



OIML Member State
Czech Republic

OIML Certificate No.
R49/2013-A-CZ1-22.02
Revision 5

OIML CERTIFICATE ISSUED UNDER SCHEME A

OIML Issuing Authority

Name: Czech Metrology Institute
Address: Okružní 31, 638 00 Brno, Czech Republic

Person responsible: Jan Kalandra

Applicant

Name: ISOIL INDUSTRIA SPA
Address: Via F.lli Gracchi, 27; Cinisello Balsamo - MI; 200 99, Italy

Manufacturer

Name: Hemina SPA
Address: Via Piemonte 2, Montagnana - PD; 350 44, Italy

Identification of the certified type *(the detailed characteristics will be defined in the additional pages)*

water meter - electromagnetic
MS2500 / MV110
MS2500 / MV145
MS2500 / MV210

Designation of the module *(if applicable)*

MS2500 / MV110 HV, MS2500 / MV210 HV + SUPERCAP or Rechargeable Lithium (not replaceable)
MS2500 / MV110 LV, MS2500 / MV210 LV + SUPERCAP or Rechargeable Lithium (not replaceable)
MS2500 / MV110 LLV, MS2500 / MV210 LLV + SUPERCAP or Rechargeable Lithium (not replaceable)
MS2500 / MV145 HV and/or Lithium or Alkaline Batteries (replaceable)
MS2500 / MV145 LLV and/or Lithium or Alkaline Batteries (replaceable)

This OIML Certificate attests the conformity of the above identified type (represented by the sample(s) identified in the OIML type evaluation report) with the requirements of the following Recommendation of the International Organization of Legal Metrology (OIML):

OIML R 49

Edition (year): 2013

For accuracy class (if applicable): 1 and 2

This OIML Certificate relates only to metrological and technical characteristics of the type of measuring instrument covered by the relevant OIML Recommendation identified above.

This OIML Certificate does not bestow any form of legal international approval.

The conformity was established by the results of tests and examinations provided in the associated OIML type evaluation report:

No. 0511-ER-V097-24, dated 30th September 2025 that includes 268 pages including annex 1-4.

- Test report No. 6015-PT-P0029-25 that includes 159 pages including annexes 1-7.
- Test report No.6011-PT-SW012-22 that includes 6 pages including annex 1.
- Test report No.6011-PT-SW009-22 that includes 9 pages including annex 1.
- Test report No.6011-PT-SW010-23 that includes 6 pages including annex 1
- Test report No.6011-PT-SW017-25 that includes 6 pages including annex 1
- Test report No. 8551-PT-E0261-25 that includes 44 pages including annexes 1.

The technical documentation relating to the identified type is contained in documentation file:

0511-UL-V097-24

OIML Certificate History

Revision No.	Date	Description of the modification
Revision 0	26 May 2022	Issuing certificate
Revision 1	13 September 2022	Adding electronics MV145
Revision 2	2 February 2023	Corrected the battery parameters in the electronics MV145 and corrected adding MV145 for DN \geq 200 mm
Revision 3	20 October 2023	Extension up to DN 2000
Revision 4	28 May 2024	Change of the OIML Test report No. 6015-PT-P5005-24
Revision 5	3 October 2025	extension to PN40, new type MS2500 / MV210, new SW and CRC version, replaceable batteries and editorial changes.

The OIML Issuing Authority

RNDr. Pavel Klenovský
Head of Certification Body

Date: 3 October 2025



Important note: Apart from the mention of the Certificate's reference number and the name of the OIML Member State in which the Certificate is issued, partial quotation of the Certificate and of the associated OIML type evaluation report(s) is not permitted, although either may be reproduced in full.

Measuring system description

The water meters types MS2500 / MV110, MS2500 / MV210 and MS2500 / MV145 are designed to measure, memorise and display the volume at metering conditions of water passing through the measurement transducer. The water meters type MS2500 / MV110, MS2500 / MV210 and MS2500 / MV145 are electromagnetic water meters with an electronic indicating device. The water meters type MS2500 / MV110, MS2500 / MV210 and MS2500 / MV145 consist of sensor and converter water meter in the compact set up or separate version with connecting cable.

