



SCALE / SORTER
OPERATORS MANUAL
(DATED 2004 - PRESENT)



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!!!! CAUTIONS !!!!

NO WELDING
NO PLASMA TORCHING
MAY RESULT IN ELECTRICAL COMPONENT
FAILURE

NO ELECTRICAL DEVICES
STRAY CURRENT MAY RESULT IN
ELECTRICAL COMPONENT FAILURE

PREVENT LIGHTNING DAMAGE
GROUND ALL GATING AND FENCING

ISOLATE THE UNIT FROM ALL
MATERIALS THAT CAN
CONDUCT ELECTRICITY

MAINTAIN CONSTANT
UNINTERRUPTED ELECTRICAL
AND AIR SUPPLIES

DEHUMIDIFIER REQUIRED TO
ASSURE AIR QUALITY

SURGE PROTECTION
USER MUST PROVIDE SURGE PROTECTION
TO INCOMING POWER AND NETWORK
LINES TO MACHINE

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Chore-Time Hog Production Systems, a division of CTB, Inc., ("Chore-Time"), warrants each new CHORE-TIME® product manufactured by it to be free from defects in material or workmanship for one (1) year from and after the date of initial installation by or for the original purchaser. If such a defect is found by Chore-Time to exist within the one-year period, the Chore-Time will, at its option, (a) repair or replace such product free of charge, F.O.B. the factory of manufacture, or (b) refund to the original purchaser the original purchase price, in lieu of such repair or replacement. Labor costs associated with the replacement or repair of the product are not covered by the Manufacturer.

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2. Warranty is void if **all components** of the system are not original equipment supplied by the **Manufacturer.**
3. This product must be purchased from and installed by an authorized distributor or certified representative thereof or the Warranty will be void.
4. Malfunctions or failure resulting from misuse, abuse, negligence, alteration, accident, or lack of proper maintenance, or from lightning strikes, electrical power surges or interruption of electricity, shall not be considered defects under the Warranty.
5. This Warranty applies only to systems for the care of poultry and livestock. Other applications in industry or commerce are not covered by this Warranty.

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Effective 07/04

Chore-Time Hog Production Systems

A Division of CTB, Inc.

P.O. Box 2000 • Milford, Indiana 46542-2000 • U.S.A.

Phone (574) 658-5433 • Fax (574) 658-5325

Email: hog@choretime.com • Internet: <http://www.choretimehog.com>

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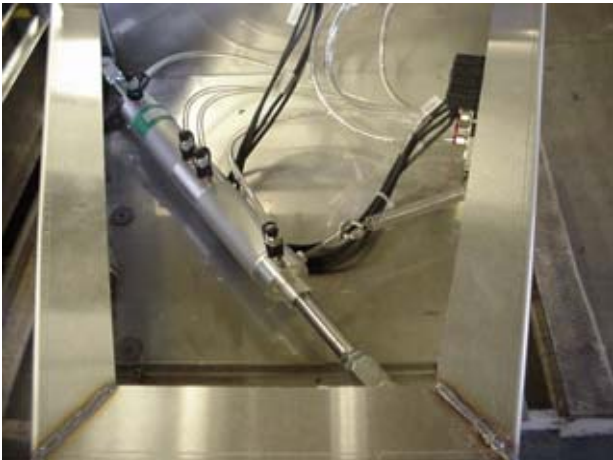
I. HARDWARE OVERVIEW



ENTER GATES



ENTER GATE CYLINDER



EXIT/SELECT GATE CYLINDER



EXIT/SELECT GATE

II. PROCESSOR OPERATION OVERVIEW

The following examples of processor screens give examples of how to move about the screens and make changes, where needed.

UNDERLINED WORDS



To move to the screen on the right, the button to the right of the underlined word “Extra” is pushed. When it is desired to return to a previous screen, a push of the *Back* button is needed.

