



EU-TYPE EXAMINATION CERTIFICATE

Number: TCM 142/17 - 5473

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In accordance: with Directive 2014/32/EU of the European Parliament and of the Council on the harmonisation of the laws of the Member States relating to the making available on the market of measuring instruments (implemented in Czech Republic by Government Order No. 120/2016 Coll.).

Manufacturer: MADDALENA S.p.A.
Via G.B. Maddalena 2/4
33040 Povoletto (UD)
Italy

For: water meter - Woltmann
Type: WMAP EVO

Accuracy class: 2
Temperature class: T50

Valid until: 6 June 2027

Document No: 0511-CS-A021-17

Description: Essential characteristics, approved conditions and special conditions, if any, are described in this certificate.

Date of issue: 7 June 2017

Certificate approved by:




RNDr. Pavel Klenovský

1. Characteristics of instrument:

The Woltmann water meters type WMAP EVO are designed to measure, memorise and display the volume at metering conditions of water passing through the measurement transducer in the sense of the Directive 2014/32/EU of the European Parliament and of the Council of the harmonisation of the laws of the Member States relating to the making available on the market of measuring instruments (implemented in Czech Republic by Government Order No. 120/2016 Coll.), as amended.

The Woltmann water meters type WMAP EVO consist of a iron casted body with connecting flanges or threads, a wet measuring unit with a plastic rotary vane wheel and adjusting slide, stainless steel shaft, sapphire stone bearings with antifriction cylinders, a magnetic coupling formed by a quadrupole magnet, an indicating device – plastic or copper glass, the upper plastic, tempered glass or glass disc, plastic ring connecting the indicating device to the body and a cover of the indicating device.

The indicating device is dry and mechanical. It is formed by numbered rollers with seven black drums displaying volume in cubic meters by three red rotary pointers displaying smaller submultiples of cubic meters. For DN 150 and DN 200 volume is displayed by seven black drums and one rotary pointer cubic meters, by two red rotary pointers displaying smaller submultiples of cubic meters. There is star wheel with six arms which can be used for rapid testing in mechanical indicating device.

The adjustment is realized by adjusting screw. The access to the adjusting screw is protected by the plastic or metal cover.

The water meters type WMAP EVO can be equipped by a Reed Impulse transmitter or electronic pulse emitter or others certified optionally or pre-equipped for a further installation. These pulse transmitters may be used for remote reading of the water meter, where national regulations permit.

The electronic pulse emitter operate on inductive principle (two or three coils) and it can detect the flow direction (forward flow and return flow), magnetic influence and sensor removal by Fraud signal.

The water meters type WMAP EVO shall be installed to operate in horizontal position with the indicating device at the top or any position in according to the technical information below.

2. Main characteristics:

| Nominal diameter: | | 50 | 65 | 80 | 100 | 125 |
|--|----------------------|---|---------------|----------------|----------------|---------------|
| Q_1 [m³/h]: | | flowrates are shown in Table <i>flowrates</i> | | | | |
| Q_2 [m³/h]: | | | | | | |
| Q_3 [m³/h]: | | | | | | |
| Q_4 [m³/h]: | | | | | | |
| Q_3/Q_1 : | H↑ | 250; 200; 160; 125; 100; 80; 63; 50; 40 | | | | |
| | H→; V↑; V↓; inclined | 160; 125; 100; 80; 63; 50; 40 | | | | |
| Accuracy class: | | 2 | | | | |
| Maximum permissible error for the lower flowrate zone (MPE1) | | ±5% | | | | |
| Maximum permissible error for the upper flowrate zone (MPEu) | | ±2% for water having a temperature ≤ 30°C ±3% for water having a temperature > 30°C | | | | |
| Temperature class: | | T50 | | | | |
| Water pressure class | | MAP 16 | | | | |
| Pressure loss class: | | ΔP 25 | ΔP 40 | ΔP 25 | ΔP 40 | ΔP 40 |
| Orientation limitation: | | horizontal position with the indicating device at the top (H↑) and at the side (H→); vertical position with flow from bottom to top (V↑) and from top to bottom (V↓), inclined position with the indicating device at the top (45°) | | | | |
| Indicating range [m³]: | | 9 999 999 | | | | |
| Resolution of the indicating device [dm³]: | | 0.2 | | | | |
| Resolution of the device for rapid testing [L]: | | 0.61448274 | 0.60991068 | 0.29466666 | 0.29466666 | 0.29466666 |
| Connection type | | G 2" or G ½" or Flange | Flange | G 3" or flange | G 4" or flange | Flange |
| Flow profile sensitivity class: | | U0D0 | | | | |
| Length [mm]: | | 200 | 200 | 225 | 250 | 250 |

