


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**  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

 II 2 G EEx d IIC T6 Process Temp ≤ 75°C Alternate Temperature Class T5 Process Temp ≤ 90°C, 115°C (T4) Process Temp ≤ 105°C consult factory. EC-type Certificate No.: KEMA 04ATEXxxxx.

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

Electrical Rating: UL models: 5A @ 125/250 VAC. 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.

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

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 certified in type of explosion protection flameproof enclosure “d”, suitable for conditions of use and correctly installed. For ambient temperatures over 70°C, cable and cable glands suitable for at least 90°C shall be used.

Conduit Connection

An EEx d certified sealing device such as a conduit seal with setting compound shall be provided immediately to the entrance of the valve housing. For ambient temperatures over 70°C, the wiring and setting compound in the conduit seal shall be suitable for at least 90°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. Alternate Temperature Class of T5 Process Temp ≤ 90°C and 115°C (T4) Process Temp ≤ 105°C are available consult factory.

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.

Example	V6	FP	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		FP							Explosion Proof and Weatherproof
Upper Body Material									Brass 303 Stainless Steel
Lower Body Material			B	B					Brass 303 Stainless Steel
Circuit (Switch) Type			S	S	S				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								MT MV	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 Tee

Cold Water - Factory Installed Tee

Approximate actuation/deactuation low Rates
GPM upper, **M³/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, **NM³/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, **M³/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, **NM³/M** lower

MINIMUM		MAXIMUM	
.18	.15	2.70	2.0
.005	.004	.08	.06

V6 With Field Trimmable Vane

Cold Water - Brass or Cast Iron Reducing Tee

Approximate actuation/deactuation flow rates

GPM upper, **M³/HR** lower

Air - Brass or Cast Iron Reducing Tee

Approximate actuation/deactuation flow rates

SCFM upper, **NM³/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 2.0 1.9						39.0 37.0 1.10 1.05
a						9.5 9.0 2.2 2.0						40.0 38.0 1.13 1.08
b						10.0 9.3 2.3 2.1						42.0 40.0 1.19 1.13
c						11.0 10.0 2.5 2.3						50.0 44.0 1.42 1.25
d					6.2 5.5 1.4 1.2	12.0 10.0 2.7 2.3					27.0 25.0 0.76 0.71	55.0 46.0 1.56 1.30
e					7.0 6.5 1.6 1.5	13.0 11.0 3.0 2.5					30.0 28.0 0.85 0.79	
f				4.3 3.9 1.0 0.9	7.6 7.1 1.7 1.6	14.0 12.0 3.2 2.7				20.0 18.0 0.57 0.51	32.0 30.0 0.91 0.85	
g				4.9 4.4 1.1 1.0	8.0 7.3 1.8 1.7					21.0 19.0 0.59 0.54	34.0 32.0 0.96 0.91	
h				5.5 5.0 1.2 1.1	9.0 8.2 2.0 1.9					23.0 21.0 0.65 0.59	37.0 34.0 1.05 0.96	
i			3.5 3.1 0.8 0.7	6.0 5.6 1.4 1.3	10.0 9.0 2.3 2.0			16.0 15.0 0.45 0.42	24.0 22.0 0.68 0.62	39.0 36.0 1.10 1.02		
j			4.0 3.5 0.9 0.8	7.0 6.6 1.6 1.5	13.0 11.0 3.0 2.5			18.0 16.0 0.51 0.45	28.0 25.0 0.79 0.71	51.0 45.0 1.44 1.27		
k			4.6 4.2 1.04 0.95	8.0 7.6 1.8 1.7	15.0 13.0 3.4 3.0			19.0 17.0 0.54 0.48	33.0 30.0 0.93 0.85	69.0 57.0 1.95 1.61		
l		2.6 2.3 0.6 0.5	5.6 5.2 1.3 1.2	10.0 9.0 2.3 2.0				13.0 12.0 0.37 0.34	22.0 20.0 0.62 0.57	38.0 35.0 1.08 0.99		
m	1.6 1.3 0.4 0.3	3.5 3.1 0.8 0.7	6.3 6.1 1.43 1.39	12.0 10.0 2.7 2.3			6.4 3.8 0.18 0.11	15.0 14.0 0.42 0.40	25.0 23.0 0.71 0.65	45.0 42.0 1.27 1.19		
n	2.2 1.8 0.5 0.4	4.3 3.8 1.0 0.9	8.0 7.5 1.8 1.7				10.0 7.0 0.28 0.20	20.0 16.0 0.57 0.45	32.0 28.0 0.91 0.79			
o	3.0 2.4 0.7 0.5						12.0 9.0 0.34 0.25					

