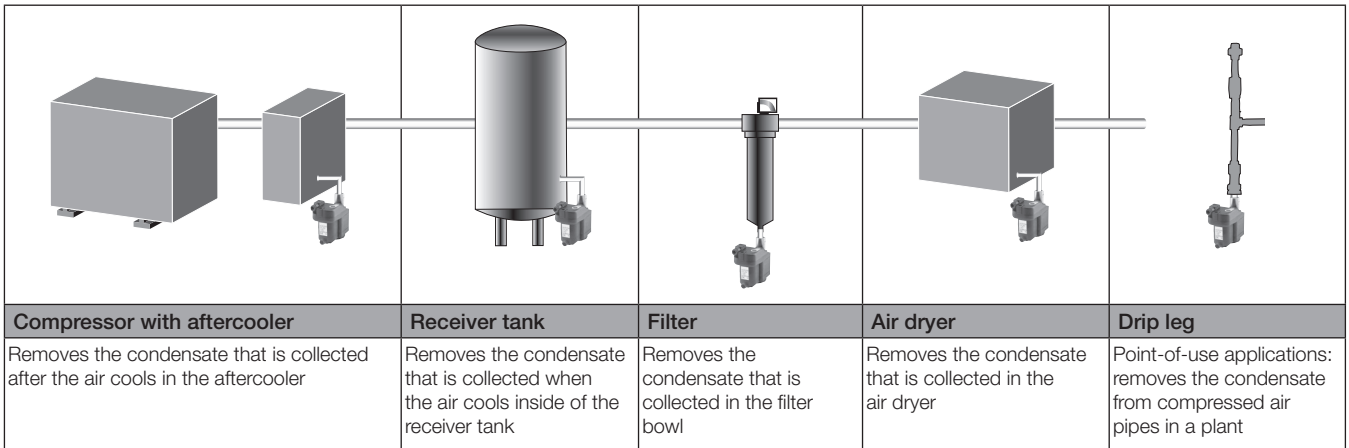
Port size (NPT)	Compressor Aftercooler (SCFM)*	Capacity Refrigeration Dryer (SCFM)**	Filter (SCFM)	Drain Capacity per Day (gal/liter)	Model Number	Service Kit
1 @ 3/8 (in), 1 @ 3/8 (out)	—	—	424	6 (22.7)	ED3002N115-K	SKED3000N115
1 @ 1/2 (in), 1 @ 3/8 (out)	141	282	1,413	13 (49.2)	ED3004N115-K	SKED3000N115
2 @ 1/2 (in), 1 @ 3/8 (out)	247	494	2,472	23 (87.1)	ED3007N115-K	SKED3000N115
2 @ 1/2 (in), 1 @ 3/8 (out)	1,059	2,119	10,594	100 (378.5)	ED3030N115-K	SKED3000N115
2 @ 1/2 (in), 1 @ 3/8 (out)	3,532	7,063	35,315	330 (1,249.2)	ED3100N115-K	SKED3000N115

* Based on 100 PSI working pressure, air compressor inlet at 77°F (25°C) at 60% RH, air discharge temperature of 95°F (35°C) following the aftercooler, pressure dewpoint of 37°F (2.8°C) after the refrigerated dryer.

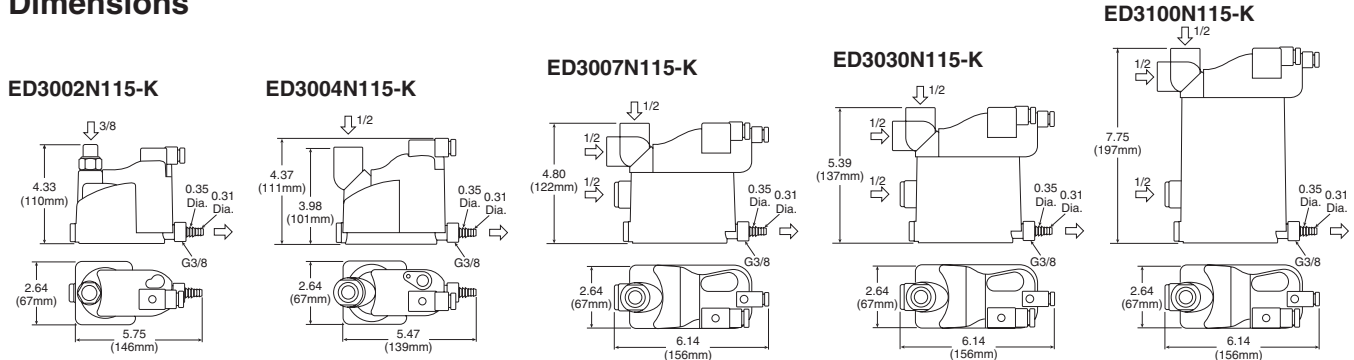
** Condensate from aftercooler or refrigerated dryer to be drained upstream – only for residual oil content or small quantities of condensate.

