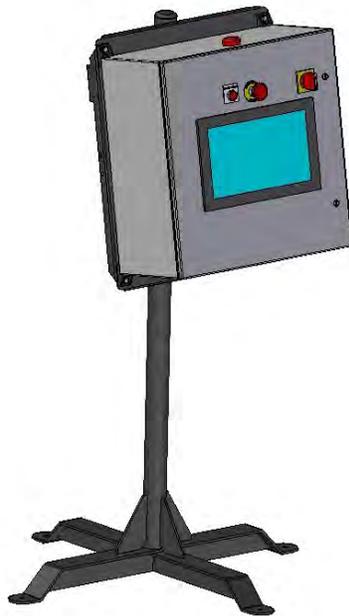




# U-Treat Automation

## Operators Manual

**Covering Automation for the  
Seed Wheel, Loss In Weight and  
Weigh Belt Treaters with  
Batch Hopper and Tri - Flo® Bin Site**



**Software Release: U-Treat v4.2**

**Document: TD-09-06-1050**

**Revision: C**



# **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 and maintain the U-Treat Automation. It does not hold USC, LLC liable for any accidents or injuries that may occur.

The technical information provided in this document is based on extensive testing under controlled conditions at the USC research and development facility. This information is given without guarantee as the conditions of operation and storage of the equipment are beyond our control. Variables such as temperature, humidity, viscosity of chemical products and changes in seed size or variety may all effect the accuracy of application and seed coverage. Periodically check the equipment calibration while treating and make adjustments as required. This will insure the optimum seed coverage.

## **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 USC at (785) 431-7900 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.**

### RECEIVING YOUR EQUIPMENT

As soon as the equipment is received, it should be carefully inspected to make certain that it has sustained no damage during shipment and that all items listed on the packing list are accounted for. If there is any damage or shortages, the purchaser must immediately notify USC, LLC. Ownership passes to purchaser when the unit leaves the USC, LLC. premises. The purchaser is responsible for unloading and mounting all components of the equipment.

Document the serial number of the machine for future reference. The serial number is located on the upper right hand corner of the main control panel.



**SERIAL NUMBER:** \_\_\_\_\_

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# SAFETY INSTRUCTIONS

## SECTION A

Every year accidents in the work place maim, kill and injure people. Although it may be impossible to prevent all accidents, with the right combination of training, operating practices, safety devices, and operator vigilance, the number of accidents can be significantly reduced. The purpose of this section is to educate equipment users about hazards, unsafe practices, and recommended hazard avoidance techniques.

If any of the required regularly scheduled maintenance is located above the reach of the operator, they should follow the companies normal safe practices of reaching that particular height, utilizing the companies specified equipment and following normal safety precautions.

When working with treatment chemicals, operators should always wear protective gloves, safety glasses, and follow the companies safety precautions in the case of any spillage or operator contamination.

### **SAFETY WORDS AND SYMBOLS**

It is very important that operators and maintenance personnel understand the words and symbols that are used to communicate safety information. Safety words, their meaning and format, have been standardized for U.S. manufacturers and published by the American National Standards Institute (ANSI). The European Community (E.C.) has adopted a different format based on the International Standards Organization (I.S.O.) and applicable machinery directives. Both formats are presented below. Graphic symbols are not standardized, but most manufacturers will use some variation of the ones seen in this manual.

### **MOTS ET SYMBOLES SÉCURITÉ**

Il est très important que les opérateurs et le personnel d'entretien à comprendre les mots et les symboles qui sont utilisés pour communiquer des informations de sécurité. Mots de sécurité, de leur signification et le format, ont été normalisés pour les fabricants américains et publié par l' American National Standards Institute ( ANSI ). La Communauté européenne (CE ) a adopté un format différent sur la base de l'Organisation internationale de normalisation ( ISO ) et des directives de machines applicables. Les deux formats sont présentés ci-dessous. Les symboles graphiques ne sont pas standardisés, mais la plupart des fabricants utilisent une variante de ceux observés dans ce manuel.



Indicates an imminently hazardous situation which, if not avoided, **will** result in death or serious injury.



Indique une situation extrêmement dangereuse qui, si pas évitée, entraînera la mort ou des blessures graves.



Indicates a potentially hazardous situation which, if not avoided, **could** result in death or serious injury.



Indique une situation potentiellement dangereuse qui, si pas évitée, pourrait entraîner la mort ou des blessures graves.



Indicates a potentially hazardous situation which, if not avoided, **may** result in minor or moderate injury and/or property damage.



Indique une situation potentiellement dangereuse qui, si pas évitée, peut entraîner des blessures mineures ou modérées et / ou des dommages.



Provides additional information that the operator needs to be aware of to avoid a potentially hazardous situation.



Fournit des informations supplémentaires que l'opérateur doit être conscient de d'éviter une situation potentiellement dangereuse.



Notice is used to notify people of important installation, operation or maintenance information which is not hazard related.



Avis est utilisé pour informer les gens des informations de maintenance qui ne est pas danger lié importante installation, l'exploitation ou.



**Mandatory Lockout Power Symbol.** Disconnect, lockout and tagout electrical and other energy sources before inspecting, cleaning or performing maintenance on this panel.

**Symbole de puissance verrouillage obligatoire.** Débranchez, de verrouillage et de déconsignation énergie électrique et d'autres sources avant d'inspecter, de nettoyage ou de la maintenance de ce panneau.



**International Safety Alert Symbol.** The exclamation point (!) surrounded by a yellow triangle indicates that an injury hazard exists. However, it does not indicate the seriousness of potential injury. The exclamation point (!) is also used with the DANGER, WARNING and CAUTION symbols so the potential injury is indicated.

**Sécurité Symbole International Alert .** Le point d'exclamation ( ! ) Entouré par un triangle jaune indique que un risque de blessure existe . Cependant, il ne indique pas la gravité des blessures potentielles. Le point d'exclamation ( ! ) Est également utilisé avec les symboles DANGER, AVERTISSEMENT et ATTENTION de sorte que le risque de blessure est indiqué.



**Electrocution Hazard Symbol.** This symbol indicates that an electrocution hazard exists. Serious injury or death could result from contacting high voltage.

**Symbole de danger d'électrocution .** Ce symbole indique qu'un danger d'électrocution existe. Des blessures graves ou la mort pourraient résulter de contact haute tension.



**International Electrocution Hazard.** This symbol indicates that an electrocution hazard exists. Serious injury or death could result from contacting high voltage.

**Danger d'électrocution international.** Ce symbole indique qu'un danger d'électrocution existe. Des blessures graves ou la mort pourraient résulter de contact haute tension.



**Mandatory Read Manual Action Symbol.** (I.S.O. format) This symbol instructs personnel to read the Operators Manual before servicing or operating the equipment.

**Obligatoire Lire Symbole d'action Manuel.** ( Format ISO )  
Ce symbole indique le personnel de lire le manuel de l'opérateur avant de réparer ou d'utiliser l'équipement.



**Mandatory Read Manual Action Symbol.** This symbol instructs personnel to read the Operators Manual before servicing or operating the equipment.

**Obligatoire Lire Symbole d'action Manuel .** Ce symbole indique le personnel de lire le manuel de l'opérateur avant de réparer ou d'utiliser l'équipement.

## **LOCKOUT / TAGOUT PROCEDURES**

Lockout/Tagout is the placement of a lock/tag on an energy isolating device in accordance with an established procedure. When taking equipment out of service to perform maintenance or repair work, always follow the lockout / tagout procedures as outlined in ANSI Z344.1 and/or OSHA Standard 1910.147. This standard “requires employers to establish a program and utilize procedures for affixing appropriate lockout devices or tagout devices to energy isolating devices and to otherwise disable machines or equipment to prevent unexpected energizing, start-up, or release of stored energy in order to prevent injury to employees.”

## **LES PROCEDURES DE VERROUILLAGE / ETIQUETAGE**

Verrouillage / étiquetage est le placement d'un verrouillage / tag sur un dispositif d'isolement de l'énergie conformément à une procédure établie. Lors de la prise hors service des équipements pour effectuer la maintenance ou de réparation, toujours suivre les procédures de verrouillage / débranchement comme indiqué dans la norme ANSI Z344.1 et / ou la norme OSHA 1910.147. Cette norme "oblige les employeurs à établir un programme et appliquer des procédures pour la fixation des dispositifs de verrouillage appropriés ou des dispositifs déconsignation à l'énergie dispositifs d'isolement et d' autre machines ou équipements désactiver pour éviter énergisant inattendu, start-up, ou la libération de l'énergie stockée dans le but de prévenir les blessures aux employés."

## **EMERGENCY STOP**



There is an Emergency Stop push button on all LPV and LPX Seed Treaters which is located on the Treater Control Panel. The LPX Automated Treater has an additional Emergency Stop pushbutton on the Main Control Panel. Actuators of emergency stop shall be colored RED. The background immediately around the device actuator shall be colored YELLOW. The actuator pushbutton operated device shall be of the palm or mushroom head type.

## **ARRET D'URGENCE**

Il existe un bouton-poussoir d'arrêt d'urgence sur tous les produits LPV et LPX Seed Treaters qui se trouvent sur le panneau de commande Treater. Le LPX Automated Treater dispose d'un bouton-poussoir d'arrêt d'urgence supplémentaire sur le panneau de commande principal. Les actionneurs de l'arrêt d'urgence doivent être colorés en couleur. Le fond immédiatement autour de l'actionneur de l'appareil doit être coloré JAUNE. Le bouton-poussoir du servomoteur doit être du type à la tête de la palme ou au champignon.

## **CONTROLLED STOP**

This is the stopping of machine motion by reducing the electrical command signal to 0 (zero) once the stop signal has been recognized.

## **ARRET CONTROLÉ**

Ce est l'arrêt du mouvement de la machine en réduisant le signal de commande électrique à 0 (zéro) dès que le signal d'arrêt a été reconnu.

## **HAZARD REVIEW**

### **RISQUE EXAMEN**



### **Electrocution Hazard**

Electrocution accidents are most likely to occur during maintenance of the electrical system or when working on or near exposed high voltage wiring. This hazard does not exist when the electrical power has been disconnected, properly locked, and tagged out.

### **Risque d'électrocution**

Les accidents d'électrocution sont les plus susceptibles de se produire lors de la maintenance du système électrique ou pour travailler sur ou à proximité du câblage haute tension exposé. Ne existe pas ce danger lorsque l'alimentation électrique a été déconnecté, bien verrouillé et étiquetés sur.

### **Automatic Start Hazard**



**! WARNING**

This equipment may be controlled by an automated system and may start without warning. Failure to properly disconnect, lockout, and tagout all energy sources of remotely controlled equipment creates a very hazardous situation and could cause injury or even death. PLEASE STAY CLEAR AND BE ALERT.

### **Démarrer danger automatique**

**! AVERTISSEMENT**

Cet équipement peut être contrôlé par un système automatisé et peut démarrer sans avertissement. Sources de l'équipement contrôlé à distance non débranché correctement, lock-out, et tous déconsignation énergie crée une situation très dangereuse et pourrait causer des blessures ou même la mort. Se IL VOUS PLAÎT rester à l'écart et d'être vigilant.

**YOU** are responsible for the **SAFE** operation and maintenance of your USC, LLC equipment . **YOU** must ensure that you and anyone else who is going to operate, maintain or work around the equipment be familiar with the operating and maintenance procedures and related **SAFETY** information contained in this manual. This manual will take you step-by-step through your working day and alert you to good safety practices that should be adhered to while operating the equipment

Remember, **YOU** are the key to safety. Good safety practices not only protect you, but also the people around you. Make these practices a working part of your safety program. Be certain that **EVERYONE** operating this equipment is familiar with the recommended operating and maintenance procedures and follows all the safety precautions. Most accidents can be prevented. Do not risk injury or death by ignoring good safety practices.

- Equipment owners must give operating instructions to operators or employees before allowing them to operate the machine, and at least annually thereafter per OSHA (Occupational Safety and Health Administration) regulation 1928.57.
- The most important safety device on this equipment is a **SAFE** operator. It is the operator's responsibility to read and understand **ALL** Safety and Operating instructions in the manual and to follow them. All accidents can be avoided.
- A person who has not read and understood all operating and safety instructions is not qualified to operate the machine. An untrained operator exposes himself and bystanders to possible serious injury or death.
- Do not modify the equipment in any way. Unauthorized modification may impair the function and/or safety and could affect the life of the equipment.
- Think SAFETY! Work SAFELY!

### GENERAL SAFETY

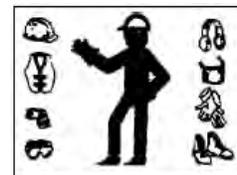
1. Read and understand the operator's manual and all safety labels before operating, maintaining, adjusting or unplugging the equipment .
2. Only trained persons shall operate the equipment . An untrained operator is not qualified to operate the machine.
3. Have a first-aid kit available for use should the need arise, and know how to use it.



4. Provide a fire extinguisher for use in case of an accident. Store in a highly visible place.
5. Do not allow children, spectators or bystanders within hazard area of machine.
6. Wear appropriate protective gear. This includes but is not limited to:



- A hard hat
- Protective shoes with slip resistant soles
- Protective goggles
- Heavy gloves
- Hearing protection
- Respirator or filter mask



7. Place all controls in neutral or off, stop motor, and wait for all moving parts to stop. Then disable power source before servicing, adjusting, repairing, or unplugging.
8. Review safety related items annually with all personnel who will be operating or maintaining the equipment.



### **OPERATING SAFETY:**

1. Read and understand the operator's manual and all safety labels before using.
2. Disconnect and disable electrical supply completely and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.
3. Clear the area of bystanders, especially children, before starting.
4. Be familiar with the machine hazard area. If anyone enters hazard area, shut down machine immediately. Clear the area before restarting.
5. Keep hands, feet, hair and clothing away from all moving and/or rotating parts.
6. Stay away from overhead obstructions and power lines during operation and transporting. Electrocutation can occur without direct contact.
7. Do not operate machine when any guards are removed.
8. Inspect welds and repair if needed.

## **PLACEMENT SAFETY**

1. Move only with the appropriate equipment
2. Stay away from overhead power lines when moving equipment. Electrocution can occur without direct contact.
3. Be familiar with machine hazard area. If anyone enters hazard areas, shut down machine immediately. Clear the area before restarting.
4. Operate the equipment on level ground free of debris. Anchor the equipment to prevent tipping or upending.



Before placement of the equipment, be sure that ground is reasonably level. The equipment may topple or work improperly if the ground is too uneven, damaging the equipment and / or causing personal injury.



Avant de placement de l'équipement, assurez-vous que sol est relativement plat. L'équipement peut tomber ou mal fonctionner si le sol est trop inégale, endommager l'équipement et / ou causer des blessures.

## **MAINTENANCE SAFETY**

1. Review the operator's manual and all safety items before working with, maintaining or operating the equipment .
2. Place all controls in neutral or off, stop motors, disable power source, and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.
3. Follow good shop practices:  
Keep service area clean and dry.  
Be sure electrical outlets and tools are properly grounded.  
Use adequate light for the job at hand.
4. Keep hands, feet, hair and clothing away from all moving and/or rotating parts.
5. Clear the area of bystanders, especially children, when carrying out any maintenance and repairs or making any adjustments.
6. Before resuming work, install and secure all guards when maintenance work is completed.
7. Keep safety labels clean. Replace any sign that is damaged or not clearly visible.



## **SAFETY LABELS**

1. Keep safety labels clean and legible at all times.
2. Replace safety labels that are missing or have become illegible.
3. Replaced parts that displayed a safety label should also display the current label.
4. Replacement safety labels are available. Contact USC at (785) 431-7900 .

### **How to Install Safety Labels:**

- Be sure that the installation area is clean and dry.
- Be sure temperature is above 50°F (10°C).
- Decide on the exact position before you remove the backing paper.
- Remove the smallest portion of the split backing paper.
- Align the sign over the specified area and carefully press the small portion with the exposed sticky backing in place.
- Slowly peel back the remaining paper and carefully smooth the remaining portion of the sign in place.
- Small air pockets can be pierced with a pin and smoothed out using the piece of sign backing paper.



**WARNING**

Located on the USC equipment you will find safety labels. Always be sure to read and follow all directions on the labels.



**! AVERTISSEMENT**

Situé sur l'équipement USC vous trouverez des étiquettes de sécurité. Veuillez à toujours lire et suivre toutes les instructions sur les étiquettes.



**WARNING**

Guards provided with USC equipment are to remain in place during operation.



**! AVERTISSEMENT**

Gardes fournis avec des équipements USC doivent rester en place pendant le fonctionnement.

## **C2D2 SPECIFICATIONS AND LABELS**

If any of the panels are located in the hazardous area described in the installation section (see page 18), the following criteria must be met.

1. All 120VAC connections must be hard wired to a listed IP65 rated enclosure in accordance with local electrical codes.
2. The C2D2 certifications are only valid for equipment operating at 60 HZ.
3. The approved operating temperature for this equipment is between 0°C (32°F) and 40°C (104°F).
4. All RJ45 and USB pass-through connector caps must remain closed to achieve a C2D2 rating. Hard wire these connections in accordance with local electrical codes.

The following labels and certification plates must be mounted to the outside of the control panel so that they are in plain view.



SECTION  
B**INSTALLATION**

**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.



Permanent installation may require additional electrical cords, chemical tubing, and air lines, since each installation is unique.



Installation permanente peut exiger cordons électriques, des tubes supplémentaires chimique, et les conduites d'air, puisque chaque installation est.

USC equipment may operate within a Group II, Division 2, Class G hazardous area which contains seed dust. If so, the equipment must be certified for use in this area. To avoid the possibility of an explosion ignited by static electricity, all USC equipment should be grounded by attaching a bonding strip to the metal frame and securing that strip to the factory ground point.

If labeled accordingly, USC products are designed to comply with CSA 22.1 for use in a Class II, Division 2, Group G environment. When connecting the USC system power cord into a power supply, first determine if the supply is also within the hazardous area where the USC system is located. If so, we recommend that the power be hard wired into the source. Do not use a standard electrical plug for this purpose. For other acceptable methods of connecting to a power source, or any other additional miscellaneous equipment to the USC system within a hazardous location, please consult CSA 22.1, Section 18-200 and 18-274. Review the appropriate section and ensure compliance with one of the options given.

When connecting to USC equipment from a remote location, and the USC equipment is in a hazardous Class II, Group G environment, customers are advised to follow the requirements within CSA 22.2 no. 25. More details may also be found in CSA 22.1 18-252 (wiring methods). There are various options covered within this section for wiring in a Class II, Group G (dust) environment. Select the best method suited for your specific location.

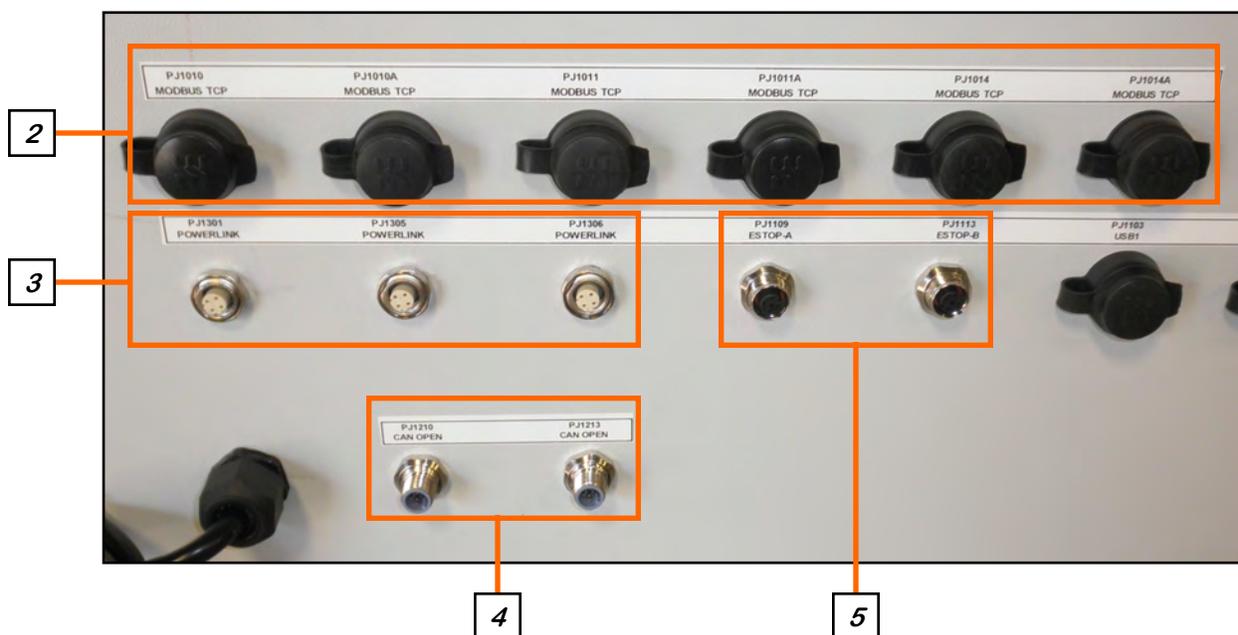
## INSTALLATION

USC équipement peut fonctionner dans un Groupe II, Division 2, Class G zone dangereuse qui contient la poussière des semences. Si oui, l'équipement doit être certifié pour une utilisation dans ce domaine. Pour éviter la possibilité d'une explosion enflammé par l'électricité statique, tous les équipements USC devrait être la terre en attachant une bande de liaison à la structure métallique et la sécurisation cette bande au point de masse du fabricant.

Si étiquetés en conséquence, les produits USC sont conçus pour être conformes à la norme CSA 22.1 pour une utilisation dans une Class II, Division 2, Groupe G environnement. Lors du raccordement du USC alimentation du système cordon dans une alimentation, d'abord déterminer si l'offre est également dans la zone dangereuse où se trouve le système USC. Si oui, nous recommandons que le pouvoir soit câblé dans la source. Ne pas utiliser une prise électrique standard à cet effet. Pour les autres méthodes acceptables de se connecter à une source d'alimentation, ou tout autre matériel divers supplémentaire au système USC dans un endroit dangereux, se il vous plaît consulter la norme CSA 22.1, Section 18-200 et 18-274. Consultez la section appropriée et assurer la conformité avec l'une des options proposées.

Lors de la connexion à l'équipement USC depuis un emplacement distant et l'équipement USC est dans une classe dangereuse II, Groupe G environnement, les clients sont invités à suivre les exigences dans CSA 22.2 no. 25. Plus de détails peuvent également être trouvés dans 22,1 CSA 18-252 ( Les méthodes de câblage). Il existe diverses options couvertes dans cette section pour le câblage dans une Class II, Groupe G (poussière ) environnement. Sélectionnez la meilleure méthode adaptée

### MAIN CONTROL PANEL

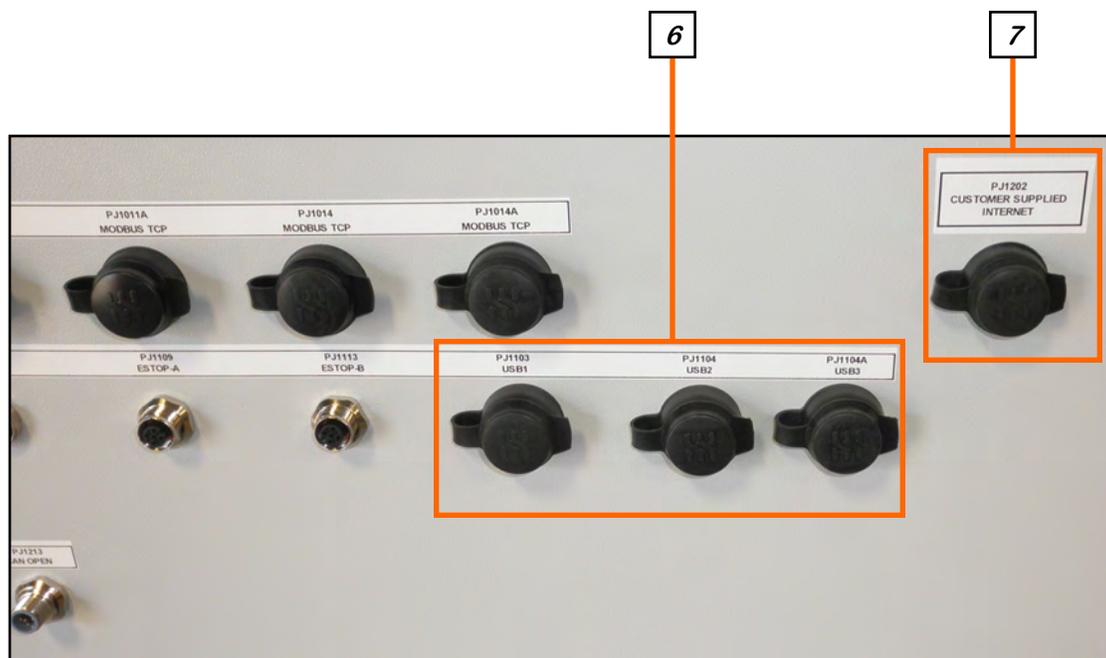


## **INSTALLATION**

1. Attach the Main Control Panel to the control panel stand using the provided hardware. Determine the permanent location you will be operating the system from, then anchor the stand to the floor. The panel may also be mounted to a wall.
2. There are six MODBUS TCP Ethernet connectors on the Main Control Panel (MCP). If the installation has a version 3 four pump or twelve pump controller panels, connect them using one of the Ethernet Ports. These are also used for connecting scale heads, printers, etc.
3. If being used with version 4 control panels, connect a cable with four pin connector to one of the three Powerlink connectors on the MCP. Connect the other end to the Powerlink connector on the closest control panel. Repeat this process until all control panels are connected. It may be MCP to Treater to Tri-Flo® to Bin Site panel. The order or number of devices is not important. It is important that all panel are connected. All version 4 pump stand control panels will need to connected in a similar configuration.
4. There are also two CAN OPEN connectors. These would only be used when the MCP is being installed on a system with Version 1, 2 or 3 control panels. Connect the gray cable with light blue endson the bottom of the MCP to one of OPEN CAN connectors on the bottom of closest control panel. Repeat this process until all control panels are connected in a daisy chain configuration. It may be MCP to Treater to Tri-Flo® to Bin Site panel. The order or number of devices is not important. It is important that no control panel is left out of the chain. Connect the two light blue plugs onto each of the remaining open PJCAN connectors on the first and last panel.
5. Connect the red cable to the PJESTOPA on the Main Control Panel (MCP) and then to the PJESTOPB on the next panel that is closest to the MCP. Repeat this process until all control panels are connected in a daisy chain configuration. It may be MCP to Treater to Tri-Flo® to Bin Site panel. The order or number of devices is not important. It is important that each cable is ran from an A connection to a B connection (never A to A or B to B), and that no control panel is left out of the chain. Connect the two red plugs onto each of the remaining open PJESTOP connectors on the first and last panel.

## INSTALLATION

- There are three USB ports located on the bottom of the panel that may be used to plug in a mouse, keyboard or download reports to a compact flash device.
- There is also a connector (PJ1202) where the customer supplied internet connection is made. This is required to use the E-Mail Reports function.



### NOTICE

If using a scale printer, plug the printer communication cable into one of the available MODBUS Ethernet ports located on the bottom of the main control panel. The printer must be located in a safe area.

**Do not use within a hazardous area which contains seed dust.**

### AVIS

Si vous utilisez une imprimante à échelle, branchez le câble de communication de l'imprimante dans l'un des ports Ethernet MODBUS disponibles situés en bas du panneau de commande principal. L'imprimante doit être située dans une zone sécurisée.

**Ne pas utiliser dans une zone dangereuse contenant de la poussière.**

SECTION  
C**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

This section provides a general overview and description of the operator controls.

### General Panel Descriptions

- The Automated Main Control Panel is a plug connected enclosure that contains the IPC (Industrial Programmable Controller) as well as the HMI (Human Machine Interface) touch screen. The operator is able to control the entire system through the HMI. Power to this panel is supplied from a standard 110V plug (Always on site).
- The 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. Power for the VFD's that control the seed wheel, atomizer and treater drum is supplied here. Power to this panel is hard wired (Always on site).
- The Tri - Flo ® Control Panel (TFCP) is a plug connected enclosure that is located on the Tri - Flo ®. This enclosure contains the electronic components for the Tri - Flo ® (Optional panel-only present with Tri - Flo ® weigh system).

## **General Panel Descriptions**

- The Automated 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 Automated 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.
- The Bin Site Control Panel (BSCP) is a 36 x 30 x 10 inch enclosure that contains the bulk of the electrical control components. The air solenoid bank that controls the Batch Hopper slide gate valve and the bin slide gate valves is located on the side of this panel and hardwired to the BSCP (Optional panel-only present on sites with bin site).

### **NOTICE**

**USC strongly recommends that you implement a routine data export strategy. This will give your company a regularly updated back-up file containing all of the important information in your seed treating system. Customer, seed, bin and chemical profiles, as well as chemical recipes may easily be restored in the event of a catastrophic system failure, such as a lightning strike or PLC failure. Reports may not be imported back into the system, but you will still have an electronic copy for your records. USC recommends daily back-ups (see page 34).**

### **AVIS**

**USC vous recommande fortement de mettre en œuvre une stratégie de routine d'exportation de données. Cela donnera à votre entreprise un fichier de sauvegarde régulièrement mise à jour contenant toutes les informations importantes dans votre système de traitement des semences. Clients, semences, bin et chimiques profils, ainsi que des recettes chimiques peuvent être facilement restaurées en cas de défaillance catastrophique du système, comme une grève de la foudre ou l'échec PLC. Rapports ne peuvent pas être importés dans le système, mais vous aurez toujours une copie électronique pour vos dossiers. USC recommande sauvegardes quotidiennes (voir page 34).**

### **NOTICE**

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

### **AVIS**

**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.**

**HMI-Main Control Panel**

This section explains the function of the touch screen controls that apply to all systems.

**USC STARTUP SCREEN**

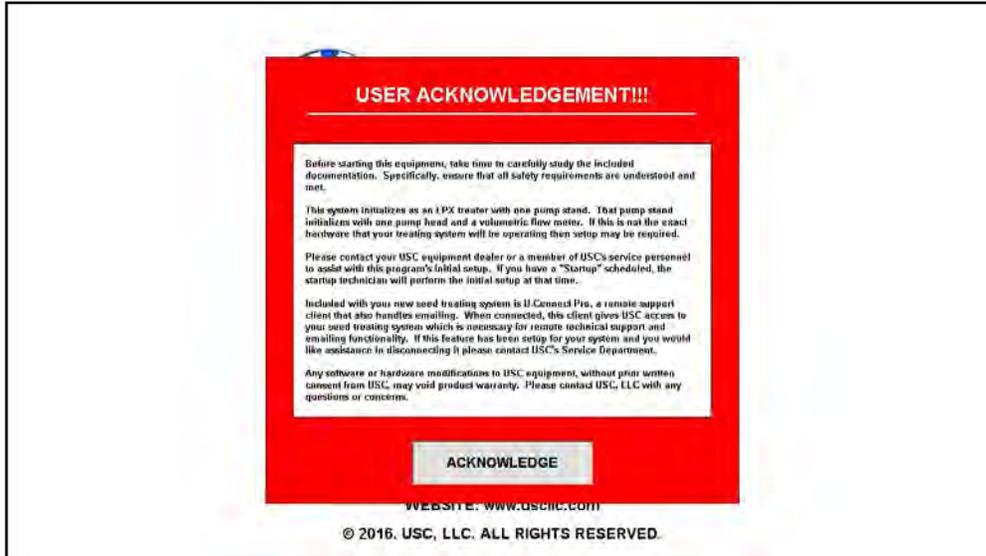
This is the first screen the operator will see after the system receives power at the initial startup. After reading the User Acknowledgement statement, push the Acknowledge button at the bottom of the popup window to close the screen. (see page 25, top). While the system is booting up, the touch screen will display a timer bar at the bottom of the Start Up Screen (see page 25, bottom).

Once the timer bar reaches the end it will disappear and be replaced with a line of text that reads Press Screen to Continue. Press anywhere on the screen and it will advance to the Main screen.

If you wish to review the acknowledgement information at a later time press the Utilities button, then press the About button on the right side of the screen. A popup screen will appear with the software version and the copyright information. Press the User Acknowledgement button on the bottom of the popup to review the acknowledgement.

The main screens vary depending on the system being run. Please see specific sections for breakdown of the main screen button descriptions.

- Seed Wheel Treater main screen description on page 58.
- Loss In Weight Treater main screen description on page 74.
- Weigh Belt Treater main screen description on page 90.
- Batch Hopper main screen description on page 107.
- Tri - Flo ® main screen description on page 121.



## FUNCTIONS COMMON TO ALL SCREENS

At the top of every screen is the dark blue title bar. In the center of the screen is the title and in the right hand corner program version, date, time and current user identification. In the upper left corner, is the treater message bar. It has a light blue background and will display messages notifying the operator of which stage the treating process is in. If the installation is a bin site, there will be another message bar below it with a light green background that will display messages notifying the operator of which operation the bin site is currently in.

At the bottom of every screen are the buttons that the operator uses to navigate from one screen to another. Pressing the button in the lower right hand corner with USC U-Treat logo on it returns the operator to the startup screen.

## H-O-A (HAND-OFF-AUTO) SCREENS



**! AVERTISSEMENT**

These H-O-A buttons force the selected component to be energized (HAND), de-energized (OFF), or automatically energized by the normal logic sequence (AUTO).

The HAND function will cause the component to operate independent of whatever else the system is trying to do automatically. These functions should not normally be used if the automated sequencing is active. **Be sure to understand the impact of energizing or de-energizing a component with the settings before using them. These commands are not a substitute for Lockout/Tagout procedures when working on or near this machine. Use proper lockout/tagout procedures to disable the equipment before servicing it.**

Ces boutons HOA forcent le composant sélectionné pour être excité (HAND), hors tension (OFF), ou automatiquement alimentés par la séquence logique normale (AUTO). La fonction de la main provoquera la composante de fonctionner indépendamment de tout ce que le système essaie de faire automatiquement. Ces fonctions ne devraient normalement pas être utilisés si le séquençage automatisé est actif. **Assurez-vous de comprendre l'impact de énergisant ou désexciter un composant avec la main / Off paramètres avant de les utiliser. Ces commandes ne sont pas un substitut pour les procédures de verrouillage / étiquetage lorsque vous travaillez sur ou près de cette machine. Utilisez les procédures appropriées de verrouillage / débranchement pour désactiver l'équipement avant de l'entretenir.**

## H-O-A (HAND-OFF-AUTO) SCREENS

Hand-Off-Auto controls are provided for most of the automated devices in the system, and are accessed on this screen.

This screen varies depending on the type of system being run. Please see specific sections for a breakdown of the H-O-A button descriptions.

- Seed Wheel Treater H-O-A description on page 64.
- Loss In Weight Treater H-O-A description on page 80.
- Weigh Belt Treater H-O-A description on page 97.
- Batch Hopper H-O-A description on page 113.
- Tri - Flo<sup>®</sup> H-O-A description on page 126.

The screenshot displays the 'Bin Site HOA 1' control interface. At the top, it shows 'Treater: Idle' and 'Weigh: Idle' on the left, and 'U-Treat v4.2.00' and '09/21/2018 09:31:16 User: OPERATOR' on the right. The main area contains several control panels:

- Underbin Controls:** A table with columns for device name, Hand, Off, Auto, and status. Devices include UNDERBIN #1 CNVR, UNDERBIN #2 CNVR, TRANSFER CNVR, SCALE FILL CNVR, OUTLET CNVR, and PRO BOX CNVR.
- Encoder Readings:** Underbin Encoder 1 and 2, both showing 0.0 CTS/min.
- Gate Control:** A table with columns for Hand, Off, and Auto. It lists BIN #1 through BIN #10, Pre Treater Diverter, and Post Treater Diverter.
- Valve and Diverter Controls:** Panels for Inlet Diverter, Discharge Valve #1, #2, and #3, each with Hand, Off, Auto, and status buttons.
- Navigation:** A bottom menu bar with buttons for Treater Main, Bin Site Main, Bin Site HOA 1 (selected), Bin Site HOA 2, Utilities, Reports, Profile Editing Screens, Help, Alarms, Security, and Setup & Online.

## UTILITIES SCREENS

This screen allows the operator to set various system parameters. The screen varies depending on the type of system being run, type of treater, bin site if one is in place. Please see specific sections for a breakdown of the Utilities Screen descriptions.

- Seed Wheel Treater Utilities description on page 71.
- Loss In Weight Treater Utilities description on page 87.
- Weigh Belt Treater Utilities description on page 104.
- Batch Hopper Utilities description on page 118.
- Tri - Flo ® Utilities description on page 130.

All Utilities screens also have a series of buttons on the right side that are present on all systems. See pages 29 through 33 for details for each button.



**UTILITIES SCREEN BUTTONS**

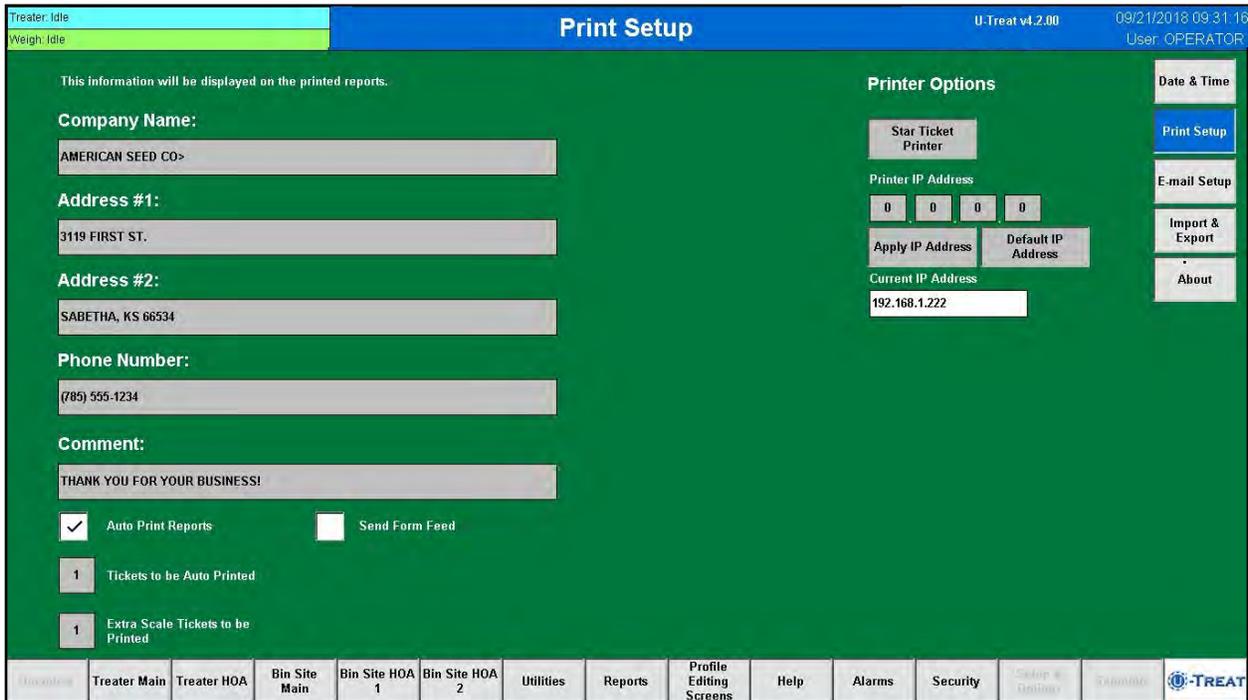
**1. DATE & TIME:** Select the top three boxes to set the year month and day. Select the bottom three boxes to set the time. The system is based on a 24 hour clock. When keying in the hour, 2:00 P.M. is 14 hours as in the example below. If you wish to view the time on the screens in 12 hour display, check the box below the time setting. The display in the upper right hand corner will now show a 12 hour clock indicating A.M. or P.M. Press the Set Date & Time button in the center of the screen to save your entries.



**UTILITIES SCREEN BUTTONS**

**2. PRINT SETUP:** Pressing this button will advance to the print setup screen. This allows the operator to set up the company information which will be printed at the top of each report. The company information may be entered by selecting the blank space under each heading. The operator may also check the Auto Print boxes to print a report for a customer every time a report is generated as well as how many copies the customer requires. The Send Form Feed check box must be checked if you are printing to a standard office printer instead of the Star Ticket printer that was shipped with the system.

The Printer Options on the right side of the screen are used to define which printer type will be used. If using the printer supplied with the system, no change is required. If using a standard office printer, press the Star Ticket Printer button and it will toggle to 8.5x11 Ticket Printer. Select each one of the Printer IP Address boxes and use the numeric keypad to enter the printer IP address, then press the Apply IP Address button. This will update the Current IP Address display. Pressing the Default IP Address button will return it to the Star Ticket Printer IP address shown in the example below.

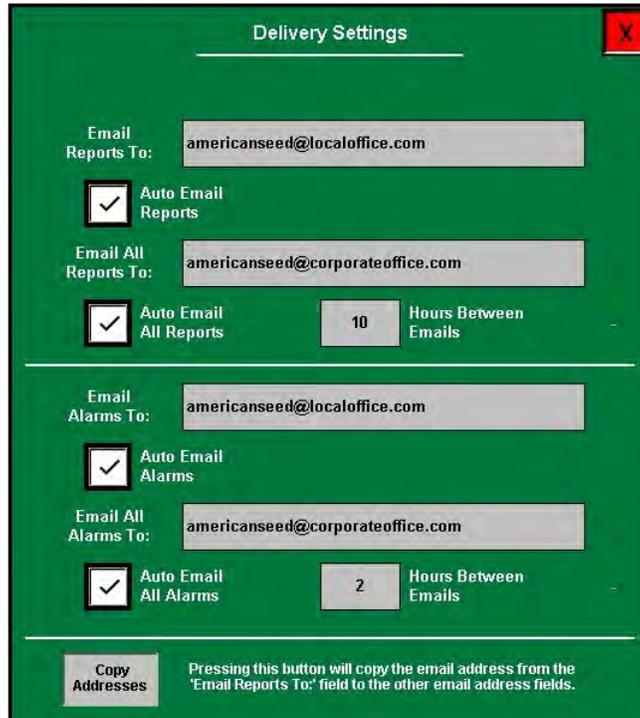


## UTILITIES SCREEN BUTTONS

**3. EMAIL SETUP:** Pressing this button will advance to the Email setup screen. This allows the operator to email reports and alarms through the U-Connect Pro if enabled. The individual reports will be sent in standard email format as text at the end of each run. When sending all reports, the email will be sent in a .CSV file for viewing in Excel format.

### NOTICE

Before you may begin to set your e-mail parameters, an individual with level 2 administrative login privileges must enable the e-mailing option in the program and has entered the server settings.



The screenshot shows the 'Delivery Settings' window. It features three main sections for configuring email delivery. The first section, 'Email Reports To', has the address 'americaseed@localoffice.com' and 'Auto Email Reports' checked. The second section, 'Email All Reports To', has the address 'americaseed@corporateoffice.com' and 'Auto Email All Reports' checked, with 'Hours Between Emails' set to 10. The third section, 'Email Alarms To', has the address 'americaseed@localoffice.com' and 'Auto Email Alarms' checked, with 'Hours Between Emails' set to 2. A 'Copy Addresses' button is located at the bottom left, with a tooltip explaining its function: 'Pressing this button will copy the email address from the "Email Reports To:" field to the other email address fields.'

The following is a basic description of the information that needs to be entered in the Delivery Settings screen .

**Email Reports To:** Enter the e-mail address to send the individual bin site and or treater reports at the end of each run.

**Auto Email Reports:** Check this box to automatically send the reports at the end of each run.

**UTILITIES SCREEN BUTTONS**

**3. EMAIL DELIVERY SETUP (Continued):**

**Email All Reports To:** This is the address that the entire job reports CSV file will be sent to if the auto email all reports box has been checked.

**Auto Email All Reports:** Check this box to have all emails sent on a timed schedule.

**Hours Between Emails:** Set the time interval in hours between the e-mailing of all reports.

**Email Alarms To:** Enter the e-mail address to send the individual alarms to when they are requested.

**Auto Email Alarms:** Check this box to automatically send an e-mail each time an alarm occurs.

**Email All Alarms To:** This is the address that the entire alarms CSV file will be sent to.

**Auto Email All Alarms:** Check this box to have all emails sent on a timed schedule.

**Hours Between Emails:** Set the time interval in hours between the e-mailing of all alarms.

**UTILITIES SCREEN BUTTONS**

**4. IMPORT / EXPORT LISTS:** Pressing this button will advance to the Import / Export screen. From here you may choose from a variety of profiles and recipes that may be either imported from a flash drive or exported to a flash drive. The USB port is located on the bottom of the main control panel. Job Reports may be exported but not imported. After they are exported you may delete them from the system.

After pushing the Export button, the message above it will be **Copying to USB...**, then it will change to indicate the number of files it is in the process of exporting. There will also be a warning above the module, **Please do not “Exit” or cycle power.** Exiting or shutting off the power will stop the process before it is complete. None of the buttons will function if you have not inserted a flash drive into the USB port.

**5. ABOUT USC:** Pressing this button brings up a popup screen showing the operator what software release is installed.



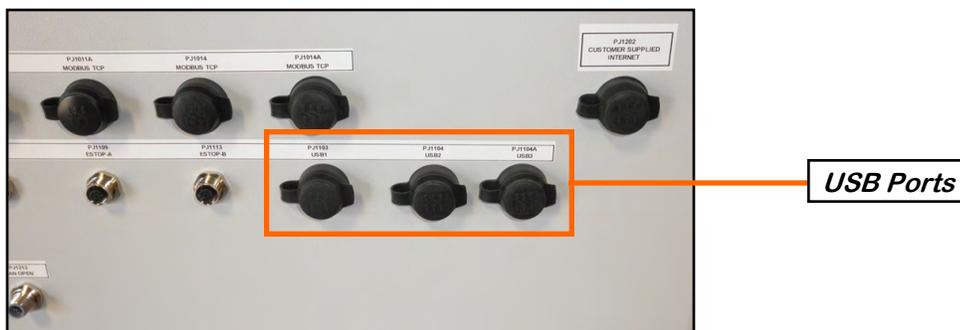
## ALARMS - EVENTS - MESSAGES LOGS AND JOB REPORTS

Over time, the amount of records for all of the Logs and Reports will begin to build up. Periodically you may wish to delete the files. If you intend to delete any of these files, USC strongly recommends you first download them to a flash drive to preserve for your records (see page 37). If you would like to delete any of the records, go to the Utilities screen. From the Utilities screen press the Import / Export button. On this screen the operator may export and delete records.

List	Total Used Records	Status	Actions
Alarm Log	122		Export Delete
Events Log	52		Export Delete
Messages Log	0		Export Delete
Job Reports	0		Export Delete
Customer Profiles	18		Export Import Delete
Seed Profiles	10		Export Import Delete
Chemical Profiles	26		Export Import Delete
Chemical Recipes	13		Export Import Delete
Pump Profiles	4		Export Import Delete
Bin Profiles	3		Export Import Delete
Conveyors Profiles	5		Export Import Delete
Paths Profiles	2		Export Import Delete
VFD Profiles	4		Export Import Delete
Diverter Profiles	0		Export Import Delete

## DOWNLOADING LOGS AND REPORTS

The are three USB ports are located on the bottom of the Main Control Panel. The operator may use one of these to download reports to a compact flash device.



1. Insert a Compact Flash device into one of the USB port. The Import / Export screen will not function unless a flash drive is detected in the USB port. When the drive is in place, the USB Status in the upper left hand corner will read **Connected**.
2. Press the Utilities screen button. Press the Import / Export button. When the upper left hand corner will reads **Connected**. Press the Export button for the Log or Report to download. The Import / Export status will appear in the upper right hand corner of the screen. A warning will read **Please do not "Exit" or cycle power**. Doing this would stop the process before completion. When the warning disappears the log or reports have been copied.
3. Remove the compact flash device from the control panel and insert into your computer. Double click on the file name and the reports will be displayed in EXCEL format.

**Import & Export** | U-Treat v4.2.00 | 09/21/2018 09:31:16 | User: OPERATOR

USB Status: **Connected** | Import/Export Status: **Please do not "Exit" or cycle power.**

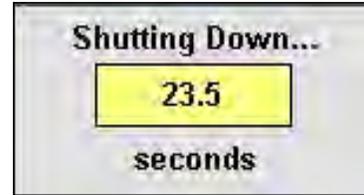
List	Total Used Records	Status	Actions
Alarm Log	122		Export Delete
Events Log	52		Export Delete
Messages Log	0		Export Delete
Job Reports	0		Export Delete
Customer Profiles	18		Export Import Delete
Seed Profiles	10		Export Import Delete
Chemical Profiles	26		Export Import Delete
Chemical Recipes	13		Export Import Delete
Pump Profiles	4		Export Import Delete
Bin Profiles	3		Export Import Delete
Conveyors Profiles	5		Export Import Delete
Paths Profiles	2		Export Import Delete
VFD Profiles	4		Export Import Delete
Diverter Profiles	0		Export Import Delete

Navigation: Overview | Treater Main | Treater HOA | Bin Site Main | Bin Site HOA 1 | Bin Site HOA 2 | Utilities | Reports | Profile Editing Screens | Help | Alarms | Security | U-TREAT

## REPORTS

The following steps explain how reports are accessed and can be managed after a run has been completed.

1. After the Shutdown button has been pressed a window will pop-up notifying the operator that the system will shut down after a specified amount of time. (right)



2. Once a run is finished the data is saved automatically in the reports file. The operator may access these records from the Reports screen. On the left side of the screen is a list of report records. Use the arrows to scroll up or down the list. If you know the record number for the report, select the jump to record box and key it in. The record will appear at the top of the list. To see the report details, select the record you want and the information will appear to the right.

To view more details, press the View Full Details button on the upper right side. This screen will display customer, seed profile and chemical treatment information (see page 35, top). Pressing it will show the bin site details (see page 35, middle). If emailing is enabled you will see an Email button that allow you to email an individual record or all records in the file. You may also choose to print a record from this screen (see page 35, bottom) .

**Reports**

2017/09/25, 13:44:14 TreatWeigh

Record Type: Treater w/ Bin Site  
Date: 2017/09/25, 13:44:14

System Paused: False  
Measurement Mode: Standard  
Customer Name: CUSTOMER #1  
Seed Profile: SOYBEANS  
Totalizer Weight: 2025      Avg. Weight/min: 1393  
Totalizer SCU: 40.51      Avg SCU/min: 27.66  
Auxiliary Used: True  
Run Timer (sec): 87.3

Chemical Name	Total oz.
Pump #1: CHEMICAL #1	95.6
Pump #2: CHEMICAL #2	71.8
Pump #3: CHEMICAL #3	24.8
Pump #4: CHEMICAL #4	62.0

Selection: 21    Viewing: 21 - 30    of 10000  
Total Used Records: 63

Jump to Record #:

Save

**REPORTS**

**2017/09/25, 13:44:14 Treat/Weigh**

<b>Customer Name:</b> CUSTOMER #1 <b>Address #1:</b> 1234 Main St <b>Address #2:</b> Sabetha, KS 66534 <b>Phone Number:</b> (785) 431-7900  <b>Record Type:</b> Treater w/ Bin Site <b>Start Time:</b> 2017/09/25, 13:40:35 <b>End Time:</b> 2017/09/25, 13:44:14 <b>System Paused:</b> False <b>Measurement Mode:</b> Standard <b>Recipe:</b> RECIPE #1 <b>Auxiliary Used:</b> True	<b>Seed Profile:</b> SOYBEANS <b>Variety:</b> ABCDEF <b>Lot Number:</b> 123456 <b>Seeds/Unit:</b> 140000 <b>Seeds/Weight:</b> 2000 <b>Weight/SCU:</b> 50.0 <b>Cup Pocket Ratio:</b> 2.60 <b>Run Time (sec):</b> 87.3 <b>Target Weight (lb):</b> 2000 <b>Target SCU:</b> 40.00 <b>Totalizer Weight:</b> 2025 <b>Totalizer SCU:</b> 40.51
---	--

Chemical Name	Total oz.	% Acc.	Density lb/gal	Start Weight	End Weight	Weight Difference
Pump #1: CHEMICAL #1	55.6	118.0	8.33	100.00	33.77	6.25
Pump #2: CHEMICAL #2	71.8	118.1	8.33	100.00	95.33	4.57
Pump #3: CHEMICAL #3	34.0	122.4	8.33	0.00	0.00	0.00
Pump #4: CHEMICAL #4	62.0	122.4	8.33	0.00	0.00	0.00

**2017/09/25, 13:44:14 Treat/Weigh**

<b>Customer Name:</b> CUSTOMER #1 <b>Address #1:</b> 1234 Main St <b>Address #2:</b> Sabetha, KS 66534 <b>Phone Number:</b> (785) 431-7900  <b>Record Type:</b> Treater w/ Bin Site <b>Start Time:</b> 2017/09/25, 13:40:35 <b>End Time:</b> 2017/09/25, 13:44:14 <b>System Paused:</b> False <b>Measurement Mode:</b> Standard	<b>Seed Profile:</b> SOYBEANS <b>Variety:</b> ABCDEF <b>Lot Number:</b> 123456 <b>Seeds/Unit:</b> 140000 <b>Seeds/Weight:</b> 2000 <b>Weight/SCU:</b> 50.0 <b>Cup Pocket Ratio:</b> 2.60
--	--

<b>Bin Name:</b> BIN #1 <b>Target Weight (lb):</b> 2000 <b>Target SCU:</b> 40.00 <b>Totalizer Weight:</b> 2063 <b>Totalizer SCU:</b> 41.26
--

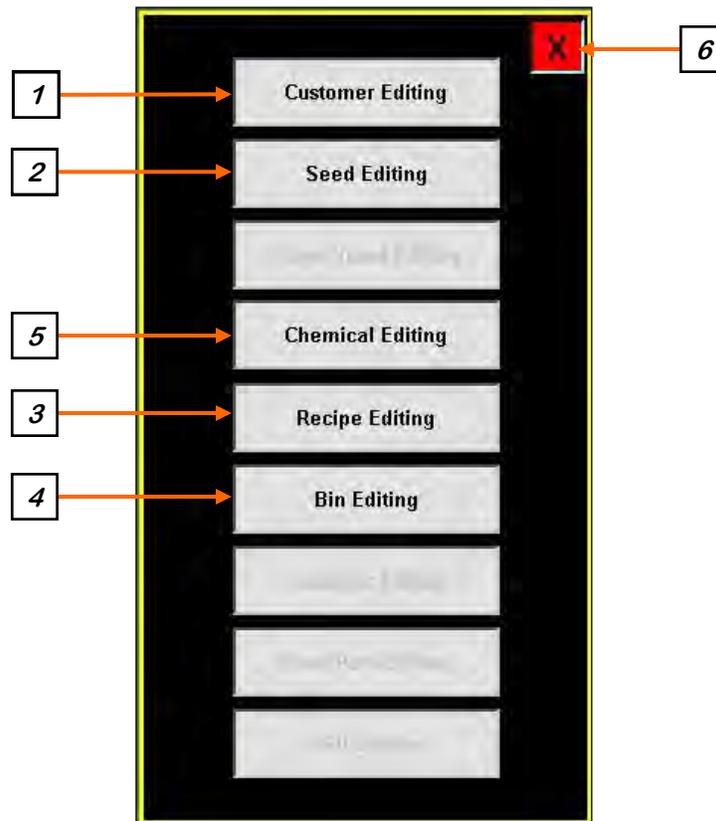
3. Press the PRINT button and a popup window appears. From this screen you may enter the number of reports to print for the customers records. Then press the X in the top right corner of the screen to exit back to the reports screen.

4. If the Auto Print Report has been activated on the Print Set-up screen (see page 30), steps 2 and 3 will not be required. The print verification screen will appear and automatically print the number of reports specified.



