

# HMI UPGRADE LPX MANUAL SEED TREATER

## Operators Manual



Software Release: v2.2

Document: TD-09-06-3025

Revision: B



# **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 v2.2 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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**SECTION  
A**

# INSTALLATION

## MANUAL TREATER v2.2 PROGRAM INSTALLATION

**STEP 1:** Before updating the program you will need to record your current program settings. From the Main screen, press the SECURITY button (top). Press the top button on the Login screen (bottom, left). Use the popup keypad to enter the word SERVICE. From the settings screen (bottom, right), make note of which options have been selected (box is green).



SYSTEM UPGRADE KIT - LPX MANUAL TREATER



**STEP 2:** Using a flathead screwdriver, turn the door latches counter-clockwise and open the door.

**CAUTION**

**USE CAUTION  
WHEN WORKING  
INSIDE THE  
ENERGIZED PANEL!!**

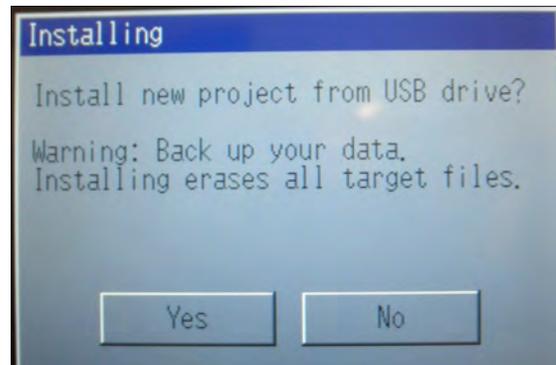


**STEP 3:** Open your panel and look at the back of the HMI mounted on the door. Note the model number from the location in the Red oval (right). It will be either HMIS5T or HMISTU855.

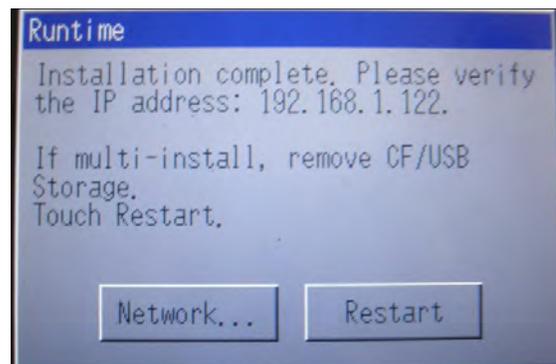
**STEP 4:** There are two USB flash drives in your kit. Locate the one with the number that matches the number on the HMI. Insert it into the HMI in the location shown in the red oval (right).



**STEP 5:** The Installation screen will appear on the HMI. Press the Yes button to begin the installation. After all the files have been downloaded, the Runtime screen will appear.



**STEP 6:** The Runtime screen will indicate the installation is complete. **Remove the USB drive from the HMI.** After the drive has been removed, press the Restart button.

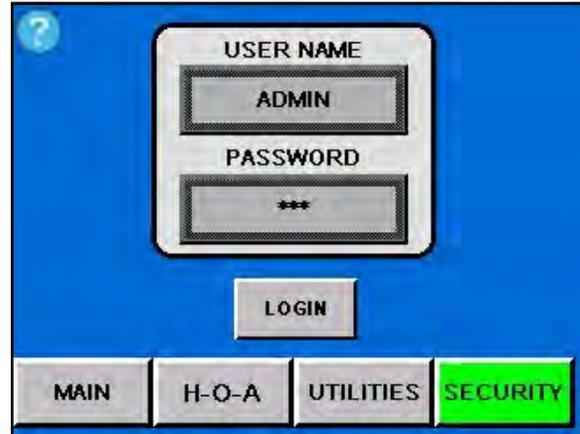


**If the flash drive is not removed before the Restart button is pressed, the process will have to be started from the beginning.**

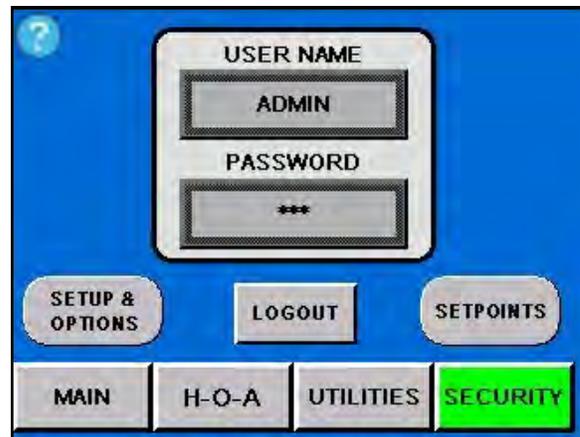
**STEP 7:** While the system is booting up, the touch screen will display a timer bar at the bottom of the Start Up Screen. Once the timer bar reaches the end it will disappear and be replaced with flashing line of text that reads **CLICK TO CONTINUE**. Select anywhere on the screen and it will advance to the Main screen. Select the **SECURITY** button in the lower right corner.



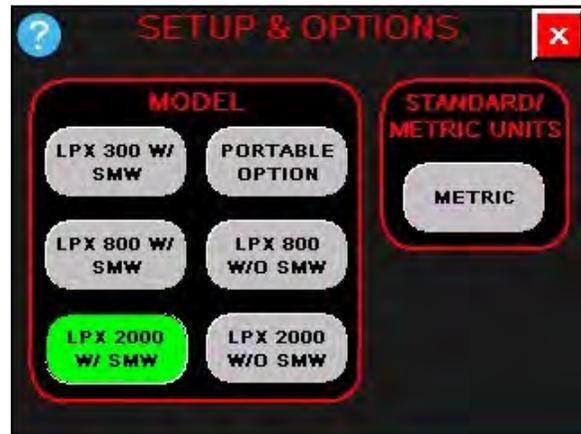
**STEP 8:** Press the User Name button and key in ADMIN. Press the Password button and key in SERVICE, then press the Login button.



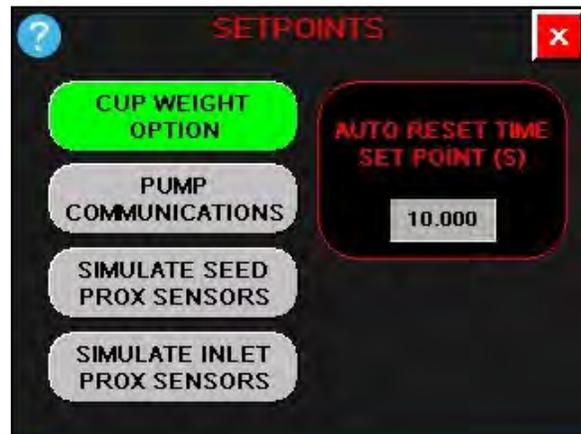
**STEP 9:** Press the Setup & Options button.



