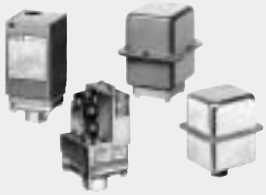
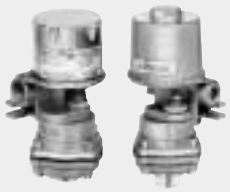
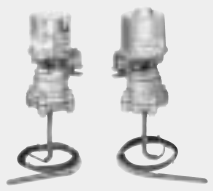
ASCO® Pressure and Temperature Switch SELECTION GUIDE and INDEX

Switches	Type	Set Point	Reset Point	Enclosure	Ranges	Pages
PRESSURE						
J-SERIES **Miniature Pressure Switches with Non-Adjustable Set Points**						
	Pressure	Non-Adjustable	Fixed	Sealed	6.5 - 162 (psig)	2 - 3
H-SERIES **Miniature Pressure Switches with Adjustable Set Points**						
	Pressure	Adjustable	Fixed, Adjustable	Open Frame, General Purpose, Watertight	4 - 200 (psig)	4 - 7
P-SERIES **Switches for Vacuum - 6000 psig with Open Frame, Type 1 or Type 4 Enclosures**						
	Vacuum, Compound, Pressure	Adjustable	Fixed, Adjustable	Open Frame, General Purpose, Watertight	Vacuum - 6000 (psig)	8 - 13
S-SERIES **Switches for Vacuum - 8000 psig, or Differential with Type 1, Type 4 or Type 7, 9 Enclosures**						
	Pressure, Vacuum, Differential, Combustion In. of W.C.	Adjustable	Fixed, Adjustable, Manual Reset	General Purpose, Watertight, Explosion-Proof	Vacuum - 8000 (psig)	14 - 23
TEMPERATURE						
P-SERIES **Switches for -60 through 510°F with Open Frame, Type 1 or Type 4 Enclosures**						
	Temperature	Adjustable	Fixed, Adjustable	Open Frame, General Purpose, Watertight	-60 - 510°F	24 - 29
S-SERIES **Switches for -60 through 640° F with Type 1, Type 4 or Type 7, 9 Enclosures**						
	Temperature	Adjustable	Fixed, Adjustable, Manual Reset	General Purpose, Watertight, Explosion-Proof	-60 - 640°F	30 - 33

Options, Definitions and Compatibility Table.....Pages 34 through Inside Back Cover

Low-Cost Switches with Non-Adjustable Set Points

Features:

- Tamperproof, factory-set, non-adjustable set points.
- Fixed deadband.
- Environmentally sealed against dust, water, oil and salt spray, e.g., for off-highway equipment.
- Vented construction for stable set points throughout operating range.
- Vibration and shock resistant to 10 G's.
- Precision electrical snap-action switch.

General Description:

J-Series miniature pressure switches have factory-set non-adjustable set points and fixed deadband, with diaphragm/piston sensor. J-Series switches are CSA approved and UL listed under "Industrial Control Equipment". J-Series switches are sealed with specially compounded epoxy that maintains its sealing integrity from -40 to 250°F.

Proof pressure:

250 psig. (Consult factory for higher pressures).

Process connection:

Standard: 1/8" NPT Ext, 1/8" NPT Int, 1/4" NPT Ext.
Optional: 1/4" NPT Int (eighth digit "3").

Standard Electrical Ratings

5 Amp Res., 125 VAC
5 Amp Res., 250 VAC
3 Amp Res., 28 VDC

Standard Temperature Ratings

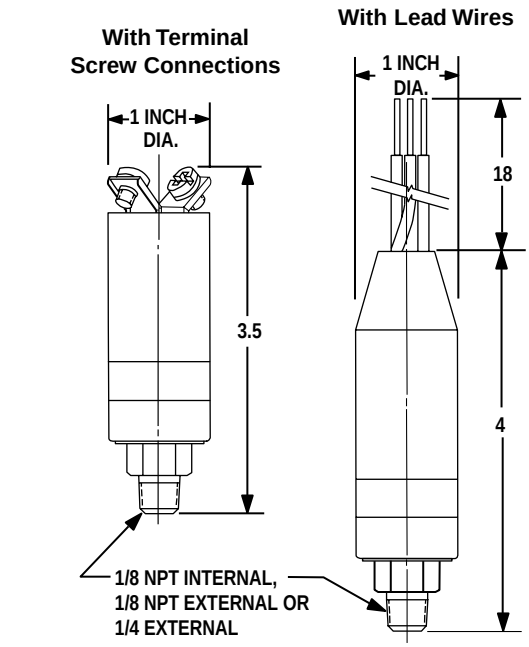
Ambient: -4°F (-20°C) to 140°F (60°C)
Fluid: -4°F (-20°C) to 180°F (82°C)

Wetted Materials (Process Connection & Diaphragm)

Standard: Brass and Buna "N"
Optional Process Connections:
- 316 SS (sixth digit "4")
- Carbon steel (sixth digit "6")

Optional Diaphragms:
- FKM (seventh digit "2")
- Neoprene (seventh digit "3")
- Ethylene propylene (seventh digit "6")
- Fluorosilicone (seventh digit "7")

Dimensions (inches)



Switch Options

Gold contacts for low power circuits: Add Suffix "P"
Tight deadband, 25-50% reduction: Add Suffix "T"
11 Amp Res., 125 VAC contacts: Add Suffix "Y"

How to Select and Order

ASCO J-Series switches are a single switch and transducer assembly.

How to Select

1. Select type of switch (normally open, normally closed or SPDT and screw terminal or wire leads).
2. Select desired set point for either decreasing pressure or increasing pressure.
3. Select desired process connection.

How to Order

Simply order the selected J-Series pressure switch by catalog number, e.g., JB67A218A describes a normally open, screw terminal pressure switch with set point decreasing of 6.5 psig and set point increasing of 8.5 psig, 1/8" NPT external brass process connection and Buna "N" diaphragm.

Options

Add appropriate suffix or change appropriate digit in catalog number for desired option, e.g., JB67A2[2]8A[P] describes a normally open, screw terminal pressure switch with optional FKM diaphragm (seventh digit "2") and gold contact snap switch (suffix "P").

Select J-Series pressure switch below

Set Point ① ②		Mfg. Set Point Tolerance (psig)	1/8" NPT External Process Connection	1/4" NPT External Process Connection	1/8" NPT Internal Process Connection ③
Decreasing Pressure (psig)	Increasing Pressure (psig)		Catalog No.	Catalog No.	Catalog No.
Normally open, screw terminals, Brass and Buna "N"					
6.5	8.5	1.2	JB67A218A	JB67A214A	JB67A215A
10.5	12.5	1.5	JB57A218A	JB57A214A	JB57A215A
18.5	22	2	JB47A218A	JB47A214A	JB47A215A
30	35	3	JB37A218A	JB37A214A	JB37A215A
40	45	4	JB27A218A	JB27A214A	JB27A215A
56	65	6	JB17A218A	JB17A214A	JB17A215A
71	85	7	JC37A218A	JC37A214A	JC37A215A
93	108	8	JC27A218A	JC27A214A	JC27A215A
138	162	12	JC17A218A	JC17A214A	JC17A215A
Normally open, 18" lead wires, Brass and Buna "N"					
6.5	8.5	1.2	JB68A218A	JB68A214A	JB68A215A
10.5	12.5	1.5	JB58A218A	JB58A214A	JB58A215A
18.5	22	2	JB48A218A	JB48A214A	JB48A215A
30	35	3	JB38A218A	JB38A214A	JB38A215A
40	45	4	JB28A218A	JB28A214A	JB28A215A
56	65	6	JB18A218A	JB18A214A	JB18A215A
71	85	7	JC38A218A	JC38A214A	JC38A215A
93	108	8	JC28A218A	JC28A214A	JC28A215A
138	162	12	JC18A218A	JC18A214A	JC18A215A
Normally closed, screw terminals, Brass and Buna "N"					
6.5	8.5	1.2	JB67A218B	JB67A214B	JB67A215B
10.5	12.5	1.5	JB57A218B	JB57A214B	JB57A215B
18.5	22	2	JB47A218B	JB47A214B	JB47A215B
30	35	3	JB37A218B	JB37A214B	JB37A215B
40	45	4	JB27A218B	JB27A214B	JB27A215B
56	65	6	JB17A218B	JB17A214B	JB17A215B
71	85	7	JC37A218B	JC37A214B	JC37A215B
93	108	8	JC27A218B	JC27A214B	JC27A215B
138	162	12	JC17A218B	JC17A214B	JC17A215B
Normally closed, 18" lead wires, Brass and Buna "N"					
6.5	8.5	1.2	JB68A218B	JB68A214B	JB68A215B
10.5	12.5	1.5	JB58A218B	JB58A214B	JB58A215B
18.5	22	2	JB48A218B	JB48A214B	JB48A215B
30	35	3	JB38A218B	JB38A214B	JB38A215B
40	45	4	JB28A218B	JB28A214B	JB28A215B
56	65	6	JB18A218B	JB18A214B	JB18A215B
71	85	7	JC38A218B	JC38A214B	JC38A215B
93	108	8	JC28A218B	JC28A214B	JC28A215B
138	162	12	JC18A218B	JC18A214B	JC18A215B
SPDT (Form "C" contact), 18" lead wires, Brass and Buna "N"					
6.5	8.5	1.2	JB68A218C	JB68A214C	JB68A215C
10.5	12.5	1.5	JB58A218C	JB58A214C	JB58A215C
18.5	22	2	JB48A218C	JB48A214C	JB48A215C
30	35	3	JB38A218C	JB38A214C	JB38A215C
40	45	4	JB28A218C	JB28A214C	JB28A215C
56	65	6	JB18A218C	JB18A214C	JB18A215C
71	85	7	JC38A218C	JC38A214C	JC38A215C
93	108	8	JC28A218C	JC28A214C	JC28A215C
138	162	12	JC18A218C	JC18A214C	JC18A215C

① Values shown are nominal.
② Deadband value is difference between the increasing and decreasing set points.
③ May be used for panel or bracket mounting.

Low-Cost Switches with Adjustable Set Points

Features:

- Field adjustable set points.
- Fixed deadband.
- Choice of open frame type, general purpose or watetight enclosure.
- Small size.
- Mounts in any position.
- Rugged and vibration resistant, e.g., for compressors.
- Visual adjustment scales in psig and bars.

General Description:

H-Series miniature pressure switches have field adjustable set points and fixed deadband, with diaphragm/piston sensor. They are available in open frame construction, Type 1 general purpose or Type 4 watertight enclosures. The resilient diaphragm/piston construction helps provide long life and maintains set point repeatability despite environmental temperature variations. The full size electical switch is a precision UL listed, snap-action type. H-Series switches are CSA approved and are UL listed under “Industrial Control Equipment”.

Proof pressure:

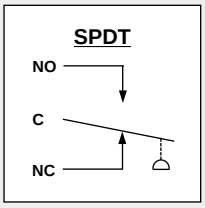
250 psig. (Consult factory for higher pressures).

Process connection:

Standard: 1/8” NPT Ext, 1/8” NPT Int, 1/4” NPT Ext.
Optional: 1/4” NPT Int (eighth digit “3”).

Standard Electrical Ratings

15 Amp Res., 125 VAC
10 Amp Res., 250 VAC
1/8 HP, 125 VAC
1/4 HP, 250 VAC
1/2 Amp Res., 125 VDC
1/4 Amp Res., 250 VDC



① Open frame construction, UL recognized component.

Standard Temperature Ratings

Ambient: -4°F (-20°C) to 140°F (60°C)
Fluid: -4°F (-20°C) to 180°F (82°C)

Wetted Materials (Process Connection & Diaphragm)

Standard: Brass and Buna “N”
Optional Process Connections:
- 316 SS (sixth digit “4”)
- Carbon steel (sixth digit “6”)

Optional Diaphragms:
- FKM (seventh digit “2”)
- Neoprene (seventh digit “3”)
- Ethylene propylene (seventh digit “6”)
- Fluorosilicone (seventh digit “7”)

Switch Options

See page 34 for optional snap switches.

How to Select and Order

ASCO H-Series switches are a single switch and transducer assembly.

How to Select

1. Select type of switch (open frame, general purpose or watertight)..
2. Select the adjustable operating range based on the desired actuation pressure.
3. Select desired process connection.

How to Order

Simply order the selected H-Series pressure switch by catalog number, e.g., HB46A218 describes an open frame pressure switch with adjustable operating range of 4 to 12 psig, 1/8" NPT external brass process connection and Buna "N" diaphragm.

Options

Add appropriate suffix or change appropriate digit in catalog number for desired option, e.g., HB46A2 2 8 P describes an open frame pressure switch with optional FKM diaphragm (seventh digit "2") and gold contact snap switch (suffix "P").

Select H-Series pressure switch below

Adjustable Operating Range (psig)	Fixed Deadband At Mid-Range (psig) ①	SPDT (Form "C" Contact), Brass and Buna "N"		
		1/8" NPT External Process Connection	1/4" NPT External Process Connection	1/8" NPT Internal Process Connection ②
		Catalog No.	Catalog No.	Catalog No.
Open frame construction				
4 - 12	1.6	HB46A218	HB46A214	HB46A215
8 - 25	1.8	HB36A218	HB36A214	HB36A215
20 - 50	2.4	HB26A218	HB26A214	HB26A215
35 - 80	3.5	HB16A218	HB16A214	HB16A215
40 - 120	7.0	HC26A218	HC26A214	HC26A215
80 - 200	10.0	HC16A218	HC16A214	HC16A215
Type 1 - General purpose enclosure				
4 - 12	1.6	HB40A218	HB40A214	HB40A215
8 - 25	1.8	HB30A218	HB30A214	HB30A215
20 - 50	2.4	HB20A218	HB20A214	HB20A215
35 - 80	3.5	HB10A218	HB10A214	HB10A215
40 - 120	7.0	HC20A218	HC20A214	HC20A215
80 - 200	10.0	HC10A218	HC10A214	HC10A215
Type 4 - Watertight enclosure				
4 - 12	1.6	HB41A218	HB41A214	HB41A215
8 - 25	1.8	HB31A218	HB31A214	HB31A215
20 - 50	2.4	HB21A218	HB21A214	HB21A215
35 - 80	3.5	HB11A218	HB11A214	HB11A215
40 - 120	7.0	HC21A218	HC21A214	HC21A215
80 - 200	10.0	HC11A218	HC11A214	HC11A215

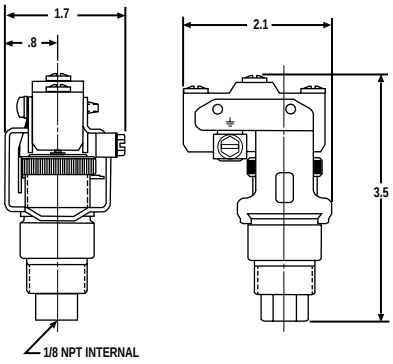
① Values shown are nominal. ② May be used for panel or bracket mounting.

