



## **ARCHWEIGH 5000 BELT SCALE**

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INSTALLATION / OPERATION

8/08

Post Office Box 1760 5929 Benton Road Paducah, KY 42002-1760  
PHONE: 800-553-4567 FAX: 800-230-9462  
<http://www.aeec.com>

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# 1. Recommended Tools for Installation

Standard Phillips Screw Driver

Regular Pliers / Needle Nose Pliers

Nylon String

Wire Strippers or Utility Knife

3/8" or 1/2" Socket Set

3/16" T-Handle Allen Wrench

1/4" T-Handle Allen Wrench

Small 1/8" Straight Tip Screw Driver

1/2" Corded or Cordless Drill

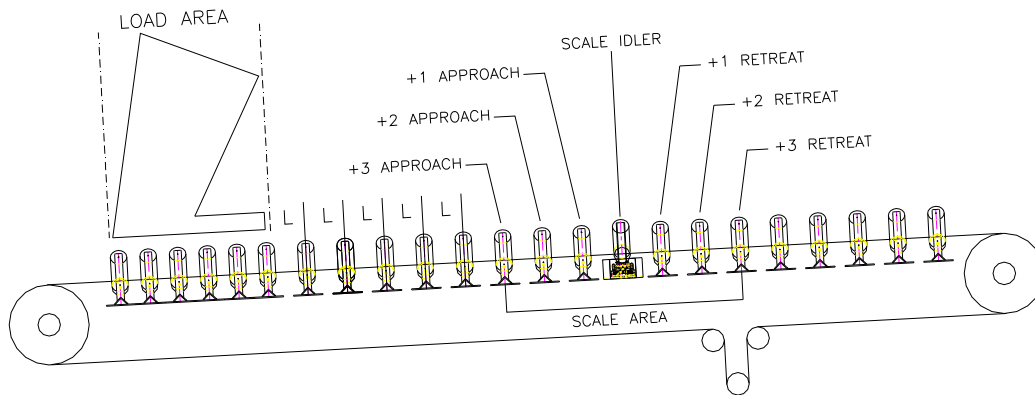
Cord Grips or Liquid Tight for Scale and Integrator Wiring

### 3. Mechanical Installation:

**Definitions:** (See Figure 1)

**Load Area:** Any area covered by skirt board material.

**Scale Area:** Area from the minus three approach idler to the plus three retreat idler.



**Figure 1**

#### **Location:**

- The weigh idler should be installed at a point where material speed and belt speed match; generally within 50 feet of the load point, but no closer than 5 idlers of the load area.
- If the scale assembly is to be mounted on a conveyor containing a curve, the weigh idler should not be installed within 40 feet of the curve.
- The conveyor should be rigid, or bracing must be added to strengthen the framework.
- Scale assemblies should be located in areas with minimum vibration.
- Training idlers should not be located within 60 feet of the scale area.
- All idlers within the scale area must be in good condition and of the same make and model. In addition, T.I.R. must not exceed +/- 0.015 inch.
- The entire scale area should be protected from the elements as much as possible.
- Idler spacing within the scale area should conform to CEMA standards based on material conveyed, speed, etc.

