

GRANVILLE EQUIPMENT

Manufactures of Quality Tobacco Equipment

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Precision Leaf Loading System

Computer Controlled Loading & Weighing

Set-up, Operation, Maintenance, and Troubleshooting Manual

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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, or to Granville 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 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 and hydraulic power 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.

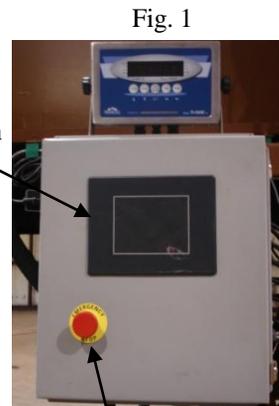
-**Never** leave equipment unattended while in operation

-**Never** attempt to check for hydraulic leaks with the equipment running. Do not come in contact with hot hydraulic fluid or hydraulic fluid under pressure. Hydraulic fluid under pressure can result in the erosion of flesh.

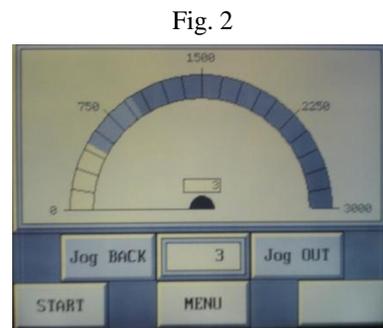
-**Make sure** to pay attention to and follow the instructions of all safety decals located on the Precision Leaf Loader.

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: Pull emergency stop button (Fig. 1) into out position, and the hydraulic pump will start. The pressure gage should read approximately 1350psi, if the gage is showing no psi and you have a 3-phase unit, the rotation on your electric motor needs to be reversed. You will need to reverse L1 and L2 in your electrical breaker box. The single-phase unit rotation is factory preset.



- Step 4: 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 then the screen will automatically go to the Operation screen (Fig. 2).



- Step 5: Then press “MENU” and the Menu screen (Fig. 3) will appear. Press “Shutdown” to view individual functions on Shutdown Menu screen (Fig. 4). Next press “Axle go DOWN”, this will lower the leaf loader into position. (The axles will not move up or down if there is any weight on the scales.) If the tracking system is empty, then press “zero” on your scales to set the weight back to zero. You then should connect trailer hydraulic lines to leaf loader. Press “Trailer OFF” to engage transport trailer so that “Trailer ON” appears on the screen. This will ensure that the trailer will function correctly. Use the Toggle Switch (Fig. 5) that is mounted on the lower right-hand side of the in-feed conveyor to turn the trailer on and off.

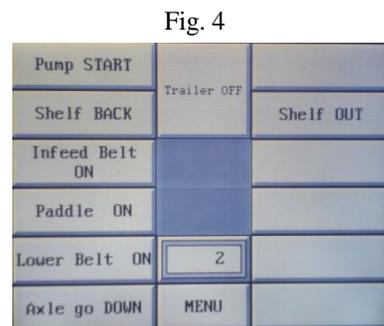
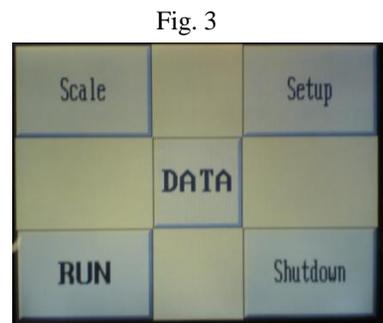


Fig. 5



Trailer Toggle Switch

Step 6: Press MENU to return to the menu screen (Fig. 3). Then press “Scale”. This will take you to the Scale screen (Fig. 6). 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.

Fig. 6



Step 7: 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.

Fig. 7



Home Switch

Step 8: The Limit Switch Stops are located inside the touch screen control box for shipping purposes. Remove and install as specified below. Set Limit Switch Stops to adjust length of travel of the shelf conveyor to match the size of your bins. The Lower Limit Switch Stop (Fig. 7) on the rear of the shelf is set approximately 18 inches from the rear of the shelf conveyor. The Upper Limit Switch Stop (Fig. 8) is approximately 40 inches from the front of the shelf conveyor. The middle Limit Switch, which activates the home position, is factory preset. (Be sure that the Home Switch is in position as shown in Fig. 7)

Fig. 8



Step 9: Refer to page 7 to set the speeds for the belts and shelf conveyor.

