



Sorting and Automation Solutions

Grape Tomato Sorter **Operation Manual**

SAFETY WARNINGS

DO NOT OPEN CONTROL/POWER/DISPLAY BOX WHILE EXTERNAL AC/DC VOLTAGE IS PRESENT. AC/DC VOLTAGE CAN CAUSE SERIOUS INJURY OR DEATH. CALL A TRAINED TECHNICIAN OR ELECTRICIAN BEFORE ATTEMPTING TO SERVICE.

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DAILY START-UP AND GENERAL OPERATIONAL GUIDELINES

1. Ensure optical tube is clean and free of debris at all times.
2. Ensure electrical power is being supplied to Grape Tomato Sorter.
3. Ensure that air regulator is being supplied with air (90-100 lbs).
4. Check "status" to ensure proper sorter performance.
5. Cycle air rejects, make sure they are all operational.

If any of the above issues cannot be rectified please contact a WECO technician.

GRAPE TOMATO SORTER OVERVIEW

WECO's Grape Tomato Sorter is an electronic color sorter intended to be used in food processing facilities to separate under-ripe (green, yellow and orange) tomatoes and foreign material from a population of good product.

SYSTEM COMPONENTS

Conveyor System

WECO provides a custom designed conveyor as an integral part of the tomato sorting system. The conveyor motors require 110V power.

Electronics/Optics Subsystem

Grape Tomato Sorters inspect fresh tomatoes for the presence of under-ripe tomatoes and foreign material. The Grape Tomato Sorter inspects tomatoes that are delivered from the conveyor belt. Optical detectors view each tomato and if a defect is detected the object is deflected to a reject conveyor.

Reject Subsystem

This device is composed of a high-speed electric solenoid valve and an air nozzle. Upon a signal from the electronic subsystem, the valve opens, providing air to the nozzle, causing it to release high pressure air. At the end of the signal, the valve closes, exhausting the nozzle. The pneumatic system includes a Filter/Regulator (FR) assembly, which provides clean air to the nozzles.

Control/Display/Power Subsystem

The main control box contains the display and control panel to adjust the unit, the electronic and reject power supplies.

CONTROLS AND OPERATING GUIDELINES

This section explains how to use the control panel to adjust the performance of the Grape Tomato Sorter. As packers face ever changing product conditions, the need to alter the performance of the sorting system is imperative. The Grape Tomato Sorter is highly adjustable

and can be changed to effectively sort for varying conditions. **Changes to the system can be made while the sorter is in use (on the fly).** It is very important that users learn to utilize the control panel in order to quickly adjust the sorter.

POWER UP

The main ON/OFF switch controls the power to the entire sorter. This switch can be found on the control screen box. The **BLACK** switch controls the overall power to the sorter. There is also a **RED** switch that controls the conveying system only. It is recommended that the unit be turned OFF when not in use, and it should ALWAYS be turned OFF during maintenance, or when any enclosure is opened.

LOG IN

Enter your password (2468) and press the green check mark (✓) to access the Main Menu.

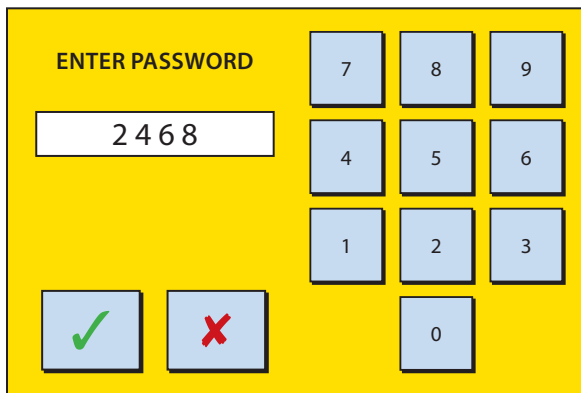


Figure 1.0

MAIN MENU

An LCD touch screen control panel (pictured below) controls the Grape Tomato Sorter. The following describes the operation of the control panel and screen, and shows how to move from screen to screen, how to select individual functions, and how to change settings.

