LP300 SEED TREATER

Operator's Manual






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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 LP300. It does not hold USC, LLC liable for any accidents or injuries that may occur.

OPERATOR RESPONSIBILITIES

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

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

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

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

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 USC 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 upper right corner of the main 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.

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.

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

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

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.

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 seed treating system is usually 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 Seed Treating System. **YOU** must ensure that you and anyone else who is going to operate, maintain, or work around the Seed Treating System 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 Seed Treating System.

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.

- LP Series Seed Treater 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!

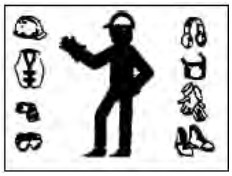
GENERAL SAFETY

1. Read and understand the Operator's Manual and all safety signs before operating, maintaining, adjusting or unplugging the LP Series Seed Treater.

2. Only trained persons shall operate the seed treater. An untrained operator is not qualified to operate the machine.
3. Have a first-aid kit available for use should the need arise, and know how to use it.

4. Provide a fire extinguisher for use in case of an accident. Store in a highly visible place.

5. Do not allow children, spectators or bystanders within hazard area of machine.
6. Wear appropriate protective gear. This includes but is not limited to:



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

7. Place all controls in neutral or off, stop motor, and wait for all moving parts to stop. Then disable power source before servicing, adjusting, repairing, or unplugging.

8. Review safety related items annually with all personnel who will be operating or maintaining the LP Series Seed Treater.

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. 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 Seed Treating System. 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 Seed Treater on level ground free of debris. Anchor the Seed Treater to prevent tipping or upending.

Before placement of the Seed Treater, be sure that ground is reasonably level. The Seed Treater 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 Seed Treating System.
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 SIGNS

1. Keep safety signs clean and legible at all times.
2. Replace safety signs that are missing or have become illegible.
3. Replaced parts that displayed a safety sign should also display the current sign.
4. Safety signs are available from your Authorized Dealer.

How to Install Safety Signs:

- 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.

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

SECTION B INSTALLATION

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.

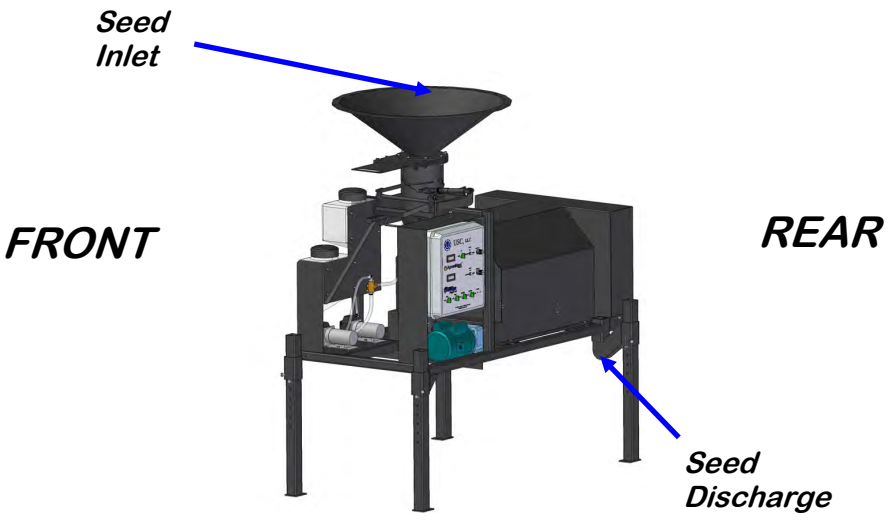
NOTICE Permanent installation may require additional electrical cords, liquid hose, and air lines, since each installation is unique.

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.

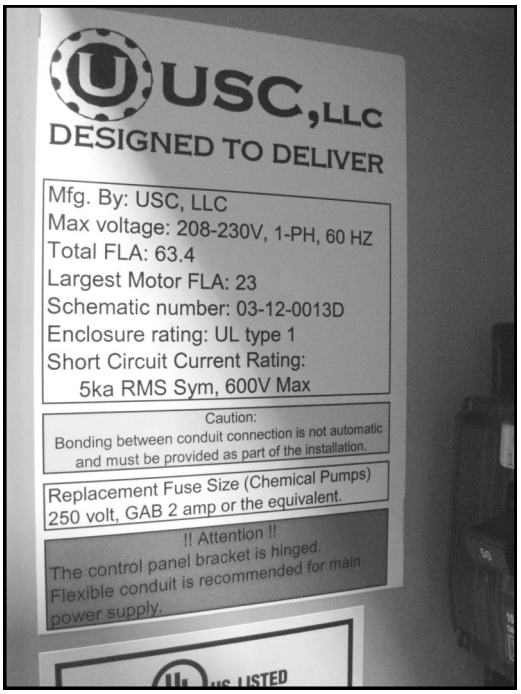
NOTICE USC highly recommends that the seed treater be set up inside a building or any covered structure to protect the machine from weathering.



4. Remove any boxes 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.

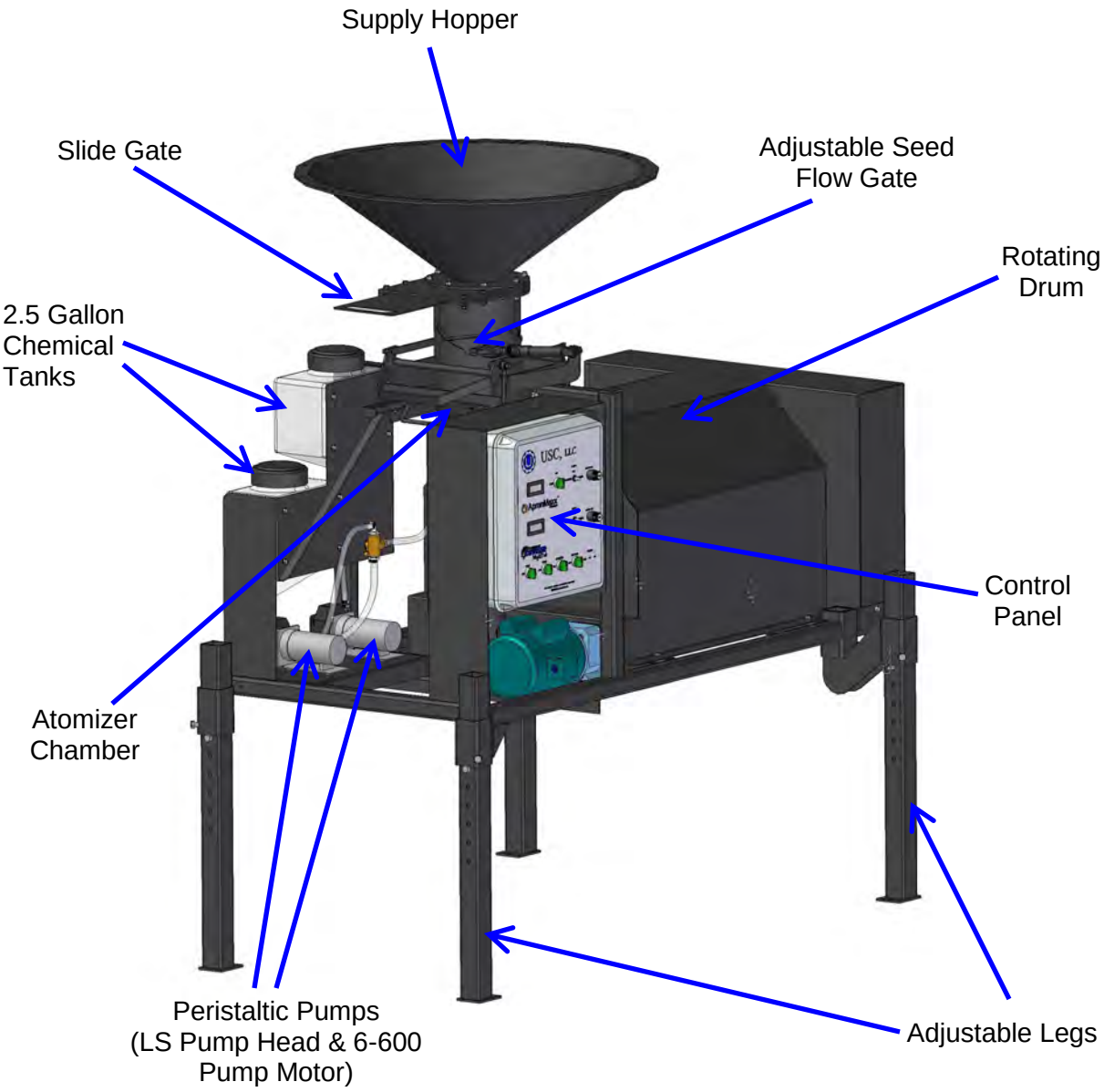
6. Anchor the seed treater in position to prevent the machine from moving during operation.
7. Inspect machine thoroughly for screws, bolts, fittings, etc. which may have come loose during shipping.
8. Check and tighten all hose connections.
9. Have a certified electrician provide power to the seed treating 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.
10. Reverse the previous steps when removing the machine from its working position.



Power Requirements Tag

SECTION C MECHANICAL OPERATION

SYSTEM OVERVIEW



ROTATING DRUM

⚠ CAUTION

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 rotating drum 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.

