



CERTIFIKÁT EÚ SKÚŠKY TYPU

EU – type examination certificate

Číslo dokumentu:

Document number:

SK 18-MI001-SMU054

Revízia 2 nahrádza certifikát zo dňa 28. mája 2018

Revision 2 replaces the certificate issued by May 28, 2018

Revízia 2

Revision 2

V súlade s:

In accordance with:

nariadením vlády Slovenskej republiky č. 145/2016 Z. z. o sprístupňovaní meradiel na trhu, ktorým sa preberá smernica Európskeho parlamentu a Rady 2014/32/EU o harmonizácii právnych predpisov členských štátov týkajúcich sa sprístupnenia meradiel na trhu

Government Ordinance of the Slovak Republic No. 145/2016 Coll. relating to the making available on the market of measuring instruments, 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):

X

Druh meradla:

Type of instrument:

Vodomer (MI-001)

Water meter (MI-001)

Označenie typu:

Type designation:

GSD8, GSD8-45, GSD5, GSD8-RFM, GSFO or domaqua m+, GSD8-I

Základné požiadavky:

Essential requirements:

príloha č. 1 a príloha č. 3 Vodomery (MI-001) k nariadeniu vlády SR č. 145/2016 Z. z.

Annex No. I and Annex No. III Water meters (MI-001) to Government Ordinance of SR No. 145/2016 Coll.

Platnosť do:

Valid until:

28. marec 2028

March 28, 2028

Notifikovaná osoba:

Notified body:

Slovenský metrologický ústav 1781

Slovak Institute of Metrology 1781

Dátum vydania:

Date of issue:

26. február 2019

February 26, 2019

Základné charakteristiky, popis meradla a podmienky schválenia sú uvedené v prílohe, ktorá je súčasťou tohto certifikátu. Certifikát vrátane prílohy má spolu 15 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 15 pages.

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 18-MI001-SMU054, Revision 0	March 29, 2018	Initial certificate
SK 18-MI001-SMU054, Revision 1	May 28, 2018	Correct Q_1 flowrates
SK 18-MI001-SMU054, Revision 2	February 26, 2019	New model with inductive index and optional metallic plate for protect gear mechanism

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, 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..

1.2 Harmonised 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:

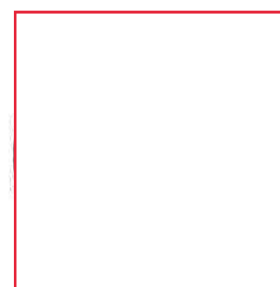
OIML R 49-2:2013 - Water meters intended for the metering of cold potable water and hot water. Part 2: Test methods

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: GSD8, GSD8-45, GSD5, GSD8-RFM, GSFO or domagua m+, GSD8-I

Meter is made in following subgroups:

Type of meter	Temperature class	Class	Nominal Diameter
GSD8, GSD8-45, GSD5, GSD8-RFM, GSFO or domagua m+, GSD8-I	T30, T50, T70, T30/70, T30/90, T90	M1 ¹⁾ , B ²⁾	DN 15, DN20

3 Description of measuring instrument

Meter name: vane wheel, single jet, dry dial, mechanic

Type marking: GSD8, GSD8-45, GSD5, GSD8-RFM, GSFO or domagua m+, GSD8-I

Description of operating principle instrument design:

Vane-wheel single-jet dry dial type water meter GSD8, GSD8-45, GSD5, GSD8-RFM, GSFO, domagua m+, GSD8-I have been designed to measure actual volume of cold and hot water flowing in a completely filled up closed pipeline. Water flowing through a meter sets the vane wheel in a rotary motion that is transferred by a magnetic clutch to the counting mechanism. Single jet dry dial type water meters GSD8, GSD8-45, GSD5, GSD8-RFM, GSFO or domagua m+, GSD8-I are composed of three basic assemblies:

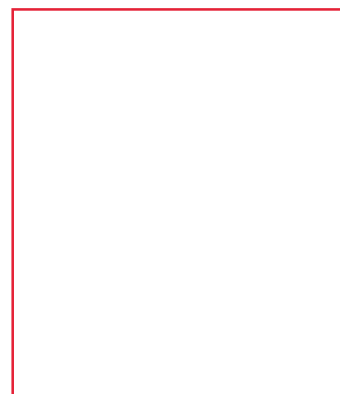
1. Measuring section
2. Indicating device
3. Dry chamber

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

Water meter can be equipped with a reed contact impulse emitter or by radio or M-BUS module which was not part of this certification.

