



Loadmaster Alpha 50

On-board Weighing System

Operation

RDS Part No.:	S/DC/500-10-841
Document Issue:	1.0 : 20.6.16

Electromagnetic Compatibility (EMC)

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

Service and Technical Support

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Software Reference: MC100001 rev00

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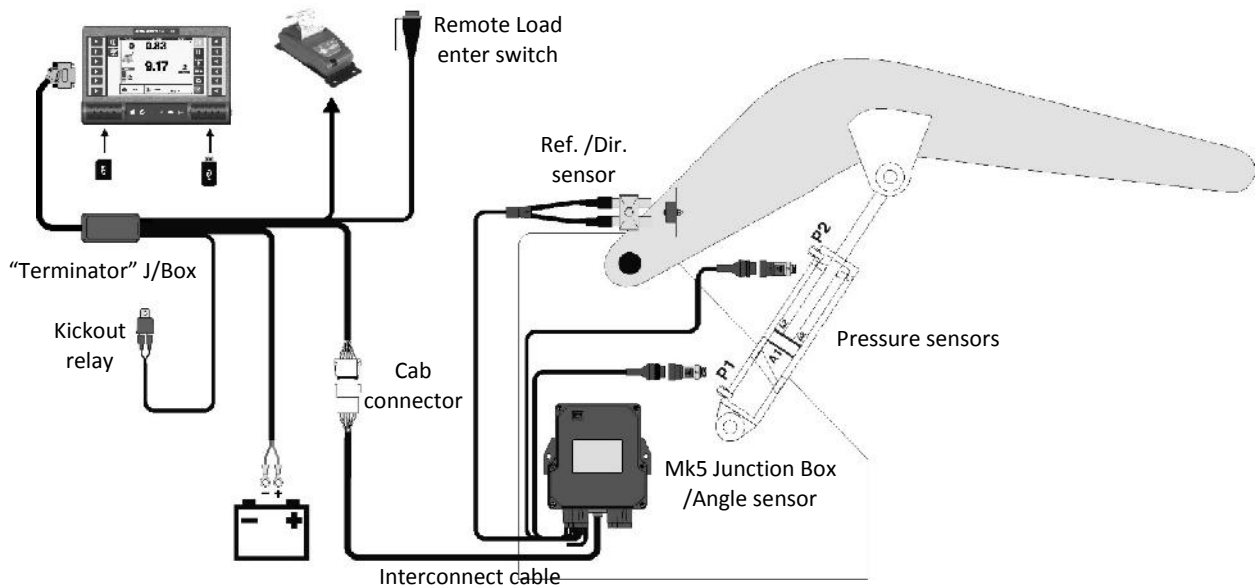
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1 Overview

The Loadmaster Alpha 50 On-Board Weighing System measures, displays and records the net weight lifted, normally based on sensing the lift system hydraulic pressure, at a set point using a Reference and Direction ("R/D") sensor. Calculated with a factor, the system weighs the contents in the bucket being lifted. This information can then be saved to a certain customer or product memory store. Dynamic or Static weighing is possible. The system operates in a Non-Approved weighing mode. The head unit is designed to be dustproof only and is only suitable for in-cab use. There are two variants of the system.

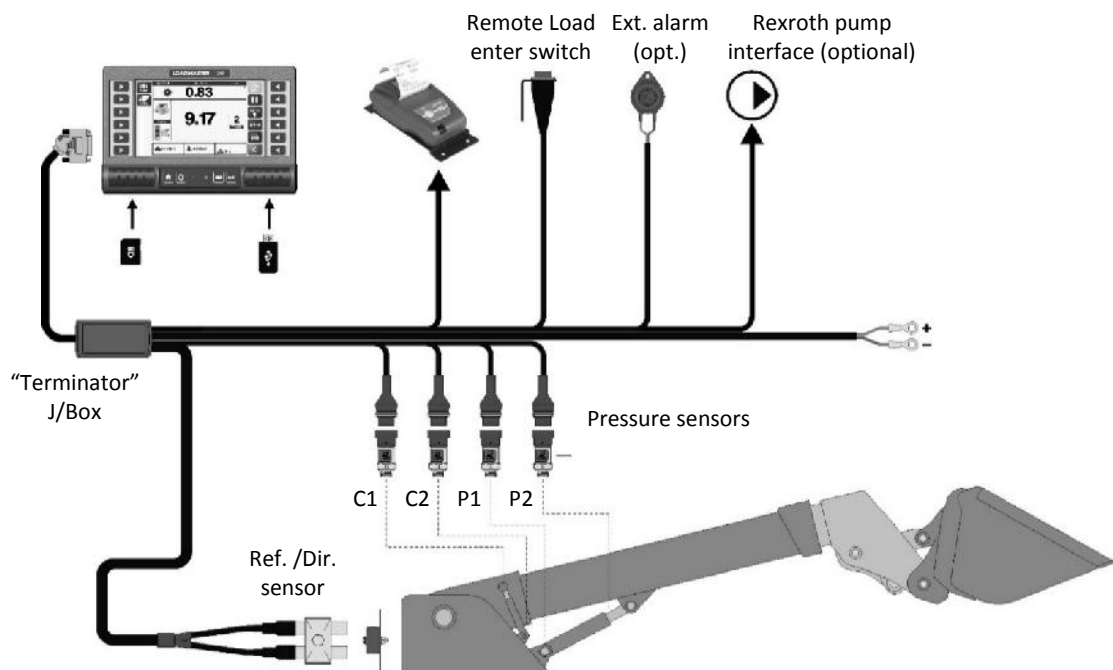
Standard system

The standard system is designed for industrial loading shovels. It employs two pressure sensors, a Reference/Direction Sensor and a Chassis Angle sensor connected via the Loadmaster Mk5 junction box mounted on the front section of the machine. The cab-mounted components are connected via the "Terminator" junction box. The cab and front section are linked via 12-core cables with an in-line connector.



"Lite" system

The "Lite" system is designed for fitment to telescopic material handlers and agricultural front-end loaders. Pressure sensing is problematic on certain types of equipment due to the design of the hydraulic system, therefore up to four pressure sensors may be installed. There is no provision for a chassis angle sensor.

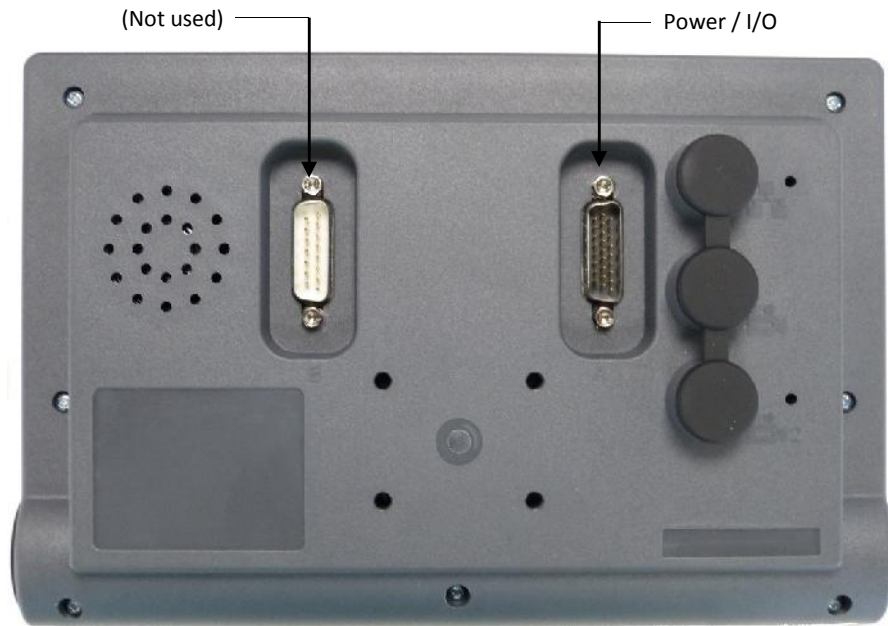


Features and Benefits

- | | |
|---|--|
| ▪ Target Load | Set individual Product target weight to ensure correct loading of vehicles. |
| ▪ Slope compensation (std system only) | 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. |
| ▪ 50 Product Stores, 100 Customer stores and Blend capability (5 mixes) | Accurate record keeping, traceability and stock management. |
| ▪ Static and Dynamic weighing modes for 'weighing on the lift' | Faster operation. |
| ▪ Grand Total summary | Secondary load accumulation. |
| ▪ XML or CSV data output via 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. |

