

F, V, W series

Electromagnetic flowmeter

Full-bore flow sensors



The perfect fit for all water industry applications

Measurement made easy

F, V, W series
electromagnetic
flow sensors

Introduction

ABB's full-bore FEF, FEV and FEW electromagnetic flowmeter sensors are available with either an AquaMaster 3 or a WaterMaster transmitter.

AquaMaster 3 and WaterMaster are a range of high performance electromagnetic flowmeters for the measurement of electrically conductive fluids and are supplied as factory-configured and calibrated systems.

This User Guide provides end-user details for installation and connection.

For more information

Further publications are available for free download from www.abb.com/flow or by scanning this code:



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WaterMaster
Electromagnetic flowmeter

User Guide Supplement [IM/WMPBS-EN](#)
WaterMaster
Electromagnetic flowmeter | PROFIBUS RS485 Physical Layer (FEX100-DP)

User Guide Supplement [IM/WMPBST-EN](#)
WaterMaster
Electromagnetic flowmeter PROFIBUS FEX100-DP parameter tables

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1 Safety

Information in this manual is intended only to assist our customers in the efficient operation of our equipment. Use of this manual for any other purpose is specifically prohibited and its contents are not to be reproduced in full or part without prior approval of the Technical Publications Department.









1.1 Electrical Safety

This equipment complies with the requirements of CEI/IEC 61010-1:2001-2 'Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use' and complies with NIST and OSHA.

If the equipment is used in a manner NOT specified by the Company, the protection provided by the equipment may be impaired.


1.2 Symbols

One or more of the following symbols may appear on the equipment labelling:

	Warning – Refer to the manual for instructions		Direct current supply only
	Caution – Risk of electric shock		Alternating current supply only
	Protective earth (ground) terminal		Both direct and alternating current supply
	Earth (ground) terminal		The equipment is protected through double insulation

1.3 Product Disposal

Note. The following only applies to European customers.

	<p>ABB is committed to ensuring that the risk of any environmental damage or pollution caused by any of its products is minimized as far as possible. The European Waste Electrical and Electronic Equipment (WEEE) Directive (2002/96/EC) that came into force on August 13 2005 aims to reduce the waste arising from electrical and electronic equipment; and improve the environmental performance of all those involved in the life cycle of electrical and electronic equipment.</p> <p>In conformity with European local and national regulations (EU Directive 2002/96/EC stated above), electrical equipment marked with the above symbol may not be disposed of in European public disposal systems after 12 August 2005.</p>
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1.4 Health & Safety

Health and Safety

To ensure that our products are safe and without risk to health, the following points must be noted:

- The safety requirements of this equipment, any associated equipment and the local environment must be taken into consideration during installation.
- Install and use this equipment and any associated equipment in accordance with the relevant national and local standards.
- The relevant sections of these instructions must be read carefully before proceeding.
- Warning labels on containers and packages must be observed.
- Installation, operation, maintenance and servicing must only be carried out by suitably trained personnel and in accordance with the information given.
- Normal safety precautions must be taken to avoid the possibility of an accident occurring when operating in conditions of high pressure and / or temperature.
- Chemicals must be stored away from heat, protected from temperature extremes and powders kept dry. Normal safe handling procedures must be used.
- When disposing of chemicals ensure that no two chemicals are mixed.
- Product liability – advice and assistance provided without charge is given in good faith but without liability.

Safety advice concerning the use of the equipment described in this manual or any relevant hazard data sheets (where applicable) may be obtained from the Company address on the back cover, together with servicing and spares information.

Warning.

- System configuration must be carried out only by users or personnel with approved access rights (user privileges).
- Read all relevant sections of this guide before configuring the system or modifying system parameters.
- Install and use associated equipment in accordance with the relevant national and local standards.

1.5 Information on ROHS Directive 2011/65/EU (RoHS II)



ABB, Industrial Automation, Measurement & Analytics, UK, fully supports the objectives of the ROHS II directive. All in-scope products placed on the market by IAMA UK on and following the 22nd of July 2017 and without any specific exemption, will be compliant to the ROHS II directive, 2011/65/EU.

2 Mechanical Installation

2.1 Unpacking

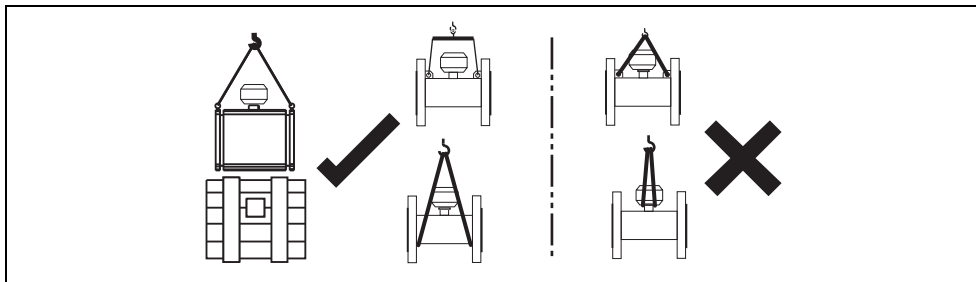


Fig. 2.1 Unpacking

Caution.

- Inspect the flowmeter for damage before installation. Do NOT install a damaged or faulty flowmeter.
- When lifting the flowmeter, use the lifting hooks provided or sling under the body of the meter. NEVER lift the flowmeter by the sensor cable terminal connection box – this will damage the terminal connection box and invalidate the warranty.

2.2 Installation Conditions

Caution. Do NOT exceed the maximum working pressure marked on the flowmeter.

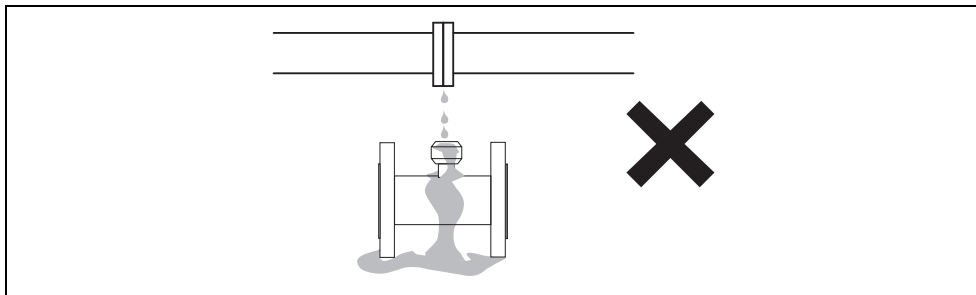


Fig. 2.2 Spillage

Caution. Do NOT install the flowmeter in an area where a spillage of any substance could damage the flowmeter.

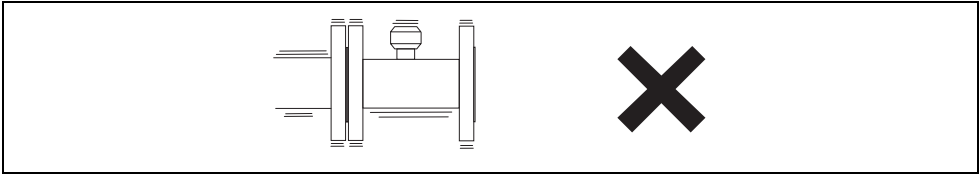


Fig. 2.3 Vibration

Caution. Do NOT install the flowmeter in a pipeline that may exert excessive movement and twisting forces on the flowmeter, for example, vibration.

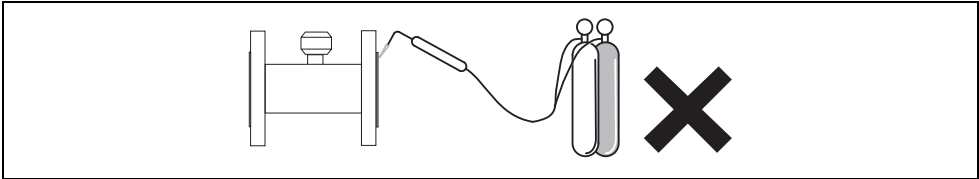


Fig. 2.4 Localized Heat

Caution. Do NOT subject the flowmeter to localized heat during installation. Remember – the flowmeter is a measuring instrument.

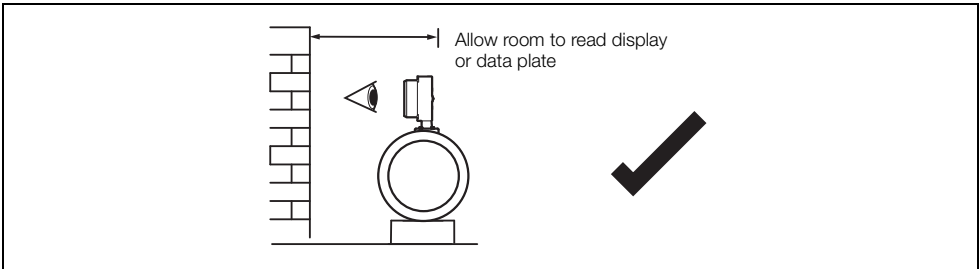


Fig. 2.5 Siting

Note. When installing an integral flowmeter, allow enough room to read the transmitter's display and data label.

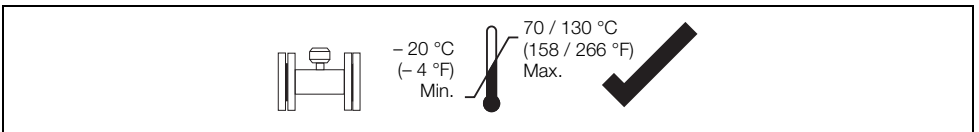


Fig. 2.6 Within Temperature Limits

Caution. Ensure the flowmeter is operated within its specified temperature limits. Use flange seals made from a material that is compatible with the fluid and fluid temperatures as required.

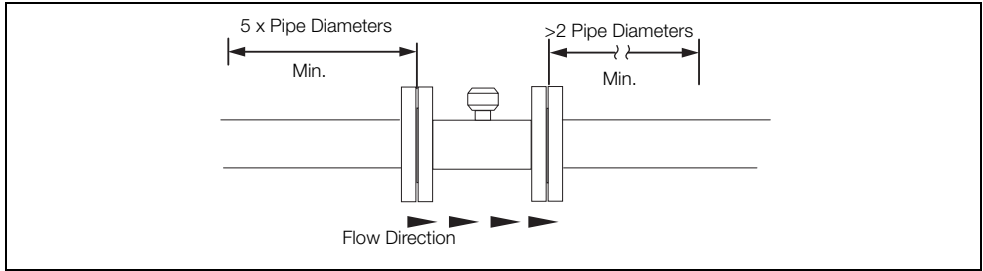


Fig. 2.7 Straight Pipe Requirements

Note. Ensure the flow direction in the pipeline corresponds to the identification plate. The flowmeter measures the flowrate in both directions. Forward flow is the factory setting. Experience has shown that, in most installations, a straight upstream section 3 x pipe diameters in length and a straight downstream section 2 x pipe diameters in length are sufficient. However, wherever possible, straight upstream and downstream sections 5 x 2 pipe diameters in length are recommended.

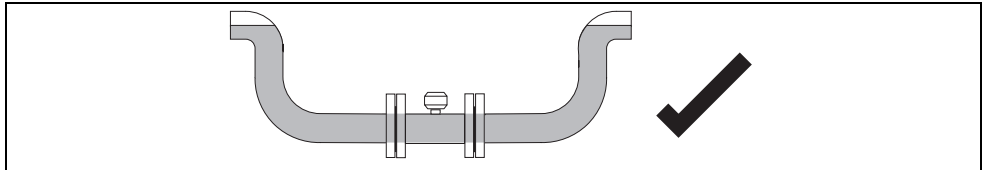


Fig. 2.8 Fluid Level

Note. For accurate and reliable operation, install the flowmeter sensor in a position where it will be completely full when in operation. The flowmeter will operate when not full, but indicated readings will not be accurate.

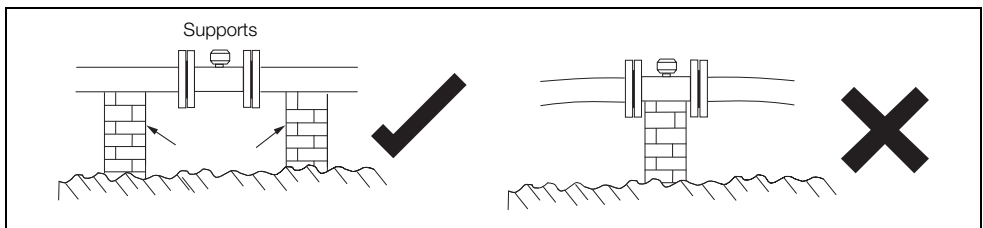


Fig. 2.9 Above Ground

Caution. Do NOT install the flowmeter in a manner that will subject it to mechanical tension (torsion, bending). If required, support the pipeline. Remember – the flowmeter is a measuring instrument.

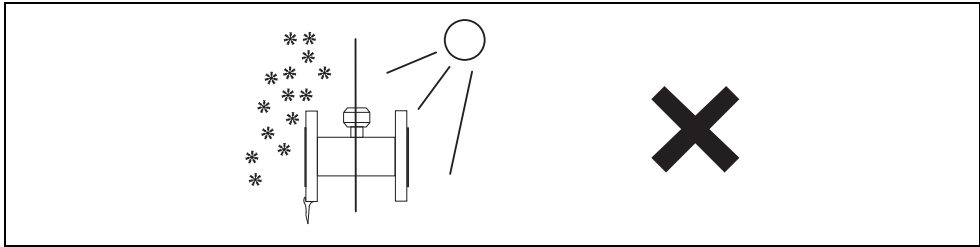


Fig. 2.10 Temperature Difference

Caution. Do NOT install the flowmeter in a position that will expose it to direct sunlight. Provide appropriate sun protection if required.

