



HMI UPGRADE LPX MANUAL SEED TREATER

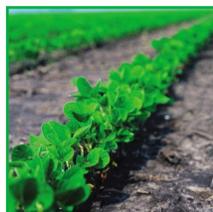
Operators Manual



Software Release: v2.1.0

Document: TD-09-06-3025

Revision: A



INTRODUCTION

Thank you for choosing USC, LLC for your equipment needs. We appreciate your business and will work diligently to ensure that you are satisfied with your choice.

OVERVIEW

The purpose of this manual is to provide you with the basic information needed to operate the LPX Manual Seed Treater U-Treat v2.1.0 HMI Upgrade. It does not hold USC, LLC liable for any accidents or injuries that may occur.

OPERATOR RESPONSIBILITIES

As the purchaser/owner/operator of this equipment and control system, you have an obligation to install, operate, and maintain the equipment in a manner that minimizes the exposure of people in your care to any potential hazards inherent in using this equipment. It is critical that the owner of this equipment:

- Has a clear and documented understanding of the process this machine is being used in and of any resulting hazards or special requirements arising from this specific application.
- Allow only properly trained and instructed personnel to install, operate, or service this equipment.
- Maintain a comprehensive safety program involving all who work with this machine and other associated process equipment.
- Establish clear areas of staff responsibility (e.g. operation, setup, sanitation, maintenance, and repairs).
- Provide all personnel with necessary safety equipment.
- Periodically inspect the equipment to insure that the doors, covers, guards, and safety devices are in place and functioning, that all safety instructions and warning labels are intact and legible, and that the equipment is in good working order.
- In addition to the operating instructions, observe and enforce the applicable legal and other binding regulations, national and local codes.

As the person with the most to gain or lose from working safely, it is important that you work responsibly and stay alert. By following a few simple rules, you can prevent an accident that could injure or kill you or a co-worker

- Disconnect, lockout, and tagout electrical and all other energy sources before inspecting, cleaning, servicing, repairing, or any other activity that would expose you to the hazards of electrical shock.
- Do not operate, clean, or service this equipment until you have read and understood the contents of this manual. If you do not understand the information in this manual, bring it to the attention of your supervisor, or call your local USC dealer for assistance.
- Any operator who is known or suspected to be under the influence of alcohol or drugs should not be allowed to operate the equipment.
- Understand and follow the safety practices required by your employer and this manual.
- **PAY ATTENTION** to what you and other personnel are doing and how these activities may affect your safety.
- **Failure to follow these instructions may result in serious personal injury or death.**

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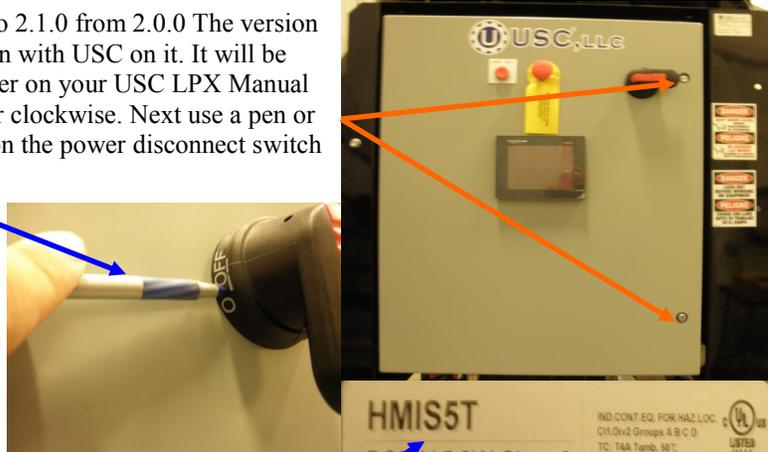
INSTALLATION SECTION A

Manual Treater 2.1.0 Program Update

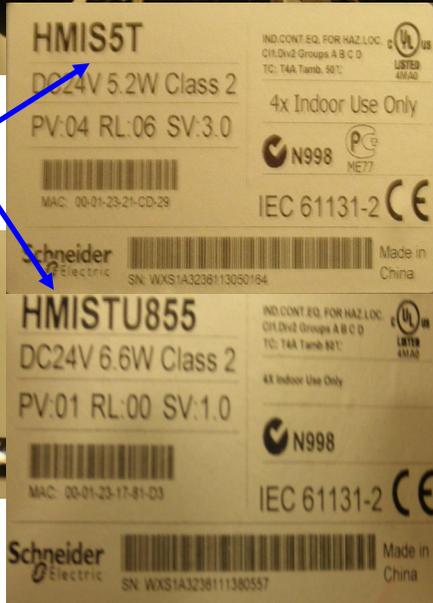
This update will bring the treater program to 2.1.0 from 2.0.0 The version information can be found on the main screen with USC on it. It will be found just above the UTILITY button. Power on your USC LPX Manual Treater and turn the **locking screws** counter clockwise. Next use a pen or a slender tool to **depress the safety catch** on the power disconnect switch and open the panel door.



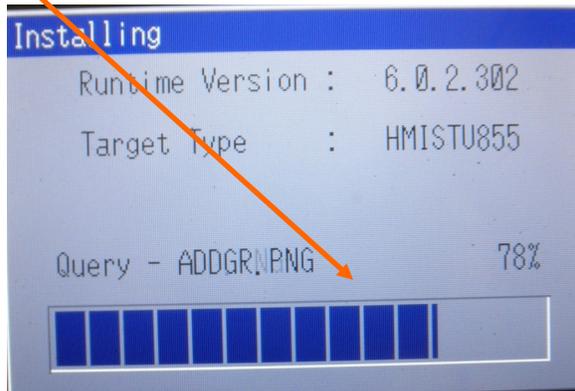
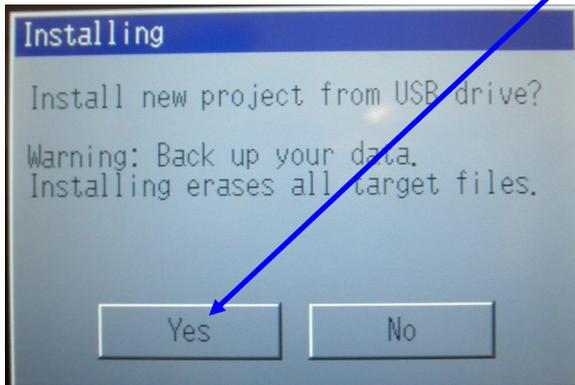
Use caution when working inside the energized panel !



On the inside of the door identify the model of your Human Machine Interface screen (HMI). Either **HMI S5T** or **HMI STU855**. Select the labeled USB drive that matches the HMI. **Insert the USB drive into the HMI**. The HMI needs to be powered up.

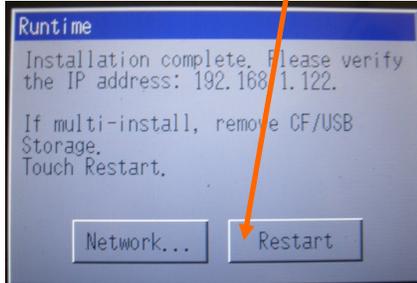


The HMI screen will state: Install new project from USB drive? **Touch Yes** to continue. During the installation **be patient and wait for the files to install**, do not turn off the treater or remove the drive during this process. A notification screen will let you know when the file transfer is finished.



