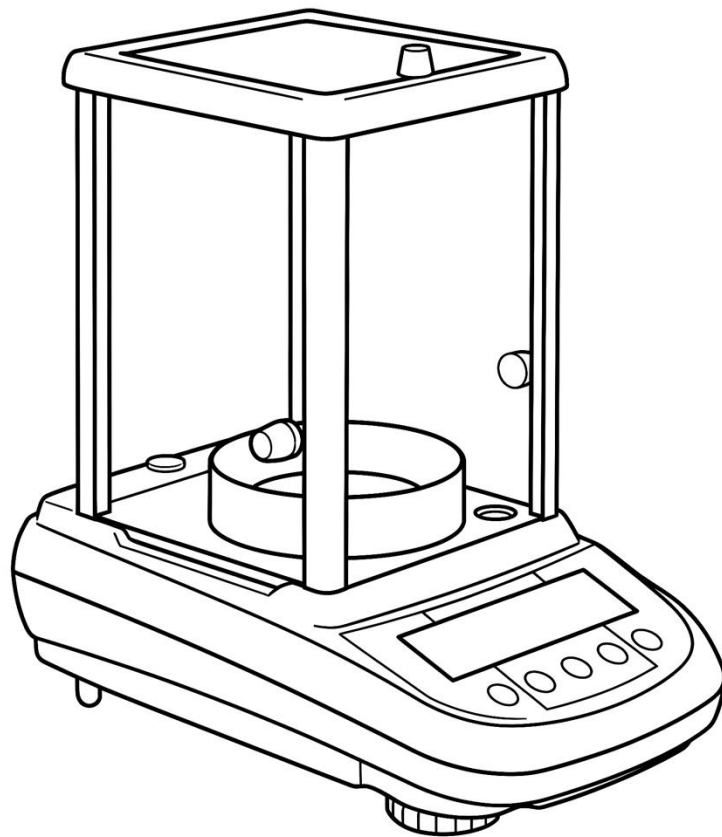


GRAM

SERIES

TGI



USER MANUAL

ENG

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WARNING:

Please read carefully following instructions for installation and use before starting your work with a new balance. Any use of the instrument different from the one mentioned in this manual does not grant product safety anymore.

1 Positioning the instrument

1.1 Preface

Balances with resolutions 0.1mg and 0.01mg are instruments of high sensitivity and precision. To achieve reliable and accurate results it is fundamental to install the instrument in a suitable environment to meet the requirements necessary to ensure its proper functioning.

1.2 Recommended installation location

The choice of the correct placement of the instrument is fundamental in order to ensure optimal and precise operations.

For optimum weighing it is necessary to respect the following criteria:

- ENVIRONMENT

- Place the balance in a corner of the room to minimize vibrations.
- Place the balance in an isolated location: far away from doors to prevent air drafts.
- Avoid crowded locations: every movement generates a draft of air.
- Protect the balance from an air conditioner or ventilation fans and other electronic devices with fans (e.g. Computer or other laboratory instruments).
- Keep the room temperature as constant as possible, at a value between 15 and 30°C. You must use a conditioner (but set the fan to a minimum to avoid excessive air drafts).
- Keep the humidity in the location of the balance as constant as possible, it should be between 40% and 65% of moisture.
- Place the balance away from heat sources, e.g. heaters, light bulbs (use tubular lamps), windows (the sun rays can filter through the window and may affect the weighing result).

- TABLE

- The table must be **stable**: it must not move (e.g. laboratory bench or marble / granite countertop).
- It must be as **anti-magnetic** and **anti-static** as possible.
- It must be **reserved** for the balance functioning.
- Place the balance as close as possible to the table legs as there are less **vibrations** than in the middle of the table.

2 Recommendations for the correct instrument use

2.1 Preface

In order to obtain accurate and repeatable weighing, please consider the following.

2.2 First power on

- **FIRST TIME THAT YOU CONNECT THE BALANCE TO THE MAINS Ion-A, WAIT AT LEAST 12 HOURS BEFORE USE TO ENSURE THE CORRECT WARM-UP OF THE INSTRUMENT.**
- For the correct use of the instrument never disconnect the balance from the mains. If you wish to turn it off, use the ON / OFF button to enable the **Stand-by mode** (in this way you avoid the warmup waiting period).

2.3 Using the Balance

- **Level the balance.** It is fundamental always to level the instrument properly: regularly check that the air bubble level. Use the **block-feet** to always ensure the correct leveling of the balance.
- Load the sample in the **center of the plate** to avoid possible errors.
- Open the glass **windshield** as rarely as possible and use the **tweezers** to load/unload the samples to be weighed.
- Pay attention to possible **static charge** that may be generated due to containers with materials of low electrical conductivity or due to dry air with less than 40% moisture. Electrostatic charge can alter the results of the weighing. It is recommended to use the **ionizer Mod. Ion-A15** to eliminate static charge present on any substances to be weighed or this accumulated on the instrument.
 - Because of static charge, the results of weighing are always different, the balance is not repeatable.
- Pay attention to **dynamic push**: a big **temperature** difference between the sample to be weighed and the weighing chamber creates air drafts along the sample. A colder object appears heavier while a warmer object lighter, this effect is reduced when the thermal equilibrium between sample and weighing chamber is reached.
 - With dynamic push you will get results that move in one direction or another depending on whether the material is colder or warmer than the chamber.
 - Consider substances that can **evaporate** (alcohol) or **absorb humidity** (silicone gel). Because of these types of materials, weight may vary **constantly in one direction**.
- Consider **magnetic** materials: magnetic objects will attract each other; this

force might be wrongly interpreted as a load.

- With magnetic materials the weighing results are hardly repeatable, the indication remains stable but weighing provides different results.

2.4 Care and cleaning of the balance

- Before **cleaning**, remove all removable parts (e.g. Plate, underplate).
- To clean the weighing chamber, the plate, the glass and the other parts please use an **antistatic** liquid (do not use cloth that can leave fluff).

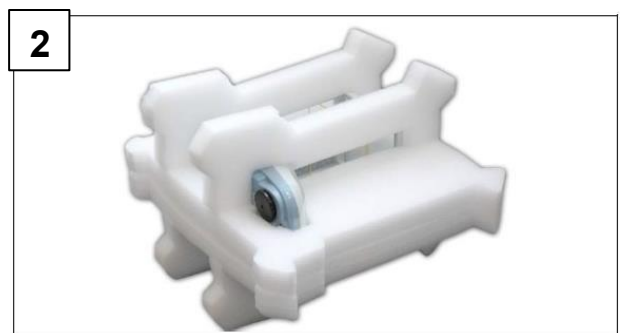
Always use original packaging in case of return in order to avoid damaging the instrument. Please note the following procedures.



Before re-packing, remove all movable objects and put them in the accessories box.



- Following this sequence, pack the balance inside its box:



4 Overview

4.1 Front view



1 Draft windshield

2 Power supply

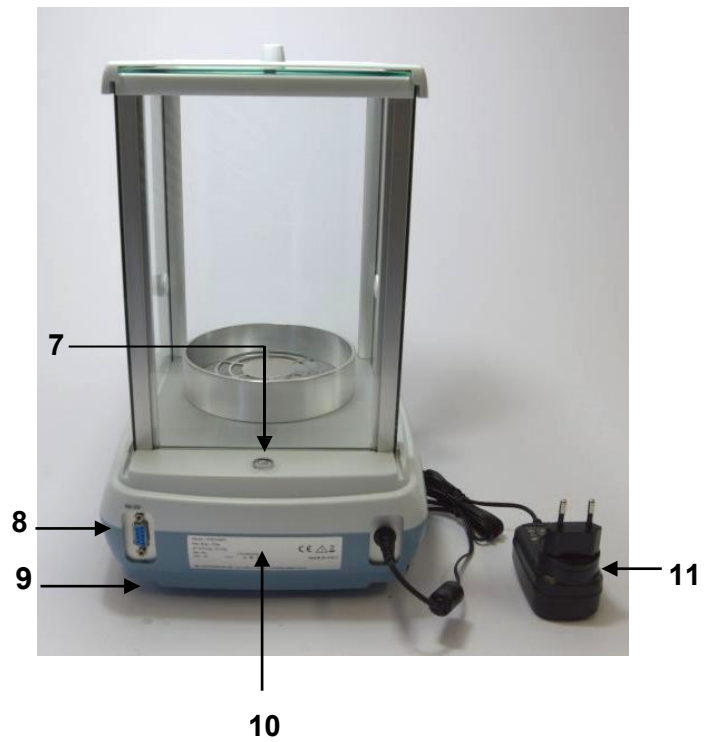
3 Master with function keys and an LCD Display

4 Anti-draft ring

5 Weighing pan

6 Adjustable front feet

4.2 Rear view



7 Bubble level

8 9-pole (pin) female connector for RS232 interface for printer PC

9 Rear fixed foot

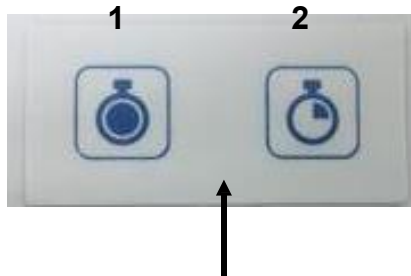
10 Label with balance model and serial number

11 Power supply

4.3 Ionizer (only for -ION models)

Using the ionizer:

Key descriptions.

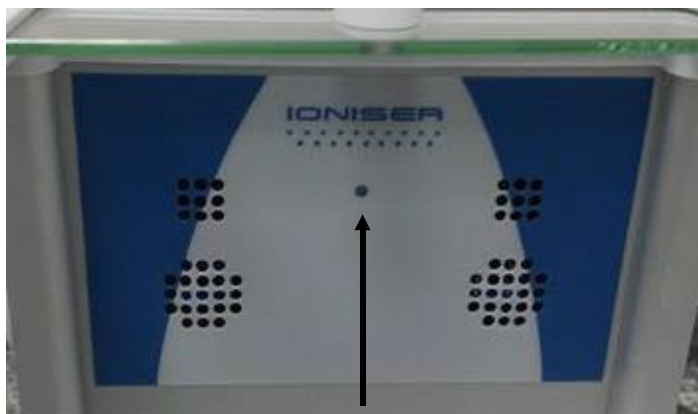


1 Ionizer activation button in continuous mode. (Auto power off after 8 hours of operation)

2 Ionizer activation button in set time mode. (Functioning for 2 minutes)



To switch the function or to turn off the device, press either one of the two keys.



Green LED: ionizer power indicator.

Solid red LED: ionizer activated in continuous mode.

Flashing red LED: ionizer activated in set time mode.

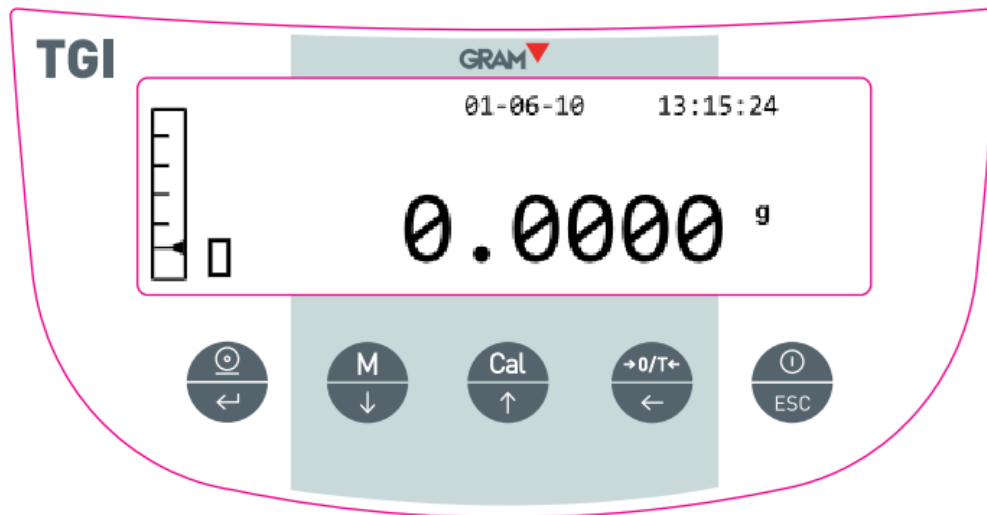
The ionizer is mounted on the rear wall as in the photo.



Technical data - Ionizer

Distance "sample ion source"	c. 5 - 40 cm
Ozone concentration	0 ~ 0.05 ppm (2cm from ion source)
Ambient conditions	0 – 50°C, 20 ~ 80% air humidity (non-condensing)
AC adapter (primary)	AC 100-240V, 50/60Hz
Rated electric power supply	DC 12V, 500mA
Pollution degree	2
Overvoltage category	Category II
Altitude	Up to 2000m
Installation site	Device may only be used indoors

5 Keyboard and display



Standby (OFF) or operating (ON) button or ESC



TARE and zeroing button



Selection CONFIRM or SEND data to the printer button



MENU button to set the parameters



Balance CALIBRATION button

Stability indicator

O

Zero indicator

%

Percentage weight

PC

Piece counting



Battery indicator



Data insertion mode

H

Upper threshold

L

Lower threshold

DS

Density measurement

ct,

Unit of measurement

6 Operating

6.1 Components installation



- As a first step place **Pan Support (3)**
On the balance cone

- Put the **Weighing Pan (2)** on
the pan support and check if the
pan is placed
properly.

- Install the **Anti-draft ring (1)**

- Insert power supply adapter in DC
plug on the back of the balance.

- Use **ONLY** the power supply provided
with the balance.

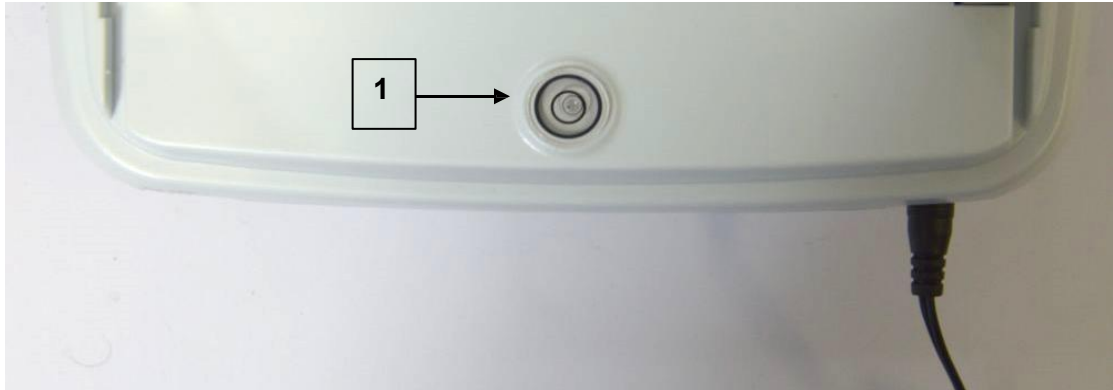


**For scales with resolution
0.01mg the Support Pan
and the Weighing Pan is
in ONE piece.**



6.2 Levelling the balance

- Level the balance with the bubble level, adjusting the Front Feet (2) until the air Bubble is placed at the centre of the indicator (1).



Adjust the balance according to the bubble level:

Lift the balance → rotate front feet clockwise

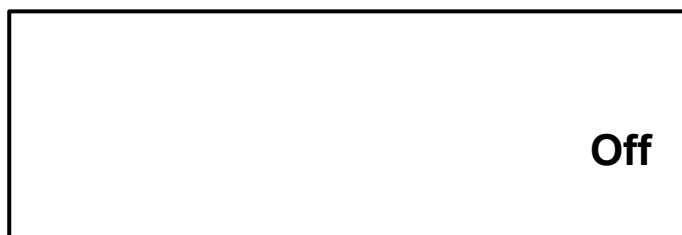
Lower the balance → rotate feet anticlockwise

- Once the bubble level is properly placed using Adjusting Rear Feet (2), lock them screwing the Foot-Locking Disk (3)



7 Weighing

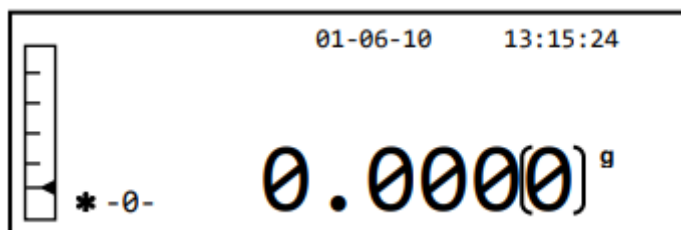
After connecting the balance to power supply, an auto diagnosis of electronic circuits is automatically performed, ending with stand by indication



Balance Warm-up: Wait 8 hours from switch on for warm up

It is suggested to never disconnect the balance from mains and only use ON/OFF key to put the instrument in standby mode when not in use.

From “**STAND BY**” mode: to bring the balance back to working conditions, press **ON/OFF** key.



It is recommended not to drop heavy objects on the balance pan, to avoid damaging the instrument.

Electronic balance performs mass measurements using gravity (g). Differences in geographical areas and altitude change gravitational acceleration (g). Therefore, in order to get precise measurements, balance has to be adjusted to environmental conditions. This adjustment is accomplished through the calibration function.

It is recommended to calibrate the balance each time it is moved to another location.

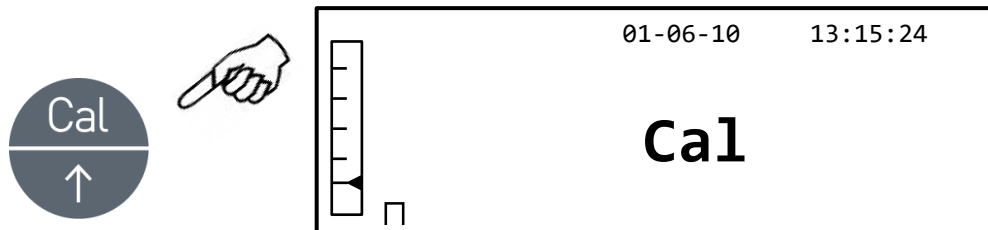
8 Calibration

The electronic balance carries out mass measurements using gravity (g). Differences in geographical regions and altitudes change the gravitational acceleration (g). The balance must therefore be adapted to environmental conditions to obtain accurate measurements. This adjustment is accomplished through the calibration function.

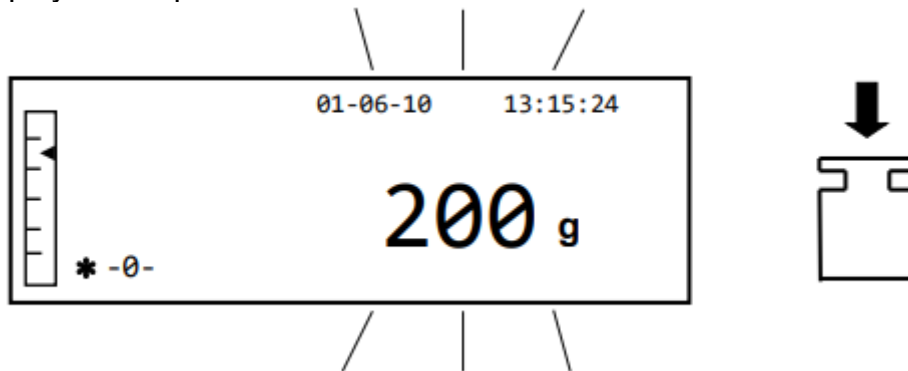
8.1 Balances with external calibration

The calibration is performed through the CAL button.

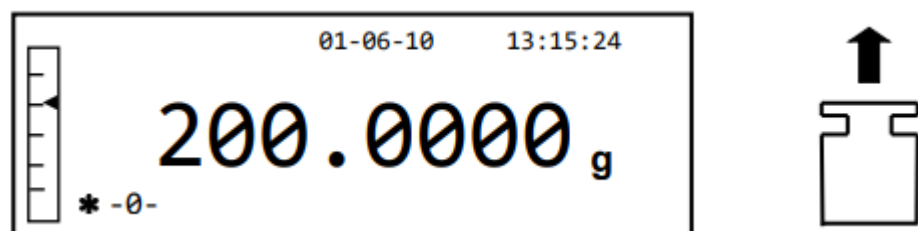
1. Press the **CAL** button with the empty plate; the word CAL will be displayed.



