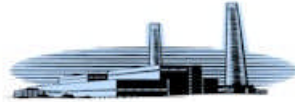# Melon Sorting, Sizing & Packing Conveyor Instruction Manual

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TABLE OF CONTENTS

GENERAL DESCRIPTION

The melon conveyor is powered by 220-Volt single-phase electricity. The conveyor also needs air supplied to it at a minimum of 50 psi.

This melon conveyor has 4 packing stations. The first three stations, located on the side of the conveyor (FIGURE 1), have adjustable limits for weights. Station 1 is the closest to the electrical cabinets.

FIGURE 1
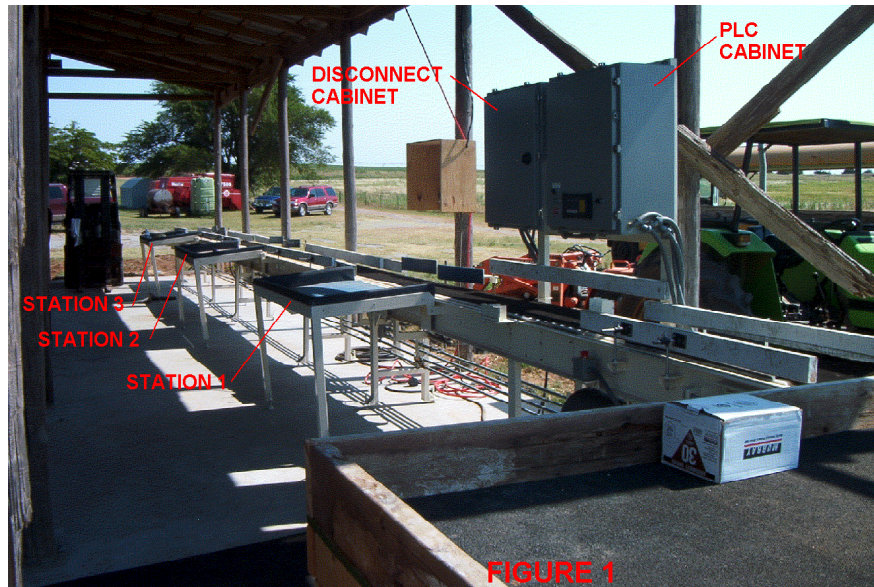
Station 2 is the middle station on the side of the conveyor and station 3 is the furthermost station from the electrical cabinets on the side of the conveyor. The last packing station at the motor end of the conveyor is an over/under station. The scale on the melon conveyor scale has a maximum capacity of 140 pounds. The conveyor belt speed can be adjusted to your preferences. The conveyor also has the ability to power an auxiliary conveyor. The auxiliary conveyor belt speed can also be adjusted to your preferences. The auxiliary conveyor needs to have a 220 Volt three phase motor.

The conveyor has two electrical cabinets. Standing in front of the cabinets, on the door side, the left cabinet is the disconnect cabinet. The right cabinet is the PLC cabinet (FIGURE 2).