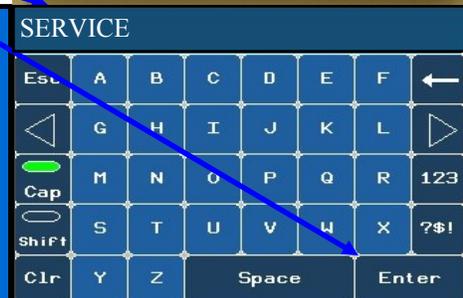
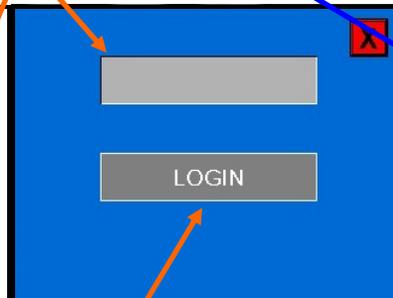
LPX MANUAL SEED TREATER

When the Installation of the Update is complete the system will prompt for a restart. Before restarting, **remove the USB drive** from the HMI. Then proceed to **touch restart**.



Let the HMI fully restart, Once it is done restarting touch **SECURITY** then the **GREY BOX**. A blue box will appear, type in **SERVICE** then touch **ENTER**.

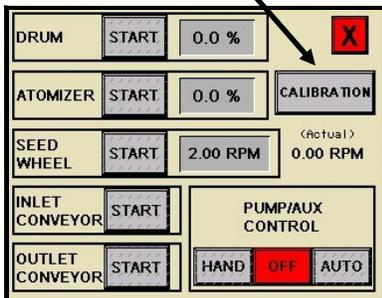
Program version information found here.



With SERVICE in the Grey box touch **LOGIN**. In the green screen **select which type of treater you have**, (if you are unsure; the name is on the side shield for the drum. IE: LPX 2000 with seed wheel or LPX 800 with out seed wheel.) **Cup weight option** for improved accuracy, whether the treater will be running in standard, **metric**, or if it is a portable system.
(Green is selected and gray is not selected.)



The new calibration box in the HOA screen.



Once done select the red X at the top right hand corner of the screen to go back to the LOGIN screen, select the red X again to go back to the main screen with USC at the top. Close the treater panel door and turn the locking screws clockwise to latch the door closed. Once done, shut the treater off by turning the disconnect switch counter clockwise, and give it a long 30 seconds for the VFD's to power all the way down. Then restart the system. Let it power all the way up, then push the E-Stop reset button. The installation of the program is complete and you are ready to treat.

Note: the program on the USB drive is only good for ONE use; after you have updated your treater you are welcome to format the USB drive and use it for your own personal use.

ELECTRICAL OPERATION

SECTION B



HIGH VOLTAGE ~ Always disconnect the power source before working on or near the control panel or lead wires.



HIGH VOLTAGE ~ Use insulated tools when making adjustments while the controls are under power.



AUTHORIZED PERSONNEL only shall work on the control panel. Never allow anyone who has not read and familiarized themselves with the owner's manual to open or work on the control panel.

This section provides a general overview and description of the operator controls for the LPX Manual Seed Treater.

General Panel Descriptions

This system consists of two plug connected panels, one hard wired panel and one plug connected panel:

- The LPX Manual Treater Main Panel is an enclosure that is attached to the side of the treater and contains the electrical components required to actuate the seed treater. This includes the VFDs for the seed wheel and atomizer. Power for the treater is supplied here. Power to this panel is hard wired.
- The LPX Manual Pump Stand Panel is a plug connected enclosure that is located on each pump stand frame. This panel connects the pump stand electrical components to the Treater Main Control Panel. Each pump stand has two standard 110V plugs. One for the manual ON/OFF switch controlling the mix tank motor and one for the pump stand control panel.

TREATER CONTROL PANEL

The following pages explain the function of the touch screen controls.

USC STARTUP SCREEN

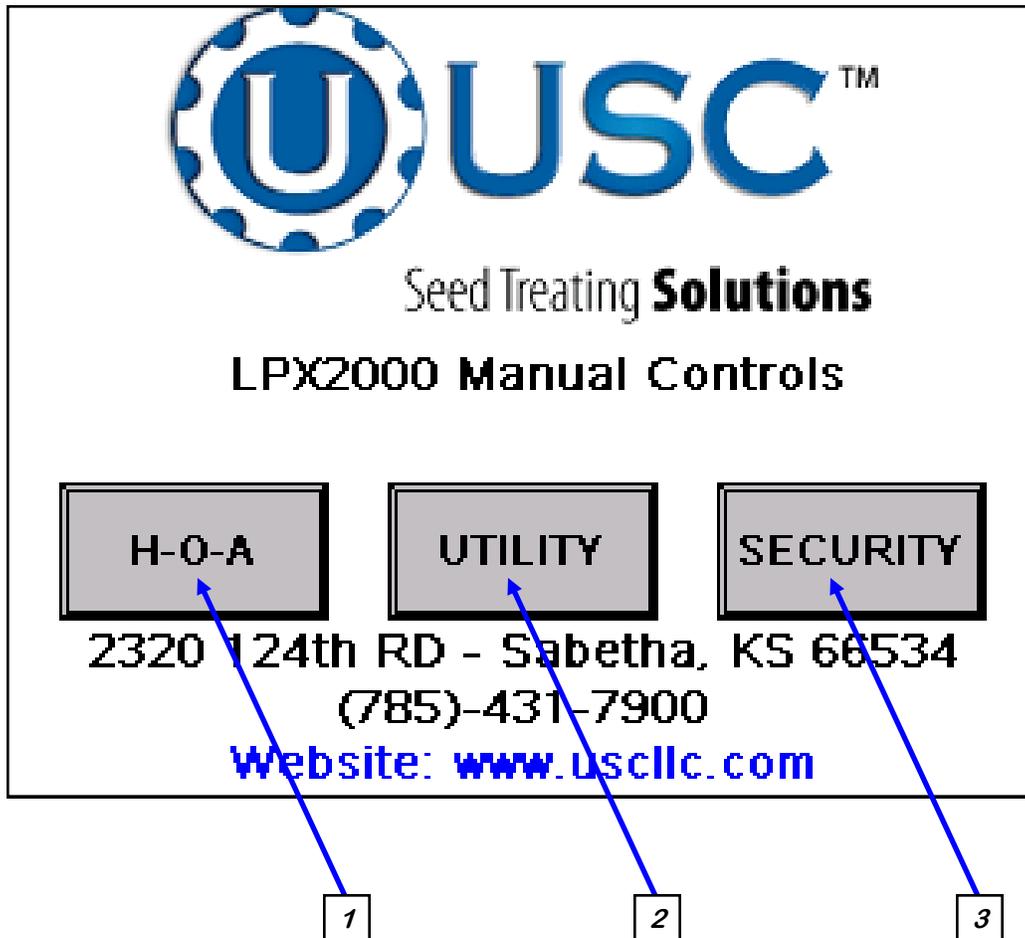
While the system is booting up, the treater touch screen will display a timer. Once the timer reaches zero, this screen is the first screen the operator will see. When the blue bar reaches the other side and communications is established the Main Screen will appear.

NOTICE

The E-Stop Reset push button must be pressed after every power cycle and every time the E-Stop is activated or the system will not operate.



