

# UNDERBIN CONVEYOR



## Operators Manual

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**Revision: D**

**Effective Date: 12-2020**



# 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

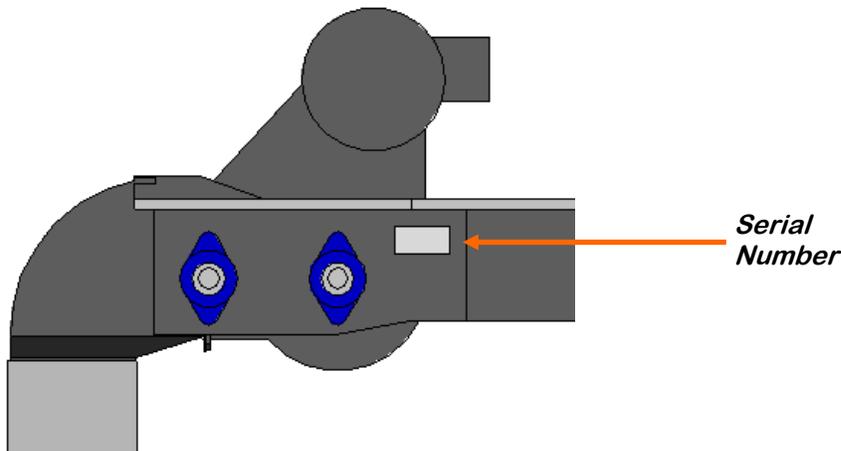
The purpose of this manual is to provide you with the basic information needed to operate and maintain the Underbin Conveyor. It does not hold USC LLC liable for any accidents or injuries that may occur.

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

## RECEIVING YOUR EQUIPMENT

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

Document the serial number of the machine for future reference. The serialization label is located on the head assembly of the conveyor opposite the belt guard.



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

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SECTION **SAFETY INSTRUCTIONS**  
A

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

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



### **DANGER! RISK OF ELECTRIC SHOCK AND ARC FLASH**

Avoid any alteration to the equipment. Alterations may produce dangerous situations, where serious injury or death may occur. This equipment shall be installed in accordance with local installation codes and applicable regulations which should be carefully followed in all cases. Authorities having jurisdiction should be consulted before installations are made. Owners/operators are responsible for knowing what requirements, hazards, and precautions exist with this equipment. Owners/operators are responsible for informing all personnel associated with the equipment and all who are in the general area of the equipment, the requirements, hazards, and precautions that exist with this equipment. Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. A qualified person is one who has skills and knowledge related to the construction and operation of electrical equipment and its installation and has received safety training to recognize and avoid the hazards involved. Only appropriately trained persons who are familiar with and understand the contents of this manual and all other pertinent product documentation are authorized to work on and/or with this product. Owners/operators must ensure that all authorized persons have sufficient technical training, knowledge, and experience and be able to foresee and detect potential hazards that may be caused by using the product, by changing the settings and by the mechanical, electrical, and electronic equipment of the entire system in which the product is used. All persons working on and with the product must be fully familiar with all applicable standards, directives, and accident prevention regulations when performing such work. Servicing and maintaining the equipment should only occur if the equipment is deenergized and properly locked out and tagged out. If it is unfeasible to service or maintain the equipment while deenergized, the following standards shall be referenced to ensure safe practices are being followed and proper PPE is being used: 29 CFR § 1910.333 and 29 CFR § 1910.137. No responsibility is assumed by USC, LLC for any consequences arising out of the use of this material.

## UNDERBIN CONVEYOR

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

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

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

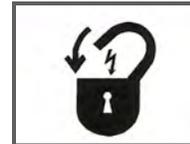
### GENERAL SAFETY

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



## UNBERBIN CONVEYOR

4. Provide a fire extinguisher for use in case of an accident. Store in a highly visible place.
5. Do not allow children, spectators or bystanders within hazard area of machine.
6. Wear appropriate protective gear. This includes but is not limited to:
  - A hard hat
  - Protective shoes with slip resistant soles
  - Protective goggles
  - Heavy gloves
  - Hearing protection
  - Respirator or filter mask
7. Place all controls in neutral or off, stop motor, and wait for all moving parts to stop. Then disable power source before servicing, adjusting, repairing, or unplugging.
8. Review safety related items annually with all personnel who will be operating or maintaining the equipment.



### **OPERATING SAFETY:**

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

## UNDERBIN CONVEYOR

### **MAINTENANCE SAFETY**

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



**SAFETY LABELS**

1. Keep safety labels clean and legible at all times.
2. Replace safety labels that are missing or have become illegible.
3. Replaced parts that displayed a safety label should also display the current label.
4. Replacement safety labels are available. Contact your authorized dealer

**How to Install Safety Labels:**

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



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

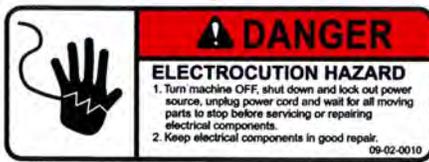


Guards provided with USC equipment are to remain in place during operation.

UNDERBIN CONVEYOR

Think **SAFETY!** Work **SAFELY!**

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



Part # 09-02-0010

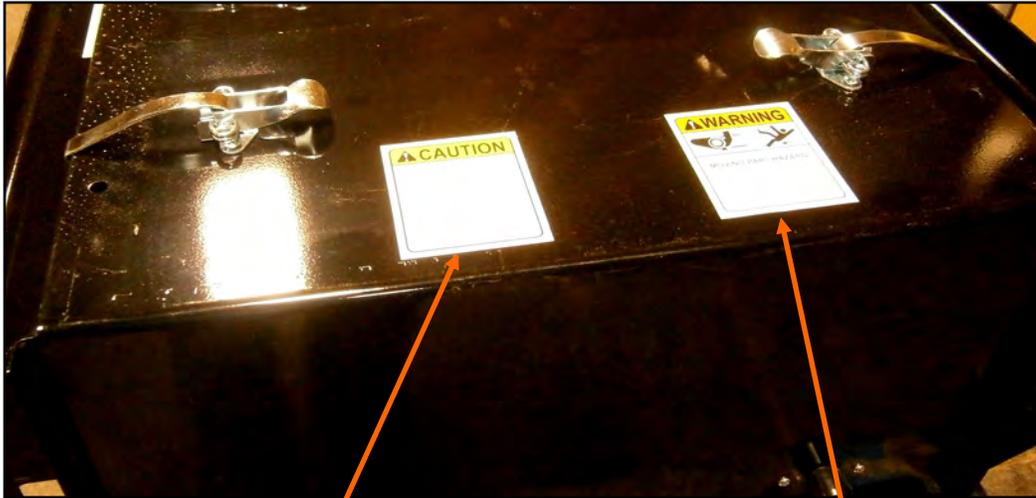


Part # 09-02-0009



Part # 09-02-0012

# UNBERBIN CONVEYOR



**Part # 09-02-0006**



**Part # 09-02-0011**

# UNDERBIN CONVEYOR



Part # 09-02-0011



UNBERBIN CONVEYOR



Part # 09-02-0002



Part # 09-02-0001

**SECTION  
B**

**INSTALLATION**



Be sure to use safe working habits when installing your equipment. Installation of the underbin conveyor requires physical strength and strain, make sure you are in healthy physical condition. USC is not liable for any injuries that occur while installing.