FIGURE 2
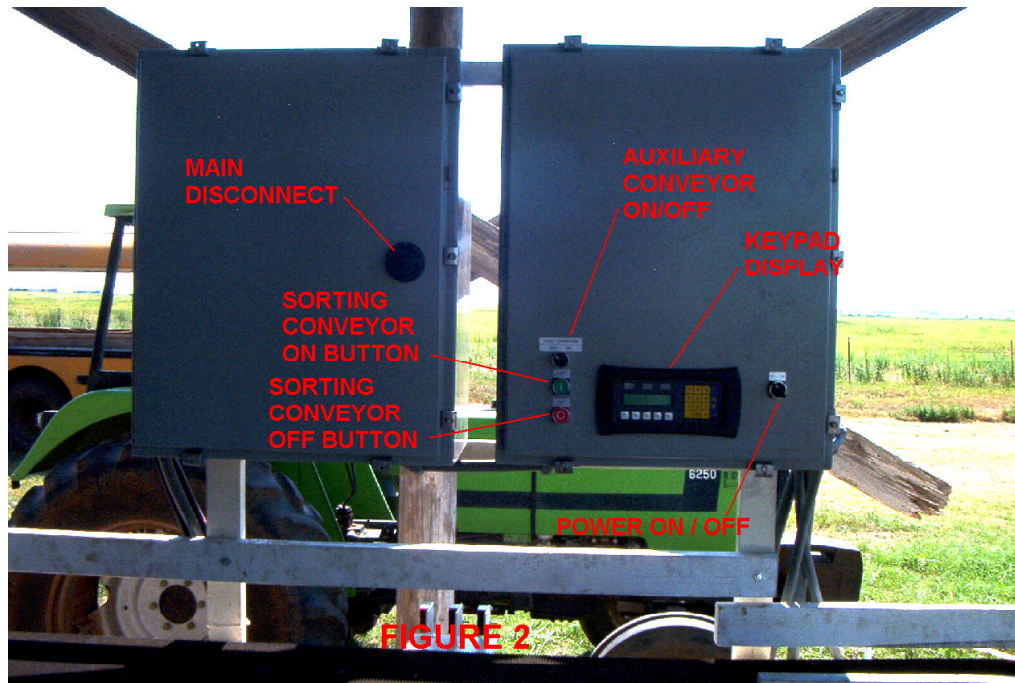
The disconnect cabinet has a disconnect switch, which provides power to entire system. To open this cabinet, the disconnect switch must be turned to the off position or "0". The clamps must be loosened and then the door can be opened.

The PLC cabinet has two selector switches, one green start button, one red stop button and keypad display.

The right ON/OFF selector switch is the power switch. This provides power to the PLC, scale...

The Feed Conveyor ON/OFF switch provides power to an auxiliary conveyor. The auxiliary conveyor motor needs to be 220 Volt 3 phase. The speed of the conveyor can be adjusted via the keypad display.

The Green start button starts the melon conveyor motor.

The Red stop push button stops the melon conveyor.

KEYPAD DISPLAY

The keypad display controls several functions of the melon-sorting conveyor. Because the display only has two lines of text, use the up and down arrow to scroll through the menu options. To select an option, move the cursor to the desired selection and press the "enter" key. To move back to the root menu, press the "esc" key.

The root menu of the keypad display is as follows:

CONVEYOR CONTROL
MONITOR SCALE
SET UP STATIONS
TOGGLE GROUP A
TOGGLE GROUP B
EDIT RECIPES
DAILY WEIGHT
FEED CONV. CONTROL
SETUP MELON TYPE

Conveyor control - This option allows you to set the speed of the melon conveyor. The slowest speed is 400 and the fastest speed is 4000. The conveyor is generally run at about 2300. To change the conveyor speed, do the following.

1. From the root menu use the up or down arrows to scroll to "CONVEYOR CONTROL".
2. Press the "enter" key.
3. The display then shows "conveyor speed XXXX".
4. Press the "enter" key.
5. The display then shows "conveyor speed 0".
6. Type in the desired speed.
7. Press the "enter" key.
8. Press the "esc" key to return to the root menu.

Monitor scale - This option allows you to monitor the weights of the melons as they pass over the scale.

1. From the root menu use the up or down arrows to scroll to "MONITOR SCALE".
2. Press the "enter" key.
3. The display then shows "MELON WEIGHT XX.X LB".

The weight of the last melon to pass over the scale will be displayed until another melon passes over the scale.

Set Up Stations - This option allows you to load one of the previously saved recipes or modify the individual minimum and maximum weights for each of the packing stations.

1. From the root menu use the up or down arrows to scroll to "SET UP STATIONS".
2. Press the "enter" key.
3. The display then shows "Load Round Recipe X"

If you want to load a recipe for long melons:

1. Scroll to the "Load Long Recipe X" line.
2. Press the "enter" key.
3. Type in "1" to load the recipe.
4. Press the "enter" key. The display will briefly show a 1 in place of the 0. When the display shows 0 again this means that the recipe for the long melons has loaded. If you continue to scroll down to the individual stations, the minimum and maximum weights that were saved in the long recipe will appear for each station.

