



CustomControlSensors

# Hazardous Areas Adjustable Pressure Switch

## 646V\*E\* & 646GV\*E - Diaphragm Sensor

### DESCRIPTION

- Highly reliable devices utilizing the CCS Dual-Snap® Belleville disc spring principle pioneered by CCS' engineers.
- Engineering based on aerospace technology.
- Rigid, midsize and internally adjustable for convenient field set point adjustment.
- Repeatable and stable set points.
- Vibration and shock resistant.
- High cycle life.
- High over-pressure capability. (System and Proof)
- Certified explosion proof hermetically sealed electrical assembly for environmental protection.
- Various options for wetted materials and electrical ratings to meet a wide range of application requirements and media compatibility.
- Suitable for ultra low pressure and vacuum to pressure applications.

SHIPPING WEIGHT: APPROXIMATELY 56 OUNCES  
(1587 GRAMS)

### SERIES:

- 646V\*E\*
- 646GV\*E\*

### ADJUSTABLE SET POINT RANGE: VACUUM:

- 1 to 28.5" Hg
- 25 to 724 mm Hg

### CROSSOVER:

- 20" Hg Vacuum to 12 PSIG
- 508 mm Hg to 0.83 bar

### OPERATING TEMPERATURE:

Temperature limits change with O-ring selection.

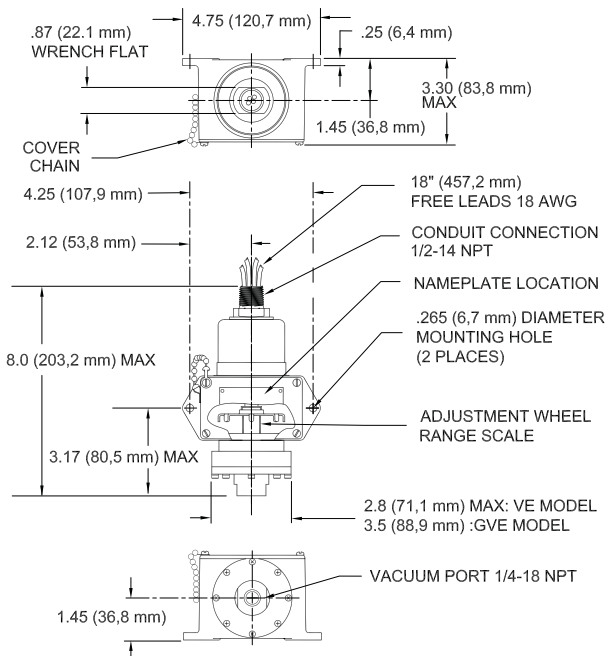
- 40° to 186°F
- 40° to 86°C

### STANDARD FEATURES:

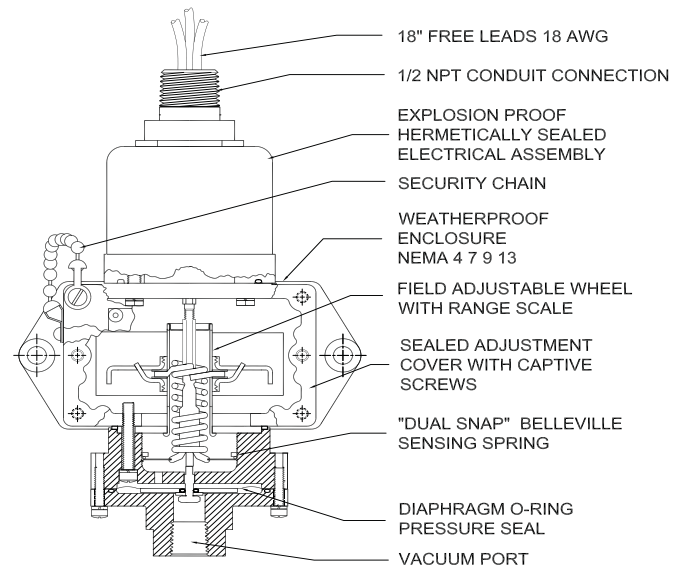
- Hermetically Sealed Electrical Assembly
- CE Mark
- Dual Seal: ANSI/ISA-12.27.01
- NACE MRO175 / ISO 15156
- NEMA: 4, 7, 9, 13 / IP66
- CRN
- U.L. / CSA Listed



### INSTALLATION DRAWING



### DESIGN PRINCIPLES



### 646VE & GVE SERIES

**FIELD SETTING:** Open access cover. Turn clockwise to increase settings. Counterclockwise to decrease settings.

**NOTE:** DO NOT USE ELECTRICAL HEX FOR TORQUING.



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# Hazardous Areas Adjustable Pressure Switch

