



Czech Metrology Institute

Notified Body No. 1383, Okružní 31
638 00 Brno

EC-TYPE EXAMINATION CERTIFICATE

Number: TCM 141/07 - 4493

Addition 5

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.**
Pražská 2325/68
678 01 Blansko
Czech Republic

In respect of: **LPG dispenser**
type: **SHARK BMP 5xx.S/LPG and 2xxx.S/LPG, OCEAN BMP 4xxx.O/LPG**
and SUNNY-XE EURO Sxx xxxx.E/LPG

Type of liquids	LPG
Accuracy class	1.0

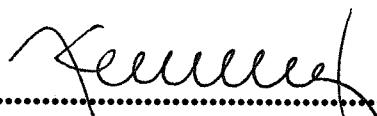
Valid until: **16 January 2017**

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

Description: Essential characteristics, approved conditions and special conditions, if any, are described in this certificate. This certificate contains 20 pages.

Date of issue: 29 April 2013




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RNDr. Pavel Klenovský
Notified Body No.1383

1. Measuring device description

The LPG dispensers of the types SHARK BMP 5xx.S/LPG and 2xxx.S/LPG, OCEAN BMP 4xxx.O/LPG and SUNNY-XE EURO Sxx xxxx.E/LPG are intended 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.

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.

Electronic calculators PDEX, ADP1/T, ADP2/T, ADPMPDx/T and CDC of the LPG dispenser can be equipped with an ATC conversion function for conversion of measurement data to volume at base conditions (15 °C). In case of active ATC function a certified temperature sensor Pt 100 has to be mounted.

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.

There is OCEAN MOD 4xxx.O/LPG LPG module, the same hydraulic without electronics, to connect to OCEAN BMP 4xxx.O fuel dispensers, which was certified separately.

The SHARK BMP 5xx.S/LPG and 2xxx.S/LPG, OCEAN BMP 4xxx.O/LPG and SUNNY-XE EURO Sxx xxxx.E/LPG LPG dispensers could be connected into independent Point of Sale or Paying terminal, which do not influence metrology parameters of measuring system.

These LPG dispensers may be connected to certified self-service device which communicate by identical protocol as electronic calculator.

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

These measurement transducers can be used alternatively.

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

1.2.2. TATSUNO FM-1029 measuring transducer consists of a measuring sensor with four pistons of cyclic volume 0.5 L and TATSUNO ZE-1945 magnetic pulse transmitter with 50 pulses / revolution.

TATSUNO MP-02524 and TATSUNO FM-1029 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

These electronic calculators can be used alternatively.

1.3.1. There are two different models of TATSUNO 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

This 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.

1.3.2. There are two different models of TATSUNO 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

This electronic calculator can be operated by four buttons keyboard. It is necessary to change over value of number of pulses per dm³, 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.

1.3.3. There are three different models of Beta Control ADPx/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.

This 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).

Electronic calculator family ADPx/T was certified separately by the EC - type examination certificate No. TCM 141/07 – 4505 issued by CMI, Notified Body No. 1383.

1.3.4. 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 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. Self-service device

Hectronic GmbH TA2331 self-service device was separately certified by Evaluation certificate No. GB-1286 issued by NWML, Notified Body 0126.

Hectronic GmbH HECSTAR and HECFLEET NT self-service devices were separately certified by Evaluation certificate No. A0445/2641/2011 issued by BEV, Notified body 0445.

1.7. Temperature sensor

1.7.1. Pt100 ZPA Nová Paka 112 705 714/ZP9306

1.7.2. Pt100 TRESTON TAB-01-Ex

1.8. Hose

ELAFLEX LPG DN 16; maximum length 7 m

1.9. Nozzle

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

1.9.2. Poličské strojírny a.s. VPP02

1.9.3. LPG Group LPG100, LPG200, LPG8xx, LPG9xx

1.9.4. ELAFLEX, ZVG2

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
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
Volume indication resolution [L]	0.01

3. Test

Technical tests of the SHARK BMP 5xx.S/LPG and 2xxx.S/LPG, OCEAN BMP 4xxx.O/LPG and SUNNY-XE EURO Sxx xxxx.E/LPG LPG dispensers were performed according to the International Recommendation OIML R 118 *Testing procedures and test report format for pattern evaluation of fuel dispensers for motor vehicles* and in conformity with International Recommendation OIML R 117-1 *Dynamic measuring systems for liquids other than water*.

Test Report No. 6031-PT-P019-06 issued on 21 December 2006, Test Report No. 6015-PT-P006-08 issued on 25 April 2008 (PDEX extension), Test Report No. 6015-PT-P027-08 issued on 22 December 2008 (ADP/T extension), Test Report No. 6015-PT-P0002-10 issued on 28 April 2010 (TBELTx extension), Test Report No. 6015-PT-P0105-11 issued on 9 September 2011 (CDC extension) and Test Report No. 6015-PT-P0004-13 issued on 8 April 2013.

All the Test reports were issued by Czech metrology institute, Notified body No. 1383.



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:

- Manufacturer's name, mark or trademark
- Type designation
- Serial number and year of manufacture
- Alternatively other relevant characteristics (e.g. Q_{\max} , Q_{\min} , P_{\max} , liquids to be measured etc.)

There are following data on a name plate of the LPG dispenser:

- The "CE" marking and supplementary metrology marking
- Number of EC-type examination certificate
- Manufacturer's name, mark or trademark
- Type designation
- Serial number and year of manufacture
- Accuracy class 1.0
- Minimum measured quantity (MMQ)
- Maximum flowrate (Q_{\max})
- Minimum flowrate (Q_{\min})
- Maximum pressure (P_{\max})
- Minimum pressure (P_{\min})
- Liquids to be measured
- Liquid temperature range
- Ambient temperature range
- Mechanical class
- Electromagnetic class

The name plate must be inseparably fixed to the construction and clearly visible in normal conditions of use.

There are following data on each face of indicating device:

- Unit of national currency (e.g. €) is indicated next to price display
- Unit of volume (ℓ or L or word Litre) is indicated next to volume display
- Unit price per litre (e.g. €/L or €/Litre) is indicated next to unit price display
- Information regarding the minimum measured quantity (MMQ)

Information regarding the base temperature ($T_b = 15\text{ °C}$) has to be mentioned near to each volume indicating device in case of measuring system with active ATC conversion function.

All data are in an official language of country where the dispenser is put into operation.

5. Conditions for approval and sealing

Before putting into use it has to be verified that the fuel dispenser is in conformity with this certificate and meets its requirements.

It is recommended to perform the accuracy test at three flow rates:

- Q_{\max} or maximum attainable,
- 25% of Q_{\max} and
- Q_{\min} .

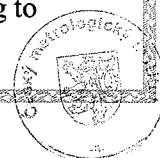
All measured errors have to be in range of tolerance $\pm 1.0\%$.