MAIN SCREEN

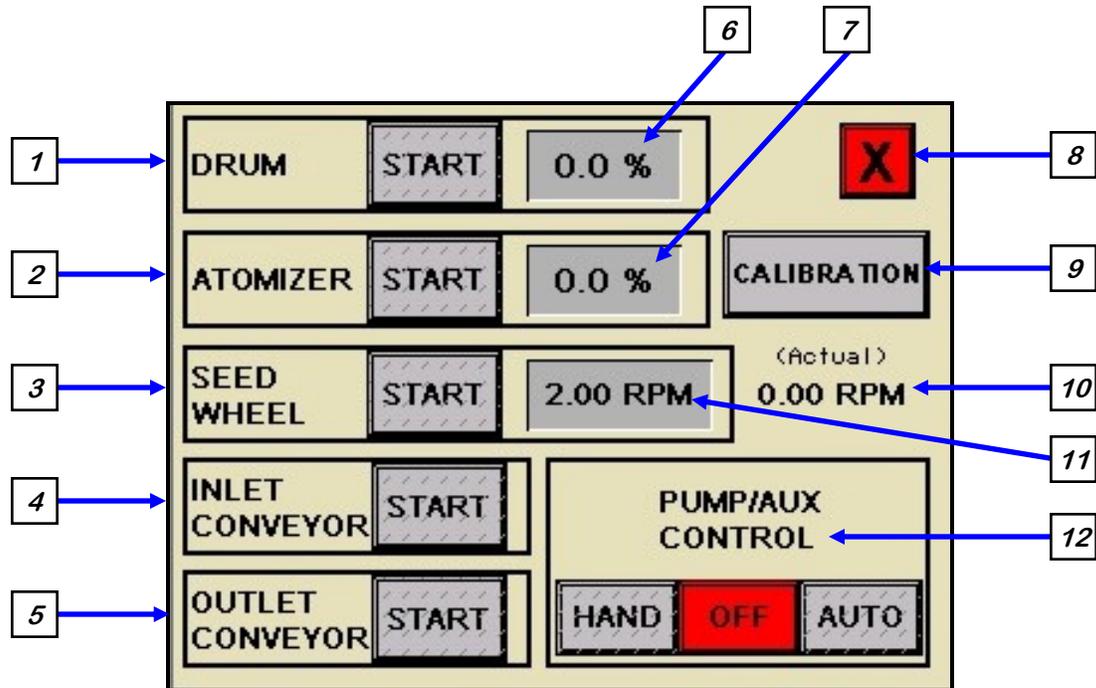


1. **H - O - A (Hand-Off-Auto):** This button advances the operator to the H-O-A screen (see page 10).
2. **UTILITIES:** This button advances the operator to the UTILITIES screen (see page 12).
3. **SECURITY:** This button advances the operator to the Security screen. This screen is for setting up the basic parameters of the system. It will only be used by a system administrator or USC service personnel.

“H-O-A” (HAND-OFF-AUTO) SCREEN

NOTICE

The E-Stop Reset push button must be pressed after every power cycle. After the E-Stop button has been pressed to stop a run, the E-Stop button must be pulled out and the E-Stop RESET button pressed. If both these conditions are not met, the START, HAND and AUTO buttons will display diagonal lines through them and the system will not function.



1. DRUM CONTROL MODULE: This module controls the function of the drum. Pressing the button while START is displayed will cause the drum to turn on and the background will turn green. Pressing this button again will shut off the drum.

2. ATOMIZER CONTROL MODULE: This module controls the function of the atomizer. Pressing the button while START is displayed will cause the atomizer to turn on and the background will turn green. Pressing this button again will shut off the atomizer.

3. SEED WHEEL CONTROL MODULE: This module controls the function of the seed wheel. Pressing the button while START is displayed will cause the seed wheel to turn on and the background will turn green. Pressing this button again will shut off the seed wheel. (This module is only available if the treater is utilizing a seed wheel)

“H-O-A” (HAND-OFF-AUTO) SCREEN

4. INLET CONVEYOR CONTROL MODULE: This module controls the function of the inlet conveyor. Pressing the button while START is displayed will cause the inlet conveyor to turn on and the background will turn green. Pressing this button again will shut off the inlet conveyor.

5. OUTLET CONVEYOR CONTROL MODULE: This module controls the function of the outlet conveyor. Pressing the button while START is displayed will cause the outlet conveyor to turn on and the background will turn green. Pressing this button again will shut off the outlet conveyor.

6. DRUM PERCENT SPEED MODULE: When this button is pressed, a numeric touch pad (bottom) will appear to allow the operator to manually adjust the speed of the drum.

7. ATOMIZER PERCENT SPEED MODULE: When this button is pressed, a numeric touch pad (bottom) will appear to allow the operator to manually adjust the speed of the atomizer.

8. RETURN BUTTON: This button returns the operator to the startup screen.

9. CALIBRATION BUTTON: This button takes the operator to the Calibration screen. (see page 13).

10. SEED WHEEL RPM DISPLAY: This display shows the current RPMs of the seed wheel.

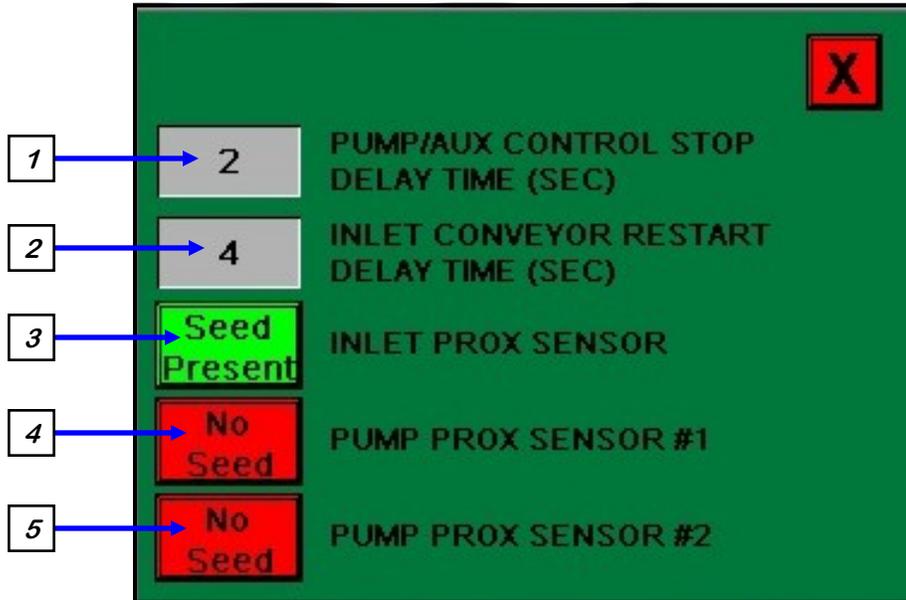
11. SEED WHEEL RPM MODULE: When this button is pressed, a numeric touch pad (bottom) will appear to allow the operator to manually adjust the speed of the seed wheel (This module is only available if the treater is utilizing a Seed Wheel).

12. PUMP / AUX CONTROL MODULE: This module allows the operator to control any unit or pump which is plugged into the auxiliary port located on the bottom of the treater main control panel located on the seed treater. The HAND button will allow the user to operate the unit in the manual mode of operation. The OFF button will disconnect control to the auxiliary port. The AUTO button will place the unit in the automatic mode of operation and will send a signal to turn on the associated device when seed is present.



UTILITIES SCREEN

This screen allows the operator to set various system parameters and view the status of the proximity switches.



1. PUMP / AUX CONTROL STOP DISPLAY TIME (SEC) MODULE: When this button is pressed, a numeric touch pad will appear and allow the operator to manually adjust the length of time that the pump will remain on once the pump proximity sensor no longer is seeing seed.

2. INLET CONVEYOR RESTART DELAY TIME (SEC) MODULE: When this button is pressed, a numeric touch pad will appear and allow the operator to manually adjust the length of time the inlet conveyor remains off after the top proximity switch no longer detects seed.

