

ES CERTIFIKÁT TYPU

EC – Type-examination certificate

Číslo dokumentu:

SK 09-MI001-SMU008**Revision 3**

Document number:

Revízia 3 nahrádza certifikát zo dňa 20. júna 2014

Revision 3 replaces the certificate issued by June 20, 2014

V súlade s:

In accordance with:

nariadením vlády Slovenskej republiky č. 294/2005 Z. z. o meradlách v znení nariadenia vlády SR č. 445/2010 Z. z., ktorým sa preberá smernica Európskeho parlamentu a rady 2004/22/ES v znení smernice 2009/137/ES

Government Ordinance of the Slovak Republic No. 294/2005 Coll., on measuring instruments as amended by Government Ordinance No. 445/2010 Coll., which implemented the Directive 2004/22/EC on measuring instruments as amended by Directive 2009/137/EC of the European Parliament and Council

Žiadateľ:

Applicant:

Elster Water Metering Ltd, Sundon Park, Luton, 130 Camford Way, LU3 3AN Bedfordshire, UNITED KINGDOM

Výrobca:

Manufacturer:

Elster Water Metering s.r.o., 8. Apríla 259, 916 01 Stará Turá, Slovakia

Druh meradla:

Type of instrument:

Vodomer (MI-001)

Water meter (MI-001)

Označenie typu:

Type designation:

H 4000

Základné požiadavky:

Essential requirements:

príloha č. 1 a príloha MI-001 k nariadeniu vlády SR č. 294/2005 Z. z. v znení nariadenia vlády SR č. 445/2010 Z. z.

Annex No. 1 and Annex MI-001 to Government Ordinance of SR No. 294/2005 Coll. as amended by Government Ordinance No. 445/2010 Coll.

Platnosť do:

Valid until:

9. septembra 2019

September 9, 2019

Notifikovaná osoba:

Notified body:

Slovenský metrologický ústav 1781

Slovak Institute of Metrology 1781

Dátum vydania:

Date of issue:

20. augusta 2015

August 20, 2015

Základné charakteristiky, popis meradla a podmienky schválenia sú uvedené v prílohe, ktorá je súčasťou tohto certifikátu. Certifikát vrátane prílohy má spolu 12 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 12 pages.

Emanuel Godál
zástupca notifikovanej osoby
representative of notified body

Poznámka:

ES certifikát typu je bez pečiatky a podpisu neplatný. Tento ES certifikát typu môže byť rozmnožovaný len celý a nezmenený. Rozmnožovať jeho časti je možné len s písomným súhlasom Slovenského metrologického ústavu.

Note:

EC-type examination certificate without signature and seal is not valid. This EC-type examination certificate may not be reproduced other than in full. Extracts may be taken only with the permission of the Slovak Institute of Metrology.

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. 294/2005 Coll., on measuring instruments as amended by Government Ordinance No. 445/2010 Coll. which implemented the Directive 2004/22/EC on measuring instruments as amended by Directive 2009/137/EC of the European Parliament and Council (next Government Ordinance).

Requirements are listed in No. 1 and Annex MI-001 to Government Ordinance of SR No. 294/2005 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 49-2:2006 - Water meters intended for the metering of cold potable water and hot water. Part 2: Test methods

OIML R 49-3:2006 - Water meters intended for the metering of cold potable water and hot water. Part 3: Test report format

2 Type marking

Woltman water meter with exchangeable metrological unit - H 4000

Meter is made in following subgroups:

Type of meter	Temperature class	Classes	Nominal Diameter
H 4000	T50	M1 ¹⁾ B ²⁾ E1 ¹⁾	DN 40, DN 50, DN 65, DN 80, DN 100, DN 125, DN 150, DN 200, DN 250, DN 300

3 Description of measuring instrument

Meter name: Woltman parallel water meter with exchangeable metrological unit

Type marking: H 4000

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



Description of operating principle instrument design:

This industrial horizontal meter with exchangeable metrological unit for cold and hot water is intended for metering of volume passed through it. The Woltman meter (Picture No. 1) operates on the speed principle whereby the speed of a rotor (number of its revolutions) is proportional to the volume of water passing through the meter. The speed of the rotor is being transferred to a mechanical counter indicating the volume passed through the meter. This water meter is dedicated to measure the volume of cold and hot water passed through it.