1.1 Features and Controls






1.1.1 Power On

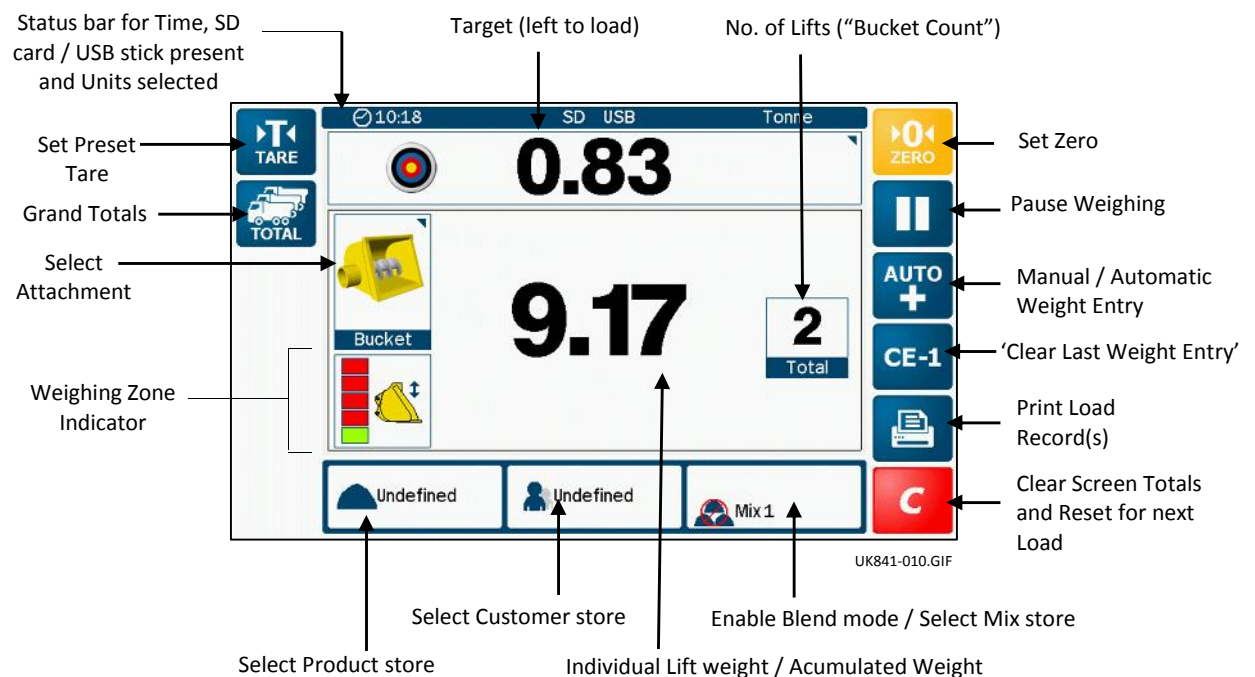
The power switch on the Head unit switches the head unit on and off.

NOTE: The system does not require an SD card in place in order to boot up.

1.2 The Home Screen

The functions displayed on the Home Screen depend on which are enabled via the 'Main Functions' page in the Technician-level Setup menu ().

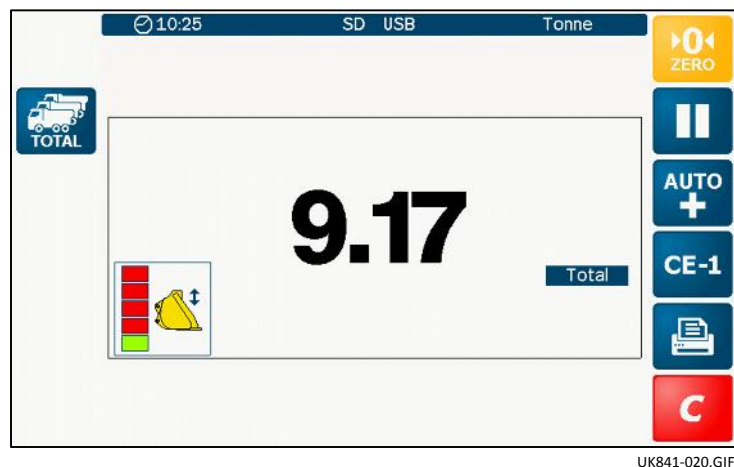
1.2.1 All screen functions enabled



There are 50 Product stores, 100 Customer stores and 5 Mix stores available.

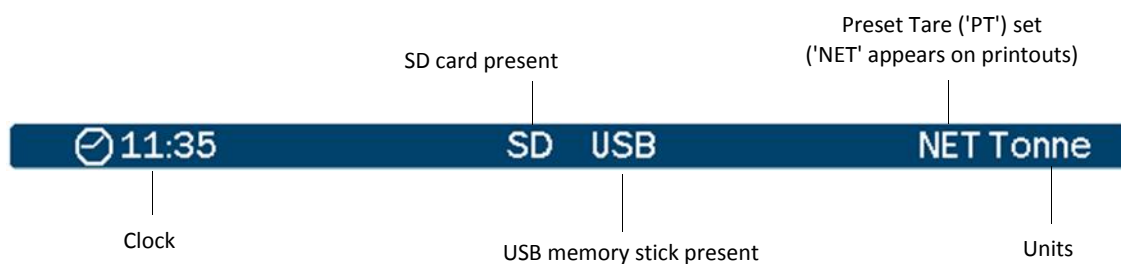
1.2.2 Basic function only

The most basic setup simply displays accumulated weight.



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1.2.4 The Status Bar



1.2.5 Touchscreen

The instrument has a 4-wire resistive touch screen. 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, please 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!

1.2.6 USB

The USB socket is intended solely for data transfer. 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 before weighing

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.

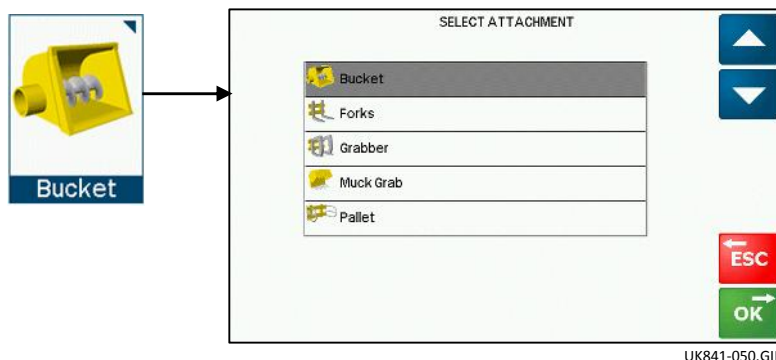
- Select Attachment
- Set Zero
- Set Target Rate
- Select Automatic / Manual entry Mode
- Programme Preset tare
- Select Load References - Product / Customer/ Mix (Blend Mode)

2.2 Select Attachment

The system can be configured for up to 10 “attachments”, and each “attachment” may be configured for any one of 9 weighing modes. The “attachments” may not necessarily be individually different. For example, a single physical attachment (e.g. a bucket) can be configured to allow operation in alternative weighing modes.

- e.g.
- Attachment 1 = Bucket (Dynamic weighing mode)
 - Attachment 2 = Bucket (“Dynamic + Static Live On” weighing mode)
 - Attachment 3 = Bucket (“Constantly Live” weighing mode)

On selection, the instrument is automatically updated to the weight calibration settings and weighing mode programmed for that attachment.



Attachments and weighing modes are configured via the factory setup menu. The weighing modes are explained here for reference only.

Weighing Modes


'OFF'	The attachment is disabled and will not be listed on the 'Select Attachment' screen.
'Dynamic'	Dynamic weighing – simply lift uninterrupted through the weighing position. The calculated weight can either be added to the total manually or automatically.
'Dynamic & Static Live On'	Dynamic weighing switching to “Static Live On” mode at the kickout position. If the R & D sensors are closed for more than the “static delay” time, then the dynamic weighing routine ceases and automatically switches to the “Static Live On” weighing mode. The Live static readout is in green.
'Dynamic & Static Live Off'	Dynamic weighing switching to averaged “Static Live Off” mode at the kickout position. If the R & D sensors are closed for more than the “static delay” time, then the dynamic weighing routine ceases and automatically switches to the “Static Live Off” weighing mode.

