



## ARMSTRONG IN-LINE AND INSERTION VORTEX FLOW METERS

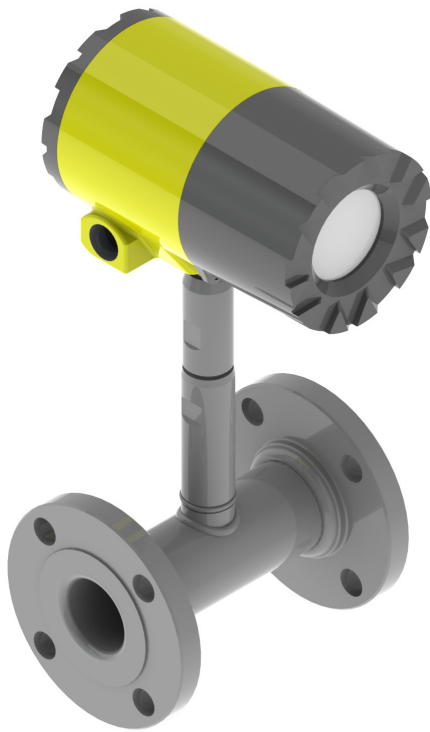




## In-Line Vortex Flow Meter

Armstrong International is pleased to offer vortex technology for measurement of steam, liquid, and gas flows. All AVF in-line models provide multivariable measurement and mass flow output for applications in industrial and institutional environments.

The flow meter is available from ½" (15 mm) (DN 15) to 12" (300 mm) (DN 300) meter sizes handling process temps from -330°F (-200°C) to 750°F (400°C) and process connections up to ANSI Class 600 (PN 64). Multivariable options include temperature, pressure, and velocity measurements for a fully compensated mass flow rate. Output communication is available via analog 4-20ma, HART™ protocol, Modbus, and BACnet™.



**Flanged Connection**



**Wafer Connection**

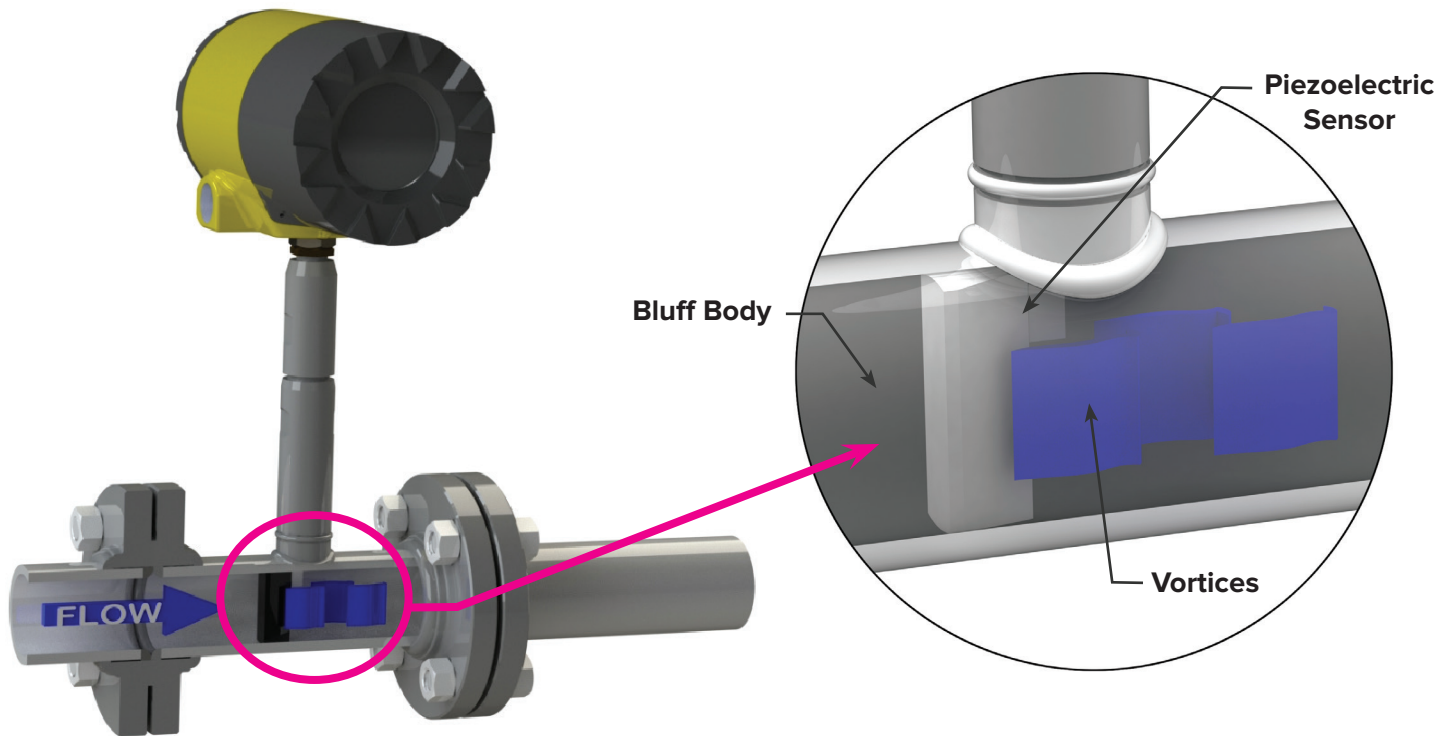
### Features

- Volumetric or mass flow
- Velocity, temperature, pressure measurements integral to meter body
- Energy calculation and output available
- 1.5% of rate accuracy or better
- Turndown up to 100:1
- Push button digital display
- Remote electronics available
- FM, FMC, ATEX, IECEx Approved

## Vortex Shedder Technology

Since the early 1970s, vortex meters have been used as a versatile, reliable measurement solution. Applicable in a variety of fluids, vortex meters can be easily installed and deliver accurate measurement over a potentially impressive turndown.

Based on the Kármán vortex street, a vortex meter measures the frequency of vortices that are shed behind a bluff body that is placed in a flow stream. As each vortex is shed, it creates high and low pressure zones which are sensed by a piezoelectric crystal. The flow meter's electronics convert these pressure pulses into electrical signals. Because the frequency of the vortices is directly proportional to the fluid's velocity, the electric signals can be used to calculate a flow rate.



## Multivariable Options

### V1 – Volumetric

Simply measures velocity and provides a volumetric flow rate. Typical for water and non-compressible fluid applications.

### V2 – Velocity and Temperature

Added temperature measurement via integral RTD is used to calculate compensated mass flow rate. Typical for saturated steam flows.

### V3 – Velocity, Temperature, and Pressure

Integral temperature and pressure sensors for fully compensated mass flow calculations. Capable of providing 3 outputs from a choice of 5 different process measurements: volumetric flow rate, mass flow rate, pressure, temperature, and density.

### E1 – Energy

Energy measurement (Btu, joules, calories, Watt-hours, Megawatt-hours, HP-hours) using integral temperature reading for either supply or return side. Must be paired with a second temperature sensor on the opposite side (supply or return) of the process.



