# iJack - 26
## (2,600 LBS. Capacity)

**RAVAS**
creating intelligence

**Owner's Manual**

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We would like to inform you about the fact that this RAVAS product is 100" recyclable on the basis that the parts are processed and disposed of in the right manner.

More information can be found on our website: **www.ravas.com**

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# OPERATION MANUAL
## IJACK-26

**Contact Us:**

**RAVAS USA, INC.**
**1500 Enterprise Parkway**
**Twinsburg, OH 44087**

**Phone Number: +1 (33) 425-3092**

**salesoffice-usa@ravas.com**
**www.ravas.com**

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# ↘ iJack-26 FEATURES

**■ Light Service Weight, Decent Capacity, Suitable for anywhere a Hand Pallet Truck Could Be Used:**

- 264.55 lbs. Ultra-light Service Weight
- 2,645.55 Highly Rated Capacity
- Come and Go Freely in Small Working Space Enivronments with 54 inch Turning Radius

**■ CAN-BUS System:**

CAN-BUS System Simplifies Operation/ Maintenance Level, Improves System Reliability

**■ Integrated Design:**

Innovative Designed Sealed Hydraulic Unit, Low Noise, Easy Maintenance

**■ Non-Contact Limit Switch Design:**

New Non-Contact Limit Switch Design Improves the Reliability

**■ Safety:**

Convenient Emergency Stop Switch, Strong Driving Wheel Cover, Solid Battery Clip, Ensure Safety and Reliability

**■ Battery:**

12.78 lbs. Battery Replacement, Optional Standby Battery Extend Run Time

**■ Integrated Handle Design:**

New Design of Integral Handle Head, Easy to Access All Control Buttons

**■ Robust Frame Design:**

New Frame Design, Light Service Weight, High Strength

**■ Innovative Key Switch Design:**

The Key Switch Design is Integrated with U-Disk Function

**■ Easy Maintenance:**

Maintenance Free Truck Design for End Users to Trouble Shooting and Replace Failure Part by Simple Instruction, Free Labor Cost.

SMART Panel Reflect Operation and Trouble Shooting Status

| Distinguishing Mark | | | | | |
|---|---|---|---|---|---|
| 1.1 | Manufacturer | | | | RAVAS |
| 1.2 | Model Designation | | | | iJack 26 |
| 1.3 | Power Unit | | | | Battery |
| 1.4 | Operator Type | | | | Pedestrian |
| 1.5 | Load Capacity | Q | | Lbs. | 2,645.55 |
| 1.6 | Load Center | C | | In. | 23.62 |
| 1.7 | Axle Center to Fork Face | X | | In. | 37.40 (34.65) |
| 1.8 | Wheelbase | Y | | In. | 46.85 (44.10) |
| **Weights** | | | | | |
| 2.1 | Service Weight (Include Battery) | | | Lbs. | 268.60 |
| 2.2 | Axle Loading with Load, Driving Side/Loading Side | | | Lbs. | 925.94/2006.21 |
| 2.3 | Axle Loading Without Load, Driving Side/Loading Side | | | Lbs. | 242.51/44.09 |
| **Wheels/Tires** | | | | | |
| 3.1 | Tire Type Driving Wheels/Loading Wheels | | | | PU/PU |
| 3.2 | Tire Size, Driving Wheels (Diameter X Width) | | | In. | 8.27 X 2.76 |
| 3.3 | Tire Size, Loading Wheels (Diameter X Width) | | | In. | 3.15 X 2.36 (2.91 X 3.46) |
| 3.4 | Wheels, Number Driving/Loading (X=Drive Wheels) | | | In. | .04 X 0.16 (0.04 X 0.10) |
| **Dimensions** | | | | | |
| 4.1 | Lift Height | H3 | | In. | 4.53 |
| 4.2 | Height of Tiller Arm in Driving Position, Min./Max. | H14 | | In. | 29.53/ 46.85 |
| 4.3 | Fork Height, Lowered | H13 | | In. | 3.15 |
| 4.4 | Overall Length | L1 | | In. | 60.63 |
| 4.5 | Length to Fork Face | L2 | | In. | 15.35 |
| 4.6 | Overall Width | B1 | | In. | 22.05 (26.97) |
| 4.7 | Fork Dimensions | SXEXL | | In. | 2.48 X 5.91 X 45.28 |
| 4.8 | Outside Width of the Forks | B5 | | In. | 22.05 (26.97) |
| 4.9 | Ground Clearance, Center of Wheelbase | M2 | | In. | 1.06 |
| 4.10 | Aisle Width for Pallets 1000 X 1200 Crossways | AST | | In. | 64.57 |
| 4.11 | Aisle Width for Pallets 800 X 1200 Lengthways | AST | | In. | 72.44 |
| 4.12 | Turning Radius | Wa | | In. | 54.72 |
| **Performance** | | | | | |
| 5.1 | Travel Speed, with/without Load | | | Mph | 2/2.5 |
| 5.2 | Lifting Speed, with/without Load | | | Ft/s | 0.07/0.082 |
| 5.3 | Lowering Speed, with/without Load | | | Ft/s | 0.30/0.16 |
| 5.4 | Max. Gradeability, with/without Load | | | % | 4/10 |
| 5.5 | Service Brake | | | | Electric |
| **Drive** | | | | | |
| 6.1 | Drive Motor Rating 60 Min | | | W/s | 650 |
| 6.2 | Lift Motor Rating at 15% | | | W/s | 500 |
| 6.3 | Battery Type | | | | Li-ion |
| 6.4 | Battery Voltage/Rated Capacity (5H) | | | V/Ah | 24.20 |
| 6.5 | Battery Weight | | | Lbs. | 12.79 |
| 6.6 | Power Consumption According to VDI Cycle | | | W/hr | 0.25 |
| 6.7 | Charger | | | | 24V10A |
| 6.8 | Optional Battery Pack Capacity | | | | 24V 26Ah |
| **Others** | | | | | |
| 7.1 | Type of Drive Control | | | | DC |
| 7.2 | Noise at the Driver's Ear | | | | <74 |
| 7.3 | Application | | | | GENERAL |

If there are improvements of technical parameters or configurations, no further notice will be given.
The diagram shown may contain non-standard configurations.

