GRANVILLE EQUIPMENT

Manufacturing Equipment for the Efficient Farmer

4602-A Watkins Road
Oxford, North Carolina 27565
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Electric Precision Leaf Loader

Computer Controlled Loading & Weighing

Set-up, Operation, Maintenance, and Troubleshooting Manual

June 2008

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INTRODUCTION

Thank you for purchasing the Precision Leaf Loader. At Granville Equipment we are dedicated to manufacturing equipment for the efficient farmer. With rising costs in labor, we strive to build equipment that will help farmers conserve labor, increase speed, and generate more profit.

This manual is designed to help set up, operate, and maintain your new Precision Leaf Loader. Also included is a section that will help to troubleshoot any minor problems that may arise with your Leaf Loader.

Any questions on replacement parts or servicing for the Precision Leaf Loader should be directed to the local dealer from whom you purchased the equipment.

We sincerely thank you for purchasing your new Precision Leaf Loader from Granville Equipment.

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GRANVILLE EQUIPMENT

Limited Warranty

Granville Equipment, Inc. warrants its agricultural equipment to be free of any defects in materials or workmanship utilized in the manufacturing process of its agricultural equipment. This LIMITED WARRANTY covers any defects that are incurred during the manufacturing process or any defects that arise from the operation of the equipment under normal use and operation for twelve months after delivery of the equipment to the purchaser.

Granville Equipment's obligations to its customers include repairing or replacing any parts that they deem to be faulty due to the manufacturing process only. The purchaser is responsible for the payment of all other repairs or replacement parts. Granville Equipment is not responsible for belt damage caused by improper adjustment.

Under this LIMITED WARRANTY Granville Equipment is not liable for any damages caused by the mistreatment or neglect of its agricultural equipment by the purchaser. The agricultural equipment should only be operated in a manner that is recommended by Granville Equipment.

Only work that is completed by a Granville Equipment employee or dealer is warranted. Any outside work done to the equipment does not fall under this warranty and Granville Equipment is not liable for any damages that result from outside work on the agricultural equipment.

Granville Equipment certifies that its agricultural equipment meets all federal and state regulations that exist during the time that the equipment is manufactured.

The forgoing warranty shall be the sole and exclusive liability of Granville Equipment, and is in lieu of all other warranties expressed, implied, or statutory, including but not limited to, any implied warranty of merchantability or fitness of purpose or use.

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SAFETY PRECAUTIONS

It is the owner's responsibility along with all and anyone operating this equipment to read and understand this manual before initial startup each season and before performing service or maintenance work and prior to end of season storage.

It is important to understand the operational methods and safety issues covered in this manual. However, Granville Equipment, cannot anticipate all conceivable ways service and operational functions may be performed, or the possible hazardous consequences of each. Anyone using and/or servicing the Precision Leaf Loader must first be satisfied that their chosen methods do not jeopardize their safety, the safety of others, or damage the equipment.

GENERAL PRECAUTIONS

-**Make sure** everyone is clear of all moving parts of this equipment before startup is initiated.

-**Keep** hands, feet, hair, and clothing away from all moving parts while equipment is in operation.

-**Never** operate this equipment with any safety guard removed or any safety device disabled.

-**Without exception**, before performing any maintenance, service, setup adjustments and/or any function involving contact with any moving part, stop equipment operation and secure all electrical sources with approved lock-out, tag-out devices to prevent accidental startup

-**To prevent** personal injury and/or damage to equipment, make sure all personnel operating and/or maintaining this equipment understand its mode of operation and carry out all functions using safe common sense practices.

-**Never** leave equipment unattended while in operation

-**Make sure** to pay attention to and follow the instructions of all safety decals located on the Precision Leaf Loader.

OPERATING PROCEDURES

Step 1: Move Precision Leaf Loader into desired position for operation. Do not place the touch screen in direct sunlight.

Step 2: Connect all electrical connections.

Step 3: Plug trailer cord and preload conveyor cord to Leaf Loader. Use the Toggle Switch (Fig. 5) that is mounted on the lower right-hand side of the in-feed conveyor to turn the trailer and preload conveyor on and off.

Step 4: Pull emergency stop button (Fig. 1) into out position, and the Leaf Loader will power up.