## Performance Specifications

Accuracy		
Variable	Liquids	Gas & Steam
Volumetric Flow Rate	±0.7% of rate	±1.0% of rate
Mass Flow Rate	±1.0 % of rate	±1.5% of rate
Temperature	±2.0°F (±1°C)	±2.0°F (±1°C)
Pressure	±0.3% of full scale	±0.3% of full scale
Density	±0.3% of reading	±0.5% of reading
<b>*Mass flow rate accuracy of gas and steam is based on 50-100% of pressure range</b>		

Repeatability	
Mass Flow Rate	±0.2% of rate
Volumetric Flow Rate	±0.1% of rate
Temperature	±0.2°F (±0.1°C)
Pressure	±0.05% of full scale
Density	±0.1% of reading
Stability Over 12 Months	
Mass Flow Rate	±0.2% of rate
Volumetric Flow Rate	Negligible
Temperature	±0.9°F (±0.5°C)
Pressure	±0.1% of full scale
Density	±0.1% of reading
Response Time	
Adjustable from 1 to 100 seconds	

Process and Ambient Temperature	
Process Standard Temperature (code T)	-330°F to 500°F (-200°C to 260°C)
Process High Temperature (code H)	-330°F to 750°F (-200°C to 400°C)
Ambient Operating	-40°F to 140°F (-40°C to 60°C)
Ambient Storage	-40°F to 185°F (-40°C to 85°C)
Pressure Transducer Ratings	
Full Scale Operating Pressure	Max. Over-Range Pressure
30 psia (2 bara)	60 psia (4 bara)
100 psia (7 bara)	200 psia (14 bara)
300 psia (20 bara)	600 psia (40 bara)
500 psia (35 bara)	1000 psia (70 bara)
1500 psia (100 bara)	2500 psia (175 bara)

Power Requirements	
LP Option	12-36 VDC, 25mA, 1W max
DC Option	12-36 VDC, 300mA, 9W max
AC Option	100-240 VAC, 50/60Hz line power, 5W
Output Signals	
Analog	4-20 mA
Alarm	Solid state relay, 40 VDC
Totalizer Pulse	50 millisecond pulse, 40 VDC
Volumetric or LP Mass	One analog, one totalizer pulse, HART™
Multivariable	Up to three analog signals, three alarms, one totalizer pulse, HART™
Multivariable	Modbus or BACnet™ process monitoring
Display	
Alphanumeric 2 line x 16 character LCD digital display	
Six pushbuttons for full field configuration	
Pushbuttons can be operated with magnetic wand without removal of enclosure covers	
Display can be mounted in 90° intervals for better viewing	

# AVF Specifications & Sizing

## Physical Specifications

Wetted Materials	
Standard	316L Stainless Steel
Optional	Carbon Steel or Hastelloy C
Approvals	
FM, FMC	CLASS I, DIV. 1, GROUPS B, C, D CLASS II/III, DIV. 1, GROUPS E, F, G Type 4X and IP66, T6, Ta = -40°C to 60°C
ATEX	II 2 G Ex db IIB + T6 Gb II 2 D Ex IIIB T85°C Db IP66
IECEX	CL I, ZN 1, AEx/Ex db IIB + H2 TG Gb ZN 21, AEx/Ex tb IIIB T85°C Db

## Sizing Considerations

Required Straight Piping Conditions		
Condition	Pipe Diameters (D)	
	Upstream	Downstream
One 90° elbow before meter	10D	5D
Two 90° elbow before meter	15D	5D
Two 90° elbows out of plane before meter	25D	5D
Reduction before meter	10D	5D
Expansion before meter	20D	5D
Partially open valve before meter	25D	5D

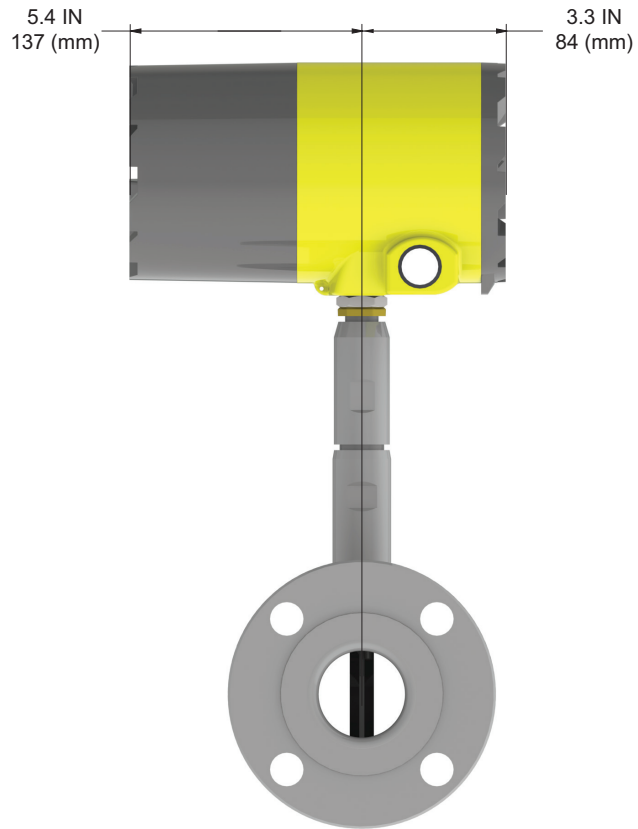
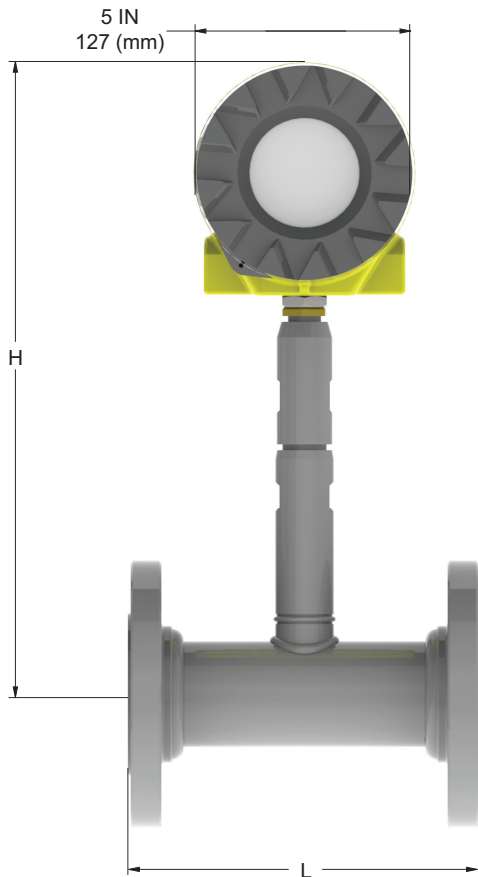
Velocity Range	
Maximum velocity, liquid	30 ft/sec (9 m/sec)
Minimum velocity, liquid	1 ft/sec (0.3 m/sec)
Maximum velocity, gas or steam	300 ft/sec (90 m/sec)
Minimum velocity, gas or steam	$\frac{5}{\sqrt{\text{density (Lb/ft}^3\text{)}}}$ for ft/sec $\frac{6.1}{\sqrt{\text{density (kg/m}^3\text{)}}}$ for m/sec



