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V 3112

EU-TYPE EXAMINATION CERTIFICATE

Number: TCM 143/24 - 5977

In accordance: with 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 (implemented in Czech Republic by Government Order No. 120/2016 Coll.).

Manufacturer: Hangzhou Zexing Metering Co., Ltd
2031, Building 2, No. 1418-5 Moganshan Road, Shangcheng Industrial Zone
310011 Hangzhou City
Zhejiang Province
China

For: diaphragm gas meter

type: HXG110 (G4, G2.5, G1.6)

MPE 1.5 %

mechanical environment class: M1

electromagnetic environment class: not applicable

Valid until: 9 October 2034

Document No: 0511-CS-A017-24

Description: Essential characteristics, approved conditions and special conditions, if any, are described in this certificate.

Date of issue: 9 October 2024

Certificate approved by:

Český metrologický institut

-3-

RNDr. Pavel Klenovský

1 Characteristics of instrument

The diaphragm gas meters of the type HXG110 (G4, G2.5, G1.6) (*Figure no.1*) are volumetric mechanical gas meters where the volume is measured by periodical filling and emptying of several measuring chambers with deformable walls (diaphragms). This type is manufactured in three sizes G4, G2.5 and G1.6. It is designed for measurement of dry fuel gases. The diaphragm gas meter is composed of a measuring module, of a housing and of an index.
The housing of the HXG110 (G4, G2.5, G1.6) series diaphragm gas meter is made of steel. The housing (casing) is split horizontally and it is composed of two parts. The upper and down part are connected by a band. The surface of housing is covered by painting in order to withstand to ambient conditions. The gas meter is manufactured in two-pipe version. The dimensional drawing of gas meters HXG110 (G4, G2.5, G1.6) is mentioned in *Figure no. 2*. There are no thermo-wells and no pressure test point outputs in the housing. The gas meter does not contain any electronic components. The measuring module (*Figure no. 3*) is composed of four chambers which are divided by synthetic diaphragms. The list of components and their materials is mentioned in *Figures no.4 and no.5*. The chambers have no firmly determined measuring spaces. A crank drive converts the translation movement of diaphragms and valves into rotational one. A transmission drives the horizontal output shaft. The measuring module is equipped with a return stop in order to prevent the registration of reverse flow. The measuring module with cyclic volume 1.2 dm^3 is used. The gas meter is equipped with an index drive with lip seal for the transmission of the rotational movement of the output shaft from the housing filled with fuel gas to index. It means there is no magnetic coupling in the gas meter.
The index is equipped with two plastic cog wheels which serve for adjustment of the gas meter. The gas meter indication is on mechanical drum index. The index has 8 drums. The diaphragm gas meter of the type HXG110 (G4, G2.5, G1.6) indicates the volume at metering conditions. The values are indicated in m^3 whereby three decimal places are displayed.

2 Main characteristics

Electromagnetic class of the gas meters HXG110 (G4, G2.5, G1.6): Not applicable.

The mechanical environment class of the gas meters HXG110 (G4, G2.5, G1.6):
M1 - This class applies to instruments used in locations with vibration and shocks of low significance, e.g. for instruments fastened to light supporting structures subject to negligible vibrations and shocks transmitted from local blasting or pile-driving activities, slamming doors, etc.

Accuracy class: 1.5

Maximum permissible error (MPE) of measurement in flow rate range $Q_t \leq Q \leq Q_{max}$	%	1.50
Maximum permissible error (MPE) of measurement in flow rate range $Q_{min} \leq Q < Q_t$	%	3.00
Temperature range of the gas	°C	(-25 - +55)
Temperature range for the climatic environment	°C	(-25 - +55)
Range of index	m^3	99999.999

The gas meter is designed for closed locations in areas with non-condensing humidity.

Size G	Q_{max} (m^3/h)	Q_t (m^3/h)	Q_{min} (m^3/h)	Cyclic volume V (dm^3)	Maximum permissible pressure loss ΔP in Q_{max} (Pa)	$Pmax$ (kPa)
G4	6.0	0.6	0.04	1.2	200	50
G2.5	4.0	0.4	0.025	1.2	200	50
G1.6	2.5	0.25	0.016	1.2	200	50

Q_t ..... The transitional flow rate is the flow rate occurring between the maximum and minimum flow rates at which the flow rate range is divided into two zones, the 'upper zone' and the 'lower zone'. Each zone has a characteristic MPE.