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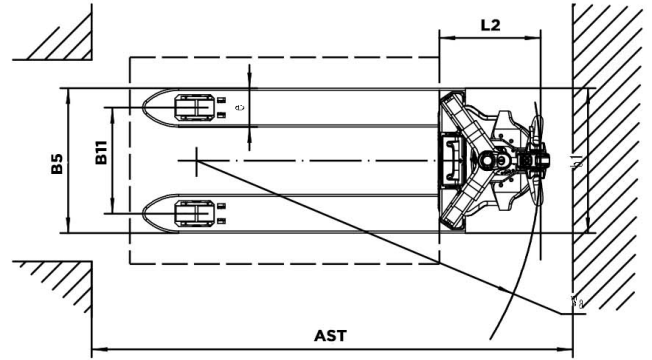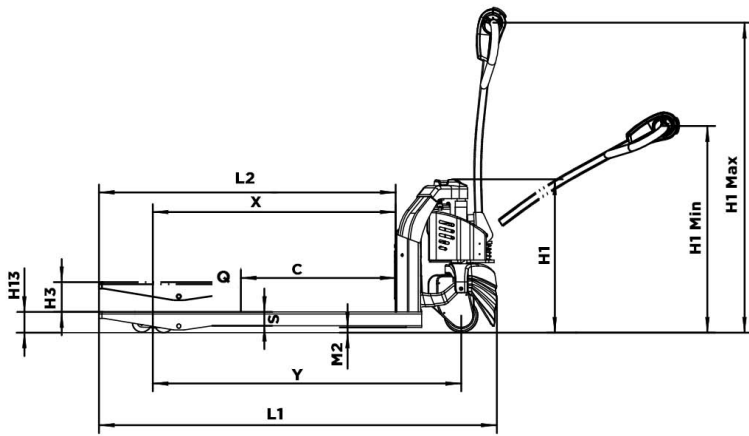
# ↘ Safety Instructions

1. All safety regulations that apply on the electric pallet truck remain valid and unchanged.

2. No weighing operation is allowed while others are on or near the load.

3. No weighing operations allowed if any objects are in the vicinity; around, or close to the load

4. RAVAS is not responsible for physical harm done to the operator because of the presence of the indicator.

5. Any modifications done to the system must be approved in writing from the supplier, prior to any work being completed.

6. It is the sole responsibility of the purchaser to train their own employees in the proper use and maintenance of this equipment.

7. Do not operate this unit unless you have been fully trained of its capabilities.

8. Do not use the weighing system in potentially explosive areas.

9. Do not weld to the lift truck without disconnecting the pressure sensor.

10. Check the accuracy of the scale on a regular basis to prevent faulty readings.

11. Only trained and authorized personnel are allowed to operate the scale.

12. Always follow the operating, maintenance and repair instructions of this truck and ask the supplier when in doubt.

13. Never lower loads if you are unsure you can place the goods on a stable surface. Personal injury may result from placement on an unstable environment.

14. RAVAS is not responsible for errors that occur due to incorrect weighings or inaccurate scales.

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**TAKING THE SYSTEM INTO OPERATION**

The power supply to the weighing system takes place through the battery of the electric pallet truck.

To activate the system, turn it on using the on/off (①) key on the indicator.

It is recommended not to lift loads before the zero point correction has been executed. (See page 13)

## Accurate Weighing

The weight must be centered over the forks of the pallet truck and be able to lift freely: without touching the electric pallet truck or other pallets. The wheels of the electric pallet truck must not be touching the pallet or any other part of the load.
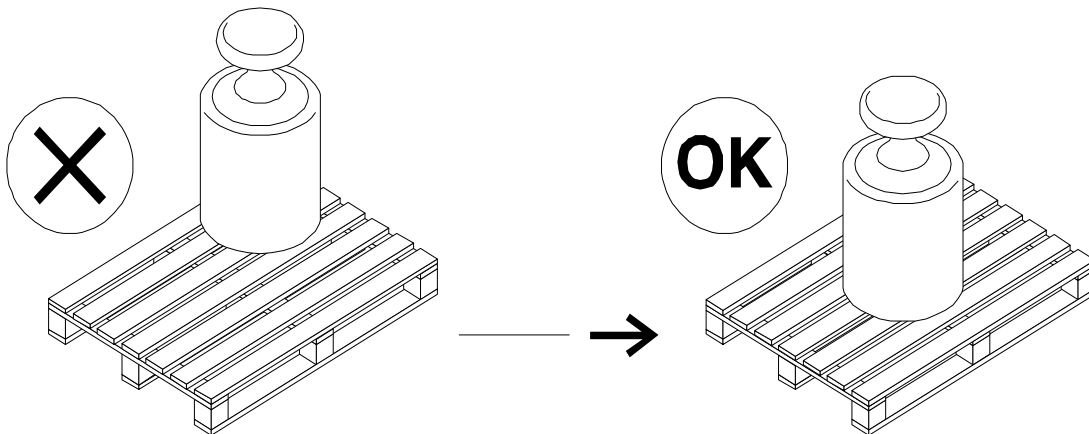
The iJack comes equipped with a level switch. This means that when the system is tilted by greater than 2º the indicator will automatically shut off. An uneven floor will have a greater effect on weighing ability. An even floor is optimal.

The most accurate weighing result is obtained when the center of gravity of the load is placed evenly between the forks.

8

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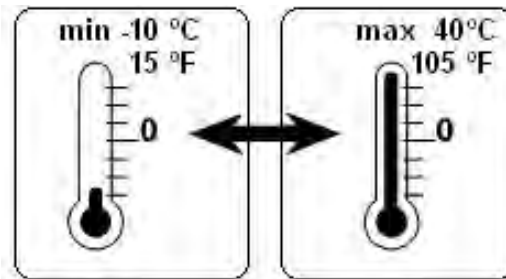
**TEMPERATURE**



Temperature range: between 15 – 105 ⁰F (-10 - +40 ⁰C) 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 acclimatization the weighing system must be shut off.

**MAINTENANCE**

The maintenance guidelines for normal electric pallet trucks apply to the chassis of the mobile weighing system. The integrated weighing system still functions even when the chassis is damaged by overloading. Care should be taken to prevent damage to the load cells.

Main guidelines:

- Clean only with a damp cloth. Chemical cleaners and high pressure washers will cause damage to the system. System should be cleaned regularly to remove any accumulating dirt between the parts of the system.

- Check bolts regularly. When used roughly, they may loosen.

- 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 perform any welding. This is to avoid damage to electronics and load cells.

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# ⬂ 320 Indicator

## BENEFITS

- Code entry, lb/kg toggle
- Relay for automatic dosing
- Display with backlight
- Internal clock for date/time
- For warehousing, dosing and mixing
- Bluetooth 4.0 for RAVAS WeightsApp

### Top quality
### Advanced functions

## FUNCTIONS

- Automatic and manual zero correction
- Gross/net weighing
- Automatic tare by push button
- Tare entry by cursor function
- Totaling with sequence number
- Code entry for max. 5-digit codes, by cursor function
- Three data output modes: print, continuous and command/answer
- lb or kg toggle
- Internal clock (for recording date/time on printout)
- Error messages in display
- Power supply to printer switched on and off by indicator
- Automatic shut-off function, defined by parameter setting
- Low battery indication
- Bluetooth 4.0 for RAVAS WeightsApp

## STANDARD SPECIFICATIONS

| | |
|---|---|
| Display | digital |
| Segments | LCD, digit height 0.79 inch, backlight, dual color |
| Graduation | 0.2, 0.5, 1, 2, 5, 10, 20 or 50 lb (see specifications weighing system) |
| Housing | plastic (ABS) |
| Bracket | steel |
| Colour | red (RAL 3000) |
| Protection class | NEMA 4 / IP65 |
| Power supply | 12V (230V for stationary applications) |
| Power consumption | 35 mA |
| Dimensions | exc. bracket: 2.4 x 3 x 7.2 inch |