Water meter is:

- Woltman horizontal, super dry water meter,
- with internal flow calibration via an integral adjustable blade,
- with removable measuring insert attached to a cover with flanged connection to the body
- measures in all position but not head down



Picture No.1 Woltman parallel water meter H 4000



3.1 Description of subgroups

Marking: H 4000
 DN: DN40, DN50, DN 65, DN 80, DN 100, DN 125, DN 150, DN 200, DN 250, DN 300

Counter variants applicable on all sizes:

1. Multipulse counter polymer and as alternative high integrity version (copper can and mineral glass)
2. Counter with preparation for retrofit inductive pulse pick up as high integrity version
3. Small, compact polymer and high integrity counter with preparation for retrofit inductive pulse pick up
4. Absolute Encoder counter as high integrity version and preparation for retrofit inductive pulse pick up

Pulse givers applicable on all sizes (Reed switch, opto-electrical, inductive retrofit pulse givers with various pulse rates):

1. Opto-electrical and Reed switch pulse givers (for counter variant 1.)
2. Inductive retrofit pulse giver ("PR6 & 7 Falcon") for counter variants 2. and 3.
3. Inductive retrofit pulse giver ("PR6 & 7 Falcon") with MBus interface (for counter variant 4.)

3.2 Description of the exchangeable metrological unit

The exchangeable metrological unit of the Woltman meter (for DN40-200) consists of the measuring mechanism, the mechanism's flanged top cover and a indicating device. The measuring unit is attached to the meter body by screws. Two O-rings ensure that the insert and the meter body are watertight. One O-ring is positioned around the outside of the mechanism, between the insert and the meter body. The second O-ring secures the water-tightness of the mechanism and the top cover.

3.3 Measuring insert

The measuring insert consists of the measuring mechanism, mechanism's flanged top cover and counter. The measuring insert is attached to the body by screws. The water-tightness of the measuring insert is secured in the body by 2 O-rings, while one O-ring secures the outside tightness (measuring insert and screws), the 2-nd O-ring secures the water-tightness of the insert situated in the body (inlet and outlet). The position of the regulation blade is adjustable via different positions in relation to the water flow.

3.4 Indicating device

The indicating device is a combined number rollers and pointers counter. It consists of:

- For DN40-125 – 6 rollers for m^3 and 3 scale indicators with pointers for the decimals of m^3 . Counter capacity is $999\,999\,m^3$ and resolution of the reading is $0,0005\,m^3$,
- for DN150-300 – 6 rollers for m^3 and 3 scale indicators with pointers for the decimals of m^3 . Counter capacity is $999\,999 \times 10\,m^3$ and resolution of the reading is $0,005\,m^3$,
- and for DN150-300 – 7 rollers for m^3 and 2 scale indicators with pointers for the decimals of m^3 . Counter capacity is $9\,999\,999\,m^3$ and resolution of the reading is $0,005\,m^3$.

The counter can be equipped with a number of retrofittable pulse givers (see 3.1). The mechanical counter is usually mounted into a metal/mineral glass casing for IP68 protection. The pulse givers can also be applied here.

3.5 Principle of operation

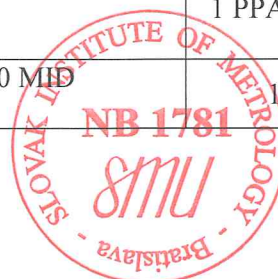
The core part of the water meter is the screw gear (worm wheel) laying vertically on the transfer axle and being driven by the worm gear at the end the horizontal rotor axis. The worm gear is rotating with rotor speed. The resulting rotation of the screw gear is transferred via the magnetic coupling into the mechanical counter.