**STEP 10:** Select the treater model and the unit of measurement. Select the red **X** to return to the Security screen.



**STEP 11:** Press the Setpoints button. Press the Cup Weight Option button if your system had the cup weight option enabled on the previous version. Select the red **X** to return to the Security screen, then press the Logout button. The settings for your installation have been reset. You are now ready to begin operation.



**NOTICE** USC recommends saving all flash drives and installation instructions you received in your kit for future use.

**SECTION  
B**

**ELECTRICAL OPERATION**



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



**HAUTE TENSION** ~ Toujours débrancher la source d'alimentation avant de travailler sur ou près du panneau de commande ou les câbles.



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



**HAUTE TENSION** ~ Utilisez des outils isolés lors des réglages, tandis que les commandes sont sous tension.



**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 panels.



Seules personnes autorisées doivent travailler sur le panneau de commande. Ne jamais laisser quelqu'un qui n'a pas lu et se sont familiarisés avec le manuel d'ouvrir ou de travail du propriétaire



**USC recommends the use of a surge protection device with a minimum rating of 400 Joules for all automated main control panels.**



**USC recommande l'utilisation d'un dispositif de protection contre les surtensions avec une cote minimale de 400 joules pour tous les principaux panneaux de contrôle automatisés.**

**General Panel Descriptions**

- The LPX 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 Automated Main Control Panel is a plug connected enclosure that contains the PLC (Programmable Logic Controller) as well as the HMI (Human Machine Interface) touch screen. The operator is able to control the entire system through the HMI. **AUTOMATED TREATERS ONLY.**

## **LPX MANUAL TREATER HMI TOUCH SCREENS**

The following pages explain the function of the touch screen controls for the USC - Manual - Treater Ver 2.2 program.

For the LPX Automated Treater, see the appropriate U-Treat Automation manual.

### **USC STARTUP SCREEN**

While the system is booting up, the touch screen will display a timer bar at the bottom of the Start Up Screen. Once the timer bar reaches the end it will disappear and be replaced with flashing line of text that reads **CLICK TO CONTINUE**. Select any where on the screen and it will advance to the Main screen.

This screen also displays the version of the software currently installed.

#### **NOTICE**

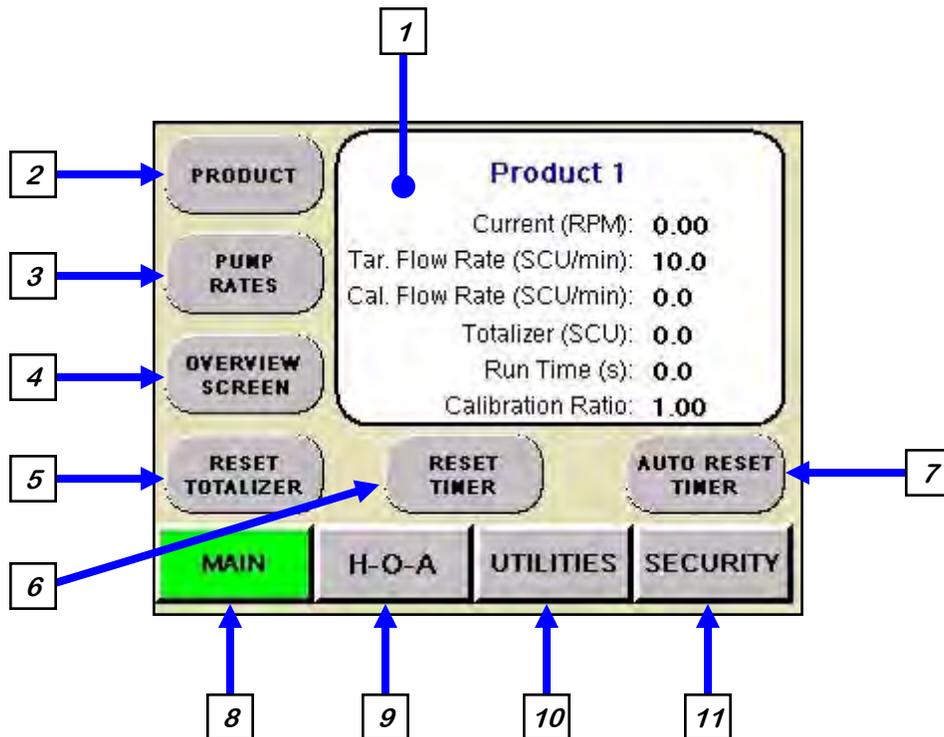
The E-Stop Reset push button must be pressed after every power cycle and every time the E-Stop is activated or the system will not operate.

#### **AVIS**

Le bouton-poussoir de réinitialisation E-Stop doit être enfoncée après chaque cycle de puissance et chaque fois que le E-Stop est activé ou le système ne fonctionnera pas.



**MAIN SCREEN**



**1. PRODUCT STATUS BOX:** Displays the name of the active product at the top of the display, as well as the current RPM of the seed wheel, target flow rate and the calculated flow rate. The totalizer displays the amount of material used. Run time displays the amount of elapsed time since the current run was started and the calibration ratio for the product being used.

**2. PRODUCT:** Pressing this button advances the operator to the Product screen (see page 14).

**3. PUMP RATES:** Pressing this button advances the operator to the Pump Rates screen (see page 17).

**4. OVERVIEW SCREEN:** Pressing this button advances the operator to the Overview screen (see page 18).

**5. RESET TOTALIZER:** Pressing this button will manually reset the totalizer display after a run is complete.

## **MAIN SCREEN**

**6. RESET TIMER:** Pressing this button will manually reset the Run Time display after a run is complete.

**7. AUTO RESET:** When this button is active it will automatically resets the timer and run time after each run is completed. If it is active, it will be green.

