



VORTEX FLOWMETER



ISO 9001
Quality 

ISO 14001
Environment 

OHSAS 18001
Health & Safety 

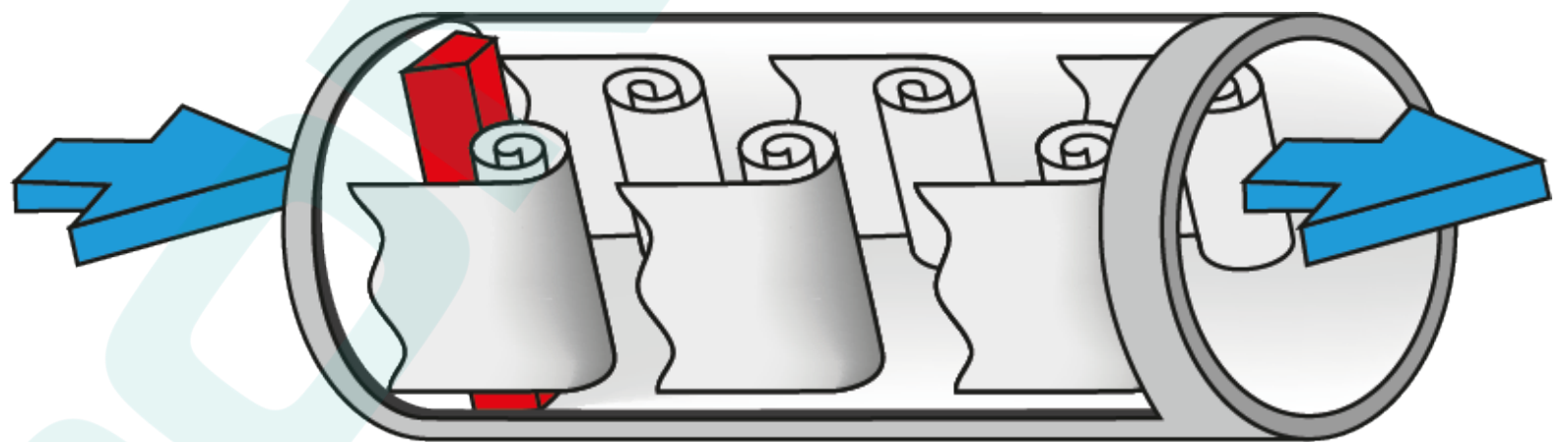
VORTEX FLOWMETER

DESCRIPTION

Vortex flowmeters operate based on the KARMAN principle. It provides an advantage to the user for massive and volumetric flow measuring of some fluids such as liquids, gases, and steam. With this product, measurements can be taken with an accuracy of 0.5% in liquid measurements and 1.0% in gas and steam measurements. For fewer error rates, high sensitivity of up to 0.2% can be achieved by precise calibration in our ISO 17025-certified calibration laboratories.

In the measurement logic based on the Von Karman Vortex path principle, the flow is divided into 2 by the effect of the object placed in the direction perpendicular to the flow and eddies rotating in the opposite direction are created. The frequency of these eddies, which propagate in waves, is measured.

Via the sensor in the vortex flowmeters (piezoelectric element) measures the speed by counting the frequencies, and the flow rate with the result of mathematical calculations. These measured frequencies are proportional to the amount of flow. Pressure and temperature data are used directly in mathematical calculations, especially since they directly affect the density in the mass flow measurement of gas fluids. For cases where these 2 values are variable, the compensated model is preferred and the changing density is also calculated to provide accurate flow measurement.



