



# Český metrologický institut

Notifikovaná osoba č 1383, Okružní 31  
638 00 Brno

## EC-TYPE EXAMINATION CERTIFICATE

Number: TCM 141/07 - 4493

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/LPG, SHARK BMP 2xxx.S/LPG  
manufacturer: TATSUNO-BENČ EUROPE a.s.

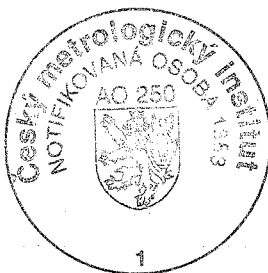
Liquids	LPG
Accuracy class	1.0

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 21 pages.

Date of issue: 5 February 2009



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 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.

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

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

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

The SHARK BMP 5xx.S/LPG and 2xxx.S/LPG LPG dispensers consist of an OPF gas separator, non-return valve, MP-02524 measurement transducer, VD-0206 differential valve, PDE, PDEX or ADP1/T, ADP2/T and ADPMPDx/T electronic calculator, electronic or electromechanical totalizing indicating device, electromagnetic valve, safety valve, manometer, break away coupling and house with delivery nozzle. These LPG dispensers can be equipped with pre-setting device. The sight glass is not required to be installed.

There is conversion ATC function for converse of measurement data to volume at base conditions (15°C) 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.

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 2.5 L with thermometer well.

There are three different models of gas separator. Model OPF 03 is equipped with one input and one output of the liquid phase. Model OPF 04 is equipped with one input and two outputs of the liquid phase. Model OPF 05 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  $\pm 1$  %. 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

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 communicate 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  $\text{dm}^3$ , 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 141/07-4506.

### 1.5. Conversion device

TM module of PDE (PDE.X) 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 strojířny a.s. VPP02

## 2. Basic technical data

Maximum flowrate $Q_{\max}$ [ $\text{dm}^3/\text{min}$ ]	30 to 50
Minimum flowrate $Q_{\min}$ [ $\text{dm}^3/\text{min}$ ]	5
Min. measured quantity MMQ [ $\text{dm}^3$ ]	5
Maximum unit price (number of digits)	9999 (4)
Maximum price to pay (number of digits):	999999 (6)
Type of display:	electronic
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 [ $^{\circ}\text{C}$ ]	-25 to +55 -40 to +50 with additional internal heating
Mechanical class	M2
Electromagnetic class	E2
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* 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 LPG 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 1.0
- 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  $\ell$  or L or word Litre
- Near unit price indication unit € / L or € / Litre
- information regarding the minimum measured quantity (MMQ)

#### 5. Verification

The SHARK BMP 5xx.S/LPG and 2xxx.S/LPG LPG dispensers are verified according to OIML R 117. In case of PDE calculator model PDEMPD the switch SW1 has to be set to position OFF (left site), in case of PDE calculator model PDEDUO 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 LPG 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 differential valve:

- |                           |    |
|---------------------------|----|
| d) The differential valve | 1× |
|---------------------------|----|

On the PDE (PDE.X) calculator:

- |  |    |
|--|----|
| e) Not dissembling of calculator and cover of SW1 switch | 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 dissembling 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×

