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V 3112

EU-TYPE EXAMINATION CERTIFICATE

Number: TCM 142/10 - 4793

Addition 3

This addition replaces all previous versions of this certificate in full wording.

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: Ningbo Water Meter (Group) Co., Ltd.
355 Hongxing Road, Jiangbei District
315032 Ningbo
China

For: water meter – multi jet
type: MJ-LFC and MJ-WDC

Temperature class: T30 and T50

Valid until: 29 March 2031

Document number: 0115-CS-A011-11

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

Date of issue: 30 March 2021

Certificate approved by:

Český metrologický institut
-3-

RNDr. Pavel Klenovský

1 Measuring device description

The multi jet water meters type MJ-LFC and MJ-WDC 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 of the European Parliament and of the Council no. 2014/32/EU of measuring instruments, as amended.

The water meters type MJ-WDC are multi jet rotary vane wheel water meters with wet mechanical indicating device.

The water meters type MJ-LFC are multi jet rotary vane wheel water meters with semi dry mechanical indicating device with protected register drums (Liquid Filled Calculator).

The water meters type MJ-LFC and MJ-WDC consist of a brass, bronze, iron or plastic body, an inlet strainer, a wet measuring unit with a plastic distributor with tangential holes, a stainless shaft with plastic pivot, a rotary vane wheel and gears, a mechanical indicating device with rotary pointers and numbered drums, a glass and a brass or plastic head ring with a plastic cover. The numbered drums are installed in capsule filled by special liquid in case of MJ-LFC type. The adjustment is realized by adjusting screw. The access to the adjusting screw is protected by sealed screw.

The mechanical indicating device is formed by numbered rollers with five drums for water meters DN 15 to DN 32 and six drums for water meters DN 40 and DN 50 and four pointers.

The water meters type MJ-LFC admit six variants for the indicating device. For the variant MJ-LFC (F1) the part of the dial with pointers is sealed by a plastic cover and therefore there is no contact of water with the window for reading of the roller drums and with the glass. The pointer scales and some parts of the meter marking are in contact with water in this case. For the variant MJ-LFC (F2) the part of the dial with pointers is sealed by a plastic cover and all the meter marking as well as the pointer scales are printed on a plate on top of this plastic cover and therefore there is no contact of water with the window for reading the roller drums neither with the complete dial plate including the pointer scales and meter marking and with the glass. For the variant MJ-LFC (F5) the part of the dial with pointers is not sealed by a plastic cover and therefore this part is in contact with water including the pointer scales and the covering glass. The part of the dial with the window for reading of the roller drums is in tight contact with the covering glass and therefore it is not in contact with water. For the variant MJ-LFC (F10) the part of the dial with pointers is sealed by a plastic cover and there is no contact of water with the window for reading the roller drums neither with the complete dial plate including the meter marking and the pointer scales which are printed on transparent plastic cover from outside. The variant MJ-LFC (F8) is based on the variant MJ-LFC (F5) and it differs in the used sealing. In MJ-LFC (F8) there is a flat sealing ring used instead of an O-ring. The variant MJ-LFC (FW) is based on the variant MJ-LFC (F5) and it differs in slight modifications of the dial and head ring design in order to enable mounting of an AMR reading head.

The water meters type MJ-LFC and MJ-WDC can be equipped by a reed impulse transmitter which can be used for remote reading. The water meter has not been tested with reed impulse transmitter installed within this certification. The meters can be equipped with parts for mounting of an AMR device and all dial types can include an inductive pointer for AMR reading.

The water meters type MJ-LFC and MJ-WDC shall be installed to operate in horizontal position or in vertical position with flow direction upwards only, according to used meter body. In any case the indicating device is positioned on top of the meter body.

Water meters type MJ-LFC and MJ-WDC are manufactured according to technical documentation of manufacturer No. Q/ZNJ 17005-2010.3.1 Annex 1 and 2 from 31.12.2013 which include among others the assembly drawings No. ZN1.630.574-574f, 575-575a, 296-297, 296y-297y, 447-448, 444-445, 583-583f, 584-584a, 306-307 from 1/2009, ZN1.630.742-742f, 743-743a, 742y-742fy, 743y-743ay from 10/2009, ZN1.630.583y-583fy, 584y-584ay from 3/2009, ZN1.630.306y-306fy, 307y-307ay from 3/2008, ZN1.630.898-906 from 1/2009 and ZN1.636.1104,1105 from 10/2018.