SUPPLY HOPPER

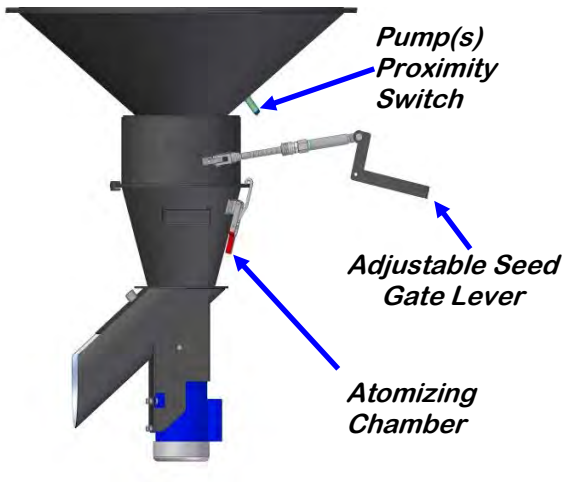
The hopper feeds the atomizing chamber with seed and the flow is controlled by the adjustable chamber lever. See “Section E: Calibration; Adjusting the Seed Flow Gate” for instructions on adjusting the seed flow gate.

Dry batch tests for the calibration of seed flow rates will be required after installation in order to determine the amount of seed flow for the different gate settings. Rates should be determined in QTY/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 treated.

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 supply hopper, down on top of the distribution cone which disperses the seed around the atomizer head.



LIQUID SYSTEM

The USC LP300 seed treater is equipped with two 2.5 gallon tanks. The liquid system utilizes two variable speed peristaltic pumps for chemical metering. The liquid being used only comes into contact with the inside diameter of the tubing and not the pump. This allows for easy cleanup and maintenance without disassembling 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 hose inside the head (See pictures below). 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 hose to a different position. If the entire hose becomes worn, simply replace with a new section of tubing. When storing the seed treater, open the pump head and remove the tubing to prevent any extra compression during the off-season.

Proper calibration of the liquid system is critical to achieve a proper granular/ chemical mixture. The liquid pump is controlled by a variable speed motor. Controls on the main panel include a counting dial which controls the pump speed, a forward/brake/reverse switch that controls the pump direction and a voltmeter that displays the amount of volts being sent to the pump. Use the calibration tube to determine the amount of chemical flow for different dial settings. Rates should be determined in QTY/TIME. This will allow for proper liquid/granular mixtures.

Pump Head Open

Pump Head Closed

Emptying the remaining chemical can be done by reversing the pump back into the mix tank and then draining the liquid into a suitable container. Clean water should be pumped through the tanks when finished.

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

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

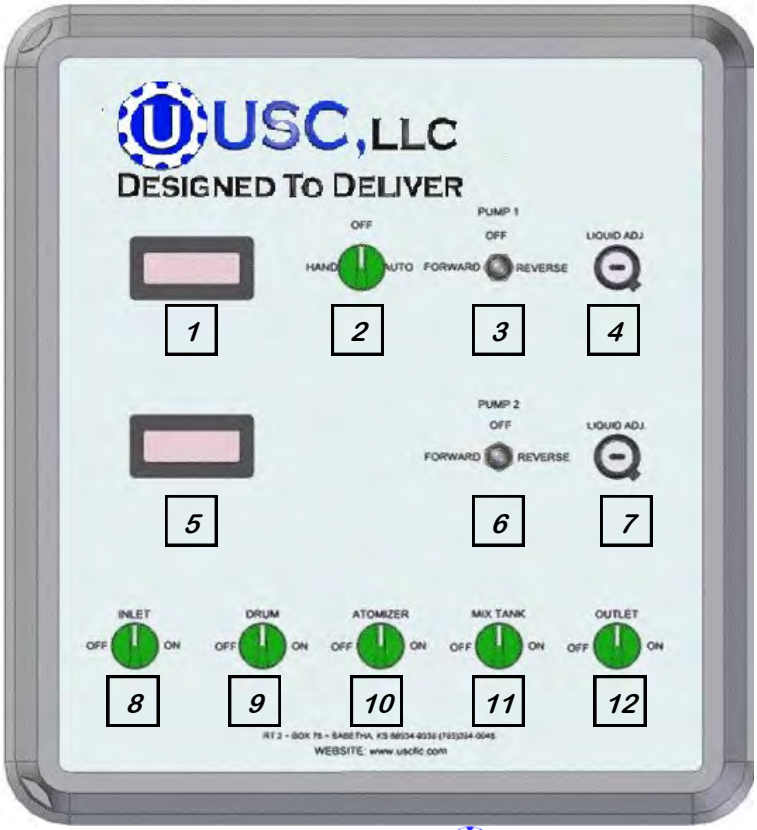
HIGH VOLTAGE ~ Always disconnect the power source before working on or near the control panel or lead wires.

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.

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:



Controls Explained

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.

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.

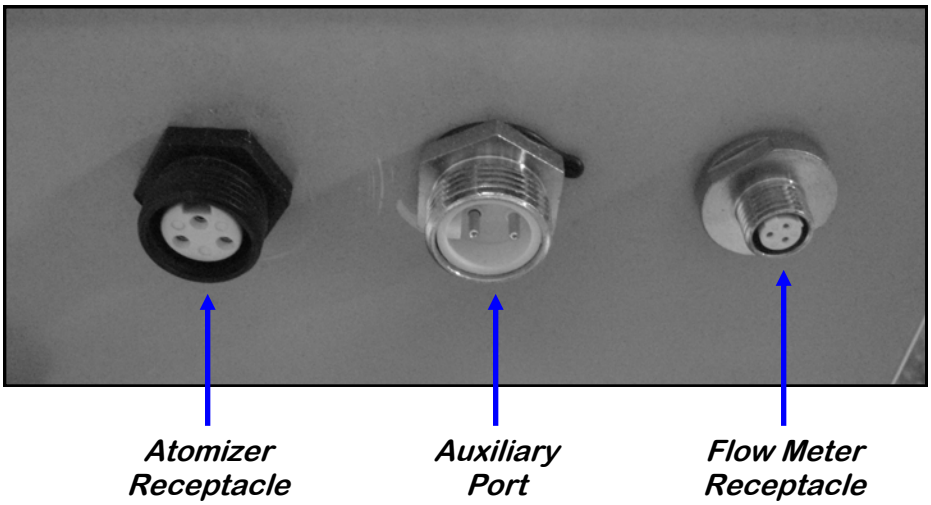
9. Drum: This switch allows the operator to turn the drum on or off.

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.

Bottom of Control Panel



Atomizer Receptacle: This receptacle is where the motor which runs the atomizer is plugged in to. The atomizer can be unplugged so it can be removed from the machine for maintenance.

Auxilliary 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.

Flow Meter Receptacle: If a flow meter is added to the machine, power is supplied to the meter through this receptacle. The receptacle is pre-wired into the control panel regardless if the machine is pre-ordered with a flow meter. This will allow for easy installation if a flow meter is added later.

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 prefer metric measurements, please refer to the conversion chart at the end of this section.

SEED FLOW CALIBRATION

The following steps illustrate how to calibrate the seed flow for a LP300 seed treater. A stop watch and a known weight of seed will be needed in the calibration process.

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 400 bushels/hr. or 181 kg/min) Refer to page 23 for adjusting the seed gate.
3. Place the drum and any conveyors to the “ON” position.
4. When the 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.

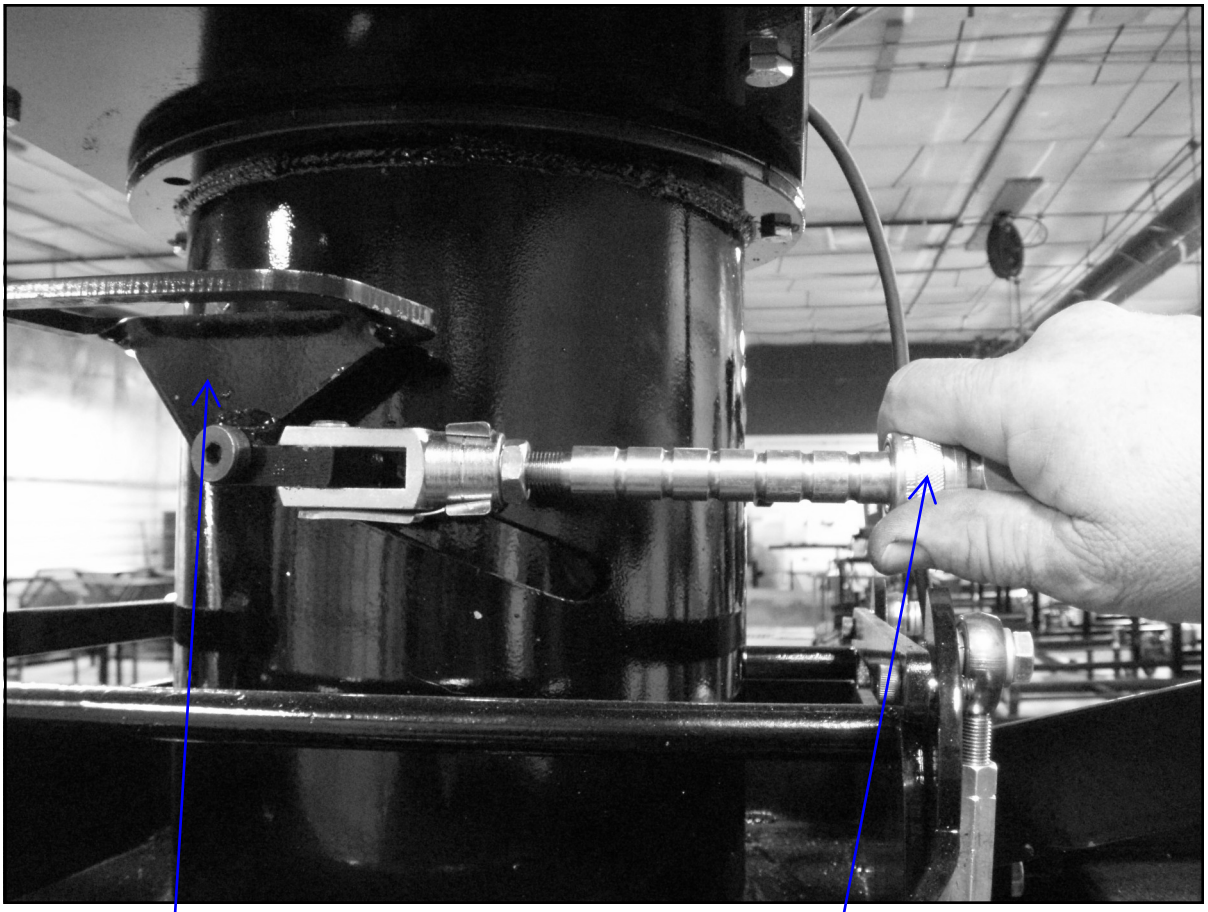
5. Stop timing after all seed has left the supply hopper.
6. Calculate the seed flow rate: Total Pounds per Minute.

