



USC[®]
Seed Treating Solutions[®]



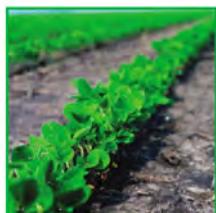
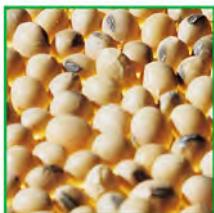
CTHC 3000 SEED TREATER

Operators Manual



Document: TD-09-06-1056

Revision: B



INTRODUCTION

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

OVERVIEW

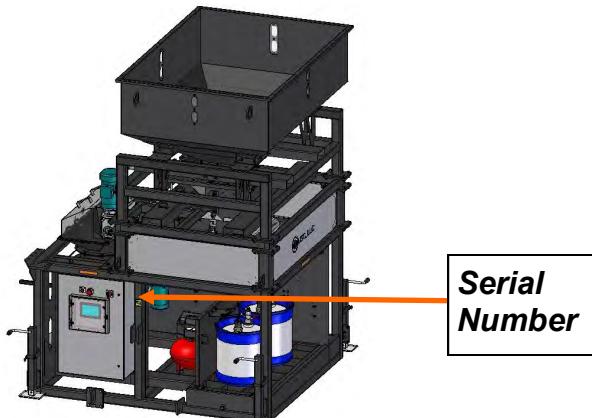
The purpose of this manual is to provide you with the basic information needed to operate and maintain the CTHC 3000 Seed Treater. It does not hold USC, LLC liable for any accidents or injuries that may occur.

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.

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 your authorized dealer. 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 right side of the control panel mounting bracket.



SERIAL NUMBER: _____

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SECTION A **SAFETY INSTRUCTIONS**

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.

Symbol 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 CTHC 3000 Seed Treaters which is located on the Treater 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 y a un bouton-poussoir d'arrêt d'urgence sur tous les semoirs CTHC 3000 qui se trouve sur le panneau de commande du traiteur. Les actionneurs d'arrêt d'urgence doivent être de couleur ROUGE. Le fond immédiatement autour de l'actionneur de l'appareil doit être de couleur JAUNE. Le dispositif actionné par bouton-poussoir d'actionneur doit être du type à tête de paume ou 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 CONTROLE

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 reconnue.

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

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

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!**

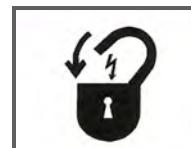
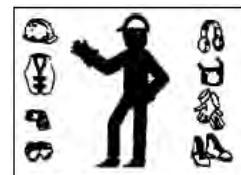
GENERAL SAFETY

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.



CTHC 3000 SEED TREATER

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. Electrocution 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.

! AVERTISSEMENT

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 your authorized dealer.

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.



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



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



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



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

Think SAFETY! Work SAFELY!

REMEMBER—If Safety Labels have been damaged, removed, become illegible, or parts replaced without safety labels, new labels must be applied. New safety labels are available from your authorized dealer.



Part # 09-02-0003



Part # 09-02-0010



Part # 09-02-0015

CTHC 3000 SEED TREATER



Part # 09-02-0002



Part # 09-02-0001



CTHC 3000 SEED TREATER



Part # 09-02-0011



Part # 09-02-0007



CTHC 3000 SEED TREATER



Part # 09-02-0012

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.

TREATER ONLY SET UP



USC strongly recommends that this equipment be stored in a protected area when not in use.



When equipped with the trailer option. It is not legal on the road. It is designed only to be moved at low speed.

USC recommande fortement que cet équipement soit stocké dans une zone protégée lorsqu'il n'est pas utilisé.

Lorsqu'il est équipé de l'option remorque. Ce n'est pas légal sur la route. Il est conçu uniquement pour être déplacé à basse vitesse.

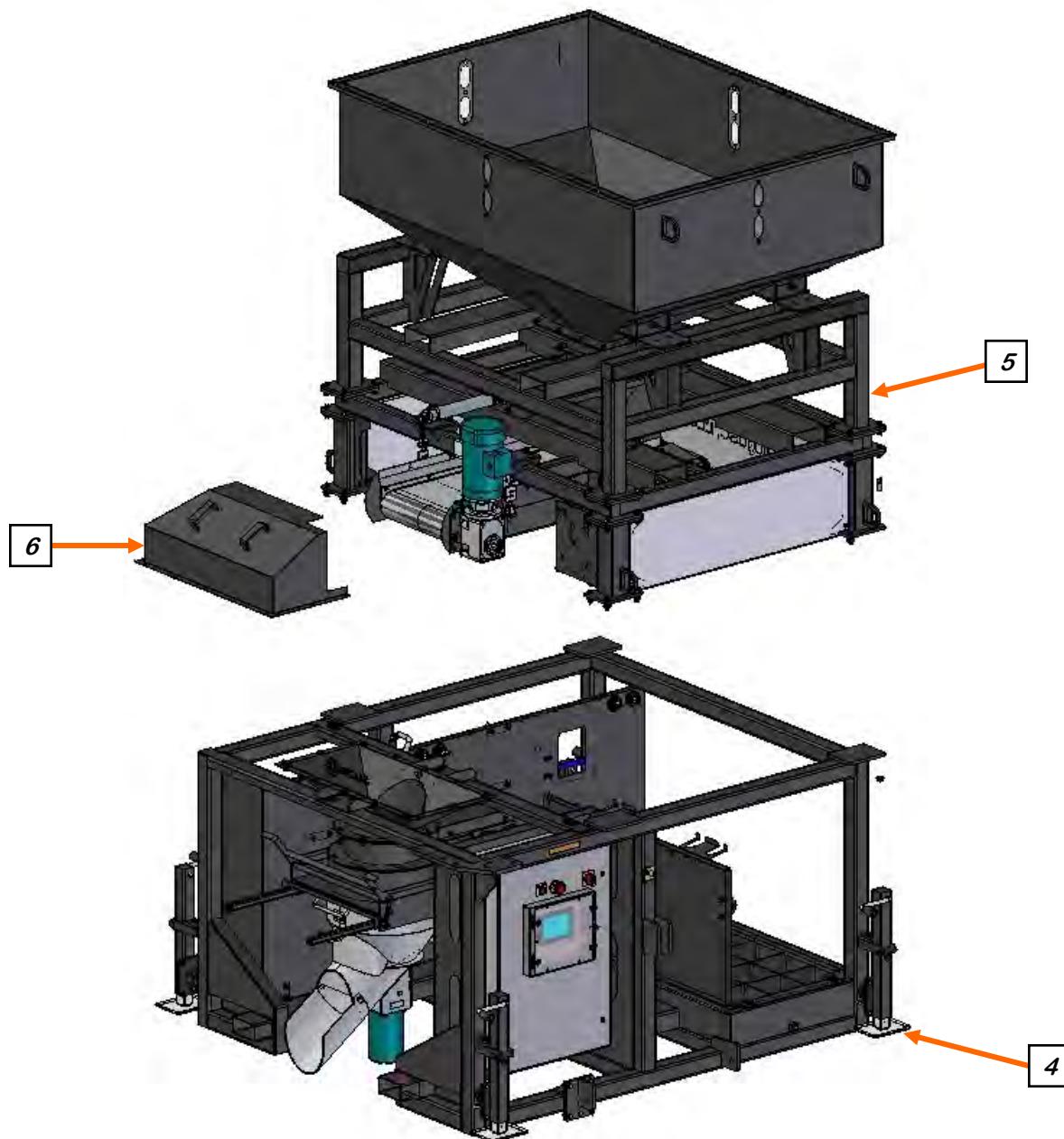
The base treater and weigh belt with hopper are shipped separately. The following steps outline the initial set-up of your USC Seed Treating system:

1. Clear the area of bystanders, especially small children, before moving.
2. Be sure there is enough clearance from overhead obstructions and power lines or other equipment to move the machine into its working position.
3. Using a forklift, place the seed treater in the desired position on as level a surface as possible.

CTHC 3000 SEED TREATER

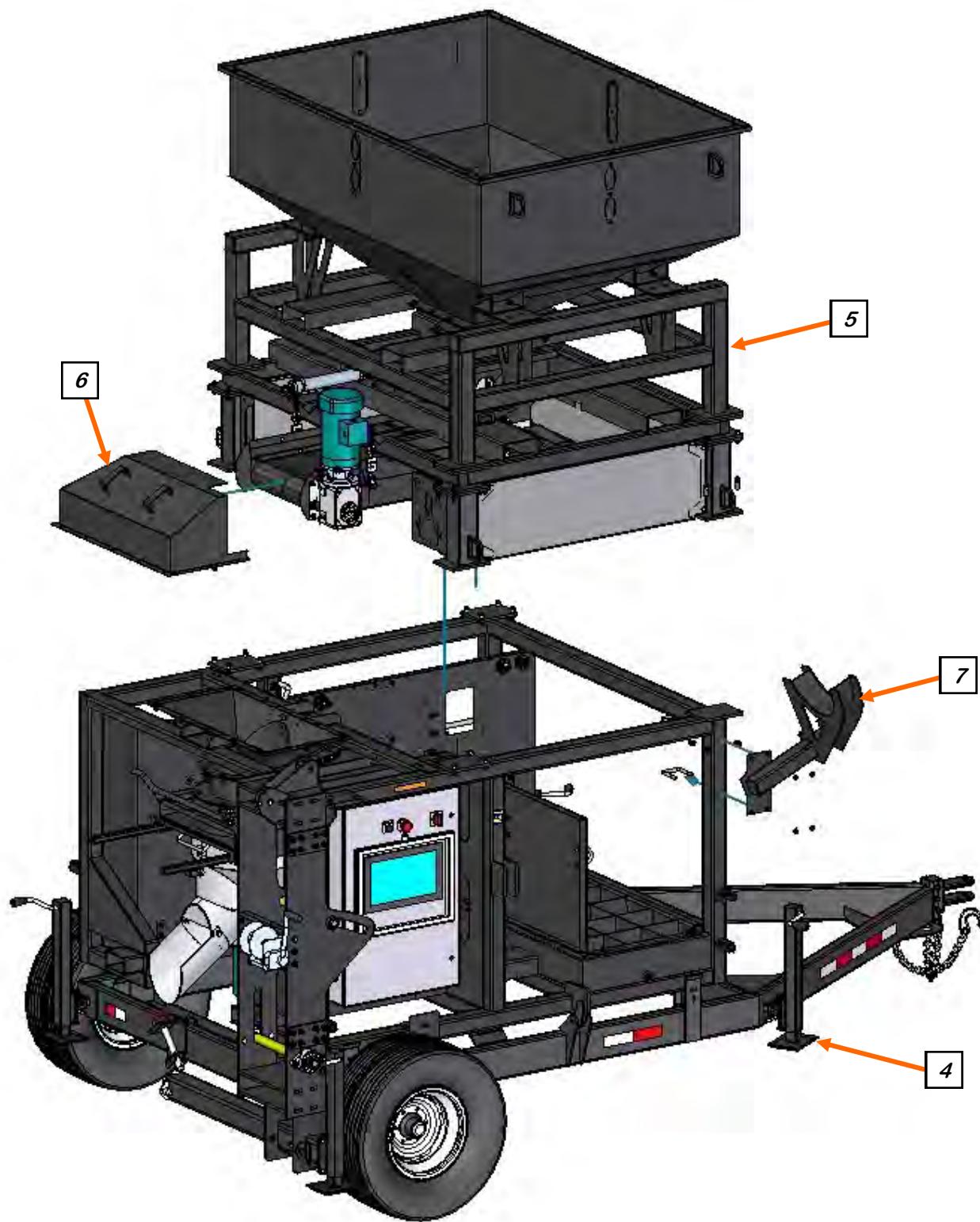
TREATER ONLY SET UP

4. Raise the jacks on all four corners to ensure the treater is stable and level on all sides.
5. Use the forklift again to lift the weigh belt and hopper. Position it over the base and lower it onto the treater frame. Secure it with the sixteen .500-13 X 1.75 bolts (06-01-0054) and .500 locknuts (06-03-0015).
6. Install the weigh belt cover using the sixteen .375-16 X .75 bolts (06-01-0124) and .375 lock nuts (06-03-0014).



CTHC 3000 SEED TREATER

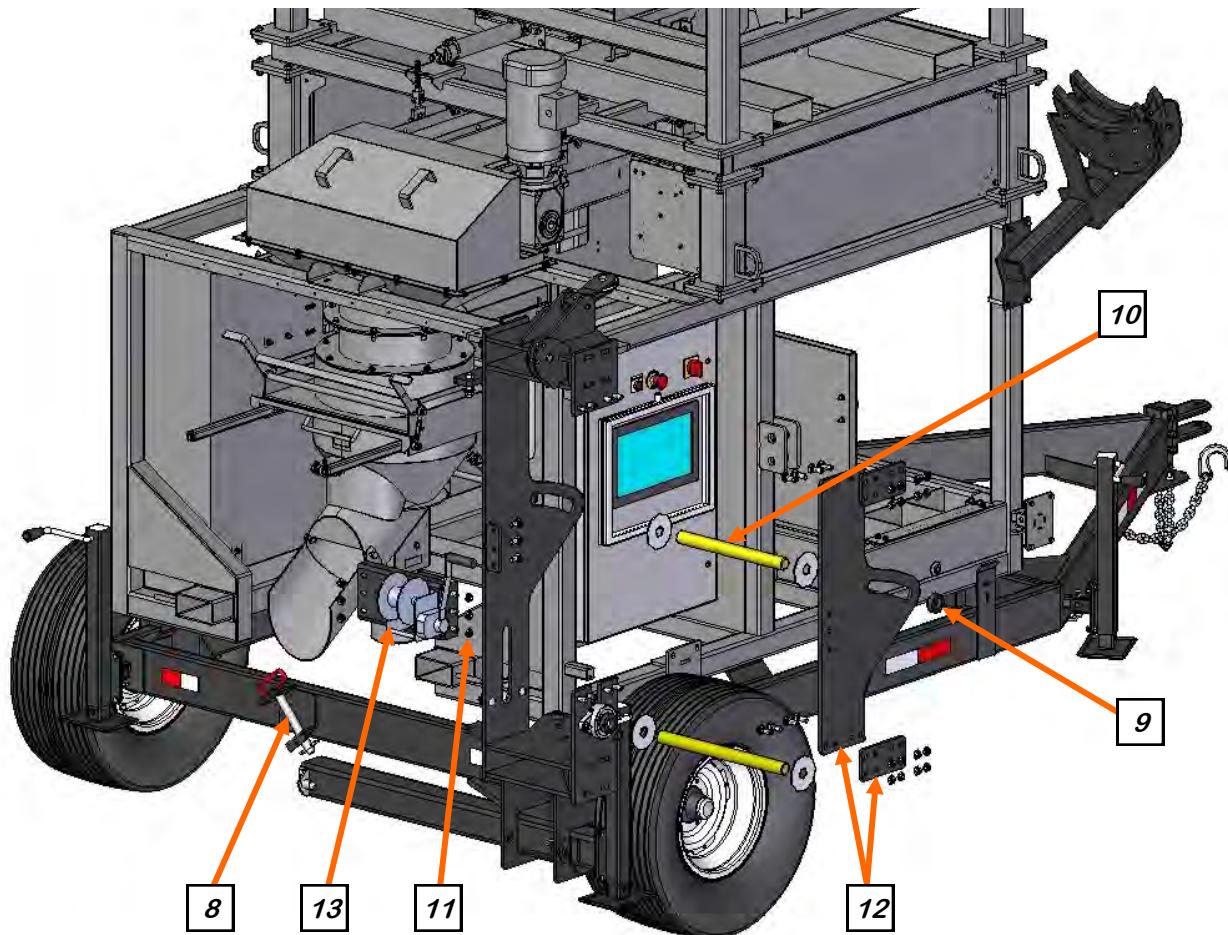
TREATER WITH WHEEL KIT AND AUGER SET UP



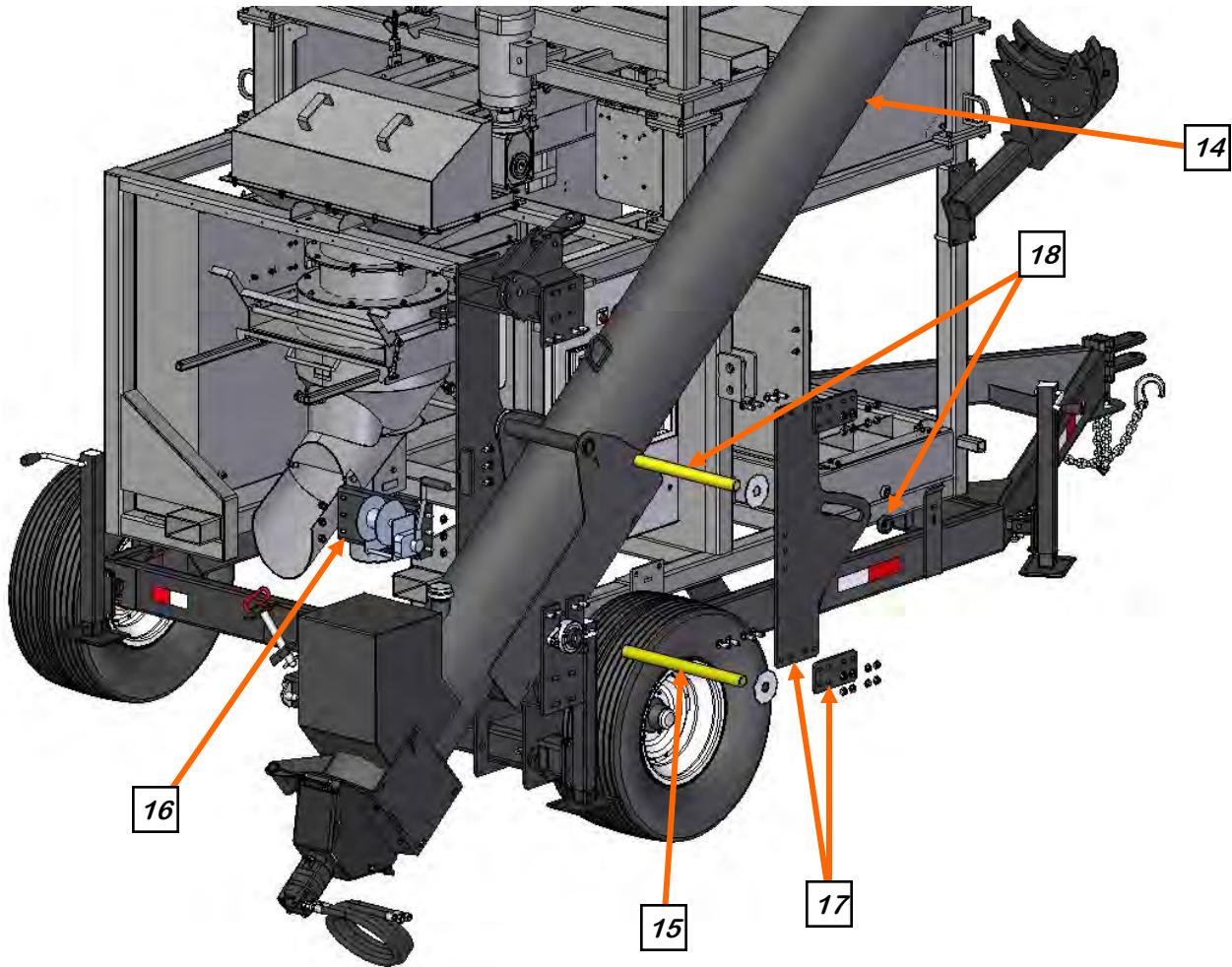
TREATER WITH WHEEL KIT AND AUGER SET UP

The base treater, weigh belt with hopper and Auger are shipped separately.
The following steps outline the initial set-up of your USC Seed Treating system:

1. Clear the area of bystanders, especially small children, before moving.
2. Be sure there is enough clearance from overhead obstructions and power lines or other equipment to move the machine into its working position.
3. Using a forklift, place the base seed treater in the desired position on as level a surface as possible.
4. Raise the jacks on all four corners to ensure the treater is stable and level on all sides.
5. Use the forklift again to lift the weigh belt and hopper. Position it over the base and lower it onto the treater frame. Secure it with the sixteen .500-13 X 1.75 bolts (06-01-0054) and .500 locknuts (06-03-0015).
6. Install the weigh belt cover using the sixteen .375-16 X .75 bolts (06-01-0124) and .375 lock nuts (06-03-0014).
7. Mount the auger cradle to the vertical frame post with two .375-16 X 3.00 X 4.00 U-bolts (06-01-0290) and .375-16 locknuts (06-03-0014).
8. Remove hitch pin and rotate the auger pivot assembly 90 degrees into the traveling or storage position.
9. Loosen the set screws from the four shaft retention collars and slide them off both shafts.
10. Remove the two shafts and set aside.
11. Remove the three .500-13 X 1.75 carriage bolts (06-01-0016) and .500-13 locknuts (06-03-0015) holding the right side of the winch assembly in place and set them aside.
12. Remove the sixteen .500-13 X 1.75 carriage bolts and .500-13 locknuts with the attach plate and both splice plates. Set them aside.
13. Remove the three .500-13 X 1.75 carriage bolts and .500-13 locknuts holding the left side of the winch assembly in place and set them aside.