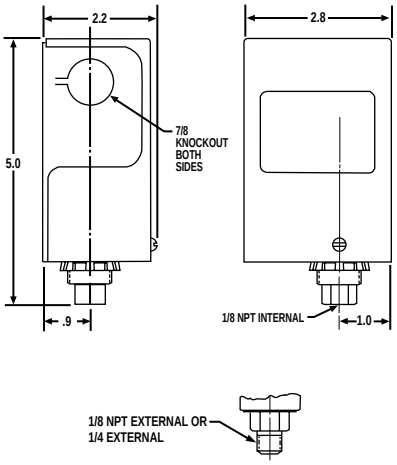
Dimensions (inches)

H-Series Pressure

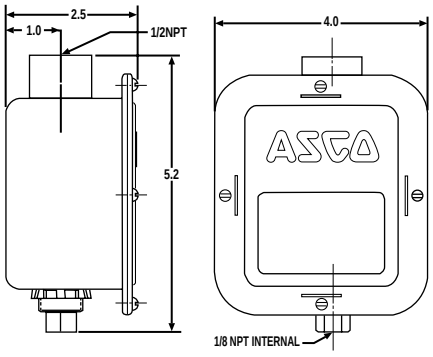
General Purpose Enclosure

Open Frame





Watertight Enclosure



Suffix S: Low-Cost Switches with Adjustable Set Points and Adjustable Deadband

Features:

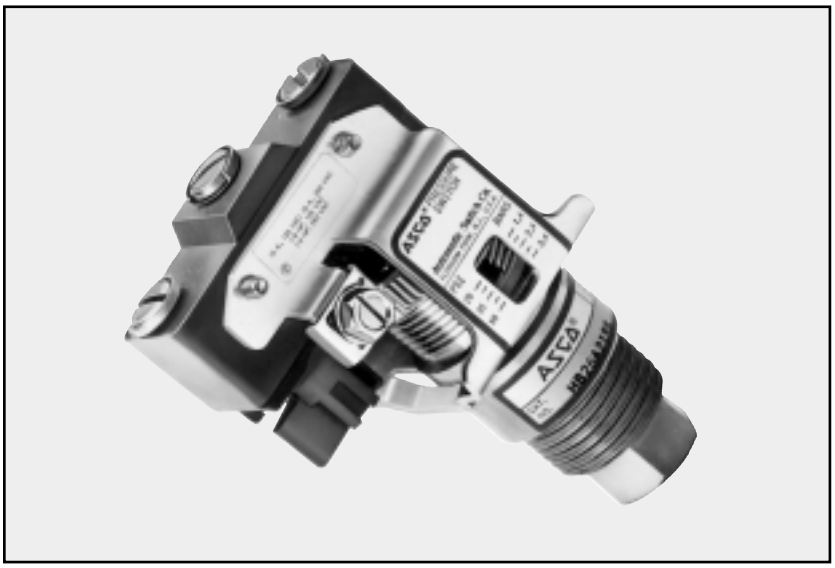
- Field adjustable set points.
- Limited adjustable deadband.
- Choice of open frame type, general purpose or watetight enclosure.
- Small size.
- Mounts in any position.
- Rugged and vibration resistant, e.g., for compressors.
- Visual adjustment scales in psig and bars.

Standard Ratings and Wetted Materials

(See page 4)

Dimensions

(See page 5)



How to Select and Order

ASCO H-Series Suffix S switches are a single switch and transducer assembly.

How to Select

1. Select type of switch enclosure (open frame, general purpose or watertight).
2. Select the adjustable operating range based on the desired actuation pressure and desired deadband (reactuation) pressure.
3. Select desired process connection.

How to Order

Simply order the selected H-Series Suffix S pressure switch by catalog number, e.g., HB46A218S describes an open frame H-Series Suffix S pressure switch with adjustable operating range of 4 to 12 psig and adjustable deadband at mid-range of 1.5 to 3.5 psig, 1/8" NPT external brass process connection and Buna "N" diaphragm.

Options (See page 4)

Change appropriate digit in catalog number for desired option, e.g., HB46A2[2]8S describes an open frame pressure switch with adjustable operating range and deadband with optional FKM diaphragm (seventh digit "2").

Select H-Series Suffix S switch below

Adjustable Operating Range (psig)	Adjustable Deadband At Mid-Range (psig) ① From/To	SPDT (Form "C" Contact), Brass and Buna "N"		
		1/8" NPT External Process Connection	1/4" NPT External Process Connection	1/8" NPT Internal Process Connection ②
		Catalog No.	Catalog No.	Catalog No.
Open frame construction				
4 - 12	1.5 - 3.5	HB46A218S	HB46A214S	HB46A215S
8 - 25	2 - 4	HB36A218S	HB36A214S	HB36A215S
20 - 50	3 - 5	HB26A218S	HB26A214S	HB26A215S
35 - 80	6 - 8	HB16A218S	HB16A214S	HB16A215S
40 - 120	8 - 13	HC26A218S	HC26A214S	HC26A215S
80 - 200	15 - 20	HC16A218S	HC16A214S	HC16A215S
Type 1 - General purpose enclosure				
4 - 12	1.5 - 3.5	HB40A218S	HB40A214S	HB40A215S
8 - 25	2 - 4	HB30A218S	HB30A214S	HB30A215S
20 - 50	3 - 5	HB20A218S	HB20A214S	HB20A215S
35 - 80	6 - 8	HB10A218S	HB10A214S	HB10A215S
40 - 120	8 - 13	HC20A218S	HC20A214S	HC20A215S
80 - 200	15 - 20	HC10A218S	HC10A214S	HC10A215S
Type 4 - Watertight enclosure				
4 - 12	1.5 - 3.5	HB41A218S	HB41A214S	HB41A215S
8 - 25	2 - 4	HB31A218S	HB31A214S	HB31A215S
20 - 50	3 - 5	HB21A218S	HB21A214S	HB21A215S
35 - 80	6 - 8	HB11A218S	HB11A214S	HB11A215S
40 - 120	8 - 13	HC21A218S	HC21A214S	HC21A215S
80 - 200	15 - 20	HC11A218S	HC11A214S	HC11A215S

① Values shown are nominal. ② May be used for panel or bracket mounting.

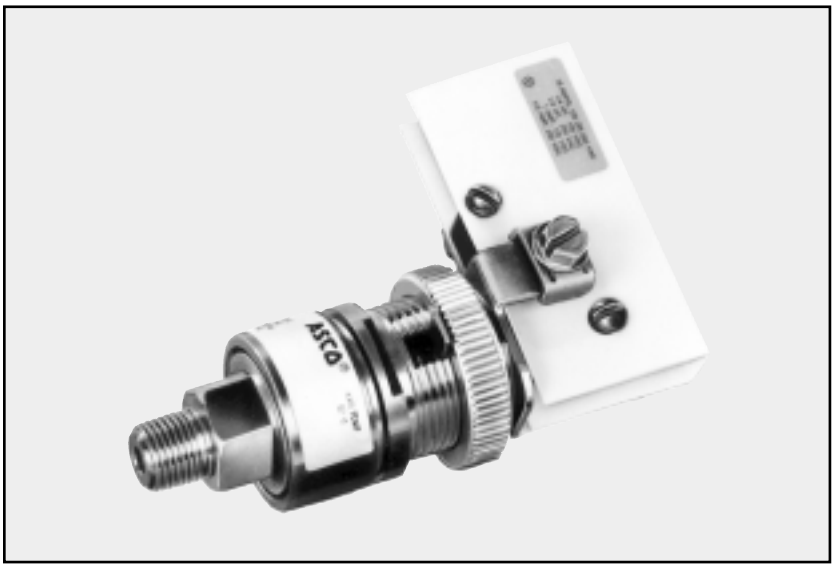
Suffix L: Lowest-Cost Switches with Adjustable Set Points (Open Frame Construction)

Features:

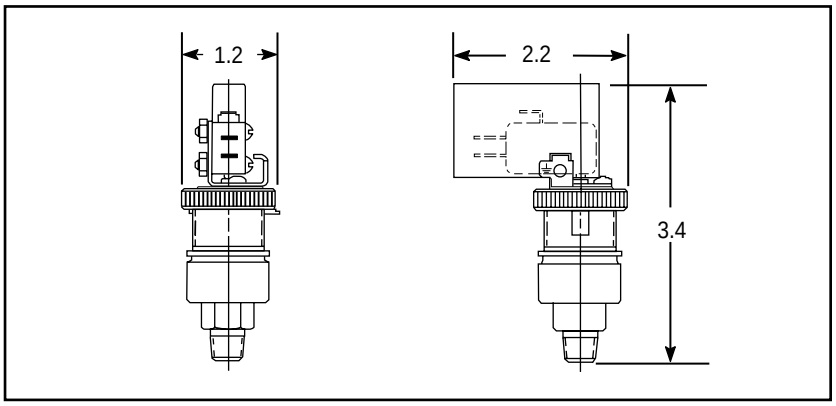
- Low cost for OEM applications.
- Miniature size.
- Wide selection of adjustable ranges.
- Fixed deadband.
- Resilient diaphragm/piston sensor for long life.
- Precision single-pole, double-throw snap switch with quick-connect 1/4" spade terminals.

Standard Ratings and Wetted Materials

(See page 4)



Dimensions (inches)



How to Select and Order

ASCO H-Series Suffix L switches are a single switch and transducer assembly.

How to Select

1. Select the adjustable operating range based on the desired actuation pressure.
2. Select desired process connection.

How to Order

Simply order the selected H-Series Suffix L pressure switch by catalog number, e.g., HB46A218L describes an open frame pressure switch with adjustable operating range of 4 to 12 psig, 1/8" NPT external brass process connection and Buna "N" diaphragm.

Options (See page 4)

Change appropriate digit in catalog number for desired option, e.g., HB46A2 2 8L describes an open frame pressure switch with adjustable operating range and optional FKM diaphragm (seventh digit "2").
Note: Optional snap switches not available on suffix "L" units.

Select H-Series Suffix L switch below

Adjustable Operating Range (psig)	Fixed Deadband At Mid-Range (psig) ①	SPDT (Form "C" Contact), Brass and Buna "N"		
		1/8" NPT External Process Connection	1/4" NPT External Process Connection	1/8" NPT Internal Process Connection ②
		Catalog No.	Catalog No.	Catalog No.
4 - 12	3.0	HB46A218L	HB46A214L	HB46A215L
8 - 25	3.6	HB36A218L	HB36A214L	HB36A215L
20 - 50	5.5	HB26A218L	HB26A214L	HB26A215L
35 - 80	7.0	HB16A218L	HB16A214L	HB16A215L
40 - 120	14.0	HC26A218L	HC26A214L	HC26A215L
80 - 200	21.0	HC16A218L	HC16A214L	HC16A215L

① Values shown are nominal. ② May be used for panel or bracket mounting.

Switches for Vacuum through 6000 psig with Adjustable Set Points and Fixed or Adjustable Deadband

Features:

- Set point repeatability, ±1% of operating range.
- All wiring terminals, adjustments and visual scales are accessible from the front of the switch.
- Choice of open frame type, general purpose or watertight enclosure.
- Choice of fixed, limited-adjustable or full-range adjustable deadband.
- Choice of single or two-stage units.
- Compact size.
- Mounts in any position.
- Rugged and vibration resistant; e.g., for compressors.
- Visual adjustment scales in psig and bars.
- Wide selection of transducer wetted materials suitable for air, water, oil or corrosive fluids.
- Mix and match switch and transducer components for increased stock flexibility or to change pressure ranges in field.

General Description:

ASCO P-Series pressure switches consist of an open frame or enclosure protected switch unit and a transducer unit. They can be ordered separately for customer stocking and/or field assembly or as a complete factory-assembled unit.

Switch

P-Series pressure switch units incorporate the unique ASCO TRI-POINT alternating fulcrum balance plate to control the operation of one or more electrical snap-action swtiches. The electrical snap-action switch together with the adjusting mechanism is a fully-tested, self-contained subassembly.

Transducer

Transducer unit incorporates a diaphragm/piston type pressure sensor, and is also a fully-tested, self-contained subassembly.

Operation

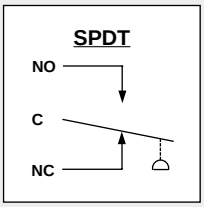
When pressure is applied to the transducer it is converted into movement of the piston. This piston movement is then used to control the operation of the electrical snap-action switch in the switch unit.

Options (See pages 34-35)

Standard Electrical Ratings

PA, PB, PC ① Series
15 Amp Res., 125 VAC
10 Amp Res., 250 VAC
1/8 HP, 125 VAC
1/4 HP, 250 VAC
1/2 Amp Res., 125 VDC
1/4 Amp Res., 250 VDC

PG Series
15 Amp Res., 125 VAC
10 Amp Res., 250 VAC
1/8 HP, 125 VAC
1/4 HP, 250 VAC



UL ② CSA ®

FM ③ APPROVED

① PC Series, UL recognized component, rated 10 Amp Res., 125/250 VAC; 1/3 HP 125/250 VAC.
② Open frame construction, UL recognized component.
③ FM listed for air flow interlocking service.

Standard Temperature Ratings

Ambient: -4°F (-20°C) to 122°F (50°C)
Fluid: For Buna "N" or Neoprene Diaphragm
-4°F (-20°C) to 180°F (82°C)
For FKM Diaphragm
-4°F (-20°C) to 250°F (121°C)
For 316 SS Diaphragm
-50°F (-45°C) to 300°F (149°C)
For Nylon Transducers
-4°F (-20°C) to 180°F (82°C)

Enclosures

ASCO TRI-POINT switches are available in either a general purpose or watertight enclosure, in addition to open frame construction. These enclosed units are made in accordance with NEMA and UL standards. These standards define the protection level an enclosure gives and the tests it must pass to meet a particular design.

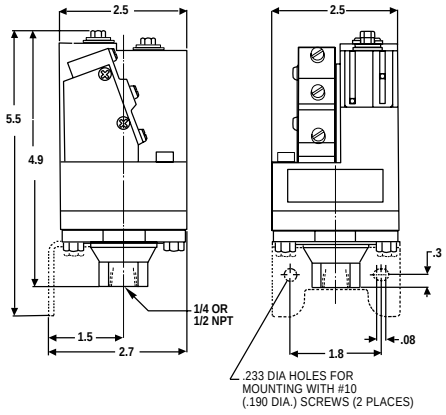
General Purpose – Type 1. These enclosures are designed for indoor use to protect personnel from accidental contact with the equipment. P-Series general purpose enclosures are painted, zinc-coated steel and have a 7/8" diameter hole at the top for electrical entry.

Watertight – Type 4. Watertight and dust-tight enclosures are intended for use indoors and outdoors to protect the enclosed equipment against splashing or falling water, windblown dust and water, hose directed water, and severe external condensation. P-Series watertight switch enclosures are epoxy-painted, zinc-coated steel with a 1/2" conduit hub in the side of the lower housing for electrical entry. (For optional 316 SS watertight enclosure see page 13.)

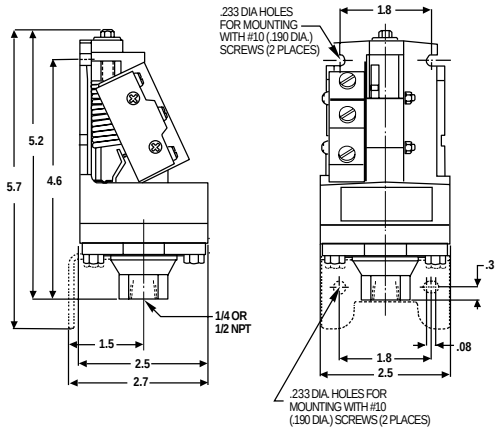
Dimensions (inches)

P-Series Pressure (Mounting brackets optional)

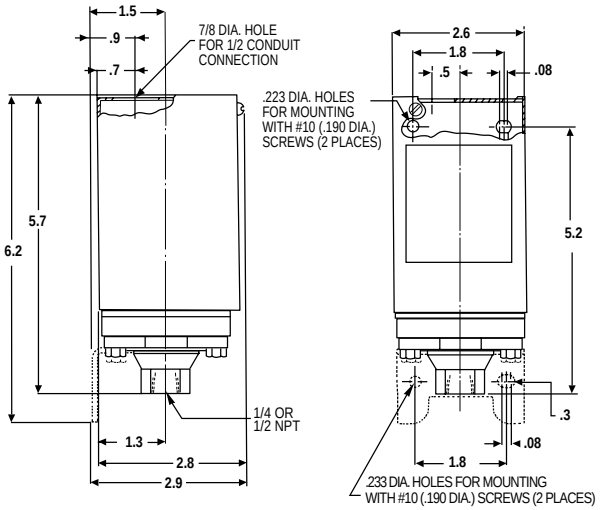
Open Frame PA and PC Switch Units with Transducer Unit



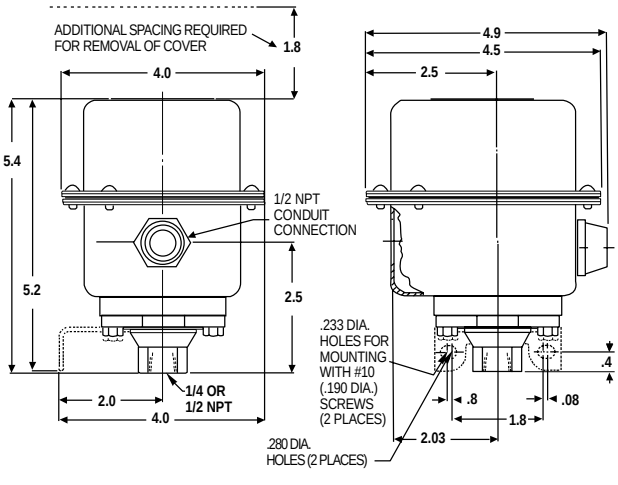
Open Frame PB and PG Switch Units with Transducer Unit



Type 1 General Purpose Switch Unit with Transducer Unit



Type 4 Watertight Switch Unit with Transducer Unit



P-SERIES Pressure Switches

General Purpose Enclosure

Watertight Enclosure

How to Select and Order

ASCO P-Series switches consist of two components, the switch unit and the transducer unit.

