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 CE Ex II 2 G EEx d IIC T6 Process Temp≤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.

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).
CE 0344 Ex II 2 G EEx d IIC T6 Process Temp≤75°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.

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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.

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		1¼˝ NPT		1½˝ 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		1¼˝ NPT		1½˝ 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

Example	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										Brass 303 Stainless Steel
Lower Body Material			B S	B S						Brass 303 Stainless Steel
Circuit (Switch) Type					S D					SPDT DPDT
Process Connection Size						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)
Process Connection Type							0 B FS MI PVC PVCSW 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)
Switch Options								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)*
Options									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

V6 With Field Trimmable Vane
Cold Water - Brass or Cast Iron Reducing Tee
Approximate actuation/deactuation flow rates
GPM upper, **LPM** lower

Vane	½″ NPT		¾″ NPT		1″ NPT		1¼″ NPT		1½″ NPT		2″ NPT	
Full Size											9.0	8.5
											34.1	32.2
a											9.5	9.0
											36.0	34.1
b											10.0	9.3
											37.9	35.2
c											11.0	10.0
											41.6	37.9
d									6.2	5.5	12.0	10.0
									23.5	20.8	45.4	37.9
e									7.0	6.5	13.0	11.0
									26.5	24.6	49.2	41.6
f							4.3	3.9	7.6	7.1	14.0	12.0
							16.3	14.8	28.8	26.9	53.0	45.4
g							4.9	4.4	8.0	7.3		
							18.5	16.7	30.3	27.6		
h							5.5	5.0	9.0	8.2		
							20.8	18.9	34.1	31.0		
i					3.5	3.1	6.0	5.6	10.0	9.0		
					13.2	11.7	22.7	21.2	37.9	34.1		
j					4.0	3.5	7.0	6.6	13.0	11.0		
					15.1	13.2	26.5	25.0	49.2	41.6		
k					4.6	4.2	8.0	7.6	15.0	13.0		
					17.4	15.9	30.3	28.8	56.8	49.2		
l			2.6	2.3	5.6	5.2	10.0	9.0				
			9.8	8.7	21.2	19.7	37.9	34.1				
m	1.6	1.3	3.5	3.1	6.3	6.1	12.0	10.0				
	6.1	4.9	13.2	11.7	23.8	23.1	45.4	37.9				
n	2.2	1.8	4.3	3.8	8.0	7.5						
	8.3	6.8	16.3	14.4	30.3	28.4						
o	3.0	2.4										
	11.4	9.1										

Air - Brass or Cast Iron Reducing Tee
Approximate actuation/deactuation flow rates
SCFM upper, **LPM** lower

½″ NPT		¾″ NPT		1″ NPT		1¼″ NPT		1½″ NPT		2″ NPT	
										39.0	37.0
										1100	1050
										40.0	38.0
										1130	1080
										42.0	40.0
										1190	1130
										50.0	44.0
										1420	1250
								27.0	25.0	55.0	46.0
								760	710	1560	1300
								30.0	28.0		
								850	790		
						20.0	18.0	32.0	30.0		
						570	510	910	850		
						21.0	19.0	34.0	32.0		
						590	540	960	910		
						23.0	21.0	37.0	34.0		
						650	590	1050	960		
				16.0	15.0	24.0	22.0	39.0	36.0		
				450	430	680	620	1100	1020		
				18.0	16.0	28.0	25.0	51.0	45.0		
				510	450	790	710	1440	1270		
				19.0	17.0	33.0	30.0	69.0	57.0		
				540	480	930	850	1950	1610		
		13.0	12.0	22.0	20.0	38.0	35.0				
		370	340	620	570	1080	990				
6.4	3.8	15.0	14.0	25.0	23.0	45.0	42.0				
180	110	420	400	710	650	1270	1190				
10.0	7.0	20.0	16.0	32.0	28.0						
280	200	570	450	910	790						
12.0	9.0										
340	250										