FEATURES

INPUT	12-32 VDC
SUBSTANCE	Liquid, gas, steam
ACCURACY	0.5% Liquid 1.0% Gas, 0.2% with optional calibration
MEASURING RANGE	0.3-7 m/sn liquid
	2-70 m/sn gas
CONNECTION	Flanged Connection
	Wafer Connection
INDICATOR	LCD Display
PRESSURE RANGE	4-100 Bar (Standard 6/10/16/25 Bar)
AMBIENT TEMPERATURE	-20°C +70°C LCD DISPLAY
	-40°C +85°C without display
MOISTURE RESISTANCE	%5-%95 Rh
OPERATING TEMPERATURE	-50°C +250°C
	-100°C +350°C High Temperature Model
OUTPUT	4-20mA ops. HART Display Model
	Model without Pulse Indicator
	Ops. RS485 Modbus
ADJUSTABLE SECTIONS	Flow mode, flow unit, scale, density, indicator data.
ALARM	Low Flow Alarm (3.8 mA), High Flow Alarm (22 mA}
CALIBRATION	2/5 point K-factor Correction
INDICATOR	1. Line Flow Rate
	2. Line Total Flow
	3. Line Flow, Current, Temperature, Pressure, Density %
COMPENSATION	Ops. Pressure Temperature Measurement and Compensation
	Recommended in Gas fluid with Variable Pressure and Temperature
TEMPERATURE PRESSURE CORRECTION	Correction with offset is available
FRICTION COEFFICIENT	Cd<24
EXPROOF PROTECTION	Ops. EXD Bt4

ADVANTAGES

- It is one of the most economical solutions for the measurement of high-pressure fluids.
- It provides high-precision measurement for saturated and superheated steam measurements.
- It is ideal for the economical measurement of gases such as natural gas, biogas, nitrogen, oxygen in continuous flow lines.
- It does not contain any moving parts and it has a long service life.
- The measuring sensor does not come into direct contact with the fluid, which extends the life of the measuring sensor.
- There is no need for physical maintenance other than contamination.
- Can be used horizontally or vertically.
- Its all-metal construction provides an advantage in terms of durability.
- It is protected against corrosion, if necessary, the metal material can be produced differently and used in corrosion fluids.
- It is not affected by vibration.

RIGHT PRODUCT SELECTION

CHOOSING THE RIGHT PRODUCT IS ONE OF THE MOST IMPORTANT ISSUES IN INDUSTRIAL APPLICATIONS.

THE CORRECT PRODUCT CHOICE CAN BE MADE IN THE LIGHT OF THE INFORMATION MENTIONED BELOW. 2/3 OF THE MISTAKES ARE DUE TO PRODUCT SELECTION AND INSTALLATION FAULTS THAT ARE NOT SUITABLE FOR THE PROCESS.

THE FOLLOWING IS THE BASIC INFORMATION THAT NEEDS TO BE OBTAINED AND CHECKED

- Fluid type and chemical properties
- Maximum, minimum and normal flow rate (or velocity information)
- Maximum and usage pressure
- Maximum and usage temperature
- Line Diameter

The minimum and maximum flow amounts should be suitable for the product measuring range to be selected. The right choice can be made by checking the product from the diameter/flow rate table.

The actual maximum pressure should be below the maximum compressive strength of the flowmeter.

The maximum and minimum temperature must match the temperature to withstand a range of the flowmeter.

After making sure that this information is correct, the availability of Vortex flowmeters is ensured and the selection is made according to the amount of flow. If the current line diameter and the selected flow meter line diameter are not the same, it should be adjusted with a reduction. In this case, the things to consider are;

