



Metering Flow... Naturally!

BIF Model 20181 Cast Iron Venturi

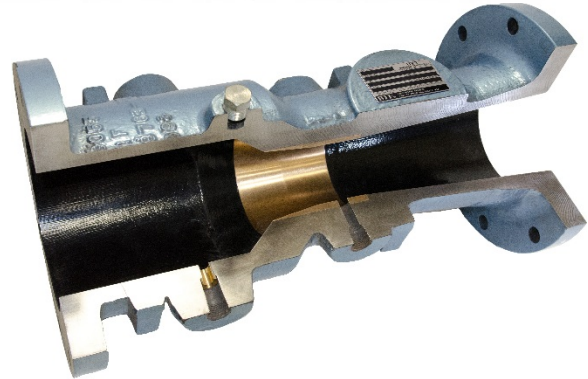
The BIF Model 20181 Universal Venturi Tube (UVT[®]) is a highly accurate differential producing primary element for measuring Water, Waste Water, Gases, Air and many other fluids, for municipal and industrial applications.

The Universal venturi Tube is a multipurpose, short laying length efficient and economical primary element device. The UVT is time proven and its performance is unmatched in the industry. It is the clear and outstanding leader for proven, substantiated and documented performance.

The Model 20181 with its high enduring accuracy of $\pm 0.5\%$ of actual flow rate, has been established and proven by thousands of laboratory trials, and is ensured by its rugged, durable and self-scouring construction.

*High enduring accuracy of
 $\pm 0.5\%$ of actual flow rate
(Uncalibrated)*

Wide flow ranges are possible because of the constant discharge coefficient (C). The secondary differential pressure instrumentation is typically the limiting factor in determining flow rate range and turndown capabilities. Low head loss is assured by the efficient truncated pressure recovery cone designed into the venturi. This truncated cone allows for the



venturi's short flange to flange length, thus minimizing the installation space for the meter.

The proven UVT Hydraulic profile conditions the flow profile as it enters the venturi so that differential signal is stable and predictable. This profile is also responsible for the overall performance of the Universal Venturi Tube.

Annular chambers at the high and low pressure taps are no longer needed thus avoiding concerns about collection of solids and sediments and their associated maintenance concerns. No in-line or on-line calibration is ever required for this primary element.

Typical Applications

Raw Water

Finsihed Water

Filter Effluent Water

Raw Waste Water

Aeration Air

Industrial Waste Water

Transmission Main Metering

Custody Transfer of Fluid

Other specialty applications as per the factory



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Engineering Specification

The metering design shall be a differential pressure producing type, utilizing pure static pressure sensed at the inlet and throat. The differential pressure shall indicate static pressure change only.

The entrance section shall be a cylindrical section of similar diameter as the pipe in which the meter is being installed. The high-pressure tap shall be installed in this entrance section. Vent and drain ports shall be included in the venturi entrance section on a 90 degree plane to metering taps.

The entrance section shall incorporate a hydraulic shape employing at least two-vena contractae.

The throat section shall be a cylindrical section with a length at least 0.50 times the throat diameter. The low-pressure tap shall be installed in the throat section.

The pressure recovery section (outlet cone) shall be truncated and have an included angle of 10 degrees.

The metering element shall not have debris collecting cavities or annular chambers, and shall have a single pressure connection at the inlet and throat on the horizontal centerline.

The flow meter body shall be constructed of cast iron ASTM A126 Class B. The throat liner and pressure tap bushings shall be Type 316 Stainless Steel. The flow meter flanges shall be ANSI Class 125 Flat Faced.

The flow meter shall be hydrostatically tested at twice the working pressure for a period of not

less than 10 minutes. Hydrostatic testing of venturi shall be performed at the factory by placing the body in tension using blind flanges to seal the ends of the venturi. Hydrostatic testing by the use of internal presses to simulate hydrostatic pressure is prohibited.

The entire flow meter except the throat liner, flange faces and pressure tap bushings shall be coated with epoxy paint that meets the requirements of the United States EPA, and is NSF 61 approved for potable water applications.

Coefficient values and tolerances shall be based on actual calibrations, performed by a hydraulic laboratory, with standards traceable to NIST and in conformance with standard calibration protocol

The substantiation data shall indicate that the venturi meter discharge coefficient is independent of line size and beta ratio. In addition, the test data shall prove that the coefficient remains constant over the range of Reynolds Numbers and down to 75,000.

Test results from the calibration of at least 30 hydraulically similar meters used for this substantiation shall show that the discharge coefficient 2 times standard deviation is no greater than ± 0.5 percent.

