



United Kingdom of Great Britain and Northern Ireland

**Certificate of EC type-examination of a
measuring instrument**

Number: UK/0126/0012

issued by the Secretary of State for Innovation, Universities & Skills
Notified Body Number 0126

In accordance with the requirements of the Measuring Instruments (Cold-water Meters) Regulations 2006 (SI 2006/1268) and the Measuring Instruments (Non-Prescribed Instruments) Regulations 2006 which implement, in the United Kingdom, Council Directive 2004/22/EC, this certificate of EC type-examination has been issued to:

**Elster Metering Limited
Pondwicks Road
Luton
Bedfordshire
LU1 3LJ**

in respect of a family of cold-water meters utilising a common, volumetric measuring element, with a nominal capacity of 36 revs/litre and having a rated permanent flowrate Q3 of 2.5m³/h.

The necessary data (principal characteristics, alterations, securing, functioning etc) for identification purposes and conditions (when applicable) are set out in the descriptive annex to this certificate.

Signatory: P R Dixon
for Chief Executive
National Weights & Measures Laboratory
Department for Innovation, Universities & Skills
Stanton Avenue
Teddington
Middlesex TW11 0JZ
United Kingdom

Issue Date: 5 October 2007
Valid Until: 4 October 2017
Reference No: T1132/0009

Descriptive Annex

1 INTRODUCTION

This pattern of liquid measuring instrument is for measuring the volume of cold water which has passed through it. It relates to models of semi-positive displacement cold-water meter having a Q_3 (permanent flowrate) of 2.5 cubic metre per hour. It is based on a 36 revolutions per litre measuring chamber with model variations described in section 2.

2 FUNCTIONAL DESCRIPTION

2.1 V210 meter

The V210 meter incorporates a semi-positive displacement rotary piston measuring assembly that is fitted into either a brass alloy, (Figure 1), or injection moulded thermoplastic body, (Figure 2), for connection to a manifold in any orientation. The rotary piston drives a magnet that couples either to a simple, non-resettable totalising register, or a non-resettable totalising display incorporating an absolute encoder model register. Either register model is positioned on the top of the measurement chamber housing and secured to the meter by the thermoplastic snap-shut register shroud. The connection to the manifold is arranged via a British Pipe Thread G1½"A male threaded co-axial inlet/outlet at the base of the meter body. Cross section diagrams of each body variant are shown in Figures 7 and 8.

2.2 V200 meter

A meter as described in section 2.1, but with the measuring assembly being arranged in a brass alloy body for in-line connection into the water pipe via two British pipe thread G3/4"A male threaded connectors, (Figure 3). A cross section diagram is shown in Figures 9.

2.3 V230 meter

Having the 36 rev/l measuring and counting assemblies housed in a brass alloy body arranged for in-line connection into the water pipe via two British pipe thread G3/4"A male threaded connectors and using a brass head ring to secure the register, (Figure 4). A cross section diagram is shown in Figures 10.

2.4 V100 meter

Having the 36 rev/l measuring chamber and counter assembly mounted in a brass alloy body for connection into the water pipe via two G3/4"A male threaded connectors, (Figure 5). The axis of the measuring chamber is parallel to the axis of the pipe, as shown in Figure 11. The register is of a roller wheel type, with a series of number wheels with printed digits showing whole measurement units and decimal places. The register is available in variants having five number wheels showing whole cubic meters and three number wheels showing the decimal places or four number wheels showing whole cubic meters and four number wheels showing the decimal places. A cross section diagram is shown in Figures 11.

2.5 V110 meter

Having the meter arranged as described in Section 2.5 but the two body halves are a thermoplastic injection moulding, (Figure 6).

3 TECHNICAL DATA

3.1 Flow designation

Table 1 shows the permitted Q3/Q1 flow designations by model, with Table 2 showing the resultant flowrates, relating to each designation.

Model Name	Q ₃ /Q ₁ (R)				
	400	315	250	200	160
V100	✓	✓	✓	✓	✓
V110	✓	✓	✓	✓	✓
V200	✓	✓	✓	✓	✓
V210	✓	✓	✓	✓	✓
V230			✓	✓	✓

Table 1. Permitted flow designations by model

Q ₃ /Q ₁ (R)	400	315	250	200	160
Q ₂ /Q ₁	1.6	1.6	1.6	1.6	1.6
Q1 Minimum flowrate (m ³ /h)	0.00625	0.00794	0.01000	0.01250	0.01563
Q2 Transitional flowrate (m ³ /h)	0.01000	0.01270	0.01600	0.02000	0.02500
Q3 Permanent flowrate (m ³ /h)	2.5	2.5	2.5	2.5	2.5
Q4 Overload flowrate (m ³ /h)	3.125	3.125	3.125	3.125	3.125

