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# INTRODUCTION.

Welcome to the Weltech Bw8010 automatic bird weigher. Although in design every effort has been made to make the controller as user friendly as possible, please take time to read this manual. Not only have we given definitions of what settings and functions are and do, but why they are needed in the overall operation. You will also find step by step guides to CALIBRATION and a pictorial explanation of how the controller measures the bird weight. At the back of the manual you will find a check list showing the settings which are essential to accurate weighing. Should you wish to contact Weltech with any questions or queries, the postal address, phone numbers and e-mail contacts can be found on the back of this folder.

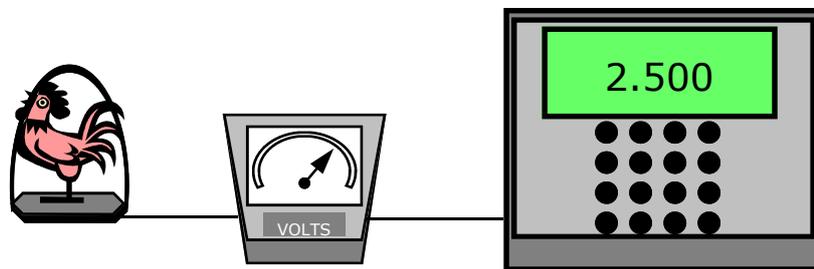
## HOW IT WORKS

This section has been written to give a full understanding as to how the controller decides which is good and which is bad information and also what to do with that information once it has it.

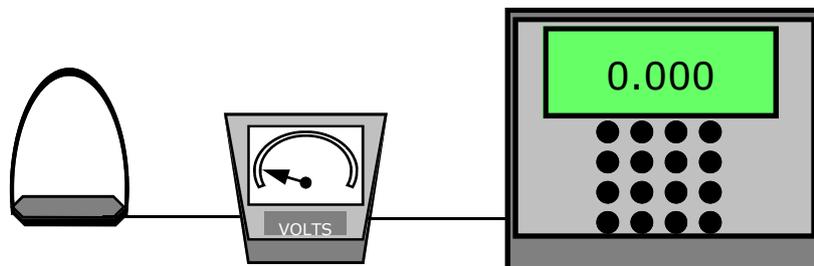
The flow of operation is quite simple and can be broken down into four steps.

### **STEP 1**

When weight is applied to the perches the loadcell inside can generate a voltage signal which corresponds to that weight. The voltage signal is then sent back to the controller which has the ability to turn that signal back into a weight reading which it understands. When the weight is removed from the perch, the signal disappears and the controller can measure how much the weight was.



WEIGHT ON, SIGNAL VOLTAGE INCREASES, CONTROLLER READS WEIGHT



WEIGHT OFF, NO SIGNAL VOLTAGE, CONTROLLER READS ZERO

## STEP 2

The controller then has to decide if the weight that it has just measured falls within acceptable limits. These limits are ones that are generated when you enter the **TARGET WEIGHT**.

**TARGET WEIGHT** = 2.250 kilo  
**ACCEPTANCE % HIGH** = 30%  
**ACCEPTANCE % LOW** = 15%

**ACCEPTABLE LIMITS** = From 1.913 kilo to 2.925 kilo

**WEIGHT RECORDED** = 2.500 kilo

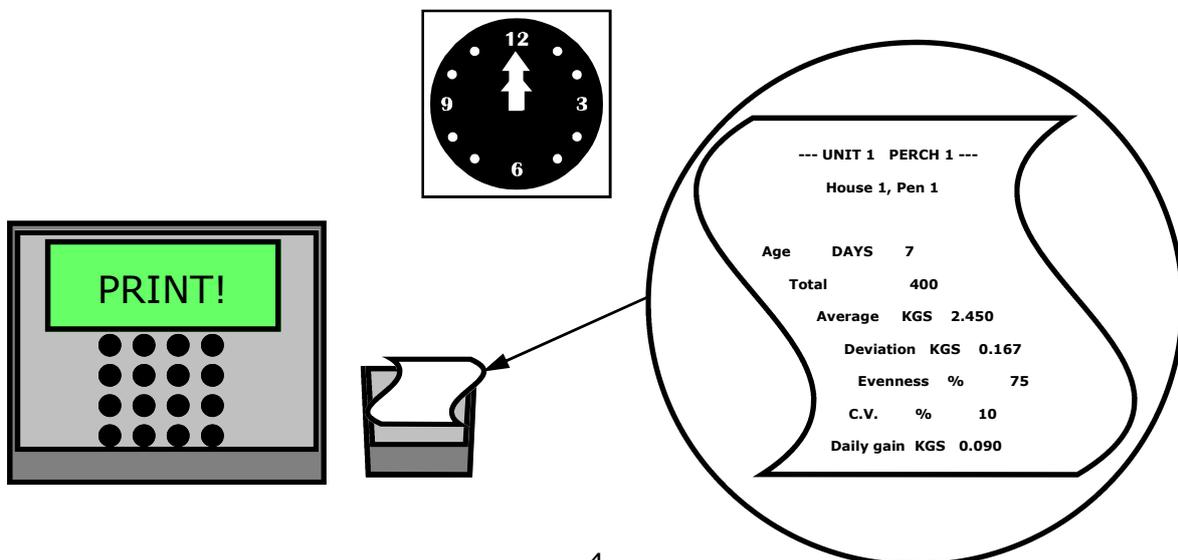
Does weight recorded fall within acceptable limits?

Answer = **YES!** Add weight to memory.

**THE HIGH AND LOW ACCEPTANCE PERCENTAGES USED ARE THE FACTORY DEFAULT ONES. IT IS RECOMMENDED THAT THESE SETTINGS ARE USED. HOWEVER, THIS IS LEFT TO THE USERS DISCRETION. OBVIOUSLY DIFFERENT SETTINGS WILL CREATE DIFFERENT RESULTS.**

## STEP 3

The controller will be checking each of the platforms constantly throughout the day, keeping the acceptable weights and disregarding the others. At midnight the controller will then gather all the weights collected and work out the daily statistics for each perch and, depending on what is connected, will print the data out.



## STEP 4

The controller will then update itself. It will use the average weight recorded for that day as the new TARGET weight for the next, increase the age of the birds and reset the memory ready to start weighing again.

### YESTERDAY'S STATISTICS

--- UNIT 1 PERCH 1 ---		
House 1, Pen 1		
Age	DAYS	7
Total		400
Average	KGS	2.450
Deviation	KGS	0.167
Evenness %		75
C.V.	%	10
Daily gain	KGS	.090

### TODAY'S SETTINGS

Age = 8 days  
New Target = 2.450 kilo  
Acceptance % High = 30%  
Acceptance % Low = 15%

New Acceptable limits = From 2.083  
to 3.185

# USING THE OPTIONS MENU

## MENU NAVIGATION

The main MENU is entered by pressing the button opposite. Once into the main MENU, all other settings and functions can be accessed.



Some functions have their own sub menus which can be viewed



This will be highlighted by the flashing arrowheads at the top of the display. If only one arrowhead is present it means that this is the end of the sub menu in that particular direction.

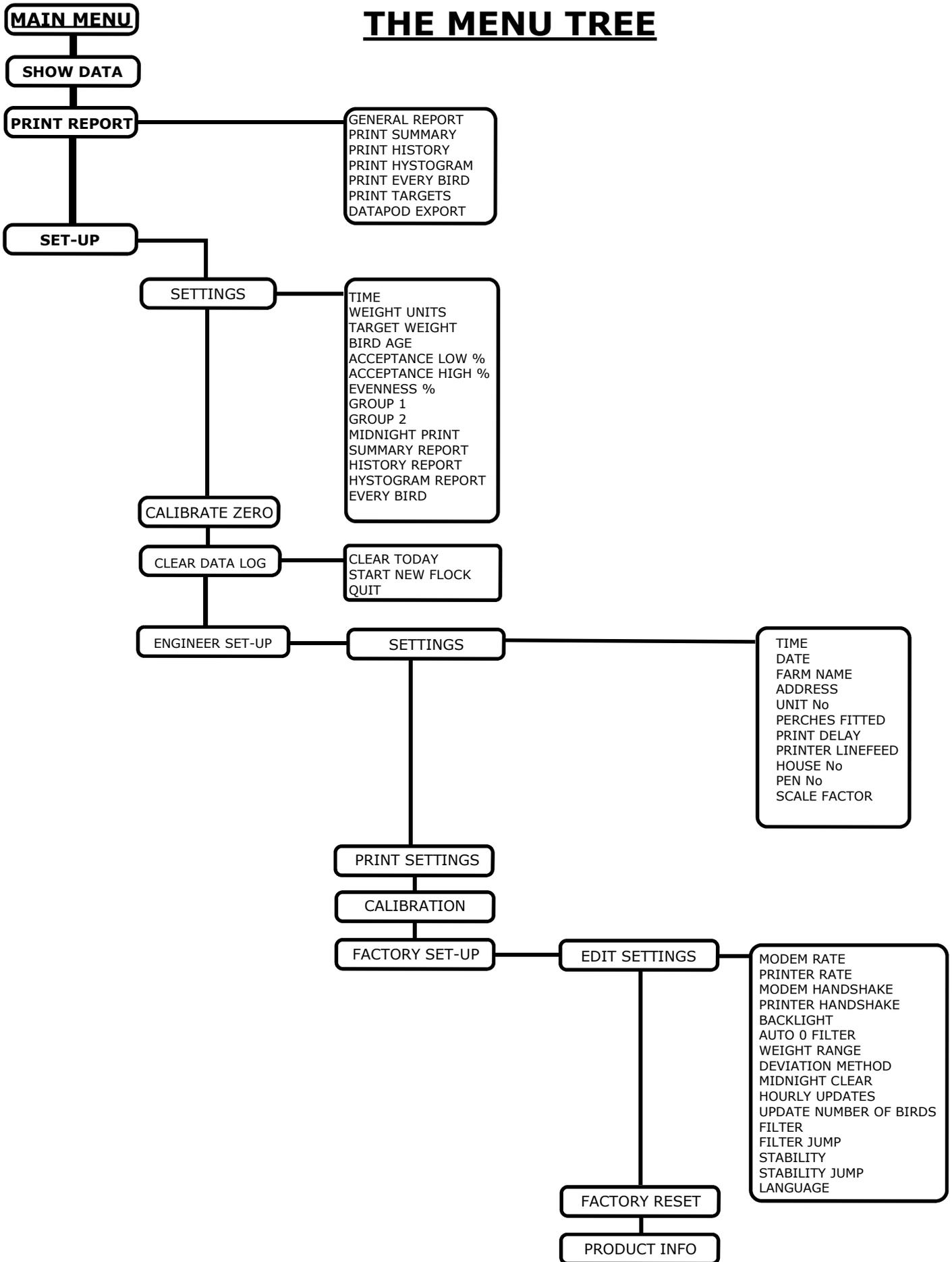
In all menu options you have the ability to exit back one step of the menu tree instantly by pressing the button opposite.



