

PRESSURE AND TEMPERATURE SWITCHES

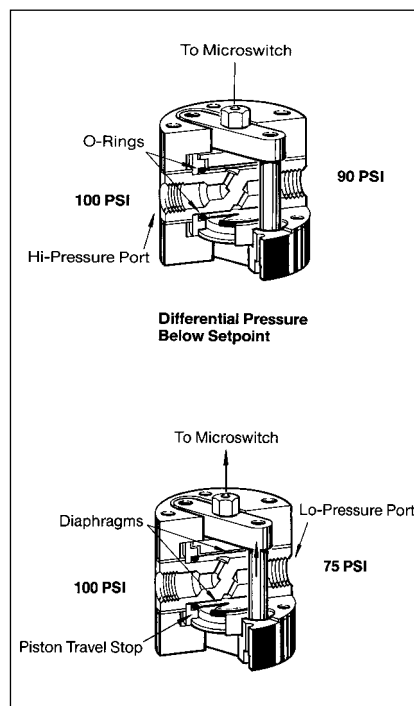
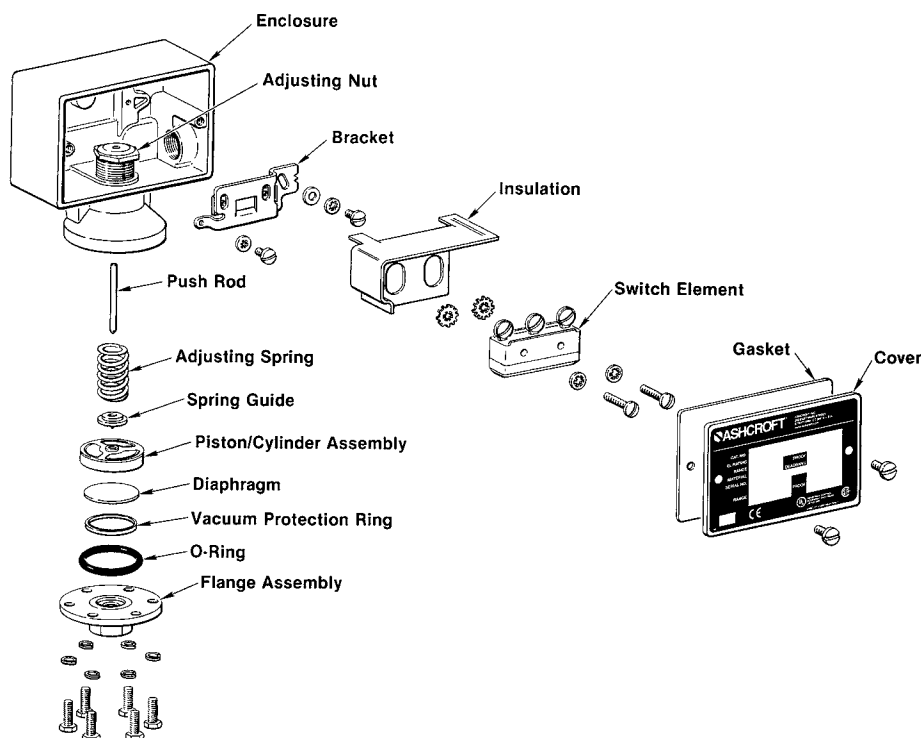
Switch Selection Information 227-228
Additional Application Information... 229-230

PRESSURE, DIFFERENTIAL PRESSURE & TEMPERATURE SWITCHES

(Watertight construction for industrial applications. Explosion-proof construction for hazardous locations)

A-Series, Miniature Pressure, Brass Body	231
A-Series, Miniature Pressure, Stainless Body	232
B400 B-Series, Pressure & Differential Pressure, Watertight	233
B400 B-Series, Temperature, Watertight	234
B700 B-Series, Pressure & Differential Pressure, Explosion-Proof	235
B700 B-Series, Temperature, Explosion-Proof Enclosure	236
F-Series, Pressure, Compact Explosion-Proof	237
G-Series, Pressure & Differential Pressure, Watertight Stainless Steel	238
G-Series, Temperature, Watertight Stainless Steel	239
H-Series, Pressure, Watertight	240
L-Series, Pressure & Differential Pressure, Watertight	241
L-Series, Temperature, Watertight	242
N-Series, Pressure, Electronic	243
N-Series, Pressure, Electronic with Indication	244
P-Series, Pressure & Differential Pressure, Explosion-Proof or Watertight	245
P-Series, Temperature, Explosion-Proof or Watertight	246
Deadbands and Ranges, B-Series	247
Deadbands and Ranges, P-Series	248
Deadbands and Ranges, L- and G-Series	249
Options	250-251





PRESSURE, TEMPERATURE AND DIFFERENTIAL PRESSURE SWITCH SELECTION

Before making your selection, consider the following:

1. Actuator

The actuator responds to changes in pressure, temperature or differential pressure and operates the switch element in response to these changes.

The actuator is normally exposed to process fluid and must therefore be chemically compatible with it. The following may be used to help select actuator type:

For nominal pressure ranges 0-15 psi through 0-3000 psi, the standard actuator is a diaphragm-sealed piston. In this actuator, process pressure acting on the piston area causes it to overcome the adjustment spring force and actuate a snap-action switch. A diaphragm and O-ring seal the process media from this mechanism. These are available in various materials, i.e.: Buna N, Teflon and Viton. The standard process connection is stainless steel. Optional monel pressure connection is available.

For H_2O Pressure and Differential Pressure Ranges, a diaphragm actuator is used. In this design, the standard pressure connections are carbon steel. Diaphragms are available in Viton, Buna N and Teflon. Always review process temperature limits before making seal selections.

Optional stainless steel pressure connections are available (option XTA).

For High Differential Pressure Actuator Ranges, 3-15 to 60-600 psid, a Dual Diaphragm-Sealed Piston Actuator is used. This actuator is designed to for high static-pressure applications. The standard pressure connections are nickel-plated brass. Diaphragms are available in Viton, Buna N and Teflon. Always review process temperature limits before making seal selections. Optional stainless steel pressure connections are available (option XUD).

For all temperature ranges the standard Ashcroft® temperature actuator operates on the vapor pressure principle: the vapor pressure in a sealed thermal system is applied to a sensing element, which in turn actuates a switch. This is known as a SAMA Class II system. Various filling materials are used, including Propane, Butane, Methyl Alcohol, N Propyl Alcohol and Xylene. High overtemperature capability is possible with this type of system. The interface between liquid and vapor is the point at which sensing occurs. This is the "sensitive" portion of the bulb. Bulb extensions and capillary are normally filled with vapor, and have little effect on the setpoint, regardless of ambient temperature variations; therefore, no ambient compensation is required. For best results, the bulb should be mounted within 60 degrees of vertical to assure the liquid remains in the bulb.

2. Enclosure

The enclosure protects the switch element and mechanism from the environment and has provisions for mounting and wiring. All Ashcroft switch enclosures are epoxy-coated aluminum or stainless steel for maximum corrosion resistance. Choose between watertight NEMA 4, 4X for most industrial applications and explosion-proof NEMA 7/9 for most process applications.

Ashcroft enclosures include watertight cover gaskets, external mounting holes and one or two $\frac{3}{4}$ NPT electrical conduit holes for ease of installation. Pressure switches may also be mounted directly to the process by means of the standard $\frac{1}{4}$ NPTF or optional $\frac{1}{2}$ NPT pressure connection.

Note: When installing Ashcroft switches, refer to instruction sheets included with each switch, the National Electrical Code, and any other local codes or requirements to assure safety.

3. The Switching Function

Next, consider the switching function. Most applications for alarm and shutdown are satisfied by single setpoint, fixed deadband models. For high/low or alarm and shutdown, the dual setpoint models may be selected. For pump, compressor, level and other control applications, an adjustable deadband model is often the best choice.

4. The Switch Element

Finally, the electrical switching element must be compatible with the electrical load being switched. For ease of selection, all electrical

switching elements are snap acting, SPDT (single pole-double throw), or 2 (SPDT). Select a switch element with electrical rating that exceeds the electrical rating of the device being controlled by the switch. For better reliability and safety, optional Hermetically Sealed switching elements may be specified.

ADDITIONAL SWITCH TERMINOLOGY

Accuracy – (See repeatability) Accuracy normally refers to conformity of an indicated value to an accepted standard value. There is no indication in switch products; thus, instead, the term repeatability is used as the key performance measure. Ashcroft switch accuracy is 1% of nominal range.

Automatic Reset Switch – Switch which returns to normal state when actuating variable (Pressure or Temperature) is reduced.

Adjustable or Operating Range – That part of the nominal range over which the switch setpoint may be adjusted. Normally about 15% to 100% of the nominal range for pressure and differential pressure switches and the full span for temperature switches.

Burst Pressure – The maximum pressure that may be applied to a pressure switch without causing leakage or rupture. This is normally at least 400% of nominal range for Ashcroft switches. Switches subjected to pressures above the nominal range can be permanently damaged.

Deadband – The difference between the setpoint and the reset point, normally expressed in units of the actuating variable. Sometimes referred to as differential.

Division 1 – A National Electrical Code Classification of hazardous locations. In Division 1 locations, hazardous concentrations of flammable gases or vapors exist continuously, intermittently or periodically under normal conditions; frequently because of repair or maintenance operation/leakage or due to breakdown or faulty operation of equipment or processes which might also cause simultaneous failure of electrical equipment. Explosion-proof NEMA 7/9 enclosures are required in Division 1 locations.

Division 2 – A National Electrical Code Classification of Hazardous locations. In Division 2 hazardous locations, flammable or volatile liquid or flammable gases are handled, processed or used, but will normally be confined within closed containers or closed systems from which they can escape only in case of accidental rupture or breakdown or in case of abnormal operation of equipment. Either Nema 7/9 explosion-proof enclosures or any enclosure with hermetically sealed switch contacts may be used in Division 2 locations.

Explosion Proof – A term commonly used in industry referring to enclosures capable of withstanding an internal explosion of a specified gas without igniting surrounding gases. Strict installation practices in accordance with the national electrical code are also required for safety.

Fixed Deadband – The difference between the setpoint and the reset point of a pressure or temperature switch. It further signifies that this deadband is a fixed function of the pressure switch and not adjustable.

Hermetically Sealed Switch – A switch element whose contacts are completely sealed from the environment to provide additional safety and reliability. Contact arc cannot cause an explosion and atmospheric corrosive elements cannot affect the contacts.

Manual Reset Switch – Pressure or Temperature switch in which contacts remain actuated even after the actuating variable returns to normal. On Ashcroft manual reset switches, a button must be pushed to reset the contacts.

National Electrical Manufacturers Association (NEMA) – This group has defined several categories of enclosures, usually referred to as “types.” Further, they designate certain features and capabilities each type must include. For example, among other features, a NEMA 4 enclosure must include a threaded conduit connector, external mounting provision and cover gaskets. When selecting a NEMA 4 enclosure from any manufacturer, a buyer is assured of receiving these features.

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

NEMA 4X – Watertight, dusttight and corrosion-resistant enclosures with same qualifications as NEMA 4, but with added corrosion resistance.

NEMA 7 – Enclosures for indoor Class I, Division 1 hazardous locations with gas or vapor atmospheres.

NEMA 9 – Enclosures for indoor Class II, Division 1 hazardous locations with combustible dust atmospheres.

Normal Switch Position – Contact position before actuating pressure (or variable) is applied. Normally closed contacts open when the switch is actuated. Normally open contacts close when the switch is actuated.

Normally Closed – Refers to switch contacts that are closed in the normal switch state or position (unactuated). A pressure change opens the contacts.

Normally Open Switch – Refers to the contacts that are open in the normal switch state or position (unactuated). A pressure change closes the contacts.

Overpressure Rating(s) – A nonspecific term that could refer to either burst or proof pressure, or both.

Proof Pressure – The maximum pressure which may be applied without causing damage. This is determined under strict laboratory conditions including controlled rate of change and temperature: This value is for reference only. Consult factory for applications where switch must operate at pressures above nominal range or reference temperature (70°F).

Repeatability (Accuracy) – The closeness of agreement among a number of consecutive measurements of the output setpoint for the same value of the input under the same operating conditions, approaching from the same direction, for full-range traverses. Ashcroft switch repeatability is 1% of nominal range.

Note: It is usually measured as nonrepeatability and expressed as repeatability in percent of span or nominal range. It does not include hysteresis or deadband.

Reset Point – The reset point is the Pressure, Temperature or Differential Pressure Value where the electrical switch contacts will return to their original or normal position after the switch has activated.

Setpoint – The setpoint is the Pressure, Temperature or Differential Pressure value at which the electrical circuit of a switch will change state or actuate. It should be specified either on increase or decrease of that variable. (See also reset point.)

Single-Pole Double Throw (SPDT) Switching Element – A SPDT switching element has one normally open, one normally closed, and one common terminal. The switch can be wired with the circuit either normally open (N/O) or normally closed (N/C). SPDT is standard with most Ashcroft pressure and temperature switches.

Snap Action – In switch terminology, snap action generally refers to the action of contacts in the switch element. These contacts open and close quickly and snap closed with sufficient pressure to firmly establish an electrical circuit. The term distinguishes products from mercury bottle types that were subject to vibration problems.

Static Pressure – For differential pressure switches, static pressure refers to the lower of the two pressures applied to the actuator.

DIFFICULT PROCESS MEDIA

When specifying pressure or temperature switches, the material in contact with media must be compatible with it. Otherwise, failure could occur, resulting in leakage, injury, loss of life, property or production. The user should review prior experience with materials of construction in the process for guidance in material selection. If this is not appropriate, contact Customer Service for assistance. Relevant information such as process media, concentration of each constituent, temperature, pressure, the presence of contaminants, particulate, vibration or pulsation is necessary to make the best recommendation.

Some applications are best handled by adding an Ashcroft diaphragm seal to isolate the fluid media from the pressure or differential pressure switch.

Diaphragm seals are recommended where:

- The process media being sensed could clog the pressure element.
- The process media temperature is above or below the ratings of the actuator seal materials.
- The application calls for a sanitary process connection.

Note: The addition of a diaphragm seal may increase the deadband and response time of the pressure switch to process pressure changes. Please consult Customer Service for details.

OXIDIZING MEDIA

When specifying a pressure switch for use in oxidizing media, such as chlorine, oxygen and several other chemical compounds, the wetted materials must be compatible with the media, and the switch should be cleaned for oxygen service. This is necessary to remove any residue that might react violently with the oxidizing media. Specify option X6B (clean for oxygen service).