3.6 Technical documentation

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

H4000 DN40 – 125 with inductive counter including material list	ZL-0239.4, pages 1-5
Multipulse High Integrity Counter (inductive) including material list	ZL-0222.4, pages 1-3
Multipulse High Integrity Counter 2 including material list	ZL-0210.4, pages 1-2
Multipulse Counter including material list	ZL-0243.4, pages 1-2
H4000P Milestone Counter (inductive) including material list	ZL-0218.4, pages 1-2
Encoder – High Integrity Counter including material list	ZL-0242.3, pages 1-3
Encoder / Inductive Counter including material list	ZL-0246.3, pages 1-3
Marking of meter data, certificate number and conformity mark	ZL-0255.4, pages 1-1
GENERAL ARRANGEMENT DN150-300 H4000 MID APPROVAL	1 HPG3253
H4000 METERS DN150-300 MATERIAL LIST – MID APPROVAL	1 HPG3254
STANDARD Cu CAN REGISTER OPTION INDUCTIVE – H4000 MID APPROVAL	1 HPG3256
STANDARD INDUCTIVE Cu CAN MATERIALS LIST – MID APPROVAL	1 HPG3257
STANDARD Cu CAN REGISTER OPTION MULTIPULSE – H4000 MID APPROVAL	1 HPG3258
STANDARD MULTIPULSE Cu CAN MATERIAL LIST – MID APPROVAL	1 HPG3259
STANDARD POLYMER REGISTER OPTION MULTIPULSE – H4000 MID APPROVAL	1 HPG3260
STANDARD MULTIPULSE POLYMER MATERIAL LIST – MID APPROVAL	1 HPG3261
SMALL POLYMER REGISTER OPTION INDUCTIVE– H4000 MID APPROVAL	1 HPG3262
SMALL INDUCTIVE POLYMER MATERIAL LIST – MID APPROVAL	1 HPG3263
SMALL Cu REGISTER OPTION INDUCTIVE– H4000 MID APPROVAL	1 HPG3264
SMALL INDUCTIVE Cu CAN MATERIAL LIST – MID APPROVAL	1 HPG3265
STANDARD Cu CAN REGISTER OPTION MULTIPULSE/ENCODER – H4000 MID APPROVAL	1 HPG3267
STANDARD MULTIPULSE/ENCODER Cu CAN MATERILA LIST – MID APPROVAL	1 HPG3268
STANDARD Cu CAN REGISTER OPTION INDUCTIVE/ENCODER – H4000 MID APPROVAL	1 HPG3270
STANDARD INDUCTIVE/ENCODER Cu CAN MATERIAL LIST – MID APPROVAL	1 HPG3271
COPPER CAN REGISTER RESONANT TARGET VARIANT	1 PPA3006, pages 1-2
EXCHANGEABLE METROLOGICAL UNIT H4000 MID APPROVAL DN150-300	1 PPG3005



EXCHANGEABLE METROLOGICAL UNIT H4000 MID APPROVAL DN80-125	1 PPD3005
EXCHANGEABLE METROLOGICAL UNIT H4000 MID APPROVAL DN40-65	1 PPA3005

All drawings, schemes and technical documentations used during the conformity assessment are saved in document No. NO-043/08, No. NO-252/14 and NO-288/15.

4 Basic technical characteristics

Type marking		H 4000					
Nominal diameter DN	mm	40	50	65	80	100	125
Indicating range	m ³	10 ⁶					
Resolution of the reading	m ³	0,0005					
Maximum admissible pressure	-	MAP 16					
Working pressure range	bar	from 0,3 to 16					
Pressure loss	-	Δp 40, Δp 25, Δp 10	Δp 25, Δp 10				
Temperature class	-	T50					
Flow profile sensitivity classes	-	U3 / D0					
Position	-	all positions but not head down					
Climatic and mechanical environments	-	closed spaces /from 5°C to 55°C/mech. class M1					
Electromagnetic environments	-	E1					
Impulses	imp/l	≥ 1					

Type marking		H 4000			
Nominal diameter DN	mm	150	200	250	300
Indicating range	m ³	10 ⁷			
Resolution of the reading	m ³	0,005			
Maximum admissible pressure	-	MAP 16			
Working pressure range	bar	from 0,3 to 16			
Pressure loss	-	Δp 16, Δp 10	Δp 16	Δp 40	
Temperature class	-	T50			
Flow profile sensitivity classes	-	U0 / D0	U3/D0	U5/D0	
Position	-	all positions but not head down			
Climatic and mechanical environments	-	closed spaces /from 5°C to 55°C/mech. class M1			
Electromagnetic environments	-	E1			
Impulses	imp/l	≥ 10			



