

Bass Instruments

Installation and Instruction Manual “Sensor”



Electromagnetic Flowmeter

Type : EMD-CM, EMD-RM

Rv : 02



USKON AKIŞKAN KONTROL SİSTEMLERİ SANAYİ VE TİCARET LTD. ŞTİ.

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1.0 Safety Instructions

This manual will assist you in installing, using and maintaining your EMD.. flow meter. It is your responsibility to make sure that all operators have access to adequate instructions about safe operating and maintenance procedure.



Warning

For your safety, review the major warnings and cautions below before operating your equipment.

1. Use only fluids that are compatible with the housing material and wetted components of your meter.
2. When measuring flammable liquids, observe precautions against fire or explosion.
3. When handling hazardous liquids, always follow the fluids manufacturer's safety precautions.
4. When working in hazardous environments, always exercise appropriate safety precautions.
5. During meter removal, fluids may spill. Follow the fluids manufacturer's safety precautions for clean up of minor spills.
6. When tightening the meter, use a wrench only on the wrench flats.
7. For best results, calibrate the meter at least 1 time per year.

1.1.Product Description

BASS EMD electromagnetic flow meters are intended for fluid measurement in most industries including water, wastewater, food and beverage, pharmaceutical and chemical.

There are two basic components of BASS electromagnetic flow meter: 1)The Detector, which includes the flow tube, isolating liner and measuring electrodes, and 2) The Converter, which is the electronic device responsible for signal processing, flow calculation, display and output signals.

The materials of construction of the wetted parts (liner and electrodes) should be appropriate for the specifications on the intended type of service. Review of the compatibilities consistent with the specifications is recommended.

All BASS's electromagnetic flow meters are factory tested and calibrated. **A calibration certificate is included in the shipment of each meter.**

1.2.Unpacking and Inspection

Upon receipt, examine your meter for visible damage. The meter is a precision measuring instrument and should be handled carefully. Remove the protective plugs and caps for a thorough inspection. If any items are damaged or missing, contact BASS.

Make sure the flow meter model meets your specific needs. For your future reference, it might be useful to record this information on nameplate in the manual in case it becomes unreadable on the meter.



2.0 Specifications

Measuring Principle	: Electromagnetic flow measurement on the basis of Faraday's Law.	
Flow Range	: 0.03-10 m/s	
Turndown Ratio	: 333:1	
Size	: 10 to 2200 mm	
Min. Conductivity	: 5 micromhos/cm	
Electrode Materials	: Standard: AISI316L Optional: Tantalum, Titanium, Hastelloy B, Hastelloy C	
Liner Material	: PTFE, Hard Rubber, PA	
Fluid Temperature	: Hard Rubber : 0...60°C PTFE : -20...120°C PA : 0...60°C	
Pressure Limits	: DN10...DN80 PN40 DN100...DN350 PN16 DN350< PN10 please consult Bass Instruments for special requirements.	
Pressure Loss	: No pressure loss	
Coil Power	: Pulsed DC	
Ambient Temperature	: -10°C to 60°C for carbon steel body -30°C to 60°C for stainless steel body	
Protection	: IP67, IP68 optional for remote version" RM"	
Pipe Spool Material	: 316 Stainless Steel	
Sensor Housing Material	: Carbon Steel welded, optional AISI304, AISI316	
Flanges	: Carbon Steel - Standard (TS ISO 7005-1) 316 Stainless Steel – Optional	
Cable Length	: up to 300 m (please see length of connection cable)	
Mounting Position	: Vertical or Horizontal (please see installation)	



3.0 Approvals

The devices are designed to meet state-of-the-art safety requirements in accordance with sound engineering practice. They have been tested and left the factory in a condition in which they are safe to operate.