| | |
|---|---|
| Reed impulse power supply(U_{\max}/I_{\max}): | $U_{\max} \leq 24 \text{ V}; I_{\max} \leq 0.1 \text{ A}$ |
| Reed impulse K-factor [pulse/L]: | 1 pulse/10 L; 1 pulse/100 L; 1 pulse/1000 L |
| Inductive sensor power supply(U_{\max}/I_{\max}): | $U_{\max} \leq 24 \text{ V}; I_{\max} \leq 20 \text{ mA}$ |
| Inductive sensor K-factor [pulse/L]: | 1 pulse/10 L |

| | | |
|--|---|---|
| Nominal diameter: | 150 | 200 |
| Q_1 [m ³ /h]: | flowrates are shown in Table <i>flowrates</i> | |
| Q_2 [m ³ /h]: | | |
| Q_3 [m ³ /h]: | | |
| Q_4 [m ³ /h]: | | |
| Q_3/Q_1 : | H↑; V↑; inclined | 250; 200; 160; 125; 100; 80; 63; 50; 40 |
| | H→; V↓ | 125; 100; 80; 63; 50; 40 |
| Accuracy class: | 2 | |
| Maximum permissible error for the lower flowrate zone (MPE1) | ±5% | |
| Maximum permissible error for the upper flowrate zone (MPEu) | ±2% for water having a temperature ≤ 30°C ±3% for water having a temperature > 30°C | |
| Temperature class: | T50 | |
| Water pressure class | MAP 16 | |
| Pressure loss class: | ΔP 16 | ΔP 40 |
| Orientation limitation: | horizontal position with the indicating device at the top (H↑) and at the side (H→); vertical position with flow from bottom to top (V↑) and from top to bottom (V↓), inclined position with the indicating device at the top (45°) | |
| Indicating range [m ³]: | 9 999 999 | |
| Resolution of the indicating device [dm ³]: | 2 | |
| Resolution of the device for rapid testing [L]: | 0.05965176 | 0.05965176 |
| Connection type | flange | |
| Flow profile sensitivity class: | U0D0 | |
| Length [mm]: | 300 | 350 |
| Reed impulse power supply(U_{\max}/I_{\max}): | $U_{\max} \leq 24 \text{ V}; I_{\max} \leq 0.1 \text{ A}$ | |
| Reed impulse K-factor [pulse/L]: | 1 pulse/100 L; 1 pulse/1000 L; 1 pulse/10000 L | |
| Inductive sensor power supply(U_{\max}/I_{\max}): | $U_{\max} \leq 24 \text{ V}; I_{\max} \leq 20 \text{ mA}$ | |
| Inductive sensor K-factor [pulse/L]: | 1 pulse/100 L | |

