



EU-TYPE EXAMINATION CERTIFICATE

Number: TCM 142/11 - 4832

Addition 5

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

Page 1 from 11 pages

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: Apator Powogaz S.A.
Klemensa Janickiego 23/25
60-542 Poznań
Poland

For: water meter - single jet, dry dial
Type: JS, JS90 and JS130

Accuracy class: 2

Valid until: 17 May 2021

Document No: 0115-CS-A020-11

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

Date of issue: 16 March 2020

Certificate approved by:




RNDr. Pavel Klenovský

1 Characteristics of instrument:

The single jet water meters type JS, JS90 and JS130 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 water meters type JS; JS90; JS130 with permanent flowrates of 1.6 m³/h, 2.5 m³/h, 4 m³/h, 6.3 m³/h, 10 m³/h and 16 m³/h consist of a measuring section and dry mechanical indicating device which are separated by sealing plate, which may be made of brass or plastic. Water flows in the measuring section and rotates the vane wheel of transducer. The rotation is transmitting by a magnetic clutch to the system of gear wheels to register. The magnetic clutch may be bipolar or unipolar. Water meters may be equipped with additional units that improve their resistance to external magnetic field. The register consists of four pointers and a fives rollers or one pointer and eight rollers. The measuring section and dry mechanical indicating device are connected to meter body by retaining ring or by a shield of counting mechanism.

The adjustment of the water meter is executed by turn of sealing plate with ribs or takes place through the closing or opening of the by-pass pipe of the measuring unit.

The water meter shall be installed to operate in horizontal or vertical position.

Water meters type JS, JS90 and JS130 doesn't contain any additional equipment. Versions of water meters with additional -XX (where XX can be NK or NKP) contain following additional equipment:

- NK mean with a reed contact pulse transmitter and
- NKP with socket pre-equipped for later installation of pulse transmitter or remote reading devices – radio module.

In the both versions (NK and NKP) adapted for fitting the radio or remote meter reading devices on one of the pointers a magnet has been suited to fit a radio device for wireless reading or a remote meter reading device. These devices are not covered by this certificate. There is also the performance of the meter to the mechanism of counting the degree of protection IP68 as well as NK or NKP.

2 Main characteristics:

Basic technical data of water meters type JS and JS90:

Meter type:	JS; JS90		
Nominal diameter DN [mm]:	15 or 20		
Minimum flowrate Q_1 [m ³ /h]:	H	≥ 0.01	≥ 0.013
	V	≥ 0.025	≥ 0.031
Transitional flowrate Q_2 [m ³ /h]:	H	≥ 0.016	≥ 0.02
	V	≥ 0.04	≥ 0.05
Permanent flowrate Q_3 [m ³ /h]:		≤ 1.6 ¹	≤ 2.5 ¹
Overload flowrate Q_4 [m ³ /h]:		≤ 2	≤ 3.125
Ratio Q_3 / Q_1 :	H	≤ 160 ²	≤ 200 ²
	V	≤ 63 ²	≤ 80 ²
Ratio Q_2 / Q_1 :		1.6	
Ratio Q_4 / Q_3 :		1.25	
Accuracy class:		2	
Maximum permissible error (MPE) lower flow range:		± 5 %	
Maximum permissible error (MPE) upper flow range:		± 2 % for water having a temperature ≤ 30 °C ± 3 % for water having a temperature > 30 °C	
Temperature classes:		T30 ÷ T90; T30/90	
Water pressure class:		MAP 16	
Pressure-loss class:		ΔP 63	
Indicating range [m ³]:		99 999	
Resolution of the indicating device [m ³]:		0.00005	
Resolution of the device for rapid testing [impulse/L]:		640.667	446.4
Flow profile sensitivity classes:		U0 D0	
Orientation limitation:		H or V	
Length [mm]:		105 ≤ L ≤ 130	

Connection type: Screw thread	G ^{3/4} or G ^{7/8} or G1
Reed contact K-factor [impulse / L]:	0.25; 0.5; 1; 2.5; 5; 10; 25; 50; 100; 250; 500; 1000
Reed contact power supply (U_{max} / I_{max}):	max. 24V / 0.1 A

¹ The value of Q_3 shall be chosen from the R5 line of EN 14154

² The ratio Q_3 / Q_1 shall be chosen from the R10 line from EN 14154 and this value shall be higher than 40.