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

² according to STN EN 14154-3:2005+A2 and OIML R 49-2:2004





Picture No. 1 - Picture of basic product

3.1 Description of subgroups

Marking: **GSD8, GSD8-45, GSD5, GSD8-RFM, GSFO or domaqua m+, GSD8-I**

Sizes: DN 15, DN 20

The Water meter can be equipped by following devices which was not part of this certification:

- Impulse emitter device
- Radio or M-BUS device

3.2 Measuring section

The measuring section consists in a wet section made by brass body and sealing plate, where the water flows and rotates the vane wheel. The rotation is transmitted through magnetic coupling (realized with two magnets) to the counting mechanism.

Optionally between sealing plate and locking ring can be inserted a steel disc for anti-ice improved resistance.

Optionally between sealing plate and locking ring can be inserted a metallic disc for extra strong protection of magnetic field.

The adjustment of the intrinsic error curve can be done by rotating the sealing plate or by external regulating screw.

3.3 Indicating device

All models have common measuring section, but different dials:

- Model GSD8, GSD8-RFM, GSFO or domaqua m+, GSD8-I has the reading rolls in front view position and can be equipped with reed contact impulse emitter and radio or wired M-BUS emitter module which are not part of this certification.
- Model GSD8-45 has the reading rolls in 45° position

- Model GSD5 has the reading rolls in front view position and can be equipped with reed contact impulse emitter

Models GSD8, GSD8-RFM GSFO or domaqua m+, GSD8-45 and GSD8-I registers are formed by five black drums displaying volume in cubic meters and three red drums and one red rotary pointer displaying submultiples of cubic meters.

Model GSD5 registers are formed by five black drums displaying volume in cubic meters and four red rotary pointers displaying submultiples of cubic meters.

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

The capacity of the counter is 99 999 m³ and resolution of the reading is 0,05 dm³

All models can be equipped with a steel sheet put around the gear mechanism for fraud protection.

3.4 Dry chamber

The indicating device is closed in a dry chamber made by sealing plate and plastic cover which is clamped to the body.



Picture No. 2 - Model GSD8 with predisposition for M-BUS modules with by material dry chamber





Picture No. 3 – Model GSD8 with options of capsule and cap

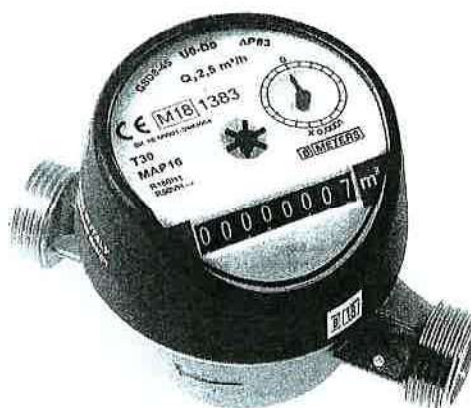


Picture No. 4 – Model GSD8 with predisposition for M-BUS modules

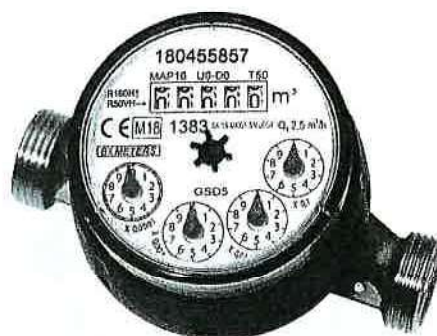




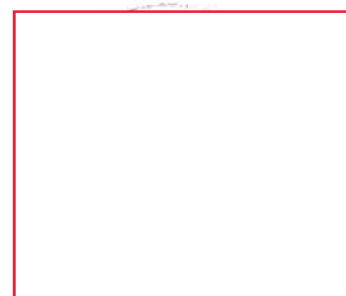
Picture No. 5 – Model GSD8 with coloured capsule