The sensor MS2500 of water meter consists of a steel body with connecting flanges, one pair of excitation coils, electrodes and connection to the converter. The sensor can be equipped with several types liners.:

1. with PTFE liner for all sizes DN 25 – DN 2000 to temperature water 90°C
2. with Polypropylene liner for all sizes DN 25 – DN 150 to temperature water 50°C
3. with Rilsan liner for sizes DN 50 – DN 2000 to temperature water 50°C
4. with Ebonite liner for sizes DN 200 – DN 2000 to temperature water 50°C

The converters MV110, MV210 or MV145 of water meter consists of the plastic or aluminium body and connection to the sensor. The converter is formed by LCD display shown volume and flow. The water meter displays the volume resolution of 0.001 m³ on the digital display. Water meter has three buttons for control water meter. Communication interfaces are with impulse output and current output.

Legally non-relevant part of communication with meter is possible by RS485 output or USB - miniB connected to converter.

Electromagnetic water meter MS2500 / MV110, MS2500 / MV210 and MS2500 / MV145 has several security levels by the passwords to entry by bottoms. The user can change the water meter MS2500 / MV110, MS2500 / MV210 and MS2500 / MV145 no-legally relevant setting using public passwords write in the manual for water meter MS2500 / MV110, MS2500 / MV210 and MS2500 / MV145. Changes to public password assistance settings do not affect to legally relevant software to measure, memorise and display the volume at metering conditions of water passing through the measurement transducer.

The water meters type MS2500 / MV110 and MS2500 / MV210 have a several modifications according types power supply.

1. The water meter MS2500 / MV110 HV and MS2500 / MV210 HV has power supply by main 100 - 240V AC.
2. The water meter MS2500 / MV110 LV and MS2500 / MV210 LV has power supply by main 24 – 36V AC/DC.
3. The water meter MS2500 / MV110 LLV and MS2500 / MV210 LLV has power supply by main 12 – 48V DC.

The water meters type MS2500 / MV145 have a several modifications according types power supply.

1. The water meter MS2500 / MV145 HV + alk. battery has power supply by main 100 – 240V AC with internal backup source 9V DC alk batteries.
2. The water meter MS2500 / MV145 HV + lit. battery has power supply by main 100 – 240V AC with internal backup source 3,6V DC lithium batteries.
3. The water meter MS2500 / MV145 LLV + alk. battery has power supply by main 12 – 48V DC with internal backup source 9V DC alk. batteries.
4. The water meter MS2500 / MV145 LLV + lit. battery has power supply by main 12 – 48V DC with internal backup source 3.6V DC lithium batteries.
5. The water meter MS2500 / MV145 with alk. battery has power by internal 9V DC alkaline batteries.
6. The water meter MS2500 / MV145 with lit. battery has power by internal 3.6V DC lithium batteries.

The water meters can be installed to operate in any positions and the internal dimensions of the water meter pipes are always the same for each dimension.

Marking and inscriptions

The water meters types MS2500 / MV110, MS2500 / MV210 and MS2500 / MV145 shall be clearly and indelibly marked with the following information:

- Water meter type
- Unit of measurement (m³)

- Numerical value Q_3 in m^3/h ($Q_3 \times \times$) and the ratio Q_3 / Q_1
- OIML certificate of conformity number or/and type approval sign according to national regulations
- Name of trademark of the 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 $\times \times$)
- The temperature class (T $\times \times$)
- The pressure loss class ($\Delta p \times \times$)
- The installation sensitivity class (Ux Dx) – it does not differ from U0 D0
- Power supply
- Environmental classification
- Electromagnetic environmental class
- Software version
- Hardware version
- Accuracy class (Class $\times \times$)

These markings shall comply with the requirements of OIML R 49 and shall be visible without dismantling the water meter after the instrument has been placed on the market or put into use.

