



EU-TYPE EXAMINATION CERTIFICATE

Number: TCM 141/13 - 5085

Addition 2

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

Page 1 from 19 pages

In accordance: with Directive 2014/32/EU of the European Parliament and of the Council on the harmonisation of the laws of the Member States relating to the making available on the market of measuring instruments (implemented in Czech Republic by Government Order No. 120/2016 Coll.).

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

For: dispenser
type SHARK BMP 2xxx.S/WSE, OCEAN BMP 4xxx.O/WSE and BMSxx/WSE
Accuracy class 0.5
Mechanical environment class: M1
Electromagnetic environment class: E1

Valid until: 29 September 2023

Document No: 0511-CS-A039-13

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

Date of issue: 21 December 2020

Certificate approved by:




RNDr. Pavel Klenovský

1 Measuring device description

SHARK BMP 2xxx.S/WSE, OCEAN BMP 4xxx.O/WSE and OCEAN BMSxx/WSE dispensers are intended for measurement of Water & Soap & Ethanol solution (WSE) volumes as a legal measuring device in the sense of the Directive of the European Parliament and of the Council no. 2014/32/EU of measuring instruments, as amended. The dispenser is used for filling of special car tanks with water & soap & ethanol solution which is used for cleaning of car windows.

The measuring systems consist of a pump (remote or installed inside dispenser), non-return valve, filter, measurement transducer, electronic calculator, solenoid valve, and house with dispensing nozzle. These WSE dispensers can be optionally equipped with a pre-setting device, electronic or electromechanical totalizing indicating device, sight glass and with internal heater of hydraulic part in order to heating the liquid to the temperature above 0 °C.

These measuring systems can be installed in one WSE dispenser and it can be connected to one electronic calculator only.

The pump has to be the submersible or placed under level of the liquid in the tank. A non-return valve has to be installed between the pump and WSE dispenser.

There is SHARK MOD 2xxx.S/WSE and OCEAN MOD 4xxx.O/WSE WSE module. The module consists of the same hydraulic described above, without electronic calculator. The module is to be connected to the SHARK BMP 2xxx.S or OCEAN BMP 4xxx.O fuel dispensers, which was certified separately.

The OCEAN BMSxx/WSE WSE dispenser (metrological part identical with OCEAN BMP 4xxx.O/WSE) could be installed into dispensing systems e.g. container dispensing system.

SHARK BMP 2xxx.S/WSE and OCEAN BMP 4xxx.O/WSE WSE dispensers could be connected into independent Point of Sale or Paying terminal, which do not influence metrology parameters of measuring system.

These fuel dispensers are compatible with and may be connected to all self-service devices with proprietary protocols PDE, TATSUNO or other protocols notified in their evaluation certificates.

1.1. Measurement transducer

1.1.1 TATSUNO FM-1022 measurement transducer consists of a positive displacement measurement sensor with four pistons of cyclic volume 0.5 L, TATSUNO EK-1025 two-channel photoelectric transmitter (pulser) with 50 pulses / revolution or TATSUNO EK-1129 two-channel magnetic transmitter with 50 pulses / revolution and adjustment device (optional).

TATSUNO FM-1022 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.

1.1.2 TATSUNO FF-1141 measuring transducer consists of a Lobe type positive displacement measuring sensor with cyclic volume 0.05 L and the ZE-1945 magnetic pulse transmitter with 5 pulses per revolution.

Measuring transducer was separately certified by Evaluation certificate No. ZR 141/17-0145 issued by CMI, Notified body 1383.

1.2. Calculator

These electronic calculators can be used alternatively.

1.2.1. 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, Puma LAN and ER4 protocol.

Approved 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.

1.2.2. 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.

Approved 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 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.

1.2.3. There are two different models of TATSUNO PDEX5 electronic calculator. Model PDEX5S can control three measuring systems simultaneously and model PDEX5L can control ten measuring systems maximally, four simultaneously. Calculator PDEX5 can operate separately or can be controlled by central system of filling station. It can communicate via RS485 by proprietary PDE or other protocols.

Software version / W&M checksum: 1.01 / (4493)hex; 1.02 / (DBD2FFA4)hex

This electronic calculator can be operated by buttons of IR module (remote control). It is necessary to change over value of correction factor, which is stored in memory of calculator M6-P09 (menu 6, parameter P09) for manual electronic calibration or perform automatic calibration by the function M6-P15 (menu 6, parameter 15). Access to electronic and manual calibration is secured by DIP switch SW1-1 (location ON – up) with sealing cover.

Electronic calculator PDEX5 has been certified separately by the Evaluation certificate No. ZR141/18-0175 issued by CMI, Notified Body No. 1383. More detailed information about the PDEX5 calculator are to be found in the corresponding Evaluation certificate.

1.2.4. 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.

Approved 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.

1.2.5. Hectronic GmbH TA2331 electronic calculating and indicating device / self-service device was separately certified by Evaluation certificate No. GB-1286 issued by NWML, Notified Body 0126.

Approved Software version: Release II: „SW2331.75.110.xxx“; Release III: „SW2331.75.130.xxx“

Other information in the related Evaluation certificate.

1.2.6. Hectronic GmbH HECONOMY electronic calculating and indicating device / self-service devices were separately certified by Evaluation certificates No. A0445/4225/2012 and No. A0445/1718/2013 issued by BEV, Notified body 0445.

Approved Software version: 1.0.3.x; 1.0.4.x; 1.0.5.x; 1.0.6.x; 2.0.0.x; 1.1.7.x; 2.1.0.x

W&M checksum: FC DLL = 28D9; CON DLL = 946B

Other information in the related Evaluation certificate.

1.2.7. Männl Elektronik GmbH, Tankmanagementsystem ME-TMS electronic calculating and indicating device / self-service device was separately certified by Type certificate No. DE-M-PTB-0075 issued by PTB, Notified body 0102.

Approved Software version: 03.00

W&M checksum: (1D63)hex or (07523)dec

Other information in the related Evaluation certificate.

1.3. Self-service device

The measuring systems may be connected to a Self service device provided that:

- a) the Self-service device is described in:
 - one of the Evaluation Certificates as mentioned below; or
 - any Parts Certificate issued by a Notified Body that acts under module B of the MID for ANNEX VII (MI -005);
- b) the following applies:
 - the connection is made in such a way that the presentation of the results meets the essential requirements of the MID; and
 - the connection is made through the interfaces with the specified protocols as mentioned in the TEC, and/or the EC/PC.

1.3.1 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.

1.3.2 ALX TECHNOLOGIES, EUROPILE and EUROPOLE self-service devices were separately certified by Evaluation certificates No. LNE-17492 and No. LNE-28279 issued by LNE, Notified body 0071.

1.3.3 NPS A/S, PAY SYS payment terminal separately certified by Evaluation certificate No. SC311-12 issued by SP, Notified body 0402.

1.3.4. LAFON, LAFON ELYS post-payment self-service device equipped with a data display and secured storage system certified by Evaluation Certificate No. LNE-22484 issued by LNE, Notified body 0071.

1.3.5. Doms ApS, PSS5000 forecourt controller and memory device, a purely digital self-service device certified by Parts Certificate No. SC0257-15 issued by RISE Research Institute of Sweden, Notified body 0402.