# AVF Dimensions - Flanged

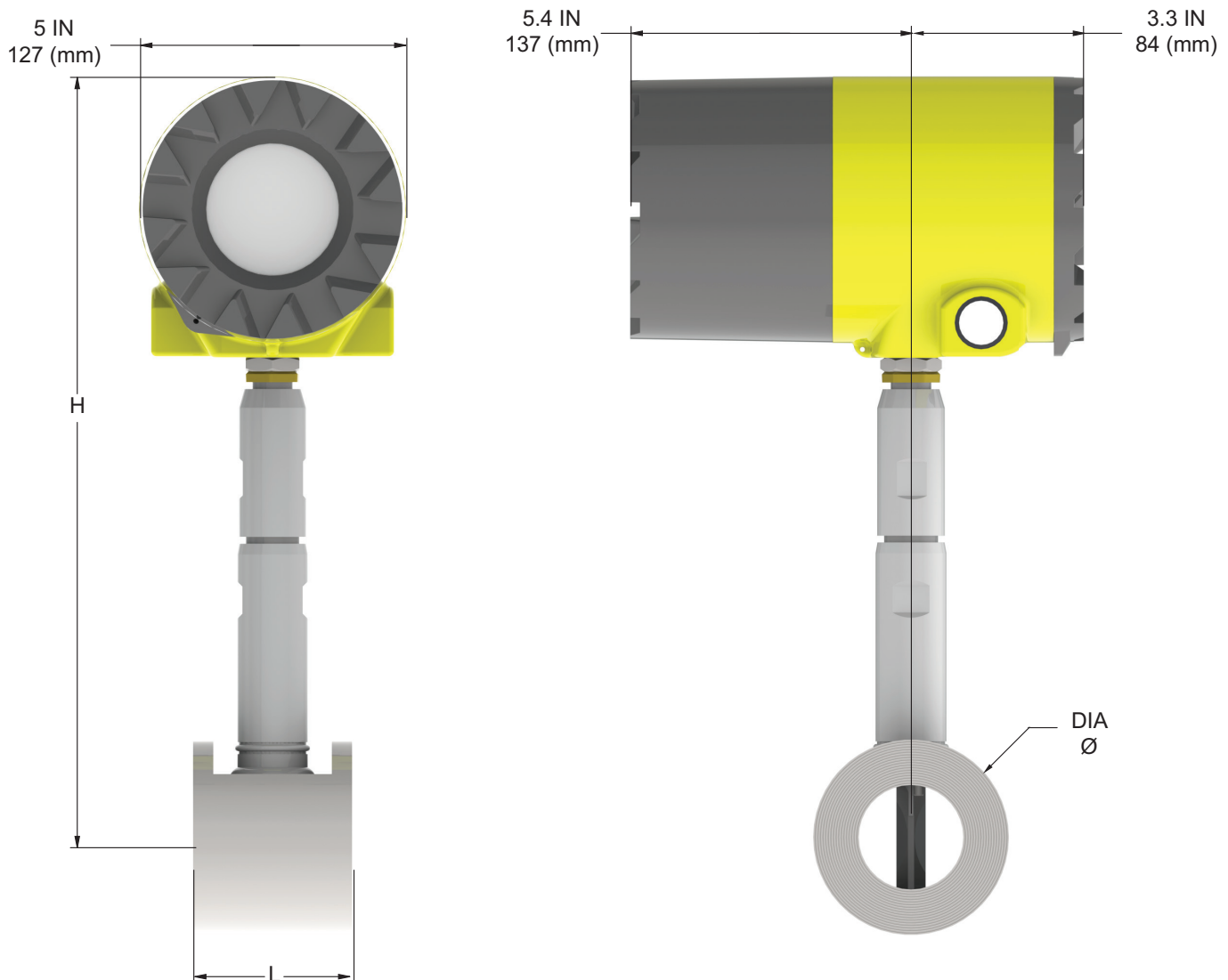
Model AVF Class 150, 300, 600, and PN 16, PN 40, PN 64			Approximate Weight LB (kg)		
Nominal Size	L Dim	H Dim	ANSI 150 (PN16)	ANSI 300 (PN40)	ANSI 600 (PN64)
½ inch (15 mm)	7.88" (200 mm)	13.40" (340 mm)	12 LB (5.5 kg)	12.5 LB (5.7 kg)	13.4 LB (6.1 kg)
¾ inch (20 mm)	7.88" (200 mm)	13.50" (343 mm)	13 LB (5.9 kg)	14.1 LB (5.7 kg)	15.6 LB (7.1 kg)
1 inch (25 mm)	7.88" (200 mm)	13.60" (345 mm)	13.5 LB (6.1 kg)	16.3 LB (7.4 kg)	16.4 LB (7.5 kg)
1 ½ inch (40 mm)	7.88" (200 mm)	13.90" (353 mm)	16.3 LB (7.4 kg)	23.3 LB (10.6 kg)	24.6 LB (11.2 kg)
2 inch (50 mm)	7.88" (200 mm)	14.20" (361 mm)	21.2 LB (9.6 kg)	26.8 LB (12.2 kg)	33.2 LB (15.1 kg)
3 inch (80 mm)	7.88" (200 mm)	14.70" (373 mm)	33 LB (15.0 kg)	41 LB (18.6 kg)	56.1 LB (25.5 kg)
4 inch (100 mm)	9.85" (250 mm)	15.20" (386 mm)	45.8 LB (20.8 kg)	66.8 LB (30.3 kg)	96 LB (43.6 kg)
6 inch (150 mm)	11.82" (300 mm)	16.30" (414 mm)	68.3 LB (31 kg)	106.3 LB (48.2 kg)	194.3 LB (88.2 kg)
8 inch (200 mm)	11.82" (300 mm)	17.30" (439 mm)	112.4 LB (51 kg)	168.4 LB (76.5 kg)	299 LB (136 kg)
10 inch (250 mm)	14.79" (376 mm)	18.30" (465 mm)	188.3 LB (85.5 kg)	263.3 LB (119.1 kg)	462.3 LB (209.9 kg)
12 inch (300 mm)	17.73" (450 mm)	19.30" (490 mm)	298.6 LB (135.6 kg)	402.6 LB (182.8 kg)	606.6 LB (275.4 kg)

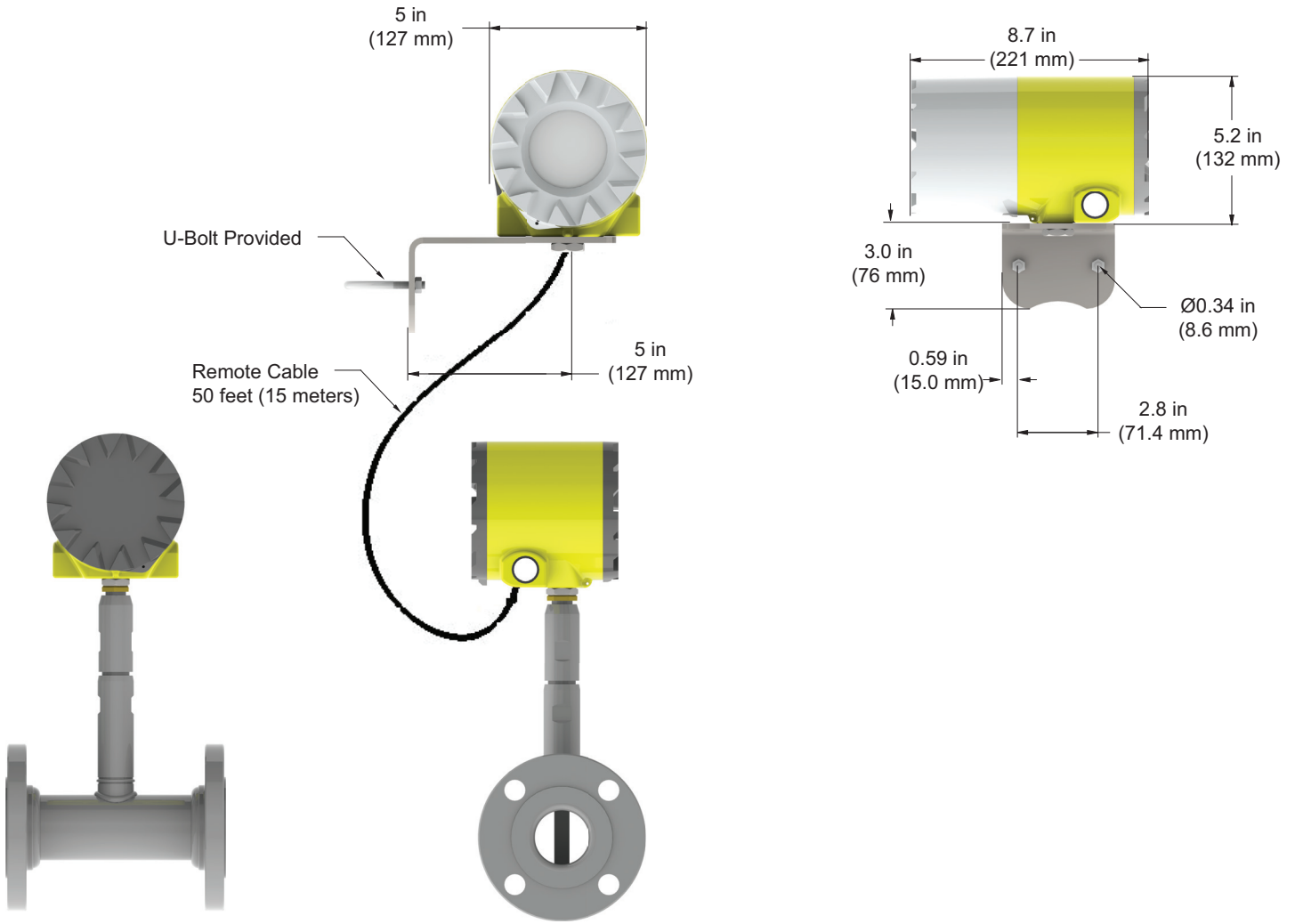
\*Add 11.5 LB (5 kg) For Remote Electronics.



