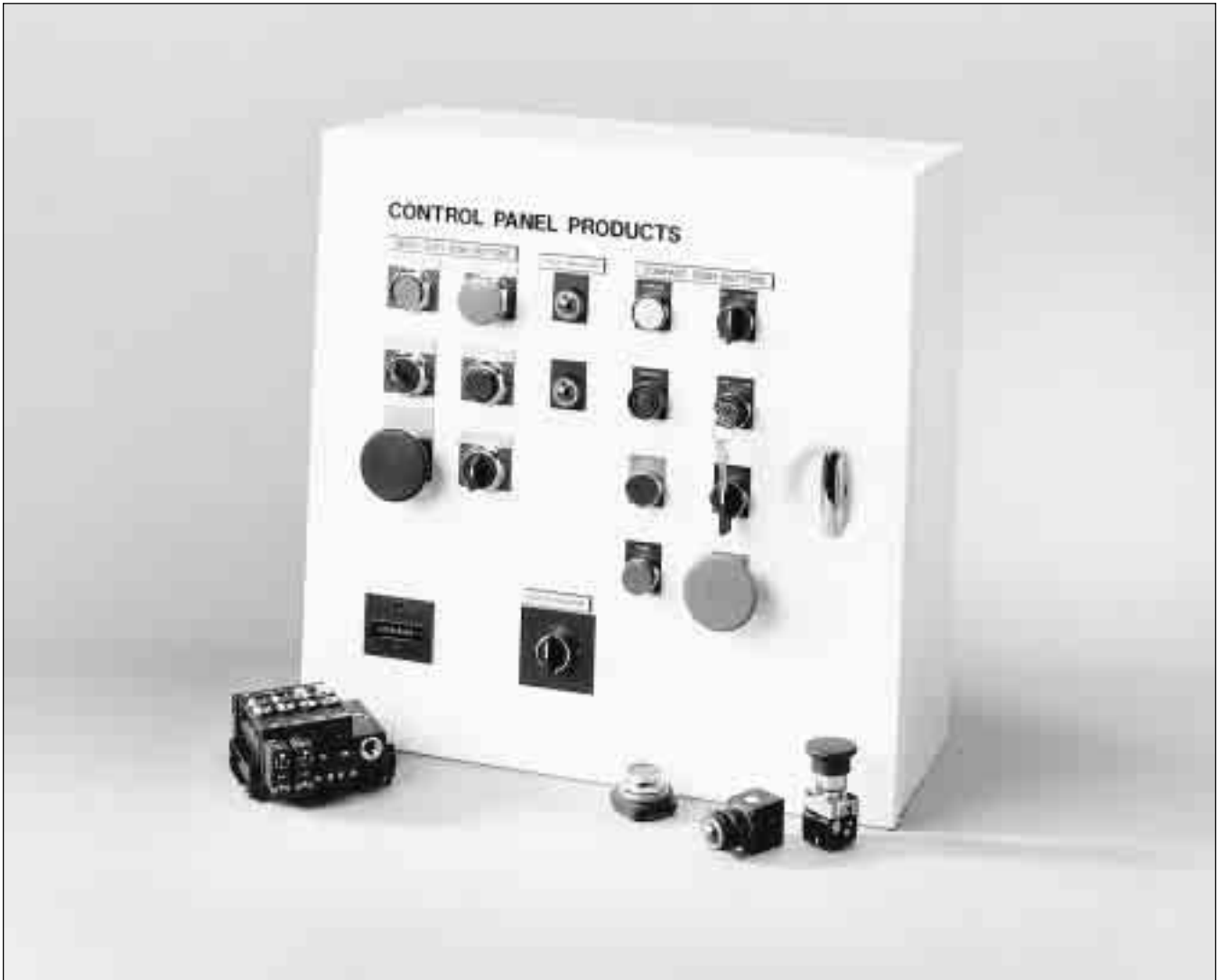


# Control Panel Products

*Pneumatic Push Button Valves,  
Rotary Selector Switches,  
Pneumatic Counters &  
Visual Indicators for  
Control Panel Mounting*  
*Section K*

