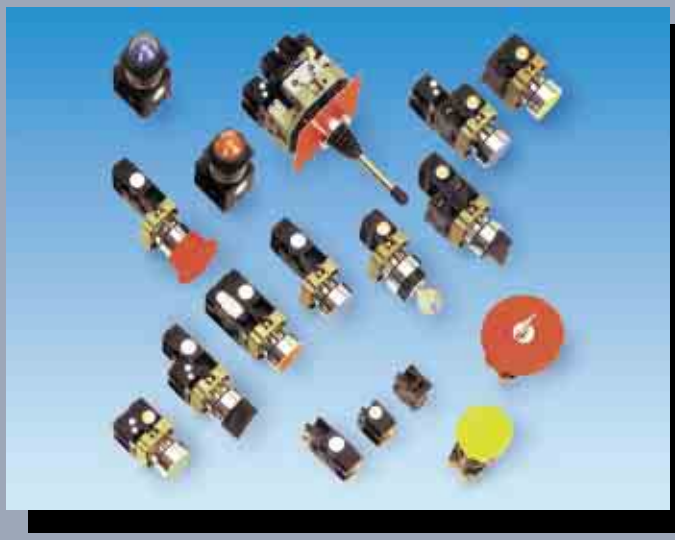
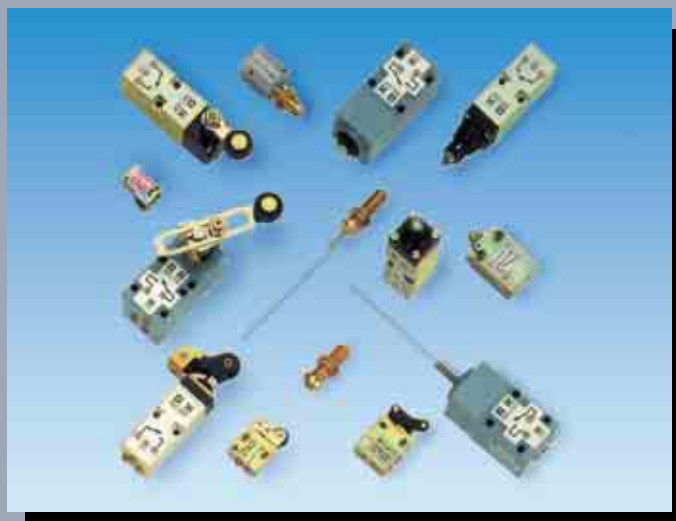
Parker Pneumatic

Pneumatic Control Components

Index

Catalog PCC-2/USA





Telepneumatic

⚠ WARNING

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Part Number to Page Index

Logic

Modular Sequencer • Logic Elements • Time Delay Relays • Memory Relays • Amplifier and Sensor Relays • Solenoid Actuators • 4-Way Valve Unit • Pulse Units • Air Regulator • Pressure Switches • Impulse Counters • Timers • Subbases • Logic Processing Spare Parts

A

Man / Machine Dialog

Push Buttons • Selector Switches • Visual Indicators • Rotary Selector Switches • Joystick Controllers • Two-hand Controls • Foot Switches

B

Sensing

Mechanical Limit Switches • Pressure Switches • Vacuum Switches • Threshold Sensors • Bleed Sensors • Fluidic Proximity Sensors

C

Accessories

Mounting Accessories • Tubing Accessories

D

Offer of Sale

Notes

Parker Pneumatic
Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan

Logic

Virtually all production machines using pneumatic actuators operate in a dedicated and repeatable sequence or cycle. The purpose of any control method is to insure that all steps of the machine's cycle occur as intended.

The sequencer constitutes the backbone of a Telepneumatic control circuit. The sequencer's poppet design provides long life using only shop air.

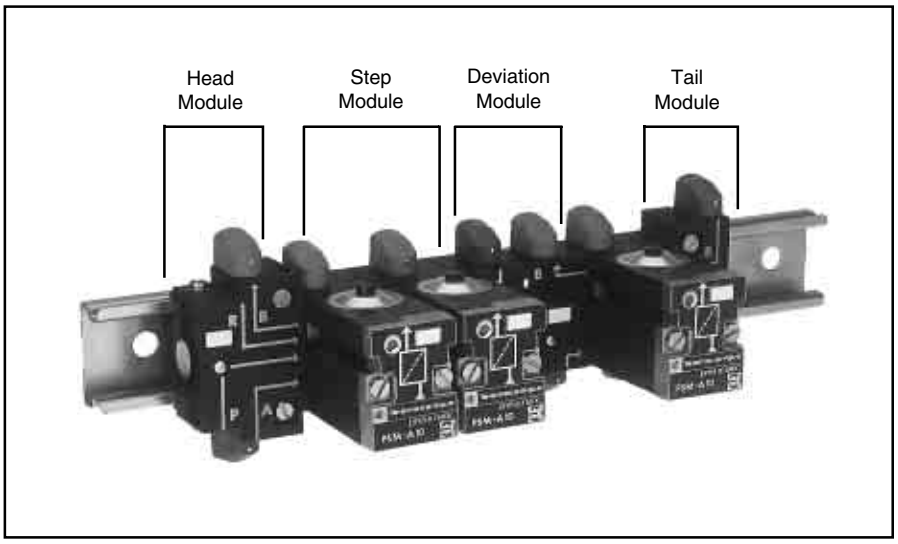
Since it is modular, the sequencer can easily be configured to any application cycle requirement. Logic elements and supporting relays provide for other application needs such as safety conditions, operating modes and time delays.

The Telepneumatic sequencer eliminates the need for solenoid operated valves.

COMPOSITION

A sequencer is comprised of a Number of step modules, each corresponding to a defined step in the machine's cycle according to the application requirements.

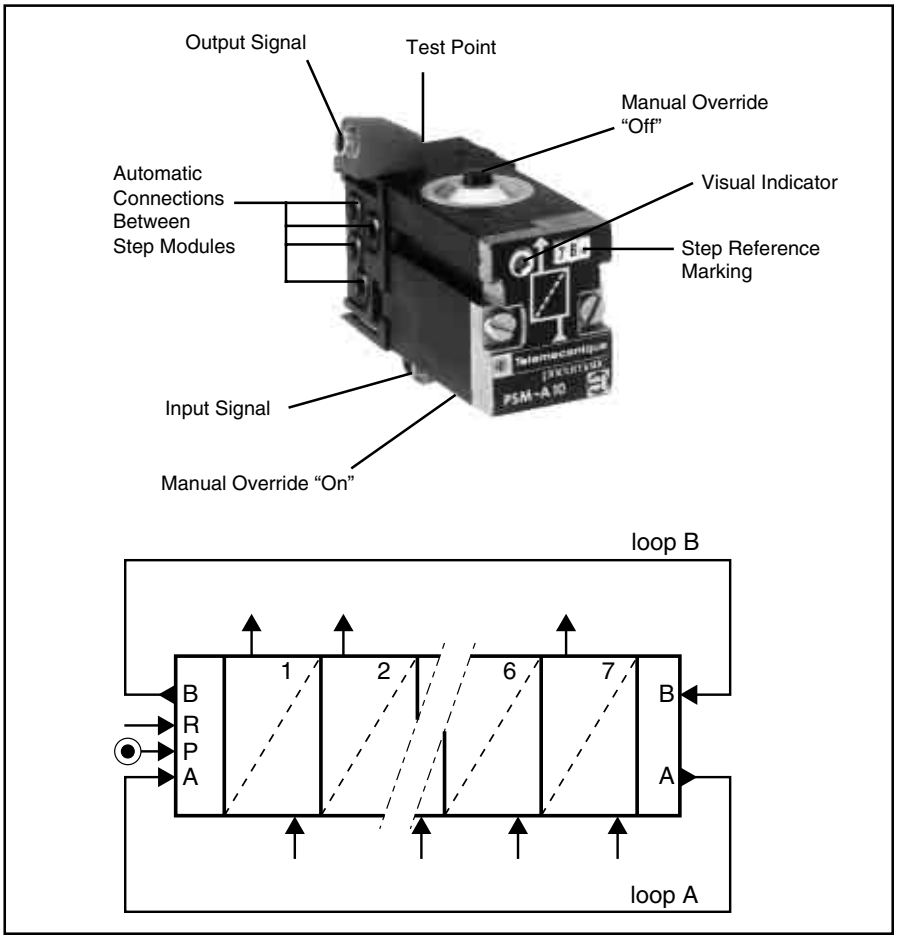
The head / tail module peforms the function of locking the easily stacked step modules to the 35 mm DIN rail while also supplying connection to the stack as follows: (1) supply pressure, (2) starting condition and (3) general and emergency resets. A deviation module is placed between step modules to provide for variation to the normal sequence of events such as skips, repeats, multi line cycles and resets.



STEP MODULE

At the heart of the sequencer, the step module is the decision making element that will read the necessary inputs and provide output commands as needed. The step module consists of the following parts:

- Input/output via 5/32" instant swivels with test points
- Visual indicator, defining status
- Both on and off manual overrides
- Step reference marking to assist in sequence diagnostics
- Stackable subbase with special internal piping.



Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan

GRAFCET

The use of a function flow diagram allows the designers of machine tool automation to organize application requirements in a simple sequential flow. The GRAFCET flow diagram becomes a snapshot of the machine's positions and conditions. This simplifies understanding and modification of the specific application.

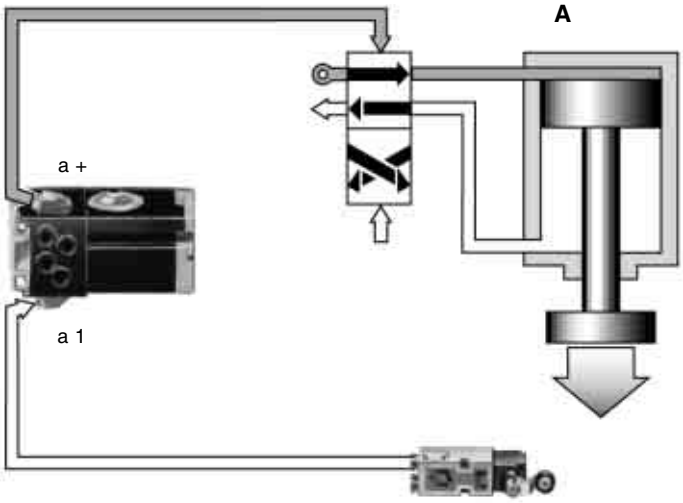
CONTROL LOOP

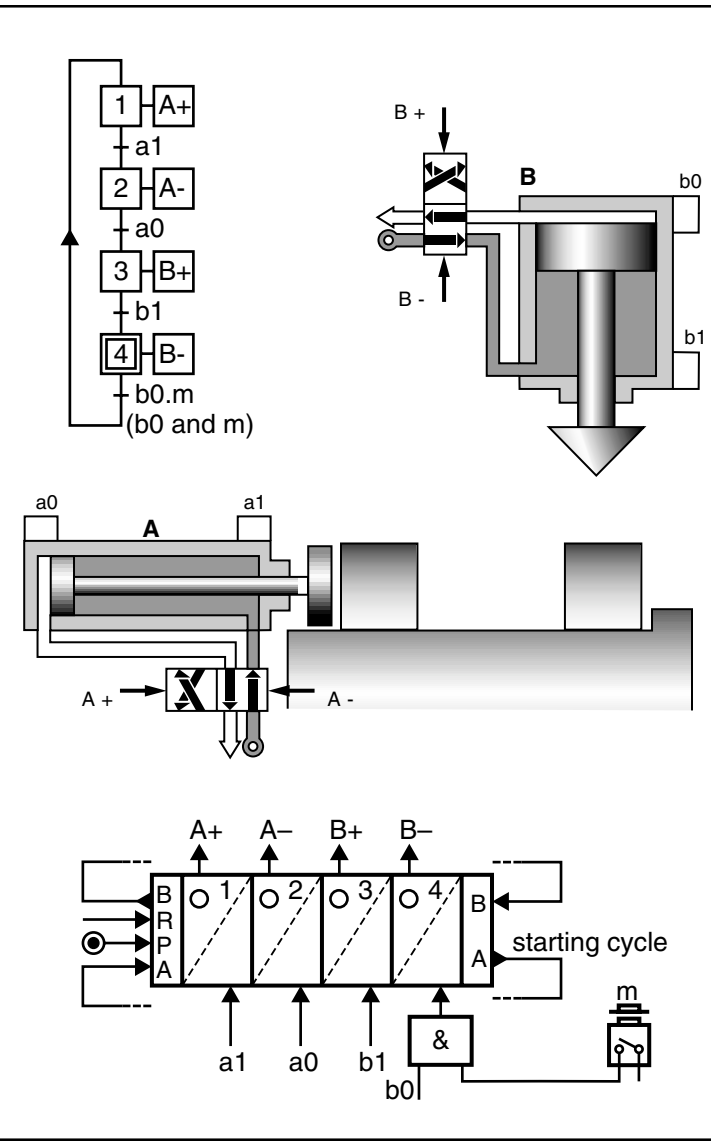
To understand the operating cycle, we first define each actuator motion in sequence. We will address each actuator with a letter starting with A. For a cylinder as shown to the right, the motion required is the extension of the cylinder. This action will now be known as A+. The "+" indicates the extension of a cylinder, or the turning of an actuator that is digital (on / off). When the cylinder reaches the end of its stroke, it will trigger a limit switch. This signal is an input (transition) that we call "a1". The "a" defines the actuator, and "1" defines its active state. This completes a step consisting of a command and a transition.

COMBINATION

We can now combine additional actuators and reciprocal motions to create a total control package. To the right are two actuators A and B. "A" is a transfer cylinder that will move parts into the workspace. "B" is a press that will form the parts.

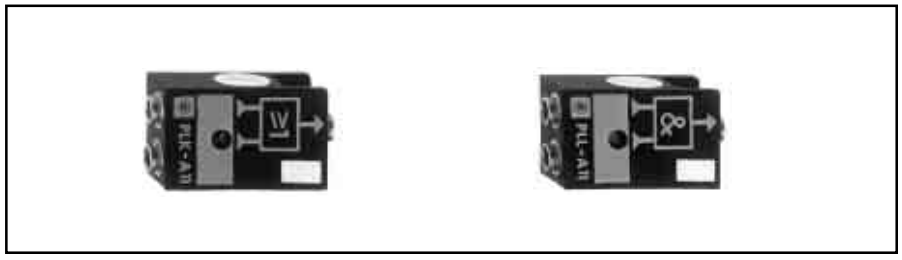
The GRAFCET flow diagram in the upper left shows the required actions and the corresponding limit switch feedback signals to indicate the actions are complete. When the machine starts, the transfer (A) will extend (+), placing a part in the nest. Feedback (a1) states that the action is complete and initiates retraction (A-). Feedback (a0) confirms the action is complete and initiates the next motion. The press (B) will extend downward (+) until reaching the end of stroke sensor (b1) which confirms the action and initiates the final step that returns the press to its home condition (B-). The sensor (b0) confirms when (B) is home and signals end of cycle.





IN-LINE MOUNTED LOGIC ELEMENTS

These logic elements can be either flush mounted on any flat surface, 35mm DIN rail mounted with the addition of a spring clip or hung from the tubing.
In-line elements are available in two logic statements: AND and OR.

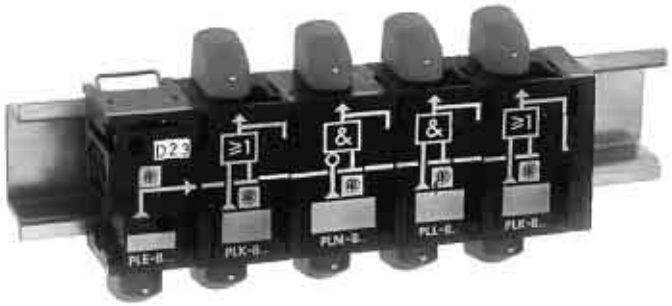


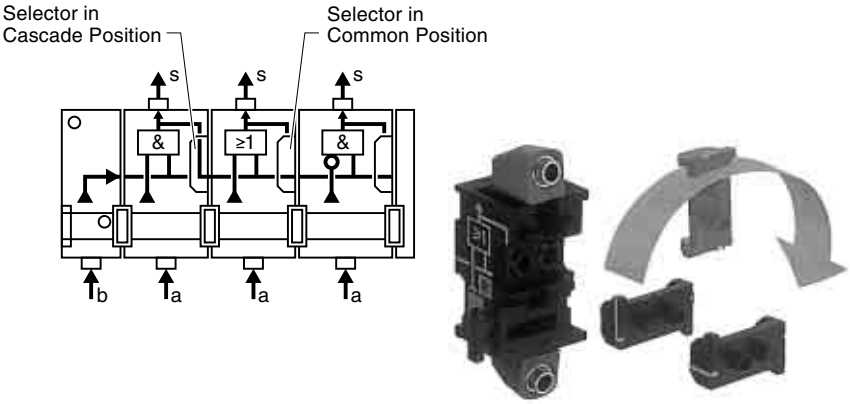
INTEGRATED LOGIC ELEMENTS

These elements can be combined with each other, allowing the creation of string statements in a compact footprint while reducing the piping required. There are three logic functions available in this configuration: AND, OR and NOT.

Each element is supplied with an integral locking key which allows each logic unit to lock to the next element to the right. In addition, each element includes a mode selector which enables the user to select either cascade (series) or common (parallel) cilrcuitry.

Cascade mode determines that the output of a logic element will feed the next downstream logic element, while the common mode feeds its supply to the next component. These units are designed for 35mm DIN rail mounting and are supplied with the internal piping diagram printed on the face of the device. This internal piping is field convertable.





SUBBASE MOUNTING LOGIC ELEMENTS

All logic devices are designed to mount on 3-port subbases. The 3-port subbase is available in two styles (common input and cascade input) and are manifoldable with each other as well as the 4-port subbases for relays. A stand alone 3-port (1/8" pipe) metal subbase is also available. There are 5 logic elements for subbase mounting: AND, OR, YES, NOT and THRESHOLD NOT.

RELAYS

These components provide additional capability to the pneumatic logic system. Types available are: Time Delay, Memory, Amplifier, Sensor, Solenoid, and Pressure Switch (both pneumatic and electric). Depending on function, a 3 or 4-port subbase is used.

3-PORT SUBBASES

These stackable subbases are designed for the mounting of:
- logic devices
- timers
- bleed sensor relays
- threshold NOT relays
- E/P and P/E interfaces.

They are stackable with the 4-port subbases below and are available in common input or cascade input styles.

4-PORT SUBBASES

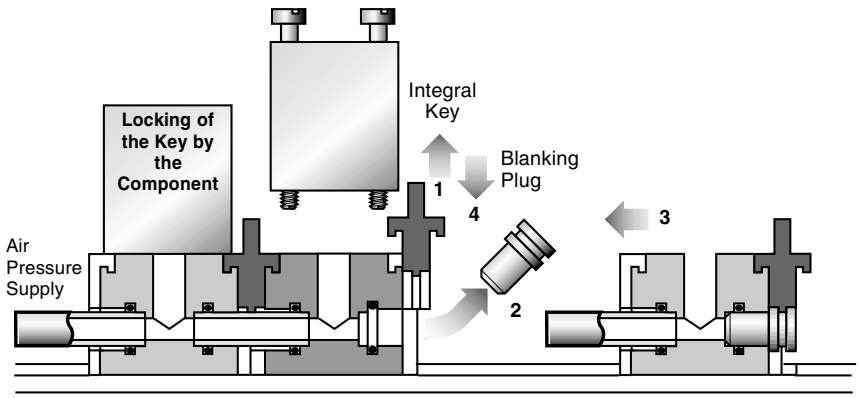
These stackable subbases are designed for the mounting of:
- memory relays
- amplifier relays for use with proximity sensors.

They are stackable with the 3-port subbases above.

STACK ASSEMBLY

The drawing to the right explains the procedure for asembling subbase mounted logic components and relays.

Note: The subbases are supplied with an integral key that must be pulled upward (1) to release the blanking plug (2). Now the downstream subbase can be positioned (3) then locked by returning the integral key back to its original position (4). After this process is complete, the relay or logic element are mounted on top.

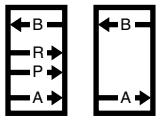


Step Module

PSMA10

Part Number	Description
PSMA10	With Manual Override, Less Base
PSMB10	Without Manual Override, Less Base
PSMA12	PSMA10 on PSBA12 Base
PSMB12	PSMB10 on PSBA12 Base

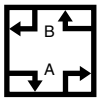
Head / Tail Set
(For 35mm DIN Rail Mounting)



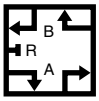
PSEA127

Part Number	Description
PSEA127	Required to assemble Modular Sequencer Provides Inlet & Signal Ports

Deviation Models



Standard

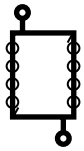


Blocked Port

PSDB12

Part Number	Description
PSDA12	**Standard:** - Parallel Sequences - Selection Sequences - Repeat Sequences - Skip Steps
PSDB12	**Blocked Port:** For the Remote Reinitialization of the Blocked Port

Step Module Subbase



PSBA12

Part Number	Description
PSBA12	For Mounting with PSM•10 Step Modules

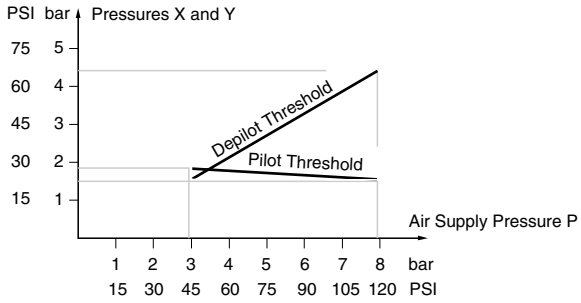
Step Module Interlock

PSVA12

Part Number	Description
PSVA12	Mounted between the Subbase and the Step Module to Interrupt the Sequence if a Sensor Signal is Faulty.

Pilot & Depilot Pressures

Reset Signal always takes priority over Set Signal.



Specifications

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

Cv (kv)
0.14 (1.8)

Flow rate at 90 PSI (6 bar) in SCFM (l/mn ANR)
6.4 (180)

Function
3-Way, Double Air operated Valve with priority reset (Reset signal takes precedence over set signal).

Materials
- Body ..... Polyamide
- Poppet ..... Polyurethane
- Seals ..... Nitrile (Buna N)

Number of Operations with Dry Air at 90 PSI and 70°F – Frequency 1 Hz
10 Million

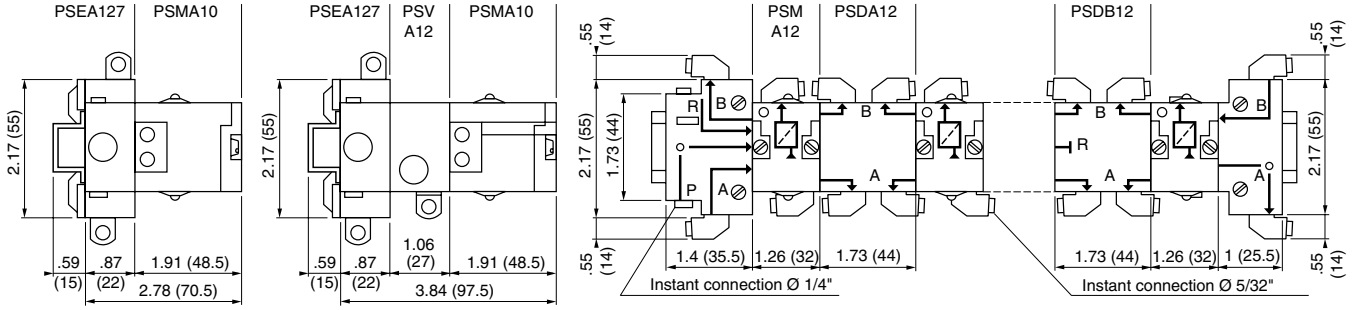
Operating Pressure
40 to 115 PSIG (3 to 8 bar)

Ports
PSEA127: Supply 1/4", All Others 5/32"
PSDA12, PSDB12, PSBA12, PSVA12: All 5/32
Use Semi- Rigid Nylon or Polyurethane Tube

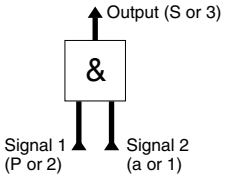
Response Time
2 to 3 msec

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

Dimensions



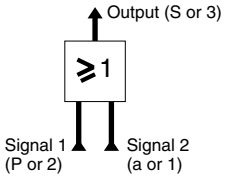
AND Element



PLLA11

Part Number	Description
PLLA11	5/32" Instant
PLLA15	10-32 UNF

OR Element



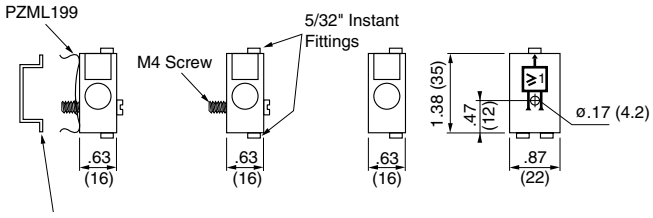
PLKA11

Part Number	Description
PLKA11	5/32" Instant
PLKA15	10-32 UNF

Mounting Clip Assembly

PZML199

Part Number	Description
PZML199	1 Set of 10 Clip Assemblies



Specifications

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

Cv (kv)
0.14 (1.8)

Flow rate at 90 PSI (6 bar) in SCFM (l/mn ANR)
6.4 (180)

Materials
- Body ..... Polyamide
- Poppet ..... Polyurethane
- Seals ..... Nitrile (Buna N)

Mounting
Inline or 35mm DIN Rail

Number of Operations with Dry Air at 90 PSI and 70°F – Frequency 1 Hz
10 Million

Operating Positions
All Positions

Operating Pressure
40 to 115 PSIG (3 to 8 bar)

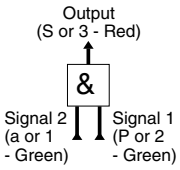
Ports
Standard: 5/32" Instant for Semi-Rigid Nylon or Polyurethane Tube
10-32 UNF Available

Response Time
2 to 3 msec

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

With 5/32" Instant Swivel Connections and Pressure Indicators

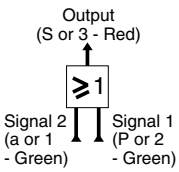
AND Element



PLLB12

Part Number	Description
PLLB12	With Integral Circuit Selector for Cascade or Common Mode Selection

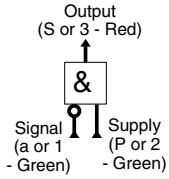
OR Element



PLKB12

Part Number	Description
PLKB12	With Integral Circuit Selector for Cascade or Common Mode Selection

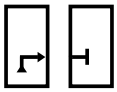
NOT Element

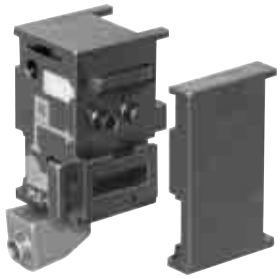


PLNB12

Part Number	Description
PLNB12	With Integral Circuit Selector for Cascade or Common Mode Selection

