Australian Government
National Measurement Institute
Bradfield Road, West Lindfield NSW 2070

Certificate of Approval

NMI 14/3/7A

Issued by the Chief Metrologist under Regulation 60
of the
National Measurement Regulations 1999

This is to certify that an approval for use for trade has been granted in respect of the instruments herein described.

SmartMeter Model SE250E Water Meter

submitted by Elster Metering Pty Ltd
55 Northcorp Boulevard
Broadmeadows VIC 3047

NOTE: This Certificate relates to the suitability of the pattern of the instrument for use for trade only in respect of its metrological characteristics. This Certificate does not constitute or imply any guarantee of compliance by the manufacturer or any other person with any requirements regarding safety.

This approval has been granted with reference to document NMI R 49-1, *Water Meters Intended for the Metering of Cold Potable Water and Hot Water, Part 1: Metrological and Technical Requirements*, April 2009.

This approval becomes subject to review on 1/05/17, and then every 5 years thereafter.

DOCUMENT HISTORY

Rev	Reason/Details	Date
0	Pattern & variants 1 to 13 approved – certificate issued	13/04/12

CONDITIONS OF APPROVAL

General

Instruments purporting to comply with this approval shall be marked with approval number 'NMI 14/3/7A' and only by persons authorised by the submittor.

It is the submittor's responsibility to ensure that all instruments marked with this approval number are constructed as described in the documentation lodged with the National Measurement Institute (NMI) and with the relevant Certificate of Approval and Technical Schedule. Failure to comply with this Condition may attract penalties under Section 19B of the National Measurement Act and may result in cancellation or withdrawal of the approval, in accordance with document NMI P 106.

Auxiliary devices used with this instrument shall comply with the requirements of General Supplementary Certificates No S1/0/A or No S1/0B.

Signed by a person authorised by the Chief Metrologist to exercise his powers under Regulation 60 of the *National Measurement Regulations 1999*.

TECHNICAL SCHEDULE No 14/3/7A

1. Description of Pattern approved on 13/04/12

A SmartMeter model SE250E class 2 fluidic oscillator meter (Figures 1 and 2) used to measure water for domestic supply for trade.

1.1 Field of Operation

The field of operation of the measuring system is determined by the following characteristics:

- Maximum continuous flow rate, Q_3 4 m^3/h
- Flow rate ratio, Q_3/Q_1 200
- Maximum admissible temperature 30°C
- Limiting condition (water temperature) 50°C
- Maximum admissible pressure 1400 kPa
- Accuracy class 2

1.2 Features/Functions

A fluidic oscillator class 2 water meter of a size which is normally connected to a 20 mm pipe and is approved for metering domestic supplies and has features/functions as listed below:

- 1 inch BSP threaded end connections.
- A replaceable mechanical digital indicator having a series of nine aligned digits giving a maximum display of 9999.99999 m^3 in 0.00001 m^3 increments.
- Encoded output.
- Meter length: 190 mm.
- Single check valve.
- Minimum straight length of inlet pipe: 0 mm.
- Minimum straight length of outlet pipe: 0 mm.

1.3 Verification Provision

Provision is made for the application of a verification mark.

1.4 Sealing Provision

Instruments shall include one or more devices which can be sealed so as to prevent dismantling or modification of the instrument without damaging the device(s).

Figure 2 shows the sealing method for the pattern and variant 1 (SE250 series meters) including using special security bolts provided.

1.5 Descriptive Markings

Instruments are marked with the following data, either grouped or distributed on the casing, the indicating device dial or an identification plate:

Manufacturer's name or mark	...
Serial number	...
Pattern approval mark	NMI 14/3/7A
Numerical value of maximum continuous flow rate, Q_3	...
Flow rate ratio, Q_3/Q_1	...
Unit of measurement	m^3
Direction of flow	→ or similar
Accuracy class	... (#)

(#) Optional for class 2 meters.

2. Description of Variant 1 **approved on 13/04/12**

Certain other SE250 series instruments, namely:

- model SE250E with encoded output and a replaceable or a non-replaceable indicator; and
- model SE250P with pulse output and a replaceable or non-replaceable indicator.

3. Description of Variant 2 **approved on 13/04/12**

Certain SM150 series instruments, with Q_3 of 2.5 m^3/h, Q_3/Q_1 of 200 or 250, 3/4 inch BSP threaded end connections, and a meter length of 110 mm, namely:

- model SM150E (Figures 3 and 4) with encoded output and a replaceable or non-replaceable battery;
- model SM150P with pulse output and a replaceable or non-replaceable battery; and
- model SM150 with a visual read indicator and a replaceable or non-replaceable battery.

The SM150 series meters have their casing halves pressed together during manufacture and so no other sealing method is required to prevent unauthorised access.

4. Description of Variant 3 **approved on 13/04/12**

Model SM250E water meter (Figure 5) which has the same specifications and features as the pattern (model SE250E) but has a different LCD display, a single (rather than dual) internal electronics module (PCB), and is in a different housing.

5. Description of Variant 4 **approved on 13/04/12**

Model SM150E (Variant 2) with some structural and housing modifications including the repositioning of the battery compartment (Figure 6).

6. Description of Variant 5 approved on 13/04/12

Any model of this approval now with dual check valves (Figure 7).

7. Description of Variant 6 approved on 13/04/12

Any model of this approval with an integral output connector. Typical examples are shown in Figure 8.

8. Description of Variant 7 approved on 13/04/12

Any model of this approval with the Maximum Admissible Pressure increased to 1.6 MPa.

9. Description of Variant 8 approved on 13/04/12

Certain other SM250 series instruments, having the same specifications and similar features as the model SM250E (variant 3), namely:

- model SM250 with a replaceable or a non-replaceable indicator for visual read only; and
- model SM250P with pulse output and a replaceable or non-replaceable indicator.

10. Description of Variant 9 approved on 13/04/12

Model SM150VR meter with the same performance specifications as the SM150 models but equipped solely with an LCD display for visual reading. The absence of additional communication facilities allows for a slimmer housing (Figure 9).

11. Description of Variant 10 approved on 13/04/12

SM250 series of water meters with repositioned three pin connectors as shown in Figure 10.

12. Description of Variant 11 approved on 13/04/12

Any model of this approval fitted with an inlet port strainer as shown in Figure 11.

13. Description of Variant 12 approved on 13/04/12

SM150 series of water meters having alternative liquid crystal display, battery compartment and markings as shown in Figure 12.

14. Description of Variant 13 approved on 13/04/12

SM250 series of water meters having alternative markings as shown in Figure 13.