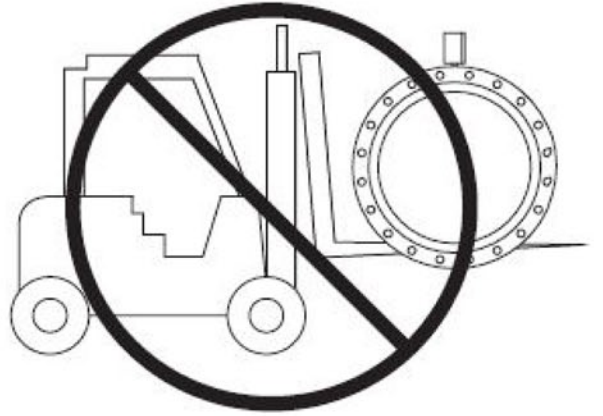
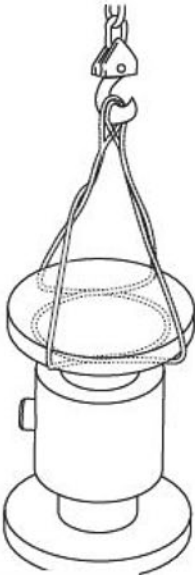
The devices comply with the applicable standards and regulations in accordance with EN 61010-1 "Safety requirements for electrical equipment for measurement, control and laboratory use" and with the EMC requirements of IEC/EN 61326.

The measuring system described in this Operating Manual is therefore in conformity with the statutory requirements of the EC Directives. Bass Instruments confirms successful testing of the device by affixing to it the CE mark.

4.0 Installation

4.1 Transportation and Handling

Do not lift the detector from the Converter housing, the junction box or the connecting cable. Use lifting lugs for larger sizes is recommended. Very large meter sizes are packed and crated with the meter laying on its side for shipping safety and stability reasons. In order to lift the meter in vertical position, it's recommended to use a sling rigged method as shown below.



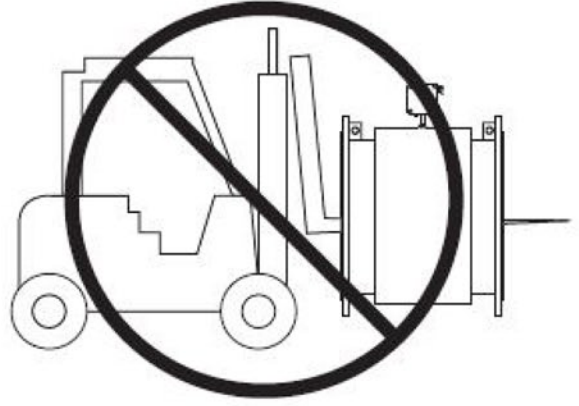
Warning: NEVER introduce the forklift, chains, wire slings or any other sharp object inside the flow tube for lifting or handling purpose. This could permanently damage the isolating liner and could render the meter inoperable.



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If using a forklift, do not lift the detector from its body between the flanges. The housing could be accidentally dented and permanent damage could be caused to the internal coil assemblies.

