



Český metrologický institut

Notifikovaná osoba č 1383, Okružní 31
638 00 Brno

EC-TYPE EXAMINATION CERTIFICATE

Number: TCM 141/07 - 4491

Addition 2

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.

Applicant: **TATSUNO-BENČ EUROPE a.s.**
Pražská 68
678 01 Blansko
Czech Republic

In respect of: **fuel dispenser for motor vehicles**
type: SHARK BMP 5xx.S, SHARK BMP 2xxx.S
manufacturer: TATSUNO-BENČ EUROPE a.s.

Liquids	Gasolines, Diesel, Ethanol
Accuracy class	0.5

Valid until: **16 January 2017**

Document number: **0115-CS-A004-07**

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

Date of issue: 5 February 2009




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RNDr. Pavel Klenovský

Notified Body No.1383

1. Measuring device description

The SHARK BMP 5xx.S and 2xxx.S fuel dispensers are destined for measurement of gasoline, diesel, ethanol and mixture 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 refuelling of motor vehicles.

The SHARK BMP 5xx.S and 2xxx.S fuel dispensers with PDEVOL calculator should not be used for direct selling to the public.

The SHARK BMP 5xx.S and 2xxx.S fuel dispensers consist of a FP-1001 pumping unit with gas elimination device, FM-1007 measurement transducer, PDE, PDEX or ADP1/T, ADP2/T and ADPMPDx/T electronic calculator, electronic or electromechanical totalizing indicating device, electromagnetic valve, sight glass and house with delivery nozzle. These fuel dispensers can be equipped with a vapour recovery system and pre-setting device.

There is conversion ATC function for converse of measurement data to volume at base conditions (15°C) for gasoline (range of density from 700 to 770 kg/m³) and diesel in PDE, PDE.X or ADP1/T, ADP2/T and ADPMPDx/T electronic calculator. There had to be connected temperature transducer Pt 100 of class B at minimum according EN IEC 751.

There are three types of subsystems:

- Standard with Q_{\max} 50 L/min, witch contains one FP-1001 B01 pumping unit and two meters; fuel can be dispensed via two nozzles simultaneously (the same product on each side of dispenser),
- High speed with Q_{\max} 80 L/min, witch varies just in using FP-1001 B02 pumping unit and
- Ultra high-speed with Q_{\max} 130 L/min, witch contains parallel mounting of two FP-1001 B02 pumping units and two meters; fuel is dispensed via one nozzle.

There is version for installation in centrally pumped system. Satellite delivery point can be present. The LPG module of the type SHARK MOD 2xxx.S/LPG, which was certified separately, could be connected.

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

1.1. Pumping unit with gas separator

TATSUNO FP-1001 pumping unit has two different models, model B01 with Q_{\max} 50 L/min and model B02 with Q_{\max} 80 L/min. There is difference in volume of pump only. The gas elimination device is the same with Q_{\max} 80 L/min. There are two manufacturers of pumping units TATSUNO CORPORATION, Japan and SHANGHAI TATSUNO CORPORATION, China.

1.2. Measuring transducer

TATSUNO FM-1007 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 FM-1007 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. Calculator

PDE electronic calculator has three different models. Models PDEVOL can control 1 subsystem only, model PDEDUO can control 2 subsystems and model PDEMPD can control 10 subsystems maximally. PDEVOL calculator do not consist price indicating device.

Software version 2.34

PDE.X electronic calculator has two different models. Models PDEDUO.X can control 2 subsystems and model PDEMPD.X can control 10 subsystems maximally. Calculator PDEX can operate separately or can be controlled by central system of filling station. It communicates by RS485, PumaLAN and ER4.

Software version 1.03

W&M checksum 20260



This counter can be operating by buttons of IR module (remote control). For electronic calibration is necessary to change over value of number of pulses per dm^3 , witch is stored in memory of counter (parameter P 44). 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.

ADP/T electronic calculator has three different models. Model ADP1/T can control one subsystem only, model ADP2/T can control two subsystems and model ADPMPDx/T can control 10 subsystems (e.g. 2x5 products) maximally. 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 function setting is secured by DIP switch No. 3 (location OFF). DIP switches are protected by sealing cover.

Calculator ADPxxx 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.

1.4. Conversion device

TM module of PDE (PDE.X) electronic calculator is placed on separate board PDEINP.

1.5. Temperature sensor

ZPA Nová Paka 112 70 Pt100 temperature sensor

1.6. Hose

ELAFLEX Conti - Slimline DN 21, 25; maximum length 6 m

1.7. Nozzle

ELAFLEX ZVA SLIMLINE, ZVA 25, ZVA 32, ZVA 200 GR,
TATSUNO FN-1001

2. Basic technical data

Fuel dispenser type:	Normal	Max.	/UH
Maximum flowrate Q_{\max} [dm^3/min]	30 to 50	70 to 80	120 to 130
Minimum flowrate Q_{\min} [dm^3/min]	3 to 5	5	10
Min. measured quantity MMQ [dm^3]	2	5	10
Maximum unit price (number of digits)	9999 (4)		
Maximum price to pay (number of digits):	999999 (6)		
Type of display:	electronic		
Liquids	Gasolines, Diesel and Ethanol		
Liquid temperature range	-20 to +50		
Maximum pressure [MPa]	0.4		
Minimum pressure [MPa]	0.16 for gasoline 0.20 for diesel		
Accuracy class	0.5		
Ambient temperature range [$^{\circ}\text{C}$]	-25 to +55 -40 to +50 with additional internal heating		
Mechanical class	M2		
Electromagnetic class	E2		
Humidity	Condensing		
Location	Open		

The range of flow had to be 1:10 at minimum.

3. Test

Technical tests of the SHARK BMP 5xx.S and 2xxx.S fuel dispensers were performed in compliance with the International Recommendation OIML R 118 *Testing procedures and test report format for pattern evaluation of fuel dispensers for motor vehicles* with conformity to International Recommendation OIML R 117-1 *Dynamic measuring systems for liquids other than water* and International Recommendation OIML D 11 *General requirements for electronic measuring instruments*, Test Report No. 6031-PT-P019-06 from December 21. 2006, Test Report No. 6015-PT-P006-08 from April 25. 2008 (PDE.X extension) and Test Report No. 6015-PT-P027-08 from December 22. 2008 (ADP/T extension).

4. The measuring device data

There are following data on the measurement transducer:

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

There are following data on the electronic calculator:

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

There are following data on the fuel dispenser:

- The "CE" marking and supplementary metrology marking
- Number of EC-type examination certificate
- Measuring device manufacturer and type
- Serial number and year of manufacture
- Accuracy class 0.5
- Minimum measured quantity (MMQ)
- Maximum flowrate (Q_{\max})
- Minimum flowrate (Q_{\min})
- Maximum pressure (P_{\max})
- Minimum pressure (P_{\min})
- Characteristics of liquids
- Liquid temperature range
- Ambient temperature range
- Mechanical class
- Electromagnetic class

There are following data on each face of indicating device:

- Near price indication unit €
- Near volume indication unit ℓ or L or word Litre
- Near unit price indication unit € / L or € / Litre
- information regarding the minimum measured quantity (MMQ)

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

5. Verification

The SHARK BMP 5xx.S and 2xxx.S fuel dispensers are verified according to OIML R 117.