Step 5: When the Touch Screen is powered up "Cancel" may appear in the center of the screen, lightly press "Cancel" on the touch screen. "System READY" will appear on the screen and the screen will automatically go to the Operation screen (Fig. 2).

Step 6: To Set Photo-eye Delay:

Press MENU on Operation Screen (Fig. 2), then press Setup on the Menu Screen (Fig. 3). A security box will appear. Enter the security code 1 2 3, and press enter. Photo-eye sensitivity can be set in a range of 1 to 100. A setting around 90 is sufficient (Fig. 4).

Step 7: To Set Shelf Speed:

The bottom right inverter (Fig. 6) labeled "SHELF" controls the shelf speed. The range of speed for the shelf traveling in and out is 20 to 60 hertz. A setting of 40 hertz is an average speed for the shelf conveyor. Adjust the speed to a lower or higher setting according to your preference using the controls on the inverter.

Fig. 1

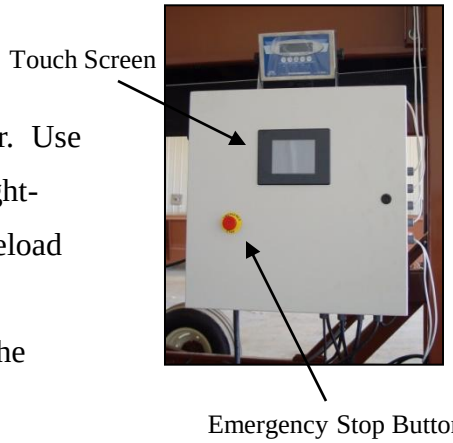


Fig. 2

Fig. 3

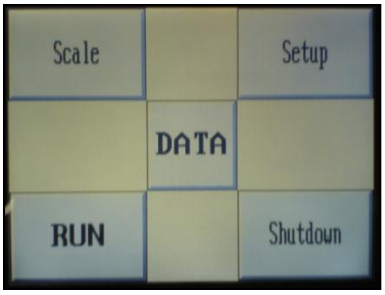


Fig. 4

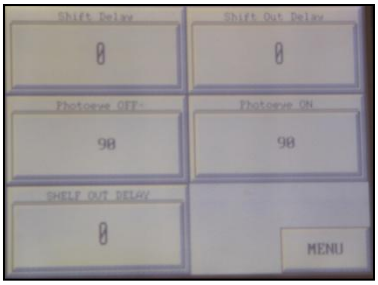


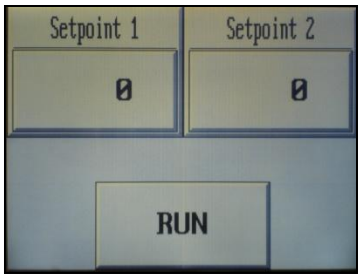
Fig. 6

Fig. 5

Step 8: To Set Belt Speed

The belt speeds can be increased or decreased by adjusting the appropriate inverter as labeled on each inverter in the control panel. The average starting speed is 40 hertz for all belts. The infeed conveyor , labeled “INFEED”, will spread the tobacco out more efficient at a slower speed. This is especially true on lower stalk tobacco. The top conveyor is labeled “TOP CON” and the shelf conveyor is labeled “BIN CON” on the inverters.

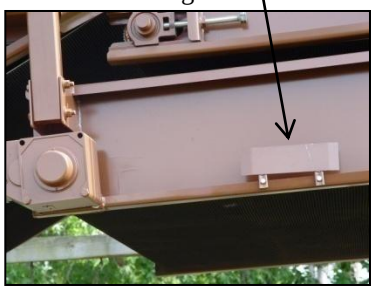
Fig. 7



Step 9: Press MENU to return to the menu screen (Fig. 3). Then press “Scale”. This will take you to the Scale screen (Fig. 7). On the Scale screen “Setpoint 1” and “Setpoint 2” will appear. Touch “Setpoint 1” to program desired weight for bottom half of box and press enter. Then press “Setpoint 2” to program desired total weight of the tobacco in the box and press enter.

Lower Proximity Sensor Plate

Fig. 8



Step 10: Slide tracking system to match the width of your bin with a ¼ inch clearance between the bin and outside rail. (Be careful not to pull on the scale wires that are in gray conduit.) Then install the track extensions on each side of the tracking system. If possible anchor the track extensions to the floor to prevent movement while loading and unloading bins.

