

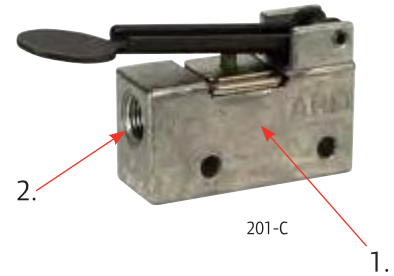
200 Series

Features

- 200-Series valves can be plumbed to perform as normally passing, normally non passing, selector or any 2-way function.
- Ideal for sensing the position of moving devices such as cylinders, slides or gates.
- Mounting holes are standard 1" electrical centers

Numerous Actuator Styles:

Mechanical		Manual
Short Roller Lever	Short Ball Roller	Plain Lever
Long Roller Lever	Long Ball Roller	Fingertip Lever
One-Way, Short Lever	Straight Plunger	Centering Toggle
One Way, Long Lever	Roller Plunger	Retained Toggle
Pin Plunger	Cross-Roller Plunger	Panel Button



Comprehensive Valve Design

1. Durable Valve Body

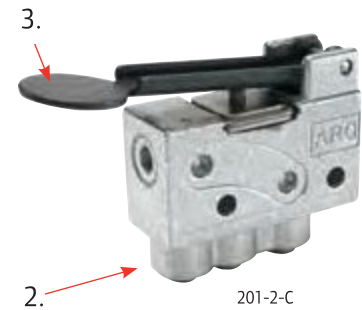
Body is die cast zinc for high wear resistance. Valve also features a stainless steel, PTFE coated spool, with Viton O-ring seals and Buna-N static seals.

2. Two Plumbing Options

Available with 1/8" NPTF ports, or instant tube fittings for use with 5/32" (4mm) nylon tubing.

3. Numerous Actuator Styles

Five manual, ten mechanical and one pilot actuators to choose from. Eight can be panel mounted.



Performance Specifications

Pressure Range: 30 to 150 PSIG (2.1 to 10.4 bar)

Temperature Range: 32° to 160° F (0° to 71° C)

Flow & Cv Factor:

1/8" Ports: 7.5 SCFM, Cv = .195

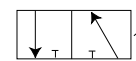
5/32" (4mm) Tube Fittings: 4.0 SCFM, Cv = .104

206-C Minimum Pilot Pressure PSIG (bar)

Supply Pressure	25 (1.7)	50 (3.4)	75 (5.1)	100 (6.9)	125 (8.6)	150 (10.4)
Piped IN - N.N.P.	11.5 (.8)	12.0 (.8)	12.5 (.9)	13.0 (.9)	13.5 (.9)	14.0 (1.0)
Piped IN - N.P.	14.5 (1.0)	17.0 (1.2)	19.5 (1.3)	22.0 (1.5)	24.5 (1.7)	27.0 (1.9)

Actuating Force:

Actuator	Force Oz.(N)	Stroke In (mm)	Travel In (mm)
200	20 (5.56)	.195 (4.95)	.055 (1.40)
201	20 (5.56)	.289 (7.34)	.086 (2.18)
202	36 (10.0)	.086 (2.18)	.024 (0.61)
203	21 (5.84)	.160 (4.06)	.040 (1.02)
204	34 (9.45)	.089 (2.26)	.027 (.69)
205	23 (6.39)	.164 (4.17)	.043 (1.09)
209	57 (15.9)	.069 (1.57)	.015 (.38)
212	57 (15.9)	.069 (1.57)	.015 (.38)
213	57 (15.9)	.069 (1.57)	.015 (.38)
214	57 (15.9)	.062 (1.57)	.089 (2.26)
215	57 (15.9)	.062 (1.57)	.089 (2.26)
216	57 (15.9)	.062 (1.57)	.089 (2.26)
222	24 (6.67)	70°	----
223	24 (6.67)	70°	----
224	57 (15.9)	.062 (1.57)	.025 (3.18)