TREATER WITH WHEEL KIT AND AUGER SET UP

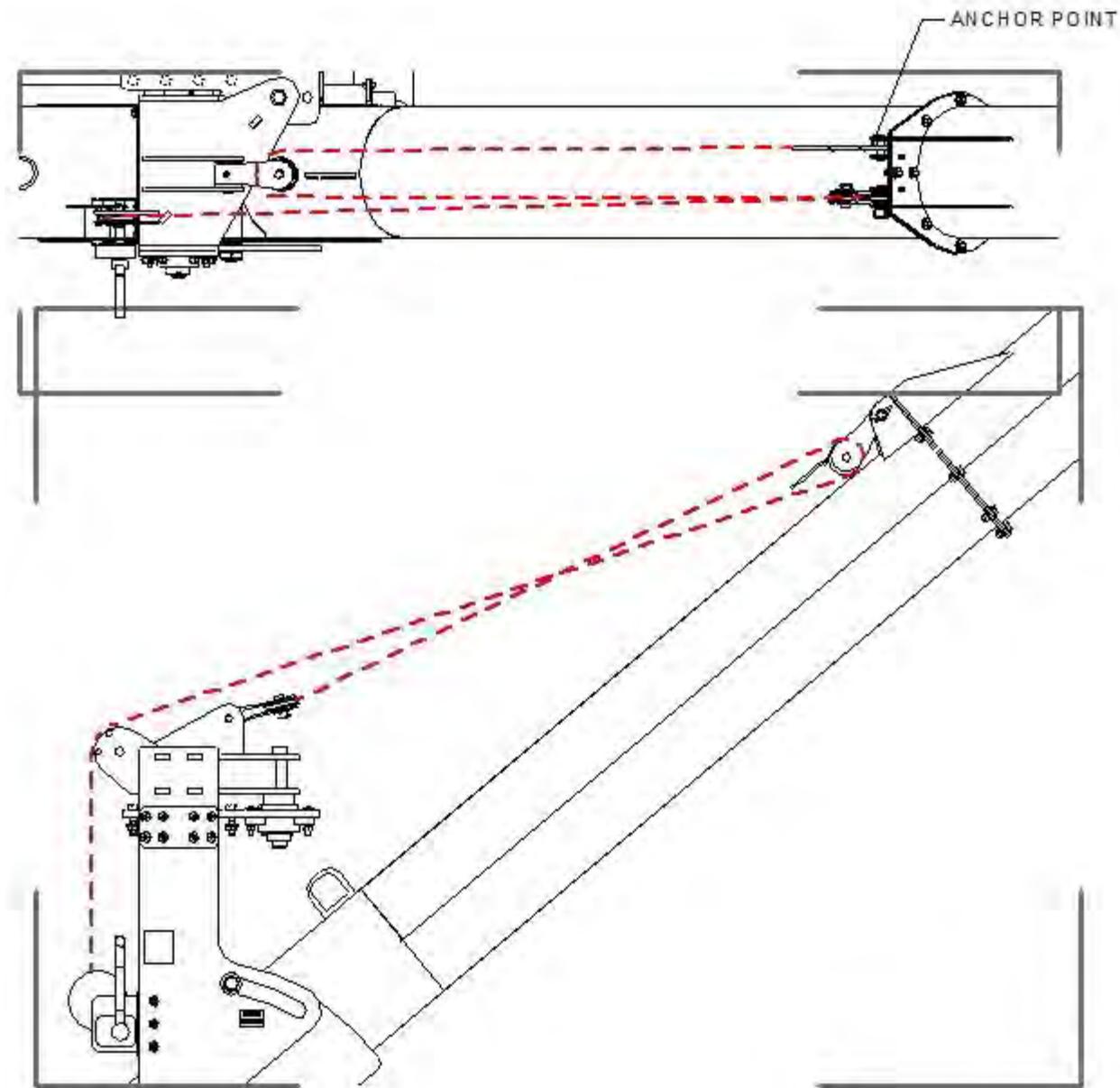
14. Using a forklift and choke strap, find the approximate center of the auger assembly and lift it. You may have to set it back down and lift several time to find the correct balance point. With a second person guiding one end of the auger from the ground, slowly move the auger so it is parallel to the right side of the treater. Raise it until it is slightly higher than the cradle. Slowly move it forward until it is lined up with the cradle.

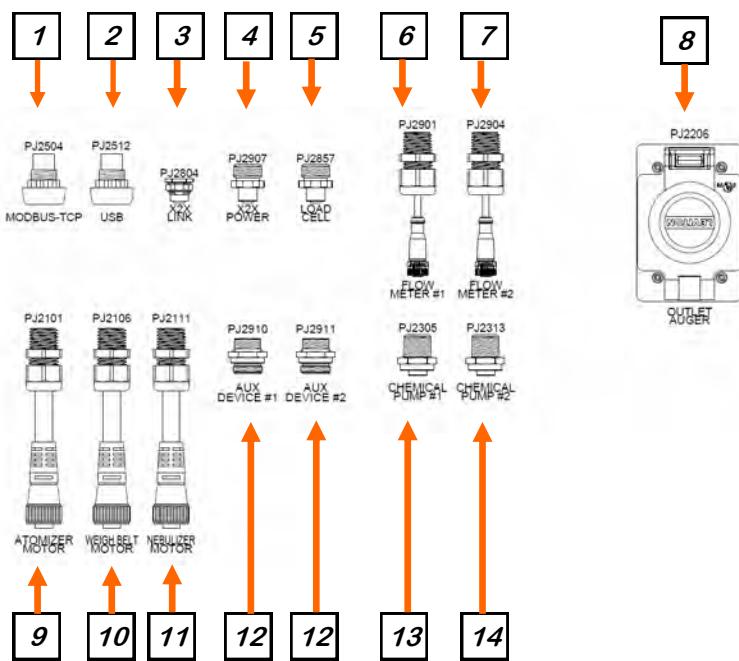
TREATER WITH WHEEL KIT AND AUGER SET UP

15. Manually pull the inlet end down until you can line up the bottom pivot hole on the auger. Capture it by sliding in the pivot shaft and secure both ends with the retention collars.
16. Re-install the winch using the hardware for the left side back onto the pivot assembly.
17. Re-install attach plate and both splice plates.
18. Lower the outlet end down until you can line up the top pivot hole on the auger with the slot on the attach plate. Capture it by sliding in the rotation shaft and secure both ends with the retention collars. Lower the inlet end until it rests in the cradle and detach from the forklift.

AUGER CABLE ROUTING

Unwind the cable from the winch. Route it over the vertical pulley on the pivot assembly, under the pulley on the auger tube splice, around the outside of the horizontal pulley on the pivot assembly and attach the end to the anchor point on the auger tube splice.

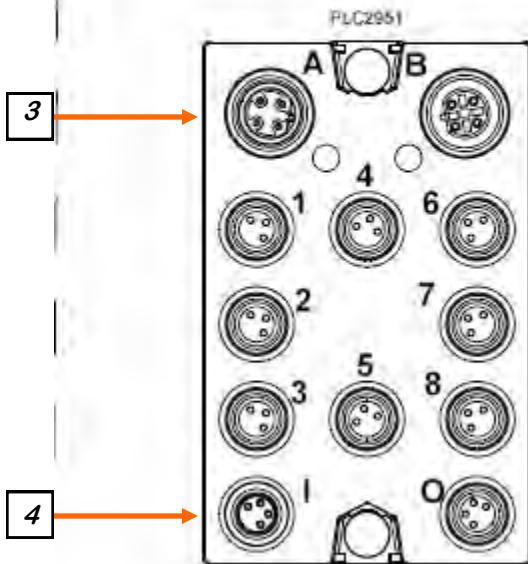


ELECTRICAL CABLE CONNECTIONS

1. Connect any Modbus auxiliary equipment to this connector (PJ2504).
2. Standard USB port (PJ2512).
3. Connect cable from top of the I/O block (A) to PJ2907. (see next page)
4. Connect cable from bottom of I/O block (I) to PJ2857. (see next page)
5. Connect cable from load cell summing box to PJ2857.
6. Cable PJ2901 is factory connected to flowmeter #1.
7. Cable PJ2904 is factory connected to flowmeter #2
8. If equipped with an USC (only) auger, plug motor cord into PJ2206. do not connect air compressor or other electrical equipment here.
9. PJ2101 is factory connected to the atomizer motor.
10. Connect cable from PJ2106 to the weigh belt motor.
11. PJ2111 is factory connected to the nebulizer motor.
12. Connect any auxiliary devices such as additional pump stands to PJ2910 or PJ2911.
13. PJ2305 is factory connected to chemical pump #1.
14. PJ2313 is factory connected to chemical pump #2.
15. If the optional air compressor is ordered. It connects to the plug on the right hand side of the control panel.

CTHC 3000 SEED TREATER
ELECTRICAL CABLE CONNECTIONS

LOCATED ON WEIGH BELT ASSY

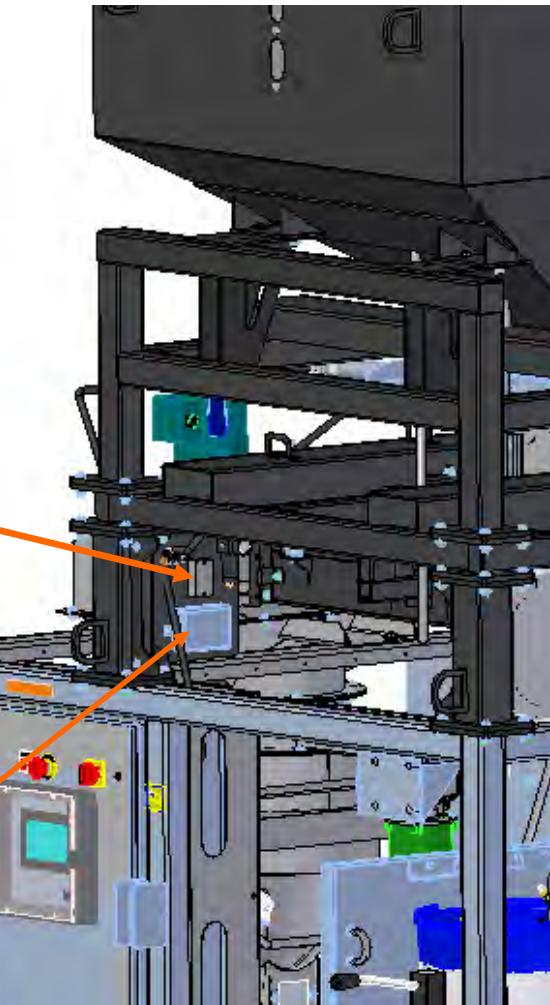


3

4



5



POWER SET UP*Example Tag***TREATER CONTROL PANEL**

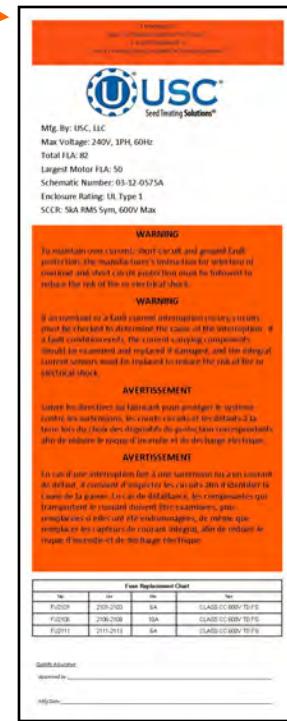
16. Have a certified electrician provide power to the seed treating system. Provide convenient shutdown switches, comply with local electrical codes and ensure that the system is properly grounded and bonded. The USC system must be connected to the same electrical requirements as specified in the treater control panel on the power requirement tag, or the electrical schematic shipped with the piece of equipment. This will power the USC CTHC 3000 seed treater.

NOTICE

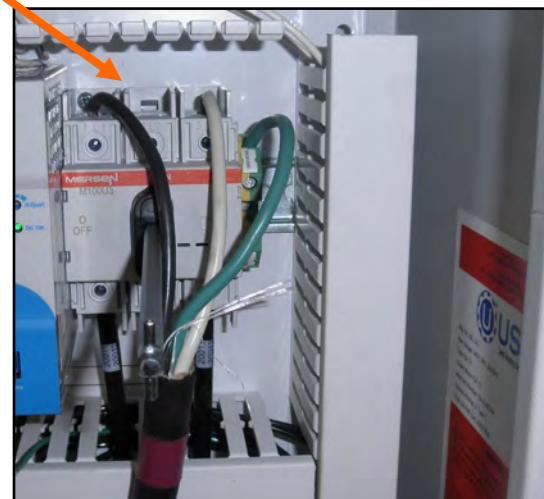
Flexible conduit is recommended for main power supply.

AVIS

Conduit flexible est recommandé pour l'alimentation principale.

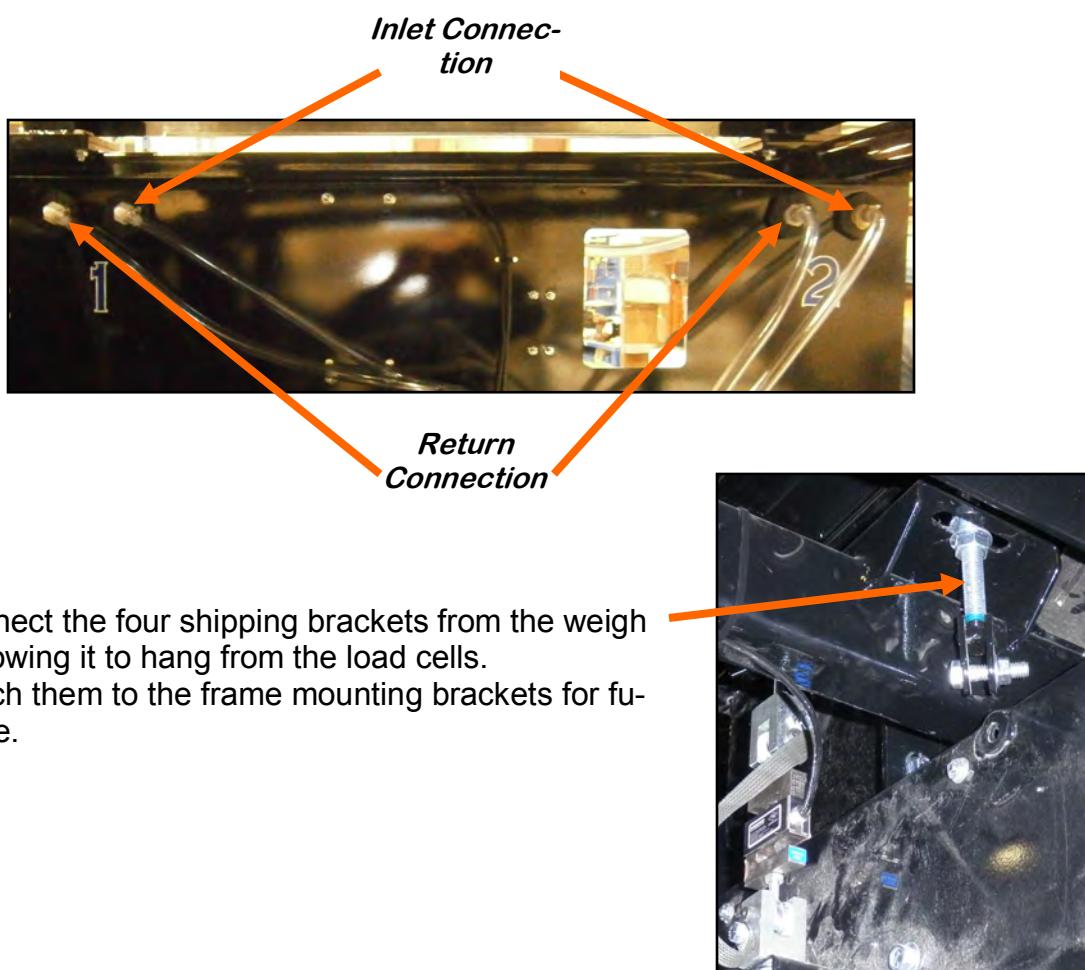


Incoming power connected to these terminals in the Treater Control Panel



CHEMICAL AND WEIGH BELT SET UP

1. Place the chemical totes on the tote rack and secure them with the straps supplied with the treater.
2. Each pump assembly has an inlet and outlet connection at the top of the mounting panel. When looking at the back side of the panel, the connection on the right of each pair is the inlet side and the left is the return. Attach the inlet and return tubing from each tote to the appropriate fitting. Then secure all four connections with a hose clamp.



3. Disconnect the four shipping brackets from the weigh belt allowing it to hang from the load cells.
Reattach them to the frame mounting brackets for future use.



The shipping brackets must be in place anytime the treater is being moved. Failure to do so may damage the load cells or the weigh belt.

! AVERTISSEMENT

Les supports d'expédition doivent être en place chaque fois que l'appareil de traitement est déplacé. Sinon, vous risquez d'endommager les cellules de charge ou la cour-

SETTING AUGER FROM TRANSPORT TO WORKING POSITION

1. Remove the cotter pin from the telescoping treater jack and extend it until the inside dead stop plate is home. Insert the cotter pin on the inside locating pin. Lower all four jacks and level the treater.

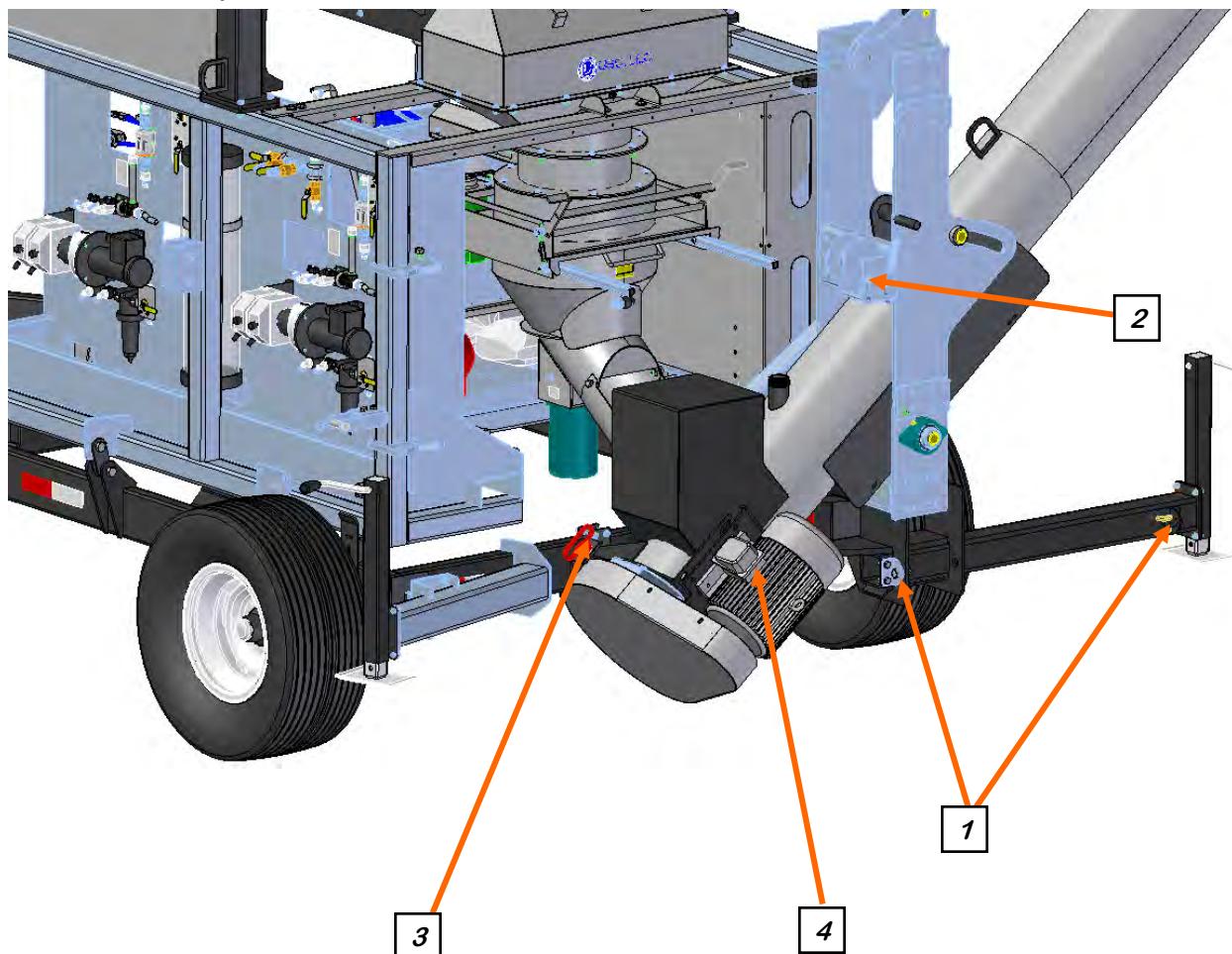


The telescoping jack must be fully extended and secured prior to moving the auger into the working position.

