

# SortAll® Revolution 2 - User Manual



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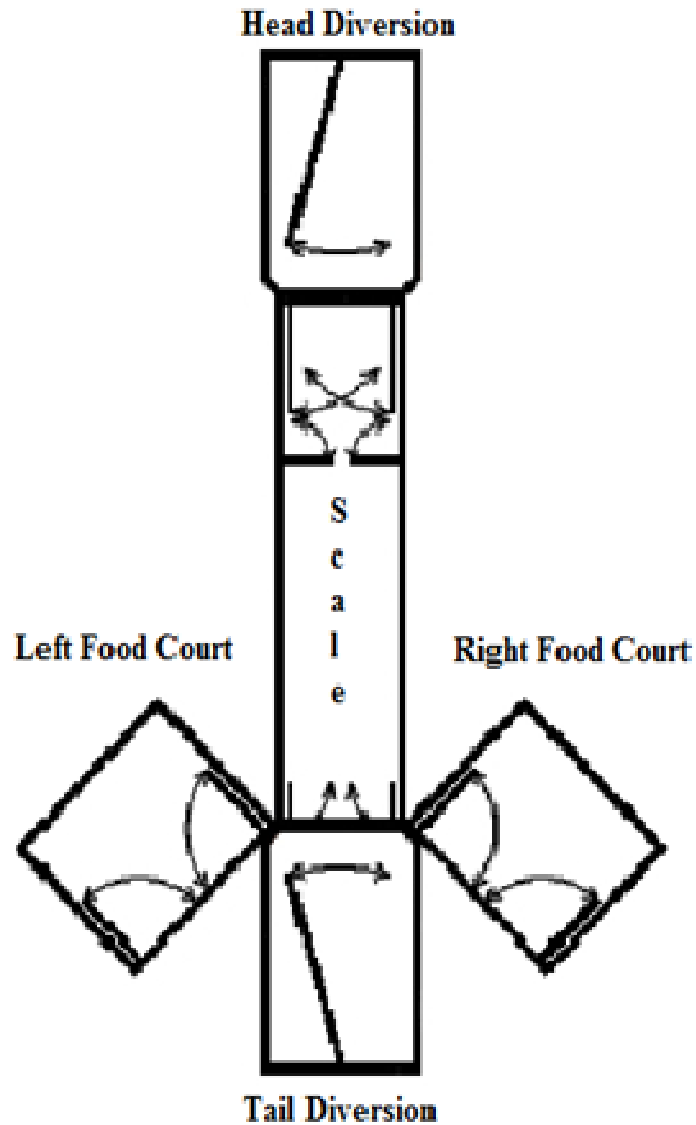
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## Getting Started



1. Unpack the scale and modular gates.
2. Move the scale into the location indicated by the blueprints for the building.
3. Using the drawing above and the labels on the top cover of each modular gate place them in their correct positions around the scale.
4. Follow the installation instructions that follow to complete the installation.

## ***Mechanical Overview***

The scale is composed of a main weighing cage surrounded by several automatic gates used to control pig flow. Each of the gates is positioned using a pneumatic air cylinder which is typically operated at 100psi. Depending on the set of positions the gates are in pigs are allowed access from one pen at a time.

As pigs walk into the scale they enter onto the weighing cage after passing through the scale's tail-end gates. The scale uses a photo eye positioned above the weighing cage to determine that a pig is on the weighing cage. As soon as the photo eye is triggered the tail-end gate immediately behind the weight cage is closed and the pig is weighed. After weighing processing specific to the activity the scale is performing is performed. Once activity specific processing has completed a gate directly in front of the weighing cage is opened to release the pig.

The scale can be configured to perform a number of different kinds of activities via its software interface. The software runs inside the scale's main control box which is located in the upper front section of its main body. To access the software an Ethernet interface is provided and is designed to be used with standard CAT-5 UTP or STP cable. A computer equipped with a 10/100 Ethernet network card (most all desktop and laptop computers) and a web browser can be configured to access the software.

**Note:** A computer is only required to view and interact with the scale's software. After viewing reports or configuring activities the computer should be turned off and disconnected from the scale to avoid damage from things such as power spikes caused by lightning.

The main control box (in the upper front section of the scale's main body) is designed with ease of service in mind. In the event it must serviced, remove all the connectors around its perimeter, and gently pull up on it to remove it from the metal plate it's mounted on. The plastic surface mount feet should remain on the mounting feet. The control box is removable so that the sensitive electronics inside can be worked on in a clean environment.

## Installation

### Overview



**DO NOT** do any welding on the scale because it may cause damage to the electrical components.

### Parts Required

Before you begin installing your scale you will need the following items:

1. T-bolts or slat-locks to fasten the scale to the floor
2.  $\frac{3}{4}$  inch, schedule 40 PVC pipe to run from the air compressor to the scale
3. 5HP 20GAL air compressor per 6 scales (oil-bath recommended)

The use of these items will be discussed in the sections that follow.

**Note:** It is also a good idea to install a water spigot near the scale so that water is easily accessible for cleaning purposes.

### Fastening



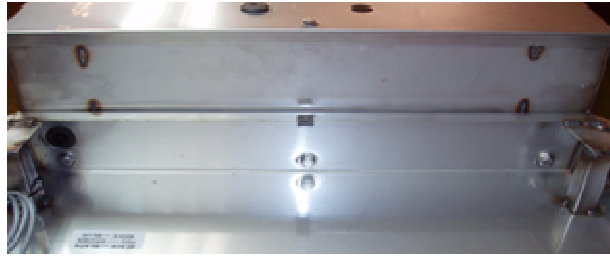
Disconnect power from the scale and set its air pressure regulator to 0 psi before performing the steps outlined in this section.

### Parts Required

1. Scale
2. Modular Gates
3. T-bolts or slat-locks
4. Fastening clips

#### *Step 1* - Bolting the modular gates to the scale

Bolt the modular gates to the scale using the bolts that are provided in the fastener kit. Attach the head and tail diversion gates first then attach the food court gates (see the diagram on page 4 for gate locations). Gates are labeled on the top of the lids).



*Head diversion gate*



*Tail diversion and food court gates*

Bolt pig guards to scale and diversion gates. Rod guards to tail end and flat plate guards to head end of scale. See picture below.



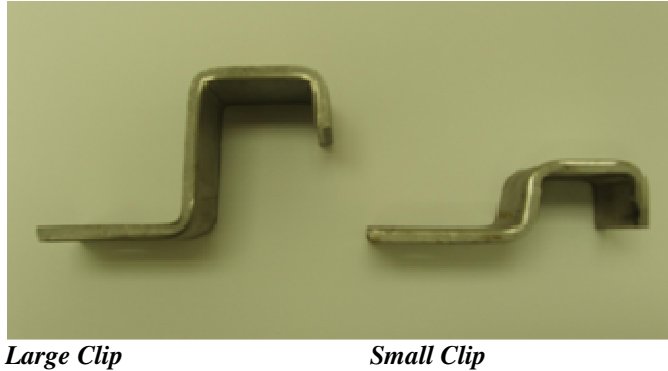
*Rod Guards*



*Flat Plate Guards*

*Step 2 - Fastening the scale and modular gates to the floor*

Fasten the scale and modular gates to the floor using the fastening clips and either T-bolts or slat-locks.



**Large Clips**

- 4 - Scale
- 4 - Left Food Court
- 4 - Right Food Court

**Small Clips**

- 3 - Tail Diversion
- 3 - Head Diversion

***Air Supply***



Disconnect power from the scale and set its air pressure regulator to 0 psi before performing the steps outlined in this section.

***Parts Required***

1. Scale
2. Modular gates
3. 5HP 20GAL air compressor per 6 scales (oil-bath recommended)
4. ¾ inch, schedule 40 PVC pipe

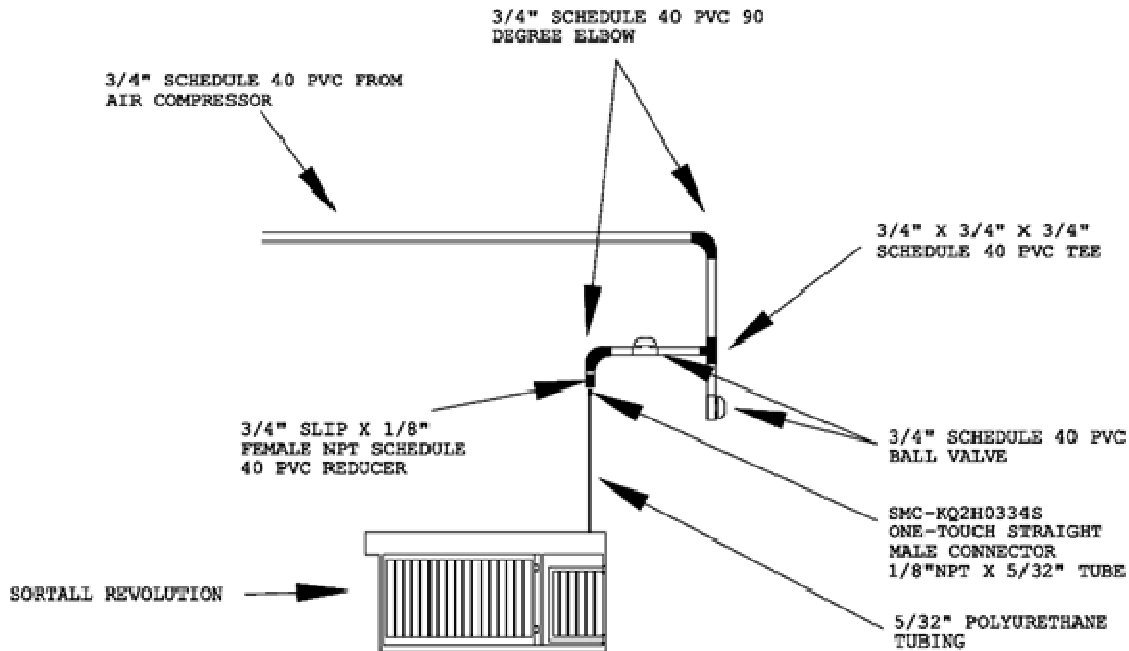
***Step 1- Installing the air compressor***

Install the air compressor in a location other than the room where the pigs are located, in order to avoid pumping corrosive gases into the scale.

***Step 2 – Running the air supply pipe from the air compressor***

Run the ¾ inch, schedule 40 pipe from the air compressor to the ceiling above the scale. Make a drip-leg, as shown in the diagram below. Attach the black air hose from the scale to the drip-leg.





#### *Drip leg and air supply hookup*

#### *Step 3 – Connecting the air hoses from the scale's control box to the gate cylinders*

The air hoses can be found rolled up in the main portion of the scale. Thread the hoses through the grommets to the modular gates, matching the color of the hose with the color marked on the air cylinder. There is an 'A' and a 'B' hose for each cylinder. Attach the 'A' hose to the 'A' end of the cylinder and the 'B' hose to the 'B' end. The black hose gets attached to the air supply drip-leg above the scale.