4.1 Additional technical characteristics

Weight	from 12 kg to 104 kg
--------	----------------------

5 Basic metrological characteristics

The maximum permissible error (accurate class):

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

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

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



Meter size DN mm	Permanent flowrate Q_3 m^3/h	Measuring range R Q_3/Q_1	Q_1 m^3/h	Q_2 m^3/h	Q_4 m^3/h	Ratio Q_2/Q_1	Pressure loss Δp
40	63	125	0,504	0,806	78,75	1,6	40
40	63	100	0,63	1,008	78,75	1,6	40
40	63	80	0,788	1,26	78,75	1,6	40
40	63	63	1	1,6	78,75	1,6	40
40	63	50	1,26	2,016	78,75	1,6	40
40	40	80	0,5	0,8	50	1,6	25
40	40	63	0,635	1,016	50	1,6	25
40	40	50	0,8	1,28	50	1,6	25
40	25	50	0,5	0,8	31,25	1,6	10
40	25	40	0,625	1	31,25	1,6	10
50	63	125	0,504	0,806	78,75	1,6	25
50	63	100	0,63	1,008	78,75	1,6	25
50	63	80	0,788	1,26	78,75	1,6	25
50	63	63	1	1,6	78,75	1,6	25
50	63	50	1,26	2,016	78,75	1,6	25
50	40	80	0,5	0,8	50	1,6	10
50	40	63	0,635	1,016	50	1,6	10
50	40	50	0,8	1,28	50	1,6	10
50	25	50	0,5	0,8	31,25	1,6	10
50	25	40	0,625	1	31,25	1,6	10
65	63	63	1	1,6	78,75	1,6	25
65	63	50	1,26	2,016	78,75	1,6	25
65	40	40	1	1,6	50	1,6	10
80, 100, 125	160	125	1,28	2,048	200	1,6	25
80, 100, 125	160	100	1,6	2,56	200	1,6	25
80, 100, 125	160	80	2	3,2	200	1,6	25
80, 100, 125	100	80	1,25	2	125	1,6	10
80, 100, 125	100	63	1,587	2,540	125	1,6	10
80, 100, 125	100	50	2	3,2	125	1,6	10
80, 100, 125	63	50	1,26	2,016	78,75	1,6	10
80, 100, 125	63	40	1,575	2,52	78,75	1,6	10

Meter size DN mm	Permanent flowrate Q_3 m^3/h	Measuring range R Q_3/Q_1	Q_1 m^3/h	Q_2 m^3/h	Q_4 m^3/h	Ratio Q_2/Q_1	Pressure loss Δp
150	400	200	2	3,2	500	1,6	16
150	400	160	2,5	4	500	1,6	16
150	400	125	3,2	5,12	500	1,6	16
150	400	100	4	6,4	500	1,6	16
150	400	80	5	8	500	1,6	16
150	250	125	2	3,2	312,5	1,6	10
150	250	100	2,5	4	312,5	1,6	10
150	250	80	3,125	5	312,5	1,6	10
150	250	63	3,968	6,349	312,5	1,6	10
150	250	50	5	8	312,5	1,6	10
150	160	80	2	3,2	200	1,6	10
150	160	63	2,540	4,063	200	1,6	10
150	160	50	3,2	5,12	200	1,6	10
150	160	40	4	6,4	200	1,6	10
200	630	160	3,938	6,3	787,5	1,6	16
200	630	125	5,04	8,064	787,5	1,6	16
200	630	100	6,3	10,08	787,5	1,6	16
200	630	80	7,875	12,6	787,5	1,6	16
200	400	100	4	6,4	500	1,6	10
200	400	80	5	8	500	1,6	10
200	400	63	6,349	10,159	500	1,6	10
200	400	50	8	12,8	500	1,6	10
200	250	63	3,968	6,349	312,5	1,6	10
200	250	50	5	8	312,5	1,6	10
200	250	40	6,25	10	312,5	1,6	10
250	1000	160	6,25	10	1250	1,6	16
250	1000	125	8	12,8	1250	1,6	16
250	1000	100	10	16	1250	1,6	16
250	1000	80	12,5	20	1250	1,6	16
300	1600	125	12,8	20,48	2000	1,6	40
300	1600	100	16	25,6	2000	1,6	40
300	1600	80	20	32	2000	1,6	40