1.3.6. Knowtronic ApS, KT-OPT outdoor payment terminal including models "KT-Retail" and "KT-Account", a purely digital self-service device certified by Parts Certificate No. SC0099-18 issued by RISE Research Institute of Sweden, Notified body 0402.

1.3.7. Tokheim, Fuel POS self-service device for use as a part of fuel dispenser, LPG dispenser and/or other liquid dispensers (e.g. AdBlue) certified by Evaluation Certificate No. TC7346 issued by NMi Certin B.V., Notified body 0122.

1.3.8. DBA Lab S.p.A., GL+POS and GL+OPT self-service device for use as a part of fuel dispenser, LPG dispenser and/or other liquids dispensers (e.g. AdBlue) certified by Evaluation Certificate No. GB-1624 issued by NMO, Notified body 0126.

1.3.9. Ratio Elektronik GmbH, Ratio TDC 2 self-service device for fuel dispensers for the attended and unattended service mode certified by Evaluation Certificate No. A0445/2186/2015 issued by BEV, Notified body 0445.

1.4. Hose

LÜDECKE, MODY SPIRAL HOSES, type PUAS xxxx, i.D./o.D. = 9/12; maximum length 7.5 m

2 Basic technical and metrological data

Measuring sensor	FM-1022	FF-1141
Accuracy class	0.5	
Maximum flowrate Q_{\max} [L/min]	20	20
Minimum flowrate Q_{\min} [L/min]	2	4
Min. measured quantity MMQ [L]	2	
Liquids to be measured	WSE (water & soap & ethanol solution)	
Liquid temperature range [°C]	-20 to +50	-20 to +40
Maximum pressure [MPa]	0.4	
Type of display:	Electronic	
Ambient temperature range [°C]	-25 to +55 -40 to +55 with additional internal heating or with CDC electronic calculator	

Mechanical class	M1 (M2 with PDEX5 el. calculator)
Electromagnetic class	E1 (E2 with PDEX5 el. calculator)
Humidity	Condensing
Location	Open

3 Test

Technical tests of the SHARK BMP 2xxx.S/WSE and OCEAN BMP 4xxx.O/WSE dispensers were performed in conformity with International Recommendation OIML R 117-1 *Dynamic measuring systems for liquids other than water*.

Assessment of the device and test results are to be found in Test Reports No. 6015-PT-P0026-13 and 6015-PT-P0059-17 issued by CMI (Notified body No. 1383).

Technical tests of the dispensers type OCEAN BMSxx/WSE were performed in conformity with International Recommendation OIML R 117-1:2020 *Dynamic measuring systems for liquids other than water*.

Assessment of the device and test results are to be found in Test Report No. 6015-PT-P0058-20 issued by CMI (Notified body No. 1383).

4 The measuring device data

There are at least a following data on the measurement sensor, pulser, and the electronic calculator:

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

There are following data on each measuring system (name plate):

- The "CE" marking and supplementary metrology marking
- Number of EU-type examination certificate
- Manufacturer's name, mark or trademark and post address
- Type designation
- Serial number and year of manufacture
- Accuracy class
- Minimum measured quantity (MMQ)
- Maximum flowrate (Q_{\max})
- Minimum flowrate (Q_{\min})
- Maximum pressure (P_{\max})
- 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 visible to user during the operation:

- 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)

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 $\pm 0.5\%$.

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, PDEX5 and TBELTx electronic calculators.

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 FM-1022:

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

On the measurement transducer TATSUNO FF-1141:

- | | |
|--------------------------------------|----|
| - Cover of the pulse transmitter | 1x |
| - Body of the sensor against opening | 1x |

On the PDEX, PDEX5 and TBELTx el. calculator:

- | | |
|--|----|
| - Connection of calculator cover with calculator console and SW1 switch cover, if separate | 1x |
| - Connection of cover of electromechanical totalizer with display | 1x |
| - The type plate of calculator | 1x |

On the dispenser:

- | | |
|--|----|
| - Connection of dispenser name plate with fuel dispenser frame | 1x |
| - The symbol of relevant measuring system on the name plate | 1x |
| - The fuel dispenser data sheet (identification of data on document) | 1x |

On the UNIDATAZ CDC electronic calculator:

- | | |
|--|----|
| - Connection of S3 switch cover with CPU unit | 1x |
| - Connection of CPU unit with calculator console | 1x |
| - Connection of electromechanical totalizer to the frame | 1x |
| - The type plate of 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 |

On the Hectronic GmbH HECONOMY calculating/indicating device / self-service device:

- | | |
|--|----|
| - Type plate of the SSD on the case of the SSD shall be sealed | 1x |
| - Compact flash disk shall be sealed against removal | 1x |
| - Each (optional) interface FCI 2040 shall be sealed by sealing two screws of the metal cover | 2x |
| - In the case when the SSD is connected to the pulsers of the fuel dispensers, the ingoing pulser lines shall be sealed by screw which fixes the cover on the interface FCI-2040 | 1x |

On the ALX Technologies EUROPOLE and EUROPILE self-service device:

- According to Evaluation certificates No. LNE-17492 and No. LNE-28279

On the Männl Elektronik GmbH Tankmanagement system ME-TMS calculating/indicating device / self-service device:

- According to Type certificate No. DE-M-PTB-0075

On the NPS A/S PAY SYS outdoor terminal:

- According to Evaluation certificate No. SC311-12

On the LAFON ELYS post-payment self-service device

- According to Evaluation Certificate No. LNE-22484

On the Doms ApS, PSS5000 forecourt controller and memory device, a purely digital self-service device

- According to Parts Certificate No. SC0257-15

On the Tokheim, Fuel POS self-service device

- According to Evaluations Certificate No. TC7346

On the. DBA Lab S.p.A., GL+POS and GL+OPT self-service device

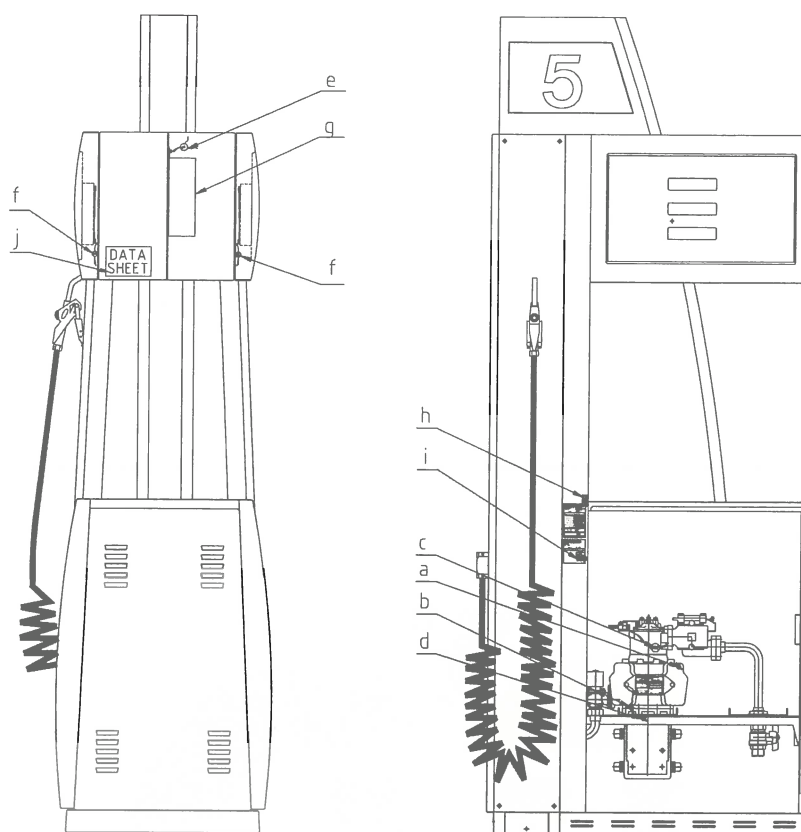
- According to Evaluation Certificate No. GB-1624