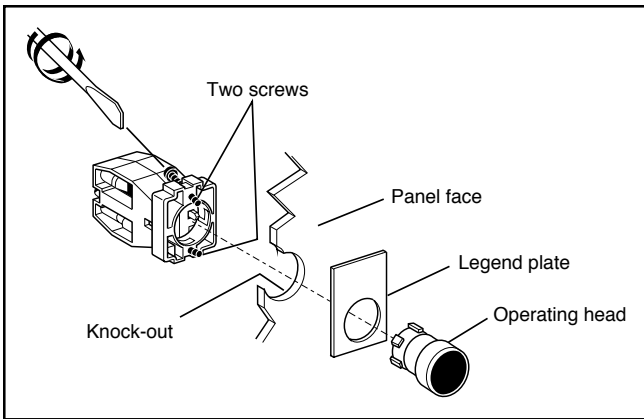
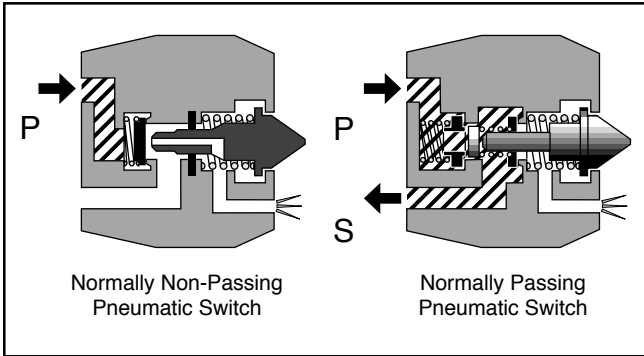
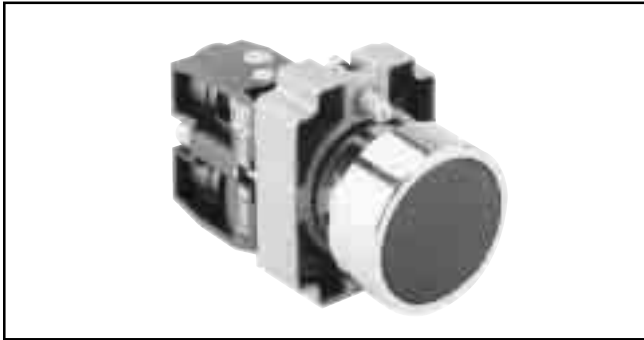


**K**

Two Hand Control .....	2	Pneumatic Counters .....	7-8
Modular Push Button Valves .....	3-4	Pneumatic Timers .....	9-10
Compact Operating Heads .....	5	Visual Indicators .....	11
Rotary Selector Switches .....	6	Accessories .....	12-13

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





## Application

These valves & switches provide single or multiple air pilot control or electrical signals. By marrying valve or switch bodies with various operating heads, momentary or maintained pressure or electrical signals can be created.

## Technical Data

**Operating pressure:** 0-120 PSIG (1/16")  
40-120 PSIG (1/8")

**Electrical Specifications:** 240VAC 10Amp

**Nominal orifice size:** 1/16" (Cv = .03), 1/8" (Cv = .14)

**Connection:** Integrated instant connection for 5/32" O.D. tubing

**Operating temperature:** 5°F to 140°F (-15°C to 60°C)

**Operating principle:** poppet

**Operating medium:** dry or lubricated compressed air or inert gases, 40 micron filtration.

**Degree of Protection:** NEMA 4, 4X

## Operating Principle

Switching is accomplished by direct operation of the poppet by the plunger (no spools). The pneumatic switch is designed so that there is no connection between supply and exhaust during switching.

**Note:** These pneumatic switches may be mounted side by side with electrical contact switches.

Response time provided by these push buttons is more than satisfactory for most pneumatic control circuits.

## Mounting

Mounting and assembly of 22mm push button and legend plate are shown on left:

- 1) Push head through panel knockout into switch mounting base (no notch required for anti-rotation).
- 2) Give slight twist to lock in bayonet mechanism.
- 3) Tighten screws against panel for dust and oil tight seal.



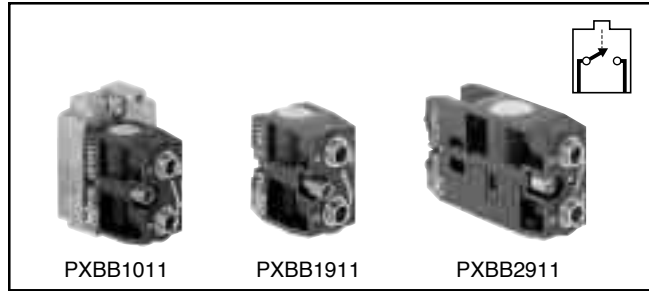
## Nomenclature

Pneumatic valves & switches in this section use universally approved nomenclature describing the function of the component. This new nomenclature addresses the contradiction that exists with nomenclature between the fluid power and electrical industries.

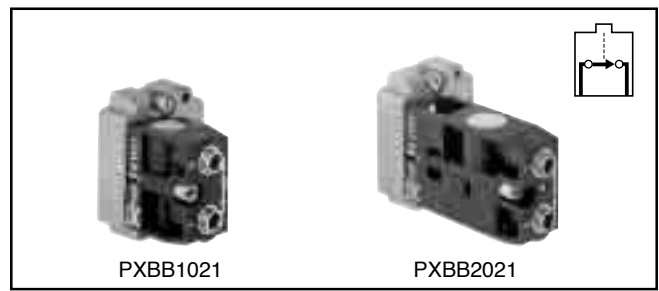
Below is a cross-reference between industry specific nomenclature and symbols, and the universal nomenclature.