6 Results of conformity assessment

The results of tests, assessments and evaluations given in the evaluation report No. NO-288/15-B-ER dated August 19, 2015 give sufficient evidence that the technical design of the measuring instrument – Woltman water meter type H 4000 - is in compliance with the technical requirements of the Slovak Republic Governmental Ordinance No. 294/2005 Coll. On measuring instruments, Annex No. 1 and MI-001, and the STN EN 14154-1:2005+A2:2011 and OIML R 49-1:2006 standards.



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) producer's name or his production mark
- b) type of the Woltman water meter
- c) measuring unit m^3
- d) numerical value of Q_3 and ratio Q_3/Q_1
- e) production number and the year of production
- f) number of ES certificate type and conformity mark
- g) the highest admissible pressure if it differs from 1 MPa
- h) flow direction
- i) the letter V or H, if the meter can only be operated in the vertical or horizontal position
- j) class of pressure loss if it differs from Δp_{63}
- k) class of climatic and mechanical environment
- l) flow profile sensitivity classes
- m) class of electromagnetic environment
- n) the temperature class where it differs from T30



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

Woltman water meters for cold and hot water put onto the market in line with the procedure of conformity assessment according to the D or F Annexes of the Governmental ordinance should be in compliance with the technical description by item 3 of this report and at test should be in compliance with the requirements determined in OIML R 49-1:2006.

8.1 Metrological test

Metrological test is performed by a testing equipment which should be in compliance with the requirements determined in STN EN 14154-3:2005+A2:2011 and water at temperature $20\text{ }^\circ\text{C} \pm 5\text{ }^\circ\text{C}$ 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 D or F Annexes of the Governmental ordinance respectively.

8.1.1 Metrological test of exchangeable metrological unit

The verification test of the metrological unit has to be performed acc. to OIML R 49-1:2006 article 6.3.3. The applicable flow rates depend on the size of the used testing body and the appropriate Q_3 . The ratios written on the type plate are marked accordingly.

8.2 Additional Requirements

The exchangeable metrological unit must be marked with their size (e.g. nominal size, permanent flow and Ratio) at a clearly visible point in order to facilitate mounting them into the correct meter body.

A suitable package must ensure that any possibility of contamination or damage during transport is prevented.

Each exchangeable metrological unit is to be accompanied by a manual (please refer to section no. 10.2 “Installation requirements”).

The exchangeable metrological unit for Woltman meters must be manufactured as a compact and/or secured unit including measuring mechanism, register and connecting flange.

9 Measures asked for providing measuring instrument integrity

9.1 Identification

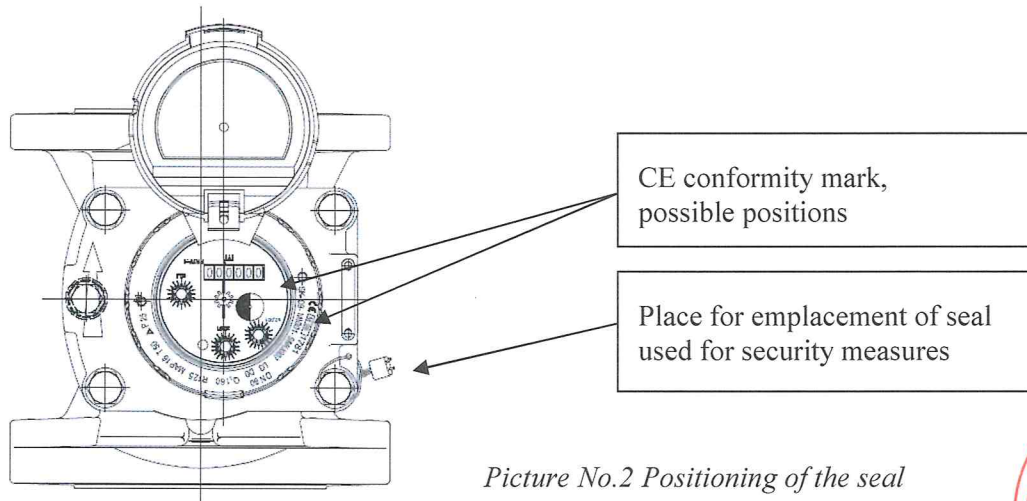
Woltman water meter should be in compliance with the description provided on item 3 of this Annex and should be in compliance with the marking specified by the item 7 of this Annex. The number given to the EC certificate is put at each piece of the measuring instrument.