The main menu (*figure 1.1*) provides access to all of the following sub systems except **FACTORY** which is for a WECO service technician only.

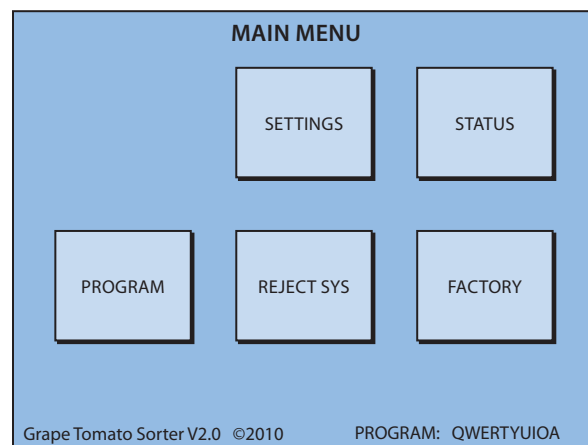


Figure 1.1

STATUS

Pressing the **STATUS** option button from the main menu (figure 1.1) provides the screen displayed above (figure 2.0). This screen gives important information as to the overall health of the sorters computer systems. On a 48" sorter with one optical tube it is possible to scroll through all six (6) cameras. Please note: There are two (2) cameras on the cross reject conveyor. Pushing the up or down arrows will scroll through the cameras and the **Camera Status** should show "OK."

If an **ERROR** (as demonstrated in figure. 2.0) is present:

1. Power the machine down, wait 10 seconds and power back on.
2. From the main menu press **PROGRAM** (figure 1.1). From this screen press the green check mark (✓) in the upper left hand corner of the screen (figure 3.0) to refresh sorter setting.

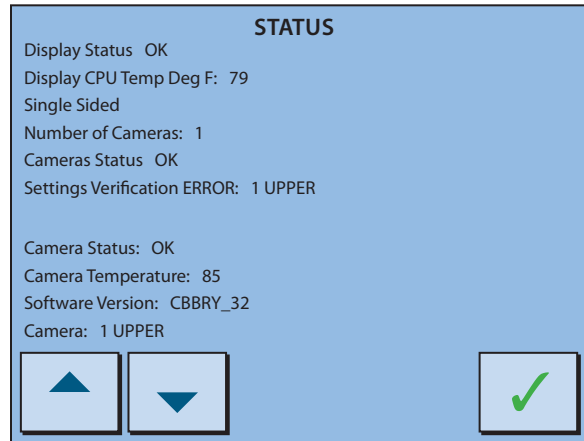


Figure 2.0

The Grape Tomato Sorter will automatically display a green screen that indicates refresh was successful.

3. Then check status again. If the problem still persists then contact a WECO service technician.

PROGRAM SELECTION

To access this screen press **PROGRAM** from figure 1.1.

Program Selection (figure 3.0) allows the user to set up several different sort setting to quickly change from one program to another. Changes in tomato varieties, weather conditions and tomato fields may require different settings. As conditions change throughout the season, additional programs can be added.

To change from one setting to another use the up/down arrows (▲▼) to scroll to the desired program. Use the green check mark (✓)

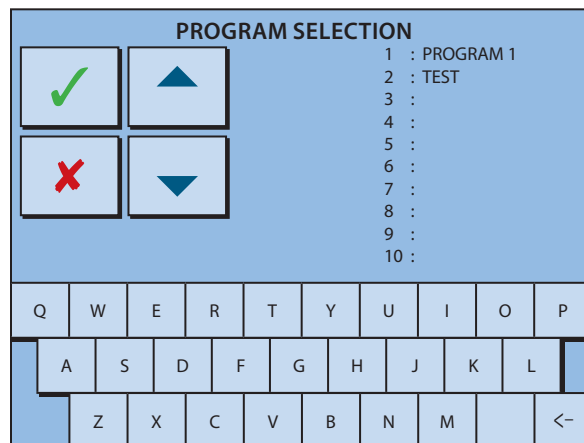







Figure 3.0

to select the new program. Input your desired color settings and press the green check mark (✓) to accept your new settings.