Basic technical data of water meters type JS and JS130:

Meter type:	JS; JS130		
Nominal diameter DN [mm]:	25 or 32 or 40		
Minimum flowrate Q_1 [m ³ /h]:	H	≥ 0.032	≥ 0.05
	V	≥ 0.08	≥ 0.125
Transitional flowrate Q_2 [m ³ /h]:	H	≥ 0.05	≥ 0.08
	V	≥ 0.126	≥ 0.2
Permanent flowrate Q_3 [m ³ /h]:		≤ 6.3 ¹	≤ 10 ¹
Overload flowrate Q_4 [m ³ /h]:		≤ 7.875	≤ 12.5
Ratio Q_3 / Q_1 :	H	≤ 200 ²	
	V	≤ 80 ²	
Ratio Q_2 / Q_1 :		1.6	
Ratio Q_4 / Q_3 :		1.25	
Accuracy class:		2	
Maximum permissible error (MPE) lower flow range:		± 5 %	
Maximum permissible error (MPE) upper flow range:		± 2 % for water having a temperature ≤ 30 °C ± 3 % for water having a temperature > 30 °C	
Temperature classes:		T30 or T50	
		T30 ÷ T130; T30/130 only for $Q_3 / Q_1 ≤ 100$ for H and $Q_3 / Q_1 ≤ 50$ for V	
Water pressure class:		MAP 16	
Pressure-loss class:		ΔP 63	
Indicating range [m ³]:		99 999	
Resolution of the indicating device [m ³]:		0.00005	
Resolution of the device for rapid testing [impulse/L]:		108	79.368
			JS: 46.2 JS130: 42.137
Flow profile sensitivity classes:		U0 D0	
Orientation limitation:		H or V	
Length [mm]:		165 ≤ L ≤ 300	
Connection type: Screw thread		G1 ^{1/4} or G1 ^{1/2} or G 2	
Reed contact K-factor [impulse / L]:		0.25; 0.5; 1; 2.5; 5; 10; 25; 50; 100; 250; 500; 1000	
Reed contact power supply (U_{max} / I_{max}):		max. 24V / 0.1 A	

¹ The value of Q_3 shall be chosen from the R5 line of EN 14154

² The ratio Q_3 / Q_1 shall be chosen from the R10 line from EN 14154 and this value shall be higher than 40.

Basic technical data of water meters type JS with sealing plate made of plastic

Meter type:	JS with sealing plate made of plastic		
Nominal diameter DN [mm]:	25 or 32 or 40		
Minimum flowrate Q_1 [m ³ /h]:	H	≥ 0.039	≥ 0.063
	V	≥ 0.079	≥ 0.125
Transitional flowrate Q_2 [m ³ /h]:	H	≥ 0.063	≥ 0.10
	V	≥ 0.126	≥ 0.20
Permanent flowrate Q_3 [m ³ /h]:		≤ 6.3 ¹	≤ 10 ¹
Overload flowrate Q_4 [m ³ /h]:		≤ 7.88	≤ 12.5
Ratio Q_3 / Q_1 :	H	≤ 160 ²	
	V	≤ 80 ²	
Ratio Q_2 / Q_1 :		1.6	



Ratio Q_4 / Q_3 :	1.25		
Accuracy class:	2		
Maximum permissible error (MPE) lower flow range:	$\pm 5 \%$		
Maximum permissible error (MPE) upper flow range:	$\pm 2 \%$ for water having a temperature $\leq 30 \text{ }^\circ\text{C}$ $\pm 3 \%$ for water having a temperature $> 30 \text{ }^\circ\text{C}$		
Temperature classes:	T30; T50		
Water pressure class:	MAP 16		
Pressure-loss class:	ΔP 63		
Indicating range [m ³]:	99 999		
Resolution of the indicating device [m ³]:	0.00005		
Resolution of the device for rapid testing [impulse/L]:	116	79.368	46.2
Flow profile sensitivity classes:	U0 D0		
Orientation limitation:	H or V		
Length [mm]:	$165 \leq L \leq 300$		
Connection type: Screw thread	G1 ¹ / ₄ or G ¹ / ₂ or G 2		
Reed contact K-factor [impulse / L]:	0.25; 0.5; 1; 2.5; 5; 10; 25; 50; 100; 250; 500; 1000		
Reed contact power supply (U_{\max} / I_{\max}):	max. 24V / 0.1 A		

¹ The value of Q_3 shall be chosen from the R5 line of EN 14154

² The ratio Q_3 / Q_1 shall be chosen from the R10 line from EN 14154 and this value shall be higher than 40.

3 Tests

Technical tests of the water meters type JS. JS90 and JS130 were performed in compliance with the International Recommendation OIML R 49 Edition 2006 (E) with conformity to EN 14154+A2:2011; Test Reports No. 6015-PT-P029-11, 6015-PT-P0047-13 and 6015-PT-P0019-15.

Technical tests and assessment of the water meters type JS were performed in compliance with the International Recommendation OIML R 49 Edition 2013 (E) with conformity to ISO 4064; Test Report No. 6015-PT-P0040-17, Test Report No. 6015-PT-P0031-19 and Test Report No. 6015-PT-P0003-20.

4 Conformity marks and inscription:

The water meters type JS. JS90 and JS130 shall be clearly and indelibly marked with the following information:

- Water meter type
- Unit of measurement (m³)
- Numerical value Q_3 in m³/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 (MAP $\times \times$)
- Letter H (horizontal position) or V (vertical 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

and if the water meter is equipped with impulse transmitter or radio module:

- 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 3 and Figure 4.