In case of PDE (PDE.X) calculator model PDEMPD (PDEMPD.X) the switch SW1 has to be set to position OFF (left site), in case of PDE (PDE.X) calculator model PDEDUO (PDEDUO.X) the dip switch SW1-1 has to be set to position ON (up), in case of ADPxxx calculator the dip switches has to be set to position OFF and fuel dispenser has to be sealed after the tests with positive result:

On the measurement transducer:

- | | |
|--|----|
| a) Conjunction body of transducer with pistons covers | 1× |
| b) Conjunction pin of adjustment device with piston cover and data plate | 1× |
| c) Conjunction upper cover with transducer or counter | 1× |



On the PDE (PDE.X) calculator:

- d) Not disassembling of calculator and cover of SW1 switch 1×
- e) Cover of totalizing indicating device 1×
- f) Cover of conversion device 1×
- g) The data plate of calculator 1×

On the ADP1/T, ADP2/T and ADPMPDx/T calculator:

- h) Not disassembling of calculator 1×
- i) The cover of DIP switches 1×
- j) Connection of electromechanical totalizing indicating device to the frame 1×
- k) The data plate of calculator 1×

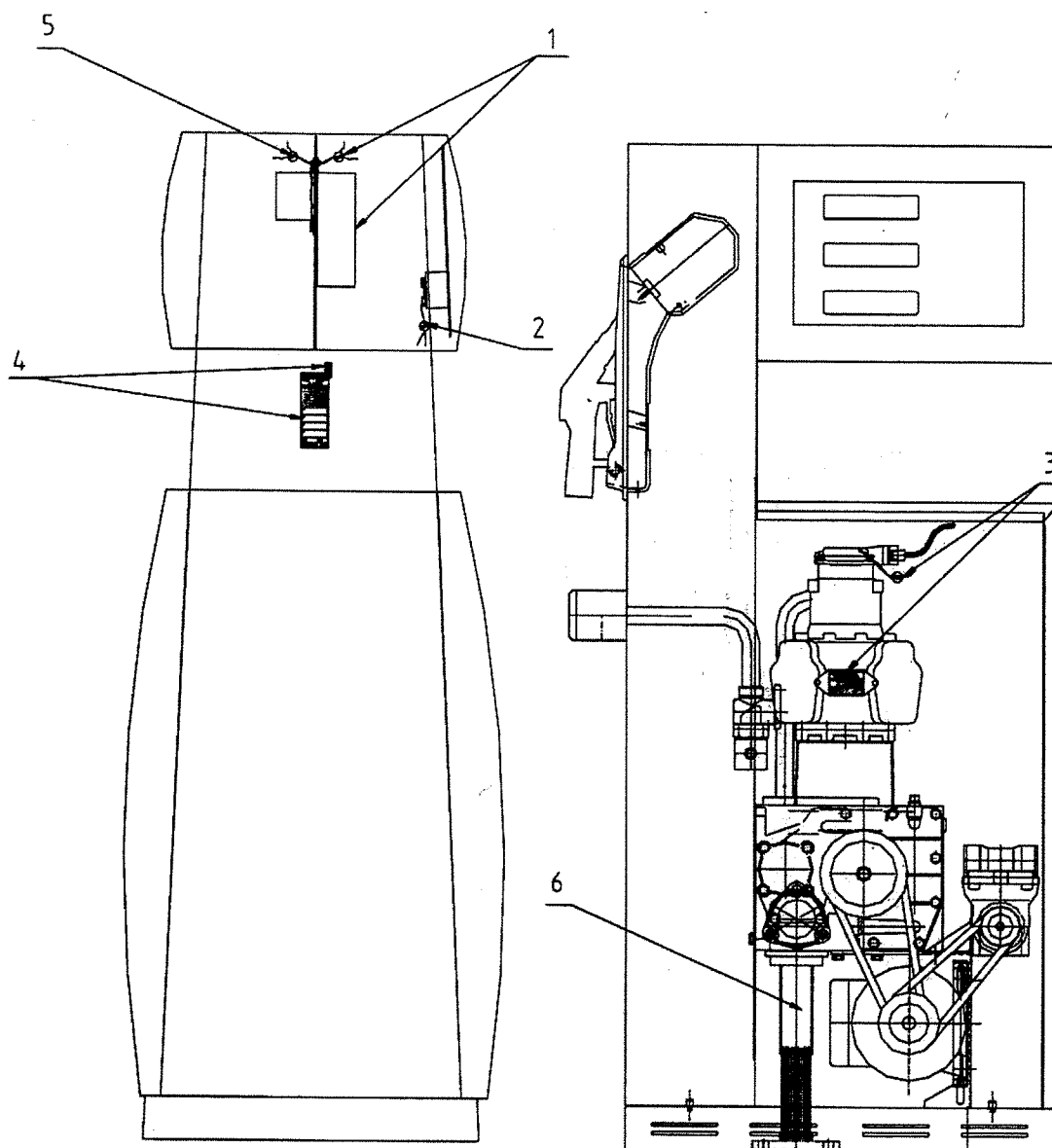
On temperature sensor (Just if ATC conversion function is activated):