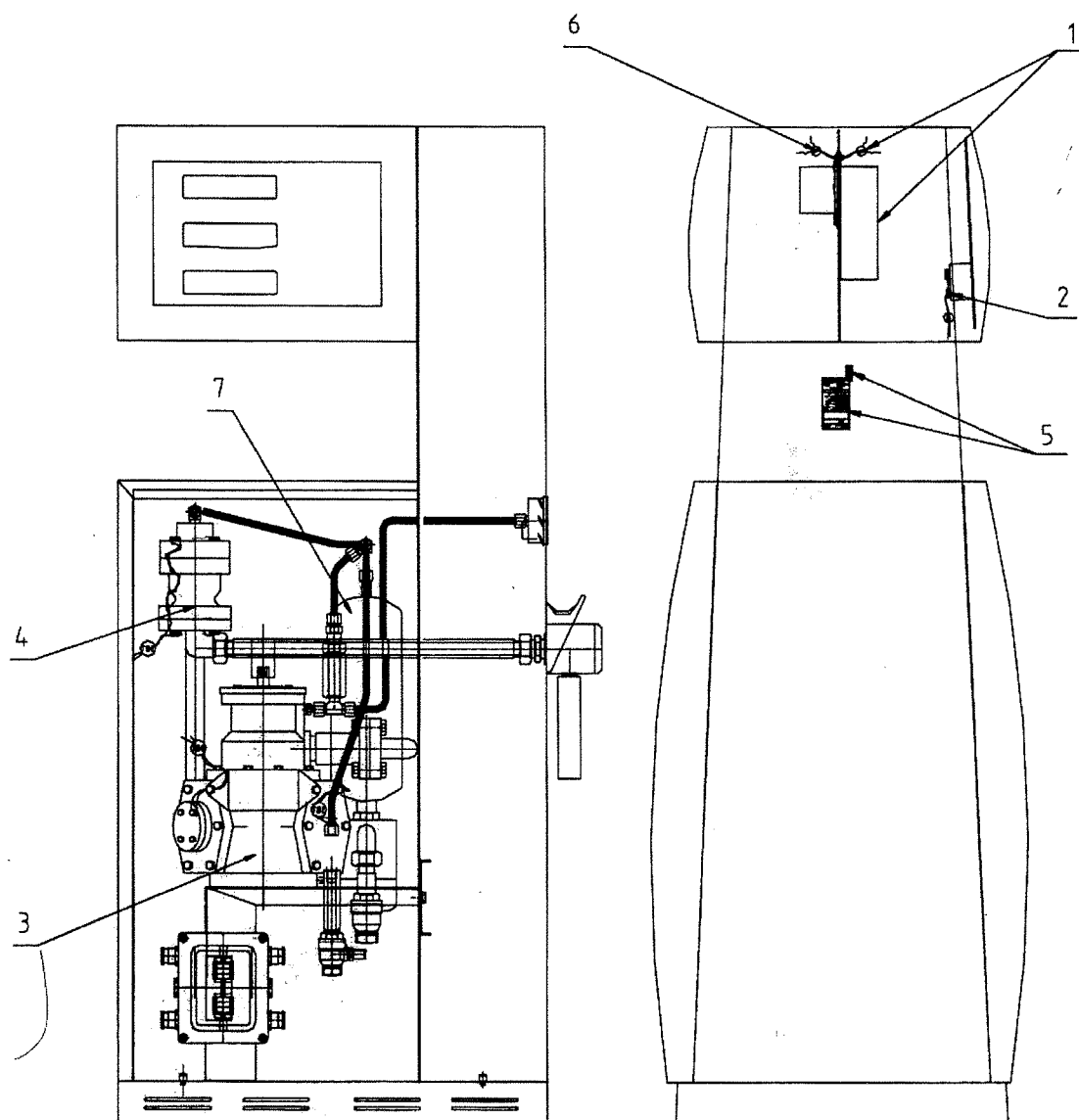
m) The data plate if separate 1×

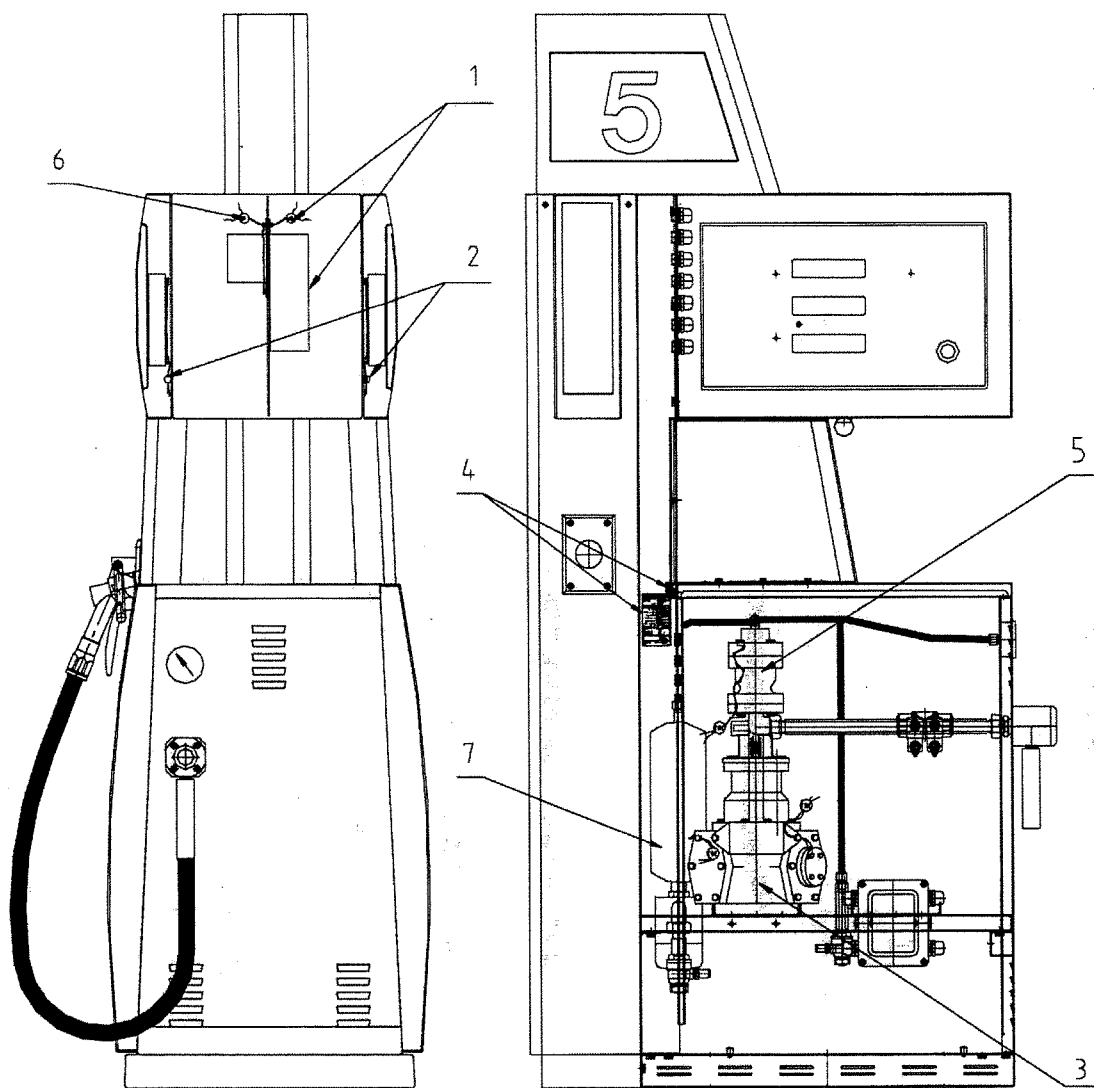
On the LPG dispenser:

n) The data plate of dispenser 1×

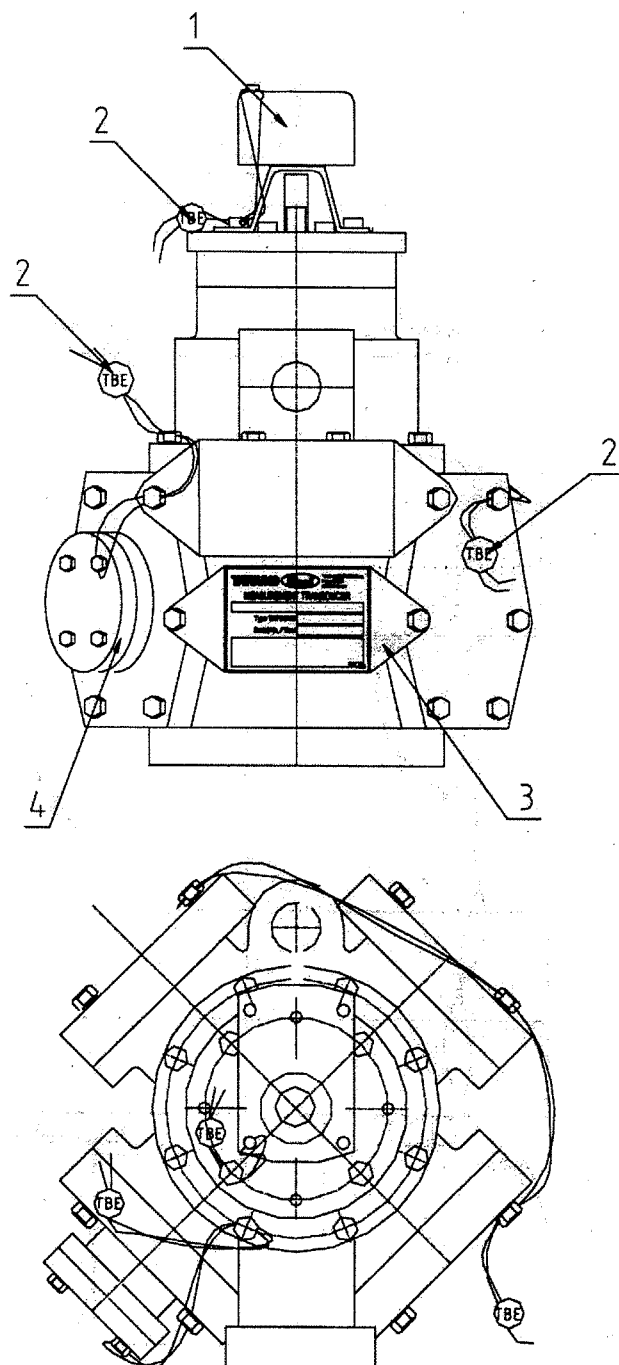
o) The symbol of relevant measurement transducer on the data plate of  
SHARK BMP 2000.S/LPG 1×

