



LPX MANUAL SEED TREATER



Operator's Manual



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 LPX manual seed treater. It does not hold USC, LLC liable for any accidents or injuries that may occur.

OPERATOR RESPONSIBILITIES

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

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

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

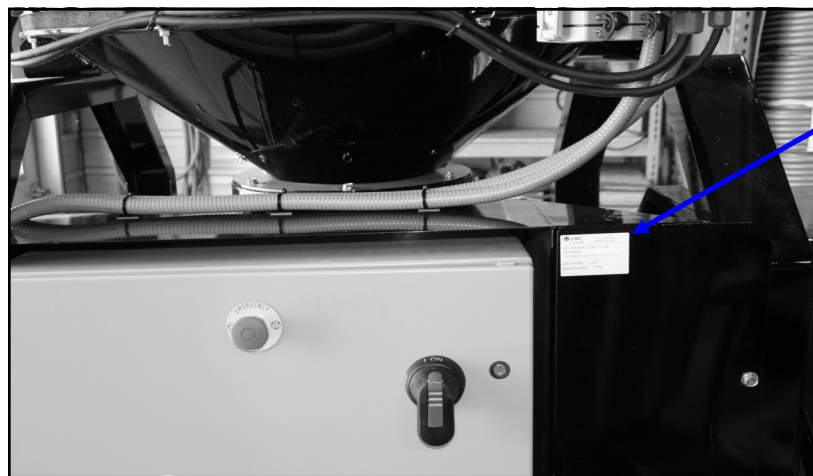
LPX MANUAL SEED TREATER

- 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 panel mounting bracket.



*Serial
Number*

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

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.

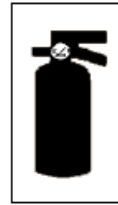
- LPX Series Seed Treater owners must give operating instructions to operators or employees before allowing them to operate the machine, and at least annually thereafter per OSHA (Occupational Safety and Health Administration) regulation 1928.57.
- The most important safety device on this equipment is 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 LPX 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 LPX 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. 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 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



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.



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

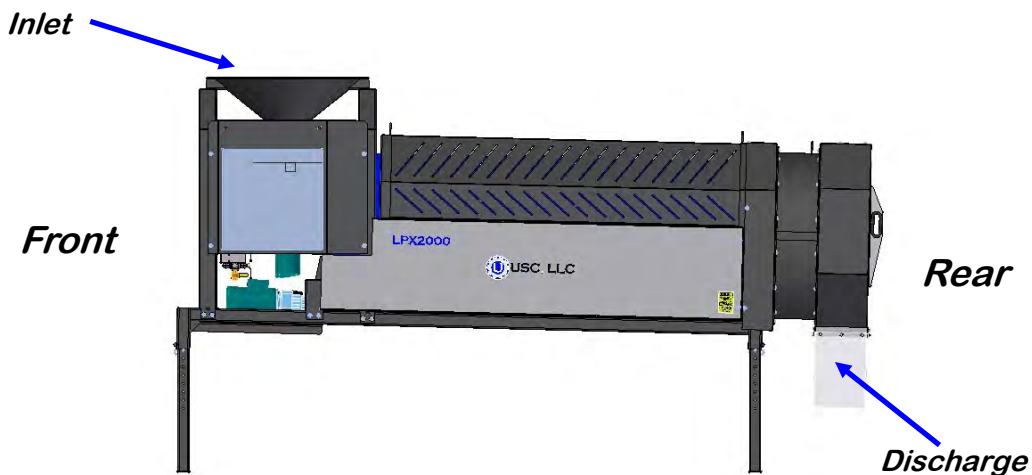
SET-UP

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 and cords from the drum of the treater.

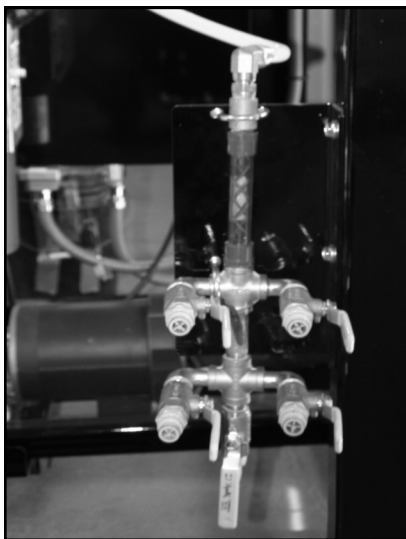


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5. Install the four provided legs and set up on a level surface, preferably concrete. When all four legs are mounted in the same pin hole, the seed treater has a slight slope to allow seed to travel through the machine. The pin holes are approximately 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 pump stand(s) should be placed on level ground close to the seed treater.
9. Attach the chemical tubing from the pump stands(s) to the atomizer plumbing on the seed treater (below left). Additional tubing can be added or removed to accommodate your set-up.
10. Connect the two wire cord from each pump stand to the bottom of the main treater panel.
11. Setup the main control panel at a place that is convenient to the operator. This may include attaching the main control panel to the seed treater, to the wall or to the control panel stand that will require anchoring.
11. Connect the included grey cords from the main control panel to the main treater panel. The receptacles are found on the bottom of each of the panels (below right).

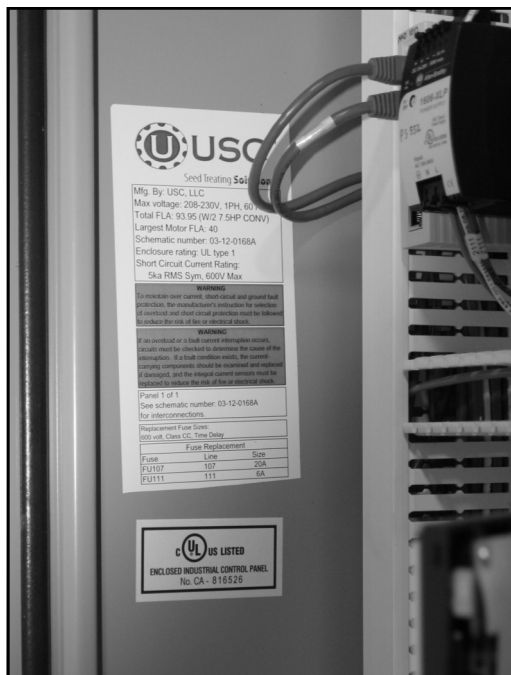


Plumbing to Atomizer



Main Treater Panel Cord Connections

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 LPX seed treater and any attached conveyors.

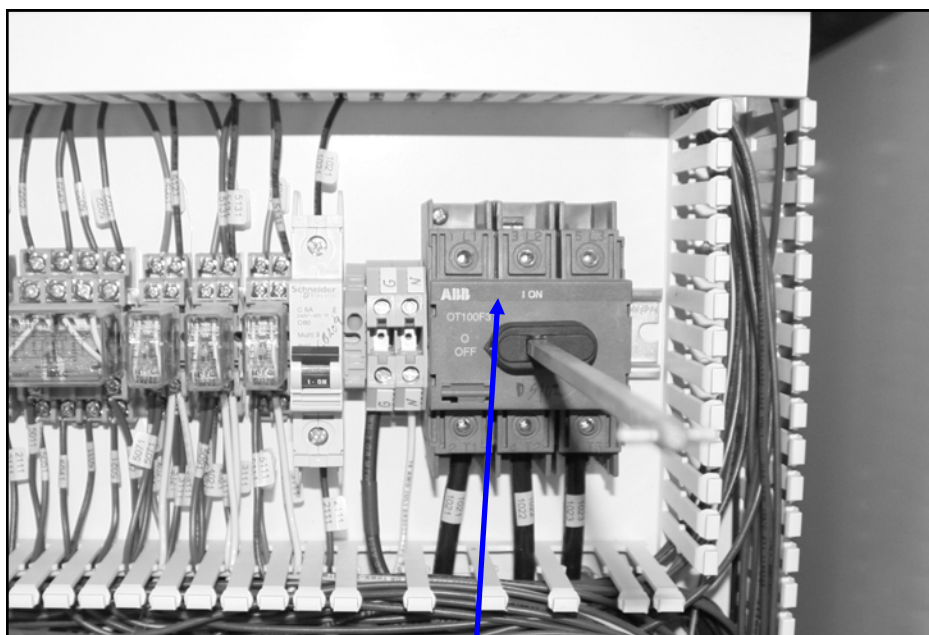


Power Requirements Tag

NOTICE Flexible conduit is recommended for main power supply.

13. Provide 110V single phase power to both the main control panel and the pump stand control panel(s).

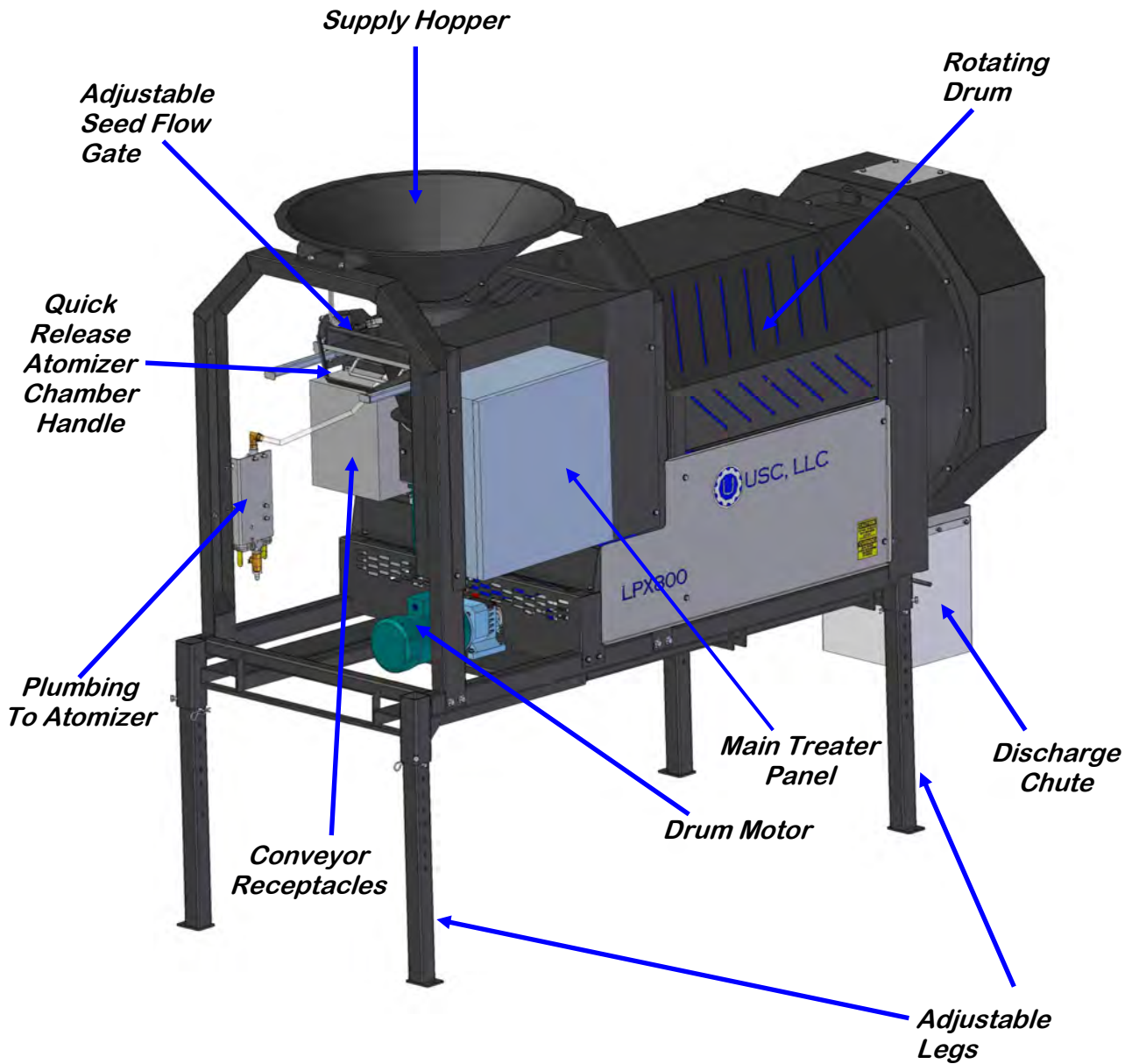
14. Reverse the previous steps when removing the machine from its working position.



Incoming Power Connected To These Terminals

NOTES

LPX TREATER 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 “Section E: Calibration, 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.

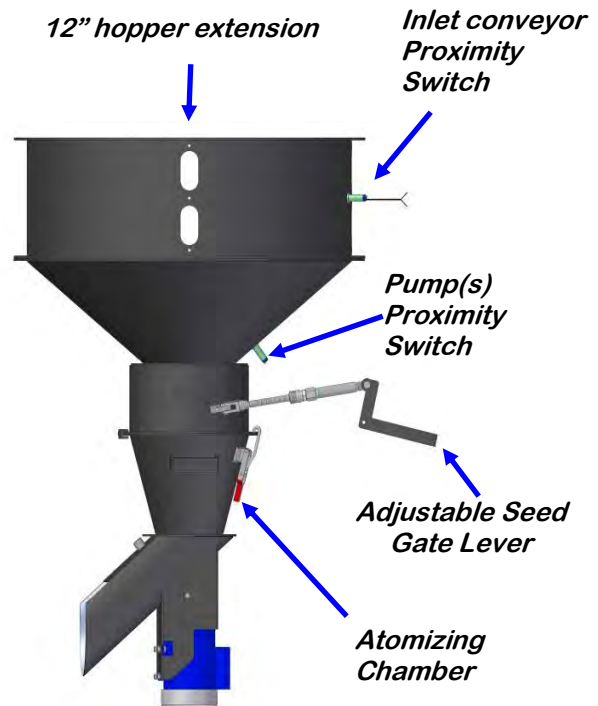
NOTICE Different seed types may be treated with this equipment. It is imperative to note that re-calibration of the seed gate setting will be required with each new seed type.

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 “Main Control Panel” in Section D, and Section F: Troubleshooting; “Proximity Switch Adjustment Guide” for more in-depth 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 37)

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 and down on top of the distribution cone which disperses the seed down around the atomizer head. The atomizer can be easily accessed by pulling down on the quick release handle and sliding the atomizer away from the treater body. (see page 35)



ROTATING DRUM

The rotating drum comes in options of 6, 8, and 10 feet 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.

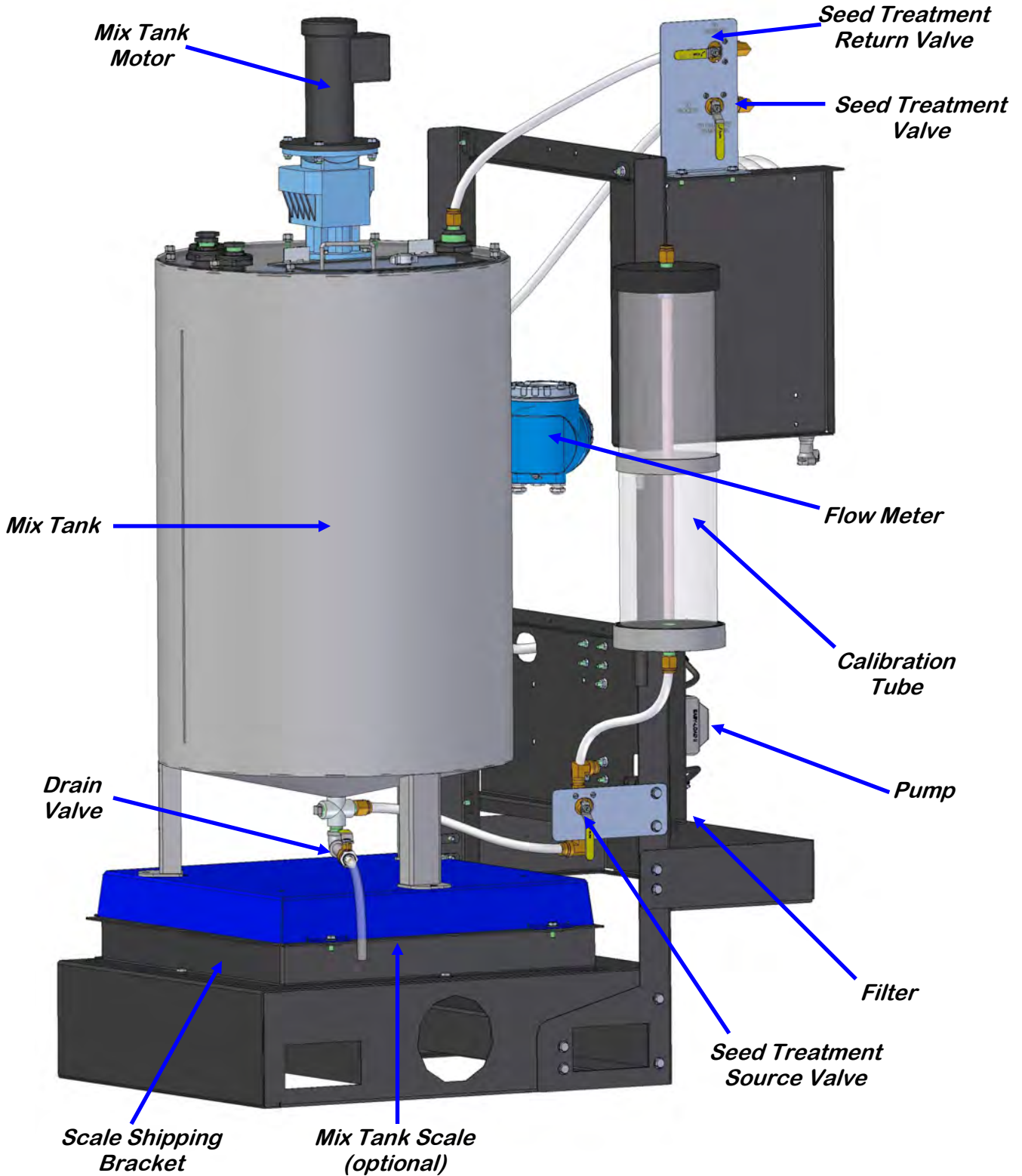
The time it takes for seed to move through the drum both during and at the end of the run can be changed by lowering or raising the pins on the legs of the discharge end of the treater. When the pins are in the same hole on all of the treater legs, the treater has a natural downward tilt towards the 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.

On the 6 and 8 foot drum options the LPX manual treater will also come standard with telescoping fork lift pockets. These pockets can be slid out from underneath

PUMP STAND OVERVIEW



MIX TANK

The USC LPX manual seed treater is equipped with a fully modular, manually controlled pump stand. This pump stand will include a 30 or 60 gallon chemical mix tank that is of either stainless steel or poly construction. This chemical mix tank will have electric drive agitation that is turned on or off at the pump stand control panel. 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 LPX manual pump stand may also be equipped with a calibration tube which is used to determine the liquid flow rate. The calibration tube measures in ounces on a 0-340 scale. Three-way valves direct liquid from different areas to keep all liquid contained. This creates a closed chemical system so that the operator can manually calibrate the chemical flow rate without handling any of the chemical.

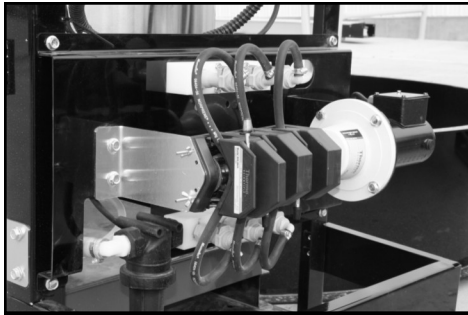
FLOW METER

A in-line chemical flow meter is another option for the LPX manual pump stand. A flow meter is used to perform real-time chemical flow adjustments and monitoring without the operator having to handle the chemical. The flow meter reading will be displayed on the pump stand control panel.

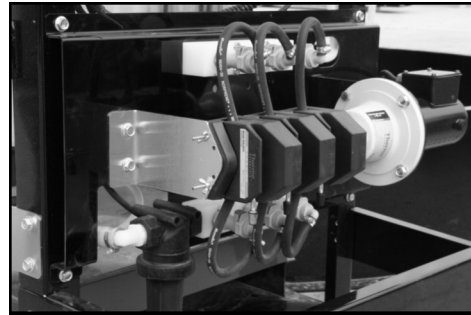
PUMP

The LPX manual pump stand utilizes a variable speed peristaltic pump and special noprrene pump tubing for liquid metering. The pump comes equipped with either 1, 2 or 3 heads. Liquid will only come into contact with the inside diameter of the pump tubing and not the pump. This allows for easy cleanup and less maintenance of the pump.

To open the pump head, lift the lever upward. Place the pump tubing inside the pump head so it fits inside the notches and above the rollers. Lower the lever back down to close the pump head, clamping the hose inside the head. Wear or fatiguing of the tubing within the pump head due to compression is normal. When tubing becomes worn or chemical rates begin to slow down, open the pump head and move the tubing to a different position. If the entire piece of tubing becomes worn, simply replace with a new section. When not using the seed treater for several days or when storing, open the pump head and remove the tubing to prevent any extra compression. Worn tubing should be moved to a different position every week to prevent additional wear.

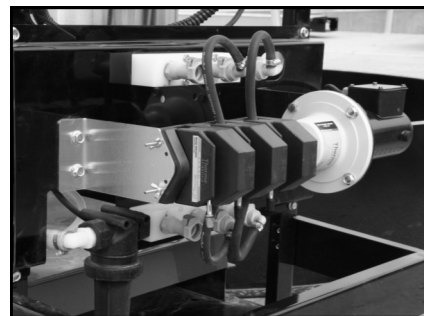
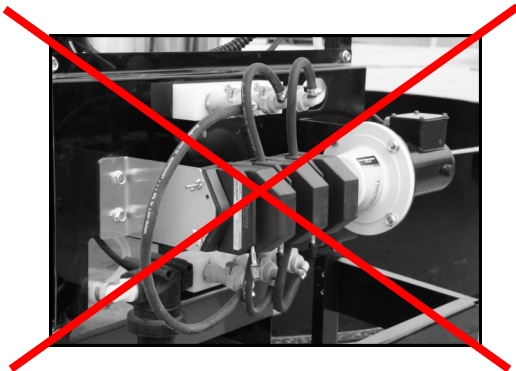


Pump Head Open



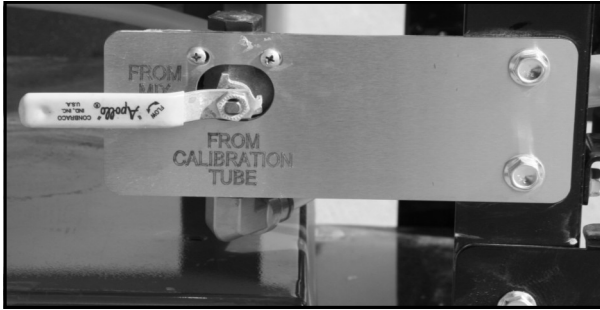
Pump Head Closed

If a very low rate is needed, a section of tubing can be removed to force the pump motor to run at a higher speed. This allows for a more consistent flow rate. When removing the tubing, uncouple it from the manifold (below, right). If the tubing is unclamped from the pump head but left coupled in the manifold (below, left), the pump will suck air and cause flow rates to be very inconsistent.



PUMP STAND VALVES

Seed Treatment Source Valve: This valve controls where the pump is drawing liquid from. It allows liquid to be pulled from either the bottom of the mix tank or the calibration tube.



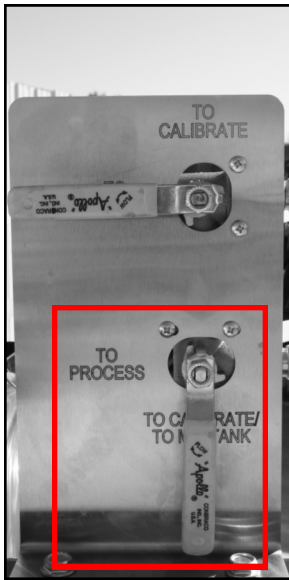
Drawing chemical from the bottom of the Mix Tank



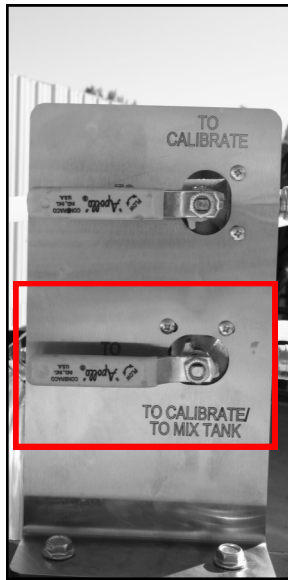
Drawing chemical from the bottom of the Calibration Tube

Seed Treatment Valve: This valve controls the direction of the liquid coming from the pump. It will either direct liquid to the Atomizer or to the Seed Treatment Return Valve.

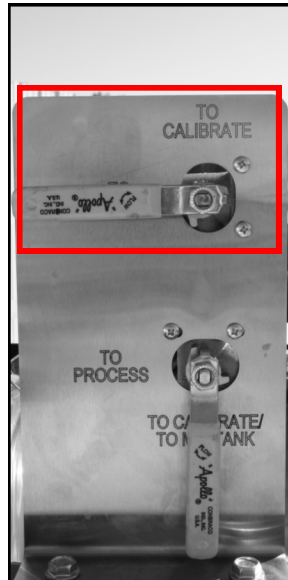
Seed Treatment Return Valve: This valve directs the liquid coming from the To Calibrate / To Mix Tank side of the Seed Treatment Valve to either fill the Calibration Tube or return to the Mix Tank.