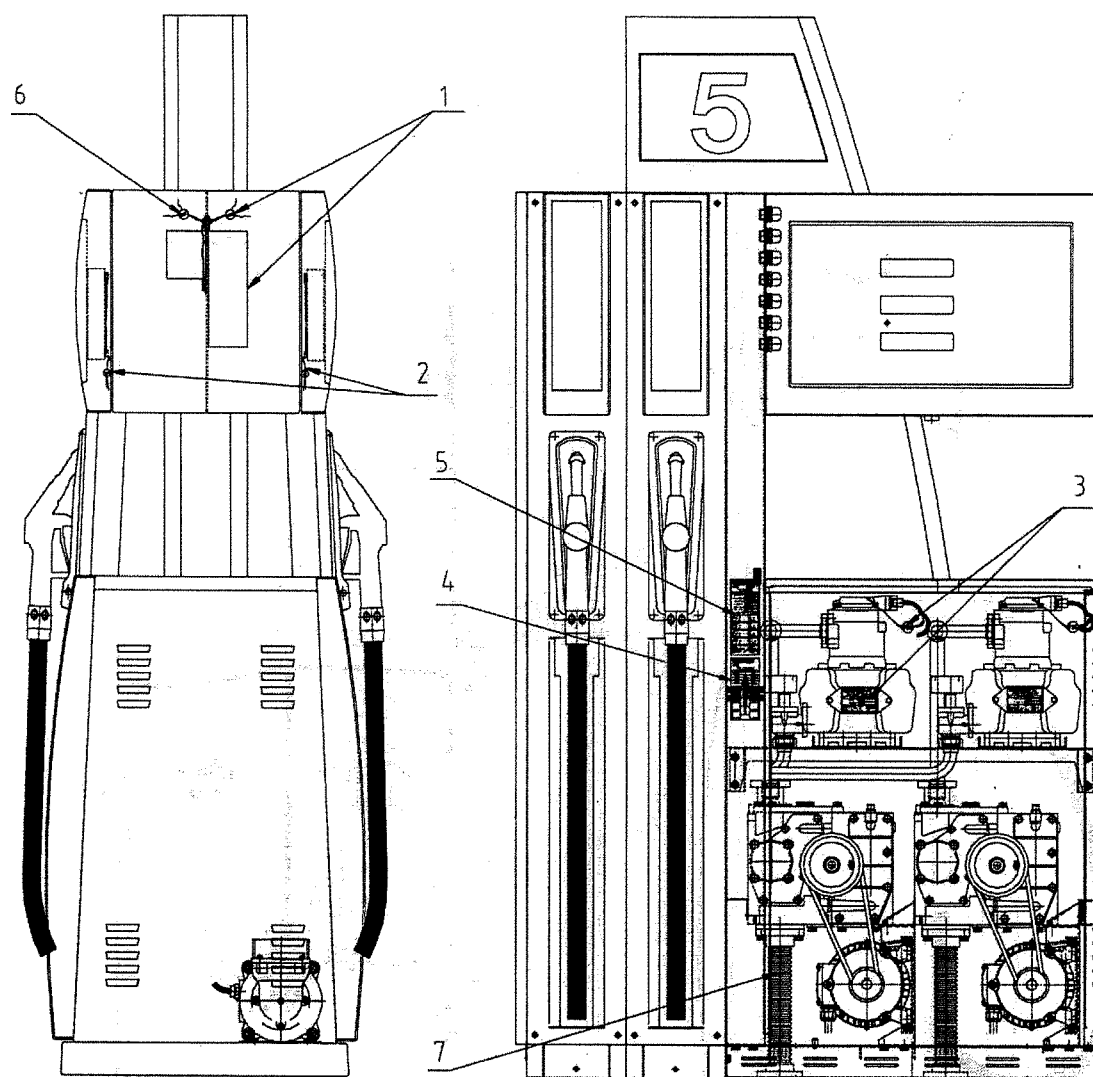
- l) Connection of temperature sensor to the pipe 1×
- m) The data plate if separate 1×

On the fuel dispenser:

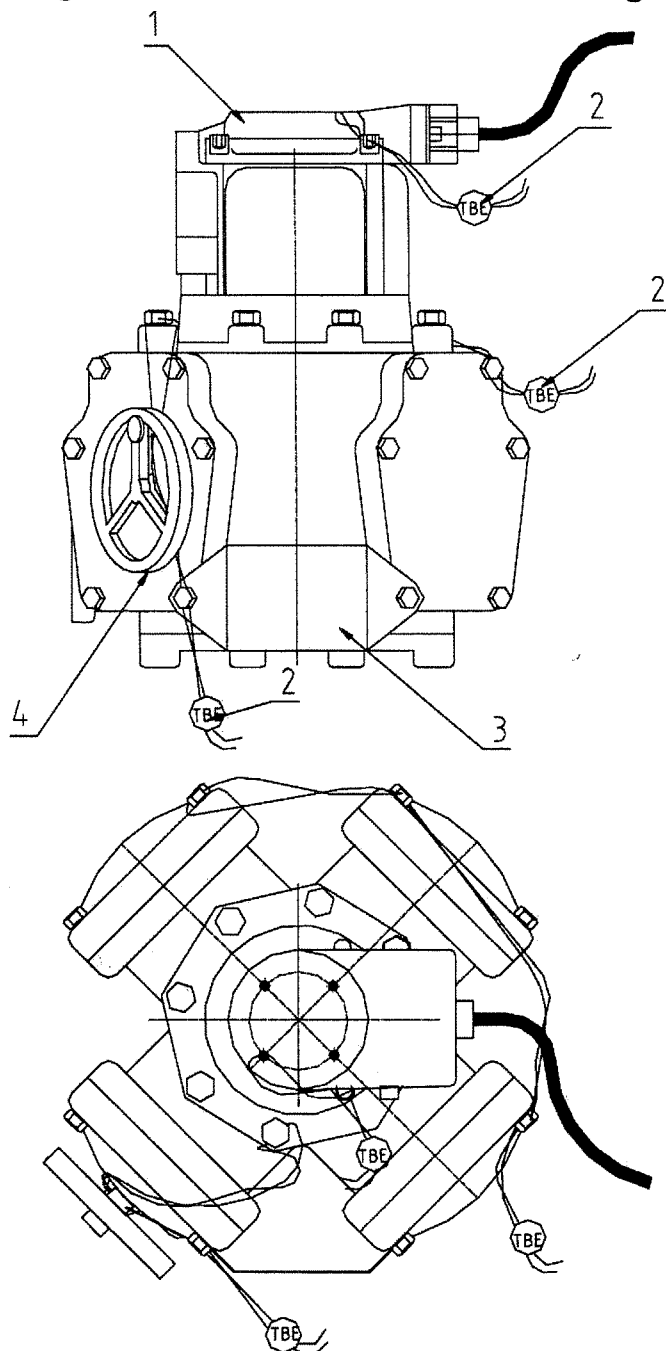
- n) The data plate of dispenser 1×
- o) The symbol of relevant measurement transducer on the data plate of SHARK BMP 2000.S 1×