STEAM SERVICE

In order to prevent live steam from coming into contact with the switch actuator, a siphon filled with water should be installed between the switch and the process line. We recommend the optional stainless steel welded process connection and diaphragm even though viton is rated for use with steam. Experience has shown that in many steam applications, the 300°F high temperature limit of viton is exceeded by steam under pressure.

In some boiler applications, a special U.L. listing, "MBPR," which requires unique features is needed. Ashcroft offers these features with option XG8.

NACE

NACE is the acronym for the National Association of Corrosion Engineers. Their standard MRO175-93 titled "Sulfide Stress Cracking Resistant Metallic Materials for Oilfield Equipment," is cited when ordering instruments for oilfield applications involving sour oil or gas with traces of hydrogen sulfide. It is a legal requirement in many states. NACE instruments are also suitable for use in sewage treatment plants and other applications with traces of hydrogen sulfide in the process.

For high concentrations of hydrogen sulfide in a diaphragm seal should be used; a Tantalum diaphragm and Hastelloy C (C276) lower housing are recommended. For over 3% or 30,000ppm, a seal is essential.

HIGH TEMPERATURE PROCESS

Refer to the actuator seal table for process temperature limits for pressure switch actuators. Pressure switches mounted directly to the process can withstand up to 300°F when equipped with optional viton, stainless steel or monel wetted parts. If process temperature exceeds 300°F, four feet of 1/2" tubing between the process and the switch will generally protect the switch from damage.

Alternatively, an Ashcroft diaphragm seal, can be used to isolate the switch from the hot process.

VIBRATION

Generally, vibration will not harm Ashcroft pressure switches. However, premature tripping may occur under severe conditions. This tends to be annoying, but repeatable for a given situation and might be in the order of 5% to 10% of switch range from the setpoint, i.e. a 100 psi switch set at 50 psi on increasing pressure might trip somewhere between 40 and 45 psi on increasing pressure. This would not reduce the life of the pressure switch. The best approach in this type of application is to mount the switch remotely, connecting the switch to the process or equipment with flexible tubing. If this is not possible, consider the use of the Belleville actuator, option XG3.

PULSATION

Pressure pulsation below the range of the pressure switch will not harm it. However,

because the switch can react to pressure pulses less than one second duration, it might be desirable to include a dampening device. Several Ashcroft accessories, such as snubbers address this situation. Consult Customer Service for more information.

MOUNTING

All Ashcroft pressure, temperature and differential pressure switches with snap acting contacts may be mounted in any position. This includes the sensing bulbs of temperature switches. This is an important advantage of snap acting switch designs.

SWITCH ELEMENT SELECTION

B-Series switches are available with a wide variety of snap acting switch elements to meet most electrical requirements. The standard contact arrangement is single pole, double throw (SPDT). This includes both normally open and normally closed contacts. Standard contact material is fine silver which generally is suitable for switching 8 volts or more, up to the rating in the Switch Element Selection Table. When switching less than 8 volts, optional Gold Alloy contacts are recommended.

Optional Dual, or 2 SPDT contacts may be supplied in B-Series enclosures for applications requiring two switch functions at the same setpoint. These contacts are technically not double pole, double throw (DPDT). They are synchronized at the factory to actuate within 1% of nominal range of each other. For simultaneous actuation of 2 SPDT contacts, option XG3 should be ordered.

**INFORMATION & GUIDELINES
FOR SETTING ASHCROFT PRESSURE,
TEMPERATURE AND DIFFERENTIAL
PRESSURE SWITCHES**

All Ashcroft pressure, temperature and differential pressure switches can be set at any point between about 15% and 100% of the range as designated on the label or the nominal range table.

Ashcroft pressure and temperature switches can be either set in the field or ordered from the factory preset to your requirements. When set at the factory, the specification is $\pm 1\%$ of the nominal range.

Factory setting, or XFS, is a very popular option, and as a result, we often get orders that do not have enough information or have incorrect information.

HOW TO ORDER

When "XFS" is desired:

1. Setpoint must be indicated.
2. Increasing or decreasing pressure must be indicated.
Ex: B424B XFS 100#
Set: 60# decreasing
3. For differential pressure switches, static operating pressure must be given also.

HAZARDOUS LOCATIONS
a. Division I.

Ashcroft 700 series or other explosion proof enclosures are required to meet the requirements of Division I Hazardous Locations as defined by the National Electrical Code.

b. Division II.

These enclosures also meet the less stringent requirements for Division II Hazardous Locations. Alternatively, Ashcroft 400 series or other watertight enclosures, with hermetically sealed switch elements are approved for use in Division II hazardous locations.

c. Intrinsic Safety.

Any Ashcroft pressure or temperature switch may be used with an approved barrier in most intrinsically safe systems. These switches do not create or store energy and are therefore designated "simple devices" in these systems.

Exception: Ashcroft N series electronic pressure switches require power and may not be suitable for use in all intrinsically safe systems.

c. ATEX.

ATEX is a European designation that deals with standards for equipment and protective systems intended for use in potentially explosive atmospheres. This approval is required for switches intended for use in hazardous locations, especially important to OEMs who export to Europe and contractors specifying or purchasing products for European applications.

Ashcroft is the leader in providing pressure and temperature switches for alarm, shutdown and control in hazardous locations.

Models are available with single or dual set-points, fixed or adjustable deadbands.

Choose from standard, miniature or compact enclosures, construction of epoxy coated aluminum or stainless steel.

- **All-welded stainless steel actuator for long, reliable service**
- **High pressure piston with Viton O-ring optional**
- **Wide variety of pressure connections, including NPT, straight threads, etc.**
- **Rugged stainless steel body epoxy-sealed for environmental protection**
- **Precision snap-acting switch element**
- **Choice of field adjustable with locking feature or factory-adjusted to setpoint requirements**
- **UL and CSA listed**
- **Choice of electrical termination**

The Ashcroft® A-Series pressure switches are designed for tough industrial and OEM applications requiring a durable, high-quality miniature switch; especially where corrosion resistance or leakage is a concern.

Ideal for pressure alarm, shutdown, or control on heavy vehicles, machine tools, electronic equipment, engines, compressors, food and beverage processing equipment, and wherever size is a consideration or equipment is being downsized. Explosion-proof models are available.



CE
LOOK FOR THIS AGENCY
MARK ON OUR PRODUCTS

1 - FUNCTION

- APS** - Pressure switch, single setpoint, fixed deadband, factory set
- APA** - Pressure switch, single setpoint, fixed deadband, field adjustable

2 - BODY (ENCLOSURE)

- NS** - Watertight stainless steel body with glass to metal switch seal
- RS** - Watertight stainless steel body with polycarbonate switch seal
- N7** - Explosion proof body with glass to metal switch seal⁽¹⁾

(1) Available only with 1/2 NPT male conduit connection. (Code C) only.

3A - SWITCH ELEMENTS CODE

Code	SPDT Switch Elements UL/CSA Listed	
D	General Purpose	5A, 125/250 Vac 5A, 28 Vdc
M	Gold Contacts	1A, 125 Vac

3B - ELECTRICAL CONNECTION CODE

Code	Electrical Terminations
L	Wire leads, 3-#18 AWG Insulated – 12"
S	Screw terminals, 3-#6 binding head screws
T	Spade terminal, 3-.187 male spade
C	1/2 NPT male conduit connection with wire leads ⁽²⁾
H	Micro DIN connector

(2) Available only with glass to metal switch seal, enclosures NS or N7.

4 - ACTUATOR SEAL

Code	Material	Process Temperature Limits (°F)
S	316 Stainless Steel Welded	0-200
H	Stainless Steel Piston/ Viton O-Ring	20-200

5 - PRESSURE CONNECTION CODE

Code	Description
01	1/8 NPT Male
02	1/4 NPT Male
03	1/8 NPT Female
04	1/4 NPT Female
05	7/16 -20 SAE
09	3/4 Tri-Clamp Connection

6 - A-SERIES OPTIONS

Code	Description
XFS	Factory adjusted setpoints
XNH	Tagging stainless steel
X6B	Cleaned for oxygen service
X3A	1 1/2" or 2" Tri-Clover connection with 3A approval

Ambient operating temperature limits -20°F to 150°F. Setpoint shift of up to one additional setpoint repeatability per 50°F change is normal.

Note: Switches calibrated at 70°F reference.

7A - AP NOMINAL RANGE & PERFORMANCE TABLE – CODE S ACTUATOR SEAL

Nominal Range		Proof Pressure	Setpoint Repeatability	Setpoint Adjustability Range	Deadband (All Switch Elements)
psi	bar	psi	psi	psi	
30 in.Hg Vac./15	-1/1	2000	±1.0 in.Hg/±0.5	-30 in.Hg to 15	1-6 in.Hg/1-5.0
30	2	2000	±0.5	5-30	1.0-5.0
60	4	2000	±1.0	8-60	2.0-7.0
100	7	2000	±2.0	10-100	3.0-10
200	14	2000	±5.0	35-200	12-20
400	28	2000	±10	45-400	20-40
600	40	3000	±15	60-600	30-60

7B - AP NOMINAL RANGE & PERFORMANCE TABLE – CODE H ACTUATOR SEAL

Nominal Range		Proof Pressure	Setpoint Repeatability	Setpoint Adjustability Range	Deadband (All Switch Elements)
psi	bar	psi	psi	psi	
1000	70	8000	±20	100-1000	50-100
2000*	140	8000	±25	200-2000	100-200

*APS only

TO ORDER THIS A-SERIES PRESSURE SWITCH:

Select: **APS NS DL SO2 XFS 30#**

- Function: _____
- Body: _____
- Electrical: _____
- Pressure Port: _____
- Options (see table 6): _____
- Pressure Range (see table 7A & 7B): _____

Set at:
(Add your setpoint requirements.)

Consult factory for guidance in product selection
Phone (203) 378-8281 or visit our web site at
www.ashcroft.com

This general purpose Ashcroft® switch series is ideal for use in virtually all Industrial and OEM applications.

- Watertight NEMA 4X enclosure, IP66
- Choice of switch elements for all applications, including hermetically sealed
- Wide choice of wetted materials, including all-welded Monel or stainless steel
- Fixed or limited adjustable deadband
- Approved for UL, CSA and FM⁽⁸⁾ ratings
- Setpoints adjustable from 15-100% of range

1 - ENCLOSURE

B4 - Pressure switch, type 400, watertight enclosure meets NEMA 3, 4, 4X and 13, IP66 requirements

D4 - Differential pressure switch, type 400, watertight enclosure meets NEMA 3, 4, 4X and 13, IP66 requirements

2 - SWITCH ELEMENTS

Order Code	Description/Maximum Electrical Ratings	UL/CSA Listed SPDT
20 ⁽⁴⁾	Narrow deadband	15A, 125/250 Vac
21 ⁽⁹⁾	Ammonia service	5A, 125/250 Vac
22 ⁽³⁾	Hermetically sealed switch, narrow deadband	5A, 125/250 Vac
23	Heavy duty ac	20A, 125/250 Vac
24 ⁽¹⁾	General purpose	15A, 125/250/480 Vac 1/2A, 125 Vdc 1/4A, 250 Vdc
25	Heavy duty dc	10A, 125/ Vac or dc 1/8HP 125/ Vac or dc
26 ⁽⁴⁾	Sealed environment proof	15A, 125/250 Vac
27	High temp. 300°F	15A, 125/250 Vac
28	Manual reset trip on increasing	15A, 125/250 Vac
29	Manual reset trip on decreasing	15A, 125/250 Vac
31	Low level (gold) contacts	1A, 125/250 Vac
32	Hermetically sealed switch, general purpose	11A, 125/250 Vac 5A, 30 Vdc
50	Variable deadband	15A, 125/250 Vac
UL/CSA Listed Dual SPDT⁽²⁾		
61 ⁽⁴⁾	Dual narrow deadband	15A, 125/250 Vac
62 ⁽⁴⁾	Dual narrow environment proof	15A, 125/250 Vac
63	Dual high temp. 300°F	15A, 125/250 Vac
64	Dual general purpose	15A, 125/250/480 Vac 1/2A, 125 Vdc 1/4A, 250 Vdc
65	Dual ammonia service	5A, 125/250/480

• Choice of actuators, including designs for fire-safe and NACE applications⁽⁸⁾

• Readily available

• Standard pressure connection materials:

Pressure psi ranges
- 316L stainless steel

Differential psid ranges
- Nickel-plated brass⁽⁹⁾

Pressure and differential inches of water ranges
- Epoxy coated carbon steel



CE
LOOK FOR THIS AGENCY MARK ON OUR PRODUCTS

3 - ACTUATOR SEAL⁽⁷⁾

Code & Material	Process Temp. ⁽⁶⁾ Limits °F	Range			
		Vac in. H ₂ O	0-600 psi	1000 psi	2000-3000 psi
B-Buna N	0 to 150	●	●	●	●
V-Viton	20 to 300	●	●	●	
T-Teflon	0 to 150	●	●	●	●
S-SS ⁽⁵⁾⁽¹⁰⁾	0 to 300		●	●	
P-Monel ⁽⁵⁾⁽¹⁰⁾	0 to 300		●	●	

4 - OPTIONS

(See pages 250-251)

5 - STANDARD PRESSURE RANGES

(See page 247)

NOTES:

- Standard switch.
- Dual switches are 2 SPDT snap-action switches not independently adjustable.
- Estimated dc rating, 2.5A, 28 Vdc (not UL listed).
- Estimated dc rating, .4A, 120 Vdc (not UL listed).
- Available on pressure only.
- Ambient operating temperature limits -20 to 150°F, all styles. Setpoint shift of ±1% of range per 50°F is normal. Switch calibrated at 70°F reference.
- Items are wetted by process fluid.
- Refer to Option Table.
- Order Option XUD, stainless steel process connection.
- On differential switches, stainless steel is available in 15, 30, 60 and 90 psid ranges only. Includes Teflon O-ring and 316 SS connection.

TO ORDER THIS B-SERIES PRESSURE SWITCH:

- Select: **B4 20 B XPK 600#**
- Enclosure: _____
 - Switch Element: _____
 - Actuator Seal: _____
 - Options (See pages 250-251): _____
 - Pressure Range (See page 247): _____

HERMETICALLY SEALED SWITCH

We recommend hermetically sealed switch elements for improved reliability. The hermetically sealed switch provides uncompromising contact protection in harsh or corrosive environments. The Ashcroft 400 Series is also approved for installation in Division II hazardous areas when supplied with hermetically sealed contacts.

