LM-100

On-board Weighing System
Operation

TOPCON

Electromagnetic Compatibility (EMC)

This product complies with European Council Directive 2014/30/EU when installed and used in accordance with the relevant instructions.

Preface

This manual provides information about operating the "LM-100" system. Correct use and maintenance is important for safe and reliable operation. Please take time to read this manual and complete appropriate training before use before using the system.

Information in this manual is correct at the time of publication. The system may vary slightly from that described herein. Topcon reserves the right to redesign and change the system as necessary without notification.

Warning

Please read the following important information very carefully.

TERMS AND DEFINITIONS:

Console – The Topcon console mounted inside the cab and used for primary control of the Machine.

Application – An applicable Topcon mobile application product that allows features of Topcon Console(s) to be monitored and controlled from a Device.

Device – A mobile device (e.g. phones and tablets) on which the Application is installed and operated.

System – The combination of the Device and the Console used to control and monitor the Machine.

Machine – The combination of the vehicle and associated attachments.

You – The person using the Application to control and monitor the Machine.

Documentation – The user documentation and manuals relating the use and operation of the covered Topcon product, including, but not limited to, the Console user manuals/materials and Application end user license agreement (as applicable).

IMPORTANT: You must read and follow the Documentation and complete appropriate training before use. If You do not operate the System properly, it can result in damage to property and/or malfunction of the product, death or serious injury to persons. If You are in any doubt regarding any aspect of operating the System, then before commencing operation You should obtain further guidance from a suitably qualified source.

WARNING: It is YOUR responsibility to read and understand the safety sections in this book before operating the system. Remember that YOU are the key to safety.

PRODUCTS/MATERIALS APPLICATION: As limited by the applicable software, You are responsible for accurately entering the information required for the Machine to measure products/materials to Your requirements, including measurement units (e.g. metric or Imperial), weight or other required input. As limited by the applicable software, You are responsible for the calibration of the Machine and ensuring products/materials are measured in accordance with their specifications (e.g. material properties including density).

Without prejudice to the generality of the above You hereby acknowledge and agree that failure by You to comply with the above may result in incorrect operation of the System, or injury to You or others. You should monitor at all times that the System is performing as required.

General Safety

DANGER! It is essential that the following information and the product-specific safety information is read and understood.

Most incidents arising during operation, maintenance and repair are caused by a failure to observe basic safety rules or precautions. Always be alert to potential hazards and hazardous situations. Always follow the instructions that accompany a Warning or Caution. The information these provide aims to minimize risk of injury and/or damage to property. In particular, follow instructions presented as Safety Messages.

Safety Messages and Warnings

The safety symbol is used with the relevant word : DANGER, WARNING or CAUTION. Messages marked in this way recommend safety precautions and practices. LEARN and apply them.

DANGER : Indicates an imminently hazardous situation that, if not avoided, could result in DEATH OR VERY SERIOUS INJURY.

WARNING : Indicates a potentially hazardous situation that, if not avoided, could result in DEATH OR SERIOUS INJURY.

CAUTION : Indicates a potentially hazardous situation that, if not avoided, could result in MINOR INJURY.

Operator Safety

Good safety practices not only protect you, but also the people around you. Study this manual as part of your safety program. This safety information only relates to Topcon equipment and does not replace other usual safe work practices.

- **WARNING: Never operate the machine with any panels or safety guards removed. Any illustrations or photos in this manual that show panels or guards removed are solely for demonstration purposes. If the removal of panels and guards is necessary for calibration or maintenance, they MUST be replaced before operation.**

- **Always check that any suspended vehicle attachments or load arm(s) are lowered to the ground before beginning repair or maintenance work on the machine.**

- **Machine parts can become hot during operation and may be under pressure. Refer to the machine manual(s).**

- **Wear appropriate protective clothing for the task being undertaken.**

- **Check the Machine is correctly setup/configured and ready for the intended use.**

- **Be aware of safety instructions for/on the Machine including hazards such as crush zones.**

- **Prevent the Machine from being accidentally started if working on it e.g. remove the ignition key, place a warning notice in the cab etc.**

- **Check that the area of Machine operation is clear of people, animals, and obstacles and identify any other possible hazards.**

- **Keep other persons required to be in the vicinity of the Machine fully aware of Your immediate intentions.**

If an applicable Topcon mobile application is used to augment Your ability to perform tasks that are traditionally performed on the Console directly, then in addition to observing the above warnings and all other pre-determined site safety requirements that apply when operating a Machine from the Console, You must also observe the following additional requirements when operating the Machine via the Application:

- **WARNING: The Application must only be operated by You, the single Console operator wholly responsible for the operation of the Machine.**

- **The Application must only be used when the Machine is not on public roads.**

- **The Device must be affixed to a rigid mount when used inside the cab while the Machine is moving to avoid a temporary loss of control if the Device is dropped or misplaced.**

- **The Application must only be used outside of the Machine cab when the Machine is stationary.**

- **When operating the Application outside of the cab of the Machine You must remain within a reasonable distance such that You can return to the cab-mounted Console in a timely manner to resume control of the Machine under any of the following circumstances:**

  - Battery failure on the Device

  - Wifi signal is lost or signal strength is too weak for proper operation

  - The Device is redirected to another application (e.g. a phone call is received)

  - The Device becomes incapacitated (e.g. device is dropped and damaged)

  - Any other event that causes the Device to no longer be fit for control of the Application and/or Machine.

- **Stand well clear of any moving parts of the Machine and areas of operation.**

- **The Device and Machine must be locked when not in use.**

- **The Device and Machine must never be left unattended**.

1. Overview

The LM-100 is a CAN-based system that measures, displays and records the net weight lifted, based on sensing the lift system hydraulic pressure. The pressure signals are captured and filtered through a 'weighing arc' provided by inclinometer sensors measuring the angle of the main boom.

All signals are processed in a separate Weighing Module, and the resultant weight calculation is sent via CANBus to the head unit.

The head unit is designed to be dustproof only and is only suitable for in-cab use. The weighing module however, is weatherproof.

Certification for Trade Approved Weighing

The system has been designed for both Trade Approved weighing (Measuring Instruments Directive 2004/22/EC), and non-approved weighing.

NOTE: *The* ⬛ᵃ *indicates information specific to operation in approved mode.*
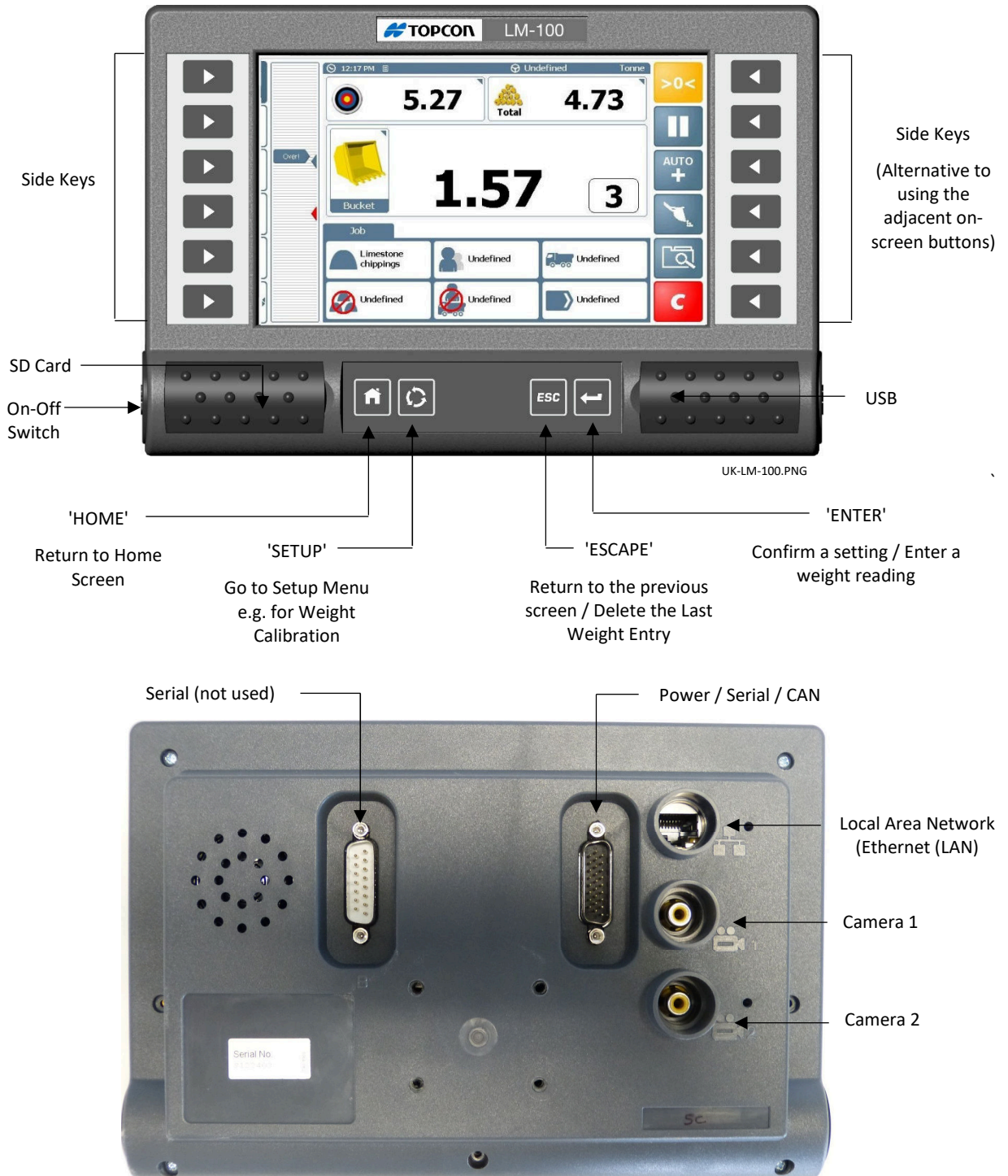
Features and Benefits

▪ Target Load	Set individual Product target weight to ensure correct loading of vehicles.
▪ GPS Product Recognition	Automatic product selection.
▪ Reversing Camera Input	Single display with automatic switching in reverse gear.
▪ Adjustable Weighing Height	Flexible operation according to specific applications.
▪ Oil Temperature and Angle Compensation	Accurate weigh information within normal operating temperatures, and on sloping or uneven terrain.
▪ Calibration for up to 10 Attachments	Easy setup when switching attachments e.g. buckets, forks etc.
▪ Preset Tare	Net weighing for pallets and containers.
▪ Live Last Bucket 'Tip-off' at any position	At the pile or above the truck.
▪ SQL Database	Ease of use and interfacing with ERP systems.
▪ Stores, multiple job and Blend capability with advanced job memory search and Job Report generation	Accurate record keeping, traceability and stock management.
▪ 5 quick, job pre-selections for repeat job setup	Multiple active job capability.
▪ GPRS and Wi-Fi connectivity	1-way or 2-way communication with office.
▪ Static and Dynamic weighing modes for 'weighing on the lift'	Faster operation.
▪ Split loading (Trailers)	Truck and up to 2 trailers.
▪ Multi-channel and Grand Total summary	Load accumulation for up to 10 attachments e.g. buckets, forks etc.
▪ XML data output via RS232, Ethernet and USB memory stick	Safe and efficient data handling.
▪ Printing with configurable output	Hard copy of load summaries and job totals.
▪ Calibration 'Nudge'	Quick and easy calibration adjustment to match site reference e.g. weighbridge.
▪ Internal Audible Alarm	Set to alarm at overload threshold (90% and 100% of max. load)
▪ System 'Pause' mode	Disable weighing mode during non-weighing tasks.
▪ Telemetry (optional ISOSYNC / SITELINK)	For fast and efficient data transfer between loader and office.

1.1 'Sitelink' Integration

Topcon 'Sitelink' is a cloud-based database application primarily for tracking material moved on a work site, providing operation managers with real time data from machines working on site.

This manual references the standard LM-100 system without Sitelink integration. The user interface for Information Stores will appear slightly different for Sitelink-enabled systems. If your system is enabled for Sitelink connectivity, then please refer to the on-line Sitelink User Guide – section entitled "RDS Weighing Interface", for further information on configuration and Sitelink-specific features on the RDS display unit.

1.2 Features and Controls

UK-LM-100.PNG

Side Keys

Side Keys
(Alternative to using the adjacent on-screen buttons)

SD Card

On-Off Switch

USB

'HOME'

Return to Home Screen

'SETUP'

Go to Setup Menu e.g. for Weight Calibration

'ESCAPE'

Return to the previous screen / Delete the Last Weight Entry

'ENTER'

Confirm a setting / Enter a weight reading

Serial (not used)

Power / Serial / CAN

Local Area Network (Ethernet (LAN)

Camera 1

Camera 2

1.3   Power On

The power switch on the Head unit switches the head unit on and off.

Both the Head Unit and the Weighing Module may be powered either from a permanent +V supply, or a switched +V supply (e.g via the ignition circuit). If powered permanently, the system will automatically go into a 'Standby' mode after 15 minutes of non-use, to save power consumption. If however, the power supply is interrupted (e.g. via the ignition switch or from the battery), the system will take approximately 30 seconds to reboot into the normal operating mode.

NOTE: *The system will not boot into the weighing mode unless the SD card containing the LM-100 database is in place.*
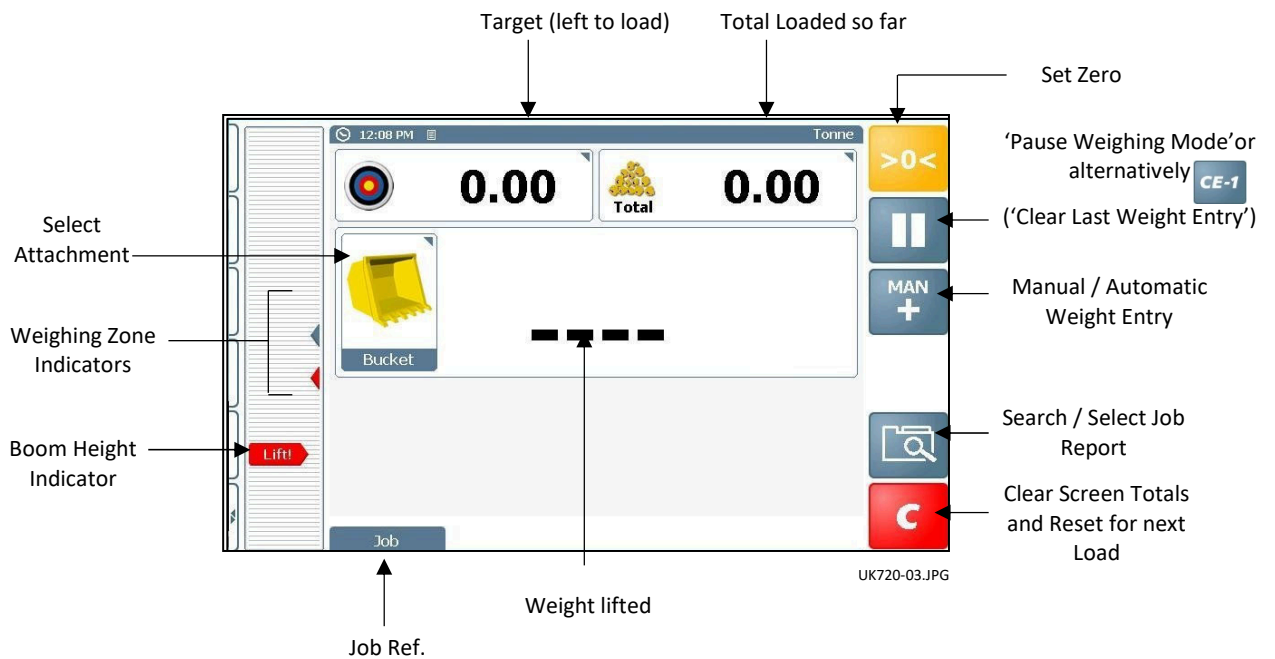
1.4   The Status Bar
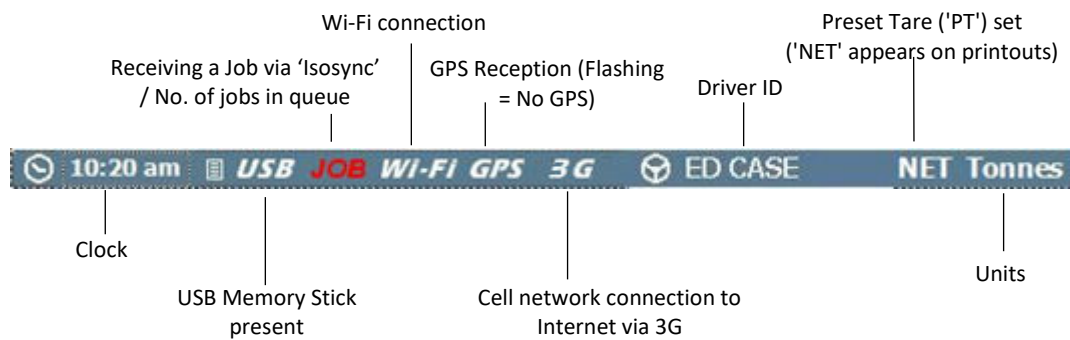
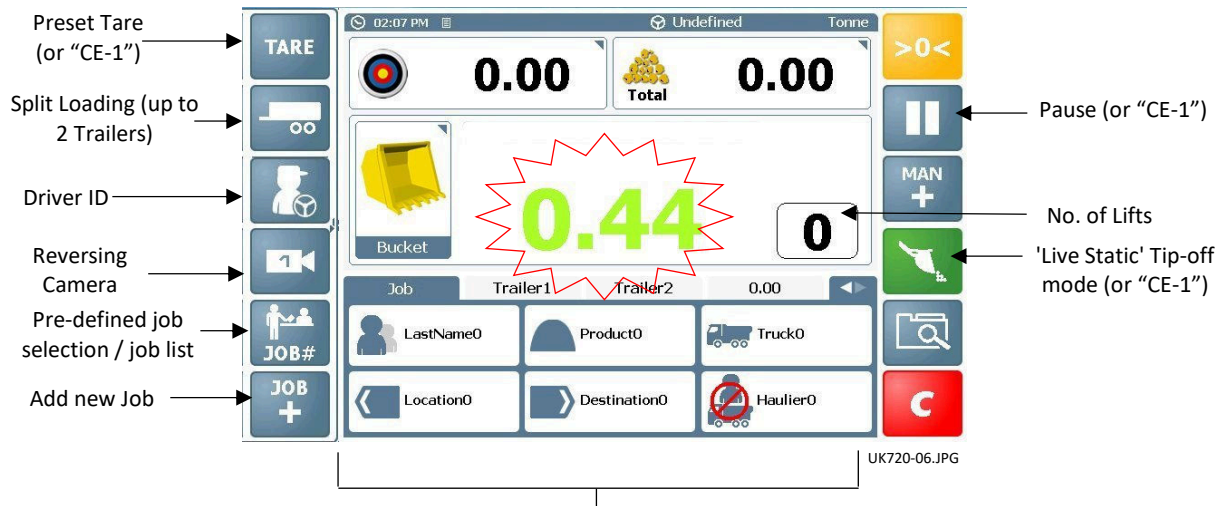## 1.5   The Home Screen