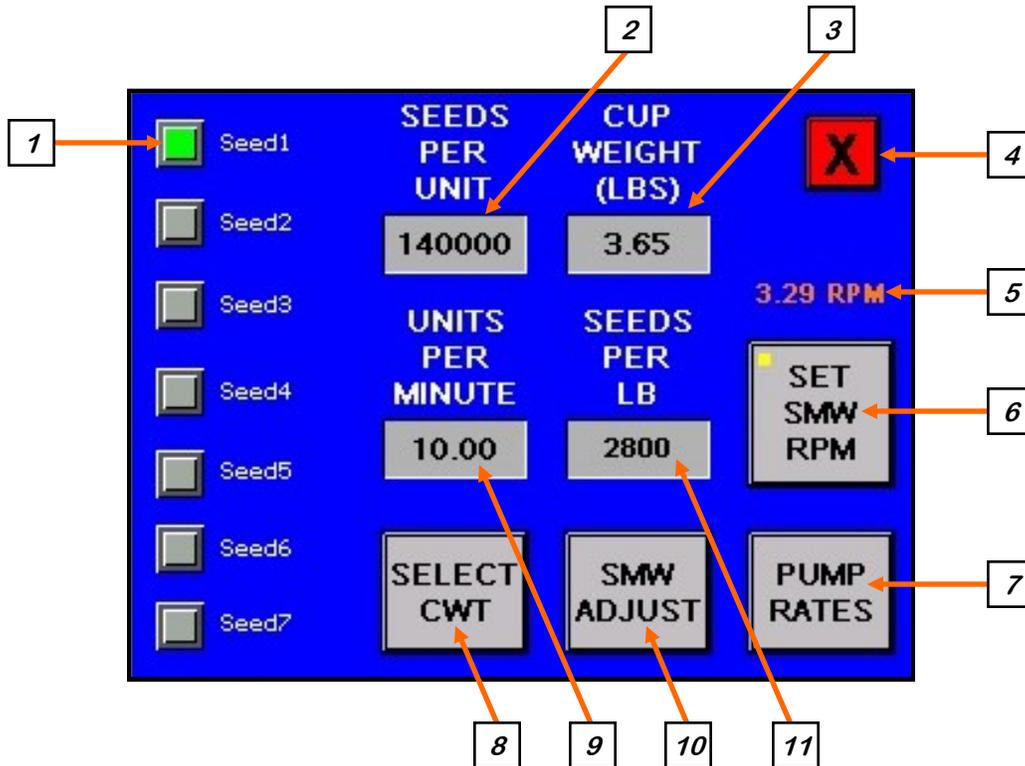
3. INLET PROXIMITY SENSOR DISPLAY: Informs the operator when the proximity switch located in the supply hopper above the treater is detecting seed.

4. PUMP PROXIMITY SENSOR #1 DISPLAY: Informs the operator when the pump proximity switch #1, which is located in the cone of the treater or the seed wheel, is not detecting seed.

5. PUMP PROXIMITY SENSOR #2 DISPLAY: Informs the operator when the pump proximity switch #2, which is located in the seed wheel, is not detecting seed. This display is only visible if the treater is utilizing a seed wheel.

CALIBRATION SCREEN SCU

This screen allows the operator to select seed type, unit of measurement, pump rates and Seed Wheel settings if the treater is equipped with one. The default setting is Seed Counts per Unit. It can also be set to Cut Weight.



1. SELECT SEED TYPE MODULE: The operator can select between seven different pre-determined seed types. Press the name of the Seed Type and an alpha numeric keyboard will popup allowing the operator to change the name.

2. SEEDS PER UNIT: Pressing this button will bring up a numeric keypad which allows the operator to input the number of seeds per unit.

3. CUP WEIGHT: Pressing this button will bring up a numeric keypad which allows the operator to input the cup weight for the Seed Wheel (see page 18).

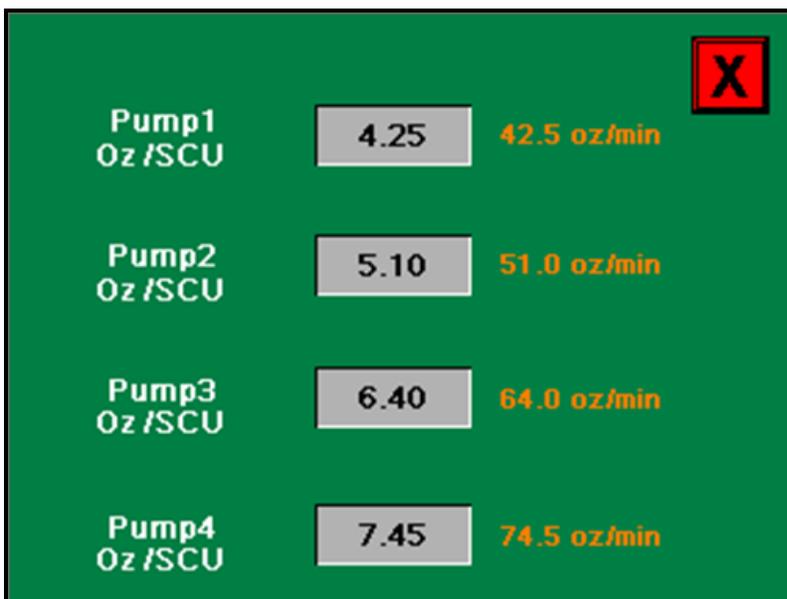
4. SCREEN EXIT BUTTON: This button is used to exit back to the previous screen. Its functionality is the same throughout the HMI display.

5. RPM INDICATOR: When any of the parameters on this screen are changed the indicator modifies the Seed Wheel RPM. The operator must press the SET SMW RPM button below it to actually make the change on the H-O-A screen.

6. SET SEED METERING WHEEL RPM: Pressing this button will change the RPM setting on the H-O-A screen to match the number on the RPM Indicator.

CALIBRATION SCREEN SCU

7. **PUMP RATES:** Pressing this button takes the operator to the screen below. By pressing the pump name an alphanumeric keypad will popup allowing the operator to key in a new name (below left). Press the grey buttons in the center, a numeric keypad will popup to change the value of the amount of chemical per Seed Count Unit (below right). This is only a calculator. The number to the right will give the operator the ounces per minute required based on the current flow rate. Manually adjust your flow meter to reflect the change. If not using a flow meter, make the adjustment on the liquid adjustment dial on the Pump Stand Control Panel.

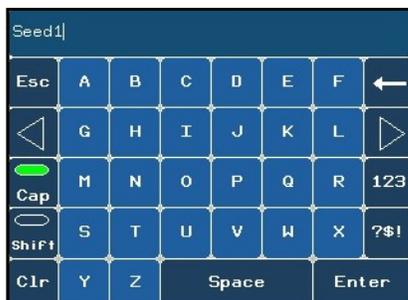


8. **SELECT CWT:** Pressing this button toggles back and forth between the default of Seed Count Units and Cut Weight.

9. **UNITS PER MINUTE:** Pressing this button will bring up a numeric keypad which allows the operator to change the number of units treated per minute.

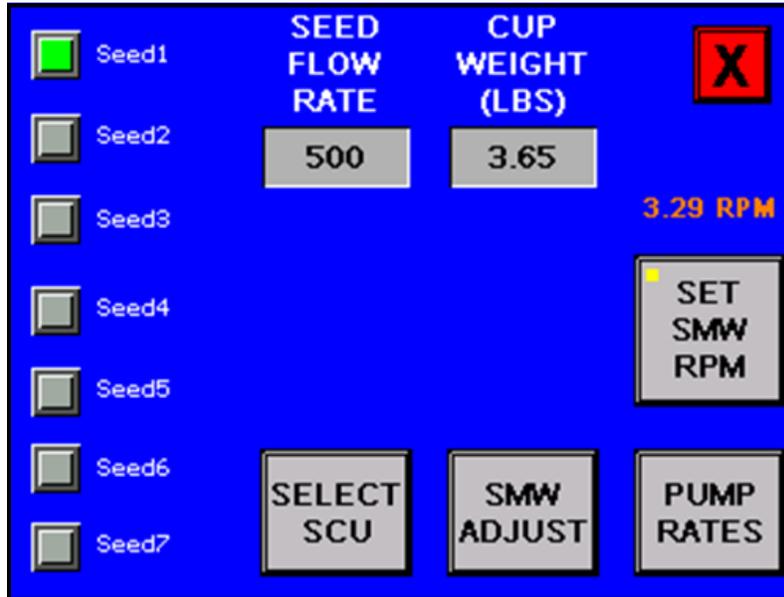
10. **SMW ADJUST:** This button takes the operator to the Seed Metering Wheel adjustment screen (see page 16).