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



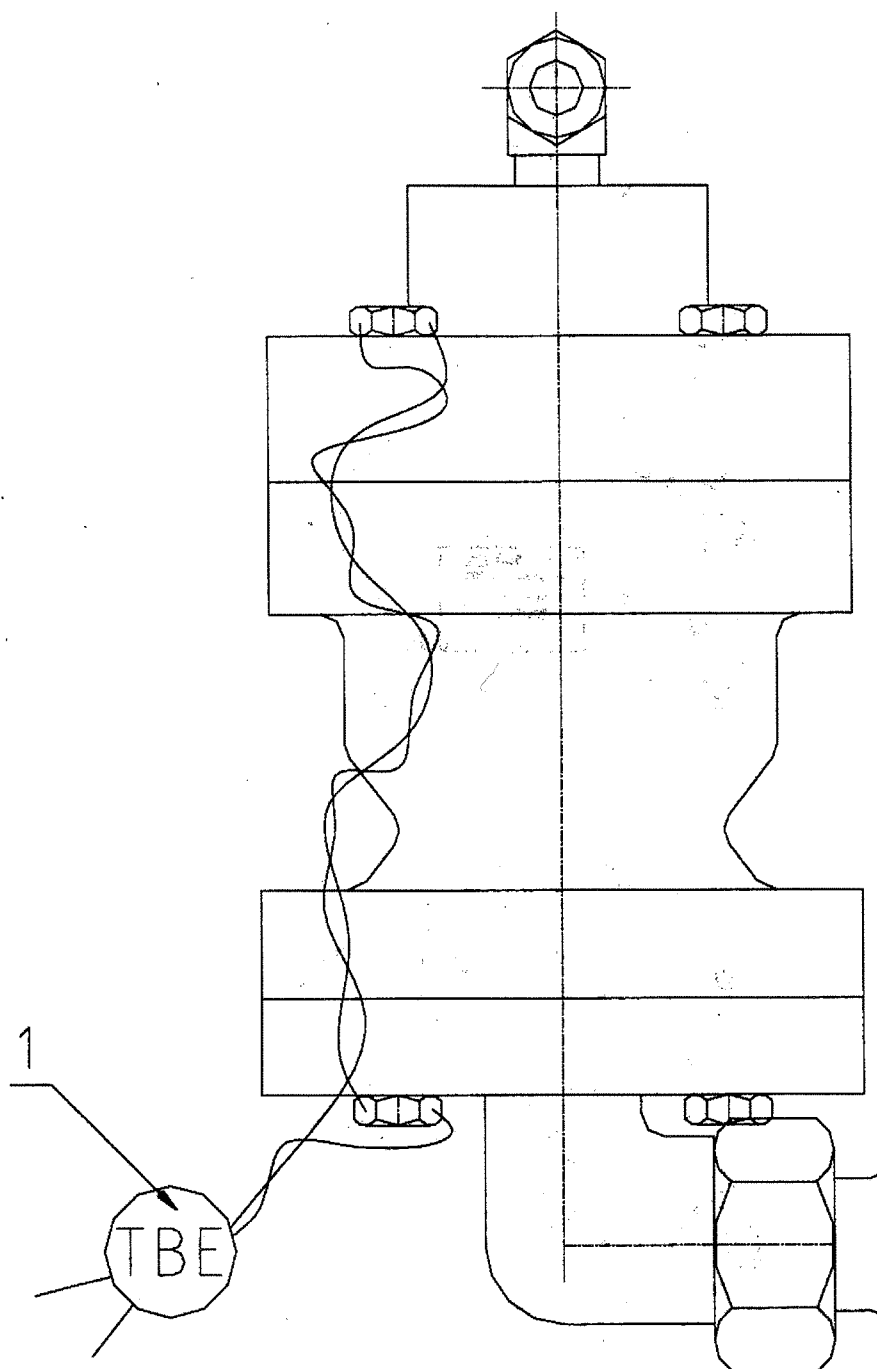


Picture No. 2: The sealing of MP-02524 measuring transducer