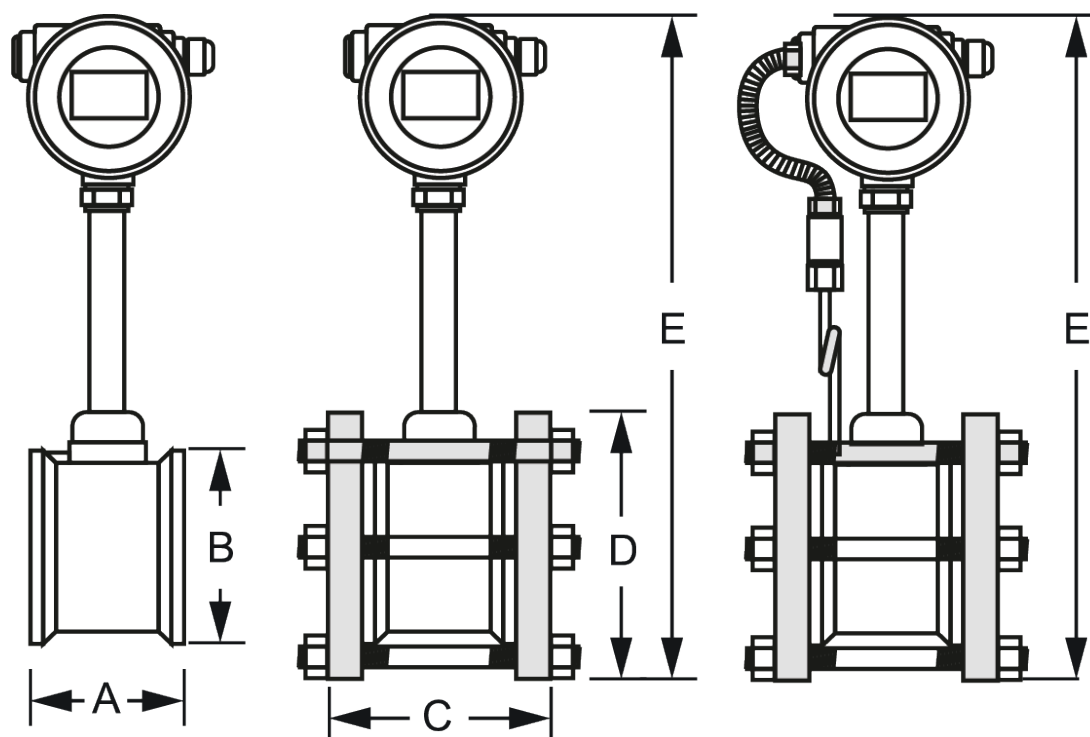
- It should be evaluated whether the application of the reduction causes a pressure change in the line and whether this change if any, will affect the current flow. In order to avoid this situation, it is not recommended to make large diameter changes in the reductions.
- When the reduction is preferred to reduce the cost of the flowmeter, it will not be the right choice if the cost of the reduction application is the same or more than the savings obtained in the selection of the flowmeter.

It should be ensured that the temperature, pressure and fluid information data to be given by the user are correct. Errors in this information may cause device failure or incorrect measurement. The assembly rules specified in the catalog and user manuals must be strictly followed. Flowmeter should not be installed on the line while welding, otherwise the electronics of the product may be damaged. The product should not be exposed to water hammer, even if it is flowing for the first time, it should be given gradually.

The product can even be mounted vertically and horizontally. In vertical mounting, the flow of liquid fluids should be from bottom to top. Considering that the compact models are IP67, they should be protected from external factors. Necessary precautions should be taken as exposure to direct sunlight will damage the product screen in all models. Users are strongly recommended to review the product manual thoroughly.