The dip switch SW1-1 has to be set to position ON (up) and switch SW1-4 has to be set to position OFF 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 according to following description and pictures:



On the measurement transducer:

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

On the differential valve:

- | | |
|---|----|
| e) Connection of differential valve body with upper and bottom covers | 1x |
|---|----|

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

- | | |
|---|----|
| f) Connection of calculator cover with calculator console and SW1 switch cover, if separate | 1x |
| g) Connection of cover of electromechanical totalizer with display mask | 1x |
| h) Type plate of calculator | 1x |

On conversion device, if any:

- | | |
|--|----|
| i) Connection of PDEINP unit cover with calculator console | 4x |
| j) Type plate of PDEINP unit, if separate | 1x |
| k) Connection of a temperature sensor with the gas separator | 1x |
| l) Type plate of the temperature sensor, if separate | 1x |

On the LPG dispenser:

- | | |
|---|----|
| m) Connection of dispenser name plate with fuel dispenser frame | 1x |
| n) Symbol of the relevant measuring system on the name plate | 1x |
| o) Fuel dispenser data sheet (identification of data on document) | 1x |

On the UNIDATAZ CDC electronic calculator:

- | | |
|---|----|
| p) Connection of S3 switch cover with CPU unit | 1x |
| q) Connection of CPU unit with calculator console | 1x |
| r) Connection of electromechanical totalizer to the frame | 1x |
| s) Type plate of the calculator | 1x |

On the Hectronic GmbH TA2331 self-service device:

- | | |
|---|----|
| - Access to the calibration switch located on the CPU board is protected by metal cover | 1x |
|---|----|

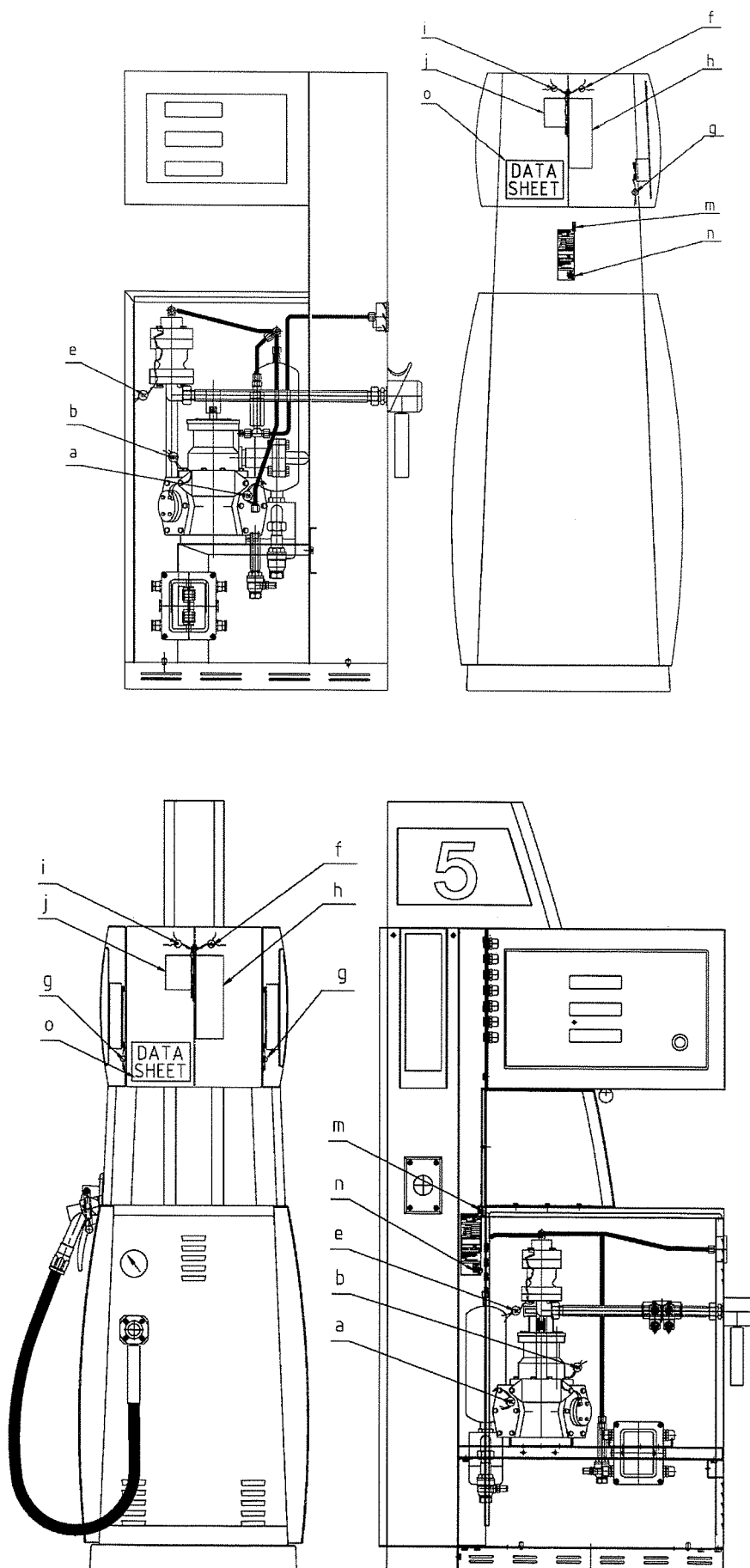
On the Hectronic GmbH HECSTAR or HECFLEET NT self-service device:

- | | |
|---|----|
| - Type plate of the SSD on the case of the SSD shall be sealed. | 1x |
| - Metal plate covering the CPU-board "PC/104" and the I/O-board "EB104" | 1x |
| - Metal angle bracket, which protects the compact flash card against removal | 1x |
| - Each (optional) interface FCI 2040 shall be sealed by sealing two screws of the metal cover | 1x |

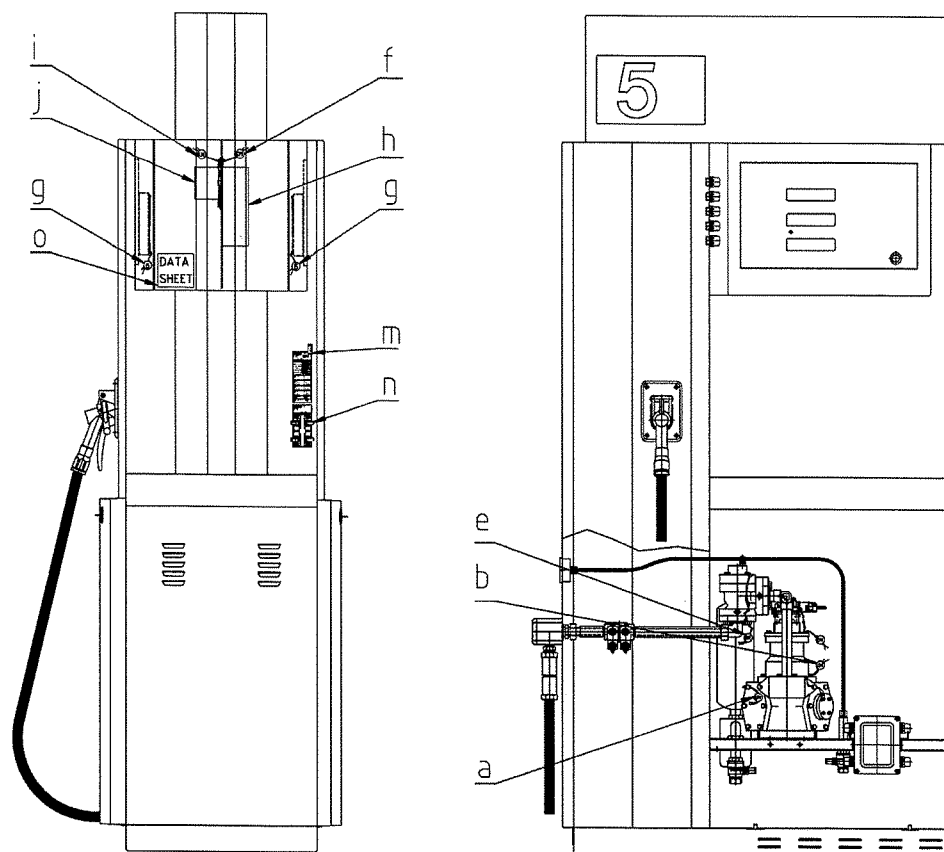
Additional sealing points beyond the requirements of OIML R 117-1 and WELMEC 10.6 can be used on special request of the local W&M authority.