How to Select

1. Select the adjustable operating range based on desired actuation pressure.
2. Check that proof pressure is sufficient.
3. Read across and select the desired P-Series switch unit with the proper enclosure.
4. Continue across and select a matching transducer unit compatible with the fluid.

PA Switch Unit

Single-Stage Adjustable Deadband units allow independent adjustment of the set and reset points over the full operating range of the switch. The minimum difference between set and reset points is the deadband listed below; the maximum difference is the full range of the switch .

Open Frame

PB Switch Unit

Single-Stage Fixed Deadband units have an adjustable set point and a non-adjustable automatic reset point.

Open Frame

Specifications		Adjustable Deadband				Fixed Deadband			
Adjustable Operating Range (psig)	Proof Pressure (psig)	Adjustable Deadband Maximum Full Scale Minimum At Mid-Range (In W.C.) ①	Open Frame Catalog No.	General Purpose Catalog No.	Watertight Enclosure Catalog No.	Fixed Deadband At Mid-Range (psig) ①	Open Frame Catalog No.	General Purpose Catalog No.	Watertight Enclosure Catalog No.
Vacuum									
0 - 30" Hg	50	4" Hg	PA36A	PA30A	PA31B	1" Hg	PB36A	PB30A	PB31B
Compound									
30"Hg - 14 psig	50	6" Hg	PA26A	PA20A	PA21B	1" Hg	PB26A	PB20A	PB21B
Pressure									
0 - 4	60	---	---	---	---	0.05	PB46A	PB40A	PB41B
0 - 9	60	1.2	PA36A	PA30A	PA31B	0.4	PB36A	PB30A	PB31B
2 - 18	60	1.8	PA26A	PA20A	PA21B	0.4	PB26A	PB20A	PB21B
2 - 18	100	2.5	PA36A	PA30A	PA31B	0.6	PB36A	PB30A	PB31B
4 - 36	150	4.0	PA26A	PA20A	PA21B	0.7	PB26A	PB20A	PB21B
6 - 60	150	5.4	PA16A	PA10A	PA11B	0.9	PB16A	PB10A	PB11B
10 - 100	200	9	PA16A	PA10A	PA11B	1.5	PB16A	PB10A	PB11B
20 - 200	400	18	PA16A	PA10A	PA11B	3.0	PB16A	PB10A	PB11B
30 - 300	450	27	PA16A	PA10A	PA11B	5.0	PB16A	PB10A	PB11B
40 - 400	500	36	PA16A	PA10A	PA11B	6	PB16A	PB10A	PB11B
60 - 600	2000	54	PA26A	PA20A	PA21B	12	PB26A	PB20A	PB21B
100 - 1000	2000	90	PA16A	PA10A	PA11B	15	PB16A	PB10A	PB11B
160 - 1650	5000	250	PA26A	PA20A	PA21B	100	PB26A	PB20A	PB21B
270 - 2700	5000	300	PA16A	PA10A	PA11B	125	PB16A	PB10A	PB11B
600 - 6000	9000	650	PA16A	PA10A	PA11B	200	PB16A	PB10A	PB11B

All switch units above are in stock for immediate delivery.

① Values shown are nominal. ② Rated proof pressure on RF10A71 is 150 psig and on RG10A71 is 300 psig.

How to Order

Factory assembled – Simply order the switch and transducer unit by catalog number joined by a slash (/), e.g., PA36A/RD30A11.

Field assembled – Simply order the switch and transducer units separately by individual catalog number, e.g., one PA36A and one RD30A11.

Options – Add appropriate suffix for desired option or accessory (see pages 34-35).

Important Note: The third digit of each of the catalog numbers must be identical, e.g., PA 3 6A and RD 3 0A11.

PA, PB, or PC unit below

PC Switch Unit

Two-Stage Fixed Deadband units consist of two separate snap-action switches, each with an independently adjustable set point and non-adjustable reset point. The difference between the set and reset points of each switch is the deadband listed below; the minimum difference between the set points of the two switches is the separation.

Open Frame

Two-Stage Fixed Deadband

Fixed Deadband At Mid-Range (psig) ①	Separation: Maximum Full Scale / Minimum At Mid-Range (psig) ①	Open Frame Catalog No.	General Purpose Catalog No.	Watertight Enclosure Catalog No.
2.7” Hg	3” Hg	PC36A	PC30A	PC31B
4.3” Hg	6” Hg	PC26A	PC20A	PC21B
---	---	---	---	--
0.6	1.0	PC36A	PC30A	PC31B
0.8	1.8	PC26A	PC20A	PC21B
1.2	1.8	PC36A	PC30A	PC31B
2.0	3.6	PC26A	PC20A	PC21B
2.4	6.0	PC16A	PC10A	PC11B
4	10	PC16A	PC10A	PC11B
8	20	PC16A	PC10A	PC11B
12	30	PC16A	PC10A	PC11B
16	40	PC16A	PC10A	PC11B
30	60	PC26A	PC20A	PC21B
40	100	PC16A	PC10A	PC11B
200	300	PC26A	PC20A	PC21B
250	400	PC16A	PC10A	PC11B
400	600	PC16A	PC10A	PC11B

Select transducer unit below

Standard connection is 1/4” NPT
(optional 1/2” NPT add suffix “B” to catalog number)

Transducer Unit

These **guage pressure type transducers** provide for one pressure connection in the bottom of the transducer. They are diaphragm/piston type transducers using an elastomer in contact with the fluid, backed by a piston cylinder. This allows high sensitivity for low pressures and strength for high pressures.

Transducer Units

Air or Gas ② Nylon & Buna “N” Catalog No.	Air, Oil or Gas Aluminum & Buna “N” Catalog No.	Water, Air, Oil or Gas Brass & Buna “N” Catalog No.	Corrosive Fluids All 316 SS ③ Catalog No.	Corrosive Fluids 316 SS & FKM ④ Catalog No.
---	RV34A11	RV34A21	---	RV34A32
---	RV24A11	RV24A21	---	RV24A32
RD40A71	RD40A11	RD40A21	---	RD40A42
RD30A71	RD30A11	RD30A21	---	RD30A42
RD20A71	RD20A11	RD20A21	---	RD20A42
---	---	---	RE30A44	---
RE20A71	RE20A11	RE20A21	RE20A44	RE20A42
RE10A71	RE10A11	RE10A21	RE10A44	RE10A42
RF10A71	RF10A11	RF10A21	RF10A44	RF10A42
RG10A71	RG10A11	RG10A21	RG10A44	RG10A42
---	RH10A11	RH10A21	RH10A44	RH10A42
---	RJ10A11	RJ10A21	RJ10A44	RJ10A42
---	---	RL20A21	---	RL20A42
---	---	RL10A21	---	RL10A42
---	---	RN20B21	---	RN20B42
---	---	RN10B21	---	RN10B42
---	---	---	---	RQ10B42

All switch units and transducer units above are in stock for immediate delivery.

③ 316 SS transducer deadbands are approx. 50% greater than listed. ④ Transducers ending in 32 have 303 SS process connections, not 316 SS.

How to Select and Order

ASCO P-Series switches consist of two components, the switch unit and the transducer unit.

How to Select

1. Select the adjustable operating range based on desired actuation pressure.
2. Check that rated proof pressure is sufficient.
3. Read across and select the desired P-Series switch unit with the proper enclosure.
4. Continue across and select a matching transducer unit compatible with the fluid.

How to Order

Factory assembled – Simply order the switch and transducer unit by catalog number joined by a slash (/), e.g., PG36A/RV34A11.
Field assembled – Simply order the switch and transducer units separately by individual catalog number, e.g., one PG36A and one RV34A11.
***Options* –** Add appropriate suffix for desired option (see pages 34-35).
***Important Note*:** The third digit of each of the catalog numbers must be identical, e.g., PG 3 6A and RV 3 4A11.

Select P-Series switch unit and transducer unit below

PG Switch Unit

Limited Adjustable Deadband units have an adjustable set point and use a special snap-action switch that varies the deadband within the limits listed below.

Open Frame

Transducer Unit

These **guage pressure type transducers** are diaphragm/piston type transducers using an elastomer in contact with the fluid, backed by a piston cylinder. This allows high sensitivity for low pressures and strength for high pressures.

Standard port connection is 1/4" NPT (optional 1/2" NPT add suffix "B" to catalog number)

Specifications		Limited Adjustable Deadband				Transducer Units				
						Air or Gas ②	Air, Oil or Gas	Water, Air, Oil or Gas	Corrosive Fluids	
Adjustable Operating Range (psig)	Proof Pressure (psig)	Adjustable Deadband At Mid-Range (psig) ① From/To	Open Frame Catalog No.	General Purpose Catalog No.	Watertight Enclosure Catalog No.	Nylon & Buna "N" Catalog No.	Aluminum & Buna "N" Catalog No.	Brass & Buna "N" Catalog No.	All 316 SS ③ Catalog No.	316 SS & FKM ④ Catalog No.
Vacuum										
0 - 30" Hg	50	1.8 - 5.0	PG36A	PG30A	PG31B	---	RV34A11	RV34A21	---	RV34A32
Compound										
30"Hg-14 psig	50	2.8 - 6.0	PG26A	PG20A	PG21B	---	RV24A11	RV24A21	---	RV24A32
Pressure										
0 - 9	60	0.7 - 1.3	PG36A	PG30A	PG31B	RD30A71	RD30A11	RD30A21	---	RD30A42
2 - 18	60	0.8 - 2.1	PG26A	PG20A	PG21B	RD20A71	RD20A11	RD20A21	---	RD20A42
2 - 18	100	1.8 - 3.1	PG36A	PG30A	PG31B	---	---	---	RE30A44	---
4 - 36	150	2.0 - 4.0	PG26A	PG20A	PG21B	RE20A71	RE20A11	RE20A21	RE20A44	RE20A42
6 - 60	150	2.1 - 4.6	PG16A	PG10A	PG11B	RE10A71	RE10A11	RE10A21	RE10A44	RE10A42
10 - 100	200	4 - 8	PG16A	PG10A	PG11B	RF10A71	RF10A11	RF10A21	RF10A44	RF10A42
20 - 200	400	8 - 17	PG16A	PG10A	PG11B	RG10A71	RG10A11	RG10A21	RG10A44	RG10A42
30 - 300	450	15 - 25	PG16A	PG10A	PG11B	---	RH10A11	RH10A21	RH10A44	RH10A42
40 - 400	500	22 - 45	PG16A	PG10A	PG11B	---	RJ10A11	RJ10A21	RJ10A44	RJ10A42
60 - 600	2000	35 - 75	PG26A	PG20A	PG21B	---	---	RL20A21	---	RL20A42
100 - 1000	2000	65 - 110	PG16A	PG10A	PG11B	---	---	RL10A21	---	RL10A42
160 - 1650	5000	190 - 290	PG26A	PG20A	PG21B	---	---	RN20B21	---	RN10B42
270 - 2700	5000	200 - 300	PG16A	PG10A	PG11B	---	---	RN10B21	---	RN10B42
600 - 6000	9000	300 - 500	PG16A	PG10A	PG11B	---	---	---	---	RQ10B42

All switch units and transducer units above are in stock for immediate delivery.

① Values shown are nominal. ② Rated proof pressure on RF10A71 is 150 psig and on RG10A71 is 300 psig.
③ 316 SS transducer deadbands are approx. 50% greater than listed. ④ Transducers ending in 32 have 303 SS process connections, not 316 SS.

Switches for Pressure to 8000 psig, Vacuum, or Differential with General Purpose, Watertight or Explosion-Proof Enclosures

Features:

- Set point repeatability, ±1% of operating range.
- All wiring terminals, adjustments and visual scales are accessible from the front of the switch.
- Choice of general purpose, watertight or explosion-proof enclosures.
- Choice of fixed or full-range adjustable deadband.
- Choice of single or two-stage units.
- Manual reset units available.
- Mounts in any position.
- Rugged and vibration resistant.
- Visual adjustment scales in psi and bars.
- External adjusting nuts.
- Separate electrical, pressure and adjusting chambers.
- Wide selection of transducer wetted materials suitable for air, water, oil or corrosive fluids.
- Mix and match switch and transducer components for increased stock flexibility or to change pressure ranges in field.

General Description:

ASCO S-Series pressure switches consist of a switch unit and a transducer unit. They can be ordered separately for customer stocking and/or field assembly or as a complete factory-assembled unit.

Switch

S-Series pressure switch units incorporate the unique ASCO TRI-POINT alternating fulcrum balance plate to control the operation of one or more electrical snap-action swtiches. The electrical snap-action switch together with the adjusting mechanism is a fully-tested, self-contained subassembly.

Transducer

Transducer unit incorporates a diaphragm/piston type pressure sensor, and is also a fully-tested, self-contained subassembly.

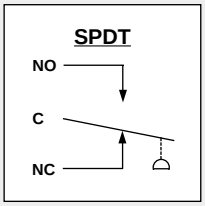
Operation

When pressure is applied to the transducer it is converted into movement of the piston. This piston movement is then used to control the operation of the electrical snap-action switch in the switch unit.

Standard Electrical Ratings

SA, SB, SC, SD and SE Series

15 Amp Res., 125 VAC
10 Amp Res., 250 VAC
1/8 HP, 125 VAC
1/4 HP, 250 VAC
1/2 Amp Res., 125 VDC
1/4 Amp Res., 250 VDC



Standard Temperature Ratings

Ambient: -4°F (-20°C) to 140°F (60°C)
Fluid: For Buna "N" or Neoprene Diaphragm
-4°F (-20°C) to 180°F (82°C)
For FKM Diaphragm
-4°F (-20°C) to 250°F (121°C)
For 316 SS Diaphragm
-50°F (-45°C) to 300°F (149°C)

Options (See pages 34-35)

Switches with Optional 316 Stainless Steel Enclosure

Every ASCO P-Series pressure switch is available in a corrosion-resistant, stainless steel enclosure. Typical applications include:

- Offshore platforms
- Hydrocarbon processing plants
- Oil & gas fields
- Oil & gas transmission lines
- Chemical plants
- Breweries
- Paper pulp mills
- Salt spray locations

Stainless Steel Enclosure

ASCO Type 4X watertight enclosure is designed to provide protection against windblown dust, rain, sleet or external ice formation. The switch and transducer unit are available only as factory-assembled units, and include a UL-approved 1/2" NPT conduit hub.

How to Select and Order

ASCO P-Series switches with 316 SS enclosure consist of two *factory-assembled* components, the switch unit and the transducer unit.

How to Select (use tables on pages 10-12)

1. Select the adjustable operating range based on desired actuation pressure.
2. Check that rated proof pressure is sufficient.
3. Read across and select the desired P-Series switch unit with open frame construction.
4. To add a 316 SS enclosure, change the fourth digit of the open frame catalog number from "6" to "4", e.g., PG3 6 A becomes PG3 4 A.
5. Continue across and select a matching transducer unit compatible with the fluid.

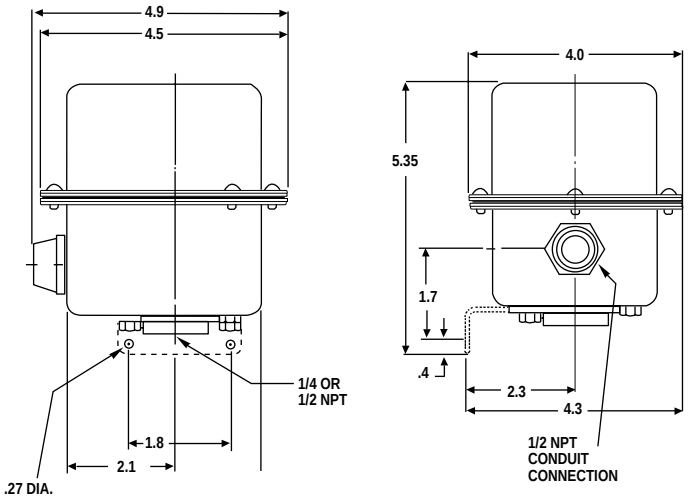
How to Order

Factory assembled only – Simply order the switch and transducer unit by catalog number joined by a slash (/), e.g., PG34A/RV34A32.

Options – Add appropriate suffix for desired option (see pages 34-35).

Dimensions (inches)

P-Series Pressure with Optional 316 SS Enclosure



NOTE: THIS DIMENSION WILL VARY FROM 5.0 MIN. TO 6.04 MAX. DEPENDING ON TRANSDUCER SPECIFIED.

