



## Series V6 FLOTECT® Flow Switch

### Specifications - Installation and Operating Instructions



The Series V6 FLOTECT® Flow Switch is an inexpensive, explosion-proof flow switch for use on air, water or other compatible gases and liquids. Three configurations are available - 1. Factory installed in a tee. 2. With a trimmable vane for field adjustment and installation in a suitable tee. 3. Low flow models with an integral tee and adjustable valve. All are available with an optional enclosure which is UL and CSA listed, or Directive 94/9/EC (ATEX) compliant for

CE II 2 G Ex d IIC T6 Gb Process Temps $\leq$ 75°C or IECEx compliant for Ex d IIC T6 Gb Process Temp  $\leq$  75°C.

#### INSTALLATION

Unpack and remove any packing material found inside lower housing or tee.

Switch can be installed in any position but the actuation/deactuation flow rates in the charts are based on horizontal pipe runs and are nominal values. For more precise settings, units can be factory calibrated to specific flow rates.

**V6 Models with Tee** are supplied in 1/2" - 2" NPT sizes. Install in piping with arrow pointing in direction of flow.

**V6 Low Flow Models** have 1/2" NPT connections and are field adjustable. Install in piping with arrow pointing in direction of flow. To adjust, loosen the four socket head cap screws on bottom. The adjustment valve rotates 90° between "O" (open) and "C" (closed). See flow charts for approximate ranges. Tighten screws once the required flow rate has been set.

**V6 with Field Trimmable Vane.** These models enable the installer to choose approximate actuation/deactuation points by trimming the full size vane at appropriate letter-designated marks on a removable template. Flows are defined in the following charts. Note that the charts are based on either brass or cast iron reducing tees or stainless or forged steel straight tees with bushings where necessary. Install in piping with arrow pointing in direction of flow.

When bushings are used, they must be back drilled to allow proper clearance for unrestricted vane travel. Bore the I.D. to 13/16" (20 mm) on 1/2" x 3/4" bushings or 1" (25 mm) on larger bushings. The depth of the bore must leave internal threads 9/16" (14 mm) high for proper engagement between the lower housing of the switch and the bushing. Check for proper vane travel and switch operation after installation.

#### SPECIFICATIONS

**Service:** Gases or liquids compatible with wetted materials.

**Wetted Materials:** Standard V6 Models: Vane: 301 SS; Lower Body: brass or 303 SS; Magnet: ceramic; Other: 301, 302 SS; Tee: brass, iron, forged steel, or 304 SS. V6 Low Flow Models: Lower Body: brass or 303 SS; Tee: brass or 304 SS; Magnet: ceramic; O-ring: Buna-N standard, Fluoroelastomer optional; Other: 301, 302 SS.

**Temperature Limits:** -4 to 220°F (-20 to 105°C) Standard, MT high temperature option 400°F (205°C) (MT not UL, CSA, ATEX or IECEx) ATEX Compliant AT and IECEx IEC Option, Ambient Temperature -4 to 167°F (-20 to 75°C) Process Temperature: -4 to 220°F (-20 to 105°C).

**Pressure Limit:** Brass lower body with no tee models 1000 psig (69 bar), 303 SS lower body with no tee models 2000 psig (138 bar). Brass tee models 250 psi (17.2 bar), iron tee models 1000 psi (69 bar), forged and stainless steel tee models 2000 psi (138 bar), low flow models 1450 psi (100 bar).

**Enclosure Rating:** Weatherproof and Explosion-proof. Listed with UL and CSA for Class I, Groups A, B, C and D; Class II, Groups E, F, and G. (Group A on stainless steel body models only).

CE 0344 II 2 G Ex d IIC T6 Gb Process Temps $\leq$ 75°C Alternate Temperature Class T5 Process Temps $\leq$ 90°C, 115°C (T4) Process Temp  $\leq$ 105°C consult factory. EC-type Certificate No.: KEMA 04ATEX2128.

ATEX Standards: EN 60079-0: 2009; EN 60079-1: 2007.

**IECEx Certified:** For Ex d IIC T6 Gb Process Temps $\leq$ 75°C Alternate Temperature Class T5 Process Temps $\leq$ 90°C, 115°C (T4) Process Temp  $\leq$ 105°C consult factory.

