



Český metrologický institut

Notifikovaná osoba č 1383, Okružní 31
638 00 Brno

EC-TYPE EXAMINATION CERTIFICATE

Number: TCM 141/07 - 4493

Addition 3

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-BENČ 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 22 pages.

Date of issue: 10 May 2010




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 PDE, PDEX, ADP1/T, ADP2/T and ADPMPDx/T electronic calculator. There had 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 or Pt100 temperature sensor. There are three 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 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 three different models of PDE electronic calculator. Models PDEVOL can control one measuring system only, model PDEDUO can control two measuring systems and model PDEMPD can control ten measuring systems maximally, two simultaneously. PDEVOL calculator do not consist price indicating device.

Software version 3.34

The PDE 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 switch SW1 (location OFF – left site) with sealing cover, alternatively in case of model PDEDUO by DIP switch SW1-1 (location ON – up) with sealing cover.

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 communicates 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.

1.5. Conversion device

TM module of PDE (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
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 from December 21. 2006, Test Report No. 6015-PT-P006-08 from April 25. 2008 (PDEX extension), Test Report No. 6015-PT-P027-08 from December 22. 2008 (ADP/T extension) and Test Report No. 6015-PT-P0002-10 from April 28. 2010 (TBE 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 switch SW1 has to be set to position OFF (left site) in case of PDEMPD electronic calculator.

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

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

The each measuring system has to be sealed after the tests with positive result:

On the measurement transducer:

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

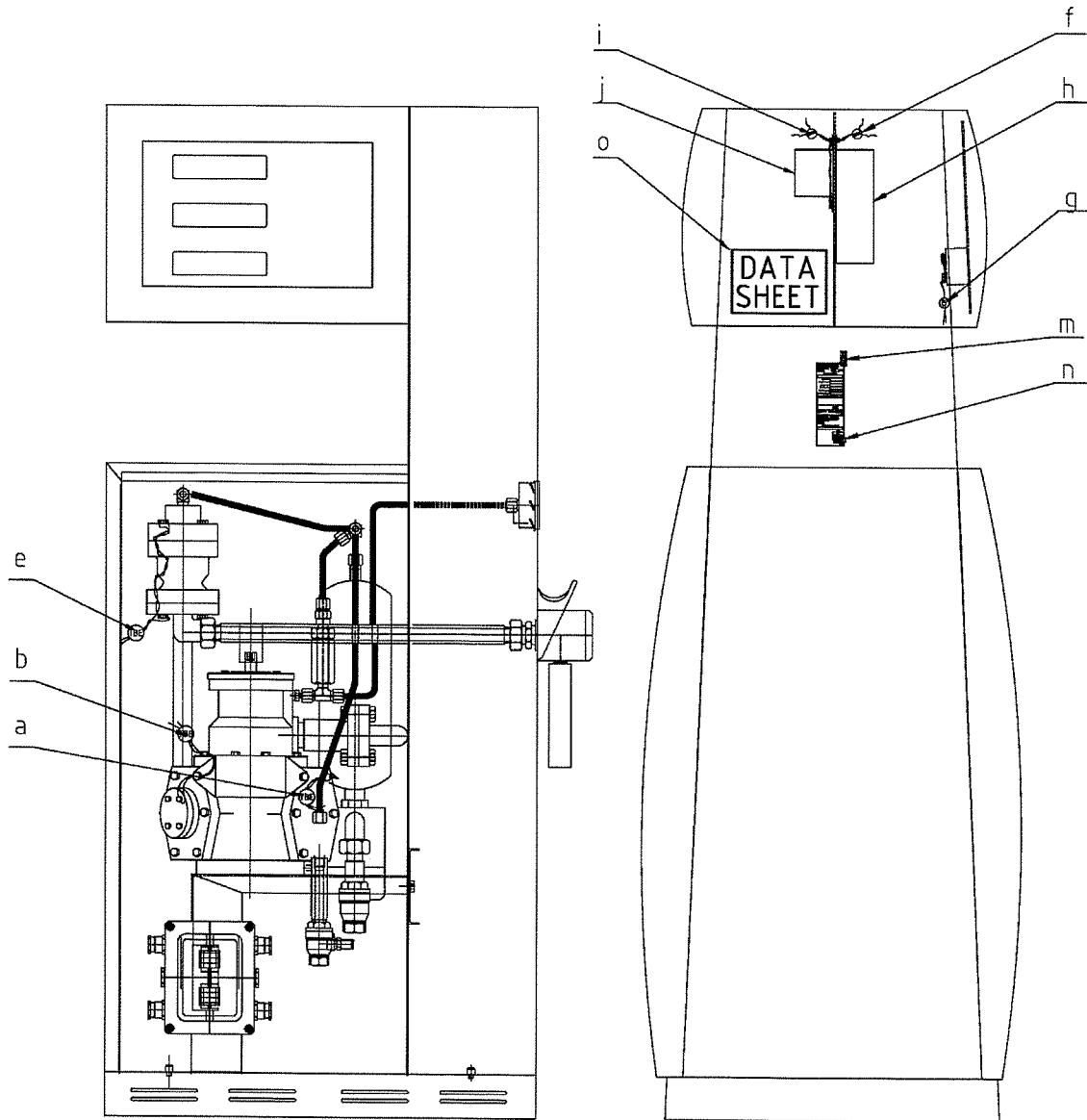
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1×

