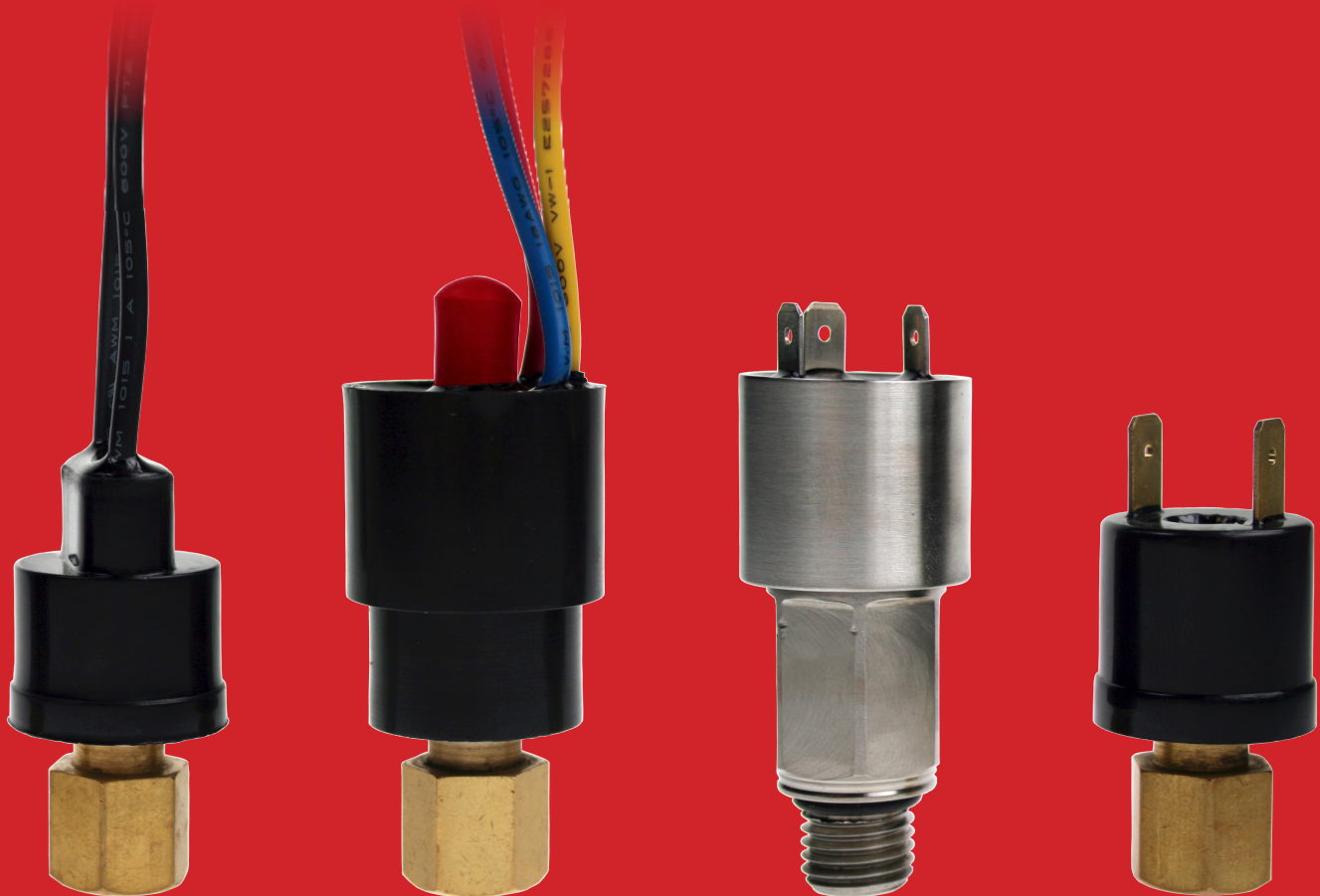


Wasco INC.