11. **SEEDS PER POUND:** Pressing this button will bring up a numeric keypad which allows the operator to change the number of seeds per pound of a given seed type.

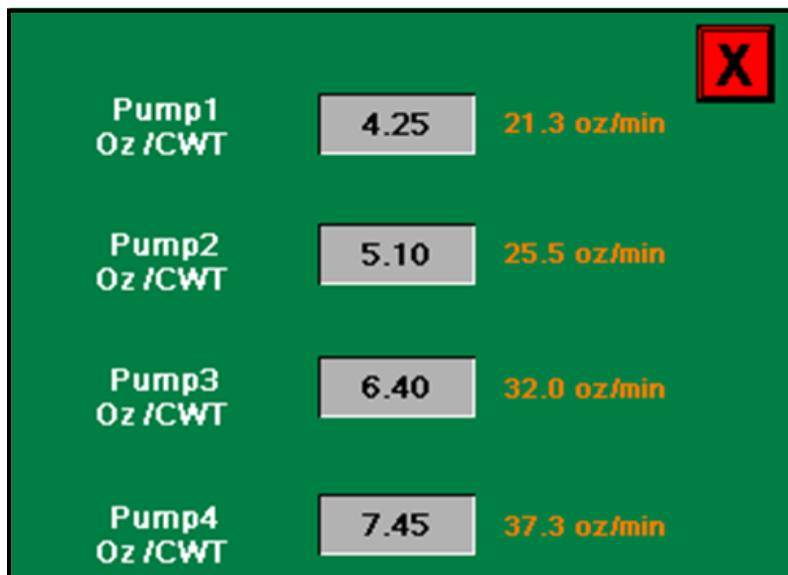


CALIBRATION SCREEN CWT

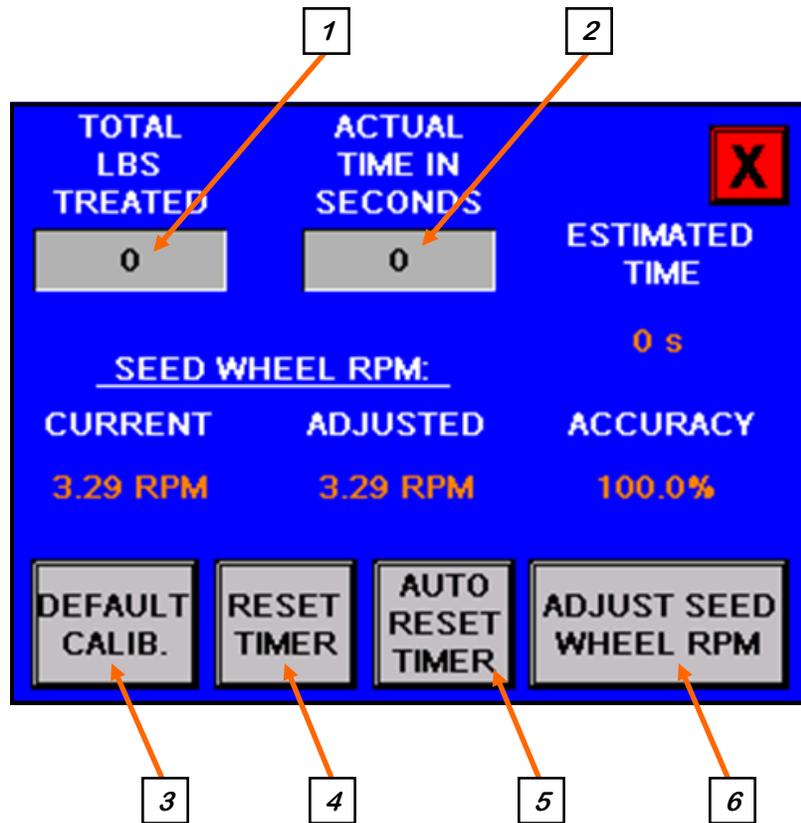
When the operator chooses SELECT CWT from the calibration screen it will change to the screen below. If they re-select the same button it will toggle back to the default.



When the operator chooses PUMP RATES from the calibration screen it will change to the screen below. All pump settings are now in CWT.



SEED METERING WHEEL ADJUSTMENT SCREEN



1. TOTAL POUNDS TREATED: Pressing this button will bring up a numeric keypad which allows the operator to manually input the amount that was treated.

2. ACTUAL TIME IN SECONDS: This button indicates the time it took to complete the previous run. Pressing this button will bring up a numeric keypad which allows the operator to input the amount of time they want it to take to treat that amount of seed. After the new time is entered, press the ADJUST SEED WHEEL RPM button. This returns the operator to the previous screen, now press the SET SMW RPM to complete the change.

3. DEFAULT CALIB.: Pressing this button resets calibration back to factory settings.

4. RESET TIMER: Pressing this button zeroes out the timer.

5. AUTO RESET TIMER: Pressing this button resets the timer to zero at the beginning of every run if more than ten seconds has passed.

6. ADJUST SEED WHEEL RPM: Pressing this button activates any of the changes made from this screen and automatically returns them to the first calibration screen.

PUMP STAND CONTROL PANEL



1. CHEMICAL PUMP SWITCH: When this switch is turned to HAND, the chemical pump will run. When the switch is turned to AUTO, the chemical pump will only run when the main control panel H-O-A switch is turned to HAND or AUTO. The 2-wire cord must be connected to the seed treater before this feature will work. When the Pump/Aux Control on the touch screen is placed in HAND, the chemical pump will run at any time. When turned to AUTO, it will only run when the proximity switch located in the bottom of the seed treater supply hopper is covered and the atomizer is running. The proximity switch determines when seed is present in the hopper. When the proximity switch does not detect seed, a timer located inside the touch screen will automatically shut off the chemical pump at a pre-determined amount of time after the hopper has emptied. The time delay allows all seed in the hopper to have an equal coverage.

2. CHEMICAL PUMP DIRECTION: This switch allows the operator to change the pump direction between forward and reverse. It has a safety feature that will not allow the operator to switch from forward to reverse or vice-versa without momentarily stopping and releasing the switch in the center position.

3. PUMP VOLTMETER / FLOW METER DISPLAY: Displays either the DC voltage for the pump or if pump stand is equipped with a flow meter, then the current flow rate going through the flow meter will be displayed. As the pump's speed is increased or decreased, this number will also increase or decrease. Press the SEL button to switch between the rate and totalizer displays. Press the RST button to reset the totalizer display.

4. LIQUID ADJUSTMENT DIAL: This dial allows the operator to adjust the speed of pump. The setting should be chosen in relation to the application rate for the treatment being applied to the seed.

**SECTION
C**

CALIBRATION

DETERMINING SEED CUP WEIGHT

The following is a list of steps to use when calibrating the seed wheel. A seed calibration cup, funnel, stand, and scale are used to calibrate the seed wheel.