* MOUNTING BRACKET OPTIONAL

Enclosures

ASCO TRI-POINT S-Series switches are available in three standard enclosures. All of these enclosed units are made in accordance with NEMA and UL standards.

General Purpose – Type 1. These enclosures are designed for indoor use to protect personnel from accidental contact with the equipment. S-Series general purpose switch units consist of a copper-free* aluminum die-cast body with a formed copper-free* aluminum cover; two 3/4" conduit hubs with one plug are provided.

Watertight – Type 4. Watertight and dust-tight enclosures are intended for use indoors and outdoors to protect the enclosed equipment against splashing or falling water, windblown dust and water, hose directed water, and severe external condensation. S-Series watertight switch units have a copper-free* aluminum die-cast body and a formed copper-free* aluminum cover with Buna "N" gaskets; two 3/4" conduit hubs with one plug are provided.

Explosion-Proof – Types 7 and 9. Type 7 enclosures are intended for use in locations defined by the National Electrical Code as Class I. Type 9 enclosures are intended for Class II locations.

Class I locations are those in which flammable gases are or may be present in the air in sufficient quantities to produce explosive or ignitable mixtures. Class I locations are classified by group letter, which defines particular atmospheres. Division 1 locations are areas where the hazardous concentration exists continuously, intermittently or periodically under normal operating conditions. Division 2 locations are those where the hazardous vapors are present only in case of accidental rupture or breakdown of equipment.

ASCO TRI-POINT explosion-proof enclosures with letter B, C or D in the fifth position are listed for Class I, Groups B, C, and D, Division 1. They are also suitable for the less stringent Division 2 environment.

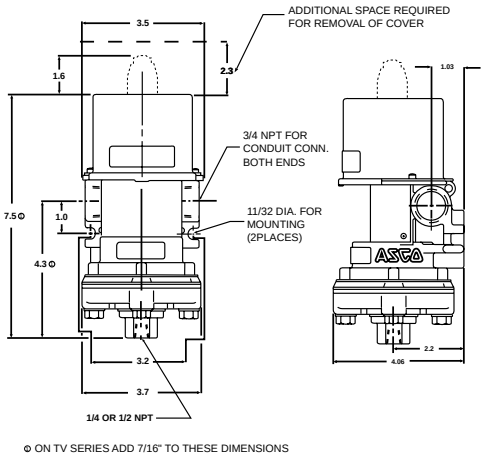
Class II locations are those which are hazardous because of the presence of combustible dust. All ASCO TRI-POINT explosion-proof enclosures are listed for Groups E, F, and G locations.

The switch body and cover are die-cast copper-free* aluminum with a Buna "N" gasket. Two 3/4" conduit hubs with one plug are provided.

Dimensions (inches)

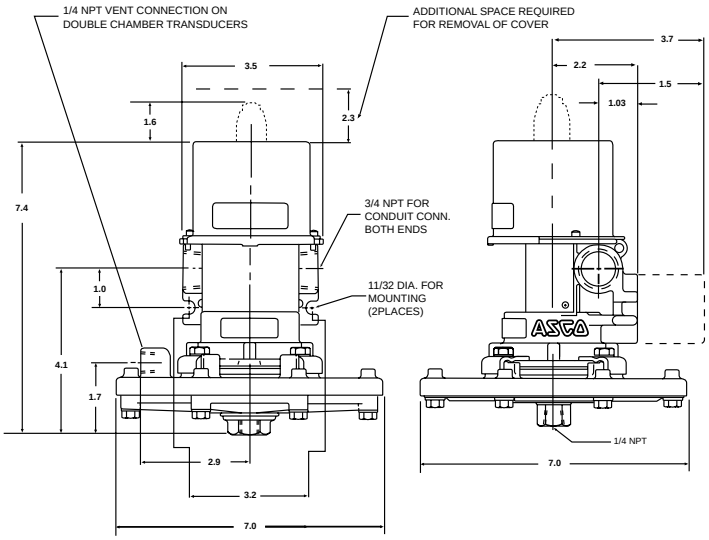
S-Series Pressure

With Types TD - TV Transducers



⊙ ON TV SERIES ADD 7/16" TO THESE DIMENSIONS

With Types TA - TC Transducers



* Less than 0.6% copper.

S-SERIES Pressure Switches (to 8000 psig)

How to Select and Order

ASCO S-Series switches consist of two components, the switch unit and the transducer unit.

How to Select

1. Select the adjustable operating range based on desired actuation pressure.
2. Check that proof pressure is sufficient.
3. Read across and select the desired S-Series switch unit with the proper enclosure.
4. Continue across and select a matching transducer unit compatible with the fluid.

How to Order

Factory assembled – Simply order the switch and transducer unit by catalog number joined by a slash (/), e.g., SA40D/TA40A11.

Field assembled – Simply order the switch and transducer units separately by individual catalog number, e.g., one SA40D and one TA40A11.

Select S-Series pressure switch

SA Switch Unit

Single-Stage Adjustable Deadband units allow independent adjustment of the set and reset points over the full operating range of the switch. The minimum difference between set and reset points is the deadband listed below; the maximum difference is the full range of the switch .

General Purpose

SB, SD or SE Switch Unit

SB Switch Unit: Single-Stage Fixed Deadband units have an adjustable set point and a non-adjustable automatic reset point.

SD Switch Unit: Manual reset on decreasing pressure units operate automatically on increasing pressure and must be reset manually on decreasing pressure. (To order, change second digit to letter "D", e.g., S B 40D becomes S D 40D).

SE Switch Unit: Manual reset on increasing pressure units operate automatically on decreasing pressure and must be reset manually on increasing pressure. (To order, change second digit to letter "E", e.g., S B 40D becomes S E 40D).

Specifications		Adjustable Deadband				Fixed Deadband or Manual Reset			
Adjustable Operating Range (psig)	Proof Pressure (psig)	Adjustable Deadband Maximum Full Scale / Minimum At Mid-Range (psig) ①	General Purpose Catalog No.	Watertight Enclosure Catalog No.	Explosion-Proof Catalog No.	Fixed Deadband At Mid-Range (psig) ①	General Purpose Catalog No.	Watertight Enclosure Catalog No.	Explosion-Proof Catalog No.
0 - 12" W.C.	25	1.5" W.C.	SA40D	SA41D	SA42D	1.0" W.C.	SB40D	SB41D	SB42D
0 - 27" W.C.	25	2.0" W.C.	SA30D	SA31D	SA32D	1.2" W.C.	SB30D	SB31D	SB32D
0 - 65" W.C.	25	2.5" W.C.	SA20D	SA21D	SA22D	1.4" W.C.	SB20D	SB21D	SB22D
15 - 140" W.C.	40	6" W.C.	SA20D	SA21D	SA22D	3" W.C.	SB20D	SB21D	SB22D
15 - 250" W.C.	40	10" W.C.	SA10D	SA11D	SA12D	6" W.C.	SB10D	SB11D	SB12D
25 - 400" W.C.	40	15" W.C.	SA10D	SA11D	SA12D	8" W.C.	SB10D	SB11D	SB12D
0.4 - 4.5	100	0.4	SA40D	SA41D	SA42D	0.3	SB40D	SB41D	SB42D
0.7 - 9.0	100	0.6	SA30D	SA31D	SA32D	0.3	SB30D	SB31D	SB32D
0.8 - 9.0	150	1.4	SA40D	SA41D	SA42D	0.8	SB40D	SB41D	SB42D
1.0 - 18	100	1.1	SA20D	SA21D	SA22D	0.4	SB20D	SB21D	SB22D
1.0 - 18	150	1.6	SA30D	SA31D	SA32D	1.0	SB30D	SB31D	SB32D
1.5 - 36	150	2.2	SA20D	SA21D	SA22D	0.9	SB20D	SB21D	SB22D
2 - 60	150	3.6	SA10D	SA11D	SA12D	1.5	SB10D	SB11D	SB12D
5 - 60	3000	6.0	SA30D	SA31D	SA32D	4.0	SB30D	SB31D	SB32D
3 - 100	200	6.0	SA10D	SA11D	SA12D	2.5	SB10D	SB11D	SB12D
5 - 120	3000	10	SA20D	SA21D	SA22D	5.0	SB20D	SB21D	SB22D
5 - 200	3000	14	SA10D	SA11D	SA12D	6.0	SB10D	SB11D	SB12D
6 - 200	400	12	SA10D	SA11D	SA12D	5.0	SB10D	SB11D	SB12D
13 - 300	600	18	SA10D	SA11D	SA12D	8	SB10D	SB11D	SB12D
15 - 400	600	24	SA10D	SA11D	SA12D	10	SB10D	SB11D	SB12D
30 - 600	900	36	SA10D	SA11D	SA12D	15	SB10D	SB11D	SB12D
50 - 1000	1500	75	SA10D	SA11D	SA12D	30	SB10D	SB11D	SB12D
75 - 1500	2300	115	SA10D	SA11D	SA12D	45	SB10D	SB11D	SB12D
200 - 3500	5000	225	SA10D	SA11D	SA12D	125	SB10D	SB11D	SB12D
500 - 8000	9000	450	SA10D	SA11D	SA12D	275	SB10D	SB11D	SB12D

All switch units above are in stock for immediate delivery.

① Values shown are nominal.

Options **–** Add appropriate suffix for desired option (see pages 34-35).
Important Note: The third digit of each of the catalog numbers must be identical, e.g., SA 4 0D and TA 4 0A11.

SA, SB, SC, SD and SE unit below

SC Switch Unit

Two-Stage Fixed Deadband units consist of two separate snap-action switches, each with an independently adjustable set point and non-adjustable reset point. The difference between the set and reset points of each switch is the deadband listed below; the minimum difference between the set points of the two switches is the separation.

Explosion Proof

Two-Stage Fixed Deadband

Fixed Deadband At Mid-Range (psig) ①	Separation Maximum Full Scale / Minimum At Mid-Range (psig) ①	General Purpose Catalog No.	Watertight Enclosure Catalog No.	Explosion-Proof Catalog No.
1.2” W.C.	2.4” W.C.	SC40D	SC41D	SC42D
1.4” W.C.	2.7” W.C.	SC30D	SC31D	SC32D
1.6” W.C.	6.5” W.C.	SC20D	SC21D	SC22D
4.0” W.C.	14” W.C.	SC20D	SC21D	SC22D
7.0” W.C.	25” W.C.	SC10D	SC11D	SC12D
13.0” W.C.	40” W.C.	SC10D	SC11D	SC12D
0.4	0.7	SC40D	SC41D	SC42D
0.4	0.9	SC30D	SC31D	SC32D
1.0	1.6	SC40D	SC41D	SC42D
0.6	1.8	SC20D	SC21D	SC22D
1.2	1.8	SC30D	SC31D	SC32D
1.4	3.6	SC20D	SC21D	SC22D
2.2	6	SC10D	SC11D	SC12D
5.5	8	SC30D	SC31D	SC32D
3.5	10	SC10D	SC11D	SC12D
7.0	12	SC20D	SC21D	SC22D
8.5	20	SC10D	SC11D	SC12D
7.0	20	SC10D	SC11D	SC12D
10	30	SC10D	SC11D	SC12D
14	40	SC10D	SC11D	SC12D
20	60	SC10D	SC11D	SC12D
40	100	SC10D	SC11D	SC12D
60	150	SC10D	SC11D	SC12D
150	350	SC10D	SC11D	SC12D
300	800	SC10D	SC11D	SC12D

Select transducer unit below

Series TA-TC

Series TD-TQ

Standard connection is 1/4” NPT; (Optional 1/2” NPT add suffix “B” to catalog numbers TD thru TQ)

Transducer Unit

These **guage pressure type transducers** provide for one pressure connection in the bottom of the transducer. They are diaphragm/piston type transducers using an elastomer in contact with the fluid, backed by a piston cylinder. This allows high sensitivity for low pressures and strength for high pressures.

Transducer Units

Air, Oil or Gas	Water, Air Oil or Gas	Corrosive Fluids	
Aluminum & Buna “N” Catalog No.	Brass & Buna “N” Catalog No.	All 316 SS ② Catalog No.	316 SS & FKM ③ Catalog No.
TA40A11	---	---	TA40A32
TA30A11	---	---	TA30A32
TA20A11	---	---	TA20A32
TB20A11	---	---	TB20A32
TB10A11	---	---	TB10A32
TC10A11	---	---	TC10A32
TD40A11	TD40A21	---	TD40A42
TD30A11	TD30A21	---	TD30A42
---	---	TE40A44	---
TD20A11	TD20A21	---	TD20A42
---	---	TE30A44	---
TE20A11	TE20A21	TE20A44	TE20A42
TE10A11	TE10A21	TE10A44	TE10A42
---	---	---	TG33A42
TE10A11	TF10A21	TF10A44	TF10A42
---	---	---	TG23A42
---	---	---	TG13A42
TG10A11	TG10A21	TG10A44	TG10A42
TH10A11	TH10A21	TH10A44	TH10A42
TJ10A11	TJ10A21	TJ10A44	TJ10A42
---	TK10A21	---	TK10A42
---	TL10A21	---	TL10A42
---	TM10A21	---	TM10A42
---	TN10B21	---	TN10B42
---	---	---	TQ10B42

All switch units and transducer units above are in stock for immediate delivery.

② 316 SS transducers increase deadband by 50%. ③ Transducers ending in 32 have 303 SS process connections, not 316 SS.

How to Select and Order

ASCO S-Series switches consist of two components, the switch unit and the transducer unit.

How to Select

1. Select the adjustable operating range based on desired actuation point.
2. Check that proof pressure is sufficient.
3. Read across and select the desired S-Series switch unit with the proper enclosure.
4. Continue across and select a matching transducer unit compatible with the fluid.

How to Order

Factory assembled – Simply order the switch and transducer unit by catalog number joined by a slash (/), e.g., SA30D/TA34A11.

Field assembled – Simply order the switch and transducer units separately by individual catalog number, e.g., one SA30D and one TA34A11.

***Options* –** Add appropriate suffix for desired option (see pages 34-35).

***Important Note*:** The third digit of each of the catalog numbers must be identical, e.g., SA 3 0D and TA 3 4A11.

Select S-Series pressure switch

SA Switch Unit

Single-Stage Adjustable Deadband units allow independent adjustment of the set and reset points over the full operating range of the switch. The minimum difference between set and reset points is the deadband listed below; the maximum difference is the full range of the switch .

General Purpose

SB, SD or SE Switch Unit

SB Switch Unit: Single-Stage Fixed Deadband units have an adjustable set point and a non-adjustable automatic reset point.

SD Switch Unit: Manual reset on decreasing pressure units operate automatically on increasing pressure and must be reset manually on decreasing pressure. (To order, change second digit to letter "D", e.g., S B 30D becomes S D 30D).

SE Switch Unit: Manual reset on increasing pressure units operate automatically on decreasing pressure and must be reset manually on increasing pressure. (To order, change second digit to letter "E", e.g., S B 30D becomes S E 30D).

SA, SB, SC, SD and SE unit below

SC Switch Unit

Two-Stage Fixed Deadband units consist of two separate snap-action switches, each with an independently adjustable set point and non-adjustable reset point. The difference between the set and reset points of each switch is the deadband listed below; the minimum difference between the set points of the two switches is the separation.

Explosion Proof

Select transducer unit below

The **vacuum transducer** has a spring which preloads the switch unit when no vacuum is applied. On application, the vacuum acts on a piston area to overcome the spring to operate the switch unit.

Vacuum Transducer

The **differential pressure transducer** has two pressure sources acting on the piston area in opposite directions. The force output is proportional to the difference between these pressures, allowing the differential pressure to be contolled by adjustment of the switch unit.