2. When the value of the calibration weight begins to flash, load the weight indicated by the display on the plate.



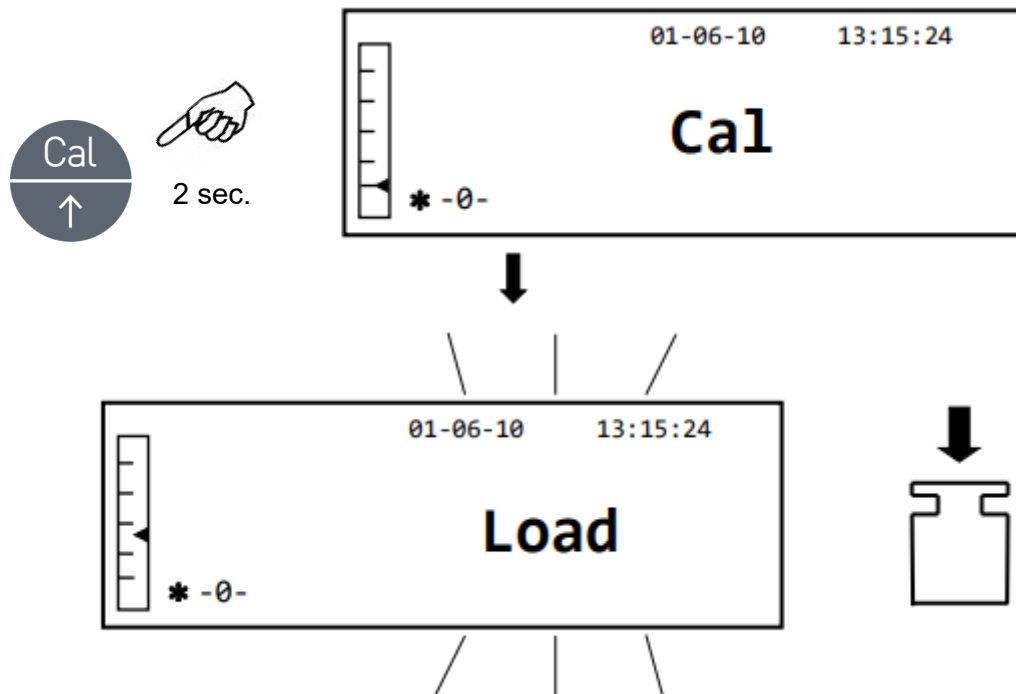
3. The display will stop flashing, indicating the value of the calibration weight with the stability indicator on.
Once the calibration has been carried out, the calibrated weight will be displayed with the indication of the current unit of measurement.
4. Remove the calibration weight.
The balance is now ready for weighing operations.



NOTE: an error message will be displayed if there is some interference during the calibration process. To interrupt the calibration process, press the ON/OFF button while the calibration weight indication flashes.

It is also possible to calibrate the balance with a calibration weight greater than the pre-set calibration weight:

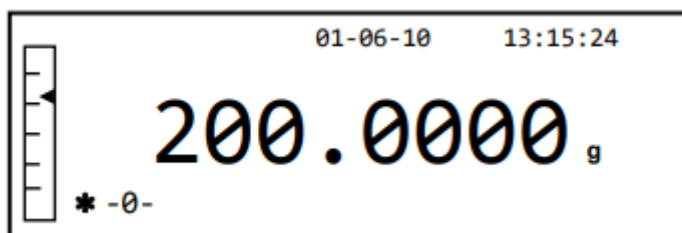
1. Press and hold the **CAL** button with the empty plate until the beeping stops, and then release the button. The word “**-CAL-**“ will be shown on the display, followed by the word “**LOAD**”, flashing.



2. Load a weight that is equal to or greater than the pre-set calibration weight on the plate; the balance will recognize a weight that is equal to or greater than the calibration weight as valid provided that it is the closest possible multiplied weight to the calibration weight.

E.G.: if the calibration weight is 200 g, it will be possible to calibrate the balance with values that go from 200g, 300g, 400g up to the upper capacity limit of the balance. The word “**LOAD**” on the display will stop flashing; once the calibration has been performed, the value of the weight used will be displayed.

3. Remove the calibration weight; the balance is ready for the weighing operations.

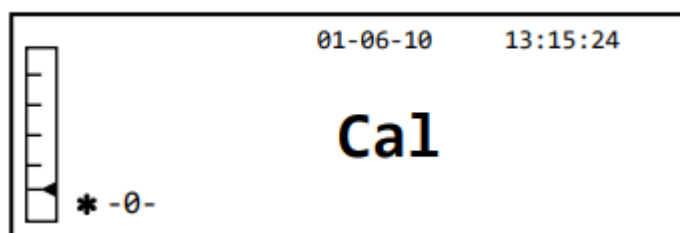


NOTE: an error message will be displayed if there is some interference during the calibration process. To interrupt the calibration process, press the ON/OFF button while the calibration weight indication flashes.

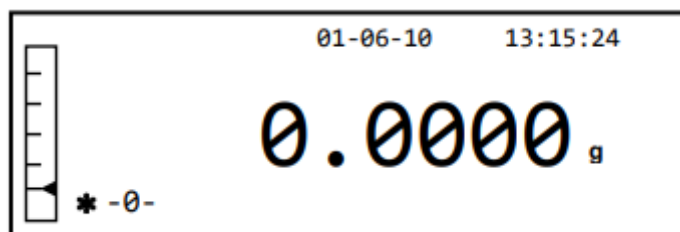
8.2 Balances with internal calibration

In these models the calibration is performed through an internal automatic system:

1. Press the **CAL** button with the empty plate.
The display will show the message “**CAL**” and the balance’s calibration will be carried out automatically.



2. At the end of the calibration, the balance will return to normal weighing conditions.

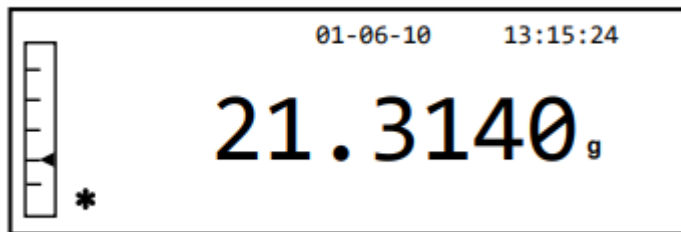


If the calibration is not completed due to vibrations or drafts, the message “**CAL bUT**” will be displayed. Press the CAL button again, and if the problem persists, select external calibration and contact the supplier.

To modify the calibration mode in these models with internal calibration, see section 9.12.1

9 Tare function

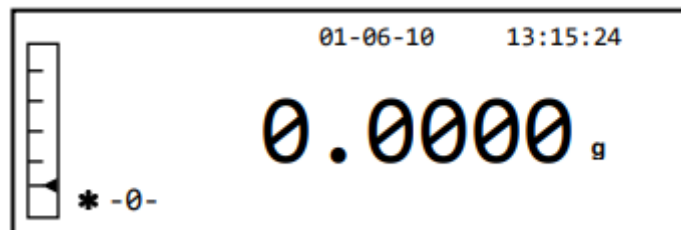
1. The relative weight will be shown on the display.



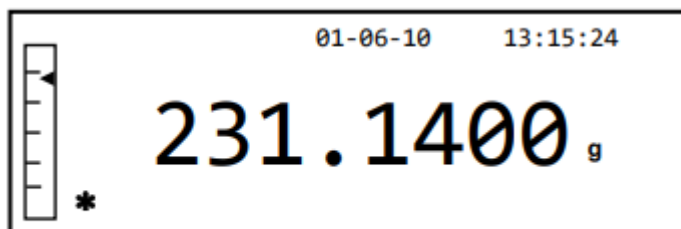
2. Press the **O/T** button. The word “Tare” will be displayed.



3. Once stability has been achieved, the zero value “**0.000**” will be displayed. In case stability is not achieved due to drafts, vibrations, or another disturbance, the dashes will continue to be displayed.



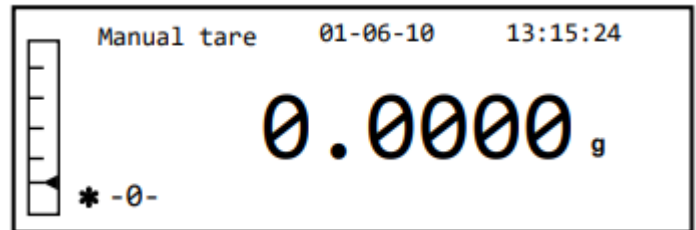
4. Put the objects to be weighed in the container. Read the value of the net weight on the display.



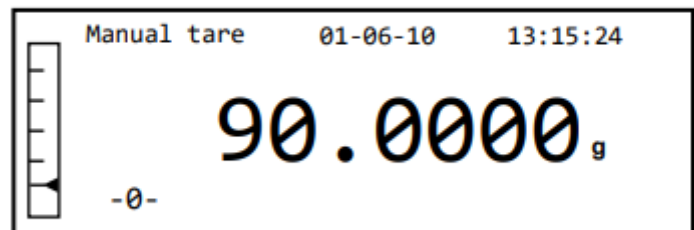
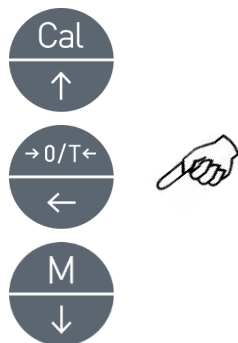
9.1 Manual tare function

This function allows a tare value to be entered manually.

1. Press and hold the **O/T** button with the empty plate until the beeping stops, and then release the button.
2. The following word will be shown on the display:



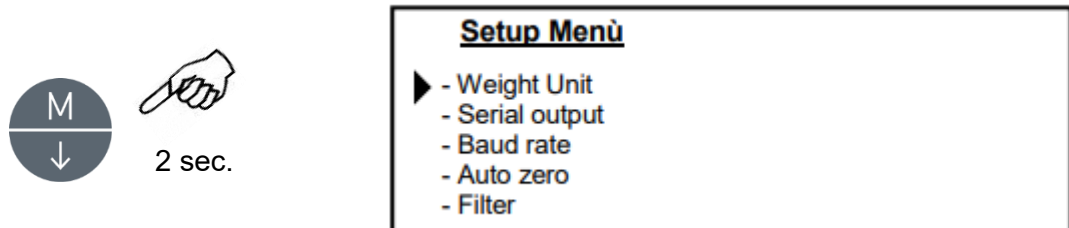
3. Now insert the desired tare value using the **CAL** and **MENU** buttons to increase and decrease the number, while pressing the **O/T** button to pass to the next number. During the entering phase, holding down the **O/T** button allows you to delete the inserted value.



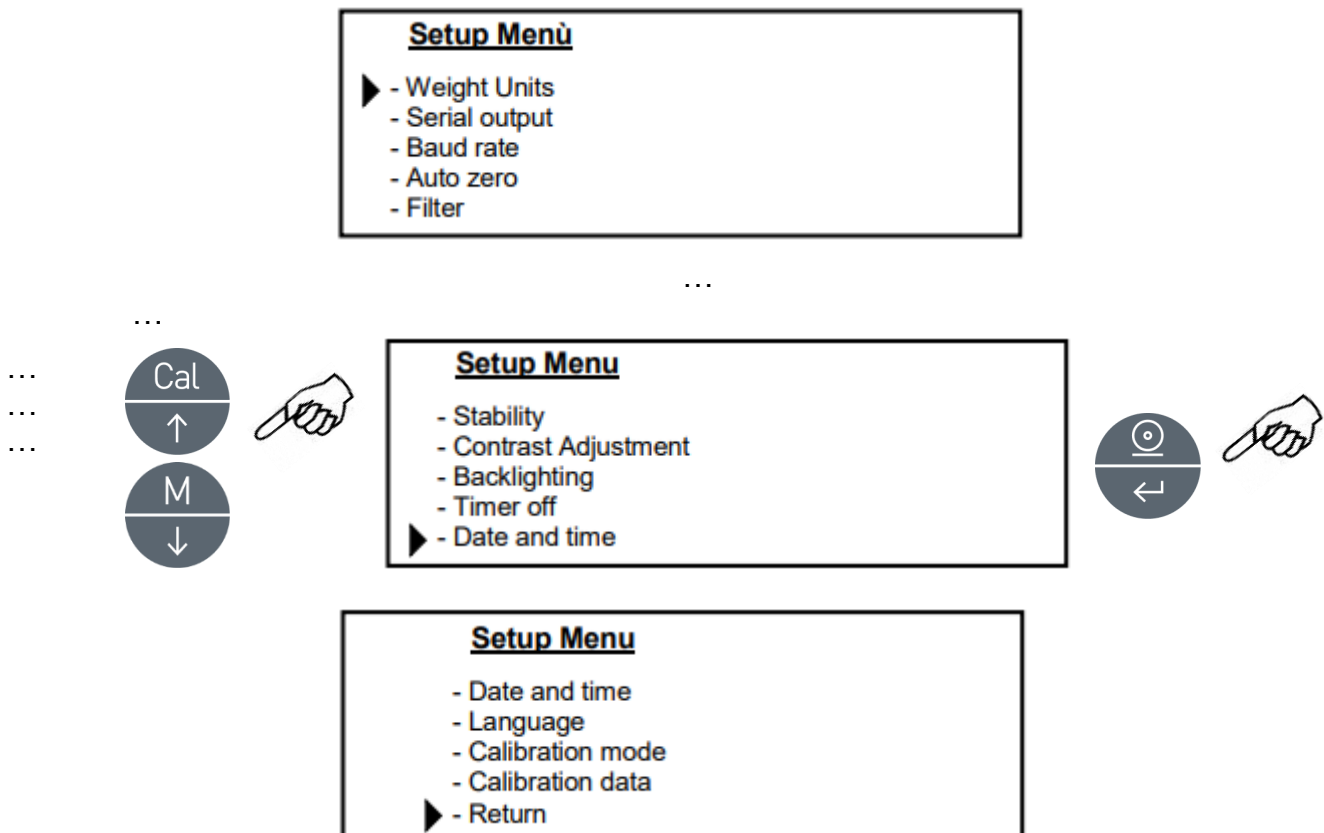
4. After having entered the desired value, press the **PRINT** button to confirm it. The value will remain in memory until the **TARE** button is pressed, or the instrument is disconnected from the power supply.

10 Balance parameters setup menu

1. Press and hold the **MENU** button with the empty plate until the beeping stops, and then release the button.
2. The following writing will be shown on the display:



3. Now use the CAL and MENU buttons to navigate forward or backward in the parameters menu.



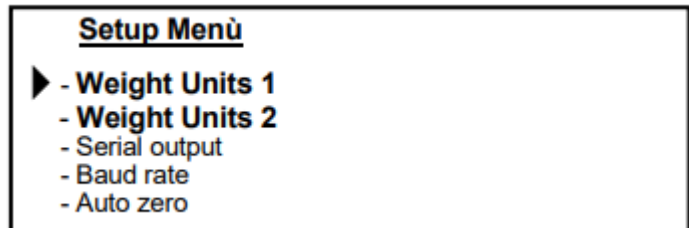
4. Position the cursor on the desired parameter and press the PRINT button to confirm the selection.
5. Press the ON/OFF button to exit from the menu or select the return function and press the PRINT button.

10.1 Weight Units

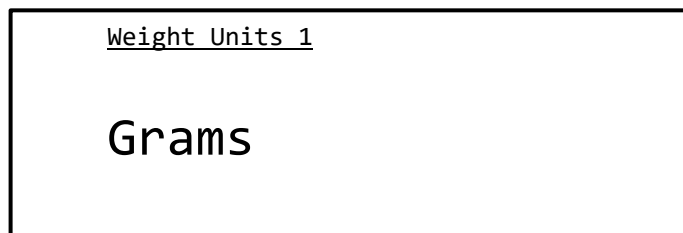
The scale can be set to display the weight in the different units, one primary (**Weight Units 1**) and one secondary (**Weight Units 2**).

When we supply the scale, the default unit of measurement is **Weight Units 1**.

1. From display zero hold down the **MENU** button until the acoustic alarm mutes, then release the button. The setup menu will be displayed then select "**Weight Units 1**" and press **PRINT** to confirm.



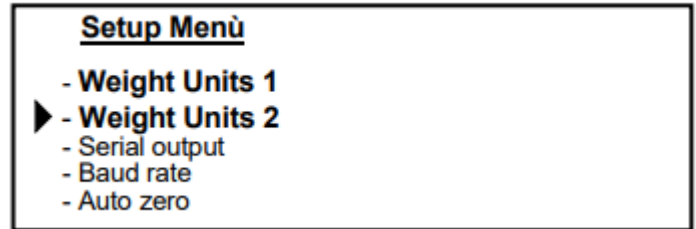
2. "**Grams**" unit will be displayed. Pressing the **MENU** or **CAL** button will enable you to scroll forward or backward the weight unit menu.



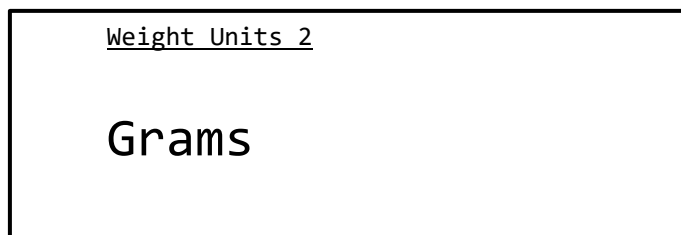
3. Press **PRINT** button to confirm or **MENU** button to shift to the other weight unit.

SYMBOL	UNIT	CONVERSION FACTOR 1g =
GrAM	GRAM	1.
MILLi Gr	MILLIGRAMMES	0.001
CARAt	CARAT	5.
OuncE	ONCE	0.035273962
Pound	POUND	0.0022046226
PEnn.	PENNYWEIGHTS	0.643014931
OuncETr.	ONCE TROY	0.032150747
GrA in	GRAIN	15.43235835
tAEL Hon	HONG KONG TAEI	0.02671725
tAEL SGP	SYNGAPORE TAEI	0.02646063
tAEL roc	R.O.C. TAEI	0.02666666
MoMME	MOMME	0.2667

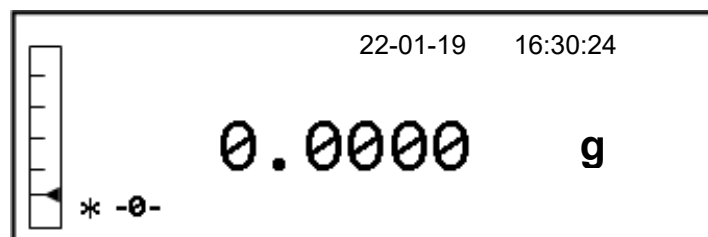
4. After setting **Weight Units 1** (by pressing the **PRINT** button to confirm), the screen relative to the setup menu will be displayed again, select "**Weight Units 2**" and press **PRINT** to confirm.



5. The "**Grams**" unit will be displayed. Pressing the **MENU** or **CAL** key will now be possible to scroll backwards or forwards the secondary units menu.