## PROFILE EDITING SCREENS

Selecting the Profile Editing Screens button at the bottom of the screen will bring up a popup screen with three active buttons. This is where the system parameters are manually entered for Customer, Seed, Chemical and Recipe profiles. The operator must be logged in as a level 1 Operator to edit these profiles. Only individuals with administrative login privileges may have access to the Seed Path and VFD Editing profiles. See pages 39 through 50 for detailed information for entering the data.



**PROFILE EDITING SCREENS**

**1. CUSTOMER EDITING:** Pressing this button will advance to the Customer Editing screen. If you are looking for a specific customer you may enter the name in the Search box at the top of the seed list or use the arrows to scroll through the list. To create a new customer profile, select a used or unused box from the list, select the name box and key in a new name and all of the customer information, then press the Save button.

If the new customer is similar to an existing one, select the existing customer and press the Copy button. If you select an existing customer and press the Paste button, all of the characteristics will be copied but the name will be unchanged. If you select a blank entry and press the Paste button, all of the characteristics will be copied but the name will be blank. Enter a new name and press the save button.

If the operator wants the name to be the same as the barcode, press the name box and scan in the barcode. Press the barcode box and scan the barcode or enter it manually using the keypad. Enter the Name, Address and Phone number by selecting each box and using the popup keyboard. To enter the Country and State / Province, select the arrow on the right side of the box and choose the applicable Country and State / Province from the listings. After the new customers information has been entered press the Save button. If there is already a customer in the list that has the same name entered the Save button will be locked and you will be unable to save the entry. You must provide a unique name for each entry. If you enter a new customer and navigate away from that profile without pressing the Save button it will not be saved.

**PROFILE EDITING SCREENS**

**2. SEED EDITING (Seed Wheel Treater):** Pressing this button will advance to the Seed Editing screen. If you are looking for a specific seed you may enter the name in the Search box at the top of the seed list or use the arrows to scroll through the list. To create a new seed profile, select a used or unused box from the list, select the name box and key in a new name and all of the characteristics of the seed, then press the Save button.

If the new seed is similar to an existing one, select the existing seed and press the Copy button. If you select an existing seed and press the Paste button, all of the characteristics will be copied but the name will be unchanged. If you select a blank entry and press the Paste button, all of the characteristics will be copied but the name will be blank. Enter a new name and press the save button.



2A

## PROFILE EDITING SCREENS

### **2. SEED EDITING (Seed Wheel Treater Continued):**

If the operator wants the name to be the same as the barcode, press the name box and scan in the barcode. Press the barcode box and scan the barcode or enter it manually using the keypad. Next, enter the Variety, Lot Number and Seeds per Unit of measurement. Press the Cup Weight button and enter the cup weight from the seed sample (see page 131). The Calibration ratio will be calculated by the system and displayed here.

There is also a Calibrating Seed? button on the top left of the Product Editing screen that when pressed will produce a popup (see page 40) with recommendations on when to make multiple profiles for the same type of seed.

**2A. SEED EDITING:** Pressing this button brings up the Seed Wheel Calibration Calculator popup screen. The operator may enter the actual scale weight, totalizer weight and then press Apply. The system will update the cup pocket ratio based on this calculation.

Seed Wheel Calibration

Seed Wheel Calibration Procedure

Step 1: Run or treat a known weight of seed. A minimum of 2000 lbs (900kgs) is recommended

Step 2: Enter the actual weight of the seed into the actual scale weight (lbs/kgs/SCUs) numeric input. Enter the total lbs/kgs/SCUs reading into the totalizer weight numeric input.

Step 3: Press the "Apply" button to complete the calibration process.

Actual Scale Weight: 2150.00

SOYBEANS - 2100

Apply

Totalizer Weight: 2075.00

Totalizer(lb): 0

**PROFILE EDITING SCREENS**

**2. SEED EDITING (LIW Treater):** Pressing this button will advance to the Seed Editing screen. If you are looking for a specific seed you may enter the name in the Search box at the top of the seed list or use the arrows to scroll through the list. To create a new seed profile, select a used or unused profile from the list, select the name box and key in a new name and all of the characteristics of the seed, then press the Save button.

If the new seed is similar to an existing one, select the existing seed and press the Copy button. If you select an existing seed and press the Paste button, all of the characteristics will be copied but the name will be unchanged. If you select a blank entry and press the Paste button, all of the characteristics will be copied but the name will be blank. Enter a new name and press the save button.

**X**

If you are experiencing extreme seed size differences, even within the same seed type or variety, it is recommended to make multiple different seed profiles for each seed size.

This will help the seed flow device (ex. seed wheel) calibrate more efficiently.

**Seed Editing** U-Treat v4.2.00 09/21/2018 09:31:16 User: OPERATOR

**Calibrating Seed?**

**Seed List**

Search: \_\_\_\_\_

COPY	CORN	↑
	COTTON	↑
	PEAS	↑
	RICE	
	SOYBEANS	
	SOYBEANS - 2100	
	SOYBEANS - 2200	
PASTE	SOYBEANS - 2300	↓
	SOYBEANS - 2400	↓
	SOYBEANS - 2500	↓

Selection: 7 Viewing: 1 - 10 of 500  
Total Used Records: 10

**Seed Details**

Select the seed you wish to rename and adjust the seeds per unit entry.

Barcode: SOYBEANS 2200

Name: SOYBEANS - 2200

Variety: ABCDEF

Lot Number: 123456

Seed/lb: 2800

Seeds/Unit: 140000

Cal. Speed: 500.00

Cal. Ratio: 1.00

Auto Calibrate Ratio On

Max Gate Pos.: 19950

Set Maximum Gate Position

Min. Gate Pos.: 3000

Set All Minimum Gate Positions

Save Clear

Customer Editing  
Seed Editing  
Chemical Editing  
Recipe Editing  
Bin Editing

2B  
2C  
2D

Overview Treater Main Treater HOA Bin Site Main Bin Site HOA 1 Bin Site HOA 2 Utilities Reports Profile Editing Screens Help Alarms Security Setup & Restore

**PROFILE EDITING SCREENS**

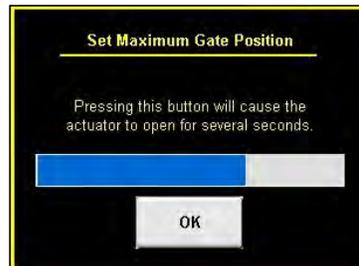
**2. SEED EDITING (LIW Treater Continued):**

If the operator wants the name to be the same as the barcode, press the name box and scan in the barcode. Press the barcode box and scan the barcode or enter it manually using the keypad. Next, enter the Variety, Lot Number, Seeds per pound and the maximum and minimum gate positions.

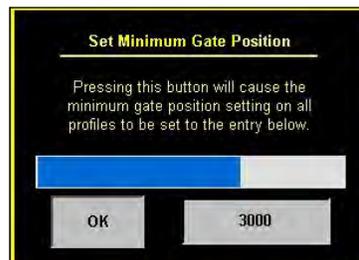
There is also a Calibrating Seed button on the top left of the Seed Editing screen that when pressed will produce a popup (see page 40) with recommendations on when to make multiple profiles for the same type of seed.

**2B. AUTO CALIBRATE RATIO:** Press this button to toggle the Auto Calibrate Ratio function from On to Off. The Calibration Ratio is the calibration of the seed profile and the speed indicator that displays the last flow rate at which a calibration occurred. The button is directly to the right of the Cal. Ratio button. After each calibration, the Cal. Ratio button will display the automatically calculated ratio. It may also be pressed to manual enter a value.

**2C. SET MAXIMUM GATE POSITION:** Pressing this button will extend the actuator as far as it is capable. A popup will inform you as to what changing the setting will do to the system, you must then select OK to continue. The timer bar appears showing the progress of the actuator. When the actuator stops, press the red X at the top to return to the seed editing page.



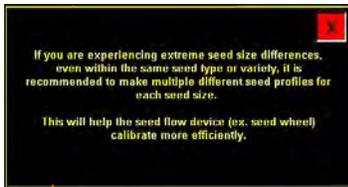
**2D. SET ALL MINIMUM GATE POSITIONS:** Pressing this button brings up a popup screen. Press the gray box and use the keyboard to enter a value for all minimum gate positions. After entering the value press the OK button. The timer bar appears showing the progress of the actuator. When the actuator stops, press the red X at the top to return to the seed editing page.



**PROFILE EDITING SCREENS**

**2. SEED EDITING (Weigh Belt Treater):** Pressing this button will advance to the Seed Editing screen. If you are looking for a specific profile you may enter the name in the Search box at the top of the seed list or use the arrows to scroll through the list. To create a new seed profile, select a used or unused box from the list, select the name box and key in a new name and all of the characteristics of the seed, then press the Save button.

If the new seed is similar to an existing one, select the existing seed and press the Copy button. If you select an existing seed and press the Paste button, all of the characteristics will be copied but the name will be unchanged. If you select a blank entry and press the Paste button, all of the characteristics will be copied but the name will be blank. Enter a new name and press the save button.



2F

2E

If the operator wants the name to be the same as the barcode, press the name box and scan in the barcode. Press the barcode box and scan the barcode or enter it manually using the keypad. Next, enter the Variety, Lot Number and Seeds per Unit of measurement.

**PROFILE EDITING SCREENS**

**2. SEED EDITING (Weigh Belt Treater Continued):**

There is also a Calibrating Seed button on the top left of the Seed Editing screen. Press will produce a popup with recommendations on when to make multiple profiles for the same type of seed.

**2E. WEIGH BELT CALIBRATION:** Pressing this button will bring up the Weigh Belt Calibration screen. Follow the six steps on the screen. After the Apply button has been pressed, both New Values will automatically updated. Press the exit button to return to the product editing screen. Notice the new values on the product editing screen will also be updated. See page 139 for more details.

The screenshot shows a window titled "Weigh Belt Calibration" with a red close button in the top right. The main area contains six numbered steps:
 

- Allocate a minimum of 1000 lbs of seed. Record the actual weight of the seed you will be using for calibration. We will use the allocated seed for two separate runs on steps 2 and 4. If a second box of seed is preferred, use a similar seed size and similar recorded weight.
- Setup an automated run with a target treating rate that is 50 to 100 lb/min less than the lowest rate you will operate with this seed type. While the run is in operation, record the average motor speed from the treater main or overview screen.
- Enter the average motor speed, the actual weight ran through the treater, and the totalizer weight.
- Setup an automated run with a target treating rate that is 50 to 100 lb/min more than the highest rate you will operate with this seed type. While the run is in operation, record the average motor speed from the treater main or overview screen.
- Enter the average motor speed, the actual weight ran through the treater, and the totalizer weight.
- When all fields have a value entered, the Original Values will display what the calibration is at, the New Values will display what the new belt length and adapt range will be, and the default will show you what a default weigh belt would be. Finally, once you have verified your belt length and adapt range press apply to update the seed profile you are on.

Below the steps is a control panel for "SOYBEANS - 2100". It includes a "Totalizer" field showing "0 lb" with "Clear Totalizer", "Default", and "Apply" buttons. A table displays calibration data for two runs:

	Speed %	Actual Weight	Totalizer Weight	Original values:	Belt Length	Adapt Range
Run 1:	25.00	2000.00	2000.00		4.19	0.20
Run 2:	50.00	2000.00	2000.00	New values:	4.19	0.20
				Default values:	4.19	0.20

**2F. SET ALL WEIGH BELT CALIBRATION:**

Pressing this button brings up the Set Weigh Belt Calibrations popup. This is used to globally set all of the calibration values for all seed profiles in the system to the same setting. Run a standard calibration for your most common seed profile. Enter the new values it generates in the Belt Length and Adapt Range boxes, then press OK.

The screenshot shows a popup window titled "Set Weigh Belt Calibrations" with a red close button in the top right. The text inside reads:
 

Pressing this button will set the Weigh Belt Adapt Range and Belt Length on all profiles to the below values.

This may take some time to complete. Continue?

 Below the text are two input fields: "Belt Length" with the value "4.19" and "Adapt Range" with the value "0.20". An "OK" button is at the bottom.

## **PROFILE EDITING SCREENS**

***3. RECIPE EDITING:*** Pressing this button will advance to the Recipe Editing screen where the operator defines the parameters for each Recipe. If you are looking for a specific product you may enter the name in the Search box at the top of the seed list or use the arrows to scroll through the list. Selecting a Name from the list on the left brings up the current parameters for it on the right. To create a new recipe profile, select a used or unused box from the list, select the name box and key in a new name and all of the characteristics of the recipe, then press the Save button

If the new recipe is similar to an existing one, select the existing recipe and press the Copy button. If you select an existing recipe and press the Paste button, all of the characteristics will be copied but the name will be unchanged. If you select a blank entry and press the Paste button, all of the characteristics will be copied but the name will be blank. Enter a new name and press the save button.

If the operator wants the name to be the same as the barcode, press the name box and scan in the barcode. Press the barcode box and scan the barcode or enter it manually using the keypad. Activate the Auxiliary Control button if an auxiliary device is connected to the system.

Choose which pumps will be active and the chemical for each pump. When the chemical box for each pump is selected, a drop down list will appear with all the chemicals already entered in the system. Choose a chemical from the list or scan in a barcode to select the chemical. If the bar code scanned in does not find a match, a popup will appear that reads No Match Found. This indicates that it does not already exist in the system. It will need to be entered for the first time from the Chemical Editing screen. After assigning a chemical the operator must define the treating rate. Pressing the first box to the right of the chemical brings up a numeric keyboard to enter the number of ounces or milliliters. The button to the right of that toggles back and forth between Cut weight and Seed Count Units. The last button toggles between Off and Auto. If you have more than four pumps, additional buttons will appear next to Pumps 1-4 for Pumps 5-8 and 9-12 if applicable.

The Enable Recipe Control button near the top of the center of the screen allows the operator to turn the recipe option On or Off. Press the Save button to file any changes made to the screen. When the Enable Recipe Controls button is in the On position, the operator will be able to select a recipe from the Start Setup screen before beginning a run. It may be selected but not modified from the Start Setup screen. All changes must be made from the Recipe Editing screen.

U-TREAT AUTOMATION MANUAL  
**PROFILE EDITING SCREENS**

**3. RECIPE EDITING (Continued):**

Treater: Idle  
Weigh: Idle
Recipe Editing
U-Treat v4.2.00    09/21/2018 09:31:16  
User: OPERATOR

**Recipe List**

Search:

RECIPE #1	↑
RECIPE #10	↑↑
RECIPE #2	↑↑
RECIPE #3	
RECIPE #4	
RECIPE #5	
RECIPE #6	
RECIPE #7	↓
RECIPE #8	↓↓
RECIPE #9	↓↓

Selection: 1    Viewing: 1 - 10    of 500  
Total Used Records: 10

Enable Recipe Controls: ON    Select the recipe you wish to rename and adjust the pump setting associated with it.

Barcode:

Name:

Aux Control: ON

	Pumps	Treating Rate		
Pump 1	CHEMICAL #1	4.000	oz/CWT	AUTO
Pump 2	CHEMICAL #2	3.000	oz/CWT	AUTO
Pump 3	CHEMICAL #3	1.000	oz/CWT	AUTO
Pump 4	CHEMICAL #4	2.500	oz/CWT	AUTO

Pumps 1-4    Pumps 5-8    Pumps 9-12

Save    Clear

Customer Editing

Seed Editing

Chemical Editing

Recipe Editing

Bin Editing

Pumps

SFA Editing

Overview Treater Main Treater HOA Bin Site Main Bin Site HOA 1 Bin Site HOA 2 Utilities Reports Profile Editing Screens Help Alarms Security Setup & Online Training

**PROFILE EDITING SCREENS****NOTICE**

**This button will not be present if the system is set up only to run a treater.**

**4. BIN EDITING:** Pressing this button will advance to the Bin Info screen.

This screen allows the operator to select a particular bin and enter a product profile for the seed that will be loaded into it. To create a new bin profile, select a used or unused box from the list, select the name box and key in a new name, then press the save button. Press the barcode box and scan the barcode or enter it manually using the keypad. The operator may also enter the product type by selecting the box and when the drop down list appears, scan in the barcode from a label with the product information. If the bar code scanned in does not find a match, a popup will appear that reads No Match Found. This indicates that it does not already exist in the system. It will need to be entered for the first time from the Seed Editing screen. Select the bin from the Bin Profile list on the left side of the screen. Select the Product Type field and a drop down menu displays the seed types entered in the Seed Editing screen.

If the new bin profile is similar to an existing one, select the existing bin profile and press the Copy button. If you select an existing bin profile and press the Paste button, all of the characteristics will be copied but the name will be unchanged. If you select a blank entry and press the Paste button, all of the characteristics will be copied but the name will be blank. Enter a new name and press the save button.

On this page you will also find the Flow Rate and Travel Time. These indicators show the flow rate and travel time but unlike the indicators on the main screen, they are also active buttons allowing the operator to make a temporary adjustment to bring the run totals to the desired amount. Push the Flow Rate button and increase or decrease the pounds per minute, then select the Gate Auto Calibration button and the system automatically adjusts the duration the bin slide gate stays open. The number of seconds needed to compensate is then displayed in the Gate Time Adj. field. The operator may also manually change these parameters.

The program supports both single and dual type solenoids. The solenoid type button toggles back and forth between the two. Select the solenoid type. You may control each bin gate individually. If you select the Global Bin Settings button directly above it, a popup screen will appear displaying the current solenoid type. Select OK to change all to that type.

To define a maximum inventory for a given bin, select the Inventory Maximum button and enter the maximum value for that bin. Then press and hold the Set button for three seconds to establish the limit. The inventory of the bin may also be entered on this screen. Enter the amount of inventory that is to be added or subtracted into the Amount to Adjust Current Inventory box, then press and hold the Plus or Minus box for 3 seconds. The total amount of inventory in the bin will be displayed to the left under current inventory.

U-TREAT AUTOMATION MANUAL  
**PROFILE EDITING SCREENS**

**4. BIN EDITING (continued):**

Make sure if you are adjusting by pounds the lbs. button on the inventory side is green, or if entering by seed count units the SCU button is green so that the calculations are based on the measurement type. When pulling seed from the bin in automated mode, the amount of seed will automatically be removed from the display. After entering all the information the Save button must be pressed for the bin site system to retain the information.

**Whenever a bin is completely emptied and then refilled check to ensure that a proper flow rate is saved to the bin's information.**  
**This will help the bin re-calibrate a new flow rate more efficiently.**

**Global Bin Settings**  
 Pressing this button will cause the Solenoid Valve Type setting on all profiles to be set to the entry below.  
 This may take some time to complete.  
 Continue?  
 OK Solenoid Valve Type: Single

**Choose Solenoid Type**

**Enter the amount of seed that is to be added or subtracted**

**Enter the Inventory Maximum**

**Gate Auto Calibration button**

**PROFILE EDITING SCREENS**

**5. CHEMICAL EDITING:** Pressing this button will advance to the Chemical Editing screen where the operator may define the parameters for each individual chemical. If you are looking for a specific profile you may enter the name in the Search box at the top of the seed list or use the arrows to scroll through the list. Selecting a chemical from the list on the left brings up the current parameters for it on the right. To create a new chemical profile, select a used or unused box from the list, select the name box and key in a new name and all of the characteristics of the chemical, then press the Save button.

If the new chemical is similar to an existing one, select the existing chemical and press the Copy button. If you select an existing chemical and press the Paste button, all of the characteristics will be copied but the name will be unchanged. If you select a blank entry and press the Paste button, all of the characteristics will be copied but the name will be blank. Enter a new name and press the Save button.

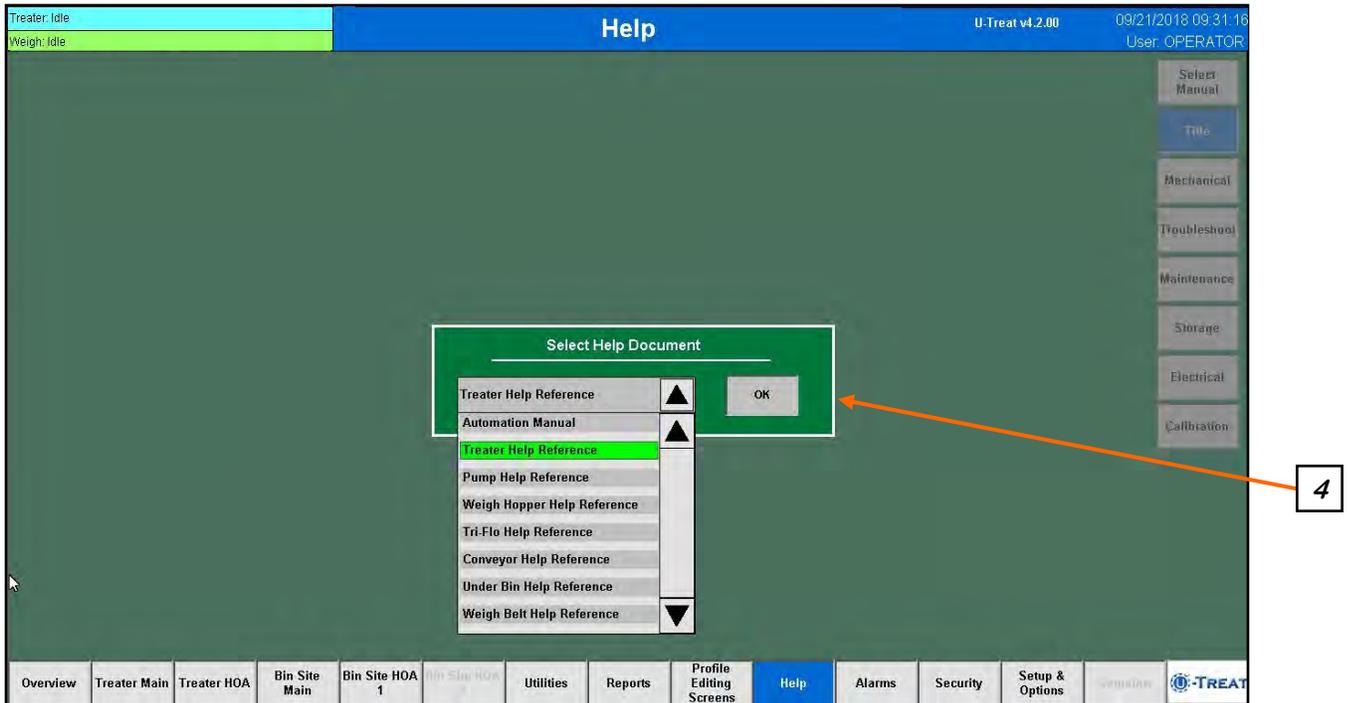
If the operator wants the name to be the same as the barcode, press the name box and scan in the barcode. Press the barcode box and scan the barcode or enter it manually using the keypad. Next, enter the Chemical Calibration Factor. The operator must press Save or any changes made to the selected profile will be lost when leaving the screen.

The Density lb. / gal and Chem Calb Factor Adj. buttons are only present when using a Loss-in-Weight pump stand. Density is required to properly define how much chemical is leaving the mix tank or tote. When the Chem Calib Factor Adj. is set to AUTO L-I-W it will automatically calibrate the pumps mid-run.

The screenshot shows the 'Chemical Editing' interface. At the top, the status bar displays 'U-Treat v1.2.00' and the date '09/21/2018 09:31:18'. The user is identified as 'OPERATOR'. The main area is split into two columns. The left column, titled 'Chemical List', contains a search box and a table of chemical profiles. The first row, 'CHEMICAL #1', is highlighted in green. To the left of the table are 'Copy' and 'Paste' buttons. The right column, titled 'Chemical Editing', contains a form for editing the selected chemical. The form fields are: Barcode (CHEMICAL 1), Name (CHEMICAL #1), Chem Calb Factor (1.00), Density lb / gal (8.33), and Chem Calb Factor Adj. (Auto L-I-W). At the bottom right of the form are 'Save' and 'Clear' buttons. The bottom navigation menu includes: Overview, Treater Main, Treater HOA, Bin Site Main, Bin Site HOA 1, Bin Site HOA 2, Utilities, Reports, Profile Editing Screens (highlighted), Help, Alarms, Security, and U-TREAT.

**HELP SCREEN**

The following pages explain how to navigate through the Help screen functions. When the operator leaves the Help screen, the system will reset to the title page of the U-Treat Automation help document.



**HELP SCREEN**

**1. SELECT MANUAL:** Pressing this button will bring up the Select Help Document drop down menu.

**2. TITLE:** Pressing this button will take you to the title page of the active document. The image may be scaled by using the PDF reader function bar hidden at the bottom of the screen, or dragging a square with your fingers.

**3. HELP SECTIONS:** Pressing these buttons will take the operator to specific sections of the help document.

**4. SELECT HELP DOCUMENT:** When the Select Manual button is active this popup module appears. Select the arrow and the drop down list will open. Choose the title of the document for viewing and then the OK button.



**ALARMS SCREEN**

The screenshot shows the 'Alarms' screen in the U-Treat v4.2.00 interface. The top status bar indicates 'Treater: Idle', 'Weigh: Idle', and 'User: OPERATOR'. The main area contains a table of alarm events:

Time	Status	Alarm Code	Description
2017-09-20, 16:08:45	Alarm	DIV.4	Servo Faulted at beginning of run. Please clear servo fault and continue.
2017-09-20, 15:47:11	Acknowledged	IO.5	CAN Device; (Treater) Atomizer VFD Not Connected.
2017-09-20, 15:47:11	Acknowledged	IO.5	CAN Device; (Treater) Drum VFD Not Connected.
2017-09-20, 15:47:11	Acknowledged	IO.5	CAN Device; (Treater) Seed Wheel VFD Not Connected.
2017-09-20, 15:47:11	Acknowledged	IO.7	ModBus Device; (H Pump Controller #2) OTB Not Connected.
2017-09-20, 15:47:11	Acknowledged	IO.7	ModBus Device; (H Pump Controller #3) OTB Not Connected.
2017-09-20, 15:47:16	Acknowledged	PMP.9	Communication Interruption; Please Check The Pumps 9-8 Controller.
2017-09-20, 15:47:16	Acknowledged	PMP.10	Communication Interruption; Please Check The Pumps 9-12 Controller.
2017-09-20, 15:49:04	Acknowledged	DIV.3	Servo Drive offline.
2017-09-20, 15:58:01	Acknowledged	DIV.4	Servo Faulted at beginning of run. Please clear servo fault and continue.
2017-09-20, 15:58:28	Acknowledged	DIV.4	Servo Faulted at beginning of run. Please clear servo fault and continue.

At the bottom of the table, it shows 'Selection: 10', 'Viewing: 1 - 18 of 10000', 'Total Entries: 74', 'Total Errors: 1', and 'Errors Resolved: 73'. On the right side, there is a control panel with buttons: 'Alarms', 'Messages', 'View All', 'Clear Non-Active', 'Email Selected', 'Email All', 'Silence', and 'Reset'. Numbered callouts 1 through 7 point to these buttons. The bottom navigation bar includes 'Overview', 'Treater Main', 'Treater HOA', 'Bin Site Main', 'Bin Site HOA 1', 'Bin Site HOA 2', 'Utilities', 'Reports', 'Profile Editing Screens', 'Help', 'Alarms', 'Security', 'Setup & Utilities', 'Accounts', and the U-TREAT logo.

**1. VIEW MESSAGES:** Pressing this button displays the Messages screen (see Page 54).

**2. VIEW ALL:** This button toggles between View All to display all alarms and faults stored at any given time (the button will be red) and Hide All which will hide all alarms except the active ones. When an alarm or fault occurs, it will be shown in the list with a red background until the Silence button is pressed, then it will turn yellow.

**3. CLEAR NON-ACTIVE:** The alarm status will change to Acknowledged once an alarm condition has been resolved and the Reset button has cleared the alarm. Pressing this button will clear all alarms with the status of acknowledged.

**4. EMAIL SELECTED:** This button will email an individual alarm. Press the report on the screen you wish to email. The yellow arrow will be positioned to the left of the selected report as confirmation. Push the button and the report will be sent to the address defined on the Delivery Settings screen (see page 31).

**5. EMAIL ALL:** Pressing this button will email all of the alarms in the list to the address defined on the Delivery Settings screen (see page 31).

**6. SILENCE:** Pressing this button will shut off the alarm siren and change the background of the active alarm or fault to yellow while the operator is resolving the issue.

**7. RESET:** After you think you have resolved the issue that caused the alarm, pressing this button will clear the alarm as confirmation. If you did not correct the problem it will alarm again.

## MESSAGES SCREEN

The table on page 55 provides a general description of some of the system messages that could occur. When a warning condition is detected, a window will appear at the top of the current screen you are on (top) notifying the operator that the system will not start because of a certain condition. When the condition has been corrected, the Start button may be pressed to start the system.

The operator may also review the recent message history by selecting the Alarms button at the bottom of the screen, then press the Messages button in the upper right hand corner (bottom).

The screenshot shows the 'Treater Idle' screen. At the top, there are two yellow warning messages: 'Invalid Path. Treater must be used in this path.' and 'Invalid Path. Weigh cannot be used in this path.' Below these are buttons for 'Clear Non Active' and 'Reset'. The main area features a 3D diagram of the seed treatment machine with various components labeled: Scale Weight (0.0 lb), Flow Detection, Gate % (0.0), Drum, Drum Actuator (0.0 Degrees), and Atomizer. To the left of the diagram are status indicators for 'Hopper Full', 'Hopper Empty', and 'Auxiliary'. To the right, there are control panels for 'Auto Size' and 'Pump Nav Down'. Below the diagram are buttons for 'Inlet Conveyor', 'Outlet Conveyor', 'Pre-Treater Diverter', and 'Post-Treater Diverter'. The bottom navigation bar includes buttons for 'Treater Main', 'Treater HOA', 'Bin Site Main', 'Bin Site HOA 1', 'Bin Site HOA 2', 'Utilities', 'Reports', 'Profile Editing Screens', 'Help', 'Alarms', and 'Security'.

The screenshot shows the 'Messages' screen. At the top, there is a table with the following data:

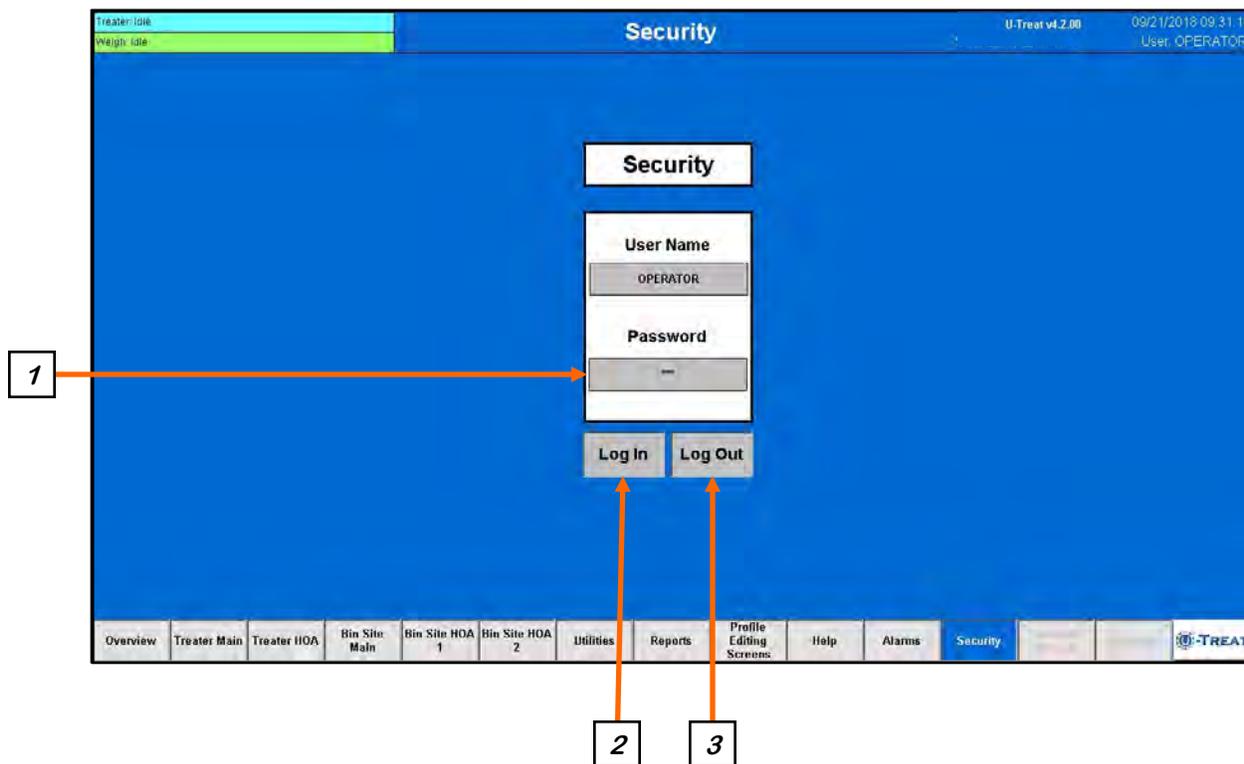
Time	Status	Alarm Code	Description
2017/09/20, 16:43:20	Silenced	MAIN.2	Invalid Path. Treater must be used in this path.

Below the table are buttons for 'Alarms', 'Messages', 'View All', 'Clear Non Active', 'Email Selected', 'Email All', 'Silence', and 'Reset'. At the bottom, there is a status bar showing 'Selection 1', 'Viewing 1 - 10 of 10000', 'Total Entries 7', 'Total Errors 1', and 'Errors Resolved 6'. The bottom navigation bar is identical to the previous screenshot.

**MESSAGES SCREEN**

Message
Atomizer NOT in Auto or Ready for Startup
Drum Not In Auto or Ready For Startup
Treater outlet conveyor is not in auto.
Automatic seed flow rate adjustment has occurred. Seed flow rate was out of range.
Pumps 5-8: Ethernet Communication Failure
Pumps 9-12: Ethernet Communication Failure
Reports are nearly full. Please, save reports to USB and then delete reports.
Reports are full. Information loss may occur!
Seed wheel not in auto or ready for startup.
Bin site shutdown due to not having all needed devices available for operation. Contact USC Service Rep for assistance.
Treater seed flow rate is set higher than the calculated bin site seed flow rate.
Enter Cup Weight
No Product Selected
Auto Startup - No Seed Type match
Treater Reports - FULL. Transfer reports to USB to keep from losing data.
Treater Reports - almost FULL. Transfer reports to USB.
Conveyor # is not in auto.
Operation not selected.

## SECURITY SCREEN



**1. PASSWORD:** The operator uses this input to obtain access to all options on this screen. When this button is pressed a keypad (below) will appear on the screen. Select the up arrow on the left side to enter upper case text. The password is **USC** and should only be made accessible to personnel qualified to operate the system. The User Name will stay OPERATOR.



**2. LOG IN BUTTON:** Pressing this button will log the operator into the system with the user name and password entered.

**3. LOG OUT BUTTON:** Pressing this button will log the operator out of the system..

## OVERVIEW SCREEN

The Overview page is an optional screen that displays all of the treater and bin site functions simultaneously. The system administrator may turn this screen off if you prefer to work directly from the Treater Main screen and or Bin Site Main screen. Some operators prefer to see all main screen functions at the same time. You will find more detailed definitions of these functions in the following Treater Main screen and Bin Site Main screen pages.

**1. BIN SITE CONTROLS:** The control and displays in this area are used for the Bin Site part of the system.

**2. TREATER CONTROLS:** The control and displays in this area are used for the Treater part of the system.

The screenshot displays the 'Overview' screen of the U-Treat automation system. The interface is divided into several functional areas:

- Top Left (Bin Site Controls - Area 1):** A list of conveyor and bin status indicators.
 

UNDERBIN #1 CNVR	ON
UNDERBIN #2 CNVR	OFF
TRANSFER CNVR	ON
SCALE FILL CNVR	ON
OUTLET CNVR	ON
PRO BOX CNVR	OFF
CONVEYOR #11	OFF
CONVEYOR #12	OFF
CONVEYOR #13	OFF
CONVEYOR #14	OFF
CONVEYOR #15	OFF
CONVEYOR #16	OFF
CONVEYOR #17	OFF
CONVEYOR #18	OFF
- Top Center (Treater Controls - Area 2):** A central schematic of the treater machine with various control points.
  - Inlet Diverter:** OFF
  - Draft Size:** 700.0 lb
  - Target Weight:** 2000.0 lb
  - Total Accum. Weight:** 0.0 lb
  - Final Batch Weight:** 0.0 lb
  - Run Avg. lb/min:** 0
  - Current lb/min:** 0
  - Run Time (Seconds):** 0.0
  - Target (Seconds):** 70.2
  - Scale Weight:** 0.0 lb
  - Gate %:** 0.0
  - Treater Inlet Conveyor:** OFF
  - Treater Outlet Conveyor:** ON
  - Drum Actuator:** 1.5 Degrees
  - Pause** button
- Top Right:** System information and user details.
 

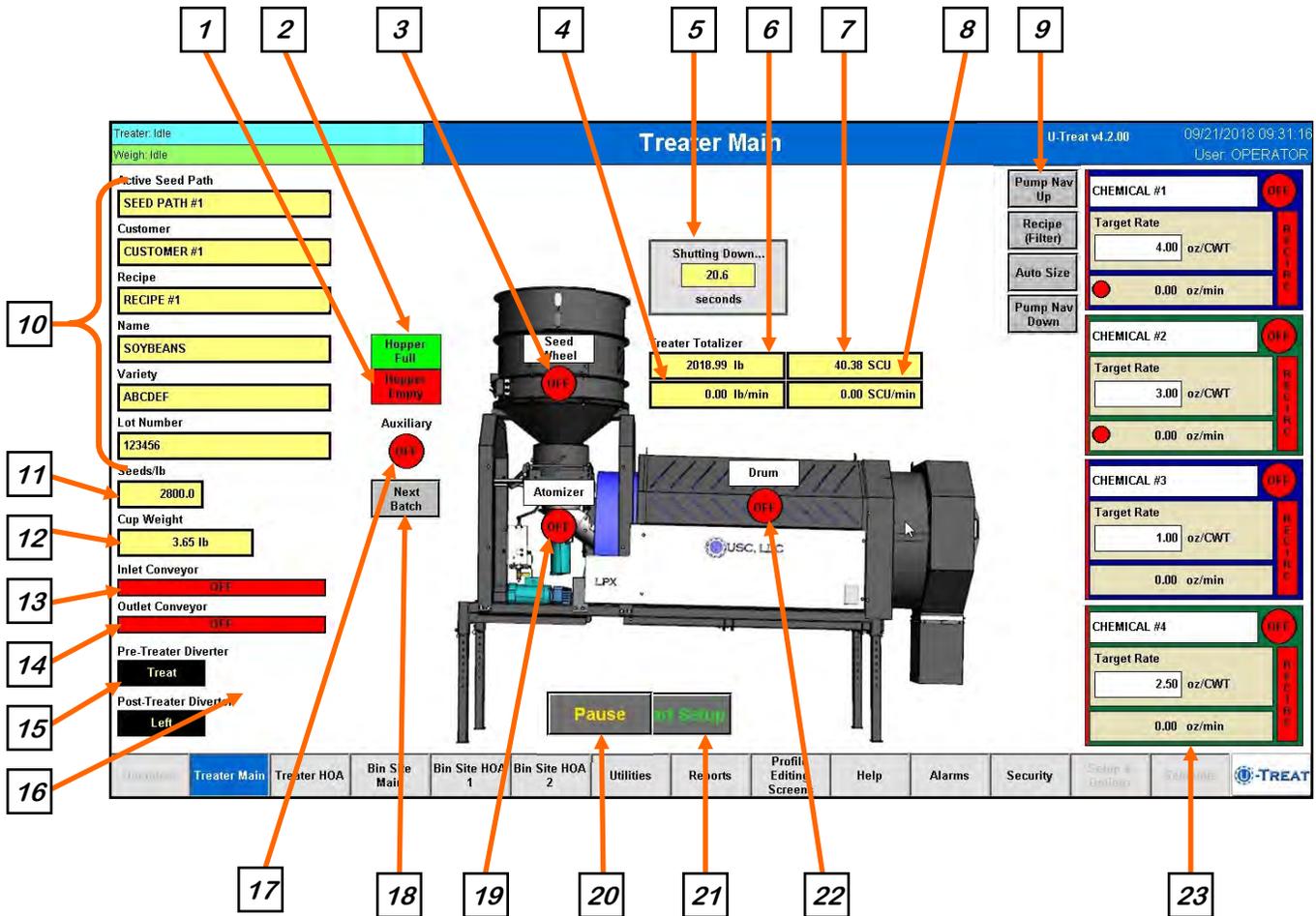
U-Treat v1.2.00    09/21/2018 09:31:18  
User: OPERATOR
- Right Side (Chemical Controls):** Four chemical application panels, each with a 'Target Rate' and a flow rate indicator.
  - CHEMICAL #1:** Target Rate 4.00 oz/CWT, Flow Rate 64.98 oz/min
  - CHEMICAL #2:** Target Rate 3.00 oz/CWT, Flow Rate 48.73 oz/min
  - CHEMICAL #3:** Target Rate 1.00 oz/CWT, Flow Rate 11.15 oz/min
  - CHEMICAL #4:** Target Rate 2.50 oz/CWT, Flow Rate 25.35 oz/min
- Bottom Left (Bin Site Data):** Bin #1 details for SOYBEANS.
 

Name:	SOYBEANS
Variety:	ABCDEF
Lot Number:	123456
Seed/lb:	2800 lb
Inventory Weight:	36733 lb
Inventory SCU:	734.66 SCU
Inventory Capacity:	73 %
Cup Weight:	3.65 lb
Flow Rate:	1800.0 lb/min
Travel Time:	15.0 SEC
- Bottom Right (Navigation):** A menu bar with buttons for Overview, Treater Main, Treater HOA, Bin Site Main, Bin Site HOA 1, Bin Site HOA 2, Utilities, Reports, Profile Editing Screens, Help, Alarms, Security, and a TREAT button.

**SECTION C-2 LP, METERING WHEEL TREATER  
AUTOMATION P, LX, MX, LPX & LPV SEED**

**SMW TREATER MAIN SCREEN**

This screen informs the operator of the status of all system motors and electrical devices. It also allows control / adjustment of system operations with a seed wheel.



**E-STOP**

ENSURE ALL E-STOPS ARE NOT ENGAGED AND ALL PANELS ARE POWERED ON.  
THEN, PRESS THE RESET BUTTON TO CLEAR THE E-STOP.

**SMW TREATER MAIN SCREEN DESCRIPTIONS**

**1. HOPPER EMPTY INDICATOR:** Informs the operator when the proximity switches located in the seed wheel are not detecting seed.

**2. HOPPER FULL INDICATOR:** Informs the operator when the proximity switch located in the supply hopper above the seed wheel is detecting seed. When the indicator is active any equipment plugged into the Inlet Conveyor plug will be turned off.

**3. SEED WHEEL MOTOR INDICATOR:** Informs the operator if the seed wheel is ON or OFF.

**4. SEED FLOW RATE:** Displays the seed flow rate in pounds or kilograms per minute.

**5. SYSTEM SHUTDOWN INDICATOR:** Informs the operator that the system is in the process of shutting down. The timer in the middle counts down how many seconds are left before shutdown is complete.

**6. TOTALIZED WEIGHT:** Displays the total pounds or kilograms of seed as they pass through the seed wheel.

**7. TOTALIZED SCU WEIGHT:** Displays the total Seed Count Units as it passes through the Seed Wheel. This is only visible if at least one of the pump stands has been set to run in the SCU mode or the SCU option is selected on the Utilities screen.

**8. SCU SEED FLOW RATE:** Displays the seed flow rate in Seed Count Units per minute. This is only visible if at least one of the pump stands has been set to run in the SCU mode or the SCU option is selected on the Utilities screen.

**9. PUMPS:** These buttons are used to modify the pump display on the right side of the screen. The top and bottom button are used when all of the pumps are not displayed on the screen. The display will scroll up or down one pump for each time the Up or Down button is selected.

The second button toggles between 3 options when recipes are enabled. All Pumps, or non-recipe mode, displays all of the pumps whether they are configured or not. Recipe (All), displays all of the pumps in the active recipe in their original location. Recipe (Filter), consolidates the pumps in the active recipe and displays them grouped together from the top of the screen down.

The third button also toggles between 3 options. 4 View Pump, displays 4 pumps at a time. 12 View Pump, displays 12 pumps at a time. Auto Size will automatically choose the display between 4 and 12 pump depending on the recipe requirements to make sure all pumps in the active recipe are displayed.

**SMW TREATER MAIN SCREEN DESCRIPTIONS**

**10. CURRENT RUN PARAMETERS:** These displays show the general information that was entered on the Start Setup popup screen prior to starting the run.

**11. SEEDS / LB:** This shows the seeds per pound the operator entered for the selected seed profile used to calculate the seed flow rate. It will only appear if at least one of the pump stands has been set to run in the SCU mode or the SCU option is selected on the Utilities screen.

**12. CUP WEIGHT:** This shows the seed cup weight that is used to calculate the seed flow rate the seed wheel will output. If the program is running a Bayer RH series treater, you must use the cup provided with that treater. It is a different size than the USC cup and is measured in grams.

**13. INLET CONVEYOR MOTOR INDICATOR:** Informs the operator if the inlet conveyor is ON or OFF.

**14. OUTLET CONVEYOR MOTOR INDICATOR:** Informs the operator if the outlet conveyor is ON or OFF.

**15. TREATER DIVERTER INDICATOR (optional):** Informs the operator if the treater diverter is currently in the treat or bypass position. This indicator will only be present if the treater has an automated bin site with a pre-treat diverter.

**16. POST TREATER DIVERTER INDICATOR (optional):** Informs the operator if the diverter positioned after the discharge chute is currently in one of two positions. These position may be named. Left or Right are the examples used in this manual. This indicator will only be present if the Treater has an automated bin site with a post treat diverter.

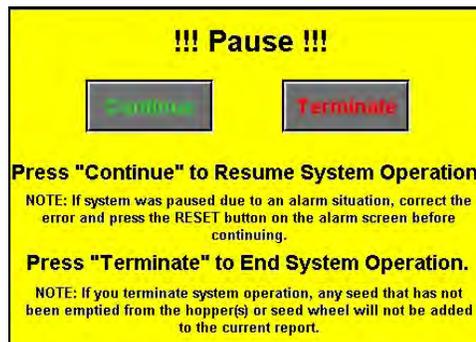
**17. AUXILIARY MOTOR INDICATOR:** Informs the operator if the motor for the auxiliary device attached to the system is ON or OFF.

**18. NEXT BATCH:** When the system is in Batch mode, and a run has been completed, pressing this button will start a new run using the same parameters from the last run.

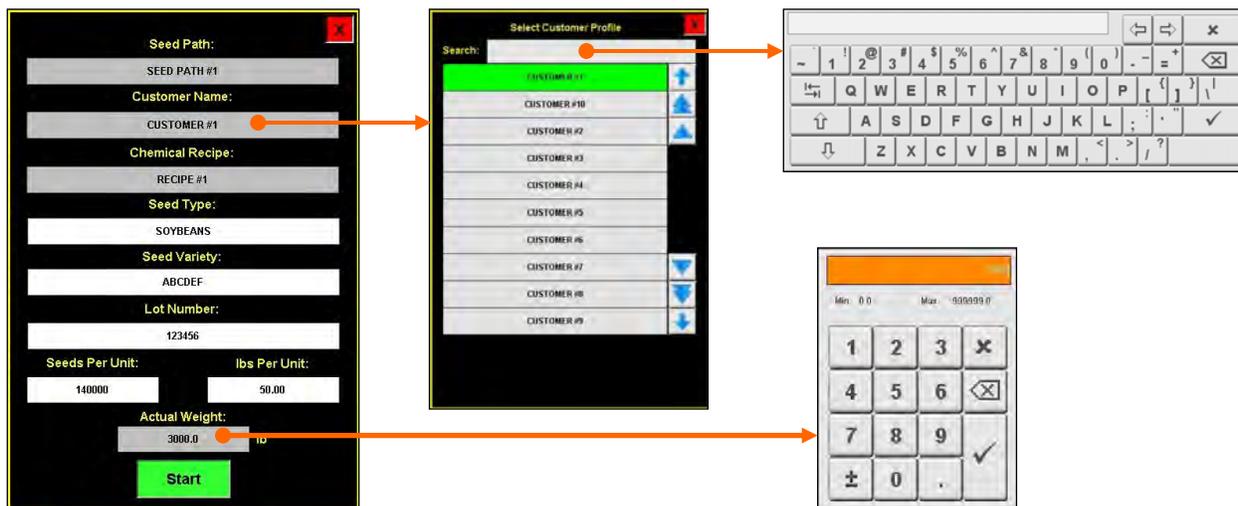
**19. ATOMIZER MOTOR INDICATOR:** Informs the operator if the atomizer motor is ON or OFF.

## SMW TREATER MAIN SCREEN DESCRIPTIONS

**20. PAUSE:** Once the Start button has been pushed and the system begins to operate, the Pause button appears. Pressing it will stop the run in progress. If the system was automatically paused due to an alarm situation, correct the error then press the reset button on the right side of the alarms screen. The operator may now press the Continue button to resume the run. If they press the Terminate button, any seed that has not been emptied from the hopper or seed wheel will not be added to the current report.



**21. START SETUP:** This is used to start the machine after all motors have been placed into the Auto position. Press the button and a pop-up window appears. You may select the seed path, customer name and chemical recipe by selecting one of the box's in the popup or search the listing for an existing entry by typing their name in the search field or using the navigation arrows. When all the information has been added enter a target weight, then press Start to begin the run. Once the system begins to operate it becomes the Shutdown button.

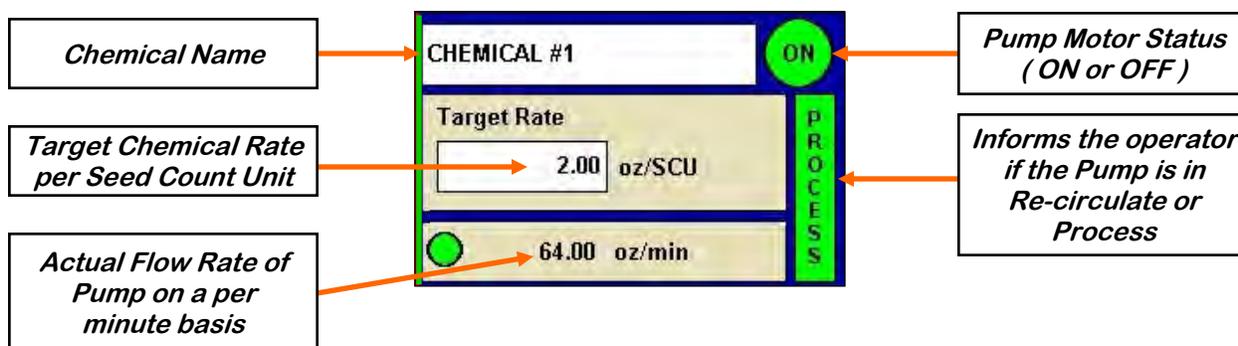


**22. DRUM MOTOR INDICATOR:** Informs the operator if the drum drive motor is ON or OFF.

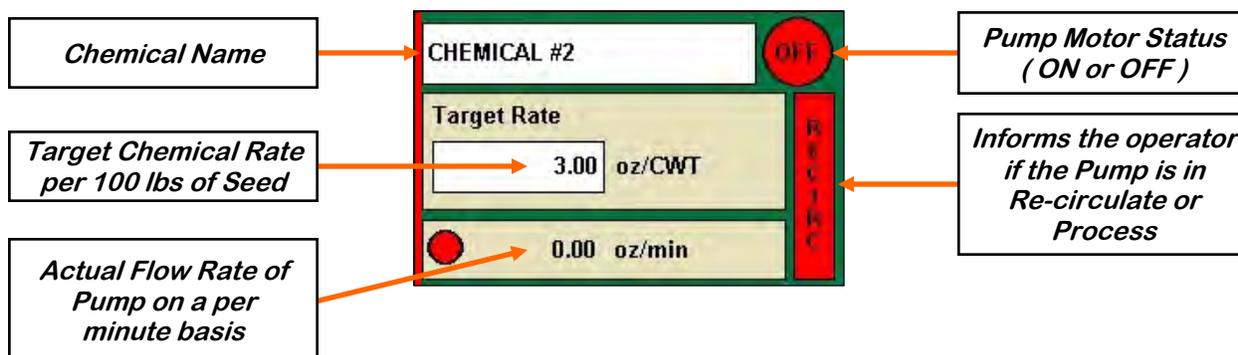
### SMW TREATER MAIN SCREEN DESCRIPTIONS

**23. PUMP MODULES:** This block of information informs the operator of the pump motor status (ON or OFF), air actuated 3-way valve status (Recirculation or Process), currently selected chemical, target flow rate and actual flow rate from flow meter. On Loss-In-Weight pump stands only, there is a round flow indicator in the flow rate display. When it is red no treatment is flowing from the pump stand to the treater. When it is green treatment is flowing to the treater. A vertical line on the left side of the pump module will indicate the tolerance status. If it is green, the pump flow rate is within tolerance. If it is red, it is out of tolerance.

#### SEED COUNT UNITS / OUNCES PER MINUTE

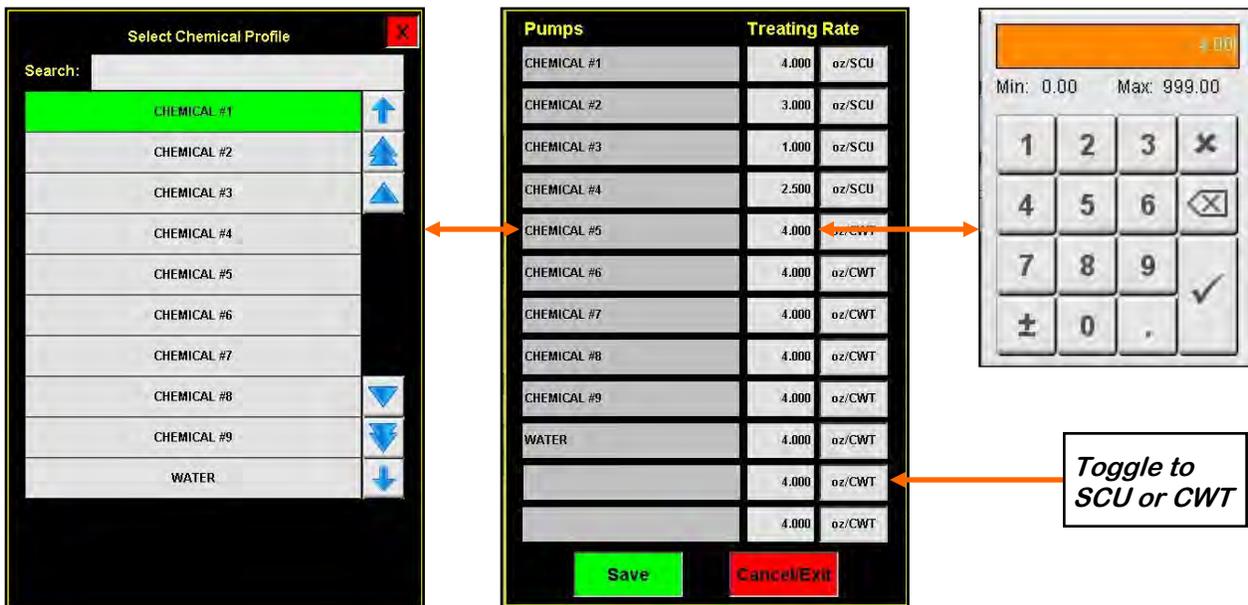


#### CUT WEIGHT / OUNCES PER MINUTE



**SMW TREATER MAIN SCREEN DESCRIPTIONS**

**23. PUMP MODULES (Continued):** If recipe mode is not active, the pump name and target rate fields will turn from white to grey and become active buttons. Selecting either one will bring up a popup screen listing all of the pumps in the system and the current chemical assigned to each pump. Select a pump and the select chemical profile screen appears. Select a different chemical and it will change it on the pump display. Select the treating rate box next to it and a numeric keyboard allows entry of the treating rate. Use the box on the right to set the measurement type.