Miniature Pressure Switches and Vacuum Switches



ISO 9001 - 2008 Certified

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Pressure / Vacuum Switches

P6/P7 Series

Material Specifications:

NON-WETTED MATERIALS

Electrical Housing - Plastic (PBT), Epoxy

Crimp Ring - Stainless Steel

Electric Contact - Silver-plated Brass, (Gold optional)

WETTED MATERIALS

Fitting - Brass or 300 series Stainless Steel

Diaphragm Assembly - Stainless Steel



RoHS compliant



P6
(Automatic Reset)



P7
(Manual Reset)

Technical Specifications

No.	Name	Requirements
1	Setpoint Range	Open/Close at 30" Hg ~ 2000 PSI*
2	Setpoint Tolerance Positive Pressure	± 3 ~ 100 PSI (See table I on page 5)
3	Setpoint Tolerance Vacuum	± 6 (See table II on page 5)
4	Proof Pressure**	≤ (Operating Pressure x 1.5)
5	Burst Pressure***	For Operating Pressure ≤ 165 PSI, Max Burst Pressure = 2500 PSI For Operating Pressure ≥ 165 PSI, Max Burst Pressure = 5000 PSI
6	Temperature Range	Ambient: -5° F ~ 175° F Medium: -40° F ~ 260° F
7	Electrical Rating	50/60 Hz DC 36V 6A AC 240V 6A Custom Currents Available
8	Dielectric Strength	AC 700 VRMS Open Switch AC 1500 VRMS Terminals Fitting Leakage Current ≤ 1mA
9	Insulation Resistance	DC 500V ≥ 100 MΩ
10	Contact Resistance	≤ 20 mΩ
11	Lifetime At Rated Load	≥ 30,000 cycles
12	Leak Rate	≤ 1.0 x 10 ⁻³ cc/min Air ("Bubble Tight")

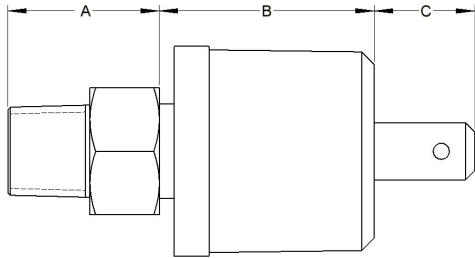
*UL Recognition for operating pressures ≤ 800 psig

**Operate at max. proof pressure for up to 1 minute with no leakage

***Operate at max. burst pressure for up to 1 minute with no burst occurrence

P6/P7 Series Typical Dimensions

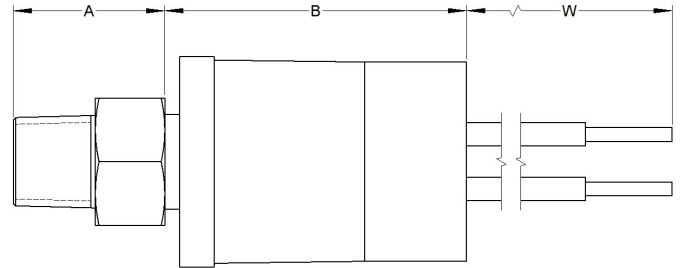
P6 Series with blades



P6 - Blades

Fitting	A	B	C
1/8"-27 NPT	0.75	1.03	0.44
1/4"-18 NPT	0.49	1.03	0.44
1/4" Female Flare	0.52	1.03	0.44

P6 Series with wires



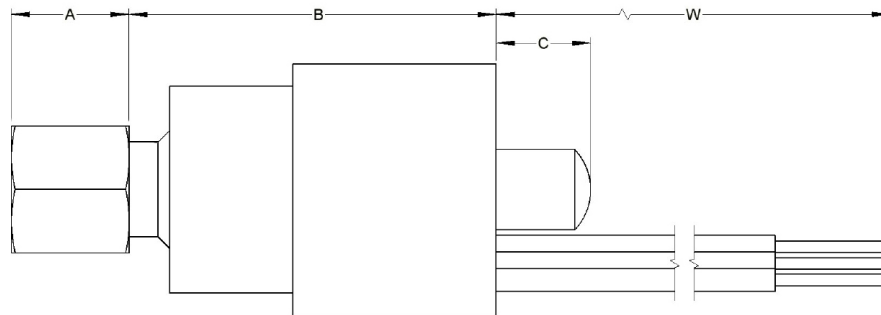
P6 - Wires

Fitting	A	B	W
1/8"-27 NPT	0.75	1.28	Customer Specified Length (3-99")
1/4"-18 NPT	0.49	1.28	Customer Specified Length (3-99")
1/4" Female Flare	0.52	1.28	Customer Specified Length (3-99")

P6 Automatic Reset Switch

Automatic Reset switches, which are the most common type, will change the state of the electrical poles ("cut-in/cut-out") when the pressure crosses the actuation point (setpoint). The electrical state will return to the previous state when the pressure crosses the reset point. These switches do not need human interaction to operate.