Step 10: 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.

Step 11: Press “Run” on the Menu Screen to bring up the Operation screen (Fig. 9). Press “Start” on the Operation screen to activate spreading process.

Step 12: The Photoeye (Fig. 10) 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 Photoeye sensor. The sensitivity of the Photoeye is set by going to the Menu screen (Fig. 3) and pressing “Setup”. At the Setup screen (Fig. 11) you will need to enter the Security Code of 123. On the Setup screen (Fig.12) “Photoeye OFF” should be set on 70 and “Photoeye ON” should be set on 70. “SHELF OUT DELAY” should be set on approximately 80.

Step 13: 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.

Step 14: The Leaf Loader will shutoff automatically when “Setpoint 1” weight has been reached. 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 your bin. Pin bin and setup bin immediately to ensure the best curing.

Step 15: After positioning the new bin, press “Start” on the Operation screen (Fig.9) to activate the loading process for the new bin.

Fig. 9



Fig. 10

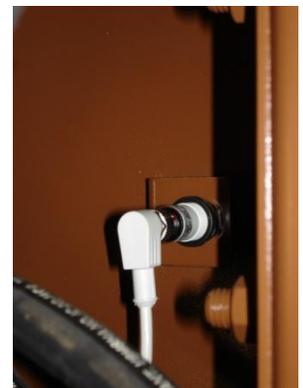


Fig. 11

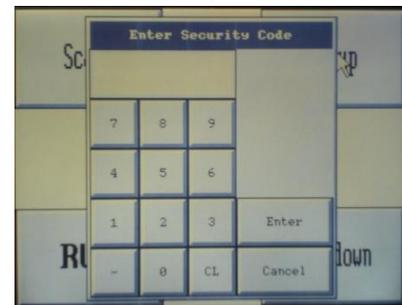


Fig. 12

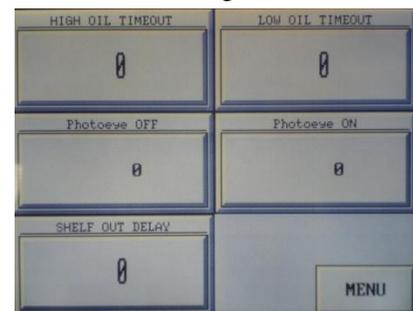
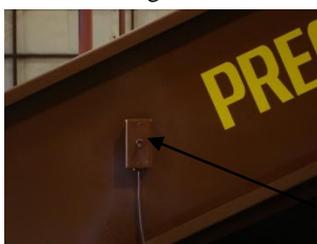


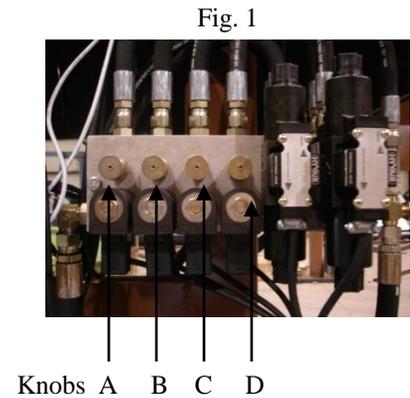
Fig. 13



Trailer Toggle Switch

SETTING CONVEYOR BELT, CONVEYOR PADDLE, AND SHELF TRAVEL SPEED

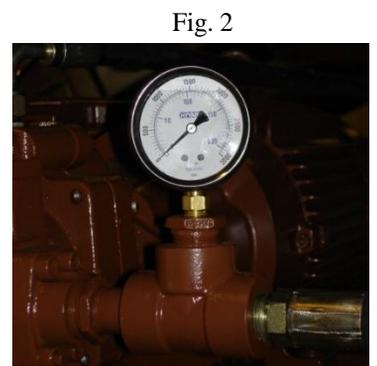
Step 1: The conveyor belt speeds are controlled by the flow controls mounted on the Hydraulic Control Body (Fig. 1). To decrease the speed of the conveyor belts, turn knobs clockwise (Fig. 1). To increase the speed of the conveyor belts turn knobs counterclockwise. If the speed is adjusted to high you will lose hydraulic pressure. The pressure reading during operation will be approximately 1300psi, this can be checked by looking at the gauge on the output of the pump (Fig. 2). If psi is low with no belts running, turn adjusting screw on hydraulic pump (Fig. 4) clockwise to increase pressure and counterclockwise to decrease pressure.



