SMART WEIGHING SOLUTIONS

400 Series

K404 Truck Weighing

Digital Indicator Operator Manual

RI00-624-100

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1.Overview and Safety

1.1. Overview

This precision digital indicator uses the latest Sigma-Delta A/D technology to ensure fast and accurate weight readings. There is a soft power on/off function that retains memory of its state. Once an instrument is turned on it will automatically start up again if the external power is interrupted. Day-to-day operating settings (eg. ZERO, TARE, CLOCK, etc.) are retained when power is removed.

The instrument provides zero, tare, gross/net, truck and print on the fixed function keys and supports special functions (eg. printing, unit switching, etc.), via user definable function key and external inputs.

1.2. Operating Environment

- Temperature: –10 to +50°C ambient (14 °F to 122 °F)
- Humidity: <90% non-condensing
- Storage: –20 to +50°C ambient (-4 °F to 122 °F)
- ABS: IP65 when panel mounted or with rear boot
- Stainless Steel: IP66 when panel mounted or with rear boot

1.3. Electrical Safety

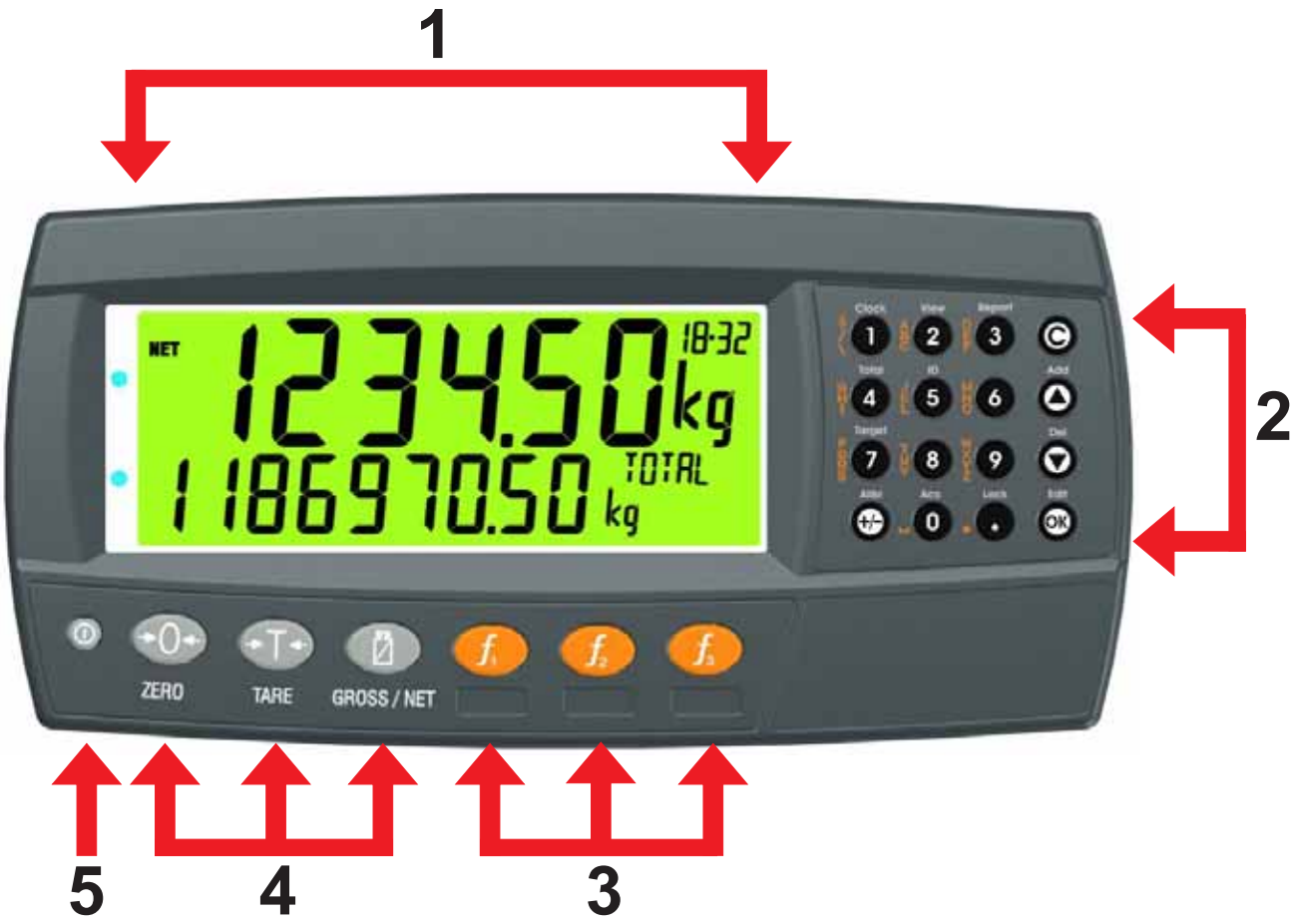
- For your protection all mains electrical hardware must be rated for environmental conditions of use.
- Pluggable equipment must be installed near an easily accessible power socket outlet.
- To avoid the possibility of electric shock or damage to the instrument, always switch off or isolate the instrument from the power supply before maintenance is carried out.

1.4. Cleaning

- To maintain the instrument, never use harsh abrasive cleaners or solvents. Wipe the instrument with a soft cloth **slightly** dampened with warm soapy water.

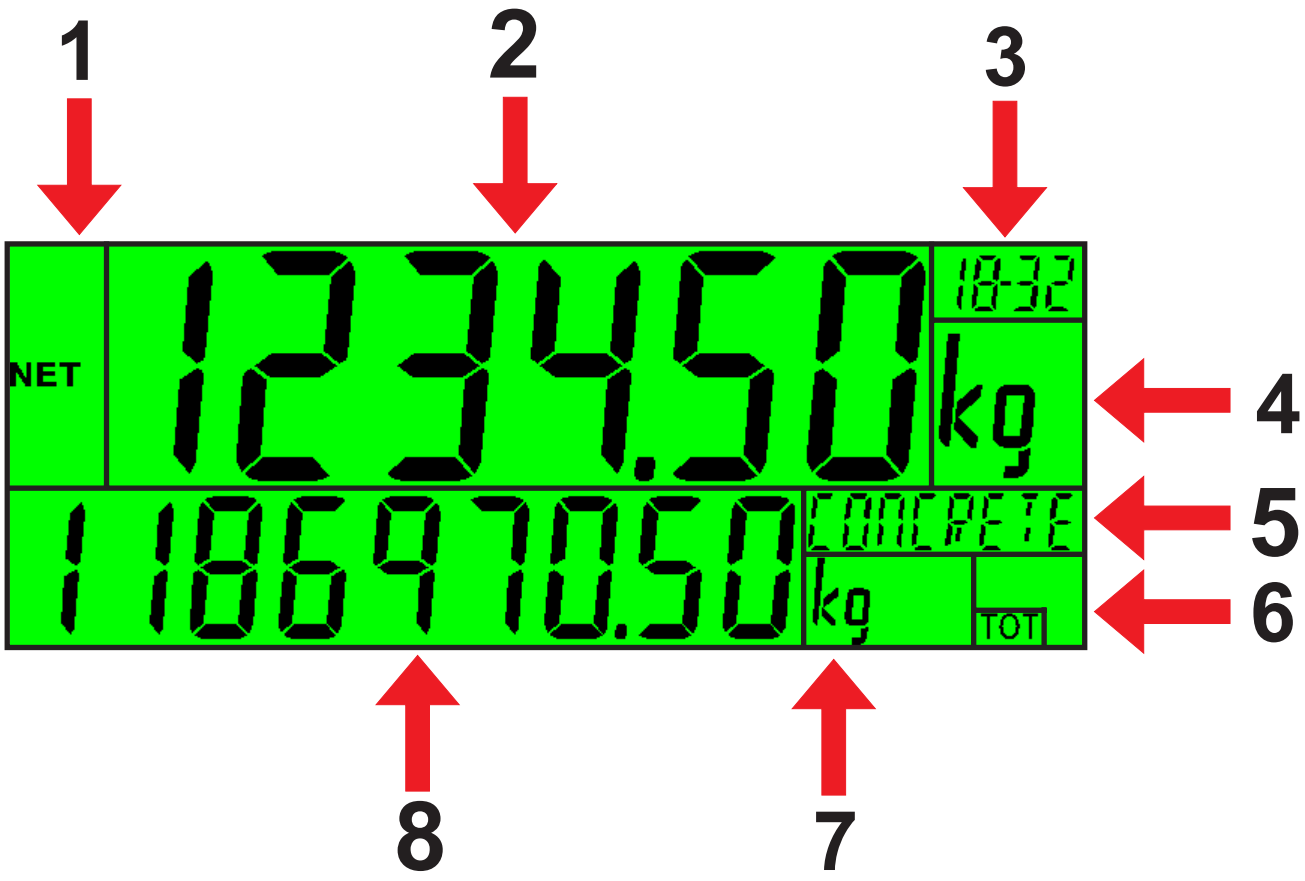
2. User Interface and Display

2.1. Overview



Code	Description
1	Display
2	Numeric Keypad
3	Function Keys (user defined)
4	Function Keys (Fixed)
5	Power Key

2.2. Display

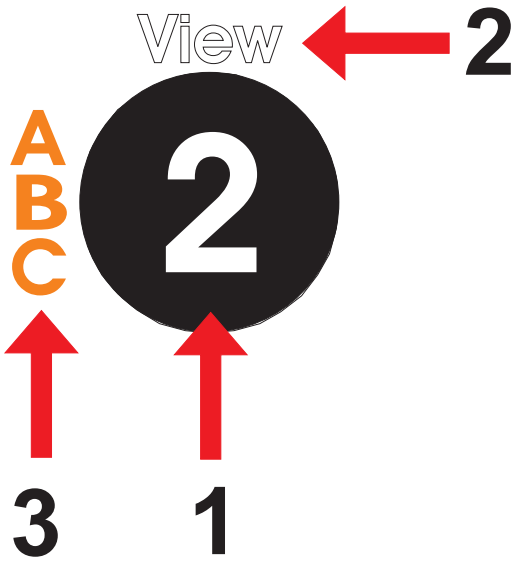


Code	Description
1	Primary Annunciators
2	**Primary Display**
3	Auxiliary Display
4	Primary Units
5	**Secondary ID** Eg Product Name = CONCRETE in example above.
6	Miscellaneous Annunciators
7	Secondary Units
8	**Secondary Display**

2.3. Primary Annunciators

Symbol	Name	Description
HOLD	**HOLD**	Visible when the displayed reading is held.
NET	**NET**	Visible when the displayed reading represents Net weight.
→0←	**ZERO**	Visible when the gross reading is within ± ¼ of a division of true zero.
≈	**MOTION**	Visible when the displayed reading is not stable.
⌴	**ZERO BAND**	Visible when the displayed weight is within the zero 'dead' band setting.
◄1►	**RANGE**	Indicates current range (for dual range/interval).