TEST PROCEDURE No 14/3/7A

Instruments tested for initial verification shall comply with the Certificate of Approval, Technical Schedule, and the maximum permissible errors for initial and subsequent verifications at the operating conditions in effect at the time of verification. Maximum permissible errors for water meters are given in the *National Trade Measurement Regulations 2009* (Cth).

TESTS

All meters shall be verified by a utility meter verifier in accordance with document NITP 14 *National Instrument Test Procedure for Utility Meters*. The following exceptions apply to the test flow rates:

All meters shall be tested in the country of origin at flow rates of:

- Q_2 (-0, +0.1 Q_2);
- 0.1 Q_3 (±0.01 Q_3); and
- Q_4 (-0.1 Q_4, +0).

The utility meter verifier shall draw sample meters from each batch of meters in accordance with NITP 14.

All sample meters drawn shall be tested at flow rates of:

- Q_2 (-0, +0.1 Q_2); and
- 0.1 Q_3 (±0.01 Q_3).

A sample of the sample meters shall be tested at flow rates of:

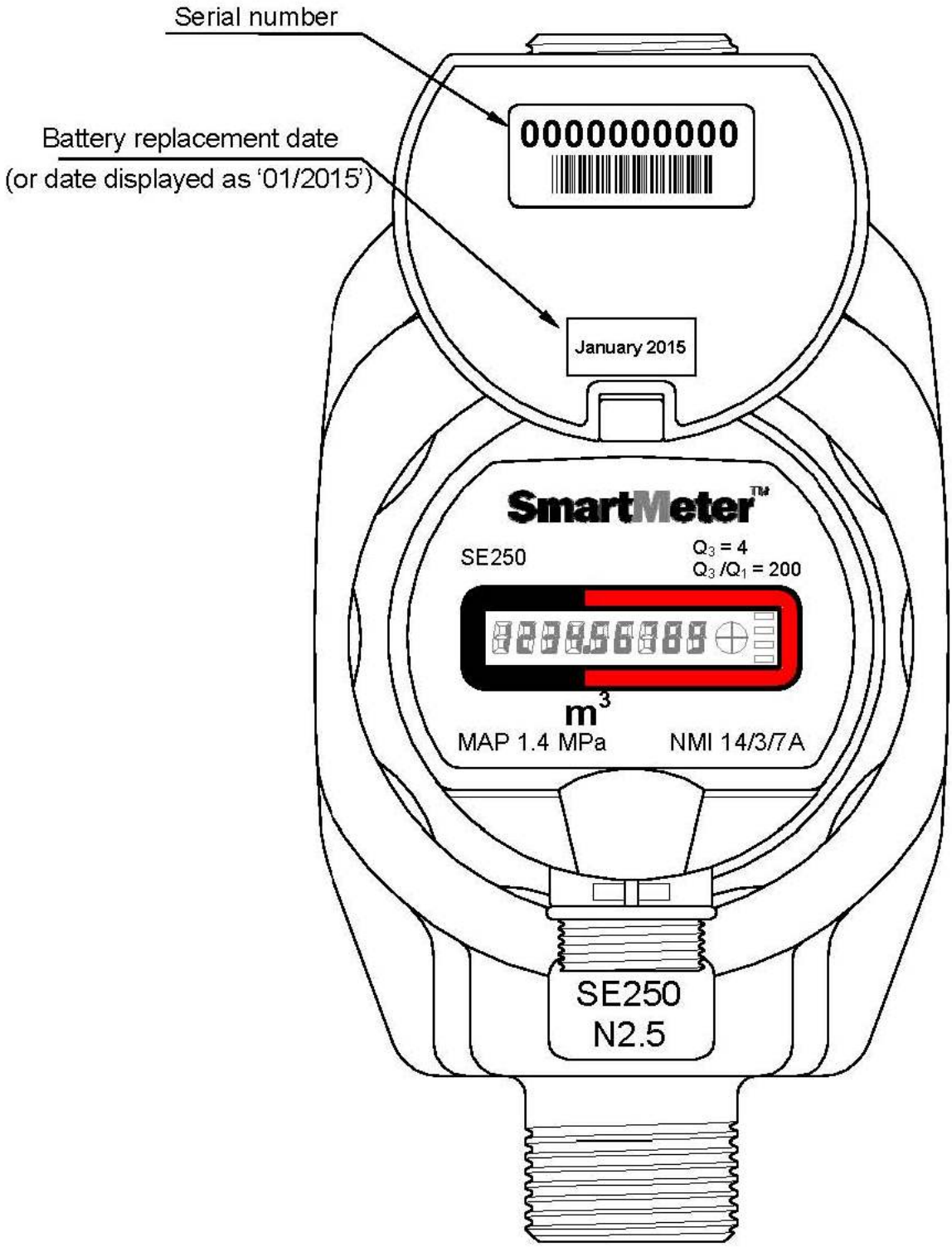
- Q_1 (-0, +0.1 Q_1); and
- Q_3 (±0.1 Q_3).

The disposition of all meters from which the sample meters were drawn shall be determined in accordance with NITP 14.

Evidence of verification shall be confirmed via the meter serial number (Figure 1) and certificate of verification issued by a utility meter verifier in accordance with NITP 14.