Universal Description	Electrical		Fluid Power	
	Function	Symbol	Function	Symbol
Normally Non-Passing (NNP)	Normally Open (N.O.)		Normally Closed (N.C.)	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>2-Way</p> </div> <div style="text-align: center;"> <p>3-Way</p> </div> </div>
Normally Passing (NP)	Normally Closed (N.C.)		Normally Open (N.O.)	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>2-Way</p> </div> <div style="text-align: center;"> <p>3-Way</p> </div> </div>

**Normally Non-Passing**



**Normally Passing**



**Operation**

**3-Way NNP**

**Normal Position** - Inlet port 3 is blocked. Outlet port 4 is connected to exhaust.

**Actuated Position** - Inlet port 3 is connected to outlet port 4.

**2-Way NNP**

**Normal Position** - Inlet port 3 is blocked. Outlet port 4 is blocked.

**Actuated Position** - Inlet port 3 is connected to outlet port 4.

**Operation**

**3-Way NP**

**Normal Position** - Inlet port 1 is connected to outlet port 2.

**Actuated Position** - Inlet port 1 is blocked. Outlet port 2 is connected to exhaust.

**2-Way NP**

**Normal Position** - Inlet port 1 is connected to outlet port 2.

**Actuated Position** - Inlet port 1 is blocked. Outlet port 2 is blocked.

**Model Selection**

Description	Orifice	Model Number
3-Way Valve w/Mounting Base	1/16"	PXBB1011
	1/8"	PXBB2011
3-Way Valve Body Only*	1/16"	PXBB1911
	1/8"	PXBB2911
2-Way Valve Body Only*	1/16"	PXBB1911SE
Electrical Switch Body Only*	N/A	ZB2BE101

\* Order Mounting Base separately below.

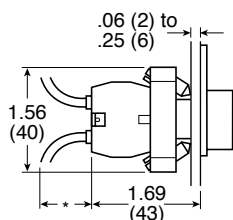
**Model Selection**

Description	Orifice	Model Number
3-Way Valve w/Mounting Base	1/16"	PXBB1021
	1/8"	PXBB2021
3-Way Valve Body Only*	1/16"	PXBB1921
	1/8"	PXBB2921
2-Way Valve Body Only*	1/16"	PXBB1921SE
Electrical Switch Body Only*	N/A	ZB2BE102

\* Order Mounting Base separately below.

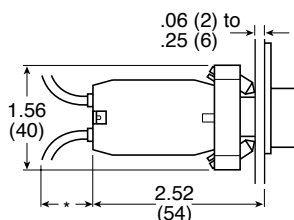
**Dimensions**

1/16" orifice



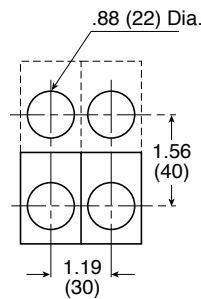
Switch body width 1.19"

1/8" orifice

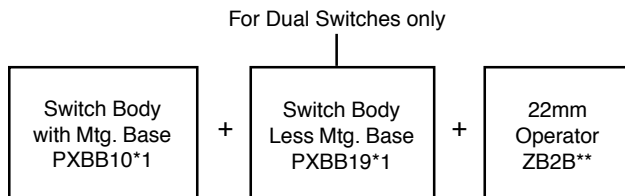


\*Bending radius .63" minimum.

**Mounting Holes**

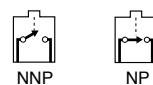


**How to Order**

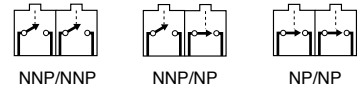



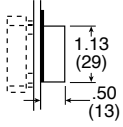
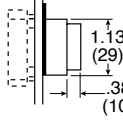



**Available Combinations**


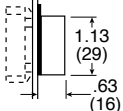

Single Switch


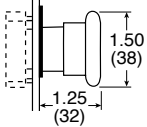
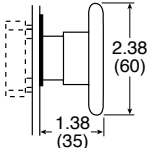





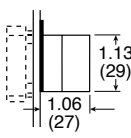




Dual Switch


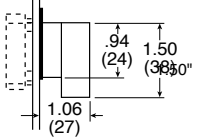







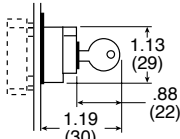


Head Type	Symbol	Description	Color	Model No.
 <p><b>Flush</b></p>  <p><b>Extended</b></p> 	  	Flush Push Button	Black	ZB2BA2
			Green	ZB2BA3
			Red	ZB2BA4
			Yellow	ZB2BA5
			Blue	ZB2BA6
			Black	ZB2BL2
		Extended Push Button	Green	ZB2BL3
			Red	ZB2BL4
			Yellow	ZB2BL5
		Extended Push ON/Push OFF	Green	ZB2BH3
			Red	ZB2BH4
			Blue	ZB2BH6


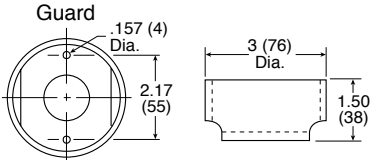
Head Type	Symbol	Description	Color	Model No.
 <p><b>Booted</b></p> 		Booted Push Button	Black	ZB2BP2
			Green	ZB2BP3
			Red	ZB2BP4
			Yellow	ZB2BP5