! AVERTISSEMENT

Le vérin télescopique doit être complètement étendu et sécurisé avant de placer la tarière en position de travail.

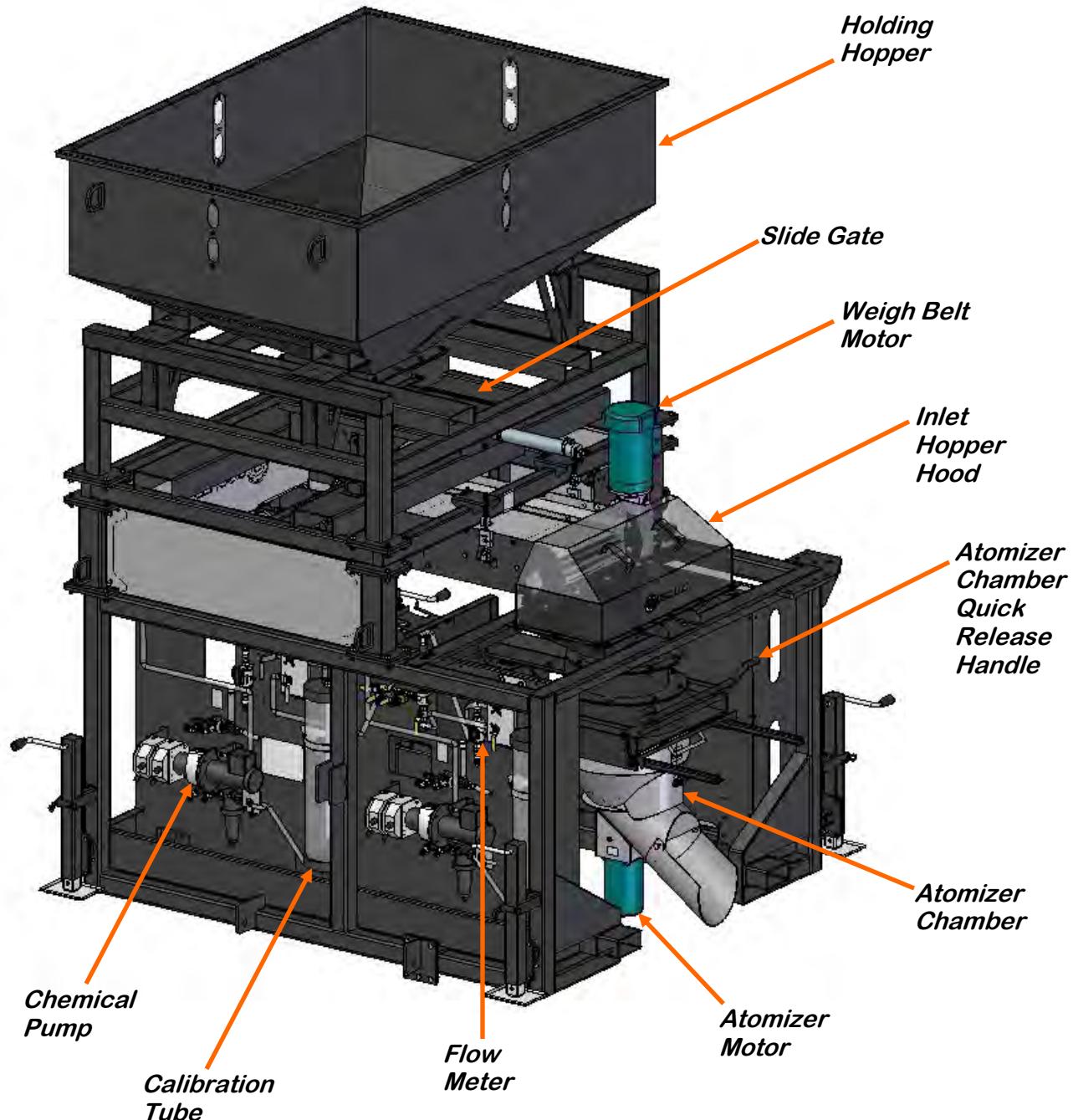
2. Crank the winch and lift the auger far enough to clear the auger cradle.
3. Remove the hitch pin. Rotate the conveyor 90 degrees so it is parallel with the back of the treater frame. Re-insert the hitch pin to secure the auger assembly.
4. Connect the electric drive motor cord into the receptacle PJ2206 on the bottom of the control panel



SECTION
C

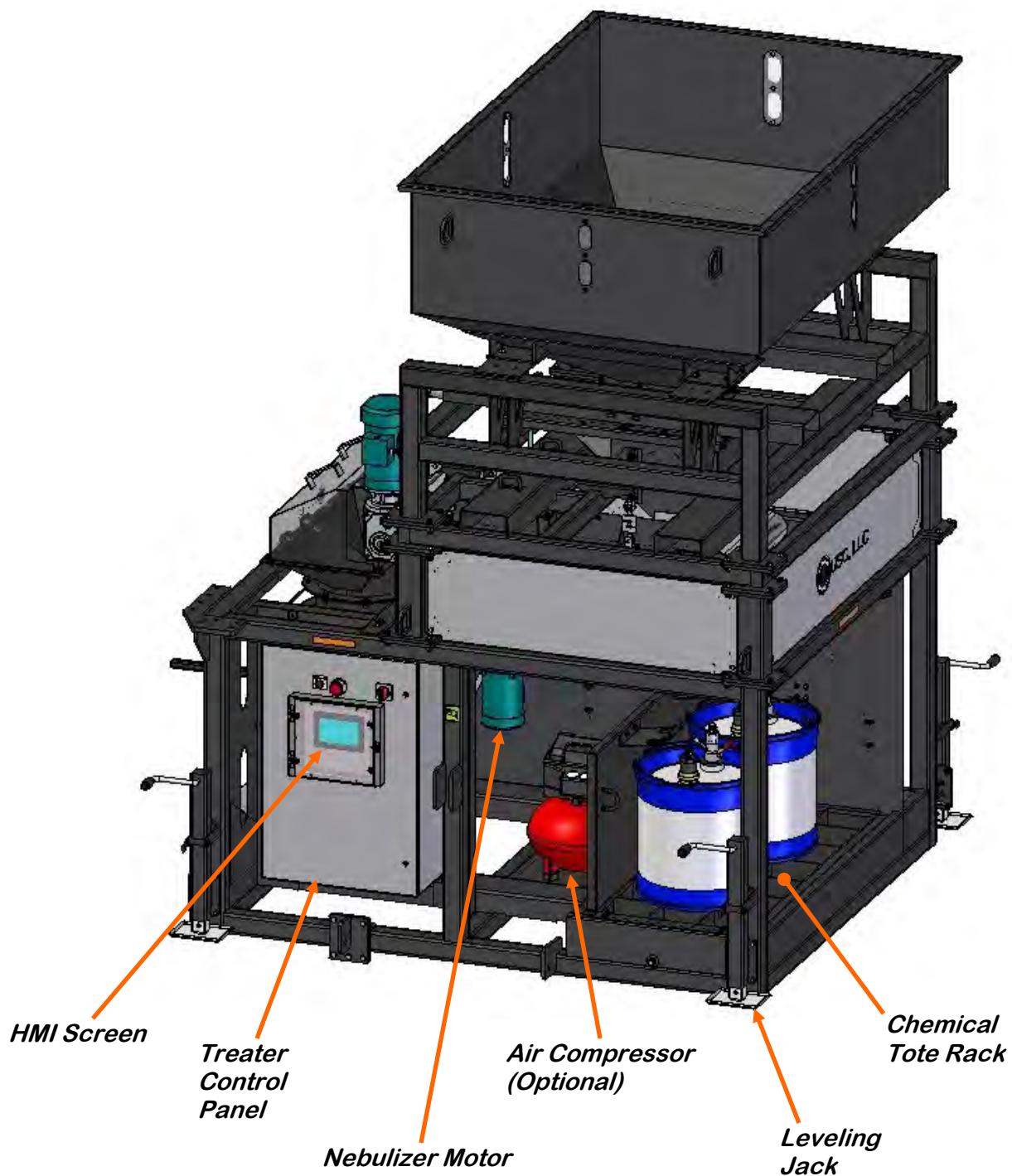
MECHANICAL OPERATION

TREATER OVERVIEW



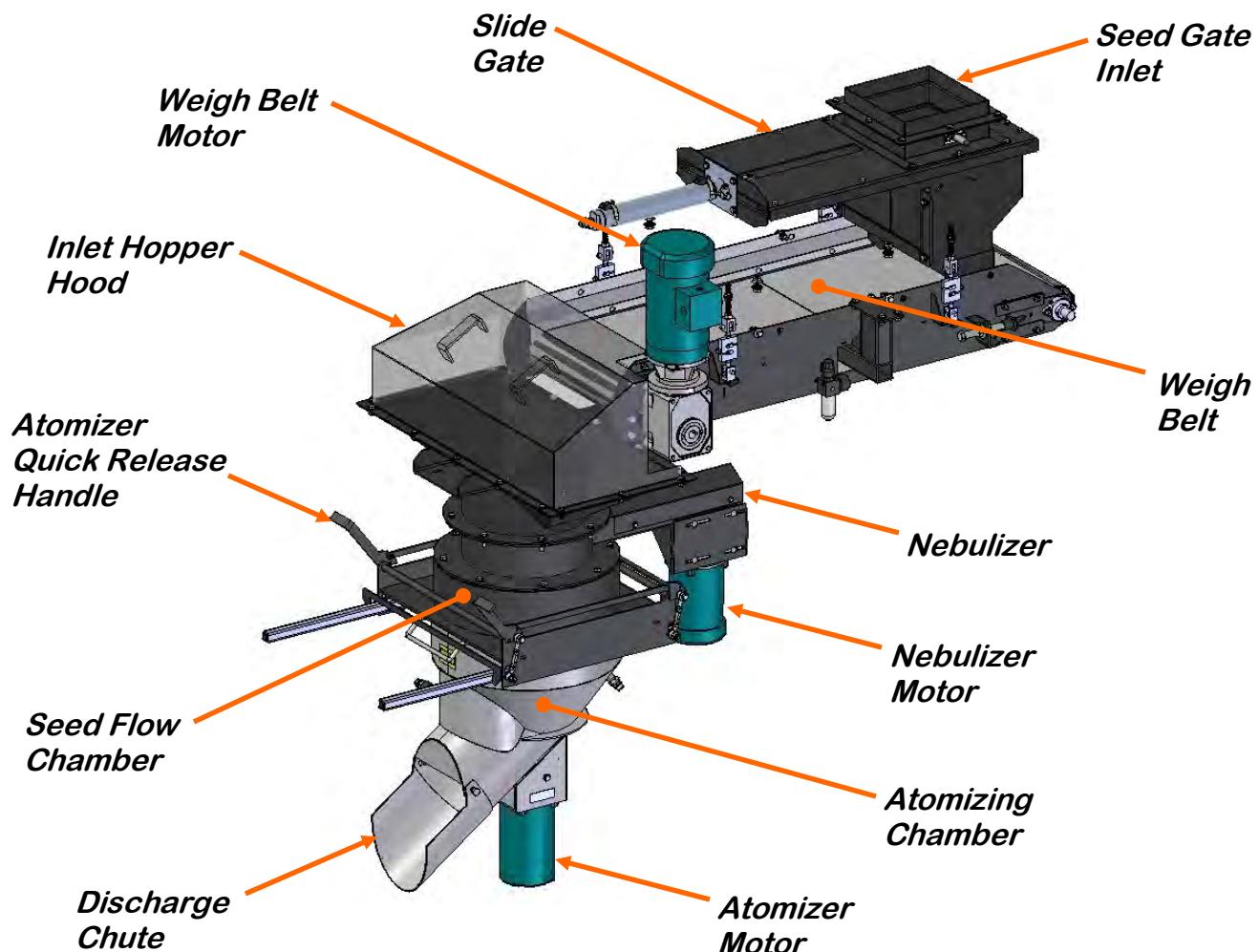
CTHC 3000 SEED TREATER

TREATER OVERVIEW



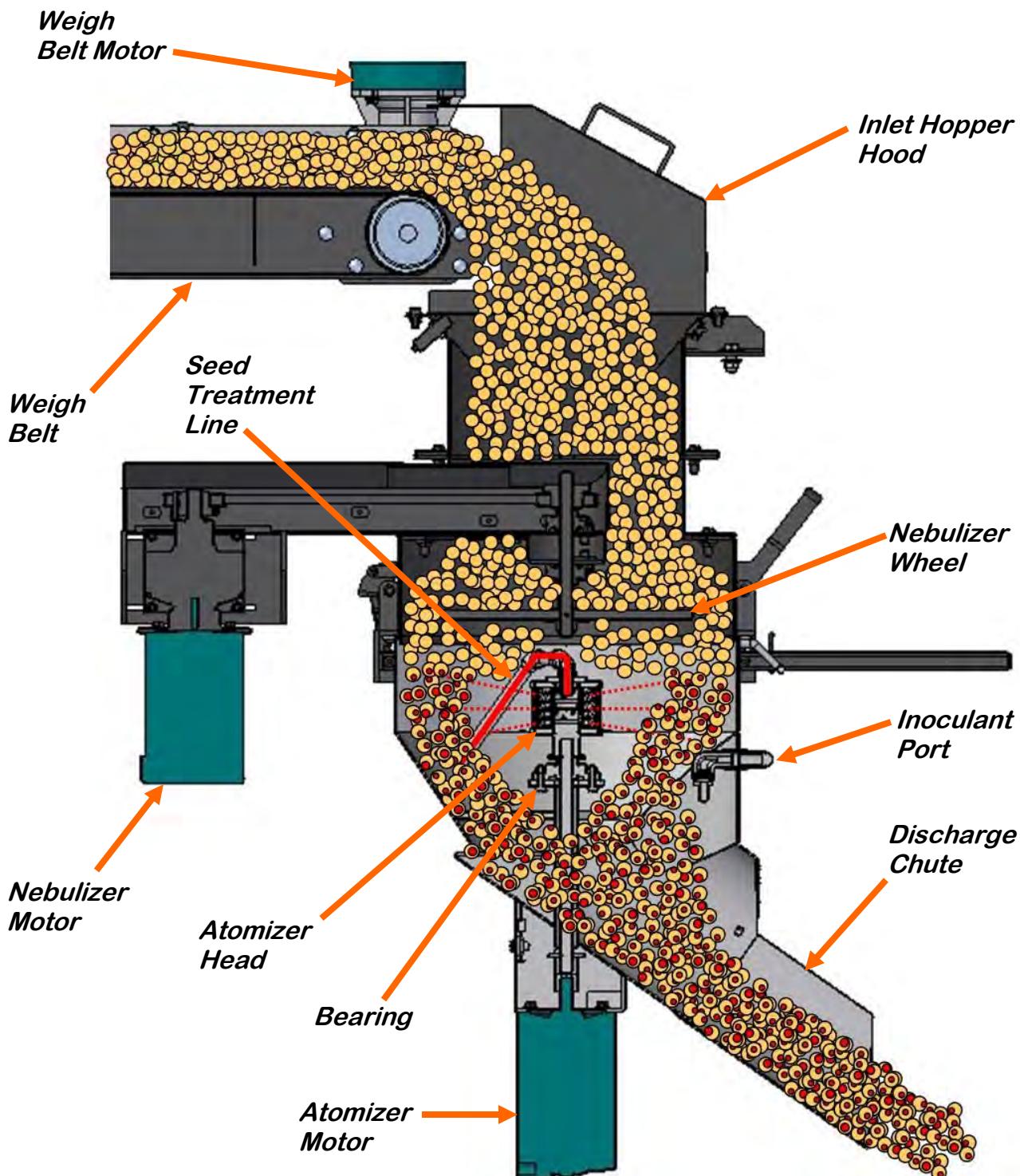
WEIGH BELT WITH NEBULIZER CHAMBER AND ATOMIZER

Seed flows down through seed gate and on to the weigh belt. It travels along the belt, through the inlet hopper and into the Nebulizer. The Nebulizer is a rotating disk that spreads the seed out as it flows into the seed flow chamber providing better separation as it enters the chamber distribution cone. The combination of these steps provide better seed dispersal around the atomizer head. The atomizer chamber consists of a patented design which disperses treatment evenly to each seed. A motor drives the atomizer head at approximately 1725 RPM's. As treatment is being pumped into the atomizer chamber, it drops into the atomizer head. The centrifugal force of the spinning head forces the treatment to be sprayed out through a screen covering in all 360 degrees. This process provides more complete treatment coverage in the Atomizer chamber. The weigh belt determines the seed flow rate based on the speed it is running at and how much weight is on it. The atomizer may be easily accessed for cleaning and maintenance by pulling down on the quick release handle and sliding the atomizer away from the treater body (see page 81).



CTHC 3000 SEED TREATER

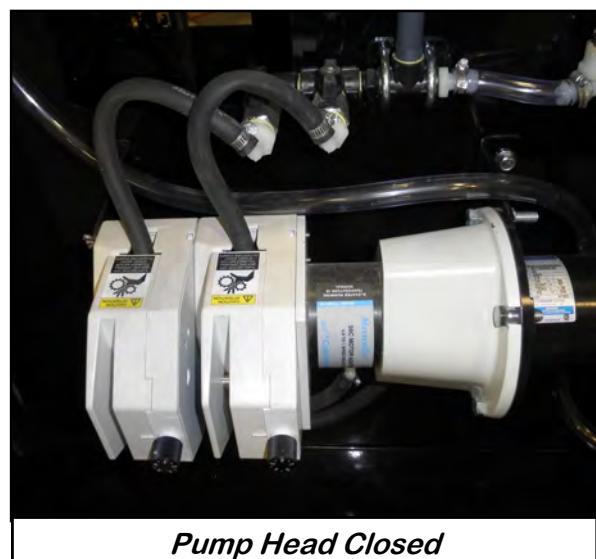
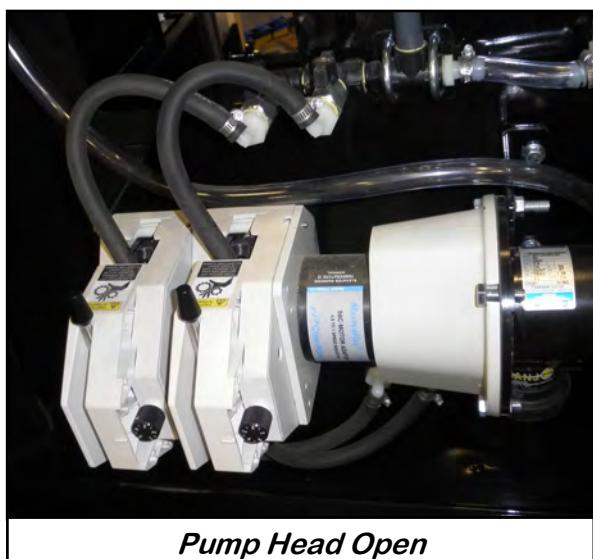
The illustration below shows how seed passes through the nebulizer and atomizing chamber. The red represents treatment being dispensed to the seed as it passes through the chamber. After the seed passes through the atomizer, it goes into the an auger, where the coating process is completed.