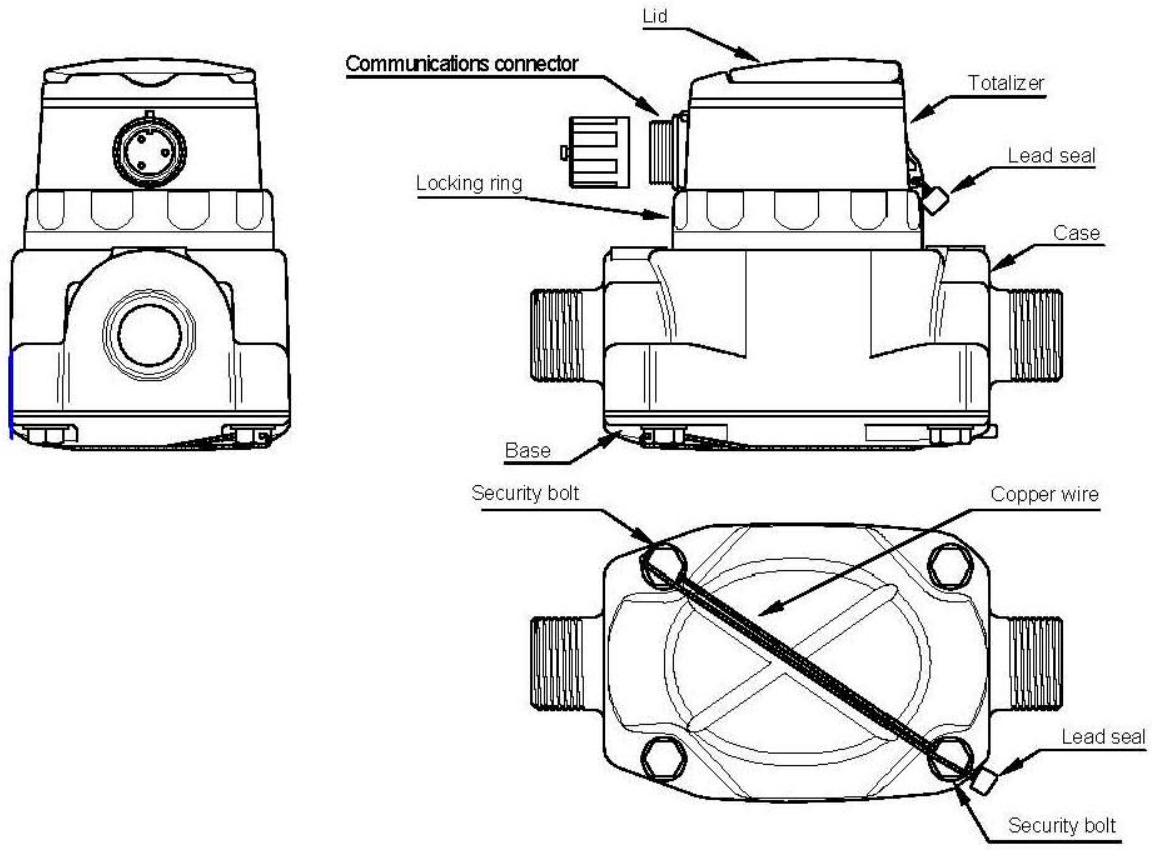
NOTE: NMI reserves the right to vary this procedure. Any such variation shall be notified in writing by NMI.

FIGURE 14/3/7A – 1



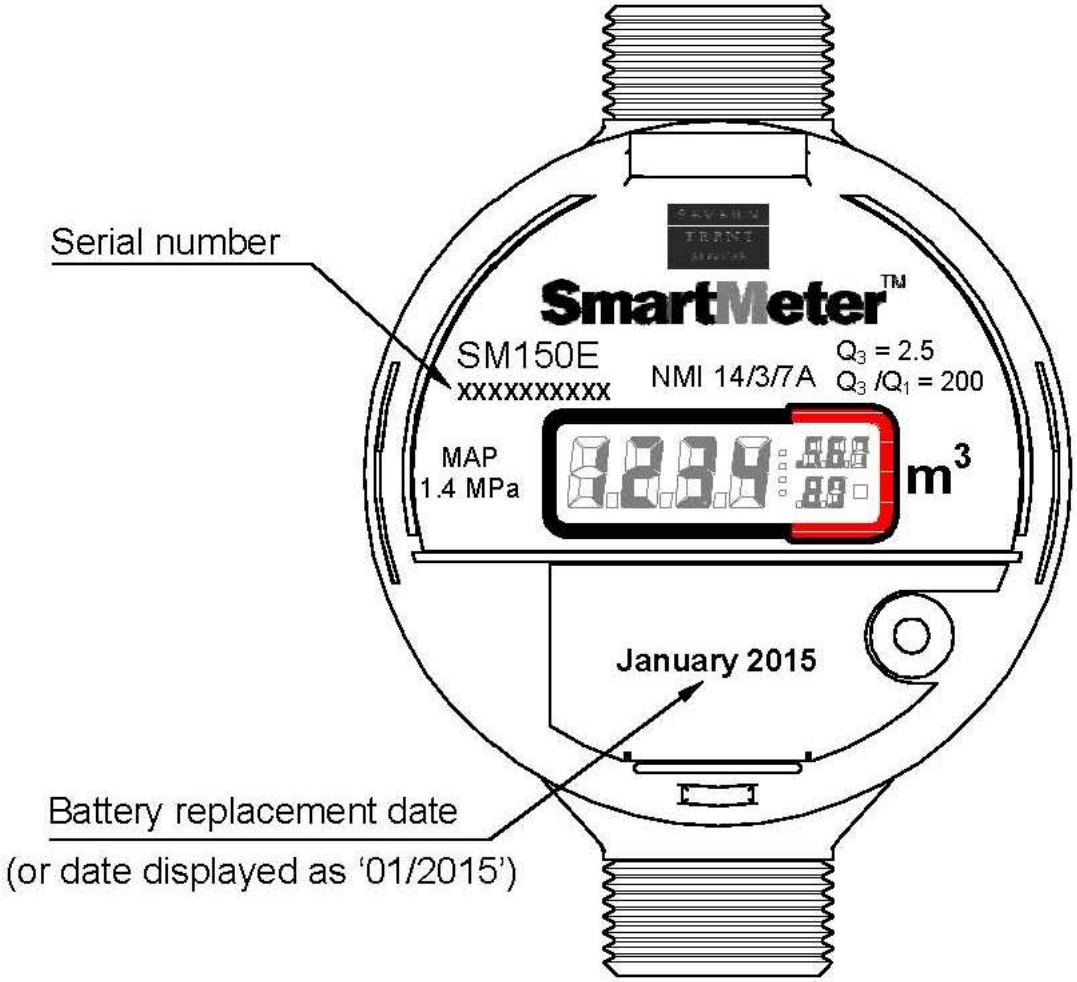
SmartMeter Model SE250E Water Meter (the Pattern)