The functions displayed on the Home Screen depends on which are enabled via the 'Home Screen Functions Setup' menu.

1.5.1   Basic functions only

UK720-03.JPG

1.5.2   All functions enabled

Preset Tare (or "CE-1")

Split Loading (up to 2 Trailers)

Driver ID

Reversing Camera

Pre-defined job selection / job list

Add new Job

Pause (or "CE-1")

No. of Lifts

'Live Static' Tip-off mode (or "CE-1")

UK720-06.JPG

Up to 8 Information tabs / Stores displayed from a choice of 12 : e.g. Product, Customer, Truck, Haulier, Location, Destination, Notes, Mix (Mixture of more than one product), Job Name etc, and also Chassis Angle (see below).

NOTE: *There are 3 display options for the left side buttons as configured in the Setup menu, (i) as shown above (temporarily displayed when the boom height indicator area is touched), (ii) as shown above (permanently displayed), or (iii) Job Presets 1-5 (permanently displayed). The "CE-1" function can be configured to display in place of "TARE", Pause (   ) or Tip-off (   ) functions.*

1.5.3   Chassis Angle Display

The instrument can be configured via the 'Home Screen Functions Setup' screen in the SETUP menu, to display the Chassis angle (Uphill / Downhill) in place of an Information Store.

1.5.4   Touchscreen

The instrument has a 5-wire resistive touch screen. 5-wire technology offers superior life and reliability without requiring re-calibration. However, it consists of a polyester film outer layer that must be treated with respect, compared to a non-touch display with toughened instrument glass. Therefore, pleas observe the following,

DO NOT use a sharp-pointed object - the screen will be damaged beyond repair!

Do NOT wipe or otherwise attempt to clean using any kind of solvent cleaner!

Do NOT wipe using a dirty cloth or gloves. Use only computer screen wipes designed for the purpose!

You may use a blunt, smooth-ended plastic object (e.g. a pen body / cap) as a stylus, if found necessary!

1.5.5   USB

The USB socket is intended solely for data transfer, e.g via,

- USB Stick
- USB cable to PC
- External USB Keyboard

Do NOT connect a mobile device to the instrument for charging purposes. It is not designed to supply a charging current. If you attempt to charge a mobile phone or other device, the current draw may be excessive and the instrument can be damaged as a result.

NOTE: *Such damage found to be caused by battery charging via USB will not be repaired under warranty.*
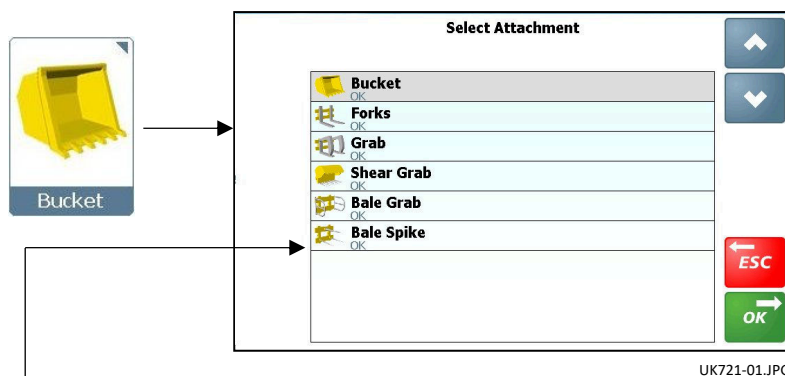
2. Operator Settings

2.1 Checklist

Depending on the instrument setup and the type of job, some or all of the following steps may be necessary before you start a weighing job.

- Select Attachment
- Set Zero
- Set Target Rate
- Select Automatic / Manual entry Mode
- Programme Preset tare
- Select Load References (Reference Stores), or a Pre-defined Job.
- Driver No. etc

2.2 Attachments

Each attachment is configured for the weighing mode, e.g. 'Dynamic', 'Live Static ON', 'Live Static OFF', 'Constantly Live Static' or 'Constantly Live Static' (No R&D). On selection, the instrument is automatically updated to the weight calibration settings and weighing mode for that attachment.

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'OK' - Attachment has been calibrated

'X' - Attachment has not been calibrated

Weighing Modes

'OFF'	The attachment is disabled and will not be listed on the 'Select Attachment' screen.
'Dynamic'	Dynamic weighing - Lift through weighing position.
'Live Static Off'	Static Weighing - 'Auto-kickout' operates at the preset weighing position (if connected). At the preset weighing position, the weight is displayed after the 'Static Delay' and 'Static Sample Time' periods *The weight display remains fixed while at the weighing position.*
'Live Static On'	Static Weighing - 'Auto-kickout' operates at the preset weighing position (if connected). At the preset weighing position, the weight is displayed after the 'Static Delay' and 'Static Sample Time' periods *NOTE: The weight display is "live" and may change as the 'Static Auto Lock' factor automatically compensates for the effect of pressure loss over time, while at the weighing position.*
'Constantly Live Static'	Static Weighing - A 'live' weight is displayed with the boom between the lower and upper weighing positions. *NOTE: This mode will not be as accurate as 'Live Static OFF' or 'Live Static ON' weighing modes.*
'Constantly Live Static (No R&D)'	Static Weighing - There is no indication of weighing position. A 'live' weight is displayed at any boom position.

2.3 Set Zero

The zero-weight reading may drift during regular use. To help ensure accurate weight readings, the zero routine should be done on a regular basis.

Press **>0<** and follow the on-screen instructions.

Trade-approved weighing systems:

The system is setup so that the zero routine is automated.

'**ZERO SYSTEM >0.00<**' displays if the system has been switched off, or has not recognised any lifts for more than a preset time-period. The '**ZERO SYSTEM >0.00<**' routine must be repeated at the end of each preset time-period.

The system will countdown 60 seconds before '**ZERO SYSTEM >0.00<**' must be repeated. Weighing is then inhibited until you press **>0<** and follow the on-screen instructions.

NOTE: *The preset time-period is set from the 'Sensor Setup and Sampling' screen in the SETUP menu. The default time-period is 15 minutes.*

*The bucket must be lifted and lowered one or more times before commencing the '**ZERO SYSTEM >0.00<**' routine. This ensures the oil is at working temperature. The number of lifts required is also set from the 'Sensor Setup and Sampling' screen in the SETUP menu.*

2.4 Target Weight (Weight left to load)
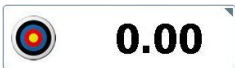
Press and enter the weight required in the truck / trailer.

As you commence the loading cycle, the figure will decrease to show how much is left to load.

2.5 Automatic or Manual Weight Entry Mode

In Dynamic Mode only:

The weight is entered automatically after the bucket is lifted through the weighing position.

UK721-09.JPG

"Live Static OFF" mode only:

After a set period at the weighing position, the weight is automatically added to the load total either,

(i)   when the attachment is lifted above the weighing position or,

(ii)   after 2 seconds while remaining at the weighing position.

depending on the "Static Auto Add Mode" setting in the "Sensor and Sampling Setup" menu

NOTE: *Automatic Weight Entry is not possible if the attachment is configured for "Live Static ON" weighing mode, or "Constantly Live Static" weighing mode.*

In both Dynamic and Static Modes:

The weight is entered manually, either by pressing the ⬅ key, or the Remote Enter Switch (optional).

2.6   Driver ID / Login

The instrument may be programmed with driver names. The current driver is selected from the list and a password entered to confirm.

The driver ID is included in the load data for each completed loading job.

A Job Report can be generated for a specific driver, using the 'Job Search' function (   ).

Normally when the instrument is powered on, the driver ID will default to '**Undefined**'. The instrument can however, be setup so the driver must be selected and their password entered on power up, before the instrument will display the Home screen.

UK721-44.JPG

NOTE: The driver ID is displayed in the status bar. If the current job was selected from the job list, and that job was created by another driver, or uploaded prior to you logging on, then their name will be displayed in the status bar. The system can also be configured from the Setup menu ("Limit Jobs by driver"), so that only the jobs allocated to the logged-in driver are visible in the Job list.

You can edit the driver ID for a job to your own ID, via the Jobs List (ref. section 2.9).
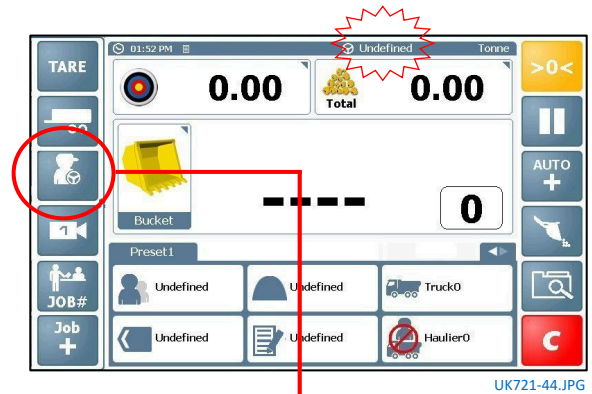
2.6.1   Edit / Print / Delete Driver ID / Password

- Add Driver ID

- Add / Edit Driver Password

- Delete Driver ID

- Print Driver ID List

- View / Print Load Totals for selected driver

- Log driver in / out

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2.7   Preset Tare ('PT')

This facility is used to display the net weight of a product within a lifted container. The normal gross weight is taken, from which the weight of the empty container is automatically subtracted.

When a Tare is set, it is displayed on the weighing screen as a 'PT' figure. Printouts will show 'NET' and the Preset Tare.

PT = 0.10

+   = 1.00   = 0.90

The Preset Tare can be entered manually or by lifting the empty container.
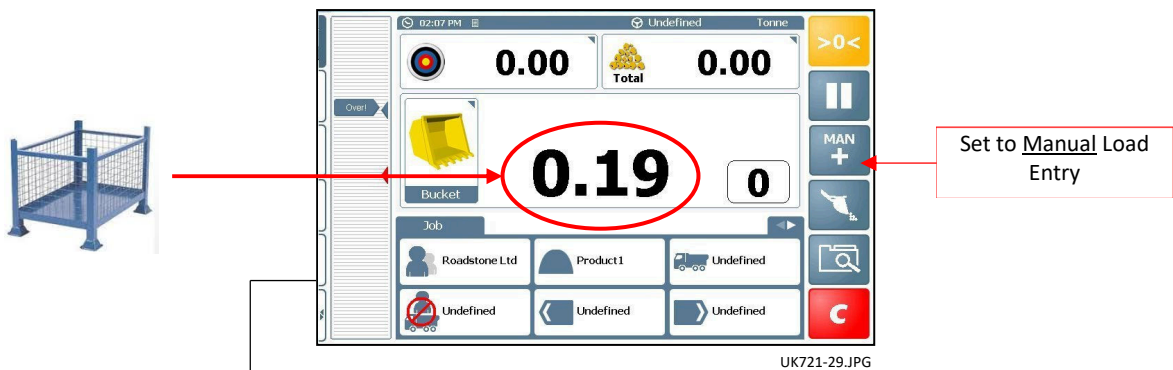
2.7.1 Setting/ Deleting the Tare - Manual Entry

Press [TARE] and then key-in the empty container weight.

Press ENTER to confirm.

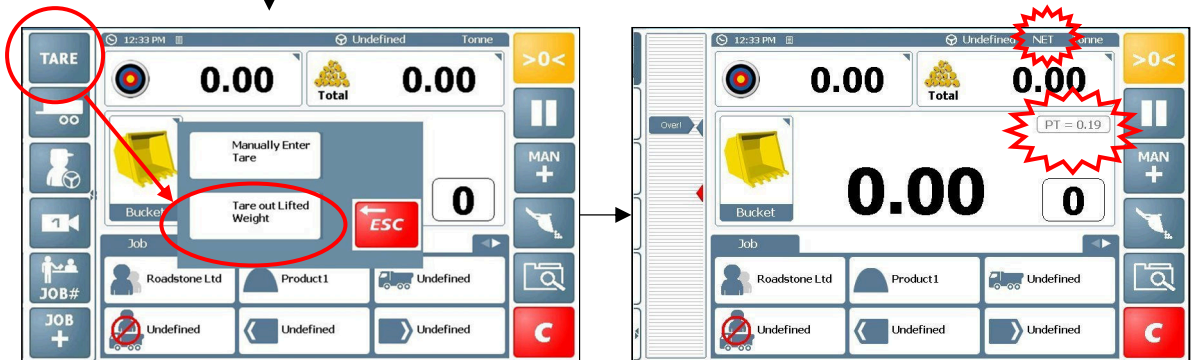To delete the Tare, set to zero and press ENTER to confirm.
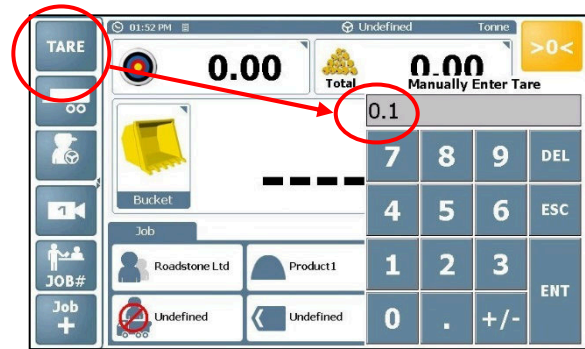
UK721-28.JPG

2.7.2 Setting the Tare by Lifting

Select Manual Load Entry, lift the empty container, press [TARE] and then select **'Tare Out Lifted Weight'**.