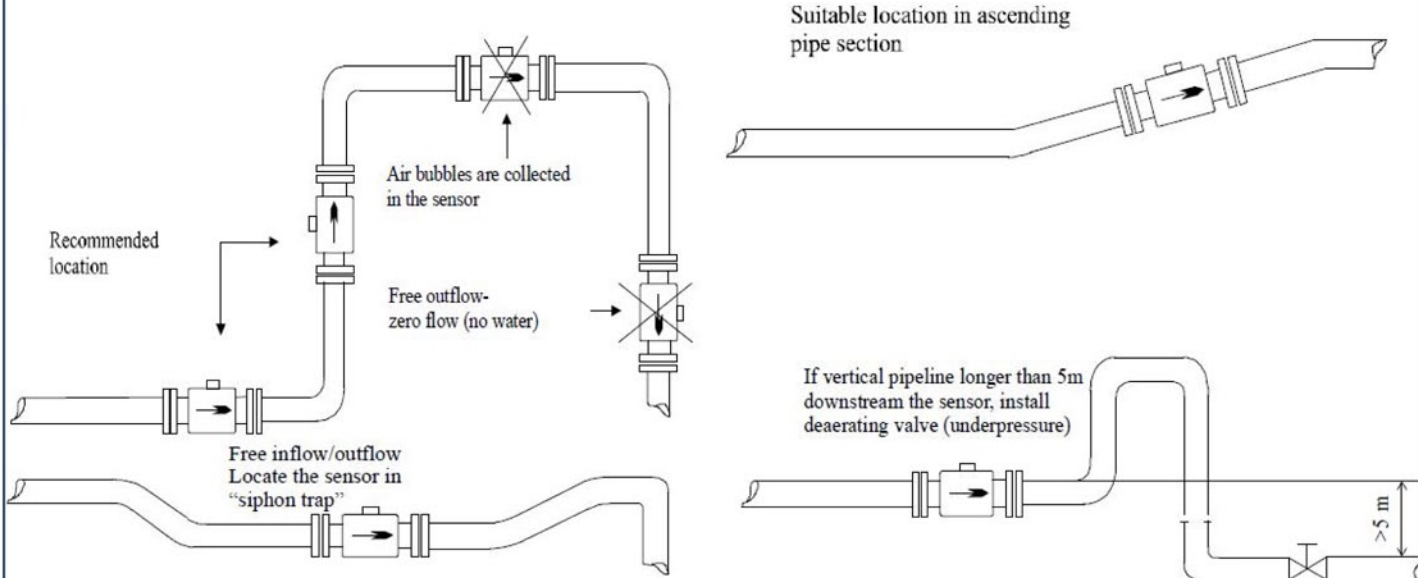


4.2. Storage

- Pack the measuring device in such a way as to protect it reliably against impact for storage (and transportation). The original packaging provides optimum protection.
- The storage temperature corresponds to the operating temperature range of the measuring transmitter and the appropriate measuring sensors
- Do not remove the protective plates or caps on the process connections until you are ready to install the device. This is particularly important in the case of sensors with PTFE linings.
- The measuring device must be protected against direct sunlight during storage in order to avoid unacceptably high surface temperatures.
- Choose a storage location where moisture does not collect in the measuring device. This will help prevent fungus and bacteria infestation which can damage the liner.

4.3. Mounting

Recommended positions for sensor installation



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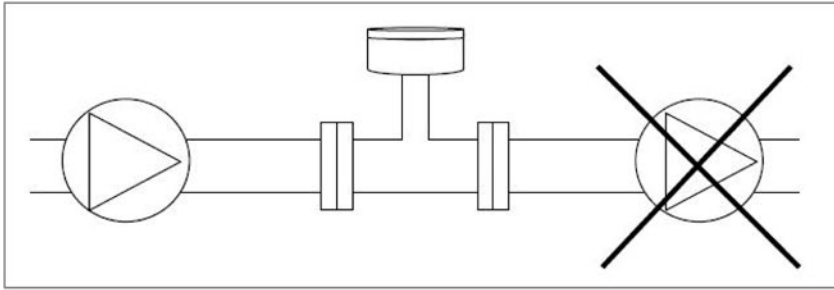
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To avoid any measurement errors which are caused by air bubbles or failures on the lining, pay attention to the following recommendations:

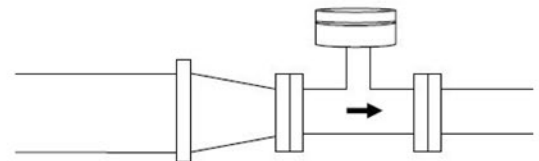
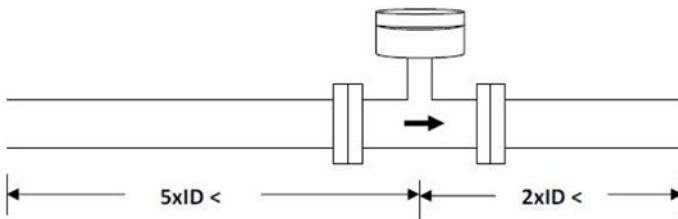
- During assembling correctly seat the sensor, tighten screws uniformly and move on a diagonal one after another.
- It should be noted that the parallelism of flanges has a greater effect on packing than excessive tightening forces on curved and seated flanges.
- The sensor must be installed inside piping so that the axis of sensor electrode is always **horizontal**.
- A PTFE (teflon) lining calls for extra care during handling and assembly. During installation/operation avoid excessive underpressure in pipes. Please do not change and damage the outlet extension on both ends of the sensor. The sensors are shipped from the factory with special covers to avoid any shape deformations. (PTFE elastic memory should cause a partial compensation in future). Please remove the covers just before installation, and when you insert it between counterflanges, replace by a number of smooth metal sheet pieces which are removed just before tightening the bolts.
- Packing – The extended part of lining does not operate properly as a seal, hence appropriate packing must be inserted between sensor and pipeline. If the packing protrudes into a flow profile at any point, this will cause turbulence and reduce the measurement quality.
- During installation, make sure the sensor slides into piping if the pipeline is not flexible enough. It is recommended that installation inserts (especially for greater internal diameters) should be used. During installation of the sensor, counterflanges must not be welded (danger of the sensor lining failure).

Installation of Pump

Do not install the sensor on the intake side of a pump. This precaution is to avoid low pressure and the consequent risk of damage to the lining of the measuring tube.



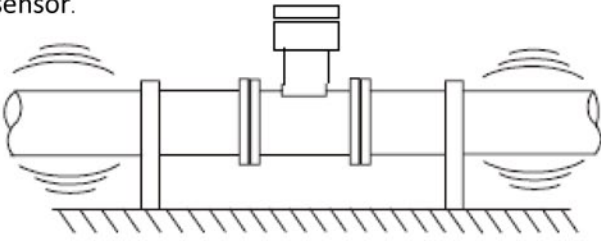
4.4. Required Lengths of Straight Runs



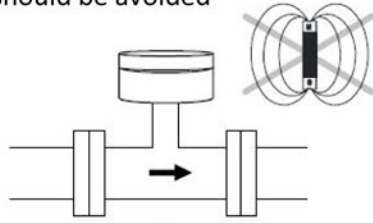
No Straight Run Required

4.5. Vibrations and Magnetic Fields

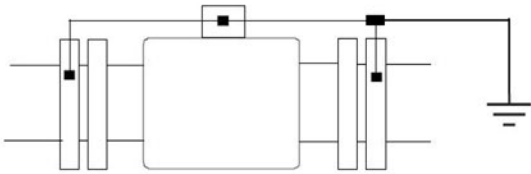
Vibrations of the pipes should be avoided by anchoring the pipe before and after the sensor.



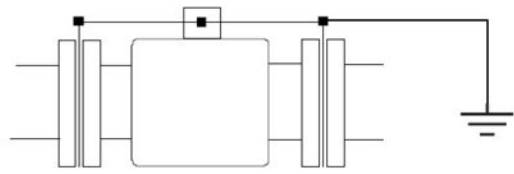
Strong magnetic fields close to the sensor should be avoided



