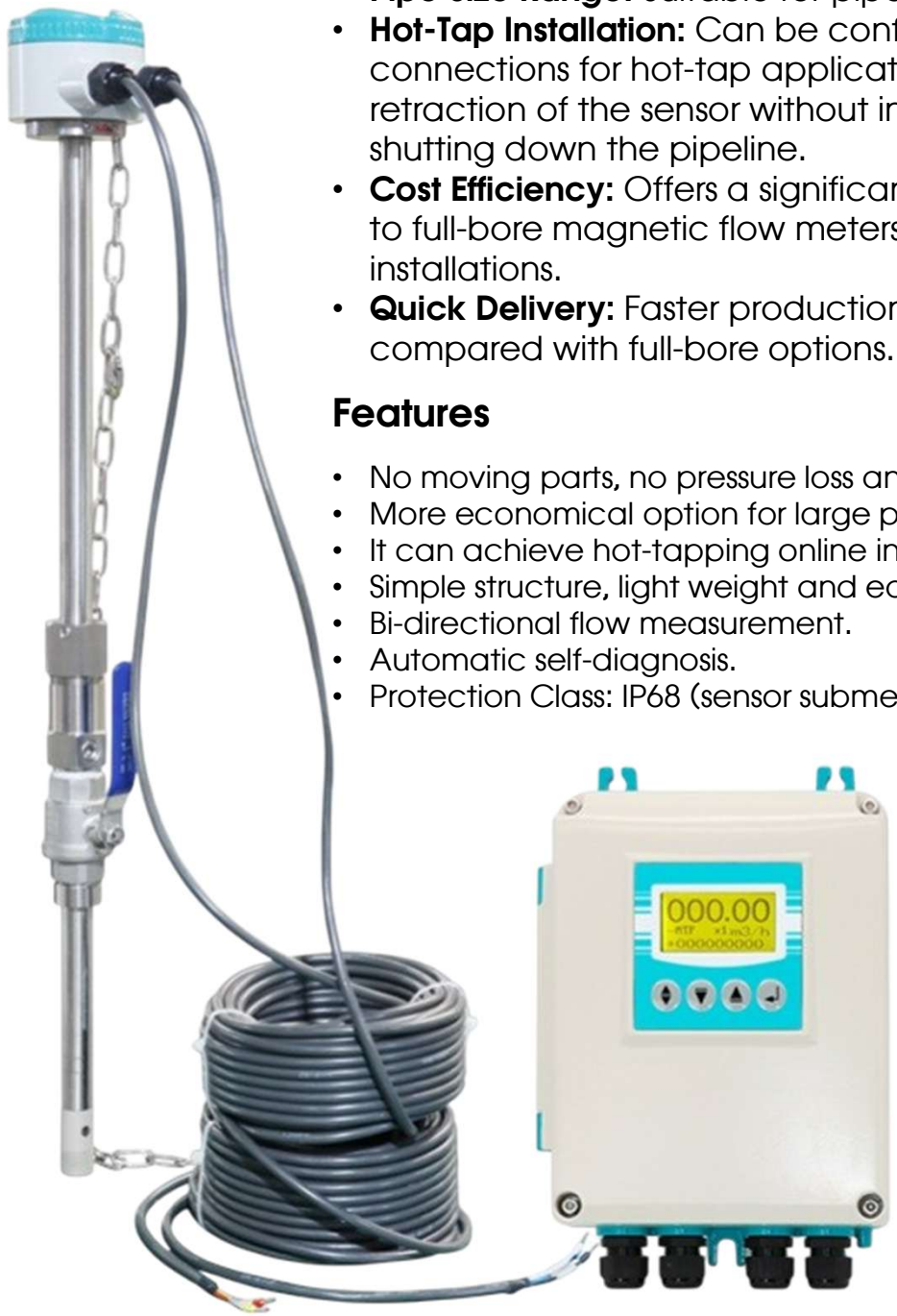
Electromagnetic Flow Meter

KWQTLD/C Series

The Ketwells, KWQTLD/C Series Insertion electromagnetic flow meter is designed for accurate measurement of conductive liquids in a wide range of industrial applications. It provides a reliable and economical solution for flow measurement, especially in large-diameter pipelines.



