

EU TYPE EXAMINATION CERTIFICATE No. PL 16 002
Revision No. 1



Issued by: GŁÓWNY URZĄD MIAR (CENTRAL OFFICE OF MEASURES)
ul. Elektoralna 2, 00-950 Warsaw

Notified Body: 1440

In accordance with: Regulation of the Minister of Economic Development of 2 June 2016 on the requirements for non-automatic weighing instruments (Journal of Laws of 2016, Item 802), implementing Directive of the European Parliament and of the Council No. 2014/31/EU of 26 February 2014 on the harmonization of the laws of the Member States relating to the making available on the market of non-automatic weighing instruments

Issued to the Manufacturer: AXIS Sp. z o.o., ul. Kartuska 375B, 80-125 Gdańsk, Poland

In respect of: electronic non-automatic weighing instrument of general use

Type: ALN / ACN	Accuracy class: I
Max:	50 g ÷ 220 g
Min:	10 mg
e:	1 mg
n:	≤ 220 000
d:	0.1 mg
T:	– Max
Temperature range:	18°C ÷ 35°C

Conclusion: The non-automatic weighing instrument satisfies the requirements set out in the Regulation of the Minister of Economic Development of 2 June 2016 on the requirements for non-automatic weighing instruments.

Valid until: 17 March 2026

Reference number: ZMI-CERT.4410.2.2018

Number of pages: 10

Main metrological characteristics, type approval conditions and special requirements, if any, are presented in the Annex that forms an integral part of this Certificate.

This version of the Certificate replaces all earlier versions, including any additions, if issued.

Warsaw, 20 November 2018

Round seal with logo, reading:
CENTRAL OFFICE OF MEASURES

acting as PRESIDENT of Central Office of
Measures
(illegible signature)
Maciej Dobieszewski, Vice President

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REFERENCE DOCUMENT

The compliance assessment of the balances was carried out in accordance with the requirements of harmonized standard PN-EN 45501:2015-05 – "Metrological aspects of non-automatic weighing instruments" and the GUM-PCertB certification programme.

1. NAME AND TYPE OF WEIGHING INSTRUMENT

ALN and ACN balances are non-automatic, electronic balances of accuracy class "I", with a round balance pan supported on an electromagnetic transducer of general use. ALN and ACN balances are equipped with an automatic or semi-automatic system for internal adjustment.

The balances are labelled in the following manner:

ALN (or ACN, respectively) $x_1 x_2$, where:

- ALN (or ACN, respectively) – defines the balance series
- x_1 – maximum balance load, *Max* in g
- x_2 – type of balance:
 - no letter: with an LCD display
 - letter G: with a graphical LCD display
 - letter R: with an additional display
 - another letter: non-typical construction or other accessories

2. CONSTRUCTION AND OPERATION

2.1. Devices and functions

The balances are equipped with the following functions and devices (references to relevant items in PN-EN 45501:2015-15 standard are provided in brackets)

- Semiautomatic zeroing device (T.2.7.2.2.)
- Zeroing and initiating device, range: $\leq \pm 10\% \text{ Max}$ (T.2.7.2.4),
- Zero-maintaining device (T.2.7.3),
- Tare deducting device (T.2.7.4),
- Semi-automatic taring device (T.2.7.4),
- Tare balancing device (T.2.7.4.1),
- Tare pre-set device (T.2.7.5).

2.2. Construction

2.2.1. Mechanical system

The operation of ALN and ACN balances is based on an electromagnetic force transducer, an analogue-digital converter installed on the controller board, a 32-bit processor installed on the processor board, and a display installed on the display board.

In the case of ALN balances, the force transducer system and electronic systems are installed in a casing of 215 mm (235 mm with legs) x 345 mm x 90 mm. The casing includes an aluminium base and an aluminium cover. In the case of ACN balances, the aluminium base is the same as in ALN balances, while the cover is made of a synthetic material. The dimensions of ACN balances are as follows: 215 mm (235 mm with legs) x 345 mm x 95 mm.