'Dynamic & Static Live Auto'	<p>Dynamic weighing switching to averaged "Static Live Off" mode at the kickout position. If the R & D sensors are closed for more than the "static delay" time, then the dynamic routine ceases & automatically switches to the "Static Live Off" weighing mode.</p> <p><i>However, if the calculated bucket weight is higher than the target weight, the system switches to the "Static Live On" mode automatically. The Live static readout is in green.</i></p>
'Static Live On'	<p>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.</p> <p><i>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.</i></p>
'Static Live Off'	<p>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.</p> <p><i>The weight display remains fixed while at the weighing position.</i></p>
'Static Live Auto'	<p>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.</p> <p><i>The weight display remains fixed while at the weighing position. However, if the calculated bucket weight is higher than the target weight, the system switches to the "Static Live On" mode automatically. The Live static readout is in green.</i></p>
'Constantly Live'	<p>Static Weighing - There is no preset weighing position. A 'live' weight is displayed at any boom position.</p> <p><i>NOTE: This mode will not be as accurate as 'Live Static OFF' or 'Live Static ON' weighing modes</i></p>

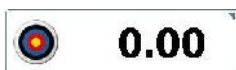
2.3 Set Zero



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  and follow the on-screen instructions.


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 Weight Entry Mode

Select  for automatic weight entry. Simply lift the load above the weighing position to auto-enter the weight.

NOTE: Automatic weight entry is not possible in certain weighing modes as per the table below.

Select  for manual weight entry. In all weighing modes, when manual weight entry is selected, you can enter the weight reading by pressing either the  key, or the remote enter switch (optional).

Weighing Mode	Auto Enter	Manual Enter
Dynamic	Y	Y
Dynamic & Static Live On	N	Y
Dynamic & Static Live Off	Y	Y
Dynamic & Static Live Auto	N	Y
Static Live On	N	Y
Static Live Off	Y	Y
Static Live Auto	N	Y
Constantly Live	N	Y

2.6 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, and 'NET' on the status bar. Printouts will show 'NET' and the Preset Tare.



The Preset Tare can be entered manually or by lifting the empty container.

2.6.1 Setting/ Deleting the Tare - Manual Entry

Manual tare entry is only possible when the boom is below the weighing arc.

Press  and , then key-in the empty container weight.

Press ENTER to confirm.

To delete the Tare, set to zero and press ENTER to confirm.




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2.6.2 Setting the Tare by Lifting

Instead of manually entering the tare weight, you can lift the empty container and automatically set the weight as the tare.

First select manual Load Entry on the main screen. Press  and select 'Last Lift', then lift the empty container dynamically or statically.

Press  and the lifted weight becomes the tare value.

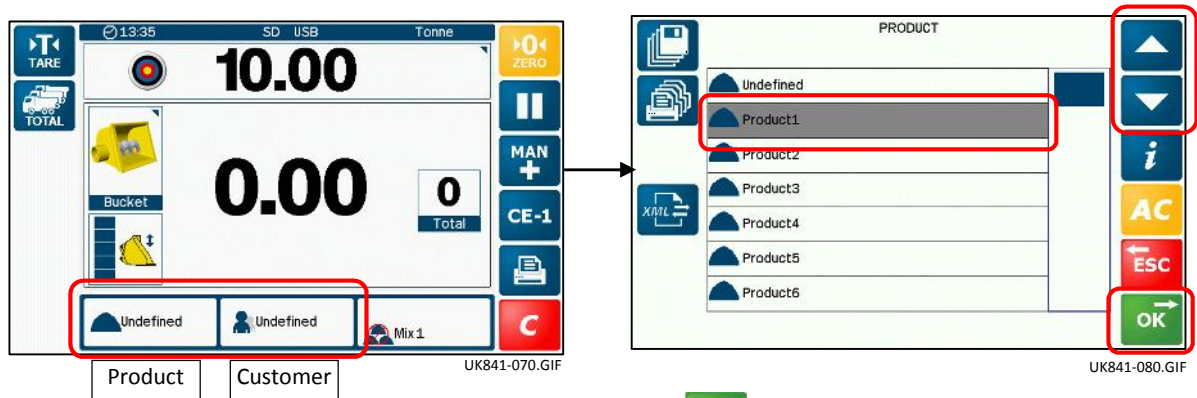
To delete the Tare, set to zero and press ENTER to confirm.


2.7 Product and Customer stores

Prior to starting a load, you can select one of 50 pre-programmed products, and one of 100 pre-programmed customers to record the load total to. Product / Customer descriptions may be programmed on the instrument, or can be imported via an XML file on a USB stick.


NOTE: Ref section 5.5 to import/export store references

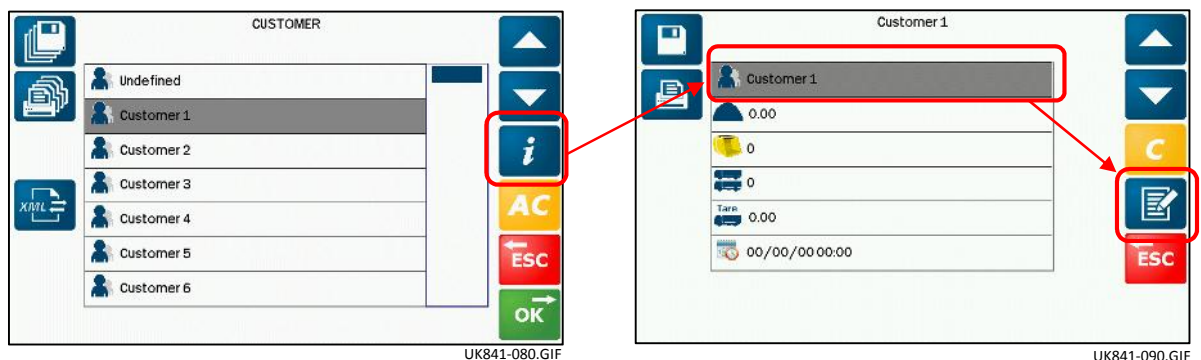
2.7.1 Select / View a Product or Customer store




From the product / customer list, select the required store and press . All subsequent loads will then be totaled to that store until changed again.


2.7.2 View / Save / Print / Clear totals for Individual Product / Customer stores


To view individual store information and load totals, select the store and press .




	Total (all loads)		Truck Tare Weight (Customer stores only)
	No. of lifts (all loads)		Time and Date (since last store reset)
	No. of trucks loaded		

To edit the store description, press .

To clear the store total, press .

To print the store total, press .

To save the store total to a USB stick, press .

NOTE: The file is saved as "PROD(x).CSV", or "CUST(x).CSV" (section 5.3)

2.7.3 Truck Tare weight (Customer store)






Truck Tare Weight must be entered in the same units set for weighing. The Truck Tare Weight is added to the load weight to calculate the Gross Vehicle Weight (GVW) printed on the load ticket.

2.7.4 Set Density (Product store)

If a volumetric unit (m^3 or yd^3) is selected, then the density of the product must be entered.

Failure to programme the product density will result in incorrect weight measurement and totals !

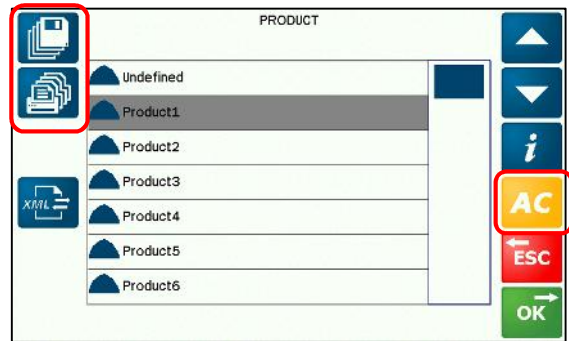
Select the store and press , Select  and press  to edit the value (default = 1.000).

2.7.5 Save / Print / Clear All Product / Customer totals


Select either Products or Customers on the main screen.





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To clear all stores totals, press .

To print all stores totals, press .

To save all stores totals to a USB stick, press .




NOTE: The file is saved as "PRODUCTS.CSV", or "CUSTOMER.CSV" (see section 5.3).

2.8 Blend (Mix) Mode

The instrument can have stored in memory, up to 5 blends ("Mix 1 to "Mix 5") - each being a menu of up to 30 different products and their preset target weights that make up a "recipe". Mixes may be programmed on the instrument, or can be imported via an XML file on a USB stick.

NOTE: Ref section 5.5 to import/export store references

2.8.1 Enable /disable Blend mode / Select Mix

On the main operating screen,  indicates that Blend ("Mix") Mode is switched off. Only Product and Customer Stores can be selected. Press  and then press  to enable blend mode.



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Select the Mix and press  to confirm.

NOTE: All load data will be saved to the Customer store previously set.

