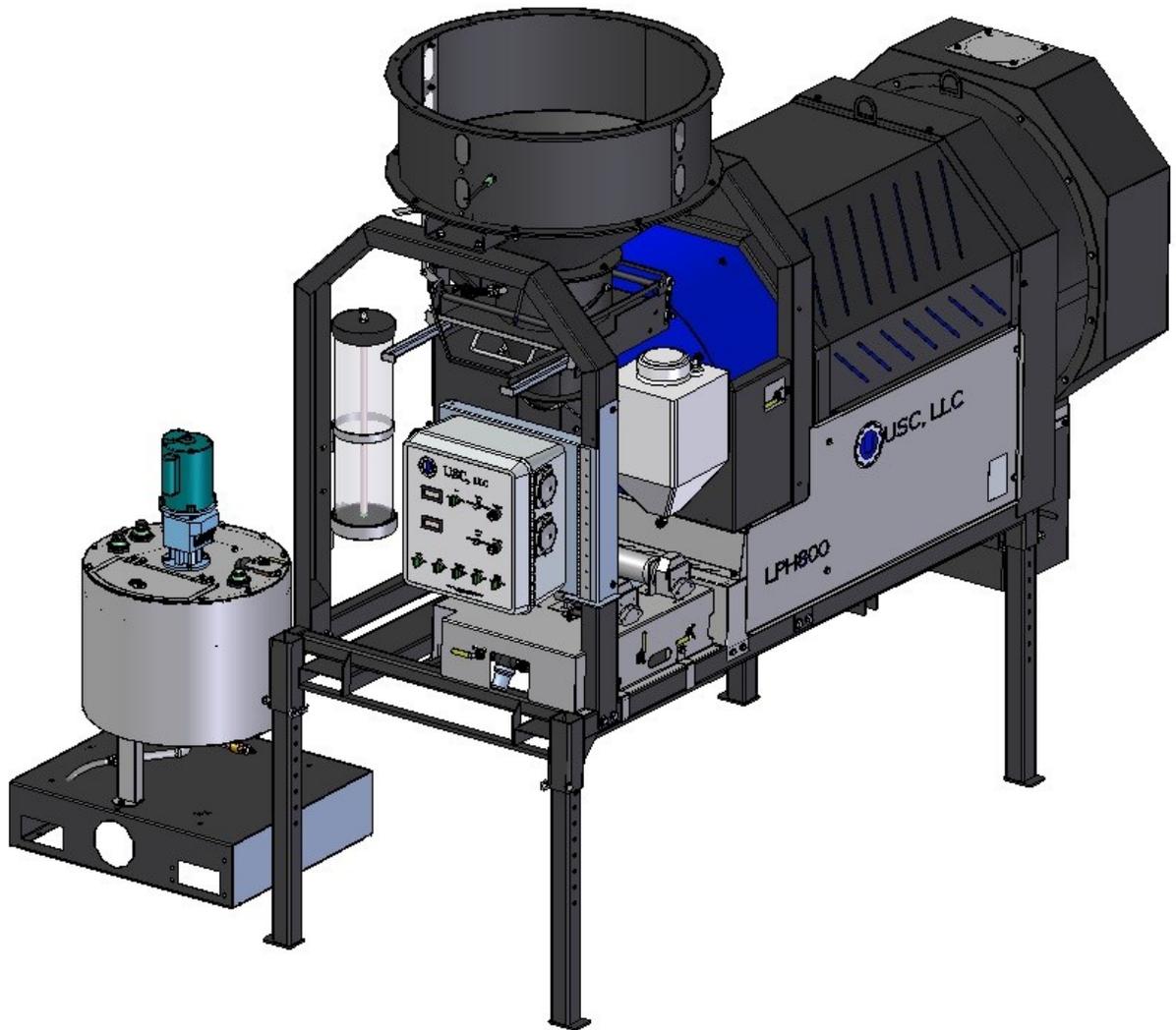




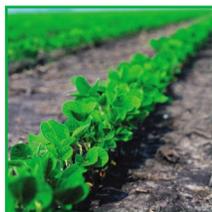
LPH800 SEED TREATER

Operators Manual



Document: TD-09-06-1033

Revision: C



INTRODUCTION

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

OVERVIEW

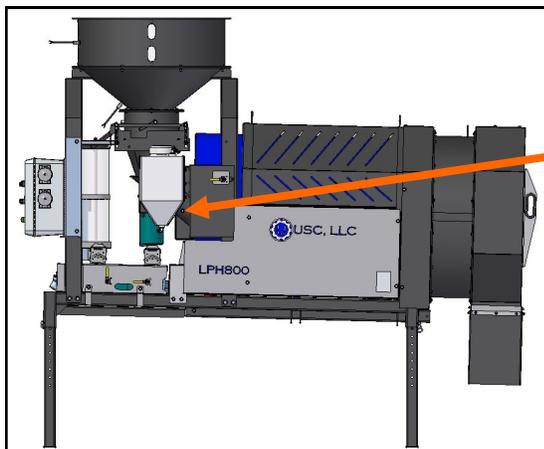
The purpose of this manual is to provide you with the basic information needed to operate and maintain the LPH800 Seed Treater. It does not hold USC, LLC liable for any accidents or injuries that may occur.

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 USC, LLC. Ownership passes to purchaser when the unit leaves the USC, LLC. premises. The purchaser is responsible for unloading and mounting all components of the equipment.

Document the serial number of the machine for future reference. The serial number is located on the right side of the headache rack below the inlet cone.



*Serial
Number*

SERIAL NUM-

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For a list of mechanical drawings for this item, visit our website at www.uscllc.com/technical-library and search for MD-09-06-5004

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.

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.



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



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



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



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



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



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.



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



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

NOTICE

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

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.”

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. The operator initiates this stop by pressing the PAUSE button at the bottom of the main screen.

HAZARD REVIEW



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.



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.

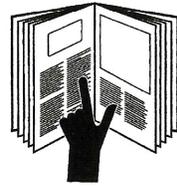
YOU are responsible for the **SAFE** operation and maintenance of your USC, LLC equipment. **YOU** must ensure that you and anyone else who is going to operate, maintain or work around the equipment be familiar with the operating and maintenance procedures and related **SAFETY** information contained 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 signs 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.
4. Have a first-aid kit available for use should the need arise, and know how to use it.
5. Provide a fire extinguisher for use in case of an accident. Store in a highly visible place.
6. Do not allow children, spectators or bystanders within hazard area of machine.
7. 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 signs before using.
2. Disconnect and disable electrical supply completely and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.
3. Clear the area of bystanders, especially children, before starting.
4. Be familiar with the machine hazard area. If anyone enters hazard area, shut down machine immediately. Clear the area before restarting.
5. Keep hands, feet, hair and clothing away from all moving and/or rotating parts.
6. Stay away from overhead obstructions and power lines during operation and transporting. Electrocutation can occur without direct contact.

7. Do not operate machine when any guards are removed.
8. Inspect welds and repair if needed.

PLACEMENT SAFETY

1. Move only with the appropriate equipment
2. Stay away from overhead power lines when moving equipment. Electrocutation 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.

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 signs 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 the back of 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.

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.



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



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

LPH800 TREATER



Part # 09-02-0003



Part # 09-02-0002



Both Sides

INSTALLATION**SECTION
B****DANGER**

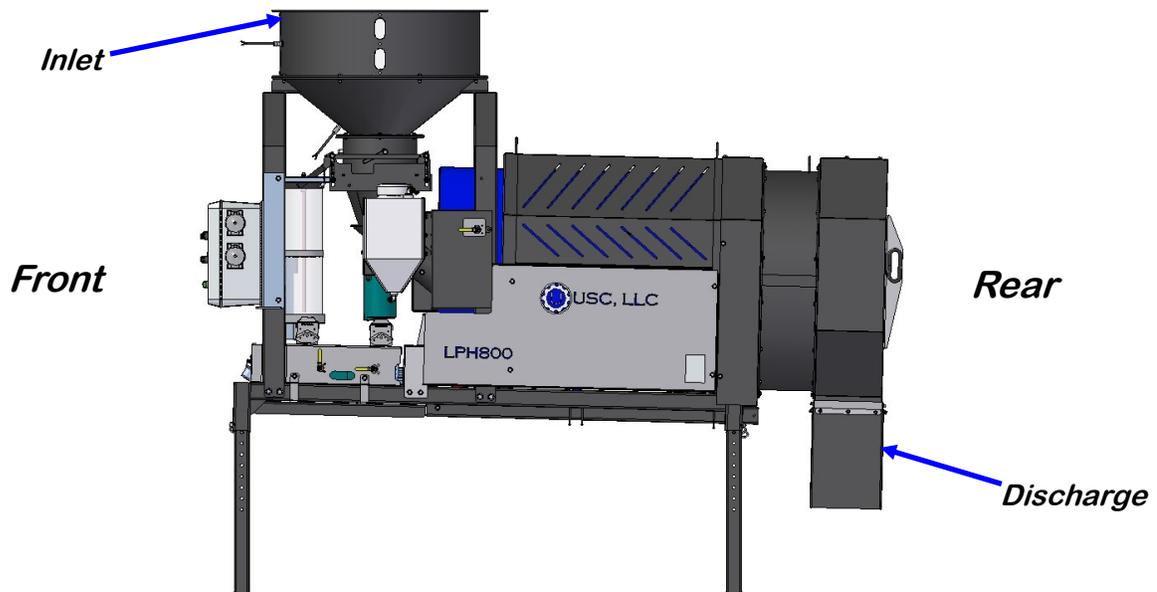
HIGH VOLTAGE ~ Always disconnect the power source before working on or near the control panel or lead wires.