**8. MAIN:** This button returns the operator to the main screen (see page 12).

**9. H-O-A:** This button advances the operator to the H-O-A screen (see page 19).

**10. UTILITIES:** This button advances the operator to the Utilities screen (see page 21).

**11. SECURITY:** This button advances the operator to the Security screen (see page 22).

### **NOTICE**

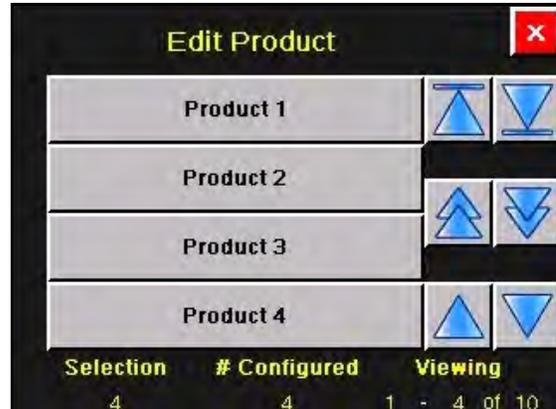
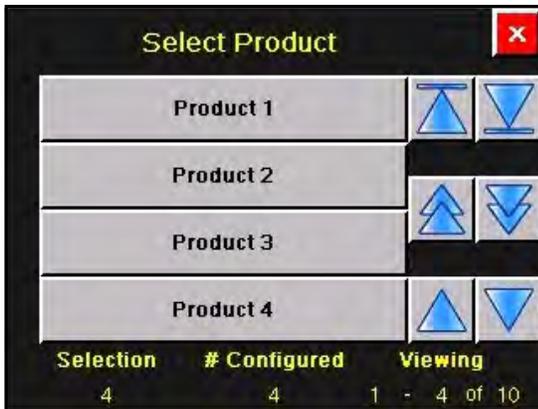
Some of the screens have a round blue button with a question mark in the upper left corner of the screen. Selecting this button will bring up a help screen covering the functions of that screen.

**PRODUCT SCREEN**



**1. PRODUCT SELECTION:** Pressing this button advances the operator to the Product Selection screen (bottom, left). Use the arrows to scroll through the list to find the product you wish to use. The system can store up to 10 different product entries. Each product type will have its own name and calibration ratio. Selecting an existing product will return you to the main screen.

**2. PRODUCT EDITING:** Pressing this button advances the operator to the Product Editing screen (bottom, right). Select a product from the list to modify or an unused box to create a new product entry. The Product Editing screen will appear (see page 15).



**PRODUCT EDITING SCREEN**

**1. PRODUCT NAME:** When this button is pushed an alpha numeric keypad appears allowing the operator to change an existing product name. If an unused box was selected from the list, the name will be blank and the Calibration Ratio will be 1.0, allowing the operator to enter a new product into the system. Once saved, it will be added to the list.

**2. SCU BUTTONS:** The first button is used to enter the seed count per pound, the second is used to enter the seed count per unit, and the third defines how many units per minute to run for this product. The Units Per Minute drives the flow rate when the Measure By button is set to SCU. Notice when you change the units it also updates the seed flow rate number even though the button is inactive.

**3. SEED FLOW RATE:** Pressing this button brings up a numeric keypad to enter the seed flow rate to run for this product. The Seed Flow Rate drives the flow rate when the Measure By button is set to CWT. Notice when you change the flow rate it also updates the units per minute number even though the button is inactive. This number must match the seed flow rate of the treater.

**4. CUP WEIGHT:** This button is used to enter the weight from the cup sample taken from this product (see page 24). This button will only be present if the Cup Weight Option is enabled on the Setpoints screen. If it is not, the system defaults will be used (see page 23).

**5. SCREEN EXIT:** This button is used to return to the previous screen. It's functionality is the same throughout all of the HMI screens.

**6. CALIB.:** Pressing this button takes the operator to the Calibration Calculator screen (see page 16).

**7. CLEAR:** This button deletes the name and resets the Calibration Factor to 1.00. After a new name and calibration factor has been entered, press the save button. This is another way to enter a new product name in the system.

**PRODUCT EDITING SCREEN**

**8. MEASURE BY:** Pressing this button toggles between the SCU and CWT measurement options.

**9. SAVE:** Saves any changes to the chemical profile.

**10. CALIBRATION FACTOR:** This button displays the calibration ratio from the Calibration Calculator. Pressing this button brings up a numeric keyboard allowing the operator to manually enter a value.

**CALIBRATION CALCULATOR SCREEN**



**1. ACTUAL WEIGHT:** Pressing this button brings up a numeric keypad used to enter the actual weight during the calibration procedure (see page 24).

**2. TOTALIZER WEIGHT:** Pressing this button brings up a keypad to enter the number from the Totalizer display below it.

**3. TOTALIZER:** This display indicates the amount of product the program estimates it weighed on the last run.

**4. APPLY:** After the actual weight and target weight have been entered, the calculated ratio will be updated. Pressing this button returns the operator to the product editing screen and updates the calibration ratio.

**5. SCREEN EXIT:** Pressing this button returns the operator to the product editing screen.

**6. SELECTED RECIPE:** This display indicates the name of the product for this calibration.

**CALIBRATION CALCULATOR SCREEN**

**7. CALCULATED RATIO:** This display indicates the amount the current calibration will be adjusted when the apply button is pressed.

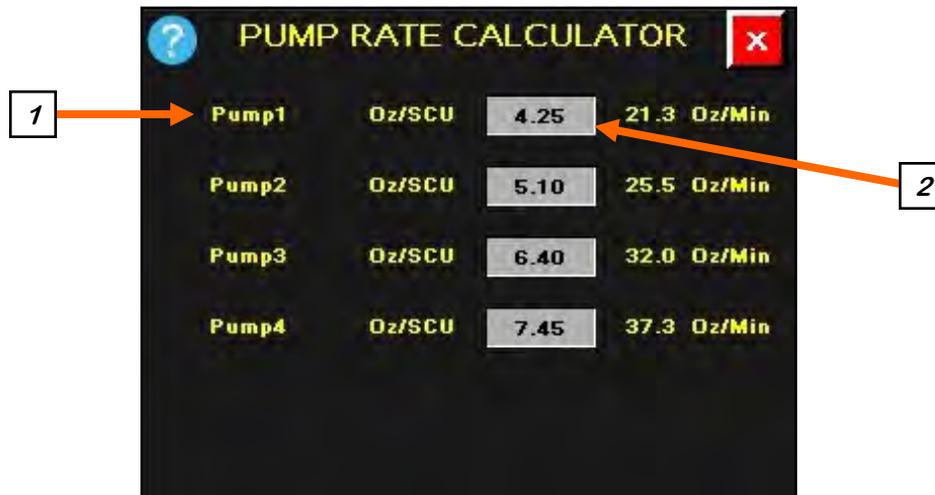
**8. CURRENT RATIO:** This display indicates the current calibration.