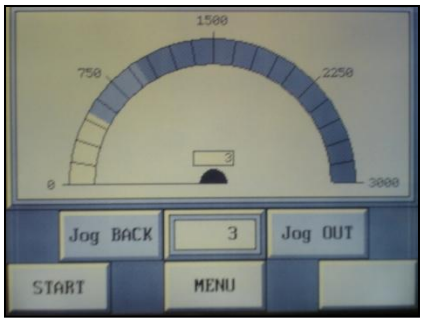
Upper Proximity Sensor Plate

Fig. 9

Step 11: The Proximity Sensor Plate can be adjusted for the length of travel of the shelf conveyor to match the size of your bins. The Lower Proximity Sensor Plate, on the rear of the shelf (Fig. 8), is set approximately 18 inches from the rear of the shelf conveyor. The Upper Proximity Sensor Plate (Fig. 9) is approximately 30 inches from the front of the shelf conveyor. The middle Proximity Sensor Plate, which activates the home position, is factory preset.

Step 12: After setting the travel distance of the shelf conveyor to accommodate the size of your bin, place two bins on the tracking system. Line the center bin up with the shelf conveyor, at this point you are ready to begin loading.

Fig. 10



Step 13: Press “Run” on the Menu Screen to bring up the Operation screen (Fig. 3). Press “Start” on the Operation screen to activate spreading process.

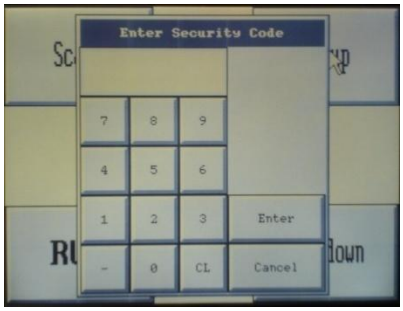
Step 14: The Photo-eye (Fig. 11) controls shelf back and out motions. When the leaf loader is first started the shelf will extend out and stop until the tobacco activates the Photo-eye sensor. The sensitivity of the Photo-eye is set by going to the Menu screen (Fig. 3) and pressing “Setup”. At the Setup screen you will need to enter the security code of 123 (Fig. 12). On the Setup screen “Photoeye OFF” should be set on 90 and “Photoeye ON” should be set on 90 (Fig. 4)

Photo-Eye

Fig. 11

Step 15: Use the trailer toggle switch (Fig. 13) to keep tobacco loading evenly into the leaf loader. It may be necessary to use the “Jog BACK” and “Jog OUT” controls on the touch screen to ensure that the tobacco is distributed into the bin evenly. Be sure that the tobacco is packed into the sides of the bins to ensure even air flow during the curing process.

Fig. 12



Step 16: The Leaf Loader will shutoff automatically when “Setpoint 1” weight has been reached. Place screen in the bin and then press “Start” to activate the loading process again so that it will reach “Setpoint 2” weight. After it is finished you are ready to remove the bin. Pin bin and set bin up immediately to ensure the best curing.

Fig. 13

Step 17: After positioning the new bin, press “Start” on the Operation screen (Fig.10) to activate the loading process for the new bin.

PROPER LOADING OF LIVE BOTTOM TRAILERS AT FIELD

For proper and efficient Leaf Loader operation the trailers must be loaded correctly at the field. Begin at the front of the trailer unloading first pile of tobacco out of the dump box. Stop, then pull forward at least 2 feet to give a break in the tobacco continuing to unload the second pile. Repeat until trailer is full. This is so the tobacco will flow off the trailer in layers onto the Transition Conveyor or Leaf Loader so that the paddle will spread out the tobacco evenly. DO NOT OVERLOAD TRAILERS, TOBACCO SHOULD NOT BE MORE THAN 36 INCHES DEEP FOR BEST PERFORMANCE OF THE TRAILER AND LEAF LOADER.

HOW TO PROPERLY TRACK BELTS

When tracking belts only move screw take ups on idler end of conveyor which is opposite to the motor end of the conveyor. See picture below. The drive end must remain square with conveyor at all times.

Standing at idler end tighten take up on right side or loosen the left side to move belt to left. Standing at idler end tighten take up on left side or loosen right side to move belt to right.