On the Ratio Elektronik GmbH, Ratio TDC 2 self-service device

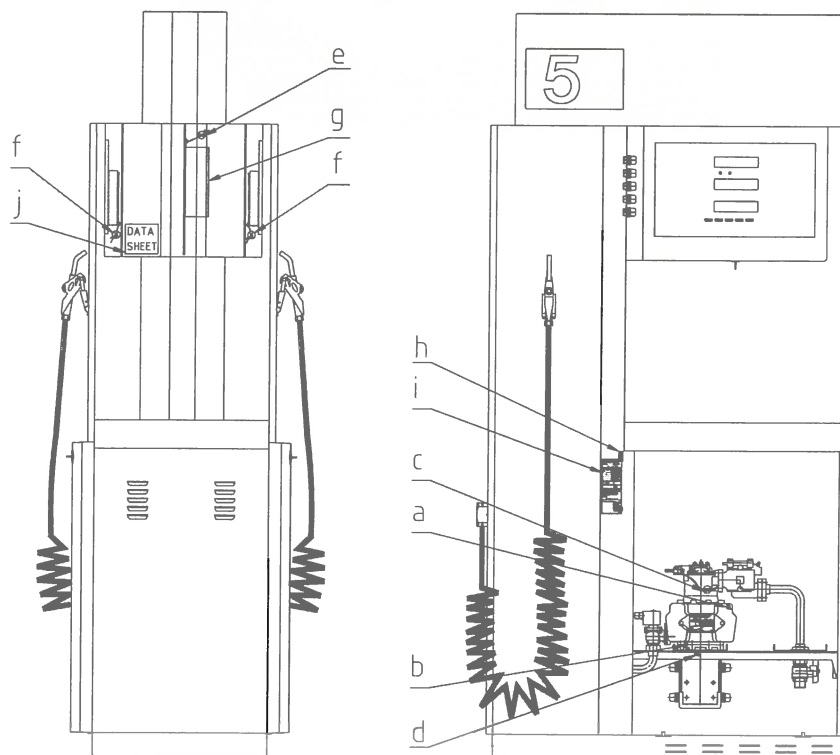
- According to Evaluation Certificate No. A0445/2186/2015

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.

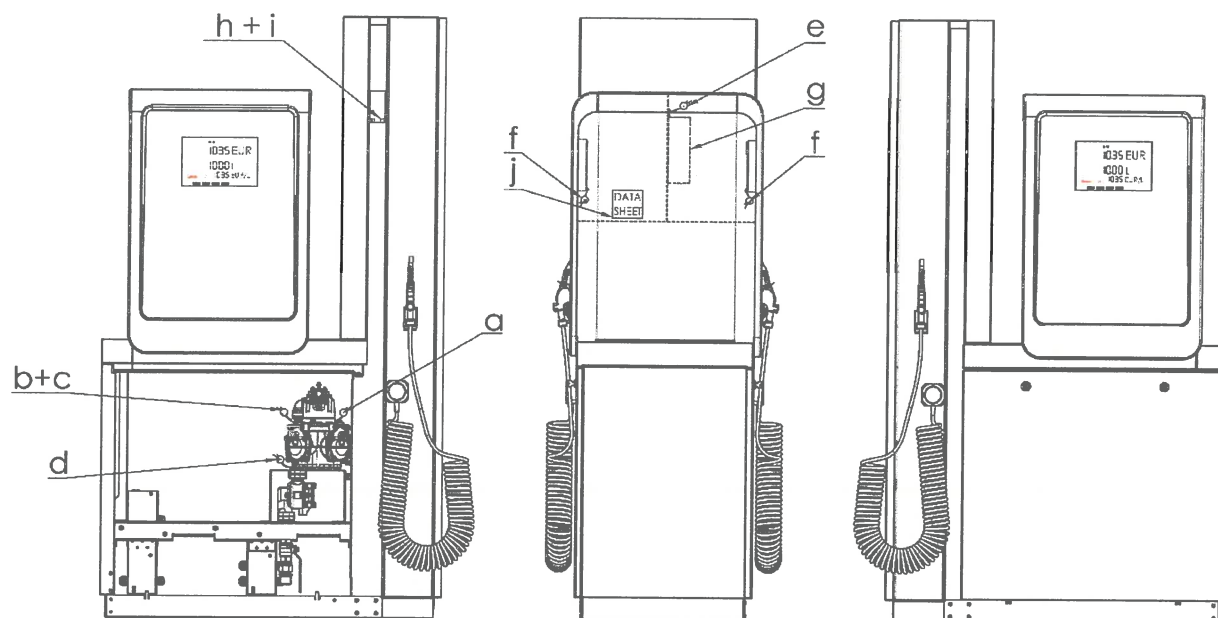
Picture No. 1: The sealing of SHARK BMP 2xxx.S/WSE WSE dispenser