Step 2: The correct infeed belt speed, which is controlled by Knob C (Fig. 1), will be approximately 35 feet per minute to 45 feet per minute. Usually lower stalk tobacco will be approximately 30 to 40 feet per minute. You can use higher speeds on upper stalk tobacco. It should take approximately 20-30 seconds for the tobacco to reach the second shelf.

Step 3: The correct lower belt (shelf belt) speed will be approximately 212 feet per minute. To decrease the speed turn Knob D (Fig. 1) clockwise and to increase the speed turn Knob D counterclockwise. You can check the belt feet per minute speed by counting the number of times the belt lacing passes in a 1-minute period. It should pass approximately 6 to 8 times per minute.

Step 4: The correct paddle speed is approximately 21 rpm. The paddle speed can be adjusted by turning Knob B (Fig. 1) clockwise to decrease and counterclockwise to increase speed. This can be checked by counting the revolutions over 15 seconds and multiplying it by 4.



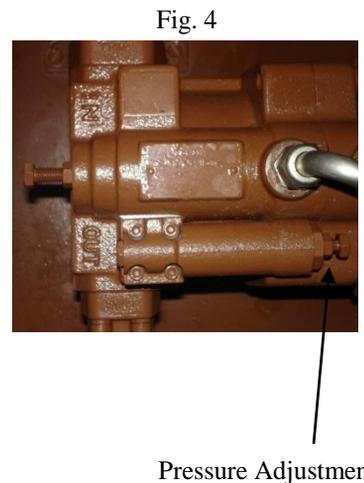
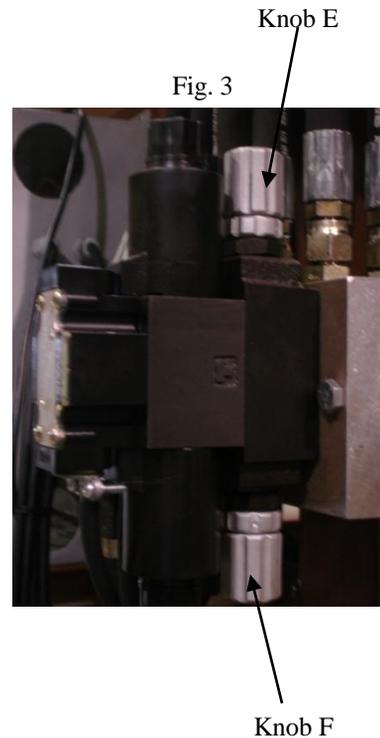
Step 5: Shelf travel speed is controlled by Knobs E and F (Fig. 3) located on the right-hand side of the Hydraulic Control Body (Fig. 1). Turn Knob E which controls the speed of “Shelf OUT” clockwise to reduce the speed of the shelf and counterclockwise to increase the speed. Turn Knob F, which controls the speed of “Shelf BACK” clockwise to reduce the speed and counterclockwise to increase the speed. It will take approximately 5 to 6 seconds for the shelf to travel out and back.

Step 6: Hydraulic pump pressure can be adjusted by loosening the locking nut and turning bolt clockwise to increase pressure and counterclockwise to decrease pressure (Fig. 4). The lower the psi, the cooler the hydraulic system will operate

Step 7: While unloading the tobacco from the trailer to the leaf loader adjust the flow control to increase or decrease the speed of the trailer by turning Knob A (Fig. 1) clockwise to decrease the speed and counterclockwise to increase the speed. Approximate speed of the trailer belt should be 3 to 4 feet per minute.