To exit blend mode, press  on the "MIX" screen

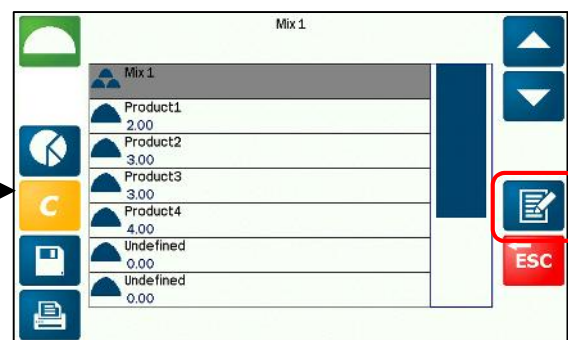
2.8.2 Create / edit a Blend ("Mix") Reference

Each mix can be programmed with up to 10 products. The factory default setting for all 10 products is "Undefined".





1. Select the mix from the list on the "MIX" screen and press .
2. If required, press  to edit the mix name.



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3. For each "ingredient" you wish to add to the mix, first select a line (e.g.  Undefined 0.00) on the mix list and then press .
4. Select the product from the product reference list and press  to confirm.
5. Press  and enter a ratio for that ingredient.

NOTE 1: 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 main screen.


6. Repeat steps 3, 4 and 5 to programme additional ingredients.


NOTE 2: You can add the same product more than once in the mix sequence (for example, to improve the blending process by adding the ingredients in smaller quantities).

2.8.3 Save / Print mix totals / Clear mix ratios and totals

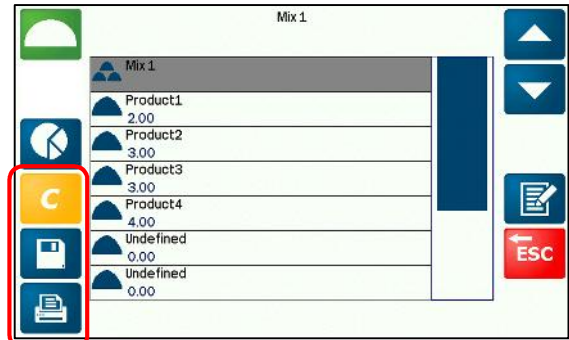
To clear the mix ratios, press .

The list of products remains and if required to change the products, refer to 2.8.2.

To print the mix totals, press .


To save the mix totals to a USB stick, press .


NOTE: The file is saved as "MIX(x).CSV"(see section 5.3).




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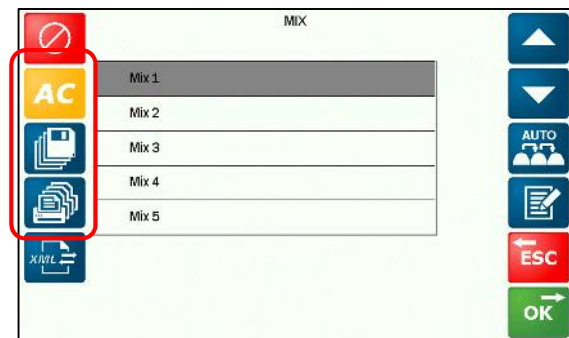
2.8.4 Save / Print all mix totals

To clear all mix load totals, press .

To print all mix load totals, press .





To save all mix totals in to a USB stick, press .


NOTE: The file is saved as "MIXES.CSV"(see section 5.3).




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2.9 View / Print / Clear Grand Totals

	Total (all loads)
	No. of trucks loaded
	No. of lifts (all loads)
	Time and Date (since last reset)

To clear the grand totals, press .


To print the grand total, press .




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2.10 Other operator settings (“Operator” setup menu)

2.10.1 Time/date / Volume / Brightness / Calculator

The following settings are accessible without PIN code entry and are mostly self-explanatory. Press  to access the menu.

- Time and Date
- Volume
- Brightness
- Calculator
- Nudge (ref. section 4)
- Diagnostics (ref. section 6)
- Target Alarm

Press  to return to the 'Home' screen.



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2.10.2 Target Alarm

You can enable a “target alarm” to give an advance audible warning when loading, that you are approaching the target weight that you entered. This is a useful function to have when using a feeder bucket (e.g. mixing animal feed)

NOTE: The Target alarm function only operates in “Live Static On” weighing mode.

The settings are,

- Enable/disable the target alarm function
- Enter the “**Start weight**” (default = 0.50 tonne). This is the weight to go before reaching the target weight, at which point the alarm sounds.

3 The Loading Cycle

3.1 Machine Requirements

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

1. **Operating temperature** : The system does not have temperature compensation therefore 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 (std system only) provides automatic correction if weighing on a slope. With the "Lite" system (e.g. telehandlers), always weigh on level ground as there is no angle compensation.
3. **Boom lift and vehicle movement** : Software algorithms 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 the 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).

NOTE: *Loadmaster Alpha 50 is a non-approved weighing system and readings are not suitable as a legal basis for the sale of goods.*

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 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.
2. Select any required load references (e.g. product, customer).
3. Zero the bucket. Follow the routine on the screen.
4. Fill the bucket as normal and crowd it right back.
5. Hold the lift lever fully 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 (shown grey).



If the Overload audible alarm is enabled,

At 90% of maximum load = intermittent tone

At 100% of maximum load = continuous tone




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.



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


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" () 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.





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However, there are several methods for "Last Bucket" weighing (ref. section 3.4)

Press  to reset for the next loading job.

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

3.4 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" () 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.


3.4.1 Clear Last Entry / "Undo Last Lift" (All Weighing Modes)



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.

If enabled via the 'Main Functions' page in the calibration menu, a 'Clear Last Entry' function on the weighing screen allows you to immediately remove the last lift from the total with a single key touch.


Alternatively,

1. Press the  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.

3.4.2 "Reweigh the Remainder" (All Weighing Modes)

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  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.

3.4.3 Live Static "Tip-off" ("Live Static On" weighing modes)

"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.


NOTE: An audible alarm will begin sounding if the "target alarm" function has been enabled (ref. 2.10.2). Live Static "Tip Off" and the "Target alarm" function are only possible when the attachment in use is configured to one of the following weighing modes (or "Constantly Live" weighing mode).

	Weighing mode	Description	Use
1	"Dynamic + Live Static On",	Dynamic weighing but when stopping at the weighing position, after the "static delay" period the system automatically switches to "Static Live On" mode.	Any bucket lift
2	"Live Static On"	Static Weighing. At the weighing position, the "live" weight is displayed after the 'Static Delay' and 'Static Sample Time' periods.	
3	"Dynamic + Live Static Auto"	Dynamic weighing but when stopping at the weighing position, the weight display remains fixed (as per "Live Static Off" mode) unless the calculated bucket weight is higher than the target weight, in which case it switches to "Live Static On" mode.	Last bucket lift only
4	"Live Static Auto"	Static Weighing. At the weighing position, a fixed weight is displayed (as per "Live Static Off" mode) unless the calculated bucket weight is higher than the target weight, in which case it switches to "Live Static On" mode.	

1. Lift the arms up to the weighing position and wait until the "live" calculated weight appears (shown in **GREEN**).

NOTE: As the weight display is "live" it may change as the 'Static Auto Lock' factor automatically compensates for the effect of pressure loss over time, while at the weighing position.

2. Crowd the bucket fully back & allow the live display to settle down before checking the true weight.
3. Tip off material back onto the pile. The instrument displays the weight remaining in the bucket as you tip the surplus material back onto the pile.

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

3.5 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. .
2. Select any required load references (e.g. product, customer).
3. Zero the bucket. Follow the routine on the screen.
4. Fill the bucket as normal and crowd it right back.
5. Hold the lift lever **fully** 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.

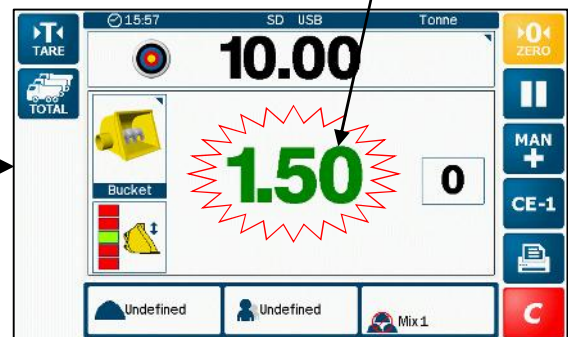


The instrument will display  indicating that the weight is being sampled, and the bucket weight is then displayed.