**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.

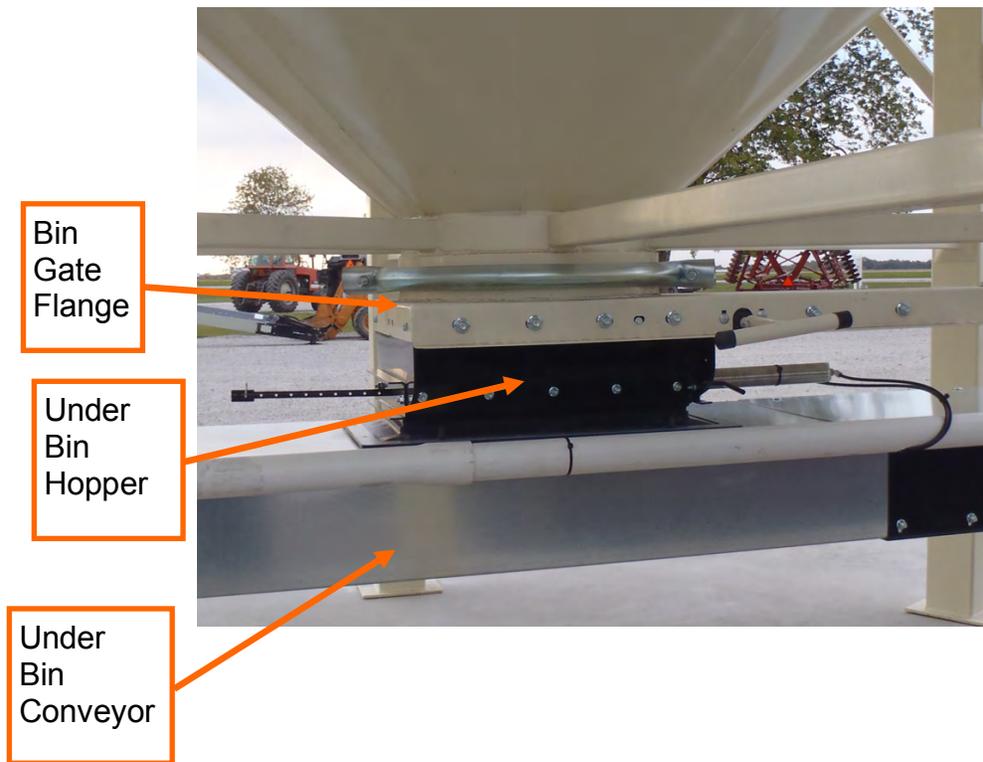
**Tools Required for Installation**

1. 7/16", 1/2", 9/16", 15/16" and 1-1/8" wrenches and or ratchets.
2. Gloves and knee pads are an extra comfort.
3. Safety Glasses.
4. Floor jacks or some form of lifting devise, to set under-bin.
5. Tape measure.
6. Forklift, if at all possible to move equipment for easier install
7. Drill for self tapping screws.
8. Grinder with cut off discs.
9. Caulking gun.
10. Knife.
11. Vise Grips.
12. Pliers.
13. Alignment Bars.
14. 1 1/4 inch Hole Saw.

## UNBERBIN CONVEYOR

### SETTING THE BINS

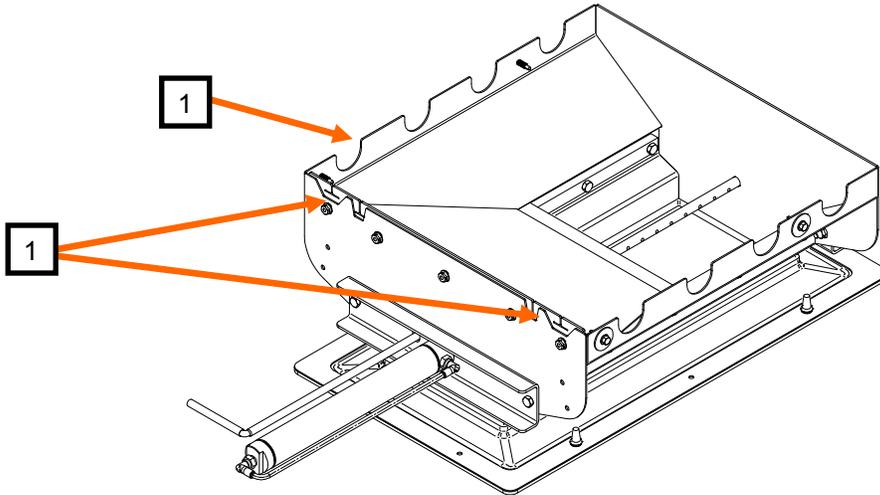
It is imperative that the bins be set with the bin slide gates running parallel to the center of the proposed under bin conveyor. (as shown below) if this is not done, the equipment will not line-up properly and cause severe capacity problems.



## UNDERBIN CONVEYOR

### BIN TRANSITION GATE INSTALLATION FOR MERIDIAN, EASTON, WESTEEL, AMBER WAVES BINS

These steps will outline the procedure for installing these types of under bin hoppers. This style hopper is delineated by the scalloped top edge on the hopper.

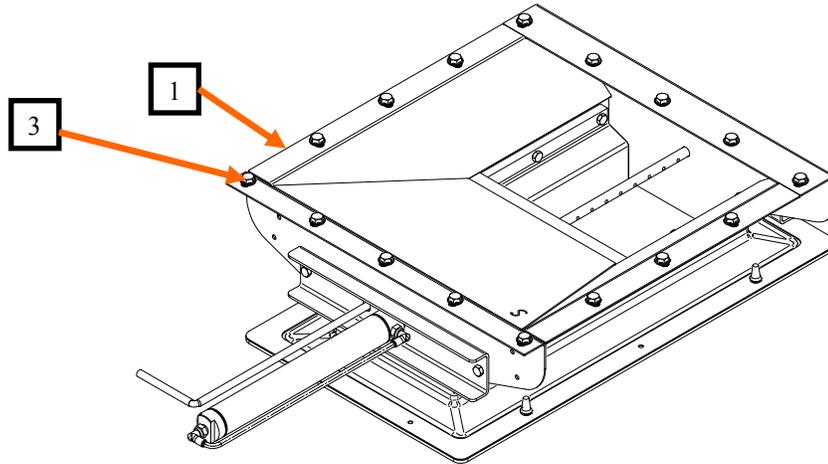


1. Place the top flanges on the hopper inside the bin gate. With the opening under the center opening in the bin gate flange. Allow adequate space vertically for the bin slide gate to move back and forth. The chain tracks will be in the notches on the air cylinder end of the gate.
2. Before bolting the hopper in place, verify that the bottom of the hopper is level.
3. Place one of the self-drilling/self tapping screws (06-06-0037) in one of the washers (06-05-0024). Insert the screw point through one of the holes in the bin gate flange so that it contacts the under bin hopper flange.
4. Using a drill / driver set the screw into the under bin hopper flange until tight.
5. Repeat the procedure three more times (1 screw on each side of the bin gate flange. 2 screws on the end opposite the air cylinder.)
6. Check that the manual bin slide gate operates smoothly with the hopper in place.
7. Repeat steps 1 through 5 for each of the bins.