5 Additional specifications:

The water meters type JS, JS90 and JS130 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:

The JS, JS90 and JS130 meters have to be sealed by connecting the brass screw head ring to the adjusting screw using a wire with a lead seal such that the head ring and the adjusting screw cannot be turned without damaging the seal or the sealing wire. The location of seal is described in Figure 1.

The sealing is realized by embedding of the clamp on cover of the meter to the body of the meter sizes DN15 and DN20. The cover can be removed only destroying this part. The cover has to be equipped with safeguarding marks (Figure 1, 1a).

Alternatively the connection of the cover of the meter and the body of the meter has to be sealed by a wire with leaden seal (Figure 1) or by safeguarding mark (Figure 2).

If the meter is equipped by the reed impulse transmitter or the inductive transmitter, the screws fixing the transmitter to the meter have to be sealed. The location and type of the seal is described in Figure 1.

7 Drawing of the instrument:

Water meters type JS, JS90 and JS130 are manufactured according to the technical documentation of manufacturer. Technical documentation contains following drawings:

Document reference	Date	Brief description
1042-000000	6.2.2012	assembly drawing JS16-NK, R160
1043-000000	24.4.2017	assembly drawing JS16-02, G2, DN40, L=300
1049-000000	17.8.2010	assembly drawing JS16
1053-000000	24.4.2017	assembly drawing JS10-02, G1 ½, DN32, L=260
1054-000000	26.4.2017	assembly drawing JS10-02, G1 ¼, DN32, L=260
1055-000000	17.8.2010	assembly drawing JS10
1056-000000	26.4.2017	assembly drawing JS10, G1 ¼, DN32, L=260
1057-000000	6.2.2012	assembly drawing JS10-NK, R160
1058-000000	26.4.2017	assembly drawing JS10-NK, G1 ¼, DN32, L=260
1060-000000	2.6.2015	assembly drawing JS6.3
1061-000000	2.6.2015	assembly drawing JS6.3-165mm
1062-000000	2.6.2015	assembly drawing JS6.3-NK
1063-000000	2.6.2015	assembly drawing JS6.3-NK-165mm
1064-000000	2.6.2015	assembly drawing JS6.3-02
1065-000000	2.6.2015	assembly drawing JS6.3-02-165mm
1070-000000	3.6.2015	assembly drawing JS10
1071-000000	3.6.2015	assembly drawing JS10 G1 ¼
1072-000000	2.6.2015	assembly drawing JS10-NK
1073-000000	2.6.2015	assembly drawing JS10-NK-G1 ¼
1074-000000	3.6.2015	assembly drawing JS10-02
1075-000000	3.6.2015	assembly drawing JS10-02-G1 ¼
1077-000000	3.6.2015	assembly drawing JS16
1078-000000	2.6.2015	assembly drawing JS16-NK
1079-000000	3.6.2015	assembly drawing JS16-02
1083-000000	26.4.2017	assembly drawing JS6.3-NK, G1 ¼, DN25, L=165
1084-000000	26.4.2017	assembly drawing JS6.3-02, G1 ¼, DN25, L=165
1086-000000	6.2.2012	assembly drawing JS6.3-NK, R160
1087-000000	26.4.2017	assembly drawing JS6.3-02, G1 ¼, DN25, L=260
1088-000000	26.4.2017	assembly drawing JS6.3, G1 ¼, DN25, L=165

