OPERATION MANUAL 4100

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1. THE WEIGHING HAND PALLET TRUCK

1.1. TAKING THE SYSTEM INTO OPERATION

To activate the weighing system, turn it on using the on/off (①) Key on the terminal.

After 3 to 5 minutes the electronics and load cells have reached the operational temperature. Before this, inaccuracies of up to ca. 0.3% may occur.

It is recommended not to lift loads before the zero-point correction has been executed.

1.2. USE

The power supply to the system takes place through an exchangeable battery pack. With a completely charged battery pack the total weighing time is about 35 hours (on a system without a printer).

When the voltage level of the battery is running low, the display will show ▱. When the battery is completely empty, the weighing system switches off after 2 minutes.

When charging, it is necessary to charge the battery for at least 6 hours. This will prevent loss of battery capacity.
If you use the system in shift work or if the system has a built-in printer, it is recommended to purchase a supplementary battery pack.
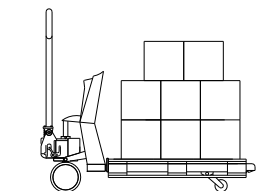
The battery can be charged on the adapter supplied with the charger. When the battery is charging, the LED on the charger is lit. When the LED turns off, the battery is fully charged.
It is not possible to overload the battery because the charger switches off automatically.

The weight must be lifted freely: without touching the housing of the indicator or other pallets:
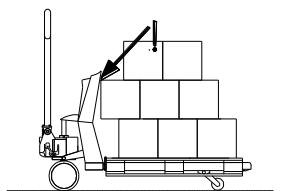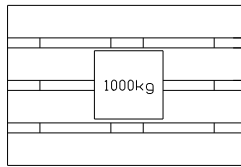
Wrong way of lifting the load   Correct way of lifting the load

The accuracy of the weighing system diminishes with circa 0.1% per degree starting from a tilted position of 2°. This effect also occurs with pits / potholes in the floor. An even floor is optimal.

The most accurate weighing result is obtained when the centre of gravity of the load is placed between the forks. With a non-centric loading the forks will tordate and bend. This may result in a higher inaccuracy.
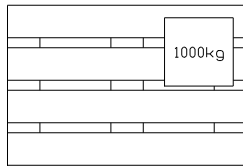
Non-optimal placement of the load   Optimal placement of the load

Temperature range: between -10 and +40°C the maximum inaccuracy is 0.1% of the weighed load. Outside this range inaccuracies of up to 0.3% may occur.

Fast temperature changes must be avoided because it can cause condensation in the electronics. During acclimatisation the weighing system must be switched off.

1.3. MAINTENANCE

The maintenance guidelines for normal pallet trucks apply to the chassis of the mobile weighing system. From experience we know that the integrated weighing system still functions when the chassis is damaged by overloading.

Main guidelines:
- Because the steering wheels are mounted in the front, pulling of the pallet truck is preferred above pushing it.
- When the lifting mechanism is not used, the handle should be kept in the neutral, middle, position. This prolongs the life span of the sealings.
- The weighing system meets up to the protection class IP65. This means that dust or moisture (rain or water beam from all sides), will not influence the operation of the electronics. However, high-pressure cleansing in combination with warm water or chemical cleansers will lead to the entry of moisture and therefore negatively influence the operation of the system.
- Only specialists may undertake any welding. This is to avoid damage to electronics and load cells.
- The bearings of the wheels (non-polyurethane) and the pivoting points of the levelling bar of the loading wheels must be cleansed and greased regularly.