Head Type	Symbol	Description	Color	Model No.
 <p><b>Standard Mushroom</b></p>  <p><b>Jumbo Mushroom</b></p> 	<p>Spring return</p>  <p>Push-Pull to release</p> 	Standard Mushroom, Spring Return	Black	ZB2BC2
			Green	ZB2BC3
			Red	ZB2BC4
		Jumbo Mushroom, Spring Return	Black	ZB2BR2
			Green	ZB2BR3
		Standard Mushroom, Push-Pull	Red	ZB2BR4
			Black	ZB2BT2
		Jumbo Mushroom, Push-Pull	Red	ZB2BT4
			Red	ZB2BX4

Head Type	Symbol	Description	Color	Model No.
 <p><b>Standard Selector</b></p> 	   	2-Pos Selector, Maintained	Black	ZB2BD2
		2-Pos Selector, Spring Return R to L	Black	ZB2BD4
		3-Pos Selector, Maintained	Black	ZB2BD3
		3-Pos Selector, Spring Center	Black	ZB2BD5

Head Type	Symbol	Description	Color	Model No.
 <p><b>Knob lever</b></p> 	   	2-Pos Lever Selector, Maintained	Black	ZB2BJ2
		2-Pos Lever Selector, Spring Return R to L	Black	ZB2BJ4
		3-Pos Lever Selector, Maintained	Black	ZB2BJ3
		3-Pos Lever Selector, Spring Center	Black	ZB2BJ5

Head Type	Symbol	Description	Key Release	Model No.
 <p><b>Key Selector</b></p> 	 	2-Position, Maintained	Left	ZB2BG2
			Left & Right	ZB2BG4
		3-Position, Maintained	Center	ZB2BG3
			Left & Right	ZB2BG5
			Left	ZB2BG9

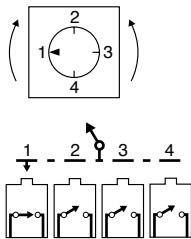
Head Type	Description	Model No.
 	Guard for Jumbo Mushroom Heads ZB2BR*S	ZB2BZ19

**K**

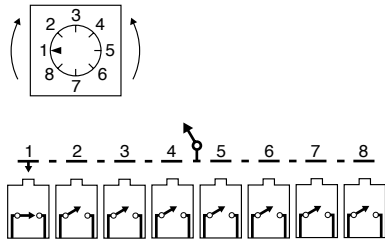


8-Position

**4 Positions, 4 Pneumatic Switches**



**8 Positions, 8 Pneumatic Switches**



**Application**

These switches (valves) provide a single discrete output as prescribed by a selector position. Each selector position controls one switch output, all other switches will be non-passing and connected to exhaust.

**Operation**

Rotary knob selector, black, with 2 1/2" x 2 1/2" legend plate black and red. No mechanical stop. Switches all normally non-passing (NNP).

**Technical Data**

**Operating Pressure:** 0 - 120 PSIG

**Nominal Orifice Size:** 1/16" (Cv = .03)

**Connection:** Integrated instant connection for 5/32" O.D. tubing

**Operating Temperature:** 5° to 140°F (-15° to 60°C)

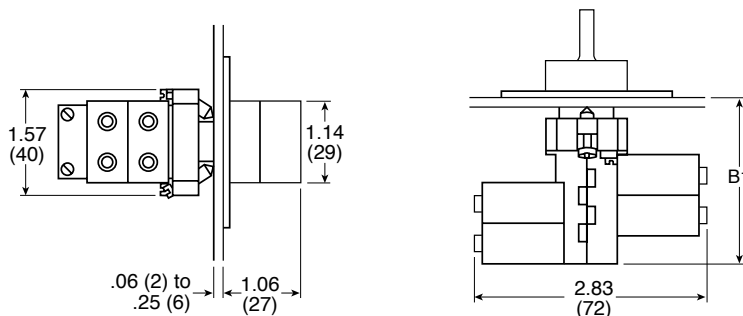
**Operating Principle:** Poppet

**Operating Medium:** Dry or lubricated compressed air or inert gases, 40 micron filtration.

**Model Selection**

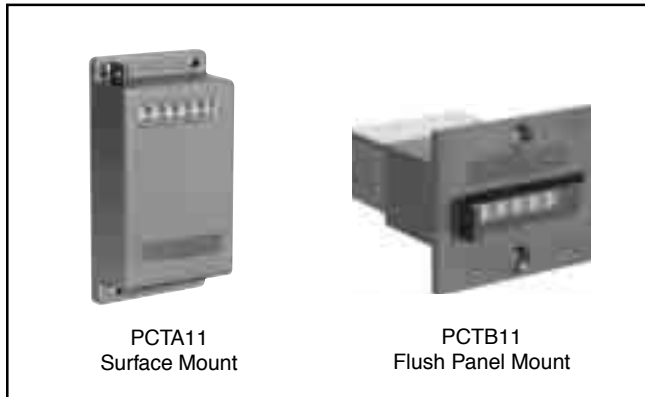
Description	Model Number	Weight
4-Position Rotary Selector	PXBDD104	7.5 oz.
8-Position Rotary Selector	PXBDD508	11.1 oz.