EXAMPLE: 100 pounds takes 37 seconds,
100 pounds / 37 seconds = 2.7 pounds/seconds
2.7 x 60 seconds = 162 lbs/minute
162 / 100 = 1.62 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

To close the seed flow gate, move the black lever down. To open, move the black lever up. To vary the seed flow rate, pull back on spring-loaded coupling and adjust to the desired notch on the shaft.



PUMP CALIBRATION

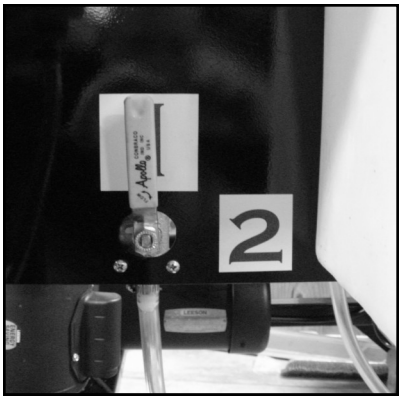
1. Premix enough chemical for the amount of seed you are treating. It's always a good practice to mix up 20% extra slurry to help fill all the lines. A stop watch and measuring cup are needed in these steps.
2. Determine the number of ounces needed in one minute.

   EXAMPLE: Seed Flow Rate = 1.62 cwt/min. x 5 oz. slurry/cwt. = 8.1 oz./min. 8.1 oz. is the rate the pump should be flowing in one minute.

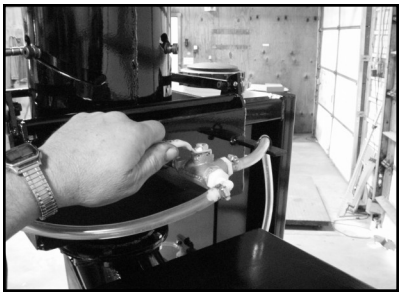
3. Set the Liquid Adjustment Dial. You can use the chart on page 25 or 26 to find a starting point.

   EXAMPLE: The ounces needed in one minute = 35 oz/min. A good starting point is approximately 59.7 volts.

4. Turn switch (2) on control panel to the "Hand" position.
5. Turn the "TANK VALVE" located above the pumps to a desired tank. Position the valve located above the drum toward the right hand side of the treater. Lock down the pump tubing in the pump head.
6. Turn switch (3) to "Forward" position (liquid should be pumping from the bottom of the desired tank, through the pump, and into a measuring cup. Keep pumping until all the air is out of the system. Turn switch (2) back to "OFF" after all air has been pumped from the system.
7. Use the stop watch to determine the pump flow rate. Empty the remaining liquid out of the measuring cup. Turn switch (2) to "Hand". When liquid begins filling into the measuring cup, begin timing. As soon as one minute is up, turn switch (2) to the "OFF" position. Read the amount of liquid pumped into the measuring cup.
8. If the desired amount has not been met then repeat steps 6 & 7.



TANK VALVE on Tank 1



CALIBRATION VALVE in Calibration Mode

Calibrating pump with measuring cup.

Below are two charts that show the potential volts and rates at different voltages.

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

6-600 Masterflex Pump
Masterflex L/S 24 Pump Tubing

Volts	OZ./Min.
9.9	4.6
14.2	7.2
18.3	9.6
22.5	12.2
26.6	14.8
30.7	17.4
34.9	19.9
39.0	22.5
43.1	24.9
47.3	27.4
51.4	29.9
55.4	32.3
59.5	34.9
63.6	37.5
67.7	40.1
71.7	42.8
75.8	45.6
80.0	48.4
84.1	51.1
88.3	54.1

6-600 Masterflex Pump
Masterflex L/S 24 Pump Tubing

Volts	ml./Min.
9.9	137
14.2	212
18.3	284
22.5	362
26.6	438
30.7	515
34.9	590
39.0	665
43.1	738
47.3	810
51.4	883
55.4	955
59.5	1,032
63.6	1,108
67.7	1,186
71.7	1,266
75.8	1,348
80.0	1,431
84.1	1,512
88.3	1,600

Below are two charts that show the potential volts and rates at different dial settings.

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

6-600 Masterflex Pump
Masterflex L/S 35 Pump Tubing

Volts	OZ./Min.
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 Masterflex Pump
Masterflex L/S 35 Pump Tubing

Volts	ml./Min.
10.5	219
14.6	325
18.8	432
22.9	538
27.0	645
31.2	751
35.3	858
39.4	964
43.6	1,071
47.7	1,177
51.8	1,284
55.9	1,390
60.1	1,497
64.2	1,603
68.3	1,710
72.5	1,816
76.6	1,923
80.7	2,029
84.9	2,136
89.0	2,242

TREATING SEED

1. Turn the Atomizer switch to “ON”. Position the “CALIBRATION VALVE” so the handle points toward the rear of the seed treater. Turn the “Hand/Off/Auto” switch to “Hand” to prime the line up to the atomizer. After the line has been primed, turn the “Hand/Off/Auto” switch to “Off”. Additional liquid can be pumped up to the atomizer and into the drum to guarantee coverage of the first seed that passes through the machine.

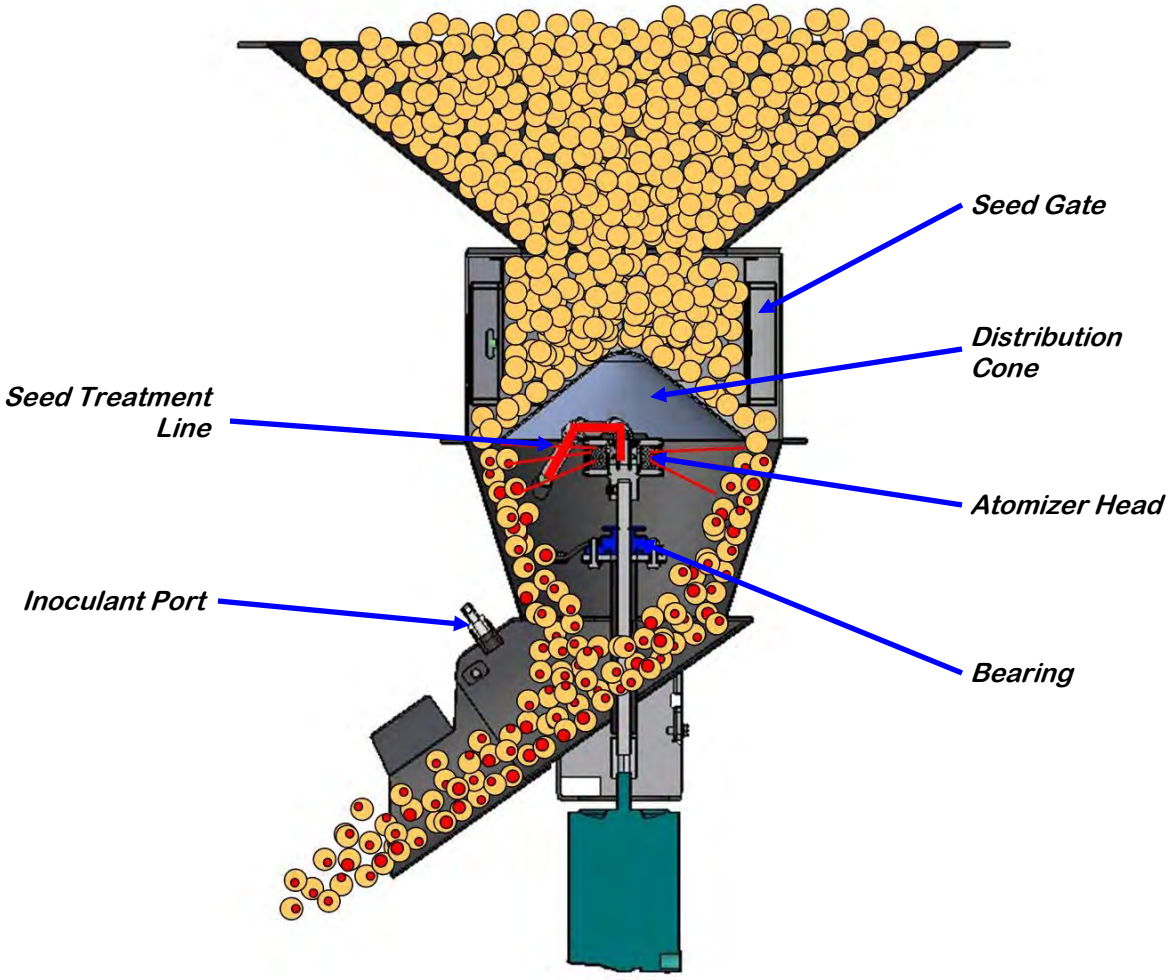
Do NOT pump liquid into the atomizing chamber when the atomizer is “OFF”.

