



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



Reg. No. 101/P-035

CERTIFIKÁT EÚ SKÚŠKY TYPU

EU – type examination certificate

Číslo dokumentu:
Document number:

SK 20-MI001-SMU066

Revízia 0
Revision 0

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):

Arad Dalia Ltd.
Kibbutz Dalia 19239, Israel

Druh meradla:
Type of instrument:

Vodomer (MI-001)
Water meter (MI-001)

Označenie typu:
Type designation:

MH

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:

1. december 2030
December 1, 2030

Notifikovaná osoba:
Notified body:

Slovenský metrologický ústav 1781
Slovak Institute of Metrology 1781

Dátum vydania:
Date of issue:

1. december 2020
December 1, 2020

Základné charakteristiky, popis meradla a podmienky schválenia sú uvedené v prílohe, ktorá je súčasťou tohto certifikátu. Certifikát vrátane prílohy má spolu 9 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 9 pages.



Viliam Mazúr
zástupca notifikovanej osoby
representative of notified body

Poznámka: Tento certifikát EÚ skúšky typu môže byť rozmnožovaný len celý a nezmenený. Bez podpisu a odtlačku pečiatky je neplatný.
Note: This EU-type examination certificate shall not be reproduced except in full. Certificates without signature and stamp are not valid.

History of the Certificate

Issue of the Certificate	Date	Modification
SK 20-MI001-SMU066, Revision 0	December 1, 2020	Initial certificate

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 Harmonized standards and normative documents used

OIML R 49-1:2006	Water meters intended for the metering of cold potable water and hot water. Part 1: Metrological and technical requirements
OIML R 49-2:2004	Water meters intended for the metering of cold potable water and hot water. Part 2: Test methods
EN 14154-1:2005+A2:2011	Water meters - Part 1: General requirements
EN 14154-2:2005+A2:2011	Water meters - Part 2: Installation and conditions of use
EN 14154-3:2005+A2:2011	Water meters - Part 3: Test methods and equipment

1.3 Other instructions 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

Multi-Jet water meter - MH

Meter is made in following subgroups:

Type of meter	Temperature class	Class	Nominal Diameter
MH	T70	M1 ¹⁾	DN 20, DN25

3 Description of measuring instrument

Meter name: Multi-Jet water meter

Type marking: MH

Description of operating principle instrument design:

Multi-Jet magnetic vane-wheel water meter with sealed dry magnetic register and permanent flowrates from 4 m³/h to 6,3 m³/h have been designed to measure actual volume of clean hot potable water flowing in a completely filled up closed pipeline. The water meter 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 directly to the counting mechanism. The meter is mainly composed of the body group and measuring unit group.

The body group consists of the body, the cap, the lid, adjusting device and the inlet strainer. The glass cover can protect the register against the external damages, and the lid provides the further protection to the register. The adjusting device built in the body is used to calibrate the meter.

The body of the water meter is a brass casting and version with low lead concentration with inlet and outlet screw parts. The body can be equipped an option for installation of a non-return valve.

Water meters have been fitted for mounting on pipelines in horizontal positions. Accidental occurrence of a reverse flow does not affect metrological characteristics provided for a normal flow.

All the meters can be pre-equipped for option of having a signal for remote reading purposes - automated computerized system (wireless metering system) for controlling of metering of delivered water quantity which was not part of this certification.

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



Picture No.1 MH Multi-Jet water meter



3.1 Description of subgroups

Marking: MH 20, MH 25

The meter can be equipped by following devices:

- Dialog 3G - Meters emitting a RF signal for remote reading purposes which was not part of this certification
- 3P – Arad mechanical register (3 points)
- Mechanical register with option output type EV - single volume output

3.2 Measuring insert

The measuring unit group consists of the sealed register, the measuring chamber, the vane wheel assembly and the pressure plate. It is a key group for the accuracy performance of the meter. The magnetic gear on the top of wane wheel shaft transmits the movement of the turbine to the clockwork and register.

3.3 Indicating device

The capacity of the counter is 99 999 m³ for size DN 20, DN25 and minimum resolution of the reading is 0,05 dm³. The register lens (glass, IP 68) is made of borosilicate glass on request to give the register protection against the impact damage and contamination.

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

Counter pointers rotate clockwise. An indication increase by one digit is complete when a digit in a lower decade change from 9 to 0. In a decade of the lowest values digital indications change continuously.