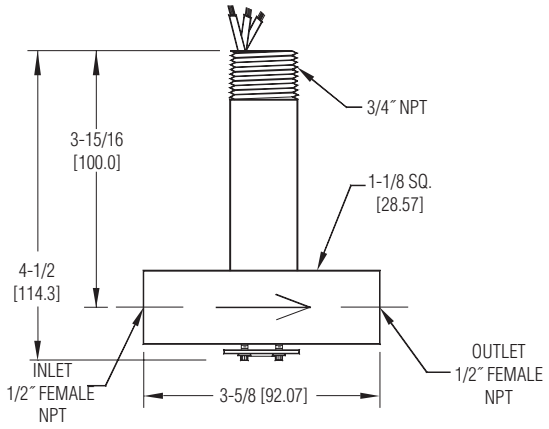
Cold Water - Stainless or Forged Steel Straight Tee and Bushing
Approximate actuation/deactuation flow rates
GPM upper, **LPM** lower

Vane	½″ NPT		¾″ NPT		1″ NPT		1¼″ NPT		1½″ NPT		2″ NPT	
Full Size							5.0	4.5	8.5	7.8		
							18.9	17.0	32.2	29.5		
a							5.5	5.0	9.2	8.6		
							20.81	18.9	34.8	32.6		
b							6.2	5.7	9.8	9.0		
							23.5	21.6	37.1	34.1		
c							6.8	6.3	12.0	10.0		
							25.7	23.8	45.4	37.9		
d					2.8	2.4	8.5	7.8	13.0	11.0		
					10.6	9.1	32.2	29.5	49.2	41.6		
e					3.4	3.0	10.0	9.2				
					12.9	11.4	37.9	34.8				
f					4.0	3.6	12.0	10.0				
					15.1	13.6	45.4	37.9				
g			2.0	1.5	5.0	4.5						
			7.6	5.7	18.9	17.0						
h			2.5	2.0	6.5	6.1						
			9.5	7.6	24.6	23.1						
i			3.5	3.0	9.0	8.2						
			13.2	11.4	34.1	31.0						
j			7.0	5.5								
			26.5	20.8								
k			10.0	8.0								
			37.9	30.3								

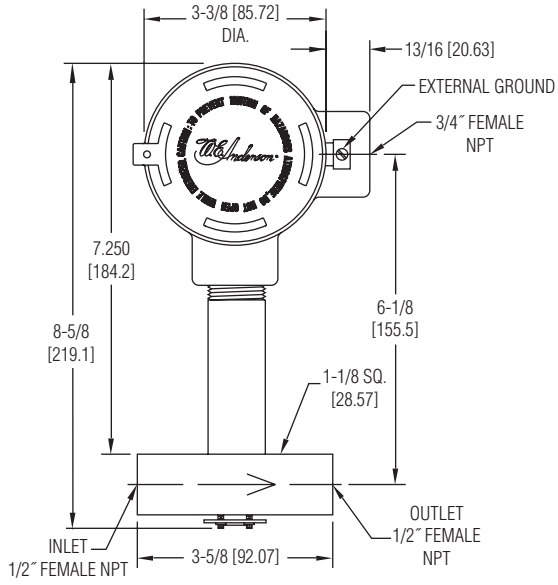
Air - Stainless or Forged Steel Straight Tee and Bushing
Approximate actuation/deactuation flow rates
SCFM upper, **LPM** lower

½″ NPT		¾″ NPT		1″ NPT		1¼″ NPT		1½″ NPT		2″ NPT	
						21.0	18.0	33.0	30.0		
						590	510	930	850		
						22.0	20.0	39.0	36.0		
						620	570	1100	1020		
						24.0	22.0	42.0	38.0		
						680	620	1190	1080		
						28.0	26.0	51.0	46.0		
						790	740	1440	1300		
				12.0	10.0	33.0	30.0	55.0	50.0		
				340	280	930	850	1560	1420		
				14.0	12.0	37.0	34.0				
				400	340	1050	960				
				16.0	14.0	43.0	40.0				
				450	400	1220	1130				
		8.0	6.5	19.0	17.0						
		230	180	540	480						
		11.0	10.0	26.0	24.0						
		310	280	740	680						
		14.0	13.0	32.0	30.0						
		400	370	910	850						
		27.0	24.0								
		760	680								
		39.0	36.0								
		1100	1020								

