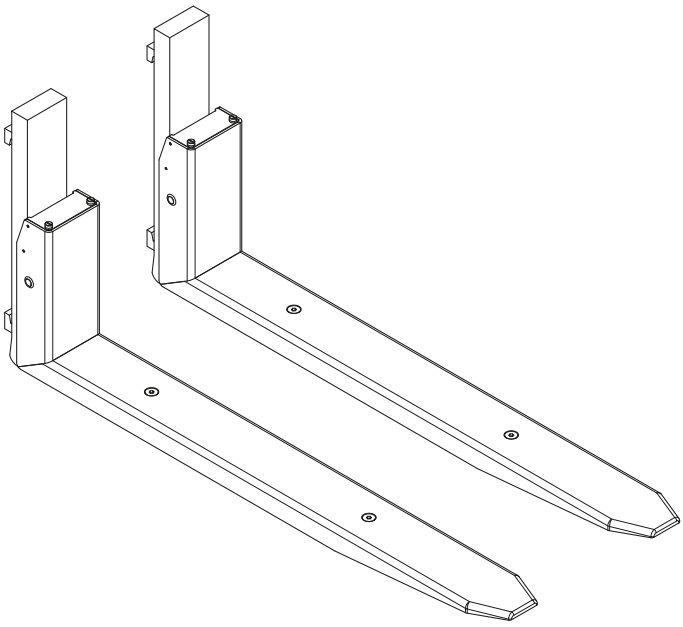
Weighing system

BULL



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USER'S MANUAL

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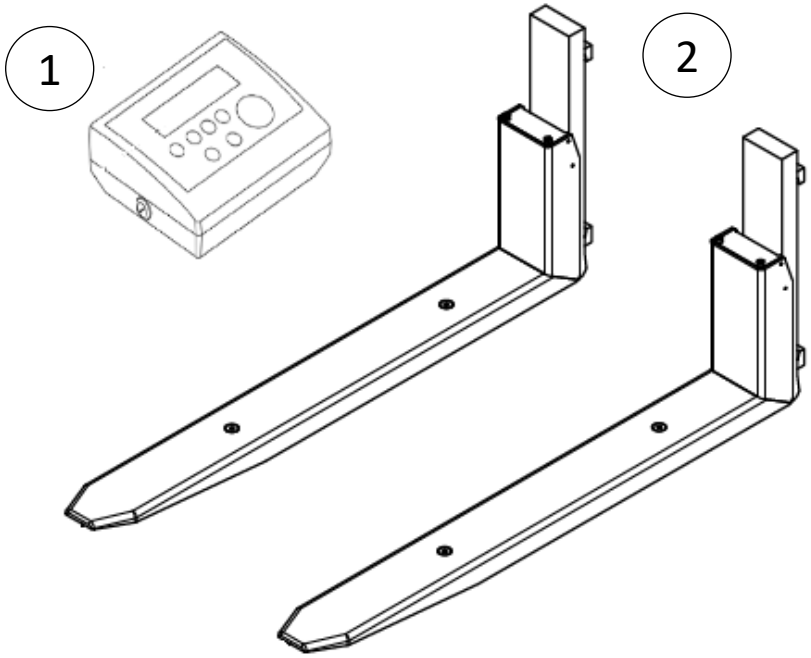
1. GENERAL DESCRIPTION