TAB SCREENS



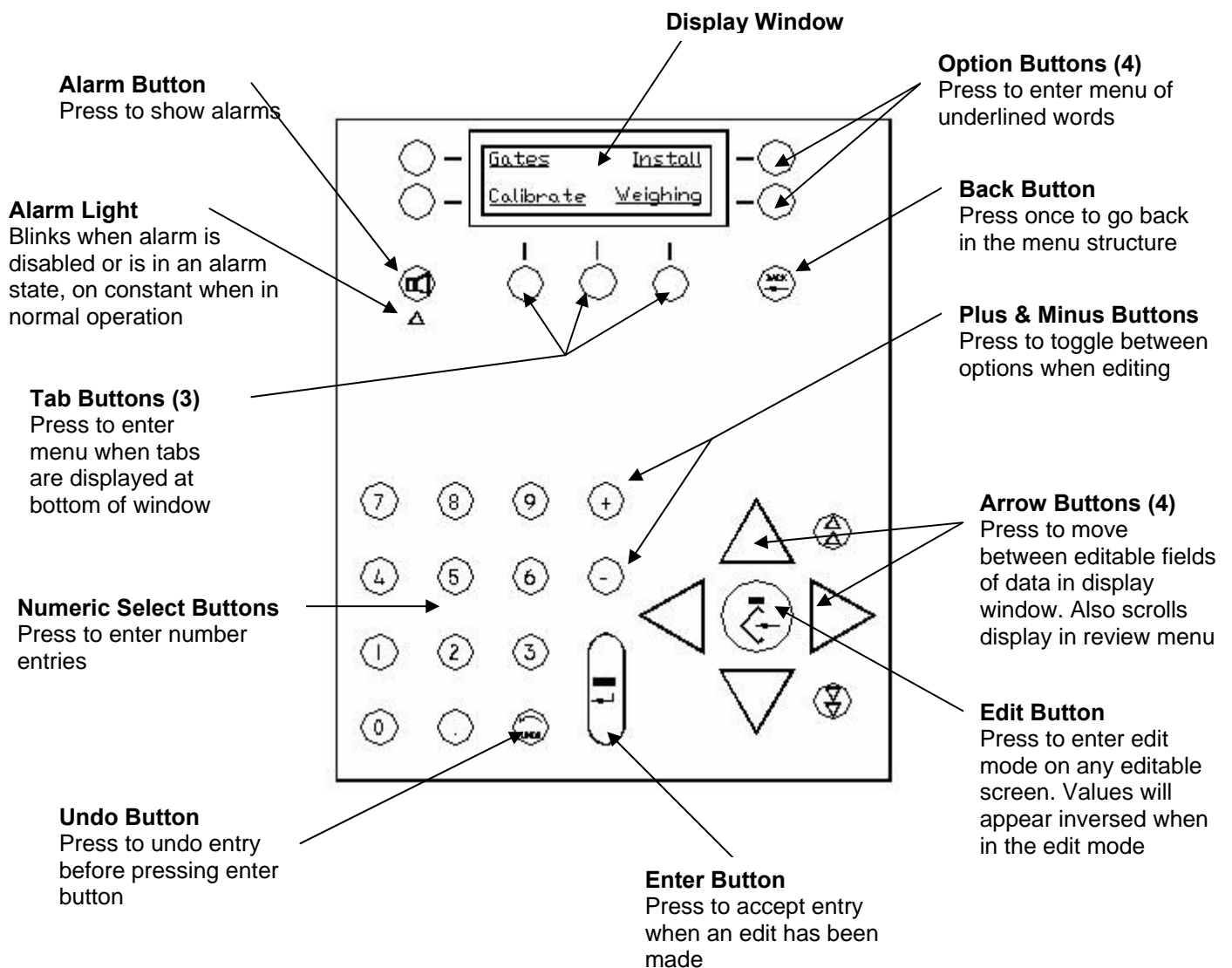
The tabs at the bottom of the screen indicates that various screens can be selected using the corresponding button below each screen tab. The bottom buttons are also used to make a selection when a highlighted option appears at the bottom of the screen.