**9. DEFAULT:** Pressing this button returns all values to the default setting of one.

**NOTICE**

The actual weight will always be the amount weighed by the scale. The target weight is the amount that should have been weighed by the scale. The totalizer amount is the programs estimation of what the scale should have received.

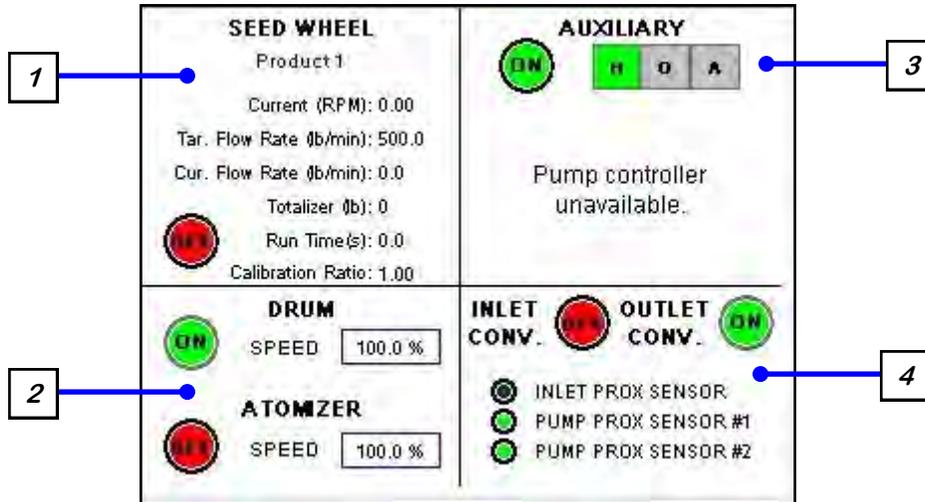
**PUMP RATE CALCULATOR SCREEN**



**1. PUMP NAME:** Pressing this button brings up a numeric keypad allowing the operator to change the pump name.

**2. PUMP RATE:** Pressing this button brings up a numeric keypad allowing the operator change the value of the amount of chemical per seed count unit or cut weight being applied. 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.

**OVERVIEW SCREEN**



**1. SEED WHEEL STATUS BOX:** Displays the name of the active product at the top of the box, as well as the current RPM of the seed wheel, target flow rate and the calculated flow rate. The totalizer displays the amount of material used. Run time displays the amount of elapsed time since the current run was started and the calibration ratio for the product being used. The Seed Wheel motor status indicator displays On or OFF.

**2. DRUM & ATOMIZER STATUS BOX:** Displays the ON or OFF status of the drum and Atomizer motors as well as the percent of maximum speed they are running at.

**3. AUXILIARY STATUS BOX:** If an auxiliary device is connected to the treater, this displays the current motor status and what H-O-A mode of operation the auxiliary device is in .

**4. CONVEYOR STATUS BOX:** Displays the motor status of the inlet and outlet conveyors as well as the active or inactive state of the proximity sensors.

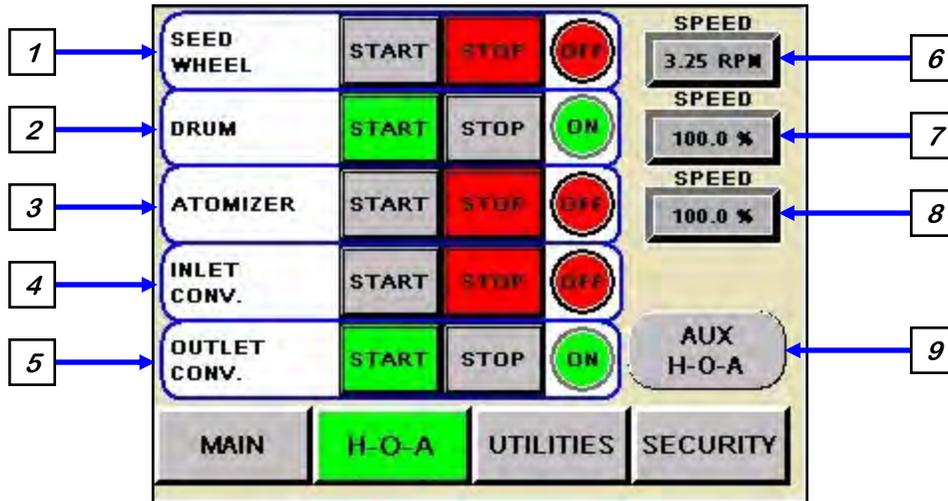
**H-O-A (HAND-OFF-AUTO) SCREEN**

**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.

**AVIS**

Le bouton-poussoir de réinitialisation E-Stop doit être enfoncée après chaque cycle de puissance. Après que le bouton d'arrêt d'urgence a été pressé d'arrêter une course, le bouton d'arrêt d'urgence doit être retiré et le bouton RESET E-Stop enfoncée. Si ces deux conditions ne sont pas remplies, la touche START, la main et les boutons de Auto affiche des lignes diagonales à travers eux et le système ne fonctionnera pas.



**1. SEED WHEEL CONTROL:** This module controls the seed wheel motor. Pressing the START button will turn the seed wheel motor on and the button will turn green. Pressing the STOP button will turn the seed wheel motor off and the button will turn red. The round indicator displays the motor status. This module is only available if the treater is utilizing a Seed Wheel.

**2. DRUM CONTROL:** This module controls the drum motor. Pressing the START button will turn the drum motor on and the button will turn green. Pressing the STOP button will turn the drum motor off and the button will turn red. The round indicator displays the motor status.

**3. ATOMIZER CONTROL:** This module controls the atomizer motor. Pressing the START button will turn the atomizer motor on and the button will turn green. Pressing the STOP button will turn the atomizer motor off and the button will turn red. The round indicator displays the motor status.

**H-O-A (HAND-OFF-AUTO) SCREEN**

**4. INLET CONVEYOR:** This module controls the inlet conveyor motor. Pressing the START button will turn the conveyor motor on and the button will turn green. Pressing the STOP button will turn the conveyor motor off and the button will turn red. The round indicator displays the motor status.