## TYPING IN LETTERS AND USING THE NUMERIC

Certain functions require you to enter letters, for example the farm name. The 8010 keypad works much the same as the keypad on a mobile phone. Some of the numbers have letters printed underneath. This indicates the location of each letter. To access the letters, simply press the number key repeatedly until the desired one is shown. To create a space between letters or numbers use the "0" key. If a word contains two letters from the same key next to each other, use the < key to move to the next character space. Letters from different keys will advance automatically.

# THE MENU TREE



## VIEWING DATA (SHOW DATA)

**MAIN MENU**

**SHOW DATA**

**PRINT REPORT**

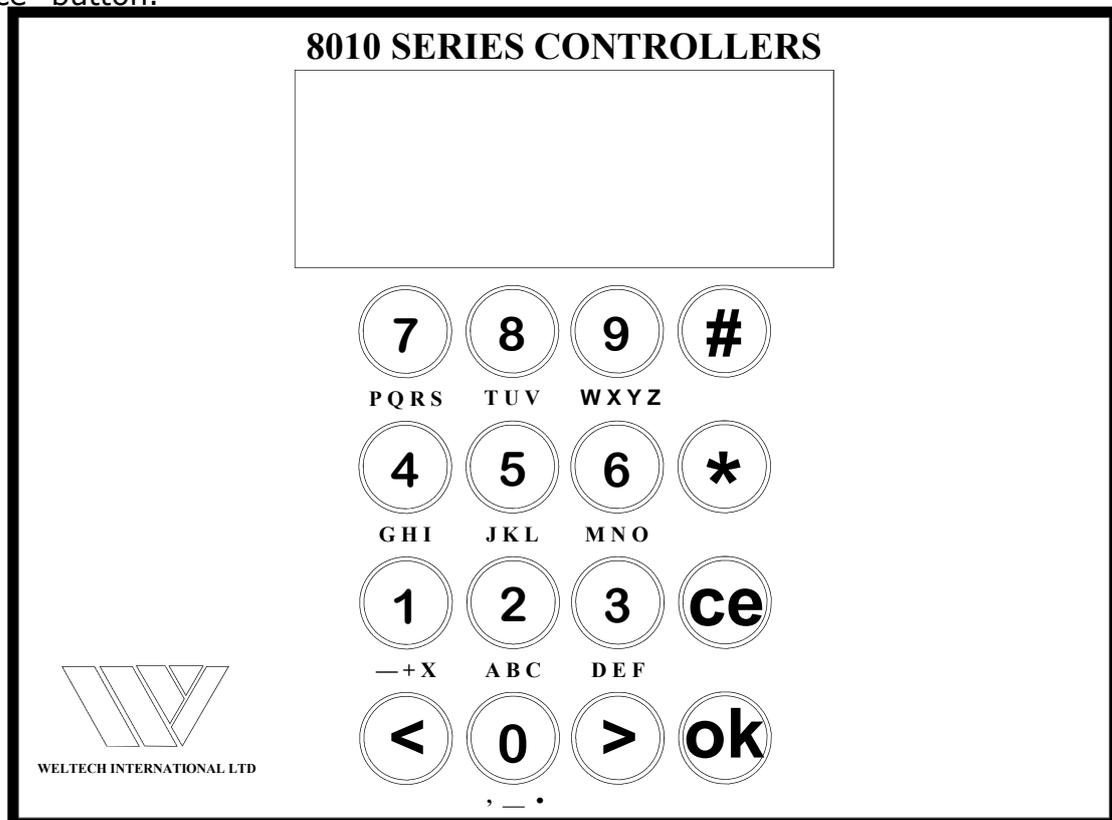
**SET-UP**

Once selected the display will automatically show the statistics gathered so far today. These statistics include number of birds weighed, average weight, standard deviation, age of birds, evenness, and coefficient of variation. In the top left corner you will notice that the < sign is flashing. This indicates that there is data available for viewing from yesterday and beyond. To view this data simply press the < key.

Once you progress to a previous day, the > sign will appear in the top right hand corner. This then indicates that you are able to move from one day to the next and back again.

The perch number that is displayed is shown on the top line of text. To change from one perch to another simply press the number of the perch required. This will then show the statistics for that channel. Again the < and > signs will indicate whether there is previous data available for viewing.

To escape from this function and return the back to the main menu, press the "ce" button.



# PRINTING DATA

**MAIN MENU**

**SHOW DATA**

**PRINT REPORT**

**SET-UP**

**PRINT REPORT**

If you have a printer connected direct to the BW8010 several reports can be printed on demand.

**GENERAL REPORT**

Prints regular statistics including daily weight gain.

select perch 0-9 or OK for all

Press a channel number or OK for all.

today

Make a selection of today, yesterday or choose a date from the last seven days. To enter another date press OK and then the year, month and day required.

yesterday

other date

**PRINT SUMMARY**

Prints regular statistics.

select perch 0-9 or OK for all

Press a channel number or OK for all.

today

Make a selection of today, yesterday or choose a date from the last seven days. To enter another date press OK and then the year, month and day required.

yesterday

other date

**PRINT HISTORY**

Prints last seven days statistics. Inc' total, average weight and

**PRINT HYSTOGRAM**

Prints numerical hystogram of birds weighed.

select perch 0-9 or OK for all

Press a channel number or OK for all.

today

Make a selection of today, yesterday or choose a date from the last seven days. To enter another date press OK and then the year, month and day required.

yesterday

other date

**PRINT EVERY BIRD**

Prints individual bird weights recorded.

select perch 0-9 or OK for all

Press a channel number or OK for all.

today

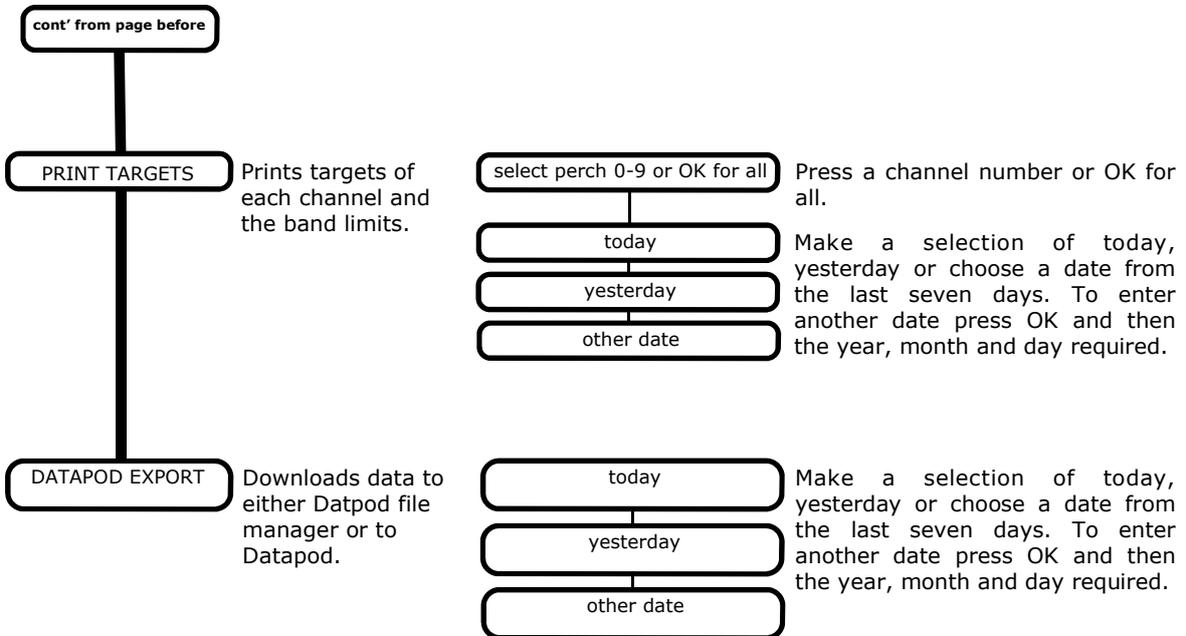
Make a selection of today, yesterday or choose a date from the last seven days. To enter another date press OK and then the year, month and day required.