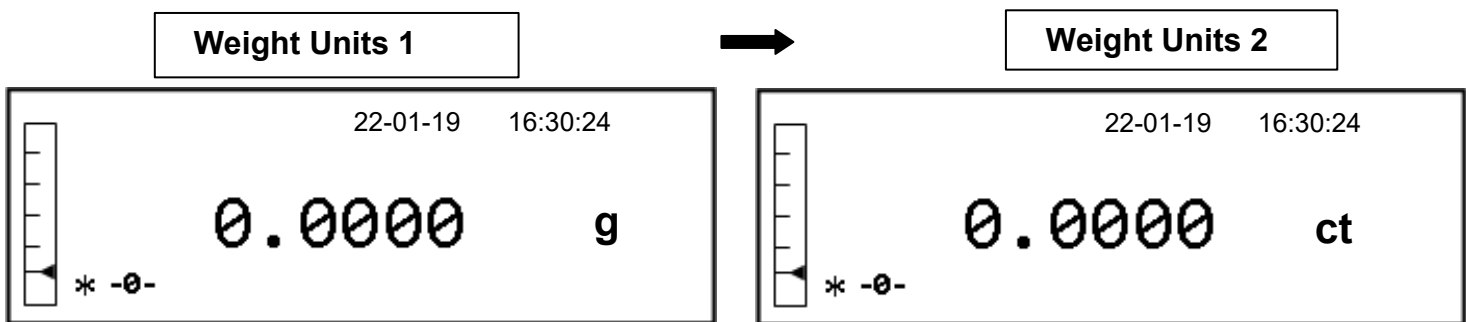
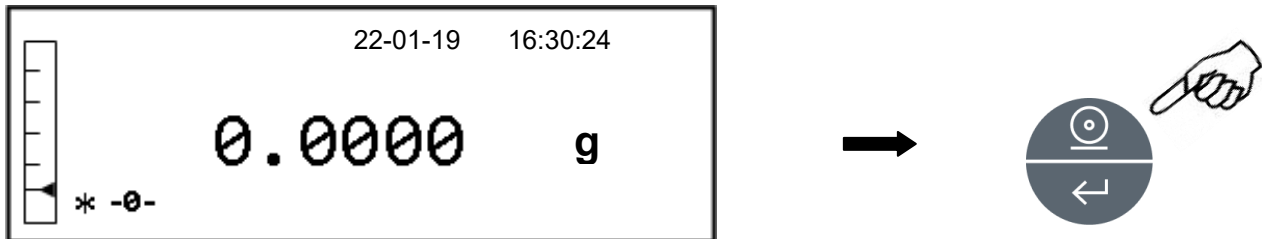


6. Press the **PRINT** key to confirm or the **MENU** key to change to another unit of measurement (the units of measurement available are the same as those listed in point 3).
7. To leave the parameters setup menu, press the **MENU** button until the acoustic alarm mutes, then release the button.
8. The balance returns to normal weighing conditions.



It is recommendable to set a second unit of measure when it is necessary to quickly display the result of a weighing in two different units.

9. After setting both units of measurement, in order to return to normal weighing mode, press the **PRINT** button until the acoustic alarm mutes, then release the button to switch from one unit of measurement to another.



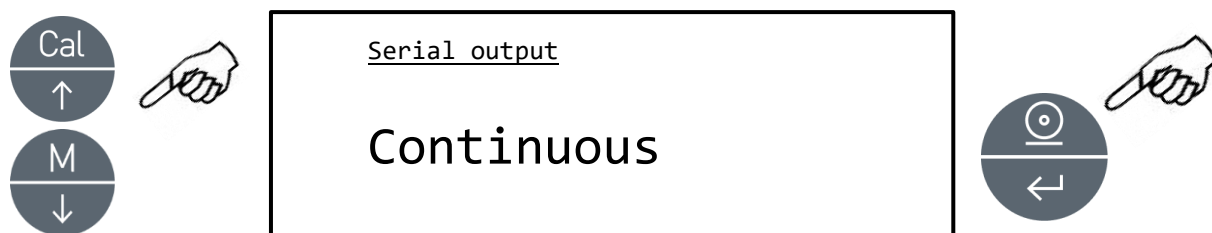
N.B. If you put the balance in **Stand-by** mode using the **ON / OFF** button, the last selected measurement unit will be used for weight display, once the power is turned on again.

However, if you disconnect the instrument from the mains, once it is switched on again, the weight will be displayed in the unit of measure corresponding to **Weight units 1**.

10.2 Serial output setup

Different data transmission devices and modes can be selected.

1. Select the serial output parameter as described in paragraph 10. The currently set transmission mode will be shown on the display:



2. By pressing the **MENU** or **CAL** button it will be possible to scroll through the serial output **MENU** forwards or backwards.
3. Then press the **PRINT** button to confirm the desired transmission mode.

The different transmission modes are illustrated below:

TRANSMISSION MODE	FEATURES
Continuous	Transmits the weight data in a continuous way
On demand	Transmits the weight data only when the PRINT button is pressed
Generic printer	The weight data is printed only when the Busy command is active
Tlp50 printer	The weight data is printed only if the Tlp50 model printer is connected
Upon request - Glp	Transmits the weight data and the Glp information only when the PRINT button is pressed
Generic printer - Glp	The weight data and the Glp information are printed only when the Busy command is active
Tlp – Glp printer	The weight data and the Glp information are printed only if the Tlp50 model printer is connected

NOTE: transmission speed selection (paragraph 10.3)

4. After selecting the desired transmission mode, the screen with the balance parameters menu will be displayed again. It will now be possible to select another parameter or return to weighing mode by pressing the **ON/OFF** button.

10.3 Transmission speed selection

Different data transmission speeds can be selected.

1. Select the baud rate parameter as described in paragraph 10. The currently set transmission speed will be shown on the display:



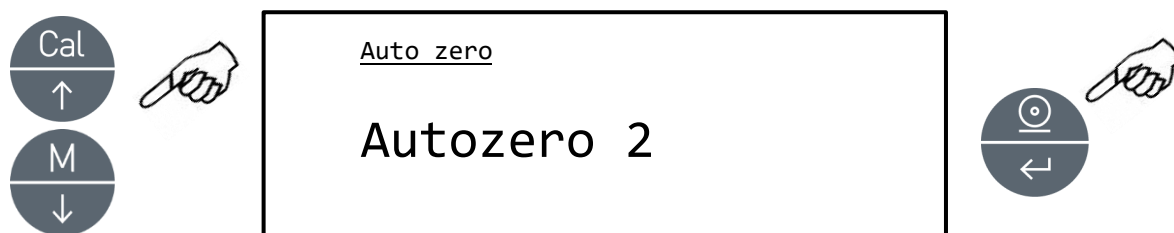
2. Select the serial data transmission speed (1200-2400-4800-9600 baud). By pressing the **MENU** or **CAL** button you can scroll the different transmission speeds forwards or backwards; then confirm the choice with the **PRINT** button.
3. After selecting the desired transmission speed, the screen of parameter menu will be displayed again. It will now be possible to select another parameter or return to weighing mode by pressing the **ON/OFF** button.

10.4 Autozero function

Autozero is a correction from a possible deviation from zero.

Different autozero levels can be selected.

1. Select the autozero parameter as described in chapter 10.
The currently set autozero parameter will be shown on the display:



2. Select the desired autozero level. By pressing the **MENU** or **CAL** button you can scroll through the various levels forwards or backwards; then confirm your choice with the **PRINT** button.

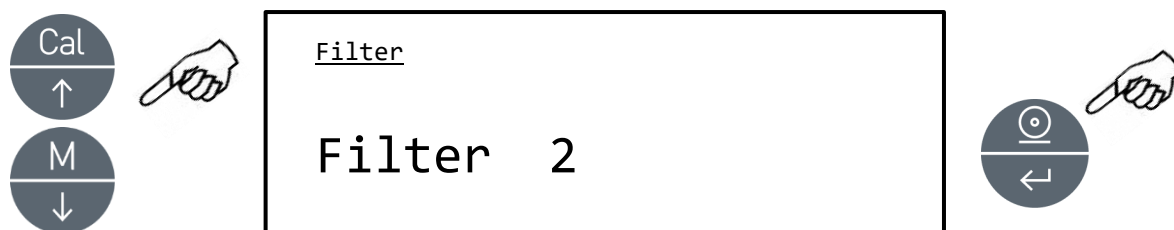
AUTOZERO MENU	AUTOZERO LEVEL
Autozero off	Autozero off
Autozero 1	Light autozero
Autozero 2	Average autozero
Autozero 3	Heavy autozero
Autozero 3E	Heavy full-scale autozero

3. After having selected the desired autozero, the screen relative to the balance parameters menu will be displayed again. It will now be possible to select another parameter or return to weighing mode by pressing the **ON/OFF** button.

10.5 Filter selection

The balance can be adapted to different environmental conditions thanks to the selection of three different filters:

1. Select the filter parameter as described in paragraph 10. The currently set filter type will be shown on the display:



2. Select the desired filter level. By pressing the **MENU** or **CAL** button it will be possible to scroll through the various levels forward or backward; then confirm your choice with the **PRINT** button.

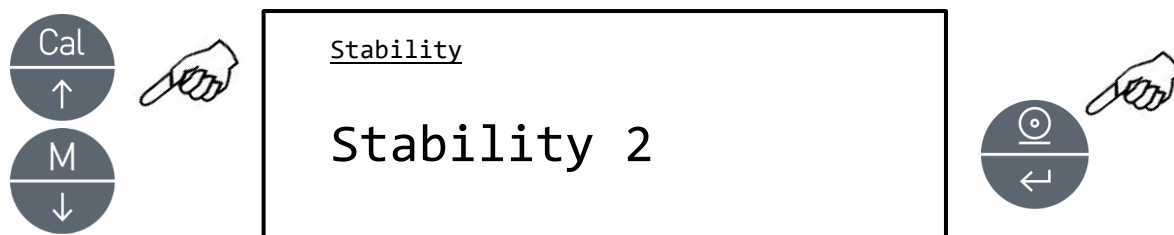
FILTER MENU	FILTER LEVEL
Filter 1	Use this filter level in stable environmental conditions and for use of the instrument in filling or dosing mode
Filter 2	Use this filter level when the environmental conditions are not stable
Filter 3	Use this filter level when the environmental conditions are particularly unstable

3. After selecting the desired filter level, the screen of parameters menu will be displayed again. It will now be possible to select another parameter or return to weighing mode by pressing the **ON/OFF** button.

10.6 Stability function

The stability symbol will appear on the display when the weight is stable within a defined interval.

1. Select the stability parameter as described in paragraph 10.
The currently set type of stability will be shown on the display:



2. Select the desired stability level. By pressing the **MENU** or **CAL** button you can scroll through the various levels forwards or backwards; then confirm your choice with the **PRINT** button.

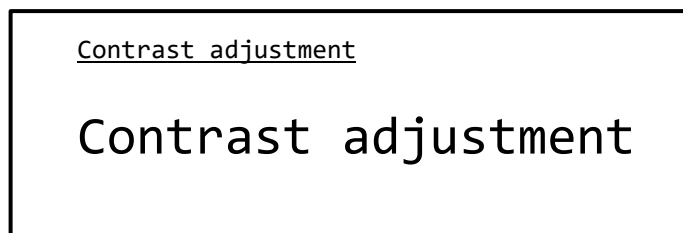
STABILITY MENU	LEVEL OF STABILITY
Stability 1	Use this level of stability when the environmental conditions are stable.
Stability 2	Use this level of stability when the environmental conditions are less stable.
Stability 3	Use this level of stability when the environmental conditions are unstable.

3. After selecting the desired level of stability, the screen of parameter menu will be displayed again. It will now be possible to select another parameter or return to weighing mode by pressing the **ON/OFF** button.

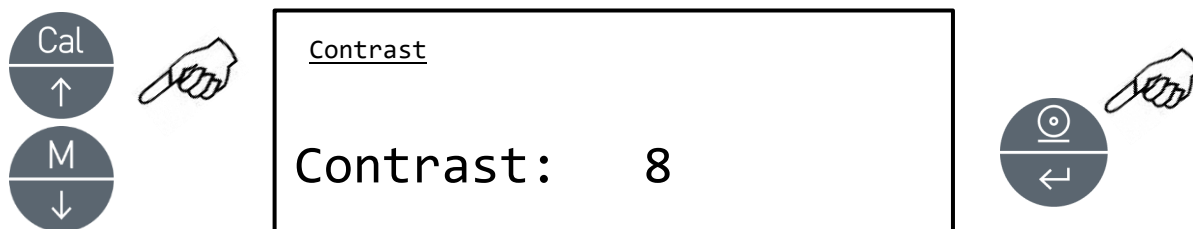
10.7 Contrast Adjustment

The balance is equipped with an LCD display; the contrast can be regulated in order to make the indication as visible as possible from different angles.

1. Select the contrast adjustment parameter as described in paragraph 10. The currently set contrast value will be shown on the display:



2. Select the desired contrast value. By pressing the **MENU** or **CAL** button you can increase or decrease the value; then confirm the choice with the **PRINT** button.

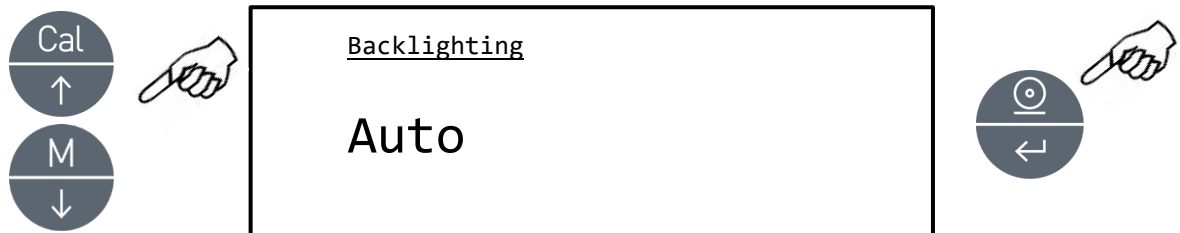


3. After selecting the desired contrast level, the screen of parameters menu will be displayed again. It will now be possible to select another parameter or return to weighing mode by pressing the **ON/OFF** button.

10.8 Backlight regulation

The display is equipped with a backlight to make the indication visible even in low light conditions.

1. Select the backlight parameter as described in paragraph 10. The currently set mode will be shown on the display:



2. Select the desired modality. By pressing the **MENU** or **CAL** button you can scroll through forwards or backwards; then confirm the choice with the **PRINT** button.

BACKLIGHT MENU	BACKLIGHT MODE
Auto	Backlight automatically active during the weighing phases
On	Backlight always on
Off	Backlight always off

3. After selecting the desired mode, the parameters menu will be displayed again. It will now be possible to select another parameter or return to weighing mode by pressing the **ON/OFF** button.

10.9 Auto-off function

This function allows you to activate the automatic turn-off of the balance after a preset time of inactivity.

1. Select the Auto off parameter as described in paragraph 10.
The currently set mode will be shown on the display:



2. Select the desired auto-off modality. By pressing the **MENU** or **CAL** you can scroll forwards or backwards; then confirm the choice with the **PRINT** button.

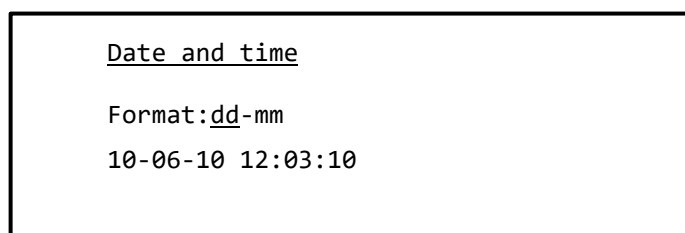
TIMER-OFF MENU	AUTO OFF MODE
Disabled	Auto-off disabled
2 minutes	Auto-off after 2 minutes of inactivity
5 minutes	Auto-off after 5 minutes of inactivity
15 minutes	Auto-off after 15 minutes of inactivity

3. After selecting the desired mode, the parameters menu will be displayed again. You can now select another parameter or return to weighing mode by pressing the **ON/OFF** button.

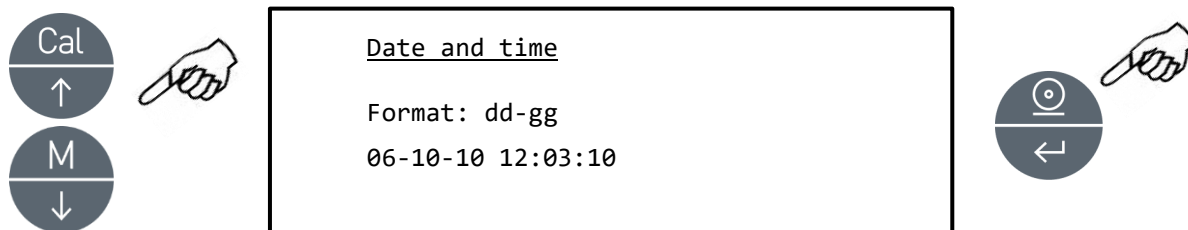
10.10 Date and time regulation

This function allows you to regulate the date and time, and to modify the date display format.

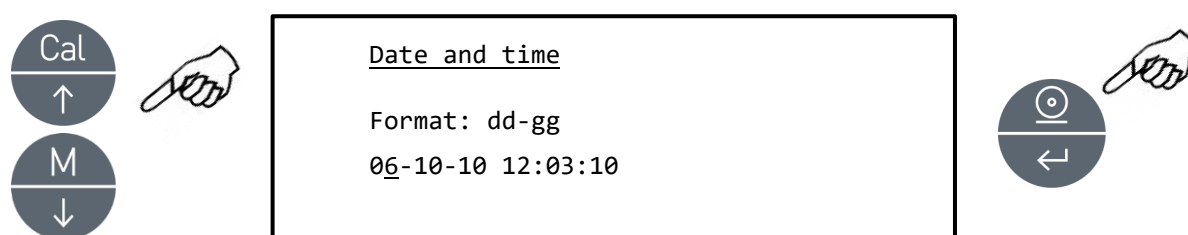
1. Select the date and time parameter as described in paragraph 10. The current set date and time will be shown on the display:



2. Select the desired date format. By pressing the **MENU** or **CAL** button you can modify the format dd-mm or mm-dd; then confirm the choice with the **PRINT** button.



3. Set the desired date and time by using the **MENU** and **CAL** buttons to increase and decrease the number and the **PRINT** button to pass to the next date.



4. After setting the date and time, press and hold the **PRINT** button until the beeping stops and then release the button to save the settings.
5. The parameters menu will then be displayed. You can now select another parameter or return to weighing mode by pressing the **ON/OFF** button.

10.11 Language selection

This function allows you to set the desired language of use.

1. Select the language parameter as described in paragraph 10. The currently set language will be shown on the display:



2. Select the desired language. By pressing the **MENU** or **CAL** button you can scroll the various levels forwards or backwards; then confirm your choice with the **PRINT** button.

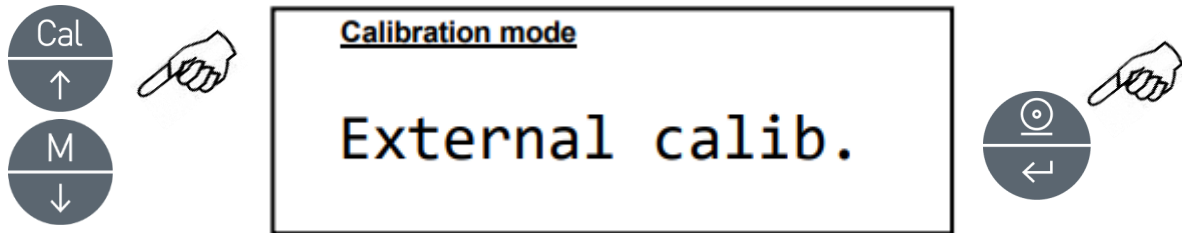
LANGUAGE MENU	LANGUAGE
Italian	Italian language
English	English language
Português	Portuguese language
Deutsch	German language
Français	French language
Español	Spanish language

- After selecting the desired language, the parameters menu will be displayed again. It will now be possible to select another parameter or return to weighing mode by pressing the **ON/OFF** button.

10.12 Calibration mode setting

This function allows you to set the calibration mode.

1. Select the calibration mode parameter as described in paragraph 10. The currently set calibration mode will be shown on the display:



2. Select the desired mode. By pressing the **MENU** or **CAL** buttons you can scroll the different calibration modes forwards or backwards:

External calibration

Internal calibration

Automatic calibration

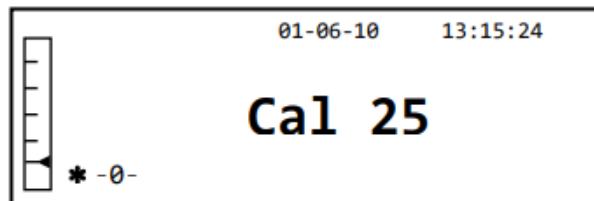
Technical calibration

3. Press the **PRINT** button to confirm “**AUT-CAL**”, “**I-CAL**”, “**E-CAL**”.
To confirm “**TEC-CAL**”, keep the **PRINT** button pressed until the beeping stops.
4. The parameters menu will then be displayed. You can now select another parameter or return to weighing mode by pressing the **ON/OFF** button.