**NOTICE**

Actual flow rate of pump may be defined as either oz./min or oz./ml regardless of the target rate setting (oz./cwt or oz./scu).

**AVIS**

Le débit réel de la pompe peut être défini comme étant oz./min ou oz./ml indépendamment du réglage du débit cible (oz./cwt ou oz./scu).

**24. EMERGENCY STOP:** This blinking display is activated when the system’s E-Stop button is activated.

## **SMW TREATER H-O-A (HAND-OFF-AUTO) SCREEN**



**! AVERTISSEMENT**

These H-O-A buttons force the selected component to be energized (HAND), de-energized (OFF), or automatically energized by the normal logic sequence (AUTO).

The HAND function will cause the component to operate independent of whatever else the system is trying to do automatically. These functions should not normally be used if the automated sequencing is active. **Be sure to understand the impact of energizing or de-energizing a component with the settings before using them. These commands are not a substitute for Lockout/Tagout procedures when working on or near this machine. Use proper lockout/tagout procedures to disable the equipment before servicing it.**

Ces boutons HOA forcent le composant sélectionné pour être excité (Hand), hors tension (Off), ou automatiquement alimentés par la séquence logique normale (Auto).

La fonction de la main provoquera la composante de fonctionner indépendamment de tout ce que le système essaie de faire automatiquement. Ces fonctions ne devraient normalement pas être utilisés si le séquençage automatisé est actif. **Assurez-vous de comprendre l'impact de énergisant ou désexciter un composant avec la main / Off paramètres avant de les utiliser. Ces commandes ne sont pas un substitut pour les procédures de verrouillage / étiquetage lorsque vous travaillez sur ou près de cette machine. Utilisez les procédures appropriées de verrouillage / débranchement pour désactiver l'équipement avant de l'entretenir.**

## SMW TREATER H-O-A (HAND-OFF-AUTO) SCREEN

Hand-Off-Auto controls are provided for most of the automated devices in the system, and are accessed on this screen. All treater, conveyor and pump stand motors are controlled here.

The treater, conveyor and pump stand motors are defined when the system is installed. Changes to them must be made by someone with administrative system login privileges.

The screenshot displays the 'Treater HOA' control interface. At the top, it shows 'Treater: Idle' and 'Weigh: Idle'. The main control area includes:

- Device Controls:** A table for Drum, Atomizer, Seed Wheel, Inlet Conveyor, and Outlet Conveyor. Each row has 'Hand', 'Off', and 'Auto' buttons, and a status indicator (ON/OFF).
- Speed Indicators:** '% Speed' readouts for Drum (100.0), Atomizer (100.0), and Seed Wheel (50.0).
- Buttons:** 'Prime to Atomizer', 'Press to Reset Drives', and 'Auxiliary Control' (Hand, Off, Auto).
- Pumps Section:** A table for CHEMICAL #1-4 with 'Hand', 'Off', and 'Auto' buttons, and '% Speed' and 'oz/min' readouts.
- Air-Valve Control:** 'Recirc' and 'Process' buttons, and 'Totalizer' and 'Scale (lb)' readouts.
- Navigation Bar:** Includes 'Treater Main', 'Bin Site Main', 'Bin Site HOA 1', 'Bin Site HOA 2', 'Utilities', 'Reports', 'Profile Editing Screens', 'Help', 'Alarms', 'Security', and 'Calibration & Settings'.

Numbered callouts (1-22) point to specific UI elements: 1 (Drum status), 2 (Drum Hand button), 3 (Atomizer status), 4 (Atomizer Hand button), 5 (Seed Wheel RPM input), 6 (Seed Wheel status), 7 (Seed Wheel Hand button), 8 (Seed Wheel status), 9 (Seed Wheel Hand button), 10 (Seed Wheel status), 11 (Auxiliary Control status), 12 (Inlet Conveyor status), 13 (Outlet Conveyor status), 14 (Pumps section), 15 (CHEMICAL #1 status), 16 (CHEMICAL #1 Hand button), 17 (CHEMICAL #1 status), 18 (CHEMICAL #2 status), 19 (CHEMICAL #2 Hand button), 20 (CHEMICAL #2 status), 21 (CHEMICAL #3 status), 22 (CHEMICAL #3 Hand button).

**SMW TREATER H-O-A SCREEN DESCRIPTIONS**

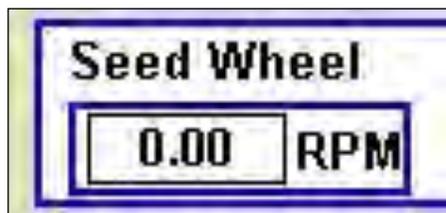
**1. DRUM CONTROL MODULE:** This module controls the function of the drum. The Hand button will place the drum in the manual mode of operation. The Off button will turn the associated device in the Off mode of operation. The Auto button will place the device in the automatic mode of operation. The motor will not operate in this function unless all other needed devices are in the Auto mode and the Start button is pressed on the main screen. The reverse button will only be present when running a Bayer RH series treater.

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

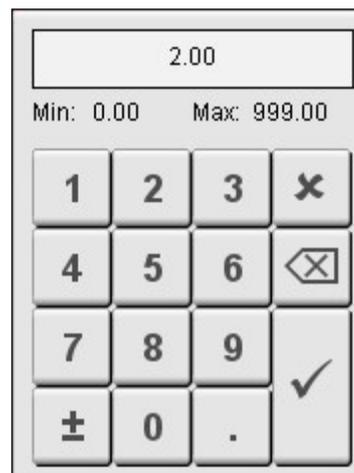
**3. ATOMIZER CONTROL MODULE:** This module controls the function of the atomizer. The Hand button will place the atomizer in the manual mode of operation. The Off button will turn the associated device in the Off mode of operation. The Auto button will place the device in the automatic mode of operation. The motor will not operate in this function unless all other needed devices are in the Auto mode and either the Prime to Atomizer or the Start button is pressed on the main screen.

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

**5. SEED WHEEL CONTROL MODULE:** This module controls the function of the seed wheel. The Hand button will place the seed wheel in the manual mode of operation. This module shows the current RPM of the seed wheel (right). The Off button will turn the associated device in the Off mode of operation. The Auto button will place the device in the automatic mode of operation. The motor will not operate in this function unless all other needed devices are in the Auto mode and the Start button is pressed on the main screen. The reverse button will only be present when running a Bayer RH series treater.



**6. SEED WHEEL PERCENT SPEED:** When this button is pressed, a numeric touch pad (right) will appear to allow the operator to manually adjust the speed of the seed wheel. When running in the Auto mode the program will override this setting.



**SMW TREATER H-O-A SCREEN DESCRIPTIONS**

**7. AUTO ALL DEVICES:** When this button is pushed, it globally changes all treater HOA settings to the Auto mode of operation. If the treater is operating with a bin site, this button will also change anything on the bin site HOA screen.

**8. PUMP CALIBRATION:** Pressing this button brings up the screen below. This screen is used to calibrate the pump stand. Enter the number of the pump you wish to calibrate and a target run time for the calibration. The longer the run time the more accurate the calibration. USC recommends a minimum of 60 seconds. Pressing the Jog Pump Motor button will turn the pumps on and off to fill the process lines attached to the top of the calibration tube. Press the button again to stop the flow. Continue until liquid in the calibration tube is at the zero mark. Press the START button to begin the calibration. When the target run time has elapsed, the pump will shutoff automatically. If for any reason you need to stop the process, press the STOP button. If the calibration is stopped before the target time has elapsed, the operator must start the process over again. If you press start and continue from your stopping point, the calibration will not be accurate. Enter the calibration tube reading in the Cal. Tube Total. Press the UPDATE RATIO button to correct the calibration ratio. For Loss-in-Weight pump stands, this section would be updating the Density. Closing this popup will stop the calibration process if it has not been completed.

Pump Calibration	
<input type="button" value="Help"/>	<input type="button" value="X"/>
Pump# to Adjust: <input type="text" value="1"/>	Selected Pump's Chemical Name: <input type="text" value="CHEMICAL #1"/>
Target Run Time (seconds): <input type="text" value="60"/>	Actual Rate (oz/min): <input type="text" value="0.0"/>
Target Rate (oz/min): <input type="text" value="32.0"/>	<input type="button" value="Jog Pump Motor"/>
Rough Est. Total (Fl. oz): <input type="text" value="32.00"/>	<input type="button" value="START"/> <input type="button" value="STOP"/>
<b>Totals</b>	<b>Calibration Ratio</b>
Cal. Tube Total (Fl. oz): <input type="text" value="1.00"/>	Current Ratio: <input type="text" value="0.97"/>
Calculated Totalizer (Fl. oz): <input type="text" value="1.00"/>	Calculated Ratio: <input type="text" value="0.97"/>
Elapsed Run Time (seconds): <input type="text" value="0.0"/>	<input type="button" value="UPDATE RATIO"/>

**9. PRIME TO ATOMIZER:** Used before a controlled startup to preload chemical in the tubing leading to the atomizer. To operate this button, place the atomizer and any pump that will be used in the Auto mode. Next press and hold the Prime To Atomizer button. The atomizer and pumps will turn on and the liquid will be directed to the atomizer. The atomizer and pumps will run as long as the button is being pressed. When the button is released the atomizer and pumps will shut-off.

## SMW TREATER H-O-A SCREEN DESCRIPTIONS

**10. VFD FAULT RESET:** When a VFD fault occurs, a popup screen will display indicating which drive failed along with a message indicating the problem. After the problem has been resolved, press the reset button to resume operation.



**11. AUXILIARY CONTROL:** This module allows the operator to control any unit which is plugged into the auxiliary port located on the bottom of the treater 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. Any unit plugged into the auxiliary port will not operate in this function until the Start button is pressed on the main screen. It will also turn off using the same logic as the pump stands.



**SMW TREATER H-O-A SCREEN DESCRIPTIONS**

**12. INLET CONVEYOR CONTROL MODULE:** This module controls the function of the inlet conveyor. The Hand button will place the inlet conveyor in the manual mode of operation. The Off button will turn the associated device in the Off mode of operation. The Auto button will place the device in the automatic mode of operation. The motor will not operate in this function unless all other needed devices are in the Auto mode and the Start button is pressed on the main screen. When the proximity switch located in the supply hopper above the seed wheel is detecting seed and the indicator is active, any equipment plugged into the Inlet Conveyor plug will be turned off.

**13. OUTLET CONVEYOR CONTROL MODULE:** This module controls the function of the outlet conveyor. The Hand button will place the outlet conveyor in the manual mode of operation. The Off button will turn the associated device in the Off mode of operation. The Auto button will place the device in the automatic mode of operation. The motor will not operate in this function unless all other needed devices are in the Auto mode and the Start button is pressed on the main screen.

**NOTICE**

**If the system is running with a bin site, the inlet and outlet conveyors will be controlled by outlet path configuration defined by the system administrator. If this is enabled, the conveyors Off mode will change to Auto. This only applies if the bin site is enabled. The Hand mode is not affected.**

**AVIS**

**Si le système fonctionne avec un site bin, les entrée et de sortie des convoyeurs seront contrôlés par la configuration du trajet de sortie défini par l'administrateur système. Si cette option est activée, le mode convoyeurs Off va changer à Auto. Ce ne vaut que si le site bin est activée. Le mode Hand est pas affectée.**

**14. PUMPS:** These buttons appear when more than 4 pumps are enabled. Use these buttons to rotate between each of the 3 groups of 4 pumps.

**15. PUMP CONTROL MODULES:** These modules control the function of the Pump Stands. The Hand button will place the desired pump in the manual mode of operation. The Off button will turn the associated device in the Off mode of operation. The Auto button will place the device in the automatic mode of operation. The pump will not operate in this function until the Start button is pressed on the main screen. This module also monitors the proximity sensor in the Seed Wheel. When the proximity switch is detecting seed and the indicator is active, the 3 - way valve will switch to PROCESS. When no seed is detected it will switch to RECIRC.

## **SMW TREATER H-O-A SCREEN DESCRIPTIONS**

**16. PUMP STAND FLOW INDICATOR:** This indicator will only be present when a Loss-In-Weight pump stand is in use. It informs the operator if seed treatment is flowing to the treater (Green), or is not flowing to the treater (Red).

**17. PUMP PERCENT SPEED:** When this button is pressed, a numeric touch pad will appear to allow the operator to manually adjust the speed of the pumps). When running in the Auto mode the program will override this setting.

**18. PUMP FLOW RATE:** This displays the actual pump flow rate.

**19. REVERSE:** When the pump is in the Off mode, this button appears. Pressing it allows the operator to reverse the pump direction and pump the product back into the mix tank. When the pump is in Hand or Auto mode, this button will not be present.

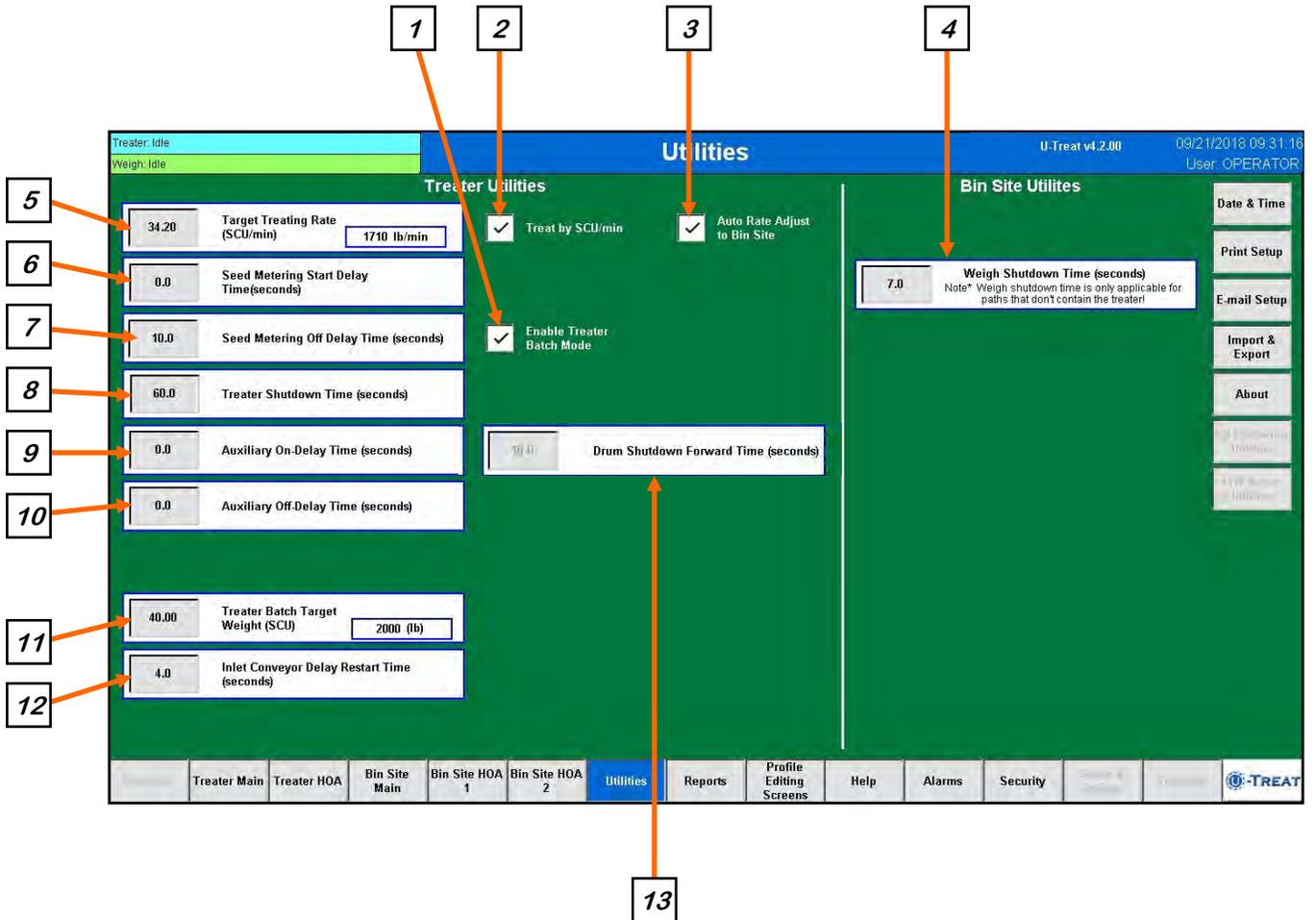
**20. AIR VALVE CONTROL MODULE:** This module controls where liquid is diverted for each pump. When a desired pump is placed in the Hand mode, the RECIRC button will appear next to that pump control module. In this mode, liquid is pumped out of its desired tank, through the air actuated 3-way valve manifold and back into the mix tank. When the RECIRC. button is pressed, the icon will change to PROCESS. In this mode, liquid is diverted from the air actuated 3-way valve, to the atomizer. When the Off button is pressed the pump will go back to RECIRC. When the pump is placed in the Auto mode the Air Valve Control cannot be accessed. (Optional feature)

**21. TOTALIZER:** Displays in real time the amount of chemical that has been applied. If the pump is set in the Hand mode, pushing the button will reset it to zero.

**22. SCALE:** This indicates the weight of the chemical detected from the scale head on pump stands that are equipped with a scale.

**SMW TREATER UTILITIES SCREEN**

This screen allows the operator to set various system parameters and gives access to the Date & Time, Print Setup, E-mail Setup, Import & Export and current program release Information screens.



**NOTICE**

When buttons 4 - 13 are pressed, a numeric touch pad (right) will appear allowing the operator to enter in a number for that particular parameter.

**AVIS**

Lorsque vous appuyez sur les boutons 4 à 13, un pavé tactile numérique (à droite) apparaît et permet à l'opérateur de saisir un nombre pour ce paramètre particulier.



**SMW TREATER UTILITIES SCREEN DESCRIPTIONS**

**1. TREATER BATCH MODE:** When this box is checked, the operator may enter a target weight for a run. When the treater reaches the desired weight, the weighing device will stop and a Next Batch button will appear on the treater screen. The operator will watch until all of the seed has discharged from the drum. They may then replace the full box with an empty one and press the Next Batch button to continue treating.

**2. TREAT BY SCU / MIN:** When this box is checked, the primary Target Treating Rate will be calculated in Seed Count Units per minute. Unchecked, it will be calculated in pounds per minute.

**3. AUTO RATE ADJUST TO BIN SITE:** (Only present when treater is used with a Tri - Flo® and USC Bin Site Automation). When this box is checked, Target Treating Rate will automatically be adjusted to 2% slower than the bin site.

**4. WEIGH SHUTDOWN TIME (seconds):** This delay is to add run time for the outlet conveyor being used under a diverter when the seed path includes a weighing device but does not include treater. This is to ensure all seed for the run has been moved and the conveyor is empty before shutting down.

**5. TARGET TREATING RATE:** Pressing this button allows the operator to adjust the estimated treating rate in pounds or SCU's per minute. This number is used by the system to control the rate of the seed wheel and pumps.

**6. SEED METERING START DELAY TIME (seconds):** This start delay time is similar to the pump start delay time and is based on seed being detected in the metering device. In the Seed Wheel the proximity switch is above the wheel in one of the inlets. This setting also works well on the portable treater to compensate for the additional distance the seed must travel from the seed wheel up the inlet conveyor to the inlet hopper.

**7. SEED METERING OFF DELAY TIME (seconds):** This off delay time is similar to the pump start delay time and is based on seed being detected in the metering device. In the Seed Wheel the proximity switch is above the wheel in one of the inlets. This setting also works well on the portable treater to compensate for the additional distance the seed must travel from the seed wheel up the inlet conveyor to the inlet hopper.

**8. TREATER SHUTDOWN TIME (Seconds):** Pressing this button allows the operator to adjust the delay shutdown time of the seed treater after the Shutdown button has been pressed after a run. This time will allow the seed treater and any conveyors to completely clean out.

## **SMW TREATER UTILITIES SCREEN DESCRIPTIONS**

**9. AUXILIARY ON DELAY TIME (Seconds):** Pressing this button allows the operator to adjust the on delay from the time the proximity switch in the seed wheel detects seed to the time a signal is sent to an auxiliary device connected to the system to start.

**10. AUXILIARY OFF DELAY TIME (Seconds):** Pressing this button allows the operator to adjust the off delay from the time the proximity switch in the seed wheel no longer detects seed to the time a signal is sent to an auxiliary device connected to the system to stop.

**11. TREATER BATCH TARGET WEIGHT:** When operating in Batch mode, this is where you define the target weight for each individual batch.

**12. INLET CONVEYOR DELAY RESTART TIME (Seconds):** Pressing this button allows the operator to adjust the restart time of the inlet conveyor after the proximity switch located at the top of the inlet hopper above the seed wheel no longer detects seed.

**13. DRUM SHUTDOWN FORWARD TIME (SECONDS):** This button will only be present when running a Bayer RH series treater. Pressing this button allows the operator to adjust the time the drum runs until it begins to run in reverse.

SECTION C-3

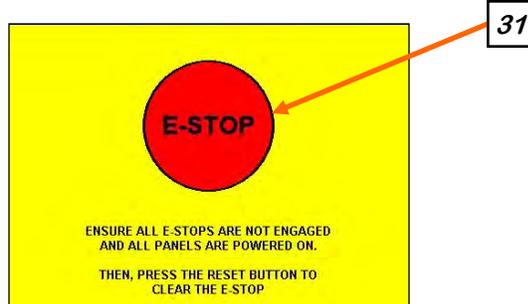
# LPV LIW TREATER AUTOMATION

## LIW TREATER MAIN SCREEN

This screen informs the operator of the status of all system motors and electrical devices and allows for control/adjustment of system operations.

The screenshot shows the LPV LIW Treater Main Screen with the following components and callouts:

- 1-13:** Top status bar containing system status (Treater Idle, Weigh Idle), version (U-Treat 4.2.00), date/time (09/21/2018 09:31:16), and user (User: OPERATOR).
- 14:** Active Seed Path section including SEED PATH #1, Customer (CUSTOMER #1), Recipe (RECIPE #1), Name (SOYBEANS), Variety (ABCDEF), and Lot Number (123456).
- 15:** Seeds/lb field showing 2800.0.
- 16:** Inlet Conveyor status (OFF).
- 17:** Outlet Conveyor status (ON).
- 18:** Pre-Treater Diverter status (Treat).
- 19:** Post-Treater Diverter status (Left).
- 20:** Bottom navigation menu with buttons for Treater Main, Treater HO, Bin Site Main, Bin Site HOA 1, Bin Site HOA 2, Utilities, Reports, Profile Editing Screens, Help, Alarms, Security, Setup & Settings, and Reports.
- 21-23:** Hopper status (Full/Empty) and Auxiliary status (ON/OFF).
- 24-26:** Control buttons: Next Batch, Reset Drum, Clear Buffer, Pause, and Start Setup.
- 27-28:** Scale Weight (2040.0 lb) and Flow Detection status (ON/OFF).
- 29:** Gate % (0.0) and Drum Actuator status (OFF).
- 30:** Temperature (4.0 Degrees).
- 31:** E-STOP button (shown in a separate callout box).
- Right Panel:** Chemical control panels for CHEMICAL #1, #2, #3, and #4, each with Target Rate and flow rate controls.
- Center:** 3D model of the treater showing Atomizer, Drum, and Drum Actuator.
- Top Center:** Shutting Down... timer (11.1 seconds).
- Bottom Center:** Run and Current statistics for lb/min and SCU/min.



## **LIW TREATER MAIN SCREEN DESCRIPTIONS**

**1. HOPPER EMPTY INDICATOR:** Informs the operator when the proximity switches located in the seed wheel are not detecting seed.

**2. HOPPER FULL INDICATOR:** Informs the operator when the proximity switch located in the supply hopper above the seed wheel is detecting seed. When the indicator is active any equipment plugged into the Inlet Conveyor plug will be turned off.

**3. FLOW DETECTION INDICATOR:** Informs the operator as to when the scale has seen enough weight fluctuation to assume that the seed is either being removed or added to the scale

**4. SCALE WEIGHT:** Displays the current weight of the scale for the LIW module.

**5. GATE PERCENT:** Displays how far open the actuator gate is by percentage.

**6. RUN AVERAGE lb. / min:** Displays the current runs average weight per minute

**7. SYSTEM SHUTDOWN INDICATOR:** Informs the operator that the system is in the process of shutting down. The timer in the middle counts down how many seconds are left before shutdown is complete.

**8. CURRENT lb. / min:** Displays the current weight per minute.

**9. RUN TIME (seconds):** Displays how long seed has been flowing through the atomizer chamber. Increments whenever the seed proximity sensor sees seed and the LIW actuator is open during an automated run.

**10. RUN AVERAGE SCU / min:** Displays the current runs average SCUs per minute. This is only visible if at least one of the pump stands has been set to run in the SCU mode or the SCU option is selected on the Utilities screen.

**11. CURRENT SCU / min:** Displays the current SCUs per minute. This is only visible if at least one of the pump stands has been set to run in the SCU mode or the SCU option is selected on the Utilities screen.

**12. TARGET (seconds):** Displays the target run time in seconds. This is calculated by the weight called in and the flow rate parameters defined in the system for the current run.

**13. PUMPS:** These buttons are used to modify the pump display on the right side of the screen. The top and bottom button are used when all of the pumps are not displayed on the screen. The display will scroll up or down one pump for each time the Up or Down button is selected.

**LIW TREATER MAIN SCREEN DESCRIPTIONS****13. PUMPS (Continued):**

The second button toggles between 3 options when recipes are enabled. All Pumps, or non-recipe mode, displays all of the pumps whether they are configured or not. Recipe (All), displays all of the pumps in the active recipe in their original location. Recipe (Filter), consolidates the pumps in the active recipe and displays them grouped together from the top of the screen down. The third button also toggles between 3 options. 4 View Pump, displays 4 pumps at a time. 12 View Pump, displays 12 pumps at a time. Auto Size will automatically choose the display between 4 and 12 pump depending on the recipe requirements to make sure all pumps in the active recipe are displayed.

**14. CURRENT RUN PARAMETERS:** These displays show the general information that was entered on the Start Setup popup screen prior to starting the run.

**15. SEEDS/LB:** This shows the seeds per pound the operator entered for the selected seed profile used to calculate the seed flow rate. It will only appear if at least one of the pump stands has been set to run in the SCU mode or the SCU option is selected on the Utilities screen.

**16. AUXILIARY MOTOR INDICATOR:** Informs the operator if the motor for the auxiliary device attached to the system is ON or OFF.

**17. INLET CONVEYOR MOTOR INDICATOR:** Informs the operator if the inlet conveyor is ON or OFF.

**18. OUTLET CONVEYOR MOTOR INDICATOR:** Informs the operator if the outlet conveyor is ON or OFF.

**19. TREATER DIVERTER INDICATOR (optional):** Informs the operator if the treater diverter is currently in the treat or bypass position. This indicator will only be present if the treater has an automated bin site with a pre-treat diverter.

**20. POST TREATER DIVERTER INDICATOR (optional):** Informs the operator if the diverter positioned after the discharge chute is currently in one of two positions. These position may be named. Left or Right are the examples used in this manual. This indicator will only be present if the Treater has an automated bin site with a post treat diverter.

**21. NEXT BATCH:** When the system is in Batch mode, and a run has been completed, pressing this button will start a new run using the same parameters from the last run.

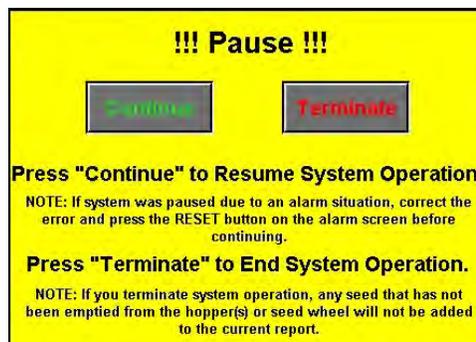
**22. RESET DRUM:** This button allows the operator to reset the drum to the start position. This is only visible when the drum tilt option is enabled and the system is in an active run of seed but the proximity sensor is not seeing seed long enough to allow the LIW actuator to have closed. In between boxes of seed for example.

## LIW TREATER MAIN SCREEN DESCRIPTIONS

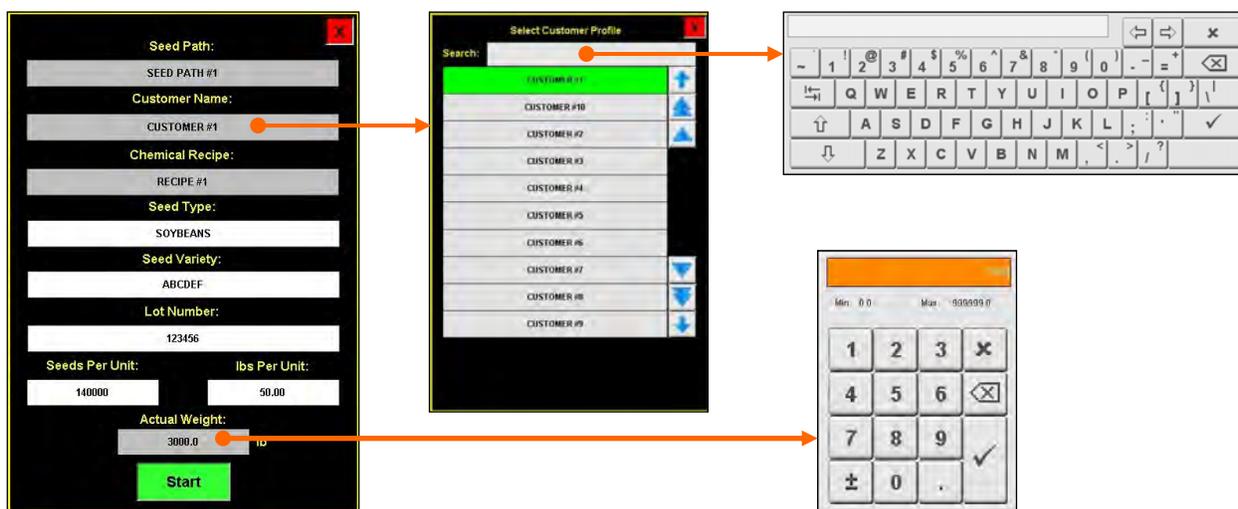
**23. CLEAR LIW BUFFER:** This button is only visible during a run of seed when the scale weight is below the weight threshold for actuator adjustment and the proximity sensor sees seed but the LIW actuator is not open. This allows the operator to clean out the buffer area of the LIW system between the scale and the actuator gate.

**24. ATOMIZER MOTOR INDICATOR:** Informs the operator if the atomizer motor is ON or OFF.

**25. PAUSE:** Once the Start button has been pushed and the system begins to operate, the Pause button appears. Pressing it will stop the run in progress. If the system was automatically paused by the system due to an alarm situation, correct the error then press the reset button on the control panel. The operator may now press the Continue button to resume the run. If they press the Terminate button, any seed that has not been emptied from the hopper or seed wheel will not be added to the current report.



**26. START SETUP:** This is used to start the machine after all motors have been placed into the Auto position. Press the button and a pop-up window appears. You may select the seed path, customer name and chemical recipe by selecting one of the box's in the popup or search the listing for an existing entry by typing their name in the search field or using the navigation arrows. When all the information has been added enter a target weight, then press Start to begin the run. Once the system begins to operate it becomes the Shutdown button.



**LIW TREATER MAIN SCREEN DESCRIPTIONS**

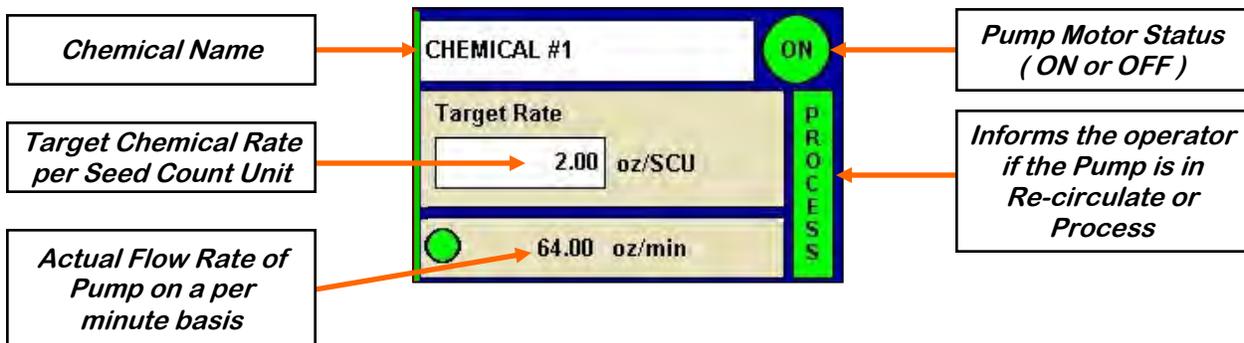
**27. DRUM MOTOR INDICATOR:** Informs the operator if the drum drive motor is ON or OFF.

**28. DRUM TILT DEGREES:** Informs the operator how many degrees the drum is extended or retracted.

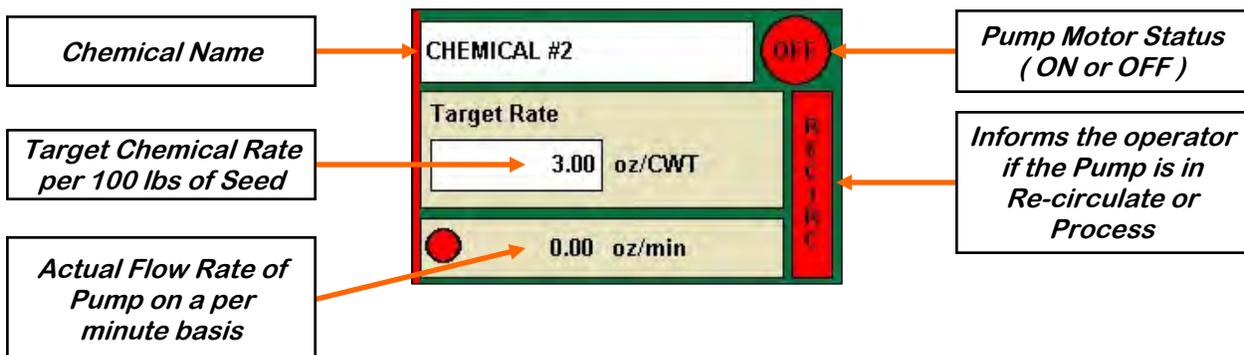
**29. DRUM ACTUATOR INDICATOR:** Informs the operator if the drum actuator motor is ON or OFF weather it is moving the drum up or down.

**30. PUMP MODULES:** This block of information informs the operator of the pump motor status (ON or OFF), air actuated 3-way valve status (Recirculation or Process), currently selected chemical, target flow rate and actual flow rate from flow meter. On Loss-In-Weight pump stands only, there is a round flow indicator in the flow rate display. When it is red no treatment is flowing from the pump stand to the treater. When it is green treatment is flowing to the treater. A vertical line on the left side of the pump module will indicate the tolerance status. If it is green, the pump flow rate is within tolerance. If it is red, it is out of tolerance.

**SEED COUNT UNITS / OUNCES PER MINUTE**

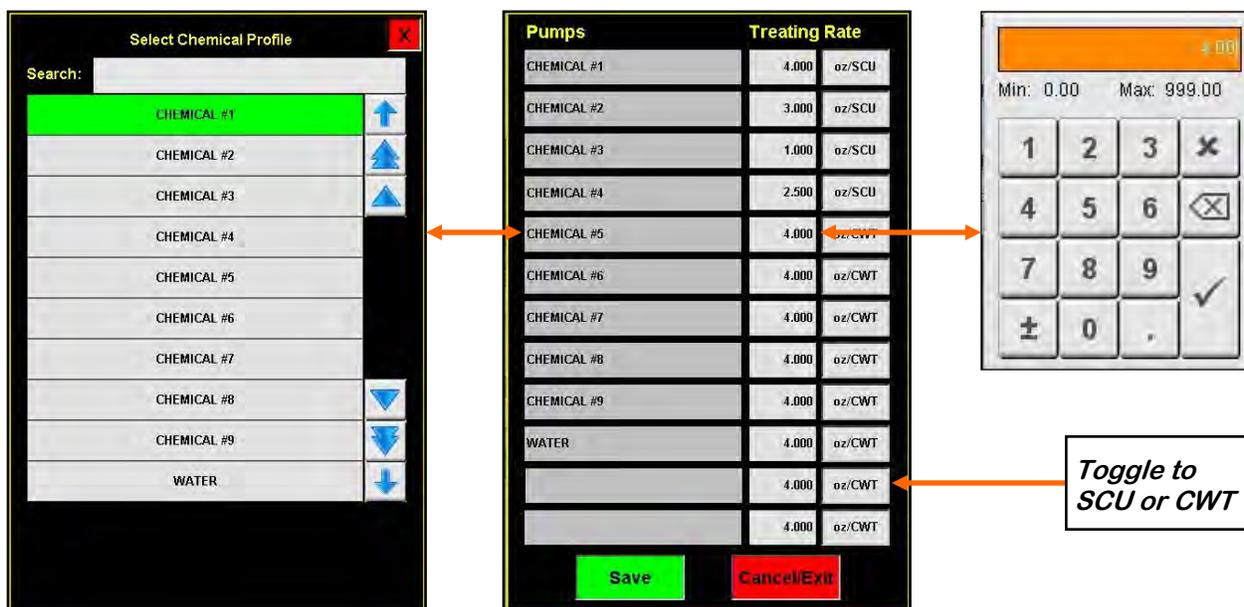


**CUT WEIGHT / OUNCES PER MINUTE**



**LIW TREATER MAIN SCREEN DESCRIPTIONS**

***30. PUMP MODULES (Continued):*** If recipe mode is not active, the pump name and target rate fields will turn from white to grey and become active buttons. Selecting either one will bring up a popup screen listing all of the pumps in the system and the current chemical assigned to each pump. Select a pump and the select chemical profile screen appears. Select a different chemical and it will change it on the pump display. Select the treating rate box next to it and a numeric keyboard allows entry of the treating rate. Use the box on the right to set the measurement type.



**NOTICE**

Actual flow rate of pump may be defined as either oz./min or oz./ml regardless of the target rate setting (oz./cwt or oz./scu).

**AVIS**

Le débit réel de la pompe peut être défini comme étant oz./min ou oz./ml indépendamment du réglage du débit cible (oz./cwt ou oz./scu).

***31. EMERGENCY STOP:*** This blinking display is activated when the system’s E-Stop button is activated.

## LIW TREATER H-O-A (HAND-OFF-AUTO) SCREEN



**! AVERTISSEMENT**

These H-O-A buttons force the selected component to be energized (HAND), de-energized (OFF), or automatically energized by the normal logic sequence (AUTO).

The HAND function will cause the component to operate independent of whatever else the system is trying to do automatically. These functions should not normally be used if the automated sequencing is active. **Be sure to understand the impact of energizing or de-energizing a component with the settings before using them. These commands are not a substitute for Lockout/Tagout procedures when working on or near this machine. Use proper lockout/tagout procedures to disable the equipment before servicing it.**

Ces boutons HOA forcent le composant sélectionné pour être excité (Hand), hors tension (Off), ou automatiquement alimentés par la séquence logique normale (Auto).

La fonction de la main provoquera la composante de fonctionner indépendamment de tout ce que le système essaie de faire automatiquement. Ces fonctions ne devraient normalement pas être utilisés si le séquençage automatisé est actif. **Assurez-vous de comprendre l'impact de énergisant ou désexciter un composant avec la main / Off paramètres avant de les utiliser. Ces commandes ne sont pas un substitut pour les procédures de verrouillage / étiquetage lorsque vous travaillez sur ou près de cette machine. Utilisez les procédures appropriées de verrouillage / débranchement pour désactiver l'équipement avant de l'entretenir.**

## LIW TREATER H-O-A (HAND-OFF-AUTO) SCREEN

Hand-Off-Auto controls are provided for most of the automated devices in the system, and are accessed on this screen. All treater, conveyor and pump stand motors are controlled here.

The treater, conveyor and pump stand motors are defined when the system is installed. Changes to them must be made by someone with administrative system login privileges.

The screenshot displays the 'Treater HOA' control interface. It features a top navigation bar with the title 'Treater HOA' and system information. The main area is divided into several functional sections:

- Device Control Section (1-14):** A list of devices including Drum, Atomizer, LIW Actuator, Inlet Conveyor, Outlet Conveyor, and Drum Actuator. Each device has control buttons for 'Hand', 'Off', and 'Auto', along with a status indicator (ON/OFF).
- Speed and Position Indicators (2-10):** Real-time data for '% Speed' and '% Position' for various components, with a 'Drive Fault' warning.
- Pumps Section (15-16):** Controls for four chemical pumps (CHEMICAL #1-4), each with 'Hand', 'Off', and 'Auto' modes and status indicators.
- Air-Valve Control (17-23):** Includes 'Recirc' and 'Process' buttons, a 'Totalizer' display, and a 'Scale (lb)' field.
- Navigation and System Status (17-23):** A bottom menu bar with options like 'Treater Main', 'Bin Site HOA', 'Utilities', 'Reports', 'Profile Editing Screens', 'Help', 'Alarms', 'Security', and 'Calibration & Settings'.

**LIW TREATER HOA SCREEN DESCRIPTIONS**

**1. DRUM CONTROL MODULE:** This module controls the function of the drum. The Hand button will place the drum in the manual mode of operation. The Off button will turn the associated device in the Off mode of operation. The Auto button will place the device in the automatic mode of operation. The motor will not operate in this function unless all other needed devices are in the Auto mode and the Start button is pressed on the main screen. The reverse button will only be present when running a Bayer RH series treater.

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

**3. ATOMIZER CONTROL MODULE:** This module controls the function of the atomizer. The Hand button will place the atomizer in the manual mode of operation. The Off button will turn the associated device in the Off mode of operation. The Auto button will place the device in the automatic mode of operation. The motor will not operate in this function unless all other needed devices are in the Auto mode and either the Prime to Atomizer or the Start button is pressed on the main screen.

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

**5. LIW ACTUATOR CONTROL MODULE:** This module controls the function of the loss in weight actuator gate. The Hand button will open the gate to the selected percentage of maximum open position. The Off button will turn the device off and reset the gate to the minimum gate position. The Auto button will place the device in the automatic mode of operation. The actuator will not operate in this function unless all other needed devices are in the Auto mode and the Start button is pressed on the main screen.



**6. LIW ACTUATOR PERCENT POSITION:** When this button is pressed, a numeric touch pad (right) will appear to allow the operator to manually adjust the percentage of the actuator gate. When running in the Auto mode the program will override this manual setting.



**LIW TREATER HOA SCREEN DESCRIPTIONS**

**7. AUTO ALL DEVICES:** When this button is pushed, it globally changes all treater HOA settings to the Auto mode of operation. If the treater is operating with a bin site, this button will not change anything on the bin site HOA screen.

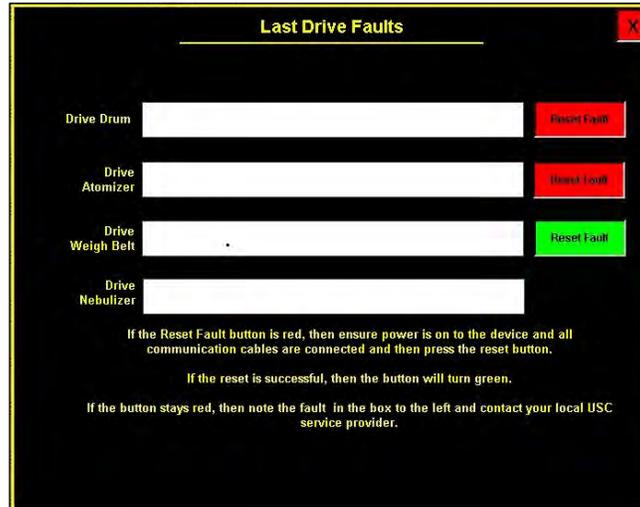
**8. PUMP CALIBRATION:** Pressing this button brings up the screen below. This screen is used to calibrate the pump stand. Enter the number of the pump you wish to calibrate and a target run time for the calibration. The longer the run time the more accurate the calibration. USC recommends a minimum of 60 seconds. Pressing the Jog Pump Motor button will turn the pumps on and off to fill the process lines attached to the top of the calibration tube. Press the button again to stop the flow. Continue until liquid in the calibration tube is at the zero mark. Press the START button to begin the calibration. When the target run time has elapsed, the pump will shutoff automatically. If for any reason you need to stop the process, press the STOP button. If the calibration is stopped before the target time has elapsed, the operator must start the process over again. If you press start and continue from your stopping point, the calibration will not be accurate. Enter the calibration tube reading in the Cal. Tube Total. Press the Update Density button to correct the ratio. For standard pump stands, this section would be updating the Calibration ratio. Closing this popup will stop the calibration process if it has not been completed.

Pump Calibration	
<input type="button" value="Help"/>	<input type="button" value="X"/>
Pump# to Adjust: <input type="text" value="1"/>	Selected Pump's Chemical Name: <input type="text" value="CHEMICAL #1"/>
Target Run Time (seconds): <input type="text" value="60"/>	Actual Rate (oz/min): <input type="text" value="0.0"/>
Target Rate (oz/min): <input type="text" value="45.6"/>	<input type="button" value="Jog Pump Motor"/>
Rough Est. Total (Fl. oz): <input type="text" value="45.60"/>	<input type="button" value="START"/> <input type="button" value="STOP"/>
Totals	
Cal. Tube Total (Fl. oz): <input type="text" value="1.00"/>	
Calculated Totalizer (Fl. oz): <input type="text" value="1.00"/>	
Elapsed Run Time (seconds): <input type="text" value="0.0"/>	
Density	
Current Density (lb/gal): <input type="text" value="8.33"/>	
Calculated Density (lb/gal): <input type="text" value="8.33"/>	
<input type="button" value="Update Density"/>	

**9. PRIME TO ATOMIZER:** Used before a controlled startup to preload chemical in the tubing leading to the atomizer. To operate this button, place the atomizer and any pump that will be used in the Auto mode. Next press and hold the Prime to Atomizer button. The atomizer and pumps will turn on and the liquid will be directed to the atomizer. The atomizer and pumps will run as long as the button is being pressed. When the button is released the atomizer and pumps will shut-off.

## LIW TREATER HOA SCREEN DESCRIPTIONS

**10. VFD FAULT RESET:** When a VFD fault occurs, a popup screen will display indicating which drive failed along with a message indicating the problem. After the problem has been resolved, press the reset button to resume operation.



**11. AUXILIARY CONTROL:** This module allows the operator to control any unit which is plugged into the auxiliary port located on the bottom of the treater 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. Any unit plugged into the auxiliary port will not operate in this function until the Start button is pressed on the main screen. It will also turn off using the same logic as the pump stands.



**LIW TREATER HOA SCREEN DESCRIPTIONS**

**12. INLET CONVEYOR CONTROL MODULE:** This module controls the function of the inlet conveyor. The Hand button will place the inlet conveyor in the manual mode of operation. The Off button will turn the associated device in the Off mode of operation. The Auto button will place the device in the automatic mode of operation. The motor will not operate in this function unless all other needed devices are in the Auto mode and the Start button is pressed on the main screen. When the proximity switch located in the supply hopper above the weigh belt detects seed and the indicator is active, any equipment plugged into the Inlet Conveyor plug will be turned off.

**13. OUTLET CONVEYOR CONTROL MODULE:** This module controls the function of the outlet conveyor. The Hand button will place the outlet conveyor in the manual mode of operation. The Off button will turn the associated device in the Off mode of operation. The Auto button will place the device in the automatic mode of operation. The motor will not operate in this function unless all other needed devices are in the Auto mode and the Start button is pressed on the main screen.

**NOTICE**

**If the system is running with a bin site, the inlet and outlet conveyors will be controlled by outlet path configuration defined by the system administrator. If this is enabled, the conveyors Off mode will change to Auto. This only applies if the bin site is enabled. The Hand mode is not affected.**

**AVIS**

**Si le système fonctionne avec un site bin, les entrée et de sortie des convoyeurs seront contrôlés par la configuration du trajet de sortie défini par l'administrateur système. Si cette option est activée, le mode convoyeurs Off va changer à Auto. Ce ne vaut que si le site bin est activée. Le mode Hand est pas affectée.**

**14. DRUM ACTUATOR MODULE:** This module controls the drum tilt actuator. The Up button raises the drum when held. The Down button lowers the drum when held. The Auto button will place the device in the automatic mode of operation. The actuator will not operate in this function unless all other needed devices are in the Auto mode and the Start button is pressed on the main screen.

**LIW TREATER HOA SCREEN DESCRIPTIONS**

**15. PUMPS:** These buttons appear when more than 4 pumps are enabled. Use these buttons to rotate between each of the 3 groups of 4 pumps

**16. PUMP CONTROL MODULES:** These modules control the function of the Pump Stands. The Hand button will place the desired pump in the manual mode of operation. The Off button will turn the associated device in the Off mode of operation. The Auto button will place the device in the automatic mode of operation. The pump will not operate in this function until the Start button is pressed on the main screen. This module also monitors the proximity sensor in the Seed Wheel. When the proximity switch is detecting seed and the indicator is active, the 3 - way valve will switch to PROCESS. When no seed is detected it will switch to RECIRC.

**17. PUMP STAND FLOW INDICATOR:** This indicator will only be present when a Loss-In-Weight pump stand is in use. It informs the operator if seed treatment is flowing to the treater (Green), or is not flowing to the treater (Red).

**18. PUMP PERCENT SPEED:** When this button is pressed, a numeric touch pad will appear to allow the operator to manually adjust the speed of the pumps). When running in the Auto mode the program will override this setting.

**19. PUMP FLOW RATE:** This displays the actual pump flow rate.

**20. REVERSE:** When the pump is in the Off mode, this button appears. Pressing it allows the operator to reverse the pump direction and pump the product back into the mix tank. When the pump is in Hand or Auto mode, this button will not be present.

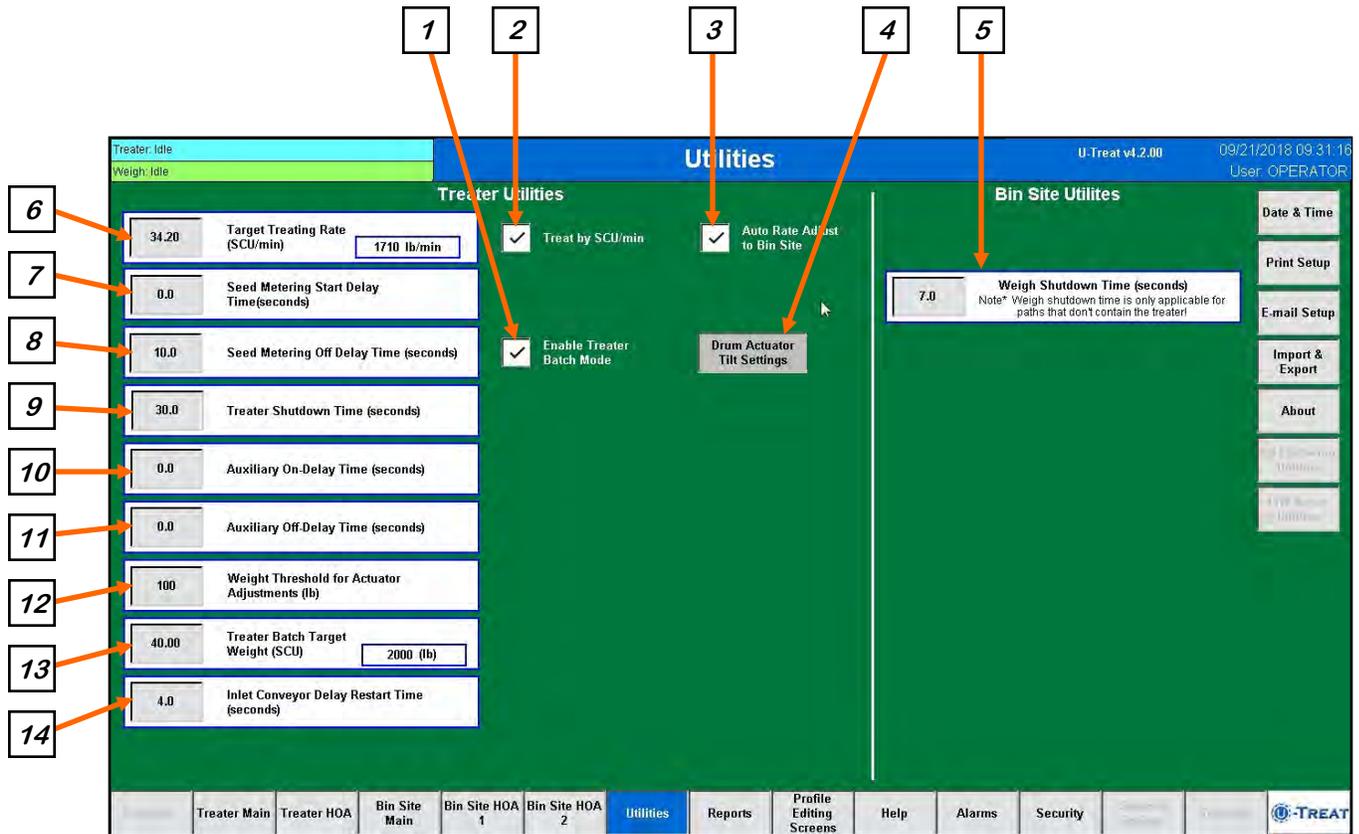
**21. AIR VALVE CONTROL MODULE:** This module controls where liquid is diverted for each pump. When a desired pump is placed in the Hand mode, the RECIRC button will appear next to that pump control module. In this mode, liquid is pumped out of its desired tank, through the air actuated 3-way valve manifold and back into the mix tank. When the RECIRC. button is pressed, the icon will change to PROCESS. In this mode, liquid is diverted from the air actuated 3-way valve, to the atomizer. When the Off button is pressed the pump will go back to RECIRC. When the pump is placed in the Auto mode the Air Valve Control cannot be accessed. (Optional feature)

**22. TOTALIZER:** Displays in real time the amount of chemical that has been applied. If the pump is set in the Hand mode, pushing the button will reset it to zero.

**23. SCALE:** This indicates the weight of the chemical detected from the scale head on pump stands that are equipped with a scale.

**LIW TREATER UTILITIES SCREEN**

This screen allows the operator to set various system parameters and gives access to the Date & Time, Print Setup, E-mail Setup, Import & Export and current program release Information screens.



**NOTICE**

When buttons 5 - 14 are pressed, a numeric touch pad (right) will appear allowing the operator to enter in a number for that particular parameter.

**AVIS**

Lorsque les boutons sont pressés 5 - 14, un pavé tactile numérique (à droite) se affiche permettant à l'opérateur d'entrer dans un certain nombre de ce paramètre particulier.

## LIW TREATER UTILITIES SCREEN DESCRIPTIONS

**1. TREATER BATCH MODE:** When this box is checked, the operator may enter a target weight for a run. When the treater reaches the desired weight, the weighing device will stop and a Next Batch button will appear on the treater screen. The operator will watch until all of the seed has discharged from the drum. They may then replace the full box with an empty one and press the Next Batch button to continue treating.

**2. TREAT BY SCU / MIN:** When this box is checked, the primary Target Treating Rate will be calculated in Seed Count Units per minute. Unchecked, it will be calculated in pounds per minute.

**3. AUTO RATE ADJUST TO BIN SITE:** (Only present when treater is used with a Tri - Flo ® and USC Bin Site Automation). When this box is checked, Target Treating Rate will automatically be adjusted to 2% slower than the bin site.