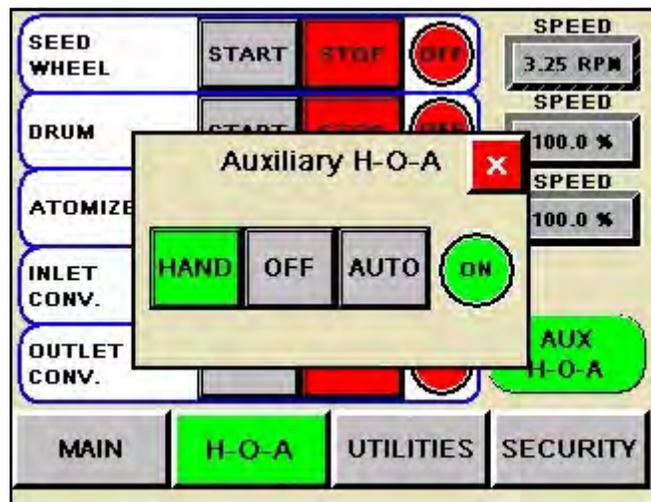
**5. OUTLET CONVEYOR:** This module controls the outlet conveyor motor. Pressing the START button will turn the conveyor motor on and the button will turn green. Pressing the STOP button will turn the conveyor motor off and the button will turn red. The round indicator displays the motor status.

**6. SEED WHEEL RPM:** This button displays the RPM the seed wheel is running at. This button will be inactive if the Auto SMW Speed button on the Utilities screen has been activated. If that button is active the RPM will be automatically calculated based on the seed flow rate defined on the Product Editing page. If the Auto SMW Speed button is inactive, the operator must manually define the RPM here. Pushing this button brings up a numeric keypad allowing the operator to manually set the RPM.

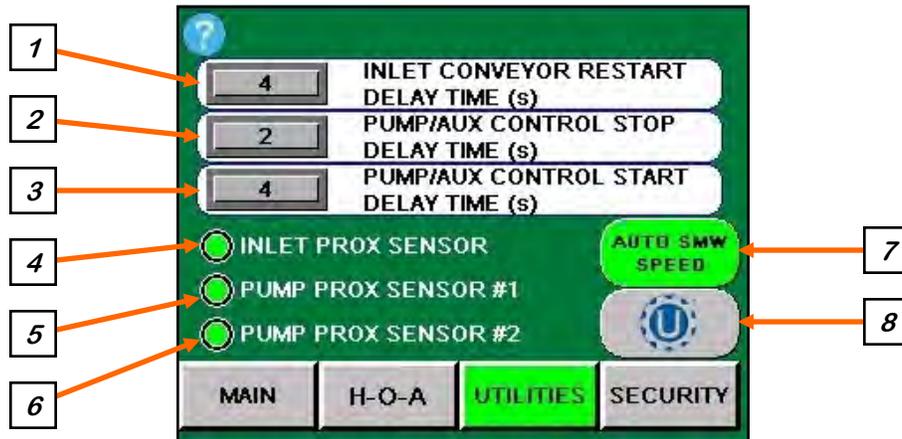
**7. DRUM PERCENT SPEED:** When this button is pressed, a numeric keypad will appear to allow the operator to manually adjust the speed of the drum.

**8. ATOMIZER PERCENT SPEED:** When this button is pressed, a numeric keypad will appear to allow the operator to manually adjust the speed of the atomizer.

**9. AUXILIARY CONTROL:** Pressing this button brings up the Auxiliary H-O-A popup screen allowing the operator to control any external device which is plugged into the auxiliary port located on the bottom of the treater main control panel. 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**



**1. INLET CONVEYOR RESTART DELAY TIME(S):** Pressing this button brings up a numeric keypad allowing the operator to adjust the delay time in one second increments. This will determine how long after the inlet hoppers proximity sensor detects seed and shuts down the inlet conveyor, to turn it back on. This prevents the hopper from overflowing.

**2. PUMP / AUX CONTROL STOP DELAY TIME(S):** Pressing this button brings up a numeric keypad allowing the operator to adjust the delay time in one second increments. This will determine how long after the proximity sensor in the treater cone or seed wheel no longer detects seed to leave the pump motor on.

**3. PUMP / AUX CONTROL START DELAY TIME(S):** Pressing this button brings up a numeric keypad allowing the operator to adjust the delay time in one second increments. This will delay turning on the pump after the seed wheel proximity sensor detects seed. **This is only used for portable treaters because the seed wheel is over a conveyor that conveys the seed up to the atomizer. Due to this delay, an adjustable start signal is required to accurately time the start of the pump.**

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

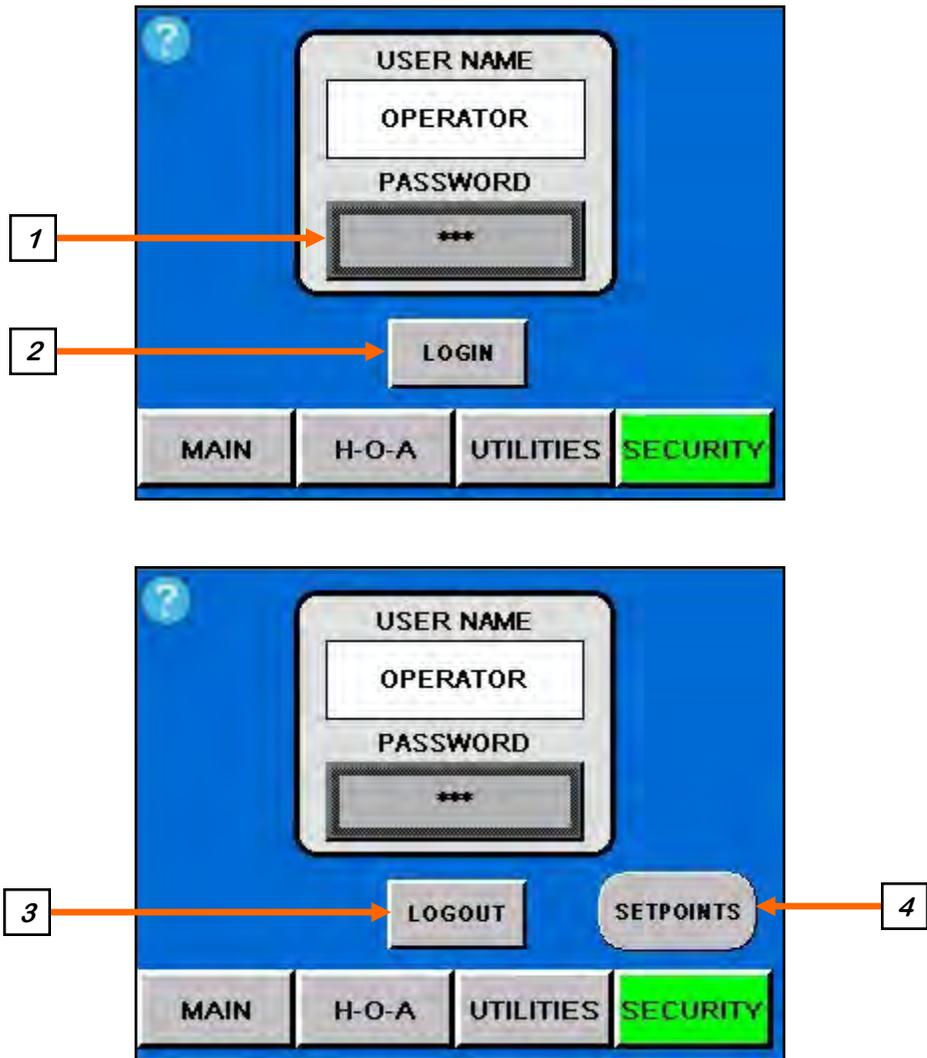
**5. PUMP PROXIMITY SENSOR #1 INDICATOR:** Informs the operator when the pump proximity switch #1, which is located in the cone of the treater or the seed wheel, is not detecting seed.