**Installation:** (See Figure 2)

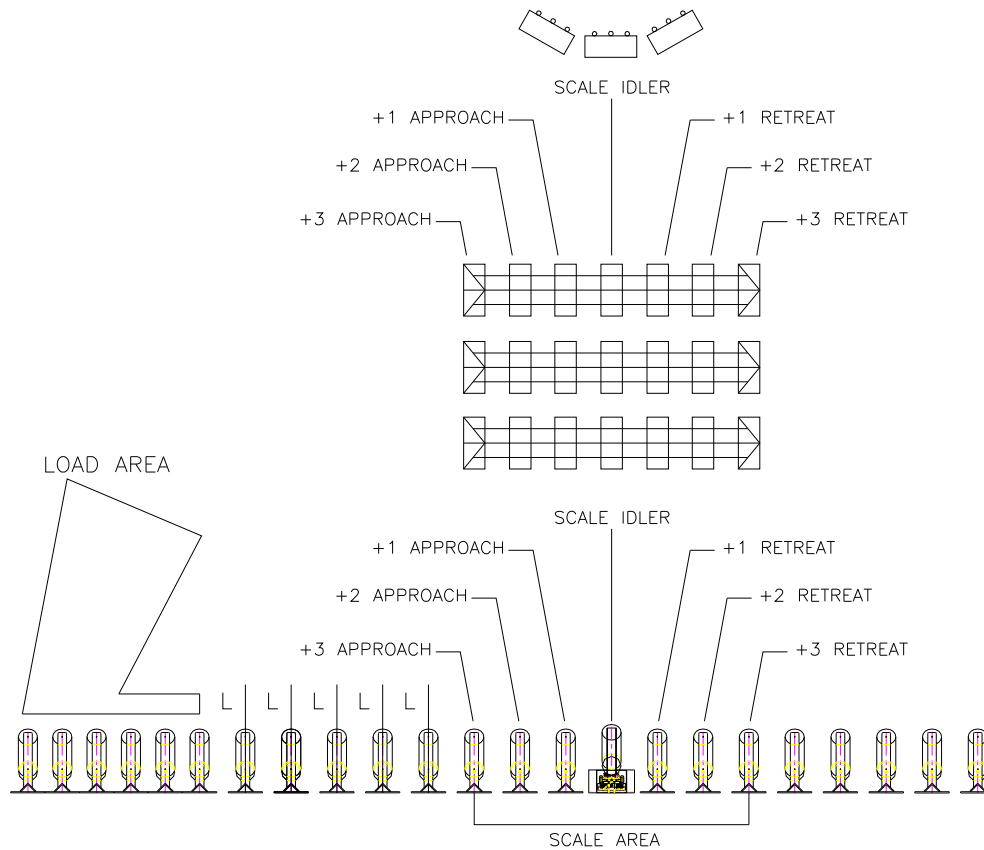
Scale Assembly:

- 1) If necessary, strengthen the conveyor framework.
- 2) Any separations (expansion joints) of the conveyor stringers near the scale must be rigidly welded together.
- 3) Insure that the conveyor is level from the minus 3 approach idler to the plus 3 retreat idler.
- 4) Raise or remove the belt over the entire scale area (from minus 3 approach to plus 3 retreat).
- 5) Remove the idler located in the scale position and replace with the ArchWeigh scale assembly.

**WARNING:** Remove the shipping pins after the scale is bolted in place. (The idler will drop approximately 1/8 to 1/4 inch when the shipping pins are removed. It will be impossible to correctly shim the idler until the shipping pins are removed.)

