

S-SERIES Pressure Switches

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

Features:

- Set point repeatability, $\pm 1\%$ 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 switches. 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

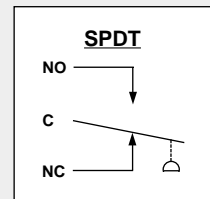
When pressure is applied to the transducer it is converted into movement of the piston. This piston movement is then used to control the operation of the electrical snap-action switch in the switch unit.



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 Viton 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)

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.

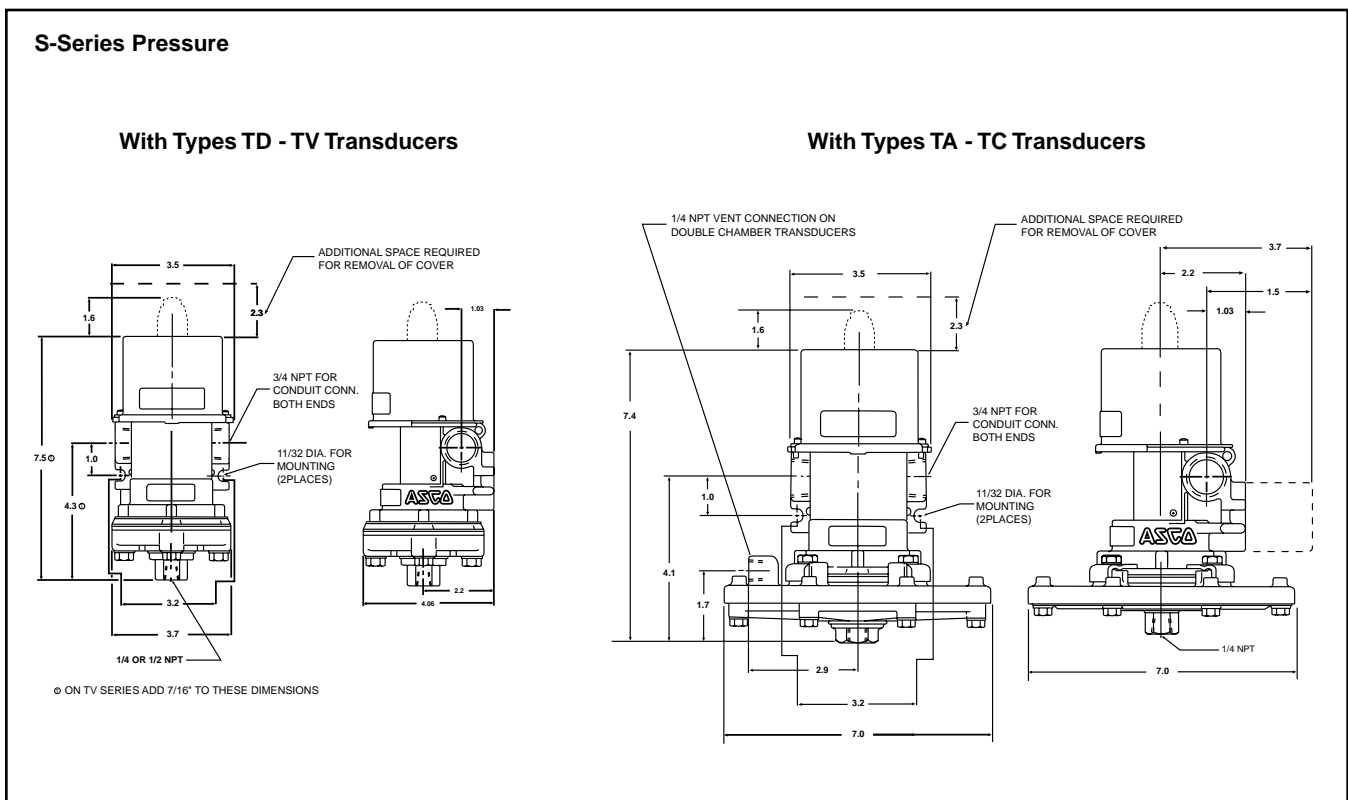
Class I locations are those in which flammable gases are or may be present in the air in sufficient quantities to produce explosive or ignitable mixtures. Class I locations are classified by group letter, which defines particular atmospheres. Division 1 locations are areas where the hazardous concentration 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)