2 Basic technical data

Basic technical data of water meters type MJ-LFC and MJ-WDC DN 15 to DN 25:

Nominal diameter (DN) [mm]:	15	20	25
Overload flowrate (Q_4) [m^3/h]:	3.13	5.00	7.88
Permanent flowrate (Q_3) [m^3/h]:	2.50	4.00	6.30
Transitional flowrate (Q_2) [m^3/h]:	≥ 0.0200	≥ 0.0320	≥ 0.0504
Minimum flowrate (Q_1) [m^3/h]:	≥ 0.0125	≥ 0.0200	≥ 0.0315
Ratio Q_3 / Q_1:	≤ 200 [1]		

Ratio Q_2 / Q_1:	1.6		
Ratio Q_4 / Q_3:	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 and T50		
Water pressure classes:	MAP 16		
Pressure-loss classes:	ΔP 63		
Indicating range [m³]:	99 999		
Resolution of the indicating device [m³]:	0.00005		
Resolution of the device for the rapid testing [pulse/L]:	71.185	54.000	37.385
Flow profile sensitivity classes:	U0 D0		
Orientation limitation:	H with indicating device on top or V with flow direction upwards and indicating device on top (according to used meter body)		
Length of horizontal water meter L [mm]:	110 to 190	160 to 190	160 to 260
Length of vertical water meter L [mm]:	100 to 105		105 to 110
Connection type– Screw thread size:	G¾B or G1B	G1B	G1¼B or G1½B
Reed switch power supply (U_{max} / I_{max}):	max. 24 V / 0.01 A		
Reed switch K-factor [impulse / L]:	0.001; 0.01; 0.1 and 1		

[1] The ratio Q_3 / Q_1 shall be chosen according to paragraph 4.1.4 of EN ISO 4064-1:2017 | OIML R 49-1:2013

Basic technical data of water meters type MJ-LFC and MJ-WDC DN 32 to DN 50:

Nominal diameter (DN) [mm]:	32	40	50
Overload flowrate (Q_4) [m³/h]:	12.5	20.0	31.3
Permanent flowrate (Q_3) [m³/h]:	10.0	16.0	25.0
Transitional flowrate (Q_2) [m³/h]:	≥ 0.0800	≥ 0.128	≥ 0.200
Minimum flowrate (Q_1) [m³/h]:	≥ 0.0500	≥ 0.0800	≥ 0.125
Ratio Q_3 / Q_1:	≤ 200 [1]		≤ 200 [1]
Ratio Q_2 / Q_1:	1.6		
Ratio Q_4 / Q_3:	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 and T50		
Water pressure classes:	MAP 16		
Pressure-loss classes:	ΔP 63		
Indicating range [m³]:	99 999	999 999	
Resolution of the indicating device [m³]:	0.00005	0.00005	
Resolution of the device for the rapid testing [pulse/L]:	23.143	12.462	
Flow profile sensitivity classes:	U0 D0		
Orientation limitation:	H with indicating device on top		
Length of horizontal water meter L [mm]:	160 to 260	200 to 300	270 to 300
Connection type– Screw thread size:	G1½B	G2B	G2½B or Flange
Reed switch power supply (U_{max} / I_{max}):	max. 24 V / 0.01 A		
Reed switch K-factor [impulse / L]:	0.001; 0.01; 0.1 and 1		

[1] The ratio Q_3 / Q_1 shall be chosen according to paragraph 4.1.4 of EN ISO 4064-1:2017 | OIML R 49-1:2013

3 Tests

Technical tests of the water meters type MJ-LFC and MJ-WDC were performed in compliance with the International Recommendation OIML R 49 Edition 2006 (E) with conformity to EN 14154-1:2005+A1:2007, Test Report No. 6015-PT-A0037-11 from March 29th 2011, test report No. 6015-PT-P0136-11 from October 25th 2011 and test report No. 6015-PT-P0003-13 from January 11th 2013 and according to EN ISO 4064:2017 and OIML R 49:2013, Test Report No. 6015-PT-P0012-21 from March 16th 2021.

