



# BPA/BPF Adjustable High Pressure Switches



## Performance Parameters

Model	Adjustment Range		Avg. Differential		Model	Adjustment Range		Avg. Differential	
	PSI	Bar	PSI	Bar		PSI	Bar	PSI	Bar
1	5-85	0.35-6	1.0-10	0.07-0.7	3	500-2500	35-170	70-300	5-20
1A	65-300	4-20	8-30	0.55-2.1	4	1000-6000	69-414	150-600	10-41
2	125-600	8-40	20-80	1.3-5.5	5	500-3500	35-240	75-300	5-24

### ELECTRICAL:

Standard: 5A, 125V/250VAC - U.L. Recognized  
 5A, 12/24VDC - U.L. Recognized  
 Option -7: 0.2A, 60VDC - U.L. Recognized  
 Gold contacts may be required for less than 12 VDC and 20 milliamps

### MANUFACTURER'S OTHER

#### RATING:

5A @ 40VDC

#### PROTECTION:

Exposed Terminals - IP00  
 DIN HC-IP65  
 Flying Leads, M12, Deutsch Integral - IP69

### TEMPERATURE RANGE:

BUNA-N: -26°C ~ 110°C  
 EPDM: -23°C ~ 121°C  
 KAPTON®: -40°C ~ 110°C  
 VITON®: -18°C ~ 150°C  
 (® Registered Trademark of DuPont)  
 Low Temp Nitrile: -40°C ~ 110°C

### WETTED MATERIAL:

Diaphragm: Buna-N (Standard)  
 (optional EPDM, KAPTON®, VITON®, Low Temp Nitrile)  
 Housing: Zinc-Nickel Plated Steel  
 (optional Steel - Electroless Nickel and 316 Stainless Steel)

### REPEATABILITY:

± 2% of full set point range at 21°C Ambient Temperature

### SWITCH TYPE:

Snap Action

### MECHANICAL LIFE:

1,000,000 cycles

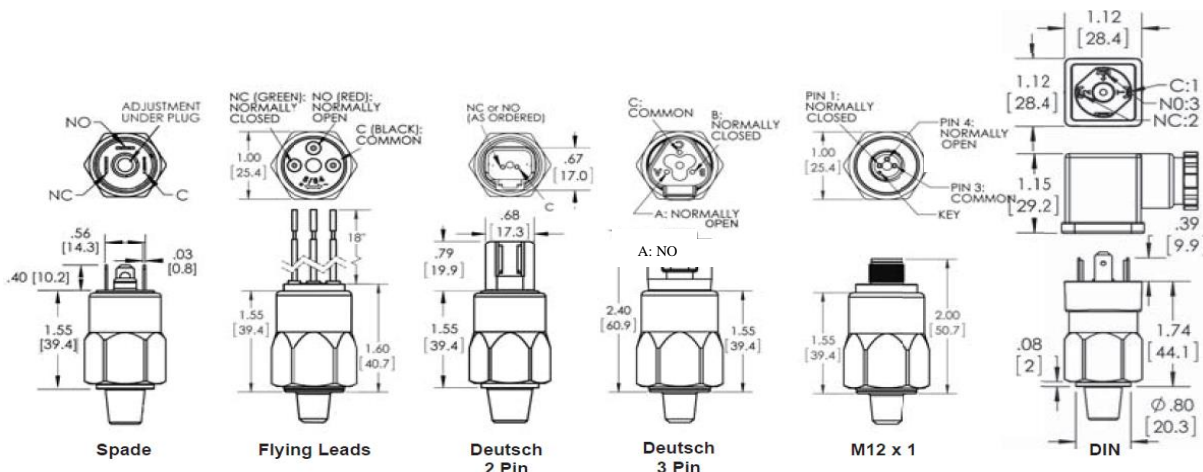
### MAXIMUM OVERPRESSURE:

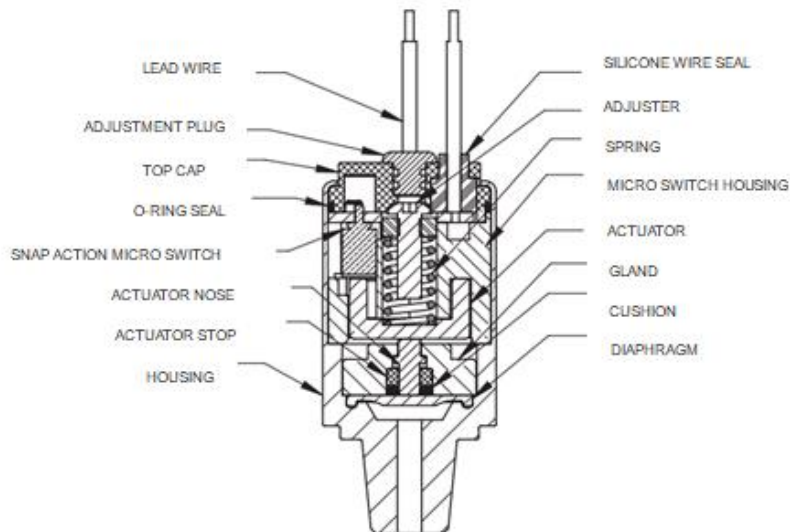
9000 PSI (620 Bar) - Static  
 7500 PSI (517 Bar) - Dynamic