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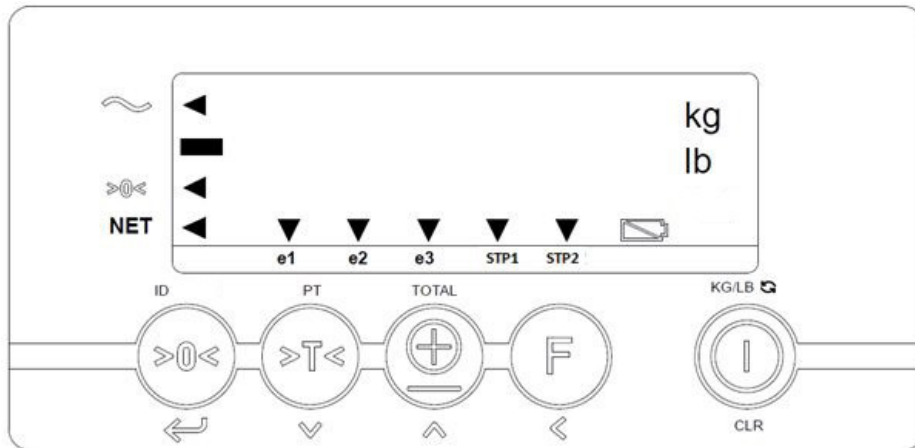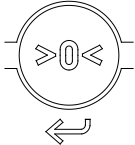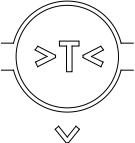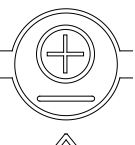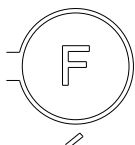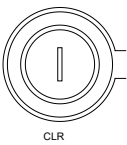
## Indicator 320



## Indicator 320-BLE
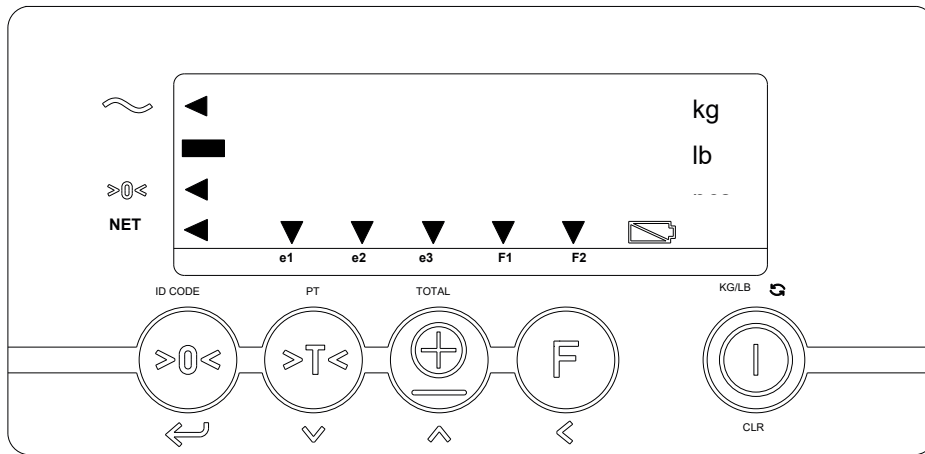


| | | |
|---|---|---|
| | ◀ | the weighing system (including load) is stable |
| | ▬ | the weight shown is negative |
| ZERO | ◀ | the weight shown is within the zero range |
| NET | ◀ | the display is showing the net weight |
| e1 | ▼ | displayed weight is in range 1 (option multi range) |
| e2 | ▼ | displayed weight is in range 2 (option multi range) |
| e3 | ▼ | displayed weight is in range 3 (option multi range) |

| | | |
|---|---|---|
| stp/F1 | ▼ | setpoint 1 active (option function key activated) |
| stp/F2 | ▼ | setpoint 2 active (option function key activated) |
| kg | | displayed weight is in kilograms |
| lb | | displayed weight is in pounds |
| 🔋 | | low bat indicator |

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# Key functions

Each key has 2 operational and one entry function.

| Standard function (short key press) | Key | Special function (long key press) | Value entering function (entry mode) |
|---|---|---|---|
| Zero setting | ID CODE | code entry | enter |
| automatic tare | PT | pre-set tare | decrease the value of the digit flashing |
| print weight and add to the total | TOTAL | check subtotal and print/reset total | increase the value of the digit flashing |
| start special function if active | F | no function | shift to the next digit on the left |
| On switch And change to lb and kg | KG/LB CLR | 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.

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## Net / Tare / Gross weight