Table 2. Related flowrates according to each Q3/Q1 designation

3.2 Register elements

Model Name	Register Variant	Volume of one revolution of the first display element (m ³)	Verification Scale Interval (m ³)	Indicating Range (m ³)
V100	4x4 Register	0.0001	0.000001	9999.99999
	5x3 Register	0.001	0.00001	99999.9999
V110	4x4 Register	0.0001	0.000001	9999.99999
	5x3 Register	0.001	0.00001	99999.9999
V200	Standard	0.001	0.00002	99999.99998
	Encoder	0.001	0.00002	9999.99998
V210	Standard	0.001	0.00002	99999.99998
	Encoder	0.001	0.00002	9999.99998
V230	Standard	0.001	0.00005	99999.99995

3.3 Meter dimensions

Model Name	Register Variant	Overall Meter Diameter (mm)	Overall Meter Height (mm)	Overall Meter Length (mm)	Meter Connection
V100	4x4 Register	86	n/a	110,115, 134, 165, 170, 190	G3/4”A
	5x3 Register				
V110	4x4 Register	99	n/a	115, 134, 165	G3/4”A
	5x3 Register				
V200	Standard	94	113	110, 115, 134, 165, 170, 190	G3/4”A
	Encoder		130		
V210	Standard	94	126	n/a	G1½”A
	Encoder		143		
V230	Standard	83	110	145,165,170, 190	G3/4”A
		83	110	105, 165,190,220	G1”A
		83	110	165,175	G1 1/4”A

3.4 Other designations

Temperature class:	T30 (0.1°C – 30°C)
Orientation requirements:	None
Revs/litre of measuring chamber	36
Maximum admissible pressure (MAP)	16 bar
Pressure Loss at Q3	0.63 bar max
Climatic environment:	-10°C to +55°C
Mechanical environment:	M1
Electromagnetic environment:	n/a
Location:	Open/closed, condensing/non-condensing
Reverse Flow:	Permitted but not measured

4 PERIPHERAL DEVICES AND INTERFACES

The meters may be permanently or temporarily fitted with a pulse giving sensor, fitted externally to the register. Pulses from this sensor can be used to transfer a repeat of the indicated volume to an ancillary device. Pulses are generated either by a metallic pointer passing an inductive field or a magnet passing a reed switch.

4.1 Inductive pointer and sensor unit (V210 and V200 meters)

The meter register is equipped with a metallic pointer on the first element of the verification scale. Two bosses and two holes on the shroud enable the option of an inductive sensor to be fitted to the meter shroud as shown in Figure 12. The manufacturer's name Elster is on the housing of the inductive sensor as well as the dial face.

4.2 Reed switch sensor (V200 and V210 meters)

The meter register is equipped with a magnetic pointer on the first element of the verification scale. The reed switch sensor is fitted to the meter shroud, as shown in Figure 13.

4.3 Reed switch sensor (V100 and V110 meters)

The meter register is equipped with a magnet on the first element of the verification scale. The reed switch sensor is fitted in a pocket within the meter housing, in close proximity to the magnet, as shown in Figure 14.

5 APPROVAL CONDITIONS

The certificate is issued subject to the following conditions:

5.1 Legends and inscriptions

The instrument bears the following legends:

- 'CE' marking
- Supplementary metrology marking
- Notified body identification number
- Permanent flow rate Q_3
- Flowrate range Q_3/Q_1 (R)
- Serial number
- Manufacturers mark or name
- Certificate number

6 LOCATION OF VERIFICATION MARKS AND SEALS

6.1 Location of verification markings

6.1.1 V200 and V210

The serial number and verification markings are permanently etched on the top surface of the shroud as shown in Figures 7 to 9.

6.1.2 V100

The serial number and verification markings are permanently etched on the front face of the plastic securing ring as shown in figure 15.

6.1.3 V100 - alternative

The serial number is marked adjacent to the register window of the meter housing and the verification marks are engraved on the central joint face of the meter housing, as shown in Figure 16.

6.1.4 V110

The serial number is marked adjacent to the register window of the meter housing and the verification marks are located on the lower, chamber housing, as shown in figure 17.

6.1.5 V230

The serial number directly on the head ring or on a plastic shroud mounted over the head ring as shown in figure 18 (marked XXXXX)

6.2 Sealing arrangement

6.2.1 V200 and V210

The meter is secured by means of the snap fit plastic shroud. The shroud has integrally moulded clips and once fitted to the meter body cannot be removed without showing visible signs of unauthorised entry if attempts are made to remove it.

6.2.2 V100 and V110

A sealing wire links the two halves of the body and is secured with a lead seal as shown in figure 16 and 17.