2.4. Keypad



Code	Description	
1	Numeric Button	0-9
2	White Characters	Hold 2 seconds
3	Orange Characters	(Alpha and Symbols)
©	Cancel	Undo last command; step backwards (including in setup menus).
▲	Up	Move cursor backwards; previous option
▼	Down	Move cursor forwards; next option
OK	OK	Accept this choice
.	Decimal Point	Place decimal point
+/-	+/-	Change to negative or positive number; Change Editing VIEW (eg ASCII vs string)

2.5. Strings

There are 3 different methods of editing strings:

- Normal string editing (auxiliary display: STR)
- Numerical string editing (auxiliary display: S.NUM)

- ASCII string with character position (auxiliary display: S.ASC)

Use the **<+/->** key to cycle between these options.

2.5.1. Normal String Editing

Normal string editing is most useful where strings are small and contain no lowercase or unprintable characters. The available characters are printed in orange on the keypad.

Special keys are:

- <OK>: Accept changes and finish.
- <Long press of cancel>: Cancel and exit without changes
- <Cancel>: Delete character
- <Up>, <Down>: Move cursor
- <Long press of down>: Delete string after cursor
- <+/->: Switch editing modes

2.5.2. Numerical String Editing

Numerical string editing is useful when entering strings containing only numbers. The available characters are the numbers and the decimal point.

Special keys are:

- <OK>: Accept changes and finish.
- <Long press of cancel>: Cancel and exit without changes
- <Cancel>: Delete character
- <Up>, <Down>: Move cursor
- <Long press of down>: Delete string after cursor
- <+/->: Switch editing modes

2.5.3. ASCII String Editing

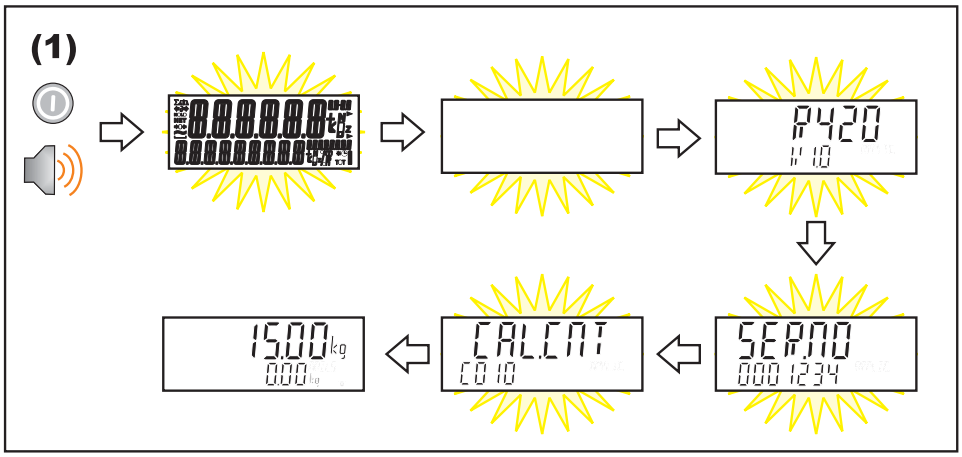
ASCII string editing is useful where tokens or other unprintable characters are required. ASCII codes are entered as numbers. Print tokens are entered in this mode.

Special keys are:

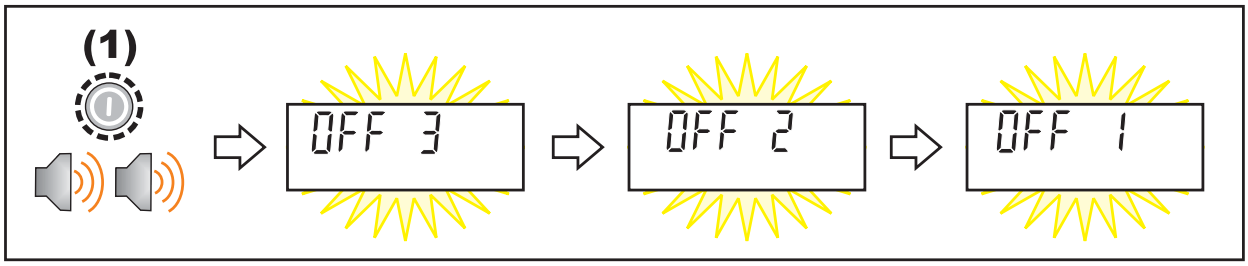
- <OK>: Accept ASCII code/Accept changes and finish.
- <Long press of cancel>: Cancel and exit without changes
- <0> to<9>: Enter a new code
- <Cancel>: Delete character
- <Up>, <Down>: Move cursor
- <Long press of down>: Delete string after cursor
- <+/->: Switch editing modes

3.Basic Operation

3.1. Turn Instrument ON - Short press <Power>



3.2. Turn Instrument OFF - Long press <Power>



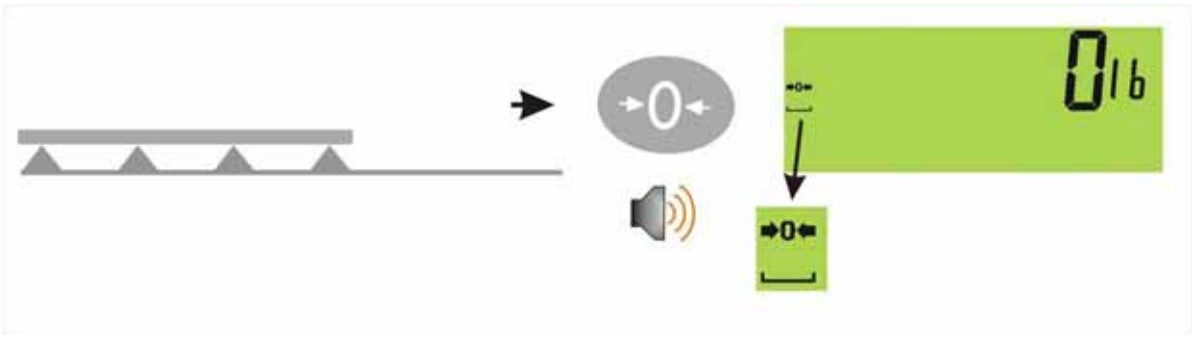
3.3. Additional Power Information

Power Key Locked: If the power key is locked, the Instrument cannot be turned off from the front keypad.

Automatic Operation: Instrument will operate whenever external power is available and will not need to be manually turned on again if the power is interrupted.

3.4. Zero Key

When an empty scale has drifted away from a true zero reading, this key is used to perform a zero adjustment on the scale display. The zero adjustment is stored when power is removed and is re-used when next powered up.



3.5. Tare Key

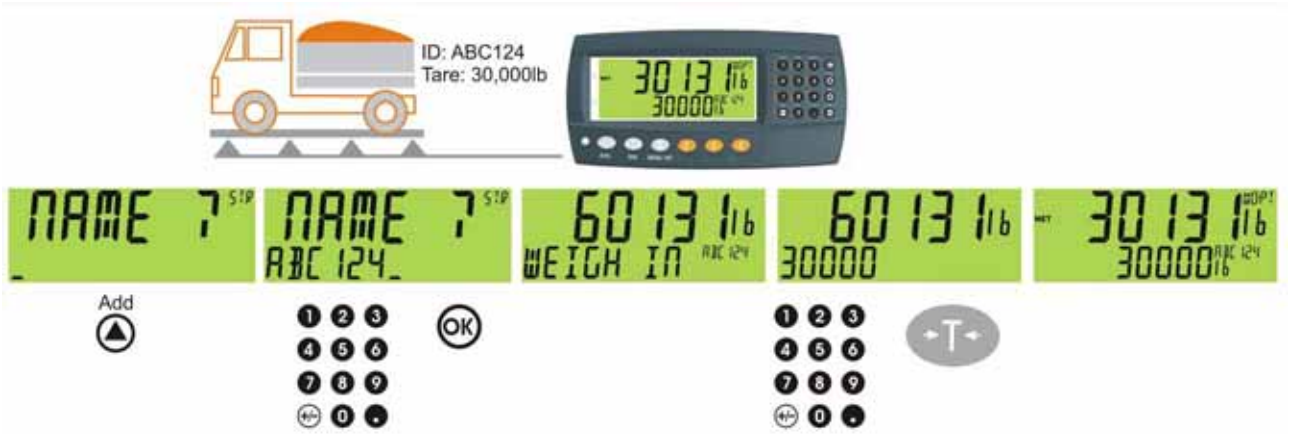
The Tare key is used to temporarily set the scale to zero. The display will show the Net weight and the NET annunciator will be lit.

The weight tared is deducted from the allowable range of the scale, reducing the maximum weight that can be displayed.

Preset Tare: Preset Tare values are entered using the Numeric Keys followed by the TARE key. (E.g. to enter 1.5kg as a preset tare, press <1> <.> <5> <TARE>)

The tare adjustment is stored when power is removed and is re-used when next powered up.

3.5.1. Setting Preset Tare on a Permanent Truck ID



3.5.2. Setting Preset Tare on a Temporary Truck ID

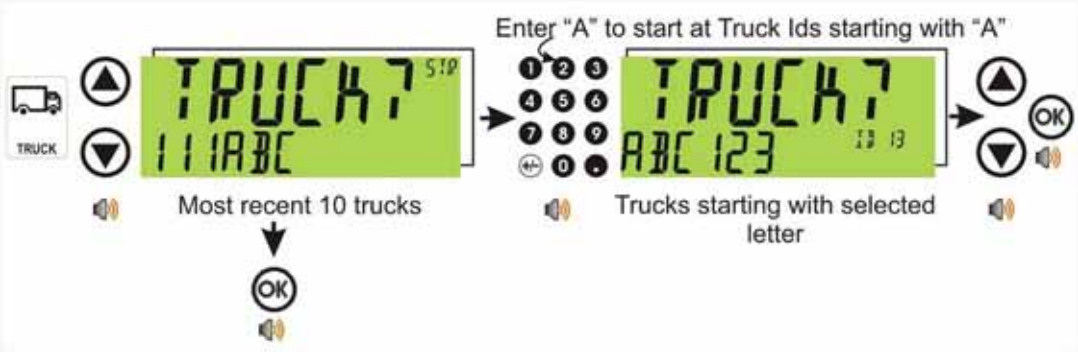
3.6. Gross/Net Key

This key toggles the weight display between the Gross weight and the Net weight (provided that a Tare has previously been acquired using the **<TARE>** key).