Normally Passing



Normally Non-Passing

206 consist of a 212-C and a model 296 actuator



212-2 Valve

200 Series

Ordering

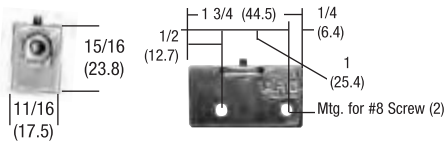
Position	1	2		3
Example:	2	XX	-	X
Position 1 Series	Position 2 Actuator Type		Position 3 Port Type	
2 200 Series	00 Plain Lever 01 Fingertip Lever 02 Short Roller Lever 03 Long Roller Lever 04 One-Way, Short Lever 05 One Way, Long Lever 06 Pilot Actuated 09 Pin Plunger	12 Short Ball Roller 13 Long Ball Roller 14 Straight Plunger 15 Roller Plunger 16 Cross-Roller Plunger 22 Centering Toggle 23 Retained Toggle 24 Panel Button	C 1/8" NPTF Ports 2-C 5/32" Tubing Ports	

Dimensions

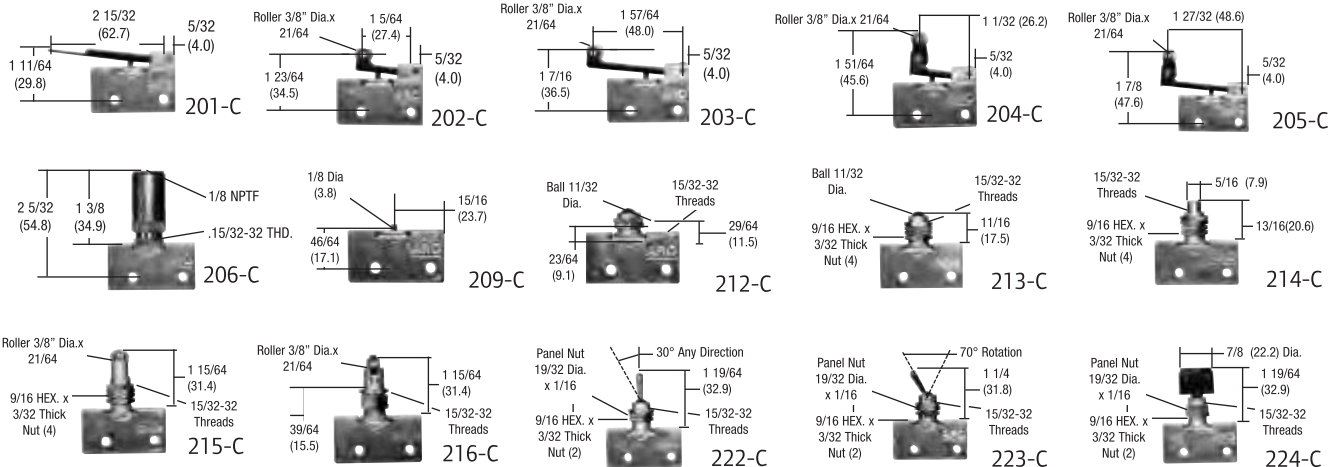
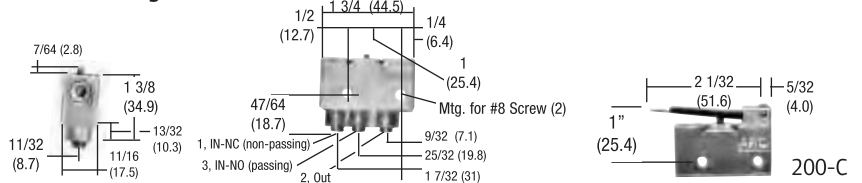
Dimensions given in Inches and (Millimeters)

Basic Valves

1/8" NPT Ports

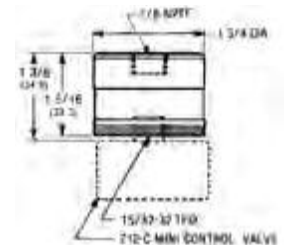


5/32" Tubing Ports



Low-Pressure Pilot Actuator Switch

- Use on 212-C ball roller limit valve.
- For use in low pilot pressure applications.
- Maximum pilot pressure is 100 psig (6.9 bar)
- 1/8" NPTF air inlet ports.
- Aluminum-alloy construction with low friction Buna-N cup seal.
- Order Model 20368 and 212-C Aro ball roller limit valve separately.



