



*Valueweigh*  
7XXSoftware

**Operation Manual and User Guide**

# **Concrete Batching System (7 Scales)**

(version a8)

**Cardinal 788 Indicator**



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# 1. Introduction

This Batching System weighing application consists of a 788 software program designed to create and edit recipes, run batches and send output data via an Ethernet connection to a PC.

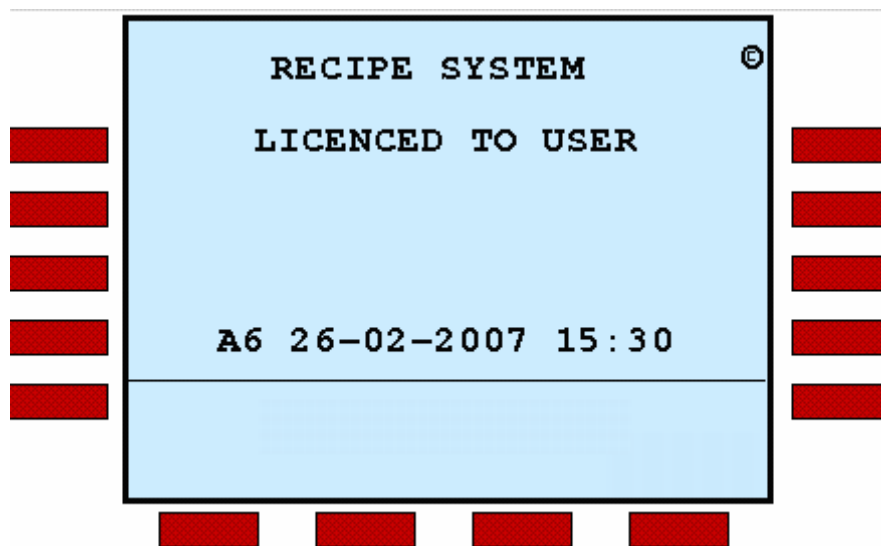
The indicator software displays the recipes and guides the operator through the steps of the required operations. The indicator checks that all the ingredients required for the selected recipe are available and allows the operator to decide if any target values need to be adjusted before batching.

The indicator stores all process events and ingredient usage and sends this information to the PC at the end of each completed mix. The PC software stores all incoming data from the indicator and allows the PC operator to run various reports.

There is also an option in the PC software to show live weight from all the scales connected to 788.

## 2. Indicator Main Screen

On power up the Cardinal 788 indicator will run through a start up sequence.



## 2.1. Explanation of the Features on the Indicator Main Screen

The following table explains the features that can be seen on the main screen, beginning with the features at the top of the screen.

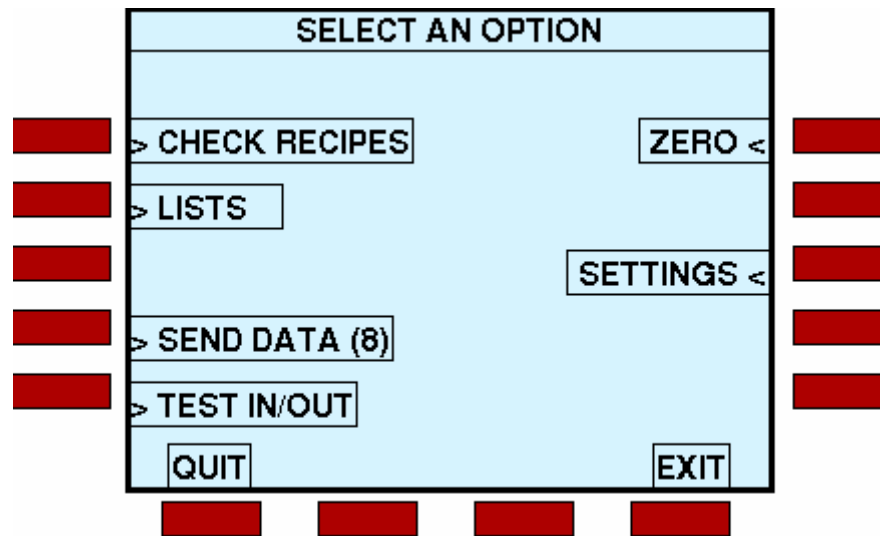
The screenshot shows a terminal window titled "RECIPES SYSTEM". It displays a list of materials and their weights in kilograms. The materials listed are CEMENT1, CEMENT2, SNOWCRETE, ASH, STONE10, STONE20, and SAND. Below the list, there are four menu options: BATCH, SUPER, ABOUT, and a time display of 23:44. The screen is surrounded by red rectangular markers representing physical buttons on the indicator.