Pumping liquid to the Seed Treatment Return valve.



Pumping liquid to atomizer. Used when treating seed.



Pumping liquid into the top of the mix tank for recirculation purposes.



Pumping liquid into the top of the calibration tube for calibration purposes.

Proper calibration of the liquid system is critical to achieve a proper granular/chemical mixture. Use the calibration procedure on page 32 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.



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.

MAIN 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 control panel is run from 110V power and controls the following functions:



Main Controls Explained

1. Hand/Off/Auto Switch for Pumps: This switch controls all the connected pump stands 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) switches are placed in auto and 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 main 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.



2. 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 main 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.



3. Drum: This switch allows the operator to turn the drum on or off. The drum controls automatically have a soft-start feature incorporated into them.

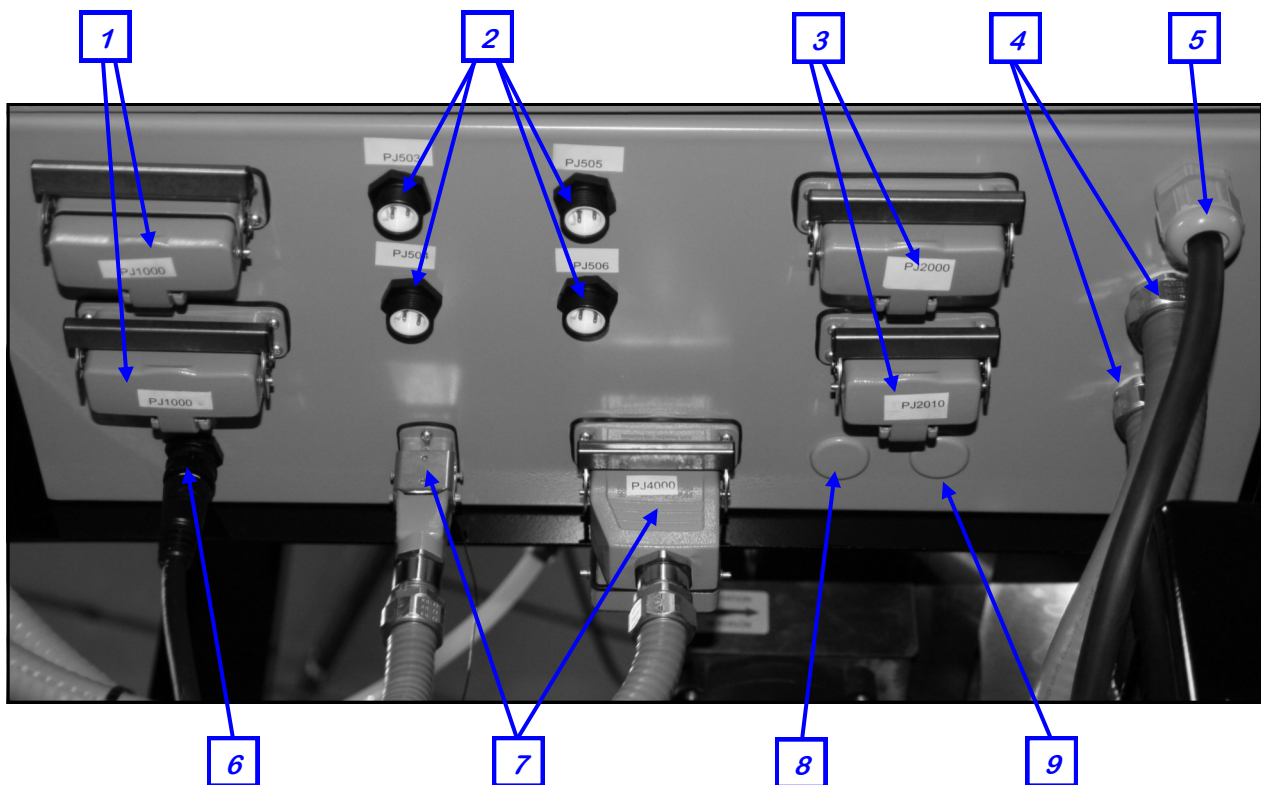
4. Drum Speed Adj.: This dial allows the operator to adjust the speed at which the drum is rotating.

5. Outlet Conveyor Switch: This switch allows the operator to turn the outlet conveyor on or off.

6. 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”.

7. Atomizer Speed Adj.: This dial allows the operator to adjust the speed at which the atomizer is spinning.

Bottom of Main Treater Panel



1. Automated Controls Receptacles: These receptacles are used for connecting automated controls to the main treater panel.

2. Auxilliary Ports: These ports will allow a LPX manual pumps stand, additional liquid systems or a 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. Manual Controls Receptacles: These receptacles are used to connect the manual control panel to the main treater panel.

4. Conveyor Controls Panel Wiring: These wires connect the conveyor controls panel to the main treater panel.

5. Drum Motor Wiring: This wire connects the drum motor to the main treater panel.

6. Atomizer Receptacle: This receptacle connects the atomizer motor to the main treater panel. The atomizer can be unplugged so it can be removed from the machine for maintenance.

7. Seed Wheel Panel Receptacles: These receptacles are used for connecting the seed wheel panel to the main treater panel. They will also replace the inlet and pump proximity switch wiring.

8. Inlet Proximity Switch Wiring: This wiring connects the inlet proximity switch that is used to control the inlet conveyor to the main treater panel. This wiring will be removed if a seed wheel is being used with the treater.

9. Pump(s) Proximity Switch Wiring: This wiring connects the pump(s) proximity switch to the main treater panel. This wiring will be removed if a seed wheel is being used in with the treater

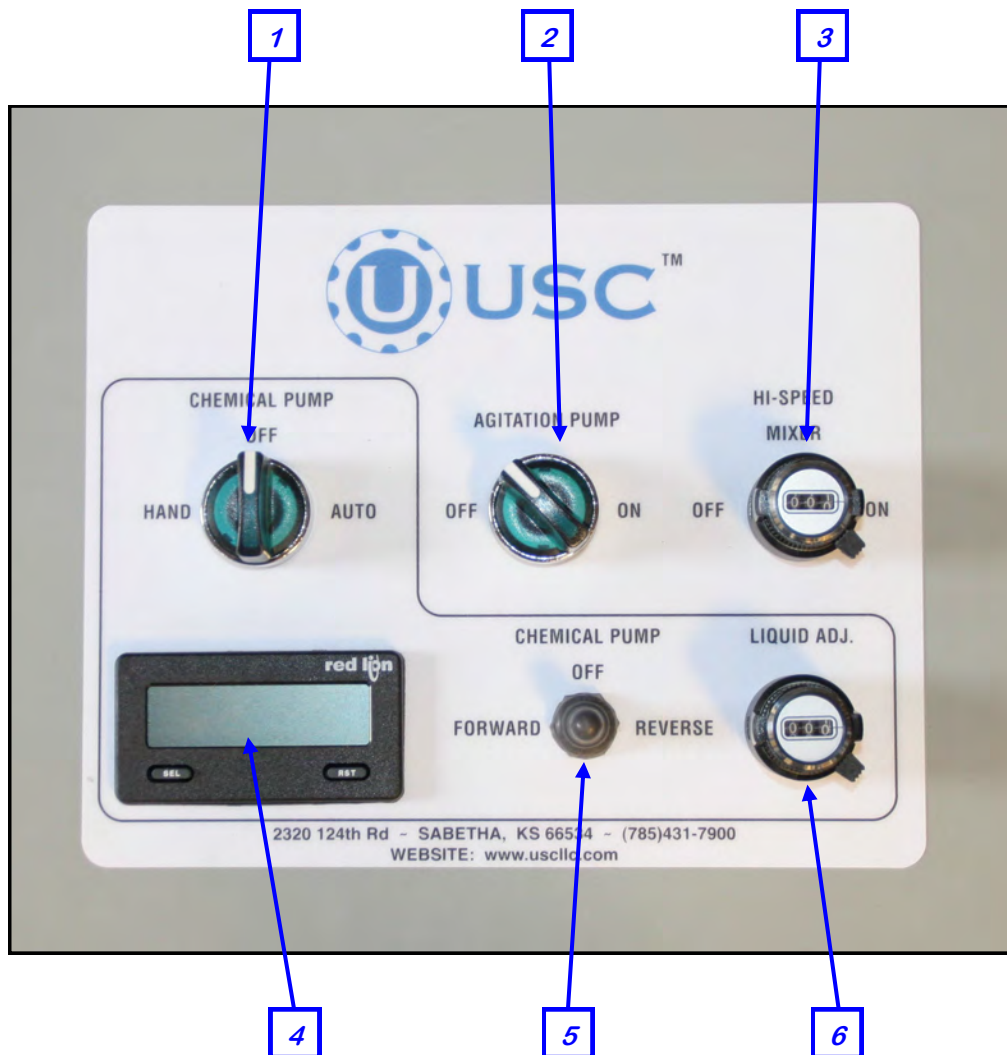
Bottom of Main Control Panel



Both of these ports will use the included grey cords to connect the main control panel to the bottom of the main treater panel. This will allow the two panels to communicate with each other.

PUMP STAND CONTROL PANEL

Refer to the control panel power requirement tag and the electrical schematic for proper voltage and amperage of the machine. The control panel is run from 110V power and controls the following functions:



Pump Controls Explained

1. Chemical Pump Switch:

- When this switch is turned to “HAND”, the chemical pump will run.
- When the switch is turned to “AUTO”, the chemical pump will only run when the main control panel H-O-A switch is turned to “HAND” or “AUTO”. The 2-wire cord must be connected to the seed treater before this feature will work. When the main control panel H-O-A switch is turned to “HAND”, the chemical pump will run at any time. When turned to “AUTO”, it will only run when the proximity switch located in the bottom of the seed treater 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 chemical pump a pre-determined amount of time after the hopper has emptied. The timer relay (right) located in the seed treater main 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 pump shuts off. The time delay allows all seed in the hopper to have an equal coverage.



2. Agitation: 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.

3. High Speed Mixer: This dial allows the operator to change the speed at which the agitator is mixing the chemical.

4. Pump Voltmeter/Flow Meter Display: Displays either the DC voltage for the pump or if pump stand is equipped with a flow meter, then the current flow rate going through the flow meter will be displayed. As the pump’s speed is increased or decreased, this number will also increase or decrease.

5. Chemical Pump 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.

6. Liquid Adj. Dial: This dial allows the operator to adjust the speed of pump. The setting should be chosen in relation to the application rate for the treatment being applied to the seed.

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 on page 37.

SEED FLOW CALIBRATION

The following steps illustrate how to calibrate the seed flow for a LPX manual series seed treater. A stop watch, ladder, and a known weight of seed will be needed during 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 1900 lbs/min. or 860 kg/min for the LPX 2000 and approximately 950 bushels/hr. or 430 kg/min) Refer to page 31 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 1 minutes and 38 seconds, or 98 seconds
 $2000 \text{ pounds} / 98 \text{ seconds} = 20.4 \text{ pounds/seconds}$
 $20.4 \times 60 \text{ seconds} = 1224 \text{ lbs/minute}$
 $1224 / 100 = 12.24 \text{ cwt/min (hundred weight per minute)}$

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

ADJUSTING THE SEED FLOW GATE

14. 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 CALIBRATION

The following steps illustrate how to calibrate the pump on an LPX manual series seed treater. A stop watch will be needed during 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 head(s) (page 21).
2. Premix enough liquid for the amount of seed you will be treating and pour into the mix 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 "SEED TREATMENT RETURN" valve to "MIX TANK".
4. Turn the chemical pump direction switch to "FORWARD".
5. Turn the "Hand/Off/Auto" switch on the main control panel to the "Hand" position and the "Hand/Off/Auto" switch on the pump stand control panel to the "Auto" position. Then set the Liquid Adjust dial on the pump stand control panel (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 the 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 = 12.24 cwt/min. x 4 oz./cwt. = 49 oz./min.
 49 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 34 to find a starting point.

EXAMPLE: The ounces needed in one minute = 49 oz/min. Assume we are using a 6-600 Masterflex pump with one P/S pump head. An approximate starting point is 58.9 volts.

LPX MANUAL SEED TREATER

9. Using the stop watch, determine the pump flow rate. Keeping the pump running, position a container under the “SEED TREATMENT RETURN” valve to catch the chemical. If the pump stand has a calibration tube then no container will be needed since the chemical will fill the calibration tube instead. Then, place the “SEED TREATMENT RETURN” valve to the “CALIBRATION TUBE” position. At this time, liquid will begin to fill the 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 the “SEED TREATMENT RETURN” valve to “MIX TANK”. Read the level on the side of the calibration tube (see Figure 2, below) or the container that was used to catch the chemical. 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 & 10 until the liquid flow rate has been matched.

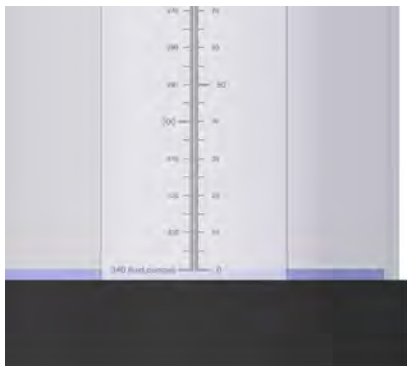


Figure 1
Liquid at 0 oz.



Figure 2
Liquid at 35 oz.
after 1 minute

Standard Data

Below are two charts that show the potential volts and oz./min of three different pump configurations at different dial settings.

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
& P/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
& 2 P/S Pump Heads,
with Masterflex L/S 35
Pump Tubing**

<u>Volts</u>	<u>OZ./Min.</u>
10.5	14.8
14.6	21
18.8	28.2
22.9	35.4
27.0	42.6
31.2	49.8
35.3	57.0
39.4	64.2
43.6	71.4
47.7	78.6
51.8	85.8
55.9	93.0
60.1	100.2
64.2	107.4
68.3	114.6
72.5	121.8
76.6	129.0
80.7	136.2
84.9	143.4
89.0	150.6

**1/4 HP 2500 RPM Motor
& 3 P/S Pump Heads,
with Masterflex L/S 35
Pump Tubing**

<u>Volts</u>	<u>OZ./Min.</u>
10.5	25.0
14.6	35.5
18.8	47.6
22.9	59.8
27.0	72.0
31.2	84.1
35.3	96.3
39.4	108.4
43.6	120.6
47.7	132.8
51.8	144.9
55.9	157.1
60.1	169.2
64.2	181.4
68.3	193.6
72.5	205.7
76.6	217.9
80.7	230.0
84.9	242.2
89.0	254.4

Metric Data

Below are two charts that show the potential volts and ml./min of three different pump configurations at different dial settings.

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
& P/S Pump Head,
with Masterflex L/S 35
Pump Tubing**

<u>Volts</u>	<u>MI./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

**6-600 RPM Motor
& 2 P/S Pump Heads,
with Masterflex L/S 35
Pump Tubing**

<u>Volts</u>	<u>ml./Min.</u>
10.5	438
14.6	604
18.8	834
22.9	1048
27.0	1260
31.2	1474
35.3	1686
39.4	1900
43.6	2,112
47.7	2,324
51.8	2,536
55.9	2,750
60.1	2,964
64.2	3,176
68.3	3,390
72.5	3,600
76.6	3,816
80.7	4,028
84.9	4,242
89.0	4,454

**1/4 HP 2500 RPM Motor
& 3 P/S Pump Heads,
with Masterflex L/S 35
Pump Tubing**

<u>Volts</u>	<u>ml./Min.</u>
10.5	740
14.6	1,020
18.8	1,409
22.9	1,770
27.0	2,128
31.2	2,490
35.3	2,848
39.4	3,209
43.6	3,567
47.7	3,925
51.8	4,283
55.9	4,645
60.1	5,006
64.2	5,364
68.3	5,726
72.5	6,080
76.6	6,445
80.7	6,803
84.9	7,165
89.0	7,523

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 on the main control panel to “Hand”. Liquid should begin pumping up to the atomizer. After the line has been primed, turn the “Hand/Off/Auto” switch to “Auto”. Additional liquid can be pumped up into the atomizer and into the drum to guarantee coverage of the first seed that passes through the machine.



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 20% 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.

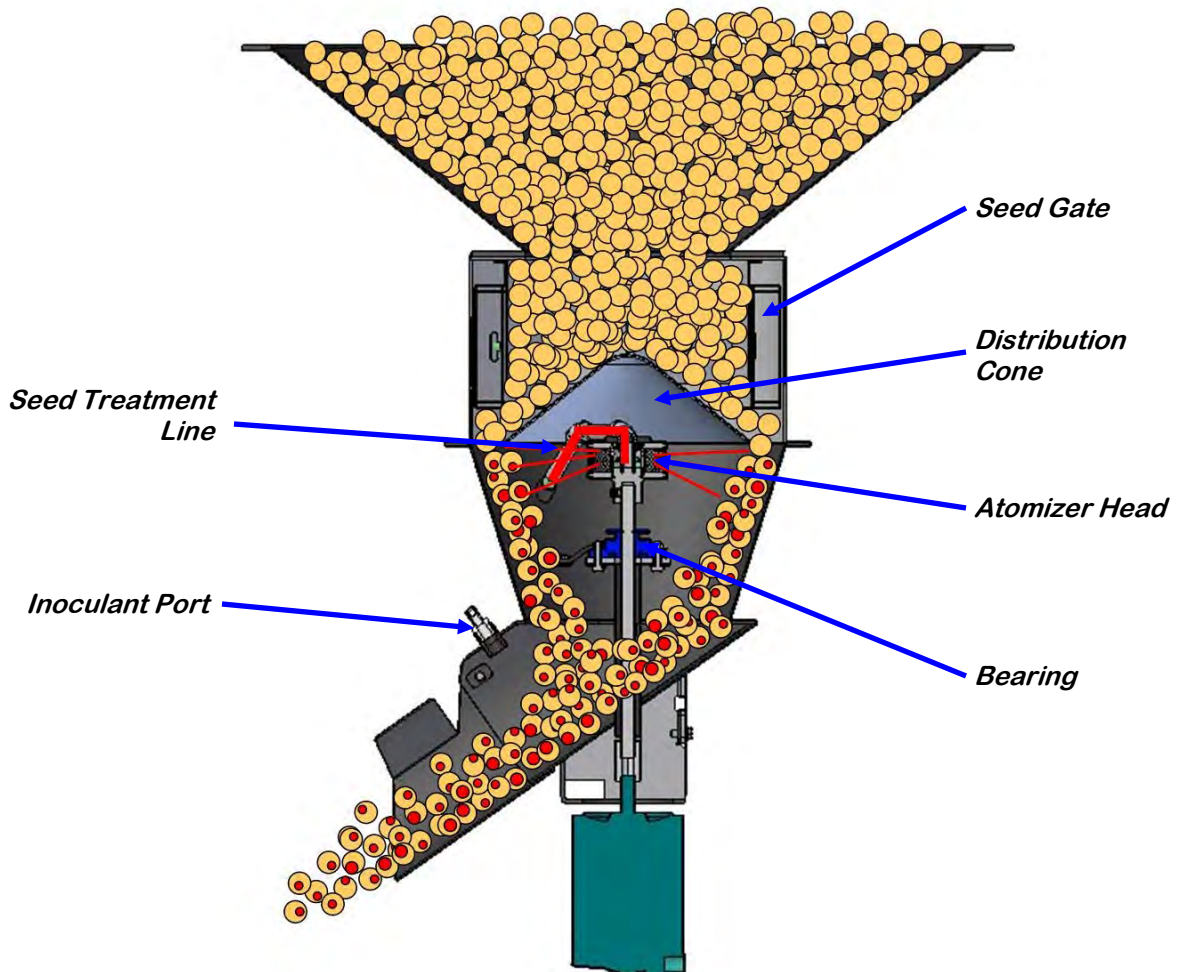


If the first seed is not well coated, the “Hand/Off/Auto” switch can initially be turned to “Hand” before the seed comes into the treater. Once the supply hopper is full, the switch can be turned to “Auto”.

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

LPX MANUAL SEED TREATER

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

Below is a table describing the most frequent problems and solutions with the USC LPX Manual Seed Treater. For further assistance, contact your local USC dealer.

Problem	Possible Cause	Solution
Inlet Conveyor will not turn on.	<ol style="list-style-type: none"> 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 40). 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 40).
Pump will not turn on in "AUTO"	<ol style="list-style-type: none"> 1. Proximity switch is not staying covered. 2. Atomizer is not on. 3. Proximity switch is not sensitive enough. 4. Pump stand two-wire cord is not plugged into to treater main panel. 	<ol style="list-style-type: none"> 1. Make sure proximity switch is staying covered with seed 2. Turn on atomizer. Atomizer must be on to run the pump in Auto. 3. Adjust pump proximity switch sensitivity by turning the adjustment screw clockwise (page 40). 4. Plug the pump stand two-wire cord into the main treater panel.
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 40). 3. Make sure inlet conveyor is plugged inlet conveyor receptacle.

LPX MANUAL SEED 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
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.

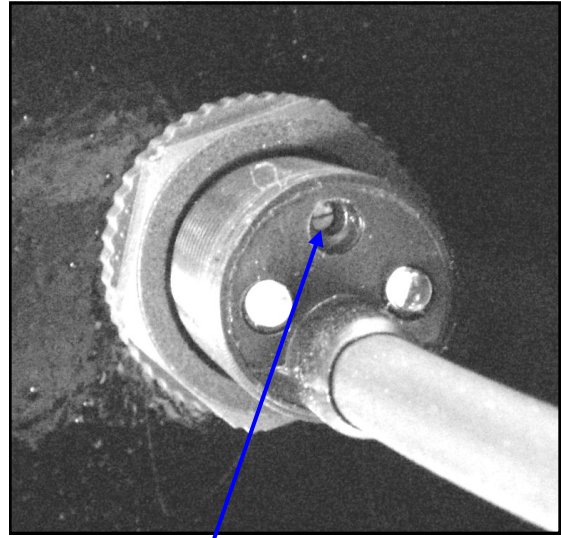
PROXIMITY SWITCH ADJUSTMENT GUIDE

The proximity switches mounted in the extension ring and cone of the seed treater detect when seed is present.

The proximity switch located in the extension ring is used to automatically shut off the inlet conveyor when the surge hopper is full. This proximity switch is not present on tower systems.

The proximity switch mounted in the cone automatically shuts off the pump when all seed has left the hopper.

Sometimes these proximity switches do not work properly. This can be caused from 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.



Sensitivity Adjustment Screw



Proximity Switch Screwdriver

Using the small screwdriver provided inside the control panel, you can adjust the proximity switch by turning the adjusting screw on the back of the proximity switch.

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

MAINTENANCE

SECTION G

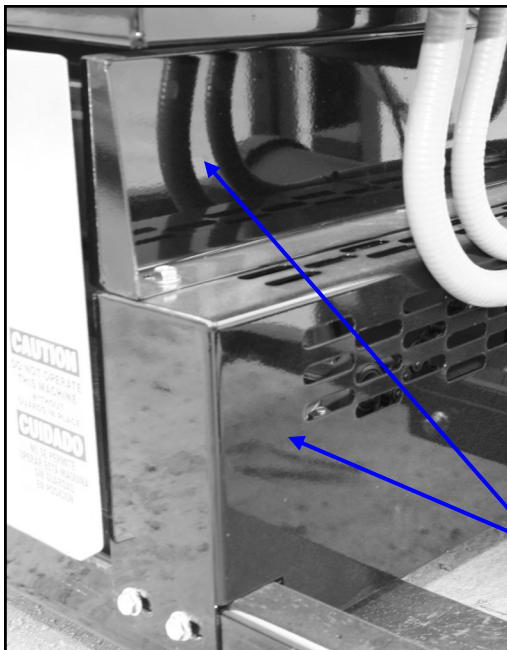
Proper maintenance of the USC LPX Manual Seed Treater is critical for peak performance, reliability and accuracy of this system. The following is a guideline for the type of maintenance and servicing that should be performed on this unit. Your environment and uses may require additional maintenance and 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.



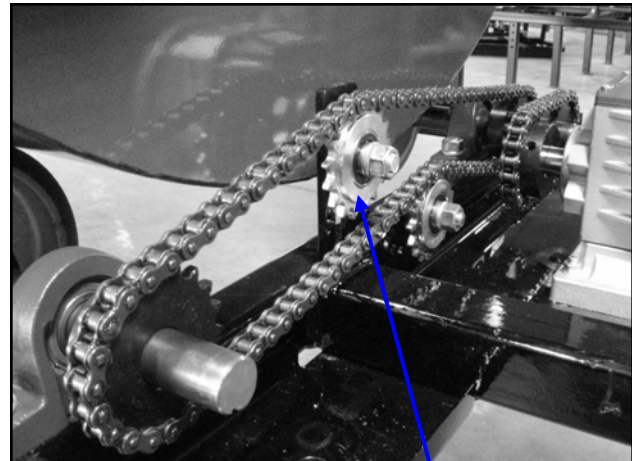
Do not put this unit into operation with any questionably maintained parts. Poor performance or a hazard may occur.