Supply Pressure	Minimum Pilot Pressure PSIG (bar)					
	25 (1.7)	50 (3.5)	75 (5.2)	100 (6.9)	125 (8.6)	150 (10.4)
Piped IN-N.N.P.	5.5 (0.4)	6.0 (0.4)	6.5 (0.4)	7.0 (0.5)	7.5 (0.5)	8.0 (0.6)
Piped IN-N.P.	5.5 (0.4)	6.0 (0.4)	6.5 (0.4)	7.0 (0.5)	7.5 (0.5)	8.0 (0.6)

100 Series

Features

Miniature Control Valves

- Ball Poppet valve provides fast response.
- Slotted Mounting holes for easy placement and adjustment.
- 100 Series Mini Valves are non-passing, non-lube limit valves.
- 33% glass reinforced polyester body is strong, lightweight and corrosion resistant.
- Available with 5/32" tube fittings. Both ports are on one side for ease of plumbing and maintenance.
- Seals are Buna-N, Stainless Steel Spring, Brass Plunger and Delrin Roller.

Performance Specifications

Pressure Range: 0 to 150 PSIG (0 to 10.4 bar)
Temperature Range: -10° to 180° F (-23° to 82° C)
Flow & Cv Factor: 3.4 SCFM at 100 PSIG (7 bar)
input 85 PSI (5.8 bar) output. Cv = .09

Actuating Force: **Travel Operation:**
Straight Plunger: **Straight Plunger:**
52 oz. at 100 PSIG .03125" (.8mm) to actuate
(14.46 N at 7 bar) .109375" (2.8mm) total
Levers: **Levers:**
25 oz. at 100 PSIG .0625" (1.6mm) to actuate
(6.95 N at 7 bar) .21875" (5.5mm) total

Ordering

Model No.	Port Size	Actuator Type
103-2-A	5/32" Tube	Roller Lever
105-2-A	5/32" Tube	90° Roller Lever
109-2-A	5/32" Tube	Straight Plunger



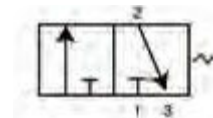
103-2-A



105-2-A

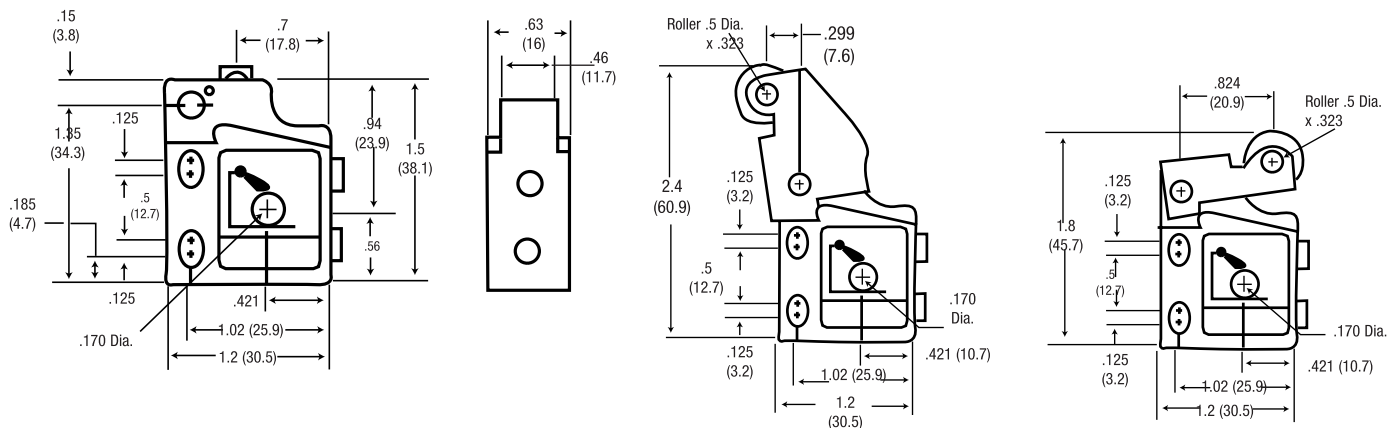


109-2-A



Normally Non-Passing

Dimensions Dimensions given in Inches and (Millimeters)

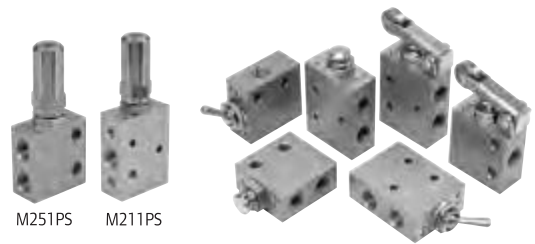


MaxAir

Features

MaxAir 3-Way & 4-Way, 1/8" Manual & Mechanical Valves

- Rugged aluminum alloy body is lightweight and durable.
- 3-way valves can be plumbed to perform as normally passing, normally non-passing, or selector.