If you want to modify the minimum or maximum weights for the individual stations:

Scroll down until "STA 1 MIN XX.X LB" is displayed. At this point you can either change the minimum weight for station 1 or scroll to another station by pressing the up or down arrow.

To change the minimum weight for station 1:

1. Press the "enter" key.
2. Type in the desired minimum weight for station 1.
3. Press the "enter" key.
4. Press the down arrow to change the maximum weight of station 1 or to scroll to another station.

Toggle Group A - This option allows you to pack melons of the same weight range at more than one station. For example: If you wanted to pack melons weighing 16.0 to 17.5 pounds at stations 1, 3 and 4, you can use the toggle option to do this. The first melon that weighed in the 16.0 to 17.5 weight range would go to station 1. The second melon that weighed in the weight range would go to station 3. The third melon in the weight range would go to station 4. The fourth melon in the weight range would go to station 1 and the process would be repeated in this cycle as long as the toggle was turned on and configured to do this.

To turn on the toggle group A option:

1. Scroll to "Toggle Group A" on the root menu.
2. Press the "enter" key.
3. Scroll to "Toggle X (1=On/0=Off)" line.

4. Press the "enter" key.
5. Type "1".
6. Press the "enter" key.

To set the minimum and maximum weights for the Toggle Group A:

1. Scroll to "Toggle Group A" on the root menu.
2. Press the "enter" key.
3. Scroll to "TOG A MIN WT=XX.X LB" line.
4. Press the "enter" key.
5. Type in the minimum weight.
6. Press the "enter" key.
7. Scroll to "TOG A MAX WT=XX.X LB" line.
8. Press the "enter" key.
9. Type in the maximum weight.
10. Press the "enter" key.

To select which stations to toggle for Group A:

1. Scroll to "Toggle Group A" on the root menu.
2. Press the "enter" key.
3. Scroll to "STA 1 = X (1=Toggle)" line.

If you want to toggle station 1:

1. Press the "enter" key.
2. Type in "1".
3. Press the "enter" key.

Scroll to the next station that you want to toggle and repeat the process. Note: The toggle feature will override the individual weights in the "Set Up Stations" section. So, if melons are going to the wrong stations check the toggle setup.

Toggle Group B - This option works just like the Toggle Group A option. Refer to the Toggle Group A instructions to set up the Toggle Group B option. Note: The Toggle Group B option will override the Toggle Group A option. So, if melons are going to the wrong stations check the toggle setups for both Group A and B.

Edit Recipes - This option allows you to save and edit two recipes that you might commonly use. We have named the two recipes "Round" and "Long" for either round melons or long melons.

To edit the round melon recipe:

1. From the root menu scroll to the "Edit Recipes" line.
2. Press the "enter" key.

3. Scroll to the "Edit Round Recipe" line.
4. Press the "enter" key.
5. "STA 1 MIN XX.X LB" is displayed. At this point you can either change the minimum weight for station 1 in the round recipe or scroll to another station by pressing the up or down arrow.

To change the minimum weight for station 1 round recipe:

1. Press the "enter" key.
2. Type in the desired minimum weight for station 1.
3. Press the "enter" key.
4. Press the down arrow to change the maximum weight of station 1 or to scroll to another station.

Daily weight - This option allows you to monitor the total weight of melons ran for a period of time. To display the total daily weight, do the following:

1. From the root menu use the up or down arrows to scroll to "DAILY WEIGHT".
2. Press the "enter" key.
3. The display then shows "TOTAL WHT. XXXXX.X"

To zero the accumulated total weight, do the following:

1. With the display showing "TOTAL WHT." press the "enter key".
2. Type in 0.
3. Press the "enter" key.
4. The accumulated value will now be zero.

Feed Conveyor Control - This option allows you to set the speed of the auxiliary conveyor as a percent of the melon conveyor.

1. From the root menu use the up or down arrows to scroll to "FEED CONV CONTROL".
2. Press the "enter" key.
3. The display will now show "% SORT CONV XX".
4. Press the "enter" key.
5. Type in the desired speed of the auxiliary conveyor". A value of less than 100 will cause the auxiliary conveyor to run at a slower speed than the melon conveyor. A value greater than 100 will cause the auxiliary conveyor to run faster than the melon conveyor.
6. Press the "enter" key.
7. Press the "esc" key to return to the root menu.