2. TOUCH PANEL INDICATOR

Indicator Front
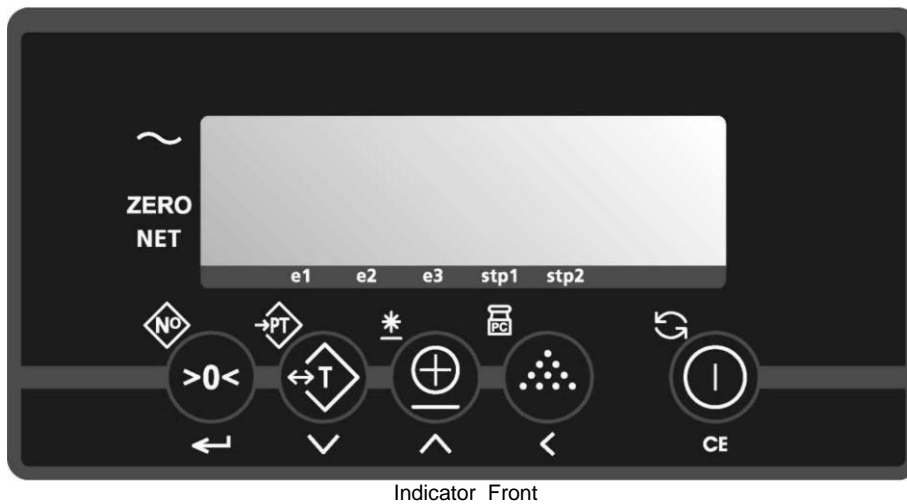
There are 3 display-modes.
The display may show the weight in kg's, lb's or it shows the number of pieces.
Also the battery sign is integrated in the display in order to show low battery status.

THE DISPLAY

By means of eight pointer bars the display shows:

∿ ◀ the weighing system (including load) is stable

━ the weight shown is negative

ZERO ◀ the weight shown is within the zero range

NET ◀ the display is showing the net weight

e1 ▼ displayed weight shown is in range 1

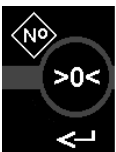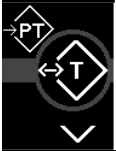**e2** ▼ displayed weight shown is in range 2

e3 ▼ displayed weight shown is in range 3

stp1 ▼ setpoint 1 is activated

stp2 ▼ setpoint 2 is activated

THE TOUCH PANEL

Each key has 2 operational and one entry function

Key	Function level 1 (short key press)	Function level 2 (long key press)	Function level 3 (entry mode)
>0<	zero setting	code entry	enter
T	automatic tare	pre-set tare	decrease the value of the digit flashing
+	print weight and add to the total	check subtotal and print total	increase the value of the digit flashing
PC	sampling a piece weight	enter a piece weight	shift to the next digit on the left
CE	Esc / toggle: kg/lb	on/off switch	clear entry

IMPORTANT

Operation of a key is not accepted unless the weighing system is stable (and the "load stable" pointer lights up). This means that the indicator only executes commands with a stable load.

WARNING

When the weighed load surpasses the pre-set maximum, the display shows: "ERR02". In order to prevent damage to the indicator or load cells, the weighing system must be unloaded immediately.

ERROR MESSAGES INDICATOR

Displayed error	Meaning	Out of error mode
Err01	Load cell signal is unstable	Disappears when signal is stable again
Err02	Overload on full weighing system	Disappears when overload is removed.
Err03	Gross negative. This action is not allowed	Disappears after 3 seconds No Tare action will be accepted
Err04	Out of zero range	Press any key
Err05	Sampling accuracy too low	Press any key
Err06	Input signal too high (over load positive)	Check weighing system (load cells +cabling)
Err07	Input signal too low (over load negative)	Check weighing system (load cells +cabling)
Err08	Calibration out of range (negative)	Follow correct calibration procedure
Err09	Calibration out of range (signal too low)	Follow correct calibration procedure
Err10	Calibration count 2nd(3rd) point lower than count 1st(2nd) point	Follow correct calibration procedure
Err11	Calibration from within piece counting mode	Follow correct calibration procedure
Err14	Setpoint value 2 < setpoint value 1. This is not allowed	Enter Limit values correctly
Err20	Signal of load cell is not correct during start up of indicator	Check weighing system
Err97	Calibration locked (jumper JP1 placed)	Place Jumper JP1 this is located next to the –EX connection
Err98	Calibration point must be higher than previous one	Follow correct calibration procedure
Err99	Action only allowed in start-up units (kg/lb)	Press ON/OFF (CE) key
-----	Lower than - 2% of full scale value	Check weighing system (mechanical) perhaps even execute a new zero calibration
Or		
-----	Level ERROR > 2% non-level	Place weighing system in horizontal position.