**Dimensions**



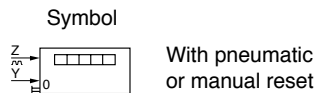
	<b>B1</b>
4 positions	2.36"
8 positions	3.54"

## Totalizing



### Application

These pneumatic counters use an air input to control a mechanical counting assembly. Input signals to be counted cause the “units” figure wheel to rotate one half digit forward. When the input signal is exhausted, the figure wheel moves through the remaining distance to complete the digit display. Thus the unit must be pressurized and exhausted in order for the count to be completed. Totalizing counters provide a display only.



### Model Selection

Counting Range	Model Number	Weight
0 to 999,999	PCTA11	2.7 oz.
0 to 99,999	PCTB11	2.1 oz.

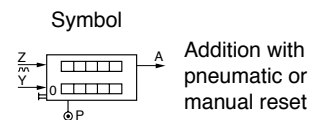
## Predetermining



### Application

This pneumatic counter uses an air input to control a mechanical counting assembly. The unit must be pressurized and exhausted in order for a count to be completed. Predetermining counters, when the set count is reached, provide a pneumatic output. Predetermining count is set on the bottom keys and permanently displayed on the lower readout. Top displays accumulated count. Reset leaves predetermining count unchanged.

**K**



### Model Selection

Counting Range	Model Number	Weight
0 to 99,999	PCPA11	4.1 oz.

## Technical Data

**Working Pressure:** 30 - 140 PSIG

**Filtration:** 40 micron max

**Air supply:** Oil free or slight oil content

**Connection:** Instant connection for 5/32" OD tubing

**Test speed:** Count 20 impulses per second

**Time between pulses:** 12 ms minimum

**Reset signal:** 130 ms minimum

**Time required between end of reset signal and next count signal:** 50 ms minimum

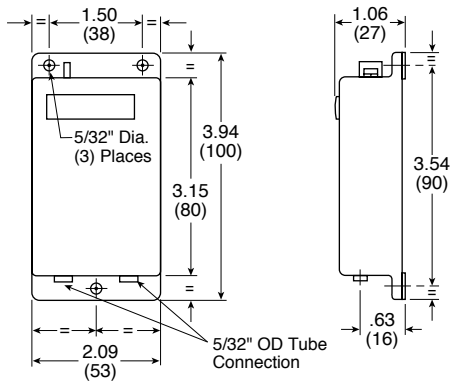
Counter consumes no air while counting.

### Pneumatic resetting:

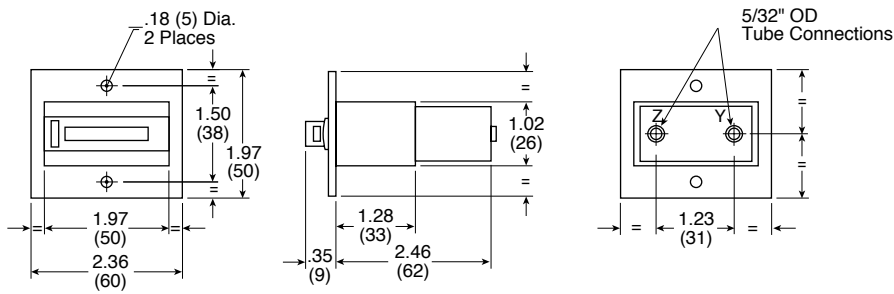
To avoid counting mistakes follow these pointers:

- Minimum reset tubing length 20"
- Output signal may not be used for resetting
- Count signal must be off when resetting

**PCTA11**

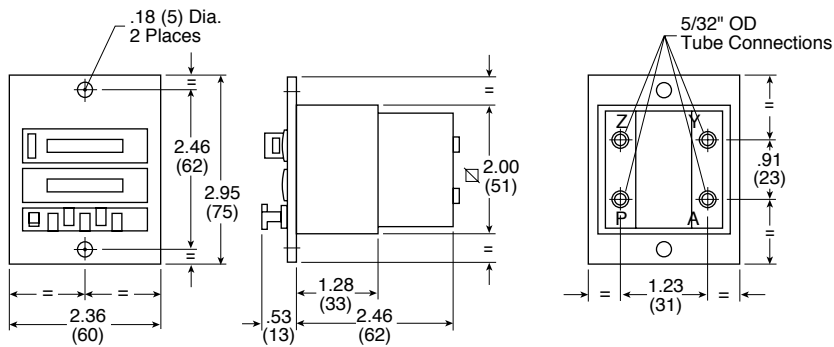


**PCTB11**



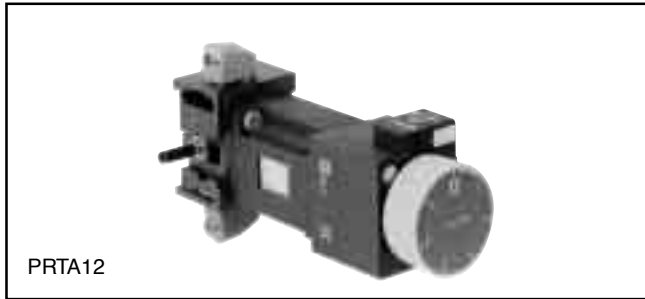
- Connections:**
- Count inputs to Z
  - Reset inputs to Y