- **Pipe Size Range:** Suitable for pipes ranging from DN50 to DN3000.
- **Hot-Tap Installation:** Can be configured with threaded connections for hot-tap applications, allowing installation and retraction of the sensor without interrupting the process or shutting down the pipeline.
- **Cost Efficiency:** Offers a significantly more economical alternative to full-bore magnetic flow meters, particularly in large pipeline installations.
- **Quick Delivery:** Faster production and delivery lead times compared with full-bore options.

Features

- No moving parts, no pressure loss and require very less maintenance.
- More economical option for large pipelines flow measurement.
- It can achieve hot-tapping online installation.
- Simple structure, light weight and easy to transport.
- Bi-directional flow measurement.
- Automatic self-diagnosis.
- Protection Class: IP68 (sensor submersible) available.

Applications

- Water supply and distribution
- Wastewater treatment
- Industrial process monitoring
- Cooling water systems
- Irrigation and agricultural water management

Benefits

- **Continuous Operation:** Hot-tap design ensures uninterrupted process flow.
- **Lower Investment:** Reduced cost for large pipeline measurement without compromising accuracy.
- **Ease of Maintenance:** Retractable sensor allows convenient servicing and replacement.

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Technical Data

Size	DN50-DN3000 (2"-120")	
Accuracy	±1.5% of reading at flow velocity ≥ 0.5m/s ; ±1.0% is customized	
Velocity	0.1~15 m/s	
Repeatability	≤0.17%	
Structure	Compact / remote, cable length 10m standard, 100m max	
Conductivity	> 5 μS/cm, demineralized water > 20 μS/cm	
Protection Grade	Transmitter: IP65 standard, IP67 optional	
	Sensor: IP65 standard, IP68 (submersible, only available for remote type)	
Electrode	SS316L	
Power Supply	85~250 VAC (50/60 Hz), or 8~36 VDC; Optional 3.6V Battery Powered	
Power Consumption	<20W	
Signal Output	Analog	4~20mA (load resistor 0~750Ω)
	Frequency	Forward & reverse flow output with a frequency range of 1~5000Hz
	Alarm	Two isolated open collector transistor (OCT) outputs for alarm signals
Communication	RS485 MODBUS standard, HART, GPRS, PROFIBUS optional	
Display	LCD Display,128X128mm, three lines, 4 buttons	
Ambient Temperature	-20 °C~60 °C	
Fluid Temperature	-20 °C~80 °C	
Process Connection	1" NPT thread ball valve	
Sensor Material	Probe material: PEEK	
	Valve: SS304	
	Pole: SS304	
Transmitter Material	Aluminium alloy with epoxy painting	
Nominal Pressure	1.6 Mpa	
Display	Instantaneous flow, total flow, flow velocity	
Function	High and low alarm, empty pipe alarm, exciting alarm, self-diagnosis	
Totalizer	Three built-in totalizers: forward flow, reverse flow and net flow	
Display Unit	L/s, L/m, L/h, m3/s, m3/m, m3/h, UKG, USG, gal/s, gal/m, gal/h, kg/s, kg/m, kg/h,t/s, t/m, t/h	
Language	English, Chinese, Italian, Portuguese, French, Spanish, Korean	

Flow Range Table (Unit: m^3/h)