RECIPES SYSTEM	
CEMENT1	: 37620 KG
CEMENT2	: 37620 KG
SNOWCRETE	: 37620 KG
ASH	: 37620 KG
STONE10	: 38170 KG
STONE20	: 37620 KG
SAND	: 37620 KG
> BATCH	
SUPER	ABOUT
23:44	

FEATURE	EXPLANATION
<b>CEMENT1</b>	Displays the weight of the each scale. The display shows the <b>GROSS</b> weight.
<b>BATCH</b>	Press to run a Batch process.
<b>SUPER</b>	Press to run the Supervisor menu.
<b>ABOUT</b>	Press to see the software details and registration.
<b>23:44</b>	Displays Current time.

## 2.2. Explanations of the system menu options

To enter the system menu from the main screen press the SUPER button. The screen will display,

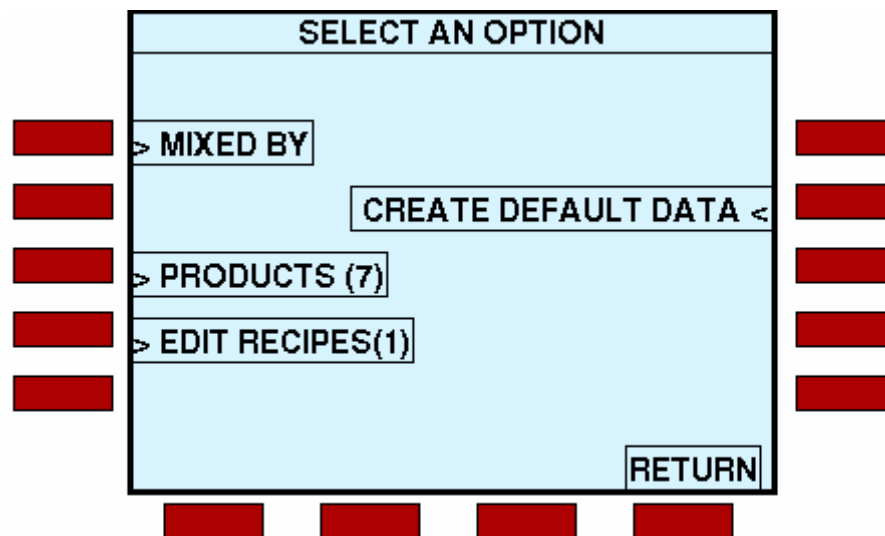


The following table explains the features that can be seen in the system menu, beginning with the features at top of the screen.

FEATURE	EXPLANATION
<b>CHECK RECIPES</b>	This option checks if all the information regarding products and recipes is correct.
<b>LISTS</b>	Opens a menu for products, recipes and operators to be edited
<b>SEND DATA(8)</b>	Sends stored output data to PC. '8' in the current example is the number of stored records
<b>TEST IN/OUT</b>	Tests logic inputs and outputs. <b>IMPORTANT: USE WITH MAIN CONTROL SIGNALS DISCONNECTED FIRST.</b>
<b>ZERO</b>	Runs an additional menu to zero each scale. Password protected option.
<b>SETTINGS</b>	Set software settings and options.
<b>EXIT</b>	Press to return to the Main Menu

### 3. Creating data (LISTS)

All stored data is organised in the following way:



MIXER BY – operator list.

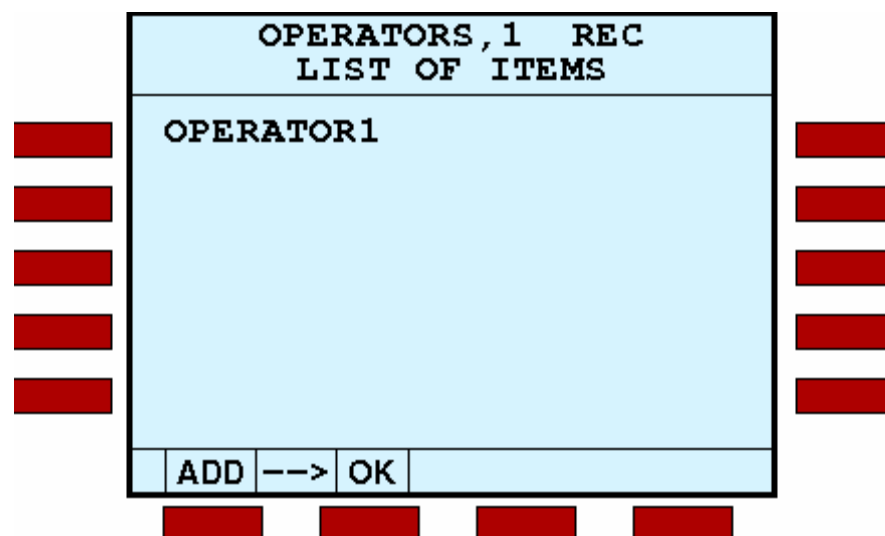
PRODUCTS – list of products.