4 The measuring device data

The water meters type MJ-LFC and MJ-WDC shall be clearly and indelibly marked with the following information:

- The "CE" marking and supplementary metrology marking
- Number of EU-type examination certificate
- Manufacturer's name or trademark
- Postal address at which the manufacturer can be contacted
- Year of manufacture (last two digits) and serial number (as near as possible to the indicating device)
- Measuring device type
- Unit of measurement (m^3)
- Accuracy class 2
- Numerical value Q_3 in m^3/h (Q_3 ×.×)
- The ratio Q_3 / Q_1, (R××)
- The temperature class (T××)
- The maximum admissible pressure (MAP ××)
- The pressure loss class (ΔP ××)
- Classes on sensitivity to irregularities in velocity field (U× D×)
- Orientation limitation marks: H or V (according to the used meter body)
- Direction of flow arrow on both sides of the meter body

There are additional data required if the water meter is equipped with impulse transmitter:

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

5 Sealing

Connection of an adjusting screw and a head ring has to be sealed using a wire with a lead or plastic seal. Connection of water meter body and a reed impulse transmitter has to be sealed, if a reed impulse transmitter is used.
Location of the seals is described in the figures below.

Figure 1: The water meter type MJ-LFC (F1)

Figure 2: The water meter type MJ-LFC (F2)

Figure 3: The water meter type MJ-LFC (F5)

Figure 4: The water meter type MJ-LFC (F8)

Figure 5: The water meter type MJ-LFC (F8) – with plastic body

Figure 6: The water meter type MJ-LFC (F10)

Figure 7: The water meter type MJ-LFC (FW1)

Figure 8: The water meter type MJ-LFC (FW2)