*EXPLANATION:  Net(1) + Tare(2) = Gross(3)*

| 1 | 2 | 3 |
|---|---|---|



## Net weighing: automatic tare

| 1 | 2 |
|---|---|



| 3 | 4 |
|---|---|



**The indicator is set to zero. The "NET" pointer shows that the tare weight is activated.**

13
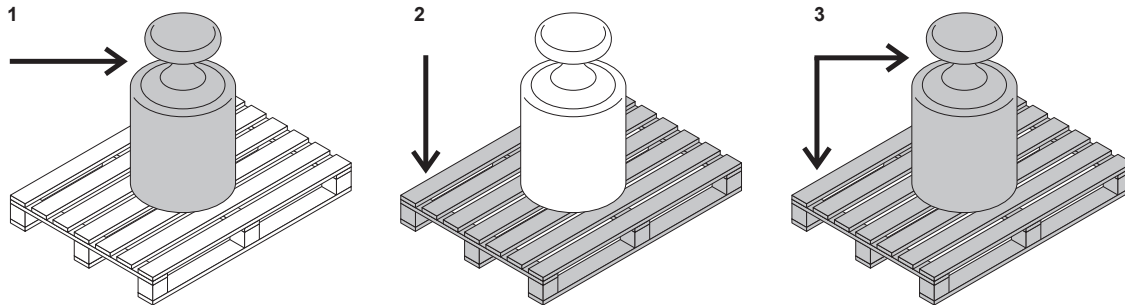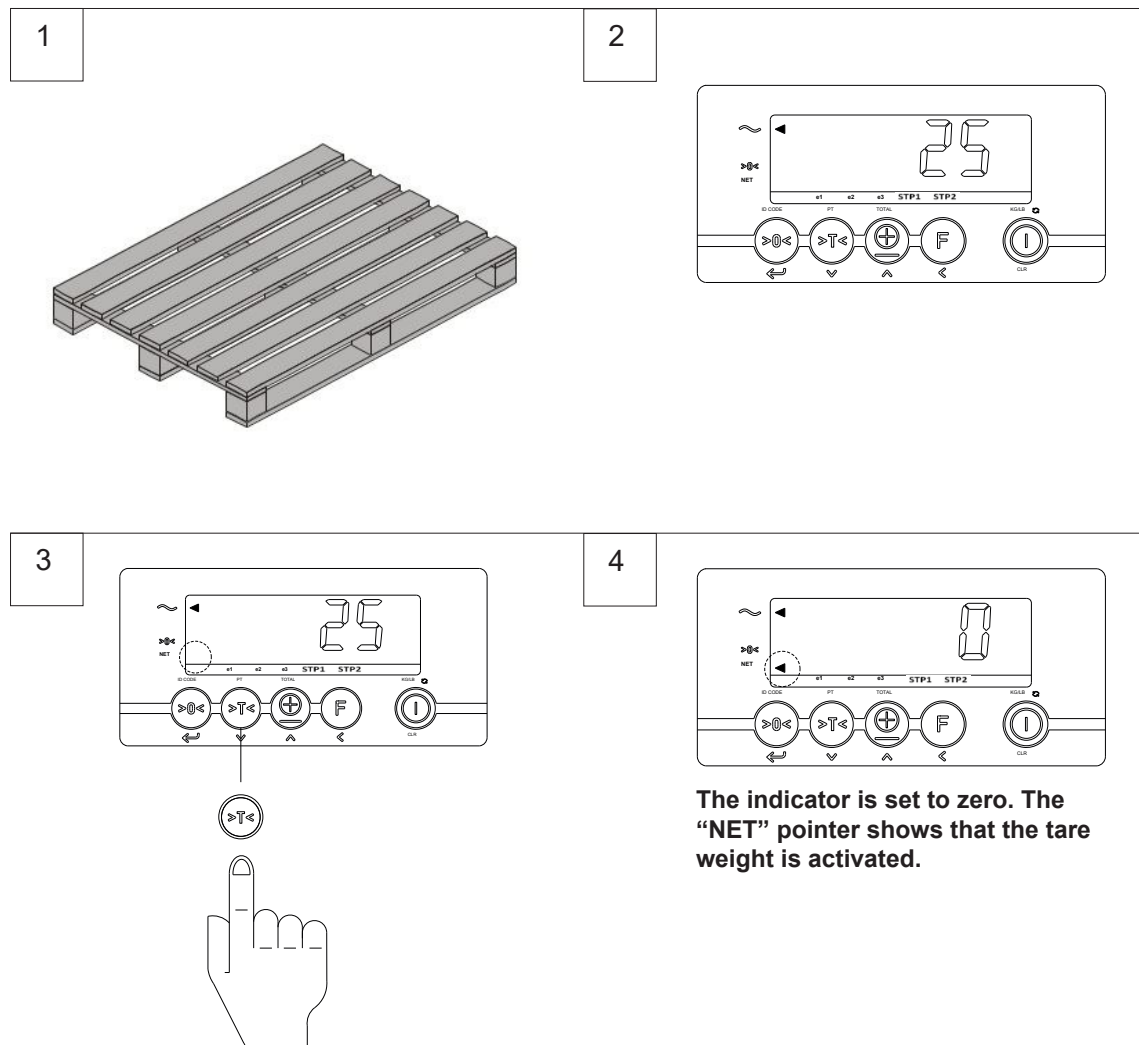
**RAVAS**

**5**
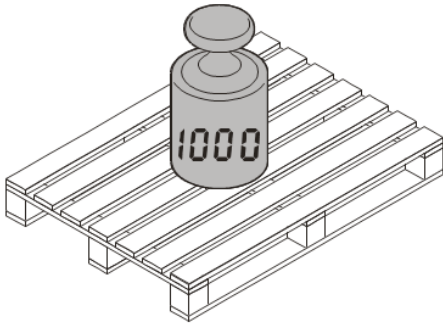


**6**
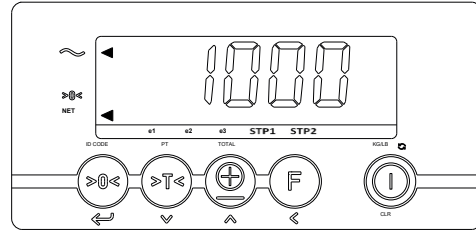


**The display shows the net value of the weighed load.**

**7**
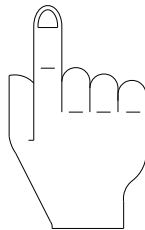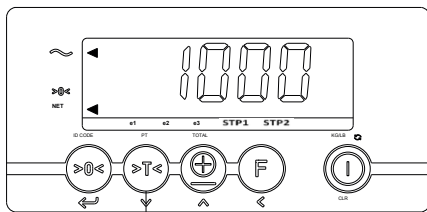


**8**
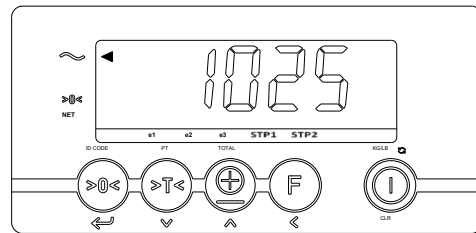


**The gross weight is displayed again.**

**9**
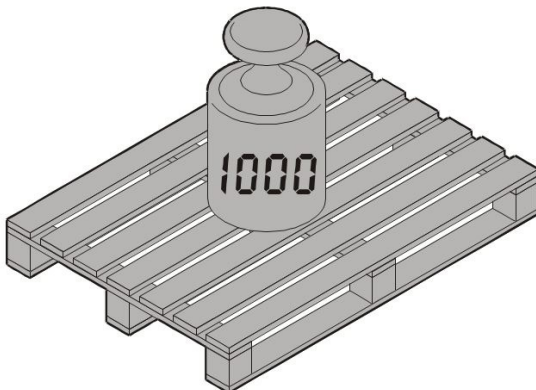


**NOTE: for OIML approved RAVAS 320 the tare will be erased automatically when the weight returns to gross zero! For the next weighing the tare must be activated again.**

**14**

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# Net weighing: manual tare (PT)

**1**

1000

25

**2**

1025

>T<

3 sec.

**Press the**

**>T< key for 3 seconds.**

**3**

00000

⊕ ∧  **5x**

Press the up
or down key
until the
desired value
is reached.

**4**

00005

F ‹  **1x**

**5**

00005

⊕ ∧  **2x**

Press the up
or down key
until the
desired value
is reached.

**6**

00025

>0< ↵

Press ENTER
to activate the
tare weight.

**15**

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**7**
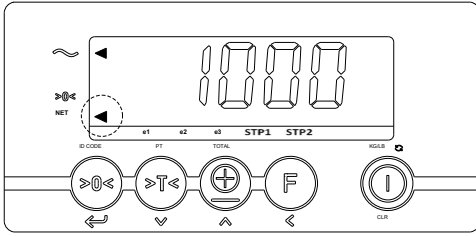
The "NET"pointer lights up.