PROPER LOADING OF LIVE BOTTOM TRAILERS AT FIELD

For proper leaf loader operation the trailers must be loaded correctly at the field. Begin loading at the front of the trailer and drop off first pile of tobacco out of the dump box. Stop, then pull up at least 2 feet to give the tobacco a break and unload second pile after pulling up at least 2 to 3 more feet, then dump the last pile. Continue loading like this until the trailer is full. This is so the tobacco will flow off the trailer in layers onto the leaf loader so that the paddle will break it up evenly. **DO NOT OVERLOAD TRAILERS, TOBACCO SHOULD NOT BE MORE THAN 36 INCHES DEEP FOR BEST PERFORMANCE OF THE TRAILER AND LEAF LOADER.**



SCALE MONITOR CALIBRATION

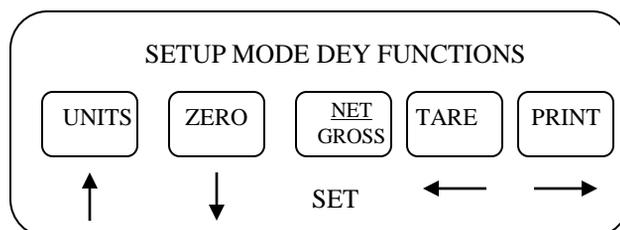
- Step 1: Unplug scale and remove the two small bolts on the 1x1 inch cover plate on the back panel of the scale monitor. Then flip the switch to the opposite position.
- Step 2: Re-plug the scale monitor and F1 will appear on the monitor screen. This is the setup mode. You should then follow the steps 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.



LEAF LOADER MAINTENANCE

MAINTENANCE ON THE LEAF LOADER NEEDS TO BE COMPLETED DAILY
BE SURE THE EMERGENCY STOP BUTTON IS ENGAGED AND THE ELECTRICITY IS
DISCONNECTED.

- 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.
- 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.
- 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.
- Replace the hydraulic filter and oil every two to three years. Use John Deere or Case IH tractor hydraulic fluid or GE fluid.
- 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 and soft damp cloth.
- **DO NOT REPLACE BATTERIES IN THE PLC OR TOUCH SCREEN WITHOUT CONSULTING YOUR LOCAL DEALER OR GRANVILLE EQUIPMENT.**

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 Photoeyes the shelf should roll back and forth. If the Photoeyes are dirty, the shelf will travel in and out constantly whether or not there is tobacco on the conveyors. If Photoeyes are too sensitive, go to page 6, Step 12 to adjust.
2. If the shelf conveyor travels to the out position and will not return, there could be a malfunction in the Photoeyes. You can by-pass the Photoeyes by placing a small jumper wire between X4 on the PLC and a neutral (Refer to page 18 for wiring schematic).

TROUBLESHOOTING: MACHINE WILL NOT START

Step 1: Make sure the emergency stop button is in the out position. (Fig. 1)

Step 2: Check your circuit breaker at the power supply to ensure that you have a voltage reading of 220 volts. A 60-amp breaker is needed for a 10 horsepower single-phase leaf loader and a 90-amp circuit breaker is needed for a 20 horsepower three-phase leaf loader.

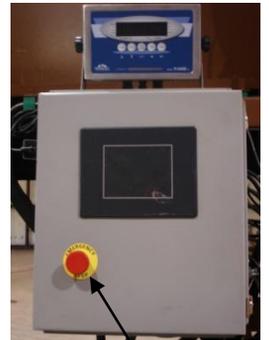
Step 3: Check voltage on the 110 electrical gray cord connected to the control box. Check the fuse located in the control box (Fig. 2).

Step 4: If the control box is powered up and the electric motor does not start up, press the reset button on the motor starter (Fig. 3).

Step 5: If the motor starter then starts and kicks off again, you are overloading the motor starter and need to reset the hydraulic speed and pressure. (See Set-up Section of Manual, pg.7)

Step 6: Then try rebutting the PLC (Fig. 4) by moving the toggle switch (Fig. 5) from term to run and then back to term.