Characteristics

Basic technical data for DN 25 to DN 350

Manufacturer:	Hemina SPA; Via Piemonte 2; Montagnana; 350 44 Italy			
Model name:	MS2500 / MV110; MS2500 / MV210; MS2500 / MV145			
Nominal diameter:	25; 32; 40; 50	65; 80;	100; 125; 150;	200; 250; 300; 350
Type details:				
Q_1 [m^3/h]:	flowrates are shown in Table <i>Basic metrological data (flowrates) for maximum ratio R</i> .			
Q_2 [m^3/h]:				
Q_3 [m^3/h]:				
Q_4 [m^3/h]:				
Q_3/Q_1 :	400 for class 2; 250 for class 1			
Q_2/Q_1 :	1.6			
Q_4/Q_3 :	1.25			
Measuring principle:	Electromagnetic water meter			
Accuracy class:	1; 2			
Maximum permissible error for the lower flowrate zone (MPE_l):	± 3 % (Class 1) ± 5 % (Class 2)			
Maximum permissible error for the upper flowrate zone (MPE_u):	± 1 (class 1) ± 2 (class 2) % ± 2 (class 1) ± 3 (class 2) %			
Temperature class:	For liner PTFE - T90; T50; T30 For liner Rilsan - T50; T30; from DN50 For liner Ebonite - T50; T30; from DN200 For liner polypropylene - T50; T30			

Water pressure class:	MAP40			
Pressure loss class:	Δp_{40}			
Reverse flow:	designed to measure			
Environmental class:	B, O			
Electromagnetic environment:	E1; E2			
Temperature range ambient:	-25 °C / 55 °C			
Maximum admissible temperature [°C]:	For liners PTFE - 90°C For liner Polypropylene, Rilsan and Ebonite - 50°C			
Maximum admissible pressure [MPa]:	4			
Orientation limitation:	any			
Indicating range – testing mode/user mode [m³]:	99 999	999 999	999 999	9 999 999
Resolution of the indicating device testing mode/user mode [m³]:	0.000 1	0.001	0.001	0.01
Resolution of the device for rapid testing [pulse/dm³]:	-			
Resolution of the indicating device for rapid testing [m³]:	-			
EUT testing requirements (OIML R 49-2:2013, 8.1.8):				
Category:	Electromagnetic water meter			
Case:	D			
Installation details:				
Connection type (screw thread):	Flanged			
Minimum straight length of inlet pipe [mm]:	0			
Minimum straight length of outlet pipe [mm]:	0			
Flow profile sensitivity class:	U0D0			
Flow conditioner (details if required):	No			
Mounting:	-			
Orientation:	Any			
Other relevant information:	-			
Length [mm]:	200	200	250/250/300	350/450/500/ 550
Reed switch power supply (U_{\max} / I_{\max}):	-			
Reed switch K-factor (impulse / L):	-			
Installation details (electrical):				
Wiring instructions:	-			
Mounting arrangement:	-			
Orientation limitations:	-			

Basic technical data for DN 400 to DN 2000:

Manufacturer:	Hemina SPA; Via Piemonte 2; Montagnana; 350 44 Italy
Model name:	MS2500 / MV110; MS2500 / MV210; MS2500 / MV145