Size		Flow Range & Velocity Table							
mm	Inch	0.1 m/s	0.2 m/s	0.5 m/s	1 m/s	4 m/s	10 m/s	12 m/s	15 m/s
DN3	1/8"	0.003	0.005	0.013	0.025	0.102	0.254	0.305	0.382
DN6	1/4"	0.01	0.02	0.051	0.102	0.407	1.017	1.221	1.526
DN10	3/8"	0.028	0.057	0.141	0.283	1.13	2.826	3.391	4.239
DN15	1/2"	0.064	0.127	0.318	0.636	2.543	6.359	7.63	9.538
DN20	3/4"	0.113	0.226	0.565	1.13	4.522	11.304	13.56	16.956
DN25	1"	0.177	0.353	0.883	1.766	7.065	17.663	21.2	26.494
DN32	1¼"	0.289	0.579	1.447	2.894	11.575	28.938	34.73	43.407
DN40	1½"	0.452	0.904	2.261	4.522	18.086	45.216	54.26	67.824
DN50	2"	0.707	1.413	3.533	7.065	28.26	70.65	84.78	10.598
DN65	2½"	1.19	2.39	5.97	11.94	47.76	119.4	143.3	179.1
DN80	3"	1.81	3.62	9.04	18.09	72.35	180.86	217	271.3
DN100	4"	2.83	5.65	14.13	28.26	113.04	282.6	339.1	423.9
DN125	5"	4.42	8.83	22.08	44.16	176.63	441.56	529.9	662.34
DN150	6"	6.36	12.72	31.79	63.59	254.34	635.85	763	953.78
DN200	8"	11.3	22.61	56.52	113.04	452.16	1130.4	1356	1696
DN250	10"	17.66	35.33	88.31	176.53	706.5	1766.25	2120	2649
DN300	12"	25.43	50.87	127.2	254.34	1017	2543.4	3052	3815
DN350	14"	34.62	69.24	1731	3461.9	1385	3461.85	4154	5193
DN400	16"	45	90	2261	452	1809	4522	5426	6782
DN450	18"	57	114	2861	572	2289	5723	6867	8584
DN500	20"	71	141	3533	707	2826	7065	8478	10598
DN600	24"	102	203	5087	1017	4069	10174	12208	15260
DN700	28"	138	277	6924	1385	5539	13847	16617	20771
DN800	32"	181	362	9043	1809	7235	18086	21704	27130
DN900	36"	229	458	1145	2289	9156	22891	27469	34336
DN1000	40"	283	565	1413	2826	11304	28260	33912	42390
DN1200	48"	407	814	2035	4069	16278	40694	48833	61042
DN1400	56"	554	1108	2769	5539	22156	55390	66468	83084
DN1600	64"	723	1447	3617	7235	28938	72346	86815	108518
DN1800	72"	916	1831	4578	9156	36625	91562	109875	137344
DN2000	80"	1130	2261	5652	11304	45216	113040	135648	169560
DN2200	88"	1368	2736	6839	13678	54711	136778	164134	205168
DN2400	96"	1628	3256	8139	16278	65111	162778	195333	244166
DN2600	104"	1910	3821	9552	19104	76415	191038	229245	286556
DN2800	112"	2216	4431	11078	22156	88623	221558	265870	332338
DN3000	120"	2543	5087	12717	25434	101736	254340	305208	381510

Remark : Recommend flow velocity range 0.5～15 m/s

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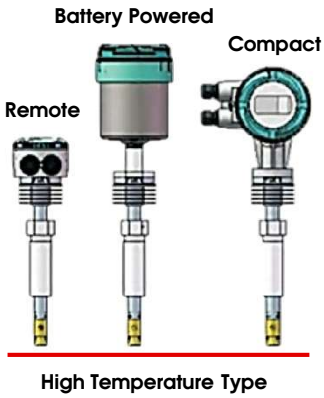
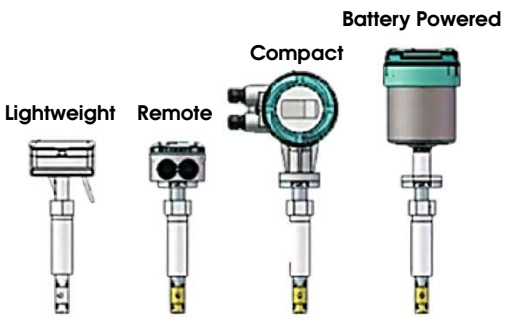
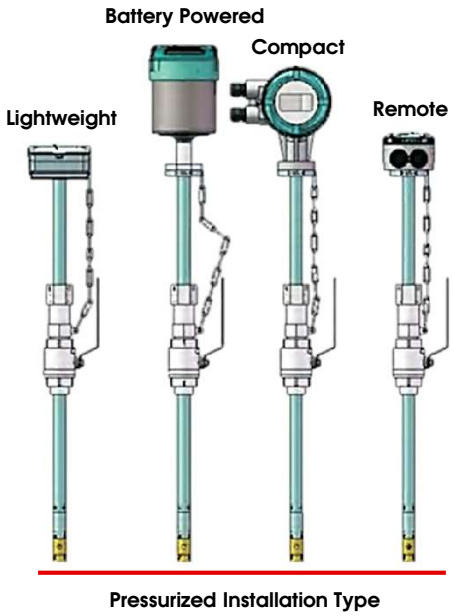
Selection Table