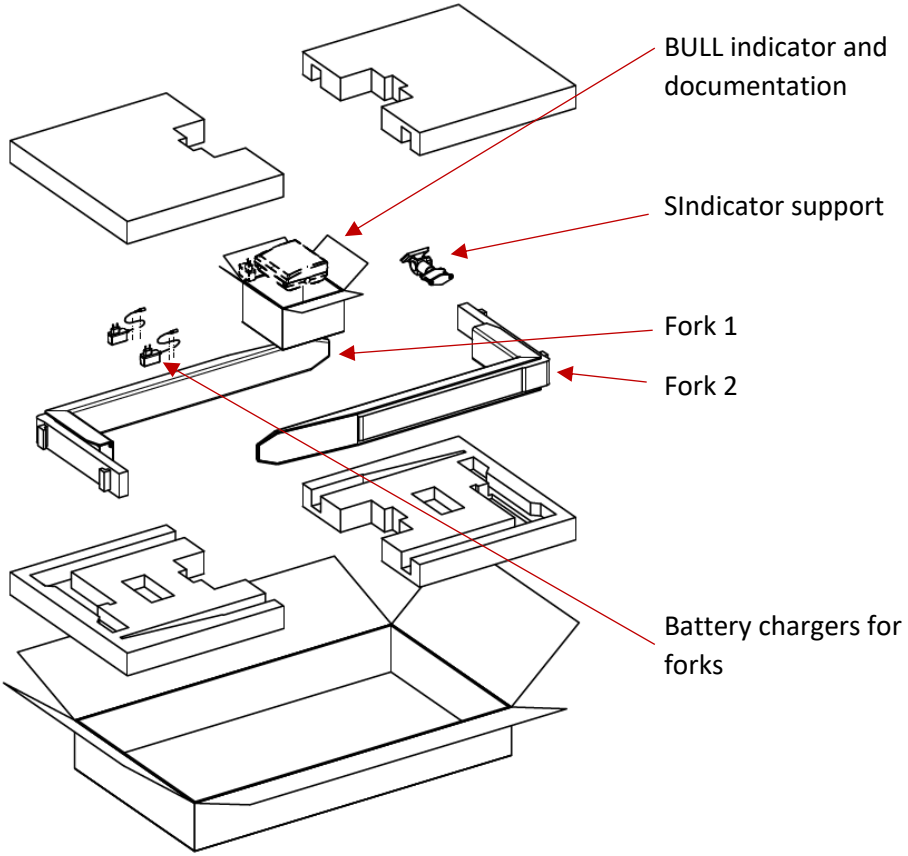
BULL is a weighing system for forklift trucks that integrates three independent equipments connected to each other through a wireless network:



1 **Indicator:**
When an object is lifted with the forks, the indicator shows the weight. At rest, it indicates the battery level of the forks. It allows to operate the weighing functions of the scale with a simple 11 mechanical keys interface.

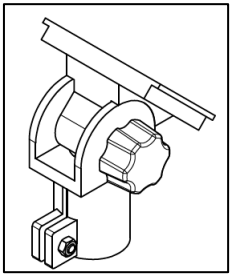
2 **Forks:**
Each fork is an independent scale that measures the weight of the load it lifts. Each fork is equipped with a rechargeable battery with an autonomy of up to 72 hours of continuous operation.

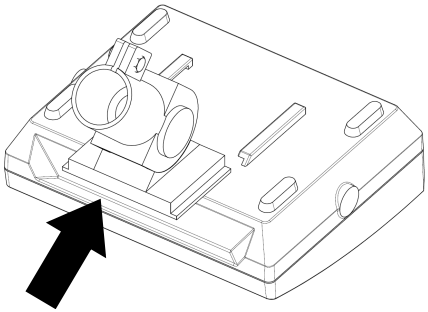
2. UNPACKING


BULL indicator and documentation
SIndicator support
Fork 1
Fork 2
Battery chargers for forks

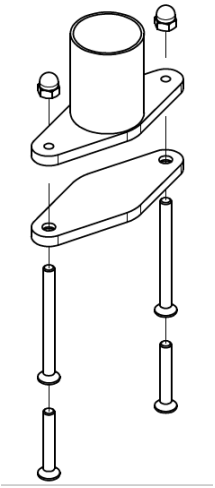
3. INSTALLATION

Place the indicator holder in the intended housing at the rear of the unit:





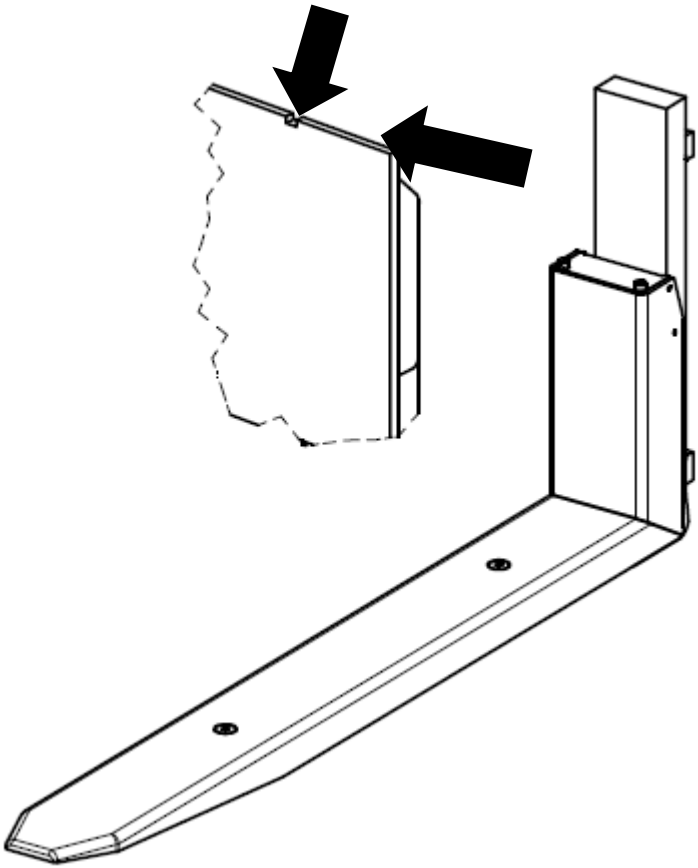
Slide the bracket between the two guides on the indicator box and push until the safety stop engages.