REJECT SYSTEM

The Reject System has three different sub-systems (*figures 4.0*).

Fire Single (*figure 4.1*): By pressing , the air jet identified in the upper right hand corner will fire rapidly. To move through all the air jets use the up/down arrows ( ) holding  to test each jet. To move back to the **REJECT SYSTEM MENU** press the red 'X' (). If at any time a single jet does not fire please contact a WECO service technician.

Fire Seq. (*figure 4.0*): Press the **FIRE SEQ.** button to test all air jets automatically. The air jets will fire one by one in sequence.

From **REJECT SYSTEM MENU** (*figure 4.0*) press **REJ RATES** (*figure 4.2*). The sub menu provides important information on how each channel is performing. There are 10 channels per camera. Each time a tomato passes in front of a channel it counts as one item. The overall percentage is how many tomatoes are being rejected over a period of time with the current settings. By pressing the **CLR** (*figure 4.1*) the previous data is erased and a new count is started. By pressing the **UPDT** (*figure 4.1*) every channel is updated in real time.

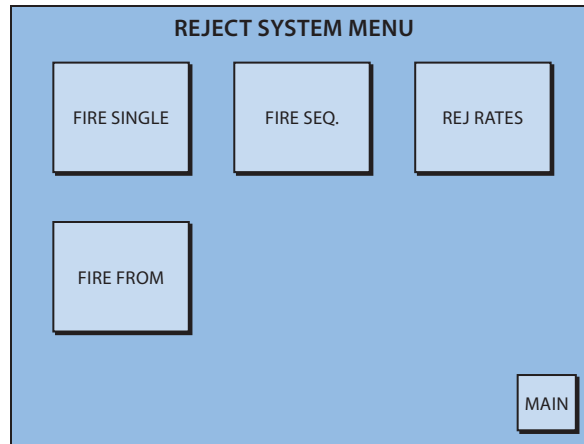


Figure 4.0

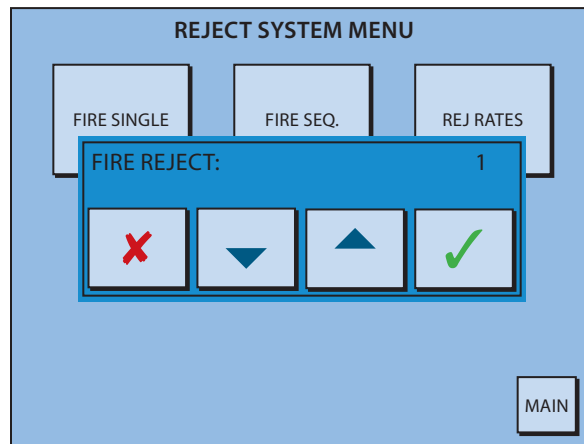


Figure 4.1

The screen displays the 'REJECT RATE % PER CHANNEL' screen with a table of reject rates for 10 channels across 4 cameras. The 'CLR' and 'UPDT' buttons are at the bottom left, and the 'MAIN' button is at the bottom right.

	CAMERA 1	CAMERA 2	CAMERA 3	CAMERA 4
1	0			
2	100			
3	100			
4	100			
5	100			
6	50			
7	100			
8	100			
9	100			
10	33			

Figure 4.2

SETTINGS MENU

Color:

The color setting has a range of 0 - 99. Zero means that the settings is turned off and will not reject product. As you turn on the settings starting at 1 and moving the numbers higher you will start to remove green tomatoes and then the higher the number is set you will begin to start removing the yellow and orange tomatoes. Remember the higher the number the more aggressive the sorter will perform. As an example to remove green tomatoes the range may be between 1 - 20, yellow may be between 20 - 30. If you increase the setting even further you will remove the green, yellow and orange (Setting range 60 - 80) allowing only the red to pass.