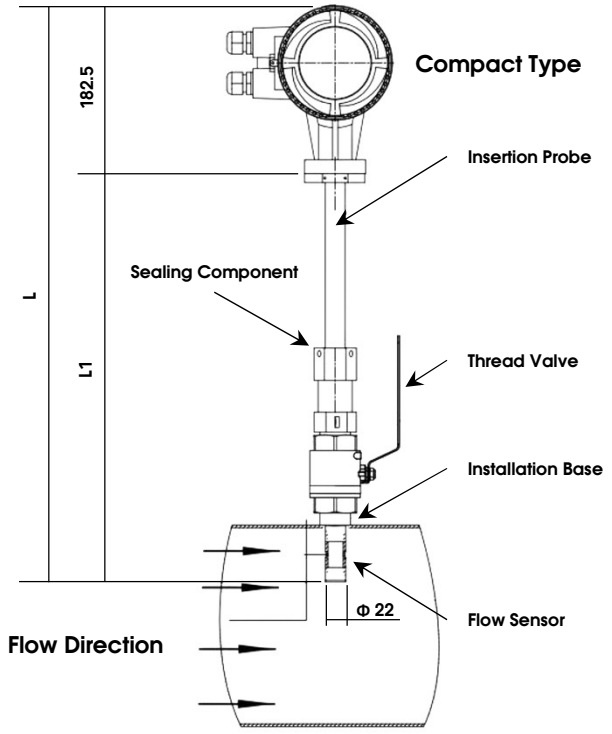
Series	KWQTLD/C								
Caliber Size		XXXX	DN50 - DN3000 / 2"-120"						
Structure			1	Compact					
			2	Remote					
			3	Compact with Explosion Proof					
			4	Remote with Explosion Proof					
Electrode Meterial				1	SS316L				
				2	Hastelloy B				
				3	Hastelloy C				
				4	Others				
Power Supply					G	20~36 VDC			
					E	85~265 VAC			
					SD	9~36 VDC Solar Power			
					B	3.6V Battery Powered			
Signal Output Communication						A	4~20 mA + Pulse + RS485 MODBUS		
						B	4~20 mA + HART		
						C	4~20 mA + Profibus		
						D	GPRS		
Protection Grade							1	IP65 Transmitter + IP65 Sensor	
							2	IP65 Transmitter + IP68 Sensor (Remote)	
Transmitter								A	Square
								B	Round
Insertion								1	1" NPT Thread Ball Valve
								2	1" NPT Thread