ALN and ACN balances include a pan protection installed on the casing that is made of a synthetic material, and includes three slidable panels. Total dimensions of an ALN balance with a casing is 215 mm (235 mm with legs) x 345 mm x 350 mm, while those of an ACN are 215 mm (235 mm with legs) x 345 mm x 355 mm.



The balance pan is round, made of stainless steel, and its diameter equals 90 mm.

ALN and ACN balances are equipped with one or two internal adjustment weight(s) and an adjustment mechanism (an automatic and semi-automatic device to adjust the weighing range).

The front side of the balances holds a board with a display and a keyboard. The display can either be a segment display or a graphical display. Metrological parameters are displayed on a graphical display or are printed on labels located in a special pouch of the keyboard or attached to the side of the keyboard.

The keyboard includes keys for metrological operations and functional keys. The balance keyboard equipped with a graphical display is also equipped with numeric and directional keys.

The power socket, the power supply data plate and the interface sockets are located at the back of the casing. Also at the back, a sealed-protected opening is located. It provides access to the adjustment switch, and the seal works as a protection against external adjustment. The rating plate is placed nearby; it can be protected with a protection seal. There is also a place at the back of the housing to apply a protection seal to protect against unauthorized opening of the casing.

Each balance is equipped with a hook to hang a weighed object, a hydro set to measure the density of solids and liquids, and other special functions. The base of the balance includes a level indicator.

2.2.2. Electric system

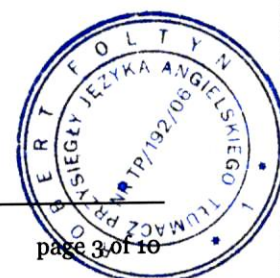
The balances operate basing on the principle of electromagnetic force compensation. The main element of the system is a servomotor that includes a magnetic core, a magnet and a coil. The coil is installed on a transmission lever. The transmission lever is connected with the pad leading bars by means of a pull rod and a box. A photoelectric placement sensor cooperates with the transmission lever. The whole electromagnetic system is powered through a PID controller located on the controller board. The coil suspended in a magnetic field retains the same level until the pad is loaded. When there is a change of the load, the placement sensor sends a signal to the controller. A reference resistor is connected with the coil in a series circuit. Voltage from that resistor, proportional to the load, is transferred to an analogue-to-digital converter with 24-bit resolution. The A/D converter is connected to a microprocessor circuit that is responsible for all functions necessary to display data or print data on an external printer.

A temperature transducer circuit is connected to the microprocessor. The temperature transducer is used to make temperature compensations of the balance reading and to measure ambient temperature.

The weighing result is displayed on the display connected to the microprocessor. Display data or balance memory data can be transferred to external devices through one of the interfaces controlled by the microprocessor.

All balances are based on EACA-52110 boards that – as regards the metrological section – use the same software. The software allows the manufacturer to select the balance type, including metrological parameters and characteristics connected with that type (damping, filtration, etc.).

The balances are powered with direct current of 12 V, 1.2 A, from a 230 V, 50 Hz, 9 VA power supply unit, delivered with each balance.



2.3. Adjustment

ALN and ACN balances are equipped with an internal adjustment system that – in determined periods of time and when there is a change in ambient temperature – automatically adjusts the balance (automatic adjustment).

Adjustment can also be carried out manually by means of the keyboard (semi-automatic adjustment). ALN and ACN balances can also be adjusted externally. To that end, the operator needs to find the external adjustment switch located in an opening at the back of the ALN/ACN casing, and switch it. The opening is protected with a protection label.

2.4. Software

The name of the software is displayed on the display when power is switched on. The software is marked in the following way:

- for ALN balances: ALn_01 (balance with an LCD display) or ALng_01 (balance with a graphical LCD display)
- for ACN balances: ACn_01 (balance with an LCD display) or ACng_01 (balance with a graphical LCD display)

Control sums are respectively:

- 0xCECC and 0x62C1 for ALN balances, and
- 0xE398 and 0x62C1 for ACN balances.