Green indicates "Live" weight display ("Live Static On" mode)




UK841-190.GIF






UK841-200.GIF

If the Overload audible alarm is enabled, At 90% of maximum load = intermittent tone. At 100% of maximum load = continuous tone.



6. AUTO ENTER (). The weight is added automatically to the load total when the attachment is lifted above the weighing position.

NOTE Automatic Weight Entry is only possible if the attachment is configured for "Live Static OFF" weighing mode.


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.

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.

Regardless if "Auto Entry" () 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.

However, there are several methods for "Last Bucket" weighing (ref. section 3.4).

8. Press  to reset for the next loading job.

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



UK841-210.GIF

3.6 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 at any boom position.


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 (e.g. product, customer).
3. Fill the bucket as normal and crowd it right back.
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.

NOTE: Weight Entry is not possible via the touchscreen. If the "target alarm" function has been enabled (ref. 2.10.1), an audible alarm will begin sounding where the weight left to load reaches the programmed threshold.


6. Press  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). 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.

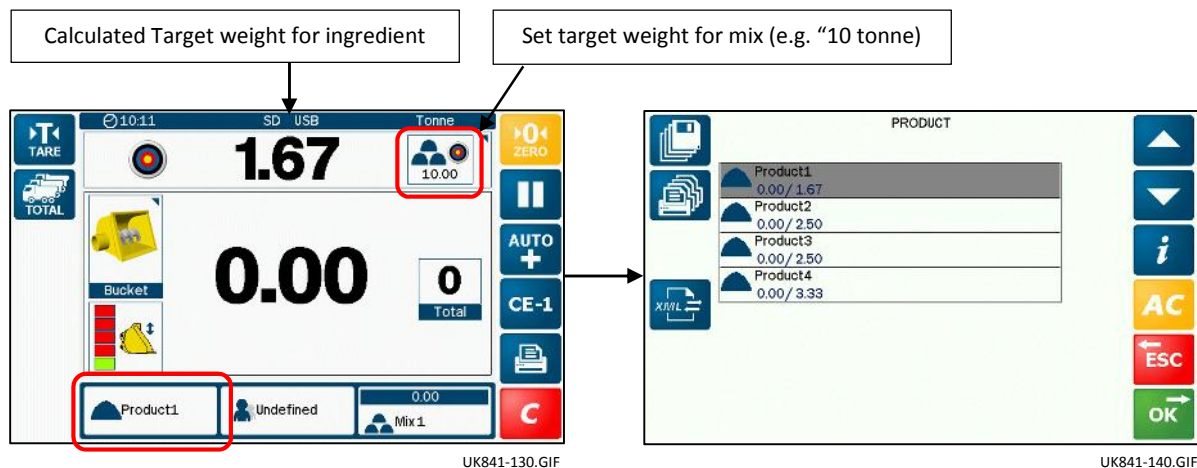


UK841-220.GIF

3.7 Weighing in Blend ('Mix') mode

You can choose to weigh dynamically or statically in this mode. Press  to switch Blend ("Mix") mode on

When Blend ("Mix") mode is switched on, the normal Product Stores list is not available. Touching the Product icon on the Main Operating screen lists the individual ingredients of the Mix. If a target weight is entered, the individual target weights are calculated and displayed for each product in the mix.



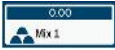
UK841-130.GIF

UK841-140.GIF

There are two methods you can follow - batch mixing or blending. Blending is similar to batch mixing except you do not follow a preset recipe.


NOTE: Reference section 2.8.2 to create or edit a mix.

3.7.1 Blend mode - auto/manual product selection

Press  to access the product selection mode key.



The ingredients of the mix must be loaded in the order that they are programmed.

On entering the final bucketful to complete loading of each product, press the  button (or Remote Enter Switch) once again to automatically select the next product in the list.

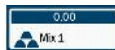


Products can be mixed in any order, either adding the whole amount of each product in turn, or by adding smaller amounts at a time e.g. to improve mixing efficiency.



UK841-120.GIF

3.7.2 Batch mixing


1. Press  and select a "Mix".
2. Enter a target weight. 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.

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

Product 1 = 2.00 parts
 Product 2 = 3.00 parts
 Product 3 = 1.00 parts
 Product 4 = 4.00 parts

For blending 5 tonnes of 'Mix 1' above, the individual Target weights will become;

Product 1 = 1.00t
 Product 2 = 1.50t
 Product 3 = 0.50t
 Product 4 = 2.00t

3. Load the first product to match the target weight.
4. Select the next product (the target weight is automatically set).
5. Repeat loading for the remaining products. The accumulated weight total for the mix is indicated above the Mix icon.
6. Press  to reset for the next loading job.

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

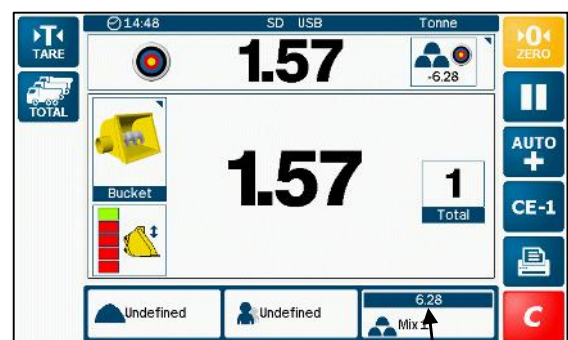
3.7.3 Blending

Blending is similar to batch mixing except you do not follow a preset recipe.

Select a "Mix" but do not enter a target weight. As you load each product in turn, the total for that product is displayed where the target weight display would normally be.

The accumulated weight total for the blend is indicated above the Mix icon.



Products can be mixed in any order, either completing each product amount in turn, or varying the mix in smaller quantities.




UK841-160.GIF

Total – all mix ingredients

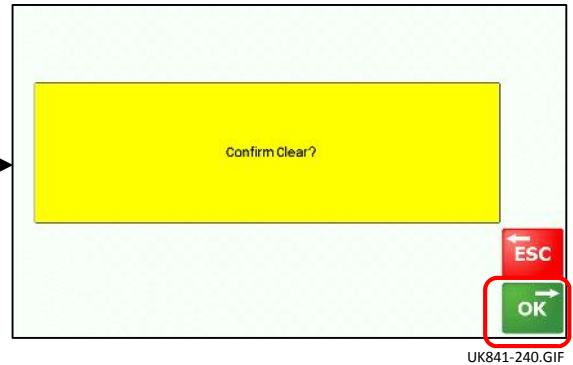
3.8 Reset for next Job

Press  and then  to reset for the next loading job.


When a Job Total is cleared, the load data for that job is automatically saved to memory, and can then be printed ().

NOTE: If set up to do so (via the "Logging" menu), a printout in the chosen format will be automatically generated.

Also if set up to do so (via the "Database Setup" menu), the instrument will reset the customer/product stores to "Undefined".




3.9 Pause / Resume Weighing Mode

If you wish to use the loader for non-weighing tasks, then simply press  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.



4 'Nudge' - Adjusting Weight Calibration

NOTE: This function must be enabled via the 'Setup' menu.


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

- 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

- Press  and select 'Nudge' from the Setup menu.



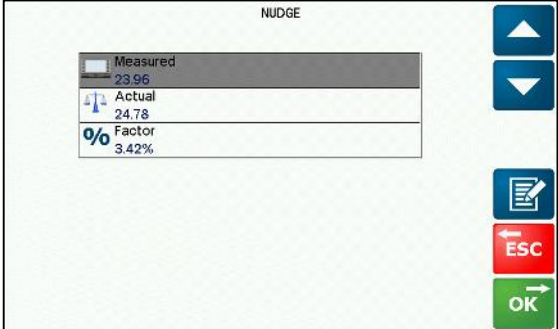
Enter the instrument reading ('Measured').



Enter the weighbridge reading ('Actual')

The % factor correction is displayed.

- Press  to accept.



The screenshot shows the 'NUDGE' screen with a table containing the following data:

Measured	23.96
Actual	24.78
% Factor	3.42%

Navigation buttons on the right include up/down arrows, a list icon, an ESC button, and an OK button.

UK841-260.GIF

4.2 Nudge by %

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

- Set 'Measured' and 'Actual' to the same value e.g. '1'.

Select '% Calculated Correction'.