3.7. Select/Deleting/Adding Truck IDs

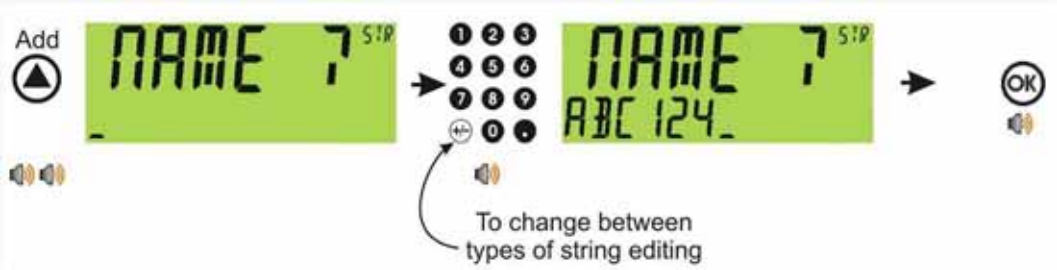
3.7.1. Select a Truck ID - Short Press of Up and Down keys

A short press of these keys will allow the user to select the desired truck from a list of the most recently used. The keypad can be used to enter the first letter of the truck name. The <UP> and <DOWN> keys will then step through the list of trucks starting with the entered letter.



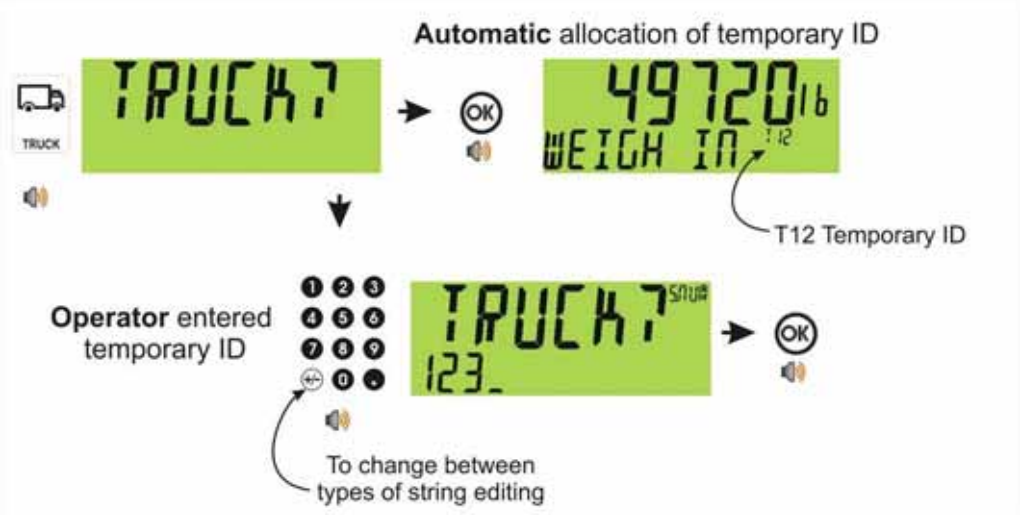
3.7.2. Add a Permanent Truck ID - Long Press of the Up Key (Add)

A long press of this key allows the user to create a new **permanent** truck. The name of the new truck must be specified. If a truck exists with that name it will be selected, otherwise a temporary truck with that name will be created.



3.7.3. Add a Temporary Truck ID – Truck Key

A short press of the Truck key allows you to enter a name followed by the <OK> key. If a name isn't specified a temporary one will be allocated in format T followed by a number (eg. T12). **As this is only a temporary Truck ID it will be automatically deleted at the end of the weigh out process.**

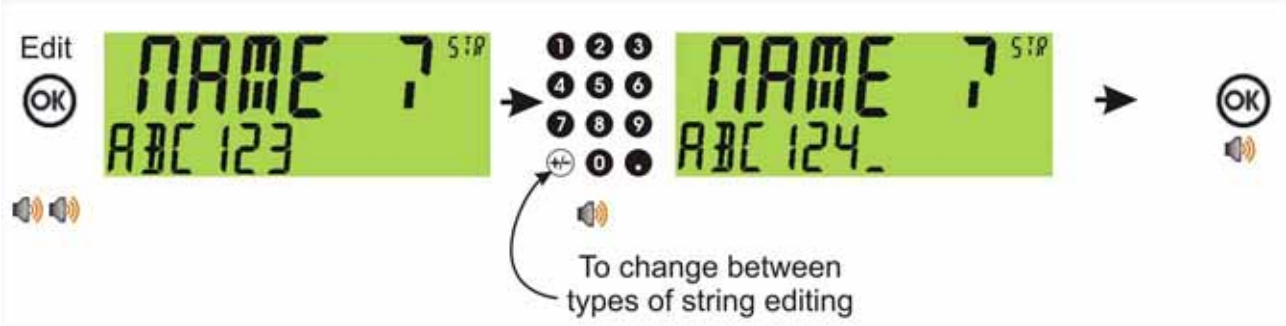


3.7.4. Delete a Truck ID - Long Press of the Down Key (Del)

A long press of this key allows the user to delete a truck. Trucks can only be deleted if the total weight is 0. Truck totals can be cleared using a long press of the 4 key (Total).

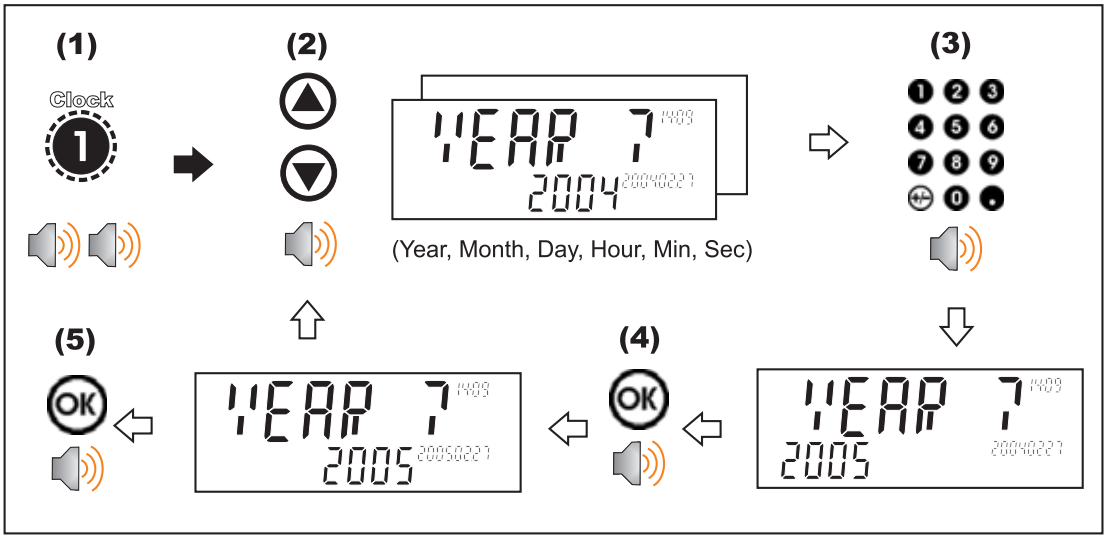
3.7.5. Edit a Truck ID - Long Press of the OK Key (Edit)

A long press of this key allows the user to change the name of a truck.



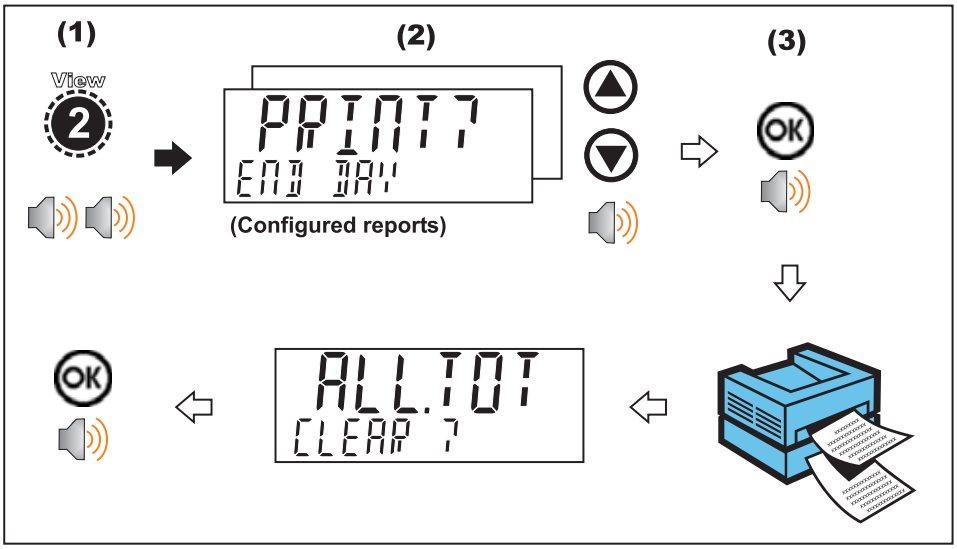
3.8. Clock

A long press of the 1 key (Clock) allows the system time and date to be viewed and changed



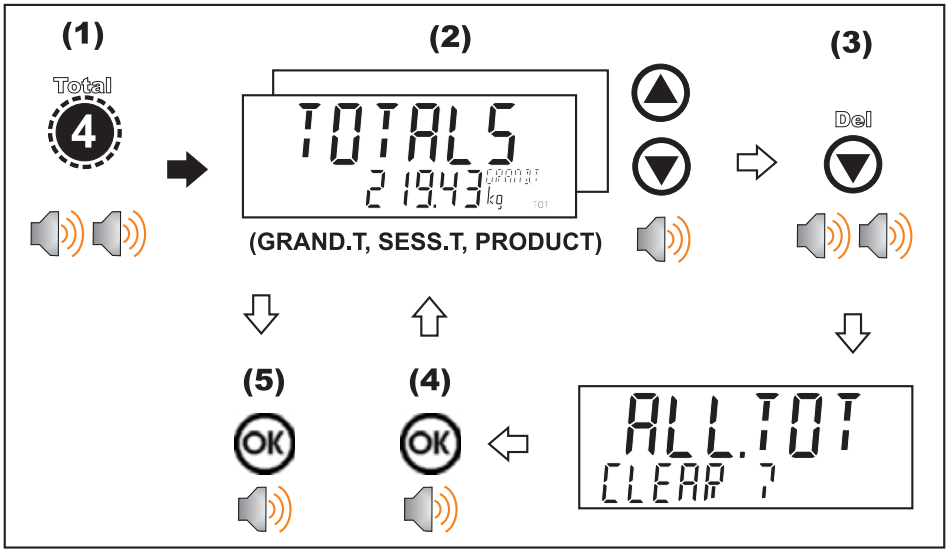
3.9. Report

A long press of the 3 key (Report) allows reports to be printed.