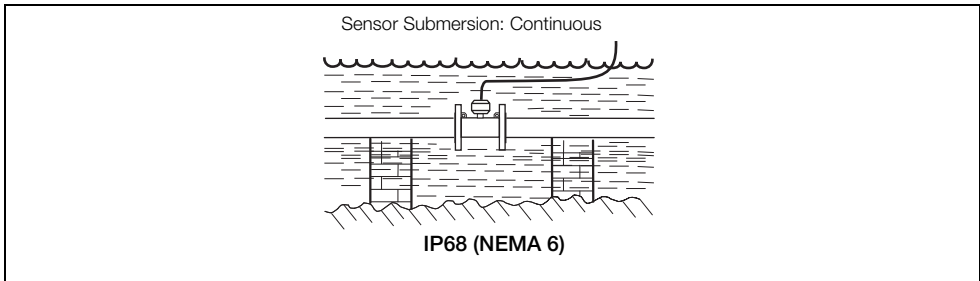


Fig. 2.11 Within Environmental Rating

Caution. Ensure the level of IP rating is correct for the required meter installation application. IP68 (NEMA 6) rated meters can be continuously submerged.

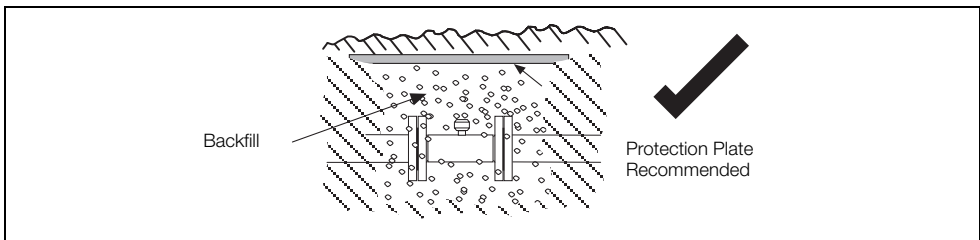


Fig. 2.12 Underground

Caution. When burying a flowmeter, ensure it can be found easily if required (for example, mark the installation position with a post). Installing a protection plate above the meter is also recommended.

Note. For further advice when burying flowmeters, contact the ABB Service Organization.

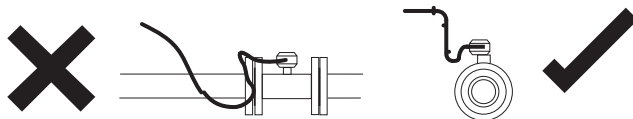


Fig. 2.13 Cable Routing

Caution. Install all flowmeter cabling neatly. Installation within a conduit is recommended. Install the cabling or conduit with a U-bend below the terminal connection box height to prevent water ingress into the flowmeter sensor by capillary action.

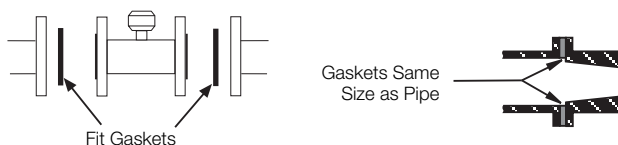


Fig. 2.14 Gasket Fitting

Caution. Use correctly sized gaskets. Do NOT fit gaskets that will extend into the flow area – the turbulence caused will adversely affect flowmeter accuracy.

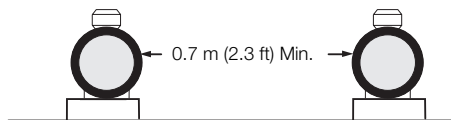


Fig. 2.15 Separation of Sensors

Caution. If flowmeters are installed in adjacent pipelines, ensure they are **at least 0.7 m (2.3 ft.)** apart to prevent the electromagnetic field from one meter affecting the other.

3 Electrical Installation

3.1 Grounding

Caution. For safety reasons and optimum performance, the flowmeter, pipelines and medium must be correctly bonded and grounded according to regulations. Do not ground cathodically-protected pipelines to an external earth.

Note.

- Connect the transmitter ground connection to the flowmeter body ground – see Figs. 3.5 (page 11) and 3.6 (page 11).
- The flow sensor must not be connected to a ground spike.
- For bonding connections use $\geq 4 \text{ mm}^2$ (<10AWG) cable.

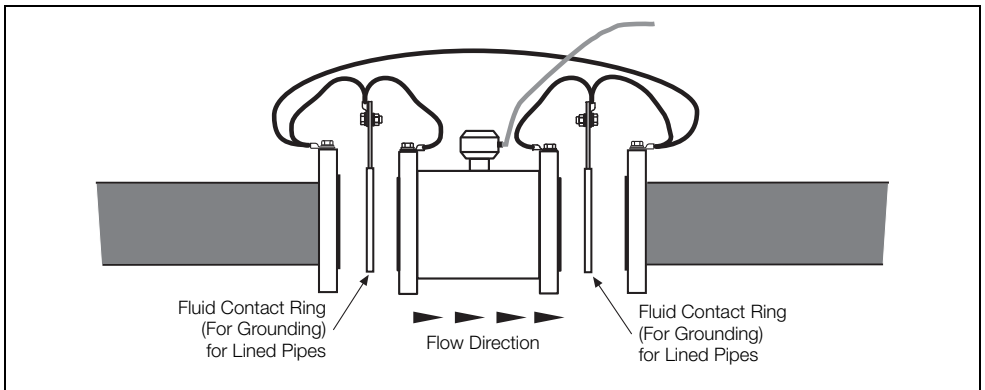


Fig. 3.1 Cross Bonding – All Flanged Pipes

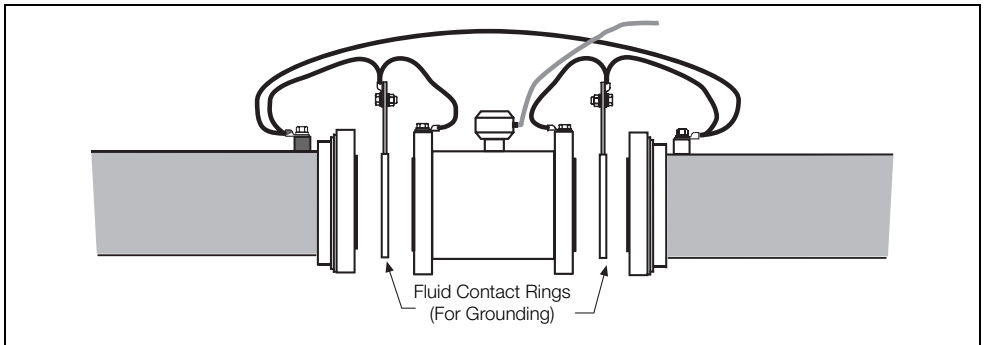


Fig. 3.2 Cross Bonding – Flange Adapter

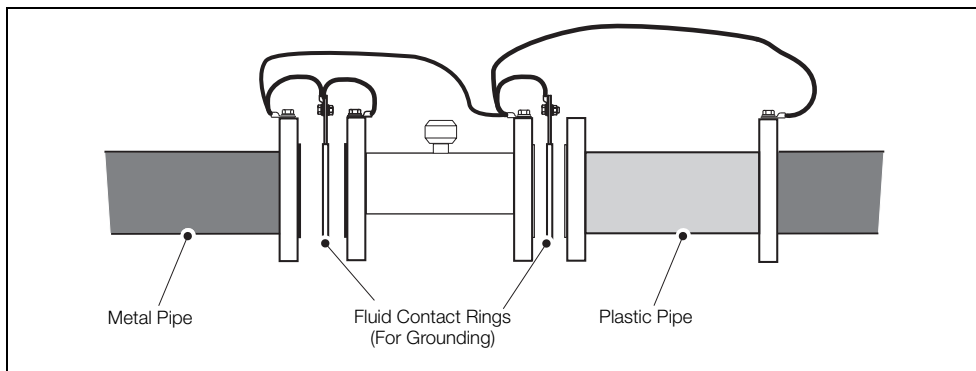


Fig. 3.3 Cross Bonding – Plastic Pipe Insert

Note. The grounding arrangement shown in Fig. 3.4 is applicable only to:

- cathodic protected installations
- installations where E_2 and E_3 are different to E_1

Caution. Incorrect installation will result in fault currents flowing through the meter resulting in unstable readings.

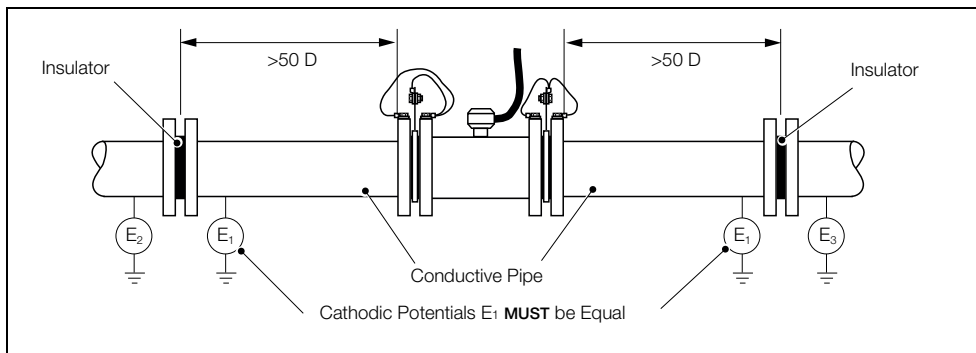


Fig. 3.4 Cathodic Protected Installations with Different Cathodic Potential Generators

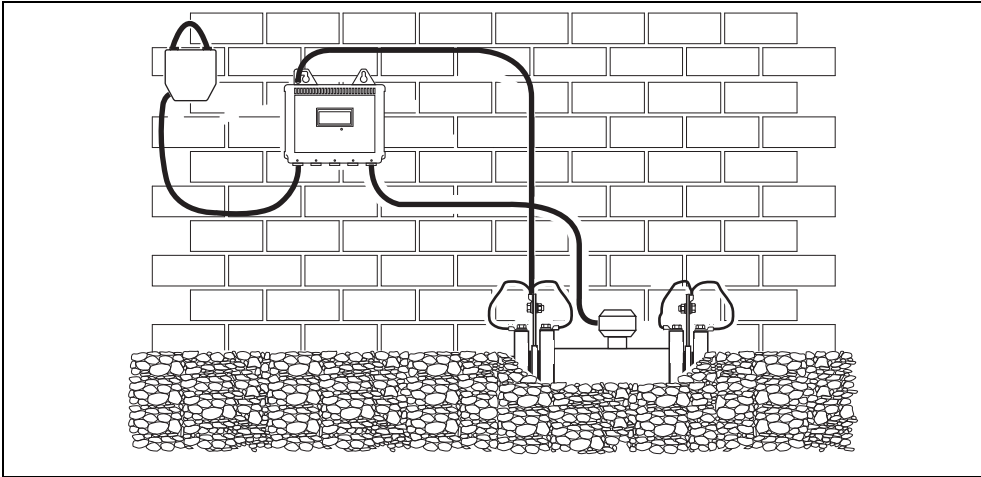


Fig. 3.5 AquaMaster 3 Transmitter Mounted in a Chamber (Battery Version Shown)

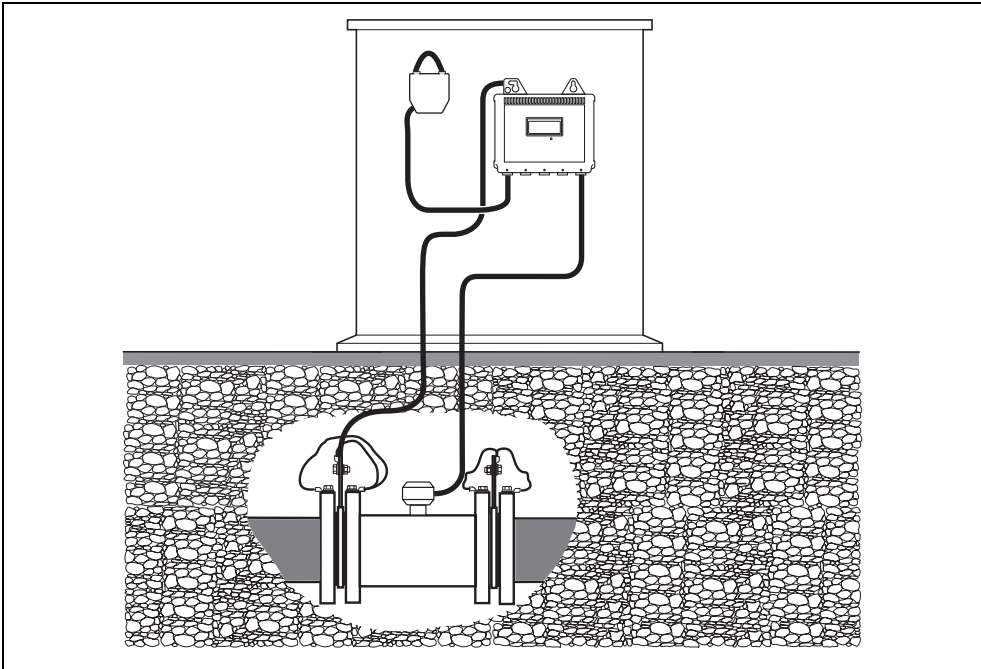


Fig. 3.6 AquaMaster 3 Transmitter Mounted in a Cabinet (Battery Version Shown)

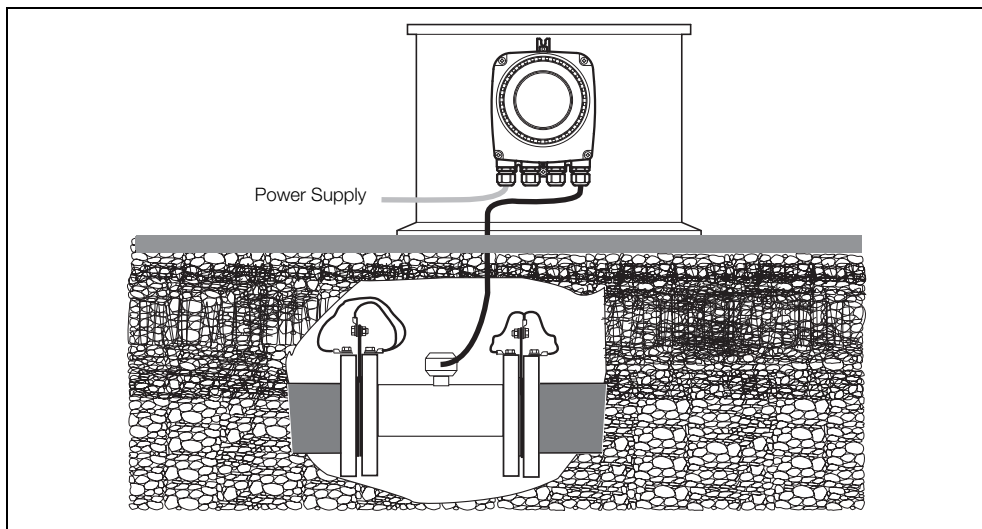


Fig. 3.7 WaterMaster Remote Transmitter Mounted in a Roadside Cabinet

3.2 Cable Preparation (Remote Transmitter Only)

Caution. Maintain Environmental Protection at all times – See Section 3.3, page 14.