Differential Pressure Transducer

Specifications		Adjustable Deadband				Fixed Deadband or Manual Reset				Two-Stage Fixed Deadband					Transducer Units		
Adjustable Operating Range (In W.C.)	Proof Pressure (psig)	Adjustable Deadband At Mid-Range (In W.C.) ① From/To	General Purpose Catalog No.	Watertight Catalog No.	Explosion-Proof Catalog No.	Fixed Deadband At Mid-Range (In W.C.) ①	General Purpose Catalog No.	Watertight Catalog No.	Explosion-Proof Catalog No.	Fixed Deadband At Mid-Range (In W.C.) ①	Separation Maximum Full Scale Minimum At Mid-Range (In W.C.) ①	General Purpose Catalog No.	Watertight Catalog No.	Explosion-Proof Catalog No.	Air or Gas Aluminum & Buna "N" Catalog No.	Water, Air Oil or Gas Brass & Buna "N" Catalog No.	Corrosive Fluids 303 SS & FKM Catalog No.
Vacuum																	
0 - 30" Hg	50	2 - 28" Hg	SA30D	SA31D	SA32D	1.2" Hg	SB30D	SB31D	SB32D	1.7" Hg	3" Hg	SC30D	SC31D	SC32D	TV34A11	TV34A21	TV34A32
15 PSI - 30" Hg	50	3 - 57" Hg	SA20D	SA21D	SA22D	1.7" Hg	SB20D	SB21D	SB22D	2.0" Hg	8" Hg	SC20D	SC21D	SC22D	TV24A11	TV24A21	TV24A32
0 - 27	15	2 - 27	SA30D	SA31D	SA32D	1.2	SB30D	SB31D	SB32D	1.7	2.7	SC30D	SC31D	SC32D	TA31A11	---	---
0 - 65	15	3 - 65	SA20D	SA21D	SA22D	1.4	SB20D	SB21D	SB22D	2.0	6.5	SC20D	SC21D	SC22D	TA21A11	---	---
15 - 140	25	6 - 125	SA20D	SA21D	SA22D	3.0	SB20D	SB21D	SB22D	4.0	14.0	SC20D	SC21D	SC22D	TB21A11	---	---
15 - 250	25	10 - 235	SA10D	SA11D	SA12D	6.0	SB10D	SB11D	SB12D	7.0	25.0	SC10D	SC11D	SC12D	TB11A11	---	---
25 - 400	25	15 - 375	SA10D	SA11D	SA12D	8.0	SB10D	SB11D	SB12D	13.0	40.0	SC10D	SC11D	SC12D	TC11A11	---	---
Differential																	
0 - 12	15	2 - 12	SA40D	SA41D	SA42D	1.0	SB40D	SB41D	SB42D	1.4	2.4	SC40D	SC41D	SC42D	TA41A11	---	---
0 - 27	15	2 - 27	SA30D	SA31D	SA32D	1.2	SB30D	SB31D	SB32D	1.7	2.7	SC30D	SC31D	SC32D	TA31A11	---	---
0 - 65	15	3 - 65	SA20D	SA21D	SA22D	1.4	SB20D	SB21D	SB22D	2.0	6.5	SC20D	SC21D	SC22D	TA21A11	---	---
15 - 140	25	6 - 125	SA20D	SA21D	SA22D	3.0	SB20D	SB21D	SB22D	4.0	14.0	SC20D	SC21D	SC22D	TB21A11	---	---
15 - 250	25	10 - 235	SA10D	SA11D	SA12D	6.0	SB10D	SB11D	SB12D	7.0	25.0	SC10D	SC11D	SC12D	TB11A11	---	---
25 - 400	25	15 - 375	SA10D	SA11D	SA12D	8.0	SB10D	SB11D	SB12D	13.0	40.0	SC10D	SC11D	SC12D	TC11A11	---	---

All switch units above are in stock for immediate delivery.

All switch units and transducer units above are in stock for immediate delivery.

① Values shown are nominal.

Pressure Switches Designed to UL or FM Requirements for Combustion Service

Features:

- Set point repeatability, ±1% of operating range.
- UL Listed in the gas and oil equipment list.
- FM Approved as “pressure supervisory switches.”
- Externally visible pressure setting scales.
- External adjusting nuts.
- Choice of fixed or full-range adjustable deadbands.
- Choice of single or two-stage units.
- Mounts in any position.
- Rugged and vibration resistant.
- Separate electrical, pressure and adjusting chambers.
- Mix and match switch and transducer components for increased stock flexibility or to change pressure ranges in field.
- Withstands high surge pressures.

General Description:

ASCO S-Series combustion switches consist of a switch unit and a transducer unit. They can be ordered separately for customer stocking and/or field assembly or as a complete factory-assembled unit.

Switch

S-Series combustion switch units incorporate the unique ASCO TRI-POINT alternating fulcrum balance plate to control the operation of one or more electrical snap-action swtiches. The electrical snap-action switch together with the adjusting mechanism is a fully-tested, self-contained subassembly.

Transducer

Transducer unit incorporates a diaphragm/piston type pressure sensor, and is also a fully-tested, self-contained subassembly.

Operation

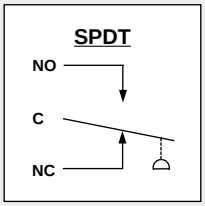
When pressure is applied to the transducer it is converted into movement of the piston. This piston movement is then used to control the operation of the electrical snap-action switch in the switch unit.

Options (See pages 34-35)

Dimensions (See page 15)

Standard Electrical Ratings

SA, SD and SE Series ①
5 Amp Res., 125, 250 VAC
1/8 HP, 125 VAC
1/4 HP, 250 VAC
1/2 Amp Res., 125 VDC
1/4 Amp Res., 250 VDC



SB and SC Series
5 Amp Res., 125, 250 VAC
1/4 HP, 125 VAC
1/2 HP, 250 VAC
.4 Amp Res., 125, VDC

UL®

FM APPROVED

① SD and SE Series not FM Approved.

Standard Temperature Ratings

Ambient: -4°F (-20°C) to 140°F (60°C)
Fluid: For Buna “N” or Neoprene Diaphragm
-4°F (-20°C) to 180°F (82°C)
For FKM Diaphragm
-4°F (-20°C) to 250°F (121°C)
For 316 SS Diaphragm
-50°F (-45°C) to 300°F (149°C)

UL Requirements

Underwriters' Laboratories, Inc.'s Standard UL 353 defines construction and performance requirements for limit controls.

Switch

S-Series combustion switch units when mated to the pressure transducers described below form pressure switches in accordance with UL requirements.

Transducers

Fuel Gas – UL requires a pressure transducer with a secondary chamber. This chamber allows the gas to be vented to a safe location in the event of primary sensing element rupture. The "double chamber" with vent pressure transducers meet this requirement.

Fuel Oil – UL requirements for fuel oil applications waive the double chamber requirement, providing the sensing element is made of Type 316 or 321 SS. S-Series type 316 SS pressure transducers are designed to meet this requirement.

General Service – Pressure transducers for water, steam and air service may be of the single chamber design.

Enclosures

ASCO TRI-POINT S-Series switches are available in three standard enclosures. All of these enclosed units are made in accordance with NEMA and UL standards.

General Purpose – Type 1. These enclosures are designed for indoor use to protect personnel from accidental contact with the equipment. S-Series general purpose switch units consist of a copper-free* aluminum die-cast body with a formed copper-free* aluminum cover; two 3/4" conduit hubs with one plug are provided.

Watertight – Type 4. Watertight and dust-tight enclosures are intended for use indoors and outdoors to protect the enclosed equipment against splashing or falling water, windblown dust and water, hose directed water, and severe external condensation. S-Series watertight switch units have a copper-free* aluminum die-cast body and a formed copper-free* aluminum cover with Buna "N" gaskets; two 3/4" conduit hubs with one plug are provided.

Explosion-Proof – Types 7 and 9. Type 7 enclosures are intended for use in locations defined by the National Electrical Code as Class I. Type 9 enclosures are intended for Class II locations.

Class I locations are those in which flammable gases are or may be present in the air in sufficient quantities to produce explosive or ignitable mixtures. Class I locations are classified by group letter, which defines particular atmospheres. Division 1 locations are areas where the hazardous concentration exists continuously, intermittently or periodically under normal operating conditions. Division 2 locations are those where the hazardous vapors are present only in case of accidental rupture or breakdown of equipment.

ASCO TRI-POINT explosion-proof enclosures with letter B, C or D in the fifth position are listed for Class I, Groups B, C, and D, Division 1. They are also suitable for the less stringent Division 2 environment.

Class II locations are those which are hazardous because of the presence of combustible dust. All ASCO TRI-POINT explosion-proof enclosures are listed for Groups E, F, and G locations.

The switch body and cover are die-cast copper-free* aluminum with a Buna "N" gasket. Two 3/4" conduit hubs with one plug are provided.

FM Requirements

Fuel Gas and Fuel Oil – FM requires that fuel gas and fuel oil pressure supervisory switches shall have a visible external means of determining switch position. No specific constructions are required for the pressure transducer. Switch units with visual position indication (suffix "V") in conjunction with single chamber pressure transducers will meet these requirements.

General Service – Standard switch units with an adjusting nut cover, when mated to single chamber transducers, meet FM requirements for general applications such as "airflow interlocking switches".

Enclosures

General Purpose – Designed to Type 1 specifications for indoor applications. Die casting is copper-free* aluminum; covers are polycarbonate. Two 3/4" conduit hubs with one plug are provided.

Watertight – Designed to Types 4 specifications for indoor/outdoor use. Die casting is copper-free* aluminum. Cover are polycarbonate and gaskets are neoprene. Two 3/4" conduit hubs with one plug are provided.

* Less than 0.6% copper.

How to Select and Order

ASCO S-Series switches consist of two components, the switch unit and the transducer unit.

How to Select

1. Select the adjustable operating range based on desired actuation pressure.
2. Check that proof pressure is sufficient.
3. Read across and select the desired S-Series switch unit with the proper enclosure.
4. Continue across and select a matching transducer unit compatible with the fluid.

How to Order

Factory assembled – Simply order the switch and transducer unit by catalog number joined by a slash (/), e.g., SA30D/TA31A11.

Field assembled – Simply order the switch and transducer units separately by individual catalog number, e.g., one SA30D and one TA31A11.

Select S-Series pressure switch

SA Switch Unit

Single-Stage Adjustable Deadband units allow independent adjustment of the set and reset points over the full operating range of the switch. The minimum difference between set and reset points is the deadband listed below; the maximum difference is the full range of the switch .

UL General Purpose

SB, SD or SE Switch Unit

SB Switch Unit: Single-Stage Fixed Deadband units have an adjustable set point and a non-adjustable automatic reset point.

SD Switch Unit: Manual reset on decreasing pressure units operate automatically on increasing pressure and must be reset manually on decreasing pressure. (To order, change second digit to letter "D", e.g., S B 30D becomes S D 30D).

SE Switch Unit: Manual reset on increasing pressure units operate automatically on decreasing pressure and must be reset manually on increasing pressure. (To order, change second digit to letter "E", e.g., S B 30D becomes S E 30D).

Specifications

Adjustable Operating Range (psig)	Proof Pressure (psig)	Adjustable Deadband – Maximum Full Scale – Minimum At Mid-Range (psig) ①	Adjustable Deadband – General Purpose Catalog No.	Adjustable Deadband – Watertight Enclosure Catalog No.	Adjustable Deadband – Explosion-Proof Catalog No.	Fixed Deadband At Mid-Range (psig.) ①	Fixed Deadband or Manual Reset ② – General Purpose Catalog No.	Fixed Deadband or Manual Reset ② – Watertight Enclosure Catalog No.	Fixed Deadband or Manual Reset ② – Explosion-Proof Catalog No.
UL Listed									
0 - 27" W.C.	15	2.0" W.C.	SA30D	SA31D	SA32D	1.2" W.C.	SB30D	SB31D	SB32D
0 - 65" W.C.	15	2.5" W.C.	SA20D	SA21D	SA22D	1.4" W.C.	SB20D	SB21D	SB22D
15 - 140" W.C.	25	6.0" W.C.	SA20D	SA21D	SA22D	3.0" W.C.	SB20D	SB21D	SB22D
15 - 250" W.C.	25	10.0" W.C.	SA10D	SA11D	SA12D	6.0" W.C.	SB10D	SB11D	SB12D
25 - 400" W.C.	25	15.0" W.C.	SA10D	SA11D	SA12D	8.0" W.C.	SB10D	SB11D	SB12D
0.8 - 9.0	150	1.4	SA40D	SA41D	SA42D	0.9	SB40D	SB41D	SB42D
1.0 - 18	150	4.6	SA30D	SA31D	SA32D	0.6	SB30D	SB31D	SB32D
1.5 - 30	200	4.0	SA30D	SA31D	SA32D	1.5	SB30D	SB31D	SB32D
1.5 - 36	150	3.3	SA20D	SA21D	SA22D	1.4	SB20D	SB21D	SB22D
2.0 - 60	150	5.4	SA10D	SA11D	SA12D	2.3	SB10D	SB11D	SB12D
2.0 - 60	200	5.0	SA20D	SA21D	SA22D	2.0	SB20D	SB21D	SB22D
3.0 - 100	200	9.0	SA10D	SA11D	SA12D	3.7	SB10D	SB11D	SB12D
FM Approved									
2 - 12" W.C.	25	1.5" W.C.	SA40DV	SA41DV	---	1.0" W.C.	SB40DV	SB41DV	---
2 - 27" W.C.	25	2.0" W.C.	SA30DV	SA31DV	---	1.2" W.C.	SB30DV	SB31DV	---
2 - 65" W.C.	25	2.5" W.C.	SA20DV	SA21DV	---	1.4" W.C.	SB20DV	SB21DV	---
15 - 140" W.C.	40	6.0" W.C.	SA20DV	SA21DV	---	3.0" W.C.	SB20DV	SB21DV	---
15 - 250" W.C.	40	10.0" W.C.	SA10DV	SA11DV	---	6.0" W.C.	SB10DV	SB11DV	---
25 - 400" W.C.	40	1 5.0" W.C.	SA10DV	SA11DV	---	8.0" W.C.	SB10DV	SB11DV	---
0.4 - 4.5	100	0.4	SA40DV	SA41DV	---	0.3	SB40DV	SB41DV	---
0.8 - 9.0	100	0.6	SA30DV	SA31DV	---	0.3	SB30DV	SB31DV	---
1.0 - 18	100	1.1	SA20DV	SA21DV	---	0.4	SB20DV	SB21DV	---
1.5 - 36	150	2.2	SA20DV	SA21DV	---	0.9	SB20DV	SB21DV	---
2.0 - 60	150	3.6	SA10DV	SA11DV	---	1.5	SB10DV	SB11DV	---
3.0 - 100	200	6.0	SA10DV	SA11DV	---	2.5	SB10DV	SB11DV	---

① Values shown are nominal. ② Manual reset units not available for FM.

Options **–** Add appropriate suffix for desired option (see pages 34-35).
Important Note**:** The third digit of each of the catalog numbers must be identical, e.g., SA 3 0D and TA 3 1A11.

SA, SB, SC, SD and SE unit below

SC Switch Unit

Two-Stage Fixed Deadband units consist of two separate snap-action switches, each with an independently adjustable set point and non-adjustable reset point. The difference between the set and reset points of each switch is the deadband listed below; the minimum difference between the set points of the two switches is the separation.

FM General Purpose

Two-Stage Fixed Deadband

Fixed Deadband At Mid-Range (psig) ①	Separation: Maximum Full Scale / Minimum At Mid-Range (psig) ①	General Purpose Catalog No.	Watertight Enclosure Catalog No.	Explosion-Proof Catalog No.
1.7" W.C.	2.7" W.C.	SC30D	SC31D	SC32D
2.0" W.C.	6.5" W.C.	SC20D	SC21D	SC22D
4.0" W.C.	14.0" W.C.	SC20D	SC21D	SC22D
7.0" W.C.	25.0" W.C.	SC10D	SC11D	SC12D
13.0" W.C.	40.0" W.C.	SC10D	SC11D	SC12D
1.5	1.6	SC40D	SC41D	SC42D
1.0	1.8	SC30D	SC31D	SC32D
2.0	3.0	SC30D	SC31D	SC32D
2.0	3.6	SC20D	SC21D	SC22D
3.5	6.0	SC10D	SC11D	SC12D
3.0	6.0	SC20D	SC21D	SC22D
5.0	10.0	SC10D	SC11D	SC12D
1.4" W.C.	2.4" W.C.	SC40DV	SC41DV	---
1.7" W.C.	2.7" W.C.	SC30DV	SC31DV	---
2.0" W.C.	6.5" W.C.	SC20DV	SC21DV	---
4.0" W.C.	14.0" W.C.	SC20DV	SC21DV	---
7.0" W.C.	25.0" W.C.	SC10DV	SC11DV	---
13.0" W.C.	40.0" W.C.	SC10DV	SC11DV	---
0.5	0.7	SC40DV	SC41DV	---
0.5	0.9	SC30DV	SC31DV	---
0.5	1.8	SC20DV	SC21DV	---
1.2	3.6	SC20DV	SC21DV	---
2.1	6.0	SC10DV	SC11DV	---
3.5	10.0	SC10DV	SC11DV	---

Select transducer unit below

UL Listed **FM Approved**

Standard connection is 1/4" NPT

Transducer Unit

These **guage pressure type transducers** provide for one pressure connection in the bottom of the transducer. They are diaphragm/piston type transducers using an elastomer in contact with the fluid, backed by a piston cylinder. UL requires a double chamber transducer for fuel gas service and single chamber 316 SS transducer for fuel oil service.