The balances can be equipped with a data storage device, hereinafter referred to as the ALIBI memory. The ALIBI memory can store up to 100 000 measuring records. These records can be retrieved by means of external software called "Axis Scale Manager". When the ALIBI memory is full, i.e. when 100 000 records are recorded, new records are recorded replacing the oldest. The user cannot modify or delete any ALIBI memory data.

3. TECHNICAL DATA

3.1. Balance

Balance metrological characteristics

Balance type	Parameter and unit	ALN x_1 x_2	ACN x_1 x_2
Maximal load	<i>Max</i> [g]	50 ÷ 220	
Minimal load	<i>Min</i> [mg]	10	
Verification scale interval	<i>e</i> [mg]	1	
Scale interval	<i>d</i> [mg]	0.1	
Tare weigh range limit	<i>T</i>	– <i>Max</i>	
Operating temperature limit	[°C]	18 ÷ 35	
Power supply		AC 230 V, 50 Hz, 9 VA / DC 12 V, 1.2 A	

The value of the maximal load *Max*, the value of the verification scale interval and scale interval may be determined for a weighing range within the limit ranges indicated above.



3.2. Documentation

Documentation filed with and kept by the Central Office of Measures is relevant for the balance series referred to in this certificate.

4. INTERFACES AND PERIPHERAL DEVICES

4.1. Interfaces

The following interfaces can be used in ALN and ACN balances:

- RS 232C, RS 485, USB A, USB B, Ethernet, Wi-Fi, Bluetooth, PS2, opto-isolators,
- analogue: $4 \div 20$ mA, $0 \div 10$ V.

4.2. Peripheral devices

The balances can work with the following peripheral devices:

- simple peripheral devices that receive data, without an examination certificate and without a reference to an EU type examination certificate (EU type approval certificate), assuming that requirements specified in Clause 3.3 of WELMEC 2.5 (2000) are complied with,
- external automatic control devices (input and output opto-isolators).

Communication of the balances and peripheral devices is carried out through interfaces installed in the balances.

5. APPROVAL REQUIREMENTS

No element of any balance, irrespective of whether described in this certificate or not, may not be non-compliant with the principal requirements specified in the Regulation of the Minister of Economic Development on the requirements for non-automatic weighing instruments of 2 June 2016 (Journal of Laws of 2016, Item 802) or in Annex I to Directive of the European Parliament and of the Council No. 2014/31/EU of 26 February 2014 on the harmonization of the laws of the Member States relating to the making available on the market of non-automatic weighing instruments.

6. ADDITIONAL REQUIREMENTS FOR EC VERIFICATION

Required documents:

- a copy of this UE type examination certificate,
- instruction manual.

A scale may be verified at the manufacturer's site or at another place, in accordance with the requirements of § 8, § 9 and §10 of the Regulation of the Minister of Economic Development of 2 June 2016 on the requirements for non-automatic weighing instruments (Journal of Laws of 2016, Item 802), or Annex II, point 7 to the Directive of the European Parliament and of the Council No. 2014/31/EU of 26 February 2014 on the harmonization of the laws of the Member States relating to the making available on the market of non-automatic weighing instruments.

Any balance adjustments should be made and any protections against unauthorized tampering should be installed in accordance with Clauses 2.3 and 8 of this Certificate.

7. PLACEMENT OF VERIFICATION MARK

A verification mark (i.e. evidence that the operation of the balance was verified in accordance with internal regulations of Member States), in the form of a label, is placed partially on the rating plate and partially on the casing.



8. PLACEMENT OF PROTECTION ELEMENTS

Protection labels are placed on the balance casing to protect access to adjustment and opening of the casing, according to Figures 1 – 4 presented below.

9. PLACEMENT OF CE MARKING AND RATING PLATE

The rating plate is located on the balance casing. The rating plate is the area of the CE mark and an additional metrological marking consisting of the capital letter "M" and the two last digits of the marking year, placed in a rectangle. The identification number or numbers of notified bodies are placed by the notification body or the manufacturer, in accordance with the instructions of the notified body. These numbers are placed on the rating plate.