* 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					SB, SD or SE Switch Unit				
<p>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.</p>  <p style="text-align: center;">General Purpose</p>					<p>SB Switch Unit: Single-Stage Fixed Deadband units have an adjustable set point and a non-adjustable automatic reset point.</p> <p>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 <u>B</u>40D becomes S <u>D</u>40D).</p> <p>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 <u>B</u>40D becomes S <u>E</u>40D).</p>				
Specifications		Adjustable Deadband				Fixed Deadband or Manual Reset			
Adjustable Operating Range (psig)	Proof Pressure (psig)	Adjustable Deadband	General Purpose	Watertight Enclosure	Explosion-Proof	Fixed Deadband At Mid-Range (psig) ①	General Purpose	Watertight Enclosure	Explosion-Proof
		Maximum Full Scale							
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 40D and TA 40A11.

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		General Purpose	Watertight Enclosure	Explosion-Proof
	Maximum Full Scale	Minimum At Mid-Range (psig) ①			
	Catalog No.	Catalog No.	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 **gauge 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"	Brass & Buna "N"	All 316 SS ②	316 SS & Viton ③
		Catalog No.	Catalog No.	Catalog No.	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.

S-SERIES Vacuum, Differential, Level Switches

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.

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).

Specifications		Adjustable Deadband				Fixed Deadband or Manual Reset			
Adjustable Operating Range (In W.C.)	Proof Pressure (psig)	Adjustable Deadband At Mid-Range (In W.C.) [Ⓢ] From/To	General Purpose	Watertight	Explosion-Proof	Fixed Deadband At Mid-Range (In W.C.) [Ⓢ]	General Purpose	Watertight	Explosion-Proof
			Catalog No.	Catalog No.	Catalog No.		Catalog No.	Catalog No.	Catalog No.
Vacuum									
0 - 30" Hg	50	2 - 28" Hg	SA30D	SA31D	SA32D	1.2" Hg	SB30D	SB31D	SB32D
15 PSI - 30" Hg	50	3 - 57" Hg	SA20D	SA21D	SA22D	1.7" Hg	SB20D	SB21D	SB22D
0 - 27	15	2 - 27	SA30D	SA31D	SA32D	1.2	SB30D	SB31D	SB32D
0 - 65	15	3 - 65	SA20D	SA21D	SA22D	1.4	SB20D	SB21D	SB22D
15 - 140	25	6 - 125	SA20D	SA21D	SA22D	3.0	SB20D	SB21D	SB22D
15 - 250	25	10 - 235	SA10D	SA11D	SA12D	6.0	SB10D	SB11D	SB12D
25 - 400	25	15 - 375	SA10D	SA11D	SA12D	8.0	SB10D	SB11D	SB12D
Differential									
0 - 12	15	2 - 12	SA40D	SA41D	SA42D	1.0	SB40D	SB41D	SB42D
0 - 27	15	2 - 27	SA30D	SA31D	SA32D	1.2	SB30D	SB31D	SB32D
0 - 65	15	3 - 65	SA20D	SA21D	SA22D	1.4	SB20D	SB21D	SB22D
15 - 140	25	6 - 125	SA20D	SA21D	SA22D	3.0	SB20D	SB21D	SB22D
15 - 250	25	10 - 235	SA10D	SA11D	SA12D	6.0	SB10D	SB11D	SB12D
25 - 400	25	15 - 375	SA10D	SA11D	SA12D	8.0	SB10D	SB11D	SB12D
Level									
0 - 12	125	2 - 12	SA40D	SA41D	SA42D	1.0	SB40D	SB41D	SB42D
0 - 27	125	2 - 27	SA30D	SA31D	SA32D	1.2	SB30D	SB31D	SB32D
0 - 65	125	3 - 65	SA20D	SA21D	SA22D	1.4	SB20D	SB21D	SB22D
15 - 140	125	6 - 125	SA20D	SA21D	SA22D	3.0	SB20D	SB21D	SB22D
15 - 250	125	10 - 235	SA10D	SA11D	SA12D	6.0	SB10D	SB11D	SB12D
25 - 400	125	15 - 375	SA10D	SA11D	SA12D	8.0	SB10D	SB11D	SB12D

All switch units above are in stock for immediate delivery.

[Ⓢ] 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 30D and TA 34A11.

