



# FLOTECT® Model V6 Flow Switch

## Specifications - Installation and Operating Instructions



The Flowtect® Model V6 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  $\text{CE} \text{ II 2 G EEx d IIC T6 Process Temp} \leq 75^\circ\text{C}$ .

### 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.

### 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, Viton® 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 or ATEX). ATEX compliant AT 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).

$\text{CE} \text{ 0344} \text{ II 2 G EEx d IIC T6 Process Temp} \leq 75^\circ\text{C}$ .

EC-type Certificate No.: KEMA 04ATEX2128.

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

**Electrical Rating:** UL models: 5A @ 125/250 VAC (V~). CSA and ATEX 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 or ATEX].

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

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.

### 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 and external grounds, the ground screw inside the housing must be used to ground the control. The external ground screw is for supplementary bonding when allowed or required by local code. 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 an EEx d certified cable gland suitable for conditions of use and correctly installed. The certified cable gland and cable shall be rated for a minimum temperature of 80°C.

**Conduit Connection**

An EEx d certified seal device such as a conduit seal with setting compound suitable for conditions of use and correctly installed shall be provided immediately to the entrance of the electrical housing. The certified conduit seal and setting compound and cable shall be rated for a minimum temperature of 80°C.

**Note:** ATEX 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.

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.

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

\* Options that do not have ATEX

**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 Tee**

**Cold Water - Factory Installed Tee**

Approximate actuation/deactuation flow rates

**GPM** upper, **LPM** 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
5.7 3.8	7.6 4.7	11.4 6.6	15.1 11.4	22.7 18.9	37.9 32.2

**Air-Factory Installed Tee**

Approximate actuation/deactuation flow rates

**SCFM** upper, **LPM** 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
180 140	280 230	400 340	590 510	930 850	1220 1020

**V6 Low Flow, Field Adjustable**

Cold Water - Low Flow Models

Approximate actuation/deactuation flow rates

**GPM** upper, **LPM** lower

MINIMUM	MAXIMUM
.04 .03	.75 0.60
.15 .11	2.8 2.3

**Air - Low Flow Models**

Approximate actuation/deactuation flow rates

**SCFM** upper, **LPM** lower

MINIMUM	MAXIMUM
.18 .15	2.70 2.0
5.1 4.2	76 57

**V6 With Field Trimmable Vane**

**Cold Water - Brass or Cast Iron Reducing Tee**

Approximate actuation/deactuation flow rates

**GPM** upper, **LPM** lower

**Air - Brass or Cast Iron Reducing Tee**

Approximate actuation/deactuation flow rates

**SCFM** upper, **LPM** 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 34.1 32.2						39.0 37.0 1100 1050
a						9.5 9.0 36.0 34.1						40.0 38.0 1130 1080
b						10.0 9.3 37.9 35.2						42.0 40.0 1190 1130
c						11.0 10.0 41.6 37.9						50.0 44.0 1420 1250
d					6.2 5.5 23.5 20.8	12.0 10.0 45.4 37.9					27.0 25.0 760 710	55.0 46.0 1560 1300
e					7.0 6.5 26.5 24.6	13.0 11.0 49.2 41.6					30.0 28.0 850 790	
f				4.3 3.9 16.3 14.8	7.6 7.1 28.8 26.9	14.0 12.0 53.0 45.4			20.0 18.0 570 510	18.0 16.0 910 850	32.0 30.0 910 850	
g				4.9 4.4 18.5 16.7	8.0 7.3 30.3 27.6				21.0 19.0 590 540	19.0 17.0 960 910	34.0 32.0 960 910	
h				5.5 5.0 20.8 18.9	9.0 8.2 34.1 31.0				23.0 21.0 650 590	17.0 15.0 960 910	37.0 34.0 960 910	
i		3.5 3.1 13.2 11.7	6.0 5.6 22.7 21.2	10.0 9.0 37.9 34.1				16.0 15.0 450 430	24.0 22.0 680 620	39.0 36.0 1100 1020	36.0 34.0 1020 960	
j		4.0 3.5 15.1 13.2	7.0 6.6 26.5 25.0	13.0 11.0 49.2 41.6				18.0 16.0 510 450	28.0 25.0 790 710	51.0 45.0 1440 1270	45.0 40.0 1270 1190	
k		4.6 4.2 17.4 15.9	8.0 7.6 30.3 28.8	15.0 13.0 56.8 49.2				19.0 17.0 540 480	33.0 30.0 930 850	69.0 57.0 1950 1610	57.0 50.0 1610 1420	
l		2.6 2.3 9.8 8.7	5.6 5.2 21.2 19.7	10.0 9.0 37.9 34.1				13.0 12.0 370 340	22.0 20.0 620 570	38.0 35.0 1080 990	35.0 32.0 990 910	
m	1.6 1.3 6.1 4.9	3.5 3.1 13.2 11.7	6.3 6.1 23.8 23.1	12.0 10.0 45.4 37.9			6.4 3.8 180 110	15.0 14.0 420 400	25.0 23.0 710 650	45.0 42.0 1270 1190	42.0 38.0 1190 1100	
n	2.2 1.8 8.3 6.8	4.3 3.8 16.3 14.4	8.0 7.5 30.3 28.4				10.0 7.0 280 200	20.0 16.0 570 450	32.0 28.0 910 790	28.0 24.0 790 710	28.0 24.0 790 710	
o	3.0 2.4 11.4 9.1						12.0 9.0 340 250					