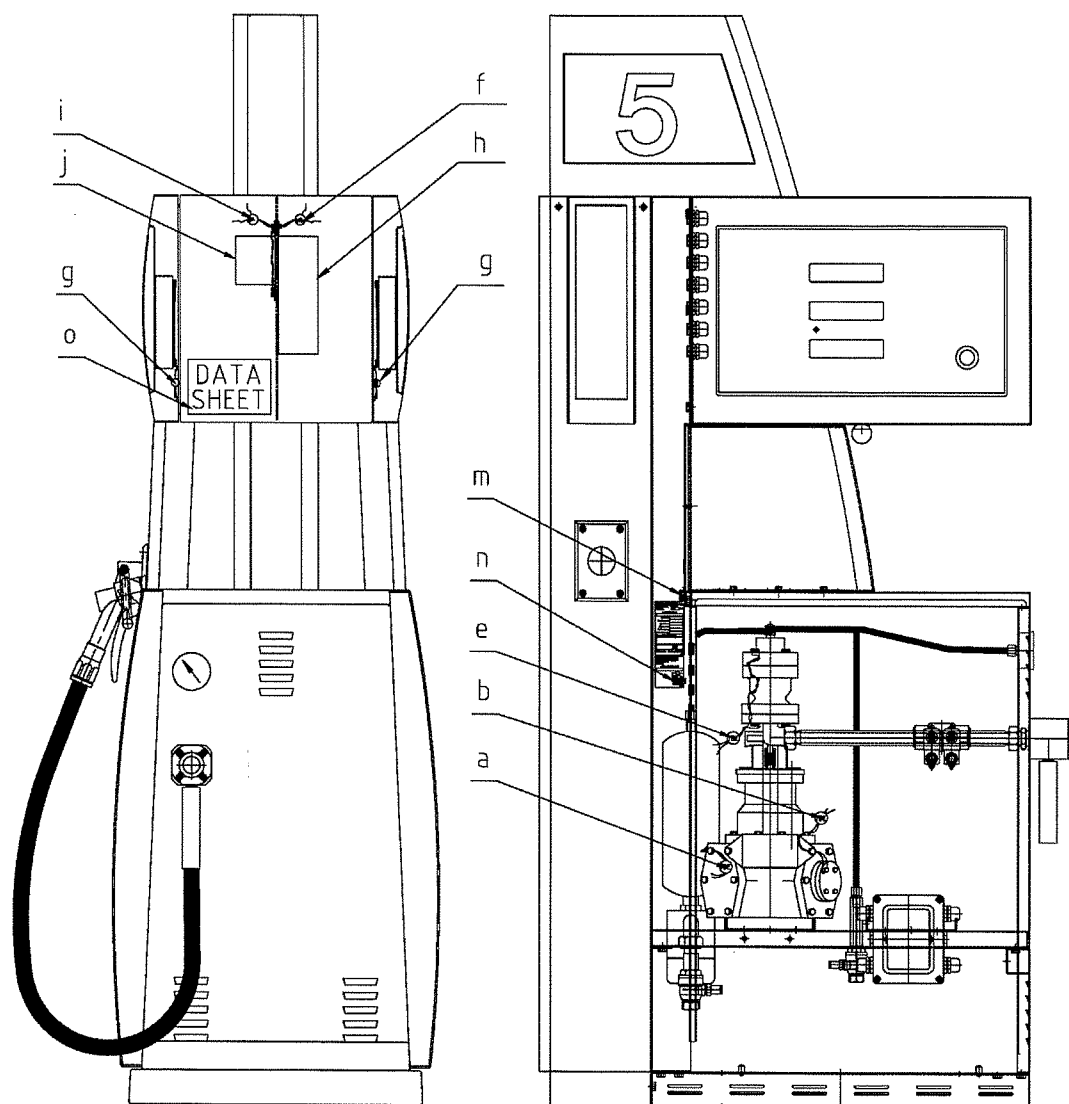


d) Conjunction of transducer body with bottom cover	1×
On the differential valve:	
e) Conjunction of differential valve body with upper and bottom covers	1×
On the calculator:	
f) Conjunction of calculator cover with calculator console and SW1 switch cover, if separate	1×
g) Conjunction of cover of electromechanical 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×

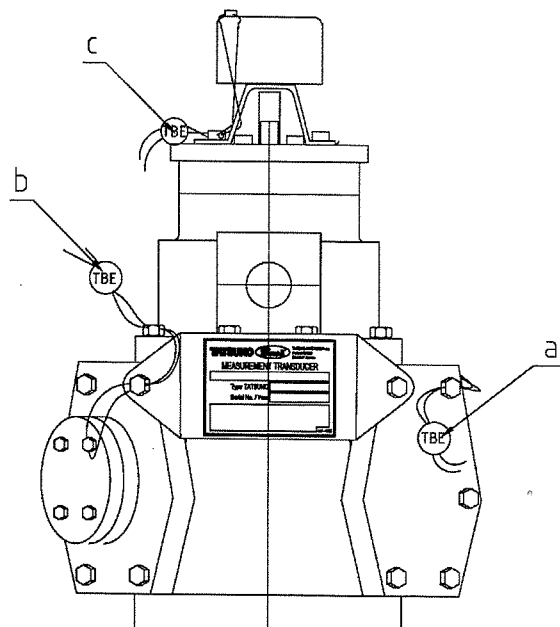
Additional sealing points beyond the requirements of OIML R 117-1 and WELMEC 10.6 can be used on special request of the local W&M authority.