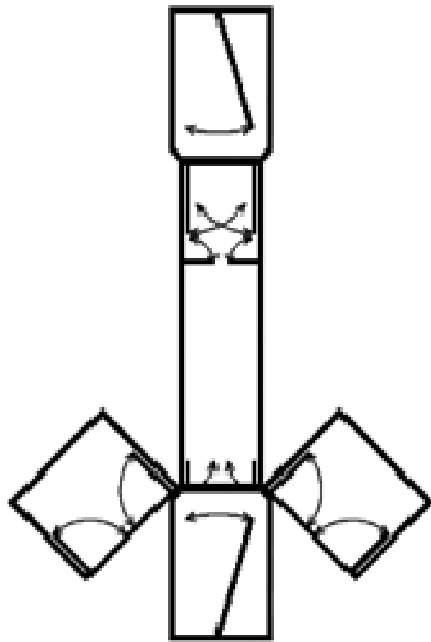


*White Air Hoses on Cylinder Labeled "WHITE"*

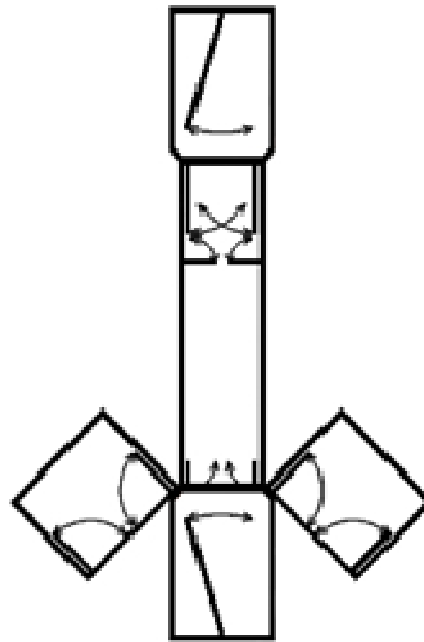
#### *Step 4 – Positioning the gates in the default configuration*

Turn the air compressor on and open the air pressure regulator on the scale. The gates need to be positioned differently depending on your holding pen location. See the

diagrams below to determine how the gates should be positioned on your scale.



*Holding pen to the right*



*Holding pen to the left*



Turn the air pressure regulator on the scale to 0 psi before working on gates and/or air hoses.

To change the positioning of a gate, find the two air hoses in the gate that connect the cylinder to the scale's control box. Swap the "A" air hose and the "B" air hose at their connection to the cylinder. What you are doing by swapping the hoses is removing air pressure from one and adding pressure to the other hose.

## ***Sensors***



Disconnect power from the scale and set its air pressure regulator to 0 psi before performing the steps outlined in this section.

## ***Parts Required***

1. Scale
2. Modular gates

### *Step 1 – Connecting the modular gate sensor wires*

Each modular gate has a sensor associated with it. One end of each sensor wire is attached to the scale's sensor junction box and the other end is rolled up inside the scale. The wires are marked 'TD7', 'HD8', 'RFC6', and 'LFC5'. Thread the sensor wires through the grommets to the appropriate modular gates. The wires and sensor bodies are polarized so be careful to line the rib in one half of the connection to the slot in the other half. With the sensor wire properly aligned with the sensor body gently push them together and tighten the textured nut on the sensor wire.

**Note:** Make sure you only turn the textured nut on the sensor wire or the connectors will be damaged.

TD7 – Tail Diversion  
HD8 – Head Diversion

LFC5 – Left Food Court  
RFC6 – Right Food Court



*Sensor Connection*

## **Communication Wiring**



Disconnect power from the scale and set its air pressure regulator to 0 psi before performing the steps outlined in this section.

### *Parts Required*

1. Scale
2. CAT 5 UTP/STP cable
3. RJ-45 plugs
4. RJ-45 plug crimping tool

### *Step 1 – Terminating the ends of the CAT 5 cable*

Refer to the table below to properly terminate each end of the CAT 5 cable using an RJ-

45 plug and crimping tool.

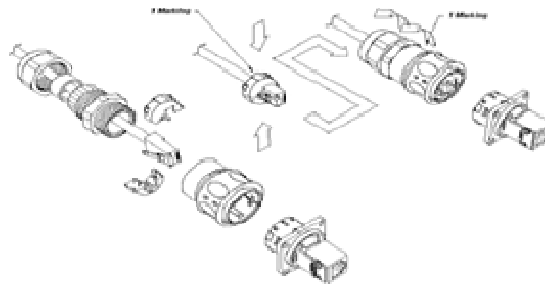
#### **EIA/TIA 568A Termination**

\*Pin numbers are read left-to-right with the plug tab facing down and cable end towards you.

<i><b>Pin (Plug)</b></i>	<i><b>Color</b></i>
1	Brown
2	White/Brown
3	Orange
4	White/Blue
5	Blue
6	White/Orange
7	Green
8	White/Green

#### *Step 2 – Connecting the CAT 5 cable to the control box*

Run CAT 5 cable from the scale to an office in the building so it can be connected to a computer or a network switch. The maximum length of the cable should not exceed 300 feet. The diagram below shows how to insert the cable into the black, water-tight connector on the control box.



*Water-tight network connector assembly*

#### **Remote Access** (optional)

##### *Parts Required*

1. Remote access module
2. Phone cable
3. CAT 5 UTP/STP patch cable

#### *Step 1 – Connecting to the network*

Connect one end of the CAT5 patch cable to the network interface of the remote access

module and the other end directly to the scale or to a network switch.

### *Step 2 – Connecting to the phone line*

Connect one end of the phone cable to the phone jack in the remote access module and the other end to a phone line in the building.

### *Default remote access module settings*

IP Address:	192.168.0.199
User name:	admin
Password:	admin
Local User Name:	sortall
User ID:	sortall
Password:	schick

## **Power**

### *Parts Required*

1. Dedicated breaker (the scale should be the only thing connected to this circuit)

### *Step 1 – Turning the power supply OFF*



The switch on the power supply is a power disconnect for use only when servicing the scale. Do not use it for turning the scale on/off.

Make sure the power disconnect switch on the top of the power supply is in the 'OFF' position.

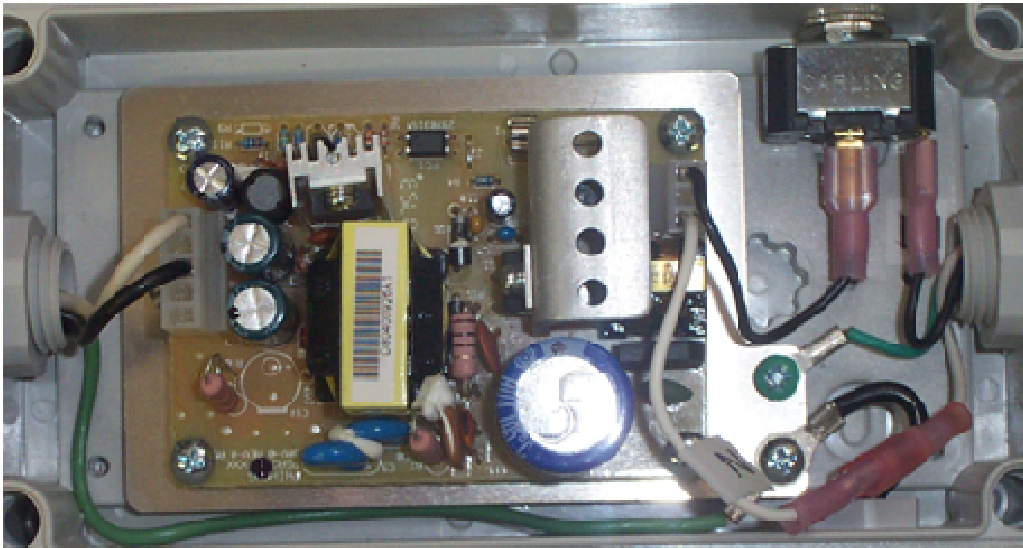


*Power center in 'off' position*

### *Step 2 – Connecting power to the power supply*

Run 110VAC from the dedicated breaker into the scale's power supply. Refer to the

wiring diagram found inside the power supply for connection details.



*Inside of power supply enclosure*

## **Surge Protection**



Disconnect power from the scale and set its air pressure regulator to 0 psi before performing the steps outlined in this section.

## **Scale Surge Protection**

### *Parts Required*

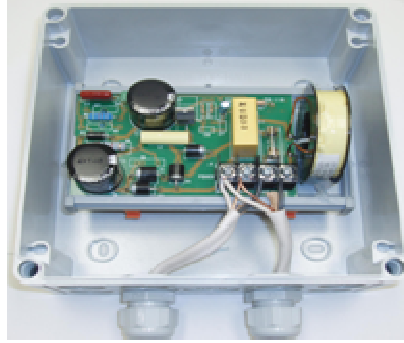
1. Surge protector



Use one surge protector per scale.

### *Step 1 – Mounting and connecting the surge protector*

Mount the surge protector as close to the scale as possible. Run 110VAC through the surge protector and into the scale (refer to the instruction sheet inside the surge protector for a detailed wiring schematic).



*Properly wired surge protector*

## Computer Surge Protection

Surge protection for your computer is highly recommended. Minimally, it should be plugged into a surge protector/power strip that can be purchased with your scale. If you've purchased a surge protector/power strip with the scale it includes protection for your computer's network interface as well. Since the computer is only required when you need to access the scale's software it is highly recommended that you turn it off when it's not in use and disconnect the power and network cables.

## Alarm



Disconnect power from the scale and set its air pressure regulator to 0 psi before performing the steps outlined in this section.

### *Parts Required*

1. Scale
2. Alarm wire

### *Step 1 – Removing the lid from the sensor junction box*

Using a flat screwdriver remove the screws from the junction box lid. Remove the lid and make sure that no dirt or water gets inside the box.