Features:

- UL-recognized component, guide WSQ2, File E85076
- All-stainless steel welded construction



This broad Ashcroft® switch series is easy to use and readily retrofits to virtually all process, industrial and OEM applications.

- **Watertight NEMA 4X, IP66 enclosure**
- **Choice of switch elements for all applications, including hermetically sealed (NEMA 4 meets Class I, Div. 2, Groups A, B, C, & D with hermetically sealed switch)**
- **UL, CSA listings standard**

- **Setpoints adjustable from 15-100% of range**
- **Wetted material is all-welded stainless steel**
- **Fixed or limited adjustable deadband**
- **Readily available**



1 - ENCLOSURE	
T4 -	Temperature switch, type 400, watertight enclosure meets NEMA 3, 4, 4X and 13, IP66 requirements

2 - SWITCH ELEMENTS		
Order Code	Description	Maximum Electrical Ratings UL/CSA Listed SPDT
20 ⁽⁴⁾	Narrow deadband	15A, 125/250 Vac
21 ⁽⁷⁾	Ammonia service	5A, 125/250 Vac
22 ⁽³⁾	Hermetically sealed switch, narrow deadband	5A, 125/250 Vac
23	Heavy duty ac	20A, 125/250 Vac
24 ⁽¹⁾	General purpose	15A, 125/250/480 Vac 1/2A, 125 Vdc 1/4A, 250 Vdc
25	Heavy duty dc	10A, 125/ Vac or dc 1/8HP 125/ Vac or dc
26 ⁽⁴⁾	Sealed environment proof	15A, 125/250 Vac
27	High temp. 300°F	15A, 125/250 Vac
28	Manual reset trip on increasing	15A, 125/250 Vac
29	Manual reset trip on decreasing	15A, 125/250 Vac
31	Low level (gold) contacts	1A, 125/250 Vac
32	Hermetically sealed switch, general purpose	11A, 125/250 Vac 5A, 30 Vdc
50	Variable deadband	15A, 125/250 Vac
UL/CSA Listed Dual SPDT ⁽²⁾		
61 ⁽⁴⁾	Dual narrow deadband	15A, 125/250 Vac
62 ⁽⁴⁾	Dual narrow environment proof	15A, 125/250 Vac
63	Dual high temp. 300°F	15A, 125/250 Vac
64	Dual general purpose	15A, 125/250/480 Vac 1/2A, 125 Vdc 1/4A, 250 Vdc
65 ⁽⁷⁾	Dual ammonia service	5A, 125/250/480

3 - THERMAL SYSTEM SELECTION ⁽⁵⁾			
DIRECT MOUNT			
Order Code	System Material	Style	
TS	316 stainless steel	Rigid	
REMOTE MOUNT			
Order Code	System Material	Line Length	Style
T05	316 stainless steel	5'	Capillary
T10	316 stainless steel	10'	with
T15	316 stainless steel	15'	302 SS
T20	316 stainless steel	20'	Spring
T25	316 stainless steel	25'	Armor

4 - BULB LENGTH SELECTION ⁽⁶⁾			
DIRECT MOUNT			
Order Code	"S" Dimension	Minimum Thermowell "U" Dimension	
027	2¾"	—	
040	4"	2½"	
060	6"	4½"	
090	9"	7½"	
120	12"	10½"	
REMOTE MOUNT			
030	3"	2½"	

5 - OPTIONS
See pages 250-251

6 - STANDARD TEMPERATURE RANGES
See page 247

- NOTES:**
1. Standard switch.
 2. Dual switches are 2 SPDT snap-action switches not independently adjustable.
 3. Estimated dc rating, 2.5A, 28 Vdc (not UL listed).
 4. Estimated dc rating, 0.4A, 120 Vdc (not UL listed).
 5. Additional line lengths available, call factory.
 6. Additional bulb lengths available, call factory.
 7. Not UL listed
- Switches calibrated at 70°F ambient reference.

HERMETICALLY SEALED SWITCH
We recommend hermetically sealed switch elements for improved reliability. The hermetically sealed switch provides uncompromising contact protection in harsh or corrosive environments. The Ashcroft 400 Series is also approved for installation in Division II hazardous areas when supplied with hermetically sealed contacts.

Features:

- UL-recognized component, guide WSQ2, File E85076
- All-stainless steel welded construction



TO ORDER THIS B-SERIES TEMPERATURE SWITCH:

Select: _____ **T4** **20** **T05** **030** **XNH** **150° to 260°F**

1. Enclosure: _____
2. Switch Element: _____
3. Thermal System: _____
4. Bulb Length: _____
5. Options (see pages 250-251): _____
6. Temperature Range (see page 247): _____

Consult factory for guidance in product selection
Phone (203) 378-8281 or visit our web site at www.ashcroft.com

This broad Ashcroft® switch series is ideal for use in virtually all process and industrial applications.

- **Explosion-proof NEMA 7/9, IP66 enclosure (explosion-proof enclosure Class I, Div. 1 & 2, Groups B, C, & D and Class II, Div. 1 & 2, Groups E, F & G)**
- **Choice of switch elements for all applications, including hermetically sealed**
- **Wide choice of wetted materials, including all-welded Monel or stainless steel**
- **Fixed or limited adjustable deadband**
- **UL listed**
- **Various actuators available**
- **Belleville actuator⁽⁸⁾**

1 - ENCLOSURE

- B7** - Pressure switch, type 700, explosion-proof enclosure meets Div.1 & 2, NEMA 7/9, IP66 requirements
- D7** - Differential pressure switch, type 700, explosion-proof enclosure meets Div. 1 & 2, NEMA 7/9, IP66 requirements

2 - SWITCH ELEMENTS

Order Code	Description/Maximum Electrical Ratings UL/CSA Listed SPDT	UL/CSA Listed SPDT
20 ⁽⁴⁾	Narrow deadband	15A, 125/250 Vac
21 ⁽⁹⁾	Ammonia service	5A, 125/250 Vac
22 ⁽³⁾	Hermetically sealed switch, narrow deadband	5A, 125/250 Vac
23	Heavy duty ac	20A, 125/250 Vac
24 ⁽¹⁾	General purpose	15A, 125/250/480 Vac 1/2A, 125 Vdc 1/4A, 250 Vdc
25	Heavy duty dc	10A, 125/ Vac or dc 1/8HP 125/ Vac or dc
26 ⁽⁴⁾	Sealed environment proof	15A, 125/250 Vac
27	High temp. 300°F	15A, 125/250 Vac
31	Low level (gold) contacts	1A, 125/250 Vac
32	Hermetically sealed switch, general purpose	11A, 125/250 Vac 5A, 30 Vdc
50	Variable deadband	15A, 125/250 Vac
UL/CSA Listed Dual SPDT⁽²⁾		
61 ⁽⁴⁾	Dual narrow deadband	15A, 125/250 Vac
62 ⁽⁴⁾	Dual narrow environment proof	15A, 125/250 Vac
63	Dual high temp. 300°F	15A, 125/250 Vac
64	Dual general purpose	15A, 125/250/480 Vac 1/2A, 125 Vdc 1/4A, 250 Vdc
65	Dual ammonia service	5A, 125/250/480 Vac
67 ⁽³⁾	Hermetically sealed switch, narrow deadband	5A, 125/250 Vac
68	Dual hermetically sealed switch, general purpose	11A, 125/250 Vac 5A, 30 Vdc

- **Readily available**
- **Standard pressure connection materials:**
 - Pressure psi ranges**
 - 316L SS**
 - Differential psid ranges**
 - Nickel plated brass⁽⁹⁾**
 - Pressure and differential inches of water ranges**
 - Epoxy coated carbon steel**
- **ATEX models available⁽⁸⁾**
- **IECEX models available⁽¹⁰⁾**
- **CSA models available⁽⁶⁾**
- **FM models available⁽⁶⁾**
- **Setpoints adjustable from 15-100% of range**
- **Dual Seal Rating models available⁽⁸⁾**

3 - ACTUATOR SEAL⁽⁷⁾

Code & Material	Process Temp. ⁽⁶⁾ Limits °F	Range			
		Vac in. H ₂ O	0-600 psi	1000 psi	2000- 3000 psi
B-Buna N	0 to 150	●	●	●	●
V-Viton	20 to 300	●	●	●	
T-Teflon	0 to 150	●	●	●	●
S-SS ⁽⁵⁾⁽¹⁰⁾	0 to 300		●	●	
P-Monel ⁽⁵⁾	0 to 300		●	●	

4 - OPTIONS

(See pages 250-251)

5 - STANDARD PRESSURE RANGES

(See page 247)

NOTES:

- Standard switch.
- Dual switches are 2 SPDT snap-action switches not independently adjustable.
- Estimated dc rating, 2.5A, 28 Vdc (not UL listed).
- Estimated dc rating, .4A, 120 Vdc (not UL listed).
- Available on pressure only.
- Ambient operating temperature limits -20 to 150°F, all styles. Setpoint shift of ±1% of range per 50°F is normal. Switch calibrated at 70°F reference.
- Items are wetted by process fluid.
- Refer to Option Table.
- Order Option XUD, stainless steel process connection.
- On differential switches, stainless steel is available in 15, 30, 60 and 90 psid ranges only. Includes Teflon O-ring and 316 SS connection.

TO ORDER THIS B-SERIES PRESSURE SWITCH:

- Select:** **B7** **20** **B** **X06** **600#**
- Enclosure: _____
 - Switch Element: _____
 - Actuator Seal: _____
 - Options (see pages 250-251): _____
 - Pressure Range (see page 247): _____

**Consult factory for guidance in product selection
Phone (203) 378-8281 or visit our web site at
www.ashcroft.com**



ATEX model shown

ATEX APPROVAL FOR HAZARDOUS LOCATIONS

ATEX is a European designation that deals with standards for equipment and protective systems intended for use in potentially explosive atmospheres. This approval is required for switches intended for use in hazardous locations, especially important to OEMs who export to Europe and contractors specifying or purchasing products for European applications. XCN option adds special features to Ashcroft 700-Series switch enclosures that meet the requirements for the highest levels of security and danger, such as:

- Special locking device requiring an Allen wrench to remove cover
- Special vents that blow out should the diaphragm rupture, thus preventing pressure build-up in the enclosure
- Special conduit plug requiring an Allen wrench for removal
- Available on pressure, temperature and differential pressure models
- Meets Explosion Class EEx d IIC T6



LOOK FOR THIS AGENCY
MARK ON OUR PRODUCTS

This broad Ashcroft® switch series ideal for use in virtually all process, industrial and OEM applications.

- **Explosion-proof NEMA 7/9, IP66 enclosures**
- **Choice of switch elements for all applications, including hermetically sealed**

1 - ENCLOSURE

T7 - Temperature switch, type 700, explosion proof enclosure meets Div. 1 & 2, NEMA 7/9, IP66 requirements

2 - SWITCH ELEMENTS

Order Code	Description/Maximum Electrical Ratings UL/CSA Listed SPDT	UL/CSA Listed SPDT
20 ⁽⁴⁾	Narrow deadband	15A, 125/250 Vac
21	Ammonia service	5A, 125/250 Vac
22 ⁽³⁾	Hermetically sealed switch, narrow deadband	5A, 125/250 Vac
23	Heavy duty ac	20A, 125/250 Vac
24 ⁽¹⁾	General purpose	15A, 125/250/480 Vac 1/2A, 125 Vdc 1/4A, 250 Vdc
25	Heavy duty dc	10A, 125/ Vac or dc 1/8HP 125/ Vac or dc
26 ⁽⁴⁾	Sealed environment proof	15A, 125/250 Vac
27	High temp. 300°F	15A, 125/250 Vac
31	Low level (gold) contacts	1A, 125/250 Vac
32	Hermetically sealed switch, general purpose	11A, 125/250 Vac 5A, 30 Vdc
50	Variable deadband	15A, 125/250 Vac
UL/CSA Listed Dual SPDT⁽²⁾		
61 ⁽⁴⁾	Dual narrow deadband	15A, 125/250 Vac
62 ⁽⁴⁾	Dual narrow environment proof	15A, 125/250 Vac
63	Dual high temp. 300°F	15A, 125/250 Vac
64	Dual general purpose	15A, 125/250/480 Vac 1/2A, 125 Vdc 1/4A, 250 Vdc
65	Dual ammonia service	5A, 125/250/480
67 ⁽³⁾	Hermetically sealed switch, narrow deadband	5A, 125/250 Vac
68	Dual hermetically sealed switch, general purpose	11A, 125/250 Vac 5A, 30 Vdc

TO ORDER THIS B-SERIES TEMPERATURE SWITCH:

Select: **T7 20 T05 030 XNH 150° to 260°F**

1. Enclosure: _____

2. Switch Element: _____

3. Thermal System: _____

4. Bulb Length: _____

5. Options (see pages 250-251): _____

6. Temperature Range (see page 247): _____

- **Fixed or limited adjustable deadband**
- **Readily available**
- **UL listings standard**
- **CSA listings available⁽⁷⁾**
- **ATEX models available⁽⁷⁾**
- **Setpoints adjustable from 15-100% of range**
- **IECEx models available⁽⁷⁾**

3 - THERMAL SYSTEM SELECTION⁽⁶⁾

DIRECT MOUNT			
Order Code	System Material	Style	
TS	316 stainless steel	Rigid	
REMOTE MOUNT			
Order Code	System Material	Line Length	Style
T05	316 stainless steel	5'	Capillary
T10	316 stainless steel	10'	with
T15	316 stainless steel	15'	302 SS
T20	316 stainless steel	20'	Spring
T25	316 stainless steel	25'	Armor

4 - BULB LENGTH SELECTION⁽⁶⁾

DIRECT MOUNT		
Order Code	"S" Dimension	Minimum Thermowell "U" Dimension
027	2¾"	—
040	4"	2½"
060	6"	4½"
090	9"	7½"
120	12"	10½"
REMOTE MOUNT		
030	3"	2½"

5 - OPTIONS

See pages 250-251

6 - STANDARD TEMPERATURE RANGES

See page 247

NOTES:

1. Standard switch.
2. Dual switches are 2 SPDT snap-action switches not independently adjustable.
3. Estimated dc rating, 2.5A, 28 Vdc (not UL listed).
4. Estimated dc rating, 0.4A, 120 Vdc (not UL listed).
5. Additional line lengths available, call factory.
6. Additional bulb lengths available, call factory.
7. Refer to Options Table.
Switches calibrated at 70°F ambient reference.



HERMETICALLY SEALED SWITCH

We recommend hermetically sealed switch elements for improved reliability. The hermetically sealed switch provides uncompromising contact protection in harsh or corrosive environments.