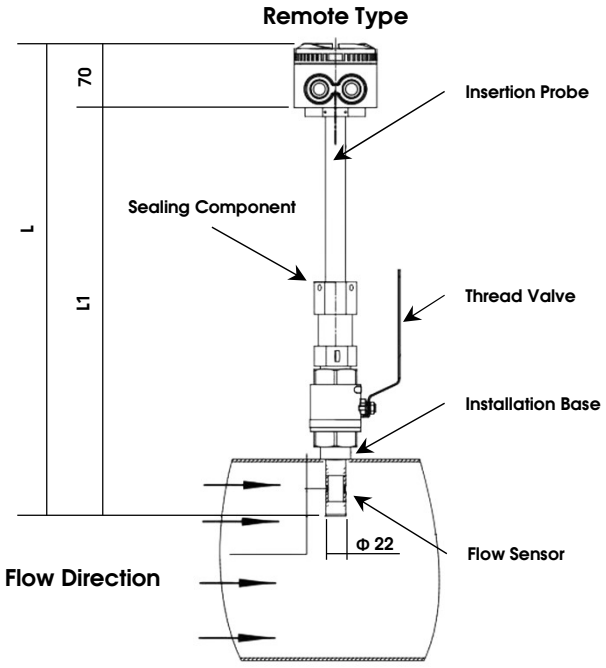




Dimension



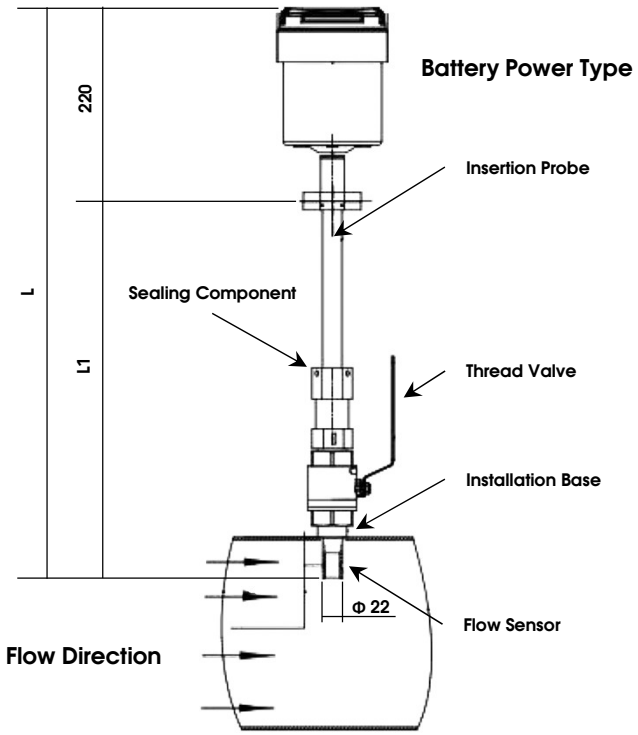
DN	L1	L
≤ 2000	620	804.5



DN	L1	L
≤ 2000	620	692

Insertion depth L1:

- Pipe diameter ≤ DN500, insertion depth is 1/2 diameter.
- Pipe Diameter DN500 - DN1000 insertion depth is 1/4 diameter.
- Pipe diameter > DN1000, insertion depth is 1/8 diameter.