Cold Water - Stainless or Forged Steel Straight Tee and Bushing

Approximate actuation/deactuation flow rates

GPM upper, **M³/HR** lower

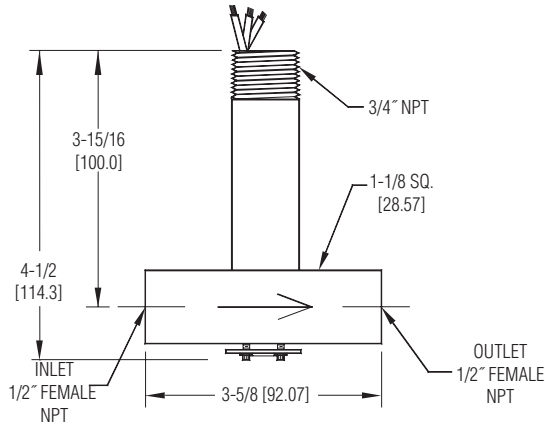
Air - Stainless or Forged Steel Straight Tee and Bushing

Approximate actuation/deactuation flow rates

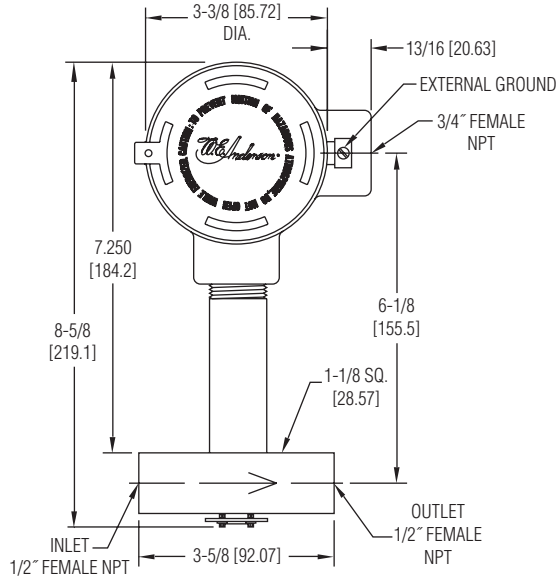
SCFM upper, **NM³/M** lower

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

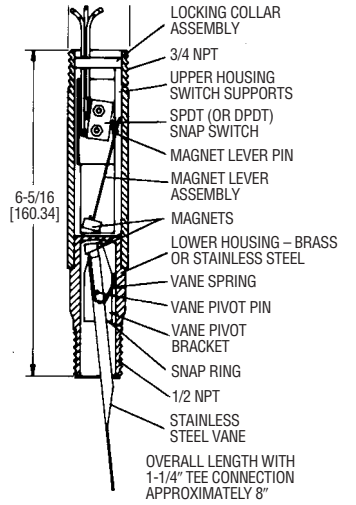
7601 Stadium Drive
Kalamazoo, MI 49009
Toll Free (877) 375-1290