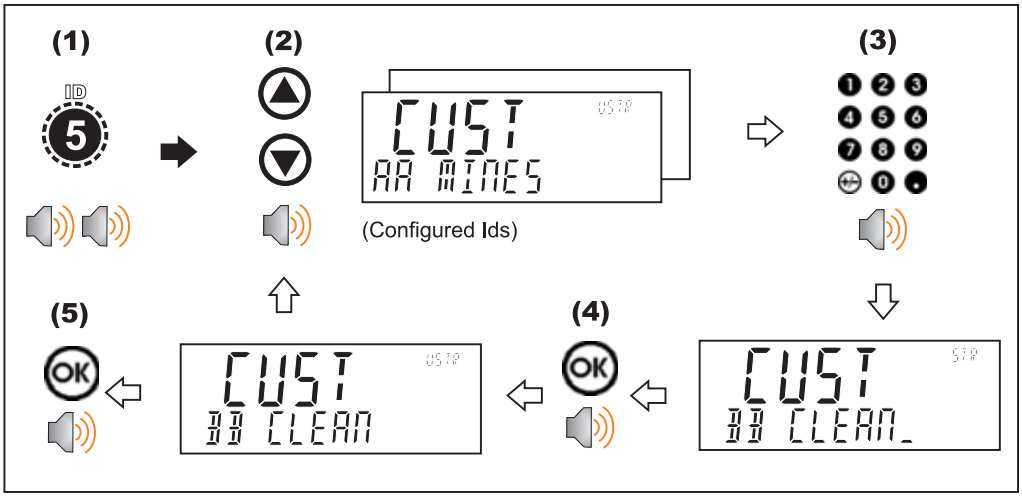
3.10. Total

A long press of the 4 key (Total) allows totals to be viewed and cleared.



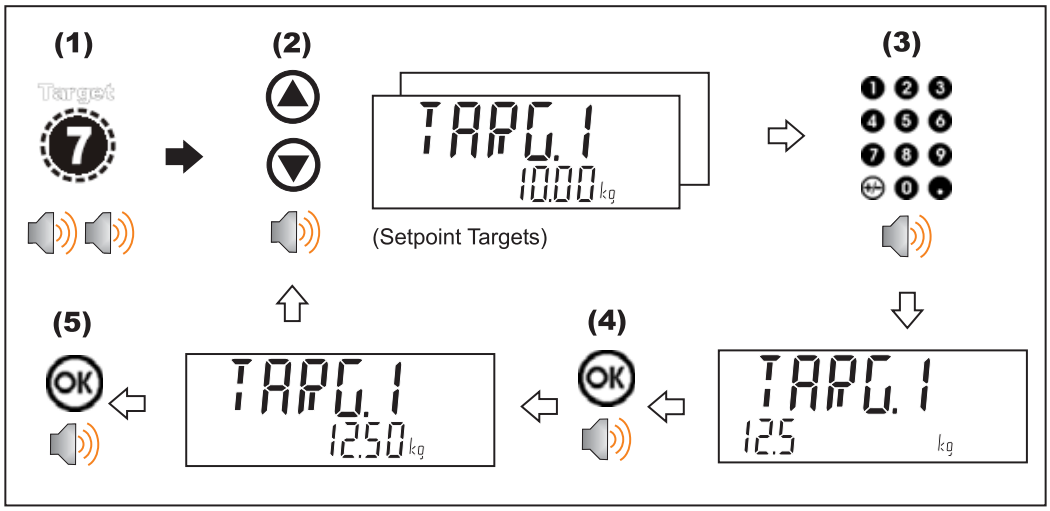
3.11. User ID

A long press of the 5 key (ID) allows User IDs to be viewed and cleared.



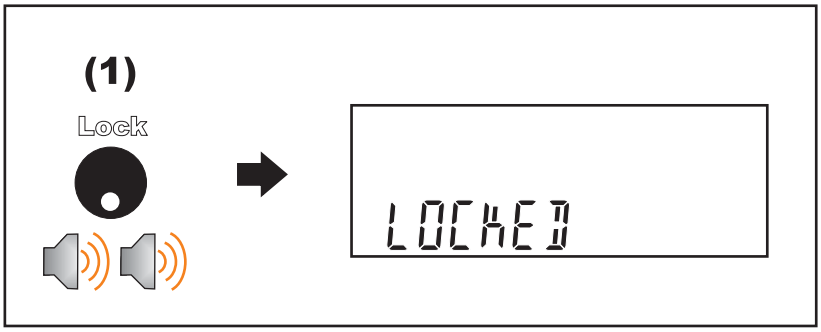
3.12. Target

A long press of the 7 key (Target) allows setpoint targets to be viewed and changed.



3.13. Lock

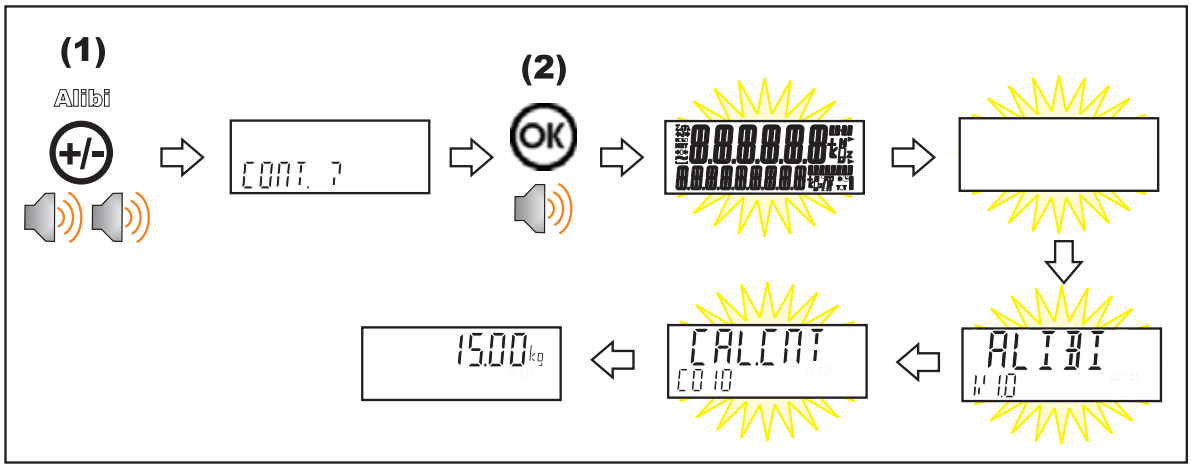
A long press of the . key (Lock) allows instrument to be locked. The instrument can be unlocked by entering the operator passcode when prompted.



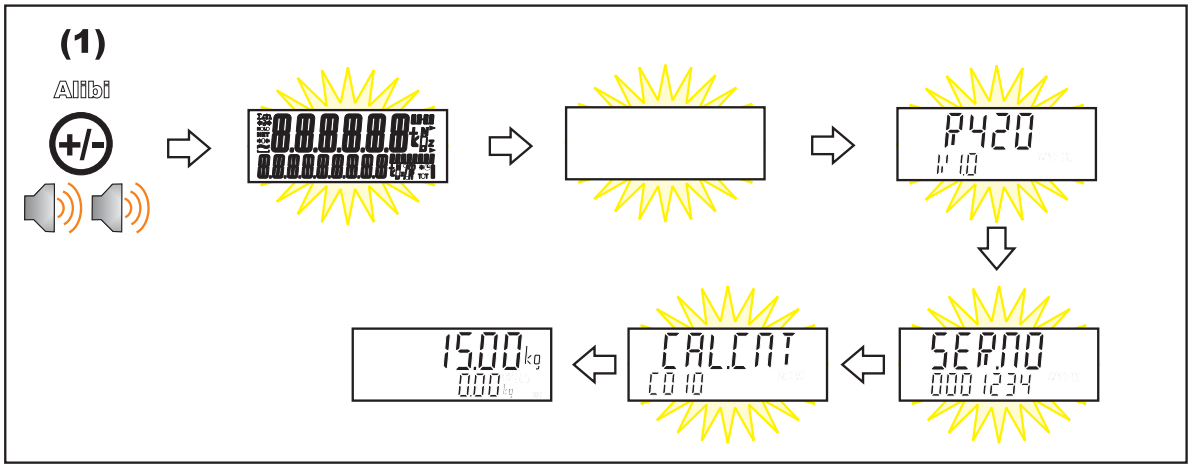
3.14. Alibi

A long press of the +/- key (Alibi) will switch the instrument to Alibi mode. Alibi mode is used to verify scale readings. To return from Alibi mode, long press the +/- key (Alibi) again.

3.14.1. Switching to Alibi Mode

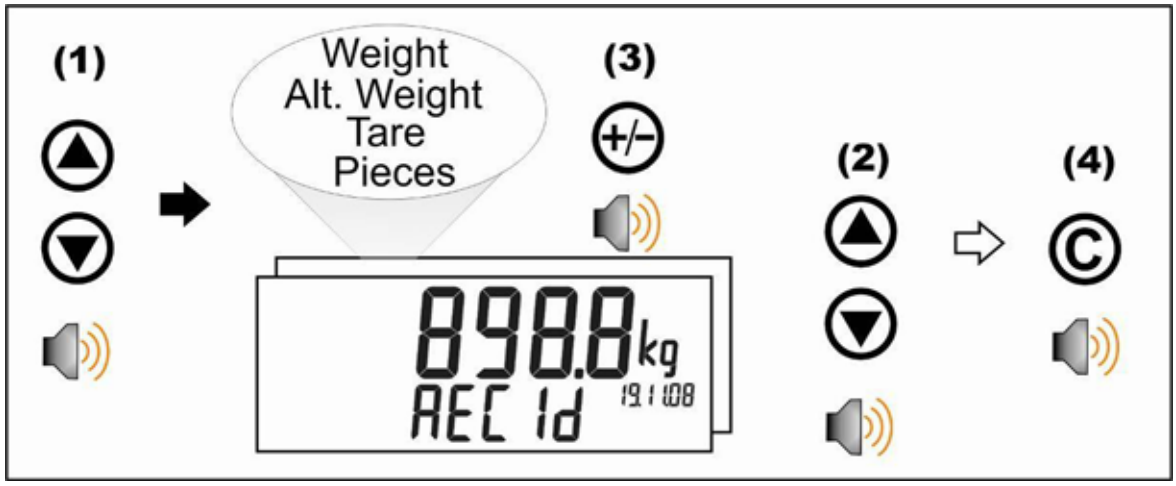


3.14.2. Returning from Alibi Mode



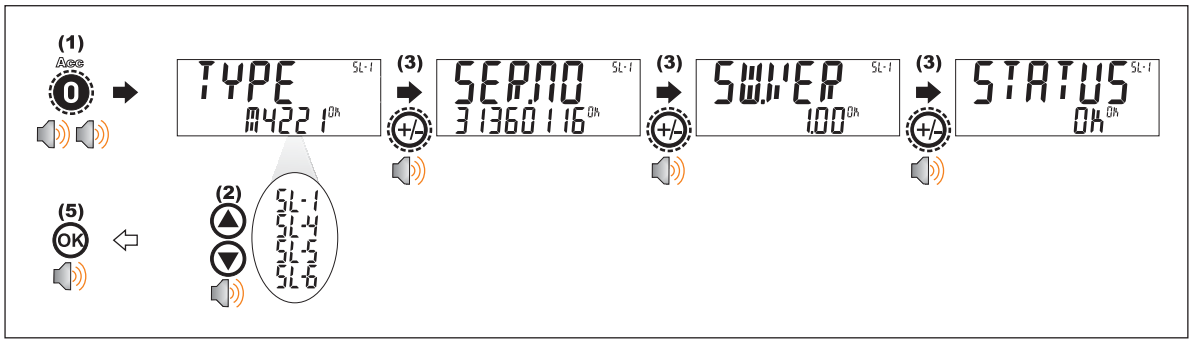
3.14.3. Viewing DSD records in Alibi mode

From Alibi mode you can view DSD records (when a DSD is fitted) by pressing the up arrow key to view the latest record, pressing the down arrow key to view the oldest record or by entering a number than pressing the OK key to view that specific record. Once viewing records you can use the +/- key to display the different information stored in the record, use the up arrow key to move onto the next record or use the down arrow key to move onto the previous record. Once you are finished viewing records you can return to Alibi mode by pressing the C key.