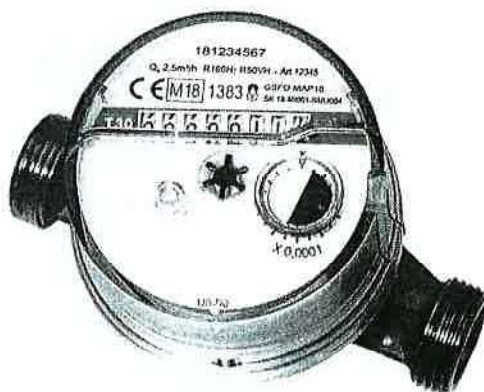


Picture No. 6 – Model GSD8-45°

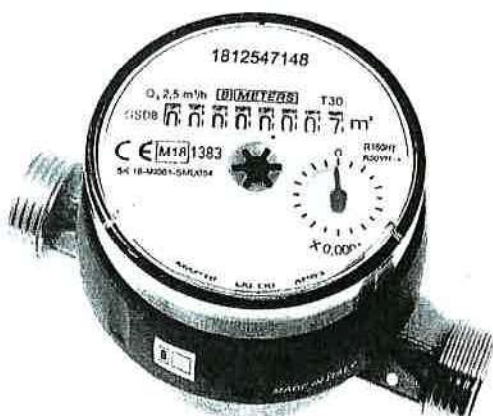


Picture No. 7 – Model GSD5





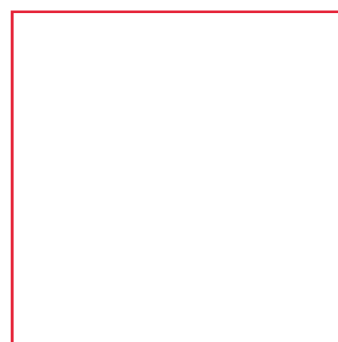
Picture No. 8 – Model GSFO – domagua m+



Picture No. 9 – GSD8 with closing ring



Picture No. 10 – GSD8 for pulse sensor





Picture No. 11 – GSD8 or GSD8-I with inductive index

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 delivered cold and hot water quantity.

3.5 Technical documentation

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

ASSEMBLY		
Drawing No.		
A-8M-1-OM-1	A-G8-1-OM-1	A-G8-5-OM-1
A-8M-1-OR-1	A-G8-1-OR-1	A-G8-6-OM-1
A-8M-5-OM-1	A-G8-2-CA-1	A-G8-7-OM-1
A-G4-1-OM-1	A-G8-2-OM-1	A-G8-8-OM-1
A-G4-1-OR-1	A-G8-2-OR-1	A-8M-5-OM-1
A-G4-2-OM-1	A-G8-3-CA-1	A-G4-3-OM-1
A-G5-1-OR-1	A-G8-3-OM-1	A-G5-3-OM-1
A-G5-2-OR-1	A-G8-3-OR-1	A-G8-9-OM-1
A-G8-1-CA-1	A-G8-4-OM-1	A-G8-10-OM-1
A-G8-6-OR-1	A-G8-10-OM-1	A-G8-11-OM-1

PARTS		
Drawing No.		
1-1-01-21-9	2-1-02-01-9	2-1-37-02-9
1-1-01-22-9	2-1-02-03-9	2-2-02-01-9
1-1-01-25-9	2-1-04-14-7	2-1-28-20-9
1-1-01-26-9	2-1-21-20-9	3-1-03-09-9
1-1-01-27-9	2-1-21-26-9	4-1-18-10-9