### **4. DRUM ACTUATOR TILT SETTINGS:**

Pressing this button will display a popup where the operator can change the drum tilt settings. Startup Drum Tilt is the degrees the operator wishes the drum to be at when starting a run. Normal drum tilt is the desired tilt during the treating process. Shutdown drum tilt is the tilt setting during the shutdown process. Totalizer Weight to Start Normal Operation is the amount of seed needed to be calculated through the metering device to move the tilt from the startup to the normal tilt setting. Deadband degree is used to say when the drum is tilted close enough to its desired tilt to stop moving and Shutdown Time to Reset Drum Tilt is the number of seconds from the time the shutdown process begins for the drum angle to be set back to the Start up position.



Drum Tilt Actuator Calibration	
1.5	Startup Drum Tilt ( + / - 0.2° )
-2.0	Normal Drum Tilt ( + / - 0.2° )
-4.0	Shutdown Drum Tilt ( + / - 0.2° )
200	Totalizer Weight to Start Normal Operation
0.35	Deadband Degree
50.0	Shutdown Time to Reset Drum Tilt (seconds)

**5. WEIGH SHUTDOWN TIME (seconds):** This delay is to add run time for the outlet conveyor being used under a diverter when the seed path includes a weighing device but does not include treater. This is to ensure all seed for the run has been moved and the conveyor is empty before shutting down.

**6. TARGET TREATING RATE:** Pressing this button allows the operator to adjust the estimated treating rate in pounds or SCU's per minute. This number is used by the system to control the rate of the seed wheel and pumps.

**LIW TREATER UTILITIES SCREEN DESCRIPTIONS**

**7. SEED METERING START DELAY TIME (seconds):** This start delay time is similar to the pump start delay time and is based on seed being detected in the metering device. In the Loss-In-Weight device the proximity switch is in the hopper above the seed gate.

**8. SEED METERING OFF DELAY TIME (seconds):** This off delay time is similar to the pump start delay time and is based on seed being detected in the metering device. In the Loss-In-Weight device the proximity switch is in the hopper above the seed gate.

**9. TREATER SHUTDOWN TIME (Seconds):** Pressing this button allows the operator to adjust the delay shutdown time of the seed treater after the Shutdown button has been pressed after a run. This time will allow the seed treater and any conveyors to completely clean out.

**10. AUXILIARY ON DELAY TIME (Seconds):** Pressing this button allows the operator to adjust the on delay from the time the proximity switch in the hopper above the seed gate detects seed to the time a signal is sent to an auxiliary device connected to the system to start.

**11. AUXILIARY OFF DELAY TIME (Seconds):** Pressing this button allows the operator to adjust the off delay from the time the proximity switch in the hopper above the seed gate no longer detects seed to the time a signal is sent to an auxiliary device connected to the system to stop.

**12. WEIGHT THRESHOLD FOR ACTUATOR ADJUSTMENTS:** Pressing this button allows the operator to adjust the weight required to stop the flow rate adjustments. When the scale weight is below this entry, then the system will no longer use the scale data to make any more adjustment moves.

**13. TREATER BATCH TARGET WEIGHT:** When operating in Batch mode, this is where you define the target weight for each individual batch.

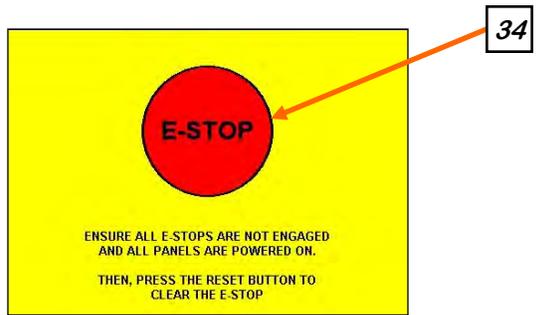
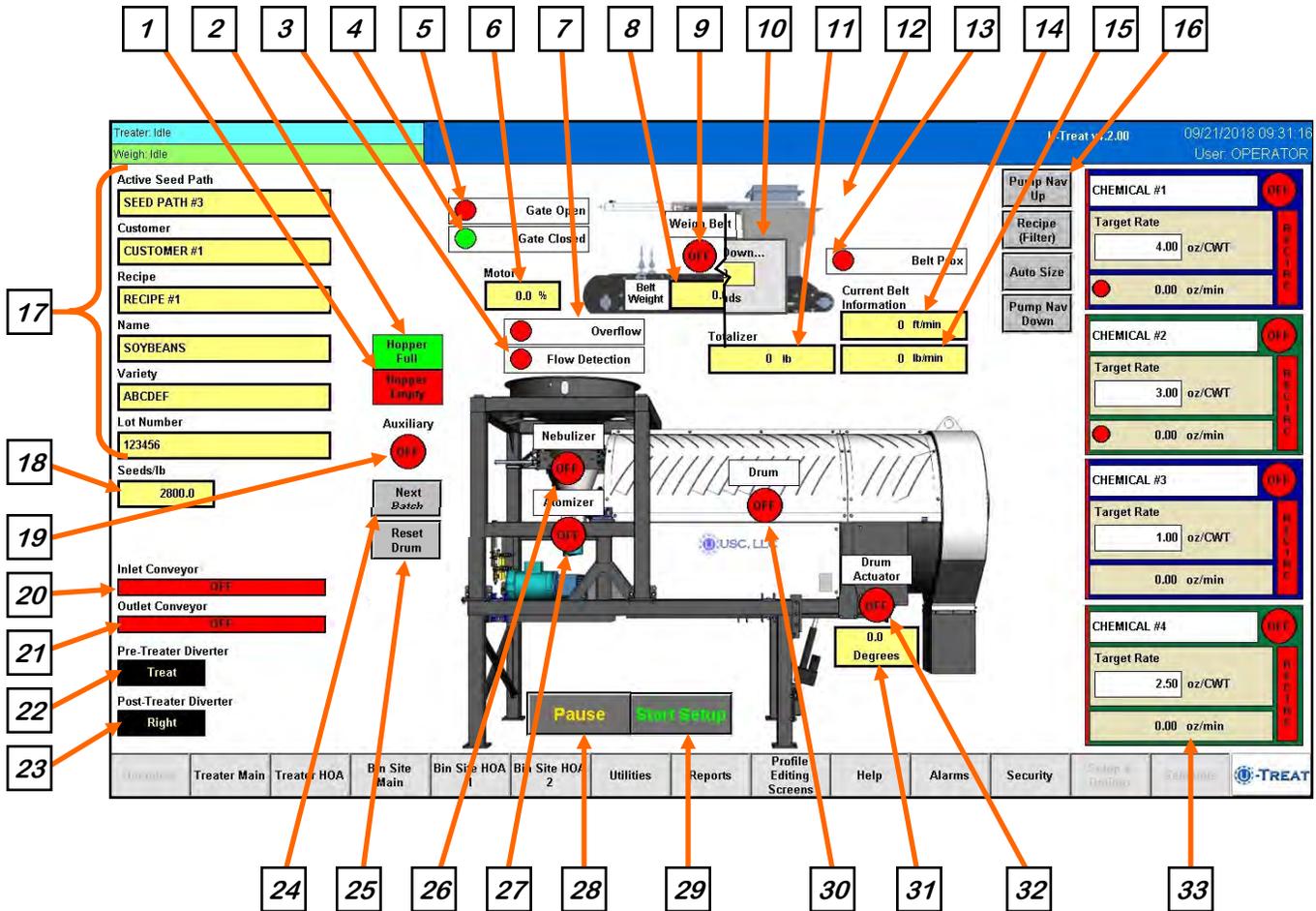
**14. INLET CONVEYOR DELAY RESTART TIME (Seconds):** Pressing this button allows the operator to adjust the restart time of the inlet conveyor after the proximity switch located at the top of the inlet hopper above the loss in weight chamber no longer detects seed.

**SECTION C-4**

**LPV WEIGH BELT TREATER AUTOMATION**

**WB TREATER MAIN SCREEN**

This screen informs the operator of the status of all system motors and electrical devices and allows for control/adjustment of system operations.



## **WB TREATER MAIN SCREEN DESCRIPTIONS**

**1. HOPPER EMPTY INDICATOR:** Informs the operator when the proximity switches located in the seed wheel are not detecting seed.

**2. HOPPER FULL INDICATOR:** Informs the operator when the proximity switch located in the supply hopper above the seed ladder is detecting seed. When the indicator is active any equipment plugged into the Inlet Conveyor plug will be turned off.

**3. FLOW DETECTION INDICATOR:** Informs the operator as to when the scale has seen enough weight fluctuation to assume that the seed is either being removed or added to the scale

**4. SLIDE GATE CLOSED INDICATOR:** When this display is green, the slide gate is closed. When it is red, the slide gate is open.

**5. SLIDE GATE OPEN INDICATOR:** When this display is green, the slide gate is open. When it is red, the slide gate is closed.

**6. MOTOR PERCENTAGE:** Displays what percent of maximum speed the motor is currently running at.

**7. OVERFLOW INDICATOR:** When the proximity switch is active (green), seed is backing up in the inlet hopper. This will stop the weigh belt and continue to run the treater and pumps) for a pre-determined amount of time and then pause the entire system. This allows the operator to adjust to a lower flow rate on the Utilities screen, go to the HOA screen and place the weigh belt module back in auto, then press the continue button on the bottom of the main screen to continue the run. This is to prevent seed from overflowing from the inlet hopper.

**8. BELT WEIGHT:** Displays the amount of weight on the belt at any given time.

**9. WEIGH BELT MOTOR INDICATOR:** Informs the operator if the weigh belt motor is ON (green) or OFF (red).

**10. SYSTEM SHUTDOWN INDICATOR:** Informs the operator that the system is in the process of shutting down. The timer in the middle counts down how many seconds are left before shutdown is complete.

**11. TOTALIZER:** Displays the total amount of seed in pounds or kilograms for the current run in real time.

**12. SEED GATE INDICATOR:** When the proximity switch is active (green), seed is detected. When it is inactive (red), seed is not detected. During an automated run, the slide gate will open and close automatically

## **WB TREATER MAIN SCREEN DESCRIPTIONS**

**13. SEED ON BELT INDICATOR:** When the proximity switch is active (green), seed is present on the belt. When it is inactive (red), seed is not present or is emptying out.

**14. CURRENT BELT SPEED:** Displays the travel speed of the weigh belt in feet per minute.

**15. CURRENT SEED FLOW RATE:** Displays the seed flow rate in pounds or kilograms per minute.

**16. PUMPS:** These buttons are used to modify the pump display on the right side of the screen. The top and bottom button are used when all of the pumps are not displayed on the screen. The display will scroll up or down one pump for each time the Up or Down button is selected.

The second button toggles between 3 options when recipes are enabled. All Pumps, or non-recipe mode, displays all of the pumps whether they are configured or not. Recipe (All), displays all of the pumps in the active recipe in their original location. Recipe (Filter), consolidates the pumps in the active recipe and displays them grouped together from the top of the screen down.

The third button also toggles between 3 options. 4 View Pump, displays 4 pumps at a time. 12 View Pump, displays 12 pumps at a time. Auto Size will automatically choose the display between 4 and 12 pump depending on the recipe requirements to make sure all pumps in the active recipe are displayed.

**17. CURRENT RUN PARAMETERS:** These displays show the general information that was entered on the Start Setup popup screen prior to starting the run.

**18. SEEDS/LB:** This shows the seeds per pound the operator entered for the selected seed profile used to calculate the seed flow rate. It will only appear if at least one of the pump stands has been set to run in the SCU mode or the SCU option is selected on the Utilities screen.

**19. AUXILIARY MOTOR INDICATOR:** Informs the operator if the motor for the auxiliary device attached to the system is ON or OFF.

**20. INLET CONVEYOR MOTOR INDICATOR:** Informs the operator if the inlet conveyor is ON or OFF.

**21. OUTLET CONVEYOR MOTOR INDICATOR:** Informs the operator if the outlet conveyor is ON or OFF.

**WB TREATER MAIN SCREEN DESCRIPTIONS**

**22. TREATER DIVERTER INDICATOR (optional):** Informs the operator if the treater diverter is currently in the treat or bypass position. This indicator will only be present if the treater has an automated bin site with a pre-treat diverter.

**23. POST TREATER DIVERTER INDICATOR (optional):** Informs the operator if the diverter positioned after the discharge chute is currently in one of two positions. These position may be named. Left or Right are the examples used in this manual. This indicator will only be present if the Treater has an automated bin site with a post treat diverter.

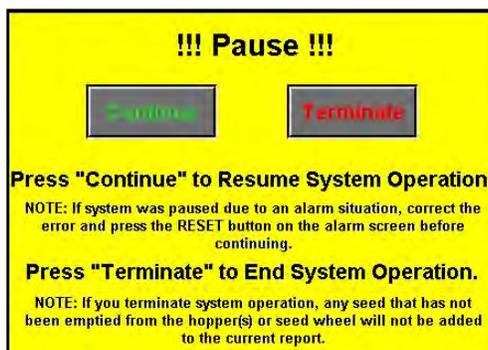
**24. NEXT BATCH:** When the system is in Batch mode, and a run has been completed, pressing this button will start a new run using the same parameters from the last run.

**25. RESET DRUM:** This button allows the operator to reset the drum to the start position. This is only visible when the drum tilt option is enabled and the system is in an active run of seed but the proximity sensor is not seeing seed long enough to allow the LIW actuator to have closed. In between boxes of seed for example.

**26. NEBULIZER MOTOR INDICATOR:** Informs the operator if the nebulizer motor is ON or OFF.

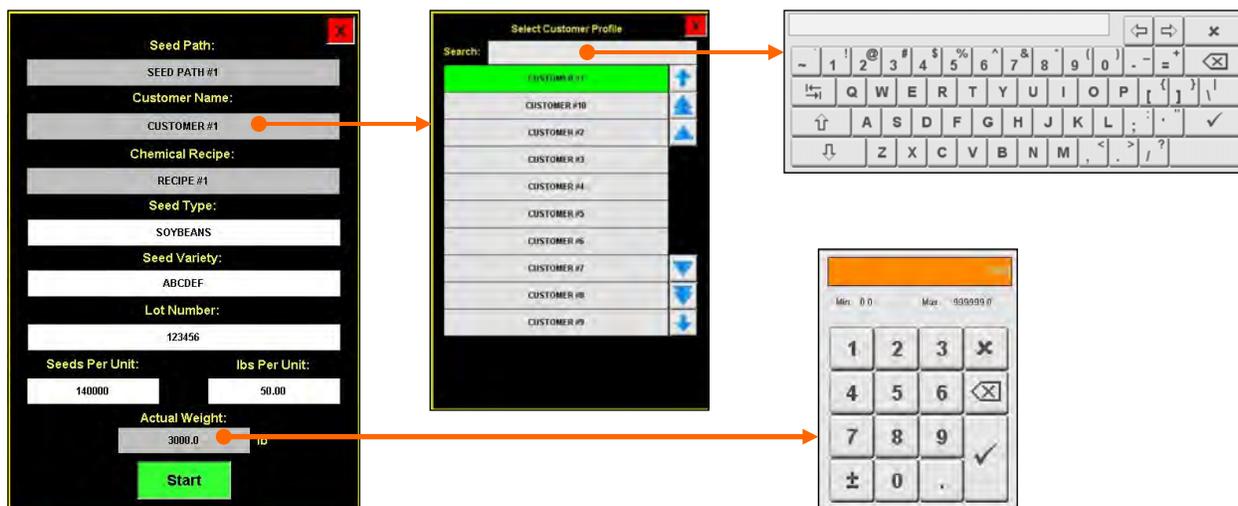
**27. ATOMIZER MOTOR INDICATOR:** Informs the operator if the atomizer motor is ON or OFF.

**28. PAUSE:** Once the Start button has been pushed and the system begins to operate, the Pause button appears. Pressing it will stop the run in progress. If the system was automatically paused by the system due to an alarm situation, correct the error then press the reset button on the control panel. The operator may now press the Continue button to resume the run. If they press the Terminate button, any seed that has not been emptied from the hopper or seed wheel will not be added to the current report.



## WB TREATER MAIN SCREEN DESCRIPTIONS

**29. START SETUP:** This is used to start the machine after all motors have been placed into the Auto position. Press the button and a pop-up window appears. You may select the seed path, customer name and chemical recipe by selecting one of the box's in the popup or search the listing for an existing entry by typing their name in the search field or using the navigation arrows. When all the information has been added enter a target weight, then press Start to begin the run. Once the system begins to operate it becomes the Shutdown.



**30. DRUM MOTOR INDICATOR:** Informs the operator if the drum drive motor is ON or OFF.

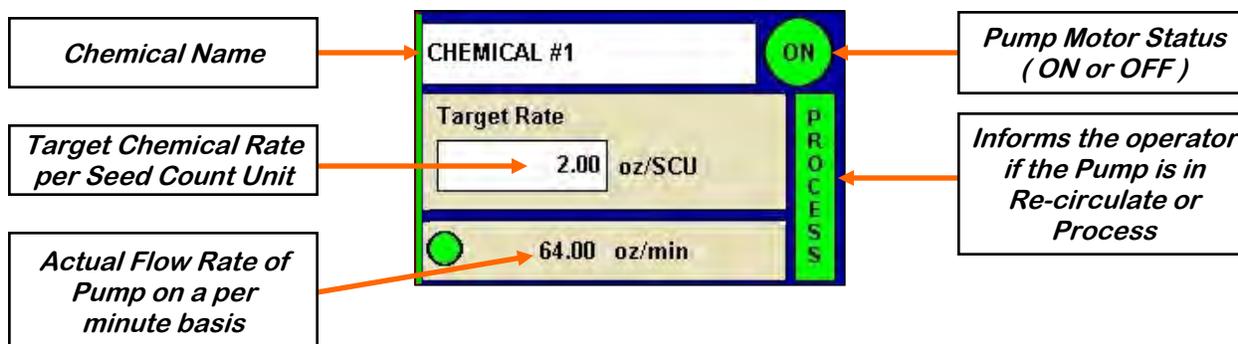
**31. DRUM TILT DEGREES:** Informs the operator how many degrees the drum is extended or retracted.

**32. DRUM ACTUATOR INDICATOR:** Informs the operator if the drum actuator motor is ON or OFF weather it is moving the drum up or down.

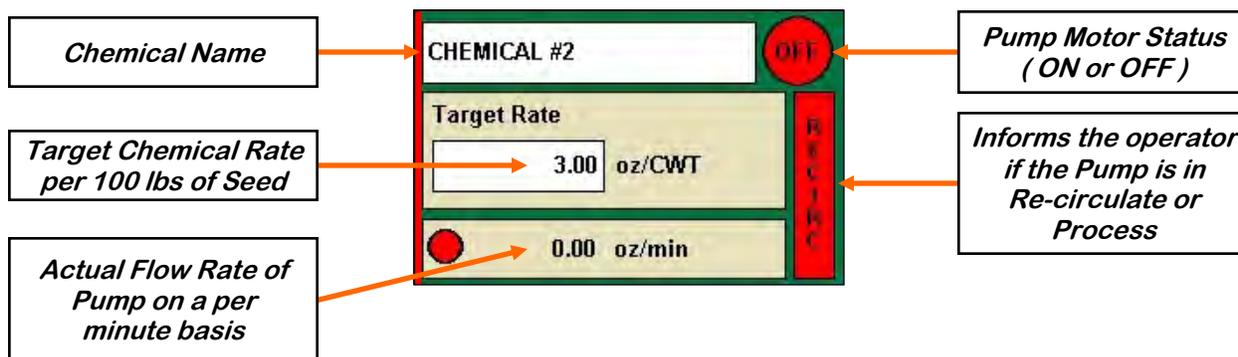
**WB TREATER MAIN SCREEN DESCRIPTIONS**

**33. PUMP MODULES:** This block of information informs the operator of the pump motor status (ON or OFF), air actuated 3-way valve status (Recirculation or Process), currently selected chemical, target flow rate and actual flow rate from flow meter. On Loss-In-Weight pump stands only, there is a round flow indicator in the flow rate display. When it is red no treatment is flowing from the pump stand to the treater. When it is green treatment is flowing to the treater. A vertical line on the left side of the pump module will indicate the tolerance status. If it is green, the pump flow rate is within tolerance. If it is red, it is out of tolerance.

**SEED COUNT UNITS / OUNCES PER MINUTE**



**CUT WEIGHT / OUNCES PER MINUTE**



**WB TREATER MAIN SCREEN DESCRIPTIONS**

**33. PUMP MODULES (Continued):** If recipe mode is not active, the pump name and target rate fields will turn from white to grey and become active buttons. Selecting either one will bring up a popup screen listing all of the pumps in the system and the current chemical assigned to each pump. Select a pump and the select chemical profile screen appears. Select a different chemical and it will change it on the pump display. Select the treating rate box next to it and a numeric keyboard allows entry of the treating rate. Use the box on the right to set the measurement type.



**NOTICE**

Actual flow rate of pump may be defined as either oz./min or oz./ml regardless of the target rate setting (oz./cwt or oz./scu).

**AVIS**

Le débit réel de la pompe peut être défini comme étant oz./min ou oz./ml indépendamment du réglage du débit cible (oz./cwt ou oz./scu).

**34. EMERGENCY STOP:** This blinking display is activated when the system’s E-Stop button is activated.

## **WB TREATER HOA SCREEN**

These H-O-A buttons force the selected component to be energized (HAND), de-energized (OFF), or automatically energized by the normal logic sequence (AUTO).

The HAND function will cause the component to operate independent of whatever else the system is trying to do automatically. These functions should not normally be used if the automated sequencing is active. **Be sure to understand the impact of energizing or de-energizing a component with the settings before using them. These commands are not a substitute for Lockout/Tagout procedures when working on or near this machine. Use proper lockout/tagout procedures to disable the equipment before servicing it.**



**! AVERTISSEMENT**

Ces boutons HOA forcent le composant sélectionné pour être excité (Hand), hors tension (Off), ou automatiquement alimentés par la séquence logique normale (Auto).

La fonction de la main provoquera la composante de fonctionner indépendamment de tout ce que le système essaie de faire automatiquement. Ces fonctions ne devraient normalement pas être utilisés si le séquençage automatisé est actif. **Assurez-vous de comprendre l'impact de énergisant ou désexciter un composant avec la main / Off paramètres avant de les utiliser. Ces commandes ne sont pas un substitut pour les procédures de verrouillage / étiquetage lorsque vous travaillez sur ou près de cette machine. Utilisez les procédures appropriées de verrouillage / débranchement pour désactiver l'équipement avant de l'entretenir.**

## WB TREATER HOA SCREEN

Hand-Off-Auto controls are provided for most of the automated devices in the system, and are accessed on this screen. All treater, conveyor and pump stand motors are controlled here.

The treater, conveyor and pump stand motors are defined when the system is installed. Changes to them must be made by someone with administrative system login privileges.

The screenshot shows the 'Treater HOA' control interface. It features a top navigation bar with the title 'Treater HOA', version 'U-Treat v4.2.00', and date/time '09/21/2018 09:31:16'. The main area is divided into several sections:

- Device Controls (1-15):** A list of devices including Drum, Atomizer, Weigh Belt, Inlet Conveyor, Outlet Conveyor, Drum Actuator, and Nebulizer. Each device has 'Hand', 'Off', and 'Auto' buttons, along with a status indicator (ON/OFF).
- Pumps (16-19):** A section for four chemical pumps (CHEMICAL #1-4) with 'Hand', 'Off', and 'Auto' buttons and speed indicators.
- Air-Valve Control (20-25):** Includes 'Recirc' and 'Process' buttons, and a 'Totalizer' section with 'Scale (lb)' values.
- Navigation (20-25):** A bottom menu bar with buttons for 'Utilities', 'Reports', 'Profile Editing Screens', 'Help', 'Alarms', and 'Security'.

Numbered callouts (1-25) point to specific elements: 1-15 point to device control buttons; 16-19 point to pump controls; 20-25 point to navigation and auxiliary control buttons.

## WB TREATER HOA SCREEN DESCRIPTIONS

**1. DRUM CONTROL MODULE:** This module controls the function of the drum. The Hand button will place the drum in the manual mode of operation. The Off button will turn the associated device in the Off mode of operation. The Auto button will place the device in the automatic mode of operation. The motor will not operate in this function unless all other needed devices are in the Auto mode and the Start button is pressed on the main screen. The reverse button will only be present when running a Bayer RH series treater.

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

**3. ATOMIZER CONTROL MODULE:** This module controls the function of the atomizer. The Hand button will place the atomizer in the manual mode of operation. The Off button will turn the associated device in the Off mode of operation. The Auto button will place the device in the automatic mode of operation. The motor will not operate in this function unless all other needed devices are in the Auto mode and either the Prime to Atomizer or the Start button is pressed on the main screen.

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

**5. WEIGH BELT CONTROL MODULE:** This module controls the function of the weigh belt. The Hand button will place the weigh belt in the manual mode of operation. The Off button will turn the associated device in the Off mode of operation. The Auto button will place the device in the automatic mode of operation. The motor will not operate in this function unless all other needed devices are in the Auto mode and the Start button is pressed on the start setup screen. The Gate button will only be present when running in manual mode. Pressing it will manually open and close the seed gate. When it is orange, the gate is open. When it is grey, the gate is closed.

**6. WEIGH BELT PERCENT SPEED:** When this button is pressed, a numeric touch pad (right) will appear to allow the operator to manually adjust the percentage of the actuator gate. When running in the Auto mode the program will override this manual setting.

**7. AUTO ALL DEVICES:** When this button is pushed, it globally changes all treater HOA settings to the Auto mode of operation. If the treater is operating with a bin site, this button will also change anything on the bin site HOA screen.



**WB TREATER HOA SCREEN DESCRIPTIONS**

**8. PUMP CALIBRATION:** Pressing this button brings up the screen below. This screen is used to calibrate the pump stand. Enter the number of the pump you wish to calibrate and a target run time for the calibration. The longer the run time the more accurate the calibration. USC recommends a minimum of 60 seconds. Pressing the Jog Pump Motor button will turn the pumps on to fill the process lines attached to the top of the calibration tube. Press the button again to stop the flow. Continue until liquid in the calibration tube is at the zero mark. Press the START button to begin the calibration. When the target run time has elapsed, the pump will shutoff automatically. If for any reason you need to stop the process, press the STOP button. If the calibration is stopped before the target time has elapsed, the operator must start the process over again. If you press start and continue from your stopping point, the calibration will not be accurate. Enter the calibration tube reading in the Cal. Tube Total. Press the UPDATE RATIO button to correct the ratio. Closing this popup will stop the calibration process if it has not been completed.

The screenshot shows the 'Pump Calibration' screen with the following fields and controls:

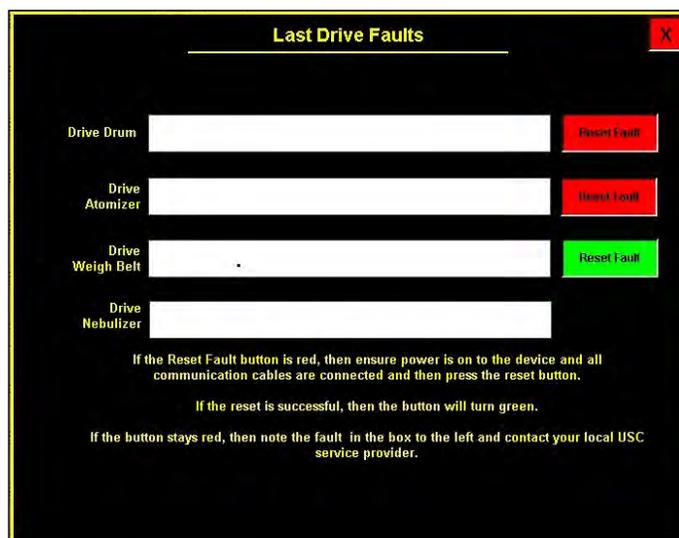
- Help** button (top left)
- Pump# to Adjust:** 1
- Selected Pump's Chemical Name:** CHEMICAL #1
- Target Run Time (seconds):** 60
- Actual Rate (oz/min):** 0.0
- Target Rate (oz/min):** 32.0
- Jog Pump Motor** button
- Rough Est. Total (Fl. oz):** 32.00
- START** button (green)
- STOP** button (red)
- Totals** section:
  - Cal. Tube Total (Fl. oz):** 1.00
  - Calculated Totalizer (Fl. oz):** 1.00
  - Elapsed Run Time (seconds):** 0.0
- Calibration Ratio** section:
  - Current Ratio:** 0.97
  - Calculated Ratio:** 0.97
  - UPDATE RATIO** button

**9. NEBULIZER PERCENT SPEED:** When this button is pressed, a numeric touch pad will appear to allow the operator to manually adjust the speed of the nebulizer.

**10. PRIME TO ATOMIZER:** Used before a controlled startup to preload chemical in the tubing leading to the atomizer. To operate this button, place the atomizer and any pump that will be used in the Auto mode. Next press and hold the Prime to Atomizer button. The atomizer and pumps will turn on and the liquid will be directed to the atomizer. The atomizer and pumps will run as long as the button is being pressed. When the button is released the atomizer and pumps will shut-off.

## WB TREATER HOA SCREEN DESCRIPTIONS

**11. VFD FAULT RESET BUTTON:** When a VFD fault occurs, a popup screen will display indicating which drive failed along with a message indicating the problem. After the problem has been resolved, press the reset button to resume operation.



**12. AUXILIARY CONTROL:** This module allows the operator to control any unit which is plugged into the auxiliary port located on the bottom of the treater 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. Any unit plugged into the auxiliary port will not operate in this function until the Start button is pressed on the main screen. It will also turn off using the same logic as the pump stands.



**WB TREATER HOA SCREEN DESCRIPTIONS**

**13. INLET CONVEYOR CONTROL MODULE:** This module controls the function of the inlet conveyor. The Hand button will place the inlet conveyor in the manual mode of operation. The Off button will turn the associated device in the Off mode of operation. The Auto button will place the device in the automatic mode of operation. The motor will not operate in this function unless all other needed devices are in the Auto mode and the Start button is pressed on the main screen. When the proximity switch located in the supply hopper above the seed wheel is detecting seed and the indicator is active, any equipment plugged into the Inlet Conveyor plug will be turned off.

**14. OUTLET CONVEYOR CONTROL MODULE:** This module controls the function of the outlet conveyor. The Hand button will place the outlet conveyor in the manual mode of operation. The Off button will turn the associated device in the Off mode of operation. The Auto button will place the device in the automatic mode of operation. The motor will not operate in this function unless all other needed devices are in the Auto mode and the Start button is pressed on the main screen.

**NOTICE**

**If the system is running with a bin site, the inlet and outlet conveyors will be controlled by outlet path configuration defined by the system administrator. If this is enabled, the conveyors Off mode will change to Auto. This only applies if the bin site is enabled. The Hand mode is not affected.**

**AVIS**

**Si le système fonctionne avec un site bin, les entrée et de sortie des convoyeurs seront contrôlés par la configuration du trajet de sortie défini par l'administrateur système. Si cette option est activée, le mode convoyeurs Off va changer à Auto. Ce ne vaut que si le site bin est activée. Le mode Hand est pas affectée.**

**15. DRUM ACTUATOR MODULE:** This module controls the drum tilt actuator. The Up button raises the drum when held. The Down button lowers the drum when held. The Auto button will place the device in the automatic mode of operation. The actuator will not operate in this function unless all other needed devices are in the Auto mode and the Start button is pressed on the main screen.

**16. NEBULIZER CONTROL MODULE:** This module controls the function of the nebulizer. The Hand button will place the nebulizer in the manual mode of operation. The Off button will turn the associated device in the Off mode of operation. The Auto button will place the device in the automatic mode of operation. The motor will not operate in this function unless all other needed devices are in the Auto mode and either the Prime to Atomizer or the Start button is pressed on the main screen.

**WB TREATER HOA SCREEN DESCRIPTIONS**

**17. PUMP CONTROL MODULES:** These modules control the function of the Pump Stands. The Hand button will place the desired pump in the manual mode of operation. The Off button will turn the associated device in the Off mode of operation. The Auto button will place the device in the automatic mode of operation. The pump will not operate in this function until the Start button is pressed on the main screen. This module also monitors the proximity sensor in the Seed Ladder. When the proximity switch is detecting seed and the indicator is active, the 3 - way valve will switch to PROCESS. When no seed is detected it will switch to RECIRC.

**18. PUMPS:** These buttons appear when more than 4 pumps are enabled. Use these buttons to rotate between each of the 3 groups of 4 pumps

**19. PUMP STAND FLOW INDICATOR:** This indicator will only be present when a Loss-In-Weight pump stand is in use. It informs the operator if seed treatment is flowing to the treater (Green), or is not flowing to the treater (Red).

**20. PUMP PERCENT SPEED:** When this button is pressed, a numeric touch pad will appear to allow the operator to manually adjust the speed of the pumps. When running in the Auto mode the program will override this setting.

**21. PUMP FLOW RATE:** This displays the actual pump flow rate.

**22. REVERSE:** When the pump is in the Off mode, this button appears. Pressing it allows the operator to reverse the pump direction and pump the product back into the mix tank. When the pump is in Hand or Auto mode, this button will not be present.

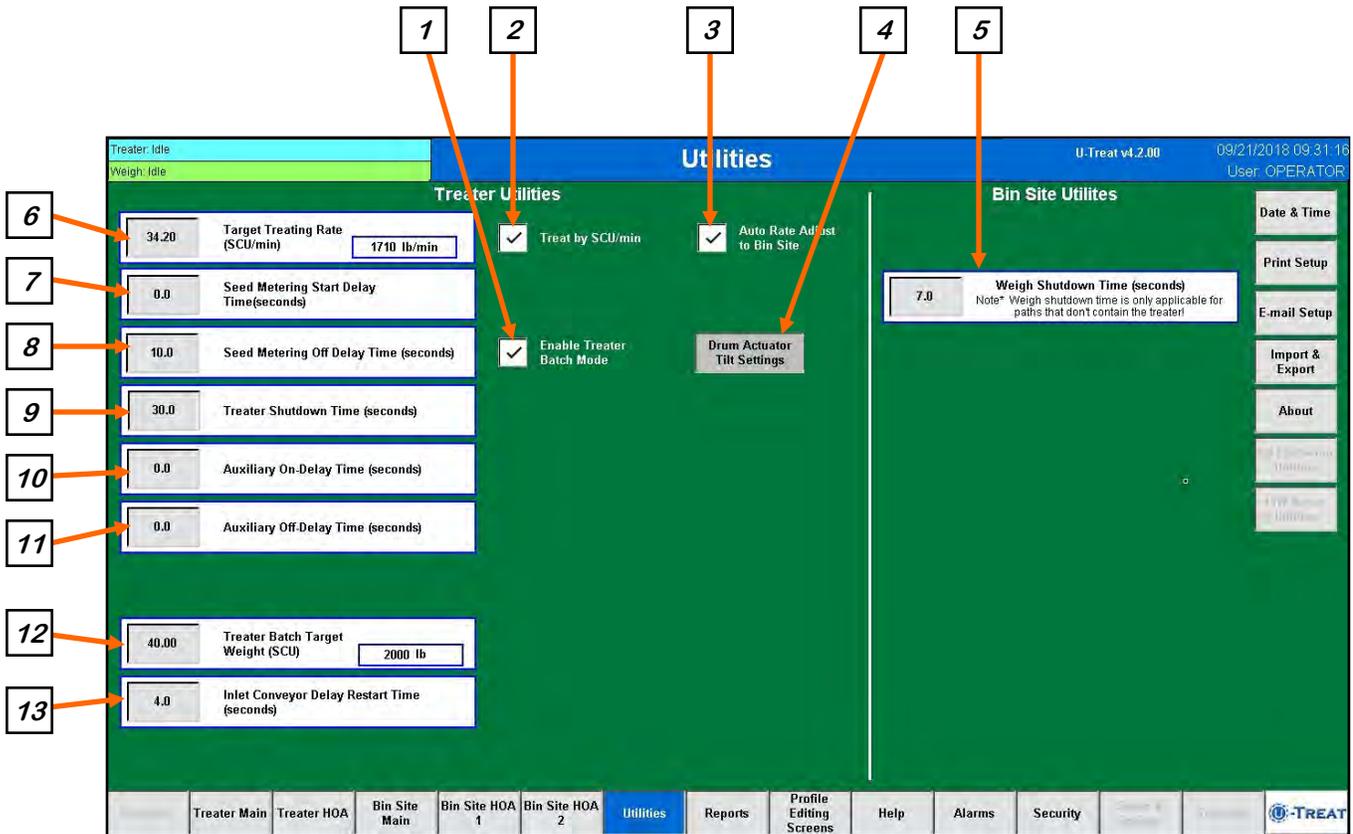
**23. AIR VALVE CONTROL MODULE:** This module controls where liquid is diverted for each pump. When a desired pump is placed in the Hand mode, the RECIRC button will appear next to that pump control module. In this mode, liquid is pumped out of its desired tank, through the air actuated 3-way valve manifold and back into the mix tank. When the RECIRC. button is pressed, the icon will change to PROCESS. In this mode, liquid is diverted from the air actuated 3-way valve, to the atomizer. When the Off button is pressed the pump will go back to RECIRC. When the pump is placed in the Auto mode the Air Valve Control cannot be accessed.  
(Optional feature)

**24. TOTALIZER:** Displays in real time the amount of chemical that has been applied. If the pump is set in the Hand mode, pushing the button will reset it to zero.

**25. SCALE:** This indicates the weight of the chemical detected from the scale head on pump stands that are equipped with a scale.

**WB TREATER UTILITIES SCREEN**

This screen allows the operator to set various system parameters and gives access to the Date & Time, Print Setup, E-mail Setup, Import & Export and current program release Information screens.



**NOTICE**

When buttons 5 - 13 are pressed, a numeric touch pad will appear allowing the operator to enter in a number for that particular parameter.

**AVIS**

Lorsque les boutons sont pressés 5 - 13, un pavé tactile numérique se affiche permettant à l'opérateur d'entrer dans un certain nombre de ce paramètre particulier.

## WB TREATER UTILITIES SCREEN DESCRIPTIONS

**1. TREATER BATCH MODE:** When this box is checked, the operator may enter a target weight for a run. When the treater reaches the desired weight, the weighing device will stop and a Next Batch button will appear on the treater screen. The operator will watch until all of the seed has discharged from the drum. They may then replace the full box with an empty one and press the Next Batch button to continue treating.

**2. TREAT BY SCU / MIN:** When this box is checked, the primary Target Treating Rate will be calculated in Seed Count Units per minute. Unchecked, it will be calculated in pounds per minute.

**3. AUTO RATE ADJUST TO BIN SITE:** (Only present when treater is used with a Tri - Flo® and USC Bin Site Automation). When this box is checked, Target Treating Rate will automatically be adjusted to 2% slower than the bin site.

### **4. DRUM ACTUATOR TILT SETTINGS:**

Pressing this button will display a popup where the operator can change the drum tilt settings. Startup Drum Tilt is the degrees the operator wishes the drum to be at when starting a run. Normal drum tilt is the desired tilt during the treating process. Shutdown drum tilt is the tilt setting during the shutdown process. Totalizer Weight to Start Normal Operation is the amount of seed needed to be calculated through the metering device to move the tilt from the startup to the normal tilt setting. Deadband degree is used to say when the drum is tilted close enough to its desired tilt to stop moving and Shutdown Time to Reset Drum Tilt is the number of seconds from the time the shutdown process begins for the drum angle to be set back to the Start up position.



Drum Tilt Actuator Calibration	
1.5	Startup Drum Tilt ( + / - 0.2° )
-2.0	Normal Drum Tilt ( + / - 0.2° )
-4.0	Shutdown Drum Tilt ( + / - 0.2° )
200	Totalizer Weight to Start Normal Operation
0.35	Deadband Degree
50.0	Shutdown Time to Reset Drum Tilt (seconds)

**5. WEIGH SHUTDOWN TIME (seconds):** This delay is to add run time for the outlet conveyor being used under a diverter when the seed path includes a weighing device but does not include treater. This is to ensure all seed for the run has been moved and the conveyor is empty before shutting down.

**6. TARGET TREATING RATE:** Pressing this button allows the operator to adjust the estimated treating rate in pounds or SCU's per minute. This number is used by the system to control the rate of the seed wheel and pumps.

## **WB TREATER UTILITIES SCREEN DESCRIPTIONS**

**7. SEED METERING START DELAY TIME (seconds):** This start delay time is similar to the pump start delay time and is based on seed being detected in the metering device. In the Weigh Belt the proximity switch is directly above the belt.

**8. SEED METERING OFF DELAY TIME (seconds):** This off delay time is similar to the pump start delay time and is based on seed being detected in the metering device. In the Weigh Belt the proximity switch is directly above the belt.

**9. TREATER SHUTDOWN TIME (Seconds):** Pressing this button allows the operator to adjust the delay shutdown time of the seed treater after the Shutdown button has been pressed after a run. This time will allow the seed treater and any conveyors to completely clean out.

**10. AUXILIARY ON DELAY TIME (Seconds):** Pressing this button allows the operator to adjust the on delay from the time the proximity switch directly above the weigh belt detects seed to the time a signal is sent to an auxiliary device connected to the system to start.

**11. AUXILIARY OFF DELAY TIME (Seconds):** Pressing this button allows the operator to adjust the off delay from the time the proximity switch directly above the weigh belt no longer detects seed to the time a signal is sent to an auxiliary device connected to the system to stop.

**12. TREATER BATCH TARGET WEIGHT:** When operating in Batch mode, this is where you define the target weight for each individual batch.

**13. INLET CONVEYOR DELAY RESTART TIME (Seconds):** Pressing this button allows the operator to adjust the restart time of the inlet conveyor after the proximity switch located at the top of the inlet hopper above the weigh belt no longer detects seed.

# BATCH HOPPER AUTOMATION SECTION C-5

## BATCH HOPPER MAIN SCREEN

This screen informs the operator of the status of all system motors and electrical devices and allows for control / adjustment of system operations.

The screenshot shows the 'Bin Site Main' interface. At the top, it displays 'Treater: Idle' and 'Weigh: Idle'. The main area is divided into several sections:

- Left Panel (1-11):** A vertical list of motor status indicators. 'OUTLET CNVR' is 'ON' (green), while others are 'OFF' (red).
- Center (10):** A large 3D model of a hopper labeled 'BIN #1'. It shows 'Name: SOYBEANS', 'Variety: ABCDEF', 'Lot Number: 123456', 'Seed/lb: 2800 lb', 'Inventory Weight: 38796 lb', 'Inventory SCU: 775.92 SCU', 'Inventory Capacity: 78 %', and 'Cup Weight: 3.65 lb'. A 'Shutdown in Progress' banner is overlaid on the hopper.
- Right Panel (3-8):** Control and data fields. Includes 'Active Seed path' (SEED PATH #1), 'Customer' (CUSTOMER #1), 'Flow Rate' (1548.0 lb/min), and 'Travel Time' (15.0 sec). A 'Shutting Down...' indicator shows '17.4 seconds'. Below are 'Post-Treater Diverter' (Left) and 'Pre-Treater Diverter' (Treat) buttons.
- Bottom Right (16-19):** Weight tracking section with 'Current Batch Weight' (0 lb), 'Treat Hopper Weight' (0 lb), 'Final Batch Weight' (0 lb), and 'Target Weight' (2000.0 lb and 40.00 SCU).
- Bottom (12-15):** Navigation tabs including 'Bin Site Main', 'Bin Site HOA 1', 'Bin Site HOA 2', 'Utilities', 'Reports', 'Profile Editing Screens', 'Help', 'Alarms', and 'Security'. 'Pause' and 'Start Setup' buttons are also present.

ENSURE ALL E-STOPPS ARE NOT ENGAGED AND ALL PANELS ARE POWERED ON.

THEN, PRESS THE RESET BUTTON TO CLEAR THE E-STOP

**BATCH HOPPER MAIN SCREEN DESCRIPTIONS**

**1. CONVEYOR MOTOR STATUS INDICATOR:** Informs the operator if a particular conveyor motor is on or off.

**2. SYSTEM SHUTDOWN INDICATOR:** Informs the operator that the system is in the process of shutting down. The timer in the middle counts down how many seconds are left before shutdown is complete. When the shutdown timer begins, a banner appears above the bin that states Shutdown in Progress.

**3. ACTIVE SEED PATH:** This display shows which of the pre-defined seed paths for the seed to follow that has been chosen from either the treater or bin site start popup screens. This can include bypassing the treater with a diverter and any necessary conveyors. The outlet paths are customizable and must be set by someone with administrative privileges. Active mode will run both the bin site and treater in sequence with all corresponding conveyors. Manual mode will run just the bin site and the operator will need to go to the treater screen to start the treating process.

**4. CUSTOMER :** This displays the current customer for the run. If a new customer is needed for a new run you will select it after hitting the start button.

**5. FLOW RATE:** Informs the operator of the flow rate of seed from the currently selected bin.

**6. TRAVEL TIME:** Informs the operator of the amount of time seed takes to flow from the currently selected bin to the batch hopper.

**7. PRE-TREAT DIVERTER INDICATOR (optional):** Informs the operator if the diverter is currently in the treat or bypass position. This indicator will only be present if the Treater has an automated bin site with a pre treat diverter.

**8. POST-TREATER DIVERTER INDICATOR (optional):** Informs the operator if the diverter is currently in the left or right position. This indicator will only be present if the Treater has an automated bin site with a post treat diverter.

**9. CURRENT BIN SELECTED:** Indicates the currently selected bin.

**10. CURRENT BIN INFO:** Displays the bin information that has been entered into the currently selected bin. Includes Name, Variety, Lot Number, Seeds per pound, remain inventory by weight and percentage.

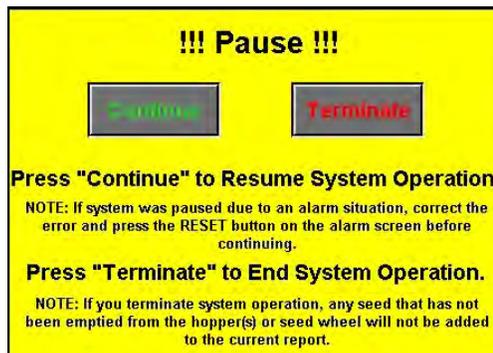
**11. INVENTORY LEVEL:** Is a graphical representation in yellow showing how much seed is in the bin.

**12. BIN SLIDE GATE INDICATOR:** Informs the operator of the slide gate position. If it is green the gate is open. If it is red the gate is closed.

## BATCH HOPPER MAIN SCREEN DESCRIPTIONS

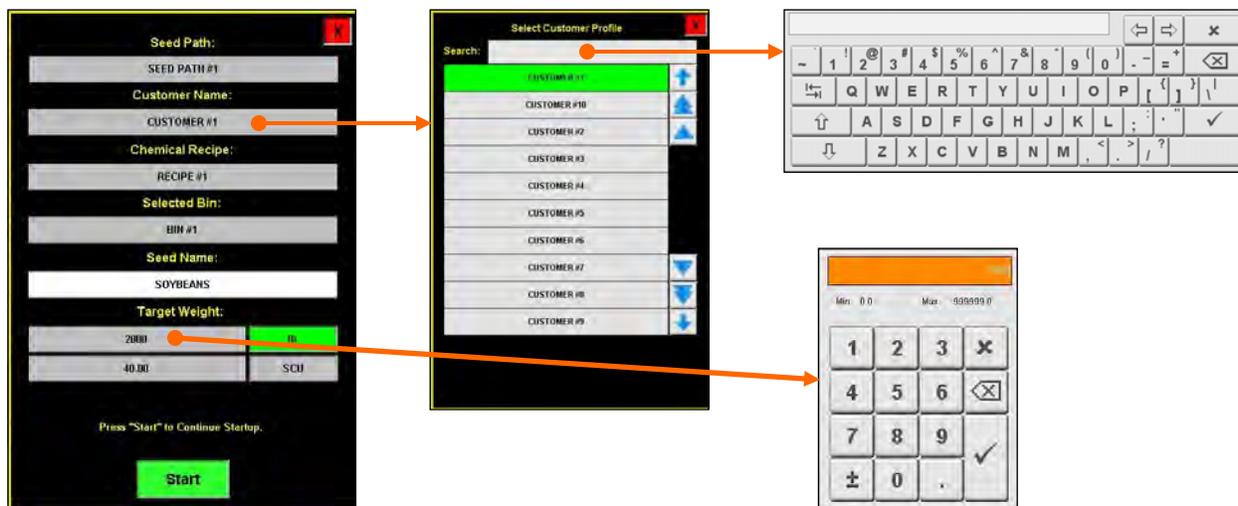
### 13. PAUSE:

Once the Start button has been pushed and the system begins to operate, the Pause button appears. Pressing it will stop the run in progress. If the system was automatically paused due to an alarm situation, correct the error then press the reset button on the control panel. The operator may now press the Continue button to resume the run. If they press the Terminate button, any seed that has not been emptied from the hopper or seed wheel will not be added to the current report.



**14. START SETUP:** This is used to start the machine after all motors have been placed into the Auto position. Press the button and a pop-up window appears. You may select the seed path, customer name, chemical recipe and bin by selecting one of the grey boxes. Search the listing for an existing entry by typing their name in the search field or using the navigation arrows. When all the information has been added enter a target weight, then press Start to begin the run. Once the system begins to operate it becomes the Shutdown button.

**15. BATCH WEIGH HOPPER SLIDE GATE INDICATOR:** Informs the operator of the status of the air-actuated slide gate located at the bottom of the batch hopper. Green indicating the open position and red for the closed position.



**BATCH HOPPER MAIN SCREEN DESCRIPTIONS**

**15. START SETUP (Continued):** If the operator is running from a Pro Box Hopper, a verification screen appears to allow them to enter the seed type. Select the seed type box and a popup will appear. Choose the desired seed type. The seed variety and lot number will automatically update. Enter the seeds per pound, cup weight if a seed wheel is being used for the seed metering device and a flow rate. After all the information is entered, press the start button to begin the run.

Bin Name:	Manual Hopper 1	
Seed Type:	SOYBEANS	
Seed Variety:	ABCDEF	
Lot Number:	123456	
Seed/lb:	2800	
Cup Weight:	3.65	lb
Set Treater Flow Rate:	34.20	SCU/min

\*Treater will not auto adjust flow rate during manual hopper operation!

**Manual Hopper Fill**

Start
Cancel

**16. CURRENT BATCH WEIGHT:** Informs the operator of the current running total of seed that has entered the batch hopper system for this particular run of seed.

**17. TARGET WEIGHT:** This displays the target weight and target seed count units requested. This may be changed for a new run on the Start Setup popup screen where the operator enters the amount of seed that is to be pulled from the selected bin. The operator may also select in seed count units (SCU). If SCU is selected, the system will base the units upon the seed count defined for each product on the Seed Editing screen. That number will vary depending on the type of seed.

**18. FINAL BATCH WEIGHT:** Informs the operator of the weight of seed that has been recorded by the scale printer and reporting system.

**19. TOTAL HOPPER WEIGHT:** Informs the operator of the current running total of seed that has entered the batch hopper at any given time.

**20. EMERGENCY STOP:** This blinking display is activated when the system's E-Stop button is activated.

**CONVEY-ALL HOPPER MAIN SCREEN**

If the weighing device is a Convey-All hopper system, there are three separate hoppers. Everything but the items shown below will function the same as the USC Batch Hopper shown on pages 107 through 110.

The screenshot displays the 'Bin Site Main' interface. On the left, a list of conveyor and underbin statuses is shown, with most set to 'OFF'. A central 'Shutdown in Progress' banner is present. The main area features a 3D model of a hopper system with three levels: Fill Hopper, Scale Hopper, and Surge Hopper. Each level has a corresponding 'High Level' indicator (ON/OFF). To the right, operational parameters like 'Active Seed path', 'Flow Rate', and 'Travel Time' are displayed. At the bottom right, weight-related data such as 'Current Batch Weight', 'Total Hopper Weight', and 'Target Weight' are shown. A navigation bar at the bottom includes tabs for 'Treater Main', 'Bin Site Main', and other system functions. Five callout boxes (21-25) are overlaid on the screen, pointing to the 'Fill Discharge Valve' indicator (21), the 'Scale Discharge Valve' indicator (22), the 'Surge Discharge Valve' indicator (23), the 'Fill Hopper High Level' indicator (24), and the 'Surge Hopper High Level' indicator (25).

**21. FILL HOPPER SLIDE GATE INDICATOR:** Informs the operator of the status of the air-actuated slide gate located at the bottom of the fill hopper. Green indicating the open position and red for the closed position.

**22. SCALE HOPPER SLIDE GATE INDICATOR:** Informs the operator of the status of the air-actuated slide gate located at the bottom of the scale hopper. Green indicating the open position and red for the closed position.

**23. SURGE HOPPER SLIDE GATE INDICATOR:** Informs the operator of the status of the air-actuated slide gate located at the bottom of the surge hopper. Green indicating the open position and red for the closed position.

## **CONVEY-ALL HOPPER MAIN SCREEN**

**24. FILL HOPPER HIGH LEVEL INDICATOR:** Informs the operator when the proximity switch located in the top of fill is detecting seed. When the indicator is active it turns green and is ON. This will turn off the signal to the Inlet Conveyor control panel shutting down the conveyor to prevent overfilling.

**25. SURGE HOPPER HIGH LEVEL GATE INDICATOR:** Informs the operator when the proximity switch located in the top of the surge hopper is detecting seed. When the indicator is active it turns green and is ON. When the indicator is active it will close the discharge gate on the scale hopper to prevent overfilling.

## **BATCH HOPPER “H-O-A” (HAND-OFF-AUTO) SCREENS**



**! AVERTISSEMENT**

These H-O-A buttons force the selected component to be energized (HAND), de-energized (OFF), or automatically energized by the normal logic sequence (AUTO).

The HAND function will cause the component to operate independent of whatever else the system is trying to do automatically. These functions should not normally be used if the automated sequencing is active. **Be sure to understand the impact of energizing or de-energizing a component with the settings before using them. These commands are not a substitute for Lockout/Tagout procedures when working on or near this machine. Use proper lockout/tagout procedures to disable the equipment before servicing it.**

Ces boutons HOA forcent le composant sélectionné pour être excité (Hand), hors tension (Off), ou automatiquement alimentés par la séquence logique normale (Auto).