Q_{min} ..... The lowest flow rate at which the gas meter provides indications that satisfy the requirements regarding maximum permissible error (MPE.) This value is valid for air flow density of about 1.2 kg/m^3.

Q_{max} ..... The highest flow rate at which the gas meter provides indications that satisfy the requirements regarding MPE.

ΔP ..... The pressure loss of the gas meter, which is the value that is valid for testing with air with a density of approximately 1.2 kg/m^3.

The gas meter can be produced with the distance between connections (male threads):
130 mm, 110 mm

The male threads used in gas meters HXG110 (G4, G2.5, G1.6):
M30×2, G1¼, 3/4" BS746, 1"BS746, M34×1.5

3 Tests

The relevant tests of diaphragm gas meters HXG110 (G4, G2.5, G1.6) for this Certificate were performed in the laboratory of CMI. These and other tests are mentioned in the *Test Report no. 5012-PT-A0006-24.* It was found, with regards to the result of tests and submitted documentation, that the diaphragm gas meters HXG110 (G4, G2.5, G1.6) are able to perform the function for which they are intended. The relevant tests were performed according to harmonised standard EN 1359:2017 or normative document OIML R137 (Edition 2012).

4 Conformity marks and inscription

The label in the index of the gas meters HXG110 (G4, G2.5, G1.6) shall contain the following information (*Figure no. 6*):

- number of *EU-type examination certificate*: **TCM 143/24 - 5977**
- manufacturer's name and the postal address
- type
- serial number
- accuracy class: *1.5*
- year of manufacture
- maximum flow Q_{max} (m^3/h)
- transitional flow Q_t (m^3/h)
- minimum flow Q_{min} (m^3/h)
- maximum pressure *Pmax*
- temperature range *Tm*
- cyclic volume *V*
- letter **"T"** which indicates the ability to withstand to high temperatures according article 6.6.6. of EN 1359:2017
- 'CE' marking and supplementary metrology marking. CE marking must have a height of at least 5 mm. The supplementary metrology marking shall consist of the capital letter 'M' and the last two digits of the year of its affixing, surrounded by a rectangle. The height of the rectangle shall be equal to the height of the CE marking. The 'CE' marking and supplementary metrology marking are followed by the identification number of the Notified Body.
- units of volume (m^3)

Additional information may be added to the label, but this information must not be in a conflict with legal requirements.

The indication is in volume unit m^3, which mark is located on the index. Behind the decimal point to the right there the 3 drums shall be red. The 5 black drums are to the left of decimal point. An example of a label is shown in *Figure no. 6*. The flow direction is indicated with arrow on the meter between connections in upper part of housing.

5 Ensuring the integrity of the instruments

The gas meters HXG110 (G4, G2.5, G1.6) that corresponds to this *EU-type examination certificate* and to other requirements concerning the assessment according to the module F or D are sealed with 2 seals in the way mentioned in *Figure no.7*.

6 Annexes

Figure no.1 Design of diaphragm gas meters HXG110 (G4, G2.5, G1.6)
Figure no.2 Dimensional drawing of diaphragm gas meters HXG110 (G4, G2.5, G1.6)
Figure no.3 Measuring mechanism of diaphragm gas meters HXG110 (G4, G2.5, G1.6)
Figure no.4 List of components and materials of diaphragm gas meters HXG110 (G4, G2.5, G1.6) (part 1/2)
Figure no.5 List of components and materials of diaphragm gas meters HXG110 (G4, G2.5, G1.6) (part 2/2)
Figure no.6 Examples of a label of diaphragm gas meters HXG110 (G4, G2.5, G1.6) (*Other language versions are allowed.*)
Figure no.7 Location of 2 seals on diaphragm gas meters HXG110 (G4, G2.5, G1.6)

Figure no.1 Design of diaphragm gas meters HXG110 (G4, G2.5, G1.6)