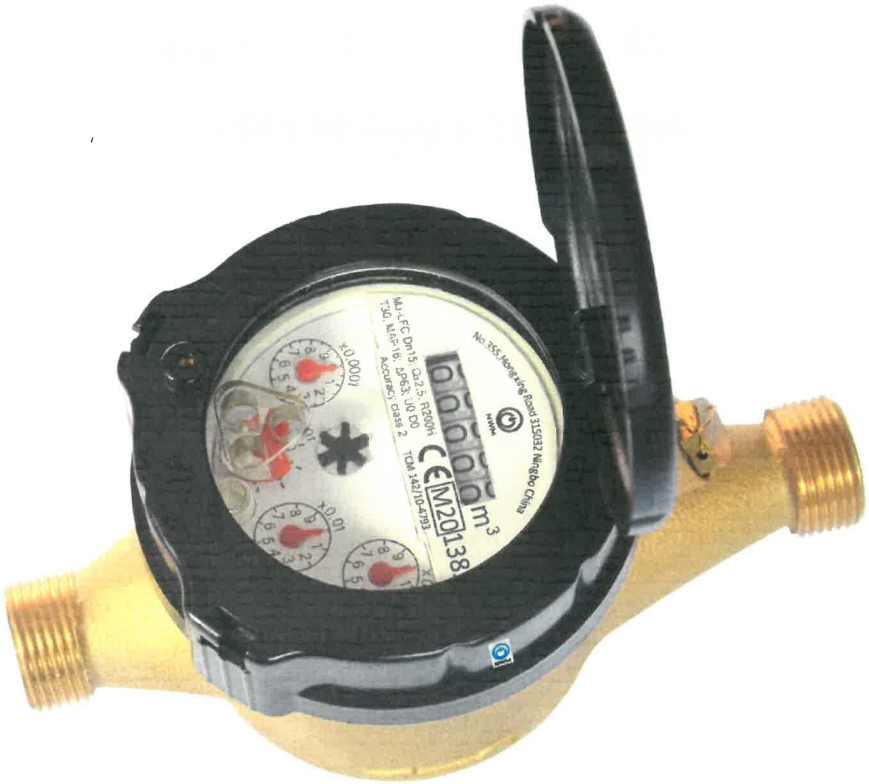
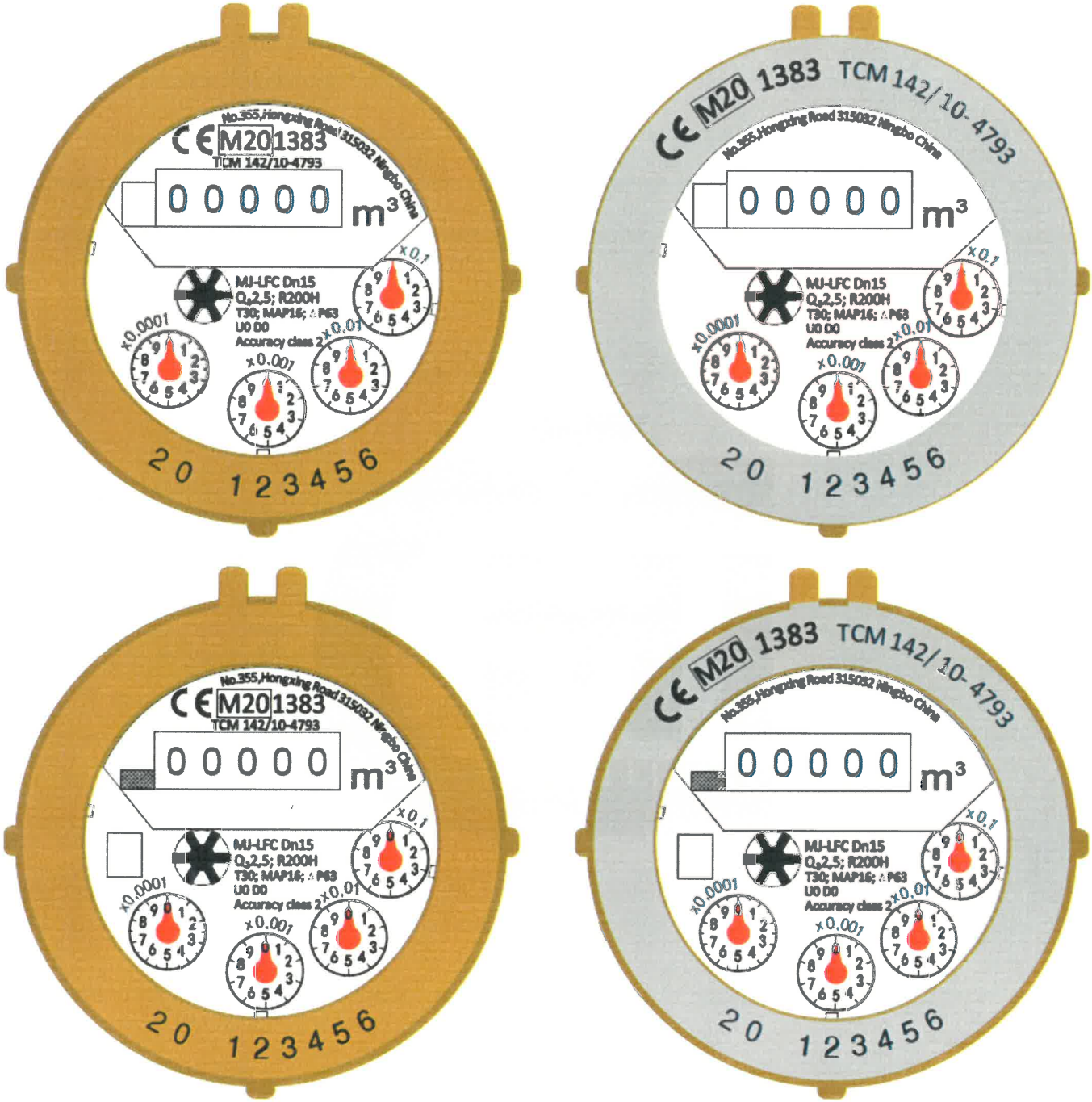


Figure 9: The water meter type MJ-WDC

Figure 10: The water meter type MJ-WDC – with vertical body

Figure 11: An example of the dial plates of the water meter type MJ-LFC (F1). Top row – dials with manufacturer's logo or name only, bottom row – dials with both manufacturers and customer's logo or name, left column – dials without plastic top ring, right column – dials with plastic top ring.



Manufacturer's logo or name

Customer's logo or name

Figure 12: An example of the dial plates of the water meter type MJ-LFC (F2). Top row – dials with manufacturer's logo or name only, bottom row – dials with both manufacturers and customer's logo or name, left column – dials without plastic top ring, right column – dials with plastic top ring.

Figure 13: An example of the dial plates of the water meter type MJ-LFC (F5) and (F8). Top row – dials with manufacturer's logo or name only, bottom row – dials with both manufacturers and customer's logo or name, left column – dials without plastic top ring, right column – dials with plastic top ring.