Features:

- UL-recognized component, guide WSQ2, File E85076
- All-stainless steel welded construction



Special features:

- Diaphragm-sealed piston actuator for long, reliable service
- Choice of wetted materials and pressure connections for all applications
- Watertight anodized aluminum body for environmental protection
- Hermetically sealed snap-acting switch element
- Field adjustable
- Standard 1/2 NPT Male electrical conduit connection
- Factory sealed leads
- Directly interchangeable with many similar models for convenience
- UL and CSA listed standard
- Setpoints adjustable from 15-100% of range. Exception: stainless steel welded (codes) adjustable from 20-100%

1 - FUNCTION

FPS - Pressure switch, single setpoint, fixed deadband, field adjustable

2 - ENCLOSURE (BODY)

N7 - NEMA 3, 4, 7 & 9, IP66
Anodized aluminum for hazardous locations

3 - SWITCH ELEMENT CODE

Code	SPDT Switch Elements UL/CSA Listed	
P	Hermetically Sealed, Narrow Deadband	5A, 125/250 Vac
J	Hermetically Sealed, General Purpose	11A, 125/250 Vac 5A, 30 Vdc
L	Hermetically Sealed, Gold Contacts	1A, 125 Vac

4 - ACTUATOR SEAL

Code	Material	Proc. Temp. Limits (°F)
B	Buna N	0-150
V	Viton	20-200
T	Teflon	0-150
R	SS Diaphragm/Viton O-Ring	0-150
S	316 SS Welded	0-200
H	SS Piston/Viton O-Ring	20-200

5 - PRESSURE CONNECTION

Code	Description
25	1/4 NPT Female
07	1/2 NPT Female (Standard)

6 - F-SERIES OPTIONS

Code	Description
XFP	Fungus proofing
XFS	Factory adjusted setpoint
XK3	Terminal blocks
XNH	Tagging stainless steel
X6B	Cleaned for oxygen service

Ideal for pressure alarm, shutdown, control on:

- Engines and compressors
- Process applications
- Offshore applications
- Panels
- Pipelines
- Hazardous locations
- Corrosive environments
- Machine tools
- Replacement and retrofit
- Where size is a consideration or equipment is being downsized


7A - NOMINAL RANGE & PERFORMANCE TABLE – BUNA (CODE B)

Nominal Range		Proof Pressure	Deadband (by Switch Element)	
psi	bar	psi	Code J	Code P,L
30 in.Hg Vac.†	-1	1000	1.8-8.0	0.4-5.0
30	2	1000	0.2-1.5	0.1-1.3
60	4	1000	0.2-2.5	0.3-1.5
100	7	1000	0.5-4.0	0.5-2.5
200	14	1000	1.5-8.0	0.5-5.0
400	28	1600	1.0-15.0	1.5-9.0
600	40	2400	4.0-28.0	2.0-15.0
1000	70	4000	6.0-50.0	3.0-30.0

7B - NOMINAL RANGE & PERFORMANCE TABLE – HIGH PRESSURE (CODE H)

Nominal Range (psi)	Nominal Range (bar)	Proof Pressure (psi)	Deadband (Code J)	Deadband (Code P,L)
1000	70	12,000	50-100	N/A
2000	140	12,000	100-200	N/A
3000	210	12,000	150-300	N/A
4000	280	16,000	150-350	N/A

7C - NOMINAL RANGE & PERFORMANCE TABLE – WELDED SS (CODE S)

Nominal Range (psi)	Nominal Range (bar)	Proof Pressure (psi)	Deadband (Code J)	Deadband (Code P,L)
30	2	1000	1.0-4.5	0.5-3.5
60	4	1000	1.0-5.0	0.5-4.0
100	7	1000	1.5-10.0	1.0-6.0
200	14	1000	2.0-18.0	1.0-12.0
400	28	1600	5.0-32.0	2.0-20.0
600	40	2400	9.0-50.0	4.0-30.0
1000	70	4000	15.0-80.0	7.0-50.0

7D - NOMINAL RANGE & PERFORMANCE TABLE – BUNA (CODE V, T, R)

Nominal Range (psi)	Nominal Range (bar)	Proof Pressure (psi)	Deadband (Code J)	Deadband (Code P,L)
30 in.Hg Vac.†	-1	1000	1.5-10.0	0.5-7.0
30	2	1000	0.5-3.5	0.2-2.5
60	4	1000	0.5-4.0	0.5-3.0
100	7	1000	1.0-7.0	1.0-4.5
200	14	1000	12.5-12.0	1.0-8.5
400	28	1600	5.0-30.0	2.0-17.0
600	40	2400	8.0-48.0	4.0-34.0
1000	70	4000	10.0-80.0	5.0-55.0

Note: Switches calibrated at 70°F reference.

TO ORDER THIS F-SERIES PRESSURE SWITCH:

Select: _____ FPS N7 P B 07 XFS 30#

- Function: _____
- Body: _____
- Switch Element (Table 3): _____
- Actuator Seal (Table 4): _____
- Pressure Port: Standard 1/2 NPTF _____
- Options (see table 6): _____
- Nominal Range (see Tables 7A, 7B, 7C, 7D): _____

Consult factory for guidance in product selection
Phone (203) 378-8281 or visit our web site at
www.ashcroft.com

This broad Ashcroft® switch series is easy to use and readily retrofits to virtually all process, industrial and OEM applications.

- Single or dual independently adjustable setpoints meet all setpoint requirements
- Watertight NEMA 4X, IP65 enclosure
- 316 SS construction
- Choice of switch elements for all applications, including hermetically sealed
- Fixed or fully adjustable deadband
- Approved for UL and CSA ratings
- Wide choice of actuators, including

1 - FUNCTION

- GPA** - Pressure control, single setpoint, adjustable deadband
- GPD** - Pressure control, two independently adjustable setpoints, fixed deadband
- GPS** - Pressure control, single setpoint, fixed deadband
- GDA** - Differential pressure control, single setpoint, adjustable deadband
- GDD** - Differential pressure control, two independently adjustable setpoints, fixed deadband
- GDS** - Differential pressure control, single setpoint, fixed deadband

2 - ENCLOSURE

- N4** - NEMA 4/4X, IP65 (watertight and corrosion resistant)

3 - SWITCH ELEMENTS FOR GPA & GDA CONTROLS

Code	Description/Maximum Electrical Ratings UL/CSA Listed	
H	General purpose	10A, 125/250 Vac 1/2A, 125 Vdc 1/4A, 250 Vdc
J	Hermetically sealed switch, general purpose	11A, 125/250 Vac 5A, 30 Vdc

SWITCH ELEMENTS FOR GPD, GPS, GDD & GDS CONTROLS

Code	Switch Elements UL/CSA Listed		
	Single (GS)	Dual (GD)	
K ⁽⁴⁾	KK	Narrow deadband	15A, 125/250 Vac
F ⁽⁴⁾	FF	Sealed environment proof	15A, 125/250 Vac
G ⁽⁵⁾	GG	General purpose	15A, 125/250/480 Vac 1/2A, 125 Vdc 1/4A, 250 Vdc
P ⁽³⁾	PP	Hermetically sealed switch, narrow deadband	5A, 125/250 Vac
J	JJ	Hermetically sealed switch, general purpose	11A, 125/250 Vac 5A, 30 Vdc

designs for fire-safe and NACE applications⁽⁷⁾

- Standard pressure connection materials:
 - Pressure psi ranges - 316L stainless steel
 - Differential psid ranges - 316 stainless steel standard
 - Pressure and differential inches of water ranges - 316 stainless steel standard
- Readily available
- 3A sanitary connection available⁽⁷⁾
- Setpoints adjustable from 15-100% of range

4 - ACTUATOR SEAL⁽¹⁾

Code & Material	Process Temp. ⁽²⁾ Limits °F	Range			
		Vac. in. H ₂ O	0-600 psi	1000 psi	2000-3000 psi
B-Buna N	0 to 150	●	●	●	●
V-Viton	20 to 300	●	●	●	●
T-Teflon	0 to 150	●	●	●	●
S-SS ⁽⁶⁾	0 to 300		●	●	
P-Monel ⁽⁶⁾	0 to 300		●	●	

5 - PRESSURE PORT⁽¹⁾

Order Code	
25	¼ NPT Female
06	¼ NPT Female and ½ NPT Male Combination
07	½ NPT Female

6 - OPTIONS

See pages 250-251

7 - STANDARD PRESSURE RANGES

See page 249

NOTES:

1. These items are wetted by process fluid.
2. Ambient operating temperature limits -20 to 150°F, all styles. Setpoint shift of ±1% of range per 50°F temperature change is normal. Switches calibrated at 70°F reference.
3. Estimated dc rating, 2.5A, 28 Vdc (not UL listed).
4. Estimated dc rating, .4A, 120 Vdc (not UL listed).
5. Not UL listed at 480 Vac.
6. Available on pressure only.
7. Refer to Option Table.

TO ORDER THIS G-SERIES PRESSURE SWITCH:

Select: _____ **GPD N4 GG B 25 X07 30#**

1. Function: _____
2. Enclosure: _____
3. Switch Element: _____
4. Actuator Seal: _____
5. Pressure Port: _____
6. Options (see pages 250-251): _____
7. Pressure Range (see page 249): _____



HERMETICALLY SEALED SWITCH
We recommend hermetically sealed switch elements for improved reliability. The hermetically sealed switch provides uncompromising contact protection in harsh or corrosive environments. The Ashcroft G Series is also approved for installation in Division II hazardous areas when supplied with hermetically sealed contacts.

- Features:
- UL-recognized component, guide WSQ2, File E85076
 - All-stainless steel welded construction



Consult factory for guidance in product selection
Phone (203) 378-8281 or visit our web site at www.ashcroft.com

This Ashcroft® specialty switch series is ideally suited for harsh and corrosive environments often found in many process, industrial and OEM applications.

- **Watertight NEMA 4X, IP65 enclosure**
- **316 SS construction**
- **Choice of switch elements for all applications, including hermetically sealed (NEMA 4 meets Class I, Div. 2, Groups A, B, C, & D with hermetically sealed switch**
- **Single or dual independently adjustable setpoints meet all setpoint requirements**

- **Fixed or fully adjustable deadband**
- **Readily available**
- **UL, CSA listings standard**
- **Setpoints adjustable from 15-100% of range**

HERMETICALLY SEALED SWITCH

We recommend hermetically sealed switch elements for improved reliability. The hermetically sealed switch provides uncompromising contact protection in harsh or corrosive environments. The Ashcroft G Series is also approved for installation in Division II hazardous areas when supplied with hermetically sealed contacts.

Features:

- UL-recognized component, guide WSQ2, File E85076
- All-stainless steel welded construction



1 - FUNCTION

- GTA** - Temperature control, single setpoint, adjustable deadband
- GTD** - Temperature control, two independently adjustable setpoints, fixed deadband
- GTS** - Temperature control, single setpoint, fixed deadband

2 - ENCLOSURE

- N4** - NEMA 4/4X, IP65 (watertight and corrosion resistant)

3 - SWITCH ELEMENTS FOR PTA CONTROLS

Order Code	Description/Maximum Electrical Ratings UL/CSA Listed
H	General purpose 10A, 125/250 Vac 1/2A, 125 Vdc 1/4A, 250 Vdc
J	Hermetically sealed switch, general purpose 11A, 125/250 Vac 5A, 30 Vdc

SWITCH ELEMENTS FOR GTD & GTS CONTROLS

Code		Switch Elements UL/CSA Listed	
Single (GS)	Dual (GD)		
K ⁽²⁾	KK	Narrow deadband	15A, 125/250 Vac
F ⁽²⁾	FF	Sealed environment proof	15A, 125/250 Vac
G ⁽³⁾	GG	General purpose	15A, 125/250/480 Vac 1/2A, 125 Vdc 1/4A, 250 Vdc
P ⁽¹⁾	PP	Hermetically sealed switch, narrow deadband	5A, 125/250 Vac
J	JJ	Hermetically sealed switch, general purpose	11A, 125/250 Vac 5A, 30 Vdc

4 - LINE LENGTH SELECTION⁽⁴⁾

DIRECT MOUNT		
Order Code	Line Length ft	Style
00	Not Applicable	Rigid
REMOTE MOUNT		
05	5	Capillary
10	10	with
15	15	Armor
20	20	(Std.)
25	25	

5 - THERMAL SYSTEM SELECTION

LINE MATERIAL	
DIRECT MOUNT	
Order Code	Description
	No entry required for Direct Mount
REMOTE MOUNT	
A7	Stainless Steel Armor (Std.)

6 - BULB LENGTH SELECTION⁽⁵⁾

DIRECT MOUNT		
Order Code	"S" Dimension	Minimum Thermowell "U" Dimension
027	2¾"	—
040	4"	2½"
060	6"	4½"
090	9"	7½"
120	12"	10½"
REMOTE MOUNT		
030	3"	2½"

7 - OPTIONS

See pages 250-251

8 - STANDARD TEMPERATURE RANGES

See page 249

NOTES:

1. Estimated dc rating, 2.5A, 28 Vdc (not UL listed).
2. Estimated dc rating, 0.4A, 120 Vdc (not UL listed).
3. Not UL listed at 480 Vac.
4. Additional line lengths available, call factory.
5. Additional bulb lengths available, call factory.
Switches calibrated at 70°F ambient reference.

TO ORDER THIS G-SERIES TEMPERATURE SWITCH:

Select: **GTA** **N4** **H** **05** **A7** **030** **XNH** **150° to 260°F**

1. Function: _____
2. Enclosure: _____
3. Switch Element: _____
4. Line Length: _____
5. Thermal System: _____
6. Bulb Length: _____
7. Options (see pages 250-251): _____
8. Temperature Range (see page 249): _____

Consult factory for guidance in product selection
Phone (203) 378-8281 or visit our web site at
www.ashcroft.com

This Ashcroft® specialty switch is designed for applications such as trash compactors, balers and similar types of hydraulic control systems.