Transducer Units

Aluminum & Buna "N" Catalog No.	Brass & Buna "N" Catalog No.	All 316 SS ③ Catalog No.	316 SS & FKM ④ Catalog No.
Fuel Gas		*Fuel Oil*	
TA31A11	---	---	---
TA21A11	---	---	---
TB21A11	---	---	---
TB11A11	---	---	---
TC11A11	---	---	---
---	---	TE40A44	---
---	---	TE30A44	---
---	TF32A21	---	---
---	---	TE20A44	---
---	---	TE10A44	---
---	TF22A21	---	---
---	TF12A21	TF10A44	---
Fuel Gas and Fuel Oil			
TA40A11F	---	---	TA40A32F
TA30A11F	---	---	TA30A32F
TA20A11F	---	---	TA20A32F
TB20A11	---	---	TB20A32
TB10A11	---	---	TB10A32
TC10A11	---	---	TC10A32
TD40A11	TD40A21	---	TD40A42
TD30A11	TD30A21	---	TD30A42
TD20A11	TD20A21	---	TD20A42
TE20A11	TE20A21	---	TE20A42
TE10A11	TE10A21	---	TE10A42
TF10A11	TF10A21	---	TF10A42

③ 316 SS transducers increase deadband by 50%. ④ Transducers ending in 32 have 303 SS process connections, not 316 SS.

Switches for -60 through 510°F with Adjustable Set Points and Fixed or Adjustable Deadband

Features:

- Set point repeatability, ±1°F (1/2°C).
- All wiring terminals, adjustments and visual scales are accessible from the front of the switch.
- Choice of open frame type, general purpose, or watertight enclosure.
- Choice of fixed, limited adjustable or full-range adjustable deadband.
- Choice of single or two-stage units.
- Compact size.
- Mounts in any position.
- Rugged and vibration resistant.
- Visual adjustment scales in °F and °C.
- Direct mount (local) or capillary and bulb (remote) sensors.
- Temperature transducers available with copper or 316 SS wetted material.
- Withstands high overrange temperatures.
- Mix and match switch and transducer components for increased stock flexibility or to change pressure ranges in field.

General Description:

ASCO P-Series temperature switches consist of an open frame or enclosure protected switch unit and a transducer unit. They can be ordered separately for customer stocking and/or field assembly or as a complete factory-assembled unit.

Switch

P-Series temperature switch units incorporate the unique ASCO TRI-POINT alternating fulcrum balance plate to control the operation of one or more electrical snap-action swtiches. The electrical snap-action switch together with the adjusting mechanism is a fully-tested, self-contained subassembly.

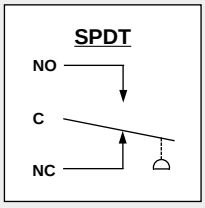
Transducer

The temperature transducer unit uses a vapor pressure principle where the internal pressure within the unit is generated by the vapor pressure of a chemical within a sealed system. Temperature transducers are available in two constructions, a direct mount or capillary and bulb construction. The direct mount unit includes a 1/2" NPT connection for direct mounting to the process. The capillary and bulb construction allows remote mounting from the process. The transducer unit (like the switch unit) is a fully-tested, self-contained subassembly.

Standard Electrical Ratings

PA, PB, PC ① Series
15 Amp Res., 125 VAC
10 Amp Res., 250 VAC
1/8 HP, 125 VAC
1/4 HP, 250 VAC
1/2 Amp Res., 125 VDC
1/4 Amp Res., 250 VDC

PG ① Series
15 Amp Res., 125 VAC
10 Amp Res., 250 VAC
1/8 HP, 125 VAC
1/4 HP, 250 VAC



① PC and PG Series not UL listed or CSA approved, PC Series rated 10 Amp Res., 125/250 VAC; 1/3 HP 125/250 VAC.

Standard Temperature Ratings

Ambient: -4°F (-20°C) to 122°F (50°C)
Fluid: See specification table on page 26 for rated overrange temperature.

Operation

Temperature sensed by the bulb creates an internal pressure within the transducer. This pressure is then converted into movement of the piston. This piston movement is then used to control the operation of the electrical snap-action switch in the switch unit.

Options (See pages 34-35)

Enclosures

ASCO TRI-POINT switches are available in either a general purpose or watertight enclosure, in addition to open frame construction. These enclosed units are made in accordance with NEMA and UL standards. These standards define the protection level an enclosure gives and the tests it must pass to meet a particular design.

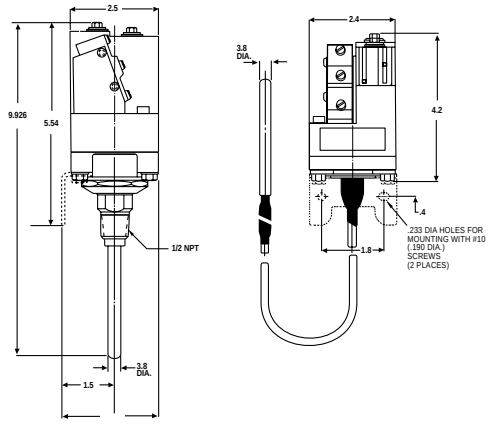
General Purpose – Type 1. These enclosures are designed for indoor use to protect personnel from accidental contact with the equipment. P-Series general purpose enclosures are painted, zinc-coated steel and have a 7/8" diameter hole at the top for electrical entry.

Watertight – Type 4. Watertight and dust-tight enclosures are intended for use indoors and outdoors to protect the enclosed equipment against splashing or falling water, windblown dust and water, hose directed water, and severe external condensation. P-Series watertight switch enclosures are epoxy-painted, zinc-coated steel with a 1/2" conduit hub in the side of the lower housing for electrical entry. (For optional 316 SS watertight enclosure see page 29.)

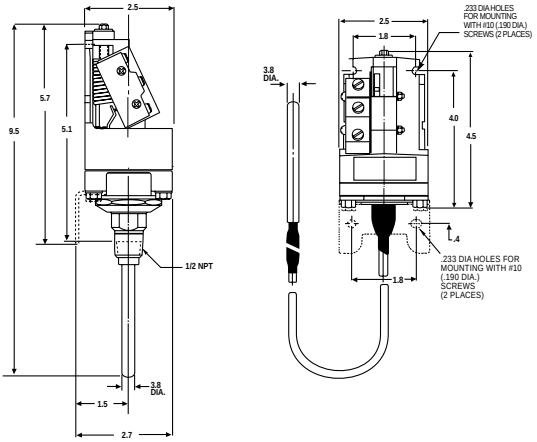
Dimensions (inches)

P-Series Temperature (Mounting brackets optional)

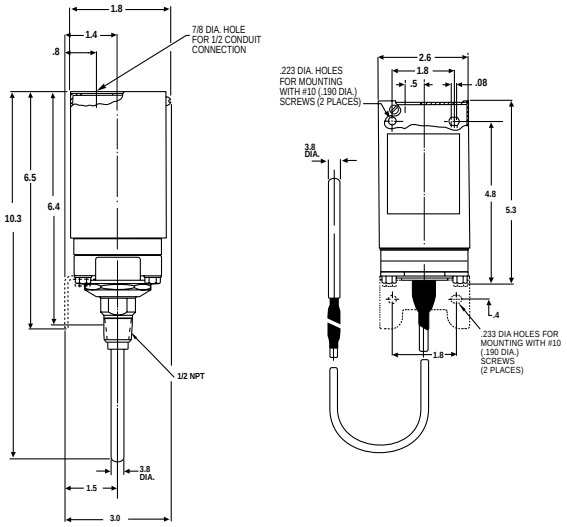
Open Frame PA and PC Switch Units with Transducer Unit Types RD-RV



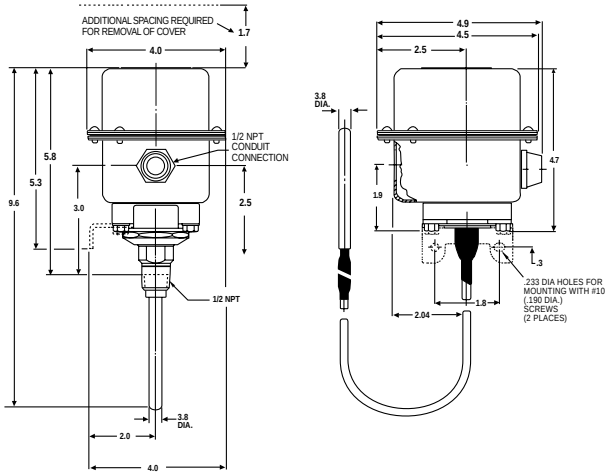
Open Frame PB and PG Switch Units with Transducer Unit



Type 1 General Purpose Switch Unit with Transducer Unit



Type 4 Watertight Switch Unit with Transducer Unit



P-SERIES Temperature Switches

General Purpose Enclosure

Watertight Enclosure

How to Select and Order

ASCO P-Series switches consist of two components, the switch unit and the transducer unit.

How to Select

1. Select the adjustable operating range based on desired actuation temperature.
2. Check that rated overrange temperature is sufficient.
3. Read across and select the desired P-Series switch unit with the proper enclosure.
4. Continue across and select a matching transducer unit.

Select P-Series temperature switch

PA Switch Unit

Single-Stage Adjustable Deadband units allow independent adjustment of the set and reset points over the full operating range of the switch. The minimum difference between set and reset points is the deadband listed below; the maximum difference is the full range of the switch .

Open Frame

PB Switch Unit

Single-Stage Fixed Deadband units have an adjustable set point and a non-adjustable automatic reset point.

Open Frame

Specifications				Adjustable Deadband				Fixed Deadband			
Adjustable Operating Range (°F)	Rated Overrange Temperature (°F)			Adjustable Deadband Maximum Full Scale Minimum At Mid-Range (°F) ①	Open Frame Catalog No.	General Purpose Catalog No.	Watertight Enclosure Catalog No.	Fixed Deadband At Mid-Range (°F) ①	Open Frame Catalog No.	General Purpose Catalog No.	Watertight Enclosure Catalog No.
	Direct Mount	Capillary									
		Copper	SS								
-30 - 60	250	250	250	10	PA16A	PA10A	PA11B	4	PB16A	PB10A	PB11B
0 - 90	260	300	300	10	PA16A	PA10A	PA11B	4	PB16A	PB10A	PB11B
50 - 160	260	350	350	10	PA16A	PA10A	PA11B	4	PB16A	PB10A	PB11B
100 - 220	260	400	450	10	PA16A	PA10A	PA11B	4	PB16A	PB10A	PB11B
160 - 260	260	500	500	10	PA16A	PA10A	PA11B	4	PB16A	PB10A	PB11B
225 - 340	---	550	600	10	PA16A	PA10A	PA11B	4	PB16A	PB10A	PB11B
300 - 450	---	550	700	12	PA16A	PA10A	PA11B	5	PB16A	PB10A	PB11B
350 - 510	---	550	800	12	PA16A	PA10A	PA11B	5	PB16A	PB10A	PB11B

All switch units above are in stock for immediate delivery.

°C = (°F -32) x 5/9

① Values shown are nominal.

How to Order

Factory assembled – Simply order the switch and transducer unit by catalog number joined by a slash (/), e.g., PA16A/KA10A1.

Field assembled – Simply order the switch and transducer units separately by individual catalog number, e.g., one PA16A and one KA10A1.

***Options* –** Add appropriate suffix for desired option or accessory (see pages 34-35).

***Important Note*:** The third digit of each of the catalog numbers must be identical, e.g., PA 1 6A and KA 1 0A1.

PA, PB, or PC unit below

PC Switch Unit

Two-Stage Fixed Deadband units consist of two separate snap-action switches, each with an independently adjustable set point and non-adjustable reset point. The difference between the set and reset points of each switch is the deadband listed below; the minimum difference between the set points of the two switches is the separation.

Open Frame

Two-Stage Fixed Deadband

Fixed Deadband At Mid-Range (°F)	Separation: Maximum Full Scale / Minimum At Mid-Range (°F)	Open Frame Catalog No.	General Purpose Catalog No.	Watertight Enclosure Catalog No.
7	9	PC16A	PC10A	PC11B
7	9	PC16A	PC10A	PC11B
7	11	PC16A	PC10A	PC11B
7	12	PC16A	PC10A	PC11B
7	10	PC16A	PC10A	PC11B
7	12	PC16A	PC10A	PC11B
9	15	PC16A	PC10A	PC11B
9	16	PC16A	PC10A	PC11B

Select transducer unit below

Direct Mount 1/2" NPT

Capillary and Bulb

Transducer Unit

The **temperature transducer** works on the vapor principle where the internal pressure within the system is generated by the vapor pressure of a chemical within a sealed system. The temperature sensed by the bulb is related uniquely to an internal pressure within the system. The pressure acts on a diaphragm/piston to create the force output from the transducer into the switch unit. Temperature transducers are available in two constructions. The direct mount (local) unit includes a 1/2" NPT connection for direct application to the process. The capillary and bulb-type construction allows for remote mounting from the process.

Temperature Transducer Units

Direct Mount		6' Capillary and Bulb		12' Capillary and Bulb	
Copper Catalog No.	316 SS Catalog No.	Copper Catalog No.	316 SS Catalog No.	Copper Catalog No.	316 SS Catalog No.
KB10A1	KB10A4	KB11A1	KB11A4	KB11A1D	KB11A4D
KD10A1	KD10A4	KD11A1	KD11A4	KD11A1D	KD11A4D
KF10A1	KF10A4	KF11A1	KF11A4	KF11A1D	KF11A4D
KJ10A1	KJ10A4	KJ11A1	KJ11A4	KJ11A1D	KJ11A4D
KL10A1	KL10A4	KL11A1	KL11A4	KL11A1D	KL11A4D
---	---	KN11A1	KN11A4	KN11A1D	KN11A4D
---	---	KT11A1	KT11A4	KT11A1D	KT11A4D
---	---	KU11A1	KU11A4	KU11A1D	KU11A4D

All switch units and transducer units above are in stock for immediate delivery.

How to Select and Order

ASCO P-Series switches consist of two components, the switch unit and the transducer unit.

How to Select

1. Select the adjustable operating range based on desired actuation temperature.
2. Check that rated overrange temperature is sufficient.
3. Read across and select the desired P-Series switch unit with the proper enclosure.
4. Continue across and select a matching transducer unit.

How to Order

Factory assembled – Simply order the switch and transducer unit by catalog number joined by a slash (/), e.g., PG16A/KA10A1.
Field assembled – Simply order the switch and transducer units separately by individual catalog number, e.g., one PG16A and one KA10A1.
Options – Add appropriate suffix for desired option (see pages 34-35).
***Important Note*:** The third digit of each of the catalog numbers must be identical, e.g., PG 1 6A and KA 1 0A1.

Select P-Series switch unit and transducer unit below

PG Switch Unit

Limited Adjustable Deadband units have an adjustable set point and use a special snap-action switch that varies the deadband within the limits listed below.

Open Frame

Transducer Unit

The **temperature transducer** works on the vapor principle where the internal pressure within the system is generated by the vapor pressure of a chemical within a sealed system. The temperature sensed by the bulb is related uniquely to an internal pressure within the system. The pressure acts on a diaphragm/piston to create the force output from the transducer into the switch unit.