**DANGER**

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

NOTICE

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

**TREATER SET - UP**

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 a level surface.

NOTICE

USC highly recommends that the seed treater be set up inside a building or any covered structure to protect the machine from weathering.

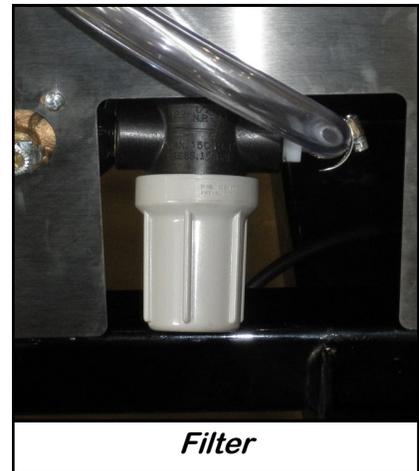
TREATER SET - UP

4. Remove any boxes and cords from the drum of the treater.
5. Install the four provided legs and set up on a level surface, preferably concrete. When all four legs are mounted in the same pin hole, the seed treater has a slight slope to allow seed to travel through the machine. The pin holes are approximately 2" apart.

NOTICE If more slope is desired, the rear legs can be dropped an additional pin hole.

6. Anchor the seed treater in position to prevent the machine from moving during operation.
7. Inspect machine thoroughly for screws, bolts, fittings, etc. which may have come loose during shipping.

8. The 30 Gallon chemical tank should be placed on level ground close to the seed treater on the same side as the calibration tube.
9. Remove the filter body from the control panel and install on the front of the treater. The filter is shipped in the control panel to avoid damage in shipping.
10. Check and tighten all hose connections.



11. Connect any conveyors into the seed treater control panel. Ensure that the conveyors being used are the same power ratings as the seed treater.

NOTICE The starters and overloads located in the seed treater panel are rated for 5 HP motors. Do **NOT** plug any conveyor into the seed treater that exceeds 5 HP.



LPH800 TREATER

TREATER SET - UP

12. 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 main control panel on the power requirement tag (right), or the electrical schematic shipped with the piece of equipment. This will power the USC system including conveyors.

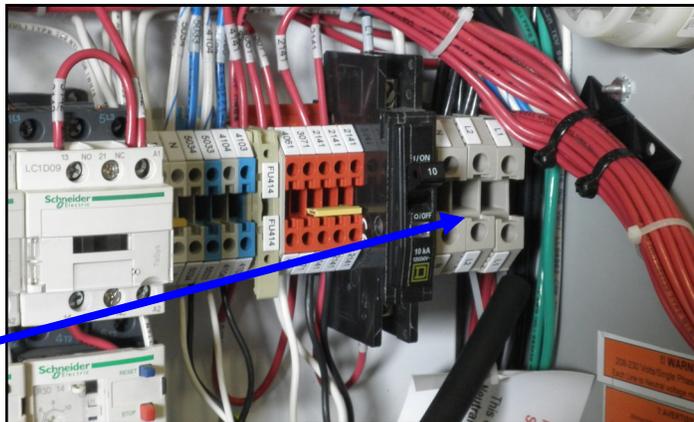
NOTICE

Control panel bracket is hinged to allow access to the atomizer chamber. Flexible conduit is recommended for main power supply.

 Seed Treating Solutions
Mfg. By: USC, LLC Max Voltage: 230V 1PH 60 HZ Total FLA: 94 Largest Motor FLA: 28 Schematic number: 03-12-0350A Enclosure rating: UL type 1 Short Circuit Current Rating: 5ka RMS Sym, 600V Max
WARNING To maintain over current, short-circuit and ground fault protection, the manufacturer's instruction for selection of overload and short circuit protection must be followed to reduce the risk of fire or electrical shock.
WARNING If an overload or a fault current interruption occurs, circuits must be checked to determine the cause of the interruption. If a fault condition exists, the current-carrying components should be examined and replaced if damaged, and the integral current sensors must be replaced to reduce the risk of fire or electrical shock.
Treater Control Panel. See schematic number 03-12-0350A - for interconnections.
Caution Bonding of conduit connection is not automatic and must be provided as part of the installation

13. Reverse the previous steps when removing the machine from its working position.

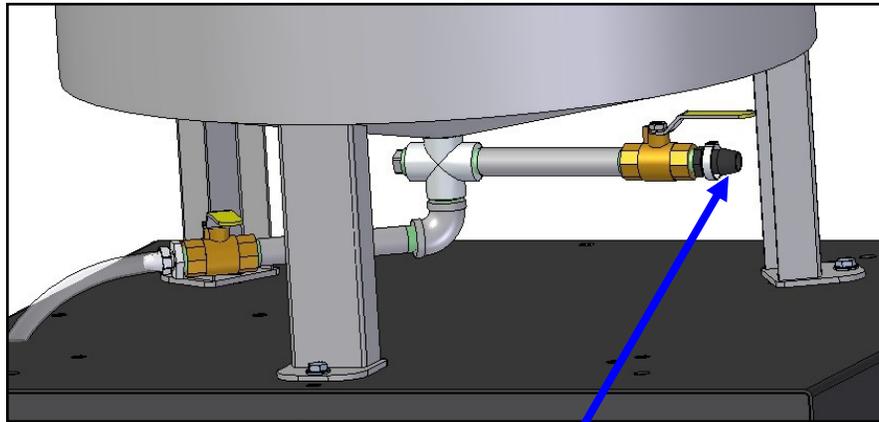
Incoming Power Connected To These Terminals



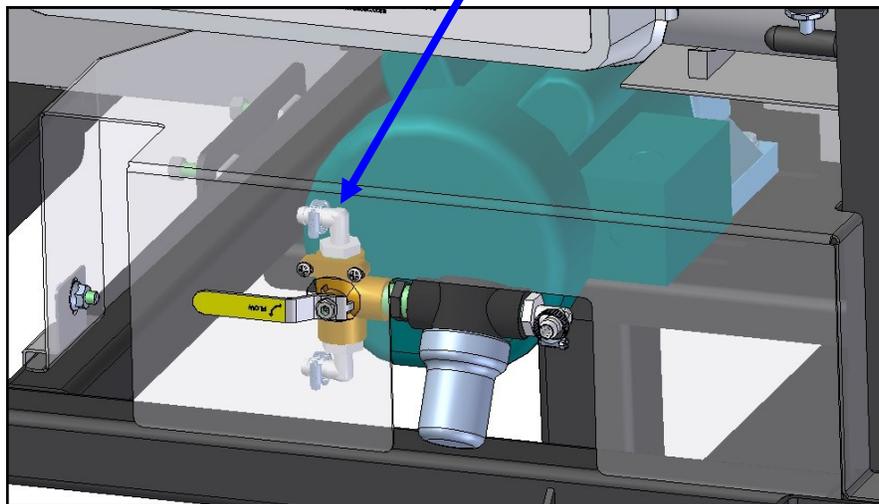
LPH800 MIX TANK PLUMBING

The following hoses must be connected from the Treater to the Mix Tank:

1. One hose from the supply valve on the bottom of the mix tank , to the top fitting on the SEED TREATMENT SOURCE valve located on the front of the treater.
2. One hose from the top fitting of the valve located on the top of the mix tank, to the left fitting on the SEED TREATMENT valve located on the right side of the treater.
3. One hose from the right fitting of the valve located on the top of the mix tank, to the fitting on the top of the Calibration Tube.