Nominal diameter:	400; 450; 500; 600	700; 800; 900; 1000	1200; 1400; 1500;1600	1800; 2000
Type details:				
Q_1 [m³/h]:	flowrates are shown in Table <i>Basic metrological data (flowrates)for maximum ratio R</i> .			
Q_2 [m³/h]:				
Q_3 [m³/h]:				
Q_4 [m³/h]:				
Q_3/Q_1 :	400 for class 2; 250 for class 1	DN 700 – R250; DN 800 - R160; DN 900 - R160; DN 1000 - R100 for class 2	80 for class 2	40 for class 2
Q_2/Q_1 :	1.6			
Q_4/Q_3 :	1.25			
Measuring principle:	Electromagnetic water meter			
Accuracy class:	1; 2			
Maximum permissible error for the lower flowrate zone (MPE_l):	±3 % (Class 1) ±5 % (Class 2)			
Maximum permissible error for the upper flowrate zone (MPE_u):	±1 (class 1) ±2 (class 2) % ±2 (class1) ±3 (class 2) %			
Temperature class:	For liner PTFE - T90; T50; T30 For liner Rilsan - T50; T30; from DN50 For liner Ebonite - T50; T30; from DN200 For liner polypropylene - T50; T30			
Water pressure class:	MAP40			
Pressure loss class:	Δp_{40}			
Reverse flow:	designed to measure			
Environmental class:	B, O			
Electromagnetic environment: ¹	E1; E2			
Temperature range ambient:	-25 °C / 55 °C			
Maximum admissible temperature [°C]:	For liners PTFE - 90°C For liner Polypropylene, Rilsan and Ebonite - 50°C			
Maximum admissible pressure [MPa]:	4			
Orientation limitation:	any			
Indicating range – testing mode/user mode [m³]:	999 999 999			
Resolution of the indicating device testing mode/user mode [m³]:	0.01 0.1 (DN600)	0.1	1	
Resolution of the device for rapid testing [pulse/dm³]:	-			
Resolution of the indicating device for rapid testing [m³]:	-			
EUT testing requirements (OIML R 49-2:2013, 8.1.8):				
Category:	Electromagnetic water meter			
Case:	D			
Installation details:				
Connection type (screw thread):	Flanged			

Minimum straight length of inlet pipe [mm]:	0			
Minimum straight length of outlet pipe [mm]:	0			
Flow profile sensitivity class:	U0D0			
Flow conditioner (details if required):	No			
Mounting:	-			
Orientation:	Any			
Other relevant information:	-			
Length [mm]:	600	700/800/900/ 1000	1200/1400/1500 /1600	1800/2000
Reed switch power supply (U_{\max} / I_{\max}):	-			
Reed switch K-factor (impulse / L):	-			
Installation details (electrical):				
Wiring instructions:	-			
Mounting arrangement:	-			
Orientation limitations:	-			

¹ The ratio Q_3 / Q_1 shall be chosen according to paragraph 4.1.4 of OIML R 49-1:2013

Power supply and electrical specification for types MS2500 / MV110; MS2500 / MV210

Manufacturer:	Hemina SPA; Via Piemonte 2; Montagnana; 350 44 Italy		
Model number of electronic:	MS2500 / MV110; MS2500 / MV210		
Designation of the module for all nominal diameter	MS2500 / MV110 HV MS2500 / MV210 SUPERCAP or Rechargeable Lithium	MS2500 / MV110 LV MS2500 / MV210 SUPERCAP or Rechargeable Lithium	MS2500 / MV110 LLV MS2500 / MV210 SUPERCAP or Rechargeable Lithium
Type (battery, mains AC, mains DC):	100 – 240 V AC	24 – 36V AC/DC	10 – 48 V DC
Frequency:	45 – 66 Hz	0 (DC) ... 45 – 66 Hz	0
Internal backup source	3,7V DC; 5200mAh; Battery	3,7V DC; 5200mAh; Battery	3,7V DC; 5200mAh; Battery
Minimum battery life time for internal backup source:	SUPER CAP: 1 minutes / Rechargeable Lithium 15 days at reference conditions		
Software version (of legally relevant SW):	V.1.05.0000.0004 V.1.06.0000.0004		
CRC checksum (of legally relevant SW) CRC-32:	F2476CEF 40FF6355		
Cut-off	0.2 % of Q_3		
Detection empty pipe	on		

Power supply and electrical specification for type MS2500 / MV 145

Manufacturer:	Hemina SPA; Via Piemonte 2; Montagnana; 350 44 Italy	
Model number of electronic:	MS2500 / MV 145	
Designation of the module for all nominal diameter	MS2500 / MV145 HV and/or Lithium or Alkaline Batteries	MS2500 / MV145 LLV and/or Lithium or Alkaline Batteries
Type (battery, mains AC, mains DC):	100 – 240 V AC	12 – 48 V DC