DISPLAY MESSAGES

Text printed out	Text in display	Function
Err00	Err01	Display error message
AddEd	AddEd	Display the word added
Add10	Add 10	Display the value to add
Adj08	AdJ08	Display adjusting cycle
TarE	tArE	Display the word tare
DonE	donE	Display the word done
PA 00	PA 00	Display the parameter number
StoP	StoP	Display the word stop
ho 00	ho 00	Display the settings for hours
m 00	m 00	Display the settings for minutes
dA 00	dA 00	Display the settings for days
m 00	m 00	Display the settings for months
yE 00	YE 00	Display the settings for years
□□□□	□□□□	Printing

3. FUNCTIONS INDICATOR

3.1. MULTIRANGE

The graduation of the indicator depends on the weighed load:
− from 0 to 200 kg the weight is shown in 0.2 kg steps and
− from 200 to 500 kg the weight is shown in 0.5 kg steps and
− from 500 to 2200 kg the weight is shown 1 kg steps.

Because of the weight dependant graduation, smaller loads are weighed with a higher accuracy. When removing weights, the graduation does not change. For example: if weight is removed from an original load of 650 kg, upon reaching 500 kg the display will not change to 0.5 kg. The weight will still be shown in 1 kg steps.

3.2. BEFORE WEIGHING: CHECK ZERO POINT

Before each weighing it is necessary to check whether the system is unloaded and free. The indicator is fitted with an automatic zero correction. This means that small deviations of the zero point will be corrected automatically. If the indicator does not determine the zero point automatically, it must be done manually using the >0< key.

3.3. GROSS WEIGHING

After lifting a load, the display shows the gross value of the weighed load.

3.4. NET WEIGHING: AUTOMATIC TARE

The indicator offers the possibility to reset tare weights to zero automatically. This way added or subtracted weights can be determined. After taring, the graduation on the display will not change.

- ➢ Lift load.
- ➢ Press the ↔T key.
    - ❑ The indicator is set to zero.
    - ❑ The "NET" pointer shows that a tare weight is activated.
- ➢ Place or remove the net load.
    - ❑ The display shows the net value of the weighed load.
    - ❑ When removing load, this is a negative value.
- ➢ By pressing the ↔T key again, the gross weight is displayed.

3.5. NET WEIGHING: MANUAL TARE ENTRY

A tare weight can be entered at any moment, either in a loaded or unloaded situation. For a higher accuracy, a tare weight can be entered with a smaller graduation step, independent of the applied load and the active graduation of the indicator.

- ➢ Press the →PT key for 3 seconds.
    - ❑ The display shows the current tare value.
    - ❑ The right digit is flashing.
- ➢ Press ENTER(↵) if the current tare value is required.

Or

- ➢ Press the →PT key for 3 seconds.
- ➢ Press the ∧ key to go up a value or press the ∨ key to go down a value until the required value is reached.
- ➢ Press < to change to the next digit.
- ➢ Repeat this procedure until the required tare value is displayed.
- ➢ Press ENTER (↵) to activate the tare weight.
    - ❑ The tare weight is activated.
    - ❑ The "NET" pointer lights up.
- ➢ Lift the load
    - ❑ When the system is loaded, the net value appears in the display

❑ When the system is unloaded, the read-out displays the negative value of the given tare.

❑ The entered value remains active until a new tare weight is entered (display shows the new net weight).

❑ Press the ↔T key to return to gross weighing mode.

❑ **Attention:** when activating of the PT function, it is not allowed the have a load on the forks.

3.6. CODE ENTRY

The indicator offers the possibility to enter 1 numeric code of 5 digits. Entry of codes is useful when the weighing system is connected to a printer or other peripheral equipment, in order to identify various weighings during a later processing of the information.

➢ Press the ◇ key for 3 seconds.
   ❑ The display will show the last used code.
   ❑ The right digit flashing.
➢ To accept the old value press ENTER (↵).
   ❑ The code is activated and the display returns to the weighing mode.
Or

➢ Press the ◇ key for 3 seconds.
➢ Press the ∧ key to go up a value or press the ∨ key to go down a value until the required value is reached.
➢ Press < to change to the next digit.
➢ Repeat this procedure until the required code is displayed.
➢ To accept the new code press ENTER (↵).
   ❑ The code is activated and the display returns to normal weighing mode.
You may make a printout and add up the weights. A special printout will be made which includes the code. (See option printer).
NOTE: if the code is "000000" it will be ignored and it will not be printed on the ticket.