1089-000000	18.8.2010	assembly drawing JS6.3
1247-000000	22.5.2012	assembly drawing JS130-16-NK, R80
1248-000000	27.4.2017	assembly drawing JS130-16-02, G2, DN40, L=300
1249-000000	17.8.2010	assembly drawing JS130-16
1251-000000	22.5.2012	assembly drawing JS130-10-NK, R80
1252-000000	27.4.2017	assembly drawing JS130-10-NK, G1 ¼, DN32, L=260
1253-000000	27.4.2017	assembly drawing JS130-10-02, G1 ½, DN32, L=260
1254-000000	27.4.2017	assembly drawing JS130-10-02, G1 ¼, DN32, L=260
1255-000000	17.8.2010	assembly drawing JS130-10
1256-000000	27.4.2017	assembly drawing JS130-10, G1 ¼, DN32, L=260
1285-000000	27.4.2017	assembly drawing JS130-6.3-NK, G1 ¼, DN25, L=165
1286-000000	27.4.2017	assembly drawing JS130-6.3, G1 ¼, DN25, L=165
1287-000000	22.5.2012	assembly drawing JS130-6.3-NK, R80
1288-000000	8.5.2017	assembly drawing JS130-6.3-02, G1 ¼, DN25, L=260
1289-000000	17.8.2010	assembly drawing JS130-6.3
1291-000000	8.5.2017	assembly drawing JS130-6.3-02, G1 ¼, DN25, L=165
1349-000000	8.3.2017	assembly drawing JS16-01, G2, DN40, L=300
1355-000000	10.3.2017	assembly drawing JS10-01, G1 ½, DN32, L=260
1356-000000	10.3.2017	assembly drawing JS10-01, G1 ¼, DN32, L=260
1360-000000	14.3.2017	assembly drawing JS6.3-01, G1 ¼, DN25, L=260
1361-000000	14.3.2017	assembly drawing JS6.3-01, G1 ¼, DN25, L=165
1370-000000	14.3.2017	assembly drawing JS10-01, G1 ½, DN32, L=260
1371-000000	14.3.2017	assembly drawing JS10-01, G1 ¼, DN32, L=260
1377-000000	14.3.2017	assembly drawing JS16-01, G2, DN40, L=300
1388-000000	14.3.2017	assembly drawing JS6.3-01, G1 ¼, DN25, L=165
1389-000000	10.3.2017	assembly drawing JS6.3-01, G1 ¼, DN25, L=260
1449-000000	15.3.2017	assembly drawing JS130-130-16-01, G2, DN40, L=300
1455-000000	15.3.2017	assembly drawing JS130-10-01, G1 ½, DN32, L=260
1456-000000	15.3.2017	assembly drawing JS130-10-01, G1 ¼, DN32, L=260
1486-000000	15.3.2017	assembly drawing JS130-6.3-01-NK, G1 ¼, DN25, L=260
1489-000000	15.3.2017	assembly drawing JS130-6.3-01, G1 ¼, DN25, L=260
9526-000000	19.8.2010	assembly drawing, sealing and view JS1.6 R160
9527-000000	19.8.2010	assembly drawing, sealing and view JS2.5 R160
9528-000000	19.8.2010	assembly drawing, sealing and view JS2.5-G1 R160
9529-000000	19.8.2010	assembly drawing, sealing and view JS4 R160
9530-000000	14.5.2007	assembly drawing JS 1-06
9538-000000	15.1.2009	assembly drawing JS1(1.6)-NK(14)
9540-000000	14.5.2007	assembly drawing JS90-1-06
9548-000000	15.1.2009	assembly drawing JS90-1(1.6)-NK(14)
9550-000000	8.4.2008	assembly drawing JS 1.5-06
9555-000000	10.5.2007	assembly drawing JS 1.5-G1-06
9559-000000	10.9.2008	assembly drawing JS1.5(2.5)-G1-NK(14)
9560-000000	23.6.2008	assembly drawing JS90-1.5-06
9565-000000	23.6.2008	assembly drawing JS90-1.5-G1-06
9569-000000	10.9.2008	assembly drawing JS90-1.5(2.5)-G1-NK(14)
9570-000000	9.5.2007	assembly drawing JS 2.5-06
9574-000000	13.1.2009	assembly drawing JS2.5(4)-NK(14)
9579-000000	10.9.2008	assembly drawing JS1.5(2.5)-NK(14)
9580-000000	23.6.2008	assembly drawing JS90-2.5-06
9584-000000	13.1.2009	assembly drawing JS90-2.5(4)-NK(14)
9589-000000	10.9.2008	assembly drawing JS90-1.5(2.5)-NK(14)
9670-000000	27.4.2017	assembly drawing JS90-1.6-02 R80 (TCM)
9671-000000	28.4.2017	assembly drawing JS90-2.5-02 R80 (TCM)
9672-000000	28.4.2017	assembly drawing JS90-2.5-G1-02 R80 (TCM)
9673-000000	28.4.2017	assembly drawing JS90-4-02 R80 (TCM)



9730-000000	28.4.2017	assembly drawing JS1.6-02 R80 (TCM)
9731-000000	28.4.2017	assembly drawing JS2.5-02 R80 (TCM)
9732-000000	28.4.2017	assembly drawing JS2.5-G1-02 R80 (TCM)
9733-000000	28.4.2017	assembly drawing JS4-02 R80 (TCM)
9726-000000	04.09.2019	assembly drawing, sealing and view JS1.6 R160
9727-000000	04.09.2019	assembly drawing, sealing and view JS2.5 R160
9728-000000	04.09.2019	assembly drawing, sealing and view JS2.5-G1 R160
9729-000000	04.09.2019	assembly drawing, sealing and view JS4 R160
0000-004517	07.02.2020	meter specification label drawing, view JS6,3 (ver. IP68)
0000-004518	07.02.2020	meter specification label drawing, view JS10 (ver. IP68)
0000-004516	07.02.2020	meter specification label drawing, view JS16 (ver. IP68)
1500-000000	07.02.2020	assembly drawing, view JS6,3 (ver. IP68)
1510-000000	07.02.2020	assembly drawing, view JS10 (ver. IP68)
1520-000000	07.02.2020	assembly drawing, view JS16 (ver. IP68)
5003-110700	07.02.2020	dial plate drawing, view JS6,3
5003-120700	07.02.2020	dial plate drawing, view JS10
5003-130700	07.02.2020	dial plate drawing, view JS16