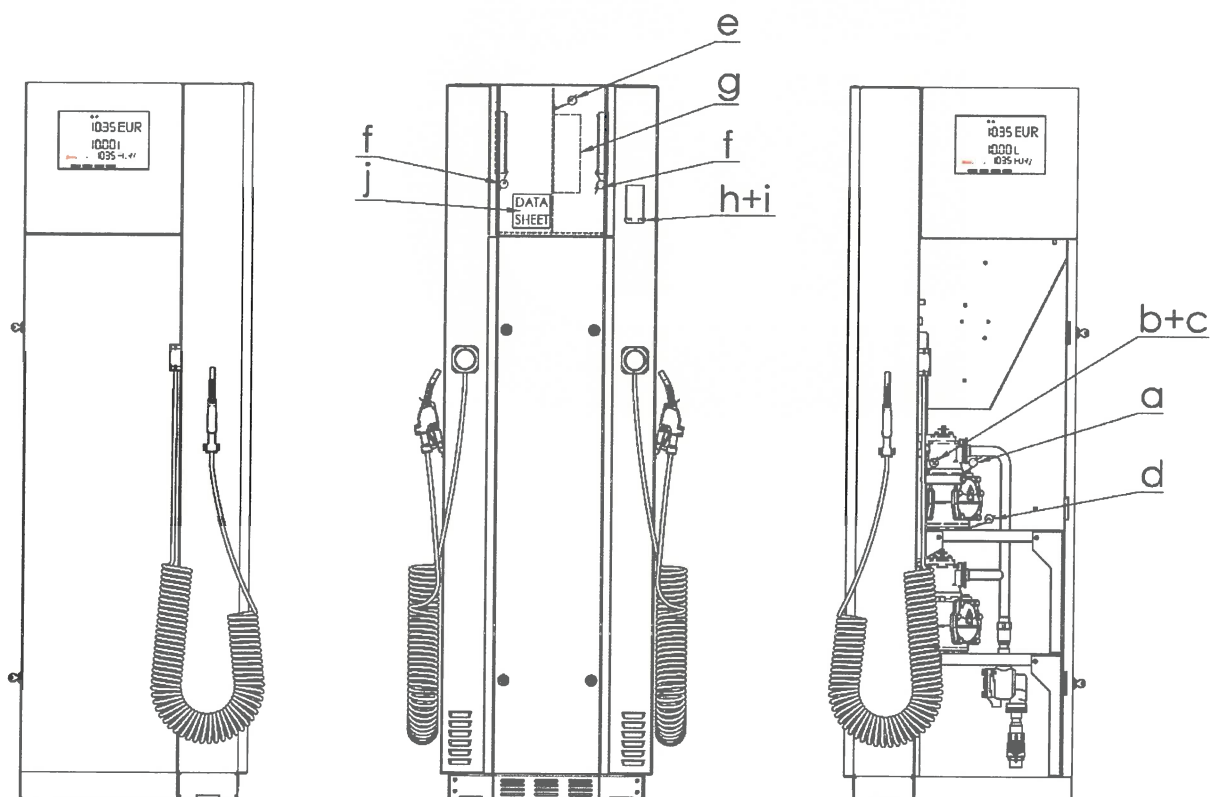
Picture No. 1a: The sealing of OCEAN BMP 4xxx.O/WSE WSE dispenser, version EURO



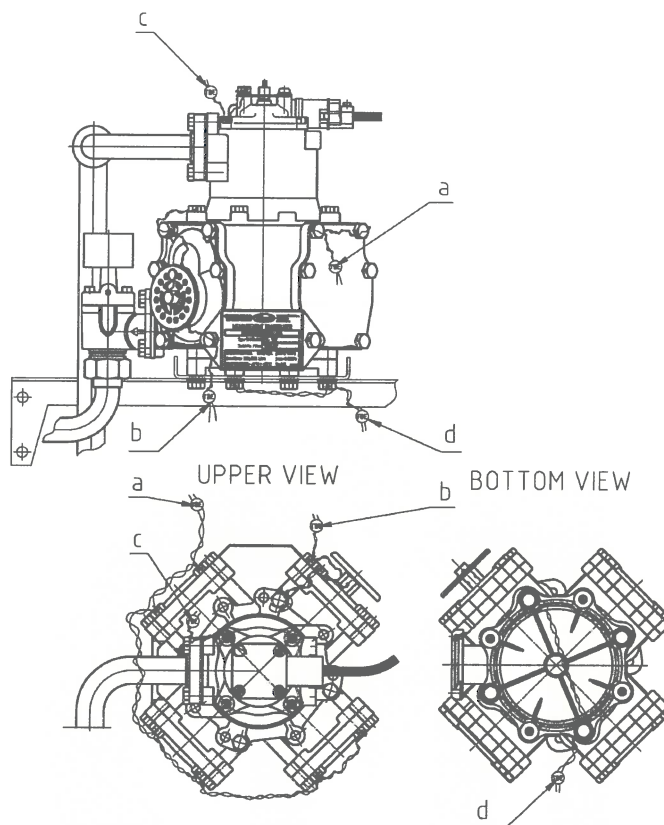
Picture No. 1b: The sealing of OCEAN BMP 4xxx.O/WSE WSE dispenser, version TOWER



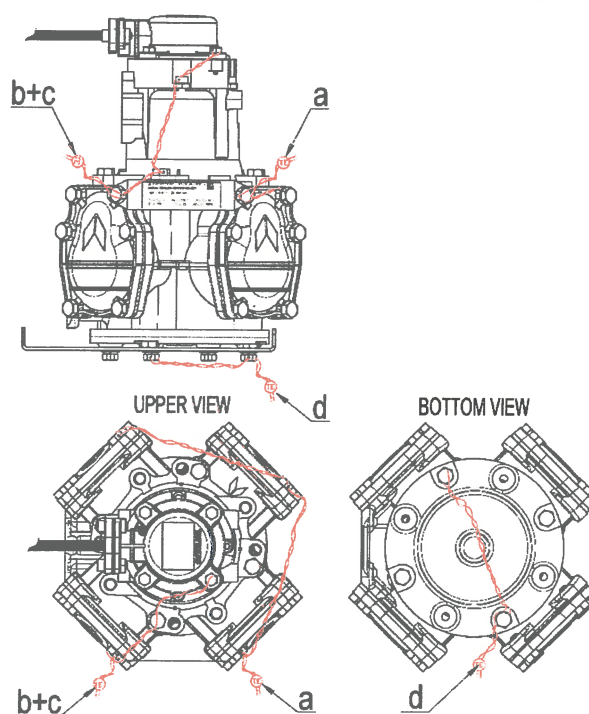
Picture No. 1c: The sealing of OCEAN BMP 4xxx.O/WSE WSE dispenser, version SMART