EDIT RECIPES – add/edit/delete recipes stored in the system.

CREATE DEFAULT DATA – overwrite data with default data.

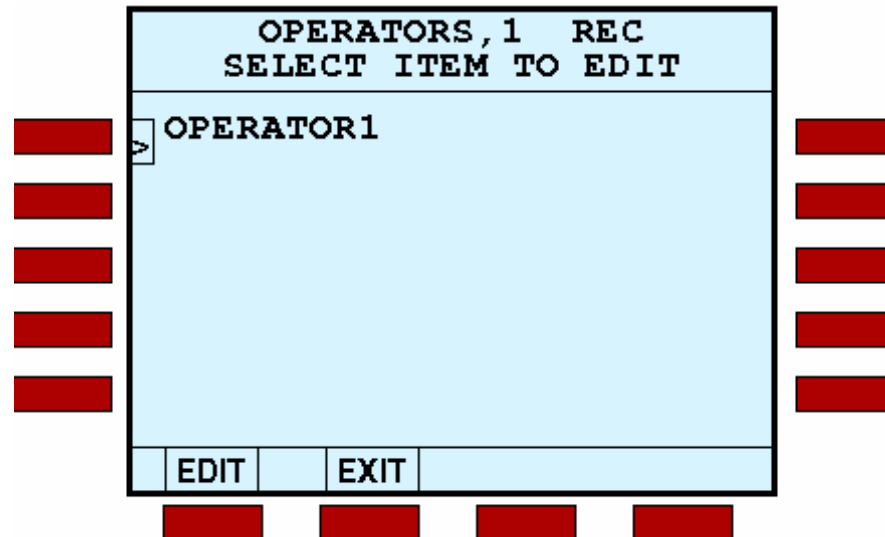
#### 3.1. List of operators

##### 3.1.1. Add item



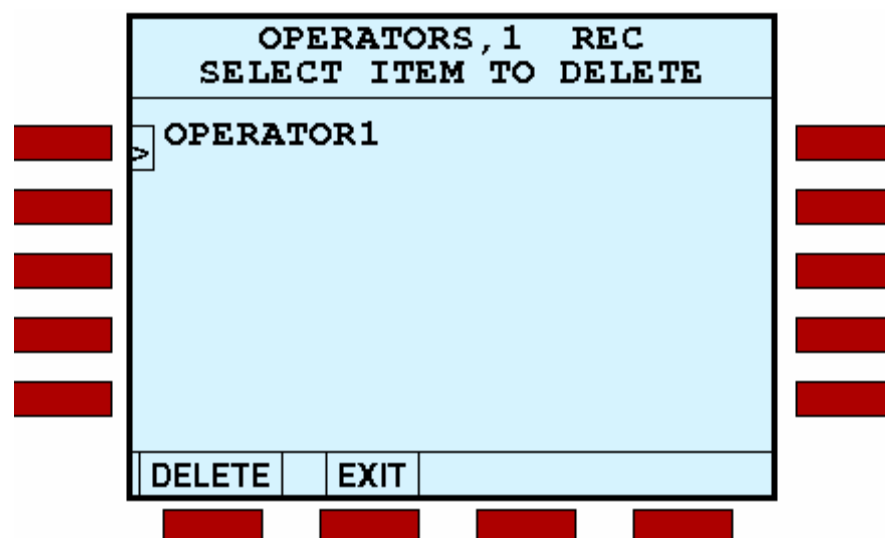
To work with the data use the buttons displayed at the bottom of the screen. The first button (ADD) is the currently selected option. The mode may be changed to ADD, EDIT or DELETE. When ADD is selected, press OK to confirm the adding of an item to the list.

### 3.1.2. Edit item



When EDIT is selected any item in the list may be selected by pressing the corresponding red button. Press the red button beside the item you wish to edit. Press the EXIT button to exit. Press EDIT button to select the different mode options.

### 3.1.3. Delete item



Change to DELETE mode and select an item to be deleted. Once an item is deleted, it cannot be recovered. If you delete a product, which is used in a recipe, then the whole recipe will be unusable.