To prepare the cable for connection at the transmitter and sensor terminal blocks:

1. Remove the outer cable insulation and Mylar® wrap.
2. Ensure the drain wire is sleeved.
3. Cut the cable connection wires to the lengths shown.

3.2.1 Sensor Cable Connections (Remote WaterMaster Transmitter Only)

Caution.

- Make connections only as shown.
- Twist the screen wire of D1 / TFE + D2 with the outer screen drain wire and sleeve them green / yellow.
- Ensure the seal and mating surfaces are clean to maintain environmental rating.
- Conduit connections must provide cable entry sealing.
- Ensure cable glands are tightened after wiring. Do not overtighten the plastic cable glands to avoid destroying their sealing properties. Initially, tighten finger-tight, then a further $1/2$ to $3/4$ turn using a suitable spanner or wrench.

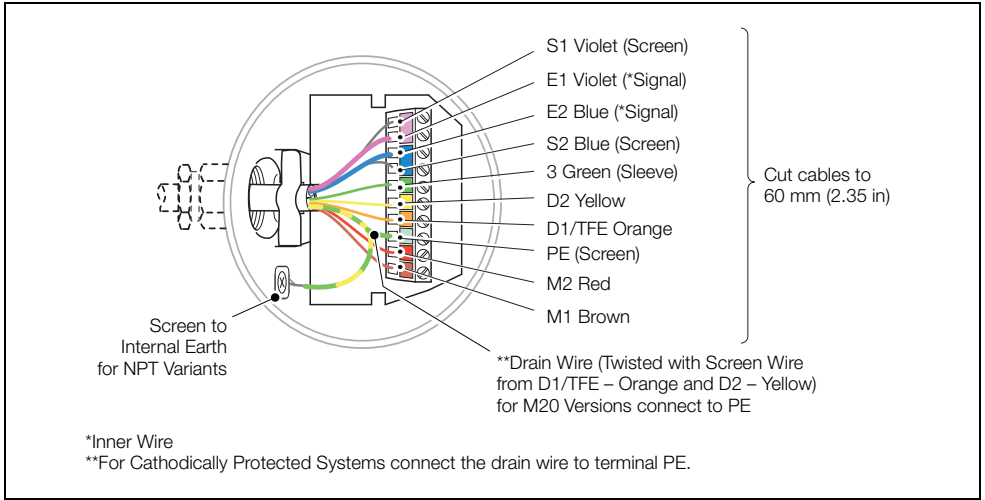


Fig. 3.8 Sensor Cable Connections – WaterMaster Transmitter

3.2.2 Sensor Cable Connections (Remote AquaMaster 3 Transmitter Only)

Caution.

- Twist the three screen wires together and sleeve them.
- Keep cable pairs twisted.
- Make connections only as shown.
- Maintain Environmental Protection at all times.
- Conduit connections must provide cable entry sealing.

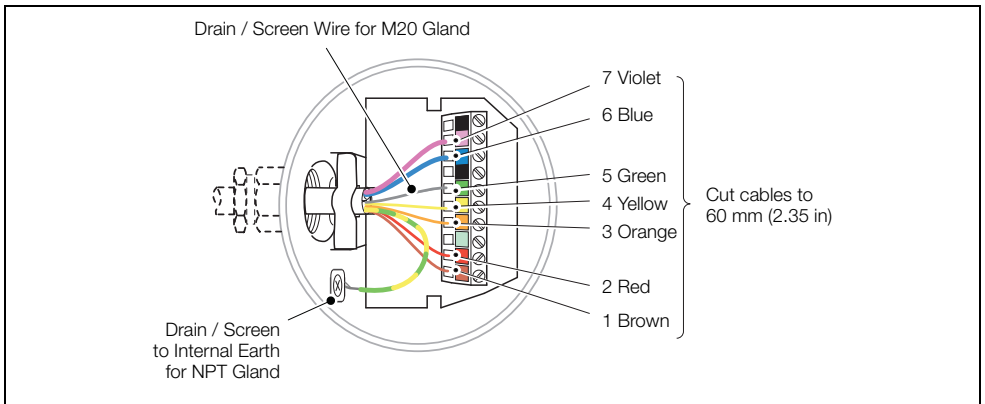


Fig. 3.9 Sensor Cable Connections – AquaMaster 3 Transmitter

3.3 Environmental Protection

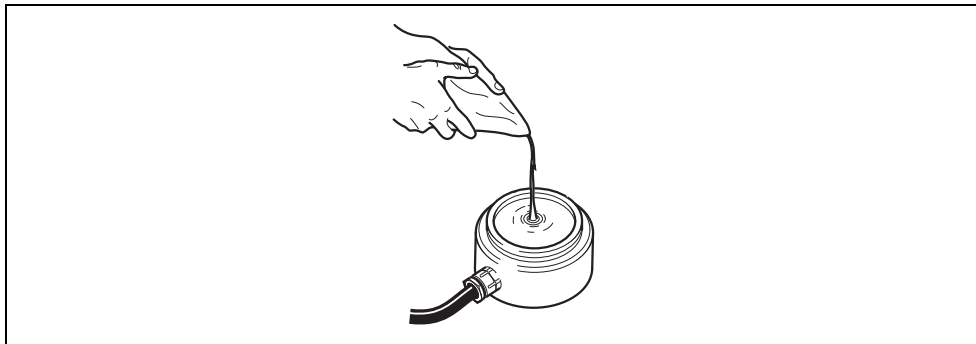


Fig. 3.10 Potting the Sensor Terminal Box

Warning.

- Potting materials are toxic. Read the manufacturers' instructions carefully before preparing the potting material and use suitable safety precautions.
- Power up and check all connections before potting.
- The remote sensor terminal box connections must be potted immediately on completion to prevent the ingress of moisture.
- Do not overfill or allow the potting material to come into contact with 'O' rings or grooves.
- Do not let potting material enter conduit (if used).

4 Specification

WaterMaster optimized full-bore meter / full-bore meters flow performance (m³/h)

DN	Q4	Q3	Standard Calibration – 0.4 % Class 2			High Accuracy Calibration – 0.2 % Class 1		
			Q _{0.4%}	Q2	Q1	Q _{0.2%}	Q2	Q1
10	3.1	2.5	0.167	0.013	0.008	0.31	0.02	0.012
15	7.88	6.3	0.42	0.032	0.02	0.79	0.05	0.03
20	12.5	10	0.67	0.05	0.032	1.25	0.08	0.05
25	20	16	1.1	0.08	0.05	2	0.13	0.08
32	31.25	25	1.67	0.13	0.08	3	0.20	0.13
40*	50	40	4.2	0.2	0.13	6	0.32	0.2
50*	79	63	4.2	0.32	0.20	7.9	0.5	0.32
65*	125	100	6.7	0.5	0.32	12.5	0.8	0.5
80*	200	160	10.7	0.81	0.51	16	1.3	0.8
100*	313	250	16.7	1.3	0.79	25	2	1.25
125*	313	250	16.7	1.3	0.79	25	2	1.25
150*	788	630	42	3.2	2.0	63	5	3.2
200*	1,250	1,000	67	5.1	3.2	100	8	5
250	2,000	1,600	107	8.1	5.1	160	13	8
300	3,125	2,500	167	12.7	7.9	250	20	12.5
350	5,000	4,000	267	20.3	12.7	400	32	20
400	5,000	4,000	267	20.3	12.7	400	32	20
450	7,875	6,300	420	32	20	630	50	32
500	7,875	6,300	420	32	20	630	50	32
600	12,500	10,000	667	51	32	1000	80	50
700	20,000	16,000	1600	102	64	1600	160	100
750	20,000	16,000	1600	102	64	1600	160	100
30 in (760)	20,000	16,000	1600	102	64	1600	160	100
800	20,000	16,000	1600	102	64	1600	160	100
900	31,250	25,000	2500	160	100	2500	250	156
1000	31,250	25,000	2500	160	100	2500	250	156
42 in	31,250	25,000	2500	160	100	2500	250	156
1100	31,250	25,000	2500	160	100	2500	250	156
1200	50,000	40,000	4000	256	160	4000	400	250
1350	78,750	63,000	6300	403	252	6300	630	394
1400	78,750	63,000	6300	403	252	6300	630	394
1500	78,750	63,000	6300	403	252	6300	630	394
60 in (1500)	78,750	63,000	6300	403	252	6300	630	394
1600	78,750	63,000	6300	403	252	6300	630	394
1650	78,750	63,000	6300	403	252	6300	630	394
1800	125,000	100,000	10000	640	400	10000	1000	625
1950	125,000	100,000	10000	640	400	10000	1000	625
2000	125,000	100,000	10000	640	400	10000	1000	625
2200	200,000	160,000	16000	1024	640	16000	1600	1000
2400	200,000	160,000	16000	1024	640	16000	1600	1000

* OIML R49 Certificate of Conformance to Class 1 and Class 2, with OIML R49 and MID versions available.

Note. OIML R49–1 allows Class 1 only for meters with Q₃ ≥ 100 m³/h. Meters outside this range have been tested and conform to Class 1.

WaterMaster optimized full-bore meter / full-bore meters flow performance (GPM)

NPS/NB (DN)	Q4	Q3	Standard Calibration 0.4 % Class 2			High Accuracy Calibration 0.2 % Class 1		
			Q0.4%	Q2	Q1	Q0.2%	Q2	Q1
3/8 (10)	13.8	11	0.73	0.06	0.035	1.38	0.09	0.053
1/2 (15)	34.7	27.7	1.85	0.14	0.09	3.48	0.22	0.14
3/4 (20)	55	44	2.94	0.22	0.14	5.5	0.35	0.22
1 (25)	88	70.4	4.7	0.35	0.22	8.8	0.57	0.35
1 1/4 (32)	137.6	110	7.3	0.57	0.35	13.2	0.88	0.57
1 1/2 (40)	220	176	18.5	0.89	0.56	26.4	1.41	0.88
2 (50)	347	277	18.5	1.41	0.88	34.7	2.22	1.39
2 1/2 (65)	550	440	29.4	2.24	1.40	55.0	3.52	2.20
3 (80)	881	704	47.0	3.58	2.24	70.4	5.64	3.52
4 (100)	1,376	1,101	73.4	5.59	3.49	110	8.81	5.50
5 (125)	1,376	1,101	73.4	5.59	3.49	110	8.81	5.50
6 (150)	3,467	2,774	185	14.1	8.81	277	22.2	13.9
8 (200)	5,504	4,403	294	22.4	14.0	440	35.2	22.0
10 (250)	8,806	7,045	470	35.8	22.4	704	56.4	35.2
12 (300)	13,759	11,007	734	55.9	34.9	1,101	88.1	55.0
14 (350)	22,014	17,611	1,174	89.5	55.9	1,761	141	88.1
16 (400)	22,014	17,611	1,174	89.5	55.9	1,761	141	88.1
18 (450)	34,673	27,738	1,849	141	88.1	2,774	222	139
20 (500)	34,673	27,738	1,849	141	88.1	2,774	222	139
24 (600)	55,036	44,029	2,935	224	140	4,403	352	220
27/28* (700)	88,057	70,446	7,045	451	282	7,045	704	440
29 (750)	88,057	70,446	7,045	451	282	7,045	704	440
30 (760)	88,057	70,446	7,045	451	282	7,045	704	440
32 (800)	88,057	70,446	7,045	451	282	7,045	704	440
36 (900)	137,590	110,072	11,007	704	440	11,007	1,100	688
39/40* (1000)	137,590	110,072	11,007	704	440	11,007	1,100	688
42 (1050)	137,590	110,072	11,007	704	440	11,007	1,100	688
44 (1100)	137,590	110,072	11,007	704	440	11,007	1,100	688
48 (1200)	220,143	176,115	17,611	1,127	704	17,611	1,761	1,101
52 (1350)	346,726	277,381	27,738	1,775	1,110	27,738	2,773	1,733
54 (1400)	346,726	277,381	27,738	1,775	1,110	27,738	2,773	1,733
60 (1500)	346,726	277,381	27,738	1,775	1,110	27,738	2,773	1,733
66 (1600)	346,726	277,381	27,738	1,775	1,110	27,738	2,773	1,733
68 (1650)	346,726	277,381	27,738	1,775	1,110	27,738	2,773	1,733
77 (1800)	550,358	440,287	44,029	2,818	1,761	44,029	4,403	2,752
77 (1950)	550,358	440,287	44,029	2,818	1,761	44,029	4,403	2,752
78 (2000)	550,358	440,287	44,029	2,818	1,761	44,029	4,403	2,752
78 (2000)	550,358	440,287	44,029	2,818	1,761	44,029	4,403	2,752
84 (2200)	880,573	704,459	70,446	4,509	2,818	70,446	7,045	4,403
96 (2400)	880,573	704,459	70,446	4,509	2,818	70,446	7,045	4,403