Picture No. 2a: The sealing of FM-1022 measuring transducer with EK-1025 pulser



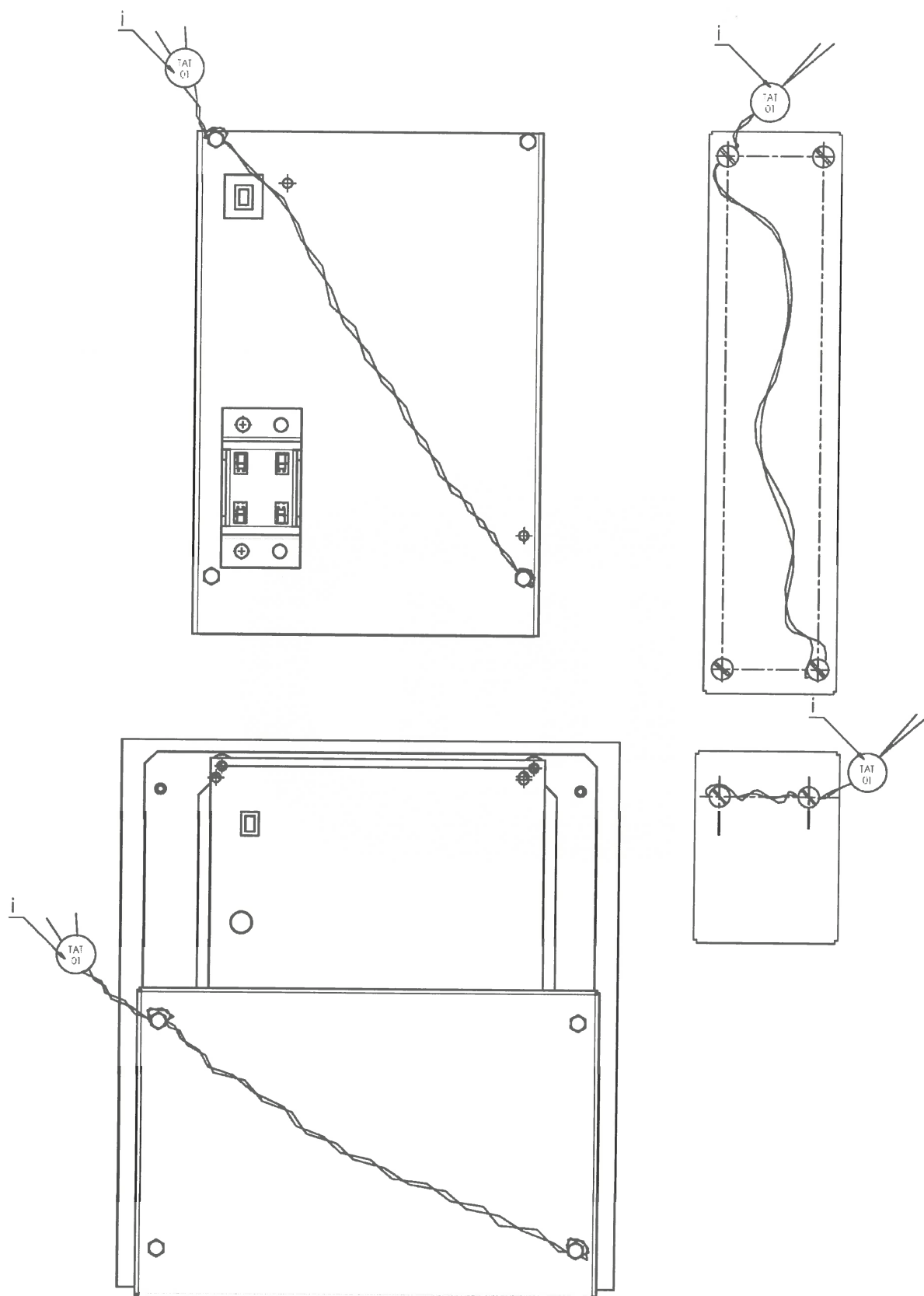
Picture No. 2b: The sealing of FM-1022 measuring transducer with EK-1129 pulser



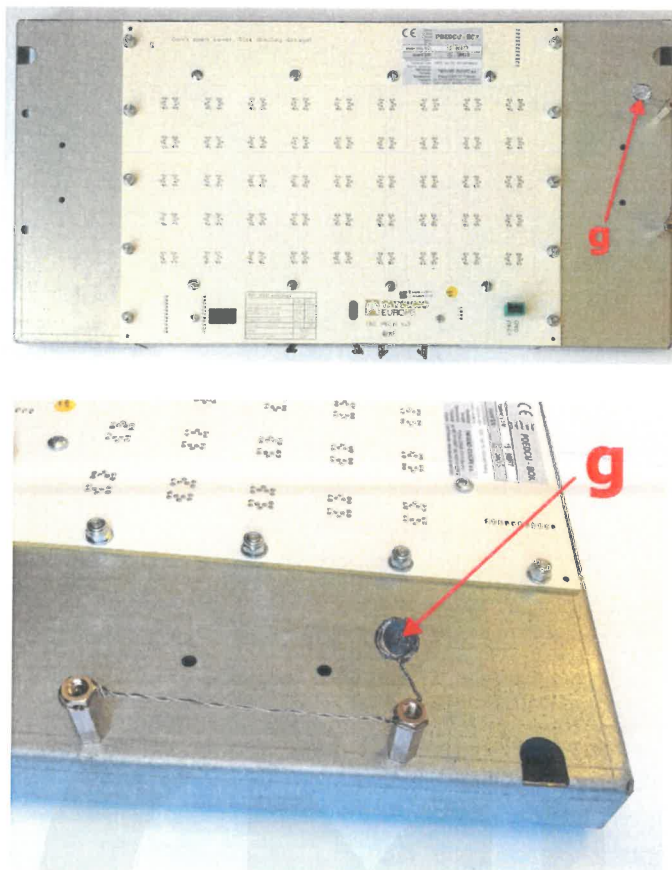
Picture No. 2c: The sealing of FF-1141 measuring transducer



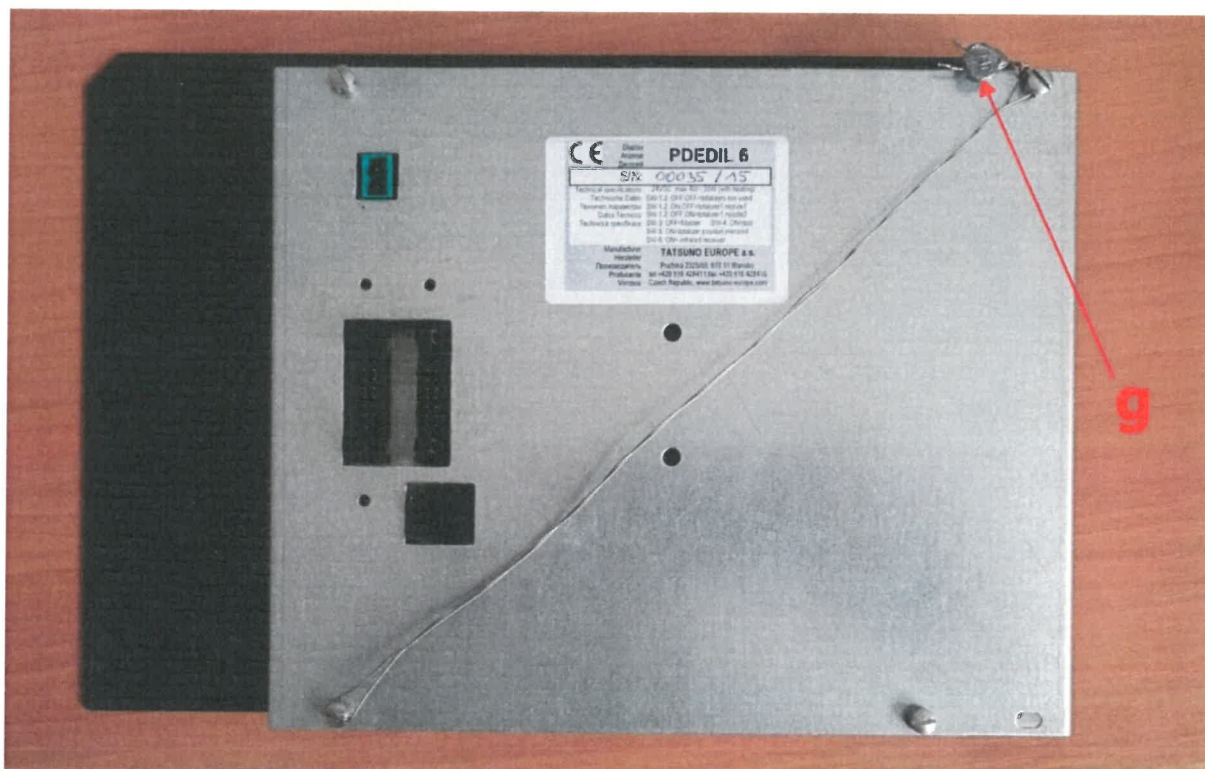
Picture No. 3: The sealing of totalizing indicating device (examples of covers)