**PCPA11**



- Connections:**
- Supply to P
  - Reset to Y
  - Count input to Z
  - Output to A

**Time Delay Relay complete with PZUA12 Subbase**



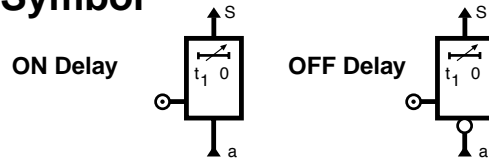
**Time Delay Relay without Subbase**



**Operating Principle**

The time delay relay is entirely pneumatic. Air supply to the timing head is taken from ambient atmosphere. The timing function is therefore independent of line pressure. As a result, repeatability is unaffected by variations in supply pressure, temperature or contamination of supply.

**Symbol**



**Model Selection with Subbase**

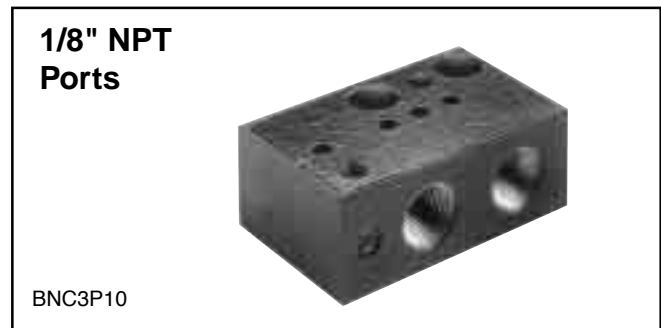
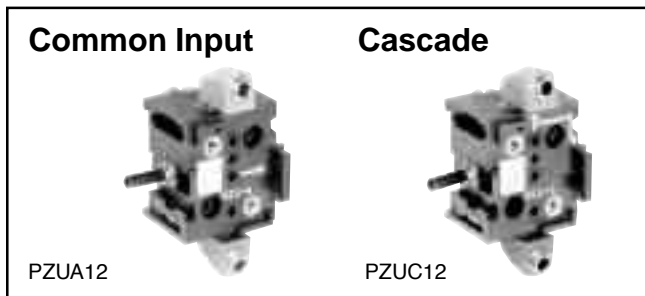
Function	Timing Range	Model Number	Weight
ON Delay	0.1 to 30 s	PRTA12	5.82 oz.

**Model Selection without Subbase**

Function	Timing Range	Model Number	Weight
ON Delay	0.1 to 3 s	PRTE10	4.4 oz.
ON Delay	0.1 to 30 s	PRTA10	4.4 oz.
ON Delay	10 to 180 s	PRTB10	4.4 oz.
OFF Delay	0.1 to 3 s	PRTF10	4.4 oz.
OFF Delay	0.1 to 30 s	PRTC10	4.4 oz.
OFF Delay	10 to 180 s	PRTD10	4.4 oz.



**3-Port Subbases (with Integral Lock for Stacking)**



**Model Selection for Subbase**

Symbol	Description	Model Number	Weight
	Common Input	PZUA12	1.4 oz.
	Cascade	PZUC12	1.58 oz.
	Individual Mount Plated Zinc	BNC3P10	3.1 oz.

**CAUTION**

Unit can be improperly assembled to BNC3P10 base. For proper orientation, the side with the white plastic filter must be positioned over Port #1.

**Replacement Filter**

a (input)	PPRL23
Input Cylinder	PPRL20

## Technical Data

- Working Pressure:** 40 to 120 PSIG (3 to 8 bar)  
**Operation Medium:** Dry or lubricated compressed air or inert gases, 50 micron filtration.  
**Connection:** Instant connection for 5/32" O.D. tubing  
**Flow Rate at 90 PSI:** 6.4 (6 bar) in SCFM  
**Cv:** 0.14  
**Working Temperature:** 5°F to 140°F (-15°C to 60°C)  
**Response Time:** 2 to 3 ms  
**Mounting:** 35mm DIN rail  
**Repeatability:** ± 5% / 5 operations  
**Setting:** Delay is set by turning knob. One 360° turn covers complete timing range. When white line on dial is set at top dead center, TDR goes to infinity. This feature facilitates machine set-up.