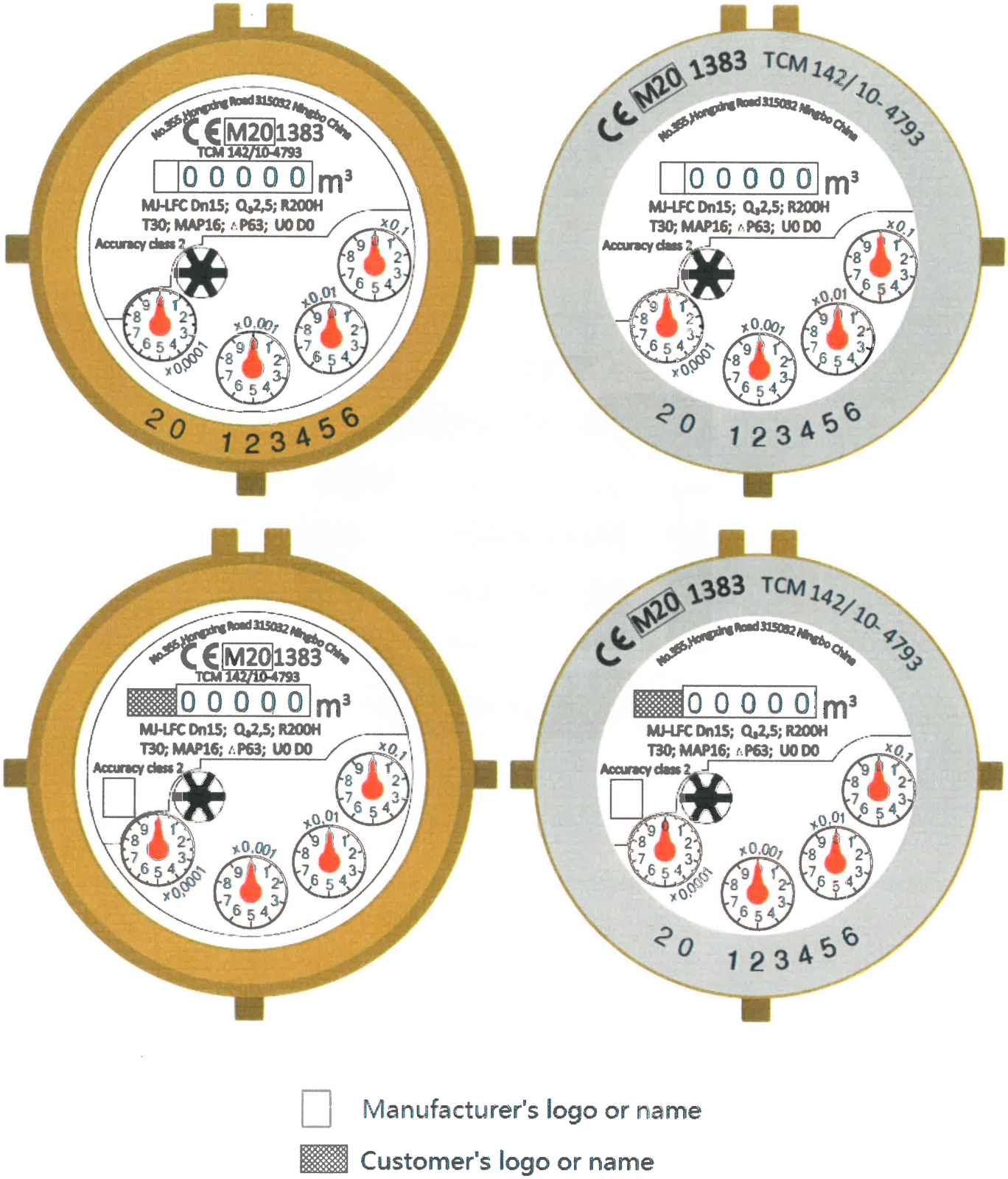


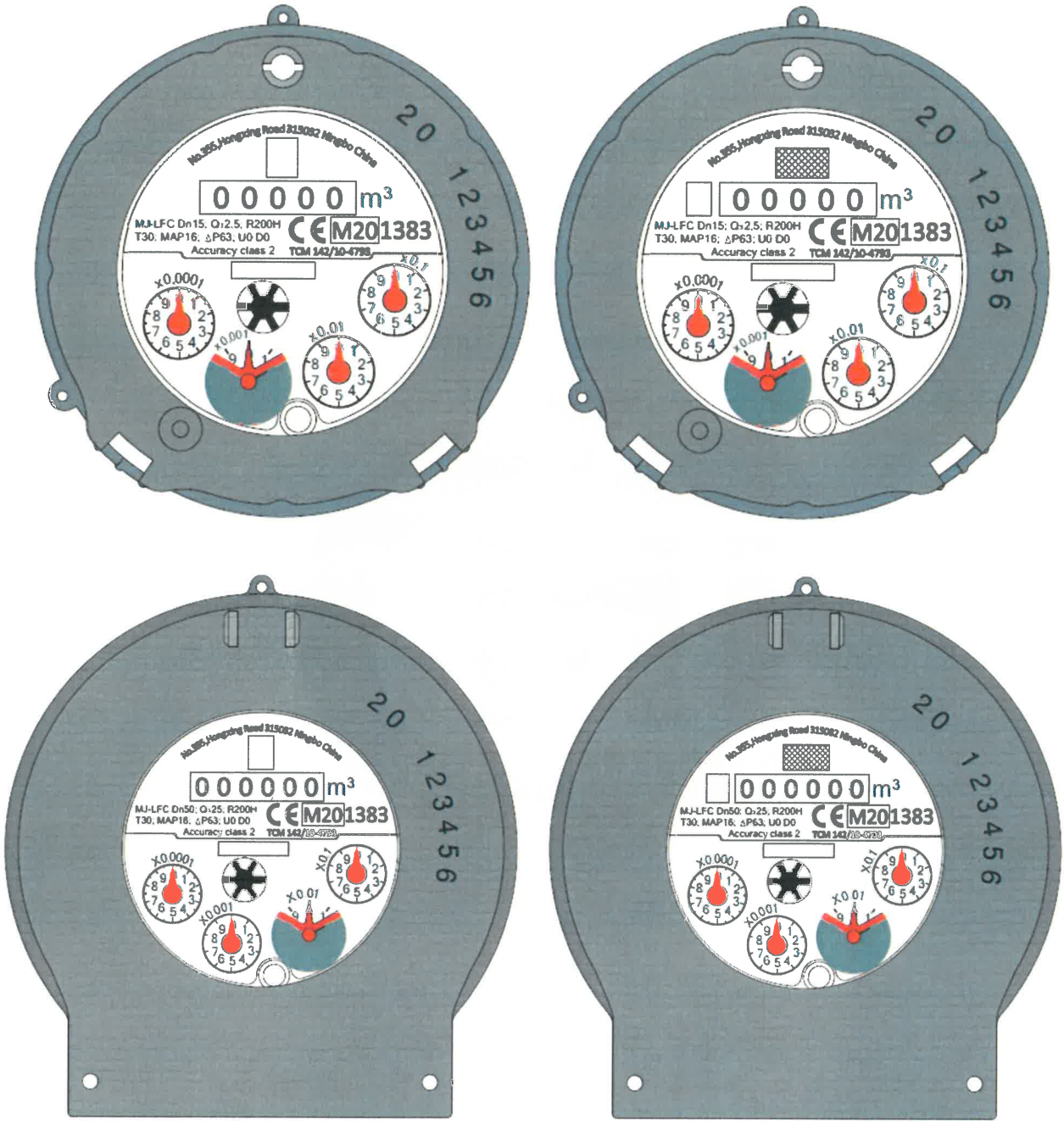
Figure 14: An example of the dial plate of the water meter type MJ-LFC (F10). Top row – dials with manufacturer's logo or name only, bottom row – dials with both manufacturers and customer's logo or name, left column – dials without plastic top ring, right column – dials with plastic top ring.

Figure 15: An example of the dial plate of the water meter type MJ-WDC. Top row – dials with manufacturer's logo or name only, bottom row – dials with both manufacturers and customer's logo or name, left column – dials without plastic top ring, right column – dials with plastic top ring.

Manufacturer's logo or name

Customer's logo or name

Figure 16: Examples of the dial plate of the water meter type MJ-LFC (FW1). Top row – DN15, bottom row – DN50, left column – dials with manufacturer's logo or name only, right column – dials with manufacturer's and customer's logo or name. Use of the inductive pointer is optional.



Manufacturer's logo or name

Customer's logo or name

Serial number

Figure 17: An example of the dial plate of the water meter type MJ-LFC (FW2). Top row – DN15, bottom row – DN32, left column – dials with manufacturer's logo or name only, right column – dials with manufacturer's and customer's logo or name. Use of the inductive pointer is optional.