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



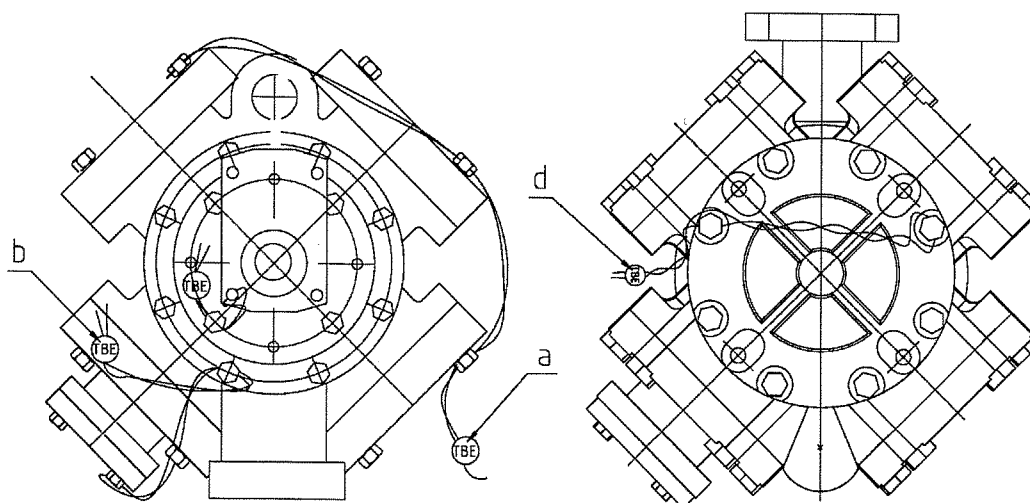


Picture No. 2: The sealing of MP-02524 measuring transducer

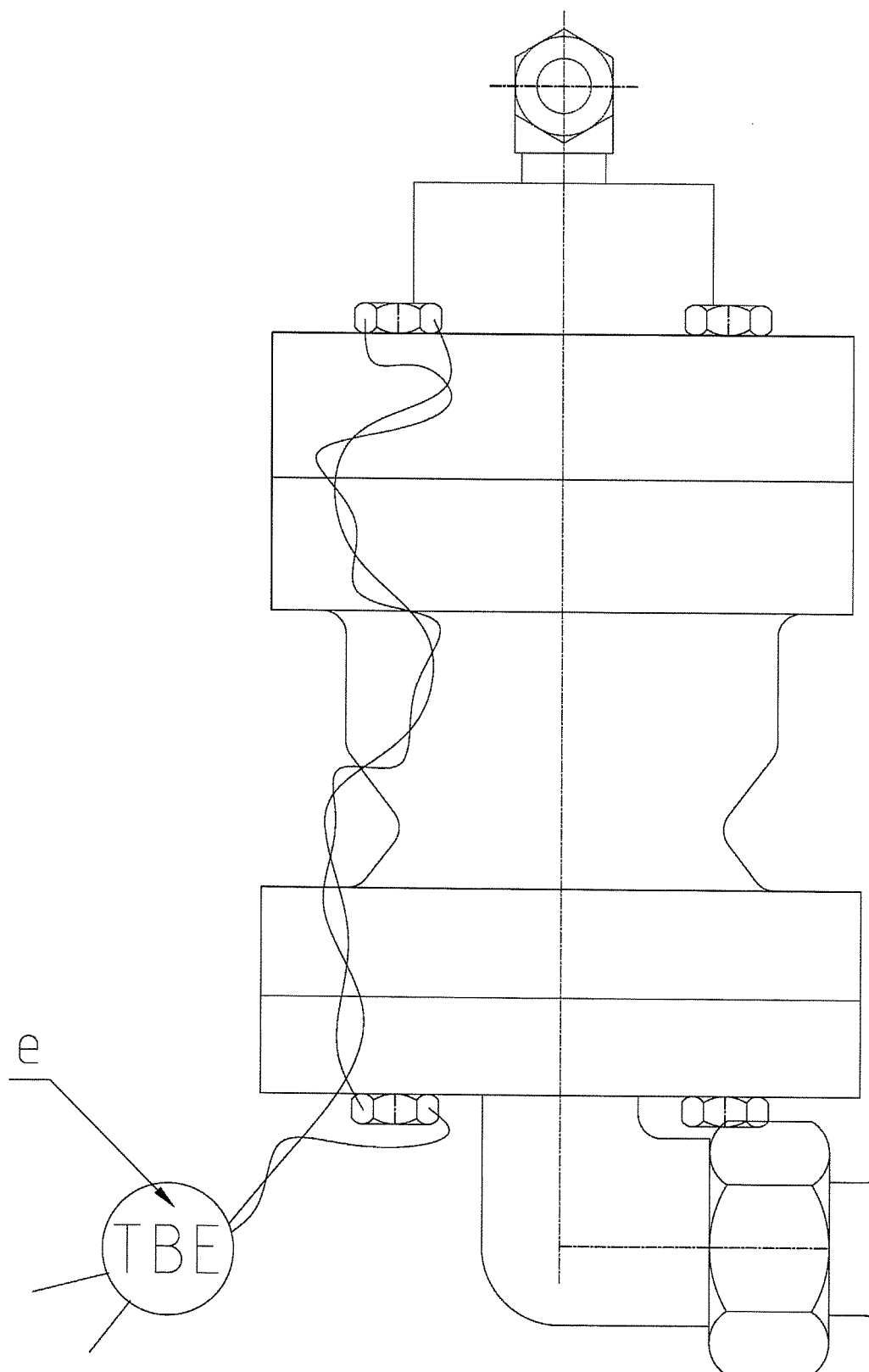


Upper view

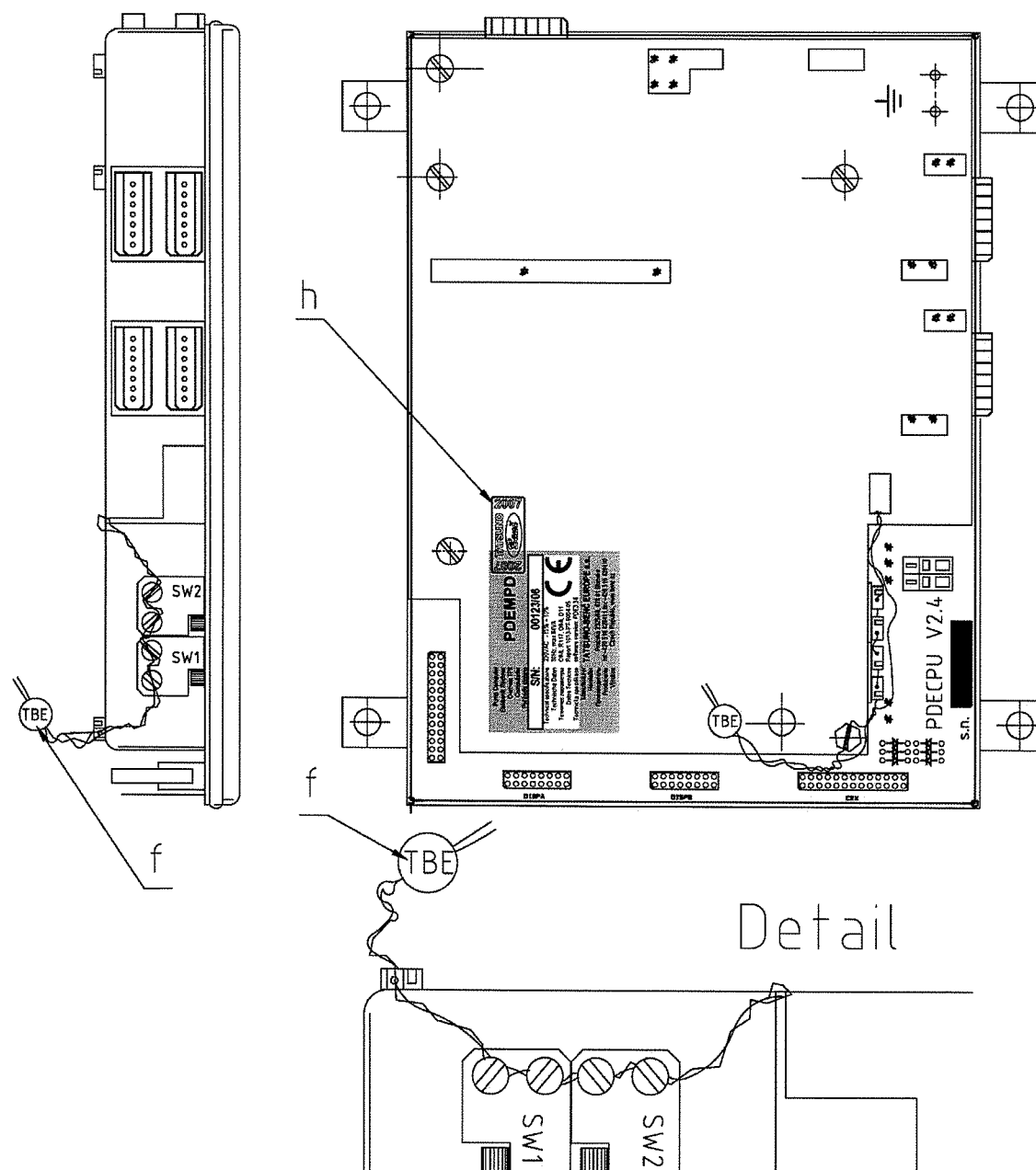
Bottom view



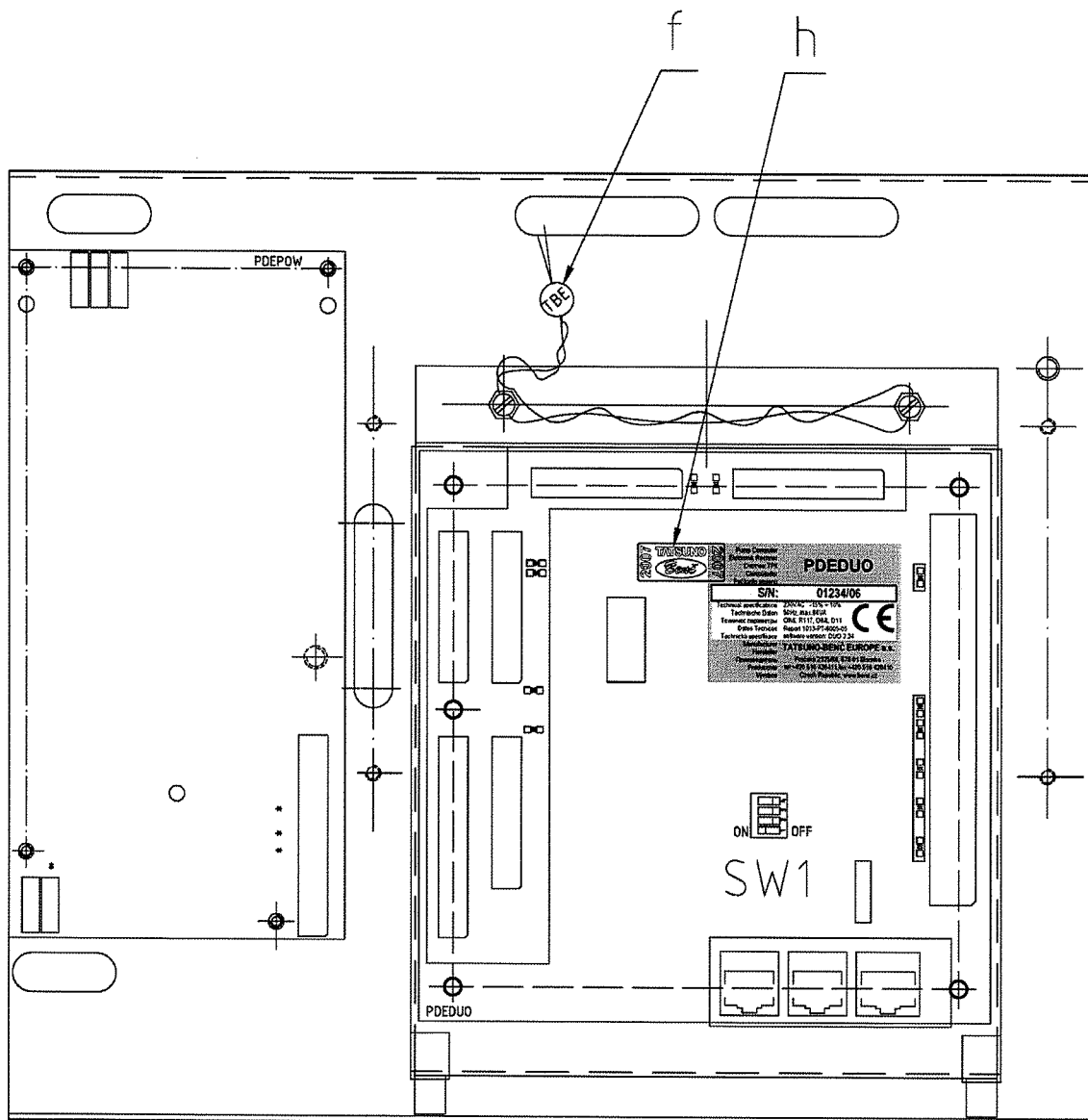
Picture No. 3: The sealing of differential valve:



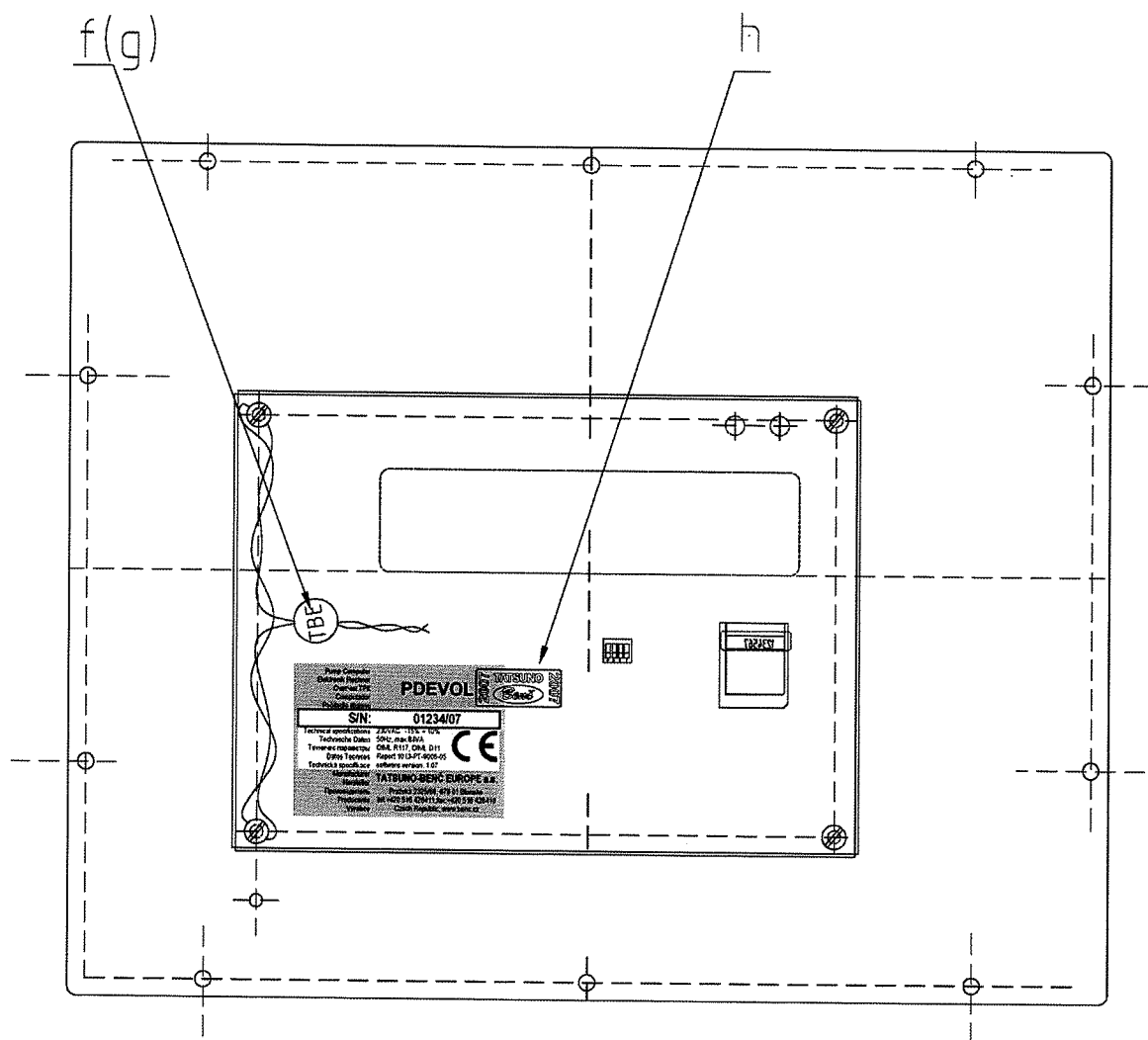
Picture No. 4: The sealing of PDEMPD calculator



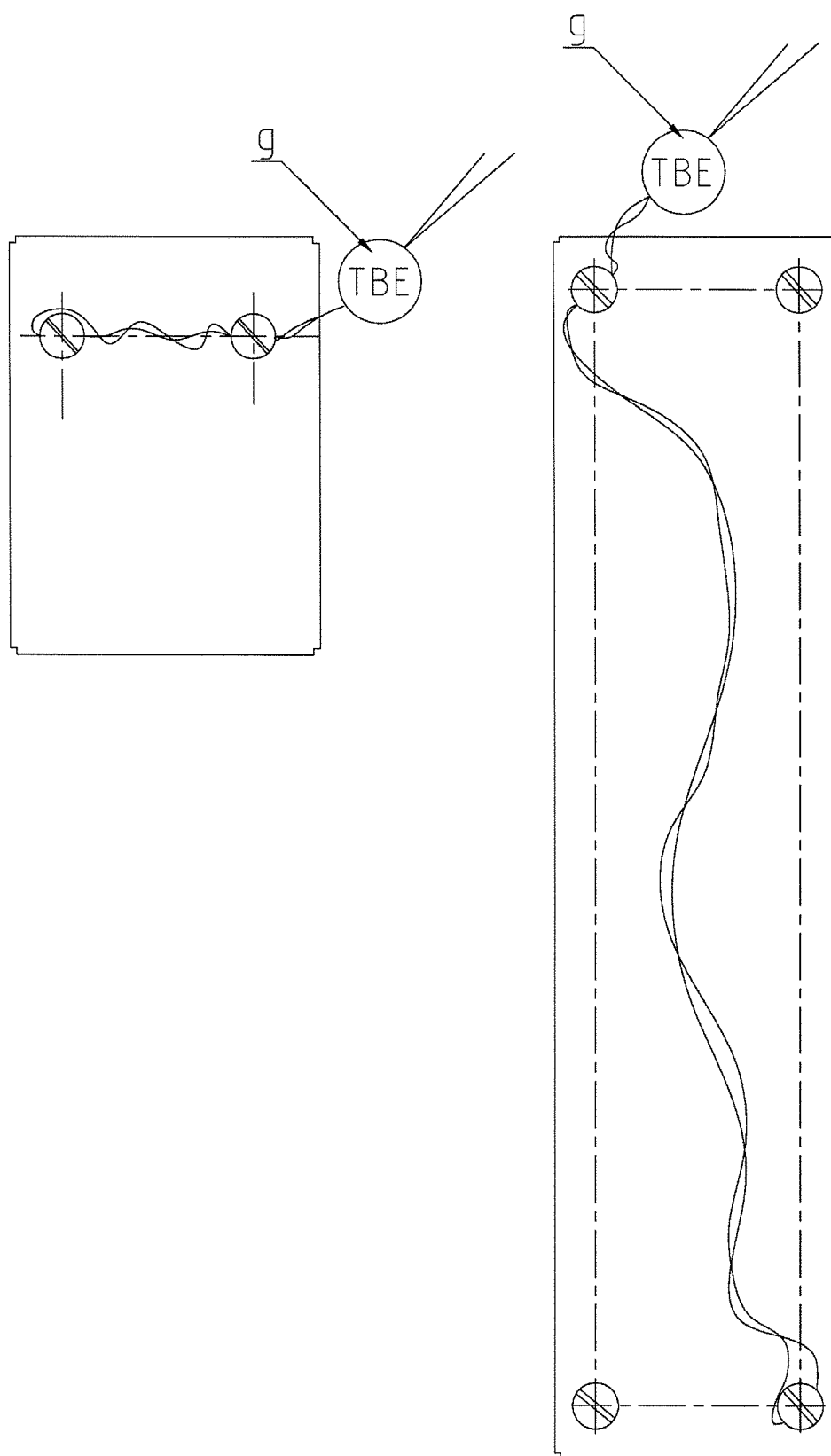
Picture No. 5: The sealing of PDEDUO calculator