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.

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.



Conversion Chart

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

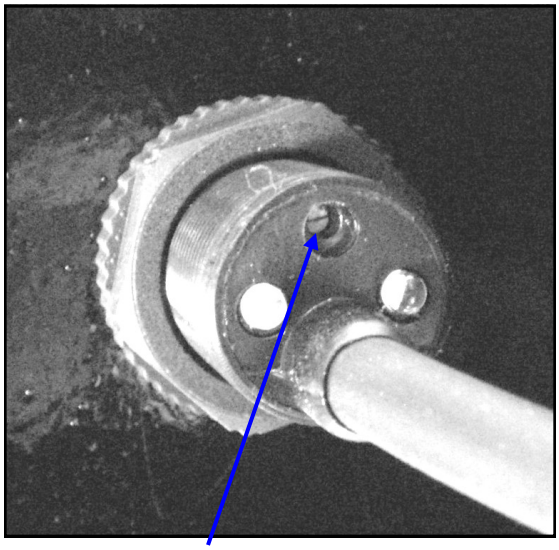
1 cwt = 100 lbs or 45.45 kg

SECTION F TROUBLESHOOTING

Problem	Possible Cause	Solution
Pump will not turn off in "AUTO" when seed runs out.	1. Proximity switch is dirty. 2. Proximity switch is too sensitive.	1. Clean proximity switch. 2. Adjust proximity switch sensitivity by turning counter-clockwise.
Pump will not turn on in "AUTO"	1. Proximity switch is not covered with seed. 2. Atomizer is not on. 3. Proximity switch is not sensitive enough.	1. Cover proximity switch. 2. Turn on atomizer. 3. Adjust proximity switch clockwise to make more sensitive.
Pump is fluctuating	1. Restriction in tubing. 2. Tubing was not broken in properly before calibrating. 3. DC pump circuit board is going bad.	1. Flush tubing and check for any restrictions. 2. Allow pump to recirculate for 15 minutes before checking calibration. 3. Watch pump voltmeter for any fluctuations and replace board if necessary.
Pump will not turn on.	1. Blown fuse. 2. Bad HP resistor. 3. Bad DC pump board.	1. Check fuses. 2. Check HP resistor. 3. Change the DC pump board part #: (03-01-0007).
Atomizer will not turn on.	1. Overload is tripped. 2. Incoming power is incorrect. 3. Atomizer is not plugged in.	1. Hit reset button on Atomizer Overload. (OL4) 2. Check incoming power. 3. Plug atomizer in.

PROXIMITY SWITCH ADJUSTMENT GUIDE

The proximity switch mounted in the cone of the seed treater detect when seed is present. The switch automatically shuts off the pump when all seed has left the hopper. Sometimes the switch's sensitivity needs to be adjusted. This can be faulty due to wear, dust, or even moisture. The first step is to clean the lens of the proximity switch. If that doesn't work, then the sensitivity needs to be adjusted.



Sensitivity Adjustment Screw

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 switch.

- Turn Clockwise for more sensitive.
- Turn Counterclockwise for less sensitive.

Proximity Switch Screwdriver

SECTION G MAINTENANCE

Proper maintenance of the USC LP300 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 grease pillow block bearings. Some of the bearings may be greaseless bearings and do not need to be greased.
- Inspect drive wheels for unordinary wear, and setscrews for tightness. Inspect the Neoprene idler wheels.
- Tighten and lubricate chain.
- Inspect coupler.

PUMPS AND PLUMBING

- Check pump in forward and reverse.
- Check pump voltage and inspect brushes in motors.
- Make sure pump head opens and closes smoothly.
- Inspect tubing and valves.
- Tighten hose clamps and check filter.
- Check tank fittings and clean any build-up.

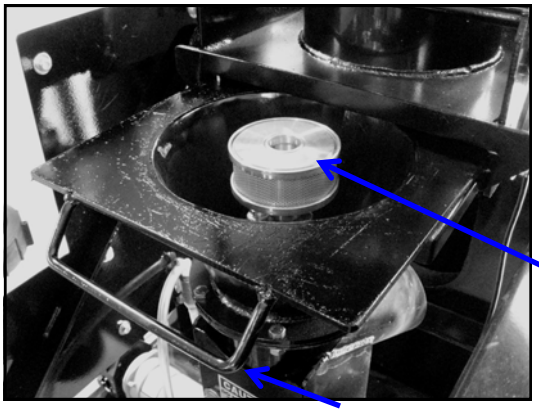
CONTROL PANEL

- Check and tighten wire connections.
- Check starters and overloads.
- Check timers and relays.
- Check the front of the panel; switches, voltmeter, potentiometer, etc.
- Inspect fuses and breakers.
- Check and set the proximity switches.

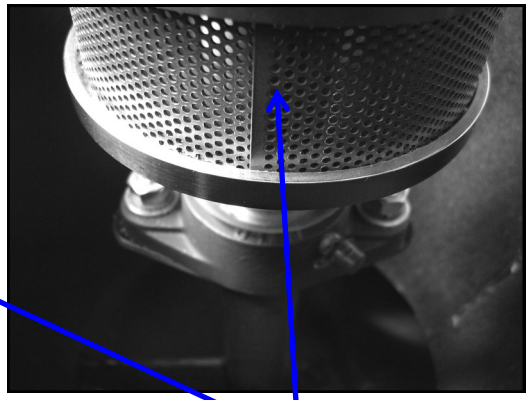
ATOMIZER

- Slide the atomizer back from treater to grease the bearing, and clean any build-up.
- Check for any play in the atomizer shaft.
- Make sure the atomizer spins smoothly.

Below are instructions and pictures that illustrate where the bearings are located.



Bearing located behind cover

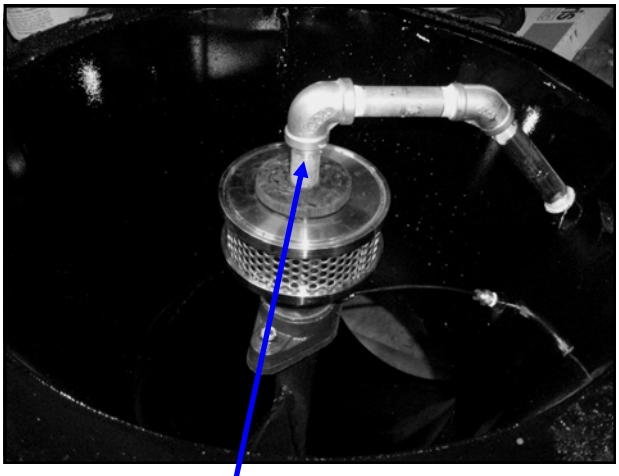


Atomizer Head

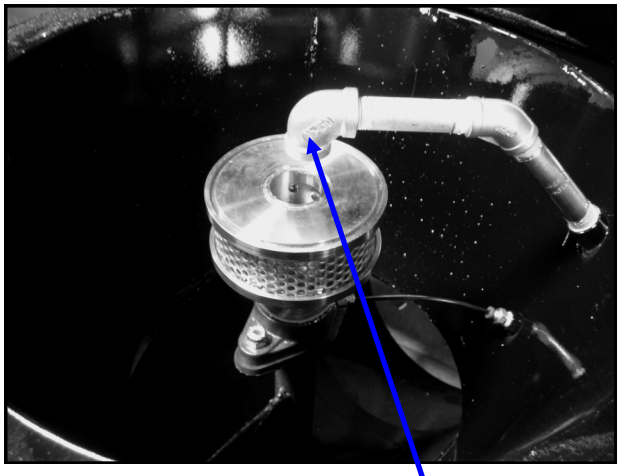
Removing Atomizer Head

Below are instructions and pictures that illustrate how the atomizer head is removed and where the bearing is located.

1. Remove the small nipple that leads down into the atomizer head. The nipple is threaded only into the 90 degree elbow fitting.



Small nipple

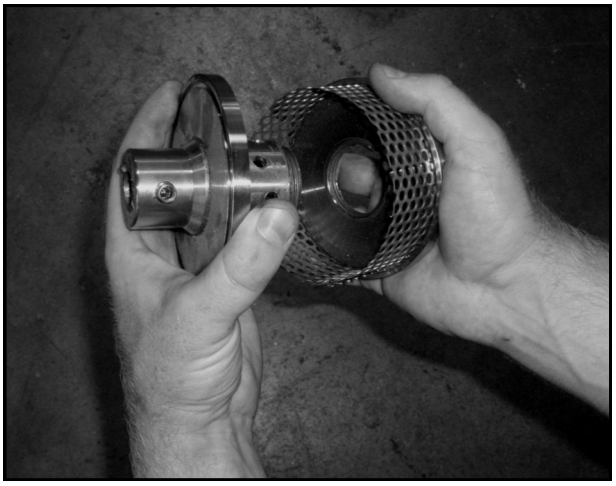


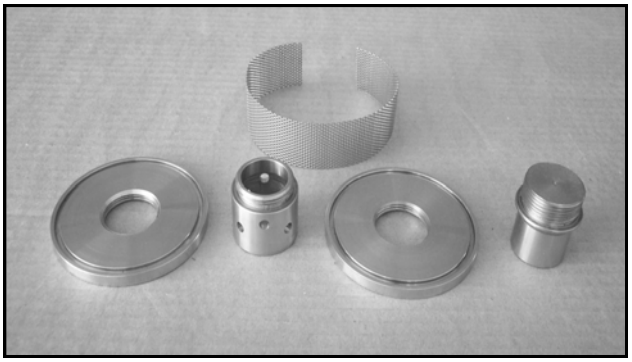
90 degree elbow

2. Remove the rest of the plumbing in one piece. A wrench may be used to loosen the plumbing.

3. Use a 3/16” allen wrench and loosen the set screw located on the bottom of the atomizer head. Next remove the head from the shaft.