10. HISTORY OF THE CERTIFICATE

Number	Date	Description of amendments
PL 16 002	17 March 2016	Certificate for ALN balances is issued
PL 16 002 Revision No. 1	20 November 2018	Revision No. 1 ACN balances added as a construction modification, with the cover made of a synthetic material instead of aluminium, as it is in ALN balances. The ALIBI memory becomes an available option for both ALN and ACN balanced.



- | | |
|--------------------------------------------|------------------------------------------------------------------------|
| 1. Force transducer | 14. Keyboard |
| 2. Balance base | 15. Balance rating plate |
| 3. Balance cover | 16. Interface boards |
| 4. Leg | 17. Power supply board |
| 5. External pad protection | 18. Power unit |
| 5A. Internal pad protection | 19. Interface sockets |
| 6. Pad set | 20. Adjustment switch |
| 7. Auto-adjustment mechanism | 21. Power socket |
| 8. Adjustment weight | 22. Place for a casing protective label |
| 9. Processor board | 23. "Green M" label |
| 10. Protective filter board and interfaces | 24. Place for a protective label for the adjustment switch |
| 11. Display board | 25. Place for the last two digits of the year and notified body number |
| 12. Controller board | 26. Verification or protection label |
| 13. Level line | |

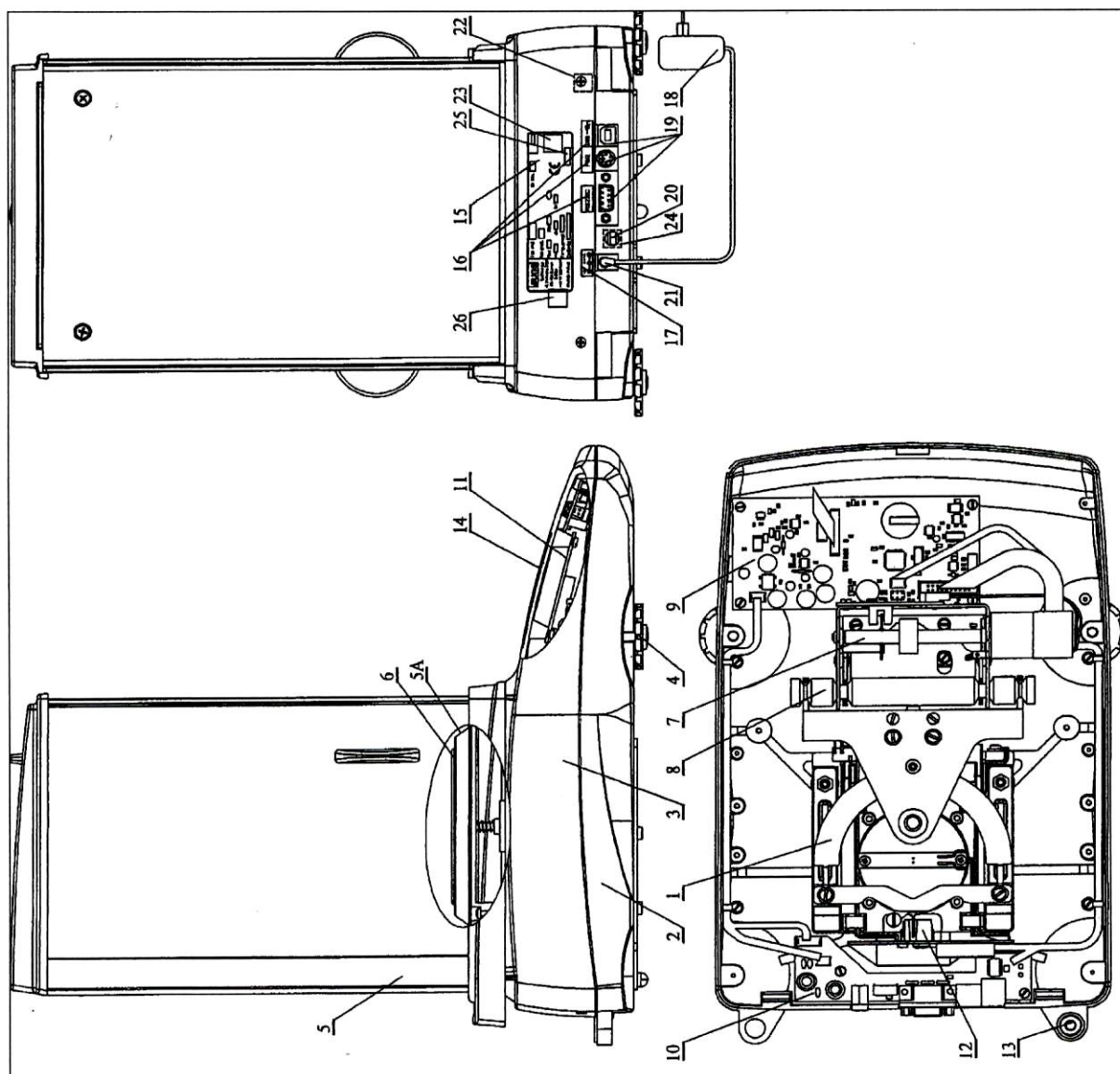


Fig. 1. ALN balance with one adjusting weight



- | | |
|--------------------------------------------|------------------------------------------------------------------------|
| 1. Force transducer | 14. Keyboard |
| 2. Balance base | 15. Balance rating plate |
| 3. Balance cover | 16. Interface boards |
| 4. Leg | 17. Power supply board |
| 5. External pad protection | 18. Power unit |
| 5A. Internal pad protection | 19. Interface sockets |
| 6. Pad set | 20. Adjustment switch |
| 7. Auto-adjustment mechanism | 21. Power socket |
| 8. Adjustment weight | 22. Place for a casing protective label |
| 9. Processor board | 23. "Green M" label |
| 10. Protective filter board and interfaces | 24. Place for a protective label for the adjustment switch |
| 11. Display board | 25. Place for the last two digits of the year and notified body number |
| 12. Controller board | 26. Verification or protection label |
| 13. Level line | |