Head / Tail Plate Set





PLEB12

Part Number	Description
PLEB12	Mounts on DIN Rail, Required with Integrated Logic Elements to Complete Stack Assembly

Specifications

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

Cv (kv)
0.14 (1.8)

Flow rate at 90 PSI (6 bar) in SCFM (l/mn ANR)
6.4 (180)

Materials
- Body ..... Polyamide
- Poppet ..... Polyurethane
- Seals ..... Nitrile (Buna N)

Mounting
Inline or 35 mm DIN Rail

Number of Operations with Dry Air at 90 PSI and 70°F – Frequency 1 Hz
10 Million

Operating Positions
All Positions

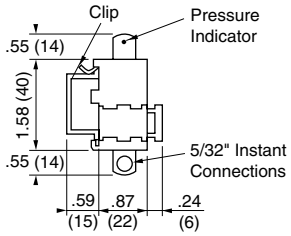
Operating Pressure
40 to 115 PSIG (3 to 8 bar)

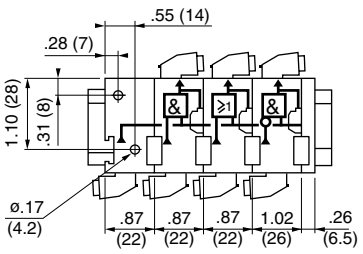
Ports
Standard: 5/32" Instant for Semi-Rigid Nylon or Polyurethane Tube
10-32 UNF Available

Response Time
2 to 3 msec

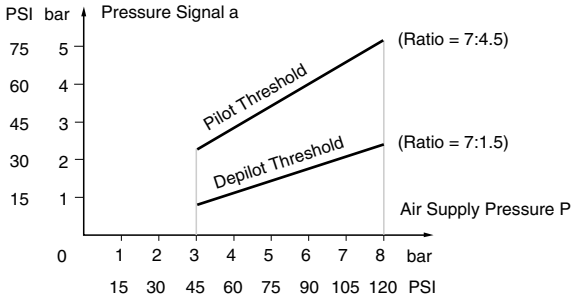
Temperature
Operating
32°F to 122°F (0°C to +50°C)
Storage
-22°F to 140°F (-30°C to +60°C)

Dimensions



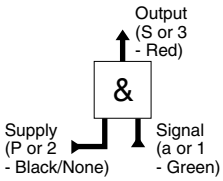


PLN - NOT



For Mounting On 3 Port Subbases

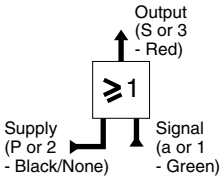
AND Element



PLLC10

Part Number	Description
PLLC10	Less Base

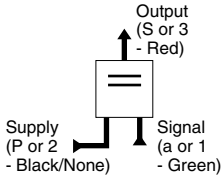
OR Element



PLKC10

Part Number	Description
PLKC10	Less Base

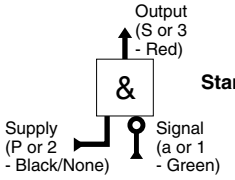
YES Element



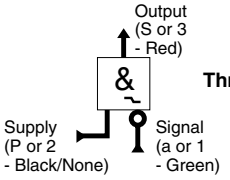
PLJC10

Part Number	Description
PLJC10	Less Base

NOT Elements



PLNC10

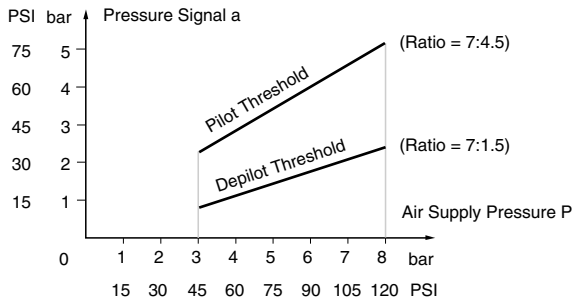


PLND10

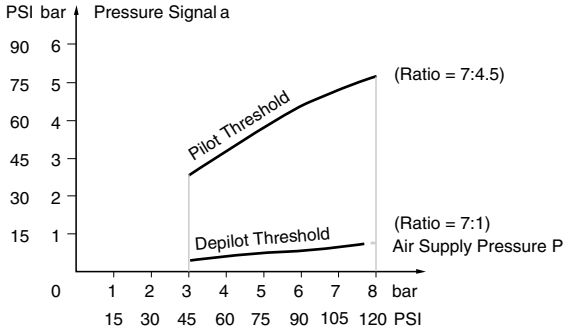
Part Number	Description
PLNC10	Less Base
PLNC12	PLNC10 on PZUA12 Subbase
PLND10	Less Base
PLND12	PLND10 on PZUA12 Subbase

Pilot and Depilot Pressures

PLN and PLJ - NOT and YES



PLND - Threshold NOT



Specifications

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

Cv (kv)

PLNC, PLJC, PLL & PLK	PLND
0.14 (1.8)	0.08 (1.0) .14 (1.8)

Flow rate at 90 PSI (6 bar) in SCFM (l/mn ANR)

PLNC, PLJC, PLL & PLK	PLND
6.4 (180)	3.2 (90 6.4 (180)

Materials
- Body ..... Polyamide
- Poppet ..... Polyurethane
- Seals ..... Nitrile (Buna N)

Mounting
3-Port Subbase

Number of Operations with Dry Air at 90 PSI and 70°F – Frequency 1 Hz

PLL & PLK	PLND PLNC / PLJC
100 Million	10 Million

Operating Positions
All Positions

Operating Pressure
40 to 115 PSIG (3 to 8 bar)

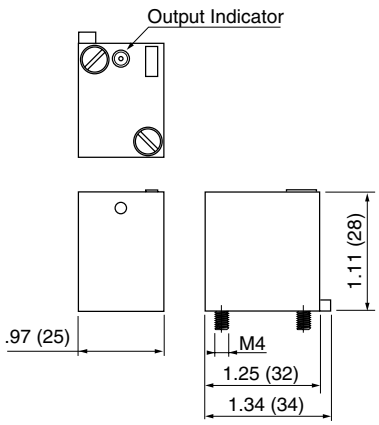
Ports
Standard: 5/32" Instant for Semi-Rigid Nylon or Polyurethane Tube
10-32 UNF Available

Response Time
2 to 3 msec

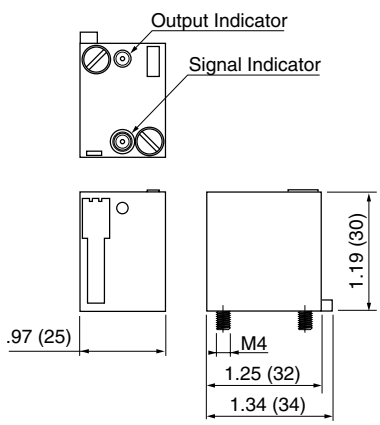
Temperature
Operating
32°F to 122°F (0°C to +50°C)
Storage
-22°F to 140°F (-30°C to +60°C)

Dimensions

PLKC10, PLLC10



PLNC10, PLND10, PLJC10



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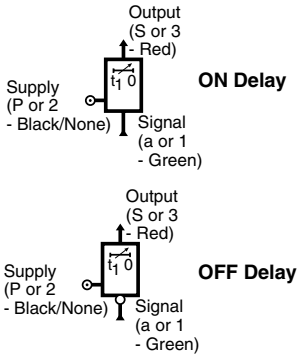
Time Delay Relays

For Mounting On Any 2* or 3-Port Subbase
Using Atmospheric Air for Control
Single Turn Adjustment



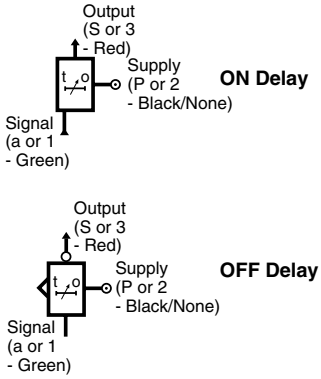
PRTA10

Part Number	Description
PRTE10	ON Delay 0.1 to 3 s
PRTA10	ON Delay 0.1 to 30 s
PRTB10	ON Delay 10 to 180 s
PRTF10	OFF Delay 0.1 to 3 s
PRTC10	OFF Delay 0.1 to 30 s
PRTD10	OFF Delay 10 to 180 s
PRTA12	PRTE10 on PZUA12 Subbase
LA9D901	Tamperproof Cap

Logic

Time Delay Relays

For Mounting On Any 2* or 3-Port Subbase
Using Pressurized Air for Control
Multiple Turn Adjustment



LTY10/3

Part Number	Description
LTY10/0	ON Delay 0.18 to 1.8
LTY10/1	ON Delay 0.40 to 3.0
LTY10/2	ON Delay 1.0 to 10.0
LTY10/3	ON Delay 5.0 to 40.0
LTY/EXT	ON Delay Variable
LTN10/0	OFF Delay 0.14 to 1.4
LTN10/1	OFF Delay 0.25 to 2.0
LTN10/2	OFF Delay 0.50 to 6.0
LTN10/3	OFF Delay 2.50 to 25.0

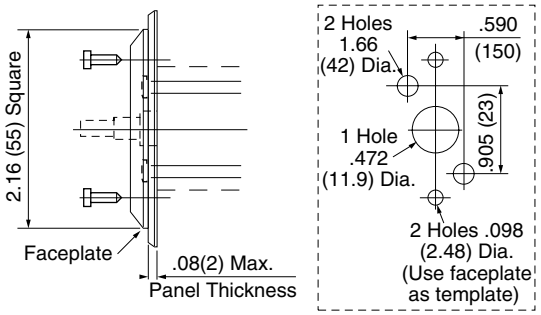
LTY / EXT
This unit is the same as a standard LTY10/3 with an additional volume added to the body, and has a time delay of 45 to 80 seconds as shipped. A barbed fitting (.129" 3.3mm diameter) on the side of the timer allows connection of an external volume to increase the time delay. See specifications for how to determine the amount of volume necessary.

LTY / LTN Accessories

LT10/C

LT10/A

Part Number	Description
LTN10/PAN	Panel Mounting Adapter Kit
LT10/C	Tamperproof Kit
LT10/A	Counting Dial Kit



Panel Cutout Detail

*Function Must Be Checked.

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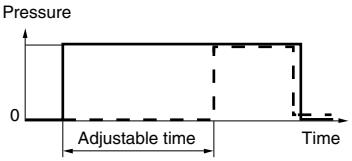
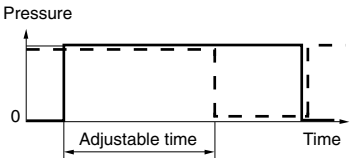
Function

PRTE
PRTA
PRTB
LTY10



With ON delay

PRTF
PRTC
PRTD
LTN10



With OFF delay

Key:
Control signal a
Output signal S ------

Specifications

Air Quality - PRT
Standard Shop Air, Lubricated or Dry, 40 µm Filtration

Air Quality - LTY/LTN
Standard Shop Air, Dry, 20 µm Filtration

Cv (kv) - PRT
0.14 (1.8)

Cv (kv) - LTY, LTN
0.19 (2.4)

Filter - PRT
a-PPRL23
Vent - PPRL20

Filter - LTY, LTN
35 Micron Internal Filter fitted to Signal Port 1

Flow rate at 90 PSI (6 bar) in SCFM (l/mn ANR) - PRT
6.4 (180)

Flow rate at 90 PSI (6 bar) in SCFM (l/mn ANR) - LTY, LTN
9.3 (262)

Interchangable 50 µm Filter (PRT Only)
a (Input) PPRL23
Input Cylinder PPRL20

Materials
- Body ..... Polyamide
- Poppet ..... Polyurethane
- Seals ..... Nitrile (Buna N)

Mounting
2 or 3-Port Subbase

Number of Operations with Dry Air at 90 PSI and 70°F – Frequency 1 Hz
10 Million

Operating Positions
All

Operating Pressure
40 to 115 PSIG (3 to 8 bar)

Repeatability - PRT
±5% / 5 Operations

Response Time - PRT
2 to 3 msec

Response Time - LTY,LTN
Typical Reset Time less than 100msec

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

LTY / EXT

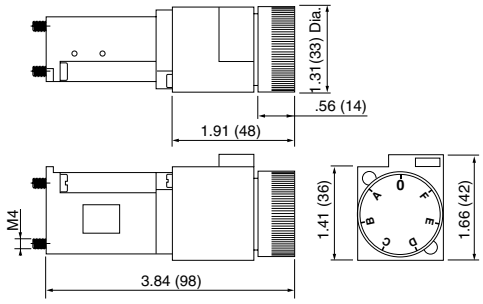
The time delay per unit volume is 295 sec/in^3 at 80 psig (18 sec/cc at 5.5 bar).
The volume of the timer as shipped is .305 in^3 (5 cc).

Example: Required 10-minute time delay at 80 psig (5.5 bar).

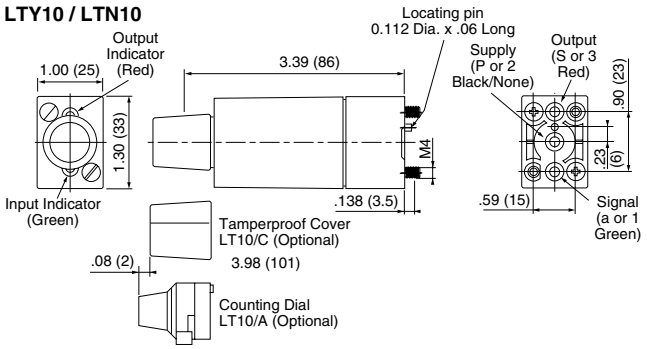
Total volume will be 10 min x 60 sec/min x 1 in^3/295 sec = 2.03 in^3 (10x60/18 = 33 cc).
The additional volume that will be required will be 2.03 - .305 = 1.725 in^3 (33-5 = 28 cc).

Dimensions

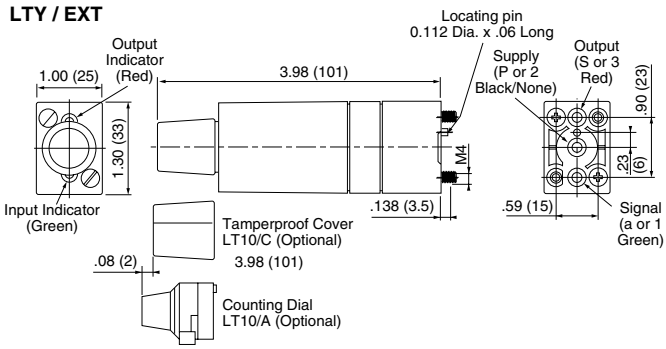
PRT•10



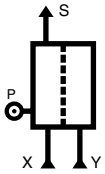
LTY10 / LTN10



LTY / EXT



Memory Relay
Without Subbase
For Mounting On 4-Port Modular Subbase



PLMA10

Part Number	Description
PLMA10	3-Way Double Air Pilot Operated Valve. Reset Signal Y Always Has Priority Over Set Signal X. With Manual Override
PLMA12	PLMA10 on PZUB12 Subbase

Specifications

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

Cv (kv)
0.14 (1.8)

Flow rate at 90 PSI (6 bar) in SCFM (l/mn ANR)
6.4 (180)

Materials
- Body ..... Polyamide
- Poppet ..... Polyurethane
- Seals ..... Nitrile (Buna N)

Mounting
4-Ported Subbase

Number of Operations with Dry Air at 90 PSI and 70°F – Frequency 1 Hz
10 Million

Operating Positions
All

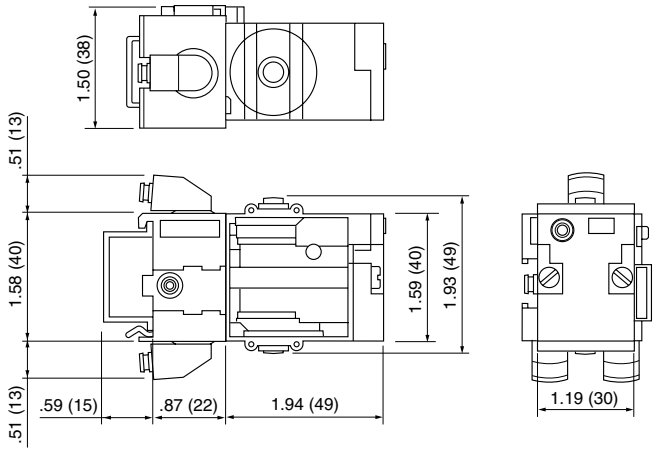
Operating Pressure
40 to 115 PSIG (3 to 8 bar)

Response Time
2 to 3 msec

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

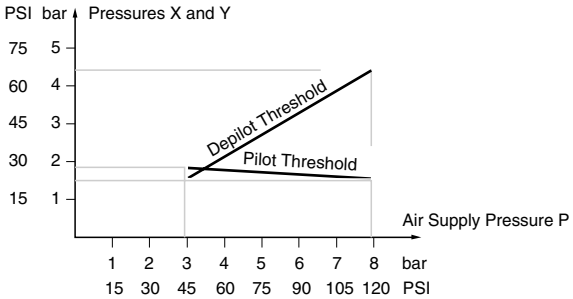
Dimensions

PLMA12



Pilot & Depilot Pressures

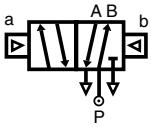
Reset Signal Y always takes priority over Set Signal X.



4-Way Valve Unit

For Mounting On 5-Ported Subbase

Part Number	Description
MEM7P10	4-Way Double Air Pilot Operated Valve. 2-Position, Dual Exhaust Ports



MEM7P10

Specifications

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

Flow
8.5 SCFM at 100 PSIG

Function
When pilot pressure is applied, the valve shifts and remains in position until an opposing signal is applied and the initiating signal is lost. This creates a “memory” or latching function.

Materials
- Body ..... Polyamide
- Poppet ..... Polyurethane
- Seals ..... Nitrile (Buna N)

Minimum Pilot Pressure
30 PSIG

Mounting Base
BAC7P10, BIC7P10

Mounting
5-Ported Subbase

Operating Pressure
30 to 115 PSIG (2 to 8 bar)

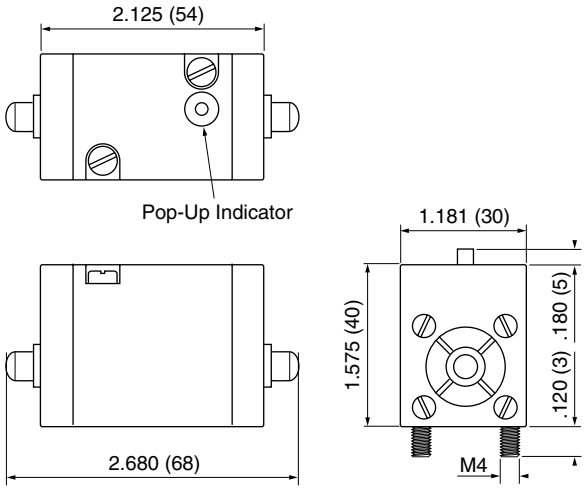
Operating Positions
All

Ports
“a” and “b” ..... Pilot Ports
A and B ..... Output Ports
Single Supply Port
Dual Exhaust Ports

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

Dimensions

(Not including Mounting Base)



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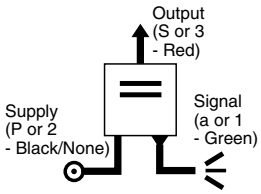
Sensor Relay

For Mounting On Any 3-Port Base

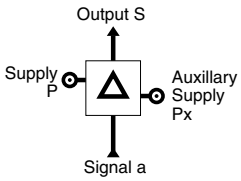


PRFA10

Part Number	Description
PRFA10	Provides a supply to a bleed sensor* and generates an output signal when operated. *See Bleed Sensors in Sensing Section
PRFA12	PRFA10 on PZUA12 Subbase

Amplifier Relay

For Mounting On 4-Port Base



PRDA10

Part Number	Description
PRDA10	With Manual Override — Amplifies the low pressure signal coming from a fluidic proximity sensor* to a usable level. * See Fluidic Proximity Sensors in Sensing
PRDA12	PRDA10 on PZUB12 Subbase

Specifications

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

Cv (kv)
0.14 (1.8)

Flow rate at 90 PSI (6 bar) in SCFM (l/mn ANR)
6.4 (180)

Function
3-Way Normally Closed
NNP
Yes

Materials
- Body ..... Polyamide
- Poppet ..... Polyurethane
- Seals ..... Nitrile (Buna N)

Mounting
Sensor: 3-Ported Subbase
Amplifier: 4-Ported Subbase

Nozzle Consumption
0.00487ft³/PSI Min
(2 l/bar - Min ANR)
LFAY10/1 - 0.04 l/s (0.08 SCFM)

Nozzle Ø (Of Sensor)
1/32" (3mm)

Number of Operations with Dry Air at 90 PSI and 70°F – Frequency 1 Hz
10 Million

Operating Positions
All

Operating Pressure
40 to 115 PSIG (3 to 8 bar)

Response Time
2 to 3 msec

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

PRD - Amplifier Relay Only

Air Signal Pressure (a)
.007 to .03 PSI (0.5 to 2 mbar)

Auxiliary Supply Pressure (Px)
1.5 to 3 PSI (100 to 200 mbar)

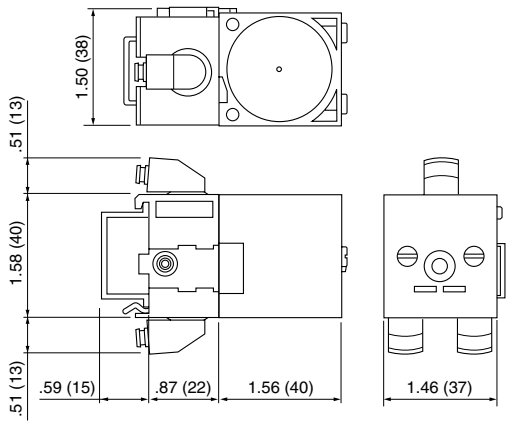
Consumption
At 1.5 PSI (100mbar) with a
= 0: 0.1 SCFM (3Nl/mn)

Maximum Operating Frequency
10 Hz

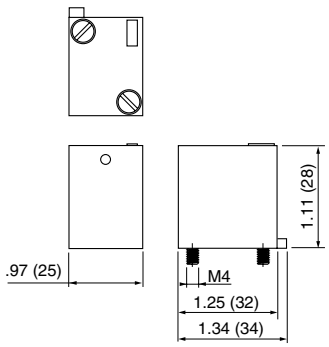
Manual Control
PRDA

Dimensions

PRDA12



PRFA10



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Signal Amplifier Relay

For Mounting On Any 3-Port Subbase

Sensitive Amplifier

Standard Amplifier

LFAY10/1

Part Number	Description	
LFAY10/0	Sensitive Amplifier .15 to 5.00 PSIG (.01 to .34 bar)	A low pressure signal at Port 1 allows a higher pressure signal to pass from Port 2 to Port 3
LFAY10/1	Standard Amplifier 1.10 to 115 PSIG (.08 to 8 bar)	

Specifications

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

Cv (kv)
0.19 (2.4)

Flow rate at 90 PSI (6 bar) in SCFM (l/mn ANR)
9.3 (262)

Function
3-Way Normally Closed
NNP
Yes

Materials
- Body ..... Acetal
- Poppet ..... Acetal
- Seals ..... Buna N (Nitrile)

Mounting
3-Ported Subbase

Nozzle Consumption
LFAY10/0 - 0.7 l/s (0.15 SCFM)
LFAY10/1 - 0.04 l/s (0.08 SCFM)

Nozzle Ø (Of Sensor)
.007" (0.18mm)

Number of Operations with Dry Air at 90 PSI and 70°F – Frequency 1 Hz
10 Million

Operating Positions
All

Operating Pressure
30 to 115 PSIG (2 to 8 bar)

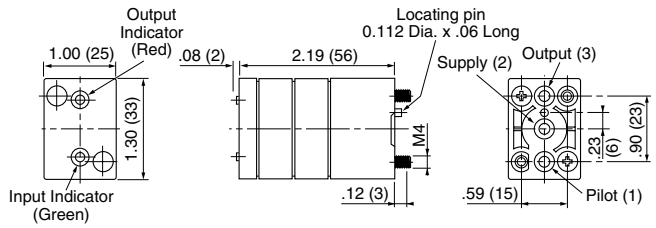
Pressure Signal Range
LFAY10/0 - .15 to 5.00 PSIG (.01 to .34 bar)
LFAY10/1 - 1.10 to 115 PSIG (.08 to 8 bar)

Response Time
Typical Reset Time less than 100ms

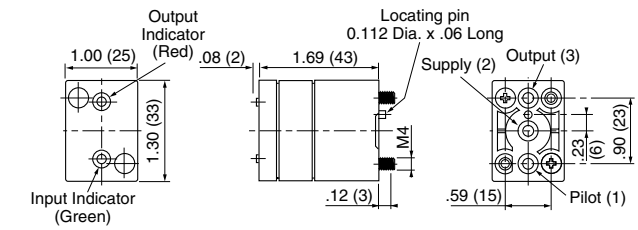
Temperature
Operating
32°F to 122°F (0°C to +50°C)
Storage
-22°F to 140°F (-30°C to +60°C)

Dimensions

LFAY10/0



LFAY10/1



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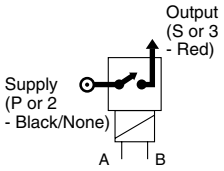
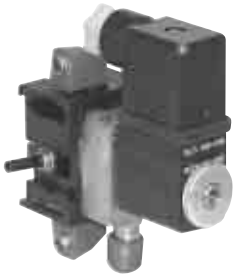
Solenoid Relay

With PZUA12 Subbase



With manual override and plug-in DIN connector 22 x 30 mm (43650 Form B Industrial)



PRSA121B

Part Number	Description	
PRSA121B	24VAC 50/60 Hz	6VA
PRSA121F	120VAC 60 Hz	6VA
PRSA122B	24VDC	5W

Solenoid Coil

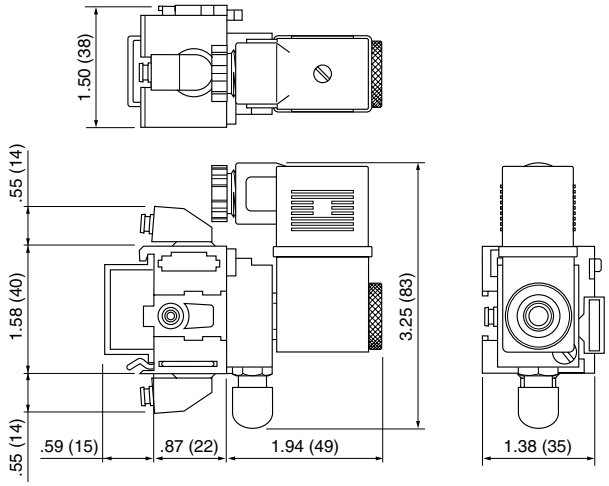
With Plunger and Plug-in DIN Connector (22 x 30mm)