# AVF Dimension - Wafer

Model AVF-W Wafer ANSI Class 600				
Nominal Size	L Dim	H Dim	Diameter Ø	LBS
½ inch (15 mm)	2.56" (65 mm)	13.60" (345 mm)	1.38" (35 mm)	9.2 (4.2 kg)
¾ inch (20 mm)	2.56" (65 mm)	13.60" (345 mm)	1.69" (43 mm)	9.5 (4.3 kg)
1 inch (25 mm)	2.56" (65 mm)	13.60" (345 mm)	2.00" (51 mm)	10.3 (4.7 kg)
1 ½ inch (40 mm)	2.56" (65 mm)	13.90" (353 mm)	2.88" (73 mm)	12.1 (5.5 kg)
2 inch (50 mm)	2.56" (65 mm)	14.10" (358 mm)	3.62" (92 mm)	14.1 (6.4 kg)
3 inch (80 mm)	2.56" (65 mm)	14.60" (371 mm)	5.00" (127 mm)	18.7 (8.5 kg)
4 inch (100 mm)	2.56" (65 mm)	15.10" (384 mm)	6.19" (157 mm)	23.4 (10.6 kg)





**Remote electronics option available on all models**



# AVF Ordering Information

Product Code	
<b>AVF</b>	Armstrong Inline Vortex
<b>Process Connections</b>	
<b>150</b>	ANSI 150# Flange
<b>300</b>	ANSI 300# Flange
<b>600</b>	ANSI 600# Flange
<b>W</b>	Wafer ANSI 600#
<b>16</b>	PN 16
<b>40</b>	PN 40
<b>64</b>	PN 64
<b>Body Size</b>	
<b>05</b>	½ inch nominal bore (15 mm)
<b>75</b>	¾ inch nominal bore (20 mm)
<b>1</b>	1 inch nominal bore (25 mm)
<b>15</b>	1 ½ inch nominal bore (40 mm)
<b>2</b>	2 inch nominal bore (50 mm)
<b>3</b>	3 inch nominal bore (80 mm)
<b>4</b>	4 inch nominal bore (100 mm)
<b>6</b>	6 inch nominal bore (150 mm)
<b>8</b>	8 inch nominal bore (200 mm)
<b>10</b>	10 inch nominal bore (250 mm)
<b>12</b>	12 inch nominal bore (300 mm)
<b>Body Material</b>	
<b>SS</b>	316 Stainless Steel
<b>CS</b>	Carbon Steel
<b>H</b>	Hastelloy
<b>Electronics</b>	
<b>D</b>	NEMA 4X Enclosure
<b>R1</b>	Remote NEMA 4X Enclosure, 50 foot cable (15 meters)
<b>R2</b>	Remote NEMA 4X Enclosure, 25 foot cable (7 meters)
<b>Multivariable Options</b>	
<b>V1</b>	Volumetric
<b>V2</b>	Velocity, Temperature
<b>V3</b>	Velocity, Temperature, Pressure
<b>V4</b>	Velocity, Temperature, External Pressure
<b>E1</b>	Energy
<b>E2</b>	Energy, Pressure
<b>Input Power</b>	
<b>LP</b>	12-36VDC, 25mA, 1W max, loop powered, output option 1 only
<b>DC</b>	12-36VDC, 300mA, 9W max, output options 2, 3, 4, 5, 6, 7
<b>AC</b>	10-240VAC, 5W max, output options 2, 3, 4, 5, 6, 7
<b>Output</b>	
<b>1</b>	One 4-20mA analog output, scaled frequency, one pulse, HART™, LP power only
<b>2</b>	One 4-20mA analog output, scaled frequency, one alarm, one pulse, HART™, DC or AC power
<b>3</b>	One 4-20mA analog output, scaled frequency, one alarm, one pulse, Modbus, DC or AC power
<b>4</b>	One 4-20mA analog output, scaled frequency, one alarm, one pulse BACnet™, DC or AC power
<b>5</b>	Three 4-20mA analog outputs, scaled frequency, three alarms, one pulse, HART™, DC or AC power
<b>6</b>	Three 4-20mA analog outputs, scaled frequency, three alarms, one pulse, Modbus, DC or AC power
<b>7</b>	Three 4-20mA analog outputs, scaled frequency, three alarms, one pulse, BACnet™, DC or AC power
<b>Temperature Options</b>	
<b>T</b>	Standard temperature, Process temperature -330°F - 500°F (-200°C - 260°C)
<b>H</b>	High temperature, Process temperature up to 750°F (400°C)
<b>Pressure Options</b>	
<b>N</b>	No pressure sensor
<b>1</b>	Maximum 30 psia (2 bara), Proof 60 psia (4 bara)
<b>2</b>	Maximum 100 psia (7 bara), Proof 200 psia (14 bara)
<b>3</b>	Maximum 300 psia (20 bara), Proof 600 psia (41 bara)
<b>4</b>	Maximum 500 psia (34 bara), Proof 1000 psia (64 bara)
<b>5</b>	Maximum 1500 psia (100 bara), Proof 2500 psia (175 bara)

AVF 150 4 SS D V2 DC 2 T N

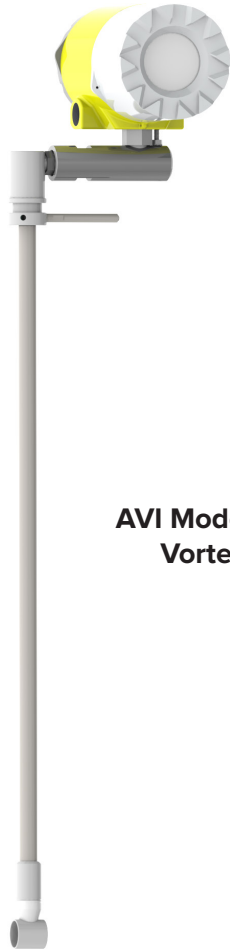


# Insertion Vortex Flow Meter

## Introducing the Insertion Vortex Flow Meter

The AVI insertion models provide all the same multivariable measurement and mass flow output features as the AVF in-line model in a robust, welded design.