Set to Manual Load Entry
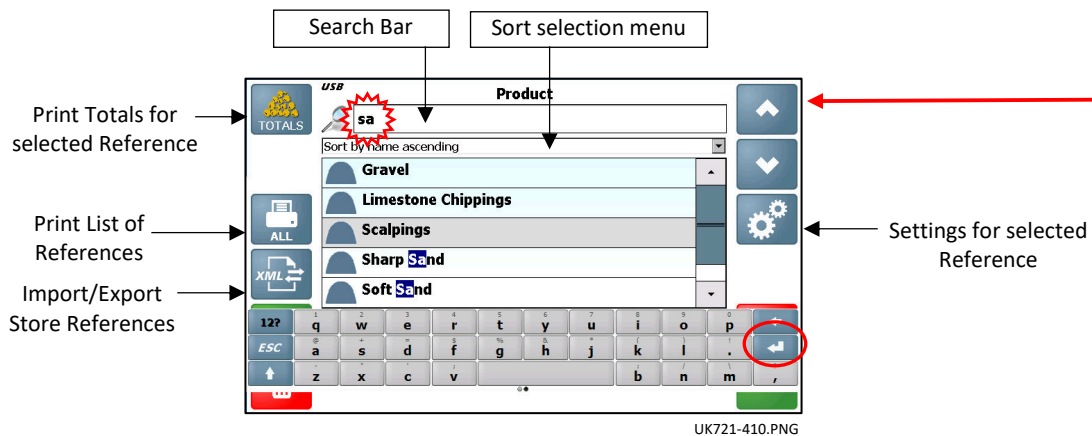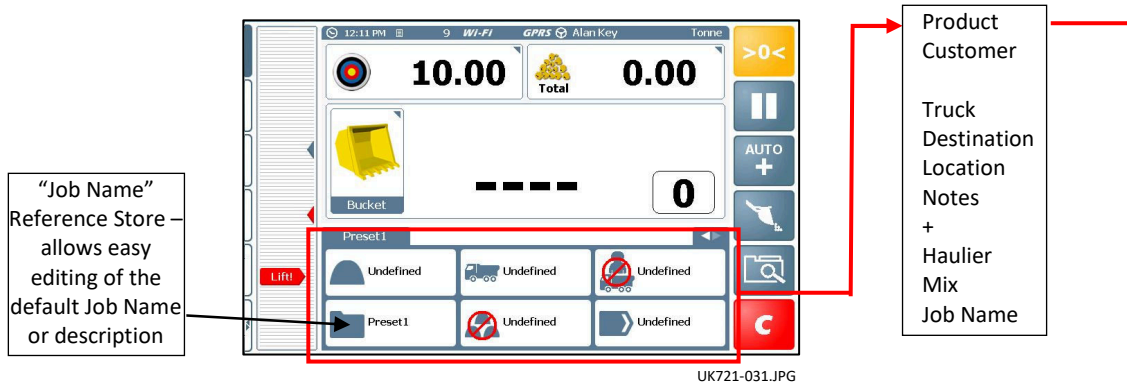
UK721-29.JPG

UK721-30.JPG

UK721-31.JPG

2.8   Reference Stores

2.8.1   Select / Search a Reference Store(s)

If more than 6 stores are enabled, then press the [◄►] tab to reveal the extra stores.


"Job Name" Reference Store – allows easy editing of the default Job Name or description

Product
Customer

Truck
Destination
Location
Notes
+
Haulier
Mix
Job Name

UK721-031.JPG

Search Bar

Sort selection menu

Print Totals for selected Reference

Print List of References

Import/Export Store References

Settings for selected Reference

UK721-410.PNG

The screen layout is similar for other Reference Stores except for 'Haulier' and 'Mix'.

Search tool

Touch the Sort selection dropdown menu and select how you want the References displayed – "**Sort by name ascending**", "**Sort by name descending**" or "**Sort by most used descending**".

When the Search Bar is tapped, a mini keyboard will be displayed. Now, a part of the phrase (based on a continuous string of characters) can be typed and after pressing [↵] , the matching words will be displayed based on the sort selection.

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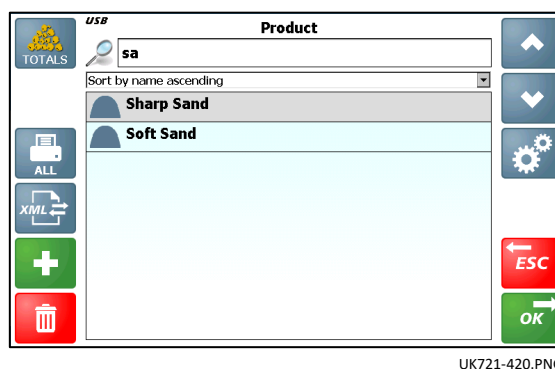
For example:

- a reference '**Truck A123**' will be displayed if 'A1' or 'a1' is typed *(search is not case sensitive).*

- '**ABCxABC**' can be found by typing 'x' alone

- '**Truck 6**' will not be displayed when typing 'Tr 6'

2.8.2 Import / Export Reference Stores

Store References (and the load data linked with them), are stored in the database on the SD card. The data can be updated by importing .XML data edited in PC software, or likewise exported in .XML format for administration purposes.

Press [XML icon] for the Import / Export options available. Each Reference Store has these options. You are prompted to enter a suitable filename.
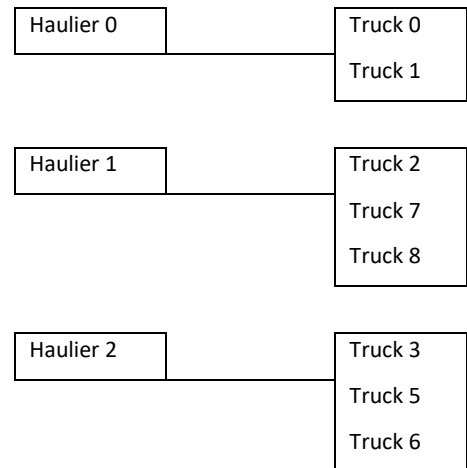

UK721-24c.JPG

NOTE: Not all the options may appear as shown, depending on your setup.

2.8.3 'Haulier' / 'Truck' Reference Stores

The 'Haulier' Reference store functionality is slightly different in that it is linked to the 'Truck ' Reference store.

'Truck' references can be associated with 'Haulier' references. In doing so, when the operator selects a specific haulier reference, only the trucks associated with that haulier will appear in the truck reference list.

Haulier 0		Truck 0
		Truck 1

Haulier 1		Truck 2
		Truck 7
		Truck 8

Haulier 2		Truck 3
		Truck 5
		Truck 6

By default, the 'Haulier' Reference store is disabled (Undefined   ), and all truck references in the 'Truck' Store (Undefined   ) are available for selection.

View/Print Totals:

Today's
Yesterday's
Since Sunday
Last 7 Days

Print all references

Import / Export list

Add a Reference

Delete a Reference

View /Edit Reference detail

UK721-12b.PNG

To associate particular trucks with a haulier, select   and then select a truck from the truck list.

UK721-132b.PNG

UK721-131b.PNG

UK721-133b.PNG

x 2

UK721-137.JPG

15

2.8.4   Set Truck Target Weight

A pre-programmed target quantity (either by weight or number of bucketfuls) can be pre-programmed for each truck. When the truck reference is selected, the target load is automatically set on the main weighing screen.

Note: *The truck target load function can be switched on (**) or off (**) but only when the "Haulier" store is disabled.*


UK721-132b.JPG

UK721-136.JPG
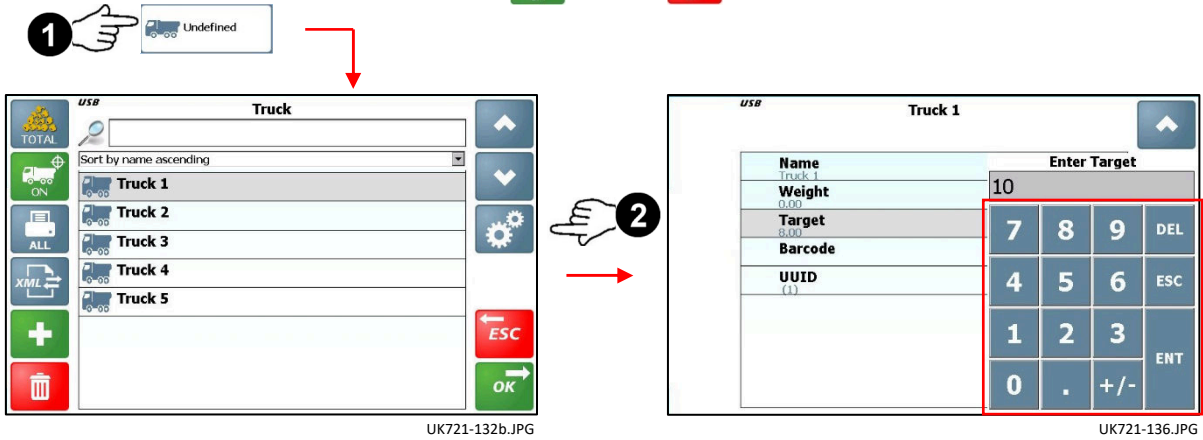
2.8.5   Enable the Blend ("Mix") Reference Store

You can create and store any no. of 'Blends'. A blend is a combination of different products and their proportions that make up a 'mix'.

By default, the 'Mix' Reference store is disabled.

Press to switch Blend ("Mix") mode on.

When Blend ("Mix") mode is on, the normal Product Reference list is not available.

UK721-20.JPG
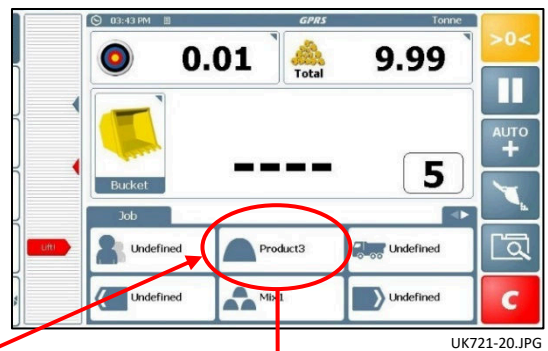
Touching the Product icon on the 'Home' screen, lists the individual ingredients of the Mix and their calculated weights, based on the target weight entered.
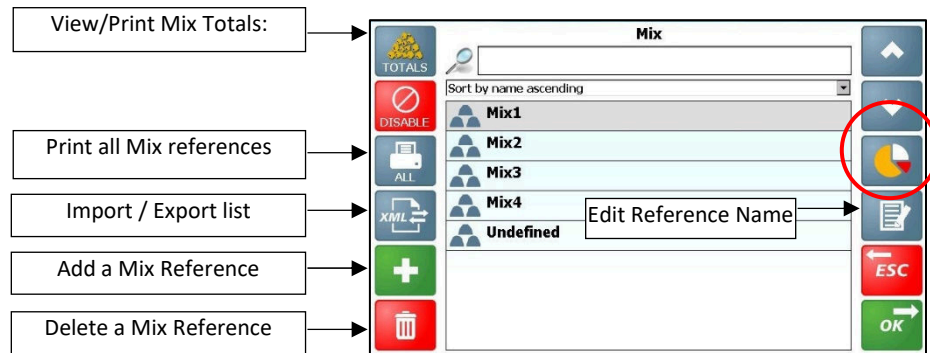
It is possible to exit the Blend ("Mix") mode (e.g. to perform an interim loading task) at any stage of blending, and then return to the blending task later (ref. 2.9 - Jobs List).

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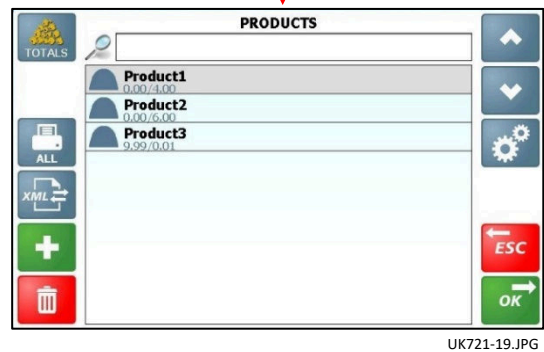
2.8.6 Create / Edit a Blend ("Mix") Reference

1. Press [+] to create a new Mix Reference and enter a name.

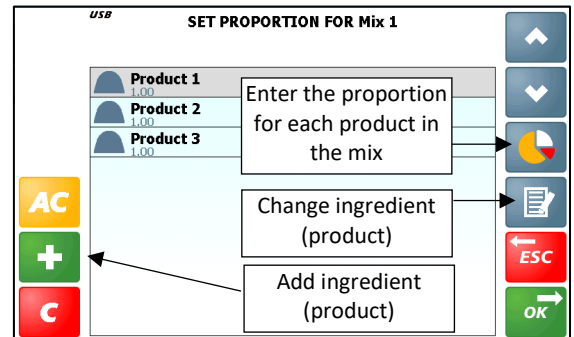*NOTE:* Press [icon] *to re-edit a Reference name if required.*

View/Print Mix Totals:	→
Print all Mix references	→
Import / Export list	→
Add a Mix Reference	→
Delete a Mix Reference	→

Edit Reference Name

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2. To edit the mix ingredients, select the desired Mix Reference and press [icon] to display the product list.

3. Press [+] to add an ingredient from the Product list.

4. For each ingredient of the mix, press [icon] to enter the proportion.

It is the PART RATIO that is important - not the actual weight.

e.g. for a concrete dry mix, you would enter 1 part Cement :2 parts Sand :4 parts Aggregate.

The instrument automatically calculates the actual weight of each ingredient, according to the target weight you enter on the Home screen.

SET PROPORTION FOR Mix 1

Product 1
1.00
Product 2
1.00
Product 3
1.00

Enter the proportion for each product in the mix

Change ingredient (product)

Add ingredient (product)

UK721-300b.JPG

2.9 'Jobs' List

👨‍🏫 — Jobs to do / Active jobs list ("Job #"): - A list of jobs to be done, or jobs in progress.

In addition to 5 permanent 'presets', jobs can be uploaded in .XML format via USB memory stick, Telemetry (via Isosync), or can be manually input by the operator.

NOTE: *When a job or jobs are received via telemetry, the "JOB" logo appears on the status bar, and alternates with a number indicating the no. of jobs that have been transmitted.*

Each job in the job list shows the following information,

- Job Name.

- Target Load / Total Loaded so far.

- Store Reference Names for Stores 1, 2 and 3.

2.9.1 Manually selecting a Job from the Jobs List

Current Job
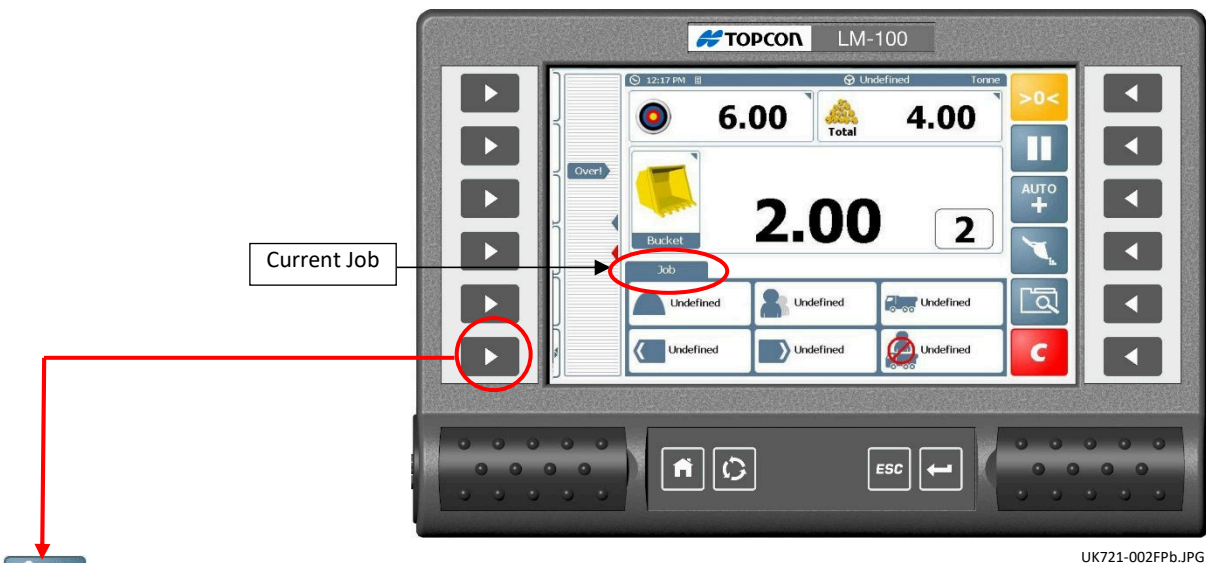
UK721-002FPb.JPG

👨‍🏫 The operator can select the jobs in any order.