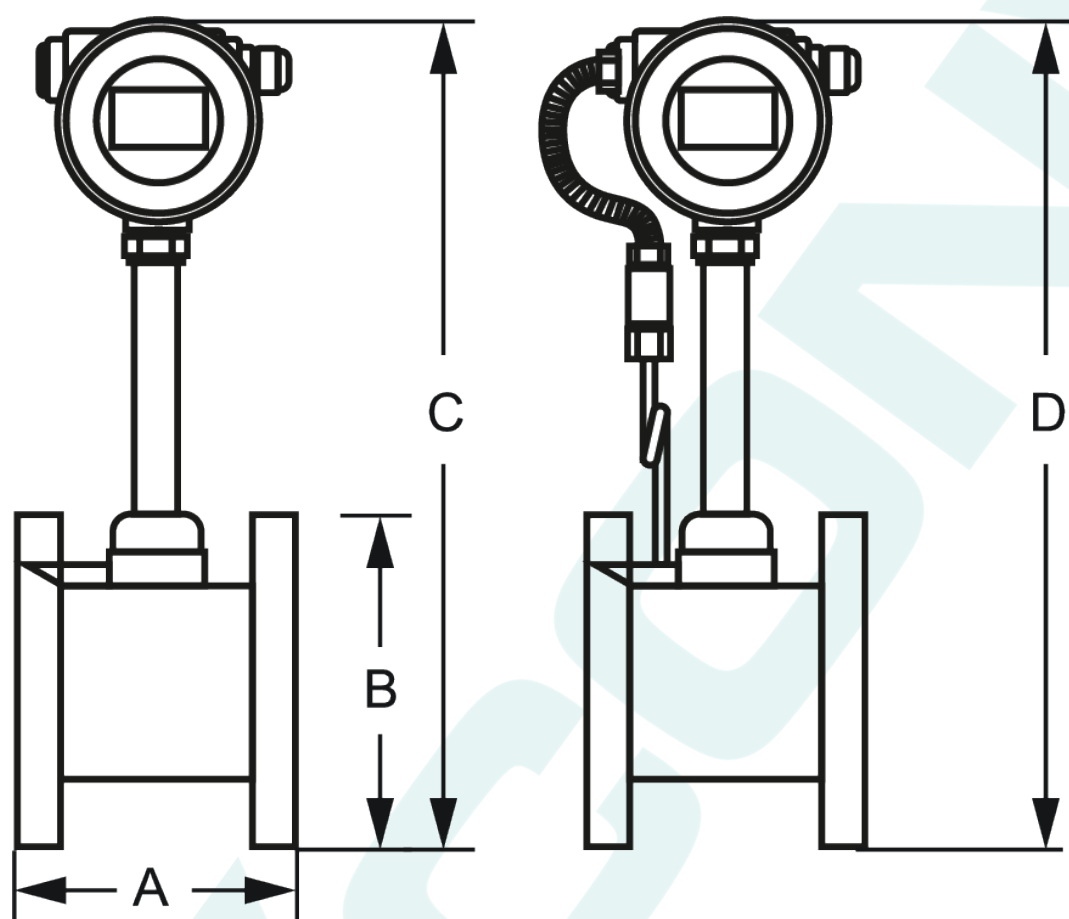
DIMENSIONS MM

SANDWICH TYPE CONNECTION DIMENSIONS



mm	A	B	C	D	E	F
15-20-25-32	68	54	96	100	440	470
40	82	78	110	140	460	490
50	85	87	110	145	490	520
65	84	105	112	165	510	540
80	88	120	116	176	540	570
100	91	140	120	200	560	590
125	92	168	126	230	580	610
150	96	194	130	265	600	630
200	101	248	140	320	630	660
250	114	300	160	370	660	690
300	128	350	170	445	690	720