yesterday

other date

cont' next page

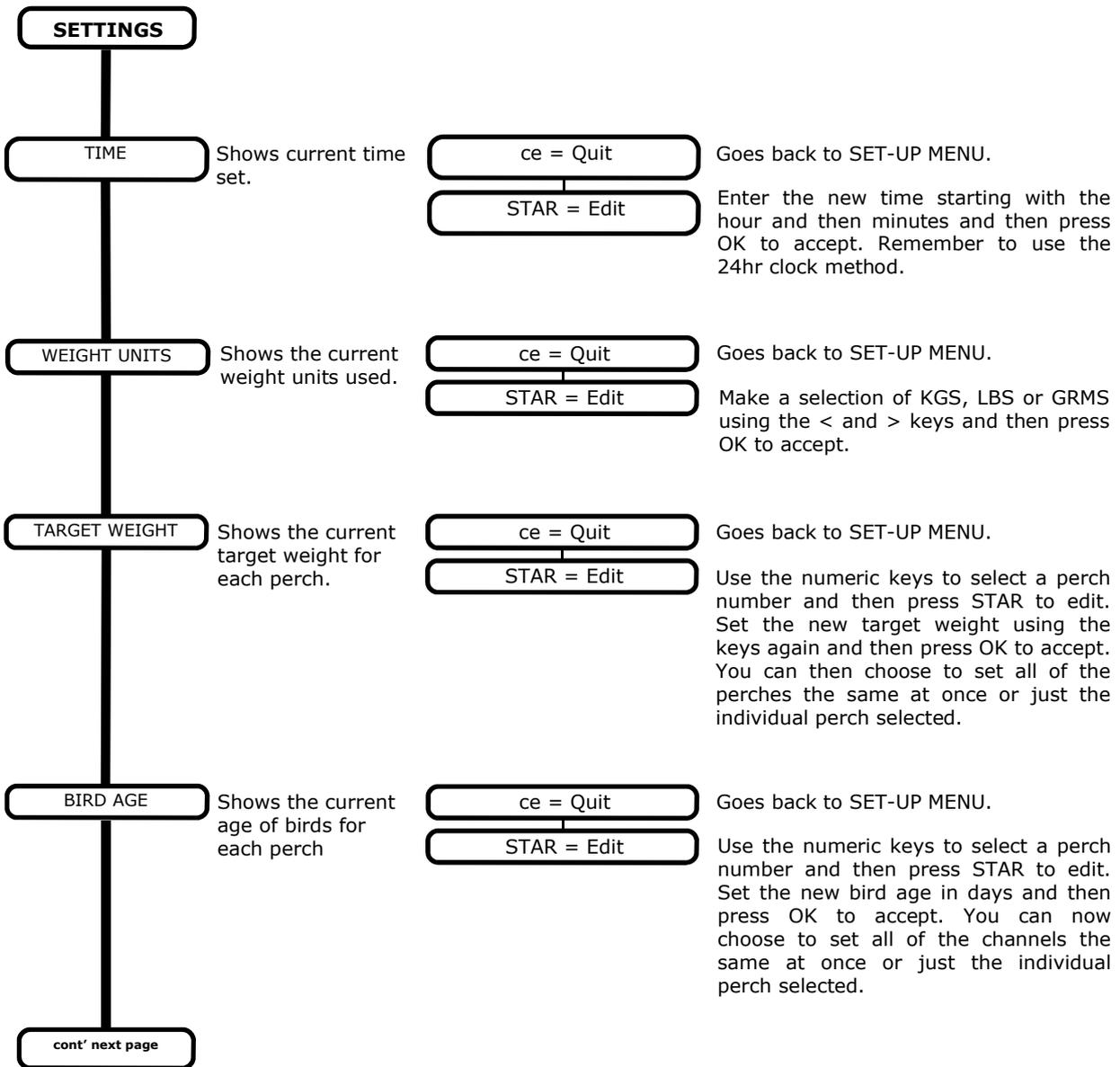
# PRINTING DATA



# SET UP



Set-up settings contain all vital information needed to start weighing birds. Settings such as TARGET WEIGHT and ACCEPTANCE % are included in this

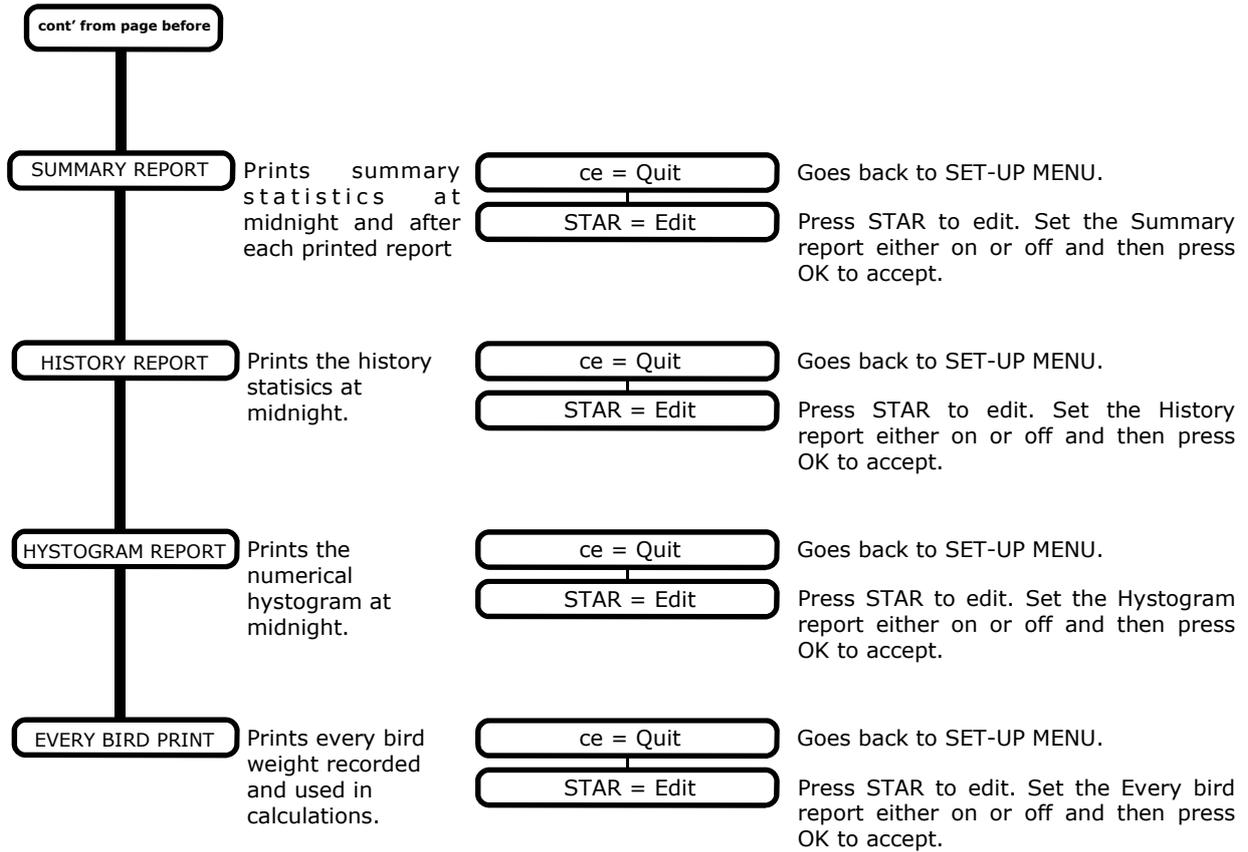
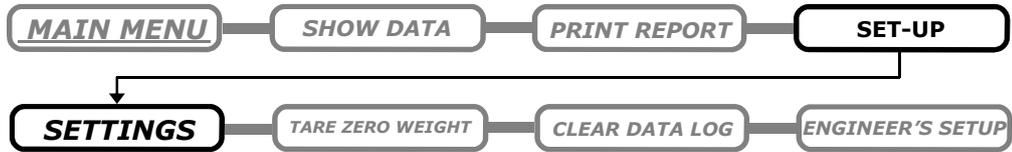


# SET UP

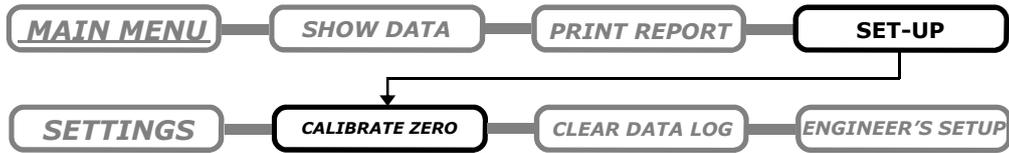


cont' from page before		
ACCEPTANCE LOW %	Shows the current lower acceptance % set for each	<div style="border: 1px solid black; padding: 2px; width: fit-content; margin-bottom: 5px;">ce = Quit</div> <div style="border: 1px solid black; padding: 2px; width: fit-content; margin-bottom: 5px;">STAR = Edit</div> <p style="margin-top: 10px;">Goes back to SET-UP MENU.</p> <p>Use the numeric keys to select a perch number and then press STAR to edit. Set the new lower acceptance in % and then press OK to accept. You can now choose to set all of the channels the same at once or just the individual perch selected.</p>
ACCEPTANCE HIGH %	Shows the current higher acceptance % for each channel	<div style="border: 1px solid black; padding: 2px; width: fit-content; margin-bottom: 5px;">ce = Quit</div> <div style="border: 1px solid black; padding: 2px; width: fit-content; margin-bottom: 5px;">STAR = Edit</div> <p style="margin-top: 10px;">Goes back to SET-UP MENU.</p> <p>Use the numeric keys to select a perch number and then press STAR to edit. Set the new lower acceptance in % and then press OK to accept. You can now choose to set all of the channels the same at once or just the individual perch selected.</p>
EVENNESS	Sets the Evenness limit to be used in calculations	<div style="border: 1px solid black; padding: 2px; width: fit-content; margin-bottom: 5px;">ce = Quit</div> <div style="border: 1px solid black; padding: 2px; width: fit-content; margin-bottom: 5px;">STAR = Edit</div> <p style="margin-top: 10px;">Goes back to SET-UP MENU.</p> <p>Press STAR to edit. Set the new Evenness limit to be used in calculations and then press OK to accept.</p>
GROUP 1	Sets the first Print-group value for the midnight print.	<div style="border: 1px solid black; padding: 2px; width: fit-content; margin-bottom: 5px;">ce = Quit</div> <div style="border: 1px solid black; padding: 2px; width: fit-content; margin-bottom: 5px;">STAR = Edit</div> <p style="margin-top: 10px;">Goes back to SET-UP MENU.</p> <p>Press STAR to edit. Set the new Print group value required (see section GROUPING CHANNELS, page 30) and then press OK to accept.</p>
GROUP 2	Sets the first Print-group value for the midnight print.	<div style="border: 1px solid black; padding: 2px; width: fit-content; margin-bottom: 5px;">ce = Quit</div> <div style="border: 1px solid black; padding: 2px; width: fit-content; margin-bottom: 5px;">STAR = Edit</div> <p style="margin-top: 10px;">Goes back to SET-UP MENU.</p> <p>Press STAR to edit. Set the new Print group value required (see section GROUPING CHANNELS, page 30) and then press OK to accept.</p>
MIDNIGHT PRINT	Prints numerical histogram of birds weighed.	<div style="border: 1px solid black; padding: 2px; width: fit-content; margin-bottom: 5px;">ce = Quit</div> <div style="border: 1px solid black; padding: 2px; width: fit-content; margin-bottom: 5px;">STAR = Edit</div> <p style="margin-top: 10px;">Goes back to SET-UP MENU.</p> <p>Press STAR to edit. Set the Midnight print either on or off and then press OK to accept.</p>
cont' next page		

# SET UP



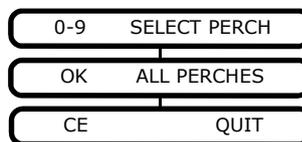
# SET UP



Tare Zero Weight is used to set the "No load" point on each of the perches. The function is mainly used during calibration which is described in greater detail in section TARE ZERO WEIGHT AND CALIBRATION but is also used to simply make the display read zero should the need arise.