Note: A 6 ft. line cord will be included with each drain.

Where are condensate drains used?



Dimensions



D

- Tanks & Air Chucks
- Mufflers & Silencers
- Relief & Exhaust Valves
- Pressure Switches
- AirGuard Protection
- Drain Valves
- Safety Blow Guns

Safety Blow Guns

Brass Nozzle & Vortec FLO-GAIN Blow Guns

O.S.H.A. Certification — All safety blow guns conform to the requirements of Compressed Air Standards as currently described in the U.S. Bureau of Labor Standards, paragraph 1910.242, when pressurized at the inlet to a maximum of 100 PSIG. Conform to current O.S.H.A. Directive No. 100-1.

Brass Nozzle Blow Guns

Contoured lever or button control both provide a natural, comfortable grip even when used with gloves. Finger guard and hang-up hook for finger protection and quick safe storage. Die cast zinc body, painted finish.

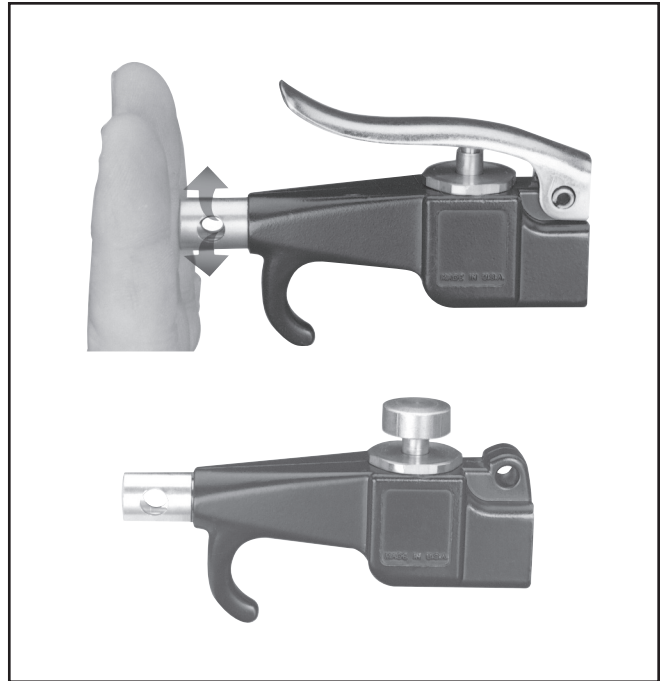
Lever Operated

Part Number	Inlet Port	SCFM Rating*
00475 0010	1/4"	20

Button Operated

Part Number	Inlet Port	SCFM Rating*
00470 0010	1/4"	20

*Based on 100 PSIG inlet pressure.



Vortec FLO-GAIN Blow Guns

A quiet Vortec FLO-GAIN nozzle is combined with a high performance blow gun. Compressed air attains sonic velocity through an adjustable slot and attaches to the exterior surface of the cone shaped nozzle. Settings are shown on a micrometer dial. Sound level of 80 dBA with 80 PSIG inlet. Finger guard and hang-up hook offers desirable finger protection and quick secure storage. Die cast zinc body, painted finish.

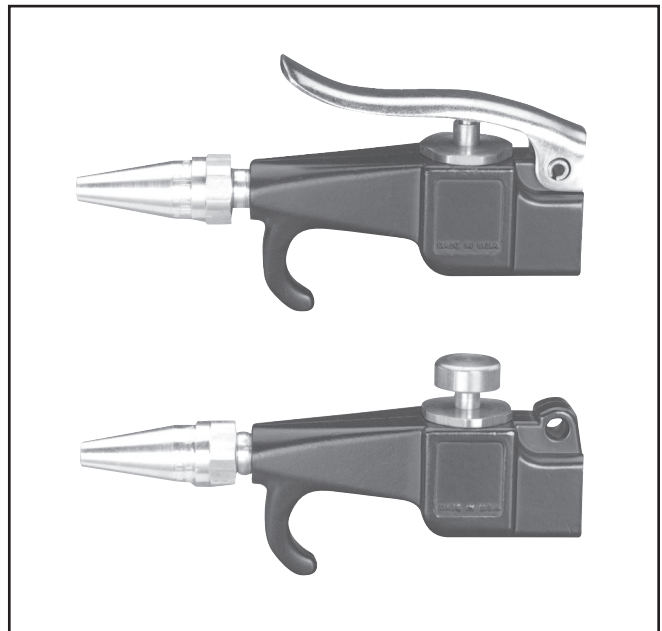
Lever Operated

Part Number	Inlet Port	SCFM Rating*
00475 0900	1/4"	70+

Button Operated

Part Number	Inlet Port	SCFM Rating*
00470 0900	1/4"	70+

*Based on 100 PSIG inlet pressure.