Performance Specifications

- Port size:** 1/8" NPT
- Pressure Range:** 0-150 PSI
- Temp. Range:** 32°-160° F (0°-71° C)
- Media:** Compressed Air
- Flow:** 3-Way = 7 scfm
4-Way = 9 scfm

Accessories

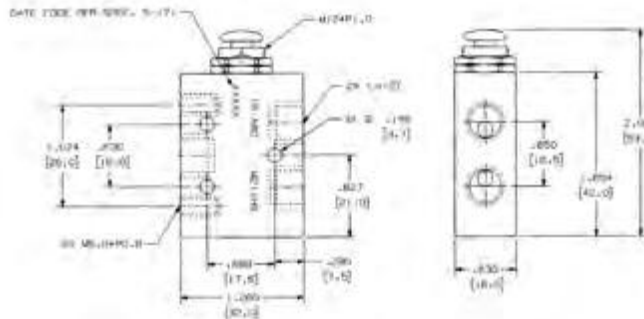
Attachments for use on M251HS & M211HS Valves

- 104484** One-way roller lever
- 104485** Ball plunger attachment
- 104486*** Air pilot attachment
- 104487** Finger button attachment
- M251PS** 3-Way
- M211PS** 4-Way

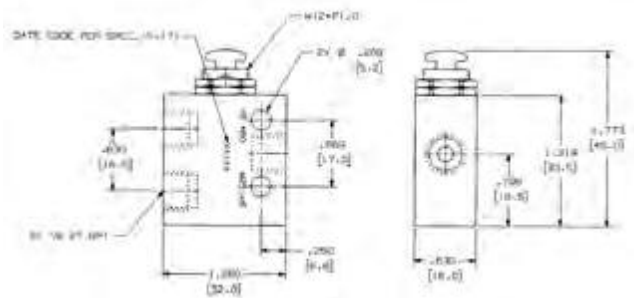
*Air pilot attachment can be ordered with valve

Dimensions Dimensions given in Inches and (Millimeters)

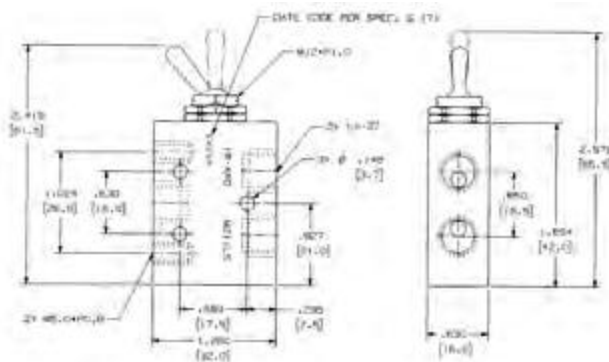
M211HS 4-Way, Push Button, Spring Return**



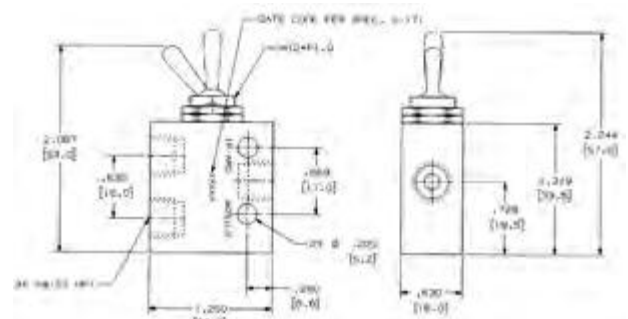
M251HS 3-Way, Push button, Spring Return**