6.2.3 V100 alternative

A plastic securing ring with retaining clip is positioned over the join between the two body halves. This cannot be removed without breaking or showing visible signs of tampering (Figure 15).

6.2.4 V230

The meter is sealed with either a plastic or wire and lead seal between the head ring and the blanking screw as shown in figure 19

7**ILLUSTRATIONS**

- Figure 1 V210 meter with brass alloy housing
- Figure 2 V210 meter with thermoplastic body
- Figure 3 V200 meter
- Figure 4 V230 meter
- Figure 5 V100 meter
- Figure 6 V110 meter
- Figure 7 V210 meter assembly with brass alloy body
- Figure 8 V210 meter assembly with thermoplastic body
- Figure 9 V200 meter assembly
- Figure 10 V230 meter assembly
- Figure 11 V100 and V110 meter assembly
- Figure 12 Dial face showing position of inductive sensor (V200 and V210)
- Figure 13 Dial face showing position of reed switch sensor (V200 and V210)
- Figure 14 View showing position of reed switch sensor (V100 and V110)
- Figure 15 V100 serial number, verification marks and securing method
- Figure 16 V100 alternative serial number, verification marks and securing
- Figure 17 V110 serial number, verification marks and securing method
- Figure 18 V230 alternative serial number, verification marks
- Figure 19 V230 alternative securing methods

9**CERTIFICATE HISTORY**

ISSUE NO.	DATE	DESCRIPTION
UK/0126/0012	5 October 2007	Type examination certificate first issued.



Figure 1 V210 meter with brass alloy housing



Figure 2 V210 meter with thermoplastic body



Figure 3 V200 meter



Figure 4 V230 meter



Figure 5 V100 meter



Figure 6 V110 meter

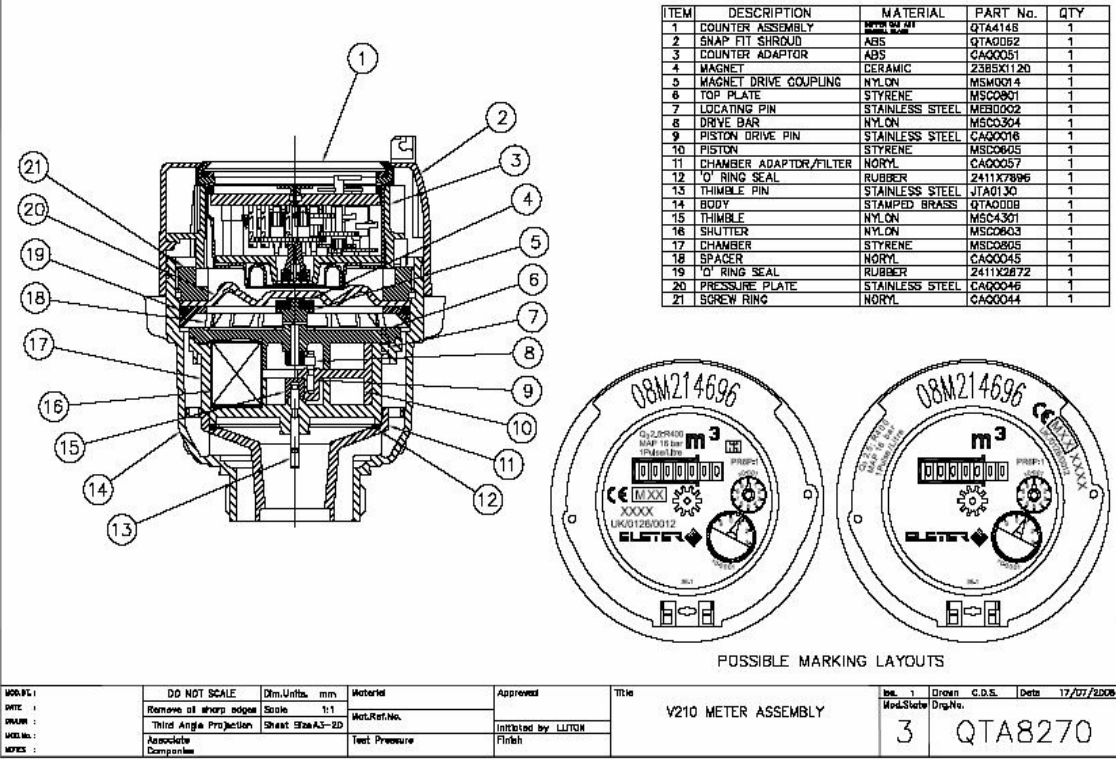
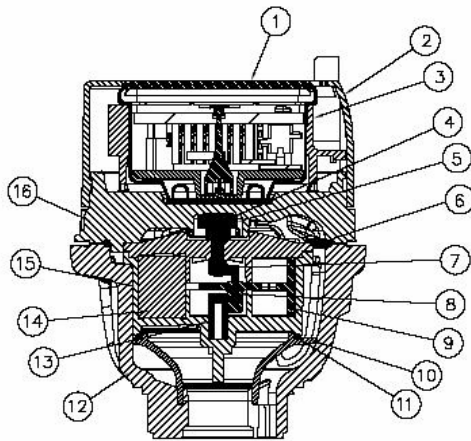
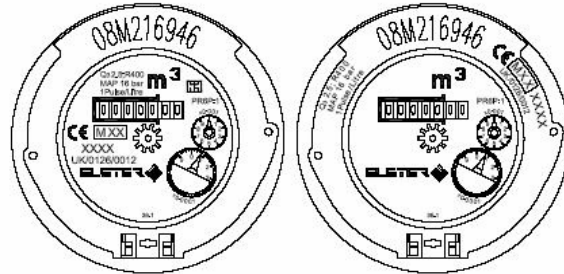