10.12.1 Automatic Calibration (AUT-CAL)

The balance self-calibrates when the temperature variation exceeds the factory preset value and at factory preset time intervals, through the internal reference mass, and only if the balance pan is empty.

When the balance needs to perform the Automatic calibration, the display will show the following message:



A 25-second countdown will start during which you can decide if:

- Stop the automatic-calibration procedure by pressing the “**ON/OFF**” button that will delay it by 5 minutes
- or
- Let the countdown finish so that the automatic calibration starts

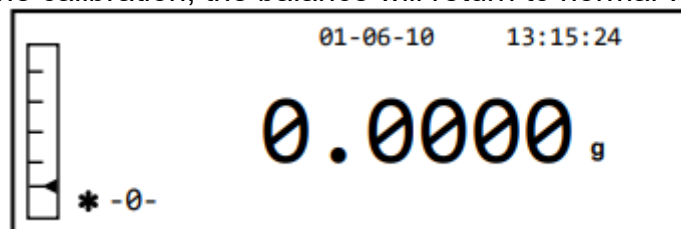
Note: DO NOT load anything on the plate during the countdown!

In this mode, it is also possible to perform the calibration with the internal reference mass by pressing the **CAL** button at any moment, first ensuring that no weight is loaded on the plate.

1. Press the **CAL** button with the empty plate. The display will show the “**CAL**” message and the balance’s calibration will be performed automatically.



2. At the end of the calibration, the balance will return to normal weighing mode.



If the calibration is not completed due to vibrations or drafts, the message “**CAL BUT**” will be displayed. Press the **CAL bUtt**on again, and if the problem persists, select external calibration and contact the supplier.

10.12.2 Internal calibration (I-CAL)

The balance calibrates itself through the internal reference mass **ONLY** upon the request of the user by pressing the **CAL** button.

Before performing the internal calibration, ensure that no weight is loaded on the plate.

10.12.3 External calibration (E-CAL)

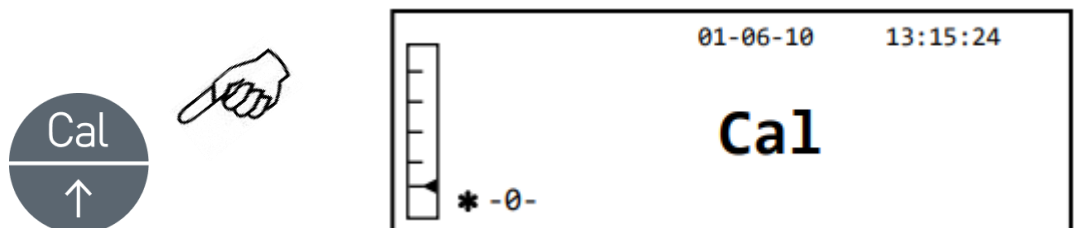
The balance will be calibrated by using the external reference mass.

(Follow the procedures described in paragraph 8.1.2)

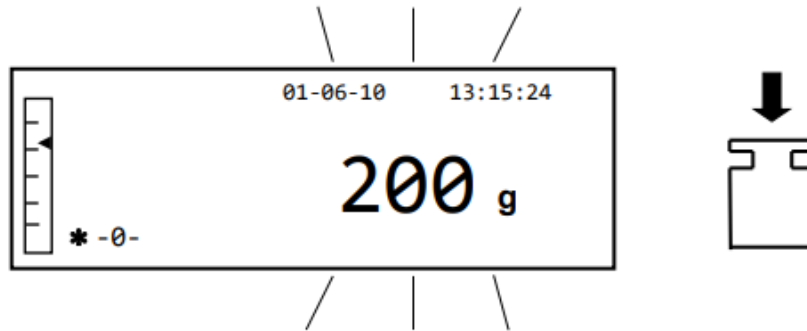
10.12.4 Technical calibration (TEC-CAL)

This function allows the internal reference mass to be calibrated whenever assistance-control-maintenance interventions make this necessary.

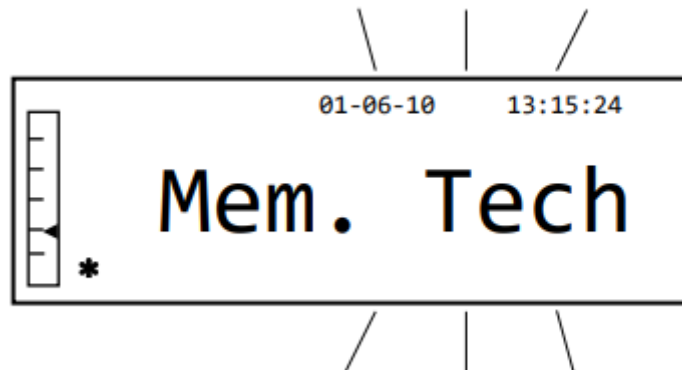
1. After having selected the **TEC-CAL** calibration mode, press the **CAL** button with the empty plate. The word “**CAL**” will be displayed.



2. When the value of the calibration weight begins to flash, load the calibration weight on the plate.



3. Wait for the calibrated weight to be displayed and the stability symbol to appear and then remove the weight from the plate.
4. When "0.000" is shown on the display, hold down the **PRINT** button until the beeping stops. The acquisition and automatic storage of the internal weight will now begin. During the acquisition cycle, the display will show the following flashing writing:



5. Once the internal calibration has been stored, the balance will return to the normal weighing condition.
6. Now re-enter the calibration menu as described in paragraph 9.1.12 and set the desired internal, automatic, or external calibration mode.



ATTENTION: This procedure must be performed only using E1 class reference masses.

10.13 Calibration data

This function allows you to display the data related to the last calibration performed.

- Date
- Calibration mode
- Correction

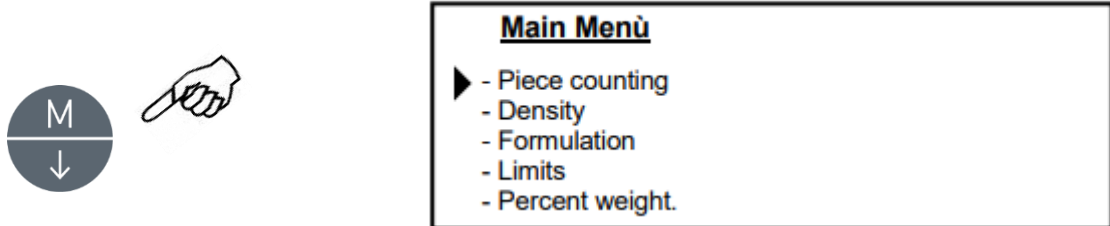
1. Select the calibration data parameter as described in paragraph 10.
The data related to the last calibration will be shown on the display:

Calibration data	
10-06-10	
External calib.	2000.0g
Corr.:	1.2g

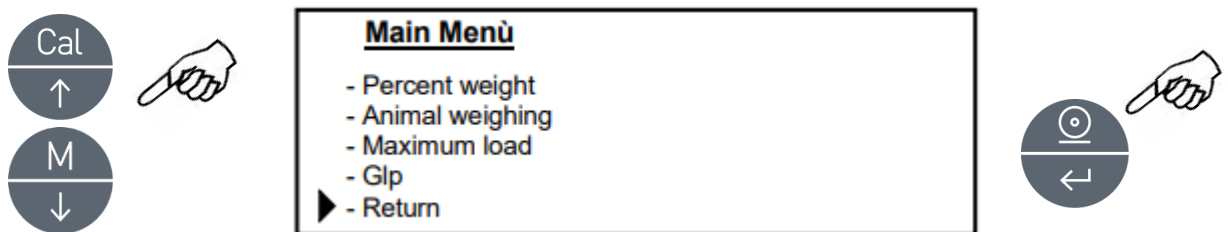
2. Press the **PRINT** button to print the calibration data.
3. Press the **ON/OFF** button to exit and return to the parameters menu. It will now be possible to select another parameter or return to weighing mode by pressing the **ON/OFF** button.

11 Balance programs menu

1. Press the **MENU** button with the empty plate.
2. The following writing will be shown on the display:



3. Now use the CAL and MENU buttons to navigate forwards or backwards in the parameters menu.

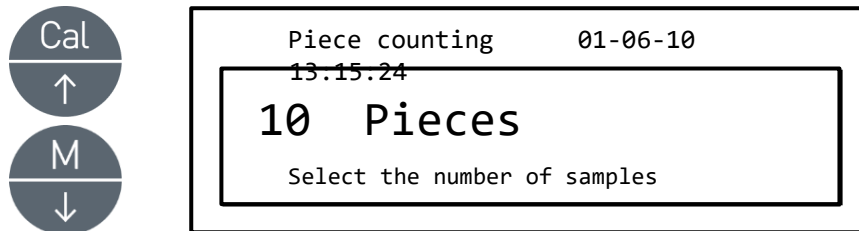


4. Position the cursor on the desired parameter and press the PRINT button to confirm the selection.
5. Press the ON/OFF button to exit the menu or select the return function and press the PRINT button.

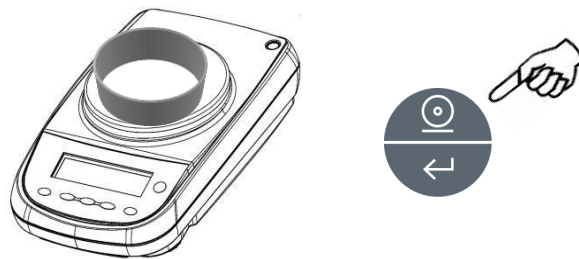
11.1 Piece counting function

The piece counting mode allows you to count the total of the pieces after having carried out a sampling of pieces or having inserted the average unit weight of the piece.

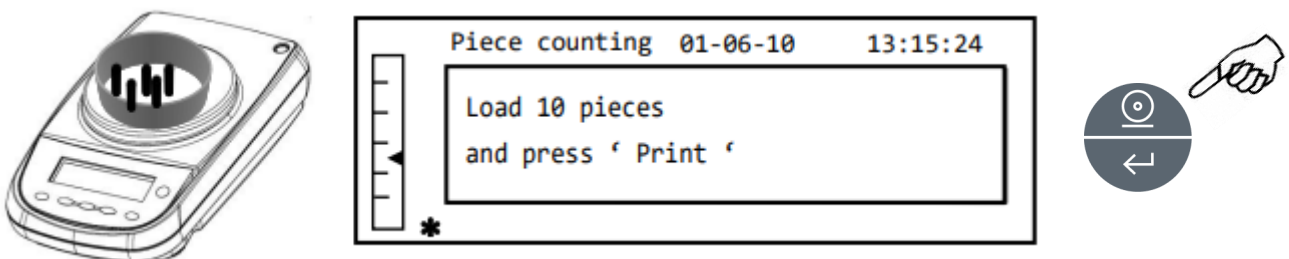
1. Select the piece counting mode as described in paragraph 10.
The following screen will be shown on the display:



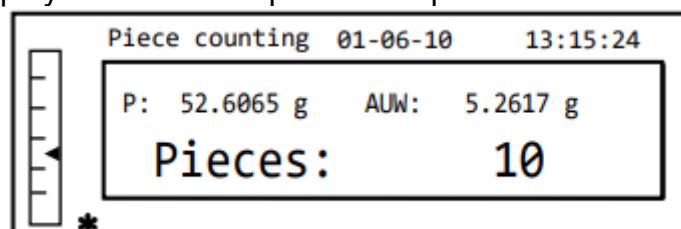
1. Select the number of pieces to put on the plate as a sample, pressing in sequence the **MENU** button to increase and the **CAL** button to decrease.
2. Load an empty container, if used, then press the **PRINT** button to confirm. The choice of the number of pieces (10, 25, 50, 100, manual, see chapter 10.3) depends on the weight of an individual piece. Load an empty container, if used.



3. Load the number of pieces indicated on the display on the plate and press the **PRINT** Button.

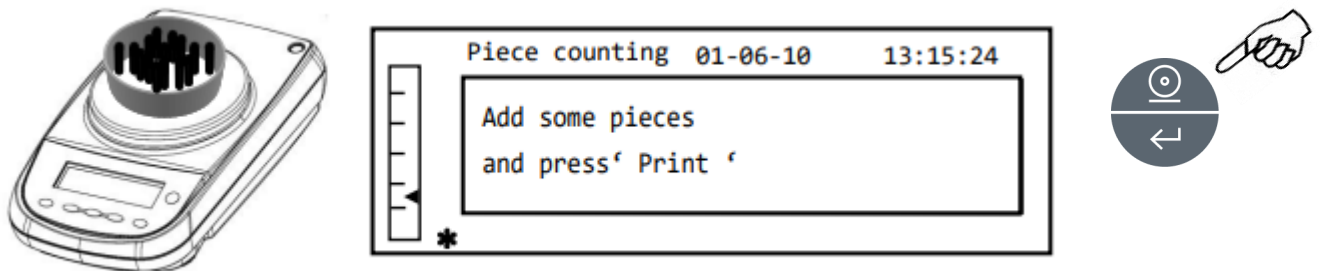


If there are enough samples (e.g. 10 as in the figure), the number of pieces loaded will appear on the display. It will now be possible to proceed with the counting of the pieces.



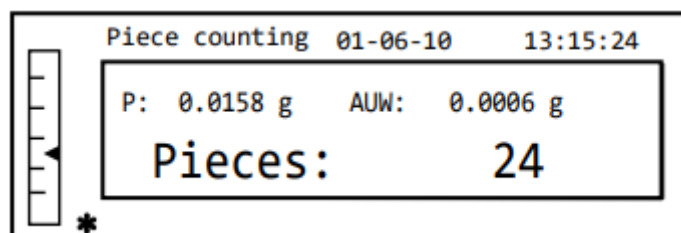
If the pieces to be counted have a weight that is smaller than the balance's resolution, an error message will be displayed.
In this case it is necessary to switch to a balance with greater resolution.

If the weight of the samples is acceptable but not sufficient, the following message will be displayed: Add enough pieces so as to approximately double the quantity loaded on the plate, then press the **PRINT** button.



If the number of pieces is still insufficient, the message indicated above will be displayed again. Double the quantity of pieces again.

Once a sufficient number of pieces has been reached, their number will be displayed and it will be possible to proceed with the counting, loading the pieces to be counted on the plate.



4. To exit the piece counting mode, press the **ON/OFF** button and the balance will return to the normal weighing mode.

11.1.1 Manual insertion of the average unit weight

This function allows the user to introduce, when known, the average unit weight of the piece, thus avoiding the sampling of the pieces.

1. Select the piece counting mode as described in paragraph 10.
The following message will appear on the display:

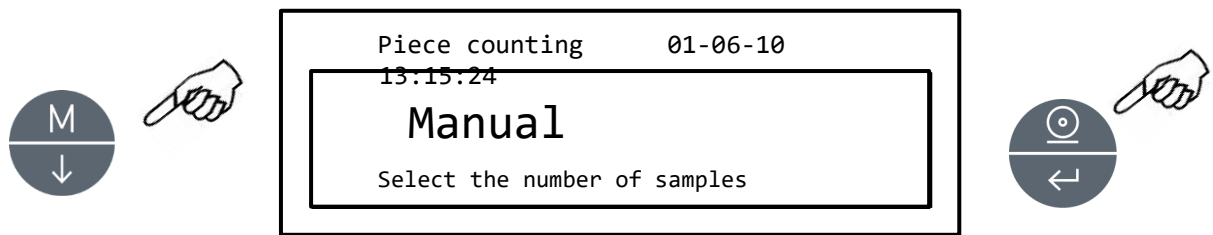
Piece counting 01-06-10

13:15:24

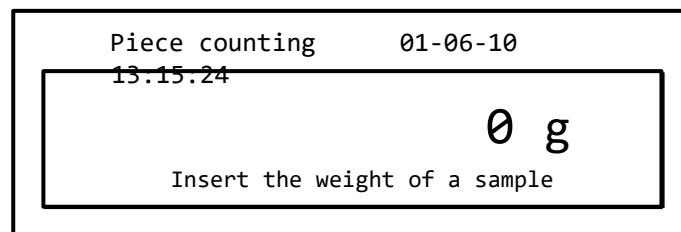
10 Pieces

Select the number of samples

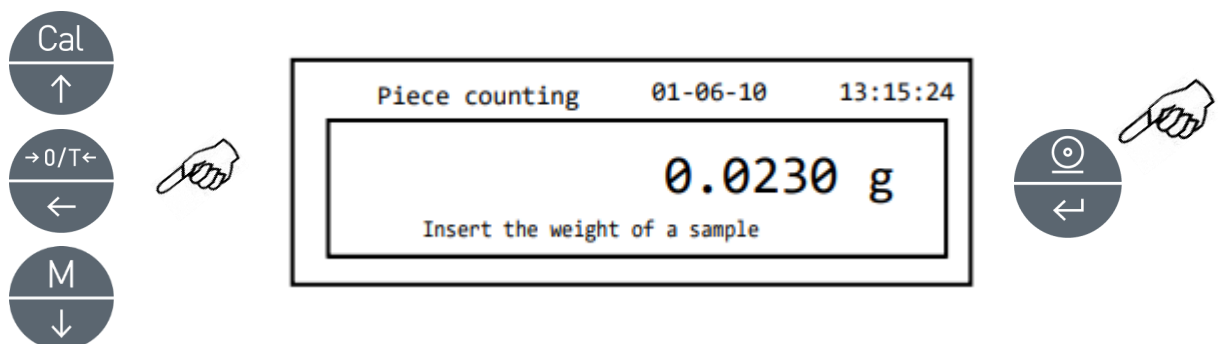
- Press the **MENU** button until the following message appears on the display:



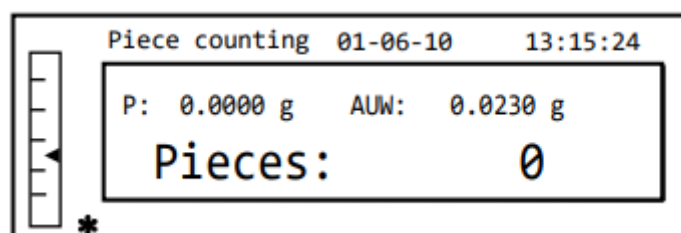
- Then press the **PRINT** button to confirm.



- Insert the single piece's weight in grams using the **CAL** and **MENU** buttons to increase and decrease the value, while pressing the **O/T** button to move to the next value. To insert a decimal point, hold down the **CAL** button. During this phase, holding down the **O/T** button allows you to delete the inserted value.

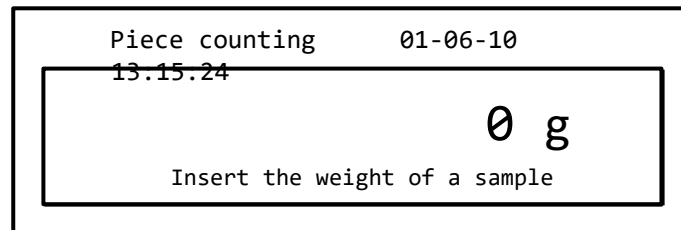


- Press the **PRINT** button to confirm.
If the piece entered is less than 100 times the resolution of the balance, an error message will be displayed.
To exit without entering the weight, press the **ON/OFF** button.
- If the weight is sufficient, "0" will be shown on the display; it is now possible to proceed with the counting, loading the pieces on the plate.



- To exit from the piece counting function, press the **ON/OFF** button.

It is also possible to use the optional alphanumeric keyboard to insert the average unit weight of the sample. In this case, carry out the same procedure described above to enter manual insertion mode.



1. Insert the sample's unit weight in grams by using the numeric keys from 0 to 9 and the decimal point.
In case of error, press the **CLEAR** button and restart.
2. Press the **INSERT** button to confirm.
3. If the piece is less than 100 times the balance resolution, an error message will be displayed.
To exit without entering the weight, press **ESCAPE** (on the alphanumeric keyboard) or **ON/OFF**.
4. If the weight is sufficient, "0" will be shown on the display; it is now possible to proceed with the counting, loading the pieces on the plate.
5. To exit the piece counting function, press the **ON/OFF** button.

11.1.2 Automatic updating of the average unit weight

After the sampling, the average unit weight can be updated in the following way.