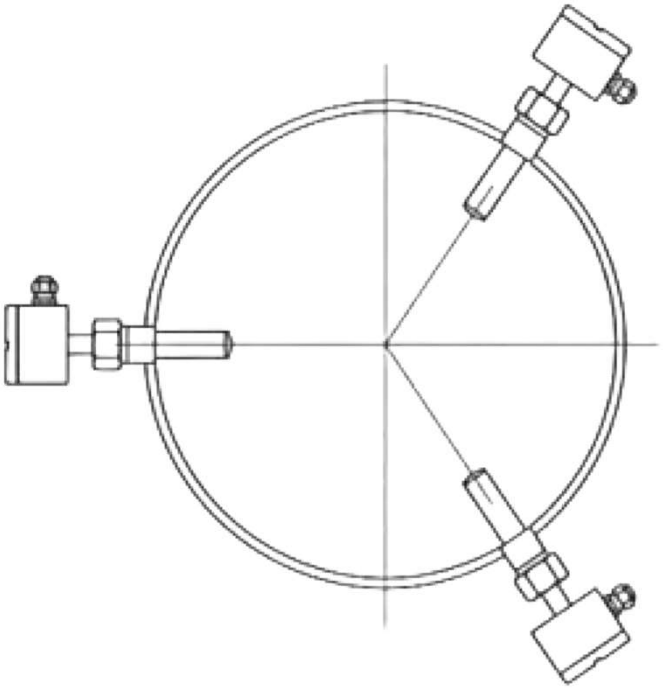


DN	L1	L
≤ 2000	620	842

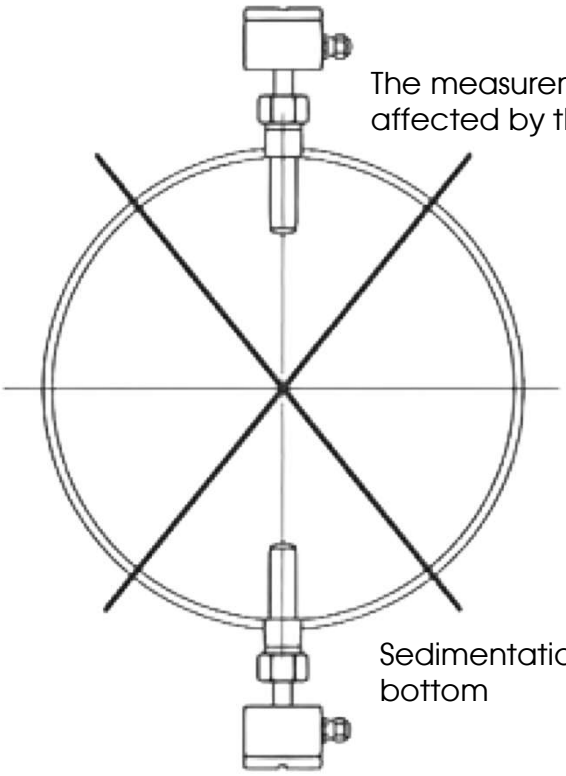
Mounting Position

- Suggestion of the mounting position is on the vertical pipeline, but make sure that the flow is upward. The meter is 90°to the pipeline.
- The meter should be on the side of the pipeline and make sure the electrodes must be fully immerged in the medium when the meter is mounted in the level pipeline as shown in figure below.