4. The atomizer head is threaded together. Unscrew the head for better access to cleaning.





SECTION H STORAGE

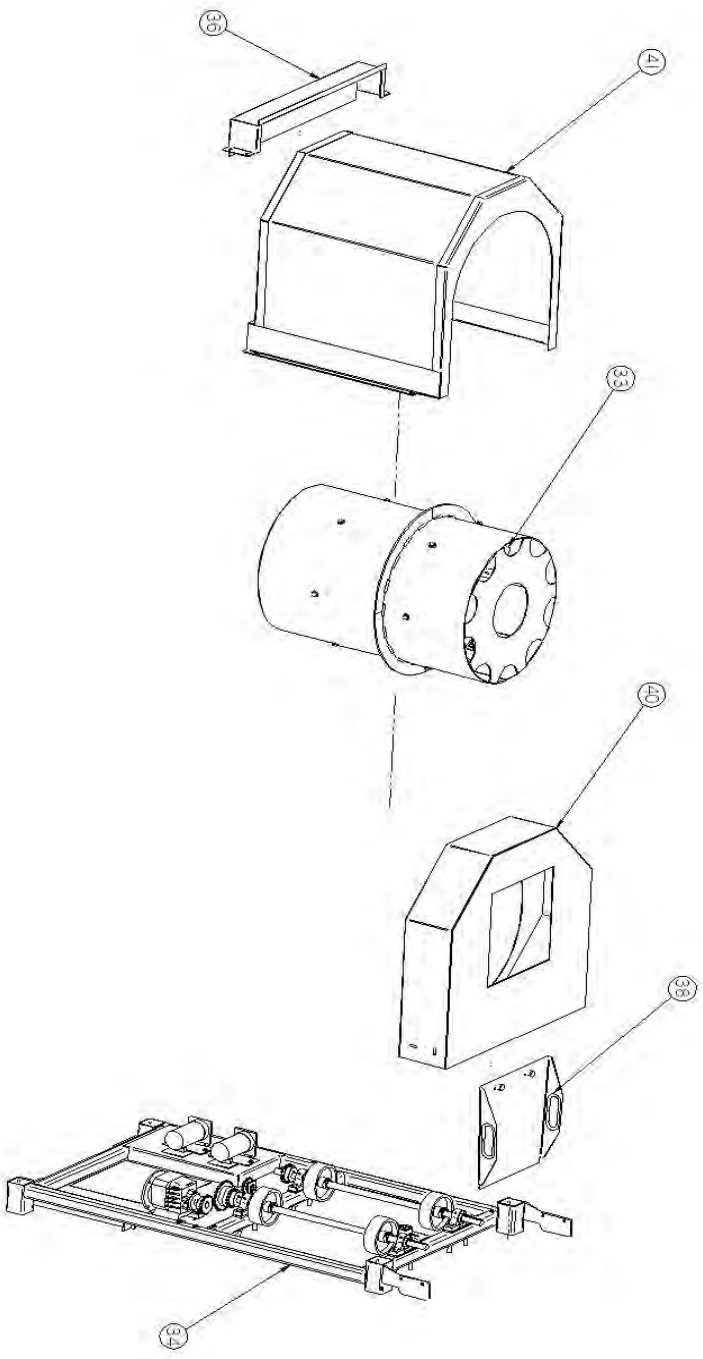
When storing the USC LP300seed treater for long periods of time, the following procedure must be followed to lessen the chance of rust, corrosion and fatigue of the treater. You can also use these steps when storing the machine for the winter.

- Make certain the inside of the tanks are completely drained of chemical residue.
- Thoroughly flush the inside of the tanks with clean water.
- Pump clean water through all areas of the plumbing including the mix tank, valves, and atomizer.
- Wipe the proximity switches clean.
- Clean out the supply hopper of any debris (compressed air can be used).
- Remove the shields and clean out any seed that may have fallen underneath the drum.
- Lubricate the chain to keep from corroding in storage.
- Open all drain points and valves, and let as much of the liquid drain as possible.
- If the seed treater will be exposed to possible freezing temperatures, the final flush of the system should be made with an anti-freeze liquid.
- If unit sits longer than 1 week, the atomizer shall be removed and cleaned. Also grease the bearings at this time. After greasing bearings, spin the atomizer a few times to ensure all grease has been worked into the bearings.
- Release pump head and remove tubing to prevent any unnecessary wear.
- Storing the machine inside a building is best to keep it from being exposed to the weather.
- Tarp or cover the hopper to keep out any unwanted pests.
- Shut off power to the machine.

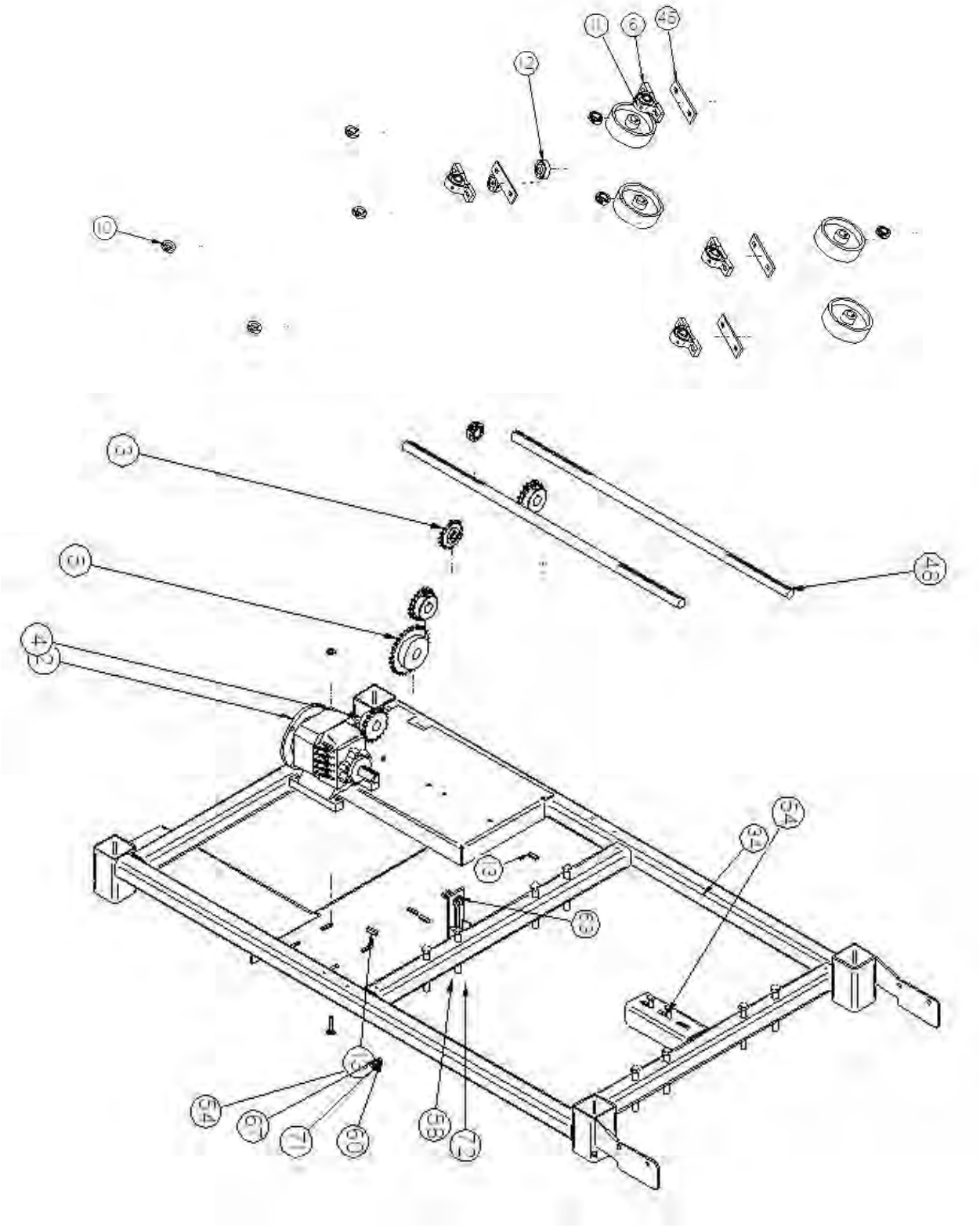
Section I Mechanical Drawings

The following pages show the parts for the LP300. Please have the part number ready when ordering parts.