1. Instead of loading all of the pieces to be counted, load a number of pieces approximately double that of those loaded on the plate and wait for the beep.
2. This procedure can now be repeated up to a maximum of 255 pieces, or you can proceed with the normal counting of the pieces.
This mechanism allows for a more accurate estimate of the average unit weight and better precision in the counting of the pieces.

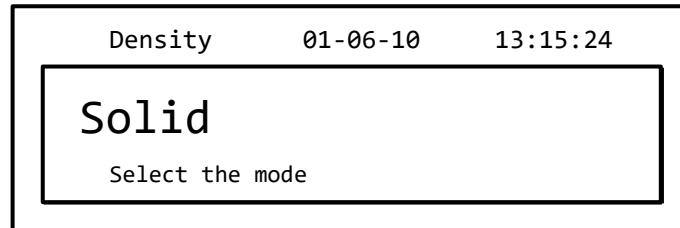
NOTE: the automatic updating mechanism is not active if the sampling has been performed through insertion of the average unitary weight.

11.2 Determination of the density of a solid or a liquid

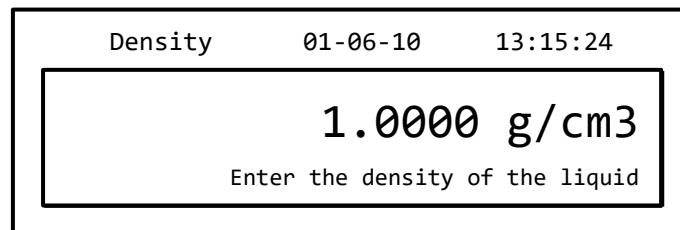
The density calculation mode allows to determine the density of a solid or liquid through the use of the lower weighing hook or the hydrostatic kit.

11.2.1 Density determination of solids

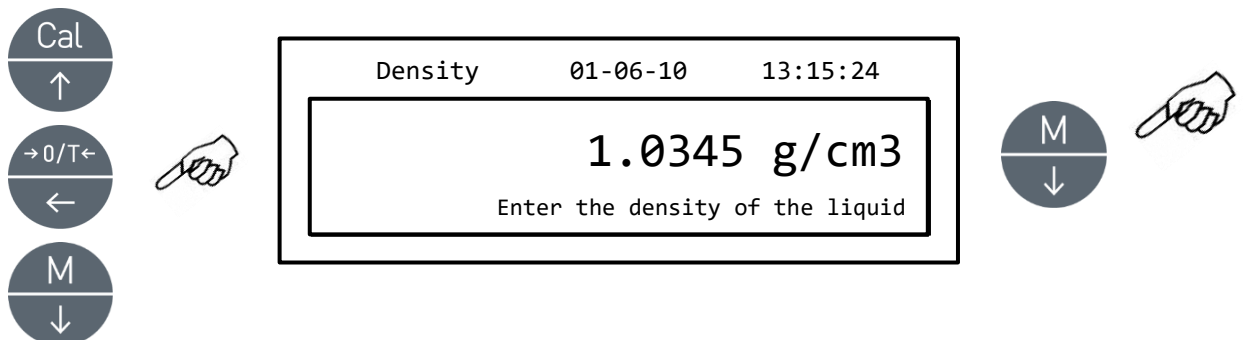
1. Select the density program as described in paragraph 10. The following screen will be shown on the display:



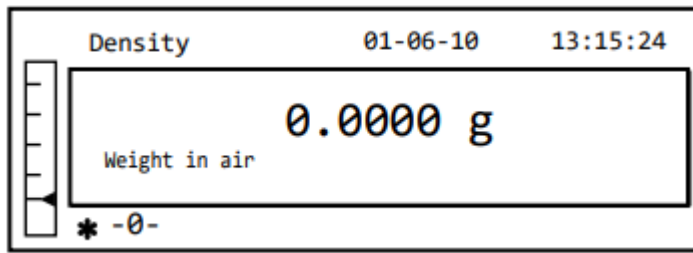
2. Then press the **PRINT** button to confirm the selection.
3. The density value of the liquid to be used will be displayed. The default value is equal to 1.0000 (distilled water at 20°C).



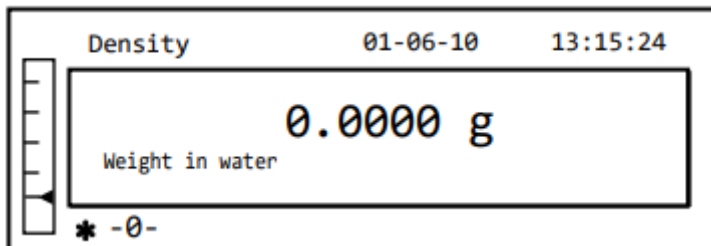
4. It is possible to insert a different value using the **CAL** and **MENU** buttons to increase and decrease the value, while pressing the **O/T** button to move to the next value. During the entering phase, holding down the **O/T** button allows you to cancel the inserted value.



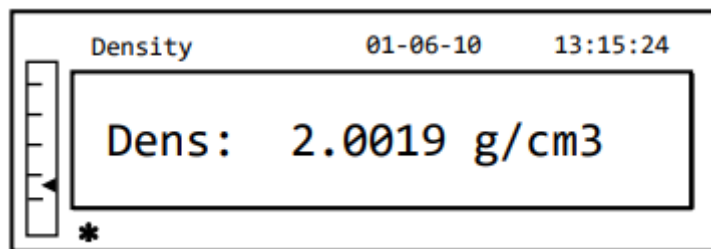
5. Once the desired value has been set, press the **PRINT** button.
6. It will now prompt you to weigh the solid in the air.



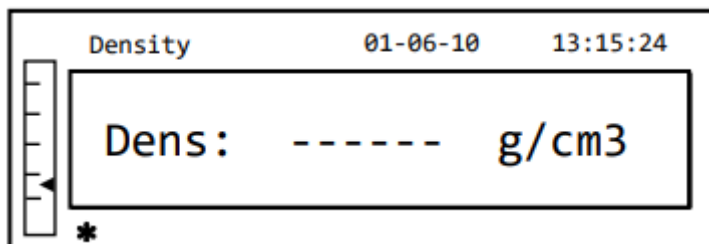
7. Perform a tare if necessary and load the solid. Wait for the stability symbol to appear and press the **PRINT** button to acquire the value. The word 'wait...' will appear during the acquisition of the value.
8. The weight of the solid in the liquid will then be requested. Carry out the tare of the drum in the liquid. Put the solid in the drum, immerse the solid, and wait for the stability indicator to appear. Then press the **PRINT** button. The word 'wait...' will be displayed during the acquisition of the value.



9. The result of the density calculation of the solid will now be displayed. If the balance is equipped with a printer, it will be possible to print the density value by pressing the **PRINT** button.



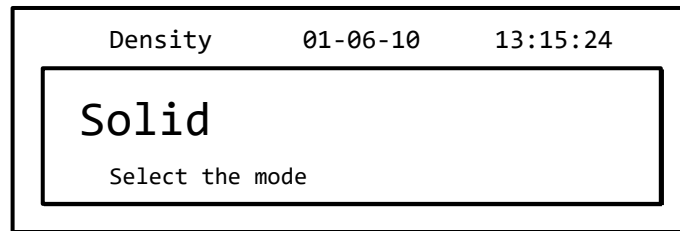
10. The following string will be shown on the display in case of error:



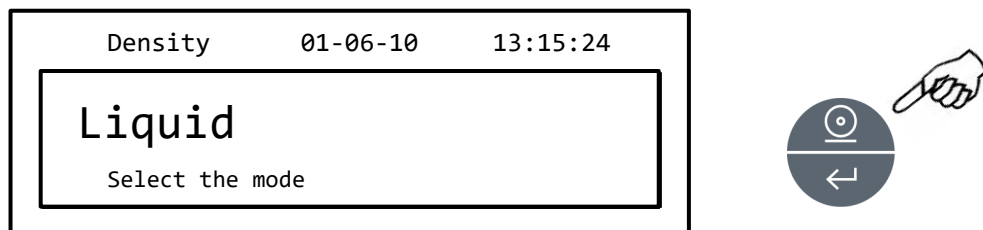
11. Now press the **ON/OFF** button to exit the density function, or the **MENU** button to perform the density measurement for another solid.

11.2.2 Density determination of liquids

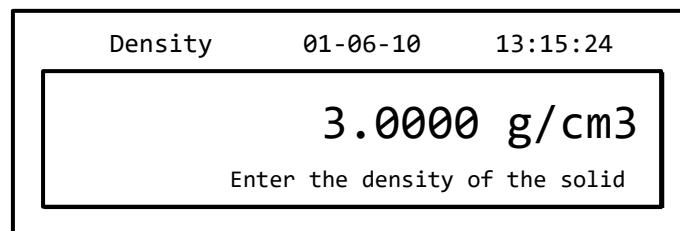
1. Select the density mode as described in paragraph 10.
The following screen will be shown on the display:



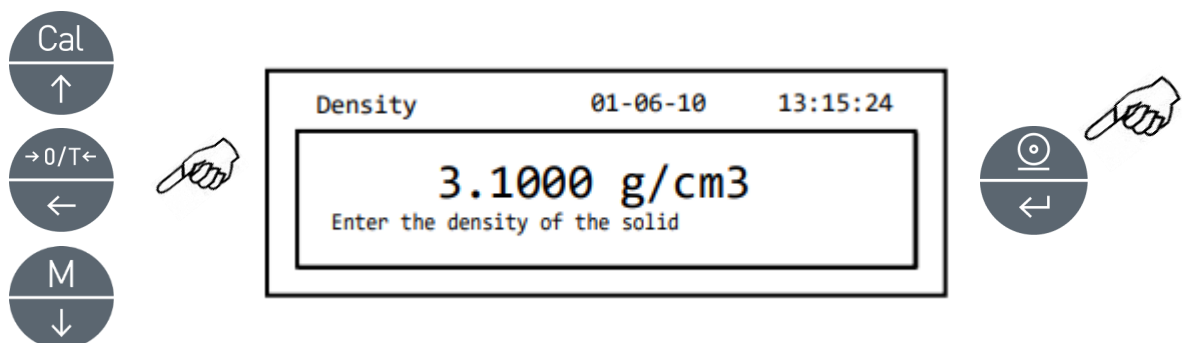
2. Press the **MENU** button to select liquid mode. Then press the **PRINT** button to confirm.



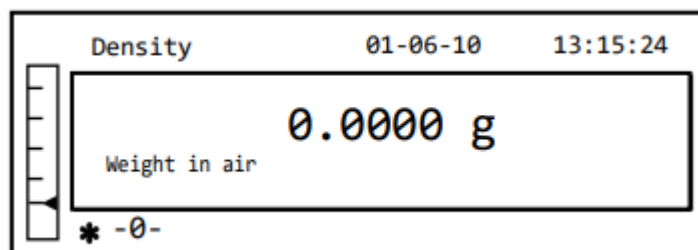
3. The default value of the solid's density will be displayed. The default value is equal to 3.0000 g/cm^3 .



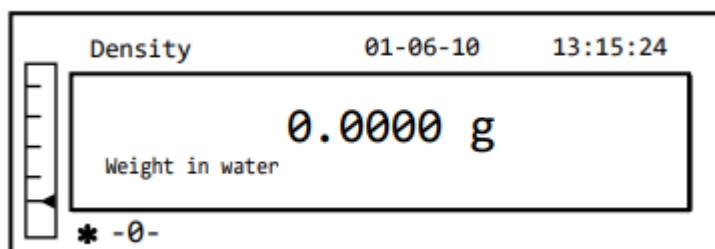
4. A different value can be entered by using the **CAL** and **MENU** buttons to increase and decrease the value, while pressing the **O/T** button to pass to the next value. During the entering phase, holding down the **O/T** button allows you to delete the inserted value.



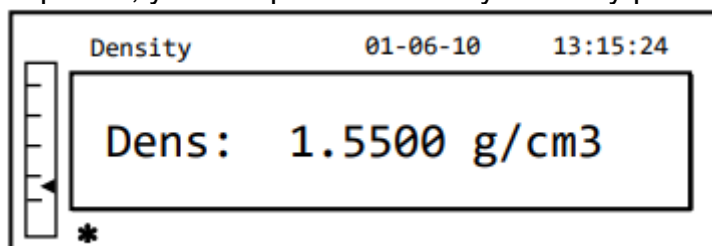
5. Once the desired value has been set, press the **PRINT** button.
6. It will now prompt you to weigh the dipstick in the air.



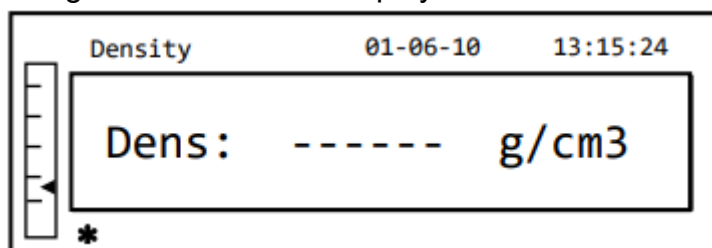
7. Carry out a tare if necessary and load the dipstick. Wait for the stability symbol to appear and press the **PRINT** button to acquire the value. The word 'wait...' will appear during the acquisition of the value.
8. The weighing of the dipstick immersed in the liquid will then be requested. Then immerse the solid in the liquid, wait for the stability indicator to appear, and then press the **PRINT** button. The word 'wait...' will be displayed during the acquisition of the value.



9. The result of the density calculation of the liquid will now be displayed. If the balance is equipped with a printer, you can print the density value by pressing the **PRINT** button.



10. The following string will be shown on display in case of error:

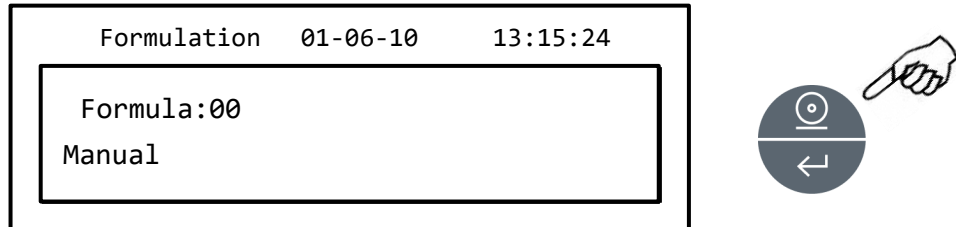


11. Now press the **ON/OFF** button to exit the density function, or the **MENU** button to perform the density measurement for another liquid.

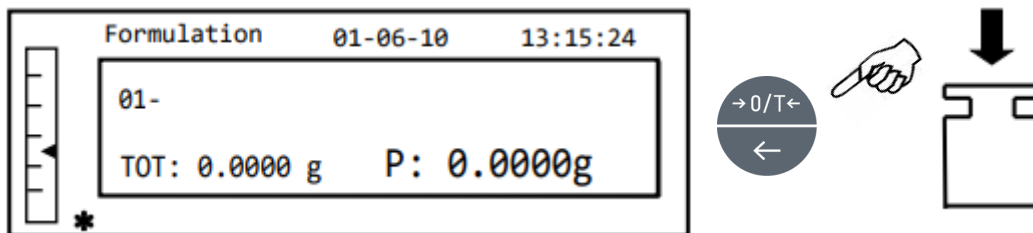
11.3 Formulation function

11.3.1 Manual formulation

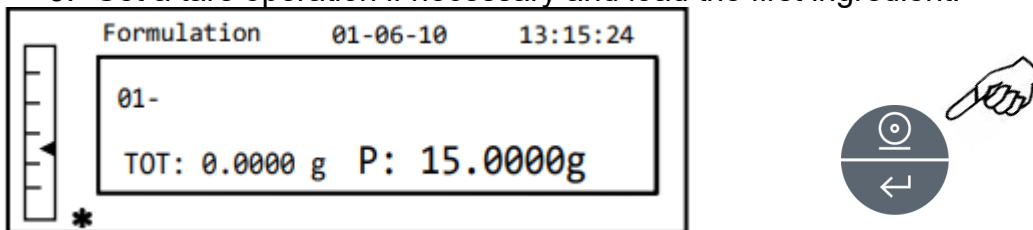
1. Select the formulation program as described in paragraph 10. The following screen will be shown on the display:



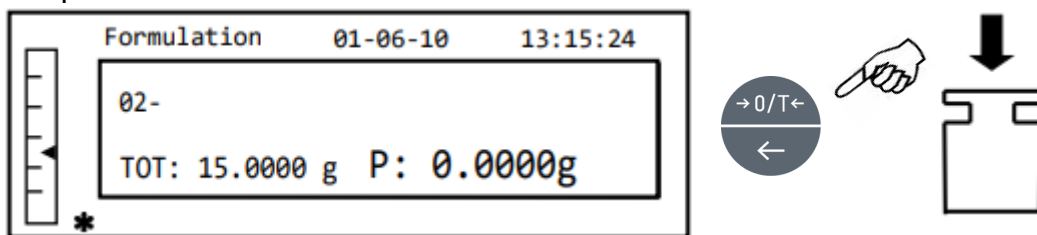
2. Then press the PRINT button to confirm the selection.



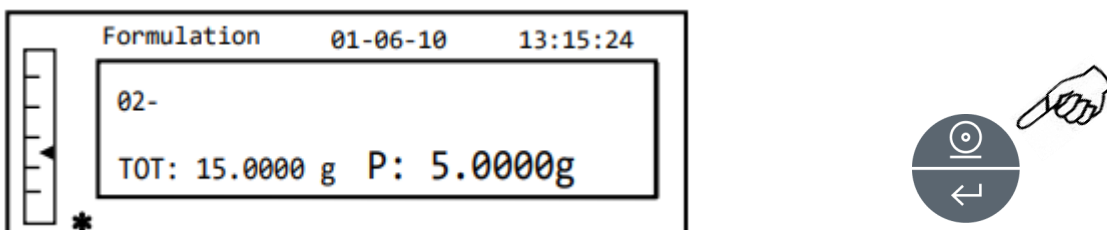
3. Set a tare operation if necessary and load the first ingredient.



4. Then press the **PRINT** button to confirm.



5. Set a tare operation if necessary and load the second ingredient.

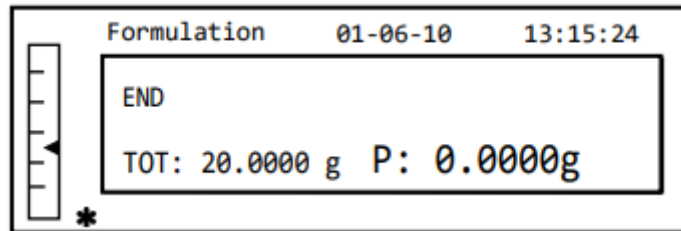


6. Then press the **PRINT** button to confirm.

7. Repeat the operation for a maximum number of 99 ingredients.

Note: During the acquisition of the ingredient, the display of Err10 indicates a negative weight value. Check whether a mistake has been made with the ingredient loading and zeroing procedure.

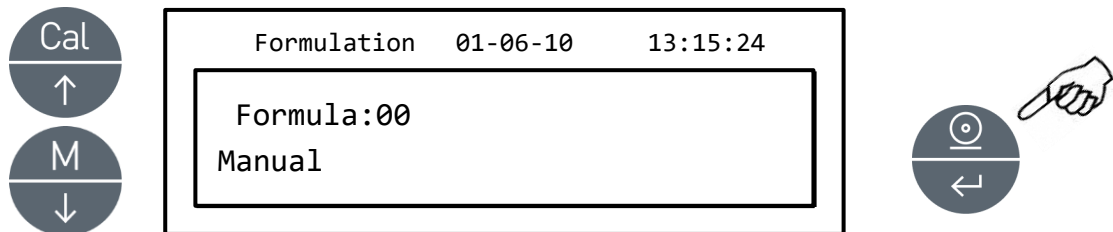
8. To end, print the value of the individual components and the total value, and press and keep pressed the **PRINT** button until the beeping stops. The display will show the following screen:



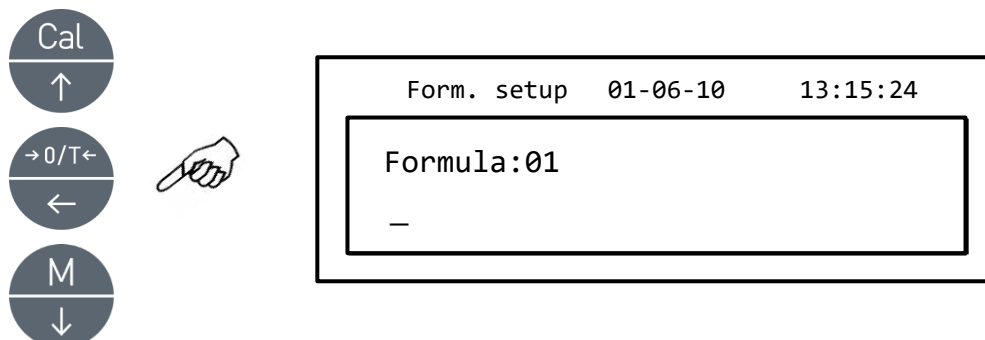
9. To exit the screen and perform a new formulation, press the **ON/OFF** button once. To exit the program and return to the weighing screen, press the **ON/OFF** button two consecutive times.

