Slovenský metrologický ústav
Karloveská 63, 842 55 Bratislava 4,
Slovenská republika

SNAS
Reg. No. 101/P-035

CERTIFIKÁT EÚ SKÚŠKY TYPU

EU – type examination certificate

Číslo dokumentu: **SK 20-MI001-SMU059** **Revízia 2**
Document number: Revízia 2 nahrádza certifikát zo dňa 23. marec 2021 *Revision 2*
Revision 2 replaces the certificate issued by March 23, 2021

V súlade s:
In accordance with:
prílohou č. 2, Modul B nariadenia vlády Slovenskej republiky č. 145/2016 Z. z. o sprístupňovaní meradiel na trhu v znení nariadenia vlády SR č. 328/2019 Z. z., ktorým sa preberá smernica Európskeho parlamentu a Rady 2014/32/EU o harmonizácii právnych predpisov členských štátov týkajúcich sa sprístupnenia meradiel na trhu
Annex II, Module B to Government Ordinance of the Slovak Republic No. 145/2016 Coll. Relating to the making available on the market of measuring instruments as amended by Government Ordinance of the Slovak Republic No. 328/2019 Coll., which implemented the 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

Žiadateľ/Výrobca:
Issued to (Manufacturer):
Apator PoWoGaz S.A.
ul. Jaryszki 1c, 62-023 Żerniki, Poland

Druh meradla:
Type of instrument:
Vodomer (MI-001)
Water meter (MI-001

Označenie typu:
Type designation:
JS, JS90

Základné požiadavky:
Essential requirements:
príloha č. 1 a príloha č. 3 Vodomery (MI-001) k nariadeniu vlády SR č. 145/2016 Z. z. v znení nariadenia vlády SR č. 328/2019 Z. z.
Annex No. I and Annex No. III Water meters (MI-001) to Government Ordinance of the Slovak Republic No. 145/2016 Coll. as amended by Government Ordinance of the Slovak Republic No. 328/2019 Coll.

Platnosť do:
Valid until:
27. februára 2030
February 27, 2030

Notifikovaná osoba:
Notified body:
Slovenský metrologický ústav **1781**
Slovak Institute of Metrology *1781*

Dátum vydania:
Date of issue:
29. apríl 2022
April 29th, 2022

Základné charakteristiky, popis meradla a podmienky schválenia sú uvedené v prílohe, ktorá je súčasťou tohto certifikátu. Certifikát vrátane prílohy má spolu 11 strán.
Essential characteristics, instrument description and approval conditions are set out in the appendix hereto, which forms the part of the certificate. The certificate including the appendix contains 11 pages.

SLOVAK INSTITUTE OF METROLOGY - Bratislava - NB 1781 SMU

Viliam Mazúr
zástupca notifikovanej osoby
representative of notified body

History of the Certificate

Issue of the Certificate	Date	Modification
SK 20-MI001-SMU059, Revision 0	February 27, 2020	Initial certificate
SK 20-MI001-SMU059, Revision 1	March 23, 2021	
SK 20-MI001-SMU059, Revision 2	April 29, 2022	Address change

Place of production:

1. **Apator PoWoGaz S.A.**
   ul. Klemensa Janickiego 23/25, 60 – 542 Poznań, Poland
2. **Apator PoWoGaz S.A.**
   ul. Jaryszki 1c, 62-023 Żerniki, Poland

1 Instructions and standards used within assessment

1.1 Generally binding instructions

Meter type was examined in terms of request for given type provisions Government Ordinance of the Slovak Republic No. 145/2016 Coll. relating to the making available on the market of measuring instruments as amended by Government Ordinance of the Slovak Republic No. 328/2019 Coll., which implemented the Directive 2014/32/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of measuring instruments as later amended (next Government Ordinance).

Requirements are set out in Annex No. 1 and Annex No. 3 Water Meters (MI-001) to Government Ordinance of SR No. 145/2016 Coll. as amended by Government Ordinance of the Slovak Republic No. 328/2019 Coll..