FIGURE 14/3/7A – 2



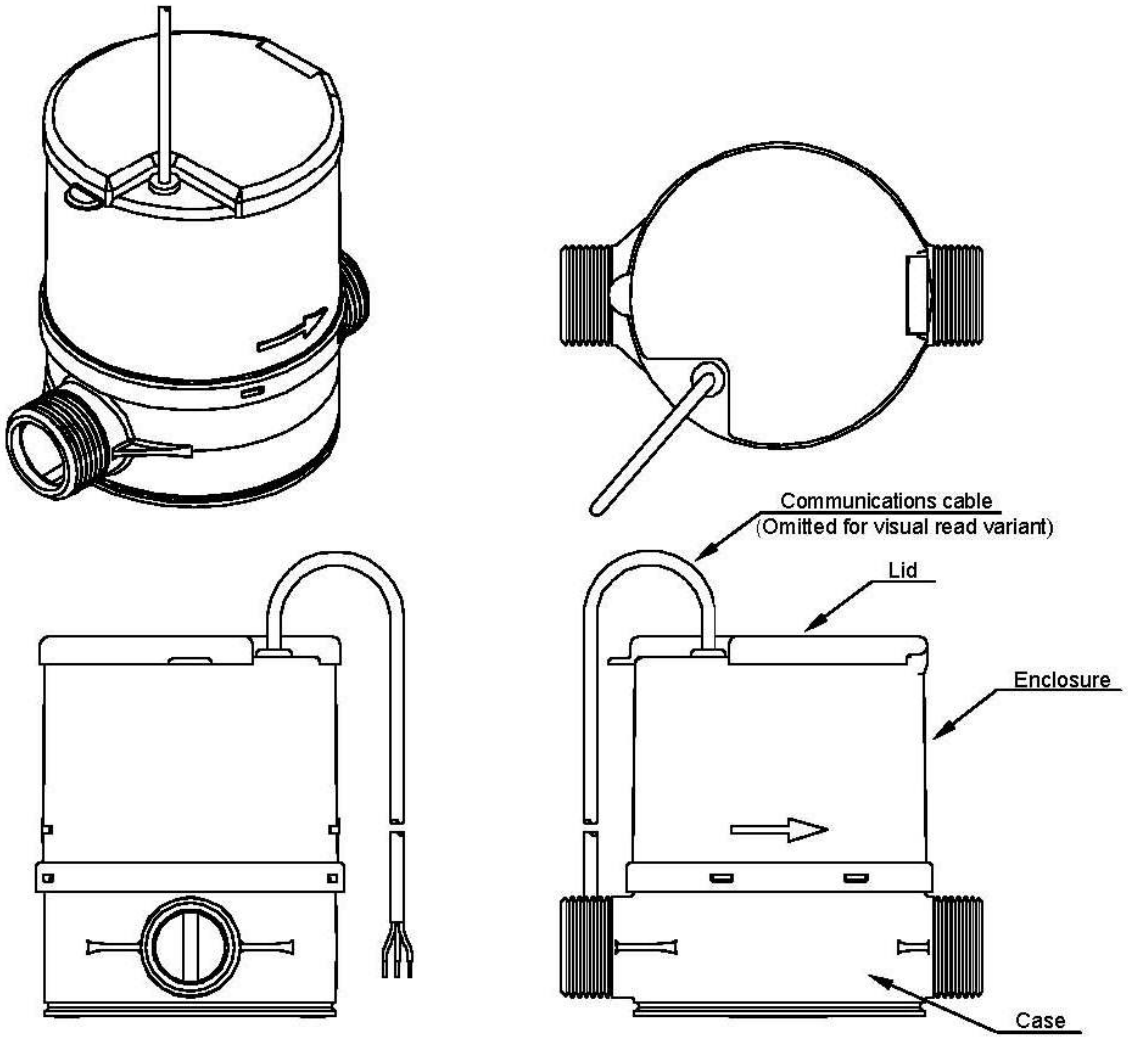
Typical Sealing Details

FIGURE 14/3/7A – 3



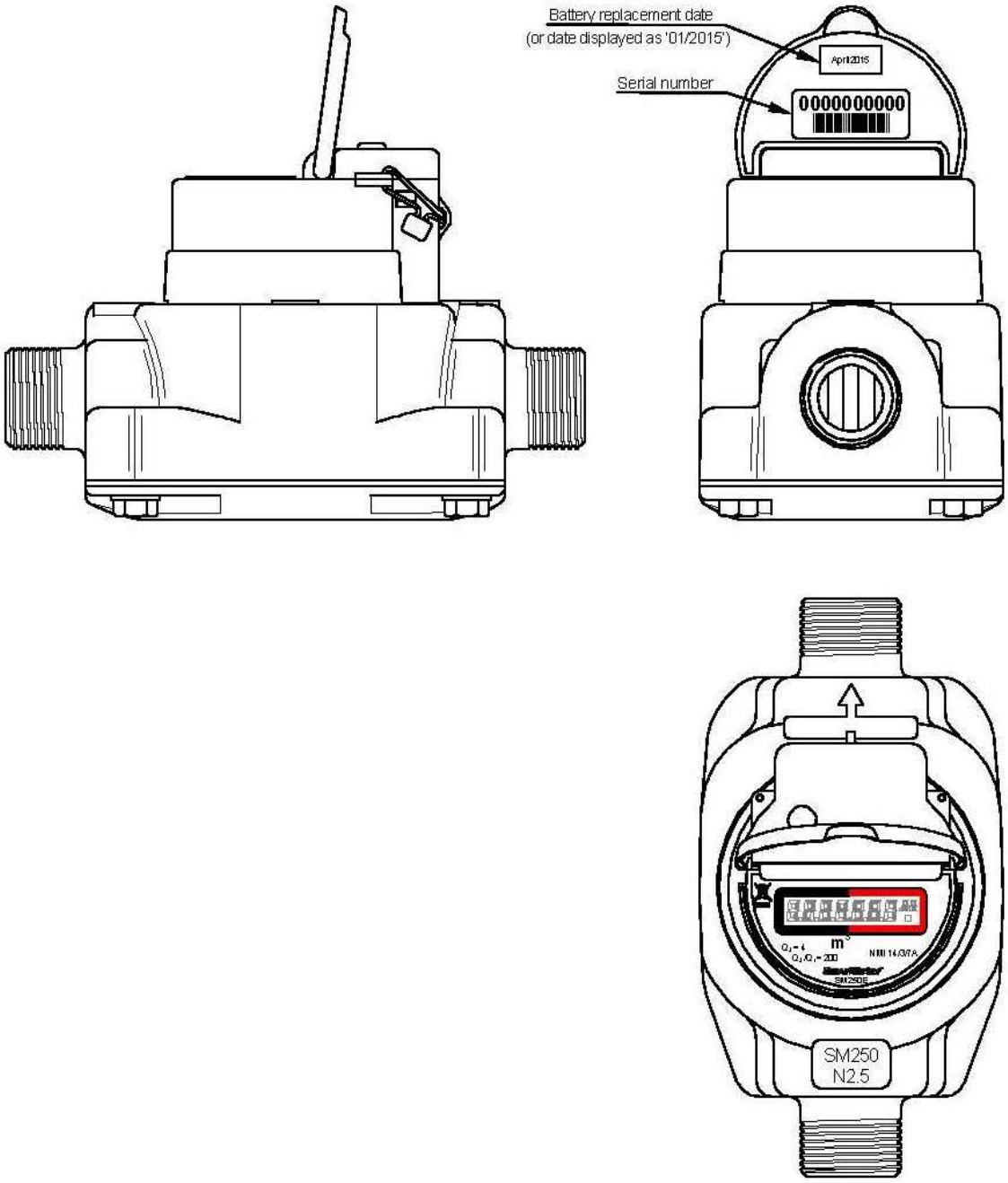
Model SM150E Meter (Variant 2)