PREFERANCE OR DATA CHANGES

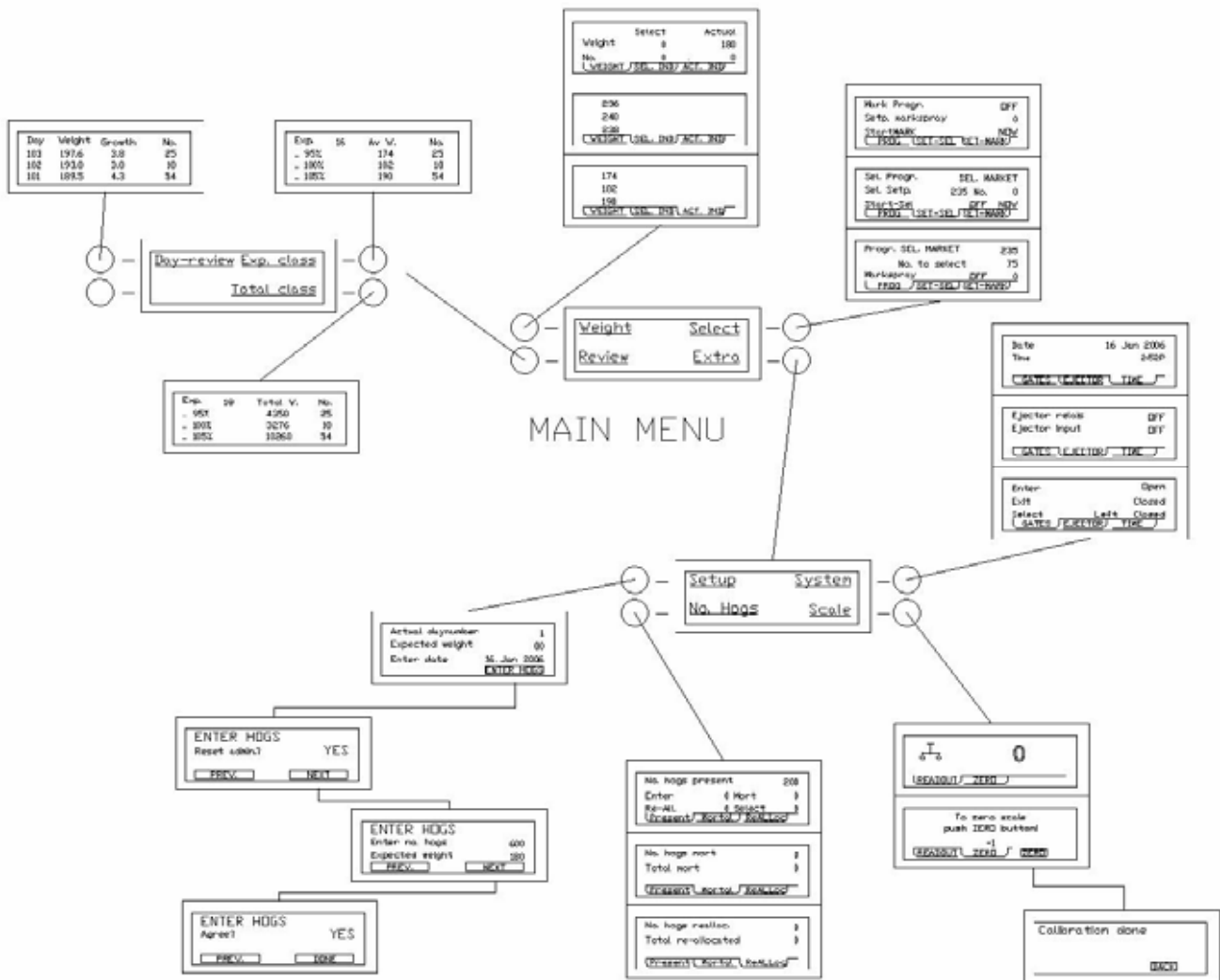


When changing a data field, first push the *Edit* button, this will highlight one of the editable fields. Then using the *Arrow* buttons, the highlight may be moved to the desired field. Once the desired field has been highlighted, the numeric keypad or the Plus/Minus buttons may be used to make the desired change. After all of the changes have been completed, a single push of the *Enter* button is required to save the changes. If an accidental change is made, the *Undo* button may be used to change all of the fields back to the original settings, if pressed prior to pushing the *Enter* button.

III. PROCESSOR OVERVIEW



IV. SETUP & REVIEW SCREENS

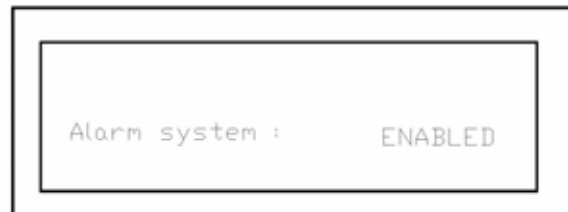


Basic Operation

VI. Reset alarm (after power downs)



1) After power is reapplied to the controller, the above screen will appear.



2) After pressing the *Alarm* button two times, the above screen will appear.



3) After pressing the *Back* button once, the main menu screen will appear.

Basic Operation

VII. Setting the gate mode

There are three operating modes for the gates: auto, manual and weigh only. In the manual mode gates are opened or closed by the operator changing their status. The auto mode weighs and based on the settings sends the animal out the exit or select sides. The weigh only mode acts just like the auto but the animals are all sent to the exit side regardless of weight. By default the controller exits to the animal’s left, selects to the animals right.



- 1) After the *Select* screen and the *Set-Sel* tab has been selected, pressing the Edit button will highlight the selections and then using the *Plus* or *Minus* buttons the selection may be changed to the desired setting. NOTE: If selections are already highlighted, pressing the Edit button will un-highlight the selection.



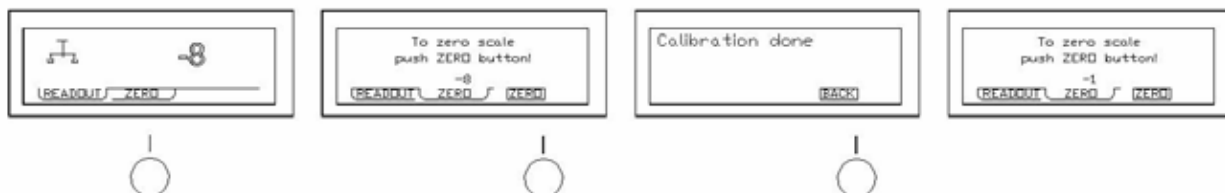
- 2) If it is desired to have the entry or exit gates in something other than the automatic mode, than the *Sel. Progr.* selection must be set to “manual” setting first, to allow access to change the gate settings in step 2.