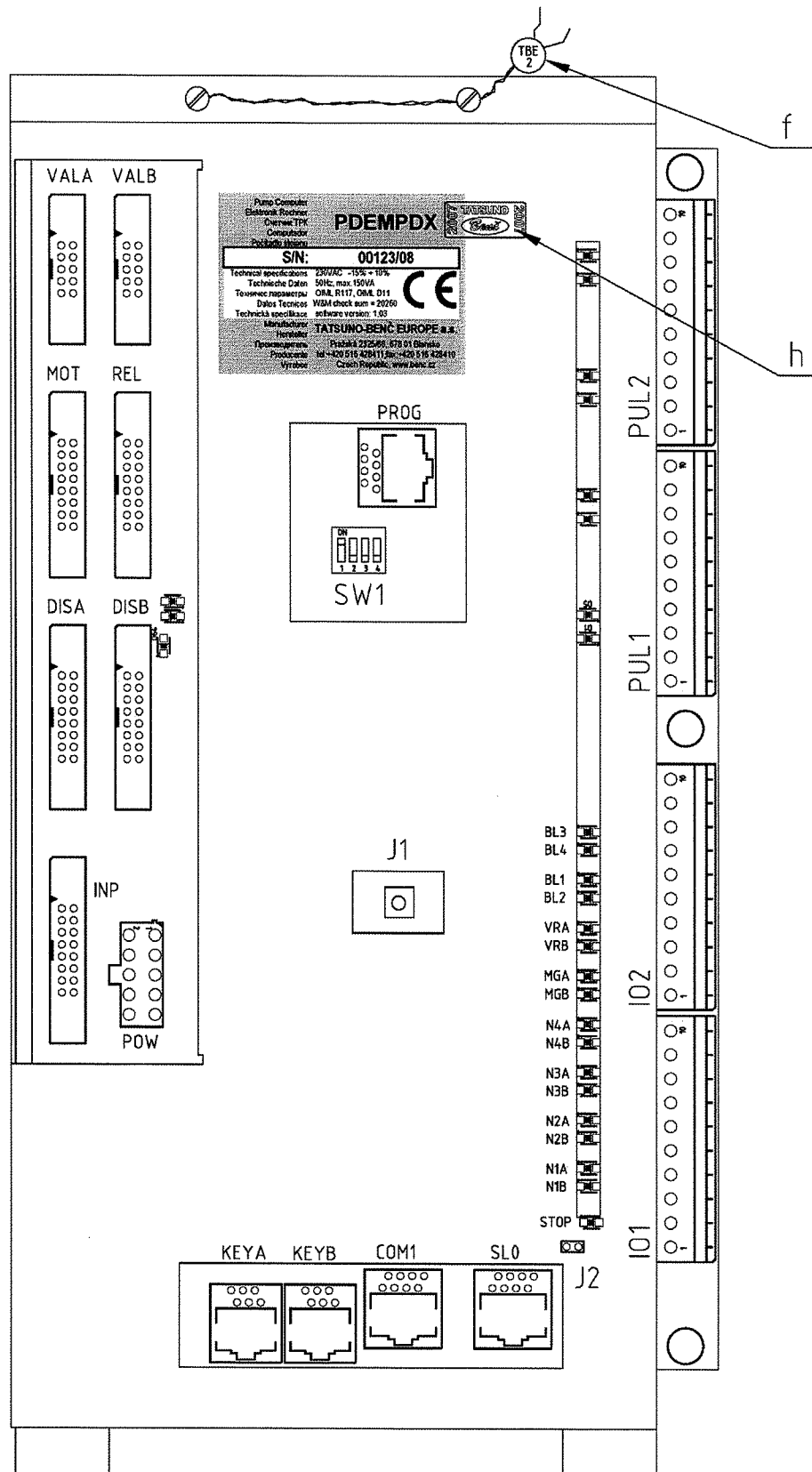
Picture No. 6: The sealing of PDEVOL calculator



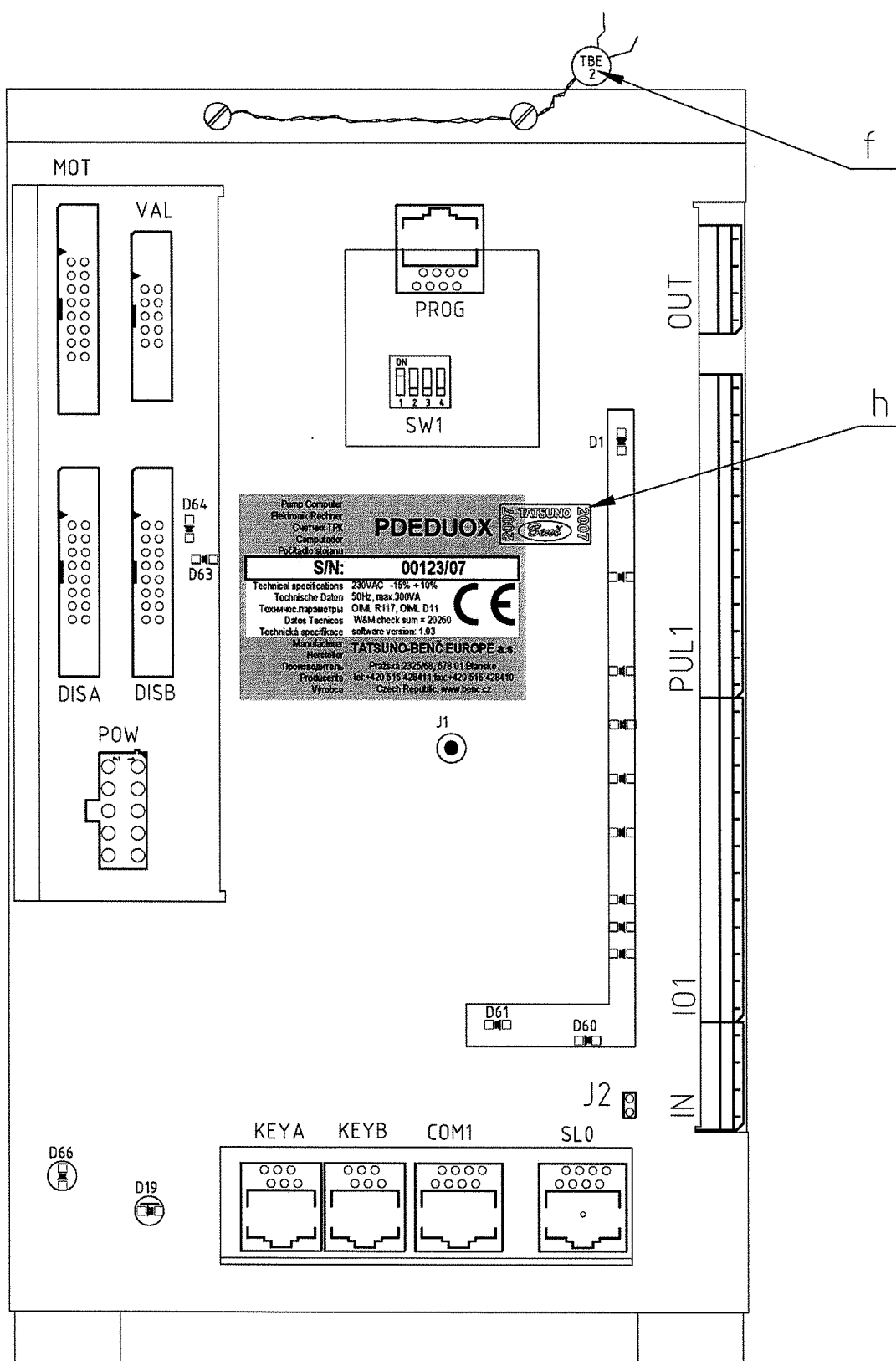
Picture No. 7: The sealing of totalizing indicating device