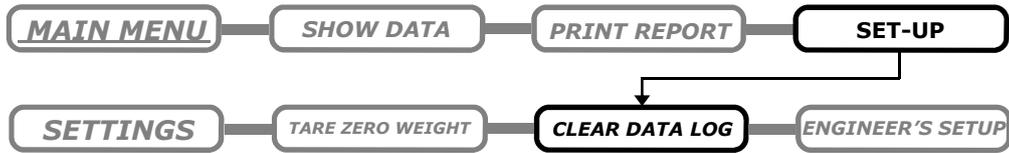
**CALIBRATE ZERO**

Enters the Zero weight routine

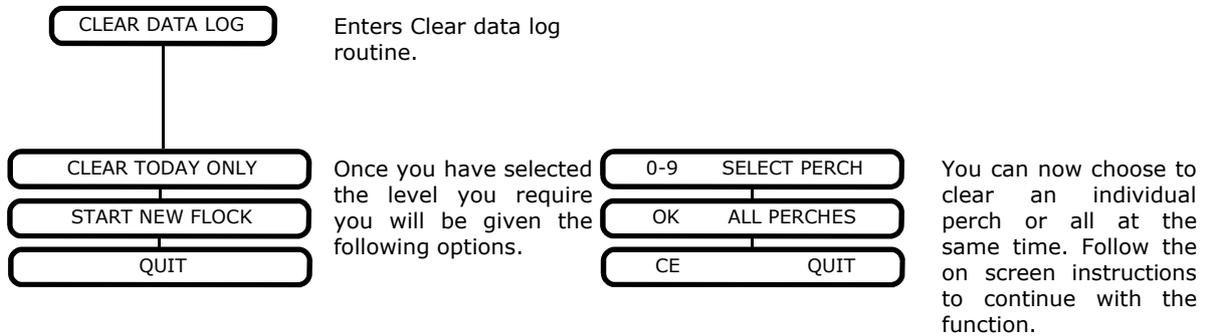


Press a channel number or OK for all. Follow the onscreen instructions to set the no load mark for the platform or to simply make the display read zero.

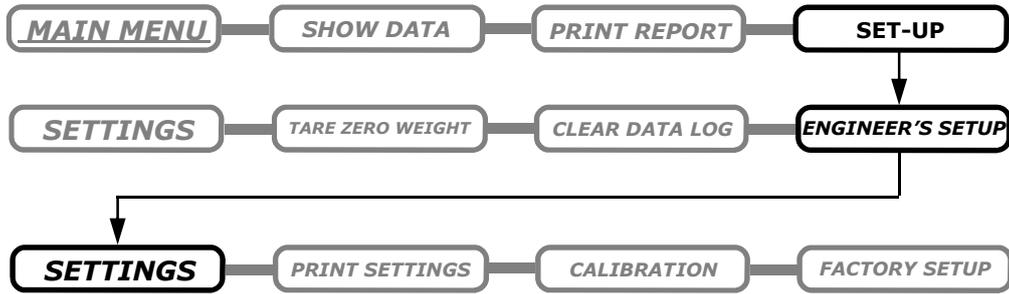
# SET UP



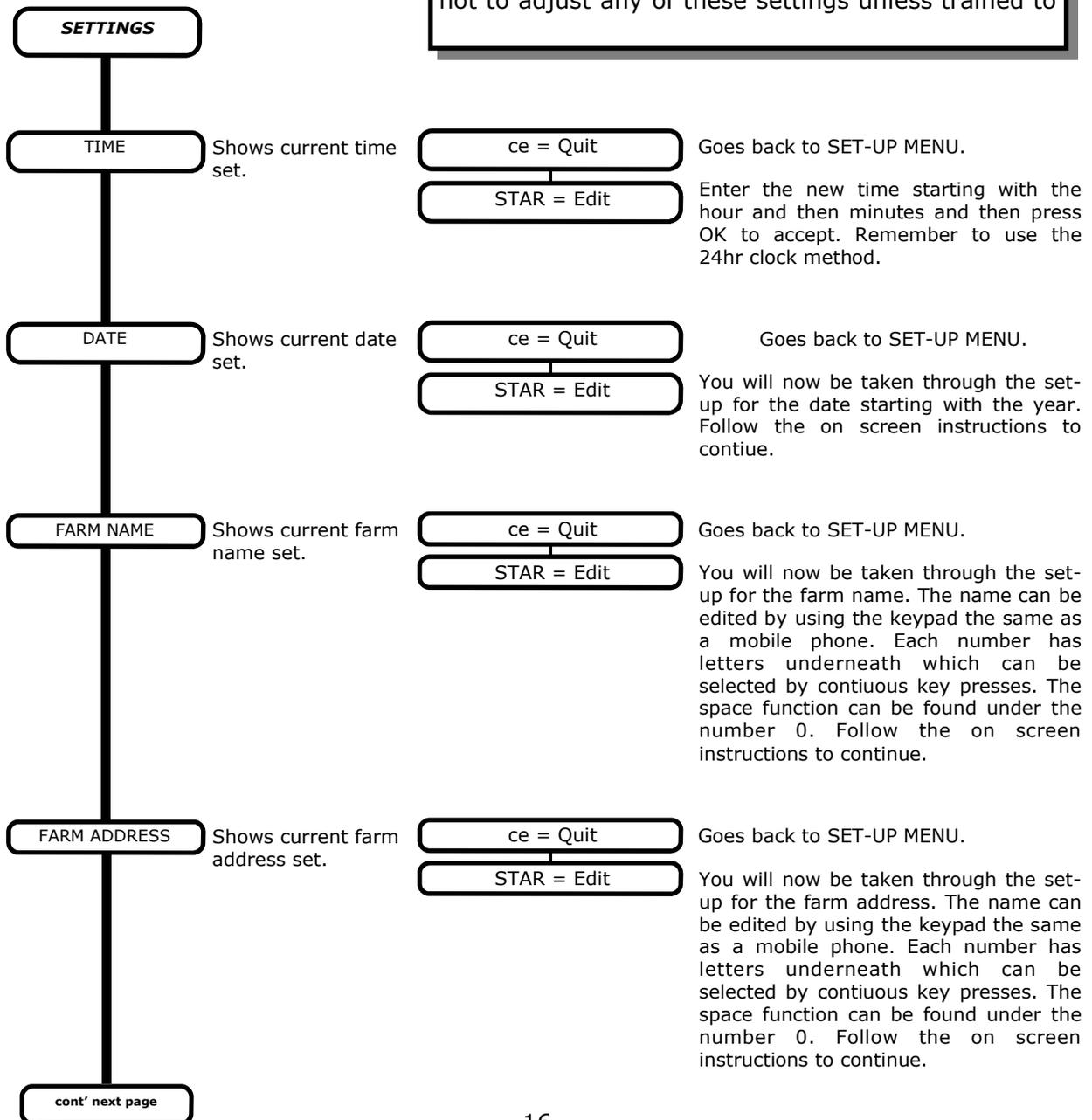
From time to time it will be necessary to clear the data recorded because a change in target weights is needed. Only data is cleared if CLEAR TODAY ONLY is selected and not settings.



