



Water meter classification

Data Sheet

Water meters are primarily classified by size. That is, the nominal diameter of the water meter is matched to the size of the pipe to which it is being connected. However, it should always be confirmed that the expected flow rates through the meter fall within the accurate flow range of the meter. The meters flow range is defined as follows:

Nominal flow rate	Q _n	The designation flow rate of the meter.
Maximum flow rate	Q _{max}	The highest flow rate at which the meter accuracy will be within the maximum permitted error.
Minimum flow rate	Q _{min}	The lowest flow at which the meter accuracy will be within the maximum permitted error.
Transitional flow rate	Q _t	The flow rate at which the maximum permitted error of the meter changes from $\pm 5\%$ to $\pm 2\%$.

Between Q_{min} and Q_t the meters accuracy is $\pm 5\%$. From Q_t up to Q_{max} the accuracy is $\pm 2\%$.

The table below sets of values of Q_{max} etc. for the range of meter sizes.

Water meter classification table

Nominal diameter	Q _n (m ³ /hr)	Q _{max} (m ³ /hr)	Class A		Class B		Class C		Class D	
			Q _{min} (litres/hr)	Q _t (litres/hr)	Q _{min} (litres/hr)	Q _t (litres/hr)	Q _{min} (litres/hr)	Q _t (litres/hr)	Q _{min} (litres/hr)	Q _t (litres/hr)
15(1/2)	1.0	2.0	-	-	-	-	-	-	7.5	11.5
15(1/2)	1.5	3.0	60	150	30	120	15	22.5	11.25	17.25
20(3/4)	2.5	5.0	100	250	50	200	25	37.5	18.75	28.75
25(1)	3.5	7	140	350	70	280	35	52.5	26.25	40.25
25(1)	6.0	12	240	600	120	480	60	90	-	-
32(1 1/4)	6.0	12	240	600	120	480	60	90	-	-
40(1 1/2)	10	20	400	1000	200	800	100	150	-	-

Meter type decision matrix

Meter type	RS stock no.	Features							
		Sizes	Maximum water temperature	High intensity use	Poor water quality	Installed in any orientation	Extreme low flow accuracy	Full brass body	Blockage resistant design
ETW single jet turbine meter	211-0468 211-0474	15mm ¹ / ₂ in 20mm ³ / ₄ in	90°C		✓	✓			✓
MNK multi-jet turbine meter	211-0480 211-0496	15mm ¹ / ₂ in 25mm/1in	50°C	✓	✓			✓	
MSV volumetric meter	211-0503	15mm ¹ / ₂ in	30°C			✓	✓	✓	

Water meter reading

Turbine type meters differ from volumetric meters not only in the measuring principle they utilise but also in the way they display their measured volume. Volumetric meters typically have a single row of digits to display the reading. The first four digits are in black and represent whole cubic meters. The final four digits are in red and represent the fractions of a cubic meter.

Turbine type meters use a combination of in-line digits and clock dials to show the volume of water that has been measured. The inline digits are in black and show the whole cubic meters. The clock dials have red pointers that indicate the fractions of a cubic meter.

The ETW meter is based on a vertical axis turbine with a single passage directing water to the turbine and another directing water from the turbine. The flow of water acts on the turbine in a paddle wheel fashion. The turbine rotation is converted to a volume reading via the gearing of the counter.

Advantages

- Low cost, compact design
- Suitable for installation in any orientation
- Uniform accuracy over whole metre life
- Suitable for water temperatures to 90°C
- Excellent resistance to impurities in water
- Silent operation
- Low head loss
- Conforms to ISO 4064 PE1 class A.

Applications

Single point installation (washing machines, showers etc.) apartments, caravan parks, general secondary metering and usage monitoring.

Note: The ETW meters incorporate a brass body and a clear plastic cover.

Technical specification

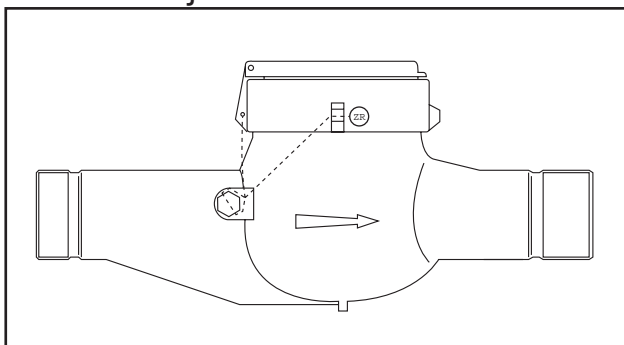
Body _____ Cast brass
 Max. operating pressure _____ 16 bar
 Max. water temperature _____ 90°C
 Head loss at Qmax. _____ <1 bar

RS stock no.		211-0468	211-0474
Class		A	A
Nominal size	mm	15(1/2)in.	20(3/4)in.
Minimum flow rate	Qmin. 1/hr	1.500(1.5m³/hr)	2.500(2.5m³/hr)
Transitional flow rate	Qt 1/hr	150	250
Maximum flow rate	Qmax. 1/hr	60	100
Connection body	BSP	3/4"	1"
Connection tails	BSP	1/2"	3/4"
Overall length	mm	190	228
Length without tails	mm	110	130
Height	mm	69	69
Width	mm	72	72
Dial indication	Minimum scale division 0.05 litres (0.00005m³) maximum reading 100.000m³		

Max. permitted error from Qmin to Qt _____ ±5%

Max. permitted error from Qt to Qmax. _____ ±2%

MNK Multi - jet turbine water meters



MNK meter is similar to the ETW in that it is based on a vertical axis turbine. The water enters the meter body and is directed to a chamber around the measuring insert. The water then flows to the turbine via multiple passages spaced at intervals around the circumference of the insert. These passages form the 'multiple' jets of water that act to rotate the turbine. This rotation is transferred to the counter dials via the counter gearing.