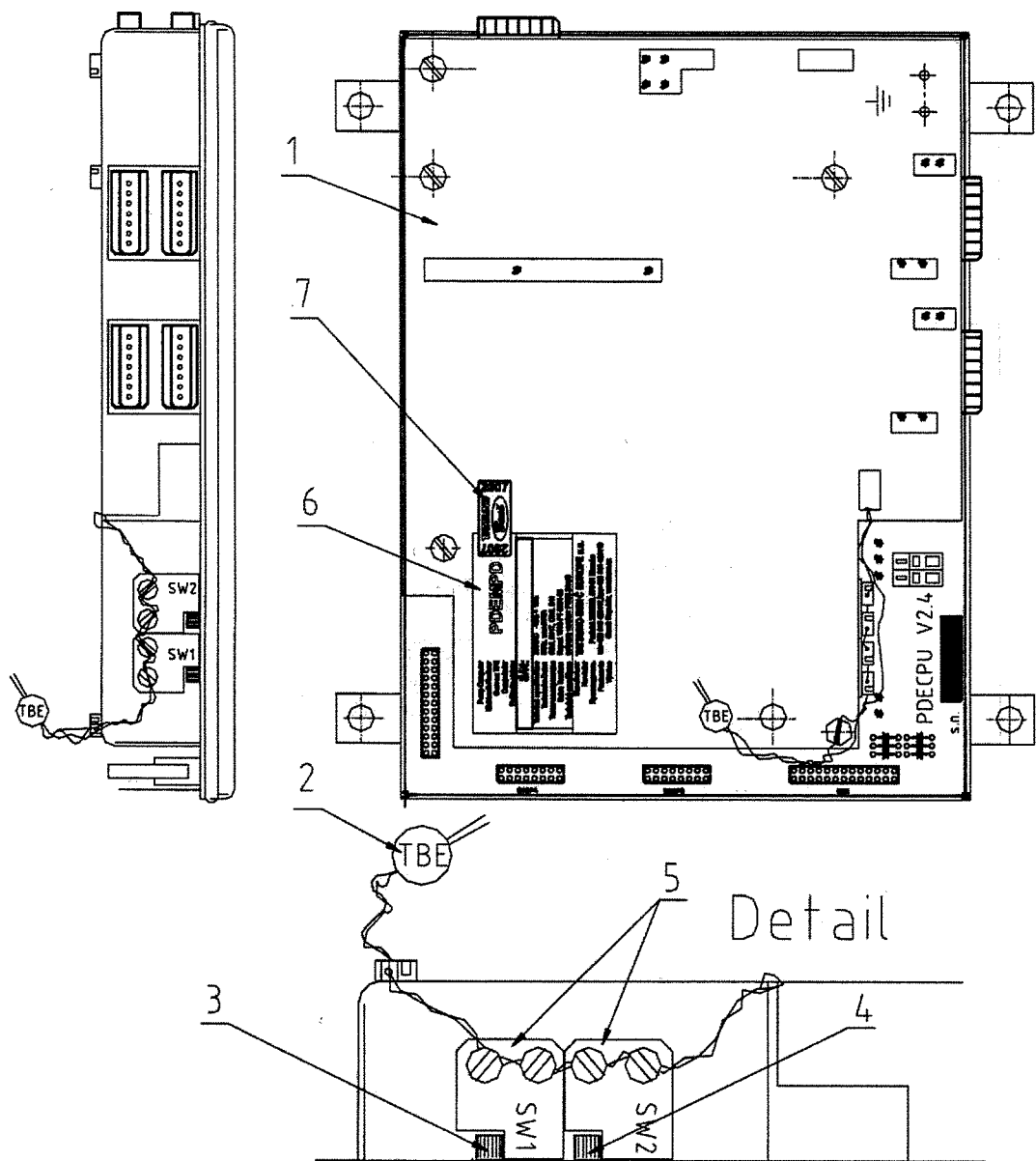




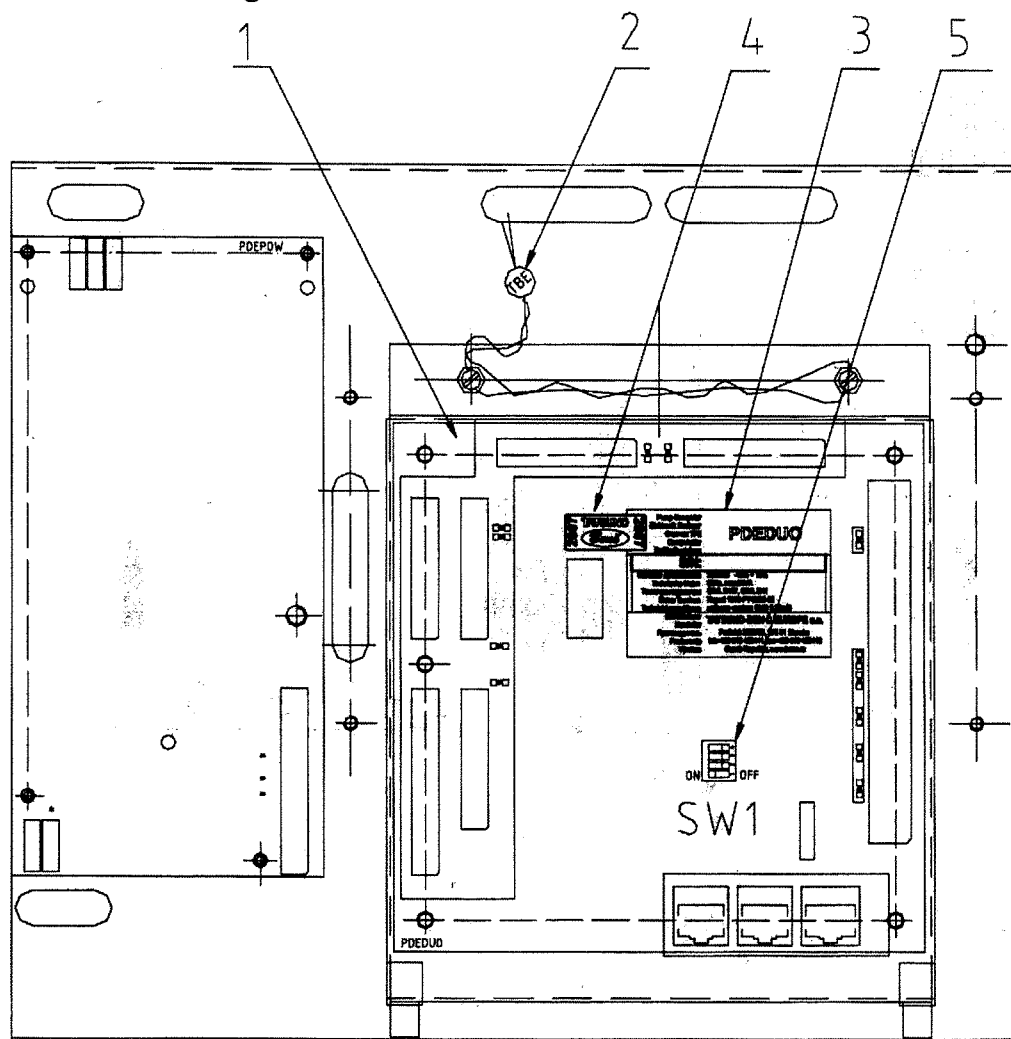
Picture No. 3: The sealing of differential valve:



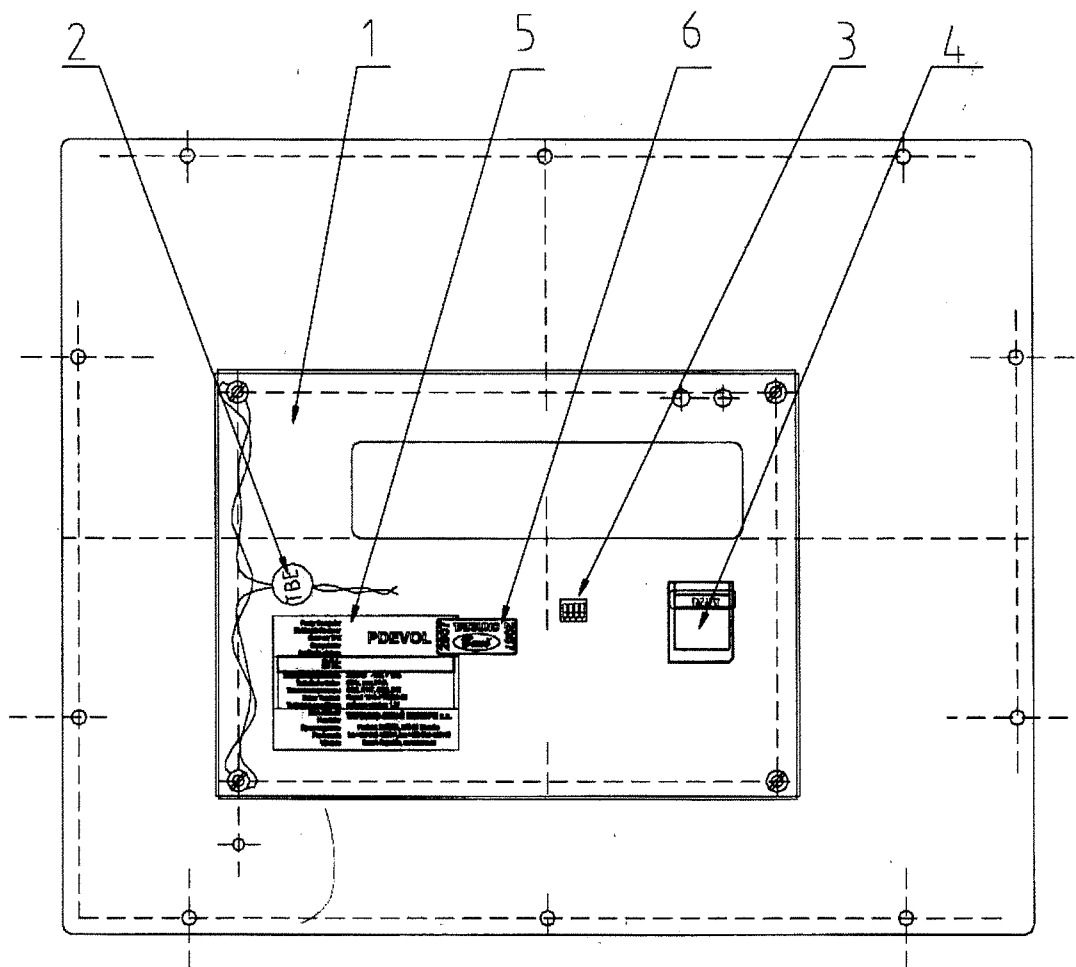
Picture No. 4: The sealing of PDEMPD calculator



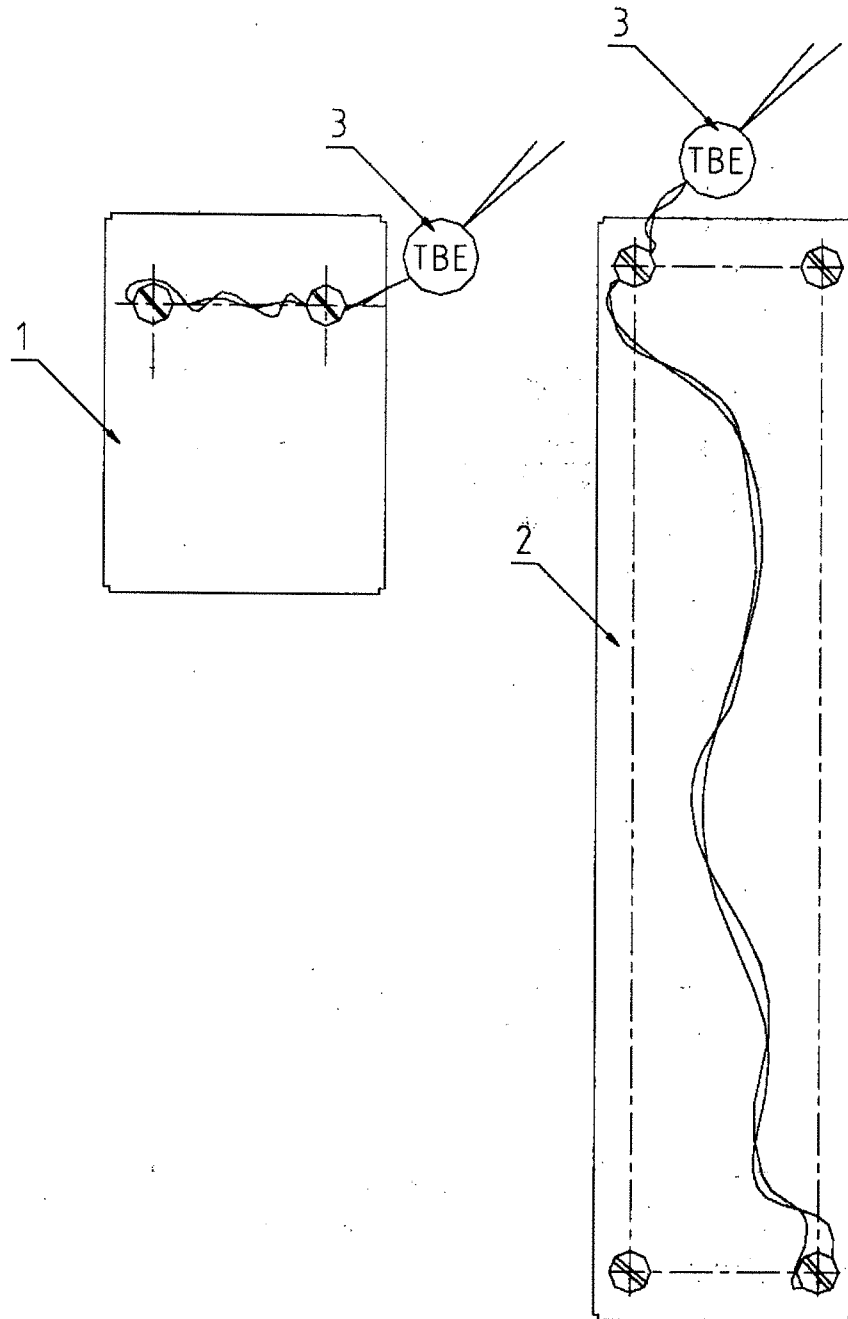
Picture No. 5: The sealing of PDEDUO calculator