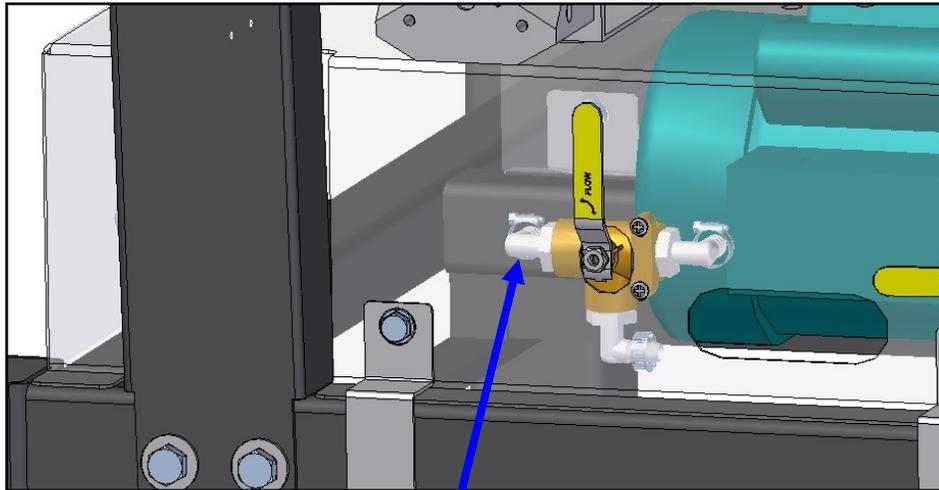


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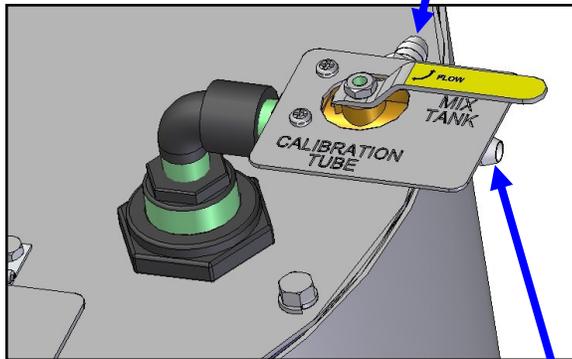


LPH800 TREATER

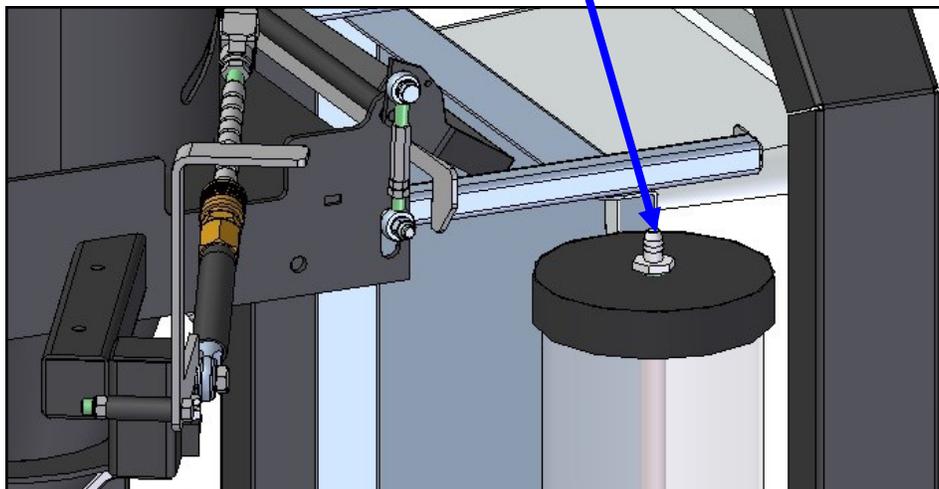
LPH800 MIX TANK PLUMBING



2



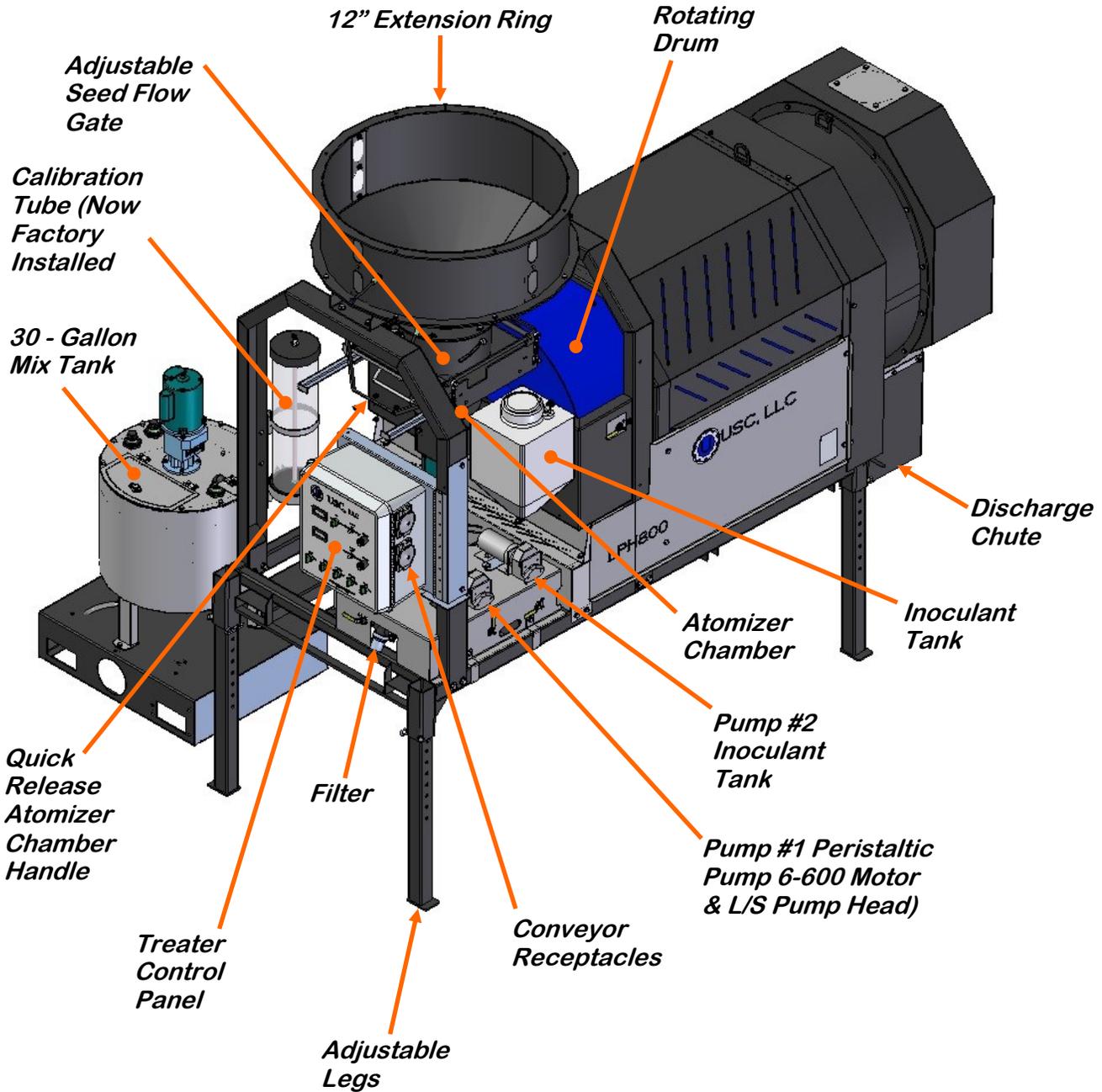
3



SECTION
C

MECHANICAL OPERATION

SYSTEM OVERVIEW



SUPPLY HOPPER

The supply hopper has a capacity of approximately 7 units of seed. The hopper supplies seed to the atomizing chamber where seed first comes in contact with the treatment.

The seed flow is controlled by an adjustable seed gate. Refer to the Calibration section page 28 for instructions on adjusting the seed flow gate. Dry batch calibration runs will be required in order to determine the seed flow rate. Rates should be determined in Quantity / Time, this will allow for proper liquid / granular mixtures.

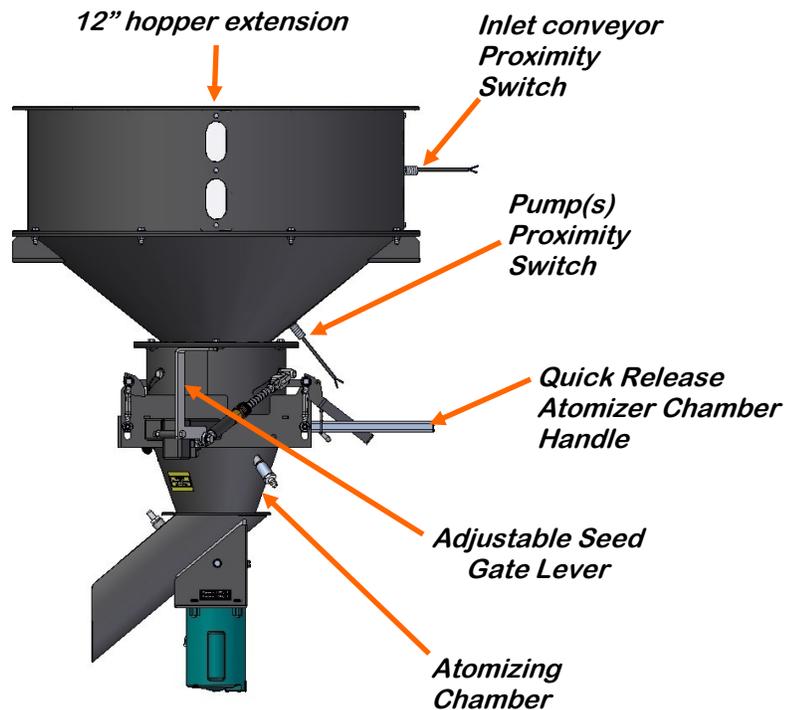
NOTICE Different seed types may be treated with this equipment. It is imperative to note that re-calibration of the seed gate setting will be required with each new seed type.