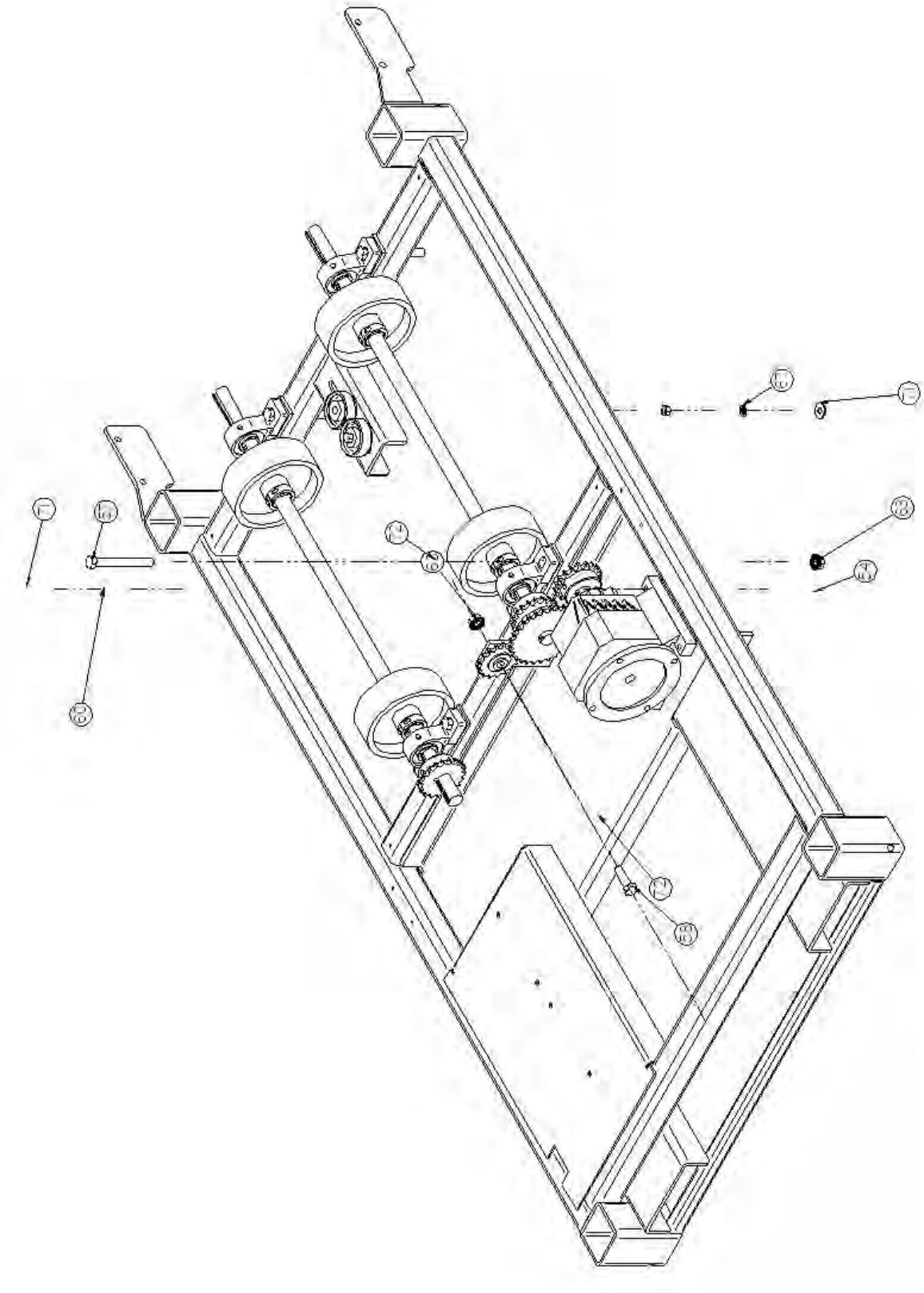
LP300 - Assembly



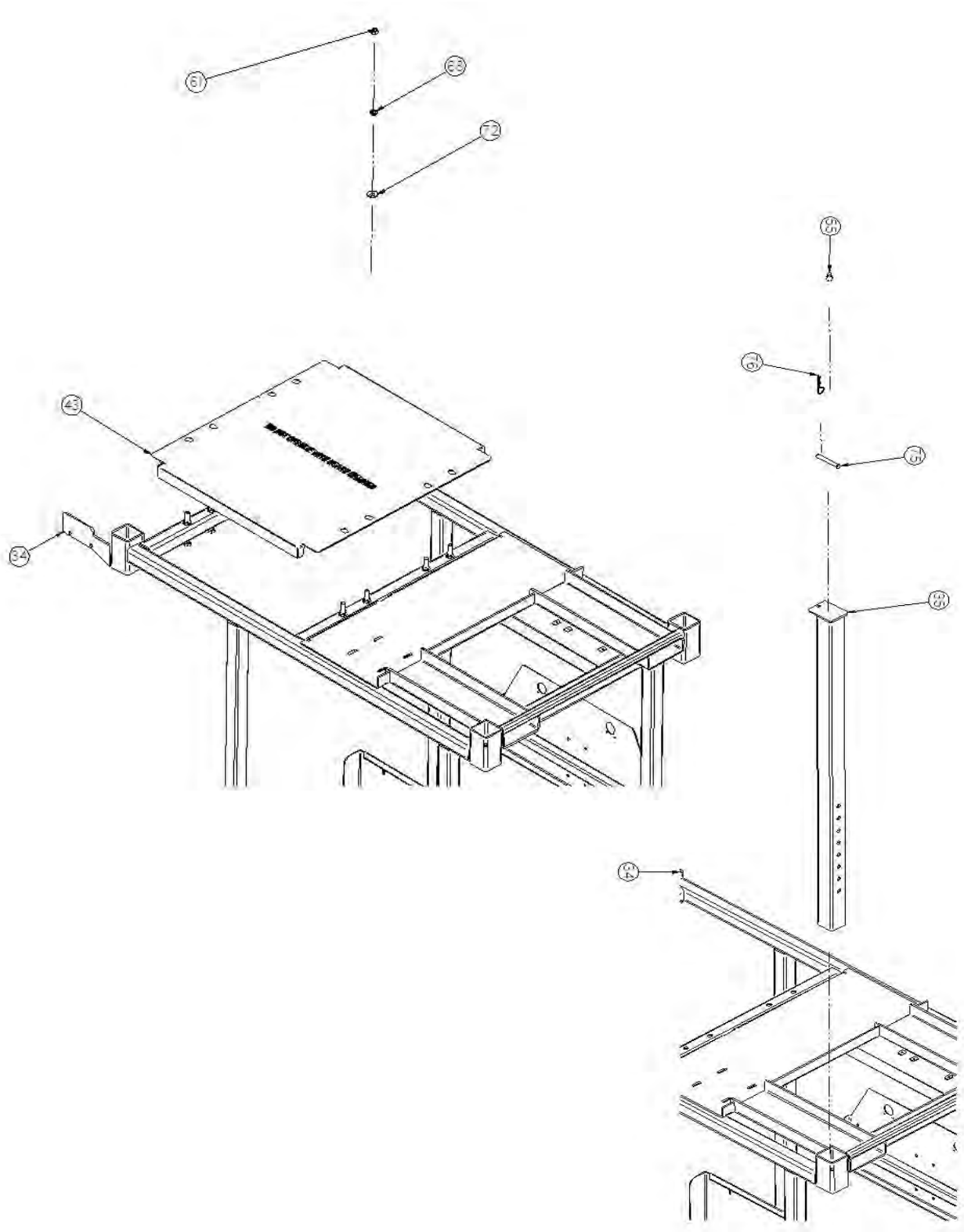
LP300 - Base Frame Assembly



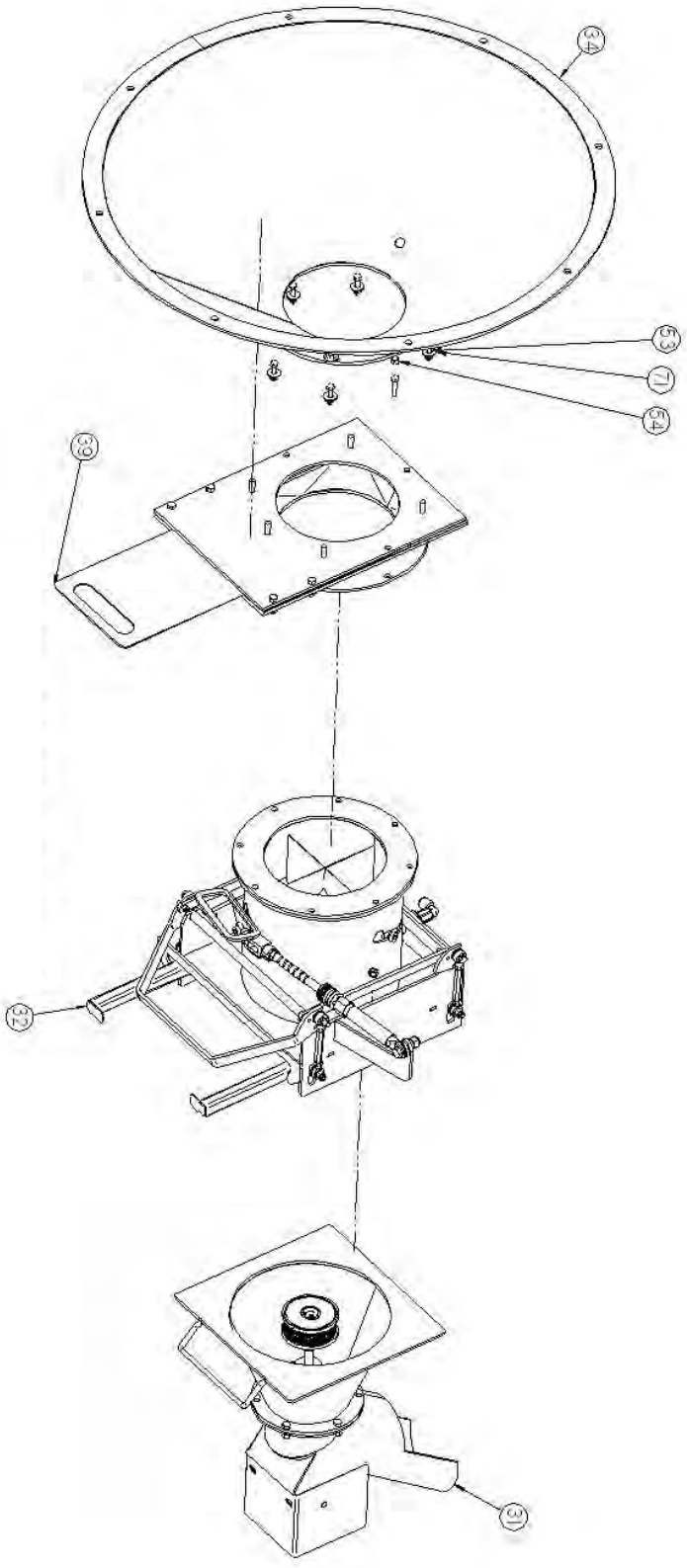
LP300 - Base Frame Assembly



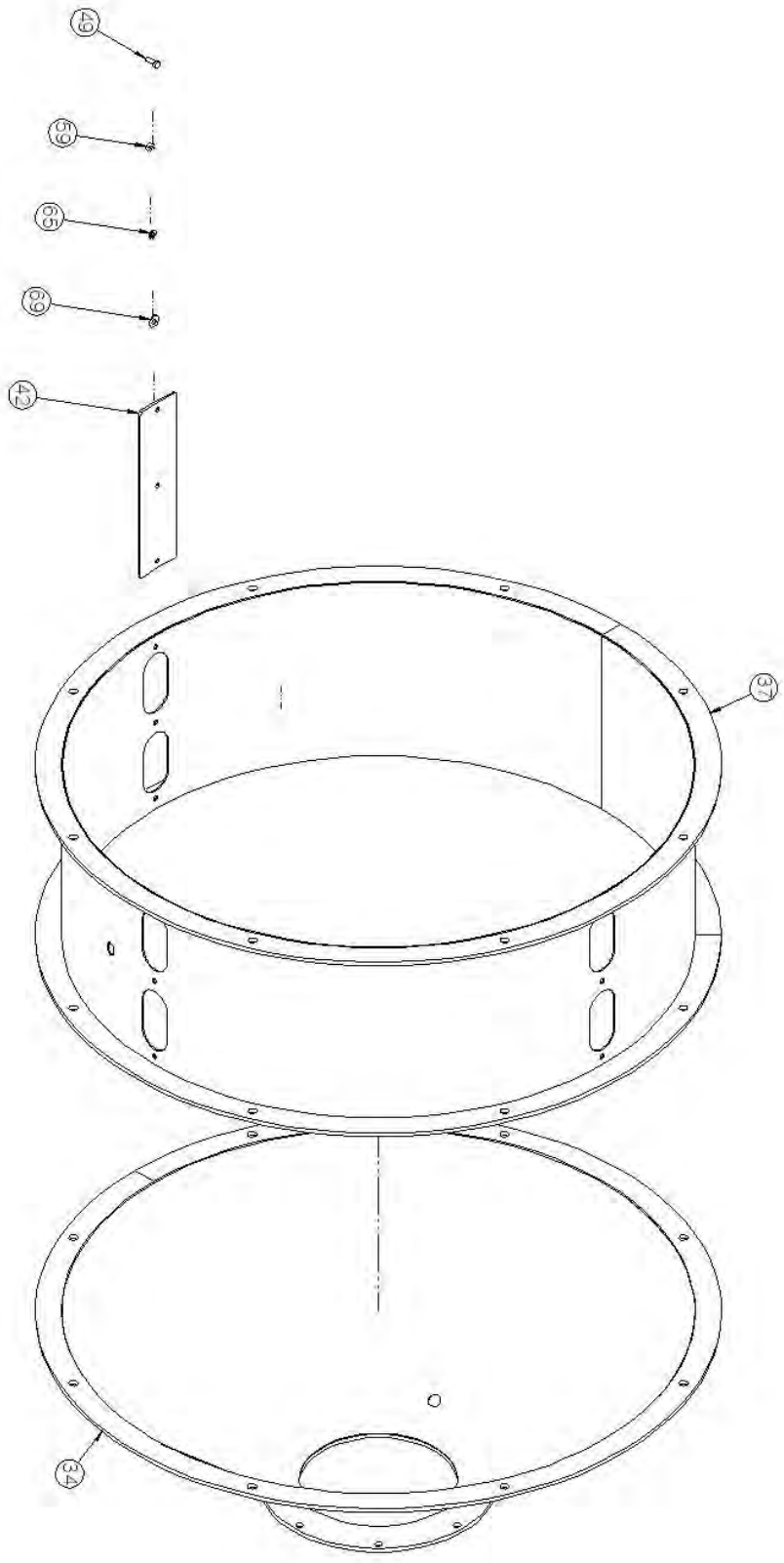
LP300 - Base Frame Assembly



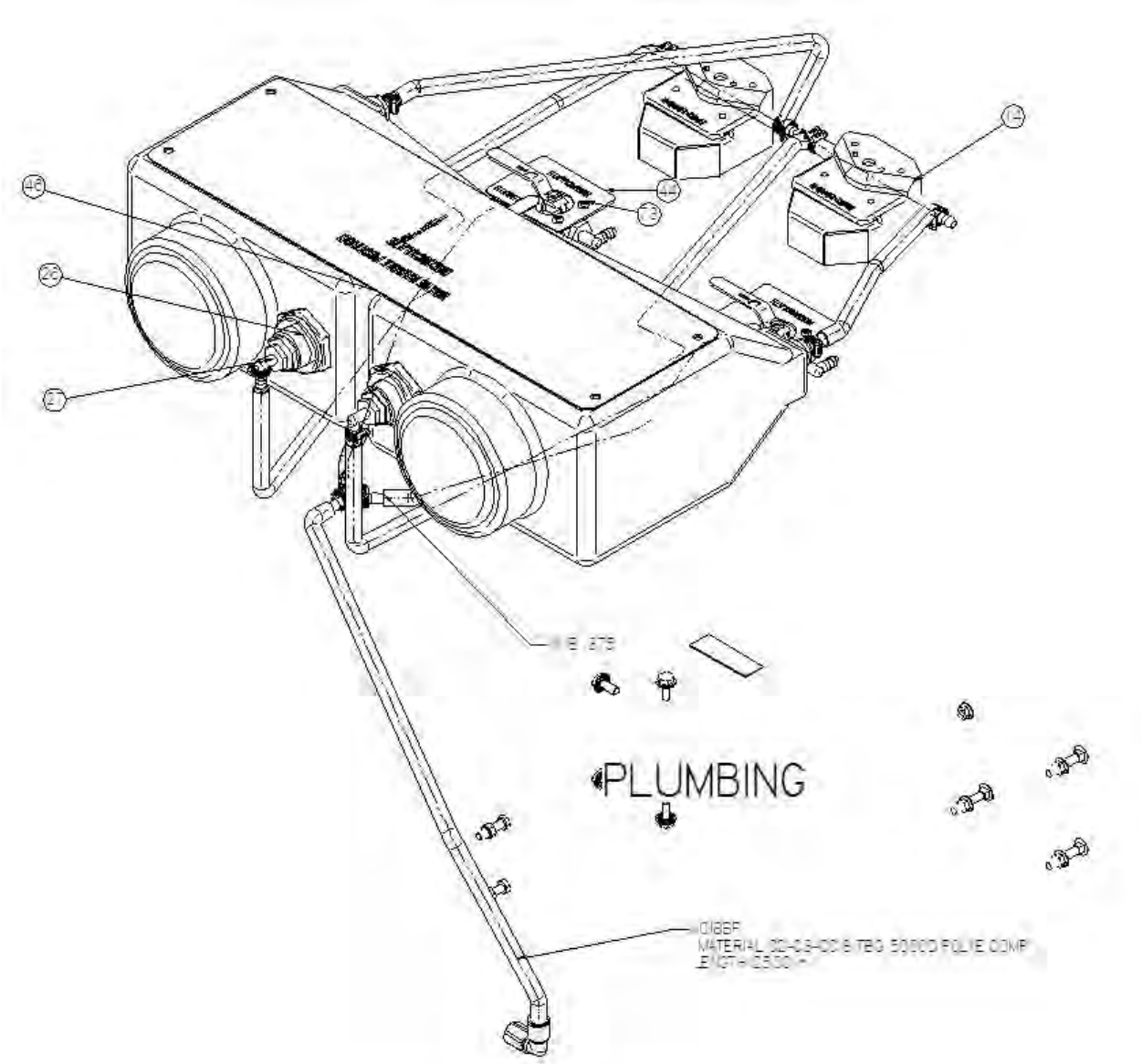
LP300 - Atomizer Chamber Assembly



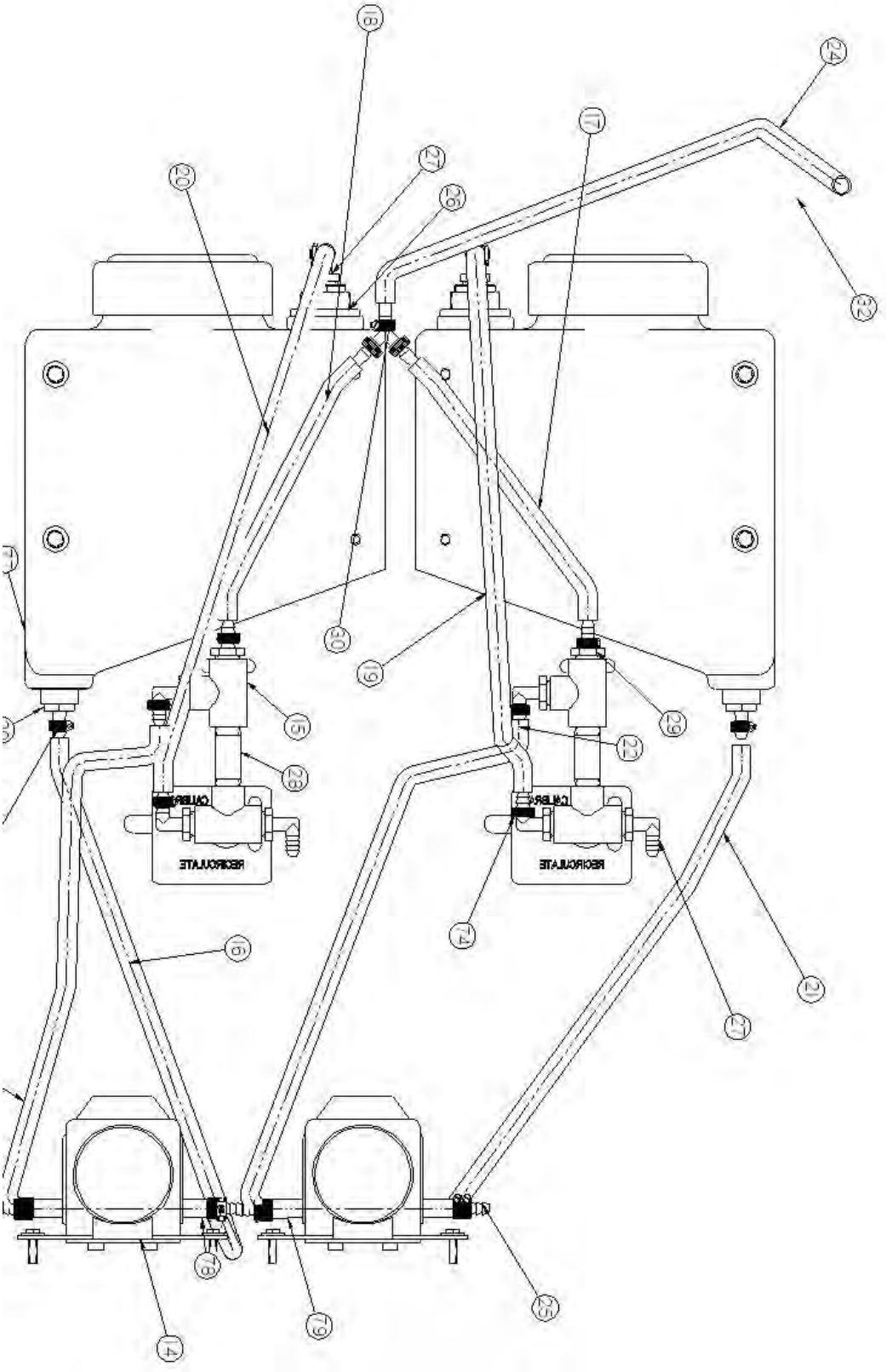
LP300 - Supply Hopper Assembly



LP300 - Pumps Assembly



LP300 - Pumps Assembly



LP300 - Parts List

ITEM #	PART NUMBER	TITLE	QTY
1	01-01-0010	MTR .1HP 6-600RPM 90VDC	2
2	01-01-0101	GBOX IL 56C 16.2:1 GR B1 FOOT MNT	1
3	01-02-0001	SPKT 17T 40P .500ID IDLER	1
4	01-02-0003	SPKT 19T 40P 1.00ID KWY	3
5	01-02-0065	Sprocket #40 30T 1.0000 Bore Type B	1
6	01-03-0036	BRG PLW 1.00ID STSC SEALED	4
7*	01-04-0001	101864 42 LINKS	1
8*	01-04-0001	101865 77 LINKS	1
9*	01-04-0004	#40 CONNECTING LINK	2
10	01-05-0008	SHAFT CLR 1.00ID SPLIT	8
11	01-06-0002	WHL DRV 6 X 2 X 1.00ID .250KWY	4
12	01-06-0004	WHL GUIDE .375ID X 2.50 X .875 NPRN	2
13	01-10-0004	KEY .250 X 1.00 CS	4
14	02-01-0005	PUMP HEAD PRST MF LS 115V 600RPM	2
15	02-02-0007	VLV BALL .500 NPT 3WAY BRSS	4
16	02-03-0004	1018B9	1
17	02-03-0004	1018BE	1
18	02-03-0004	1018BD	1
19	02-03-0004	1018BC	1
20	02-03-0004	1018BB	1
21	02-03-0004	1018BA	1
22	02-03-0004	1018B8	1
23	02-03-0004	1018B7	1
24	02-03-0018	1018BF	1