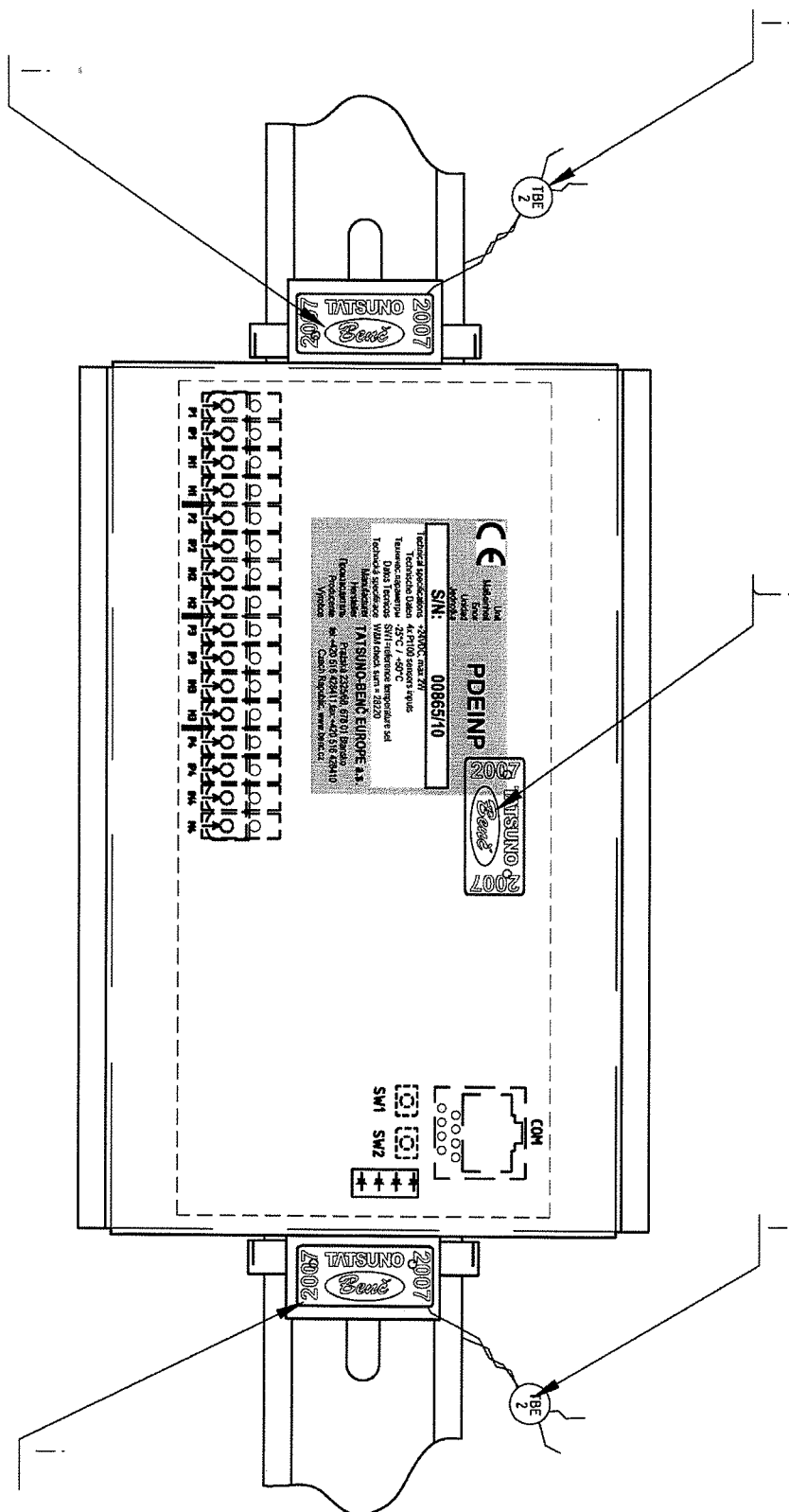
Picture No. 8: The sealing of PDEMPD.X calculator



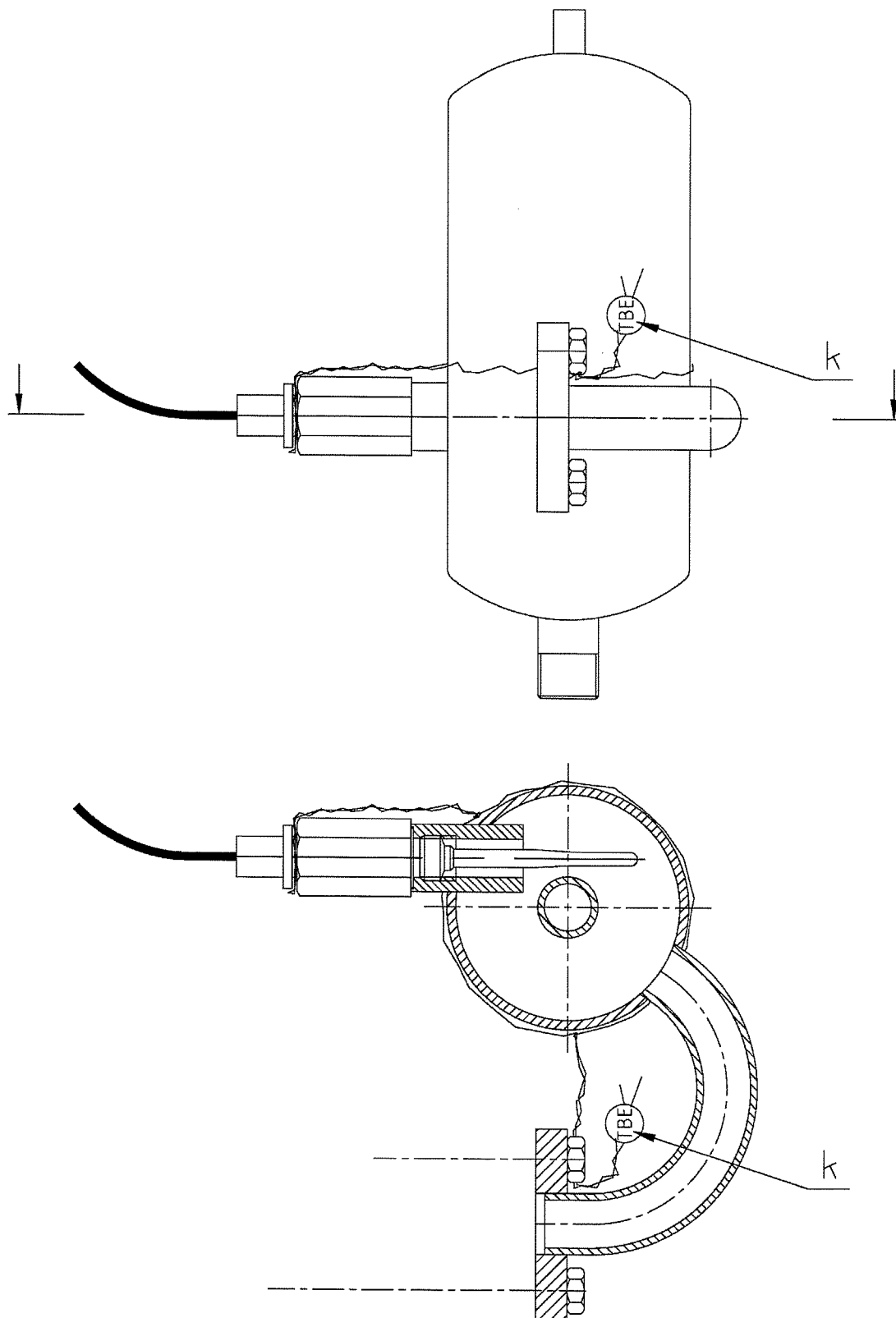
Picture No. 9: The sealing of PDEDUO.X calculator