1.2 Technical specification used:

OIML R 49-1:2013	Water meters intended for the metering of cold potable water and hot water. Part 1: Metrological and technical requirements
OIML R 49-2:2013	Water meters intended for the metering of cold potable water and hot water. Part 2: Test methods
OIML R 49-3:2013	Water meters intended for the metering of cold potable water and hot water. Part 3: Test report format
EN ISO 4064-1: 2017	Water meters for cold potable water and hot water. Part 1: Metrological and technical requirements
EN ISO 4064-2: 2017	Water meters for cold potable water and hot water. Part 2: Test methods
EN ISO 4064-3: 2014	Water meters for cold potable water and hot water. Part 3: Test report format
EN ISO 4064-5: 2017	Water meters for cold potable water and hot water. Part 5: Installation requirements

2 Type marking

Water meter: **JS, JS90**

Meter is made in following subgroups:

Type of meter	Temperature class	Class	Nominal Diameter
JS	T30, T50	M1[1)], B[2)] or O[2)]	DN15, DN20
JS90	T30/90		

3 Description of measuring instrument

Meter name: Vane-wheel single-jet water meter

Type marking: JS, JS90

Description of operating principle instrument design:

Vane-wheel single-jet water meters JS, JS90 with permanent flow rates of 1,6 m^3/h, 2,5 m^3/h and 4 m^3/h have been designed to measure actual volume of clean cold potable water and hot water flowing in a completely filled up closed pipeline. The water meter for cold water is composed of a body, of the measuring mechanism and the counter. Water flowing through a meter sets the vane-wheel in a rotary motion that is transferred by a magnetic clutch to the counting mechanism.
Vane-wheel single-jet water meters JS, JS90 are composed of two basic assemblies:

1. measuring unit
2. counting mechanism

The body of the water meter is a brass casting (meters could be with composite body) equipped with threaded pipe connectors to enable mounting on a pipeline with the help of fittings and nuts.

The counting mechanism has been set so that it can be easily adjusted by rotation to facilitate readout. Water meters are sealed against fraud with a special plastic covers or mounting rings that will be visibly destroyed if trying to break in.

Water meters have been equipped with threaded pipe connectors to enable mounting on a pipeline with the help of fittings and nuts.

Water meters are designed for mounting on pipelines in:

1. Horizontal position, with the indicating device at the top and the side
2. Vertical position with flow from bottom to top and from top to bottom.

Accidental occurrence of a reverse flow does not affect metrological characteristics provided for a normal flow.

[1] according to Government Ordinance of the Slovak Republic, Annex No. 1

[2] according to EN ISO 4064-1:2017 and OIML R 49-2:2013

Picture No.1 Vane-wheel single-jet water meter JS

3.1 Description of subgroups

Marking:	**JS, JS90**
Sub-groups marking:	**JSX-YY, JS90-X-YY**
Size:	**DN15, DN20**

Due to the designing solutions adopted and application range assumed for water meters JS, JS90 with permanent flow rates of 1,6 m3/h, 2,5 m3/h and 4 m3/h there were introduced diverse varieties of meters marked with JSX-YY or JS90-X-YY where X is the value of permanent flow rate: 1,6 m^3/h, 2,5 m^3/h and 4 m^3/h and YY is a version of pulse transmission type:

- 05 - 8 roller type, full covered, ready for inductive and IR reading type communication modules,
- 07 - 8 roller type, light version ready for IR reading type communication modules.

3.2 Measuring insert

The main elements of the measuring unit are the following:

- a body with a strainer set in the inlet channel and a basic axle pressed into the body bottom without any additional dam plate in the body bottom or with an dam plate fixed to the body bottom,
- a vane-wheel,
- a sealing plate.

The vane-wheel is mounted on a bearing pin in the body and the bearing pin of the sealing plate. There is a magnet of a magnetic clutch on the vane-wheel. The sealing plate is fitted with an adjusting rib angled to water flow, which allows meter adjustment.