Advantages

- Robust fully brass body and headring
- Wet dial counter ensures clear reading
- Direct drive from turbine to counter
- Uniform accuracy over whole meter life
- Multi-jet configuration ensures even bearing wear
- Suitable for water temperatures to 50°C
- Excellent resistance to impurities in water
- Silent operation.

Applications

General purpose metering (from small households to medium sized commercial properties), industrial installations where robust construction is required.

Note: The MNK multi-jet is typical of the meters used throughout Europe and many parts of the world. The multi-jet design is reknown for its long life and its resistance to the effects of poor water quality. The MNK multi-jet meters have class C accuracy in 15mm sizes and class B accuracy for 25mm. To achieve their stated accuracy multi-jet meters must be installed horizontally.

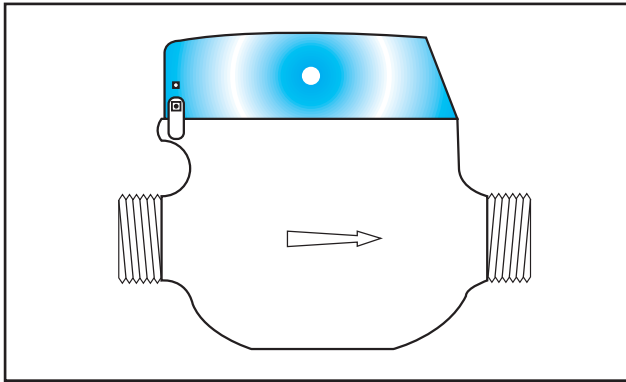
Technical specification

Max. pressure _____ 16 bar
 Max. water temperature _____ 50°C
 Headloss at Qmax. _____ < 1bar

RS stock no.		211-0480	211-0496
Size	mm	15(1/2)in.	25(1)in.
Nominal flow rate	Qn 1/hr (m³/hr)	1,500 (1.5)	3,500 (3.5)
Minimum flow rate	Qmin 1/hr	15	70
Transitional flow rate	Qt 1/hr	22.5	280
Maximum flow rate	Qmax. 1/hr	3,000	7,000
Connection body	BSP	3/4"	1 1/4"
Connection tails	BSP	1/2"	1"
Overall length	mm	245	378
Length without tails	mm	165	260
Height	mm	120	130
Weight	kg	1.5	3.0
Dial indication	Minimum scale division 0.05 litres (0.00005m³) maximum reading 100.000m³		

Max. permitted error from Qmin. to Qt _____ ±5%
 Max. permitted error from Qt to Qmax. _____ ±2%

MSV Volumetric water meter



The MSV meter is a semi-positive displacement type meter, also referred to as volumetric or piston meters. The meter incorporates a small bucket or piston with a known volume. The water flows through one orifice and fills the bucket which then rotates and lets the water flow out through a second orifice. The number of 'buckets' of water is converted to a total volume by the counter gearing.

Advantages

- Robust design brass body
- Excellent low flow accuracy (class D for 15mm)
- Suitable for installation in any orientation
- Suitable for water temperatures to 30°C
- Evacuated and sealed counter ensures clear reading
- Conforms to BS 5728 Pt 1.

Applications

Households and smaller commercial installations, leakage detection, measuring flow into break tanks.

Note: Volumetric meter are prevalent in the UK. This type of meter is generally susceptible to wear in poor water quality areas. However, the MSV volumetric meter offers superior wear resistance. It incorporates high grade engineering plastic internal components processed using a unique moulding technique. As a result it is able to complete a full ISO4064 endurance test and still conform to class D specification!

Technical specification

Body _____ Cast brass
 Max. operating pressure _____ 10 bar
 Head loss at Qmax _____ 1 bar max.
 Water temp. range _____ 0°C to 30°C

RS stock no. 211-0503		
Class		D
Nominal size	mm	15 (1/2)in.
Nominal flow rate	Qn 1/hr	1000 (1.0m³/hr)
Transitional flow rate	Qt 1/hr	11.5
Minimum flow rate	Qmin 1/hr	7.5
Maximum flow rate	Qmax. 1/hr	2,000
Connection type (body)	BSP	3/4"
Connection type (tails)	BSP	1/2"
Length	mm	134
Height	mm	102
Width	mm	90
Weight	Kg	1.20
Dial indication	Minimum scale reading 0.02 litres (0.00002m³) Maximum reading 10,000m³	

Max. permitted error from Qmin to Qt _____ ±5%
 Max. permitted error from Qt: to Qmax _____ ±2%

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