DRIVE AND DRUM

- Inspect all welds and structural components on frame
- Check drum for bends, cracks and damage.
- Remove shields to inspect bearings and tighten set screws.
- Inspect drive wheels for unordinary wear, and set screws for tightness.
- Inspect and adjust the Neoprene guide wheels located near back of drum.
- Tighten and lubricate chains.
- Inspect and re-align sprockets.



Remove these two guards to access chains



Use this sprocket to tighten chain

ATOMIZER

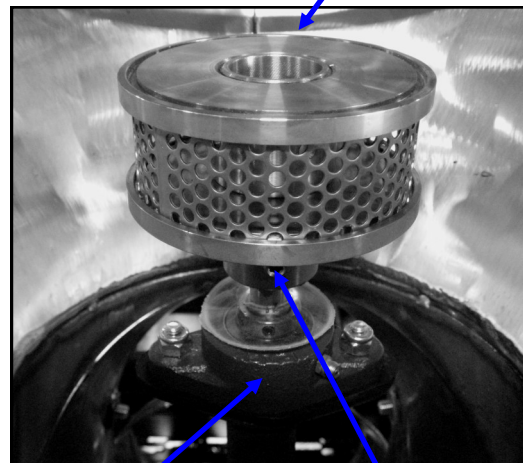
To access inside of atomizer housing, push up on the quick release handle and slide back the atomizer (see picture below).



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.
- 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

PUMPS AND PLUMBING

- Check pump in forward and reverse.
 - Check and adjust pump voltage
 - Inspect brushes in motors.
 - Make sure pump head(s) opens and closes smoothly.
 - Inspect tubing and valves.
 - Tighten hose clamps and check/clean filter.
-

MIX TANK

- Check motor.
 - Check for any play in the mix tank shaft.
 - Check valves, fittings, and plug on bottom of tank.
-

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.

When storing the USC LPX Manual 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 (below), 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.

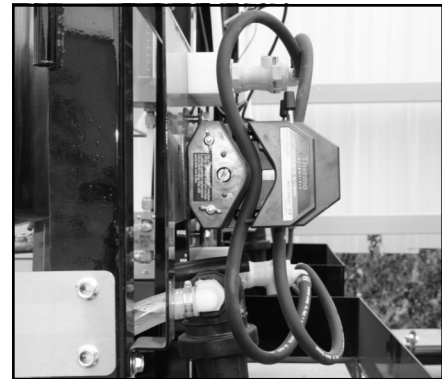


ROTATING DRUM

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.
-

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, calibration tube, and valves.
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 head (right) 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.

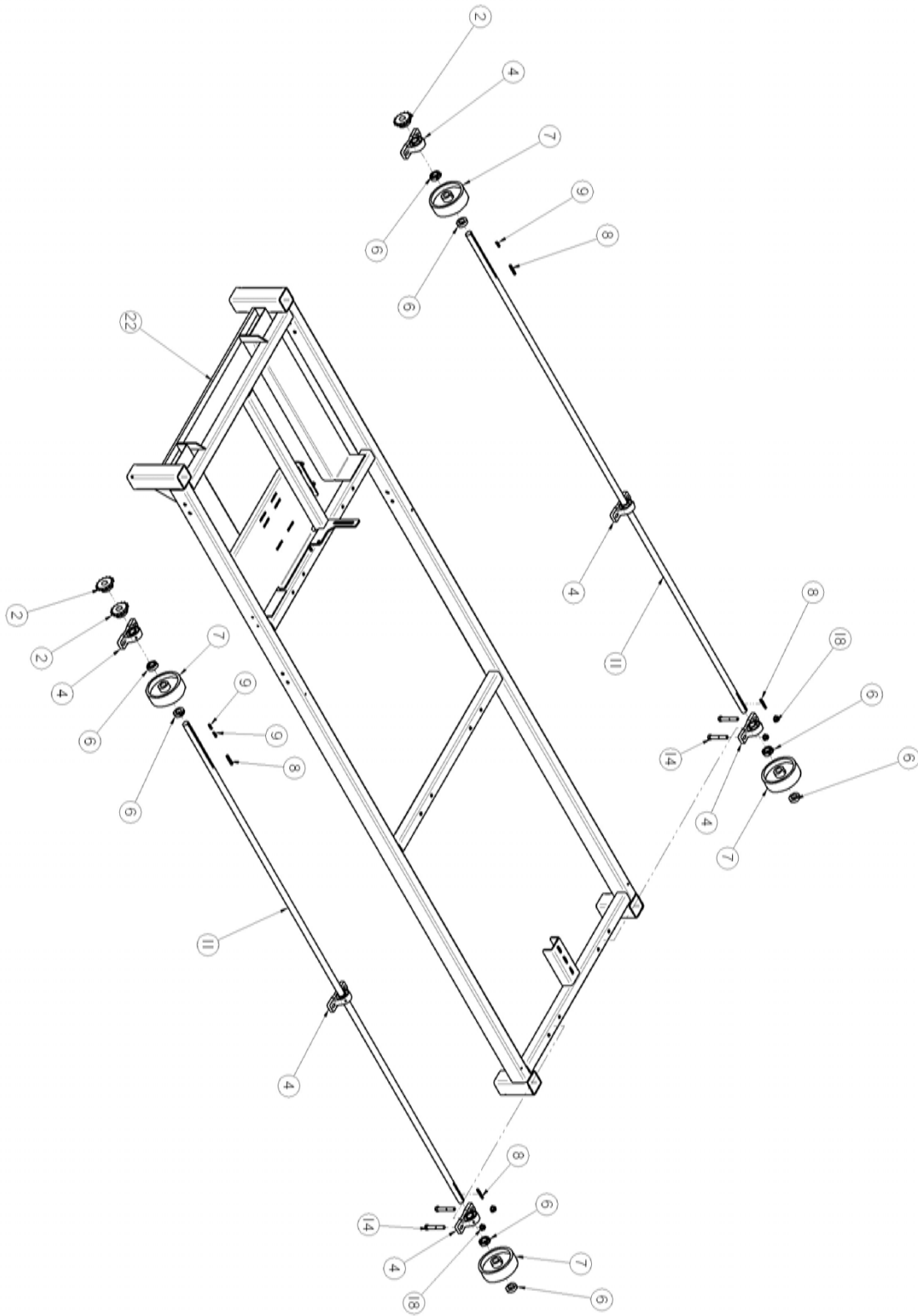
MECHANICAL DRAWINGS

SECTION I

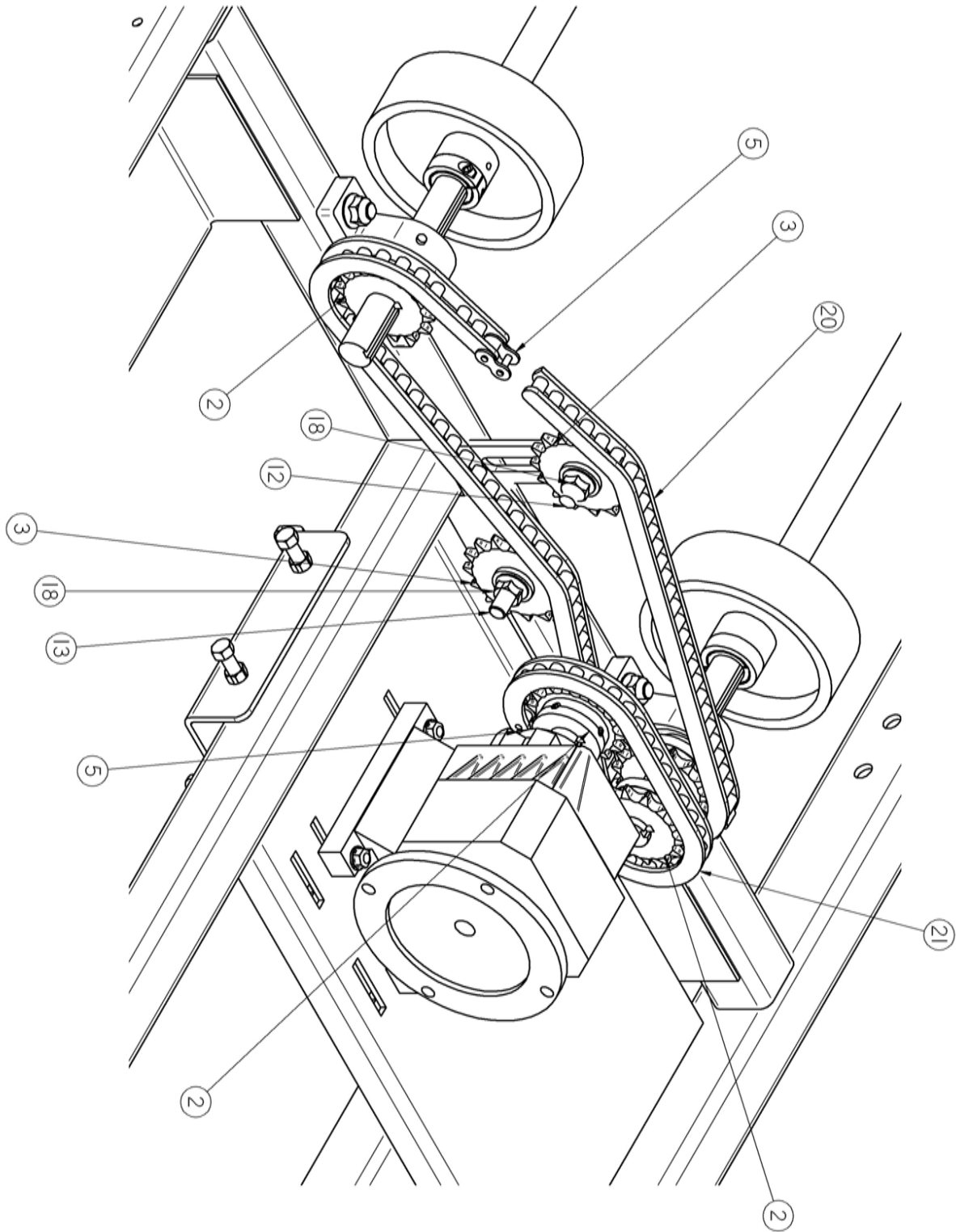
The following pages show the parts of the LPX Manual Seed Treater. Please have the part number ready when ordering parts.

<u>Item</u>	<u>Page #</u>
Mechanical Drawings & Parts List	47
Limited Warranty Information	89

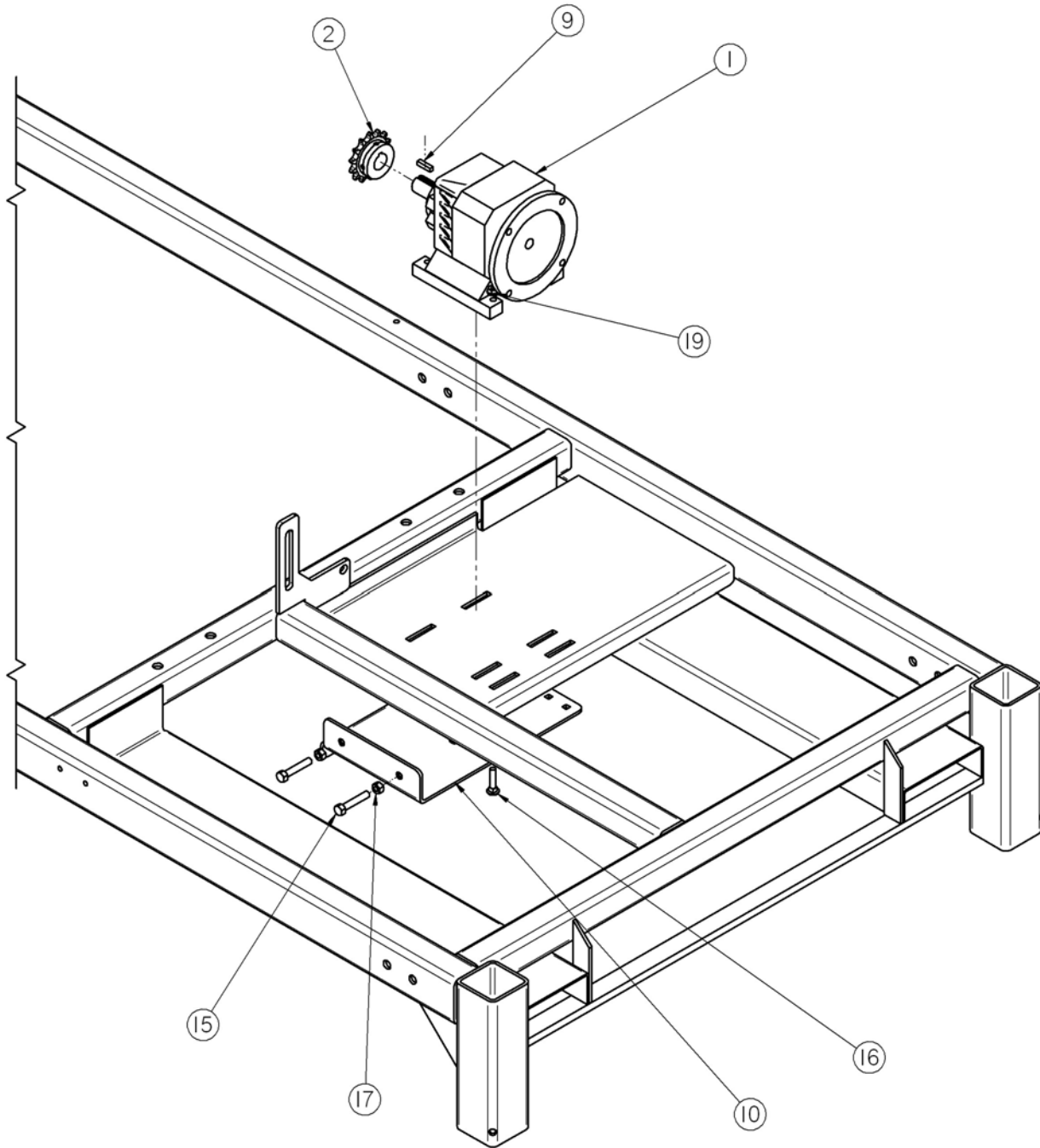
LPX Base Frame Assembly



LPX Base Frame Assembly



LPX Base Frame Assembly

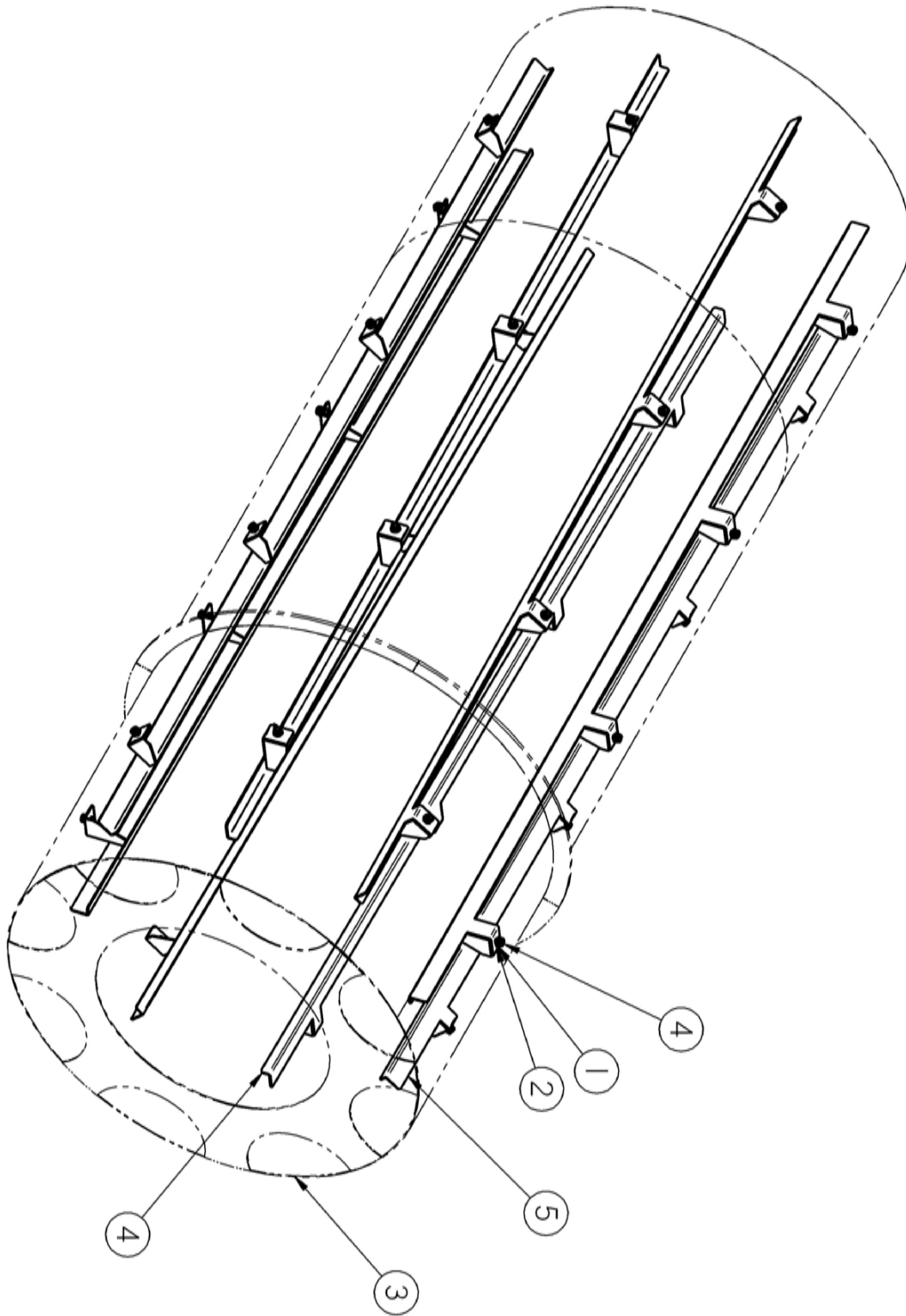


LPX MANUAL SEED TREATER

LPX Base Frame Assembly Parts List

<u>LPX BASE FRAME ASSEMBLY</u>		LPX 6FT		LPX 8FT		LPX 10FT	
		18-01-0011		18-01-0012		18-01-0013	
<u>Item #</u>	<u>Title</u>	<u>Part #</u>	<u>Qty</u>	<u>Part #</u>	<u>Qty</u>	<u>Part #</u>	<u>Qty</u>
1	GBOX IL 56C 16.2:1 GR B1 FOOT MNT	01-01-0101	1	01-01-0101	1	01-01-0101	1
2	SPROCKET # 50 14T 1.00 IN BORE TYPE B	01-02-0093	4	01-02-0093	4	01-02-0093	4
3	SPKT 17 T 50P .500 ID IDLER	01-02-0095	2	01-02-0095	2	01-02-0095	2
4	BRG PLW 1.00ID STSC SEALED	01-03-0036	6	01-03-0036	6	01-03-0036	6
5	#50 CNTG LINK	01-04-0005	2	01-04-0005	2	01-04-0005	2
6	SHAFT CLR 1.00ID SPLIT	01-05-0008	8	01-05-0008	8	01-05-0008	8
7	WHL DRV 6 X 2 X 1.00ID .250KWY	01-06-0002	4	01-06-0002	4	01-06-0002	4
8	KEY .250 X 2.00 CS	01-10-0003	4	01-10-0003	4	01-10-0003	4
9	KEY .250 X 1.00 CS	01-10-0004	4	01-10-0004	4	01-10-0004	4
10	WDMT DRUM DRV ADJ PLT	05-04-0067	1	05-04-0067	1	05-04-0067	1
11	DRIVE SHAFT	05-11-0003	2	05-11-0348	2	05-11-0235	2
12	BOLT CRG .500-13 X 2.00 ZP GR5	06-01-0026	1	06-01-0026	1	06-01-0026	1
13	BOLT .500-13 X 2.00 ZP GR5	06-01-0027	1	06-01-0027	1	06-01-0027	1
14	BOLT .500-13 X 3.25 ZP GR5	06-01-0029	12	06-01-0029	12	06-01-0029	12
15	BOLT .375-16 X 2.00 ZP GR5 FULL THRD	06-01-0137	2	06-01-0137	2	06-01-0137	2
16	BOLT CRG .313-18 X 1.75 ZP GR5	06-01-0172	4	06-01-0172	4	06-01-0172	4
17	NUT FULL .375-16 ZP GR5	06-02-0003	2	06-02-0003	2	06-02-0003	2
18	NUT LOCK FLG .500-13 ZP GR5	06-03-0015	14	06-03-0015	14	06-03-0015	14
19	NUT, FLG .3125-18 UNC ZP GRADE 5	06-03-0019	4	06-03-0019	4	06-03-0019	4
20	#50 CHAIN 84LINKS	13-05-0156	1	13-05-0156	1	13-05-0156	1
21	#50 CHAIN -- 32 LINKS	13-05-0157	1	13-05-0157	1	13-05-0157	1
22	WDMT BASE FR LPX	18-01-0007	1	18-01-0008	1	18-01-0009	1

LPX Drum Assembly



LPX MANUAL SEED TREATER

LPX Drum Assembly Parts List

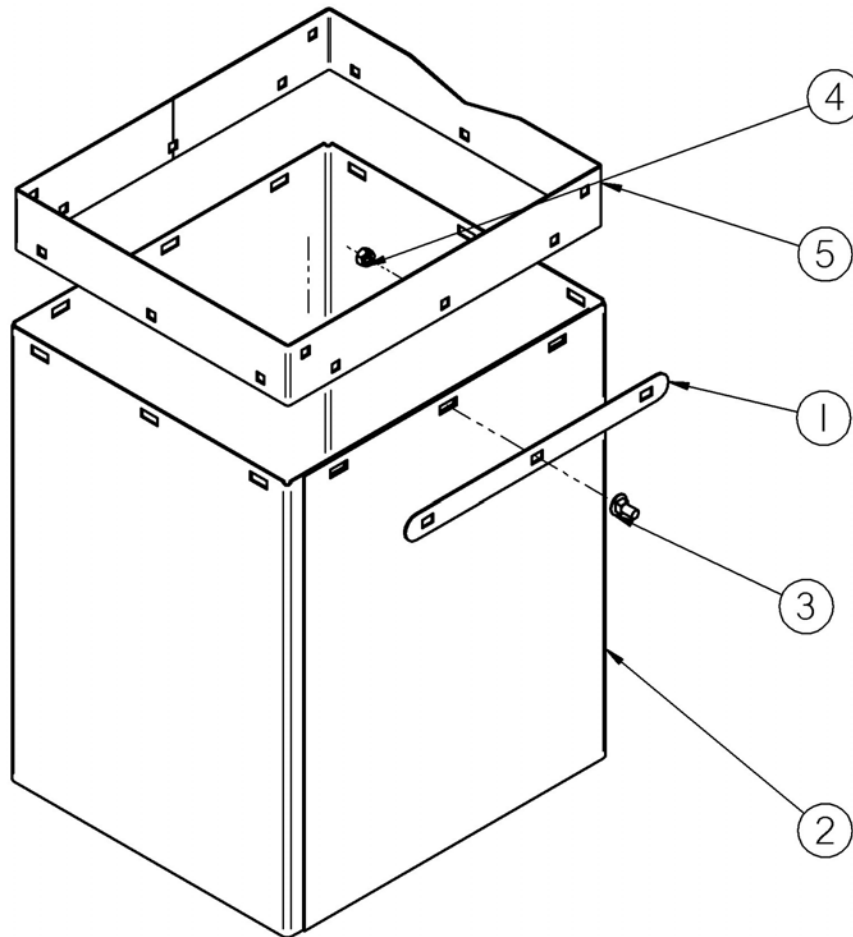
<u>LPX DRUM ASSEMBLY</u>		LPX800 6FT CS		LPX800 6FT SS		LPX2000 6FT CS	
		18-01-0042		18-01-0043		18-01-0044	
<u>Item #</u>	<u>Title</u>	<u>Part #</u>	<u>Qty</u>	<u>Part #</u>	<u>Qty</u>	<u>Part #</u>	<u>Qty</u>
1	NUT LOCK FLG .375-16 ZP GR5	06-03-0014	24	06-03-0014	24	06-03-0014	24
2	WSHR SS BONDED SEALING .375 ID	06-04-0013	24	06-04-0013	24	06-04-0013	24
3	WDMT DRUM LPX	18-01-0016	1	18-01-0129	1	18-01-0018	1
4	WDMT DRUM PDL TALL	18-01-0026	4	18-01-0027	4	18-01-0026	4
5	WDMT DRUM PDL SHORT	18-01-0034	4	18-01-0035	4	18-01-0034	4

<u>LPX DRUM ASSEMBLY</u>		LPX2000 6FT SS		LPX2000 8FT CS		LPX2000 8FT SS	
		18-01-0045		18-01-0046		18-01-0047	
<u>Item #</u>	<u>Title</u>	<u>Part #</u>	<u>Qty</u>	<u>Part #</u>	<u>Qty</u>	<u>Part #</u>	<u>Qty</u>
1	NUT LOCK FLG .375-16 ZP GR5	06-03-0014	24	06-03-0014	32	06-03-0014	32
2	WSHR SS BONDED SEALING .375 ID	06-04-0013	24	06-04-0013	32	06-04-0013	32
3	WDMT DRUM LPX	18-01-0019	1	18-01-0020	1	18-01-0132	1
4	WDMT DRUM PDL TALL	18-01-0027	4	18-01-0028	4	18-01-0133	4
5	WDMT DRUM PDL SHORT	18-01-0035	4	18-01-0036	4	18-01-0134	4

