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V 3112

EU-TYPE EXAMINATION CERTIFICATE

Number: TCM 142/20 - 5700

In accordance: with Directive 2014/32/EU of the European Parliament and of the Council on the harmonization 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 – single jet, dry dial

Type: SJ; SJ Plus and SJ Evo

Accuracy class: 2

Temperature class: T30, T50 or T30/90

Valid until: 13 January 2030

Document No: 0511-CS-A001-20

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

Date of issue: 14 January 2020

Certificate approved by:

Český metrologický institut

RNDr. Pavel Klenovský

1 Characteristics of instrument

The single jet water meters types SJ; SJ Plus and SJ 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 single jet water meters types SJ; SJ Plus and SJ Evo consist of a brass body with connecting threads and an inlet filter, a wet measuring part included a plastic rotary turbine, stainless steel shafts, a magnetic coupling, sapphire stone bearings, an O-ring and spacer ring, a pressure plate and a threaded ring, a dry indicating device inside plastic cover, plastic seal ring connecting the indicating device to the body.
The indicating device is dry and mechanical. It is formed by numbered rollers with five black drums displaying volume in cubic meters and three red drums and one red rotary pointer displaying smaller submultiples of cubic meters. There is star wheel with six arms which can be used for rapid testing in mechanical indicating device.
Adjustment is enabled by the angular orientation of the pressure plate. The lower side of the pressure plate is divided into sectors. The separating plate is secured by the seal ring.
The water meters type SJ Plus can be equipped by a pulse emitter and type SJ Evo can be equipped by a radio emitter or others optionally or both pre-equipped for a further installation. This emitter are not part of this certification.
The water meters type SJ; SJ Plus and SJ Evo shall be installed to operate in horizontal position with the indicating device at the top or on side or in vertical position with flow from bottom to top, in according to the technical information below.

2 Main characteristics

Nominal diameter:		15		20	
Q_1 [m³/h]:		flowrates are shown in Table *Basic metrological data (flowrates)*			
Q_2 [m³/h]:					
Q_3 [m³/h]:					
Q_4 [m³/h]:					
Q_3 [m³/h]:		1.6	2.5	2.5	4.0
Q_3/Q_1:	for horizontal position with the indicating device at top (H↑):	100, 80; 63; 50; 40	160, 125, 100, 80; 63; 50; 40	100, 80; 63; 50; 40	160, 125, 100, 80; 63; 50; 40
	for horizontal position with the indicating device at side (H→):	50; 40	80; 63; 50; 40	50; 40	80; 63; 50; 40
	for vertical position with flow from bottom to top (V↑):	40	63; 50; 40	40	63; 50; 40
Q_2/Q_1:		1.6			
Q_3/Q_4:		1.25			
Accuracy class:		2			
Maximum permissible error for the lower flowrate zone (MPE_l):		±5%			
Maximum permissible error for the upper flowrate zone (MPE_u):		±2% for water having a temperature ≤ 30 °C ±3% for water having a temperature > 30 °C			
Temperature class:		T30, T50 or T30/90			
Water pressure class:		MAP 16			
Pressure loss class:		Δ*p* 63			
Indicating range [m³]:		99 999			
Resolution of the indicating device [dm³]:		0.05			
Resolution of the device for rapid testing [Pulses/L]:		223.2		126.0	
Connection type (screw thread):		G¾ / G⅞ or G¾ or G1		G1B or G3/4B	
Flow profile sensitivity class:		U0 D0			
Mounting:		in-line			
Orientation:		horizontal position with the indicating device at top (H↑) horizontal position with the indicating device at side (H→) vertical position with flow from bottom to top (V↑)			
Length [mm]:		110; 115; 120; 130		115; 130	

Informations specified by the manufacturer	
Reed impulse emitter power supply (U_{max} / I_{max}):	max. 24 V / 0.1 A
Reed impulse emitter K-factor (impulse / L):	0.1 (SJ Plus)
	1 (SJ Plus Evo)
Environmental class	B
Electromagnetic class	E1
Mechanical class	M1