### 3.2. List of products

PRODUCTS, 7 REC	
LIST OF ITEMS	
CEMENT1	SCALE: 1 FFC: 0 KG
CEMENT2	SCALE: 2 FFC: 0 KG
SNOWCRETE	SCALE: 3 FFC: 0 KG
ASH	SCALE: 4 FFC: 0 KG
STONE10	SCALE: 5 FFC: 0 KG
ADD	--> OK
NEXT>	

Use the control buttons in the same way as when working with the Operator's list. If the current list is longer than five items, the NEXT button is provided to scroll to the list on the next screen.

### 3.3. Edit recipes

RECIPES, 1 REC	
SELECT ITEM TO EDIT	
RECIPE1	VOLUME: 5.00
EDIT	EXIT

Select the recipe from the list by pressing the corresponding red button beside the recipe name.

The following prompt will be shown:

A screenshot of a terminal window with a light blue background. The text is centered and reads: **NAME**, **MAX 15 CHARS**, **[ESC] - EXIT**, and **CURRENT = RECIPE1**. Below this is a horizontal line. At the bottom, there are four buttons: **ESC**, **BKSPC**, **.**, and **ENTER**. On the left side, there are five numbered boxes (1-5) and on the right side, there are seven numbered boxes (6-0).

Use the 788 keypad to enter the text.

Press **BKSPC** to delete a character.

Press **ENTER** to confirm.

The next prompt is **VOLUME**.

Enter the volume of recipe. Note, that the value cannot be bigger than that of the mixer volume (6 or 8).

After all of the following 7 prompts have been completed, the target weight of each product in the recipe must be entered. If the product needs to be excluded from the recipe then the target must be set to zero.

A screenshot of a terminal window with a light blue background. The text is centered and reads: **STONE10**, **WEIGHT KG, 0-SKIP**, and **CURRENT = 1000**. Below this is a horizontal line. At the bottom, there are four buttons: **ESC**, **BKSPC**, **.**, and **ENTER**. On the left side, there are five numbered boxes (1-5) and on the right side, there are seven numbered boxes (6-0).

The prompts shown will be **CEMENT1**, **CEMENT2**, **SNOWCRETE**, **ASH**, **STONE10**, **STONE20**, **SAND**.

### 3.4. Create default data

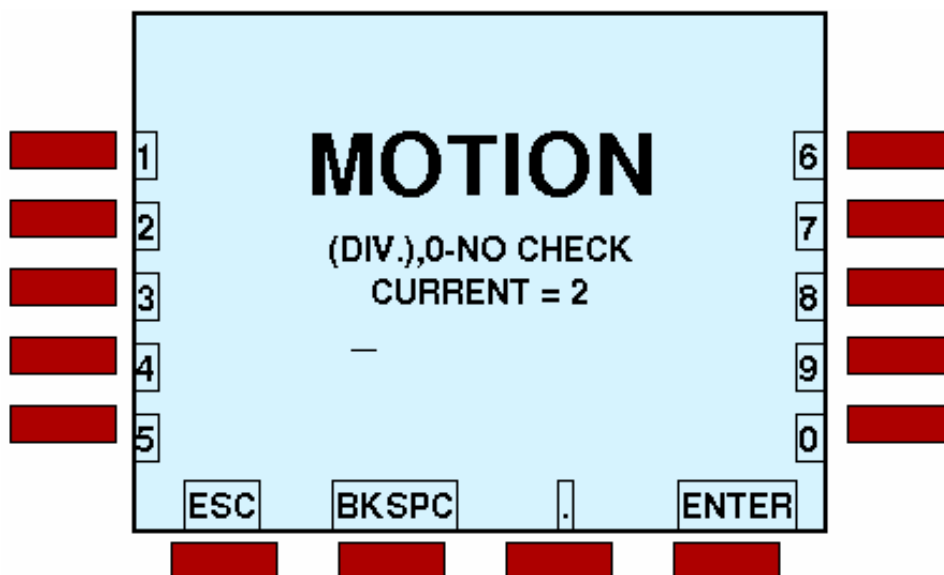
Default data is pre-prepared data for the system. It is usually created automatically when the indicator memory is clear and software runs for the first time.

Please note, the default data overwrites the existing list of products. It will also overwrite existing recipes located at the beginning of the recipe list.

## 4. Settings

### 4.1. Motion

Before the start of a batch there is a motion check to ensure each platform is stable. If for some reason, the check is not needed then zero must be entered at this prompt. Note that the motion value is entered in divisions (usually 10 kg is standard.)