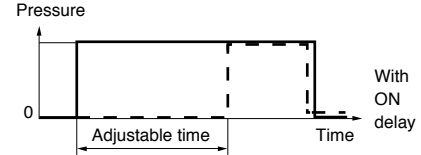
## Specific Characteristics

### Function

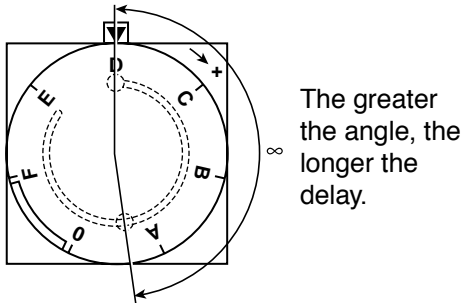
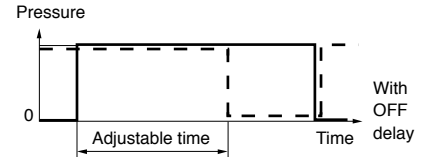
### Key:

- Control signal a  
 - - - - Output signal S

PRT-E  
 PRT-A  
 PRT-B

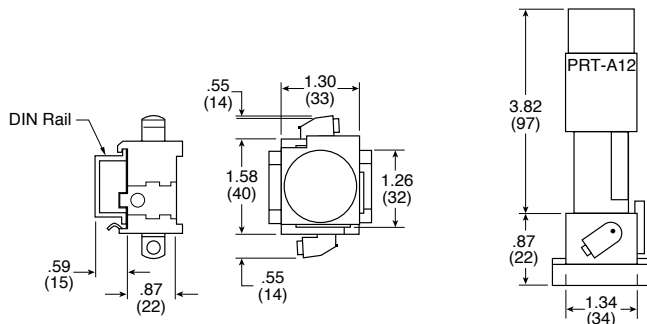


PRT-F  
 PRT-C  
 PRT-D

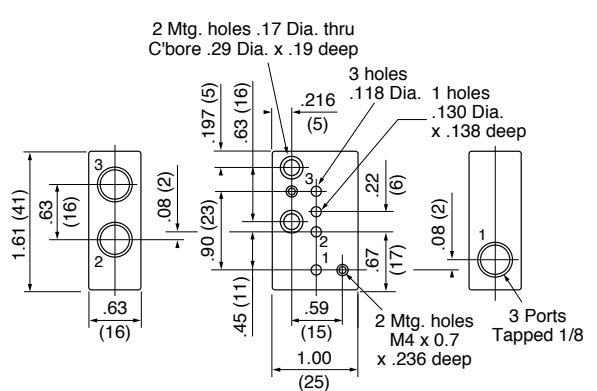


## Dimensions

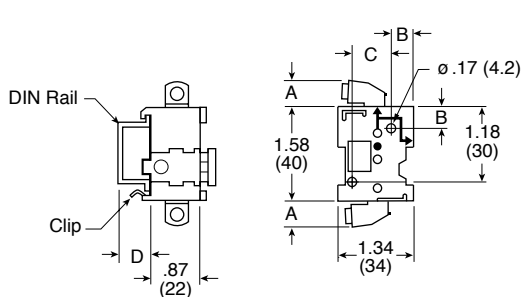
**PRTA12**



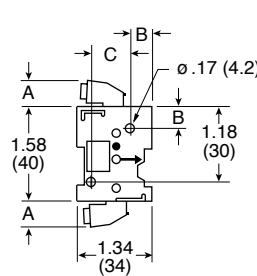
**BNC3P10**



**PZUC12**



**PZUA12**

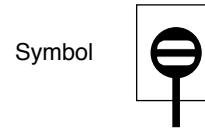


	inch	mm
A	.55	14
B	.39	10
C	.59	15
D	.59	15



## Application

Pneumatic visual indicators replace electrical pilot lights in pneumatic control systems. Visual indicators show the presence or absence of pneumatic signals such as E-stop, part present, etc.



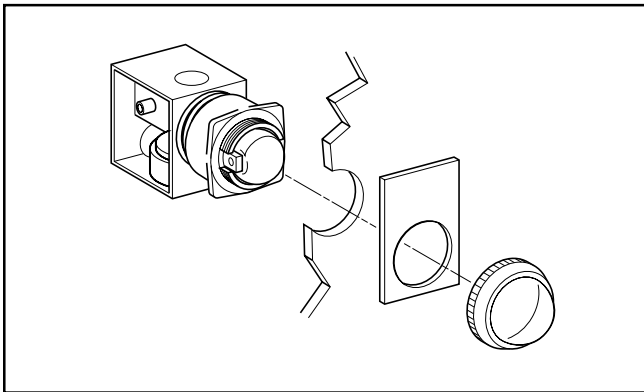
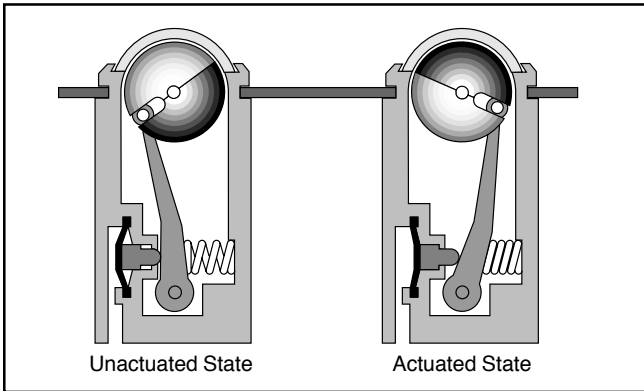
## Operating Principle

A pneumatic signal inverts diaphragm, which pushes an arm and rotates the indicator ball.