Frequency:	45 – 66 Hz	DC
Internal backup source	3.6 V/ Lithium/ 9V Alkaline	
Minimum battery life time for internal backup source:	Lithium 3 years (1+1)/ Alkaline 1 year (nine) both in SMART mode and under proper environmental and working conditions	
Software version (of legally relevant SW):	V.1.06.0000.0005 1.07.0000.0005	
CRC checksum (of legally relevant SW)- CRC-32:	EF726D9C A1D8736F	
Cut-off	0.2 % of Q ₃	
Detection empty pipe	on	

Basic metrological data (flowrates)

CLASS 1					
Manufacturer:	Hemina SPA				
Type	MS2500 / MV110; MS2500 / MV210; MS2500 / MV145				
DN	R	Q ₄ (1,25*Q ₃)	Q ₃	Q ₂ (1,6*Q ₁)	Q ₁ (Q ₃ /R)
	Q ₃ /Q ₁	m ³ /h	m ³ /h	m ³ /h	m ³ /h
25	250	20	16	0.10	0.064
32	250	31	25	0.16	0.10
40	250	50	40	0.26	0.16
50	250	78.75	63	0.40	0.25
65	250	125	100	0.64	0.40
80	250	200	160	1.0	0.64
100	250	312.5	250	1.6	1.0
125	250	500	400	2.6	1.6
150	250	787.5	630	4.0	2.5
200	250	1250	1000	6.4	4.0
250	250	2000	1600	10	6.4
300	250	3125	2500	16	10.0
350	250	3125	2500	16	10.0
400	250	5000	4000	26	16
450	250	5000	4000	26	16
500	250	7875	6300	40	25
600	250	12500	10000	64	40

CLASS 2					
Manufacturer:	Hemina SPA				
Type	MS2500 / MV110; MS2500 / MV210; MS2500 / MV145				
DN	R	Q ₄ (1,25*Q ₃)	Q ₃	Q ₂ (1,6*Q ₁)	Q ₁ (Q ₃ /R)
	Q ₃ /Q ₁	m ³ /h	m ³ /h	m ³ /h	m ³ /h
25	400	20	16	0.06	0.040
32	400	31	25	0.10	0.063
40	400	50	40	0.16	0.10
50	400	78.75	63	0.25	0.16
65	400	125	100	0.40	0.25

80	400	200	160	0.64	0.40
100	400	312.5	250	1.00	0.63
125	400	500	400	1.60	1.0
150	400	787.5	630	2.52	1.6
200	400	1250	1000	4.00	2.5
250	400	2000	1600	6.40	4.0
300	400	3125	2500	10	6.3
350	400	3125	2500	10	6.3
400	400	5000	4000	16	10
450	400	5000	4000	16	10
500	400	7875	6300	25	16
600	400	12500	10000	40	25
700	250	12500	10000	64	40
800	160	20000	16000	160	100
900	160	20000	16000	160	100
1000	100	20000	16000	256	160
1200	80	20000	16000	320	200
1400	80	20000	16000	320	200
1500	80	20000	16000	320	200
1600	80	20000	16000	320	200
1800	40	20000	16000	640	400
2000	40	20000	16000	640	400

Securing components and verification marks

The MS2500 / MV110, MS2500 / MV210 and MS2500 / MV145 meters have to be sealed according to the design of the water meter compact / separate version.

The converter MV110, MV 210 and MV145 of water meter compact or separate version have to be sealed by security seal on cover of the mini USB-B and two security seals across the dividing line of the water meter housing on its sides. Installation seals are across the cover of terminal block and housing of convector. The sealing is described in Figure 1 and 2.

The compact water meter MS2500 / MV110, MS2500 / MV210 and MS2500 / MV145 have to be sealed by security seal on the screw on the bottom of the convector connecting the sensor. The sealing is described in Figure 3.