**6. PUMP PROXIMITY SENSOR #2 INDICATOR:** 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.

**7. AUTO SMW SPEED:** When this button is active it is green and the calculated RPM from the current product will automatically be used. When it is inactive, the operator must manually set the RPM on the HOA screen.

**8. START-UP SCREEN:** This button returns the operator to the starter screen (see page 11).

**SECURITY SCREEN**



**1. PASSWORD ENTRY:** The operator uses this input to obtain access to the Setpoints screen. When this button is pressed an alpha numeric keypad will appear. The password is **USC** and should only be made accessible to personnel qualified to operate the system.

**2. LOGIN:** Pressing this button **after** the password has been entered will activate the SETPOINTS button.

**3. LOGOUT:** Pressing this button will de-activate the Setpoint button.

**4. SETPOINTS:** Pressing this button advances the operator to the Setpoints screen (see page 23).

## SETPOINTS SCREEN



**1. CUP WEIGHT OPTION:** Pressing this button activates the Cup Weight button on the Product Editing screen (see page 15). Entering a cup weight will make the system more accurate on the first run without a calibration.

**2. SIMULATE SEED PROX SENSOR:** Pressing this button simulates the signal from the proximity sensor when it detects seed when no seed is actually present. This is used for troubleshooting purposes.

**3. SIMULATE INLET PROX SENSOR:** Pressing this button simulates the signal from the proximity sensor when it detects seed when no seed is actually present. This is used for troubleshooting purposes.

**4. AUTO RESET TIME:** Pressing this button brings up a numeric keyboard to allow the operator to enter a delay time in seconds for how long the system will wait to reset the Totalizer and Run Time after the end of a run. The Auto Reset Timer button on the main screen must be active for this delay to be used.

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 (see page 25, 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 (see page 25, figure 1).
5. After the cup has been filled, strike off the top of the calibration cup with a straight edge (see page 25, figure 2).

**NOTICE**

Do not shake the cup.

**AVIS**

Ne secouez pas la tasse.

6. Weigh the sample of seed (see page 25, figure 3).

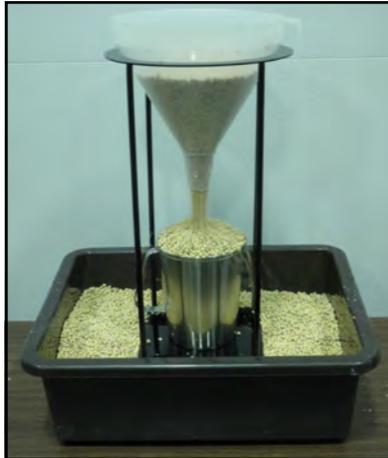
**NOTICE**

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.

**AVIS**

Un poids typique de l'échantillon de semences sera ne importe où entre 2,8 à 4,0 livres. Tout sur ou sous cette fourchette pourrait être causée par la réduction à zéro ne pas le poids de la tasse, ou la balance peut être réglé sur les mauvaises unités.

**DETERMINING SEED CUP WEIGHT**



*Figure 1*



*Figure 2*

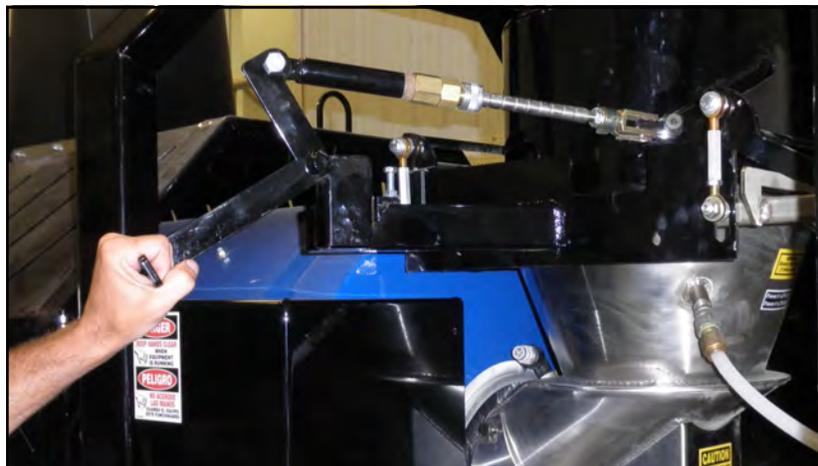


*Figure 3*

**ADJUSTING THE LPX TREATER SEED FLOW GATE**

The following pictures 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.



## **ADJUSTING THE LPX TREATER SEED FLOW GATE**

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.

### **AVIS**

Si le traitement de semences est équipé d'une roue de semences, la porte de flux des semences réglable doit toujours être laissée dans la plus grande position ouverte. Si la porte de semences est pas complètement ouvert, écoulement des semences sera diminuée et peut même causer des semences pour sauvegarder dans la roue de semences.

## **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 liquids 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.

### **! AVERTISSEMENT**

Ne pas pomper de liquide dans la chambre d'atomisation lorsque le pulvérisateur est OFF.