**IECEx Certificate of Conformity:** IECEx DEK 11.0039;

**IECEx Standards:** IEC 60079-0: 2007; IEC 60079-1: 2007;

**Switch Type:** SPDT snap switch standard, DPDT snap switch optional.

**Electrical Rating:** UL models: 5A @125/250 VAC. CSA, ATEX and IECEx models: 5A @ 125/250 VAC (V~); 5A res., 3A ind. @ 30 VDC (V=). MV option: .1A @ 125 VAC (V~). MT option: 5A @125/250 VAC (V~). [MT option not UL, CSA, ATEX or IECEx].

**Electrical Connections:** UL models: 18 AWG, 18" (460 mm) long. ATEX/CSA /IECEx models: terminal block.

**Upper Body:** Brass or 303 stainless steel.

**Conduit Connections:** 3/4" male NPT standard, 3/4" female NPT on junction box models.

**Process Connection:** 1/2" male NPT on models without a tee.

**Mounting Orientation:** Switch can be installed in any position but the actuation/deactuation flow rates in the charts are based on horizontal pipe runs and are nominal values.

**Set Point Adjustment:** Standard V6 models none. Without tee models vane is trimmable. Low flow models are field adjustable in the range shown. See set point charts on opposite page.

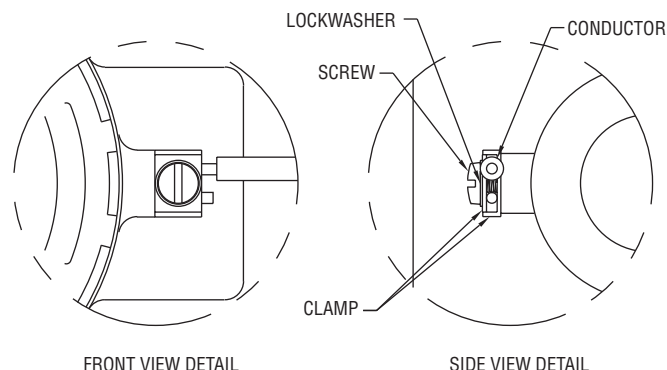
**Weight:** 2 to 6 lb (.9 to 2.7 kg) depending on construction.

**Options not Shown:** Custom calibration, bushings, PVC tee, reinforced vane, DPDT relays.

#### ELECTRICAL CONNECTIONS

Connect wire leads in accordance with local electrical codes and switch action required. N.O. contacts will close and N.C. contacts will open when flow increases to the actuation point. They will return to "normal" condition when flow decreases to the deactuation point. Black = Common, Blue = Normally Open and Red = Normally Closed.

For units supplied with both internal ground and external bonding terminals, the ground screw inside the housing must be used to ground the control. The external bonding screw is for supplementary bonding when allowed or required by local code. When external bonding conductor is required, conductor must be wrapped a minimum of 180° about the external bonding screw. See below. Some CSA listed models are furnished with a separate green ground wire. Such units must be equipped with a junction box, not supplied but available on special order.



**EC-Type Certificate Installation Instructions:**

**Cable Connection**

The cable entry device shall be certified in type of explosion protection flameproof enclosure "d", suitable for conditions of use and correctly installed. For Ta ≥ 65°C cable and cable gland rated ≥ 90°C shall be used.

**Conduit Connection**

An Ex d certified sealing device such as a conduit seal with setting compound shall be provided immediately to the entrance of the valve housing. For Ta ≥ 65°C wiring and setting compound, in the conduit seal, rated ≥ 90°C shall be used.

**Note:** ATEX and IECEx units only: The temperature class is determined by the maximum ambient and or process temperature. Units are intended to be used in ambient of -20°C ≤ Tamb ≤ 75°C. Units may be used in process temperatures up to 105°C providing the enclosure and switch body temperature do not exceed 75°C. The standard Temperature Class is T6 Process Temp ≤ 75°C. Alternate Temperature Class of T5 Process Temp ≤ 90°C and 115°C (T4) Process Temp ≤ 105°C are available consult factory.

Refer to Certificate No: IECEx DEK 11.0039 for conditions of safe use for IECEx compliant units.

All wiring, conduit and enclosures must meet applicable codes for hazardous areas. Conduits and enclosures must be properly sealed. For outdoor or other locations where temperatures vary widely, precautions should be taken to prevent condensation inside switch or enclosure. Electrical components must be kept dry at all times.

**CAUTION:** To prevent ignition of hazardous atmospheres, disconnect the device from the supply circuit before opening. Keep assembly tightly closed when in use.