PARTS		
Drawing No.		
1-1-01-28-9	2-1-22-10-9	4-1-18-14-9
1-1-01-32-9	2-1-22-24-9	4-1-18-22-9
1-1-01-33-9	2-1-22-42-9	6-1-27-02-9
1-1-01-34-9	2-1-22-43-9	6-1-27-03-9
1-1-01-47-9	2-1-22-44-9	7-1-38-09-9
1-1-01-48-9	2-1-26-07-7	7-1-38-11-9
1-1-36-03-9	2-1-26-11-7	1-1-01-21-0
1-2-01-07-9	2-1-28-02-9	1-1-01-25-0
1-2-01-11-9	2-1-28-03-9	1-1-01-27-0
1-2-01-12-9	2-1-28-04-7	1-1-01-32-0
1-2-01-13-9	2-1-28-08-9	1-2-01-07-0
1-2-01-14-0	2-1-28-12-9	1-2-01-13-0
1-2-01-14-9	2-1-28-28-9	1-2-01-14-0
1-2-01-17-9	2-1-28-29-9	1-2-01-18-0
1-2-01-18-9	2-1-30-06-7	2-1-28-32-7
2-1-28-33-7	2-1-15-22-9	2-1-28-34-9
7-1-38-13-9		

All drawings, schemes and technical documentation used during the conformity assessment are saved in document No. 375/18 and NO-405/19.

4 Basic technical characteristics

Type marking		GSD8, GSD8-45, GSD5, GSD8-RFM, GSFO or domaqua m+, GSD8-I	
Nominal diameter DN	mm	DN15	DN20
Indicating range	m ³	99,999	
Resolution of the reading	dm ³	0.05	
Maximum admissible pressure	-	MAP 16	
Working pressure range	bar	from 0,3 to 16	
Pressure loss		Δp_{63}	
Temperature class	-	T30, T50, T70, T90, T30/70, T30/90	
Accuracy Class		2	
Flow profile sensitivity classes	-	U0, D0	
Height (L)	-	From 80 to 130	From 115 to 130
Connection Type (D)		From G3/4" B to G1" B	From G7/8" B to G1" B



Type marking		GSD8, GSD8-45, GSD5, GSD8-RFM, GSFO or domaqua m+, GSD8-I
Mounting ³⁾ :	-	Flow axis in the horizontal plane Flow axis in the vertical plane
Orientation ³⁾ :	-	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
Climatic and mechanical environments	-	closed spaces /from 5°C to 55°C/mech. class M1

4.1 Additional technical characteristics

Weight from 0,42 to 0,56 kg

5 Basic metrological characteristics

The maximum permissible error (accuracy class):

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

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

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

Nominal Diameter DN	mm	15				20	
Overload flowrate, Q_4	m ³ /h	$\leq 2,0$		$\leq 3,12$		$\leq 5,0$	
Permanent flowrate, Q_3	m ³ /h	$\leq 1,6^{4)}$		$\leq 2,5^{4)}$		$\leq 4,0^{4)}$	
Transitional flowrate, Q_2	m ³ /h	$\geq 0,016$	$\geq 0,0512$	$\geq 0,025$	$\geq 0,080$	$\geq 0,040$	$\geq 0,128$
Minimum flowrate, Q_1	m ³ /h	$\geq 0,01$	$\geq 0,032$	$\geq 0,0156$	$\geq 0,050$	$\geq 0,025$	$\geq 0,080$
Measuring range R, Q_3/Q_1		$\leq 160^{5)}$	$\leq 50^{5)}$	$\leq 160^{5)}$	$\leq 50^{5)}$	$\leq 160^{5)}$	$\leq 50^{5)}$
Orientation Limitation		H↑	V,H→	H↑	V,H→	H↑	V,H→

³⁾ Depends of marking on the dial

⁴⁾ The value of Q_3 shall be chosen from the R5 line of ISO 3:1973

⁵⁾ The ratio Q_3/Q_1 shall be chosen from the R10 line from ISO 3:1973 and this value shall be higher than 40