The hopper is equipped with two proximity switches. The top proximity switch controls the automatic start and stop of the inlet conveyor, so the supply hopper does not overflow. This proximity switch is not used on Tower Units. The lower proximity switch controls the automatic shut-off of the pump(s) when the hopper runs out of seed. Refer to the Electrical Operations section on page 24 and the Proximity Switch Adjustment Guide on page 38 for more information on these proximity switches.

The distribution cone creates a curtain of seed which wraps around the atomizer head, ensuring that every seed is applied with treatment. (see page 35)

ATOMIZER CHAMBER

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. Meanwhile, seed flows down out of the seed wheel and down on top of the distribution cone which disperses the seed down around the atomizer head. The atomizer can 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 40)



ROTATING DRUM

The rotating drum is six feet long and accepts treated seed through the opening on the hopper end. As seed passes through the length of the drum it is tumbled, producing accurate and uniform seed coating. The seed then exits the seed treater out the discharge end of the machine.



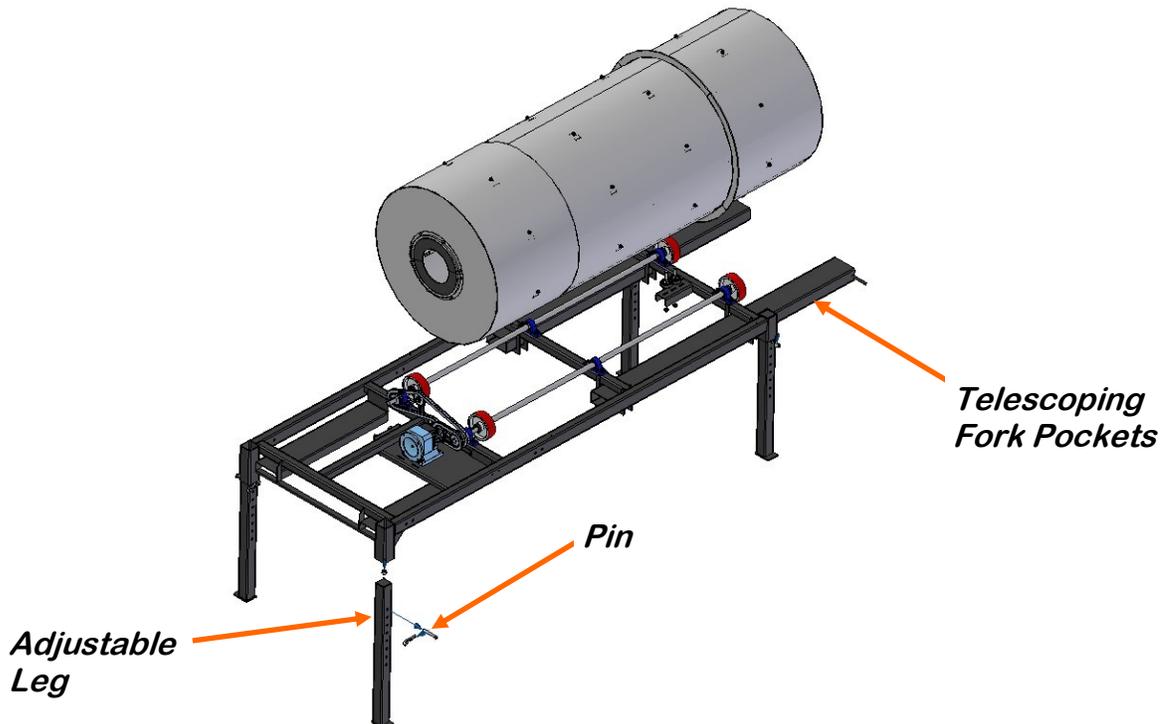
Never allow exposure of persons or clothing to the drive shaft, idler wheels, or the drum during operation. Always have the safety shields in place during operation.

The time it takes for seed to move through the drum both during and at the end of the run can be changed by lowering or raising the pins on the legs of the discharge end of the treater. When the pins are in the same hole on all of the treater legs, the treater has a natural downward tilt towards the discharge end of the treater. Lowering the pins on the discharge end's legs will give the treater more tilt during operation which will allow seed to travel through the drum at a faster rate. Vice versa, raising those pins will cause seed to stay in the drum longer.



It is not recommended to lower the discharge end's pins more than one hole setting different from the inlet end's pins. If this is done, a loss in seed coverage and chemical coating may occur.

The LPH800 Treater also comes standard with telescoping fork lift pockets. These pockets can be slid out from underneath the treater to allow a fork lift to pick up the treater from it's discharge end.



LPH800 TREATER

MIX TANK

The LPH800 Treater includes a 30 gallon stainless steel chemical mix tank. This mix tank will have electric drive agitation that is turned on or off from a manual switch. The agitator should be running at all times when treatment is present in the mix tank to keep the chemical mixed and in a suspended state. The tank is equipped with a shut-off, drain plug, and drain valve located on the bottom. The top of the tank also includes 3 extra ports which the operator can use to direct fill into the tank (see below).



CALIBRATION TUBE

The LPH800 Treater is equipped with a calibration tube which is used to check the liquid flow rate. The calibration tube measures in ounces, on a 0-340 scale and millimeters on a 0-10000 scale. Manual valves direct liquid from different areas to keep all liquid contained. This creates a closed chemical system so that the operator can manually check the calibration of the chemical flow rate without handling any of the chemical. The Calibration Tube is now factory installed.



PERISTALTIC PUMP HEADS AND MOTOR

The LPH800 Treater utilizes a variable speed peristaltic pump and special norprene pump tubing for liquid metering. The pump comes equipped with a peristaltic pump head. 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, turn lever to the left. Place pump tubing in pump head so it fits inside the notches and above the rollers. Turn lever back to the right to close the pump head, clamping the tubing inside the head. Wear or fatigue of the tubing due to usage and compression is normal. When tubing becomes worn or liquid rates begin to slow down, open the pump head and move the tubing to a different position. When the entire piece of tubing becomes worn, simply replace with a new section of tubing. When not using the machine for a few days or when storing, open the pump head and remove the tubing to prevent any unnecessary compression during the off-season.



Pump Head Open



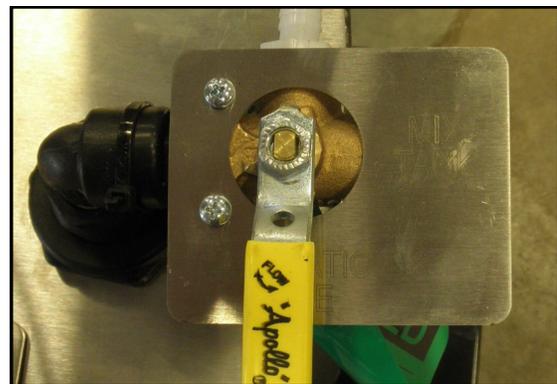
Pump Head Closed

PUMP #1 LIQUID SYSTEM VALVES

VALVE ON MIX TANK: This valve directs the liquid coming from the Calibrate side of the Seed Treatment Valve.



Pump #1 pumping liquid into the top of the mix tank when Seed Treatment Valve is in Calibrate



Pump #1 pumping liquid into the top of the calibration tube when Seed Treatment Valve is in Calibrate

PUMP #1 LIQUID SYSTEM VALVES

SEED TREATMENT SOURCE VALVE: This valve controls where pump #1 is drawing liquid from.



Pump #1 Drawing from bottom of Mix Tank



Pump #1 Drawing from bottom of Calibration Tube

SEED TREATMENT: This valve controls the direction of the liquid coming from pump #1.



Pump #1 pumping liquid to valve on top of mix tank.



Pump #1 pumping liquid to atomizer. Used when treating seed.

PUMP #2 LIQUID SYSTEM VALVES

INOCULANT VALVE: This valve controls the direction of the liquid coming from the tank.



Pump #2 Pumping Liquid to Calibration Valve



Pump #2 Pumping Liquid to the Atomizer

CALIBRATION VALVE: This valve directs liquid which comes from the calibrate side of the Inoculant valve.



Directs liquid to the hose to the right of the valve to check calibration



Directs Liquid back into the top of the 5 gallon tank

LPH800 TREATER

Proper calibration of the liquid system is critical to achieve a proper granular/chemical mixture. Use the calibration procedures on pages 28 through 35 to determine liquid flow rate.

Emptying the remaining liquid can 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.