PVAF10●●

Part Number	Description	
PVAF102B	24VDC	5W
PVAF102E	48VDC	5W
PVAF101B	24VAC 50/60 Hz	6VA
PVAF101E	48VAC 50/60 Hz	6VA
PVAF101F	120VAC 60 Hz	6VA
PVAF101M	240VAC 60 Hz	6VA

Dimensions

PRSA121B



Coil Mount

For Mounting On Any 2 or 3-Port Subbase

PRSD10

Part Number	Description
PRSD10	For mounting the Solenoid Coil and Plunger on a 3-Port Subbase With Manual Override

Specifications

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

Consumption
Direct Current: Holding = 5 W
Alternating Current: Holding = 6 VA; Inrush = 20 VA

Cv (kv)
0.05 (0.65)

Degree of Protection
IP 65

Electrical Connection
Plug-in Connector, 22-30 mm, Ø 9 mm Cable Entry, Terminal Capacity 1.5 mm²

Flow rate at 90 PSI (6 bar) in SCFM (l/mn ANR)
2.1 (60)

Manual Control
Yes

Materials
- Body ..... Polyamide
- Poppet ..... Polyurethane
- Seals ..... Nitrile (Buna N)

Mounting
3-Ported Subbase

Number of Operations with Dry Air at 90 PSI and 70°F – Frequency 1 Hz
10 Million

Operating Positions
All Positions

Operating Pressure
40 to 115 PSIG (3 to 8 bar)

Rated Insulation Voltage
660V AC or DC

Duty Rating
100 %

Response Time
8 to 12 msec

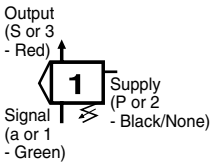
Standard Voltages
24 VDC; 48 VDC ; 24 VAC ; 48 VAC; 120 VAC; 240 VAC

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

Pneumatic Pressure Level Switch Without Subbase

For Mounting On Any 3-Port Base

Part Number	Description
LAAY10/1	Senses Change in Rising Pressure from a Adjustable Level and Provides a Pneumatic Output
LAAN10/1	Senses Change in Falling Pressure from a Adjustable Level and Provides a Pneumatic Output



LAA*10/1

Specifications

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

Cv (kv)
0.19 (2.4)

Flow rate at 90 PSI (6 bar) in SCFM (l/mn ANR)
9.3 (262)

Materials
- Body ..... Polyamide
- Poppet ..... Polyurethane
- Seals ..... Nitrile (Buna N)

Mounting
3-Ported Subbase

Number of Operations with Dry Air at 90 PSI and 70°F – Frequency 1 Hz
10 Million

Operating Positions
All Positions

Operating Pressure
115 PSIG Max. (8 bar)

Pilot Pressure
Adjustable 7 to 130 PSI (0.5 to 8 bar)

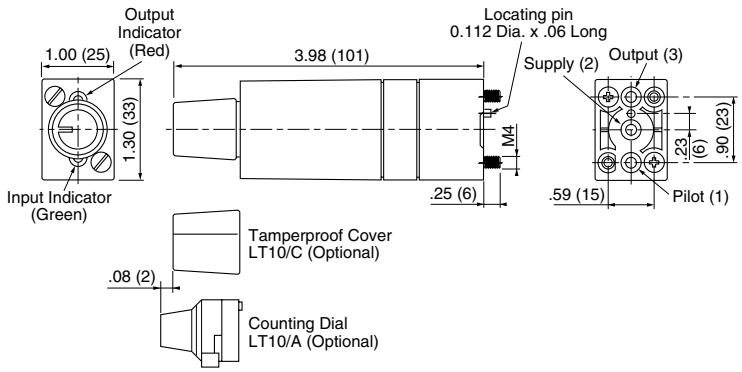
Switching Differential (On Off)
<5PSI (<0.34 bar)

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

Typical Bleed Rate
0.08 SCFM (2.1 l/min)

Dimensions

LAAY10/1, LAAN10/1



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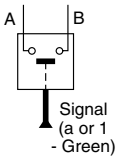
Pneumatic Division
Richland, Michigan

Pressure Switch Without Subbase

For Mounting On Any 2 or 3-Port Base

Part Number	Description
PREA10	With Manual Override and Plug-in DIN Connector 22 x 30 mm
PREA12	PREA10 on PZUA12 Subbase



PREA10

Specifications

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

Degree of Protection
IP 65

Depilot Pressure
30 to 37 PSI (2 to 2.6 bar)

Electrical Characteristics
N.O. (NNP) Contact, 5A / 660V

Electrical Connection
Plug-in Connector, 22-30 mm,
Ø 9 mm Cable Entry,
Terminal Capacity 1,5 mm²

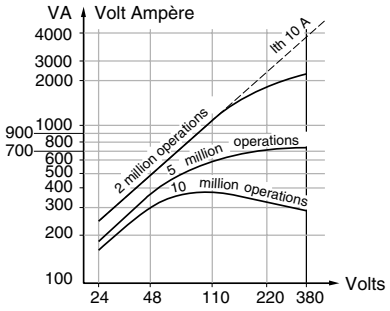
Function
NO Contact

Insulation Voltage Rating
660V AC or DC

Materials
- Body ..... Polyamide
- Poppet ..... Polyurethane
- Seals ..... Nitrile (Buna N)

Maximum Operating Frequency
10 Hz

Mechanical Life



Mounting
2 or 3-Ported Subbase

Nominal Current Rating
10 A

Number of Operations with Dry Air at 90 PSI and 70°F – Frequency 1 Hz
10 Million

Operating Positions
All Positions

Operating Pressure
115 PSIG Max. (8 bar)

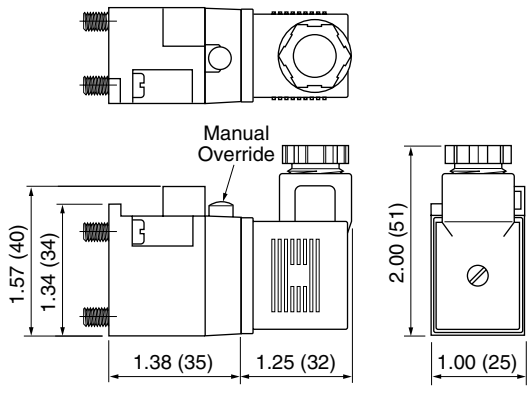
Response Time
2 to 3 msec

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

Trip Pressure
32 to 40 PSI (2.2 to 3 bar)

Dimensions

PREA10

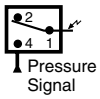


Parker Pneumatic

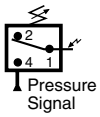
Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan

Line Mounted Pressure Switch

(Includes Manual Override and Visual Indicator)



Fixed



Adjustable

PS1P1091

Part Number	Description	
	Electrical	Pneumatic
PS1P1081	1SPDT Contact 5A / 250V	20PSI Fixed Switching Pressure
PS1P1091	1SPDT Contact 5A / 250V	30-75 PSI Adjustable Switching Pressure

Specifications

Adjustable Trip Pressure
30 to 75 PSI (2 to 5 bar)

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

Degree of Protection
IP 40

Electrical Connections
Screw Terminals

Fixed Trip Pressure
≥20 PSI (1.3 bar)

Function
SPDT Contacts

Insulation Voltage Rating
250V AC or DC

Materials
- Body ..... Polyamide
- Poppet ..... Polyurethane
- Seals ..... Nitrile (Buna N)

Maximum Operating Frequency
10 Hz

Mounting
Inline or 35 mm DIN Rail

Nominal Current Rating
5 A

Number of Operations with Dry Air at 90 PSI and 70°F – Frequency 1 Hz
10 Million

Operating Positions
All Positions

Operating Pressure
115 PSIG Max. (8 bar)

Ports
5/32" Instant for Semi- Rigid Nylon or Polyurethane Tube

Response Time
2 to 3 msec

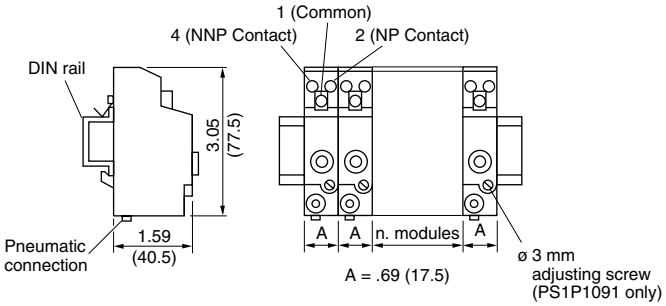
Temperature
Operating
32°F to 122°F (0°C to +50°C)
Storage
-22°F to 140°F (-30°C to +60°C)

Electrical Life

Type of Circuit

		AC (Switching Capacity in VA)					DC (Switching Capacity in W)				
		12V	24V	48V	120V	220V	12V	24V	48V	110V	220V
For 1 Million Operations	AC	15	25	56	115	140	17	24	37	50	54
	DC	54	86	190	370	440	42	58	88	115	105
For 2 Million Operations	AC	-	-	-	-	-	10	14	25	40	23
	DC	-	-	-	-	-	30	43	70	100	90
For 5 Million Operations	AC	8	10	14	19	21	-	-	-	-	-
	DC	21	35	82	160	200	-	-	-	-	-

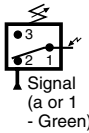
Dimensions



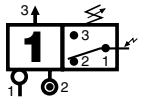
With Electrical, Electrical & Pneumatic and Pneumatic Output

Electrical Pressure Switch Without Subbase

For Mounting On Any 2 or 3-Port Base



LPS10/2, LPS10/3



LNOTPS10

LPS10/*

Part Number	Description
LPS10/2	1.5 to 30 PSIG Adjustable Senses Presence of Air Pressure to provide Electrical Switching
LPS10/3	10 to 100 PSIG Adjustable Senses Presence of Air Pressure to provide Electrical Switching
LNOTPS10	Senses Absence of Air Pressure, Provides Electrical and Pneumatic Switching

Units supplied with 3 crimp-on electrical terminals with insulators.

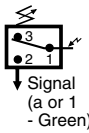
Electrical Characteristics

5A / 250V, 1 N.O. or 1 N.C. (SPDT) Contact

Terminal Number	Description	
	LPS10	**LNOTPS**
1	Common	Common
2	Normally Passing	Normally Non-Passing
3	Normally Non-Passing	Normally Passing

Vacuum Switch

For Mounting On Any 2 or 3-Port Base



LPSV10

Part Number	Description
LPSV10	Senses Presence of Vacuum

Units supplied with 3 crimp-on electrical terminals with insulators.

Electrical Characteristics

5A / 250V, 1 N.O. or 1 N.C. (SPDT) Contact

Terminal Number	Description
1	Common
2	Normally Non-Passing
3	Normally Passing

Cable

7097J03711

Part Number	Description
7097J03711	Optional for LPS10 / LPSV

Terminal Number	Wire Color
1	Brown
2	Blue
3	Black

Specifications
LPS & LPSV

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

Degree of Protection
IP40 with Molded Connector

Depilot Pressure
Differential less than 25% of maximum range

Electrical Connection
Spade Connectors or Molded Cable

Function
SPDT Contacts (NO or NC)

Insulation Voltage Rating
250V AC or DC

Materials
- Body ..... Polyamide
- Poppet ..... Acetal
- Seals ..... Nitrile (Buna N)

Maximum Operating Frequency
2 Hz

Mechanical Life
10 Million Operations

Mounting
2 or 3-Port Subbase

Number of Operations with Dry Air at 90 PSI and 70°F – Frequency 1 Hz
10 Million

Operating Positions
All Positions

Operating Pressure
115 PSIG (8 bar Max.)

Rated Current
5A (3A with 7097J03711 Cable)

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

Trip Pressure
LPS10/2 - 1.5 to 30 PSI (0.1 to 2 bar Adjustable
LPS10/3 - 10 to 100 PSI (0.7 to 7 bar Adjustable

Specifications
LNOTPS

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

Cv
0.19 (2.4)

Degree of Protection
IP40 with Molded Connector

Depilot Pressure
7% of Supply Pressure

Electrical Connection
Spade Connectors or Molded Cable

Flow rate at 90 PSI (6 bar) in SCFM (l/mn ANR)
9.3 (262)

Function
SPDT Contacts (NO or NC)

Insulation Voltage Rating
250V AC or DC

Materials
- Body ..... Polyamide
- Poppet ..... Acetal
- Seals ..... Nitrile (Buna N)

Mechanical Life
10 Million Operations

Mounting
3-Ported Subbase

Number of Operations with Dry Air at 90 PSI and 70°F – Frequency 1 Hz
10 Million

Operating Positions
All Positions

Operating Pressure
40 to115 PSIG (3 to 8 bar)

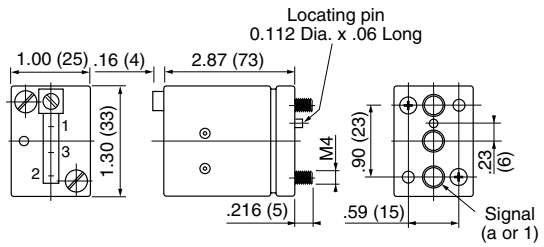
Rated Current
5A (3A with 7097J03711 Cable)

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

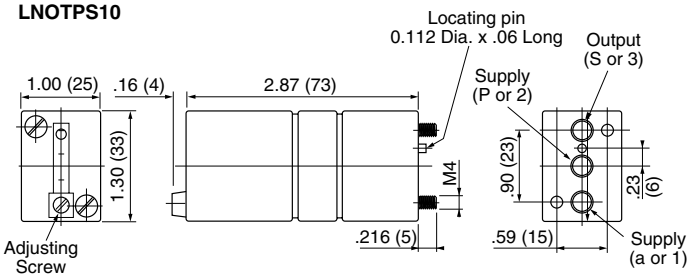
Trip Pressure
36% of Supply Pressure

Dimensions

LPS10 / LPSV10

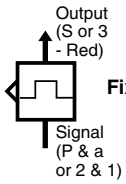


LNOTPS10



Fixed Pulse Unit*

Mounts On Any 2-Port Base (3-Port base may be used if Inlet and Signal Ports are externally connected or by using LT10/ POL Pulse Conversion Kit)



Fixed Time Duration

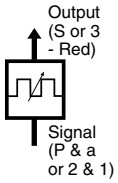
LFPUL10/1

Part Number	Description
LFPUL10/0.5	0.5 Second Pulse Provides a short duration Pneumatic Pulse when a Pneumatic Signal is applied.
LFPUL10/1	1.0 Second Pulse Provides a short duration Pneumatic Pulse when a Pneumatic Signal is applied.

Logic

Variable Pulse Unit*

Mounts On Any 2-Port Base (3-Port base may be used if Inlet and Signal Ports are externally connected or by using LT10/ POL Pulse Conversion Kit)



Variable Pulse

LPG10/0

Part Number	Description
LPG10/0	1 to 10 Pulse per Second Provides continuous pulses which are user set for pulse frequency.
LPG10/1	Pulse every 1 to 10 Seconds Provides continuous pulses which are user set for pulse frequency.

Specifications
LFPUL

Air Quality
Standard Shop Air, Lubricated or Dry, 20 µm Filtration

Connections
Subbase

Cv (kv)
0.19 (2.4)

Flow rate at 90 PSI (6 bar) in SCFM (l/mn ANR)
9.3 (262)

Materials
- Body ..... Polyamide
- Poppet ..... Acetal
- Seals ..... Nitrile (Buna N)

Mounting
All Positions

Number of Operations with Dry Air at 90 PSI and 70°F – Frequency 1 Hz
10 Million

Off Time
LFPUL10/0.5 - 0.5 Secs ±15%
LFPUL10/1 - 1.0 Secs ±15%

Operating Positions
All Positions

Operating Pressure
30 to 115 PSIG (2 to 8 bar)

Reset Time
LFPUL10/0.5 - <3 Seconds
LFPUL10/1 - <8 Seconds

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

Specifications
LPG

Air Quality
Standard Shop Air, Lubricated or Dry, 20 µm Filtration

Connections
Subbase

Cv (kv)
0.19 (2.4)

Flow rate at 90 PSI (6 bar) in SCFM (l/mn ANR)
4.5 (171)

Frequency Range
0.1 to 1 Hz

Frequency Variation
-5% at 30 PSI (2 bar)
+5% at 115 PSI (8 bar)
-refered to setting at 80 PSI (5.5 bar)

Materials
- Body ..... Polyamide
- Poppet ..... Acetal
- Seals ..... Nitrile (Buna N)

Mounting
2 or 3-Port Subbase

Number of Operations with Dry Air at 90 PSI and 70°F – Frequency 1 Hz
10 Million

Off Time
88% of Cycle Time

On Time
12% of Cycle Time

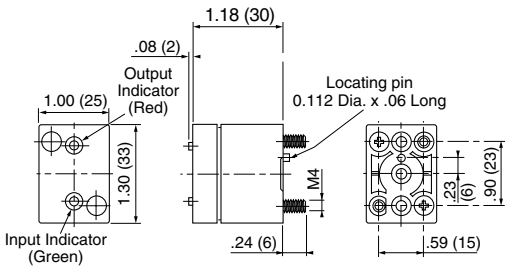
Operating Positions
All Positions

Operating Pressure
30 to 115 PSIG (2 to 8 bar)

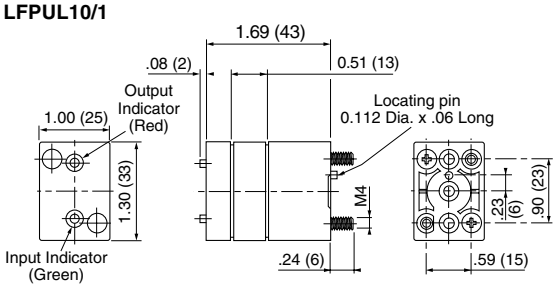
Temperature
Operating
32°F to 122°F (0°C to +50°C)
Storage
-22°F to 140°F (-30°C to +60°C)

Dimensions

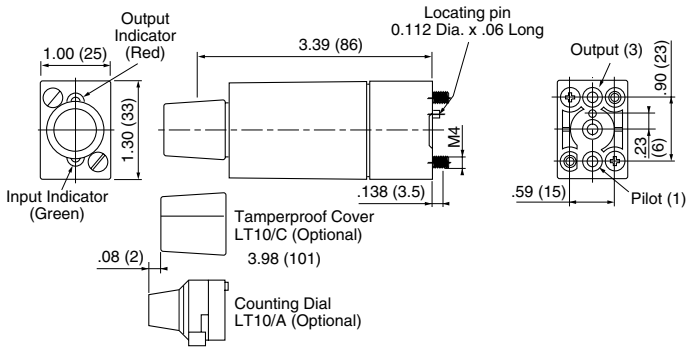
LFPUL10/0.5



LFPUL10/1

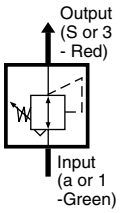


LPG10/•



Air Regulator

Mounts On Any 2 or 3-Port Base



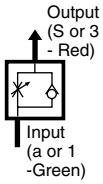
Pressure Control

PRD3P10

Part Number	Description
PRD3P10	Regulate Air Pressure Unit is Base Mounted

Flow Control

Mounts On Any 2 or 3-Port Base



Flow Control

TR3P10

Part Number	Description
TR3P10	Fine Adjustable Restrictor Full Reverse Flow (Grey Knob)
	Course Adjustable Restrictor **FR3P10** Full Reverse Flow (Black Knob)

Specifications

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

Control Range
TR3P10 - 0.002 to 0.1 SCFM
FR3P10 - 0.020 to 3.0 SCFM

Flow rate at 90 PSI (6 bar) in SCFM (l/mn ANR) - PRD3
5.2 (147)

Flow rate at 90 PSI (6 bar) in SCFM (l/mn ANR) - TRP3, FR3P
Max Reverse Flow - 3 SCFM

Materials - PRD3
- Body ..... Anodized Aluminum
- Seals ..... Nitrile (Buna N)

Materials - TRP3, FR3P
- Body ..... Polyamide
- Poppet ..... Acetal
- Seals ..... Nitrile (Buna N)

Mounting
2 or 3-Ported Subbase

Operating Positions
All Positions

Operating Pressure - PRD3
120 PSI (8.5 bar Max.)

Operating Pressure - TRP3, FR3P
30 to 115 PSI (2 to 8 bar)

Pneumatic Characteristics - PRD3
120 PSI Maximum Pressure
7 to 105 PSI Reduction Range
6 SCFM Flow at 85 PSI
Port 1 - Not Used
Port 2 - Air Supply
Port 3 - Reduced Output Pressure

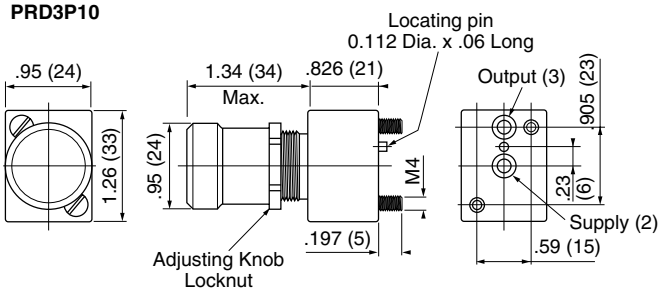
Pneumatic Characteristics - TR3P
30 to115 PSIG Pressure Range
0 to 0.1 Flow at 100 PSIG (Port 1 to Port 3)
5 SCFM Max. Reverse Flow (Port 3 to Port 1)

Pneumatic Characteristics - FR3P
30 to115 PSIG Pressure Range
0.2 to 3.0 Flow at 100 PSIG (Port 1 to Port 3)
5 SCFM Max. Reverse Flow (Port 3 to Port 1)

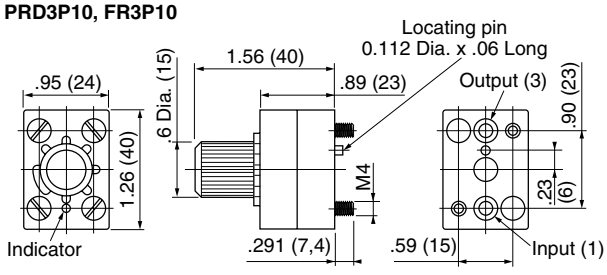
Temperature
Operating
32°F to 122°F (0°C to +50°C)
Storage
-22°F to 140°F (-30°C to +60°C)

Dimensions

PRD3P10



PRD3P10, FR3P10



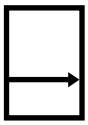
Parker Pneumatic

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan

For Mounting Logic Elements And Relays

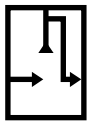
3-Port Subbases

With 5/32" Instant Swivel Connections, Pressure Indicators and Integral Lock for Stacking



Common Input

PZUA12



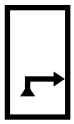
Cascade

PZUC12

Part Number	Description
PZUA12	Common Input
PZUC12	Cascade

Entry Module

With Integral Lock for Stacking



PZUE12

Part Number	Description
PZUE12	Relay Entry Module (Used with PZUA12, PZUB12 and PZUC12 Bases

4-Port Subbases

With 5/32" Instant Swivel Connections, Pressure Indicators and Integral Lock for Stacking

PZUB12

Part Number	Description
PZUB12	Common Input

Specifications

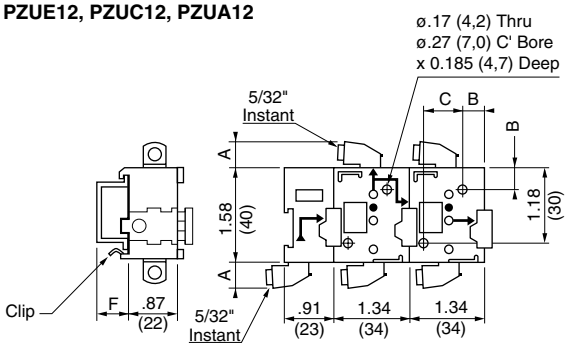
Materials
Polyamide and Brass

Ports
5/32" Instant for Semi- Rigid Nylon or Polyurethane Tube

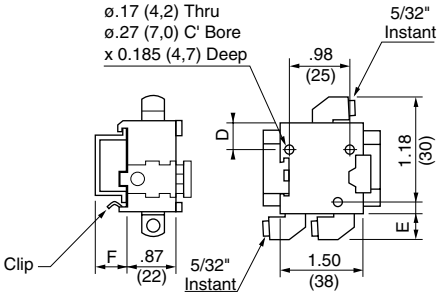
Notes:
1. Can be used as individual units or in stacking assemblies.
2. May be DIN rail mounted using spring clip or surface mounted using 2 socket head cap screws.
3. PZUA12, PZUB12 and PZUC12 can be mounted together in the same assembly.
4. Units interconnect with 5/32" Tube. For replacement use 1" (25mm), 5/32" semi-rigid nylon or polyurethane.

Dimensions

PZUE12, PZUC12, PZUA12



PZUB12



	inch	mm
A	.55	14
B	.39	10
C	.59	15
D	.47	12
E	.20	5
F	.59	15

Independent Bases

BNC3P10

BPB3P10

BIC3P10

BIC7P10

Part Number	Description	# of Ports
BNC3P10	1/8" NPT, Individual Mount	3
BPB3P10	5/32" Instant Fitting*, Machine Mount	3
BIC3P10	5/32" Instant Fitting*, DIN Rail Mount	3
BIC7P10	5/32" Instant Swivel Fitting*, DIN Rail Mount for MEM7P10	5

* Use Semi- Rigid Nylon or Polyurethane Tube

Independent 2-Port Pulse Bases

BNC3P20

BPB3P20

Part Number	Description
BNC3P20	1/8" NPT, Port 1 and 2 Common
BPB3P20	5/32" Instant Fitting*, Machine Mount, Port 1 and 2 Common

* Use Semi- Rigid Nylon or Polyurethane Tube

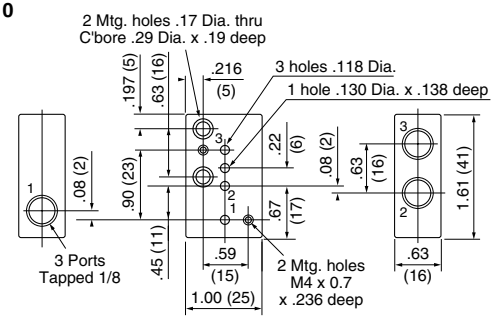
Specifications

Materials

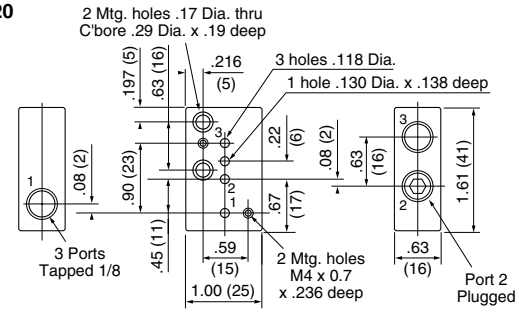
BIC Units ..... Polyamide and Brass
BNC Units ..... Plated Zinc
BPB Units ..... Aluminium

Dimensions

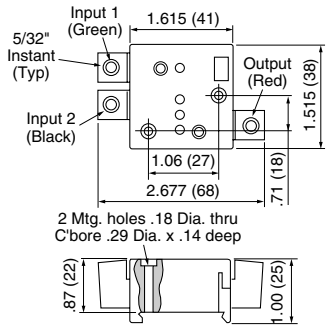
BNC3P10



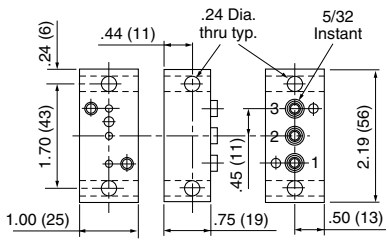
BNC3P20



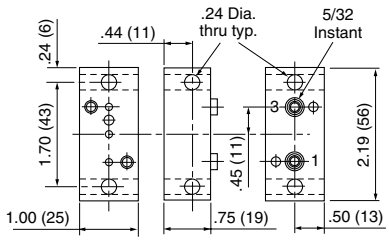
BIC3P10



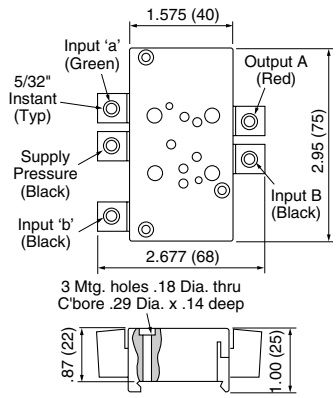
BPB3P10



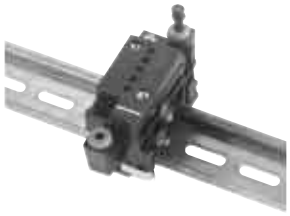
BPB3P20



BIC7P10



Polylog Manifold Mounting Base



BAC3P10

BAC7P10

Part Number	Description
BAC3P10*	3-Port Modular Base, 5/32" Instant Swivel Fitting, DIN Rail Mount
BAESP20	End Plate Kit 2 Pieces - Supply Base and Output Base
BAC7P10*	5/32" Instant DIN Rail Base, 5-Port Modular Base For MEM7P10. Use with BAESP20 End Plates

* BAC3P10 and BAC7P10 can be assembled in the same manifold assembly

Conversion Kits

LT10/PUL

PI•23P10

Pulse Conversion Kit

Part Number	Description
LT10/PUL	Converts a 3-Port Base into a 2-Port Base - Combines Ports P and a or 1 and 2

Unit ships with (2) 40mm long screws for use with LTY, LTN, LPG and LFPUL10/0.5. For additional screws, see Spare Parts at the end of this Section.