FLANGED TYPE CONNECTION SIZES

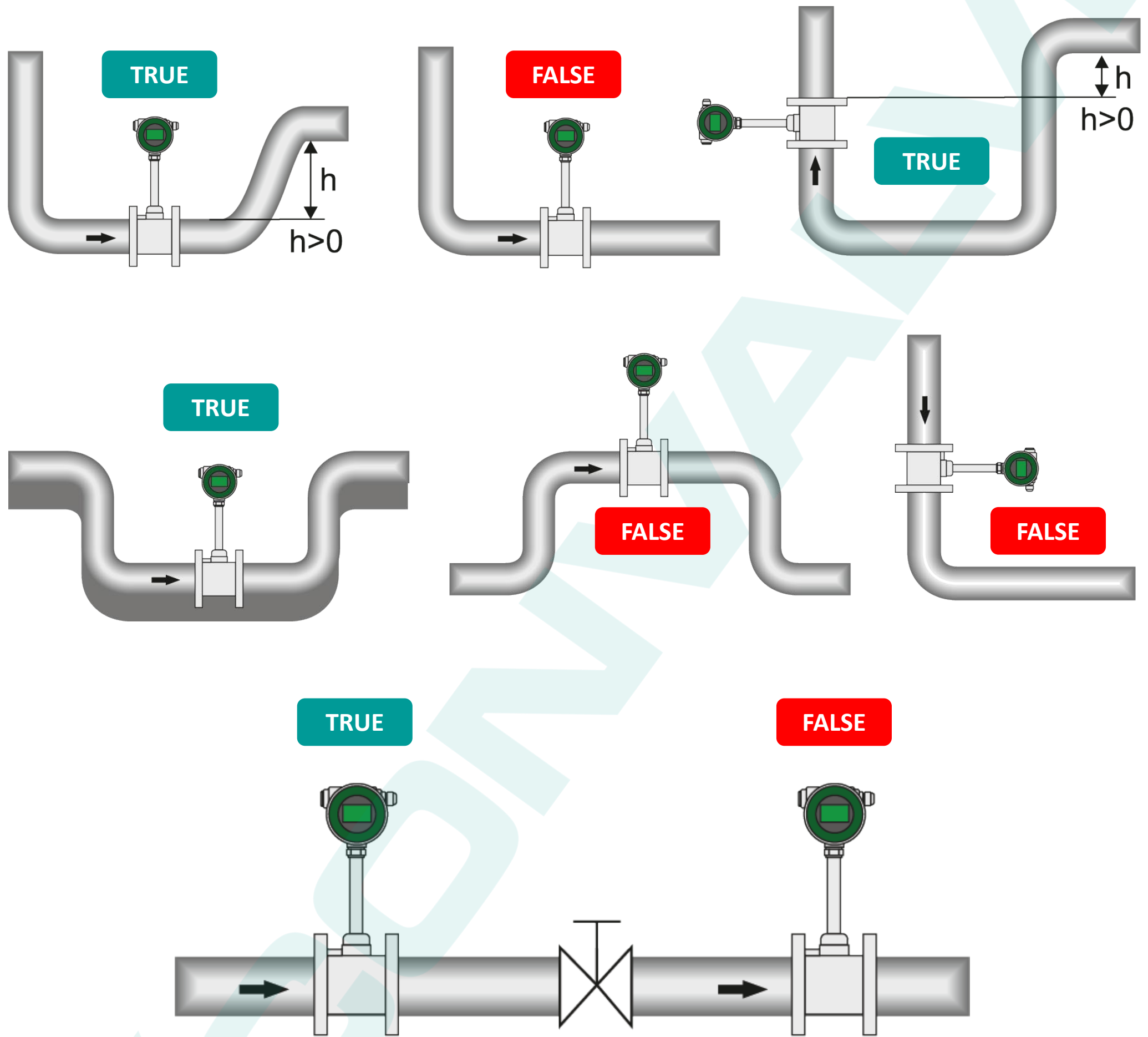


mm	A	B	C	D
15	170	95	430	460
20	170	105	430	460
25	170	115	440	470
32	170	132	450	480
40	160	150	480	510
50	160	160	480	510
65	160	180	530	560
80	180	195	530	560
100	180	215	550	580
125	180	245	560	590
150	180	280	590	620
200	200	340	620	680
250	200	405	710	740
300	350	460	750	780

VORTEX FLOWMETER INSTALLATION CONDITIONS

For accurate and precise measurements in liquid fluids, avoid the formation of air bubbles in the pipe.

Air bubbles in the line cause measurements to be taken.



PIPE CONNECTION TYPE	STRAIGHT DISTANCE	
	INPUT	OUTPUT
CONCENTRIC HEAT SHRINKABLE TUBE	15D	5D
CONCENTRIC EXPANDING TUBE	35D	5D
90° ELBOW	20D	5D
90° DOUBLE ELBOW (Same Plane)	25D	5D
90° DOUBLE ELBOW (Different Plane)	30D	5D
Valve (Fully Open)	20D	5D
Valve (Half Open)	40D	5D