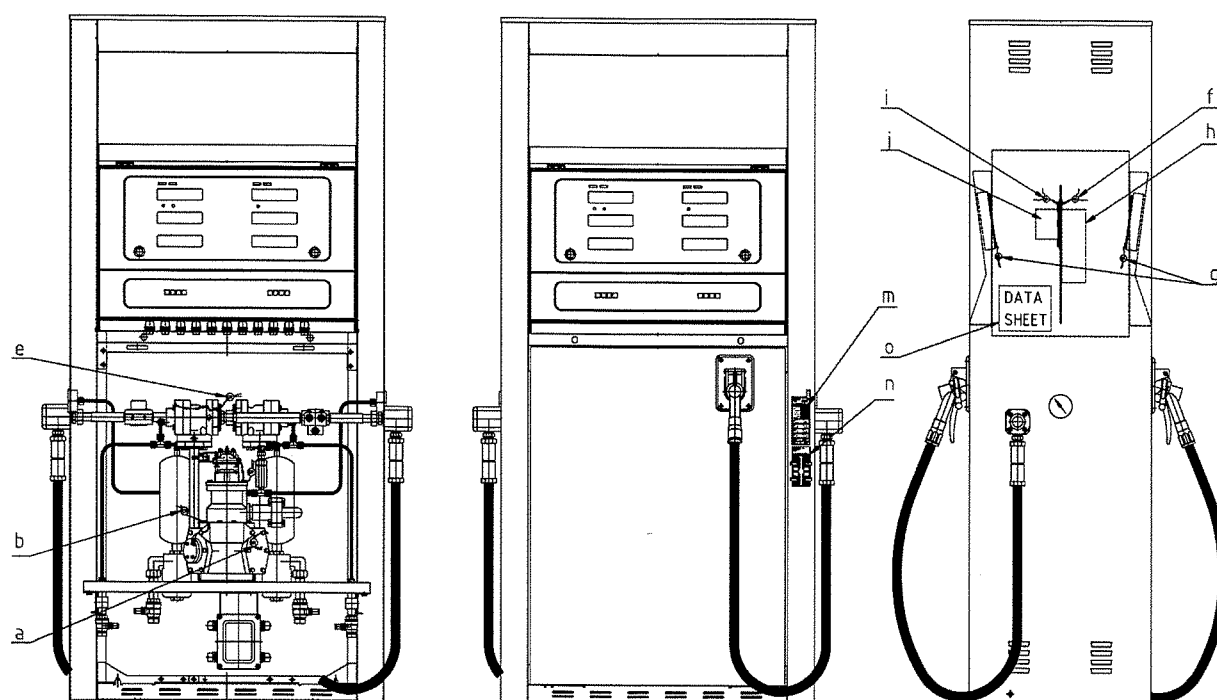
Picture No. 1a: The sealing of SHARK BMP 5xx.S/LPG and 2xxx.S/LPG LPG dispenser



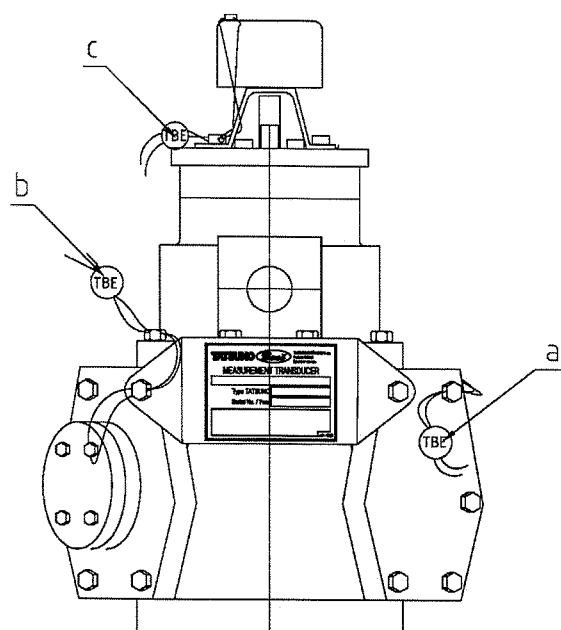
Picture No. 1b: The sealing of OCEAN BMP 4xxx.O/LPG LPG dispenser