The separate water meter MS2500 / MV110, MS2500 / MV210 and MS2500 / MV145 have to be sealed by security seal on the screw on the bottom of the convector connecting the sensor. Installation seal is across the cover of terminal block and housing of sensor. The sealing is described in Figure 4.

The separate MS2500 / MV110, MS2500 / MV210 and MS2500 / MV145 water meter is paired using "COUP." numbers, which can be found on the convector and sensor label. The labels are described in Figure 5.

Explanation of the seal:

Security seal – is a seal to ensure the metrological integrity of the instrument.

Installation seal – is a seal applied by the installer to indicate the integrity of the installation.

Note:

MV110/MV210: rechargeable battery or SUPERCAP are not intended for main power supply but as backup for limited period of time.

MV145: the batteries Lithium or Alkaline are intended for main power supply; they are used as backup if the main power module is installed and connected to the main line. The batteries are replaceable and if replacement sealing (security and installation seals) are broken, then securing measures have to be taken into account.

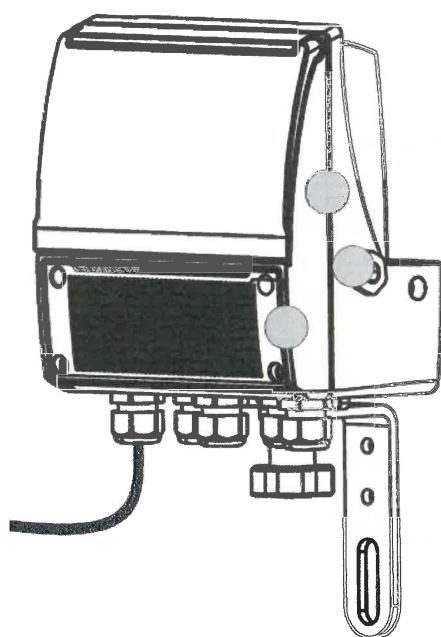
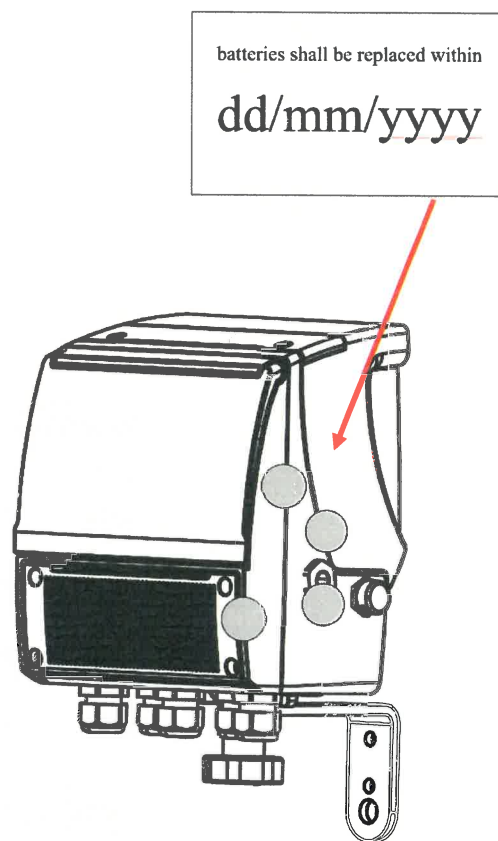


Figure 1: Sealing of the converter MV110, MV210 and MV145 of water meter compact or separate version



batteries shall be replaced within

dd/mm/yyyy

Figure 2: Sealing of the converter MV145, of water meter compact or separate version with replaceable battery