Nominal diameter:		15	
Q_1 [m³/h]:		flowrates are shown in Table *Basic metrological data (flowrates)*	
Q_2 [m³/h]:			
Q_3 [m³/h]:			
Q_4 [m³/h]:			
Q_3 [m³/h]:		1.6	2.5
Q_3/Q_1:	for horizontal position with the indicating device at top (H↑):	63; 50; 40	100, 80; 63; 50; 40
	for horizontal position with the indicating device at side (H→):	40	63; 50; 40
	for vertical position with flow from bottom to top (V↑):	40	63; 50; 40
Q_2/Q_1:		1.6	
Q_3/Q_4:		1.25	
Accuracy class:		2	
Maximum permissible error for the lower flowrate zone (MPE_l):		±5%	
Maximum permissible error for the upper flowrate zone (MPE_u):		±2% for water having a temperature ≤ 30 °C ±3% for water having a temperature > 30 °C	
Temperature class:		T30, T50 or T30/90	
Water pressure class:		MAP 16	
Pressure loss class:		Δ*p* 63	
Indicating range [m³]:		99 999	
Resolution of the indicating device [dm³]:		0.05	
Resolution of the device for rapid testing [Pulses/L]:		223.2	
Connection type (screw thread):		G¾B	
Flow profile sensitivity class:		U5 D3	
Mounting:		in-line	
Orientation:		horizontal position with the indicating device at top (H↑) horizontal position with the indicating device at side (H→) vertical position with flow from bottom to top (V↑)	
Length [mm]:		80	

Informations specified by the manufacturer	
Reed impulse emitter power supply (Umax / Imax):	max. 24 V / 0.1 A
Reed impulse emitter K-factor (impulse / L):	0.1 (SJ Plus)
	1 (SJ Plus Evo)
Environmental class	B
Electromagnetic class	E1
Mechanical class	M1

Table *Basic metrological data (flowrates)*

Nominal diameter:	15	15	20	20	15	15	20	20	15	15	20	20
Q_1 [m³/h]:	-	0.0156	-	0.025	-	0.020	-	0.032	0.016	0.025	0.025	0.040
Q_2 [m³/h]:	-	0.025	-	0.040	-	0.032	-	0.0512	0.0256	0.040	0.040	0.064
Q_3 [m³/h]:	-	2.5	-	4.0	-	2.5	-	4.0	1.6	2.5	2.5	4.0
Q_4 [m³/h]:	-	3.125	-	5.0	-	3.125	-	5.0	2.0	3.125	3.125	5.0
Q_3/Q_1:	160				125				100			

Nominal diameter:	15	15	20	20	15	15	20	20	15	15	20	20
Q_1 [m³/h]:	0.020	0.0313	0.0313	0.050	0.0254	0.0397	0.0397	0.063	0.032	0.050	0.050	0.080
Q_2 [m³/h]:	0.032	0.050	0.050	0.080	0.0406	0.0635	0.0635	0.102	0.0512	0.080	0.080	0.128
Q_3 [m³/h]:	1.6	2.5	2.5	4.0	1.6	2.5	2.5	4.0	1.6	2.5	2.5	4.0
Q_4 [m³/h]:	2.0	3.125	3.125	5.0	2.0	3.125	3.125	5.0	2.0	3.125	3.125	5.0
Q_3/Q_1:	80				63				50			

Nominal diameter:	15	15	20	20
Q_1 [m³/h]:	0.040	0.0625	0.0625	0.100
Q_2 [m³/h]:	0.064	0.100	0.100	0.160
Q_3 [m³/h]:	1.6	2.5	2.5	4.0
Q_4 [m³/h]:	2.0	3.125	3.125	5.0
Q_3/Q_1:	40			

3 Tests

Technical tests of the water meters type SJ; SJ Plus and SJ Evo were performed in compliance with the International Recommendation OIML R 49 Edition 2013 with conformity to ISO 4064, Test Report No. 6015-PT-P0037-19.