Table *flowrates*

| | | | | | | | |
|----------------------------|------------------|------|-------|-------|-------|-------|-------|
| Manufacturer: | Maddalena S.p.A. | | | | | | |
| Model number: | WMAP EVO | | | | | | |
| Nominal diameter: | 50 | 65 | 80 | 100 | 125 | 150 | 200 |
| Type details: | | | | | | | |
| Q_1 [m ³ /h]: | 0.16 | 0.25 | 0.40 | 0.64 | 0.64 | 1.00 | 1.60 |
| Q_2 [m ³ /h]: | 0.26 | 0.40 | 0.64 | 1.02 | 1.02 | 1.60 | 2.56 |
| Q_3 [m ³ /h]: | 40.0 | 63.0 | 100.0 | 160.0 | 160.0 | 250.0 | 400.0 |
| Q_4 [m ³ /h]: | 50.0 | 78.8 | 125.0 | 200.0 | 200.0 | 312.5 | 500.0 |
| Q_3/Q_1 : | 250 | | | | | | |

| | | | | | | | |
|----------------------------|------|------|-------|-------|-------|-------|-------|
| Q_1 [m ³ /h]: | 0.20 | 0.32 | 0.50 | 0.80 | 0.80 | 1.25 | 2.00 |
| Q_2 [m ³ /h]: | 0.32 | 0.50 | 0.80 | 1.28 | 1.28 | 2.00 | 3.20 |
| Q_3 [m ³ /h]: | 40.0 | 63.0 | 100.0 | 160.0 | 160.0 | 250.0 | 400.0 |
| Q_4 [m ³ /h]: | 50.0 | 78.8 | 125.0 | 200.0 | 200.0 | 312.5 | 500.0 |
| Q_3/Q_1 : | 200 | | | | | | |

| | | | | | | | |
|----------------------------|------|------|-------|-------|-------|-------|-------|
| Q_1 [m ³ /h]: | 0.25 | 0.39 | 0.63 | 1.00 | 1.00 | 1.56 | 2.50 |
| Q_2 [m ³ /h]: | 0.40 | 0.63 | 1.00 | 1.60 | 1.60 | 2.50 | 4.00 |
| Q_3 [m ³ /h]: | 40.0 | 63.0 | 100.0 | 160.0 | 160.0 | 250.0 | 400.0 |
| Q_4 [m ³ /h]: | 50.0 | 78.8 | 125.0 | 200.0 | 200.0 | 312.5 | 500.0 |
| Q_3/Q_1 : | 160 | | | | | | |

| | | | | | | | |
|----------------------------|------|------|-------|-------|-------|-------|-------|
| Q_1 [m ³ /h]: | 0.32 | 0.50 | 0.80 | 1.28 | 1.28 | 2.00 | 3.20 |
| Q_2 [m ³ /h]: | 0.51 | 0.81 | 1.28 | 2.05 | 2.05 | 3.20 | 5.12 |
| Q_3 [m ³ /h]: | 40.0 | 63.0 | 100.0 | 160.0 | 160.0 | 250.0 | 400.0 |
| Q_4 [m ³ /h]: | 50.0 | 78.8 | 125.0 | 200.0 | 200.0 | 312.5 | 500.0 |
| Q_3/Q_1 : | 125 | | | | | | |

| | | | | | | | |
|----------------------------|------|------|-------|-------|-------|-------|-------|
| Q_1 [m ³ /h]: | 0.40 | 0.63 | 1.00 | 1.60 | 1.60 | 2.50 | 4.00 |
| Q_2 [m ³ /h]: | 0.64 | 1.01 | 1.60 | 2.56 | 2.56 | 4.00 | 6.40 |
| Q_3 [m ³ /h]: | 40.0 | 63.0 | 100.0 | 160.0 | 160.0 | 250.0 | 400.0 |
| Q_4 [m ³ /h]: | 50.0 | 78.8 | 125.0 | 200.0 | 200.0 | 312.5 | 500.0 |
| Q_3/Q_1 : | 100 | | | | | | |