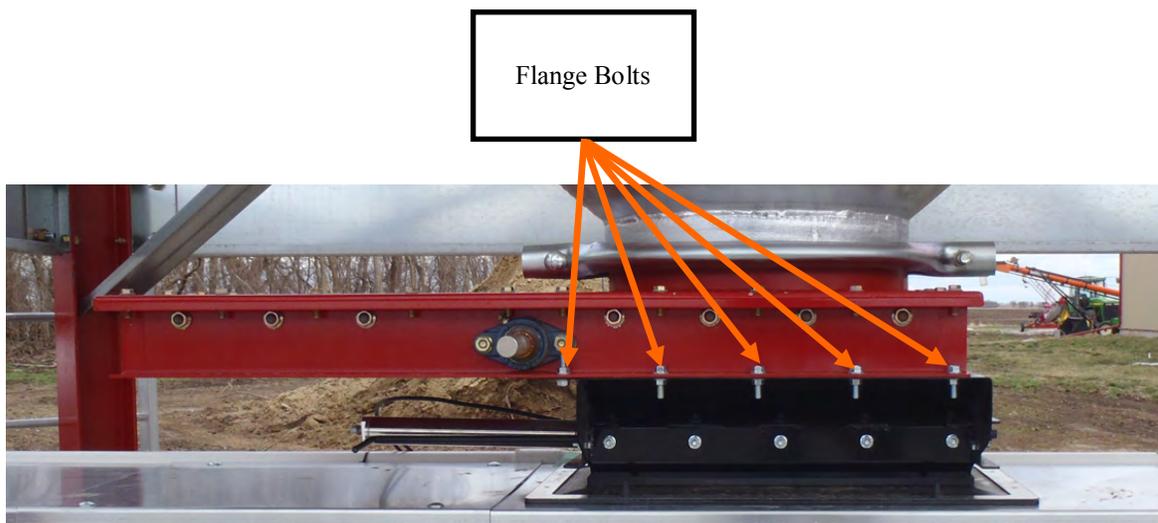


## BIN TRANSITION GATE INSTALLATION FOR SCHULD/BUSHNELL, YORK BINS

These steps will outline the procedure for installing these types of under bin hoppers. This style hopper is delineated by the flanged top edge on the hopper.



1. Place the top flanges of the hopper against the bin gate flange. With the opening under the center of the opening in the bin.
2. Before bolting the hopper in place, verify that the bottom of the hopper is level.
3. Insert bolts through the holes in the two sets of flanges. Add nuts and tighten.
4. Check that the manual bin slide gate operates smoothly with the hopper in place.
5. Repeat steps 1 through 4 for each of the bins.

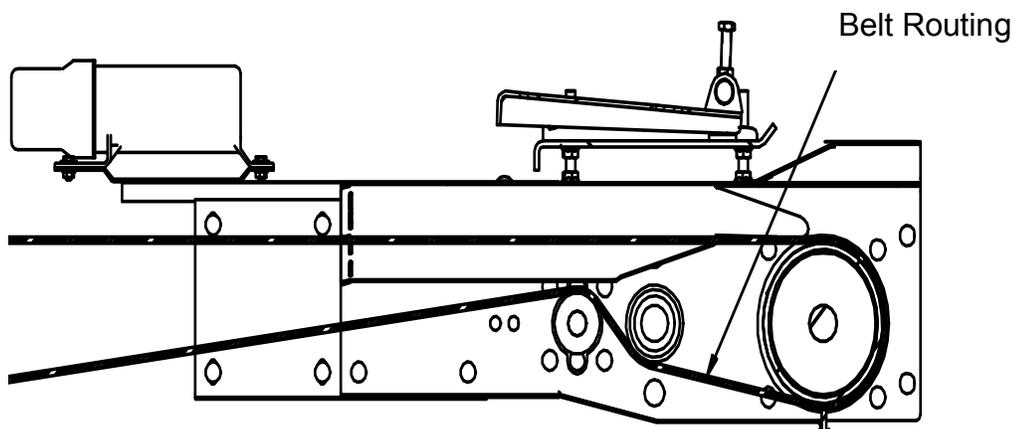


## UNDERBIN CONVEYOR

### UNDERBIN INSTALLATION

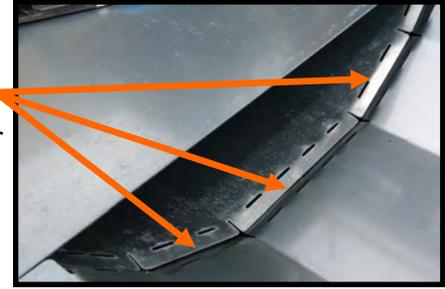
1. If not already completed, align and anchor bins. Install the under bin hoppers.
2. Now you can start installing your underbin conveyor. Start by laying out the conveyor underneath the bins. The discharge end (10' head section) has the motor and the 10' tail section has two brackets on each side for belt tensioning and alignment purposes. The rest of the conveyor is in 10', 7.5', 5' or even 2.5' sections. Lay out components as best fits the bin arrangement. As much as possible, avoid having a splice under a bin discharge.
3. After the entire conveyor is laid out go through and remove all lids and valley pans on every body section and place them off to the side. Try to keep the sections together and remember their placement. Some bolt holes only line on certain sections. This portion will require a 9/16 wrench or ratchet.
4. After all lids have been removed, it is advantageous to have each section up off the ground. Lay a 2x4 on edge and set the conveyor on it. Now go through and remove all bolts from the splice sections. There will be a total of 8-3/8"x 1" crg bolts on the sides and 2-1/4"x 3/4" crg bolts on the bottom that do not secure anything per section . This portion requires a 9/16 and a 7/16 wrench or ratchet.
5. Begin bolting the conveyor together. Start with the tail and work your way down the conveyor. The sections do not overlap, and should be butted up to each other before tightening hardware. A pair of vice grip pliers may be helpful during this process. Tighten the bolts starting with the 1/4" bolts on the bottom. Then secure the rest. Continue this step all the way until the head section is bolted together.
6. Next, install the belt. This is a crescent belt (little C shape cups). The C's cup open to the head sections of the conveyor. Start with the return side of the belt, starting from the tail section and pull to the head section. Pull the belt up and around the head section drive pulley with about 2 ft of play.

### HEAD SECTION



## UNBERBIN CONVEYOR

7. Then, lay all the valley pans in their correct locations. Make sure that the ends of each pan are bent down so that the belt does not catch on the seams. Now you should have a long conveyor body lying underneath the bins. At this point, place lifting devices under the body sections. Floor or transmission jacks will work. Be sure NOT to bend the conveyor body.



8. Lay the rest of the belt on the valley pan. Splice the belt.
9. Attach all of the conveyor lids. There will be a splice cover for every section of conveyor. Before bolting, silicone under each splice cover and secure bolts. Make sure conveyor is square and is as level as possible before bolts are secured. You should now have an assembled under-bin conveyor.
10. Align under-bin from measurements on prints. Normally a measurement from the 16" step down to the end of the discharge chute is indicated on the prints.
11. Now you are ready to cut the transition holes. Raise the whole underbin conveyor till it is touching the bin transition gates. Center the under-bin on the first bin gate and the last. Mark the under-bin lids around each gate. Lower the under-bin enough to cut the holes. Use a straight edge and mark a section one half inch bigger than the marks you made. An angle grinder will work for this; just be aware of the belt and take care not to damage it during this process.
12. Now you are ready to set the underbin conveyor. Clean all metal shavings from surface and place the bin transition plates on the underbin conveyor and rise to the height indicated on the prints.
13. Install stands evenly. Start with one stand close to the discharge end and one close to the tail section . Evenly space the rest. This will require a 1 1/8" wrench.
14. After all stands are set in place, anchor the stands
15. Tighten the belt. Normally there will be no power to the under-bin at this point so use a tape measure and evenly tighten the belt. This is a new belt and will stretch some.

## UNDERBIN CONVEYOR

16. Silicone around each transition gate between the bottom of the rubber seal and the top of the under bin conveyor and your install should be complete!



