



Czech Metrology Institute

Notified Body No. 1383, Okružní 31
638 00 Brno

EC-TYPE EXAMINATION CERTIFICATE

Number: TCM 141/07 - 4493

Addition 4

This addition replaces all previous versions of this certificate in full wording.

Issued by: **Český metrologický institut**
Okružní 31
638 00 Brno
Czech Republic

Notified Body No. 1383

In accordance with: point 3 of annex 2 to Government Order No. 464/2005 Coll. (annex B of the Directive 2004/22/EC) from 19 October 2005 that lays down technical requirements on measuring instruments and implements in Czech Republic Directive 2004/22/EC of the European Parliament and of the Council.

Manufacturer: **TATSUNO EUROPE a.s.**
(applicant) **Pražská 2325/68**
678 01 Blansko
Czech Republic

In respect of: **LPG dispenser**
type: **SHARK BMP 5xx.S/LPG and SHARK BMP 2xxx.S/LPG**

Type of liquids	LPG
Accuracy class	1.0

Valid until: **16 January 2017**

Document number: **0115-CS-A006-07**

Description: Essential characteristics, approved conditions and special conditions, if any, are described in this certificate. This certificate contains 19 pages.

Date of issue: 23 September 2011



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RNDr. Pavel Klenovský

Notified Body No.1383

1. Measuring device description

The SHARK BMP 5xx.S/LPG and 2xxx.S/LPG LPG dispensers are destined for measurement of liquefied petroleum gas (LPG) volumes as a legal measuring device in the sense of the Directive of the European Parliament and of the Council no. 2004/22/EC of measuring instruments, as amended and are used for the refueling of motor vehicles.

The measuring systems consist of a gas separator, non-return valve, measurement transducer, differential valve, electronic calculator with electronic or electromechanical totalizing indicating device, electromagnetic valve (optionally), safety valve, manometer, sight glass (optionally), break away coupling and house with delivery nozzle. These LPG dispensers can be equipped with pre-setting device.

There can be ATC conversion function for converse of measurement data to volume at base conditions (15 °C) in PDEX, ADP1/T, ADP2/T and ADPMPDx/T electronic calculator. There has to be connected temperature transducer Pt 100.

These measuring systems can be installed in one LPG dispenser and they can be connected to electronic calculator only. Two measuring systems can be connected to one OPF4 gas separator at maximum.

There is SHARK MOD 2xxx.S/LPG LPG module, the same hydraulic without electronics, to connect to SHARK BMP 2xxx.S fuel dispensers, which was certified separately.

The SHARK BMP 5xx.S/LPG and 2xxx.S/LPG LPG dispensers could be connected into independent Point of Sale or Paying terminal, which do not influence metrology parameters of measuring system.

1.1. Gas separator

TECHKO, s.r.o. OPF gas separator with nominal volume of 2.5L or 1.9L with thermometer well for Pt100 temperature sensor. There are four different models of gas separator. Model OPF3 with nominal volume 2.5L is equipped with one input and one output of the liquid phase. Model OPF4 with nominal volume 1.9L is equipped with one input and two outputs of the liquid phase. Model OPF5 and OPF6 (without thermometer well) with nominal volume 1.9L is equipped with one input and one output of the liquid phase.

1.2. Measuring transducer

TATSUNO MP-02524 measuring transducer consists of a flow sensor with four pistons and cyclic volume 0.5 L, TATSUNO EK – 1025 two-channel photoelectric transducer with 50 pulses / revolution and adjustment device.

TATSUNO MP-02524 measuring transducer can be adjusted by varying of the strokes of one pair of pistons by the adjustment screw. The regulation is non-continual with steps 0.08 %. Maximum range of adjustment is about ± 1 %. Location of screw is protected by pin.

1.3. Differential valve

TATSUNO VD-0206 differential valve open by differential pressure about 100 kPa.

1.4. Calculator

There are two different models of PDEX electronic calculator. Model PDEDUOX can control two measuring systems and model PDEMPDX can control ten measuring systems maximally, two simultaneously. Calculator PDEX can operate separately or can be controlled by central system of filling station. It can communicate by RS485 by PDE, PumaLAN and ER4 protocol.

Software version 1.03

W&M checksum 20260

The PDEX electronic calculator can be operated by buttons of IR module (remote control). It is necessary to change over value of number of pulses per L, which is stored in memory of calculator (parameter P 44) for electronic calibration. Access to electronic calibration is secured by DIP switch SW1-1 (location ON – up) with sealing cover.

There are two different models of TBELTx electronic calculator. Model TBELT2 can control two measuring systems and model TBELT4 can control four measuring systems at maximum, two simultaneously. Calculator

TBELTx can operate separately or can be controlled by central system of filling station. It can communicate by RS485 by PDE, PumaLAN and ER4 protocol.

Software version 1.01

W&M checksum 8CA4

TBELTx electronic calculator can be operated by four buttons keyboard. It is necessary to change over value of number of pulses per dm^3 , which is stored in memory of calculator (parameter P14, P15, P16 and P17) for electronic calibration. Access to electronic calibration is secured by DIP switch SW1-1 (location ON – up) with sealing cover.

There are three different models of Beta Control type ADP/T electronic calculator. Model ADP1/T can control one measuring system only, model ADP2/T can control two measuring systems and model ADPMPDx/T can control ten measuring systems at maximum (e.g. 2×5 products). There is version SMX which can control parallel mounting of two meters; fuel is dispensed via one nozzle.

This calculator can be operated by communication line or KL-SERINF remote controller. Electronic calibration is realized by automatic procedure “Electronic calibration of the meters and ATC”, (manual chapter 2.2.7). Access to electronic calibration is secured by DIP switch No. 2 (location OFF). Access to ATC conversion function setting is secured by DIP switch No. 3 (location OFF). DIP switches are protected by sealing cover.

The ADP/T electronic calculator can operate separately or can be controlled by central system of filling station. It communicate by RS485 (EASY-CALL), or by IFSF standard (LON FTT-10 or TCP/IP-Ethernet).

The electronic calculator family ADP/T was certified separately by CMI, Notified Body No. 1383 in EC - type examination certificate No. TCM 141/07 - 4505.

There is UNIDATAZ CDC electronic calculator with included card system used for self-service dispensing.

This electronic calculator can handle up to two nozzles, and is able to serve to one customer at a time only.

This electronic calculator can be equipped with ATC conversion function to converse the measured data to volume at a base temperature of 15°C for gasoline, diesel, LPG, heating oil and biofuels. There has connected certified temperature sensor Pt100.

This electronic calculator could be connected into independent Point of Sale or Paying terminal device which do not influence metrology parameters of measuring system.

Software version and W&M checksum: See bellow mentioned Evaluation certificate.