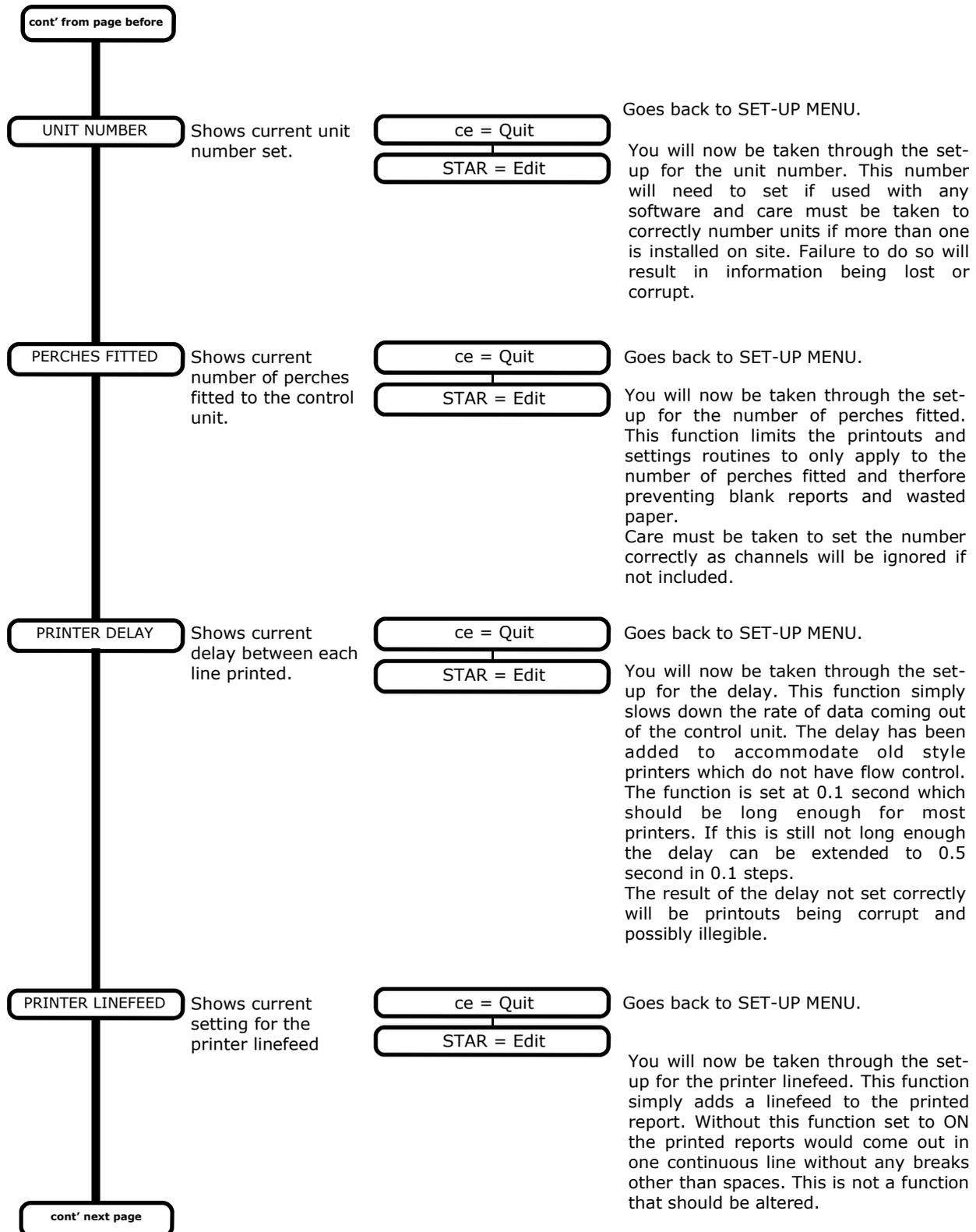
# SET UP



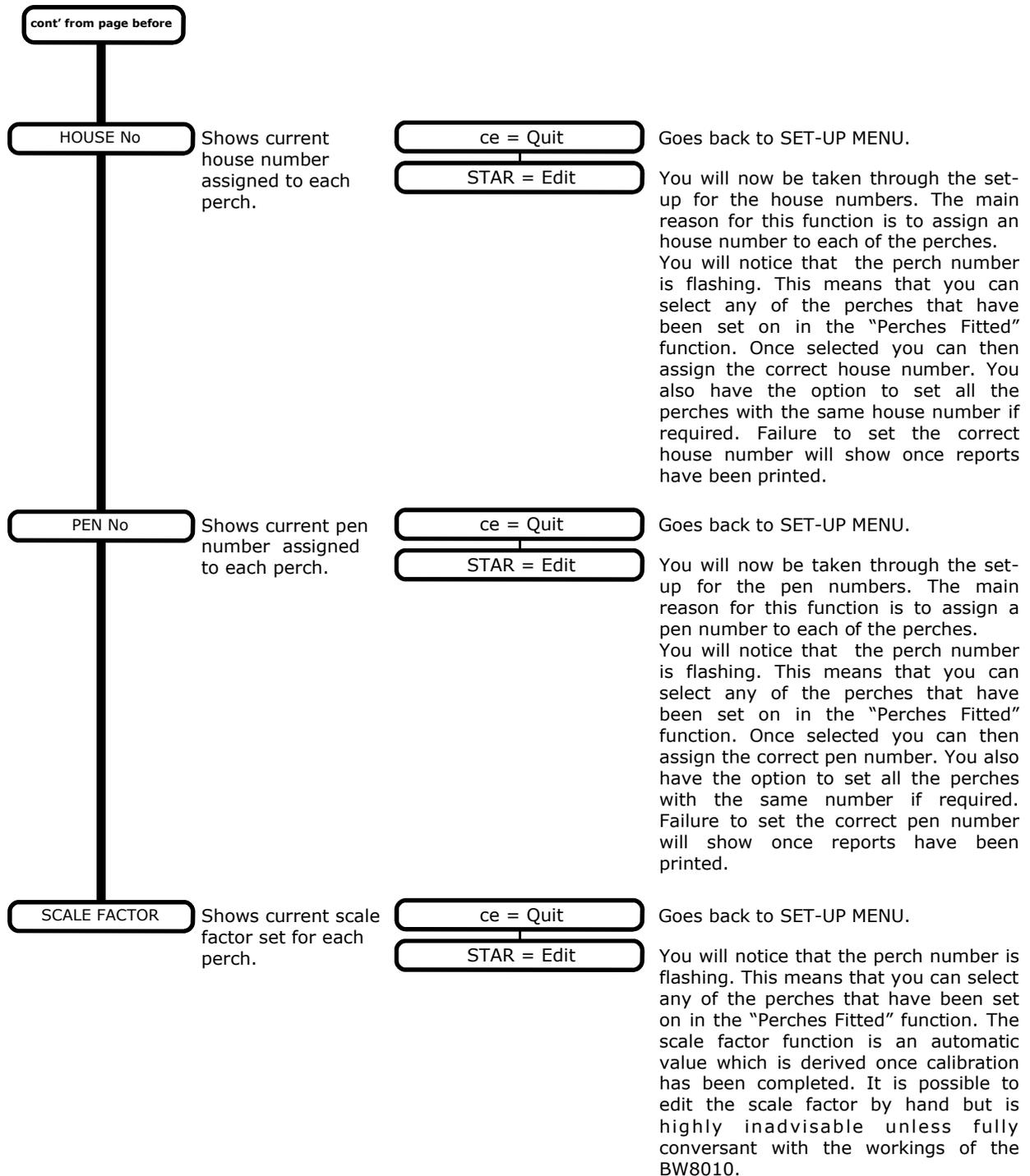
The engineer's SET-UP menu contains settings which normally do not change from one crop to another. It also has another sub menu under the heading FACTORY SET-UP. You are highly advised not to adjust any of these settings unless trained to



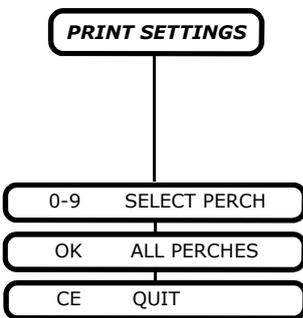
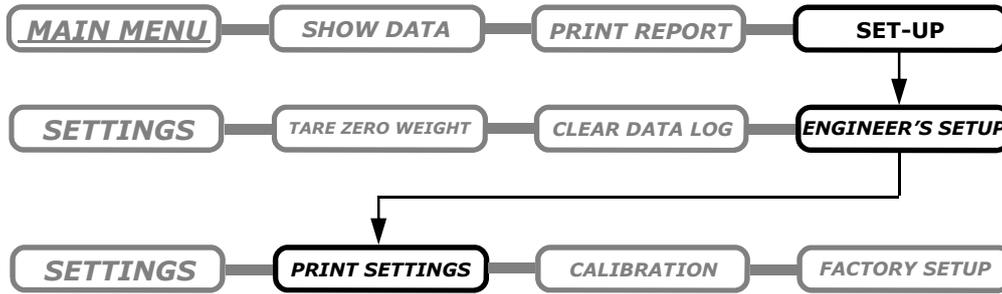
# SETUP



# SET UP



# SET UP

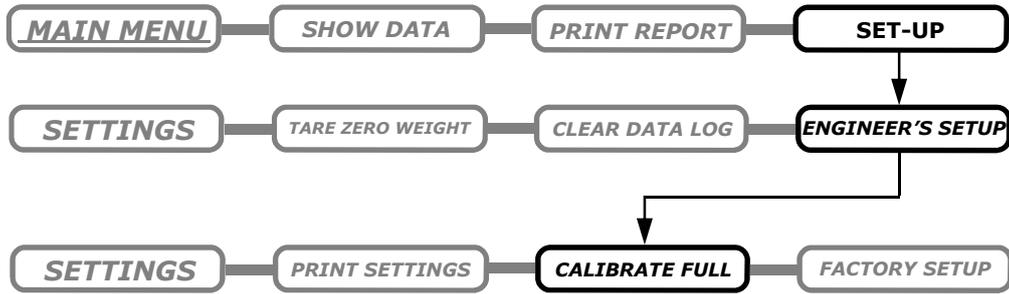


This function is a direct order to the BW8010. Once the perch selection has been made, the controller will print all the current settings starting with the controller's global and function settings. These include settings such as the Baud rates and report types. Afterwards the individual perch settings are printed. These include settings which control the weighing and acceptance.

A sample print-out can be seen below.

<pre>         THE FARM NAME           THE ADDRESS         BW8010 1.7 UNIT 1         Logged 07 APR 03 12:57           SETTINGS REPORT         Serial No.         12211         Weight range         CHICKEN         Comms unit      1         Perches        10         Evenness %         10         Weight unit    KGS         Auto 0 filter  6         Statistics     WELTECH         Modem rate Baud 9600         Print rate Baud 9600         Modem use RTS  OFF         Print use RTS  OFF         Print delay Secs 0.1         Backlight      TIMED         Hourly updates  0         Minimum update  10         Print group 1   1         Print group 2   1         Midnight clear  ON         Midnight print  ON         Summary report  ON         History report  OFF       </pre>	<pre>         --- UNIT 1 PERCH 1 ---               House 1, Pen 1         Accept low %      15         Accept high %    30         Filter jump      24         Filter            2         Stability jump    2         Stability         4         Scale factor       </pre>
--	--

# SET UP

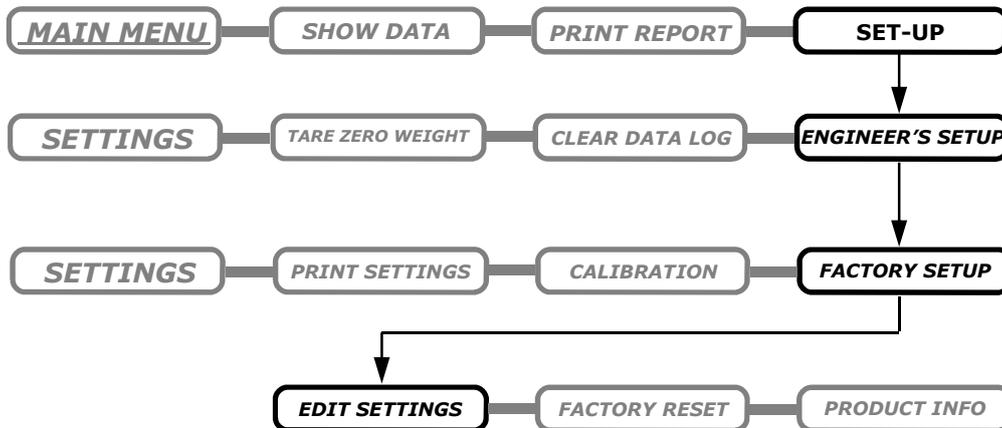


## **CALIBRATE FULL**

CALIBRATE FULL  
WEIGHT TO USE  
VALUE = 5.000KGS  
STAR = EDIT CE = QUIT

Calibration is one of the most important parts of setting up the Bw8010. Because of this it has its own chapter which deals with the process completely including explanation of each step. Please take time to read this chapter thoroughly as it can make a difference to the accuracy of your results.