In unactuated position, ball shows black side.

In actuated position, ball shows highly visible colored side.

During rotation, arm slides in a slot providing a sinusoidal movement: smooth start, fast rotation, smooth stop. This avoids shocks and insures long indicator cycle-life.



## Mounting

- 1) Indicator body is positioned on panel
- 2) Transparent top is assembled to body by screwing top into collar.
- 3) Indicator assembly is fastened to panel by screwing pinion drive, thus moving collar forward to grip panel.

## Technical Data

**Operating Pressure:** 15 - 120 PSIG

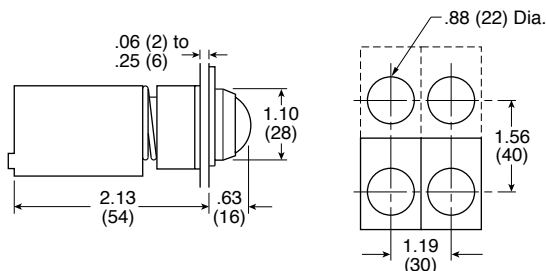
**Connection:** Integrated instant connection for 5/32" O.D. tubing

**Operating Temperature:** 5°F to 140°F (-15°C to 60°C)

**Operating Principle:** Diaphragm

**Operation Medium:** Dry or lubricated compressed air or inert gases, 40 micron filtration.

## Dimensions

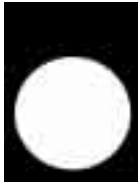


## Model Selection

Model Number	Color	Indication	Bezel
PXVF1214	Orange	Off	Black Plastic
PXVF131	Green	On	Black Plastic
PXVF141	Orange	On	Black Plastic
PXVF151	Yellow	On	Black Plastic
PXVF161	Blue	On	Black Plastic



## Legend Plates for 22mm (7/8") Controls



ZB2BY\*\*\*\*

### For Push Buttons

Text	Model No.
Start	ZB2BY2303
Stop	ZB2BY2304
On	ZB2BY2311
Off	ZB2BY2312
Emergency Stop	ZB2BY2330
Forward	ZB2BY2305
Reverse	ZB2BY2306
Open	ZB2BY2313
Close	ZB2BY2314
Up	ZB2BY2307
Down	ZB2BY2308
Fast	ZB2BY2328
Slow	ZB2BY2327
High	ZB2BY2338
Low	ZB2BY2336
Inch	ZB2BY2321
Jog for	ZB2BY2381
Jog rev	ZB2BY2380
In	ZB2BY2503
Out	ZB2BY2339
Raise	ZB2BY2335
Lower	ZB2BY2337
Reset	ZB2BY2323
Power on	ZB2BY2326
Run	ZB2BY2334
Right	ZB2BY2309
Left	ZB2BY2310

### For Selectors

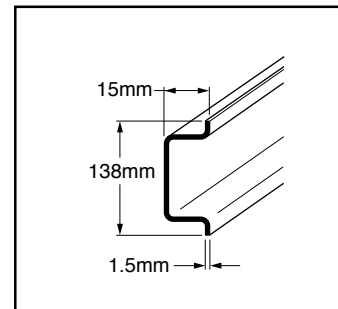
Description	Text	Model No.
For 2-Position Switches	For Rev	ZB2BY2371
	High Low	ZB2BY2369
	Off On	ZB2BY2367
	Open Close	ZB2BY2376
	Stop Start	ZB2BY2362
	Up Down	ZB2BY2370
	Run Jog	ZB2BY2365
	Manual Auto	ZB2BY2372
For 3-Position Switches	Hand Off Auto	ZB2BY2387
	For O Rev	ZB2BY2384
	Open O Close	ZB2BY2388
	Up O Down	ZB2BY2389

### Blank Legend Plates

Description	Model No.
Blanking plug for 7/8" diameter (black)	ZB2SZ3
Black or Red	ZB2BY2101
Black Background, White Letters	ZB2BY2002
Red Background, White Letters	ZB2BY2004
Circular 3-39/64" (90mm) for mushroom head	ZB2BY8330
Rectangular for mushroom head	ZB2BY5101

### DIN Rail – AM1DE200

This DIN mounting rail can be mounted to grids or other surfaces and allow snap in mounting of pneumatic and electrical components. DIN rails are sold in 6 ft. increments.



### Mounting Track Spacer

The mounting track spacer is installed under the DIN rail and allows the rail to be elevated from the grid or mounting surface.

Height	Model Number	Box Qty.
1/2"	AZ1CA04	10
3/4"	AZ1CA029123	10
2"	AZ1CA3167542	5



### Clip Nuts – AF1EA51

Clip nuts for universal mounting on grids. 10-24 threads.



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### Tubing Clamps – AK2LA34

Tubing clamps snap onto mounting grid and hold ten 5/32" diameter tubes. Use with 1/2" mounting track spacer.



### Terminal Block – PZCB244

Allows for four straight through pneumatic passages. Mounts to 35mm DIN rail. Complete with 5/32" O.D. instant tube connectors.



**Notes**

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