### WEIGHT:

Approx. 0.09 kg

## Drawing





Model BPA Shown

### Ordering Information

BPA	-*2	-*R	-4M	-C	-H	-*1
Model	Set Point	Direction	Port Size	Circuit	Terminal	Options
BPA-Field Adjustable	See Above Adjustment Ranges	R-PSI Rising F-PSI Falling	2M-1/8 NPT 4M-1/4 NPT 2G-1/8 BSPP 4G-1/4 BSPP	A-SPST/NO B-SPST/NC C-SPDT	SP-1/4"x1/32" Spade TS-6-32 Terminal Screws FL-18" Flying Leads FLL-Advise additional length of leads if required	*-Omit If Standard 1-VITON® Diaphragm 2-EPDM Diaphragm 3-KAPTON® Diaphragm
BPF-Factory Set	*Model BPF Specify Set Point Required	BR-Bar Rising BF-Bar Falling  *Omit For Model BPA	(undercut for an o-ring seal) 4GS-1/4 BSPP (no undercut) 4S-7/16x20 SAE MALE 4SW-7/16x20 SAE Swivel 6S-9/16x18 SAE MALE M10-M10x1* M12-M12x1.5*  *Consult Factory for Specials		FLWTF-Weatherpack Tower Female FLWTM-Weatherpack Tower Male FLWSF-Weatherpack Shroud Female FLWSM-Weatherpack Shroud Male H-DIN43650A Male Half Only HC-DIN43650A Cable Clamp HN-DIN43650A 1/2 Conduit (female) HCC-XXX (Specify Length in Inches) HC11A-DIN Light NO/NC110V HC11B-DIN Light NO/NC12VDC HC11C-DIN Light NO/NC24VDC HC11D-Indicating Light Green/Red DI-Deutsch Integral M12-M12x1	* For Model Ranges 1, 1A & 2 Only 15 - Low Temp Nitrile Dia. 4-316 SS Housing 4A-Steel-Electroless Nickel Plated 5-Spiral Restrictor 6-Oxygen Cleaned 7-Gold Contacts UL-UL Recognized** **For Selected Models Only – Consult Factory

## Appendix 1: Definitions and Terms

### DEFINITIONS AND TERMINOLOGY

**ACCURACY, (REPEATABILITY)** - Accuracy is the maximum allowable set point deviation of a single pressure or temperature switch under one given set of environmental and operational conditions.

**ACTUATION AND DEACTUATION POINT** - The actuation point (sometimes called set point) is the exact point at which the electrical circuit controlled by the switching element is opened (or closed) on increasing pressure or temperature. The deactuation point is the opposite at which the electrical circuit is closed (or opened) on decreasing pressure or temperature.

**DEAD BAND** - The dead band sometimes referred to as “differential” or “hysteresis” is the change in pressure between actuation and deactuation set points.

**PRESSURE SWITCH** - An instrument that upon the increase or decrease of a pressure or vacuum, opens or closes one or more electrical switching elements at a predetermined actuation point (setting).

**PRESSURE SENSING ELEMENT** - That portion of pressure switch that is in contact with and moves as a result of a change in pressure of the medium. The most common type of pressure sensing elements are diaphragms, accordion bellows, bourdon tubes, and pistons.

**SINGLE POLE DOUBLE THROW (SPDT) SWITCHING ELEMENT** - A SPDT switching element has one normally open, one normally closed and one common terminal. Three terminals mean that the switch can be wired with the circuit either normally open (N/O) or normally closed (N/C).

**NORMALLY CLOSED SWITCHING ELEMENT (NC)** - Is one in which the terminals are wired so that current can flow through the switching element until pressure is applied to open the electrical circuit.

**NORMALLY OPEN SWITCHING ELEMENT (NO)** - Is one in which the terminals are wired so that no current can flow through the switching element until the pressure is applied to close the electrical circuit.

**PRESSURE, PROOF** - Proof Pressure is the maximum pressure which can be applied to any switch without causing permanent degradation.

### Circuit Definitions

#### Form A - SPST - NO

Single Pole - Single Throw      Normally Open

#### Form B - SPST - NC

Single Pole - Single Throw      Normally Closed

#### Form C – SPDT

Single Pole - Double Throw

### Standard Electrical Circuit

Wire Color	DIN 43650 Number	Circuit
Black	1	Common
Green	2	N. Closed
Red	3	N. Open

Wotian Pressure Switches are sealed, vibration resistant and ruggedly built to provide a reliable protection for automatic control of equipment and processes. They are designed for direct or remote mounting and offer a quality product at a competitive price.