3.3 Indicating device

The capacity of the counter is 99 999 m^3 and resolution of the reading is 0,05 dm^3.

The counting mechanism includes a rear clutch, gears and a register. The register may consist

of four pointers and five drum roller or one pointer and eight-drum roller. A transparent casing facilitates readout of meter indications. A special pin in the counter has been provided to prevent undesirable casing deflection thereby indicating unauthorised manipulation. On the central pin of the counting mechanism on which the magnet of the magnetic clutch has been fixed there is a small unit disk that performs a function of a vane-wheel rotation indicator. The unit disk is also used in the process of electronic testing of meters.

The counter design does not allow for resetting of meter indications.

Counter pointers rotate clockwise. Indicated digital values increase as the drums with digits marked on them move upwards. An indication increase by one digit is complete when a digit in a lower decade changes from 9 to 0. In a decade of the lowest values digital indications change continuously. Black digits marked on digital drums indicate cubic meters or their multiples whereas red digits or pointers indicate submultiples of cubic meters.

The pointers move round scales marked with proper multipliers and placed on an indicating dial.

Connection between the measuring unit and counter gear is provided by both a guarding and a fixing ring or by a fixing ring alone. The guarding ring may be equipped with a cover. On endings of the fixing rings seal holes is provided.

3.4 Principle of operation

The water meter operates on the principle of a water speed sensor by impeller wheel. The operating speed of the wheel is proportionated to the speed of overflowing water. The operating speed is proportionated to water delivered quantity. The water meter is dedicated to measure the flow and the delivered cold water quantity.

3.5 Technical documentation

A number of drawings of technical documentation's are listed in the following list:

Drawing number				
9910-000000	9004-740700	0000-004677	9004-750702	9911-010000
9911-000000	9004-750700	0000-004678	9004-760000	9912-010000
9912-000000	9004-760700	0000-004679	9004-760000_2	9913-010000
9913-000000	9004-770700	0000-004680	9004-770000	9960-000000
9004-750000	9915-000000	9004-740000	9004-770000_2	9961-000000
9911-010000	9911-000000 material list	9004-740000_2	9004-770702	9961-000000 material list
9005-750700	0000-004515	9004-740702	9005-750000	9962-000000
0000-004513	0000-004516	9004-750000	9005-750702	9963-000000
0000-004514	9005-750000	9004-750000_2	9910-010000	9965-000000

All drawings, schemes and technical documentations used during the conformity assessment are saved in document No. NO-422/19, NO-503/21 and NO-546/22.

4 Basic technical characteristics

Type marking		**JS, JS90**	
Nominal diameter DN	mm	15	20
Indicating range	m^3	99 999	
Resolution of the reading	m^3	0,00005	
Water pressure class	-	MAP10, MAP16	
Working pressure range	bar	from 0,3 to 10 (or 16)	
Pressure loss class	-	Δp 63	
Temperature class	-	JS (T30, T50), JS90 (T30/90)	
Flow profile sensitivity classes	-	U0, D0	
Position	-	Horizontal with indicating device positioned on top, H↑ Horizontal with indicating device positioned on side, H→ Vertical from bottom to top and from top to bottom V	
Climatic and mechanical environments	-	closed spaces /from 5°C to 55°C/mech. class M1	
Accuracy class	-	2	

4.1 Additional technical characteristics

Weight	from 0,25 kg to 0,55 kg

5 Basic metrological characteristics

The maximum permissible error (accuracy class):

± 5 % ($Q_1 \leq Q < Q_2$)

± 2 % ($Q_2 \leq Q \leq Q_4$) for water temperature (from 0,1 to 30) °C

± 3 % ($Q_2 \leq Q \leq Q_4$) for water temperature greater than 30 °C

Model number			**JS1,6**	**JS2,5**		**JS4**
Diameter	DN	mm	15	15	20	20
Minimum flow rate	Q_1	m^3/h	According to table of flowrates			
Transitional flow rate	Q_2	m^3/h				
Permanent flow rate	Q_3	m^3/h	1,6	2,5		4
Overload flow rate	Q_4	m^3/h	2	3,125		5
Measuring range R H↑	Q_3/Q_1	-	50; 80; 100; 160	50; 80; 100; 160; 200		
Measuring range R H→; V↑; V↓	Q_3/Q_1	-	50; 63; 80			
Ratio	Q_2/Q_1	-	1,6			