PERISTALTIC PUMP HEAD AND MOTOR

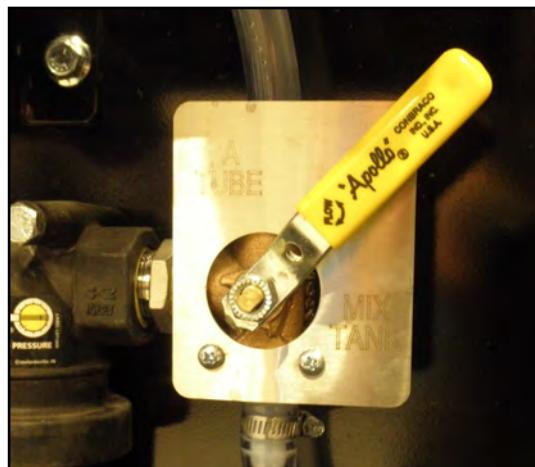
The pump assemblies utilize a variable speed pump motor and special norprene pump tubing for liquid metering. Each pump comes equipped with 2 peristaltic pump heads. Liquid will only come into contact with the inside diameter of the pump tubing and not the pump. This allows for easy cleanup and less maintenance of the pump.

To open the pump head, rotate the lever up to the top. Place the pump tubing inside the pump head so it fits inside the notches and above the rollers (bottom, left). Rotate the lever back down to the bottom to close the pump head, clamping the hose inside the head (bottom, right). Wear or fatiguing of the tubing within the pump head due to compression is normal. When tubing becomes worn or chemical rates begin to slow down, open the pump head and move the tubing to a different position. If the entire piece of tubing becomes worn, simply replace with a new section. When not using the pump stand for several days or when storing, open the pump head and remove the tubing to prevent any extra compression.



SEED TREATMENT VALVES**SEED TREATMENT SOURCE VALVE:**

This valve controls where the pump is drawing liquid from. When it is set to MIX TANK (horizontal), it allows liquid to be pulled from either the tote. When it is set to CAL TUBE it pulls liquid from the bottom of the calibration tube.

**SEED TREATMENT RETURN VALVE:**

When the top valve is set to RECIRC (horizontal), liquid will flow back into the tote. When the valve is set to PROCESS/CAL TUBE (vertical), it flows to the bottom valve. When the bottom valve is set to PROCESS (horizontal), liquid will flow to the treatment source valve then on to the treater. When it is set to CAL TUBE (vertical), liquid will flow to the calibration tube.



PUMP SELECTION VALVES: These valves are connected to the static mixer at the top of the pump panel. The static mixer further blends the treatment right before it is pumped into the Atomizer. The valve in the horizontal position controls the output from the number 2 pump and the valve in the vertical position controls the output from the number 1 pump. When the handle on either valve is parallel to the valve it is in the open position. When the handle is perpendicular, it is in the closed position. The example to the right shows both valves closed.

CTHC 3000 SEED TREATER

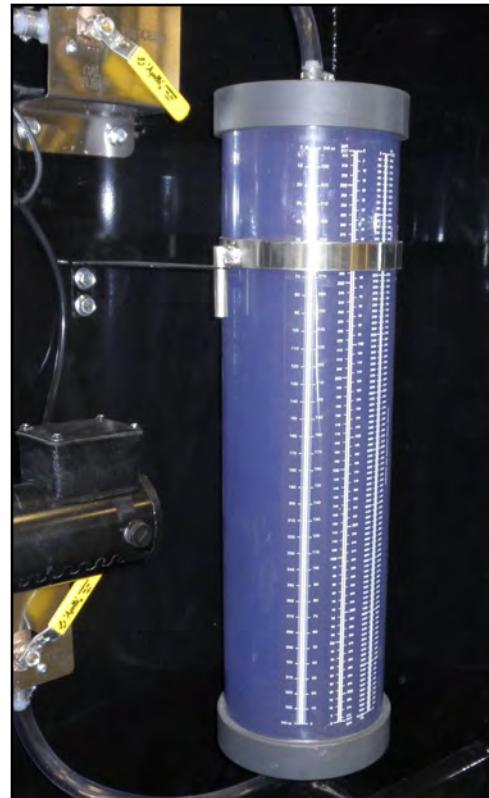
FLOW METERS

The pump assemblies are equipped with volumetric flow meters. A flow meter is used to perform real time chemical flow adjustments and monitoring without the operator having to handle the chemical. The flow meter reading will be displayed on the HMI touch screen and can be set to read in oz / min or ml / min.



CALIBRATION TUBES

The pump assemblies are equipped with calibration tubes which are used to check the liquid flow rate. The calibration tubes will hold 340 ounces. The system valves direct liquid from different areas to keep all liquid contained. This creates a closed chemical system so that the operator may manually check the calibration of the chemical flow rate without handling any of the chemical.



CALIBRATION TUBES

Proper calibration of the liquid system is critical to achieve a proper granular / chemical mixture. For information on pump calibration and flow meter calibration to determine liquid flow rate, see the Calibration and Operation section on page 67.

Emptying the remaining liquid may be done by using the reverse function on the control panel. This will pump liquid back into the mix tank. Then drain the remaining liquid into a suitable container. Clean water should be pumped through the calibration tube and mix tank when finished.



Always dispose of chemical or diluted chemical according to your local, state, and federal regulations.



Éliminez toujours les produits chimiques ou dilués conformément aux réglementations locales, nationales et fédérales.



Only you, the operator, can determine the length of time required to completely rinse all chemical residue from the tank and plumbing system.



Vous seul, l'exploitant, pouvez déterminer le temps requis pour rincer complètement tous les résidus chimiques du réservoir et du système de plomberie.

**SECTION
D****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 sur les panneaux de contrôle.

General Panel Descriptions:

- The CTHC 3000 Automated Treater Panel is an enclosure that contains the electrical components required to actuate the seed treater. This includes the VFDs for the atomizer, nebulizer and weigh belt. Power for the treater is supplied here. Power to this panel is hard wired.



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



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

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 lightening 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 54).

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 54).

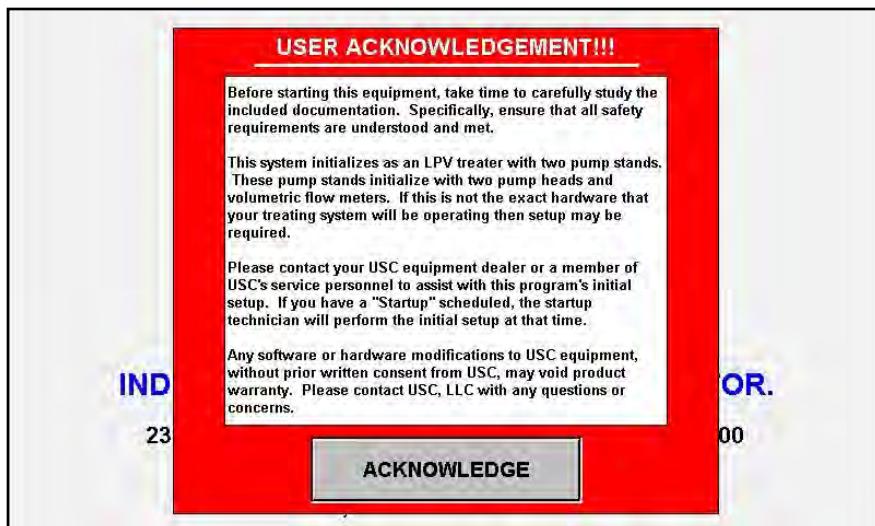
HMI-Main Control Panel

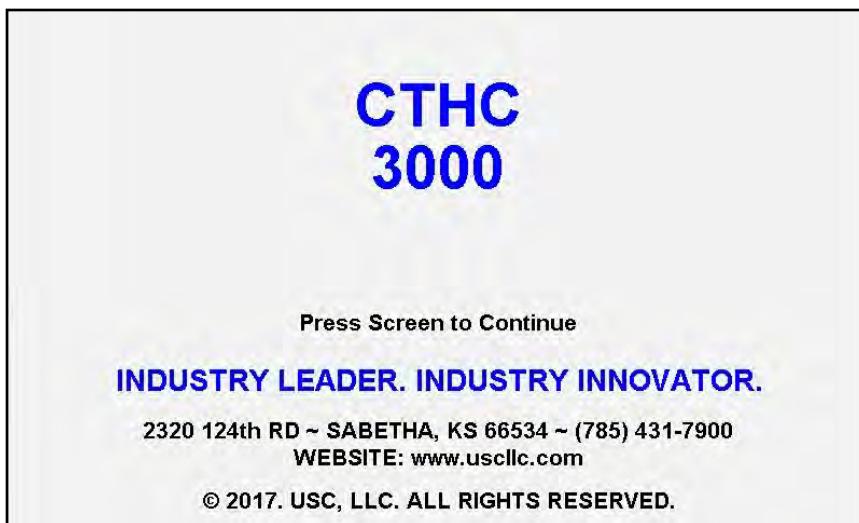
This section explains the function of the touch screen controls that apply to all systems.

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. (below). While the system is booting up, the touch screen will display a timer bar at the bottom of the Start Up Screen (see page 41, top).

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 (see page 42).





FUNCTIONS COMMON TO ALL SCREENS

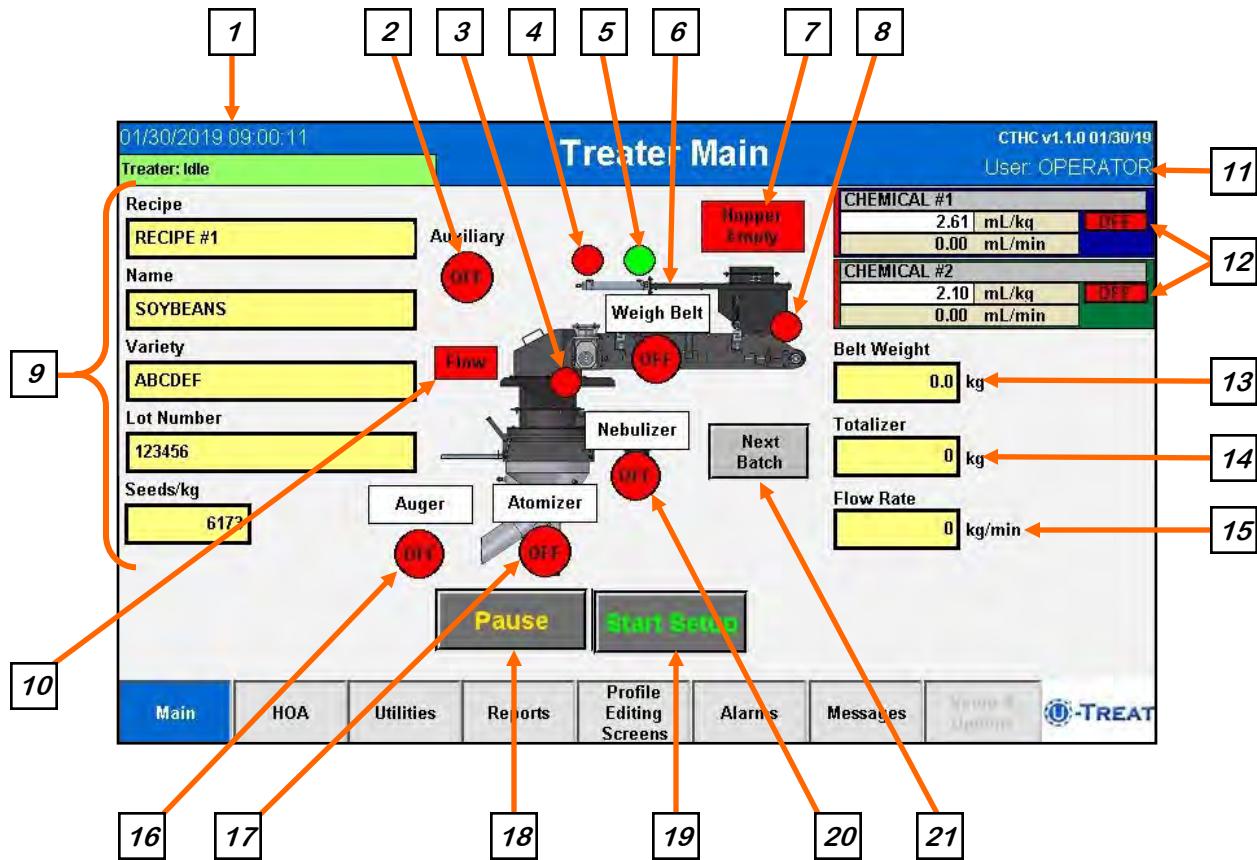
At the top of every screen is the dark blue title bar. In the center of the screen is the title of the current screen. In the upper left corner is the date and time. Below that is the treater message bar. It has a light green background and will display messages notifying the operator of which stage the treating process is in. In the top right corner is the program version, and current user identification.

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.

CTHC 3000 SEED TREATER

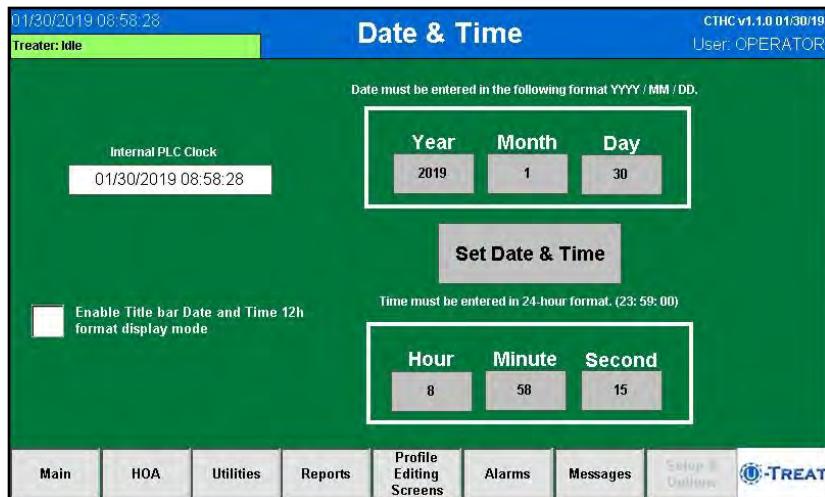
MAIN SCREEN

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



MAIN SCREEN DESCRIPTIONS

1. DATE & TIME: The date and time are displayed in the upper left corner of the screen. If you press the text, you will advance to the Date & Time screen. 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 left 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.



2. AUXILIARY MOTOR INDICATOR: Informs the operator if the motor for the auxiliary device attached to the system is ON or 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 OPEN INDICATOR: When this display is green, the slide gate is open. When it is red, the slide gate is closed.

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

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

7. HOPPER EMPTY INDICATOR: When this indicator is present, the proximity switch above the seed gate no longer detects seed.

8. 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.

MAIN SCREEN DESCRIPTIONS

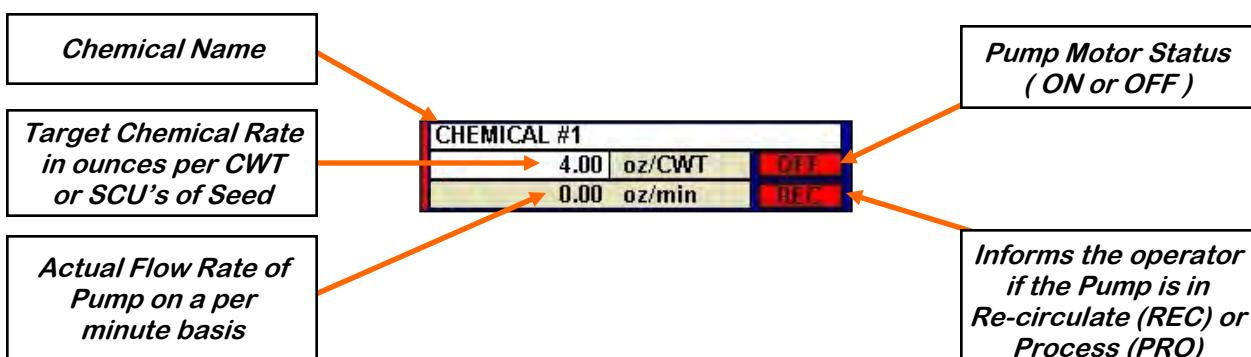
9. CURRENT RUN PARAMETERS: These displays show the general information that was entered on the Start Setup popup screen prior to starting the run.

10. 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

11. SECURITY SCREEN: In the upper right corner is the current user name. If you press the text, you will advance to the Security screen. The operator uses this input to obtain access to all options on this screen. When the Password button is pressed a keypad 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.

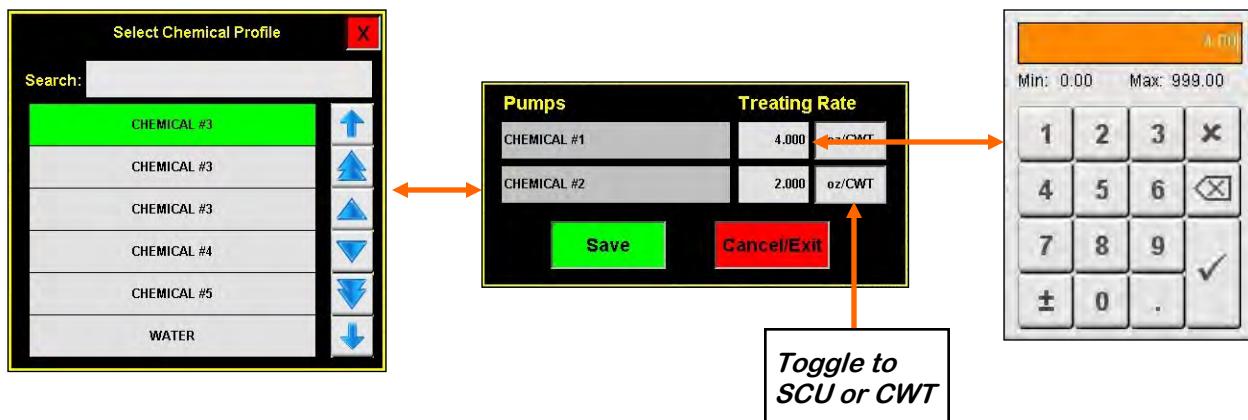


12. PUMP MODULES: This block of information informs the operator of the pump motor status (ON or OFF), currently selected chemical, target flow rate and actual flow rate from flow meter. A vertical line on the left side of the pump module will indicate the tolerance status. If it is green, the pump flow rate is within tolerance. If it is red, it is out of tolerance.



MAIN SCREEN DESCRIPTIONS

12. PUMP MODULES (Continued): If recipe mode is not active, the chemical name and target rate fields will turn from white to grey and become active buttons. Selecting either one will bring up a popup screen with both pumps listed. Select a pump name and the select chemical profile screen appears. Select the chemical you wish to change it to. 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. When all the information is set, press the Save button then Exit.



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

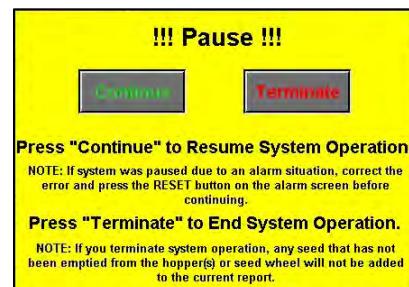
14. TOTALIZER: This display indicates the amount of seed the program estimates has been treated on the last run.

15. FLOW RATE: This display indicates the amount of product being treated per minute in real time. It will display the final number after the run is complete.

16. AUGER MOTOR INDICATOR: Informs the operator if the auger motor is ON or OFF. This is only visible when auger controls are enabled.