La fonction de la main provoquera la composante de fonctionner indépendamment de tout ce que le système essaie de faire automatiquement. Ces fonctions ne devraient normalement pas être utilisés si le séquençage automatisé est actif. **Assurez-vous de comprendre l'impact de énérgisant ou désexciter un composant avec la main / Off paramètres avant de les utiliser. Ces commandes ne sont pas un substitut pour les procédures de verrouillage / étiquetage lorsque vous travaillez sur ou près de cette machine. Utilisez les procédures appropriées de verrouillage / débranchement pour désactiver l'équipement avant de l'entretenir.**

## BATCH HOPPER BIN SITE HOA SCREEN

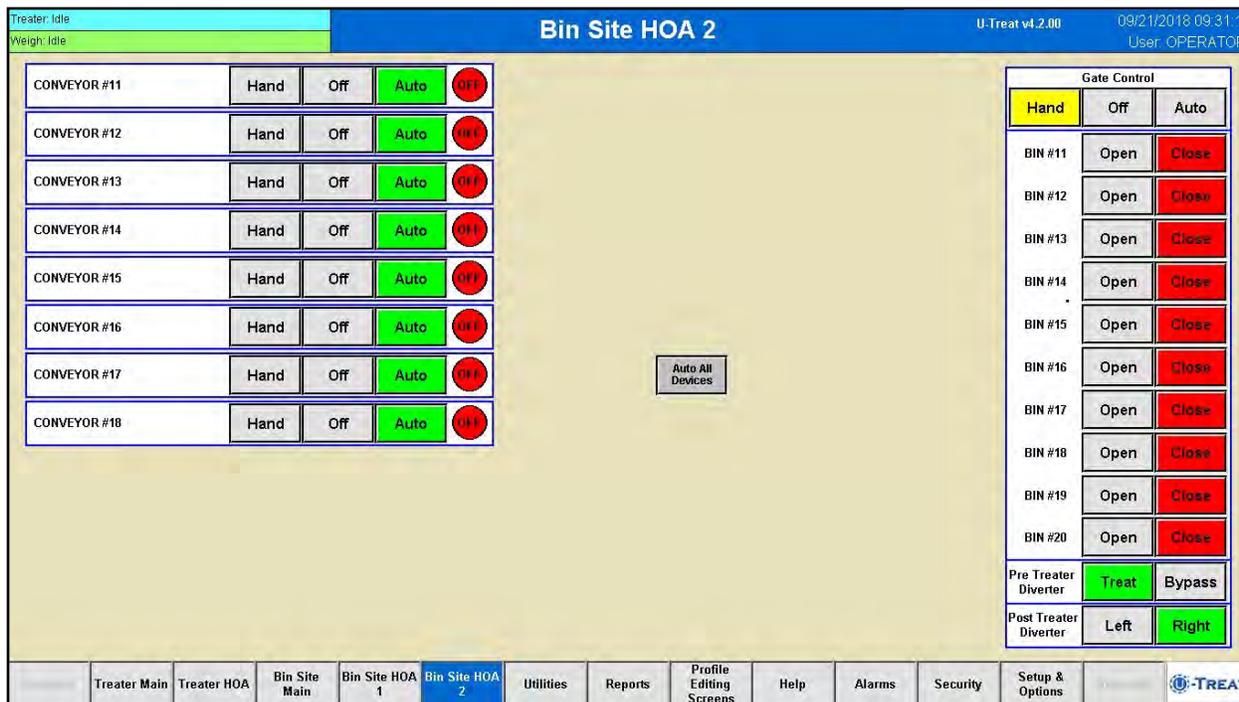
Hand-Off-Auto controls are provided for most of the automated devices in the system, and are accessed on this screen. All conveyors, weighing devices and bin slide gates are controlled here. If the underbin conveyors have an encoder installed, the counts per minute indicators are also displayed.

The conveyors, bin slide gates and diverters are defined when the system is installed. Changes to them must be made by someone with administrative system login privileges. If the bin site has more than eight conveyors or ten bins, they will be controlled on the Bin Site HOA 2 screen (see page 115). The system is capable of handling twenty bins. It is also capable of using 20 conveyors. An Inlet and outlet conveyor and 18 additional conveyors defined by the customer.

The screenshot displays the 'Bin Site HOA 1' control interface. At the top, it shows 'Treater: Idle' and 'Weigh: Idle' on the left, the title 'Bin Site HOA 1' in the center, and 'U-Treat v4.2.00' and '09/21/2018 09:31:18 User: OPERATOR' on the right. The main area contains several control panels:

- Conveyors (Callout 1):** A list of six conveyors: UNDERBIN #1 CNVR, UNDERBIN #2 CNVR, TRANSFER CNVR, SCALE FILL CNVR, OUTLET CNVR, and PRO BOX CNVR. Each has 'Hand', 'Off', and 'Auto' buttons, a status indicator (ON/OFF), and a 'Reverse' button.
- Underbin Encoders (Callout 3):** Two encoders, Encoder 1 and Encoder 2, each showing '0.0' CTS/min.
- Gate Control (Callout 4):** A panel for ten bins (BIN #1 to BIN #10) and two diverters. Each bin has 'Open' and 'Close' buttons. The Pre Treater Diverter has 'Treat' and 'Bypass' buttons, and the Post Treater Diverter has 'Left' and 'Right' buttons.
- Auto All Devices (Callout 5):** A central button to toggle all devices to auto mode.
- Weigh Hopper Scale Discharge Valve (Callout 6):** A control panel with 'Hand', 'Off', 'Auto' buttons, a 'CTS' indicator, and 'Open'/'Close' buttons.
- Navigation Bar (Callout 7):** A bottom bar with menu items: Treater Main, Treater HOA, Bin Site Main, Bin Site HOA 1 (selected), Bin Site HOA 2, Utilities, Reports, Profile Editing Screens, Help, Alarms, Security, Setup & Options, and the U-TREAT logo.

**BATCH HOPPER BIN SITE HOA SCREEN DESCRIPTIONS**



**1. CONVEYOR CONTROL MODULES:** These modules control the function of the conveyors. The Hand button will place a conveyor in the manual mode of operation. The Off button will turn the associated device in the Off mode of operation. The Auto button will place the device in the automatic mode of operation. The motor will not operate in this mode unless all other needed devices are in the Auto mode and the Start button on the Start Setup popup screen.

**2. REVERSE CONVEYOR CONTROL:** This button operates in the manual mode only. Pressing the Reverse button allows the operator to run the conveyor in reverse. **ALWAYS ENSURE THE BELT IS IMMEDIATELY AND PROPERLY ALIGNED WHEN RUNNING IN REVERSE! BELTS WILL OFTEN SHIFT ALIGNMENT WHEN THEIR DIRECTION OF TRAVEL IS REVERSED. BE SURE TO RE-CHECK THE ALIGNMENT AFTER IT IS RETURNED TO THE FORWARD DIRECTION.** This button will only be present if the option is set during installation. It can be used on any conveyor but is typically only used on the underbin conveyors.

**3. UNDERBIN ENCODER CTS / min DISPLAY (optional):** This display shows the current counts per second that the underbin encoder is reading. This allows the bin site system to be sure that the underbin conveyor is running properly and that the belt is not slipping. This display will only be present if the bin site system has an encoder installed on the underbin conveyor. If not working correctly, calibration of the seed flow will be affected.

## **BATCH HOPPER BIN SITE HOA SCREEN DESCRIPTIONS**

**4. BIN SLIDE GATES CONTROL MODULE:** If the gate control is in Auto, the gates will be opened and closed automatically by the automated program when the operator presses the Start button on the Start Setup popup screen. Pressing the Hand button allows the operator to manually control the operation of the slide gates that are located underneath each bin. The bin slide gates

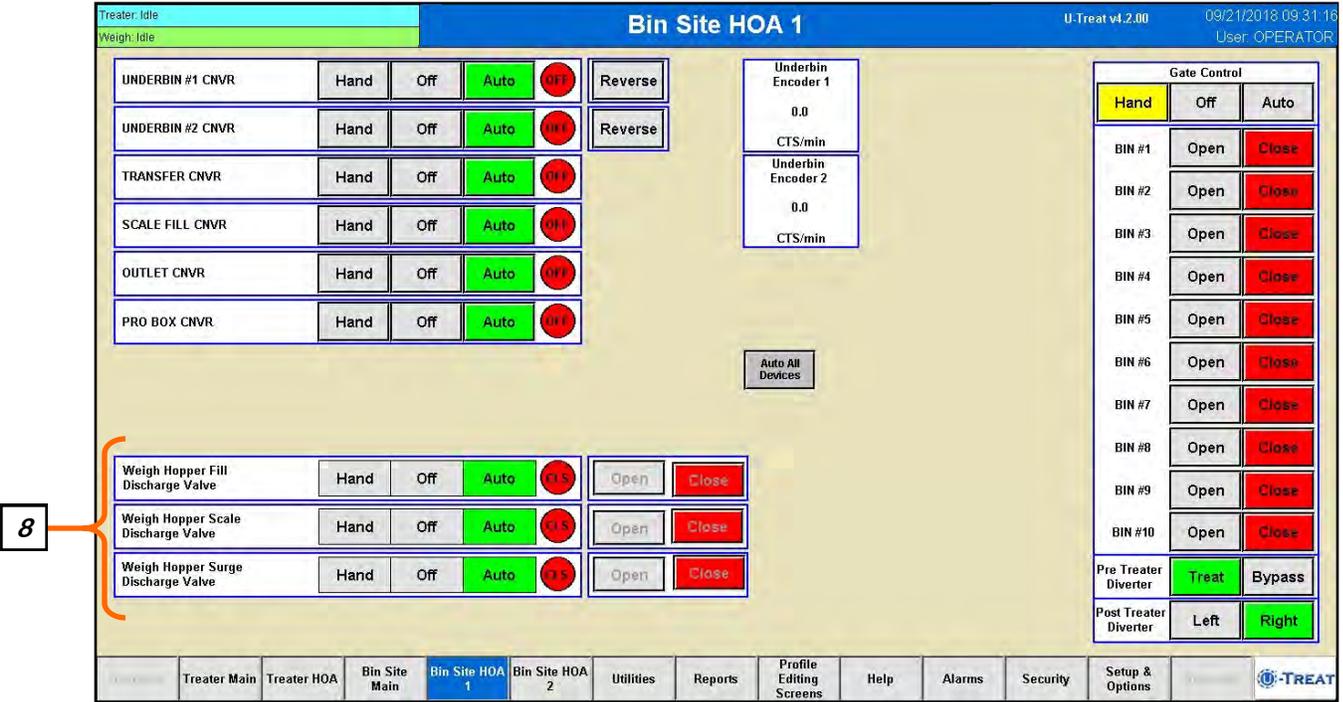
**5. WEIGH HOPPER DISCHARGE VALVE CONTROL MODULE:** This module controls the function of the hopper discharge valve located at the bottom of the batch hopper. The Hand button will place the discharge valve in the manual mode of operation. By pressing and holding for two seconds the Open or Closed button the operator can manually open or close the hopper discharge gate. The round indicator displays the valve status. CLS in red for closed and OPN in green for open. The Off button will turn the associated device in the Off mode of operation. The Auto button will place the device in the automatic mode of operation and would then be controlled by the batch hopper program.

**6. AUTO ALL DEVICES:** When this button is pushed, it globally changes all bin site HOA settings to the Auto mode of operation. If the bin site is operating with a treater, this button will also change anything on the treater HOA screen.

**7. TREATER DIVERTER CONTROL MODULE (optional):** This module controls the function of the diverter. The module allows the operator to choose if the diverter is in the treat or bypass mode. In treat mode seed will be run through the treater and in bypass mode seed will be diverted so that it does not pass through the treater. This module will only be present if the batch hopper system has a pre treat or post treat diverter.

**CONVEY-ALL HOPPER HOA SCREEN**

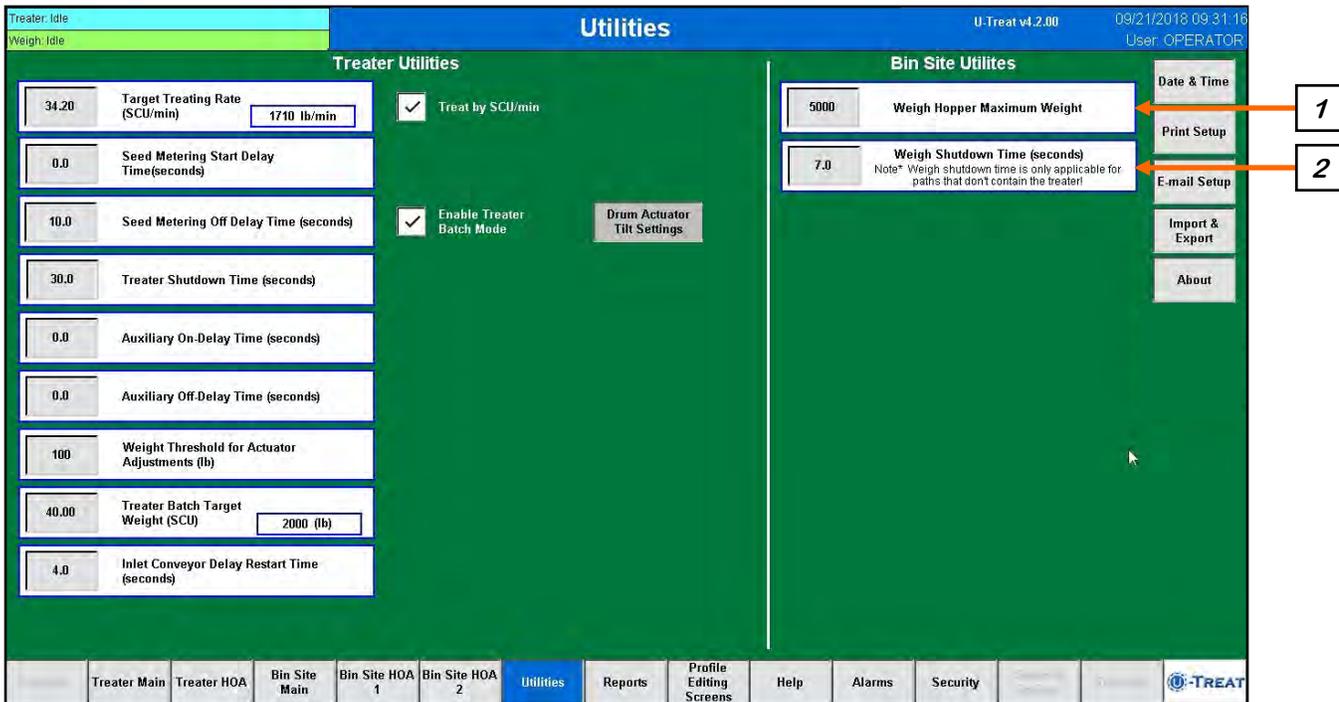
If the weighing device is a Convey-All hopper system, there are three separate hoppers. Everything but the items shown below will function the same as the USC Batch Hopper shown on pages 114 through 116.



**8. HOPPER DISCHARGE VALVE CONTROL MODULE:** These modules control the function of the Fill, Scale and Surge hopper discharge valves located at the bottom of each of the three individual hoppers. The Hand button will place the discharge valve in the manual mode of operation. By pressing and holding for two seconds the Open or Closed button the operator can manually open or close the hopper discharge gate. The round indicator displays the valve status. CLS in red for closed and OPN in green for open. The Off button will turn the associated device in the Off mode of operation. The Auto button will place the device in the automatic mode of operation and would then be controlled by the Convey-All section of the U-Treat program.

## BATCH HOPPER UTILITIES SCREEN

This screen allows the operator to set various system parameters and gives access to the Date & Time, Print Setup, E-mail Setup, Import & Export and current program release Information screens.



**1. WEIGH HOPPER MAXIMUM WEIGHT:** Pressing this button allows the operator to adjust the maximum amount of seed that the scale can hold.

**2. WEIGH SHUTDOWN TIME (seconds):** This delay is to add run time for the outlet conveyor being used under a diverter when the seed path includes a weighing device but does not include treater. This is to ensure all seed for the run has been moved and the conveyor is empty before shutting down

### NOTICE

When buttons 1 - 2 are pressed, a numeric touch pad (right) will appear allowing the operator to enter in a number for that particular parameter.

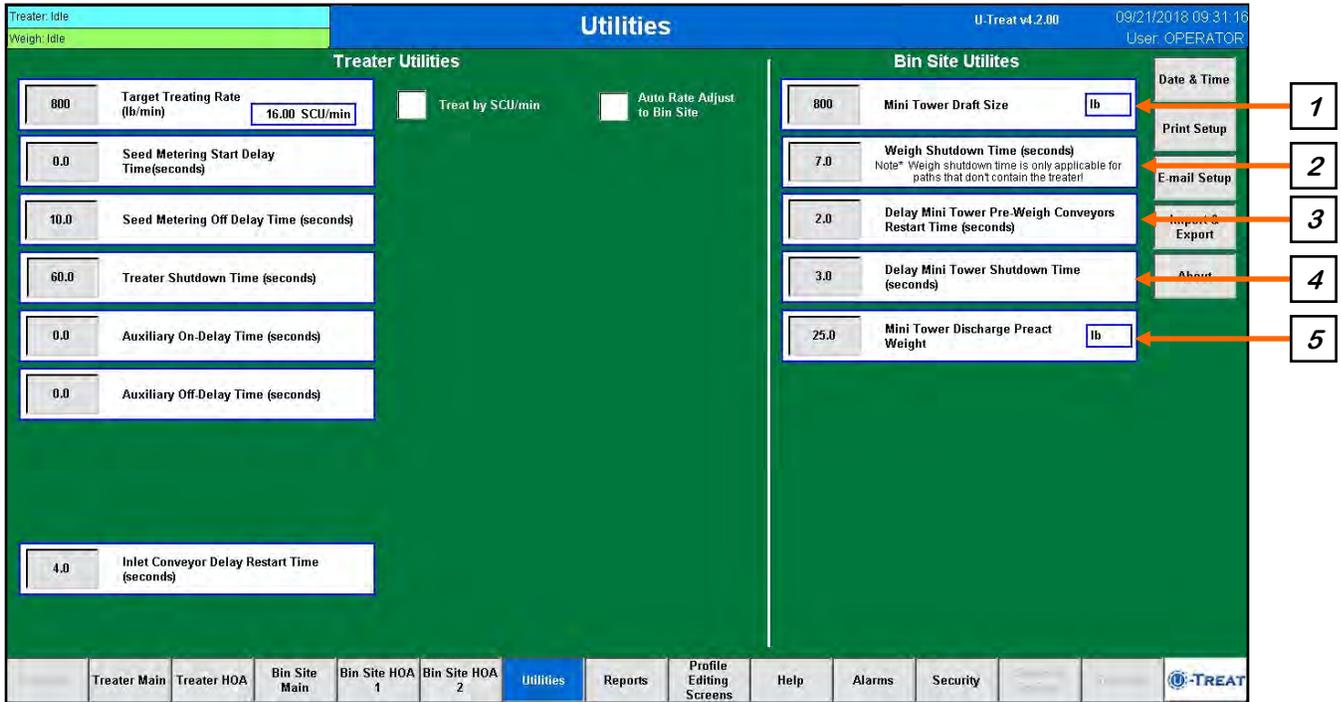
### AVIS

Lorsque les boutons sont pressés 1 - 2, un pavé tactile numérique (à droite) se affiche permettant à l'opérateur d'entrer dans un certain nombre de ce paramètre particulier.



## CONVEY-ALL HOPPER UTILITIES SCREEN

This screen allows the operator to set various system parameters and gives access to the Date & Time, Print Setup, E-mail Setup, Import & Export and current program release Information screens.



### NOTICE

When buttons 1 - 5 are pressed, a numeric touch pad (right) will appear allowing the operator to enter in a number for that particular parameter.

### AVIS

Lorsque les boutons sont pressés 1 - 5, un pavé tactile numérique (à droite) se affiche permettant à l'opérateur d'entrer dans un certain nombre de ce paramètre particulier.



## **CONVEY-ALL HOPPER UTILITIES SCREEN**

**1. MINI TOWER DRAFT SIZE:** Pressing this button allows the operator to adjust the maximum amount of seed that the scale can hold.

**2. WEIGH SHUTDOWN TIME (seconds):** This delay is to add run time for the outlet conveyor being used under a diverter when the seed path includes a weighing device but does not include treater. This is to ensure all seed for the run has been moved and the conveyor is empty before shutting down.

**3. DELAY MINI TOWER PRE-WEIGH CONVEYORS RESTART TIME (seconds):** Pressing this button allows the operator to adjust the restart time of the inlet conveyor after the proximity switch located at the top of the fill hopper no longer detects seed.

**4. DELAY MINI TOWER SHUTDOWN TIME (seconds):** Pressing this button allows the operator to adjust the delay shutdown time of the seed treater after the Shutdown button has been pressed after a run. This time will allow all three mini tower hoppers to clear out completely.

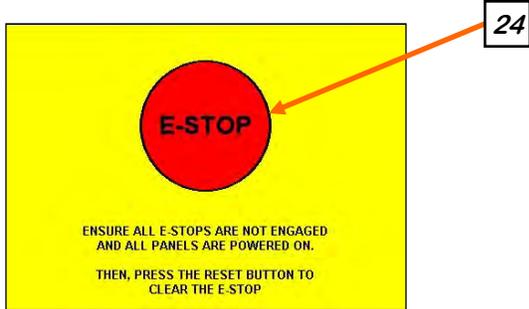
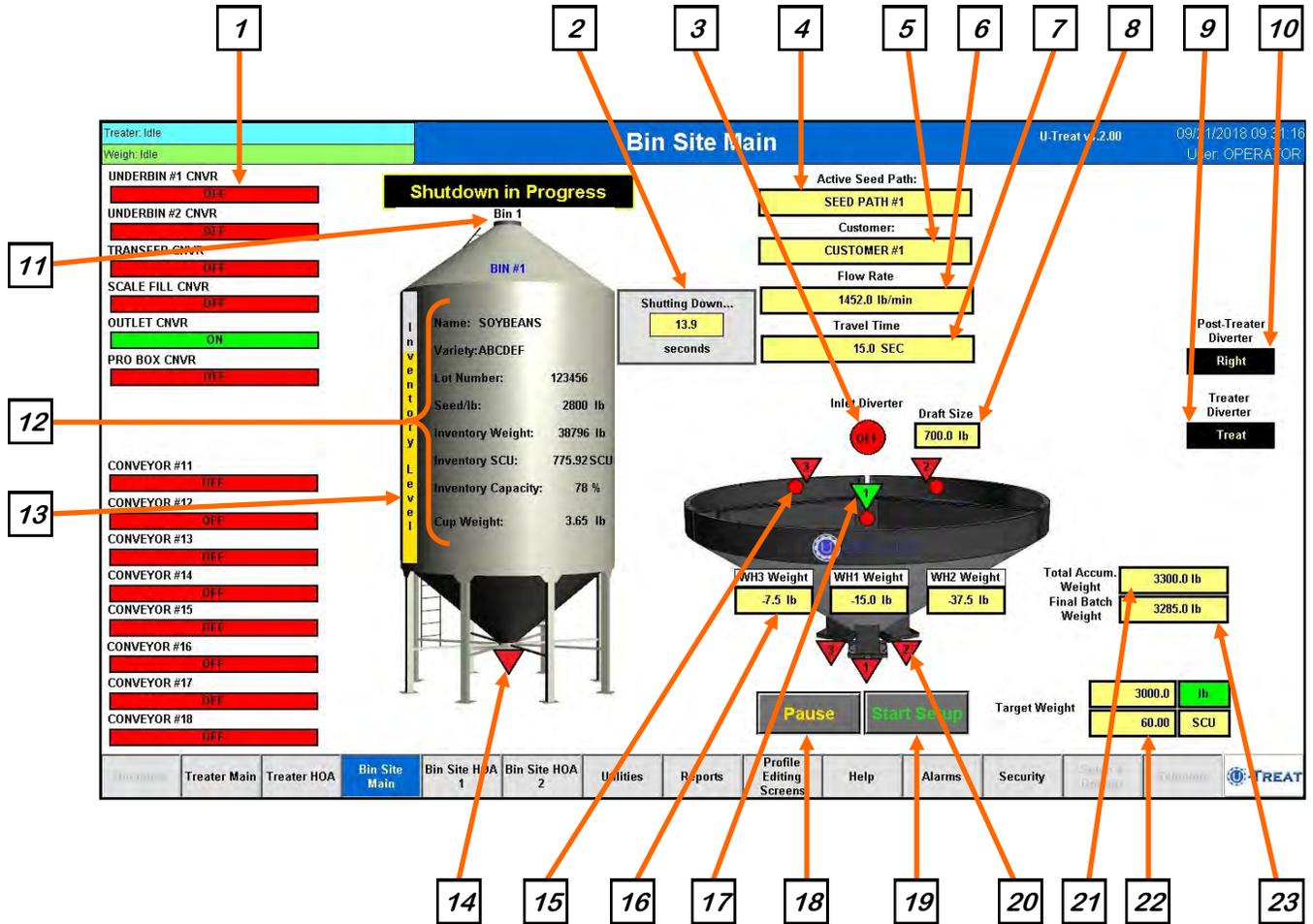
**5. MINI TOWER DISCHARGE PRACT WEIGHT:** Pressing this button allows the operator to enter the weight left in the scale hopper that will trigger the discharge gate to close.

# TRI-FLO® AUTOMATION

**SECTION C-6**

## TRI-FLO® BIN SITE MAIN SCREEN

This screen informs the operator of the status of all system motors and electrical devices and allows for control / adjustment of system operations.



## **TRI-FLO® BIN SITE MAIN SCREEN DESCRIPTIONS**

**1. CONVEYOR MOTOR STATUS INDICATOR:** Informs the operator if a particular conveyor motor is on or off.

**2. SYSTEM SHUTDOWN INDICATOR:** Informs the operator that the system is in the process of shutting down. The timer in the middle counts down how many seconds are left before shutdown is complete. When the shutdown timer begins, a banner appears above the bin that states Shutdown in Progress.

**3. TRI - FLO® INLET DIVERTER MOTOR STATUS INDICATOR:** Informs the operator if the inlet diverter motor is on or off.

**4. ACTIVE SEED PATH INDICATOR:** This display shows which of the pre-defined seed paths for the seed to follow that has been chosen from either the treater or bin site start popup screens. This can include bypassing the treater with a diverter and any necessary conveyors. The outlet paths are customizable and must be set by someone with administrative privileges. Active mode will run both the bin site and treater in sequence with all corresponding conveyors. Manual mode will run just the bin site and the operator will need to go to the treater screen to start the treating process.

**5. CUSTOMER:** This displays the current customer for the run. If a new customer is needed for a new run you will select it after hitting the start button.

**6. FLOW RATE:** Informs the operator of the flow rate of seed from the currently selected bin.

**7. TRAVEL TIME:** Informs the operator of the amount of time seed takes to flow from the currently selected bin to the batch hopper.

**8. DRAFT SIZE:** Is the seed weight that is to be loaded into each hopper before the system rotates and begins to fill the next hopper.

**9. TREAT DIVERTER INDICATOR (optional):** Informs the operator if the diverter is currently in the treat or bypass position. This indicator will only be present if the Treater has an automated bin site with a pre treat diverter.

**10. POST TREATER DIVERTER INDICATOR (optional):** Informs the operator if the diverter is currently in the left or right position. This indicator will only be present if the Treater has an automated bin site with a post treat diverter.

**11. CURRENT BIN SELECTED:** Indicates the currently selected bin.

**12. CURRENT BIN INFO:** Displays the bin information that has been entered into the currently selected bin. Includes Name, Variety, Lot Number, Seeds per pound, remain inventory by weight and percentage.

**TRI-FLO® BIN SITE MAIN SCREEN DESCRIPTIONS**

**13. INVENTORY LEVEL:** Is a graphical representation in yellow showing how much seed is in the bin.

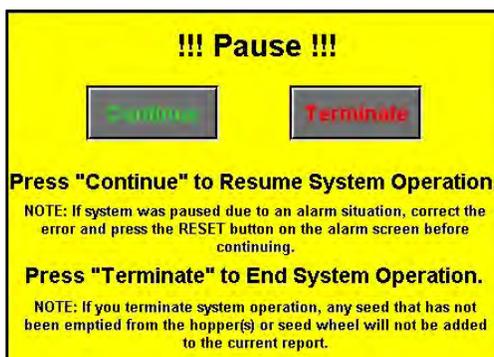
**14. BIN SLIDE GATE INDICATOR:** Informs the operator of the slide gate position. If it is green the gate is Open. If it is red the gate is Closed.

**15. SEED PROXIMITY INDICATOR:** Informs the operator when any one of the three hoppers is over filled. When this occurs the indicator will be green.

**16. WEIGH HOPPER WEIGHT:** Gives the operator a real time running weight total for each of the three individual hoppers.

**17. INLET DIVERTER INDICATOR:** Informs the operator which one of the three weigh hoppers the diverter is in position to load seed into. The active hopper will be green.

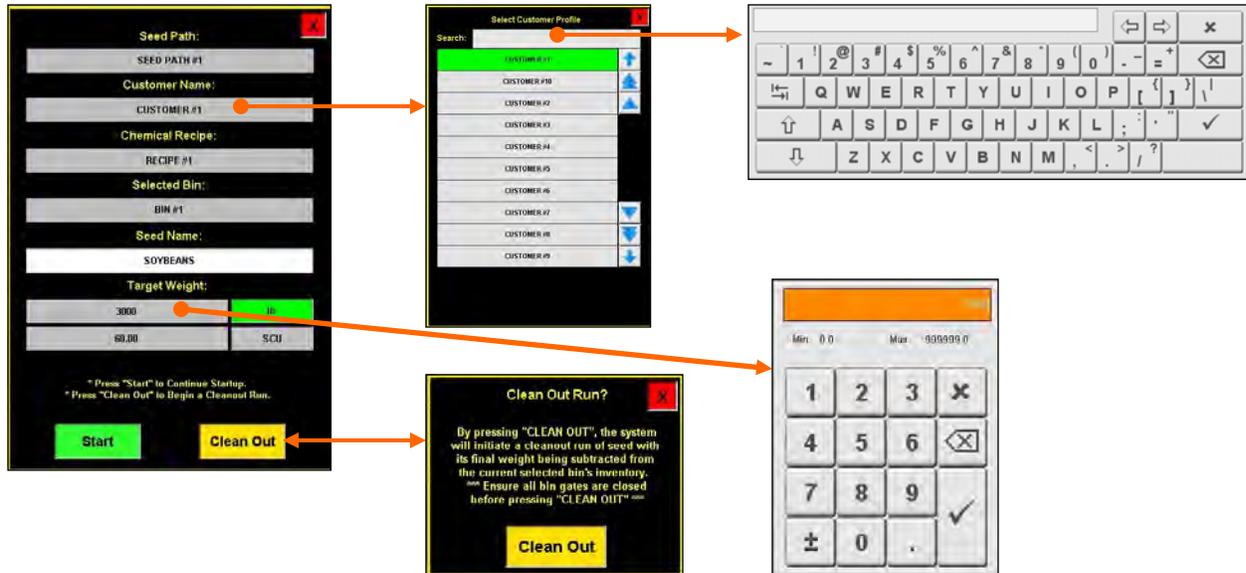
**18. PAUSE:** Once the Start button has been pushed and the system begins to operate, the Pause button appears. Pressing it will stop the run in progress. If the system was automatically paused by the system due to an alarm situation, correct the error then press the reset button on the control panel. The operator may now press the Continue button to resume the run. If they press the Terminate button, any seed that has not been emptied from the hopper or seed wheel will not be added to the current report.



**19. START SETUP:** This is used to start the machine after all motors have been placed into the Auto position. Press the button and a pop-up window appears. You may select the seed path, customer name, chemical recipe and bin by selecting one of the grey boxes. Search the listing for an existing entry by typing their name in the search field or using the navigation arrows. When all the information has been added enter a target weight, then press Start to begin the run. Once the system begins to operate it becomes the Shutdown button.

**TRI-FLO® BIN SITE MAIN SCREEN DESCRIPTIONS**

***19. START SETUP (Continued):***



If the operator is running from a Pro Box Hopper, a verification screen appears to allow them to enter the seed type. Select the seed type box and a popup will appear. Choose the desired seed type. The seed variety and lot number will automatically update. Enter the seeds per pound, cup weight if a seed wheel is being used for the seed metering device and a flow rate. After all the information is entered, press the start button to begin the run.

Bin Name:	Manual Hopper 1	
Seed Type:	SOYBEANS	
Seed Variety:	ABCDEF	
Lot Number:	123456	
Seed/lb.:	2800	
Cup Weight:	3.65	lb
Set Treater Flow Rate:	34.20	SCU/min

Treater will not auto adjust flow rate during manual hopper operation!

**Manual Hopper Fill**

Start
Clean Out
Cancel

By pressing "Start" the system will automatically set:  
 No Seed Flow = 10 minutes lb  
 &  
 "Target Weight" = 1,000,000.

## **TRI-FLO® BIN SITE MAIN SCREEN DESCRIPTIONS**

**20. WEIGH HOPPER SLIDE GATE INDICATORS:** Informs the operator of the status of the air-actuated slide gate located at the bottom of each hopper. Green indicating the open position and red for the closed position.

**21. TOTAL ACCUM. WEIGHT:** Informs the operator of the current running total of seed that has entered the Tri - Flo ® system for this particular run of seed.

**22. TARGET WEIGHT:** This displays the target weight and target seed count units requested. This may be changed for a new run on the Start Setup popup screen where the operator enters the amount of seed that is to be pulled from the selected bin. The operator may also select in seed count units (SCU). If SCU is selected, the system will base the units upon the seed count defined for each product on the Seed Editing screen. That number will vary depending on the type of seed.

**23. FINAL BATCH WEIGHT:** Informs the operator of the weight of seed that has been recorded by the scale printer and has exited the Tri - Flo ® system during a given run of seed.

**24. EMERGENCY STOP:** This blinking display is activated when the system's E-Stop button is activated.

## **TRI - FLO ® “H-O-A” (HAND-OFF-AUTO) SCREEN**

**! WARNING**



**! AVERTISSEMENT**

These H-O-A buttons force the selected component to be energized (HAND), de-energized (OFF), or automatically energized by the normal logic sequence (AUTO).

The HAND function will cause the component to operate independent of whatever else the system is trying to do automatically. These functions should not normally be used if the automated sequencing is active. **Be sure to understand the impact of energizing or de-energizing a component with the settings before using them. These commands are not a substitute for Lockout/Tagout procedures when working on or near this machine. Use proper lockout/tagout procedures to disable the equipment before servicing it.**

Ces boutons HOA forcent le composant sélectionné pour être excité (Hand), hors tension (Off), ou automatiquement alimentés par la séquence logique normale (Auto).

La fonction de la main provoquera la composante de fonctionner indépendamment de tout ce que le système essaie de faire automatiquement. Ces fonctions ne devraient normalement pas être utilisés si le séquençage automatisé est actif. **Assurez-vous de comprendre l'impact de énergisant ou désexciter un composant avec la main / Off paramètres avant de les utiliser. Ces commandes ne sont pas un substitut pour les procédures de verrouillage / étiquetage lorsque vous travaillez sur ou près de cette machine. Utilisez les procédures appropriées de verrouillage / débranchement pour désactiver l'équipement avant de l'entretenir.**

## TRI - FLO® HOA SCREENS

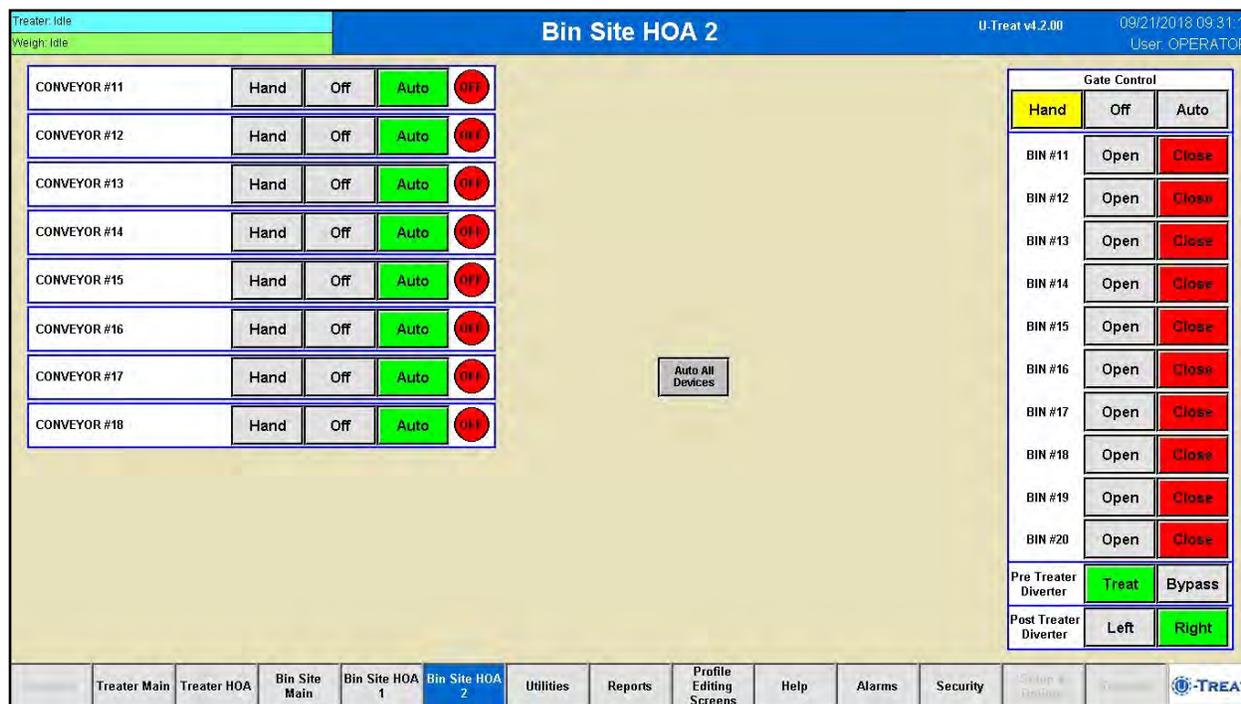
Hand-Off-Auto controls are provided for most of the automated devices in the system, and are accessed on this screen. All conveyors, weighing devices and bin slide gates are controlled here. If the underbin conveyors have an encoder installed, the counts per minute indicators are also displayed.

The conveyors, bin slide gates and diverters are defined when the system is installed. Changes to them must be made by someone with administrative system login privileges. If the bin site has more than eight conveyors or ten bins, they will be controlled on the Bin Site HOA 2 screen (see page 128).

The screenshot displays the 'Bin Site HOA 1' control interface. At the top, it shows system status: 'Treater: Idle', 'Weigh: Idle', 'U-Treat v4.2.00', and '09/21/2018 09:31:16 User: OPERATOR'. The main control area is divided into several sections:

- Conveyors (Callout 1):** A table with columns for device name, Hand, Off, Auto, and status. Devices include UNDERBIN #1 CNVR, UNDERBIN #2 CNVR, TRANSFER CNVR, SCALE FILL CNVR, OUTLET CNVR, and PRO BOX CNVR.
- Reverse Buttons (Callout 2):** Two 'Reverse' buttons are located to the right of the conveyor controls.
- Underbin Encoders (Callout 3):** Two boxes showing 'Underbin Encoder 1' and 'Underbin Encoder 2', both displaying '0.0 CTS/min'.
- Gate Control (Callout 4):** A table with columns for Hand, Off, and Auto. It lists BIN #1 through BIN #10, Pre Treater Diverter, and Post Treater Diverter.
- Auto All Devices (Callout 7):** A button labeled 'Auto All Devices' is located in the center of the screen.
- Diverters and Valves (Callout 5 and 6):** A section containing 'Inlet Diverter' and three 'Discharge Valve' entries, each with Hand, Off, Auto, and status controls.
- Navigation Bar (Callout 8):** A bottom bar with buttons for 'Treater Main', 'Treater HOA', 'Bin Site Main', 'Bin Site HOA 1', 'Bin Site HOA 2', 'Utilities', 'Reports', 'Profile Editing Screens', 'Help', 'Alarms', 'Security', and 'U-TREAT'.

**TRI - FLO ® HOA SCREEN DESCRIPTIONS**



**1. CONVEYOR CONTROL MODULES:** These modules control the function of the conveyors. The Hand button will place a conveyor in the manual mode of operation. The Off button will turn the associated device in the Off mode of operation. The Auto button will place the device in the automatic mode of operation. The motor will not operate in this mode unless all other needed devices are in the Auto mode and the Start button on the Start Setup popup screen.

**2. REVERSE CONVEYOR CONTROL MODULE:** This button operates in the manual mode only. Pressing the REVERSE button allows the operator to run the conveyor in reverse. **ALWAYS ENSURE THE BELT IS IMMEDIATELY AND PROPERLY ALIGNED WHEN RUNNING IN REVERSE! BELTS WILL OFTEN SHIFT ALIGNMENT WHEN THEIR DIRECTION OF TRAVEL IS REVERSED. BE SURE TO RE-CHECK THE ALIGNMENT AFTER IT IS RETURNED TO THE FORWARD DIRECTION.** This button will only be present if the option is set during installation. It can be used on any conveyor but is typically only used on the underbin conveyors.

**3. UNDERBIN ENCODER CTS / min DISPLAY (optional):** This display shows the current counts per second that the underbin encoder is reading. This allows the bin site system to be sure that the underbin conveyor is running properly and that the belt is not slipping. This display will only be present if the bin site system has an encoder installed on the underbin conveyor. If not working correctly, calibration of the seed flow will be affected.

**TRI - FLO ® HOA SCREEN DESCRIPTIONS**

**4. BIN SLIDE GATES CONTROL MODULE:** This module allows the operator to manually control the operation of the slide gates that are located underneath each bin. The bin slide gates will be opened and closed automatically when the operator presses the Start button on the Start Setup popup screen.

**5. INLET DIVERTER CONTROL MODULE :** This module controls the function of the inlet diverter. The Hand button will place the inlet diverter in the manual mode of operation. The Off button will turn the associated device in the Off mode of operation. The Auto button will place the device in the automatic mode of operation and would then be controlled by the Tri - Flo ® PLC program. When the (HOMED) indicator is green, the inlet is at the number 1 hopper.

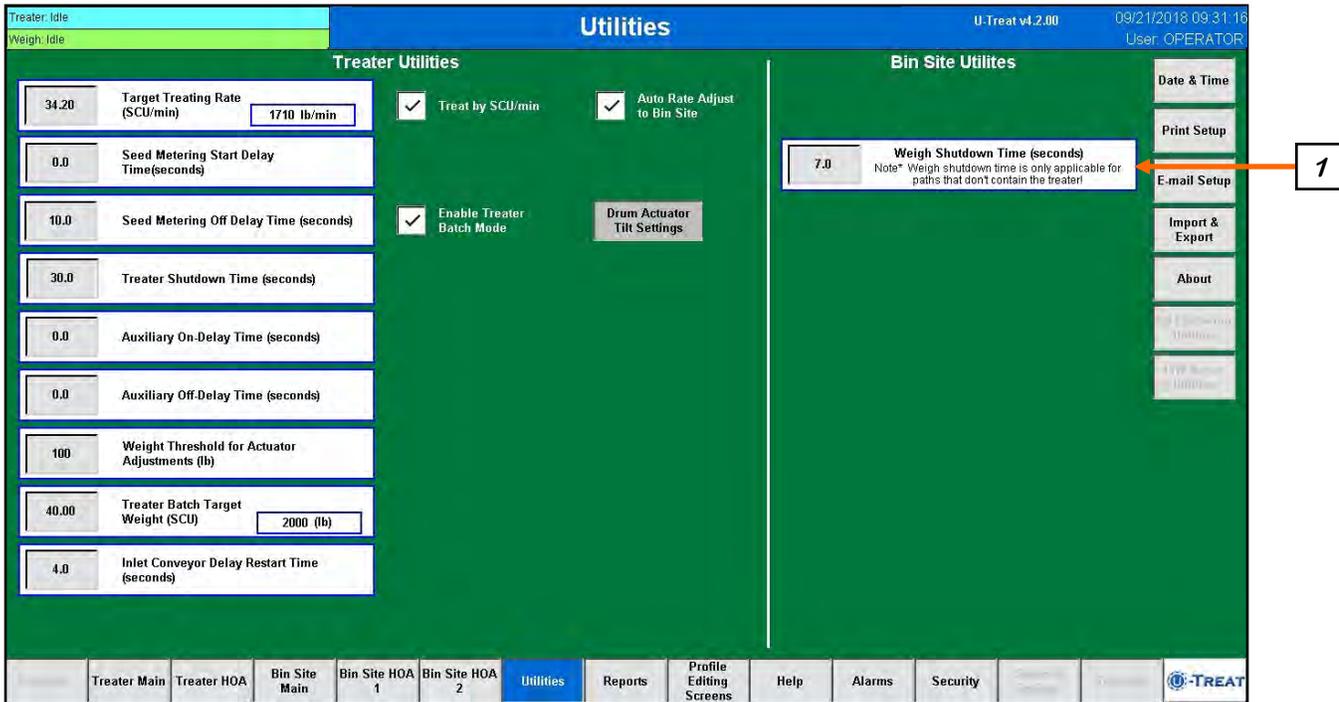
**6. HOPPER DISCHARGE VALVE CONTROL MODULE:** These modules control the function of the hopper discharge valves located at the bottom of each of the three individual hoppers. The Hand button will place the discharge valve in the manual mode of operation. The Off button will turn the associated device in the Off mode of operation. The Auto button will place the device in the automatic mode of operation and would then be controlled by the Tri - Flo ® program.

**7. AUTO ALL DEVICES:** When this button is pushed, it globally changes all bin site HOA settings to the Auto mode of operation. If the bin site is operating with a treater, this button will also change anything on the treater HOA screen.

**8. TREATER DIVERTER CONTROL MODULE (optional):** This module controls the function of the diverter. The module allows the operator to choose if the diverter is in the treat or bypass mode. In treat mode seed will be run through the treater and in bypass mode seed will be diverted so that it does not pass through the treater. This module will only be present if the Tri - Flo ® system has a pre treat or post treat diverter.

U-TREAT AUTOMATION MANUAL  
**TRI - FLO® UTILITIES SCREEN**

This screen allows the operator to set various system parameters and gives access to the Date & Time, Print Setup, E-mail Setup, Import & Export and current program release Information screens.



**1. WEIGH SHUTDOWN TIME (seconds):** This delay is to add run time for the outlet conveyor being used under a diverter when the seed path includes a weighing device but does not include treater. This is to ensure all seed for the run has been moved and the conveyor is empty before shutting down.

**NOTICE**

When button 1 is pressed, a numeric touch pad (right) will appear allowing the operator to enter in a number for that particular parameter.

**AVIS**

Lorsque le bouton 1 est pressé, un pavé tactile numérique (à droite) apparaît, permettant à l'opérateur d'entrer un nombre pour ce paramètre particulier.



**CALIBRATION & OPERATION****SECTION  
D****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 132, 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 132, figure 1).
5. After the cup has been filled, strike off the top of the calibration cup with a straight edge (see page 132, figure 2).



**NOTICE** Do not shake the cup.

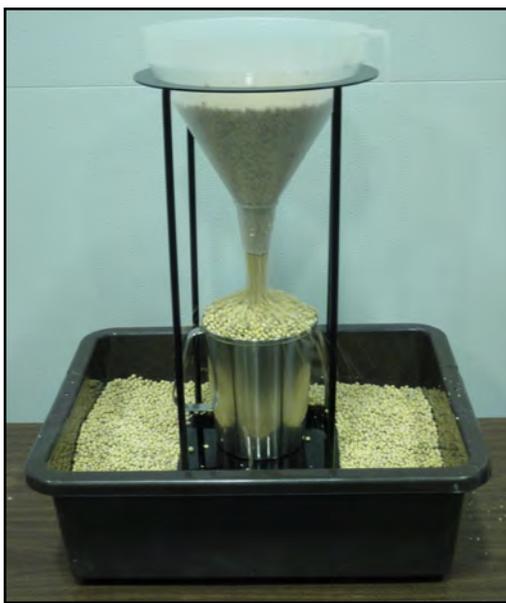
**AVIS** Ne secouez pas la tasse.

6. Weigh the sample of seed (see page 132, 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*

**NOTICE**

When U-Treat is being used to run a Bayer RH series treater, use the cup and scale provided with that treater to measure the cup weight. The RH scale measures in grams not pounds.

**AVIS**

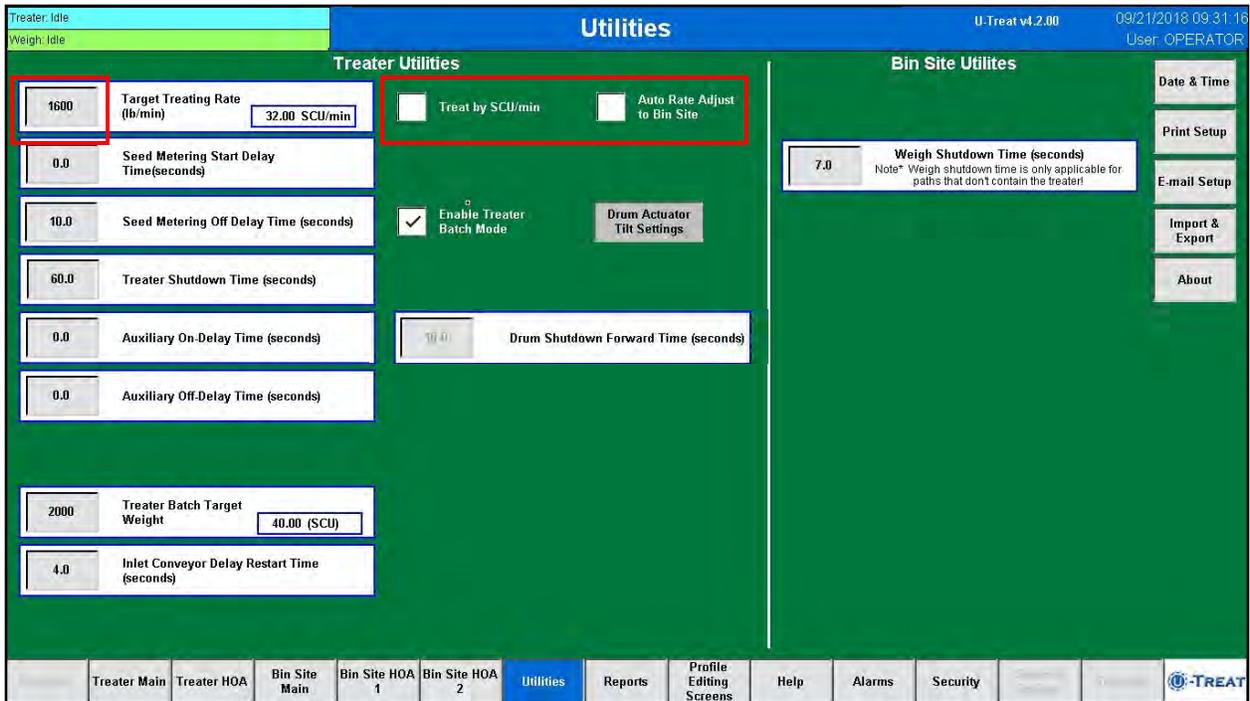
Lorsque U-Treat est utilisé pour exécuter une série treater Bayer RH, utilisez la tasse et échelle fournie avec ce purificateur pour mesurer le poids de la tasse. Les mesures à l'échelle de SR dans grammes non livres.

# TREATER CALIBRATION & OPERATION

SECTION D-1

## SEED FLOW CALIBRATION FOR TREATERS WITH SEED WHEELS

1. Press the Utilities button. Ensure that the Treat by SCU / min and Auto Rate Adjust to Bin Site boxes are **NOT** checked. Enter in the Target Treating Rate in pounds per minute.



## SEED FLOW CALIBRATION FOR TREATERS WITH SEED WHEELS

- Press the Profile Editing Screens button at the bottom of the screen and then push the Seed Editing button on the popup screen. Select the seed profile from the seed list you want to calibrate on the left side of the screen. The seed profile details will appear on the right where they may be edited and the seed wheel may be calibrated for that seed. Enter the weight of the seed sample in the Cup Weight box. The operator must press Save before leaving the profile if any changes were made. If they do not, the changes will not be added to that profile.

**Seed Editing** U-Treat v4.2.00 09/21/2018 09:31:18 User: OPERATOR

Calibrating Seed? **Seed List**

Search: \_\_\_\_\_

C o p y	CORN	↑
	COTTON	↑
	PEAS	↑
	RICE	
	SOYBEANS	
P a s t e	<b>SOYBEANS - 2100</b>	
	SOYBEANS - 2200	
	SOYBEANS - 2300	↓
	SOYBEANS - 2400	↓
	SOYBEANS - 2500	↓

Selection: 6 Viewing: 1 - 10 of 500  
Total Used Records: 10

Select the seed you wish to rename and adjust the seeds per unit entry.

Barcode: SOYBEANS 2100  
Name: SOYBEANS - 2100  
Variety: ABCDEF  
Lot Number: 123456  
Seed/lb: 2800  
Seeds/Unit: 140000  
Calibration Ratio: 1.00  
Cup Weight (lb): 3.65

Seed Wheel Calibration Calculator

Save Clear

Customer Editing  
Seed Editing  
Chemical Editing  
Recipe Editing  
Bin Editing  
Seed Editing  
Seed Editing  
Seed Editing

Overview Treater Main Treater HOA Bin Site Main Bin Site HOA 1 Bin Site HOA 2 Utilities Reports **Profile Editing Screens** Help Alarms Security System & Devices

Enter Seed Sample Weight Here

- Return to the main screen and run or treat a minimum of 2000 pounds of seed. When the system shuts down, record the actual scale weight and the totalizer weight. Return to the Seed Editing screen and press the Seed Wheel Calibration Calculator button,

**SEED FLOW CALIBRATION FOR TREATERS WITH SEED WHEELS**

- From the Seed Wheel Calibration Calculator screen, enter the actual scale weight and the Totalizer weight from the run. Then press the Apply button. This will enter the two weights in the system and return the operator to the Seed Editing screen. You must press the Save button again as the system will update the calibration ratio based on this calculation.

The screenshot shows a software interface titled "Seed Wheel Calibration". At the top right is a red close button with an 'X'. Below the title is a section titled "Seed Wheel Calibration Procedure" with three steps:

- Step 1:** Run or treat a known weight of seed. A minimum of 2000 lbs (900kgs) is recommended
- Step 2:** Enter the actual weight of the seed into the actual scale weight (lbs/kgs/SCUs) numeric input. Enter the total lbs/kgs/SCUs reading into the totalizer weight numeric input.
- Step 3:** Press the "Apply" button to complete the calibration process.

Below the procedure are input fields and buttons:

- Actual Scale Weight:** A numeric input field containing "2150.00".
- SOYBEANS - 2100:** A blue button with white text.
- Apply:** A grey button with black text.
- Totalizer Weight:** A numeric input field containing "2075.00".
- Totalizer(lb):** A numeric input field containing "0".

## SEED FLOW CALIBRATION FOR TREATERS WITH LIW

1. Press the Utilities button. Ensure that the Treat by SCU / min and Auto Rate Adjust to Bin Site boxes are **NOT** checked. Enter in the Target Treating Rate in pounds per minute.

2. Press the Profile Editing Screens button and then push the Seed Editing button on the popup screen. Select the seed profile from the seed list you want to calibrate on the left side of the screen. The seed profile details will populate on the right where they may be edited and the seed actuator gate may be calibrated for that seed. The operator must press Save button before leaving the profile or the changes will be lost and go back to what that profile was previously set to.
3. The Max Gate Position is a global variable and will be consistent between all product profiles. The operator should set the Auto Calibrate ratio to the On position.
4. Setting Maximum Gate Position is important to set before running the treater so the system will not cause an alarm by asking the actuator to extend further than it is physically capable. When setting this parameter be sure that there is no seed open to flow through the gate as it will open for several seconds as the warning popup will indicate.

**SEED FLOW CALIBRATION FOR TREATERS WITH LIW**

- (Continued) Pressing the Setting Maximum Gate Position button will extend the actuator as far as it is capable. A popup will inform you as to what changing the setting will do to the system, you must then select OK to continue. The timer bar appears showing the progress of the actuator. When the actuator stops, press the red X at the top to return to the seed editing page. Once set this should not need reset unless the hardware is moved for any reason. Again this will be the same on all product profiles.

## **SEED FLOW CALIBRATION FOR TREATERS WITH LIW**

5. Setting Minimum Gate Position is adjustable for every profile or may be set the same for every profile. If you have varying seed sizes it is suggested to set them for each profile. This setting indicates the lowest setting that seed will flow at. To set it for a certain seed you will need to have seed available in the buffer zone above the actuator gate. With the gate completely closed, go to the H-O-A screen and set the LIW Actuator % Position setting to 5 % and place the actuator in Hand mode. Then open the gate in small increments until a small but steady stream of seed is flowing out of the actuator. Note the Gate Position reading and place the actuator back in Auto mode of operation. Pressing the Setting Minimum Gate Position button brings up a popup, then press the gray box and use the keyboard to enter a value for all minimum gate positions. After entering the value press the OK button. The timer bar appears showing the progress of the actuator. When the actuator stops, press the red X at the top to return to the seed editing page. Then, enter the noted gate position reading minus 200 into the Min Gate Position setting. This will allow the program to accurately calculate the seed flow through the actuator gate (see page 137).