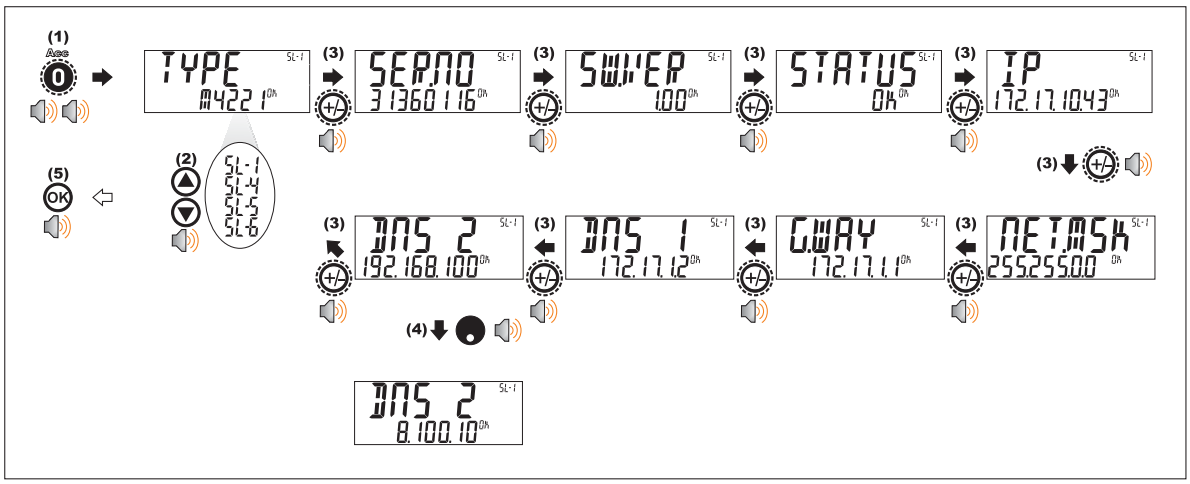


3.15. Acc

A long press of the 0 key (Acc) is used to view information about the attached accessory modules.



When a M4221 Ethernet module is attached, the current IP (Internet Protocol) settings can be viewed from the Acc menu. The "." key allows the second half of longer IP addresses to be displayed. In this example the DNS 2 IP address is 192.168.100.10.



3.16. Stability Considerations

Some functions (e.g. Tare and Zero) require a stable weight. These functions will wait for up to 10 seconds for stable weight. If a stable weight is not available 'MOTION ERROR' is displayed and the function is cancelled.

3.17. Passcodes

The instrument has three levels of passcode to provide security for instrument functions, calibration and general configuration.

- Full Setup Passcode
- Safe Setup Passcode
- Operator Passcode

The operator passcode is used to protect access to instrument functions available from the front panel keypad. The operator generally needs to enter the Operator Passcode only once to gain access to multiple functions. To lock the instrument again press the '.' key for two seconds (LOCK function).

4. Truck Weighing

4.1. Weighing in

Once a Truck ID with no first weight or preset tare has been selected the indicator will move to weigh in mode. When the truck is on the scale you can either press the OK key to store the current weight as the first weight, press the print key to print the current weight and store it as the first weight or enter a preset tare to move directly to the weigh out step. If you have stored a first weight then the indicator will move back to normal mode weighing until a truck is selected.

The Cancel key <C> allows you to cancel out of the weigh in mode and return to normal mode without storing a first weight or preset-tare.

4.2. Weighing out with preset tare

Once a product with a preset tare is selected the indicator will move to weigh out with preset tare mode. When the truck is on the scale you can press the print key to add the current tare weight to totals and return to normal mode.

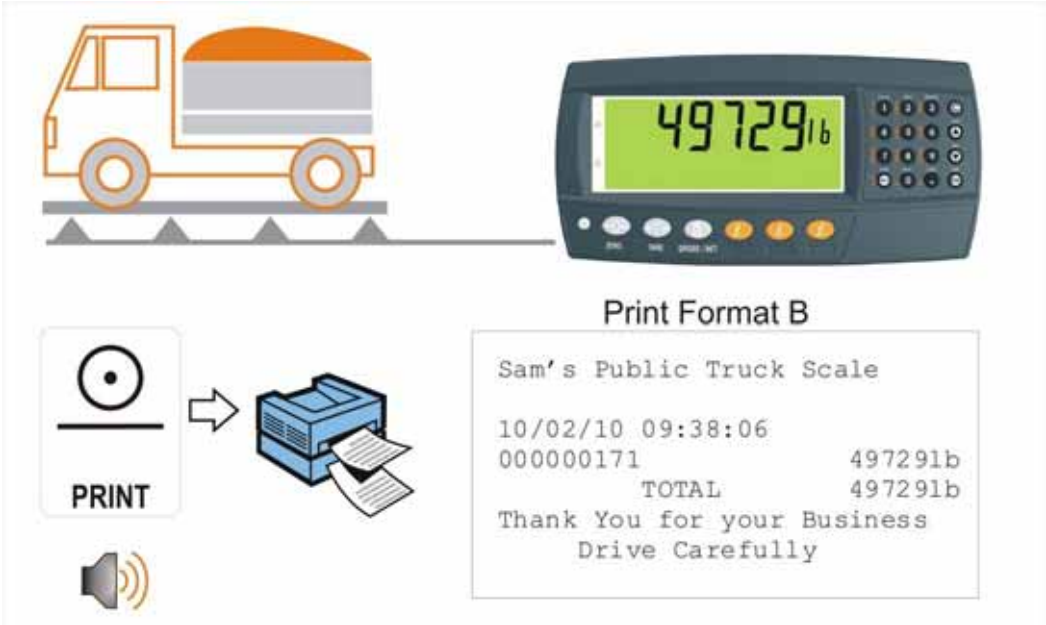
The Cancel key <C> or <OK> key allows you to cancel out of the weigh out mode and return to normal mode without adding any weight to totals.

4.3. Weighing out with first weight

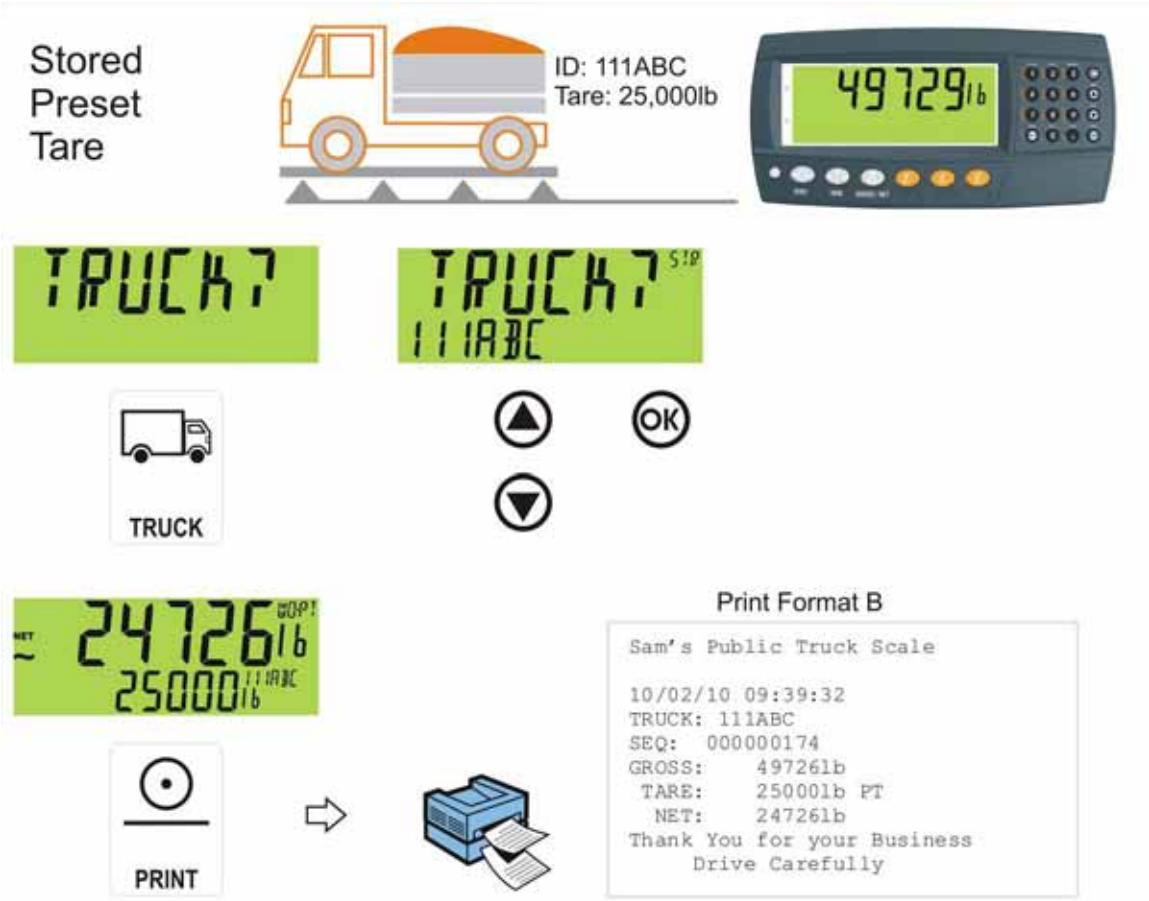
Once a product with a stored first weight is selected the indicator will move to weigh out with first weight mode. When the truck is on the scale you can press the print key to add the current weight minus the first weight to totals, the first weight will be cleared when this happened and the indicator will return to normal mode.

The Cancel key <C> or <OK> key allows you to cancel out of the weigh out mode and return to normal mode without clearing the first weight or adding any weight to totals.