<u>LPX DRUM ASSEMBLY</u>		LPX2000 10FT CS		LPX2000 10FT SS	
		18-01-0048		18-01-0049	
<u>Item #</u>	<u>Title</u>	<u>Part #</u>	<u>Qty</u>	<u>Part #</u>	<u>Qty</u>
1	NUT LOCK FLG .375-16 ZP GR5	06-03-0014	40	06-03-0014	40
2	WSHR SS BONDED SEALING .375 ID	06-04-0013	40	06-04-0013	40
3	WDMT DRUM LPX	18-01-0022	1	18-01-0135	1
4	WDMT DRUM PDL TALL	18-01-0030	4	18-01-0136	4
5	WDMT DRUM PDL SHORT	18-01-0038	4	18-01-0137	4

LPX MANUAL SEED TREATER

LPX End Chute & Parts List

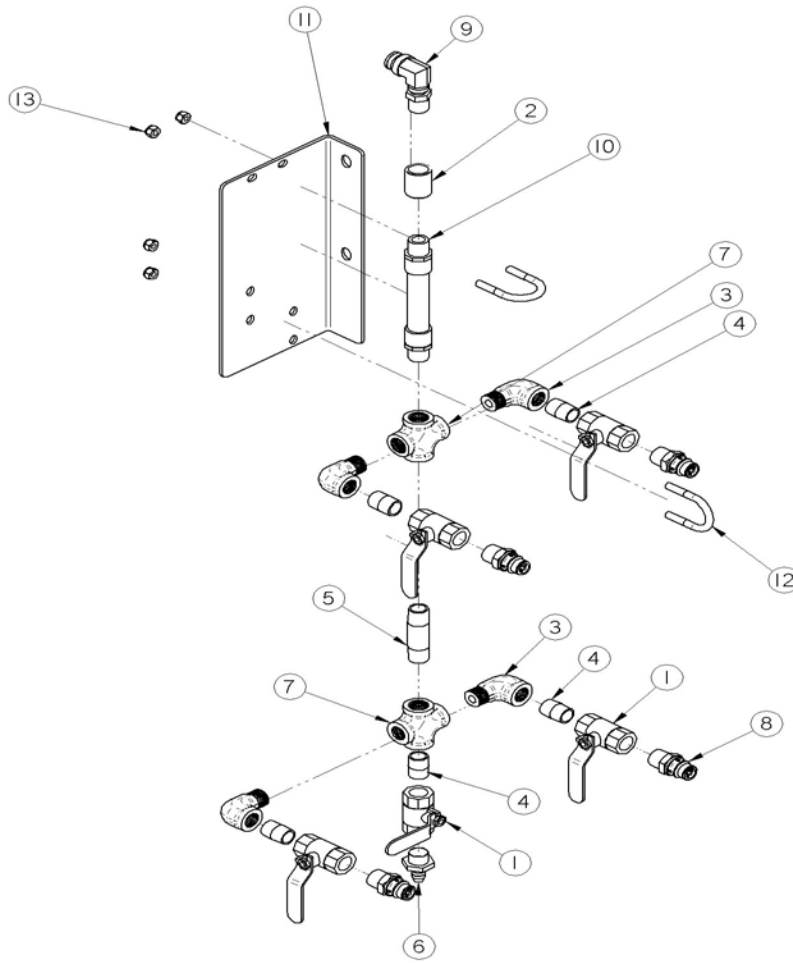


LPX END CHUTE 18-01-0072

<u>Item #</u>	<u>Part #</u>	<u>Title</u>	<u>Qty</u>
1	05-10-3400	PLT DSCHG TRTR	4
2	05-10-3886	SKIRT DSCHG TRTR LPX2000	1
3	06-01-0198	BOLT, CARRIAGE, 5/16-18 X 3/4 UNC ZP GRADE 5	12
4	06-03-0002	NUT NYL LOCK .313-18 ZP GR5	12
5	101FB5	ADPT END CHUTE EXT LPX2000	1

LPX MANUAL SEED TREATER

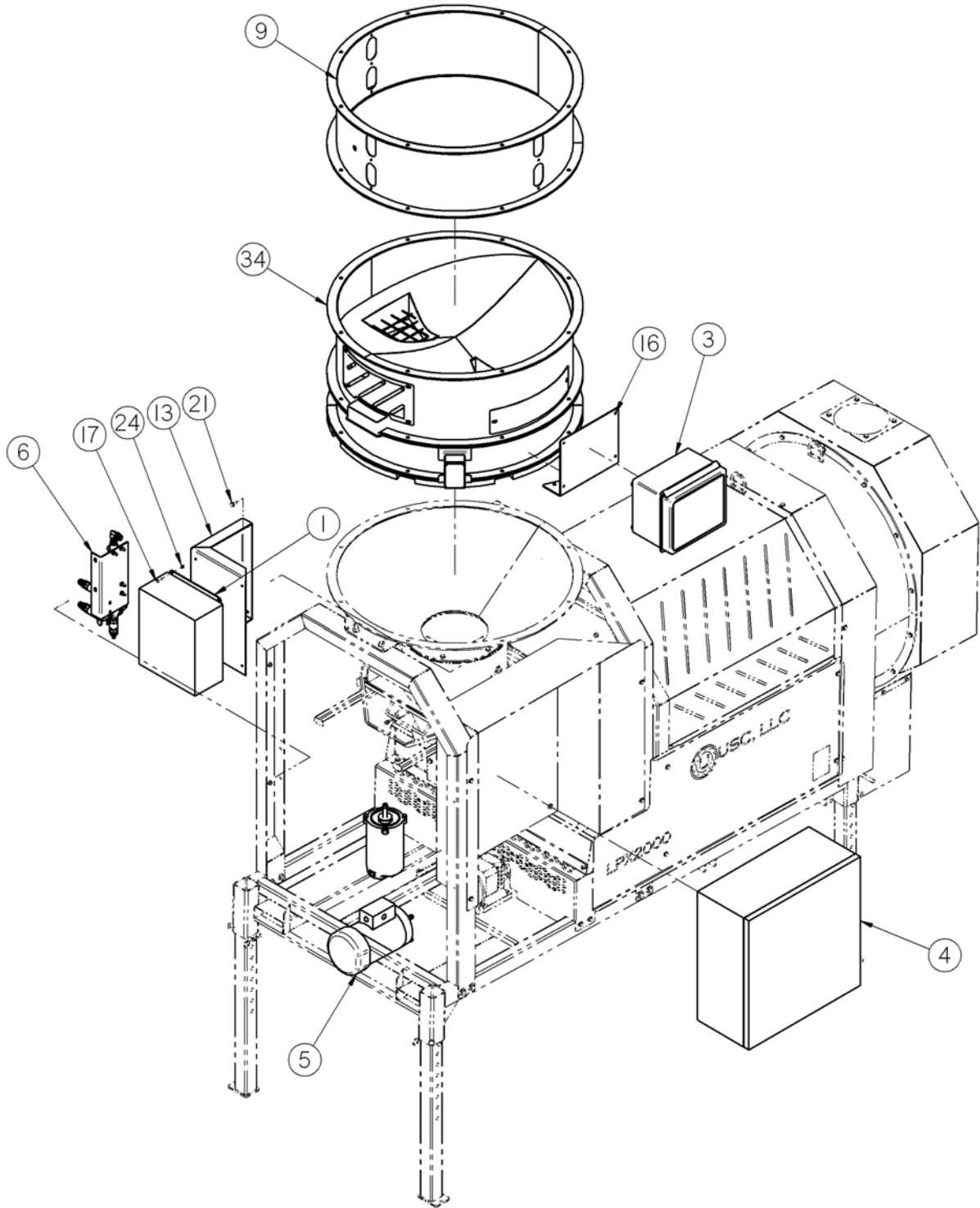
LPX Static Mixer & Parts List



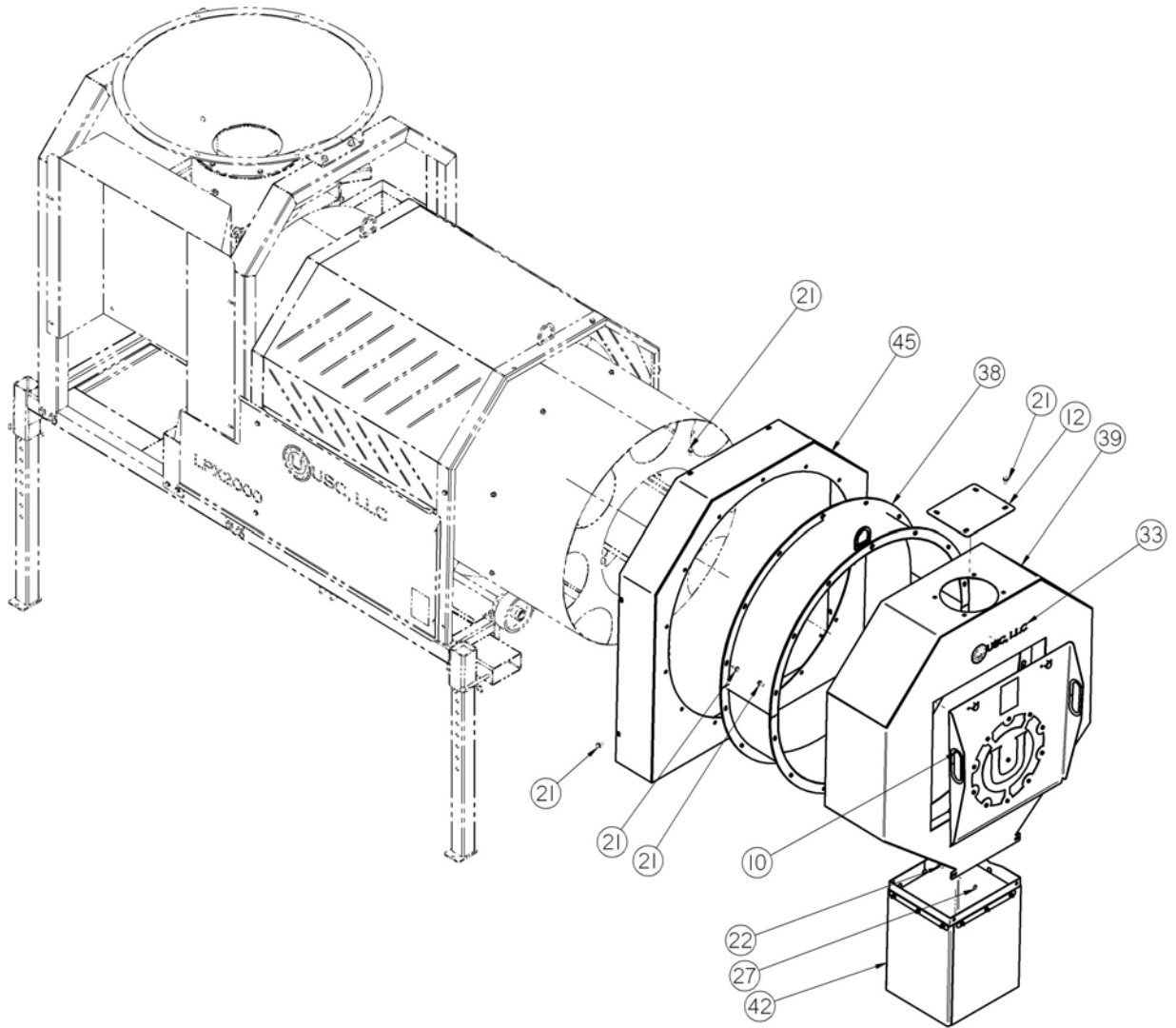
LPX STATIC MIXER 04-03-0157

<u>Item #</u>	<u>PART #</u>	<u>Title</u>	<u>Qty</u>
1	02-02-0006	VLV BALL .500 NPT 2WAY BRSS	5
2	02-05-0005	FTTG CPLG .500 NPT FM SS	1
3	02-06-0020	FTTG 90 DEG STRT .500NPTX .500NPT	4
4	02-07-0007	FTTG NIP .500 NPT X 1.125 TBE SS	5
5	02-07-0019	NIPPLE, .500-14 NPT X 3.0 LG 304SS	1
6	02-08-0007	FTTG STGHT .500HB X .500NPT ML NYL	1
7	02-11-0001	FTTG CROSS .500 NPT FM SS	2
8	02-15-0014	FTTG CPLG .500 NPT QCK DISC INSERT	4
9	02-16-0050	FTTG PUSH 90DEG .625ODX.500 NPT ML	1
10	04-03-0030	MXR IL PVC 6ELEMENT .500PIPE X 7.00	1
11	05-10-2891B	STATIC MIXER & MNFLD MNT BRKT	1
12	06-01-0037	BOLT U .313-18 X 1.38 X 2.188 ZP	2
13	06-03-0002	NUT NYL LOCK .313-18 ZP GR5	4