## SEED FLOW CALIBRATION FOR TREATERS WITH WEIGH BELT

1. Press the Utilities button. Ensure that the Treat by SCU / min and Auto Rate Adjust to Bin Site boxes are **NOT** checked. Enter in the Target Treating Rate in pounds per minute.

The screenshot shows the 'Utilities' screen in the U-Treat v4.2.00 software. The 'Treater Utilities' section is highlighted with a red box, indicating the 'Target Treating Rate (lb/min)' is set to 1600 and the 'Treat by SCU/min' checkbox is unchecked. The 'Bin Site Utilities' section shows the 'Weigh Shutdown Time (seconds)' set to 7.0. The bottom navigation bar includes buttons for Treater Main, Treater HOA, Bin Site Main, Bin Site HOA 1, Bin Site HOA 2, Utilities, Reports, Profile Editing Screens, Help, Alarms, Security, and TREAT.

2. Press the Profile Editing Screens button at the bottom of the screen and then push the Seed Editing button on the popup screen. Select the seed profile from the seed list you want to calibrate. The belt length and belt speed adapt range need to be updated.

The screenshot shows the 'Seed Editing' screen in the U-Treat v4.2.00 software. The 'Seed List' on the left shows 'SOYBEANS - 2100' selected. The right panel shows fields for Barcode (SOYBEANS 2100), Name (SOYBEANS - 2100), Variety (ABCDEF), Lot Number (123456), Seed/lb (2800), Seeds/Unit (140000), Belt Length (4.19), and Belt Speed Adapt Range (0.20). The 'Weigh Belt Calibration' button is visible. The bottom navigation bar includes buttons for Overview, Treater Main, Treater HOA, Bin Site Main, Bin Site HOA 1, Bin Site HOA 2, Utilities, Reports, Profile Editing Screens, Help, Alarms, Security, Setup & Diagnostics, and TREAT.

**SEED FLOW CALIBRATION FOR TREATERS WITH WEIGH BELT**

- You will need to run a minimum of 1000 pounds of seed. The more seed you calibrate with, the more accurate the calibration will be. Record the actual weight of the seed you will be using for this calibration. Press the Weigh Belt Calibration button and follow the six steps of the procedure.

**Weigh Belt Calibration**
✖

Step 1: Allocate a minimum of 1000 lbs of seed. Record the actual weight of the seed you will be using for calibration. We will use the allocated seed for two separate runs on steps 2 and 4. If a second box of seed is preferred, use a similar seed size and similar recorded weight.

Step 2: Setup an automated run with a target treating rate that is 50 to 100 lb/min less than the lowest rate you will operate with this seed type. While the run is in operation, record the average motor speed from the treater main or overview screen.

Step 3: Enter the average motor speed, the actual weight ran through the treater, and the totalizer weight.

Step 4: Setup an automated run with a target treating rate that is 50 to 100 lb/min more than the highest rate you will operate with this seed type. While the run is in operation, record the average motor speed from the treater main or overview screen.

Step 5: Enter the average motor speed, the actual weight ran through the treater, and the totalizer weight.

Step 6: When all fields have a value entered, the Original Values will display what the calibration is at, the New Values will display what the new belt length and adapt range will be, and the default will show you what a default weigh belt would be. Finally, once you have verified your belt length and adapt range press apply to update the seed profile you are on.

---

**SOYBEANS - 2100**      Totalizer 0 lb

	Speed %	Actual Weight	Totalizer Weight
Run 1:	25.00	2000.00	2000.00
Run 2:	50.00	2000.00	2000.00

Clear Totalizer
Default
Apply

	Belt Length	Adapt Range
Original values:	4.19	0.20
New values:	4.19	0.20
Default values:	4.19	0.20

After all of the data from the two runs has been entered into their respective boxes, press the Apply button. Press the exit button in the upper right hand corner of the screen to return to the product editing screen. When you return to the seed profile screen, notice both the belt length and belt speed adapt range have automatically updated. Press the blinking Save button to complete the process.

## **SEED FLOW CALIBRATION FOR TREATERS WITH WEIGH BELT**

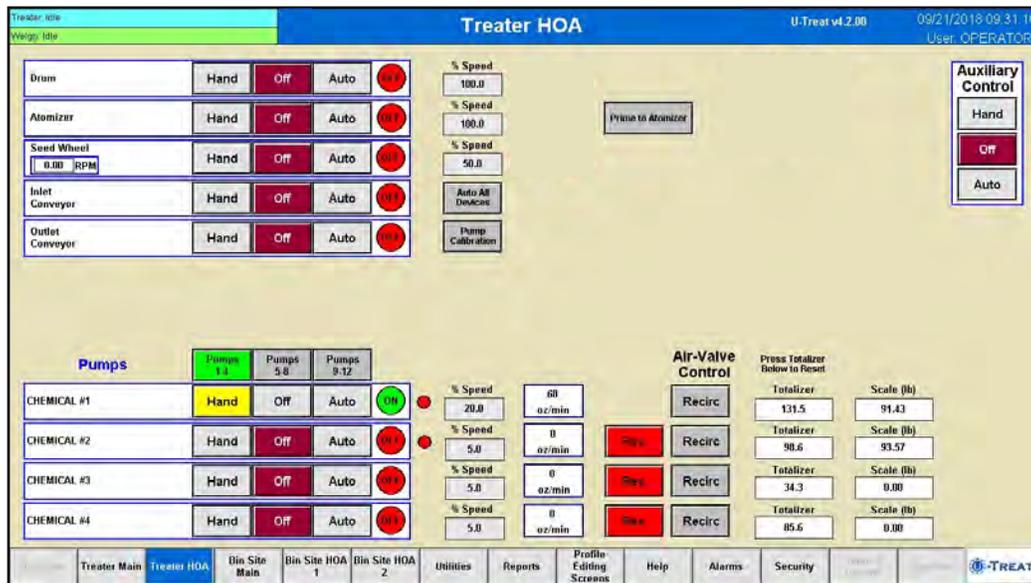
4. If you want to use the same calibration data for all of your seed profiles, press the Set Weigh Belt Calibration button. The values for Belt Length you just saved will appear in the boxes on the popup screen. Press OK to enter these values for all of your seed profiles.



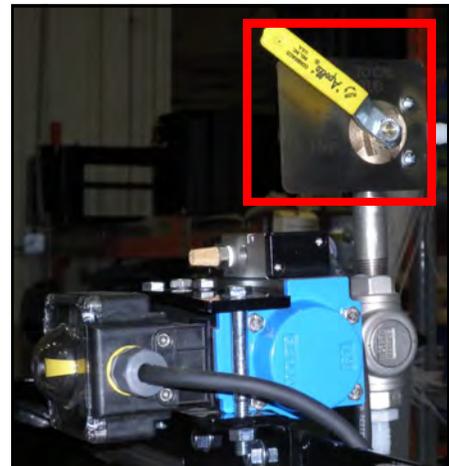
## FLOW METER CALIBRATION

Due to the composition of some types of chemicals, additional flow meter calibration may be required. It is recommended that, like other calibration devices, the flow meter is checked regularly and calibrated when needed. When calibrating the flow meter, each chemical slurry must be checked and adjusted for.

1. To begin the calibration process, fill the appropriate mix tank with the slurry that is going to be used for this calibration.
2. Turn the corresponding pump to the hand position and adjust the flow rate until it reads about 20 percent on the pump control module. Let the system run in recirculation mode for 15 minutes. This will remove any air from the system. Now place the pump in Auto mode.



3. Place the MIX TANK / CALIBRATION TUBE valve that is located on top of the pump stand in the calibration tube position.



**FLOW METER CALIBRATION**

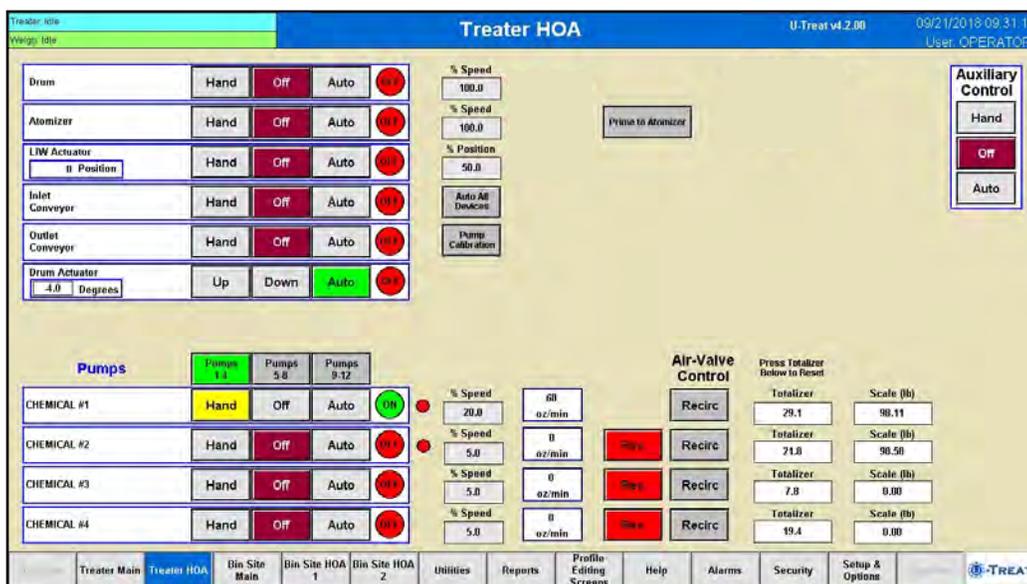
4. From the Treater HOA screen, press the Pump Calibration button. Enter the number of the pump you wish to calibrate and a target run time for the calibration. The longer the run time the more accurate the calibration. USC recommends a minimum of 60 seconds. Press the jog pump motor, this will turn the pumps on and off for short periods of time. When the chemical lines are full and the level in the tube is at zero, press the button again to stop the pump. Press the Start button to begin the calibration. When the target run time has elapsed, the pump will shutoff automatically. If for any reason you need to stop the process, press the Stop button. If the calibration is stopped before the target time has elapsed, the operator must start the process over again. Enter the calibration tube ounces into the Cal. Tube Total box. Enter the flow meter reading into the Calculated Totalizer box. Press the UPDATE RATIO button and it will automatically update. Closing this screen will stop the calibration process if it has not been completed.
  
5. Repeat the process as necessary and for each different chemical slurry used.

Pump Calibration									
Pump# to Adjust: <input type="text" value="1"/>	Selected Pump's Chemical Name: <input type="text" value="CHEMICAL #1"/>								
Target Run Time (seconds): <input type="text" value="60"/>	Actual Rate (oz/min): <input type="text" value="0.0"/>								
Target Rate (oz/min): <input type="text" value="32.0"/>	<input type="button" value="Jog Pump Motor"/>								
Rough Est. Total (Fl. oz): <input type="text" value="32.00"/>	<input type="button" value="START"/> <input type="button" value="STOP"/>								
<table border="1"> <thead> <tr> <th>Totals</th> <th>Calibration Ratio</th> </tr> </thead> <tbody> <tr> <td>                             Cal. Tube Total (Fl. oz): <input type="text" value="1.00"/> </td> <td>                             Current Ratio: <input type="text" value="0.97"/> </td> </tr> <tr> <td>                             Calculated Totalizer (Fl. oz): <input type="text" value="1.00"/> </td> <td>                             Calculated Ratio: <input type="text" value="0.97"/> </td> </tr> <tr> <td>                             Elapsed Run Time (seconds): <input type="text" value="0.0"/> </td> <td> <input type="button" value="UPDATE RATIO"/> </td> </tr> </tbody> </table>		Totals	Calibration Ratio	Cal. Tube Total (Fl. oz): <input type="text" value="1.00"/>	Current Ratio: <input type="text" value="0.97"/>	Calculated Totalizer (Fl. oz): <input type="text" value="1.00"/>	Calculated Ratio: <input type="text" value="0.97"/>	Elapsed Run Time (seconds): <input type="text" value="0.0"/>	<input type="button" value="UPDATE RATIO"/>
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Cal. Tube Total (Fl. oz): <input type="text" value="1.00"/>	Current Ratio: <input type="text" value="0.97"/>								
Calculated Totalizer (Fl. oz): <input type="text" value="1.00"/>	Calculated Ratio: <input type="text" value="0.97"/>								
Elapsed Run Time (seconds): <input type="text" value="0.0"/>	<input type="button" value="UPDATE RATIO"/>								

## LOSS IN WEIGHT FLOW CALIBRATION

Due to the composition of some types of chemicals, additional calibrations may be required. It is recommended that, like other calibration devices it is checked regularly and calibrated when needed. Each chemical slurry must be checked and adjusted for.

1. To begin the calibration process, fill the appropriate mix tank with the slurry that is going to be used for this calibration.
2. Turn the corresponding pump to the hand position and adjust the flow rate until it reads about 20 percent on the pump control module. Let the system run in recirculation mode for 15 minutes. This will remove any air from the system. Now place the pump in Auto mode.



3. Place the MIX TANK / CALIBRATION TUBE valve that is located on top of the pump stand to the calibration tube position.



**LOSS IN WEIGHT FLOW CALIBRATION**

4. From the Treater HOA screen, press the Pump Calibration button. Enter the number of the pump you wish to calibrate and a target run time for the calibration. The longer the run time the more accurate the calibration. USC recommends a minimum of 60 seconds. Press the jog pump motor, this will turn the pumps on and off for short periods of time. When the chemical lines are full and the level in the tube is at zero, press the button again to stop the pump. Press the Start button to begin the calibration. When the target run time has elapsed, the pump will shutoff automatically. If for any reason you need to stop the process, press the Stop button. If the calibration is stopped before the target time has elapsed, the operator must start the process over again. Enter the calibration tube ounces into the Cal. Tube Total box. Enter the flow meter reading into the Calculated Totalizer box. Press the Update Density button and it will automatically update. Closing this screen will stop the calibration process if it has not been completed.
  
5. Repeat the process as necessary and for each different chemical slurry used.

Pump Calibration									
Pump# to Adjust: <input type="text" value="1"/>	Selected Pump's Chemical Name: <input type="text" value="CHEMICAL #1"/>								
Target Run Time (seconds): <input type="text" value="60"/>	Actual Rate (oz/min): <input type="text" value="0.0"/>								
Target Rate (oz/min): <input type="text" value="45.6"/>	<input type="button" value="Jog Pump Motor"/>								
Rough Est. Total (Fl. oz): <input type="text" value="45.60"/>	<input type="button" value="START"/> <input type="button" value="STOP"/>								
<table border="1"> <thead> <tr> <th>Totals</th> <th>Density</th> </tr> </thead> <tbody> <tr> <td>                             Cal. Tube Total (Fl. oz): <input type="text" value="1.00"/> </td> <td>                             Current Density (lb/gal): <input type="text" value="8.33"/> </td> </tr> <tr> <td>                             Calculated Totalizer (Fl. oz): <input type="text" value="1.00"/> </td> <td>                             Calculated Density (lb/gal): <input type="text" value="8.33"/> </td> </tr> <tr> <td>                             Elapsed Run Time (seconds): <input type="text" value="0.0"/> </td> <td> <input type="button" value="Update Density"/> </td> </tr> </tbody> </table>		Totals	Density	Cal. Tube Total (Fl. oz): <input type="text" value="1.00"/>	Current Density (lb/gal): <input type="text" value="8.33"/>	Calculated Totalizer (Fl. oz): <input type="text" value="1.00"/>	Calculated Density (lb/gal): <input type="text" value="8.33"/>	Elapsed Run Time (seconds): <input type="text" value="0.0"/>	<input type="button" value="Update Density"/>
Totals	Density								
Cal. Tube Total (Fl. oz): <input type="text" value="1.00"/>	Current Density (lb/gal): <input type="text" value="8.33"/>								
Calculated Totalizer (Fl. oz): <input type="text" value="1.00"/>	Calculated Density (lb/gal): <input type="text" value="8.33"/>								
Elapsed Run Time (seconds): <input type="text" value="0.0"/>	<input type="button" value="Update Density"/>								

## LOSS IN WEIGHT SCALE CALIBRATION

### NOTICE

During the weight transmitter setup and calibration process it will be necessary to enter the operational parameters using the 201 keypad. See figure 1.

### AVIS

Pendant le processus d'installation de l'émetteur de poids et de l'étalonnage, il sera nécessaire d'entrer les paramètres de fonctionnement en utilisant le clavier 201. Voir la figure 1.

### ! WARNING

**DO NOT** operate the keypad with pointed objects (pencils, pens, etc). Damage to the keypad resulting from this practice is **NOT** covered under warranty.

### ! AVERTISSEMENT

NE PAS utiliser le clavier avec des objets pointus (crayons, stylos, etc.). Dommages au clavier résultant de cette pratique ne soit pas couvert par la garantie.

## CARDINAL 201 SCALE HEAD DATA ENTRY

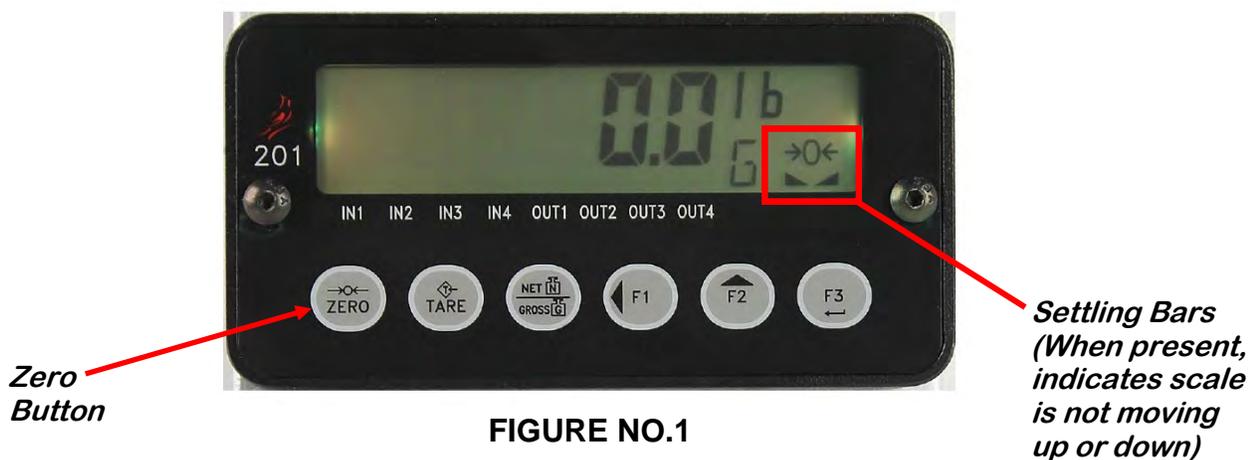


FIGURE NO.1

- The function of the numeric keys are replaced by using the **F1/◀** and the **F2/▲** Keys.
- The cursor location is identified by the blinking character and may be moved to the left to the next position by pressing the **F1/◀**.
- Pressing the **F2/▲** key will change the blinking character to the next value or setting. Continue to press this key to toggle between the different available values or settings for the setup parameter.
- Pressing the **F1/◀** key when a setup parameter (not a parameter value or setting) is displayed, will backup to the previous parameter prompt.
- Pressing the **F3/←** key will save the data entered or displayed and advance the screen to the next prompt.

### CALIBRATION SWITCH

**CAUTION**

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

**! ATTENTION**

**PRUDENCE LORS DE TRAVAIL DANS LA PANEL ENERGIZED !!**

**NOTICE**

USC recommends that the pump stand scales be calibrated at least once at the start of each treating season.

**AVIS**

USC recommande que les échelles de supporter la pompe être étalonnés au moins une fois au début de chaque saison de

**NOTICE**

USC recommends that the pump stand scales be zeroed out before each calibration ( see figure 1).

1. Make sure there is nothing on the scale.
2. Settling Bars must be present on the scale head display.
3. Press the Zero button on the scale head display.

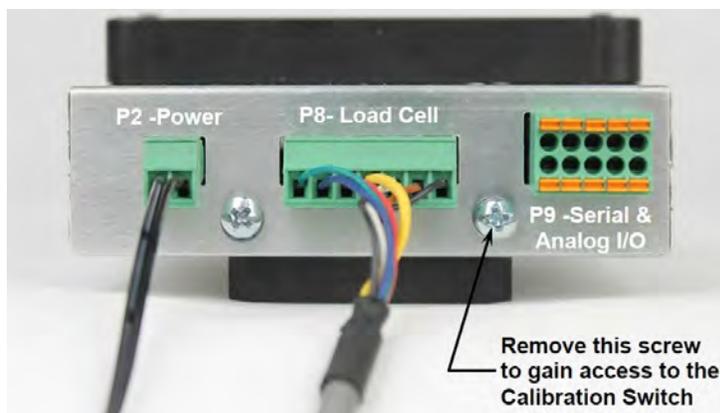
**AVIS**

USC recommande que l'échelle du peuplement de la pompe être mis à zéro avant chaque étalonnage (voir figure 1).

1. Assurez-vous qu'il n'y a rien sur l'échelle.
2. Bars de décantation doit être présent sur l'affichage de l'échelle.
3. Appuyez sur la touche zéro sur l'affichage de l'échelle.

The model 201 weight transmitter has been thoroughly tested and calibrated before being shipped to you. If you received the weight transmitter attached to a scale, calibration is not necessary. If the weight transmitter is being connected to the scale for the first time or recalibration is necessary for other reasons, continue following these instructions.

The calibration switch is located on the main printed circuit board and may only be accessed by removing the screw below and to the right of the load cell connector. See figure 2.



**FIGURE NO.2**

## ACCESSING SETUP

1. With the screw removed to gain access to the calibration switch, apply power to the 201 Weight Transmitter.
2. Insert a small tool (3/32 or 2mm Hex Key Wrench) into the hole where the screw was removed until it contacts the calibration switch.
3. Press and hold the calibration switch for approximately 2 seconds until the display changes to SEtUP.
4. Release the calibration switch to begin setup.
5. Press the **F2/▲** key to step to the beginning point of each setup section.

SEtUP	Setup Mode (starts at <i>USR=</i> prompt)
SCALE	Scale Configuration (starts at <i>Unit 1=</i> prompt)
F ILTERR	Analog to Digital Filtering (starts at <i>FLT=</i> prompt)
CAL	Calibration (starts at <i>CAL=</i> prompt)
F SPAN	Fine Span Adjustment

6. If you press the **F3/←** key at the SETUP prompt, you may proceed through the next section (up to and including F SPAn) by pressing the **F3/←** key.

## CALIBRATION

- With CAL displayed, press the **F3/←** key. The display will change to CAL=. Proceed to the CAL= (Preform Calibration) parameter.
- CAL = (Perform Calibration)
  - With CAL= displayed, press the **F3/←** key. The display will change to no. If the scale has been previously calibrated and you wish to skip the calibration to proceed to F SPAn, press the **F3/←** key again.
  - Otherwise, press the **F2/▲** key to toggle to YES and then press the **F3/←** key. The display will change to CAL 1=. Proceed to the CAL 1= parameter.

## SINGLE POINT CALIBRATION

- CAL 1 = - First Calibration Weight
  1. The display will show CAL 1 =. This is the first of two calibration weights. This weight is ZERO (NO LOAD).
  2. Press the **F3/←** key to view the current setting.
  3. Press the **F3/←** key again to set absolute zero.
  4. Starting at the left and proceeding right, a series of dashes will appear and then disappear. Then the display will show CAL 2=.
- CAL 2 = - Second Calibration Weight
  1. The display will show CAL 2 =. This is the second of two calibration weights. This weight is with the two 50lb. test weights. (TEST LOAD).
  2. Press the **F3/←** key to view the current setting.
  3. Use the **F1/◀** and **F2/▲** to input the value of the test weights. The display must read 100.000.
  4. Place both 50lb. weights on the scale platform, then press the **F3/←** key.
  5. Starting at the left and proceeding right, a series of dashes will appear and then disappear. Then the display will show F SPAn.
  6. The calibration process is now complete. Press **F1/◀** until you are returned to the starting screen.

### NOTICE

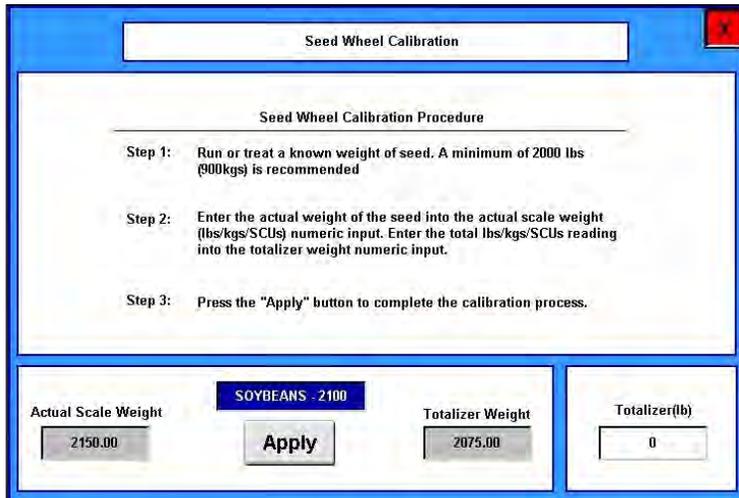
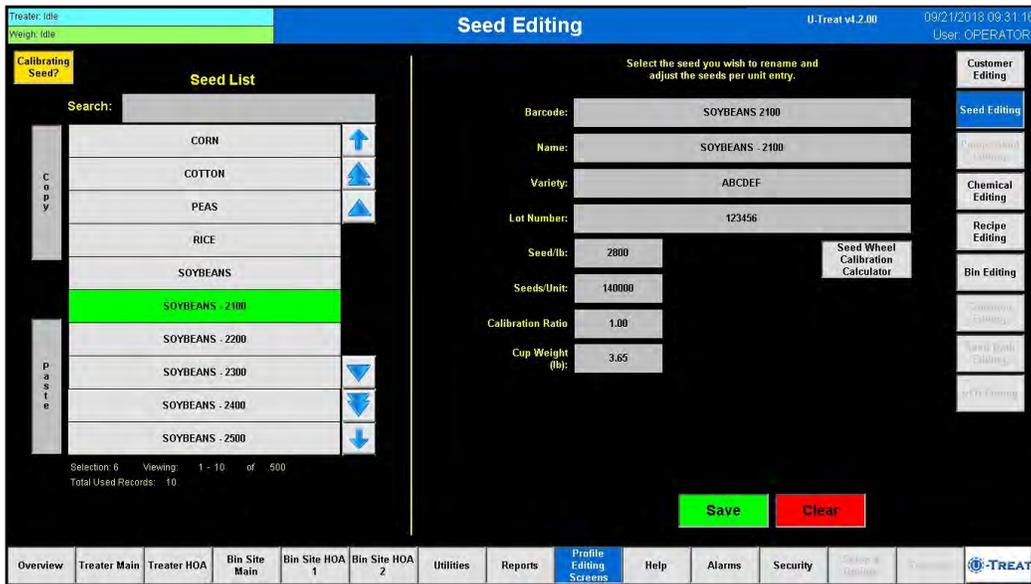
- For a single additional scale LIW Upgrade Kits, Order USC Part # 13-05-0444.
- LIW Add-on Panels will only support up to 4 pumps per panel. A 2 Pump LIW Add-on Panel can only have two 1 Pump Upgrade Kits installed. If more than 4 pumps, additional LIW Add-on Panels must be purchased.

### AVIS

- Pour un seul Kits LIW échelle de mise à niveau supplémentaires, # Ordre USC Partie 13-05-0444.
- LIW Add-on ne fera que les panneaux en charge jusqu'à 4 pompes par panneau. A 2 Pompe LIW Add-on Panel ne peut avoir deux 1 Pompe de mise à niveau Kits installés. Si plus de 4 pompes, supplémentaires LIW Add-on Les panneaux doivent être achetés.

**SEED WHEEL CALIBRATION**

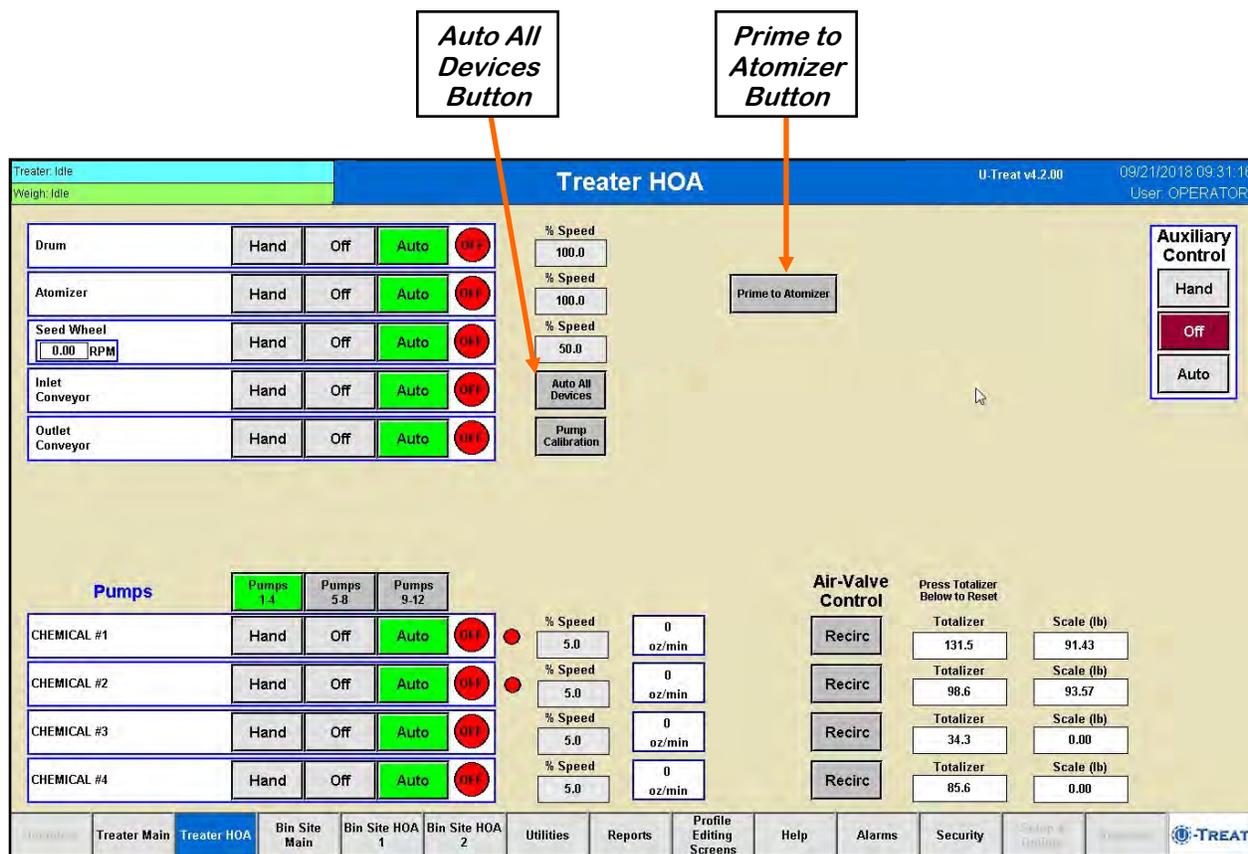
1. If the totalized weight from the seed wheel differs from the actual weight of the seed that was run through the treater. The seed wheel may be calibrated to increase accuracy. Press the Profile Editing Screens button and then push the Seed Editing button on the popup screen. Choose the product to calibrate for, then press the Seed Wheel Calibration Calculator. This will advance to the Seed Wheel Calibration screen (bottom).
2. Enter in the Actual Scale Weight of the seed that was treated, and the Totalizer Weight from what the seed wheel recorded.
3. Press the Apply button. The IPC will calibrate the seed wheel and exit back to the Seed Editing screen. The Calibration Ratio value box will be automatically updated.



**Note: The seed wheel calibration screen will adjust the seed profiles Cups / Pocket Ratio automatically.**

## TREATING SEED WITH SEED WHEEL

1. From the Treater HOA screen, press the Auto All Devices button to place the Drum, Atomizer, Seed Wheel, Inlet Conveyor and Outlet Conveyor and all of the pumps in Auto.
2. Next, prime the chemical line to the atomizer. Ensure that the valve on each of the chemical attachment ports on the treater are in the correct position. Press and hold the Prime To Atomizer button. The atomizer will turn on and liquid will begin pumping up to the atomizer. When liquid reaches the atomizer release the Prime to Atomizer button.



3. Return to the main screen and press the Start Setup button. The Start screen appears (see page 152). Press the gray buttons to change any fields such as customer, seed path, actual weight and chemical recipe for this run. Press Start to begin the run. The drum, atomizer, inlet conveyor and outlet conveyor will activate. The pumps will turn on and re-circulate until they reach the desired flow rate needed to match the target treating rate that was entered.

**TREATING SEED WITH SEED WHEEL**

Seed Path: ✖

SEED PATH #1

Customer Name:

CUSTOMER #1

Chemical Recipe:

RECIPE #1

Seed Type:

SOYBEANS

Seed Variety:

ABCDEF

Lot Number:

123456

Seeds Per Unit:      lbs Per Unit:

140000      50.00

Actual Weight:

3000.0 lb

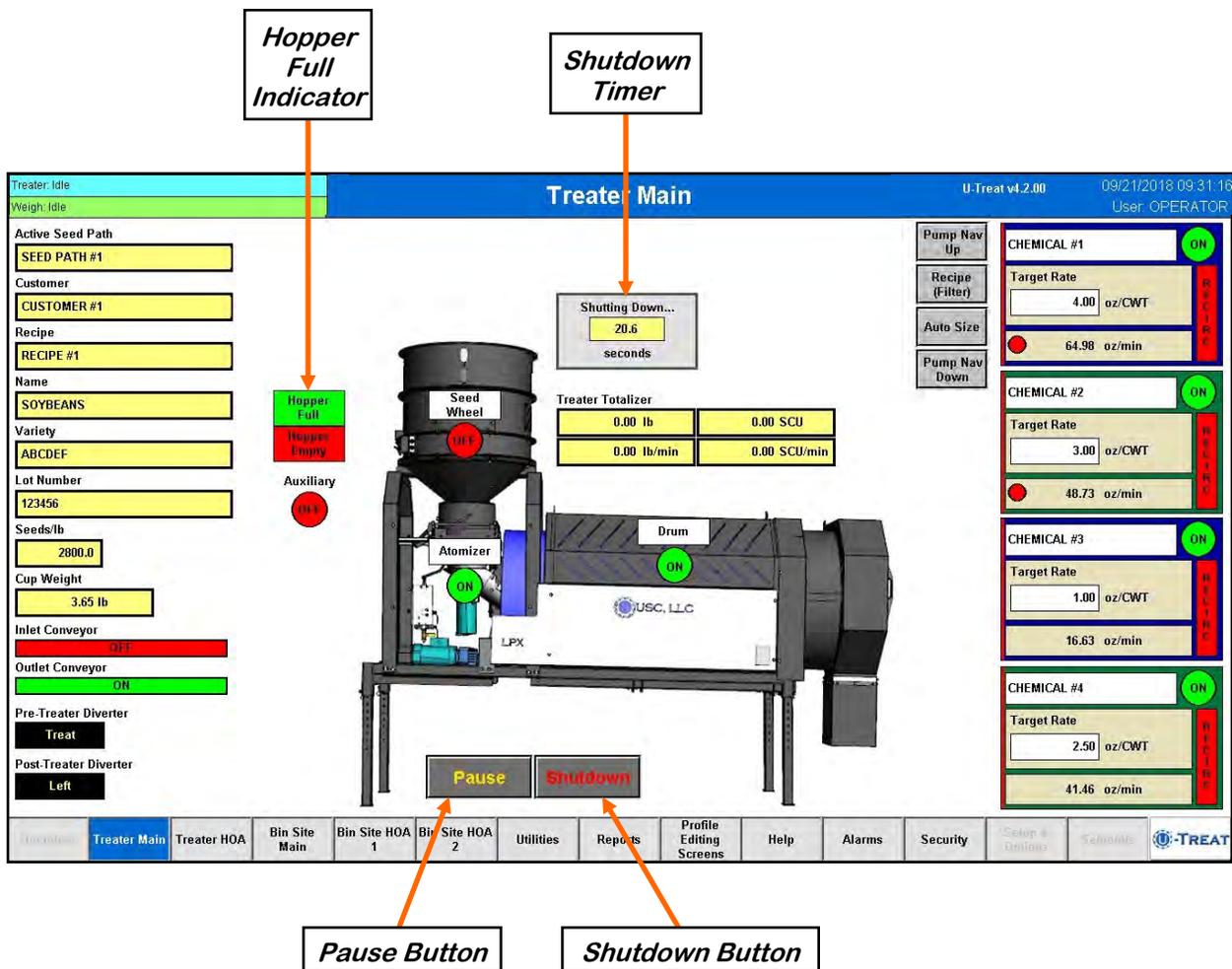
Start

4. When the pump's flow rate has been reached and seed is covering the proximity sensors inside of the seed wheel, the air actuated 3-way valve will open and allow liquid to pump up to the atomizer. A moment later (based on the settings in the utilities screen), the seed wheel will turn on and the seed treating process will begin.
5. As the seed is being treated, the main screen will display the pounds per minute, the total pounds, and the liquid flow rate. If the system needs to be stopped for a moment because of a problem, the Pause button may be pressed to halt the process. When ready to begin again, press the Continue button on the Continue / Terminate popup screen.
6. When the seed wheel hopper is full the Hopper Full indicator light will appear and the inlet conveyor will shut off. The flow of seed into the hopper will begin again once seed is no longer present at the top proximity sensor in the hopper and the Inlet Conveyor Delay Restart Time defined on the utilities has expired. This is done to ensure that seed will not overflow the hopper.
7. When all seed passes through the seed wheel, the seed wheel will turn off and the pump will switch to re-circulate. When more seed is fed into the seed wheel, the treating process will continue.

**TREATING SEED WITH SEED WHEEL**

- After all seed has been treated the seed wheel will shutdown automatically. The 3-way valve on the pump stand will switch to re-circulate. However, the atomizer, drum and outlet conveyor will still be running. Press the Shutdown button at the bottom of the screen and the shutdown timer appears and begins to count down the seconds left before complete shutdown. The operator decides how much time is adequate for all product to clear the drum and outlet conveyor. The time is entered on the treater utilities screen and may be adjusted whenever necessary.

When treating seed with a bin site, the shutdown process will occur automatically when the target weight has been met.



## TREATING SEED WITH LOSS IN WEIGHT

1. From the Treater HOA screen, press the Auto All Devices button to place the Drum, Atomizer, Inlet Conveyor and Outlet Conveyor and all of the pumps in Auto.
2. Next, prime the chemical line to the atomizer. Ensure that the valve on each of the chemical attachment ports on the treater are in the correct position. Press and hold the Prime To Atomizer button. The atomizer will turn on and liquid will begin pumping up to the atomizer. When liquid reaches the atomizer release the Prime to Atomizer button.

*Auto All Devices Button*

Prime to Atomizer Button

The screenshot displays the 'Treater HOA' control interface. At the top, it shows 'Treater: Idle' and 'Weigh: Idle' status. The main control area includes:

- Drum:** Hand, Off, Auto (selected), Stop.
- Atomizer:** Hand, Off, Auto (selected), Stop.
- LIW Actuator:** 0 Position, Hand, Off, Auto (selected), Stop.
- Inlet Conveyor:** Hand, Off, Auto (selected), Stop.
- Outlet Conveyor:** Hand, Off, Auto (selected), Stop.
- Drum Actuator:** -4.0 Degrees, Up, Down, Auto (selected), Stop.
- Speed/Position Controls:** % Speed (100.0), % Position (50.0), Auto All Devices, Pump Calibration.
- Auxiliary Control:** Hand, Off, Auto.
- Pumps:** Pumps 1-4, 5-8, 9-12. Each has Hand, Off, Auto (selected), Stop buttons and % Speed/oz/min readouts.
- Air-Valve Control:** Recirc buttons and Totalizer/Scale (lb) readouts.

Navigation buttons at the bottom include: Treater Main, Treater HOA (selected), Bin Site Main, Bin Site HOA 1, Bin Site HOA 2, Utilities, Reports, Profile Editing Screens, Help, Alarms, Security, Setup & Utilities, and TREAT logo.

3. Return to the main screen and press the Start Setup button. The Start screen appears (see page 155). Press the gray buttons to change any fields such as customer, seed path, actual weight and chemical recipe for this run. Press Start to begin the run. The drum, atomizer, inlet conveyor and outlet conveyor will activate. The pump will turn on and re-circulate until it reaches the desired flow rate needed to match the target treating rate that was entered.

**TREATING SEED WITH LOSS IN WEIGHT**

Seed Path: SEED PATH #1

Customer Name: CUSTOMER #1

Chemical Recipe: RECIPE #1

Seed Type: SOYBEANS

Seed Variety: ABCDEF

Lot Number: 123456

Seeds Per Unit: 140000      lbs Per Unit: 50.00

Actual Weight: 3000.0 lb

Start

4. When the pump's flow rate has been reached and seed is covering the proximity sensors inside of the hopper cone, the air actuated 3-way valve will open and allow liquid to pump up to the atomizer. A moment later (based on the settings in the utilities screen), the Loss in Weight actuator will turn on and the seed treating process will begin.
5. As the seed is being treated, the main screen will display the pounds per minute, the total pounds, and the liquid flow rate. If the system needs to be stopped for a moment because of a problem, the Pause button may be pressed to stop the process. When ready to begin again, press the Continue button on the Continue / Terminate popup screen.
6. When all seed passes through the hopper, the pumps will switch to re-circulate. When more seed is fed into the treater, the treating process will continue.
7. After all seed has been treated the 3-way valve on the pump stand will switch to re-circulate. However, the atomizer, drum and outlet conveyor will still be running. Press the Shutdown button at the bottom of the screen and the shutdown timer appears and begins to count down the seconds left before complete shutdown. The operator decides how much time is adequate for all product to clear the drum and outlet conveyor. The time is entered on the treater utilities screen and may be adjusted whenever necessary.

When treating seed with a bin site, the shutdown process will occur automatically when the target weight has been met.

U-TREAT AUTOMATION MANUAL  
TREATING SEED WITH LOSS IN WEIGHT

**Shutdown Timer**

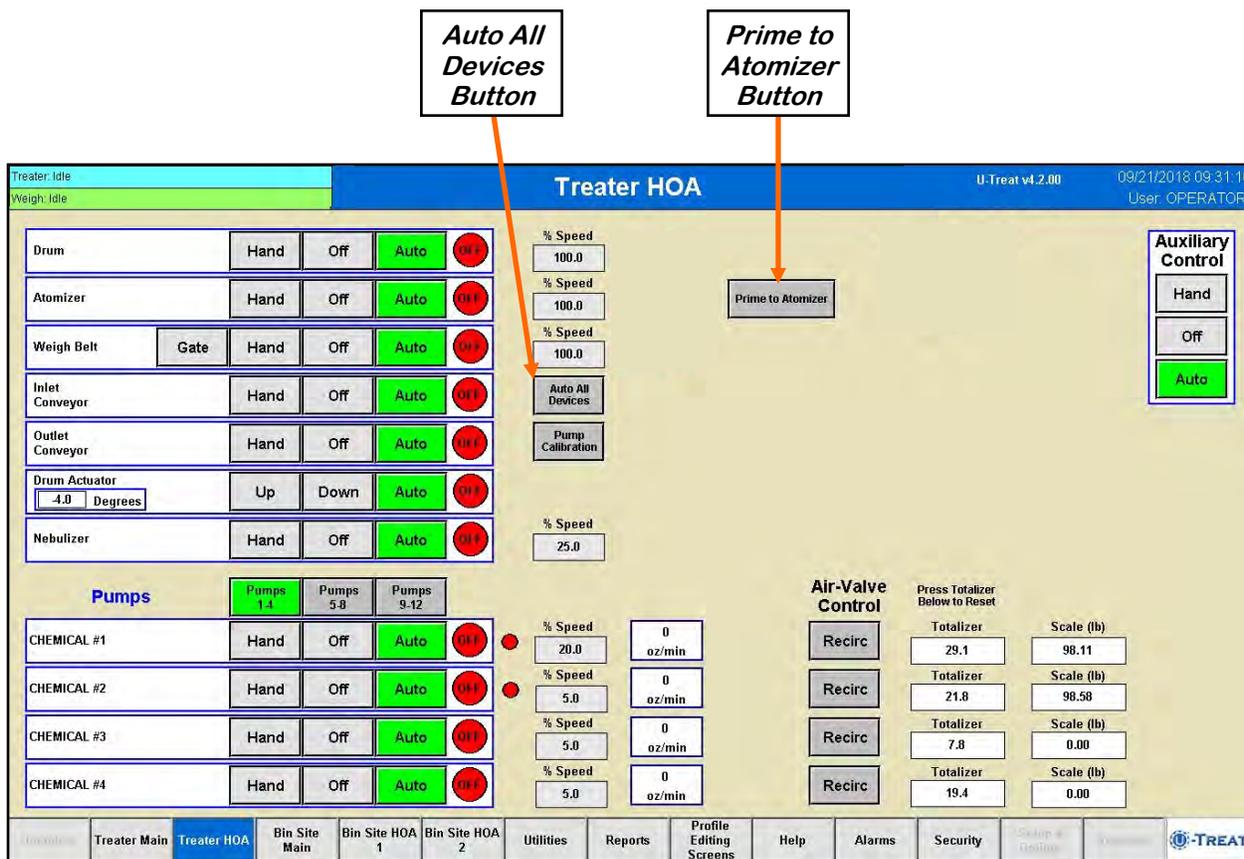
**Shutting Down...**  
11.1 seconds

Scale Weight	2040.0 lb	Run Avg. lb/min	9000	Run Avg. SCU/min	180.00
Flow Detection	ON	Current lb/min	0	Current SCU/min	0.00
Gate %	0.0	Run Time (Seconds)	14.8	Target (Seconds)	70.2

**Pause Button**      **Shutdown Button**

## TREATING SEED WITH WEIGH BELT

1. From the Treater HOA screen, press the Auto All Devices button to place the Drum, Atomizer, Weigh Belt, Inlet Conveyor and Outlet Conveyor and all of the pumps in Auto.
2. Next, prime the chemical line to the atomizer. Ensure that the valve on each of the chemical attachment ports on the treater are in the correct position. Press and hold the Prime To Atomizer button. The atomizer will turn on and liquid will begin pumping up to the atomizer. When liquid reaches the atomizer release the Prime to Atomizer button.



3. Return to the main screen and press the Start Setup button. The Start screen appears (see page 158). Press the gray buttons to change any fields such as customer, seed path, actual weight and chemical recipe for this run. Press Start to begin the run. The drum, atomizer, inlet conveyor and outlet conveyor will activate. The pump will turn on and re-circulate until it reaches the desired flow rate needed to match the target treating rate that was entered. The inlet conveyor will then begin dumping seed into the holding hopper for a few seconds before opening the slide gate. It is important to keep the seed gate and weigh belt completely full of seed to provide a full and continuous flow of seed to the inlet hopper when the slide gate is open.

**TREATING SEED WITH WEIGH BELT**

The screenshot shows a control panel with the following fields and values:

- Seed Path:** SEED PATH #1
- Customer Name:** CUSTOMER #1
- Chemical Recipe:** RECIPE #1
- Seed Type:** SOYBEANS
- Seed Variety:** ABCDEF
- Lot Number:** 123456
- Seeds Per Unit:** 140000
- lbs Per Unit:** 50.00
- Actual Weight:** 3000.0 lb

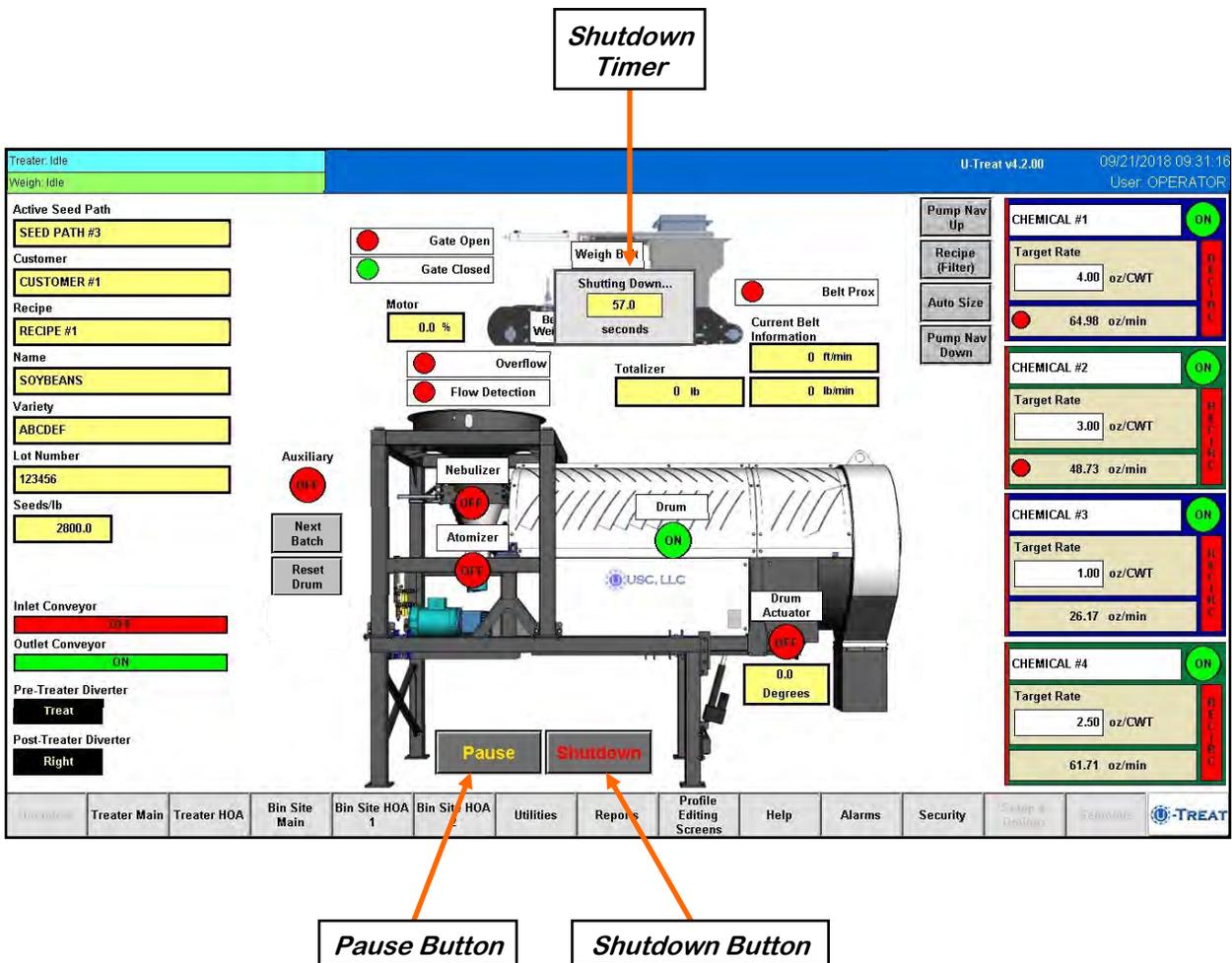
A green **Start** button is located at the bottom of the panel.

4. When the pump's flow rate has been reached and seed is covering the proximity switch in the bottom of the seed holding hopper, the weigh belt will turn on and ramp up to full speed. Then the seed gate will open. As the belt detects weight and seed travels toward the end of the belt, the flow rate is detected and the target belt speed is adjusted to achieve the desired flow rate. When seed begins to flow off the belt the flow indicator becomes active. Then the air actuated 3-way valve will switch to process allowing treatment to begin pumping to the atomizer.
5. As the seed is being treated, the main screen will display the pounds per minute, the total pounds, and the liquid flow rate. If the system needs to be stopped for a moment because of a problem. The Pause button may be pressed to halt the process. When ready to begin again, press the Continue button.
6. When the surge hopper is full the Hopper Full indicator light will come on and the inlet conveyor will shut off. The flow of seed into the surge hopper will begin again once seed is no longer present at the top proximity sensor in the hopper and the Inlet Conveyor Delay Restart time defined on the utilities has expired. This is done to ensure that seed will not overflow the hopper.
7. When all seed passes over the weigh belt, it will turn off and the pump will switch to re-circulate. When more seed is fed into the treater, the treating process will continue.

## TREATING SEED WITH WEIGH BELT

- After all seed has been treated the weigh belt will shutdown automatically. The 3-way valve on the pump stand will switch to re-circulate. However, the atomizer, drum and outlet conveyor will still be running. Press the Shutdown button at the bottom of the screen and the shutdown timer appears and begins to count down the seconds left before complete shutdown. The operator decides how much time is adequate for all product to clear the drum and outlet conveyor. The time is entered on the utilities screen and may be adjusted whenever necessary.

When treating seed with a bin site, the shutdown process will occur automatically when the target weight has been met.



SECTION  
D-2

# BATCH HOPPER CALIBRATION & OPERATION

## BATCH HOPPER - LOADING SEED INTO BINS

Before seed is pulled out of the bins and run through the batch hopper system, all of the applicable information about the seed that was loaded into each individual bin must first be entered into the batch hopper system. If the same seed was loaded into multiple bins the same information still needs to be loaded into each bin separately.

The following is a list of steps to perform to enter the bin information for each bin once seed has been loaded into that bin:

1. Load the seed into the bin. If your treater has a Seed Wheel, take a seed sample for the cup weight of each bin at this time. Also note the seed type, seed variety, lot number, seed per pound weight and total inventory weight of the seed that is loaded into the bin. The seed weight may be defined in either pounds, seed count units or seed weight units.
2. Press the Profile Editing Screens tab at the bottom of the screen.
3. Press the Seed Editing button and select the seed you are loading from the seed list. Scan in or manually enter the bar code, variety, lot number and seeds per pound. If it does not already exist, select a blank entry and enter a new name and the information. Once the information here is saved, it will automatically populate the barcode information on the bin editing page when the seed type is selected.

The screenshot shows the 'Seed Editing' screen in the U-Treat automation software. At the top, the title bar reads 'Seed Editing' with the version 'U-Treat v4.2.00' and the date '09/21/2018 09:31:18'. The user is identified as 'OPERATOR'. The interface is split into three main areas:

- Seed List (Left):** A table with a search bar and a list of seed types. The 'SOYBEANS - 2200' entry is highlighted in green. Navigation arrows are present on the right side of the list.
- Seed Editing Form (Right):** A form for entering seed details. Fields include:
  - Barcode: SOYBEANS 2200
  - Name: SOYBEANS - 2200
  - Variety: ABCDEF
  - Lot Number: 123456
  - Seed/lb: 2800
  - Seeds/Unit: 140000
  - Cal. Speed: 500.00
  - Cal. Ratio: 1.00
  - Max Gate Pos.: 19950
  - Min. Gate Pos.: 3000
 There are also buttons for 'Auto Calibrate Ratio On', 'Set Maximum Gate Position', and 'Set All Minimum Gate Positions'.
- Navigation (Bottom):** A series of tabs: Overview, Treater Main, Treater HOA, Bin Site Main, Bin Site HOA 1, Bin Site HOA 2, Utilities, Reports, Profile Editing Screens (active), Help, Alarms, Security, and U-TREAT.

## **BATCH HOPPER - LOADING SEED INTO BINS**

4. Select the Bin Editing button on the right side of the screen and select the bin that seed was loaded into from the Bin Profile List.
5. Press the product type box a select the seed that was loaded from the popup screen.
6. Enter in the total weight of seed that was added to the bin into the Amount to Adjust Current Inventory box. Press and hold the Plus button for 3 seconds and the Current Inventory amount will be updated. The system will automatically subtract inventory after each run. Press the Save button when all the information has been entered. If it will not save the amount you have entered, check the inventory maximum amount defined in the box to the right. The system will not allow you to add an amount of seed that will bring the total current inventory to a number larger than the maximum inventory.