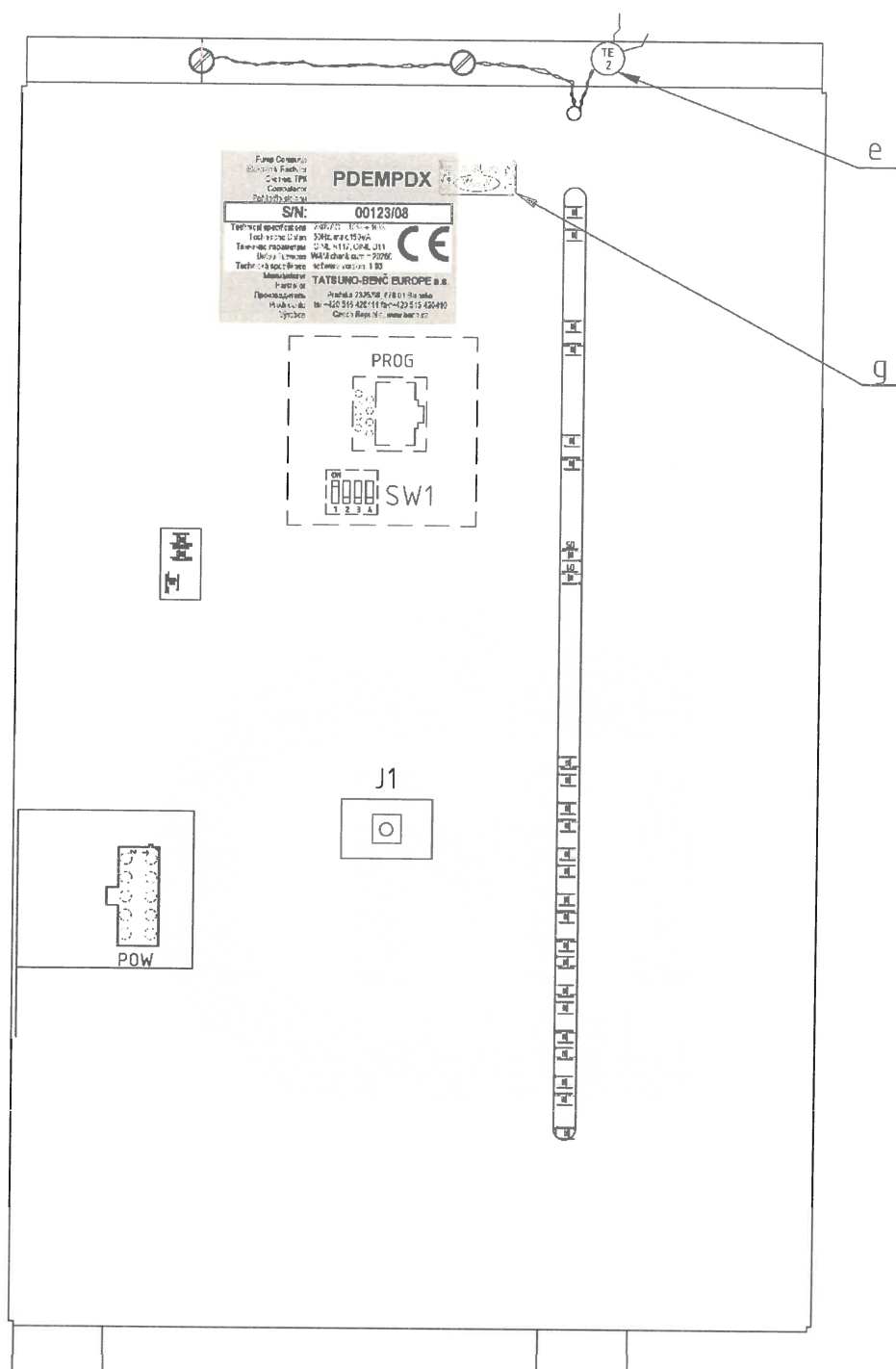
Picture No. 3a: Sealing of the totalizing indicating device with proportional display PDEDCU



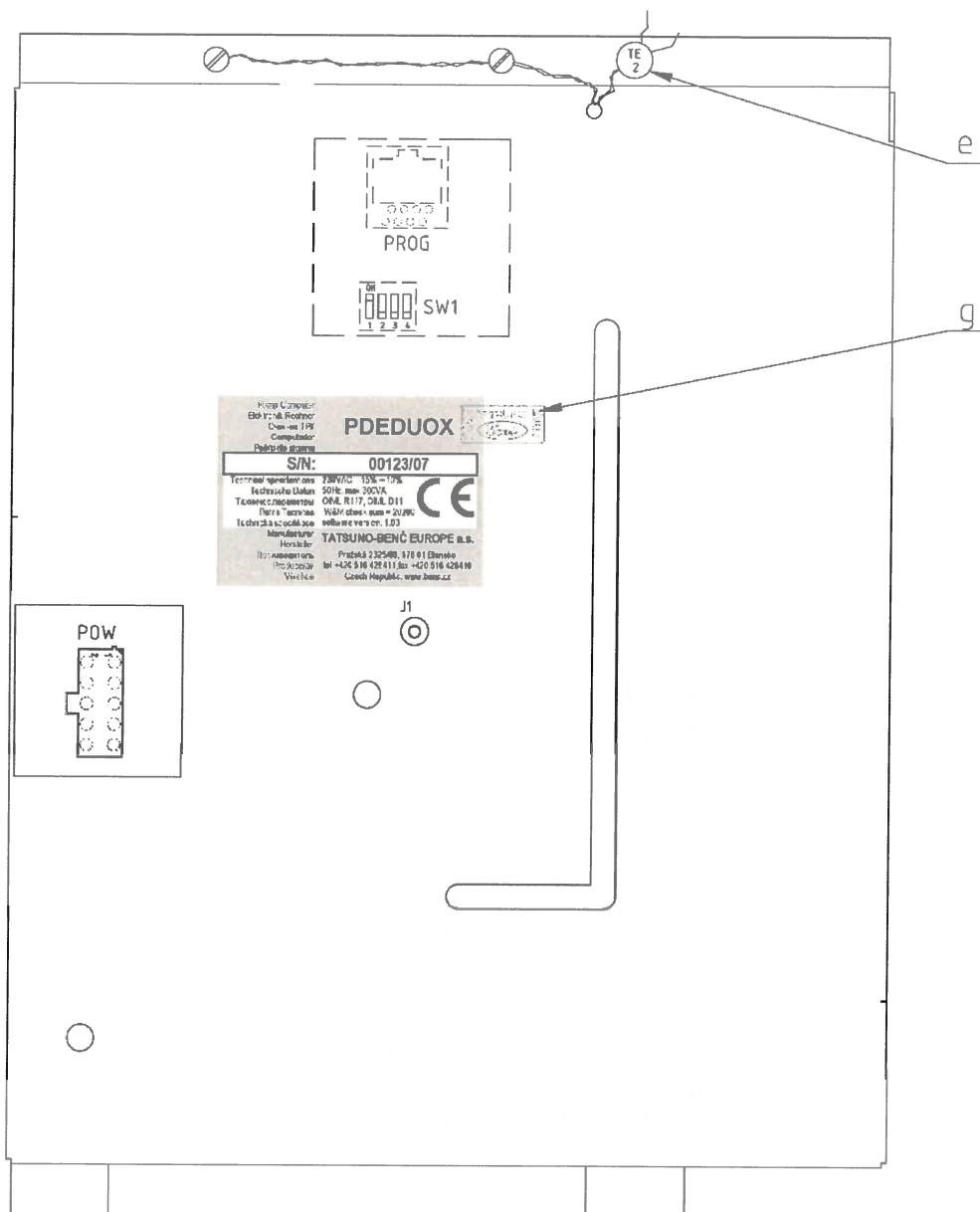
Picture No. 3b: Sealing of the totalizing indicating device with display PDEDIL V6