Once selected, a job does not have to be completed and cleared before starting another job. This enables the operator to perform and log multiple loading tasks e.g. in a busy environment.

For example, by selecting 👨‍🏫JOB# to access the job list, the operator could switch from loading a truck to adding more material to a crusher, and likewise switch back again to finish loading the truck.

Active Job

UK721-44.JPG

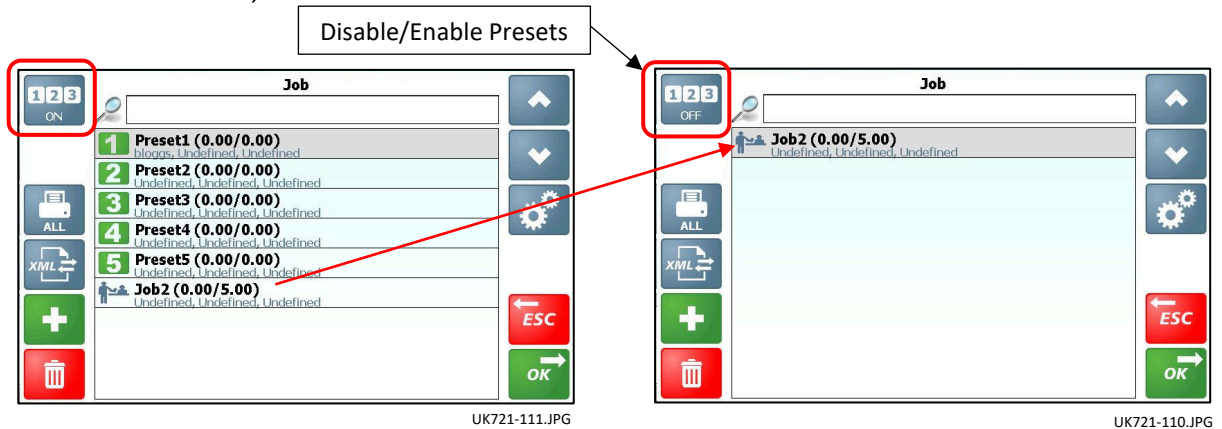Permanent 'presets'

'Jobs to do' / Active Jobs
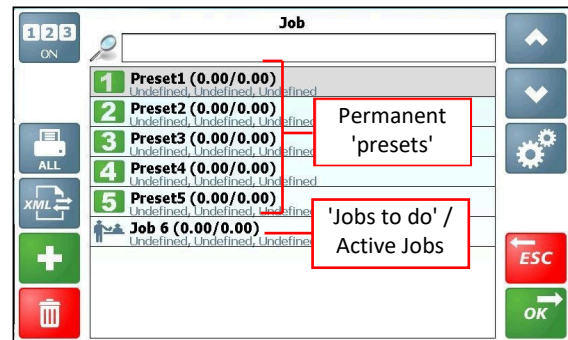
UK758-601.JPG

### 2.9.2 Selecting a 'Preset' Job

If you have particular jobs that are done repeatedly with the same Store references, like the preset channels on a radio, you can quickly select a preset 'job' from the list without having to keep manually selecting the Store references.

NOTE: *The 'Preset' functions can be disabled from the Jobs List screen. For example, if all jobs are to be created and then transmitted via telemetry to the instrument.*

UK721-111.JPG   UK721-110.JPG

Permanent 'presets': ("Preset Job #"): - These 5 presets will always appear at the top of the 'jobs' list.

Preset Job 1
Preset Job 2
Preset Job 3
Preset Job 4
Preset Job 5

Current Preset Name

UK721-03FPb.JPG
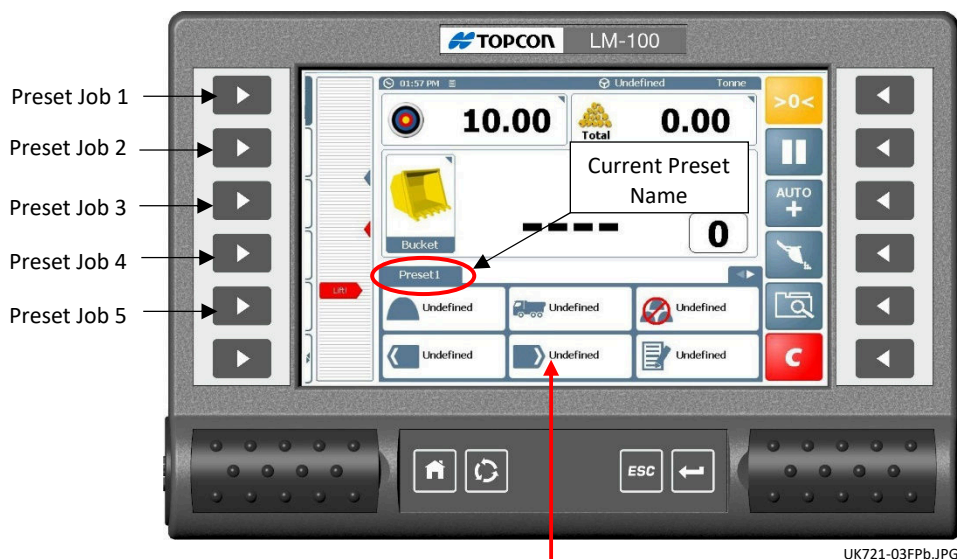
1. Select the required 'Preset' using the side buttons shown.

2. The Store References may be edited if required.

3. Set the Target Weight and start to load (ref. section 3).

NOTE: *When a preset job is cleared, the Store References will return to the programmed preset reference names. If the names need to be modified, then edit the required names and then press and hold the relevant preset button for 5 seconds. A long beep will sound, confirming the new reference name has been stored.*

2.9.3 Starting another Job before the current Job is cleared

4. To start another job (preset or non-preset) before the current job is completed and cleared, either press another preset, select another job from the job list (2.9.1) or add a new job (2.9.5), and continue as above.

The load data for uncompleted jobs is stored, and can be returned to for completion as required.

2.9.4   Automatic Job creation after the current Job is cleared

5. When a job is cleared (preset or non-preset), the system then automatically creates a new job. The new job will either be automatically named "Job", or you are prompted to manually enter a job name [1].

[1] *Please refer to the setting 'Add Job Name' in the 'Database Setup' menu.*

6. The store references automatically set [2] for the new job will be either,

(i)   the references of the last job completed.

(ii)   "Undefined" references.

(iii) the references of the last preset job completed.

[2] *Please refer to the setting 'Clear Options' in the 'Database Setup' menu.*

You can continue to use the automatically-created 'Job' or if required re-select a 'Preset', or another Job from the 'To Do' List.

7. If no lifts were added to the automatically-created 'Job' prior to re-selecting a 'Preset', that job is automatically deleted from the Jobs list. This prevents unwanted automatically-created jobs accumulating in the Jobs List.

2.9.5   Add a New Job

As well as jobs being uploaded to the LM-100 from an external source, the operator can manually input new jobs as required.

NOTE: *There are 3 display options when adding a job, configured via the "Database Setup" page in the Calibration menu,*

(i) A new job is created with the default job name "Job".

(ii) You are prompted to enter a job name via the on-screen keyboard.

(ii) You are prompted to enter a BIC code via the on-screen keyboard.

You can subsequently edit the name via the ⚙ *button on the Jobs List page, if you wished to change it.*

When entering a new job, it will appear as the active job on the main screen, with 'Undefined' for the Store References. The new job will also appear on the Job List page. You can then set the required Store References either from the main screen (or from the Jobs List).

UK721-44.JPG

UK758-441.JPG

UK758-601.JPG
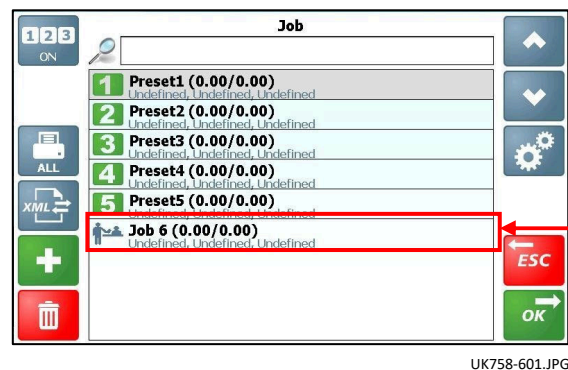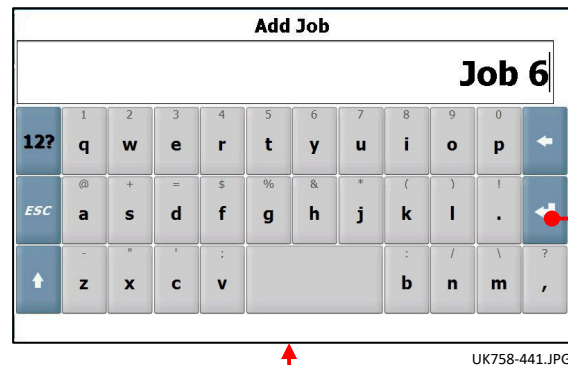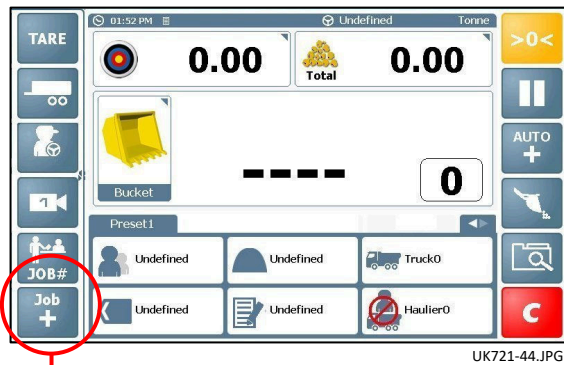
### 2.9.6 Edit Preset Jobs / 'Jobs to Do'

You can manually edit the Store References, Driver name and Job Name for any 'Preset' / 'Job to Do' in the Jobs list.

1. From the '**Jobs**' screen, press [icon] to select the Edit screen.

2. Select the information line to edit.

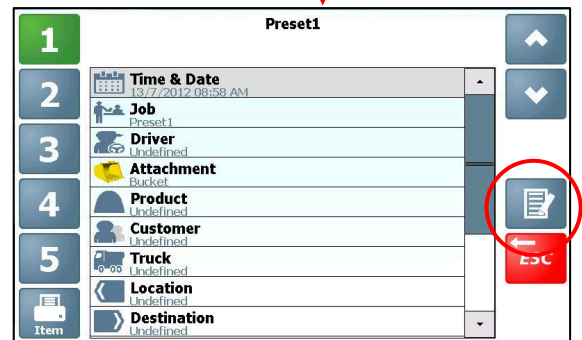3. Press [icon] to select the required Store information.

   For example,

   If selecting 'Customer', the Customer Store list will be displayed, from which you can select the required customer reference.

NOTE: *The Store References can also be edited from the "Home" screen (2.9.2), then stored by pressing and holding the relevant Preset key for 5 seconds.*
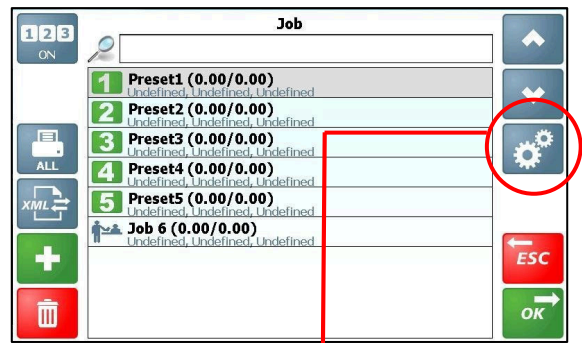
UK758-601.JPG


UK758-53.JPG

2.9.7 Switching Jobs and Presets

Any job in the job list can be assigned to one of the 5 preset positions. Likewise, the preset jobs can be re-arranged in a different order if desired.

Jobs and Presets can be interchanged via the Jobs List screen page.
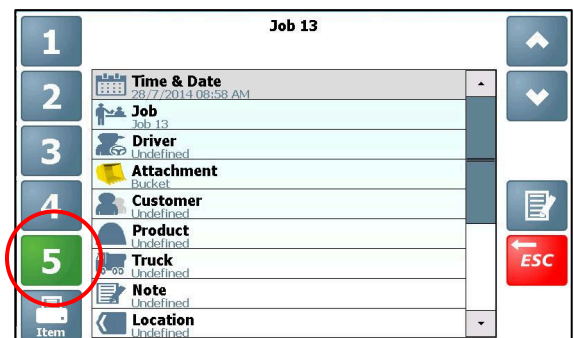
Switching via the Jobs List screen page

For example: Assigning a job (Job 13) to Preset 5.

1. Select the job to re-assign and press [icon] .
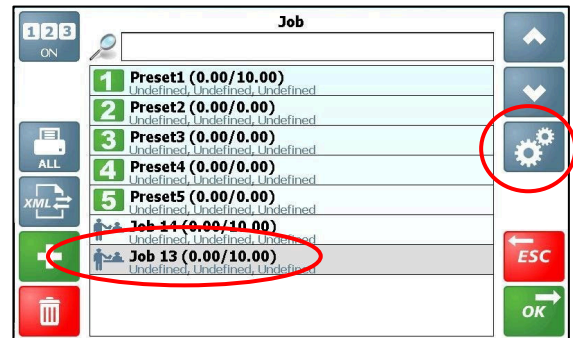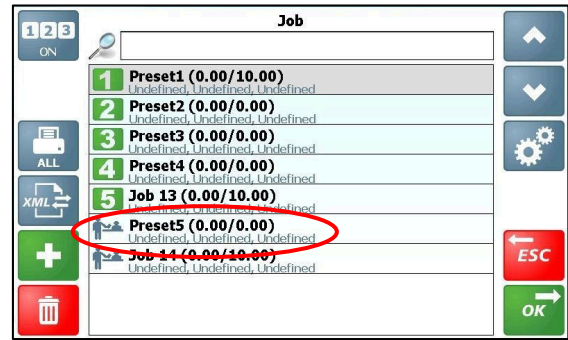

UK721-65.JPG

2. Select the preset to assign the job to.

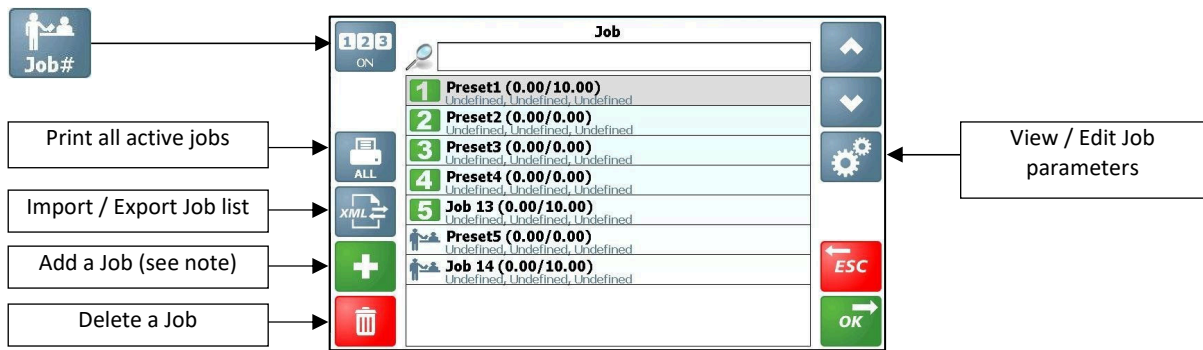3. Press ESC to return to the Home screen.

UK721-66.JPG

4. The jobs switch places. Job 13 is now Preset 5, and the job that was previously Preset 5 is moved down to the job list.

UK721-67.JPG

2.9.8   Add / Delete / Print Jobs

Print all active jobs

Import / Export Job list

Add a Job (see note)

Delete a Job

View / Edit Job parameters

UK721-67.JPG

NOTE: A job can also be added via the [Job+] *key (2.9.5).*

2.9.9   Import/Export Jobs List

The Jobs list is stored in the database on the SD card. The data can also be updated by importing .XML data edited in PC software, or likewise exported in .XML format for administration purposes.