*Enter the amount of seed that is to be added or subtracted here.*

*Displays the total inventory in the selected bin*

## **BATCH HOPPER - SETTING THE SEED FLOW RATE**

The following is a list of steps for setting the seed flow rate. This must be completed before running the batch hopper system. Repeat steps 1 & 2 for each bin.

1. Set the manual gate on the bin to the fully open position. Once opened, this gate should be set in place and not moved throughout the entire season. If this gate is adjusted during a run or between runs then it will affect the calibration of the system and the system will need to be re-calibrated (see page 133).
2. Set the stop for the air actuated slide gate on the bin. This stop controls how far the slide gate will open and the flow rate at which seed can exit the bin. To set the stop, adjust the position of the collar on the rod that exits the slide gate opposite of the air valve (below). Placing the collar closer to the slide gate will restrict flow and farther away from the slide gate will increase seed flow for the system. Once a collar location has been selected, use the hitch pin to lock the collar in place. If the stop is adjusted between runs then it will affect the calibration of the system and the system will need to be re-calibrated (see page 133).

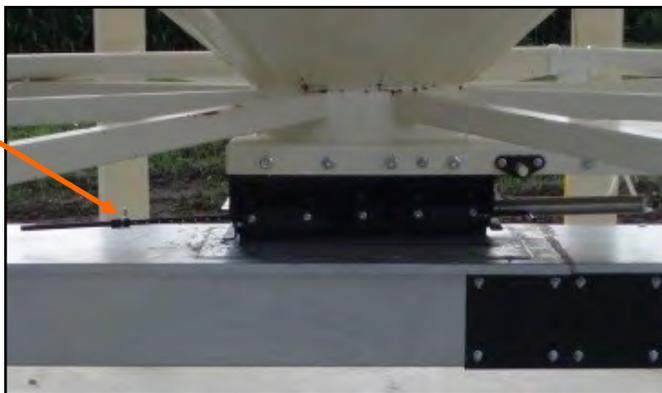
### **NOTICE**

It is recommended to initially place the collar closer to the slide gate and then move it farther away from the slide gate one hole at a time to increase the flow rate of the system. This will protect against overloading the underbin conveyor with seed.

### **AVIS**

Il est recommandé de placer d'abord le col plus proche de la valve à tiroir et le déplacer plus loin de la porte coulissante un trou à la fois pour augmenter la vitesse du système d'écoulement. Cela permettra de protéger contre la surcharge du convoyeur underbin avec des semences.

*Move the position of the collar along this rod to adjust the flow of seed through the bin slide gate.*

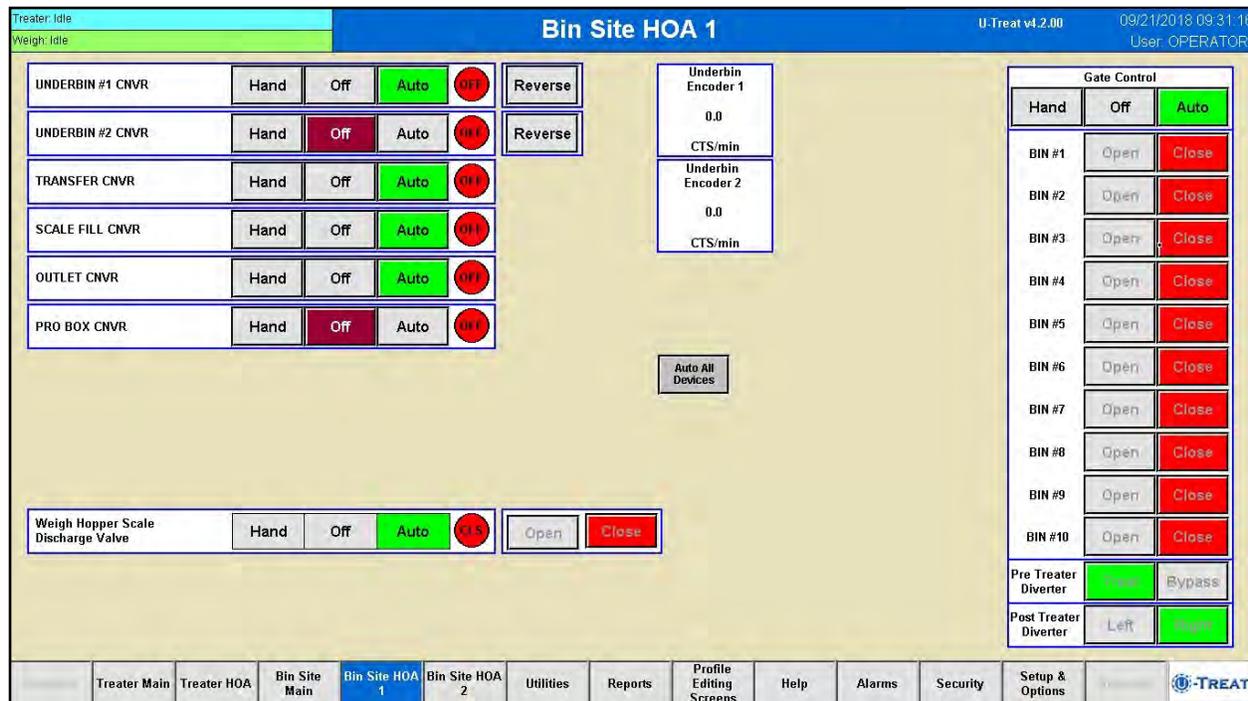


3. Finally, set the position of the manual slide gate that is located under the weigh hopper. This gate will control the flow of seed out of the weigh hopper by restricting the size of the opening from the weigh hopper. The more open the gate is, the faster seed will exit the weigh hopper. To set this gate, simply loosen the three nuts on the gate. Then adjust the gate to the desired position, and retighten the nuts.

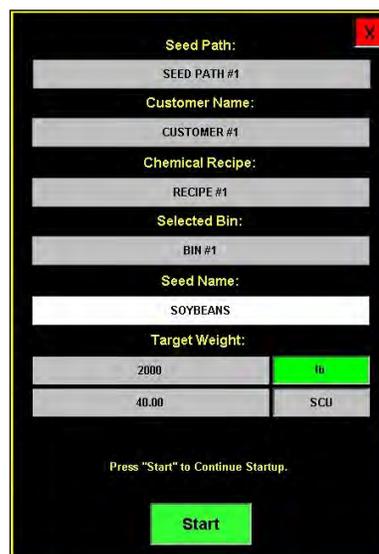
## BATCH HOPPER - CALLING IN SEED FROM BIN SITES

The following is a list of steps to use when using the batch hopper system to treat seed from a bin site.

1. Press the Bin Site HOA 1 button and place the Gate Control module and all necessary conveyors into the Auto mode of operation. Ensure that the diverter is in the appropriate position as well.



2. Press the Bin Site Main button and then press the Start Setup button.
3. Press the Seed Path button and select the seed path you wish to use for this run.
4. Press the Customer button at the top of the setup screen and select the current customer name by scrolling through the list to find it, or keying it in the Name Search box at the top.
5. If the enable recipe controls are active on the recipe screen (see page 46), the Chemical Recipe button will be active and you may select one from this screen.



## BATCH HOPPER - CALLING IN SEED FROM BIN SITES

6. Press the Selected Bin button and select the bin you wish to pull seed from. The name for that bin will be displayed in the box below it.
7. Press the Target Weight button and enter the amount of weight that you wish to bring into the batch hopper on this run.
8. Press the Start button at the bottom of the startup screen. This toggles the button to Shutdown and activates the Pause button. The system will first turn on the outlet conveyor then scale fill, transfer conveyor (if applicable) and then the underbin conveyor. Once all required conveyors are running, the slide gate for the selected bin will open and seed will flow through the conveyors to the batch hopper.
9. As the batch hopper system is running, the main screen will display the total pounds of seed in the weight hopper, and the status of the conveyor motors.
10. The slide gate on the bin will automatically close once the target weight in seed passes through the gate. Once the gate closes, bin site message window will read exiting run. A popup will appear next to the hopper notifying the operator that the system is shutting down. Inside that window a display will count down the number of seconds left in the run. A banner will appear above the bin indicating that the shutdown is in progress. The system will then shutdown the conveyors in reverse order of startup. This will ensure the conveyors have an opportunity to clean out any product from them.

**Bin Site Main**

Treater: Idle | Weigh: Idle | U-Treat v4.2.00 | 09/21/2018 09:31:18 | User: OPERATOR

**Shutdown in Progress**

**Bin 1**

**Inventory Level**

Name: SOYBEANS  
 Variety: ABCDEF  
 Lot Number: 123456  
 Seed/lb: 2800 lb  
 Inventory Weight: 38796 lb  
 Inventory SCU: 775.92 SCU  
 Inventory Capacity: 78 %  
 Cup Weight: 3.65 lb

Active Seed path  
 SEED PATH #1  
 Customer: CUSTOMER #1  
 Flow Rate: 1548.0 lb/min  
 Travel Time: 15.0 sec

Shutting Down... 17.4 seconds

Post-Treater Diverter: Left  
 Pre-Treater Diverter: Treat

Current Batch Weight: 1520 lb  
 Total Hopper Weight: 80 lb  
 Final Batch Weight: 1520 lb

Target Weight: 2000.0 lb  
 40.00 SCU

Pause

Navigation: Treater Main | Treater HOA | **Bin Site Main** | Bin Site HOA 1 | Bin Site HOA 2 | Utilities | Reports | Profile Editing Screens | Help | Alarms | Security | System & Diagnostics | TABS | U-TREAT

## **BATCH HOPPER - CALLING IN SEED FROM PRO BOXES**

The following is a list of steps to use when using the batch hopper system to treat seed from a Pro Box.

1. Press the Bin Site HOA 1 button and place all necessary conveyors into the Auto mode of operation. Depending upon the setup of the equipment, some bin sites will require only the transfer conveyor or the scale fill conveyor to be in Auto mode and some sites will require the transfer, underbin and scale fill conveyors to all be in the Auto mode. Ensure that the diverter is in the appropriate position as well.
2. Press the Bin Site Main button and then press the Start Setup button.
3. Press the Seed Path button and select the seed path you wish to use for this run.
4. Press the Customer button and select the current customer name by scrolling through the list to find it, or keying it in the Name Search box at the top.
5. If the enable recipe controls are active on the recipe screen (see page 46). The Chemical Recipe button will be active and you may select one from this screen.
6. Press the Selected Bin button and select the Manual Hopper from the listing.
7. There is no need to specify a target rate as the system will continue to treat until all of the seed in the box has gone through.
8. Press the Start button and the manual hopper popup window appears.
9. Press the Seed Type button and select one from the listing. The operator may also define the flow rate by pressing the Set Treater Flow Rate button and entering a number. His number will either be displayed in pounds or SCU's per minute depending on the information in the seed profile.

Seed Path: SEED PATH #1

Customer Name: CUSTOMER #1

Chemical Recipe: RECIPE #1

Selected Bin: BIN #1

Seed Name: SOYBEANS

Target Weight:

2000	lb
40.00	SCU

Press "Start" to Continue Startup.

**Start**

Bin Name: Manual Hopper 1

Seed Type: SOYBEANS

Seed Variety: ABCDEF

Lot Number: 123456

Seed/lb: 2800

Cup Weight: 3.65 lb

Set Treater Flow Rate: 34.20 SCU/min

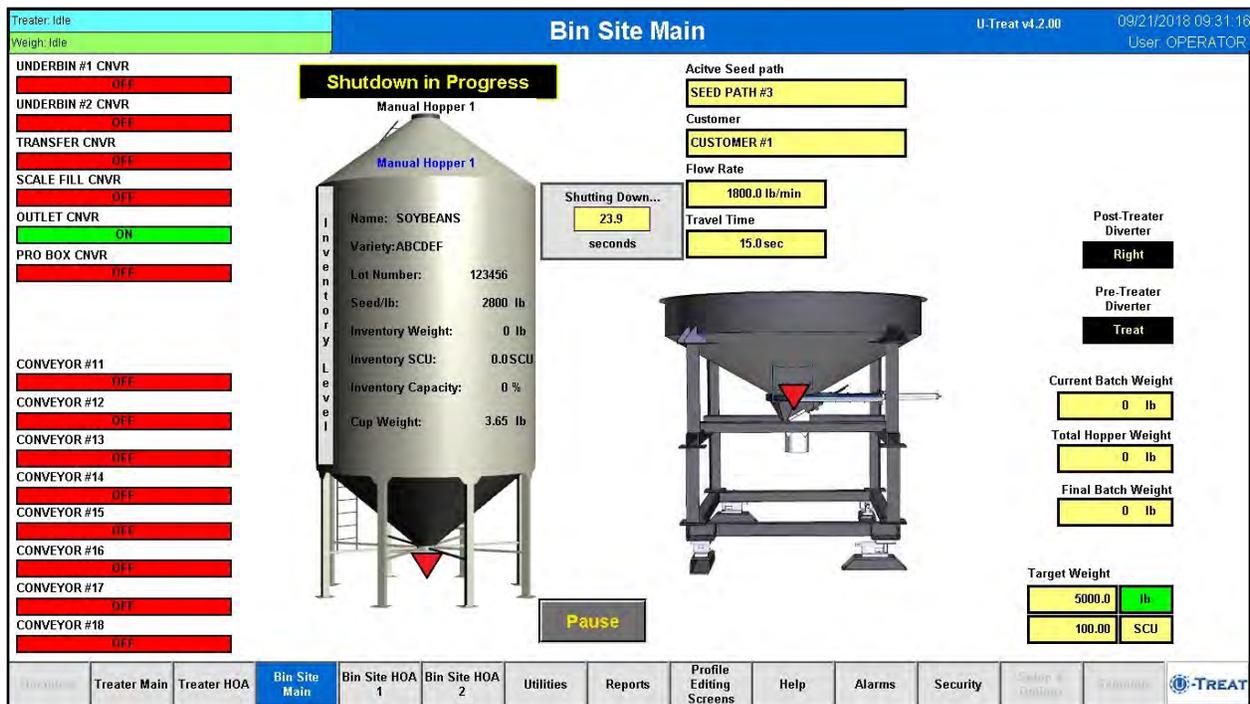
Treater will not auto adjust flow rate during manual hopper operation!

**Manual Hopper Fill**

**Start** **Cancel**

**BATCH HOPPER - CALLING IN SEED FROM PRO BOXES**

10. Press the Start button at the bottom of the startup screen. This toggles the button to Shutdown and activates the Pause button. The system will first turn on the outlet conveyor then scale fill, transfer conveyor (if applicable) and then the underbin conveyor (if applicable). Once all needed conveyors are running, open the slide gate on the bottom of the pro box and seed will flow through the conveyors to the treater.
11. As the batch hopper system is running, the main screen will display the total pounds of seed in the weigh hopper. If the system needs to be stopped for a moment because of a problem, the Pause button may be pressed to halt the process. When ready to begin again, press the Continue button.
12. Once all of the seed has passed from the manual hopper, through the conveyors and through the weigh hoppers, press the Shutdown button. At this point, the conveyors will shutdown in reverse order of startup.
13. The system will automatically print the report for the run from the scale head printer.



## **BATCH HOPPER - CALIBRATION**

Once the initial calibration is established, the system continuously updates the seed flow rate. The calibration is based upon time and weight. The system first calculates the amount of time it takes for the seed to travel from the bin slide gate to the weigh hopper. This is called the travel time. Then the system calculates how long it takes to fill the weigh hopper. This allows the system to calculate the seed flow rate of pounds per minute. Finally, the system uses the travel time and seed flow rate to calculate the amount of seed in the conveyors at any given time. Once this weight is known, it will automatically close the bin gate at the appropriate time to reach the target weight of seed that the operator has entered.

Initial calibration procedure:

1. Set the bin collar in the fourth hole from the end of the rod in. This sets the Flow Rate at approximately 1200 pounds. Adjust as needed (each hole adjusts up or down by approximately 200 pounds). These figures are based on Soybeans.
2. From the main screen check the Flow Rate to verify it is at the default setting of 1800 lbs/min and the Travel Time is at its default of 15.0 sec. Set your Target Weight at 2000 pounds. This Target Weight is recommended but not necessary depending on the setup. After the run, check to see if the Flow Rate and Travel Time have changed from the default settings. If they have the system has been successfully calibrated. Each bin must be individually calibrated. As long as there have been no pauses or alarms the system will re-calculate and update the flow rate display after the run is complete. For the Travel Time to update, there must be seed in the hopper before the bin slide gate closes (see page 168).

**If you change the location of the bin collar or the bin runs out of seed before the Target Weight is reached, the system will need to be re-calibrated.**

# U-TREAT AUTOMATION MANUAL

## BATCH HOPPER - CALIBRATION

Treater: Idle  
Weigh: Idle
Bin Site Main
U-Treat v4.2.00    09/21/2018 09:31:16  
User: OPERATOR

**UNDERBIN #1 CNVR** ON

**UNDERBIN #2 CNVR** OFF

**TRANSFER CNVR** ON

**SCALE FILL CNVR** ON

**OUTLET CNVR** ON

**PRO BOX CNVR** OFF

**CONVEYOR #11** OFF

**CONVEYOR #12** OFF

**CONVEYOR #13** OFF

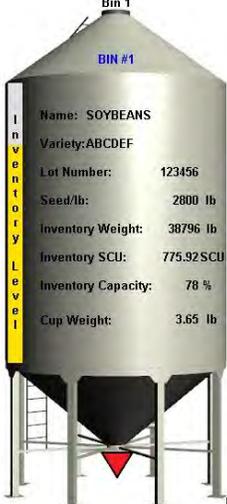
**CONVEYOR #14** OFF

**CONVEYOR #15** OFF

**CONVEYOR #16** OFF

**CONVEYOR #17** OFF

**CONVEYOR #18** OFF



**Bin #1**

Name: SOYBEANS  
Variety: ABCDEF  
Lot Number: 123456  
Seed/lb: 2800 lb  
Inventory Weight: 38796 lb  
Inventory SCU: 775.92 SCU  
Inventory Capacity: 78 %  
Cup Weight: 3.65 lb

**Active Seed path**

SEED PATH #1

Customer: CUSTOMER #1

Flow Rate: 1800.0 lb/min

Travel Time: 15.0 sec

Post-Treater Diverter: Left

Pre-Treater Diverter: Treat

Current Batch Weight: 320 lb

Total Hopper Weight: 320 lb

Final Batch Weight: 0 lb

Target Weight: 2000.0 lb

40.00 SCU

Pause
Shutdown

Overview Treater Main Treater HOA **Bin Site Main** Bin Site HOA 1 Bin Site HOA 2 Utilities Reports Profile Editing Screens Help Alarms Security Setup & Defaults
TREAT

Treater: Idle  
Weigh: Idle
Bin Editing
U-Treat v4.2.00    09/21/2018 09:31:16  
User: OPERATOR

**Refilling Bins?**

Bin List

Search:

Manual Hopper 1	↑
Bin #1	↑
Bin #2	↑
Bin #3	↑
Bin #4	↑
Bin #5	↑
Bin #6	↑
Bin #7	↓
Bin #8	↓
Bin #9	↓

Selection: 2    Viewing: 1 - 10 of 22  
Total Used Records: 10

Select the bin you wish to edit and adjust its associated settings.    Enabled:

Barcode	BIN #1		
Bin Name	Bin #1		
Seed Type	SOYBEANS		
Flow Rate	1800	lb / min	Global Bin Settings
Travel Time	15.0	seconds	Solenoid Valve Type: Single
Gate Time Adj.	0.00	seconds	Gate Auto Calibrate
Gate Output Hold Time	12.0	seconds	

Amount to adjust current Inventory	Plus	Minus	Press & Hold for 3 sec.	Inventory Maximum	Set	Press & Hold for 3 sec.
45000.00				0.00		
Current Inventory				Current Maximum Inventory		
45000				150000		
900.00				3000.00		

Save
Cancel

Overview Treater Main Treater HOA **Bin Site Main** Bin Site HOA 1 Bin Site HOA 2 Utilities Reports **Profile Editing Screens** Help Alarms Security Setup & Defaults
TREAT

## **BATCH HOPPER - UNDERBIN OPERATION IN REVERSE MODE**

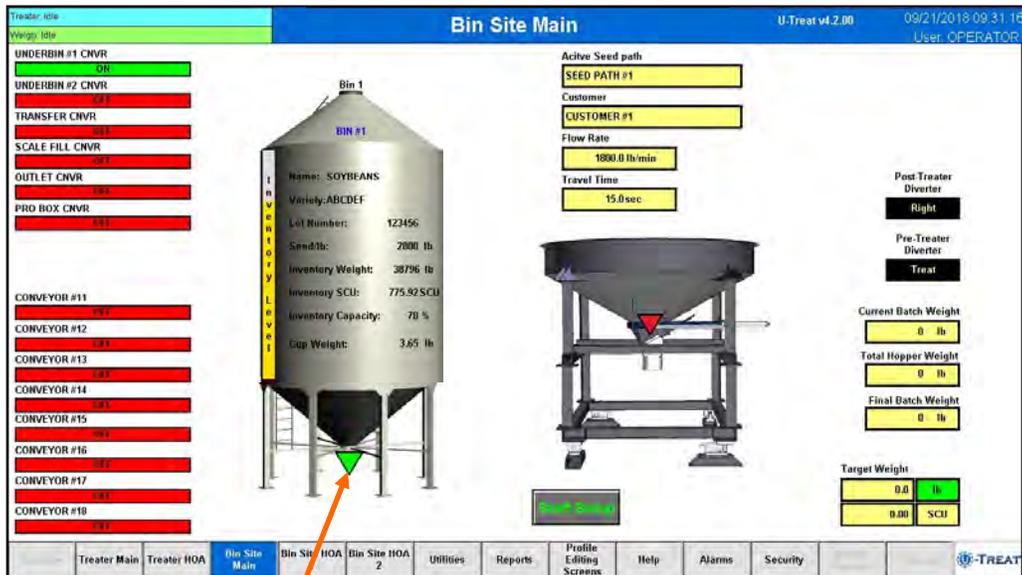
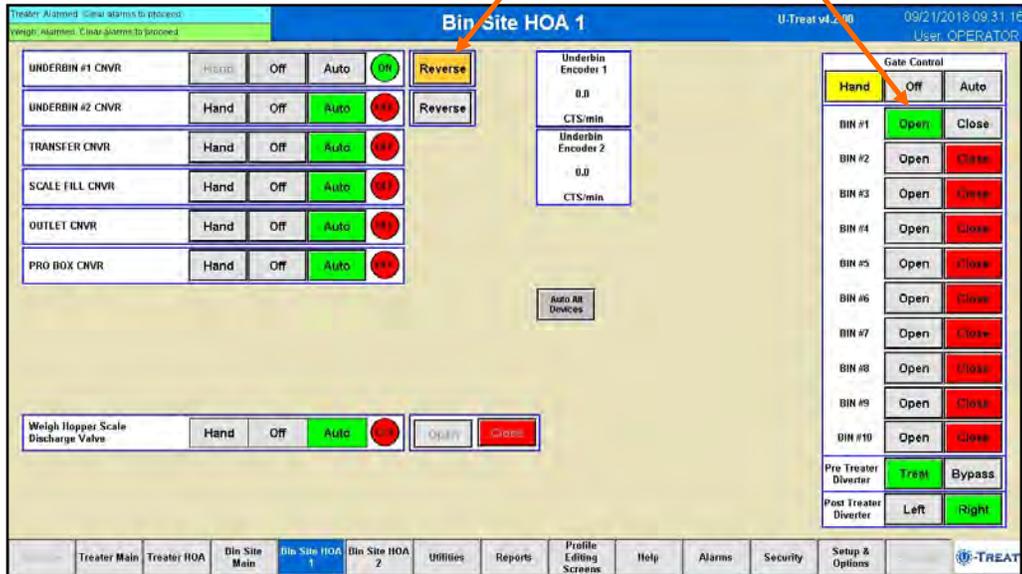
The following is a list of steps to use when running the underbin in Reverse mode. This mode of operation will allow the operator to clean out the underbin conveyor and remove any excess seed from the bins at the end of the treating season.

**ALWAYS ENSURE THE BELT IS IMMEDIATELY AND PROPERLY ALIGNED WHEN RUNNING IN REVERSE! BELTS WILL OFTEN SHIFT ALIGNMENT WHEN THEIR DIRECTION OF TRAVEL IS REVERSED.** The reverse option for the underbin conveyor will only be present if the controls for this feature have been installed.

1. Place a conveyor and seed storage container under the reversing end of the underbin conveyor to catch seed as it exits the underbin conveyor.
2. Press the Bin Site HOA 1 button. The underbin conveyor needs to be in the OFF mode. Press the Reverse button to the right of the underbin conveyor. Ensure that the belt on the underbin conveyor is correctly aligned.
3. Place the Gate Control module in the Hand mode. Press the bin slide gate Open button on the bin you wish to cleanout.
4. The bin site main screen will show the underbin conveyor on and the bin slide gate in the open position.
5. Once all seed has passed through the underbin conveyor and into the seed container, place the open bin slide gate back to the Closed position.
6. Allow the underbin conveyor to run for at least 15 seconds. This will allow the conveyor to clean itself out. When the conveyor is empty, place the motor in the Off position (see page 170).

**BATCH HOPPER - UNDERBIN OPERATION IN REVERSE MODE**

*Press the Reverse button and then place the bin slide gate to the Open position*



*Slide Gate Indicator*

# TRI-FLO® CALIBRATION & OPERATION

SECTION D-3

## TRI-FLO® -LOADING SEED INTO BINS

Before seed is pulled out of the bins and run through the Tri-Flo® system, all of the applicable information about the seed that was loaded into each individual bin must first be entered into the Tri-Flo® system. If the same seed was loaded into multiple bins the same information still needs to be loaded into each bin separately.

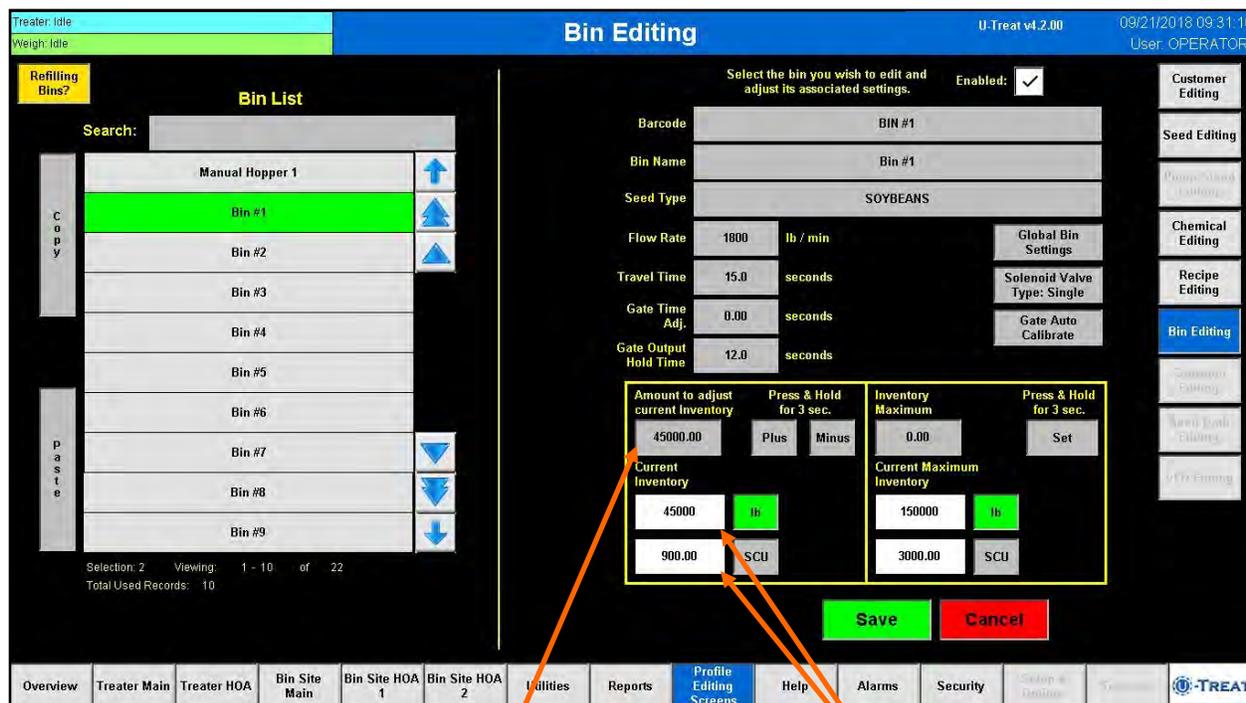
The following is a list of steps to perform to enter the bin information for each bin once seed has been loaded into that bin:

1. Load the seed into the bin. Take a seed sample for the cup weight of each bin at this time. Also note the seed type, seed variety, lot number, seed per pound weight and total inventory weight of the seed that is loaded into the bin. The seed weight may be defined in either pounds, seed count units or seed weight units.
2. Press the Profile Editing Screens button at the bottom of the screen.
3. Press the Seed Editing button and select the seed you are loading from the seed list. Scan in or manually enter the bar code, variety, lot number and seeds per pound. If it does not already exist, select a blank entry and enter a new name and the information. Once the information here is saved, it will automatically populate the barcode information on the bin editing page when the seed type is selected.

The screenshot shows the 'Seed Editing' interface. At the top, the title 'Seed Editing' is centered, with 'U-Treat v1.2.00' and '09/21/2018 09:31:18' on the right, and 'User: OPERATOR' below. The left sidebar has a 'Calibrating Seed?' button and a 'Seed List' table. The table has columns for 'Copy' and 'Paste', and a list of seed types with up/down arrows. The 'SOYBEANS - 2100' row is highlighted in green. Below the table, it says 'Selection: 6 Viewing: 1 - 10 of 500 Total Used Records: 10'. The main area has a heading 'Select the seed you wish to rename and adjust the seeds per unit entry.' and several input fields: Barcode (SOYBEANS 2100), Name (SOYBEANS - 2100), Variety (ABCDEF), Lot Number (123456), Seed/lb (2800), Seeds/Unit (140000), Calibration Ratio (1.00), and Cup Weight (lb) (3.65). There is a 'Seed Wheel Calibration Calculator' button. The right sidebar has buttons for 'Customer Editing', 'Seed Editing', 'Chemical Editing', 'Recipe Editing', 'Bin Editing', 'Chemical Editing', 'Seed Editing', and 'Bin Editing'. At the bottom, there are 'Save' and 'Clear' buttons. The navigation menu at the very bottom includes 'Overview', 'Treater Main', 'Treater HOA', 'Bin Site Main', 'Bin Site HOA 1', 'Bin Site HOA 2', 'Utilities', 'Reports', 'Profile Editing Screens', 'Help', 'Alarms', 'Security', 'System & Database', 'Treatments', and 'U-TREAT'.

### TRI-FLO® -LOADING SEED INTO BINS

4. Select the Bin Editing button on the right side of the screen and select the bin that seed was loaded into from the Bin Profile List.
5. Press the Product Type box and select the seed that was loaded from the popup screen.
6. Enter in the total weight of seed that was added to the bin into the Amount to Adjust Current Inventory box. Press and hold the Plus button for 3 seconds and the Current Inventory amount will be updated. The system will automatically subtract inventory after each run. Press the Save button when all the information has been entered. If it will not save the amount you have entered, check the inventory maximum amount defined in the box to the right. The system will not allow you to add an amount of seed that will bring the total current inventory to a number larger than the maximum inventory.



*Enter the amount of seed that is to be added or subtracted here.*

*Displays the total inventory in the selected bin*

## **TRI-FLO® - SETTING THE SEED FLOW RATE**

The following is a list of steps for setting the seed flow rate. This must be completed before running the Tri - Flo ® system. Repeat steps 1 & 2 for each bin.

1. Set the manual gate on the bin to the fully open position. Once opened, this gate should be set in place and not moved throughout the entire season. If this gate is adjusted during a run or between runs then it will affect the calibration of the system and the system will need to be re-calibrated (see page 133).
2. Set the stop for the air actuated slide gate on the bin. This stop controls how far the slide gate will open and the flow rate at which seed can exit the bin. To set the stop, adjust the position of the collar on the rod that exits the slide gate opposite of the air valve (below). Placing the collar closer to the slide gate will restrict flow and farther away from the slide gate will increase seed flow for the system. Once a collar location has been selected, use the hitch pin to lock the collar in place. If the stop is adjusted between runs then it will affect the calibration of the system and the system will need to be re-calibrated (see page 133).

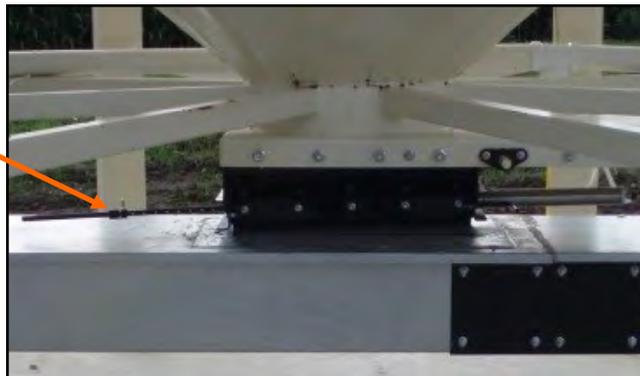
### **NOTICE**

It is recommended to initially place the collar closer to the slide gate and then move it farther away from the slide gate one hole at a time to increase the flow rate of the system. This will protect against overloading the underbin conveyor with seed.

### **AVIS**

Il est recommandé de placer d'abord le col plus proche de la valve à tiroir et le déplacer plus loin de la porte coulissante un trou à la fois pour augmenter la vitesse du système d'écoulement. Cela permettra de protéger contre la surcharge du convoyeur underbin avec des semences.

*Move the position of the collar along this rod to adjust the flow of seed through the bin slide gate.*

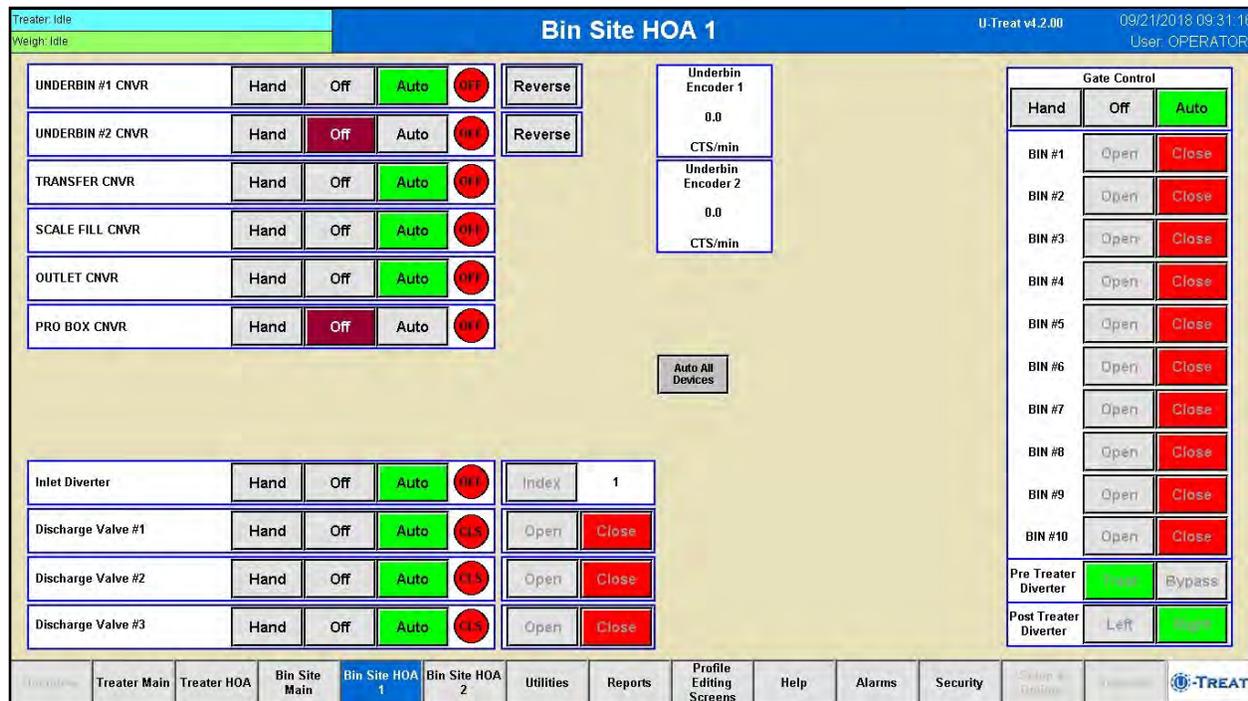


A minimum of 2000 pounds is recommended but not necessarily needed to calibrate flow rate for the first time. The system needs roughly that amount to enter its real time calibration (depending on the distance of the bin, it may be far less) but at the end of any alarm/pause free run of seed the system will do a calibration. If the run is long enough, then no initial calibration is needed as the system will set its calibration during the run. If running a small batch there may not be enough seed run to have the flow rate updating in real time during the run. As long as there have been no pauses or alarms the system will re-calculate and update the flow rate display after the run is complete.

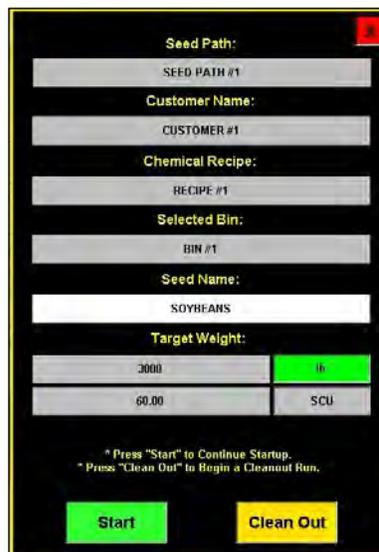
## TRI-FLO® - CALLING IN SEED FROM BIN SITES

The following is a list of steps to use when using the Tri-Flo® to treat seed from a bin site.

1. Press the Bin Site HOA 1 button and place the Gate Control module and all necessary conveyors into the Auto mode of operation. Ensure that the diverter is in the appropriate position as well.



2. Press the Bin Site Main button and then press the Start Setup button.
3. Press the Seed Path button and select the seed path you wish to use for this run.
4. Press the Customer button at the top of the setup screen and select the current customer name by scrolling through the list to find it, or keying it in the Name Search box at the top.
5. If the enable recipe controls are active on the recipe screen (see page 46), the Chemical Recipe button will be active and you may select one from this screen.



**TRI-FLO® - CALLING IN SEED FROM BIN SITES**

6. Press the Selected Bin button and select the bin you wish to pull seed from. The name for that bin will be displayed in the box below it.
7. Press the Target Weight button and enter the amount of weight that you wish to bring into the batch hopper on this run.
8. Press the Start button at the bottom of the startup screen. This toggles the button to Shutdown activates the Pause button. The system will first turn on the outlet conveyor then scale fill, transfer conveyor (if applicable) and then the underbin conveyor. Once all needed conveyors are running, the slide gate for the selected bin will open and seed will flow through the conveyors to the batch hopper.
9. As the Tri - Flo ® system is running, the main screen will display the total pounds of seed in each of the three weight hoppers, and the status of the conveyor motors.
10. The slide gate on the bin will automatically close once the target weight in seed passes through the gate. Once the gate closes, bin site message window will read exiting run. A popup will appear next to the hopper notifying the operator that the system is shutting down. Inside that window a display will count down the number of seconds left in the run. A banner will appear above the bin indicating that the shutdown is in progress. The system will then shutdown the conveyors in reverse order of startup. This will ensure the conveyors have an opportunity to clean out any product from them.

**Bin Site Main**

Treater: Idle | Weigh: Idle | U-Treat v4.2.00 | 09/21/2018 09:31:16 | User: OPERATOR

**Shutdown in Progress**

**Bin 1**

Name: SOYBEANS  
 Variety: ABCDEF  
 Lot Number: 123456  
 Seed/lb: 2800 lb  
 Inventory Weight: 38796 lb  
 Inventory SCU: 775.92 SCU  
 Inventory Capacity: 78 %  
 Cup Weight: 3.65 lb

Active Seed path  
 SEED PATH #1  
 Customer: CUSTOMER #1  
 Flow Rate: 1452.0 lb/min  
 Travel Time: 15.0 sec

Shutting Down... 17.4 seconds

Post-Treater Diverter: Right  
 Pre-Treater Diverter: Treat

Total Accum. Weight: 2063.0 lb  
 Final Batch Weight: 2063.0 lb

Target Weight: 2000.0 lb, 40.00 SCU

Conveyors: UNDERBIN #1 CNVR OFF, UNDERBIN #2 CNVR OFF, TRANSFER CNVR OFF, SCALE FILL CNVR OFF, OUTLET CNVR ON, PRO BOX CNVR OFF, CONVEYOR #11 OFF, CONVEYOR #12 OFF, CONVEYOR #13 OFF, CONVEYOR #14 OFF, CONVEYOR #15 OFF, CONVEYOR #16 OFF, CONVEYOR #17 OFF, CONVEYOR #18 OFF

Batch Hopper Weights: WH3 Weight -22.5 lb, WH1 Weight -7.5 lb, WH2 Weight -7.5 lb

Buttons: Pause, Right, Treat

Navigation: Treater Main, Treater HOA, Bin Site Main, Bin Site HOA 1, Bin Site HOA 2, Utilities, Reports, Profile Editing Screens, Help, Alarms, Security, Setup & Online, Troubleshooting

## TRI-FLO® - CALLING IN SEED FROM PRO BOXES

The following is a list of steps to use when using the Tri-Flo® system to treat seed from a Pro Box.

1. Press the Bin Site HOA 1 button and place all necessary conveyors into the Auto mode of operation. Depending upon the setup of the equipment, some bin sites will require only the transfer conveyor or the scale fill conveyor to be in Auto mode and some sites will require the transfer, underbin and scale fill conveyors to all be in the Auto mode. Ensure that the diverter is in the appropriate position as well.
2. Press the Bin Site Main button and then press the Start Setup button.
3. Press the Seed Path button and select the seed path you wish to use for this run.
4. Press the Customer button and select the current customer name by scrolling through the list to find it, or keying it in the Name Search box at the top.
5. If the enable recipe controls are active on the recipe screen (see page 46). The Chemical Recipe button will be active and you may select one from this screen.
6. Press the Selected Bin button and select the Manual Hopper from the listing.
7. There is no need to specify a target rate as the system will continue to treat until all of the seed in the box has gone through.
8. Press the Start button and the manual hopper popup window appears.
9. Press the Seed Type button and select one from the listing. The operator may also define the flow rate by pressing the Set Treater Flow Rate button and entering a number. His number will either be displayed in pounds or SCU's per minute depending on the information in the seed profile

Seed Path: SEED PATH #1

Customer Name: CUSTOMER #1

Chemical Recipe: RECIPE #1

Selected Bin: BIN #1

Seed Name: SOYBEANS

Target Weight: 2000 lb, 40.00 SCU

Press "Start" to Continue Startup.

Start

Bin Name: Manual Hopper 1

Seed Type: SOYBEANS

Seed Variety: ABCDEF

Lot Number: 123456

Seed/lb: 2800

Cup Weight: 3.65 lb

Set Treater Flow Rate: 34.20 SCU/min

Treater will not auto adjust flow rate during manual hopper operation

Manual Hopper Fill

Start Clean Out Cancel

By pressing "Start" the system will automatically set:  
No Seed Flow = 10 minutes<sup>10</sup>  
&  
"Target Weight" = 1,000,000.

**TRI-FLO® - CALLING IN SEED FROM PRO BOXES**

10. Press the Start button at the bottom of the startup screen. This toggles the button to Shutdown and activates the Pause button. The system will first turn on the outlet conveyor then scale fill, transfer conveyor (if applicable) and then the underbin conveyor (if applicable). Once all needed conveyors are running, open the slide gate on the bottom of the pro box and seed will flow through the conveyors to the treater.
  
8. As the Tri - Flo ® system is running, the main screen will display the total pounds of seed in each of the three weight hoppers, and the status of the conveyor motors.
  
10. If the system needs to be stopped for a moment because of a problem, the Pause button may be pressed to halt the process. When ready to begin again, press the Continue button.
  
11. Once all of the seed has passed from the manual hopper, through the conveyors and through the weigh hoppers, press the Shutdown button. At this point, the conveyors will shutdown in reverse order of startup.
  
12. The system will automatically print the report for the run from the scale head printer.

**Bin Site Main** | U-Treat v4.2.00 | 09/21/2018 09:31:18 | User: OPERATOR

**Shutdown in Progress**

**Manual Hopper 1**

Name: SOYBEANS  
 Variety: ABCDEF  
 Lot Number: 123456  
 Seed/lb: 2800 lb  
 Inventory Weight: 0 lb  
 Inventory SCU: 0.0 SCU  
 Inventory Capacity: 0 %  
 Cup Weight: 3.65 lb

**Active Seed path**  
 SEED PATH #3

Customer: CUSTOMER #1

Flow Rate: 1452.0 lb/min

Travel Time: 15.0 sec

Shutting Down... 20.9 seconds

Inlet Diverter: OFF

Draft Size: 700.0 lb

WH3 Weight: -15.0 lb | WH1 Weight: -22.5 lb | WH2 Weight: -52.5 lb

Total Accum. Weight: 5550.0 lb

Final Batch Weight: 5498.0 lb

Target Weight: 100000.0 lb (20000.00 SCU)

Conveyor Statuses:  
 UNDERBIN #1 CNVR: OFF  
 UNDERBIN #2 CNVR: OFF  
 TRANSFER CNVR: OFF  
 SCALE FILL CNVR: OFF  
 OUTLET CNVR: ON  
 PRO BOX CNVR: OFF  
 CONVEYOR #11-18: OFF

Buttons: Pause, Right, Treat

Navigation: Treater Main, Treater HOA, **Bin Site Main**, Bin Site HOA 1, Bin Site HOA 2, Utilities, Reports, Profile Editing Screens, Help, Alarms, Security, Settings, TABS, U-TREAT

**TRI - FLO ® CALIBRATION**

Once the initial calibration is established, the system continuously updates the seed flow rate. The calibration is based upon time and weight. The system first calculates the amount of time it takes for the seed to travel from the bin slide gate to the first Tri - Flo ® weigh hopper. This is called the travel time. Then the system calculates how long it takes to fill the first weigh hopper. This allows the system to calculate the seed flow rate of pounds per minute. Finally, the system uses the travel time and seed flow rate to calculate the amount of seed in the conveyors at any given time. Once this weight is known, it will automatically close the bin gate at the appropriate time to reach the target weight of seed that the operator has entered.

Initial calibration procedure:

1. Set the bin collar in the fourth hole from the end of the rod in. This sets the Flow Rate at approximately 1200 pounds. Adjust as needed (each hole adjusts up or down by approximately 200 pounds). These figures are based on Soybeans.
2. From the main screen check the Flow Rate to verify it is at the default setting of 1800 lbs/min and the Travel Time is at it's default of 15.0 sec. Then set your Target Weight at 2000 pounds. At the end of the run the Final Batch Weight must be 1500 pounds. These values are recommended but not necessary depending on the setup. For the system to be able to record the calibration the first two Tri - Flo ® hoppers must be weighed full and the third is in the process of filling with no alarm faults. After the run, check to see if the Flow Rate and Travel Time have changed from the default settings. If they have the system has been successfully calibrated. Each bin must be individually calibrated. If running a small batch there may not be enough seed run to have the flow rate updating in real time during the run. As long as there have been no pauses or alarms the system will re-calculate and update the flow rate display after the run is complete (see page 179).

**If you change the location of the bin collar or the bin runs out of seed before the Target Weight is reached the system will need to be re-calibrated.**

**TRI-FLO® CALIBRATION**

Treater: Idle Weigh: Idle **Bin Site Main** U-Treat v1.2.00 09/21/2018 09:31:16 User: OPERATOR

UNDERBIN #1 CNVR **ON**

UNDERBIN #2 CNVR **OFF**

TRANSFER CNVR **ON**

SCALE FILL CNVR **ON**

OUTLET CNVR **ON**

PRO BOX CNVR **OFF**

CONVEYOR #11 **OFF**

CONVEYOR #12 **OFF**

CONVEYOR #13 **OFF**

CONVEYOR #14 **OFF**

CONVEYOR #15 **OFF**

CONVEYOR #16 **OFF**

CONVEYOR #17 **OFF**

CONVEYOR #18 **OFF**

**Bin 1**

Name: SOYBEANS  
Variety: ABCDEF  
Lot Number: 123456  
Seed/lb: 2800 lb  
Inventory Weight: 38796 lb  
Inventory SCU: 775.92 SCU  
Inventory Capacity: 78 %  
Cup Weight: 3.65 lb

Active Seed Path:

**SEED PATH #1**

Customer: CUSTOMER #1

Flow Rate: 1800.0 lb/min

Travel Time: 15.0 SEC

Inlet Diverter: **ON** Draft Size: 700.0 lb

WH3 Weight: 0.0 lb WH1 Weight: 0.0 lb WH2 Weight: 0.0 lb

Total Accum. Weight: 0.0 lb  
Final Batch Weight: 0.0 lb

Target Weight: 3000.0 lb  
60.00 SCU

**Pause** **Shutdown**

Post-Treater Diverter: **Right**

Treater Diverter: **Treat**

Overview Treater Main Treater HOA **Bin Site Main** Bin Site HOA 1 Bin Site HOA 2 Utilities Reports Profile Editing Screens Help Alarms Security Setup & Defaults

Treater: Idle Weigh: Idle **Bin Editing** U-Treat v1.2.00 09/21/2018 09:31:16 User: OPERATOR

Refilling Bins? **Bin List**

Search: \_\_\_\_\_

Manual Hopper 1	↑
<b>Bin #1</b>	↑
Bin #2	↑
Bin #3	↑
Bin #4	↑
Bin #5	↑
Bin #6	↑
Bin #7	↓
Bin #8	↓
Bin #9	↓

Selection: 2 Viewing: 1 - 10 of 22  
Total Used Records: 10

Select the bin you wish to edit and adjust its associated settings. Enabled:

Barcode: BIN #1

Bin Name: Bin #1

Seed Type: SOYBEANS

Flow Rate: 1800 lb / min

Travel Time: 15.0 seconds

Gate Time Adj.: 0.00 seconds

Gate Output Hold Time: 12.0 seconds

Global Bin Settings  
Solenoid Valve Type: Single  
Gate Auto Calibrate

Amount to adjust current Inventory	Press & Hold for 3 sec.	Inventory Maximum	Press & Hold for 3 sec.
45000.00	Plus Minus	0.00	Set
Current Inventory		Current Maximum Inventory	
45000 lb		150000 lb	
900.00 SCU		3000.00 SCU	

**Save** **Cancel**

Overview Treater Main Treater HOA **Bin Site Main** Bin Site HOA 1 Bin Site HOA 2 Utilities Reports **Profile Editing Screens** Help Alarms Security Setup & Defaults

## **TRI-FLO® - UNDERBIN OPERATION IN REVERSE MODE**

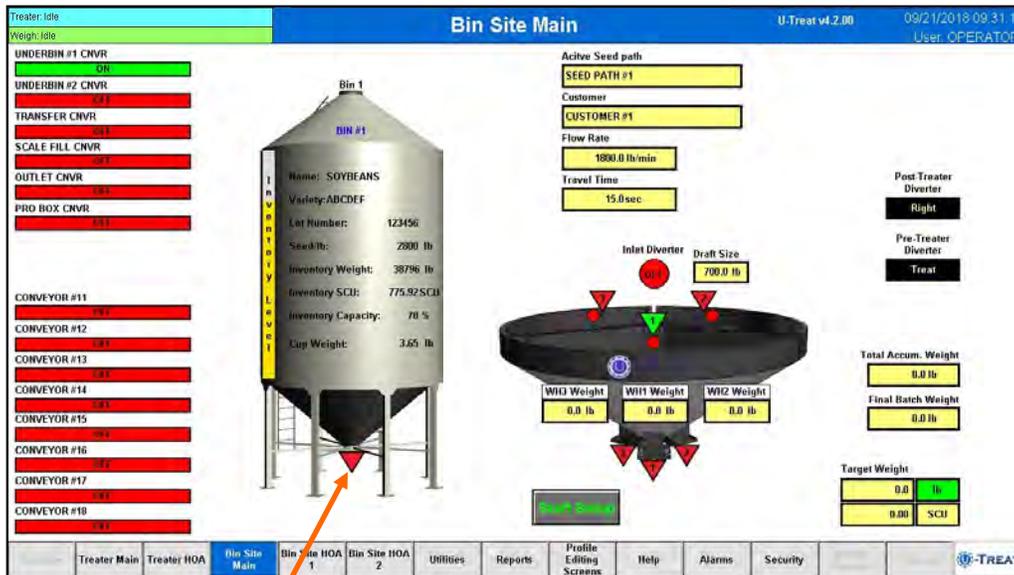
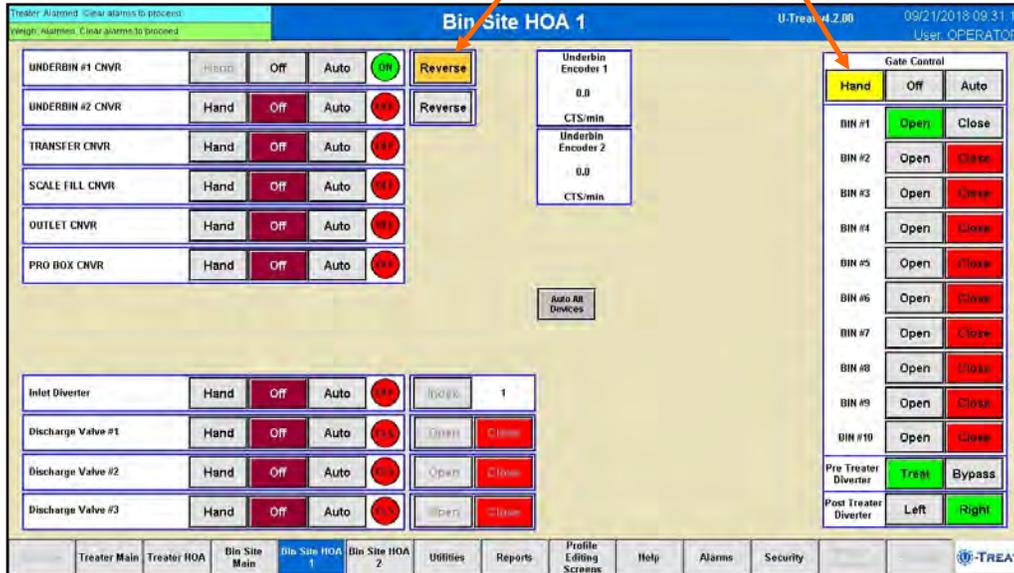
The following is a list of steps to use when running the underbin in Reverse mode. This mode of operation will allow the operator to clean out the underbin conveyor and remove any excess seed from the bins at the end of the treating season.

**ALWAYS ENSURE THE BELT IS IMMEDIATELY AND PROPERLY ALIGNED WHEN RUNNING IN REVERSE! BELTS WILL OFTEN SHIFT ALIGNMENT WHEN THEIR DIRECTION OF TRAVEL IS REVERSED.** The reverse option for the underbin conveyor will only be present if the controls for this feature have been installed.

1. Place a conveyor and seed storage container under the reversing end of the underbin conveyor to catch seed as it exits the underbin conveyor.
2. Press the Bin Site HOA 1 button. The underbin conveyor needs to be in the OFF mode. Press the Reverse button to the right of the underbin conveyor. Ensure that the belt on the underbin conveyor is correctly aligned.
3. Place the Gate Control module in the Hand mode. Press the bin slide gate Open button on the bin you wish to cleanout.
4. The bin site main screen will show the underbin conveyor on and the bin slide gate in the open position.
5. Once all seed has passed through the underbin conveyor and into the seed container, place the open bin slide gate back to the Closed position.
6. Allow the underbin conveyor to run for at least 15 seconds. This will allow the conveyor to clean itself out. When the conveyor is empty, place the motor in the Off position (see page 181).