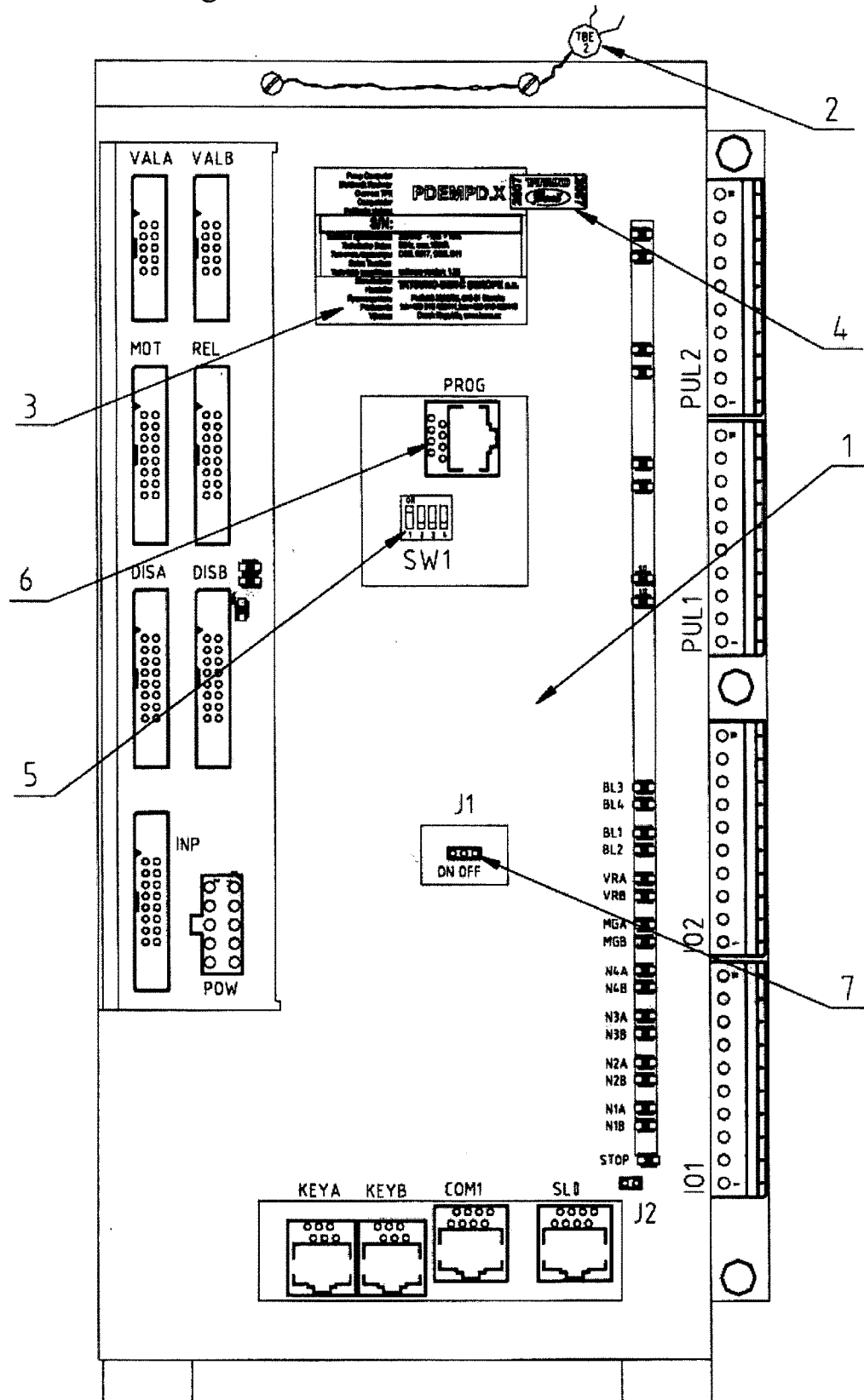
Picture No. 6: The sealing of PDEVOL calculator