## 5. General Operating Procedure

### 5.1. Select information for batch

- Press the BATCH button located on the main screen.
- Select the required recipe from the recall list.
- Select the operator from the operator's list.
- Select a MIXER (six cubic meters or eight cubic meters).
- Enter the MIX VOLUME.

Note, that if the mix volume is different from the recipe volume then it will be recalculated automatically. It is possible to change the mix volume later from the additional EDIT menu.

## 5.2. Confirmation screen

CONFIRM SELECTION			
RECIPE: RECIPE1			
PRODUCT	IN MIX	GROSS	
CEMENT1	1640	37620	KG
CEMENT2	NO	37620	KG
SNOWCRE	NO	37620	KG
ASH	900	37620	KG
STONE10	1000	38170	KG
STONE20	4200	37620	KG
SAND	5250	37620	KG
VOLUME :	6.00	6.00	
START ?	YES	NO	EDIT

This confirmation screen appears before the batch begins. If all the details are correct then the YES button will be available. If a product is not used then it is marked as NO (not used in mix).

The volume line shows two volumes: the volume of the mix and the volume of the recipe. Press EDIT to make any changes required before beginning the batch.

## 5.3. Edit information before batch start

SELECT AN OPTION	
FIRST SILO: ASH	N 4
> EDIT FREE FALL	
> EDIT IN MIX	
> SELECT MIXER	
> SELECT BATCH VOLUME	
	EXIT

That scale number is flexible and may be selected from this screen by selecting EDIT IN MIX. It is also possible to edit the targets for each product, mixer and batch volume. It is possible to Edit the Free Fall Compensation values for each scale via the EDIT FREE FALL option.

#### 5.4. Not enough product situation

CONFIRM SELECTION			
RECIPE: RECIPE1			
PRODUCT	IN MIX	GROSS	
<b>CEMENT1</b>	1090	740	KG
CEMENT2	NO	28470	KG
SNOWCRE	NO	28470	KG
ASH	600	28470	KG
STONE10	660	28470	KG
STONE20	2800	28470	KG
SAND	3500	28470	KG
VOLUME :	4.00	6.00	
START ?		NO	EDIT

If there is not enough product in the required silo, it is not possible to start a batch. The YES button is automatically removed from the confirmation screen.

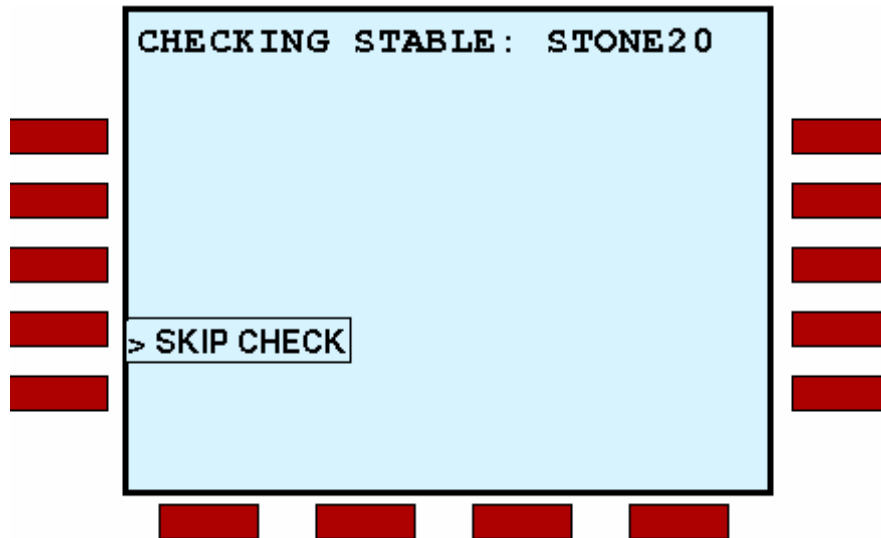
Check the corresponding product whose name is highlighted or it is also possible to decrease the mix volume. This will decrease the target weight of the products but the recipe will remain in proportion. It is possible to enter non-integer values, for example 0.25 of the recipe volume.