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Tanks & Air Chucks

Mufflers & Silencers

Relief & Exhaust Valves

Pressure Switches
AirGuard Protection

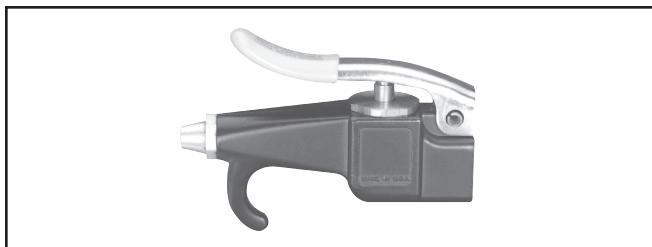
Drain Valves

Safety Blow Guns

Self-Regulating Blow Gun

Designed with integral self-regulating pressure reducing valve for automatic shut-off when nozzle is blocked. Prevents air pressure buildup over 30 PSIG in compliance with U.S. Dept. of Labor standards.

Air shield aids in protecting the operator against blow back of flying chips of dirt. Designed to operate at less than 90 dBA to comply with government regulations. Die cast zinc body, painted finish.



Lever Operated

Part Number	Inlet Port	SCFM Rating*
00475 2900	1/4"	10

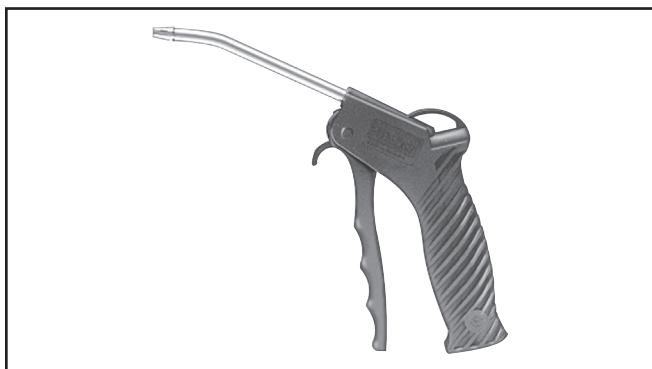
Performance Data

Inlet Pressure	Blocked Pressure	Sound Level
70 PSIG	17.0 PSIG	79 dBA
100 PSIG	21.0 PSIG	83 dBA
175 PSIG	28.0 PSIG	87 dBA

*Based on 100 PSIG inlet pressure.

Pistol Grip Blow Gun

Pistol grip is easy to aim for quick and efficient cleaning. Ideal for all shop housekeeping purposes. Lightweight and easy to handle. Easy trigger action features instant spring adjustment for controlled air. Get the amount of air where you want it with no restrictions, no cut-offs! Makes for a convenient connection for overhead or under bench floor air use.

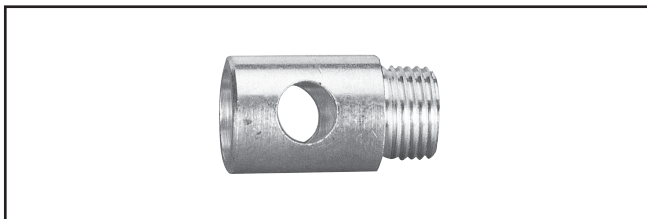


Part Number	Inlet Port	Rated Pressure	Temperature Range	OSHA Rated
BG441-NBL	1/4"	175 PSI	120° F	No

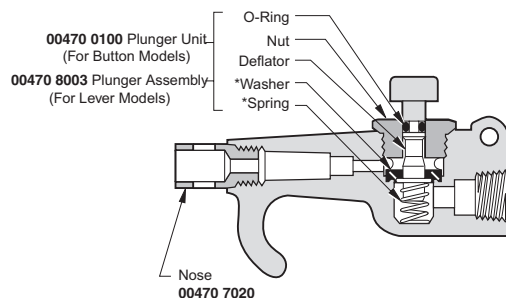
Brass Nozzle

Model No. 00470 7020

General purpose nozzles are supplied as standard on 00470 0010, 00475 0010 and 07184 1000 blow guns. Conform to the requirements of the Williams Steiger Occupational Safety and Health Act of 1970, paragraph 1910.242 when fitted with blow guns pressurized at the inlet to a maximum of 100 PSIG. Conform to O.S.H.A. Directive 100-1.