Screw the indicator holder firmly onto one of the bars in the forklift cabin in the position you feel is most convenient. You will find M6 screws of two different lengths, 40mm and 70mm, in the packaging.

Place the indicator in its place and use the sprocket on the bracket to orient it as you wish.

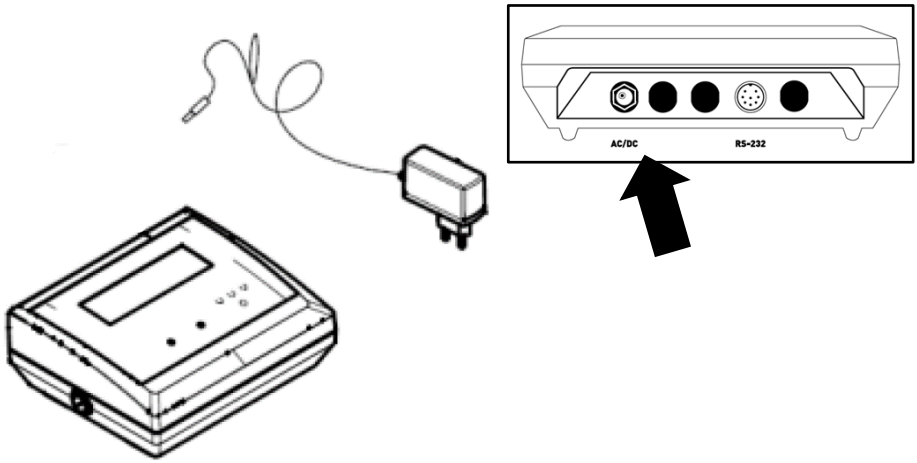
Mount both forks on the fork lift truck holder by sliding them to the desired distance from the fork lift truck. Once positioned, secure the fork with the safety lock to prevent accidental movement.



4. CHARGING THE BATTERIES

Weight indicator:

The support battery inside the scale is not removable. To charge the battery, connect the supplied 12Vdc AC/DC adapter to the scale and plug the adapter into a 220V / 50Hz outlet.



When the power is on, the indicator shows the battery charge level on the LCD display by means of a pictogram:

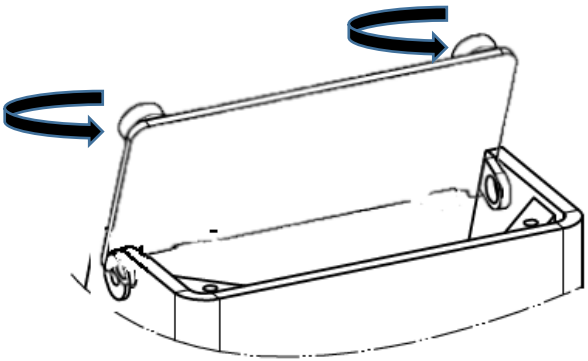
Battery operation. The power supply is not connected. The indicator's charge level is indicated.

AC/DC power supply connected to the wall outlet.

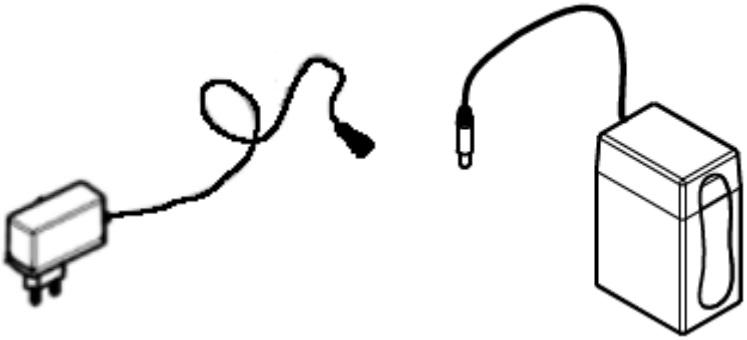
It is not necessary to keep the indicator on for battery charging, charging with the indicator off is recommended.