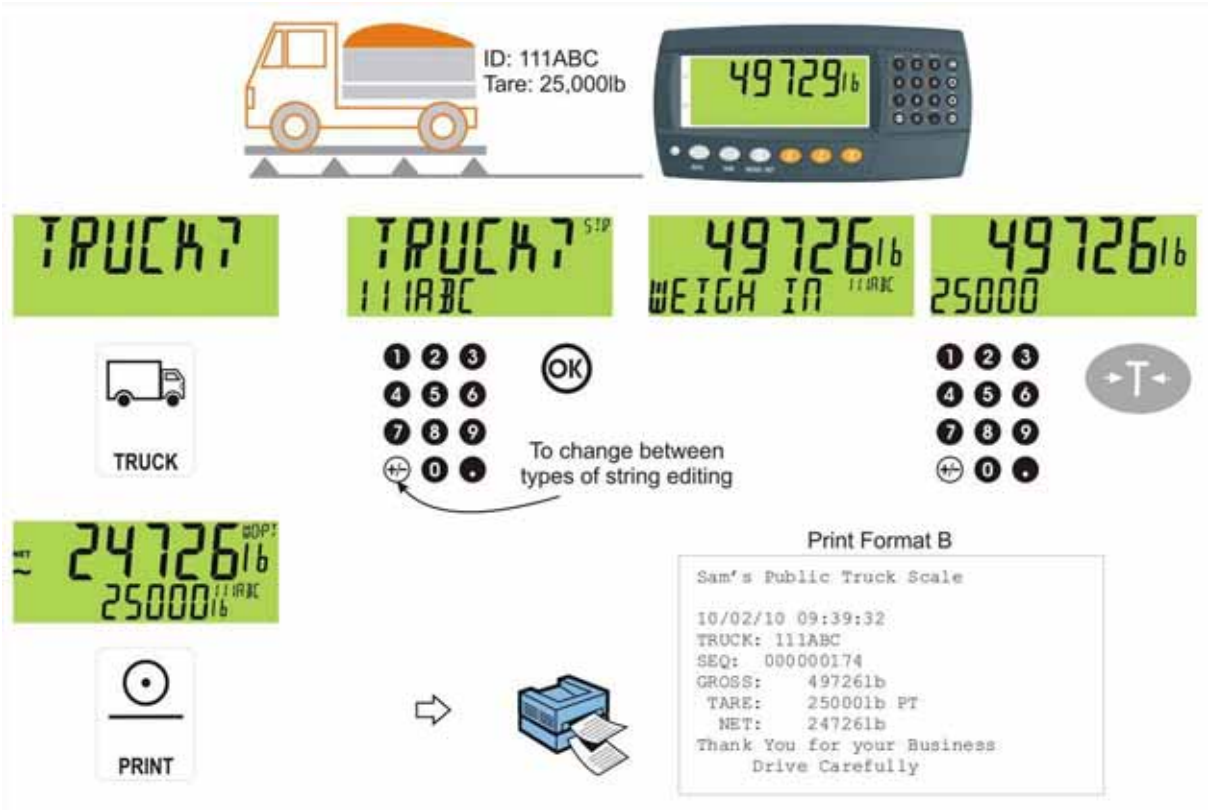
4.4. Print Current Weight of Truck



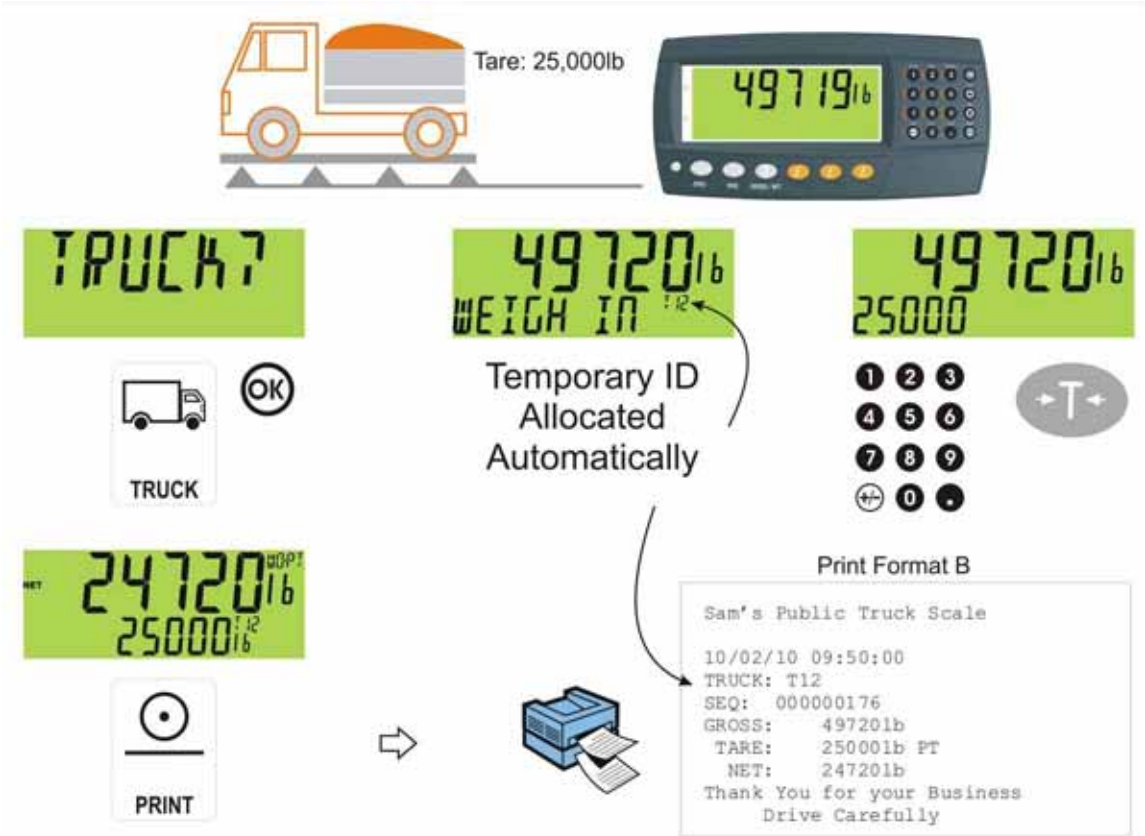
4.5. Single Pass - Permanent Truck ID with Preset Tare



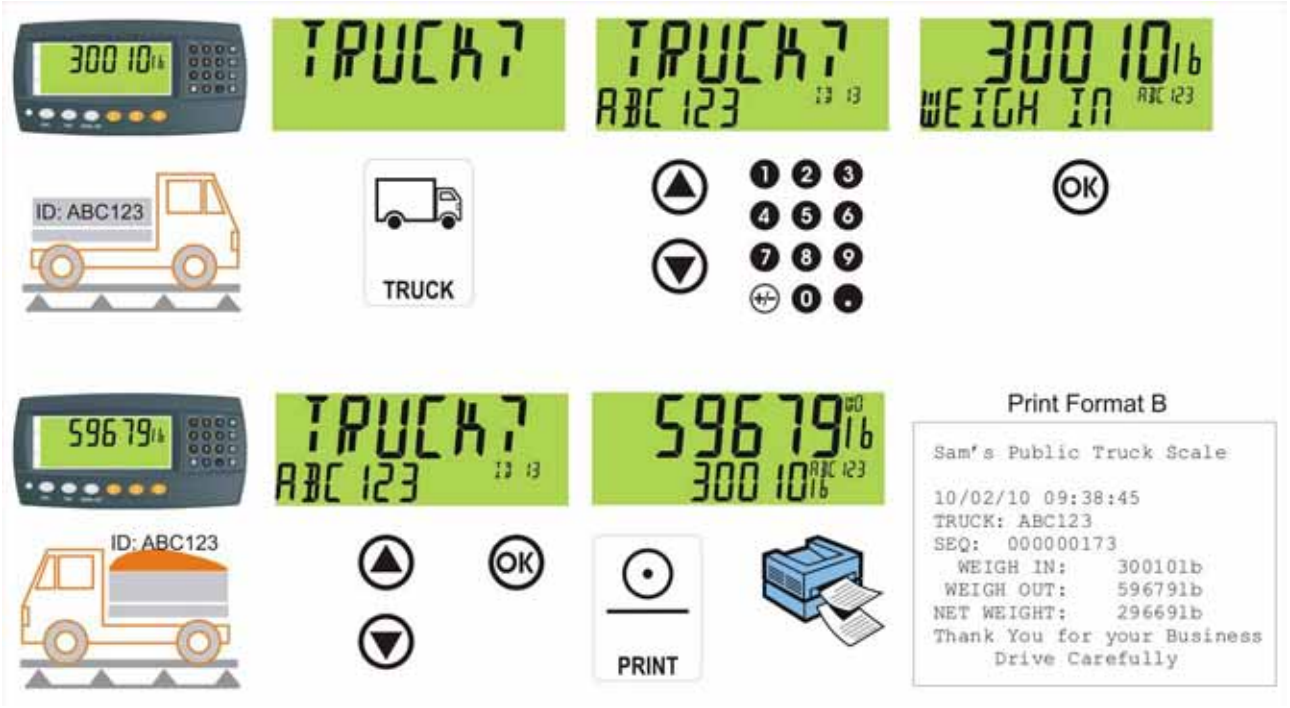
4.6. Single Pass - Temporary ID (Operator Entered) with a Preset Tare



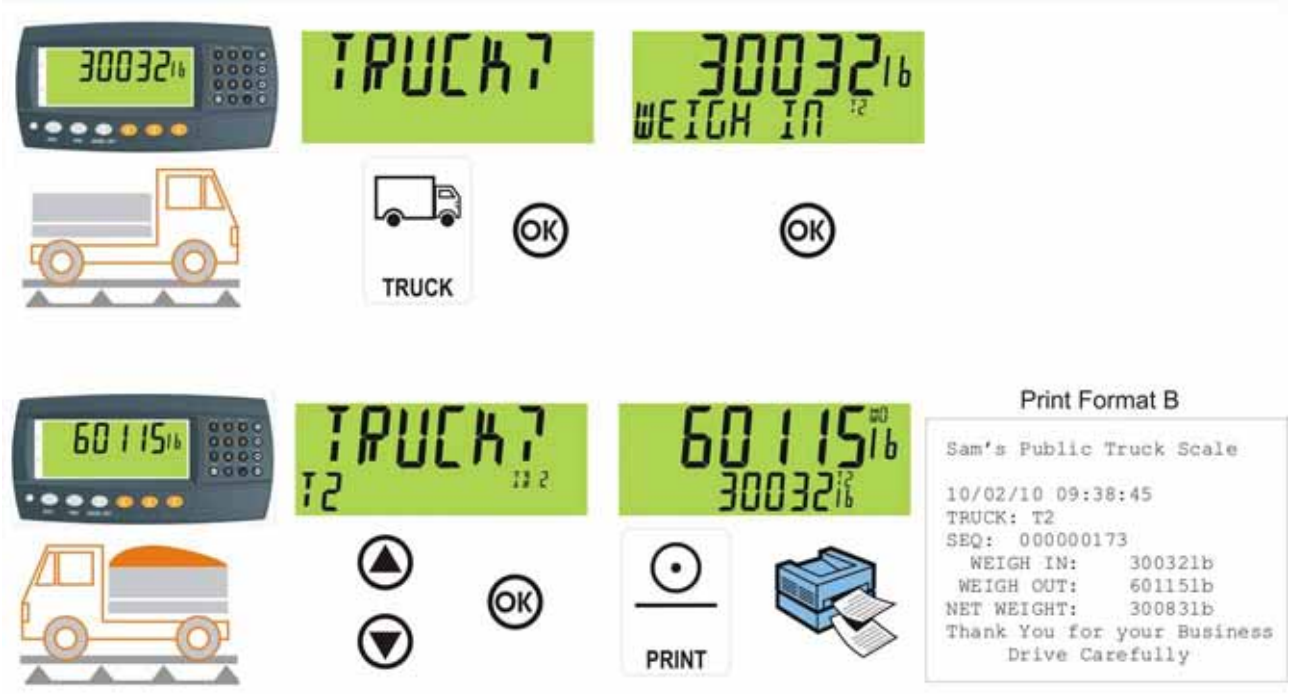
4.7. Single Pass – Automatic Temporary ID Allocated with a Preset Tare