### *Step 2 – Running the alarm wire into the sensor junction box*

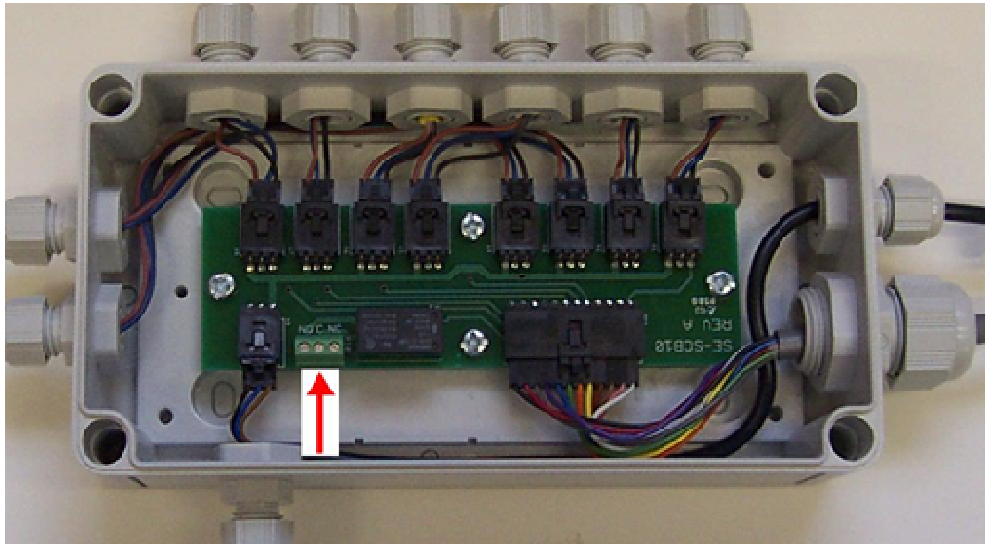
There is a water-tight strain relief connector with a silver plug inserted into it on the side of the junction box. Remove the plug from the strain relief and run the alarm wire through to the green 3 position terminal.

### Step 3 – Connecting the alarm wire



The scale's alarm relay has a maximum contact rating of 5 amps. Do not exceed this rating.

Attach the wires to the screw terminals as normally open or normally closed depending on how your alarm system is configured.



*Three-screw alarm terminal*

### Step 4 – Tightening the strain relief connector and closing the sensor junction box lid

Tighten the strain relief connector around the alarm wire and close the junction box lid.

### Summary

- Bolt Diversion and Food Court gates to scale
- Fasten scale to the floor with provided clips
- Place hoses on the proper cylinders and zip tie them to make sure they don't get tangled in moving parts
- Attach sensor wires to corresponding sensors being careful not to damage the polarized connectors
- Use zip ties to protect sensor wires from moving parts where necessary
- Turn on the air and check for leaks



- Move gate cylinder air hoses to set gates in default positions
- Plug in network cable on both ends
- Turn power on with main disconnect switch
- Set the static IP address on the computer
- Open the web browser and connect to the scale at 192.168.0.31
- Set configuration, preferences, date/time, and network settings
- Start a new population
- Push on/off button on control box to turn the scale on
- Check each sensor by placing a metal object under it
- Perform a system test to make sure all gates are functional
- Remove all air pressure from the scale and verify it's weighing accurately using an object of a known weight (the closer to market weight the better)
- Start a Train Activity

## Scale Operation



*Main Control Box*

### Turning On/Off

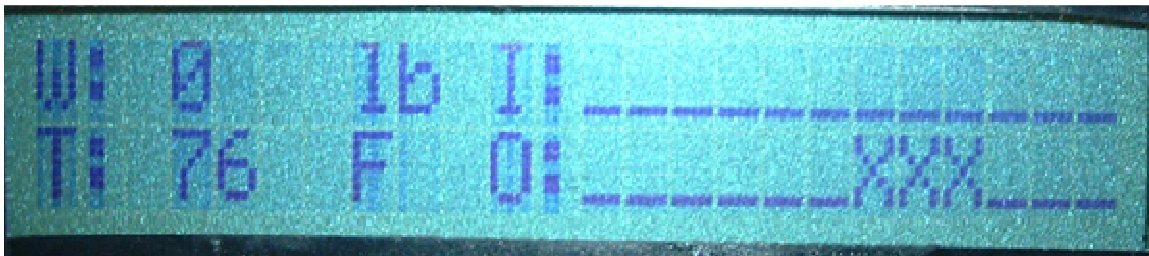
The on/off button is located on the side of the scale's main control box. After power is applied to the scale the display will read 'Scale OFF'. To turn the scale on, push and hold the button for approximately one second then release it. When the scale is on you should see the following information on the display:

W – Amount of weight currently on the scale

T – Current temperature

I – Status of inputs 1-12 starting at 1 ('\_' for off and 'X' for on)

O – Status of outputs 1-12 starting at 1 ('\_' for off and 'X' for on)



*LCD Readout*

To turn the scale off push and hold the button for approximately one second then release it. Before the scale turns off it will put its gates into their default positions. When the scale is off the display will read 'Scale OFF'.

## **Zeroing**

After the scale has been in use for some time it may no longer read a zero weight when nothing is on the scale. This is most likely because there is debris built up on and/or around the scale cage. If there isn't any debris on the scale and the cage moves freely but a zero weight is still not displayed, you may need to zero the scale. Perform the following steps to zero the scale:

1. Press and hold the on/off button.
2. Wait until the on light next to the display blinks twice.
3. After the on light blinks twice release the on/off button.

After zeroing the scale the weight readout should display a weight of zero.

## **Restoring the Default IP Address**

Each scale has its IP address set to a default value of 192.168.0.31 at the factory. To restore the IP address to the default factory value perform the following steps:

1. Press and hold the on/off button.
2. Wait until the on light next to the display blinks three times.
3. After the on light blinks three times release the on/off button.

## **Performing a System Test**

A system test moves each of the scale's gates sequentially, activates the painter, and triggers the alarm to verify that they are functional. To perform a system test perform the following steps:

1. Press and hold the on/off button.
2. Wait until the on light next to the display blinks four times.
3. After the on light blinks 4 times release the on/off button.
4. As each item is tested a description is displayed on the LCD readout. Visually verify that each item tested functions correctly.

## **Error Messages**

Messages are displayed on the LCD readout when an error has occurred. If an error message is displayed the scale must be power cycled before it will be functional again. Some common error messages and their cause/resolution are listed below.

*No Population* – A new population must be created using the software interface.

*Invalid License* – A license key must be obtained before the scale can be used.

*Hardware Error* – Control box hardware may be failing.

*Error* – An unexpected error has occurred.

## Software Interface

### Getting Started



Make sure all of the sections in *Installation* have been properly addressed before accessing the software interface.

A computer and web browser are needed to access the software interface. The software interface exposes a rich set of features built into the scale.

### Features

- *Create/Edit/Cancel Market, Train, Cross Sort, and Paint activities*
- *View weight distribution, average daily gain, and temperature reports*
- *Record and analyze population statistics*
- *Change the scale's configuration settings*
- *Customize the software layout*

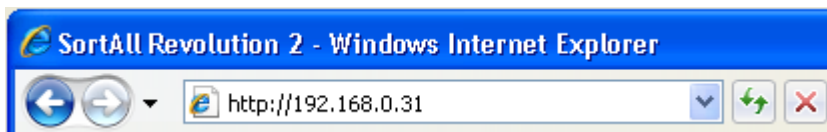
### Minimum Computer Requirements

- Windows XP or Windows Vista
- Network Interface
- Internet Explorer 7
- Adobe Flash Player 9 or newer

### Accessing the Software

To access the software:

1. Open Internet Explorer (**do not** connect to the Internet).
2. Enter the scale's IP address in the address field (default is 192.168.0.31).
3. Press the *Enter* key on the keyboard.



*Address field in Internet Explorer 7*

### Interface Overview

The software interface is divided into three main sections.

1. *Navigator* – Provides access to the various areas of the software interface.
2. *Interface Viewer* – Displays interfaces accessed via the *Navigator*.
3. *Overview* – Displays real-time statistics for the population.

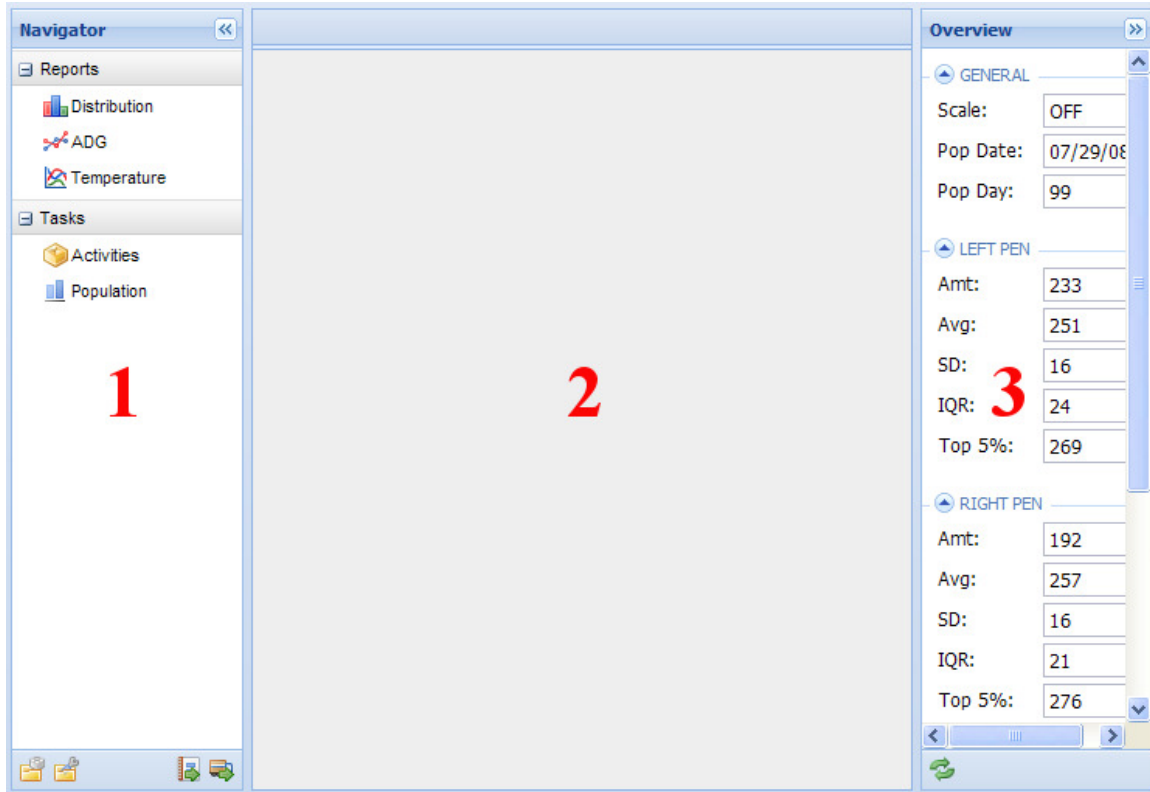



Figure 1 - Software Interface

**Note:** Clicking the  icons on the various interfaces in the software will refresh the data being viewed. The *Overview* interface will refresh its data automatically periodically but all other interfaces load data once when they are first opened.

## Data Entry Tool

The *Data Entry* tool is a common set of buttons used throughout the software interface.



The data entry function for each button is listed below.



Add/Create new item.



Edit selected item.



Save selected item.



Delete selected item.



Cancel Add/Create/Edit.



Refresh data being viewed.

## Initial Setup


In order for the scale to work properly, some initial software setup must be performed. Most of the factory defaults are adequate but there are some settings that need to be changed depending on where and how the scale is installed. See the *Settings* section that follows for information about each of the settings listed below.