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

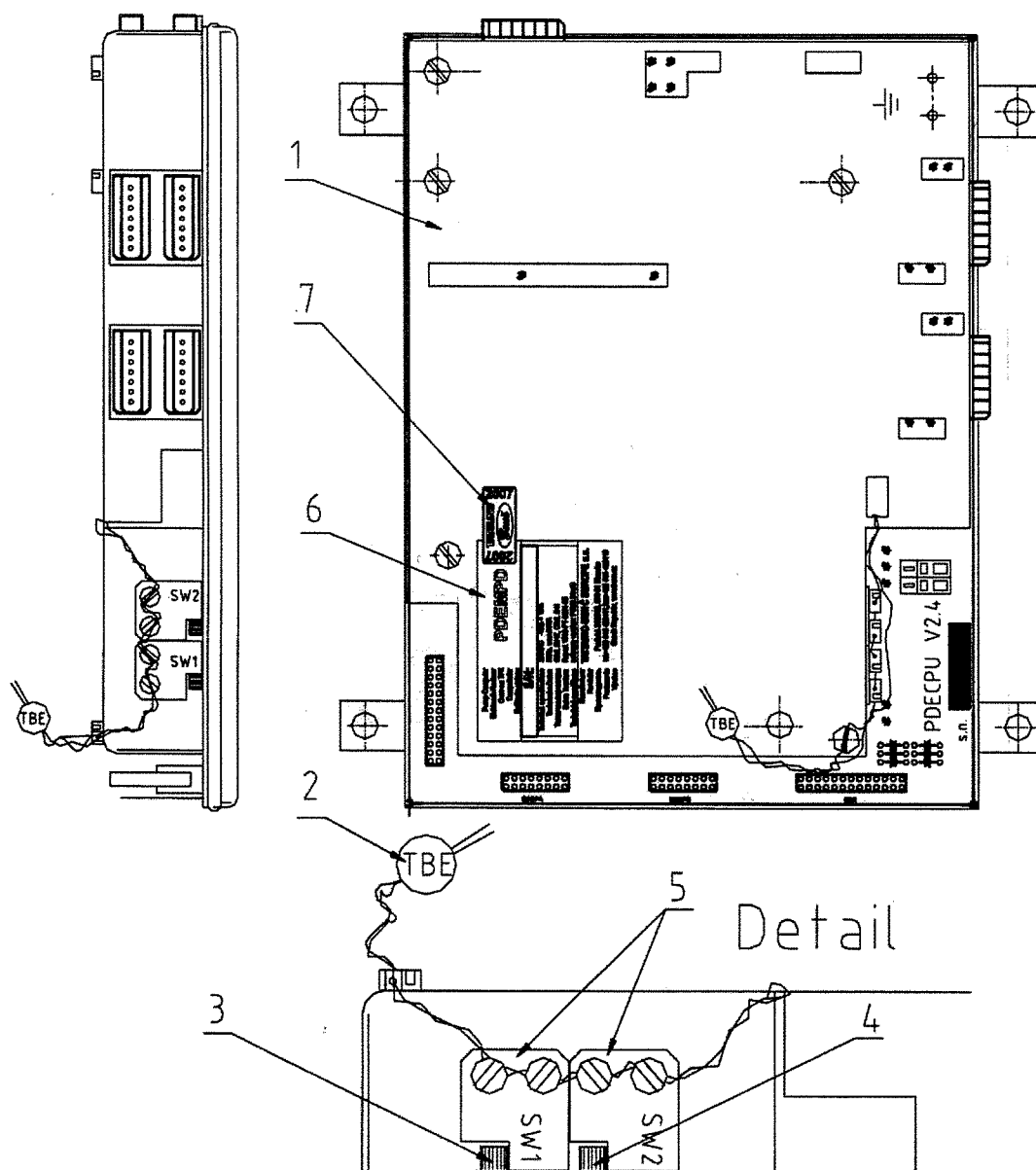




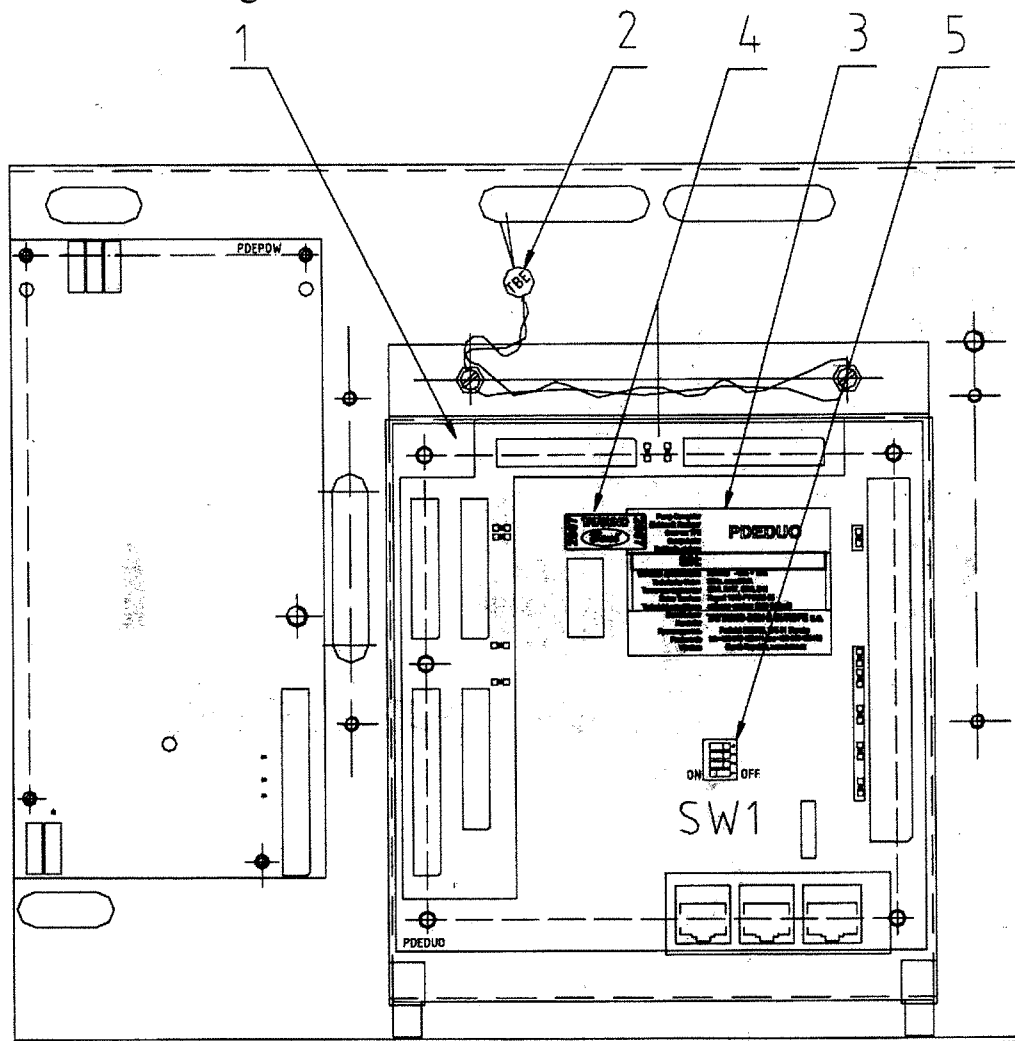
Picture No. 2: The sealing of FM-1007 and FM 1022 measuring transducer