Figure 7 V210 meter assembly with brass alloy body



ITEM	DESCRIPTION	MATERIAL	PART No.	QTY
1	COUNTER ASSEMBLY	ABS	QTA4148	1
2	SNAP FIT SHROUD	ABS	QTA0052	1
3	COUNTER ADAPTOR	ABS	CA00051	1
4	MAGNET	DERAMIC	Z385X1120	1
5	MAGNET DRIVE COUPLING	NYLON	MSM00914	1
6	TOP PLATE	STYRENE	MSC0801	1
7	DRIVE BAR	NYLON	MSC0304	1
8	PISTON DRIVE PIN	STAINLESS STEEL	CA00016	1
9	PISTON	STYRENE	MSC0805	1
10	ADAPTOR / STRAINER	ACETAL	QTA0118	1
11	O' RING SEAL	RUBBER	QTA0117	1
12	BODY	ACETAL	QTA0114	1
13	THIMBLE	NYLON	MSCA301	1
14	SHUTTER	NYLON	MSC0603	1
15	CHAMBER	STYRENE	MSC0805	1
16	PRESSURE PLATE	ACETAL	QTA0115	1
				1
				1
				1
				1



POSSIBLE MARKING LAYOUTS

WOB:PL	DD NOT SCALE	Dim. Units: mm	Material	Approved	Title	Rev. 1	Drawn: MAM	Date: 10/12/2007
DATE :	Remove of sharp edges	Scale: 1:1	Part/Ref.No.	Initiated by: LUTON	V210P METER ASSEMBLY	Mod/State	QTA8305	
DRAWN :	Third Angle Projection	Sheet Size:A3-D2	Test Procedure	Finish		3		
WOB:No :	Assemblies							
WOB: :	Component							