Setup Melon Type - This option allows you to setup the melon type that is being weighed. "S" is for melons with seeds (more properly long melons) and "NS" is for non-seeded melons (round melons). When "NS" or round melon is selected the melon is actually weighed three times as it crosses the scale and the average weight is used to determine

the packing station for that melon. When "S" or long melon is selected the melon is weighed only once and that weight determines which packing station the melon will go to.

To set up the melon type:

1. From the root menu scroll to the "SETUP MELON TYPE" line.
2. Press the "enter" key. "MELON TYP 0=S 1=NS X" should be displayed.
3. Press the "enter" key.
4. Type in "0" for long melons or "1" for round melons.
5. Press the "enter" key.

KEYPAD DISPLAY MENU

CONVEYOR CONTROL
  CONVEYOR SPEED
  ENCODER COUNTS
MONITOR SCALE
  MELON WEIGHT
SET UP STATIONS
  LOAD ROUND RECIPE
  LOAD LONG RECIPE
  STA 1 MIN
  STA 1 MAX
  STA 2 MIN
  STA 2 MAX
  STA 3 MIN
  STA 3 MAX
  STA 4 MIN
  STA 4 MAX
  STA 5 MIN
  STA 5 MAX
  STA 6 MIN
  STA 6 MAX
TOGGLE GROUP A
  TOGGLE (1=ON/0=OFF)
  TOG A MIN WT
  TOG A MAX WT
  STA 1 (1=TOGGLE)
  STA 2 (1=TOGGLE)
  STA 3 (1=TOGGLE)
  STA 4 (1=TOGGLE)
  STA 5 (1=TOGGLE)
  STA 6 (1=TOGGLE)
TOGGLE GROUP B
  TOGGLE (1=ON/0=OFF)
  TOG B MIN WT
  TOG B MAX WT
  STA 1 (1=TOGGLE)
  STA 2 (1=TOGGLE)
  STA 3 (1=TOGGLE)
  STA 4 (1=TOGGLE)
  STA 5 (1=TOGGLE)
  STA 6 (1=TOGGLE)

EDIT RECIPES
    EDIT ROUND RECIPE
        STA 1 MIN
        STA 1 MAX
        STA 2 MIN
        STA 2 MAX
        STA 3 MIN
        STA 3 MAX
        STA 4 MIN
        STA 4 MAX
        STA 5 MIN
        STA 5 MAX
        STA 6 MIN
        STA 6 MAX
    EDIT LONG RECIPE
        STA 1 MIN
        STA 1 MAX
        STA 2 MIN
        STA 2 MAX
        STA 3 MIN
        STA 3 MAX
        STA 4 MIN
        STA 4 MAX
        STA 5 MIN
        STA 5 MAX
        STA 6 MIN
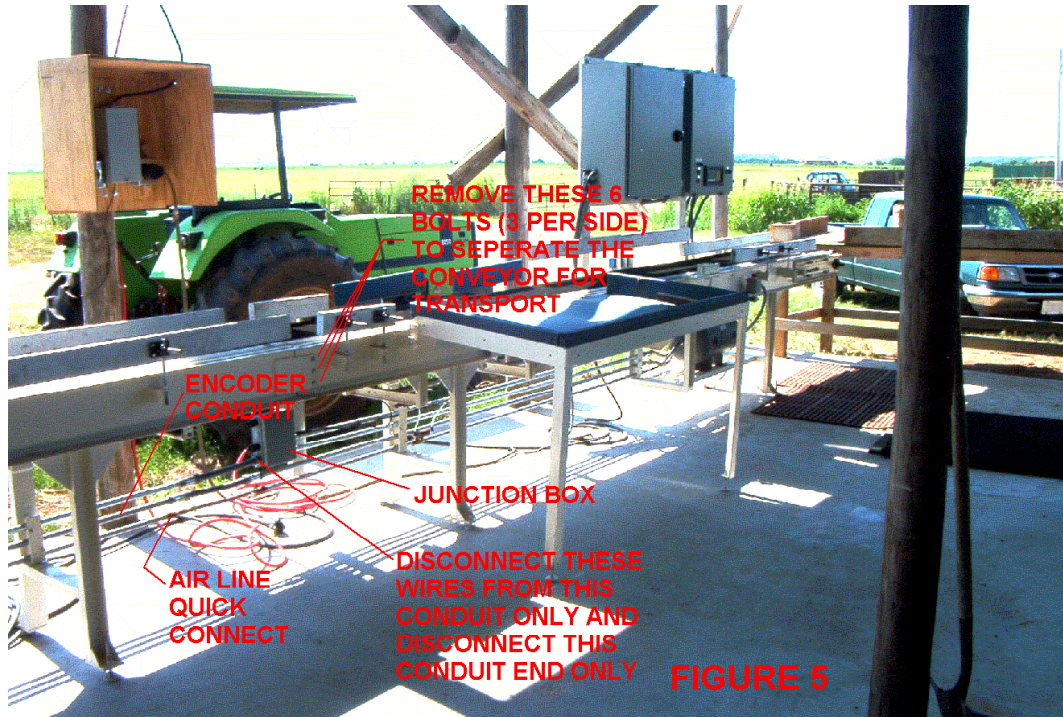   STA 6 MAX