Model number			**JS90-1,6**	**JS90-2,5**		**90-JS4**
Diameter	DN	mm	15	15	20	20
Minimum flow rate	Q_1	m^3/h	According to table of flowrates			
Transitional flow rate	Q_2	m^3/h				
Permanent flow rate	Q_3	m^3/h	1,6	2,5		4
Overload flow rate	Q_4	m^3/h	2	3,125		5
Measuring range R H↑	Q_3/Q_1	-	50; 80; 100; 160			
Measuring range R H→; V↑; V↓	Q_3/Q_1	-	50; 63; 80			
Ratio	Q_2/Q_1	-	1,6			

Table of flowrates								
Model number			**JS1,6; JS90-1,6**					
Minimum flow rate	Q_1	m^3/h	0,032	0,0253	0,02	0,016	0,01	-
Transitional flow rate	Q_2	m^3/h	0,0512	0,0406	0,032	0,0256	0,016	-
Permanent flow rate	Q_3	m^3/h	1,6	1,6	1,6	1,6	1,6	-
Overload flow rate	Q_4	m^3/h	2	2	2	2	2	-
Measuring range R	Q_3/Q_1	-	50	63	80	100	160	-
Ratio	Q_2/Q_1	-	1,6					
Model number			**JS2,5; JS90-2,5**					
Minimum flow rate	Q_1	m^3/h	0,05	0,0397	0,0313	0,025	0,0156	0,0125
Transitional flow rate	Q_2	m^3/h	0,08	0,0635	0,05	0,04	0,025	0,02
Permanent flow rate	Q_3	m^3/h	2,5	2,5	2,5	2,5	2,5	2,5
Overload flow rate	Q_4	m^3/h	3,125	3,125	3,125	3,125	3,125	3,125
Measuring range R	Q_3/Q_1	-	50	63	80	100	160	200
Ratio	Q_2/Q_1	-	1,6					
Model number			**JS4; JS90-4**					
Minimum flow rate	Q_1	m^3/h	0,08	0,0635	0,05	0,04	0,025	0,02
Transitional flow rate	Q_2	m^3/h	0,128	0,1016	0,08	0,064	0,04	0,032
Permanent flow rate	Q_3	m^3/h	4	4	4	4	4	4
Overload flow rate	Q_4	m^3/h	5	5	5	5	5	5
Measuring range R	Q_3/Q_1	-	50	63	80	100	160	200
Ratio	Q_2/Q_1	-	1,6					