Color Spot:

The spot count setting defines the number of bad spots (approximately 1/16" square) that must be detected to decide if a tomato is bad, or should be re-directed. The larger the setting, the less aggressive the sort will be.

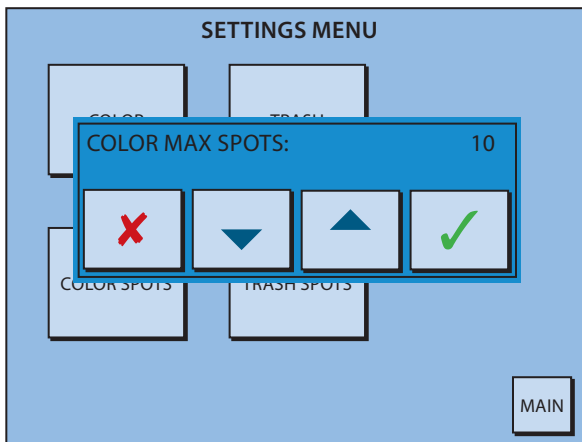


Figure 5.1

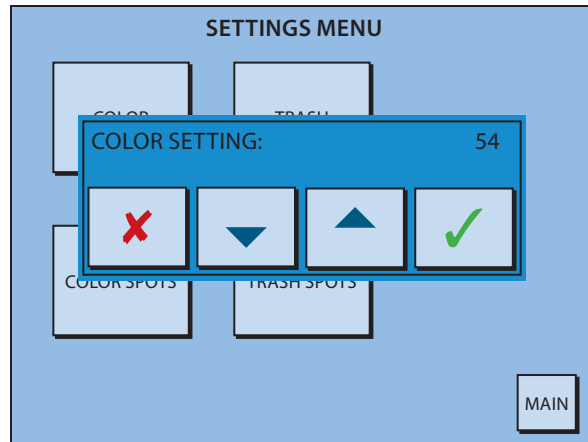


Figure 5.0

Input your desired color settings and press the green check mark (✓) to accept your new settings.

IMPORTANT: THE GREEN CHECK MARK (✓) MUST BE PRESSED FOR THE COMPUTER TO ACCEPT THE NEW SETTINGS. FAILURE TO DO SO WILL RESULT IN NO CHANGES TO THE SETTING.

The smaller the setting, the more aggressive the sort will be. The Spot Count settings are used in conjunction with the Color setting to define the cut point between "good" tomatoes and "bad" tomatoes.

But, the Spot Count settings are not typically changed once the machine has been setup for the application. To change the cut point, the Color settings are the primary adjustment.

Input your desired color spot settings and press the green check mark (✓) to accept your new settings.

IMPORTANT: THE GREEN CHECK MARK (✓) MUST BE PRESSED FOR THE COMPUTER TO ACCEPT THE NEW SETTINGS. FAILURE TO DO SO WILL RESULT IN NO CHANGES TO THE SETTING.

SETTINGS MENU *(continued)*

Trash:

The color setting has a range of 0 - 99. Zero means that the setting is turned off and will not reject product. The Trash setting is to remove foreign material and other debris from the population of good tomatoes (material other than tomatoes). The higher the setting the more aggressive the sorter will perform. If there is not foreign material present this setting can be turned to "zero" and turned off. Feel free to move the trash setting up or down to meet the needs and requirements of your packing facility.

Input your desired trash settings and press the green check mark (✓) to accept your new settings.

Trash Spot:

The spot count setting defines the number of bad spots (approximately 1/16" square) that must be detected to decide a tomato is bad, or should be re-directed. The larger the setting, the less aggressive the sort will be.