FIGURE 14/3/7A – 4



Model SM150E Meter (Variant 2)

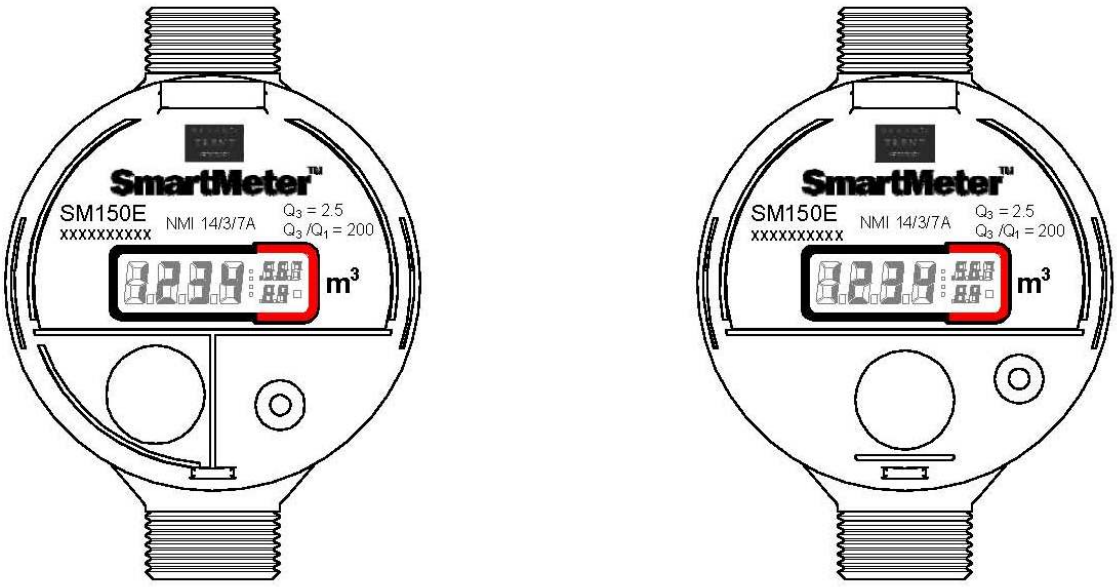
FIGURE 14/3/7A – 5



Model SM250E Meter With Lid Open

Model SM250E Meter (Variant 3)

FIGURE 14/3/7A – 6

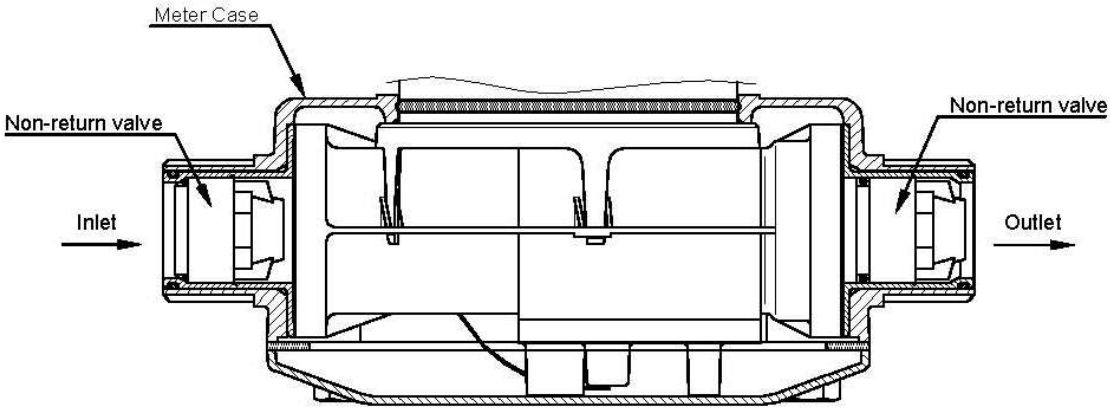


Previous battery compartment position

New battery compartment position

Showing Alternative Housing incl. Battery Compartments (Variant 4) – SM150E Series Meters