4 Conformity marks and inscription

The water meters type SJ; SJ Plus and SJ Evo shall be clearly and indelibly marked with the following information:

- Water meter type (on plastic seal or via laser marking on the dial)
- Unit of measurement (m³)
- Numerical value Q_3 in m³/h (Q_3 ×.×) and the ratio Q_3 / Q_1,
- EU-type examination certificate number (on plastic seal or via laser marking on the dial)
- 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 (MAP ××)
- Letter H↑ (horizontal position with the indicating device at the top), H→ (horizontal position with the indicating device at the side), V↑ (vertical position with flow from bottom to top)
- The temperature class (T××)
- The pressure loss class (Δp ××)
- CE marking and metrology marking in line with the Directive 2014/32/EU

There are additional data required for water meter equipped with a pulse emitter or a radio emitter, if appropriate:

- 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.

5 Additional specifications

The water meters type SJ; SJ Plus and SJ 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 4064-1:2017, 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

The water meter is secured by means of a transparent plastic cover with the indicating device fitted to the body by plastic seal ring, identified by security mark and sealed by sealing ribs. The sealing is described in Figure 1.
If the meter is equipped by the reed impulse transmitter or the inductive sensor the seal of the sensor with the meter is guaranteed with a sticker (Figure 1).

7 Drawing of the instrument

Water meters type SJ; SJ Plus and SJ Evo are manufactured according to the technical documentation of manufacturer. Technical documentation contains following drawings:

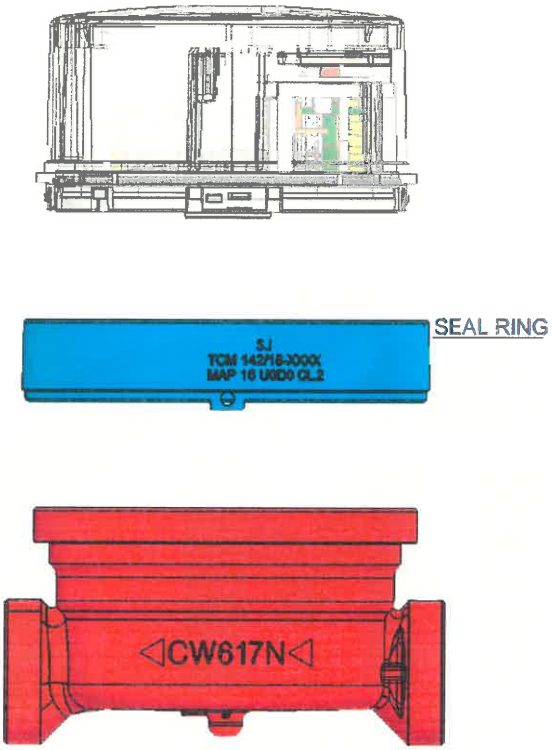
Document reference	Date	Brief description
22500148	28.10.2019	SJ Plus/Evo DN15 - gears
22500149	28.10.2019	SJ Plus/Evo DN20 - gears
22500154	13.11.2019	SJ Plus/Evo DN20 – exploded view
22500157	5.8.2018	SJ Plus/Evo – external view, sealing
22500179	4.12.2019	SJ – dial plate
22500180	4.9.2019	SJ Plus/Evo DN15 – body L = 80 mm
22500181	4.9.2019	SJ Plus/Evo DN15 – body L = 110 mm
22500182	4.9.2019	SJ Plus/Evo DN15 – body L = 115 mm
22500183	22.11.2019	SJ Plus/Evo DN15 – body L = 115 mm (G7/8" - > G ¾")
22500184	22.11.2019	SJ Plus/Evo DN20 – body L = 115 mm (G1")
22500185	4.9.2019	SJ Plus/Evo DN15 – body L = 120 mm
22500186	4.12.2019	SJ Plus – dial plate with pulse emitter
22500197	20.12.2019	SJ Plus/Evo DN20 – body L = 130 mm (G3/4")
22500188	22.11.2019	SJ Plus/Evo DN15 – body L = 130 mm
22500190	4.12.2019	SJ Evo – dial plate with radio emitter
22500191	4.9.2019	SJ Evo – sealing M-Bus
22500192	31.7.2019	SJ Evo – sealing radio module
22500199	20.12.2019	SJ Plus/Evo DN15 – exploded view
22500198	20.12.2019	SJ Plus/Evo DN20 – exploded view
22500201	20.12.2019	SJ – sealing M-Bus