P7 Series with wires



P7 - Wires

Fitting	A	B	C	W
1/8"-27 NPT	0.75	1.62	0.52	Customer Specified Length (3-99")
1/4"-18 NPT	0.49	1.62	0.52	Customer Specified Length (3-99")
1/4" Female Flare	0.52	1.62	0.52	Customer Specified Length (3-99")

P7 Manual Reset Switch

Manual Reset switches will change electrical state ("cut-in/cut-out") and lock when the system pressure crosses the increasing actuation point. When the system pressure drops to the decreasing actuation point, the switch's electrical state will remain unchanged. An operator must depress the manual reset button in order for the switch to return to its normal state. These switches are best utilized in systems that need to be inspected if a maximum pressure has been exceeded, or as safety devices in systems that **need** human interaction before restarting.

How to Order P6 and P7 Switches

P6-V-0200 G-0100 G-NC 12-B-X/3130

Model Number

P6	Auto Reset Switch
P7	Manual Reset

Fitting

J	1/8" NPT (M)
K	1/4" NPT (M)
S	1/4" Female Flare w/ Deflator (7/16" - 20 UNF)
V	1/4" Solder
X	Custom Fitting

Open Pressure

-30" Hg to +2000 PSI

Decreasing/Increasing Pressure

Tolerance (in PSI)

No.	Max. Operating Pressure (PSI)	Setpoint Range (±) (PSI)	Deadband Range (±) (PSI)	Tolerance (±) (PSI)
C	30	5 - 30	5 - 10	3
D	40	11 - 30	6 - 15	4
E	50	21 - 30	6 - 15	5
F	100	31 - 50	7 - 20	5
G	150	51 - 50	8 - 40	7
H	200	61 - 100	10 - 50	8
I	195	111 - 130	15 - 80	9
J	275	131 - 150	20 - 90	10
K	375	181 - 200	25 - 100	11
L	450	201 - 300	30 - 150	12
M	525	301 - 350	40 - 200	14
N	600	351 - 400	50 - 200	15
O	675	401 - 450	50 - 200	16
P	750	451 - 500	50 - 150	17
Q	800	501 - 600	50 - 100	18
R	975	601 - 650	50 - 100	20
S	1050	651 - 700	50 - 100	20
T	1200	701 - 800	50 - 100	40
U	1300	801 - 1000	5 - 100	50
V	1440	900 - 1000	5 - 100	60
W	1500	1201 - 1500	5 - 100	80
X	2000	1501 - 2000	5 - 100	100

Close Pressure

-30" Hg to +2000 (PSI)

Circuitry

NO	Normally OPEN
NC	Normally CLOSE
DT	Double Throw (SPDT)

Termination

00	1/4" Blades
03-99	Wire Length (inches)

Base Material

B	Brass
S	Stainless Steel

X Items

X	Additional / Custom Items (as needed)
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File / Application Number

Wasco will assign a File / Application number that will correlate to your unique application, and include any specific options that are not called out in our standard part numbering.

Example: P6-V-0200J-0100J-NC12-B-X/3130

P6 series auto reset switch, 1/4" solder fitting, Open at 200 PSI ± 7 PSI, Close at 100 PSI ± 7 PSI, SPST normally closed, 12" Wires, Brass fitting, Wasco assigned file number 3130, X=pin and connector assembly.