Direct Mount 1/2" NPT

Capillary and Bulb

Specifications

Adjustable Operating Range (°F)	Rated Overrange Temperature (°F)		
	Direct Mount	Capillary	
		Copper	SS
-30 - 60	250	250	250
0 - 90	260	300	300
50 - 160	260	350	350
100 - 220	260	400	450
160 - 260	260	500	500
225 - 340	---	550	600
300 - 450	---	550	700
350 - 510	---	550	800

°C = (°F -32) x 5/9

Limited Adjustable Deadband

Adjustable Deadband Maximum Full Scale Minimum At Mid-Range (°F) ①	Open Frame Catalog No.	General Purpose Catalog No.	Watertight Enclosure Catalog No.
6 - 12	PG16A	PG10A	PG11B
6 - 12	PG16A	PG10A	PG11B
6 - 12	PG16A	PG10A	PG11B
6 - 12	PG16A	PG10A	PG11B
6 - 12	PG16A	PG10A	PG11B
6 - 12	PG16A	PG10A	PG11B
6 - 12	PG16A	PG10A	PG11B
6 - 12	PG16A	PG10A	PG11B

Temperature Transducer Units

Direct Mount		6' Capillary and Bulb		12' Capillary and Bulb	
Copper	316 SS	Copper	316 SS	Copper	316 SS
Catalog No.	Catalog No.	Catalog No.	Catalog No.	Catalog No.	Catalog No.
KB10A1	KB10A4	KB11A1	KB11A4	KB11A1D	KB11A4D
KD10A1	KD10A4	KD11A1	KD11A4	KD11A1D	KD11A4D
KF10A1	KF10A4	KF11A1	KF11A4	KF11A1D	KF11A4D
KJ10A1	KJ10A4	KJ11A1	KJ11A4	KJ11A1D	KJ11A4D
KL10A1	KL10A4	KL11A1	KL11A4	KL11A1D	KL11A4D
---	---	KN11A1	KN11A4	KN11A1D	KN11A4D
---	---	KT11A1	KT11A4	KT11A1D	KT11A4D
---	---	KU11A1	KU11A4	KU11A1D	KU11A4D

All switch units and transducer units above are in stock for immediate delivery.

① Values shown are nominal.

Switches with Optional 316 Stainless Steel Enclosure

Every ASCO P-Series temperature switch is available in a corrosion-resistant, stainless steel enclosure. Typical applications include:

- Offshore platforms
- Hydrocarbon processing plants
- Oil & gas fields
- Oil & gas transmission lines
- Chemical plants
- Breweries
- Paper pulp mills
- Salt spray locations

Stainless Steel Enclosure

ASCO Type 4X watertight enclosure is designed to provide protection against windblown dust, rain, sleet or external ice formation. The switch and transducer unit are available only as factory-assembled units.

How to Select and Order

ASCO P-Series switches with 316 SS enclosure consist of two *factory-assembled* components, the switch unit and the transducer unit.

How to Select (use tables on pages 26-28)

1. Select the adjustable operating range based on desired actuation temperature.
2. Check that rated overrange temperature is sufficient.
3. Read across and select the desired P-Series switch unit with open frame construction.
4. To add a 316 SS enclosure, change the fourth digit of the open frame catalog number from “6” to “5”, e.g., PG1 6 A becomes PG5 5 A.
5. Continue across and select a matching direct mount or capillary and bulb transducer unit compatible with the fluid. For direct mount unit add suffix “D” to switch catalog number, e.g., PG15A becomes PG15AD; for capillary and bulb unit add suffix “C”, e.g., PG15A becomes PG15AC.

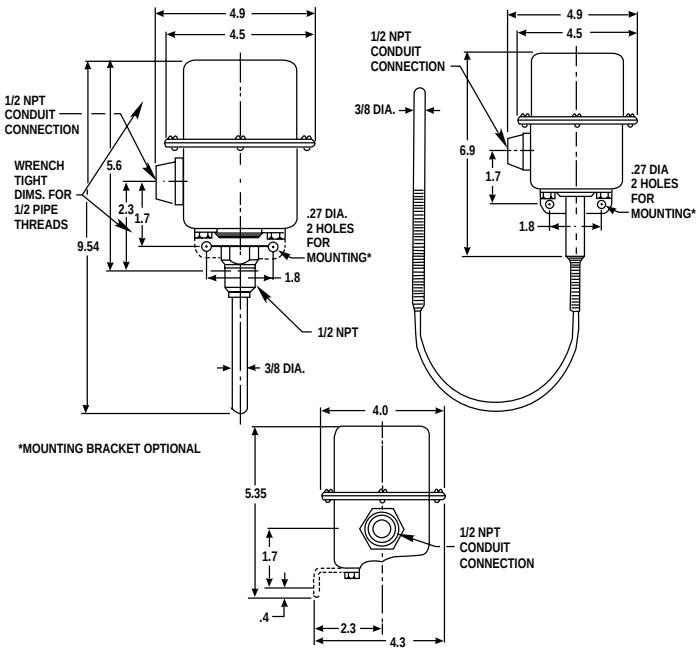
How to Order

Factory assembled only – Simply order the switch and transducer unit by catalog number joined by a slash (/), e.g., PG15AD/KA10A4 for direct mount and PG15AC/KA11A4 for capillary and bulb unit.

***Options* –** Add appropriate suffix for desired option (see pages 34-35).

Dimensions (inches)

P-Series Temperature with Optional 316 SS Enclosure



Switches for -60 through 640°F with Adjustable Set Points, Fixed or Adjustable Deadband and General Purpose, Watertight or Explosion-Proof Enclosures

Features:

- Set point repeatability, ±1°F (1/2°C).
- All wiring terminals, adjustments and visual scales are accessible from the front of the switch.
- Choice of general purpose, watertight or explosion-proof enclosures.
- Choice of fixed or full-range adjustable deadband.
- Choice of single or two-stage units.
- Manual reset units available.
- Mounts in any position.
- Rugged and vibration resistant.
- Visual adjustment scales in °F and °C.
- External adjusting nuts.
- Separate temperature, electrical and adjusting chambers.
- Direct mount (local) or capillary and bulb (remote) sensors.
- Temperature transducers available with copper or 316 stainless steel wetted material.
- Withstands high overrange temperatures.
- Mix and match switch and transducer components for increased stock flexibility or to change pressure ranges in field.

General Description:

ASCO S-Series temperature switches consist of a switch unit and a transducer unit. They can be ordered separately for customer stocking and/or field assembly or as a complete factory-assembled unit.

Switch

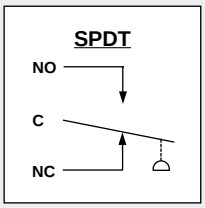
S-Series temperature switch units incorporate the unique ASCO TRI-POINT alternating fulcrum balance plate to control the operation of one or more electrical snap-action swtiches. The electrical snap-action switch together with the adjusting mechanism is a fully-tested, self-contained subassembly.

Transducer

The temperature transducer unit uses a vapor pressure principle where the internal pressure within the unit is generated by the vapor pressure of a chemical within a sealed system. Temperature transducers are available in two constructions, a direct mount or capillary and bulb construction. The direct mount unit includes a 1/2" NPT connection for direct mounting to the process. The capillary and bulb construction allows remote mounting from the process. The transducer unit (like the switch unit) is a fully-tested, self-contained subassembly.

Standard Electrical Ratings

SA, SB, SC, SD and SE Series
15 Amp Res., 125 VAC
10 Amp Res., 250 VAC
1/8 HP, 125 VAC
1/4 HP, 250 VAC
1/2 Amp Res., 125 VDC
1/4 Amp Res., 250 VDC



Standard Temperature Ratings

Ambient: -4°F (-20°C) to 140°F (60°C)
Fluid: See specification table on page 32 for rated overrange temperature.

Operation

Temperature sensed by the bulb creates an internal pressure within the transducer. This pressure is then converted into movement of the piston. This piston movement is then used to control the operation of the electrical snap-action switch in the switch unit.

Options (See pages 34-35)

Enclosures

ASCO TRI-POINT S-Series switches are available in three standard enclosures. All of these enclosed units are made in accordance with NEMA and UL standards.

General Purpose – Type 1. These enclosures are designed for indoor use to protect personnel from accidental contact with the equipment. S-Series general purpose switch units consist of a copper-free* aluminum die-cast body with a formed copper-free* aluminum cover; two 3/4” conduit hubs with one plug are provided.

Watertight – Type 4. Watertight and dust-tight enclosures are intended for use indoors and outdoors to protect the enclosed equipment against splashing or falling water, windblown dust and water, hose directed water, and severe external condensation. S-Series watertight switch units have a copper-free* aluminum die-cast body and a formed copper-free* aluminum cover with Buna “N” gaskets; two 3/4” conduit hubs with one plug are provided.

Explosion-Proof – Types 7 and 9. Type 7 enclosures are intended for use in locations defined by the National Electrical Code as Class I. Type 9 enclosures are intended for Class II locations.

Class I locations are those in which flammable gases are or may be present in the air in sufficient quantities to produce explosive or ignitable mixtures. Class I locations are classified by group letter, which defines particular atmospheres. Division 1 locations are areas where the hazardous concentration exists continuously, intermittently or periodically under normal operating conditions. Division 2 locations are those where the hazardous vapors are present only in case of accidental rupture or breakdown of equipment.

ASCO TRI-POINT explosion-proof enclosures with letter B, C or D in the fifth position are listed for Class I, Groups B, C, and D, Division 1. They are also suitable for the less stringent Division 2 environment.

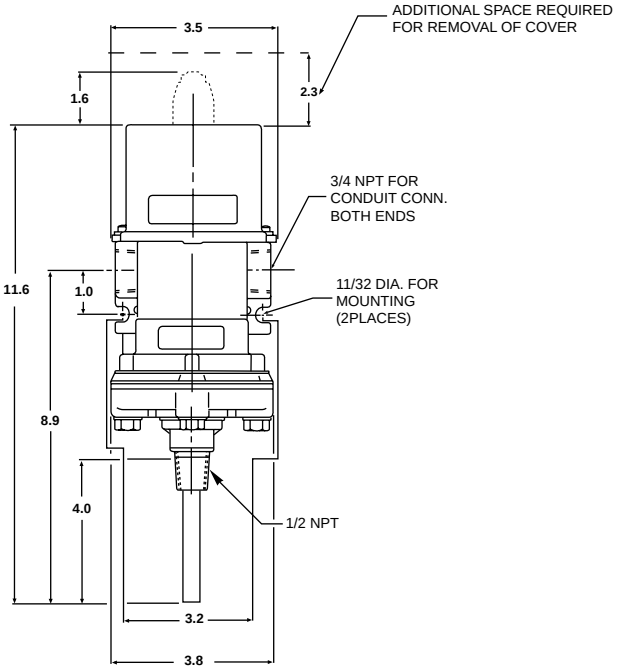
Class II locations are those which are hazardous because of the presence of combustible dust. All ASCO TRI-POINT explosion-proof enclosures are listed for Groups E, F, and G locations.

The switch body and cover are die-cast copper-free* aluminum with a Buna “N” gasket. Two 3/4” conduit hubs with one plug are provided.

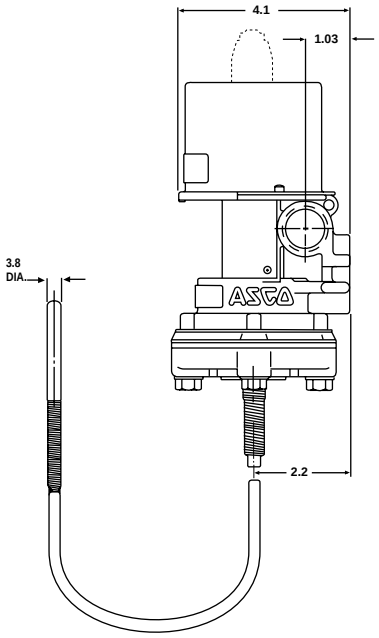
Dimensions (inches)

S-SeriesTemperature

With Direct Mount Transducer



With Capillary and Bulb Transducer



* Less than 0.6% copper.

How to Select and Order

ASCO S-Series switches consist of two components, the switch unit and the transducer unit.

How to Select

1. Select the adjustable operating range based on desired actuation temperature.
2. Check that rated overrange temperature is sufficient.
3. Read across and select the desired S-Series switch unit with the proper enclosure.
4. Continue across and select a matching transducer unit compatible with the fluid.

How to Order

Factory assembled – Simply order the switch and transducer unit by catalog number joined by a slash (/), e.g., SA10D/QA10A1.

Field assembled – Simply order the switch and transducer units separately by individual catalog number, e.g., one SA10D and one QA10A1.

***Options* –** Add appropriate suffix for desired option (see pages 34-35).

***Important Note*:** The third digit of each of the catalog numbers must be identical, e.g., SA 1 0D and QA 1 0A1.

Select S-Series temperature switch

SA Switch Unit

Single-Stage Adjustable Deadband units allow independent adjustment of the set and reset points over the full operating range of the switch. The minimum difference between set and reset points is the deadband listed below; the maximum difference is the full range of the switch .

General Purpose

SB, SD or SE Switch Unit

SB Switch Unit: Single-Stage Fixed Deadband units have an adjustable set point and a non-adjustable automatic reset point.
SD Switch Unit: Manual reset on decreasing temperature units operate automatically on increasing temperature and must be reset manually on decreasing temperature. (To order, change second digit to letter "D", e.g., S B 40D becomes S D 40D).
SE Switch Unit: Manual reset on increasing temperature units operate automatically on decreasing temperature and must be reset manually on increasing temperature. (To order, change second digit to letter "E", e.g., S B 40D becomes S E 40D).

Specifications				Adjustable Deadband				Fixed Deadband or Manual Reset			
Adjustable Operating Range (°F)	Rated Overrange Temperature (°F)			Adjustable Deadband Maximum Full Scale Minimum At Mid-Range (°F) ①	General Purpose Catalog No.	Watertight Enclosure Catalog No.	Explosion-Proof Catalog No.	Fixed Deadband At Mid-Range (°F) ①	General Purpose Catalog No.	Watertight Enclosure Catalog No.	Explosion-Proof Catalog No.
	Direct Mount	Capillary									
		Copper	SS								
-30 - 60	250	250	250	8	SA10D	SA11D	SA12D	3	SB10D	SB11D	SB12D
0 - 90	260	300	300	8	SA10D	SA11D	SA12D	3	SB10D	SB11D	SB12D
50 - 160	260	350	350	8	SA10D	SA11D	SA12D	3	SB10D	SB11D	SB12D
100 - 220	260	450	450	8	SA10D	SA11D	SA12D	3	SB10D	SB11D	SB12D
160 - 260	260	500	500	9	SA10D	SA11D	SA12D	3	SB10D	SB11D	SB12D
225 - 340	---	550	600	12	SA10D	SA11D	SA12D	6	SB10D	SB11D	SB12D
300 - 450	---	550	700	12	SA10D	SA11D	SA12D	6	SB10D	SB11D	SB12D
350 - 510	---	550	800	18	SA10D	SA11D	SA12D	7	SB10D	SB11D	SB12D
425 - 640	---	550	890	32	SA10D	SA11D	SA12D	20	SB10D	SB11D	SB12D

All switch units above are in stock for immediate delivery.

°C = (°F -32) x 5/9

① Values shown are nominal.

SA, SB, SC, SD or SE unit below

SC Switch Unit

Two-Stage Fixed Deadband units consist of two separate snap-action switches, each with an independently adjustable set point and non-adjustable reset point. The difference between the set and reset points of each switch is the deadband listed below; the minimum difference between the set points of the two switches is the separation.

Explosion Proof

Select transducer unit below

Direct Mount
1/2" NPT

Capillary
and Bulb

Transducer Unit

The **temperature transducer** works on the vapor principle where the internal pressure within the system is generated by the vapor pressure of a chemical within a sealed system. The temperature sensed by the bulb is related uniquely to an internal pressure within the system. The pressure acts on a diaphragm/piston to create the force output from the transducer into the switch unit. Temperature transducers are available in two constructions. The direct mount (local) unit includes a 1/2" NPT connection for direct application to the process. The capillary and bulb-type construction allows for remote mounting from the process.

Two-Stage Fixed Deadband

Fixed Deadband At Mid-Range (°F) ①	Separation: Maximum Full Scale / Minimum At Mid-Range (°F) ①	General Purpose Catalog No.	Watertight Enclosure Catalog No.	Explosion-Proof Catalog No.
4	8	SC10D	SC11D	SC12D
4	8	SC10D	SC11D	SC12D
4	8	SC10D	SC11D	SC12D
4	8	SC10D	SC11D	SC12D
4	9	SC10D	SC11D	SC12D
8	12	SC10D	SC11D	SC12D
8	12	SC10D	SC11D	SC12D
10	18	SC10D	SC11D	SC12D
27	32	SC10D	SC11D	SC12D

Transducer Units

Direct Mount		6' Capillary and Bulb		12' Capillary and Bulb	
Copper Catalog No.	316 SS Catalog No.	Copper (Armored Capillary) Catalog No.	316 SS (Plain Capillary) Catalog No.	Copper (Armored Capillary) Catalog No.	316 SS & (Plain Capillary) Catalog No.
QB10A1	QB10A4	QB11A1	QB11A4	QB11A1D	QB11A4D
QD10A1	QD10A4	QD11A1	QD11A4	QD11A1D	QD11A4D
QF10A1	QF10A4	QF11A1	QF11A4	QF11A1D	QF11A4D
QJ10A1	QJ10A4	QJ11A1	QJ11A4	QJ11A1D	QJ11A4D
QL10A1	QL10A4	QL11A1	QL11A4	QL11A1D	QL11A4D
---	---	QN11A1	QN11A4	QN11A1D	QN11A4D
---	---	QT11A1	QT11A4	QT11A1D	QT11A4D
---	---	QU11A1	QU11A4	QU11A1D	QU11A4D
---	---	---	QW11A4	---	QW11A4D

All switch units and transducer units above are in stock for immediate delivery.