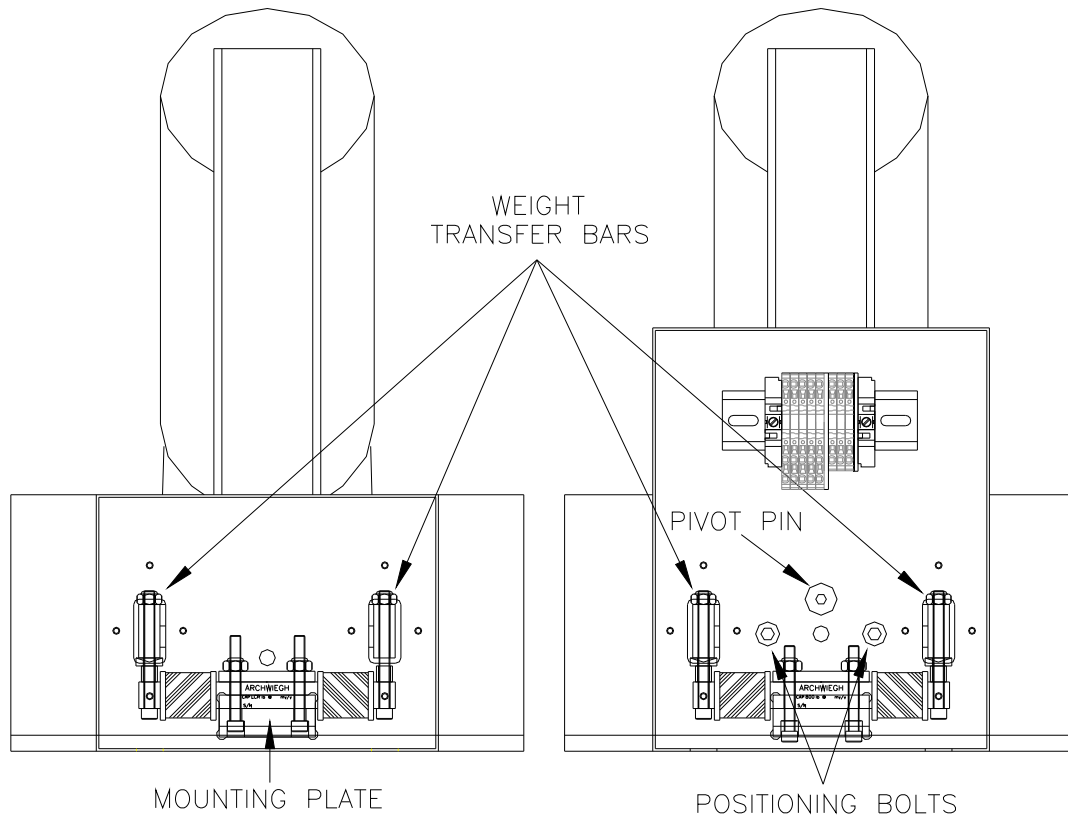
- 6) Locate and mark the mid point of the wing rolls of each idler assembly located in the scale area.
- 7) Square the minus two approach and the plus two retreat idlers with the conveyor structure.
- 8) Raise the minus three approach and the plus three retreat idlers 1/4 inch Above the belt line.
- 9) Evenly space all idlers (including scale assembly) located between the minus three approach and the plus three retreat idlers.
- 10) Tie four lines (a piano wire or equivalent) to the base of the minus three approach idler; one line running across the center marks of each wing roll and two lines evenly spaced and running across the center roll. Each line should then be tied tightly to the base of the plus three retreat idler.

**Note:** On scale systems over 54 inches, an additional string line should be placed on each wing roll for a total of 6 lines. Refer to figure 2.



**Figure 2**

- ❑ **11)** At this point in the setup process the lines should only touch the plus three and minus three idlers. The other idlers should be below the lines. If the line touches any roll located in the scale area, additional 1/16 inch shims should be evenly added to the minus three and plus three idlers until a clearance exists.
- ❑ **12)** Shim all idlers between the plus three and minus three idler including the scale idler to within 1/32 inch of the lines but not touching the lines.
- ❑ **13)** Insure that all idlers are squared, leveled, and bolted tightly in place.
- ❑ **14)** See *Figure 3* - Loosen the Pivot Pin one (1) turn, loosen the Positioning Bolts two (2) turns. Tighten the Positioning Bolts and then tighten the Pivot Bolt. This procedure removes any torsion strain placed on the assembly during installation.
- ❑ **15)** See *Figure 3* - Tighten the load cells to the weight transfer bars and the mounting plate. There are 4 bolts per loadcell that has to be tightened.
- ❑ **16)** Remove all alignment strings.



**Figure 3**

**When tightening the loadcells in the junction boxes, make sure that all (4) bolts are tightened. There are (2) bolts through the mounting plate and (1) bolt in each transfer bar.**

## 4. Electrical Connections

Once the Scale has been installed and the integrator mounted in its desired location, the electrical connections can be made. All ArchWeigh Scales are shipped with 25 feet of loadcell cable (Belden Cable P/N 8723, 22 AWG with 2 individually Shielded Pairs).

The load cells use four conductors and a shield, while the Speed Sensor uses 2 conductors. This will allow you to mount the Integrator 10–12 feet from the Scale. If you require the Integrator to be located farther from the scale ARCH can provide you extra cable, at an additional cost, or you may wish to use the above part number to buy it locally in your area.

### Starting at the Scale

You will find the two loadcell wires and one speed sensor wire connected to the bottom of the terminal blocks in the junction box. See Figure 4 and 5.