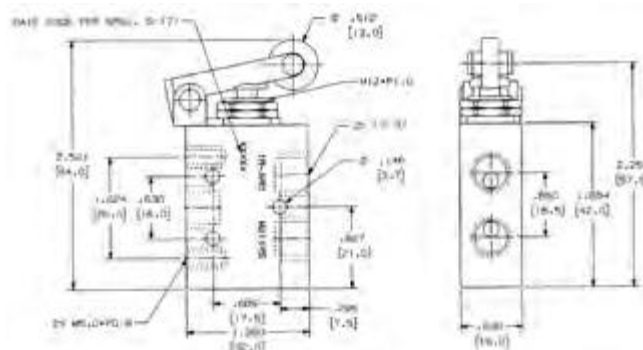
M211LS 4-Way, Toggle, Maintained



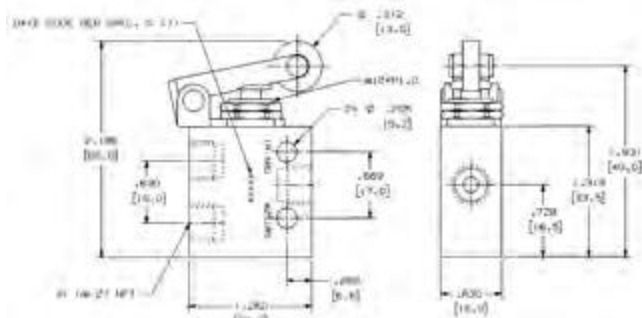
M251LS 3-Way, Toggle, Maintained



M211RS 4-Way, Roller, Spring Return



M251RS 3-Way, Roller, Spring Return



** Accessories can be mounted on push button valves for additional actuating styles

400 Series

Features

3-Way Limit Valves

- Plumb 400 Series valves as normally passing, normally non-passing, selector or any 2-way valve function.
- Ports available with either 1/8" NPTF threads or 5/32" tube fittings.
- Four actuator options: Nylon Roller, Steel Roller, Rod Lever or Adjustable Roller Lever.
Actuators must be ordered separately. See menu below.
- Operating head may be adjusted to any of four positions.
- Outer case protects working parts from dirt.

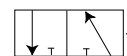


Performance Specifications

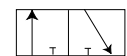
Pressure Range: 30 to 150 PSIG (2.1 to 10.4 bar)
Temperature Range: 32° to 160° F (0° to 71° C)
Flow & Cv Factor: 1/8" Ports 7.5 SCFM, Cv = .195
 5/32" (4mm) Tube Fittings 4.0 SCFM, Cv = .104

Actuator Force:
 447 - 1.6 lbs.
 448 - 1.6 lbs.
 449 - 0.5 lbs.
 450 - 0.8 lbs.

Actuating Torque: 2.4 in. lbs.
119605 Side Plate Cover-used to cover body cavities.



Normally Passing



Normally Non-Passing

Ordering

Valves

1/8" Ports	Tube Fittings	Valve Action
400-A	400-1-A	One Way, Clockwise
401-A	401-1-A	One Way, Counterclockwise
402-A	402-1-A	Clockwise & Counterclockwise

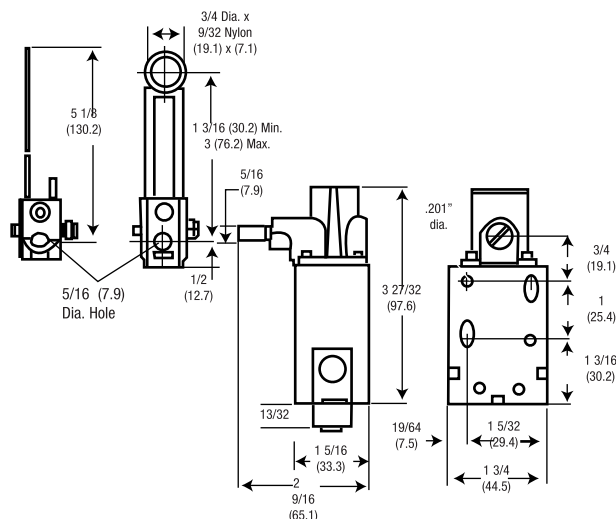
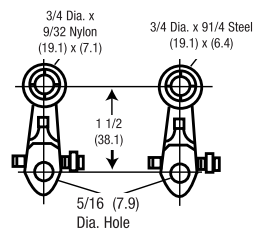
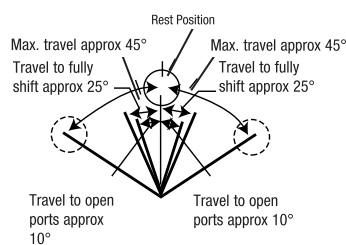
Actuators

Code	Description
447	Nylon Roller
448	Steel Roller
449	Rod Lever
450	Adjustable Roller

Dimensions

Dimensions given in Inches and (Millimeters)

400 Series



460 Series

Features

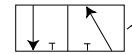
Palm Button Control Valves

- Plumb each to perform as normally passing, normally non-passing, selector or any 2-way valve function.
- Ports available with either 1/8" NPTF threads or 5/32" tube fittings.
- 2 1/2" Buttons (63.5mm) are available in four colors. If needed, order 20975 guard separately.
- 460-5 and 461-5 models use buttons that are threaded on rather than pushed on, making them more tamper resistant.