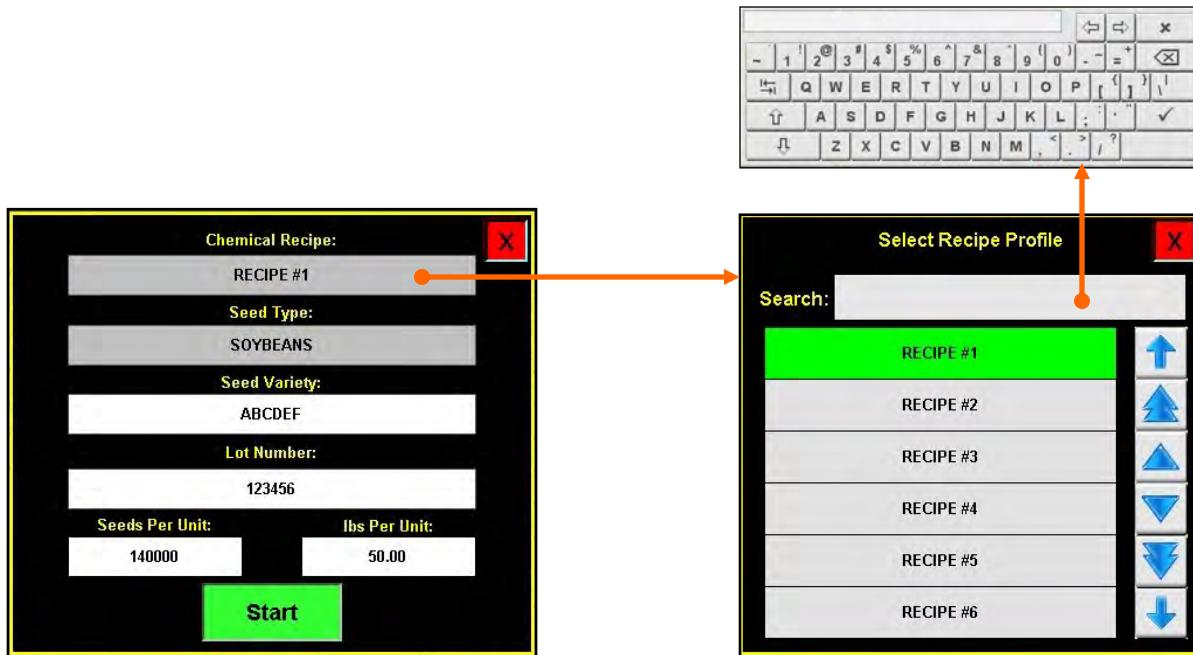
17. ATOMIZER MOTOR INDICATOR: Informs the operator if the atomizer motor is ON or OFF.

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.



MAIN SCREEN DESCRIPTIONS

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 chemical recipe and seed type by selecting one of the box's in the popup or search the listing for an existing entry by typing the name in the search field or using the navigation arrows. The other boxes will automatically populate with the information from the seed profile selected. When all the information has been added press Start to begin the run. Once the system begins to operate it becomes the Shutdown button.



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

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

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

H-O-A (HAND-OFF-AUTO) SCREEN** **WARNING****** ! AVERTISSEMENT**

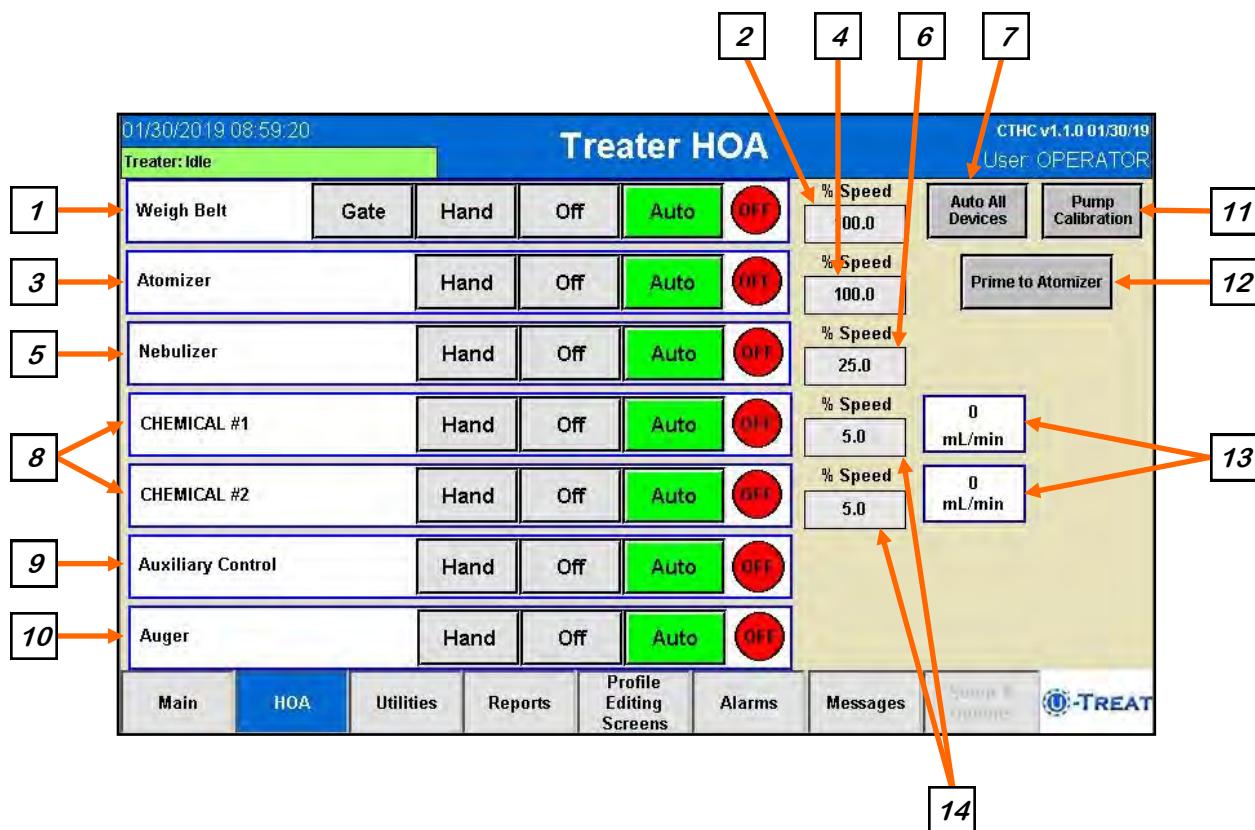
These H-O-A buttons force the selected component to be energized (HAND), de-energized (OFF), or automatically energized by the normal logic sequence (AUTO).

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.**

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.



1. 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.

2. WEIGH BELT PERCENT SPEED: When this button is pressed, a numeric touch pad 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.

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

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 will appear to allow the operator to manually adjust the speed of the atomizer.

5. 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.

6. 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.

7. AUTO ALL DEVICES: When this button is pushed, it globally changes all treater HOA settings to the Auto mode of operation.

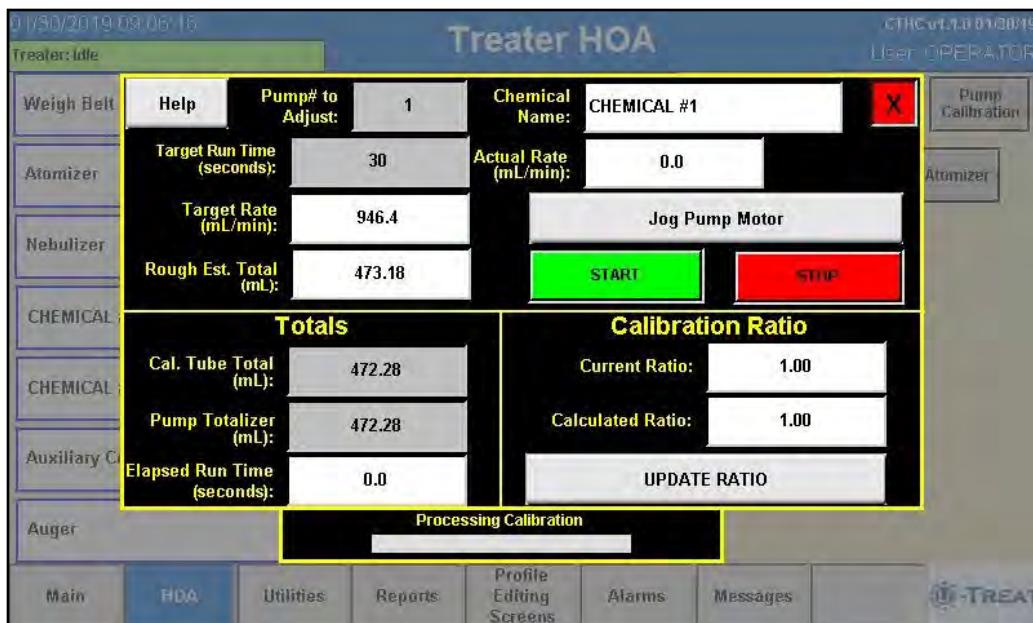
8. PUMP CONTROL MODULES: These modules control the function of the Pump Stands. The Hand button will place the desired pump in the manual mode of operation. The Off button will turn the associated device in the Off mode of operation. When OFF the REV. button appears. This allows the operator to reverse the pump direction and pump the product back into the mix tank. 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.

9. AUXILIARY CONTROL: These modules allow 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.

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

10. AUGER CONTROL: This module controls the function of the auger if it is enabled. The Hand button will place the auger 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.

11. PUMP CALIBRATION: Pressing this button brings up the pump calibration screen (below). This screen is used to calibrate the pumps. 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 valve. Place a measuring receptacle under the tube coming from the valve. 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 receptacle 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.



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

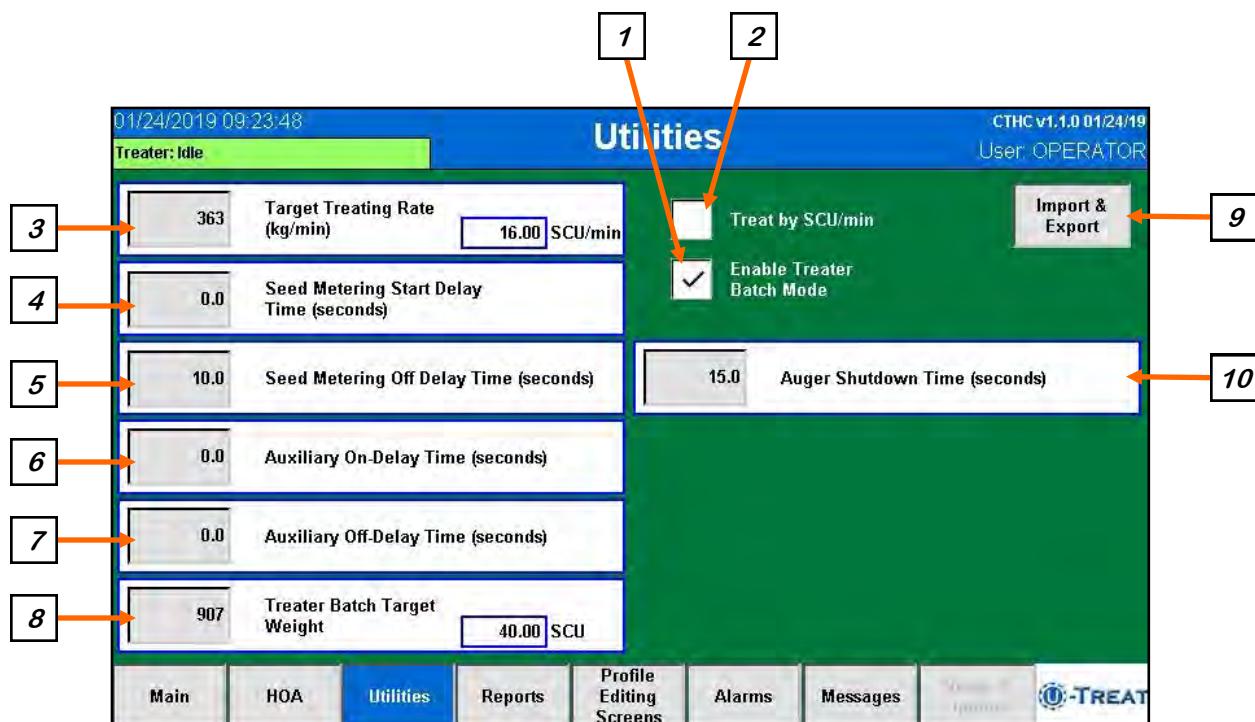
12. PRIME TO ATOMIZER: Used before a controlled startup to preload chemical in the tubing leading to the atomizer. To operate this button, place the atomizer and any pump that will be used in the Auto mode. Next press and hold the Prime to Atomizer button. The atomizer and pumps will turn on and the 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.

13. FLOW RATE INDICATOR: When the pump is in operation, this displays the liquid flow rate in real time.

14. 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.

UTILITIES SCREEN

This screen allows the operator to set various system parameters.

**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 5 à 14 sont enfoncés, un pavé tactile numérique (à droite) apparaît, permettant à l'opérateur de saisir un numéro pour ce paramètre particulier.

1. ENABLE TREATER BATCH MODE: This function can be used if you wish to treat less than a full box. This box must be checked to make the Treater Batch Target Weight present. This allows the operator to define how much of the seed in the box to treat. This may also be used when seed is entering the system from a customer supplied and controlled conveyor. 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 auger. They may then replace the treated box with an empty one and press the Next Batch button to continue treating. See item 21 on page 42.

UTILITIES SCREEN

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. 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 gate and pumps.

4. SEED METERING START DELAY TIME (seconds): The start delay time is the number of seconds from the time the atomizer and auger have been started and the proximity switch detects seed until the actuator opens the slide gate to begin treating.

5. SEED METERING OFF DELAY TIME (seconds): The off delay time is the number of seconds from the time the shutdown button is pressed for the actuator to close the slide gate atomizer to stop.

6. 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.

7. 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.

8. TREATER BATCH TARGET WEIGHT: When operating in batch mode, the operator will enter the weight for each individual batch.

9. IMPORT / EXPORT LISTS: Pressing this button will advance to the Import / Export screen (see page 54). 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.

UTILITIES SCREEN**9. IMPORT / EXPORT LISTS:** (Continued)

01/30/2019 08:59:47 Import & Export CTHC v1.1.0 01/30/19
 Treater: Idle User: OPERATOR

Import/Export Status:
 USB Status: Not Connected.

Select the specific list you would like to export, import or delete.

List	Total Records	Status	Actions	
Alarm Log	11	Export	Import	Delete
Messages Log	0	Export	Import	Delete
Job Reports	1	Export	Import	Delete
VFD Profiles	4	Export	Import	Delete
Seed Profiles	6	Export	Import	Delete
Chemical Profiles	3	Export	Import	Delete
Chemical Recipes	1	Export	Import	Delete
Pump Profiles	2	Export	Import	Delete
Events Log	13	Export	Import	Delete

Main HOA Utilities Reports Profile Editing Screens Alarms Messages [Jump to groups](#) 

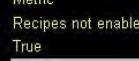
10. AUGER SHUTDOWN TIME: When the auger controls are enabled, this will set the amount of time the auger will run after the system has been shutdown.

CTHC 3000 SEED TREATER

REPORTS

After the run is complete and all of the seed has been run through the treater, press the shutdown button. Once a run is finished the data is saved automatically in the reports file. The operator may access these records from the Reports screen. Press the Reports button and you will be viewing the last recorded run. The three columns at the top of the screen display all of the information recorded from the run. In the middle is a grey box. Select it and a keyboard will popup so you may enter notes about this run. At the bottom, the values for both pumps are shown.

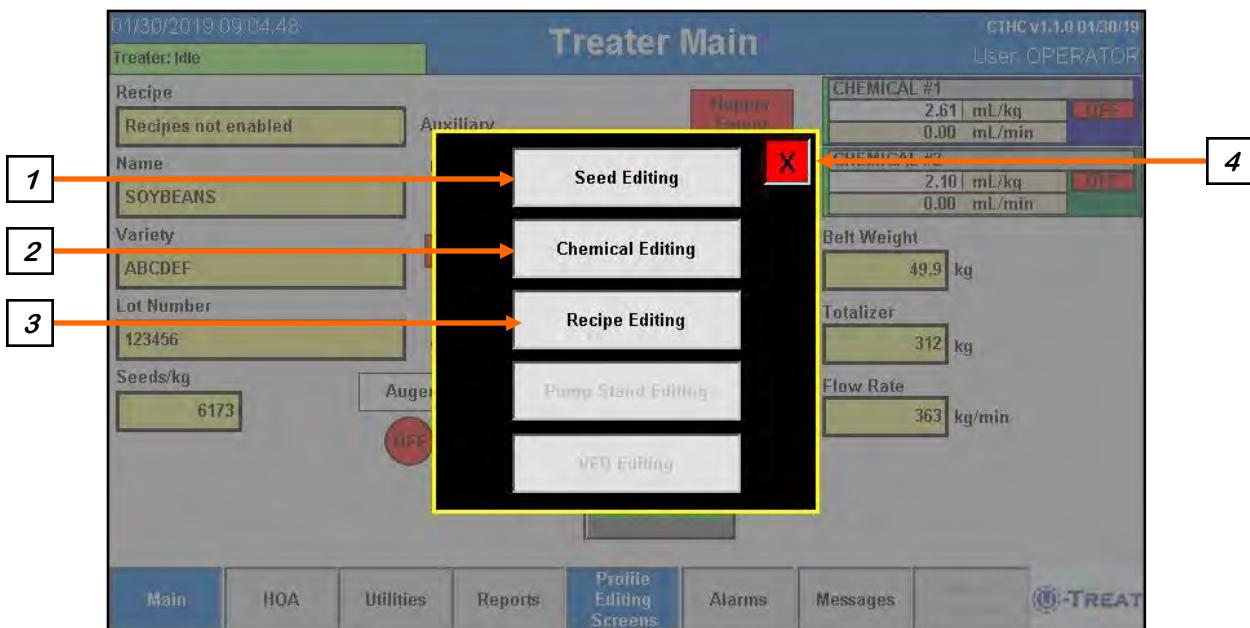
Selecting the grey arrow in the upper left corner activates the dropdown list displaying all of the reports. Use the arrows to scroll through them or press the grey box to enter the name of a specific report. That report will be brought to the top of the list. The system is capable of storing up to 5000 entries.

01/30/2019 09:07:48		Reports		CTHC v1.1.0 01/30/19
Treater: Idle				User: OPERATOR
 Record Type:	Treater	Seed Profile:	SOYBEANS	Totalizer Weight: 312
Start Time:	2019/01/30, 09:00:49	Variety:	ABCDEF	Totalizer SCU: 13.77
End Time:	2019/01/30, 09:04:34	Lot Number:	123456	Avg. Weight/min: -
System Paused:	False	Seeds/Unit:	140000	Avg SCU/min: 14.25
Measurement Mode:	Metric	Seeds/Weight:	2800	Run Timer (sec): 58.0
Recipe:	Recipes not enabled	Weight/SCU:	22.7	
Auxiliary Used:	True	Cup Pocket Ratio:	2.50	
Notes:				Cup Weight: 1.66

Main HOA Utilities Reports Profile Editing Screens Alarms Messages [Setup & Configuration](#)  TREAT

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 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 Pump Stand and VFD Editing profiles. See pages 57 through 64 for detailed information for entering the data.



PROFILE EDITING SCREENS

1. SEED EDITING: Pressing this button will advance to the Seed Editing screen.

If you are looking for a specific seed profile, select the grey arrow in the upper left corner to open the seed profile list (see page 58, top). 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.

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.