17. Electric Drive: Have a licensed electrician provide power to the machine per the National Electrical Code ANSI/NFPA 70 and local codes. For customer safety and ease of use, a motor disconnect switch may be mounted on the conveyor depending on options ordered.
18. *Conveyors supplied with cord kits and/or used with USC control packages can be directly wired or plugged into the USC control panels for controlling on/off and supplying motor overload protection. **If conveyor is not controlled by a USC control panel, end-user will be responsible for ensuring that motor thermal overload protection is provided.***

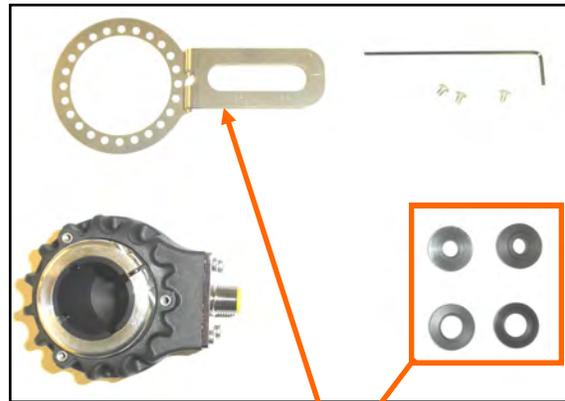
## UNDERBIN ENCODER INSTALLATION

### **NOTICE**

**Underbin Encoders are only used on USC automated bin site systems. Disregard this section if the conveyor is being used otherwise.**

The purpose of the underbin encoder is to count the rotation of the non drive roller to assure the belt is not slipping. This helps increase calibration accuracy for the bin site automation software as well as increase the life of the belt.

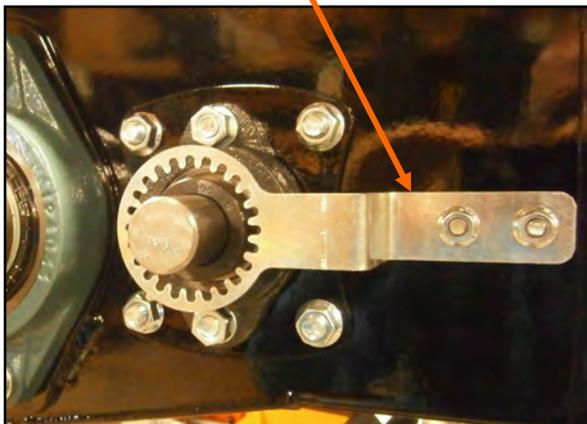
1. Open the box containing the encoder and you will find the parts in the picture to the right. You will only need the encoder, three small screws, and the allen wrench provided.



*Discard*

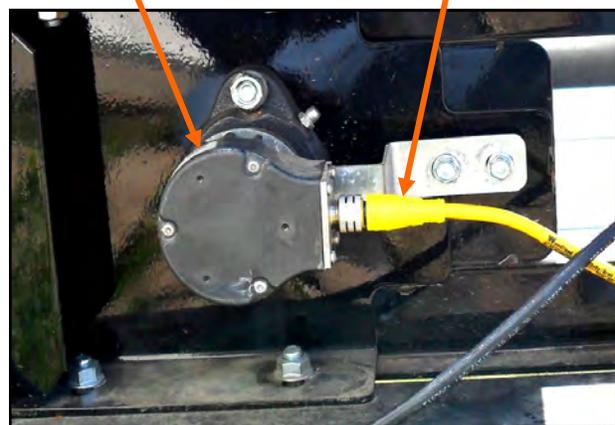
2. Remove the encoder mounting bracket (bottom, left) and attach it to the encoder using the three screws. It should rotate free. Slide the encoder over the end of the shaft and re-secure the mounting bracket. Tighten the allen bolt on the encoder mounting collar to secure it to the roller shaft. Connect the encoder cable. You are now ready to wire the pigtail at the other end of the cable.

*Encoder Mounting Bracket*



*Encoder*

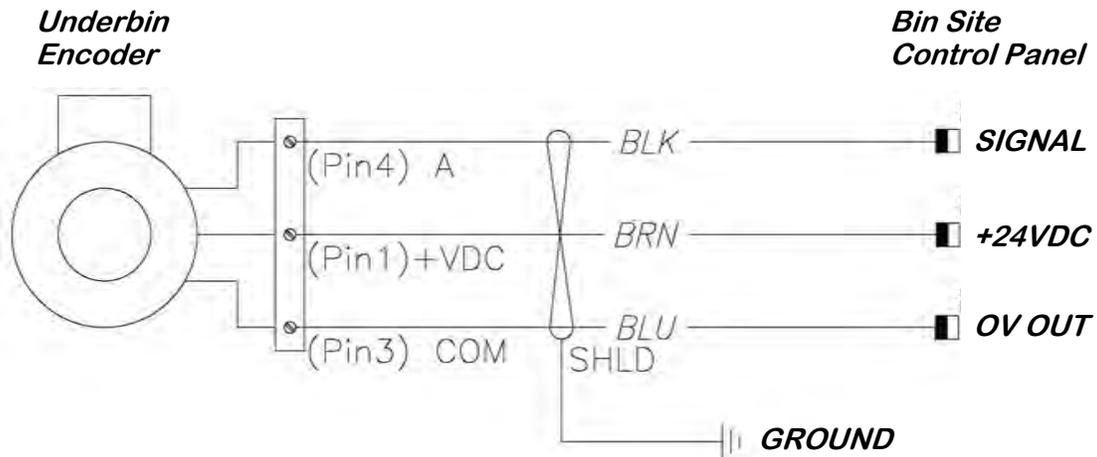
*Encoder Cable*



## UNDERBIN CONVEYOR

### UNDERBIN ENCODER WIRING

1. Below is an example of the encoder schematic. **THIS IS ONLY AN EXAMPLE.**
2. The cable that is attached to the encoder has 5 stranded wires coming out of it. As the schematic shows below, the **Brown, Blue, Black and Shield wires** from the cable will be used. Cap off the other wire that is not being used.
3. The actual wiring is in the custom bin site schematic drawing.



### ELECTRICAL INSTALLATION

Have a licensed electrician provide power to the machine per the National Electrical Code ANSI/NFPA 70 and local codes. For customer safety and ease of use, a motor disconnect switch may be mounted on the conveyor depending on options ordered.

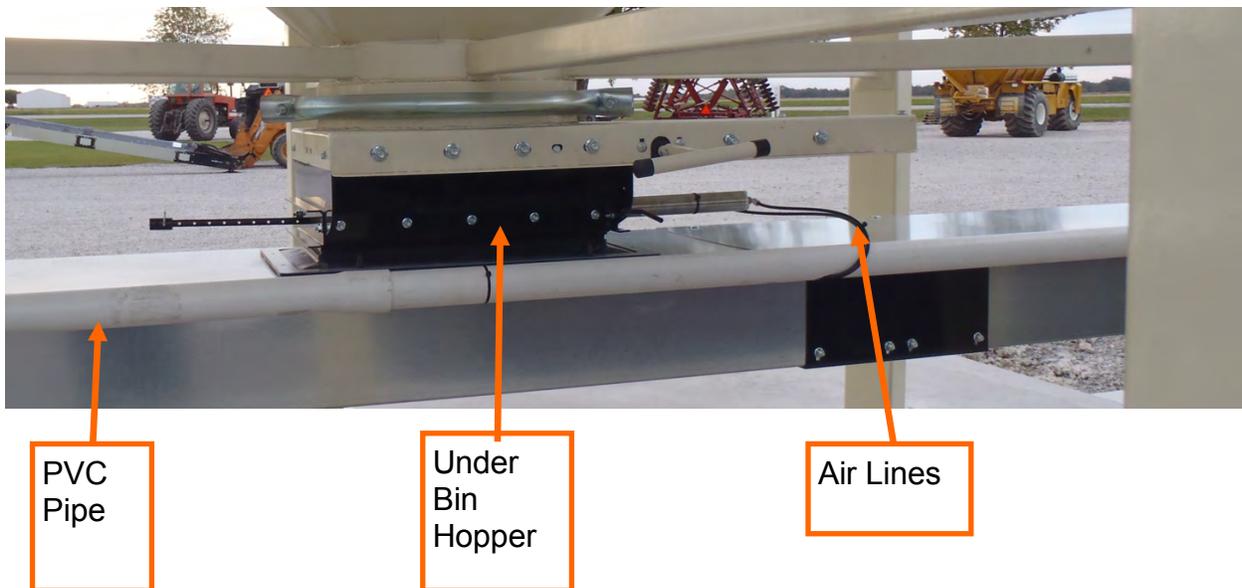
Conveyors supplied with cord kits and/or used with USC control packages can be directly wired or plugged into the USC control panels for controlling on/off and supplying overload protection.