CONFIRM SELECTION			
RECIPE: RECIPE1			
PRODUCT	IN MIX	GROSS	
CEMENT1	60	1150	KG
CEMENT2	NO	9070	KG
SNOWCRE	NO	10030	KG
ASH	30	10030	KG
STONE10	40	9890	KG
STONE20	170	11260	KG
SAND	210	12900	KG
VOLUME :	0.25	6.00	
START ?	YES	NO	EDIT

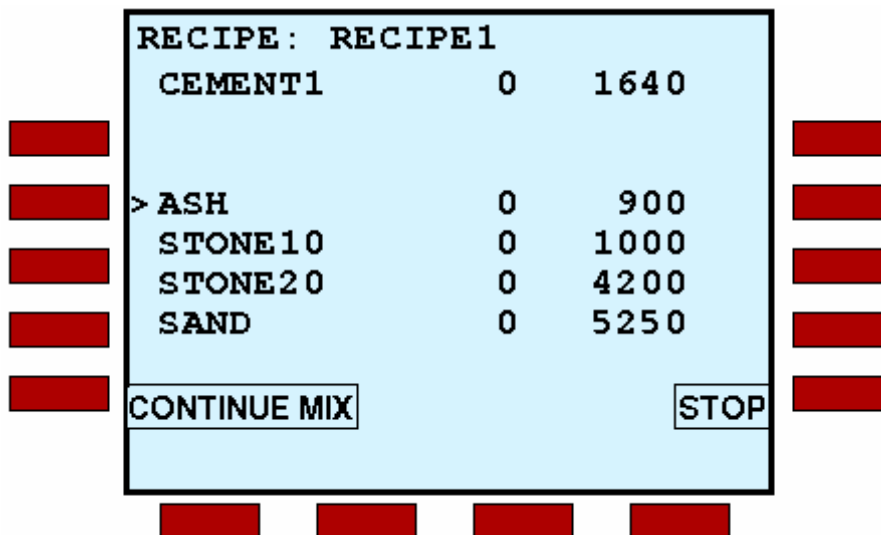
## 5.5. Mix process

When all the details are correct then the YES button on the confirmation screen is available. Press it to start the batch.

Once pressed, the system checks each scale for stability.



The system then starts to fill from the first silo. The default value is scale number four. This is the scale which currently runs ash, but it may be any scale with any name).



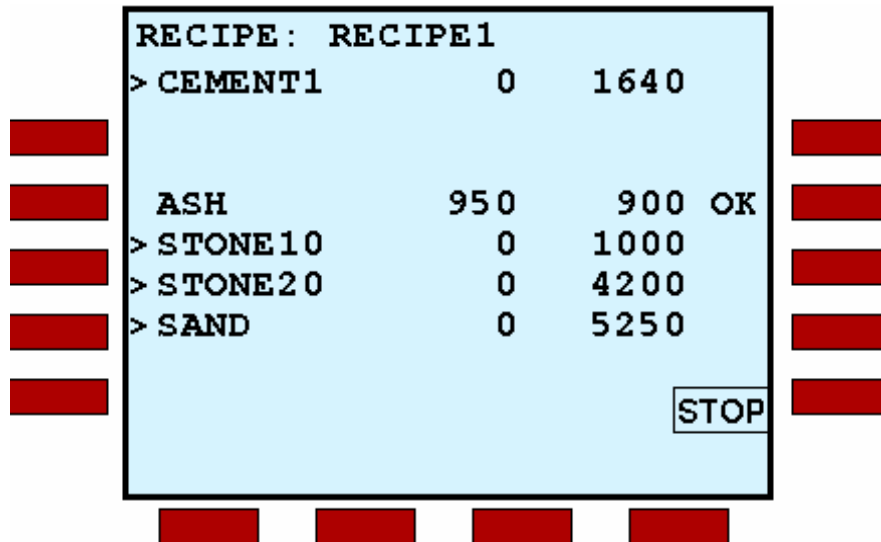
The scale number where the filling process is currently active is marked by “>”. At any time the button CONTINUE MIX may be pressed to add additional products into fill process.

The fill process is negative (i.e. loss in weight). This means that the product is subtracted from the weight in the silo and the system tracks each scale for the

amount emptied out. When the scale target is reached, the corresponding relay is switched off.

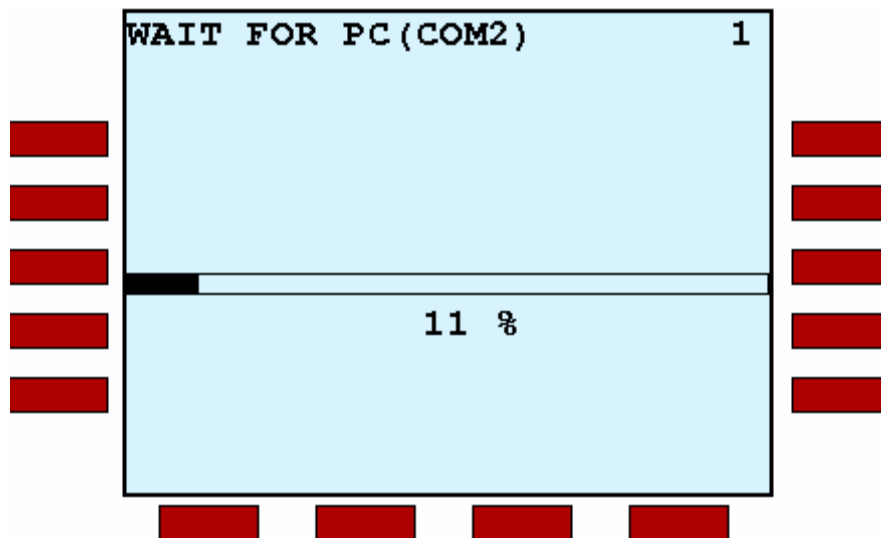
All the scales are filling at the same time. The system allows the filling of all seven scales in the indicator up to a target weight.