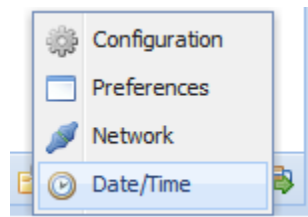
*Customize the following settings*

1. Settings->Configuration->Holding Side
2. Settings->Configuration->Holding Capacity
3. Settings->Date/Time

## **Settings**

### **Opening Settings Menu**

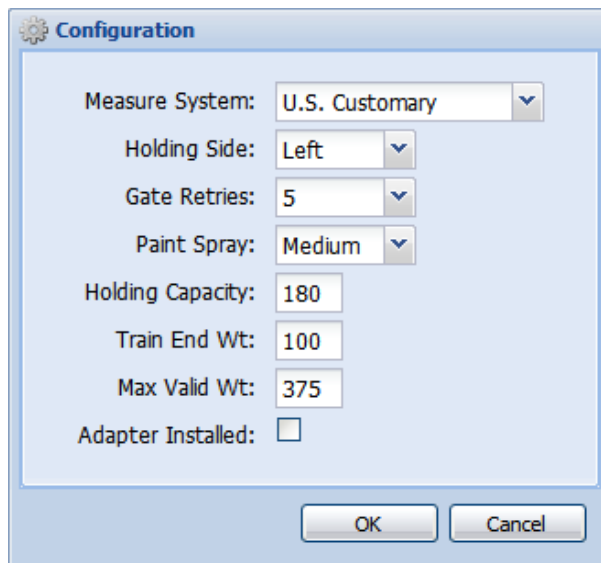
Open the settings menu by clicking the  icon at the bottom of the *Navigator* (#1, Figure1).



*Settings Menu*

### **Configuration**

Click the *Configuration* menu option to open the *Configuration* dialog.



*Configuration Dialog*

Each of the following configuration options can be changed at any time and saved by clicking *OK*.

*Measure System* – Determines the measurement system to be used for data displayed on the scale and in the software interface.

*Holding Side* – Controls the way gates are positioned so access to the holding pen is

properly controlled. Left/Right is determined based on the side of the scale the holding pen is on from the perspective of a pig entering the weighing cage.

*Gate Retries* – The number of times the Smart Gates will retry when a blockage is detected.

*Paint Spray* – Controls the length of time the painter sprays when painting.

*Holding Capacity* – The maximum number of pigs that can be held in the holding pen.

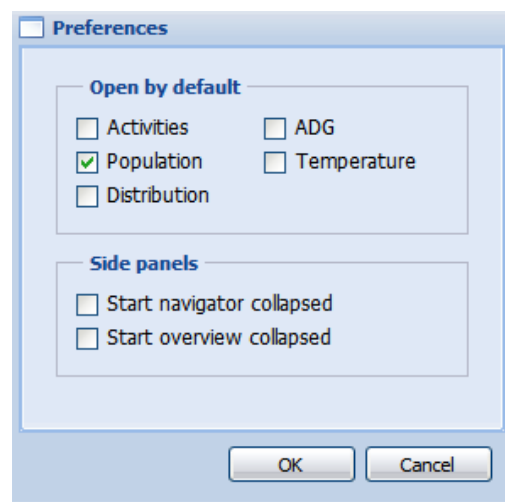
*Train End Wt* – The average pig weight at which training ends by default.

*Max Valid Wt* – The maximum weight the scale considers valid. No data is recorded for weights greater than this value.

*Adapter Installed* – Indicates whether a small pig adapter is installed in the scale or not.

## Preferences

Click the *Preferences* menu option to open the *Preferences* dialog.

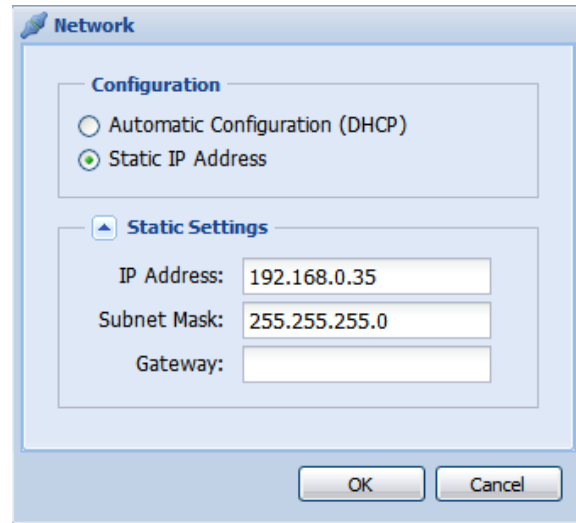


*Preferences Dialog*

The *Preferences* dialog allows the default layout and behavior of the main software interface components to be customized. Preferences can be changed at any time and saved by clicking *OK*.

## Network

Click the *Network* menu option to open the *Network* dialog.



*Network Dialog*

The network settings determine how the scale will communicate with the computer using its network interface.

If you just have a few scales that you would like to access from the same computer use a fixed IP address in the range 192.168.0.2–192.168.0.254 with subnet mask 255.255.255.0. Assign an IP address in this range to the computer as well as each scale.

**Note:** For advanced networks DHCP may be used, but in general a fixed IP address is recommended.

For example, for three scales the following network settings could be configured:

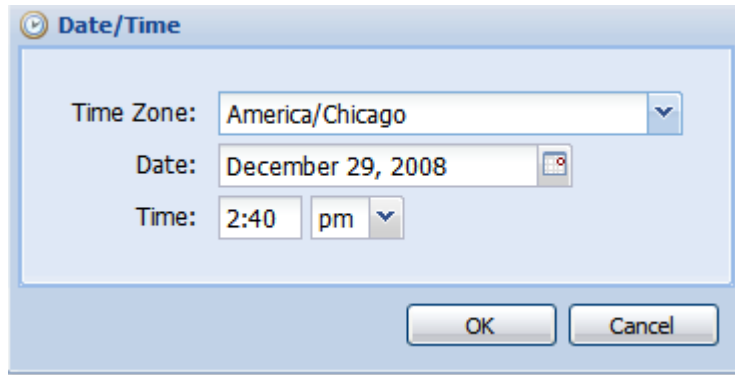
	IP Address	Network Mask
Scale 1	192.168.0.2	255.255.255.0
Scale 2	192.168.0.3	255.255.255.0
Scale 3	192.168.0.4	255.255.255.0
Computer	192.168.0.5	255.255.255.0

When you're finished, click *OK* to save changes.

## Date/Time

Click the *Date/Time* menu option to open the *Date/Time* dialog.





*Date/Time Dialog*

To set the date/time, enter values for the following three items.

*Time Zone* – The closest city in the same time zone as the scale installation.

*Local Date* – Today's date in the time zone.


*Local Time* – Current time in the time zone.

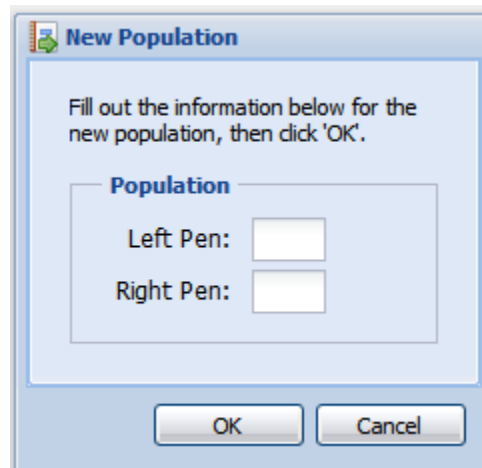
When you're finished, click *OK* to save changes.

## ***Populations***

A population represents the group of pigs accessing the scale in a room. When pigs are started in a room a new population must be created to collect data, track changes, and perform activities.

## **Creating New**

Open the *New Population* dialog by clicking the  icon at the bottom of the *Navigator* (#1, Figure 1).



*New Population Dialog*

**When a new population is created all data from the previous population is permanently erased (including reports).**

Enter the number of pigs in each pen and then click *OK* to create a new population. Make sure the values entered are as accurate as possible because report generation relies on correct population information.

## Record Keeping

Open the *Population* interface by clicking on the *Population* navigator option (#1, Figure 1).

The screenshot shows the 'Population' interface. At the top, there are statistics for the current population: Current: 425, Left: 233, Died: 12, Loss: 1.1%, Initial: 1120, Right: 192, Culled: 5, and Marketed: 688. Below this is a tabbed interface with 'Adjustments' and 'System' tabs. The 'Adjustments' tab is active, showing a table of recent changes. The table has columns for Date, Time, Pen, Type, Amt, Avg Wt, and Notes. The data rows show various events like 'Died', 'Cull', 'Add', and 'Died' with corresponding amounts and average weights. Below the table, there are input fields for Date, Time, Pen, Type, Amt, and Avg Wt, along with a large text area for Notes.

Date	Time	Pen	Type	Amt	Avg Wt	Notes
11/03/2008	7:06 AM	Right	Died	1	255	
10/20/2008	8:06 AM	Left	Died	1	250	
10/20/2008	8:05 AM	Right	Cull	1	180	
10/10/2008	12:13 PM	Right	Add	10	200	
10/08/2008	5:08 AM	Left	Died	1	230	
10/06/2008	7:38 AM	Right	Cull	1	180	

Below the table, the following fields are visible:

- Date: 11/03/2008
- Time: 7:06 AM
- Pen: Right
- Type: Died
- Amt: 1
- Avg Wt: 255
- Notes: (Large text area)

**Population Interface**

Population totals which summarize the current population in the room are displayed at the top of the *Population* interface.

As changes to the population are made, it's important to create the corresponding adjustments in the *Population* interface to ensure accurate report generation. Adjustments for changes made by the scale, during a sort to the holding pen for example, are automatically created in the *System* tab. Any changes without the scale's knowledge, such as deaths, must be entered daily in the *Adjustments* tab.

## Adding/Editing Adjustments

An adjustment consists of the following population change fields:

*Date* – The date the change occurred.

*Time* – The time of day when the change occurred.

*Pen* – The pen in which the change was made.

*Type* – A value describing the nature of the change.

*Amt* – The number of pigs involved in the change.

*Avg Wt* – The average weight of the pigs in the change (optional).

*Notes* – Additional information about the change (optional).

The adjustment types are as follows:

*Add* – Pigs were added to a pen.

*Remove* – Pigs were removed from a pen.



*Cull* – Pigs were removed from a pen to be culled.

*Death* – Pigs died in a pen.



*Market* – Pigs were removed to be marketed.

*Not Marketed* – Pigs were added back to a pen after the scale sorted them for market.

To **add** a new adjustment:

1. Click the  icon in the toolbar.
2. Enter the change values into the fields (see field detail above) in the grid or the detail section below the grid (whichever you prefer).
3. Click the  icon in the toolbar.