**TRI-FLO® - UNDERBIN OPERATION IN REVERSE MODE**

Press the Reverse button and then place the bin slide gate to the Open position



Slide Gate Indicator

**TROUBLESHOOTING**

This section contains tables describing the most frequent problems and solutions with the USC systems on the pages noted below. For further assistance, contact the USC Service department at (785) 431-7900.

- Treater troubleshooting table pg. 183.
- Batch Hopper troubleshooting table : pg. 195.
- Tri - Flo ® troubleshooting table : pg. 200.

**SYSTEM ALARMS - FAULTS**

The table on the pages noted below provide a general description of all the system alarms (faults & warnings) of the different USC systems. When a fault or warning condition is detected by the system, the alarms screen will pop-up describing the cause of the alarm or fault. Any motor fault will activate the alarm screen on the operator control panel. If running, the system will then progress to the pause state. A warning will alert the operator of a system condition which needs attention or correction. The alarms are reset when the fault condition is cleared and the Reset button is pressed. The horn is silenced by pressing the Silence button on the alarm screen. The arrows on the right allow the operator to scroll through the listing. For further assistance, contact the USC Service department at (785) 431-7900.

- Treater system alarm-faults table pg. 189.
- Batch Hopper system alarm-faults table : pg. 197.
- Tri - Flo ® system alarm-faults table : pg. 203.

**TREATER TROUBLESHOOTING****SECTION  
E-1****LPX & LPV TREATER**

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. 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 188).</li> <li>3. 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 188).</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. Proximity switch is not sensitive enough.</li> </ol>	<ol style="list-style-type: none"> <li>1. Make sure proximity switch is staying covered with seed.</li> <li>2. Adjust pump proximity switch sensitivity by turning the adjustment screw clockwise (page 188).</li> </ol>
Inlet conveyor won't shut off when supply 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 188).</li> <li>3. Make sure Inlet Conveyor is plugged inlet conveyor receptacle.</li> </ol>
Shutdown due to not having all needed devices available.	<ol style="list-style-type: none"> <li>1. An interlock on one of the bin site conveyors is not properly setup and is keeping the conveyor from starting.</li> <li>2. The system was PAUSED during startup.</li> </ol>	<ol style="list-style-type: none"> <li>1. Contact USC service department for assistance with changing the interlock.</li> <li>2. Restart the run of seed.</li> </ol>

**LPX & LPV 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> </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> </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>

**LPV LOSS IN WEIGHT TREATER ONLY**

Problem	Possible Cause	Solution
Seed Gate Actuator will not move.	<ol style="list-style-type: none"> <li>1. Adjustable Chamber mechanism jammed with debris.</li> <li>2. One or both of the two connectors linking the actuator to the control panel are not connected.</li> </ol>	<ol style="list-style-type: none"> <li>1. Clear all debris and make sure mechanism moves freely.</li> <li>2. Make sure both connectors are properly engaged.</li> </ol>
Seed Gate Actuator will not return to the closed position after all seed has emptied from the box.	<ol style="list-style-type: none"> <li>1. Proximity switch is dirty.</li> <li>2. Proximity switch is set too sensitive.</li> <li>3. The system is running in HAND mode.</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean proximity switch.</li> <li>2. Adjust the pump proximity switch sensitivity (see page 181).</li> <li>3. Change to AUTO mode.</li> </ol>
Seed Gate Actuator will not move in AUTO.	<ol style="list-style-type: none"> <li>1. Proximity switch is not staying covered.</li> <li>2. Proximity switch is not set sensitive enough.</li> <li>3. HMI screen not 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. Adjust pump proximity switch sensitivity by turning the adjustment screw clockwise.</li> <li>3. Set HMI screen to AUTO.</li> </ol>
Seed Gate Actuator will not close completely.	<ol style="list-style-type: none"> <li>1. Debris may be keeping it from closing completely.</li> </ol>	<ol style="list-style-type: none"> <li>1. Open the seed gate, remove debris and power cycle the entire system. When the system is turned back on, the gate will automatically close and find it's Home position.</li> </ol>
Drum Actuator not moving and stopping at the correct time.	<ol style="list-style-type: none"> <li>1. The connector linking the control panel to the actuator is not connected.</li> <li>2. The Actuator Calibration parameters have not been set or are set incorrectly.</li> </ol>	<ol style="list-style-type: none"> <li>1. Make sure the connector is properly engaged.</li> <li>2. From the Utilities page, press the Drum Actuator Calibration button and ensure the settings are correct.</li> </ol>

**LPV WEIGHT BELT TREATER ONLY**

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 188).</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>
Inlet conveyor will not 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> <li>4. Hopper proximity switch is not connected</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 188).</li> <li>3. Make sure inlet conveyor is plugged inlet conveyor receptacle.</li> <li>4. Connect hopper proximity switch.</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 188).</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>
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>

**LPV WEIGHT BELT TREATER ONLY**

Problem	Possible Cause	Solution
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 190).</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 weigh belt.</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 weigh belt 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.

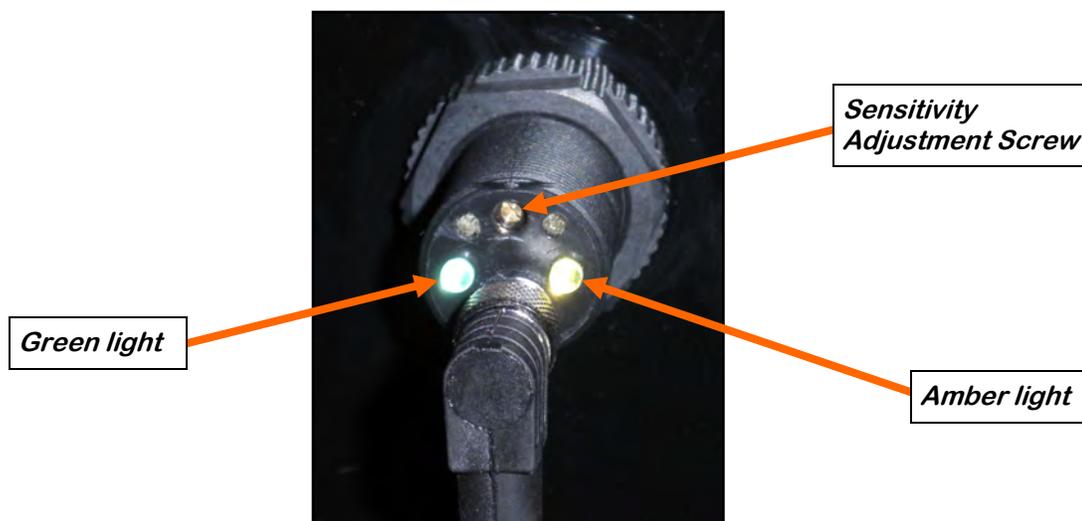
If the proximity switch is not working properly, this can be caused by wear, dust, or even moisture. The first step is to clean the lens of the proximity switch. If this does not solve the problem, the next step would be to adjust the sensitivity of the proximity switch.

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.



*Green light*

*Sensitivity Adjustment Screw*

*Amber light*



*Proximity Switch Screwdriver*

**SYSTEM ALARMS - FAULTS**

Below is a table describing the most frequent system alarms, faults and solutions with the USC Automated Seed Treater.

For further assistance, contact USC at (785) 431-7900.

**LPX & LPV TREATER**

Alarm - Fault	Possible Cause	Solution
Drum Motor Fault	<ol style="list-style-type: none"> <li>1. No signal from Drum motor drive (VFD) indicating that the Drum is running.</li> <li>2. Drum motor has been shutdown while in Auto mode of operation.</li> </ol>	<ol style="list-style-type: none"> <li>1. Verify that the VFD is powered up, or check if it is faulted out. Check the Information screen.</li> <li>2. Verify that the Drum was not turned OFF while the system was in Auto mode of operation.</li> </ol>
Seed Wheel Motor Fault	<ol style="list-style-type: none"> <li>1. No signal from Seed Wheel motor drive (VFD) indicating that the Seed Wheel is running.</li> <li>2. Seed Wheel motor has been shutdown while in Auto mode of operation.</li> </ol>	<ol style="list-style-type: none"> <li>1. Verify that the VFD is powered up, or check if it is faulted out. Check the Information screen.</li> <li>2. Verify that the Seed Wheel was not turned Off while the system was in Auto mode of operation.</li> </ol>
Atomizer Motor Fault	<ol style="list-style-type: none"> <li>1. No signal from Atomizer motor drive (VFD) indicating that the Atomizer is running.</li> <li>2. Atomizer motor has been shutdown while in Auto mode of operation.</li> </ol>	<ol style="list-style-type: none"> <li>1. Verify that the VFD is powered up, or check if it is faulted out.</li> <li>2. Verify that the Atomizer was not turned OFF while the system was in Auto mode of operation.</li> </ol>
Flow rate less than 300 or greater than 1800 lbs/min 136-820 KGS/min	<ol style="list-style-type: none"> <li>1. There could be an obstruction in the seed path.</li> <li>2. May have set run speed to high.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check seed path for obstruction and remove it.</li> <li>2. Slow run speed down.</li> </ol>
Treater Inlet Conveyor Motor Fault	<ol style="list-style-type: none"> <li>1. Inlet Conveyor motor auxiliary contact was not sensed after being energized to run.</li> </ol>	<ol style="list-style-type: none"> <li>1. Verify that the motor starter has power and is turned on.</li> </ol>

**LPX & LPV TREATER**

Alarm - Fault	Possible Cause	Solution
Treater Outlet Conveyor Motor Fault	1. Outlet Conveyor motor auxiliary contact was not sensed after being energized to run.	1. Verify that the motor started has power and is turned on.
Pump - Not In Process:	1. Valve of the liquid displayed failed to divert to process when requested.	1. Verify valve has diverted, if so troubleshoot sensor, if not check air supply and signal to valve.
Seed Wheel - Lbs/Min Under Range	1. Actual Lbs/Min is under 95% of target rate.	1. Make sure the VFD is not maxed out at the specified target rate. Check for sluggish or oscillating Seed Wheel response. Call the manufacturer.
Check Operation Of Seed Sensors In Seed Wheel	1. Seed Wheel is in Auto mode of operation, and only one proximity sensor has been activated for the past ten seconds.	1. Verify both proximity sensors are working properly. (This alarm will also be activated if seed is only flowing through one side of the seed wheel.)
Treater Pump # Liquid Flow Rate Alarm: Flow is more than ## percent out of range for X seconds.	1. Filter may be clogged. 2. Hoses may be obstructed. 3. Pump Head not locked down. 4. Pump Head hoses may be worn out.	1. Remove filter and clean. 2. Check to see if hoses are blocked or pinched. May need to clean or replace. 3. Lock down Pump Head. 4. Replace Pump Head hoses.
Treater Pump # Liquid Flow Rate Alarm: Flow is more than xxx out of range for X seconds.	1. Filter may be clogged. 2. Hoses may be obstructed. 3. Pump Head not locked down. 4. Pump Head hoses may be worn out.	1. Remove filter and clean. 2. Check to see if hoses are blocked or pinched. May need to clean or replace. 3. Lock down Pump Head. 4. Replace Pump Head hoses.
Pump ## Three Way Valve Not In Process Alarm	1. Valve of the liquid displayed failed to divert to process when requested.	1. Verify valve has diverted, if so troubleshoot sensor, if not check air supply and signal to valve.
Treater Surge Suppressor - L1 FAILED!!!	1. L1 of the Surge Protector will no longer protect the electrical panel against voltage surges.	1. Replace the Surge Protector.

**LPX & LPV TREATER**

Alarm - Fault	Possible Cause	Solution
Check pump flow rate - Must be above 80% Target Rate for 30 seconds	<ol style="list-style-type: none"> <li>1. Filter may be clogged.</li> <li>2. Hoses may be obstructed.</li> <li>3. Pump Head not locked down.</li> <li>4. Pump Head hoses may be worn out.</li> </ol>	<ol style="list-style-type: none"> <li>1. Remove filter and clean.</li> <li>2. Check to see if hoses are blocked or pinched. May need to clean or replace.</li> <li>3. Lock down Pump Head.</li> <li>4. Replace Pump Head hoses.</li> </ol>
Check pump flow rate - Less than 10oz/min below Target Rate for 10 seconds	<ol style="list-style-type: none"> <li>1. Filter may be clogged.</li> <li>2. Hoses may be obstructed.</li> <li>3. Pump Head not locked down.</li> <li>4. Pump Head hoses may be worn out.</li> </ol>	<ol style="list-style-type: none"> <li>1. Remove filter and clean.</li> <li>2. Check to see if hoses are blocked or pinched. May need to clean or replace.</li> <li>3. Lock down Pump Head.</li> <li>4. Replace Pump Head hoses.</li> </ol>
Check pump flow rate - Less than 50% Flow Rate for 5 seconds	<ol style="list-style-type: none"> <li>1. Filter may be clogged.</li> <li>2. Hoses may be obstructed.</li> <li>3. Pump Head not locked down.</li> <li>4. Pump Head hoses may be worn out.</li> </ol>	<ol style="list-style-type: none"> <li>1. Remove filter and clean.</li> <li>2. Check to see if hoses are blocked or pinched. May need to clean or replace.</li> <li>3. Lock down Pump Head.</li> <li>4. Replace Pump Head hoses.</li> </ol>
Check pump flow rate - Less than 80% Flow Rate for 10 seconds	<ol style="list-style-type: none"> <li>1. Filter may be clogged.</li> <li>2. Hoses may be obstructed.</li> <li>3. Pump Head not locked down.</li> <li>4. Pump Head hoses may be worn out.</li> </ol>	<ol style="list-style-type: none"> <li>1. Remove filter and clean.</li> <li>2. Check to see if hoses are blocked or pinched. May need to clean or replace.</li> <li>3. Lock down Pump Head.</li> <li>4. Replace Pump Head hoses.</li> </ol>
Mix Tank ## Motor Fault	<ol style="list-style-type: none"> <li>1. Mix Tank motor auxiliary contact was not sensed after being energized to run.</li> </ol>	<ol style="list-style-type: none"> <li>1. Verify that the motor starter has power and is turned on.</li> </ol>

**LPV LOSS IN WEIGHT TREATER ONLY**

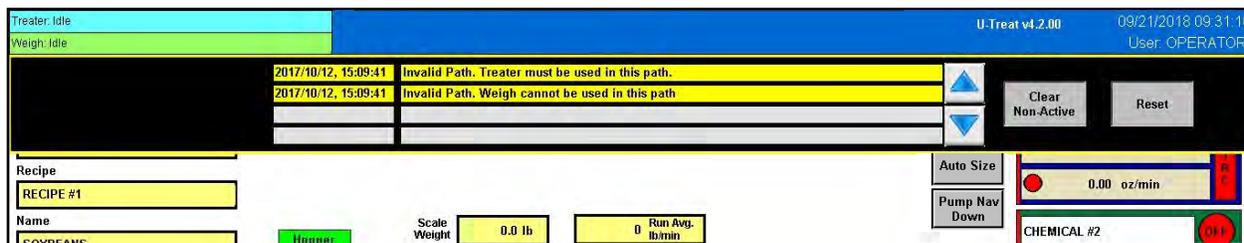
Alarm - Fault	Possible Cause	Solution
Drum Tilt Actuator NOT in position.	<ol style="list-style-type: none"> <li>1. Connector on the actuator not completely engaged.</li> <li>2. Something is physically obstructing the drum from returning to the start position.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check connection to ensure a tight connection.</li> <li>2. Locate and clear the obstruction.</li> </ol>
Dyadic Actuator NOT in requested position.	<ol style="list-style-type: none"> <li>1. Adjustable Chamber mechanism jammed with debris.</li> <li>2. One or both of the two connectors linking the actuator to the I/O control panel are not connected.</li> <li>3. One or both ends of the ethernet cable is not connected to the I/O control panel or the Main control Panel.</li> </ol>	<ol style="list-style-type: none"> <li>1. Open the seed gate, remove debris and power cycle the entire system. When the system is turned back on, the gate will automatically close and find it's HOME position.</li> <li>2. Ensure that both connectors are securely connected to the I/O control panel.</li> <li>3. Ensure that both connectors are securely connected to the control panels.</li> </ol>
LPV Treater I/O panel: Ethernet Communication Failure.	<ol style="list-style-type: none"> <li>1. One or both ends of the ethernet cable is not connected to the I/O Control panel or the Main Control Panel.</li> <li>2. Connections are good but cable is damaged.</li> </ol>	<ol style="list-style-type: none"> <li>1. Ensure that both ends of the cable are connected to the control panels.</li> <li>2. Replace damaged cable.</li> </ol>
Internal Dyadic Actuator error detected on flow control gate. Press alarm "RESET ALARMS" button to initiate the reset of the actuator.	<ol style="list-style-type: none"> <li>1. Adjustable Chamber mechanism jammed with debris.</li> <li>2. One or both of the two connectors linking the actuator to the I/O control panel are not connected.</li> <li>3. One or both ends of the ethernet cable is not connected to the I/O control panel or the Main control Panel.</li> </ol>	<ol style="list-style-type: none"> <li>1. Open the seed gate, remove debris and power cycle the entire system. When the system is turned back on, the gate will automatically close and find it's HOME position.</li> <li>2. Ensure that both connectors are securely connected to the I/O control panel.</li> <li>3. Ensure that both connectors are securely connected to the control panels.</li> </ol>
Gate Position Actuator at maximum position and desired flow rate has not been achieved. Check for seed flow restrictions.	<ol style="list-style-type: none"> <li>1. Flow rate may be set to high for the type of seed being treated.</li> <li>2. Value for the Max Gate position is set to low.</li> </ol>	<ol style="list-style-type: none"> <li>1. Lower the target flow rate.</li> <li>2. Go to the Product Editing page and make sure the Max Gate Position is set to at least 18000.</li> </ol>

**LPV WEIGHT BELT TREATER ONLY**

Alarm - Fault	Possible Cause	Solution
Belt VFD Fault.	<ol style="list-style-type: none"> <li>1. System alarms and stops. The Last Drive Fault popup window appears.</li> <li>2. After problem is resolved, the VFD will not reset.</li> </ol>	<ol style="list-style-type: none"> <li>1. Read the message in the Drive Weigh Belt display. Take action to correct the issue and press the Reset Fault button. If it turns green, exit out of the window and continue the run.</li> <li>2. Power down the system. If the VFD does not reset when power is restored, contact your local USC service provider.</li> </ol>
Weigh Belt inlet gate not in position (Gate needs to be closed to begin a run).	<ol style="list-style-type: none"> <li>1. Bad electrical connection.</li> <li>2. Inadequate or non-existent air pressure to the slide gate cylinder.</li> <li>3. Slide gate is jammed.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check the electrical connections at the air cylinder and the bottom of the control panel.</li> <li>2. Check to see if compressor is running. Check the pneumatic connections at the air cylinder and the bottom of the air pressure regulator.</li> <li>3. Open gate and clean out debris that is binding or blocking the slide gate.</li> </ol>
Flow rate out of range.	<ol style="list-style-type: none"> <li>1. Flow rate is set to low or to high for a particular product density or the hardware configuration at your installation.</li> <li>2. Inlet is starved for seed.</li> <li>3. Cardinal 201 weigh scale is out of calibration.</li> </ol>	<ol style="list-style-type: none"> <li>1. Raise or lower the flow rate to resolve the problem. If this does not resolve the issue, a system setpoint may need to be modified. <b>DO NOT</b> modify any setpoints without first consulting a qualified service technician.</li> <li>2. The maximum amount of seed that the gate is capable of must be flowing at all times.</li> <li>3. Re-calibrate the scale head.</li> </ol>

## SYSTEM MESSAGES

The table below provides a general description of some of the system messages that could occur. When a warning condition is detected, a window will appear at the top of the current screen (below) notifying the operator that the system will not start because of a certain condition. When the condition has been corrected, the Start button may be pressed to start the system.



Message
Atomizer NOT in Auto or Ready for Startup
Drum Not In Auto or Ready For Startup
Treater outlet conveyor is not in auto.
Automatic seed flow rate adjustment has occurred. Seed flow rate was out of range.
Pumps 5-8: Ethernet Communication Failure
Pumps 9-12: Ethernet Communication Failure
Reports are nearly full. Please, save reports to USB and then delete reports.
Reports are full. Information loss may occur!
Seed wheel not in auto or ready for startup.
Bin site shutdown due to not having all needed devices available for operation. Contact USC Service Rep for assistance.
Treater seed flow rate is set higher than the calculated bin site seed flow rate.
Enter Cup Weight
No Product Selected
Auto Startup - No Seed Type match
Treater Reports - FULL. Transfer reports to USB to keep from losing data.
Treater Reports - almost FULL. Transfer reports to USB.
Conveyor # is not in auto.
Operation not selected.

**BATCH HOPPER TROUBLESHOOTING****SECTION  
E-2****TROUBLESHOOTING**

Below is a table describing the most frequent problems and solutions with the USC Batch Weigh Hopper system. For further assistance, contact USC at (785) 431-7900.

Problem	Possible cause	Solution
System is not consistently calibrating correctly.	<ol style="list-style-type: none"> <li>1. Bin slides gates or manual gates have been moved.</li> <li>2. Underbin conveyor belt is slipping.</li> <li>3. Bin slide gate is not consistently opening to the same point.</li> <li>4. The operator is pressing the CANCEL SCALE FILL button before the run ends.</li> <li>5. System is being paused during the run.</li> </ol>	<ol style="list-style-type: none"> <li>1. Ensure that the slide gate collar and manual gate is locked into place. Then recalibrate.</li> <li>2. Tighten the underbin conveyor belt.</li> <li>3. Check for any obstruction that may be restricting the movement of the slide gate.</li> <li>4. Allow the system to shutdown on its own.</li> <li>5. Make another run without pausing system.</li> </ol>
System calibration for currently selected bin is incorrect.	<ol style="list-style-type: none"> <li>1. System is too far out of calibration to recalibrate automatically.</li> </ol>	<ol style="list-style-type: none"> <li>1. Recalibrate the system. (see page 167).</li> </ol>
Weight display not reading steady (Bouncing)	<ol style="list-style-type: none"> <li>1. Bad load cell.</li> <li>2. Wind Drafts.</li> <li>3. Poor grounding.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace load cell.</li> <li>2. Close doors.</li> <li>3. Check grounding and ensure that it meets all area codes.</li> </ol>
No scale reading on the weigh hopper indicator on the touch screen.	<ol style="list-style-type: none"> <li>1. Ethernet cable is disconnected.</li> <li>2. Scale head is unplugged.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check all Ethernet cables for connectivity and damage.</li> <li>2. Ensure that the scale head has power and is turned on.</li> </ol>
Scale is reading incorrect weight.	<ol style="list-style-type: none"> <li>1. Something is touching the scale.</li> <li>2. Scale needs recalibrated.</li> <li>3. Ethernet cable may be damaged or receiving electrical interference</li> </ol>	<ol style="list-style-type: none"> <li>1. Ensure that the area around the scale is clean and that nothing is leaning on or resting on the hopper.</li> <li>2. Zero scale. If still incorrect, have a professional scale technician recalibrate the scale.</li> <li>3. Ensure that Ethernet cable is not located directly next to any electrical lines.</li> </ol>

**TROUBLESHOOTING**

Problem	Possible Cause	Solution
No bin slide gates will open or close when their corresponding button is pressed on the touch screen.	<ol style="list-style-type: none"> <li>1. No air or not enough air is being supplied to the solenoid bank on the side of the bin site control panel.</li> <li>2. The bin site panel may be off.</li> <li>3. Power surge has disrupted electrical communications.</li> </ol>	<ol style="list-style-type: none"> <li>1. Ensure that at least 100 psi of air is being supplied to the solenoid bank.</li> <li>2. Ensure that the bin site control panel has power to it, is on and that all of the breakers inside the panel are on as well.</li> <li>3. Power off all panels for 30 seconds then power them back on.</li> </ol>
Air gate will not close fully.	<ol style="list-style-type: none"> <li>1. Something is obstructing the air gate from closing.</li> <li>2. Air pressure to the gate is not strong enough.</li> </ol>	<ol style="list-style-type: none"> <li>1. Remove obstruction.</li> <li>2. Ensure that the bin slide gate has at least 100 psi of air being supplied to it.</li> </ol>
Air gate is opening when it should be closing and vice versa.	<ol style="list-style-type: none"> <li>1. Air lines to the air gate are reversed.</li> </ol>	<ol style="list-style-type: none"> <li>1. Exchange air line for the proper solenoid on the back of the solenoid bank.</li> </ol>
Diverter is leaking seed through bypass side while in TREAT mode of operation.	<ol style="list-style-type: none"> <li>1. Too low of air pressure to actuate the diverter.</li> <li>2. An obstruction in the diverter is stopping correct placement of the diverter plate.</li> </ol>	<ol style="list-style-type: none"> <li>1. Ensure that at least 100 psi of air pressure is present at the diverter.</li> <li>2. Remove obstruction.</li> </ol>
Solenoids are making a buzzing sound when air gates are actuated.	<ol style="list-style-type: none"> <li>1. Moisture in the air system.</li> <li>2. Electric actuator on solenoid bank may be faulty.</li> </ol>	<ol style="list-style-type: none"> <li>1. Remove moisture from the air lines.</li> <li>2. Replace the electronic actuator on the solenoid.</li> </ol>
The touch screen has warning triangles on each button.	<ol style="list-style-type: none"> <li>1. The bin site PLC may be off.</li> </ol>	<ol style="list-style-type: none"> <li>1. Ensure that the bin site control panel has power to it, is ON and that all of the breakers inside the panel are on as well.</li> </ol>
Conveyor will not start in HAND or AUTO mode.	<ol style="list-style-type: none"> <li>1. Conveyor motor starter is tripped.</li> <li>2. Conveyor is clogged.</li> </ol>	<ol style="list-style-type: none"> <li>1. Reset motor starter.</li> <li>2. Remove obstruction or debris.</li> </ol>

**SYSTEM ALARMS - FAULTS**

Alarm - Fault	Possible Cause	Solution
Weigh Hopper over Max weight	<ol style="list-style-type: none"> <li>1. The current weight in the Weigh Hopper is above the number entered into the maximum scale weight in the Utilities screen.</li> </ol>	<ol style="list-style-type: none"> <li>1. Verify the number entered into the maximum scale weight box is correct. If yes, then recalibrate and rerun system.</li> </ol>
Bin Site SURGE SUPPRESSOR-FAILED!!!	<ol style="list-style-type: none"> <li>1. L1 of the Surge protector will no longer protect the electrical panel against voltage surges.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace the Surge Protector.</li> </ol>
Conv # Belt/Encoder Fault	<ol style="list-style-type: none"> <li>1. Conveyor belt is slipping.</li> <li>2. Conveyor Speed encoder is not working correctly.</li> </ol>	<ol style="list-style-type: none"> <li>1. Tighten and adjust the Conveyor belt as necessary.</li> <li>2. Verify that sensor is tight to shaft and wiring is correct. If yes to both, then replace sensor.</li> </ol>
Conveyor #1 Motor Fault	<ol style="list-style-type: none"> <li>1. Conveyor #1 motor auxiliary contact was not sensed after being energized to run.</li> <li>2. Conveyor #1 motor has been shutdown while in Auto mode of operation.</li> </ol>	<ol style="list-style-type: none"> <li>1. Verify that the motor starter has power, is turned on and that the overload is not tripped.</li> <li>2. Verify that the Conveyor #1 was not turned OFF while the system was in Auto mode of operation.</li> </ol>
Conveyor #2 Motor Fault	<ol style="list-style-type: none"> <li>1. Conveyor #2 motor auxiliary contact was not sensed after being energized to run.</li> <li>2. Conveyor #2 motor has been shutdown while in Auto mode of operation.</li> </ol>	<ol style="list-style-type: none"> <li>1. Verify that the motor starter has power, is turned on and that the overload is not tripped.</li> <li>2. Verify that the Conveyor #2 was not turned OFF while the system was in Auto mode of operation.</li> </ol>
Conveyor #3 Motor Fault	<ol style="list-style-type: none"> <li>1. Conveyor #3 motor auxiliary contact was not sensed after being energized to run.</li> <li>2. Conveyor #3 motor has been shutdown while in Auto mode of operation.</li> </ol>	<ol style="list-style-type: none"> <li>1. Verify that the motor starter has power, is turned on and that the overload is not tripped.</li> <li>2. Verify that the Conveyor #3 was not turned OFF while the system was in Auto mode of operation.</li> </ol>

**SYSTEM ALARMS - FAULTS**

Alarm - Fault	Possible Cause	Solution
Conveyor #4 Motor Fault	<ol style="list-style-type: none"> <li>1. Conveyor #4 motor auxiliary contact was not sensed after being energized to run.</li> </ol>	<ol style="list-style-type: none"> <li>1. Verify that the motor starter has power and is turned on.</li> </ol>
Weigh Hopper Discharge Gate Fault	<ol style="list-style-type: none"> <li>1. OPEN/CLOSE slide gate sensor is not positioned properly.</li> <li>2. OPEN/CLOSE slide gate solenoid failed to actuate.</li> </ol>	<ol style="list-style-type: none"> <li>1. Verify that the OPEN/CLOSE slide gate sensor is properly positioned.</li> <li>2. Check air supply and signal to solenoid.</li> </ol>
Bin Site Batch Overweight Alarm	<ol style="list-style-type: none"> <li>1. Hopper received more weight than called.</li> <li>2. Hopper scale calibration is off.</li> </ol>	<ol style="list-style-type: none"> <li>1. Recalibrate scale with new run.</li> </ol>

## SYSTEM MESSAGES

The table below provides a general description of some of the system messages that could occur. When a warning condition is detected, a window will appear at the top of the current screen (below) notifying the operator that the system will not start because of a certain condition. When the condition has been corrected, the Start button may be pressed to start the system.

The screenshot shows the U-Treat v4.2.00 interface. At the top, it displays 'Treater: Idle' and 'Weigh: Idle'. The message log contains two entries:

Timestamp	Message
2017/10/12, 15:09:41	Invalid Path. Treater must be used in this path.
2017/10/12, 15:09:41	Invalid Path. Weigh cannot be used in this path.

Below the log, the interface shows system parameters: Recipe (RECIPE #1), Name (SOYBEANS), Hopper status (green), Scale Weight (0.0 lb), Run Avg. (0 lb/min), and CHEMICAL #2 (0.0). There are also buttons for 'Clear Non-Active' and 'Reset'.

Message
Target weight too small.
Scale communications errors
Target weight larger than max hopper weight.
Weight hopper discharge valve not in auto.
Weigh hopper gate open at startup

**SECTION  
E-3**

**TRI - FLO ® TROUBLESHOOTING**

**TROUBLESHOOTING**

Below is a table describing the most frequent problems and solutions with the USC Tri - Flo ® bin site system. For further assistance, contact USC at (785) 431-7900.

Problem	Possible cause	Solution
Tri - Flo ® : Minimum flow rate alarm.	1. Running too low capacity.	1. Adjust your air gates or manual gates.
Tri - Flo ® : Indicator weight shows two pounds in bin after run.	1. Tri - Flo ® did not empty completely.	1. Open gates on the Tri - Flo ® and zero scales.
Tri - Flo ® : Scale will not zero out.	1. Scale is in filing mode. 2. Scale is to far out of range.	1. Exit filling mode then end run. Needs to be in shipping mode. 2. Recalibrate scale
Tri - Flo ® : Even when all three scales are zeroed on Batch, the next batch gives a negative number on one of the hoppers with an overweight Alarm.	1. Tri - Flo ® was not emptied before zeroed. 2. Wind drafts. 3. Hoppers are touching.	1. Open gates and zero scale. 2. Close doors. 3. Loosen the four mounting bolts enough to be able to move the hopper. Make the gap on both sides of the hopper as even as possible.
Tri - Flo ® : If there are five pounds or less in the hopper, the system will not empty hopper.	1. Scale heel weight has not been reached.	1. Open and close the gate hopper.
System is not consistently calibrating correctly.	1. Bin slides gates or manual gates have been moved. 2. Underbin conveyor belt is slipping. 3. Bin slide gate is not consistently opening to the same point. 4. The operator is pressing the CANCEL SCALE FILL button before the run ends. 5. System is being paused during the run.	1. Ensure that the slide gate collar and manual gate is locked into place. Then recalibrate. 2. Tighten the underbin conveyor belt. 3. Check for any obstruction that may be restricting the movement of the slide gate. 4. Allow the system to shutdown on its own. 5. Make another run without pausing system.

**TROUBLESHOOTING**

Problem	Possible Cause	Solution
System calibration for currently selected bin is incorrect.	1. System is too far out of calibration to recalibrate automatically.	1. Recalibrate the system. (see page 178).
Weight display not reading steady (Bouncing)	1. Wind drafts. 2. Bad load cell. 3. Poor grounding.	1. Close doors. 2. Replace load cell. 3. Check grounding and ensure
Scale is reading incorrect weight.	1. Something is touching the scale. 2. Scale needs recalibrated.	1. Ensure that the area around the scale is clean and that nothing is leaning on or resting on the hopper. 2. Zero scale. If still incorrect, have a professional scale technician recalibrate the scale.
No Tri - Flo ® slide gates will open or close when their corresponding button is pressed on the touch screen.	1. No air or not enough air is being supplied to the air regulator / filter on the frame cross member. 2. The Tri - Flo ® PLC may be off.	1. Ensure that at least 100 psi of air is being supplied to the regulator and it is adjusted for a minimum output of 45 PSI. Also, check to see that the filter is clean and no water has built up above the maximum allowed line. 2. Ensure that the Tri - Flo ® control panel has power to it, is ON and that all of the breakers inside the panel are ON as well.
No bin slide gates will open or close when their corresponding button is pressed on the touch screen.	1. No air or not enough air is being supplied to the solenoid bank on the side of the bin site control panel. 2. The bin site PLC may be off.	1. Ensure that at least 100 psi of air is being supplied to the solenoid bank. 2. Ensure that the bin site control panel has power to it, is ON and that all of the breakers inside the panel are ON as well.
Air gate is opening when it should be closing and vice versa.	1. Air lines to the air gate are reversed.	1. Exchange air line for the proper solenoid on the back of the solenoid bank.

**TROUBLESHOOTING**

Problem	Possible Cause	Solution
Air gate will not close fully.	<ol style="list-style-type: none"> <li>1. Something is obstructing the air gate from closing.</li> <li>2. Air pressure to the gate is not strong enough.</li> </ol>	<ol style="list-style-type: none"> <li>1. Remove obstruction.</li> <li>2. Ensure that the bin slide gate has at least 100 psi of air being supplied to it. If it is a Tri - Flo ® slide gate it needs at least 45 PSI.</li> </ol>
Diverter is leaking seed through bypass side while in TREAT mode of operation.	<ol style="list-style-type: none"> <li>1. Too low of air pressure to actuate the diverter.</li> <li>2. An obstruction in the diverter is stopping correct placement of the diverter plate.</li> </ol>	<ol style="list-style-type: none"> <li>1. Ensure that at least 100 psi of air pressure is present at the diverter.</li> <li>2. Remove obstruction.</li> </ol>
Solenoids are making a buzzing sound when air gates are actuated.	<ol style="list-style-type: none"> <li>1. Moisture in the air system.</li> <li>2. Electric actuator on solenoid bank may be faulty.</li> </ol>	<ol style="list-style-type: none"> <li>1. Remove moisture from the air lines.</li> <li>2. Replace the electronic actuator on the solenoid.</li> </ol>
The touch screen has warning triangles on each button.	<ol style="list-style-type: none"> <li>1. The bin site PLC may be off.</li> <li>2. The Tri - Flo ® panel may be off.</li> </ol>	<ol style="list-style-type: none"> <li>1. Ensure that the bin site control panel has power to it, is ON and that all of the breakers inside the panel are ON as well.</li> <li>2. Ensure that the Tri - Flo ® control panel has power to it, is ON and that all of the breakers inside the panel are ON as well.</li> </ol>
Conveyor will not start in HAND or AUTO mode.	<ol style="list-style-type: none"> <li>1. Conveyor motor starter is tripped.</li> <li>2. Conveyor is clogged.</li> </ol>	<ol style="list-style-type: none"> <li>1. Reset motor starter.</li> <li>2. Remove obstruction or debris.</li> </ol>

**SYSTEM ALARMS - FAULTS**

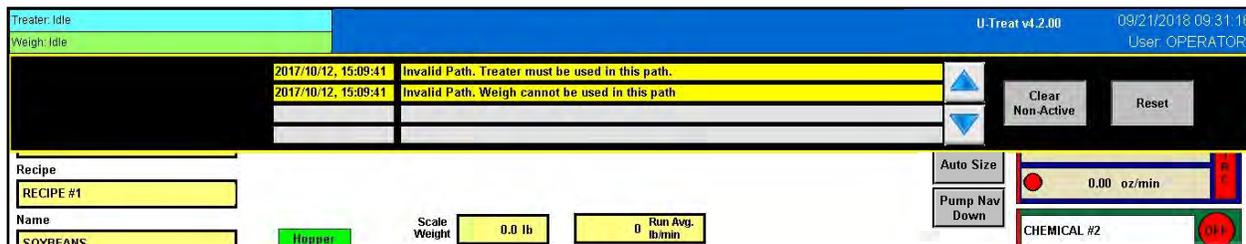
Alarm - Fault	Possible Cause	Solution
Tri-Flo inlet diverter limit switch 1 FAIL  Tri-Flo inlet diverter limit switch 2 FAIL  Tri-Flo inlet diverter limit switch 3 FAIL	<ol style="list-style-type: none"> <li>1. Limit switch out of adjustment</li> <li>2. Inverter did not fully rotate to the next hopper.</li> <li>3. Limit switch failed.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check adjustment on limit switch.</li> <li>2. Manually rotate diverter to determine the problem.</li> <li>3. Replace limit switch.</li> </ol>
Tri-Flo WH1 discharge valve alarm  Tri-Flo WH2 discharge valve alarm  Tri-Flo WH3 discharge valve alarm	<ol style="list-style-type: none"> <li>1. Air not on.</li> <li>2. Limit switch out of adjustment.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check to see if the main incoming air valve is open.</li> <li>2. Adjust limit switch.</li> </ol>
Tri-Flo WH1 high level  Tri-Flo WH2 high level  Tri-Flo WH3 high level	<ol style="list-style-type: none"> <li>1. Weigh hopper is over full.</li> </ol>	<ol style="list-style-type: none"> <li>1. Empty hopper manually or move seed away from limit switch paddles by hand.</li> <li>2. Run Cleanout.</li> </ol>
Tri-Flo WH inlet diverter motor fault alarm	<ol style="list-style-type: none"> <li>1. Motor over voltage tripped.</li> </ol>	<ol style="list-style-type: none"> <li>1. Reset overload.</li> </ol>
Tri-Flo surge suppressor – FAILED!!!	<ol style="list-style-type: none"> <li>1. L1 of the Surge protector will no longer protect the electrical panel against voltage surges.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace the Surge Protector.</li> </ol>
Conveyor # Belt/Encoder Fault	<ol style="list-style-type: none"> <li>1. Conveyor belt is slipping.</li> <li>2. Conveyor Speed encoder is not working correctly.</li> </ol>	<ol style="list-style-type: none"> <li>1. Tighten and adjust the Conveyor belt as necessary.</li> <li>2. Verify that sensor is tight to shaft and wiring is correct. If yes to both, then replace sensor.</li> </ol>

**SYSTEM ALARMS - FAULTS**

Alarm - Fault	Possible Cause	Solution
Conveyor #1 Motor Fault	<ol style="list-style-type: none"> <li>1. Conveyor #1 motor auxiliary contact was not sensed after being energized to run.</li> <li>2. Conveyor #1 motor has been shutdown while in Auto mode of operation.</li> </ol>	<ol style="list-style-type: none"> <li>1. Verify that the motor starter has power, is turned on and that the overload is not tripped.</li> <li>2. Verify that the Conveyor #1 was not turned OFF while the system was in Auto mode of operation.</li> </ol>
Conveyor #2 Motor Fault	<ol style="list-style-type: none"> <li>1. Conveyor #2 motor auxiliary contact was not sensed after being energized to run.</li> <li>2. Conveyor #2 motor has been shutdown while in Auto mode of operation.</li> </ol>	<ol style="list-style-type: none"> <li>1. Verify that the motor starter has power, is turned on and that the overload is not tripped.</li> <li>2. Verify that the Conveyor #2 was not turned OFF while the system was in Auto mode of operation.</li> </ol>
Conveyor #3 Motor Fault	<ol style="list-style-type: none"> <li>1. Conveyor #3 motor auxiliary contact was not sensed after being energized to run.</li> <li>2. Conveyor #3 motor has been shutdown while in Auto mode of operation.</li> </ol>	<ol style="list-style-type: none"> <li>1. Verify that the motor starter has power, is turned on and that the overload is not tripped.</li> <li>2. Verify that the Conveyor #3 was not turned OFF while the system was in Auto mode of operation.</li> </ol>
Conveyor #4 Motor Fault	<ol style="list-style-type: none"> <li>1. Conveyor #4 motor auxiliary contact was not sensed after being energized to run.</li> </ol>	<ol style="list-style-type: none"> <li>1. Verify that the motor starter has power and is turned on.</li> </ol>

## SYSTEM MESSAGES

The table below provides a general description of some of the system messages that could occur. When a warning condition is detected, a window will appear at the top of the current screen (below) notifying the operator that the system will not start because of a certain condition. When the condition has been corrected, the Start button may be pressed to start the system.

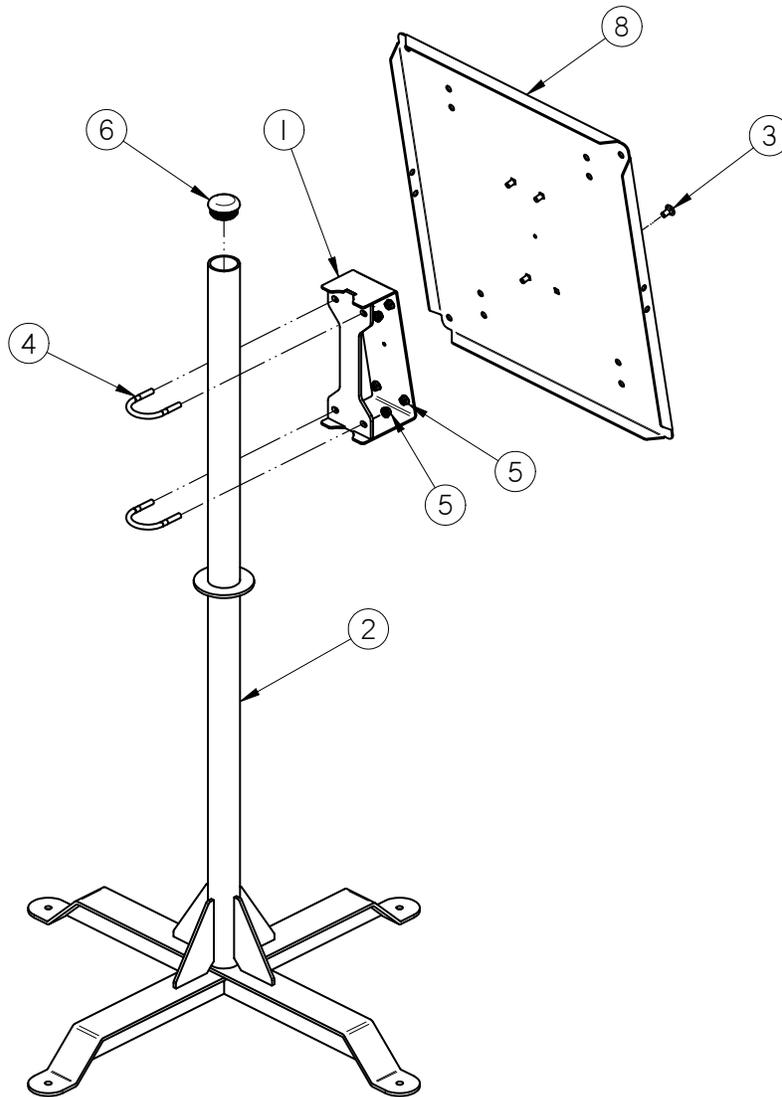


Message
Tri-Flo inlet diverter is not in auto
Tri-Flo WH 1 DCV is not in auto
Tri-Flo WH 2 DCV is not in auto
Tri-Flo WH 3 DCV is not in auto
Target weight too small
At least one of the Tri-Flo scales is reading less than -5 LBS/KGS. Zero the scales)
Tri-Flo weigh hoppers are not empty, run clean out
Scale communications error
Bulk weigh ticket printer out of paper
Bulk weigh indicator not active. Check power and communication cables to the scale head & printer. Check printer paper.

**SECTION  
F**

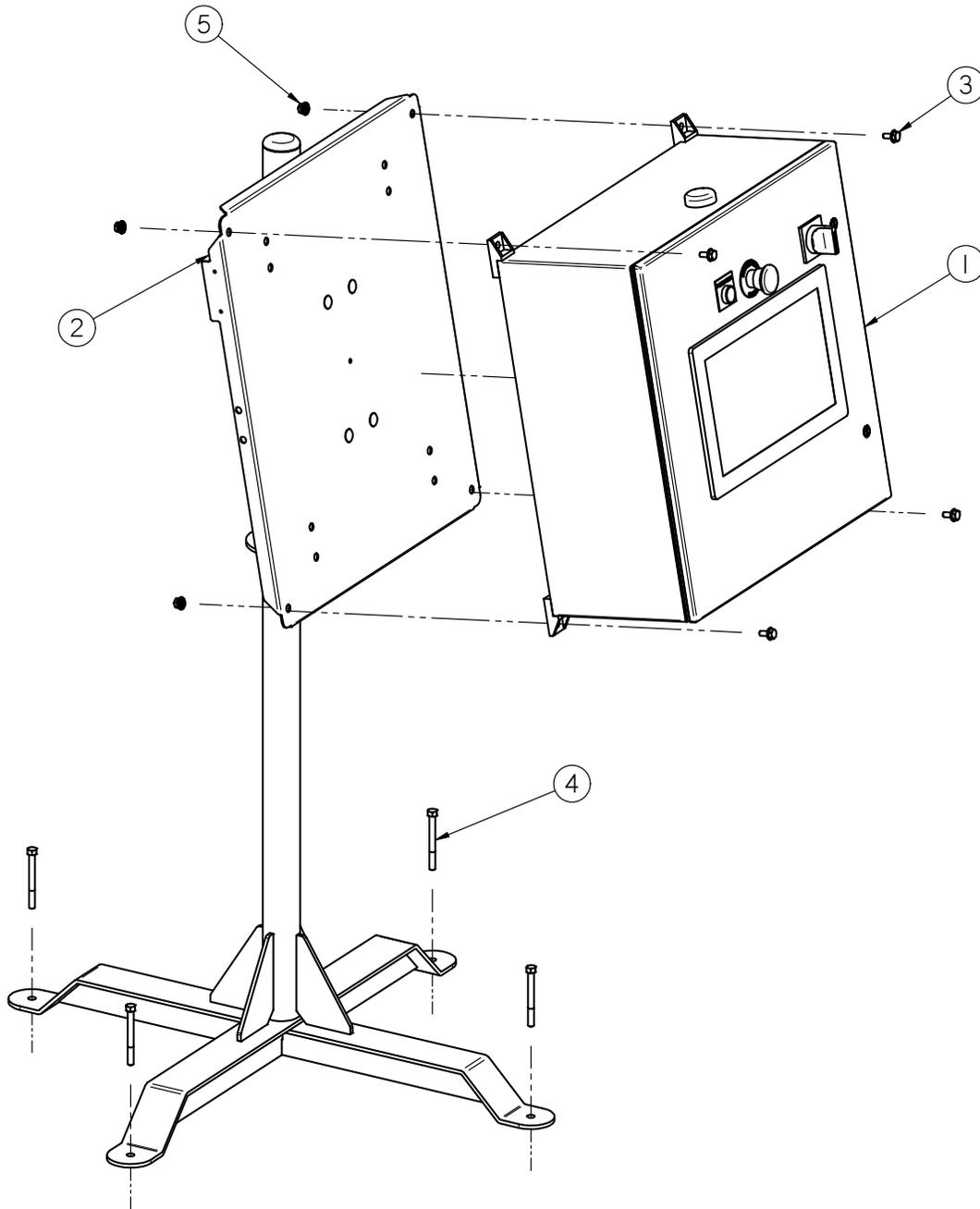
**MECHANICAL DRAWINGS**

**ADJ STAND - STANDARD MAIN CONTROL PANEL ASSEMBLY (05-03-1471)**



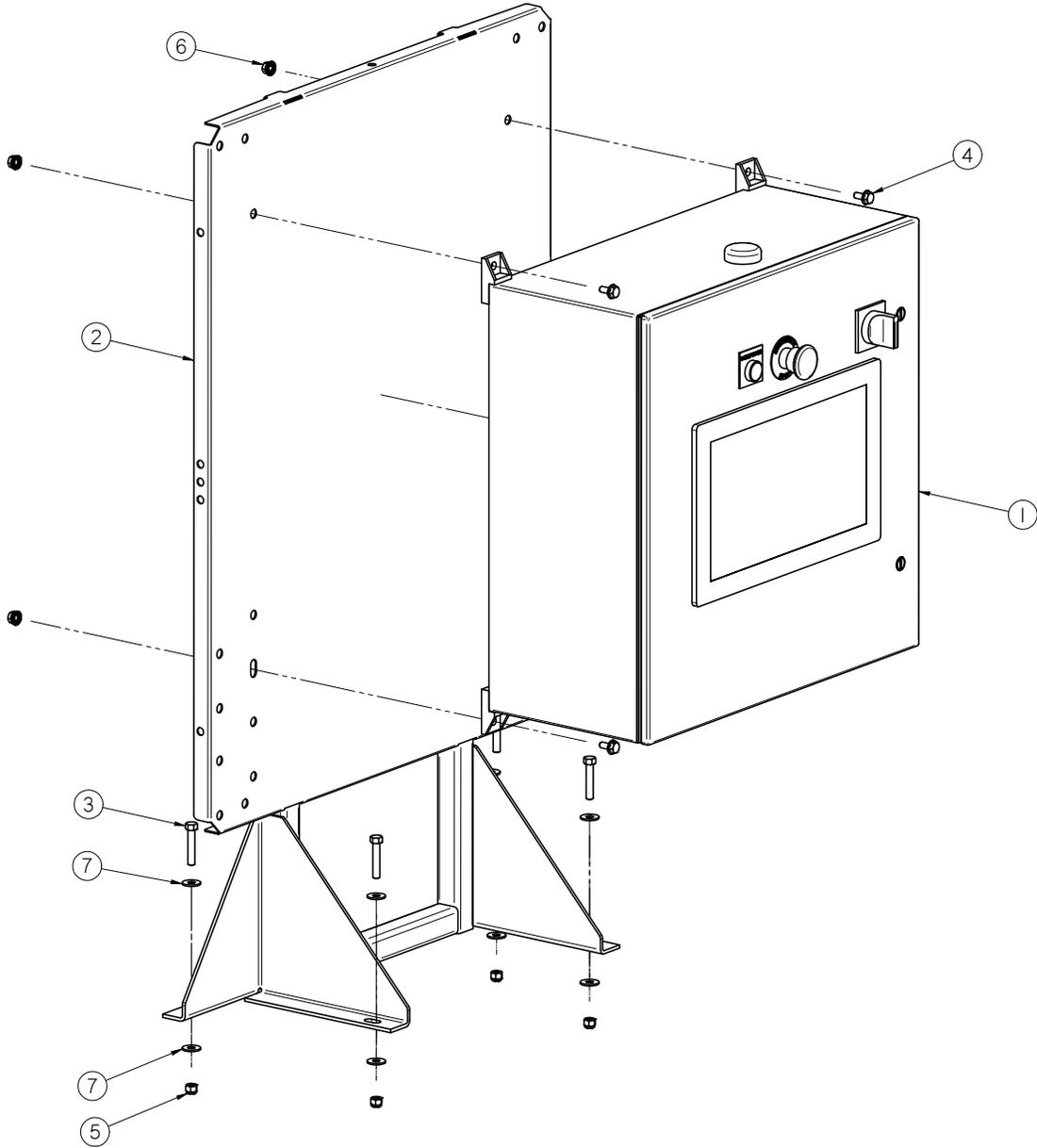
Item #	Part #	Description	Qty
1	05-03-1479	WDMT PNL ADJ	1
2	05-03-1545	WDMT PANEL STAND	1
3	06-01-0153	BOLT CRG .375-16X.750 ZP SHORT NECK	4
4	06-01-0287	BOLT U .375-16 X 2.50 X 3.125 ZP	2
5	06-03-0014	NUT LOCK FLG .375-16 ZP GR5	7
6	06-10-0056	PLUG TBG RD RIB POLY 2.38 X .156W	1
7	103651	PLT PNL MT	1

**STANDARD MAIN CONTROL PANEL ASSEMBLY (13-12-0159)**



Item #	Part #	Description	Qty
1	03-12-0529	CSA COMPLIANT MCP U-TREAT	1
2	05-03-1471	ASSY PNL FRM 4PUMP SAP	1
3	06-01-0124	BOLT FLG .375-16 X .750 ZP GR5	4
4	06-01-0220	BOLT 3/8-16 CONC ANCHOR ZP 3.75	4
5	06-03-0033	NUT LOCK FLG .375-16 GR8	4

**PORTABLE MAIN CONTROL PANEL ASSEMBLY (13-12-0158)**



Item #	Part #	Description	Qty
1	03-12-0529	CSA COMPLIANT MCP U-TREAT	1
2	05-03-1313	BIN SITE MAIN CNTL PNL FR	1
3	06-01-0020	BOLT .375-16 X 2.00 ZP GR5	4
4	06-01-0124	BOLT FLG .375-16 X .750 ZP GR5	4
5	06-03-0003	NUT NYL LOCK .375-16 ZP GR5	4
6	06-03-0014	NUT LOCK FLG .375-16 ZP GR5	4
7	06-05-0004	WSHR FLAT .375 ZP	8

# USC LIMITED WARRANTY

## SECTION G

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.

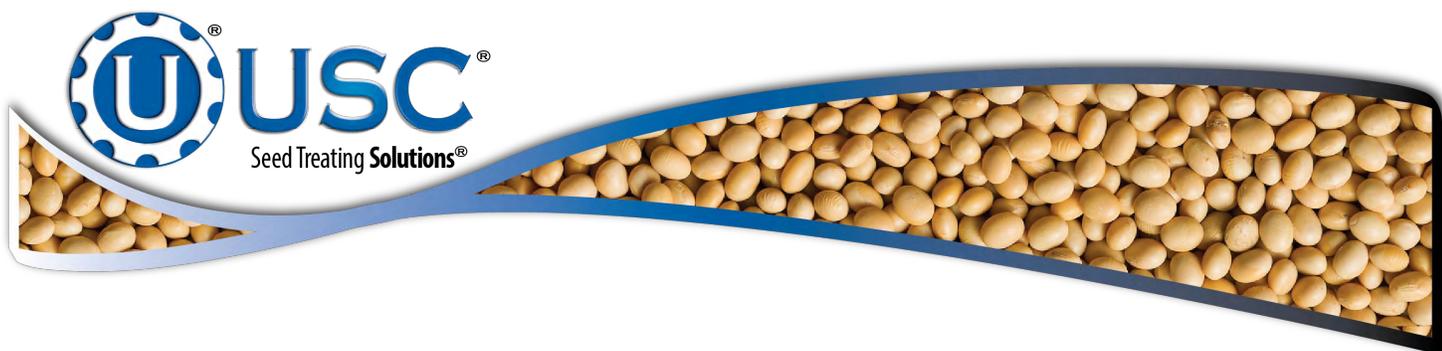
4. **Other Statements:** Manufacturer's employees or representatives' oral or other written statements do not constitute warranties, shall not be relied upon by Buyer, and are not a part of the contract for sale or this limited warranty.

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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