Emplacement of the conformity mark is followed by § 7 of the Governmental ordinance.

9.2 Sealing of the measuring instrument

The Woltman water meter shall be before the conformity assessment according to the D or F Annexes sealed by following sealing marks:

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



Picture No.2 Positioning of the seal

9.2.1 Sealing of the exchangeable metrological unit

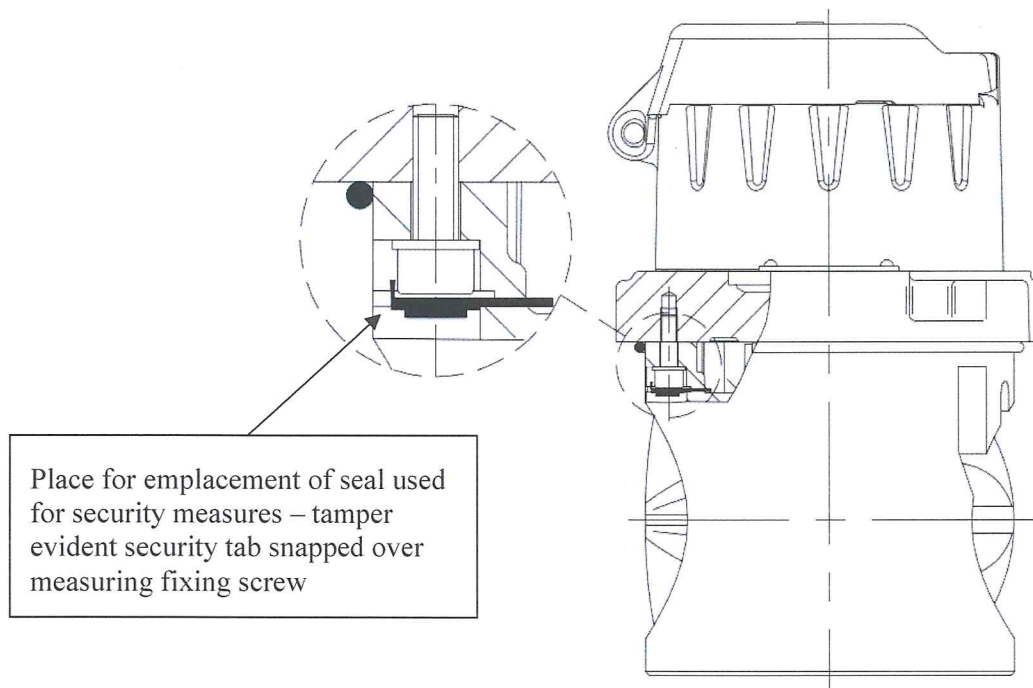
Register is secured to cover plate with tamper evident snap fitting polymer shroud used for security measures (Picture No. 3).

If the exchangeable metrological unit is mounted into the body outside of the test laboratory (e.g. on installation site), the conformity assessment marking must be placed clearly visible on the exchangeable metrological unit and the user seals shall be placed after installation.

In case of mounting the exchangeable metrological unit into the matching body on site (i.e. at the meter installation site or outside the test laboratory) a user seal must be placed in order to see whether the Woltman's exchangeable metrological unit was removed and/or preventing unauthorised removal.