DO NOT OVER TIGHTEN BELT.

The belt should have a minimum of 1” sag (droop) in center of belt. See picture below. Over tightening of belts will break shafts. Tighten or loosen take ups one to two turns and wait for belt to make at lease 5 revolutions before readjusting more. Readjust the center belt as needed.

LEAF LOADER MAINTENANCE

MAINTENCE ON THE LEAF LOADER NEEDS TO BE COMPLETED DAILY

BE SURE THE EMERGENCY STOP BUTTON IS ENGAGED AND THE ELECTRICITY IS DISCONNECTED. BE SURE TO WAIT AT LEAST TWO MINUTES FOR INVERTERS TO POWER DOWN BEFORE TOUCHING THE WIRES

- Do not wrap touch screen or scale with clear plastic this will cause overheating. Wrap touch screen first with a clean dry cloth, then plastic may be draped over loosely.
- Clean under all belts to remove trash from underneath the belts. A leaf blower works good to do this or compressed air or use a high pressure washer. Check grease on top and bottom of the shelf rail. A light coat of grease should be between the bearings and the rail.
- Grease bearings on the rollers and the rail extension wheels once a year. Do not over grease bearings using more than one pump.
- The touch screen may be cleaned using mild soap and a damp rag. Do not leave the touch screen in direct sunlight, this will cause the touch screen to overheat.
- Make sure to lubricate the chains lightly with chain lube on the shelf rail.
- Make sure that the belts are tracked properly. Generally, adjusting the tail pulley bolts will bring the belt back into alignment.
- Clean Photoeyes twice during the season with a soft damp cloth.
- DO NOT REPLACE BATTERIES IN THE PLC OR TOUCH SCREEN WITHOUT CONSULTING YOUR LOCAL DEALER OR GRANVILLE EQUIPMENT.

CLEANING LEAF LOADER ROLLERS AND BELTS

It is very important to keep rollers and belts free of trash to prevent breakage of roller shafts and tearing of belts. A buildup of trash (usually gummy material) on the rollers will cause the belt not only to not track properly, but eventually tear. A buildup of trash will also cause the roller shaft to break.

Belts can be cleaned with “Purple Power” or equivalent heavy duty cleaner. Spray cleaner between belt and rollers along with water. Then start Leaf Loader so that the rollers and belts become saturated with the cleaner and water. You can rinse the rollers and belts off with a standard water hose or a high pressure washer. **Cleaning should be performed every week or as needed according to trash build up.**

TOUCH SCREEN TROUBLESHOOTING

THE TOUCH SCREEN IS VERY FRAGILE! DO NOT HIT OR TAP ON IT IN A ROUGH MANNER. DAMAGE TO THE TOUCH SCREEN IN THIS MANNER WILL REQUIRE REPLACEMENT AT CUSTOMER'S EXPENSE.

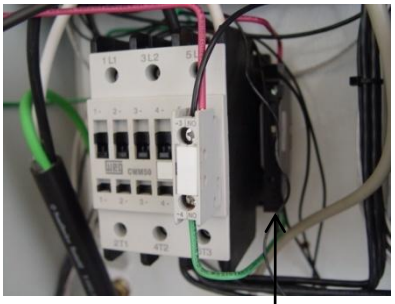
Touch Screen will not power up:

Step 1: Check the 24-volt transformer (Fig. 1) to ensure that the green light is on. If not, there is a shortage somewhere in the 24-volt system. First check the system fuse (Fig. 2) to make sure it is not blown and that 120 volts is connected to the bottom left-hand corner of the 24-volt transformer. Make sure that the transformer has an output of 24 volts at top right hand corner, if not then proceed to Step 3.

Fig. 1

Step 2: Look at back panel of touch screen and you should see four green lights illuminated. This will show that you have power to the touch screen. If the touch screen powers up and says, "No Program Found", the program backup battery has failed. The program backup battery will need to be replaced and the touch screen will need to be reprogrammed. If it needs reprogramming, call your local dealer. If the touch screen does come on, then follow the next steps.

Fig. 2



Step 3: On the top right hand corner of the 24-volt transformer (Fig. 1) there is a green plug-in (Fig. 3) with four wires. Remove the green plug-in and then plug it back in to see if the green lights will come on. If the green lights do not come on then the 24-volt transformer may need to be replaced.