470 and 475 Series Blow Guns



* Contained in Service Kit No. 00470 0090

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Tanks & Air Chucks
Mufflers & Silencers
Relief & Exhaust Valves
Pressure Switches
AirGuard Protection
Drain Valves
Safety Blow Guns

Notes

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Tanks & Air Chucks
Mufflers & Silencers
Relief & Exhaust Valves
Pressure Switches
AirGuard Protection
Drain Valves
Safety Blow Guns

Safety Guide For Selecting And Using Pneumatic Division Products And Related Accessories

WARNING:

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF PNEUMATIC DIVISION PRODUCTS, ASSEMBLIES OR RELATED ITEMS (“PRODUCTS”) CAN CAUSE DEATH, PERSONAL INJURY, AND PROPERTY DAMAGE. POSSIBLE CONSEQUENCES OF FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THESE PRODUCTS INCLUDE BUT ARE NOT LIMITED TO:

- Unintended or mistimed cycling or motion of machine members or failure to cycle
- Work pieces or component parts being thrown off at high speeds.
- Failure of a device to function properly for example, failure to clamp or unclamp an associated item or device.
- Explosion
- Suddenly moving or falling objects.
- Release of toxic or otherwise injurious liquids or gasses.

Before selecting or using any of these Products, it is important that you read and follow the instructions below.

1. GENERAL INSTRUCTIONS

- 1.1. Scope:** This safety guide is designed to cover general guidelines on the installation, use, and maintenance of Pneumatic Division Valves, FRLs (Filters, Pressure Regulators, and Lubricators), Vacuum products and related accessory components.
- 1.2. Fail-Safe:** Valves, FRLs, Vacuum products and their related components can and do fail without warning for many reasons. Design all systems and equipment in a fail-safe mode, so that failure of associated valves, FRLs or Vacuum products will not endanger persons or property.
- 1.3. Relevant International Standards:** For a good guide to the application of a broad spectrum of pneumatic fluid power devices see: ISO 4414:1998, Pneumatic Fluid Power – General Rules Relating to Systems. See www.iso.org for ordering information.
- 1.4. Distribution:** Provide a copy of this safety guide to each person that is responsible for selection, installation, or use of Valves, FRLs or Vacuum products. Do not select, or use Parker valves, FRLs or vacuum products without thoroughly reading and understanding this safety guide as well as the specific Parker publications for the products considered or selected.
- 1.5. User Responsibility:** Due to the wide variety of operating conditions and applications for valves, FRLs, and vacuum products Parker and its distributors do not represent or warrant that any particular valve, FRL or vacuum product is suitable for any specific end use system. This safety guide does not analyze all technical parameters that must be considered in selecting a product. The user, through its own analysis and testing, is solely responsible for:
 - Making the final selection of the appropriate valve, FRL, Vacuum component, or accessory.
 - Assuring that all user's performance, endurance, maintenance, safety, and warning requirements are met and that the application presents no health or safety hazards.
 - Complying with all existing warning labels and / or providing all appropriate health and safety warnings on the equipment on which the valves, FRLs or Vacuum products are used; and,
 - Assuring compliance with all applicable government and industry standards.
- 1.6. Safety Devices:** Safety devices should not be removed, or defeated.
- 1.7. Warning Labels:** Warning labels should not be removed, painted over or otherwise obscured.
- 1.8. Additional Questions:** Call the appropriate Parker technical service department if you have any questions or require any additional information. See the Parker publication for the product being considered or used, or call 1-800-CPARKER, or go to www.parker.com, for telephone numbers of the appropriate technical service department.

2. PRODUCT SELECTION INSTRUCTIONS

- 2.1. Flow Rate:** The flow rate requirements of a system are frequently the primary consideration when designing any pneumatic system. System components need to be able to provide adequate flow and pressure for the desired application.
- 2.2. Pressure Rating:** Never exceed the rated pressure of a product. Consult product labeling, Pneumatic Division catalogs or the instruction sheets supplied for maximum pressure ratings.
- 2.3. Temperature Rating:** Never exceed the temperature rating of a product. Excessive heat can shorten the life expectancy of a product and result in complete product failure.
- 2.4. Environment:** Many environmental conditions can affect the integrity and suitability of a product for a given application. Pneumatic Division products are designed for use in general purpose industrial applications. If these products are to be used in unusual circumstances such as direct sunlight and/or corrosive or caustic environments, such use can shorten the useful life and lead to premature failure of a product.
- 2.5. Lubrication and Compressor Carryover:** Some modern synthetic oils can and will attack nitrile seals. If there is any possibility of synthetic oils or greases migrating into the pneumatic components check for compatibility with the seal materials used. Consult the factory or product literature for materials of construction.
- 2.6. Polycarbonate Bowls and Sight Glasses:** To avoid potential polycarbonate bowl failures:
 - Do not locate polycarbonate bowls or sight glasses in areas where they could be subject to direct sunlight, impact blow, or temperatures outside of the rated range.
 - Do not expose or clean polycarbonate bowls with detergents, chlorinated hydro-carbons, ketones, esters or certain alcohols.
 - Do not use polycarbonate bowls or sight glasses in air systems where compressors are lubricated with fire resistant fluids such as phosphate ester and di-ester lubricants.