Performance Specifications

Pressure Range:	30 to 150 PSIG (2.1 to 10.4 bar)
Temperature Range:	32° to 160° F (0° to 71° C)
Flow & Cv Factor:	1/8" Ports 7.5 SCFM, Cv = .195 5/32" (4mm) 4.0 SCFM, Cv = .104 Tube Fittings
Actuator Force:	3 lbs.



Normally Passing



Normally Non-Passing

Ordering

Position	1	2		3
Example:	46	X	-	X

Position 1 Series	Position 2 Port Type	Position 3 Button Color
46 460 Series	0 1/8" NPT 1 5/32" Tubing	1 Black 2 Red 3 Green 4 Yellow 5 Valve W/O Button (Order button for 7/16"-20 TH'd separately)

Accessories

20975 Button Guard	† 13111	Plastic, Black
*20973-1 Black Button	†119243	Metal, Plain
*20973-2 Red Button	†119244	Metal, Red
*20973-3 Green Button	†119245	Metal, Green
*20973-4 Yellow Button	†MP3651-7	Plastic, Red

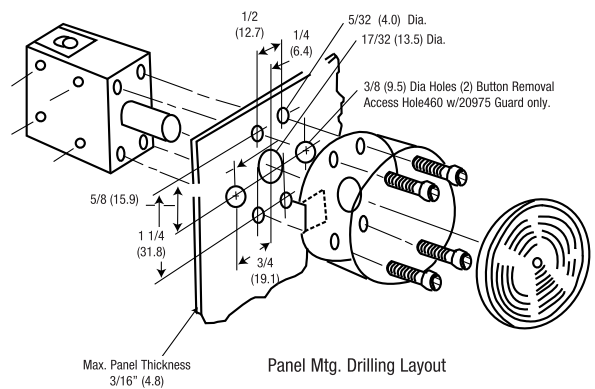
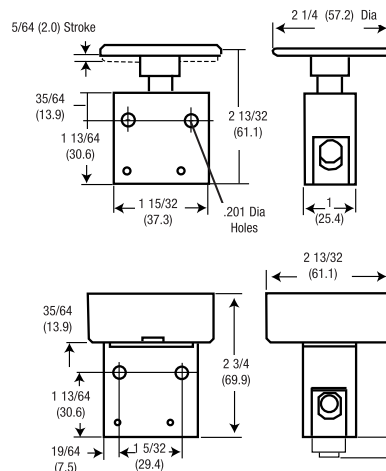
* Tolerance ring 20972 must be ordered with accessory buttons. (Replacement buttons for -1, -2, -3, -4 options only.)

† (Buttons for -5 models only)

Dimensions

Dimensions given in Inches and (Millimeters)

460 Series



Bleeder, Quick Exhaust, Relay Valves

Features

Button Bleeders

- Provides remote control of bleeder pilot-operated valves.
- Reduces air pressure on valve, so valve can shift.
- Mounting blocks provide remote location of bleeder valve.
- 1/8" NPT thread. Maximum operating pressure of 150 PSIG (10.4 bar)



Pilot Bleeder Valve - 9600

- Similar to button bleeder valves, but operated by a pressure signal.
- 1/8" NPT threads. Operating Pressures 20-150 PSIG (1.4 - 10.4 bar)



Quick Exhaust Valves

- Provides quick dump of exhaust at cylinder.
- Eliminates need for large diameter piping or selector valves.
- Die cast aluminum body.

Single Pulse Relay Valve - PR10

- Converts continuous inlet supply to a momentary pressure pulse.
- Ideal where input signal remains pressurized, but output must go "off" after performing its task.
- Locate PR10 as close to pilot port of valve as possible.