## UNBERBIN CONVEYOR

### PLUMBING FOR AIR LINES.

To protect the air lines for the under bin hoppers, they are run through PVC pipe from the solenoids on the bin site control panel to each of the hopper air cylinders. There are two lines per cylinder. The PVC pipe and fittings are normally included in the installation kit.

1. Using the hangers provided, hang pipe from the edge of the Under Bin Conveyor lid using the self drilling / self tapping screw provided.
2. Locate a point about center of each under bin hopper's air cylinder and drill an 1/4 inch diameter hole in the bottom of the pipe. This is where the air lines come out of the pipe for that hopper.
3. Run a fish tape back from this hole to the bin site control panel. Attach a rope to the tape and pull back.
4. Identify one tube as "A" and one as "B". Securely tape these to the end of the rope.
5. Pull the two tubes through the pipe and out of the hole.
6. Pull enough tube to allow connection to the air cylinder connectors without kinking the tube.



7. Connect the "A" tube to the air cylinder fitting closest to the Under Bin Hopper.
8. Secure the tube to the air cylinder with a zip tie.
9. Connect the "B" tube to the air cylinder fitting at the end of the air cylinder.
10. At the Bin Site Control Panel, connect the "A" tube to the "A" connector on the solenoid for that bin and the "B" tube to the "B" connector on the same solenoid.
11. Repeat for each Under Bin Hopper.
12. Test each hopper to verify that it opens when it should. If not, reverse the tubes at the control panel and repeat the test.



**OPERATING SAFETY**

- |  |  |
|--|--|
| <ol style="list-style-type: none"> <li>1. Read and understand the Operator's Manual and all safety signs before using.</li> <li>2. Electric motor drives: Disconnect and disable electrical supply completely and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.</li> <li>3. Clear the area of bystanders, especially children, before starting.</li> <li>4. Be familiar with machine hazard area. If anyone enters hazard areas, shut down machine immediately. Clear the area before restarting.</li> <li>5. Keep hands, feet, hair and clothing away from all moving and/or rotating parts.</li> <li>6. Do not allow riders on the Conveyor or transport vehicle when transporting.</li> </ol> | <ol style="list-style-type: none"> <li>7. Stay away from overhead obstructions and power lines during operation and transporting. Electro-cution can occur without direct contact.</li> <li>8. Do not operate machine when any guards are removed.</li> <li>9. Lower Conveyor to its lowest position before moving or transporting or when not in use.</li> <li>10. Inspect lift cable before using Conveyor. Replace if frayed or damaged.</li> <li>11. Make certain lift cable is properly seated in cable pulleys.</li> <li>12. Be sure that conveyor is empty before raising or lowering.</li> </ol> |
|--|--|

The USC Underbin Conveyor is designed to efficiently move seed between a storage facility or seed totes to a truck, trailer, wagon or seed treater. Power is provided by an electric motor. Be familiar with the machine before starting.

It is the responsibility of the owner or operator to read this manual and to train all other operators before they start working with the machine. In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, and prudence of personnel involved in the operation, transport, maintenance and storage of equipment or in the use and maintenance of facilities.

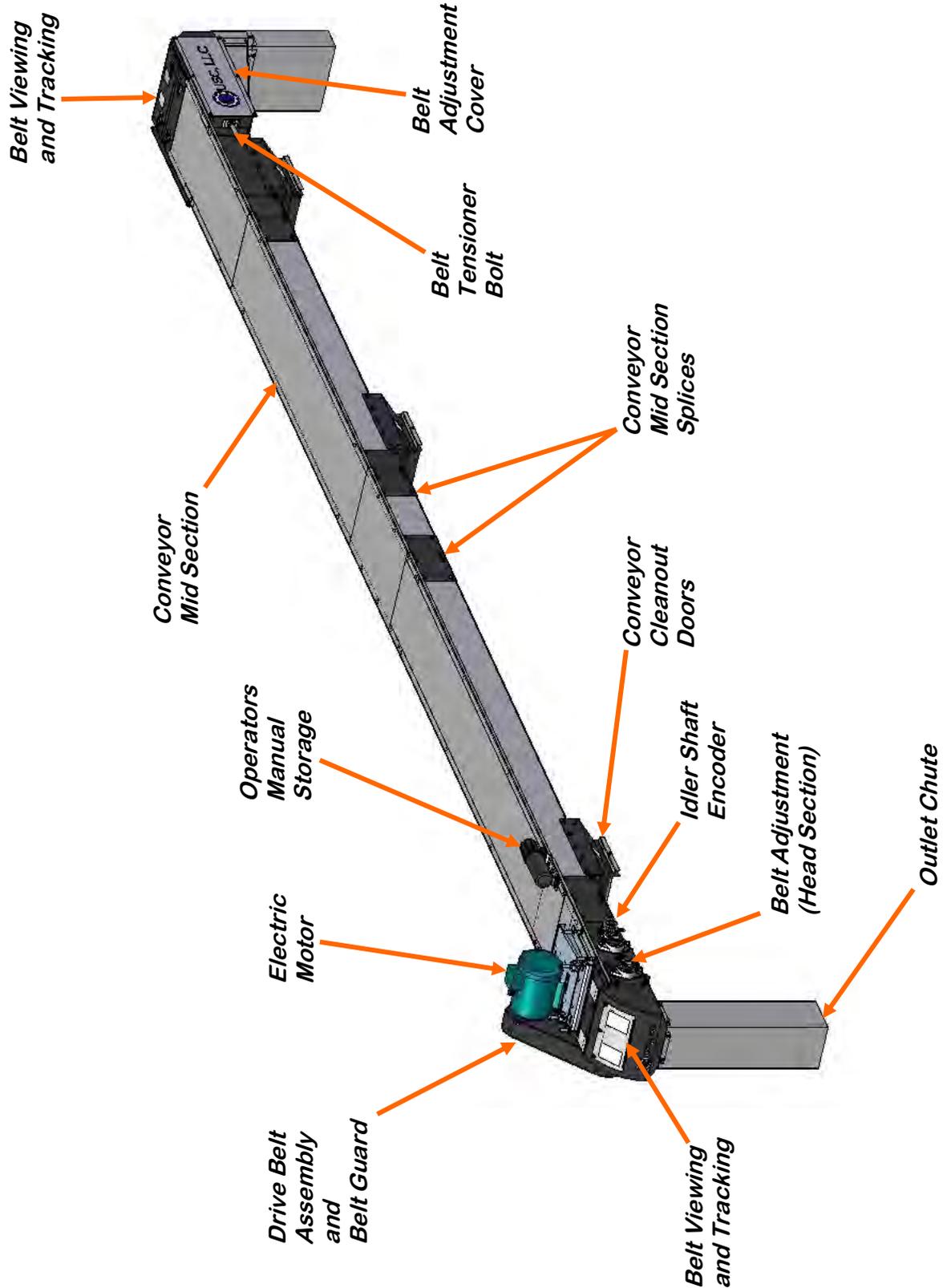
**NOTICE**

Follow all safety instructions exactly. Safety is everyone's business. By following recommended procedures, a safe working environment is provided for the operator, bystanders and the area around the worksite. Untrained operators are not qualified to operate the machine.