**Microswitch** - Each Wotian BPA pressure switch contains a precision, snap-action microswitch which meets or exceeds industrial standards for reliability; electrical capacity and long life.

The snap action micro switch meets underwriters and CSA specifications for 5 amp or 3 amp rating dependent upon specification type - consult factory for additional data.

**Setting** - The set point of each switch is preset at the factory as follows:

- Field adjustable series - bottom of range
- Factory set series - at the desired set point

The switches can be ordered for operation with either rising or falling temperature, vacuum or pressure. Reset of the microswitch is automatic and depends upon the dead band or differential of the particular model.

**Switch Protection** - Standard switches offer excellent protection and long life in most applications. They are also sealed for weatherproof protection. The corrosion-resistant materials in the wetted areas and the standard nitrile diaphragm are suitable for most media. Where required the switches are available with VITON®, KAPTON®, EPDM or Low Temperature Nitrile diaphragms and, in some cases, optional steel, brass or stainless steel housings and wetted areas.

**Mechanism** - Where the pressure switch is subject to higher pressure, either dynamic or static, of over 700 psi, the diaphragm operating mechanism includes an O-ring cushion which absorbs the slight operation motion required while preventing extrusion of the diaphragm material into the piston-to-cylinder clearance.

**Gold Contacts** - May be required for applications where less than 12VDC and 20 Milliamps.

**Appendix 2: Electrical Configuration**

			
<p>FL Flying Leads</p>	<p>SP "A" or "B" Circuit 1/4" Spades</p>	<p>SP "C" Circuit 1/4" Spades</p>	<p>TS 6-32 Terminal Screws</p>
			
<p>H DIN 43650A Male Half Only</p>	<p>HC DIN 43650A Cable Clamp</p>	<p>HN DIN 43650A 1/2" Conduit</p>	<p>HC11A, B, C &amp; D DIN 43650A Lighted DIN</p>
			
<p>HCC DIN w/36" Cable</p>	<p>HCM DIN 43650C</p>	<p>HCM.A, B, C &amp; D DIN 43650C Lighted DIN</p>	<p>MDP2 Deutsch DT06-2S 2 Pin Mating Plug</p>
			
<p>WTF/WTM Weather Pack Tower 2 Pin Male or Female Pins</p>	<p>WSF/WSM Weather Pack Shroud 2 Pin Male or Female Pins</p>	<p>WTF3/WTM3 Weather Pack Tower 3 Pin Male or Female Pins</p>	<p>WSF/WSM3 Weather Pack Shroud 3 Pin Male or Female Pins</p>

### Appendix 3: Material Compatibility

Media	Buna	EPDM	Viton	Media	Buna	EPDM	Viton
Acetic Acid		*		Hydraulic Oil(PET Base)	*		
Acetone		*		Hydrocarbons	*		
Acetylene	*			Hydrogen	*		
Air	*			Hydrogen Sulphide		*	
Alcohols	*			Isopropanol		*	
Alkalies (Weak)	*			JP-3-6	*		
Alkalies (Strong)		*		Kerosene	*		
Ammonia(Anhydrous)	*			LPG	*		
Ammonia(Hydroxide)		*		Lube Oil(PET Base)	*		
Asphalt			*	Methanol	*		
Automotive Oils	*			MEK		*	
Beer	*			Mineral Oil	*		
Benzene			*	Motor Oils	*		
Boric Acid	*			Naptha		*	
Brake Fluid		*		Natural Gas	*		
Bunker Oil	*			Nitric Acid		*	
Butane	*			Nitrogen	*		
Butyl Cellosolve		*		Cleum Spirits			*
Carbon Dioxide	*			Oxygen	*		
Carbon Monoxide	*			Ozone		*	
Cellube		*		Crude Oil	*		
Chlorobenzene			*	Phosphoric Acid			*
Citric Acid	*			Propane	*		
Coke Oven Gas			*	Propanol	*		
Coolant	*			Pydraul		*	
Diesel Fuels	*			Shell Iris 902	*		
Di-Ester Lube (MIL-L-7808)			*	Silicone Greases	*		
Dowtherm A&E		*		Silicone Oils	*		
Ethanol	*			Skydrol 500 & 7000		*	
Ether		*		Soap Solutions	*		
Ethylene	*			Steam Below 320°F		*	
Ethylene Glycol	*			Stoddard Solvent	*		
Freon 11,12,112,114	*			Sulfuric Acid			*
Freon 22		*		Tolulene			*
Fyrquel		*		Transmission Fluid	*		
Fuel Oil	*			Trisodium Phosphate	*		
Gasoling	*			Turpentine	*	*	
Glycerin	*			Water to 220°F (104°C)	*		
Helium	*			Water to 302°F (150°C)		*	
Hexane	*						



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