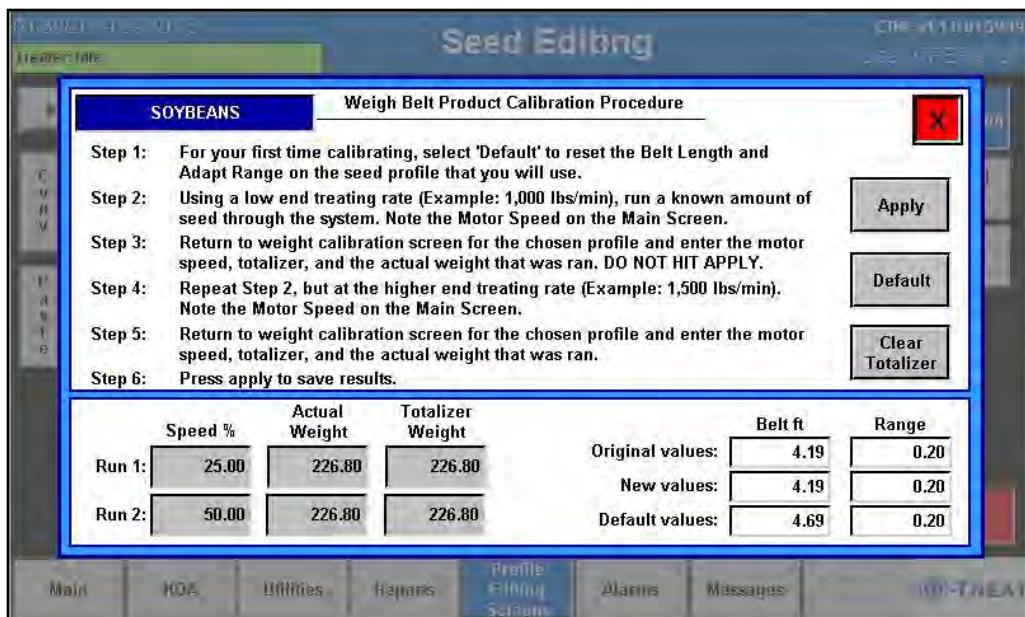
1A

CTHC 3000 SEED TREATER
PROFILE EDITING SCREENS

1. SEED EDITING (Continued):



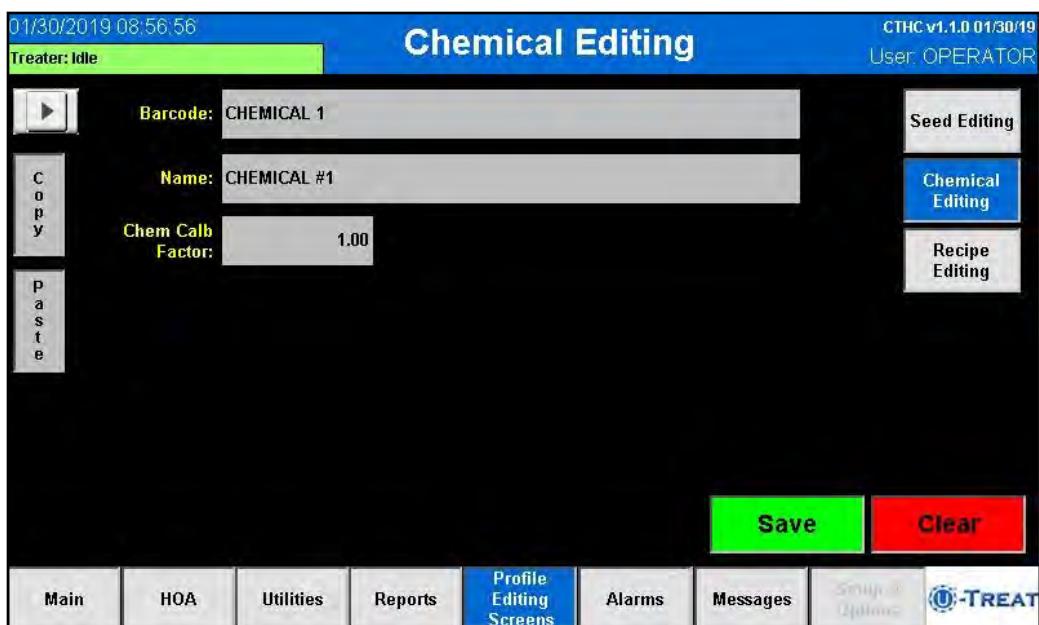
1A. SEED EDITING: Pressing this button will bring up the Weigh Belt Calibration popup screen. Follow the six steps on the top half of the screen. After the Apply button has been pressed, both New Values will automatically update. Press the exit button to return to the product editing screen. Notice the new values on the product editing screen will also be updated.



PROFILE EDITING SCREENS

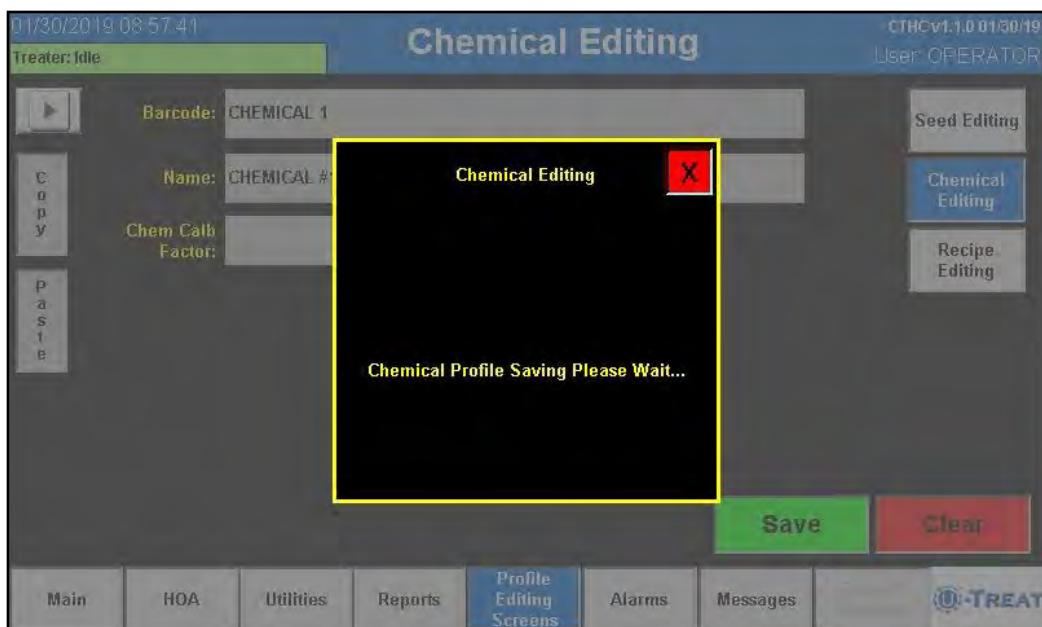
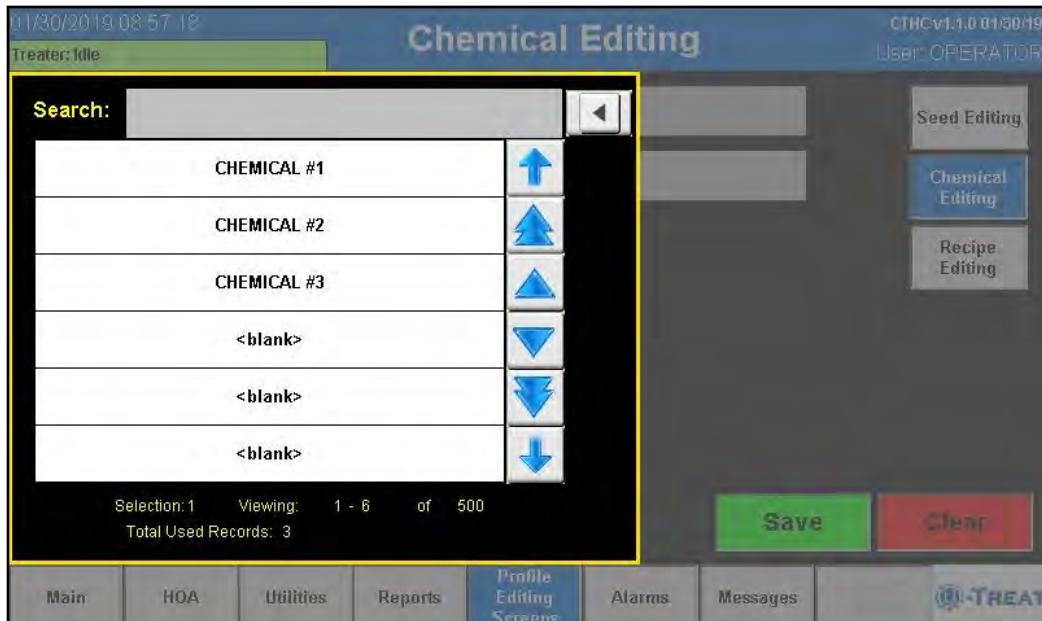
2. CHEMICAL EDITING: Pressing this button will advance to the Chemical Editing screen where the operator may define the parameters for each individual chemical. If you are looking for a specific profile you may select the grey arrow in the upper left corner to access the seed profile list (see page 60, top). 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 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. After you press save, a popup will appear warning you to wait until it saves the changes before you leave the screen (see page 60, bottom).

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.



CTHC 3000 SEED TREATER
PROFILE EDITING SCREENS

2. CHEMICAL EDITING (Continued):



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 profile you may select the grey arrow in the upper left corner to access the seed profile list (see page 62, bottom). You may enter the in the Search box at the top of the seed list or use the arrows to scroll through the list. 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.

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.

CTHC 3000 SEED TREATER
PROFILE EDITING SCREENS

3. RECIPE EDITING (Continued):

01/30/2019 09:06:50 Treater: Idle Recipe Editing CTHC v1.1.0 01/30/19 User: OPERATOR

	Enable Recipe Controls:	OFF	Seed Editing
	Barcode:		
	Name:	RECIPE #1	
	Aux Control:	ON	Chemical Editing
	Pumps Treating Rate		
	Pump 1	CHEMICAL #1	2.608 mL/kg AUTO
	Pump 2	CHEMICAL #2	2.100 mL/kg AUTO
Save Clear			
Main	HOA	Utilities	Reports
Profile Editing Screens		Alarms	Messages
Setup & Options			

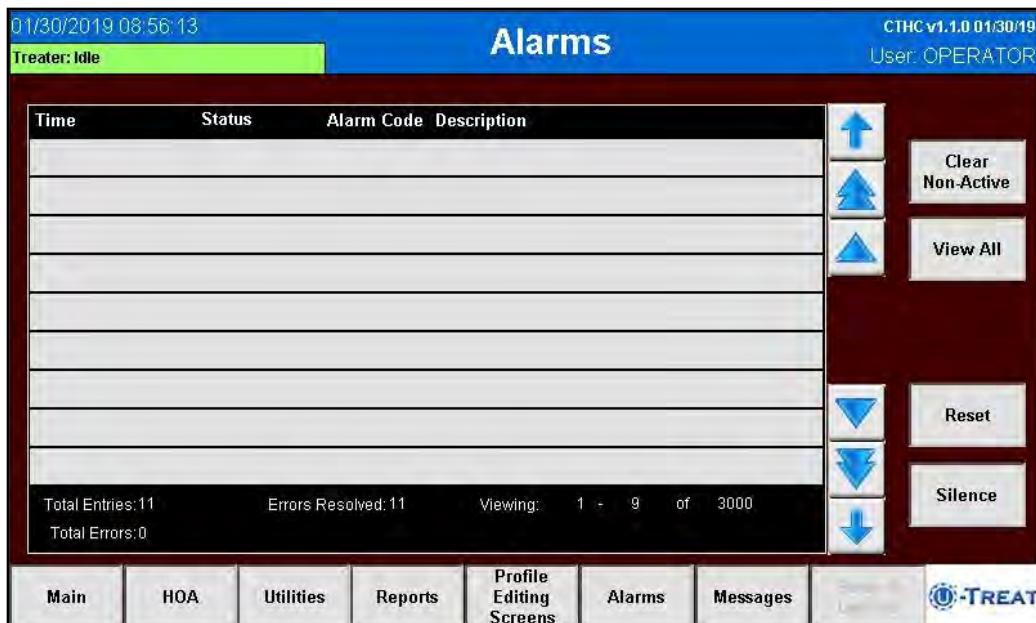
01/30/2019 09:07:23 Treater: Idle Recipe Editing CTHC v1.1.0 01/30/19 User: OPERATOR

Search: <input type="text"/>		Seed Editing												
<table border="1" style="width: 100px;"> <tr><td>RECIPE #1</td><td></td></tr> <tr><td><blank></td><td></td></tr> <tr><td><blank></td><td></td></tr> <tr><td><blank></td><td></td></tr> <tr><td><blank></td><td></td></tr> <tr><td><blank></td><td></td></tr> </table>		RECIPE #1		<blank>		<blank>		<blank>		<blank>		<blank>		Chemical Editing
RECIPE #1														
<blank>														
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<table border="1" style="width: 100px;"> <tr><td></td><td>mL/kg</td><td>AUTO</td></tr> <tr><td></td><td>mL/kg</td><td>AUTO</td></tr> </table>			mL/kg	AUTO		mL/kg	AUTO	Recipe Editing						
	mL/kg	AUTO												
	mL/kg	AUTO												
Save Clear														
Main	HOA	Utilities												
Reports		Profile Editing Screens												
Alarms		Messages												

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

ALARMS SCREEN

The Alarms screen shows a listing of system alarms both current and reset. It also allows you to silence an active alarm and clear non active entries.



1. 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.

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). 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. 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.

4. 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.

CTHC 3000 SEED TREATER

MESSAGES SCREEN

The Alarms screen shows a listing of system messages both current and reset. It also allows you to silence an active alarm and clear non active entries.



1. CLEAR NON-ACTIVE: The message 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.

2. VIEW ALL: Press this button to view all messages stored at any given time . When an message occurs, it will be shown in the list with a yellow background until the Reset button is pressed, then it will turn green.

3. RESET: After you think you have resolved the issue that caused the message, pressing this button will clear the message as confirmation. If you did not correct the problem the message will appear again.

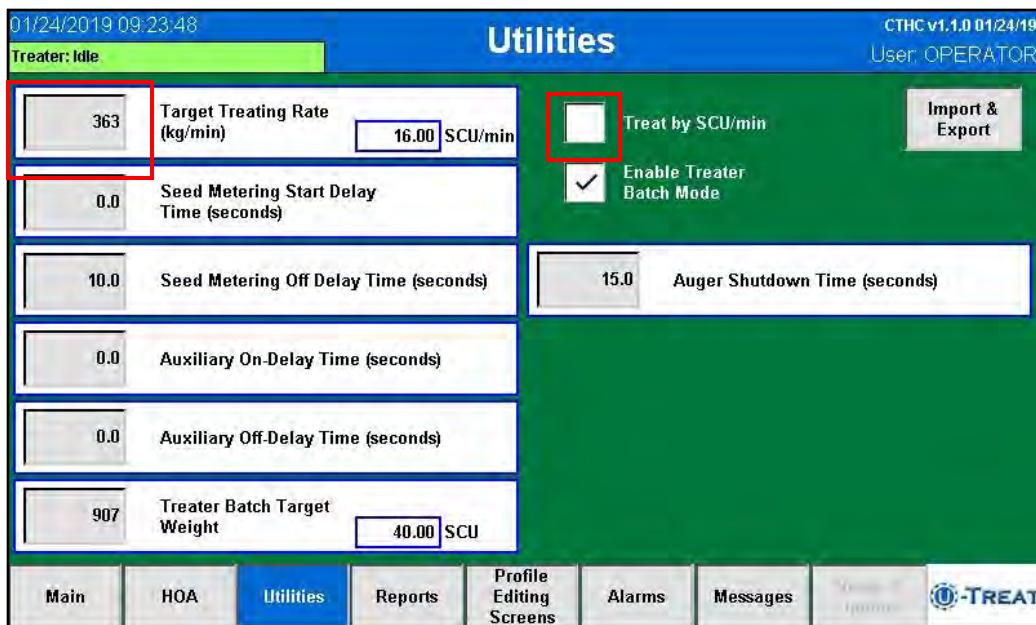
4. SILENCE: Pressing this button will shut off the message siren and change the background of the active alarm or fault to yellow while the operator is resolving the issue.

CALIBRATION & OPERATION

SECTION
E

SEED FLOW CALIBRATION

1. Press the Utilities button. Ensure that the Treat by SCU / min is **NOT** checked. Enter in the Target Treating Rate in kilograms per minute.

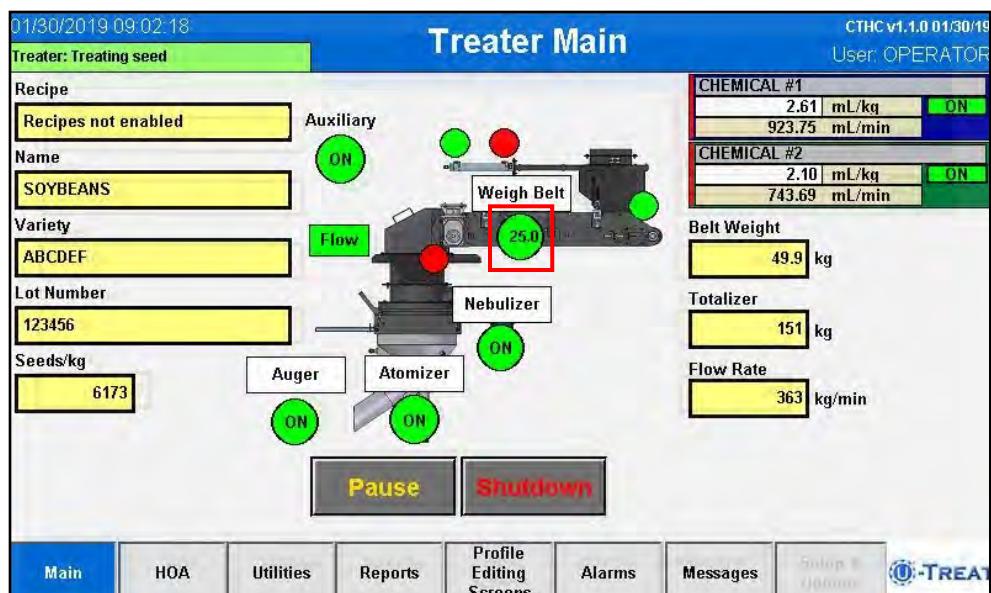
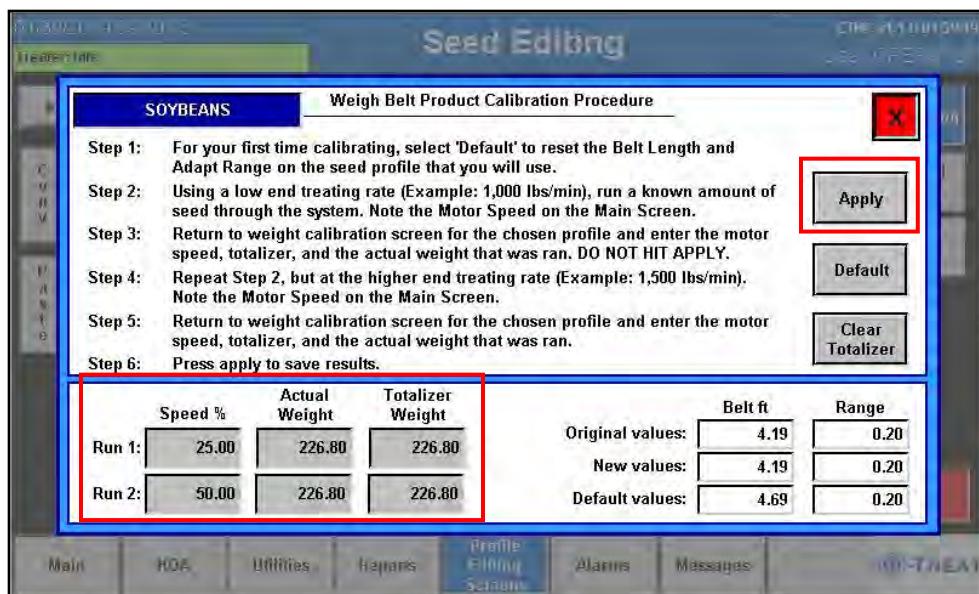


2. Press the Profile Editing Screens button and then push the Seed Editing button on the popup screen. Press the grey arrow to bring up the seed list and select the seed profile you wish to calibrate. The seed profile may be edited and the weigh belt may be calibrated for that seed. The operator must 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. Select Weigh Belt Calibration to bring up the calibration screen. Once open, review the step to familiarize yourself with the calibration procedure.
4. Select a target treating rate on the lower range of what you expect to treat. Run a box of seed with a known weight through the treating process. During the process record the motor % speed that can be found on the Weigh Belt Indicator on the Main Screen. Once the run is complete, record the totalized weight.
5. Repeat step 4, for a target treating rate on the upper range of what you expect to treat. Be sure to run a similar product to the previous run.