Safety Guide

2.7. Chemical Compatibility: For more information on plastic component chemical compatibility see Pneumatic Division technical bulletins Tec-3, Tec-4, and Tec-5

- 2.8. Product Rupture:** Product rupture can cause death, serious personal injury, and property damage.
- Do not connect pressure regulators or other Pneumatic Division products to bottled gas cylinders.
 - Do not exceed the maximum primary pressure rating of any pressure regulator or any system component.
 - Consult product labeling or product literature for pressure rating limitations.

3. PRODUCT ASSEMBLY AND INSTALLATION INSTRUCTIONS

3.1. Component Inspection: Prior to assembly or installation a careful examination of the valves, FRLs or vacuum products must be performed. All components must be checked for correct style, size, and catalog number. DO NOT use any component that displays any signs of nonconformance.

3.2. Installation Instructions: Parker published Installation Instructions must be followed for installation of Parker valves, FRLs and vacuum components. These instructions are provided with every Parker valve or FRL sold, or by calling 1-800-CPARKER, or at www.parker.com.

3.3. Air Supply: The air supply or control medium supplied to Valves, FRLs and Vacuum components must be moisture-free if ambient temperature can drop below freezing

4. VALVE AND FRL MAINTENANCE AND REPLACEMENT INSTRUCTIONS

4.1. Maintenance: Even with proper selection and installation, valve, FRL and vacuum products service life may be significantly reduced without a continuing maintenance program. The severity of the application, risk potential from a component failure, and experience with any known failures in the application or in similar applications should determine the frequency of inspections and the servicing or replacement of Pneumatic Division products so that products are replaced before any failure occurs. A maintenance program must be established and followed by the user and, at minimum, must include instructions 4.2 through 4.9.

4.2. Installation and Service Instructions: Before attempting to service or replace any worn or damaged parts consult the appropriate Service Bulletin for the valve or FRL in question for the appropriate practices to service the unit in question. These Service and Installation Instructions are provided with every Parker valve and FRL sold, or are available by calling 1-800-CPARKER, or by accessing the Parker web site at www.parker.com.

4.3. Lockout / Tagout Procedures: Be sure to follow all required lockout and tagout procedures when servicing equipment. For more information see: OSHA Standard – 29 CFR, Part 1910.147, Appendix A, The Control of Hazardous Energy – (Lockout / Tagout)

4.4. Visual Inspection: Any of the following conditions requires immediate system shut down and replacement of worn or damaged components:

- Air leakage: Look and listen to see if there are any signs of visual damage to any of the components in the system. Leakage is an indication of worn or damaged components.
- Damaged or degraded components: Look to see if there are any visible signs of wear or component degradation.
- Kinked, crushed, or damaged hoses. Kinked hoses can result in restricted air flow and lead to unpredictable system behavior.
- Any observed improper system or component function: Immediately shut down the system and correct malfunction.
- Excessive dirt build-up: Dirt and clutter can mask potentially hazardous situations.

Caution: Leak detection solutions should be rinsed off after use.

4.5. Routine Maintenance Issues:

- Remove excessive dirt, grime and clutter from work areas.
- Make sure all required guards and shields are in place.

4.6. Functional Test: Before initiating automatic operation, operate the system manually to make sure all required functions operate properly and safely.

4.7. Service or Replacement Intervals: It is the user's responsibility to establish appropriate service intervals. Valves, FRLs and vacuum products contain components that age, harden, wear, and otherwise deteriorate over time. Environmental conditions can significantly accelerate this process. Valves, FRLs and vacuum components need to be serviced or replaced on routine intervals. Service intervals need to be established based on:

- Previous performance experiences.
- Government and / or industrial standards.
- When failures could result in unacceptable down time, equipment damage or personal injury risk.

4.8. Servicing or Replacing of any Worn or Damaged Parts: To avoid unpredictable system behavior that can cause death, personal injury and property damage:

- Follow all government, state and local safety and servicing practices prior to service including but not limited to all OSHA Lockout Tagout procedures (OSHA Standard – 29 CFR, Part 1910.147, Appendix A, The Control of Hazardous Energy – Lockout / Tagout).
- Disconnect electrical supply (when necessary) before installation, servicing, or conversion.
- Disconnect air supply and depressurize all air lines connected to system and Pneumatic Division products before installation, service, or conversion.
- Installation, servicing, and / or conversion of these products must be performed by knowledgeable personnel who understand how pneumatic products are to be applied.
- After installation, servicing, or conversions air and electrical supplies (when necessary) should be connected and the product tested for proper function and leakage. If audible leakage is present, or if the product does not operate properly, do not put product or system into use.
- Warnings and specifications on the product should not be covered or painted over. If masking is not possible, contact your local representative for replacement labels.

4.9. Putting Serviced System Back into Operation: Follow the guidelines above and all relevant Installation and Maintenance Instructions supplied with the valve FRL or vacuum component to insure proper function of the system.