*Size is dependent on flange specification

AquaMaster 3 FEV2, FEF2 AC-powered Full-bore Sensors – Flow Performance

Size		Q ₄	Q ₃	Q _{0.5%}	Class 2 specification		R	Class 1 specification		R
					Q ₂	Q ₁		Q ₂	Q ₁	
mm	in.	m ³ / h (GPM)	m ³ / h (GPM)	m ³ / h (GPM)	m ³ / h (GPM)	m ³ / h (GPM)		m ³ / h (GPM)	m ³ / h (GPM)	
40	1½	50 (220)	40 (176)	4 (18)	0.20 (0.88)	0.13 (0.57)	315	0.32 (1.40)	0.20 (0.88)	200
50	2	79 (247)	63 (277)	6.3 (28)	0.32 (1.41)	0.20 (0.88)	315	0.50 (2.20)	0.32 (1.41)	200
65	2½	125 (550)	100 (440)	10 (44)	0.50 (2.20)	0.32 (1.41)	315	0.80 (3.52)	0.50 (2.20)	200
80	3	200 (880)	160 (700)	16 (70)	0.81 (3.56)	0.51 (2.24)	315	1.30 (5.72)	0.8 (3.52)	200
100	4	313 (1377)	250 (1100)	25 (110)	1.3 (5.72)	0.79 (3.47)	315	2.00 (8.80)	1.25 (5.5)	200
125	5	313 (1377)	250 (1100)	25 (110)	1.3 (5.72)	0.79 (3.47)	315	2.00 (8.80)	1.25 (5.5)	200
150	6	788 (3470)	630 (2770)	63 (277)	3.2 (14.08)	2.00 (8.80)	315	5.00 (22.00)	3.2 (14.08)	200
200	8	1250 (5500)	1000 (4400)	100 (440)	5.1 (22.44)	3.2 (14.08)	315	8.0 (35.20)	5.0 (22.00)	200
250	10	2000 (8800)	1600 (7040)	160 (700)	8.1 (35.64)	5.1 (22.44)	315	13.0 (57.20)	8.0 (35.20)	200
300	12	3125 (13750)	2500 (11007)	250 (1100)	12.7 (55.88)	7.9 (34.76)	315	20.0 (88.00)	12.5 (55.00)	200
350	14	5000 (22000)	4000 (17610)	400 (1760)	20.3 (89.32)	12.7 (55.88)	315	32.0 (14.08)	20.0 (88.00)	200
400	16	5000 (22000)	4000 (17610)	400 (1760)	20.3 (89.32)	12.7 (55.88)	315	32.0 (14.08)	20.0 (88.00)	200
450	18	7875 (34760)	6300 (27740)	630 (2770)	32.0 (140.8)	20.0 (88.00)	315	50.0 (220.00)	32.0 (140.8)	200
500	20	7875 (34650)	6300 (27740)	630 (2770)	32.0 (140.8)	20.0 (88.00)	315	50.0 (220.00)	32.0 (140.8)	200
600	24	12500 (55000)	10000 (44000)	1000 (4400)	51.0 (224.4)	32.0 (140.8)	315	80.0 (352.0)	50.0 (220.0)	200

AquaMaster 3 FEV2, FEF2 Battery / Renewable Energy Full-bore Sensors – Flow Performance

Size		Q ₄	Q ₃	Q _{1(0.25%)}	Class 2 specification		R	Class 1 specification		R
					Q ₂	Q ₁		Q ₂	Q ₁	
mm	in.	m ³ / h (GPM)	m ³ / h (GPM)	m ³ / h (GPM)	m ³ / h (GPM)	m ³ / h (GPM)		m ³ / h (GPM)	m ³ / h (GPM)	
40	1½	50 (220)	40 (176)	2.7 (11.8)	0.4 (1.8)	0.25 (1.1)	160	0.64 (2.8)	0.4 (1.8)	100
50	2	79 (247)	63 (277)	4.2 (18.5)	0.63 (2.8)	0.39 (1.71)	160	1.0 (4.4)	0.63 (2.8)	100
65	2½	125 (550)	100 (440)	6.7 (29.5)	1.0 (4.4)	0.6 (1.41)	160	1.6 (7.0)	1.0 (4.4)	100
80	3	200 (880)	160 (700)	10.7 (47.0)	1.6 (7.0)	1.0 (4.4)	160	2.6 (11.4)	1.6 (7.0)	100
100	4	313 (1377)	250 (1100)	16.7 (73.5)	2.5 (11.0)	1.6 (7.0)	160	4.0 (17.6)	2.5 (11.0)	100
125	5	313 (1377)	250 (1100)	16.7 (73.5)	2.5 (11.0)	1.6 (7.0)	160	4.0 (17.6)	2.5 (11.0)	100
150	6	788 (3470)	630 (2770)	42.0 (184.8)	6.3 (27.7)	3.9 (17.1)	160	10.0 (44.0)	6.3 (27.7)	100
200	8	1250 (5500)	1000 (4400)	67.0 (294.8)	10.0 (44.0)	6.0 (26.4)	160	16.0 (70.0)	10.0 (44.0)	100
250	10	2000 (8800)	1600 (7040)	107.0 (470.8)	16.0 (70.0)	10.0 (44.0)	160	26.0 (110.4)	16.0 (70.0)	100
300	12	3125 (13750)	2500 (11007)	167.0 (734.8)	25.0 (110.0)	15.6 (68.6)	160	40.0 (176.0)	25.0 (110.0)	100
350	14	5000 (22000)	4000 (17610)	267.0 (1174.8)	40.0 (176.0)	25.0 (110.0)	160	64.0 (281.6)	40.0 (176.0)	100
400	16	5000 (22000)	4000 (17610)	267.0 (1174.8)	40.0 (176.0)	25.0 (110.0)	160	64.0 (281.6)	40.0 (176.0)	100
450	18	7875 (34760)	6300 (27740)	420.0 (184.8)	63.0 (277.0)	39.0 (171.6)	160	101.0 (444.4)	63.0 (277.0)	100
500	20	7875 (34650)	6300 (27740)	420.0 (184.8)	63.0 (277.0)	39.0 (171.6)	160	101.0 (444.4)	63.0 (277.0)	100
600	24	12500 (55000)	10000 (44000)	667.0 (2934.8)	100.0 (440.0)	63.0 (277.0)	160	160.0 (704.0)	100.0 (440.0)	100

Functional Specification

Temperature limitations

Ambient temperature
 Remote transmitter -20 to 70 °C (-4 to 158 °F)
 Integral transmitter -20 to 60 °C (-4 to 140 °F)
 Process temperature See table below:
 0.1 to 50 °C (32.2 to 122 °F) – OIML R49 T50 Approved

Code	Lining	Flange material	Medium temperature °C (°F)	
			Minimum	Maximum
FEF, FEW3	Hard rubber	Carbon steel	-10 (14)	80 (176)
		Stainless steel	-10 (14)	80 (176)
FEW1	PTFE	Carbon steel	-10 (14)	80 (176)
		Stainless steel	-25 (-13)	80 (176)
FEW3	PTFE	Carbon steel	-10 (14)	80 (176)
		Stainless steel	-10 (14)	80 (176)
FEW3	Elastomer	Carbon steel	-5 (23)	80 (176)
		Stainless steel	-5 (23)	80 (176)
FEF	Elastomer	Carbon steel	-6 (21)	70 (158)
FEV	Polypropylene		-6 (21)	70 (158)

Pressure limitations

As flange rating
 PN25 Max Process Temp 50 °C (122 °F)
 PN40 Max Process Temp 40 °C (104 °F)
 OIML / MID Approved Meters 16 bar (232 psi)
 UL Fire Service approved meters 285 psi

Pressure equipment directive 97/23/EC

This product is applicable in networks for the supply, distribution and discharge of water and associated equipment and is therefore exempt.

IP rating

IP68 (NEMA 6) to 7 m (20 ft.) depth
Note. Not sizes DN10 to DN32 (3/8 – 1 1/4 in. NB)
 IP67 (NEMA 4X) – DN10 to DN32 (3/8 – 1 1/4 in. NB)

Buriable (sensor only)

FEV, FEF and FEW – DN450 to 2400 (18 to 96 in. NB) to 5 m (16 ft.) depth

Conductivity

>20 µS cm⁻¹

Transmitter mounting

Integral (not FEF) or remote

Electrical connections

20 mm glands
 1/2 in. NPT
 20 mm armored glands

Sensor cable

ABB WaterMaster cable available in two forms – standard and armored
 Maximum length 200 m (660 ft.)

Physical Specification

Wetted parts

Electrode material

Stainless steel 316 L / 316 Ti
Super-austenitic steel
Hastelloy® C-22 and Hastelloy C⁴
(other electrode materials available on request)

Potential equalizing rings

Minimum of 1 recommended

Lining material / potable water approvals

			Potable Water Approvals					
Code	Size Range	Liner	WRAS	WRAS 60°C	ACS	DVGW	NSF	AZ/NZS4020
FEW1	DN10 – 32 (³ / ₈ – 1 ¹ / ₄ in. NB)	PTFE	✓					
FEW3	DN10 – 600 (³ / ₈ – 24 in. NB)	PTFE						
FEW3	DN40 – 2400 (1 ¹ / ₂ – 96 in. NB)	Elastomer	✓					✓
FEW3	DN40 – 2400 (1 ¹ / ₂ – 96 in. NB)	Hard rubber	✓	✓		✓	NSF approved material	
FEV	DN40 – 200 (1 ¹ / ₂ – 8 in. NB)	Polypropylene	✓		✓	✓	NSF-61	✓
FEF	DN250 – 600 (10 – 24 in. NB)	Elastomer	✓		✓	✓	NSF-61	✓
FEF	DN250 – 600 (10 – 24 in. NB)	Hard rubber	✓	✓		✓	NSF approved material	
FER	DN40 – 600 (1 ¹ / ₂ – 24 in. NB)	Elastomer	✓		4	✓		4

*Size is dependent on flange specification

Lining protection plates

Not required

Installation conditions (recommended)

Straight pipe requirements

	Upstream	Downstream
FEW / FEF	5 x DN	2 x DN
FEV	5 x DN	0 x DN

Pressure loss

Negligible at Q3	All full bore meters
<0.25 bar (<3.62 psi) at Q3	FEV (DN40 to 200 [1 ¹ / ₂ to 8 in. NB])
<0.63 bar (<9.13 psi) at Q3	FER (DN40 to 600 [1 ¹ / ₂ to 24 in. NB])

Non-wetted parts**Flange material**

Carbon steel	DN20 to DN2400 ($\frac{3}{4}$ to 96 in. NB)
Stainless steel	DN10 to DN2400 ($\frac{3}{8}$ to 96 in. NB)
SG iron	FEV – DN40 to DN150 [1 $\frac{1}{2}$ to 6 in. NB)

Housing material

Carbon steel	FEV – DN40 to 200 (1 $\frac{1}{2}$ to 8 in. NB) FEW – DN450 to 2400 (18 to 96 in. NB)
Plastic	FEF – DN250 to 600 (10 to 24 in. NB)
Aluminium	FEW – DN10 to 400 ($\frac{3}{8}$ to 16 in. NB)

Terminal box material

Polycarbonate

Cable gland material

Plastic, brass

Paint specificationPaint coat ≥ 70 μm thick RAL 9002 (light grey)

DS/WM-EN Rev. X

5 Sensor dimensions

5.1 FEW – DN10 to 125 (3/8 to 5 in. NB)

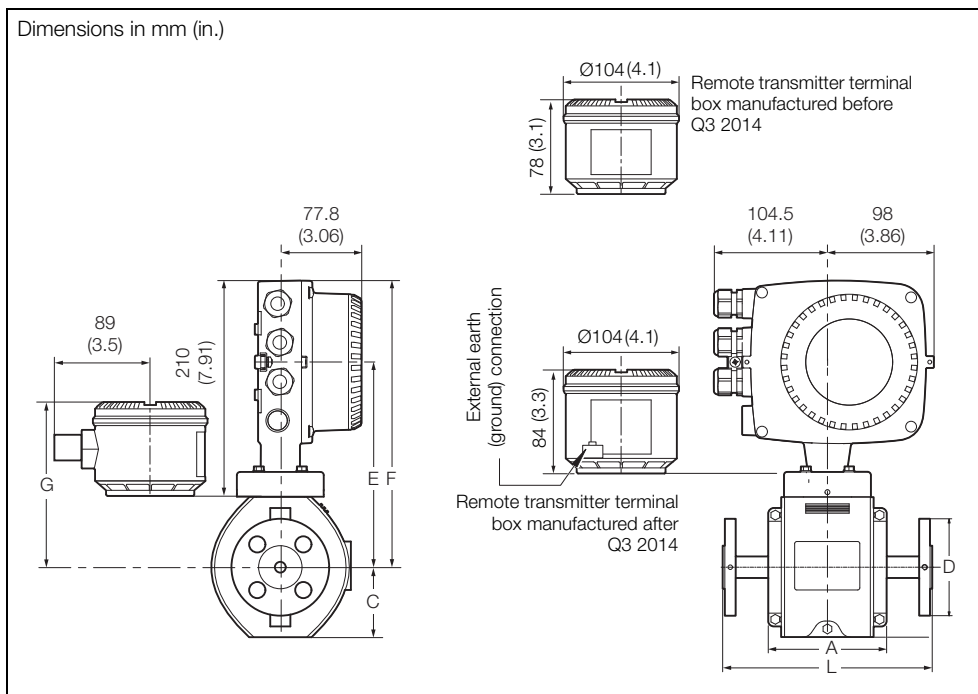


Fig. 5.1 DN10 to 125 (3/8 to 5 in. NB) (FEW)

DN	Mating flange type	Dimensions in mm (in.)							Approx. weight in kg (lb)	
		D	L	F	C	E	G	A	Integral	Remote
DN10 (3/8 in.)	JIS10K	90 (3.54)	200 (7.87)	268 (10.55)	82 (3.23)	193 (7.6)	148 (5.83)	113 (4.45)	6 (13)	4 (9)
	PN10 to 40	90 (3.54)								
	ASME B16.5 CL150	90 (3.54)								
	ASME B16.5 CL300	96 (3.78)								
DN15 (1/2 in.)	PN10 to 40	95 (3.74)	200 (7.87)	268 (10.55)	82 (3.23)	193 (7.6)	148 (5.83)	113 (4.45)	6 (13)	4 (9)
	JIS5K	80 (3.15)								
	JIS10K	95 (3.74)								
	ASME B16.5 CL300	95 (3.74)								
DN20 (3/4 in.)	ASME B16.5 CL150	90 (3.54)	200 (7.87)	268 (10.55)	82 (3.23)	193 (7.6)	148 (5.83)	113 (4.45)	6 (13)	4 (9)
	PN10 to 40	105 (4.13)								
	JIS5K	85 (3.35)								
	JIS10K	100 (3.94)								
	ASME B16.5 CL300	115 (4.53)								
ASME B16.5 CL150	98 (3.86)									