DAILY WEIGHT
   TOTAL WHT.
FEED CONV. CONTROL
    % SORT CONV
SETUP MELON TYPE
    MELON TYPE 0=S 1=NS

SETUP AND INSTALLATION PROCEDURE AFTER MOVING

1. Slide together conveyor section one to conveyor section two. Insert six 3/8 bolts and tighten to secure the conveyor sections (FIGURE 5).

FIGURE 5

2. Slide together conveyor section two to conveyor section three. Insert six 3/8 bolts and tighten to secure the conveyor sections.
3. Using a line level or string, adjust the adjustable feet at the bottom of each leg to make the conveyor level and straight.
4. Install the four packing station tables.
5. Connect the flexible conduit ends at junction box 1 and box 2 (FIGURE 5).
6. Connect the loose wires at junction box 1 per diagram A.
7. Connect the loose wires at junction box 2 per diagram B.
8. Using a wire fish tape, pull the encoder cable to the encoder junction box (FIGURE 6).

ENCODER JUNCTION BOX

FIGURE 5
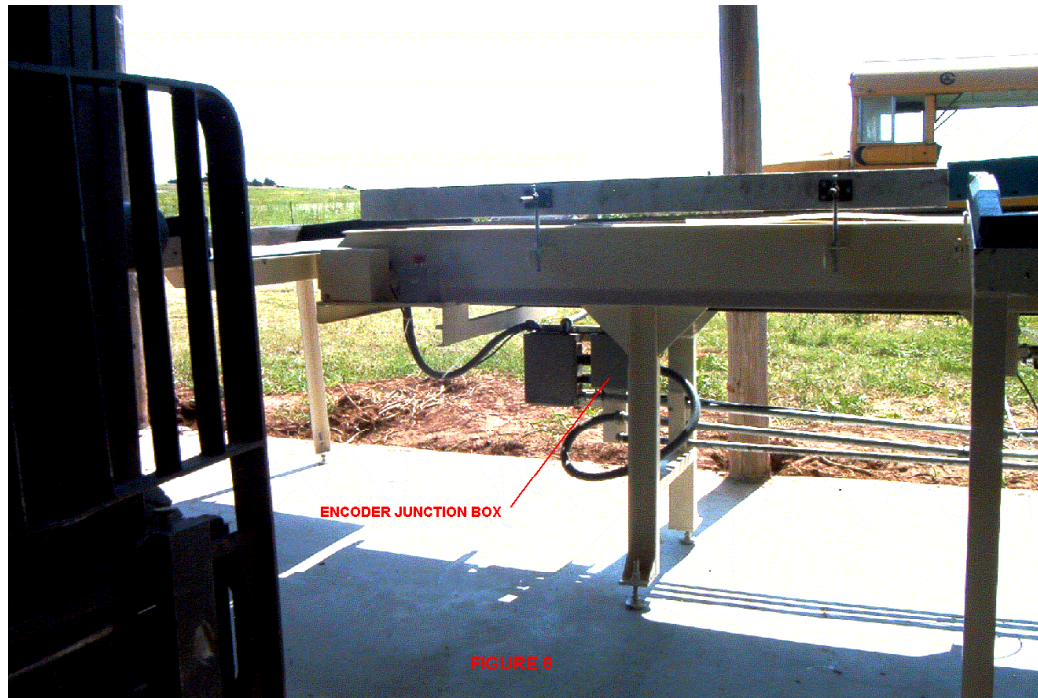
9. Connect the loose wires of the encoder cable per diagram C.
10. Connect the airlines near junction box 1 and 2.
11. Remove four scale access covers from the side of the scale conveyor.
12. Remove four 1/4 bolts from the scale, allowing the scale plate to be free from the scale overload stop blocks.
13. Remove four .015 shims from between the scale plate and the overload stop blocks.