Press [XML] for the Import / Export options available. You are prompted to enter a suitable filename.

IMPORT / EXPORT

EXPORT LIST VIA EMAIL

EXPORT LIST VIA USB

IMPORT AND OVERWRITE LIST VIA USB
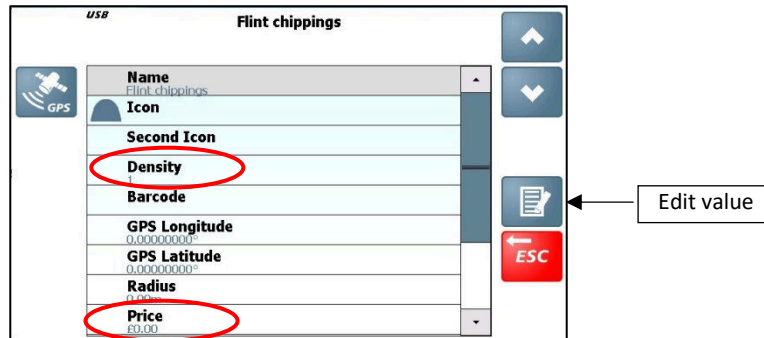
IMPORT AND ADD TO LIST VIA USB

UK721-24c.JPG

2.10 Set Product Density / Price per Unit

If a volumetric unit (m³ or yd³) is selected, then the DENSITY of the product must be entered on the Product Store Information screen.

Press [Undefined] to select the Product Reference store. Select the reference to edit then press [⚙]

UK721-25.JPG

Edit value

NOTE: *If weighing volumetrically, failure to programme the product density will result in incorrect weight measurement and memory totals !*

3 The Loading Cycle

3.1 Machine Requirements

The accuracy of the system depends to some extent on the following :

1. **Operating Temperature :** Always allow the machine and the hydraulics to warm up to the normal operating temperature before commencing weighing.

2. **Weighing on level ground :** The chassis angle sensor provides automatic correction if weighing on a slope.

3. **Boom lift and vehicle movement :** Anti-bounce compensation and filtering help to maximise weighing accuracy especially if weighing whilst moving. Best results however, are still obtained when weighing while the vehicle is stationary.

4. **Maintenance :** Keep your machine maintained in good condition. Things like excessively worn bushings, pivot pins and slideways, as well as lack of lubrication to these areas can have an adverse effect on weighing accuracy. After any major servicing particularly if you have replaced worn components or carried out welding repairs, you should re-calibrate the weighing system. If the hydraulic system has been drained and re-filled, you should also check for any air that may have become trapped at the pressure sensor(s).

3.2 Lifting Procedure

The correct lifting procedure is especially important for dynamic weighing. The load should be lifted smoothly and consistently through the weighing position. The best procedure is as follows:

1. Having picked up the load, crowd (roll) the bucket right back as far as it will go.

2. Pull the lift lever right back with the engine at idle.

3. Increase engine revs to the "weighing speed" and lift smoothly without bouncing or jerking.

   In Dynamic Weighing mode, the system has lift speed compensation and will alert the operator in the event the lift speed is too fast or too slow.

   In Static Weighing mode, the system has automatic compensation and filtering when the load is stationary at the weighing position.

NOTE: *'Live Static ON' mode only.*

3.3 Approved Weighing

An approved system can be certified for multiple attachments. However, for any attachment used that is <u>not</u> certified, when that attachment is selected the screen will display the icon reminding the operator that weighing with that attachment is not legal for trade.

All load printouts for non-approved weighing will state "Not Legal for Trade".

3.3.1 Automatic inhibitions

Bucket position:

An approved system is fitted with a bucket position sensor. For those attachments selected that have the bucket angle sensor input enabled, weighing will be inhibited unless the attachment is positioned at the pre-determined angle set during verification, indicated by the `BUCKET OK` icon.

For all other attachments that were not certified as part of verification, non-approved weighing is in effect.

Boom Position (Approved and non-approved systems)

Telescopic handlers are fitted with an additional position sensor monitoring boom extension. Weighing will be inhibited unless the boom is at the pre-determined extension, indicated by the '**BOOM OK'** icon.

Oil Temperature:

An approved system is fitted with a temperature sensor. Weighing will be inhibited until the machine has reached a preset oil temperature threshold.

"Zero System" Check:

In addition, a "Zero System" function (section 2.3.1) requires the operator to periodically perform a zero-weight check. Weighing will automatically be inhibited until the system is re-zeroed. The weight must remain within 2% of the zero weight measured on verification.

3.3.2   Weight Alarms

An approved weighing system has weight limits determined as part of verification, beyond which it is not certified to measure. If the weight reading exceeds these pre-determined values, then a warning icon is displayed on the main screen as follows.

Minimum Rated Capacity: The minimum weight for which the system is to be certified to measure.

Maximum Rated Capacity: The maximum weight for which the system is to be certified to measure.

Alarm weight: The maximum weight above which the weight cannot be added to the total weight (or printed). For an approved system, this is set to the 'Maximum Rated Capacity' plus 9 divisions (9 x 'e').

3.4   Dynamic Weighing Mode

With dynamic weighing, the load is lifted without any interruption. Weighing can be fully automatic and quick, and weighing 'on the move' is possible.

1. Make sure the machine is at normal operating temperature.
    Trade-approved weighing systems: Weighing will be inhibited until normal operating temperature is reached.

2. Select any required load references (product, customer, truck etc).

    If GPS Product recognition is enabled (ref. section 5.3), then the Product reference is automatically set when the loader comes within range of the product location, and reverse gear is selected.

3. Zero the bucket. Follow the routine on the screen.
    Trade-approved weighing systems: The system is setup so that the zero routine is automated.

4. Fill the bucket as normal and crowd it right back.

5   Hold the lift lever <u>fully</u> back. Lift the boom smoothly at a constant speed through the indicated weighing "zone", keeping the loader as steady as possible while the weight is taken.

Once the weighing zone is passed, the lifted weight is displayed.

If the Overload audible alarm is enabled,

At 90% of maximum load = intermittent tone
At 100% of maximum load = continuous tone
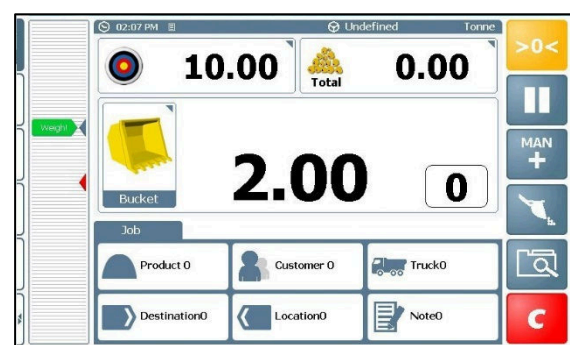
UK721-05.JPG

If AUTO ENTER ( ) is set, the weight is automatically added to the load total.

If MANUAL ENTER ( ) is set, then PRESS the key (or the Remote Enter Switch if fitted), to add to the load total.

The target weight (🎯) will decrease by the calculated weight to show how much is left to load.

The 🟡 figure then indicates the total of all bucket weights entered so far.

Note: *If the bucket weight has been added to the total (either automatically or manually) before the material is tipped out, and the bucket remains above the weighing position, then you can use the 'Clear Entry' key (CE-1) to deduct that bucket weight back off the total.*

The Clear Entry key then changes to a 'Re-add Entry' key (CE+1), should you then wish to re-add the bucket weight to the total. This option to clear or re-add the bucket weight remains until the bucket is lowered below the weighing position.

UK721-06.JPG

6. Continue loading until you get to the last bucketful. If the bucket weight exceeds the target required, the bucket weight turns **RED** in colour.

   Regardless if "Auto Entry" (AUTO +) is enabled, the system does not automatically enter the "last bucket" weight unless configured to do so [1]. You have to manually enter the weight using the Remote Enter button (if fitted), or the ⬅ key.

   [1] If "Auto Add Over Target" is enabled (via the 'Database Setup' menu), then the "last bucket" load will be automatically entered even if the target load is exceeded.

   However, there are several methods for "Last Bucket" weighing (ref. section 3.5)

7. Press C to reset for the next loading job.

   A 'Job Record' that includes the Load Data and Store references, is saved automatically to the database on the SD card, and printed out (if setup to do so).

Note: *If the 'Auto-Email' function is configured in the 'Email Setup' menu, an email is automatically sent in either XML, CSV or PDF format to a user-defined account when the job is cleared. Once sent, 'Load sent via email' text will be added to the job record. If cleared with no internet connection, the job data will be cached and sent as soon as the connection is restored.*

A new Job Name is then created (section 2.9.4). Depending on the setting in the 'Setup', menu, the Store References will either default to those of the previous job, or to '**Undefined**'.

The "Target Load" will revert to the last figure entered, and will need to be changed only if the next truck requires a different weight.

NOTE: *Once started, a job does not have to be completed and cleared before starting another job. This enables the operator to perform and log multiple loading tasks e.g. in a busy environment (ref. 2.9 - 'Jobs List').*

3.5   Last Bucket Weighing

When in either Dynamic or Static weighing mode, if the weight exceeds the target required, the weight display turns **RED**. Regardless if "Auto Entry" ([AUTO +]) is enabled, the system does not automatically enter the "last bucket" weight. You have to manually enter the weight using the Remote Enter button (if fitted), or the [←] key.

There are several methods for "Last Bucket" weighing.

3.5.1   "Undo last Lift" (Dynamic / Static Weighing Mode)

If the last added lift is too much, the operator may wish to simply cancel the last lift, tip off some material back onto the pile, and weigh again.

1. Press the [ESC] key, and select "**Undo Last Lift**". This will subtract the last lift from the weighing screen and the Store totals.

2. Tip out some material and then lift again through the weighing zone, until the required amount has been weighed and added again to the total.

NOTE: If setup via the 'Home Screen Functions Setup' page in the calibration menu, a 'Clear Last Entry' function ([CE-1]) replaces the 'Pause' function ([⏸]) on the weighing screen.

This then allows you to immediately remove the last lift from the total with a single key touch.

3.5.2   "Reweigh the Remainder" (Dynamic / Static Weighing Mode)

In some cases where the truck also has an on-board weighing system, the operator may tip a partial amount off the last bucket load to "top-off" the truckload, as directed by the truck driver.

The "re-weigh" function enables the weight of the material remaining in the bucket to be re-weighed and subtracted from the truck total, ensuring the recorded total matches the actual weight loaded into the truck.

1. Press the [ESC] key, and select "**Reweigh the Remainder**".

2. Lift again through the weighing zone. The weight of material remaining in the bucket is subtracted from the truck total.

3.5.3   Live Static "Tip-off" Mode

NOTE: The 'Tip-off' function may be replaced by a 'Clear Last Entry' ([CE-1]) function. This setting is made via the 'Home Screen Functions Setup' page in the Calibration menu.

"**Undo last Lift**" and "**Reweigh the Remainder**" last bucket weighing are trial and error methods. To assist in measuring the amount required for the last dynamic weighing, the "Live Static Tip Off" feature may be used.

1. Lift the arms up to any suitable height, and then press the [icon] button. The "live" calculated weight, and button icon are then shown in **GREEN**. The weight shown is now live.

2. Crowd the bucket fully back & allow the live display to settle down before checking the true weight.

"Live Static Tip Off" can be configured to operate in either of two ways,

3(a) Tip off material back onto the pile ("Pile Tip Off – Manual Add On" configuration). The instrument displays the weight remaining in the bucket as you tip the surplus material back onto the pile.

3(b) Tip off material into the truck ("Truck Tip off" configuration). The instrument displays the weight tipped off the bucket into the truck (to match the 'weight left to load' display).

To enter the 'Live Tip-off' weight, press the Remote Enter button (if fitted), or the [←] key.

NOTE 1:   "Live Static Tip-off Mode" must be configured to "Pile Tip Off (Manual Add On"), otherwise weight entry is not possible whilst remaining in Live static mode. "Live Static Tip-off Mode" is configured from the 'Sensor Sampling and Setup' screen ('Factory' settings menu).

[icon] If an approved system, it is not possible to add a live weight to the total. In this case, tip off the required amount, then lower the bucket and weigh again using the normal method.

3.6 Static Weighing Mode

This normally uses the loader's auto-kickout system to automatically stop the lift arms in the reference position, before sampling the weight.

1. Make sure the machine is at normal operating temperature.
   Trade-approved weighing systems: Weighing will be inhibited until normal operating temperature is reached.

2. Select any required load references (product, customer, truck etc).

   If GPS Product recognition is enabled (ref. Section 5.3), then the Product reference is automatically set when the loader comes within range of the product location, and reverse gear is selected.

3. Zero the bucket. Follow the routine on the screen.
   Trade-approved weighing systems: The system is setup so that the zero routine is automated.

4. Fill the bucket as normal and crowd it right back.

5. Hold the lift lever <u>fully</u> back. Lift the load up to the weighing position. The alarm will sound one beep and either the "live" weight or captured weight will be displayed. Keep the machine as steady as possible while the weight is taken.

   The instrument will display ✋ indicating that the weight is being sampled, and the bucket weight is then displayed.

   If the Overload audible alarm is enabled,

   At 90% of maximum load = intermittent tone
   At 100% of maximum load = continuous tone

6. If AUTO ENTER ([AUTO +]) is set, and depending on the "Static Auto Add Mode" setting in the "Sensor and Sampling Setup" menu, the weight is automatically added to the load total either,

   (i) when the attachment is lifted above the weighing position or,

   (ii) after 2 seconds while remaining at the weighing position.

   Automatic Weight Entry is not possible if the attachment is configured for "Live Static ON" weighing mode, or "Constantly Live Static" weighing mode.
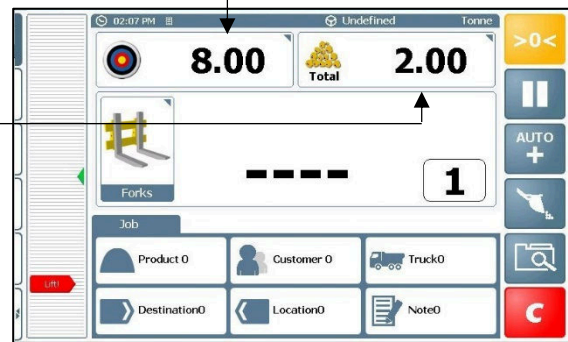
   If MANUAL ENTER ([MAN +]) is set, then press the [←] key (or the Remote Enter Switch if fitted), to add to the load total.

   The target weight (🎯) will decrease by the calculated weight to show how much is left to load.

   The 🔺 figure then indicates the total of all bucket weights entered so far.

Note: _If the bucket weight has been added to the total (either automatically or manually) before the material is tipped out, and the bucket remains above the weighing position, then you can use the 'Clear Entry' key ([CE-1]) to deduct that bucket weight back off the total._

The Clear Entry key then changes to a 'Re-add Entry' key ([CE+1]), should you then wish to re-add the bucket weight to the total. This option to clear or re-add the bucket weight remains until the bucket is lowered below the weighing position.

7. Continue loading until you get to the last bucketful. If the bucket weight exceeds the target required, the bucket weight turns **RED** in colour. The amount will still add to the total.

   Regardless if "Auto Entry" ([AUTO +]) is enabled, the system does not automatically enter the "last bucket" weight unless configure to do so [1]. You have to manually enter the weight using the Remote Enter button (if fitted), or the [←] key.

UK721-07.JPG

UK721-08.JPG

[1] If "Auto Add Over Target" is enabled (via the 'Database Setup' menu), then the "last bucket" load will be automatically entered even if the target load is exceeded.

However, there are several methods for "Last Bucket" weighing (ref. section 3.5).

8. Press [C] to reset for the next loading job.

A 'Job Record' that includes the Load Data and Store references, is saved automatically to the database on the SD card, and printed out (if setup to do so).

Note: *If the 'Auto-Email' function is configured in the 'Email Setup' menu, an email is automatically sent in either XML, CSV or PDF format to a user-defined account when the job is cleared. Once sent, 'Load sent via email' text will be added to the job record. If cleared with no internet connection, the job data will be cached and sent as soon as the connection is restored.*

A new Job Name is then created (section 2.9.4). Depending on the setting in the 'Setup', menu, the Store References will either default to those of the previous job, or to '**Undefined**'.

The "Target Load" will revert to the last figure entered, and will need to be changed only if the next truck requires a different weight.