Picture No. 7: The sealing of totalizing indicating device



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

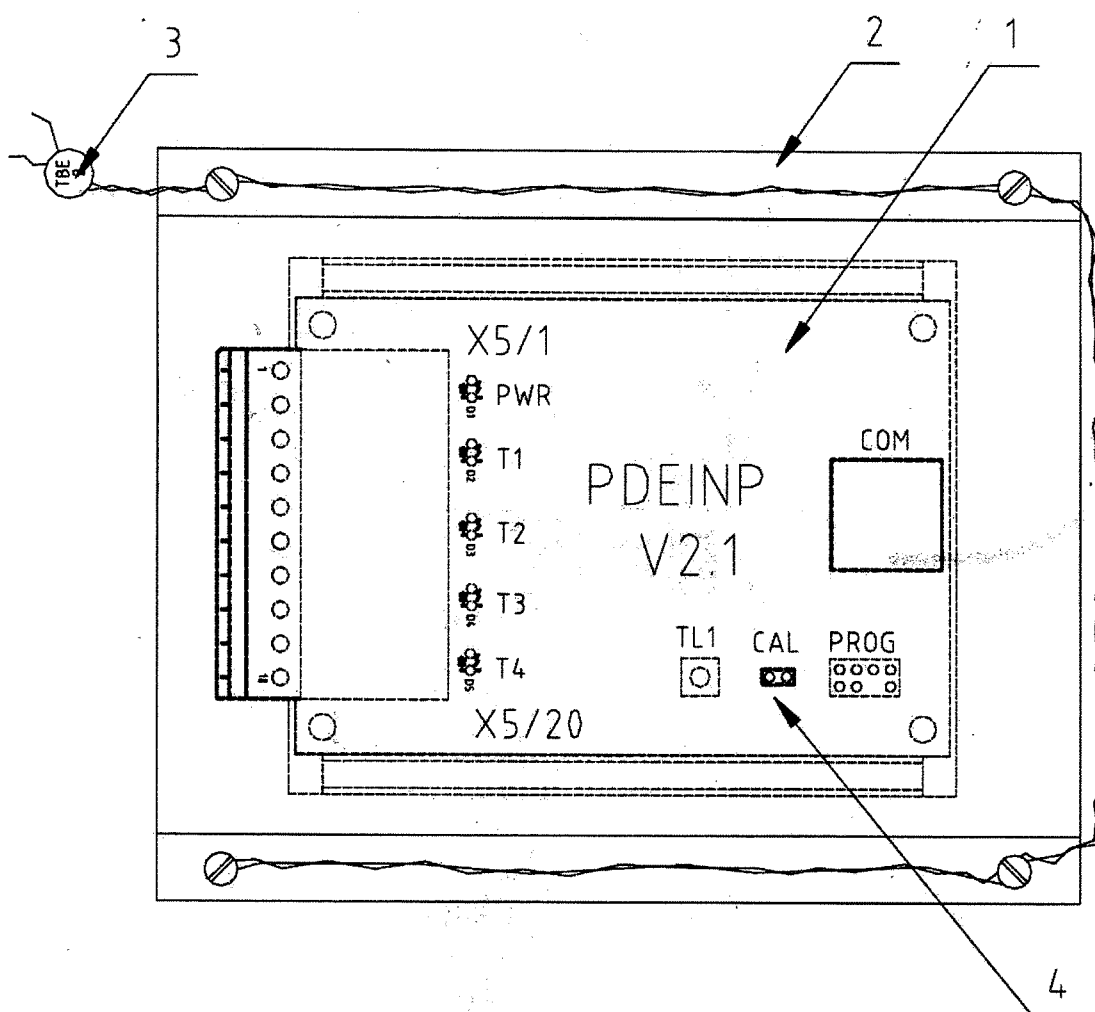


The diagram illustrates the internal components and connections of the PDEDUO.X computer system. Key components include:

- MOT (Motor):** A vertical component on the left side.
- VAL (Valve):** A vertical component next to the motor.
- DISA (Display A) and DISB (Display B):** Two vertical display units.
- POW (Power):** A power supply unit at the bottom left.
- PRDG (Printer):** A printer unit at the top center.
- SW1 (Switch):** A switch unit below the printer.
- OUT (Output):** A vertical output unit on the right side.
- KEYA, KEYB, COM1, SL0:** A keyboard section at the bottom with four ports.
- Central Label:** Identifies the system as PDEDUO.X, manufactured by DATSUNO-BEN C EUROPE A.S. It includes technical specifications and contact information.

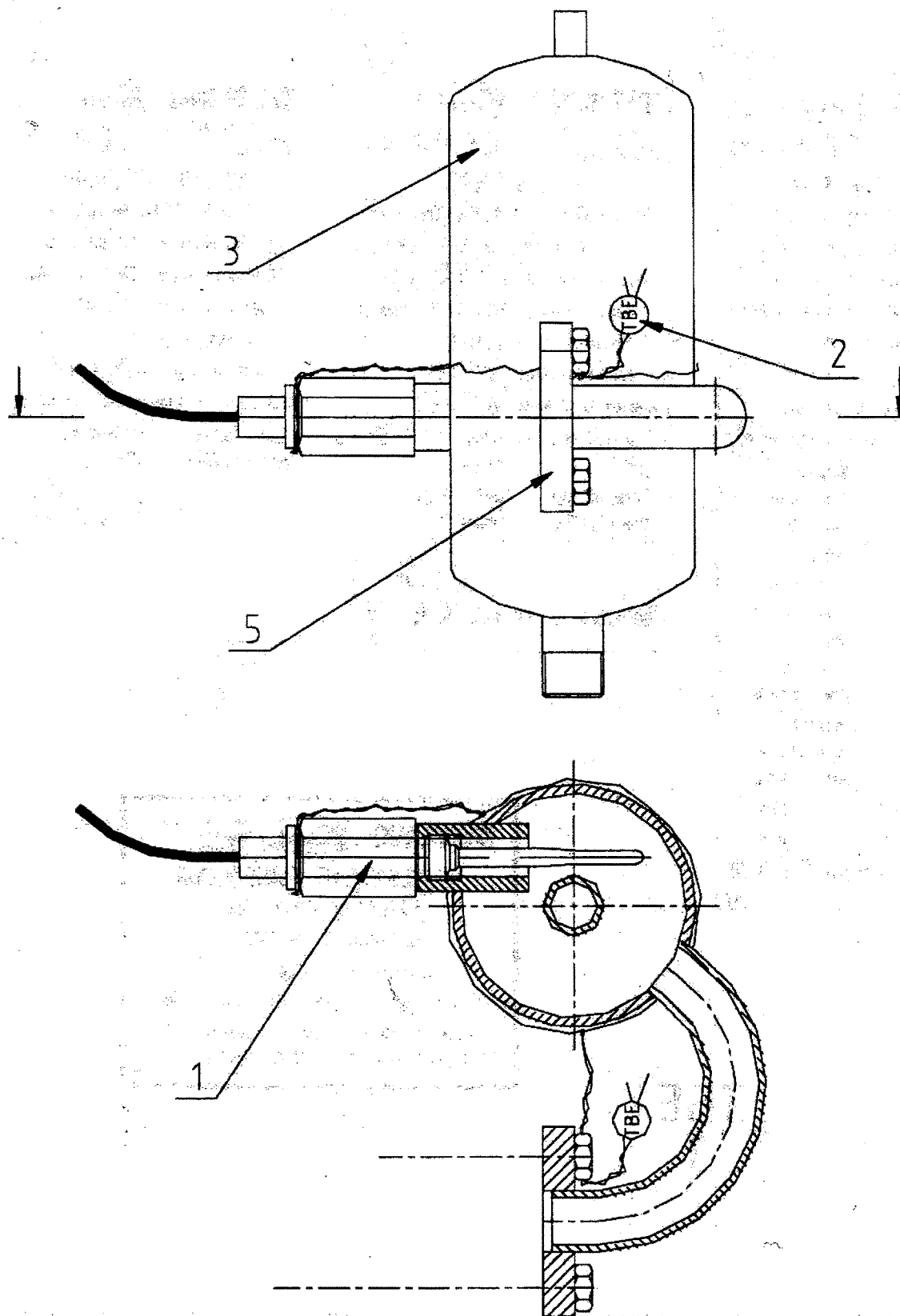
The diagram also shows various connection points, switches, and a power supply unit. A legend at the bottom right identifies the components with numbers 1 through 7.