14. Replace the four scale access covers.
15. Connect electrical power from the shed to the conveyor. The electrical power required is 220-Volt single-phase power with a 30 Amp breaker.
16. Connect an auxiliary conveyor as applicable.
17. Install the conveyor belt and tighten it using the belt tensioner located at the start of the conveyor.
18. Turn on the power to the disconnect.
19. Connect an airline to the quick connect on the air regulator. The conveyor needs at least 50 psi. of air pressure.
20. Turn on the disconnect.
21. Turn on the main power selector switch. The keypad display should light up and go through a self-check sequence.
22. Turn on the conveyor belt and let run for at least 10 minutes.
23. Zero the scale per the zero scale procedure.
24. Calibrate the scale per the calibrate scale procedure.
25. Using the keypad display set the weights for each station.
26. The scale should now be ready to operate.

ZERO SCALE
To zero or tare the scale, do the following:

1. Turn on the conveyor belt and let run approximately 10 minutes.
2. While the conveyor belt is running, press the "F1" key on the keypad display. The leftmost lamp should momentarily turn green on the keypad display.
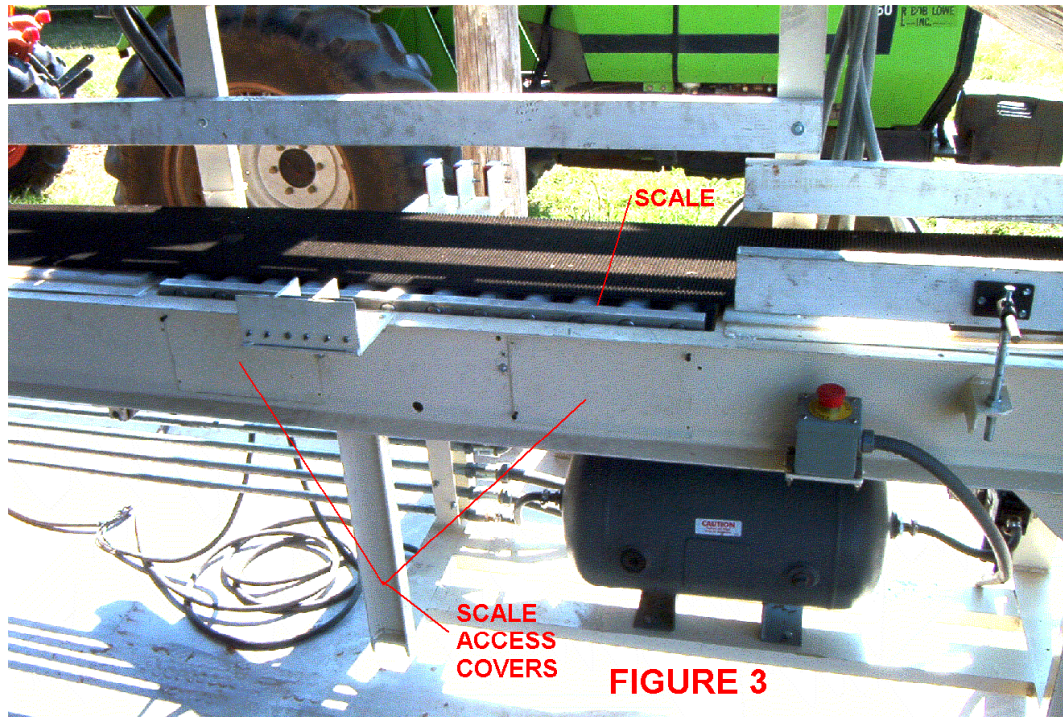3. The scale should now be zeroed.