NOTE: *Once started, a job does not have to be completed and cleared before starting another job. This enables the operator to perform and log multiple loading tasks e.g. in a busy environment (ref. 2.9 - 'Jobs List').*

3.7 Static Weighing - 'Constantly Live Static' Mode

If the weighing mode for a selected attachment is set to 'Constantly Live Static', the loaders 'auto-kickout' system is not active and the live weight is displayed between the lower and upper weighing positions.

Weighing in this mode will not be as accurate as with other weighing modes. However, to get the best accuracy possible, it is recommended to always enter the weight reading at the same boom position every time. This position should ideally be the weighing position at which the attachment was calibrated.

1. Make sure the machine is at normal operating temperature

2. Select any required load references (product, customer, truck etc).

If GPS Product recognition is enabled (ref. Section 5.3), then the Product reference is automatically set when the loader comes within range of the product location, and reverse gear is selected.

3. Fill the bucket as normal and crowd it right back.

NOTE: *There are no weighing zone indicators displayed.*

4. Lift the load and stop at a convenient boom position, and the "live" weight will be displayed. Keep the loader as steady as possible while the weight is taken.

If the Overload audible alarm is enabled,

At 90% of maximum load = intermittent tone
At 100% of maximum load = continuous tone

5. Press the [←] key (or the Remote Enter Switch if fitted), to add to the load total (non-approved systems only).

NOTE: *Automatic Weight Entry is not possible.*

6. Press [C] to reset for the next loading job.

UK721-23.JPG

Boom position Indicator only

NOTE: *Operation in 'Constantly Live Static (no R&D)' mode is similar to that for 'Constantly Live Static' Mode above, except that there is no defined lower and upper weighing position (the instrument does not display a boom position indicator). The live weight is displayed at ANY boom position.*
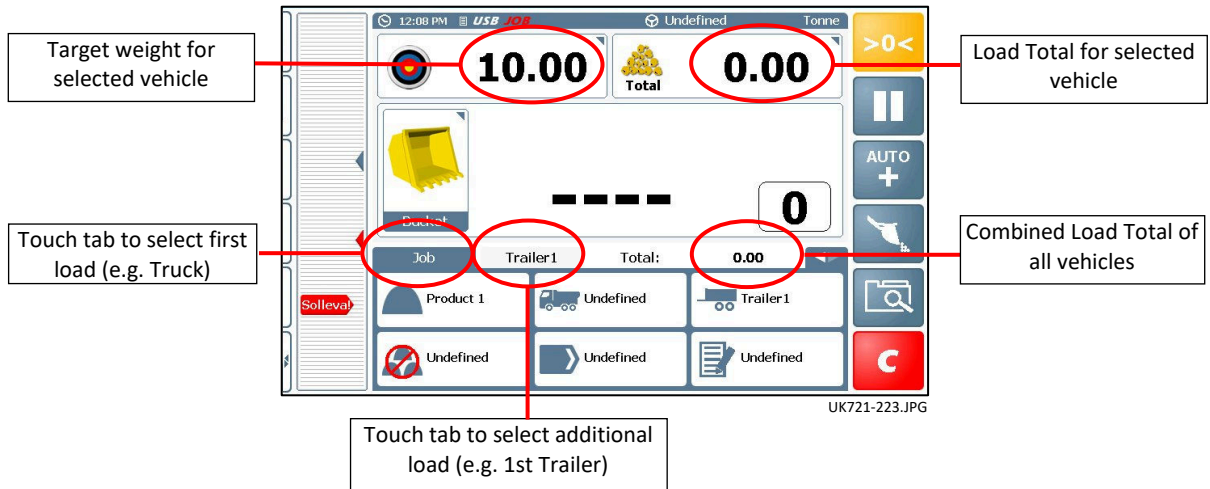
3.8   Split Loading (Trailers)

This function enables you to load multiple vehicles (e.g truck plus trailer(s) <u>as a single job</u>.

Touch the tab as shown below to select the vehicle being loaded.

Target weight for selected vehicle

Load Total for selected vehicle

Touch tab to select first load (e.g. Truck)

Combined Load Total of all vehicles

UK721-223.JPG

Touch tab to select additional load (e.g. 1st Trailer)

Select the appropriate tab to load each vehicle in turn. The reference stores and target weight can be set independently for each vehicle. You may switch between vehicles as required.

NOTE: *Once started, a job does not have to be completed and cleared before starting another job. This enables the operator to perform and log multiple loading tasks e.g. in a busy environment (ref. 2.9 - 'Jobs List').*

NOTE: *Pressing the* **C** *key to complete and clear the job before starting a new job, resets the load totals to zero for all vehicles.*

3.8.1   Add / select a vehicle ("trailer")

To create an additional vehicle (or "trailer") either,

(i)   From the lefthand side menu, press [trailer icon] and then 'OK' to create a 'Trailer #' (or enter your own description if required).

UK721-221.JPG
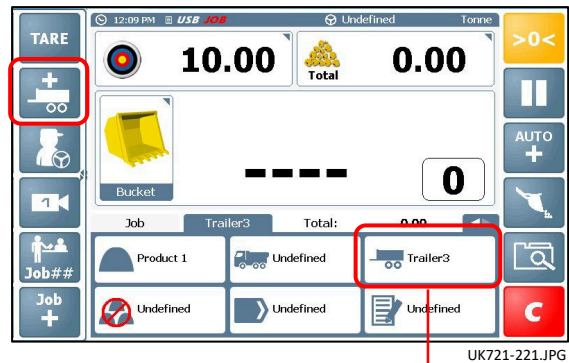
(ii)   Select the "Trailer" reference store (this has to be enabled via the 'Home Screen Functions Setup' page in the calibration menu), and then the '+' key.

Repeat to create additional vehicles if required.

Select a "trailer"

Add a "trailer"

UK721-222.JPG
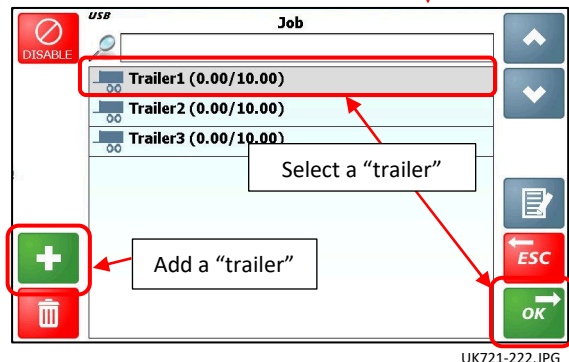
3.9   Blend ('Mix') Weighing Mode

You can choose to weigh dynamically or statically in this mode.

Select a "Mix", and enter a target weight for batch mixing. The instrument automatically calculates the target weight for each ingredient of the "recipe". Then simply weigh following the target weight ("Left to Load") display for each product in turn.

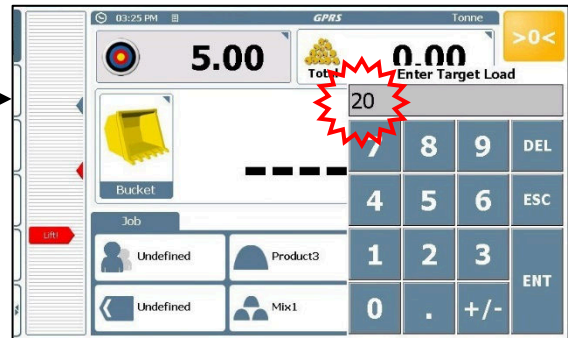Products can be selected and weighed in any order.

1. Press [Undefined] to switch Blend ("Mix") mode on.

2. Confirm the Mix selection from the list.

    Example: "Mix 1" has the following ratio of ingredients;

    Product 1 = 2.00 parts
    Product 2 = 3.00 parts
    Product 3 = 5.00 parts

3. Enter the Target Weight.

NOTE: The target weights for the individual products are <u>automatically</u> recalculated.

UK721-18.JPG

Example: For blending 20 tonnes of 'Mix 1' above, the individual Target weights will become;

Product 1 = 4.00t
Product 2 = 6.00t
Product 3 = 10.00t

4. Load the first product to match the target weight.
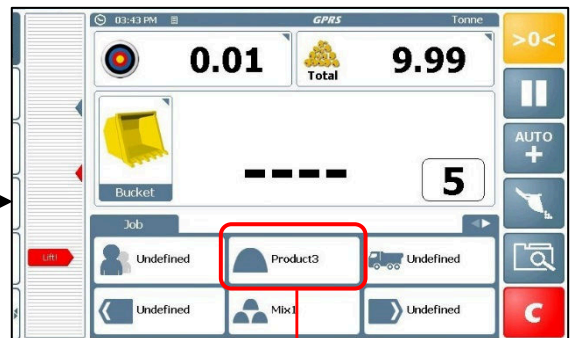
UK721-20.JPG

5. Select the next product (the target weight is <u>automatically</u> set).

6. Repeat loading for the remaining products.

7. Press [C] to reset for the next loading job.

NOTE: "Blend ("Mix") Mode) is automatically disabled after pressing [C] and the instrument returns to the normal (i.e. single product) weighing mode.
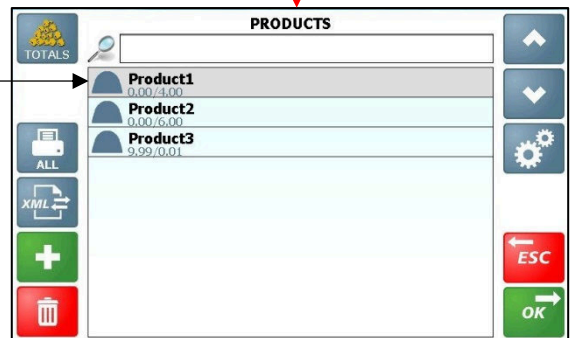
UK721-19.JPG

A 'Job Record' that includes the Load Data and Store references, is saved automatically to the database on the SD card, and printed out (if setup to do so).

A new Job Name is then created. Depending on the setting in the 'Setup', menu, the Store References will either default to those of the previous job, or to '**Undefined**'

The "Target Load" will revert to the last figure entered, and will need to be changed only if the next truck requires a different weight.

NOTE: Once started, a job does not have to be completed and cleared before starting another job. This enables the operator to perform and log multiple loading tasks e.g. in a busy environment (ref. 2.9 - 'Jobs List').

3.10 Reset for next Job

There are two options,

(i). Press [C] and then [OK] to reset for the next loading job.

*A print summary will be automatically generated if the instrument is setup to do so in the 'Setup' menu ('Printer and Serial Port Setup).*

(ii). Alternatively, press [Item] to print a Job summary and clear the job total.

NOTE: *When a Job Total is cleared, the load data for that job is automatically save to the database on the SD card. If the 'Auto-Email' function is configured in the Setup menu, an email is automatically sent in either XML, CSV or PDF format to a user-defined account when the job is cleared. Once sent, 'Load sent via email' text will be added to the job record. If cleared with no internet connection, the job data will be cached and sent as soon as the connection is restored.*
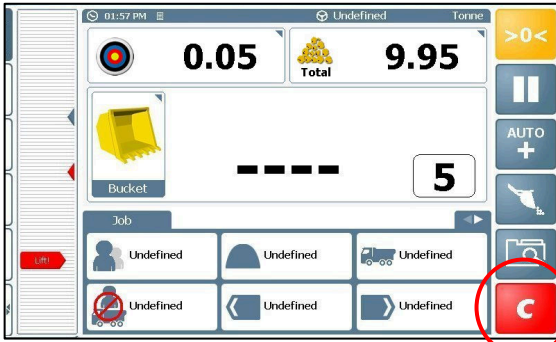
UK721-50.JPG
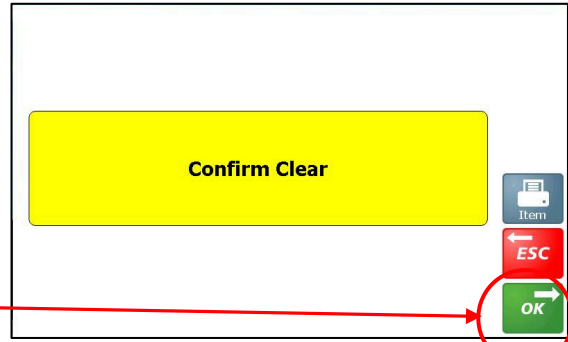
UK758-501.JPG

3.11 Pause / Resume Weighing Mode

If you wish to use the loader for non-weighing tasks, then simply press [II] to de-activate the weighing mode.

'Pause' may be activated during a 'job', e.g. if you need to temporarily perform a non-weighing task.

Press [▶] to resume weighing.

NOTE: *The 'Pause' function may be replaced by a 'Clear Last Entry' ([CE-1]) function.*

This setting is made via the 'Home Screen Functions Setup' page in the Calibration menu.
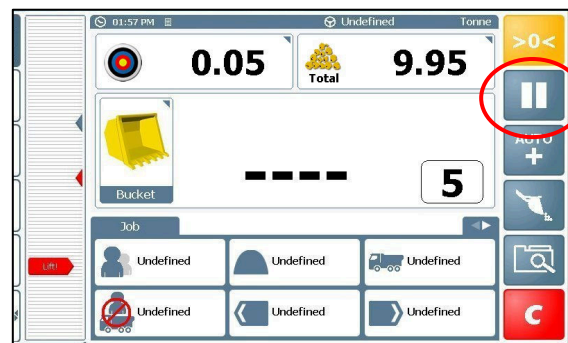
UK721-50.JPG

3.12 Reversing Camera Input

The LM-100 can also function as a video monitor for a reversing camera. The display will switch automatically from the 'Home' screen to camera view when reverse gear is selected.

Camera view can be also selected at any time by pressing the [📷] key. Press the [🏠] key to return to the main operating screen.

NOTE: *The Camera function is enabled from the 'Home Screen Setup' page in the 'Setup' menu.*

UK721-44.JPG

4 'Nudge' - Adjusting Weight Calibration

NOTE: *Trade-approved weighing systems:* *This function is <u>not</u> available in the normal operating mode.*

Non-approved weighing systems: *This function <u>may be</u> available in normal operating mode depending on your setup.*

After performing the initial weight calibration and loading a few trucks, you may find that the load readings from the instrument are consistently different from weighbridge (weighscale) readings. This situation can also occur after maintenance or repair to the loading shovel e.g. changing a bucket.

Also, use the 'Nudge' function to adjust the weight calibration factors for individual attachments, where the initial factors were set using the 'COPYCAL' function.

4.1   Nudge by Weight

1. Load a truck and note the weighbridge total against the instrument total for that load, e.g.

   Instrument reading ('Measured')   23.96 tonnes
   Scale reading ('Actual'):   24.78 tonnes

2a. Press [icon] and select 'Cal Nudge' from the Setup menu.

[icon] Enter the instrument reading ('**Measured**').
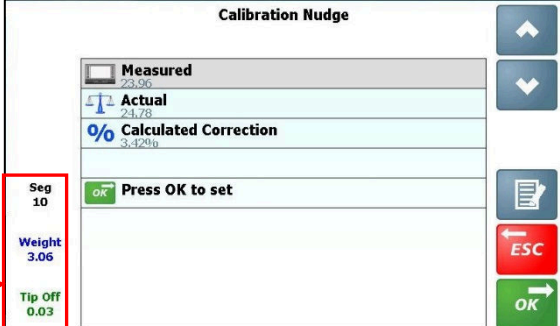
[icon] Enter the weighscale reading ('**Actual**')

The % correction is displayed.

3. Press [OK] to accept.

The boom height ('Seg 1' to 'Seg 20') and the dynamic / live weights are displayed on the left side of the screen.

UK759-292.JPG

4.2   Nudge by %

Alternatively, to manually adjust the cal factors by trial and error,

2b. Set '**Measured**' and '**Actual**' to the <u>same value</u> e.g. '1'.

Select '% Calculated Correction'.
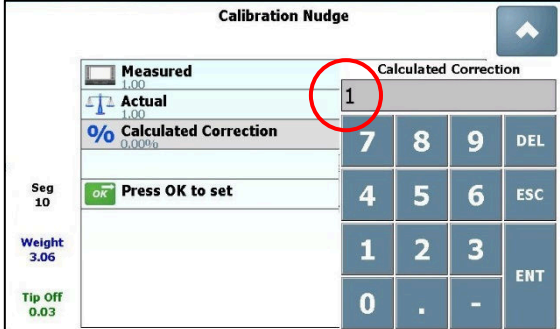
[icon] Enter a + / - percentage change.