**Cold Water - Stainless or Forged Steel Straight Tee and Bushing**

Approximate actuation/deactuation flow rates

**GPM** upper, **LPM** lower

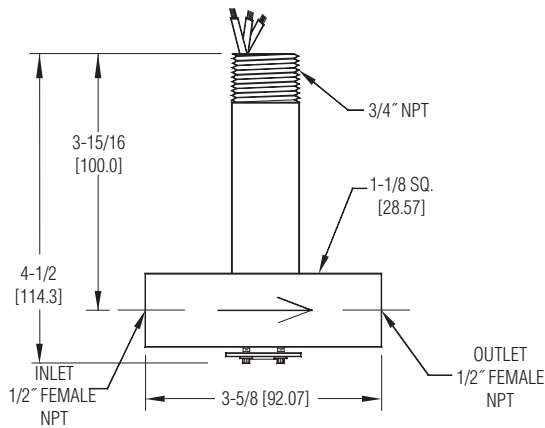
**Air - Stainless or Forged Steel Straight Tee and Bushing**

Approximate actuation/deactuation flow rates

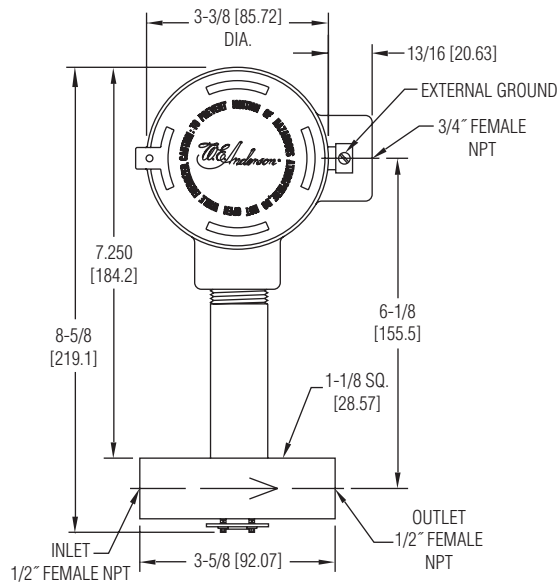
**SCFM** upper, **LPM** lower

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 18.9 17.0	8.5 7.8 32.2 29.5					21.0 18.0 590 510	33.0 30.0 930 850	30.0 27.0 850 790
a				5.5 5.0 20.8 18.9	9.2 8.6 34.8 32.6					22.0 20.0 620 570	39.0 36.0 1100 1020	36.0 33.0 1020 960
b				6.2 5.7 23.5 21.6	9.8 9.0 37.1 34.1					24.0 22.0 680 620	42.0 38.0 1190 1080	38.0 35.0 1080 1020
c				6.8 6.3 25.7 23.8	12.0 10.0 45.4 37.9					28.0 26.0 790 740	51.0 46.0 1440 1300	46.0 42.0 1300 1220
d			2.8 2.4 10.6 9.1	8.5 7.8 32.2 29.5	13.0 11.0 49.2 41.6			12.0 10.0 340 280	10.0 9.0 930 850	33.0 30.0 1560 1420	55.0 50.0 1420 1300	50.0 46.0 1300 1220
e			3.4 3.0 12.9 11.4	10.0 9.2 37.9 34.8				14.0 12.0 400 340	12.0 10.0 1050 960	37.0 34.0 960 910	34.0 31.0 910 850	
f			4.0 3.6 15.1 13.6	12.0 10.0 45.4 37.9				16.0 14.0 450 400	14.0 12.0 1220 1130	43.0 40.0 1130 1050	40.0 37.0 1050 960	
g		2.0 1.5 7.6 5.7	5.0 4.5 18.9 17.0					8.0 6.5 230 180	19.0 17.0 540 480	17.0 15.0 480 430		
h		2.5 2.0 9.5 7.6	6.5 6.1 24.6 23.1					11.0 10.0 310 280	26.0 24.0 740 680	24.0 22.0 680 620		
i		3.5 3.0 13.2 11.4	9.0 8.2 34.1 31.0					14.0 13.0 400 370	13.0 11.0 910 850	32.0 30.0 850 790		
j		7.0 5.5 26.5 20.8						27.0 24.0 760 680				
k		10.0 8.0 37.9 30.3						39.0 36.0 1100 1020				