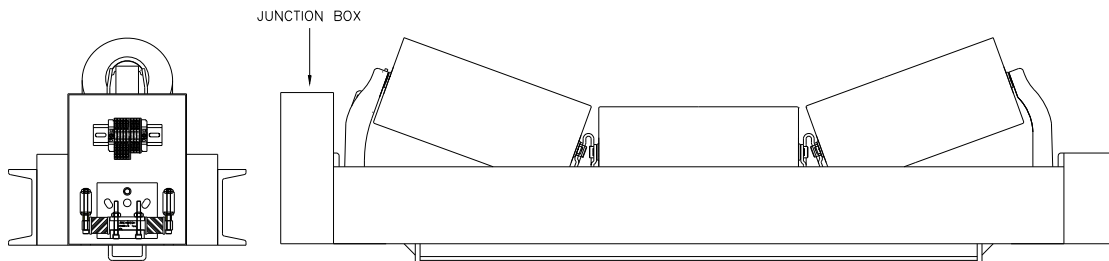
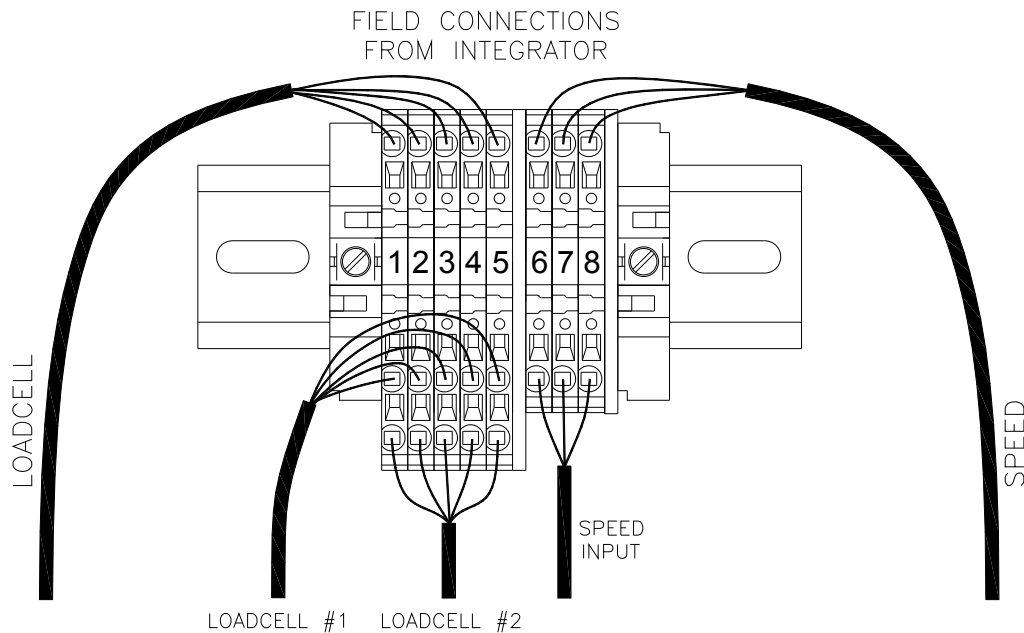


Figure 4

- ❑ 1) Remove the load cell enclosure cover from the junction box.
- ❑ 2) Place two small cord grips in the desired location of the junction box For the load cell and speed cables.

**WARNING:** *Do not cut the loadcell wires, they have been manufactured to compensate for temperature variances.*

- ❑ 3) Cut the supplied Belden Cable in half and insert one end of each cable through the side of the junction box enclosure.
- ❑ 4) Remove approximately (2) inches of the cable jacket from both ends of each cable that you inserted into the junction box enclosure.
- ❑ 5) Strip ¼" of insulation off all the colored conductors.