6 Results of conformity assessment

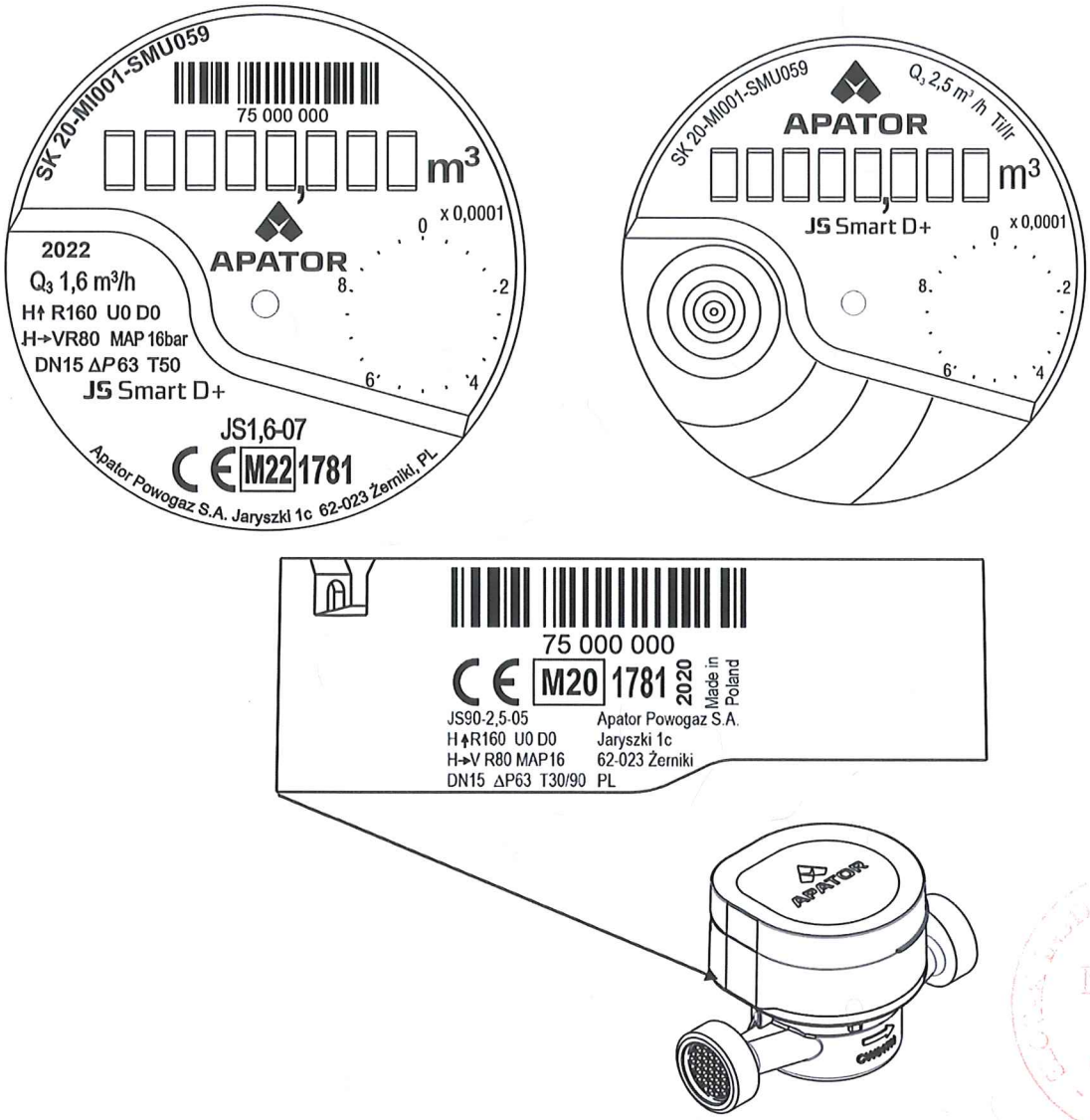
The results of tests, assessments and evaluations given in the evaluation report No. NO-546/22/B/ER dated April 28, 2022 give sufficient evidence that the technical design of the measuring instrument – Vane-wheel single-jet water meter type JS, JS90 is in compliance with the technical requirements of the Slovak Republic Governmental Ordinance No. 145/2016 Coll. relating to the making available on the market of measuring instruments as amended by Government Ordinance of the Slovak Republic No. 328/2019 Coll., Annex No. 1 and Annex No. 3 Water Meters and with the requirements determined in EN ISO 4064-1:2017, respectively OIML R49-1:2013, which are relevant for this type of meter.

7 Data placed on the measuring instrument

On the shroud, the dial of the indicating device or on an identification plate of every water meter or in the product documentation minimum the following data should be marked:

a) Manufacturer's name, registered trade name or registered mark
b) Postal address of manufacturer at which they can be contacted
c) Measuring instrument type
d) Measuring unit (m^3)
e) Numerical value of Q_3 in m^3/h (Q_3 x,x) and ratio Q_3/Q_1 (Rxxx)
f) Year of production
g) Production serial number
h) Number of EU-type examination certificate and conformity mark
i) The highest admissible pressure if it differs from 1 MPa (MAP xx)
j) Flow direction
k) Letter H↑ (Horizontal with indicating device position on the top) H→(Horizontal with indicating device position at the side), V (Vertical from bottom to top and from top to bottom)
l) Class of pressure loss if it differs from Δp63 (Δp XX)
m) Flow profile sensitivity classes (Ux Dx)
n) The temperature class where it differs from T30
o) Environmental classification

The environmental classification may be given on a separate datasheet, unambiguously related to the meter by a unique identification, and not on the meter itself.