Fig. 1



Emergency stop button

Fig. 2



Fig. 3



Reset Button

Fig. 4 (PLC)



Fig. 5



PLC Toggle Switch

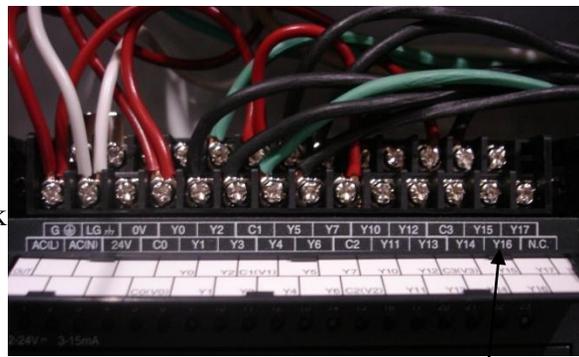
Step 7: Check voltage on the input legs (Fig. 5) of the motor starter. If voltage is 220 volts, then check voltage on the output legs (Fig. 5) to make sure it is at 220 volts as well. If no voltage is present on the input legs, you are not receiving voltage from your circuit breaker box. Check all cords and connections. If you have 220 volts on the input legs, but no voltage on the output legs, then check the voltage on the motor starter coil (Fig. 5). It should be 110 volts; if voltage is present, the motor starter box has failed and needs to be replaced.

Fig. 5



Step 8: If a voltage reading of 220 volts is present on the output legs (Fig. 5), check the wire connections on the motor starter box. If no problem is found have the motor starter box checked by your local electrician.

Fig. 6



Terminal Block Number Y15

Step 9: If no voltage is coming to the motor starter coil and the cord is connected to the main control box then open the front panel on the control box. The motor starter is controlled by the PLC (Fig. 6) terminal block number Y15 (Fig. 6). (There is a bigger diagram on page 14) With the power turned on and the pump in the on position on the Operation screen of the touch screen (Fig. 7) and the PLC has power, the terminal block number Y15 (Fig. 6) has a red light that should be illuminated and Y15 should have a voltage reading of 110 volts. The black wire should be connected to Y15 and to the coil on the motor starter. The white wire is connected to the common. (See page 18 for an in-depth wiring schematic.

Fig. 7

Pump START	Trailer OFF	
Shelf BACK		Shelf OUT
Infeed Belt ON		
Paddle ON		
Lower Belt ON	2	
Axle go DOWN	MENU	

Step 10: If no current is present on Y15 and the light is not illuminated, check to make sure current on AC(L) and C3 (Fig. 2 on pg. 13) is reading a voltage of 110 volts. If no voltage is present then check to make sure the main 8-amp fuse is okay. If voltage is present on AC(L) and C3 to the PLC, it will need reprogramming or replacing.

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

Step 4: If the green light does come on, then check for a faulty solenoid. First unplug all the solenoids and then re-plug each one at a time to check for any faulty solenoids. If there is a faulty solenoid, then the green light will go out when that faulty solenoid is plugged in. Replace any faulty solenoids.

Green plug-in

PLC TROUBLESHOOTING

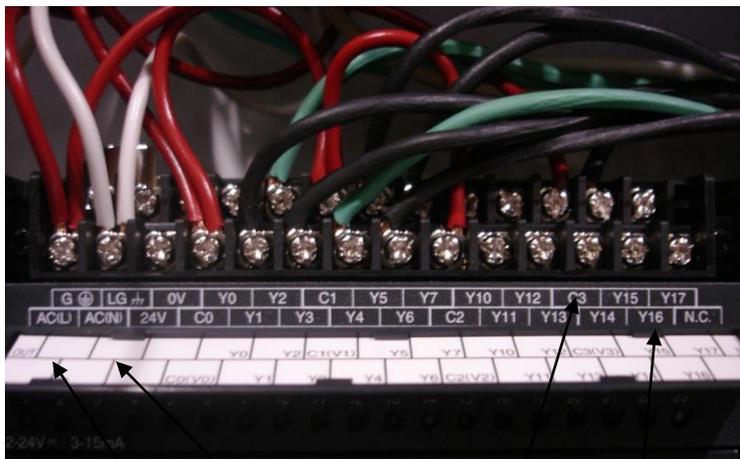
Step1: Check to ensure that the PLC (Fig. 1) has power. A green light on the upper right-hand corner beside PWR should be illuminated. If it is not illuminated, check to make sure 120 volts is connected to AC(L) and AC(N) on the PLC (Fig. 2). If 120 volts is not present, then check the fuse (Fig. 3).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