Figure 8 V210 meter assembly with thermoplastic body

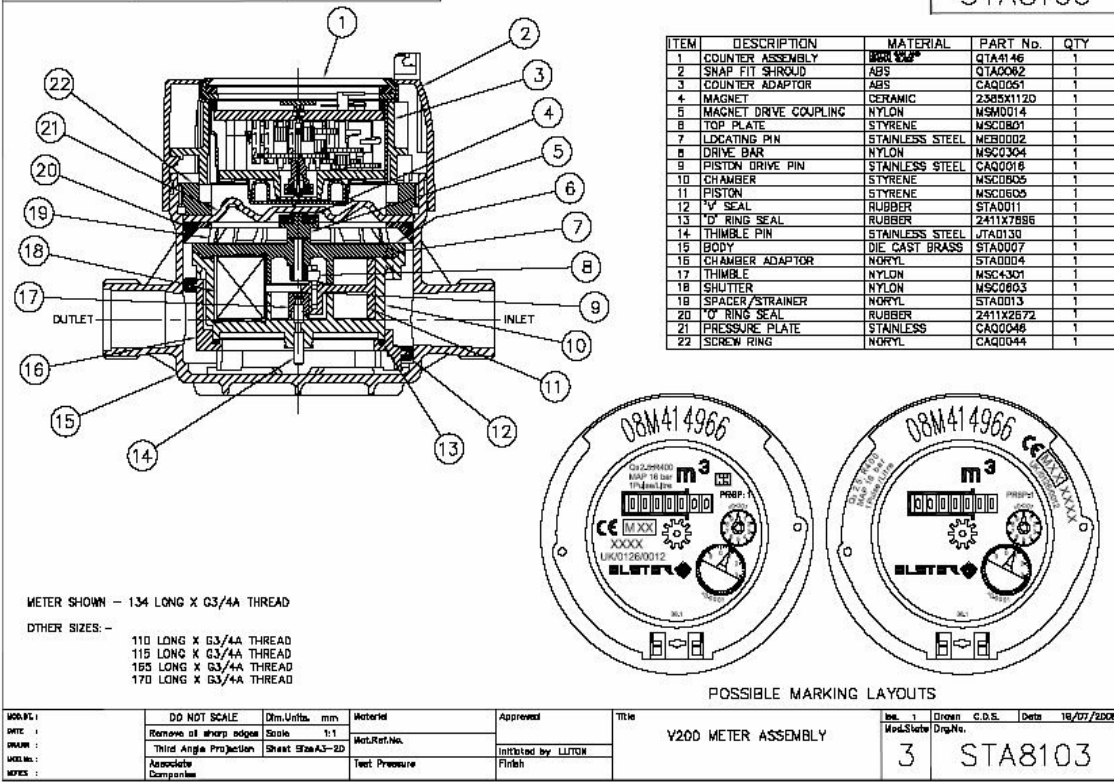
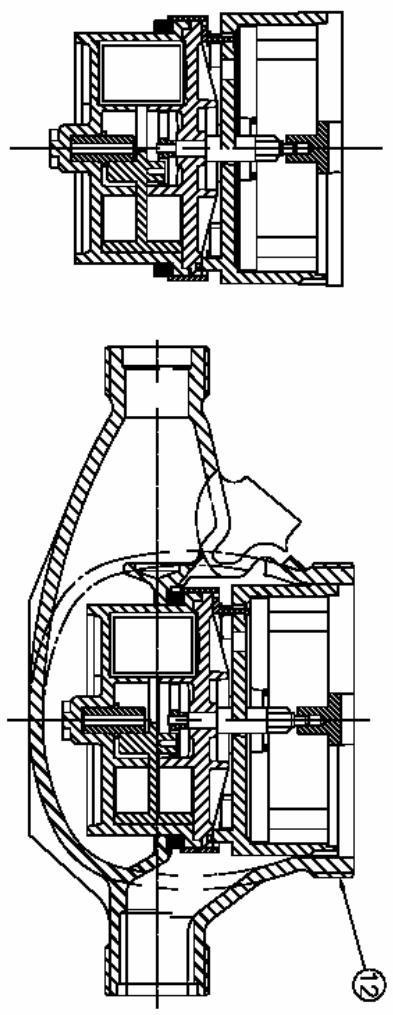
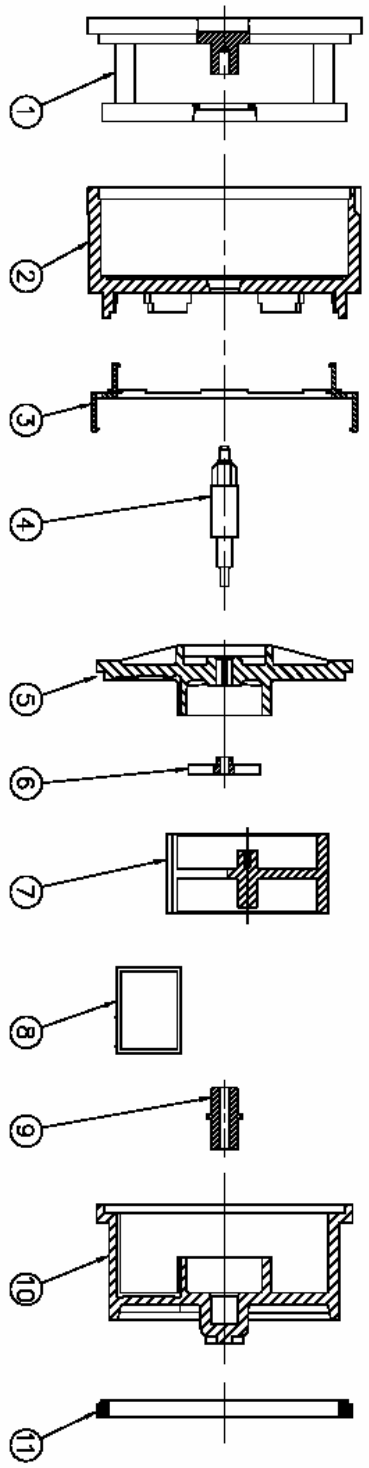