3.7. PIECE COUNTING: SAMPLING

If an unknown piece weight is to be determined you may do this by sampling a certain number of pieces. The number of pieces taken from or placed on the weighing system determines the accuracy of the sampling. The total weight of the pieces taken from or placed on the weighing system for the sampling should be no less than 4-5 kg. The greater the weight difference, the greater accuracy. The standard sampling amount is 10 pieces, but this number can be increased up to 95 pieces.
NOTE: If the accuracy is too low when sampling, the indicator will show "ERR05". Press any key to return to piece counting mode and increase the sampling amount.

- ➢ Press the ⚏ key.
  - ❑ The display shows "add10". The 'kg' pointer turns off and the 'pcs' pointer goes on.
- ➢ Take or place 10 pieces from/on the weighing system and press the ENTER (↵) key.
  - ❑ The sampling is done and the display will show the total number of pieces on the weighing system.

Or

- ➢ Press the ∧ key or the ∨ key to change the number of pieces to add.
  - ❑ The display will show the new value to add (for example "add50").
- ➢ Take or place the correct number of pieces from/on the weighing system and press the ENTER (↵) key.
  - ❑ The sampling is done and the display will show the total number of pieces on the weighing system.

You may make a printout and add up the weights. A special printout will be made which includes the piece weight sampled and the number of pieces. (See option printer).

To return to the normal weighing mode press the ↻ key for 1 second. Once your return to normal weighing mode the piece count total will be lost.

3.8. PIECE COUNT: ENTER A PIECE WEIGHT

- ➢ Press the ⌸ key for 3 seconds.
  - ❑ The last used piece weight will be displayed.
  - ❑ The right digit flashing.
- ➢ To accept the old value press ENTER (↵).
  - ❑ The display shows the number of pieces currently on the weighing system.

Or

- ➢ Press the ⌸ key for 3 seconds.
- ➢ Press the ∧ key to go up a value or press the ∨ key to go down a value until the required value is reached.
- ➢ Press < to change to the next digit.
- ➢ Repeat this procedure until the required piece weight is displayed.
- ➢ To accept the new value press ENTER (↵).
 - ❑ The display shows the number of pieces currently on the weighing system.

You may make a printout and add up the weights. A special printout will be made which includes the piece weight sampled and the number of pieces. (See option printer).

To return to the normal weigh mode press the ↻ key for 1 second. Once your return to normal weighing mode the piece count total will be lost.

3.9. TOTALING

The indicator offers the possibility to add weighings and show the total weight. When a tare weight is active, the net weight is added automatically.

- ➢ Load the system with the weight that should be added.
- ➢ Press the ☺ key to add the weighed load to the total weight.
  - ❑ The display shortly shows the message "ADDED" and then automatically returns to the weighing mode.
  - ❑ If a printer is installed, a printout will be made (see option printer).
  - ❑ The gross, net and tare weights are totalled.
  - ❑ No weight can be recorded twice. The system needs to be returned to the net zero-range before another weight can be added up.
- ➢ The subtotal can be checked by pressing the ⁎ key for 3 seconds.
  - ❑ The display shows the net total weight and the number of weightings totalled so far repeatedly for 3 seconds.
    - ➢ If the ☺ key is pressed shortly during this period, the total is printed out (if option is installed) and reset to 0.
    - ➢ If the "CE" key is pressed during this period, the total is reset but not printed out.
    - ➢ If no key is pressed during this period, the subtotal stays in memory and the system returns to the weighing mode after 60 seconds.

3.10. CHANGE UNITS

The system is set to start up in 'kg' or in 'lbs'. However you may, at any time in the weighing mode, change to the second unit (lb⇔kg or kg⇔lb).

- ➢ Press the ↻ key for 1 second.
  - ❑ The display will show the current weight in the new units for 5 seconds and then automatically change back to the start up units.

The same key is used to change from the piece counting mode back to the weighing mode. (See 3.7./3.8.).
NOTE: It is not possible to use any of the scale functions when the display has been changed to the second unit. If any key is pressed the indicator will display "ERR99" and return to normal weighing mode.

3.11. PRINTER

If the weighing system has been equipped with a printer, obtained and entered weighing data can be printed. Date and time are only printed out with the option board installed.

In the printout a gross weight is indicated with the letters "B/G" and a net weight with the letter "N". A manually entered tare weight will also be printed and is indicated with the letters "PT". The total weight is shown with the letters "TOT".