Operating Pressure Range and Standard Tolerances

Table I- Positive Pressure Setpoints

No.	Max. Operating Pressure (PSI)	Setpoint Range (PSI)	Deadband Range (PSI)	Setpoint Tolerance (±) (PSI)
C	150	0 ~ 10	5 ~ 10	3
D	150	11 ~ 20	6 ~ 15	4
E	150	21 ~ 30	6 ~ 15	5
F	150	31 ~ 50	7 ~ 20	6
G	160	51 ~ 80	8 ~ 40	7
H	195	81 ~ 110	10 ~ 60	8
I	220	111 ~ 130	15 ~ 80	9
J	270	131 ~ 180	20 ~ 90	10
K	375	181 ~ 250	25 ~ 100	11
L	450	251 ~ 300	30 ~ 150	12
M	525	301 ~ 350	40 ~ 200	14
N	600	351 ~ 400	50 ~ 200	15
O	675	401 ~ 450	50 ~ 200	16
P	750	451 ~ 500	50 ~ 150	17
Q	900	501 ~ 600	50 ~ 100	18
R	975	601 ~ 650	50 ~ 100	20
S	1050	651 ~ 700	50 ~ 100	30
T	1200	701 ~ 800	50 ~ 100	40
U	1200	801 ~ 1000	5 ~ 100	50
V	1440	1001 ~ 1200	5 ~ 100	60
W	1800	1201 ~ 1500	5 ~ 100	80
X	2400	1501 ~ 2000	5 ~ 100	100

Operating Vacuum Range and Standard Tolerance

Table II- Vacuum Pressure Setpoints

No.	Operating Vacuum Range (" Hg)	Min. Deadband Range (" Hg)	Setpoint Tolerance (±) (" Hg)
C	-30 ~ 0	8	6

Example: P6-J-V015C-V005C-NC12-B-X/3130

P6 series auto reset switch, 1/4" NPT fitting, Open at 15 "Hg ± 6 "Hg, Close at 0 "Hg ± 6 "Hg, SPST normally closed, 12" Wires, Brass fitting, Wasco assigned file number 3130, X=pin and connector assembly.

Typical Applications



Fire Extinguisher System

Controls Engine Shutdown systems, Carbon Monoxide Detectors, Smoke and Fire Alarms, Gasoline Fume Detectors, and Propane Systems. Uses also include monitoring and controlling automatic shut down systems in buildings and offices.

Factory Automated Equipment

Uses include Gas panels to monitor and control Nitrogen, Oxygen, Air, etc. In addition, pressure switches are used on Hydraulic drills, presses, and lifts to warn of high overpressure, or low pressure. Vacuum switches are utilized to pick up or stabilize parts.



Medical Equipment

Used to control pressure on a circulating system machine, and alarms in the event of pressure being too high or low. Used to signal a pressure drop when an Oxygen bottle needs to be replaced. Monitors portable pressure equipment used in operating rooms and laboratories.

Refrigeration Recovery

Used in the recycling and reclamation of used refrigerants so they can be reprocessed for further commercial use, or destroyed. Hydro fluorocarbons (HFCs) can be recovered, recycled and reclaimed from many applications, including mobile air conditioning, stationary air conditioning and refrigeration.



Food Manufacturing Machine

Used for monitoring and controlling machines utilizing high and low pressures in the food processing industry. Machines include automatic mixers, grinders, slicers, dicers, vacuum fillers, metal detectors, tray sealers, bowl cutters, fryers, spiral freezers, tumblers, battering machines, meat recovery systems, and conveyors systems.

HVAC Control

Heating, ventilation, and air conditioning, sometimes referred to as "climate control" is extremely important in the design of medium to large industrial office buildings where humidity and temperature must all be closely regulated while maintaining safe and healthy conditions within.



Application Worksheet

Take a few minutes to record your application. Please complete as much information as you can. Once completed, your information will help determine the proper model and sensor. We will be more than happy to assist you, but first, have as much of your information outlined below.