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

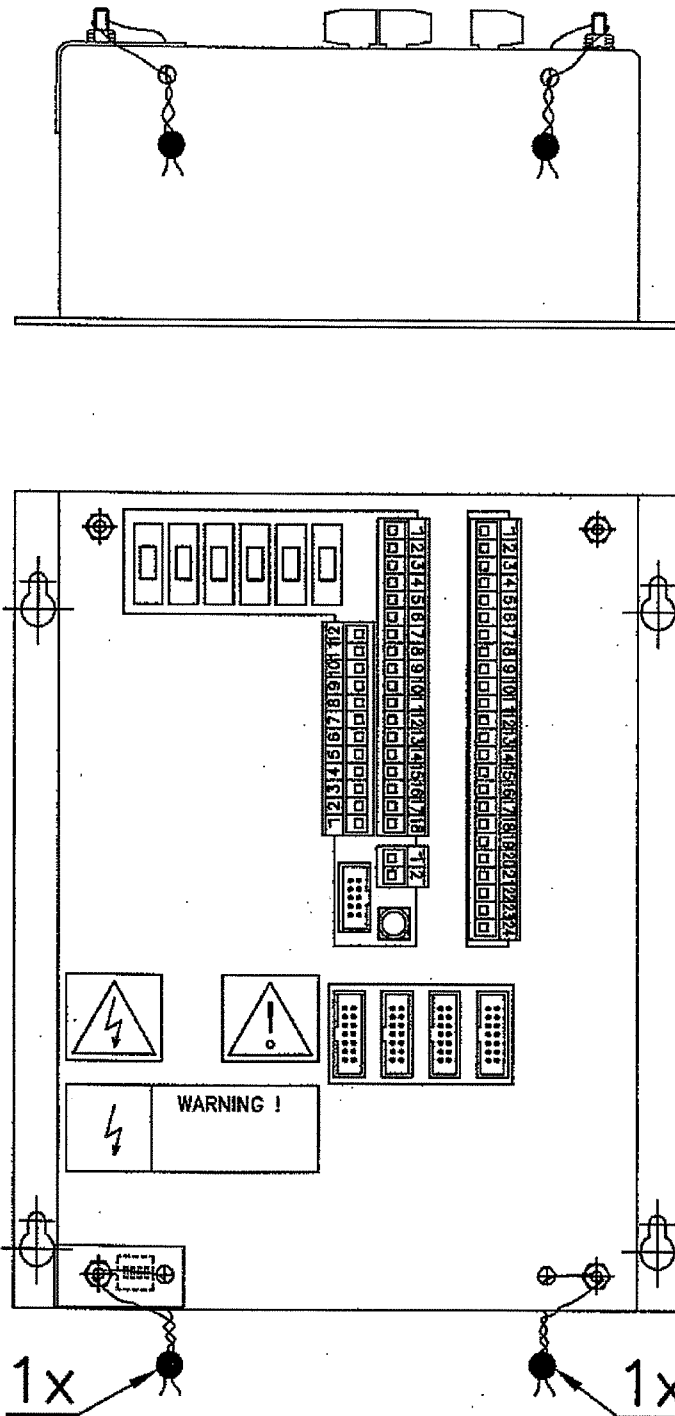




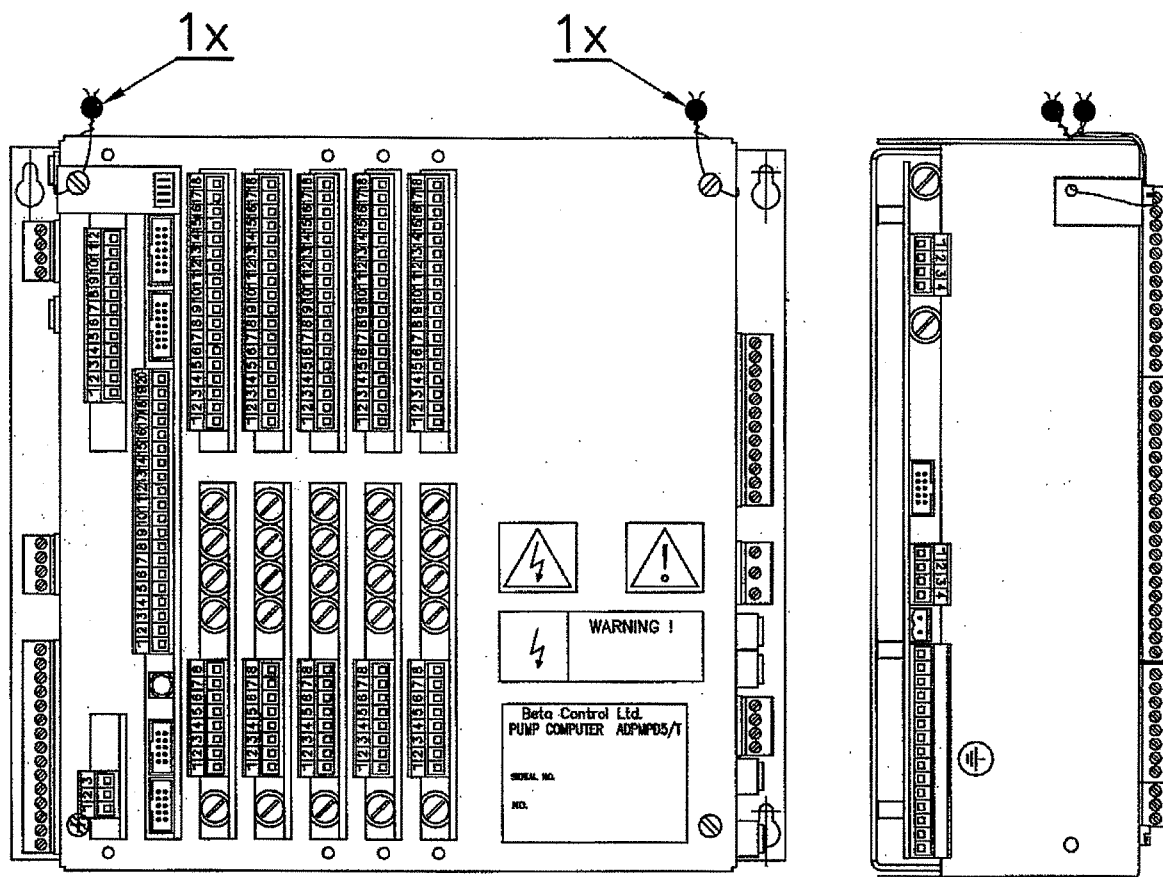
Picture No. 11: The sealing of Pt100 (in gas separator OPF 05)



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)