4.8. Two Pass



4.9. Two Pass – Automatic Temporary ID Allocated



5.Function Keys

5.1. Introduction

The instrument has 3 special function keys on the front panel, the K404 uses F1 as the Truck key and F2 as a Print key. These functions are also available for external keys. Function key 3 and external keys can be configured to any of the key functions detailed below.

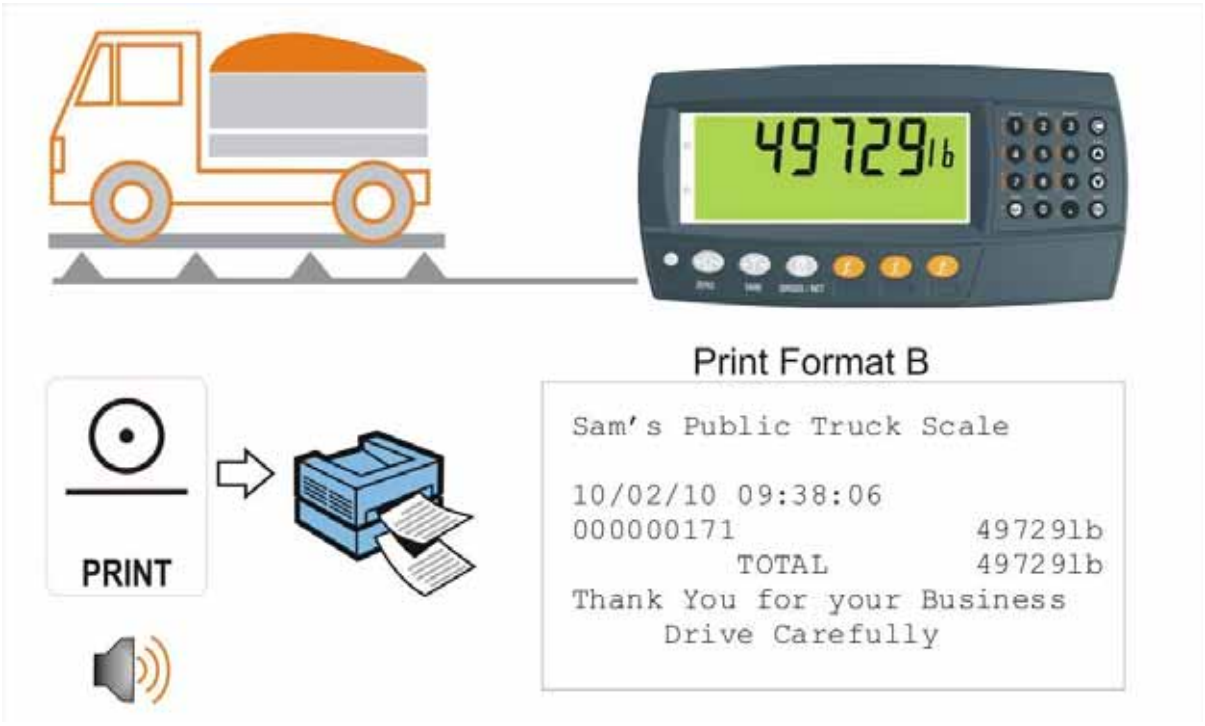
5.2. TRUCK

A short press of the truck button will allow you to enter a name or use the arrow keys to select and existing product or enter a name for a new temporary product, refer to 3.7 Select/Deleting/Adding Truck IDs page 10.

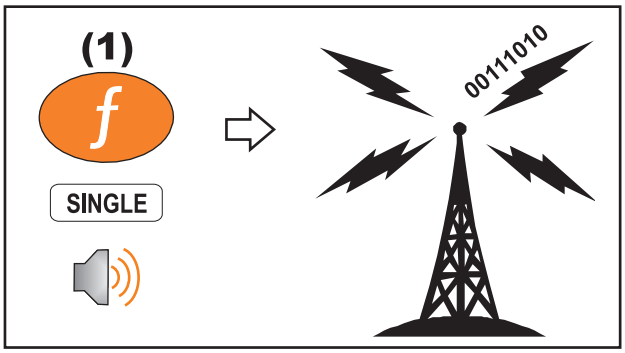
5.3. PRINT

A print key can be used to trigger any of the configured printouts, noting that it will also trigger the weigh in and weigh out events. It can also add to totals or undo the last add. When docket printing, a long press ends the docket.

- **Short press**

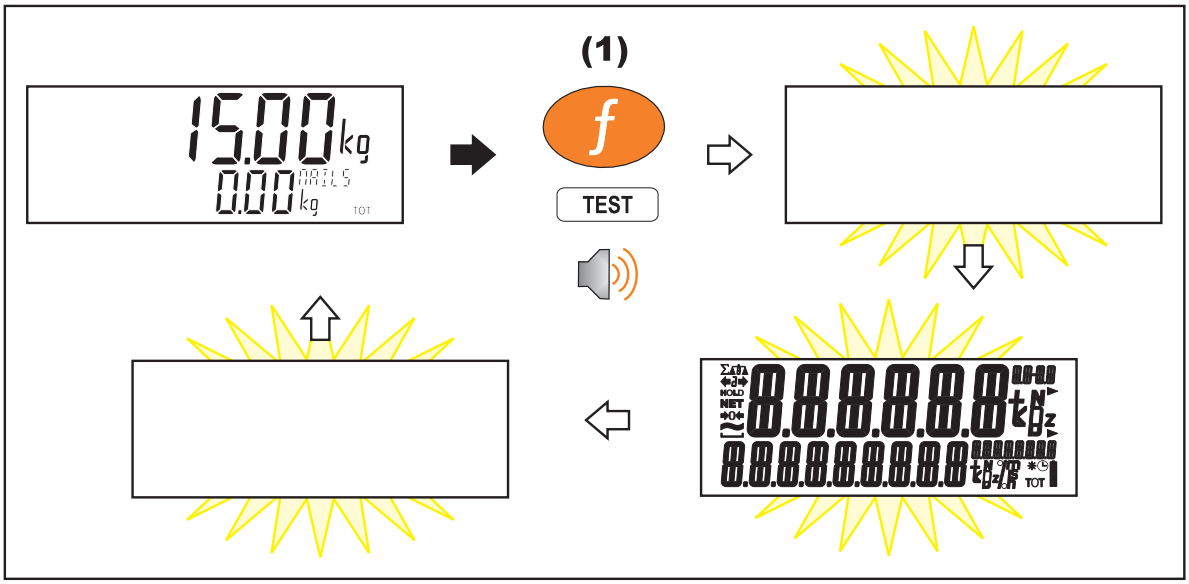


5.4. SINGLE



5.5. TEST

A test key is used to start a display test.

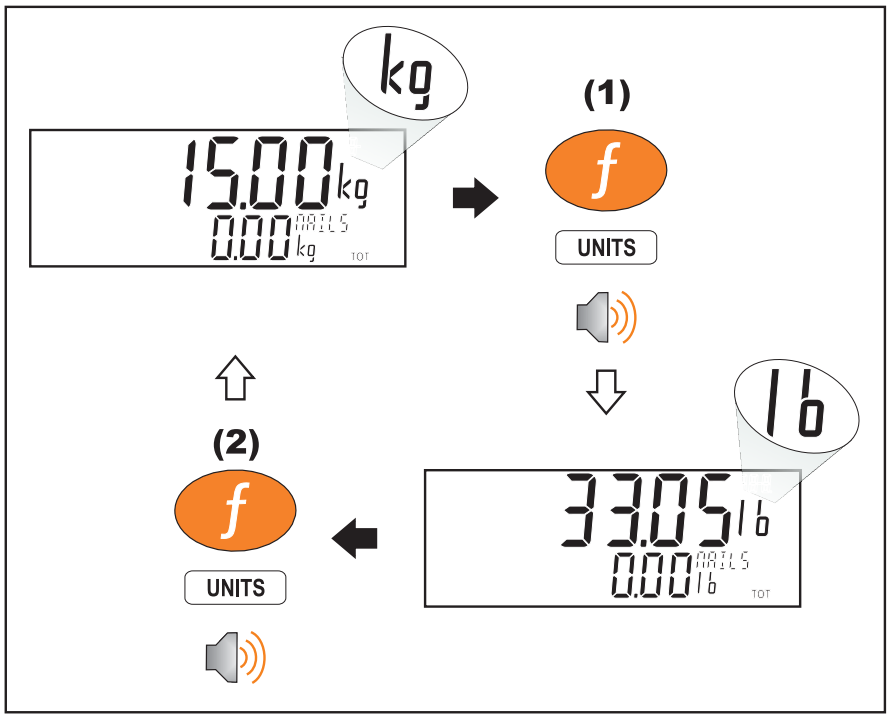


5.6. UNITS

The units key is used to convert primary (calibrated) units to alternative units.