[icon] Enter a plus value if the instrument reading is less than the weighbridge weight.

Enter a minus value if the instrument reading is more than the weighbridge weight.

3. Press [OK] to accept.

4. Press [home icon] to return to the 'Home' screen.

UK759-297.JPG

5. Location Services

To enable location services requires a GPS signal and mobile Internet connection. 'Product', 'Destination' and 'Location' Store references must include latitude and longitude co-ordinates, and a 'Radius' setting.

5.1   Using Location Services

1. When the loader moves within the specified radius of the programmed co-ordinates of a Location or Destination Store Reference, the display will automatically switch to that reference.

2. However, to ensure that only the desired Product Reference is automatically selected, the display will not switch to the Product Store Reference associated with that location until reverse gear is selected i.e. you have chosen to dig in to the pile and reverse out with a bucket load.

3. If you wish to record the 'Destination' co-ordinates of the bucket load (e.g. a storage area), keep the boom lowered until you reach the tipping area. The bucket load should then be weighed in the normal way, during which the co-ordinates are logged.

5.2   Setting 'Destination' and 'Location' Co-ordinates

Both 'Destination' and 'Location' references may include GPS co-ordinates.

1. Select or add ([+]) the Destination ([>]) or Location ([<]) reference.

2. Press [gear icon] to view the Reference settings.
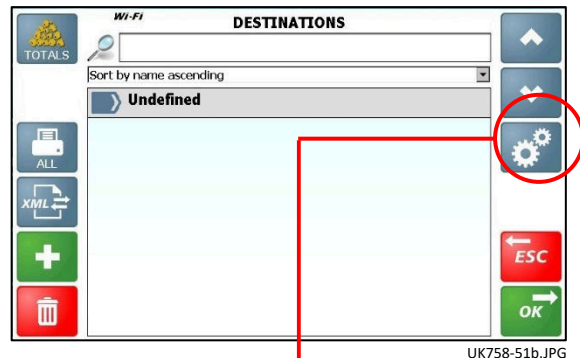
UK758-51b.JPG

3. If you are at the correct position, then press [GPS] to enter the co-ordinates.

NOTE: *Alternatively, the co-ordinates for that position are logged by performing the weighing routine.*

[bulb icon] If you are not at the selected Destination or Location, but you know the GPS co-ordinates, then select the appropriate line and press [icon] to enter them manually.
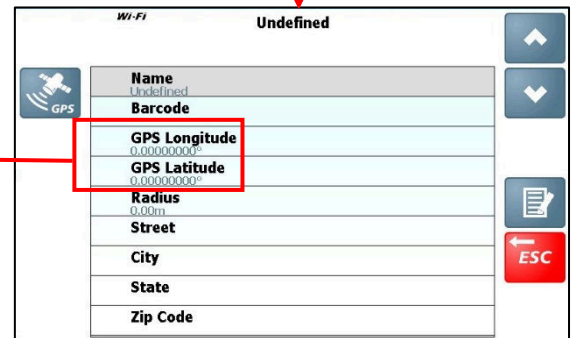

UK721-52.JPG

5.3 GPS Product Recognition

A moving map (Google Map) can be displayed via the 'Diagnostics' screen in the 'Setup' menu, which shows:-

- LOCATIONS (◀) - where the material originates e.g. a worksite, or location within a worksite.
- DESTINATIONS (▶) - where the material is sent e.g another location on the worksite, or to another worksite.
- PRODUCTS - Locations of products on the worksite.

To display the map,

1. Press [icon] on the 'Diagnostics' screen.
2. Press [icon] .
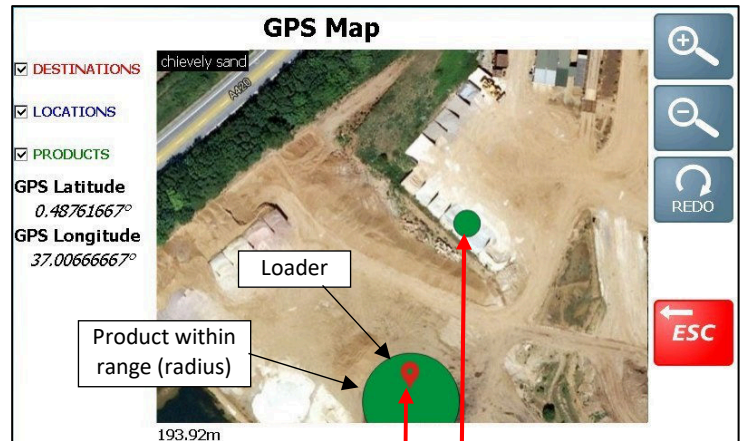
UK721-46.JPG

5.3.1 Set Product Co-ordinates and Radius

Using the examples shown, from the weighing screen,

1. Select the product reference (e.g. 'Chievely Sand'), and then move close to the pile.
2. Press [icon] to enter the co-ordinates.
3. Select '**Radius**' and enter the required value.

NOTE: *Where products are close to each other e.g. a row of storage bays, then do not set a large radius.*
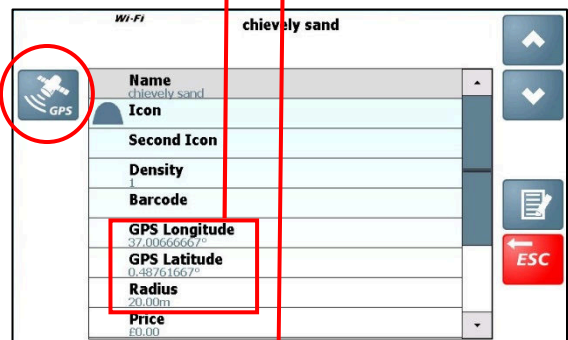
UK721-48.JPG

4. Repeat for each product.

In normal operation, the instrument displays the 'Home' screen. As you move within the product radius, the product reference is automatically set.

[lightbulb icon] *If products are in close proximity and incorrect selection occurs often, then reduce the 'radius ' setting for the adjacent products.*

UK721-47.JPG

6.   Printing, Data Logging and Transfer

6.1   Data Transfer Options

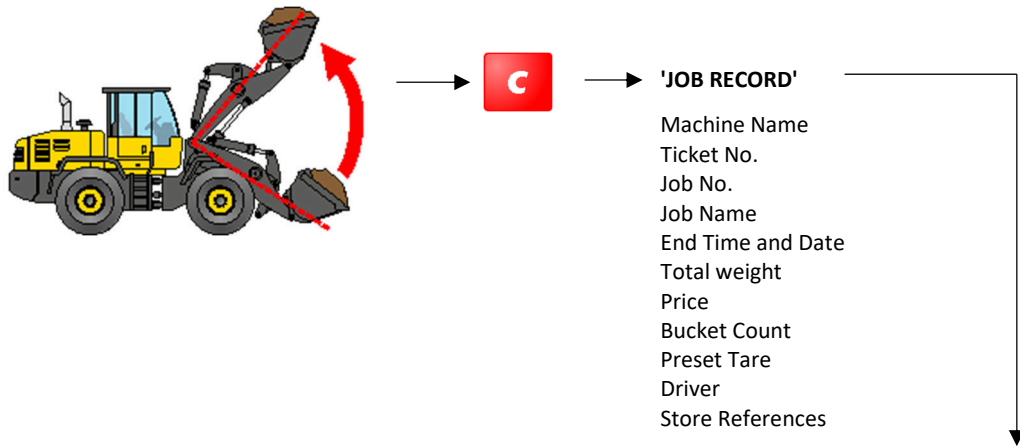*NOTE: Some options may not apply, depending on the setup of your system.*

TYPE	MODE	OPTION	
PRINTER	RS232 SERIAL (Normally COM 2)	[OFF]	No automatic printout after a load is cleared, but Job Records can be printed manually
		AUTOMATIC MODE	A Job Record ('Ticket') in one of 3 formats, is printed automatically after a load is cleared.
		'LOAD BY LOAD'	Ticket includes space for Name, Address and Signature of customer.
		'SHORT LOAD BY LOAD'	As above but excludes space for Name, Address and Signature of customer.
		'LIFT BY LIFT'	As above but also lists individual bucket weights.
		EXTENDED INFORMATION	Ticket includes extra text entered for 'Description 1' to 'Description 4' in the Product Stores.
		PRINTER TYPE	**['ICP300 (1)'] / '['ICP300 (2)' / EPSON TM295' / 'BIXOLON'**
			'ICP300 (1)' has a slow print mode so that it can print tickets with large icons, without handshaking.
			'ICP300 (2)' has a fast print mode for general printing with small or no icons.
			The RDS ICP300 printer supports bitmap characters, however most third-party printers do not. If you are using a printer other than the RDS printer. LM-100 will then not output bitmap characters. Selecting '**BIXOLON**' enables 48 characters per line, and a paper "cutter" command
		No. OF DUPLICATES	Sets the no. of copies of a ticket that will be printed.
DATA	USB (PEN)	EXPORT LIST VIA USB	Reference Stores, Jobs List, Job Records
		IMPORT AND OVERWRITE LIST VIA USB	Reference Stores, Jobs List
		IMPORT AND ADD LIST VIA USB	Reference Stores, Jobs List
	ETHERNET / 3G MODEM (EMAIL)	EXPORT LIST TO EMAIL	Reference Stores, Jobs List, Job Records
	RS232 SERIAL (Normally COM 1)

e.g.

RADIO MODEM
DATALOGGER
PC CABLE

etc | .CSV - LOAD BY LOAD LM8K | Data output in .CSV format if compatibility with existing Loadmaster 8000 data is required. |
		.CSV - LIFT BY LIFT LM8K	As above, but also lists individual bucket weights. *(.CSV line sent to Com Port when load is cleared.)*
		.XML	"SQL Queries" from networks or PC running software (i.e. "Isosync"). Data returned from SQL query in .XML format.
		.CSV - LOAD BY LOAD	CSV data output closely matching XML data output in mode, but in CSV format
		.CSV - LIFT BY LIFT	As above, but also lists individual bucket weights
	ETHERNET TCP/IP

i.e. With Ethernet radio modem or direct cable | SQL | "SQL Queries" from networks or PC running software (i.e. "Isosync"). Data returned from SQL query in .XML format. |

6.2   Reference Stores and Job Records

An incremental Job No. is created automatically for each new loading task. When the **C** button is pressed, A 'Job Record' that includes the Load Data and the Store references, is saved automatically to the database on the SD card, and printed out (if setup to do so).

NOTE: *Each of the stores can have an unlimited no. of references. The programmable content of each Reference Store is shown in the table below.*
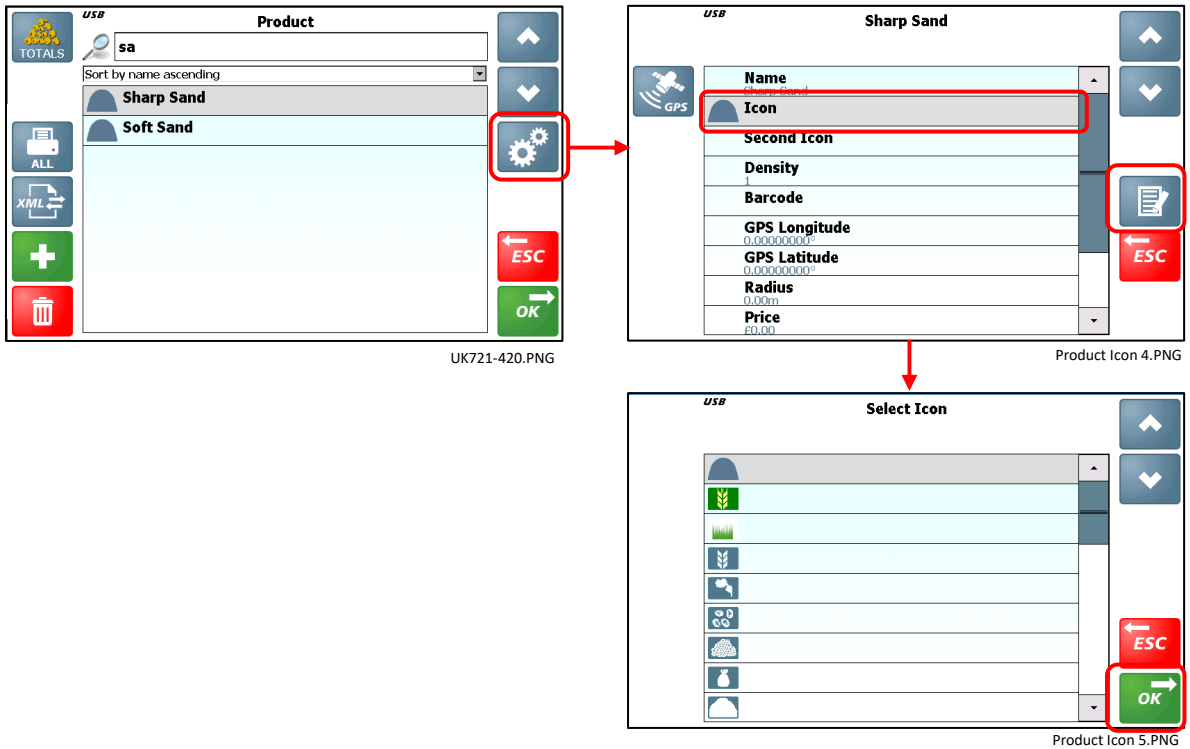
'JOB RECORD'

Machine Name
Ticket No.
Job No.
Job Name
End Time and Date
Total weight
Price
Bucket Count
Preset Tare
Driver
Store References

| Programmable Content	DATABASE on SD Card - Reference Stores (excluding the 'Mix' store)						
	Product	Customer	Destination	Location	Truck	Haulier	Note
Name / Text	o	o	o	o	o	o	o
Weight					o		
Target					o		
Icon 1	o						
Icon 2 [2]	o						
Density	o						
Barcode	o		o	o	o		o
GPS Long.	o		o	o			
GPS Lat.	o		o	o			
Radius	o		o	o			
Price	o						
Description 1	o		o	o			o
Description 2	o		o	o			o
Description 3	o		o	o			o
Description 4	o		o	o			o
Phone No.		o				o	
Email		o				o	
Street		o	o	o		o	
City		o	o	o		o	
State		o	o	o		o	
Zip Code		o	o	o		o	
'LM8K Index' [3]	o	o					

[1]   The choice of Reference stores available on the Home Screen depends on which are enabled via the 'Home Screen Functions Setup' menu.

[2]   Currently only a requirement for COPRO regulations (Belgium), for 'BENOR' and 'CE1137' to appear on printouts.

[3]   'LM8K Index' - Only required if you are operating LM-100 and older Loadmaster series instruments on the same site, and want compatibility with the .CSV data format exported from the Loadmaster 8000/8000i. The 'LM8K Index' entries would correspond to the Customer Nos. / Product Nos. stored in the Loadmaster 8000/8000i.

6.2.1   Select Product Icons

For each reference (product) in the product reference store, the product icon can be selected from a pre-programmed list.

UK721-420.PNG

Product Icon 4.PNG

Product Icon 5.PNG

Custom icons (.PNG format, maximum size 120 x 120 pixels), can be imported via a USB stick.