When the target weight of the scale is reached, the filling mark is removed and an OK is displayed beside each target.



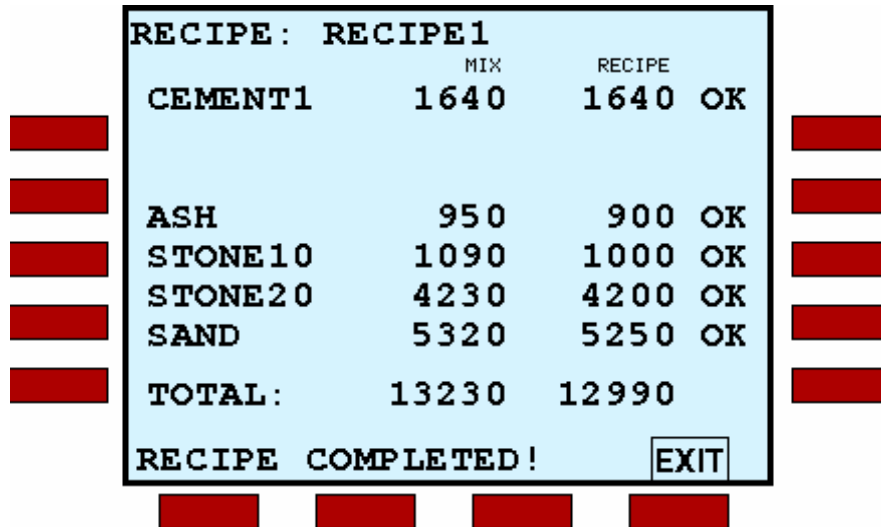
## 5.6. Auto-send data

When all targets are reached, the system sends the data to the PC.



If there is no connection available, the system stores the data locally in the 788 and resends all the data next time. It is also possible to send the data manually from the supervisor menu.

## 5.7. Process completed



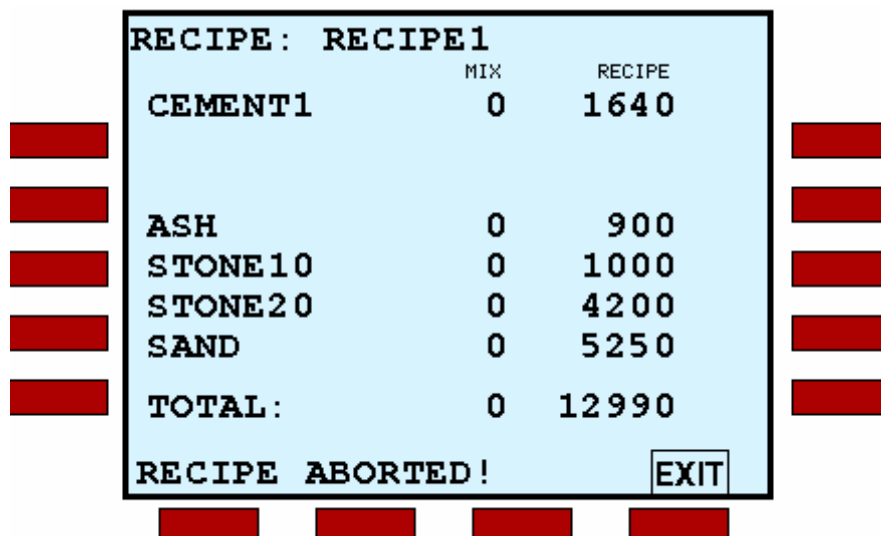
	MIX	RECIPE	
CEMENT1	1640	1640	OK
ASH	950	900	OK
STONE10	1090	1000	OK
STONE20	4230	4200	OK
SAND	5320	5250	OK
TOTAL:	13230	12990	

RECIPE COMPLETED!