**8**
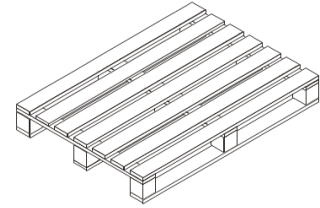


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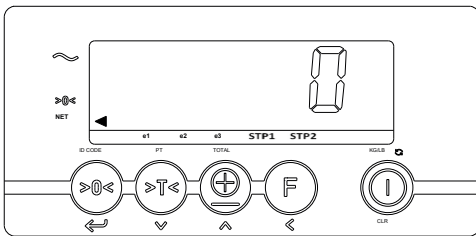


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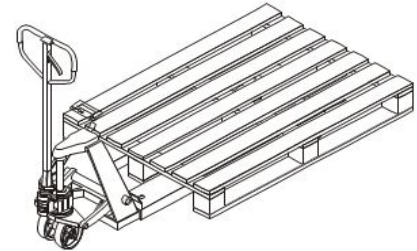


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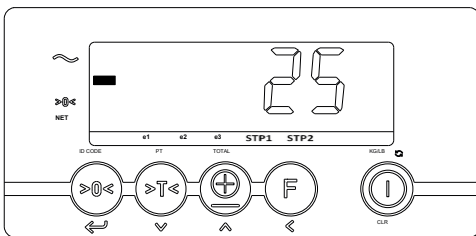
When the pallet wagen is completely unloaded, the tare value is displayed negatively.



**12**

**NOTE: for OIML approved RAVAS 320 the tare will be erased automatically when the weight returns to gross zero! For the next weighing the tare must be activated again.**

**Press >T< and then Enter only when tare value is the same.**

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# Adding & reset

**1**
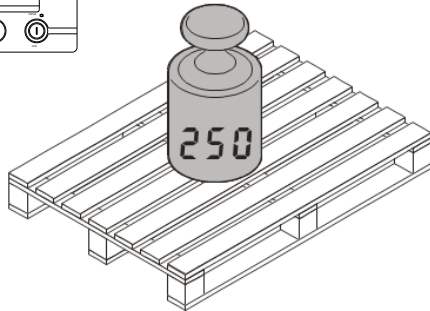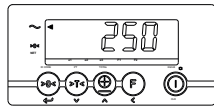


**2**
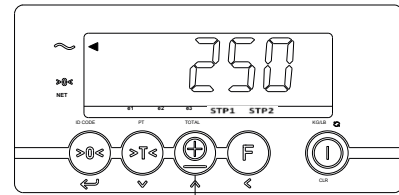


**Press the TOTAL key to add the weight load to the total weight.**

**If a printer is installed, a printout will be made. The gross, net and tare weights are printed.**

**3**

**3X**
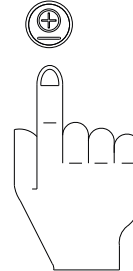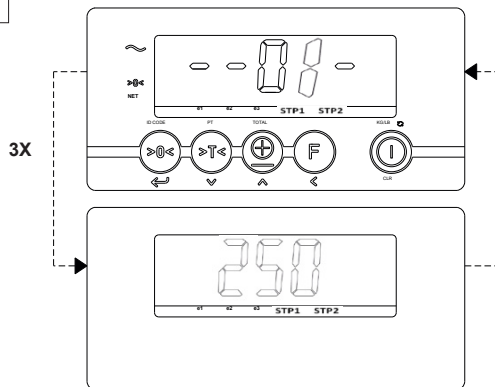


**4**
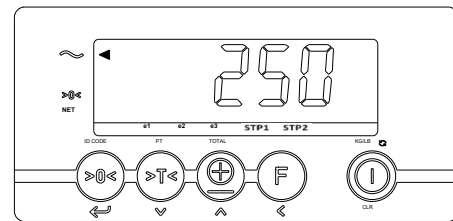


**The display returns to the weighing mode automatically.**

**5**
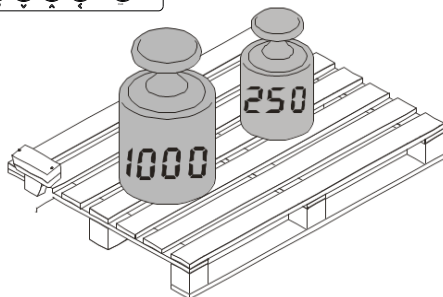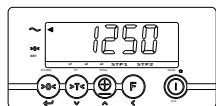


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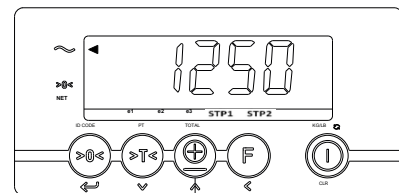


**Press the TOTAL key to add the load weight to the total weight.**

**If a printer is installed, a printout will be made. The gross, net and tare weights are printed.**

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**7**

**3X**

**8**
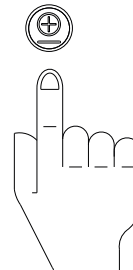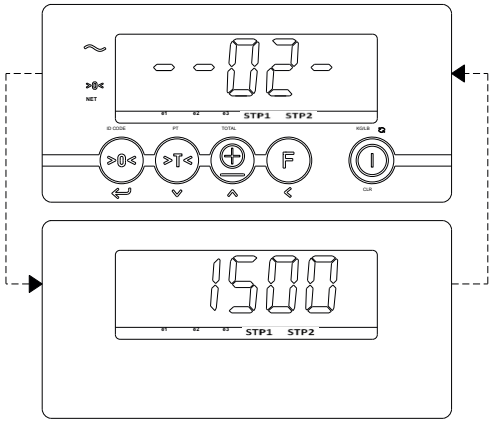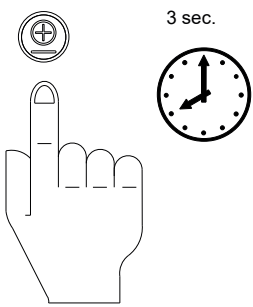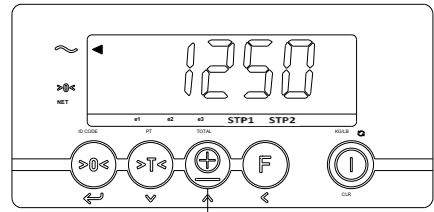
3 sec.

The subtotal
can be checked
by pressing the
TOTAL key for
3 sec.

**9**

3 sec.