CTHC 3000 SEED TREATER

SEED FLOW CALIBRATION

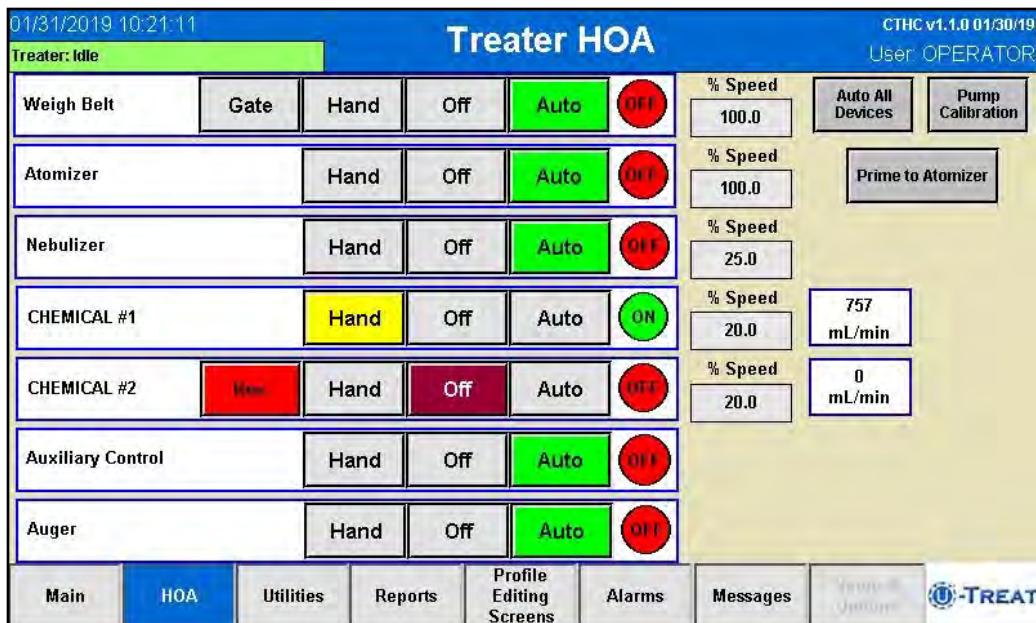
6. Return to the Seed Editing Screen and select your seed using drop down menu on the left. Select Weigh Belt Calibration. Enter the info that was recorded on Steps 4 and 5.
7. The Original Values will show what is currently set within the profile. The New Values are what was calculated with the information that was entered on the left. If satisfied with the calibration values, press Apply to transfer the values to the profile.
8. Select Save on the Seed Editing Screen to save the calibration values.



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 must be checked and adjusted for.

1. To begin the calibration process, fill the appropriate tank with the slurry that is going to be used for this calibration.
2. Place the bottom valve in the RECIRCULATE position. 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 approximately 5 minutes. This will remove any air from the system. Now place the pump in Auto mode.



3. Place the top valve in the PROCESS / CAL TUBE position and the bottom valve in the CAL TUBE position. The handles for both valves should be vertical.



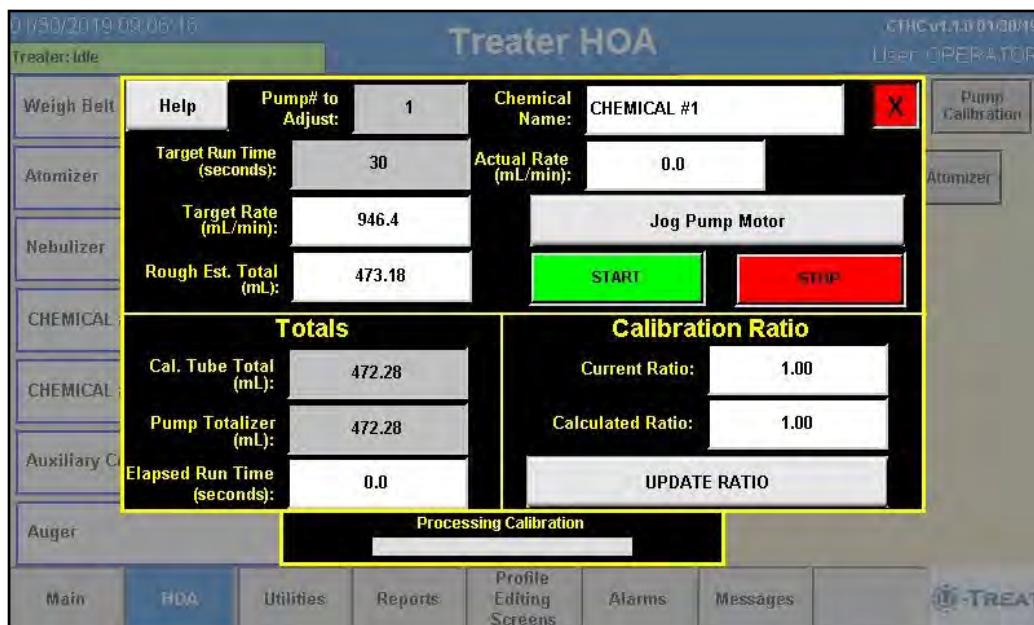
CTHC 3000 SEED TREATER

FLOW METER CALIBRATION

- 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. Place a measuring receptacle under the calibration fitting discharge tube on the top valve. Press the Jog Pump Motor and then a second later press it again. This will turn the pump on and off quickly. This is done to fill the plumbing between the two valves. When liquid stops coming from the tube, dump what is in the receptacle back into the tank and place it back under the tube.

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 receptacle 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.

Repeat this process for each pump. The ration could be slightly different due to hose wear.

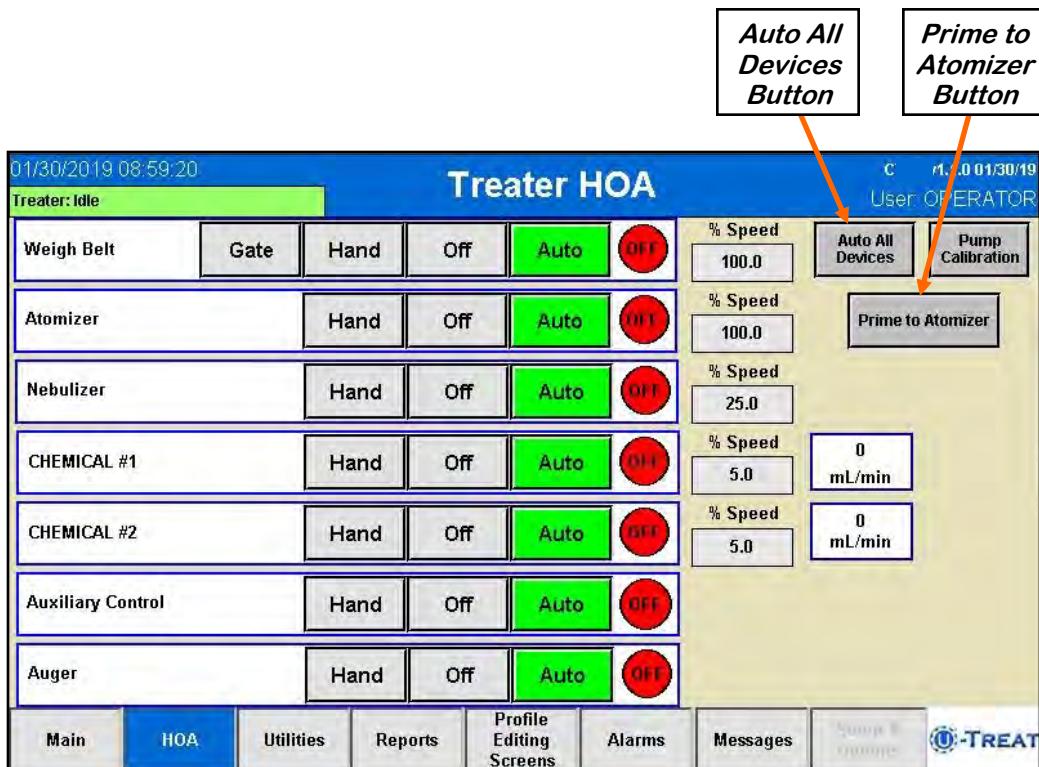


- Repeat the process as necessary and for each different chemical slurry used.

CTHC 3000 SEED TREATER

TREATING SEED

1. From the Treater HOA screen, press the Auto All Devices button to place the Actuator, Atomizer, Auger, both Pumps and the Auxiliary Control in Auto. If recipes are being used, the pumps and auxiliary devices will set themselves to Auto base on the active recipe.
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. Leave the valve in the process position.



3. Return to the main screen and press the Start Setup button. Press the gray buttons to change the Recipe or Seed Type fields. Press Start to begin the run. The atomizer and auger will turn on. Open the manual gate on the box. When the proximity switch detects seed, a timer will count down the number of seconds the start delay was set for. When that time elapses, the slide gate will open.

CTHC 3000 SEED TREATER

TREATING SEED

3. (Continued):

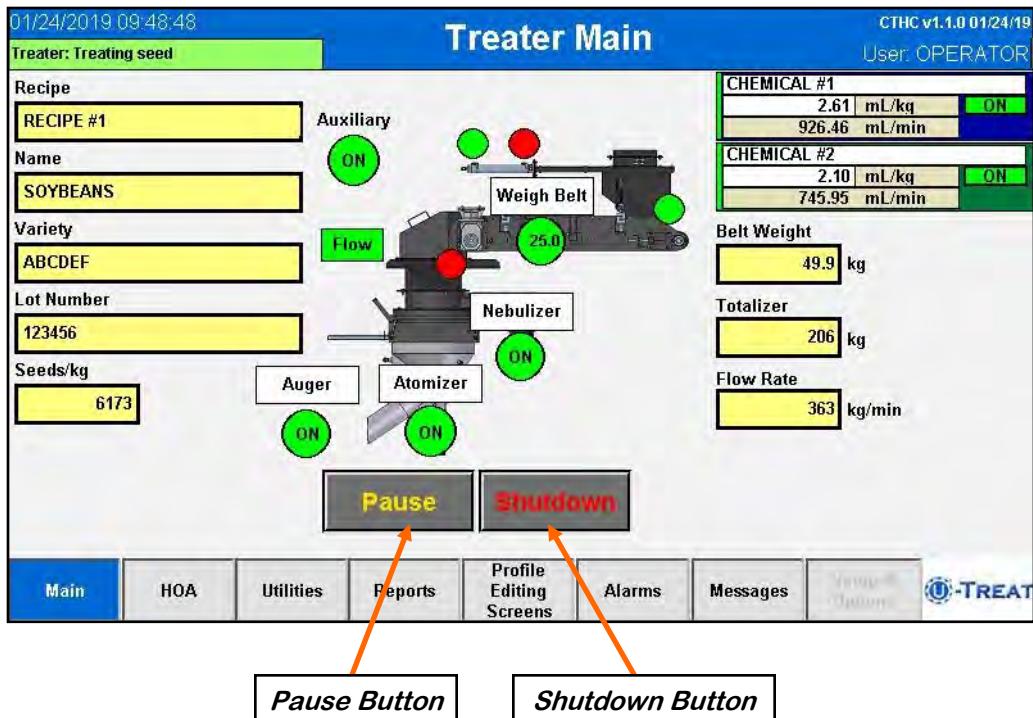
The pump will turn on the same way. Waiting for the pump start delay time defined in the pump profile. The pump may be set to turn on a second or two before seed is flowing to ensure thorough coating of the first seed out of the box. The operator may open the seed gate first so after pressing the start button, the treating processing will begin immediately after the system is up and running. The message bar in the upper left corner will always show what part of the process the system is currently in.



4. As the seed is being treated, the main screen will display the box weight and the liquid flow rate. If the system needs to be stopped for a moment, the Pause button may be pressed to temporarily stop the process. When ready to begin again, press the Continue button on the Continue / Terminate popup screen.
5. When all seed passes through the slide gate it will close and the pumps will turn off. When more seed is fed into the treater, the treating process will continue.
6. After all seed has been treated the pumps will shut off. However, the atomizer, auger will still be running. When there is no more seed discharging from the auger, press the Shutdown button at the bottom of the screen (see page 71). The auger will continue to run for the number of seconds defined on the Utilities screen and then stop. Remove the treated box and replace it with an empty one. Place a box of untreated seed on the scale and open the manual gate. Go to the Start Setup screen to continue treating.

CTHC 3000 SEED TREATER

TREATING SEED



**SECTION
F****TROUBLESHOOTING**

Below is a table describing the most frequent mechanical problems and solutions with the USC CTHC 3000 Seed Treater. For further assistance, contact your authorized dealer.

Problem	Possible Cause	Solution
Pump will not turn on in AUTO	<ol style="list-style-type: none"> 1. Proximity switch is not staying covered. 2. Atomizer is not on. 3. Proximity switch is not sensitive enough. 4. Pump stand two-wire cord is not plugged into to treater main panel. 5. Both the Chemical Pump switch on the Pump Stand and the Pump/Aux Control on the HMI screen need to be set to AUTO. 	<ol style="list-style-type: none"> 1. Make sure proximity switch is staying covered with seed 2. Turn on atomizer. Atomizer must be on to run the pump in Auto. 3. Adjust pump proximity switch sensitivity by turning the adjustment screw clockwise (page 75). 4. Plug the pump stand two-wire cord into the main treater panel. 5. Set both the Pump Stand switch and Pump/Aux on the HOA screen to AUTO.
Pump is fluctuating.	<ol style="list-style-type: none"> 1. Restriction in tubing 2. Filter is plugged or missing gasket. 	<ol style="list-style-type: none"> 1. Flush tubing and check filter for any restrictions. 2. Clean filter and check for gasket.
Pump will not turn off in AUTO when seed runs out.	<ol style="list-style-type: none"> 1. Proximity switch is dirty. 2. Proximity switch is set too sensitive. 	<ol style="list-style-type: none"> 1. Clean proximity switch. 2. Adjust the pump proximity switch sensitivity by turning adjustment screw counter-clockwise (page 75).
None of the motors will turn to ON in HAND mode.	<ol style="list-style-type: none"> 1. Processor is faulted. 2. Emergency Stop button is activated. 3. The Emergency Stop RE-SET button has not been pressed after the Emergency Stop button has been pulled out. 	<ol style="list-style-type: none"> 1. Disconnect power and wait 30 seconds before reconnecting power. 2. Pull out the Emergency Stop button. 3. After the Emergency Stop button has been pulled out, press the Emergency Stop RESET button.

CTHC 3000 SEED TREATER

Problem	Possible Cause	Solution
E-stop is flashing.	<ol style="list-style-type: none"> 1. An E-stop may be depressed. 2. Power may not be on to the control panels. 3. One of the control panels may not be connected to all of the others. 	<ol style="list-style-type: none"> 1. Ensure all E-stops are not depressed. 2. Check incoming power to each control panel. 3. Check the wiring and connections to each control panel.
Seed Gate will not move.	<ol style="list-style-type: none"> 1. Supplied air is not on or high enough pressure to move gate. 2. Mechanism jammed with debris. 3. Seed hopper proximity switch not covered or not sensitive enough. 	<ol style="list-style-type: none"> 1. Check air pressure and air regulator for issues. 2. Clear all debris and make sure mechanism moves freely. 3. Make sure the proximity switch is covered. 4. Adjust the proximity switch sensitivity (see page 75).
Auger overload keeps tripping.	<ol style="list-style-type: none"> 1. Seed flow is too high. 2. Too much liquid being applied. 	<ol style="list-style-type: none"> 1. Slow down seed flow rate. 2. Lower the liquid rate.
Weigh Belt will not move in AUTO.	<ol style="list-style-type: none"> 1. Device not set to AUTO. 2. Seed hopper lower proximity switch not covered or not sensitive enough. 	<ol style="list-style-type: none"> 1. Place device in AUTO. 2. Make sure the proximity switch is covered. 3. Adjust the proximity switch sensitivity (see page 75).
Weigh Belt is not totalizing.	<ol style="list-style-type: none"> 1. Weigh belt is not detecting weight. 2. Belt proximity switch is not covered. 	<ol style="list-style-type: none"> 1. Check weigh belt weight display for correct weight. 2. Check weigh belt scale indicator for correct weight. 3. Make sure the proximity switch is covered. 4. Adjust the proximity switch sensitivity (see page 75).

CTHC 3000 SEED TREATER

Problem	Possible Cause	Solution
Flow meter is fluctuating.	1. Pump is sucking air. 2. Restriction in the line. 3. Flow meter is not full of liquid.	1. Check and tighten all hose connections. 1. Check filter to see if gasket is missing or cracked. 2. Clean out filter and lines to check for any debris. 3. The meter will fluctuate if there is nothing pumping and there is some liquid left in the meter. Drain out the liquid.
Flow meter will not turn on.	1. Improper power going to flow meter. 2. Loose connection.	1. Check incoming power to flow meter. 2. Check connection inside the control panel and inside the flow meter.
Flow meter is reading too low or too high.	1. Restring in Flow meter or in line. 2. Air in treatment. This can cause the flow meter to read lower than calibrating it using a measuring cup. 3. Seed flow rate has been adjusted.	1. Flush the flow meter with water or use compressed air and blow air backwards through the meter. 2. Check and tighten all hose connections. 3. Check filter to see if gasket is missing or cracked. 4. Recheck seed flow rate.
Flow meter will not zero.	1. Improper wiring. 2. Wrong parameter programmed into the flow meter.	1. Check wiring schematic. 2. Check flow meter parameters against the parameters listed in the schematic. Call local dealer.

PROXIMITY SWITCH ADJUSTMENT GUIDE

If a 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 LED lights indicates the power status. If they are active the device is powered.

The center LED is when the switch closes.

Using the small screwdriver, you can adjust the proximity switch by turning the sensitivity dial of the proximity switch.

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



PROXIMITY SWITCH ADJUSTMENT GUIDE

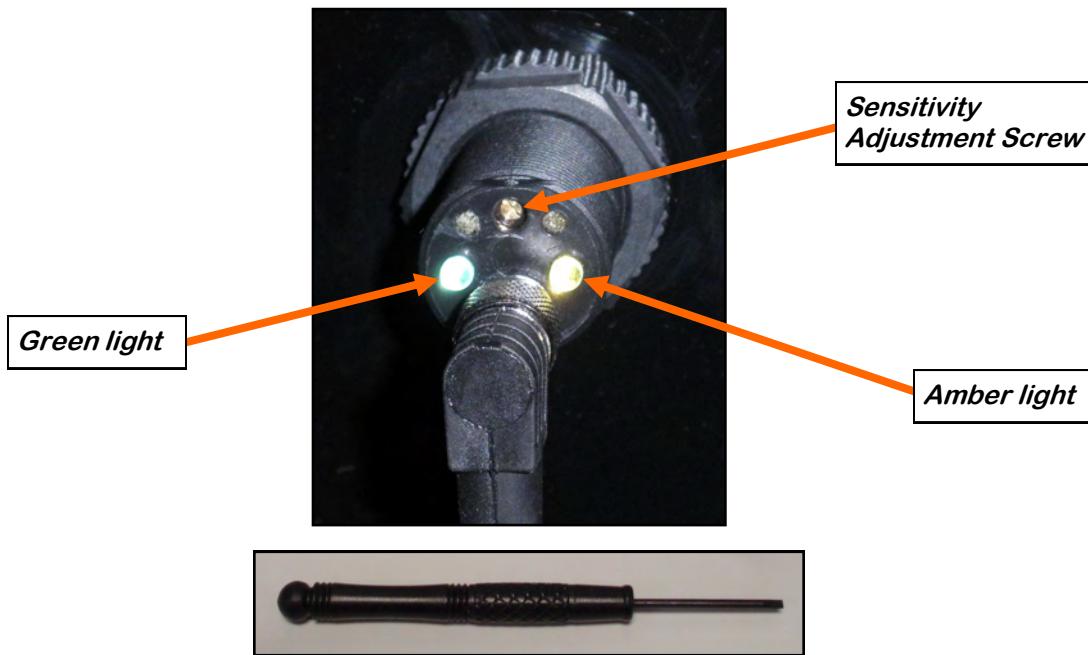
If the proximity switch is not working properly, this can be caused by wear, dust, or even moisture. The first step is to clean the lens of the proximity switch. If this does not solve the problem, the next step would be to adjust the sensitivity of the proximity switch.

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.