Basic Operation

VIII. View current weight & zero scale



- 1) The current weight reading of the scale may be read by pressing the *Extra* and then *Scale* button.



- 2) If there is a need to re-zero the scale this may be done by pressing the zero tab button and then pressing the button beneath the highlighted word “zero”. After the “calibration done” appears, the button beneath the highlighted word “back” may be pressed, which will take you back to the Zero tab screen. Care should be taken when zeroing the scale that no animals are interfering with the reading, which will affect the zero setting and the accuracy of the scale.

Basic Operation

IX. Entering day number, expected weight & date (New group setup)

***WARNING:** When these settings are changed, both the historic data in the *Review* menu and the selected data in *Select* menu are cleared!



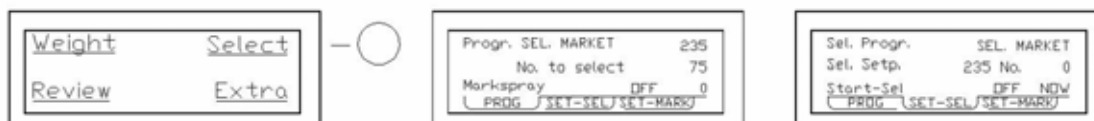
- 1) The setup screen can be used to check when and how long the current group of animals has been in the building. If at this point, the Back button is used, there will be no effect on the historic data.



- 2) When a new group of animals is brought into the facility, the above set of screens will be used to track the new historic data for the group. This information will be used to calculate day numbers, growth and inventory within the review screens.

Basic Operation

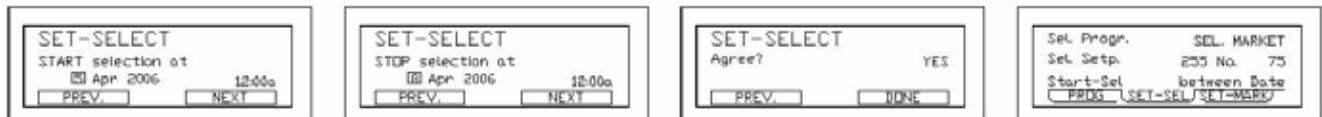
X. Enter select weight



- 1) The Prog and Set-Sel screens will be used to select the weight that it is desired to have sorted off into a separate pen.



- 2) After choosing the Sel. Market option, the minimum desired weight and the maximum number of animals that are needed to be selected are chosen. Next, the select option of either “now” or “between dates” is available.



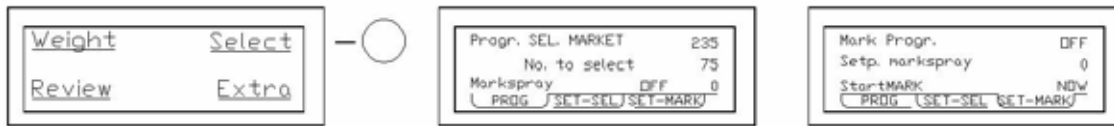
- 3) If the “between dates” option is selected two additional screens will be displayed, allowing the user to specify when the selection is to begin and stop.

Additional selections are available within the Select Program. These options provide some of the following choices:

- Select Market – selects those animals over a given minimum weight and it can be specified the maximum number of animals selected. If the scale assumes that two animals are on the scale, using the expected weight input, then they will be returned to the Exit side of the sorter.
- Select Market + – selects those animals over a given minimum weight and it can be specified the maximum number of animals selected. If the scale assumes that two animals are on the scale, using the expected weight input, then they will be selected to the Select side of the sorter.
- Exit All - weights and then releases each animal to the Exit side of the sorter. The measured weights are then saved and can be reviewed.
- Manual - No weights are measured and must be used to manually control the Enter and Exit/Select gates.
- Select All - weights and then releases each animal to the Select side of the sorter. The measured weights are then saved and can be reviewed.
- Select Small - selects all those animals under a given maximum weight.
- Select Small Mean - selects those animals under a given maximum weight and it can be specified the maximum quantity of animals selected.

Basic Operation

XI. Enter markspray weight



- 1) The Prog and Set-Sel screens will be used to select the animals that it is desired to have marked using the markspray.



- 2) After choosing the Sel. Markspray option, the first option is the mark mode. This provides an option for which animals are needed to be marked. Next, the select option of either “now” or “between dates” is available.



- 3) If the “between dates” option is selected two additional screens will be displayed, allowing the user to specify when the selection is to begin and stop.