1. Definitions. As used herein, the following terms have the meanings indicated.

Buyer:	means any customer receiving a Quote for Products from Seller.
Goods:	means any tangible part, system or component to be supplied by the Seller.
Products:	means the Goods, Services and/or Software as described in a Quote provided by the Seller.
Quote:	means the offer or proposal made by Seller to Buyer for the supply of Products.
Seller:	means Parker-Hannifin Corporation, including all divisions and businesses thereof.
Services:	means any services to be supplied by the Seller.
Software:	means any software related to the Products, whether embedded or separately downloaded.
Terms:	means the terms and conditions of this Offer of Sale or any newer version of the same as published by Seller electronically at www.parker.com/saleterms .

2. Terms. All sales of Products by Seller are contingent upon, and will be governed by, these Terms and, these Terms are incorporated into any Quote provided by Seller to any Buyer. Buyer's order for any Products whether communicated to Seller verbally, in writing, by electronic data interface or other electronic commerce, shall constitute acceptance of these Terms. Seller objects to any contrary or additional terms or conditions of Buyer. Reference in Seller's order acknowledgement to Buyer's purchase order or purchase order number shall in no way constitute an acceptance of any of Buyer's terms of purchase. No modification to these Terms will be binding on Seller unless agreed to in writing and signed by an authorized representative of Seller.

3. Price; Payment. The Products set forth in Seller's Quote are offered for sale at the prices indicated in Seller's Quote. Unless otherwise specified in Seller's Quote, prices are valid for thirty (30) days and do not include any sales, use, or other taxes or duties. Seller reserves the right to modify prices at any time to adjust for any raw material price fluctuations. Unless otherwise specified by Seller, all prices are F.C.A. Seller's facility (INCOTERMS 2010). All sales are contingent upon credit approval and payment for all purchases is due thirty (30) days from the date of invoice (or such date as may be specified in the Quote). Unpaid invoices beyond the specified payment date incur interest at the rate of 1.5% per month or the maximum allowable rate under applicable law.

4. Shipment; Delivery; Title and Risk of Loss. All delivery dates are approximate. Seller is not responsible for damages resulting from any delay. Regardless of the manner of shipment, delivery occurs and title and risk of loss or damage pass to Buyer, upon placement of the Products with the shipment carrier at Seller's facility. Unless otherwise agreed, Seller may exercise its judgment in choosing the carrier and means of delivery. No deferment of shipment at Buyer's request beyond the respective indicated shipping date will be made except on terms that will indemnify, defend and hold Seller harmless against all loss and additional expense. Buyer shall be responsible for any additional shipping charges incurred by Seller due to Buyer's acts or omissions.

5. Warranty. The warranty related to the Products is as follows: (i) Goods are warranted against defects in material or workmanship for a period of twelve (12) months from the date of delivery or 2,000 hours of use, whichever occurs first; (ii) Services shall be performed in accordance with generally accepted practices and using the degree of care and skill that is ordinarily exercised and customary in the field to which the Services pertain and are warranted for a period of six (6) months from the completion of the Services by Seller; and (iii) Software is only warranted to perform in accordance with applicable specifications provided by Seller to Buyer for ninety (90) days from the date of delivery or, when downloaded by a Buyer or end-user, from the date of the initial download. All prices are based upon the exclusive limited warranty stated above, and upon the following disclaimer:

DISCLAIMER OF WARRANTY: THIS WARRANTY IS THE SOLE AND ENTIRE WARRANTY PERTAINING TO PRODUCTS. SELLER DISCLAIMS ALL OTHER WARRANTIES, EXPRESS AND IMPLIED, INCLUDING DESIGN, NONINFRINGEMENT, MERCHANTABILITY, AND FITNESS FOR A PARTICULAR PURPOSE. SELLER DOES NOT WARRANT THAT THE SOFTWARE IS ERROR-FREE OR FAULT-TOLERANT, OR THAT BUYER'S USE THEREOF WILL BE SECURE OR UNINTERRUPTED. BUYER AGREES AND ACKNOWLEDGES THAT UNLESS OTHERWISE AUTHORIZED IN WRITING BY SELLER THE SOFTWARE SHALL NOT BE USED IN CONNECTION WITH HAZARDOUS OR HIGH RISK ACTIVITIES OR ENVIRONMENTS. EXCEPT AS EXPRESSLY STATED HEREIN, ALL PRODUCTS ARE PROVIDED "AS IS".

6. Claims; Commencement of Actions. Buyer shall promptly inspect all Products upon receipt. No claims for shortages will be allowed unless reported to the Seller within ten (10) days of delivery. Buyer shall notify Seller of any alleged breach of warranty within thirty (30) days after the date the non-conformance is or should have been discovered by Buyer. Any claim or action against Seller based upon breach of contract or any other theory, including tort, negligence, or otherwise must be commenced within twelve (12) months from the date of the alleged breach or other alleged event, without regard to the date of discovery.