UNIDATAZ CDC electronic calculator was separately certified by CMI Evaluation certificate No. ZR 141/10-0073 issued by CMI, Notified Body 1383.

1.5. Conversion device

TM module of PDEX electronic calculator is placed on separate board PDEINP.

1.6. Hose

ELAFLEX LPG DN 16; maximum length 7 m

1.7. Nozzle

OPW BREVETTI NETTUNO T3, NT3, NR1, BN300, BN310, BN320, BN300B-HG

Poličské strojírny a.s. VPP02

LPG Group LPG100, LPG200

2. Basic technical data

Maximum flowrate Q_{\max} [L/min]	30 to 50
Minimum flowrate Q_{\min} [L/min]	5
Min. measured quantity MMQ [L]	5
Maximum unit price (number of digits)	9999 (4)
Maximum price to pay (number of digits):	999999 (6)



Type of display:	Electronic
Type of liquids	LPG
Liquid temperature range	-20 to +50
Maximum pressure [MPa]	1.8
Minimum pressure [MPa]	0.7
Accuracy class	1.0
Ambient temperature range [°C]	-25 to +55 -40 to +50 with additional internal heating or with CDC electronic calculator
Mechanical class	M1
Electromagnetic class	E1
Humidity	Condensing
Location	Open

3. Test

Technical tests of the SHARK BMP 5xx.S/LPG and 2xxx.S/LPG LPG dispensers were performed with conformity to International Recommendation OIML R 117-1 *Dynamic measuring systems for liquids other than water*.

Test Report No. 6031-PT-P019-06 issued by CMI on 21 December 2006, Test Report No. 6015-PT-P006-08 issued by CMI on 25 April 2008 (PDEX extension), Test Report No. 6015-PT-P027-08 issued by CMI on 22 December 2008 (ADP/T extension), Test Report No. 6015-PT-P0002-10 issued by CMI on 28 April 2010 (TBELTx extension) and Test Report No. 6015-PT-P0105-11 issued by CMI on 9 September 2011 (CDC extension).

4. The measuring device data

There are following data on the gas separator, measurement sensor, pulser, temperature sensor, differential valve, conversion device and the electronic calculator:

- Measuring device manufacturer and type
- Serial number and year of manufacture

There are following data on each measuring system:

- The "CE" marking and supplementary metrology
- Number of EC-type examination certificate
- Measuring device manufacturer and type
- Serial number and year of manufacture
- Accuracy class
- Minimum measured quantity (MMQ)
- Maximum flowrate (Q_{\max})
- Minimum flowrate (Q_{\min})
- Maximum pressure (P_{\max})
- Minimum pressure (P_{\min})
- Type of liquids
- Liquid temperature range
- Ambient temperature range
- Mechanical class
- Electromagnetic class

There are following data on each face of indicating device:

- Currency unit of price (€), near price indication
- Unit of volume (ℓ or L or word Litre), near volume indication
- Currency unit of unit price (€ / L or € / Litre), near unit price indication
- Information regarding the minimum measured quantity (MMQ)

There had to be based temperature ($T_b = 15\text{ °C}$) near volume indication on the dial of any indicating device of LPG dispense with activated ATC conversion function visible to user during the measurement.



5. Sealing

The DIP switch SW1-1 has to be set to position ON (up) in case of PDEX and TBELTx electronic calculators.

The DIP switches No. 2 and 3 have to be set to position OFF in case of ADPx/T electronic calculator.

The switch S3 has to be set to position OFF (position up) in case of CDC electronic calculator.

Each measuring system has to be sealed after the conformity assessment with positive result:

On the measurement transducer:

- | | |
|---|----|
| a) Conjunction of transducer body with pistons covers | 1× |
| b) Conjunction of adjustment device pin with piston cover and type plate | 1× |
| c) Conjunction of transducer body with upper cover and pulser and totalizer, if any | 1× |
| d) Conjunction of transducer body with bottom cover | 1× |

On the differential valve:

- | | |
|--|----|
| e) Conjunction of differential valve body with upper and bottom covers | 1× |
|--|----|

On the PDEX, TBELTx and ADPx/T el. calculator:

- | | |
|--|----|
| f) Conjunction of calculator cover with calculator console and SW1 switch cover, if separate | 1× |
| g) Conjunction of cover of electromechanical totalizer with display mask, if separate | 1× |
| h) The type plate of calculator | 1× |

On conversion device, if any:

- | | |
|---|----|
| i) Conjunction of PDEINP unit cover with calculator console | 4× |
| j) The type plate of PDEINP unit, if separate | 1× |
| k) Conjunction of ATC temperature sensor with the gas separator | 1× |
| l) The type plate of temperature sensor, if separate | 1× |

On the LPG dispenser:

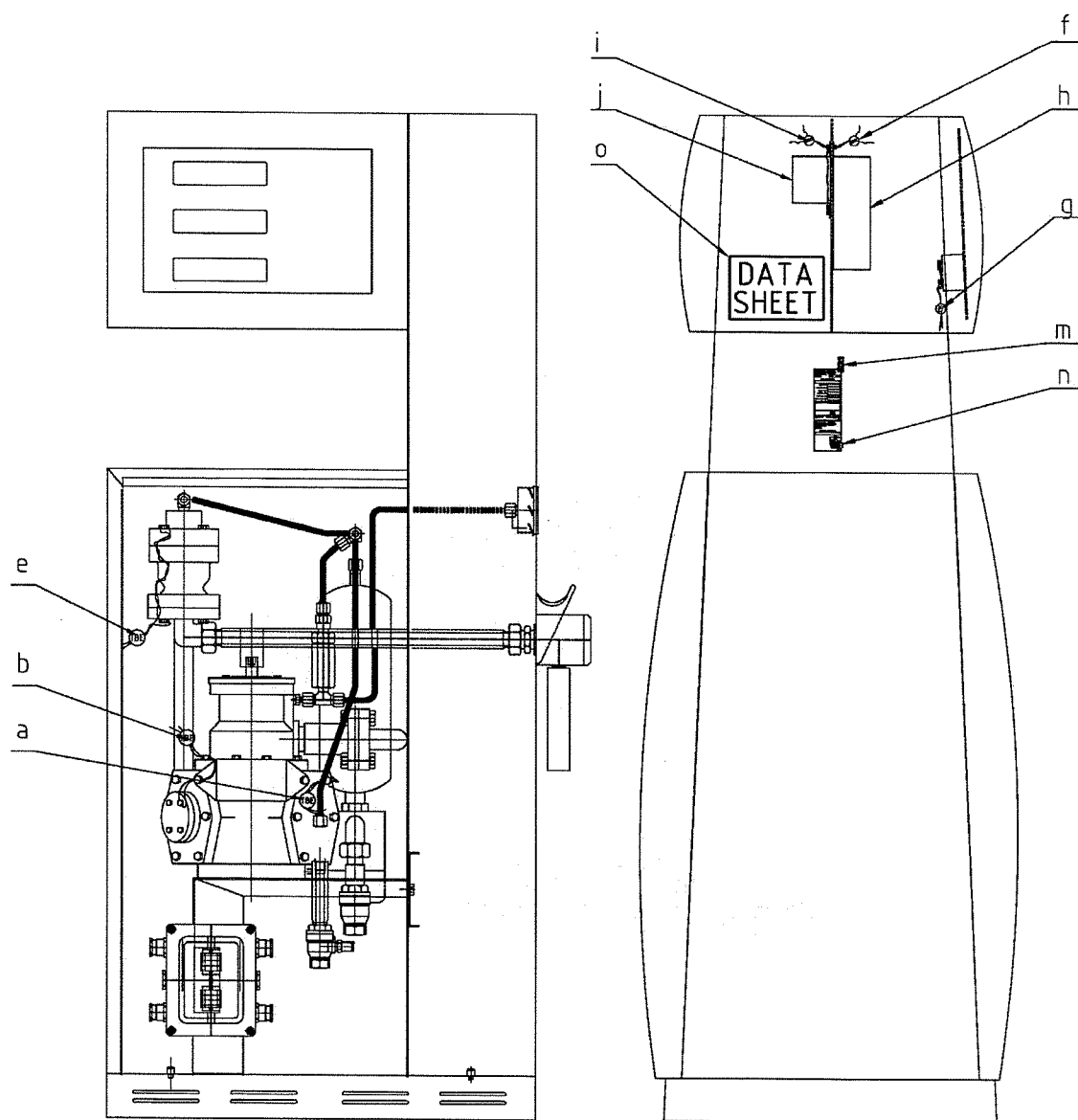
- | | |
|---|----|
| m) Conjunction of dispenser name plate with fuel dispenser frame | 1× |
| n) The symbol of relevant measuring system on the name plate | 1× |
| o) The fuel dispenser data sheet (identification of data on document) | 1× |