The AVI is available for pipe sizes 2" (50 mm) (DN 50) and above with either flanged or NPT process connections up to ANSI Class 600 (PN64). Optional retractor tool provides easy hot-tap installation and removal.



**AVI Model Insertion  
Vortex Meter**



**AVI Model with Packing Gland  
and Retractor Options**

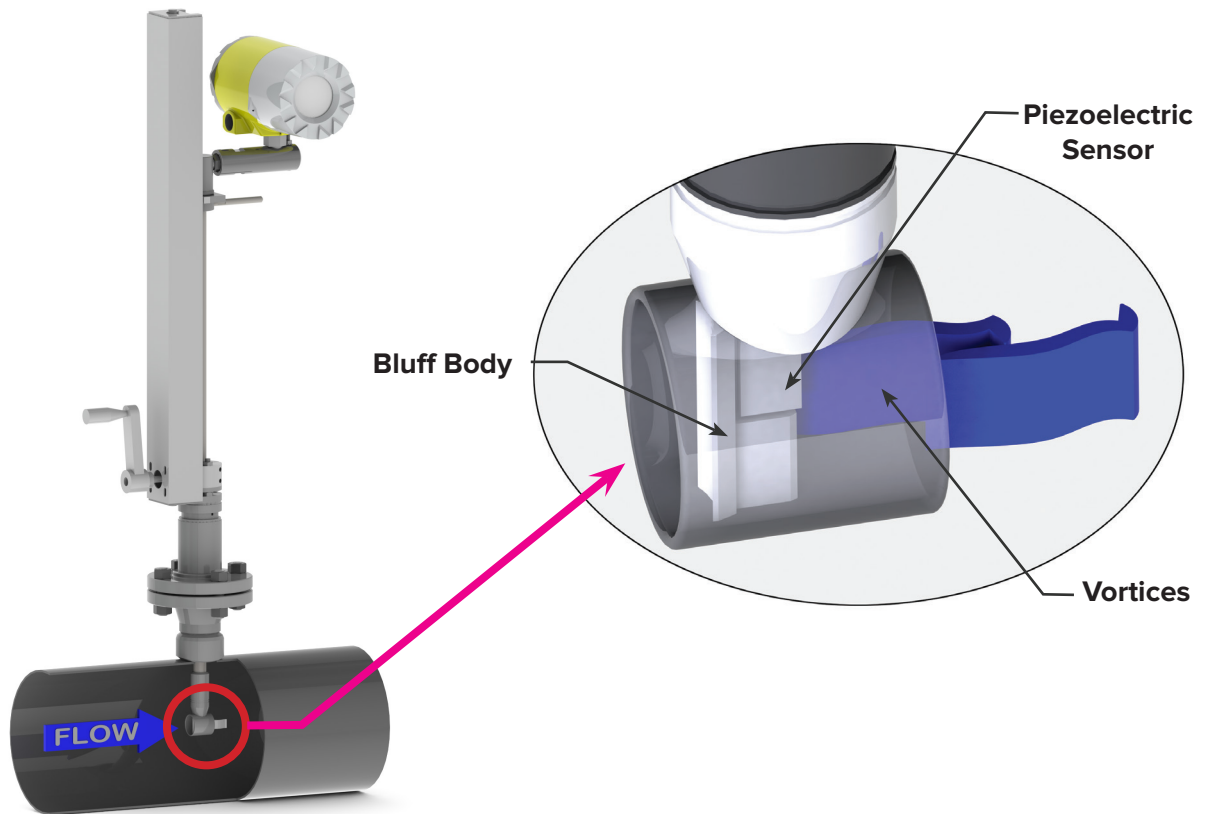
## Features

- Compensated mass flow and energy calculations for gases, liquids, and steam
- Hot tap installation does not require shut down or process interruption
- Up to  $\pm 1.5\%$  accuracy over a wide turndown in flow rates
- Reliable construction – no moving parts
- Analog, HART™, Modbus, and BACnet™ communication
- FM, FMC, ATEX, IECEx Approved

## Insertion Meter Measurement Principle

The insertion vortex utilizes the same operating principle of the in-line meter. However, rather than placing a bluff body across the entire pipe ID, the bluff body is strategically placed in a position within the pipe to measure a single local velocity and yield an average volumetric flow rate.

Multivariable measurement is available through the incorporation of temperature and pressure sensors for an output of compensated mass flow rate for gases, liquids, and steam.



## Sizing Considerations

Required Straight Piping Conditions		
Condition	Pipe Diameters (D)	
	Upstream	Downstream
One 90° elbow before meter	10D	5D
Two 90° elbow before meter	15D	5D
Two 90° elbows out of plane before meter	25D	5D
Reduction before meter	10D	5D
Expansion before meter	20D	5D
Partially open valve before meter	25D	5D

Velocity Range	
Maximum velocity, liquid	30 ft/sec (9 m/sec)
Minimum velocity, liquid	1 ft/sec (0.3 m/sec)
Maximum velocity, gas or steam	300 ft/sec (90 m/sec)
Minimum velocity, gas or steam	$\frac{5}{\sqrt{\text{density (Lb/ft}^3\text{)}}}$ for ft/sec
	$\frac{6.1}{\sqrt{\text{density (kg/m}^3\text{)}}}$ for m/sec

## Performance Specifications

Accuracy		
Variable	Liquids	Gas & Steam
Volumetric Flow Rate	±1.2% of rate	±1.5% of rate
Mass Flow Rate	±1.5 % of rate	±2.0% of rate
Temperature	±2.0°F (±1°C)	±2.0°F (±1°C)
Pressure	±0.3% of full scale	±0.3% of full scale
Density	±0.3% of reading	±0.5% of reading
<b>*Mass flow rate accuracy of gas and steam is based on 50-100% of pressure range</b>		

Repeatability	
Mass Flow Rate	±0.2% of rate
Volumetric Flow Rate	±0.1% of rate
Temperature	±0.2°F (±0.1°C)
Pressure	±0.05% of full scale
Density	±0.1% of reading
Stability Over 12 Months	
Mass Flow Rate	±0.2% of rate
Volumetric Flow Rate	Negligible
Temperature	±0.9°F (±0.5°C)
Pressure	±0.1% of full scale
Density	±0.1% of reading
Response Time	
Adjustable from 1 to 100 seconds	

Process and Ambient Temperature	
Process Standard Temperature (code T)	-330°F to 500°F (-200°C to 260°C)
Process High Temperature (code H)	-330°F to 750°F (-200°C to 400°C)
Ambient Operating	-40°F to 140°F (-40°C to 60°C)
Ambient Storage	-40°F to 185°F (-40°C to 85°C)
Pressure Transducer Ratings	
Full Scale Operating Pressure	Max. Over-Range Pressure
30 psia (2 bara)	60 psia (4 bara)
100 psia (7 bara)	200 psia (14 bara)
300 psia (20 bara)	600 psia (40 bara)
500 psia (35 bara)	1000 psia (70 bara)
1500 psia (100 bara)	2500 psia (175 bara)