Picture No. 1c: The sealing of SUNNY-XE EURO Sxx xxxx.E/LPG LPG dispenser

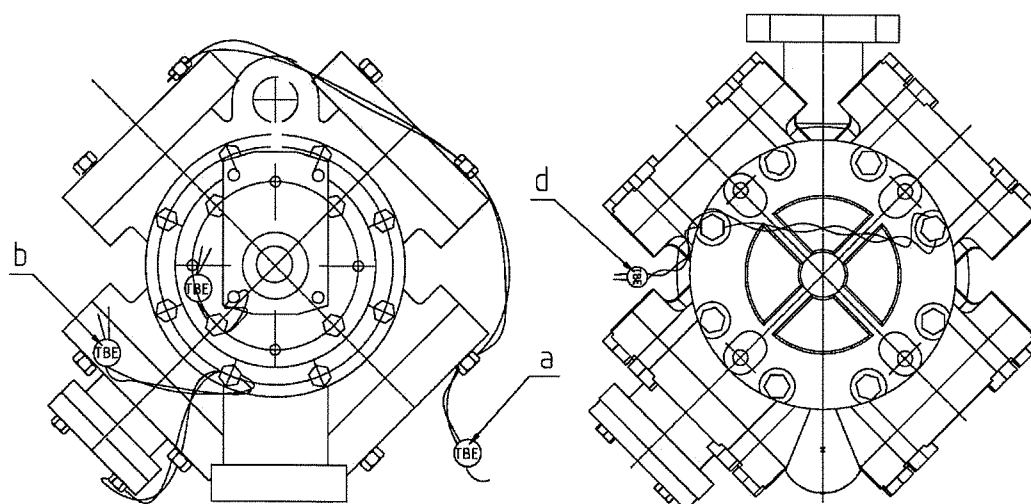


Picture No. 2a: The sealing of MP-02524 measuring transducer

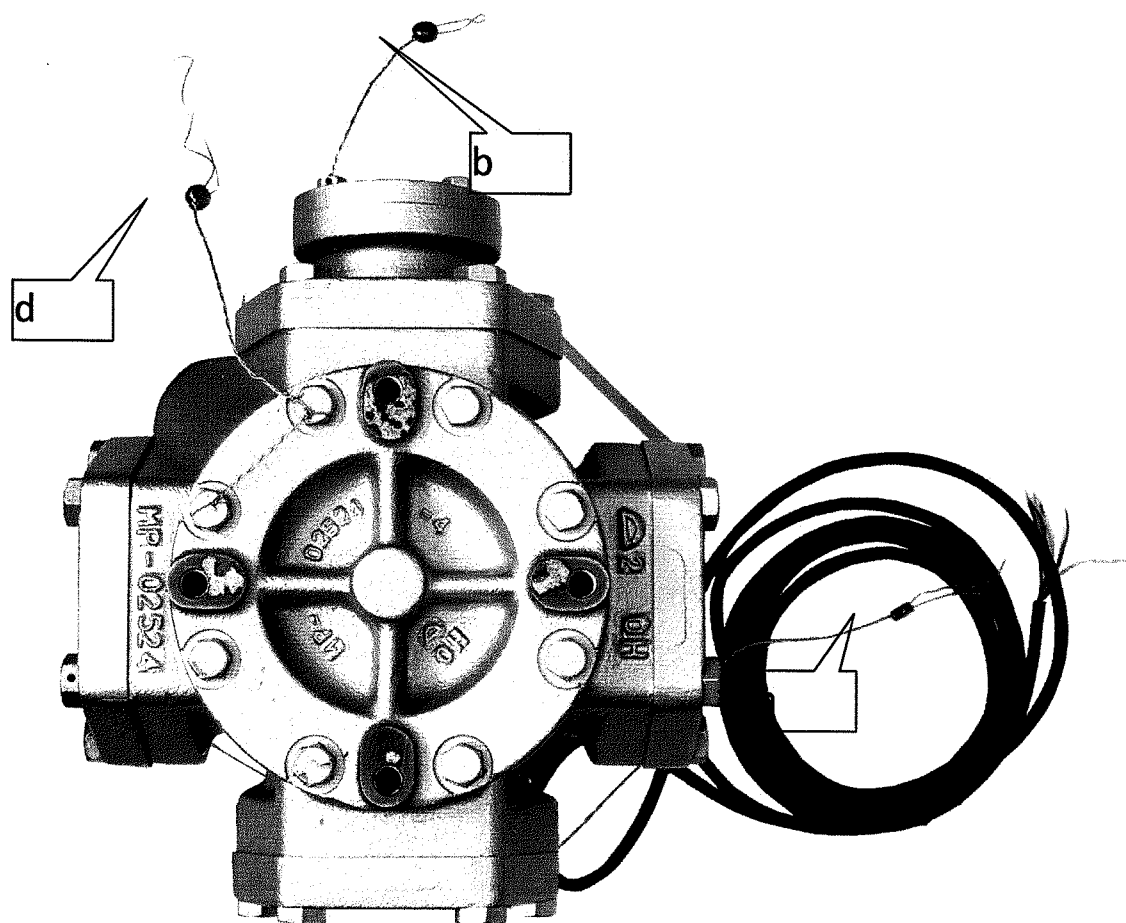
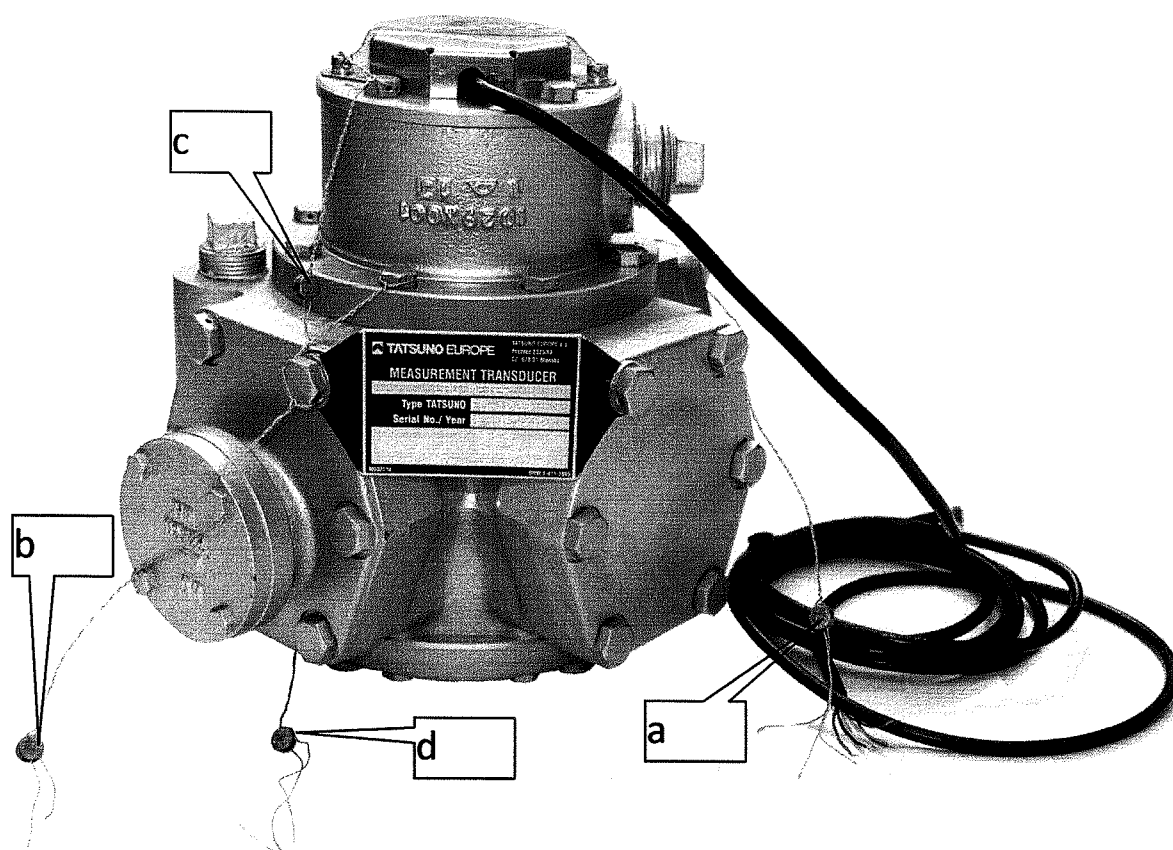