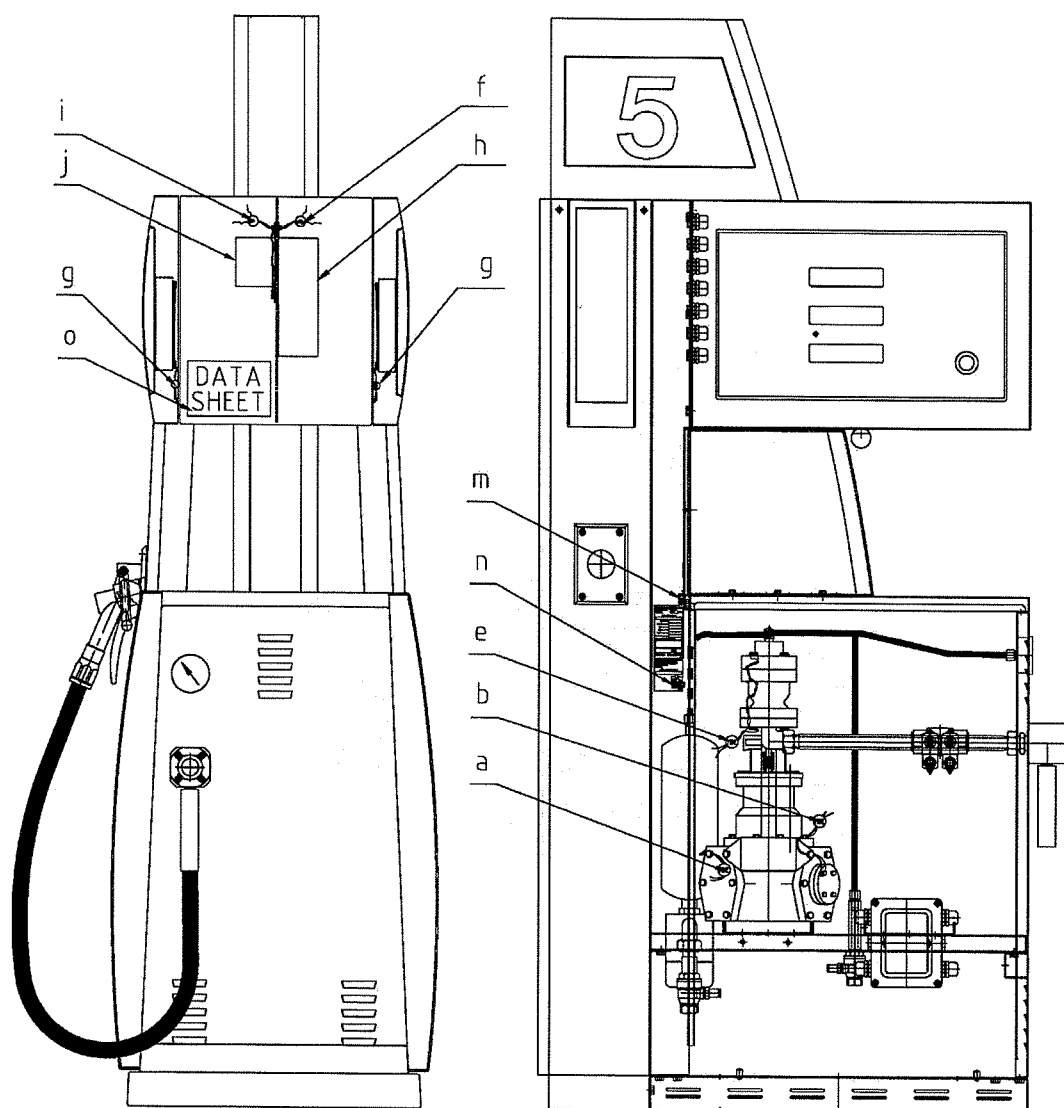
On the UNIDATAZ CDC electronic calculator:

- | | |
|--|----|
| p) Conjunction of S3 switch cover with CPU unit | 1× |
| q) Conjunction of CPU unit with calculator console | 1× |
| r) Conjunction of electromechanical totalizer to the frame | 1× |
| s) The type plate of calculator | 1× |

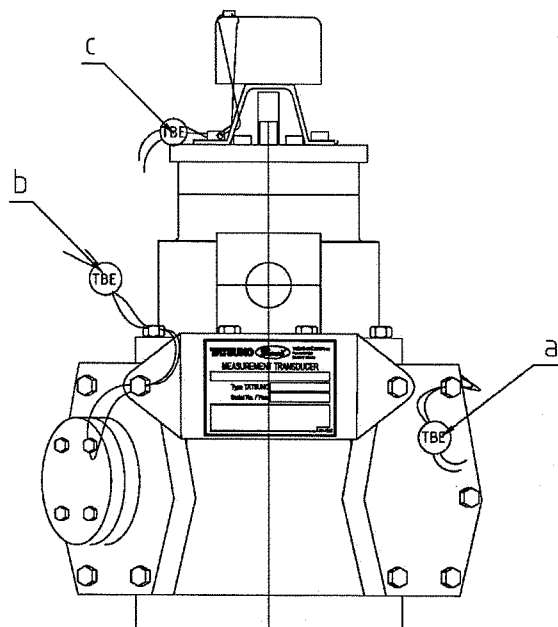
Additional sealing points beyond the requirements of OIML R 117-1 and WELMEC 10.6 can be used on special request of the local W&M authority.