**MAINTENANCE**

Inspect and clean wetted parts at regular intervals. The cover should be in place at all times to protect, the internal components from dirt, dust and weather and to maintain hazardous location ratings. Disconnect device from the supply circuit before opening to prevent ignition of hazardous atmosphere. Repairs to be conducted by Dwyer Instruments, Inc. Units in need of repair should be returned to the factory prepaid.

**V6 With Tee**

**Cold Water - Factory Installed Tee**

Approximate actuation/deactuation low Rates

GPM upper, M<sup>3</sup>/HR lower

1/2" NPT		3/4" NPT		1" NPT		1-1/4" NPT		1-1/2" NPT		2" NPT	
1.5	1.0	2.0	1.25	3.0	1.75	4.0	3.0	6.0	5.0	10.0	8.5
0.34	0.23	0.45	0.28	0.68	0.40	0.91	0.68	1.36	1.14	2.27	1.93

**Air-Factory Installed Tee**

Approximate actuation/deactuation flow rates

SCFM upper, NM<sup>3</sup>/M lower

1/2" NPT		3/4" NPT		1" NPT		1-1/4" NPT		1-1/2" NPT		2" NPT	
6.5	5.0	10.0	8.0	14	12	21	18	33	30	43	36
.18	.14	.28	.23	.40	.34	.59	.51	.93	.85	1.19	1.02

**V6 Low Flow, Field Adjustable**

Cold Water - Low Flow Models

Approximate actuation/deactuation flow rates

GPM upper, M<sup>3</sup>/HR lower

Minimum		Maximum	
.04	.03	.75	0.60
.009	.007	0.17	0.14

**Air - Low Flow Models**

Approximate actuation/deactuation flow rates

SCFM upper, NM<sup>3</sup>/M lower

Minimum		Maximum	
.18	.15	2.70	2.0
.005	.004	.08	.06

Example	V6	EP	B	B	S	2	B	MT	
	V6	EP	B	B	S	2	B	MT	V6EPB-B-S-2-B-MT flow switch; brass upper housing, brass lower housing, brass tee with 3/4" NPT connections, SPDT snap switch, and high temperature option
Series	V6								Series V6 flow switch
Construction		EP							Explosion Proof and Weatherproof
Upper Body Material			B						Brass 303 Stainless Steel
Lower Body Material				B					Brass 303 Stainless Steel
Circuit (Switch) Type					S				SPDT DPDT
Process Connection Size						1			1/2" NPT
						2			3/4" NPT
						3			1" NPT
						4			1-1/4" NPT
						5			1-1/2" NPT
						6			2" NPT
						LF			Low Flow Model (1/2" NPT connections)
Process Connection Type							0		No Tee, Male NPT Connection, Field Trimable Vane
							B		Brass Tee
							FS		Forged Steel Tee
							MI		Iron Tee
							PVC		PVC Tee with NPT*
							PVCSW		PVC Tee with sweat joints*
							S		304 Stainless Steel Tee
							S150		304 Stainless Steel 150# Tee
									(For LF Model no tee material chosen, tee material matches lower housing choice)
Switch Options								MV	Gold Contacts on snap switch for dry circuits (see specifications for ratings)
								MT	High Temperature switch rated 400°F (205°C) (see specifications for ratings)*
Options								AT	ATEX approved construction (with JCT option standard)
								CSA	CSA approved construction (with JCT option standard)*
								IEC	IECEx approved construction (with JCT option standard)
								CV	Custom Vane
								FTR	Flow Test Report
								GL	Ground Lead*
								ID	Customer Information on standard nameplate
								JCT	Weatherproof and explosion-proof junction box*
								JCTLH	Weatherproof and explosion-proof junction box, left side
								ORFB	Orifice Brass
								ORFS	Orifice Stainless Steel
								RV	Reinforced Vane
								TBC	Terminal Block Connector*
								VIT	Viton® O-rings in place of Buna-N on low flow models
								018	.018 Spring
								020	.020 Spring
								022	.022 Spring
								022A	.022 Spring with Alnico® magnet
								031	.031 Spring

\* Options that do not have ATEX and IECEx

**Attention:** Units without the "AT" suffix are not Directive 94/9/EC (ATEX) compliant. These units are not intended for use in potentially hazardous atmospheres in the EU. These units may be CE marked for other Directives of the EU.