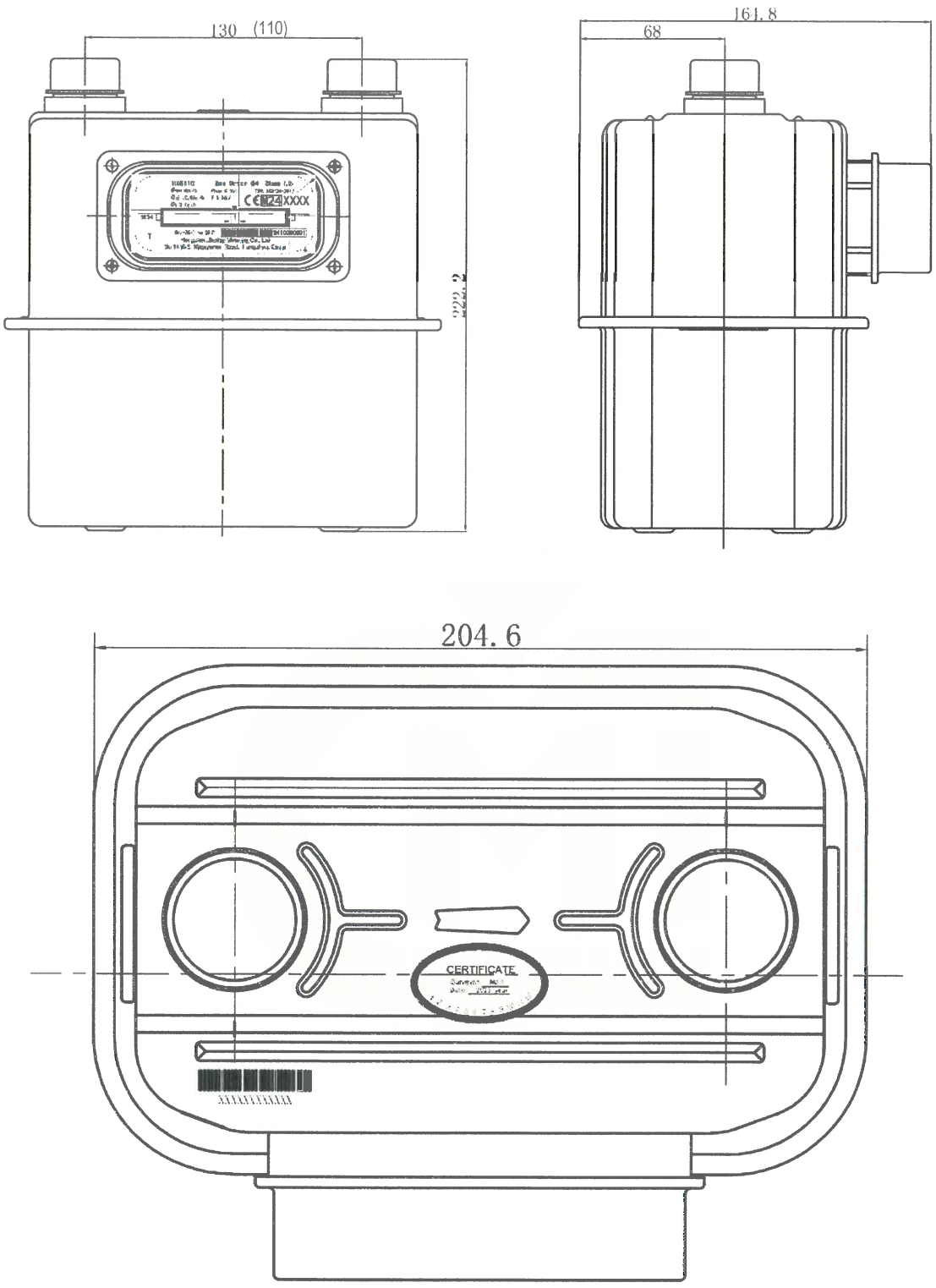

Figure no.2 Dimensional drawing of diaphragm gas meters HXG110 (G4, G2.5, G1.6)