History of additions

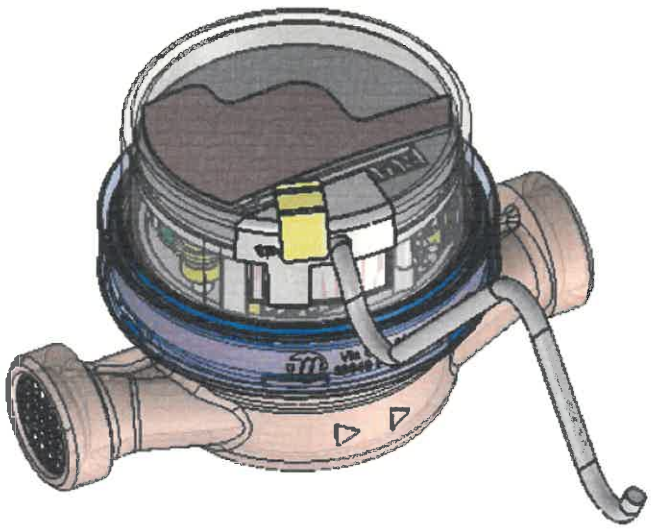
Addition No.	Description
Addition 0	Issuing certificate

Figure 1: The sealing of the SJ; SJ Plus and SJ Evo water meter

- sealing SJ water meter (Would be can on plastic seal or via laser marking on the dial):



- sealing SJ Plus water meter:



- sealing SJ Evo water meter (detail "S" represent the sticker):