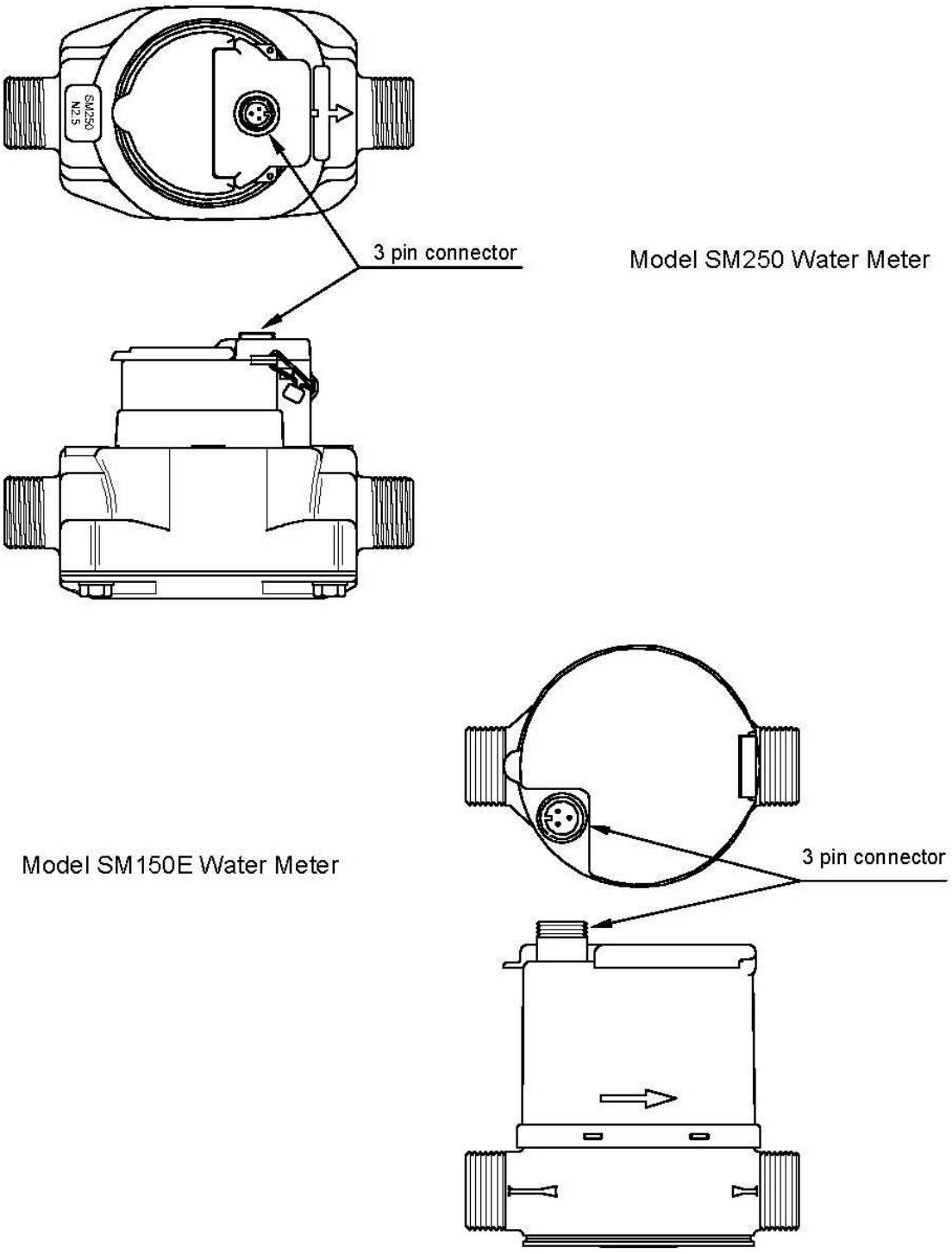
FIGURE 14/3/7A – 7



Meter case cross-section
Two non-return valves

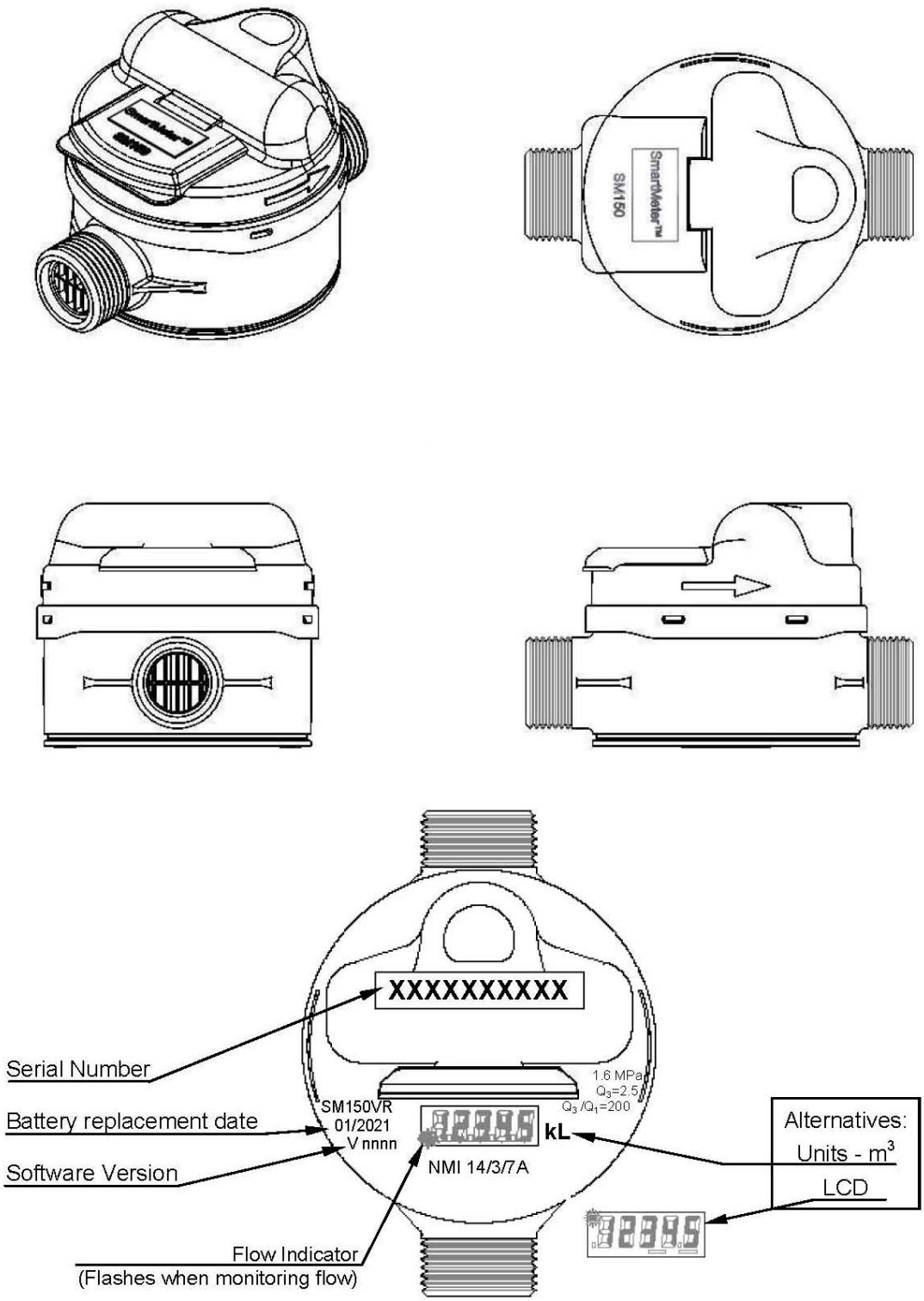
Typical Meter With Dual Check Valves (Variant 5)