Power Requirements	
LP Option	12-36 VDC, 25mA, 1W max
DC Option	12-36 VDC, 300mA, 9W max
AC Option	100-240 VAC, 50/60Hz line power, 5W
Output Signals	
Analog	4-20 mA
Alarm	Solid state relay, 40 VDC
Totalizer Pulse	50 millisecond pulse, 40 VDC
Volumetric or LP Mass	One analog, one totalizer pulse, HART™
Multivariable	Up to three analog signals, three alarms, one totalizer pulse, HART™
Multivariable	Modbus or BACnet™ process monitoring
Display	
Alphanumeric 2 line x 16 character LCD digital display	
Six pushbuttons for full field configuration	
Pushbuttons can be operated with magnetic wand without removal of enclosure covers	
Display can be mounted in 90° intervals for better viewing	

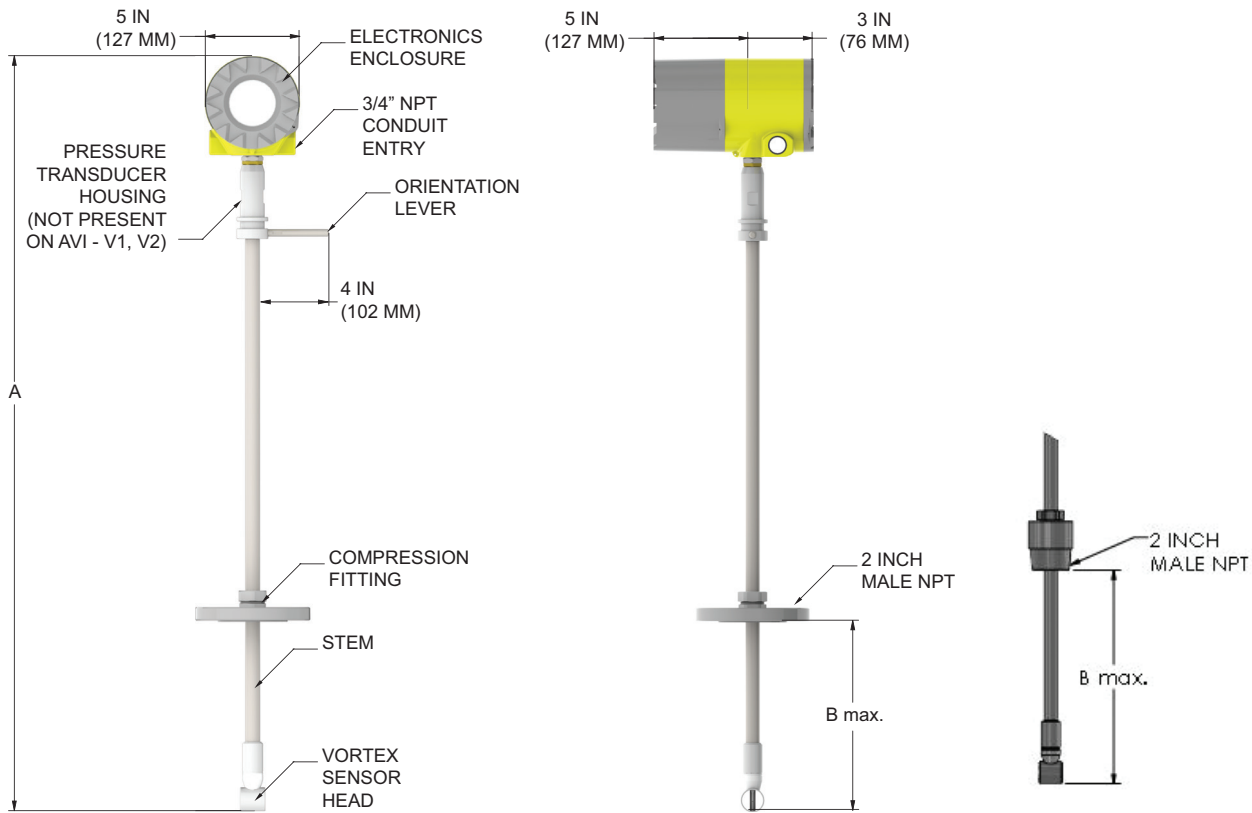
## Operating Specifications

Pressure Ratings			
Style Connection	Process	Rating Code	Ordering
Compression Fitting	2" (50 mm) MNPT	ANSI 600#	CT8
	2" (50 mm) 150# flange	ANSI 150#	CF8150
	2" (50 mm) 300# flange	ANSI 300#	CF8300
	2" (50 mm) 600# flange	ANSI 600#	CF8600
Packing Gland	2" (50 mm) MNPT	50 psig (3.5 barg)	PT8
	2" (50 mm) 150# flange	50 psig (3.5 barg)	PF8150
	2" (50 mm) 300# flange	50 psig (3.5 barg)	PF8300
Packing Gland & Removable Retractor	2" (50 mm) MNPT	ANSI 300#	PT8RR
	2" (50 mm) 150# flange	ANSI 150#	PF8150RR
	2" (50 mm) 300# flange	ANSI 300#	PF8300RR
Packing Gland & Permanent Retractor	2" (50 mm) MNPT	ANSI 600#	PT8R
	2" (50 mm) 150# flange	ANSI 150#	PF8150R
	2" (50 mm) 300# flange	ANSI 300#	PF8300R
	2" (50 mm) 600# flange	ANSI 600#	PF8600R

## Physical Specifications

Wetted Materials	
Standard	316L Stainless Steel
DuPont Teflon based thread sealant on models with pressure transducer	
DuPont Teflon packing on standard temperature models with packing gland	
Graphite based packing on high temperature models with packing gland	
Approvals	
FM, FMC	CLASS I, DIV. 1, GROUPS B, C, D CLASS II/III, DIV. 1, GROUPS E, F, G Type 4X and IP66, T6, Ta = -40°C to 60°C
ATEX	II 2 G Ex d IIB + H2 T6 II 2 D EX tD A21 IP66 T85°C, Ta = -40°C to 60°C
IECEX	Ex d IIB + H2 T6 Ex tD A21 IP66 T85°C, Ta = -40°C to 60°C