CLR

TOTAL

= RESET TOTAL & PRINT

KG/LB
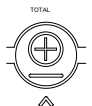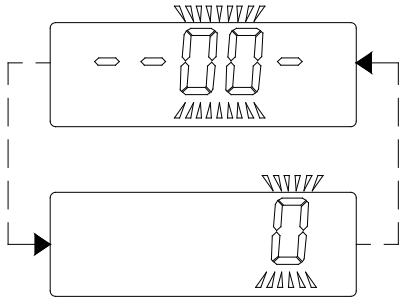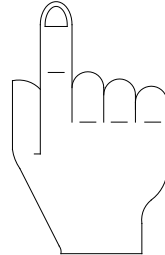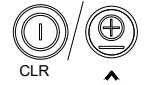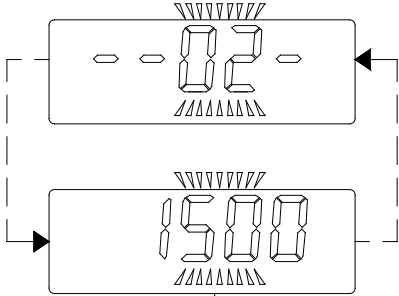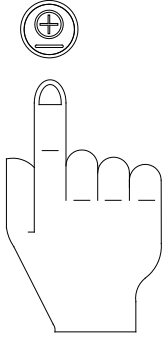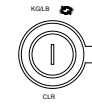
= RESET TOTAL

**NOTE: In case the total is not manually used or reset, the system will do this automatically as soon as the total number has reached 99 or as soon as the total weight has reached a value of 99999 kg.**

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## 3. TOUCH PANEL INDICATOR



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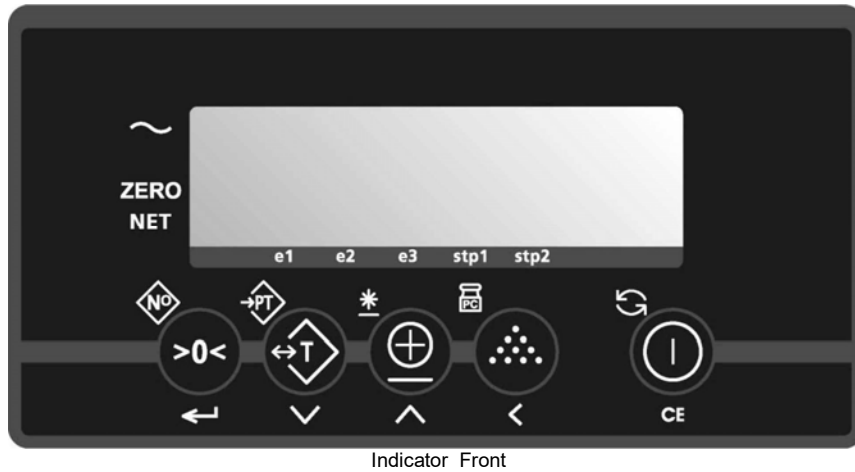
There are 3 display-modes.
The display may show the weight in kgs, lbs or it shows the number of pieces.
Also the battery sign is integrated in the display in order to show low battery status.

**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 is in range 1

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

**e3**   ▼    displayed weight is in range 3

**stp1**   ▼    setpoint 1 is activated

**stp2**   ▼    setpoint 2 is activated

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**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) |
|---|---|---|---|
| | zero setting | code entry | enter |
| | 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 |
| | sampling a piece weight | enter a piece weight | shift to the next digit on the left |
| | on/off switch | toggle units | 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.

**RAVAS**

# ⬂ Printer (Option)

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
```

*Piececount 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
```