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

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

SECTION **D** **ELECTRICAL OPERATION**



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



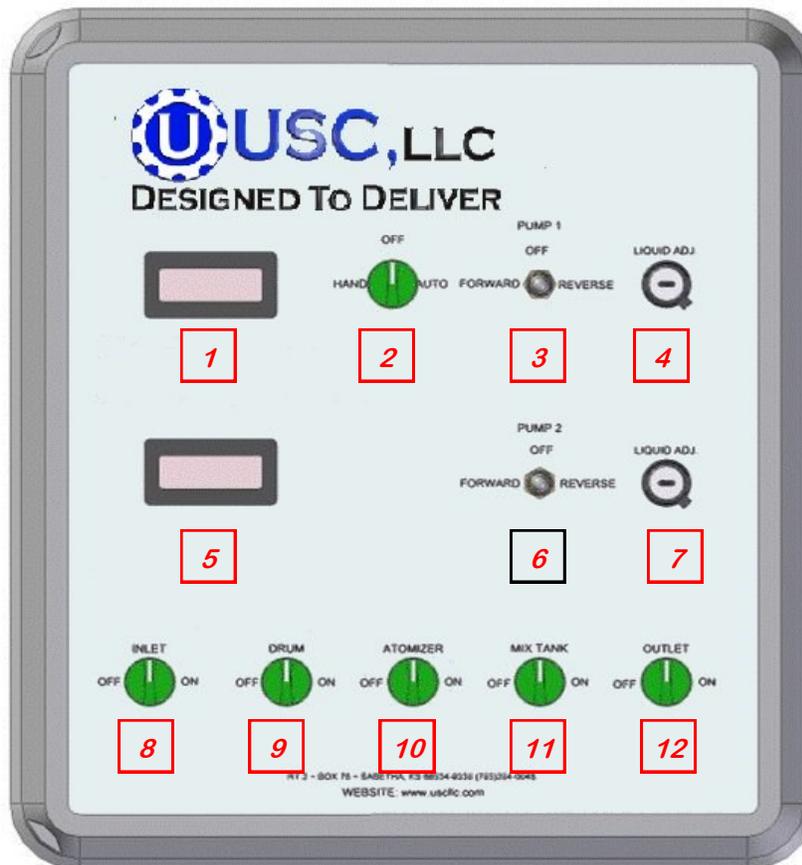
HIGH VOLTAGE ~ Use insulated tools when making adjustments while the controls are under power.



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

TREATER CONTROL PANEL

Refer to the control panel and the electrical schematic for proper voltage and amperage of the machine. All green switches will illuminate when activated. The bottom row of switches are spring return to center. The control panel controls the following functions:



CONTROL DESCRIPTIONS

1. PUMP #1 VOLTMETER: Displays the DC voltage for pump #1. As pump #1 speed is increased or decreased, this number will also increase or decrease.

2. HAND / OFF / AUTO SWITCH (for Pump #1 & #2): This switch controls pump #1, pump #2, and any device connected to the auxiliary port. This switch must be activated before either pump will operate in forward or reverse.

- **HAND POSITION:** When the switch is placed in HAND, the pump(s) will run only when you have turned the pump(s) switch to forward or reverse and the speed has been adjusted.
- **AUTO POSITION:** When the switch is placed in AUTO, the pump(s) will only run when the lower proximity switch located in the supply hopper is covered and the atomizer is running. The proximity switch determines when seed is present in the hopper. When the proximity switch does not detect seed, a timer relay located inside the control panel will automatically shut off the pump(s) a pre-determined amount of time after the hopper has emptied. The timer relay (right) located in the control panel is set to Mode “D” and has an adjustable knob with settings from 0-6. Each number represents the number of seconds from the time the hopper empties until the pumps will shut off. The time delay allows all seed in the hopper to have an equal coverage.



3. PUMP #1 DIRECTION: This switch allows the operator to change the pump direction between forward and reverse. It has a safety feature that will not allow the operator to switch from forward to reverse or vice-versa without momentarily stopping and releasing the switch in the center position.

4. LIQUID ADJ. PUMP #1: This dial allows the operator to adjust the speed of pump #1. The setting should be chosen in relation to the application rate for the treatment being applied to the seed.

5. PUMP #2 VOLTMETER: Displays the DC voltage for pump #2. As pump #2 speed is increased or decreased, this number will also increase or decrease.

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

7. LIQUID ADJ. PUMP #2: This dial allows the operator to adjust the speed of pump #2. The setting should be chosen in relation to the application rate for the treatment being applied to the seed.

CONTROL DESCRIPTIONS

8. INLET CONVEYOR SWITCH: This switch controls the inlet conveyor in conjunction with a timer relay. When the switch is turned on, the conveyor will run until seed covers the proximity switch mounted near the top of the supply hopper, at which time the conveyor will turn off automatically. The inlet conveyor will remain off until seed has dropped below the proximity switch. A timer relay (right) will turn the conveyor back on after a pre-determined time. The timer relay located inside the control panel is set to Mode "A" and has an adjustable knob with settings from 0-6. Each number represents the number of seconds from the time the proximity switch is uncovered to when the conveyor will turn back on. The time delay prevents the conveyor from turning on and off too quickly.



9. DRUM: This switch allows the operator to turn the drum on or off.

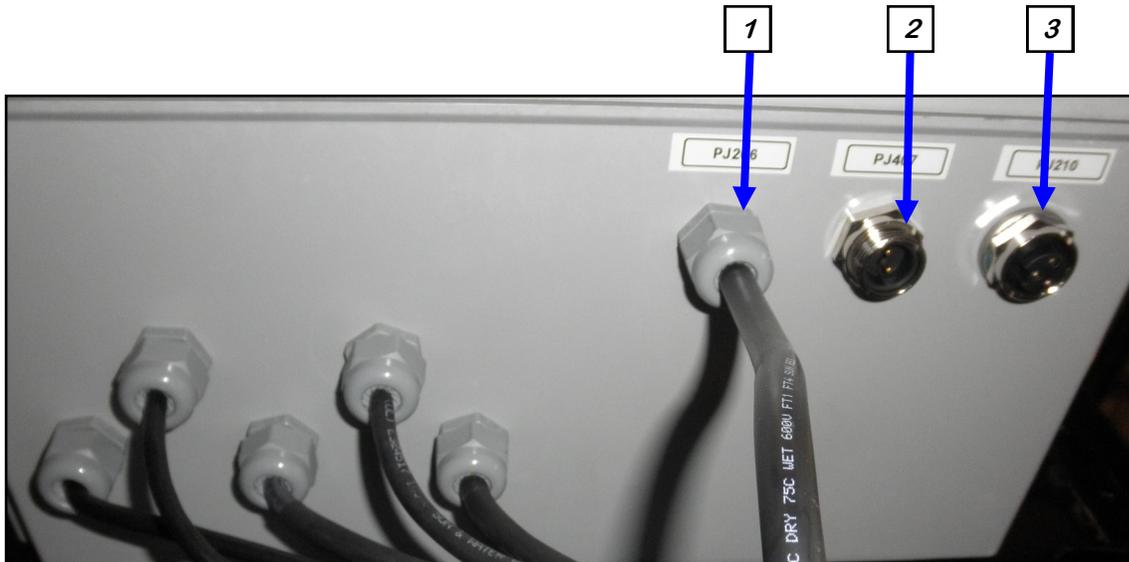
10. ATOMIZER: This switch allows the operator to turn the rotary driven atomizer on or off for primary distribution of product on the seed. This switch must be turned on before the seed treating process begins and before the pump(s) will operate in AUTO.

11. MIX TANK: This switch allows the operator to turn the chemical mixer / agitator on or off to allow for a perfectly mixed application of the seed treatment.

12) OUTLET CONVEYOR SWITCH: This switch allows the operator to turn the outlet conveyor on or off.

LPH800 TREATER

Bottom of Control Panel



1. ATOMIZER MOTOR CABLE: The other end of this cable plugs into the receptacle on the atomizer motor. The atomizer cable may be disconnected from the atomizer so it can be removed from the machine for maintenance.

2. AUXILIARY PORT: This port will allow an additional liquid system or dry additive feeder to tie in with the Automatic shut-off function. The HAND / OFF / AUTO switch will control the secondary system. This port does not supply power to a secondary unit.

3. MIX TANK MOTOR RECEPTACLE: This receptacle is where the cable from the 30 gallon mix tank motor is connected. The mix tank motor cable may be disconnected so the mix tank can be moved.

SECTION
E**CALIBRATION**

Calibration of both the seed flow and liquid portions of the equipment is necessary for accurate treatment of seed.

NOTICE

If you require metric data there are two options. Contact USC customer service for a copy of the Red Lion Cub 5 Programming Guide and re-program the display for metric or use the conversion chart on page 34 to manually convert the data output to metric.

SEED FLOW CALIBRATION

The following steps illustrate how to calibrate the seed flow for the LPH800 seed treater. A stop watch, ladder, and a known weight of seed will be needed in the calibration process.

NOTICE

If the seed treater is equipped with a Seed Wheel, refer to the Seed Wheel operator's manual for seed flow calibration instructions.

1. Position all equipment so that you are able to run a dry batch of seed through the seed treater and catch it back into a container. This will allow you to easily run the seed through again to recalibrate or begin treating.
2. Set the adjustable seed gate lever at a position that you and your equipment can handle. (all the way open – approximately 950 bushels/hr. or 430 kg/min) Refer to page 29 for adjusting the seed gate. Calibrations should be done with at least 40 units or 2000 lbs.
3. Place the drum and any conveyors to the ON position.
4. When equipment is in position, begin running seed through the seed treater. Using the stop watch, begin timing as soon as the seed lands in the bottom of the supply hopper.