Charging the battery of the forks:

Open the battery compartment cover by loosening the two fastening screws.



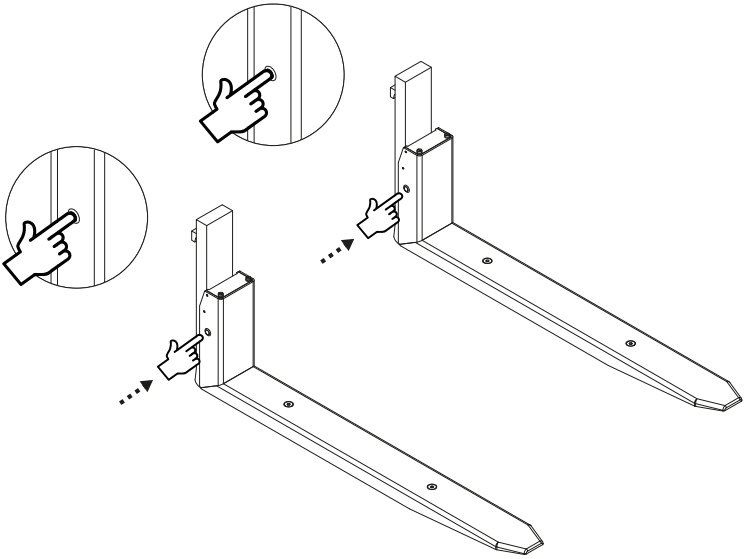
Remove the rechargeable battery from each fork and connect it to either of the two chargers provided. Plug the charger into a 220V/50Hz outlet.



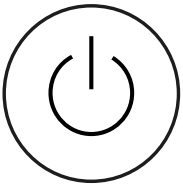
It is convenient to recharge both batteries at the same time: The system will automatically switch off when the battery with the lowest charge is exhausted.

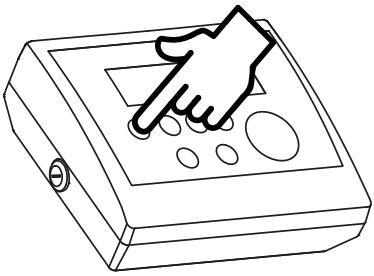
5. TURN ON

Press and hold the button / light on the side of each fork until it lights up:



Turn on the weight indicator installed in the truck cabin by pressing the indicator on/off button:





When you press the power key, the display lights up and goes through the following sequence

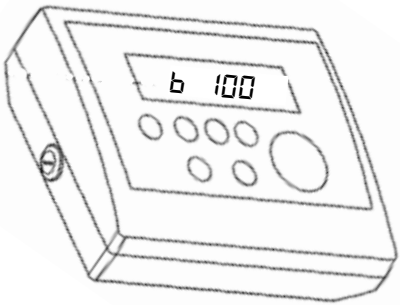
1. On the LCD display all the segments and symbols light up for one second to check that they are working correctly.
2. Then the version code of the equipment firmware is shown for one second.
3. Finally, the maximum capacity and resolution of the scale are displayed for one second.

While the indicator establishes the connection with the forks, the LCD display shows "▫▫▫▫ ".

Once the connection with the forks is established, the display will indicate the weight.

If no change in weight is detected, after 5" the display turns off and the system goes to standby (low power) until a new load is detected on any of the forks. The time during which the weight is displayed before going to standby is user configurable (see section 9.2 in configuration options).

In idle condition, the LCD display indicates the remaining autonomy of the equipment by means of a percentage:



6. TURN OFF

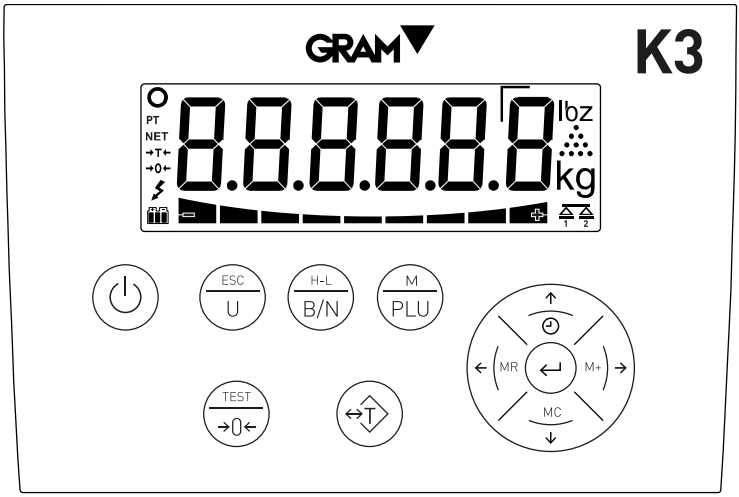
Press and hold the indicator on/off button for more than two seconds. The indicator display will show "OFF" and then both the indicator and the two forks will turn off.

The system will automatically turn off in any of the following circumstances:

- The battery voltage of any of the three units is below 5.7Vdc. In this case, the message "bAt" will flash on the indicator display for a few seconds, and then the whole system will automatically switch off. The batteries need to be recharged.

- The forks will automatically turn off if after 3 minutes the indicator is not lit or the connection cannot be established.

7. LCD KEYBOARD AND DISPLAY



Turn on/off the equipment. When pressed, it turns on the indicator. When the indicator is on, pressing and holding it for two seconds turns it off.

Escape. In menu mode, you have the function of menu exit and return to normal mode.

Gross/Net. When the tare is used, pressing it displays the gross weight (total weight on the scale), and pressing it again displays the net weight. If you press and hold it for more than one second, you access the overload alarm set point input.

M / PLU. Pressing it accesses the scale configuration menu.

Zero / Test. Zeroing the scale. When pressed for more than one second, it shows the display test, software version, capacity and division.

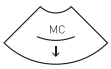
Tare When pressed, subtracts the weight of any container or box on the platform until the weight is removed from the platform and this key is pressed again.

M+ and right arrow. Selects the next stored tare. In menu mode, it displays the next option.

MR and left arrow. Selects the previous stored tare. In menu mode, returns to the previous option.

Enter. In menu mode, confirms the selection/modification made.

Clock and up arrow. Pressing it for more than one second displays the date and time (optional RTC board). In menu mode, when editing the content of a parameter, the value (digit) on the display increases.

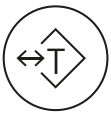


MC and down arrow. In menu mode, when editing a parameter, it decreases the value (digit) that appears on the display. If it is held down for more than one second, the "Clear" function is executed: it cancels the tare or resets a value when editing a tare register or the set point for the overload alarm.

	It shows the weight that the forks are lifting.
	Stable weight indication: There is a weight on the scale and it does not change. Flashing or off to indicate that there is movement on the scale.
	Negative sign. The indication may be negative if a tare is activated or a problem has occurred with the acquisition of zero.
NET	The net weight is indicated. The net weight is the actual weight on the scale minus the tare. It is only lit if a tare has been made.
→T←	Tare on. The tare is maintained even when the weight is removed from the scale, in which case a value with a negative sign is displayed.
→0←	Scale to zero: The weight on the load receptor is less than ¼ step (division).
	Battery operation. The power supply is not connected. The indicator's battery charge level is indicated.
	AC/DC power supply connected to the power outlet.

8. FUNCTIONING

8.1. TARE



Press the tare key: The scale stores the weight currently lifted by the trolley, and subtracts it from the total weight until the tare function is deactivated or cancelled.

The weight display shows >T<

The tare remains after unloading the forks. When the scale is unloaded, the display shows the tare value with a negative sign. To cancel the tare, press the tare key again with the scale empty.

The "clear" function (press and hold the MC button) also disables the tare. The scale reset key also disables the tare.

When the tare function is active, a short press on the B/W key alternates the display of the net weight with the gross weight each time the key is pressed. While the net weight is being displayed, the "NET" indication on the LCD display is activated.

8.2. MEMORY TARE RECORDING

It is possible to apply a tare previously memorized in the equipment. The indicator has up to 20 tare records, numbered from 1 to 20.

Use the ← and → keys to access this register and select one of the stored tares.

The display will show the message t 01; press the → key to move on to register t 02 and so on. Pressing the ← key returns to the previous tare memory.

Once you have selected the tare memory you wish to use, press the ↵, key, the display will show the associated tare value. Press the ↵ key again to apply the tare and the display returns to weight display mode.