| | | | | | | | |
|----------------------------|------|------|-------|-------|-------|-------|-------|
| Q_1 [m ³ /h]: | 0.50 | 0.79 | 1.25 | 2.00 | 2.00 | 3.13 | 5.00 |
| Q_2 [m ³ /h]: | 0.80 | 1.26 | 2.00 | 3.20 | 3.20 | 5.00 | 8.00 |
| Q_3 [m ³ /h]: | 40.0 | 63.0 | 100.0 | 160.0 | 160.0 | 250.0 | 400.0 |
| Q_4 [m ³ /h]: | 50.0 | 78.8 | 125.0 | 200.0 | 200.0 | 312.5 | 500.0 |
| Q_3/Q_1 : | 80 | | | | | | |

| | | | | | | | |
|----------------------------|------|------|-------|-------|-------|-------|-------|
| Q_1 [m ³ /h]: | 0.63 | 1.00 | 1.59 | 2.54 | 2.54 | 3.97 | 6.35 |
| Q_2 [m ³ /h]: | 1.02 | 1.60 | 2.54 | 4.06 | 4.06 | 6.35 | 10.16 |
| Q_3 [m ³ /h]: | 40.0 | 63.0 | 100.0 | 160.0 | 160.0 | 250.0 | 400.0 |
| Q_4 [m ³ /h]: | 50.0 | 78.8 | 125.0 | 200.0 | 200.0 | 312.5 | 500.0 |
| Q_3/Q_1 : | 63 | | | | | | |

| | | | | | | | |
|----------------------------|------|------|-------|-------|-------|-------|-------|
| Q_1 [m ³ /h]: | 0.80 | 1.26 | 2.00 | 3.20 | 3.20 | 5.00 | 8.00 |
| Q_2 [m ³ /h]: | 1.28 | 2.02 | 3.20 | 5.12 | 5.12 | 8.00 | 12.80 |
| Q_3 [m ³ /h]: | 40.0 | 63.0 | 100.0 | 160.0 | 160.0 | 250.0 | 400.0 |
| Q_4 [m ³ /h]: | 50.0 | 78.8 | 125.0 | 200.0 | 200.0 | 312.5 | 500.0 |
| Q_3/Q_1 : | 50 | | | | | | |

| | | | | | | | |
|----------------------------|------|------|-------|-------|-------|-------|-------|
| Q_1 [m ³ /h]: | 1.00 | 1.58 | 2.50 | 4.00 | 4.00 | 6.25 | 10.00 |
| Q_2 [m ³ /h]: | 1.60 | 2.52 | 4.00 | 6.40 | 6.40 | 10.00 | 16.00 |
| Q_3 [m ³ /h]: | 40.0 | 63.0 | 100.0 | 160.0 | 160.0 | 250.0 | 400.0 |
| Q_4 [m ³ /h]: | 50.0 | 78.8 | 125.0 | 200.0 | 200.0 | 312.5 | 500.0 |
| Q_3/Q_1 : | 40 | | | | | | |

3. Tests

Technical tests of the water meters type WMAP EVO were performed in compliance with the International Recommendation OIML R 49 Edition 2013 (E) with conformity to ISO 4064, Test Report No. 6015-PT-P0041-17.

4. Conformity marks and inscription:

The water meters type WMAP EVO shall be clearly and indelibly marked with the following information:

- Water meter type
- Unit of measurement (m^3)
- Numerical value Q_3 in m^3/h ($Q_3 \times \times$) and the ratio Q_3 / Q_1 ,
- EU-type examination certificate number
- Manufacturer's name, registered trade name or registered trade mark
- Post address of manufacturer
- Year of manufacture, two last digits of the year of manufacture, or the month and year of manufacture
- Serial number (as near as possible to the indicating device)
- Direction of flow, by means of an arrow (shown on both sides of the body or on one side only provided the direction of flow arrow is easily visible under all circumstances)
- Maximum admissible pressure ($\text{MAP} \times \times$)
- Letter $H\uparrow$ (horizontal position with the indicating device at the top), $H\rightarrow$ (horizontal position with the indicating device at the side), $V\uparrow$ (vertical position with flow from bottom to top), $V\downarrow$ (vertical position with flow from top to bottom), 45° (inclined position with the indicating device at top); or any position
- The temperature class ($T \times \times$)
- The pressure loss class ($\Delta P \times \times$)
- The installation sensitivity class ($U \times D \times$)
- CE marking and metrology marking in line with the Directive 2014/32/EU