Many features incorporated into this machine are the result of suggestions made by customers like you. Read this manual carefully to learn how to operate the machine safely and how to set it to provide maximum efficiency. By following the operating instructions in conjunction with a good maintenance program, your conveyor will provide many years of trouble free service.

UNBERBIN CONVEYOR

**SYSTEM OVERVIEW**



**PRE-OPERATION CHECKLIST**

Efficient and safe operation of the USC LLC Underbin Conveyor requires that each operator reads and understands the operating procedures and all related safety precautions outlined in this section. A pre-operation checklist is provided for the operator. It is important for both the personal safety and maintaining the good mechanical condition of the conveyor that this checklist is followed.

Before operating the conveyor and each time thereafter, the following areas should be checked off:

1. Service the machine per the schedule outlined in Section E, Maintenance. (see page 33).
2. Use only an electric motor of adequate power to operate the machine.
3. Check that all guards are installed, secured and functioning as intended. Do not operate with missing or damaged shields.
4. Check worksite. Clean up working area to prevent slipping or tripping.
5. Check that drive belt and conveying belt are not frayed or damaged and that they are properly adjusted and aligned.
6. Check that discharge chute is free of obstructions.
7. Ensure that the conveyor taking seed away from the underbin conveyor is working properly. If the takeaway conveyor were to fail, the underbin conveyor would back up with seed and flood causing major issues. Extensive time wasted cleaning and possibly repairing the belt and or rollers may be needed.

## UNBERBIN CONVEYOR

### **OPERATION**

1. Clear the area of bystanders before starting the equipment.
2. Review the workplace Hazards schematic and use extra care when inside the hazard area. Keep all bystanders out of this area. Should anyone enter this area, stop the machine immediately.
3. Turn the underbin conveyor on and open the bin slide gate to begin conveying seed away from your bin.
4. To stop the conveyor, shut the bin gate and run until the belt is clear of material. Then, turn off the conveyor motor.

### **OPERATING HINTS**

- Always listen for any unusual sounds or noises. If any are heard, stop the machine and determine the source. Correct the problem before resuming work.
- Never allow anyone into the workplace hazard area. If anyone enters, stop immediately. Make them LEAVE before resuming work.
- Do not run the machine for long periods of time with no material on the belt. It increases the belt wear. Try to run the conveyor only when performing maintenance or moving material.
- Always check and make sure the belt is properly aligned. Neglecting your belt may lead to pre-mature wear and possible breakage.
- Make sure that the flow of seed onto the conveyor is not greater than the discharge flow of seed. If so, this could cause the conveyor to plug up and back feed causing time wasted cleaning the conveyor out and possible damage.
- When reversing the underbin conveyor, you need to check the alignment before and after reversing. The alignment may shift when you change drive directions.

### **EMERGENCY STOPPING**

Although it is recommended that the machine be emptied before stopping, in an emergency situation, stop or shutdown the power source immediately. Correct the emergency before resuming work.

### **RESTARTING**

When the machine is shut down inadvertently or for an emergency, the belt may still be covered with material. It may be necessary to tighten the drive belt slightly to handle the heavier-than-normal starting loads.

## **MACHINE BREAK-IN**

Although there are no operational restrictions on the Conveyor when used for the first time, it is recommended that the following mechanical items be checked:

### **Before Starting**

1. Read the Conveyor Operator's Manual.
2. During the conveyors first few minutes of operation, check conveyor belt alignment to ensure belt is tracking correctly when running empty and also during loaded conditions.

### **After Operating for 1/2 Hour**

1. Re-torque fasteners and hardware.
2. Check that all safety decals are installed and legible. Apply new decals if required.
3. Check the drive belt tension and alignment. Tension or align as required.
4. Check the conveying belt tension and alignment. Tension or align as required.
5. Check that all guards are installed and working as intended.

### **After Operating for 5 Hours and 10 Hours**

1. Re-torque all bolts, fasteners and hardware.
2. Check that all guards are installed, secured and functioning as intended. Do not operate with missing or damaged shields.
3. Check safety decals. Install new ones if required.
4. Check the drive belt, and conveying belt tension and alignment. Tension or align as required.
5. Then, begin the normal servicing and maintenance schedule as defined in the Maintenance Section.

**TROUBLESHOOTING****SECTION  
D**

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

Problem	Possible Cause	Solution
Conveyor will not run.	<ol style="list-style-type: none"> <li>1. Not turned on.</li> <li>2. Conveying belt loose.</li> <li>3. Drive belt loose.</li> </ol>	<ol style="list-style-type: none"> <li>1. Start power source or turn power on.</li> <li>2. Tighten and align belt.</li> <li>3. Tighten drive belt.</li> </ol>
Belt edge fraying.	<ol style="list-style-type: none"> <li>1. Belt not aligned.</li> </ol>	<ol style="list-style-type: none"> <li>1. Align and tension belt.</li> </ol>
Low conveying capacity.	<ol style="list-style-type: none"> <li>1. Slow operating speed.</li> <li>2. Conveyor belt slipping.</li> <li>3. Drive belt slipping.</li> </ol>	<ol style="list-style-type: none"> <li>1. Increase operating speed.</li> <li>2. Tighten belt.</li> <li>3. Set drive belt tension.</li> </ol>

**UNPLUGGING**

In unusual moisture or material conditions, the machine may plug. When plugging occurs, follow this procedure:

1. Place all controls in neutral or off, stop motor, disable and lock out power source before unplugging.
2. Unbolt and remove the necessary conveyor covers.
3. Unlatch and open the hinged tail cover.
4. Remove plugged material.
5. Install and secure conveyor covers, close and re-latch hinged tail cover.

## SECTION MAINTENANCE E

Proper maintenance of the Underbin Conveyor 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.



Failure to maintain the proper belt tension will cause the belt to slip. This will damage the belt and head drive pulley. If the belt is not tracking correctly, it can ride along one edge causing the belt to fray and damage the belt splice. Either problem will cause the belt to burn or wear out prematurely.

### FLUIDS AND LUBRICANTS

#### Grease

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

#### Storing Lubricants

Your machine can operate at top efficiency only if clean lubricants are used. Use clean containers to handle all lubricants. Store them in an area protected from dust, moisture and other contaminants.

### GREASING

Use a Maintenance Checklist to keep record of all scheduled maintenance.

1. Use a hand-held grease gun for all greasing.
2. Wipe grease fitting with a clean cloth before greasing to avoid injecting dirt and grit.
3. Replace and repair broken fittings immediately.

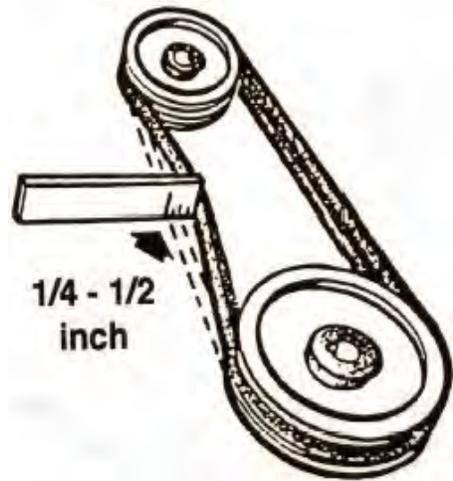


If fittings will not take grease, remove and clean thoroughly. Also clean lubricant passageway. Replace fitting if necessary.