7. LIMITATION OF LIABILITY. IN THE EVENT OF A BREACH OF WARRANTY, SELLER WILL, AT ITS OPTION, REPAIR OR REPLACE THE NON-CONFORMING PRODUCT, RE-PERFORM THE SERVICES, OR REFUND THE PURCHASE PRICE PAID WITHIN A REASONABLE PERIOD OF TIME. IN NO EVENT IS SELLER LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF, OR AS THE RESULT OF, THE SALE, DELIVERY, NON-DELIVERY, SERVICING, NON-COMPLETION OF SERVICES, USE, LOSS OF USE OF, OR INABILITY TO USE THE PRODUCTS OR ANY PART THEREOF, LOSS OF DATA, IDENTITY, PRIVACY, OR CONFIDENTIALITY, OR FOR ANY CHARGES OR EXPENSES OF ANY NATURE INCURRED WITHOUT SELLER'S WRITTEN CONSENT, WHETHER BASED IN CONTRACT, TORT OR OTHER LEGAL THEORY. IN NO EVENT SHALL SELLER'S LIABILITY UNDER ANY CLAIM MADE BY BUYER EXCEED THE PURCHASE PRICE PAID FOR THE PRODUCTS.

8. Loss to Buyer's Property. Any designs, tools, patterns, materials, drawings, confidential information or equipment furnished by Buyer or any other items which are or become Buyer's property, will be considered obsolete and may be destroyed by Seller after two (2) consecutive years have elapsed without Buyer ordering the Products manufactured using such property. Seller shall not be responsible for any loss or damage to such property while it is in Seller's possession or control.

9. Special Tooling. Special Tooling includes but is not limited to tooling, jigs, fixtures and associated manufacturing equipment acquired or necessary to manufacture Products. A tooling charge may be imposed for any Special Tooling. Such Special Tooling shall be and remain Seller's property notwithstanding payment of any charges by Buyer. In no event will Buyer acquire any interest in Special Tooling belonging to Seller that is utilized in the manufacture of the Products, even if such Special Tooling has been specially converted or adapted for such manufacture and notwithstanding any charges paid by Buyer. Unless otherwise agreed, Seller has the right to alter, discard or otherwise dispose of any Special Tooling or other property in its sole discretion at any time.

10. Security Interest. To secure payment of all sums due, Seller retains a security interest in all Products delivered to Buyer and, Buyer's acceptance of these Terms is deemed to be a Security Agreement under the Uniform Commercial Code. Buyer authorizes Seller as its attorney to execute and file on Buyer's behalf all documents Seller deems necessary to perfect its security interest.

11. User Responsibility. The Buyer through its own analysis and testing, is solely responsible for making the final selection of the Products and assuring that all performance, endurance, maintenance, safety and warning requirements of the application of the Products are met. The Buyer must analyze all aspects of the application and follow applicable industry standards, specifications, and other technical information provided with the Product. If Seller provides Product options based upon data or specifications provided by the Buyer, the Buyer is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the Products. In the event the Buyer is not the end-user, Buyer will ensure such end-user complies with this paragraph.

12. Use of Products, Indemnity by Buyer. Buyer shall comply with all instructions, guides and specifications provided by Seller with the Products. **Unauthorized Uses.** If Buyer uses or resells the Products for any uses prohibited in Seller's instructions, guides or specifications, or Buyer otherwise fails to comply with Seller's instructions, guides and specifications, Buyer acknowledges that any such use, resale, or non-compliance is at Buyer's sole risk. Buyer shall indemnify, defend, and hold Seller harmless from any losses, claims, liabilities, damages, lawsuits, judgments and costs (including attorney fees and defense costs), whether for personal injury, property damage, intellectual property infringement or any other claim, brought by or incurred by Buyer, Buyer's employees, or any other person, arising out of: (a) improper selection, application, design, specification or other misuse of Products provided by Seller; (b) any act or omission, negligent or otherwise, of Buyer; (c) Seller's use of patterns, tooling, equipment, plans, drawings, designs or specifications or other information or things furnished by Buyer; (d) damage to the Products from an external cause, repair or attempted repair by anyone other than Seller, failure to follow instructions, guides and specifications provided by Seller, use with goods not provided by Seller, or opening, modifying, deconstructing or tampering with the Products for any reason; or (e) Buyer's failure to comply with these Terms. Seller shall not indemnify Buyer under any circumstance except as otherwise provided in these Terms.

13. Cancellations and Changes. Buyer may not cancel or modify any order for any reason, except with Seller's written consent and upon terms that will indemnify, defend and hold Seller harmless against all direct, incidental and consequential loss or damage. Seller, at any time, may change Product features, specifications, designs and availability.

14. Limitation on Assignment. Buyer may not assign its rights or obligations without the prior written consent of Seller.