Table 5.1 DN10 to 125 (3/8 to 5 in. NB) (FEW) dimensions / weights

DN	Mating flange type	Dimensions in mm (in.)							Approx. weight in kg (lb)	
		D	L	F	C	E	G	A	Integral	Remote
DN25 (1 in.)	PN10 to 40	115 (4.53)	200 (7.87)	268 (10.55)	82 (3.23)	193 (7.6)	148 (5.83)	113 (4.45)	9 (20)	7 (15)
	JIS5K	95 (3.74)								
	JIS10K	125 (4.88)								
	ASME B16.5 CL300	125 (4.88)								
	ASME B16.5 CL150	108 (4.25)								
DN32 (1¼ in.)	PN10 to 40	140 (5.51)		275 (10.83)	92 (3.62)	200 (7.87)	155 (6.10)	113 (4.45)	10 (22)	8 (18)
	JIS5K	115 (4.53)								
	JIS10K	135 (5.31)								
	ASME B16.5 CL300	135 (5.31)								
	ASME B16.5 CL150	117 (4.61)								
DN40 (1½ in.)	PN10 to 40	150 (5.91)							11 (24)	9 (20)
	JIS5K	120 (4.72)								
	JIS10K	140 (5.51)								
	ASME B16.5 CL300	155 (6.10)								
	ASME B16.5 CL150	127 (5.00)								
DN50 (2 in.)	PN10 to 40	165 (6.5)		281 (11.06)	97 (3.82)	206 (8.11)	161 (6.34)	115 (4.53)	12 (26)	10 (22)
	JIS5K	130 (5.12)								
	JIS10K	155 (6.10)								
	AS4087 PN16	150 (5.91)								
	AS4087 PN35	165 (6.50)								
	ASME B16.5 CL150	152 (5.98)								
ASME B16.5 CL300	165 (6.50)									
DN65 (2½ in.)	PN10 to 40	185 (7.28)		292 (11.50)	108 (4.25)	217 (8.54)	172 (6.77)	104 (4.09)	13 (29)	11 (24)
	JIS5K	155 (6.10)								
	JIS10K	175 (6.89)								
	AS4087 PN16	165 (6.50)								
	AS4087 PN35	185 (7.28)								
	ASME B16.5 CL150	178 (7.01)								
ASME B16.5 CL300	190 (7.48)									
DN80 (3 in.)	PN10 to 40	200 (7.87)		292 (11.5)	108 (4.25)	217 (8.54)	172 (6.77)	104 (4.09)	17 (37)	15 (33)
	JIS5K	180 (7.09)								
	JIS10K	185 (7.28)								
	AS4087 PN16	185 (7.28)								
	AS4087 PN35	205 (8.07)								
	ASME B16.5 CL150	190 (7.48)								
ASME B16.5 CL300	210 (8.28)									
									19 (42)	17 (37)

Table 5.1 DN10 to 125 (½ to 5 in. NB) (FEW) dimensions / weights (Continued)

DN	Mating flange type	Dimensions in mm (in.)							Approx. weight in kg (lb)	
		D	L	F	C	E	G	A	Integral	Remote
DN100 (4 in.)	PN10 to 16	220 (8.66)	250 (9.84)	314 (12.36)	122 (4.8)	239 (9.41)	194 (7.64)	125 (4.92)	19 (42)	17 (37)
	PN25 to 40	235 (9.25)							23 (51)	21 (46)
	JIS5K	200 (7.87)							19 (42)	17 (37)
	JIS10K	210 (8.27)								
	AS4087 PN16	215 (8.46)								
	AS4087 PN35	230 (9.06)							23 (51)	21 (46)
	ASME B16.5 CL300	255 (1.04)							30 (66)	28 (62)
	ASME B16.5 CL150	229 (9.00)							21 (51)	19 (42)
DN125 (5 in.)	PN10 to 16	250 (9.84)	324 (12.76)	130 (5.12)	249 (9.8)	204 (8.03)	125 (4.92)	22 (48)	20 (44)	
	PN25 to 40	270 (10.63)						29 (64)	27 (59)	
	JIS5K	235 (9.25)						22 (48)	20 (44)	
	JIS10K	250 (9.84)								
	ASME B16.5 CL150	254 (10.00)								
	ASME B16.5 CL300	280 (11.02)						35 (77)	33 (73)	

Table 5.1 DN10 to 125 ⁶/₈ to 5 in. NB (FEW) dimensions / weights (Continued)

5.2 FEW – DN150 to 400 (6 to 16 in. NB)

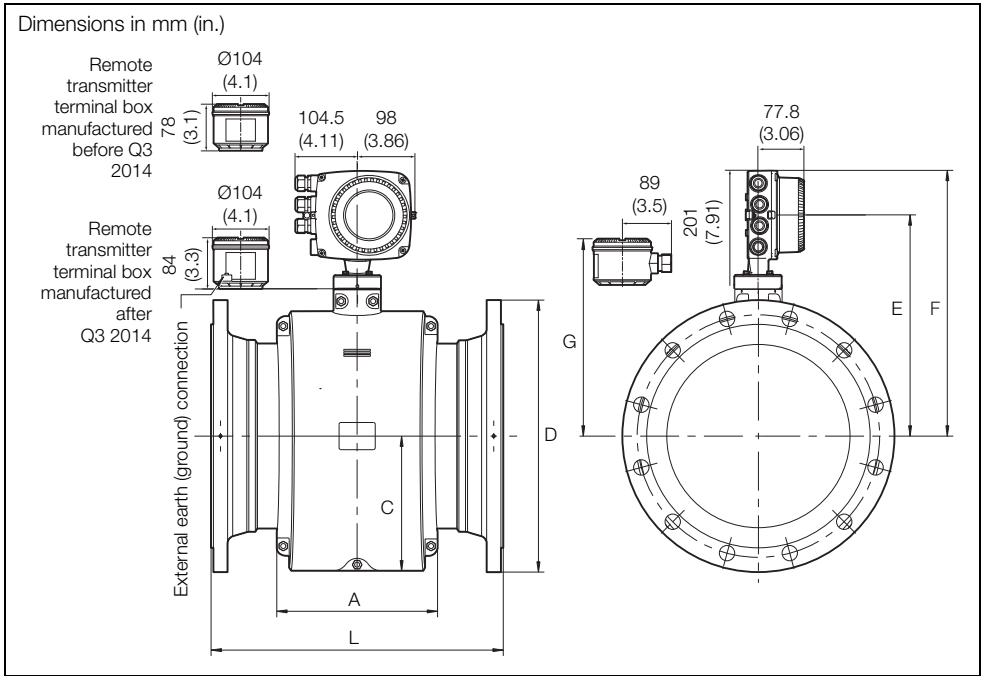


Fig. 5.2 DN150 to 400 (6 to 16 in. NB) (FEW)

DN	Mating flange type	Dimensions in mm (in.)							Approx. weight in kg (lb)	
		D	L	F	C	E	G	A	Integral	Remote
DN150 (6 in.)	PN10 to 16	285 (11.22)	300 (11.81)	371 (14.61)	146 (9.88)	296 (11.65)	251 (9.88)	166 (6.54)	33 (73)	31 (68)
	PN25 to 40	300 (11.81)							39 (86)	37 (81)
	JIS5K	265 (10.43)							33 (73)	31 (68)
	JIS10K	280 (11.02)								
	AS4087 PN16	280 (11.02)								
	AS4087 PN35	305 (11.81)							39 (86)	37 (81)
	ASME B16.5 CL300	320 (12.60)							47 (103)	45 (99)
ASME B16.5 CL150	279 (10.98)							33 (73)	31 (68)	
DN200 (8 in.)	PN10	340 (13.39)	350 (13.78)	411 (16.18)	170 (6.69)	336 (13.23)	291 (11.46)	200 (7.87)	41 (90)	39 (86)
	PN16	340 (13.39)								
	PN25	360 (14.17)							55 (121)	53 (117)
	PN40	375 (14.76)							65 (143)	63 (139)
	AS4087 PN16	335 (13.19)							41 (90)	39 (86)
	AS4087 PN35	370 (14.57)							65 (143)	63 (139)
	JIS5K	320 (12.60)							41 (90)	39 (86)
	JIS10K	330 (12.99)								
	ASME B16.5 CL300	380 (14.96)							72 (158)	70 (154)
ASME B16.5 CL150	345 (13.58)							50 (110)	48 (106)	

Table 5.2 DN150 to 400 (6 to 5 in. NB) (FEW) dimensions / weights

DN	Mating flange type	Dimensions in mm (in.)							Approx. weight in kg (lb)	
		D	L	F	C	E	G	A	Integral	Remote
DN250 (10 in.)	PN10	395 (15.55)	450 (17.72)	426 (16.77)	198 (7.80)	351 (13.82)	306 (12.05)	235 (9.62)	61 (134)	59 (130)
	PN16	405 (15.94)							65 (143)	63 (139)
	PN25	425 (16.73)							84 (185)	82 (180)
	PN40	450 (17.72)							95 (209)	93 (205)
	AS4087 PN16	405 (15.94)							65 (143)	63 (139)
	AS4087 PN35	430 (16.93)							95 (209)	93 (205)
	JIS5K	385 (15.16)							65 (143)	63 (139)
	JIS10K	400 (15.75)								
	ASME B16.5 CL300	445 (17.52)							105 (231)	103 (227)
ASME B16.5 CL150	405 (15.94)	70 (154)	68 (150)							
DN300 (12 in.)	PN10	445 (17.52)	500 (19.69)	449 (17.68)	228 (8.98)	374 (14.72)	329 (12.95)	272 (10.71)	74 (163)	72 (158)
	PN16	460 (18.11)							80 (176)	78 (172)
	PN25	485 (19.09)							100 (220)	98 (216)
	JIS5K	430 (16.93)							80 (176)	78 (172)
	JIS10K	445 (17.52)								
	AS4087 PN16	455 (17.91)								
	AS4087 PN35	490 (19.29)							130 (286)	128 (282)
	ASME B16.5 CL300	520 (20.47)							150 (330)	148 (326)
	ASME B16.5 CL150	485 (19.09)							105 (231)	103 (227)
PN40	515 (20.28)	600 (23.62)	130 (286)	128 (282)						
DN350 (14 in.)	PN10	505 (19.88)	550 (21.65)	464 (18.27)	265 (10.43)	389 (15.31)	344 (13.54)	322 (12.68)	95 (209)	93 (205)
	PN16	520 (20.47)							110 (242)	108 (238)
	PN25	555 (21.85)							145 (319)	143 (315)
	JIS5K	480 (18.90)							95 (209)	93 (205)
	JIS10K	490 (19.29)								
	AS4087 PN16	525 (20.67)							130 (286)	128 (282)
	AS4087 PN35	550 (21.65)							185 (407)	183 (403)
	ASME B16.5 CL300	585 (23.03)							140 (308)	138 (304)
	ASME B16.5 CL150	535 (21.06)							105 (231)	103 (227)
PN40	580 (22.83)	650 (25.59)	195 (429)	193 (425)						
DN400 (16 in.)	PN10	565 (22.24)	600 (23.62)	506 (19.92)	265 (10.43)	431 (16.97)	386 (15.20)	322 (12.68)	103 (227)	101 (222)
	PN16	580 (22.83)							126 (277)	124 (273)
	PN25	620 (24.41)							170 (374)	168 (370)
	JIS5K	540 (21.26)							103 (227)	101 (223)
	JIS10K	560 (22.05)							116 (255)	114 (251)
	AS4087 PN16	580 (22.83)							154 (339)	152 (335)
	AS4087 PN35	610 (24.02)							302 (664)	300 (660)
	ASME B16.5 CL300	650 (25.59)							265 (583)	263 (578)
	ASME B16.5 CL150	600 (23.62)							175 (385)	173 (381)
PN40	660 (25.98)	650 (25.59)	258 (568)	256 (564)						

Table 5.2 DN150 to 400 (6 to 5 in. NB) (FEW) dimensions / weights (Continued)

5.3 FEW – DN450 to 2400 (18 to 96 in. NB)

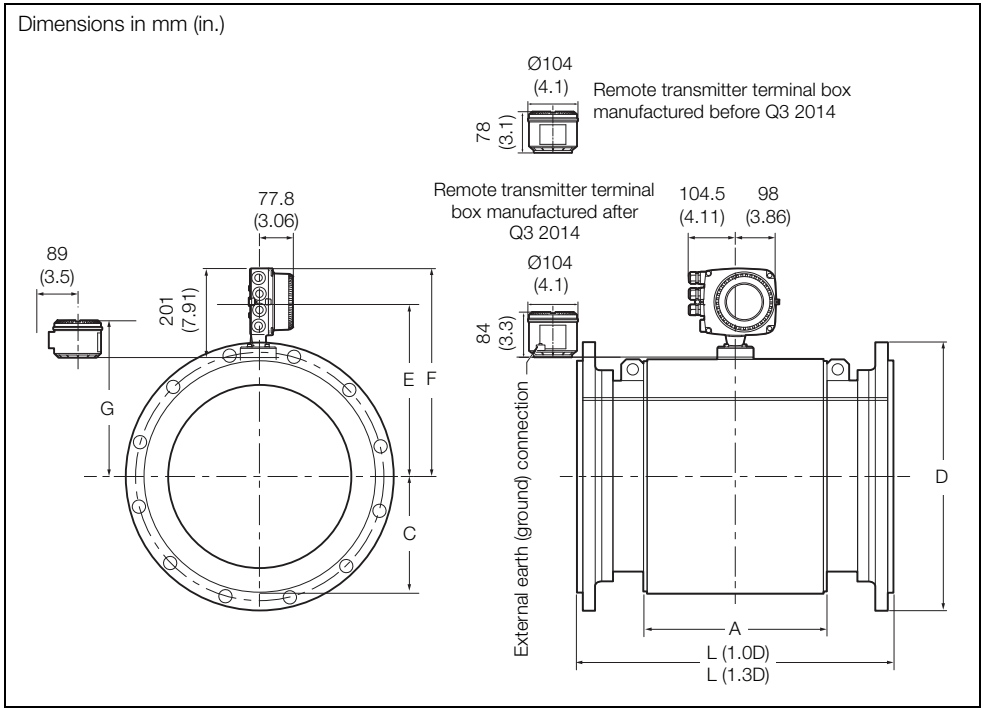


Fig. 5.3 DN450 to 2400 (18 to 96 in. NB) (FEW)