**V6 With Field Trimmable Vane**  
**Cold Water - Brass or Cast Iron Reducing Tee**  
 Approximate actuation/deactuation flow rates  
 GPM upper, M<sup>3</sup>/HR lower

**Air - Brass or Cast Iron Reducing Tee**  
 Approximate actuation/deactuation flow rates  
 SCFM upper, NM<sup>3</sup>/M lower

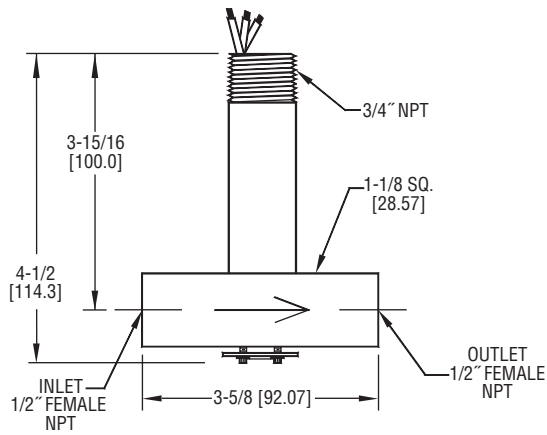
Vane	1/2" NPT	3/4" NPT	1" NPT	1-1/4" NPT	1-1/2" NPT	2" NPT	1/2" NPT	3/4" NPT	1" NPT	1-1/4" NPT	1-1/2" NPT	2" NPT
Full Size						9.0 8.5						39.0 37.0
a						2.0 1.9						1.10 1.05
b						9.5 9.0						40.0 38.0
c						2.2 2.0						1.13 1.08
d						10.0 9.3						42.0 40.0
e						2.3 2.1						1.19 1.13
f						11.0 10.0						50.0 44.0
g						2.5 2.3						1.42 1.25
h					6.2 5.5	12.0 10.0					27.0 25.0	55.0 46.0
i					1.4 1.2	2.7 2.3					0.76 0.71	1.56 1.30
j					7.0 6.5	13.0 11.0					30.0 28.0	
k					1.6 1.5	3.0 2.5					0.85 0.79	
l				4.3 3.9	7.6 7.1	14.0 12.0			20.0 18.0	32.0 30.0		
m				1.0 0.9	1.7 1.6	3.2 2.7			0.57 0.51	0.91 0.85		
n				4.9 4.4	8.0 7.3				21.0 19.0	34.0 32.0		
o				1.1 1.0	1.8 1.7				0.59 0.54	0.96 0.91		
p				5.5 5.0	9.0 8.2				23.0 21.0	37.0 34.0		
q				1.2 1.1	2.0 1.9				0.65 0.59	1.05 0.96		
r			3.5 3.1	6.0 5.6	10.0 9.0			16.0 15.0	24.0 22.0	39.0 36.0		
s			0.8 0.7	1.4 1.3	2.3 2.0			0.45 0.42	0.68 0.62	1.10 1.02		
t			4.0 3.5	7.0 6.6	13.0 11.0			18.0 16.0	28.0 25.0	51.0 45.0		
u			0.9 0.8	1.6 1.5	3.0 2.5			0.51 0.45	0.79 0.71	1.44 1.27		
v			4.6 4.2	8.0 7.6	15.0 13.0			19.0 17.0	33.0 30.0	69.0 57.0		
w			1.04 0.95	1.8 1.7	3.4 3.0			0.54 0.48	0.93 0.85	1.95 1.61		
x		2.6 2.3	5.6 5.2	10.0 9.0			13.0 12.0	22.0 20.0	38.0 35.0			
y		0.6 0.5	1.3 1.2	2.3 2.0			0.37 0.34	0.62 0.57	1.08 0.99			
z	1.6 1.3	3.5 3.1	6.3 6.1	12.0 10.0			6.4 3.8	15.0 14.0	25.0 23.0	45.0 42.0		
aa	0.4 0.3	0.8 0.7	1.43 1.39	2.7 2.3			0.18 0.11	0.42 0.40	0.71 0.65	1.27 1.19		
ab	2.2 1.8	4.3 3.8	8.0 7.5				10.0 7.0	20.0 16.0	32.0 28.0			
ac	0.5 0.4	1.0 0.9	1.8 1.7				0.28 0.20	0.57 0.45	0.91 0.79			
ad	3.0 2.4						12.0 9.0					
ae	0.7 0.5						0.34 0.25					