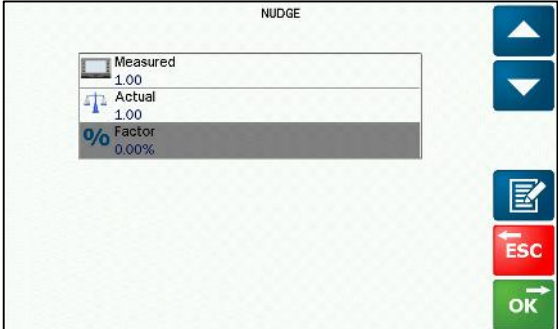
Enter a + / - percentage change.



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.

- Press  to accept.




The screenshot shows the 'NUDGE' screen with a table containing the following data:

Measured	1.00
Actual	1.00
% Factor	0.00%

Navigation buttons on the right include up/down arrows, a list icon, an ESC button, and an OK button.

UK841-270.GIF

- Press  to return to the 'Home' screen.

5. Printing and data transfer

5.1 Logging load data

The unit can be configured to automatically log load totals to any or all of the following. A sequentially numbered job record is created and saved to the log file "TOTALS.CSV" each time a load is cleared.

Output	Format	Job record options
Printer	ASCII Text print only	"Short Load by Load" / "Long Load by Load" / "Lift by Lift"
Data	.CSV file to modem or logger	"Load by Load" / "Lift by Lift"
SD	.CSV file to SD card	
USB	.CSV file to USB stick	

5.2 Saving load data

NOTE: The functionality that is available is determined via the "Logging" setup screen in the 'Setup' menu. These settings require a PIN code and may or may not be accessible to the operator in normal operation.

Job records can be output in either .CSV or .XML file format to any or all of the following,

- Data logger or modem (RS232 serial COM 1 / COM2)
- SD Card
- USB stick

Job records are logged either,


- "Load by load" (the job record total is logged when a load is cleared)
- "Lift by Lift" (individual bucket weights are logged when entered, and the job record total when a load is cleared)


For both SD and USB if enabled, the SD and USB icons will flash red on the status bar to remind the operator if either device is not present, however weighing is not inhibited in this event.



5.2.1 Download / delete job records

Normally, job records will be logged to the SD card in daily operation. At intervals, the job records can then be copied from the SD card to the USB stick for further data management and record purposes.

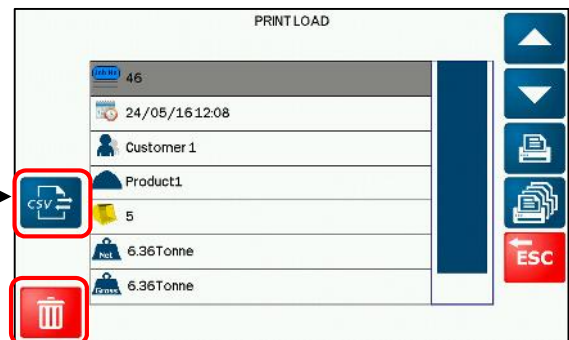
Press  on the main screen.

Press  and enter a suitable filename.

Press 'Ent' to transfer the load data to a USB stick.

CSV or XML (depending on setting in "Database Setup" menu)

Alternatively, press  to delete all load records on the SD card.



UK841-290.GIF

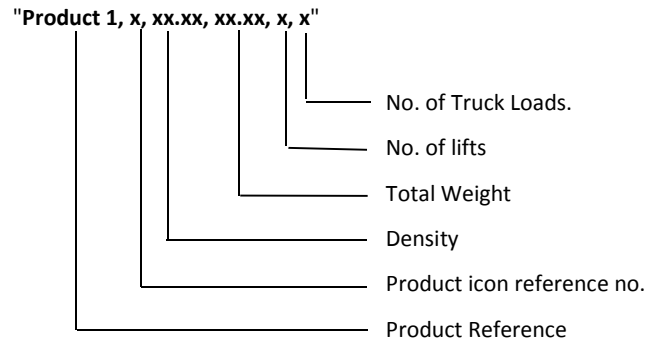
5.3 CSV files

5.3.1 Product store totals - "PROD(x).CSV" and "PRODUCTS.CSV"

Note: Filenames are generated using the store index no. The first store reference "Undefined" = store index 1, so the auto-generated filename is "PROD1.CSV". "Product 1" = store index 2, so the filename is "PROD2.CSV" etc.

When saving a single product,

"PROD(x).CSV" file format:



When saving all product store totals () the CSV file has a line for each additional product store e.g.

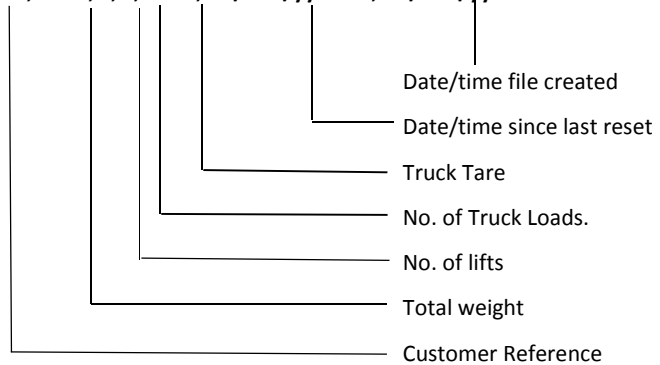
"PRODUCTS.CSV" file format: line 1 "Product 1, x, xx.xx, xx.xx, x, x"
 line 2 "Product 2, x, xx.xx, xx.xx, x, x"
 etc...

Only stores that contain load totals are included.

5.3.2 Customer store totals - "CUST(x).CSV" and "CUSTOMER.CSV"

Note: Filenames are generated using the store index no. The first store reference "Undefined" = store index 1, so the auto-generated filename is "CUST1.CSV". "Customer 1" = store index 2, so the filename is "CUST2.CSV" etc.

"CUST(x).CSV" file format e.g. line 1: "Customer1, xx.xx, x, x, xx.xx, dd/mm/yy xx.xx, dd/mm/yy xx.xx"



When saving all customer store totals () the CSV file has a line for each additional customer store e.g.

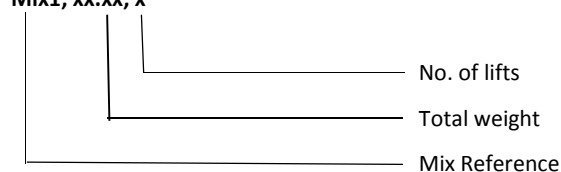
"CUSTOMER.CSV" file format: line 1 "Customer1, xx.xx, x, x, xx.xx, dd/mm/yy xx.xx, dd/mm/yy xx.xx"
 line 2 "Customer2, xx.xx, x, x, xx.xx, dd/mm/yy xx.xx, dd/mm/yy xx.xx"
 etc...

Only stores that contain load totals are included.


5.3.3 Mix store totals - “MIX(x).CSV” and “MIXES.CSV”

Note: Filenames are generated using the store index no. The first store reference “Undefined” = store index 1, so the auto-generated filename is “CUST1.CSV”. “Product 1” = store index 2, so the filename is “CUST2.CSV”.

“CUSTOMER.CSV” file format e.g. line 1: **"Mix1, xx.xx, x**



No. of lifts
Total weight
Mix Reference

When saving all mixr store totals () the CSV file has a line for each additional customer store e.g.

“CUSTOMER.CSV” file format: line 1 **"Mix1, xx.xx, x**
line 2 **"Mix2, xx.xx, x**
etc...