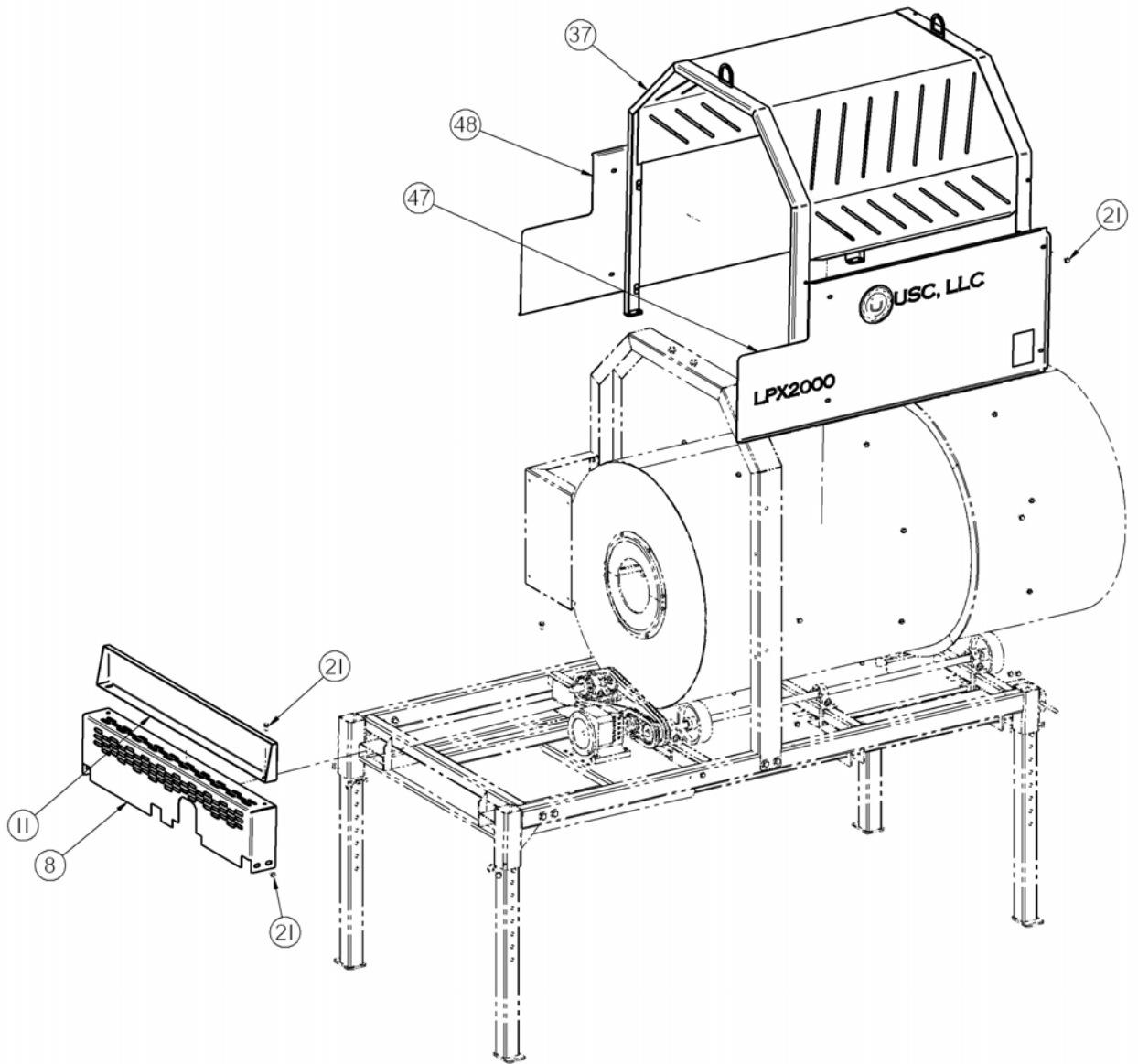
LPX Treater



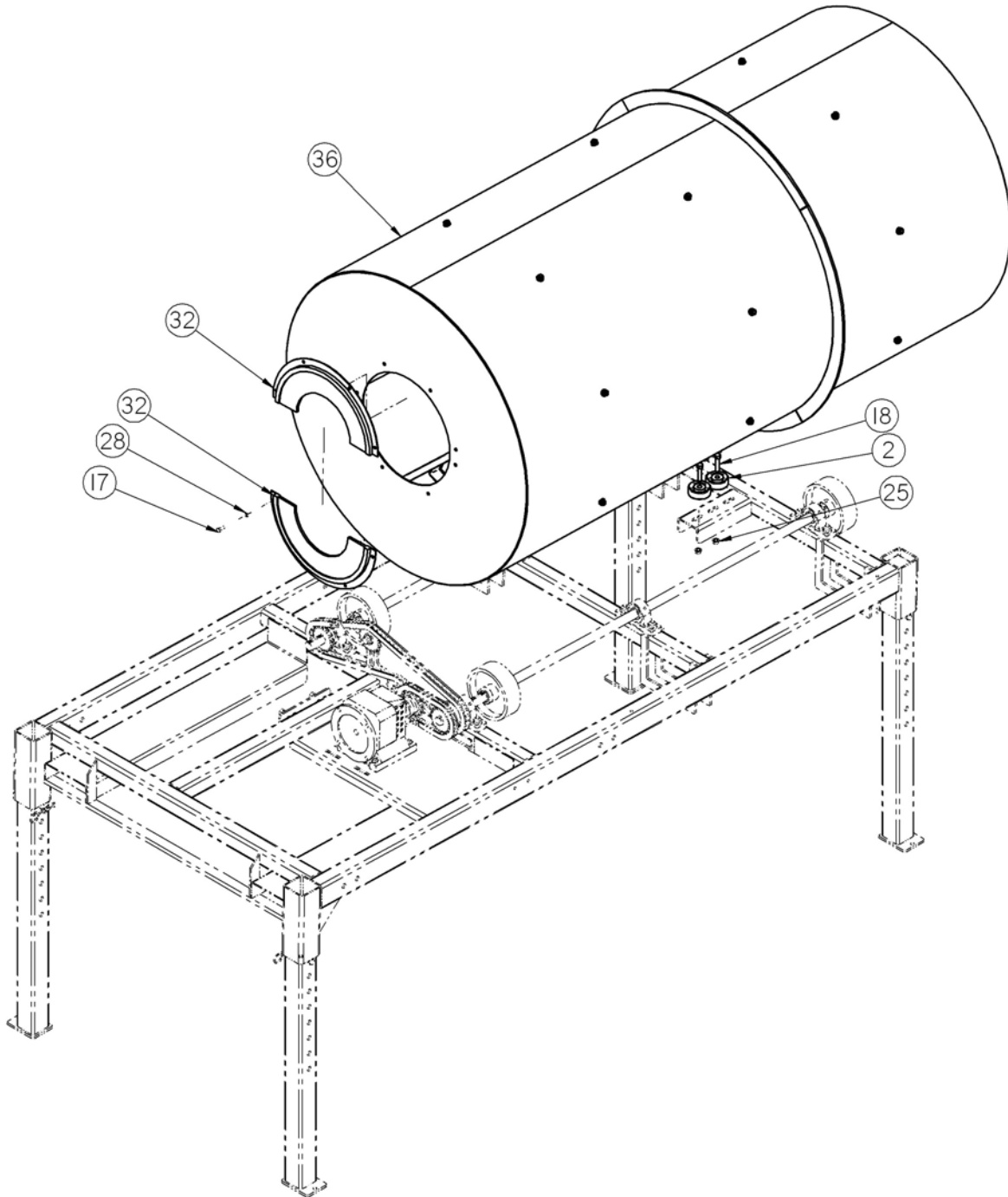
LPX Treater



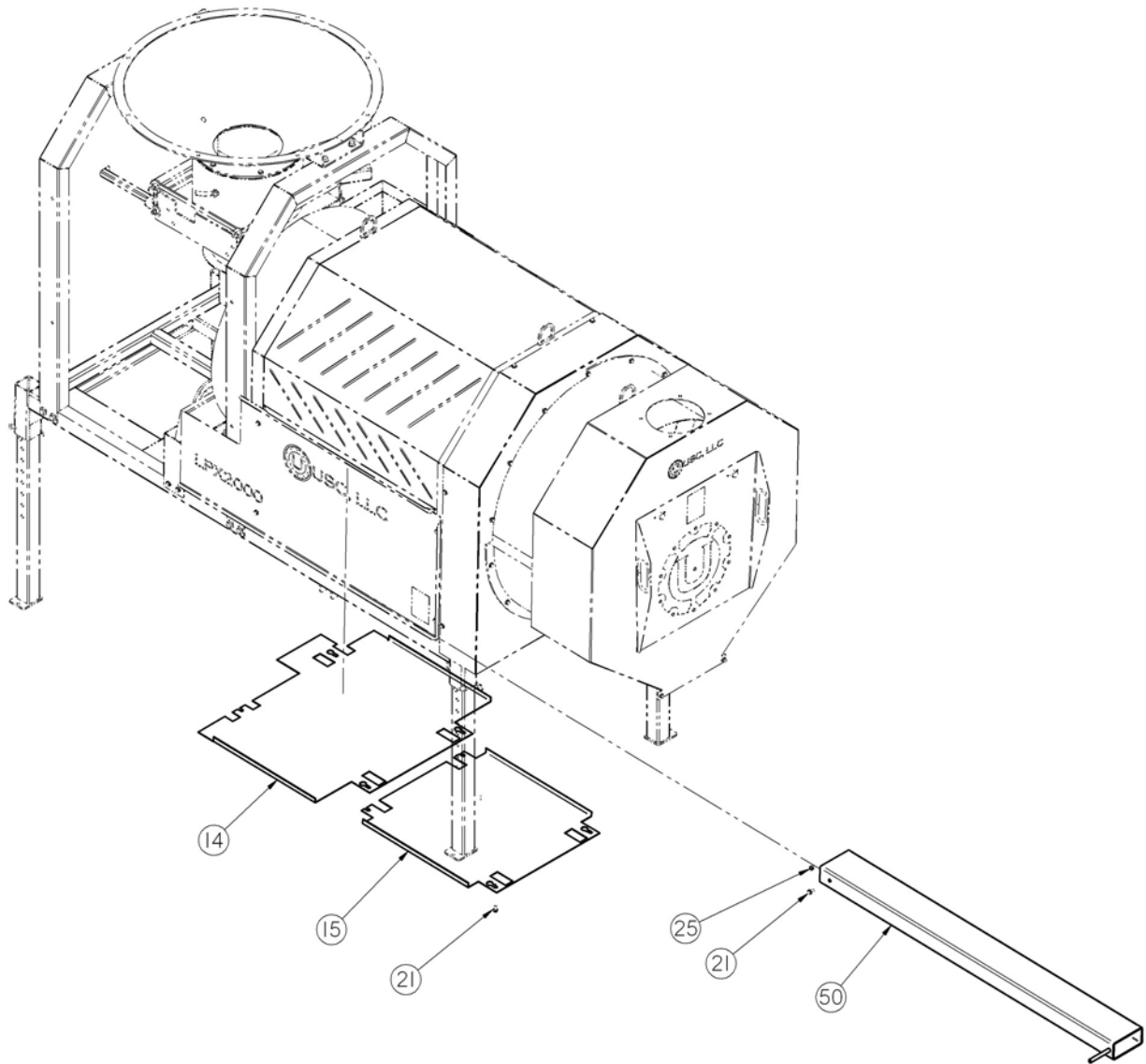
LPX Treater



LPX Treater

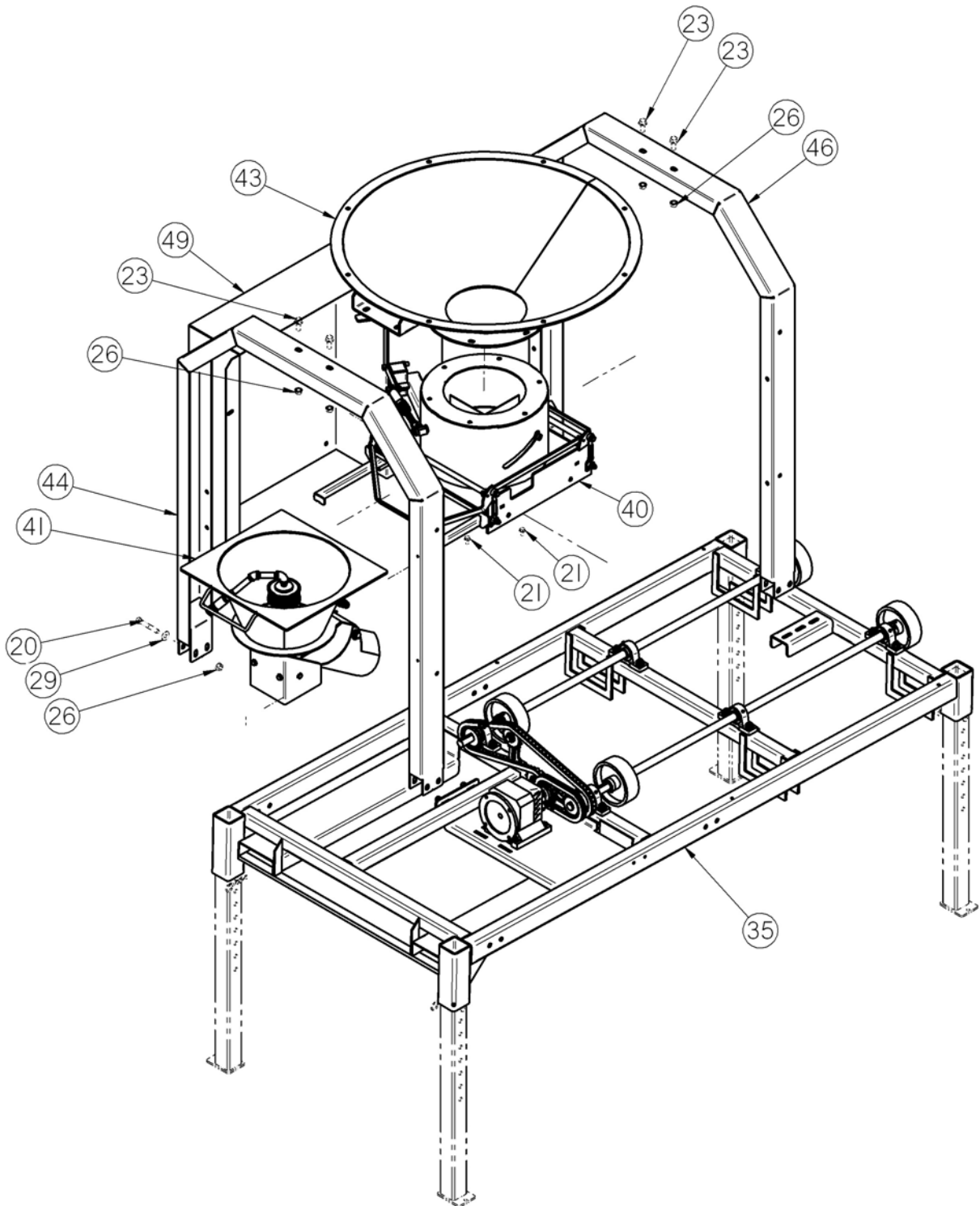


LPX Treater

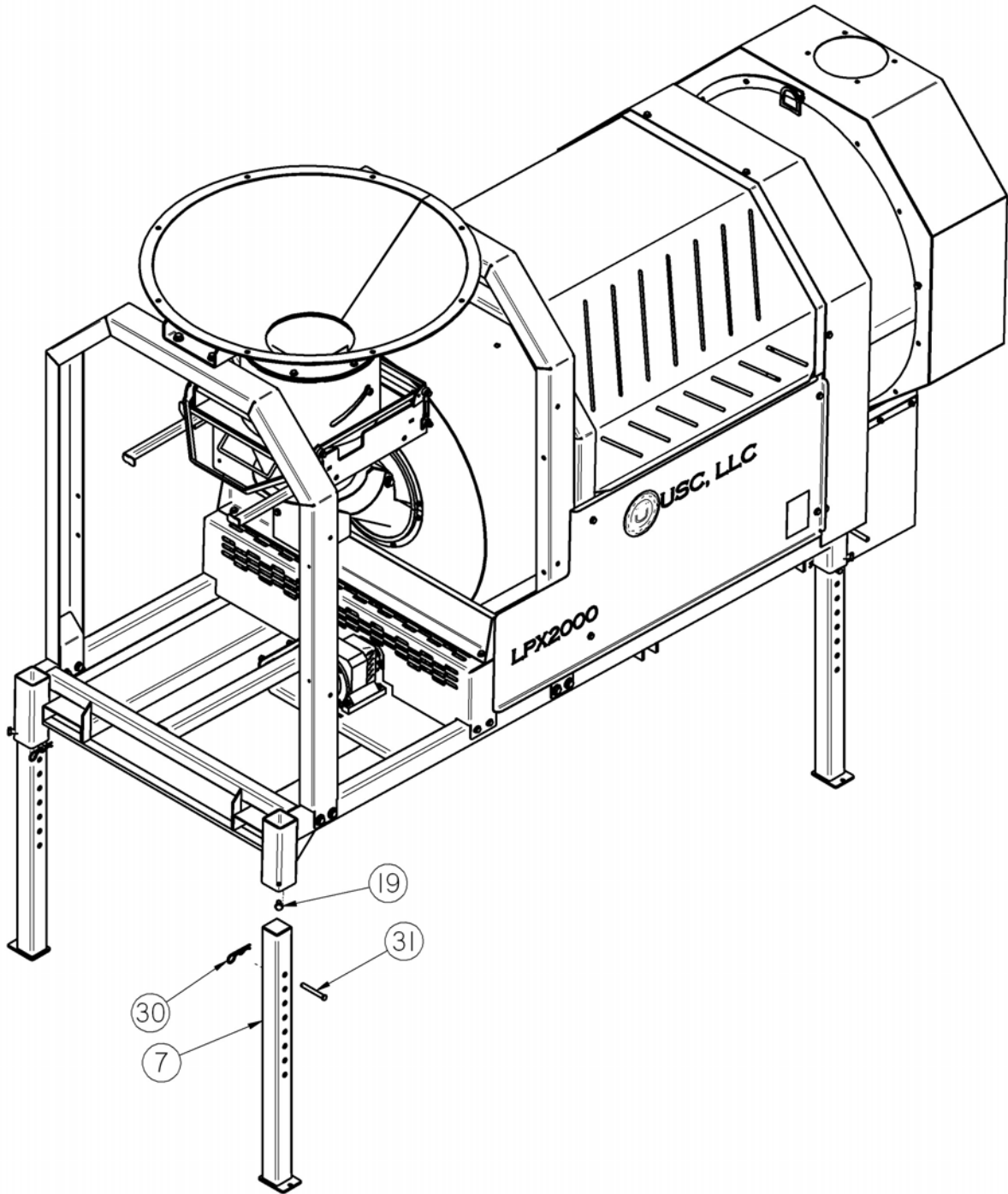


LPX MANUAL SEED TREATER

LPX Treater



LPX Treater



LPX MANUAL SEED TREATER

LPX Treater Parts List

LPX TREATER		800 - 6 Foot		2000 - 6 Foot	
Item #	Title	Part #	Qty	Part #	Qty
1	CNVR CNTL PANEL	See Table 1a	1	See Table 1a	1
2	WHL GUIDE .375ID X 2.50 X .875 NPRN	01-06-0004	2	01-06-0004	2
3	SMW PANEL	See Table 1b	1	See Table 1b	1
4	TRTR PANEL	See Table 1c	1	See Table 1c	1
5	KIT PWR	See Table 2a	1	See Table 2a	1
6	ASSY STTC MXR & VLVS LPX TRTR	04-03-0157	1	04-03-0157	1
7	WDMT ADJ TREATER LEG	05-05-0001	4	05-05-0001	4
8	WDMT CHAIN GRD LP800/LP2000	05-06-0001	1	05-06-0001	1
9	WDMT INLET HOPP EXT	See Table 3a	1	See Table 3a	1
10	ASSY END CHUTE DOOR GALV	05-07-0198	1	05-07-0198	1
11	GRD DRUM INLET LOWER	05-10-0150	1	05-10-0150	1
12	PLT CVR DISCH CHUTE 1	05-10-3800	1	05-10-3800	1
13	GRD DRUM INLET LPX BOLTED	05-10-3931	1	05-10-3931	1
14	GRD DRUM BTM FRNT HALF LPX	05-10-3950	1	05-10-3950	1
15	GRD DRUM BTM REAR HALF LPX	05-10-3951	1	05-10-3951	1
16	SEED WHEEL PANEL MOUNT PLATE	05-10-3980	1	05-10-3980	1
17	BOLT .250-20 X .750 ZP GR5	06-01-0006	12	06-01-0006	12
18	BOLT .375-16 X 1.75 ZP GR5	06-01-0019	2	06-01-0019	2
19	BOLT .500-13 X .750 ZP GR5	06-01-0024	4	06-01-0024	4
20	BOLT .500-13 X 3.25 ZP GR5	06-01-0029	8	06-01-0029	8
21	BOLT, FLG .375-16 UNC ZP GRADE 5; 3/4" LG	06-01-0124	76	06-01-0124	76
22	BOLT, CARRIAGE, 5/16-18 X 3/4 UNC ZP GRADE 5	06-01-0198	4	06-01-0198	4
23	BOLT FLG .500-13 X 1.250 ZP GR5	06-01-0232	4	06-01-0232	4
24	NUT,LOCK, FLG .250-20 ZP SERRATED	06-03-0013	4	06-03-0013	4
25	NUT LOCK FLG .375-16 ZP GR5	06-03-0014	12	06-03-0014	12
26	NUT LOCK FLG .500-13 ZP GR5	06-03-0015	12	06-03-0015	12
27	NUT LOCK FLG .3125-18 ZP GR5	06-03-0019	4	06-03-0019	4

LPX MANUAL SEED TREATER

LPX Treater Parts List

LPX TREATER		800 - 6 Foot		2000 - 6 Foot	
Item #	Title	Part #	Qty	Part #	Qty
28	WSHR LOCK SPLT .250 ZP	06-04-0001	8	06-04-0001	8
29	WSHR FLAT .500 ZP	06-05-0005	8	06-05-0005	8
30	PIN CLIP HITCH 3.063 SIZE 9 ZP	06-09-0002	4	06-09-0002	4
31	PIN CLVS .500 X 3.50 PLN	06-09-0005	4	06-09-0005	4
32	SEAL BRSH 180 DEG 7.81 OR X 4.00 IR	06-10-0018	2	06-10-0018	2
33	ATWL LBL USC, LLC 3" X 15" PRO-CUT	09-01-0042	1	09-01-0042	1
34	ASSY SEED METER WHL	13-04-0064	1	13-04-0065	1
35	ASSY BASE FR LPX	18-01-0011	1	18-01-0011	1
36	ASSY DRUM LPX2000	18-01-0042	1	18-01-0044	1
36*	ASSY DRUM LPX2000 (Stainless Steel Only)	18-01-0043	1	18-01-0045	1
37	WDMT DRUM GRD LPX	18-01-0050	1	18-01-0050	1
38	WDMT DRUM EXT GRD LPX 6-8-10FT	18-01-0054	1	18-01-0054	1
39	WDMT END CHUTE LPX	18-01-0057	1	18-01-0057	1
39*	WDMT END CHUTE LPX (Stainless Steel Only)	18-01-0125	1	18-01-0125	1
40	ASSY ADJ CHMBR LPX	18-01-0061	1	18-01-0062	1
41	ASSY ATMZR	18-01-0067	1	18-01-0069	1
41*	ASSY ATMZR (Stainless Steel Only)	18-01-0068	1	18-01-0070	1
42	ASSY END CHUTE EXT LPX	18-01-0072	1	18-01-0072	1
43	WDMT INLET HOPP LPX	18-01-0080	1	18-01-0080	1
44	WDMT HEADACHE RACK SHORT	18-01-0081	1	18-01-0081	1
45	WDMT DRUM EXT GRD MNT LPX 6-8-10FT	18-01-0082	1	18-01-0082	1
46	WDMT HEADACHE RACK TALL	18-01-0083	1	18-01-0083	1
47	ASSY GRD DRUM LPX2000 RT GALV	18-01-0091	1	18-01-0091	1
48	ASSY GRD DRUM LPX2000 LT GALV	18-01-0094	1	18-01-0094	1
49	WDMT ENCL MNT LPX	18-01-0097	1	18-01-0097	1
50	WDMT FORKLIFT PCKT EXT	18-01-0106	2	18-01-0106	2

LPX MANUAL SEED TREATER

LPX Treater Parts List

LPX TREATER		2000 - 8 Foot		2000 - 10 Foot	
<u>Item #</u>	<u>Title</u>	<u>Part #</u>	<u>Qty</u>	<u>Part #</u>	<u>Qty</u>
1	CNVR CNTL PANEL	See Table 1a	1	See Table 1a	1
2	WHL GUIDE .375ID X 2.50 X .875 NPRN	01-06-0004	2	01-06-0004	2
3	SMW PANEL	See Table 1b	1	See Table 1b	1
4	TRTR PANEL	See Table 1c	1	See Table 1c	1
5	KIT PWR	See Table 2a	1	See Table 2a	1
6	ASSY STTC MXR & VLVS LPX TRTR	04-03-0157	1	04-03-0157	1
7	WDMT ADJ TREATER LEG	05-05-0001	4	05-05-0001	4
8	WDMT CHAIN GRD LP800/LP2000	05-06-0001	1	05-06-0001	1
9	WDMT INLET HOPP EXT	See Table 3a	1	See Table 3a	1
10	ASSY END CHUTE DOOR GALV	05-07-0198	1	05-07-0198	1
11	GRD DRUM INLET LOWER	05-10-0150	1	05-10-0150	1
12	PLT CVR DISCH CHUTE 1	05-10-3800	1	05-10-3800	1
13	GRD DRUM INLET LPX BOLTED	05-10-3931	1	05-10-3931	1
14	GRD DRUM BTM FRNT HALF LPX	05-10-3993	1	05-10-3923	1
15	GRD DRUM BTM REAR HALF LPX	05-10-3994	1	05-10-3924	1
16	SEED WHEEL PANEL MOUNT PLATE	05-10-3980	1	05-10-3980	1
17	BOLT .250-20 X .750 ZP GR5	06-01-0006	12	06-01-0006	12
18	BOLT .375-16 X 1.75 ZP GR5	06-01-0019	2	06-01-0019	2
19	BOLT .500-13 X .750 ZP GR5	06-01-0024	4	06-01-0024	4
20	BOLT .500-13 X 3.25 ZP GR5	06-01-0029	8	06-01-0029	8
21	BOLT, FLG .375-16 UNC ZP GRADE 5; 3/4" LG	06-01-0124	76	06-01-0124	76
22	BOLT, CARRIAGE, 5/16-18 X 3/4 UNC ZP GRADE 5	06-01-0198	4	06-01-0198	4
23	BOLT FLG .500-13 X 1.250 ZP GR5	06-01-0232	4	06-01-0232	4
24	NUT,LOCK, FLG .250-20 ZP SERRATED	06-03-0013	4	06-03-0013	4
25	NUT LOCK FLG .375-16 ZP GR5	06-03-0014	12	06-03-0014	12
26	NUT LOCK FLG .500-13 ZP GR5	06-03-0015	12	06-03-0015	12
27	NUT LOCK FLG .3125-18 ZP GR5	06-03-0019	4	06-03-0019	4

LPX MANUAL SEED TREATER

LPX Treater Parts List

LPX TREATER		2000 - 8 Foot		2000 - 10 Foot	
<u>Item #</u>	<u>Title</u>	<u>Part #</u>	<u>Qty</u>	<u>Part #</u>	<u>Qty</u>
28	WSHR LOCK SPLT .250 ZP	06-04-0001	8	06-04-0001	8
29	WSHR FLAT .500 ZP	06-05-0005	8	06-05-0005	8
30	PIN CLIP HITCH 3.063 SIZE 9 ZP	06-09-0002	4	06-09-0002	4
31	PIN CLVS .500 X 3.50 PLN	06-09-0005	4	06-09-0005	4
32	SEAL BRSH 180 DEG 7.81 OR X 4.00 IR	06-10-0018	2	06-10-0018	2
33	ATWL LBL USC, LLC 3" X 15" PRO-CUT	09-01-0042	1	09-01-0042	1
34	ASSY SEED METER WHL	13-04-0065	1	13-04-0065	1
35	ASSY BASE FR LPX	18-01-0012	1	18-01-0013	1
36	ASSY DRUM LPX2000	18-01-0046	1	18-01-0048	1
36*	ASSY DRUM LPX2000 (Stainless Steel Only)	18-01-0047	1	18-01-0049	1
37	WDMT DRUM GRD LPX	18-01-0051	1	18-01-0052	1
38	WDMT DRUM EXT GRD LPX 6-8-10FT	18-01-0054	1	18-01-0054	1
39	WDMT END CHUTE LPX	18-01-0057	1	18-01-0057	1
39*	WDMT END CHUTE LPX (Stainless Steel Only)	18-01-0125	1	18-01-0125	1
40	ASSY ADJ CHMBR LPX	18-01-0062	1	18-01-0062	1
41	ASSY ATMZR	18-01-0069	1	18-01-0069	1
41*	ASSY ATMZR (Stainless Steel Only)	18-01-0070	1	18-01-0070	1
42	ASSY END CHUTE EXT LPX	18-01-0072	1	18-01-0072	1
43	WDMT INLET HOPP LPX	18-01-0080	1	18-01-0080	1
44	WDMT HEADACHE RACK SHORT	18-01-0081	1	18-01-0081	1
45	WDMT DRUM EXT GRD MNT LPX 6-8-10FT	18-01-0082	1	18-01-0082	1
46	WDMT HEADACHE RACK TALL	18-01-0083	1	18-01-0083	1
47	ASSY GRD DRUM LPX2000 RT GALV	18-01-0092	1	18-01-0093	1
48	ASSY GRD DRUM LPX2000 LT GALV	18-01-0095	1	18-01-0096	1
49	WDMT ENCL MNT LPX	18-01-0097	1	18-01-0097	1
50	WDMT FORKLIFT PCKT EXT	18-01-0107	2	NA	

LPX MANUAL SEED TREATER

LPX Treater Parts List

<u>Table 1a -> CNVR PNL</u>
03-12-0152 -> PNL CNVR 230V 1PH 5HP IN 5HP OUT
03-12-0153 -> PNL CNVR 230V 1PH 7.5HP IN 5HP OUT
03-12-0154 -> PNL CNVR 230V 1PH 5HP IN 7.5HP OUT
03-12-0155 -> PNL CNVR 230V 1PH 7.5HP IN 7.5HPOUT
03-12-0156 -> PNL CNVR 230V 3PH 5HP IN 5HP OUT
03-12-0157 -> PNL CNVR 230V 3PH 7.5HP IN 5HP OUT
03-12-0158 -> PNL CNVR 230V 3PH 5HP IN 7.5HP OUT
03-12-0159 -> PNL CNVR 230V 3PH 7.5HP IN 7.5HPOUT
03-12-0160 -> PNL CNVR 460V 3PH 5HP IN 5HP OUT
03-12-0161 -> PNL CNVR 460V 3PH 7.5HP IN 5HP OUT
03-12-0162 -> PNL CNVR 460V 3PH 5HP IN 7.5HP OUT
03-12-0163 -> PNL CNVR 460V 3PH 7.5HP IN 7.5HPOUT
03-12-0164 -> PNL CNVR 575V 3PH 5HP IN 5HP OUT
03-12-0165 -> PNL CNVR 575V 3PH 7.5HP IN 5HP OUT
03-12-0166 -> PNL CNVR 575V 3PH 5HP IN 7.5HP OUT
03-12-0167 -> PNL CNVR 575V 3PH 7.5HP IN 7.5HP OUT

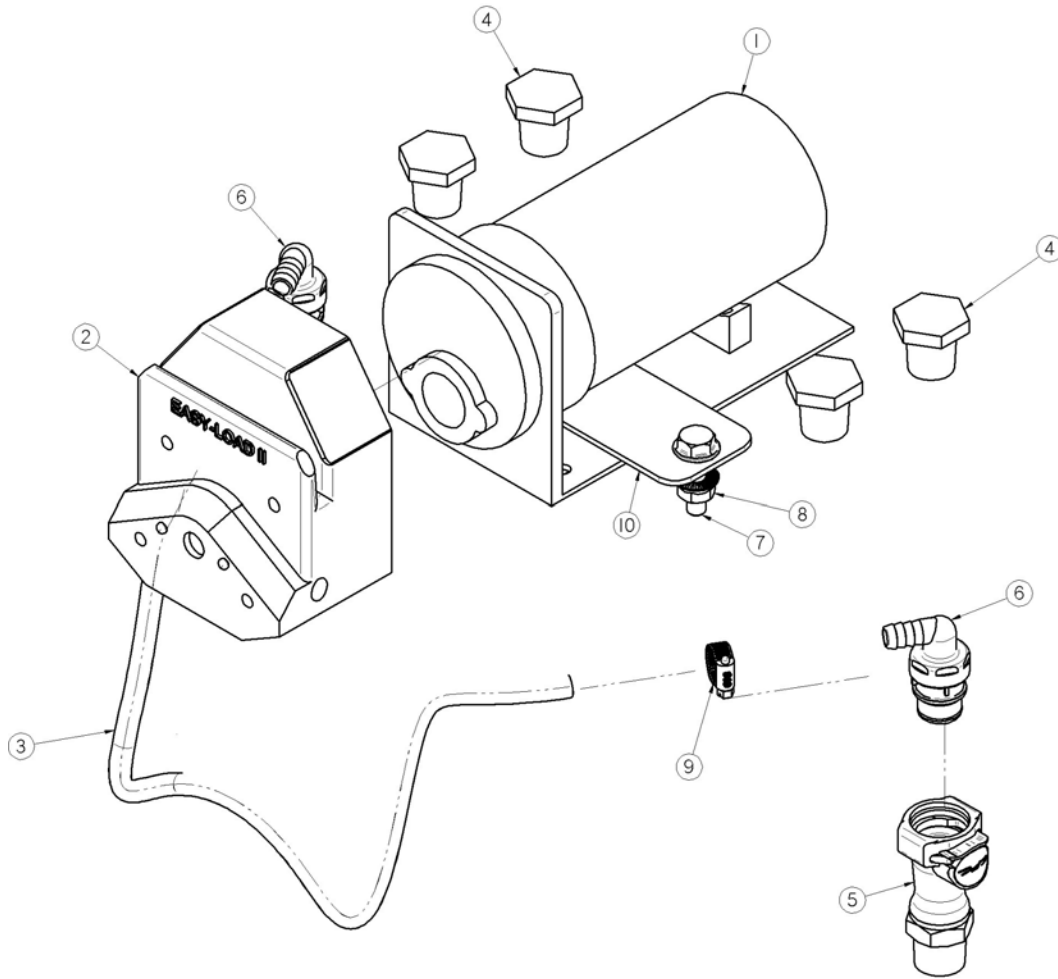
<u>Table 1b -> SMW PNL</u>
03-12-0172 -> PNL CNTL LPX SMW 230V 1PH
03-12-0173 -> PNL CNTL LPX SMW 230V 3PH
03-12-0174 -> PNL CNTL LPX SMW 460V 3PH
03-12-0175 -> PNL CNTL LPX SMW 575V 3PH
03-12-0176 -> PNL CNTL LPX MNL SMW (This is the 2nd Seed Wheel panel for the manual option only)

<u>Table 1c -> TRTR PNL</u>
03-12-0168 -> PNL CNTL LPX TRTR 230V 1PH
03-12-0169 -> PNL CNTL LPX TRTR 230V 3PH
03-12-0170 -> PNL CNTL LPX TRTR 460V 3PH
03-12-0171 -> PNL CNTL LPX TRTR 575V 3PH