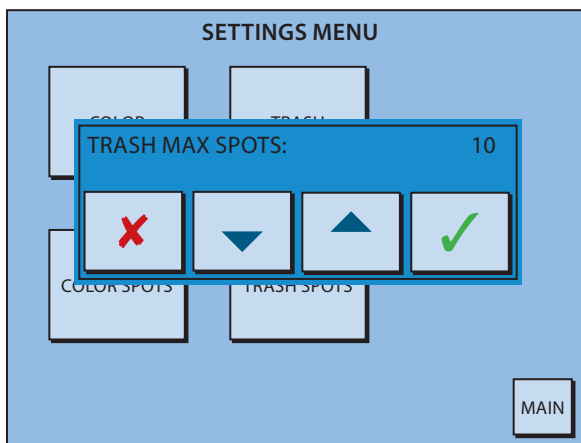


Figure 5.3

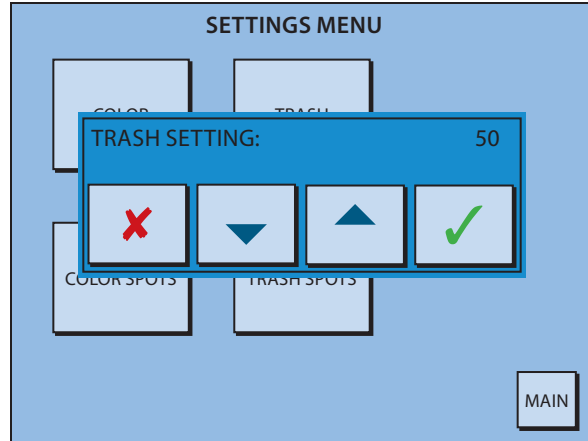


Figure 5.2

IMPORTANT: THE GREEN CHECK MARK (✓) MUST BE PRESSED FOR THE COMPUTER TO ACCEPT THE NEW SETTINGS. FAILURE TO DO SO WILL RESULT IN NO CHANGES TO THE SETTING.

The smaller the setting, the more aggressive the sort will be. The Spot Count settings are used in conjunction with the Trash setting to define the cut point between item you want removed and those item you would like to let pass.

But, the Spot Count setting are not typically changed once the machine has been setup for the application. To change the cut point, the Trash settings are the primary adjustment.

Input your desired trash spot settings and press the green check mark (✓) to accept your new settings.

IMPORTANT: THE GREEN CHECK MARK (✓) MUST BE PRESSED FOR THE COMPUTER TO ACCEPT THE NEW SETTINGS. FAILURE TO DO SO WILL RESULT IN NO CHANGES TO THE SETTING.

TROUBLE-SHOOTING GUIDE

1. No power:

If the sorter is not working first check to see if the sorter is properly connected to its electrical power supply.

Next, make sure the ON/OFF switch on the front of the power panel is in the ON position. The LED screen should be illuminated with the Main Menu.

If the LED screen is illuminated but belts are not working check the Red button below to the power button.

2. Sorter is powered up but not rejecting:

Check the filter regulator assembly. Ensure that the regulator is on and is reading approximately 90 - 100 psi.

If the regulator doesn't have airflow make sure the handle is in the UP position. If the handle is in the UP position and there is no airflow check the main compressor.

3. Power and air are operational but sorter is not rejecting:

If it is determined that the sorter has power and air is flowing to the regulator, the optics windows needs to be inspected to ensure it is clean. If the window is dirty or obscured the optics will be prevented from viewing the product properly. If the window is clean and the sorter is still not working, call a WECO service technician.

4. Machine seems to be kicking out too much good product:

It is recommended that the user turn all three "Settings" (figure 5.0) back to 0. This will cause the machine to stop rejecting product. Start moving each of the color settings up until the desired result is obtained.



Sorting and Automation Solutions

Toll-Free: (800) 984-0844

Email: eric@berrytek.net

28 North East Street

Woodland CA 95776

www.wecotek.com

WECO (Woodside Electronics Corporation), based in California, has been designing, manufacturing, and servicing electronic sorters for over thirty years and has thousands of units deployed worldwide. WECO serves several industries: tomato harvesters and tomato processing facilities; the walnut industry; and several small fruits including, blueberries, cranberries, raspberries, grape tomatoes and wine grapes.

Find WECO online at www.wekotek.com