1. Set the empty seed calibration cup on the scale and zero out the weight of the cup.
2. Place the funnel and stand in the seed to be treated or a separate container (figure 1). This will help to avoid any unnecessary clean-up while filling and leveling the top of the seed calibration cup.
3. Place your hand under the bottom of the funnel and fill the funnel up with seed.
4. Place the calibration cup under the funnel stand and remove your hand from the bottom of the funnel, and allow the cup to be filled. (figure 1)
5. After the cup has been filled, strike off the top of the calibration cup with a straight edge. (figure 2)



Seed Calibration Cup

NOTICE Do not shake the cup.

6. Weigh the sample of seed. (figure 3)

NOTICE A typical weight of the sample of seed will be anywhere between 2.8 to 4.0 lbs. Anything over or under this range could be caused by not zeroing out the weight of the cup, or the scale may be set on the wrong units.

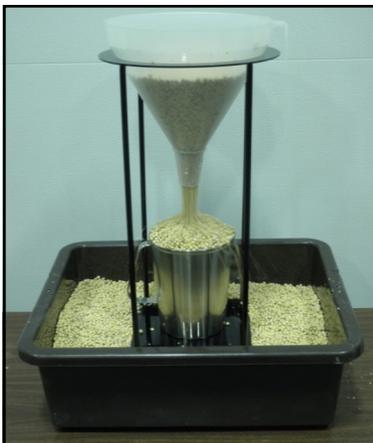


Figure 1



Figure 2

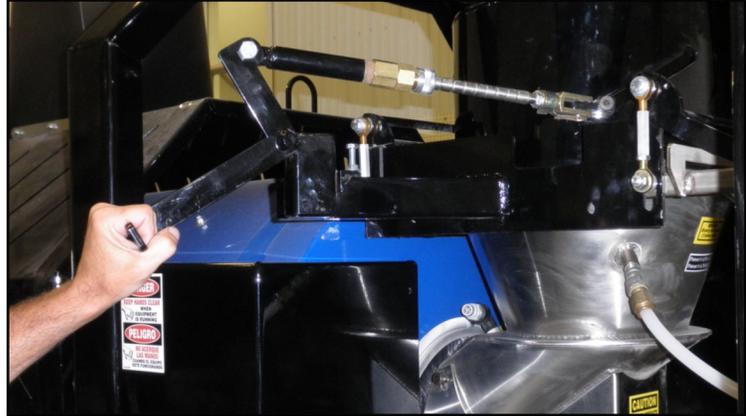


Figure 3

ADJUSTING THE SEED FLOW GATE

14. Below are pictures that illustrate how to open, close, and adjust the opening of the seed flow gate.

When the black lever is pulled down, the seed gate is in the closed position, and will not allow seed to flow through



When the black lever is pushed up, the seed gate is in the open position, and seed will flow through



Regulate the amount of seed flowing through the seed treater by using the spring-loaded coupler and moving it to a different notch. The more notches exposed, the higher the seed flow.



NOTICE

If the seed treater is equipped with a seed wheel, the adjustable seed flow gate should always be left in the most wide open position. If the seed gate is not open fully, seed flow will be diminished and may even cause seed to back up into the seed wheel.

FLOW METER CALIBRATION

The following steps illustrate how to calibrate a flow meter on an LPX manual series seed treater. You will need a stopwatch for this calibration

1. Determine a desired flow rate

EXAMPLE: The seed treatment slurry rate is 5 ounces per cwt.
Seed Flow Rate = 10.8 cwt/min. x 5 oz./cwt. = 54 oz./min.
54 oz. is the rate the pump should be pumping in one minute.

2. Set the Liquid Flow Rate. Make sure the chemical is diverted back into the mix tank, then using the Liquid Adj. dial, increase or decrease the pump speed until the liquid flow rate has been matched.
3. Begin the calibration process by pumping chemical into the calibration tube or a measuring cup and using the stop watch to start timing once the liquid reaches the zero mark on the calibration tube.
4. Note the rate that the flow meter display on the pump stand is currently reading.

EXAMPLE: Flow meter reading = 54 Oz./min

5. After approximately one minute, simultaneously stop timing and shut down the flow of liquid to the calibration tube or measuring cup.
6. Note the total ounces of liquid in the calibration tube or measuring cup and the total amount of time that it took to fill the tube to that level in seconds. Divide those two numbers to find the ounces per second (Oz./Sec) of liquid application rate. Now multiply the ounces per second of liquid application rate by 60 to get the ounces per minute (Oz./Min) liquid application rate. This number is the actual amount of ounces per minute that the pump is currently pumping.

EXAMPLE: Total ounces of liquid in the calibration tube = 57 ounces.

Total amount of time to fill calibration tube = 62 seconds.

Oz./Sec liquid application rate = 57 ounces / 62 seconds = 0.9194

Oz./Min liquid application rate = 0.9194 x 60 seconds = 55.16

The actual liquid application rate is 55.16 Oz./min

FLOW METER CALIBRATION

7. Take the flow meter reading that was previously noted and divide it by the actual liquid application rate. This number will give you the calibration factor that the flow meter reading will need to be adjusted by.

EXAMPLE: Flow meter reading = 54 Oz./min
Actual liquid application rate = 55.16 Oz./min
Calibration factor = $54 / 55.16 = 0.9790$

The calibration factor is 0.9790

8. In order to find the flow meter reading that is needed for accurate application of the liquid, you must now multiply the calibration factor by the desired application rate.

EXAMPLE: Calibration factor = 0.9790
Desired flow rate = 54 Oz./min
Flow meter reading for accurate application = $0.9790 \times 54 = 52.87$

52.87 Oz./min is the rate that the flow meter should read to ensure proper flow is being achieved.

9. Now you can set the pump dial so that the flow meter will read the rate that is needed to ensure the accurate flow of liquid s being applied to the seed.

TREATING SEED

1. Prime the line going to the atomizer by turning the Atomizer switch to ON and turn the SEED TREATMENT valve to PROCESS. Next turn the pump direction switch to FORWARD and the Hand / Off / Auto switch to Hand. Liquid should begin pumping up to the atomizer. After the line has been primed, turn the Hand / Off / Auto switch to Auto. Additional liquid can be pumped up into the atomizer and into the drum to guarantee coverage of the first seed that passes through the machine.



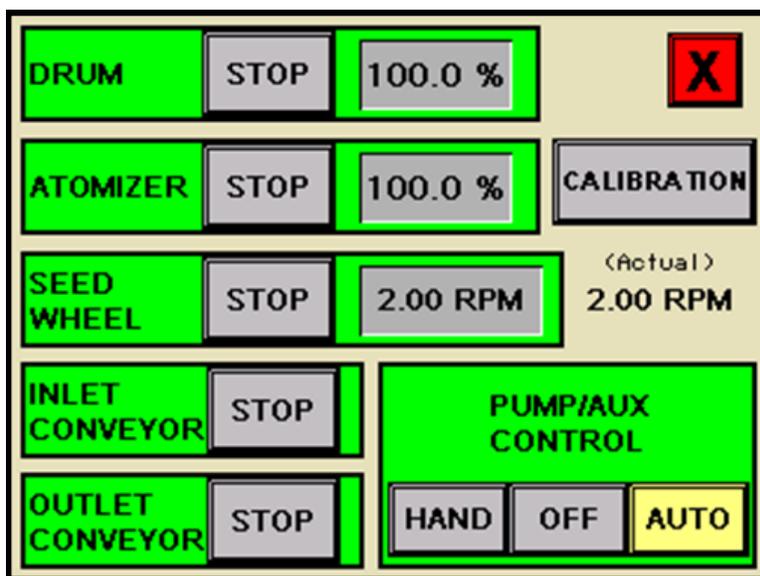
WARNING Do NOT pump liquid into the atomizing chamber when the atomizer is OFF.