Figure 9 V200 meter assembly



ITEM	DESCRIPTION	PART No.
1	EMT COUNTER ASSEMBLY	QTA0088
2	GROUNTER CUP	QTA0089
3	CUP FOR CHAMBER ASSY	QTA0090
4	DRIVE SPINDLE	QTA0098
5	AMAZON TOP FLATE	QTA0079
6	CAPTIVE DRIVE BAR	QTA0048
7	PISTON	QTA0107
8	AMAZON SHUTTER	QTA0043
9	AMAZON THIMBLE	QTA0087
10	AMAZON CHAMBER	QTA0078
11	AMAZON SPACER	QTA0081
12	EMT BODY	

DATE : DRAWN : CHECKED : APPROVED :	DD NOT SCALE Borrow all dimensions Third Angle Projection Assemblies Descriptions	Den/Units: mm Scale: 1:1 Material: Cast Iron Task: Pressure Approved by: LUTON Checked by: LUTON Title: AMAZON - V230 REYNOLDS METER ASSEMBLY	Rev: 1 Description: Drawn: Date: 18/08/2005 1 QTA8225
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Figure 10 V230 meter assembly

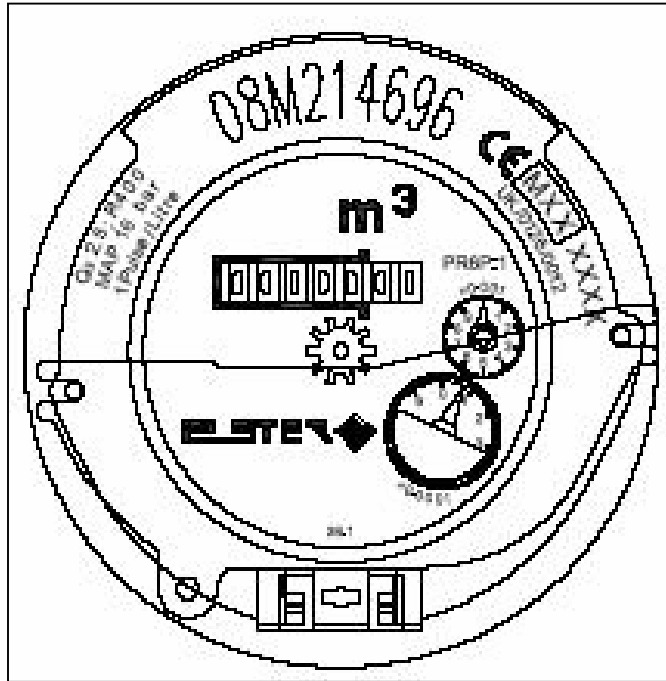


Figure 12 Dial face showing position of inductive sensor (V200 and V210)

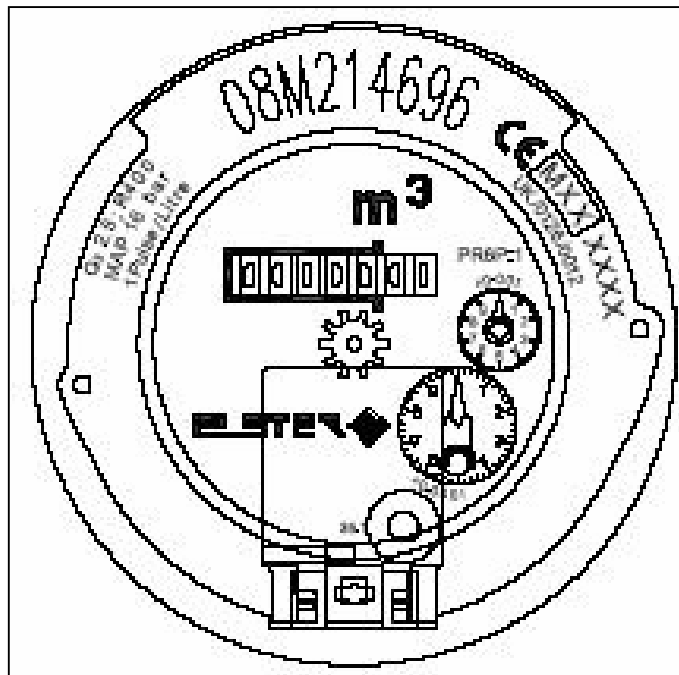


Figure 13 Dial face showing position of reed switch sensor (V200 and V210)

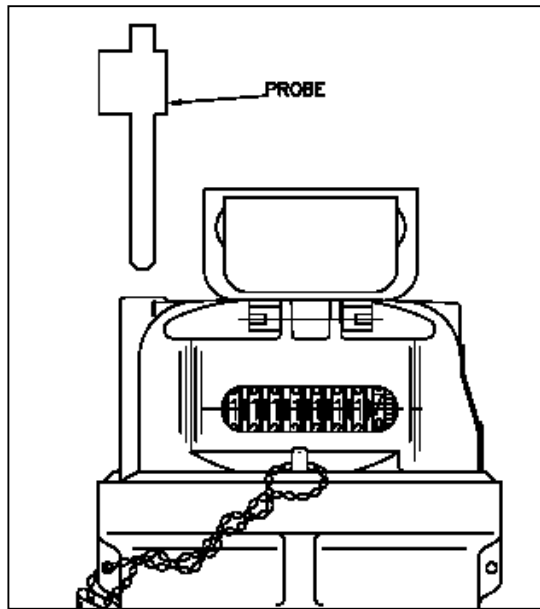


Figure 14 View showing position of reed switch sensor (V100 and V110)