Performance Specifications and Ordering

Button Bleeders

Model Number	Description
24130	1/2" (12.7) Dia. Head
24135	1 1/8" (28.6) Dia. Head

Quick Exhaust Valves

Model Number	Inlet Port	Cyl. Port	Exh Port	Pres Range PSI (bar)
EV 125	1/8"	1/8"	1/4"	1-125 (.07-8.6)
EV 250	1/4"	1/4"	3/8"	1-125 (.07-8.6)
EV 375	3/8"	3/8"	3/8"	1-125 (.07-8.6)
EV 30-A	1/2"	1/2"	3/4"	5-125 (.35-8.6)
EV 35-A	3/4"	3/4"	3/4"	5-125 (.35-8.6)

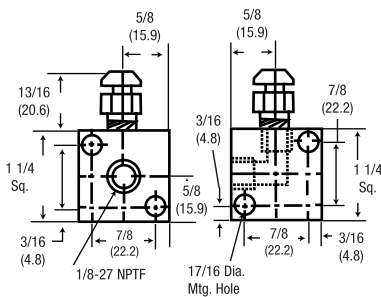
Single Pulse Relay Valve - PR10

Supply PSIG Press. (bar)	Pulse Duration	Reset Time
50 (3.5)	125ms	300 ms
75 (5.2)	110ms	300 ms
100 (6.9)	105ms	300 ms
125 (8.6)	100ms	300 ms

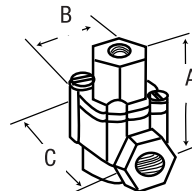
Dimensions

Dimensions given in Inches and (Millimeters)

Button Bleeders

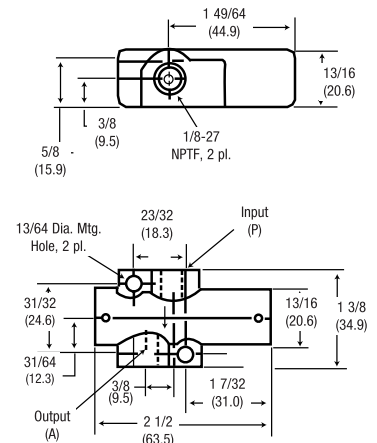


Quick Exhaust Valves



A	B	C
1-7/16 (36.5)	1-23/32 (43.7)	1-1/2 (38.1)
2-1/8 (54.0)	2-7/32 (56.4)	2-1/1 (52.4)
2-1/8 (54.0)	2-7/32 (56.4)	2-1/1 (52.4)
3-1/8 (79.4)	3-1/2 (88.9)	4-1/32 (102.4)
3-1/8 (79.4)	3-1/2 (88.9)	4-1/32 (102.4)

Single Pulse Relay Valve - PR10



Circuitry Valves

Features

Shuttle Valves

- Allows one of two input sources to get the output.
- Prevents either input from exhausting at other input source.
- Check ball moves from inlet with the greatest pressure and against the port having the least pressure. Minimum pressure difference of 10 PSIG(.7 bar) is necessary to effect shuttle change. 200 PSIG (13.8 bar) maximum.

Ordering

Shuttle Valves

Model Number	Inlet Ports	Outlet
SV10-C	1/8"	1/8"
SV20-C	1/4"	1/4"

Microswitch

20370 Microswitch Actuator

Pressure Range 25-125 PSIG (1.7-8.6 bar)
 Temperature Range 0-180 F (-18-82 C)

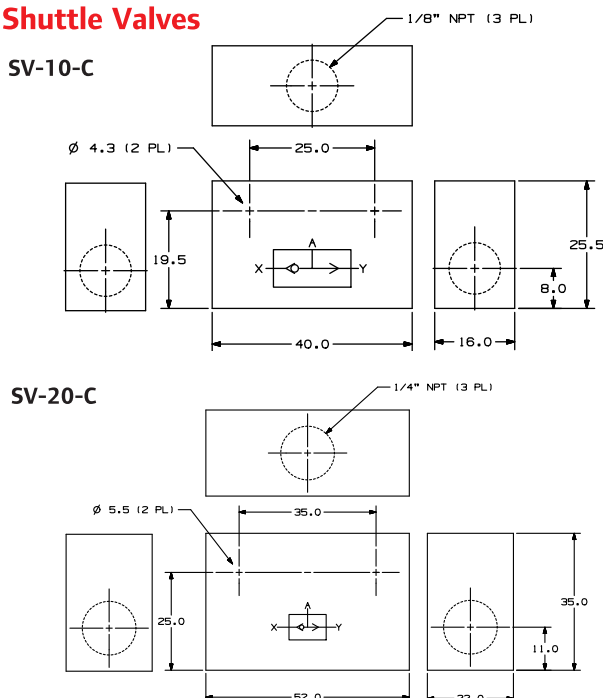
20467 Microswitch

Can be wired normally open or normally closed.
 Single pole, double throw:
 15 Amps, 125, 250 or 480 V-AC
 1/2 Amp, 125 V-DC; 1/4 Amp, 250 V-DC
 1/8 H.P., 125 V-AC; 1/4 H.P., 250 V-DC