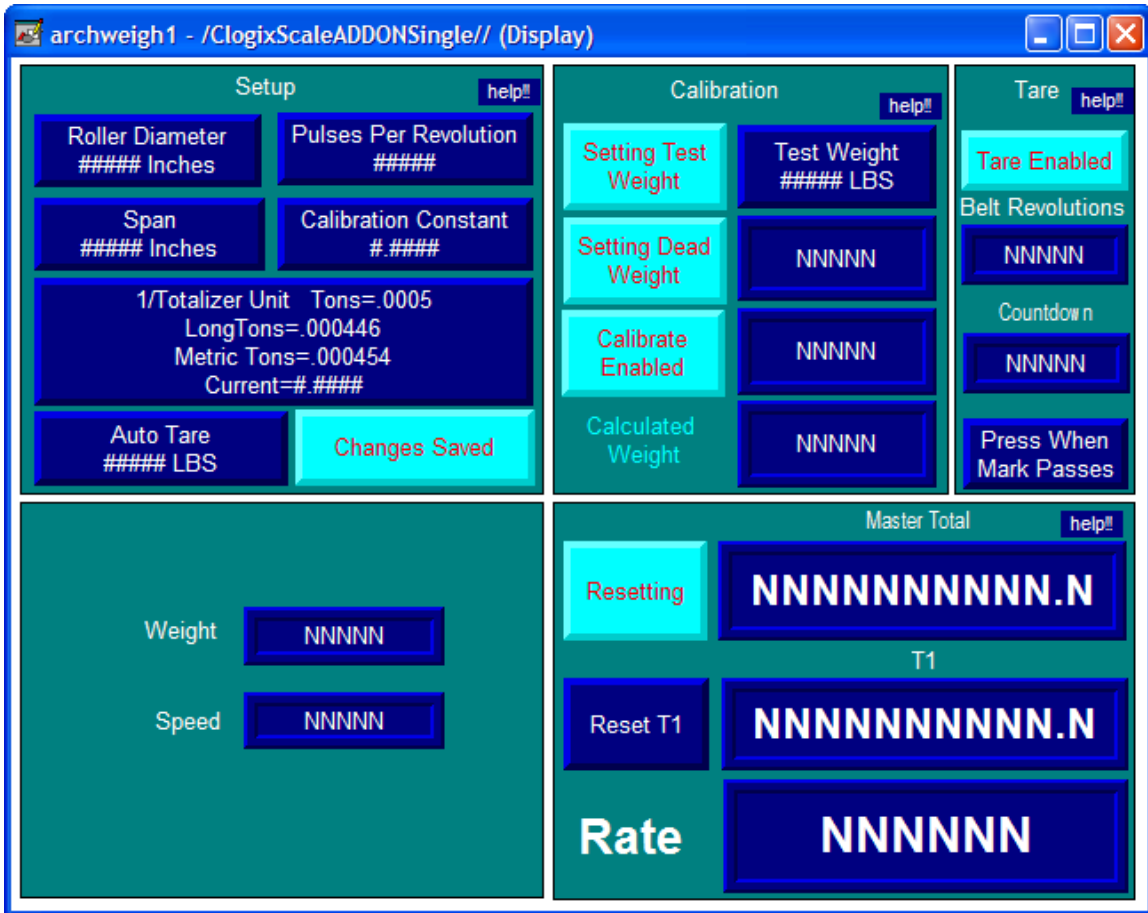
**Figure 5**

### **Terminal Strip in Scale Idler Junction Box**

- ❑ 5) Place a small straight tipped screwdriver in the square hole just below the hole that you wish to terminate the conductor in. Pull the screw driver down carefully to move the spring clamp so the wire can be inserted. After inserting the wire pull the screw driver out. Pull on the wire to insure that it will not come out of the terminal block.
- ❑ 6) Route other ends of the two cables to the Control Integrator and insert them into the box through cord grips placed at your description.