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

### **NOTICE**

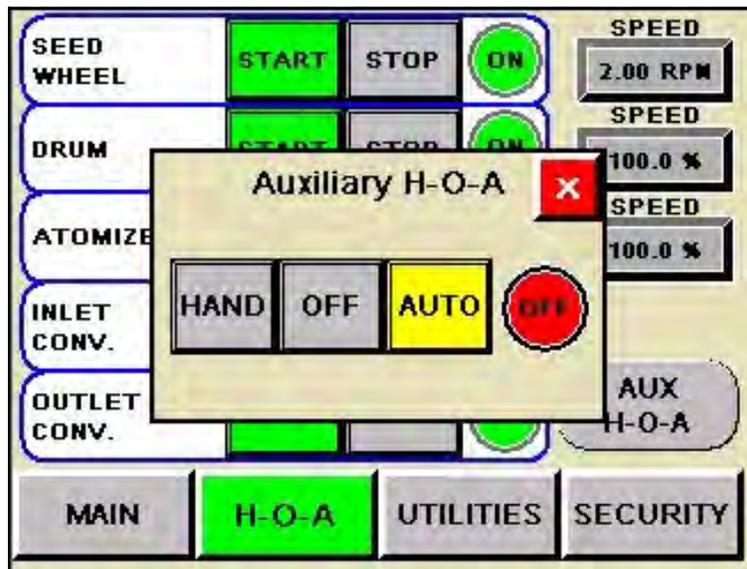
If you desire to check the total ounces used per batch of seed. Fill the calibration tube with the amount needed for the batch of seed (about 10 ounces extra is a good practice). Then position the SEED TREATMENT SOURCE valve to CALIBRATION TUBE and go on to step 3.

### **AVIS**

Si vous désirez vérifier les totaux once utilisés par lot de semences. Remplir le tube d'étalonnage avec la quantité nécessaire pour le lot de semences (environ 10 onces supplémentaires est une bonne pratique). Ensuite, positionner le TRAITEMENT DES SEMENCES SOURCE vanne CALIBRATION tube et passez à l'étape 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 Auxiliary Hand / Off / Auto switch to AUTO. The pumps will not start until the Seed Wheel proximity switch detects seed and the motor is turned on. (top of page 30).

**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.

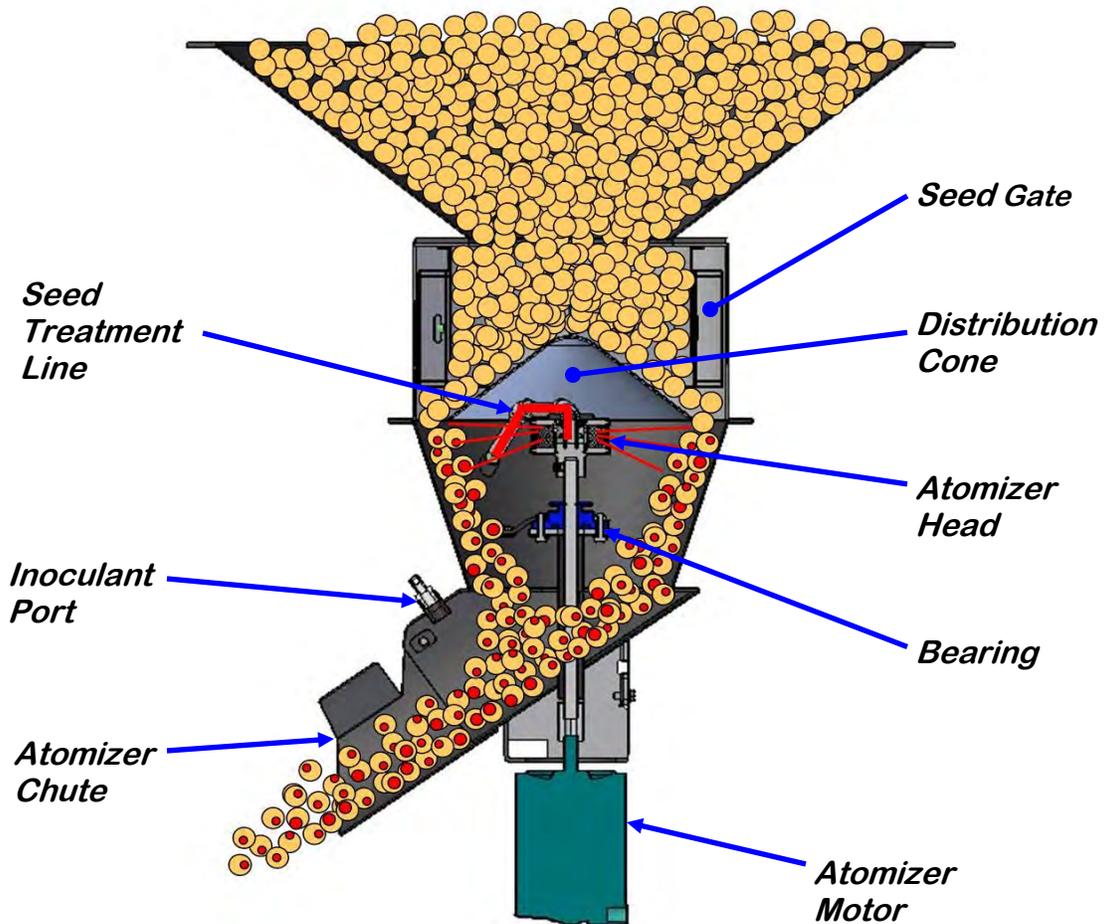
**NOTICE** You may notice the RPM will run at a lower RPM under the load of seed. Do not adjust the RPM back up. The program already has figured in the factor for the drop in RPM.

**AVIS** Vous pouvez remarquer le RPM fonctionne à une vitesse de rotation inférieure sous la charge de semences. Ne pas régler le RPM sauvegarde. Le programme a déjà figuré dans le facteur de la baisse de régime.