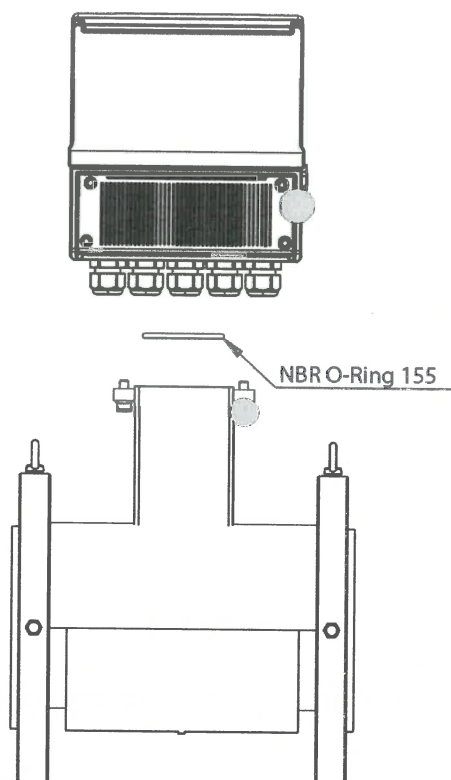


Figure 3: Sealing of The compact water meter MS2500 / MV110, MS2500/ MV210 and MS2500 / MV145

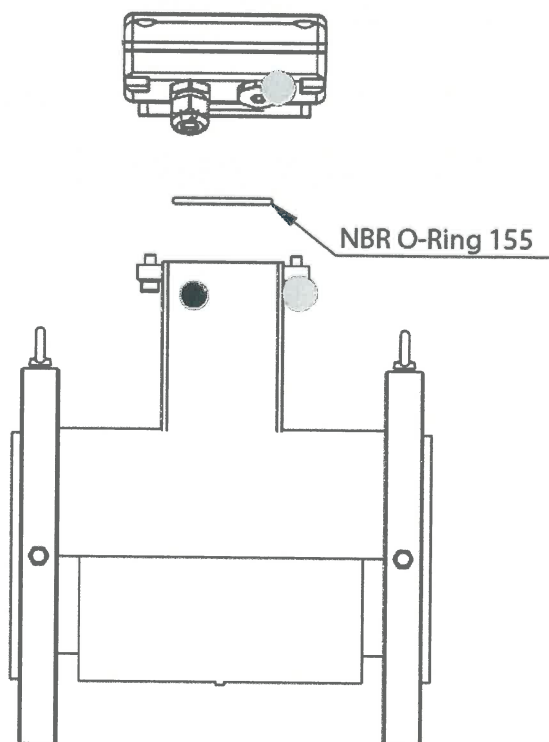


Figure 4: The sealing of the the separate water meter MS2500/ MV110, MS2500/ MV210 and MS2500 / MV145.