To **edit** an existing adjustment:

1. Click the adjustment to be edited in the grid.
2. Click the  icon in the toolbar.
3. Edit the change values in the fields (see field detail above) in the grid or the detail section below the grid (whichever you prefer).
4. Click the  icon in the toolbar.

## Activity Basics

Open the *Activities* interface by clicking on the *Activities* navigator option (#1, Figure 1).

The screenshot shows the 'Activities' window with a table of activities and configuration options below it.

Activity	Start Time	Run Time	Source	Status	Notes
Market	11/04/08 10:17 AM	2hr 32min	Both Pens; Start w/Right	Active	
Market	11/01/08 7:38 AM	1day	Left Pen	Complete	
Market	10/31/08 8:24 AM	23hr 14min	Right Pen	Cancelled	
Market	10/30/08 9:02 AM	23hr 21min	Left Pen	Cancelled	
Market	10/29/08 8:54 AM	1day	Right Pen	Complete	
Market	10/28/08 9:08 AM	23hr 43min	Left Pen; Heaviest	Cancelled	
Market	10/26/08 7:24 AM	20hr 54min	Left Pen	Complete	
Market	10/22/08 8:59 AM	1day	Right Pen	Complete	
Market	10/20/08 2:25 PM	9hr 4min	Right Pen	Complete	

Below the table are tabs for 'Tasks', 'Settings', and 'Notes'. The 'Settings' tab is active, showing 'Sort' and 'Options' sections.

**Sort**

Wt: 274 to 330 Qty: 160 Total: 40

**Options**

Split: 50 to 245 Qty: 100 Total: 5

Paint: to Qty: Total: 0

### Activities Interface

The scale performs tasks on the pigs in a pen using activities. The default activity, called *Main*, is always active and will be performed whenever no other active activities exist. When an activity other than the *Main* activity completes the *Main* activity automatically resumes where it left off.

The tasks performed by the *Main* activity are detailed below.

1. Free Choice Left Pen for 6 days.
2. Whole Pen Left Pen for 1 day.
3. Whole Pen Right Pen for 1 day.
4. Free Choice Right Pen for 6 days.
5. Go to #1 (repeat).

In addition to the *Main* activity the following types of activities can be created.

*Train* – Familiarize pigs with the scale to promote its usage.

*Market* – Sort pigs to the holding pen for sale.


*Sort Out* – Sort pigs to the holding pen for a reason other than sale.

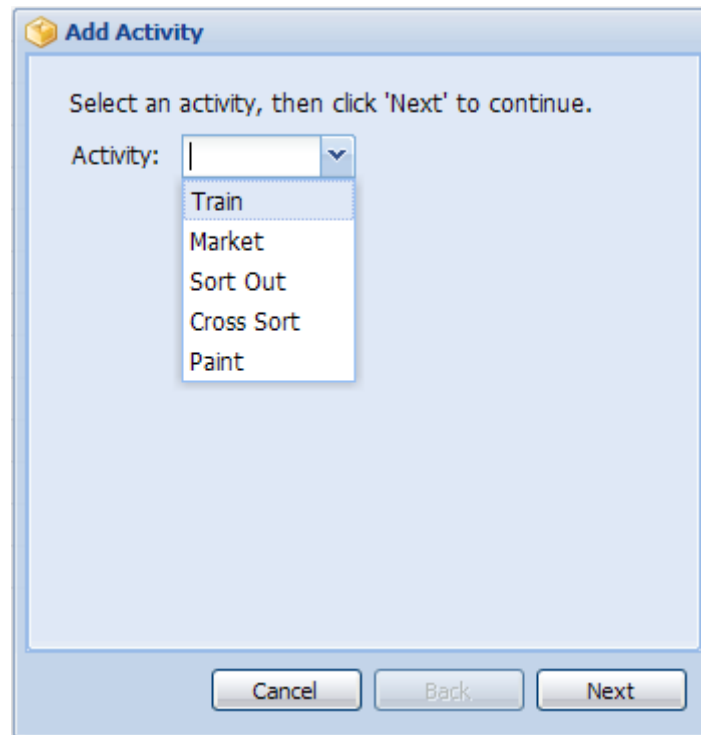
*Cross Sort* – Sort pigs between pens.

*Paint* – Paint pigs as they cross the scale.

## Creating New

To **create** a new activity:

1. Click the  icon in the toolbar to open the *Add Activity* wizard.
2. In the *Add Activity* wizard select the type of activity then click *Next*.
3. Fill out the activity details then click *Finish* (see activity detail sections that follow for more information).




*Add Activity Wizard*

## Editing

The settings of active activities (not including the *Main* activity) can be edited. Changes made to activity settings take effect immediately upon saving them.


To **edit** an active activity:

1. Click the active activity in the grid (first row by default).
2. Click the *Settings* tab below the activities grid.
3. Edit the setting values.
4. Click the  icon for each setting edited to save the changes.

## Cancelling

Active activities (not including the *Main* activity) can be cancelled. When an activity is cancelled the *Main* activity will automatically resume where it left off.


To **cancel** an active activity:

1. Click the active activity in the grid (first row by default).
2. Click the  icon in the toolbar.


## View Distribution Tool

*Market*, *Sort Out*, and *Cross Sort* activities cause a weight distribution report to be generated after the first pig is sorted. The *View Distribution* tool provides a convenient way to open an activity's corresponding weight distribution report in the *Distribution* interface.

To **view** an activity's weight distribution report:

1. Click a *Market*, *Sort Out*, or *Cross Sort* in the grid.
2. Click the  icon in the toolbar.

## Triangulation Tool

The *Triangulation Tool* can be used by clicking the  icon associated with weight range input fields. The tool uses the *Current* distribution report to help calculate desirable weight ranges for activities. As a result, the tool is only available for use when the *Current* distribution report has been generated (see *Weight Distribution* sub-section in *Reports* section).

The following *Triangulation Tool* options are available.

*Above* – Using the lower weight range value it calculates the upper weight range value and the quantity available.

*Below* – Using the upper weight range value it calculates the lower weight range value and the quantity available.

*Between* – Using both weight range values it calculates the quantity available.

*Heaviest* – Using the quantity value it calculates the weight range of the heaviest pigs.

*Lightest* – Using the quantity value it calculates the weight range of the lightest pigs.

## Training

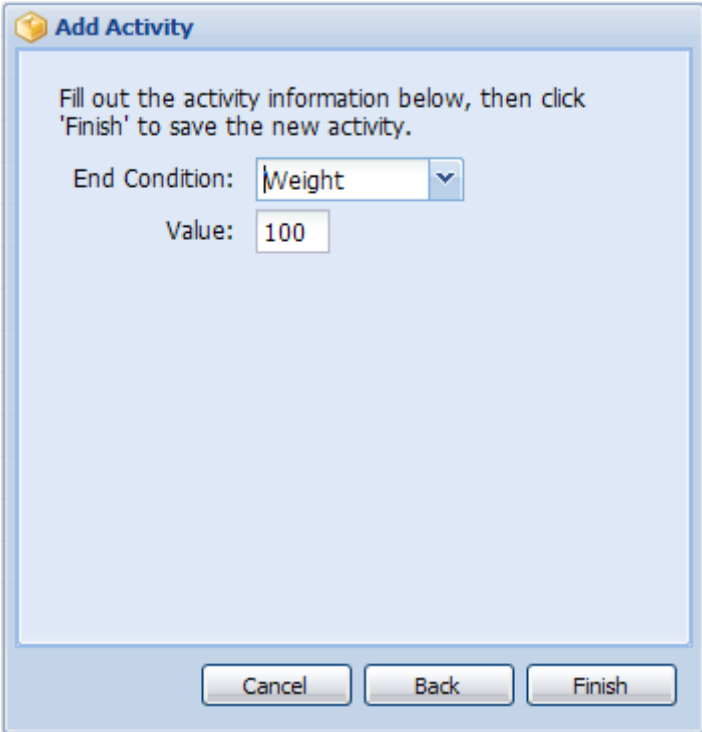
When a group of pigs is brought into a room they need to be trained to use the scale. Training is critical because in order for pigs to flow through the scale properly at a later time, they need to get acquainted with it early on. This is accomplished by starting a training activity when the room is populated (even if the pigs are large).

**Note:** For a wean-to-finish room the scale should be turned off until the pigs reach an average weight of 40 lbs. When the pigs are 40 lbs. the scale should be turned on and training should be started.

While training, the scale leaves the head and tail gate open so pigs can walk across it without having to worry about gates moving. With all of the gates stationary there is little risk of injury to the small pigs and they can become comfortable with its use to access the food court.

When a new training activity is created, one of the following conditions is specified to determine when it will be complete.

- Average pig weight is at or above a value.
- Training has been performed for a certain number of days.



*Add Activity Wizard – Train*

The tasks performed by the *Train* activity are detailed below.

1. Train Free Choice Left Pen for 7 days.
2. Train Free Choice Right Pen for 7 days.
3. Go to #1 if completion condition not met (weight or days).
4. Train Whole Pen Left Pen for 1 day.
5. Train Whole Pen Right Pen for 1 day.

## Marketing

At a desired weight pigs must be sorted for sale. The *Market* activity sorts one or more groups of pigs to one or more holding pens for sale. As pigs are sorted the scale automatically creates the associated population adjustments and keeps track of the total number it has put in the holding pen.

When a new *Market* activity is created, the holding pen capacity (see *Settings* section) is checked to make sure the holding pen can hold all of the pigs that will potentially be sorted. A warning will be displayed if the holding pen capacity may be exceeded by the activity.



*Holding Pen Capacity Warning*

**If the holding pen capacity warning is disregarded and creation of the activity is continued overcrowding of the holding pen may occur resulting in pig deaths.**

**Note:** Always double check that the holding pen configuration(s) can accommodate all of the pigs that will potentially be sorted by the *Market* activity.

Using the *Split* option available for a *Market* activity pigs can be sorted into two separate holding pens at the same time. When the *Split* option is used pigs falling within the *Split* weight range will be diverted into a second holding pen using the head diversion gate. The default position of the head diversion gate for a *Market* activity directs pigs to the holding pen side (see *Settings* section) of the scale. Pigs are *Split* to the opposite side of the scale by actively moving the head diversion gate.

The following activity details are specified when creating a *Market* activity.