## AVI Compression Fitting Models



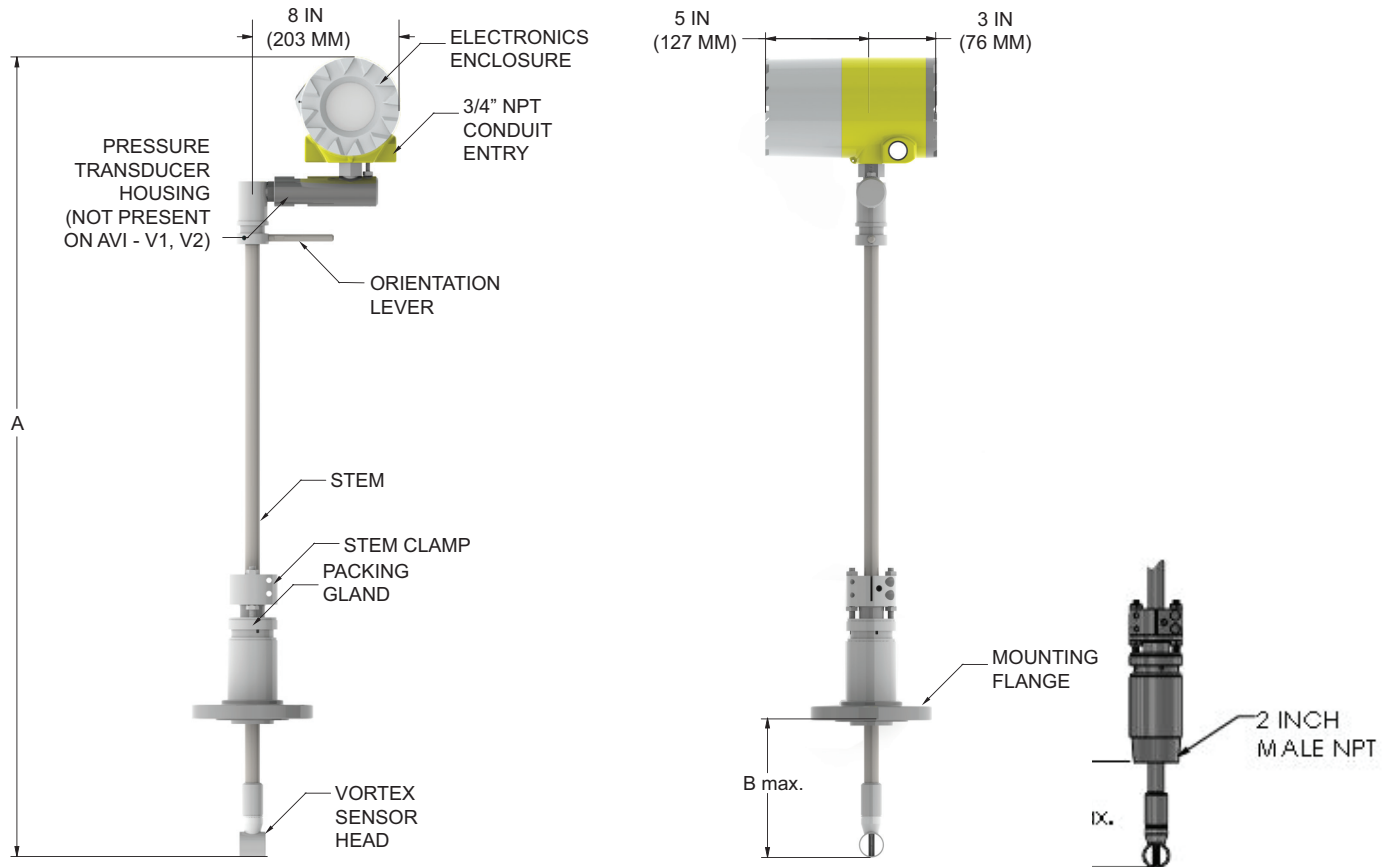
Model AVI - V1, V2		CL/Comp Act Length in (mm)		SL/Standard Length in (mm)		EL/Extended Length in (mm)	
		A	B	A	B	A	B
CT8	Compression Fitting, Male NPT	21.6 (549)	9.8 (249)	38.0 (965)	26.2 (665)	50 (1 270)	38.2 (970)
CF8150	Compression Fitting, 2 Inch, 150 LB Flange	21.6 (549)	10.9 (277)	38.0 (965)	27.3 (693)	50 (1 270)	39.3 (998)
CF5016	Compression Fitting, DN50, PN16 Flange	21.6 (549)	10.9 (277)	38.0 (965)	27.3 (693)	50 (1 270)	39.3 (998)
CF8300	Compression Fitting, 2 Inch, 300 LB Flange	21.6 (549)	10.8 (274)	38.0 (965)	27.2 (691)	50 (1 270)	39.2 (996)
CF5040	Compression Fitting, DN50, PN40 Flange	21.6 (549)	10.8 (274)	38.0 (965)	27.2 (691)	50 (1 270)	39.2 (996)
CF8600	Compression Fitting, 2 Inch, 600 LB Flange	21.6 (549)	10.4 (264)	38.0 (965)	26.8 (681)	50 (1 270)	38.8 (986)
CF5064	Compression Fitting, DN50, PN64 Flange	21.6 (549)	10.4 (264)	38.0 (965)	26.8 (681)	50 (1 270)	38.8 (986)

Model AVI - V3		CL/Comp Act Length in (mm)		SL/Standard Length in (mm)		EL/Extended Length in (mm)	
		A	B	A	B	A	B
CT8	Compression Fitting, Male NPT	24.6 (625)	9.8 (249)	41.0 (1 041)	26.2 (665)	53 (1 346)	38.2 (970)
CF8150	Compression Fitting, 2 Inch, 150 LB Flange	24.6 (625)	10.9 (277)	41.0 (1 041)	27.3 (693)	53 (1 346)	39.3 (998)
CF5016	Compression Fitting, DN50, PN16 Flange	24.6 (625)	10.9 (277)	41.0 (1 041)	27.3 (693)	53 (1 346)	39.3 (998)
CF8300	Compression Fitting, 2 Inch, 300 LB Flange	24.6 (625)	10.8 (274)	41.0 (1 041)	27.2 (691)	53 (1 346)	39.2 (996)
CF5040	Compression Fitting, DN50, PN40 Flange	24.6 (625)	10.8 (274)	41.0 (1 041)	27.2 (691)	53 (1 346)	39.2 (996)
CF8600	Compression Fitting, 2 Inch, 600 LB Flange	24.6 (625)	10.4 (264)	41.0 (1 041)	26.8 (681)	53 (1 346)	38.8 (986)
CF5064	Compression Fitting, DN50, PN64 Flange	24.6 (625)	10.4 (264)	41.0 (1 041)	26.8 (681)	53 (1 346)	38.8 (986)