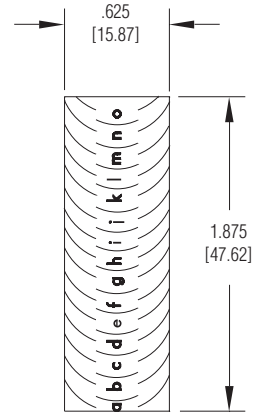
V6 Low Flow



V6 Low Flow with CSA, ATEX Conduit Enclosure

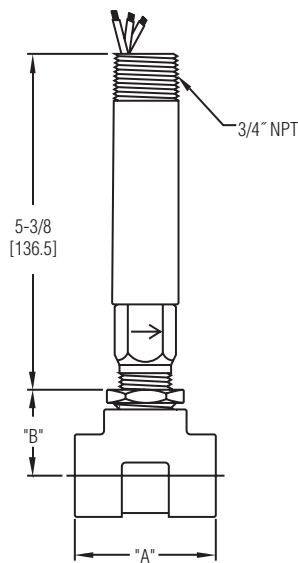


V6 with Field Trimmable Vane

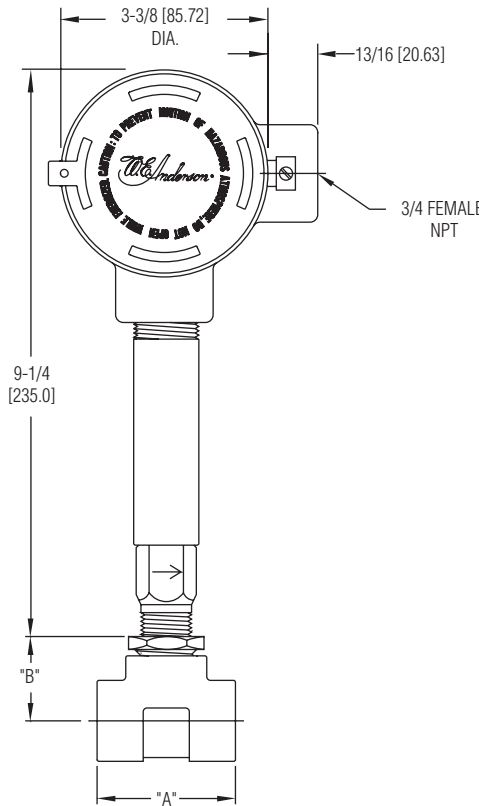


Trimmable Vane

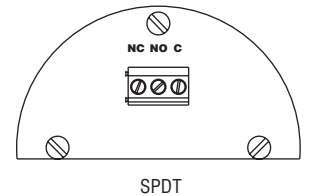
PIPE SIZE	BRASS/DUCTILE IRON		FORGED/STAINLESS STEEL		MALLEABLE IRON	
	DIM. A	DIM. B	DIM. A	DIM. B	DIM. A	DIM. B
1/2"	2-1/4 (57)	1-1/8 (29)	2-1/4 (57)	1-1/8 (29)	2-1/2 (64)	1-1/4 (32)
3/4"	2-3/8 (60)	1-1/4 (32)	2-5/8 (67)	1-7/8 (47)	2-5/8 (67)	1-3/8 (35)
1"	2-1/2 (64)	1-3/8 (35)	3 (76)	2-1/8 (54)	2-7/8 (73)	1-1/2 (38)
1-1/4"	2-5/8 (67)	1-1/2 (89)	3-1/2 (38)	2-1/2 (64)	3 (76)	1-3/4 (44)
1-1/2"	2-7/8 (73)	1-5/8 (102)	4 (41)	2-3/4 (70)	3-1/4 (83)	1-7/8 (48)
2"	3 (76)	1-7/8 (121)	4-3/4 (48)	3-1/8 (79)	3-1/2 (89)	2-1/8 (54)



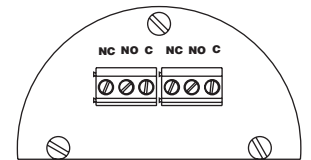
V6 with Tee



V6 with Tee and CSA, ATEX Conduit Enclosure



SPDT



DPDT

Terminal Connections
CSA, ATEX Enclosures