MS2500: LABEL DESCRIPTION

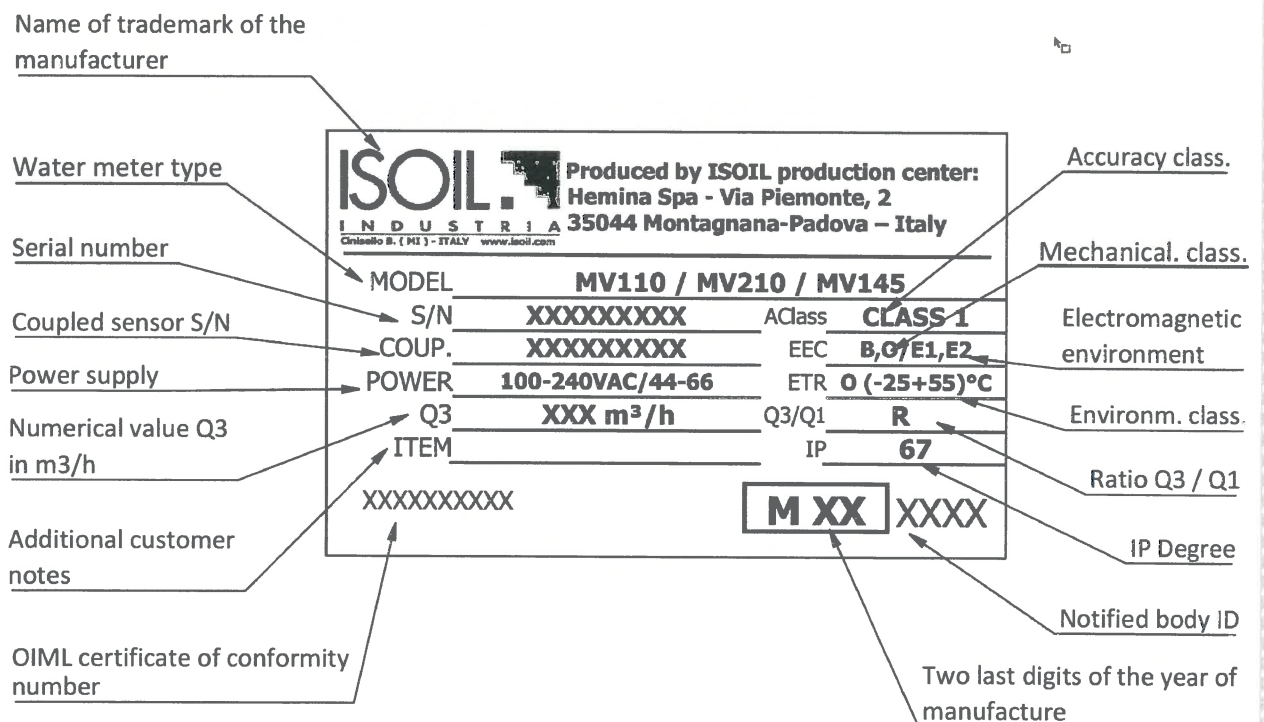
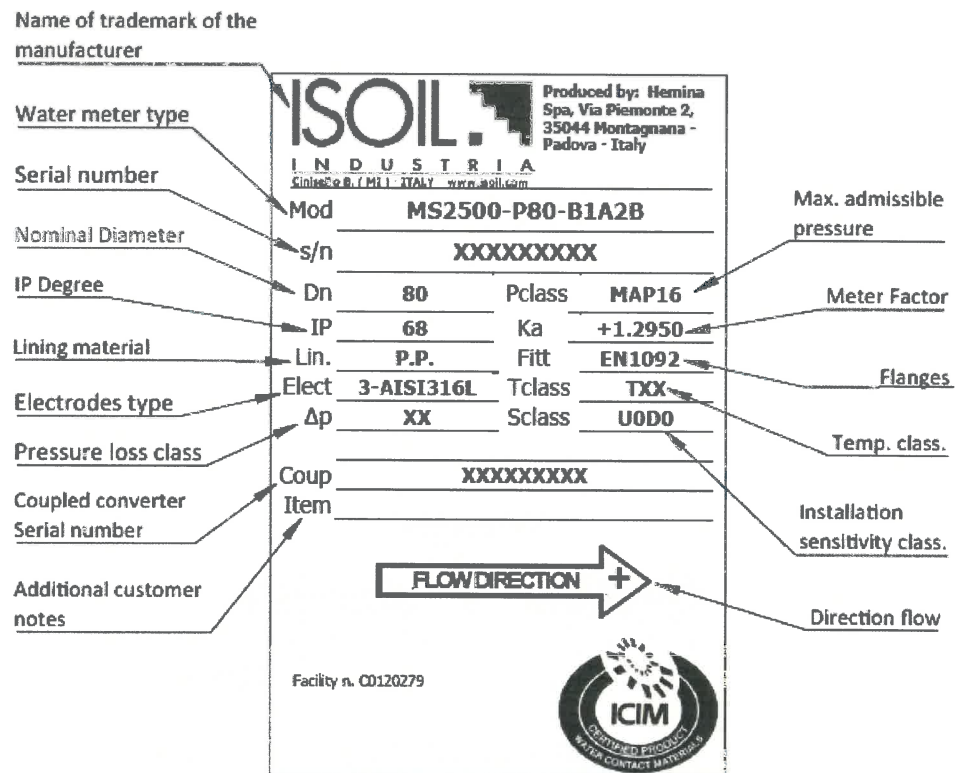


Figure 5: The labels of water meter MS2500 / MV110, MS2500 / MV210 HV or MS2500 / MV145