Additional selections are available within the Set-Markspray Program. These options provide some of the following choices:

- a. Off – turns the markspray off.
- b. Once – provides one shot of the dye, which might be used while priming or trouble shooting the markspray equipment.
- c. Below – marks all those animals that are below the markspray set-point, which might be used to mark those animals that may require medical attention or not keeping up with the group.
- d. Above - marks all those animals that are above the markspray set-point, which might be used to mark those animals that just missed the selection weight and might be used to finish a load.
- e. All - marks all the animals that are weighted across the scales, which might be used to verify which animals crossed the scale during a given time frame.

Basic Operation

XII. Weight review



- 1) The Actual Individual screen is used to view the weights of all the animals that were weighted across the scales. The Select Individual screen is used to view the weights of the animals that were weighted and selected. The Weight screen is an overview screen showing the average weight and number of animals that were selected under the "Select" column. The "Actual" column shows the expected weight and the number of animals that went to the exit side of the sorter.



- 2) The Day-Review screen gives the days that the group has been in the facility, the average animal weight per day, the growth rate per day, and the number of animals that were weighted each day across the scales.



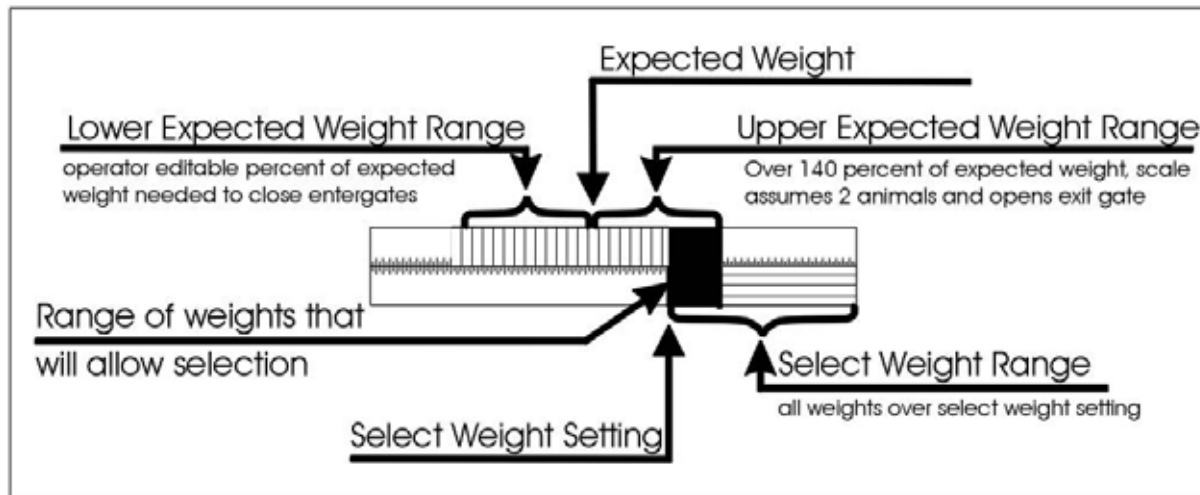
- 3) The Expected Class screen gives the average weight as a percentage of the expected weight, and the number of animals that were weighted within each weight group.



- 4) The Total Class screen gives the total weight as a percentage of the expected weight, and the number of animals that were weighted within each weight group.

Technical Notes

XIII. Relationship between expected and select weights



The expected weight is an editable setpoint that is used as a basis to control gate operation (see Installation set-up, setting gate times and weight percentages). The expected weight should be thought of as the average weight of all the animals that will be weighed by the sort unit. Every hour the processor will automatically update the expected weight to reflect the average weight of all the animals weighed in the prior 24 hours.

The select weight is an operator editable feature that is the weight at which the operator wants to select the animals.

The Expected Weight Range includes both the Lower Expected Weight Range and the Upper Expected Weight Range. The lower expected weight range is between the expected weight and a percentage of the expected weight that is defined by the operator. The upper expected weight is between the expected weight and 1.4 times the expected weight. Above 1.4 times the expected weight, the controller assumes there are two animals in the scale and opens the gate to the exit side to send them to the feed court.

The Selection Weight Range is simply all weights heavier than the Select Weight Setting.

The Range of weights that will allow selection is the range of weights that are within BOTH the Selection Weight Range and the Expected Weight Range.

When setting the expected weight for the first time, perform the following math to insure that the unit will have the proper parameters to function as desired.

1) Determine the percentage of expected weight that has been set in the Enter Gate parameters (see the Installation set-up section, gate set-up for information to help navigate to desired display). Record this number for use in the following formula.

2) Calculate the approx. average weight of the pen to be weighed by measuring 10 animals. Use this number as your expected weight in the formula and input in the setup menu.

Formula A

_____ Expected Weight (from #2 above)
x . _____ Enter gate percentage (from #1 above) as a decimal
_____ This is the lightest animal that will activate the unit

Formula B

_____ Expected Weight (from #2 above)
x 1.40 Percentage of expected weight (as a decimal) that will
Cause the control to assume two animals are in the
Scale, resulting in the gate opening to the exit side.
_____ An animal more heavy than this is seen as 2 and will
Be exited back to the light side.