Picture No.2 Examples of the dial marking

8 Conditions of conformity assessment of measuring instruments produced with type approval

Vane-wheel single-jet water meters put onto the market in line with the procedure of conformity assessment according to the Annex No.2 (Module D or F) of the Governmental ordinance should be in compliance with the technical description by the item 3 of this report and at test should be in compliance with the requirements determined in OIML R 49-1:2013 and EN ISO 4064-1:2017. Metrological test is performed by testing equipment which should be in compliance with the requirements determined in EN ISO 4064-2:2017 and water at temperature 20 °C ± 5 °C (for temperature class T30, T50, T30/T90) and 50 °C ± 5 °C (for temperature class T30/90) at the following flowrates:

a) Minimum flowrate $Q_1 \leq Q \leq 1{,}1Q_1$
b) Transitional flowrate $Q_2 \leq Q \leq 1{,}1Q_2$
c) Permanent flowrate $0{,}9Q_3 \leq Q \leq Q_3$

A metrological test may only be performed by a producer, or a notified body respectively in line with the conformity assessment procedure according to the Annex No.2 (Module D or F) of the Governmental ordinance respectively.

9 Measures asked for providing measuring instrument integrity

9.1 Identification

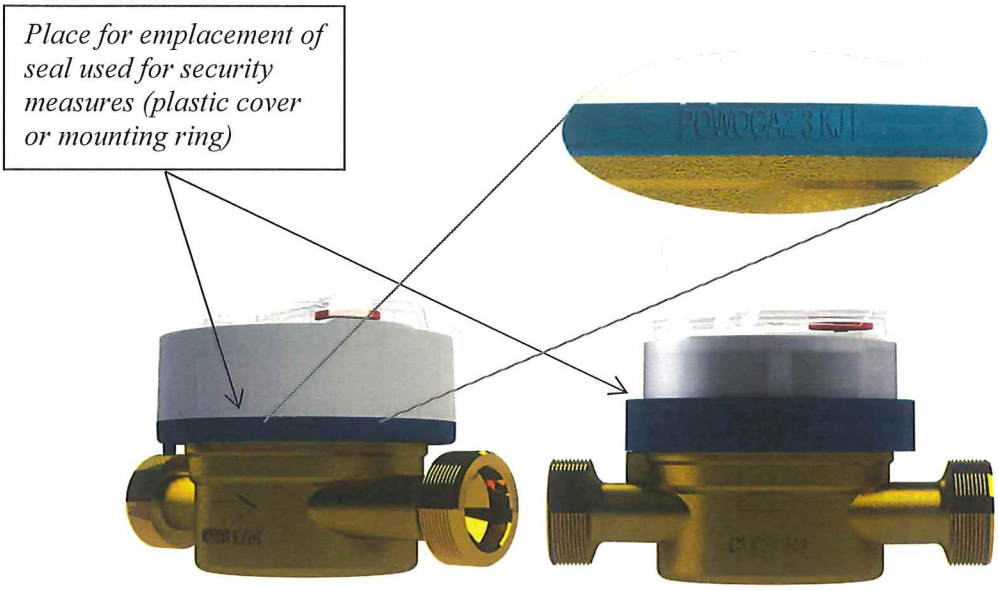
Vane-wheel single-jet water meter should be in compliance with the description provided on item 3 of this Annex and should be in compliance with the marking specified the item 7 of this Annex. The number given to the EU-type examination certificate is put at each piece of the measuring instrument.