Port Inverter

Part Number	Description
PI123P10	Inverts Ports 1 or a and 2 or P
PI233P10	Inverts Ports 2 or P and 3 or S

Includes threaded screw extensions.

Specifications

Materials

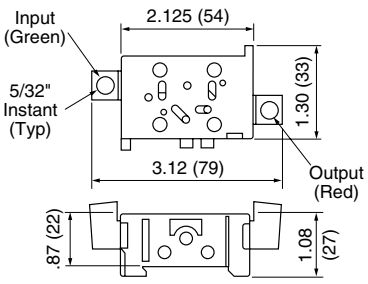
Polyamide and Brass

Ports

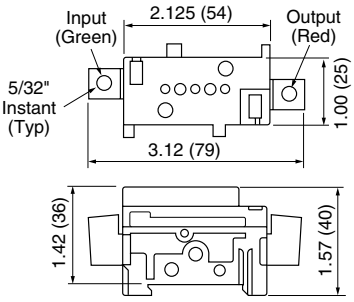
All are 5/32" Instant except for supply on BAESP20 which is 1/4" Instant. Use Semi- Rigid Nylon or Polyurethane Tube

Dimensions

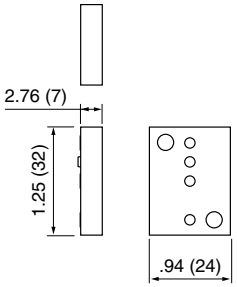
BAC3P10



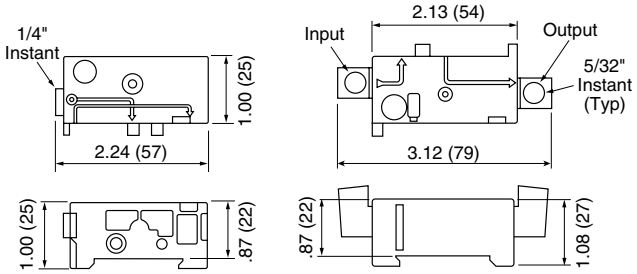
BAC7P10



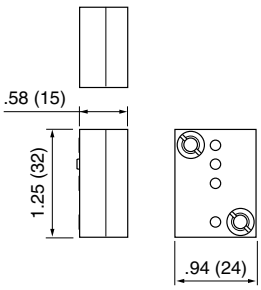
LT10/PUL



BAESP20



PI123P10, PI223P10



Parker Pneumatic

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan

Base Usage - Shows which components can be mounted with which base types.

Element	Part No.	Base Description / Part Number					
		Type	2-Port	3-Port	4-Port	5-Port	6-Port
		Stacking		PZUA12	PZUB12	BAC7P10	PSBA12
		Stacking		PZUC12			
		Stacking		BAC3P10			
		Inline	BNC3P20	BNC3P10		BIC7P10	
		Inline	BPB3P20	BPB3P10			
		Inline		BIC3P10			
Step Module							
Step Module w/Overrides	PSMA10						X
Step Module w/o Overrides	PSMB10						X
Logic							
AND	PLLC10			X			
OR	PLKC10			X			
YES	PLJC10			X			
NOT	PLNC10			X			
Threshold NOT	PLND10			X			
Relays							
Sensor	PRFA10			X			
Solenoid	PRSA10		X	X			
Signal Amplifier	LFAY10			X			
Electric Pressure Switch	PREA10		X	X			
E/P Pressure Switch	LNOTPS10			X			
Electric Pressure Switch	LPS10		X	X			
Vacuum/Electric	LPSV10		X	X			
Pneumatic/Pneumatic	LAAY10			X			
Pneumatic/Pneumatic	LAAN10			X			
Timers							
Timer (NNP) Relay	PRTA10		X*	X			
Timer (NNP) Relay	PRTB10		X*	X			
Timer (NNP) Relay	PRTE10		X*	X			
Timer (NP) Relay	PRTC10		X*	X			
Timer (NP) Relay	PRTD10		X*	X			
Timer (NP) Relay	PRTF10		X*	X			
Timer (NNP) Relay	LTY10		X*	X			
Timer (NP) Relay	LTN10		X*	X			
Other Relays							
Memory Relay	PLMA10				X		
Amplifer Relay	PRDA10				X		
Valves							
4 Way Valve	MEM7P10					X	
Pulse Generators							
Pulse Generator Fixed	LPG10		X	X**			
Pulse Generator Variable	LFPUL		X	X**			
Accessories							
Air Pressure Regulator	PRD3P10		X	X			
Flow Control (Fine)	TR3P10		X	X			
Flow Control (Single Turn)	FR3P10		X	X			

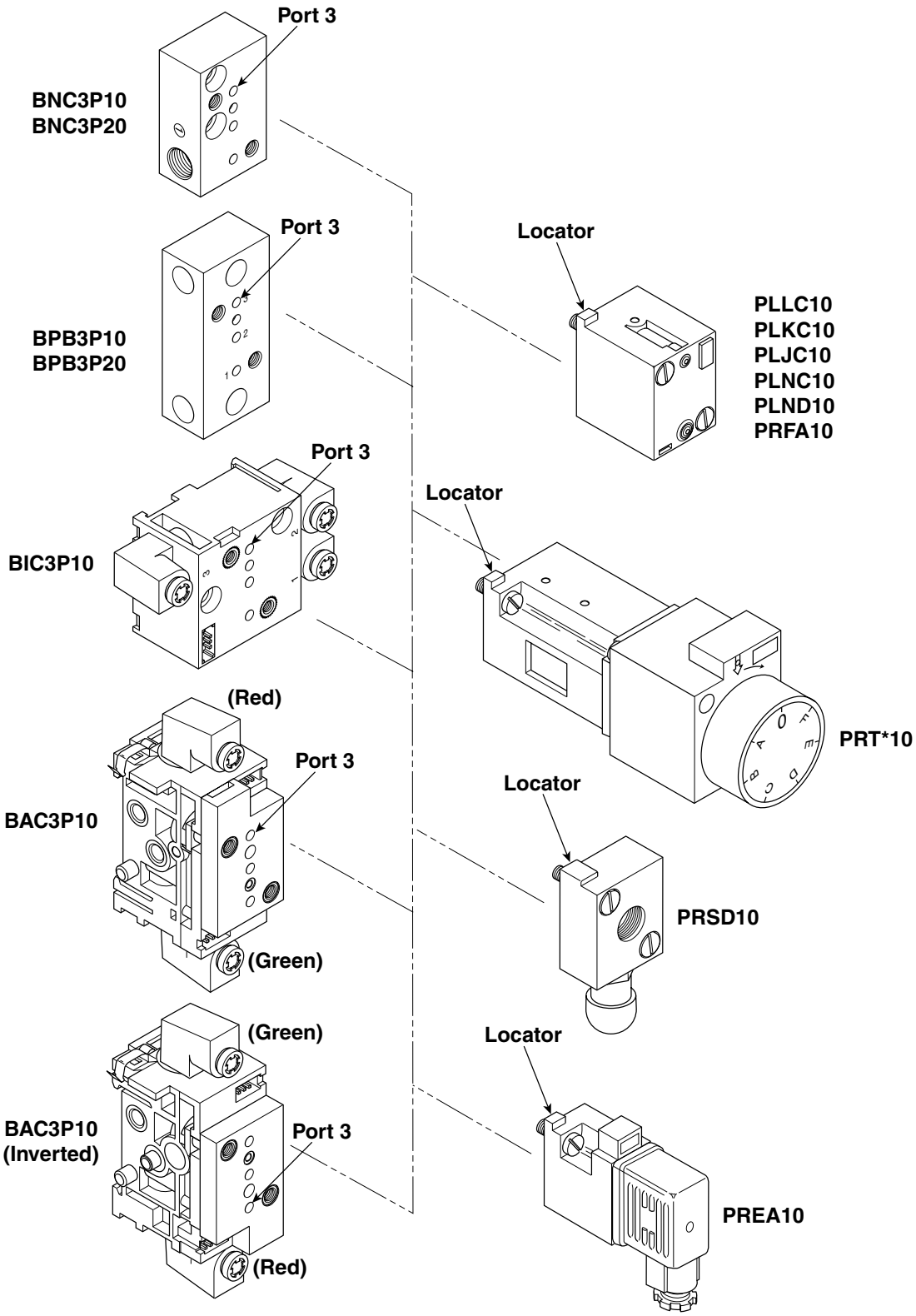
* Functionality must be checked

** Must be used with LT10/PUL

Port	Label		Color
Supply	P	2	Black/None
Signal	a	1	Green
Output	S	3	Red

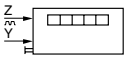
	Entry Module	End Plate	Head / Tail
Used With Base	PZUE12	BAE3SP20	PSEA127
	PZUA12	BAC3P10	PSBA12
	PZUC12	BAC7P10	
	PZUB12		

⚠ **CAUTION:** The logic and relay units shown on the right can be improperly assembled to the bases shown on the left. For proper assembly, the locators shown should be oriented towards port 3 on the subbases.



With 5/32" Instant Straight Connections

Totalizing Counters

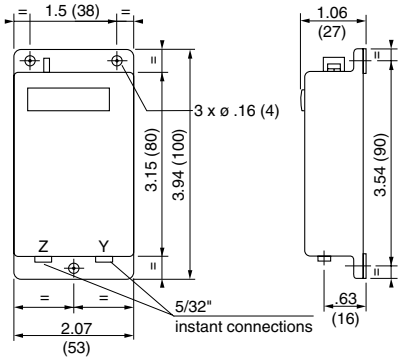


PCTA11

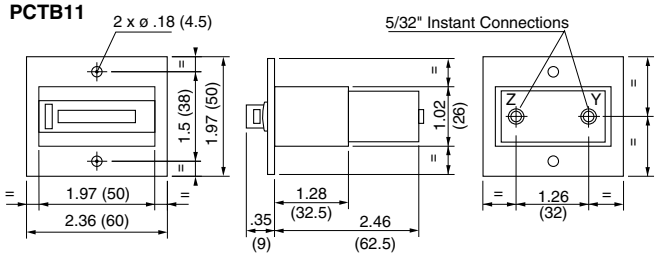
PCTB11

Part Number	Description
PCTA11	0 to 999,999 Surface Mount
PCTB11	0 to 99,999 Panel Mount with 60 x 50 mm Bezel *(Lockable cover available, see below)*

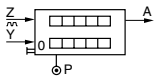
PCTa11



PCTB11



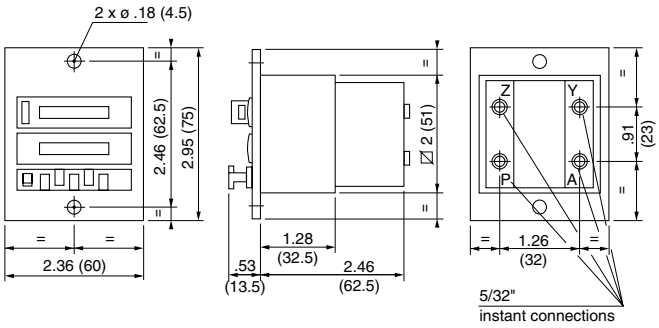
Predetermined Counters



PCPA11

Part Number	Description
PCPA11	0 to 99,999 Panel Mount with 60 x 75 mm Bezel *(Lockable cover available, see below)*

PCPA11

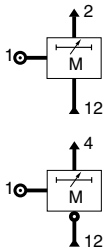


Lockable Cover

PXCA1

Part Number	Description
PXCA1	For 60 x 50 mm Bezel
PXCB1	For 60 x 75 mm Bezel

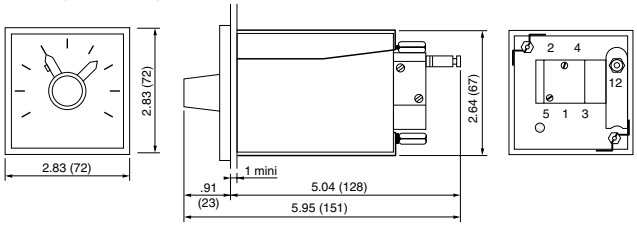
Timers with Calibrated Dial



PCMC11

Part Number	Description
PCMC11	3 to 100 Seconds, With Reset
PCMD11	0.3 to 10 Seconds, With Reset
PCME11	3 to 100 Minutes, With Reset

PCMC11, PCMD11, PCME11



Specifications

	PCTA	PCTB	PCPA	PCMC, PCMD & PCME
Connections	Standard: 5/32" Instant for Semi-rigid Tube (Nylon and Polyurethane).			
Degree of Protection	—	IP55 with Lockable Cover	IP55 with Lockable Cover	—
Function	—	—	NNP or NP	NNP
Maximum Operating Frequency	20 Hz with Mark / Space Ratio of 1/1		—	—
Mechanical Life (Number of operations) with Dry Air at 90 PSI and 70°F – Frequency 1 Hz	10 Million			10 Million
Mounting	Surface Mount	Panel Mount	Panel Mount	Panel Mount
Operating Positions	All Positions	All Positions	All Positions	All Positions
Operating Pressure	40 to 130 PSI (3 to 9 bar)			40 to 130 PSI (3 to 9 bar)
Operating Temperature	32°F to 140°F (0°C to 60°C)			32°F to 122°F (0°C to +50°C)
Pneumatic Reset Time	150 ms	150 ms	150 ms	200 ms
Setting Accuracy	—	—	—	—
Storage Temperature	-40°F to 160°F (-40°C to 70°C)			-22°F to 140°F (-30°C to +60°C)
Timing Accuracy	—	—	—	± 2%
Type of Air	Dry with 40 µm Filtration			Dry with 5 µm Filtration

Operating Characteristics

PCTA11 and PCTB11	Count and display the Number of impluses received. Pulse input at Port Z. Pneumatic reset at Port Y.
PCPA11	Supplies a signal at A when the preselected Number of pulses has been reached. The required Number of impulses is preselected using the keys associated with the lower display, which remains unchanged during counting. The pulses to be counted are applied to Port Z. Signal A is given as soon as the two displays show the same value. Port Y is used to reset the counter with a single pulse. (1)
PCMC11, PCMD11 and PCME11	The required time is preselected directly on the dial, by moving the preselection pointer to the required position. Timing starts when a signal appears at 12. This signal must be maintained continuously until the output signal appears at 2. Signal 2 is given at the end of the timing period. The output signal is “on delay” if connected to 2 and “off delay” if connected to 4. The timer is reset by breaking the command signal at 12. Units have constant bleed rate of 0.14 SCFM @ 72 PSIG (4Nl/min @ 5 bar)

(1) **Note:** “Output” may not be used as the reset signal.

For Modular Sequencer and Logic Elements

Gaskets For Step Module and Interlock Module

PPRL01

Part Number	Base Component	Description
PPRL01	PSMA12 PSMB12 PSVA12 PSBA12	1 Set of 10 Flat Gaskets

Head And Tail Module Rail Clamping Components

PPRL09

Part Number	Base Component	Description
PPRL09	PSEA12	1 Set Comprising Of: - 20 Hooks - 20 Screws - 20 Springs

O-rings For Sequencer Components and Combinable Logic Elements

PPRL11

Part Number	Base Component	Description
PPRL11	PLEB12 PLKB12 PLLB12 PLNB12 PSMA12 PSMB12 PSDA12 PSDB12 PSBA12	1 Set of 100 O-rings For Use With Subbases

Locks & Circuit Selectors

For Combinable Logic Relays

PPRL06

PPRL10

Part Number	Base Component	Description
PPRL06	PLEB12 PLKB12 PLLB12 PLNB12	1 Set of 50 Intermodule Locks
PPRL10	PSMA12 PSMB12 PSDA12	1 Set of 50 Circuit Selectors For Cascade or “Common Input”

For Logic Elements, Subbases and Relays

O-rings For Subbase Mounted Logic Relays

PPRL04

Part Number	Base Component	Description
PPRL04	PLJC10 PLKC10 PLLC10 PLNC10 PSND10 PRT••• PRFA10	1 Set of 100 O-rings: - 10 O-rings For Port WithFilter - 90 O-rings For Port Without Filter
91500/1007	LTY LTN LAAY LAAN LPS10 LNOTPS10 TR3P10 FR3P10 LFPUL LPG10 PRD3P	1 O-ring

Flat Gaskets For 4-Port Subbases

PPRL02

Part Number	Base Component	Description
PPRL02	PRDA12 PLMA12 PZUB12	1 Set of 10 Flat Gaskets

Subbase Plugs For 3 or 4-Port Subbases

PPRL05

Part Number	Base Component	Description
PPRL05	PZUA12 PZUB12 PZUC12	1 Set of 50 Subbase Plugs

Intermodule Locks For 3 or 4-Port Subbases

PPRL07

Part Number	Base Component	Description
PPRL07	PZUA12 PZUB12 PZUC12	1 Set of 50 Intermodule Locks

Mylar Diaphragms For Amplifier Relays

Part Number	Base Component	Description
PPRL08	PRDA10 PRDA12	1 Set of 10 Mylar Diaphragms

Note: To obtain 1 set of 10 Mylar Diaphragms for PRDA10, order 1 of PPRL08.

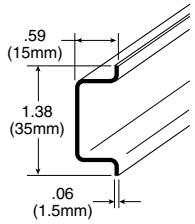
Filters

PPRL23

Part Number	Base Component	Description
PPRL20	PRT•••	1 Set of 20 50µm Input Filters
PPRL23	PRT•••	1 Set of 20 50µm Filters

DIN Rail

Part Number	Description
AM1DE200	6 Foot Rail Length



Base Mounted Component Screws M4 x 0.7 With 7mm Head Diameter

Logic

Part Number	Element	Screw Length	Replacement Part Number	For Use With LT10/PUL
FR3P10	Flow Control	25 mm	K05M11040025	—
LAAN10	Pneumatic/Pneumatic	45 mm	K05M11040045	—
LAAY10	Pneumatic/Pneumatic	45 mm	K05M11040045	—
LFAY10/0	Signal Amplifier	55mm	K05M11040055	—
LFAY10/1	Signal Amplifier	45 mm	K05M11040045	—
LFPUL10/0.5	Pulse Generator fixed	30 mm	K05M11040030	K05M11040040
LFPUL10/1	Pulse Generator fixed	45 mm	K05M11040045	K05M11040055
LNOTPS10	E/P Pressure Switch	70mm	K05M11040070	—
LPG10	Pulse Generator Variable	30 mm	K05M11040030	K05M11040040
LPS10	Electric Pressure Switch	40 mm	K05M11040040	—
LPSV10	Vacuum/Electric	40 mm	K05M11040040	—
LTN10	Timer (NP) Relay	30 mm	K05M11040030	K05M11040040
LTY10	Timer (NNP) Relay	30 mm	K05M11040030	K05M11040040
MEM7P10	4 Way Valve	40 mm	K05M11040040	—
PLJC10	YES	31 mm	K05M11040032F	—
PLKC10	OR	31 mm	K05M11040032F	—
PLLC10	AND	31 mm	K05M11040032F	—
PLMA10	Memory Relay	50 mm	K05M11040050	—
PLNC10	NOT	31 mm	K05M11040032F	—
PLND10	Threshold NOT	31 mm	K05M11040032F	—
PRD3P10	Air Pressure Regulator	22.5 mm	K05M11040025	—
PRDA10	Amplifer Relay	45 mm	K05M11040045	—
PREA10	Electric Pressure Switch	12 mm	K05M11040012	—
PRFA10	Sensor	31 mm	K05M11040032F	—
PRSA10	Solenoid	18 mm	K05M11040020	—
PRTA10	Timer (NNP) Relay	12 mm	K05M11040012	K05M11040020
PRTB10	Timer (NNP) Relay	12 mm	K05M11040012	K05M11040020
PRTC10	Timer (NP) Relay	12 mm	K05M11040012	K05M11040020
PRTD10	Timer (NP) Relay	12 mm	K05M11040012	K05M11040020
PRTE10	Timer (NNP) Relay	12 mm	K05M11040012	K05M11040020
PRTF10	Timer (NP) Relay	12 mm	K05M11040012	K05M11040020
PSMA10	Step Module w/Overrides	50 mm	K05M11040050	—
PSMB10	Step Module w/o Overrides	50 mm	K05M11040050	—
TR3P10	Flow Control	25 mm	K05M11040025	—

Notes

Notes

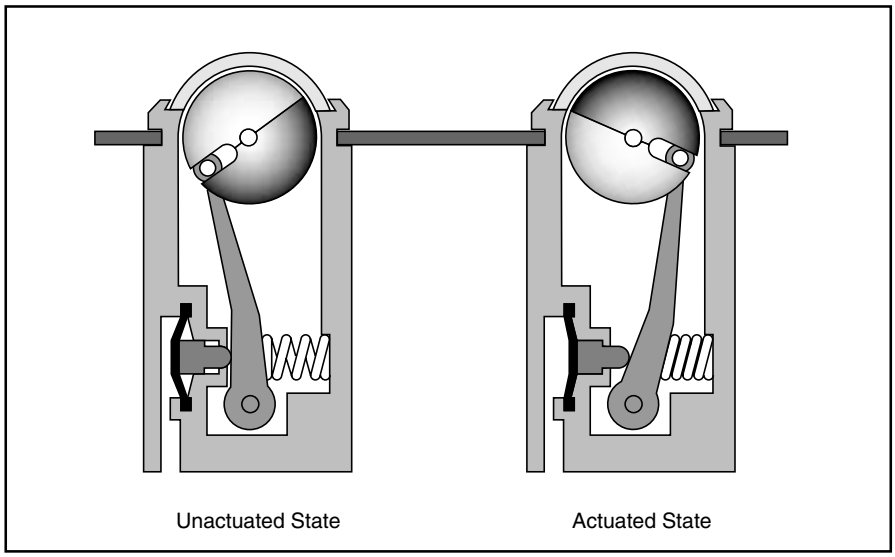
Parker Pneumatic
Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan

Man / Machine Dialog

MAN-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.

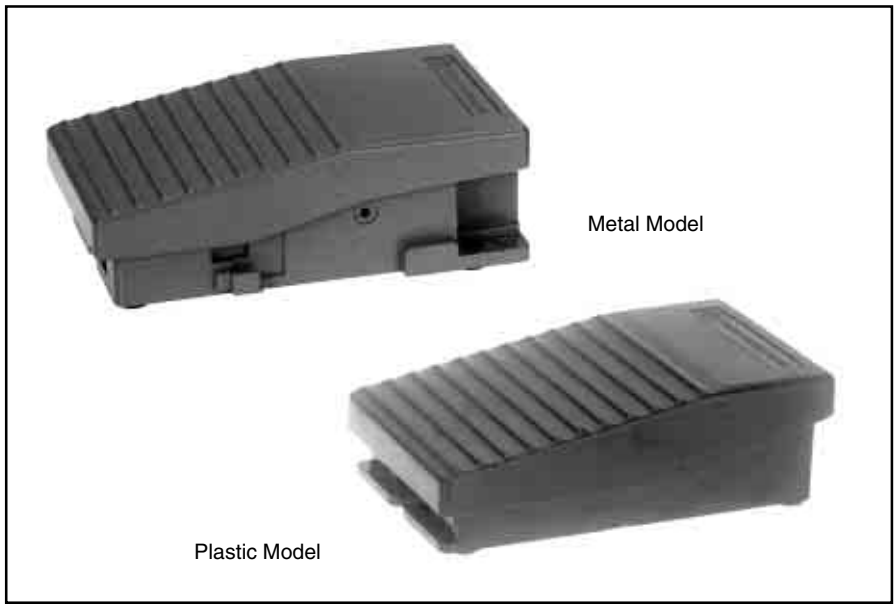
PNEUMATIC VISUAL INDICATORS

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.



FOOT PEDAL SWITCHES

When the application requires the use of foot pedals, these devices can be used to initiate a cycle or a step within a cycle. A metal foot pedal is available with protective guard.