Fig. 1



Power light for PLC

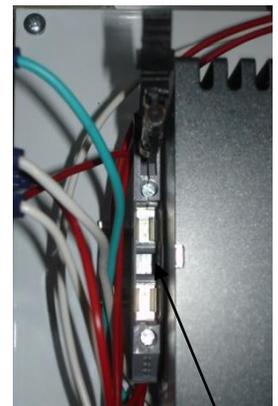
Fig. 2



AC(L) AC(N)

C3 Y15

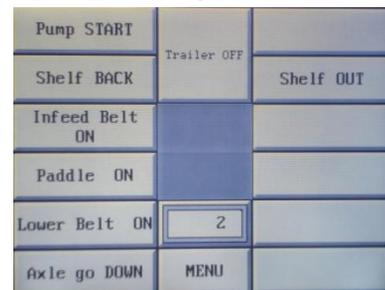
Fig. 3



fuse

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), press “Pump START”. “Pump STOP” will appear on the screen, and then verify that the red light for Y15 (Fig. 5) is illuminated. This will start and stop the main hydraulic pump.

Fig. 4



Step 3: On the same Shutdown menu, press “Shelf BACK” to ensure that Y1 illuminates. Then press “Shelf OUT” to make sure Y2 is illuminated (Fig. 5). Y1 and Y2 should carry 24 volts to the shelf solenoid (Fig. 6). If Y1 and Y2 does not illuminate, then you should reboot the PLC by switching the toggle switch (Fig. 7) from term to run 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

Fig. 6



Fig. 8



24-volt solenoids

Step 4: Press “Infeed belt 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 not illuminated then repeat the rebooting process of the PLC underlined in Step 3. If the light is illuminated, then check the 24-volt solenoids on the hydraulic valve (Fig. 8) to see if it is magnetized by placing a screwdriver on the 24-volt solenoids on the hydraulic valve. If the hydraulic valve is not magnetized then the hydraulic valve will need replacing.

- Step 5: Next check the power on the spreader paddle by pressing “Paddle ON” at the Shutdown menu on the touch screen so that “Paddle OFF” appears on the touch screen. If the light is illuminated on Y6 (Fig. 5) then you have power going to the solenoid on the hydraulic valve (Fig. 8). If the valve is operating, then it will be magnetized. To check to see if it is magnetized repeat the underlined portion of Step 4. If the light is not illuminated, then repeat the rebooting process of the PLC underlined in Step 3.
- Step 6: Next check lower belt operation by pressing “Lower Belt ON” at the Shutdown menu on the touch screen so that “Lower Belt Off” appears on the touch screen. If the light is illuminated on Y7 (Fig. 5), then you have power going to the 24-volt solenoid on the hydraulic valve (Fig. 8). If the valve is operating then it will be magnetized, check for magnetization by repeating underlined portion of Step 4. If the light is not illuminated, then repeat the rebooting process of the PLC underlined in Step 3.
- Step 7: Raise and lower axle by pressing “Axle go UP” at the Shutdown menu on the touch screen so that “Axle go DOWN” appears on the touch screen. Y3 (Fig. 5) will illuminate when the axle is up and Y4 (Fig. 5) will illuminate when the axle is down. If it does not illuminate the PLC needs rebooting and you should repeat the rebooting process underlined in Step 3. Next check the arrows on the axle solenoid on the hydraulic valve (Fig. 8) to make sure they are illuminated. If they are not illuminated you will need to check the hydraulic valve to make sure it is operating.
- 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 it is illuminated, then check the solenoid on the hydraulic valve (Fig. 8) for magnetization by repeating the underlined portion of Step 4. If not, replace the solenoid on the hydraulic valve.