Your Name: _____ Phone: _____

Company: _____ Fax: _____

E-mail: _____

• Medium (media) _____

• Desired Set Point _____ +/- _____ Increasing Pressure Decreasing Pressure
Increasing Vacuum Decreasing Vacuum

• Reset Point (if required) _____ Minimum _____ Maximum _____

• Switch Adjustability A Factory set, and field adjustable
B Factory set, and permanently locked
C Set mid-range; customer to set final set point

• Electrical Use SPDT SPST Common and NO NC

• Desired Fitting _____

• Max. System Pressure _____ PSIG. Normal Working Pressure _____ PSIG

• Max. Spike Pressure _____ Number of Spikes per ___ minute ___ hour ___ day

• Max. System Temp. _____ ° F Normal Operating Temp. _____ ° F

• Electrical System _____ Volts, AC DC @ _____ Amp, Inductive Resistive

• CPM (cycles per minute) _____ Shifts/Day _____

• Special Protection, ie: NEMA _____

• Vibration and Shock (if applicable)

Vibration _____ CPS @ _____ G's
Shock _____ G's @ _____ Milliseconds

• Helium Leakage Requirement If so, ___ x 10⁻ cc/sec He

• Special Requirements or Modification. Please outline in detail below.

Glossary of Terms

Accuracy: A measure of conformity between the value read on the indicating scale or calibrated dial and an accepted standard value. Instrument accuracy is usually expressed as a % of its range, i.e. "accurate within the limits of + x % of full range span."

Burst Pressure: Pressure which causes failure of the pressure element, resulting in permanent damage.

Deadband: The minimum change in pressure required to open or close the contacts of a switch. (See also Reset Band)

Dielectric Strength - the maximum electric field strength that an insulator can withstand intrinsically without breaking down, i.e., without experiencing failure of its insulating properties.

Hysteresis: The difference in readings of an instrument when the value of the measured quantity is approached from two different directions.

Maximum Operating Pressure: The designed safe limit of a pressure element for regular use at a specified pressure.

Maximum Temperature: The highest temperature at which a pressure or vacuum switch may be operated without resulting in the loss of accuracy and set point tolerance.

NEMA 4: Water-tight and dust-tight enclosures intended for use indoors or outdoors to protect the equipment against splashing, falling, or hose directed water, external condensation and water seepage. They are also sleet-resistant.

NEMA 4X: Water-tight, dust-tight and corrosion resistant enclosures with same qualifications as NEMA 4, but with added corrosion resistance.

Operating Pressure Range: The pressure range within which two opposing sensors can be safely operated and still maintain set point adjustability provided the difference in pressure between them does not exceed the designed adjustable range.

Proof Pressure: Pressure in excess of the maximum working pressure to which a pressure sensor may be occasionally subjected, which causes no permanent damage. The unit may require recalibration.

Reset Band: The difference in pressure between the set point and the reset point. (See also Deadband)

Reset point: Point at which a switch will return to its original or normal operating position.

Sensor: A primary measuring device (bellows, diaphragm, piston) for detecting either the absolute or variable pressure.

Set Point: The predetermined point at which a switch will operate and can be specified either on increasing or decreasing pressure.

Set Point Tolerance: The exactness with which a unit duplicates its set point value after each successive cycle, within the same conditions.

SPDT: Single pole double throw, an SPDT switch contains one common, normally open and normally closed terminal.

Vacuum Pressure: The value of pressure below atmospheric pressure.

Wetted Parts: Components that come into direct contact with the process.

Return Policy

Should one of our products be suspected of malfunction, return it as soon as possible, with shipping charges prepaid. An RMA (Return Material Authorization) number must be issued for your return. Please do not attempt to disassemble or repair as this action may destroy evidence of malfunction. Your cooperation in this regard will save both time and money.

Warranty Policy

WASCO warrants the P6/P7 series to be free from defects in material and workmanship in normal use and service for a period of 1 year or 100,000 cycles from date of shipment, whichever ever occurs first. This warranty is limited to the repair or replacement of the product or part thereof which the Seller's inspection finds to be defective. This warranty shall not apply if the product has been subjected to misuse, negligence, accident, modification or repair by unauthorized persons. Repairs NOT covered under this Warranty will be subjected to a standard service charge. No other warranty or guarantee is expressed or implied.

Note: Please consider all the possible failure modes in your system that could occur with the use of our product. The switch you are considering could fail mechanically or electrically and the user must bear full responsibility for its' misapplication and misuse, including but not limited to any losses or damages caused by your use of that switch in your products, and by your customer's use of your products. Wasco, Inc. accepts no responsibility or liability for failures resulting from any misapplication of its product.