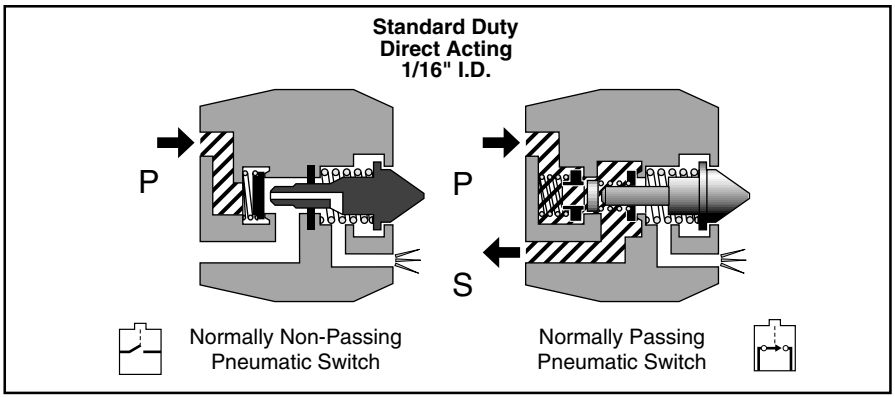


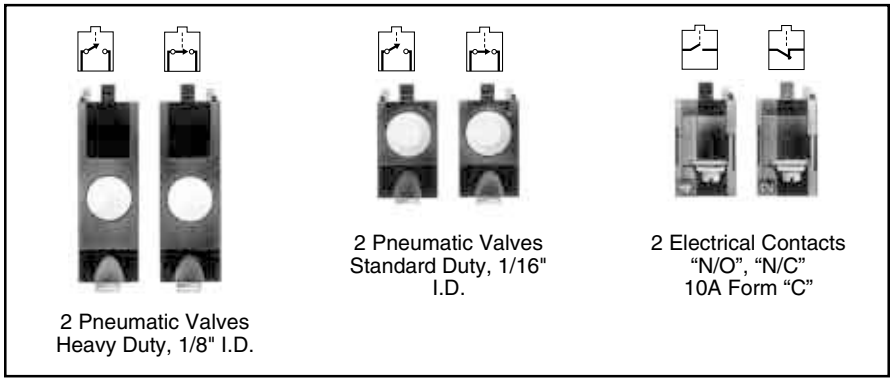
MODULAR PNEUMATIC/ELECTRIC PUSH BUTTONS

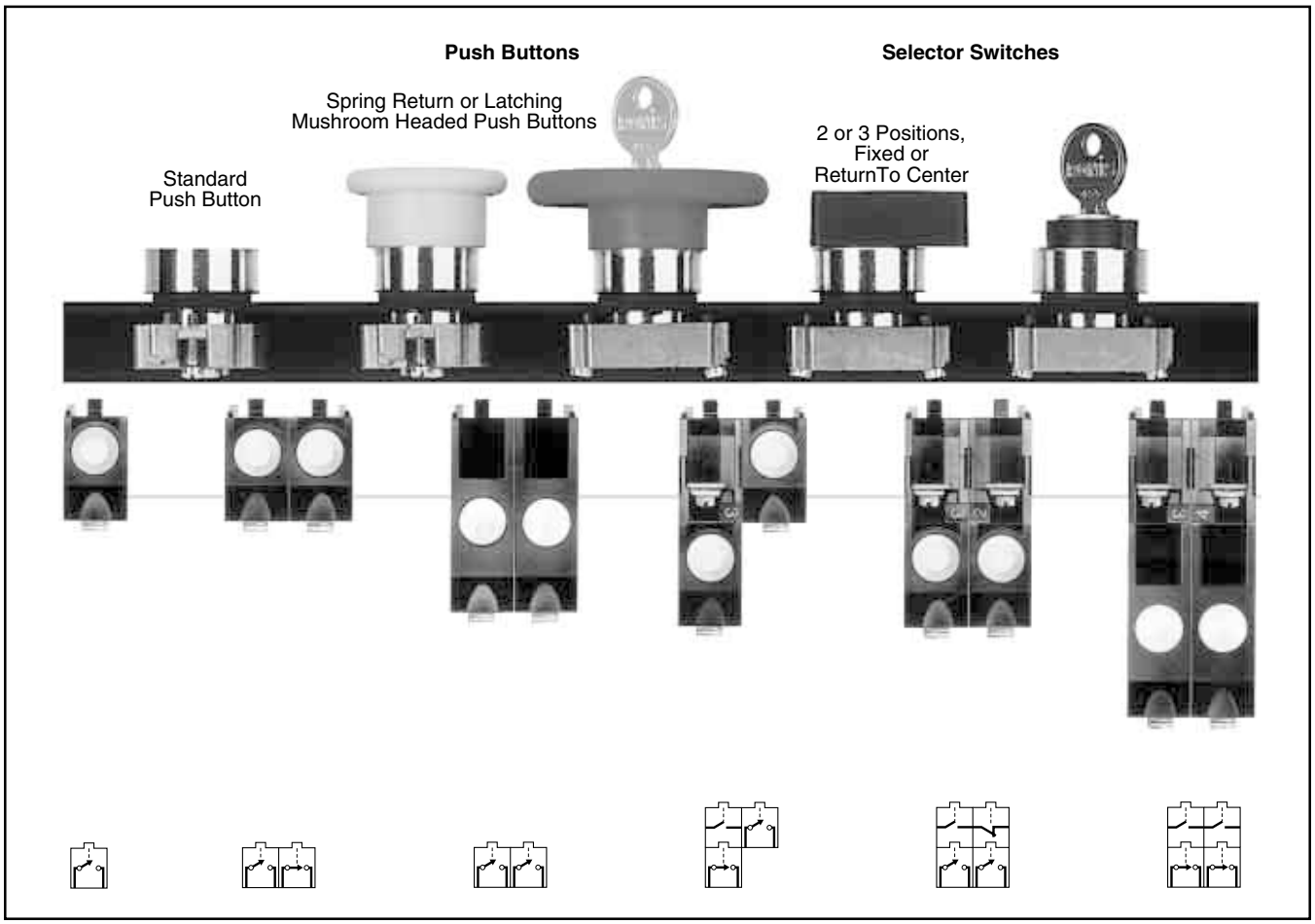
As with electrical contact switches, pneumatic valve modules can be mounted on a number of different operating heads.

- 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.







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

Flush Push Buttons

PXBB1011BA2

PXBB2011BA2

Part Number	Part Number	Color	Function	Type of Switching*
PXBB1011BA2	**PXBB2011BA2**	Black	Spring Return	NNP
PXBB1011BA3	**PXBB2011BA3**	Green		
PXBB1011BA4	**PXBB2011BA4**	Red		
PXBB1121BA2	**PXBB2121BA2**	Black	Spring Return	NNP+NP

Mushroom Head Push Buttons
(40mm Diameter)

PXBB1021BT4

PXBB2021BT4

Part Number	Part Number	Color	Function	Type of Switching*
PXBB1011BC2	**PXBB2011BC2**	Black	Spring Return	NNP
PXBB1011BC4	**PXBB2011BC4**	Red		
PXBB1011BT4	**PXBB2011BT4**	Red	Push-Pull	NNP
PXBB1021BT4	**PXBB2021BT4**	Red	Push-Pull	NP
PXBB1121BT4	**PXBB2121BT4**	Red	Push-Pull	NNP+NP

Man

Selector Switches

PXBB1121BD2

PXBB2121BD2

Part Number	Part Number	Color	Function	Type of Switching*
PXBB1011BD2	**PXBB2011BD2**	Black	2 Maintained Positions with Std. Handle	NNP
PXBB1111BD2	**PXBB2111BD2**	Black		NNP+NNP
PXBB1121BD2	**PXBB2121BD2**	Black		NNP+NP
PXBB1111BD3	**PXBB2111BD3**	Black	3 Maintained Positions with Std. Handle	NNP+NNP
PXBB1121BD3	**PXBB2121BD3**	Black		NNP+NP
PXBB1111BJ5	**PXBB2111BJ5**	Black	3 Positions, Spring Return to Center with Long Handle	NNP+NNP
PXBB1221BJ5	**PXBB2221BJ5**	Black		NNP+NP

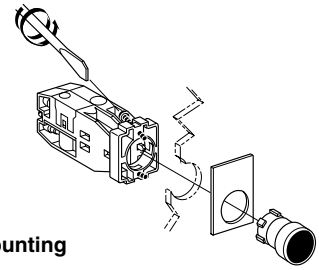
* NNP: Normally Non-Passing.

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.



Mounting

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

3/2 Valve Bodies with Mounting Ring

PXBB1011

PXBB1021

PXBB2011

PXBB2021

Part Number 1/16" ID Body	Part Number 1/8" ID Body	Connections	Function	Type of Switching*
PXBB1011	**PXBB2011**	5/32" Instant	3/2	NNP
PXBB1021	**PXBB2021**	5/32" Instant	3/2	NP

Additional Valve Bodies

PXBB1911

PXBB1922

PXBB2911

Part Number 1/16" ID Body	Part Number 1/8" ID Body	Connections	Func.	Type of Switching*
PXBB1911	**PXBB2911**	5/32" Instant Straight	3/2	NNP
PXBB1912	—	5/32" Instant Swivel		
PXBB1915	**PXBB2915**	10-32 UNF Threaded		
PXBB1921	**PXBB2921**	5/32" Instant Straight	3/2	NP
PXBB1922	—	5/32" Instant Swivel		
PXBB1925	**PXBB2925**	10-32 UNF Threaded		
PXBB1911SE	—	5/32" Instant Straight	2/2	NNP
PXBB1921SE	—	5/32" Instant Swivel		NP

Accessories

ZB2BE101

Electrical Switch Bodies
When combined with pneumatic these contact blocks allow different forms of power to be vided from a single pushbutton. Can be mounted with both types of valves PXBB1•• and PXBB2••

Electrical Specification: 240V, 10Amp

Part Number	Type of Contact
ZB2BE101	**Normally Open (NO)**
ZB2BE1016 (Gold Leaf)†	
ZB2BE102	**Normally Closed (NC)**
ZB2BE1026 (Gold Leaf)†	

† For Low Voltage

ZB2BZ009

Mounting Ring for Valve Bodies, Switch Bodies and Operating Heads
To make up a complete pushbutton 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
ZB2BZ009

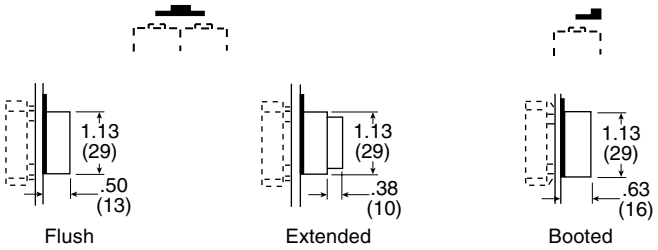
* NNP: Normally Non-Passing.
NP: Normally Passing.

For Use With PXBB Valve Bodies and ZB2BE Electrical Switch Bodies Using ZB2BZ009 Mounting Ring

Push Buttons

ZB2BA2

ZB2BL3

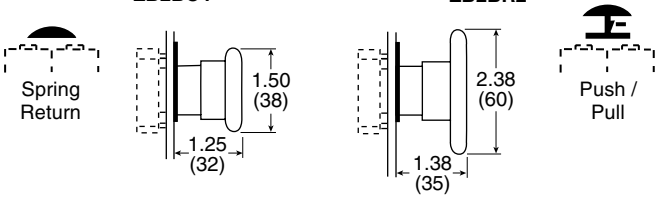


Part Number	Color	Function	Description
ZB2BA2	Black	Spring Return	Flush
ZB2BA3	Green		
ZB2BA4	Red		
ZB2BA5	Yellow		
ZB2BA6	Blue		
ZB2BL2	Black	Spring Return	Extended
ZB2BL3	Green		
ZB2BL4	Red		
ZB2BL5	Yellow		
ZB2BP2	Black	Spring Return	Booted
ZB2BP3	Green		
ZB2BP4	Red		

Mushroom Head Push Buttons

ZB2BC4

ZB2BR2



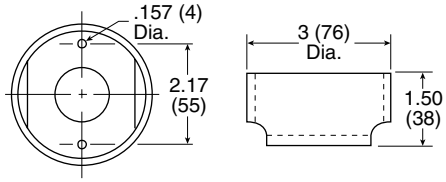
Part Number	Color	Function	Description
ZB2BC2	Black	Spring Return	Ø 40mm Head
ZB2BC3	Green		
ZB2BC4	Red		
ZB2BT2	Black	Latching Push-Pull	
ZB2BT4	Red		
ZB2BR2	Black	Spring Return	Ø 60mm Head
ZB2BR3	Green		
ZB2BR4	Red		
ZB2BX2	Black	Latching Push-Pull	
ZB2BX4	Red		

Mushroom Head Push Buttons with Key Sellect

ZB2BS24

Part Number	Color	Function	Description
ZB2BS54	Red	Latching Turn to Release	Ø 40mm Head
ZB2BS14	Red	Key Latching	
ZB2BS64	Red	Latching Turn to Release	Ø 60mm Head
ZB2BS24	Red	Key Latching	

Mounting Accessories



ZB2BZ19

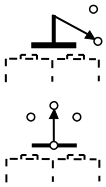
Part Number	Color	Description
ZB2BZ19	Black Plastic	Guard for 60mm Mushroom Heads
ZB2BZ41	—	Adapter for Mounting 22mm Device in 30mm Opening
ZB2SZ3	Black Plastic	Blanking Plate for 7/8" Dia.

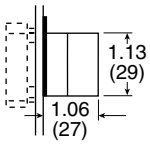
For Use With PXBB Variable Composition Switch Bodies

Selector Switches

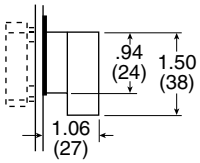
ZB2BD3

ZB2BJ3





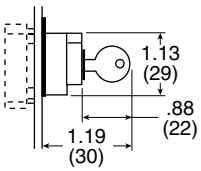
Standard Selector



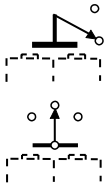
Knob Lever

Standard Black Handle		
Part Number	**Description**	**Function**
ZB2BD2	Maintained	2-Positions
ZB2BD4	Spring Return from Right to Left	
ZB2BD3	Maintained	3-Positions
ZB2BD5	Spring Return to Center from Left and Right	
ZB2BD7	Maintained Right Spring Return from Left to Center	3-Positions
ZB2BD8	Maintained Left Spring Return from Right to Center	3-Positions
Long Black Handle		
ZB2BJ2	Maintained	2-Positions
ZB2BJ4	Spring Return from Right to Left	
ZB2BJ3	Maintained	3-Positions
ZB2BJ5	Spring Return to Center from Left and Right	

Key Operated Selectors



ZB2BG7



Key Operated		
Part Number	**Key Withdrawal**	**Function**
ZB2BG2	Left	2 Maintained Positions
ZB2BG4	Left and Right	
ZB2BG3	Center	3 Maintained Positions
ZB2BG5	Left and Right	
ZB2BG7	Center	3 Positions 2 Spring Return to Center

B

Man

Specifications

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

Flow at 90 PSI (6 bar) in SCFM (l/mn ANR)
PXBB1• 1.8 (50)
PXBB2• 8.5 (240)

Materials
Body ..... Polyamide
Operating Head ... Zinc Alloy & Plastic

Nominal Bore Ø in Inches (mm)
PXBB1• ..... 1/16" (1.5)
PXBB2• ..... 1/8" (3)

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

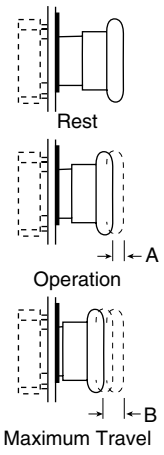
Operating Positions
All Positions

Operating Pressure
PXBB1• - 15 to 115 PSIG (1 to 8 bar)
PXBB2• - 40 to 115 PSIG (3 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)

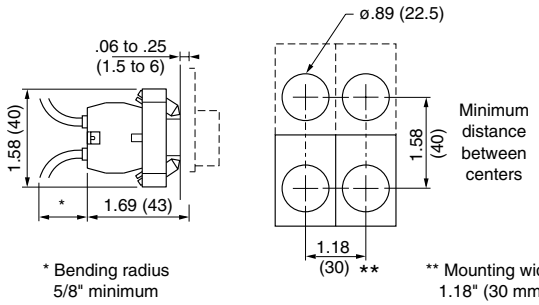
Operator Specifications

	Mushroom Head Spring Return Push Buttons PXBB	Mushroom Head Latching Push Buttons PXBB	Spring Return Push Buttons PXBB
Maximum Travel (B) at 90 PSIG (6 bar)	3/16" (4.8 mm)	3/16" (4.8 mm)	3/16" (4.8 mm)
Minimum Pre-Travel (A) at 90 PSIG (6 bar)	7/64" (3 mm)	9/64" (3.5 mm)	7/64" (3 mm)
Minimum Operating Force at 90 PSI (6 bar)	4.0 lb (18 N)	11.2 lb(50 N)	2.9 lb (13 N)
Operating Diagram			

Man

Dimensions

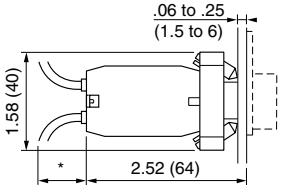
PXBB1●●●



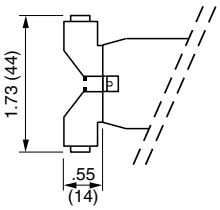
* Bending radius 5/8" minimum

** Mounting width 1.18" (30 mm)

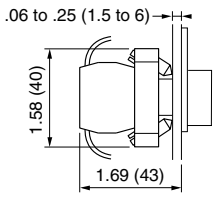
PXBB2●●●
with straight connections



PXBB2912, PXBB2922
with swivel connections



ZB2BE10●



Low Operating Force Push Button Valve

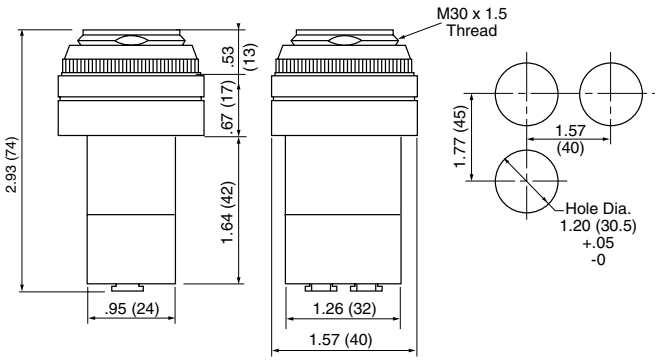
VLF3P4-302

Part Number	Button Color	Description	Type of Switching*
VLF3P4-302	Green	Designed to reduce straining injuries associated with repetitive operations. Built-in guard to prevent accidental operation.	NNP

Specifications

Air Bleed
0.085 SCFM
Air Quality
Standard Shop Air, Lubricated or Dry, 40 µm Filtration
Flow @ 100 PSI
10.6 SCFM
Materials
Body ..... Acetal
Mounting Ring ..... Acetal
Operating Force Required
4.5 oz
Operating Pressure
29 to 115 PSI (2 to 8 bar)
Ports
5/32" Instant for Semi-Rigid Nylon or Polyurethane Tube
Temperature Rating
Operating
32°F to 122°F (0°C to + 50°C)
Storage
-22°F to 140°F (-30°C to +60°C)

Dimensions



Miniature Pilot Valves

CBP101

CBL101

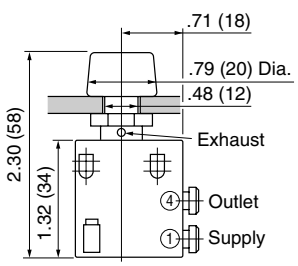
Part Number	Connection	Actuator	Type of Switching*
CBP101	5/32" Instant	Push Button	NNP
CBP501	10-32 UNF		
CBL101	5/32" Instant	Toggle Lever	NNP
CBL501	10-32 UNF		

Specifications

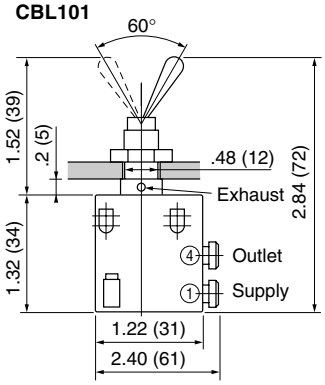
Air Quality
Standard Shop Air, Lubricated or Dry, 40 µm Filtration
Flow @ 80 PSI
10 SCFM / .14Cv
Materials
Body ..... Zinc
Operator ..... Polyamide
Operating Pressure
0 to 115 PSIG (0 to 8 bar)
Ports
5/32" Instant for Semi-Rigid Nylon or Polyurethane Tube
Temperature Rating
Operating
32°F to 122°F (0°C to + 50°C)
Storage
-22°F to 140°F (-30°C to +60°C)

Dimensions

CBP101



CBL101



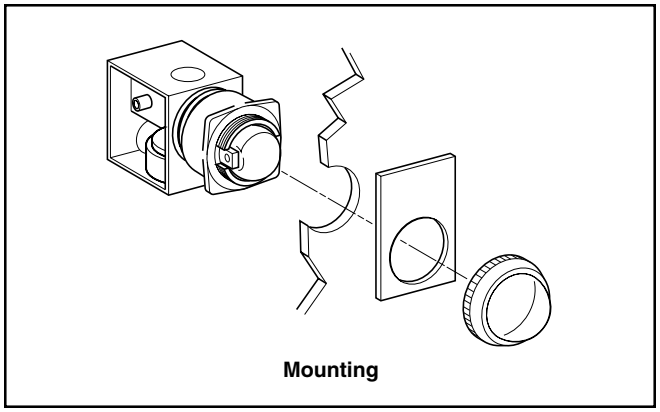
* NNP: Normally Non-Passing.

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



Mounting

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).

Man

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

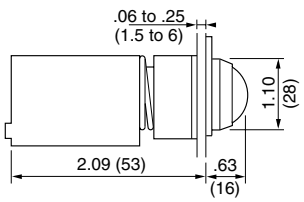
Operating Pressure
15 to 115 PSIG (1 to 8 bar)

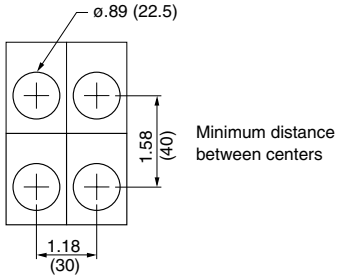
Ports
Standard: 5/32" Instant for Semi-Rigid Nylon or Polyurethane Tube
10-32 UNF Available.

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●●





Parker Pneumatic

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan

For Push Buttons and Visual Indicators

Legend Plates for PXBB Devices (22mm)

ZB2BY●●●●

Part Number	Description
Without Text For Customer Engraving	
ZB2BY2101	Black / Red Background (White Letters)
ZB2BY4101	Yellow / White Background (Black Letters)
With Text For Push Buttons	
ZB2BY2303	Start
ZB2BY2304	Stop
ZB2BY2305	Forward
ZB2BY2306	Reverse
ZB2BY2307	Up
ZB2BY2308	Down
ZB2BY2309	Right
ZB2BY2310	Left
ZB2BY2311	On
ZB2BY2312	Off
ZB2BY2313	Open
ZB2BY2314	Close
ZB2BY2321	Inch
ZB2BY2323	Reset
ZB2BY2326	Power on
ZB2BY2327	Slow
ZB2BY2328	Fast
ZB2BY2330	Emergency stop
ZB2BY2334	Run
ZB2BY2335	Raise
ZB2BY2336	Low
ZB2BY2337	Lower
ZB2BY2338	High
ZB2BY2339	Out
ZB2BY2380	Jog Rev
ZB2BY2381	Jog For
ZB2BY2503	In

Legend Plates for PXBB Devices (22mm)

Part Number	Description		
With Text For 2-Position Selectors			
ZB2BY2362	Stop		Start
ZB2BY2365	Run		Jog
ZB2BY2367	Off		On
ZB2BY2369	High		Low
ZB2BY2370	Up		Down
ZB2BY2371	For		Rev
ZB2BY2372	Manual		Auto
ZB2BY2376	Open		Close
With Text For 3-Position Selectors			
ZB2BY2384	For	O	Rev
ZB2BY2387	Hand	Off	Auto
ZB2BY2388	Open	O	Close
ZB2BY2389	Up	O	Down
With Text For Mushroom Head Operator			
ZB2BY8330	Emergency Stop (90mm round)		

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)

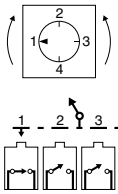
Part Number	Description
ZB2BY2002	Black Background / White Letters

Blank Legend Plates

Part Number	Description
ZB2BY5101	Rectangular for Mushroom Head

With 5/32" Instant Connections
1/16" I.D. Internal Orifice

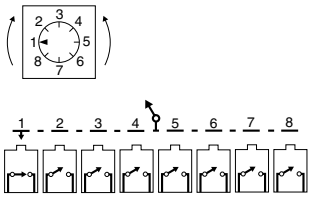
4-Positions, 4-Outputs 3/2



PXBDD104

Without Mechanical Stop		
Part Number	**Operating Head**	**Type of Switching***
PXBDD104	Black Handle with 2.5" x 2.5" (64 x 64 mm) Legend Plate, Red or Black Background	NNP

8-Positions, 4-Outputs 3/2

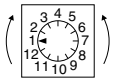


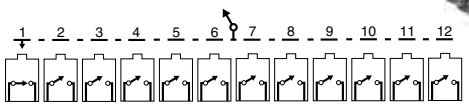
PXBDD508

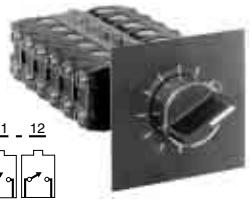
Without Mechanical Stop		
Part Number	**Operating Head**	**Type of Switching***
PXBDD508	Black Handle with 2.5" x 2.5" (64 x 64 mm) Legend Plate, Red or Black Background	NNP

Man

12-Positions, 12-Outputs 3/2







PXBDD512

Without Mechanical Stop		
Part Number	**Operating Head**	**Type of Switching***
PXBDD512	Black Handle with 2.5" x 2.5" (64 x 64 mm) Legend Plate, Red or Black Background	NNP

*NNP: Normally Non Passing.

Specifications

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

Materials
Body: ..... Polyamide
Operating Head: ... Zinc Alloy & Plastic

Minimum Operating Force
9.4 Lb (42 N)

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.

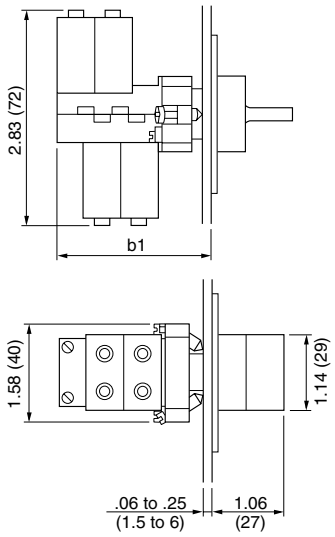
Temperature
Operating
32°F to 122°F (0°C to + 50°C)
Storage
-22°F to 140°F (-30°C to +60°C)

Notes:
These Rotary Switches operate in either direction. They come assembled with switch PXBB1921 (Normally Passing). All switches are held in the actuated non-passing position except the one associated with a given dial position, which is in the unactuated Normally Passing position.
Example of Operation: Rotation from Position 1 to Position 2:
- Switch 1 changes from unactuated Normally Passing to actuated non-passing.
- Switch 2 changes from actuated non-passing to unactuated Normally Passing.

Units will accept all switch bodies shown earlier in this Section, but care must be taken in selecting switch type.

Dimensions

PXBDD8•••



type	b1 inch	b1 mm
4 positions	2.36	60
8 positions	3.54	90
12 positions	4.72	120

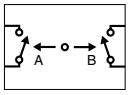
Parker Pneumatic

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan

With 5/32" Instant Connections
1/16" I.D. Internal Orifice

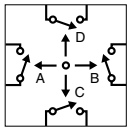
2-Position Unit

PXBGA8211



4-Position Unit

PXBGA8411



Part Number	Position	Function	Type of Switching*	Operating Head
PXBGA8211	2	Maintained Position in Each Direction	NNP	Chrome Plated Lever with Protective Bellows 1.6" x 2.5"
PXBGA8411	4			
PXBGA8221	2	Spring Return in Each Direction	NNP	(40 x 64 mm) Legend Plate Red or Black Background
PXBGA8421	4			

*NNP: Normally Non Passing.