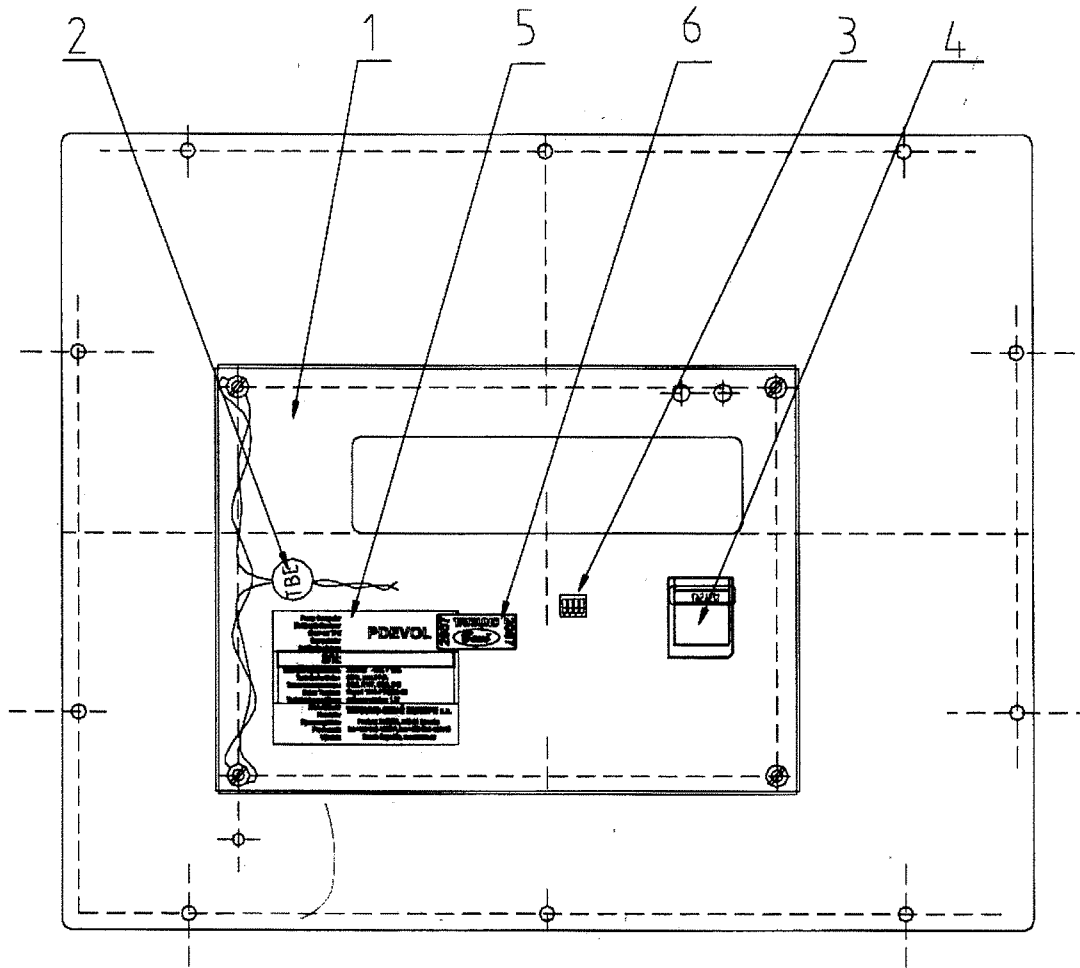
Picture No. 3: The sealing of PDEMPD calculator



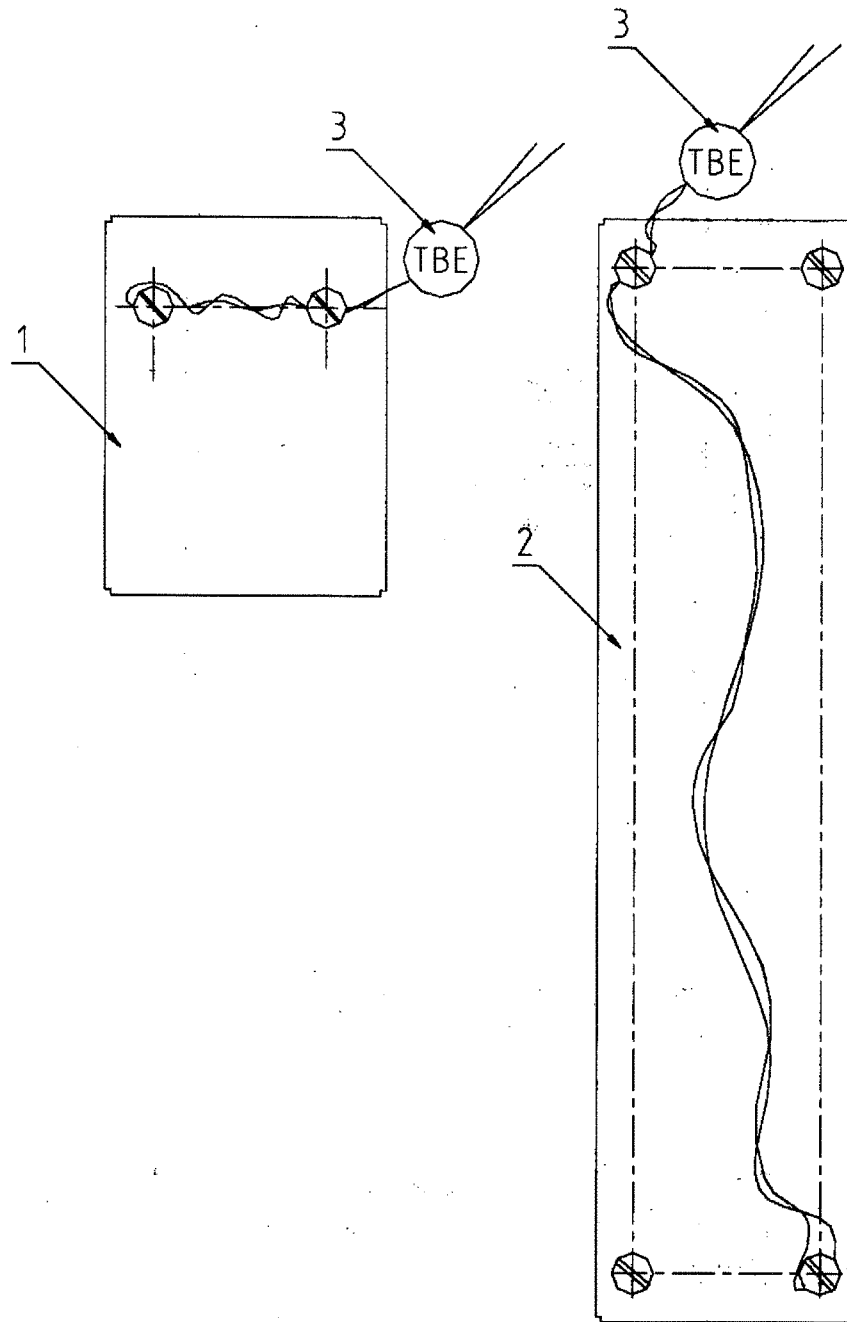
Picture No. 4: The sealing of PDEDUO calculator