<u>Table 2a -> Power Kits</u>
230V -> 03-20-0011
575V -> 03-20-0017

<u>Table 3a -> Extension Rings</u>
0
6IN CS -> 05-07-0367
12IN CS -> 05-07-0008

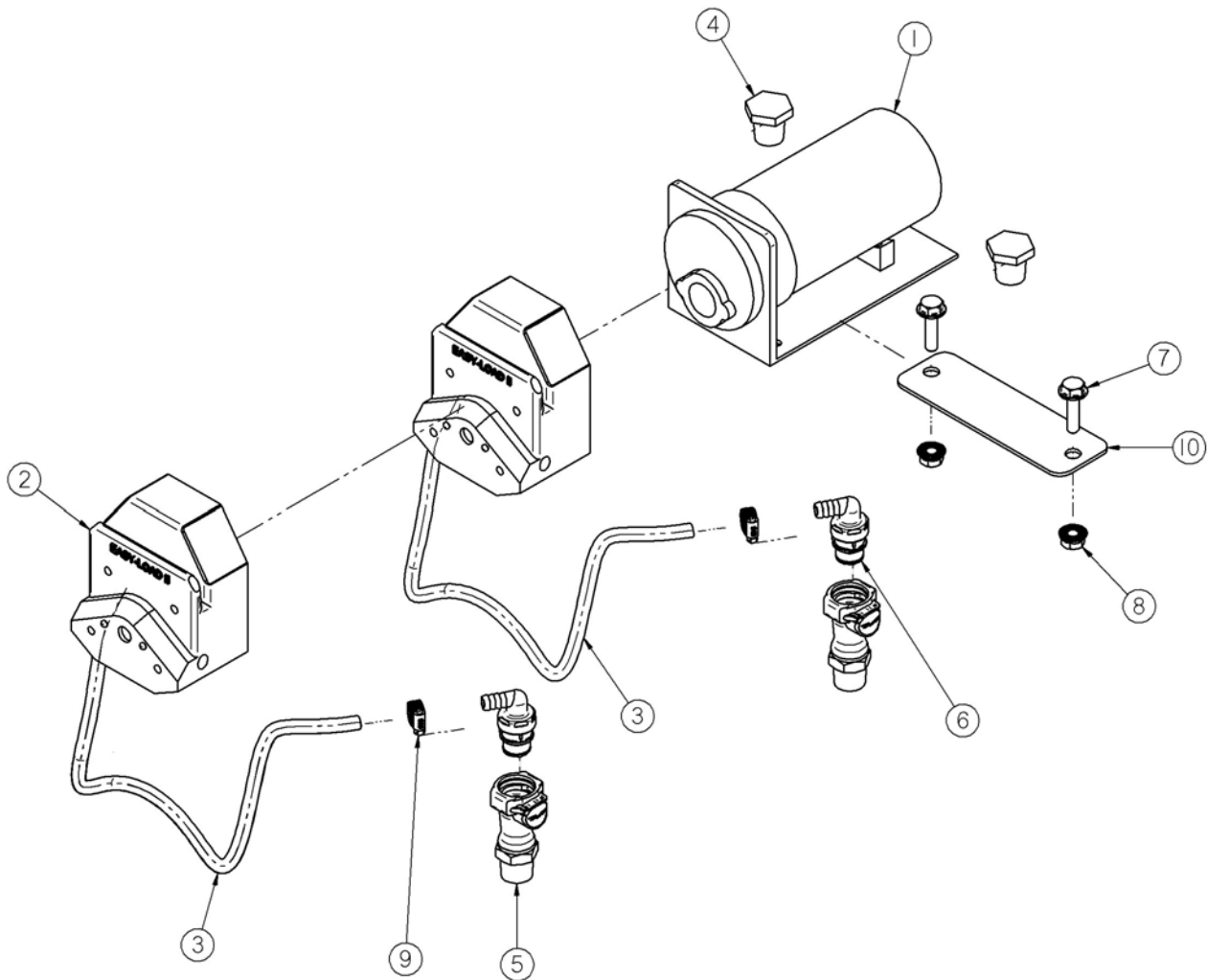
LPX Pump Stand - Single Pump Head & Parts List



SINGLE PUMP HEAD 13-04-0105

<u>Item #</u>	<u>Part #</u>	<u>Title</u>	<u>Qty</u>
1	01-01-0010	MTR .1HP 6-600RPM 90VDC	1
2	02-01-0005	PUMP HEAD PRST MF LS 115V 600RPM	1
3	02-03-0001	TUBE MASTERFLEX PUMPHEAD (28 inches)	4
4	02-14-0002	1/2-14 NPT,PLUG BP	4
5	02-15-0016	FTTG CPLG .500 NPT QCK DISC BODY	2
6	02-15-0022	FTTG CPLG .375 HB X 90 QCK DISC INSERT	2
7	06-01-0189	BOLT, FLG .375-16 UNC ZP GRADE 5; 1-1/4" LG	2
8	06-03-0014	NUT LOCK FLG .375-16 ZP GR5	2
9	06-07-0005	CLMP HOSE .219 TO .625 X .313W ZP	2
10	102276	BRKT PUMP MOUNT PUMPSTD	1

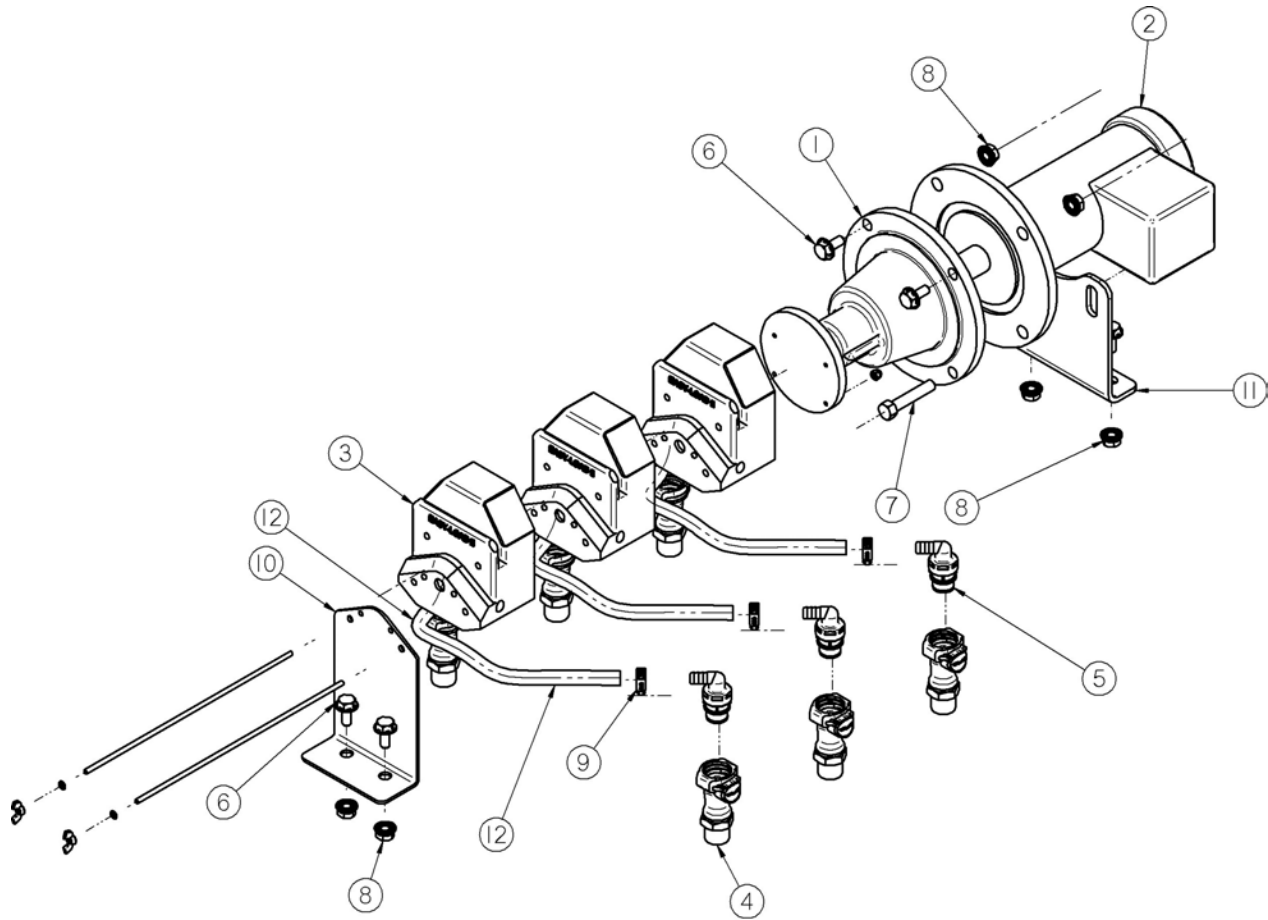
LPX Pump Stand - Dual Pump Head & Parts List



DUAL PUMP HEAD 13-04-0104

<u>Item #</u>	<u>Part #</u>	<u>Title</u>	<u>Qty</u>
1	01-01-0010	MTR .1HP 6-600RPM 90VDC	1
2	02-01-0005	PUMP HEAD PRST MF LS 115V 600RPM	2
3	02-03-0001	TUBE MASTERFLEX PUMPHEAD (28 Inches)	5
4	02-14-0002	1/2-14 NPT,PLUG BP	2
5	02-15-0016	FTTG CPLG .500 NPT QCK DISC BODY	4
6	02-15-0022	FTTG CPLG .375 HB X 90 QCK DISC INSERT	4
7	06-01-0189	BOLT, FLG .375-16 UNC ZP GRADE 5; 1-1/4" LG	2
8	06-03-0014	NUT LOCK FLG .375-16 ZP GR5	2
9	06-07-0005	CLMP HOSE .219 TO .625 X .313W ZP	4
10	102276	BRKT PUMP MOUNT PUMPSTD	1

LPX Pump Stand - Triple Pump Head & Parts List

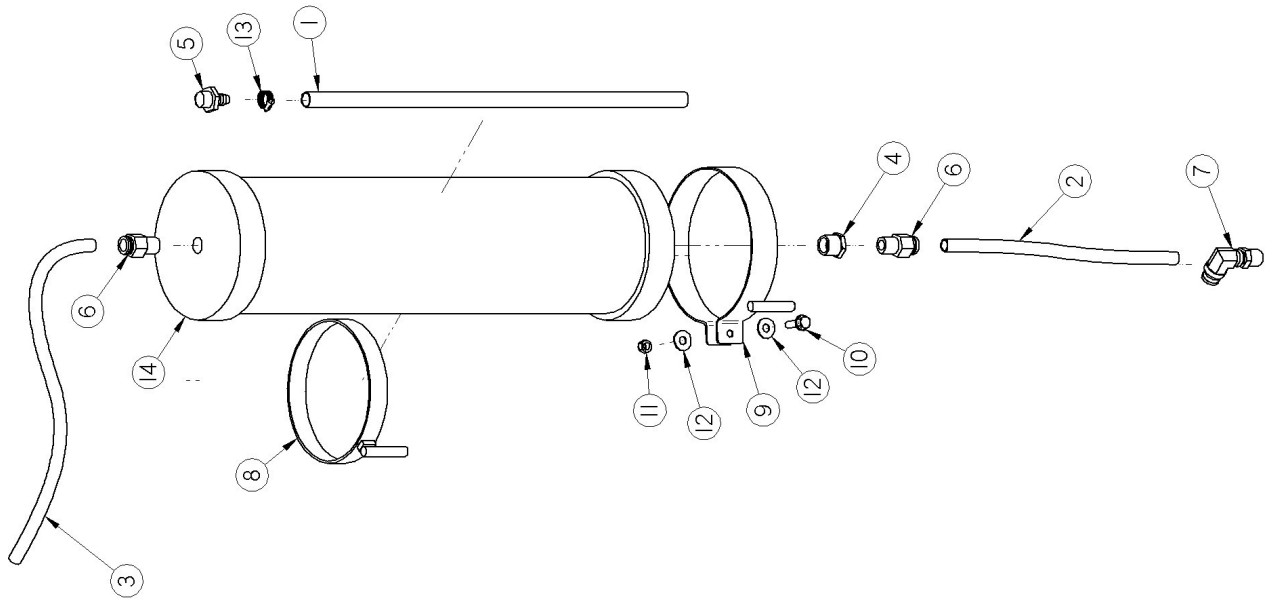


3 PUMP HEAD 13-04-0103

<u>Item #</u>	<u>Part #</u>	<u>Title</u>	<u>Qty</u>
1	01-01-0066	SPEED REDUCER, 3.7 TO 1	1
2	01-01-0160	MTR .25HP 2500 RPM 34 90VDC	1
3	02-01-0005	PUMP HEAD PRST MF LS 115V 600RPM	3
4	02-15-0016	FTTG CPLG .500 NPT QCK DISC BODY	6
5	02-15-0022	FTTG CPLG .375 HB X 90 QCK DISC INSERT	6
6	06-01-0124	BOLT, FLG .375-16 UNC ZP GRADE 5; 3/4" LG	6
7	06-01-0137	BOLT .375-16 X 2.00 ZP GR5 FULL THRD	2
8	06-03-0014	NUT LOCK FLG .375-16 ZP GR5	8
9	06-07-0005	CLMP HOSE .219 TO .625 X .313W ZP	6
10	102213	BRKT 3PUMPHEAD MNT PUMPSTD	1
11	102214	BRKT 3HEAD MOTOR MNT PUMPSTD	1
12	02-03-0001	HOSE MF .375 NPRN BLK - LS35 .31 ID (28 Inches)	6

LPX MANUAL SEED TREATER

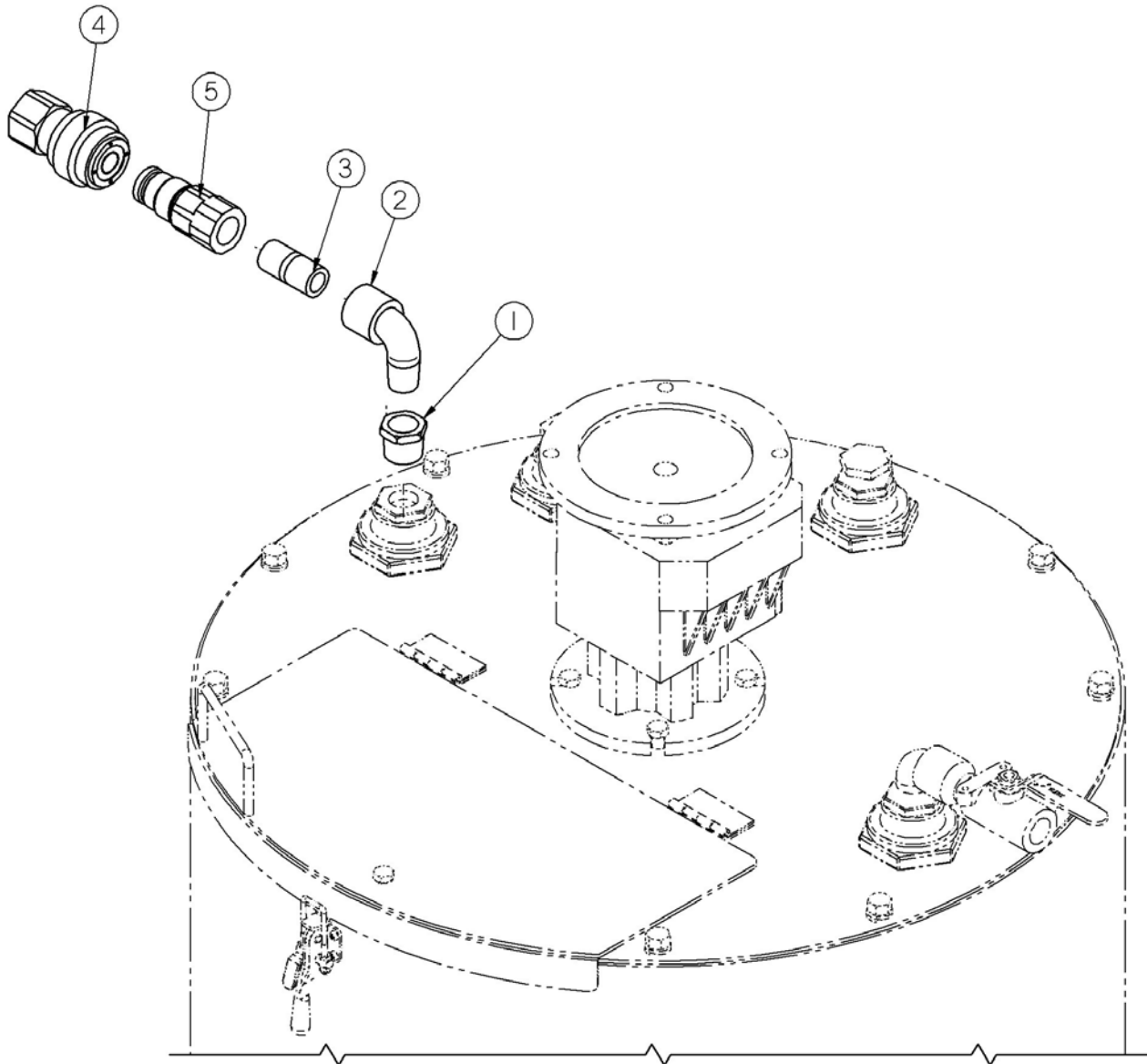
LPX Pump Stand - Calibration Tube & Parts List



CAL TUBE PUMP STAND 13-04-0106

<u>Item #</u>	<u>Part #</u>	<u>Title</u>	<u>Qty</u>
1	02-03-0005	TUBE,CALIBRATION TUBE INSIDE (22.5 Inches)	1
2	02-03-0034	TUBE CAL TUBE TO VLV PUMPSTD (11.25 Inches)	1
3	02-03-0034	TUBE SOL VLV TO CAL TUBE PUMPSTD (28 Inches)	1
4	02-04-0008	BUSHING .750-14 NPT, REDUCER .500-14 NPT	1
5	02-08-0007	FTTG STGHT .500HB X .500NPT ML NYL	1
6	02-16-0028	FTTG PUSH .625OD X .500 NPT ML	2
7	02-16-0050	FTTG PUSH 90DEG .625ODX.500 NPT ML	1
8	05-08-0006	WDMT,INOC.BRK,SM	1
9	05-08-0007	WDMT,BRK,INOC LG	1
10	06-01-0189	BOLT, FLG .375-16 UNC ZP GRADE 5; 1-1/4" LG	1
11	06-03-0003	NUT NYL LOCK .375-16 ZP GR5	1
12	06-05-0004	WSHR FLAT .375 ZP	2
13	06-07-0006	CLMP HOSE .500 TO .906 X .313W ZP	1
14	07-02-0006	CALIBRATION TUBE,10K ML - 2005	1

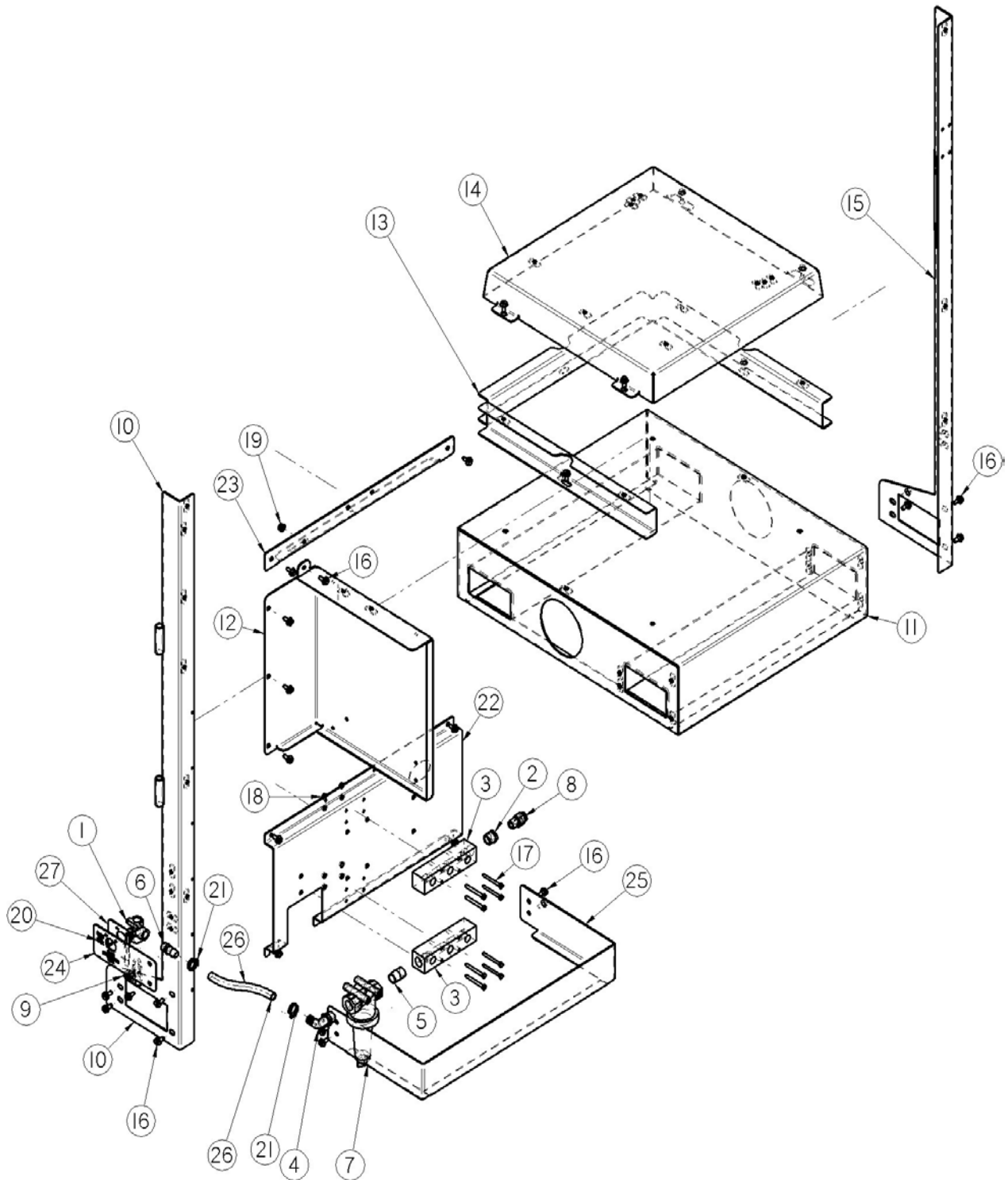
LPX Pump Stand - Dry Lock Fittings & Parts List



DRY LOCK FITTINGS 13-10-0017

<u>Item #</u>	<u>Part #</u>	<u>Title</u>	<u>Qty</u>
1	02-04-0024	BUSH .750-14 NPT .500-14 NPT BP	1
2	02-06-0017	1/2-14 NPT,SL 90 DEG. BP	1
3	02-07-0009	FTTG NIP .500 NPT X 1.75 TBE BLK	1
4	02-15-0035	FTTG CPLG 0.50 NPT FM PARKER POLY	1
5	02-15-0036	FTTG CPLG 0.50 NPT ML PARKER POLY	1

LPX Pump Stand - Base Frame



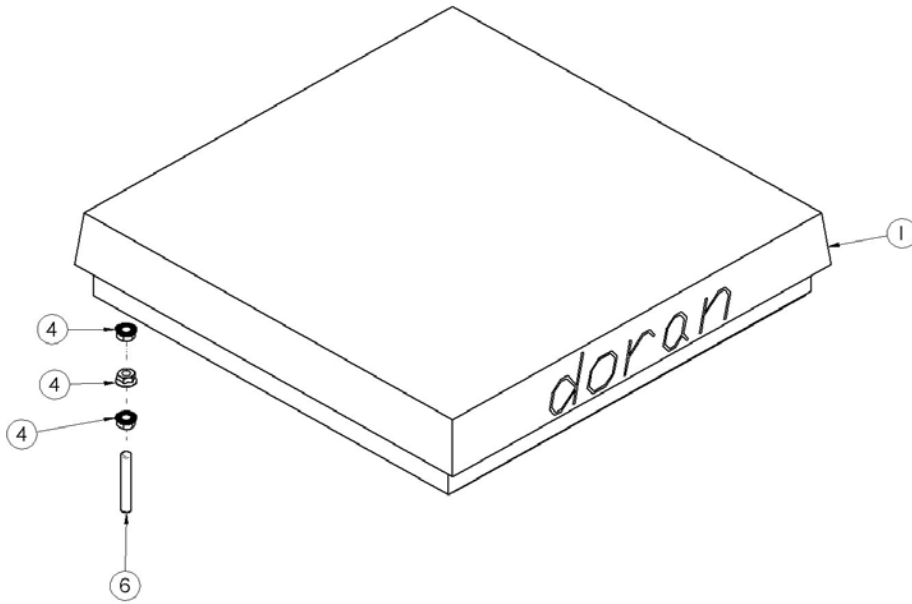
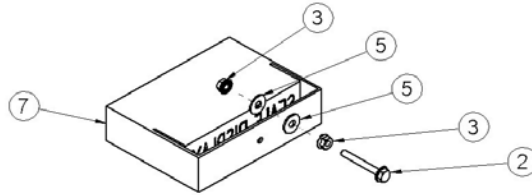
LPX MANUAL SEED TREATER

LPX Pump Stand - Base Frame Parts List

LPX PUMP STAND BASE FRAME 05-03-1066

<u>Item #</u>	<u>Part #</u>	<u>Title</u>	<u>Qty</u>
1	02-02-0007	VLV BALL .500 NPT 3WAY BRSS	1
2	02-04-0008	BUSHING .750-14 NPT, REDUCER .500-14 NPT	1
3	02-05-0043	FTTG MANIFOLD UHMW 1 IN 3 OUT	2
4	02-06-0015	BARB, .750-14 NPT X .750 90DEG WP	1
5	02-07-0070	FTTG NIP .750 NPT X 1.50 TBE SS	1
6	02-08-0011	1/2-14 NPT, 3/4 BARB, STRAIGHT BP	1
7	02-12-0011	FLTR TEE PPE .750 NPT 16 MESH BANJO	1
8	02-16-0028	FTTG PUSH .625OD X .500 NPT ML	1
9	02-16-0050	FTTG PUSH 90DEG .625ODX.500 NPT ML	1
10	05-03-1052	WDMT SMALL PUMPSTAND LH UPRIGHT	1
11	05-03-1053	WDMT SMALL PUMPSTAND BASE BOX	1
12	05-03-1064	WDMT PANEL MNT PUMPSTD	1
13	05-03-1072	WDMT SPACER PUMPSTD	1
14	05-03-1073	WDMT SCALE LID PUMPSTD	1
15	05-03-1074	WDMT SMALL PUMPSTAND RH UPRIGHT	1
16	06-01-0124	BOLT, FLG .375-16 UNC ZP GRADE 5; 3/4" LG	31
17	06-01-0192	BOLT .250-20 X 2.50 ZP GR5	8
18	06-03-0013	NUT,LOCK, FLG .250-20 ZP SERRATED	8
19	06-03-0014	NUT LOCK FLG .375-16 ZP GR5	1
20	06-06-0020	SRCW, PAN HD, 10-24 X .500 ZP	2
21	06-07-0007	CLMP HOSE .563 TO 1.06 X .313W ZP	2
22	102200	BRKT PUMP ALL HEADS PUMPSTD	1
23	10220E	PLT XBEAM SUPP VLV PUMPSTD	1
24	102290	PLT LABEL SOURCE PUMPSTD	1
25	1022AA	BRKT FORKLIFT GUARD PUMPSTD	1
26	1022AB	1022AB 02-03-0006 8.25IN LONG	1
27	1022AC	PLT SPACER VLV SOURCE MOUNT	1