*Piececount 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
```

RAVAS

**CHANGE 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, with 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, with 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, with 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, with 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, with the right digit flashing.
- ➢ Repeat the above procedure to accept or change the year setting.
  - ❑ The indicator will return to normal weighing mode.

## 6. RELAY (Option)

If this option is used, it is no longer possible to use the 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 tare & start
4 – dosing/filling with auto tare & start

**OVERLOAD CHECK Gross Weight / Net Weight**                                                         **22**

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 with the left digit blinking. The pointer for set-point 1 is on.
- ➢ Press ↵ 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 ↵ to accept the new value.
  - ❑ The set-point value is activated and the display returns to the weighing mode.

**DOSING/FILLING with Manual Tare & 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 with the left digit blinking. The pointer for set-point 1 is on.
- ➢ Press ↵ to accept the old value.
  - ❑ The value for set-point 1 is activated. The display shows the last entered value for set-point 2 with 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 ↵ to accept the new value.
  - ❑ The set-point value is activated and the display returns to the weighing mode.
  - ❑ The display shows "tare".

**RAVAS**

**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 page 18).

**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 page 18).

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.

**DOSING / FILLING with Automatic Tare & 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 with the left digit blinking. The pointer for set-point 1 is on.
➢ Press ↵ to accept the old value.
   ❑ The value for set-point 1 is activated. The display shows the last entered value for set-point 2 with the left digit blinking. The pointer for set-point 2 is on.

**RAVAS**

**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 ↵ 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 below).

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.

**CANCEL DOSING / 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.

**RAVAS**

| No power | Open indicator and measure power on the board. | Is voltage coming from the truck battery? | Check where the power line comes from. See if power is available on this point. |
|---|---|---|---|
| | | | Mostly a fuse is installed. Measure is voltage is also available after the fuse. |
| | | | If power is available in the indicator then check if the power board is not functioning. |
| | | If the power from the truck is more than 12 Vdc, then the first board is a power converter board. | Check if red and black wire connected between the power board and the main board has 12 Vdc.<br><br>If there is no 12Vdc coming out of this board check this board. If nothing can be found it needs to be replaced.<br><br>If 12Vdc is supplied to the main board. Then check the main board. |
| | 12Vdc on the board | Check the board for burned components | Picture of component most likely to blow when batteries have been entered the wrong way. |
| Accuracy | No repeatability | Check if there is a mechanical problem. | Load left and right fork with for example body weight and see if weight changes when you are in different positions on the scale.<br><br>There should not be a difference larger than 2 lb.<br><br>If there is a bigger difference then 5 lb you have a load cell or a mechanical problem. |
| | | | To make sure it is a mechanical problem, repeat test with a heavy load on the scale, Lift a pallet with 2000 or 3000 lb.<br><br>Reset Indicator for 0 lb using the tare function.<br><br>Load corners with body weight by standing on or on the sides of the pallet. If readings change more than 5 lb you have a mechanical problem. |
| | | | The push rods in the forks may not interfere with the load cells. Take of the fork shoe by unscrewing the nuts on the bottom side of the pallet truck.<br><br>Push the pushrods sideways towards the load cells to see if they come in contact with the load cells: see if they can interfere with the load cells. |
| | | | With the forks lifted half way up, the brackets for the loading wheels may touch the fork shoe. By taking off the fork shoe, Scratches will show if it does and where it does. |
| | | | Check if bolts are loose. |
| | | Check the load cells. If one is broken or gives more or less signal than the others, the scale will give different reading depending how it is loaded. | To be sure that it is not a mechanical problem, load the load cells directly. Take off the fork cover. Try to apply weight 25 to 50 kg / lb, direct onto each load cell. If the indicator shows the same reading, the load cells are OK. |
| | | | Tap with a hammer onto the load cells. Do not be afraid to break it. Repeat the test for each load cell. |

**RAVAS**

| | | | Measure resistance with ohm meter between wires and load cell body. Do this with the other load cells disconnected from indicator. No resistance is allowed. |
| | | | The load cells should have +/- 350 ohm between the signal wires: yellow and green, and excitation wires, black and red. |
| | | Check cables | Bad connections will cause changes when moving the scale. |
| | | | Bend and move the cable briskly especially where the cable is moving continuously while lifting. While doing so, look at the display to see if it reacts to the movements. |
| | | The potentiometers with which we calibrate the output of the load cells, are mechanical parts therefore, higher risk components | Move the board and but pressure with fingers on the potentiometers while looking at the display to see if it reacts. Do not touch the contact itself. |
| | Not linear | Check if it is load cells or indicator | Load cells or indicator are very rarely the cause of this problem. Easiest way to check is by changing the indicator temporarily. If problem is not solved when changing the indicator, the problem is the load cell, cable or mechanics |
| | | Check cable | Very rarely the cause. Maybe in a lift truck. |
| Instability | With no load it is most of the time humidity, bad connection or component r bad shield. | Check for humidity | Check for water marks on the indicator board or load cell connections (potentiometers). |
| | | Check the indicator. | Sometimes the indicator will show a weight when the load cells are disconnected. If you do this and the indicator becomes more stable, it is most likely elsewhere in the system. |
| | | | Check visually for traces of oxidation. If found, heating the solder contacts can solve the problem. |
| | | Check cables. In warehouse and lift truck the cable is working all the time when following the lifting movement. It may be worn or damaged. Changing temperatures and chemicals have an effect on the lifetime of a cable. | Bad connections will cause changes when moving the scale. |
| | | | Bend and move the cable briskly especially where the cable is moving continuously when lifting. While doing so, look at the display to see if it reacts to the movements. |
| | | The potentiometers with which we calibrate the output of the load cells are mechanical parts and are sensitive to humidity, shocks and vibration. | Move the board and but pressure with fingers on the potentiometers while looking at the display to see if it reacts. Do not touch the contact itself. |

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RAVAS

| | | Check the load cells. | If connected independently to the indicator, it can be checked which one is unstable and which one is not. |
|---|---|---|---|
| | With load | Check mechanics. | |
| Function error | No reaction when pushing keys | Check the touch panel | Test can be done by making short cut on connection of the touch panel to simulate a key being pressed. Check for wear of broken contacts in the flat cable going to the indicator board |
| | | Lock up | Take out the battery pack and replace to see if it starts up afterwards. |
| | Not summing | Operator error . | Load is not stable. Scale needs to be unloaded before accepting new print. System will not print weights that are smaller than the graduation. |

## Error messages

ERROR MESSAGES INDICATOR 320

| Display | Meaning | Out of error mode |
|---|---|---|
| Err01 | Load cell signal is unstable | Automatic |
| Err02 | Overload on full scale | Automatic after removing weight |
| Err03 | Gross negative. This action is not allowed | Automatic |
| Err04 | Out of zero range | Press any key |
| Err06 | Input signal too high | Automatic after correcting input |
| Err08 | Calibration out of range (negative) | Automatic |
| Err09 | Calibration out of range (signal too low) | Automatic |
| Err10 | Calibration count 2nd (3rd) point lower than count 1st (2nd) point | Automatic |
| Err14 | Setpoint value 2 < setpoint value 1. This is not allowed | Automatic |
| CAL-J | Legal for trade version: action not allowed | When action is intended, remove jumper JP1 ( attention: after this action a complete new calibration and stamping of the system is necessary ) |