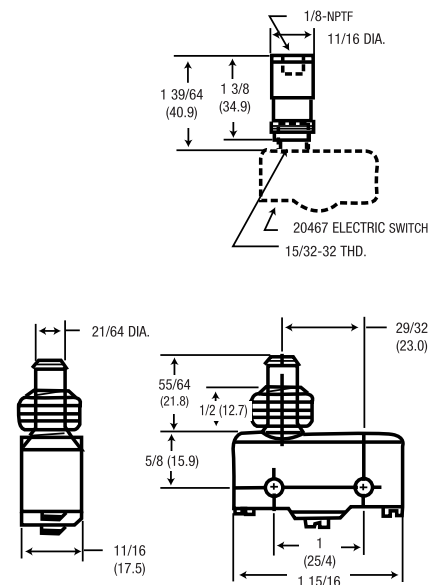
Dimensions

Dimensions given in Inches and (Millimeters)

Shuttle Valves



Microswitch



SV20-C



20370

20467

Circuitry Valves

Features

Breather Vents

- Use on valves and single acting cylinders to prevent dirt from entering ports open to atmosphere. Other uses are for vacuum relief or pressure equalization on gear boxes, reservoirs and air tanks.
- 40 micron filtration. Selection based on thread size.

Muffler

- Use on valve exhaust ports.
- Sintered bronze construction. Air muffler and exhaust diffuser.
- 40 micron nominal filtration; sound deadening qualities with low pressure drop.

Speed Controls

- Controls air flow on exhaust ports of air valves.
- Change cylinder operating speed by adjusting screw. Secure with lock nut.

Silencer

- Reduces noise of air powered motors and valves.
- For high SCFM applications. High flow, low back pressure with no build up.
- 300 PSI Max.



20311-X



20312-X



20313-X



20308-X

Ordering

Breather Vents

Model Number	Port Size	Length In. (mm)	Hex
20311-1	1/8"	7/16 (11.1)	7/16
20311-2	1/4"	5/8 (15.9)	9/16
20311-3	3/8"	3/4 (19.1)	11/16
20311-4	1/2"	7/8 (22.2)	7/8
20311-6	3/4"	1 (25.4)	1-1/16
20311-8	1"	1-5/16 (33.3)	1-5/16

Speed Controls

Model Number	Port Size	Length Closed	Length Open In. (mm)
20313-1	1/8"	1 3/8 (34.9)	2 (50.8)
20313-2	1/4"	1 9/16 (39.7)	2 3/16 (55.6)
20313-3	3/8"	1 7/8 (47.6)	2 13/16 (71.4)
20313-4	1/2"	2 1/4 (57.2)	3 5/16 (84.1)
20313-6	3/4"	2 3/4 (69.9)	3 13/16 (96.8)
20313-8	1"	3 1/4 (82.6)	4 5/8 (117.5)

Muffler

Model Number	Port Size	Length In. (mm)	Hex
116464	10-32	23/32 (18.2)	5/16
20312-1	1/8"	1 1/8 (28.6)	7/16
20312-2	1/4"	1 3/8 (34.9)	9/16
20312-3	3/8"	1 1/2 (38.1)	11/16
20312-4	1/2"	1 7/8 (47.6)	7/8
20312-6	3/4"	2 1/4 (57.2)	11/16
20312-8	1"	1 7/8 (73.0)	1 5/16

Silencer

Model	Ports	Diameter	Length
20308-1	1/8"	13/16	2-1/8
20308-2	1/4"	13/16	2-1/4
20308-3	3/8"	1-1/4	3-7/16
20308-4	1/2"	1-1/4	3-9/16
20308-6	3/4"	2	5-3/8
20308-8	1"	2	5-1/2

Circuitry Valves

Features

3-Way Sleeve Valve

- Provides low-cost on-off control of single-acting spring return cylinders.
- Use in both ports of double-acting cylinders to isolate from circuit.



600-X

Performance Specifications and Ordering

Maximum Pressure: 200 PSI (13.8 bar)

Temperature Range: -25° - 200°F (-32° - 93°C)

Model Number	Port Size	10 PSI Pressure Drop (SCFM)	
		100 PSI	80 PSI
600-1	1/8"	16	14.5
600-2	1/4"	40	36
600-3	3/8"	65	59
600-4	1/2"	140	127