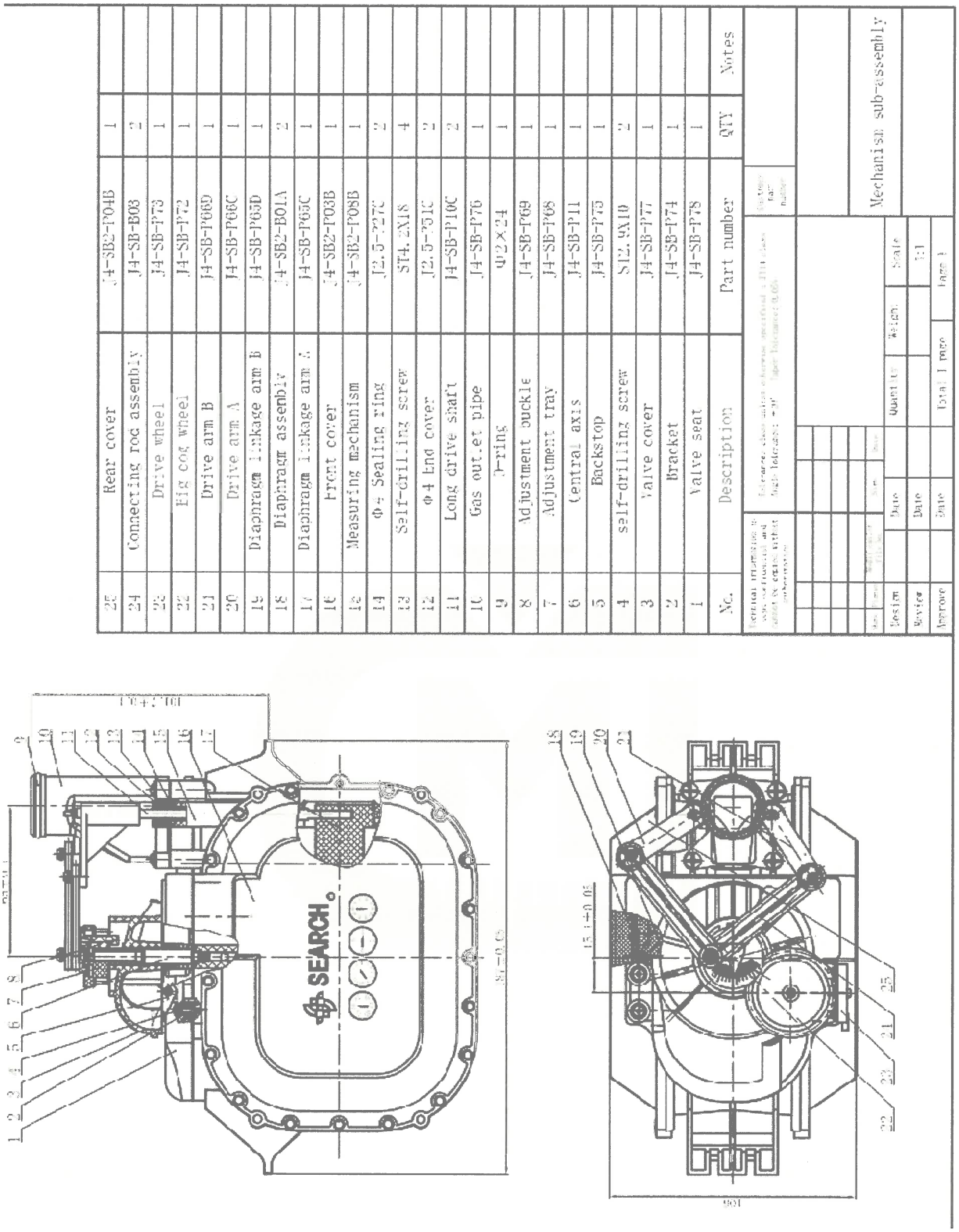

Figure no.3 Measuring mechanism of diaphragm gas meters HXG110 (G4, G2.5, G1.6)