FIGURE 14/3/7A – 8



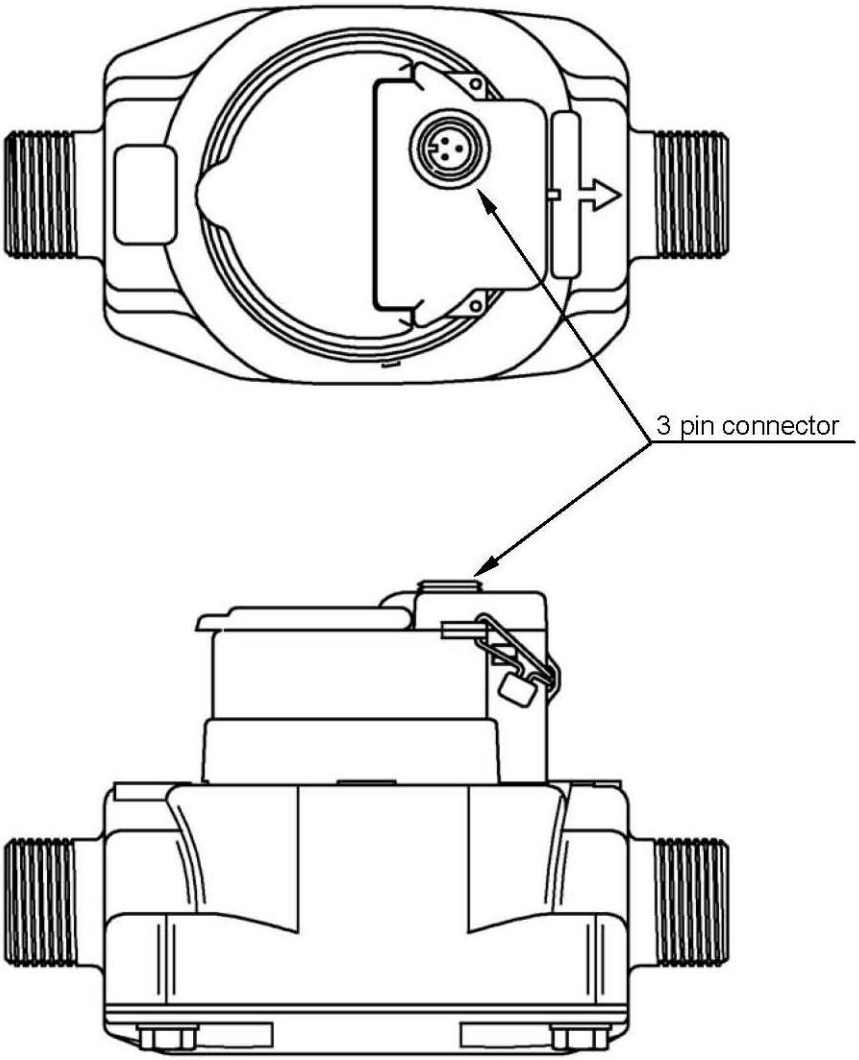
Showing Typical Integral Connector Installations (Variant 6)

FIGURE 14/3/7A – 9



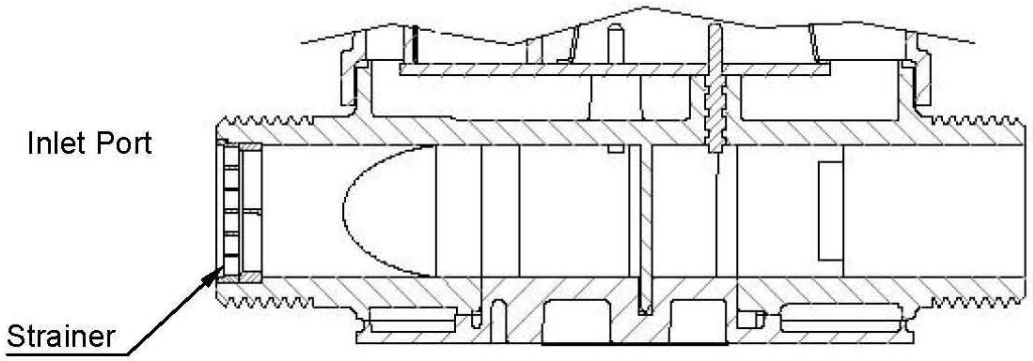
Model SM150VR Meter (Variant 9)

FIGURE 14/3/7A – 10

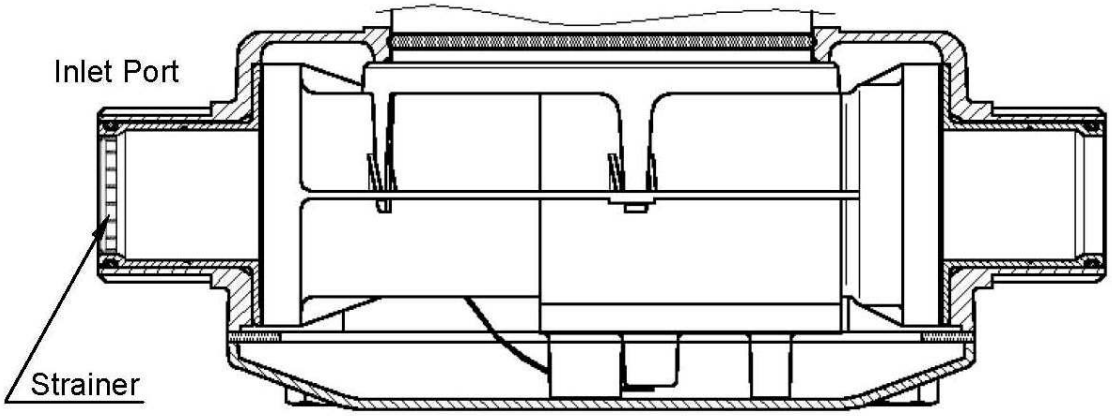


Alternative Position of 3 Pin Connector on SM250 Series Meters (Variant 10)