NOTICE

Be sure the supply hopper stays full at all times. If seed does not pile-up in the hopper, the seed calibration will not be accurate.

5. Stop timing after all seed has left the supply hopper.
6. Calculate the seed flow rate: Total Pounds per Minute.

EXAMPLE: 2000 pounds takes 3 minutes and 7 seconds or 187 seconds
 $2000 \text{ pounds} / 187 \text{ seconds} = 10.69 \text{ pounds/seconds}$
 $10.69 \times 60 \text{ seconds} = 641 \text{ lbs/minute}$
 $641 / 100 = 6.41 \text{ cwt/min (hundred weight per minute)}$

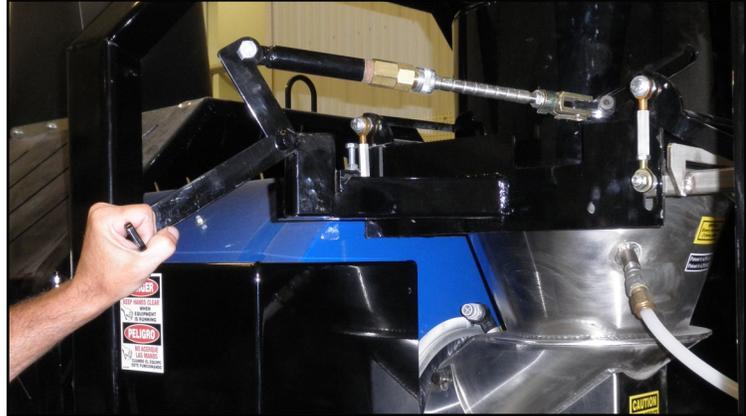
NOTICE

Different seed sizes and different seed types will tend to flow differently. Be sure to check calibration when changing to a different seed size or seed type.

ADJUSTING THE SEED FLOW GATE

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

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



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



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



NOTICE

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

PUMP #1 CALIBRATION

The following steps illustrate how to calibrate pump #1 on an LPH800 seed treater. A stop watch will be needed in the calibration process.

NOTICE

If the seed treater is equipped with a flow meter, refer to the Flow Meter operator's manual for pump calibration instructions.

1. Lock down the pump tubing in the Pump #1 pump head. (see page 20)
2. Premix enough liquid for the amount of seed you will be treating and pour into the 30 gallon stainless steel tank. It's always a good practice to mix up 20% extra slurry to help fill all the lines. Turn on the mix tank and allow liquid to mix.
3. Turn the SEED TREATMENT SOURCE valve to the MIX TANK position, the SEED TREATMENT valve to the CALIBRATE position and the valve on top of the mix tank to MIX TANK.
4. Turn the pump #1 direction switch to FORWARD.
5. Turn the HAND / OFF / AUTO switch to the HAND position and set the Pump #1 liquid adjust dial (right) to about 500 or half speed. The liquid should begin re-circulating from the bottom of the mix tank, through the pump, and back into the top of the mix tank.
6. Allow pump to re-circulate liquid for approximately 15 minutes to ensure all air has been removed from the liquid lines. This will also help break-in the pump tubing, which is critical before checking pump calibration.
7. After you have allowed the liquid to re-circulate you are ready to calibrate the pump. Determine the number of ounces needed in one minute.



EXAMPLE: The seed treatment slurry rate is 4 ounces per cwt.
 Seed Flow Rate = 6.41 cwt/min. x 4 oz./cwt. = 25.6 oz./min.
 25.6 oz. is the rate the pump should be pumping in one minute.

8. Set the Liquid Adjustment Dial . You can use the chart on page 33 to find a starting point.

EXAMPLE: The ounces needed in one minute = 25.6 oz/min. Assume we are using a 6-600 Masterflex pump. An approximate starting point is 31.8 volts.

PUMP #1 CALIBRATION

9. Using the stop watch, determine the pump flow rate. Keeping the pump running, position the valve on top of mix tank to CALIBRATION TUBE. When liquid reaches 0 (zero) or an even number, begin timing for one minute. (see Figure 1, below)
10. As soon as one minute is up, position valve on top of mix tank to MIX TANK. Read the level on the side of the calibration tube (see Figure 2, below). This number should equal the number of ounces needed to flow through the pump in one minute. If the ounces needed per minute have not been met, re-adjust the pump speed up or down accordingly and repeat steps 9 and 10 until the liquid flow rate has been matched.

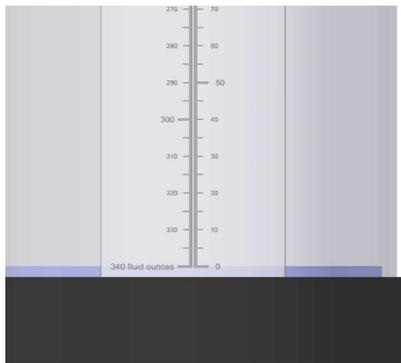


Figure 1
Liquid at 0 oz.

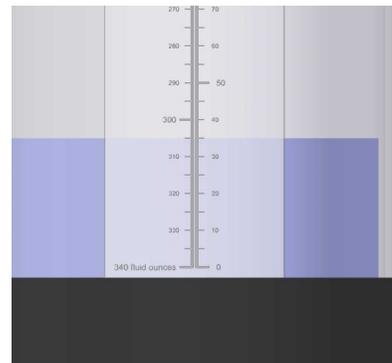


Figure 2
Liquid at 35 oz.
after 1 minute

PUMP #2 CALIBRATION

The following steps illustrate how to calibrate pump #2 on an LP series seed treater. A stop watch and measuring cup will be needed in the calibration process.

1. Lock down the pump tubing in the Pump #2 pump head. (page 20)
2. Premix enough liquid for the amount of seed you are treating and pour into the 5 gallon poly tank. It's always a good practice to mix up 20% extra slurry to help fill all the lines.
3. Turn the INOCULANT valve to the CALIBRATE position, and the Calibration Valve to RECIRCULATE.
4. Turn the pump #2 direction switch to FORWARD.
5. Turn the HAND / OFF / AUTO switch to the Hand position and set the Pump #2 liquid adjustment dial (right) to about 500 or half speed. Liquid should begin circulating from the bottom of the mix tank, through the pump, and back into the top of the tank.



LPH800 TREATER

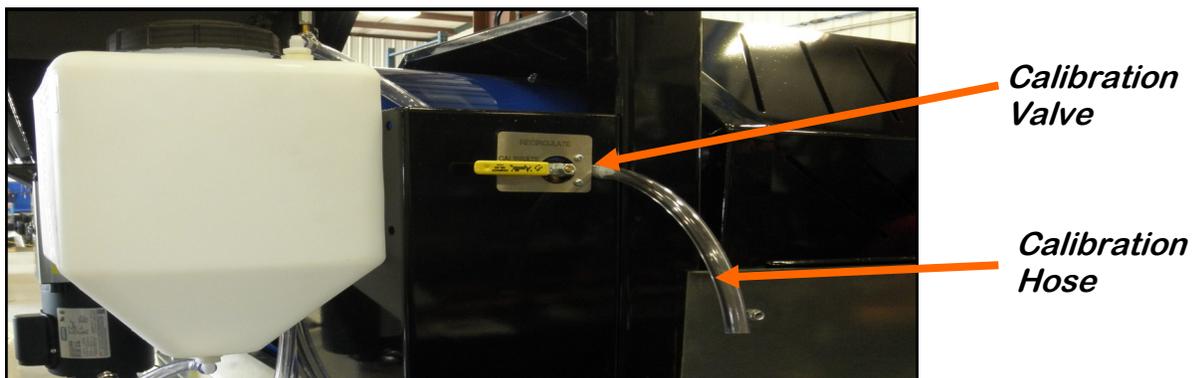
6. Allow pump to re-circulate liquid for approximately 15 minutes to ensure all air has been removed from the liquid lines. This will also help break-in the pump tubing, which is critical before checking pump calibration.
7. After you have allowed the liquid to circulate you are ready to calibrate the liquid flow. Determine the number of ounces needed in one minute.

EXAMPLE: The seed treatment slurry rate is 5 ounces per cwt.
Seed Flow Rate = 6.41 cwt/min. x 5 oz./cwt. = 32.1 oz./min.
32.1 oz. is the rate the pump should be pumping in one minute.

8. Set the Liquid Adjustment Dial . You can use the chart on page 33 to find a starting point.

EXAMPLE: The ounces needed in one minute = 32.1 oz/min. Assume we are using a 6-600 Masterflex pump. A good starting point is approximately 39.4 volts.

9. Using the stop watch and measuring cup, determine the pump flow rate. Hold the measuring cup under the calibration hose next to the Side Valve.
10. Keeping the pump running, position the Calibration Valve to CALIBRATE.
When liquid begin timing for one minute as soon as liquid begins flowing into the
11. As soon as one minute is up, position the Calibration Valve back to RECIRCULATE. Read the level on the side of the measuring cup. This number should equal the number of ounces needed to flow through the pump in one minute. If the ounces needed per minute have not been met, adjust the pump speed up or down accordingly and repeat steps 9,10, & 11 until the liquid flow rate has been matched.