Standard printout
without code

```
B/G      1234.5  kg.
T          34.5  kg.
N        1200.0  kg.

Nr.              1
10/07/03      17:45
```

Standard printout
with code

```
CODE     12345
B/G      1234.5  kg.
T          34.5  kg.
N        1200.0  kg.

Nr.              1
10/07/03      17:45
```

Piece count printout
without code

```
B/G      1234.5  kg.
T          34.5  kg.
N        1200.0  kg.

PcWt     1.234  kg.
Qty      12345  PCs

Nr.              1
10/07/03      17:45
```

Piece count printout
with code

```
CODE     12345
B/G      1234.5  kg
T          34.5  kg
N        1200.0  kg

PcWt     1.234  kg
Qty      12345  PCs

Nr.              1
10/07/03      17:45
```

Total printout (always without code)

```
Tot. B/G 1234.5  kg.
Tot. T     34.5  kg.
Tot. N   1200.0  kg.

Tot. Nr.       999
10/07/03      17:45
```

3.12. CHANGING THE TIME AND DATE ON THE PRINTOUT

If the weighing system has been equipped with a printer, and an option board, the date and time can be printed together with the weight information.

➢ Press the ⚏ key for 6 seconds.
  ❑ The display will show "ho_00" or the previous hour time setting
  ❑ The right digit flashing.
➢ To accept the old value press ENTER (↵).
Or
➢ Press the ∧ key to go up a value or press the ∨ key to go down a value until the required value is reached.
➢ Press < to change to the next digit and use the ∧ or ∨ key to change the value until the required value is reached.
➢ To accept the new value press ENTER (↵).
  ❑ The display will show "m_00" or the previous minute time setting.
  ❑ The right digit flashing.
➢ Repeat the above procedure to accept or change the minute setting.
  ❑ The display will show "dA_00" or the previous date of the month setting
  ❑ The right digit flashing.
➢ Repeat the above procedure to accept or change the date of the month setting.
  ❑ The display will show "m_00" or the previous month setting.
  ❑ The right digit flashing.
➢ Repeat the above procedure to accept or change the month setting.
  ❑ The display will show "YE_00" or the previous year setting.
  ❑ The right digit flashing.
➢ Repeat the above procedure to accept or change the year setting.
  ❑ The indicator will return to normal weighing mode.

3.13. RELAY (Option)

If this option is used, it is no longer possible to use piece-counting mode. The setting of the set-points for the relay is done with the same key as is used for sampling or entering a piece weight.

Relay technical specifications: Type: Zettler AZ833-12DE
                                   Coil voltage: 12VDC
                                   Switched capacity: max. 30VDC/2A

The choice of relay application is made when the system is ordered and the program is selected in the parameter menu. The instructions for use depend on the application chosen.

Four different applications are possible;   1 – overload check gross weight
                                             2 – overload check net weight
                                             3 – dosing/filling with manual start
                                             4 – dosing/filling with auto start

3.13.1. Overload check gross weight and net weight

In this setting set-point 1 is activated as soon as the gross or net value exceeds the set-point value. In this case the set-point value is an absolute value.

To enter a new value:
- ➢ Press the ⁂ key.
    - ❑ The display shows the last entered value.
    - ❑ The left digit blinking. The pointer for set-point 1 is on.
- ➢ Press ENTER (↵) to accept the old value.
    - ❑ The set-point value is activated and the display returns to the weighing mode.

Or
- ➢ Press the ⁂ key.
- ➢ Press the ∧ key to go up a value or press the ∨ key to go down a value until the required value is reached.
- ➢ Press < to change to the next digit.
- ➢ Repeat this procedure until the required value is displayed.
- ➢ Press ENTER (↵) to accept the new value.
    - ❑ The set-point value is activated and the display returns to the weighing mode.

3.13.2. Dosing/filling with manual start

In this setting set-point 1 and 2 are switched on as soon as the tare key has been activated and after the set-point values have been entered.

To enter new set-point values:
- ➢ Press the ⁂ key.
    - ❑ The display shows the last entered value.
    - ❑ The left digit blinking. The pointer for set-point 1 is on.
- ➢ Press ENTER (↵) to accept the old value.
    - ❑ The value for set-point 1 is activated. The display shows the last entered value for set-point 2.
    - ❑ The left digit blinking. The pointer for set-point 2 is on.