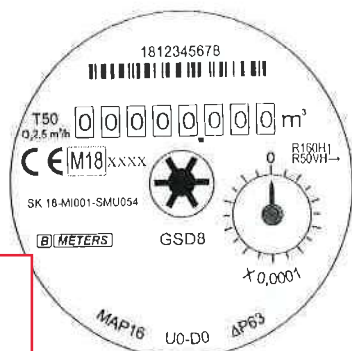
6 Results of conformity assessment

The results of tests, assessments and evaluations given in the evaluation report No. NO-405/19/B/ER dated February 25, 2019 give sufficient evidence that the technical design of the measuring instrument water meter GSD8, GSD8-45, GSD5, GSD8-RFM, GSF0 or domaqua m+, GSD8-I 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, 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 ISO 4064-1:2017, ISO 4064-2:2017 and ISO 4064-3:2015 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 name, registered trade name or registered mark
- Postal address of manufacturer
- Measuring device type
- Measuring unit (m^3)
- Numerical value of Q_3 in m^3/h ($Q_3 \times x, x$) and ratio Q_3/Q_1 (Rxxx)
- Year of production (two last digits of the year) and production serial number (for example 180295000 = product year 2018)
- Number of EU-type examination certificate and conformity mark
- The highest admissible pressure if it differs from 1 Mpa (MAP xx)
- Flow direction, by means of an arrow
- 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)
- Class of pressure loss if it differs from Δp_{63} ($\Delta p \times X$)
- Flow profile sensitivity classes ($U \times D \times$)
- The temperature class where it differs from T30



Picture No. 12 - Example of dial and manufacturing address printing

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

Single jet dry dial type GSD8, GSD8-45, GSD5, GSD8-RFM, GSFO or domaqua m+, GSD8-I 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 ISO4064-1:2017. Metrological test is performed by testing equipment which should be in compliance with the requirements determined in STN EN 14154-3:2005+A2 and ISO4064-2:2017 and water at temperature $20\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$ (for temperature class T30, T50, T70, T90) and $50\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$ (for temperature class T70, T90, T30/70, T30/90) in following points 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 D or F Annexes of the Governmental ordinance respectively.

9 Measures asked for providing measuring instrument integrity

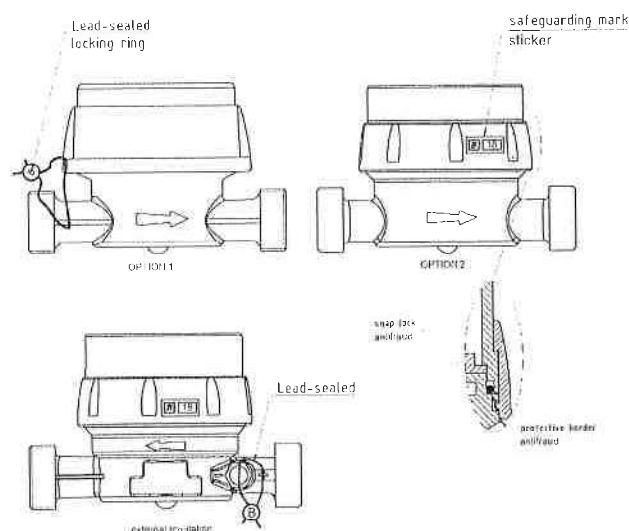
9.1 Identification

Single jet dry dial type GSD8, GSD8-45, GSD5, GSD8-RFM, GSFO or domaqua m+, GSD8-I 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