Note:
These Joystick Operators come assembled with switch type PXBB1911, but will accept all Switch Bodies shown earlier in this Section.

Specifications

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

Flow at 90 PSI (6 bar) in SCFM (l/mn ANR)
1.8 (50)

Materials
Body: ..... Polyamide
Operating Head: ... Zinc Alloy & Plastic

Nominal Bore Ø in Inches (mm)
1/16" (1.5)

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

Operating Angle
18°

Operating Positions
All Positions

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

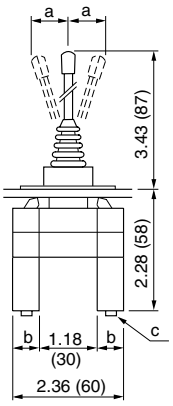
Operating Torque
59.5 oz-in (420 mNm)

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

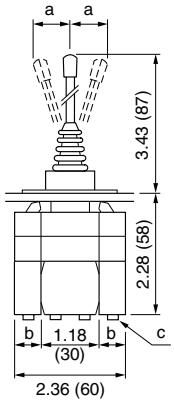
PXBGA82●●



	inch	mm
a*	1.57	40
b	.59	15
c	Ø5/32	Ø4

*in both directions

PXBGA84●●



	inch	mm
a*	1.57	40
b	.59	15
c	Ø5/32	Ø4

* in all 4 directions

Standard Duty 1/6" I.D. Valves With 5/32" Instant Connections

Protective Guard

PXPEM510

Part Number	Function	Material	Type of Switching*
PXPEM510	High resistance protective guard, with interlock mechanism to prevent accidental operation by a falling object.	Metal	NNP

Foot Switches Without Protective Guard

PXPEA110

Part Number	Function	Material	Type of Switching*
PXPEA110	Spring Return	Plastic	NNP
PXPEM110	Spring Return	Metal	NNP

⚠ ***CAUTION:***
This valve shall not be used to actuate a punch press. Do not use this valve on punch presses or press brakes. See OSHA 1910.217.

Man

Specifications

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

Flow at 90 PSI (6 bar) in SCFM (l/mn ANR)
1.8 (50)

Materials
Body: ..... Polyamide
Operating Head: ... Zinc Alloy & Plastic

Nominal Bore Ø in Inches (mm)
1/16" (1.5)

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

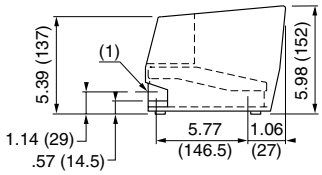
Operating Pressure
15 to 115 PSIG (1 to 8 bar)

Ports
5/32" Instant for Semi-Rigid Nylon or Polyurethane Tube

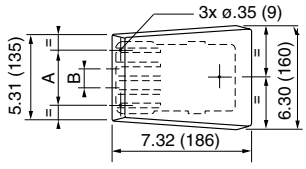
Temperature
Operating
32°F to 122°F (0°C to + 50°C)
Storage
-22°F to 140°F (-30°C to +60°C)

Dimensions

PXPEM510

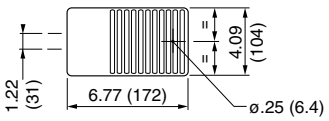


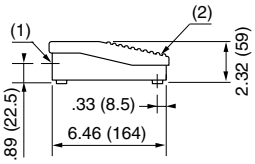
(1) 2 mounting ports for adaptors for conduit fittings
(2) 7° operating angle



	inch	mm
A	3.53	90
B	1.22	31

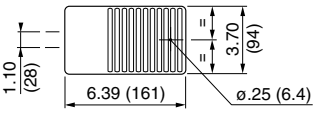
PXPEM110

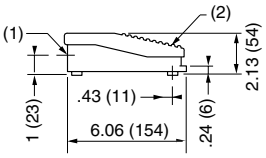




(1) .825" diameter thru hole
(2) 6° operating angle

PXPEA110





Notes:
These Foot Pedal Operators come assembled with switch PXBB1921 (Normally Passing). With the pedal in the unoperated position, the switch is in the actuated non-passing position. With the pedal actuated, the switch is in the unactuated Normally Passing position.

Units will accept all switch bodies shown earlier in this Section, but care must be taken in selecting switch type.

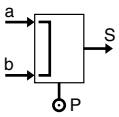
* NNP = Normally Non Passing.

Parker Pneumatic

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan

Module and Pre-Assembled Enclosure

Two-Hand Control Module



PXPA11

Part Number	Connections
PXPA11	5/32" Instant

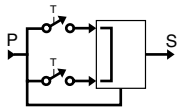
Guard For Two-Hand Control Module

PPRL15

Part Number	Base Component
PPRL15	PXPC111

Pre-Assembled Two-Hand Control Module

Comprising a Plastic Case with Two Mushroom Head Push Buttons and Guards



PXPC111

Part Number	Connections
PXPC111	5/32" Instant

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

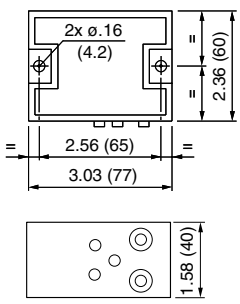
Operating Pressure
40 to 115 PSIG (3 to 8 bar)

Ports
5/32" Instant for Semi-Rigid Nylon or Polyurethane Tube

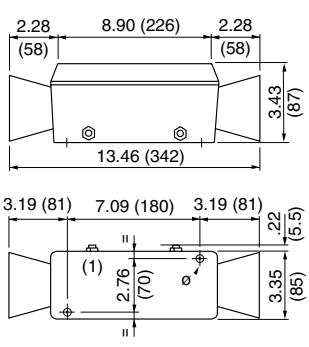
Temperature
Operating
32°F to 122°F (0°C to + 50°C)
Storage
-22°F to 140°F (-30°C to +60°C)

Dimensions

PXPA11



PXPC111

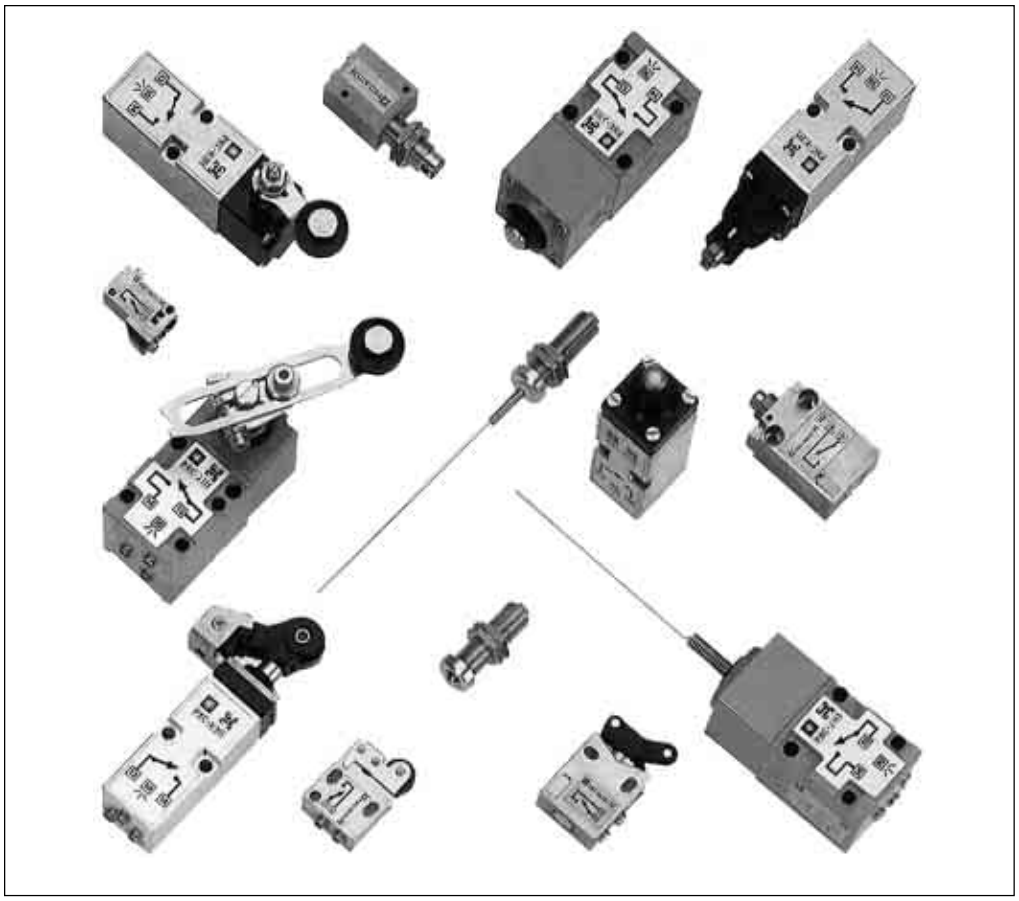


⚠ WARNING

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.

Notes

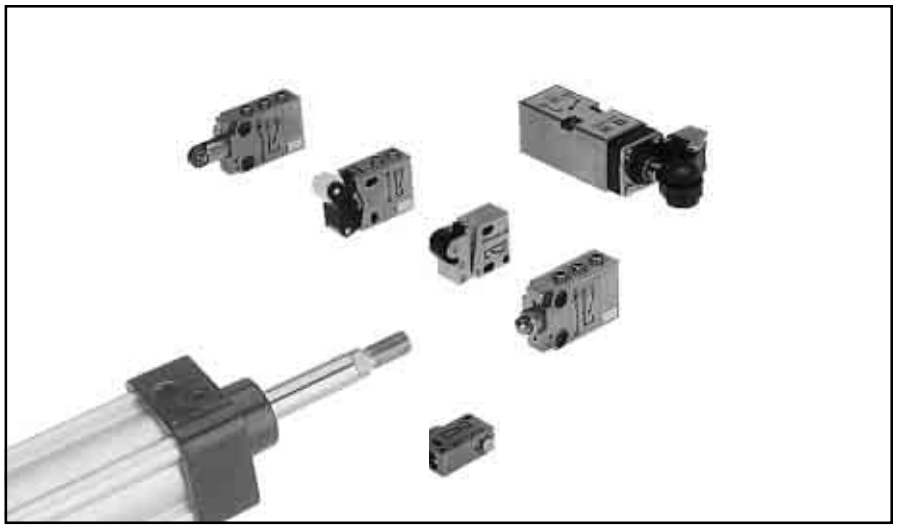


Sensing

To achieve the sensing or feedback function, pneumatic sensors can be:

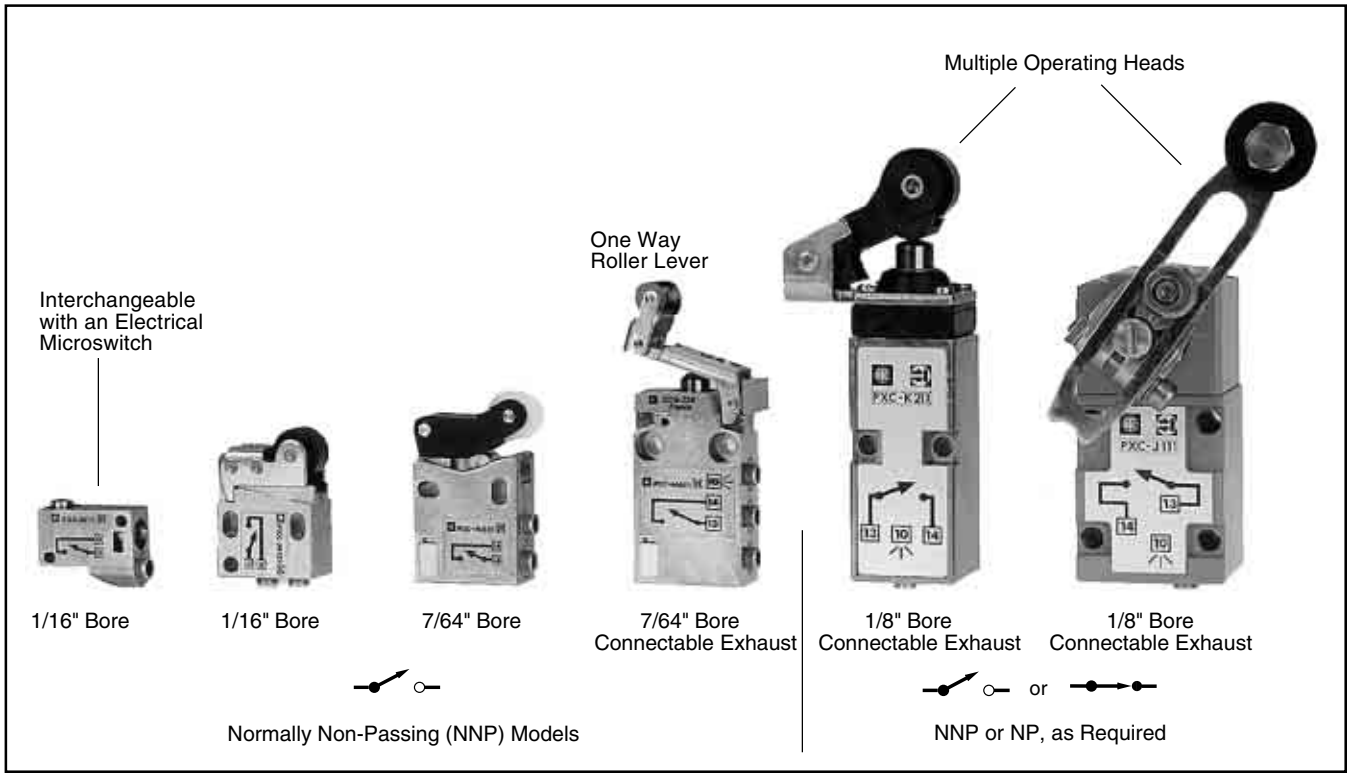
- limit switches in a variety of sizes and configurations
- pressure switches with many adjustable ranges
- components designed specifically for pneumatic technology using pressure variation, air bleed or blocking for detection.

A wide variety of pneumatic sensors are available to suit any application requirement.



PNEUMATIC LIMIT SWITCHES

Pneumatic limit switches are non-passing (NNP) or passing (NP) when actuated by a moving part. The various operating levers, bore dimensions and functions are given below.



PNEUMATIC PRESSURE AND VACUUM SWITCHES

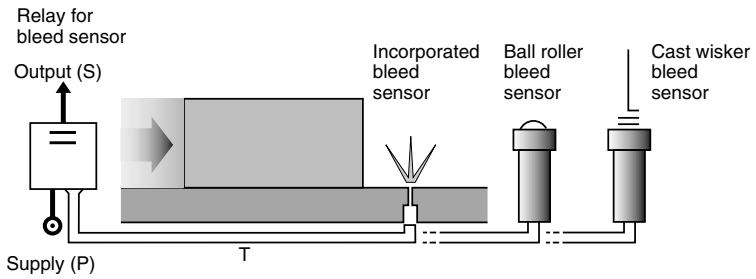
These devices monitor the presure of a fluid (air, water, oil or vacuum). Pressures from -30" (vacuum switches) to 130 PSI (pressure switches) can be detected in several ranges depending on the model selected. (See pressure switches in logic section for further details.)

Electrical Output

Pneumatic Output

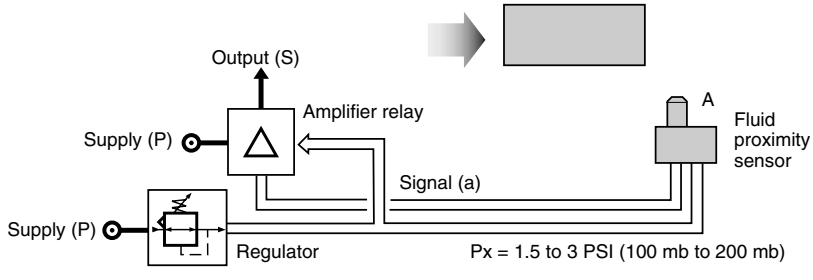
BLEED SENSORS

Bleed sensors are used for the sensing of low forces and short travel. They are simple to install and connect. The detected object blocks the bleed air at low flow. An increase of pressure in tube (**T**) creates a pneumatic signal (**S**) on the relay equal to the supply pressure (**P**).



FLUIDIC PROXIMITY SENSORS

Fluidic proximity sensors are used when the application requires non-contact sensing of the moving part. A fluidic sensor emits a continuous air jet (**A**) at low pressure. When the object to be detected interferes with this air jet, a back pressure (**a**) is created. When this back pressure reaches the amplifier relay, an output signal (**S**) is generated equal to supply pressure (**P**).



C

Sensing

Direct Acting Limit Switches

1/16" I.D. Internal Orifice

PXCM111

PXCM121

Part Number	Connection	Actuator	Type of Switching*
PXCM111	5/32" Instant	Steel Plunger Operating Levers Available (See Below)	NNP
PXCM115	10-32 UNF		
PXCM121	5/32" Instant	Plastic Roller	NNP
PXCM125	10-32 UNF		

7/64" I.D. Internal Orifice

PXCM521

Part Number	Connection	Actuator	Type of Switching*
PXCM521	5/32" Instant	Plastic Roller	NNP

Actuators For Steel Plunger

PXCZ11

Use with PXCM11•	
Part Number	**Actuator**
PXCZ11	Plastic Roller Lever
PXCZ12	Plastic Roller Lever, One Way Trip

Specifications

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

Flow SCFM (Nl/min)
PXCM111 ..... 2.2 (60)
PXCM121 ..... 3.0 (85)
PXCM521 ..... 8.8 (250)

Materials
Body ..... Zinc Alloy
Poppets ..... Polyurethane
Seals ..... Nitrile (Buna N)

Maximum Operating Frequency
5 Hz

Nominal Bore Ø
PXCM111, PXCM121 1/16" (1.5 mm)
PXCM521 ..... 7/64" (2.5 mm)

Number of Operations with Dry Air at 90 PSI (6 bar) and 68°F (20°C) – Frequency 1 Hz
10 Million

Operating Positions
All Positions

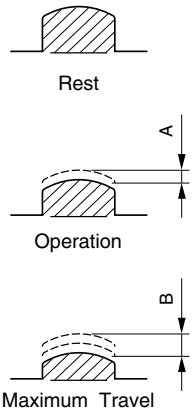
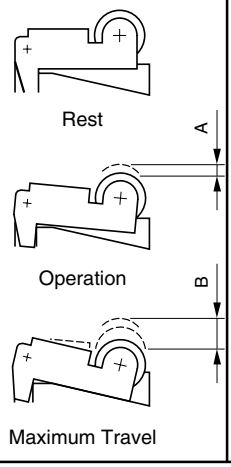
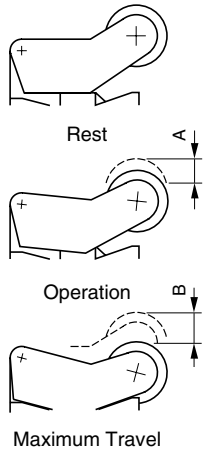
Operating Pressure
40 to 115 PSIG (3 to 8 bar)

Ports
5/32" Instant for Semi-Rigid Nylon or Polyurethane Tube
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)

* NNP = Normally Non Passing.

Operator Specifications

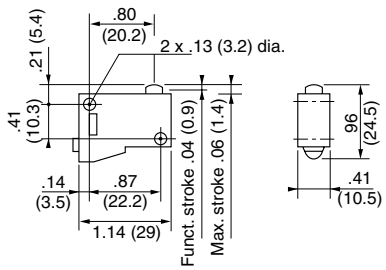
	PXCM111	PXCM121	PXCM521
Differential Travel at 90 PSI (6 bar)	.006" (0.15 mm)	.012" (0.3 mm)	.020" (0.5 mm)
Maximum Travel (B) at 90 PSIG (6 bar)	.055" (1.4 mm)	.126" (3.2 mm)	.228" (5.8 mm)
Minimum Pre-Travel (A) at 90 PSIG (6 bar)	.035" (0.9 mm)	.079" (2 mm)	.087" (2.2 mm)
Minimum Operating Force at 90 PSI (6 bar)	2.5 lb (11 N)	1.0 lb (4.5 N)	1.6 lb (7 N)
Operating Diagram			

C

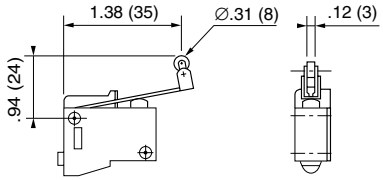
Sensing

Dimensions

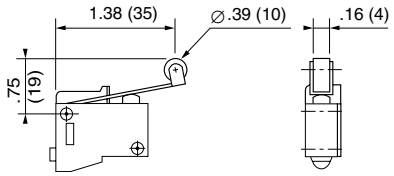
PXCM111



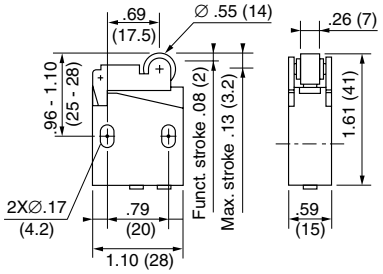
PXCZ12



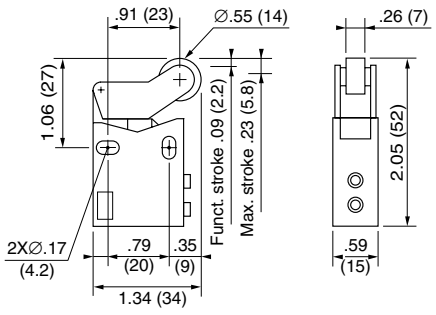
PXCZ11



PXCM121, PXCM131



PXCM521



Pilot Operated Compact Limit Switches

5/32" Instant Connections
Pipeable Exhaust Port
7/64" I.D. Internal Orifice

PXCM601A110

PXCM601A102

PXCM601A103

Part Number	Actuator	Type of Switching*
PXCM601A110	Steel Plunger Operating Levers Available (See Below)	NNP
PXCM601A102	Steel Roller Plunger	
PXCM601A103	90° Steel Roller Plunger	

Actuators For Steel Plunger

XCMZ24

Use with PXCM601A110	
Part Number	**Actuator**
XCMZ24	90° Stainless Steel Roller Lever, One Way Trip

Sensing

Specifications

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

Flow SCFM (Nl/min)
8.8 (250)

Materials
Body ..... Zinc Alloy
Poppets ..... Polyurethane
Seals ..... Nitrile (Buna N)

Maximal Operating Frequency
5 Hz

Nominal Bore Ø
7/64" (2.5 mm)

Number of Operations with Dry Air at 90 PSI (6 bar) and 68°F (20°C) – Frequency 1 Hz
10 Million

Operating Positions
All Positions

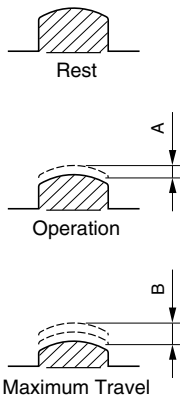
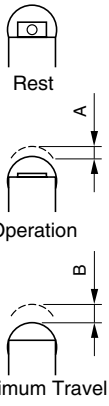
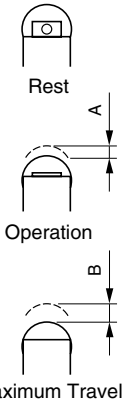
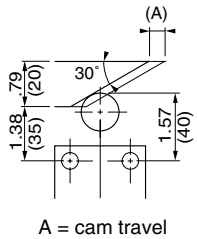
Operating Pressure
40 to 115 PSIG (3 to 8 bar)

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)

* NNP = Normally Non Passing.

Operator Specifications

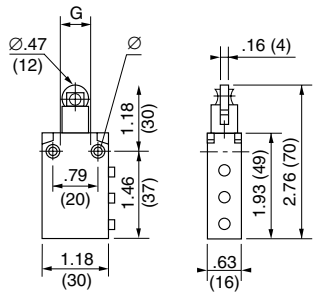
	PXCM601A110	PXCM601A102	PXCM601A103	PXCM601A110 + XCMZ24
Differential Travel at 90 PSI (6 bar)	.012" (0.3 mm)	.008" (0.2 mm)	.020" (0.5 mm)	.047" (1.2 mm) (A)
Maximum Travel (B) at 90 PSIG (6 bar)	.197" (5 mm)	.197" (5 mm)	.197" (5 mm)	—
Minimum Pre-Travel (A) at 90 PSIG (6 bar)	.066" (1.7 mm)	.066" (1.7 mm)	.066" (1.7 mm)	.370" (9.4 mm) (A)
Minimum Operating Force at 90 PSI (6 bar)	5.4 lbf (24 N)	5.2 lbf (23 N)	5.2 lbf (23)	4.3 lbf (19)
Operating Diagram				 A = cam travel

C

Sensing

Dimensions

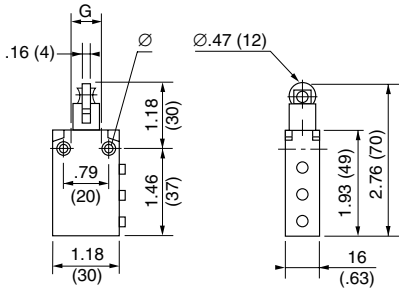
PXCM601A102



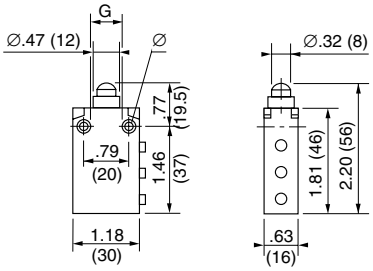
Ø:
2 mounting holes Ø .17" (4.3)
2 countersunk Ø .32" (8.2)
depth 4 mm

G:
top mounting holes, 2 x M5
.71" (18 mm) centers

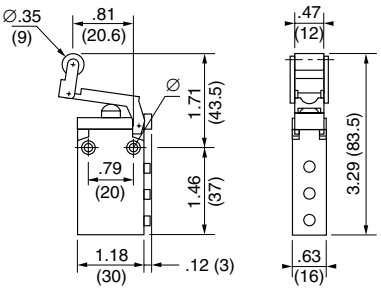
PXCM601A103



PXC-M601A110



PXCM601A110 + XCMZ24



Limit Switches

Plunger Operated

5/32" Instant Connections
Pipeable Exhaust Port
1/8" I.D. Internal Orifice

PXCK21101 **PXCK21102** **PXCK21121** **PXCK21106**

Complete Assemblies		
Part Number	**Actuator**	**Type of Switching***
PXCK21101	Steel Plunger	NNP
PXCK22101		NP
PXCK21102	Steel Roller Plunger	NNP
PXCK22102		NP
PXCK21121	Plastic Roller Plunger	NNP
PXCK22121		NP
PXCK21106	Cats Whisker	NNP
PXCK22106		NP

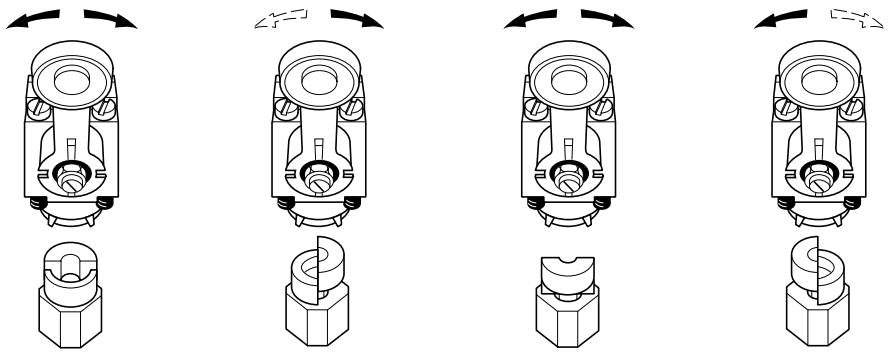
Roller Operated

5/32" Instant Connections
Pipeable Exhaust Port
1/8" I.D. Internal Orifice

PXCK2110031 **PXCK2110041**

With Die Cast Rotary Operating Head and Operating Lever - Complete Assemblies		
Part Number	**Actuator**	**Type of Switching***
PXCK2110031	Fixed Delrin Roller Lever Multi-Function Head Actuates: - From Right and Left	NNP
PXCK2210031	- From Right - From Left	NP
PXCK2110041	Adjustable Delrin Roller Lever Multi-Function Head Actuates: - From Right and Left	NNP
PXCK2210041	- From Right - From Left	NP

Field Conversion of Rotary Operating Head



* NNP = Normally Non Passing.
NP = Normally Passing.