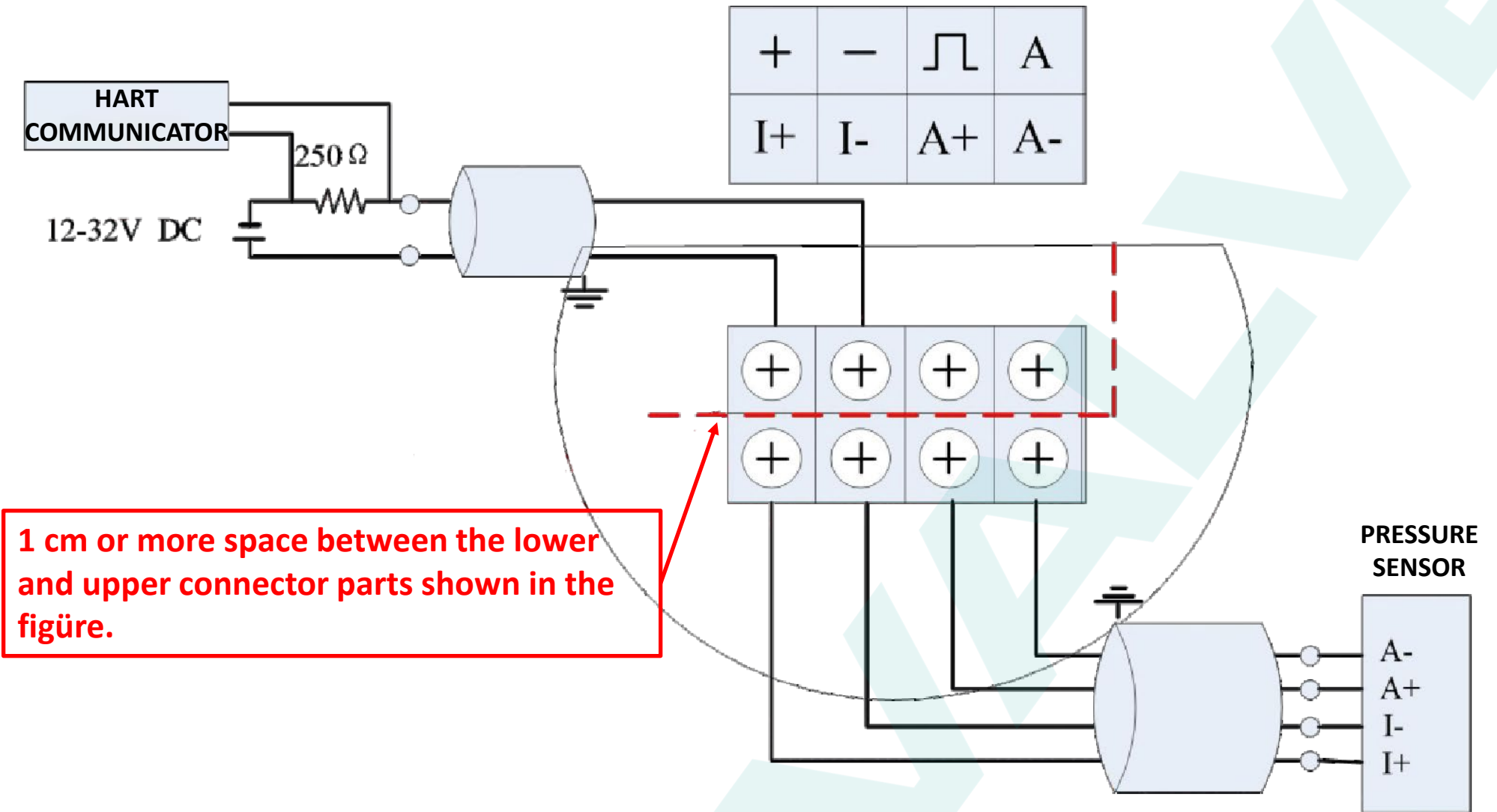
FLOW RANGES

MEASURABLE FLOW RANGES ACCORDING TO PRODUCT DIAMETERS AND FLUID							
DN	K-FACTOR	LIQUID (m3/h)	FREQUENCY (Hz)	GAS (m3/h)	FREQUENCY (Hz)	GAS (m3/h)	FREQUENCY (Hz)
15	350000	0.5-5	88-580	3-20	240-2350	4-50	260-2000
20	148000	0.6-10	38-422	5-40	210-2132	7-80	210-1900
25	74980.3	1-16	25-336	8-60	190-1140	10-80	210-1680
32	30511	1.8-18	16-264	20-120	150-1100	12-120	156-1080
40	17523.5	2-30	10-200	30-180	140-1040	25-180	126-910
50	9451.2	3-50	8-160	40-350	94-1020	40-260	100-700
65	4113	5-50	6.1-77.1	70-650	80.7-807	35-800	94-940
80	2346	7-100	4.1-82	90-900	55-690	100-800	63-500
100	1153.5	15-180	4.7-69	150-1500	42-536	160-1100	50-350
125	573.1	20-210	3.3-41.6	250-2200	38-416	150-2000	38-475
150	334	30-400	2.8-43	350-3500	33-380	400-3500	38-350
200	141.5	50-700	2-31	600-7000	22-315	580-7000	23-270
250	70.8	70-1000	1.5-25	1000-9000	18-221	960-9600	20-200
300	42.98	100-1800	1.2-24	1500-14000	16-213	1300-13000	16-160