4.6. Grounding of Sensor

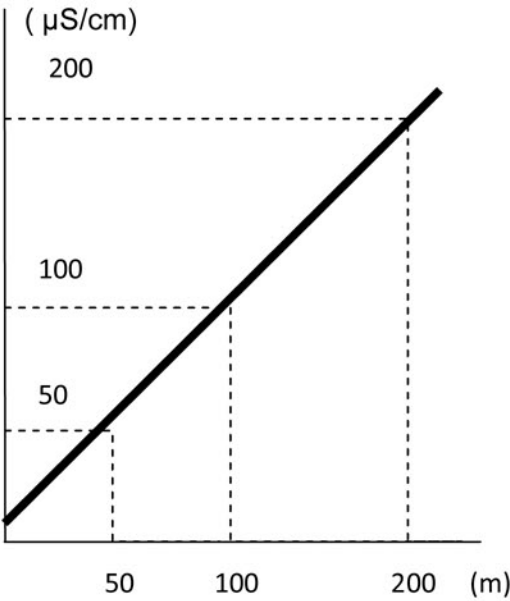


Grounding in metal pipes



Grounding in plastic pipes

4.7. Length of Connection Cable



4.8. Measurable Flow Rate Range:

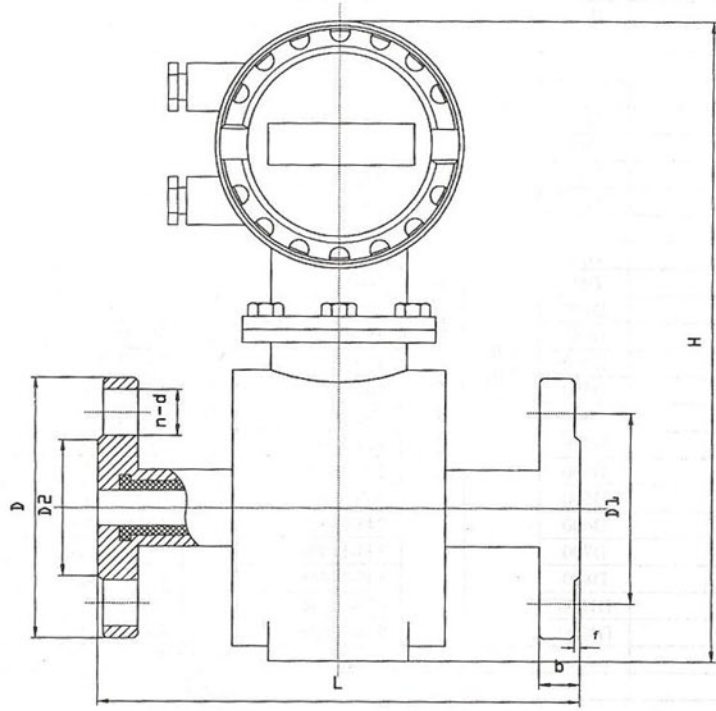
Note: The flow range as below is for reference only. Consult the factory if you have special requirement. Refer to the nameplate or certificate for actual flow range.

DN		*Flow Range (l/sec)		*Flow Range (m ³ /h)	
mm	inch	Qmin	Qmax	Qmin	Qmax
10	¼"	0,0078	0,785	0,0282	2,827
15	½"	0,0176	1,767	0,0636	6,361
20	¾"	0,0314	3,141	0,1130	11,3
25	1"	0,0490	4,908	0,1767	17,67
32	1 ¼"	0,0804	8,042	0,2895	28,95
40	1 ½"	0,1256	12,65	0,4523	45,23
50	2"	0,1963	19,63	0,7068	70,68
65	2 ½"	0,3318	33,18	1,194	119,4
80	3"	0,5026	50,26	1,809	180,9
100	4"	0,7853	78,53	2,827	282,7
125	5"	1,227	122,7	4,417	441,7
150	6"	1,767	176,6	6,361	636,1
200	8"	3,141	314,1	11,30	1130
250	10"	4,908	490,8	17,67	1767
300	12"	7,068	706,8	25,44	2544
350	14"	9,621	962,1	34,63	3463
400	16"	12,56	1256	45,23	4523
450	18"	15,90	1590	57,25	5725
500	20"	19,63	1963	70,68	7068
600	24"	28,27	2827	101,7	10178
700	28"	38,48	3848	138,5	13854
800	32"	50,26	5026	180,9	18095
900	36"	63,61	6361	229	22902
1000	40"	78,53	7853	282,7	28274