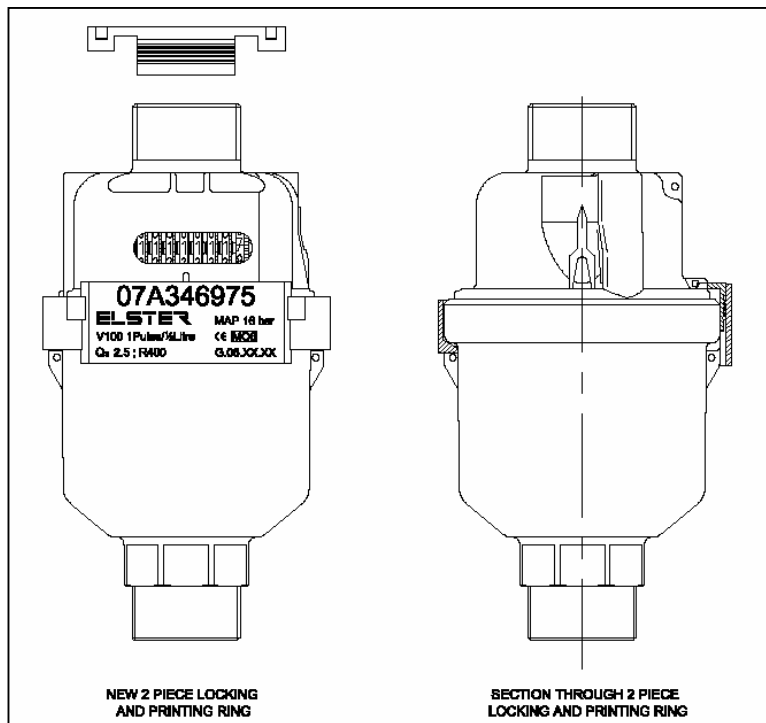


Figure 15 V100 serial number, verification marks and securing method

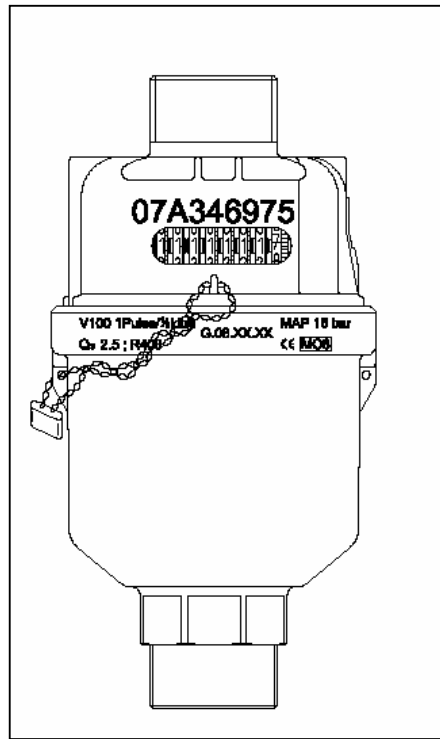


Figure 16 V100 alternative serial number, verification marks and securing method

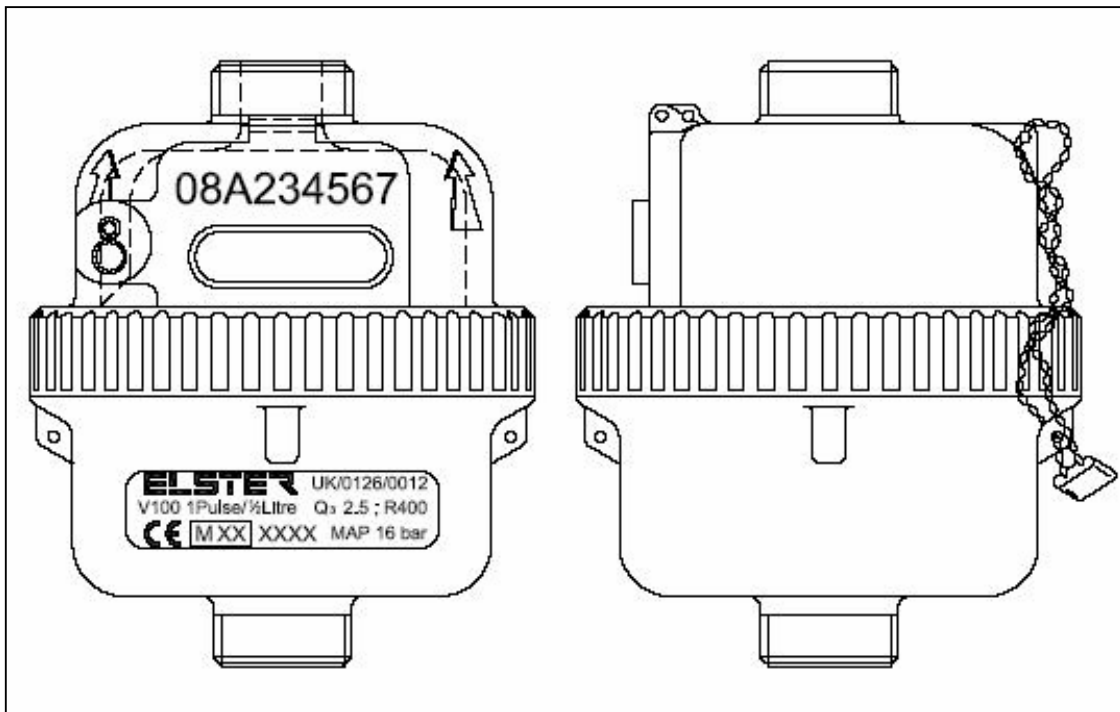