## 646V\*E\* & 646GV\*E - Diaphragm Sensor

### OPERATING AND ORDERING DATA

SERIES 646VE*	WETTED PARTS: 1/4"-18 NPT ALUMINUM PRESSURE PORT, POLYIMIDE DIAPHRAGM , BUNA N O-RING									
	ADJUSTABLE SET POINT RANGE				APPROX. DEAD BAND INCHES Hg (mm Hg)	SYSTEM PRESSURE PSIG (BAR)	PROOF PRESSURE PSIG (BAR)			
	INCREASING VACUUM INCHES Hg (mm Hg)		DECREASING VACUUM INCHES Hg (mm Hg)							
646VE*1	3.5-28.5 (89-724)		1-26 (25-660)		2.5 (64)	150 (10.3)	250 (17.2)			
SERIES 646VZE*	WETTED PARTS: 1/2"-14 NPT 316 STAINLESS STEEL PRESSURE PORT, POLYIMIDE DIAPHRAGM, VITON O-RING									
	ADJUSTABLE SET POINT RANGE				APPROX. DEAD BAND INCHES Hg (mm Hg)	SYSTEM PRESSURE PSIG (BAR)	PROOF PRESSURE PSIG (BAR)			
	INCREASING VACUUM INCHES Hg (mm Hg)		DECREASING VACUUM INCHES Hg (mm Hg)							
646VZE*1	3.5-28.5 (89-724)		1-26 (25-660)		2.5 (64)	150 (10.3)	250 (17.2)			
SERIES 646GVE* CROSSOVER (VACUUM TO GAGE)	WETTED PARTS: 1/4"-18 NPT ALUMINUM PRESSURE PORT, POLYIMIDE DIAPHRAGM , BUNA N O-RING									
	ADJUSTABLE SET POINT RANGE VACCUM		APPROX. DEAD BAND INCHES Hg (mm Hg) VACCUM		ADJUSTABLE SET POINT RANGE GAGE PRESSURE		APPROX. DEAD BAND PSI (BAR) GAGE PRESSURE		SYSTEM PRESSURE PSIG (BAR)	PROOF PRESSURE PSIG (BAR)
	INCREASING VACUUM INCHES Hg (mm Hg)	DECREASING VACUUM INCHES Hg (mm Hg)	AT TOP OF RANGE	AT BOTTOM OF RANGE	INCREASING PRESSURE PSI (BAR)	DECREASING PRESSURE PSI (BAR)	AT TOP OF RANGE	AT BOTTOM OF RANGE		
646GVE*2	1.5-18 (38-457)	0.5-17 (3-493)	1.0 (25)	1.0 (25)	1.0-10 (0.068-0.68)	0.5-9.5 (0.034-0.65)	0.5 (0.034)	0.5 (0.034)	500 (34.5)	750 (52)
SERIES 646GVZE* CROSSOVER (VACUUM TO GAGE)	WETTED PARTS: 1/4"-18 NPT STAINLESS STEEL PRESSURE PORT, POLYIMIDE DIAPHRAGM, VITON O-RING									
	ADJUSTABLE SET POINT RANGE VACCUM		APPROX. DEAD BAND INCHES Hg (mm Hg) VACCUM		ADJUSTABLE SET POINT RANGE GAGE PRESSURE		APPROX. DEAD BAND PSI (BAR) GAGE PRESSURE		SYSTEM PRESSURE PSIG (BAR)	PROOF PRESSURE PSIG (BAR)
	INCREASING VACUUM INCHES Hg (mm Hg)	DECREASING VACUUM INCHES Hg (mm Hg)	AT TOP OF RANGE	AT BOTTOM OF RANGE	INCREASING PRESSURE PSI (BAR)	DECREASING PRESSURE PSI (BAR)	AT TOP OF RANGE	AT BOTTOM OF RANGE		
646GVZE*2	1.5-18 (38-457)	0.5-17 (3-493)	1.0 (25)	1.0 (25)	1.0-10 (0.068-0.68)	0.5-9.5 (0.034-0.65)	0.5 (0.034)	0.5 (0.034)	500 (34.5)	750 (52)

### HOW TO ORDER

Follow these steps to build your part number:

1. Specify the series based on your required set point, range, dead band, system pressure and proof pressure.
2. Add desired options model code letter.
3. Add the applicable standard suffix number.

(Ex: 646GVZE2-7008)

### PRESSURE CONVERSION

1 BAR = 14.5 PSI  
1 kPa = 0.145 PSI

### CERTIFICATIONS

Consult CCS website for complete certification and approval listing.

### OPTIONAL STANDARD MODIFIED SUFFIXES

- 7005:** Viton/Dacron Diaphragm, Viton O-Ring & Stainless Steel Port Cap (VZ Models only)
- 7008:** Gold Contacts
- 7011:** Stainless Steel Port and Diaphragm
- 7054:** 2 Meter Free Leads
- 7076:** 18 inch Teflon Free Leads (Low Temp Wire)

Note: Additional modified standard suffixes are available, consult CCS sales department or CCS Representative.

### ELECTRICAL ENCLOSURE CERTIFICATIONS

- \* c-UL, U.L./CSA Explosion Proof: Div. 1, 2 hermetically sealed electrical assembly P/N 17-51 (17-73 for M model option), listed by both Underwriter's Laboratories, Inc. (File No. E32961) and Canadian Standard Association (CSA) Testing Laboratories (File No. LR22921) for hazardous locations, Class 1, Groups A, B, C, and D; Class 2 Groups E, F, and G.
- \* ATEX - Baseefa certified for potentially explosive atmospheres. Models 646\*\*Y, II 2 GD Ex d IIC, Baseefa 05ATEX0011X. (Option Y)

### OPTIONS MODEL CODES

- A:** Viton® O-Ring (STD on GVZE models)
- F:** Ethylene Propylene O-Ring
- M:** DPDT Electrical
- Y:** ATEX / GOST Certified Electrical Assembly (Consult CCS Sales Department for GOST options and requirements.)
- X:** Double Break Electrical Assembly

### ELECTRICAL CHARACTERISTICS RATING OF SWITCH ELEMENT

VOLTS	AMPERES		
	SPDT	DPDT "M"	Dbl Brk "X"
	Res.	Res.	Res.
125 AC - 50/60 Hz	15	5	15
250 AC - 50/60 Hz	15	5	15
480 AC - 50/60 Hz	15	-	15
28 DC	-	5	-
125 DC	.5	.5	1
250 DC	.2	-	.5
*125 AC - 50/60 Hz	1 max	1 max	-
*30 DC	1 max	1 max	-

\*Gold Contacts -7008 Suffix

### SCHEMATIC AND WIRING CODE

Note: In gage mode, wiring diagram will be in reverse.