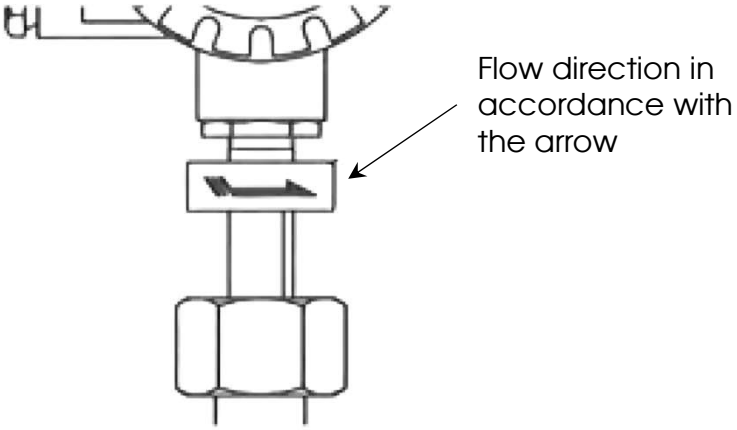
Correct Mounting



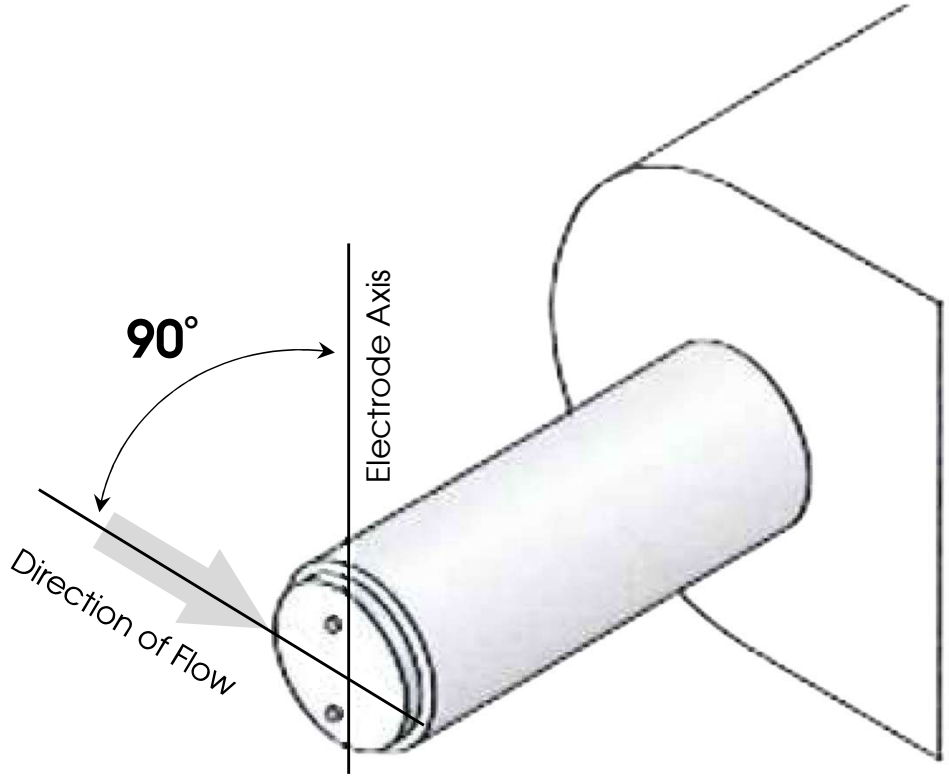
False Mounting



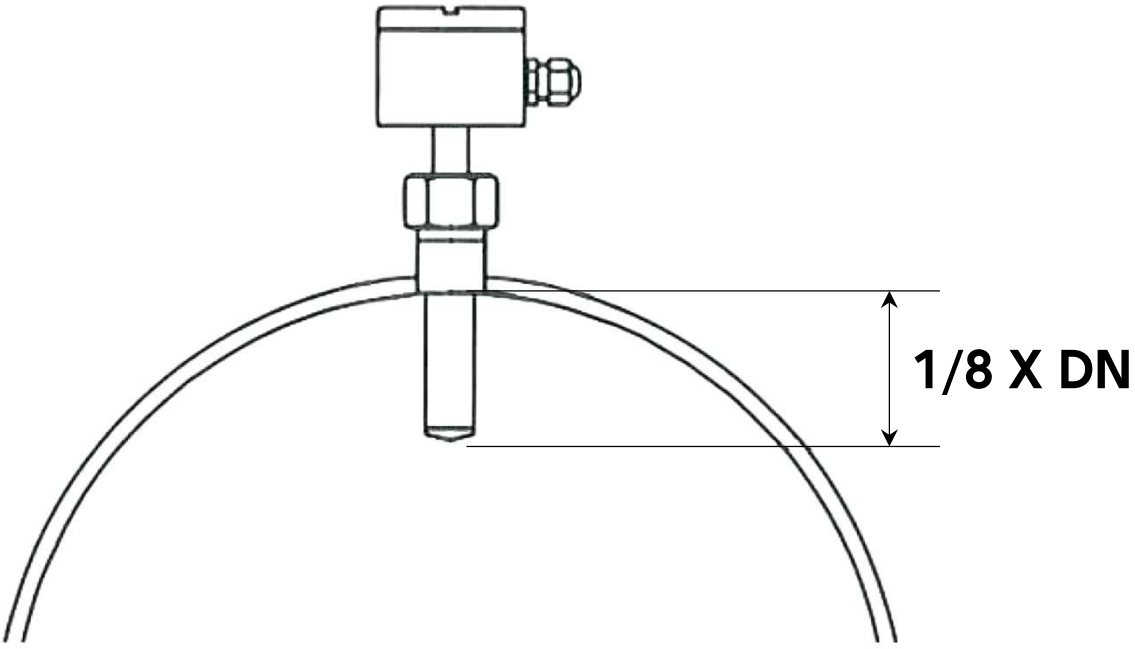
- The position of the meter shall not be ess than 10xDN (DN: Size) on the upward pipeline, and 5xDN on the lower.
- The flow must be in the direction in accordance with the arrow shown on the meter.