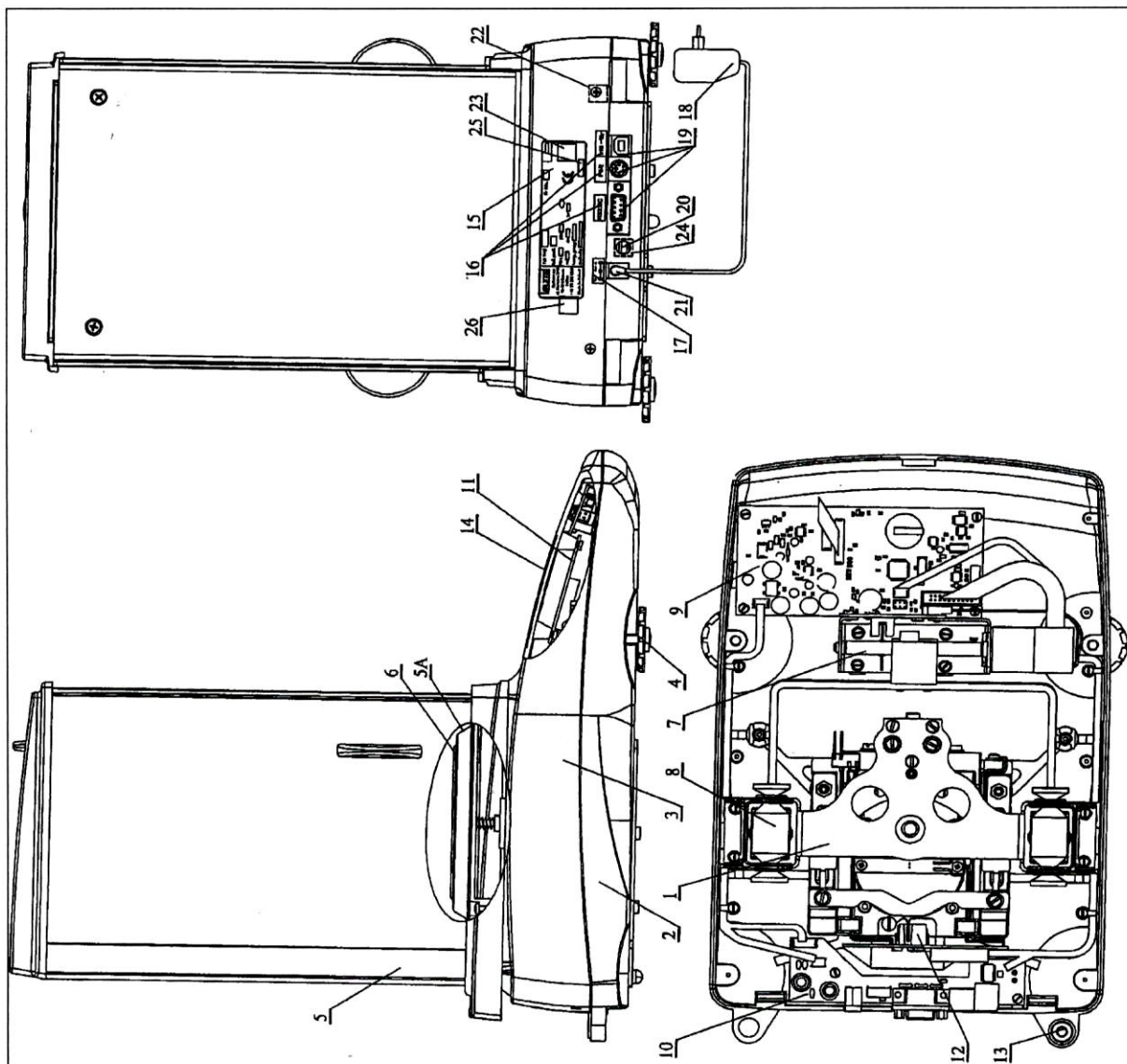


Fig. 2. ALN balance with two adjusting weights



- | | |
|--------------------------------------------|------------------------------------------------------------|
| 1. Force transducer | 14. Keyboard |
| 2. Balance base | 15. Balance rating plate |
| 3. Balance cover | 16. Interface boards |
| 4. Leg | 17. Power supply board |
| 5. External pad protection | 18. Power unit |
| 5A. Internal pad protection | 19. Interface sockets |
| 6. Balance pad | 20. Adjustment switch |
| 7. Auto-adjustment mechanism | 21. Power socket |
| 8. Calibration weight | 22. Place for a casing protective label |
| 9. Processor board | 23. Additional metrological marking |
| 10. Protective filter board and interfaces | 24. Place for a protective label for the adjustment switch |
| 11. Display board | 25. Place for the notified body number |
| 12. Controller board | 26. Verification or protection label |
| 13. Level line | |