DN	Mating flange type	Dimensions in mm (in.)								Approx. weight in kg (lb)	
		D	L (1.0D)	L (1.3D)	F	C	E	G	A	Integral	Remote
DN450 (18 in.)	PN10	615 (24.21)	N/A	600 (23.62)	514 (20.24)	310 (12.20)	439 (17.28)	394 (15.51)	328 (12.91)	173 (381)	171 (377)
	PN16	640 (25.20)								188 (414)	186 (410)
	JIS5K	605 (23.82)								165 (364)	163 (359)
	JIS10K	620 (24.41)								177 (390)	175 (386)
	AS4087 PN16	640 (25.20)								232 (511)	230 (507)
	AS4087 PN35	675 (26.57)								328 (723)	326 (718)
	ASME B16.5 CL300	710 (27.95)								368 (811)	366 (807)
	ASME B16.5 CL150	635 (25.00)								250 (551)	248 (547)
	PN25	670 (26.38)	N/A	686 (27.01)						245 (540)	243 (536)
PN40	685 (26.97)								315 (694)	313 (690)	

Table 5.3 DN450 to 2400 (18 to 96 in. NB) (FEW) dimensions / weights

DN	Mating flange type	Dimensions in mm (in.)								Approx. weight in kg (lb)	
		D	L (1.0D)	L (1.3D)	F	C	E	G	A	Integral	Remote
DN500 (20 in.)	PN10	670 (26.38)	N/A	600 (23.62)	514 (20.24)	310 (12.20)	439 (17.28)	394 (15.51)	367 (14.45)	190 (418)	188 (413)
	PN16	715 (28.15)								240 (528)	238 (524)
	JISSK	655 (25.79)								190 (418)	188 (413)
	JIS10K	675 (26.57)									
	AS4087 PN16	705 (27.76)								290 (638)	288 (634)
	AS4087 PN35	735 (28.94)								435 (957)	433 (953)
	ASME B16.5 CL150	700 (27.56)	300 (660)	298 (656)							
	ASME B16.5 CL300	775 (30.51)	N/A	762 (30.00)						490 (1080)	488 (1076)
	PN25	730 (28.74)	N/A	700 (27.56)						300 (661)	298 (657)
PN40	755 (29.72)	N/A	762 (30.00)	392 (864)	390 (860)						
DN600 (24 in.)	PN10	780 (30.71)	N/A	800 (31.50)	565 (22.24)	361 (14.21)	490 (19.29)	445 (17.52)	469 (18.46)	284 (626)	282 (622)
	PN16	840 (33.07)								318 (700)	316 (695)
	PN25	845 (33.27)								460 (1012)	458 (1008)
	JISSK	770 (30.31)								275 (605)	273 (600)
	JIS10K	795 (31.30)								306 (673)	304 (668)
	AS4087 PN16	825 (32.48)								382 (840)	380 (835)
	AS4087 PN35	850 (33.46)								452 (994)	450 (990)
	ASME B16.5 CL300	915 (36.02)								550 (1210)	548 (1205)
	ASME B16.5 CL150	815 (32.09)								425 (935)	423 (930)
	PN40	890 (35.04)	N/A	890 (35.04)						600 (1320)	598 (1316)
DN700 (28 in.)	JIS 5K	875 (34.45)	700 (27.56)	910 (35.83)	604 (23.77)	403 (15.87)	528 (20.79)	488 (19.21)	444 (17.48)	216 (475)	214 (471)
	JIS 10K	905 (35.63)								282 (620)	280 (616)
	PN6	860 (33.86)								225 (495)	223 (491)
	PN10	895 (35.24)								303 (667)	301 (662)
	PN16	910 (35.83)								337 (741)	335 (737)
	AWWA C207 CLASS B	927 (36.50)								249 (548)	247 (543)
	AWWA C207 CLASS D	927 (36.50)								280 (616)	278 (612)
	AS4087 PN16	910 (35.83)								359 (790)	357 (785)
	AS2129 TABLE-D	910 (35.83)								263 (579)	261 (574)
	AS2129 TABLE-E	910 (35.83)								337 (741)	335 (737)
	PN25	960 (37.80)								471 (1036)	469 (1032)
	PN40	995 (39.17)								586 (1289)	584 (1285)
	AWWA C207 CLASS E	927 (36.50)								472 (1038)	470 (1034)
	AWWA C207 CLASS F	1035 (40.75)								715 (1573)	713 (1569)
	AS4087 PN35	935 (36.80)								539 (1186)	537 (1181)
	ASME CL150 SERIES A	925 (36.42)								503 (1107)	501 (1102)
	ASME CL150 SERIES B	835 (32.87)								323 (711)	321 (706)
	ASME CL300 SERIES B	920 (36.22)								631 (1388)	629 (1384)

Table 5.3 DN450 to 2400 (18 to 96 in. NB) (FEW) dimensions / weights (Continued)

		Dimensions in mm (in.)								Approx. weight in kg (lb)	
DN	Mating flange type	D	L (1.0D)	L (1.3D)	F	C	E	G	A	Integral	Remote
DN750 (30 in.)	JIS 5K	945 (37.20)	750 (29.52)	990 (38.98)	630 (24.79)	429 (16.89)	554 (21.81)	514 (20.23)	444 (17.48)	251 (552)	249 (548)
	JIS 10K	970 (38.19)								327 (719)	325 (715)
	AWWA C207 CLASS B	984 (38.74)								273 (601)	271 (596)
	AWWA C207 CLASS D	984 (38.74)								344 (757)	342 (752)
	AS4087 PN16	995 (39.17)								467 (1027)	465 (1023)
	AS2129 TABLE-D	995 (39.17)								340 (748)	338 (744)
	AS2129 TABLE-E	995 (39.17)								454 (999)	452 (994)
	AWWA C207 CLASS E	984 (38.74)								496 (1091)	494 (1087)
	AWWA C207 CLASS F	1092 (43.99)								790 (1738)	788 (1734)
	AS4087 PN35	1015 (39.96)								663 (1459)	661 (1454)
	ASME CL150 SERIES A	985 (38.78)								544 (1197)	542 (1192)
	ASME CL150 SERIES B	885 (34.84)								320 (704)	318 (700)
	ASME CL300 SERIES B	990 (38.98)								748 (1646)	746 (1641)
DN800 (32 in.)	JIS 5K	995 (39.17)	800 (31.49)	1040 (40.04)	654 (25.74)	453 (17.83)	578 (22.76)	538 (21.18)	542 (21.34)	280 (616)	278 (612)
	JIS 10K	1020 (40.16)								364 (801)	362 (796)
	PN6	975 (38.39)								294 (647)	292 (642)
	PN10	1015 (39.96)								406 (893)	404 (889)
	PN16	1025 (40.35)								469 (1032)	467 (1027)
	AWWA C207 CLASS B	1060 (41.73)								328 (722)	326 (717)
	AWWA C207 CLASS D	1060 (41.73)								408 (898)	406 (893)
	AS4087 PN16	1060 (41.73)								530 (1166)	528 (1162)
	AS2129 TABLE-D	1060 (41.73)								386 (849)	384 (845)
	AS2129 TABLE-E	1060 (41.73)								519 (1142)	517 (1137)
	PN25	1085 (42.72)								615 (1353)	613 (1349)
	PN40	1140 (44.88)								866 (1905)	864 (1901)
	AWWA C207 CLASS E	1060 (41.73)								634 (1395)	632 (1390)
	AWWA C207 CLASS F	1150 (45.28)								897 (1973)	895 (1969)
	AS4087 PN35	1060 (41.73)								751 (1652)	749 (1648)
	ASME CL150 SERIES A	1060 (41.73)								700 (1540)	698 (1536)
	ASME CL150 SERIES B	940 (37.01)								406 (893)	404 (889)
	ASME CL300 SERIES B	1055 (41.54)								933 (2053)	931 (2048)

Table 5.3 DN450 to 2400 (18 to 96 in. NB) (FEW) dimensions / weights (Continued)

DN	Mating flange type	Dimensions in mm (in.)								Approx. weight in kg (lb)	
		D	L (1.0D)	L (1.3D)	F	C	E	G	A	Integral	Remote
DN900 (36 in.)	JIS 5K	1095 (43.11)	900 (35.43)	1170 (46.06)	705 (27.7)	504 (19.84)	629 (24.76)	589 (23.19)	570 (22.44)	369 (812)	367 (807)
	JIS 10K	1120 (44.09)								445 (979)	443 (975)
	PN6	1075 (42.32)								390 (858)	388 (854)
	PN10	1115 (43.90)								502 (1104)	500 (1100)
	PN16	1125 (44.29)								589 (1296)	587 (1291)
	AWWA C207 CLASS B	1168 (45.98)								417 (917)	415 (913)
	AWWA C207 CLASS D	1168 (45.98)								493 (1085)	491 (1080)
	AWWA C207 CLASS E	1168 (45.98)								827 (1819)	825 (1815)
	AWWA C207 CLASS F	1270 (50.00)								1150 (2530)	1148 (2526)
	AS4087 PN16	1175 (46.26)								706 (1553)	704 (1549)
	AS2129 TABLE-D	1175 (46.26)								514 (1131)	512 (1126)
	AS2129 TABLE-E	1175 (46.26)								694 (1527)	692 (1522)
	PN25	1185 (46.65)								819 (1802)	817 (1797)
	PN40	1250 (49.21)								1158 (2548)	1156 (2543)
	AS4087 PN35	1185 (46.65)								1044 (2297)	1042 (2292)
ASME CL150 SERIES A	1170 (46.06)	961 (2114)	959 (2110)								
ASME CL150 SERIES B	1055 (41.54)	595 (1309)	593 (1305)								
ASME CL300 SERIES B	1170 (46.06)	1147 (2523)	1145 (2519)								
DN1000 (40 in.)	JIS 5K	1195 (47.05)	1000 (39.37)	1300 (51.18)	755 (29.71)	554 (21.81)	679 (26.73)	639 (25.16)	624 (24.57)	441 (970)	439 (966)
	JIS 10K	1235 (48.62)								572 (1258)	570 (1254)
	PN6	1175 (46.26)								466 (1025)	464 (1021)
	PN10	1230 (48.43)								674 (1483)	672 (1478)
	PN16	1255 (49.41)								879 (1934)	877 (1929)
	AWWA C207 CLASS B	1289 (50.75)								503 (1107)	501 (1102)
	AWWA C207 CLASS D	1289 (50.75)								659 (1450)	657 (1445)
	AWWA C207 CLASS E	1289 (50.75)								1028 (2262)	1026 (2257)
	AWWA C207 CLASS F	1378 (54.25)								1367 (3007)	1365 (3003)
	AS4087 PN16	1255 (49.41)								831 (1828)	829 (1824)
	AS2129 TABLE-D	1255 (49.41)								610 (1342)	608 (1338)
	AS2129 TABLE-E	1255 (49.41)								833 (1833)	831 (1828)
	PN25	1320 (51.97)								1207 (2655)	1205 (2651)
	PN40	1360 (53.54)								1413 (3109)	1411 (3104)
	AS4087 PN35	1275 (50.20)								1244 (2737)	1242 (2732)
	ASME CL150 SERIES A	1290 (50.79)								1149 (2528)	1147 (2523)
	ASME CL300 SERIES A	1240 (48.82)								1349 (2968)	1347 (2963)
	ASME CL150 SERIES B	1175 (46.26)								738 (1624)	736 (1619)
ASME CL300 SERIES B	1275 (50.20)	1487 (3271)	1485 (3267)								

Table 5.3 DN450 to 2400 (18 to 96 in. NB) (FEW) dimensions / weights (Continued)

		Dimensions in mm (in.)								Approx. weight in kg (lb)	
DN	Mating flange type	D	L (1.0D)	L (1.3D)	F	C	E	G	A	Integral	Remote
DN1050 (42 in.)	AWWA C207 CLASS B	1346 (52.99)	1050 (41.33)	1365 (53.74)	808 (31.82)	608 (23.92)	733 (28.84)	693 (27.28)	624 (24.57)	564 (1241)	562 (1236)
	AWWA C207 CLASS D	1346 (52.99)								669 (1472)	667 (1467)
	AWWA C207 CLASS E	1346 (52.99)								1143 (2515)	1141 (2510)
	AWWA C207 CLASS F	1448 (57.01)								1568 (3450)	1566 (3445)
	ASME CL150 SERIES B	1225 (48.23)								809 (1780)	807 (1775)
	ASME CL150 SERIES A	1345 (52.95)								1289 (2836)	1287 (2831)
	ASME CL300 SERIES A	1290 (50.79)								1527 (3359)	1525 (3355)
DN1100 (44 in.)	ASME CL300 SERIES B	1335 (52.56)	1100 (43.30)	1430 (56.30)	860 (33.85)	659 (25.94)	784 (30.87)	744 (29.29)	802 (31.57)	1704 (3749)	1702 (3744)
	JIS 5K	1305 (51.38)								510 (1122)	508 (1118)
	JIS 10K	1345 (52.95)								689 (1516)	687 (1511)
	AWWA C207 CLASS B	1403 (55.24)								615 (1353)	613 (1349)
	AWWA C207 CLASS D	1403 (55.24)								807 (1775)	805 (1771)
	AWWA C207 CLASS E	1404 (55.26)								1205 (2651)	1203 (2647)
DN1200 (48 in.)	AWWA C207 CLASS F	1505 (59.25)	1200 (47.24)	1560 (61.42)	955 (37.59)	754 (29.69)	879 (34.61)	839 (33.03)	902 (35.51)	1719 (3782)	1717 (3777)
	JIS 5K	1420 (55.91)								651 (1432)	649 (1428)
	JIS 10K	1465 (57.68)								967 (2127)	965 (2123)
	PN6	1405 (55.31)								710 (1562)	708 (1558)
	PN10	1455 (57.28)								1107 (2435)	1105 (2431)
	PN16	1485 (58.46)								1363 (2999)	1361 (2994)
	AWWA C207 CLASS B	1511 (59.49)								772 (1698)	770 (1694)
	AWWA C207 CLASS D	1511 (59.49)								999 (2198)	997 (2193)
	AWWA C207 CLASS E	1511 (59.49)								1458 (3208)	1456 (3203)
	AWWA C207 CLASS F	1651 (65.00)								2400 (5280)	2398 (5276)
	AS4087 PN16	1490 (58.66)								1253 (2757)	1251 (2752)
	AS2129 TABLE-D	1490 (58.66)								1023 (2251)	1021 (2246)
	AS2129 TABLE-E	1490 (58.66)								1272 (2798)	1270 (2794)
	PN25	1530 (60.24)								1559 (3430)	1557 (3425)
	PN40	1575 (62.01)								2133 (4693)	2131 (4688)
	AS4087 PN35	1530 (60.24)								2115 (4653)	2113 (4649)
	ASME CL150 SERIES A	1510 (59.45)								1707 (3755)	1705 (3751)
	ASME CL300 SERIES A	1465 (57.68)								2163 (4759)	2161 (4754)
	ASME CL150 SERIES B	1390 (54.72)								1085 (2387)	1083 (2383)
ASME CL300 SERIES B	1510 (59.45)	2352 (5174)	2350 (5170)								
DN1350 (54 in.)	AWWA C207 CLASS B	1683 (66.26)	1350 (53.15)	1755 (69.09)	955 (37.59)	754 (29.69)	879 (34.61)	839 (33.03)	902 (35.51)	981 (2158)	979 (2154)
	AWWA C207 CLASS D	1683 (66.26)								1213 (2669)	1211 (2664)
	AWWA C207 CLASS E	1683 (66.26)								1942 (4272)	1940 (4268)
DN1400 (56 in.)	PN6	1630 (64.17)	1400 (55.11)	1820 (71.65)	955 (37.59)	754 (29.69)	879 (34.61)	839 (33.03)	902 (35.51)	1085 (2387)	1083 (2383)
	PN10	1675 (65.94)								1731 (3808)	1729 (3804)
	PN16	1685 (66.34)								1770 (3894)	1768 (3890)
	ASME CL150 SERIES B	1600 (62.99)								1593 (3505)	1591 (3500)
	PN25	1755 (69.09)								2368 (5210)	2366 (5205)
	PN40	1795 (70.67)								3086 (6789)	3084 (6785)
	ASME CL150 SERIES A	1745 (68.70)								2556 (5623)	2554 (5619)
	ASME CL300 SERIES A	1710 (67.32)								3376 (7427)	3374 (7423)
ASME CL300 SERIES B	1765 (69.49)	3758 (8268)	3756 (8263)								