Separate Pneumatic Switch Bodies

PXCK211

Part Number	Actuator	Type of Switching*
PXCK211	For Use With ZCK Series Operating Heads	NNP
PXCK221		NP

Pneumatic Switch Bodies With Rotary Heads

PXCK21100

Part Number	Actuator	Type of Switching*
PXCK21100	Multi-Function Head Actuates: - From Right and Left - From Right - From Left	NNP
PXCK22100		NP

C

Sensing

Operating Heads
For Use With PXCK Switch Bodies

ZCKG00

Part Number	Actuator	Description
Rotary Operated		
ZCKG00	—	Die Cast Zinc
Plunger Operated		
ZCKD02	Roller Plunger	Plunger Operated
ZCKD06	Whisker	
ZCKD10	Rod Plunger	
ZCKD21	Delrin Roller Lever On Plunger	
ZCKD23	Steel Roller Lever On Plunger	

Operating Levers For Rotary Heads

ZCKY81

ZCKY91

For Use With Rotary Head ZCKG00		
Part Number	**Actuator**	**Description**
ZCKY51	Steel 1/8" Square	Rod Levers
ZCKY52	Fiberglas 1/8" Dia. Round	
ZCKY81	Plastic Spring Rod Lever	
ZCKY91	Metal Spring Rod Lever	
ZCKY11	Delrin Roller Lever	Roller Levers
ZCKY13	Steel Roller Lever	
ZCKY41	Adjust. Delrin Roller Lever	
ZCKY43	Adjust. Steel Roller Lever	

Specifications

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

Flow SCFM (Nl/min)
7.4 (210)

Materials
Body ..... Zinc Alloy
Poppets ..... Polyurethane
Seals ..... Nitrile (Buna N)

Maximal Operating Frequency
5 Hz

Nominal Bore Ø
1/8" (3 mm)

Number of Operations with Dry Air at 90 PSI (6 bar) and 68°F (20°C) – Frequency 1 Hz
10 Million

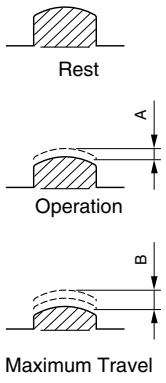
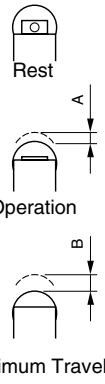
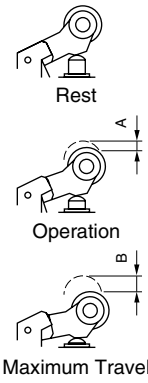
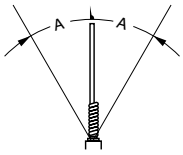
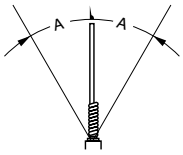
Operating Positions
All Positions

Operating Pressure
40 to 115 PSIG (3 to 8 bar)

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

Ports
5/32" Instant for Semi-Rigid Nylon or Polyurethane Tube

Operator Specifications

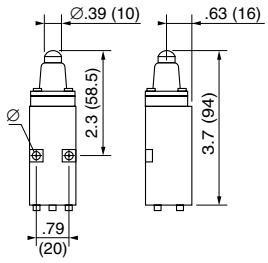
	PXCK2••01	PXCK2••02	PXCK2••03	PXCK2••06	PXCK2••00 + Actuator
Differential Angle	—	—	—	12°	3°
Differential Travel	.008" (0.2 mm)	.008" (0.2 mm)	.008" (0.2 mm)		
Maximum Angle of Travel	—	—	—	—	80°
Maximum Travel (B) at 90 PSIG (6 bar)	.020" (0.5 mm)	.020" (0.5 mm)	.020" (0.5 mm)	—	—
Minimum Pre-Travel (A) at 90 PSIG (6 bar)	.087" (2.2 mm)	.087" (2.2 mm)	.102" (2.6 mm)	—	—
Minimum Operating Force at 90 PSI (6 bar)	3.6 lbf (16N)	4.5 lbf (20N)	3.4 lbf (15N)	—	—
Minimum Operating Torque at 90 PSI (6 bar)	—	—	—	17.0 oz in (120mNm)	29.8 oz in (210mNm)
Operating Angle	—	—	—	35°	31° (Minimum Lever Travel Including Pre-Travel Required For Operation)
Operating Diagram					

Sensing

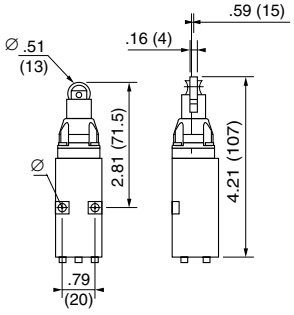
Parker Pneumatic
Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan

Dimensions

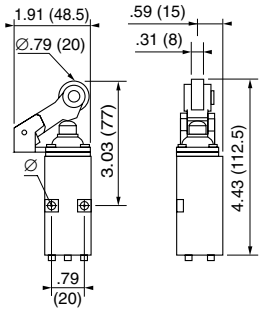
PXCK21101,PXCK22101



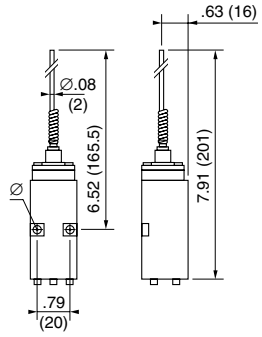
PXCK21102, PXCK22102



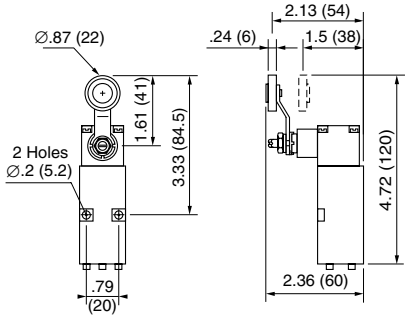
PXCK21121, PXCK22121



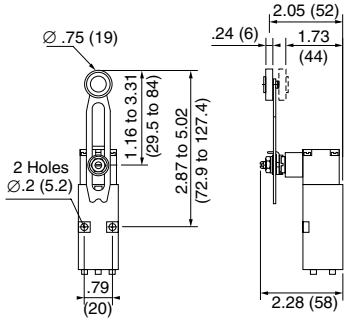
PXCK21106, PXCK22106



PXCK2110531,
PXCK2210531

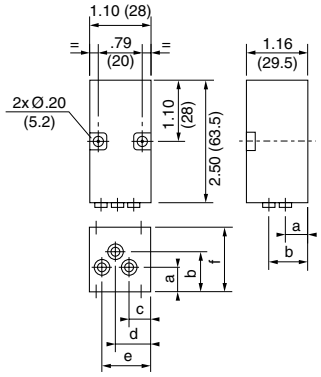


PXCK2110541,
PXCK2210541



Pneumatic Switch Bodies

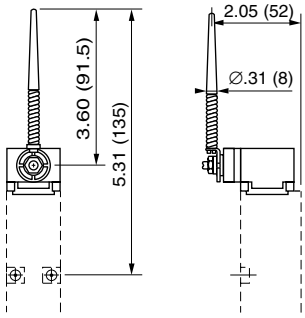
PXCK211, PXCK221



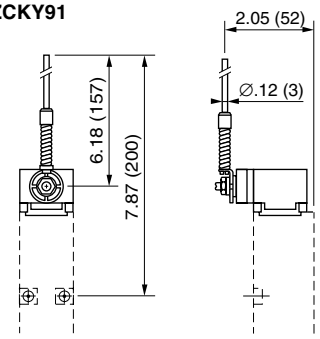
	inch	mm
a	.39	10
b	.77	19.5
c	.35	9
d	.61	15.5
e	.87	22
f	1.16	29.5

Rotary Heads With Operating Levers

ZCKY81



ZCKY91



C

Sensing

Parker Pneumatic

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan

Switch Bodies Only

PXCJ117

Part Number	Type of Switching*
PXCJ117	NNP
PXCJ127	NP

Switch Bodies With Rotary Head

PXCJ11701

Part Number	Direction of Actuation	Type of Switching*
PXCJ11701	Right & Left, Spring Return	NNP
PXCJ11705	Right or Left, Spring Return	
PXCJ12701	Right & Left, Spring Return	NP
PXCJ12705	Right or Left, Spring Return	

Top Plunger & Rotary Operating Heads

ZC2JE70

ZC2JE01

Die Cast Zinc. For Use With PXCJ Switch Bodies		
Top Plunger Type		
Part Number	**Operation**	**Description**
ZC2JE61	Top Push	Spring Return
ZC2JE62	Top Roller Push	
ZC2JE63	Side Push	
ZC2JE70	Cat's Whisker	
Rotary Type		
ZC2JE01	From Left & Right	Spring Return
ZC2JE02	Counterclockwise From Right	
ZC2JE03	Clockwise From Left	
ZC2JE05	From Left or Right	
ZC2JE09	Maintained Positions	

Operating Levers For Rotary Heads

ZC2JY91

ZC2JY81

ZC2JY11

ZC2JY31

Die Cast Zinc. For Use With PXCJ Switch Bodies		
Part Number	**Operator**	**Description**
ZC2JY11	Delrin Roller	Spring Return
ZC2JY13	Steel Roller	
ZC2JY21	Offset Delrin Roller	
ZC2JY81	Plastic Spring Rod	
ZC2JY91	Metal Spring Rod	
ZC2JY31	Delrin Roller	Adjustable Roller
ZC2JY41	Offset Delrin Roller	
ZC2JY51		Rod Lever
ZC2JY71	Single Track, Delrin Roller	Fork Lever
ZC2JY61	Double Track, Delrin Rollers	

* NNP = Normally Non Passing.
NP = Normally Passing.

Parker Pneumatic

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan

Specifications

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

Flow SCFM (Nl/min)
7.4 (210)

Materials
Body ..... Zinc Alloy
Poppets ..... Polyurethane
Seals ..... Nitrile (Buna N)

Maximal Operating Frequency
5 Hz

Nominal Bore Ø
1/8" (3 mm)

Number of Operations with Dry Air at 90 PSI (6 bar) and 68°F (20°C) – Frequency 1 Hz
10 Million

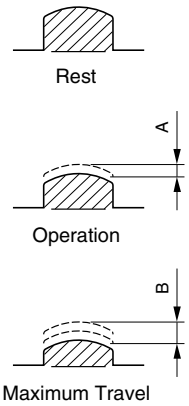
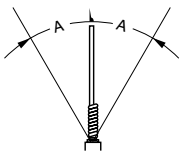
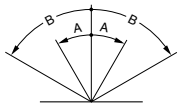
Operating Positions
All Positions

Operating Pressure
40 to 115 PSIG (3 to 8 bar)

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

Ports
1/8" NPT

Operator Specifications

	PXCJ1••61	PXCJ1••62	PXCJ1••70	PXCJ1••01 + Actuator	PXCJ1••05 + Actuator
Differential Angle	—	5°	5°	2°	2°
Differential Travel at 90 PSI (6 bar)	.008" (0.2 mm)	—	—	—	—
Maximum Angle of Travel	—	—	—	75°	75°
Maximum Travel (B) at 90 PSIG (6 bar)	228" (5.8 mm)	—	—	—	—
Minimum Pre-Travel (A) at 90 PSIG (6 bar)	.059" (1.5 mm)	—	—	—	—
Minimum Operating Force at 90 PSI (6 bar)	3.6 lbf (16N)	—	—	—	—
Minimum Operating Torque at 90 PSI (6 bar)	7.1 oz in (50Nm)	35.4 oz in (250Nm)	35.4 oz in (250Nm)	35.4 oz in (250Nm)	—
Operating Angle (Minimum Lever Travel Including Pre-Travel Required For Operation)	—	23°	23°	12°	12°
Operating Diagram					

C

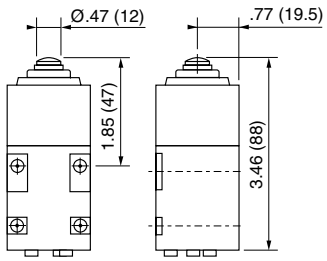
Sensing

Parker Pneumatic

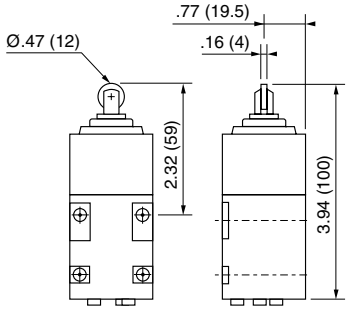
Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan

Switch Body With Plunger Heads

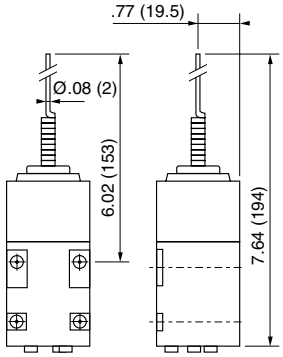
With ZC2JE61



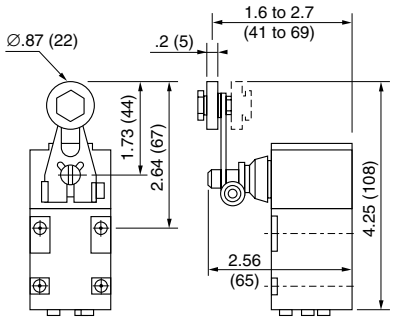
With ZC2JE62

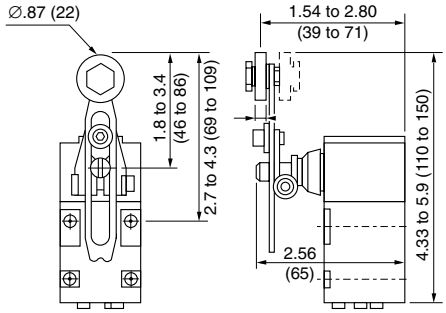


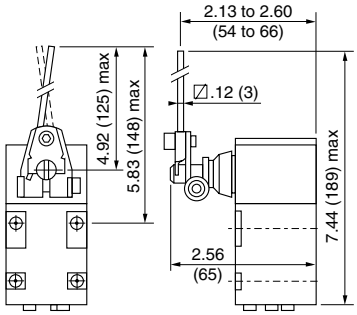
With ZC2JE70



Switch Body With Rotary Heads and Operating Levers



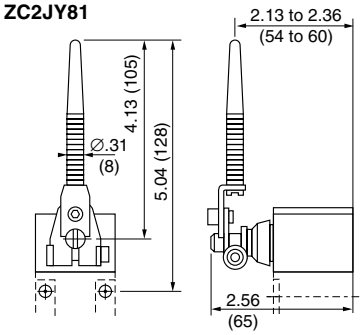




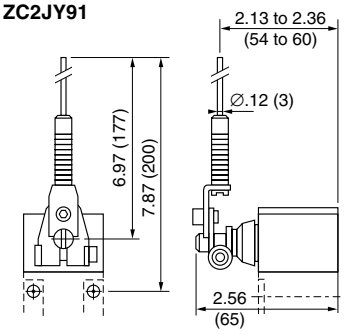
Sensing

Rotary Heads With Operating Levers

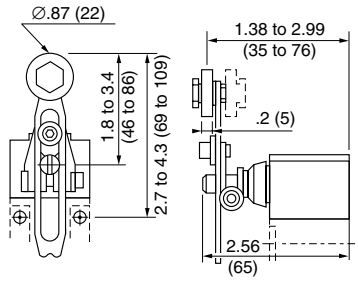
ZC2JY81



ZC2JY91

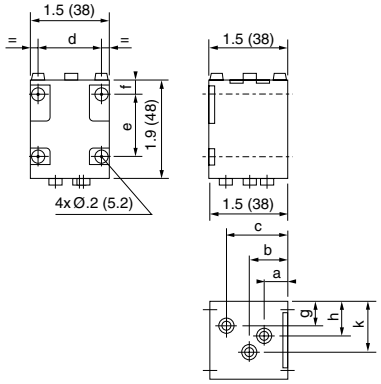


ZC2JY41



Pneumatic Switch Bodies

PXCJ117, PXCJ127



	inch	mm
a	.47	12
b	.75	19
c	1.16	29.5
d	1.14 to 1.18	29 to 30
e	1.18	30
f	.28	7
g	.43	11
h	.51	13
k	.94	24

For Pressure and Vacuum Sensing, see Pressure Switches in Logic Section.

Subbase Mounted, Non-Adjustable
Pressure to Electrical Switch
DIN 43650 Form B Industrial Connector

Subbase Mounted, Adjustable
Pressure to Electrical Switch
Spade Connectors or Formed Cable
Electrical Connection

Stand Alone or DIN Rail Mounted,
Adjustable & Non-Adjustable
Pressure to Electrical Switch
Screw Terminal Connections

Subbase Mounted, Adjustable
Pressure to Pressure Switch

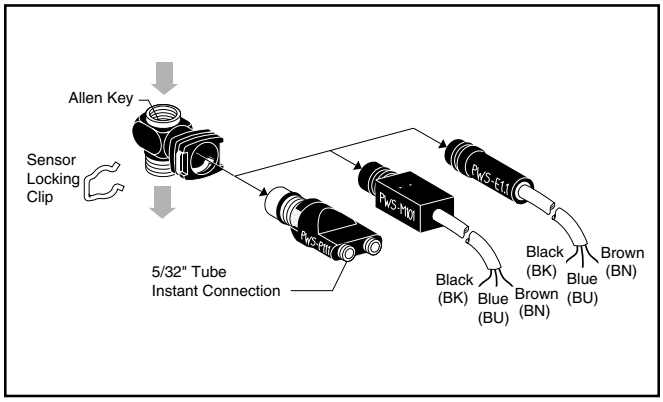
Subbase Mounted, Adjustable
Vacuum to Electrical Switch
Spade Connectors or Formed Cable
Electrical Connection

C

Sensing

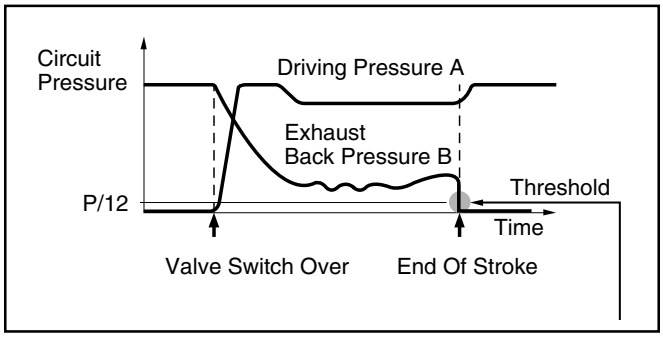
Application

The threshold sensor provides electrical or pneumatic feedback information on pneumatic cylinder status. These devices monitor the back pressure of the cylinder's exhausting chamber. When the cylinder stops, the back pressure drops and the threshold sensor provides the desired output. Ideal for variable stroke applications. The banjo fitting and the feedback element are two separate subassemblies, giving the user flexibility between electrical, electronic and pneumatic outputs as feedback.



Mounting

Banjo fittings in 10-32 to 1/2" pipe sizes are designed to be installed directly into actuator ports (up to 5" bore cylinders). The banjo fitting can accommodate other functional fittings and components such as right angle flow control valves or blocking valves. Banjo fittings screw into actuators using an Allen wrench or 5/16" hex head wrench for 10-32 size. Electrical or pneumatic feedback element snaps into place using a locking clip.



Operation

Pneumatic sensors have a continuous pressure signal applied to the sensor device. Electrical sensors have a continuous electrical signal applied to the sensor device. The threshold sensor assembly mounted directly into the cylinder port provides an output signal S, which can be pneumatic or electrical, when the falling back pressure in the exhausting chamber of the cylinder reaches the operating threshold (approximately 6-9 PSIG). (The device is a normally passing device. The output is only on when there is nearly zero pressure at the cylinder.)

Sensing

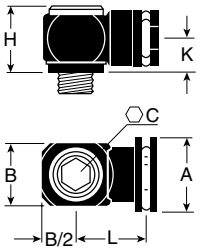
Model Selection

Banjo Sockets (with Sensor Clip)		
Port Size (NPT)	**Model Number**	**Wrench**
10-32	**PWSB1557**	5/16" Hex
1/8"	**PWSB1887**	3/16" Allen
1/4"	**PWSB1997**	5/16" Allen
3/8"	**PWSB1337**	3/8" Allen
1/2"	**PWSB1227**	1/2" Allen
Port Size (BSP)	**Model Number**	**Wrench**
M5	**PWSB155**	5/16" Hex
1/8"	**PWSB188**	3/16" Allen
1/4"	**PWSB199**	5/16" Allen
3/8"	**PWSB133**	3/8" Allen
1/2"	**PWSB122**	1/2" Allen

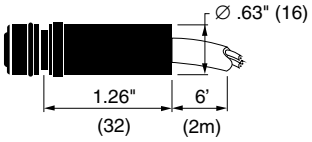
Plug-in Sensors		
Output	**Model Number**	**Connection**
Pneumatic	**PWSP111**	5/32" Instant*
Electrical	**PWSM1012**	3 x 20 Ga. Cable (6 ft)
Electronic	**PWSE101**	3 x 28 Ga. Cable (6 ft) NO
Electronic	**PWSE111**	3 x 28 Ga. Cable (6 ft) NC

* Use Semi-rigid Nylon or Polyurethane Tube

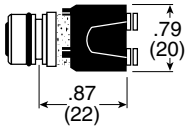
Dimensions



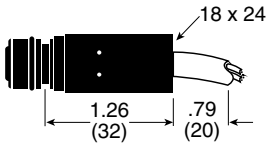
Banjo Socket



PWSE1•1



PWSP111



PWSM1012

Model	A	B	C	H	K	L
PWSB1557	.98" (25)	.43" (11)	5/16" Hex	.79" (20)	.40" (10)	.67" (17)
PWSB1887	.98" (25)	.63" (16)	3/16" Allen	.71" (18)	.40" (10)	.79" (20)
PWSB1997	.98" (25)	.83" (21)	5/16" Allen	.71" (18)	.40" (10)	.87" (22)
PSWB1337	.98" (25)	1.10" (28)	3/8" Allen	.79" (20)	.47" (12)	.98" (25)
PWSB1227	.98" (25)	1.30" (33)	1/2" Allen	.93" (24)	.55" (14)	1.02" (26)

Specifications

Current Rating (PWSM1012)
5 VA, 250 VAC
5W, 48 VAC

Materials
Body ..... Thermoplastic
Mounting Screw
& Threads ..... Brass

Maximum Operating Frequency
10 Hz

Number of Operations with Dry Air at 90 PSI (6 bar) and 68°F (20°C) – Frequency 1 Hz
10 Million

Operating Pressure
0 to 150 PSIG (0 to 10 bar)

Output Flow Rate (PWSP111)
3 SCFM at 90 PSIG

Pilot Pressure (PWSP111)
>64 PSIG (4.4 bar)

Spare Sensor Locking Clip
PPRW01 (1 Lot of 50 Pieces)

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

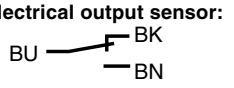
Threshold Pressure
6 to 9 PSIG (.4 to .6 bar)

Voltage Range (PWSM1012)
12 - 240 VAC
12 - 48 VDC

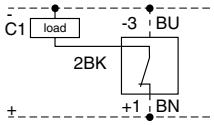
Operating Assembly and Connection

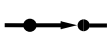
Pneumatic output sensor:
5/32" instant connection

Electrical output sensor:



Electronic output sensor:



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

Parker Pneumatic

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Richland, Michigan

C

Sensing

Bleed Sensors

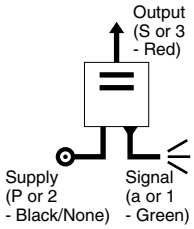
PXFA111

PXFA121

PXFA131

For Use With PRFA12 Relay		
Part Number	**Port**	**Actuator**
PXFA111	5/32" Instant	Touch
PXFA121	5/32" Instant	Ball Roller
PXFA131	5/32" Instant	Cat's Whisker

Bleed Sensor Relay



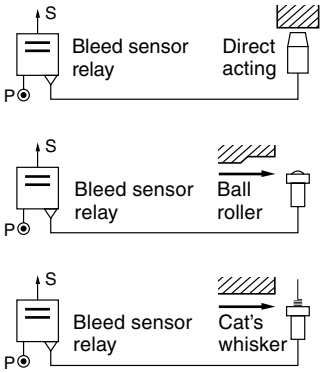
PRFA12

Complete With PZUA Subbase (5/32" Instant Fittings) For Use With PXFA Bleed Sensors	
Part Number	**Description**
PRFA12	Provides a supply to a bleed sensor and generates an output signal when operated.

Application

Bleed sensors make it possible to sense very low actuating forces or small motions in a small space. They are easy to install and connect, as they only require a single tube.

Note: The length of the interconnecting tube must remain short if quick response times are required.



Specifications

Minimum Pre-Travel at 6 bar
PXFA12• ..... .040 (1 mm)

Maximum Travel
PXFA12• ..... .110 (2.8 mm)

Minimum Operating Force at 90 PSI (6 bar)
PXFA12• ..... 11 oz. (3 N)

Minimum Operating Torque at 90 PSI (6 bar)
PXFA13• ..... 1.3 in-oz (12.5 mmN) (Center of Operator)

Sensing Distance
PXFA11• ..... Direct
PXFA12• ..... Direct
PXFA13• ..... Direct

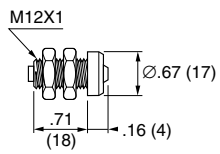
Sensing Angle
PXFA13• ..... 10°

For PRFA12 Specifications, see Relays in Section A of this Catalog.