Standard Data

Below are two charts that show the potential volts and volume: 1 English (volts / oz), 2 Metric (volts / ml).

NOTICE

All calibrations were done using water. Numbers are not exact, only use these numbers as a starting point or for troubleshooting.

**6-600 RPM Motor and
L / S Pump Head with
Masterflex L / S 35 Pump Tubing**

<u>Volts</u>	<u>OZ./Min.</u>
10.5	7.4
14.6	10.5
18.8	14.1
22.9	17.7
27.0	21.3
31.2	24.9
35.3	28.5
39.4	32.1
43.6	35.7
47.7	39.3
51.8	42.9
55.9	46.5
60.1	50.1
64.2	53.7
68.3	57.3
72.5	60.9
76.6	64.5
80.7	68.1
84.9	71.7
89.0	75.3

**6-600 RPM Motor and
L/S Pump Head with
Masterflex L / S 35 Pump Tubing**

<u>Volts</u>	<u>ml./Min.</u>
10.5	219
14.6	302
18.8	417
22.9	524
27.0	630
31.2	737
35.3	843
39.4	950
43.6	1,056
47.7	1,162
51.8	1,268
55.9	1,375
60.1	1,482
64.2	1,588
68.3	1,695
72.5	1,800
76.6	1,908
80.7	2,014
84.9	2,121
89.0	2,227

TREATING SEED

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



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

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



If you desire to check the total ounces used per batch of seed. Fill the calibration tube with the amount needed for the batch of seed (approximately 10 ounces extra to be safe). Then position the SEED TREATMENT SOURCE valve to CALIBRATION TUBE.

3. Position conveyors, overhead hopper or seed box so the first seed coming into the seed treater lands on the lower proximity switch which automatically turns on the pump(s).
4. Turn the switches to ON for the Drum, Atomizer and any Conveyors being used. With all motors turned to the ON position, you are ready for seed.
5. Begin sending seed into the seed treater. As soon as seed lands on the proximity switch, the pump will turn on and the seed treating process will begin.

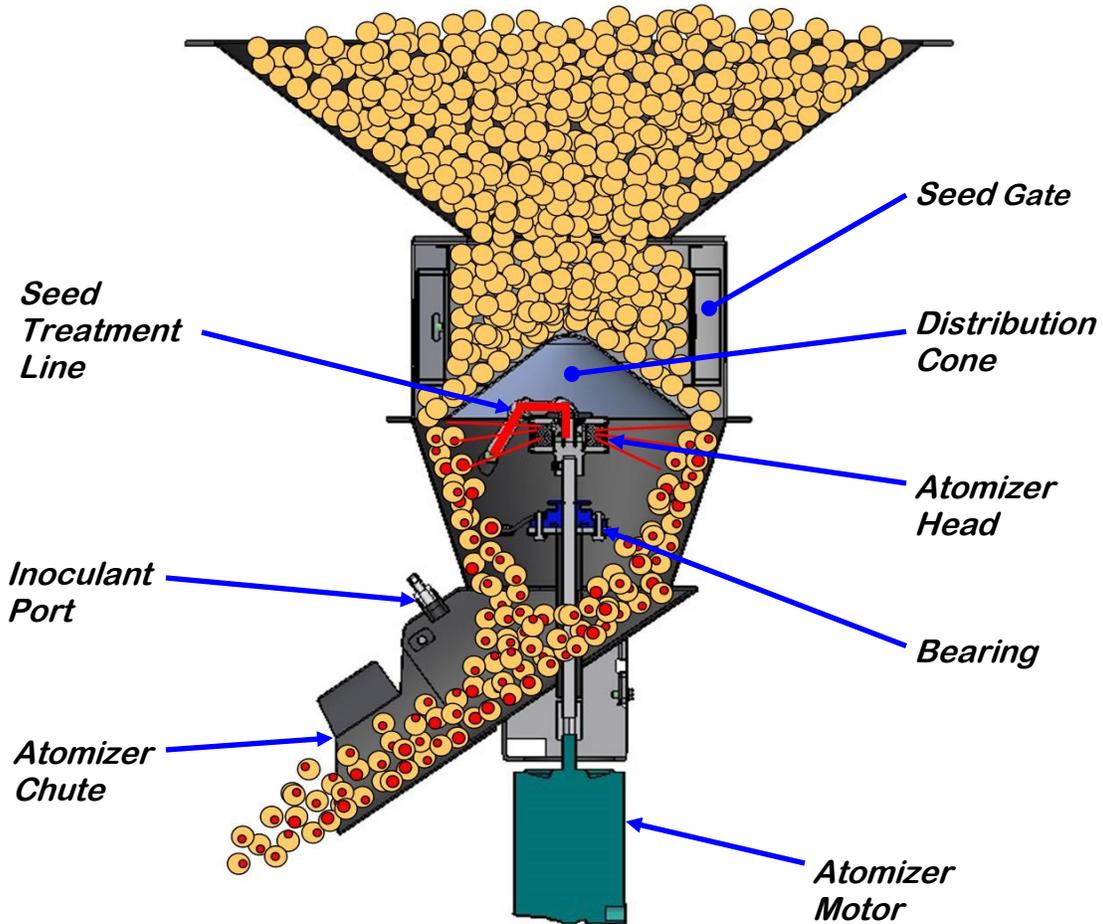


If the first seed is not well coated, the HAND / OFF / AUTO switch can initially be turned to HAND before the seed comes into the treater. Once the supply hopper is full, the switch can be turned to AUTO.

6. When all seed has passed through the atomizer, the pump will automatically shut off.

TREATING SEED

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



<u>Conversion Chart</u>	
1 ounce	= 29.58 milliliters
1 gallon	= 3.79 liters
1 kilogram	= 2.2 pounds
1 unit	= 50 lbs or 22.73 kg
1 bushel	= approx. 60 lbs or 27.27 kg
1 cwt	= 100 lbs or 45.45 kg

**SECTION
F**

TROUBLESHOOTING

Below is a table describing the most frequent problems and solutions with the LPH800 Seed Treater. For further assistance, contact your authorized dealer.

Problem	Possible Cause	Solution
Inlet Conveyor will not turn on.	<ol style="list-style-type: none"> 1. Inlet Conveyor proximity switch is activated. 2. Inlet Conveyor proximity switch is too sensitive. 3. Overload is tripped. 4. Conveyor is plugged into wrong outlet on seed treater panel. 	<ol style="list-style-type: none"> 1. Clean proximity switch 2. Adjust the inlet conveyor proximity switch sensitivity by turning the adjustment screw counter-clockwise (page 38). 3. Reset Inlet Conveyor Overload. 4. Check to make sure the inlet conveyor is plugged into the inlet conveyor receptacle.
Pump will not turn off in AUTO when seed runs out.	<ol style="list-style-type: none"> 1. Proximity switch is dirty. 2. Proximity switch is set too sensitive. 	<ol style="list-style-type: none"> 1. Clean proximity switch. 2. Adjust the pump proximity switch sensitivity by turning adjustment screw counter-clockwise (page 38).
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. 	<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 pump #1 and #2 in Auto. 3. Adjust pump proximity switch sensitivity by turning the adjustment screw clockwise (page 38).
Inlet conveyor won't shut off when hopper is full.	<ol style="list-style-type: none"> 1. Seed is not hitting proximity switch. 2. Proximity switch is not set sensitive enough. 3. Inlet Conveyor is plugged into wrong receptacle. 	<ol style="list-style-type: none"> 1. Make sure seed is hitting proximity switch. 2. Adjust the inlet conveyor proximity switch by turning the adjustment screw clockwise (page 38). 3. Make sure Inlet Conveyor is plugged inlet conveyor receptacle.

LPH800 TREATER

Problem	Possible Cause	Solution
Pump is Fluctuating	<ol style="list-style-type: none"> 1. Restriction in tubing. 2. Tubing was not broken-in properly before calibrating. 3. DC Pump circuit board is going bad. 	<ol style="list-style-type: none"> 1. Flush tubing and check filter for any restrictions. 2. Allow pump to recirculate for 15 minutes before checking calibration. 3. Watch pump voltmeter for any fluctuations. The pump board may have to be replaced.
Pump will not turn on.	<ol style="list-style-type: none"> 1. Blown Fuse. 2. Bad HP Resistor. 3. Bad DC Pump Board. 	<ol style="list-style-type: none"> 1. Check fuses. 2. Check HP Resistor. 3. Change the DC Pump Board Part #: (03-01-0007).
Seed Calibration is fluctuating	<ol style="list-style-type: none"> 1. Seed Treater surge hopper is not staying full. 2. Restriction in the surge hopper. 3. Build-up in the atomizing chamber. 	<ol style="list-style-type: none"> 1. Make sure the surge hopper is staying full. May have to close down seed gate in order to have a consistent flow of seed. 2. Check surge hopper for any debris, and remove. 3. Remove atomizing housing and clean out any build-up of material.
Drum is slipping and seed is coming out the inlet side of the drum.	<ol style="list-style-type: none"> 1. Drum is wet. 2. The seed treater is set too level. 3. Chains are too loose. 	<ol style="list-style-type: none"> 1. Dry off any moisture that may have collected on the outside of the drum. 2. Adjust the slope of the seed treater to at least a 3" drop from front to back. If desired, more slope can be applied. 3. Check and tighten the drive chains. Also check the chain alignment.
Certain motors will not turn on.	<ol style="list-style-type: none"> 1. Overload is tripped. 2. Incoming power is incorrect or has been disconnected. 3. Cord has been cut or is disconnected. 	<ol style="list-style-type: none"> 1. Reset Overload inside control panel 2. Test incoming power. 3. Check cord to motor.