25	02-05-0002	FTTG CPLG .375 HB NYL	4
26	02-05-0028	FTTG .500 NPT DBL THD PPE BULKHEAD	2
27	02-06-0006	FTTG 90 DEG .375HB X .500NPT ML NYL	8
28	02-07-0019	NIPPLE, .500-14 NPT, 3.0"LG 304SS TBE	2
29	02-08-0005	1/2-14 NPT, 3/8 BARB, STRAIGHT WP	4
30	02-10-0001	WYE, .375	1
31	04-01-0037	ASSY ATMZR CS LP/LX300	1
32	04-01-0038	ASSY ADJ CHMBR LP300 CS 9 INCH	1
33	05-02-0035	ASSY DRUM LP300 24 X 36	1
34	05-03-0846	WDMT FR LP300	1
35	05-05-0056	WDMT ADJ TRTR LEG EXTD 16IN	4
36	05-06-0079	WDMT GRD 2 LP300	1
37	05-07-0008	WDMT INLET HOPP EXT	1
38	05-07-0155	ASSY END CHUTE DOOR LP300 CS	1
39	05-07-0325	ASSY LP300 SLGT 9 IN	1
40	05-07-0371	WDMT END CHUTE LP300-24	1

LP300 - Parts List

ITEM #	PART NUMBER	TITLE	QTY
41	05-08-0095	WDMT DRUM GRD	1
42	05-10-0362	PLT HOPP EXT VIEW	3
43	5/10/3637	PLT LP300 BTM GRD GALV	1
44	5/10/3639	PLT, LBL RECIRCULATE - CALIBRATE	2
45	5/10/3746	PLT SPCR BRG .25 THK	4
46	5/10/3758	PLT TNK CVR LP300	1
47	5/10/3760	PLT PUMP CLMP LP300	2
48	05-11-0137	DRUM DRV SHAFT LP300 LT SPEC	2
49	06-01-0006	BOLT .250-20 X .750 ZP GR5	9
50*	06-01-0006	BOLT, .250-20 X .75 UNC ZP GRADE 5	8
51	06-01-0007	BOLT, .250-20 X 1 UNC ZP GRADE 5	4
52*	06-01-0010	BOLT .313-18 X 0.75 ZP GR5	8
53	06-01-0013	BOLT, .312-18 UNC ZP GRADE 5; 1.50" LG	8
54	06-01-0019	BOLT .375-16 X 1.75 ZP GR5	5
55	06-01-0024	BOLT .500-13 X .750 ZP GR5	4
56	06-01-0054	BOLT .500-13 X 1.75 ZP GR5	1