Product Icon 1.PNG

Product Icon 2.PNG

Product Icon 3.PNG
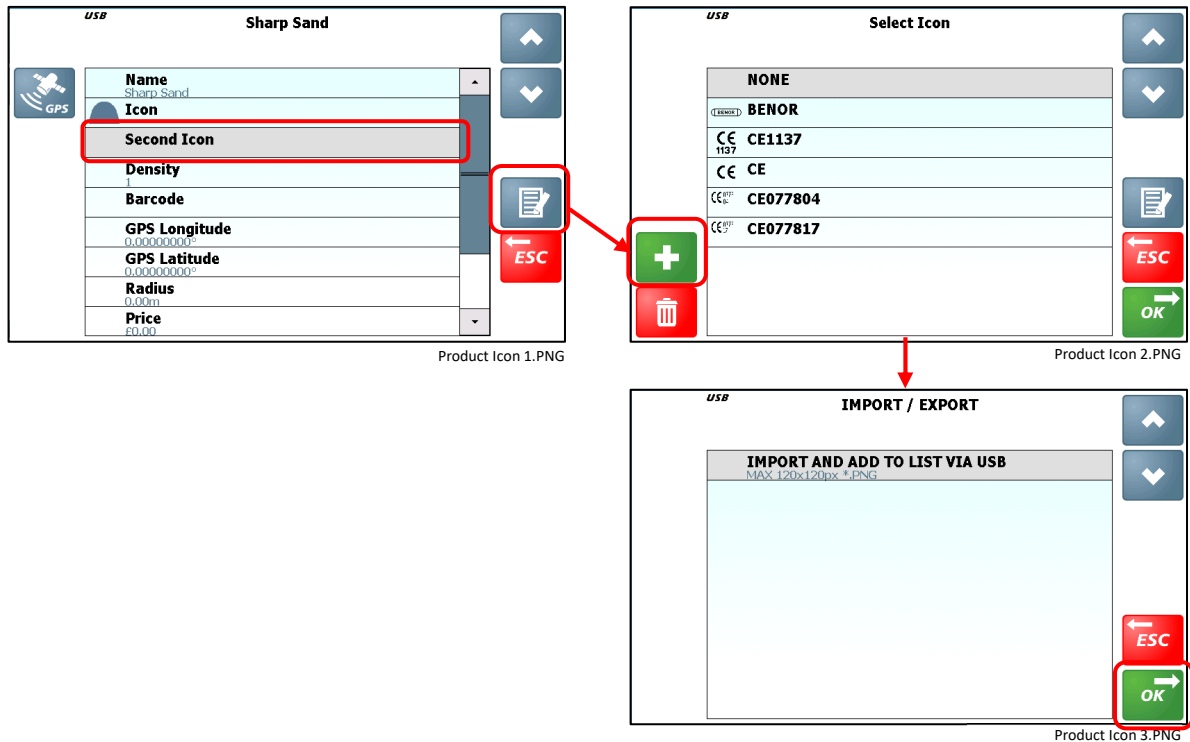
6.3 Job Records

The database can be searched using search filters to create the following reports,

- 'Job Report' - a list of individual Job Records with load data, according to the search filter selection.

- 'Summary Report' - a list of weight totals and no. of loads for individual store references, according to the search filter selection.

- 'Detailed Report' - a list of weight totals and no. of loads for each different combination of store references, according to the search filter selection.

The search criteria are;

Job No's (   )

Trucks   (   )

Locations (   )

Products (   )

Ticket No's (1234)

Customers (   )

Drivers   (   )
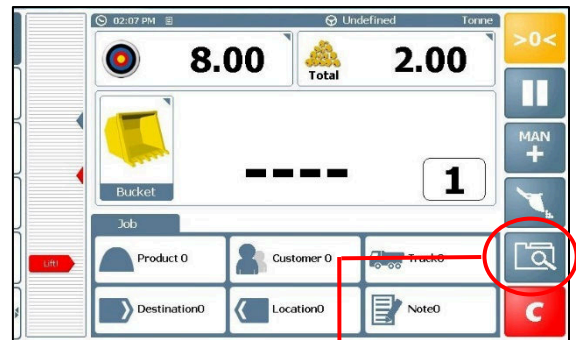
UK721-06.JPG

Search filters

UK758-402.PNG

6.3.1 Search Job Records

Search records within a specified time-period

Select the search criteria:-

For the date you have the following options (default = 'Today').   If you select 'Between', a calendar is displayed to select the 'From' date. Press 'OK' to select the 'To' date.

Select   if you wish to search for job records created within a more specific time period.
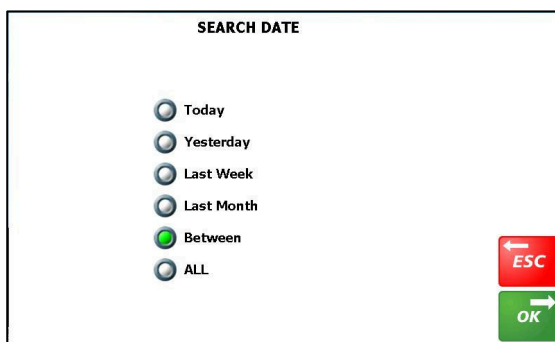
UK721-80.JPG
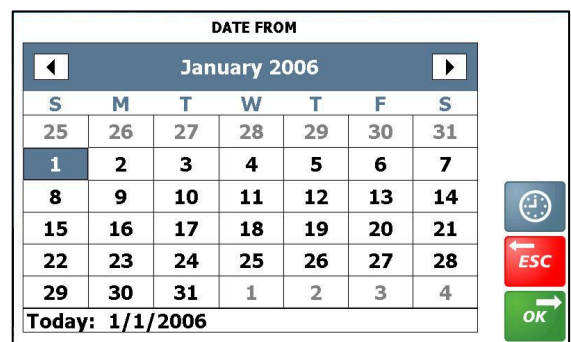
UK721-82.JPG

Search by Store Reference

For all other criteria, you have 3 options to choose from.

E.g. for the 'Customers' criterion,

'**ALL**' - Include all 'Customers' in the search.

'**NONE**' - Exclude 'Customers' from the search.

'**SELECTED**' - Include only selected 'Customers' from the list displayed, for the search.

(Default = '**NONE**')
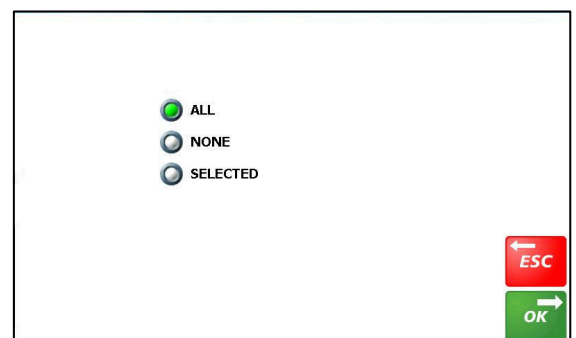
UK758-81.JPG

6.3.2   Print / Export Summary Report

- Print the last Job record saved.

- Reset all search criteria to default settings'.
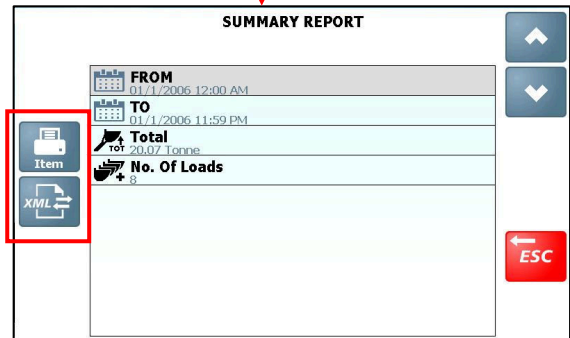

UK758-402.PNG

- Print Summary Report

Export options:-

- USB

- Email

You are prompted to enter a suitable filename.

NOTE: The default export file format is selected from the 'Database Setup' menu, as either XML or CSV (ref. Calibration manual).

UK758-421.JPG

6.3.3   Print / Export Job Record(s)

- Print all Job Records listed

Warning! Be sure before you do this - it may be a very long printout.

Export all Records via:-

- USB

- Email

UK758-412.JPG

You are prompted to enter a suitable filename.

To print a single Job Record, select the line and press   , then press   .

NOTE: The default export file format is selected from the 'Database Setup' menu, as either XML or CSV (ref. Calibration manual).
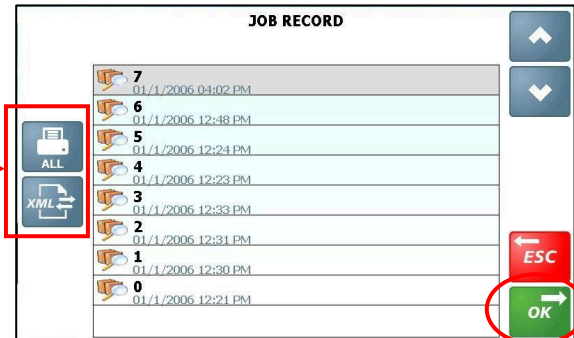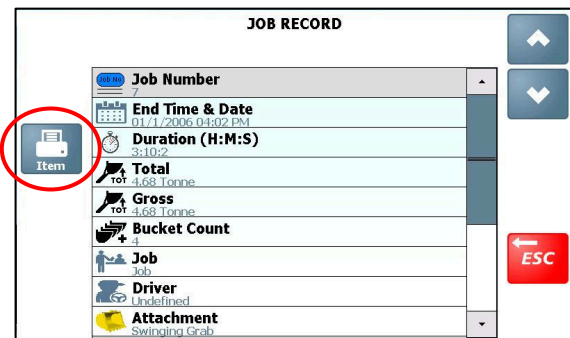

UK758-411.JPG

6.3.4 Print Detailed Report(s)

From the home page, select the "SEARCH JOB RECORDS" page ([icon]), select the search criteria and then select the

[DETAILED REPORT icon] key.

The heading indicates the number of different combinations of store references (e.g. 5 as shown), according to the search filter selection.

To print an individual combination, press [SKIP icon] to select the next, or [ESC icon] to select the previous, then press [Item icon] to print.

Press [ALL icon] to print all combinations.
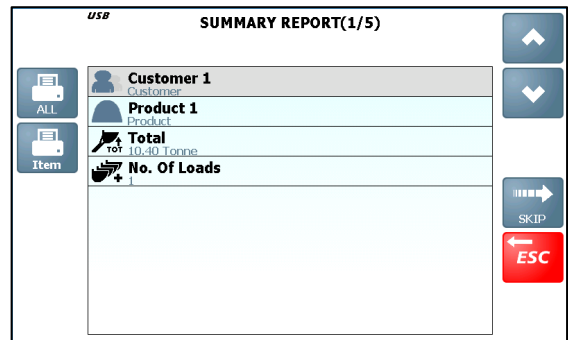
UK758-403.PNG

6.3.5 Delete Job Record(s)

1. Select [trash icon] .

2. Enter the Technician menu PIN (factory default = 1234).

UK758-402.PNG

3. Select the jobs to delete by "**Date from**" / "**Date to**".

4. If you need a more precise search, press [clock icon] to select time.

5. Press [OK icon] and then once again to delete the selected jobs.

NOTE: *Deleting all Job records is also possible from the calibration menu:-*

⟶ **"Technician"**

⟶ **"Database Setup"**

⟶ **"Job Records"** – "Press edit button to reset all job records"
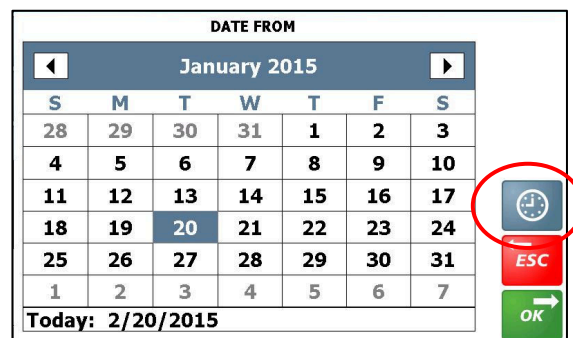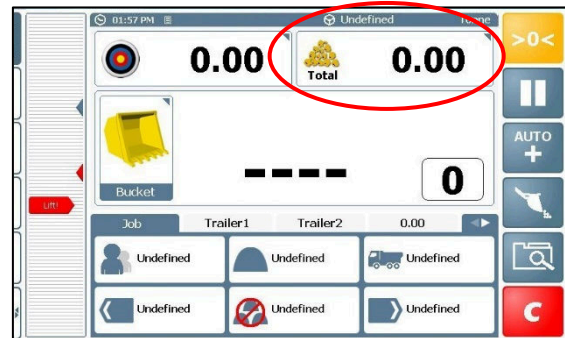

UK721-100.JPG

6.4 Totals

6.4.1 Grand Total

Press the ![icon] area on the 'Home' Screen to view,

- Grand Total

- Lift Count

- Date

since the Grand Total was last reset.

Press ![AC icon] to reset to zero

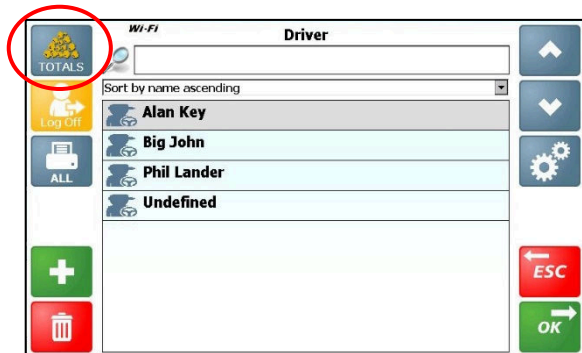

UK721-22.JPG

6.4.2 Driver Totals

You can view (and print if enabled) a summary of the loads saved over the previous week.

From the 'Home' screen, press ![icon] to select the driver list

Select the driver from the list and press ![TOTALS icon] to view,

- Today's Total

- Yesterday's Total

- Total Since Sunday

- 7 Day Total

Press ![Item icon] to print a summary of these totals.

UK758-431b.PNG

6.4.3 Reference Store Totals

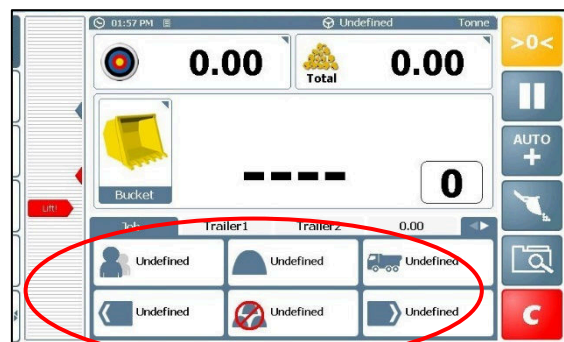You can view (and print if enabled) a summary of the loads saved over the previous week.

NOTE: Applies to all Reference Stores

Select the appropriate Reference Store.

Select the reference from the list and press ![TOTALS icon] to view,

- Today's Total

- Yesterday's Total

- Total Since Sunday

- 7 Day Total

Press ![Item icon] to print a summary of these totals.

UK721-22.JPG

7.   Operating Parameters

The LM-100 system is designed to operate within the following parameters:

Environmental:

Climatic environment:	Indicator, printer: Closed, non-condensing, -25/+50˚C
Transducers, sensors:	Open, condensing, -25/+50˚C
Sealing: Head unit:	IP34 (mount in an enclosed cab)
Sensors:	IP67
Junction Box:	IP65
Pressure range:	0 – 250 bar or 0 - 400 bar.
Maximum angle deviation	From level ground, ± 10° Front-Back, ± 5° Left-Right
Approval Classification:	OIML R51, Y(b), MID Y(b)
No. of divisions (n)	250
Scale Interval (e) (kg)	>/=10
Capacity (kg):	</= 50,000

Electrical:

Supply voltage:	11 – 30V dc
Current:	1000 mA max.
EMC Emission/Immunity	ISO 13766 : 2006
	ISO 14982 : 1998
EM classification:	E3

Issue Ref.	Date	Description
Issue 1.0:	10.7.13	Original issue
Issue 2.0:	24.9.13	Ref. CRQ 5094
Issue 3.0:	17.6.14	Revisions for S/W Ref. IS100004 rev.07 / LX100002rev.06 Ref CRQ 5796
Issue 3.1	24.7.14	Ref. CRQ 5830
Issue 3.2	6.8.14	Ref. CRQ 5846 : Added "Operating parameters"
Issue 3.21	11.8.14	Ref. CRQ 5865 : Add EM classification to "Operating parameters"
Issue 3.3	29.9.14	Ref. CRQ 5924
Issue 3.4	22.10.14	Ref. CRQ 6020
Issue 4.0	20.2.15	Ref. CRQ 6238
Issue 4.01	26.2.15	Ref. CRQ 6276
Issue 4.02	9.3.15	Ref. CRQ 6295
Issue 4.03	24.3.15	Ref. CRQ 6342
Issue 4.1	22.10.15	Ref. CRQ 6700
Issue 4.11	28.4.17	Ref. CRQ 7839
Issue 4.2	21.5.17	Ref. CRQ 7868
Issue 4.21	24.10.17	Ref. CRQ 8045
Issue 4.3	18.12.18	Ref. CRQ 8564
Issue 4.4	2.4.19	Ref. CRQ 8650
Issue 4.5	27.11.2019	Ref. CRQ 8975
Issue 4.6	01.12.2023	Ref. TTL_DRF_SDC500-100_UK Rev 4-6_All languages.docx

Topcon Technology Ltd

Cirencester Road, Minchinhampton,
Stroud, Gloucestershire, GL6 9BH, UK

Phone: +44 (0) 2393 162453 (Support)

Email: info@rdstec.com

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