These answers give you the Expected Weight Range, from the lightest (Formula A) to the heaviest (Formula B) weights that any animal in the group may be and still allow normal selection using the expected weight entered. If you believe this range does not cover all the animals in the group, adjust the expected weight accordingly and repeat the formulas until you are confident you have an expected weight number that will work for your application.

The select weight you choose must be below 1.4 times the expected weight to have any effect. For example, if you have chosen an expected weight of 200 lbs. and the enter gate is set to close after 60% of the expected weight is attained, the Expected Weight Range is 120 lbs. (200 x .6) to 280 lbs. (200 x 1.4). The select weight must be within this range for the unit to work properly. If a select weight of 250 lbs. is chosen, the Select Weight Range is all weights above 250 lbs. and within the expected weight range, yielding a Range of weights that will allow selection from 250 lbs. to 280 lbs.

NOTE: If a select weight is chosen that is more than 140% of the expected weight no animals will be selected.

Additional Examples:

1) 100 lb. Expected Wt.; 60% gate; = 60 lb. to 140 lb. Expected Wt Range
125 lb. Select Wt. = 125 lb. to 140 lb. Range that allows selection

2) 75 lb. Expected Wt. ; 50% gate; = 37.5 lb. to 105 lb. Expected Wt Range
90 lb. Select Wt. = 90 lb. to 105 lb. Range that allows selection

3) 180 lb. Expected Wt.; 60% gate; = 108 lb. to 252 lb. Expected Wt Range
170 lb. Select Wt. = 170 lb. to 252 lb. Range that allows selection

4) 180 lb. Expected Wt.; 60% gate; = 108 lb. to 252 lb. Expected Wt Range
260 lb. Select Wt. = greater than 260 lb. to less than 252 lb. results in a Range that
will never select hogs

NOTE:

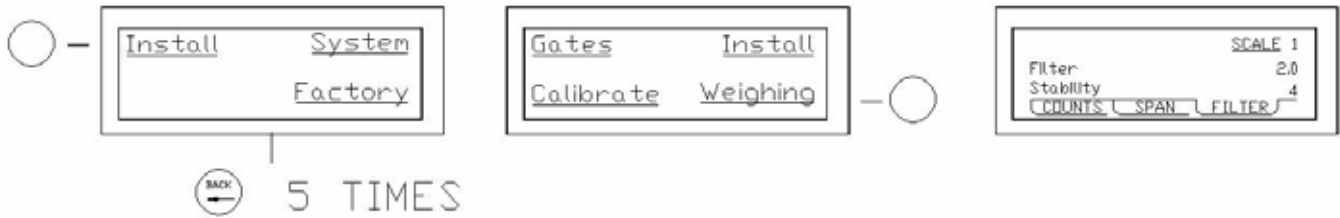
Herd Variance - If the lightest animal is less than half the weight of the heaviest animal presort is recommended to separate small animals out.

WARNING:

When either the day number or expected weight settings are changed both the historic data in the Review menu and the selected data in Select menu is cleared!

Technical Notes

XIV. Relationship between filter and stability



The sensitivity of the scale is controlled with two items, Filter and Stability. While these are both editable features, it is not recommended that these features be changed unless special circumstances exist. This section is meant to educate the operator and aide in trouble shooting.

During normal operation the scale takes multiple weight samples.

Filter refers to the number of seconds the weight must remain within a range to be stable.

This range is set with the Stability setting.

Stability is the percentage of the expected weight that the reading from the scale may vary.

The default settings from the factory are:

Filter: 2.0

Stability: 2

Technical Notes

XV. Gate operation and variable parameters

The scale utilizes gates to control the animal's movement into the unit, then holding the animal while weighing takes place, and finally sending the animal out of the unit through one of two exit directions. Properly set, this cycle takes place automatically, with no trauma to the animals. The settings allow operator input that can fine-tune the unit to the special needs of a particular operation.

Modes

There are three operating modes for the gates: auto, manual and weigh only. In the manual mode gates are open or closed. The auto mode weighs and based on the settings sends the animal out the exit or select direction. The weigh only mode functions just as the auto mode but all the animals are sent in the exit direction regardless of weight.

Entry Gates

The animals enter the unit through a pair of gates. During normal operation these enter gates are in an open position until an animal enters and the scale registers the new weight being added. When a weight is sensed that is determined by the operator as a percentage of expected weight, the processor will close the entry gates to confine the animal for weighing after a delay set by the operator.

More detailed information concerning how to edit expected weight and delay seconds is covered in the "Installation set-up" section under setting gate times and percentages.

The percentage of expected weight is set to 50% by the factory. This means that when 50% or half of the expected weight is detected in the scale the delay seconds countdown begins. The delay seconds is set to 5 seconds by the factory. The delay should allow enough time for the animal to completely enter the scale without allowing another animal to sneak in behind.