CALIBRATE SCALE

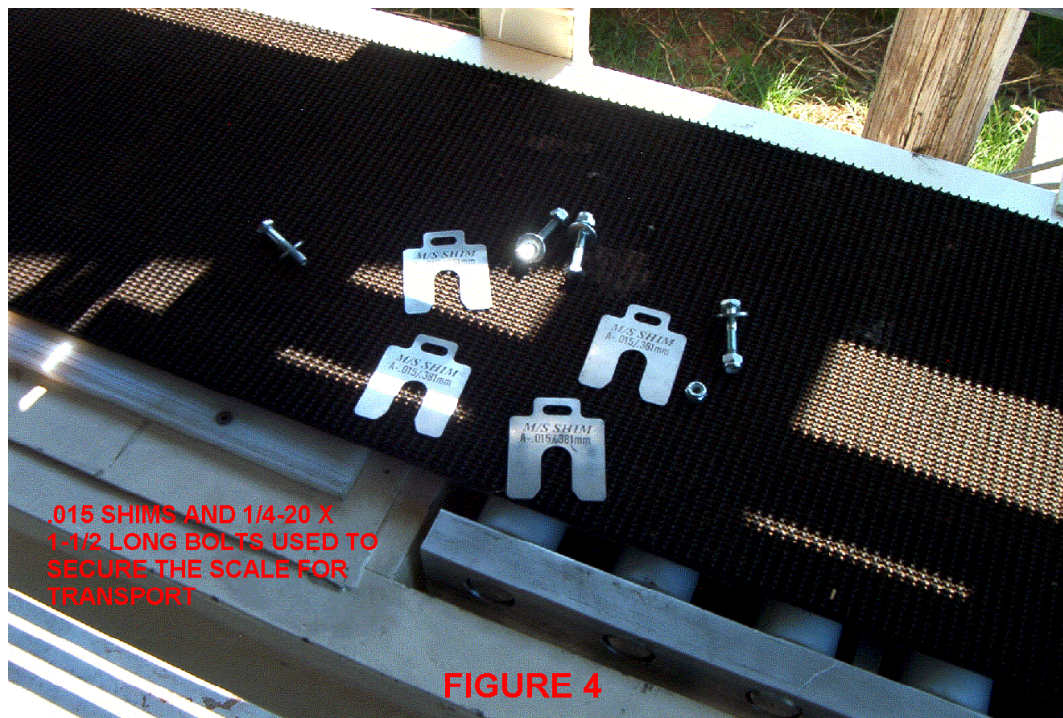To calibrate the scale, do the following:
1. Turn on the conveyor belt.
2. After the belt has ran for approximately 10 minutes and while it is still running, press the "F1" key on the keypad display to zero the scale. The leftmost lamp should momentarily turn green on the keypad display.
3. After zeroing the scale, press the "F2" key on the keypad display. The middle lamp should turn yellow and remain on.
4. Place the included weight on the conveyor belt before the scale.
5. Let the weight go completely off the scale before removing the weight from belt. After the weight passes the scale the middle yellow light should go off. The scale should now be calibrated.
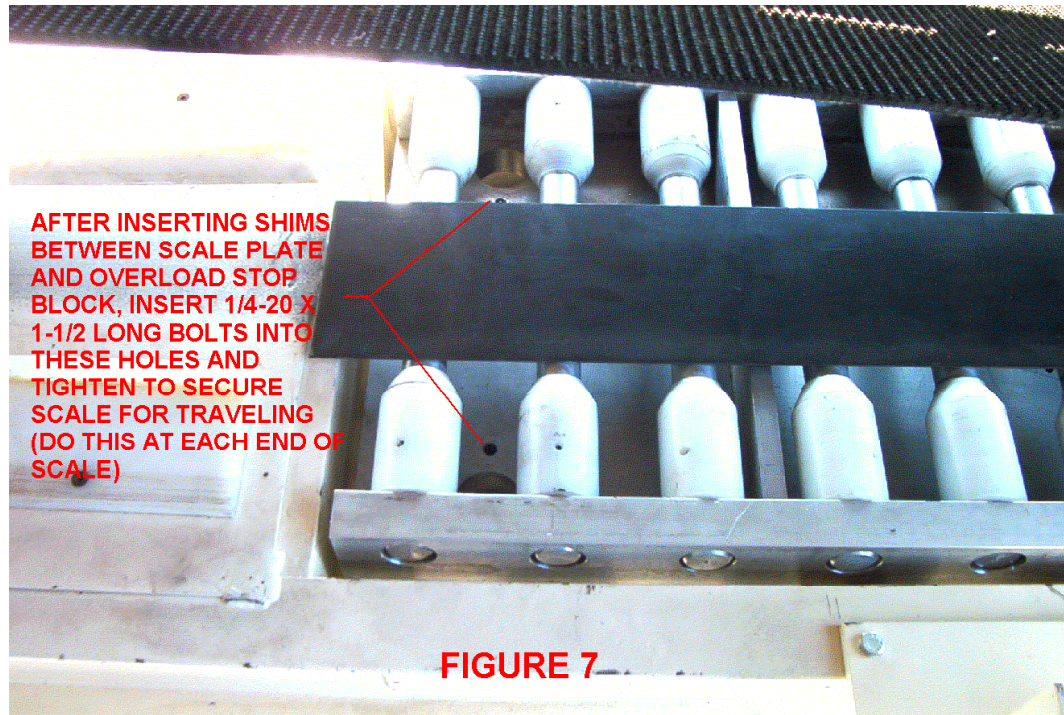
DISCONNECT PROCEDURE FOR MOVING