Picture No. 1: The sealing of SHARK BMP 5xx.S/LPG and 2xxx.S/LPG LPG dispenser



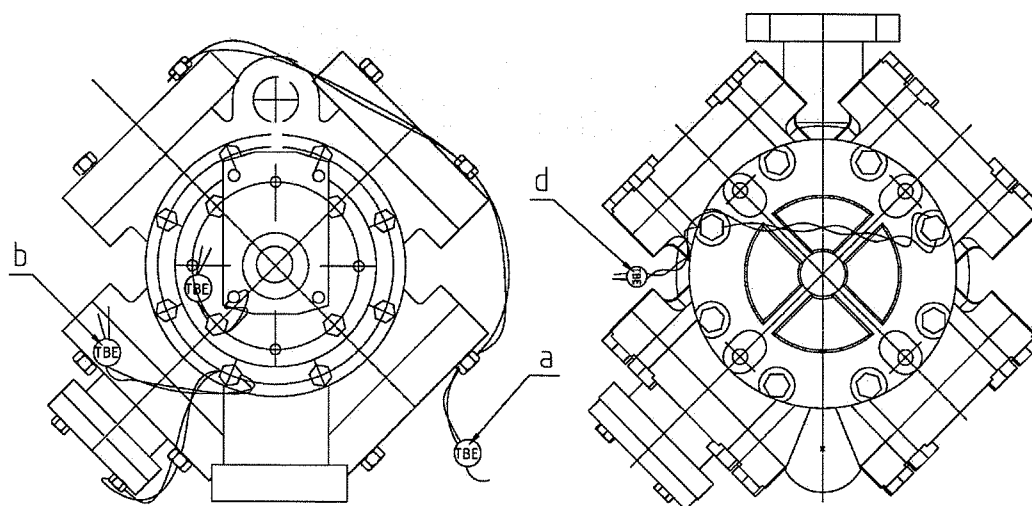


Picture No. 2: The sealing of MP-02524 measuring transducer