Table 5.3 DN450 to 2400 (18 to 96 in. NB) (FEW) dimensions / weights (Continued)

DN	Mating flange type	Dimensions in mm (in.)								Approx. weight in kg (lb)	
		D	L (1.0D)	L (1.3D)	F	C	E	G	A	Integral	Remote
DN1500 (60 in.)	JIS 5K	1730 (68.11)	1500 (59.05)	1950 (76.77)	1065 (41.92)	864 (34.02)	989 (38.94)	949 (37.36)	910 (35.83)	1029 (2264)	1027 (2259)
	JIS 10K	1795 (70.67)								1504 (3309)	1502 (3304)
	ASME CL150 SERIES B	1725 (67.91)								2031 (4468)	2029 (4464)
	AWWA C207 CLASS B	1854 (72.99)								1229 (2704)	1227 (2699)
	AWWA C207 CLASS D	1854 (72.99)								1514 (3331)	1512 (3326)
	AWWA C207 CLASS E	1854 (72.99)								2544 (5597)	2542 (5592)
	ASME CL150 SERIES A	1855 (73.03)								3084 (6785)	3082 (6780)
	ASME CL300 SERIES A	1810 (71.26)								3875 (8525)	3873 (8521)
ASME CL300 SERIES B	1880 (74.02)	4181 (9198)	4179 (9194)								
DN1600 (64 in.)	PN6	1830 (72.05)	1600 (62.99)	2080 (81.89)	1066 (41.96)	865 (34.06)	990 (38.98)	950 (37.4)	1000 (39.37)	1434 (3155)	1432 (3150)
	PN10	1915 (75.39)								2525 (5555)	2523 (5551)
	PN25	1975 (77.76)								3201 (7042)	3199 (7038)
	PN16	1930 (75.98)								2768 (6090)	2766 (6085)
	PN40	2025 (79.72)								4375 (9625)	4373 (9621)
DN1650 (66 in.)	AWWA C207 CLASS B	2032 (80.00)	N/A	2145 (84.45)	1116 (43.94)	915 (36.02)	1040 (40.94)	1000 (39.37)	1000 (39.37)	1504 (3309)	1502 (3304)
	AWWA C207 CLASS D	2032 (80.00)								2025 (4455)	2023 (4451)
DN1800 (72 in.)	PN6	2045 (80.51)	N/A	2340 (92.13)	1181 (46.50)	980 (38.58)	1105 (43.50)	1065 (41.93)	1100 (43.31)	1853 (4077)	1851 (4072)
	PN10	2115 (83.27)								3180 (6996)	3178 (6992)
	PN16	2130 (83.86)								3657 (8045)	3655 (8041)
	PN25	2195 (86.42)								4422 (9728)	4420 (9724)
	AWWA C207 CLASS B	2197 (86.50)								1773 (3901)	1771 (3896)
	AWWA C207 CLASS D	2197 (86.50)								2387 (5251)	2385 (5247)
DN1950 (78 in.)	AWWA C207 CLASS B	2362 (92.99)	N/A	2535 (99.80)	1291 (50.81)	1090 (42.91)	1215 (47.83)	1175 (46.26)	1180 (46.46)	2309 (5080)	2307 (5075)
	AWWA C207 CLASS D	2362 (92.99)								3037 (6681)	3035 (6677)
DN2000 (80 in.)	PN6	2265 (89.17)	N/A	2600 (102.36)	1395 (54.91)	1194 (47.01)	1319 (51.93)	1279 (50.35)	1180 (46.46)	2581 (5678)	2579 (5674)
	PN10	2325 (91.54)								4254 (9359)	4252 (9354)
	PN16	2345 (92.32)								4556 (10023)	4554 (10019)
	PN25	2425 (95.47)								5896 (12971)	5894 (12967)
DN2100 (84 in.)	AWWA C207 CLASS B	2534 (99.76)	N/A	2730 (107.48)	1395 (54.91)	1194 (47.01)	1319 (51.93)	1279 (50.35)	1180 (46.46)	2641 (5810)	2639 (5806)
	AWWA C207 CLASS D	2534 (99.76)								3487 (7671)	3485 (7667)
DN2200 (88 in.)	PN6	2475 (97.44)	N/A	2860 (112.60)	1495 (58.85)	1294 (50.94)	1419 (55.87)	1379 (54.29)	1450 (57.09)	3363 (7399)	3361 (7394)
	PN10	2550 (100.39)								5795 (12749)	5793 (12745)
DN2400 (96 in.)	PN6	2685 (105.71)	N/A	3120 (122.83)	1495 (58.85)	1294 (50.94)	1419 (55.87)	1379 (54.29)	1450 (57.09)	4100 (9020)	4098 (9016)
	PN10	2760 (108.66)								6968 (15330)	6966 (15325)

Table 5.3 DN450 to 2400 (18 to 96 in. NB) (FEW) dimensions / weights (Continued)

5.4 FEV – DN40 to 200 (1½ to 8 in. NB)

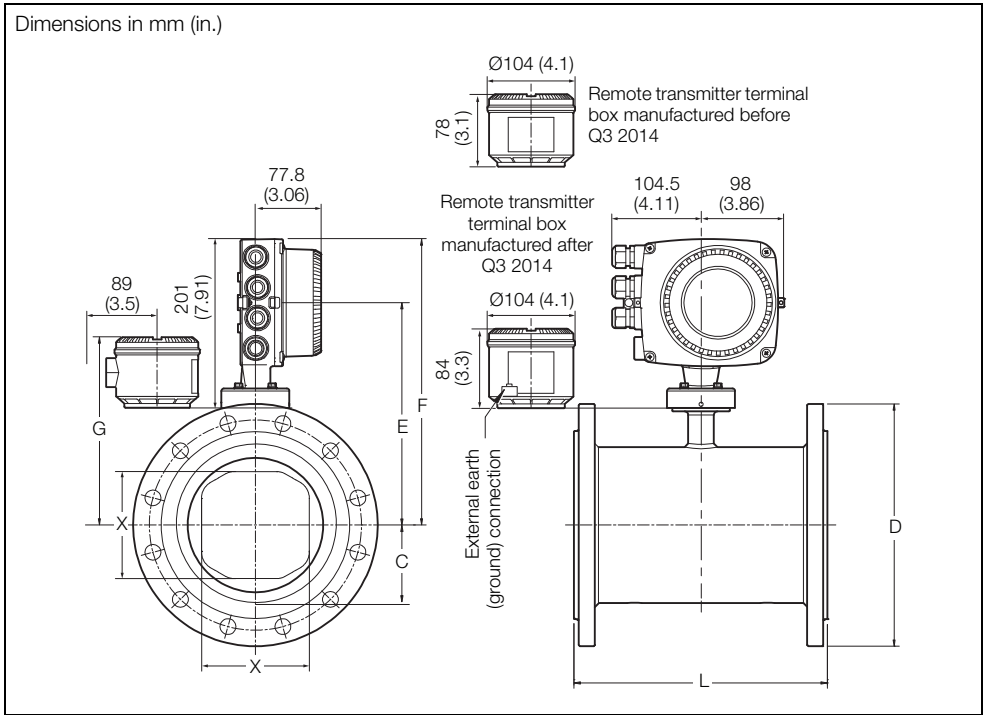


Fig. 5.4 DN40 to 200 (1½ to 8 in. NB) (FEV)

DN	Process connection type	Dimensions in mm (in.)						Approx. weight in kg (lb)	
		D	L	F	E	G	X	Integral	Remote
DN40 (1½ in.)	EN1092-1 PN10, 16, 25, 40	150 (5.91)	200 (7.87)	260 (10.24)	185 (7.28)	137 (5.39)	30 (1.18)	12.8 (28.16)	11.8 (25.96)
	ASME B16.5 CLASS 150								
DN50 (2 in.)	EN1092-1 PN10, 16, 25, 40	165 (6.50)	200 (7.87)	261 (10.28)	186 (7.32)	138 (5.43)	38 (1.5)	13.75 (30.25)	12.75 (28.05)
	ASME B16.5 CLASS 150								
DN80 (3 in.)	EN1092-1 PN10, 16, 25, 40	200 (7.87)	200 (7.87)	280 (11.04)	205.5 (8.09)	157.5 (6.2)	61 (2.4)	17.2 (37.84)	16.2 (35.64)
	ASME B16.5 CLASS 150								
	AS4087 PN16, 21								
DN100 (4 in.)	EN1092-1 PN10, 16, 25, 40	225 (8.86)	250 (9.84)	300.5 (11.83)	225.5 (8.88)	177.5 (6.98)	70 (2.76)	19.3 (42.5)	18.3 (40.3)
	ASME B16.5 CLASS 150								
	AS4087 PN16								
DN150 (6 in.)	EN1092-1 PN10, 16, 25, 40	300 (11.81)	300 (11.81)	333.5 (13.13)	258.5 (10.18)	210.5 (8.29)	103 (4.06)	35.1 (77.2)	34.1 (75)
	ASME B16.5 CLASS 150								
	AS4087 PN16								
DN200 (8 in.)	EN1092-1 PN10, 16	375 (11.76)	350 (13.78)	358.7 (14.12)	283.7 (11.17)	235.7 (9.28)	150 (5.91)	67 (147.4)	66 (145.2)
	ASME B16.5 CLASS 150								
	AS2129 TABLE C, D, E, F								
	AS4087 PN14, 16, 21								

Table 5.4 WaterMaster integral / remote FEV – DN40 to 200 (1½ to 8 in.) cast iron sensor dimensions / weights

DN	Mating flange type	Dimensions in mm (in.)							Approx. weight in kg (lb)	
		D	L	F	C	E	G	X	Integral	Remote
DN40 (1½ in.)	EN1092-1 PN10, PN40	150 (5.91)	200 (7.87)	260 (10.24)	30.4 (1.20)	185 (7.28)	138 (5.43)	30 (1.18)	12 (27)	11 (24)
	ASME B16.5 CLASS 150	127 (5.00)								
	JIS 10K	140 (5.51)								
	AS2129 TABLE F	140 (5.51)								
	AS2129 TABLE C D E	135 (5.31)								
	AS4087 PN14	135 (5.31)								
DN50 (2 in.)	EN1092-1 PN10, PN16	165 (6.50)	200 (7.87)	270 (10.63)	38.3 (1.51)	195 (7.68)	146 (5.75)	38 (1.50)	13 (29)	12 (27)
	ASME B16.5 CLASS 150	152.4 (6.00)								
	JIS 10K	155 (6.10)								
	AS4087 PN21	165 (6.50)								
	AS2129 TABLE F	165 (6.50)								
	AS2129 TABLE C D E	150 (5.91)								
	AS4087 PN14, PN16	150 (5.91)								
DN65 (2½ in.)	AS4087 PN14, PN16	165 (6.50)	200 (7.87)	275 (10.83)	45.2 (1.78)	200 (7.87)	152 (5.98)	48 (1.89)	15 (33)	14 (31)
	AS2129 TABLE C D E	165 (6.50)								
	EN1092-1 PN10	185 (7.28)								
	EN1092-1 PN16	185 (7.28)								
DN80 (3 in.)	EN1092-1 PN10, PN16	200 (7.87)	200 (7.87)	280 (11.02)	51.5 (2.03)	205 (8.07)	156 (6.14)	61 (2.40)	16 (36)	15 (33)
	ASME B16.5 CLASS 150	190 (7.48)								
	JIS 7.5K	211 (8.31)								
	JIS 10K	185 (7.28)								
	AS2129 TABLE C D E	185 (7.28)								
	AS4087 PN14, PN16	185 (7.28)								
	AS2129 TABLE F	205 (8.07)								
	AS4087 PN21	205 (8.07)								
DN100 (4 in.)	EN1092-1 PN10, PN16	220 (8.66)	250 (9.84)	320 (12.60)	63.75 (2.51)	245 (9.65)	196.8 (7.75)	70 (2.76)	19 (42)	18 (40)
	ASME B16.5 CLASS 150	228.6 (9.00)								
	JIS 7.5K	238 (9.37)								
	JIS 10K	210 (8.27)								
	AS2129 TABLE C D	215 (8.46)								
	AS4087 PN14, PN16	215 (8.46)								
	AS2129 TABLE E	215 (8.46)								
	AS4087 PN21	230 (9.06)								
	AS2129 TABLE F	230 (9.06)								
DN125 (5 in.)	EN1092-1 PN10, PN16	250 (9.84)	250 (9.84)	320 (12.60)	63.75 (2.51)	245 (9.65)	197 (7.76)	70 (2.76)	20 (44)	19 (42)
	ASME B16.5 CLASS 150	254 (10.00)								
	JIS 10K	250 (9.84)								
	AS2129 TABLE C D E	255 (10.04)								
	AS2129 TABLE F	280 (11.02)								