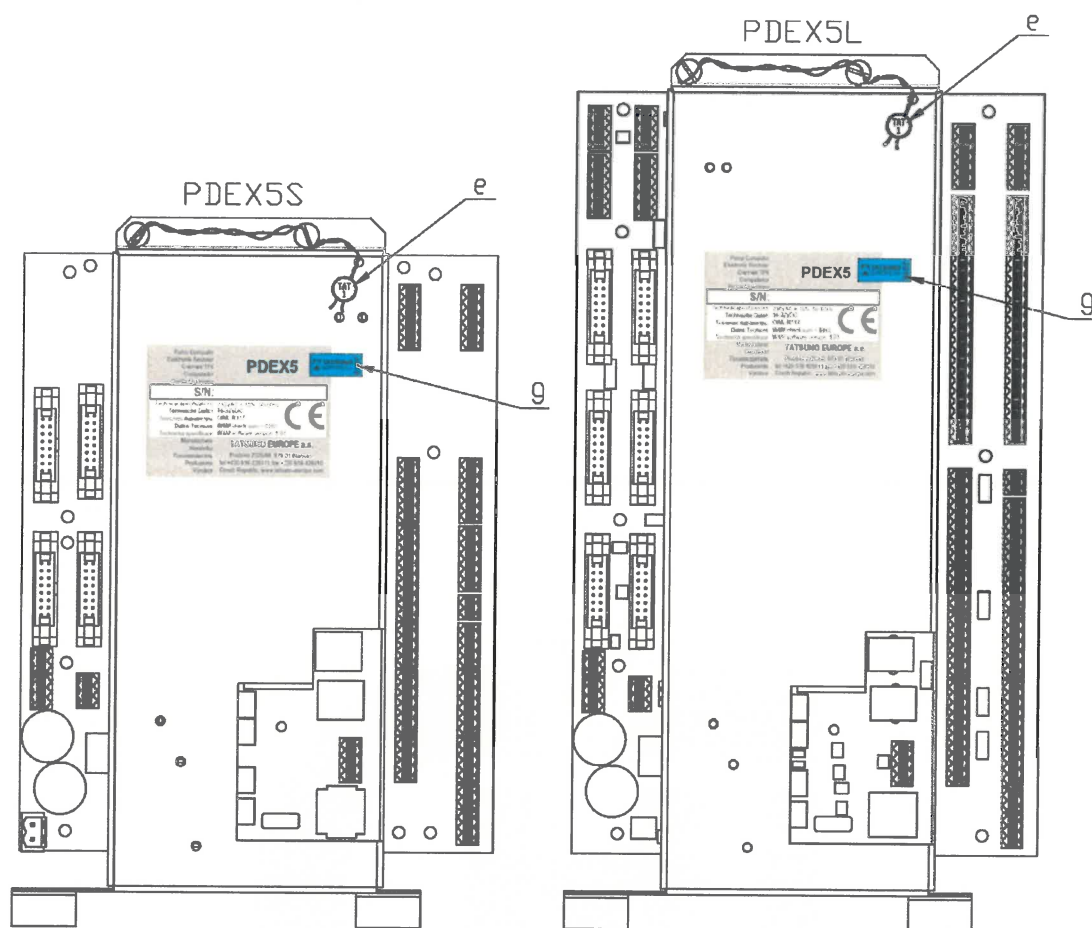
Picture No. 4: The sealing of PDEMPDX calculator



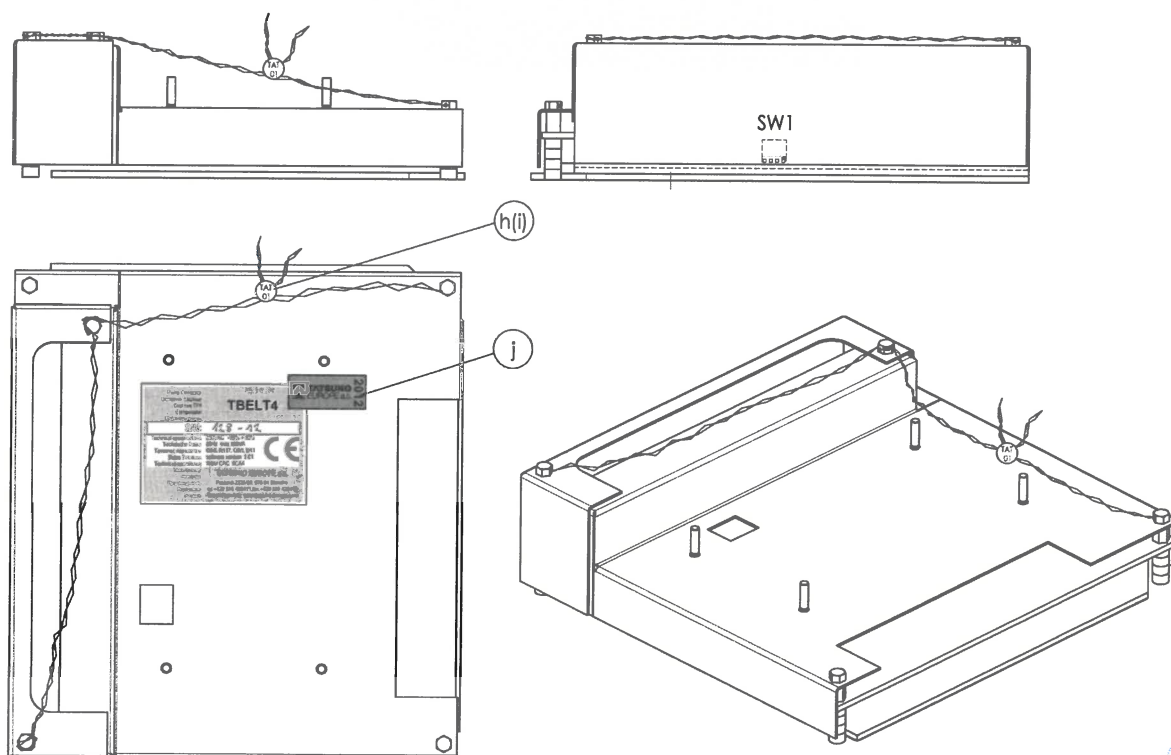
Picture No. 5: The sealing of PDEDUOX calculator