# SET UP



The factory SET-UP menu contains settings which normally do not change from one crop to another. You are highly advised not to adjust any of these settings unless trained to do so.

## EDIT SETTINGS

### MODEM RATE

Shows current data transfer rate for the modem.

OK = Next

Goes to next item in Set-up

STAR = Edit

The current modem rate is now shown. You can now choose between 1200, 9600 and 19200 Baud. Press OK to accept your choice or CE to quit.

### PRINTER RATE

Shows current data transfer rate for the printer.

OK = Next

Goes to next item in Set-up

STAR = Edit

The current printer rate is now shown. You can now choose between 1200, 9600 and 19200 Baud. Press OK to accept your choice or CE to quit.

### MODEM HANDSHAKE

Shows current setting for the modem handshaking.

OK = Next

Goes to next item in Set-up

STAR = Edit

The current modem setting is now shown. You can now choose between ON or OFF. Press OK to accept your choice or CE to quit.

### PRINTER HANDSHAKE

Shows current setting for the printer handshaking.

OK = Next

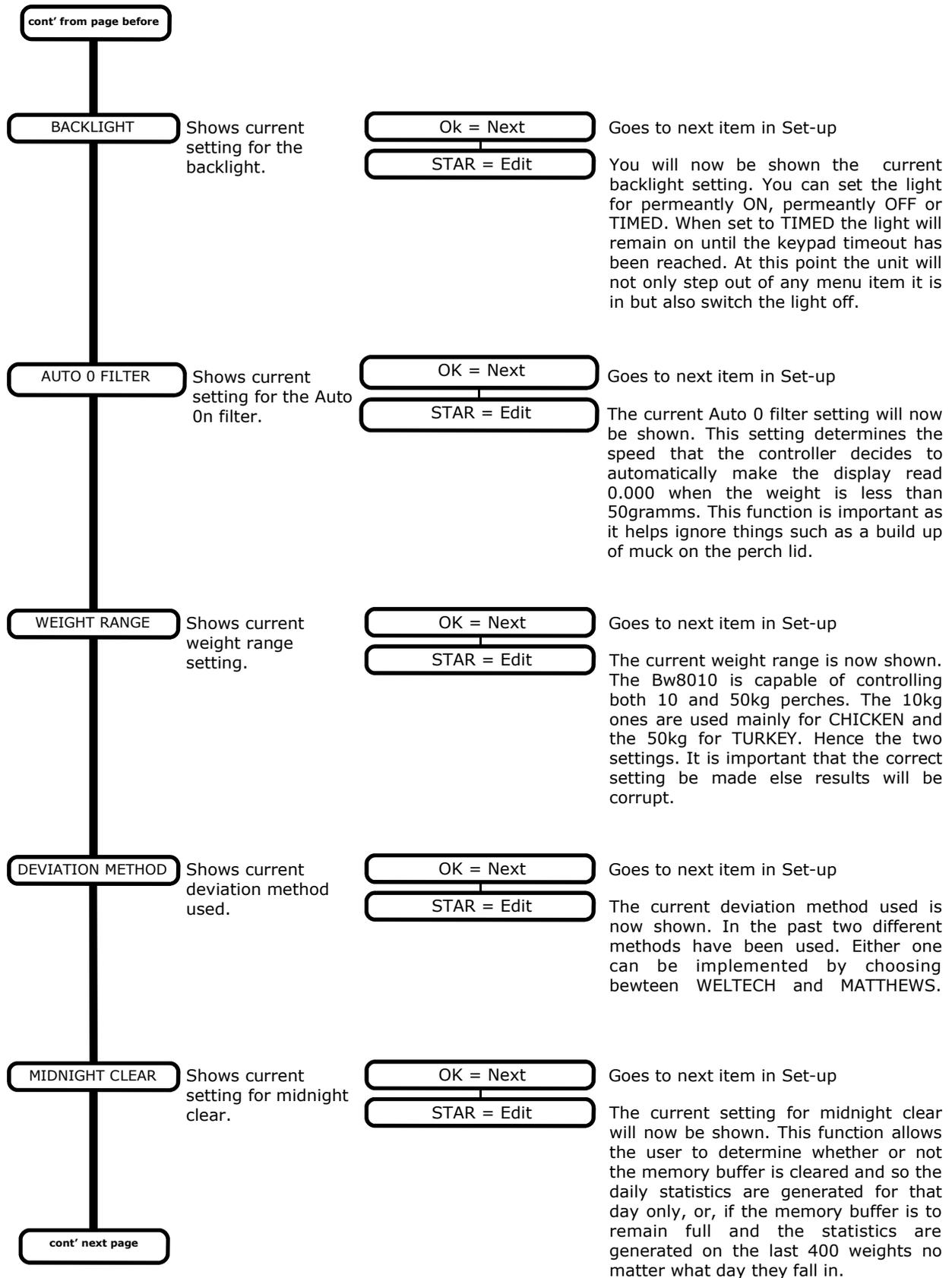
Goes to next item in Set-up

STAR = Edit

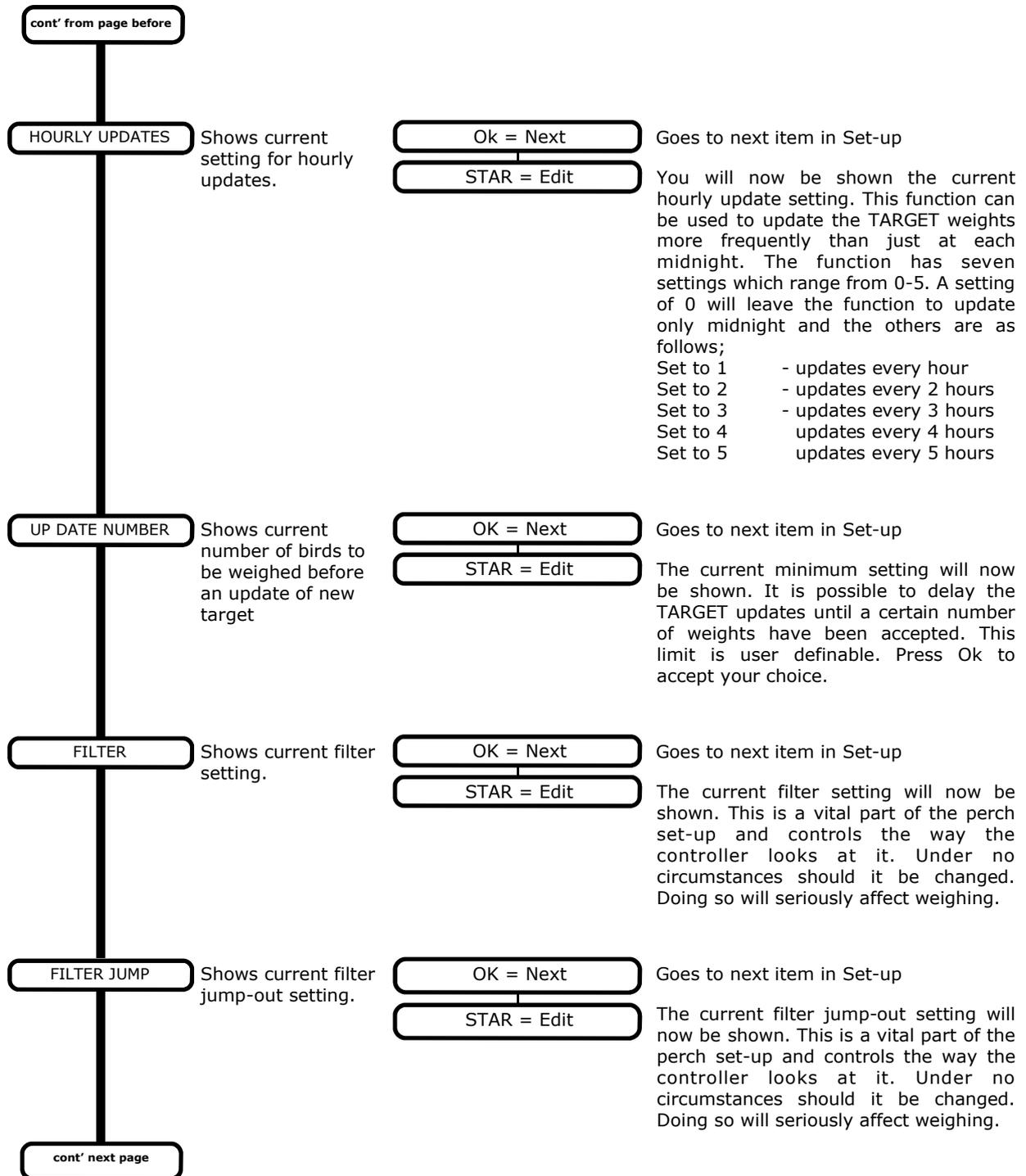
The current printer setting is now shown. You can now choose between ON or OFF. Press OK to accept your choice or CE to quit.