Table 5.5 DN40 to 200 (1½ to 8 in. NB) (FEV) dimensions / weights

DN	Mating flange type	Dimensions in mm (in.)							Approx. weight in kg (lb)	
		D	L	F	C	E	G	X	Integral	Remote
DN150 (6 in.)	EN1092 PN10, PN16	285 (11.22)	300 (11.81)	340 (13.39)	84.4 (3.32)	265 (10.43)	217 (8.54)	103 (4.06)	32 (70)	31 (68)
	ASME B16.5 CLASS 150	279 (10.98)								
	JIS 7.5k	290 (11.42)								
	JIS 10K	280 (11.02)								
	AS2129 TABLE C D	280 (11.02)								
	AS4087 PN14, PN16	280 (11.02)								
	AS2129 TABLE E	280 (11.02)								
	AS2129 TABLE F	305 (12.01)								
	AS4087 PN21	305 (12.01)								
DN200 (8 in.)	EN1092-1 PN10	340 (13.39)	350 (13.78)	365 (14.37)	109.8 (4.32)	290 (11.42)	243 (9.57)	150 (5.91)	49 (108)	48 (105)
	EN1092-1 PN16	340 (13.39)								
	ASME B16.5 CLASS 150	345 (13.58)								
	JIS 7.5K	342 (13.46)								
	JIS 10K	330 (12.99)								
	AS2129 TABLE C D	335 (13.19)								
	AS4087 PN14, PN 16	335 (13.19)								
	AS2129 TABLE E	335 (13.19)								
	AS2129 TABLE F	370 (14.57)								
	AS4087 PN21	370 (14.57)								

Table 5.5 DN40 to 200 (1 1/2 to 8 in. NB) (FEV) dimensions / weights (Continued)

5.5 FEF – DN250 to 600 (10 to 24 in. NB)

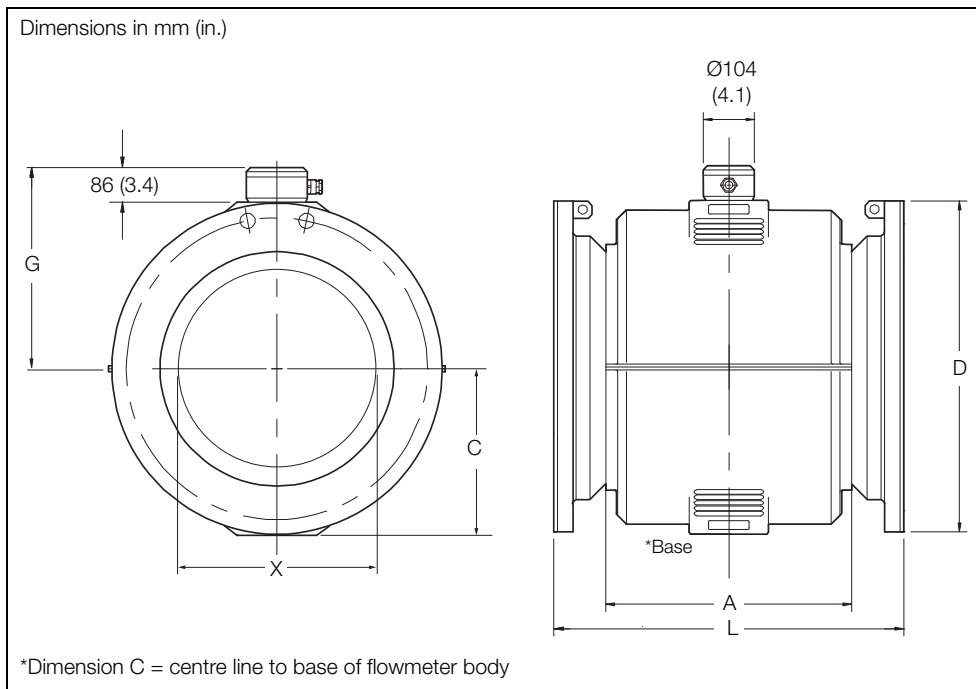


Fig. 5.5 DN250 to 600 (10 to 24 in. NB) (FEF)

		Dimensions in mm (in.)						
DN	Mating flange type	D	L	C	G	A	X	Approx. weight in kg (lb)
DN250 (10 in.)	ASME B16.5 CLASS 150	405 (15.94)	450 (17.72)	215 (8.46)	301 (11.85)	300 (11.81)	250 (9.84)	88 (194)
	ASME B16.5 CLASS 300	445 (17.52)	490 (19.29)					
	EN1092 -1 PN10	395 (15.55)	450 (17.72)					
	EN1092 - 1 PN16	405 (15.94)						
	EN1092 - 1 PN25	425 (16.73)	490 (19.29)					
	EN1092 - 1 PN40	450 (17.72)						
	JIS 5K	385 (15.16)	450 (17.72)					
	JIS 10K	400 (15.75)						
	AS4087 PN14, PN16	405 (15.94)						
	AS2129 TABLE C D							
	AS2129 TABLE E							
	AS4087 PN21	430 (16.93)						
AS2129 TABLE F								

Table 5.6 DN250 to 600 (10 to 24 in. NB) (FEF) dimensions / weights

DN	Mating flange type	Dimensions in mm (in.)						Approx. weight in kg (lb)
		D	L	C	G	A	X	
DN300 (12 in.)	ASME B16.5 CLASS 150	485 (19.09)	500 (19.69)	231 (9.09)	317 (12.48)	352 (13.86)	300 (11.81)	128 (282)
	ASME B16.5 CLASS 300	520 (20.47)	540 (21.26)					
	EN1092 – 1 PN10	445 (17.52)	500 (19.69)					
	EN1092 – 1 PN16	460 (18.11)	500 (19.69)					
	EN1092 – 1 PN25	485 (19.09)	540 (21.26)					
	EN1092 – 1 PN40	515 (20.28)	540 (21.26)					
	JIS 5K	430 (16.93)	500 (19.69)					
	JIS 10K	445 (17.52)	500 (19.69)					
	AS4087 PN14, PN16	455 (17.91)	500 (19.69)					
	AS2129 TABLE TABLE C D	455 (17.91)	500 (19.69)					
	AS2129 TABLE E	455 (17.91)	500 (19.69)					
	AS4087 PN21	490 (19.29)	500 (19.69)					
AS2129 TABLE F	490 (19.29)	500 (19.69)						
DN350 (14 in.)	ASME B16.5 CLASS 150	535 (21.06)	550 (21.65)	257.5 (10.14)	346 (13.62)	376 (14.80)	350 (13.78)	100 (220)
	ASME B16.5 CLASS 300	585 (23.03)	570 (22.44)					
	EN1092 – 1 PN10	505 (19.88)	550 (21.65)					
	EN1092 – 1 PN16	520 (20.47)	550 (21.65)					
	EN1092 – 1 PN25	555 (21.85)	570 (22.44)					
	EN1092 – 1 PN40	580 (22.83)	570 (22.44)					
	JIS 5K	480 (18.90)	550 (21.65)					
	JIS 7.5K	530 (20.87)	550 (21.65)					
	JIS 10K	490 (19.29)	550 (21.65)					
	AS4087 PN14, PN16	525 (20.67)	550 (21.65)					
	AS2129 TABLE C D E	525 (20.67)	550 (21.65)					
	AS4087 PN21	550 (21.65)	550 (21.65)					
	AS2129 TABLE F	550 (21.65)	550 (21.65)					
	AS4087 PN35	550 (21.65)	570 (22.44)					
	AS2129 TABLE H	550 (21.65)	570 (22.44)					
DN375 (15 in.)	AS4087 PN14, PN16	550 (21.65)	550 (21.65)	257.5 (10.14)	346 (13.62)	376 (14.80)	350 (13.78)	115 (253)
	AS2129 TABLE C	550 (21.65)	550 (21.65)					
	AS4087 PN35	580 (22.83)	570 (22.44)					
DN400 (16 in.)	ASME B16.5 CLASS 150	600 (23.62)	600 (23.62)	285 (11.22)	371 (14.61)	420 (16.54)	400 (15.75)	115 (253)
	ASME B16.5 CLASS 300	650 (25.59)	620 (24.41)					
	EN1092 – 1 PN10	565 (22.24)	600 (23.62)					
	EN1092 – 1 PN16	580 (22.83)	600 (23.62)					
	EN1092 – 1 PN25	620 (24.41)	620 (24.41)					
	EN1092 – 1 PN40	660 (25.98)	620 (24.41)					
	JIS 5K	540 (21.26)	600 (23.62)					
	JIS 7.5K	582 (22.91)	600 (23.62)					
	JIS 10K	560 (22.05)	600 (23.62)					
	AS4087 PN14, PN16	580 (22.83)	600 (23.62)					
	AS2129 TABLE C D E	580 (22.83)	600 (23.62)					
	AS4087 PN21	610 (24.02)	600 (23.62)					
	AS2129 TABLE F	610 (24.02)	600 (23.62)					
	AS4087 PN35	610 (24.02)	620 (24.41)					
	AS2129 TABLE H	610 (24.02)	620 (24.41)					

Table 5.6 DN250 to 600 (10 to 24 in. NB) (FEF) dimensions / weights (Continued)

		Dimensions in mm (in.)						
DN	Mating flange type	D	L	C	G	A	X	Approx. weight in kg (lb)
DN450 (18 in.)	ASME B16.5 CLASS 150	635 (25.00)	700 (27.56)	317.5 (12.50)	402 (15.83)	480 (18.90)	450 (17.72)	160 (352)
	ASME B16.5 CLASS 300	710 (27.95)						
	EN1092 – 1 PN10	615 (24.21)						
	EN1092 – 1 PN16	640 (25.20)						
	EN1092 – 1 PN25	670 (26.38)						
	EN1092 – 1 PN40	685 (26.97)						
	JIS 5K	605 (23.82)						
	JIS 7.5K	652 (25.67)						
	JIS 10K	620 (24.41)						
	AS4087 PN14, PN16	640 (25.20)						
	AS2129 TABLE C D	640 (25.20)						
	AS2129 TABLE E	640 (25.20)						
	AS4087 PN21	675 (26.57)						
	AS2129 TABLE F	675 (26.57)						
AS4087 PN35	675 (26.57)							
AS2129 TABLE H	675 (26.57)							
DN500 (20 in.)	ASME B16.5 CLASS 150	700 (27.56)	770 (30.31)	345 (13.58)	429 (16.89)	520 (20.47)	500 (19.69)	217 (455)
	ASME B16.5 CLASS 300	775 (30.51)						
	EN1092 – 1 PN10	670 (26.38)						
	EN1092 – 1 PN16	715 (28.15)						
	EN1092 – 1 PN25	730 (28.74)						
	EN1092 – 1 PN40	755 (29.72)						
	JIS 5K	655 (25.79)						
	JIS 7.5K	706 (27.80)						
	JIS 10K	675 (26.57)						
	AS4087 PN 14, PN16	705 (27.76)						
	AS2129 TABLE C D E	705 (27.76)						
	AS4087 PN21	735 (28.94)						
	AS2129 TABLE F	735 (28.94)						
	AS4087 PN35	735 (28.94)						
AS2129 TABLE H	735 (28.94)							
DN600 (24 in.)	ASME B16.5 CLASS 150	815 (32.09)	920 (36.22)	387.5 (15.25)	472 (18.58)	610 (24.02)	600 (23.62)	315 (693)
	ASME B16.5 CLASS 300	915 (36.02)						
	EN1092 – 1 PN10	780 (30.71)						
	EN1092 – 1 PN16	840 (33.07)						
	EN1092 – 1 PN25	845 (33.27)						
	EN1092 – 1 PN40	890 (35.04)						
	JIS 5K	770 (30.31)						
	JIS 7.5K	810 (31.89)						
	JIS 10K	795 (31.30)						
	AS4087 PN14, PN16	825 (32.48)						
	AS2129 TABLE C D	825 (32.48)						
	AS2129 TABLE E	825 (32.48)						
	AS4087 PN21	850 (33.46)						
	AS2129 TABLE F	850 (33.46)						
AS4087 PN35	850 (33.46)							
AS2129 TABLE H	850 (33.46)							

Table 5.6 DN250 to 600 (10 to 24 in. NB) (FEF) dimensions / weights (Continued)

6 Common accessories

Accessory	Item Number
WaterMaster AC Fuse F1 Type T 250 mA A/S TR5	B20411
WaterMaster DC Fuse F2 Type T 2 A A/S TR5	B20412
WaterMaster Infra Red Comms Pack	MJBX9932
WaterMaster Backplane PCB Board (STD)	WATX2505
WaterMaster Sensor PCB Board	WATX2506
WaterMaster Comms Cable	WEBC2500
Signal cable for remote WaterMaster transmitter 5 m (15 ft.) 10 m (30 ft.) 20 m (60 ft.) 30 m (100 ft.) 50 m (165 ft.) 80 m (260 ft.) 100 m (325 ft.) 150 m (490 ft.) 500 m (1650 ft.)	STT4500/05 STT4500/10 STT4500/20 STT4500/30 STT4500/50 STT4500/80 STT4500/100 STT4500/150 STT4500/500
Armored signal cable for remote WaterMaster transmitter 5 m (15 ft.) 10 m (30 ft.) 20 m (60 ft.) 30 m (100 ft.) 50 m (165 ft.) 80 m (260 ft.) 100 m (325 ft.) 150 m (490 ft.) 500 m (1650 ft.)	STT4501/05 STT4501/10 STT4501/20 STT4501/30 STT4501/50 STT4501/80 STT4501/100 STT4501/150 STT4501/500

Notes

Acknowledgments

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