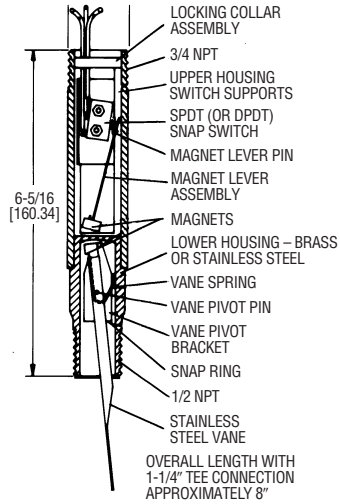
DIMENSIONS
FLOTECT® Model V6



V6 Low Flow

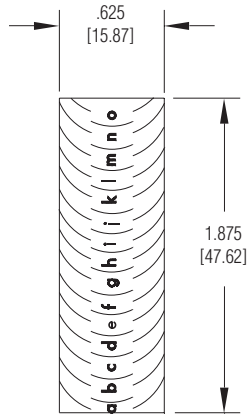


V6 Low Flow with CSA, ATEX Conduit Enclosure

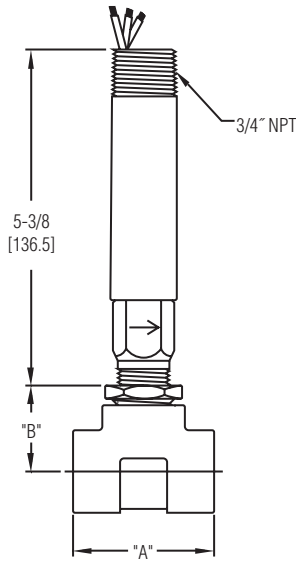


V6 with Field Trimmable Vane

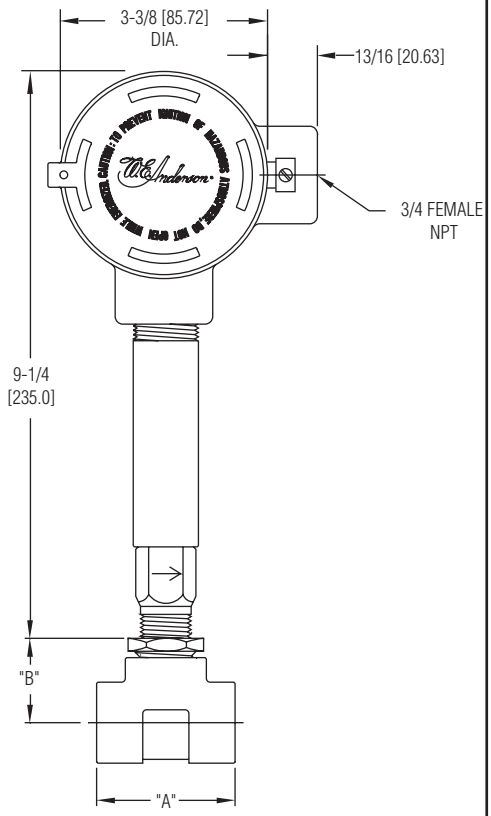
PIPE	BRASS/DUCTILE IRON		FORGED/STAINLESS STEEL		MALLEABLE IRON	
SIZE	DIM. A	DIM. B	DIM. A	DIM. B	DIM. A	DIM. B
1/2″	2-1/4 (57)	1-1/8 (29)	2-1/4 (57)	1-1/8 (29)	2-1/2 (64)	1-1/4 (32)
3/4″	2-3/8 (60)	1-1/4 (32)	2-5/8 (67)	1-7/8 (47)	2-5/8 (67)	1-3/8 (35)
1″	2-1/2 (64)	1-3/8 (35)	3 (76)	2-1/8 (54)	2-7/8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



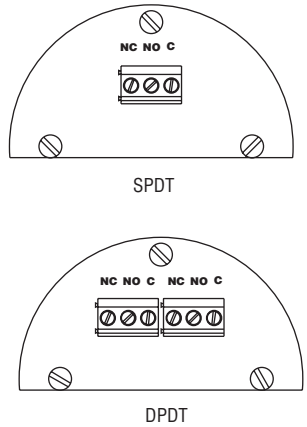
Trimmable Vane



V6 with Tee



V6 with Tee and CSA, ATEX Conduit Enclosure



Terminal Connections CSA, ATEX Enclosures

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