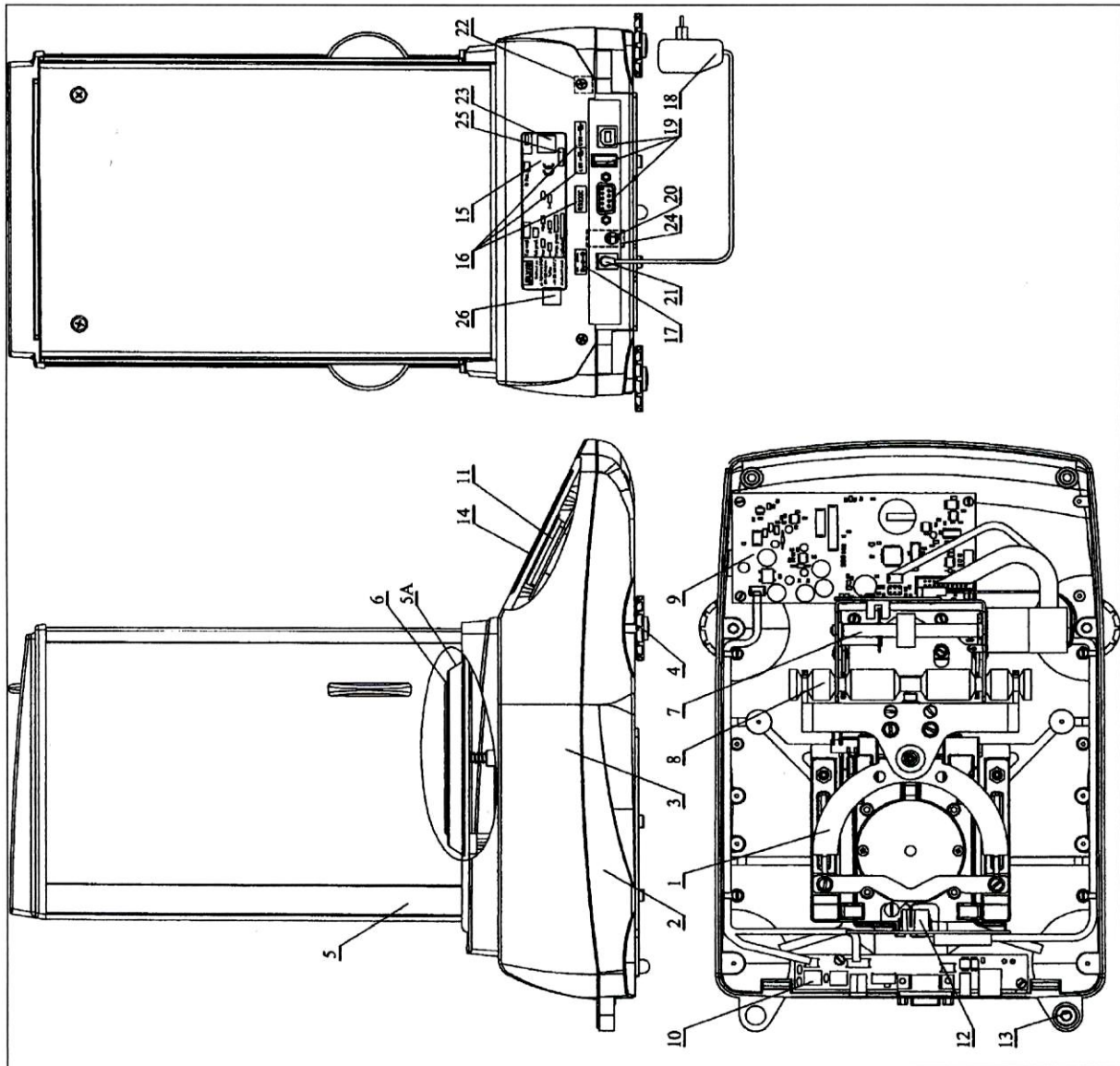


Fig. 3. ACN balance with one adjusting weight

- | | |
|--------------------------------------------|------------------------------------------------------------|
| 1. Force transducer | 13. Level line |
| 2. Balance base | 14. Keyboard |
| 3. Balance cover | 15. Balance rating plate |
| 4. Leg | 16. Interface boards |
| 5. External pad protection | 17. Power supply board |
| 5A. Internal pad protection | 18. Power unit |
| 6. Balance pad | 19. Interface sockets |
| 7. Auto-adjustment mechanism | 20. Adjustment switch |
| 8. Calibration weight | 21. Power socket |
| 9. Processor board | 22. Place for a casing protective label |
| 10. Protective filter board and interfaces | 23. Additional metrological marking |
| 11. Display board | 24. Place for a protective label for the adjustment switch |
| 12. Controller board | 25. Place for the notified body number |
| | 26. Verification or protection label |