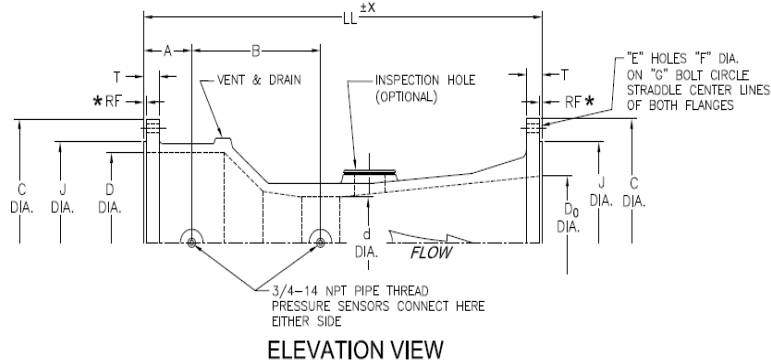
The Substantiation shall show that the discharge coefficient 2 times standard deviation is no greater than $\pm 0.5\%$

Effects of upstream piping configuration shall be known and based on testing performed by a recognized hydraulic laboratory.

Substantiation shall show headloss as a function of the velocity head expended.



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ELEVATION VIEW

D	d	D ₀	A	B	125# FLANGE					250# FLANGE						LL	X
					C	T	E	F	G	C	J	T	RF	E	F		
4	A-1.800	2.9	6	3.3	9	15/16	8	7 1/2	10	6 15/16	1 1/4	1/16	8	7/8	7 7/8	14	±1/8
	B-2.400	3.4		13													
	C-2.900	3.7		19													
6	A-2.700	4.2	6	4.9	11	1	8	9 1/2	12 1/2	9 11/16	1 7/16	12	12	10 5/8	20	±1/8	
	B-3.600	4.9		19													
	C-4.350	5.4		25													
8	A-3.600	5.6	6	6.5	13 1/2	1 1/8	8	7/8	15	11 15/16	1 5/8	12	12	13	25	±1/8	
	B-4.800	6.6		23													
	C-5.800	7.2		27													
10	A-4.800	7.2	6	8.3	16	1 3/16	12	1	17 1/2	14 1/16	1 7/8	16	16	15 1/4	29	±1/8	
	B-5.800	8.0		34													
	C-7.250	8.9		31													
12	A-5.800	8.7	6	10.0	19	1 1/4	12	17	20 1/2	16 7/16	2	16	16	17 3/4	34	±1/8	
	B-7.250	9.9		38													
	C-8.700	10.7		35													
14	A-6.300	9.6	6	11.4	21	1 3/8	12	18 3/4	23	18 15/16	2 1/8	20	20	20 1/4	38	±1/4	
	B-8.700	11.7		42													
	C-10.150	12.4		39													
16	A-7.250	10.9	6	13.1	23 1/2	1 7/16	16	1 1/8	25 1/2	21 1/16	2 1/4	20	20	22 1/2	42	±1/4	
	B-10.150	13.4		48													
	C-11.600	14.2		43													
18	A-8.700	13.0	6	15.1	25	1 9/16	16	1 1/4	28	23 5/16	2 3/8	24	24	24 3/4	48	±1/4	
	B-10.150	14.3		52													
	C-13.050	15.9		47													
20	A-10.150	14.8	6	17.0	27 1/2	1 11/16	20	1 1/4	30 1/2	25 9/16	2 1/2	24	24	27	52	±1/4	
	B-11.600	16.0		62													
	C-14.500	17.7		55													
24	A-11.600	17.4	6	20.1	32	1 7/8	20	1 3/8	36	30 1/4	2 3/4	24	24	32	62	±1/4	
	B-14.500	19.9		66													
	C-17.400	21.2		55													