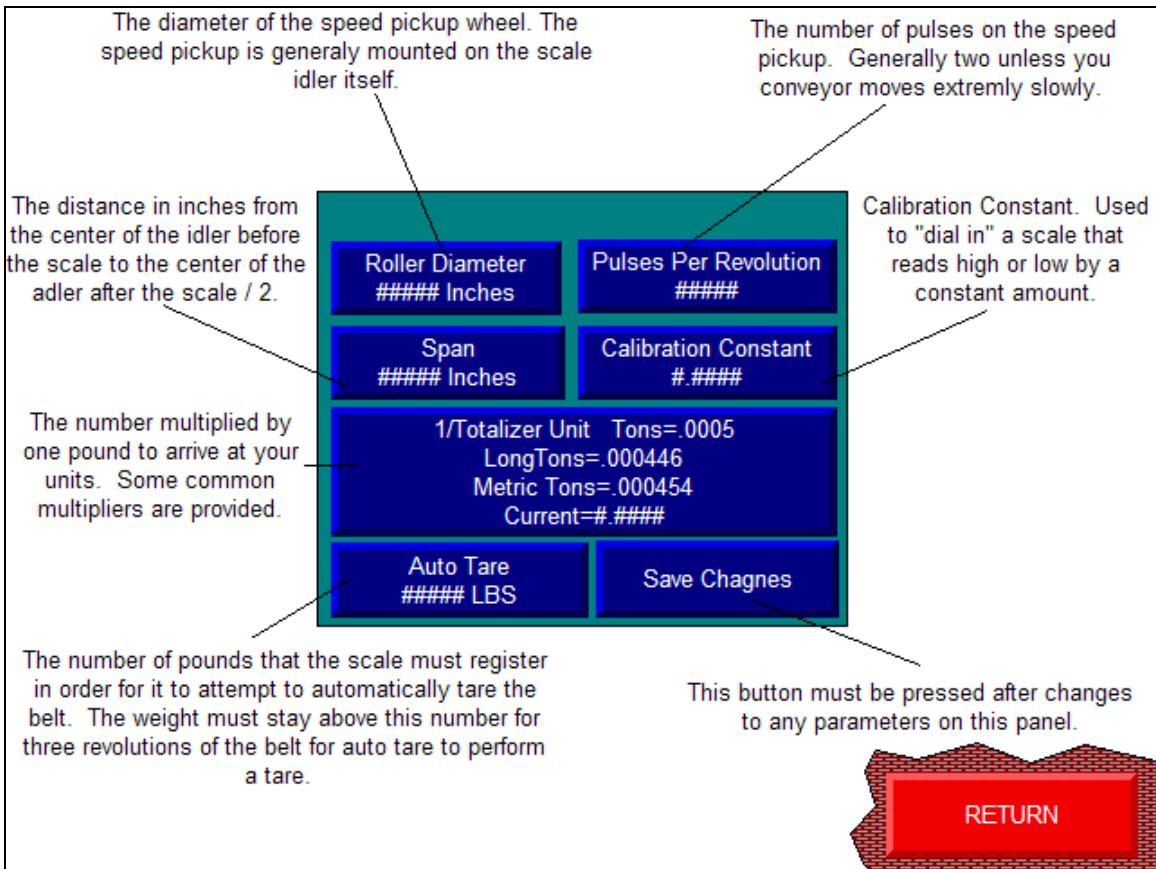
- ❑ **7)** Remove approximately (2) inches of the cable jacket from both ends of each cable that you inserted into the Control Integrator enclosure.
- ❑ **8)** Strip ¼” of insulation off all the colored conductors.
- ❑ **9)** Place a small straight tipped screwdriver in the square hole just above the hole that you wish to terminate the conductor in. Push the screw driver up carefully to move the spring clamp so the wire can be inserted. After inserting the wire pull the screw driver out. Pull on the wire to insure that it will not come out of the terminal block.
- ❑ **10)** Reinstall the Junction Box Cover.

## 10. Operational Screen Shots



**Main Screen**

**Pressing the help button in each section of the main screen will bring up a detailed explanation of each section as described on the following pages.**



## Setup Section

Perform these functions in the following order:

- Calibrate Enable
- Enter Test Weight
- Set Dead Weight
- Set Test Weight
- Disable Calibrate

(Calibrate Enable must be disabled for the scale to show total and rate)

Calibration				
Momentary push button that performs the test weight function.	<table border="1"><tr><td>Set Test Weight</td><td>Test Weight ##### LBS</td></tr></table>	Set Test Weight	Test Weight ##### LBS	Press this button to enter the amount of test weight (in pounds) that will be used to calibrate the scale.
Set Test Weight	Test Weight ##### LBS			
Momentary push button that performs the dead weight function.	<table border="1"><tr><td>Set Dead Weight</td><td>NNNNN</td></tr></table>	Set Dead Weight	NNNNN	A2D reading when the "SET DEAD WEIGHT" button was pressed last.
Set Dead Weight	NNNNN			
Maintained push button that enables the calibrate function. (must be enabled for calibration to work)	<table border="1"><tr><td>Calibrate Enable</td><td>NNNNN</td></tr></table>	Calibrate Enable	NNNNN	The current A2D reading from the loadcells.
Calibrate Enable	NNNNN			
	<table border="1"><tr><td>Calculated Weight</td><td>NNNNN</td></tr></table>	Calculated Weight	NNNNN	Shows the weight on the scale using the dead weight as a zero. After calibration is complete this should read very close to the amount of test weight on the scale.
Calculated Weight	NNNNN			