1. Turn disconnect to off.
2. Turn off the supply breaker.
3. Disconnect electric line to the auxiliary conveyor.
4. Disconnect electric line to melon conveyor.
5. Loosen conveyor belt.
6. Remove conveyor belt.
7. Insert shims under scale.
    a. Remove scale access plates (FIGURE 3).

SCALE

SCALE ACCESS COVERS

FIGURE 3

b. Slide .015 thick shims (FIGURE 4) between top scale plate and the overload stop block.

.015 SHIMS AND 1/4-20 X 1-1/2 LONG BOLTS USED TO SECURE THE SCALE FOR TRANSPORT

FIGURE 4

8. Bolt scale to overload stops (FIGURE 7).

AFTER INSERTING SHIMS BETWEEN SCALE PLATE AND OVERLOAD STOP BLOCK, INSERT 1/4-20 X 1-1/2 LONG BOLTS INTO THESE HOLES AND TIGHTEN TO SECURE SCALE FOR TRAVELING (DO THIS AT EACH END OF SCALE)

FIGURE 7

9. Disconnect wiring connections at junction box 1 (FIGURE 5). Disconnect the flexible conduit connection at the junction box and pull the wires from the junction box.

10. Disconnect wiring connections at junction box 2. Disconnect the flexible conduit connection at the junction box and pull the wires from the junction box.

11. Disconnect encoder cable at encoder junction box (FIGURE 6). Disconnect the flexible conduit connections for the encoder cable conduit near junction box 1 and 2. Pull the encoder cable through the conduit to near junction box 1. Coil and secure the cable for travel.

12. Disconnect the quick connect air line at the air regulator.

13. Disconnect the quick connect airline near junction box 1.

14. Disconnect the quick connect airline near junction box 2.

15. Remove packing tables from the conveyor.

16. Remove 6 bolts at the seam between the first conveyor segment and the second segment.

17. Remove 6 bolts at the seam between the second conveyor segment and the third segment.

18. Separate the conveyor sections.