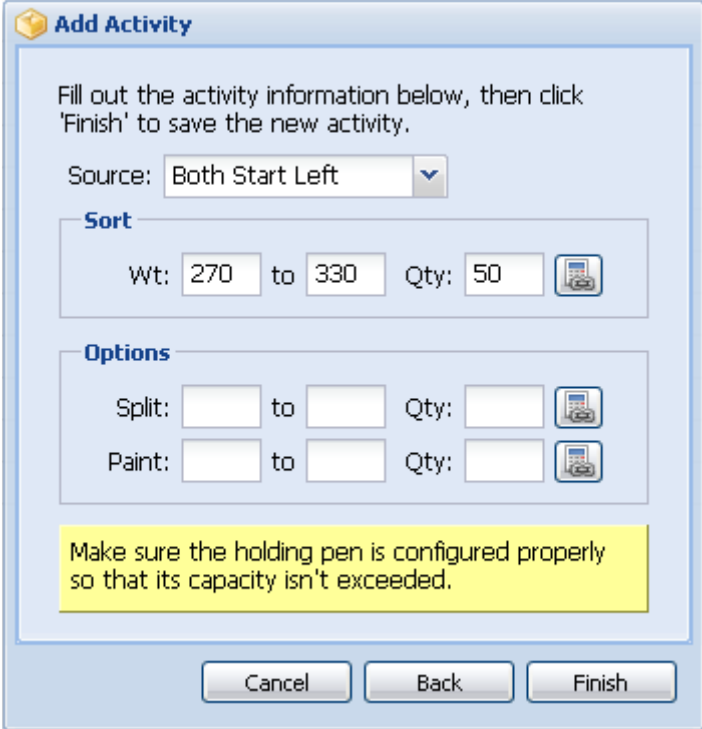
*Source* – The pen(s) that should be marketed from. Available selections are Left, Right, Both Start Left, and Both Start Right.

*Wt* – The weight range and quantity of pigs to sort into the primary holding pen (on the holding side of the scale).



*Split* – The weight range and quantity of pigs to sort into the second holding pen (opposite the holding side of the scale). (**optional**)

*Paint* – The weight range and quantity of pigs to paint. The quantity is optional, and if not specified, painting will be performed for an unlimited number of pigs within the weight range. (**optional**)



**Add Activity**

Fill out the activity information below, then click 'Finish' to save the new activity.

Source: Both Start Left

**Sort**

Wt: 270 to 330 Qty: 50

**Options**

Split: to Qty:

Paint: to Qty:

Make sure the holding pen is configured properly so that its capacity isn't exceeded.


Cancel Back Finish

*Add Activity Wizard – Market*

Pens are marketed for up to one day before the activity completes or the next pen is started (if “Both...” option selected for *Source*). A *Market* will end sooner than a day if the sort quantity is reached. If the *Split* option is being utilized both the main sort quantity and the *Split* sort quantity must be reached for the activity to end in less than a day.

When pigs have been sorted to the holding pen the scale positions its gates for use with a holding pen. After all pigs in the holding pen(s) are shipped the scale must be notified using the *Empty Holding Pen* feature before it'll reposition its gates.

#### To empty the holding pen:

1. Click the  icon at the bottom of the *Navigator* interface (#1, Figure 1).
2. Click *Yes* to empty the holding pen.

Immediately after the *Empty Holding Pen* feature is used the scale will reposition its gates for use without a holding pen.

## ***Sorting Out***

A *Sort Out* is exactly the same as a *Market* activity except it uses a different type of population adjustment. When a pig is sorted by a *Sort Out* the scale creates a *Sort* population adjustment instead of a *Market* adjustment. A *Sort* adjustment is used to indicate that pigs have been sorted to the holding pen for a reason other than sale.

See the *Marketing* section for more information about this activity.

## ***Cross Sorting***

In general, heavy pigs are kept in the pen on the holding pen side of the scale while light pigs are kept in the pen opposite the holding pen side. If the population becomes inconsistent (i.e. there are light pigs in the heavy side and vice versa) a *Cross Sort* activity can be created to move pigs to their respective sides.

**Note:** The food court gate is closed during a *Cross Sort* forcing all pigs to use the scale to access the food court. For this reason *Cross Sorts* should be used sparingly to avoid hurting the growth rate of the pigs.

The following activity details are specified when creating a *Cross Sort* activity.

*Source* – The pen(s) that should be cross sorted from. Available selections are Left, Right, Both Start Left, and Both Start Right.

*Left* – The weight range and quantity of pigs to cross sort from the left pen.

*Right* – The weight range and quantity of pigs to cross sort from the right pen.

*Paint* – The weight range and quantity of pigs to paint. The quantity is optional, and if not specified, painting will be performed for an unlimited number of pigs within the weight range. (**optional**)

**Add Activity**

Fill out the activity information below, then click 'Finish' to save the new activity.

Source: Both Start Left

**Sort**

Left: 50 to 150 Qty: 10

Right: 250 to 330 Qty: 10

**Options**

Paint: [ ] to [ ] Qty: [ ]

Cancel Back Finish

*Add Activity Wizard – Cross Sort*

Pens are cross sorted for up to one day before the activity completes or the next pen is started (if “Both...” option selected for *Source*). A *Cross Sort* will end sooner than a day if the sort quantity is reached.

## Painting

A *Paint* activity can be used to mark pigs within a desired weight range.

Marking liquids such as Sprayolo and Spraymark paints can be used with the scale’s painter. As long as the marking liquid used is “thin” any brand/type will work.

**Note:** The food court gate is closed during a *Paint* activity forcing all pigs to use the scale to access the food court. For this reason *Paints* should be used sparingly to avoid hurting the growth rate of the pigs.

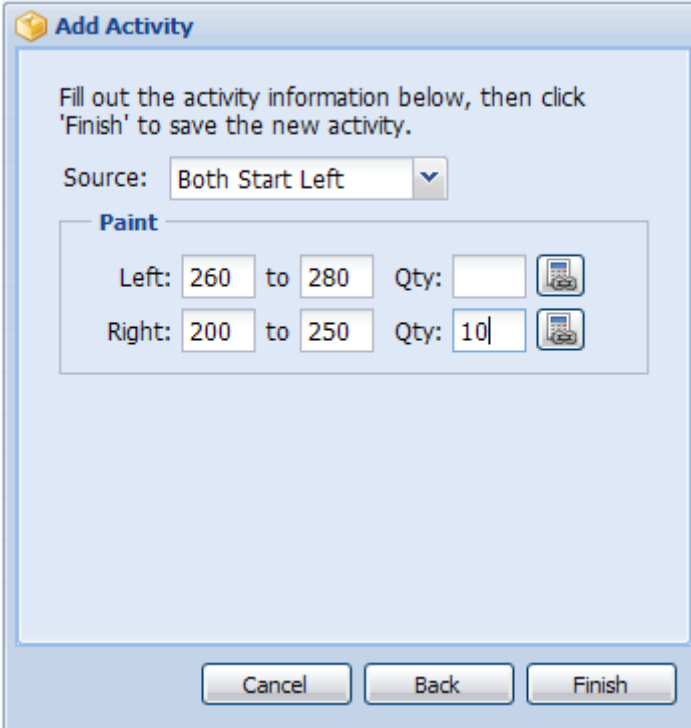
The following activity details are specified when creating a *Paint* activity.

*Source* – The pen(s) that should be painted. Available selections are Left, Right, Both Start Left, and Both Start Right.

*Left* – The weight range and quantity of pigs to paint in left pen. The quantity is optional, and if not specified, painting will be performed for an unlimited number of pigs within the weight range.

*Right* – The weight range and quantity of pigs to paint in the right pen. The quantity is optional, and if not specified, painting will be performed for an

unlimited number of pigs within the weight range.

The image shows a software dialog box titled "Add Activity" with a yellow cube icon. Inside, it says "Fill out the activity information below, then click 'Finish' to save the new activity." Below this is a "Source:" label followed by a dropdown menu showing "Both Start Left". Underneath is a section titled "Paint" in blue. This section contains two rows of input fields. The first row is for "Left:" with a value of "260", followed by "to" and a value of "280", then "Qty:" followed by an empty text box and a printer icon. The second row is for "Right:" with a value of "200", followed by "to" and a value of "250", then "Qty:" followed by a text box containing "10" and a printer icon. At the bottom of the dialog are three buttons: "Cancel", "Back", and "Finish".

*Add Activity Wizard – Paint*

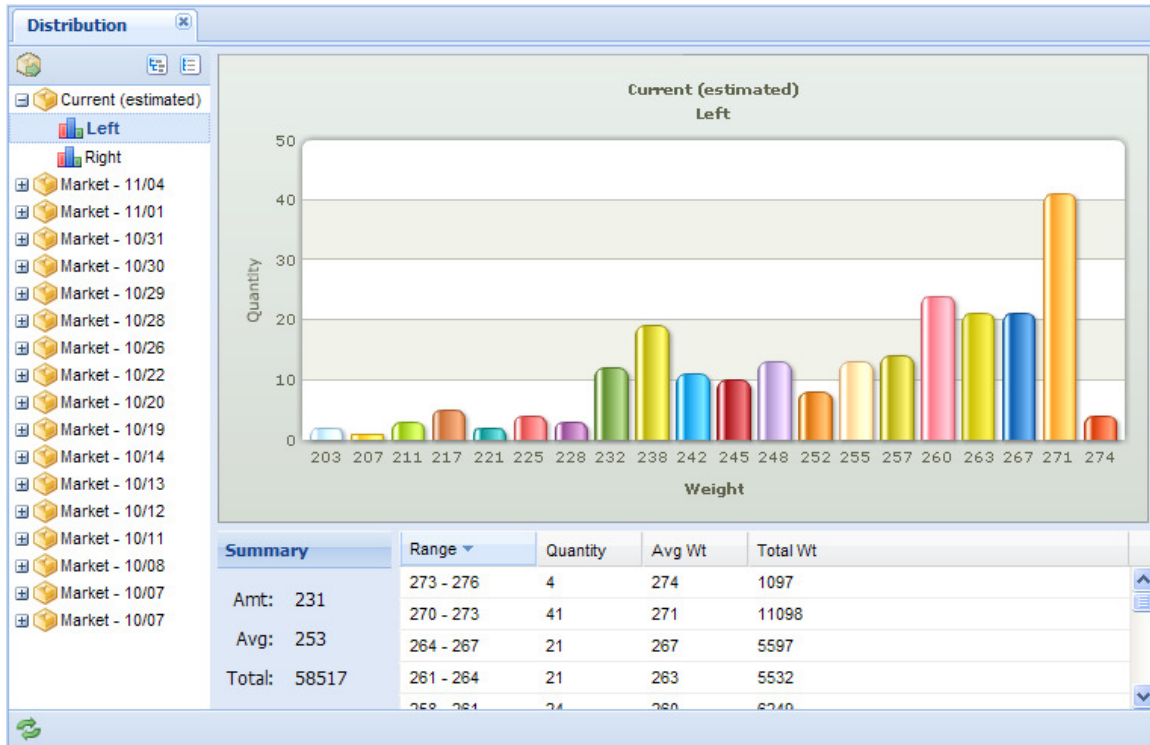
Pens are painted for up to one day before the activity completes or the next pen is started (if “Both...” option selected for *Source*). A *Paint* activity will end sooner than a day if the paint quantity is reached (if a quantity is specified).