To change the value associated with a tare value, follow the procedure below:

1. Use the ← y → keys to select the tare value you wish to modify and press the ↵ key.
2. The display shows the tare value associated with the selected register.
3. Enter the desired value using the arrow keys ← → to move to the next digit and the keys ↑↓para to modify the value of each digit.
4. Press the key ↵ to validate the display content and store it in the indicator memory.

To cancel the tare, with the scale empty, press the tare button again.

The "clear" function (press and hold the MC button) also disables the tare.
The scale reset key also disables the tare.

8.3. RESETTING

Reset the scale: A short press on this key will reset the scale. The scale is considered to be "at zero" when the weight on the load receptor is less than ¼ division.

While the scale is "at zero", the display shows →0←.

Pressing the key →0← also deactivates the tare if it is activated.

8.4. LCD DISPLAY TEST

When this key is held down for more than one second, it shows the LCD display test (all segments and pictograms lit), the version code of the instrument firmware, and finally the maximum capacity and resolution of the scale.

8.5. OVERLOAD ALARM

To enter the overload alarm set point, press and hold the H-L key for more than one second. The display shows the programmed set point.

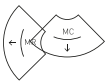
Enter the desired value using the ← → direction keys to change to the next digit and the keys ↑↓para to modify the value of each digit. Press the ↵ key to validate the content of the display.

The color of the display backlighting changes to red when the weight exceeds the entered set point.

9. CONFIGURATION OPTIONS MENU

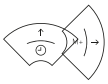
Press the "M" key to access the setup option menu. The display shows the message MEnu for ½ second to indicate that from this moment the indicator will go on to show the different options to be selected. In "menu" mode, use the direction keys to switch to the next option or change the value of a digit on the display when editing a parameter value.

Returns to the previous menu level without making any changes. When you are in the main menu, exit the menu mode and return to normal operating mode (weighing mode).

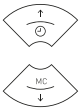


Moves to the next menu option in the "left" direction, or changes between the different values that can be assigned to a given option.

Moves to the next menu option level or displays the current value of an option. When changing the selected value for an option using the ← and →, keys, pressing this key validates the change. In "edit" mode, it validates the entered value.



It moves to the next menu option in the "right" direction, or changes between the different values that can be assigned to a given option.



To change the value of a digit on the display when a parameter value is being entered (edit mode).

9.1. BEEP

This function allows you to activate ("On") or deactivate ("Off") the emission of a sound when any of the buttons on the keyboard are pressed.

The factory setting is "On".

9.2. T-DISP

This option allows you to set the time that the weight remains on the indicator before going to standby, where the system's battery life is indicated.

The possible options are 5 seconds, 10 seconds, 20 seconds, or 60 seconds.

9.3. WiFi-X

This option allows you to change the name of the WiFi network to which the indicator and the two forks are connected.

The option is protected by an access pin to prevent unwanted accidental changes.

If you have several forklifts equipped with a BULL scale working in the same area, each scale must use a different network name (SSID).

9.4. TLU

Tare memory registration.

Use the ← and → keys to select the tare memory to be modified and press the key ↵.

The display shows the tare value associated with the selected register.

Enter the desired value using the arrow keys ← → to move to the next digit and the keys ↑↓para to modify the value of each digit.

Press the key ↵ to validate the display content and store it in the indicator memory.

9.5. HIGH (Overload alarm)

Enter the desired value using the arrow keys ← → to change to the next digit and the keys ↑↓para modify the value of each digit. Press the key ↵ to validate the display contents.

The color of the display backlighting changes to red when the weight exceeds the entered set point.

10. ERROR MESSAGES

E02 F1	ADC failure in fork F1: No response from ADC	F-1 fork failure. Consult SAT
E02 F2	ADC failure in fork F2: No ADC response	F2 fork failure. Consult SAT
E03 F1 E03 F2	Sensor input signal out of range in fork F1 or fork F2	Breakdown in one of the forks. Consult SAT
AdH F1 AdH F2	Sensor input signal too high (>30mV) at fork F1 or fork F2	Breakdown in one of the forks. Consult SAT
AdL F1 AdL F2	Sensor input signal too low (<-30mV) at fork F1 or fork F2	Breakdown in one of the forks. Consult SAT
bAt	Discharged battery	Connect the AC/DC adapter to charge the battery.
-0 L-	Overload: The weight > 2009 kg exceeds the maximum capacity of the scale	
-----	Negative weight	Perform a reset.
nOrtC	The optional RTC clock is not present or the circuit is damaged.	Check SAT

11. NOTES

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