UNBERBIN CONVEYOR  
**CONVEYOR SERVICING INTERVALS**

**Every 40 hours or Weekly**

1. Check the conveyor belt tension and alignment.
2. Grease conveyor bearings.
  - A. Two bolt flanged bearings, tail roller bearings right and left (2 locations).
  - B. Two bolt flanged bearings, drive roller bearings right and left (2 locations).
  - C. Two bolt flanged bearings, jackshaft bearings right and left (2 locations).
3. Remove guard and check the drive belt tension and alignment. The belts will deflect approximately 1/4 to 1/2 inch when properly tensioned.
4. Check the chain tension. Adjust if required, lubricate chain and re-install guard.



**Every 200 hours or Annually**

1. Wash conveyor.
2. Check pulley bushing for wear. To inspect pulley:
  - Loosen and remove the bolt.
  - Inspect the bushing on the pulley for wear.
  - Reverse steps for re-assembly.

## CONVEYING BELT TENSION AND ALIGNMENT - TAIL END

A contoured crescent belt is used to convey material along the frame. The tension and alignment of the belt should be checked weekly, or more often if required, to be sure that it does not slip or run to one side. A properly tensioned belt will not slip when it is operating. Operating the belt with less slippage will increase the belt life and causes less stress on bearings, pulleys and shafts.

### **WARNING**

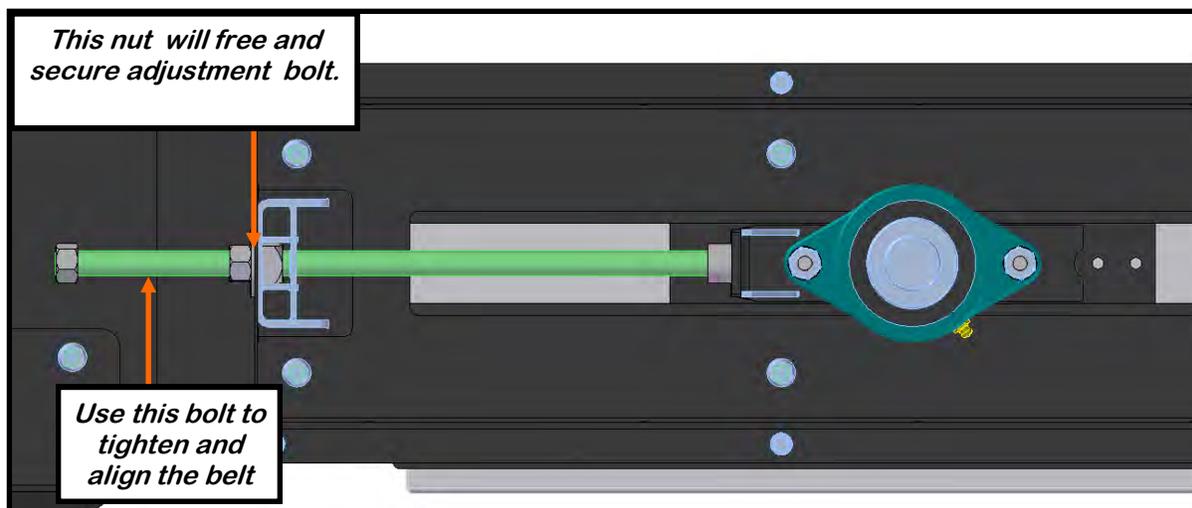
Although it is acceptable to align the belt from either the Head or the Tail end. Tightening the belt may only be done from the Tail end of the conveyor

To maintain the belt, follow this procedure:

### **NOTICE**

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

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

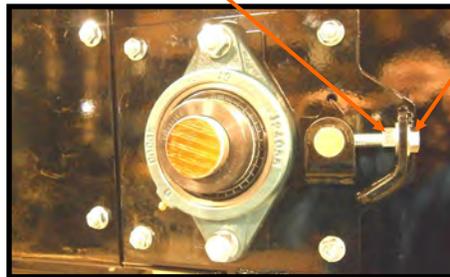


### **CONVEYING BELT ALIGNMENT-HEAD END**

1. A misaligned belt will track toward the loose side. Set the tracking by loosening the jam nut on the tight side and using the bearing position bolt to move the end of the head roller toward the tail. Tighten the jam nut when the belt is centered on the head roller.
2. Run the belt and check the tracking again. Loosen the tight side slightly again if required. Repeat the adjusting and checking procedure until the belt centers on the input end roller and remains centered when running.
3. Always repeat this aligning procedure when installing a new belt. Check frequently during the first 10 hours of operation. After 10 hours, the belt is normally seated and checking the alignment can be done less frequently.

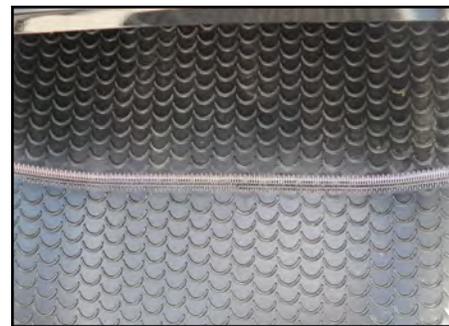
*Tighten jam nut  
after adjustment*

*Use this bolt to  
align the belt*



### **BELT REPLACEMENT**

1. Rotate the belt until the seam is visible.
2. Move the tail roller to its loosest position.
3. Pull all the slack to the seam area.
4. Remove the wire connector and open the belt.
5. Attach one end of the replacement belt to the belt end being removed.
6. Pull the old belt out and the new belt will be threaded into place.
7. Disconnect the old belt.
8. Connect the ends of the new belt together and secure.
9. Set the belt tension.
10. Check belt routing and alignment. Set the belt alignment



*Belt Seam*



*Head Cover removed*

## **DRIVE BELT TENSION & ALIGNMENT**

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

### **NOTICE**

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

#### **Drive Belt Tension**

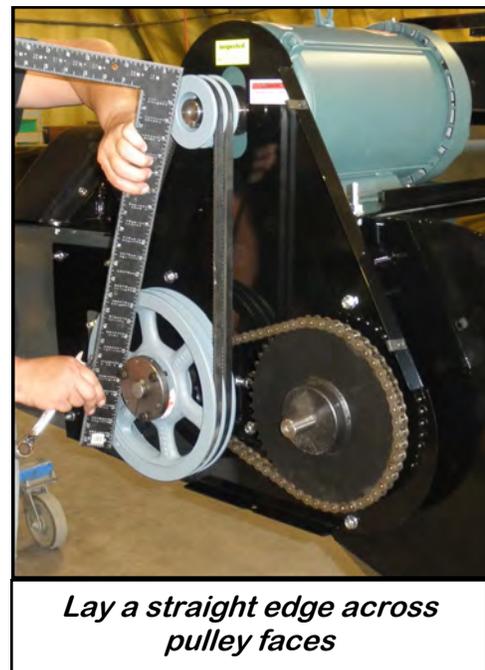
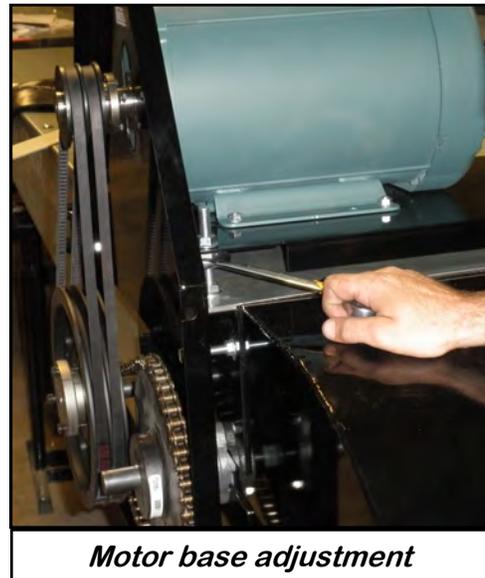
1. Push on the center of the belt span with a force of approximately 5 to 10 lbs.
2. Follow the belt tensioning specification on page 32 to determine proper belt deflection.
3. Move the motor up, using the adjustment bolts, to set drive belt tension (top right).
4. Close and secure guards.