There are additional data required if the water meter is equipped with an impulse transmitter or an inductive sensor:

- Output signals for ancillary devices (type / levels)
- External power supply requirements (voltage – frequency)

These markings shall be visible without dismantling the water meter after the instrument has been placed on the market or put into use. Examples are in Figure 2 and Figure 3.

5. Additional specifications:

The water meters type WMAP EVO shall be put onto the market in line with the procedure of conformity assessment according to the Annex D or F of the Directive 2014/32/EU as well as in compliance with the technical description of this report and shall be tested in accordance with the requirements determined in ISO 4064-1:2014, respectively OIML R 49-1:2013.

A metrological test may only be performed by a producer, or a notified body respectively in line with the conformity assessment procedure by the D or F Annexes of the Directive 2014/32/EU, respectively.

6. Ensuring the integrity of the instruments:

A screw fixing the base plate of the meter has to be sealed (1 leaden seal). A screws fixing the plastic ring to the body of the meter has to be sealed (2 leaden seals). The location of seals is described in Figure 1.

Furthermore the plastic or metal cover of the register could be sealed

If the meter is equipped by the reed impulse transmitter or the inductive sensor, the cover of the meter which protects the transmitter has to be sealed.

7. Drawing of the instrument:

Water meters type WMAP EVO are manufactured according to the technical documentation of manufacturer. Technical documentation contains following drawings:

| Document reference | Date | Brief description |
|--------------------|-----------|----------------------------|
| 22500095 | 9.2.2017 | exploded view |
| 22500096 | 9.2.2017 | view, geometrical measures |
| 22500097 | 9.2.2017 | sealing |
| 22500098-rev.1 | 28.4.2017 | strip with marking |
| 22500100-rev.1 | 28.4.2017 | dial plate |
| 22500103 | 9.2.2017 | sensors – view and sealing |

| | | |
|----------|----------|---|
| 22500104 | 5.5.2017 | geometrical measures – threaded connections DN80 |
| 22500105 | 5.5.2017 | geometrical measures with base plate DN80 |
| 22500106 | 5.5.2017 | geometrical measures – threaded connections DN100 |
| 22500108 | 5.5.2017 | view, geometrical measures DN80 |
| 22500110 | 5.5.2017 | exploded view DN80 - DN100 |
| 22500111 | 8.5.2017 | view, geometrical measures DN80 – DN100 |
| 22500114 | 9.5.2017 | geometrical measures – threaded connections DN50 |
| 22500115 | 9.5.2017 | geometrical measures with base plate DN50 |
| 22500116 | 9.5.2017 | view, geometrical measures DN50 |

History of additions

| Addition No. | Description |
|--------------|---------------------|
| Addition 0 | Issuing certificate |