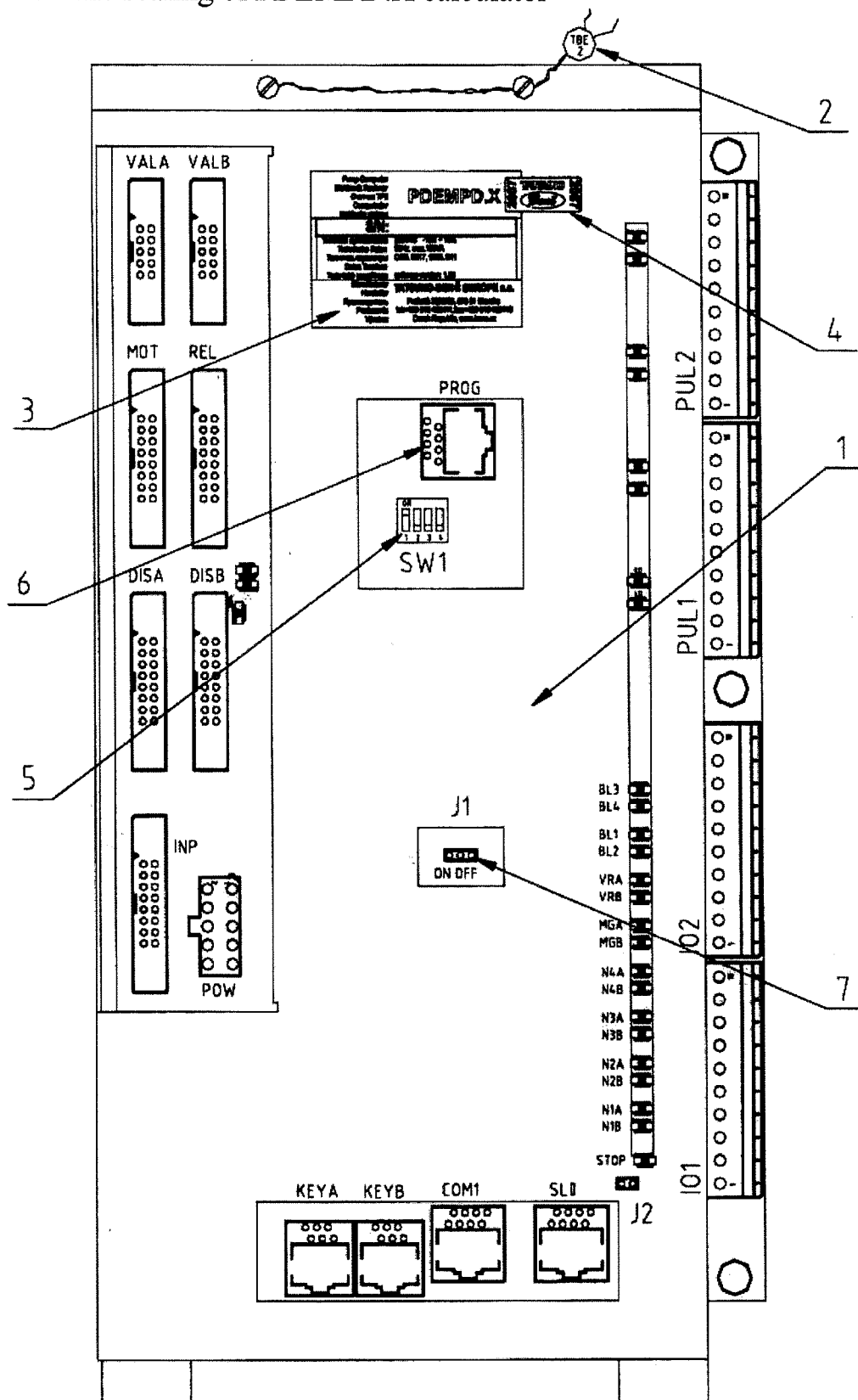
Picture No. 5: The sealing of PDEVOL calculator



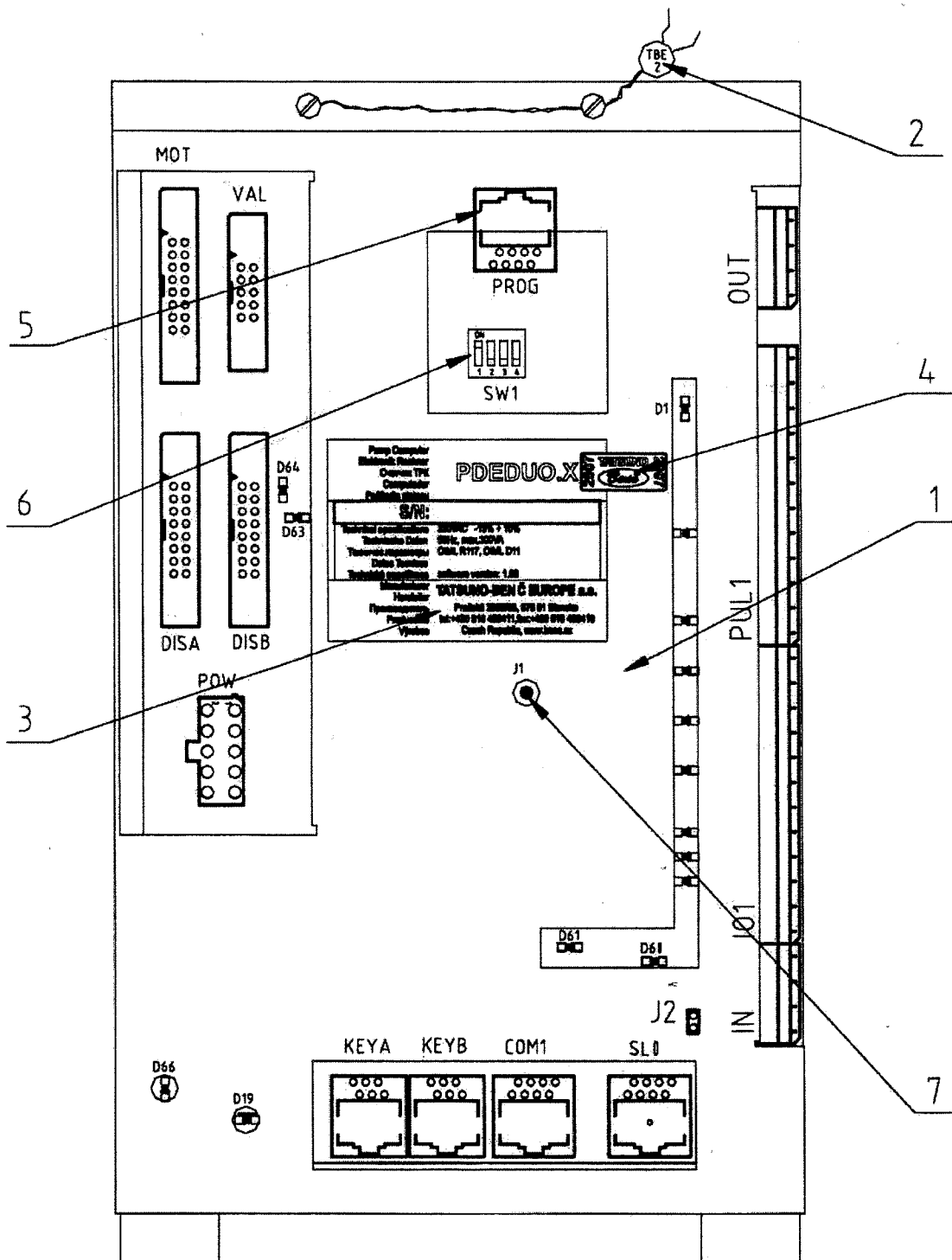
Picture No. 6: The sealing of totalizing indicating device