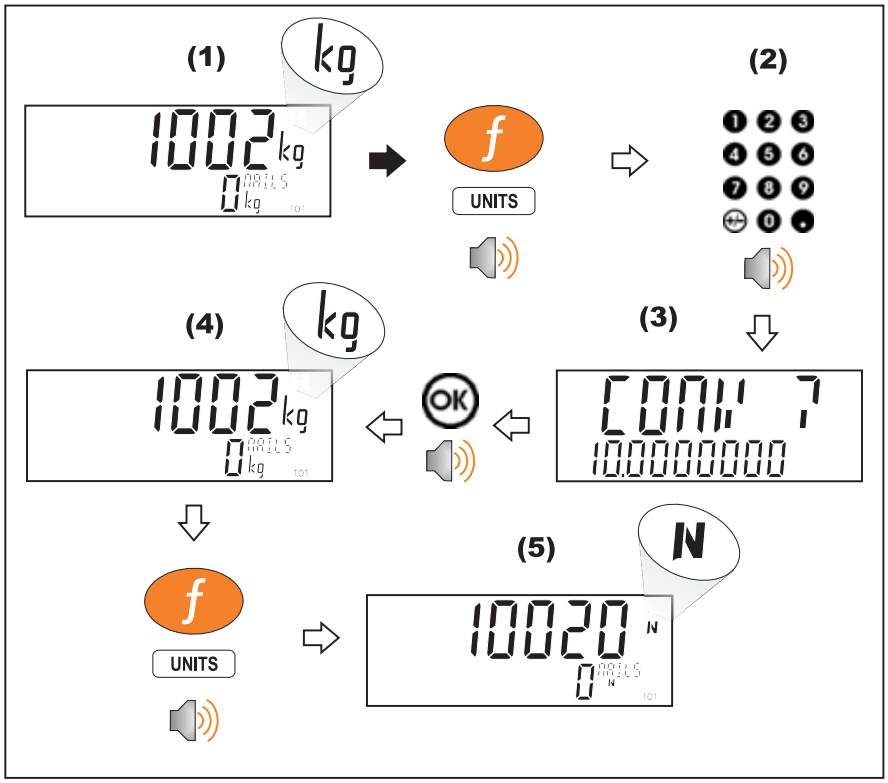
5.6.1. Short press

A short press switches between primary and alternative units.



5.6.2. Long press

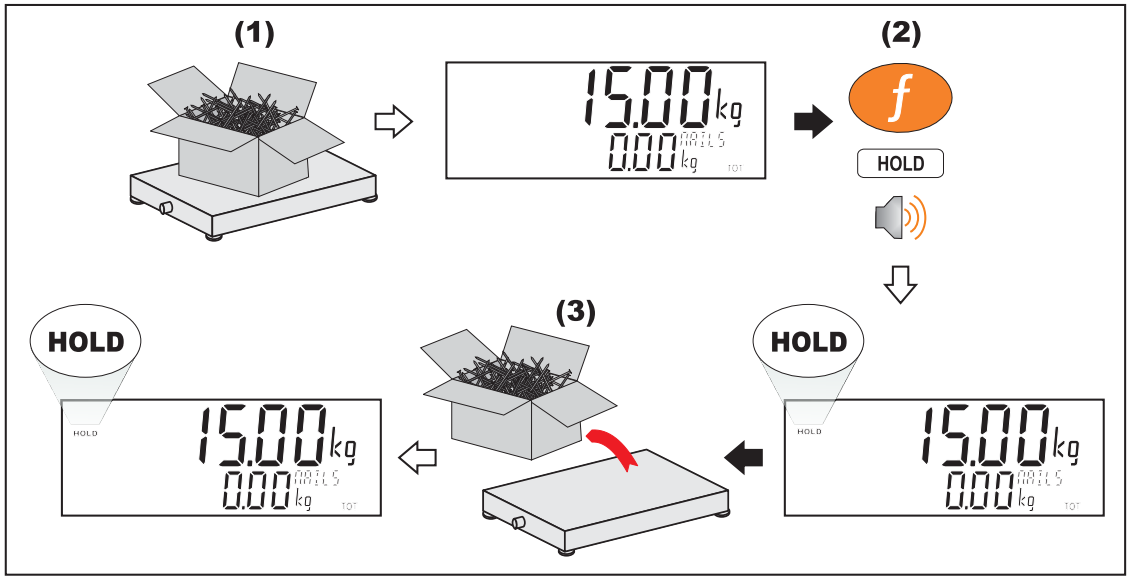
A long press allows the units conversion factor to be entered. If lb/kg switching is chosen, this will be unavailable.



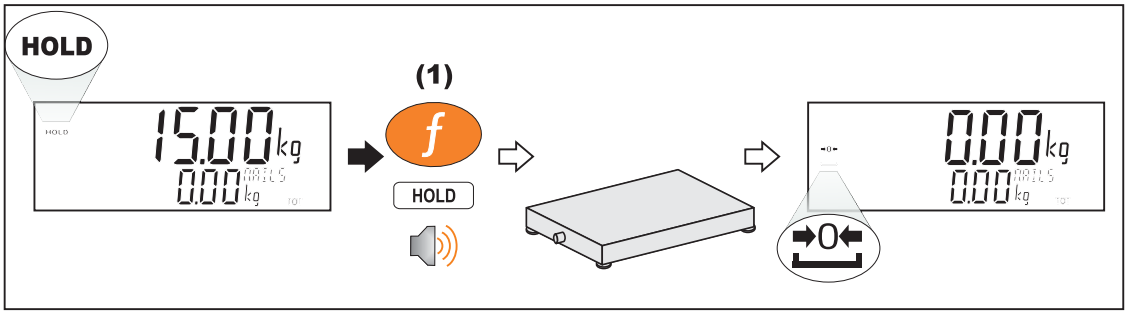
5.7. HOLD

A hold key performs a manual hold. Pressing the hold key again will cancel the hold.

5.7.1. Hold



5.7.2. Release

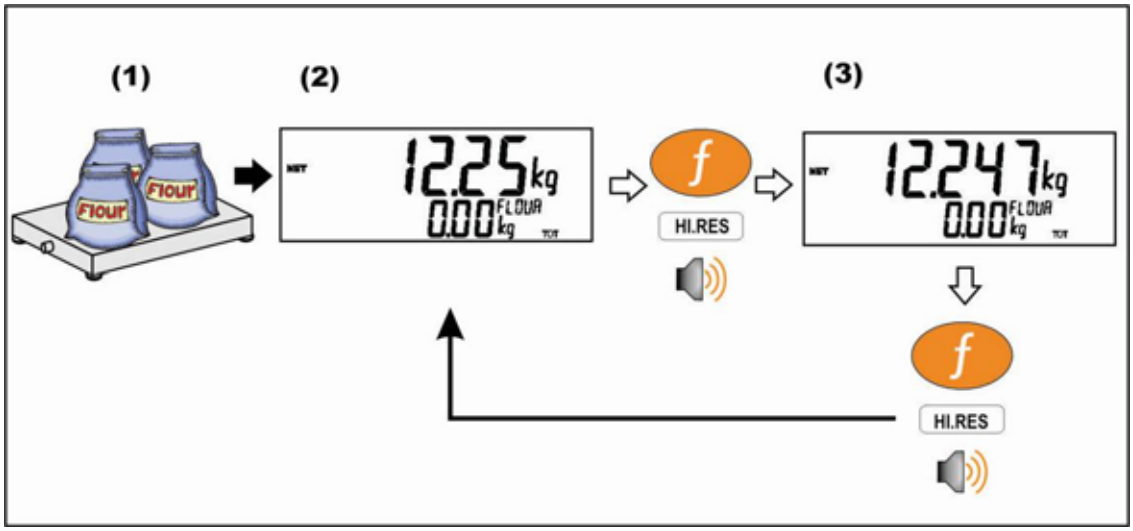


5.8. HI.RES

A short press of the high resolution button will enable or disable high resolution mode. If the instrument is in trade mode the high resolution mode will be restored to its original state after five seconds.

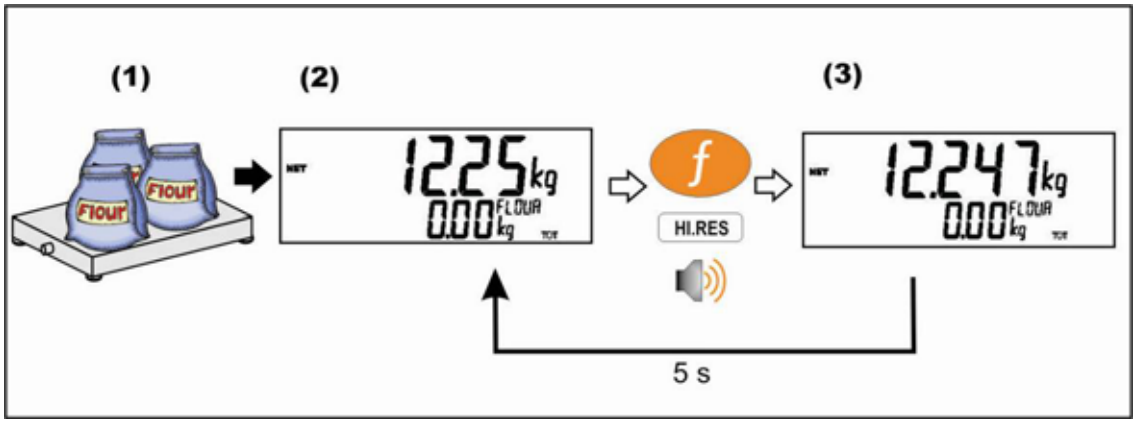
5.8.1. Short press – Industrial Mode

Display high resolution reading, until function key pressed again.



5.8.2. Short press – Trade Mode

Display high resolution reading for five (5) seconds, then return to original state.



5.9. SC.EXIT

A short press of the scale exit button will trigger the scale exit setpoint if the weight is outside of the zero band.

6.Error Messages

6.1. Overview

A number of error messages may be displayed to warn of operation outside of the acceptable limits. These messages may appear on either the primary or the secondary display. Short messages (XXXXXX) will appear as a single message. Longer messages (XXXXXX) (YYYYYY) will appear on the display in two parts, first the (XXXXXX) part, then the (YYYYYY) part.

6.2. Weighing Errors

These messages show status messages or errors that may occur during normal weighing operation.

Error	Description	Resolution
(U.LOAD)	The weight is below the minimum allowable weight reading.	Increase the weight or decrease the minimum allowable weight reading.
(O.LOAD)	The weight is above the maximum allowable weight reading. Warning - overloading may damage mechanical scale elements.	Check the condition of load cell connections. Check for damaged load cell.
(ERROR) (RANGE)	The weight reading is beyond the limit set for Zero operation. The operation of the **<ZERO>** key is limited in the setup during installation. The indicator cannot be Zeroed at this weight.	Increase the Zero Range (Z.RANGE) or use the **<TARE>** key instead.
(ERROR) (MOTION)	Scale motion has prevented a **<ZERO>** or **<TARE>** operation from occurring on command.	Try the operation again once the scale is stable.
(ERROR) (ADC)	An error with the ADC has prevented a <ZERO> or <TARE> operation from occurring	Ensure loadcell cabling is correct.

Table 1: Errors: weighing

6.3. Diagnostic Errors

The instrument continually monitors the condition of the internal circuits. Any faults or out-of-tolerance conditions are shown on the display as an **E** type error message, a scale service technician is required to handle these faults.

Notes:

SMART WEIGHING SOLUTIONS