57*	06-01-0172	BOLT CRG .313-18 X 1.75 ZP GR5	4
58	06-01-0221	BOLT .500-13 X 4.50 ZP GR5 FTH	8
59	06-02-0001	NUT FULL .250-20 ZP GR5	9
60*	06-02-0003	NUT FULL .375-16 ZP GR5	2
61	06-02-0004	NUT FULL .500-13 ZP GR5	8
62*	06-03-0003	NUT NYL LOCK .375-16 ZP GR5	16
63	06-03-0015	NUT LOCK FLG .500-13 ZP GR5	9
64*	06-03-0019	NUT LOCK FLG .3125-18 ZP GR5	4
65	06-04-0001	WSHR LOCK SPLT .250 ZP	17
66*	06-04-0002	WSHR LOCK SPLT .313 ZP	8
67	06-04-0003	WSHR LOCK SPLT .375 ZP	2
68	06-04-0004	WSHR LOCK SPLT .500 ZP	8
69	06-05-0001	WASHER, FLAT .250	21
70*	06-05-0003	WSHR FLAT .313 ZP	8
71	06-05-0004	WSHR FLAT .375 ZP	18
72	06-05-0005	WSHR FLAT .500 ZP	8
73	06-06-0008	SCRW MACH 10-24 X .250 PHLP PHD ZP	8
74	06-07-0005	CLMP HOSE .219 TO .625 X .313W ZP	21
75	06-09-0005	PIN CLVS .500 X 3.50 PLN	4
76	06-09-0029	CLIP, .105 HAIR PIN	4
77	07-02-0004	3 GAL. REC. TANK W/CAP	2
78	13-05-0018	HOSE .375 BLK MF 20 IN.	1
79	13-05-0018	HOSE .375 BLK MF 20 IN.	1

SECTION J LIMITED WARRANTY

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

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

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

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

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

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

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