Upper view

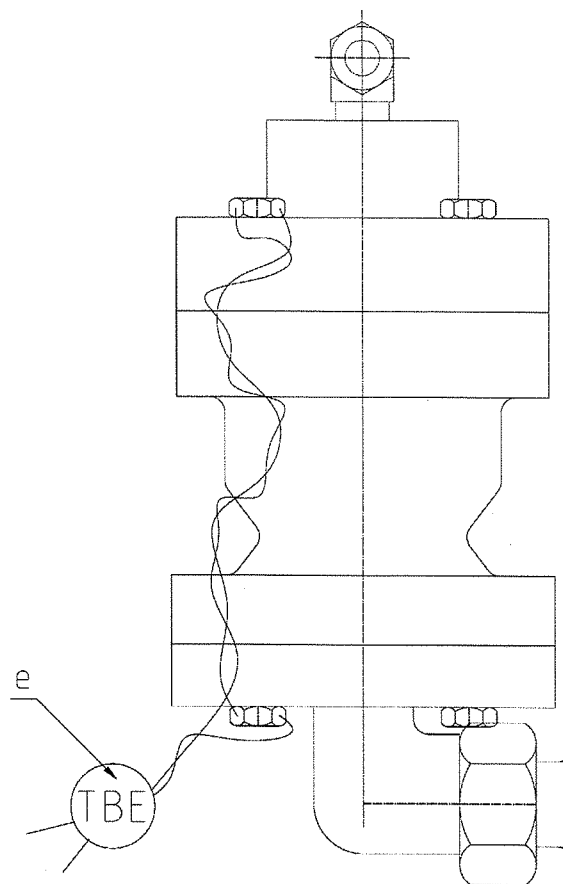
Bottom view



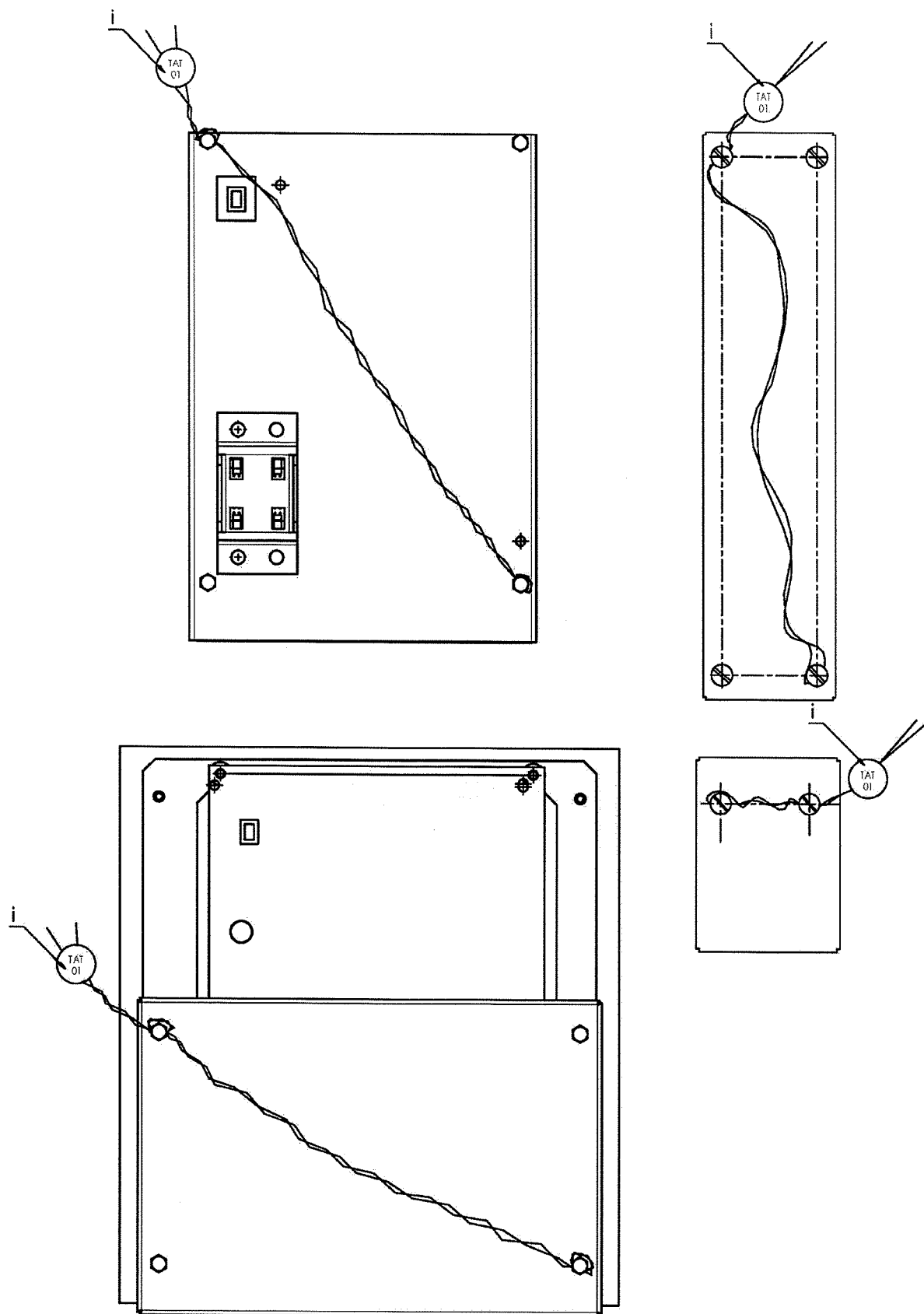
Picture No. 2b: Sealing of the FM-1029 measurement transducer



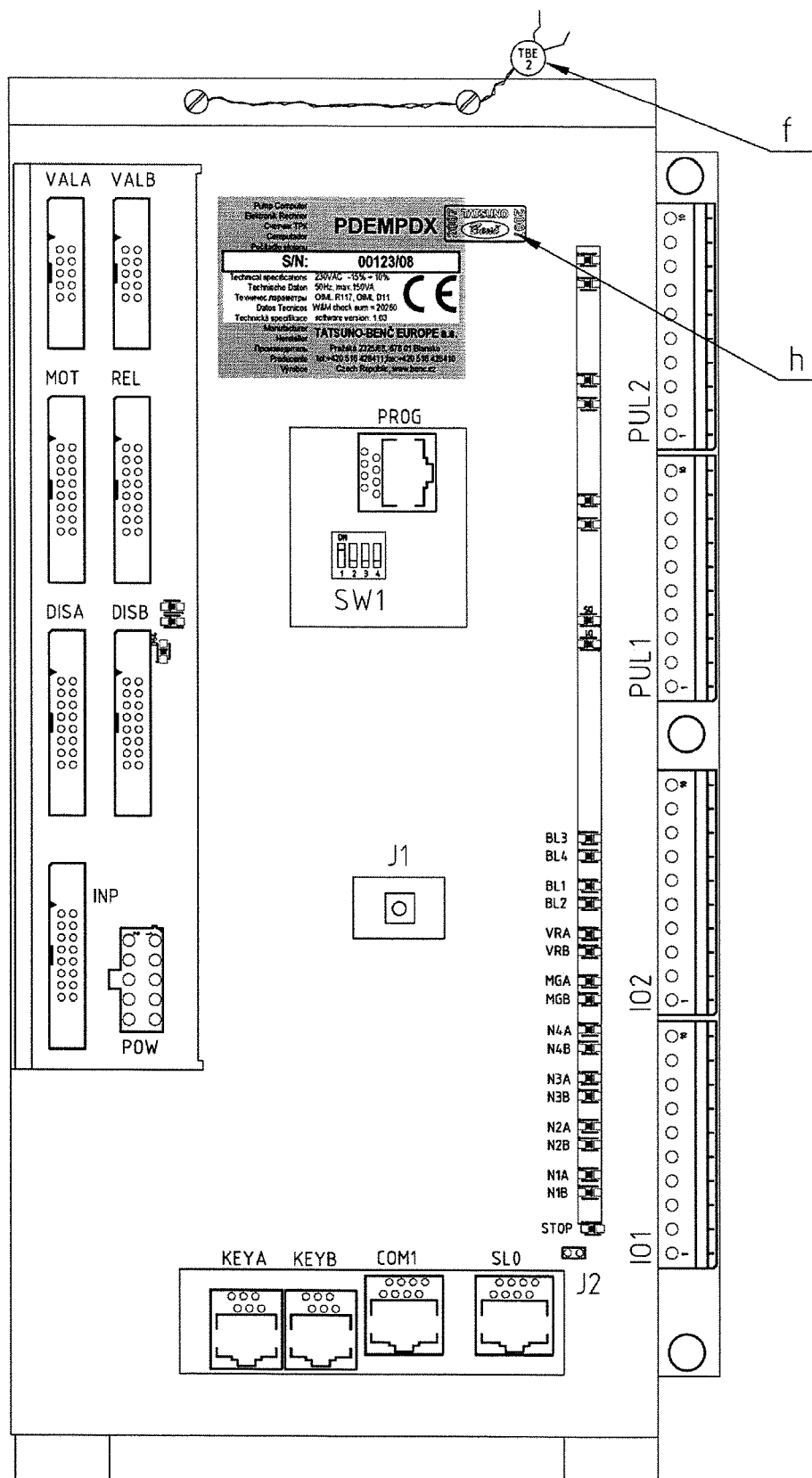
Picture No. 3: Sealing of the differential valve:



Picture No. 4: Sealing of the totalizing indicating device (examples of covers)



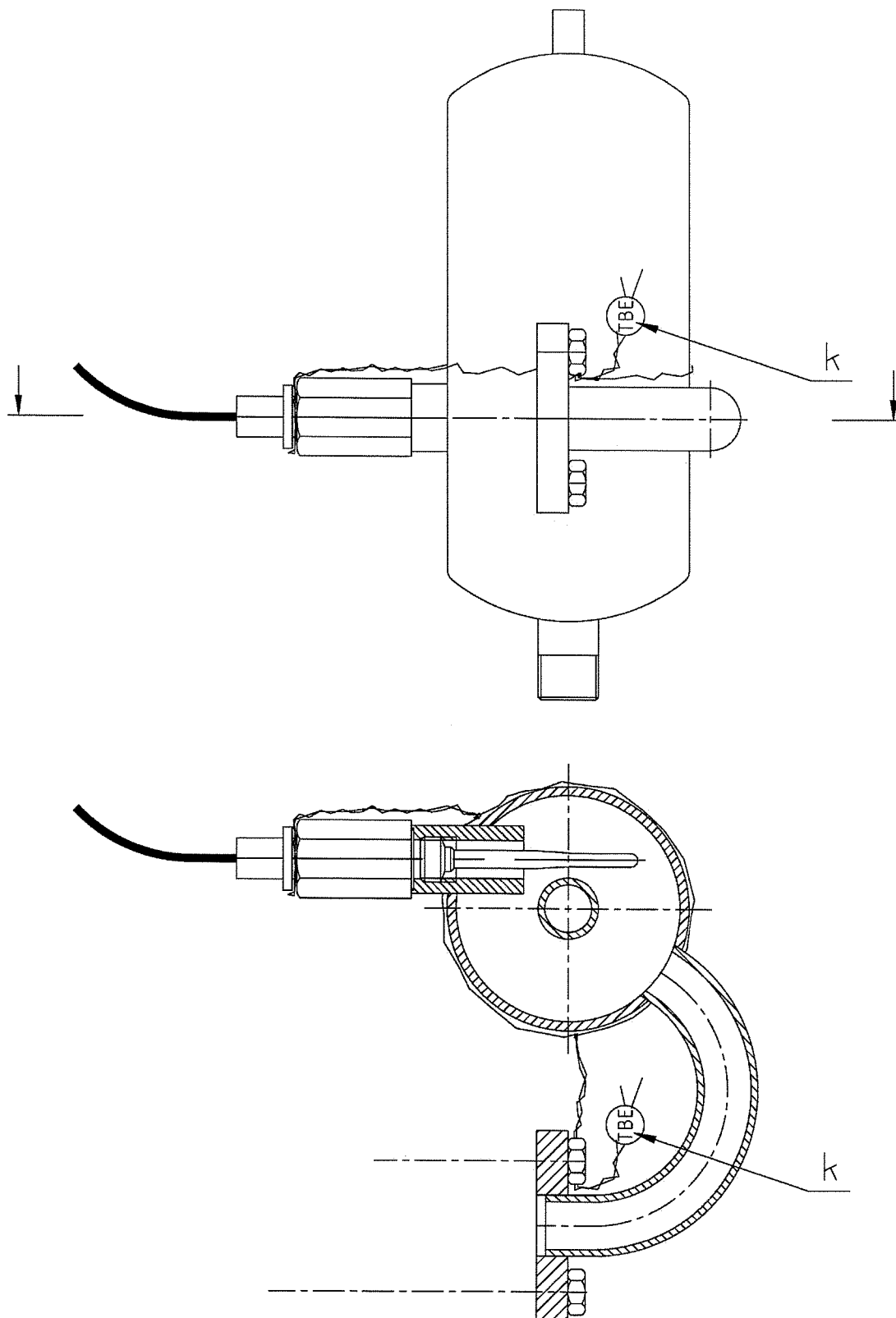
Picture No. 5: Sealing of the PDEMPD.X calculator