Fig. 3

PLC TROUBLESHOOTING

(ALL INVERTERS ARE ACTIVATED BY A GROUND)

Step1: Check to ensure that the PLC (Fig. 1) has power. A green light on the upper right-hand corner beside PWR should be illuminated. If it is not illuminated, check to make sure 120 volts is connected to AC(L) and AC(N) on the PLC (Fig. 2). If 120 volts is not present, then check the fuse (Fig. 3). If PLC power light does not come on, then call your local dealer.

Fig. 1

Fig. 2

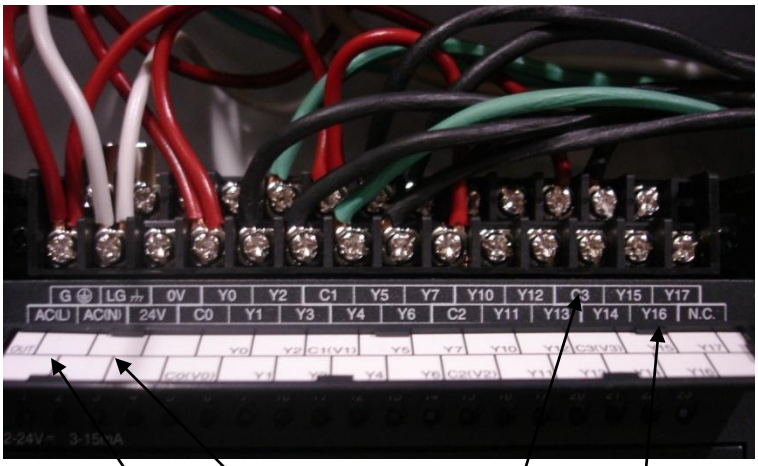
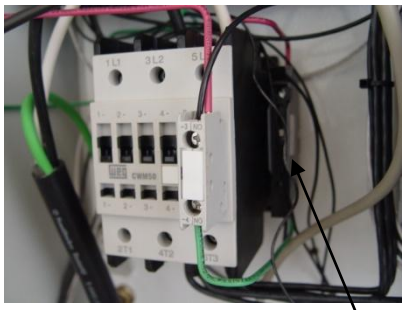


Fig. 3



Step 2: If light does come on, then you will need to check the individual functions of the PLC using the Touch Screen. On the Operation screen press menu.
After the Menu screen appears press “Shutdown”.
At the Shutdown menu (Fig. 4). This screen will allow you to start and stop the individual inverters.

Fig. 4

Step 3: On the same Shutdown menu (Fig. 4), press "Shelf BACK" to ensure that Y1 illuminates. Then press "Shelf OUT" to make sure Y2 is illuminated (Fig. 5). Y1 and Y2 carry grounds to the shelf inverter. If Y1 and Y2 does not illuminate, then you should reboot the PLC by switching the toggle switch (Fig. 7) from term to run to stop and back to term. The PLC normally operates in term position. If this does not work, then call your local dealer.

Fig. 5

Check lights for illumination

Fig. 7

PLC Toggle Switch

Step 4: Press "conv-1 ON" on the touch screen in the Shutdown menu (Fig. 4). If the infeed belt does not power up, then check for an illuminated light on Y5. If the light is illuminated on Y5 (Fig. 5) then the ground is connected to the inverter labeled "INFEED" and you should check the inverter labeled "INFEED". If the light is not illuminated then repeat the rebooting process of the PLC underlined in Step 3.

Step 5: Next check the power on the spreader paddle by pressing "Paddle ON" at the Shutdown menu (Fig. 4) on the touch screen so that "Paddle OFF" appears on the touch screen. If the light is illuminated on Y6 (Fig. 5) then the ground is connected to the inverter labeled "PADDLE" and you should check the inverter . If the light is not illuminated, then repeat the rebooting process of the PLC underlined in Step 3.

Step 6: Next check top belt operation by pressing “conv-2 ON” at the Shutdown menu of the touch screen so that “conv-2 OFF” appears on the touch screen. If the light is illuminated on Y7 (Fig. 5), then you have a ground going to inverter labeled “TOP CON” and you should check the inverter. If the light is not illuminated, then repeat the rebooting process of the PLC underlined in Step 3.