**RETURN**

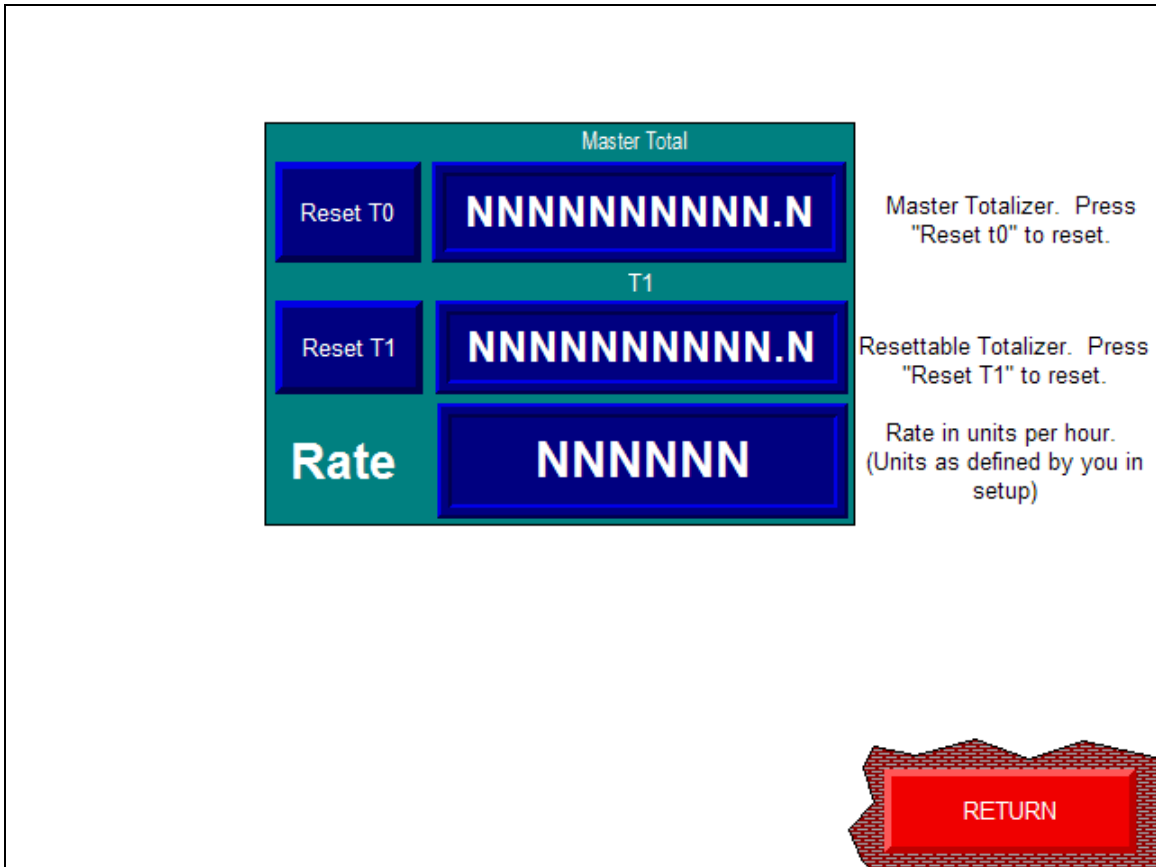
## Calibrate Section

Paint a stripe on the belt that can be plainly seen while the conveyor is running.  
After running the conveyor for 30 minutes or longer to warm up the bearings and dissipate any bumps in the belt created by the belt sitting idle, press the Enable Tare pushbutton.  
Press the "Press when mark passes" as the paint stripe passes a pre-determined place on the conveyor.  
It will be necessary to press the "Press When Mark Passes" button six times for the integrator to properly tare the belt.

The current revolution and a countdown to the end of the current revolution are displayed.



## Tare Section



## Master Total Section