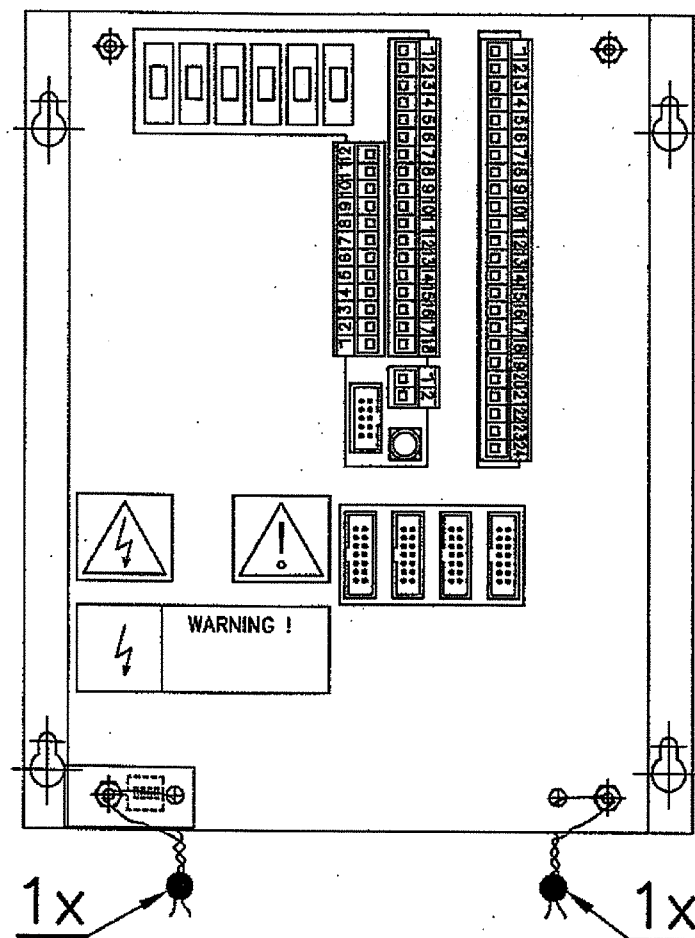
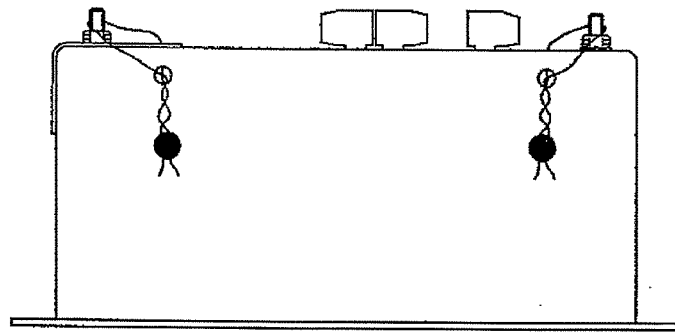
Picture No. 7: Sealing of the PDEINP.X conversion device



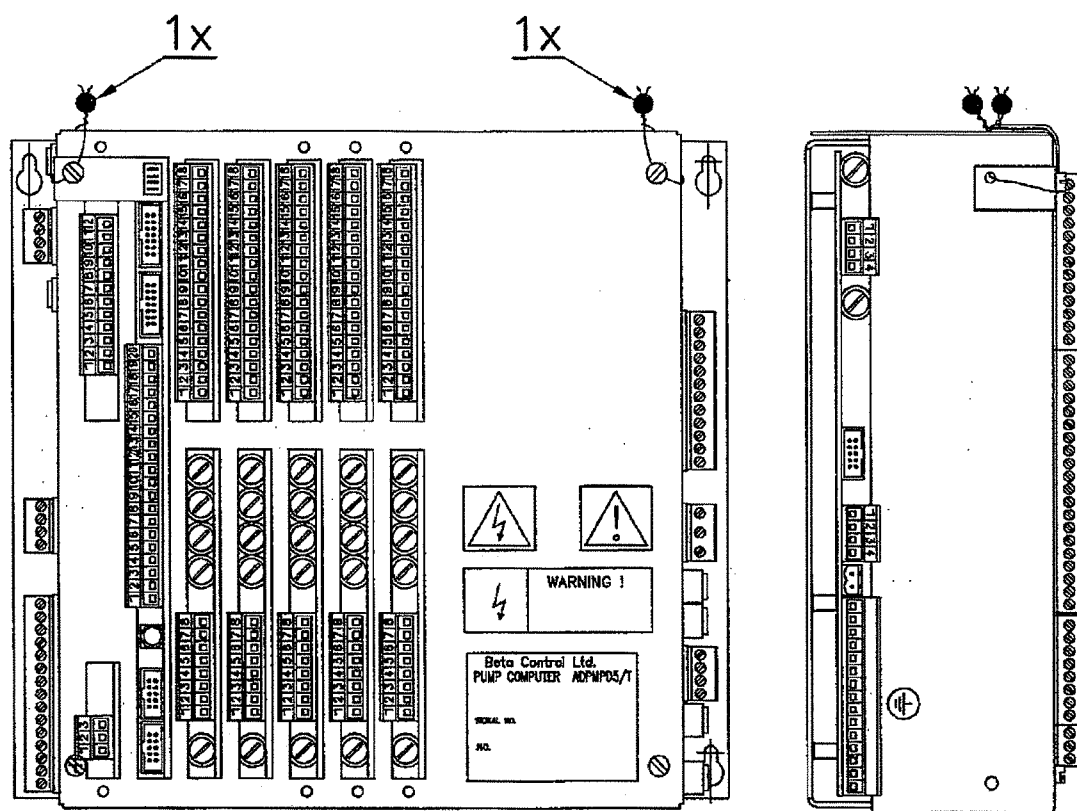
Picture No. 8: Sealing of the Pt100 in gas separator



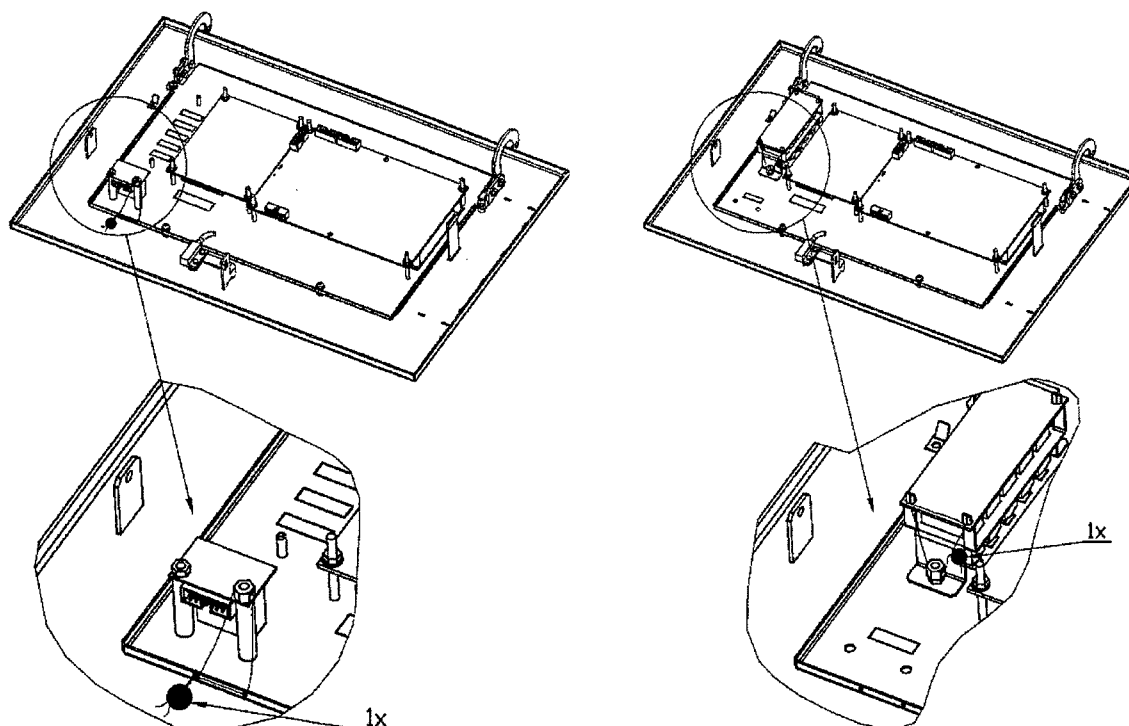
Picture No. 9: Sealing of the ADP1/T and ADP2/T calculator