FIGURE 14/3/7A – 11



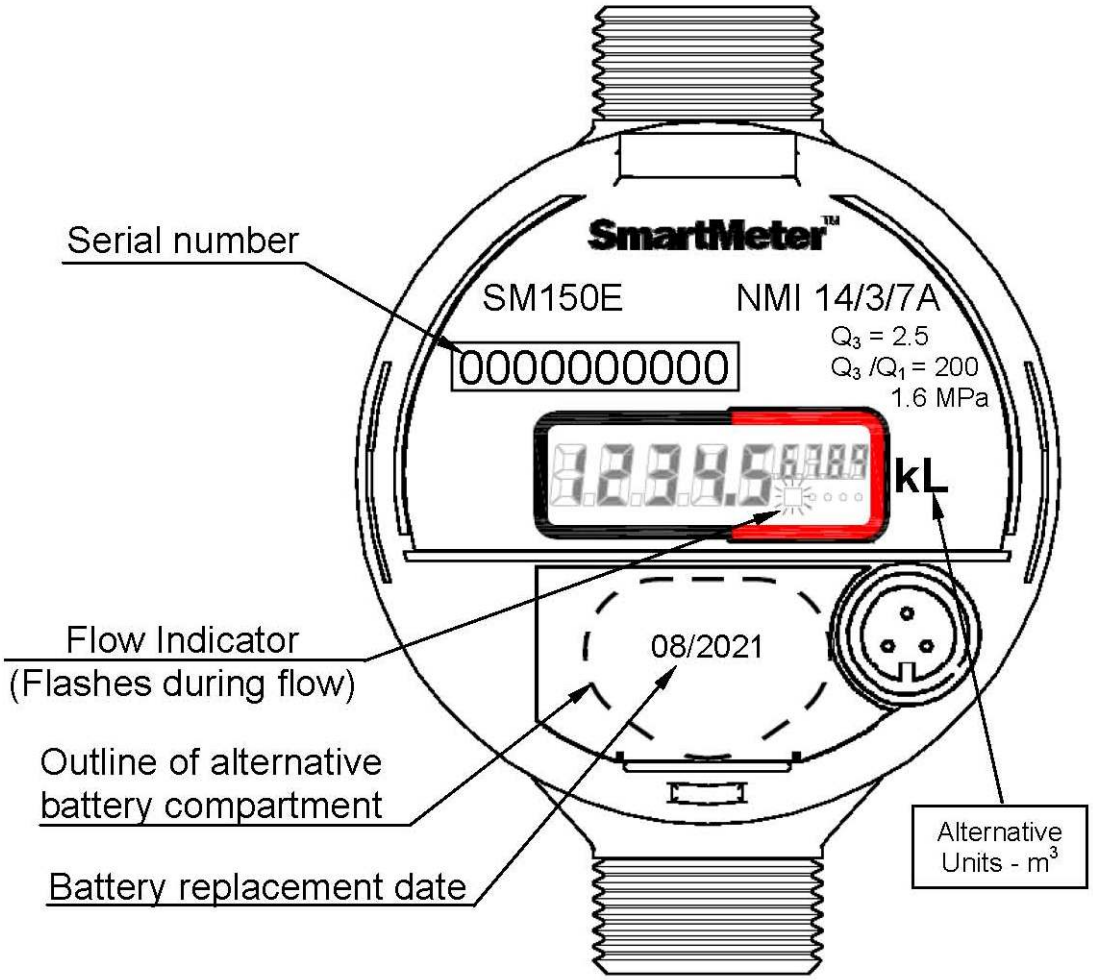
Strainer fitted into SM150 meter base



Strainer fitted into SM250 meter base

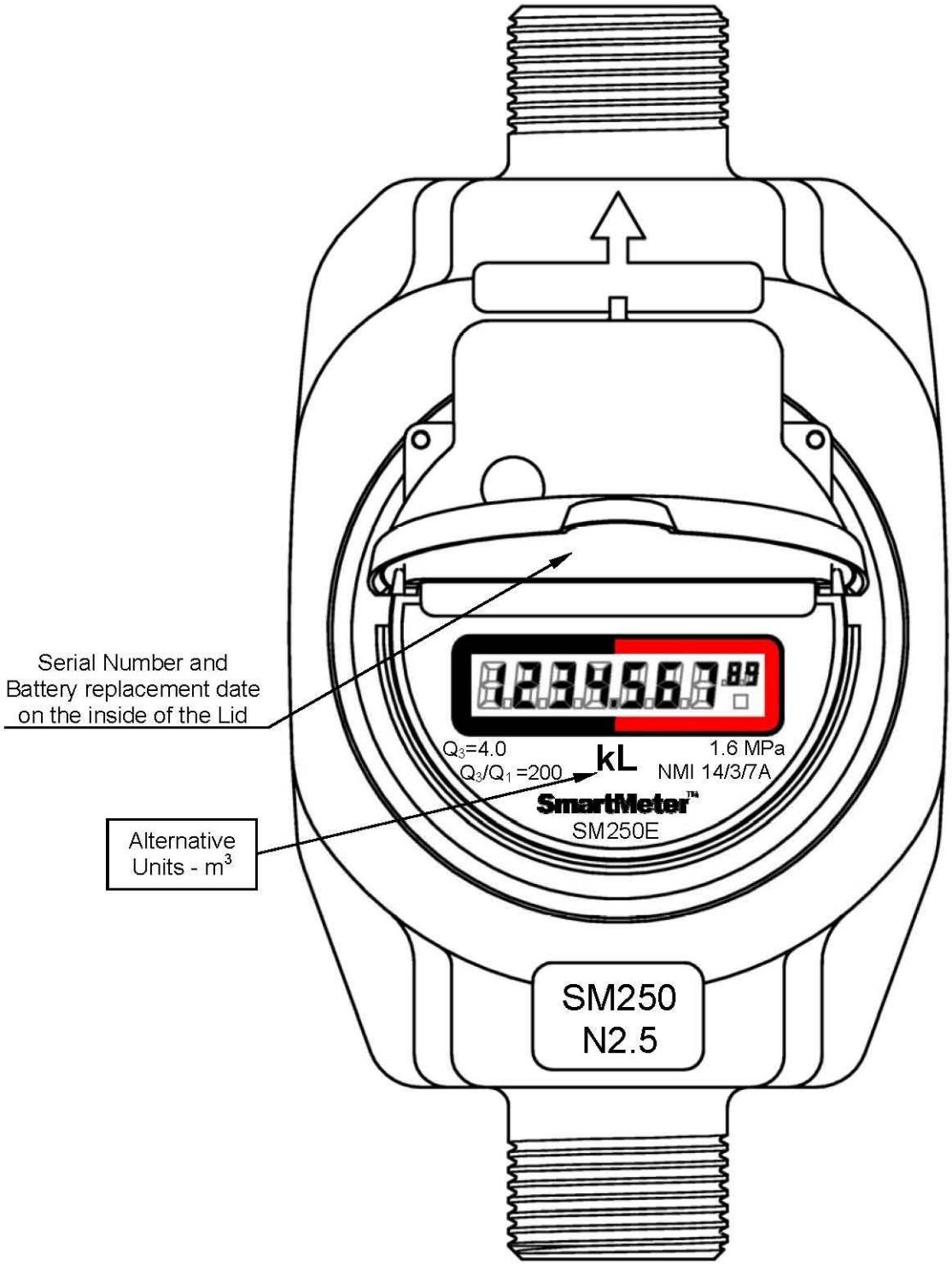
Typical Meters with Strainers Fitted into Inlet Ports (Variant 11)

FIGURE 14/3/7A – 12



Alternative LCD, Battery Compartment and Markings on
Model SM150 Meter (Variant 12)

FIGURE 14/3/7A – 13



Alternative Markings on Model SM250 (Variant 13)

~ End of Document ~