Safety

As a safety feature, if the enter gates are not fully closed 4 seconds after the processor signals to close them, the processor assumes an animal has been caught in the gates and they reopen and the process begins again. This safety is based on a reed switch located on the enter gate air cylinder.

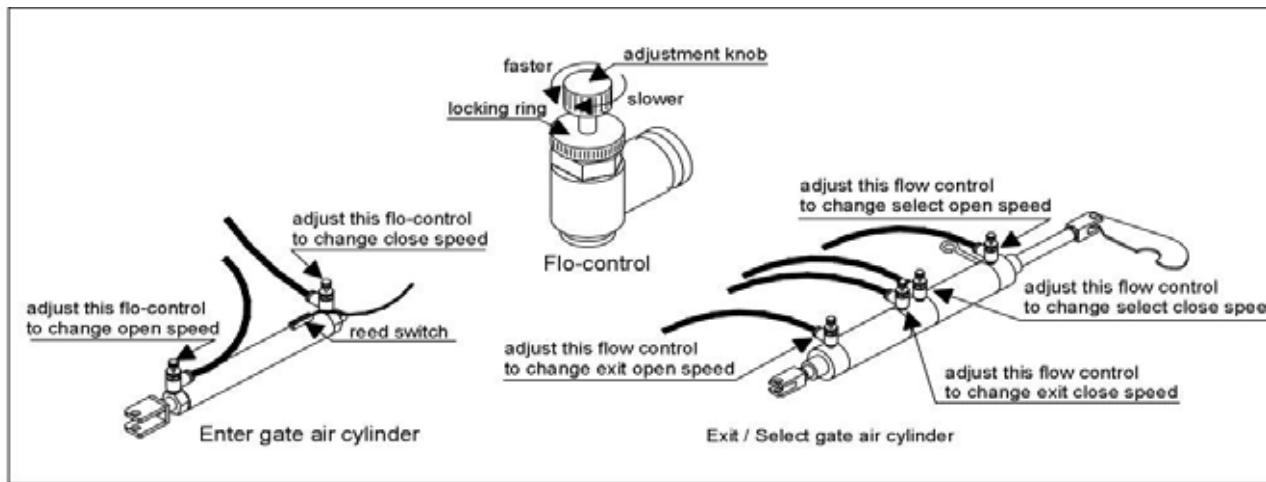
Exit / Select Gate

After the animal's weight is determined, it exits the unit through a gate that swings to the left or right allowing the unit to direct the animal to one of two pens. By default the processor exits to the animals to the left and selects the animals to the right. This gate is referred to as the "Exit / Select Gate" and it's opening direction is determined by the weight of the animal and the operator's desired select weight (more information on this subject in Technical notes, expect / select weight). After the gate opens to let the animal leave the scale, it refers to the gate settings for closing instructions. This gate uses the same type of settings as the enter gates with the exception that in this case the percent of expected weight is set so that when the scale reads a weight below this percentage weight setting it begins the delay to close. Note that the processor actually views this gate as two separate gates (exit gate and select gate) and allows these settings to be edited separately for each gate (more detailed information concerning how to edit both of these features is covered in the "Installation set-up" section under setting gate

times and percentages). The factory settings for these gates are the same, 5 seconds after weight drops below 50% percent of expect weight.

Adjusting Gates for Speed, Pressure and Opening Width

The opening and closing speeds of both the enter gate and the exit / select gates are adjustable using the flow controls on the air cylinders. These controls are set at the factory but can be adjusted on site if desired. These flow controls regulate the air leaving the cylinder rather than entering the cylinder, so if you are trying to change the opening speed you adjust the flow control on the end of the cylinder with the close airline connected. To restrict the air flow (slowing movement) turn the Adjusting Gates for Speed, Pressure and Opening Width adjustment in a clockwise direction. The enter gate has its own air pressure regulator to control the force used to close the gates. During regular operation the air pressure should be set at 40psi. When smaller animals are being run through the unit, the entry gate opening can be reduced to lower the possibility of two animals entering at once. Restrict the opening by pinning the chain attached to the entry gate linkage, in a link making the chain shorter.



XVI. Setting date & time



- 1) The clock and date can be set using the General screen. The date will be set using the day-month-year format. The Clock Type may be set to either 12 or 24 hour setting. If the Clock Type is set to 12 hour, than the Time will be set to the standard, shown format, using the AM/PM display. If the Clock Type is set to 24 hour, than the Time will be displayed in a “military” format, which would be 14:35 for the same time as shown above. NOTE: When entering the Time, a period (.) will be used to enter the hyphen (:).