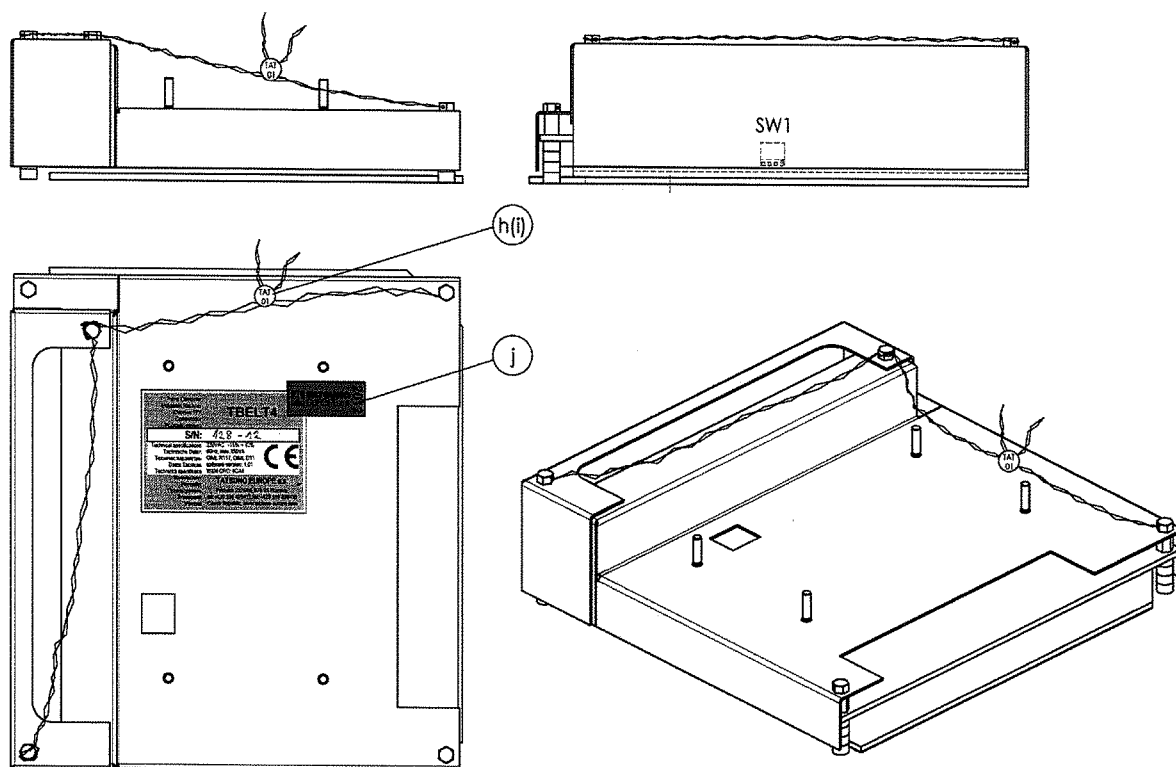
Picture No. 10: Sealing of the ADPMPDx/T calculator



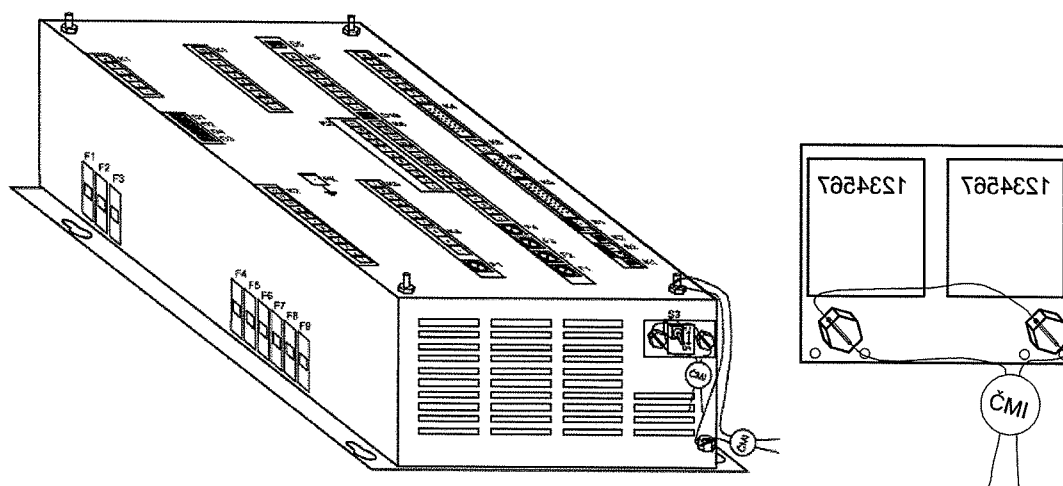
Picture No. 11: Sealing of the totalizing indicating device (ADPx/T, ADTMPDx/T)



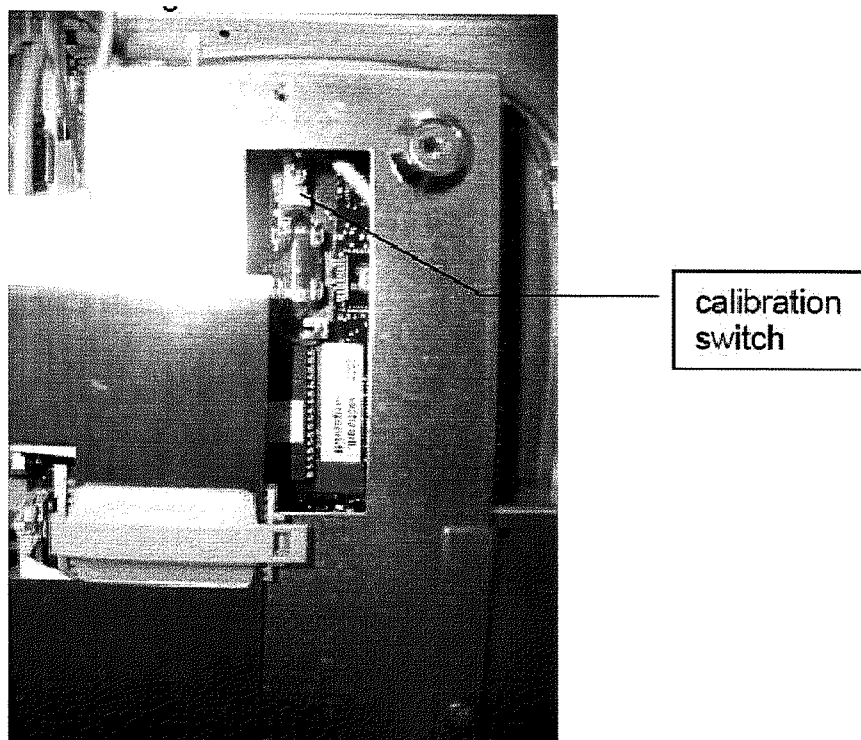
Picture No. 12: Sealing of the TBELTx calculator



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



Picture No. 14: Sealing of the calibration switch of Hectronic GmbH TA2331 self-service device



Picture No. 15: Sealing of the CPU and flash card of Hectronic GmbH HECSTAR/ HECFLEET NT self-service device