| Err98 | Calibration point must be higher than previous one Action only allowed in start-up units | Automatic |
| Err99 | | Automatic |
| ---- | Loadcell signal negative | Lift up the forks from the ground |
| Err_L | Pallet truck is out of level (only legal-for-trade version) | Put the pallet truck into horizontal position |
| 🔋 | Battery of indicator is empty | Charge the battery pack |
| OimL | Action not allowed (only legal for trade version) | Automatic |
| ntEP | Action not allowed (only legal for trade version) | Automatic |
| SCALL | Audit trail no out of range | Contact RAVAS Service department |
| ESoFt | Wrong combination of firmwares | Contact your dealer |
| EConF | P96 not set | Contact your dealer |

ERROR MESSAGES RELATED TO INDICATOR 320-BLE ONLY

| Display | Meaning | Out of error mode |
|---|---|---|
| ErrF1 | Problem with transmitter module 1 (no communication) | Indicator will try to reconnect for 30 sec. Restart indicator. Restart transmitter module and indicator. |
| ErrF2 | Problem with transmitter module 2 (no communication) | Indicator will try to reconnect for 30 sec. Restart indicator. Restart transmitter module and indicator. |
| Er_F1 | too few samples for measurement | Wait for improvement of the Bluetooth connection (by moving the mast to lower position) |
| Er_F2 | too few samples for measurement | Wait for improvement of the Bluetooth connection (by moving the mast to lower position) |
| tiP | too large load on the tip of forks | Replace load |
| SidE | too large load on one fork | Replace load |
| 🔋 +F1 | battery of transmitter module 1 is empty | Replace the Li-ion pack or recgarge |
| 🔋 +F2 | battery of transmitter module 2 is empty | Replace the Li-ion pack or recgarge |
| LobaF | Fork batteries are empty (appears after three times start-up with empty batteries) | charge the fork batteries |

**ATTENTION:  Before entering the setup mode make sure that the battery supply is sufficient.  A low battery may cause the micro-processor to block. If this happens remove the empty battery and replace it with a fully charged battery.  You should be able to start the indicator in the normal way.**

To enter the setup mode, turn on the indicator and keep the ① key pressed for 20 seconds.  You will go through the normal start-up routine (all segments on; software version; calibration number and weight) and end up in the "P_01" with the right digit flashing.

At this stage you may proceed as follows:

- ➢ To enter parameter 01 press the ⬅ key quickly.
  - o The display will show the setting for this parameter at this moment.
- ➢ You may change the setting by using the ∧ or the ∨ key.

**OR**

- ➢ You can accept the setting by pressing ⬅ .

**OR**

- ➢ To move to the next parameter you press the ∧ key.

**OR**

- ➢ To move to the previous parameter you press the ∨ key.

- ➢ To leave the set-up mode you do the following:
- ➢ With P_XX in the display press the ① key quickly.
  - o The display will show "P_00"
- ➢ Press the ① key again quickly.
  - o If a change was made to the settings the display will show "SET__" briefly and then return to the normal weighing mode.  The calibration number will be increased by every time a change was made in the set up and also after a new calibration.
  - o If no change was made, the display will return into the normal weighing mode.

In the following pages the different parameters are explained and the standard settings are given.  Parameters that are not used yet will not be accessible or displayed with underscores.

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**RAVAS**

| Parameter | Function | Settings | Default US |
|---|---|---|---|
| 01 | Start-up unit (and print units) | 1=kg / 2=lb | 2 |
| 02 | Smallest graduation step for multi-range | 0.1/0.2/0.5…………10/20/50 | 0.5 |
| 03 | Largest graduation step for multi-range | 0.1/0.2/0.5 ……….. 10/20/50 | 2 |
| 04 | Number of graduations for every range | 0000-9900 divisions | 1000 |
| 05 | Weighing capacity system (full scale) | 0000-99999 units | 5000 |
| 06 | Motion tolerance for stable | 0-32<br>off                0.5 grad./sec<br>1 grad./sec      2 grad./sec<br>4 grad./sec      8 grad./sec<br>16 grad./sec    32 grad./sec | 1 |
| 07 | Filter size | 0-12<br>0=off<br>1=light filtering, 12=heavy filtering | 8 |
| 08 | Auto zero range | 0=off             0.5 division<br>1=division        3 divisions | 0.5 |
| 09 | Zero range positive (+) | 0-100%   (approved 2%) of span | 10 |
| 10 | Zero range negative (-) | 0-100%   (approved 2%) of span | 10 |
| 11 | Test Function | BASIC         ADC Counts<br>10x Resolution | bASIC |
| 12 | Power On zero | Yes / No | No |
| 13 | Approved | None, NTEP, OIML, NTEPC | None |
| 14 | Start-up number to add in sampling mode | 1-2-5-10-20-50-95 | 10 |
| 15 | Units switch mode active | Yes / No | No |
| 16 | Setpoint function | 0-14<br>0 (not used), 1 (gross overload), 2 (net overload), 3 (fill manual tare), 4 (fill auto tare), 5 (gross overload not authorize to change gross settin), 6 (net overload not authorize to change net setting), 7(gross overload delayed), 8 (net overload delayed), 9 (gross overload delay not authorize to change gross setting), 10 (net overload delay not authorize to change net setting),11 (gross overload+errors), 12(gross overload+err, no changes allowed), 13(gross overload+err, delayed), 14(gross overload+err, no changes allowed, delayed) | 0 |

RAVAS

| Parameter | Function | Settings | Default US |
|---|---|---|---|
| 17 | Sense active (4 or 6 wire) | 4; 6 | 4 |
| 18 | Gravity value working area | 9.750-9.850 | 9.797 |
| 19 | Print format time/date | European format dd/mm/yy hh:mm<br>American format mm/dd/yy hh:mm | USA |
| 20 | Baudrate comport 1 | 600-1200-2400-4800-9600-19200 | 9600 |
| 21 | Databits comport 1 | 8_n_1;8_n_2;7_n_1;7_n_2;7_E_1;7_E_2;7_o_1;7_o_2 | 8_n_1 |
| 22-23 | Not used | | |
| 24 | End character comport 1 | CR/LF/CRLF | cr |
| 25 | Dataprotocol comport 1 | 0 = PC (bi-directional)<br>1 = PC Excel format on print    command<br><br>2 = remote display<br>3 = printer with power control<br>4 = printer without power control<br>5 = not used<br>6 = PC excel format on print command with ACK/NAK<br>7 = special 1<br>8 = special 2 | 0 |
| 26 | Number of linefeeds comport 1 | 0-9 | 0 |
| 27 | Handshake com1 | soft (Xon/Xoff);hard (CTS) | soft |
| 28 | printout format for com1 and com2 | stand;total;conf | stand |
| 29 | header lines added | 0 - 3 | 0 |
| 30 | Baudrate comport 2 | 600-1200-2400-4800-9600-19200 | 9600 |
| 31 | Databits comport 2 | 8_n_1;8_n_2;7_n_1;7_n_2;7_E_1;7_E_2;7_o_1;7_o_2 | 8_n_1 |
| 32-33 | Not used | | |
| 34 | End character comport 2 | CR/LF/CRLF | CR |

**RAVAS**

| Parameter | Function | Settings | Default US |
|---|---|---|---|
| 35 | Dataprotocol comport 2 | 0 = PC (bi-directional) | 3 |
| | | 1 = PC Excel format on print    command<br><br>2 = remote display<br>3 = printer with power control<br>4 = printer without power control<br>5 = not used<br>6 = PC excel format on print command with ACK/NAK<br>7 = special 1<br>8 = special 2 | |
| 36 | Number of linefeeds comport 2 | 0-9 | 5 |
| 37 | Handshake com2 | Soft/hard | Soft |
| 38 | Print twice | 0=print only once 1=Print twice | 0 |
| 39 | Not used | | |
| 40 | Level switch | NO; LS NC; LS NO; CS FA; CS RA; CS LS | NO |
| 41 | Delay trigger time level switch | 0-10 sec. | 3 |
| 42 | Not used | | |
| 43 | Comp. factor cf | 0.1 to 10.0  (not used) | 1.0 |
| 44 | Comp. factor rdx | 0.1 to 10.0  (not used) | 1.0 |
| 45 | Comp. factor rdy | 0.1 to 10.0  (not used) | 1.0 |
| 46 | T comp. factor zero | (not used) | 1.0 |
| 47 | Not used | | |
| 48 | T comp. factor span | (not used) | 0 |
| 49 | Underload % of FS | 0-100 % | 2 |
| 50 | Peak hold time RCS | 0-7 | 4 |
| 51 | Threshold value RCS | 9999 kg/lb | 100.0 |
| 52 | Peakhold function (RCS function) | 0= OFF 1= ON (RCS function active) | 0 |
| 53-58 | Not used | | |
| 59 | Measuring frequency | 10 or 80 Hz | 10 |
| 60 | Battery used | 12VDC                            6VDC | 12v |
| 61 | Low Bat switch off time | 0-99 minutes<br>0= not switched off | 2 |
| 62 | Auto shut off time if not used | 0-99 minutes<br>0= always on | 30 |
| 63-64 | Not used | | |
| 65 | Auto shut off time backlight | 0; 20; 40; 80; 160; 320 seconds | 20 |
| 66 | Backlight brightness | 100; 75; 50;20;0 % | 100 |
| 67 | Not used | | |
| 68 | Buzzer function | No/yes | No |
| 69 | Disable keys 2, 3 and 4 (only if P16= active) | 0-3 | 0 |

RAVAS

| Parameter | Function | Settings | Default US |
|---|---|---|---|
| 70 | Auto Tare release(at empty scale) | No/yes | No |
| 71-89 | Not used | | |
| 90 | Reset to default parameter settings without altering calibration parameters | If parameter 01 was on 1 it will default to the EU settings, if P01=2 the US settings will be defaulted. New delivered boards will have the EU settings. | |
| 91 | Reset to default parameter settings including calibration parameters | If parameter 01 was on 1 it will default to the EU settings, if P01=2 the US settings will be defaulted. New delivered boards will have the EU settings. | |
| 92 | Recall factory settings calibration | | |
| 93 | Read out last 10 error messages | | |
| 94 | Not used | | |
| 95 | Factor used only | | 00000 |
| 96 | Printout parameter setup | Pr-C1: Pr-C2 | Pr-C1 |
| 97 | Key test function (buzzer and Nr) | | |
| 98 | Scale ID number | 0-999 | 1 |
| 99 | Firmware version | (last available version | 215A |

**RAVAS**