11.3.2 Formula saving

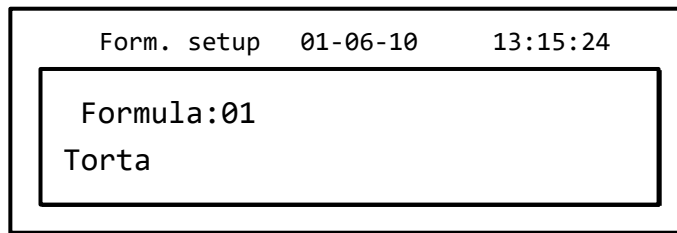
1. Select the formulation mode as described in paragraph 10. The following screen will be shown on the display:



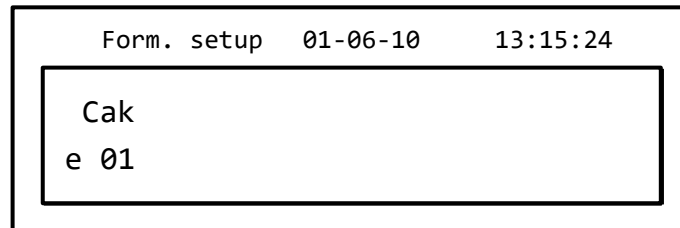
2. Select the number of the formula to save or modify using the **CAL** and **MENU** buttons to increase and decrease the value, after the word 'Formula'. Hold down the **PRINT** button until the beeping stops to confirm the selection and enter the 'setup formula' menu.



3. Enter the name of the formula (it can be a series of numbers or letters, max 20 characters) using the **MENU** or **CAL** buttons to scroll all of the available characters, and the **TARE** button to move to the next character. To select the uppercase or lowercase character, press and hold the **MENU** button until the beeping stops.

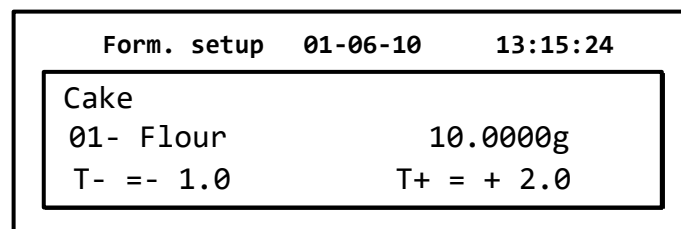


4. Press the **PRINT** button to confirm.



5. Enter the name of the first component (it can be a series of numbers or letters, max 11 characters) using the **MENU** or **CAL** buttons to scroll through the available characters.

6. Then press the **PRINT** button to confirm and save the value.



7. Now enter the quantity of the component using the **MENU** or **CAL** buttons to increase or decrease the value while pressing the **O/T** button to move to the next value and the **PRINT** button to move to the next parameter

8. Now enter the negative tolerance and press **PRINT** button to move to the next parameter

9. Now enter the positive tolerance.

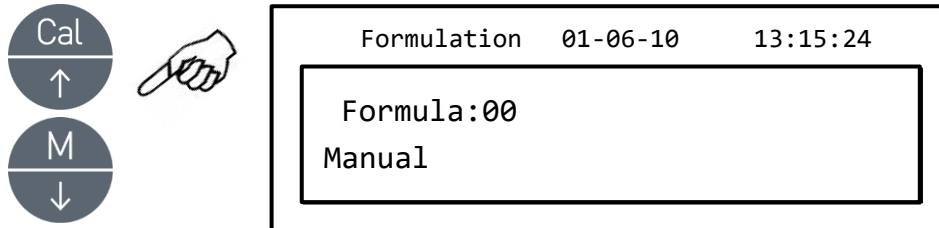
10. Then press the **PRINT** button to confirm and save the value.

11. Repeat the operation described from point 5 to point 10 to enter all of the desired components up to a maximum of 20.

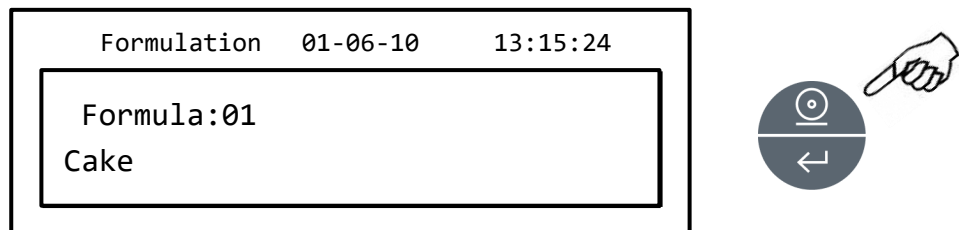
12. After entering all of the desired components press the **ON/OFF** button to exit from the formula saving procedure.

11.3.3 Formula recall

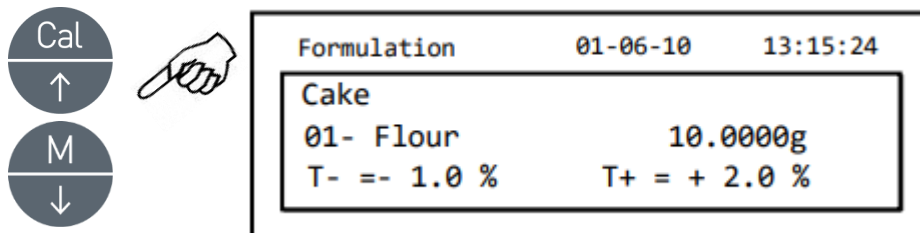
1. Select the formulation program as described in paragraph 10. The following screen will be shown on the display:



2. Choose the name of the formula (previously saved) using the **CAL** and **MENU** keys to scroll through the various formulas.

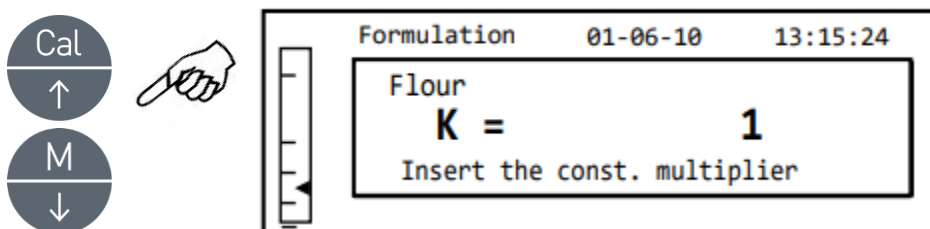


3. Then press the **PRINT** button to confirm the selection.



4. It will now be possible to display various components and relative quantities of the selected formula using the **MENU** and **CAL** buttons.

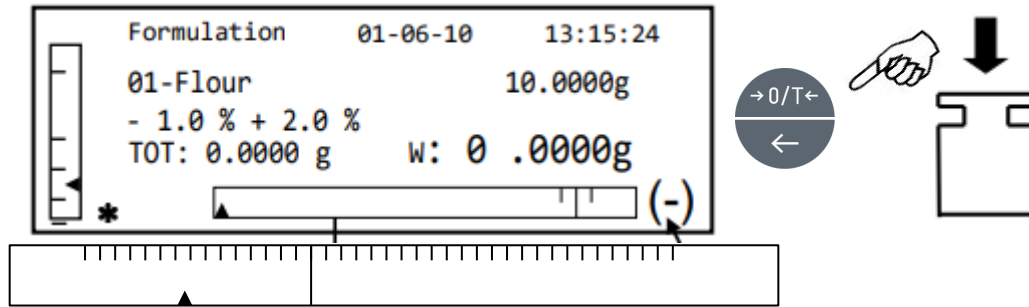
5. Press the **PRINT** button again to insert the constant multiplier.



6. Insert now the multiplicative constant K to determine the desired amount of product. Use the **MENU** or **CAL** buttons to increase or decrease the value.

Example: if the entered formula is for 100g of product, inserting $K = 2$ the values of all components will be recalculated to obtain a total amount of product equal to 200g.

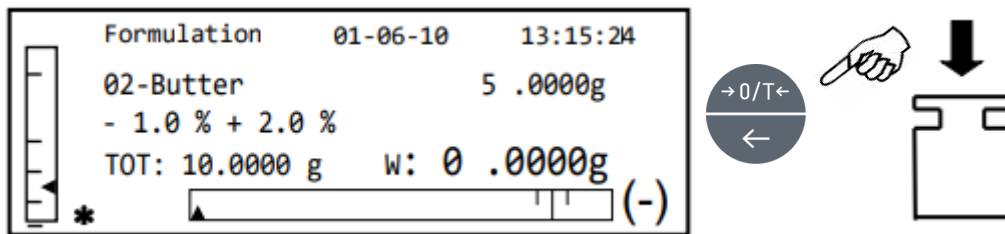
- Press the **PRINT** button again to begin weighing the various components. If necessary, perform the tare operation before measuring out the quantity of component indicated at the top right of the display.



(-) means that weight is under the value, (+) means that weight is over the value, OK means that weight is inside values

To facilitate the dosing operation, when the value of the component is approaching the threshold of the acceptable value, the dosing bar will automatically zoom.

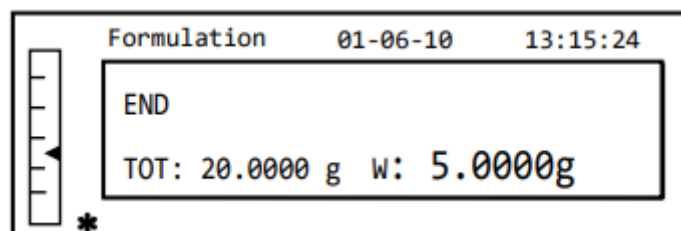
- Then press the **PRINT** button to pass to the next component.



- If necessary, perform the tare operation before measuring out the quantity of component indicated at the top right of the display.

- Then press the **PRINT** button to pass to the next component.

- Repeat the procedure until the last component, after which the weights of the single component measured, and the total weight will be printed if the instrument is equipped with a printer. The display will show the following screen:



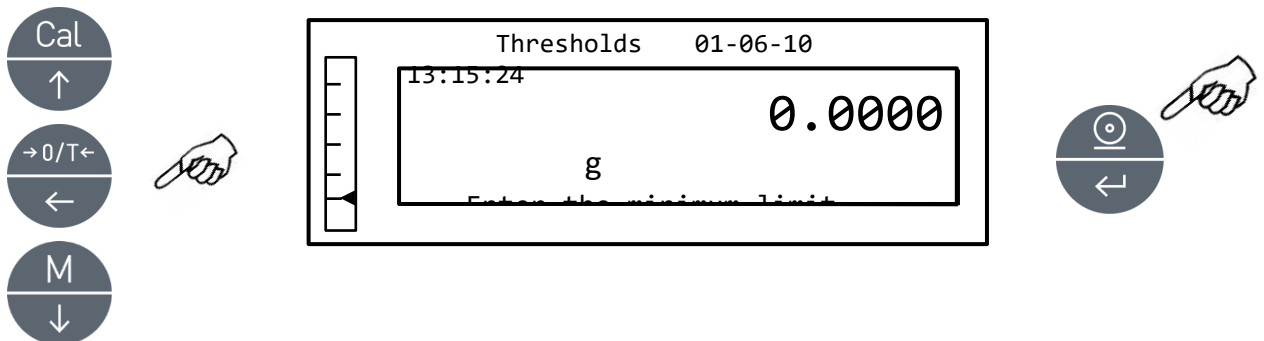
- To exit the screen and perform a new formulation, press the **ON/OFF** button once. To exit the program and return to the weighing screen, press the **ON/OFF** button two consecutive times.

To interrupt and exit from the formulation function at any time, press the ON/OFF button.

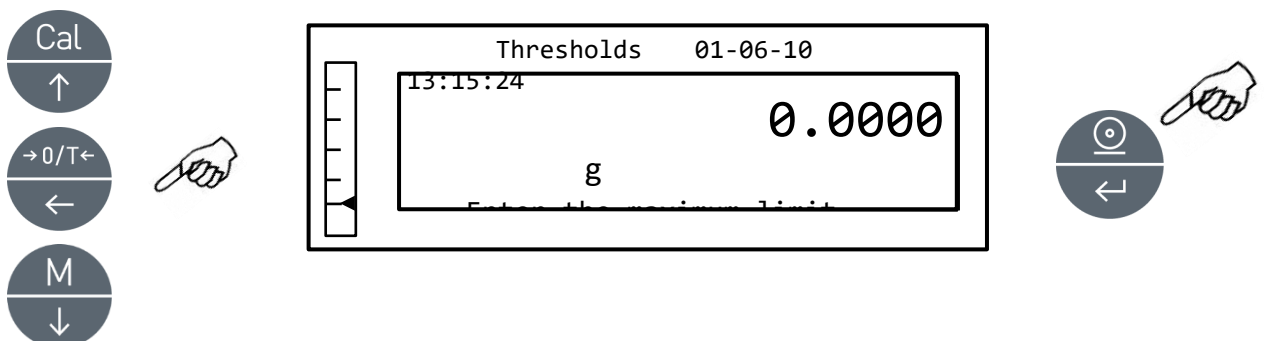
11.4 Max-Min thresholds function.

The threshold function allows you to determine if the weight loaded on the plate is above or below two thresholds pre-set by the user.

1. Select the thresholds function as described in paragraph 10. The following screen will be shown on the display:

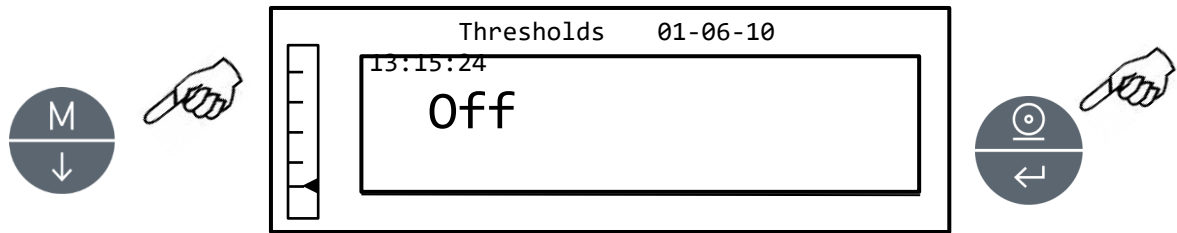


2. Enter the MINIMUM limit value by using the **CAL** and **MENU** buttons to increase and decrease the value, while pressing the **O/T** button to pass to the next number. During the entering phase, holding down the **O/T** button allows you to delete the entered value.
3. Then press the **PRINT** button to confirm. The entered value will remain in memory until the balance is turned off.
4. The following screen will then be displayed.

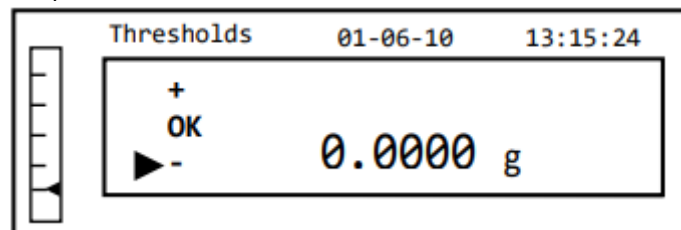


5. Now insert the MAXIMUM limit using the same procedure described for the insertion of the MINIMUM limit.
6. Then press the **PRINT** button to confirm. The entered value will remain in memory until the balance is turned off.

7. The following screen will then be displayed.



8. With the **MENU** key, select the activation or not of the acoustic signal (buzzer) when the weight is within the two set limits. Then confirm the selection by pressing the **ENTER** button.
9. If the thresholds have been inserted correctly, the balance will return to weighing mode with an indication of the threshold status (+ MAX threshold, - MIN threshold, **OK** within the two limits sets).



NOTE: If the values have not been set correctly, the word **ERROR 07** will be displayed.

The threshold function has three operating modes.

11.4.1 With both limits set

This mode allows to identify an acceptance range, inserting a lower limit and an upper limit, in which the value of weight is considered acceptable, identified by the "OK" symbol that is visualized on the display together with the acoustic signal, if activated. When the weight is under the value of the lower limit, the symbol "L" is visualized on display, while if the value is over the upper limit, the symbol "H" is visualized on display.

11.4.2 With only the lower limit set

When only the lower limit is set and the upper limit is left to zero, the weight is considered acceptable each time the value of weight is over the lower limit set, identified by the "OK" symbol that is visualized on the display together with the acoustic signal, if activated. When the weight is under the value of the lower limit set, the symbol "L" is visualized on display.

11.4.3 With only the upper limit set

When only the upper limit is set and the lower limit is left to zero, the weight is considered acceptable each time the value of weight is under the upper limit set, identified by the "OK" symbol that is visualized on the display together with the acoustic signal, if activated. When the weight is over the value of the upper limit set, the symbol "H" is visualized on display.

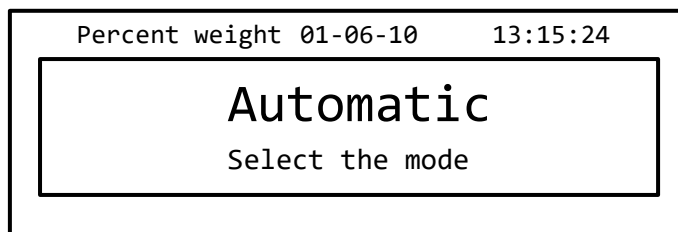
11.5 Percentage weighing function

This function allows you to read the weight as a percentage of a reference weight. The reference weight is assumed as the 100% value (factory setting).

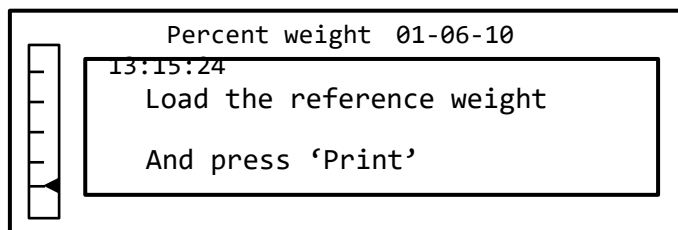
There are two modes for the acquisition of the reference weight – an automatic one (with reference weight), and a manual one (with the manual entry of the reference weight value).

11.5.1 Automatic mode with reference weight

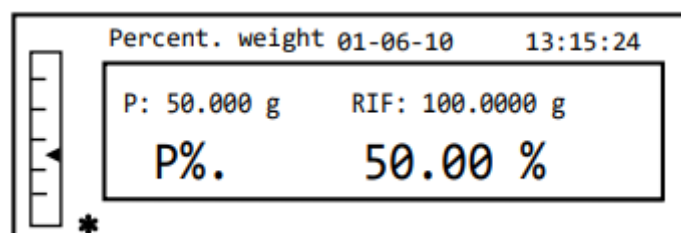
1. Select the percentage weighing function as described in paragraph 10. The following screen will be shown on the display:



2. Confirm the automatic mode by pressing the **PRINT** button.
3. The tare will be carried out and you will be asked to load the reference weight on the plate.



4. Load the reference weight on the plate and then press the **PRINT** button; the word "**Wait**" will be shown. Once the weight is acquired, a screen with an indication of the weight loaded, reference weight, and percentage weight will be shown.