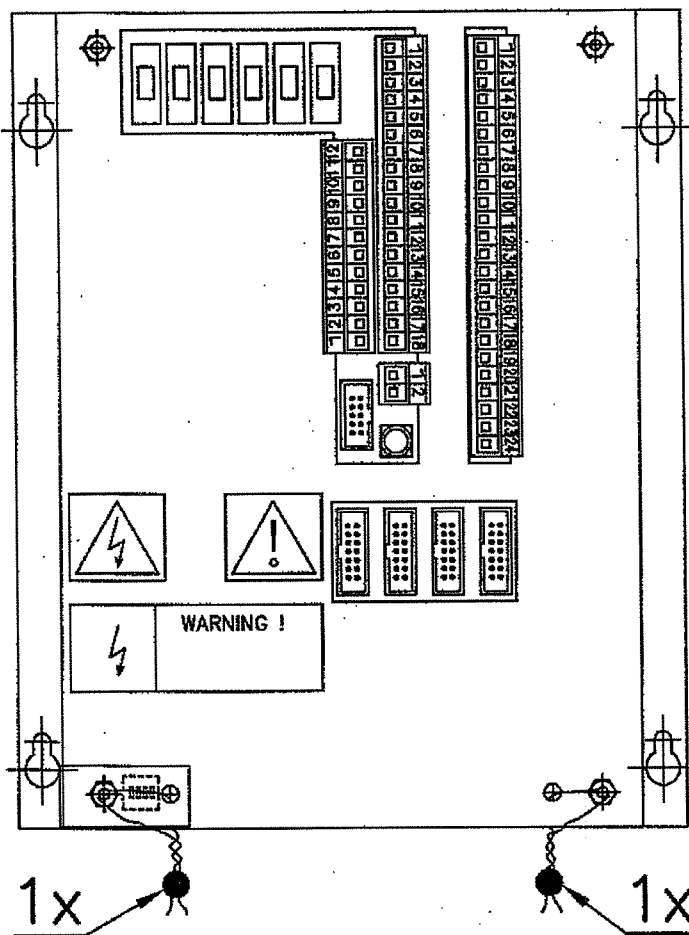
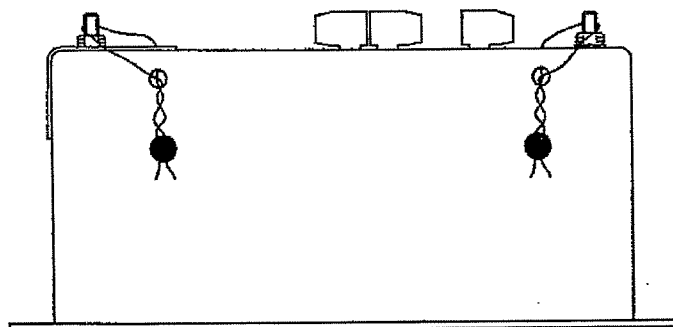
Picture No. 10: The sealing of PDEINP.X conversion device



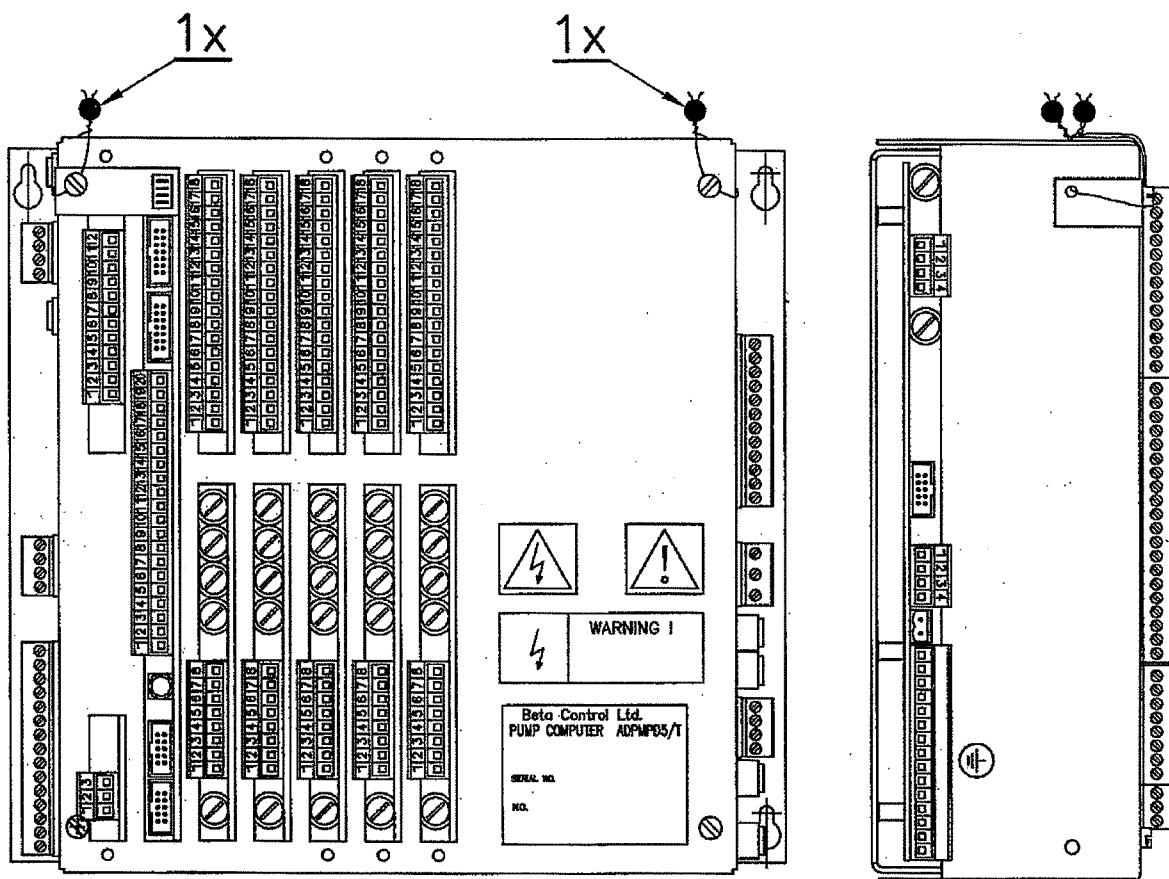
Picture No. 11: The sealing of Pt100 in gas separator