- **Watertight NEMA 4X, IP66 enclosure**
- **High overpressure protection**
- **Vibration resistant O-ring sealed piston actuator**
- **Choice of switch elements for all applications, including hermetically sealed**

- **Fixed or limited adjustable deadband**
- **Readily available**
- **Setpoints adjustable from 15-100% of range**



1 - FUNCTION

H4 - Hydraulic switch, type 400, watertight enclosure meets NEMA 4, 4X and 13, IP66 requirements

2 - SWITCH ELEMENTS

Order Code	Description/Maximum Electrical Ratings	UL/CSA Listed SPDT
20 ⁽³⁾	Narrow deadband	15A, 125/250 Vac
23	Heavy duty ac	20A, 125/250 Vac
24 ⁽¹⁾	General purpose	15A, 125/250/480 Vac 1/2A, 125 Vdc 1/4A, 250 Vdc
25	Heavy duty dc	10A, 125/ Vac or dc 1/8HP 125/ Vac or dc
26 ⁽³⁾	Sealed environment proof	15A, 125/250 Vac
27	High temp. 300°F	15A, 125/250 Vac
28	High limit, manual reset	15A, 125/250 Vac
32	Hermetically sealed, general purpose	11A, 125/250 Vac 5A, 30 Vdc
50	Variable deadband	15A, 125/250 Vac
UL/CSA Listed Dual SPDT⁽²⁾		
61 ⁽³⁾	Dual narrow deadband	15A, 125/250 Vac
62 ⁽³⁾	Dual narrow environment proof	15A, 125/250 Vac
63	Dual high temp. 300°F	15A, 125/250 Vac
64	Dual general purpose	15A, 125/250/480 Vac 1/2A, 125 Vdc 1/4A, 250 Vdc

3 - ACTUATOR SEAL

Order Code	
V-Viton	Viton O-ring, 304 SS press. conn. Connection style 1/4 NPT Female

4 - OPTIONS

(see pages 238-239)

5 - STANDARD PRESSURE RANGES

Range psi	Adjustable Setpoint Limits psi	Proof Pressure psi
1000	150-1000	12,000
2000	300-2000	12,000
3000	450-3000	12,000
5000	750-5000	10,000
7500	1125-7500	10,000

NOTES:

1. Standard switch.
2. Dual switches are 2 SPDT snap-action switches not independently adjustable.
3. Estimated dc rating, 0.4A, 120 Vdc (not UL listed).

TO ORDER THIS H-SERIES PRESSURE SWITCH:

Select: _____ **H4** **24** **V** **XFS** **3000#**

1. Enclosure: _____
2. Switch Element: _____
3. Actuator Seal: _____
4. Options (see pages 250-251): _____
5. Pressure Range (from table 5): _____

Consult factory for guidance in product selection
Phone (203) 378-8281 or visit our web site at
www.ashcroft.com

This broad Ashcroft® switch series is easy to use and readily retrofits to virtually all process, industrial and OEM applications.

- Single or dual independently adjustable setpoints meet all setpoint requirements
- Watertight NEMA 4X, IP66 enclosure
- Choice of switch elements for all applications, including hermetically sealed
- Fixed or adjustable deadband
- Standard pressure connection materials:

1 - FUNCTION

- LPA** - Pressure control, single setpoint, adjustable deadband
- LPD** - Pressure control, two independently adjustable setpoints, fixed deadband
- LPS** - Pressure control, single setpoint, fixed deadband
- LDA** - Differential pressure control, single setpoint, adjustable deadband
- LDD** - Differential pressure control, two independently adjustable setpoints, fixed deadband
- LDS** - Differential pressure control, single setpoint, fixed deadband

2 - ENCLOSURE

- N4** - NEMA 4/4X, IP66 (watertight and corrosion resistant)

3 - SWITCH ELEMENTS FOR LPA & LDA CONTROLS

Code	Description/Maximum Electrical Ratings UL/CSA Listed
H	General purpose 10A, 125/250 Vac 1/2A, 125 Vdc 1/4A, 250 Vdc
J	Hermetically sealed switch, general purpose 11A, 125/250 Vac 5A, 30 Vdc

SWITCH ELEMENTS FOR LPD, LPS, LDD & LDS CONTROLS

Code	Switch Elements UL/CSA Listed	
	Single (PS)	Dual (PD)
K ⁽⁴⁾	KK	Narrow deadband 15A, 125/250 Vac
F ⁽⁴⁾	FF	Sealed environment proof 15A, 125/250 Vac
G ⁽⁵⁾	GG	General purpose 15A, 125/250/480 Vac 1/2A, 125 Vdc 1/4A, 250 Vdc
P ⁽³⁾	PP	Hermetically sealed switch, narrow deadband 5A, 125/250 Vac
J	JJ	Hermetically sealed switch, general purpose 11A, 125/250 Vac 5A, 30 Vdc

Pressure psi ranges - 316L SS

Differential psid ranges - Nickel-plated brass⁽⁷⁾

Pressure and differential inches of water ranges - Epoxy coated carbon steel

- Approved for UL, CSA and FM⁽⁷⁾ ratings
- Wide choice of actuators, including designs for fire-safe and NACE applications⁽⁷⁾
- Readily available
- Setpoints adjustable from 15-100% of range

4 - ACTUATOR SEAL⁽¹⁾

Code & Material	Process Temp. ⁽²⁾ Limits °F	Range			
		Vac. in. H ₂ O	0-600 psi	1000 psi	2000-3000 psi
B-Buna N	0 to 150	●	●	●	●
V-Viton	20 to 300	●	●	●	
T-Teflon	0 to 150	●	●	●	●
S-SS ^{(6),(8)}	0 to 300		●	●	
P-Monel ⁽⁶⁾	0 to 300		●	●	

5 - PRESSURE PORT⁽¹⁾

Order Code	
25	¼ NPT Female
06	¼ NPT Female and ½ NPT Male Combination
07	½ NPT Female

6 - OPTIONS

See pages 250-251

7 - STANDARD PRESSURE RANGES

See page 249



NOTES:

1. These items are wetted by process fluid.
2. Ambient operating temperature limits -20 to 150°F, all styles. Setpoint shift of ±1% of range per 50°F temperature change is normal. Switches calibrated at 70°F reference.
3. Estimated dc rating, 2.5A, 28 Vdc (not UL listed).
4. Estimated dc rating, .4A, 120 Vdc (not UL listed).
5. Not UL listed at 480 Vac.
6. Available on pressure only.
7. Refer to Option Table.
8. Order Option XUD, stainless steel process connection.

HERMETICALLY SEALED SWITCH

We recommend hermetically sealed switch elements for improved reliability. The hermetically sealed switch provides uncompromising contact protection in harsh or corrosive environments. The Ashcroft L Series is also approved for installation in Division II hazardous areas when supplied with hermetically sealed contacts.

Features:

- UL-recognized component, guide W/SQ2, File E85076
- All-stainless steel welded construction



TO ORDER THIS L-SERIES PRESSURE SWITCH:

Select: _____ LPD N4 GG B 25 XK3 30#

1. Function: _____

2. Enclosure: _____

3. Switch Element: _____

4. Actuator Seal: _____

5. Pressure Port: _____

6. Options (see pages 250-251): _____

7. Pressure Range (see page 249): _____

**Consult factory for guidance in product selection
Phone (203) 378-8281 or visit our web site at
www.ashcroft.com**

This broad Ashcroft® switch series is easy to use and readily retrofits to virtually all process, industrial and OEM applications.

- Single or dual independently adjustable setpoint(s) meet all setpoint requirements
- Watertight NEMA 4X, IP66 enclosure
- Choice of switch elements for all applications, including hermetically sealed (NEMA 4 meets Class I, Div. 2, Groups A, B, C, & D with hermetically sealed switch
- Fixed or fully adjustable deadband
- Readily available
- UL, CSA listings standard
- Setpoints adjustable from 15-100% of range

1 - FUNCTION

- LTA** - Temperature control, single setpoint, adjustable deadband
- LTD** - Temperature control, two independently adjustable setpoints, fixed deadband
- LTS** - Temperature control, single setpoint, fixed deadband

2 - ENCLOSURE

- N4** - NEMA 4/4X, IP66 (watertight and corrosion resistant)

3 - SWITCH ELEMENTS FOR LTA CONTROLS

Order Code	Description/Maximum Electrical Ratings UL/CSA Listed
H	General purpose 10A, 125/250 Vac 1/2A, 125 Vdc 1/4A, 250 Vdc
J	Hermetically sealed switch, general purpose 11A, 125/250 Vac 5A, 30 Vdc

SWITCH ELEMENTS FOR LTD & LTS CONTROLS

Code	Switch Elements UL/CSA Listed	
	Single (LS)	Dual (LD)
K ⁽²⁾	KK	Narrow deadband 15A, 125/250 Vac
F ⁽²⁾	FF	Sealed environment proof 15A, 125/250 Vac
G ⁽³⁾	GG	General purpose 15A, 125/250/480 Vac 1/2A, 125 Vdc 1/4A, 250 Vdc
P ⁽¹⁾	PP	Hermetically sealed switch, narrow deadband 5A, 125/250 Vac
J	JJ	Hermetically sealed switch, general purpose 11A, 125/250 Vac 5A, 30 Vdc

HERMETICALLY SEALED SWITCH

We recommend hermetically sealed switch elements for improved reliability. The hermetically sealed switch provides uncompromising contact protection in harsh or corrosive environments. The Ashcroft L Series is also approved for installation in Division II hazardous areas when supplied with hermetically sealed contacts.

Features:

- UL-recognized component, guide WSQ2, File E85076
- All-stainless steel welded construction



4 - LINE LENGTH SELECTION⁽⁴⁾

DIRECT MOUNT		
Order Code	Line Length ft	Style
00	Not Applicable	Rigid
REMOTE MOUNT		
05	5	Capillary
10	10	with
15	15	Armor
20	20	(Std.)
25	25	

5 - THERMAL SYSTEM SELECTION

LINE MATERIAL	
DIRECT MOUNT	
Order Code	Description
	No entry required for Direct Mount
REMOTE MOUNT	
A7	Stainless Steel Armor (Std.)



CE
LOOK FOR THIS AGENCY MARK ON OUR PRODUCTS



6 - BULB LENGTH SELECTION⁽⁵⁾

DIRECT MOUNT		
Order Code	"S" Dimension	Minimum Thermowell "U" Dimension
027	2¾"	—
040	4"	2½"
060	6"	4½"
090	9"	7½"
120	12"	10½"
REMOTE MOUNT		
030	3"	2½"

7 - OPTIONS

See pages 250-251

8 - STANDARD TEMPERATURE RANGES

See page 249

NOTES:

1. Estimated dc rating, 2.5A, 28 Vdc (not UL listed).
2. Estimated dc rating, 0.4A, 120 Vdc (not UL listed).
3. Not UL listed at 480 Vac.
4. Additional line lengths available, call factory.
5. Additional bulb lengths available, call factory. Switches calibrated at 70°F ambient reference.

TO ORDER THIS L-SERIES TEMPERATURE SWITCH:

Select: **LTA N4 H 05 A7 030 XNH 150° to 260°F**

1. Function: _____
2. Enclosure: _____
3. Switch Element: _____
4. Line Length: _____
5. Thermal System: _____
6. Bulb Length: _____
7. Options (see pages 250-251): _____
8. Temperature Range (see page 249): _____

Consult factory for guidance in product selection
Phone (203) 378-8281 or visit our web site at
www.ashcroft.com

Special features:

- Ashcroft® K Series polysilicon thin film pressure sensor (transducer) for long, stable life (minimum 10 million cycles at rated load)
- Setpoint repeatability of 0.5% of range
- Choice of watertight, NEMA 4 or explosion-proof NEMA 7/9, IP66 enclosures for safety and reliability
- Pressure setpoints to 20,000 psi
- Deadbands adjustable between 0.1% and 95% of nominal range
- Multi-turn potentiometers make setpoint and deadband adjustments easy

1 - FUNCTION
NPA - Single setpoint with adjustable deadband

2 - ENCLOSURE

N4	NEMA 4, IP66, watertight
N7	NEMA 7/9, IP66, explosion proof

3 - OUTPUT

D	SPDT Relay	10A, 250 Vac 10A, 30 Vdc
I	SPDT Relay and current output	10A, 250 Vac 10A, 30 Vdc and 4-20mA

4 - POWER REQUIREMENTS

Code	Power Supply
L	110 Vac, 50/60 Hz
C	24 Vdc
V	250 Vac, 50/60 Hz

5 - PRESSURE CONNECTIONS

Code	Description
S01	1/8 NPT male
S02	1/4 NPT male
S03	1/8 NPT female
S04	1/4 NPT female
S05	7/16-20 SAE-male
S06	1/2 NPT male
S07	1/4 AMINCO-female
S08	7/16-20 SAE-J514-female

6 - OPTIONS

Code	Description
XEA	External adjustment (N4 only)

TO ORDER THIS N-SERIES PRESSURE SWITCH:

Select:

1. Function: _____ **NPA**

2. Body: _____ **N4**

3. Electrical Output: _____ **D**

4. Power Requirements: _____ **L**

5. Pressure Port: _____ **S02**

6. Options (see table 6): _____ **XEA**

7. Pressure Range (see table 7): _____ **100#**

- Status lights indicate switch state
- Continuous power assures operation first time and every time even after years of inactivity

Ideal for pressure alarm, shutdown, control on:

- Machine tools
- Injection molding machines
- Presses
- Pumps
- Hydraulic systems
- Turbines and compressors
- Most process applications

7 - STANDARD PRESSURE RANGES

Range psi	Setpoint ⁽¹⁾ Limits psi	Proof psi	Burst psi
60	3-60	120	480
100	5-100	200	800
200	10-200	400	1600
300	15-300	600	2400
500	25-500	1000	4000
750	35-750	1500	6000
1000	50-1000	2000	8000
2000	100-2000	4000	16,000
3000	150-3000	4500	15,000
5000	250-5000	7500	25,000
7500	375-7500	9000	22,500
10,000 ⁽²⁾	500-10,000	12,000	30,000
15,000 ⁽²⁾	750-15,000	18,000	45,000
20,000 ⁽²⁾	1000-20,000	24,000	60,000

(1) Switch setpoint is adjustable throughout these limits.

(2) Pressure connection S07 only on these ranges.

NOTES:
Temperature Specifications (70°F ref.)