Figure 17 V110 serial number, verification marks and securing method

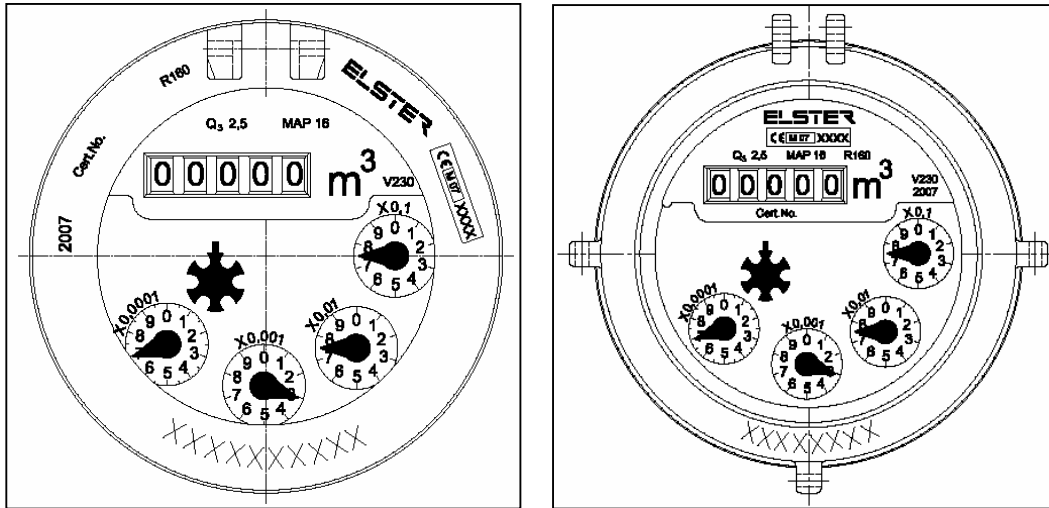


Figure 18 V230 alternative serial number and verification marks

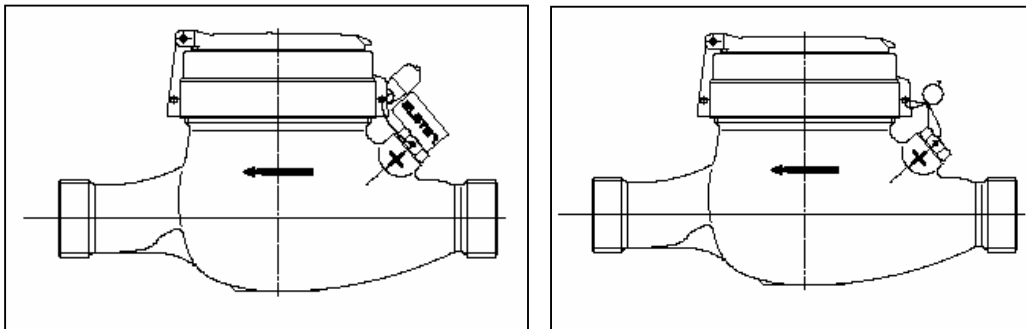


Figure 19 V230 alternative securing methods