**Cold Water - Stainless or Forged Steel Straight Tee and Bushing**  
 Approximate actuation/deactuation flow rates  
 GPM upper, M<sup>3</sup>/HR lower

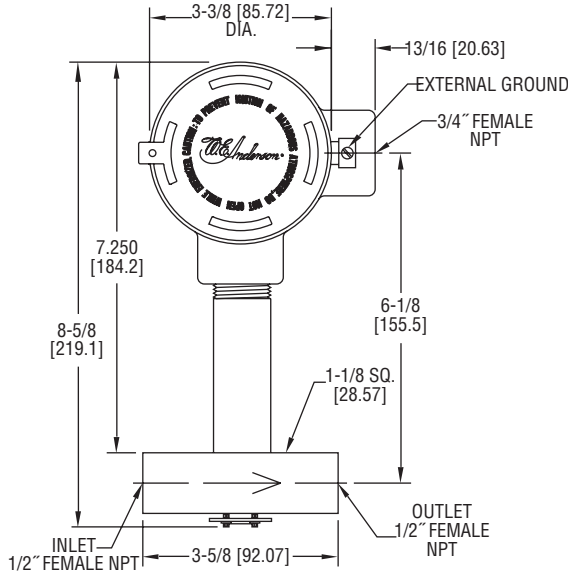
**Air - Stainless or Forged Steel Straight Tee and Bushing**  
 Approximate actuation/deactuation flow rates  
 SCFM upper, NM<sup>3</sup>/M lower

Vane	1/2" NPT	3/4" NPT	1" NPT	1-1/4" NPT	1-1/2" NPT	2" NPT	1/2" NPT	3/4" NPT	1" NPT	1-1/4" NPT	1-1/2" NPT	2" NPT
Full Size				5.0 4.5	8.5 7.8					21.0 18.0	33.0 30.0	
a				1.1 1.0	1.9 1.8					0.59 0.51	0.93 0.85	
b				5.5 5.0	9.2 8.6					22.0 20.0	39.0 36.0	
c				1.2 1.1	2.1 2.0					0.62 0.57	1.10 1.02	
d				6.2 5.7	9.8 9.0					24.0 22.0	42.0 38.0	
e				1.4 1.3	2.2 2.0					0.68 0.62	1.19 1.08	
f				6.8 6.3	12.0 10.0					28.0 26.0	51.0 46.0	
g				1.5 1.4	2.7 2.3					0.79 0.74	1.44 1.30	
h			2.8 2.4	8.5 7.8	13.0 11.0			12.0 10.0	33.0 30.0	55.0 50.0		
i			0.6 0.5	1.9 1.8	3.0 2.5			0.34 0.28	0.93 0.85	1.56 1.42		
j			3.4 3.0	10.0 9.2				14.0 12.0	37.0 34.0			
k			0.8 0.7	2.3 2.1				0.40 0.34	1.05 0.96			
l			4.0 3.6	12.0 10.0				16.0 14.0	43.0 40.0			
m			0.91 0.82	2.7 2.3				0.45 0.40	1.22 1.13			
n	2.0 1.5	5.0 4.5						8.0 6.5	19.0 17.0			
o	0.5 0.3	1.1 1.0						0.23 0.18	0.54 0.48			
p	2.5 2.0	6.5 6.1						11.0 10.0	26.0 24.0			
q	0.6 0.5	1.48 1.39						0.31 0.28	0.74 0.68			
r	3.5 3.0	9.0 8.2						14.0 13.0	32.0 30.0			
s	0.8 0.7	2.0 1.9						0.40 0.37	0.91 0.85			
t	7.0 5.5							27.0 24.0				
u	1.6 1.2							0.76 0.68				
v	10.0 8.0							39.0 36.0				
w	2.3 1.8							1.10 1.02				

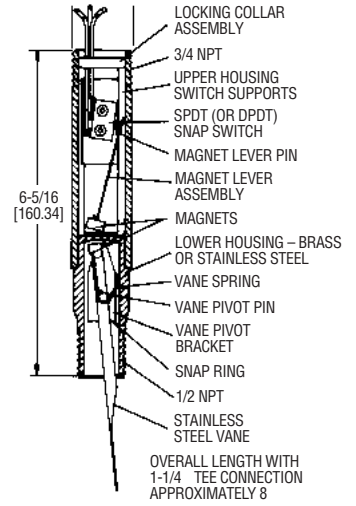
**DIMENSIONS**  
**Series V6 FLOTECT® Flow Switch**