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

**TREATING SEED**

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"> <li>1. Inlet conveyor proximity switch is activated.</li> <li>2. Inlet conveyor proximity switch is too sensitive.</li> <li>3. Overload is tripped.</li> <li>4. Conveyor is plugged into wrong outlet on seed treater panel.</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean proximity switch</li> <li>2. Adjust the inlet conveyor proximity switch sensitivity by turning the adjustment screw counter-clockwise (page 34).</li> <li>3. Reset inlet conveyor overload.</li> <li>4. Check to make sure the inlet conveyor is plugged into the inlet conveyor receptacle.</li> </ol>
Pump will not turn off in AUTO when seed runs out.	<ol style="list-style-type: none"> <li>1. Proximity switch is dirty.</li> <li>2. Proximity switch is set too sensitive.</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean proximity switch.</li> <li>2. Adjust the pump proximity switch sensitivity by turning adjustment screw counter-clockwise (page 34).</li> </ol>
Pump will not turn on in AUTO	<ol style="list-style-type: none"> <li>1. Proximity switch is not staying covered.</li> <li>2. Atomizer is not on.</li> <li>3. Proximity switch is not sensitive enough.</li> <li>4. Pump stand two-wire cord is not plugged into to treater main panel.</li> <li>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.</li> </ol>	<ol style="list-style-type: none"> <li>1. Make sure proximity switch is staying covered with seed</li> <li>2. Turn on atomizer. Atomizer must be on to run the pump in Auto.</li> <li>3. Adjust pump proximity switch sensitivity by turning the adjustment screw clockwise (page 34).</li> <li>4. Plug the pump stand two-wire cord into the main treater panel.</li> <li>5. Set both the Pump Stand switch and Pump/Aux on the HOA screen to AUTO.</li> </ol>
Inlet conveyor won't shut off when hopper is full.	<ol style="list-style-type: none"> <li>1. Seed is not hitting proximity switch.</li> <li>2. Proximity switch is not set sensitive enough.</li> <li>3. Inlet conveyor is plugged into wrong receptacle.</li> </ol>	<ol style="list-style-type: none"> <li>1. Make sure seed is hitting proximity switch.</li> <li>2. Adjust the inlet conveyor proximity switch by turning the adjustment screw clockwise (page 34).</li> <li>3. Make sure inlet conveyor is plugged inlet conveyor receptacle.</li> </ol>

SYSTEM UPGRADE KIT - LPX MANUAL TREATER

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

## **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.

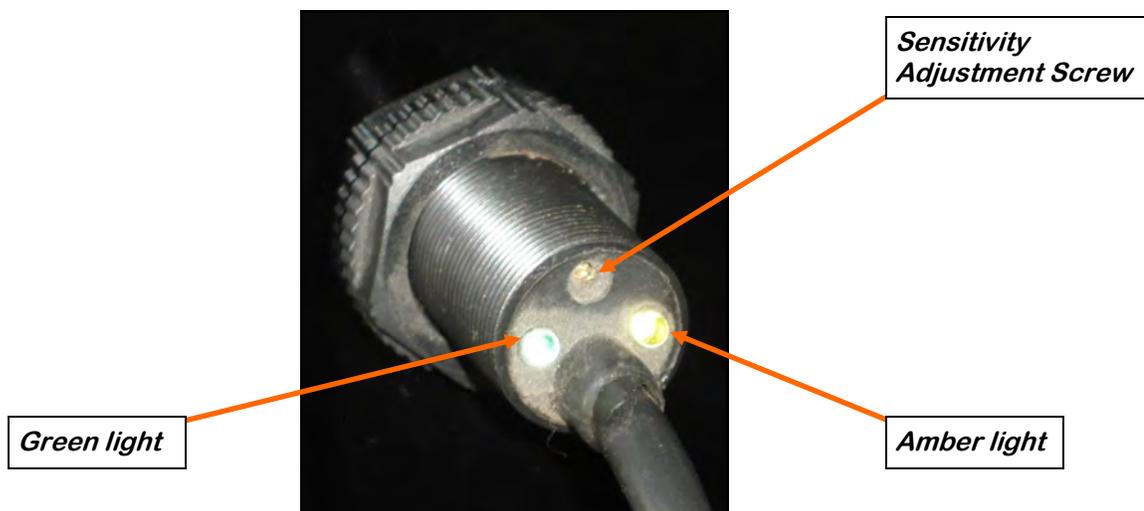
If the proximity switch is not working properly, this can be caused by wear, dust, or even moisture. The first step is to clean the lens of the proximity switch. If this does not solve the problem, the next step would be to adjust the sensitivity of the proximity switch.

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. This includes any welding on equipment which could damage electrical components. Manufacturer does not warrant against casualties or damages resulting from misuse and / or abuse of Products, improper storage or handling, 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 lost profits, lost revenue, lost sales (whether direct or indirect damages), incidental, special, punitive, indirect or consequential damages.

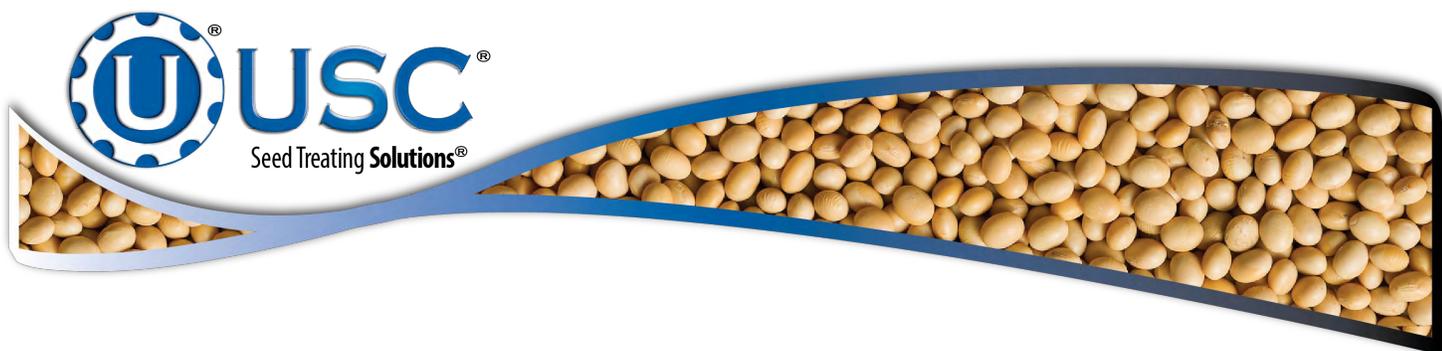
4. **Other Statements:** Manufacturer's employees or representatives' oral or other written statements do not constitute warranties, shall not be relied upon by Buyer, and are not a part of the contract for sale or this limited warranty.

5. **Return Policy:** Approval is required prior to returning goods to Manufacturer. 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.

US / Canada Non-Exclusive 2016





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