-20°F to 160°F ambient and process

Setpoint shift of up to 2% of range per 50°F change can be expected

OPTIONAL TRANSMITTER SPECIFICATIONS
PERFORMANCE CHARACTERISTICS

Accuracy Class (F.S.):	<u>1%</u>
Nonlinearity	
Terminal Point*	±0.7%
B.F.S.L.	±0.4%



NEMA 7 (N7) Model Shown

Hysteresis	±0.2%
Nonrepeatability	±0.07%
Interchangeability	±1.0%
*Includes hysteresis	

Stability: ±0.5% F.S./year

Durability: 10⁸ cycles 20/80% F.S. with negligible performance change

Response Time: Less than 5msec

ENVIRONMENTAL CHARACTERISTICS
Temperature Limits:

Storage	-65/+250°F
Operating	-20/+180°F
Compensated	-20/+160°F

Thermal Coefficients (70°F ref.):

Accuracy	Zero and Span
1%	±0.040% F.S./°F

ELECTRICAL SPECIFICATIONS
Output Signal: Supply Voltage:

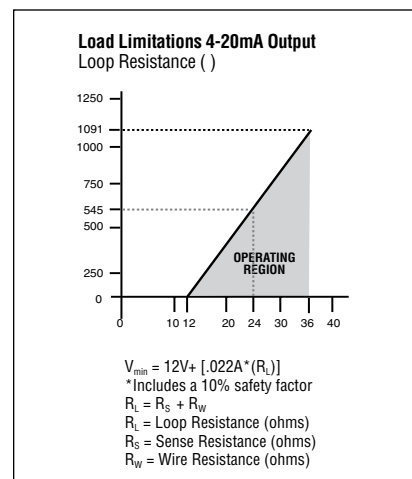
4-20mA (2 wire) 12-36 Vdc unregulated

MECHANICAL SPECIFICATIONS
Standard Construction Materials:

Wetted Parts:

Diaphragm - 17-4PH SS

Pressure Connection - 316SS

Reverse wiring protected.
Zero Offset: ±1.0%F.S.


**Electronic Pressure Switches,
Watertight Enclosure with
Pressure Indication, N-Series**

Ideal for pressure alarm, shutdown, control on:

- Machine tools
- Injection molding machines
- Presses
- Pumps
- Hydraulic systems
- Turbines and compressors
- Most process applications

Special features:

- Ashcroft® K Series polysilicon thin film pressure sensor (transducer) for long, stable life (minimum 10 million cycles at rated load)

- Setpoint repeatability of 0.5% of range
- Watertight, NEMA 4X, IP66 enclosures for safety and reliability
- Pressure setpoints to 20,000 psi
- Deadbands adjustable between 0.1% and 95% of nominal range
- Multi-turn potentiometers make setpoint and deadband adjustments easy
- Status lights indicate switch state
- Continuous power assures operation first time and every time even after years of inactivity



1 - FUNCTION

NPI - Single setpoint with adjustable deadband and indication

2 - ENCLOSURE

N4 NEMA 4, IP66, watertight

3 - OUTPUT

D	SPDT Relay	10A, 250 Vac 10A, 30 Vdc
I	SPDT Relay and current output	10A, 250 Vac 10A, 30 Vdc and 4-20mA

4 - POWER REQUIREMENTS

Code	Power Supply
L	110 Vac, 50/60 Hz
C	24 Vdc
V	250 Vac, 50/60 Hz

5 - PRESSURE CONNECTIONS

Code	Description
S01	1/8 NPT male
S02	1/4 NPT male
S03	1/8 NPT female
S04	1/4 NPT female
S05	7/16-20 SAE-male
S06	1/2 NPT male
S07	1/4 AMINCO-female
S08	7/16-20 SAE-J514-female

6 - OPTIONS

Code	Description
XEA	External adjustment (N4 only)

7 - STANDARD PRESSURE RANGES

Range psi	Setpoint ⁽¹⁾ Limits psi	Proof psi	Burst psi
60	3-60	120	480
100	5-100	200	800
200	10-200	400	1600
300	15-300	600	2400
500	25-500	1000	4000
750	35-750	1500	6000
1000	50-1000	2000	8000
2000	100-2000	4000	16,000
3000	150-3000	4500	15,000
5000	250-5000	7500	25,000
7500	375-7500	9000	22,500
10,000 ⁽²⁾	500-10,000	12,000	30,000
15,000 ⁽²⁾	750-15,000	18,000	45,000
20,000 ⁽²⁾	1000-20,000	24,000	60,000

(1) Switch setpoint is adjustable throughout these limits.
(2) Pressure connection S07 only on these ranges.

NOTES:

Temperature Specifications (70°F ref.)

-20°F to 160°F ambient and process
Setpoint shift of up to 2% of range per 50°F change can be expected

OPTIONAL TRANSMITTER SPECIFICATIONS

PERFORMANCE CHARACTERISTICS

Accuracy Class (F.S.):	1%
Nonlinearity	
Terminal Point*	±0.7%
B.F.S.L.	±0.4%

Hysteresis	±0.2%
Nonrepeatability	±0.07%
Interchangeability	±1.0%
*Includes hysteresis	

Stability: ±0.5% F.S./year

Durability: 10⁸ cycles 20/80% F.S. with negligible performance change

Response Time: Less than 5msec

ENVIRONMENTAL CHARACTERISTICS

Temperature Limits:

Storage	-65/+250°F
Operating	-20/+180°F
Compensated	-20/+160°F

Thermal Coefficients (70°F ref.):

Accuracy	Zero and Span
1%	±0.040% F.S./°F

ELECTRICAL SPECIFICATIONS

Output Signal: Supply Voltage:
4-20mA (2 wire) 12-36 Vdc unregulated

MECHANICAL SPECIFICATIONS

Standard Construction Materials:

Wetted Parts:
Diaphragm - 17-4PH SS
Pressure Connection - 316SS

Reverse wiring protected.

Zero Offset: ±1.0% F.S.

TO ORDER THIS N-SERIES PRESSURE SWITCH:

Select: _____ NPI N4 D L S02 XEA 100#

1. Function: _____

2. Body: _____

3. Electrical Output: _____

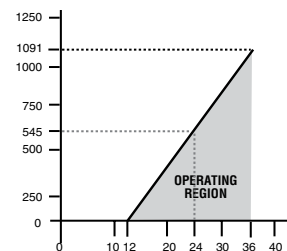
4. Power Requirements: _____

5. Pressure Port: _____

6. Options (see table 6): _____

7. Pressure Range (see table 7): _____

Load Limitations 4-20mA Output Loop Resistance ()



$V_{min} = 12V + [.022A * (R_L)]$
 *Includes a 10% safety factor
 $R_L = R_S + R_W$
 $R_L =$ Loop Resistance (ohms)
 $R_S =$ Sense Resistance (ohms)
 $R_W =$ Wire Resistance (ohms)

This top-of-the-line Ashcroft® process switch series includes many state-of-the-art features for safety and reliability in virtually all process applications.

- Die cast aluminum enclosure is standard with NEMA 4X (weather-proof, corrosion resistant) NEMA 7 (explosion-proof enclosure Class I, Div. 1 & 2, Groups B, C & D and Class II, Div. 1 & 2, Groups E, F & G). Dual chamber design allows setpoint changes to be made safely even with power connected.
- Single or dual independently adjustable setpoints meet all setpoint requirements

1 - FUNCTION

- PPA** - Pressure control, single setpoint, adjustable deadband
- PPD** - Pressure control, two independently adjustable setpoints, fixed deadband
- PPS** - Pressure control, single setpoint, fixed deadband
- PDA** - Differential pressure control, single setpoint, adjustable deadband
- PDD** - Differential pressure control, two independently adjustable setpoints, fixed deadband
- PDS** - Differential pressure control, single setpoint, fixed deadband

2 - ENCLOSURE

- N7** - NEMA 7/9, IP65, watertight, corrosion resistant and explosion proof Div. 1 & 2

3 - SWITCH ELEMENTS FOR PPA & PDA CONTROLS

Code	Description/Maximum Electrical Ratings UL/CSA Listed
H	General purpose 10A, 125/250 Vac 1/2A, 125 Vdc 1/4A, 250 Vdc
J	Hermetically sealed switch, general purpose 11A, 125/250 Vac 5A, 30 Vdc

SWITCH ELEMENTS FOR PPD, PPS, PDD & PDS CONTROLS

Code	Switch Elements UL/CSA Listed	
	Single (PS)	Dual (PD)
K ⁽⁴⁾	KK	Narrow deadband 15A, 125/250 Vac
F ⁽⁴⁾	FF	Sealed environment proof 15A, 125/250 Vac
G ⁽⁵⁾	GG	General purpose 15A, 125/250/480 Vac 1/2A, 125 Vdc 1/4A, 250 Vdc
P ⁽³⁾	PP	Hermetically sealed switch, narrow deadband 5A, 125/250 Vac
J	JJ	Hermetically sealed switch, general purpose 11A, 125/250 Vac 5A, 30 Vdc

- UL, CSA⁽⁷⁾ listed
- Fixed or adjustable deadband
- Readily available
- Standard pressure connection materials:
 - Pressure psi ranges - 316L stainless steel
 - Differential pressure ranges - Nickel plated brass⁽⁸⁾
 - Pressure and differential inches of water ranges - Epoxy coated carbon steel
- Setpoints adjustable from 15-100% of range
- Dual Seal Rating models available

4 - ACTUATOR SEAL⁽¹⁾

Code & Material	Process Temp. ⁽²⁾ °F	Range			
		Vac. in.H ₂ O	0-600 psi	1000 psi	2000-3000 psi
B-Buna N	0 to 150	●	●	●	●
V-Viton	20 to 300	●	●	●	
T-Teflon	0 to 150	●	●	●	●
S-SS ⁽⁶⁾⁽⁹⁾	0 to 300		●	●	
P-Monel ⁽⁶⁾	0 to 300		●	●	

5 - PRESSURE PORT⁽¹⁾

Order Code	
25	¼ NPT Female
06	¼ NPT Female and ½ NPT Male Combination
07	½ NPT Female

6 - OPTIONS

See pages 250-251

7 - STANDARD PRESSURE RANGES

See page 248



CE
LOOK FOR THIS AGENCY MARK ON OUR PRODUCTS

NOTES:

1. These items are wetted by process fluid.
2. Ambient operating temperature limits -20 to 150°F, all styles. Setpoint shift of ±1% of range per 50°F temperature change is normal. Switches calibrated at 70°F reference.
3. Estimated dc rating, 2.5A, 28 Vdc (not UL listed).
4. Estimated dc rating, .4A, 120 Vdc (not UL listed).
5. Not UL listed at 480 Vac.
6. Available on pressure only.
7. Refer to Option Table.
8. Order Option XUD, stainless steel process connection.
9. On differential switches, stainless steel is available in 15, 30, 60 and 90 psid ranges only. Includes Teflon O-ring and 316 SS connection.

HERMETICALLY SEALED SWITCH

We recommend hermetically sealed switch elements for improved reliability. The hermetically sealed switch provides uncompromising contact protection in harsh or corrosive environments.

Features:

- UL-recognized component, guide WSQ2, File E85076
- All-stainless steel welded construction



TO ORDER THIS P-SERIES PRESSURE SWITCH:

- Select: _____ PPD N7 GG B 25 XK3 30#
1. Function: _____
 2. Enclosure: _____
 3. Switch Element: _____
 4. Actuator Seal: _____
 5. Pressure Port: _____
 6. Options (see pages 250-251): _____
 7. Pressure Range (see page 248): _____

Consult factory for guidance in product selection
Phone (203) 378-8281 or visit our web site at
www.ashcroft.com

This top-of-the-line Ashcroft® process switch series includes many state-of-the-art features for safety and reliability in virtually all process applications.

- Explosion-proof NEMA 7/9, IP55 enclosures
- Single or dual independently adjustable setpoints meet all setpoint requirements
- UL listings standard
- CSA listings available⁽⁶⁾

- Dual-chamber design for improved safety. Choice of switch elements for all applications, including hermetically sealed
- Fixed or fully adjustable deadband
- Setpoints adjustable from 15-100% of range

HERMETICALLY SEALED SWITCH

We recommend hermetically sealed switch elements for improved reliability. The hermetically sealed switch provides uncompromising contact protection in harsh or corrosive environments.

Features:

- UL-recognized component, guide WSQ2, File E85076
- All-stainless steel welded construction
- Available on 400 and 700 models



1 - FUNCTION

- PTA** - Temperature control, single setpoint, adjustable deadband
- PTD** - Temperature control, two independently adjustable setpoints, fixed deadband
- PTS** - Temperature control, single setpoint, fixed deadband

2 - ENCLOSURE

- N7** - NEMA 7/9, IP65 (explosion proof Div. 1 & 2)

3 - SWITCH ELEMENTS FOR PTA CONTROLS

Order Code	Description/Maximum Electrical Ratings UL/CSA Listed	UL/CSA Listed
H	General purpose	10A, 125/250 Vac 1/2A, 125 Vdc 1/4A, 250 Vdc
J	Hermetically sealed switch, general purpose	11A, 125/250 Vac 5A, 30 Vdc

SWITCH ELEMENTS FOR PTD & PTS CONTROLS

Code		Switch Elements UL/CSA Listed
Single (PS)	Dual (PD)	
K ⁽²⁾	KK	Narrow deadband 15A, 125/250 Vac
F ⁽²⁾	FF	Sealed environment proof 15A, 125/250 Vac
G ⁽³⁾	GG	General purpose 15A, 125/250/480 Vac 1/2A, 125 Vdc 1/4A, 250 Vdc
P ⁽¹⁾	PP	Hermetically sealed switch, narrow deadband 5A, 125/250 Vac
J	JJ	Hermetically sealed switch, general purpose 11A, 125/250 Vac 5A, 30 Vdc

4 - LINE LENGTH SELECTION⁽⁴⁾

DIRECT MOUNT		
Order Code	Line Length ft	Style
00	Not Applicable	Rigid
REMOTE MOUNT		
05	5	Capillary
10	10	with
15	15	Armor
20	20	(Std.)
25	25	

5 - THERMAL SYSTEM SELECTION

LINE MATERIAL	
DIRECT MOUNT	
Order Code	Description
No entry required for Direct Mount	
REMOTE MOUNT	
A7	Stainless Steel Armor (Std.)

6 - BULB LENGTH SELECTION⁽⁵⁾

DIRECT MOUNT		
Order Code	"S" Dimension	Minimum Thermowell "U" Dimension
027	2¾"	—
040	4"	2½"
060	6"	4½"
090	9"	7½"
120	12"	10½"
REMOTE MOUNT		
030	3"	2½"

7 - OPTIONS

See pages 250-251

8 - STANDARD TEMPERATURE RANGES

See page 248

NOTES:

1. Estimated dc rating, 2.5A, 28 Vdc (not UL listed).
 2. Estimated dc rating, 0.4A, 120 Vdc (not UL listed).
 3. Not UL listed at 480 Vac.
 4. Additional line lengths available, call factory.
 5. Additional bulb lengths available, call factory.
 6. Refer to Option Table.
- Switches calibrated at 70°F ambient reference.