Step 7: Next check the shelf belt by pressing “conv-3 ON” at the shutdown menu on the touch screen so that “conv-3 OFF” appears on the touch screen. If the light is illuminated on Y4 (Fig. 5), then you have a ground going to inverter labeled “BIN CON” and you should check the inverter. If the light is not illuminated, then repeat the rebooting process of the PLC underlined in Step 3.

Step 8: To check the trailer operation press “Trailer ON” at the Shutdown menu (Fig. 4) on the touch screen so that it lights up to a brighter tone of gray. Then check Y10 (Fig. 5) for illumination on the PLC. If the light is illuminated on Y10 (Fig. 5), then you have a ground going to inverter labeled “TRAILER” and you should check the inverter. If the light is not illuminated, then repeat the rebooting process of the PLC underlined in Step 3.

Step 9: To check the transition conveyor operation press “preload START” on the Shutdown menu of the touch screen so that “preload STOP” appears on the touch screen. If the light is illuminated on Y3, then the ground is connected to the inverter labeled “PRELOAD” and you should check the inverter. If the light is not illuminated, then repeat the rebooting process of the PLC underlined in Step 3.

PHOTOEYE TROUBLESHOOTING

1. The shelf should travel to the out position and stop if there is no tobacco on the conveyors. When the tobacco activates the Photo-eyes the shelf should roll back and forth. If the Photo-eyes are dirty, the shelf will travel in and out constantly whether or not there is tobacco on the conveyors. If Photo-eyes are to sensitive, go to page 4, Step 6 to adjust.
2. If the shelf conveyor travels to the out position and will not return, there could be a malfunction in the Photo-eyes. You can by-pass the Photo-eyes by placing a small jumper wire between X4 on the PLC and a 24volt neutral

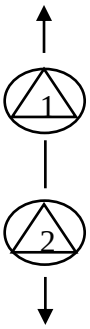
INVERTER TROUBLE SHOOTING

If there is an inverter overload the inverter will kick out and an error message will appear "E003". If this happens clear overloaded belt, check bearings, and check belt alignment so that the belt will turn freely. Power down machine and wait two minutes for the inverters to completely power down. Once powered down the inverters will automatically reset for normal operation.

Please see the following insert for a description of error codes and causes of inverter failure. If the inverter does not reset or power up please contact your local dealer.

Error Codes for Hitachi Inverter $L200_2$ Series

ERROR CODE	NAME	PROBABLE CAUSES
E01	Over current event while at constant speed	• Inverter output was short-circuited • Motor shaft is locked • Load is too heavy • A dual-voltage motor is wired incorrectly Note: The $L200_2$ will over current trip at nominally 200% of rated current
E02	Over current event during deceleration	
E03	Over current event during acceleration	
E04	Over current event for other conditions	• DC braking power(A054) set too high • Current transformer function
E05	Overload protection	• Motor overload is detected by the electronic thermal function
E07	Over voltage protection	• DC bus voltage exceeds a threshold due to regenerative energy from motor
E09	Under-voltage error	• DC bus voltage decreased enough to cause a control circuit fault
E11 E22	CPU error	• Built-in CPU had internal error

Step	Display
1. Access D081	*d081*
2. Press Function Key	If no error: – – – If error exists: EXX (error code)
3. Press Up/Down key (if error exists)  	Output frequency at trip point: 10.0 Motor current at trip point: 2.5 DC bus voltage at trip point: 284.0 Cumulative Run time house at trip point: 15 Cumulation power-ON hours at trip point: 18

SCALE MONITOR CALIBRATION FOR TRANSCELL MODEL

Step 1: Unplug scale and remove the two small bolts on the 1x1 inch cover plate on the back panel of the scale monitor. Then flip the switch to the opposite position.

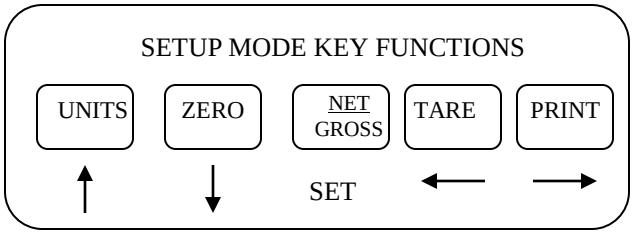
Step 2: Re-plug the scale monitor and F1 will appear on the monitor screen. This is the setup mode. You should then follow the steps in the Scale Monitor Setup / Operation Manual. See the figure below for instructions directly out of the Scale Monitor Manual on Page 6-1 and 6-2. (You can also refer to page 19 for a wiring schematic of the scale system.)