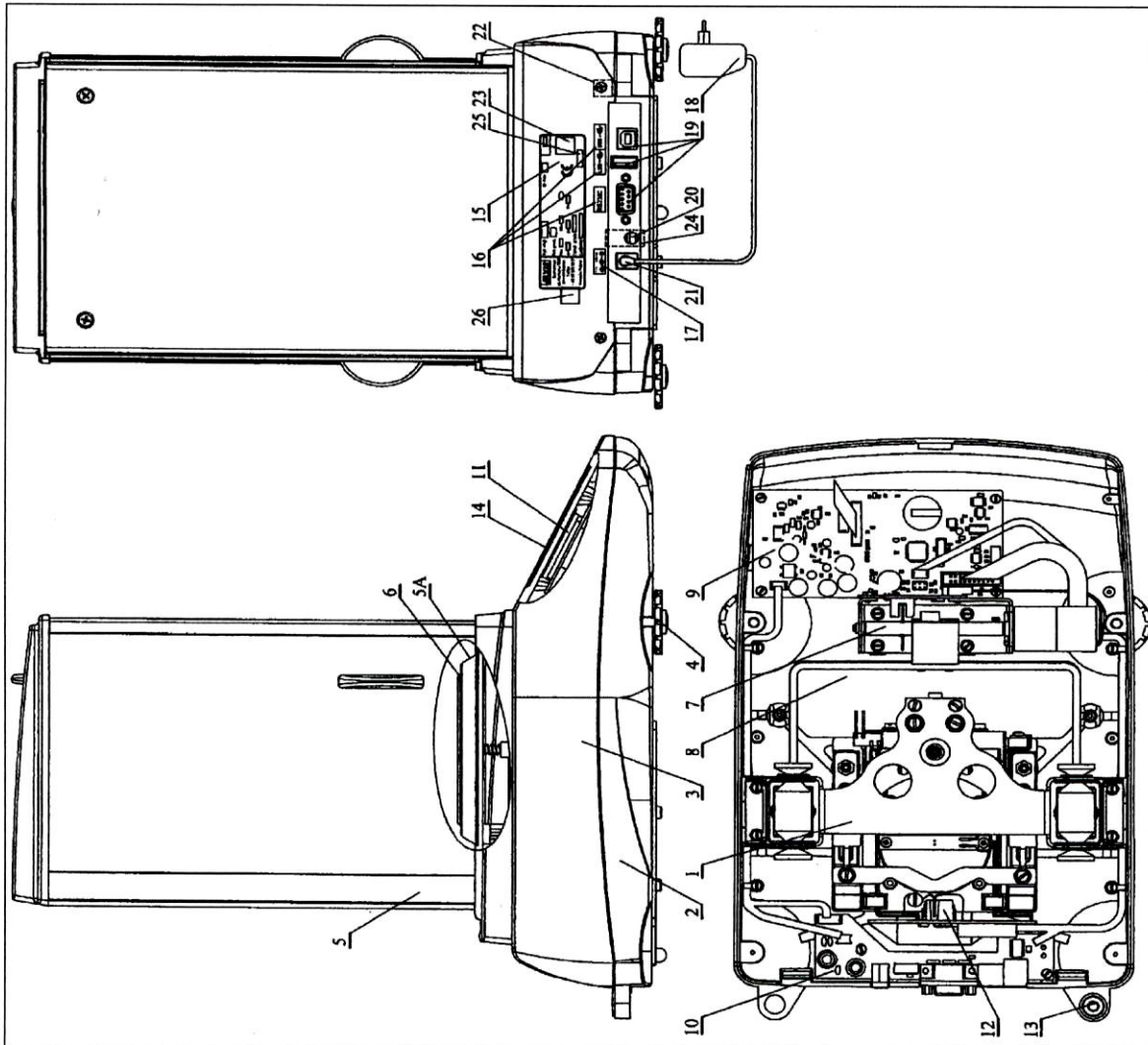


Fig. 4. ACN balance with two adjusting weights

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Registry Entry No: 195/2020, Date: 13 July 2020

I hereby certify the above to be
a true translation from Polish

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Document size: ca. 17 200 characters = 16 standard pages