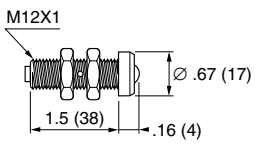
Sensing

Dimensions

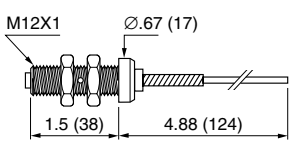
PXFA111



PXFA121



PXFA131

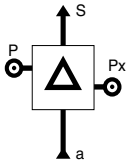


Fluidic Proximity Sensor

Amplified, 1/8" I.D. Internal Orifice

PXDA111

Amplifier Relay

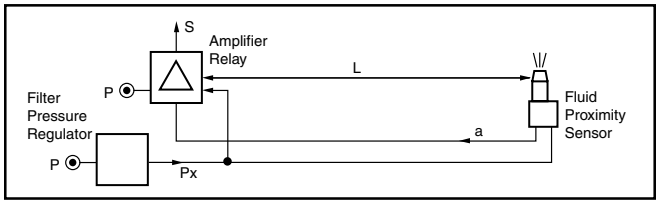


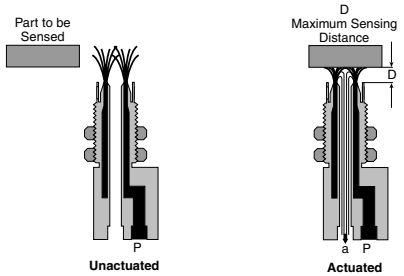
PRDA12

Operating Principle, Characteristics

Fluidic Proximity Sensors are used in conjunction with amplifier relays. A low pressure supply,"Px" 1.5 to 3 PSIG (.1 to .2 bar), is connected to Sensor and Relay.
A permanent bleed, in an annular pattern, issues from the Sensor, creating a sensitive field. When an object enters this field, it reflects a low pressure signal to the Sensor and, in turn, to the Amplifier Relay. The low pressure signal is then amplified to system level, 40 to 120 PSIG (2.8 to 8.3 bar) and output S appears.

Low Pressure Supply, "Px" minimum pressure, varies as a function of Sensing Distance "D" and Signal Travel Distance "L" from Sensor to Amplifier Relay. The diagram shows these variations. In any case, air consumption is negligible and virtually inaudible.





For Use With PRDA12 Amplifier Relay			
Part Number	**Sensing Distance**	**Ø Mounting**	**Connections**
PXDA111	5/64" to 3/16" (2 to 5mm)	M12 x 2	5/32" (4mm) Instant

Function

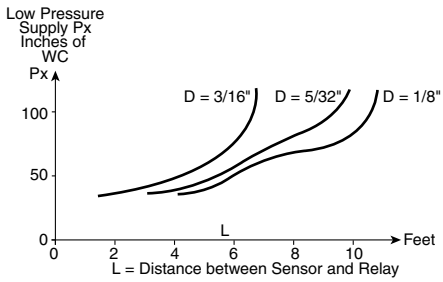
Fluidic Proximity Sensors are used for non-contact sensing of stationary or moving parts.
Certain applications require detection without physical contact, particularly where the object to be detected is fragile or soft. The technique of detection by fluid proximity sensor provides the ideal solution for this need.

Complete With PZUA12 Subbase (5/32" Instant Fittings) For Use With PXDA Fluid Proximity Sensors		
Part Number	**Function**	
PRDA12	Amplifies the low Pressure Signal Coming from a Fluid Proximity Sensor to a usable level	With Manual Override

Specifications

Sensing Distance

PXDA11• ..... .04 to .20 (1 to 5 mm)

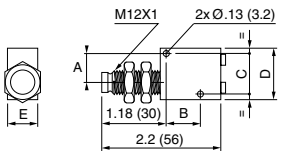


Mounting Styles

Two mounting styles are provided on each Sensor.
Nose Mount: Nuts are supplied
Flush Mount: Two clearance holes are provided in Sensor body.

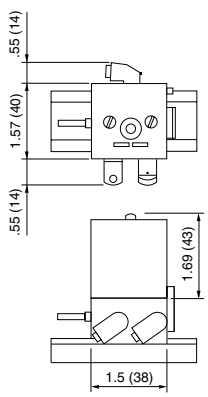
Dimensions

PXDA111



	inch	mm
A	.49	12.5
B	.67	17
C	.71	18
D	.98	25
E	.59	15

PRDA12



C

Sensing

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Pneumatic Division
Richland, Michigan

Notes

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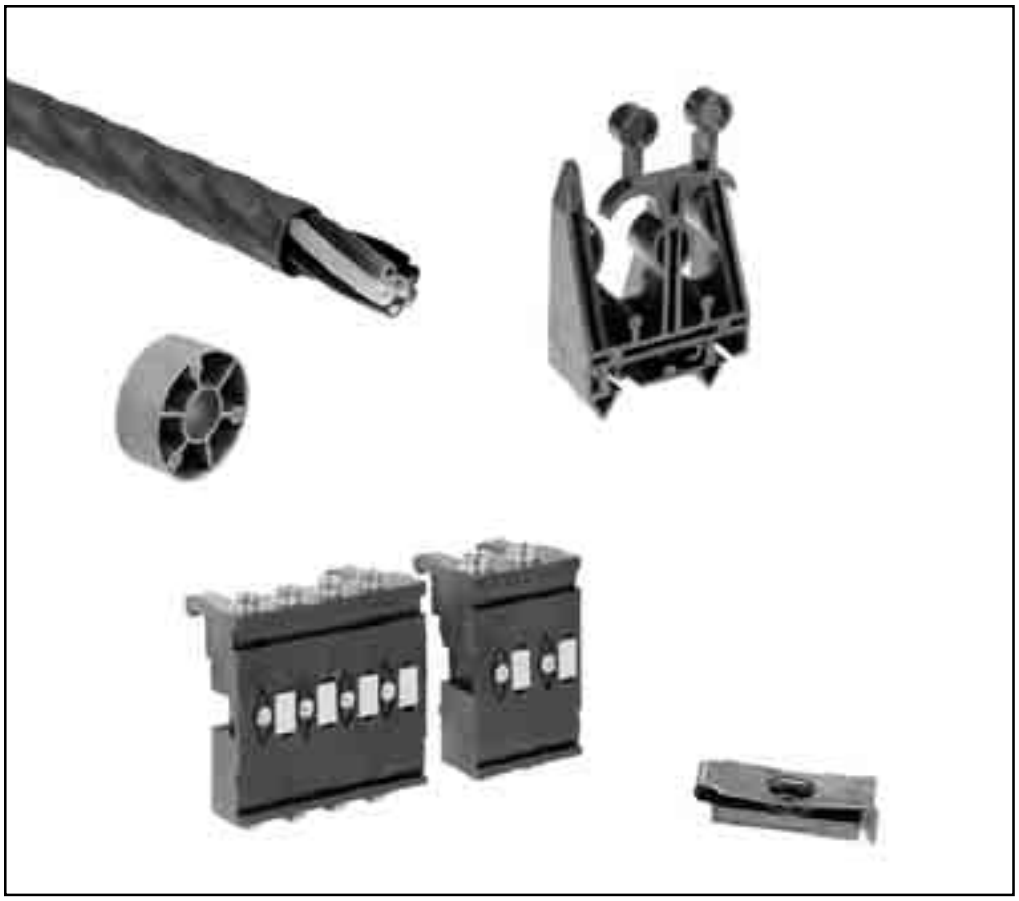
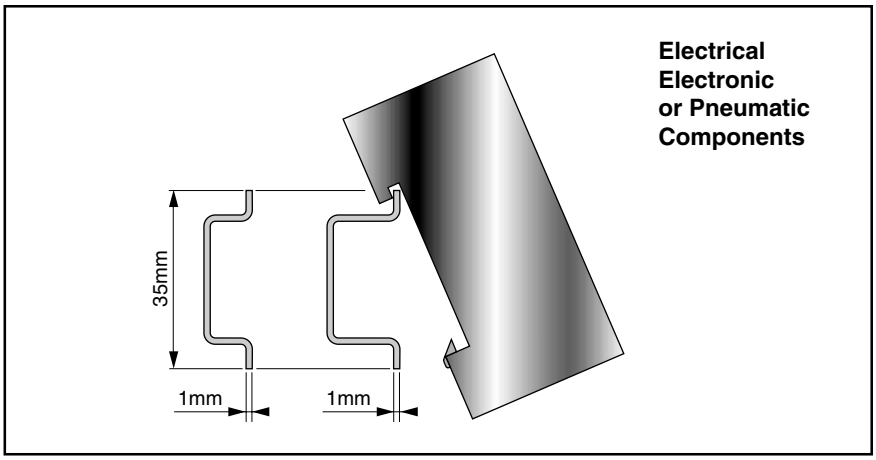
Pneumatic Division
Richland, Michigan



Accessories

MOUNTING ON DIN RAIL

Suitable for various uses, the rails shown on the right all are conform to standards NF, DIN, EN: width 35 mm, latching groove thickness 1mm.
They are therefore suitable for the simple clip-on mounting of all standard components.

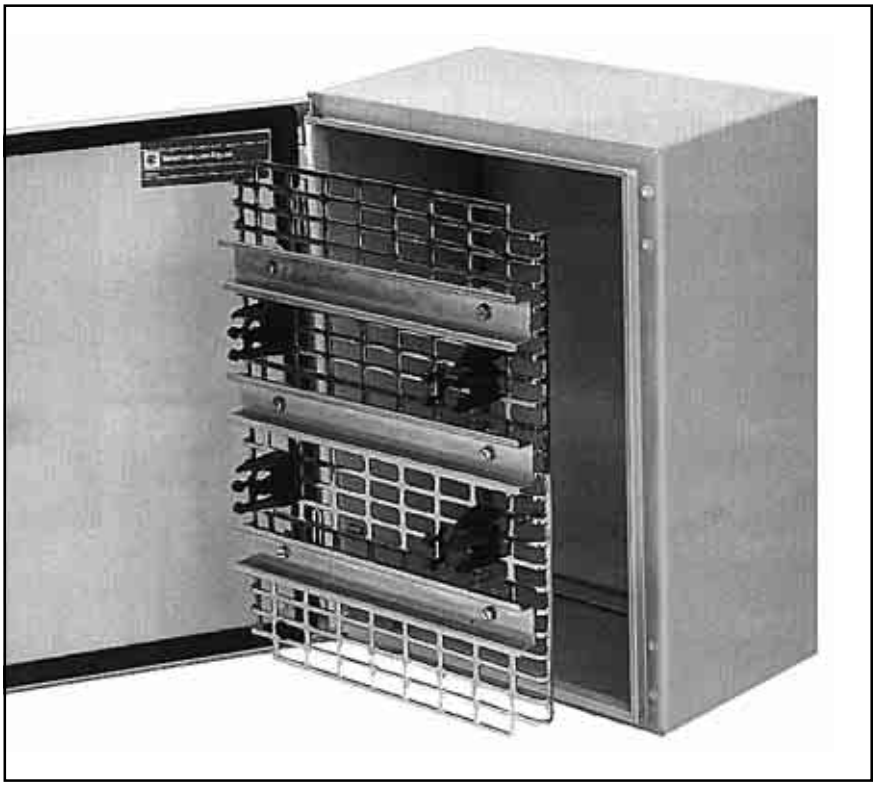


Electrical Electronic or Pneumatic Components

MOUNTING IN ENCLOSURE

When pneumatic components generated humid exhausts, they had to be separated from electrical components, and a special pneumatics enclosure was necessary.
Now that the exhaust is captured and/or the air is dry, it has become more economical to locate the electro-mechanical, electronic, and pneumatic components in the same enclosure: the assembly is more compact, the connections are shorter, the component positions and their referencing are more logical, thus facilitating any interventions.

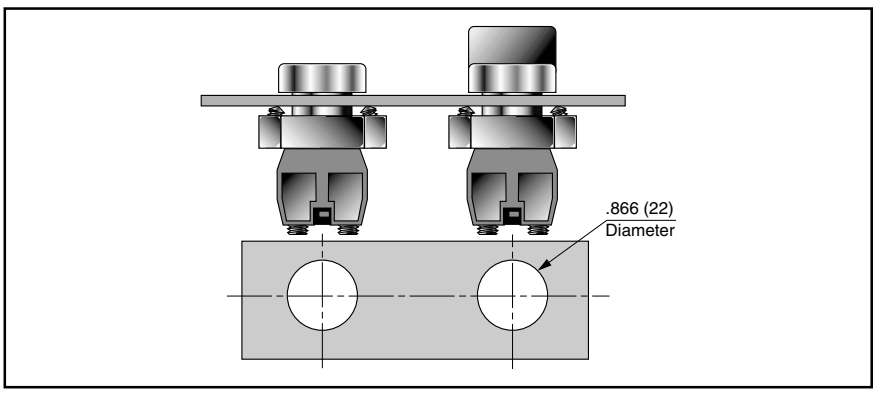
The Grid System
Very familiar to electricians, the system includes the enclosures, the mounting plates, the rails and all the installation and wiring accessories for the three technologies: electromechanical, electronic and pneumatic.



Access

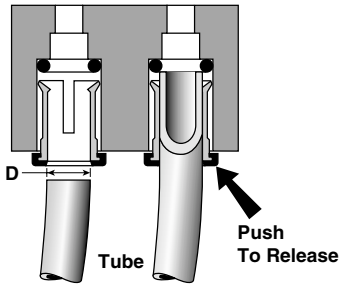
MOUNTING IN A CONTROL STATION

The pneumatic push-buttons presented have the same operating heads as electrical push-buttons.
Because of this, their installation in control panels or control stations is exactly the same :
- same mounting centers;
- same cutout Ø.

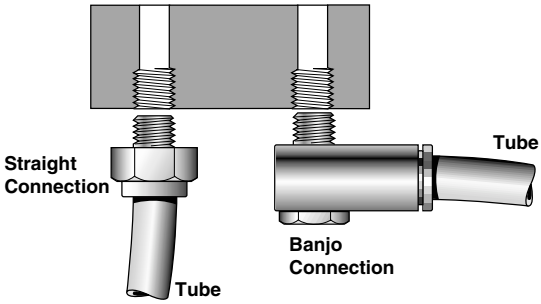


PNEUMATIC CONNECTIONS

The flexible pneumatic tubes are connected without preparation, by simply pushing into the component connection. Disconnection is also instant. One push on the external collet unlocks the tube.



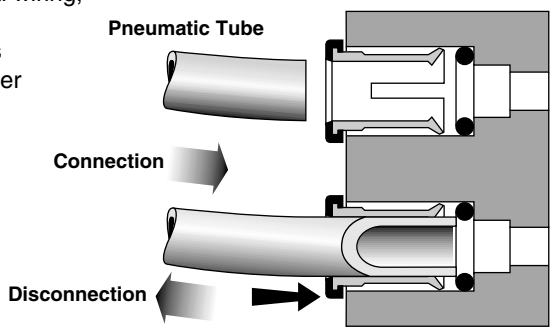
Pneumatic Component with Incorporated Instant Connections



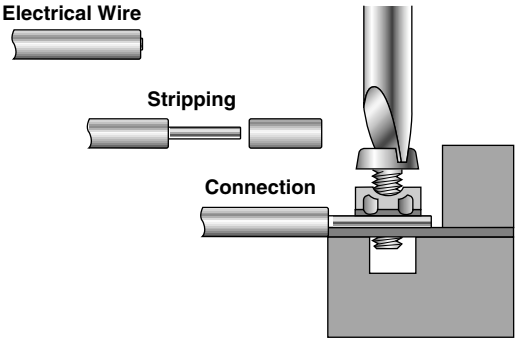
Pneumatic Component with Threaded Port

COMPARISON :
In comparison with current electrical wiring, connection and disconnection is simpler and faster with pneumatic tubing.

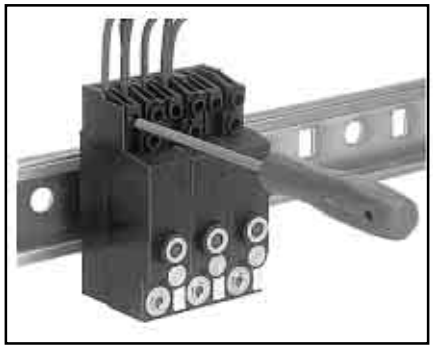
Pneumatic connections



Electrical connections

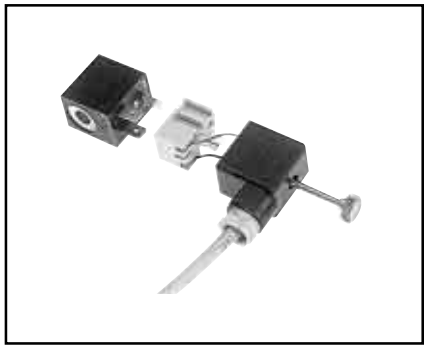


ELECTRICAL CONNECTIONS



On Modular Interfaces

Designed to be mounted in an enclosure,electro-pneumatic or pneumo-electric interfaces are all connected by screw terminals, as are industrial electrical or electronic components.



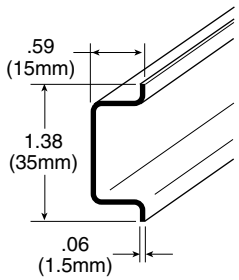
Plug-In Connectors

When it is necessary to mount the components outside the enclosure, the solenoid valves are fitted with a protected plug-in connector (IP65).

D

Access

Mounting Rail



AM1DE200

Part Number	Length	Description
AM1DE200	6 Feet	Zinc Chromated Steel 1.5mm Thick To DIN EN 50022

Mounting Accessories

AZ1CA04

Part Number	Height Inches (mm)	Description
AZ1CA04	1/2" (12)	DIN Rail Brackets Spacer
AZ1CA029123	3/4" (20)	Sold In Sets Of Four (4)

AF1EA51

Part Number	Thread Size	Description
AF1EA51	10-24 (ØM5)	Clip On Nut Sold In Sets Of 100

Access

Clip-On Terminal Blocks for DIN Rail Mounting

PZCB244 PZCB2268

Part Number	Thread Size	Description
PZCB244	5/32" (4)	4 Ports
PZCB2268	1/4" (6)	2 Ports

Multiple Tubing

PZTM472

Part Number	Number of Tubes (Color)	Sleeve Ø Inch (mm)	Tube Ø Inch (mm)
P6T-MC04N04-025	4 (Green, Red Blue, Clear)	1/2" (12)	5/32" (4)
P6T-MC04N07-025	7 (Green, Red Black, Gray, Blue, Clear, Yellow	5/8" (15)	

Spiral Conduit For Tubing Bundles

PZTX05

Part Number	Minimum Bundle Ø	Maximum Bundle Ø	Description
PZTX05	3/8" (10)	1-5/8" (40	For Bundling Tubes and Cables Sold In Rolls Of 80'

Clip-On Tubing Clamp For Pre-slotted Mounting Plate

AK2LA34

Part Number	Description
AK2LA34	Sold In Sets Of Ten (10)

Tools

PZCM994

PZCM888

Part Number	Tube Size	Description
PZCM994	5/32" (4)	Tube Disconnecting Tool
PZCM996	1/4" (6)	
PZCM888	—	Tube Cutter

D

Access

Notes

Offer of Sale

The items described in this document and other documents or descriptions provided by Parker Hannifin Corporation, its subsidiaries and its authorized distributors, are hereby offered for sale at prices to be established by Parker Hannifin Corporation, its subsidiaries and its authorized distributors. This offer and its acceptance by any customer ("Buyer") shall be governed by all of the following Terms and Conditions. Buyer's order for any such item, when communicated to Parker Hannifin Corporation, its subsidiaries or an authorized distributor ("Seller") verbally or in writing, shall constitute acceptance of this offer.

1. Terms and Conditions of Sale: All descriptions, quotations, proposals, offers, acknowledgments, acceptances and sales of Seller's products are subject to and shall be governed exclusively by the terms and conditions stated herein. Buyer's acceptance of any offer to sell is limited to these terms and conditions. Any terms or conditions in addition to, or inconsistent with those stated herein, proposed by Buyer in any acceptance of an offer by Seller, are hereby objected to. No such additional, different or inconsistent terms and conditions shall become part of the contract between Buyer and Seller unless expressly accepted in writing by Seller. Seller's acceptance of any offer to purchase by Buyer is expressly conditional upon Buyer's assent to all the terms and conditions stated herein, including any terms in addition to, or inconsistent with those contained in Buyer's offer. Acceptance of Seller's products shall in all events constitute such assent.

2. Payment: Payment shall be made by Buyer net 30 days from the date of delivery of the items purchased hereunder. Amounts not timely paid shall bear interest at the maximum rate permitted by law for each month or portion thereof that the Buyer is late in making payment. Any claims by Buyer for omissions or shortages in a shipment shall be waived unless Seller receives notice thereof within 30 days after Buyer's receipt of the shipment.

3. Delivery: Unless otherwise provided on the face hereof, delivery shall be made F.O.B. Seller's plant. Regardless of the method of delivery, however, risk of loss shall pass to Buyer upon Seller's delivery to a carrier. Any delivery dates shown are approximate only and Seller shall have no liability for any delays in delivery.

4. Warranty: Seller warrants that the items sold hereunder shall be free from defects in material or workmanship for a period of 18 months from date of shipment from Parker Hannifin Corporation. THIS WARRANTY COMPRISES THE SOLE AND ENTIRE WARRANTY PERTAINING TO ITEMS PROVIDED HEREUNDER. SELLER MAKES NO OTHER WARRANTY, GUARANTEE, OR REPRESENTATION OF ANY KIND WHATSOEVER. ALL OTHER WARRANTIES, INCLUDING BUT NOT LIMITED TO, MERCHANTABILITY AND FITNESS FOR PURPOSE, WHETHER EXPRESS, IMPLIED, OR ARISING BY OPERATION OF LAW, TRADE USAGE, OR COURSE OF DEALING ARE HEREBY DISCLAIMED.

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5. Limitation of Remedy: SELLER'S LIABILITY ARISING FROM OR IN ANY WAY CONNECTED WITH THE ITEMS SOLD OR THIS CONTRACT SHALL BE LIMITED EXCLUSIVELY TO REPAIR OR REPLACEMENT OF THE ITEMS SOLD OR REFUND OF THE PURCHASE PRICE PAID BY BUYER, AT SELLER'S SOLE OPTION. IN NO EVENT SHALL SELLER BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES OF ANY KIND OR NATURE WHATSOEVER, INCLUDING BUT NOT LIMITED TO LOST PROFITS ARISING FROM OR IN ANY WAY CONNECTED WITH THIS AGREEMENT OR ITEMS SOLD HEREUNDER, WHETHER ALLEGED TO ARISE FROM BREACH OF CONTRACT, EXPRESS OR IMPLIED WARRANTY, OR IN TORT, INCLUDING WITHOUT LIMITATION, NEGLIGENCE, FAILURE TO WARN OR STRICT LIABILITY.

6. Changes, Reschedules and Cancellations: Buyer may request to modify the designs or specifications for the items sold hereunder as well as the quantities and delivery dates thereof, or may request to cancel all or part of this order, however, no such requested modification or cancellation shall become part of the contract between Buyer and Seller unless accepted by Seller in a written amendment to this Agreement. Acceptance of any such requested modification or cancellation shall be at Seller's discretion, and shall be upon such terms and conditions as Seller may require.

7. Special Tooling: A tooling charge may be imposed for any special tooling, including without limitations, dies, fixtures, molds and patterns, acquired to manufacture items sold pursuant to this contract. 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 apparatus belonging to Seller which is utilized in the manufacture of the items sold hereunder, even if such apparatus has been specially converted or adapted for such manufacture and notwithstanding any charges paid by Buyer. Unless otherwise agreed, Seller shall have the right to alter, discard or otherwise dispose of any special tooling or other property in its sole discretion at any time.

8. Buyer's Property: Any designs, tools, patterns, materials, drawings, confidential information or equipment furnished by Buyer, or any other items which become Buyer's property, may be considered obsolete and may be destroyed by Seller after two (2) consecutive years have elapsed without Buyer placing an order for the items which are 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. Taxes: Unless otherwise indicated on the face hereof, all prices and charges are exclusive of excise, sales, use, property, occupational or like taxes which may be imposed by any taxing authority upon the manufacture, sale or delivery of the items sold hereunder. If any such taxes must be paid by Seller or if Seller is liable for the collection of such tax, the amount thereof shall be in addition to the amounts for the items sold. Buyer agrees to pay all such taxes or to reimburse Seller therefore upon receipt of its invoice. If Buyer claims exemption from any sales, use or other tax imposed by any taxing authority, Buyer shall save Seller harmless from and against any such tax, together with any interest or penalties thereon which may be assessed if the items are held to be taxable.

10. Indemnity For Infringement of Intellectual Property Rights: Seller shall have no liability for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights except as provided in this Part 10. Seller will defend and indemnify Buyer against allegations of infringement of U.S. patents, U.S. trademarks, copyrights, trade dress and trade secrets (hereinafter "Intellectual Property Rights"). 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 an allegation that an item sold pursuant to this contract infringes the Intellectual Property Rights of a third party. Seller's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10) days after Buyer becomes aware of such allegations of infringement, and Seller having sole control over the defense of any allegations or actions including all negotiations for settlement or compromise. If an item sold hereunder is subject to a claim that it infringes the Intellectual Property Rights of a third party, Seller may, at its sole expense and option, procure for Buyer the right to continue using said item, replace or modify said item so as to make it noninfringing, or offer to accept return of said item and return the purchase price less a reasonable allowance for depreciation. Notwithstanding the foregoing, Seller shall have no liability for claims of infringement based on information provided by Buyer, or directed to items delivered hereunder for which the designs are specified in whole or part by Buyer, or infringements resulting from the modification, combination or use in a system of any item sold hereunder. The foregoing provisions of this Part 10 shall constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for infringement of Intellectual Property Rights.

If a claim is based on information provided by Buyer or if the design for an item delivered hereunder is specified in whole or in part by Buyer, Buyer shall defend and indemnify Seller for all costs, expenses or judgements resulting from any claim that such item infringes any patent, trademark, copyright, trade dress, trade secret or any similar right.

11. Force Majeure: Seller does not assume the risk of and shall not be liable for delay or failure to perform any of Seller's obligations by reason of circumstances beyond the reasonable control of Seller (hereinafter "Events of Force Majeure"). Events of Force Majeure shall include without limitation, accidents, acts of God, strikes or labor disputes, acts, laws, rules or regulations of any government or government agency, fires, floods, delays or failures in delivery of carriers or suppliers, shortages of materials and any other cause beyond Seller's control.

12. Entire Agreement/Governing Law: The terms and conditions set forth herein, together with any amendments, modifications and any different terms or conditions expressly accepted by Seller in writing, shall constitute the entire Agreement concerning the items sold, and there are no oral or other representations or agreements which pertain thereto. This Agreement shall be governed in all respects by the law of the State of Ohio. No actions arising out of sale of the items sold hereunder or this Agreement may be brought by either party more than two (2) years after the cause of action accrues.

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