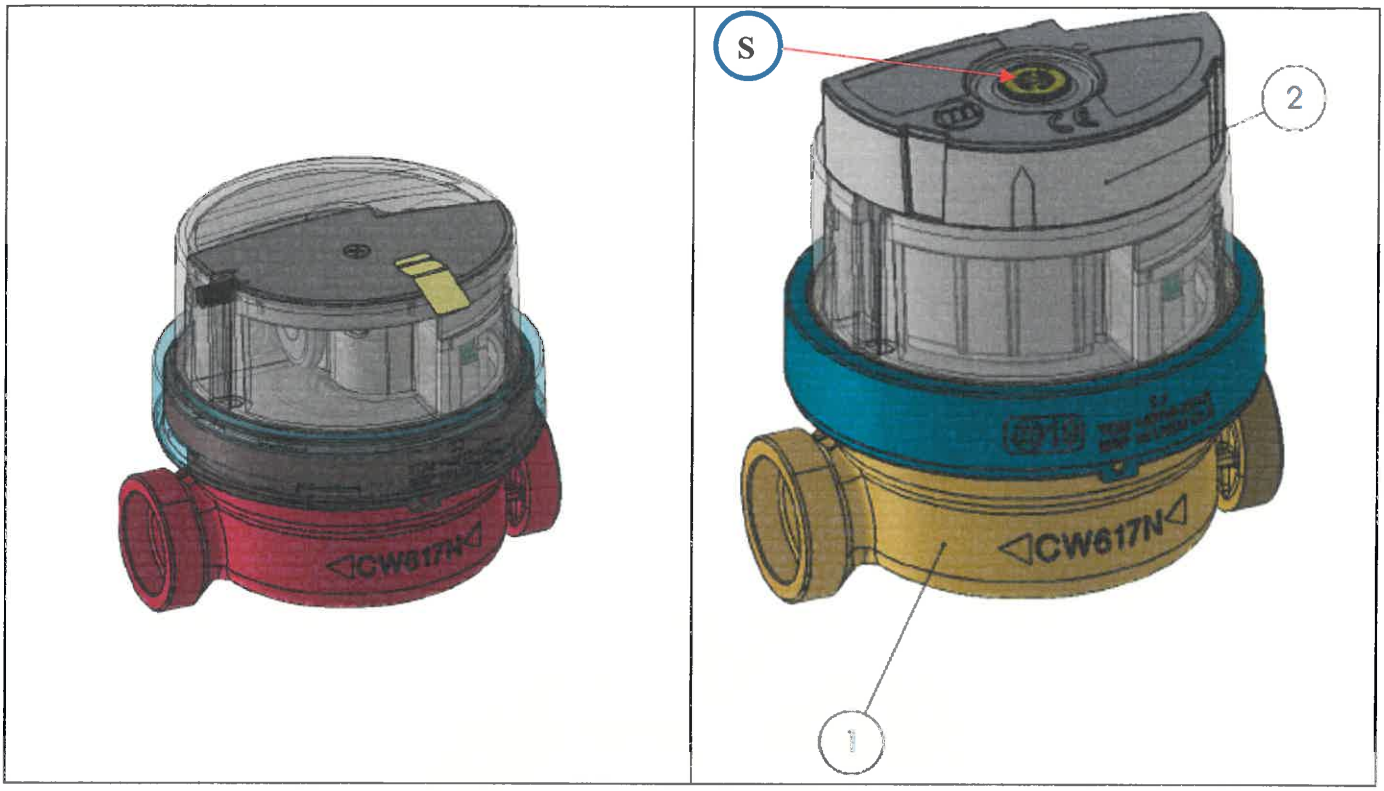
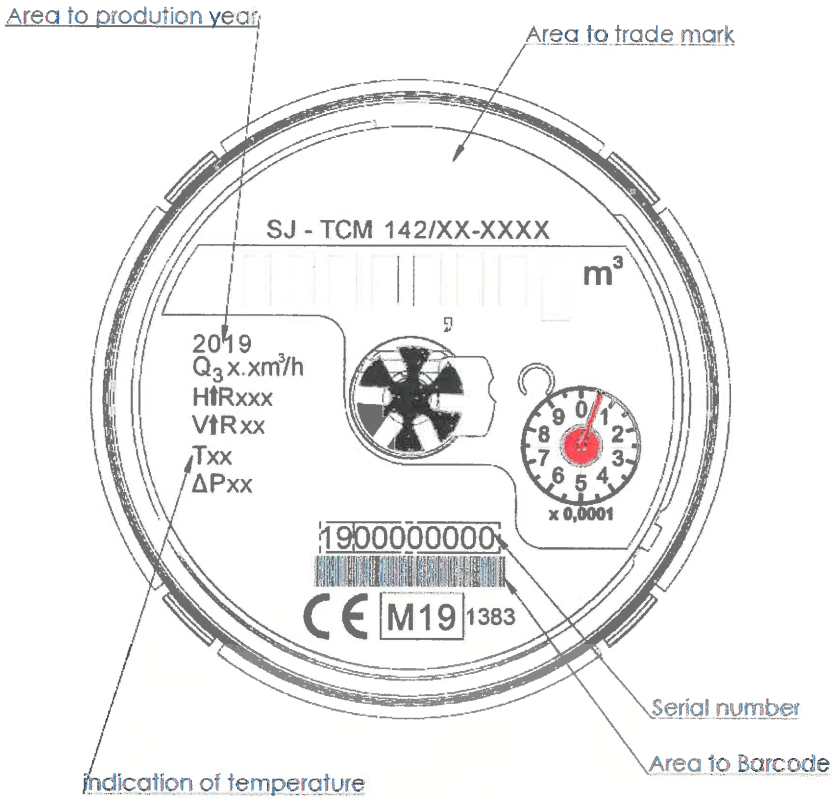
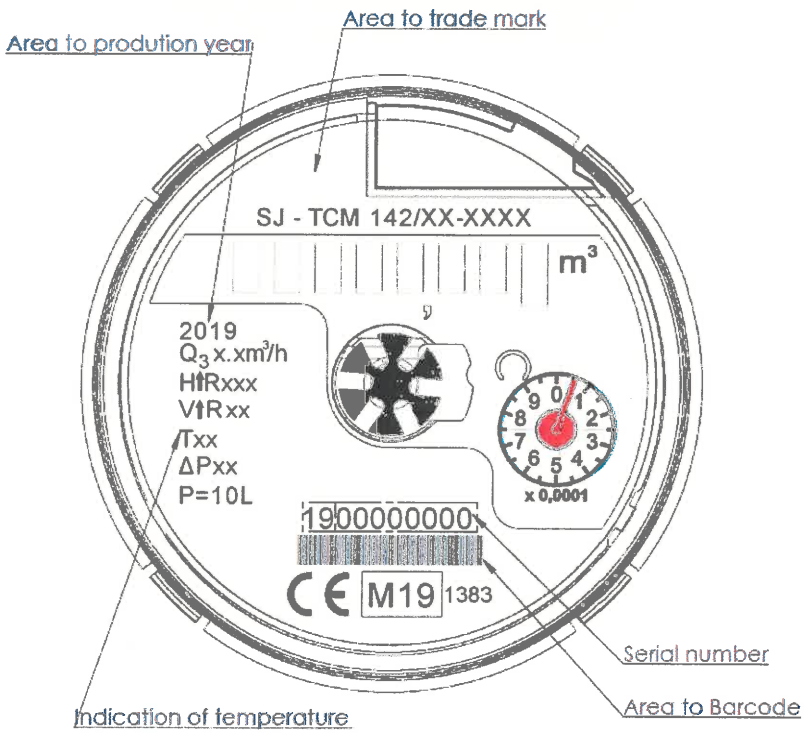