15. Force Majeure. Seller does not assume the risk and is not liable for delay or failure to perform any of Seller's obligations by reason of events or circumstances beyond its reasonable control ("Events of Force Majeure"). Events of Force Majeure shall include without limitation: accidents, strikes or labor disputes, acts of any government or government agency, acts of nature, delays or failures in delivery from carriers or suppliers, shortages of materials, or any other cause beyond Seller's reasonable control.

16. Waiver and Severability. Failure to enforce any provision of these Terms will not invalidate that provision; nor will any such failure prejudice Seller's right to enforce that provision in the future. Invalidation of any provision of these Terms by legislation or other rule of law shall not invalidate any other provision herein and, the remaining provisions will remain in full force and effect.

17. Termination. Seller may terminate any agreement governed by or arising from these Terms for any reason and at any time by giving Buyer thirty (30) days prior written notice. Seller may immediately terminate, in writing, if Buyer: (a) breaches any provision of these Terms (b) appoints a trustee, receiver or custodian for all or any part of Buyer's property (c) files a petition for relief in bankruptcy on its own behalf, or one if filed by a third party (d) makes an assignment for the benefit of creditors; or (e) dissolves its business or liquidates all or a majority of its assets.

18. Ownership of Software. Seller retains ownership of all Software supplied to Buyer hereunder. In no event shall Buyer obtain any greater right in and to the Software than a right in the nature of a license limited to the use thereof and subject to compliance with any other terms provided with the Software.

19. Indemnity for Infringement of Intellectual Property Rights. Seller is not liable for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights ("Intellectual Property Rights") except as provided in this Section. Seller will defend at its expense and will pay the cost of any settlement or damages awarded in an action brought against Buyer based on a third party claim that one or more of the Products sold hereunder infringes the Intellectual Property Rights of a third party in the country of delivery of the Products by the Seller to the Buyer. Seller's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10) days after Buyer becomes aware of any such claim, and Seller having sole control over the defense of the claim including all negotiations for settlement or compromise. If one or more Products sold hereunder is subject to such a claim, Seller may, at its sole expense and option, procure for Buyer the right to continue using the Products, replace or modify the Products so as to render them non-infringing, or offer to accept return of the Products and refund the purchase price less a reasonable allowance for depreciation. Seller has no obligation or liability for any claim of infringement: (i) arising from information provided by Buyer; or (ii) directed to any Products provided hereunder for which the designs are specified in whole or part by Buyer; or (iii) resulting from the modification, combination or use in a system of any Products provided hereunder. The foregoing provisions of this Section constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for such claims of infringement of Intellectual Property Rights.

20. Governing Law. These Terms and the sale and delivery of all Products are deemed to have taken place in, and shall be governed and construed in accordance with, the laws of the State of Ohio, as applicable to contracts executed and wholly performed therein and without regard to conflicts of laws principles. Buyer irrevocably agrees and consents to the exclusive jurisdiction and venue of the courts of Cuyahoga County, Ohio with respect to any dispute, controversy or claim arising out of or relating to the sale and delivery of the Products.

21. Entire Agreement. These Terms, along with the terms set forth in the main body of any Quote, forms the entire agreement between the Buyer and Seller and constitutes the final, complete and exclusive expression of the terms of sale. In the event of a conflict between any term set forth in the main body of a Quote and these Terms, the terms set forth in the main body of the Quote shall prevail. All prior or contemporaneous written or oral agreements or negotiations with respect to the subject matter shall have no effect. These Terms may not be modified unless in writing and signed by an authorized representative of Seller.

22. Compliance with Laws. Buyer agrees to comply with all applicable laws, regulations, and industry and professional standards, including those of the United States of America, and the country or countries in which Buyer may operate, including without limitation the U.S. Export Control Practices Act ("FCPA"), the U.S. Anti-Kickback Act ("Anti-Kickback Act"), U.S. and E.U. foreign corrupt and sanctions laws ("Export Laws"), the U.S. Food Drug and Cosmetic Act ("FDCA"), and the rules and regulations promulgated by the U.S. Food and Drug Administration ("FDA"), each as currently amended. Buyer agrees to indemnify, defend, and hold harmless Seller from the consequences of any violation of such laws, regulations and standards by Buyer, its employees or agents. Buyer acknowledges that it is familiar with all applicable provisions of the FCPA, the Anti-Kickback Act, Export Laws, the FDCA and the FDA and certifies that Buyer will adhere to the requirements thereof and not take any action that would make Seller violate such requirements. Buyer represents and agrees that Buyer will not make any payment or give anything of value, directly or indirectly, to any governmental official, foreign political party or official thereof, candidate for foreign political office, or commercial entity or person, for any improper purpose, including the purpose of influencing such person to purchase Products or otherwise benefit the business of Seller. Buyer further represents and agrees that it will not receive, use, service, transfer or ship any Product from Seller in a manner or for a purpose that violates Export Laws or would cause Seller to be in violation of Export Laws.

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