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.



MAINTENANCE SECTION G

Proper maintenance of the LPH800 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.



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

DRIVE AND DRUM

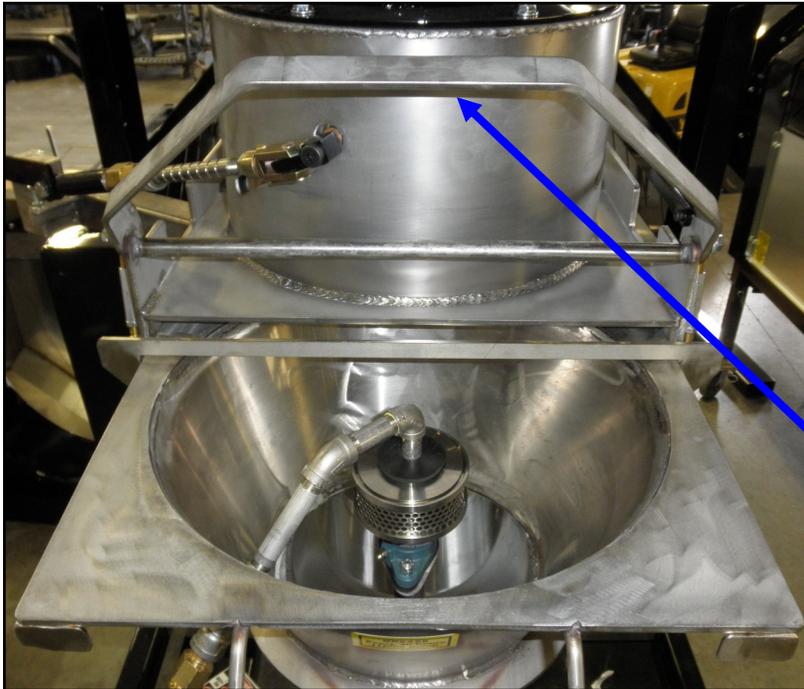
- Inspect all welds and structural components on frame and drum for bends, cracks and damage.
- Remove shields and inspect pillow block bearings.
- Inspect drive wheels for unordinary wear, and setscrews for tightness.
- Inspect the Neoprene idler wheels.
- Tighten and lubricate chain.

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.

ATOMIZER

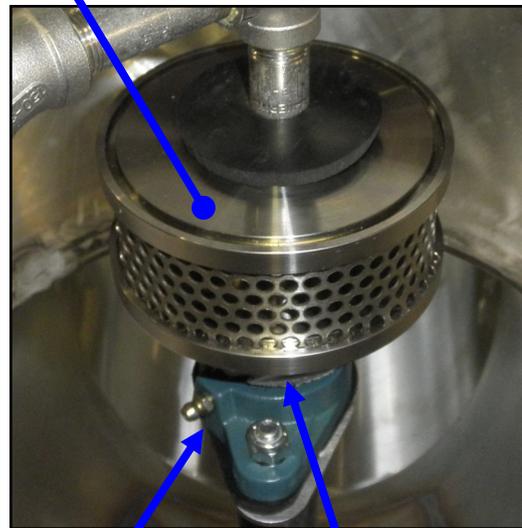
To access inside of atomizer housing, push up on the quick release handle and slide back the atomizer (below).



Quick-Release Handle

Atomizer Head

- Slide back atomizer housing and grease bearing inside. Bearing needs just one pump of grease every 40 hours of use (right).
- 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.
- Check for any play in the atomizer shaft.
- Make sure the atomizer spins smoothly.
- Ensure the adjustable chute is fitting completely into the drum opening. Adjust if necessary.



Bearing

Set Screw

LPH800 TREATER

MIX TANK

- Check motor.
 - Check for any play in the mix tank shaft.
 - Check valves, fittings, and plug on bottom of tank for leaks.
 - Check chemical line tubing for abnormal wear.
-

ELECTRICAL PANEL

- Check and tighten wire connections.
- Check quick connects on bottom of control panel.
- Check starters and overloads.
- Check relays and breakers.
- Check and set the proximity switches. (page 38).
- Check VFD's.

SECTION H STORAGE

When storing the LPH800 series 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.

SUPPLY HOPPER

1. Clean out the supply hopper of any debris (compressed air can be used).
2. Wipe the proximity switches clean.
3. Tarp or cover the hopper to keep out any unwanted pests.

ATOMIZER CHAMBER

1. Remove and clean the atomizer housing.
2. Remove the atomizer head and stainless steel plumbing. The atomizer head can 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.



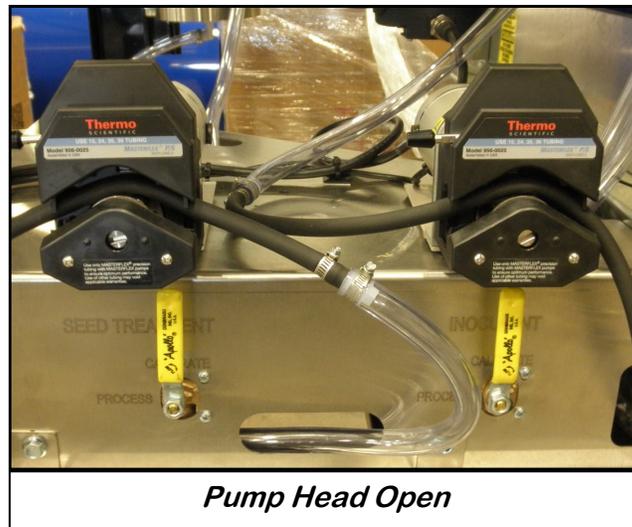
ROTATING DRUM

1. Remove the shields and clean out any seed that may have fallen underneath the drum.
2. Lubricate the chain to keep from corroding in storage.

LPH800 TREATER

LIQUID SYSTEM

1. Make certain the inside of the tank is completely drained of chemical residue and thoroughly flush the inside of the tank with clean water.
2. Remove and clean the filter.
3. Pump clean water through all areas of the plumbing including the mix tank, flow meter, and valves. It may be necessary to move the position of the air actuated 3-way valve from recirc to process in order to clean the chemical lines that run to the seed treater.
4. Open all drain points, valves, and filter to let as much of the liquid drain as possible.
5. If the seed treater will be exposed to possible freezing temperatures, the final flush of the system should be made with a non freezable liquid, or use compressed air to blow the lines out from any moisture.
6. Release pump heads (below) and remove tubing to prevent any unnecessary wear.



FINAL

1. Store the machine inside a protective building to keep it from being exposed to the weather.
2. Disconnect power to the machine.

LPH800 TREATER

NOTES:

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.

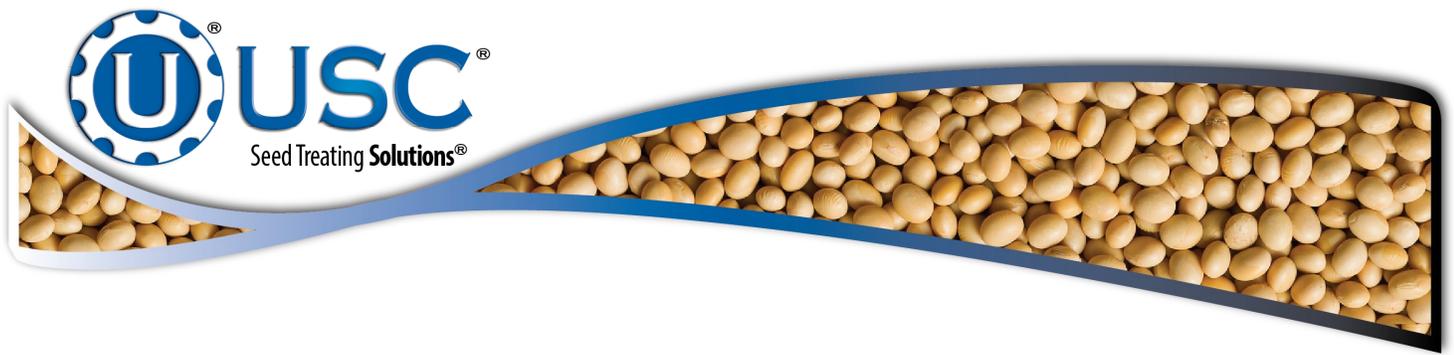
4. **Other Statements:** Manufacturer's employees or representatives' oral or other written statements do not constitute warranties, shall not be relied upon by Buyer, and are not a part of the contract for sale or this limited warranty.

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.

US / Canada Non-Exclusive 2016





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