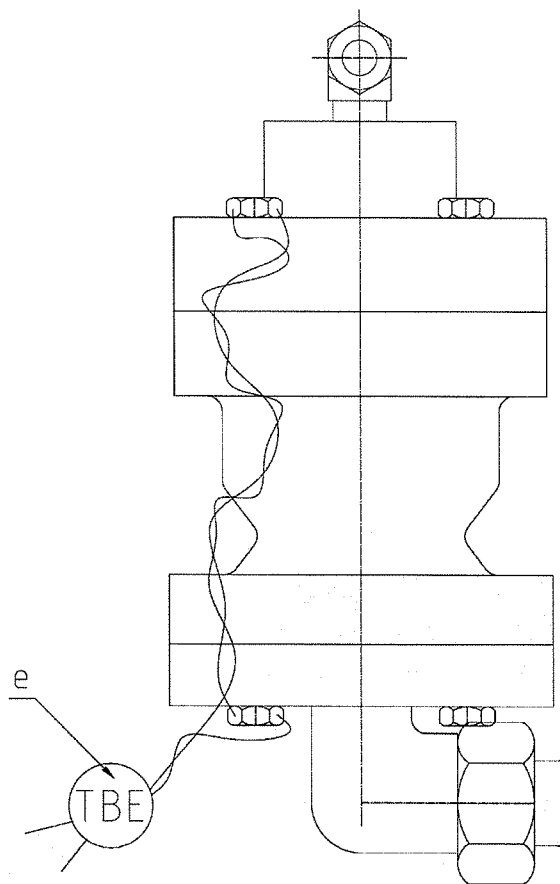


Upper view

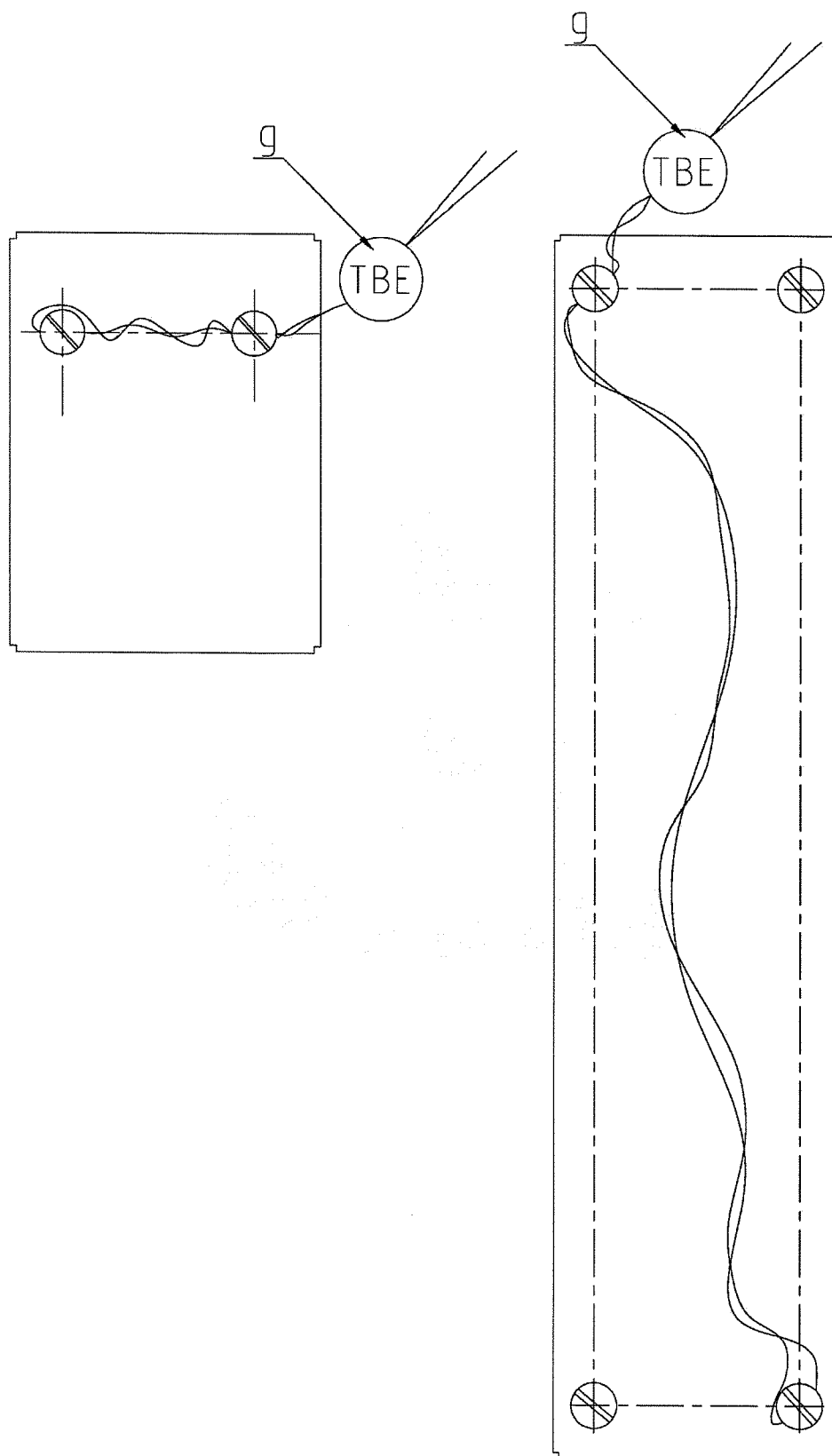
Bottom view



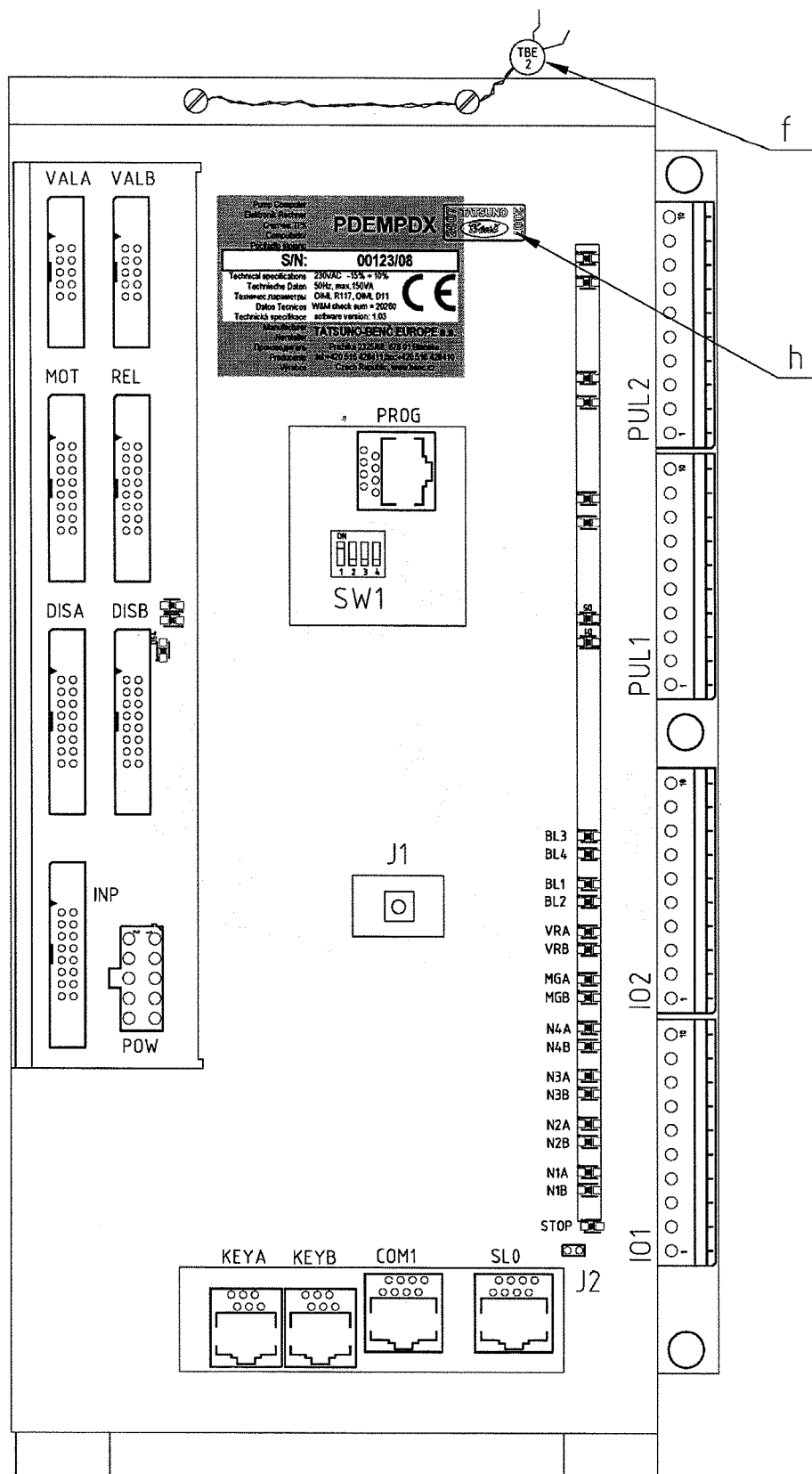
Picture No. 3: The sealing of differential valve:



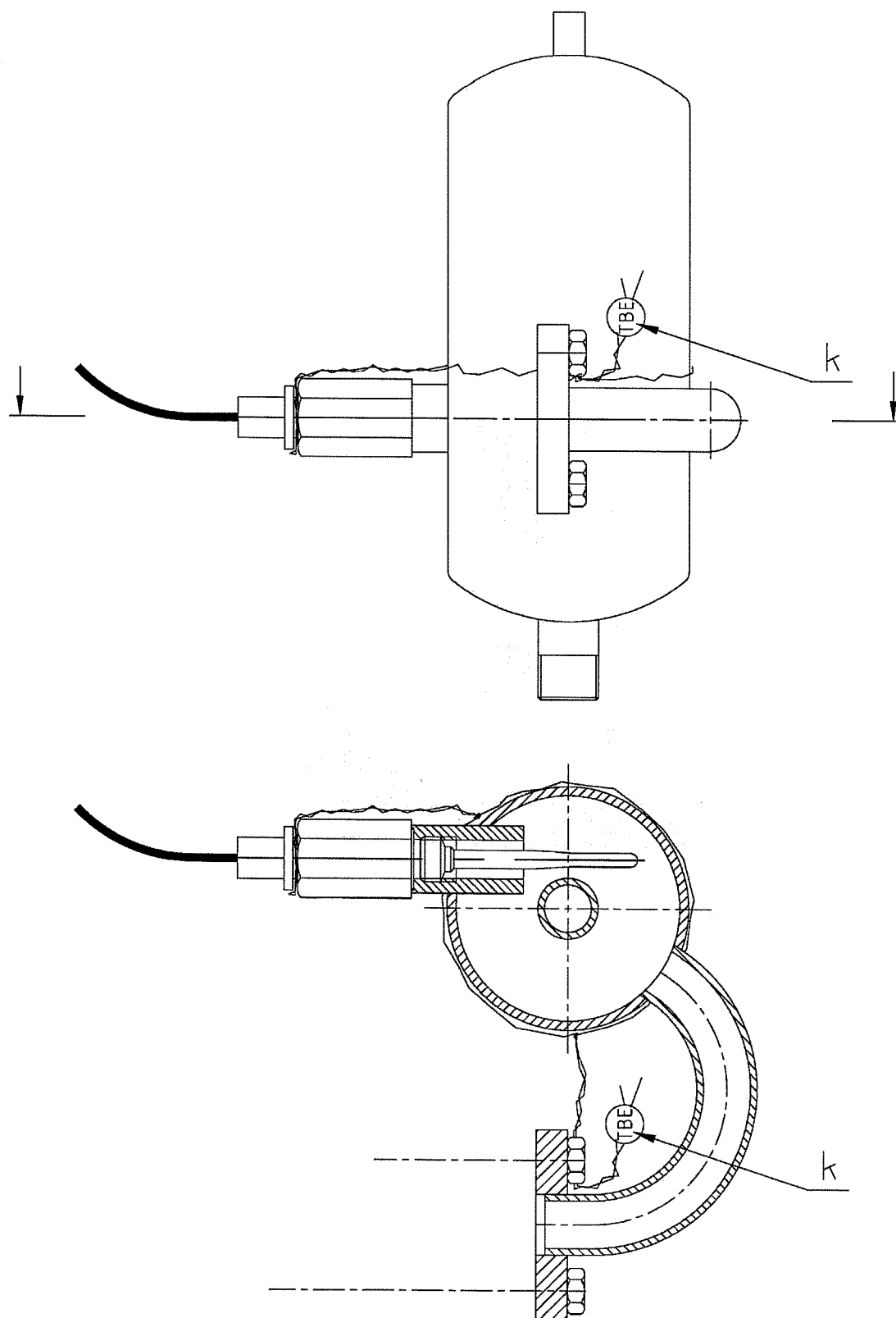
Picture No. 4: The sealing of totalizing indicating device



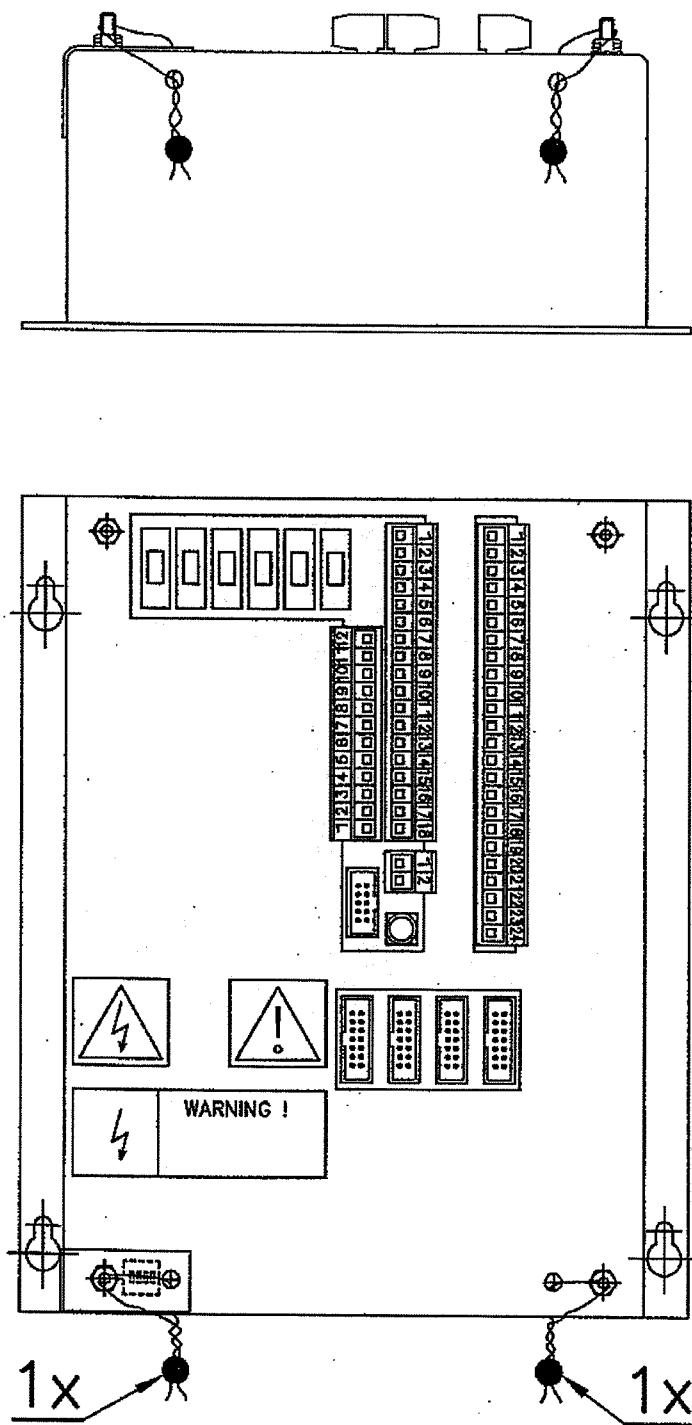
Picture No. 5: The sealing of PDEMPD.X calculator