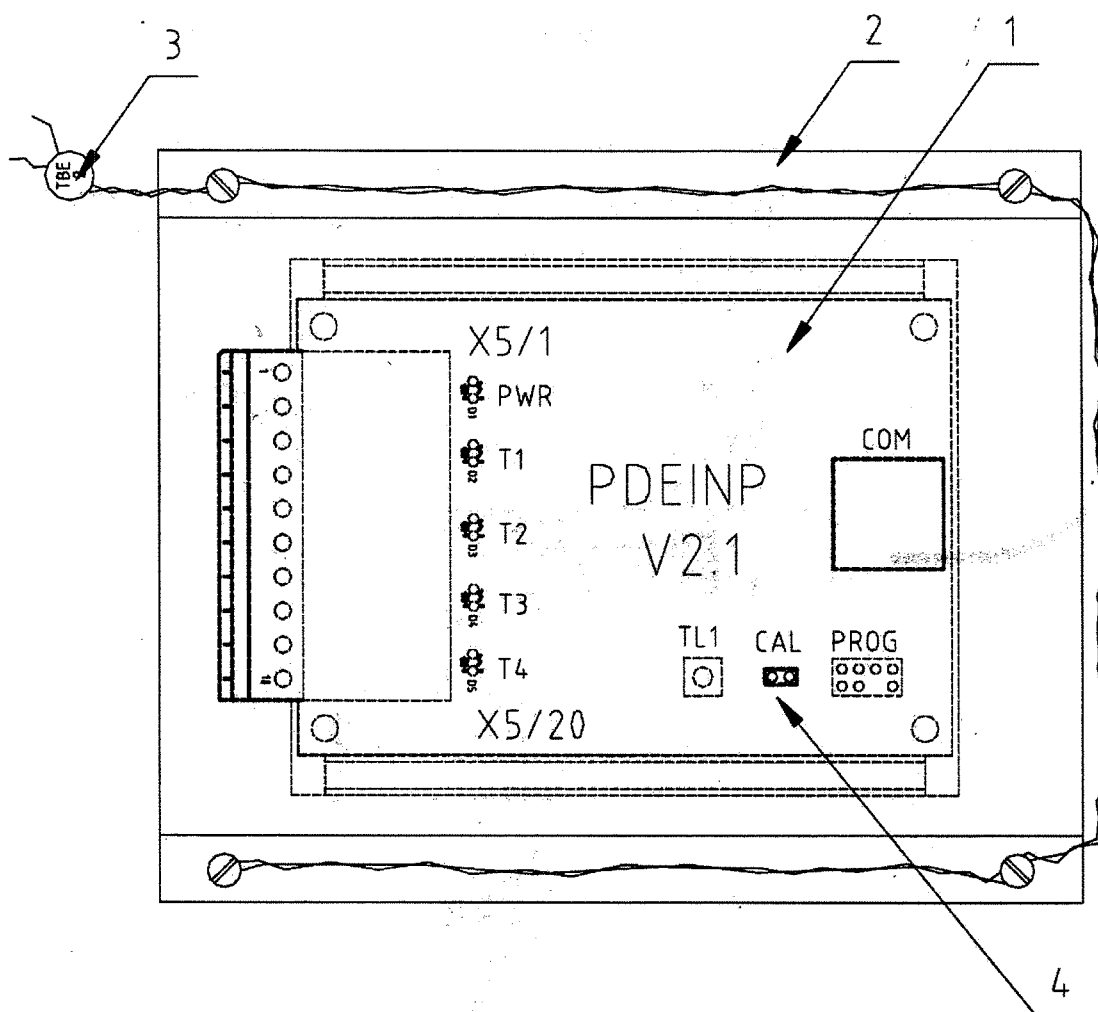
Picture No. 7: The sealing of PDEMPD.X calculator



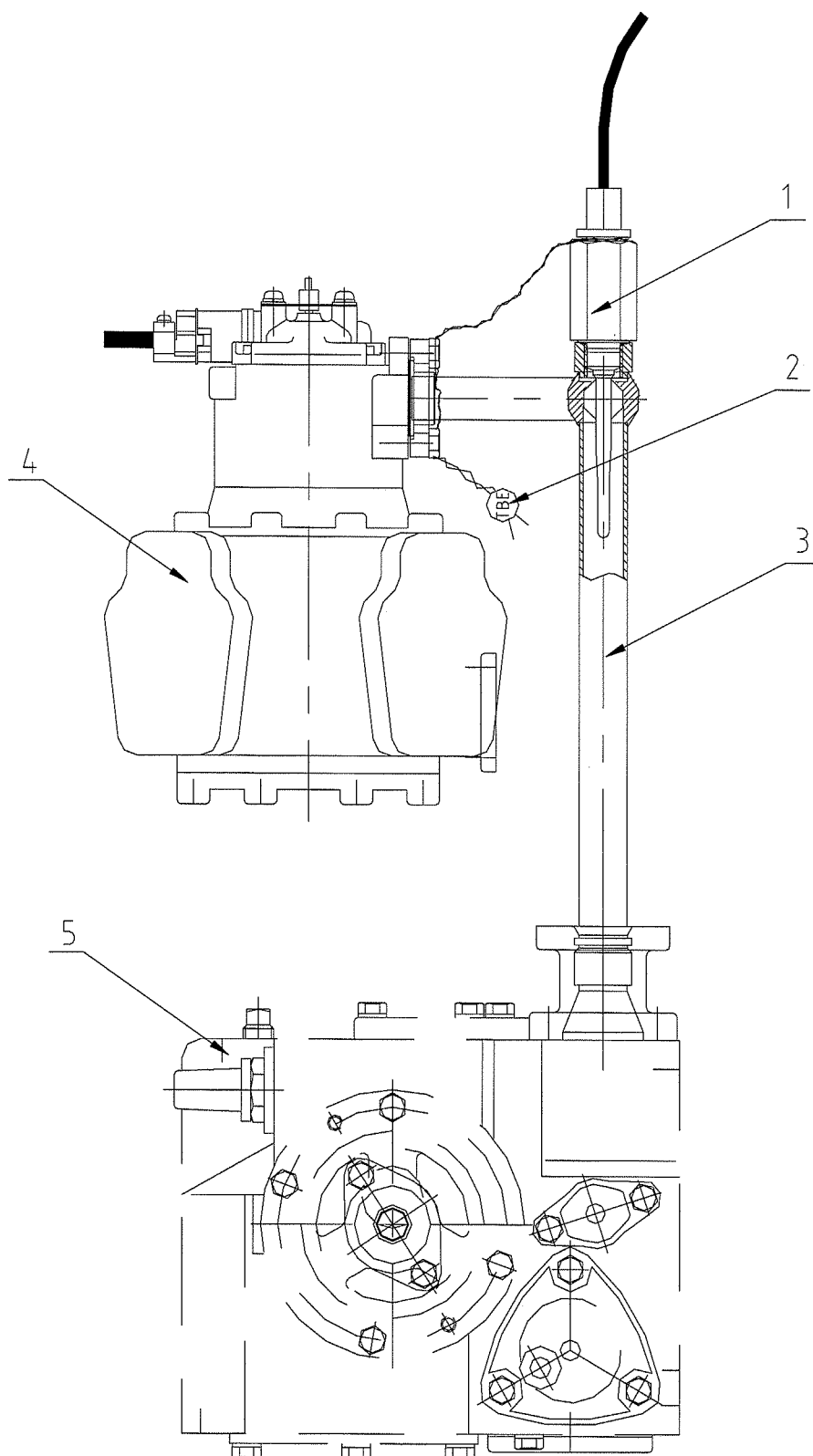
Picture No. 8: The sealing of PDEDUO.X calculator