#### **Drive Belt Alignment**

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

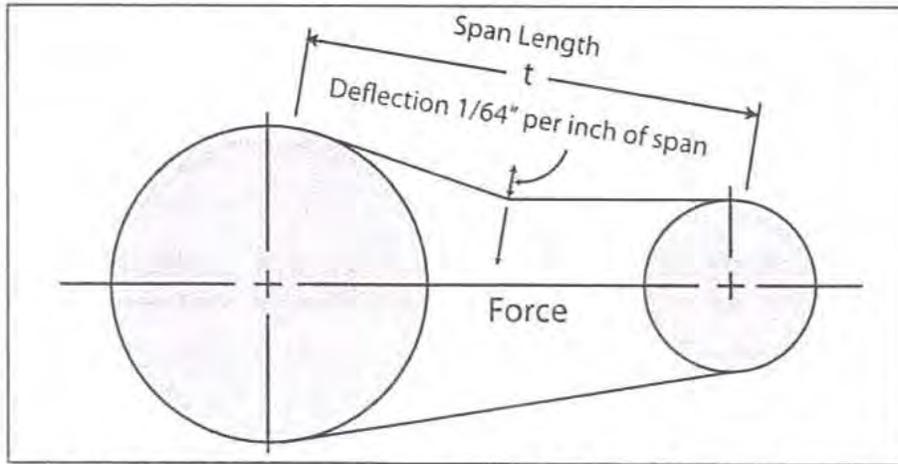
#### **Drive Belt Replacement**

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



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



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

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

**SECTION F** **STORAGE**

When the Underbin Conveyor is not used for long periods of time, the following procedure must be followed to reduce the chance of rust, corrosion and fatigue of the conveyor.



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

1. Thoroughly wash the entire machine to remove all dirt, mud, debris or residue.
2. Inspect all moving or rotating parts to see if anything has become entangled in them. Remove the entangled material.
3. Lubricate all grease fittings. Make sure that all grease cavities have been filled with grease to remove any water residue from the washing. This also protects the bearing seals.
4. Remove drive assembly cover. Clean entire area and ensure drive belt and chain are clean and free of debris. Lubricate drive chain.
5. Touch up all paint nicks and scratches to prevent rusting.
6. Cover the electric motor with a water proof tarpaulin and tie securely in place.
7. Do not allow children to play on or around the machine.

UNBERBIN CONVEYOR

**NOTES:**

## SECTION **USC LIMITED WARRANTY**

### G

Rev II 01AUG20

USC, LLC, (Manufacturer) warrants its seed treating equipment as follows:

1. **Limited Warranty:** Manufacturer warrants that the Products sold hereunder will be free from defects in material and workmanship for a period of 18 months from date of shipment. Manufacturer further provides a 12 month warranty on specific equipment supplied with a warranty card. The 12 month warranty begins upon USC receipt of warranty card from Wholesaler and must be submitted to USC within 18 months of stock equipment purchase by wholesaler to be valid. If the Products do not conform to this Limited Warranty during the warranty period, consumer shall notify Manufacturer in writing (on the approved USC warranty claim form) of the claimed defects and demonstrate to Manufacturer satisfaction that said defects are covered by this Limited Warranty (through pictures, video or other objective data). 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 Consumer's expense. All replacement parts orders through USC will carry their specific manufacturer's standard warranty including serialized parts manufactured by USC. USC will not warrant parts outside of the standard USC warranty period. USC will not extend any warranty due to replaced parts. The end user is responsible for all shipping and handling expenses for parts returned to USC under this section which may or may not be included in that specific warranty. USC will pay shipping expense between USC's vendor and USC.

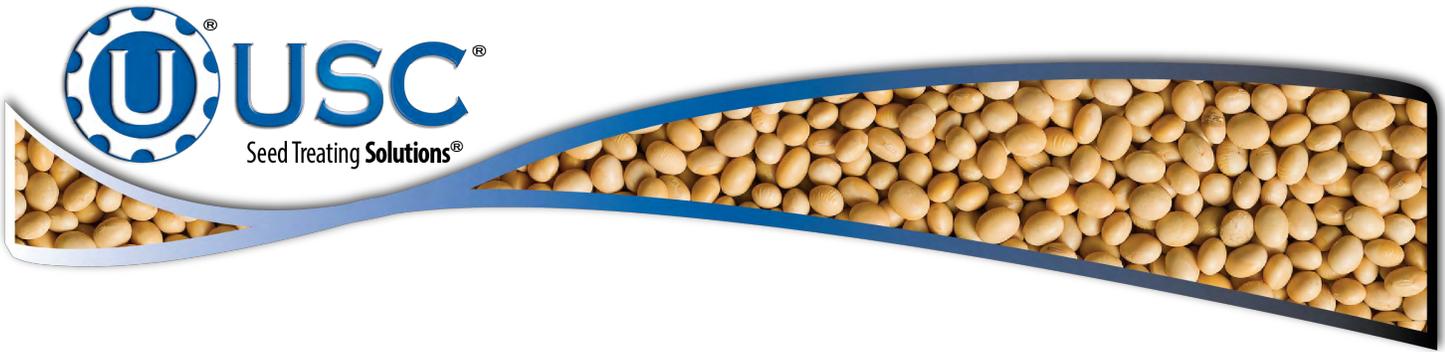
2. **Other Limits:** THE FOREGOING IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Manufacturer does not warrant against damages or defects arising from improper installation (where 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 consumer 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 affected or attempted by persons other than pursuant to written authorization by Manufacturer. This includes any welding on equipment which could damage electrical components. Manufacturer does not warrant against casualties or damages resulting from misuse and / or abuse of Products, improper storage or handling, acts of nature, effects of weather, including effects of weather due to outside storage, accidents, or damages incurred during transportation by common carrier or Dealer/customer arranged freight. Any replacement or repair covered under this warranty will **not** extend the warranty period. The remainder of the manufacturer's warranty will remain in force until stated expiration from point of sale.

3. **Exclusive Obligation:** THIS WARRANTY IS EXCLUSIVE. The sole and exclusive obligation of Manufacturer shall be to repair or replace the defective Products in the manner and for the period provided above. Manufacturer shall not have any other obligation with respect to the Products or any part thereof, whether based on contract, tort, strict liability or otherwise. Under **no** circumstances, whether based on this Limited Warranty or otherwise, shall Manufacturer be liable for lost profits, lost revenue, lost sales (whether direct or indirect damages), incidental, special, punitive, indirect or consequential damages. Consumer shall make no claims for renumeration for any loss as a result of USC equipment and USC shall reject any and all claims that may arise as stated herein.

4. **Other Statements:** Manufacturer's employees or representatives' oral or other written statements do not constitute warranties, shall not be relied upon by consumer, and are not a part of the contract for sale or this limited warranty. The USC Warranty Manager is the final decision point for all warranty claims.

5. **Return Policy:** Approval is required prior to returning goods to Manufacturer irrespective of warranty claim. A restocking fee will apply to all goods that are returned in new, sellable condition. Items returned for warranty that are found to be in new, sellable condition (not failing) will remain the property of the consumer and warranty claim for such items will be denied. The consumer will have the ability to have part returned at the consumer's expense or restocked at 15% restocking fee less any USC paid freight for its return.

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.



DOCUMENT REVIEW RECORD	
DATE	BY
04-2020	BT
07-2020	BT
12-2020	BT

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