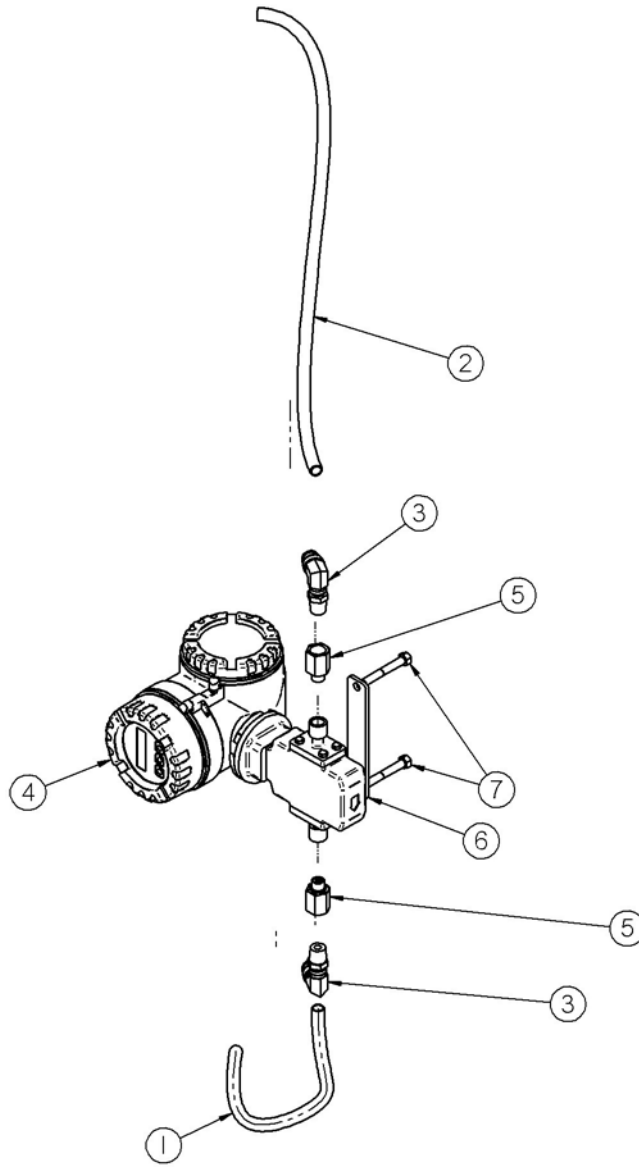
LPX Pump Stand - Scale Assembly & Parts List



LPX SCALE ASSY 05-03-1069

<u>Item #</u>	<u>Part #</u>	<u>Title</u>	<u>Qty</u>
1	03-19-0028	SCL, 24' X 24" 1000 LB BASE	1
2	06-01-0204	BOLT, FLG .375-16 UNC ZP GRADE 5; 2-1/2" LG	1
3	06-03-0014	NUT LOCK FLG .375-16 ZP GR5	2
4	06-03-0015	NUT LOCK FLG .500-13 ZP GR5	12
5	06-05-0004	WSHR FLAT .375 ZP	2
6	06-14-0018	.500-13 THD RD CS 3IN LONG	4
7	PART OF 03-19-0028	SCALE DISPLAY	1

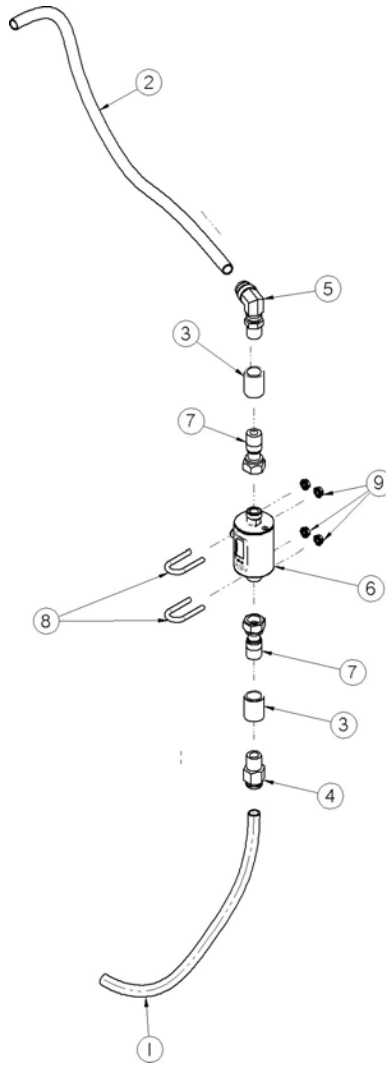
LPX Pump Stand - Mass Flow Meter & Parts List



MASS FLOW METER 05-03-1067

<u>Item #</u>	<u>Part #</u>	<u>Title</u>	<u>Qty</u>
1	02-03-0034	TUBE MANIFOLD TO FLOWMETER (14.75 Inches)	1
2	02-03-0034	TUBE FLOWMETER TO SOLENOID VALVE (20 Inches)	1
3	02-16-0050	FTTG PUSH 90DEG .625ODX.500 NPT ML	2
4	03-18-0019	FLMT PROMASS 83E08 DN8 3/8IN	1
5	03-18-0021	FTTG ADPTR 1/2" VC0 X 1/2" FPT E+H	2
6	05-10-3413	BRACKET FLMT CLAMP E&H 83E	1
7	06-01-0116	BOLT .375-16 X 2.75 ZP GR5	2

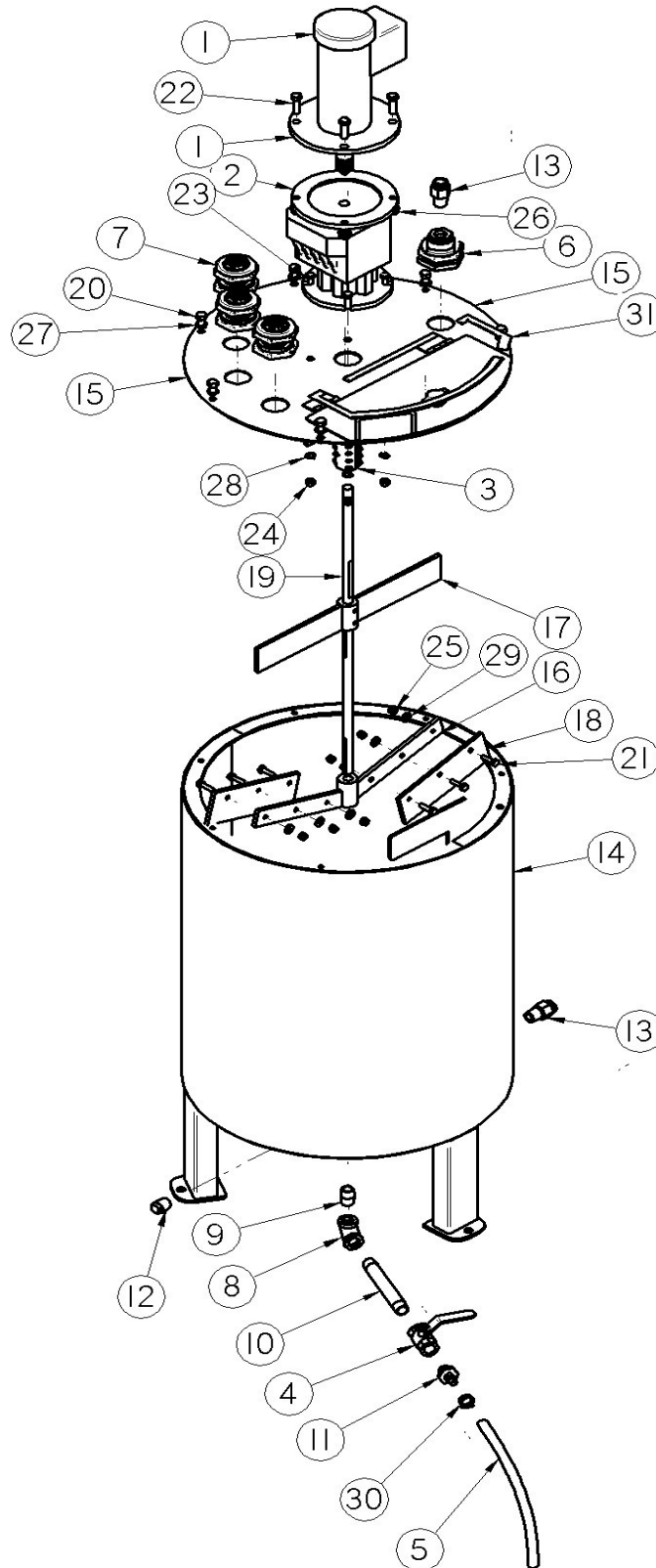
LPX Pump Stand - Volumetric Flow Meter & Parts List



VOLUMETRIC FLOW METER 05-03-1068

<u>Item #</u>	<u>Part #</u>	<u>Title</u>	<u>Qty</u>
1	02-03-0034	TUBE MANIFOLD TO FLOWMETER (31 Inches)	1
2	02-03-0034	TUBE FLOWMETER TO AUTO VLV (22 Inches)	1
3	02-05-0005	FTTG CPLG .500 NPT FM SS	2
4	02-16-0028	FTTG PUSH .625OD X .500 NPT ML	1
5	02-16-0050	FTTG PUSH 90DEG .625ODX.500 NPT ML	1
6	03-18-0018	FLMT IFM EFECTOR SM6001 1/2 IN	1
7	03-18-0020	FTTG ADPTR G1/2 TO 1/2NPT ML IFM	2
8	06-01-0199	BOLT U .313-18 X 1.00 X .375 ZP GR5	2
9	06-03-0013	NUT,LOCK, FLG .250-20 ZP SERRATED	4

LPX Pump Stand - 30 Gallon Stainless Steel Tank

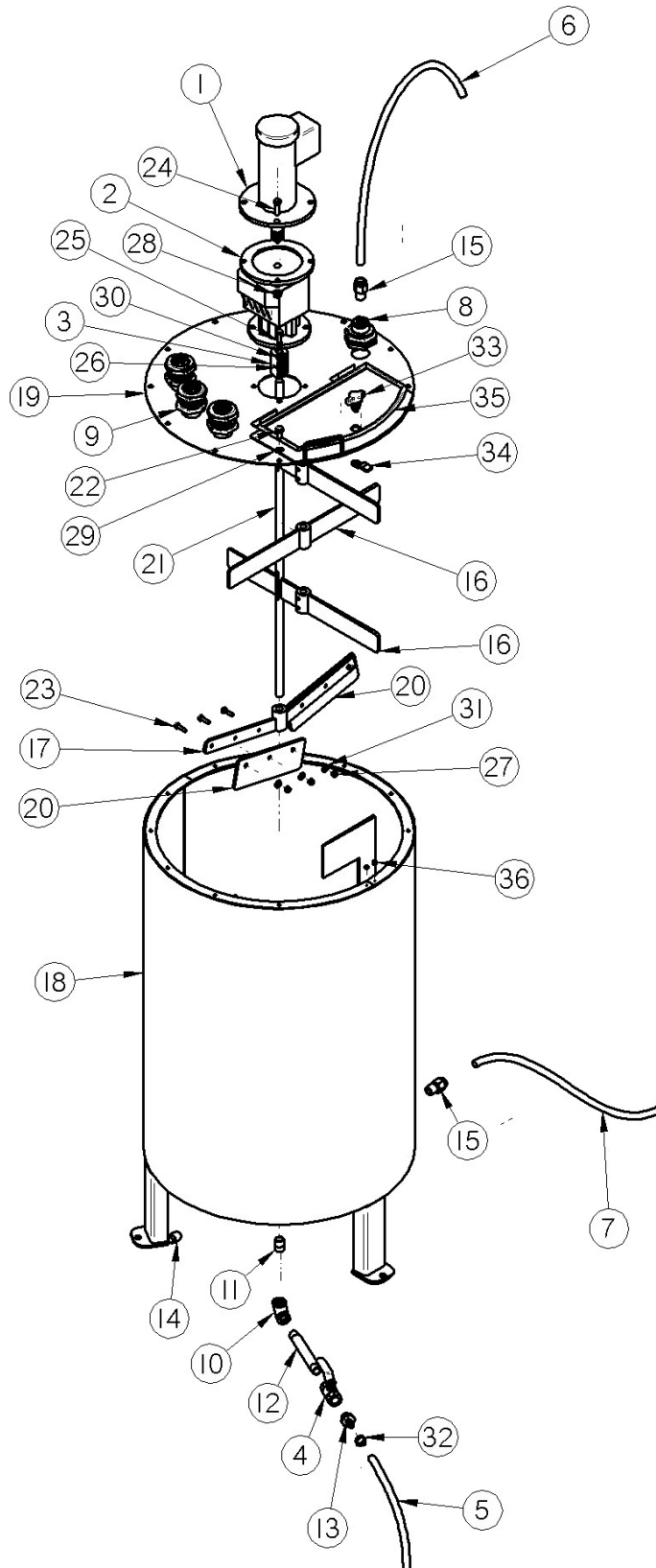


LPX Pump Stand - 30 Gallon Stainless Steel Tank Parts List

30 GAL STAINLESS STEEL PUMP STAND 04-03-0159

<u>Item #</u>	<u>Part #</u>	<u>Title</u>	<u>Qty</u>
1	01-01-0007	MTR .25HP 1725RPM 34 90VDC	1
2	01-01-0039	GBOX IL 61.8:1 56C OTP 56C INP	1
3	01-07-0015	CPLG CLPN .625 X .750 X 1.50OD SS	1
4	02-02-0006	.500-14 NPT X 2-WAY VALVE	1
5	02-03-0005	DRAIN HOSE PUMP STAND (12 Inches)	1
6	02-05-0028	FTTG .500 NPT DBL THD PPE BULKHEAD	1
7	02-05-0045	FTTG .750 NPT DBL THD PPE BULKHEAD	3
8	02-06-0012	ELBOW, .500-14 NPT, 90 DEG. SS	1
9	02-07-0007	FTTG NIP .500 NPT X 1.125 TBE SS	1
10	02-07-0015	FTTG NIP .500 NPT X 6.00 TBE SS	1
11	02-08-0007	FTTG STGHT .500HB X .500NPT ML NYL	1
12	02-14-0001	FTTG PLUG SQHD .500 NPT SS	1
13	02-16-0028	FTTG PUSH .625OD X .500 NPT ML	2
14	05-03-1088	WDMT 30GAL CHEM TNK LOCK LID	1
15	05-03-1089	WDMT 30GAL REMV TOP LOCK LID	1
16	05-04-0005	WDMT 27GAL STIR ARM LOWER	1
17	05-04-0011	WDMT 27GAL STIR ARM MIDDLE	2
18	05-10-0799	PDL 27GAL WIPER	2
19	05-11-0349	30-GAL TANK STIR ROD	1
20	06-01-0042	BOLT, .375-16 X .750 18-8 SS	6
21	06-01-0051	BOLT .250-20 X 1.00 SS 316	6
22	06-01-0053	BOLT .375-16 X 1.25 ZP GR5	4
23	06-01-0083	BOLT .313-18 X 1.00 SS 18-8	4
24	06-02-0017	NUT FULL .313-18 SS 18-8	4
25	06-03-0007	NUT NYL LOCK .250-20 SS 18-8	6
26	06-03-0014	NUT LOCK FLG .375-16 ZP GR5	4
27	06-04-0008	WSHR LOCK SPLT .375 SS 18-8	6
28	06-04-0010	WSHR LOCK SPLT .313 SS 18-8	4
29	06-05-0002	WASHER, .250 FLAT 316 SS	6
30	06-07-0006	CLMP HOSE .500 TO .906 X .313W ZP	1
31	06-10-0001	SEAL,CHARCAOL TANK	1

LPX Pump Stand—60 Gallon Stainless Steel Tank



LPX MANUAL SEED TREATER

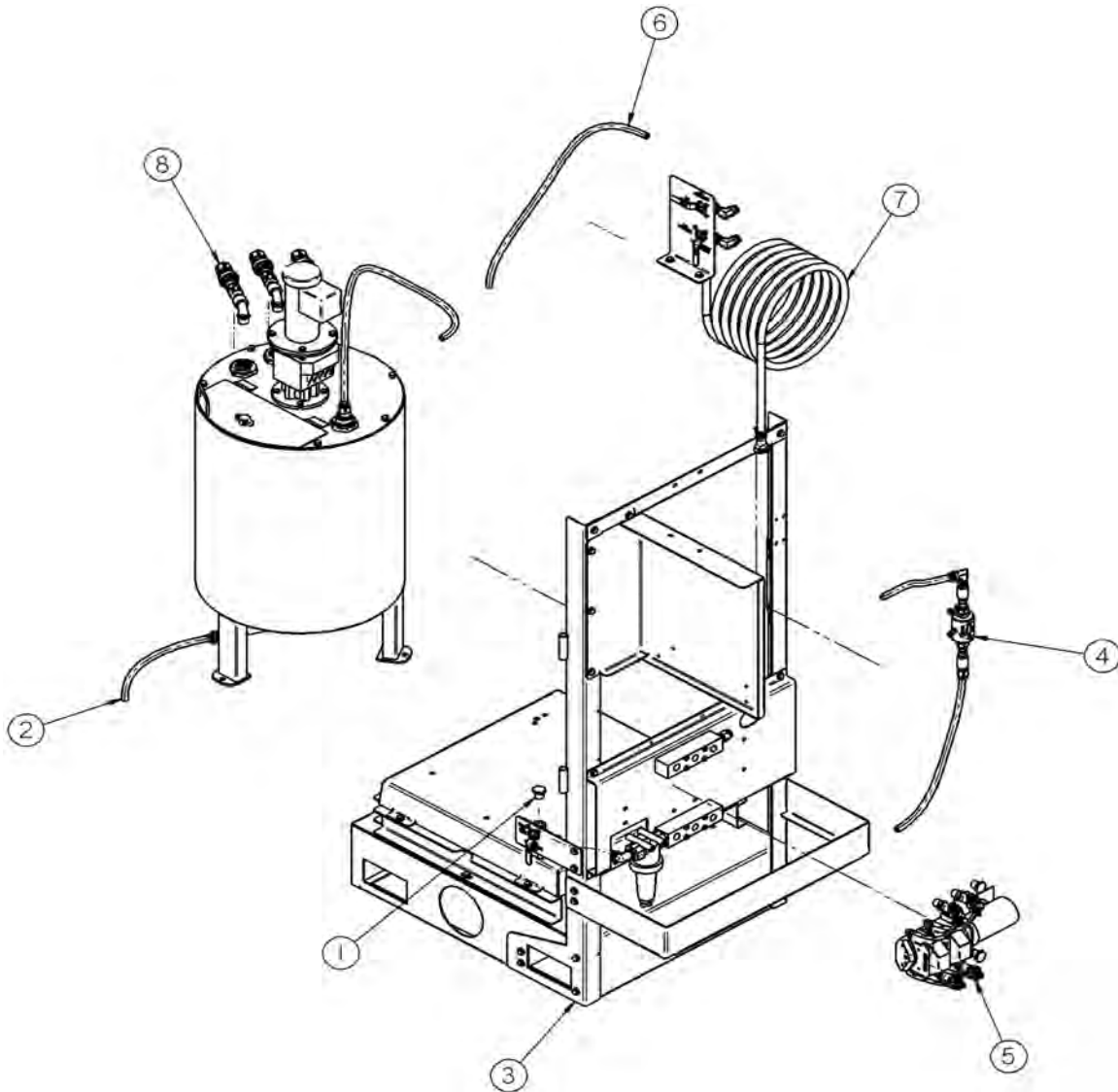
LPX Pump Stand - 60 Stainless Steel Tank Parts List

60 GAL SS PUMP STAND 04-03-0158

Item #	Part #	Title	Qty
1	01-01-0007	MTR .25HP 1725RPM 34 90VDC	1
2	01-01-0039	GBOX IL 61.8:1 56C OTP 56C INP	1
3	01-07-0015	CPLG CLPN .625 X .750 X 1.50OD SS	1
4	02-02-0006	VLV BALL .500 NPT 2WAY BRSS	1
5	02-03-0005	DRAIN HOSE PUMP STAND (12 Inches)	1
6	02-03-0034	HOSE SOL VLV TO TANK (23 Inches)	1
7	02-03-0034	HOSE TANK TO VLV (23 Inches)	1
8	02-05-0028	FTTG .500 NPT DBL THD PPE BULKHEAD	1
9	02-05-0045	FTTG .750 NPT DBL THD PPE BULKHEAD	3
10	02-06-0012	ELBOW, .500-14 NPT, 90 DEG. SS	1
11	02-07-0007	FTTG NIP .500 NPT X 1.125 TBE SS	1
12	02-07-0015	FTTG NIP .500 NPT X 6.00 TBE SS	1
13	02-08-0007	FTTG STGHT .500HB X .500NPT ML NYL	1
14	02-14-0001	FTTG PLUG SQHD .500 NPT SS	1
15	02-16-0028	FTTG PUSH .625OD X .500 NPT ML	2
16	05-03-0069	WDMT 50GAL MIDDLE STIR ARM	3
17	05-03-0070	WDMT 50GAL LOWER STIR ARM	1
18	05-03-1078	WDMT BASE 60GAL TANK	1
19	05-03-1079	WDMT 60GAL REMOVABLE TOP 2 HOLE	1
20	05-10-0878	PDL 50GAL WIPER	2
21	05-11-0341	ROD 60GAL DRV	1
22	06-01-0042	BOLT, .375-16 X .750 18-8 SS	10
23	06-01-0051	BOLT .250-20 X 1.00 SS 316	6
24	06-01-0053	BOLT .375-16 X 1.25 ZP GR5	4
25	06-01-0083	BOLT .313-18 X 1.00 SS 18-8	4
26	06-02-0017	NUT FULL .313-18 SS 18-8	4
27	06-03-0007	NUT NYL LOCK .250-20 SS 18-8	6
28	06-03-0014	NUT LOCK FLG .375-16 ZP GR5	4
29	06-04-0008	WSHR LOCK SPLT .375 SS 18-8	10
30	06-04-0010	WSHR LOCK SPLT .313 SS 18-8	4
31	06-05-0002	WSHR FLAT .250 X .625OD SS 18-8	6
32	06-07-0006	CLMP HOSE .500 TO .906 X .313W ZP	1
33	06-09-0075	KNOB WING LATCH	1
34	06-09-0076	KNOB WING CAM	1
35	06-10-0001	SEAL RBBR BULBS CHAR .500 X .250 (38 Inches)	1
36	06-12-0011	3/16 X .450" LONG POP RIVET	2