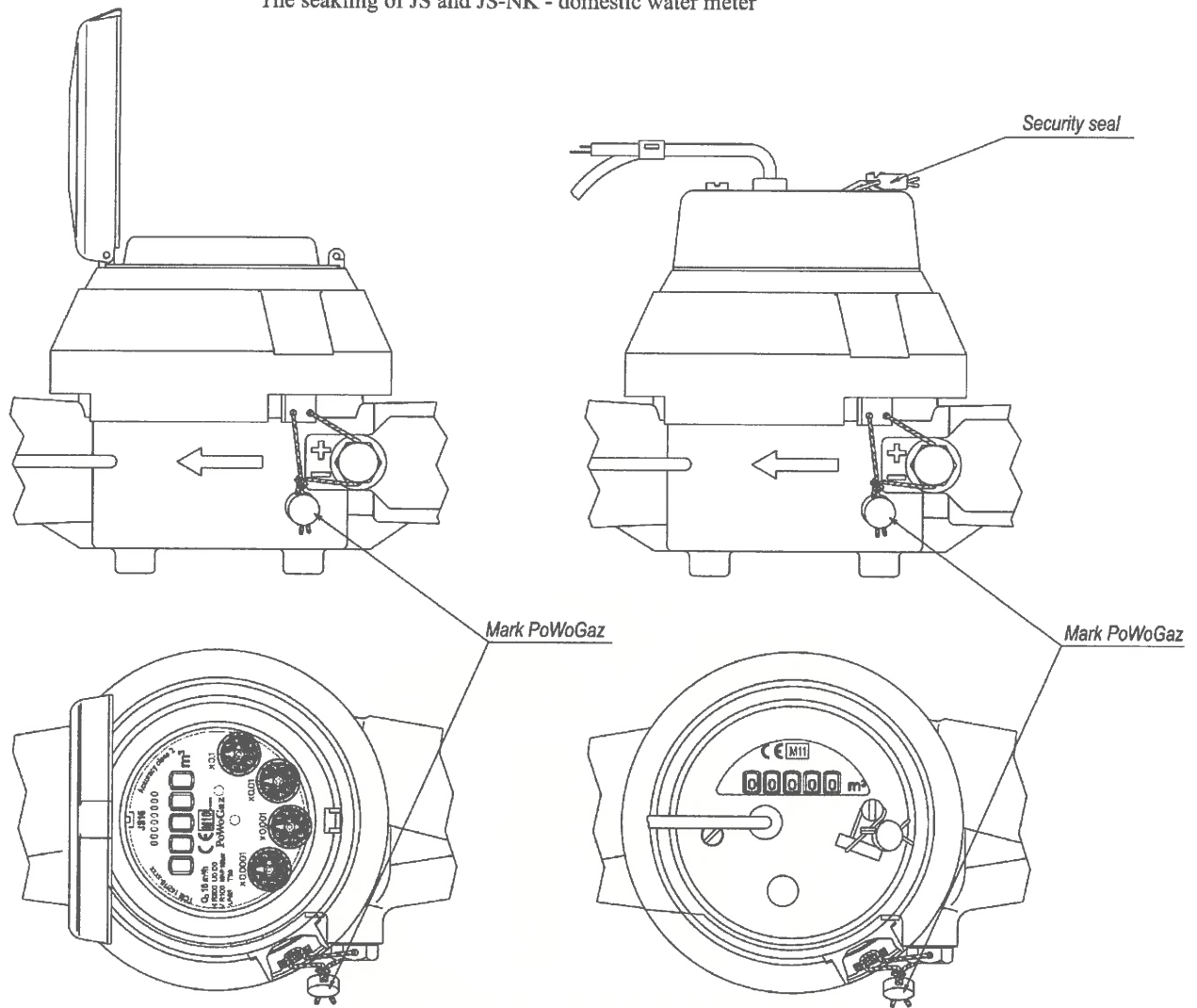
History of additions

Addition No.	Description
Addition 0	Issuing certificate.
Addition 1	Added new type of sealing.
Addition 2	Added new type of sealing plate (plastic).
Addition 3	Added new magnetic clutch for DN25, DN32 and DN40.
Addition 4	Added alternative sealing of JS type.
Addition 5	Added alternative glass cover of mechanical counter (excluded IP68 certification*), added alternative sealing. Fixed pulse constants for rapid testing.