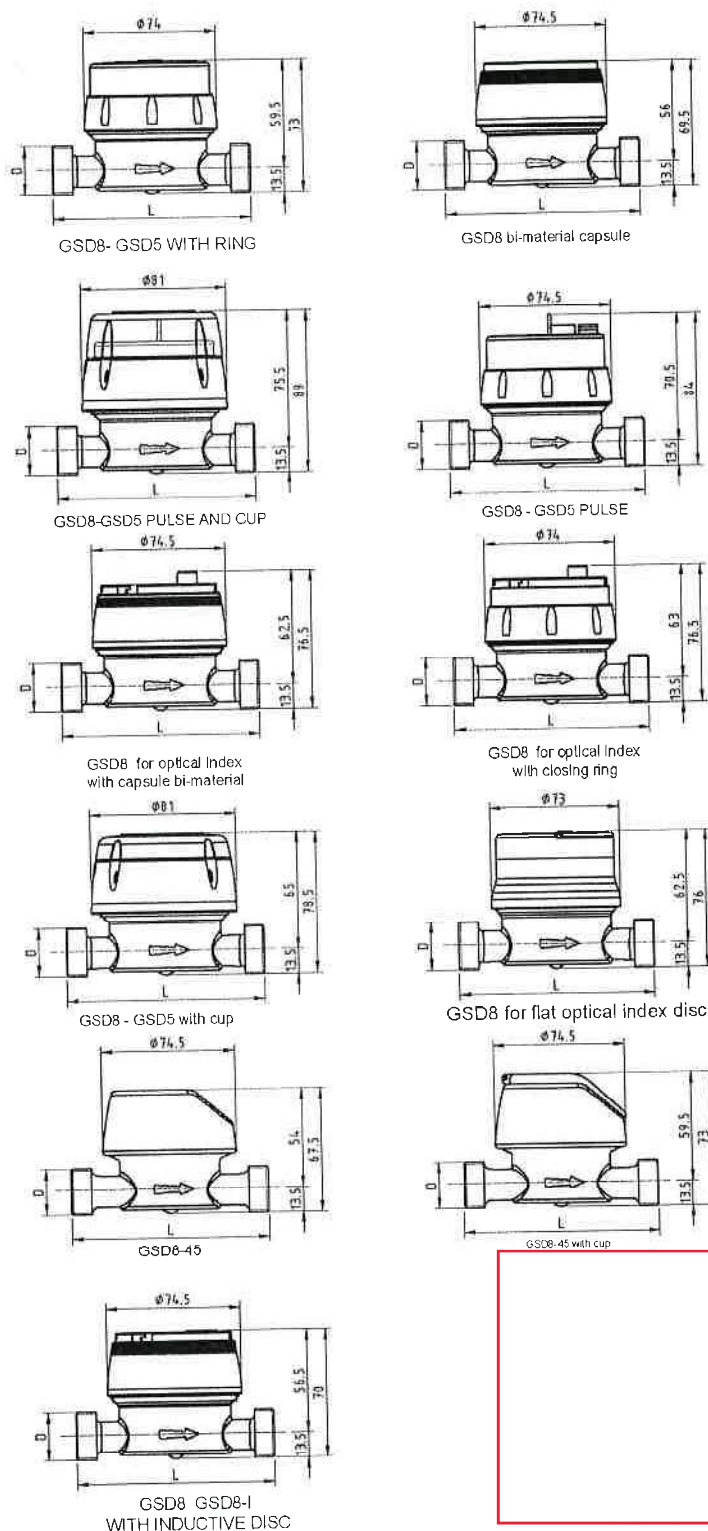
Single jet dry dial type GSD8, GSD8-45, GSD5, GSD8-RFM, GSFO or domaqua m+, GSD8-I water meter shall be before the conformity assessment according to the Annex No.2 (Module D or F) of the Governmental ordinance sealed by following sealing marks:



Picture No. 13 - Emplacement of seal used for security measures

10 Requirements for installation, especially conditions of using

10.1 Installation data



Picture No. 14 - Installation dimensions



10.2 Installation requirements

Single jet dry dial type GSD8, GSD8-45, GSD5, GSD8-RFM, GSFO or domagua m+, GSD8-I water meter is introduced into the operation by a worker having a certificate for this activity performance. The 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.