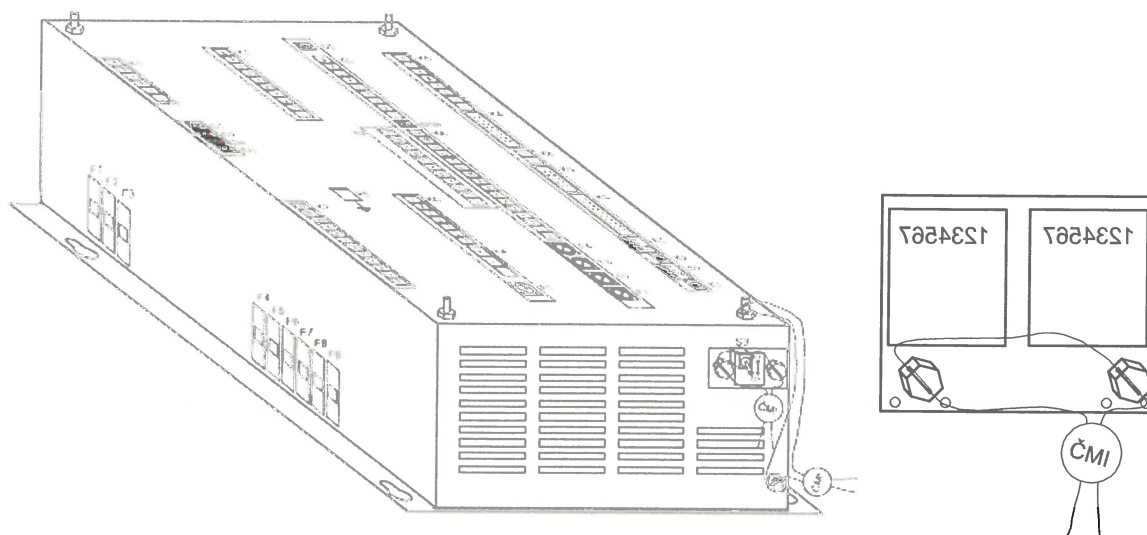
Picture No. 5a: The sealing of PDEX5 calculator (modification PDEX5S and PDEX5L)



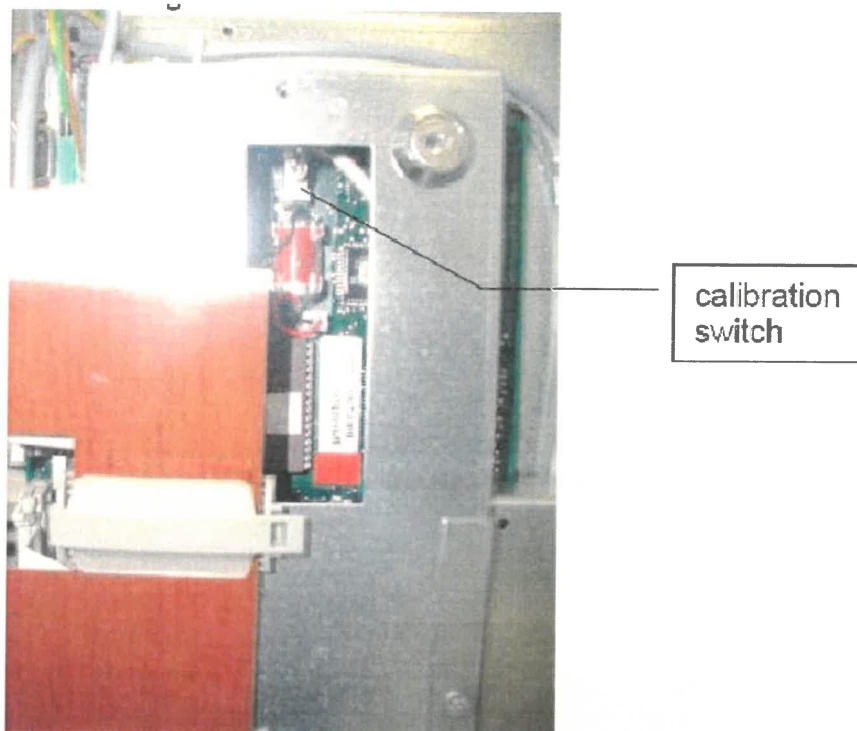
Picture No. 6: The sealing of TBELTx calculator



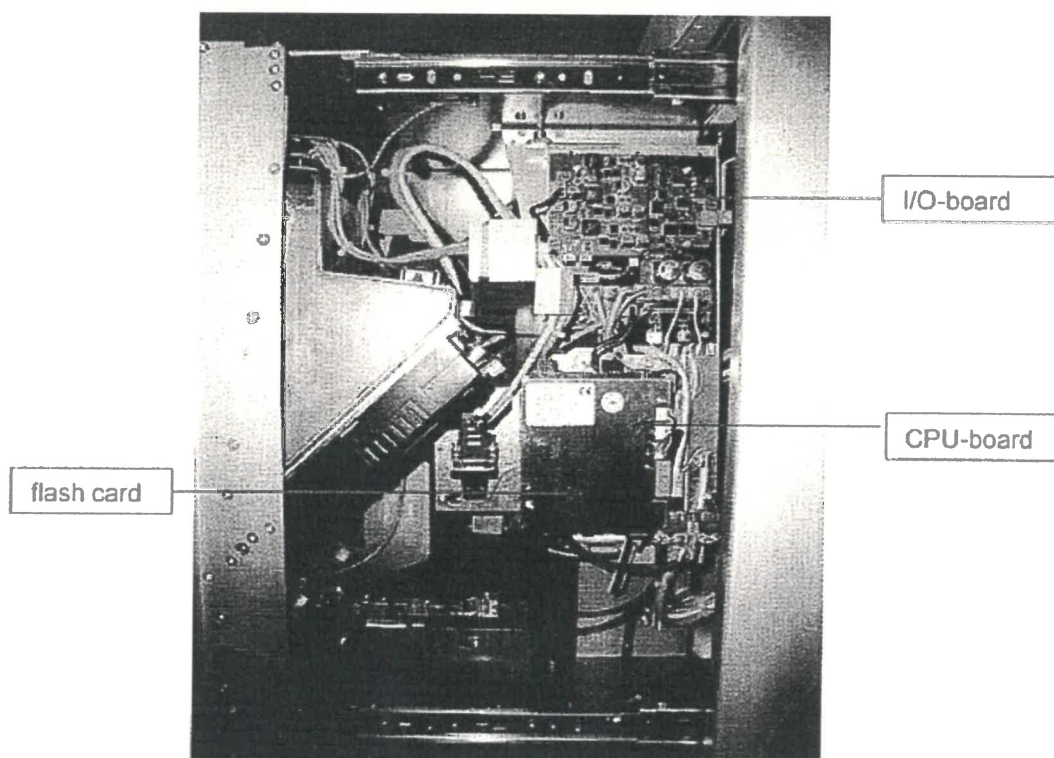
Picture No. 7: The sealing of the UNIDATAZ CDC electronic calculator with totalizer



Picture No. 8: Sealing of calibration switch of Hectronic GmbH TA2331 self-service device



Picture No. 9: Sealing of CPU and flash card of Hectronic GmbH HECSTAR/ HECFLEET NT self-service device



Picture No. 10: Sealing of CPU, type label, flash disk and pulsers of Hectronic GmbH HECONOMY self-service device