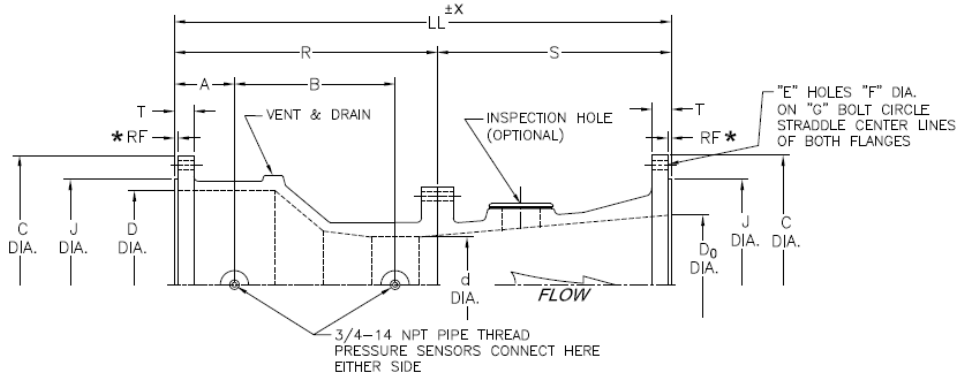
Dimensions in Inches

Note: 125# Flanges are Flat Faced

Note: 250# Flanges have 1/16" Raised Face



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ELEVATION VIEW

D	d	D _o	A	B	125# FLANGE					250# FLANGE						LL	X																
					C	T	E	F	G	C	J	T	RF	E	F			G															
30	A-13.050	20.2	8	24.1	38 3/4	2 1/8	28	1 3/8	36	43	37 3/16	3	1/16	28	2	39 1/4	76	±3/8															
	B-17.400	23.4		26.8																													
	C-21.750	26.6		29.0																													
36	A-17.400	25.7		30.1	46	2 3/8	32	1 5/8	42 3/4					50	43 11/16	3 3/8	1/16		32	2	46	90	±3/8										
	B-21.750	29.4		32.7																													
	C-26.100	31.8		34.8																													
42	A-18.900	28.5		34.2	53	2 5/8	36	1 5/8	49 1/2										57	50 7/16	3 11/16	1/16		36	2 1/4	52 3/4	102	±3/8					
	B-26.100	34.7		38.5																													
	C-30.450	37.1		40.6																													
48	A-21.750	32.8		39.1	59 1/2	2 3/4	44	1 5/8	56															65	58 7/16	4	1/16		40	2 1/4	60 3/4	116	±3/8
	B-30.450	40.3		44.3																													
	C-34.800	42.3		46.4																													
54	A-26.100	38.3	45.2	66 1/4	3	44	2	62 3/4	Designed for 150PSI Operating Pressure 250# Rated Flanges are not available									130											±1/2				
	B-30.450	42.1	47.8															120															
	C-39.150	47.6	52.2															120															
60	A-26.100	39.9	48.1	73	3 1/8	52	2	69 1/4	Designed for 150PSI Operating Pressure 250# Rated Flanges are not available						145	±1/2																	
	B-34.800	47.5	53.8												133																		
	C-43.500	52.9	58.0												133																		

CONTACT FACTORY FOR LINE SIZES GREATER THAN 60"

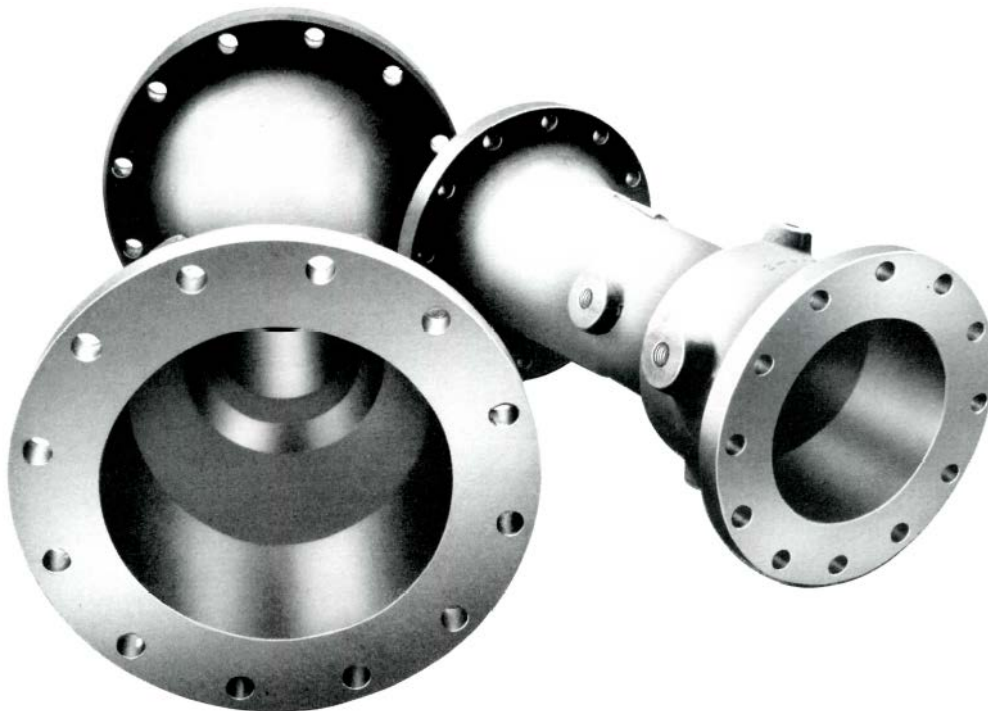
Dimensions in Inches

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