## ***Reports***

As the scale weighs pigs it stores the data so that reports can be generated which provide insight into the status of the population in the room. In an effort to provide reports that are as accurate as possible, the scale filters the data and only uses it if it meets several quality metrics. As a result, data must be collected for at least two weeks (not including training) before it is possible to generate reports. If population information is incorrect or cross sorting is performed report generation may be further delayed.

## **Weight Distribution**

Open the *Distribution* interface by clicking on the *Distribution* navigator option (#1, Figure 1).



**Distribution Interface**

By expanding the items listed in the report tree on the left side of the *Distribution* interface available reports can be viewed. Clicking on a report in the report tree will load it in the center of the interface. The data is displayed in a bar graph and grid for each report.

As soon as the scale is able to generate reports the *Current* distribution is generated in the *Distribution* interface.

The *Current* distribution for a pen shows estimates of the number of pigs and their weights to date. The estimates are made by forward projecting the last set of quality data collected by the scale. To forward project the data, the average daily gain of the pen is used to predict the present weight of each pig. The accuracy of this report depends largely upon the uniformity of the data and the quality of the population information recorded in the *Population* interface.

Additional distribution reports are generated for each *Market*, *Sort Out*, and *Cross Sort* activity performed. Unlike the *Current* distribution these reports are not estimates and represent exactly what was sorted. If a *Split* or *Paint* option was specified for a sort a report will be generated for them as well.

## View Activity Tool

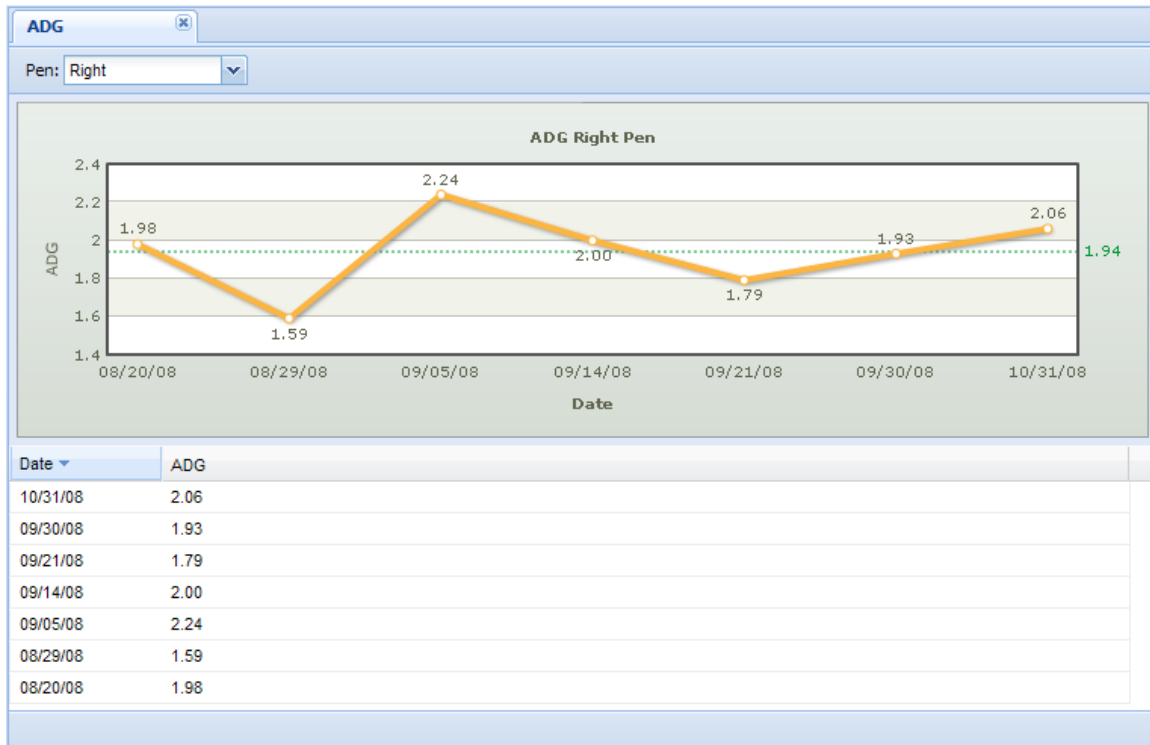
Distribution reports other than the *Current* distribution are generated by *Market*, *Sort Out*, and *Cross Sort* activities. The *View Activity* tool provides a convenient way to view the activity that generated a distribution report in the *Activities* interface.

To **view** the activity that generated a distribution report:

1. Click a report other than the *Current* distribution in the distribution report tree.
2. Click the 🏠 icon above the report tree.

## Average Daily Gain (ADG)

Open the *ADG* interface by clicking on the *ADG* navigator option (#1, Figure 1).



### ADG Interface

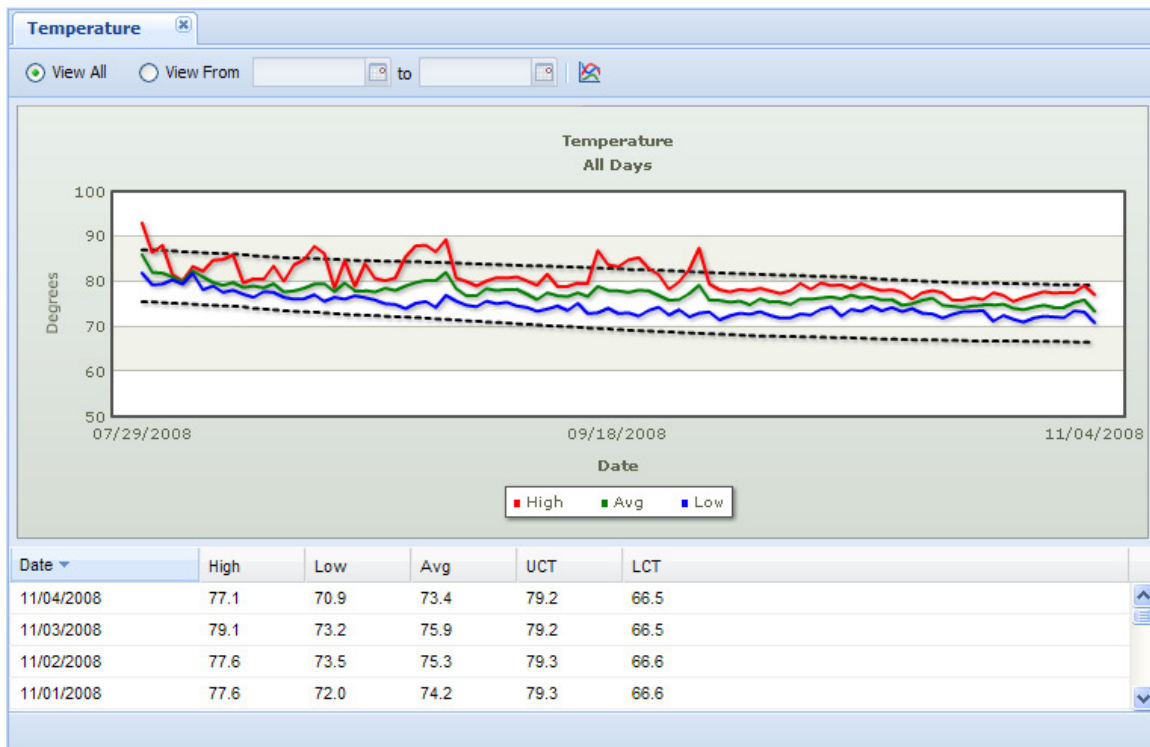
*ADG* reports are generated for each pen as well as overall (both pens). The report displayed can be changed by selecting a different option from the *Pen* drop down list. The data is displayed in a line graph and grid for each report.

**Note:** When quality data for report generation is just becoming available it is possible to have reports generated for only one of the two pens. As data becomes available for the other pen a report will be generated for it as well.

The *ADG* data points represent the *ADG* since the previous data point. The longer the *Main* activity is allowed to run uninterrupted by other activities (such as *Cross Sorts* and *Paints*) the better the *ADG* data will be.

## Temperature

Open the *Temperature* interface by clicking on the *Temperature* navigator option (#1, Figure 1).




### *Temperature Interface*

A *Temperature* report is generated as soon as a day's worth of temperature data has been recorded by the scale. Data points for Upper Critical Threshold (UCT) and Lower Critical Threshold (LCT) are not generated until the weight data quality requirements for report generation are met.

UCT and LCT are the temperatures above and below which growth rate and feed efficiency may be negatively impacted. These values are calculated using the average weight of the pigs in both pens for each day.


By default the *Temperature* report for all days on record is displayed but it's also possible to view only a certain range of days.

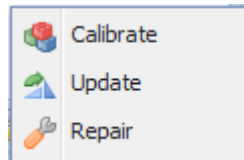
To view the report for a **date range**:

1. Click *View From*.
2. Enter a starting date in the first date field.
3. Enter an ending date in the second date field.
4. Click the  icon to generate the report.

## Maintenance

### Opening Maintenance Menu

Open the *Maintenance* menu by clicking the  icon at the bottom of the *Navigator* interface (#1, Figure 1).

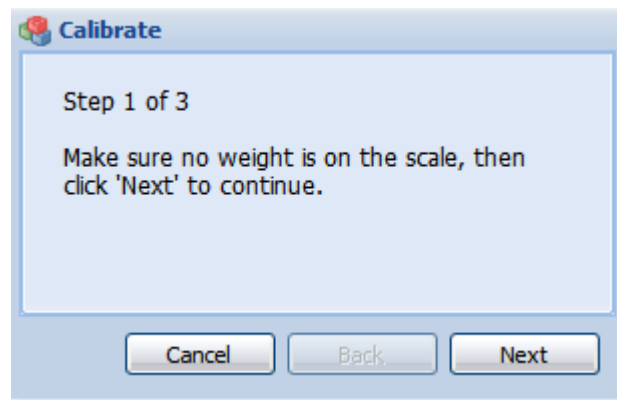


*Maintenance Menu*

### Calibration

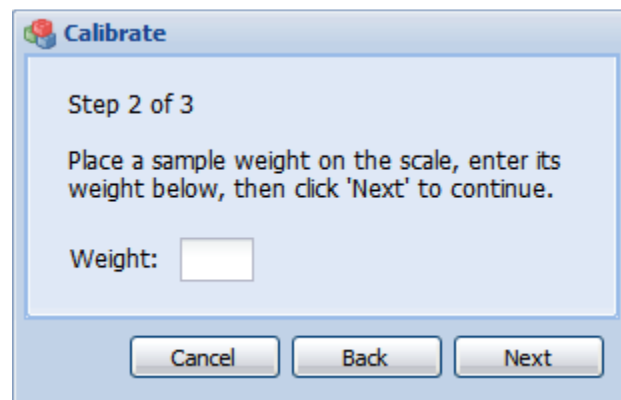
In order for the scale to accurately measure weights it must be calibrated. To calibrate it, click *Calibrate* in the *Maintenance* menu.