# AVI Dimensions

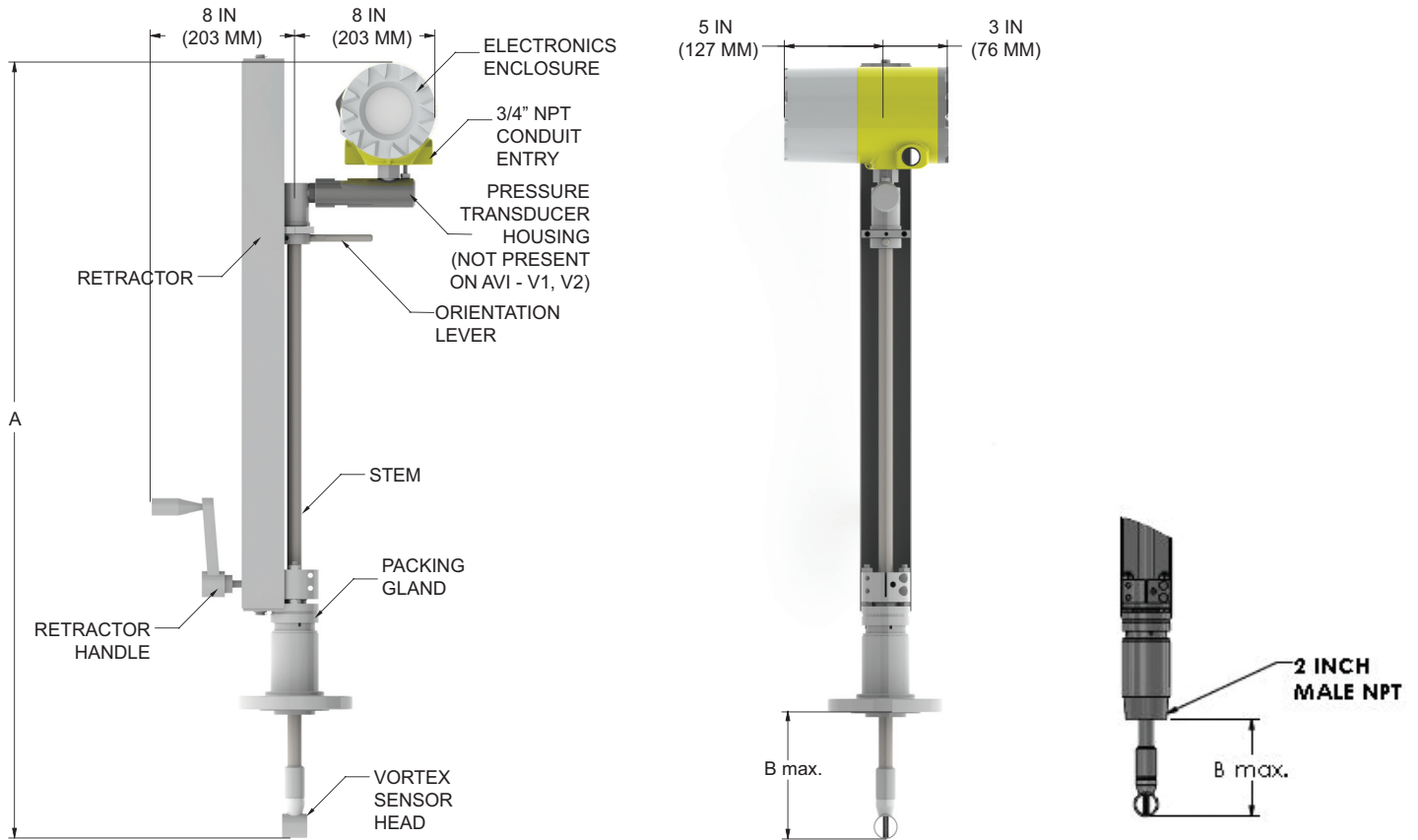
## AVI Packing Gland Models

**REMOVABLE RETRACTOR CAN BE USED WITH THESE MODELS**



Model AVI		SL/Standard Length in (mm)		EL/Extended Length in (mm)	
		A	B	A	B
PT8	Packing Gland, Male NPT	40.5 (1 029)	21.5 (546)	52.5 (1 334)	33.5 (851)
PF8150	Packing Gland, 2 Inch, 150 LB Flange	40.5 (1 029)	21.5 (546)	52.5 (1 334)	33.5 (851)
PF5016	Packing Gland, DN50, PN16 Flange	40.5 (1 029)	21.5 (546)	52.5 (1 334)	33.5 (851)
PF8300	Packing Gland, 2 Inch, 300 LB Flange	40.5 (1 029)	21.5 (546)	52.5 (1 334)	33.5 (851)
PF5040	Packing Gland, DN50, PN40 Flange	40.5 (1 029)	21.5 (546)	52.5 (1 334)	33.5 (851)

## AVI Packing Gland Models with Permanent Retractor



Model AVI With Permanent Retractor		SL/Standard Length in (mm)		EL/Extended Length in (mm)	
		A	B	A	B
PT8R	Packing Gland, Male NPT	40.5 (1 029)	21.5 (546)	52.5 (1 334)	33.5 (851)
PF8150R	Packing Gland, 2 Inch, 150 LB Flange	40.5 (1 029)	21.5 (546)	52.5 (1 334)	33.5 (851)
PF5016R	Packing Gland, DN50, PN16 Flange	40.5 (1 029)	21.5 (546)	52.5 (1 334)	33.5 (851)
PF8300R	Packing Gland, 2 Inch, 300 LB Flange	40.5 (1 029)	21.5 (546)	52.5 (1 334)	33.5 (851)
PF5040R	Packing Gland, DN50, PN40 Flange	40.5 (1 029)	21.5 (546)	52.5 (1 334)	33.5 (851)
PF8600R	Packing Gland, 2 Inch, 600 LB Flange	40.5 (1 029)	21.5 (546)	52.5 (1 334)	33.5 (851)
PF5064R	Packing Gland, DN50, PN64 Flange	40.5 (1 029)	21.5 (546)	52.5 (1 334)	33.5 (851)



# AVI Ordering Information

Product Code	
AVI	Armstrong Insertion Vortex
<b>Process Connections</b>	
CT8	Compression, 2 inch NPT
CF8150	Compression, 2 inch 150# Flange
CF5016	Compression, DN50 PN16 Flange
CF8300	Compression, 2 inch 300# Flange
CF5040	Compression, DN50 PN 40 Flange
CF8600	Compression, 2 inch 600# Flange
CF5064	Compression, DN50 PN64 Flange
PT8	Packing Gland, 2 inch NPT
PF8150	Packing Gland, 2 inch 150# Flange
PF5016	Packing Gland, DN50 PN16 Flange
PF8300	Packing Gland, 2 inch 300# Flange
PF5040	Packing Gland, DN50 PN40 Flange
PT8R	Packing Gland, 2 inch NPT, Retractor
PF8150R	Packing Gland, 2 inch 150# Flange, Retractor
PF5016R	Packing Gland, DN50 PN16 Flange, Retractor
PF8300R	Packing Gland, 2 inch 300# Flange, Retractor
PF5040R	Packing Gland, DN50 PN40 Flange, Retractor
PF8600R	Packing Gland, 2 inch 600# Flange, Retractor
PF5064R	Packing gland, DN50 PN64 Flange, Retractor
<b>Probe Length</b>	
S	Standard Length
C	Compact Length
E	Extended Length
<b>Electronics</b>	
D	NEMA 4X Enclosure
R1	Remote NEMA 4X Enclosure, 50 foot cable (15 meters)
R2	Remote NEMA 4X Enclosure, 25 foot cable (7 meters)
<b>Multivariable Options</b>	
V1	Volumetric
V2	Velocity, Temperature
V3	Velocity, Temperature, Pressure
V4	Velocity, Temperature, External Pressure
E1	Energy
E2	Energy, Pressure
<b>Input Power</b>	
LP	12-36VDC, 25mA, 1W max, loop powered, output option 1 only
DC	12-36VDC, 300mA, 9W max, output options 2, 3, 4, 5, 6, 7
AC	10-240VAC, 5W max, output options 2, 3, 4, 5, 6, 7
<b>Output</b>	
1	One 4-20mA analog output, scaled frequency, one pulse, HART™, LP power only
2	One 4-20mA analog output, scaled frequency, one alarm, one pulse, HART™, DC or AC power
3	One 4-20mA analog output, scaled frequency, one alarm, one pulse, Modbus, DC or AC power
4	One 4-20mA analog output, scaled frequency, one alarm, one pulse BACnet™, DC or AC power
5	Three 4-20mA analog outputs, scaled frequency, three alarms, one pulse, HART™, DC or AC power
6	Three 4-20mA analog outputs, scaled frequency, three alarms, one pulse, Modbus, DC or AC power
7	Three 4-20mA analog outputs, scaled frequency, three alarms, one pulse, BACnet™, DC or AC power
<b>Temperature Options</b>	
T	Standard temperature, Process temperature -330°F - 500°F (-200°C - 260°C)
H	High temperature, Process temperature up to 750°F (400°C)
<b>Pressure Options</b>	
N	No pressure sensor
1	Maximum 30 psia (2 bara), Proof 60 psia (4 bara)
2	Maximum 100 psia (7 bara), Proof 200 psia (14 bara)
3	Maximum 300 psia (20 bara), Proof 600 psia (41 bara)
4	Maximum 500 psia (34 bara), Proof 1000 psia (64 bara)
5	Maximum 1500 psia (100 bara), Proof 2500 psia (175 bara)

AVI CF8150 S D V2 DC 2 T N

Designs, materials, weights and performance ratings are approximate and subject to change without notice. Visit [armstronginternational.com/veris](http://armstronginternational.com/veris) for up-to-date information.







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