Or
- ➢ Press the ⁂ key.
- ➢ Press the ∧ key to go up a value or press the ∨ key to go down a value until the required value is reached.
- ➢ Press < to change to the next digit.
    - ❑ Repeat this procedure until the required value is displayed.
- ➢ Press ENTER (↵) to accept the new value.
    - ❑ The set-point value is activated and the display returns to the weighing mode.
    - ❑ The display shows "tare".

Filling:
Place an empty container on the scale.
- ➢ Press the ↔T key.
    - ❑ The display shows the net value and the pointers stp1 and stp2 are on.

- Relays 1 and 2 are closed.
- As soon as set-point 1 is reached, pointer stp1 will turn off and relay 1 will be opened.
- As soon as set-point 2 is reached, pointer stp2 will turn off and relay 2 will be opened.
- The display shows "done" for a few seconds and will return in the normal weighing mode.
- The net weight is displayed. A printout may be made at this point.

It is possible to cancel the filling procedure at any time by pressing the CE key (see 3.13.4).

Dosing:
Place a full container on the scale.
➢ Press the ↔T key.
- The display shows the net value and the pointers stp1 and stp2 are on.
- Relays 1 and 2 are closed.
- As soon as set-point 1 is reached, pointer stp1 will turn off and relay 1 will be opened.
- As soon as set-point 2 is reached, pointer stp2 will turn off and relay 2 will be opened.
- The display shows "done" for a few seconds and returns in the normal weighing mode.
- The net weight is displayed. A printout may be made at this point.

It is possible to cancel the dosing procedure at any time by pressing the CE key (see 3.13.4).

The printout will show the following:
- The gross weight is the weight of the container with rest material.
- The tare weight is the weight of the container with material before dosing.
- The net weight will show a minus sign as token of weight being removed from the scale.

3.13.3. Dosing/filling with automatic start

In this setting set-point 1 and 2 are switched on as soon as the set-point values have been entered. The tare action is done automatically in this mode.

To enter new set-point values:
➢ Press the ⸪ key.
- The display shows the last entered value.
- The left digit blinking. The pointer for set-point 1 is on.
➢ Press ENTER (↵) to accept the old value.
- The value for set-point 1 is activated. The display shows the last entered value for set-point 2.
- The left digit blinking. The pointer for set-point 2 is on.
Or
➢ Press the ⸪ key.

- ➢ Press the ∧ key to go up a value or press the ∨ key to go down a value until the required value is reached.
- ➢ Press < to change to the next digit.
- ➢ Repeat this procedure until the required value is displayed.
- ➢ Press ENTER (↵) to accept the new value.
  - ❑ The set-point value is activated and the display returns to the weighing mode.
  - ❑ The display shows "tare" and the indicator automatically tares out the scale after the scale has been stable for a few seconds.

⚡ Attention: be sure the container is already in place at this moment!

Filling & Dosing:
- ❑ The display shows the net value and the pointers stp1 and stp2 are on.
- ❑ Relays 1 and 2 are closed.
- ❑ As soon as set-point 1 is reached, pointer stp1 will turn off and relay 1 will be opened.
- ❑ As soon as set-point 2 is reached, pointer stp2 will turn off and relay 2 will be opened.
- ❑ The display shows "done" for a few seconds and will return in the normal weighing mode.
- ❑ The net weight is displayed. A printout may be made at this point.

It is possible to cancel the filling or dosing procedure at any time by pressing the CE key (see 3.13.4).

The printout will show the following:
- - The gross weight is the weight of the container with rest material.
- - The tare weight is the weight of the container with material before dosing.
- - The net weight will show a minus sign as token of weight being removed from the scale.

3.13.4. Cancelling the dosing or filling

It is possible to cancel the filling or dosing procedure at any time by pressing the CE key.
- ➢ Press the CE key to stop the procedure.
  - ❑ The display shows "stop" and the relays are opened. Pointers stp1 and stp2 will be turned off.
  - ➢ Press ENTER to start the procedure again.
    - ❑ The display sign "stop" is cleared and the net weight is displayed again. The relays are closed. Pointers stp1 and/or stp2 will be turned on.
  - **Or**
  - ➢ Press the CE key to stop the procedure.
    - ❑ The display shows "done" for a few seconds and will return in the normal weighing mode.
    - ❑ The net weight is displayed.