Make sure there aren't any animals on the scale and the scale cage is free of debris then click *Next* to continue.



*Calibrate – Step 1*

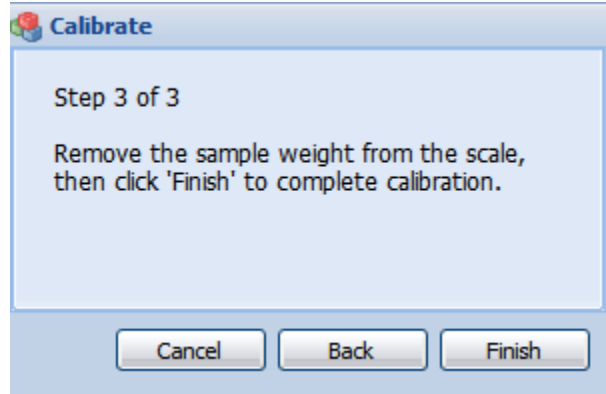
Put an object with a known weight on the scale that is about 200 lbs (91 kg) then enter its exact weight in the *Weight* field. Click *Next* to continue.



*Calibrate – Step 2*



Remove the object from the scale and click *Finish*.



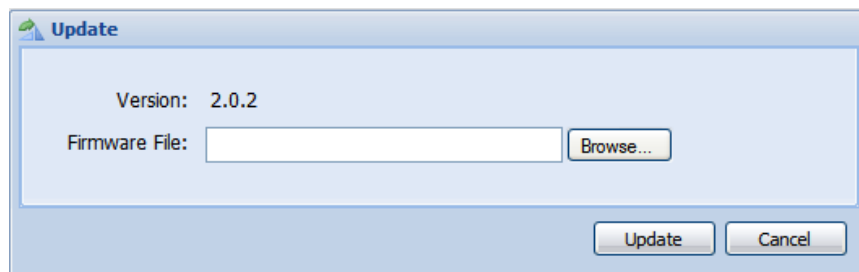
*Calibrate – Step 3*

Put the object back on the scale and look at the weight displayed on the readout to verify that the scale is weighing properly.

## Update

To update the scale's software with an update file click *Update* in the *Maintenance* menu.

Click *Browse* to select the update file then click *Update* to begin the update process.



*Update Software Dialog*

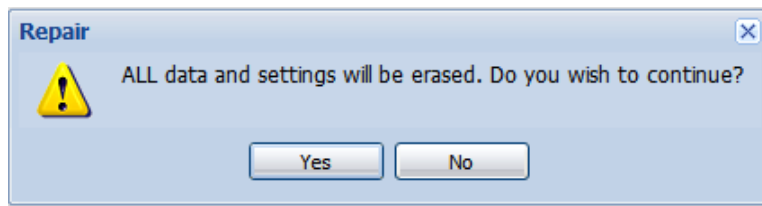
After the update file is sent to the scale, you'll be prompted to power cycle it. To power cycle it, disconnect power, wait a few seconds, then reconnect power. After power is reconnected the update will take several minutes.

### **DO NOT REMOVE POWER WHILE THE UPDATE IS IN PROGRESS**

When "Scale OFF" is displayed on the readout the update is complete.

## Repair

Clicking *Repair* in the *Maintenance* menu will cause the scale reinitialize its data storage hardware in an attempt to recover from an error state. Performing a *Repair* will erase all data including settings and calibration.



*Repair Warning*

## Maintenance

### ***Air Supply***

Water buildup in the air compressor and drip leg (above scale) should be drained once a week. If water is found in the drip leg then check for water in the scale's air regulator and drain it if necessary.

### ***Washing***

Wash the scale floor and area under it once a week for solid floors and daily for woven wire floors. If the floor isn't washed, buildup of debris will cause the scale to function improperly.

### ***Gate Lubrication***

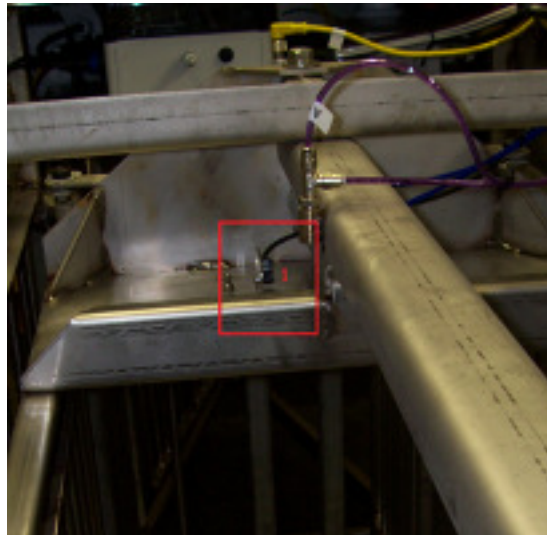
Each time the room is repopulated the scale's gates should be greased. Put grease in the grease fittings found on the gates to keep them operating smoothly.

### ***Load Cell Calibration***

Apply a known weight to the scale and verify that the correct weight is displayed on the readout. If the weight displayed is incorrect and the readout displays a zero weight when nothing is on the scale, recalibrate the scale.

### ***Photo Eye***

The photo eye is used to detect a pig on the scale; it is located on top of the weighing cage (#1 inside red box in picture below).



*Standing at Tail end of Scale*

### ***Cleaning***

Wipe the bottom of the photo eye with a damp cloth to remove dirt buildup that interferes with its operation.

## Adjusting

The photo eye is adjusted at the factory before shipment. If you must replace the photo eye, use a tape measure to set the height of the adjustment screw to  $\frac{1}{2}$  inch above the base of the mounting bracket (#2 in picture below).



*Photo eye adjustment*

The photo eye has two indicator lights and two adjustment screws (#1 above).

*Orange Light* – Lights when eye is triggered.

*Green Light* – Lights when an object has been detected.

To set the photo eye **sensitivity**:

1. Turn the *Min/Max* screw to *Max*.
2. Slowly turn the *Min/Max* screw towards *Min* stopping when the *Orange Light* turns off.
3. Make sure the *Orange Light* doesn't turn on until your hand (or some other object) is at least 6 inches from the top of the anti lay-down bar on the scale's floor.
4. Turn the *Min/Max* screw towards *Min* as needed to satisfy #3.

The *L/D* screw should always be set to *L*.

## Troubleshooting

### ***Common Problems and Solutions***

<b>Problem</b>	<b>Solution</b>
I forgot the IP address of my scale.	<ul style="list-style-type: none"> <li>- Press and hold the scale on/off button until the on light blinks 3 times to set the default IP address (192.168.0.31).</li> </ul>
I can't access the scale from my web browser.	<ul style="list-style-type: none"> <li>- If you are configuring multiple new scales remove power from them. Then, one by one, apply power and configure each scale.</li> <li>- Verify that you are entering the correct IP address into the web browser.</li> <li>- Make sure you're using a Internet Explorer 7</li> <li>- Check the network connections.</li> <li>- Press and hold the scale on/off button until the on light blinks 3 times to set the default IP address (192.168.0.31).</li> <li>- Check IP address on your computer. It must be set different than the scales, (192.168.0.98)</li> </ul>
When I view a report I don't see anything.	<ul style="list-style-type: none"> <li>- Make sure you're using a Internet Explorer 7</li> <li>- Make sure your browser has Adobe Flash Player 9 or newer installed.</li> <li>- Read <i>Reports</i> section for details on report generation requirements.</li> </ul>
I completed all the steps in the <i>Installation-&gt;Power</i> section and my scale won't turn on.	<ul style="list-style-type: none"> <li>- Make sure the power disconnect switch on the scale's power supply is in the <i>ON</i> position.</li> <li>- Check for blown fuses.</li> </ul>

Problem	Solution
Gates are not in the expected positions.	<ul style="list-style-type: none"><li>-Turn scale off and check gate default settings.</li><li>-Make sure holding pen configuration is correct.</li><li>- Perform a System Test.</li></ul>
Scale isn't weighing accurately.	<ul style="list-style-type: none"><li>-Check under floor for debris.</li><li>-Calibrate Scale.</li></ul>
Gates open and close multiple times with no obstruction.	<ul style="list-style-type: none"><li>-Replace gate sensor for that gate.</li></ul>
Readout shows "nan" or "inf" for weight or temperature reading.	<ul style="list-style-type: none"><li>-Replace load cell(s)/temperature sensor.</li></ul>
Tail gate won't close when a pig is on the scale.	<ul style="list-style-type: none"><li>-Clean photo eye.</li><li>-Place hand under photo eye and check if green LED on photo eye and the corresponding input on the scale's readout turns on.</li><li>- Replace photo eye if green LED doesn't light.</li><li>- Replace control box hardware if green LED lights but input doesn't turn on.</li></ul>
Head gate stays open.	<ul style="list-style-type: none"><li>-Zero scale.</li><li>-Replace load cell.</li></ul>

## ***Scale Identification***

### **Manufacturing Number**

Each scale has a number stamped on top of the Tail Gate linkage which indicates its *Manufacturing Number*.



*Manufacturing Number on Tail Gate Linkage*

### **Serial Number**

Each scale is assigned a serial number to uniquely identify it. The serial number label is located on the inside cover of the main control box lid.



*Serial Number Location*

### **Contact Information**

*Phone:* 800-527-7675

*Website:* <http://www.sortall.com>

*Address:* 3320 Scherer Road Kutztown, PA 19530



## Appendix A: Windows Network Configuration

### *Windows XP*

1. Click **Start**, and then click **Control Panel**.
2. Click **Network and Internet Connections**.
3. Under **or pick a Control Panel icon**, click **Network Connections**.
4. Right click **Local Area Connection** then click **Properties**.
5. Click **Internet Protocol (TCP/IP)** then click the **Properties** button.
6. Click **Use the following IP address**, and then, in the **IP address**, **Subnet mask**, and **Default gateway** boxes, type the IP address settings.

**Note:** If you're using an IP address of the form **192.168.0.X** the **Subnet mask** is **255.255.255.0**. A default gateway is usually not required.

### *Windows Vista*

1. Open Network Connections by clicking the **Start** button , clicking **Control Panel**, clicking **Network and Internet**, clicking **Network and Sharing Center**, and then clicking **Manage network connections**.
2. Right-click the connection that you want to change, and then click **Properties**.   
If you are prompted for an administrator password or confirmation, type the password or provide confirmation.
3. Click the **Networking** tab. Under **This connection uses the following items**, click **Internet Protocol Version 4 (TCP/IPv4)**, and then click **Properties**.
4. Click **Use the following IP address**, and then, in the **IP address**, **Subnet mask**, and **Default gateway** boxes, type the IP address settings.

**Note:** If you're using an IP address of the form **192.168.0.X** the **Subnet mask** is **255.255.255.0**. A default gateway is usually not required.