Emplacement of the conformity mark is followed by § 15 of the Governmental ordinance.

9.2 Sealing of the measuring instrument

Vane-wheel single-jet water meter shall be before the conformity assessment according to the Annex No.2 (Module D or F) of the Governmental ordinance sealed by following sealing mark:

Connection of counter cover and water meter body shall be sealed by seal used for security measures (plastic covers or mounting rings) (Picture No. 3)

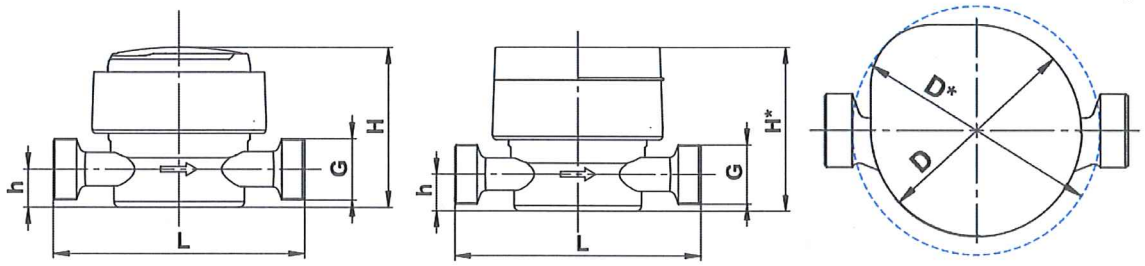


Picture No.3 Emplacement of the seal used for security measures

10 Requirements for installation, especially conditions of using

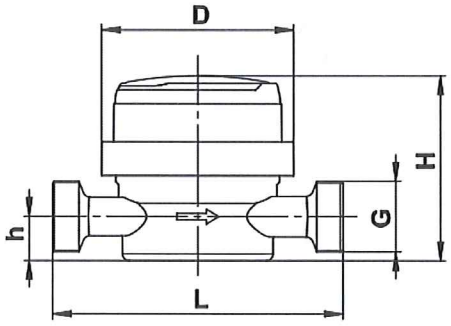
10.1 Installation data

Water meter version JS-05, JS90-05	DN	L	G	D	D*	h	H	H*
JS1,6; JS90-1,6	15	105-115	G 3/4; G 7/8	77	90	16,5	69,5	73,5
JS2,5; JS90-2,5	15	105-115	G 3/4; G 7/8	77	90	16,5	69,5	73,5
JS2,5 G1; JS90-2,5 G1	20	115-130	G 1	77	90	17	70	74
JS4; JS90-4	20	115-130	G 1	77	90	17	70	74



Picture No.4 Installation dimensions (Standard version JS-05, JS90-05)

Water meter version JS-07, JS90-07	DN	L	G	D	h	H
JS1,6; JS90-1,6	15	105-115	G 3/4; G 7/8	73	16,5	69,5
JS2,5; JS90-2,5	15	105-115	G 3/4; G 7/8	73	16,5	69,5
JS2,5 G1; JS90-2,5 G1	20	115-130	G 1	73	17	70
JS4; JS90-4	20	115-130	G 1	73	17	70



Picture No.5 Installation dimensions (Light version JS-07, JS90-07)

10.2 Installation requirements

A vane-wheel single-jet water meter is introduced into the operation by a worker having a certificate for this activity performance. The vane-wheel single-jet meter is possible to be put into use after a construction in line with this report and in line with the producer instruction by "Instruction of installation and conditions of use of water meters". A measuring instrument should be installed in direction of water flow arrow marked on the meter body.

The indicating device can be oriented in the position indicating in the dial

- H↑ Mean flow horizontal and the indicating device position on the top
- H→ Mean flow horizontal and the indicating device position on the side
- V Mean flow vertical from bottom to top or from top to bottom

10.3 Conditions of use

The measuring instrument should be used within the recommendations of a producer or manufacturer: "Instruction of installation and conditions of use of water meters".

Assessment done by: Ing. Viliam Mazúr

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