Figure 2: The dial and with the parameters of the SJ; SJ Plus and SJ Evo water meter (Would be can on plastic seal or via laser marking on the dial)

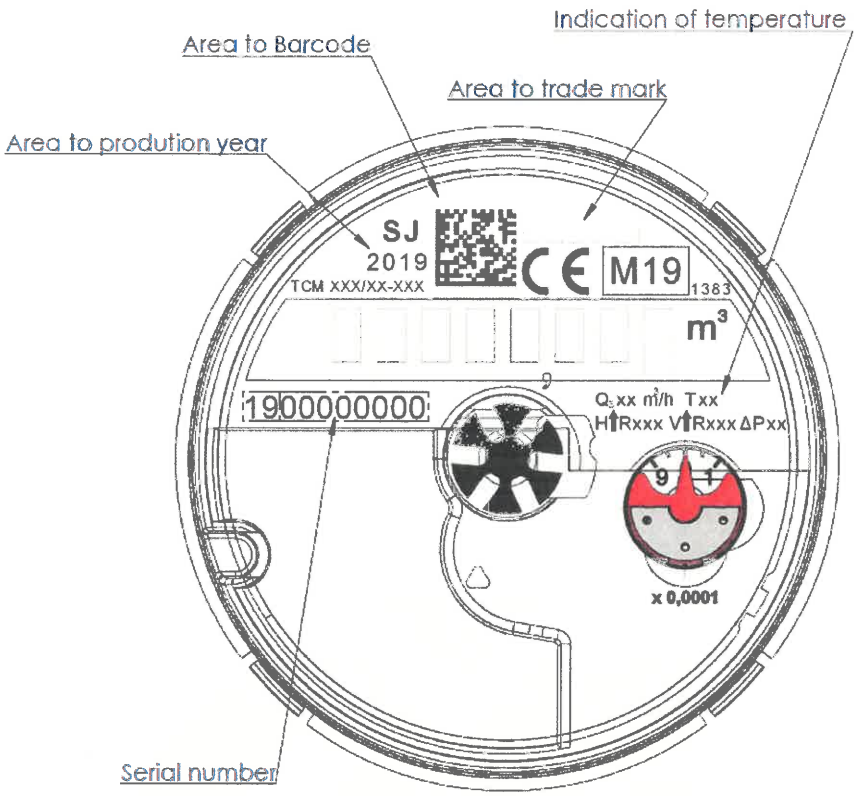
- SJ dial



- SJ Plus dial:



- SJ Evo dial:



- the seal ring with marking (the same for all versions):