Figure 1: The sealing photo of the WMAP EVO water meter

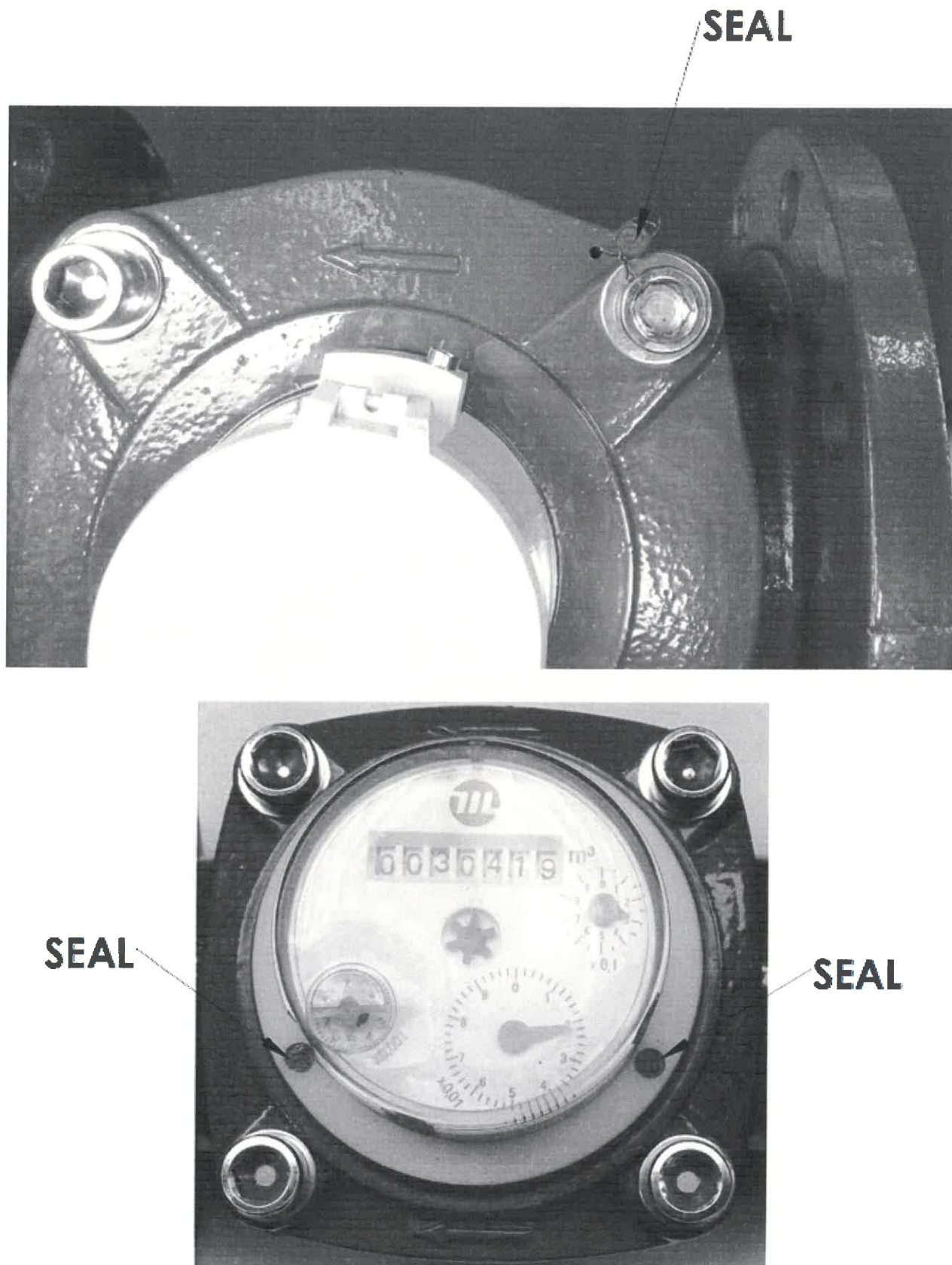


Figure 2: The combination of the dial and the strip with the parameters of the WMAP EVO water meter