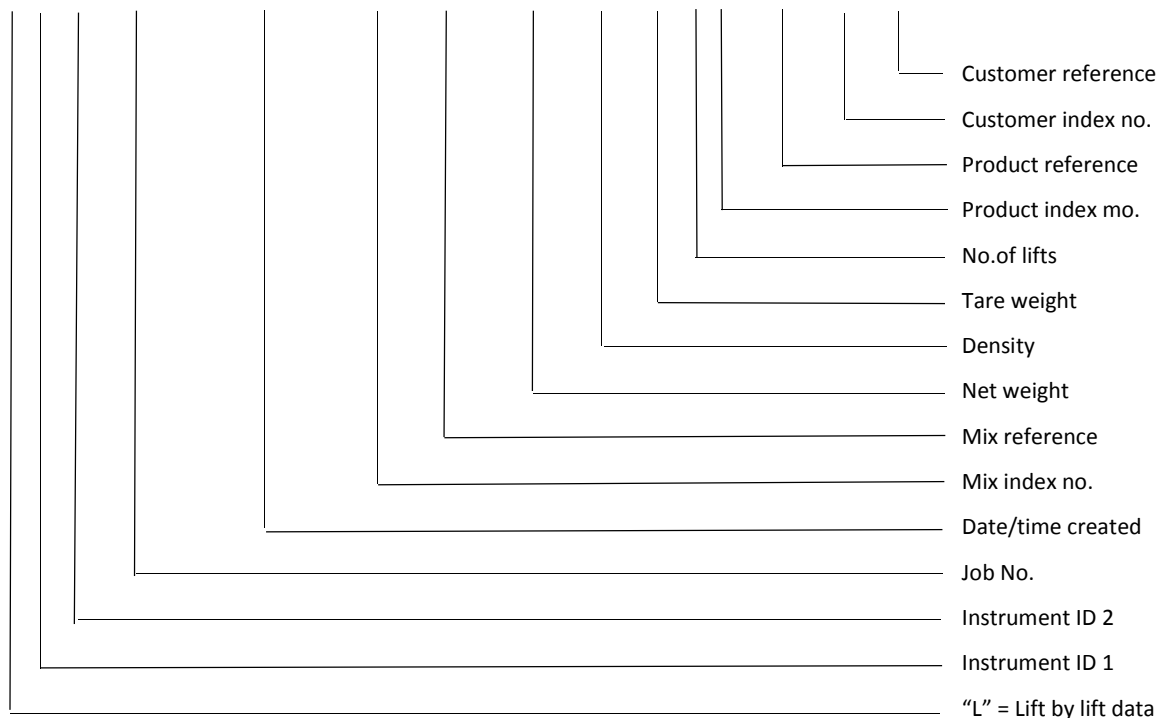
Only stores that contain load totals are included.

5.3.4 Job records (“TOTALS.CSV”)

Each time a load is cleared for the next job, a job record is generated and a line is added to the file “TOTALS.CSV” on the SD card.

Example of file format:

R, ID1, ID2, 54, 2016-05-26 13:39:43, 0, Undefined, 8.28, 1.123, 1.38, 6, 4, Product5, 5, Customer4,



Customer reference
Customer index no.
Product reference
Product index no.
No. of lifts
Tare weight
Density
Net weight
Mix reference
Mix index no.
Date/time created
Job No.
Instrument ID 2
Instrument ID 1
“L” = Lift by lift data
“R” = Load by load data

NOTE: Mix index no. and reference appear as “0, Undefined” in CSV string when blend mode is disabled.

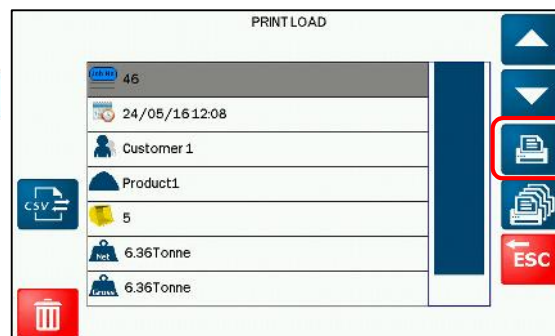
5.4 Printing load data

5.4.1 Print last load total

The Print option can be configured to automatically print a load ticket when a load is cleared.

However, if automatic printing is not enabled, then press on the main screen to display the last load cleared.

Press  .



UK841-290.GIF

With blend mode switched off, the following text prints are possible depending on the mode set.

“Short Load by Load”

A short form ticket is generated for each completed load.

Job Record	
ID 1	
ID 2	
ID 3	
ID 4	
ID 5	

Job Number	3
Date	03/01/2002
Time	12:23
Weight	4.09
Product	
Customer	

Print date	
Ticket Number:	21

“Long Load by Load”

As for “short load by load” ticket, but including space for name, address and signature.

Job Record	
ID 1	
ID 2	
ID 3	
ID 4	
ID 5	

Job Number	4
Date	03/01/2002
Time	12:27
Weight	4.09
Product	
Customer	
Name:	
Address:	
Sign:	

Print date	
Ticket Number:	22

“Lift by Lift”

The ticket itemises the individual lifts making a load, including any lifts that were subtracted using the “Clear Entry” function.


Job Record	
ID 1	
ID 2	
ID 3	
ID 4	
ID 5	

Job Number	3
Date	03/01/2002
Time	12:23
Lift 1	0.98
Lift 2	1.21
Lift 3	0.84
Lift 4	1.06

Weight	4.09
Product	
Customer	

Print date	
Ticket Number:	20

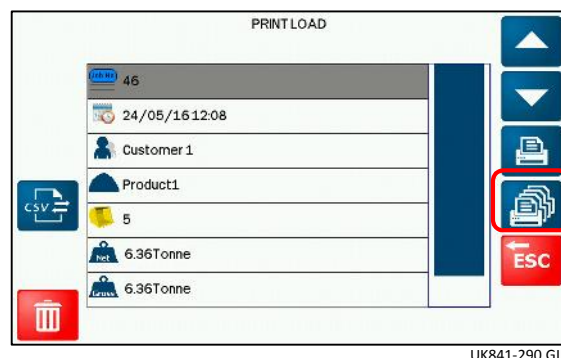
5.4.2 Print all Product, Customer and Mix totals

Press  on the main screen.

Press .


Job Record	
ID 1	
ID 2	
ID 3	
ID 4	
ID 5	


Date	dd.mm.yy
Time	hh.mm
Product 1	
Total	xxx.x t
Lifts	xx
Loads	xx
Product 2 Etc...	
Customer 1	
Total Weight	xxx.x t
Lifts =	xx
Loads =	xx
Truck tare =	x.xx
From	dd.mm.yy hh.mm
To	dd.mm.yy hh.mm
Customer 2 etc...	
Mix 1	
Total Weight	xxx.x t
Lifts =	xx
Loads =	xx
Truck tare =	x.xx
From	dd.mm.yy hh.mm
To	dd.mm.yy hh.mm
Mix 2 etc...	



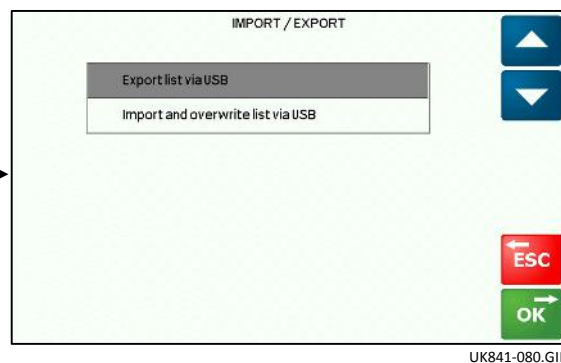
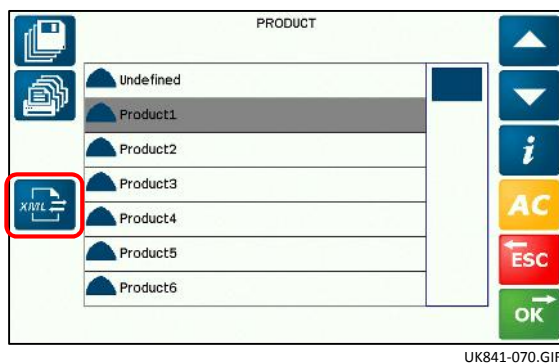
5.5 Import / Export store references (Customer / Product / Mix)

Store References can be updated by importing .XML data edited in PC software, or likewise exported in .XML format for administration purposes via the USB port.

From the relevant stores screen, press .

Choose the Import or Export option and press .

If exporting, you are then prompted to enter a suitable filename.



5.6 Editing store references on a PC

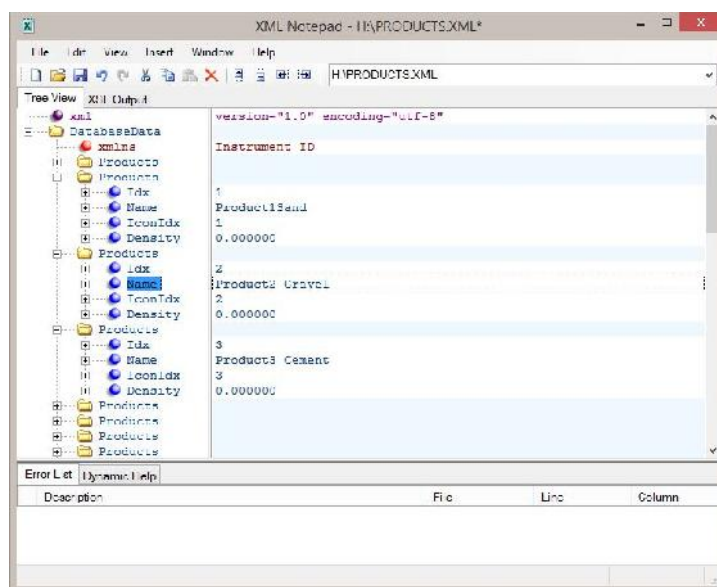
The “XML Notepad 2007” © utility program is freely available from the Microsoft download centre. It provides a simple intuitive user interface for browsing and editing XML documents.