TO ORDER THIS P-SERIES TEMPERATURE SWITCH:

Select: PTA N7 H 05 A7 030 XNH 150° to 260°F

1. Function: _____
2. Enclosure: _____
3. Switch Element: _____
4. Line Length: _____
5. Thermal System: _____
6. Bulb Length: _____
7. Options (see pages 250-251): _____
8. Temperature Range (see page 248): _____

**Consult factory for guidance in product selection
Phone (203) 378-8281 or visit our web site at
www.ashcroft.com**



Nominal Ranges and Deadbands Pressure and Temperature Switches, B-Series

PRESSURE/VACUUM SWITCHES

Nominal Range ⁽¹⁾			Overpressure Ratings		Approximate Deadband ⁽²⁾ Switch Element (Buna-N Diaphragm)				
			Proof psi	Burst psi	20, 26, 27	21, 24, 31	50	22	32, 42
Vacuum									
-30 in.Hg	-760 mmHg	-100 kPa	250	400	0.3-0.7	1.5-4.0	0.5-2.2	0.4-1.5	2.1-4.2
Compound									
-15 in.H ₂ O/ 15 in.H ₂ O	-375 mmH ₂ O/ 375 mmH ₂ O	-3.7 kPa 3.7 kPa	20	35	0.15-0.75/ 0.15-0.75	1.5-2.5/ 1.5-2.5	.45-2.0/ 0.45-2.0	0.5-1.2/ 0.5-1.2	2.1-3.5/ 2.1-3.5
-30 in.H ₂ O 30 in.H ₂ O	-760 mmH ₂ O/ 760 mmH ₂ O	-7.5 kPa 7.5 kPa	20	35	0.30-0.60/ 0.30-0.60	1.5-2.5/ 1.5-2.5	0.45-2.0/ 0.45-2.0	0.5-1.5/ 0.5-1.5	2.1-3.5/ 2.1-3.5
-30 in.Hg/ 15 psi	-760 mmHg/ 1.0 kg/cm ²	-100 kPa 100 kPa	250	400	0.5-1.0/ 0.3-0.7	2.0-3.5/ 0.5-2.0	0.75-2.5/ 0.5-1.0	0.7-1.8/ 0.5-1.4	2.8-4.2/ 0.7-2.1
-30 in.Hg/ 30 psi	-760 mmHg/ 2.0 kg/cm ²	-100 kPa 200 kPa	250	400	1.0-1.5/ 0.3-0.8	3.0-6.0/ 1.0-2.0	1.2-4.5/ 0.7-1.5	1.4-2.4/ 0.4-1.3	4.2-8.4/ 1.4-2.8
-30 in.Hg/ 60 psi	-760 mmHg/ 4.0 kg/cm ²	-100 kPa 400 kPa	250	400	2.0-3.0/ 0.7-1.5	5.0-9.0/ 3.0-5.0	2.5-7.0/ 1.1-4.0	2.8-4.5/ 1.0-2.3	7.0-12.0/ 4.2-7.0
Pressure									
10 in.H ₂ O	250 mmH ₂ O	2.5 kPa	20	35	0.2-0.5	1.0-2.0	0.35-1.5	0.4-1.0	1.4-2.8
30 in.H ₂ O	750 mmH ₂ O	7.5 kPa	20	35	0.3-0.6	1.5-2.5	4.5-2.0	0.5-2.0	2.1-3.5
60 in.H ₂ O	1500 mmH ₂ O	15 kPa	20	35	0.5-1.3	1.5-3.5	0.9-2.5	0.7-3.0	2.1-5.0
100 in.H ₂ O	2500 mmH ₂ O	25 kPa	20	35	0.6-1.6	2.5-5.5	1.1-4.0	1.0-4.0	3.5-7.7
150 in.H ₂ O	3750 mmH ₂ O	37 kPa	20	35	1.0-2.5	4.5-8.5	1.7-6.5	2.0-6.0	6.0-12.0
15 psi	1.0 kg/cm ²	100 kPa	500	1500	0.1-35	0.5-1.5	0.2-1.0	0.4-1.0	0.7-2.1
30 psi	2.5 kg/cm ²	200 kPa	500	1500	0.1-50	0.5-1.5	0.3-1.0	0.4-1.0	0.7-2.1
60 psi	4.0 kg/cm ²	400 kPa	500	1500	0.3-1.0	1.0-3.5	0.7-2.5	0.6-2.0	1.4-5.0
100 psi	7.0 kg/cm ²	700 kPa	1000	3000	0.5-1.7	1.5-5.0	1.1-3.5	1.0-4.5	2.1-7.0
200 psi	14 kg/cm ²	1400 kPa	1000	3000	1-3	5-13	2-9	3.0-7.5	7.0-18.2
400 psi	28 kg/cm ²	2800 kPa	2400	3000	4-7.5	5-24	5.5-15	4.0-11.0	7.0-33.6
600 psi	42 kg/cm ²	4200 kPa	2400	3000	4-11	9-30	7-20	5.0-23.0	12.6-42
1000 psi ⁽⁸⁾	70 kg/cm ²	7000 kPa	12000	18000	7-30	30-110	18-70	15.0-60	42-154
3000 psi	210 kg/cm ²	21000 kPa	12000	18000	15-60	80-235	37-160	30.0-130.0	112-329

DIFFERENTIAL PRESSURE SWITCHES

Nominal Range ⁽¹⁾			Overpressure Ratings		Approximate Deadband ^(2,4) Switch Element (Buna-N Diaphragm)				
			Static psi	Proof psi	20, 26, 27	21, 24, 31	50	22	32, 42
30 in.H ₂ O _d	750 mmH ₂ O	7.5 kPa	5.4	21.6	0.3-0.6	1.5-2.5	0.45-2.0	0.5-2.0	2.1-3.5
60 in.H ₂ O _d	1500 mmH ₂ O	15 kPa	5.4	21.6	0.5-1.3	1.5-3.5	0.9-2.5	0.7-3.0	2.1-5.0
100 in.H ₂ O _d	2500 mmH ₂ O	25 kPa	5.4	21.6	0.6-1.6	2.5-5.5	1.1-4.0	1.0-4.0	3.5-7.7
150 in.H ₂ O _d	3750 mmH ₂ O	37 kPa	5.4	21.6	1.0-2.5	4.5-8.5	1.8-6.5	2.0-6.0	6.3-12.0
15 psid	1 kg/cm ²	100 kPa	500	2000	0.5-1.0	2.0-5.0	0.7-3.5	0.7-1.4	2.8-7.0
30 psid	2.5 kg/cm ²	200 kPa	500	2000	1.0-2.0	2.0-5.0	1.5-3.5	1.4-2.8	2.8-7.0
60 psid	4 kg/cm ²	400 kPa	500	2000	2.0-4.0	3.0-6.0	3.0-4.5	2.8-5.6	4.2-8.5
100 psid	7 kg/cm ²	700 kPa	1000	4000	4.0-10.0	11.0-20.0	7.0-15.0	6.0-14.0	16.0-28.0
200 psid	14 kg/cm ²	1400 kPa	1000	4000	5.0-15.0	12.0-40.0	10.0-86.0	7.0-21.0	17.0-56.0
400 psid	28 kg/cm ²	2800 kPa	1000	8000	10.0-20.0	20.0-60.0	15.0-40.0	14.0-28.0	28.0-84.0
600 psid	42 kg/cm ²	4200 kPa	1000	8000	20.0-40.0	80.0-150.0	30.0-115.0	30.0-56.0	112.0-210.0

TEMPERATURE RANGE SELECTION

Adjustable Range		Max. Temp. °F	Approximate Deadband ⁽⁶⁾ Switch Element				
°F	°C		20, 26, 27	21, 24, 31	50	22	32, 42
-40 to 60	-40 to 16	400	1.0-2.0	3.0-8.0	1.5-5.5	1.4-6.0	8.0-16.0
0 to 100	-20 to 40	400	1.5-3.0	5.0-12.0	2.2-8.5	1.5-7.5	9.0-20.0
75 to 205	20 to 95	400	1.5-3.5	8.0-16.0	2.5-12.0	2.0-9.0	10.0-24.0
150 to 260	65 to 125	400	1.5-3.0	5.0-12.0	2.2-8.5	2.0-9.0	10.0-24.0
235 to 375	110 to 190	500	1.5-3.5	5.0-12.0	2.2-8.5	2.0-9.0	10.0-24.0
350 to 525 ⁽⁷⁾	175 to 275	700	2.0-4.5	8.0-16.0	3.2-12.0	2.5-10.0	15.0-34.0
500 to 750 ⁽³⁾	260 to 400	900	4.0-8.0	16.0-30.0	7.0-24.0	5.0-23.0	30.0-50.0

NOTES:

- Switches may generally be set between 15% and 100% of nominal range on increasing pressure. Consult factory for applications where setpoints must be lower.
- All deadbands are given in English units as shown in the nominal range column. Deadbands shown are for switches with Buna N diaphragm.

- Approximate deadbands for optional diaphragms:
 Viton: Multiply Buna N value by 1.4
 Teflon: Multiply Buna N value by 1.2
 Stainless Steel: Multiply Buna N value by 1.7
 Monel: Multiply Buna N value by 1.7
- Available with remote mount thermal system only.

- Deadbands given are for zero static working pressure.
- For approximate deadbands for dual switch elements, multiply the single switch element by 1.6.
- All deadbands given in °F.
- Not available with 2³/₄" stem.
- Proof pressure is 4000 psi with stainless steel and monel welded diaphragms.

Consult factory for guidance in product selection
 Phone (203) 378-8281 or visit our web site at
www.ashcroft.com

PRESSURE/VACUUM SWITCHES

Nominal Range ⁽¹⁾			Overpressure Ratings		Approximate Deadband ⁽²⁾ Switch Element (Buna-N Diaphragm)									
					PPA ⁽³⁾		PPS ⁽⁴⁾				PPD ⁽⁴⁾			
Nominal Range ⁽¹⁾			Proof psi		Burst psi		Switch Element							
							J, H	G	J, H	K, F	P	GG	JJ, HH	KK, FF
Vacuum														
-30 in.Hg	-760 mmHg	-100 kPa	250	400										
					7-26	3-5	3-6.5	1-2	1-2.5	3-5	3-6.5	1-2	1.0-3.5	
Compound														
-30 in.Hg/ 15 psi	-760 mmHg/ 1.0 kg/cm ²	-100 kPa 100 kPa	250	400	10-25 4-13	3-5 1-2	2.5-3.5 1-3	1-2 0.5-2	1-2.5 0.5-2	3-5 2-4	2.5-4.5 1-3	1-2 0.5-1	1.0-3.5/ 1.0-2.8	
Pressure														
30 in.H ₂ O	750 mmH ₂ O	7.5 kPa	20	35	4-27	1.5-3.5	2-5	0.5-1	0.5-2	1.5-3.5	2-5	0.5-1	1.0-2.8	
60 in.H ₂ O	1500 mmH ₂ O	15 kPa	20	35	5-54	1.5-3.5	2.5-5	0.5-2.0	1-2	1.5-3.5	2.5-5.0	0.5-2.0	1.0-2.8	
100 in.H ₂ O	2500 mmH ₂ O	25 kPa	20	35	8.5-90	4-6	4-8.5	1-2	1-3	4-7	4-8.5	1-2	2.0-4.2	
150 in.H ₂ O	3750 mmH ₂ O	37 kPa	20	35	18-135	5-11	10-18	1.5-3	2-6	8-14	10-18	1.5-3	3.0-8.4	
15 psi	1 kg/cm ²	100 kPa	500	1500	2.5-13	1-2	1-0.5	0.5-1	0.5-2	1-2	1-3.0	0.5-1	1.0-2.8	
30 psi	2.5 kg/cm ²	200 kPa	500	1500	3.5-26	1-2.5	2-4.5	0.5-1.5	0.5-1.5	1-2.5	2-4.5	0.5-1.5	1.0-3.0	
60 psi	4 kg/cm ²	400 kPa	500	1500	6.5-54	2-4	4-7	1-2	1-2.5	2-4	4-7	1-2	2.0-3.5	
100 psi	7 kg/cm ²	700 kPa	1000	3000	10-90	5-7	5-10	1-2.5	2-4	5-7	5-10	1-2.5	2.0-5.6	
200 psi	14 kg/cm ²	1400 kPa	1000	3000	20-180	10-15	10-18	1-4	5-15	10-20	15-25	3-6	4.0-12.0	
400 psi	28 kg/cm ²	2800 kPa	2400	3000	45-360	16-30	16-45	4-8	5.0-15	16-30	16-45	4-8	5.0-21.0	
600 psi	42 kg/cm ²	4200 kPa	2400	3000	75-540	16-50	20-75	5-8	6-25	16-50	20-75	5-15	8.0-35.0	
1000 psi ⁽⁹⁾	70 kg/cm ²	7000 kPa	12000	14000	160-900	75-130	50-160	7-30	10-85	75-130	50-160	7-30	20.0-119.0	
2000 psi	140 kg/cm ²	14000 kPa	12000	14000	350-1800	150-200	150-350	20-50	25-110	150-200	150-350	20-50	35.0-154.0	
3000 psi	210 kg/cm ²	21000 kPa	12000	14000	400-2600	180-250	180-400	30-70	30-190	180-250	180-400	30-70	40.0-266.0	

DIFFERENTIAL PRESSURE SWITCHES

Nominal Range ⁽¹⁾				Overpressure Ratings		Approximate Deadband ^(2,6) Switch Element (Buna-N Diaphragm)									
						PDA ⁽³⁾		PDS ⁽⁴⁾				PDD ⁽⁴⁾			
Nominal Range ⁽¹⁾				Static Working Pressure psi		Proof psi		Switch Element							
								J, H	G	J, H	K, F	P	GG	JJ, HH	KK, FF
30 in.H ₂ O	750 mmH ₂ O	5.4	21.6												
60 in.H ₂ O	1500 mmH ₂ O	5.4	21.6												
100 in.H ₂ O	2500 mmH ₂ O	5.4	21.6												
150 in.H ₂ O	3750 mmH ₂ O	5.4	21.6												
15 psid	2 kg/cm ²	500	2000												
30 psid	2 kg/cm ²	500	2000												
60 psid	4 kg/cm ²	500	2000												
100 psid	7 kg/cm ²	500	2000												
200 psid	14 kg/cm ²	1000	4000												
400 psid	28 kg/cm ²	1000	8000												

TEMPERATURE RANGE SELECTION

Nominal Range		Max. Temp. °F	Approximate Deadband (Buna N Diaphragm) ⁽²⁾								
			PTA ⁽³⁾		PTS ⁽⁴⁾				PTD ⁽⁴⁾		
°F		°C	Switch Element								
			J, H	G	J, H	K, F	P	GG	JJ, HH	KK, FF	PP
-40 to 60	-40 to 16	400	18-90	2-10	9-18	1-2	1-5	2-10	9-18	1-2	2.0-7.0
0 to 100	-20 to 40	400	30-90	2-15	10-30	1-3	1.5-7	2-15	10-30	1.5-3	3.0-10.0
75 to 205	20 to 95	400	34-120	2-17	10-34	1.5-3.5	1.5-8	2-17	10-34	1.5-3.5	3.0-12.0
150 to 260	65 to 125	400	25-100	2.5-12	9-25	1-2.5	1-7	2.5-12	9-25	1-2.5	3.0-10.0
235 to 375	110 to 190	500	35-130	2-18	10-35	1-3.5	1.5-8	2-18	10-35	1-3.5	3.0-12.0
350 to 525 ⁽⁸⁾	175 to 275	700	40-165	3-25	15-40	2-4.5	2.5-11	3-25	15-40	2-4.5	4.0-15.5
500 to 750 ⁽⁵⁾	200 to 400	900	50-200	20-36	36-60	5-10	6-21	20-36	36-60	5-10	7.0-30.0

NOTES:

- Switches may generally be set between 15% and 100% of nominal range on increasing pressure. Consult factory for applications where setpoints must be lower.
- All deadbands are given in English units as shown in the nominal range column. Deadbands shown are for switches with Buna N diaphragm.