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

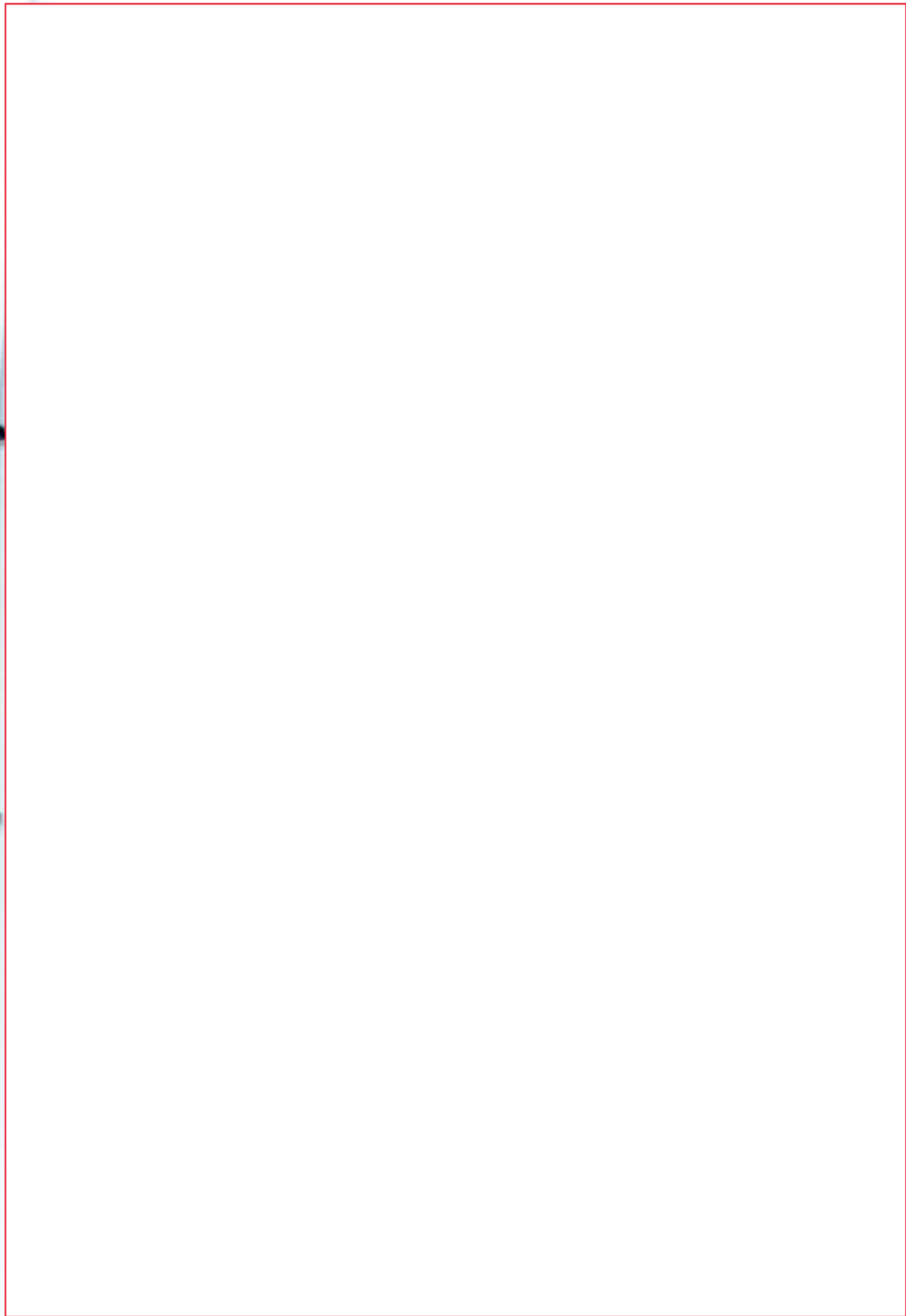
- H↑ Mean flow horizontal and the indicating device position on the top
- H→ Mean flow horizontal and the indicating device position on the side