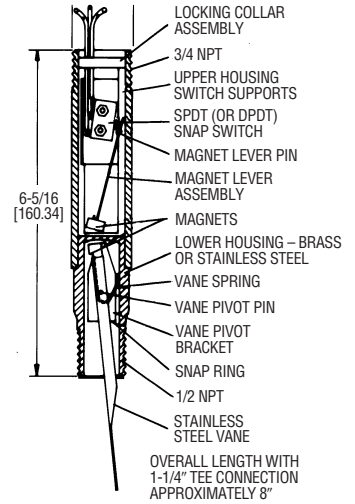
**DIMENSIONS**  
**FLOTECT® Model V6**



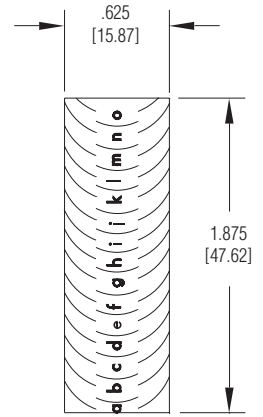
**V6 Low Flow**



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

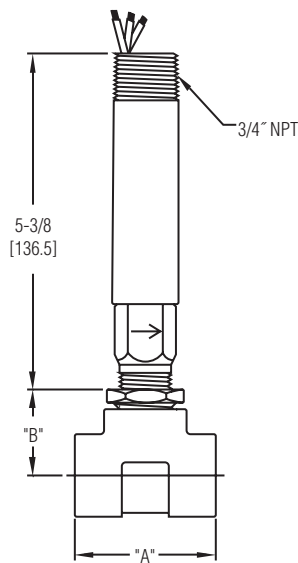


**V6 with Field  
Trimable Vane**

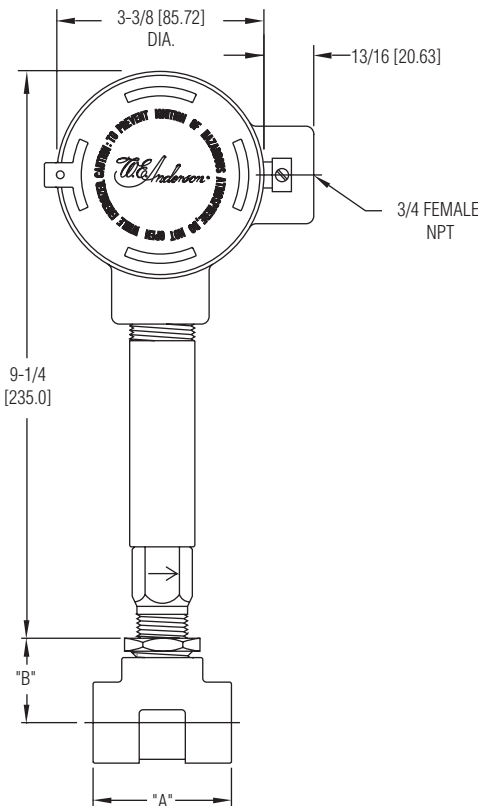


**Trimable Vane**

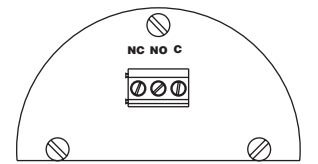
PIPE SIZE	BRASS/DUCTILE IRON		FORGED/STAINLESS STEEL		MALLEABLE IRON	
	DIM. A	DIM. B	DIM. A	DIM. B	DIM. A	DIM. B
1/2"	2-1/4 (57)	1-1/8 (29)	2-1/4 (57)	1-1/8 (29)	2-1/2 (64)	1-1/4 (32)
3/4"	2-3/8 (60)	1-1/4 (32)	2-5/8 (67)	1-7/8 (47)	2-5/8 (67)	1-3/8 (35)
1"	2-1/2 (64)	1-3/8 (35)	3 (76)	2-1/8 (54)	2-7/8 (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)



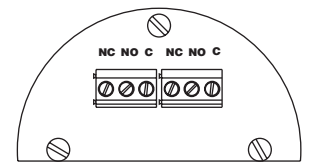
**V6 with Tee**



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



SPDT



DPDT

**Terminal Connections  
CSA, ATEX Enclosures**