Installation set-up

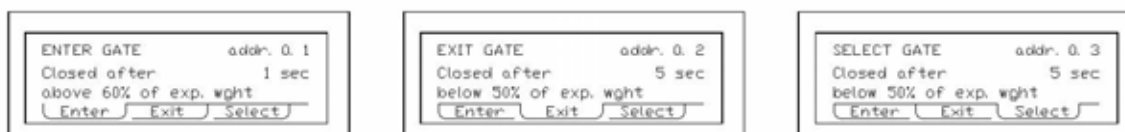
XVII. Setting gate times and percentages

WARNING: DO NOT CHANGE THE GATE ADDRESS [Example: Select Gate addr. 0.3]

NOTE: WHILE THE EXIT/SELECT GATE IS PHYSICALLY ONLY ONE GATE THAT MOVES TWO DIRECTIONS, THE CONTROLLER HANDLES IT AS TWO SEPARATE GATES



- 1) The gate times and percentages can be set using the Gates screen. If at any time the gate addresses are accidentally changed, they should be returned to the defaults, shown below.



- 2) Each gate may set to close after a given time and percentage of the expected weight.

EXAMPLE: If the expected weight has been set to 200 pounds and an animal starts to step onto the scale, as soon as the scale is measuring 120 pounds, the scale waits one second more and than starts closing the Enter Gate. After the animal has been weighted, then either the Exit or Select Gate will open, as determined by the weight and gate mode, after enough of the animals weight has left the scale for the amount of weight still measured by the scale to have dropped below 100 pounds, the scale waits five more seconds and than starts closing the Exit/Select Gate.

Installation set-up

XVIII. Calibrating the scale

This calibration is done at the factory and should only be required if a control board or load cell are changed. Use these directions in the event they need to be re-entered. The calibration process will require the use of an object of known weight that can be placed in the scale. It is recommended that the object be at least 200 lbs.



- 1) If there are animals moving across the scale, it will be necessary to close the sorter to prevent the animal activity from influencing the calibration process. First, the controller must be set to the Manual setting.



- 2) Next, the Enter and the Exit/Select gates will need to be changed to the Closed setting.



- 3) If the Zero screen is not showing a reading of "0", then the button beneath the highlighted Calibration button needs to be pressed to first zero the scale. After the scale has been zeroed, press the Span button, then the known weight may be loaded into the basket. If the Calibration Weight readout does not match the Weight Readout, then, using the numeric keypad, the reading needs to be changed and then press the Calibration button. After the Calibration Weight has been set, the weight should be removed and the Zero screen rechecked to verify that the reading returns to "0".

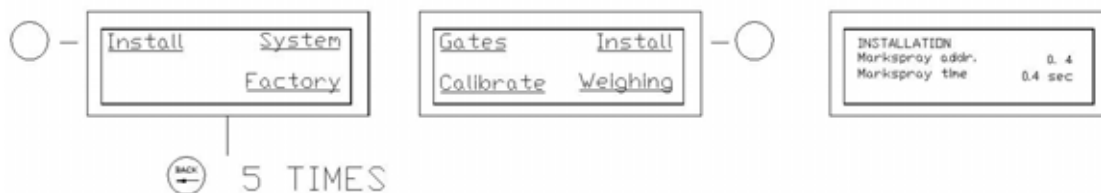


- 4) After completion of the calibration process, the controller may be returned to the desired Select Program option.

Installation set-up

XIX. Setting markspray times

WARNING: DO NOT CHANGE THE MARKSPRAY ADDRESS [Example: Markspray addr. 0.4]



- 1) The markspray time can be set using the Install screen. If at any time the markspray address is accidentally changed, it should be returned to the default, shown above.

Trainer Operation

XX. Setup and operation

The sorter can either be set for the use of the Trainer gate or the markspray and a change to both addresses is required for proper operation of either. The following are the required address settings for the desired mode of operation:

Trainer

Markspray address: 0.0

Ejector address: 0.4

Markspray

Markspray address: 0.4

Ejector address: 0.0

NOTE: If both addresses are left at 0.4, both the Trainer gate and the markspray will operate, but the markspray will continue to mark through out the movement of the Trainer gate.



- 1) This sample change is changing from the markspray usage to the Trainer gate but to change from the Trainer gate to markspray will be performed using the same steps. After bringing up the Install screen and selecting the Marker tab, highlight the Markspray address and change it from 0.4 to 0.0.



- 2) Next, select the Ejector tab and change the Ejector relay address from 0.0 to 0.4. Caution should be taken that the Ejector input address is not changed.
- 3) The Start timing can be set for the time delay between the exit / select gate opening, and operation of the Trainer gate.
- 4) The Close timing can be set to delay the Enter gate from opening until after the Trainer gate has been fully retracted to avoid premature entry to the scale .
- 5) To turn the Trainer gate off, it is necessary to change the Ejector relay address to 0.0.

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P.O. Box 2000, Milford, Indiana 46542-2000 • U.S.A.

Phone: (574) 658-5433 • Fax: (574) 658-5325

E-mail: hog@choretime.com • Internet: www.choretimehog.com

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