When the recipe is completed, press the EXIT button to return to the main screen. It is possible to see and compare the expected totals and actual totals. If the difference is too big, it is recommended to adjust free fall compensation values for the products to be mixed next time.

## 5.8. Process aborted

It is possible to stop the filling process. The stop button must be pressed to cancel the current batch. Note that output data will be stored and sent anyway. A cancelled batch will be labelled “aborted” and will be stored with the data sent to the PC.

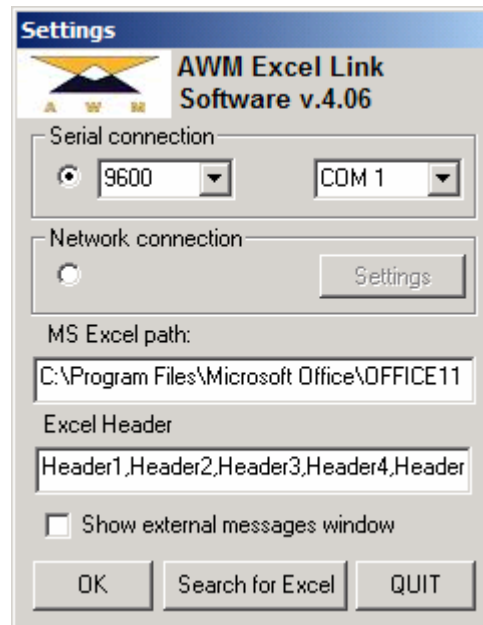


	MIX	RECIPE	
CEMENT1	0	1640	
ASH	0	900	
STONE10	0	1000	
STONE20	0	4200	
SAND	0	5250	
TOTAL:	0	12990	

RECIPE ABORTED!

## 6. PC Software

### 6.1. Settings



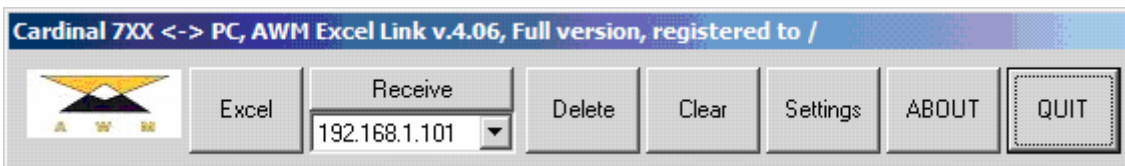
Above is the settings screen of the PC software. The serial connection section provides the settings for serial ports or networks to be connected.

Excel path shows the path from which to access MS Excel.

Excel header is a data string to be inserted at the beginning of the data in Excel.

"Show external messages window" allows the live weight from all scales during batch process and system stand by to be seen.

### 6.2. Main screen



This is main screen of the PC application. The receiving of the data from 788 is automatic.

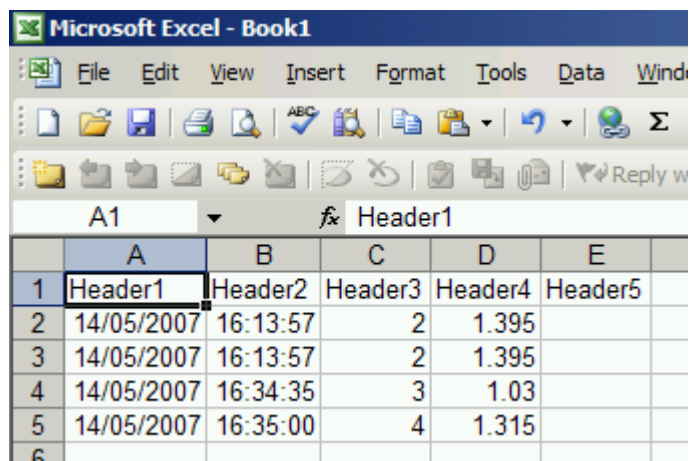
When the data is ready the Excel application may be run to inserted the data into a spread sheet.

Press the Excel button when ready. Note that any copy of the Excel currently running must be closed before pressing this button.

Press delete when you want to delete data. The CLEAR option only clears the data from the screen, it does not delete it.

### 6.3. Converted data

Data from the 788 in an Excel spread sheet.



	A	B	C	D	E
1	Header1	Header2	Header3	Header4	Header5
2	14/05/2007	16:13:57	2	1.395	
3	14/05/2007	16:13:57	2	1.395	
4	14/05/2007	16:34:35	3	1.03	
5	14/05/2007	16:35:00	4	1.315	
6					

Please note, that data provided in this examples is not connected with the actual data of this system.

## NOTES



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