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

3.4 Principle of operation

The potable water enters the meter from the inlet of the meter and distributed by the lower orifices that equally spaced on the circumference of the measuring chamber, the Multi-Jet distributed strike the vane wheel at the tip of the vane blades to make it rotation, the measured water by the vane wheel flows out from the top orifices on the measuring chamber. The rotation of the vane wheel (proportional to the velocity of water flow) is transmitted directly to the sealed register, the register totalizes the rotation of the vane wheel and indicates the water volume passing through the meter. The water meter is dedicated to measure the flow and the delivered water quantity.

3.5 Technical documentation

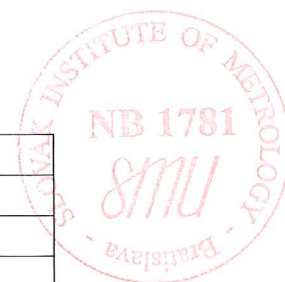
A number of drawings of technical documentations are listed in the following table:

Drawing No.	Description
34160319	Body M 1 260x30 low lead blue NRV assy-Approved-00
54370330/01	Measuring chamber M N3.5-N6 mag.prot. India-Approved-01
21081219	Regulator cap 1 ass'y-Approved-01
23149609-01	Flow diversion ring H=10-Approved-01
25441509-01	Strainer M 1"-Approved-01
24570809	Plastic seal 1-Approved-03
34145019	Body SLB 190x21 arrows B1G low lead blue assy-Approved-00
54350369	Measuring chamber M-SLB Q3=4-Approved-00
21080609	Regulator cap 0.5"-0.75"-Approved-17
25441309	Strainer 21 C.H.F-Approved-03
24570609	Plastic seal M 1 ² -3 ⁴ -Approved-04
23142609	Pressure ring kmm-Approved-08
23142309	Sliding ring-Approved-06
23143409	Pressure ring h=6.5-Approved-02
97400181	RING 3G COVER 19 - rev00
11754055	mid_mh20-slb^mh20-slb-3g q3=4 r80 mid-approved-00
11773255	mid_mh25 ^mh25-3g r50 mid-approved-00

All drawings, schemes and technical documentations used during the conformity assessment are saved in document No. NO-462/20.

4 Basic technical characteristics

Type marking		MH
Nominal diameter DN	mm	20, 25
Indicating range	m ³	10 ⁵
Resolution of the reading	m ³	0,00005
Maximum admissible pressure	-	MAP10
Working pressure range	bar	from 0,3 to 10
Pressure loss	-	Δp 63
Temperature class	-	T70
Flow profile sensitivity classes	-	U0, D0
Position	-	H
Climatic and mechanical environments	-	closed spaces /from -10°C to 55°C/mech. class M1



4.1 Additional technical characteristics

Weight	from 1,5kg to 2,3kg
IP Code	IP 68

5 Basic metrological characteristics

The maximum permissible error (accurate class):

$$\pm 5 \% (Q_1 \leq Q < Q_2)$$

$$\pm 2 \% (Q_2 \leq Q \leq Q_4) \text{ for water temperature (from 0,1 to 30) } ^\circ\text{C}$$

$$\pm 3 \% (Q_2 \leq Q \leq Q_4) \text{ for water temperature greater than 30 } ^\circ\text{C}$$

Diameter	DN	mm	20	25	25
Minimum flowrate	Q_1	m ³ /h	0,05	0,08	0,126
Transitional flowrate	Q_2	m ³ /h	0,08	0,128	0,2016
Permanent flowrate	Q_3	m ³ /h	4	4	6,3
Overload flowrate	Q_4	m ³ /h	5	5	7,875
Measuring range R	Q_3/Q_1	-	80	50	50
Ratio	Q_2/Q_1	-	1,6	1,6	1,6

6 Results of conformity assessment

The results of tests, assessments and evaluations given in the evaluation report No. NO-462/20/B/ER dated November 30, 2020 give sufficient evidence, that the technical design of the measuring instrument – Multi-Jet water meter type MH 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 (MI-001) and the EN 14154-1:2005+A2:2011, EN 14154-2:2005+A2:2011, EN 14154-3:2005+A2:2011 and OIML R49-1:2006, OIML R49-2:2004 (harmonised standards and normative documents) and other instructions OIML R49-2:2013, EN ISO 4064-1:2017, EN ISO 4064-2:2017 and EN ISO 4064-3:2014 standards, 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:

- Manufacturer's name, registered trade name or registered mark
- Postal address of manufacturer at which they can be contacted
- Type of the Multi-Jet meter
- Measuring unit (m³)
- Numerical value of Q_3 in m³/h (Q_3 x,x) and ratio Q_3/Q_1 (Rxxx)
- Year of production
- Production serial number
- 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) The letter V or H, if the meter can only be operated in the vertical or horizontal position
- l) Class of pressure loss if it differs from Δp_{63} (Δp XX)
- m) Flow profile sensitivity classes ($U_x D_x$)
- n) The temperature class where it differs from T30
- o) Environmental classification

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

Multi-Jet magnetic water meter 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 49-1:2006 and EN ISO 4064-1:2017. Metrological test is performed by testing equipment which should be in compliance with the requirements determined in STN EN 14154-3:2005+A2 and EN ISO 4064-2:2017 and water at temperature $20\text{ °C} \pm 5\text{ °C}$ in following point of flowrate:

- 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

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

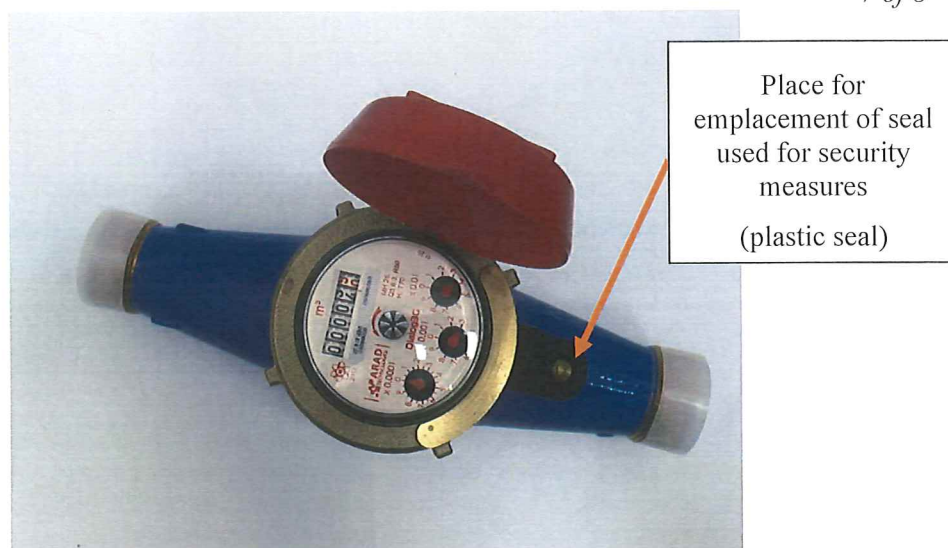
Emplacement of the conformity mark is followed by § 15 of the Governmental ordinance.

9.2 Sealing of the measuring instrument

The Multi-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 marks:

Connection of counter shroud and water meter body shall be sealed by seal used for security measures (plastic seal) (Picture No. 2)



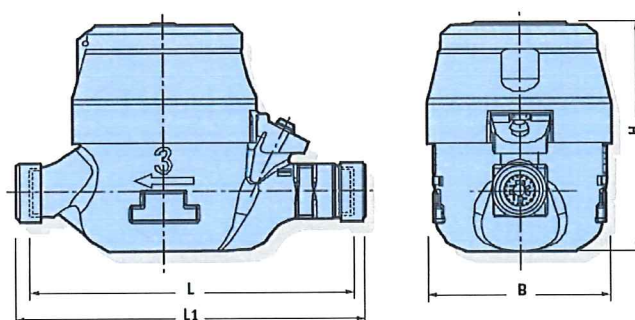


Picture No.2 Emplacement of the seal for security measures

10 Requirements for installation, especially conditions of usage

10.1 Installation data

Nominal size	[mm]	DN20	DN25
	[inch]	3/4	1
Construction length [mm] - L		190	260
Length with couplings [mm] - L_1		285	375
Width [mm] - B		85	100
High [mm] - H		111	117
Weight [kg]		1,5	2,3
Weight with couplings [kg]		2,3	3,3



Picture No.3 Installation dimensions

10.2 Installation requirements

A Multi-Jet water meter is introduced into the operation by a worker having a certificate for this activity performance. The Multi-Jet water meter is possible to be put into use after a construction in line with this report and in line with a 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.





10.3 Conditions of use

Within using the measuring instrument, it is needed to be managed by recommendations of a producer by “Instruction of installation and conditions of use of water meters”.

Assessment done by: Ing. Viliam Mazúr