TABLE OF FLOW CHANGES BY PRESSURE										
DN (mm)	DEBi	MEASURABLE FLOW RATES (kg/h)								
		1 Bar	2 Bar	4 Bar	6 Bar	8 Bar	10 Bar	15 Bar	20 Bar	25 Bar
15	MIN	2,2	3,2	5,1	7,1	8,9	10,8	15,5	20,2	25
	MAX	54,5	79,6	128,4	176,3	223,7	270,8	388,2	505,9	624,5
20	MIN	3,8	5,6	9	12,3	15,7	19	27,2	35,4	43,7
	MAX	95,4	139,2	224,6	308,5	391,4	473,9	679,3	885,3	1092,9
25	MIN	6,1	8,9	14,4	19,8	25,2	30,5	43,7	56,9	70,3
	MAX	153,4	223,7	361	495,7	629,1	761,6	1091,8	1422,8	1756,5
32	MIN	10,2	14,9	24,1	33	41,9	50,8	72,8	94,9	117,1
	MAX	255,6	372,9	601,7	826,2	1048,4	1269,3	1819,7	2371,4	2927,5
40	MIN	15,7	22,9	36,9	50,7	64,3	77,9	111,6	145,4	179,6
	MAX	392	571,8	922,6	1266,9	1607,6	1946,3	2790,1	3636,1	4488,8
50	MIN	23,9	34,8	56,2	77,1	97,9	118,5	169,8	221,3	273,2
	MAX	596,5	870,1	1404	1927,8	2446,3	2961,8	4245,9	5533,2	6830,7
65	MIN	49,1	71,6	115,5	158,6	201,3	243,7	349,4	455,3	562,1
	MAX	1227	1789,9	2888,2	3965,8	5032,5	6092,8	8734,4	11382,6	14051,8
80	MIN	61,4	89,5	144,4	198,3	251,6	304,6	436,7	569,1	702,6
	MAX	1533,8	2237,4	3610,3	4957,3	6290,6	7616	10918	14228,2	17564,7
100	MIN	95,4	139,2	224,6	308,5	391,4	473,9	679,3	885,3	1092,9
	MAX	2385,8	3480,4	5616	7711,3	9785,3	11847,1	16983,5	22132,8	27322,9
125	MIN	150	218,8	353	484,7	615,1	744,7	1067,5	1391,2	1717,4
	MAX	3749,2	5469,3	8825,2	12117,8	15376,9	18616,8	26688,4	34780,1	42935,9
150	MIN	204,5	298,3	481,4	661	838,7	1015,5	1455,7	1897,1	2342
	MAX	5112,5	7458,1	12034,3	16524,2	20968,5	25386,6	36393,2	47427,4	58549
200	MIN	374,9	546,9	882,5	1211,8	1537,7	1861,7	2668,8	3478	4293,6
	MAX	9373	13673,2	22062,9	30294,4	38442,3	46542	66720,9	86950,3	107340
250	MIN	599,9	875,1	1412	1938,8	2460,3	2978,7	4270,1	5564,8	6869,8
	MAX	14996,8	21877,1	35300,6	48471	61507,7	74467,3	106753	139120	171744
300	MIN	852,1	1243	2005,7	2754	3494,8	4231,1	6065,5	7904,6	9758,2
	MAX	21302,2	31075,4	50142,9	68850,9	87368,9	105777	151638	197614	243954

CONNECTION SCHEMA

4~20mA Output + HART + External Pressure



Pulse Output + External Pressure and Temperature Sensor