	List of Components			2 pages in total
		Product name	Diaphragm gas meter	Page 1

No.	Drawing No.	Component Name	Q.ty	Material	Remark
	J4/2.5/1.6-SB3-L/R	Assembly	1		
Component					
1	J4-SB3-A00-L/R	Base meter assembly	1		
2	J4-SB2-A04	Character wheel sub assembly	1		
Spare parts					
1	J4-SB2-P16/A/B/C	Tooth extraction cog wheel	1	PA6-GF30	
2	J4-SB-P22	Middle cog wheel	1	ABS	
3	J4-SB-P23	Transition cog wheel	1	ABS	
4	J4SB-DZ-P01	Counter cover	1	ST14	
5	J4SB-DZ-P02	Glass panel	1	Glass	
6	J2.5-P35	Adjusting cog wheel	1	ABS	
7	J2.5-P62	Cap	2	PP	
8	J2.5-P64	Product certificate	1	Sticker	
9	J4/2.5/1.6-SB-P33	Nameplate	1	PVC	
10	J2.5-SH-P03	Date label	1	Sticker	
Standard parts					
1	GB 818-85	M3X6 Cross Pan Head Screw	2	Stainless steel	
2	GB 868-86	Rivet 2.5X8	2	Aluminium	
3	GB 845-85	ST2.6X8 Self-drilling screw	1	Stainless steel	
Base meter assembly J4-SB3-A00-L/R					
Components					
1	J4-SB2-A01-L/R	Measuring mechanism sub assembly	1		
2	J4-SB3-A01-L/R	Upper housing sub assembly	1		
Spare parts					
1	J4-SB-P52	Collar	1	Stainless steel	
2	J4-SB-P51	Lower housing	1	Galvanized sheet	
3	J4-SB-P 00	Upper and lower housing sealing pad	1	NBR	
Upper housing sub-assembly J4-SB3-A02-L/R					
Components					
1	J4-SB-B04	Bushing assembly	1		
Spare parts					
1	J4-SB3-P02	Counter bottom shell (injection molding)	1	PA6-GF30	
2	J4-SB3-P03L/R	Upper housing	1	Galvanized sheet	
3	J4-SB-P41	Connections	2	A3	
4	J4-SB-P43	Washers	2	A3	
5	J4-SB-P84	Bushing nut	1	Aluminium alloy	
6	Φ2X33	O-ring	1	NBR	
7	Φ 5X15	O-ring	1	NBR	

Figure no.4 List of components and materials of diaphragm gas meters HXG110 (G4, G2.5, G1.6) (part 1/2)

	List of Components	Product name	Diaphragm gas meter	2 pages in total Page 2

No.	Drawing No.	Component Name	Q.ty	Material	Remark
		Standard parts			
1	GB 109-86	Φ4X6 Flat head rivets	3	BL2	
Mechanism sub-assembly					
		Components			
1	J4-SB2-B01A	Diaphragm assembly	2		
2	J4-SB-B03	Connecting rod assembly	2		
		Spare parts			
1	J4-SB2-P08B	Measuring mecharism	1	POM	
2	J4-SB2-P03B	Front cover	1	POM	
3	J4-SB2-P04B	Rear cover	1	POM	
4	J4-SB-P65C	Diaphragm linkage arm A	1	POM	
5	J4-SB-P65D	Diaphragm linkage arm B	1	POM	
6	J4-SB-P66C	Drive arm A	1	POM	
7	J4-SB-P66D	Drive arm B	1	POM	
8	J4-SB-P68	Adjustment tray	1	POM	
9	J4-SB-P69	Adjustment buckle	1	POM	
10	J4-SB-P76	Gas outlet pipe	1	POM	
11	J4-SB-P77	Valve cover	1	Special bakelite	
12	J4-SB-P78	Valve seat	1	Special bakelite	
13	J4-SB-P10C	Long drive shaft	2	1Cr18Ni9Ti	
14	J4-SB-P11	Central axis	1	1Cr18Ni9Ti	
15	J2.5-?27C	Φ4 Sealing ring	2	NBR	
16	J2.5-?51C	Φ4 End cover	2	POM	
17	Φ2×24	O-ring	1	NBR	
18	J4-SB-P72	Big cog wheel	1	POM	
19	J4-SB-P73	Drive wheel	1	POM	
20	J4-SB-P74	Bracket	1	POM	
21	J4-SB-P75	Backstop	1	POM	
		Standard parts			
1	GB 845-85	ST4.2X18 self-drilling screw	4	Stainless steel	
2	GB 845-85	ST2.9X10 self-drilling screw	2	Stainless steel	
Diaphragm assemblies J4-SB2-B01A					
1	J4-SB2-P20	Diaphragm	1	Cloth clamp, NBR	Fengcheng yizhan instrument technology co., ltd
2	J4-SB-P63	Diaphragm guide plate	1	POM	
3	J4-SB-P64	Diaphragm Pressing plate	1	Al	

Figure no.5 List of components and materials of diaphragm gas meters HXG110 (G4, G2.5, G1.6) (part 2/2)