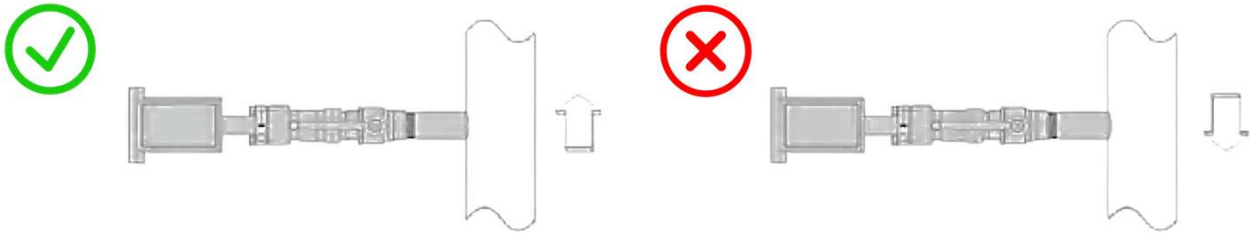
- The electrodes must be in 90°with the flow. See figure below.



- The electrodes must be in 90°with the flow. See figure below.

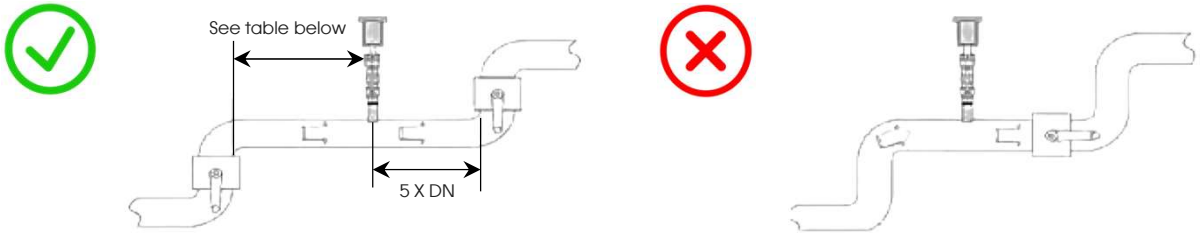


In vertical installations an ascending flow is preferable. For vertical installations with descending flow direction contact the manufacturer

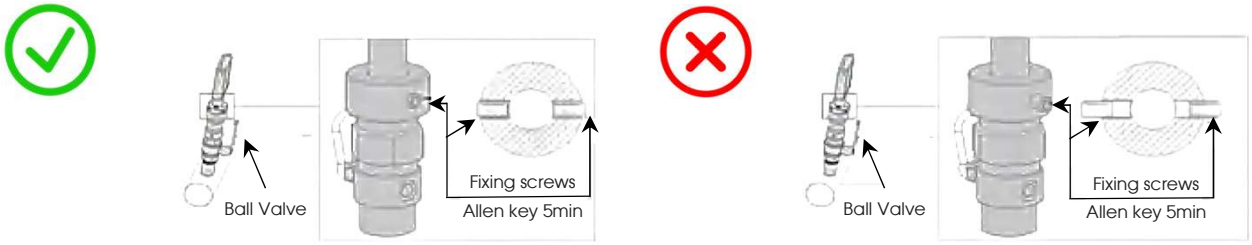


Avoid a partially empty pipe, during operation the pipe must be either completely full of liquid or completely empty

Install the sensor away from bends and hydraulic accessories



Tighten the two fixing screws before opening the ball valve



Disturbance upstream from the measuring point	Min upstream stralght length in multiples of condult diameter	
	Valid for a measurement at the point of mean axial velocity	Valid for a measurement on the axis of the pipe
90° elbow or a t-bend	50	25
Several 90° coplanar bends	50	25
Several 90° non-coplanar bends	80	50
Total angle convergent 18 to 36°	30	10
Total angle divergent 14 to 28°	55	25
Fully opened butterfly valve	45	25
Fully opened plug valve	30	15