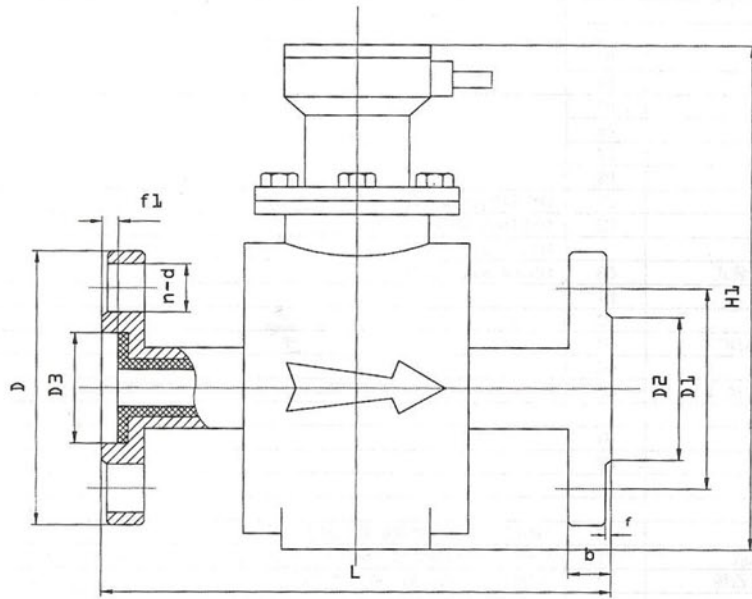
*According to 0,1...10 m/sec.



4.9. Dimensions



EMD-CM.. (Compact)



EMD-RM.. (Remote)



Diameter (mm)	Pressure Rating (Bar)	Dimension (mm)						
		H	H1	L	D	D1	n-d	b
10-15	40	360	220	160	95	65	4 × Ø 14	14
20		360	220	165	105	75	4 × Ø 14	16
25		360	220	200	115	85	4 × Ø 14	16
32		370	235	200	140	100	4 × Ø 18	18
40		370	235	200	150	110	4 × Ø 18	20
50		385	242	200	165	125	4 × Ø 18	22
65		400	256	250	185	145	8 × Ø 18	24
80		415	275	250	200	160	8 × Ø 18	24
100	1.6	435	295	250	220	180	8 × Ø 18	24
	2.5	440	300	250	230	190	8 × Ø 22	26
125	1.6	465	325	250	250	210	8 × Ø 18	24
	2.5	475	335	250	270	220	8 × Ø 26	28
150	1.6	497	355	300	285	240	8 × Ø 22	26
	2.5	505	363	300	300	250	8 × Ø 26	28
200	1.6	550	410	350	340	295	8 × Ø 22	28
	2.5	560	420	350	360	310	8 × Ø 26	32
250	1.6	610	488	450	405	355	12 × Ø 26	30
	2.5	620	498	450	425	370	12 × Ø 30	32
300	1.6	660	520	500	460	410	12 × Ø 26	30
350	1.6	720	576	500	520	470	16 × Ø 26	32
400	1.0	765	625	600	565	515	16 × Ø 26	32
450	1.0	825	685	600	615	565	20 × Ø 26	32
500	1.0	878	735	600	670	620	20 × Ø 26	32
600	1.0	988	845	600	780	725	20 × Ø 30	34
700	1.0	1095	952	700	895	840	24 × Ø 30	36
800	1.0	1208	1064	800	1015	950	24 × Ø 33	36
900	1.0	1310	1167	900	1115	1050	28 × Ø 33	38
1000	1.0	1413	1269	1000	1230	1160	28 × Ø 36	38

5.0 Maintenance

No special maintenance work is required.

When cleaning the exterior of measuring devices, always use cleaning agents that do not attack the surface of the housing and the seals.



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