- Approximate deadbands for optional diaphragms:
- Viton: Multiply Buna N value by 1.4
 - Teflon: Multiply Buna N value by 1.2
 - Stainless Steel: Multiply Buna N value by 1.7
 - Monel: Multiply Buna N value by 1.7
- Deadbands for PTA, PPA and PDA are adjustable between the values shown.

- Deadbands for PPS, PPD, PDS, PDD, PTD, and PDS models are fixed within the range of values shown.
- Available with remote mount thermal system only.
- Deadbands given are for zero static working pressure.
- All deadbands given in °F.
- Not available with 2³/₄" stem.
- Proof pressure is 4000 psi with stainless steel and monel welded diaphragms.

PRESSURE/VACUUM SWITCHES

Nominal Range ⁽¹⁾		Overpressure Ratings		Approximate Deadband ⁽²⁾ Switch Element (Buna-N Diaphragm)									
				LPA-GPA ⁽³⁾	LPS-GPS ⁽⁴⁾				LPD-GPD ⁽⁴⁾				
Nominal Range ⁽¹⁾		Proof psi	Minimum Burst psi	Switch Element									
				J, H	G	J, H	K, F	P	GG	JJ, HH	KK, FF	PP	
Vacuum													
-30 in.Hg	-760 mmHg	250	400	6-24	2.5-4	4-6	1-2	1-2.5	3-5.5	4-6.5	1-2	1-2.5	
Compound													
-30 in.Hg/ 15 psi	-760 mmHg/ 1.0 kg/cm ²	250	400	6-24 3-12	2.5-4 1-2.5	4-6 1-3.5	1-2 0.5-1.5	1-2.5 0.5-2	3-5.5 1.5-3.5	4-6.5 1.5-4	1-2 1-2	1-2.5 1-2	
Pressure													
30 in.H ₂ O	750 mmH ₂ O	20	35	4.0-27	1.5-3.5	2.0-4.0	0.5-1.0	0.7-2.0	2.1-4.9	2.8-5.6	0.7-1.4	0.7-2.8	
60 in.H ₂ O	1500 mmH ₂ O	20	35	5.0-54	1.5-4	2.5-5.0	0.5-1.4	1.0-2.5	3-5.6	3.5-7.0	0.7-2.0	2-3.5	
100 in.H ₂ O	2500 mmH ₂ O	20	35	8.5-90	2.0-5.5	4.0-8.5	1.0-2.0	1.4-3.0	4-7.7	5.6-11.7	1.4-2.8	2-4.2	
150 in.H ₂ O	3750 mmH ₂ O	20	35	18-135	5.0-11	10-18	1.5-3.0	2.0-6.0	7.0-16	14-25.1	2.1-4.2	5-9.2	
15 psi	1 kg/cm ²	500	1500	2.5-13	1.0-1.5	1.0-2.5	0.5-1.0	0.75-1.5	1.4-2.1	1.4-3.5	0.7-1.4	1-1.4	
30 psi	2 kg/cm ²	500	1500	3.0-27	1.0-2.8	1.0-3.2	0.5-1.0	1-1.8	1.4-5	3-6	1-2.1	1.4-2.5	
60 psi	4 kg/cm ²	500	1500	5.0-54	2.0-4.0	2.0-4.5	1.0-2.0	1.0-2.5	3-7	4-8	1.4-2.8	1.4-3.5	
100 psi	7 kg/cm ²	1000	3000	10-90	3-6	5.0-10	1.0-2.5	1.4-3.2	7-12	7.0-14	1.4-3.5	3-7	
200 psi	14 kg/cm ²	1000	3000	18-180	7-14	10-18	1.0-4.0	5.0-8.0	10-23	14-25	1.4-5.6	7.0-11.2	
400 psi	28 kg/cm ²	2400	3000	45-360	16-30	16-45	4.0-8.0	5.0-15	22-42	22-63	5.6-11.2	7.0-21	
600 psi	42 kg/cm ²	2400	3000	75-540	16-50	20-75	5.0-15	6.0-25	22-70	28-105	7.0-21	8.0-35	
1000 psi ⁽¹⁰⁾	70 kg/cm ²	12000	14000	160-900	75-130	50-160	7.0-30	10-85	70-180	70-223	10-42	14-119	
2000 psi	140 kg/cm ²	12000	14000	350-1800	150-200	150-350	20-50	25-110	209-279	209-488	28-70	35-154	
3000 psi	210 kg/cm ²	12000	14000	400-2600	180-250	180-400	30-70	30-190	251-349	251-558	42-98	42-226	

DIFFERENTIAL PRESSURE SWITCHES

Nominal Range ⁽¹⁾		Overpressure Ratings		Approximate Deadband ^(2,7) Switch Element (Buna-N Diaphragm)								
				LDA-GDA ⁽³⁾	LDS-GDS ⁽⁴⁾				LDD-GDD ⁽⁴⁾			
Nominal Range ⁽¹⁾		Static psi	Minimum Proof psi	Switch Element								
				J, H	G	J, H	K, F	P	GG	JJ, HH	KK, FF	PP
Pressure												
30 in.H ₂ O	750 mmH ₂ O	5.4	21.6	4.0-27	1.5-3.5	2.0-4.0	0.5-1.0	0.7-2.0	2.1-4.9	2.8-5.6	0.7-1.4	0.7-2.8
60 in.H ₂ O	1500 mmH ₂ O	5.4	21.6	5.0-54	1.5-4.0	2.5-5.0	0.5-1.4	1.0-2.5	2.5-6	3.5-7.0	0.7-2.0	2-3.5
100 in.H ₂ O	2500 mmH ₂ O	5.4	21.6	8.5-90	4.0-5.5	4.0-8.5	1.0-2.0	1.4-3.0	5.6-7.7	5.6-11.9	1.4-2.8	2-4.2
150 in.H ₂ O	3750 mmH ₂ O	5.4	21.6	18-135	5.0-11	10-18	1.5-3.0	2.0-6.0	7.0-15.4	14-25.2	2.1-4.2	2.8-8.4
30 psid	2 kg/cm ²	500	2000	3.0-27	1.0-2.5	1.0-3.0	1.0-1.5	1.0-1.8	2-5	3-6	1-2.1	1.4-2.4
60 psid	4 kg/cm ²	500	2000	5-54	2-4	2-4.5	1-2	1-2.5	3-7	4-8	1.4-2.8	1.4-3.5
200 psid	14 kg/cm ²	1000	4000	18-180	10-15	10-18	1.0-4.0	5.0-8.0	14-23	14-30	1.4-5.6	7.0-11.2
400 psid	28 kg/cm ²	1000	8000	45-360	16-30	16-45	4.0-8.0	5.0-15	22.4-42	22.4-36	5.6-11.2	7.0-21.0

TEMPERATURE RANGE SELECTION

Adjustable Range		Max. Temp. °F	Approximate Deadband ⁽⁹⁾ Switch Element								
			LTA-GTA ⁽³⁾	LTS-GTS ⁽⁴⁾				LTD-GTD ⁽⁴⁾			
°F		°C	Switch Element								
			J, H	G	J, H	K, F	P	GG	JJ, HH	KK, FF	PP
-40 to 60	-40 to 16	400	18-90	4.0-10	9.0-18	1.5-3	2-5	4-10	9.0-18	1.5-3	2-5
0 to 100	-20 to 40	400	30-90	5.0-15	10-30	1.5-5.5	3-7	5-15	10-30	1.5-4.5	3-7
75 to 205	20 to 95	400	34-120	6.0-18	10-34	3-5.5	3-8	6-18	10-34	3-5.5	3-8
150 to 260	65 to 125	400	25-100	3-13	9.0-25	1.5-4	3-7	3-13	9.0-25	1.5-4	3-7
235 to 375	110 to 190	500	35-130	6-19	10-35	2-5.5	3-8	6-17	10-35	2-5.5	3-8
350 to 525 ⁽⁹⁾	175 to 275	700	40-165	5-27	15-40	3-7	3.5-11	5-27	15-40	3-7	3.5-11
500 to 750 ⁽⁶⁾	260 to 400	900	50-200	20-36	5-10	6-21	20-36	20-36	36-60	5-10	6-21

NOTES:

- Switches may generally be set between 15% and 100% of nominal range on increasing pressure. Consult factory for applications where setpoints must be lower.
- All deadbands are given in English units as shown in the nominal range column. Deadbands shown are for switches with Buna N diaphragm.
- Approximate deadbands for optional diaphragms:

- Viton: Multiply Buna N value by 1.4
 Teflon: Multiply Buna N value by 1.2
 Stainless Steel: Multiply Buna N value by 1.7
 Monel: Multiply Buna N value by 1.7
- Deadbands for LTA, LPA and LDA are adjustable between the values shown for all diaphragm materials.
 - Deadbands for LPS, LPD, LDS, LDD, LTD, and LDS models are fixed within the range of values shown.

- Switches can be set at increase or decrease throughout the nominal range.
- Available with remote mount thermal system only.
- Deadbands given are for zero static working pressure.
- All deadbands given in °F.
- Not available with 2 3/4" stem.
- Proof pressure is 4000 psi with stainless steel and monel welded diaphragms.

PRESSURE SWITCH OPTIONS (ALL SERIES)										
OPTION CODE	DESCRIPTION	SWITCH SERIES								NOTES
		A	B	L	P	G	F	N	H	
XBP	Wall mounting bracket (H ₂ O)		●	STD	STD	STD				
XBX	69C bushing (St. St.)									Assembled to capillary. Remote Temperature only.
XCH	Chained cover		●	●	●	●		●	●	
XCN	ATEX approval on 700 Series		●							
XC8	CSA approval	STD	●	STD	●	STD	STD			Standard on NEMA 4 enclosures. F series and A series.
XD2	Dual seal rating		●		●					
XFM	FM approval – Single element – Dual element		● ●	● ●						N/A on temperature switches.
XFP	Fungus proofing		●	●	●	●	●	●	●	
XFS	Factory adjusted setpoint	●	●	●	●	●	●	●	●	Setpoint must be given as well as increase or decrease.
XG3	Belleville actuator		●							Setpoint limits reduced to 30% to 100% of range.
XG5	Gas/oil UL limit differential pressure control to 150" H ₂ O		●	●						Buna N & Viton diaphragm only. B400 & LDS single setpoint only. N/A w/code 22, 32, P or J switch elements.
XG6	Gas/oil UL limit pressure control to 600 psi		●	●						Buna N and Viton diaphragm only.
XG7	Special actuator with redundant seal design (SS primary diaphragm)		●							B700 switch only. UL listed.
XG8	Steam limit pressure control to 300 psi		●	●						Stainless steel or Viton diaphragm only.
XG9	Fire safe actuator		●	●	●	●				Stainless steel diaphragm only.
XHS	High static differential		●	●	●					Available with Buna N and Viton diaphragms only. 15 psid and 30 psid only.
XHX	40 psi static pressure/dp only 160 psi proof pressure/dp only 100 psi proof pressure/press only Inches of water ranges		●	●	●	●				
XJK	Left side conduit connection		●	●				●	●	Standard on 700 series. N/A with DPDT element on 400 series.
XJL	¾" to ½" conduit reducing bushing		●	●	●	●		●	●	
XK3	Terminal block		●	●	●	●	●			Terminal blocks standard with dual switches on 700 series. N/A on 400 series.
XLE	6 foot leads on the micro switch	●	●	●	●	●	●		●	
XMD	Metric range on label		●							N7 switches only. Standard on N4.
XNH	Stainless steel tagging		●	●	●	●	●	●	●	Specify tag information.
XNN	Paper tag		●	●	●	●	●	●	●	Specify tag information.
XPJ	24 Vdc pilot light(s) – Single – Dual		● ●	● ●	● ●					B, L & P Nema 4 only.
XPK	Pilot light(s), top mounted		●	●	●				●	N/A on explosion-proof enclosures.
XPM	¾" sealed conduit connection with 16" lead wires		●	●	●	●	STD		●	
XRN	Range scale		●							Standard on L, G, P & F series.
XTA	316 SS pressure port(s) for in H ₂ O ranges		●	●	●	STD				

PRESSURE SWITCH OPTIONS (ALL SERIES)

OPTION CODE	DESCRIPTION	SWITCH SERIES								NOTES
		A	B	L	P	G	F	N	H	
XTM	2" pipe mounting bracket		●	●	●	●		●		
XUD	316 stainless steel diff. press. conn.		●	●	●	STD				
XUX	IECEX approval (700 series)		●							
X06	Pressure connection: ½ NPT male, ¼ NPT female combination		●	●	●	●	N/A	●		Standard with 1000, 2000 and 3000 psi ranges. Bottom connection only on D/P °H ₂ O ranges.
X07	Pressure connection: ½ NPT female		●	●	●	●	STD			
X2C	DPDT with single setpoint adjustment			●		●				Available with LPS, LDS, LTS, GPS, GTS and GDS models.
X3A	Sanitary seal approved by 3A council	●	●	●		●				Select either 1½" or 2" Tri-Clamp seal.
X6B	Cleaned for oxygen service		●	●	●	●	●	●		N/A with Buna N diaphragm.
	Diaphragm seals	●	●	●	●	●	●	●		