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 (In W.C.) ^①	Separation	General Purpose Catalog No.	Watertight Catalog No.	Explosion-Proof Catalog No.
	Maximum Full Scale Minimum At Mid-Range (In W.C.) ^①			
1.7" Hg	3" Hg	SC30D	SC31D	SC32D
2.0" Hg	8" Hg	SC20D	SC21D	SC22D
1.7	2.7	SC30D	SC31D	SC32D
2.0	6.5	SC20D	SC21D	SC22D
4.0	14.0	SC20D	SC21D	SC22D
7.0	25.0	SC10D	SC11D	SC12D
13.0	40.0	SC10D	SC11D	SC12D
1.4	2.4	SC40D	SC41D	SC42D
1.7	2.7	SC30D	SC31D	SC32D
2.0	6.5	SC20D	SC21D	SC22D
4.0	14.0	SC20D	SC21D	SC22D
7.0	25.0	SC10D	SC11D	SC12D
13.0	40.0	SC10D	SC11D	SC12D
1.4	2.4	SC40D	SC41D	SC42D
1.7	2.7	SC30D	SC31D	SC32D
2.0	6.5	SC20D	SC21D	SC22D
4.0	14.0	SC20D	SC21D	SC22D
7.0	25.0	SC10D	SC11D	SC12D
13.0	40.0	SC10D	SC11D	SC12D

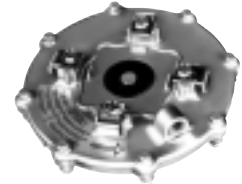
Select transducer unit below

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 controlled by adjustment of the switch unit.



Differential Pressure Transducer

The **level control unit** uses shop air between 15-125 psi. The air is regulated to between 1 and 1-1/2 SCFH through a tube to sense the liquid level within an open or vented tank. The static back pressure created by the liquid level against an air stream activates the level control.



Level Control Unit

Transducer Units

Air or Gas	Water, Air Oil or Gas	Corrosive Fluids	Level Control Units
Aluminum & Buna "N"	Brass & Buna "N"	303 SS & Viton	Aluminum & Buna "N"
Catalog No.	Catalog No.	Catalog No.	Catalog No.
TV34A11	TV34A21	TV34A32	---
TV24A11	TV24A21	TV24A32	---
TA31A11	---	---	---
TA21A11	---	---	---
TB21A11	---	---	---
TB11A11	---	---	---
TC11A11	---	---	---
TA41A11	---	---	---
TA31A11	---	---	---
TA21A11	---	---	---
TB21A11	---	---	---
TB11A11	---	---	---
TC11A11	---	---	---
---	---	---	TA05A11
---	---	---	TA05A11
---	---	---	TA05A11
---	---	---	TB05A11
---	---	---	TB05A11
---	---	---	TC05A11

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

S-SERIES Combustion Switches

Pressure Switches Designed to UL or FM Requirements for Combustion Service

Features:

- Set point repeatability, $\pm 1\%$ 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 switches. 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](#))



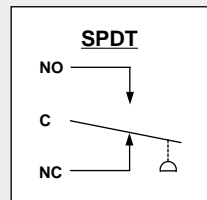
Standard Electrical Ratings

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



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 Viton 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.

S-SERIES Combustion Switches

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 Deadband				Fixed Deadband or Manual Reset ②			
Adjustable Operating Range (psig)	Proof Pressure (psig)	Adjustable Deadband	General Purpose	Watertight Enclosure	Explosion-Proof	Fixed Deadband At Mid-Range (psig.) ①	General Purpose	Watertight Enclosure	Explosion-Proof
		Maximum Full Scale							
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	3.0" 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	15.0" 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 30D and TA 31A11.

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		General Purpose	Watertight Enclosure	Explosion-Proof
	Maximum Full Scale	Minimum At Mid-Range (psig) ①			
	Catalog No.	Catalog No.	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 **gauge 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"	Brass & Buna "N"	All 316 SS ③	316 SS & Viton ④
Catalog No.	Catalog No.	Catalog No.	Catalog No.
<i>Fuel Gas</i>		<i>Fuel Oil</i>	
TA31A11	---	---	---
TA21A11	---	---	---
TB21A11	---	---	---
TB11A11	---	---	---
TC11A11	---	---	---
---	---	TE40A44	---
---	---	TE30A44	---
---	TF32A21	---	---
---	---	TE20A44	---
---	---	TE10A44	---
---	TF22A21	---	---
---	TF12A21	TF10A44	---
<i>Fuel Gas and Fuel Oil</i>			
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.