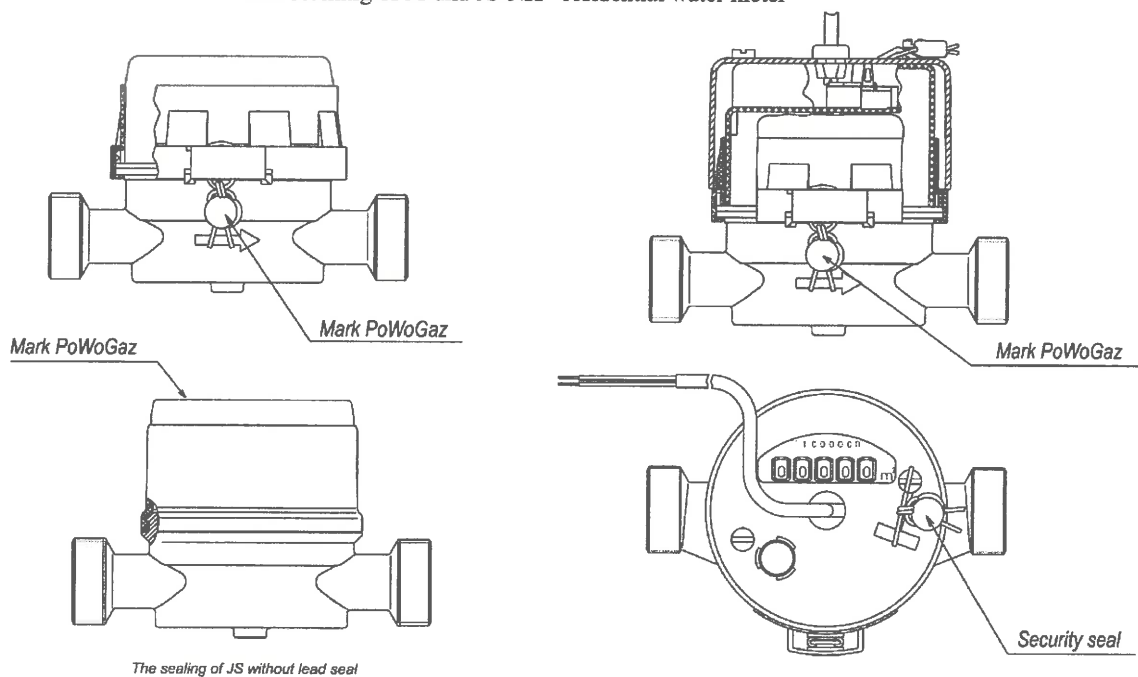
* Certification of ingress protection IP68 is not subject of this EU-type examination certificate.



Figure 1: The water meter type JS –sealing, view:
The seakling of JS and JS-NK - domestic water meter