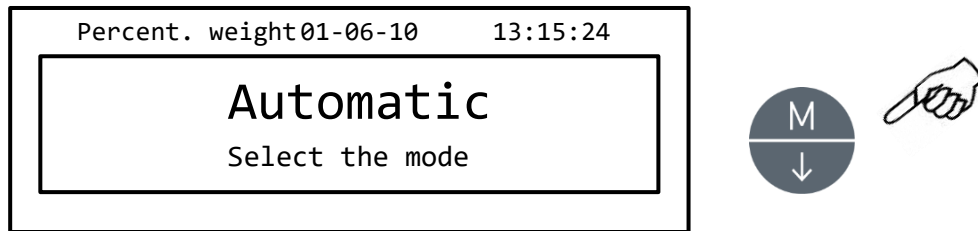


5. Now remove the reference weight, load the sample and read the percentage weight.
6. Press the **ON/OFF** button to exit the percentage weighing function.

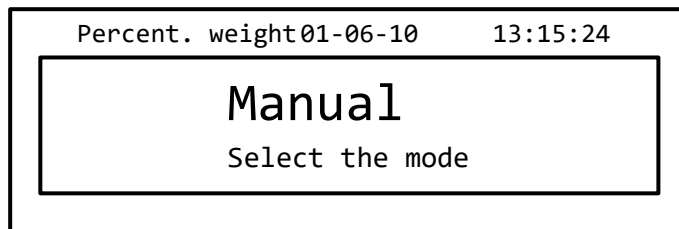
NOTE: If the reference weight is less than 10 displayed digits, the word **ERROR 07** will be shown.

11.5.2 Mode with manual insertion of the reference weight

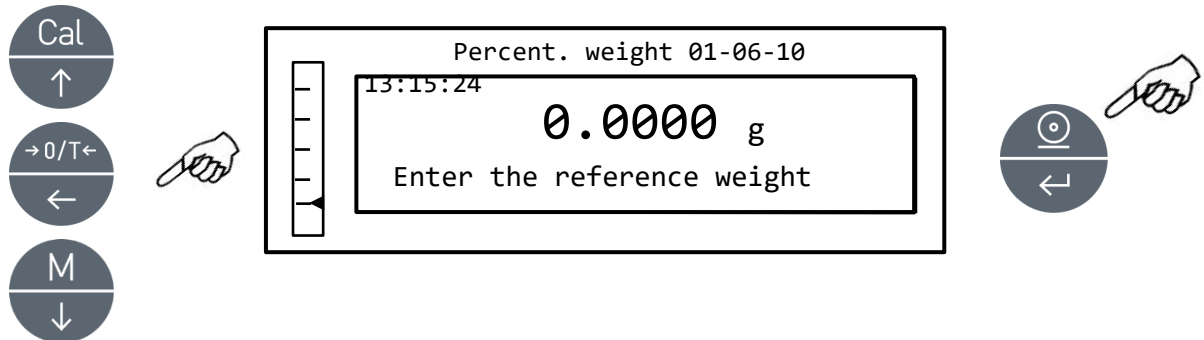
1. Select the percentage weight function as described in paragraph 10. The following screen will be shown on the display:



2. Press the **MENU** button to select manual mode

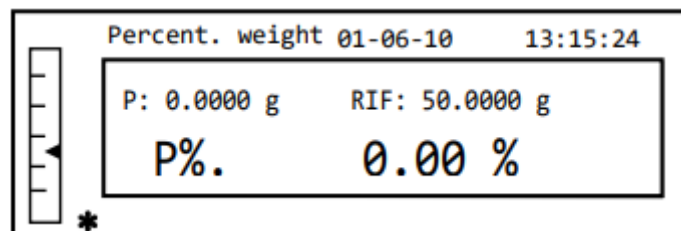


3. Confirm manual mode by pressing the **PRINT** button.



4. You can now enter the reference weight value, using the **CAL** and **MENU** keys to increase and decrease the value, while pressing the **O/T** button to move to the next value. During the entry phase, holding down the **O/T** button allows you to delete the entered value. The entered value will remain in memory until the balance is switched off. It is also possible to enter the value using the optional alphanumeric keypad.

5. After inserting the desired reference weight value, press the **ENTER** key.



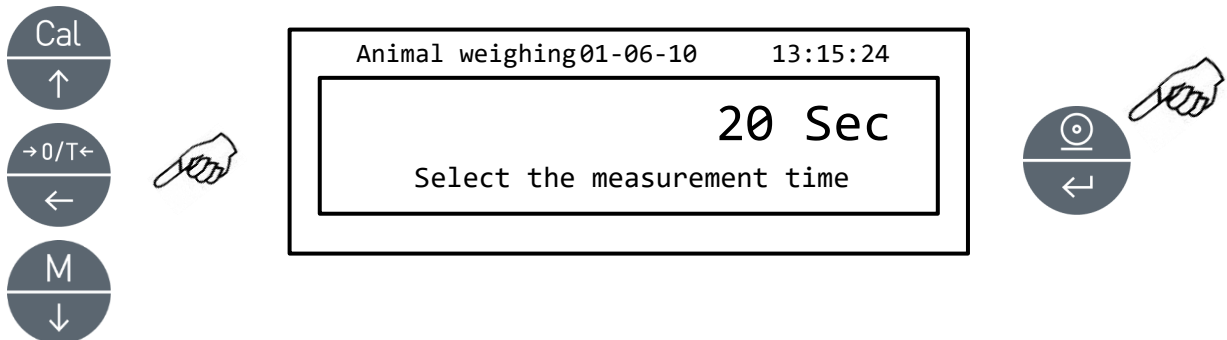
6. Now load the sample and read the percentage value.
7. Press the **ON/OFF** button to exit the percentage weighing function.

NOTE: If the reference weight is less than 10 displayed digits, the word **ERROR 07** will be shown.

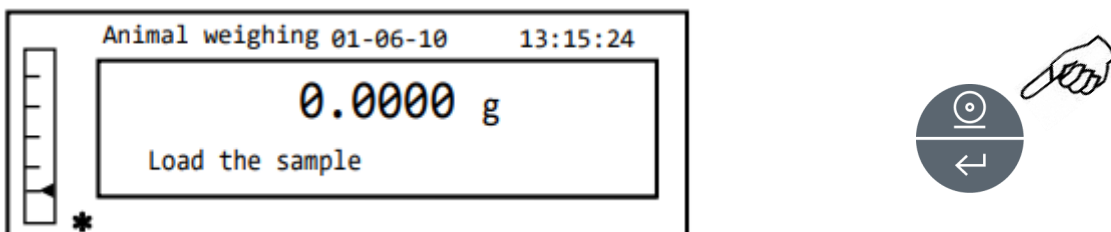
11.6 Animal weighing function

This function allows you to acquire an average weight of moving objects or animals for a settable period of time.

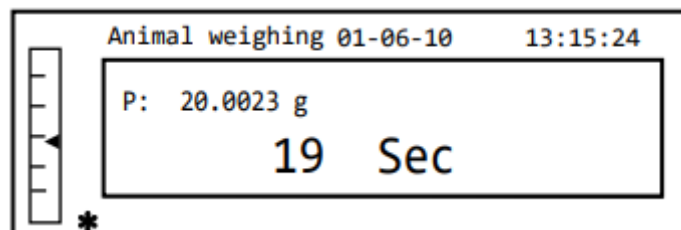
1. Select the animal weighing function as described in paragraph 10. The following screen will be shown on the display:



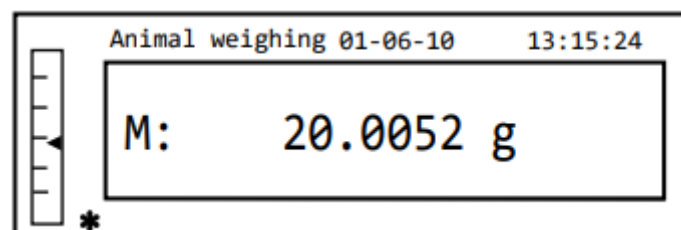
2. Set the desired time from 5 to 90 seconds using the **MENU** key to decrease and **CAL** to increase. Then confirm by pressing the **PRINT** button.



3. Load the sample to be weighed on the plate and press the **PRINT** button; the value of the current weight and the set sampling countdown time will be displayed.



4. Once acquired, the weight will be shown on the display with an indication of the average weight detected.

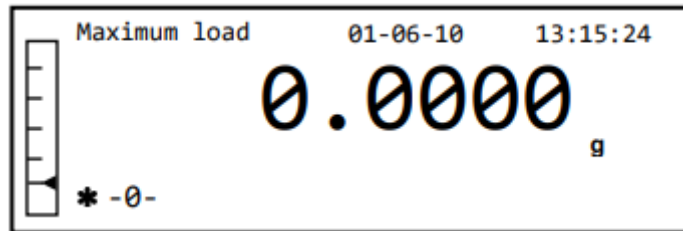


5. Press the **ON/OFF** button once to perform another measurement, or twice to exit the function.

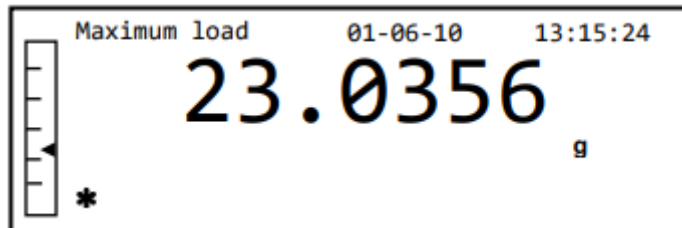
11.7 Maximum load function

The “maximum load” function allows you to measure the maximum breakage load of a solid.

1. Select the maximum load function as described in paragraph 10.
A tare will automatically be performed and the following screen will be shown on the display with an indication of the maximum load function at the top left:



2. The breakage weight can now be detected.

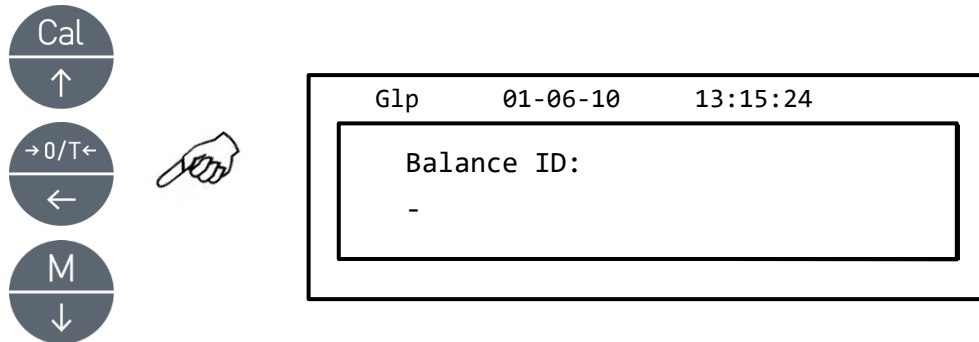


3. Press the **TARE** button to perform another measurement.
4. Press the **ON/OFF** button to exit the maximum load function.

11.8 GLP function (Good Laboratory Practices)

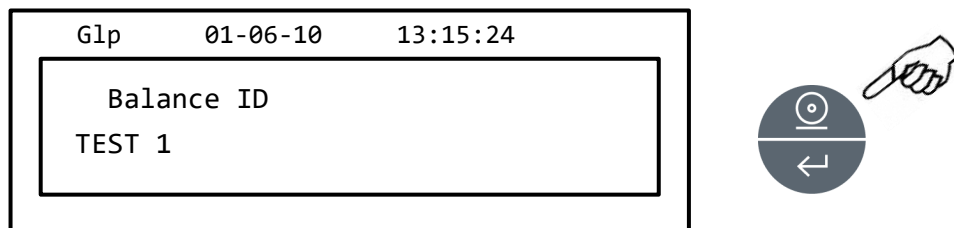
The “GLP” function allows you to save the identifying parameters of the instrument and operator to be able to print them along with the value of the test results.

1. Select the GLP function as described in paragraph 10. The following screen will be shown:



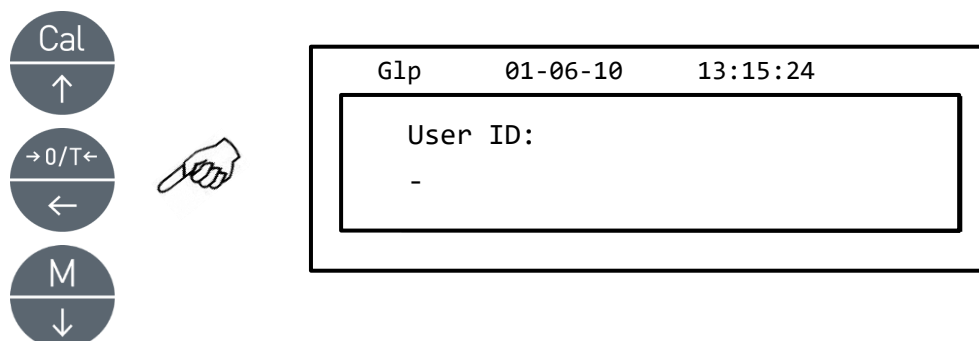
2. Enter the balance ID (it can be a series of numbers or letters, max 18 characters) using the **MENU** and **CAL** buttons to scroll through all of the available characters. To select uppercase or lowercase characters, press and hold the **MENU** button until the beeping stops.

Note: It is also possible to set the value by using the optional alphanumeric keypad.

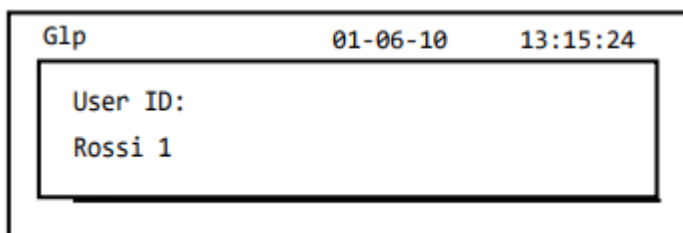


3. Enter the user ID (it can be a series of numbers or letters, max 18 characters) using the **MENU** and **CAL** buttons to scroll through all of the available characters.

Note: It is also possible to set the value by using the optional alphanumeric keypad.

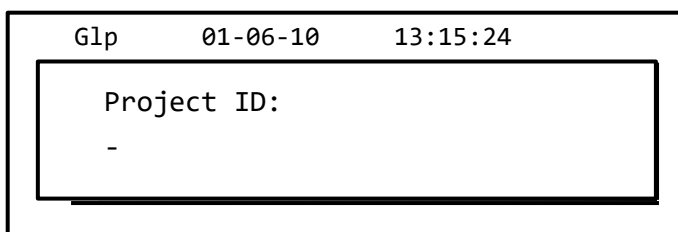
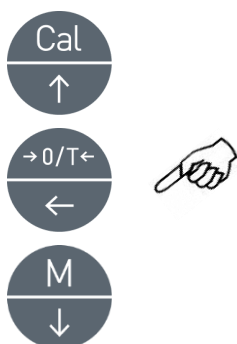


4. Confirm by pressing the **PRINT** button.

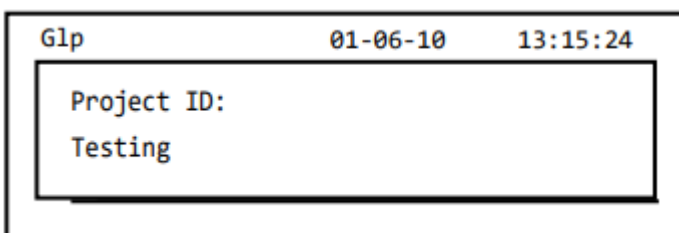


5. Enter the project identifier (it can be a series of numbers or letters, max 18 characters) using the **MENU** and **CAL** buttons to scroll through all of the available characters.

Note: It is also possible to set the value by using the optional alphanumeric keypad.



6. Then confirm all of the data entered by holding down the **PRINT** button until the beeping stops.



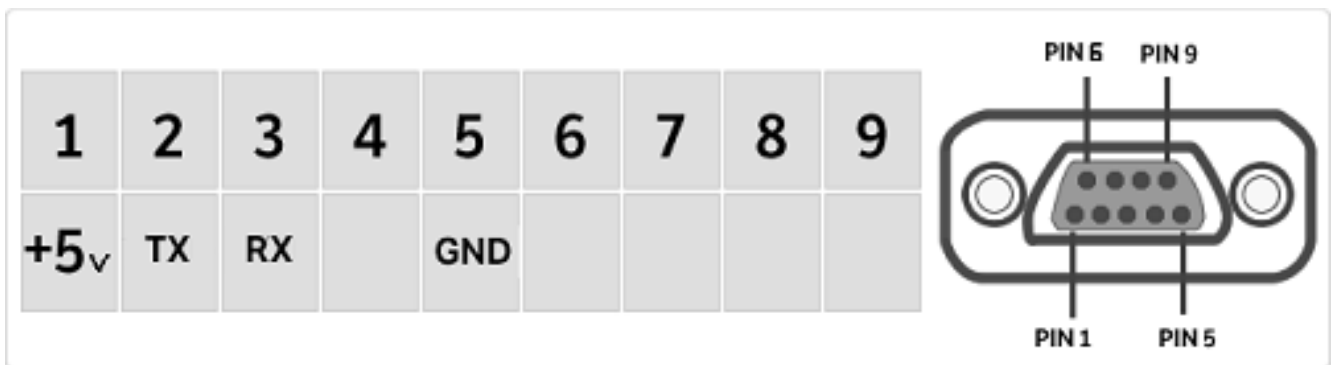
7. The balance will automatically return to the weighing screen.

12 RS232 Interface features

12.1 General features

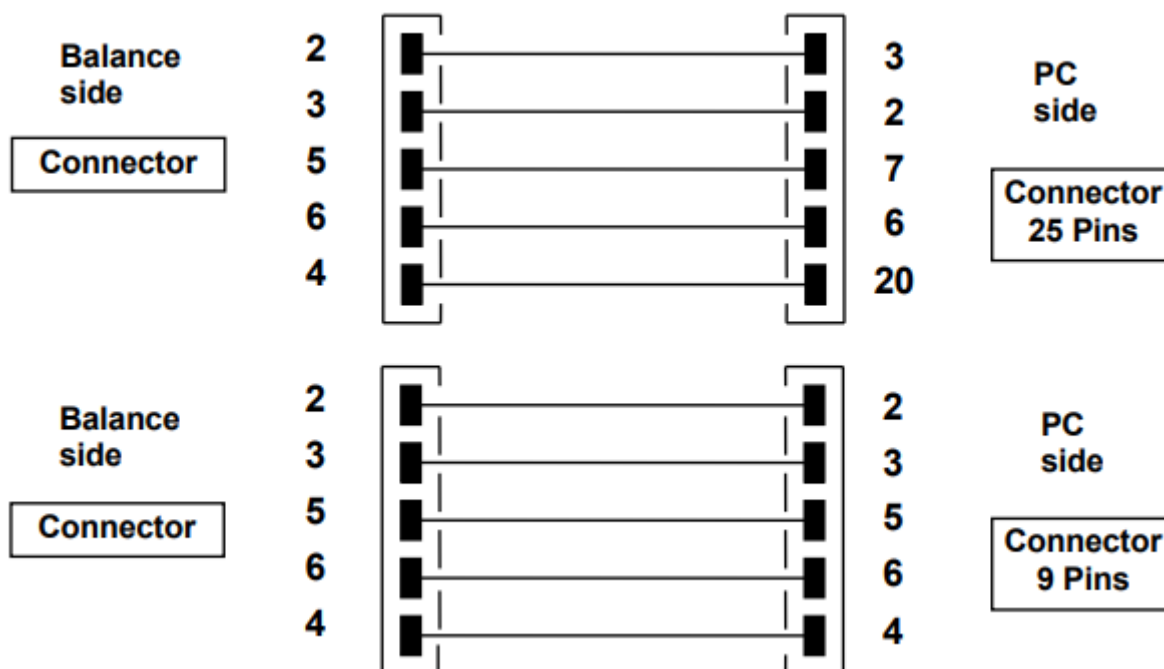
The balance transmits the value visualized on the display following serial RS232C standard, allowing to print the value of weight to a PC monitor or to a serial printer. In the case of connection to a PC, it will be possible to select the transmission in continuous mode or transmission at user command through pressing of the PRINT button. The balance is also capable of receiving commands, always through the RS232C standard, that allow performing all the functions available through the PC keyboard itself. The speed of transmission and reception can be selected, as described previously, to 1200, 2400, 4800, e 9600 baud. The character format is of 8 bit preceded by one bit of start and followed by a bit of stop. Parity is not considered.