**SECTION
G****MAINTENANCE**

Proper maintenance of the CTHC 3000 Seed Treater is critical for peak performance, reliability and accuracy of this system. The following is a guideline for the type of maintenance and servicing that should be performed on this unit. Your environment and uses may require additional maintenance and service beyond this list to assure a reliable and safe unit. The operator of this unit has ultimate responsibility to identify areas of concern and rectify them before they become a hazard or safety issue. There is no substitute for a trained, alert operator.



DANGER Do not put this unit into operation with any questionably maintained parts. Poor performance or a hazard may occur.



! DANGER Ne pas mettre cet appareil en service avec des pièces douteuse entretenus. La mauvaise performance ou un danger peut survenir.



DANGER Do not use compressed air or water under pressure to clean any of the components of the USC equipment.



! DANGER Ne pas utiliser d'air comprimé ou de l'eau sous pression pour nettoyer l'un des composants de l'équipement USC.

GREASING

Use an SAE multipurpose high temperature grease with extreme pressure (EP) performance. Also acceptable is an SAE multipurpose lithium-based grease.

- Use a Maintenance Checklist to keep record of all scheduled maintenance.
- Use a hand-held grease gun for all greasing.
- Wipe grease fitting with a clean cloth before greasing to avoid injecting dirt and grit.
- Replace and repair broken fittings immediately.

NOTICE

If fittings will not take grease, remove and clean thoroughly. Also clean lubricant passageway. Replace fitting if necessary.

AVIS

Si les raccords ne prendront pas la graisse, enlever et nettoyer. Aussi propre passage de lubrifiant. Remplacer approprié si nécessaire .



ELECTRICAL PANEL

- Check and tighten wire connections.
 - Check quick connects on bottom of control panel.
 - Check to see if starters and/or overloads are tripped.
 - Check to see if relays, timers and/or breakers are tripped.
 - Check and set the proximity switches. (page 75).
 - Check quick connects on end of Auxiliary cord.
 - Check relay and fuse holder.
 - Check power cords for cuts or frays and ensure ground is present.
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PUMPS AND PLUMBING

- Check pump in forward and reverse.
 - Make sure pump heads open and close smoothly.
 - Inspect tubing and for uneven wear. Replace pump tubing often to ensure high flow rates can be met.
 - Tighten hose clamps and check filter. Clean filter frequently to avoid blockages
 - Flush flow meter with clean water frequently to avoid chemical buildup.
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Every 40 hours or Weekly

1. Check the conveyor belt tension and alignment.
2. Grease weigh belt bearings.
 - A. Two bolt flanged bearings, tail roller bearings right and left (2 locations).
 - B. Two bolt flanged bearings, drive roller bearings right and left (2 locations).

WEIGH BELT TENSION AND ALIGNMENT - TAIL END

To maintain the belt, follow this procedure:

NOTICE

Place all controls in neutral or off, stop motor and disable power source following Lockout Tagout procedures before working on belt.

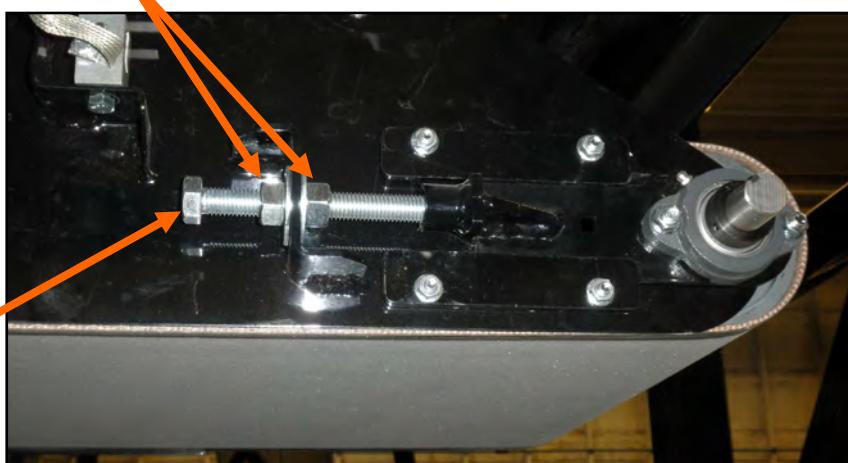
AVIS

Placez toutes les commandes au point mort ou hors tension, arrêter le moteur et désactiver la source d'alimentation en suivant les procédures de verrouillage Tagout avant de travailler sur la ceinture.

1. If the belt needs to be tightened to prevent slippage, use the take-up adjustments on the tail end..
2. The belt is tightened by turning both take-up adjustments an **equal** number of turns.
3. Check the alignment. The belt should be centered.
4. Turn the belt 1/2 revolution when the belt is new and check the tail roller. If out of alignment, the belt will move to the loose side. Loosen the jam nut and use the bearing position bolts to set the position. Tighten jam nut.
5. Run and check again. Check frequently during the first few minutes of operation and then several times during the first 10 hours. The belt normally seats itself during the first 10 hours of operation and can be checked weekly after that.
6. The belt is properly aligned when the belt runs in the center of the head and tail rollers.

Loosen these jam nuts before adjusting the bearing position bolt

Use this bolt to tighten and align the belt



NEBULIZER DRIVE ASSEMBLY

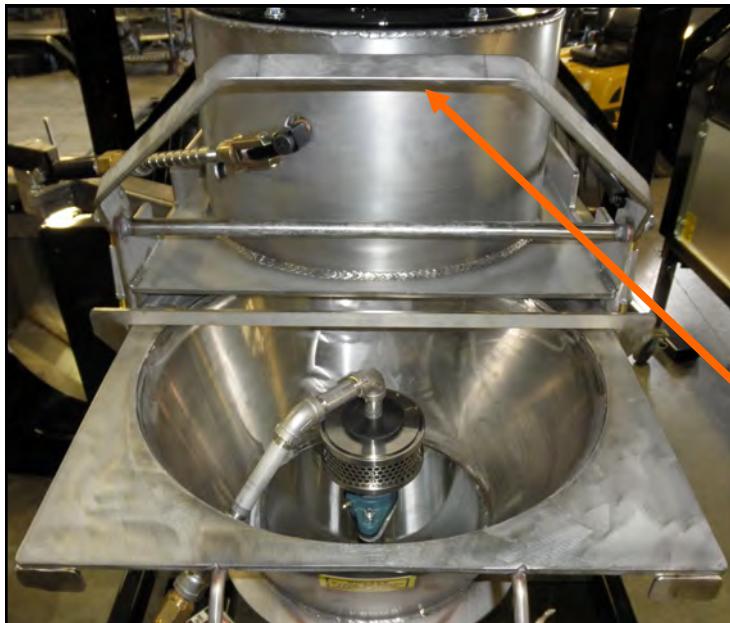
- Check for unusual vibration or sound when the Nebulizer is running.
- Check for leaks coming from the rotary union and supply line fittings.
- Remove the covers and check for any play in the motor drive shafts.
- Check the top of the bearing assembly for any leaking grease. The bearings are sealed units. Any leakage or play in the bearing shaft would indicate a bearing failure. If necessary, remove bearing and disk assembly and replace the bearings.
- Clean any dust or dirt with compressed air and a clean cloth.
- Check the drive belts for excessive wear. Replace if necessary.
- Check the drive belt tension using the methods described on page 84 and if necessary, adjust them accordingly.

ATOMIZER AND NEBULIZER CHAMBER

- Pump clean water through supply lines, rotary union and atomizer.
- Unlatch and swing open the Nebulizer housing.
- Unscrew the Atomizer and disassemble. Clean each of the four pieces individually.
- Check the bottom of the bearing assembly for any leaking grease. The bearings are sealed units. Any leakage or play in the bearing shaft would indicate a bearing failure. If necessary, remove bearing and disk assembly and replace the bearings.
- Clean any build-up from the inside of the housing.
- Reinstall the Atomizer head and make sure it turns freely, close and re-latch the housing .
- Clean any dirt or build-up on the outside of the housing.

ATOMIZER

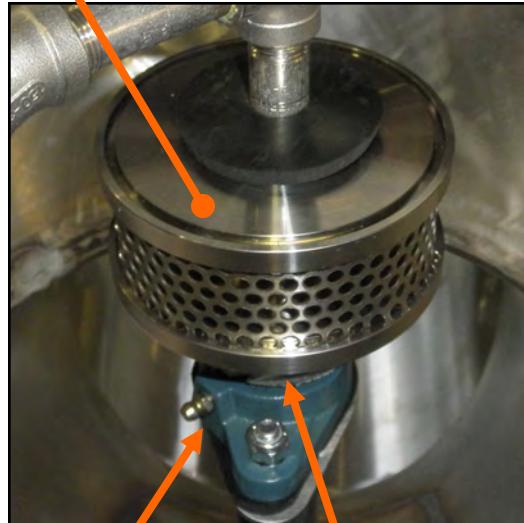
To access the inside of the atomizer housing, disconnect the motor power cable from the atomizer motor, push up on the quick release handle and slide out the atomizer. After completing maintenance, slide the atomizer back into the operating position, pull down quick release handle to lock it in place and reconnect the motor power cord.



Quick-Release Handle

Atomizer Head

1. Slide out atomizer housing and grease bearing inside. Bearing needs just one pump of grease every 40 hours of operation (right).
2. Clean any build up inside the housing and the atomizer head. To remove the atomizer head, loosen the set screw located on the bottom of the head.
3. Check for any play in the atomizer shaft.
4. Make sure the atomizer spins smoothly.
5. Ensure the adjustable chute is fitting completely into the drum opening. Adjust if necessary.



Bearing

Set Screw

AUGER DRIVE BELT TENSION & ALIGNMENT

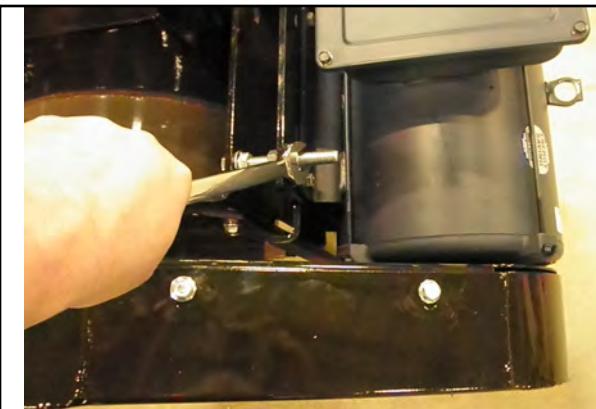
Power to the auger belt is transmitted through a V-belt. The V-belt drive system must be maintained at the proper belt tension and pulley alignment to obtain the desired performance and life. When maintaining the belt drive system for the electric drive model, follow this procedure:

NOTICE

Turn motor off and unplug power cord or turn off power and lock out the master panel before starting maintenance on drive belt system.

Drive Belt Tension

1. Push on the center of the belt span with a force of approximately 5 to 10 lbs.
2. Follow the belt tensioning specification on page 83 to determine proper belt deflection.
3. Move the motor up, using the adjustment bolts, to set drive belt tension (right).



Motor base adjustment

Drive Belt Alignment

1. Lay a straightedge across the pulley faces to check the alignment (right).
2. Use the pulley hub or the motor mounting plate slots to move the pulley to the required position for alignment.
3. Tighten hub bolts to secure pulley on shaft.
4. Check belt tension
5. Close and secure guards.



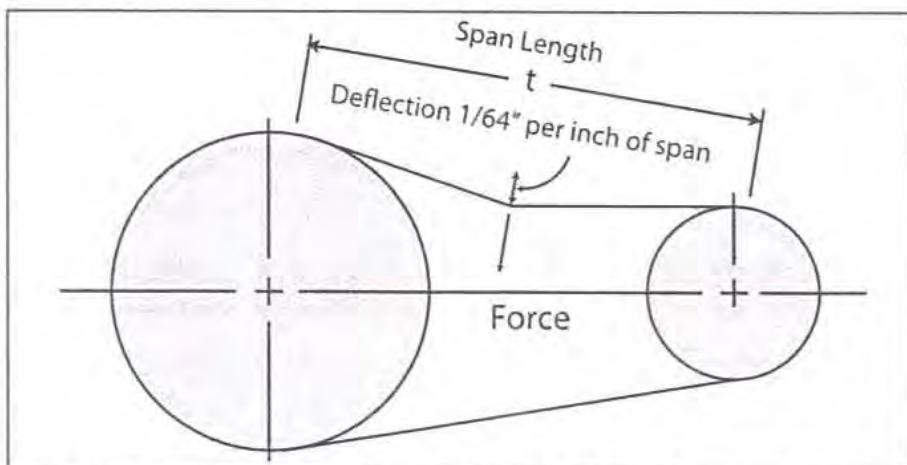
Lay a straight edge across pulley faces

Drive Belt Replacement

1. Lower motor to its loosest position.
2. Remove old belt and replace with a new one.
3. Raise motor to set the belt tension.
4. Check pulley alignment. Adjust if required.
5. Close and secure guards.

V-BELT TENSIONING GUIDE

V-Belt tensioning adjustment can be made using a tension meter or other type spring scale using the following procedure. After seating the belts in the groove and adjusting center distance so as to take up the slack in the belts, further increase the tension until only a slight bow on the slack side is apparent while the drive is operating under load. Stop the drive and using the meter, measure the force necessary to depress one of the center belts $1/64$ inch for every inch of belt span (see sketch below). For example, a deflection for a 50 inch belt span is $50/64$ or $25/32$ inch. The amount of force required to deflect the belt should compare with the deflection forces noted in the table below. Also notice for V- Belts that deflection forces vary from the initial RUN - IN values which are greater (reflecting higher run-in tensioning) to the NORMAL values for after the run-in period.



MEASURE THE SPAN LENGTH "T"
AS SHOWN IN THE SKETCH ABOVE.

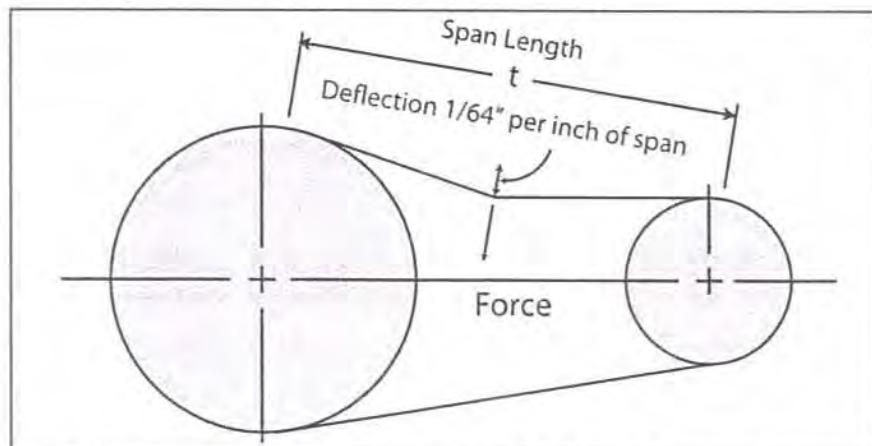
BELT CROSS SECTION	SMALLER PULLEY DIAMETER RANGE (inches)	DEFLECTION FORCE	
		RUN - IN (lbs.)	NORMAL (lbs.)
AX	3.0 - 3.6	4 - 1/8	2 - 3/4
	3.8 - 4.8	5	3 - 1/4
	5.0 - 7.0	6	4
BX	3.4 - 4.2	5 - 1/4	3 - 1/2
	4.4 - 5.2	7 - 1/8	4 - 3/4
	5.4 - 9.4	9	6

NEBULIZER SYNCHRONOUS BELTS

High torque, Standard and Metric synchronous belts should be installed to fit pulleys snugly, neither too tight nor too loose. The belts positive grip eliminates the need for high initial tension. When a belt is installed with a snug but not overly tight fit, longer belt life, less bearing wear and more quiet operation will result. Overtight belts may cause early failure and should be avoided. With high torque a loose belt may jump teeth upon startup. If this occurs, the tension should be increased gradually until satisfactory operation is achieved.

To properly tension a synchronous belt, place belt on pulleys and adjust take up until the belt teeth mesh securely with the pulley grooves. Measure belt span T, Then tighten belt so it deflects 1/64-inch for every inch of belt span when a force as specified in the table below is applied to the top of the belt. For belts wider than two inches, a metal or wooden strip 3/4 to 1 inch wide should be placed across the belt between it and the tester to prevent distortion.

The following range of deflection forces are normally adequate for drive installation. Actual installation tension required depends on peak loads, system rigidity, number of teeth in mesh, etc.



MEASURE THE SPAN LENGTH "T"
AS SHOWN IN THE SKETCH ABOVE.

BELT PITCH	BELT WIDTH	DEFLECTION FORCE
L (3/8 Inch)	1/2 Inch	7 Oz
	3/4 Inch	11 Oz
	1 Inch	1 Lb
H (1/2 Inch)	3/4 Inch	2 Lbs
	1 Inch	2-1/2 Lbs
	1-1/2 Inch	4 Lbs

STORAGE SECTION H

When storing the CTHC 3000 Seed Treater for long periods of time, the following procedure must be followed to reduce the chance of rust, corrosion and fatigue of the treater. You can also use these steps when storing the machine for the winter.



A dust mask and protective rubber gloves shall be used when cleaning the machine.

WEIGH BELT

1. Turn power off to the treater and treater components.
2. Inspect all welds and structural components for bends, cracks and damage.
3. Remove the inlet hopper cover and bottom seed gate cover that has the seed on belt proximity switch mounted to it. Inspect belt , pulleys and proximity switch.
4. Use a vacuum to clean out any seeds and excess build-up that may have occurred during operation.
5. Turn power back on to the treater and run weigh belt to help remove any additional debris.
6. Use a vacuum to clean out any seeds and excess build-up that may have occurred during operation.
7. Wipe down the motor casing with a damp cloth making sure to remove all dust that may have collected since the last maintenance date.
8. Wipe off and clean the lens of the proximity switches (below).
9. Disconnect power and mount all guards back in place.
10. Tarp or cover the supply hopper and weigh belt to keep out any dirt or unwanted pests.

ATOMIZER CHAMBER

1. Remove and clean the atomizer housing.
2. Remove the atomizer head and stainless steel plumbing. The atomizer head may be disassembled (right), for easier cleaning. It is threaded together and can simply be unscrewed.
3. Reinstall the atomizer head and plumbing. Grease the bearing and spin the atomizer head a few times to ensure all grease has been worked into the bearings.



FINAL

1. Disconnect power to the machine.
2. Store the machine inside a protective building to keep it from being exposed to the weather.
3. Ensure all guards and safety labels are in place.

USC LIMITED WARRANTY**SECTION
I**

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.

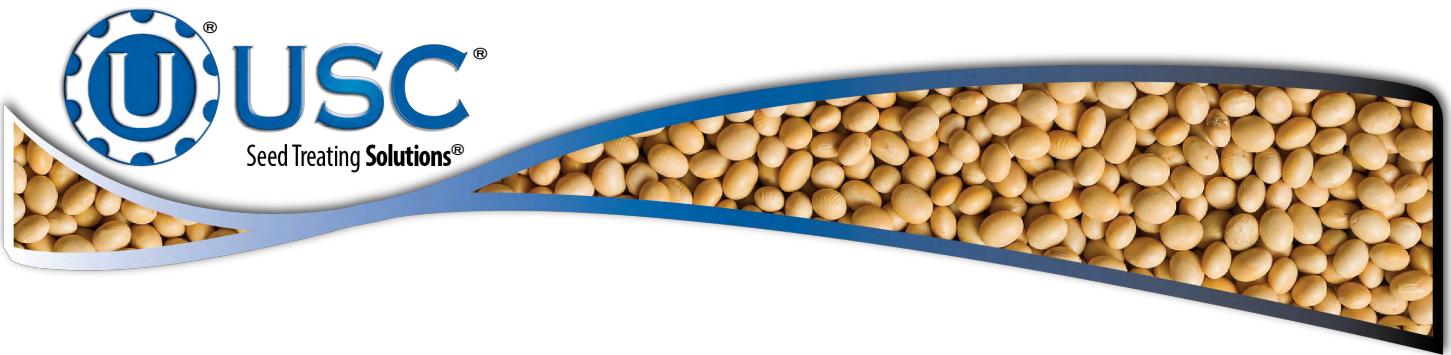
5. Return Policy: Approval is required prior to returning goods to Manufacturer. A restocking fee will apply.

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.

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