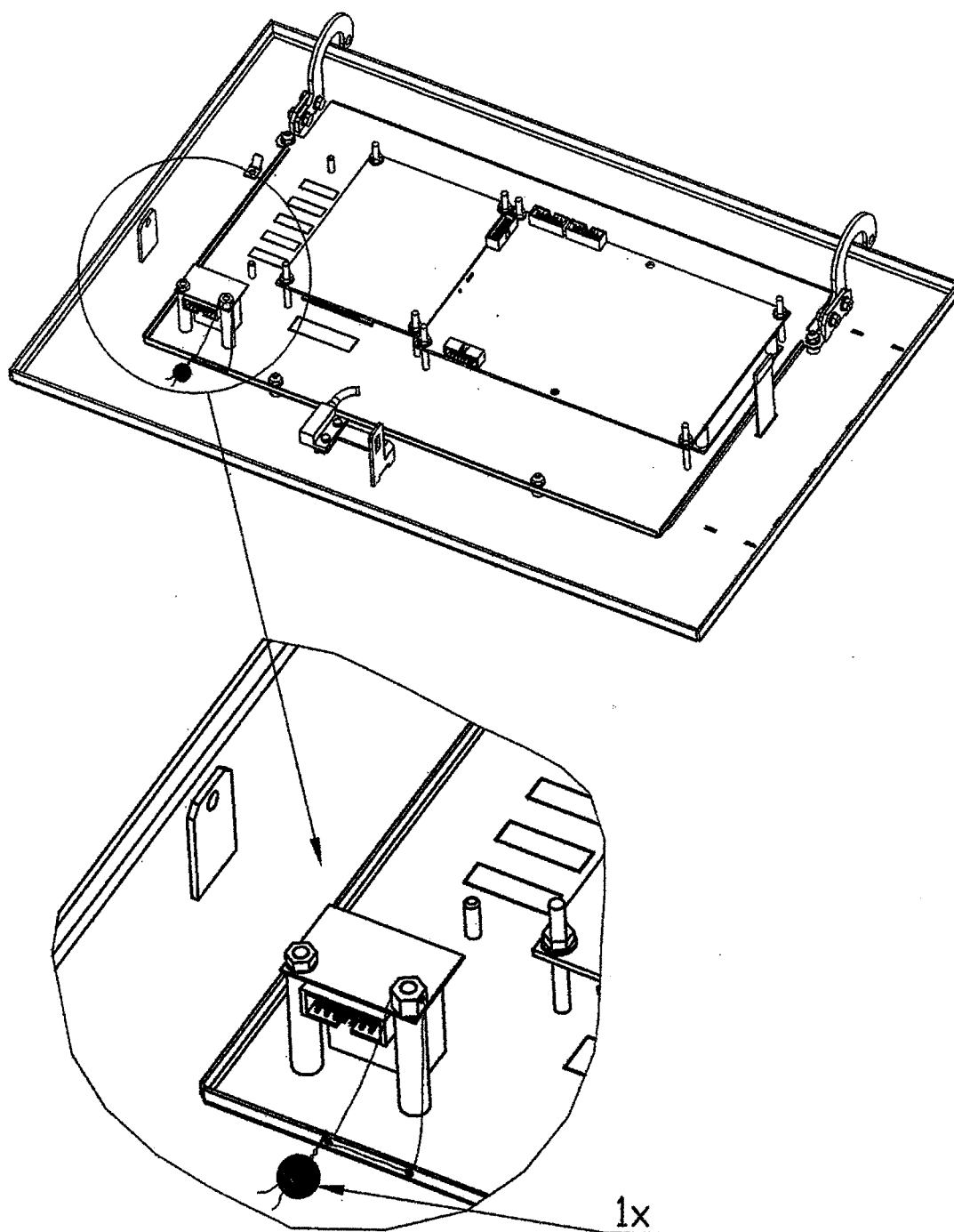
Picture No. 12: The sealing of ADP1/T and ADP2/T calculator

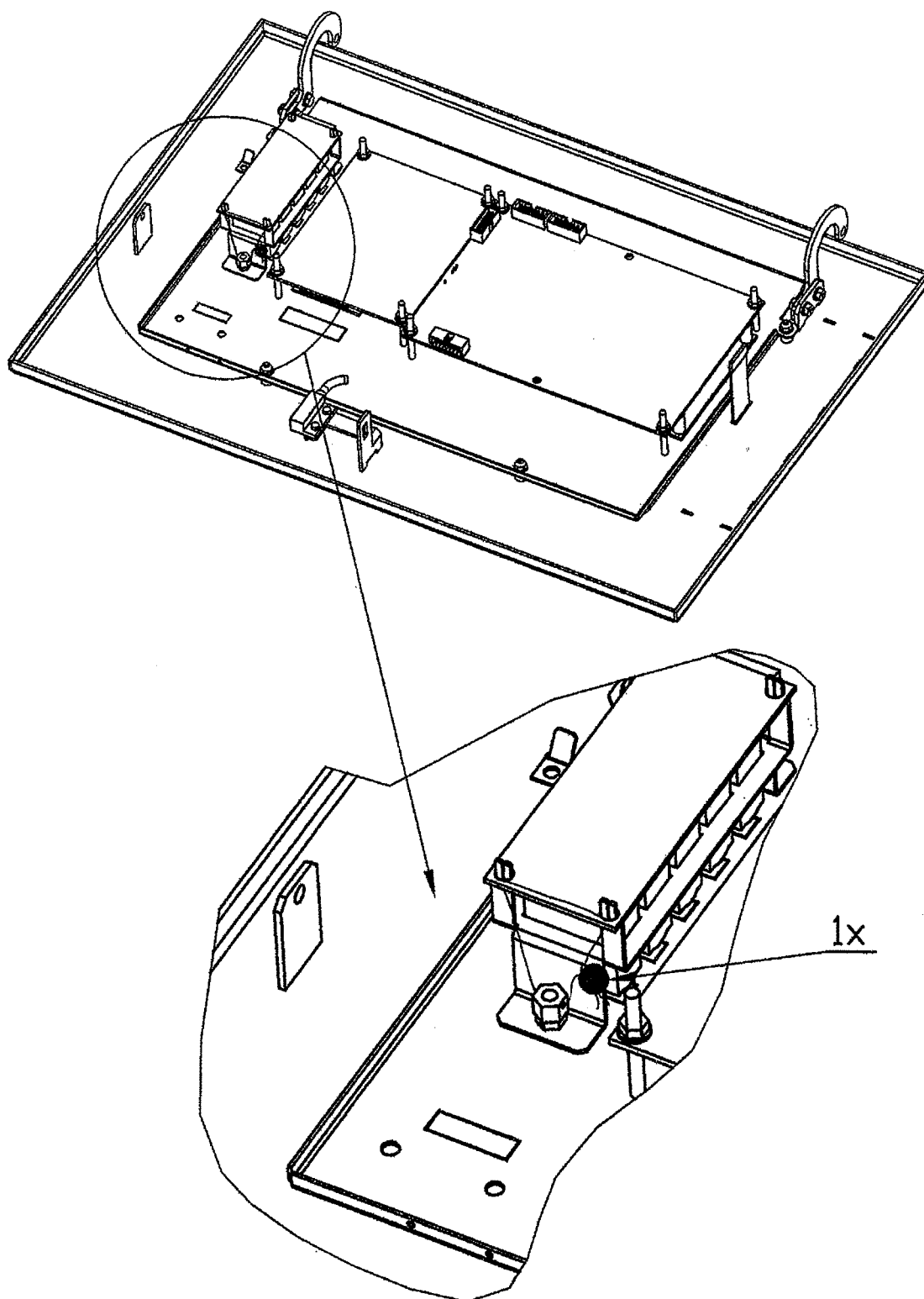


Picture No. 13: The sealing of ADPMPDx/T calculator



Picture No. 14: The sealing of totalizing indicating device (ADPx/T, ADTMPDx/T)





Picture No. 15: The sealing of TBELTx calculator