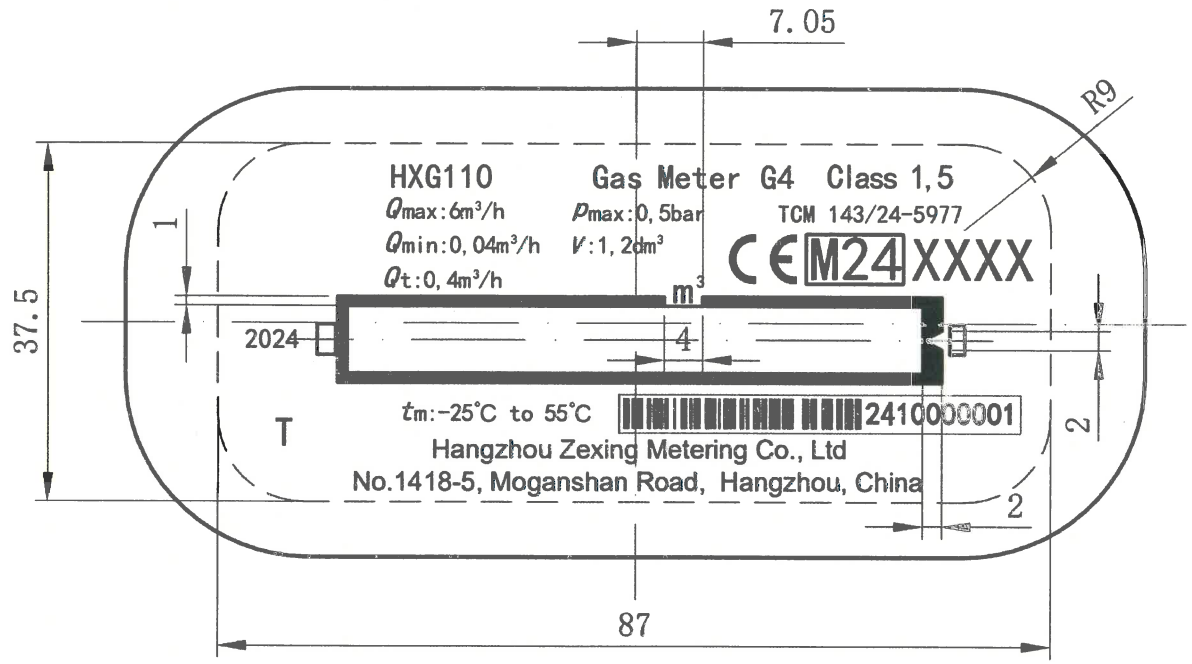

Figure no.6 Example of a label of diaphragm gas meters HXG110 (G4, G2.5, G1.6) (*Other language versions are allowed.*)

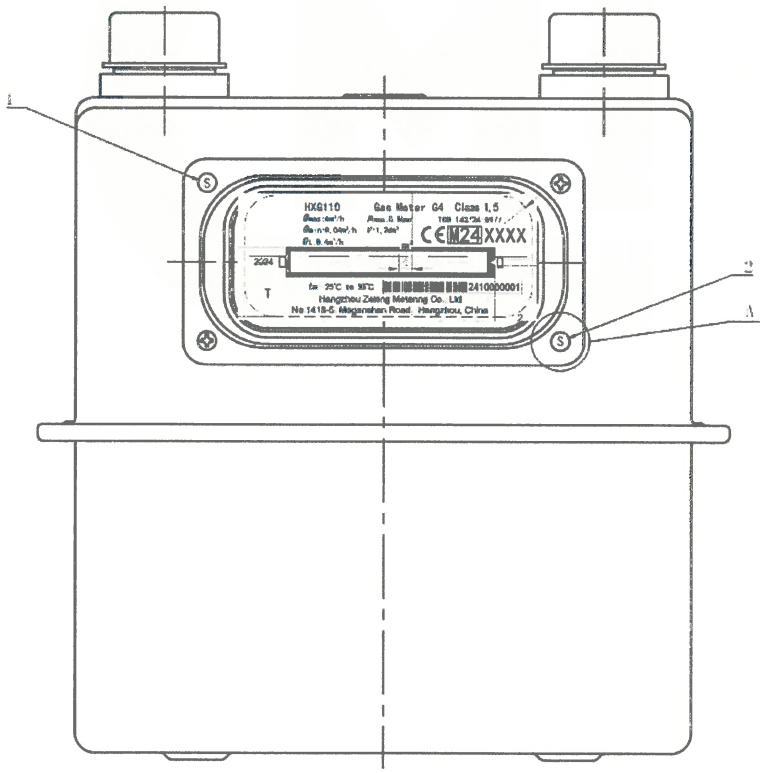

Figure no.7 Location of 2 seals on diaphragm gas meters HXG110 (G4, G2.5, G1.6)