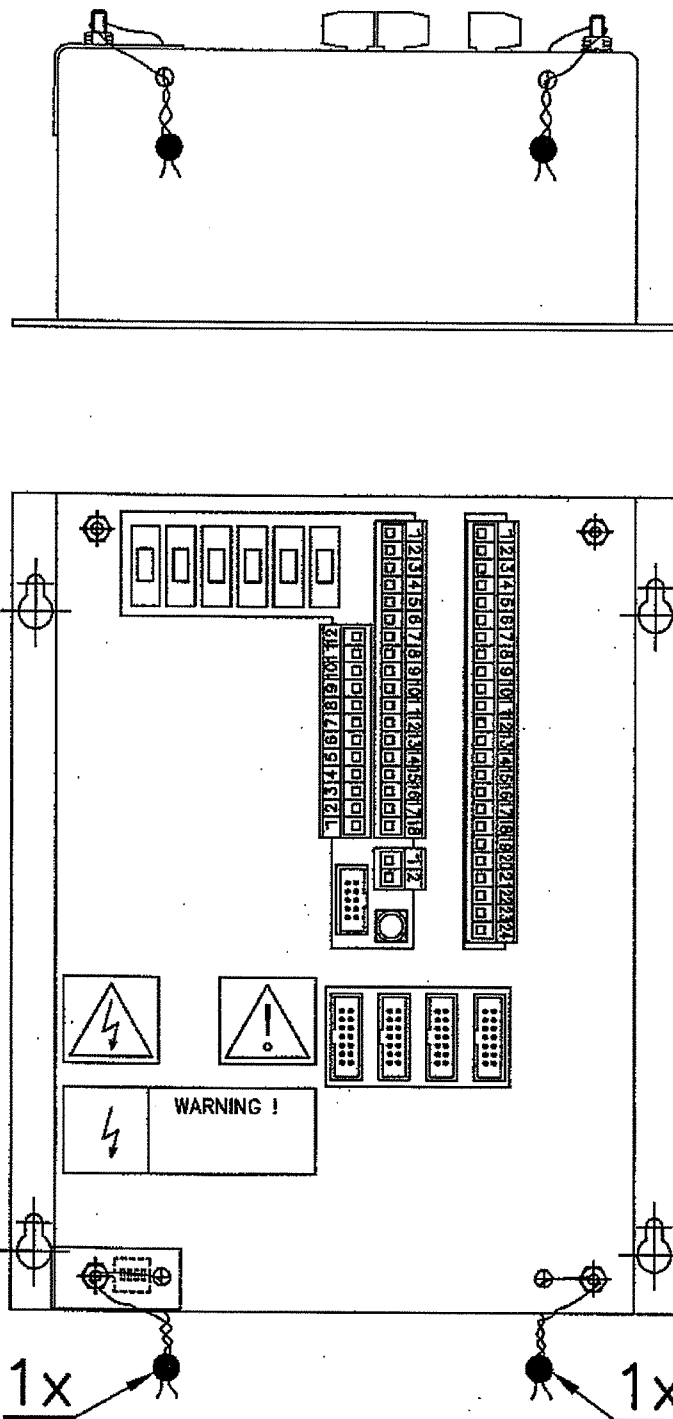
Picture No. 9: The sealing of PDEINP.X conversion device



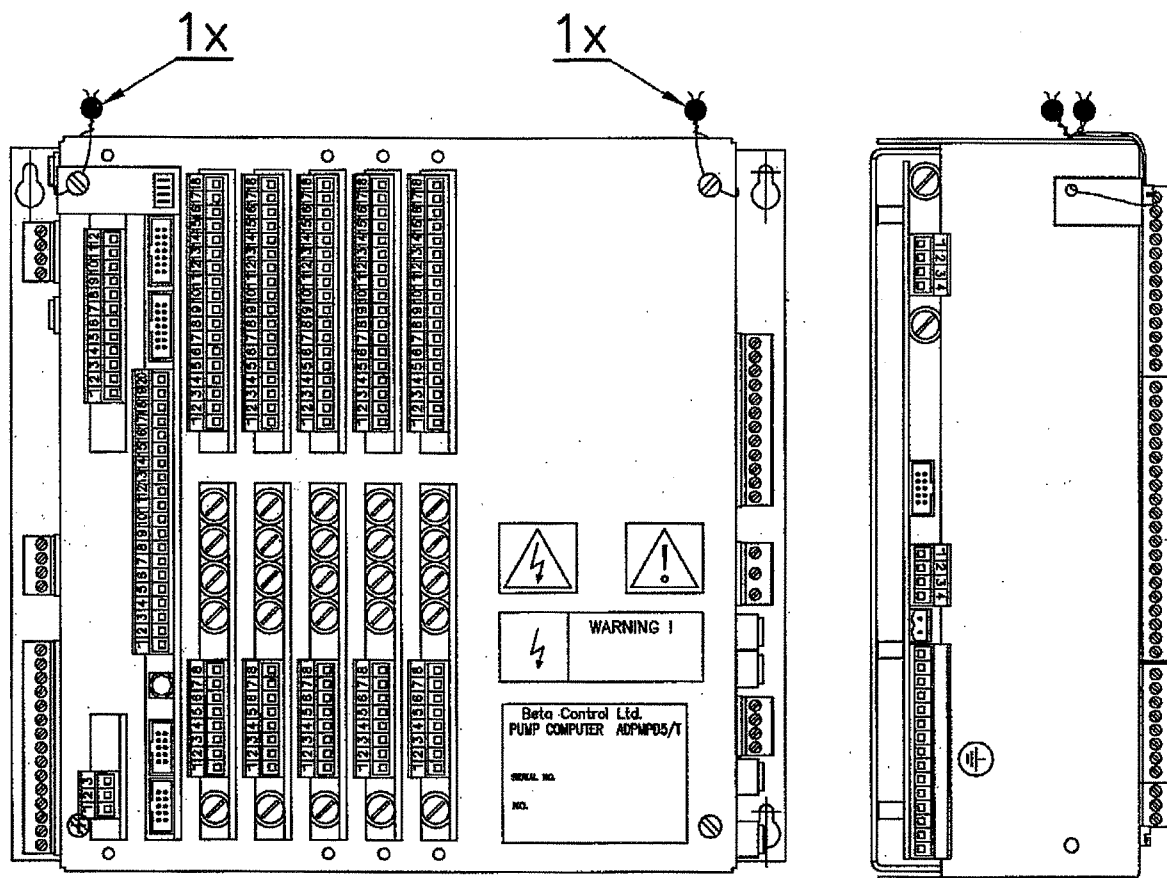
Picture No. 10: The sealing of Pt100 temperature sensor (liquid fuel dispenser)



Picture No. 11: The sealing of ADP1/T and ADP2/T calculator



Picture No. 12: The sealing of ADPMPD_x/T calculator



Picture No. 13: The sealing of totalizing indicating device (ADPx/T, ADTMPDx/T)