10.3 Conditions of use

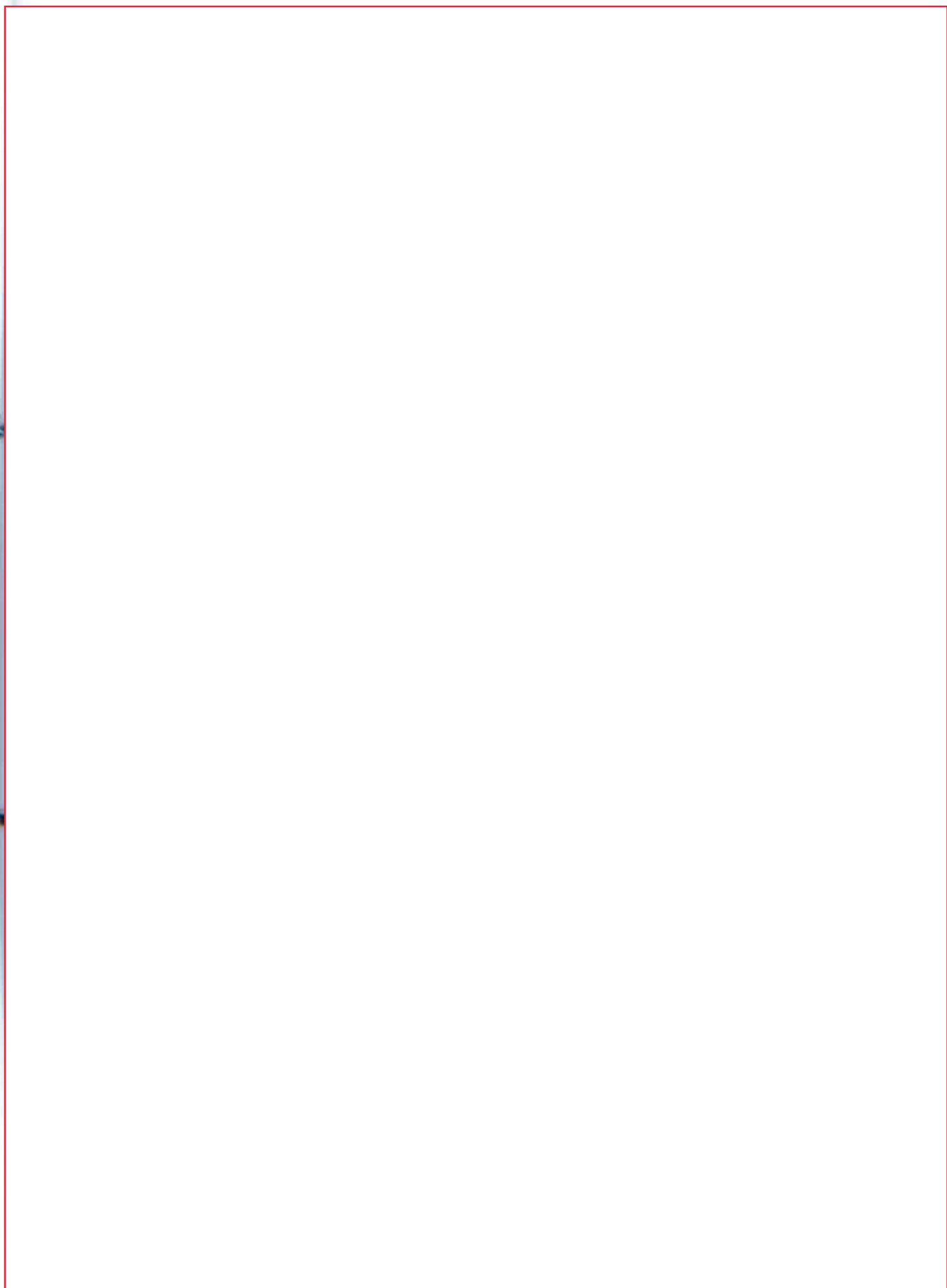
The measuring instrument should be used within the recommendations of a producer or manufacturer: "Instruction of installation and conditions of use of water meters".

Assessment done by: 















1.