The user seal preventing dismounting the Woltman's exchangeable metrological unit must be designed in such a way that it cannot be removed or unfastened without breaking





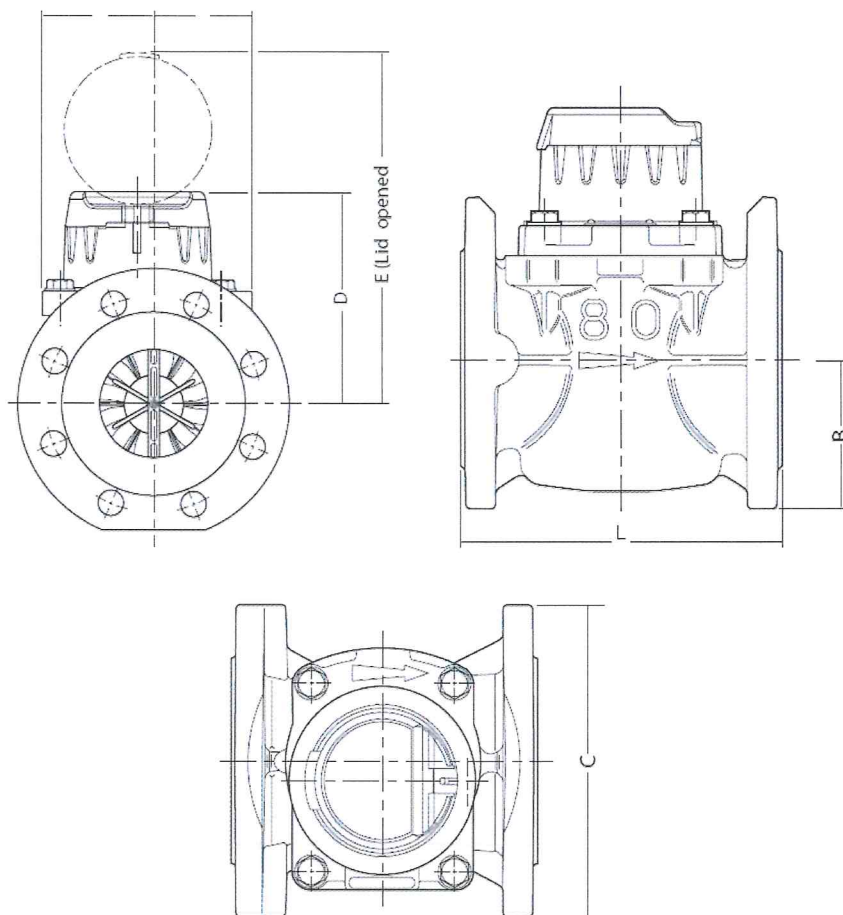
Picture No.3 Exchangeable metrological unit - positioning of the seal

10 Requirements for installation, especially conditions of usage

10.1 Installation data

Diameter	40	50	65	80	100
Construction Length (<i>L</i>) [mm]	≥ 300	≥ 200	≥ 200	≥ 200	≥ 250
Flange Diameter (<i>C</i>) [mm]	151	166	186	201	228
Weight [kg]	11,8	12,2/13,1	13	14,1/16,6	19,4/21
Height (<i>D</i>) [mm]	148	148	148	159	159
Height (<i>B</i>) [mm]	78	78	86	94	106
Height (<i>E</i>) [mm]	236	236	236	247	247

Diameter	125	150	200	250	300
Construction Length (<i>L</i>) [mm]	≥ 250	≥ 300	≥ 350	≥ 450	≥ 500
Flange Diameter (<i>C</i>) [mm]	251	286	341	409	461
Weight [kg]	20,5	37,5/43,5	47,5	82	104
Height (<i>D</i>) [mm]	159	207	229	247	247
Height (<i>B</i>) [mm]	118	135	165	198	225
Height (<i>E</i>) [mm]	247	305	327	345	345



Picture No.4 Installation dimensions

10.2 Installation requirements

A Woltman water meter is introduced into the operation by a worker having a certificate for this activity performance. The Woltman 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 flanged water meters". A measuring instrument should be installed in direction of water flow arrow marked on the meter body.

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 flanged water meters".

Assessment done by:  Ing. Viliam Mazúr