cont' next page

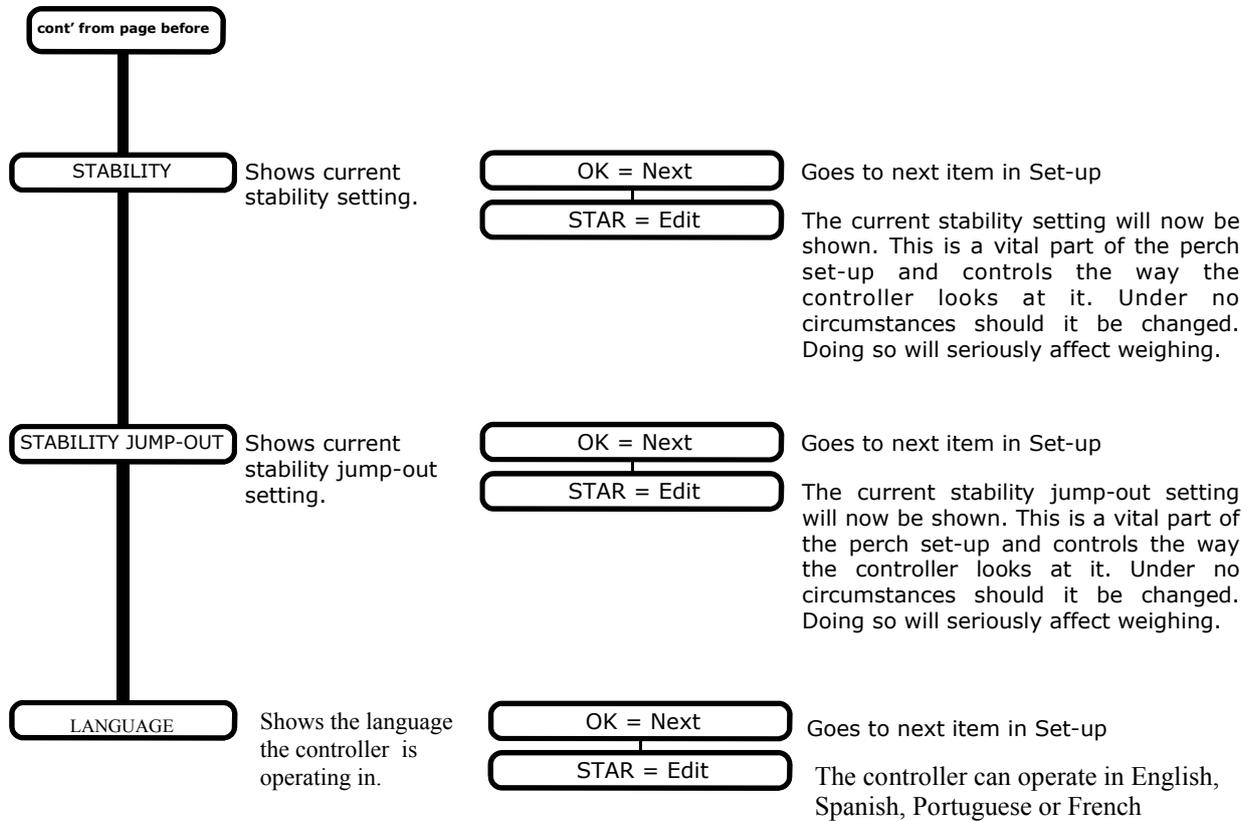
# SET UP



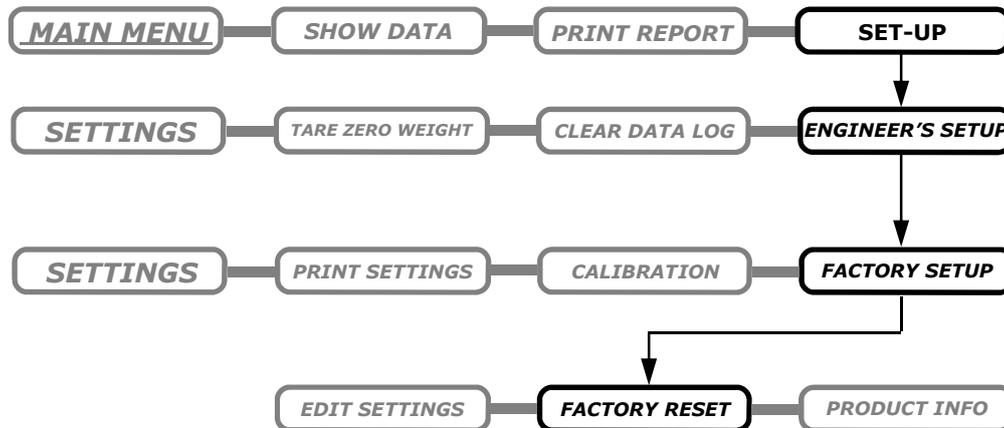
# SET UP



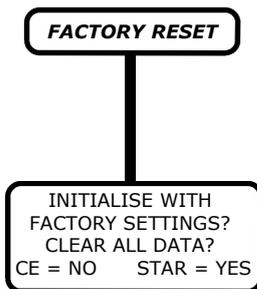
# SET UP



## SET UP



The factory SET-UP menu contains settings which normally do not change from one crop to another. You are highly advised not to adjust any of these settings unless trained to do so.



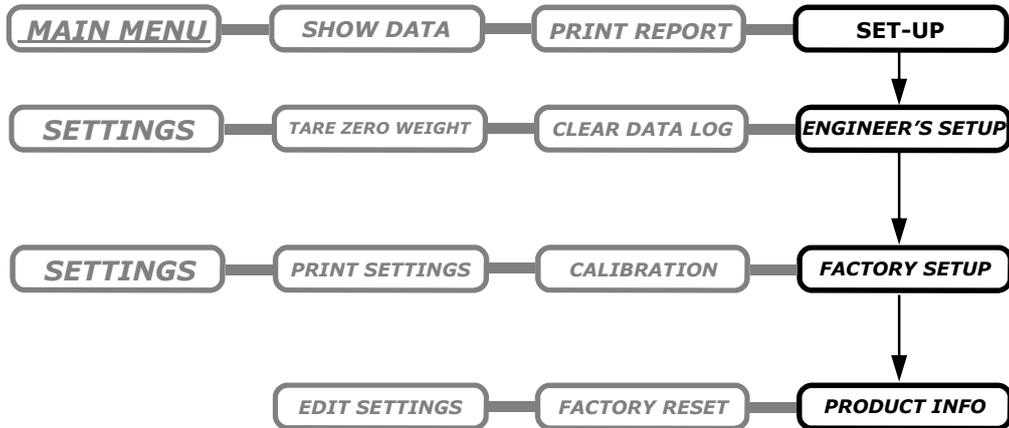
This function should only be used if the unit has been moved from one site to another. Not only does bird data get deleted, but also every setting that has been made specific for the site that it is on. All set-up, engineer's set-up and factory set-up values are returned to default and the farm name and address are cleared.

### **Once the unit has been reset the data is irretrievable!**

If you do decide to continue with the reset you will be asked to confirm several machine settings. Firstly you will be asked to check the time and reset if incorrect. Next will be the date followed by the unit value (metric or USA) and the weight range (chicken or turkey). Once you have completed this the controller asks you one final time if you would like to proceed. If at any time you do wish to exit the routine, simply press the CE button. If you still wish to reset press the star button. The display will show "INITIALISING" and then ask you to press any key to continue. When you do so, the controller will step back into the "Factory Set-up" part of the menu system.

### **RESETTING THE UNIT WILL CAUSE LOSS OF DATA!!**

# SET UP



The factory SET-UP menu contains settings which normally do not change from one crop to another. You are highly advised not to adjust any of these settings unless trained to do so.



This page is purely for information purposes only. It shows the product name, BW8010, the software version, 1.7, the serial number, 12345 and the number of channels that are being used. Once any key is pressed the unit will return back to the Factory Set-up menu.

## TARE ZERO WEIGHT AND CALIBRATION.

One of the most important parts to setting the Bw8010 system up is the calibration. It goes without saying that if the calibration is incorrect, then any weights recorded cannot be taken as true. Once calibration has been completed it should not be necessary to recalibrate again until next crop. Even then, provided that the perches are kept in reasonable storage and are refitted back in the same place they came from, they should still read fairly accurately when test weighed. This said however, periodic checks with a known weight as advised.

What the calibration actually does is to give the controller two points. These are the zero or "no load" and "full scale" points. The controller will receive signals for both of these marks and through simple maths can then work out how much weight is applied to each perch.

For example, if the signal that the controller has for the "no load" point is 0.010 volts and the signal that it has when a 5 kilo weight is put on the perch is 1.385 volts the maths is as follows.

No load	= 0.010v
Full scale (5kg)	= 1.385v
Difference	= 1.375v

Therefore 1 kilo	= 0.275v
and 7 kilo	= 1.925v

When calibrating more than one perch the controller will record separate zero and full scale points for each one. This then takes into account any differences in signals because of cable lengths and tolerances in loadcells. What this means is that if for some reason two perches are swapped over or put back in the wrong place at restocking, the chances are that one perch will read slightly too much when a test weight is put on and the other will read slightly under weight. It is a good idea to mark the perches in some way so that they are kept in the correct place.

The process of calibration can be found on the next page.

## SETTING THE ZERO MARK

The first part of calibration is to give the controller a starting point for each of the perches. The controller will then use the points recorded when doing the maths. Follow the instructions below for ZEROING the perches.

PRESS;



THE DISPLAY WILL SHOW;

```

=====CALIBRATE ZERO=====
0-9      SELECT PERCH
ok        ALL PERCHES
ce        QUIT
    
```

At this point you will have to choose if you would like to set the zero on just one perch or all at the same time.

***Remember***, which ever perch or perches you choose must be completely free from interference from hands or birds. If not, the zero setting maybe incorrect and cause errors in the calibration.

You will now be asked to confirm your decision by the following screen

```

*      CALIBRATE ZERO      *
*      ON ALL PERCHES ?   *
* ce = No      star = Yes *
    
```

Press the CE button to quit and exit without any changes or the star (\*) key to continue.

If you have chosen to continue then the display will show the following.

```

*      CALIBRATING ZERO    *
1 2 3 4 5 6 7 8 9 10
Z Z Z Z Z Z Z Z Z Z
*          ce = Quit      *
    
```

Each time a perch has it's ZERO point set, the character underneath the channel number will change from a X to a Z. If all channels have been selected you should have a line of Zs. Once this has been completed the display will go back to the SET UP MENU. If there is a problem the Z will not be shown for that channel. If so, press the CE button to exit and investigate the problem.