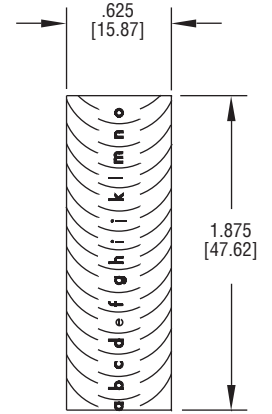
**V6 Low Flow**



**V6 Low Flow with CSA, ATEX Conduit Enclosure**

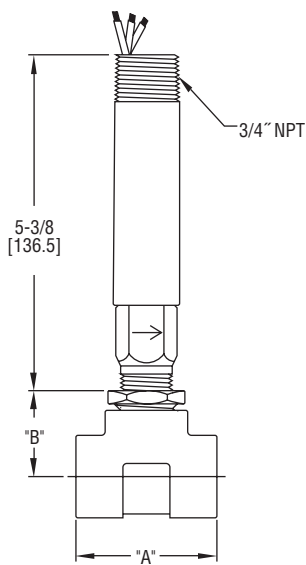


**V6 with Field Trimable Vane**

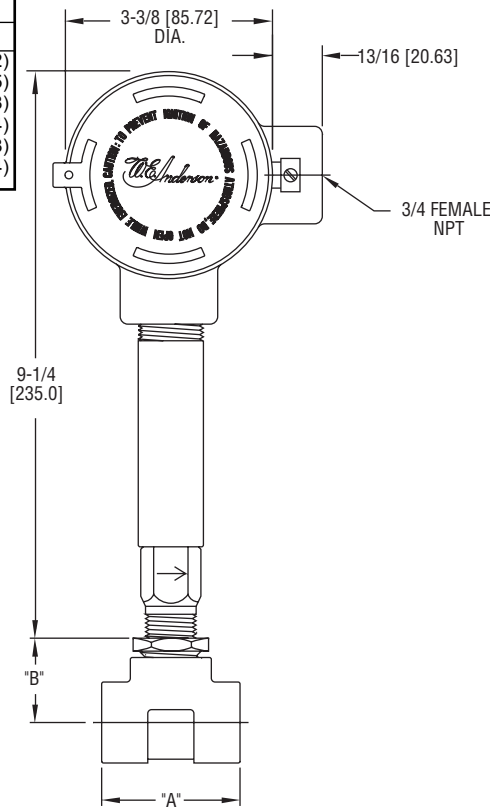


**Trimmable Vane**

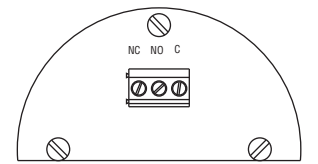
Pipe Size	Brass/Ductile Iron		Forged/Stainless Steel		Malleable Iron	
	Dim. A	Dim. B	Dim. A	Dim. B	Dim. A	Dim. B
1/2"	2-1/4 (57)	1-1/8 (29)	2-1/4 (57)	1-1/8 (29)	2-1/2 (64)	1-1/4 (32)
3/4"	2-3/8 (60)	1-1/4 (32)	2-5/8 (67)	1-7/8 (47)	2-5/8 (67)	1-3/8 (35)
1"	2-1/2 (64)	1-3/8 (35)	3 (76)	2-1/8 (54)	2-7/8 (73)	1-1/2 (38)
1-1/4"	2-5/8 (67)	1-1/2 (38)	3-1/2 (89)	2-1/2 (64)	3 (76)	1-3/4 (44)
1-1/2"	2-7/8 (73)	1-5/8 (41)	4 (102)	2-3/4 (70)	3-1/4 (83)	1-7/8 (48)
2"	3 (76)	1-7/8 (48)	4-3/4 (121)	3-1/8 (79)	3-1/2 (89)	2-1/8 (54)



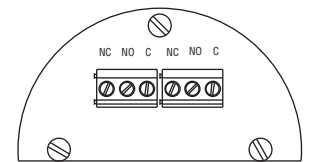
**V6 with Tee**



**V6 with Tee and CSA, ATEX Conduit Enclosure**



**SPDT**



**DPDT**

**Terminal Connections  
 CSA, ATEX Enclosures**