H-Series, P-Series and S-Series Snap-Action Switch Options

Optional snap-action switches to meet specific electrical loads or application conditions are available on most ASCO TRI-POINT switch units. Generally, the construction of a switch unit with optional snap-action switches contains other specific parts and may be ordered only as a factory-built unit. To specify a particular optional construction, add the appropriate suffix to the switch unit catalog number, e.g., SA10D with optional gold contact snap-action switch (suffix "P") would become SA10D P.

Description	Electrical Rating	Catalog Suffix	Deadband Variation From Listing
DC Rating 1 Amp Double Break	5 Amp, 125, 250 VAC 1/4 HP, 125 VAC 1/2 HP, 250 VAC 1 Amp, 125 VDC 1/2 Amp, 250 VDC	G	SA: +50% SB, SC, PA: +100% H: +200% PB: +400%
DC Rating 10 Amps, SPDT	10 Amp, 125 VAC, VDC 1/8 HP, 125 VAC, VDC	M	SA: +50% SB, SC, PA: +100% H: +120% PB: +400%
Double-pole Double-throw (Two SPDT Switches with Common Lever)	5 Amp, 125, 250 VAC 1/8 HP, 125 VAC 1/4 HP, 250 VAC 1/2 Amp, 125 VDC 1/4 Amp, 250 VDC	K	SA, SB, SD, SE, PB: +50%
Gold Contact Dry Circuit SPDT	1 Amp, 28 VAC 1 Amp, 28 VDC 25 Amp Res, 28 VDC	P	SA, SB, SC, PA: +25% H: +50% PB, PC: +100%
Hermetically Sealed SPDT	10 Amp Ind, 28 VDC 5 Amp Motor, 28 VDC 3 Amp Lamp, 28 VDC 1 Amp, 125 VAC	H	SA, PA: +100% H: +200% PB: +600%
High Ambient 250°F SPDT	5 Amp, 125, 250 VAC 1/8 HP, 125 VAC 1/4 HP, 250 VAC 1/2 Amp, 125 VDC 1/4 Amp, 250 VDC	F	SA, SB, SC: +25%
High Power 1 HP SPDT	20 Amp, 125, 250 VAC 1 HP, 125 VAC 2 HP, 250 VAC 1/2 Amp, 125 VDC 1/4 Amp, 250 VDC	W	SA: +50% SB, SC: +100% PB: +400%
Moisture Resistant Sealed Switch SPDT	5 Amp, 125, 250 VAC 1/8 HP, 125 VAC 1/4 HP, 250 VAC 1/2 Amp, 125 VDC 1/4 Amp, 250 VDC	J	SA: None SB, SC, PA: +25% PB, H: +50%
Tight Fixed Deadband SPDT	5 Amp, 125, 250 VAC 1/8 HP, 125 VAC 1/4 HP, 250 VAC 1/2 Amp, 125 VDC	T	SB, SC: -50%

P-Series Switch Options

Panel Mount – Open frame P-Series compact switch units are available for panel mounting with the switch unit inside and the transducer outside. The panel separates the fluid sensing portion from the electromechanical portion. Five holes for bolts and operating stem must be drilled or punched through the panel. Three constructions are available: add the suffix listed below to the switch unit catalog number for the desired thickness.

Panel Thickness	Suffix
10 Ga (.135±.005)	10
14 Ga (.075±.005)	11
16 Ga (.060±.005)	12

S-Series Switch Options

Industrial Adjusting Nut Covers – Available in clear plastic or metal to prevent tampering with set point adjusting nuts.
Clear plastic cover: To order, add suffix "1" to the switch unit catalog number, or order separately as SP01.
Metal cover: To order, add suffix "2" to the switch unit catalog number, or order separately as SP02.

JIC Construction – A switch unit having the electrical and adjusting nut covers attached to the switch body by a chain. Also designed to Type 13 specifications. To order, add suffix "3" to the switch unit catalog number, or order separately as SP03.

Terminal Block – Applicable to switch units with one single-poledouble-throw switch. The terminal strip is prewired to the snap-action switch. To order, add suffix "4" to the switch unit catalog number, or order separately as SP04.

Factory Sealed – Explosion-proof units may be ordered with a factory seal separating the electrical chamber from the conduit hubs and 24" long #14 AWG 105°C. rated lead wires. To order, change the fourth digit of the switch unit catalog number from "2" to "3", e.g., SA12D becomes SA13D.

Pressure Transducer Options

Special Wetted Materials – The following diaphragms may be substituted on transducer body materials of aluminum, brass, polyester and stainless steel. To order, substitute the material code below in the seventh digit of the transducer catalog number, e.g., a TF10A1[1] with optional FKM diaphragm becomes a TF10A1[2].

Diaphragm	Material Code	Temperature Range
Buna "N"	1	-4°F (-20°C) to 180°F (82°C)
Ethylene Propylene	6	-4°F (-20°C) to 250°F (121°C)
Neoprene	3	-4°F (-20°C) to 180°F (82°C)
Fluorosilicone	7	-40°F (-40°C) to 250°F (121°C)
FKM	2	-4°F (-20°C) to 250°F (121°C)

Oxygen Cleaning – Pressure transducers for oxygen service should be specially cleaned. They are degreased and blacklight inspected, then assembled in a clean area and tested with oil-free air or nitrogen. Use metal body transducer with FKM or neoprene diaphragm and add suffix "H" to transducer catalog number, e.g., TA40A13 becomes TA40A13[H].

Pressure Snubbers – A pressure snubber (1/4" NPTF by 1/4" NPTM) installed in the transducer pressure connection will dampen the pressure spikes to a value which will not cause damage. It consists of a body with a porous metal disc of stainless steel through which the fluid passes. To order, select a snubber compatible with the fluid. Available by seperate catalog number only (see table below).

Fluid	Brass Catalog No.	303 SS Catalog No.
Air, Non-Hazardous Gases	TP04G2	TP04G3
Water, Light Oil (under 225 SSU)	TP04E2	TP04E3
Oil (Heavy, (over 225 SSU)	TP04D2	TP04D3
Pressure Rating (psig)	2000	5000

Process Connection – A female process connection (1/4" NPT) is standard on all pressure transducers. A 1/2" NPT is available as an option on *gauge* pressure transducers. To order, add suffix "B" to transducer catalog number, e.g., RF10A21 becomes RF10A21[B].
Note: Not available on nylon transducers.

P-Series and S-Series Temperature Transducer Options

Armored Capillaries – Double braided copper armor is standard for copper capillary units. Stainless steel spiral interlocked armor is available for stainless steel capillary units. Add suffix "C" to transducer catalog number.

Thermal Well

Thermal Well① **–** Use with direct or remote sensors for protecting sensing bulb. This allows removal of bulb while maintaining a pressure-tight vessel. Available in 1/2" NPT or 3/4" NPT process connection in brass or 316 SS. Dimensions are in accordance with SAMA Std. RC17-9. Standard "U" dimension (insertion length) is 2-1/2" for direct mount and 6' capillary units and is 4-1/2" for 12' capillary units.

Material	Pressure Rating (psig)	"U" Dimensions (Inches)	Process Connection	
			1/2" NPT	3/4" NPT
			Catalog No.	Catalog No.
Brass	1000	2-1/2	QP03	QP04
		4-1/2	QP13	QP14
		7-1/2	QP23	QP24
		10-1/2	QP33	QP34
316 SS	6000	2-1/2	QP07	QP08
		4-1/2	QP17	QP18
		7-1/2	QP27	QP28
		10-1/2	QP37	QP38

① Jam nuts provided with thermal wells.

Longer Capillaries – Standard copper and stainless steel capillary units can be furnished in 12' lengths. To order, add suffix "D" to transducer catalog number.
Consult ASCO for longer length capillaries.

Capillary Length (Feet)	Transducer Suffix	Bulb Length (Inches)	"U" Dimension Required (Inches)
6	---	3-1/2	2-1/2
12	D	5-1/2	4-1/2
13 - 20	E	5-1/2	4-1/2
21 - 50	F	8-1/2	7-1/2
51 - 80	G	11-1/2	10-1/2

Union Connector – For use with remote units for mounting of bulb in fluid being controlled. Available in 1/2" NPT and 3/4" NPT process connections in brass or 316 SS.

Material	Pressure Rating (psig)	Process Connection	
		1/2" NPT	3/4" NPT
		Catalog No.	Catalog No.
Brass	500	QP01	QP02
316 SS	1500	QP05	---

Definitions

Accuracy – The maximum deviation from the set point under specified operating condition (ambient temperature, barometric pressure, etc.).

Adjustable Deadband – Refers to the capability of a pressure or temperature switch to allow the deadband to be adjusted over a given range. Certain ASCO TRI-POINT switches have an adjustable deadband which can be adjusted over the total operating range of the switch.

Adjustable Operating Range – The pressure or temperature range of the switch within which the set point may be adjusted.

Differential Pressure – The difference between two pressures. A differential pressure switch senses two pressure sources and can be adjusted to actuate on a desired difference between them.

Guage Pressure – The actual reading of a typical pressure guage and is the difference between the pressure within a vessel and the atmospheric pressure surrounding it. It is normally measured in pounds per square inch (psig).

Manual Reset – The switch is a semi-automatic device which operates automatically with a signal change in one direction but must be manually reset once the signal returns to its original position.

Proof Pressure – A pressure which a device can be subjected to for extended periods of time without changes in its operating characteristics.

Rated Overrange Temperature – A temperature which a device can be subjected to for extended periods of time without changes in its operating characteristics.

Repeatability – The closeness of agreement among a number of consecutive measurements of the output for the same value of input under the same operating conditions approaching from the same direction. Repeatability is normally specified as a percentage of the upper limit of the operating range.

> Example: Operating range 5-100 psig with ±1% repeatability; equals ±1% of 100 psig or ±1 psig.

Reset Point – After a pressure or temperature switch has reached its set point and operated the electrical switch, it must return to a point called the reset point before the electrical switch can return to its original position.

Set Point – The pressure reading at which the electrical switch element changes contact position (it can be specified either increasing or decreasing).

Switch Unit – ASCO uses the term “switch unit” to describe the electromechanical portion of a pressure or temperature switch. This is used in conjunction with a transducer unit to form a complete pressure or temperature switch.

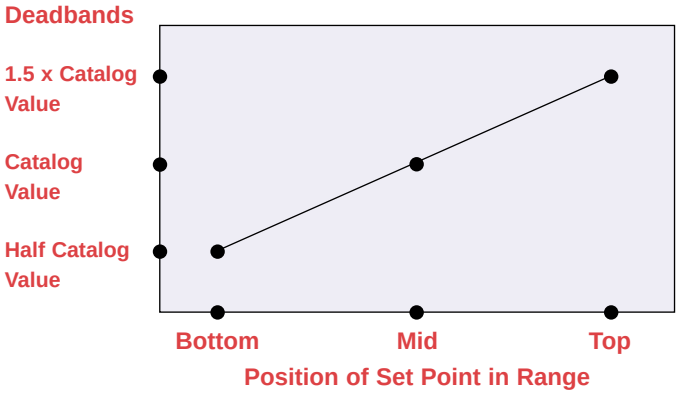
Transducer Unit – ASCO uses the term “transducer unit” to describe that portion of a pressure or temperature switch to which a pressure or temperature is applied which converts the input signal to another form of energy to operate the switch unit.

Two-Stage (Dual) – ASCO uses the term “two stage” to describe a pressure or temperature switch which is equivalent to two pressure or temperature switches which are independently adjustable. This switch is equivalent to two fixed deadband switches.

Deadbands – The deadband is the difference between the set point and reset point readings. Deadbands are listed in the specification tables at nominal values. They are representative of the deadbands of the units at the middle of the range.

The deadband values for the full range adjustable deadband switches and limited adjustable deadband switches indicate the values through which the deadband may be adjusted.

Generally, as the set point is adjusted through the operating range, the deadband will vary. Normally, it will become narrower as the set point is towards the bottom of the range, and will become wider when the set point is towards the top of the range. The graph shown below indicates representative trends of this type of deadband variation.



Temperature switch deadbands are a result of the characteristics of the vapor pressure curve as well as other factors. Normally, this results in a deadband which is narrower in the top third of the range than in the bottom third of the range. The values published are nominal and representative of mid-range set points.

Fluid Compatibility Guide

These recommendations are to be used as a guide only, as service life of material is dependent on temperature, concentrations, or catalysts that may be added and other conditions which are beyond our control.
Consult ASCO for specific service applications.

Note: Items in black circles are standard catalog units.
All others available on factory order.
P - Indicates preferred construction. **S** - Indicates satisfactory construction.

Transducer Material Code of Two Digits represents process connection material and diaphragm material, respectively; these are the sixth and seventh positions of the pressure transducer catalog number.

Process Connection: 6th Position

1 Aluminum
2 Brass
3 303 S.S.
4 316 S.S.
7 Nylon/Brass

Diaphragm: 7th Position

1 Buna "N"
2 FKM
3 Neoprene
4 316 S.S.
6 Ethylene Propylene
7 Fluorosilicone

Material Code		11	12	13	16	17	21	22	23	26	27	31	32	33	36	37	42	44	71
Ranges Available	Vacuum	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
	Inches of Water	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
	P.S.I.G. ⑤ to	400	400	400	400	400	3500	3500	3500	3500	3500	8000	8000	8000	8000	8000	8000	400	200
Acetic Acid														S	S			P	
Acetylene		P	S		S							S	S		S		S	S	
Air		P	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	P
Ammonia																		P	
Argon-Welding ①		P	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	P
Benzene-Benzol			P					S					S				S	S	
Butane		P	S				S	S				S	S				S	S	
Carbon Tetrachloride													P				P	S	
Cellulube			P		S			S		S			S		S		S	S	
Coke Oven Gas													P				P	S	
Ethyl Alcohol (denatured)		P	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	
Ethylene Glycol		P	S	S	S		S	S	S	S		S	S	S	S		S	S	
Freon Refrigerants																		P	
Freon Solvents ("MF", "TF", "BF")							P	S				S	S				S	S	
Fuel Oils and Diesel ④		P	S				S	S				S	S				S	S	
Gasoline																		P	
Gas, Inert		P	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	P
Gas (natural and manufactured) ④		P	S	S		S	S	S	S		S	S	S	S		S	S	S	
Helium		P	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	P
Hydrogen		P	S	S	S		S	S	S	S		S	S	S	S		S	S	
Jet Fuel (JP1 to JP6)			P			S		S			S		S			S	S	S	
Kerosene		P	S				S	S				S	S					S	
Methyl Alcohol (Methanol)		P		S	S	S	S		S	S	S	S		S	S	S	S	S	
Naphtha		P	S				S	S				S	S				S	S	
Nitrogen		P	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	P
Oils (coolant, hydraulic, lubricating and motor)		P	S				S	S				S	S				S	S	P
Oxygen, Gaseous ②			S	P		S		S	S		S		S	S		S	S	S	
Potassium Sulfate		P	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	
Propane Gas and Liquid		P	S	S			S	S	S			S	S	S			S	S	
"Pydraul" ("Monsanto")			P			S		S			S		S			S	S	S	
Steam ③							P	S		S	S	S	S		S	S	S	S	
Steam Condensate							P	S		S	S	S	S		S	S	S	S	P
Stoddard Solvent		P	S				S	S				S	S				S	S	
Toluene (Tolulo)			P					S					S				S	S	
Vacuum		P	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S		
Vegetable Oil		P	S	S		S						S	S	S		S	S	S	
Vinegar													S		S	S	S	P	
Water, Fresh, Boiler Feed							P	S		S	S	S	S		S	S	S	S	P
Water (Distilled, Deionized, Demineralized)												P	S	S	S	S	S	S	
Water, Sea																		S	

Notes: ① For high purity applications use stainless steel transducers. ② Oxygen service requires special cleaning, specify suffix "H". ③ For steam service a condensate loop (pigtail) is required. ④ For pressure transducers for combustion service see pages 20-23. ⑤ Material availability refers to standard gauge pressure constructions only.