**You must now set the full scale of the perches. A known weight of at least 5 kilos is needed. Follow the instructions on the next page to continue.**

## SETTING THE FULL SCALE POINTS

Once the zeros have been set the controller needs to have a reference point which it can relate to. In this section you will give the controller these reference points so that it can complete the maths.

PRESS;



THE DISPLAY WILL SHOW;

```
====CALIBRATE FULL====  
WEIGHT TO USE  
VALUE = 5.000 KGS  
star = Edit ce = Quit
```

This is displaying the value of the calibration weight which you are using. It is advisable not to use anything less than three kilos. If you do wish to change the value indicated, press the STAR key, enter the new value and press the OK button. If the value displayed is correct press the OK button to continue.

THE DISPLAY WILL NOW SHOW;

```
====CALIBRATE FULL====  
WEIGHT DELAY  
VALUE = 10 SECS  
star = Edit ce = Quit
```

This is displaying the length of time that the calibration weight needs to be on the perch for the controller to make it's recording. If you wish to change this value press the STAR button, enter the new value and press OK. To keep the current setting simply press the OK button to continue.

THE DISPLAY WILL NOW SHOW;

```
====CALIBRATE FULL====  
0-9 SELECT PERCH  
ok ALL PERCHES  
ce QUIT
```

At this point you will have to choose if you would like to set the full scale on just one perch or all at the same time.

THE DISPLAY WILL SHOW;

```
*====CALIBRATE FULL====*  
ON ALL PERCHES  
WITH 5.000 KGS?  
* ce=NO star = Yes *
```

You are now asked to confirm the calibration and weight value. Press the STAR to continue or the CE button to escape from the routine.

**CONTINUED NEXT PAGE...**

If you have chosen to continue then the display will show the following.

```
*   CALIBRATING FULL   *
1 2 3 4 5 6 7 8 9 10
P P P P P P P P P P
*           ce = Quit           *
```

Each of the channels are listed on the second line. The characters underneath represent the condition that the channel is in. For example, when a **P** is shown, that channel is ready for calibration. You now have to place the calibration weight onto the perch. Once the weight is on the character underneath the channel will change to **W**. This indicates that the controller knows that there is a weight on and is starting to measure the signal. At this point the perch must be totally clear from interference from hands or birds. When the controller has finished making it's calculations, the character underneath the channel will change once more to an **X**. This indicates that calibration is now complete for that channel.

Once all the channels have completed calibration and all have an X underneath, the display will show the following.

```
===CALIBRATE FULL ===
HAS FINISHED.

Press any key....
```

**Calibration has now been completed. To start weighing you will need to set a TARGET WEIGHT for each channel which is approximately the average weight of the birds that the perches will be placed with. Please read HOW IT WORKS for more information on TARGET WEIGHTS.**

## GROUPING CHANNELS

The reports have two group settings, each one being a value between **1** and **6**. The table below shows what print out to expect for each setting. For example, a group setting of **5** will print the average statistics in only two groups with channels 1 to 5 in one group and 6 to 10 in the other. However, a group setting of **1** will print out ten individual sets of statistics, one for each perch. The number lists to the right of the table shows the way in which the groups are split.

GROUP VALUE	NUMBER OF GROUPS	GROUPING OF PERCHES
1	10 groups of 1	1,1,1,1,1,1,1,1,1,1
2	5 groups of 2	2,2,2,2,2
3	4 groups of 3	3,3,3,1
4	3 groups of 4	4,4,2
5	2 groups of 5	5,5
6	1 group of 10	10

The reason for two group settings is to give the average statistics of a group of perches that may be in the same shed, or pen, as well as individual ones. However, if this breakdown of is not needed the controller can be set so that it does not waste paper rolls with unwanted information. To do this, simply set both group settings to the same value. Which ever value you choose will be printed only the once.

## BEFORE YOU START WEIGHING

Now that you are ready to start using the Bw8010 controller have you set everything?

The Bw8010 relies totally on three parts of the controller being set correctly. These are;

**ACCEPTANCE**

**CALIBRATION**

**TARGET**

**ACCEPTANCE** is factory set at 30% above the target weight and 15% below. These figures have been derived from many tests completed on all types of birds. The main reason for the lower % below is that lighter birds are more active and will weigh more times on the perches. The effect this has is to give an average weight which is lower than the true one.

**CALIBRATION** is absolutely essential. Without the controller knowing what it is measuring, accurate weights are impossible. Please read the TARE ZERO WEIGHT AND CALIBRATION section carefully and ensure it has been carried out correctly.

**TARGETS** are again essential to weighing. Without the correct targets set the controller will not know where to start. Targets should be taken from the breeders hand books. However once targets have been set, the controller will automatically update itself every 24 hours.

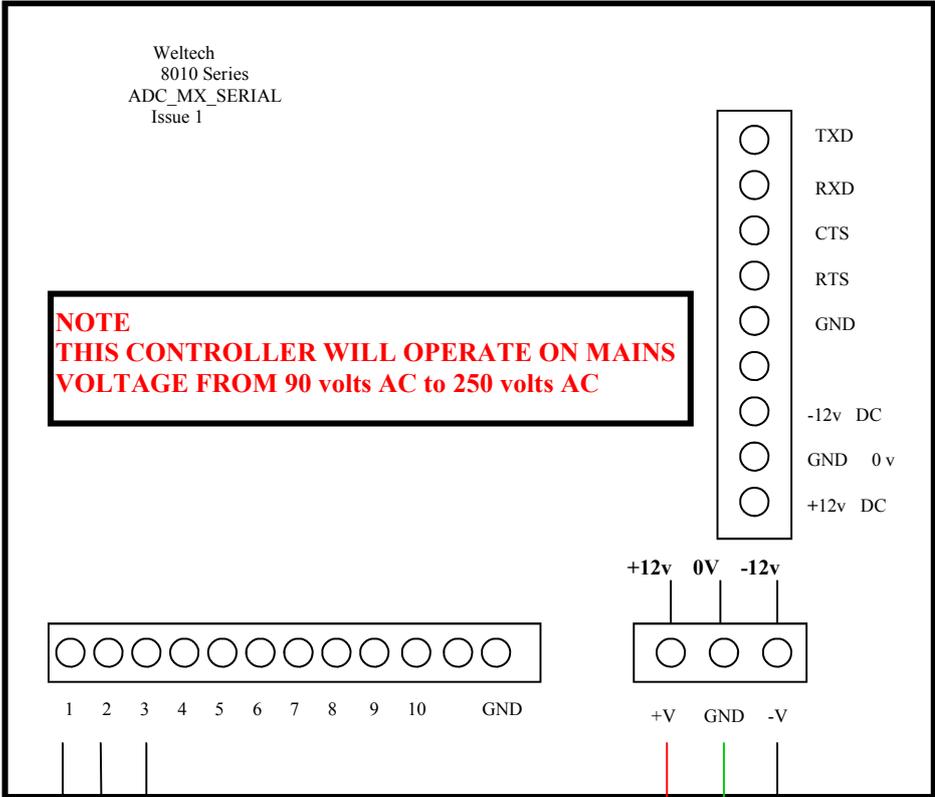
Apart from the essentials above other settings which need to be checked before use are;

**AGE** - make sure the ages are set. If not print outs and downloads will be incorrect.

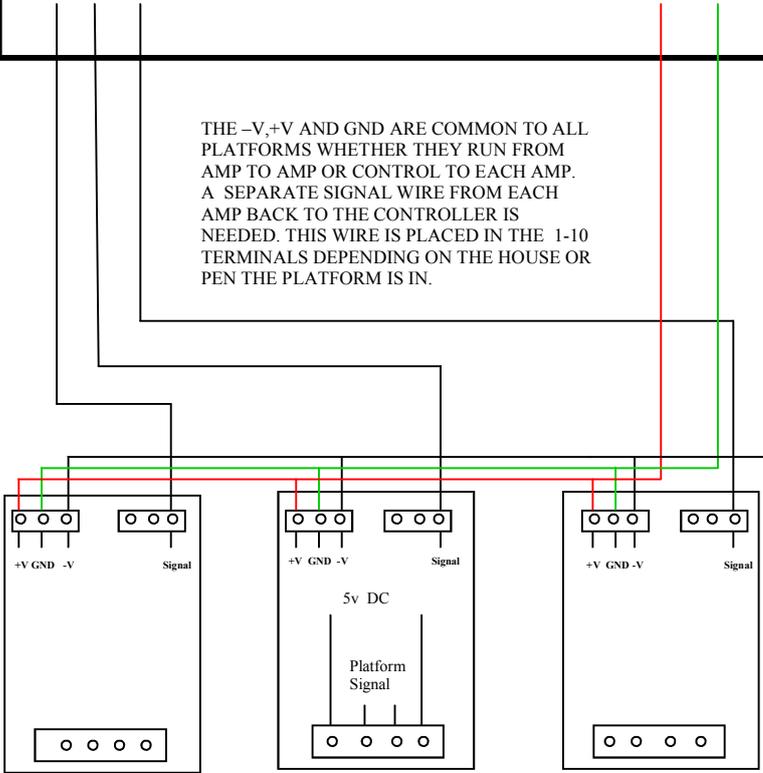
**PRINT SETTINGS** - make sure the print settings are correct if the controller is to be used with a printer.

**GROUP** - make sure the group settings are correct if combined statistics are required.

# 8010 WIRING CONNECTIONS



THE -V,+V AND GND ARE COMMON TO ALL PLATFORMS WHETHER THEY RUN FROM AMP TO AMP OR CONTROL TO EACH AMP. A SEPARATE SIGNAL WIRE FROM EACH AMP BACK TO THE CONTROLLER IS NEEDED. THIS WIRE IS PLACED IN THE 1-10 TERMINALS DEPENDING ON THE HOUSE OR PEN THE PLATFORM IS IN.



Platform 1

Platform 2

Platform 3

Technical /Service problems call:  
Weltech 01480 461611  
Email: [service@weltech.co.uk](mailto:service@weltech.co.uk)