2. Position the SEED TREATMENT SOURCE valve to MIX TANK.



If you desire to check the total ounces used per batch of seed. Fill the calibration tube with the amount needed for the batch of seed (about 10 ounces extra is a good practice). Then position the SEED TREATMENT SOURCE valve to CALIBRATION TUBE and go on to step 3.

3. Begin feeding seed into the Seed Wheel until the supply hopper is full. This will ensure that the first pockets are full when the wheel is turned on. At this time, ensure the seed gate on the seed treater is wide open. If there is no Seed Wheel position conveyors, overhead hopper or seed box so the first seed coming into the seed treater lands on the lower proximity switch which automatically turns on the pump(s).
4. Turn the switches to ON for the Drum, Atomizer and any Conveyors being used. Also turn the Hand / Off / Auto switch to AUTO. The pumps will not start until the Seed Wheel switch has been activated (below).



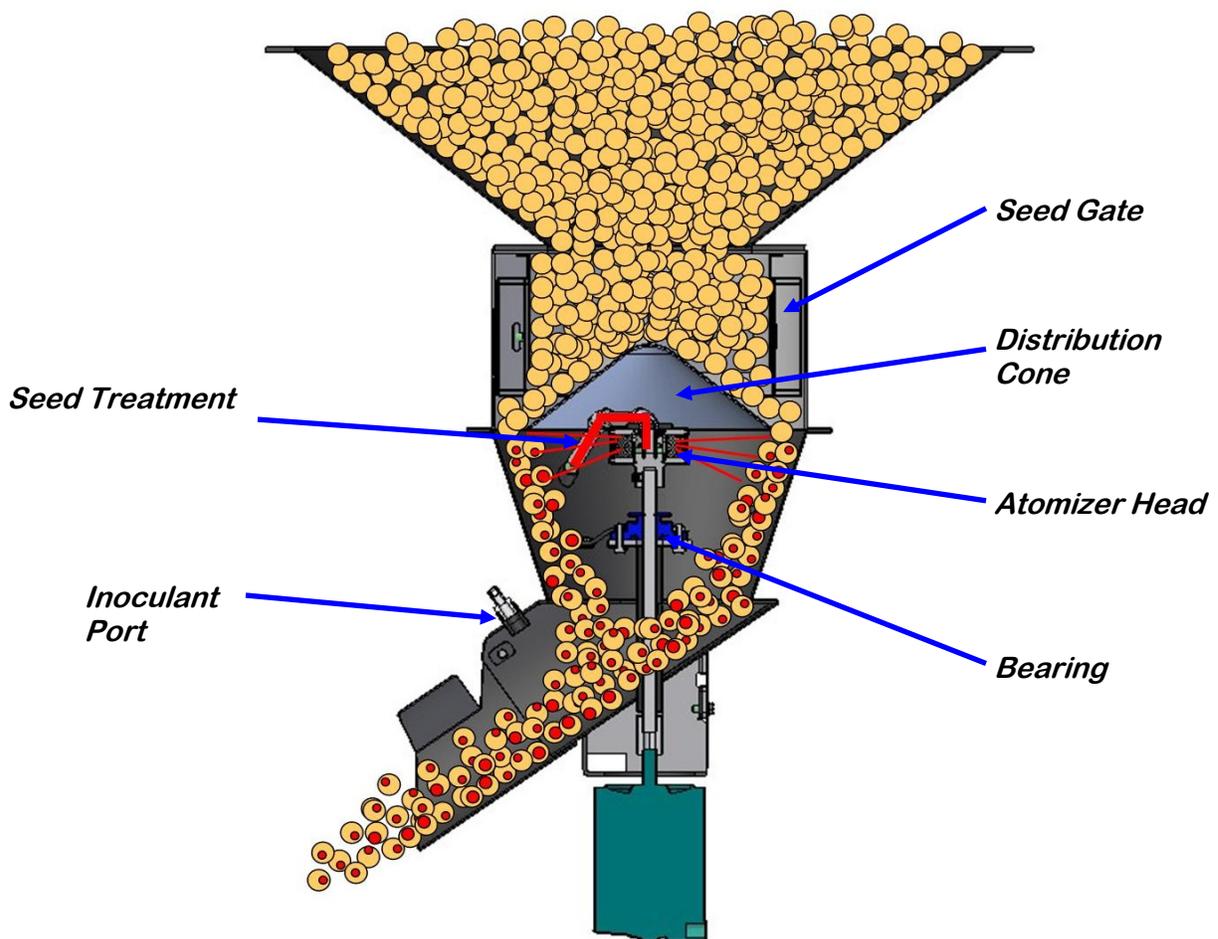
TREATING SEED

5. Turn the Seed Wheel to ON. The Seed Wheel will speed up to the dialed-in RPM. The pumps will also begin pumping liquid into the atomizer, this will start the seed treating process.

NOTICE You may notice the RPM will run at a lower RPM under the load of seed. Do not adjust the RPM back up. The program already has figured in the factor for the drop in RPM.

6. As you are treating the first batch of seed, time the seed as it begins flowing out the atomizer chute into the drum (below).
7. Once all the seed has passed through the seed wheel and atomizer, stop timing. The pump(s) will automatically shut off.

The illustration below shows how seed passes through the atomizing chamber. The red represents treatment being dispensed to the seed as it passes through the chamber. After the seed passes through the atomizer, it goes into the drum where the coating process is completed.



**SECTION
D**

TROUBLESHOOTING

Below is a table describing the most frequent problems and solutions with the USC LPX Manual Seed Treater. For further assistance, contact your local USC dealer.

Problem	Possible Cause	Solution
Inlet Conveyor will not turn on.	<ol style="list-style-type: none"> 1. Inlet conveyor proximity switch is activated. 2. Inlet conveyor proximity switch is too sensitive. 3. Overload is tripped. 4. Conveyor is plugged into wrong outlet on seed treater panel. 	<ol style="list-style-type: none"> 1. Clean proximity switch 2. Adjust the inlet conveyor proximity switch sensitivity by turning the adjustment screw counter-clockwise (page 26). 3. Reset inlet conveyor overload. 4. Check to make sure the inlet conveyor is plugged into the inlet conveyor receptacle.
Pump will not turn off in AUTO when seed runs out.	<ol style="list-style-type: none"> 1. Proximity switch is dirty. 2. Proximity switch is set too sensitive. 	<ol style="list-style-type: none"> 1. Clean proximity switch. 2. Adjust the pump proximity switch sensitivity by turning adjustment screw counter-clockwise (page 26).
Pump will not turn on in AUTO	<ol style="list-style-type: none"> 1. Proximity switch is not staying covered. 2. Atomizer is not on. 3. Proximity switch is not sensitive enough. 4. Pump stand two-wire cord is not plugged into to treater main panel. 5. Both the Chemical Pump switch on the Pump Stand and the Pump/Aux Control on the HMI screen need to be set to AUTO. 	<ol style="list-style-type: none"> 1. Make sure proximity switch is staying covered with seed 2. Turn on atomizer. Atomizer must be on to run the pump in Auto. 3. Adjust pump proximity switch sensitivity by turning the adjustment screw clockwise (page 26). 4. Plug the pump stand two-wire cord into the main treater panel. 5. Set both the Pump Stand switch and Pump/Aux on the HOA screen to AUTO.
Inlet conveyor won't shut off when hopper is full.	<ol style="list-style-type: none"> 1. Seed is not hitting proximity switch. 2. Proximity switch is not set sensitive enough. 3. Inlet conveyor is plugged into wrong receptacle. 	<ol style="list-style-type: none"> 1. Make sure seed is hitting proximity switch. 2. Adjust the inlet conveyor proximity switch by turning the adjustment screw clockwise (page 26). 3. Make sure inlet conveyor is plugged inlet conveyor receptacle.