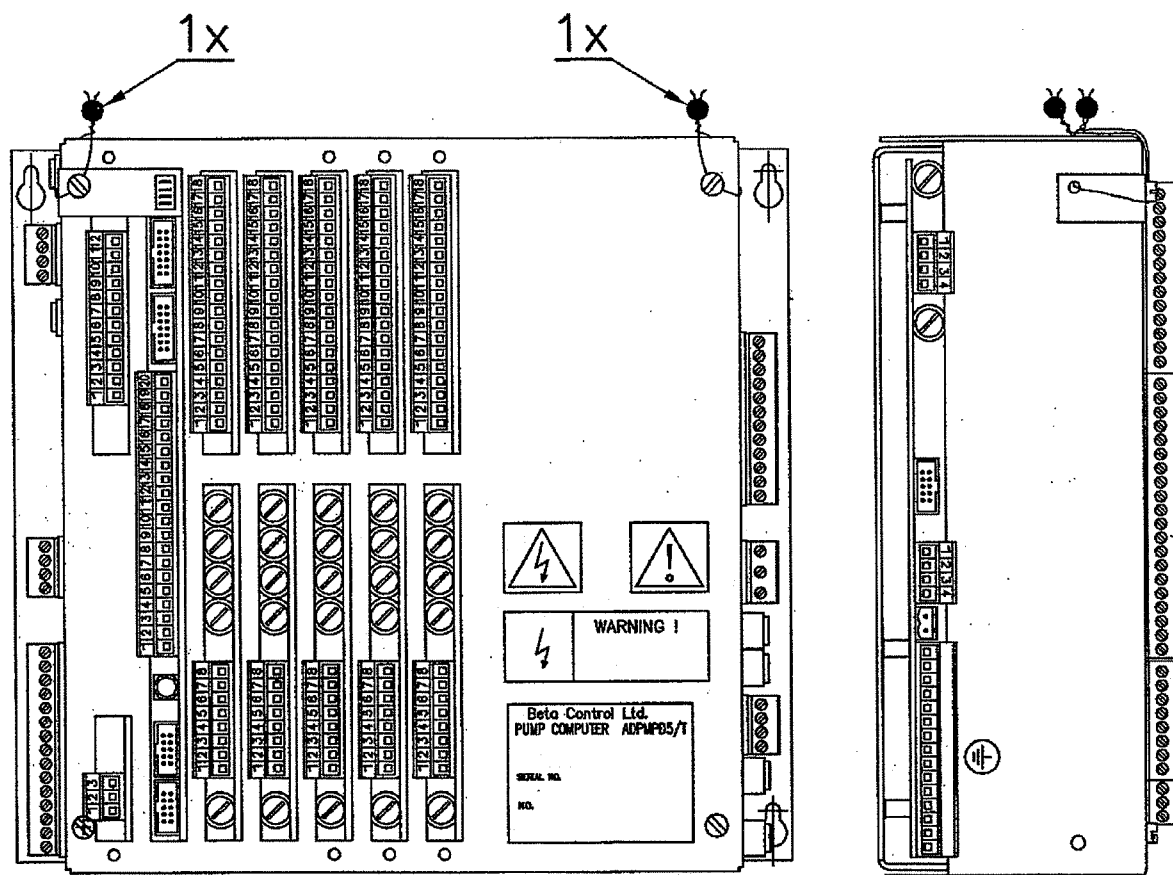
Picture No. 8: The sealing of Pt100 in gas separator



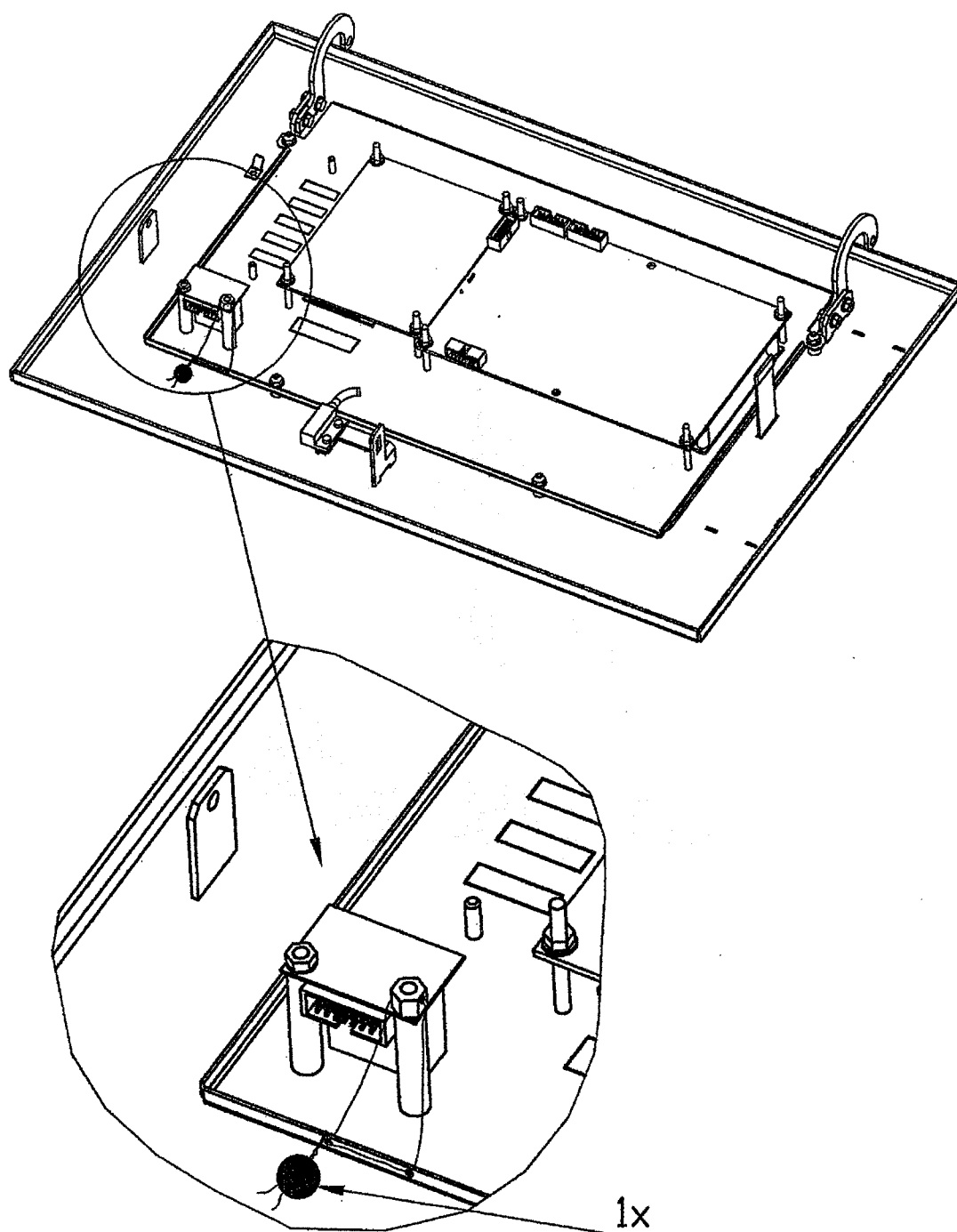
Picture No. 9: The sealing of ADP1/T and ADP2/T calculator