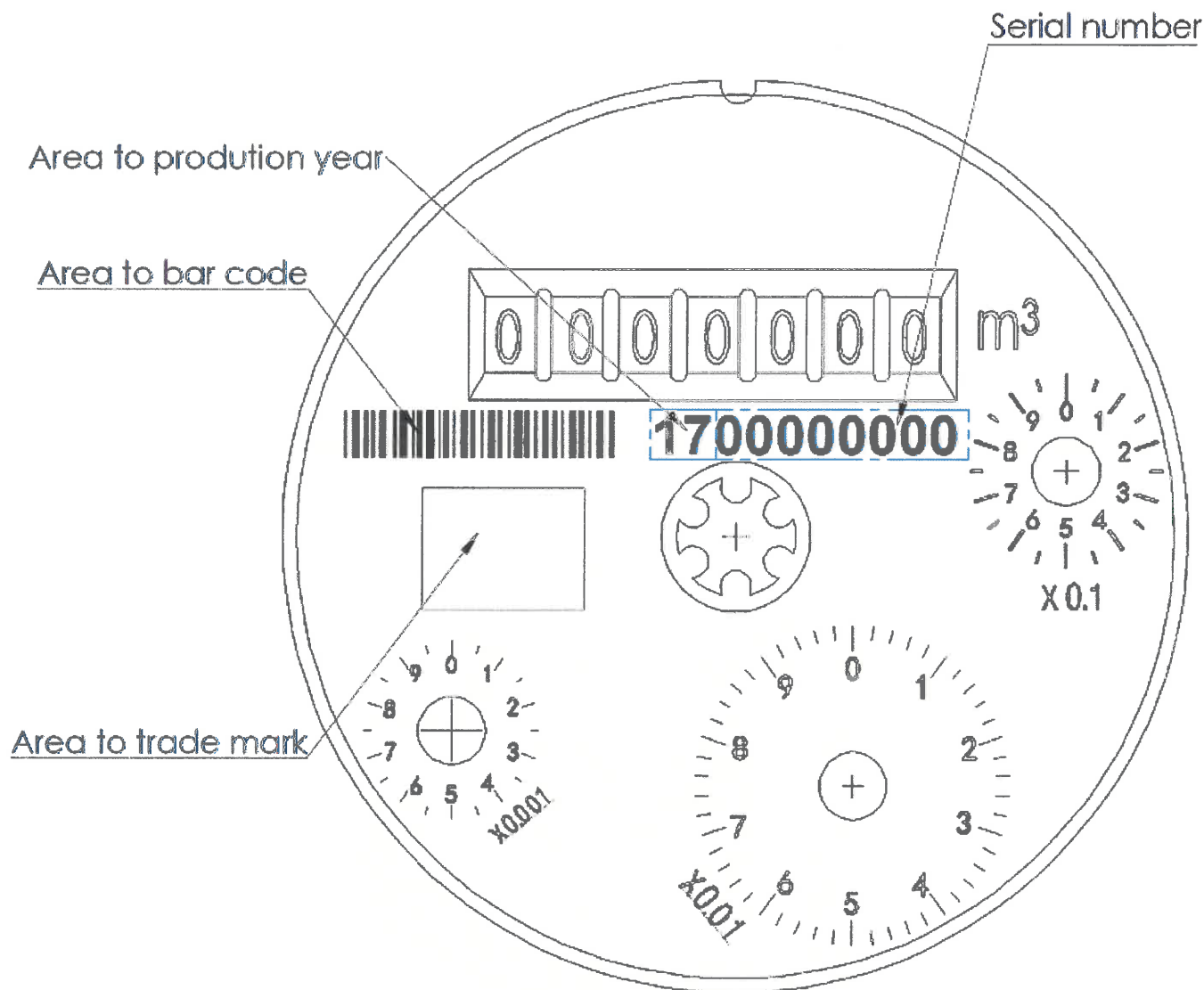
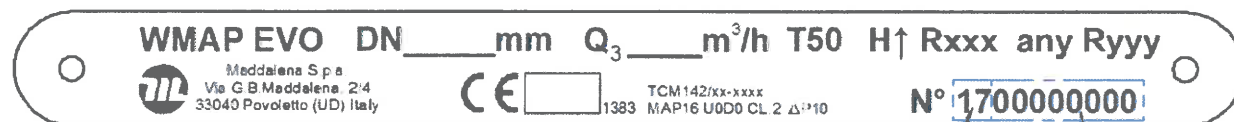


Figure 3: The strip with the parameters of the WMAP EVO water meter



Area to production year

Serial number