6.2 ZERO CALIBRATION (F16)

1. While in the Setup mode, scroll to "**F 16**", then scroll down once using the ZERO key to enter zero calibration menu. The display will momentarily show "**C 0**" followed by a value. This value is the internal A/D count and can prove useful when trying to troubleshoot setup problems.
2. After making sure that there are no test weights on the platform, press the ZERO key again to zero out the displayed value.
3. Press the NET/GROSS key to save the zero point value. The display will show "**EndC0**" momentarily, then revert back up to F16. At this time, proceed to the F17 span calibration to complete indicator calibration

6.3 SPAN CALIBRATION (F17)

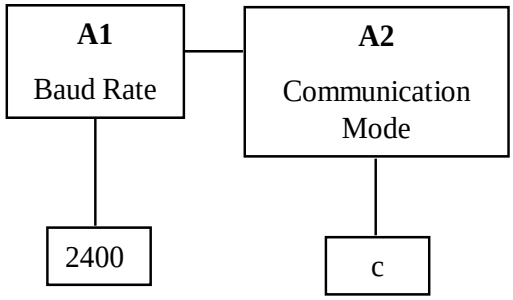
1. While in Setup mode, scroll to "**F 17**", then scroll down once using the ZERO key to enter span calibration menu
2. The display will momentarily show "**C 1**" for the span calibration, followed by a value with one flashing digit. This value will be zero with the Decimal Point parameter selected in F10. Place the test weight on the weighing mechanism.
3. Use the four direction keys (shown in Figure 6-1 below) to adjust the displayed value to the actual test weight value. Increase the flashing digit by pressing the UNITS key. Decrease the flashing digit by pressing the ZERO key. Pressing the PRINT key or the TARE key will change the position of the flashing digit.
4. After setting the exact value, press the NET/GROSS key to save the value.
5. If the calibration was successful, the display will show "**EndC1**" momentarily, then revert back up to F17.



SCALE MONITOR CALIBRATION FOR CNCELL SCALE

STEP	NAME	DISPLAY	OPERATION
1	Zero Calibration (**F15**)	XXXXX	Display internal codes at zero, press the [**SET**] key to memory the zero calibration value after the scale is stable and empty. Then return to F16 waiting for Span Calibration.
2	Span Calibration	XXXXX	Display original weight value, you can enter new value using [←] and [→] keys, return to F16 after pressing the [**SET**] key when the weight is equal with the displaying value and the scale is stable. The indicator will display the correct value by pressing the [↓] key, please re-calibrate if it is not correct, it will return to F16 automatically after calibrating successfully, it will also display the error code if not success and return to F16 after 3 seconds, please re-calibrate after checking.

For Cncell on Leaf Loader:



LOAD CELL TROUBLESHOOTING

First, check to make sure rails and load cells are clear of any debris and rails are floating freely on load cells. The arrows on the end of each load cell should always be pointing upwards.

At least 90% of all scale failure is due to loose wire connections and/or damaged load cell cords. Please inspect all cables and wires running from load cells to the junction box to scale head before preceding to any further trouble shooting. If scale wire is damaged, it can be cut and spliced together by reconnecting wires according to each matching color.

If the above is not the case and you suspect there is a faulty load cell follow the instructions below:

If weight reading on scale head is fluctuating up and down more than a couple of pounds with a steady load on the scales, and you do not have a loose load cell wiring connection or a cut in wiring, then there could be a faulty load cell. If all wires are checked and that is not an issue then you will need to isolate the faulty load cell. To find the faulty load cell, first disconnect power to your scale head, then disconnect one load cell wire connection from the grey junction box. After reconnecting power to your scales, check to see if the weight reading is steady or still fluctuating. If it is steady then the disconnected load cell is faulty, if it is still fluctuating then one of the other load cells is faulty. Reconnect the disconnected load cell and disconnect another load cell. Continue to check each load cell in this manner until you find the faulty one. Replace the faulty load cell and recalibrate scales if necessary.