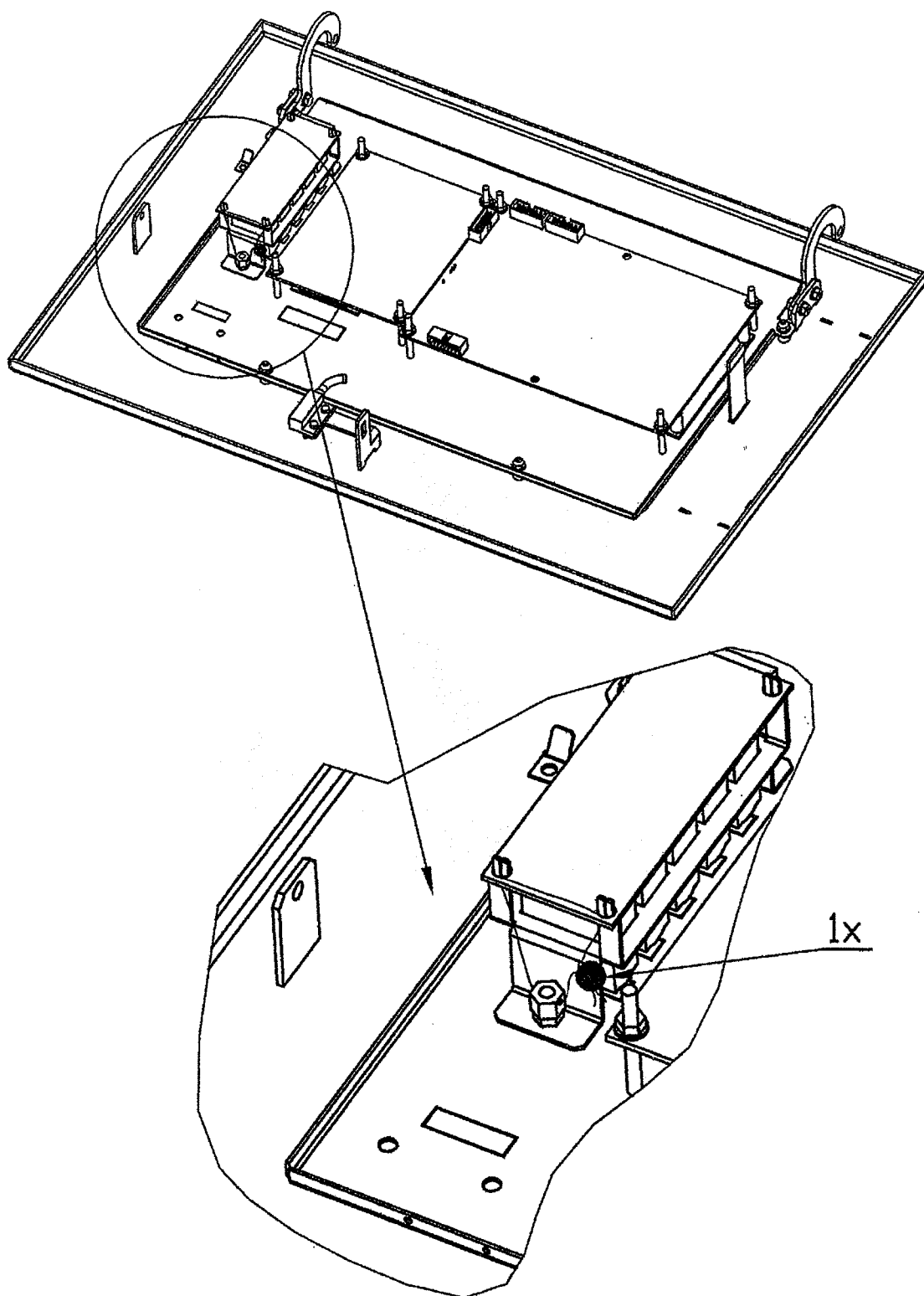


Picture No. 10: The sealing of ADPMPDx/T calculator

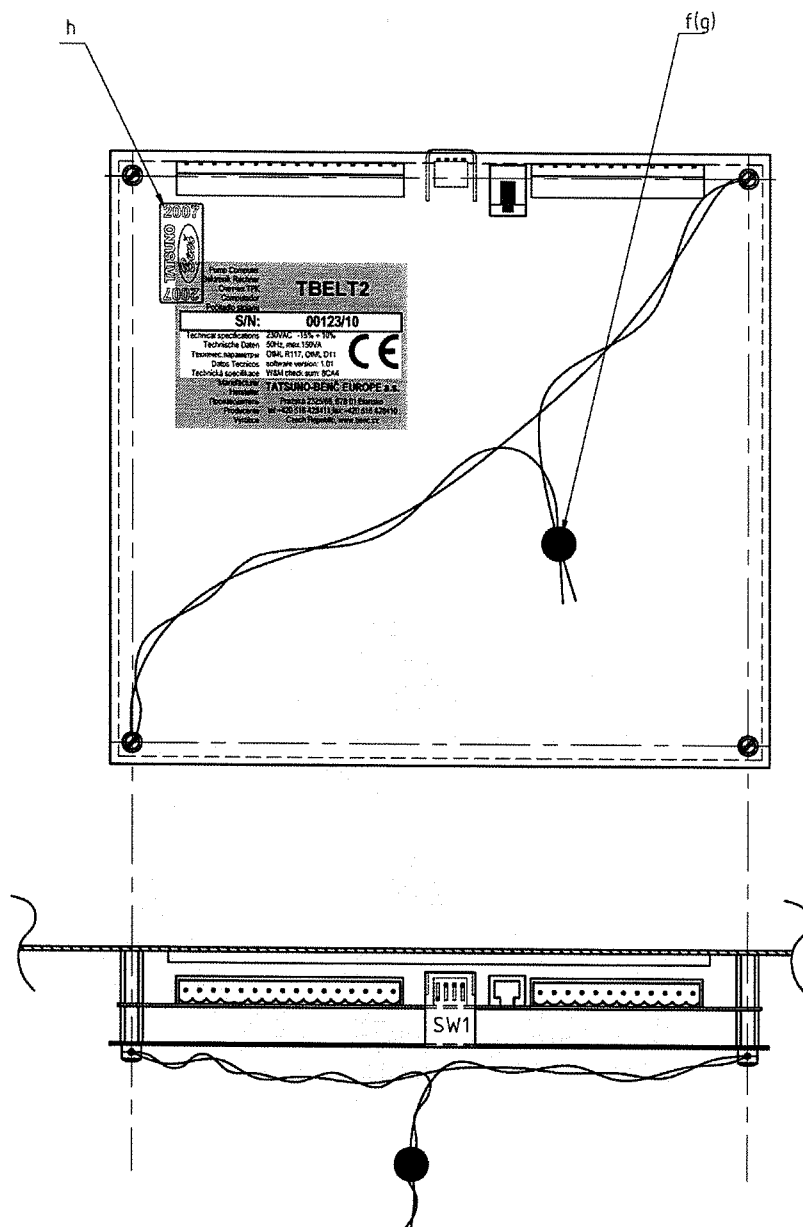


Picture No. 11: The sealing of totalizing indicating device (ADPx/T, ADTMPDx/T)





Picture No. 12: The sealing of TBELTx calculator



Picture No. 13: The sealing of the UNIDATAZ CDC electronic calculator with totalizer