12.2 Connector map



12.3 Connection of the Balance to computer

To receive/transmit data, link the balance connector to the serial port of your Personal Computer as shown below:



There are three ways of transmission in which the Balance and the computer can be interfaced:

- Continuous transmission of weighing data (continuous mode must be set from the menu as explained in paragraph 10.2).
- On demand transmission of weighing data (on demand mode must be set from the menu as explained in paragraph 10.2).
- On demand transmission of weighing data with GLP (on demand mode with GLP must be set from the menu as explained in paragraph 10.2).

In all modes it is possible to execute all the balance's functions directly from the computer's keyboard, transmitting to balance the ASCII codes as shown in the table below.

CODE	1 st FUNCTION (SINGLE PRESS)
"T" = H54	TARE
"C" = H43	CALIBRATION
"E" = H45	ENTER
"M" = H4D	MENU
"O" = H4F	ON/OFF

CODICE	2nd FUNCTION (HOLD DOWN)
"t" = H74	TARE
"c" = H63	CALIBRATION
"e" = H65	ENTER
"m" = H6D	MENU
"o" = H6F	ON/OFF

12.3.1 Continuous Transmission mode

The transmitted string is composed of the following 14 characters:

- 1st character: weight sign (blank or -)
- 2nd to 9th character: weight or other data
- 10th to 12th character: weighing unit symbol
- 13th character: stability indicator
- 14th character: carriage return
- 15th character: line feed

Any non-significative zeroes are set as spaces.

In the following table the various transmission formats are shown:

1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	13°	14°	15°
Sign	weight								measure unit			Stability	CR	LF

Weight mode (valid for both continuous and on demand transmission)

When in on demand mode, the data transmitted to the computer does not include only the weight value but also date/time and other information that depend on the function in use. Below you can see an example of data transmitted in each situation:

WEIGHT:

```
-----  
03-04-11 10:13:44  
-----  
Weight:      0.00 g
```

PIECE COUNTING:

```
-----  
03-04-11 10:49:28  
-----  
Pcs.:        10  
Weight:      100.02 g  
MPW:         10.00 g
```

DENSITY:

```
-----  
03-04-11 10:51:15  
-----  
d: 1.4504 g/cm3
```

FORMULATION:

03-04-11 10:54:57

Manual

- 1. 31.05 g
- 2. 100.02 g
- 3. 26.89 g

T = 157.96 g

NOTE: To transmit the print of totalization of weights, hold down the PRINT button

THRESHOLDS:

Value under threshold

Value inside thresholds

Value over threshold

03-04-11 11:02:19

03-04-11 11:01:50

03-04-11 11:01:50

Lim.1 : 10.00 g
Lim.2 : 100.00 g
Weight: -0.01 g
TEST: KO! ---

Lim.1 : 10.00 g
Lim.2 : 100.00 g
Weight: 31.08 g
TEST: OK!

Lim.1 : 10.00 g
Lim.2 : 100.00 g
Weight: 131.10 g
TEST: KO! +++

PERCENTUAL WEIGHT

03-04-11 11:58:39

Perc. 100.0 %
Weight: 18.69 g
Refer.: 18.69 g

ANIMAL WEIGHING:

03-04-11 12:01:06

Time = 20 Sec
M: 56.53 g

MAXIMUM LOAD:

03-04-11 12:01:57

Max.: 2.76 g

12.3.2 On demand transmission with G.L.P.

In the on-demand transmission with G.L.P., the data transmitted to the computer is the same in case of the on-demand transmission without G.L.P. mode but with the addition of G.L.P. parameters before of each transmission, as described below:

```
-----  
03-04-11 12:14:03  
Balance ID:  
A99  
User ID:  
MR.ROSSI  
Project ID:  
TEST  
-----  
Weight: 18.71 g  
-----  
Signature:  
-----
```

} G.L.P. parameters

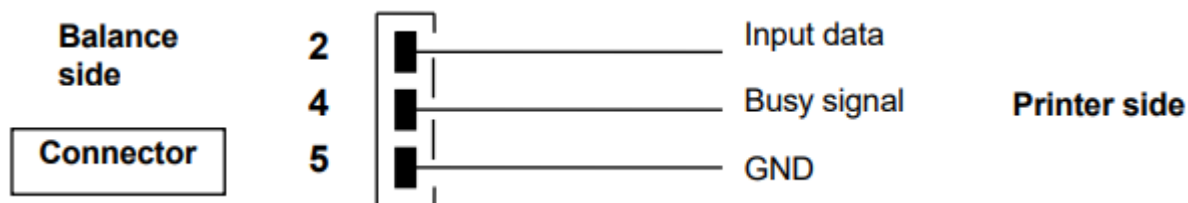
} Weight data

} G.L.P. parameters

12.4 Connection with serial printer

It is possible to connect the balance to a printing peripheral.

To print the weighing data, connect the balance connector to the serial printer as shown in the scheme below:



Several modes of printing can be selected:

- Printing the weighing data with a generic serial printer (from the menu, set the generic printing mode as described in paragraph 10.2 and wait until it stops beeping).
- Print of weighing data together with GLP indications with generic serial printer (from the menu, set the generic printing-GLP mode as described in paragraph 10.2 and wait until it stops beeping)
- Print of weighing data with printer model TLP50 (from the menu, set the printer TLP mode as described in paragraph 10.2).
- Print of weight data together with GLP indications with printer model TLP50 (from the menu, set the printer TLP - GLP mode as described in paragraph 10.2).

Note: In all different printing modes just described, if the weight is not stable during transmission of data to the printer, an acoustic signal is emitted and ERR05 is displayed and weighing data is not printed.

12.4.1 PRINTING FORMATS

Different types of printing formats, depending on the print mode and on the function can be selected:

Generic printing or TLP 50 printer

Weighing mode:

```
-----  
03-04-11 10:13:44  
-----  
Weight:      0.00 g
```

Piece counting:

```
-----  
03-04-11 10:49:28  
-----  
Pcs.:        10  
Weight:      100.02 g  
MPW:         10.00 g
```

Density:

03-04-11 10:51:15

d: 1.4504 g/cm3

Formulation:

03-04-11 10:54:57

Manual

1. 31.05 g
2. 100.02 g
3. 26.89 g

T = 157.96 g

NOTE: To transmit the print of totalization of weights, hold down the PRINT button

Thresholds:

Value under threshold

Value inside thresholds

Value over threshold

03-04-11 11:02:19

03-04-11 11:01:50

03-04-11 11:01:50

Lim.1 : 10.00 g

Lim.2 : 100.00 g

Weight: -0.01 g

TEST: KO! ---

Lim.1 : 10.00 g

Lim.2 : 100.00 g

Weight: 31.08 g

TEST: OK!

Lim.1 : 10.00 g

Lim.2 : 100.00 g

Weight: 131.10 g

TEST: KO! +++

Percentual weight:

03-04-11 11:58:39

Perc. 100.0 %

Weight: 18.69 g

Refer.: 18.69 g

Animal weighing mode:

03-04-11 12:01:06

Time = 20 Sec

M: 56.53 g

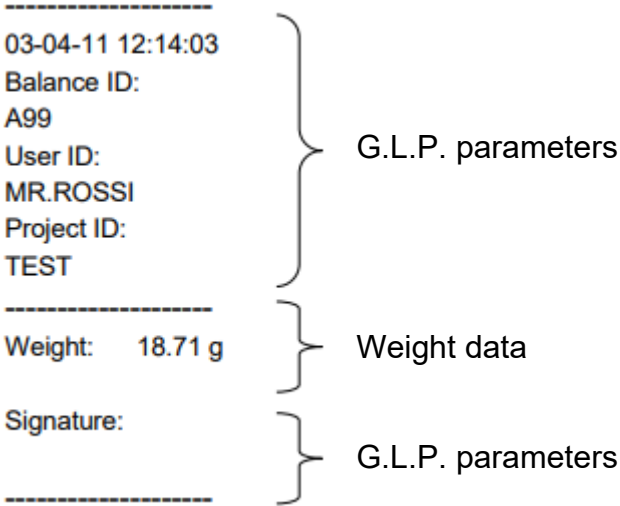
Maximum load:

03-04-11 12:01:57



Max.: 2.76 g

12.4.2 Generic Printer or TLP 50 printer with G.L.P.

In the printing mode with G.L.P. the printed data is the same as in the printing mode without G.L.P. but with the addition of G.L.P. parameters as shown below:



13 Error codes

ERROR MESSAGE ON DISPLAY	MEANING	POSSIBLE SOLUTIONS
ERR01	Weight not stable after tare	Protect the balance from air draft or from vibrations of the working table
ERR02	Impossible to start the calibration due to instability of the balance	Protect the balance from air draft or from vibrations of the working table.
ERR03	Calibration weight incorrect or balance unstable	Calibrate with correct weight or protect the balance from environmental disturbances. In models with internal calibration remove the screw in the left lower part of the balance (see par5)
ERR04	Sample weight for the piece counting function not adequate or unstable	Select a bigger number of samples or protect the balance from vibrations
ERR05	Impossible to print because of unstable weight	Protect the balance from environmental disturbances
ERR06	Weight cannot reach stability in density determination mode	Protect the balance from environmental disturbances
ERR07	Weight cannot reach stability in percentual weighing mode	Protect the balance from environmental disturbances
ERR08	Anomaly on autocalibration	Contact technical support
ERR09	Weight cannot reach stability in formulation mode	Protect the balance from environmental disturbances
ERR10	Component weight out of tolerance in formulation mode	Reduce quantity
ERR F	Flash memory damaged	Contact technical support
“UNLOAD”	Weight loaded on the pan or pan not positioned properly	Remove the weight from the pan or position properly the pan and underpan.
“CAL But”:	Balance requires to be re-calibrated	Unload the charge, if any, on the pan, and press the CAL button
	Range exceeded	Unload the charge off the pan
	Range not reached	Place pan and underpan properly

14 Maintenance and care

Regular maintenance of your balance guarantees accurate measurements.

- **Cleaning**

Before cleaning the balance unplug the balance. Do not use aggressive cleaning products (such as solvents or similar), use a humid cloth with soft detergent, avoid liquids entering the instrument while cleaning. Wipe the balance with a soft cloth. Parts of samples or powders can be removed using a brush or vacuum cleaner.

- **Safety checks**

Safety of the instrument cannot be guaranteed when:

- balance power supply is clearly damaged

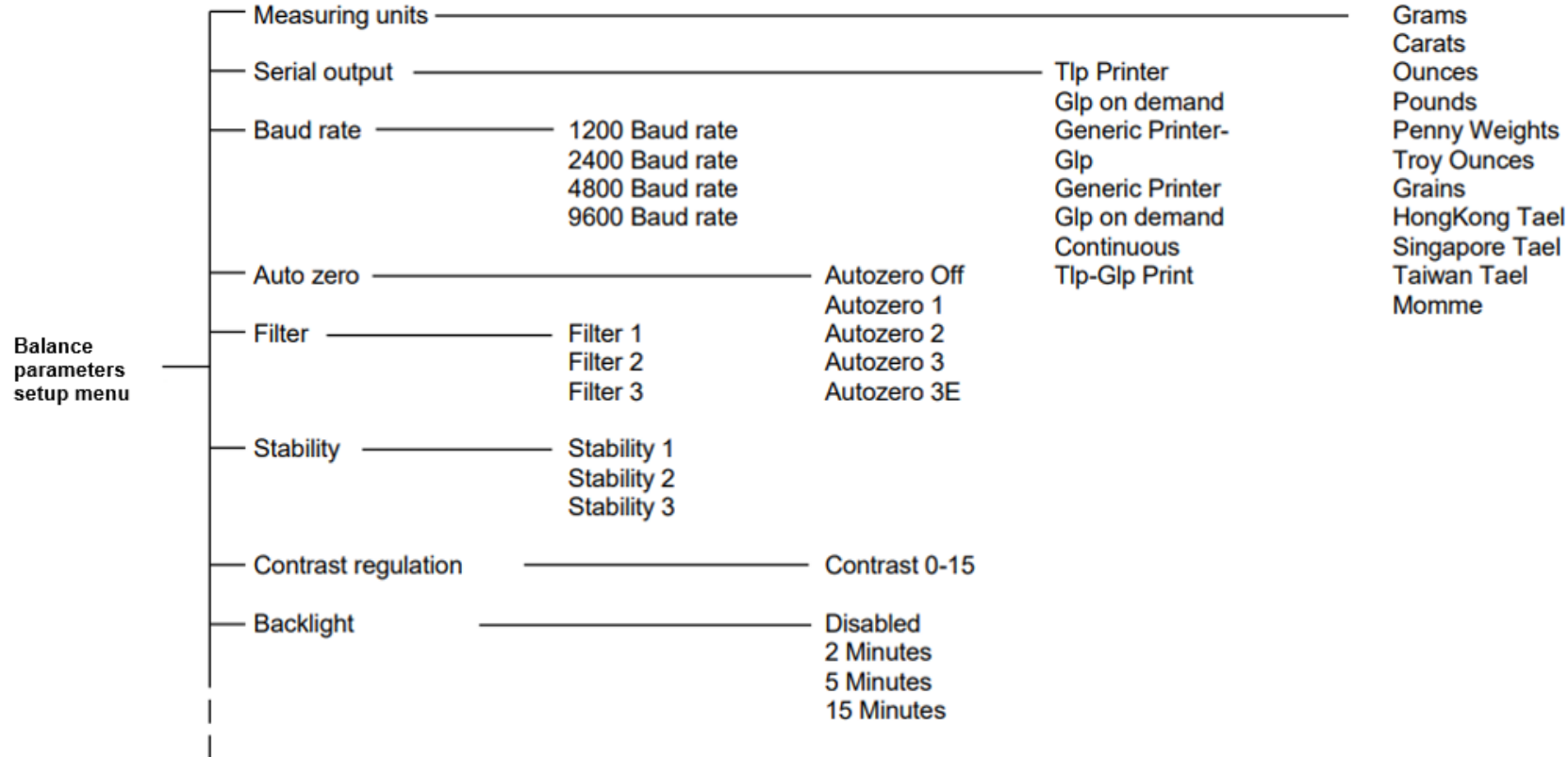
- balance power supply is not working

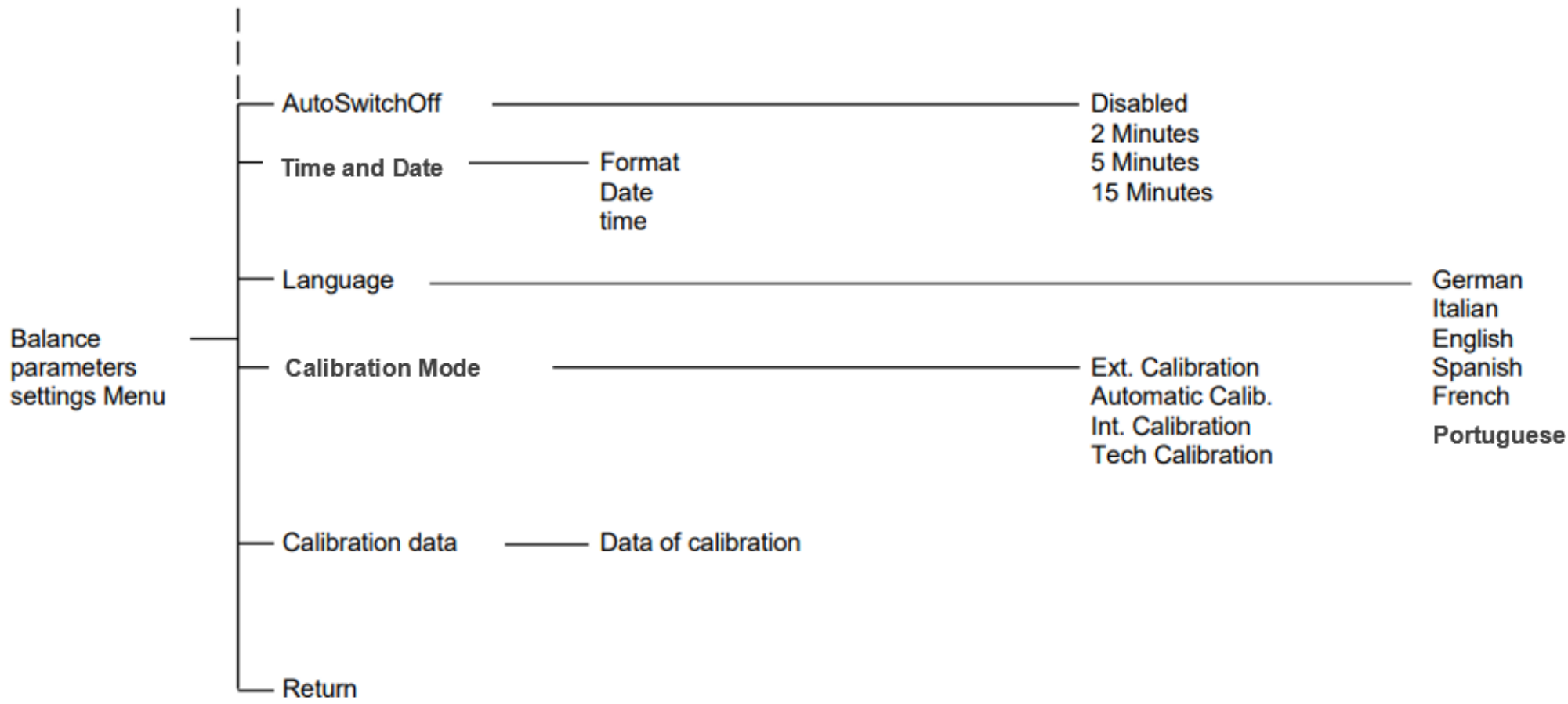
- balance power supply is stored in hard environment conditions for extended periods of time.

In these instances, refer to the technical support centre.

15 Quick guide to balance parameters setup

- To enter the balance parameters setup menu, hold down the **MENU** button until the beeping stops.
- Use the **MENU** button to move to the next parameter, use the **CAL** button to go to the previous one and the **PRINT** button to confirm.
- To exit the menu, hold down the **MENU** button until the beeping stops.





16 Technical specifications

All the models listed are only for interior use. Maximum altitude limit: 4000m. Pollution level: 2. Over voltage category: II

Power supply provided:	INPUT: 230V ~ 50Hz o 115V ~ 60Hz, OUTPUT: 24V DC 1A, Max power absorbed 13.2VA-
Environmental conditions adaptation:	Filters selection
Autozero:	Selectable from the menu
Serial output:	RS232C
Operating temperature:	+5°C - +35°C

17 Warranty

- Warranty period is 12 months from the date of purchase as provided in the invoice or delivery note.
- Warranty covers all parts defective at the origin. It does not cover mechanical or electronic parts damaged by incorrect installation, tampering or incorrect use.
- Warranty does not cover damage caused by impacts, balance dropping or dropping of objects on the pan.
- Delivery costs shall not be included in the warranty.

18 Storage conditions

- **Storage Temperature** +5 °C...+40°C
- **Storage Humidity** 45% - 75%.
- **Keep balance packaging** in case of the need to return the device, remove all cables and accessories to prevent damage.
- **Do not unnecessarily expose** the balance at extreme temperatures and humidity and avoid impacts.

19 Equipment disposal



This equipment bears the crossed-out wheeled bin symbol, indicating that it must not be disposed of together with unsorted household waste.

It is your responsibility to ensure the proper end-of-life disposal of this equipment by delivering it to an authorized facility for separate collection and recycling. You are also responsible for decontaminating the equipment in the event of biological, chemical, and/or radiological contamination, in order to protect the health and safety of personnel involved in its disposal and recycling.

For information on designated collection or disposal facilities, please contact the dealer from whom you originally purchased this equipment.

By following these requirements, you will contribute to the conservation of natural resources and help ensure that the equipment is recycled in a manner that safeguards human health.



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