LPX MANUAL SEED TREATER

Problem	Possible Cause	Solution
Pump is fluctuating.	<ol style="list-style-type: none"> 1. Restriction in tubing 2. Filter is plugged or missing gasket. 	<ol style="list-style-type: none"> 1. Flush tubing and check filter for any restrictions. 2. Clean filter and check for gasket.
Seed calibration is fluctuating.	<ol style="list-style-type: none"> 1. Seed treater supply hopper is not staying full. 2. Restriction in the supply hopper or seed wheel. 3. Build-up in the atomizing chamber. 	<ol style="list-style-type: none"> 1. Make sure the supply hopper and seed wheel are staying full. May have to lower seed flow rate in order to have a consistent flow of seed. 2. Check supply hopper and seed wheel for any debris, and remove. 3. Remove atomizing housing and clean out any build-up of material.
Drum is slipping and seed is coming out the inlet side of the drum.	<ol style="list-style-type: none"> 1. Drum is wet. 2. The seed treater is set too level. 3. Chains are too loose. 	<ol style="list-style-type: none"> 1. Dry off any moisture that may have collected on the outside of the drum. 2. Adjust the slope of the seed treater to at least a 3" drop from front to back. If desired, more slope can be applied. 3. Check and tighten the drive chains. Also check the chain alignment.
None of the motors will turn to "ON" in "HAND" mode.	<ol style="list-style-type: none"> 1. Processor is faulted. 2. Emergency Stop button is activated. 3. The Emergency Stop RESET button has not been pressed after the Emergency Stop button has been pulled out. 	<ol style="list-style-type: none"> 1. Disconnect power and wait 30 seconds before reconnecting power. 2. Pull out the Emergency Stop button. 3. After the Emergency Stop button has been pulled out, press the Emergency Stop RESET button.
E-stop is flashing.	<ol style="list-style-type: none"> 1. An E-stop may be depressed. 2. Power may not be on to the control panels. 3. One of the control panels may not be connected to all of the others. 	<ol style="list-style-type: none"> 1. Ensure all E-stops are not depressed. 2. Check incoming power to each control panel. 3. Check the wiring and connections to each control panel.

PROXIMITY SWITCH ADJUSTMENT GUIDE

The proximity switches mounted in the extension ring and the seed wheel detect when seed is present.

The proximity switch located in the extension ring is used to automatically shut off the inlet conveyor when the surge hopper is full. This proximity switch is not present on tower systems.

The proximity switches located in the seed wheel automatically shut off the pump when all seed has left the hopper.

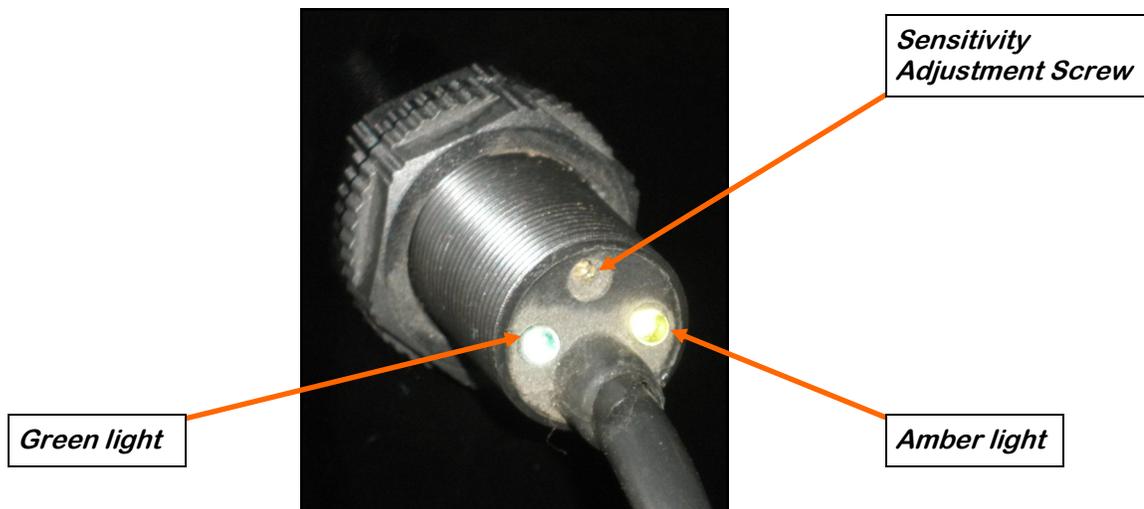
If the proximity switch is not working properly, this can be caused by wear, dust, or even moisture. The first step is to clean the lens of the proximity switch. If this does not solve the problem, the next step would be to adjust the sensitivity of the proximity switch.

The green light indicates the power status. If it is active the device is powered.

The amber light indicates when seed is being detected. If it is active it detects seed, if inactive it does not detect seed.

Using the small screwdriver provided inside the control panel, you can adjust the proximity switch by turning the adjusting screw on the back of the proximity switch.

- Turn Clockwise to make the proximity switch more sensitive.
- Turn Counterclockwise to make the proximity switch less sensitive.



Proximity Switch Screwdriver

USC LIMITED WARRANTY**SECTION
E**

USC, LLC, (Manufacturer) warrants its seed treating equipment as follows:

1. **Limited Warranty:** Manufacturer warrants that the Products sold hereunder will be free from defects in material and workmanship for a period of 18 months from date of shipment. If the Products do not conform to this Limited Warranty during the warranty period, Buyer shall notify Manufacturer in writing of the claimed defects and demonstrate to Manufacturer satisfaction that said defects are covered by this Limited Warranty. If the defects are properly reported to Manufacturer within the warranty period, and the defects are of such type and nature as to be covered by this warranty, Manufacturer shall, at its expense, furnish replacement Products or, at Manufacturer's option, replacement parts for the defective products. Shipping and installation of the replacement Products or replacement parts shall be at the Buyer's expense.

2. **Other Limits:** THE FOREGOING IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Manufacturer does not warrant against damages or defects arising from improper installation (where installation is by persons other than Manufacturer), against defects in products or components not manufactured by Manufacturer, or against damages resulting from such non-Manufacturer made products or components. Manufacturer passes on to the Buyer the warranty it received (if any) from the maker of such non-Manufacturer made products or components. This warranty also does not apply to Products upon which repairs and/or modifications have been effected or attempted by persons other than pursuant to written authorization by Manufacturer. Manufacturer does not warrant against casualties or damages resulting from misuse and/or abuse of product(s), acts of nature, effects of weather, including effects of weather due to outside storage, accidents, or damages incurred during transportation by common carrier.

3. **Exclusive Obligation:** THIS WARRANTY IS EXCLUSIVE. The sole and exclusive obligation of Manufacturer shall be to repair or replace the defective Products in the manner and for the period provided above. Manufacturer shall not have any other obligation with respect to the Products or any part thereof, whether based on contract, tort, strict liability or otherwise. Under no circumstances, whether based on this Limited Warranty or otherwise, shall Manufacturer be liable for incidental, special, or consequential damages.

4. **Other Statements:** Manufacturer's employees or representatives' oral or other written statements do not constitute warranties, shall not be relied upon by Buyer, and are not a part of the contract for sale or this limited warranty.

5. **Return Policy:** Approval is required prior to returning goods to USC, LLC. A restocking fee will apply.

6. **Entire Obligation:** This Limited Warranty states the entire obligation of Manufacturer with respect to the Products. If any part of this Limited Warranty is determined to be void or illegal, the remainder shall remain in full force and effect.





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