LPX MANUAL SEED TREATER

**LPX 30 Gallon, Stainless Steel, Volumetric Flow Meter, Manual Controls
Pump Stand & Parts List**

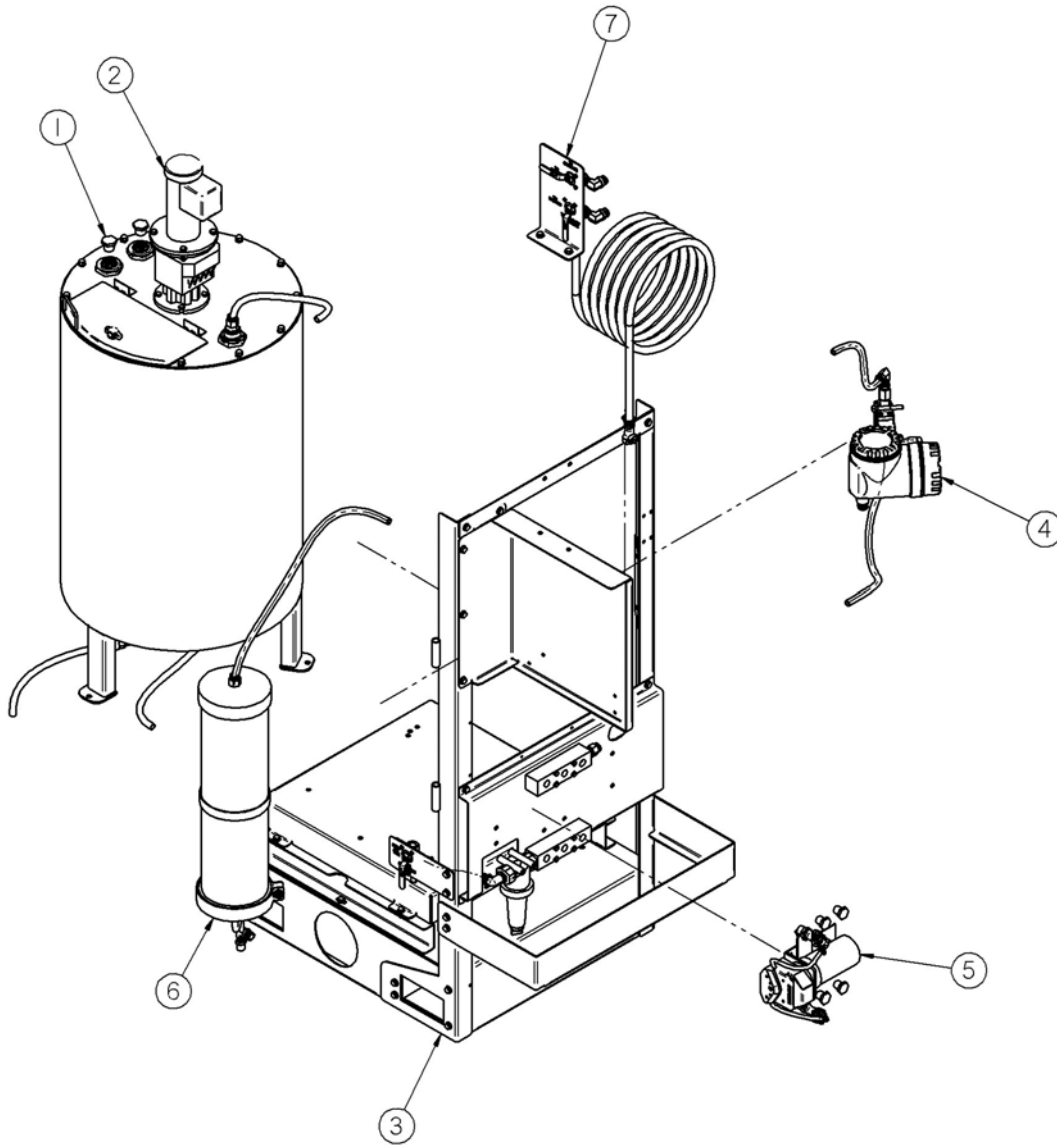


PSM30S22100

<u>Item #</u>	<u>Part #</u>	<u>Title</u>	<u>Qty</u>
1	02-14-0002	1/2-14 NPT,PLUG BP	1
2	04-03-0159	ASSY TANK 27GAL LOCK LID	1
3	05-03-1066	ASSY PUMPSTD FRAME BASE	1
4	05-03-1068	ASSY VOL FLMT PUMPSTD	1
5	13-04-0104	KIT LS HEAD X2 ASSY PUMPSTD	1
6	13-04-0106	KIT CAL TUBE ASSY PUMPSTD	1
7	13-04-0109	MAN PUMPSTD CNTRLS NO FLMT	1
8	13-10-0017	KIT FTTG CHEM TNK .5NPT PARKER	3

LPX MANUAL SEED TREATER

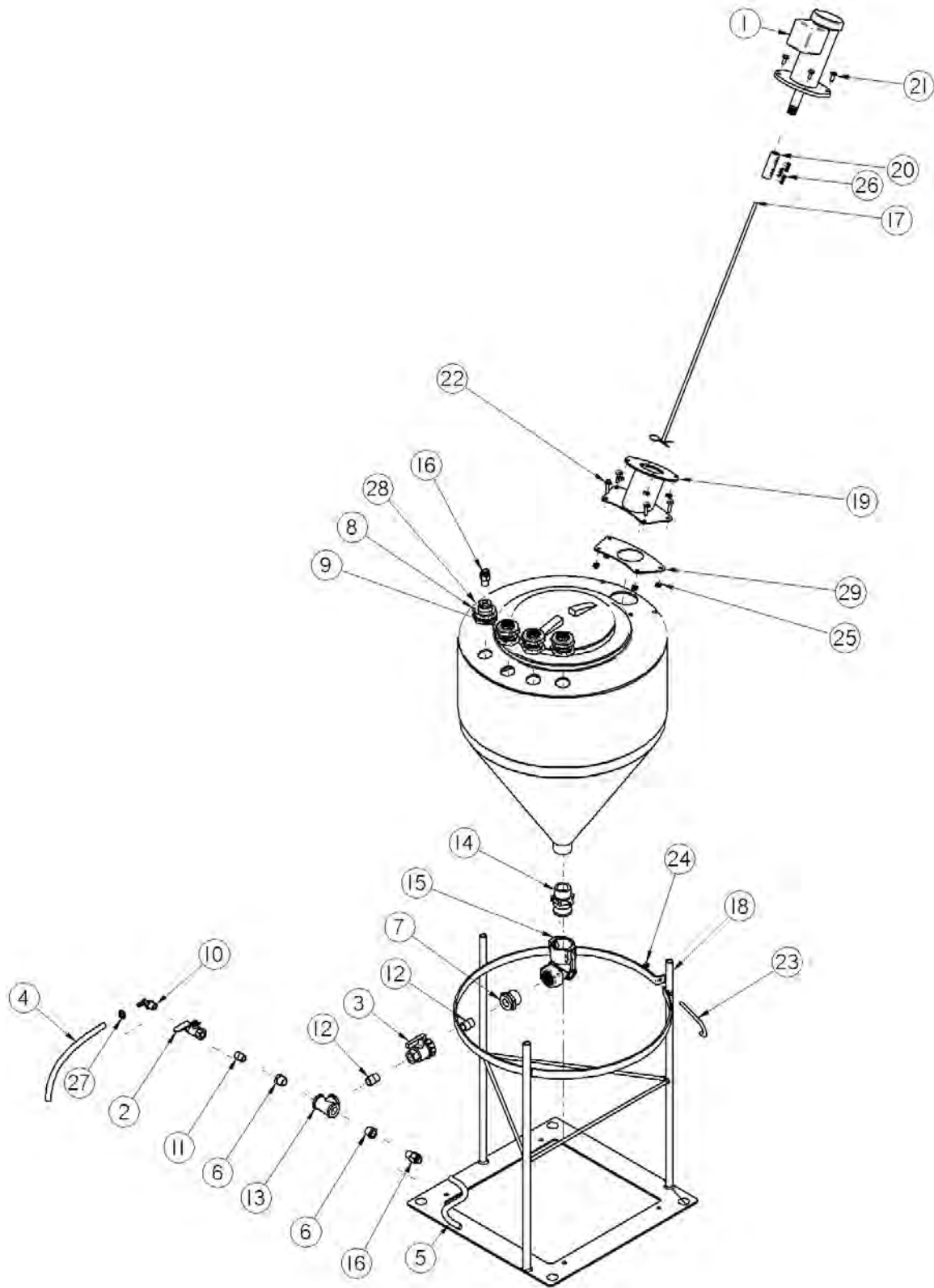
LPX 60 Gallon, Stainless Steel, Mass Flow Meter, Manual Controls
Pump Stand & Parts List



PSM60S11010

<u>Item #</u>	<u>Part #</u>	<u>Title</u>	<u>Qty</u>
1	02-14-0014	.750-14 NPT PLUG BP	3
2	04-03-0158	ASSY SS 60GAL TANK PUMPSTD	1
3	05-03-1066	ASSY PUMPSTD FRAME BASE	1
4	05-03-1067	ASSY MASS FLMT PUMPSTD	1
5	13-04-0105	KIT LS HEAD X1 ASSY PUMPSTD	1
6	13-04-0106	KIT CAL TUBE ASSY PUMPSTD	1
7	13-04-0109	MAN PUMPSTD CNTRLS NO FLMT	1

LPX Pump Stand - 30 Gallon Poly Tank



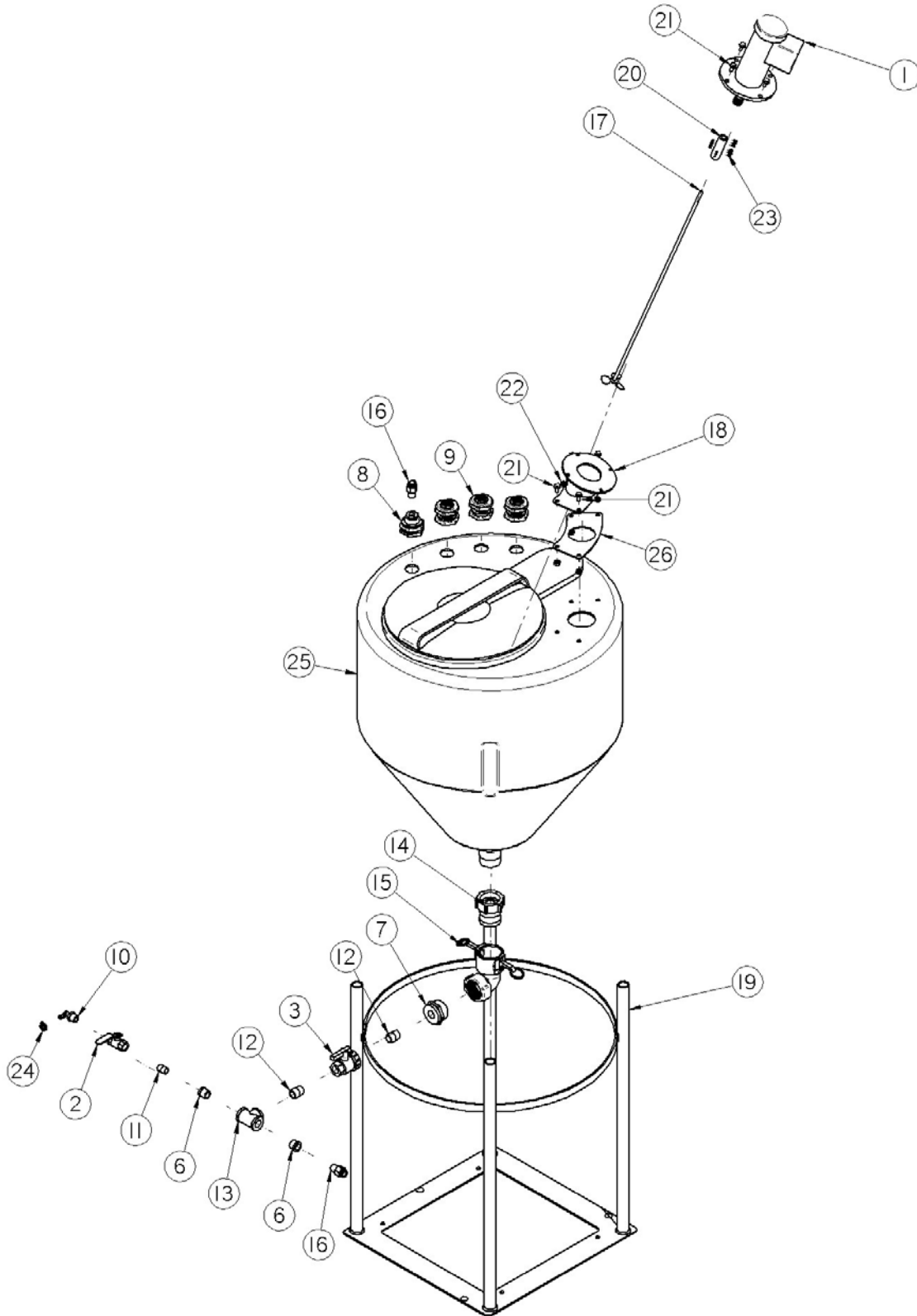
LPX MANUAL SEED TREATER

LPX Pump Stand - 30 Gallon Poly Tank Parts List

30GAL POLY PUMP STAND 04-03-0161

<u>Item #</u>	<u>Part #</u>	<u>Title</u>	<u>Qty</u>
1	01-01-0007	MTR .25HP 1725RPM 34 90VDC	1
2	02-02-0006	.500-14 NPT X 2-WAY VALVE	1
3	02-02-0056	VLV BALL .750 NPT FM PLAS	1
4	02-03-0005	DRAIN HOSE PUMP STAND (12 Inches)	1
5	02-03-0034	TBG .625 OD POLYE COMP (24 Inches)	1
6	02-04-0008	BUSHING .750-14 NPT, REDUCER .500-14 NPT	2
7	02-04-0034	FTTG BUSH 1.50NPT X .750NPT PPE	1
8	02-05-0028	FTTG .500 NPT DBL THD PPE BULKHEAD	1
9	02-05-0045	FTTG .750 NPT DBL THD PPE BULKHEAD	3
10	02-06-0010	FTTG 90 DEG .500HB X .500NPT ML NYL	1
11	02-07-0008	FTTG NIP .500 NPT X 1.125 TBE BLK	1
12	02-07-0025	NIPPLE 3/4" NPT CLOSE 304SS	2
13	02-09-0008	TEE 3/4 NPT X 3/4 NPT X 3/4 NPT SS	1
14	02-15-0040	FTTG CPLG CAM LVR 1.5" ML X ML	1
15	02-15-0041	FTTG CPLG CAM LVR 90DEG 1.5" FMXFM	1
16	02-16-0028	FTTG PUSH .625OD X .500 NPT ML	2
17	04-03-0162	MXR PROP 30"X5/16" SHAFT 3" PROP	1
18	05-03-1071	WDMT TANKSTD 30GAL PUMPSTD	1
19	05-03-1106	WDMT MTR MNT POLY TANK 30G PUMPSTD	1
20	05-11-0346	COUPLER MOTOR MIX SHAFT POLY TANK	1
21	06-01-0124	BOLT, FLG .375-16 UNC ZP GRADE 5; 3/4" LG	4
22	06-01-0189	BOLT, FLG .375-16 UNC ZP GRADE 5; 1-1/4" LG	4
23	06-01-0239	JBOLT .375-16 X 5.00 CS ZP	1
24	06-02-0003	NUT FULL .375-16 ZP GR5	1
25	06-03-0014	NUT LOCK FLG .375-16 ZP GR5	8
26	06-06-0080	SETSCREW #10-32 X 0.375 HEX CUP PT	9
27	06-07-0006	CLMP HOSE .500 TO .906 X .313W ZP	1
28	07-02-0020	TNK 30GAL CONE 1.5 FPT OUTLET FD	1
29	102247	PSM BOT MTR MNT PUMPSTD	1

LPX Pump Stand - 60 Gallon Poly Tank



LPX MANUAL SEED TREATER

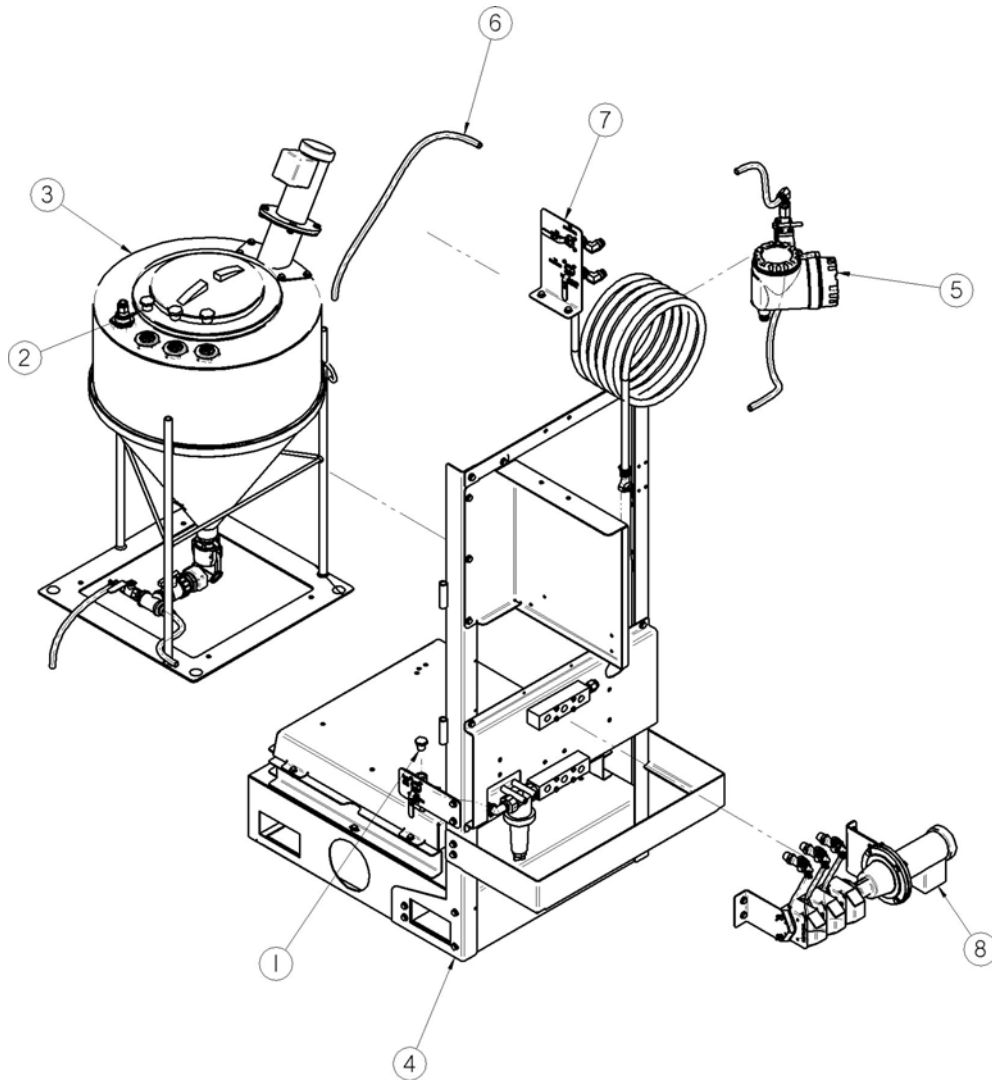
LPX Pump Stand - 60 Gallon Poly Tank Parts List

60 GAL POLY PUMPSTAND 04-03-0160

<u>Item #</u>	<u>Part #</u>	<u>Title</u>	<u>Qty</u>
1	01-01-0007	MTR .25HP 1725RPM 34 90VDC	1
2	02-02-0006	.500-14 NPT X 2-WAY VALVE	1
3	02-02-0056	VLV BALL .750 NPT FM PLAS	1
4	02-03-0005	DRAIN HOSE PUMP STAND (12 Inches)	1
5	02-03-0034	TBG .625 OD POLYE COMP (24 Inches)	1
6	02-04-0008	BUSHING .750-14 NPT, REDUCER .500-14 NPT	2
7	02-04-0033	FTTG BUSH 2.00NPT X .750NPT PPE	1
8	02-05-0028	FTTG .500 NPT DBL THD PPE BULKHEAD	1
9	02-05-0045	FTTG .750 NPT DBL THD PPE BULKHEAD	3
10	02-06-0010	FTTG 90 DEG .500HB X .500NPT ML NYL	1
11	02-07-0008	FTTG NIP .500 NPT X 1.125 TBE BLK	1
12	02-07-0025	NIPPLE 3/4" NPT CLOSE 304SS	2
13	02-09-0008	TEE 3/4 NPT X 3/4 NPT X 3/4 NPT SS	1
14	02-15-0039	FTTG CPLG CAM LVR 2" ML X FM NPT	1
15	02-15-0042	FTTG CPLG CAM LVR 90DEG 2" FM X FM	1
16	02-16-0028	FTTG PUSH .625OD X .500 NPT ML	2
17	04-03-0162	MXR PROP 30"X5/16" SHAFT 3" PROP	1
18	05-03-1062	WDMT MTR MNT POLY TANK PUMPSTD	1
19	05-03-1070	WDMT TANKSTD 60GAL PUMPSTD	1
20	05-11-0346	COUPLER MOTOR MIX SHAFT POLY TANK	1
21	06-01-0124	BOLT, FLG .375-16 UNC ZP GRADE 5; 3/4" LG	8
22	06-03-0014	NUT LOCK FLG .375-16 ZP GR5	8
23	06-06-0080	SETSCREW #10-32 X 0.375 HEX CUP PT	9
24	06-07-0006	CLMP HOSE .500 TO .906 X .313W ZP	1
25	07-02-0013	TNK 60GAL 60 DEG 2.00 MNPT FD	1
26	102247	PSM BOT MTR MNT PUMPSTD	1

LPX MANUAL SEED TREATER

**LPX 30 Gallon, Poly, Mass Flow Meter, Manual Controls
Pump Stand & Parts List**

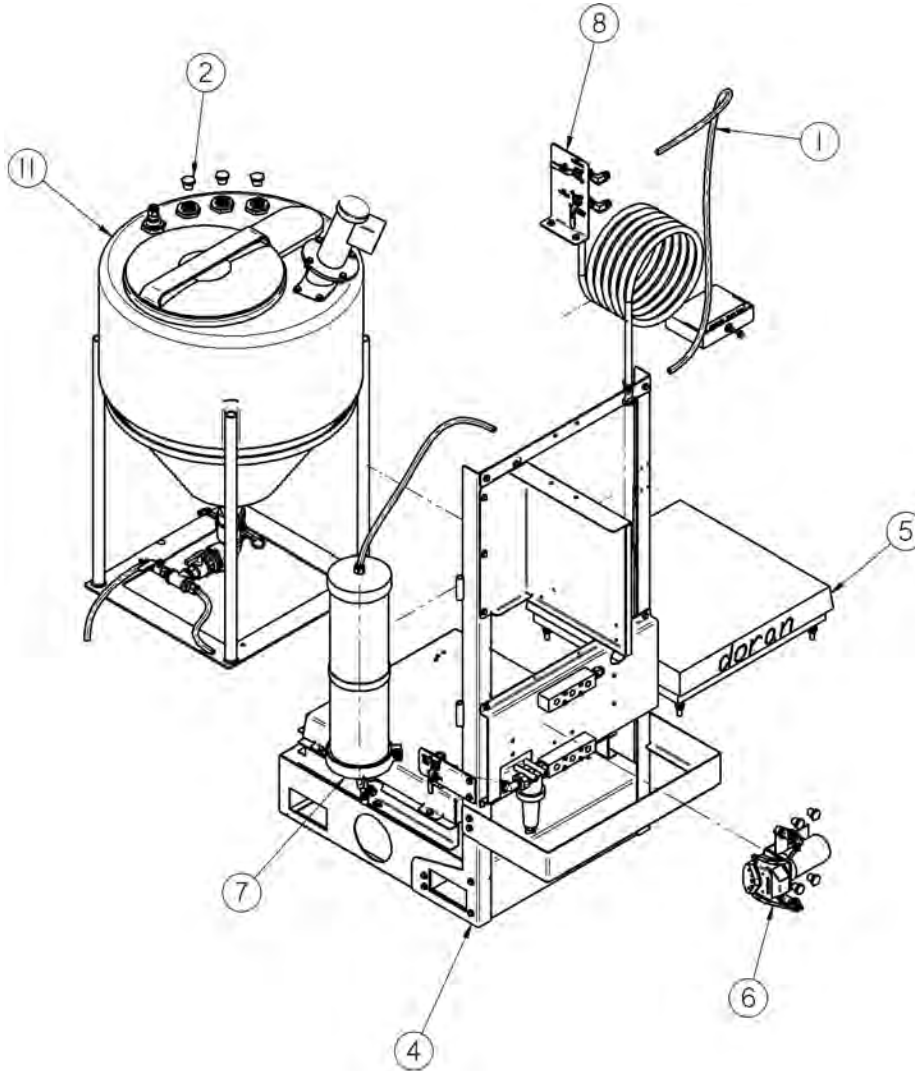


PSM30P13000

<u>Item #</u>	<u>Part #</u>	<u>Title</u>	<u>Qty</u>
1	02-14-0002	1/2-14 NPT,PLUG BP	1
2	02-14-0014	.750-14 NPT PLUG BP	3
3	04-03-0161	ASSY POLY 30GAL TANK PUMPSTD	1
4	05-03-1066	ASSY PUMPSTD FRAME BASE	1
5	05-03-1067	ASSY MASS FLMT PUMPSTD	1
6	13-04-0106	KIT CAL TUBE ASSY PUMPSTD	1
7	13-04-0109	MAN PUMPSTD CNTRLS NO FLMT	1
8	13-04-0112	KIT LPX ADDON 2ND 3RD PS PUMP HEAD	1

LPX MANUAL SEED TREATER

LPX 60 Gallon, Poly, Calibration Tube, Manual Controls
Pump Stand & Parts List



PSM60P1011

<u>Item #</u>	<u>Part #</u>	<u>Title</u>	<u>Qty</u>
1	02-03-0034	TBG .625 OD POLYE COMP	1
2	02-14-0014	.750-14 NPT PLUG BP	9
3	04-03-0160	ASSY POLY 60GAL TANK PUMPSTD	1
4	05-03-1066	ASSY PUMPSTD FRAME BASE	1
5	05-03-1069	ASSY SCL PUMPSTD	1
6	13-04-0105	KIT LS HEAD X1 ASSY PUMPSTD	1
7	13-04-0106	KIT CAL TUBE ASSY PUMPSTD	1
8	13-04-0109	MAN PUMPSTD CNTRL NO FLMT	1

LIMITED WARRANTY

SECTION J

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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