To edit store references, open the appropriate .XML file saved onto the USB stick.

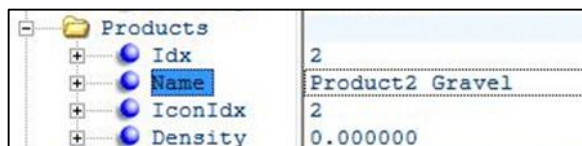
NOTE: If you did not enter a different filename when exporting the references, the default filenames are “PRODUCTS.XML”, “CUSTOMER.XML” OR “MIXES.XML”.

5.6.1 Editing Product references

The “Tree View” lists all 50 product references starting from Product Index ‘0’ (“Undefined”).



To edit a reference, click ‘+’ to expand the tree, and then edit the text entry in the adjacent column, e.g.:



‘Idx’ - the product index no. Do not change this.

‘Name’ – the product description. Edit as required.

‘IconIdx’ - the icon index no. displayed alongside the product description. Edit as required (ref. below).

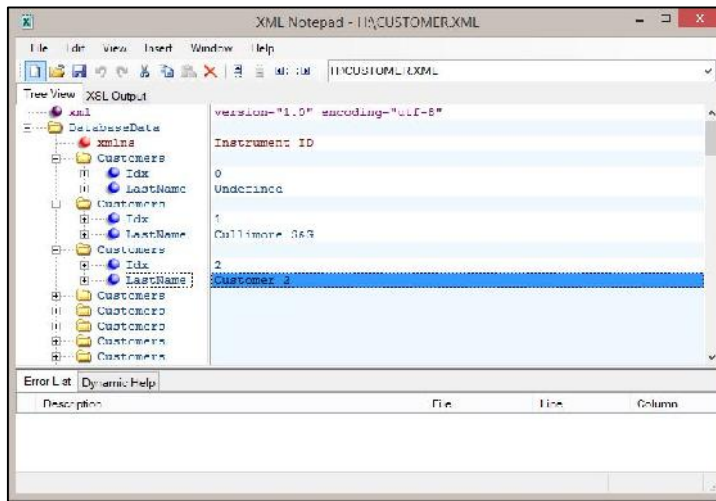
‘Density’ – the relative density (otherwise the density in kg/m³). Only required if volumetric units are selected.

Icon index numbers correspond with the following icons,

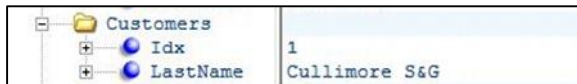
0	1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20	21
22	23	24	25	26	27	28	29			
4	5	6	7	8	9					

5.6.2 Editing Customer references

The “Tree View” lists all 100 product references starting from Customer Index ‘0’ (“Undefined”).



To edit a reference, click ‘+’ to expand the tree, and then edit the text entry in the adjacent column, e.g.:

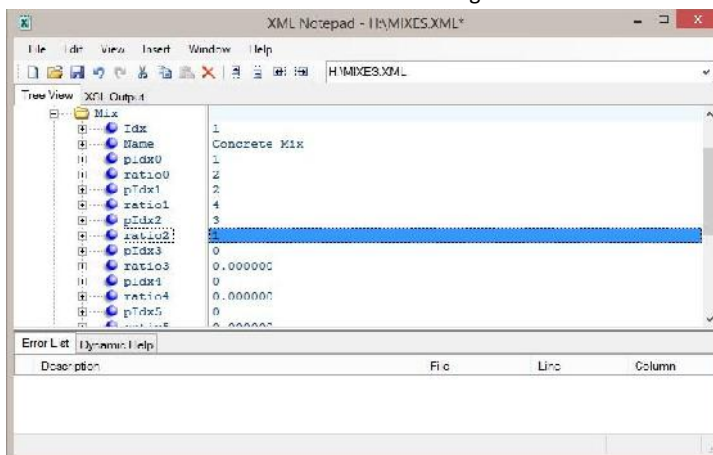


‘Idx’ – the customer index no. Do not change this.

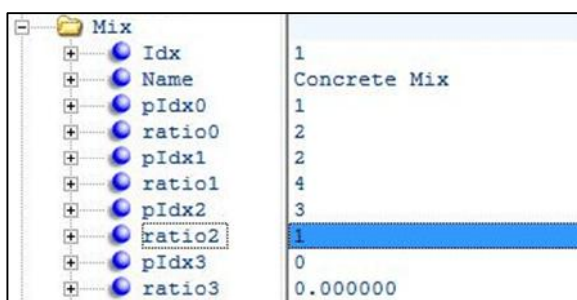
‘Lastname’ – the customer description. Edit as required.

5.6.3 Editing Mix References

The “Tree View” lists all 5 mix references starting from Mix Index ‘0’.



To edit a reference, click ‘+’ to expand the tree, and then edit the text entry in the adjacent column. Each mix can have up to 10 ingredients programmed, e.g.:



‘Idx’ – the mix index no. Do not change this.

‘Name’ – the mix description. Edit as required.

‘pIdx0’ to ‘pIdx9’ – the ingredient index no. (max. 10 ingredients). Enter the product index number for each ingredient.

‘ratio0’ to ‘ratio9’ – the ratio of each ingredient in the mix.

In this example (and in reference to the product list shown in 5.6.1), the mix is,


Ingredient ‘0’: Sand (Product Index ‘1’) : 2 parts

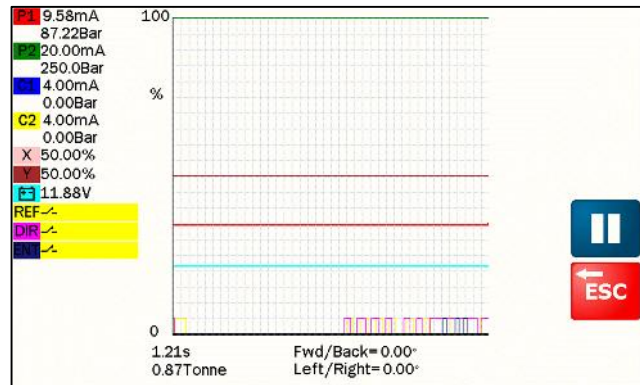
Ingredient ‘1’: Gravel (Product Index ‘2’) : 4 parts

Ingredient ‘2’: Cement (Product Index ‘3’) : 1 part

6. Diagnostics

In the event of problems with weighing, the diagnostics screen enables you to check the operation of the various sensors.

Press  to access the “Operator” setup menu and select “Diagnostics”.



UK841-310.GIF

“P1” is pressure sensor 1 installed on the lift side of the main lift ram. If working, it should display a milliamp reading between 4-20mA, and a pressure in bar.

“P2” is pressure sensor 2 installed on the return side of the main lift ram, and should display similarly to “P1”.

“C1” and “C2” are pressure sensors fitted to the lift and return sides of the lift compensation cylinder usually on telehandlers. They may or may not be fitted depending on the machine make/model, and are usually fitted to “problem” machines with more complex hydraulic systems. They should display similarly as with “P1”/“P2”.

“X” is the Left/right angle sensor input

“Y” is the Forward/Backward angle sensor input

“REF” and “DIR” are the reference/direction sensors adjacent to the boom. While lifting and lowering the boom, the icons should switch between yellow (open) and green (closed) in the sequence,

REF+DIR off
 REF on/DIR off
 REF+DIR on
 REF off/DIR on
 REF+DIR off

as you lift through the weighing arc.

“ENT” indicates the remote enter switch status and should switch between yellow (open) and green (closed) when you press the remote enter button.

7. Operating Parameters

The Loadmaster 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::	IP54 (mount in an enclosed cab)
Sensors:	IP67
Junction Box:	IP65
Pressure range:	0 – 250 bar
Maximum angle deviation	From level ground, $\pm 10^\circ$ Front-Back, $\pm 5^\circ$ Left-Right
Approval Classification:	Non-approved
No. of divisions (n)	250
Scale Interval (e) (kg)	≥ 10
Capacity (kg):	$\leq 50,000$

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 A:	9.5.16	1 st draft
Issue B:	9.6.16	2nd draft with corrections (DK)
Issue 1.0	20.6.16	Original issue