The seakling of JS and JS-NK - residential water meter



The sealing of JS ver. IP68

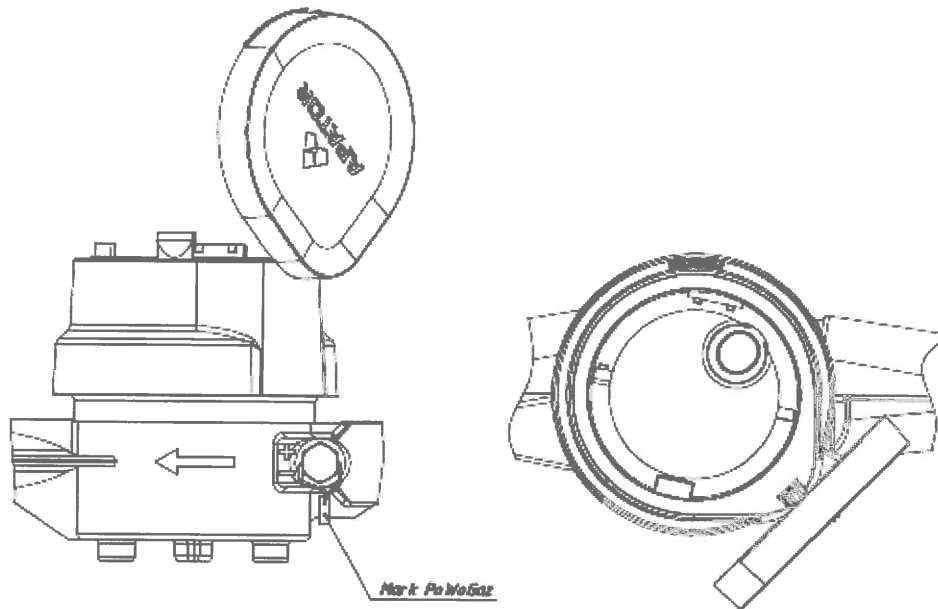


Figure 1a: The alternative sealing of JS type

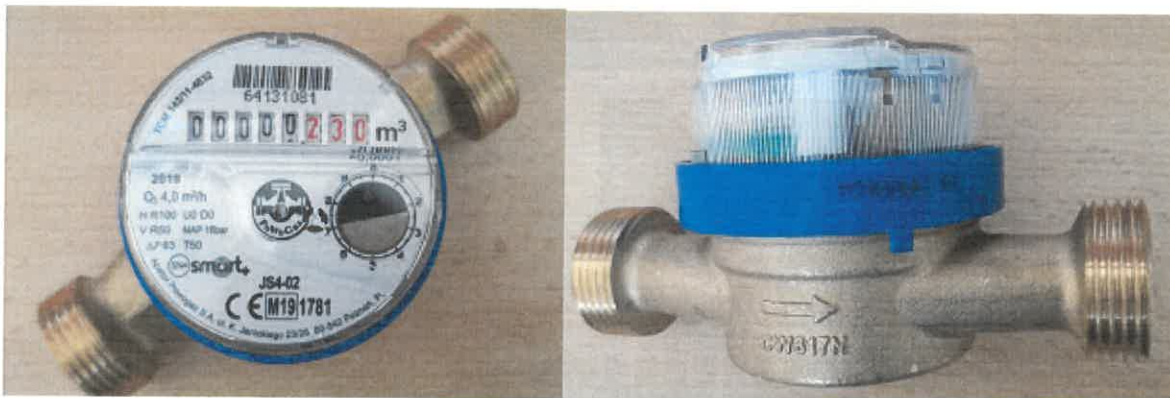


Figure 2: The alternative sealing of residential water meters:

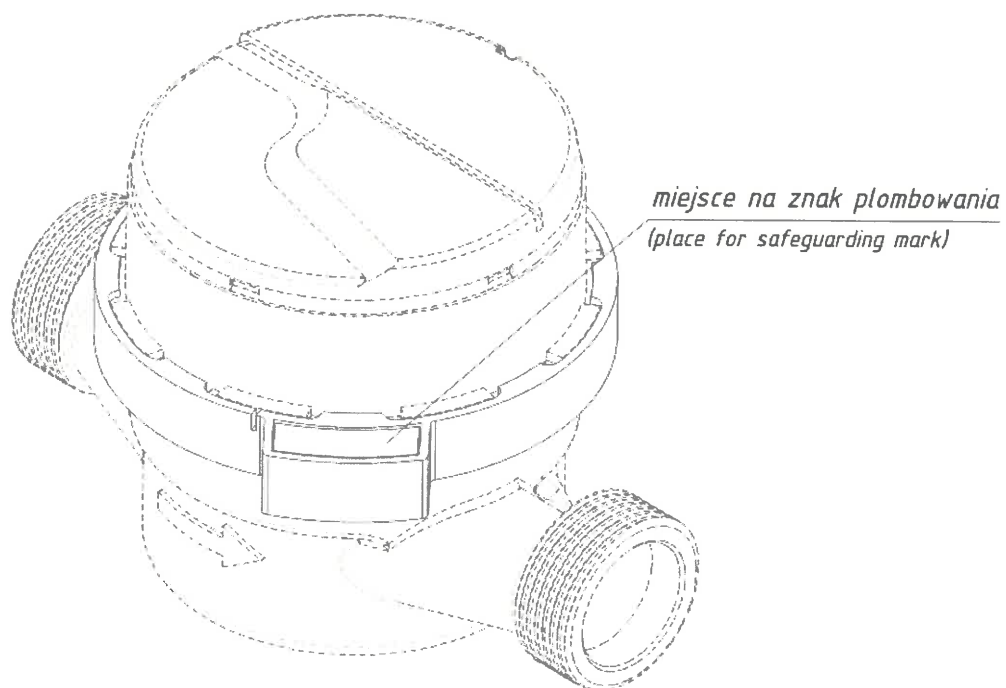


Figure 3: The examples of the dial plates of JS and JS-NK residential water meters:

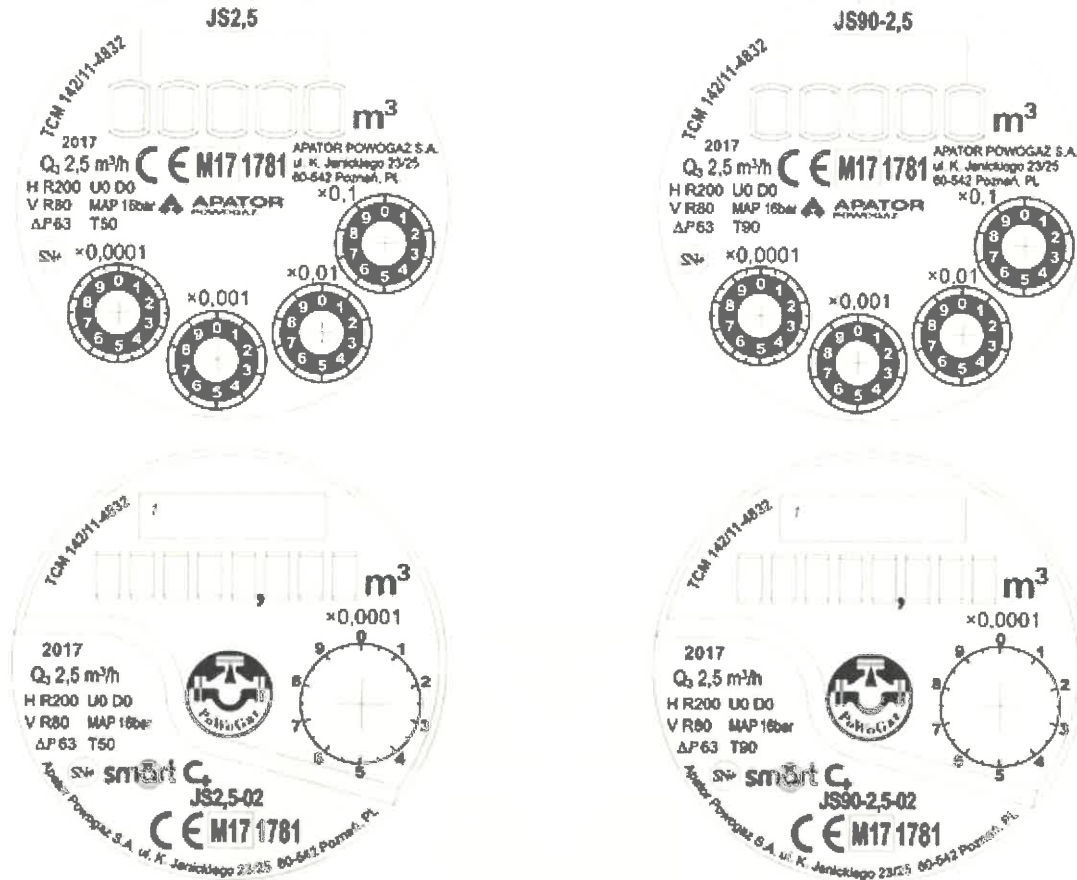


Figure 4: The examples of the dial plates of JS and JS-NK domestic water meters:

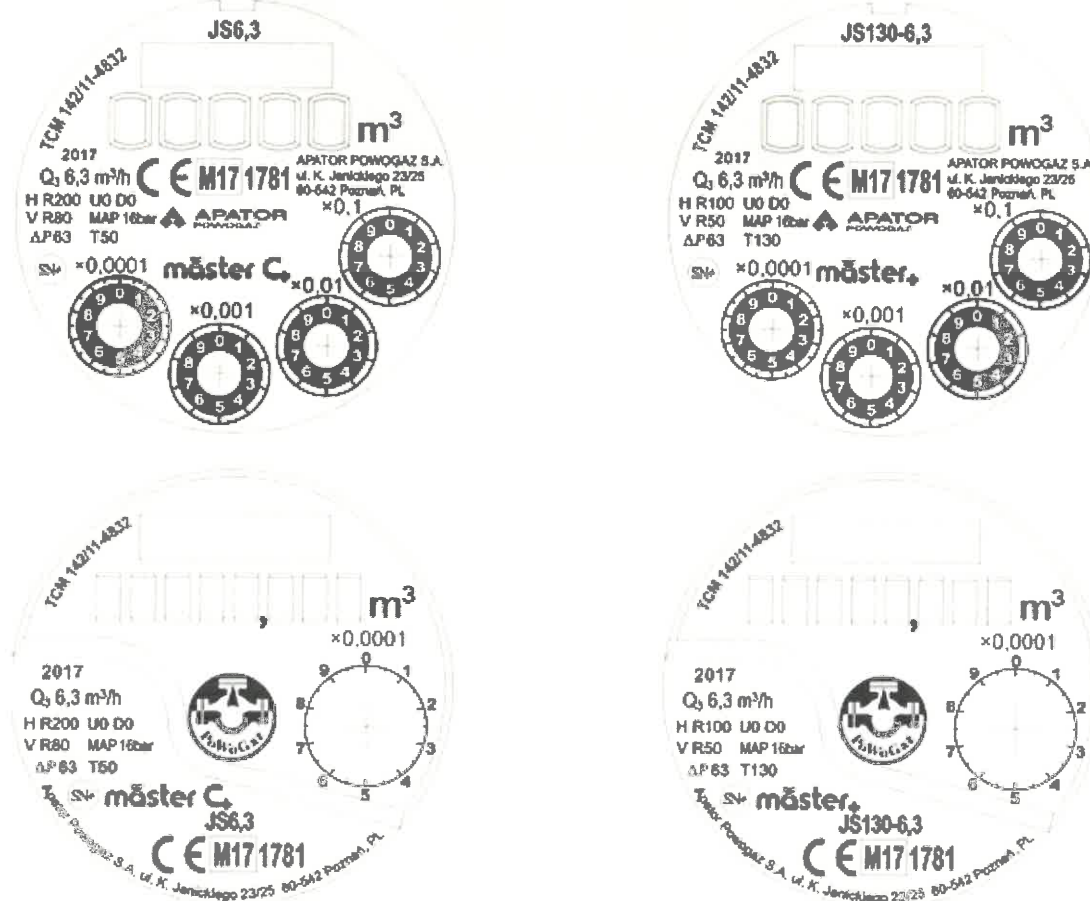


Figure 5: The examples of the dial plates of JS ver. IP68:

