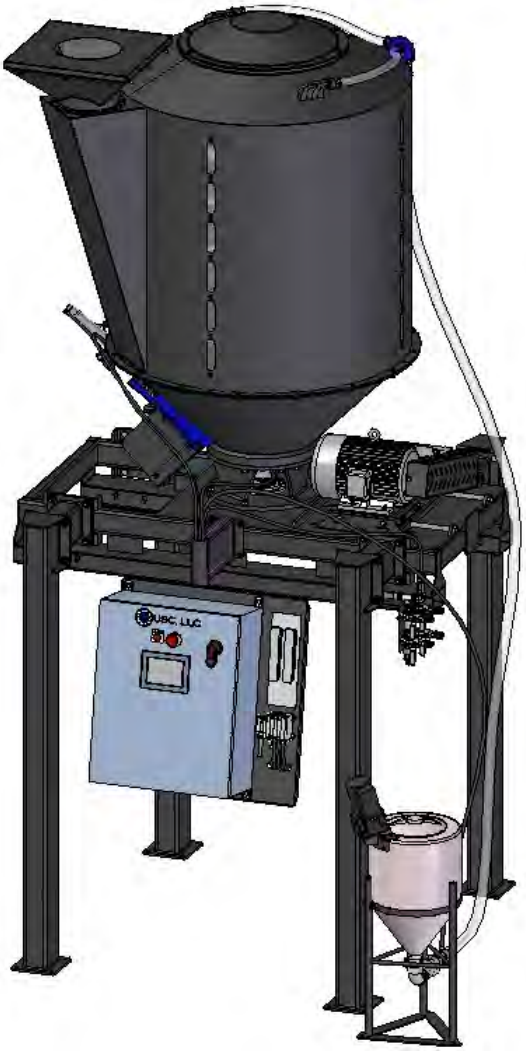
BATCH COATER

Operators Manual



Software Release: U-Batch v1.0

Document: TD-09-06-1040 **Revision: A**



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Revision Effective 20 FEB 2015

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 Batch Coater . 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.

- 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 USC at (785) 431-7900 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 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 base frame near the discharge chute.

SERIAL NUMBER:_____

Table of Contents

SAFETY INSTRUCTIONS

SECTION 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.

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

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

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

SAFETY INSTRUCTIONS — 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."

EMERGENCY STOP

There is an Emergency Stop push button on the Batch Coater which is located on the Main Control Panel. Actuators of emergency stop shall be colored RED. The background immediately around the device actuator shall be colored YELLOW. The actuator pushbutton operated device shall be of the palm or mushroom head type.

CONTROLLED STOP

This is the stopping of machine motion by reducing the electrical command signal to 0 (zero) once the stop signal has been recognized. The operator initiates this stop by pressing the PAUSE button at he bottom of the main screen.

HAZARD REVIEW

Electrocution Hazard

Electrocution accidents are most likely to occur during maintenance of the electrical system or when working on or near exposed high voltage wiring. This hazard does not exist when the electrical power has been disconnected, properly locked, and tagged out.

Automatic Start Hazard

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

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

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

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

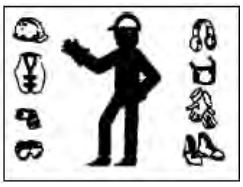
GENERAL SAFETY

1. Read and understand the operator's manual and all safety 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.

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

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



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

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

8. Review safety related items annually with all personnel who will be operating or maintaining the equipment.

OPERATING SAFETY:

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

PLACEMENT SAFETY

1. Move only with the appropriate equipment
2. Stay away from overhead power lines when moving equipment. Electrocution can occur without direct contact.
3. Be familiar with machine hazard area. If anyone enters hazard areas, shut down machine immediately. Clear the area before restarting.
4. Operate the equipment on level ground free of debris. Anchor the equipment to prevent tipping or upending.

⚠ WARNING

Before placement of the equipment , be sure that ground is reasonably level. The equipment may topple or work improperly if the ground is too uneven, damaging the equipment and/or causing personal injury.

MAINTENANCE SAFETY

1. Review the operator's manual and all safety items before working with, maintaining or operating the equipment .
2. Place all controls in neutral or off, stop motors, disable power source, and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.
3. Follow good shop practices:

   Keep service area clean and dry.
   Be sure electrical outlets and tools are properly grounded.
   Use adequate light for the job at hand.
4. Keep hands, feet, hair and clothing away from all moving and/or rotating parts.
5. Clear the area of bystanders, especially children, when carrying out any maintenance and repairs or making any adjustments.
6. Before resuming work, install and secure all guards when maintenance work is completed.
7. Keep safety 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 sign should also display the current sign.
4. Replacement safety labels are available. Contact USC at (785) 431-7900 .

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.

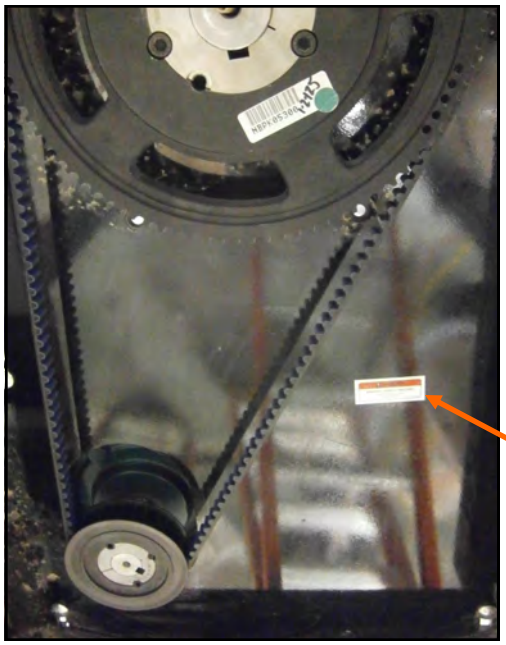
Part # 09-02-0002

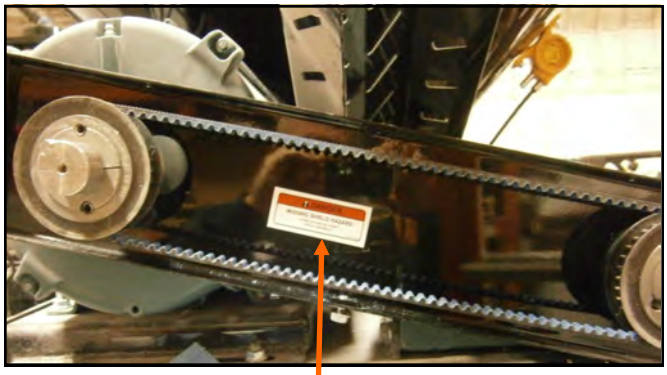
Think **SAFETY!** Work **SAFELY!**

REMEMBER—If Safety Signs have been damaged, removed, become illegible, or parts replaced without safety signs, new signs must be applied. New safety signs are available from USC at (785) 431-7900.

Part # 09-02-0003

Part # 09-02-0001





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Part # 09-02-0010

Part # 09-02-0009

SECTION B INSTALLATION

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

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

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

SET-UP

The following steps outline the initial set-up of your USC Batch Coater :

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 Batch Coater in the desired position on a level surface.

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

4. Inspect Batch Coater thoroughly for screws, bolts, fittings, etc. which may have come loose during shipping.
5. Use the forklift to raise the batch coater high enough so the legs can be installed. Attach the four horizontal legs (P\N 05-05-0123) to the base of the machine. Then, attach the four vertical legs (P\N 05-05-0122) to the horizontal legs (see page 60).
6. Lower the machine and place it in the final working position. Make sure there is ample room for a forklift to remove full pro boxes and replace them with empty ones. Place the inlet conveyor and ensure proper access to the pro box stand. Anchor the batch coater to the floor to prevent the machine from moving during operation.

SET-UP

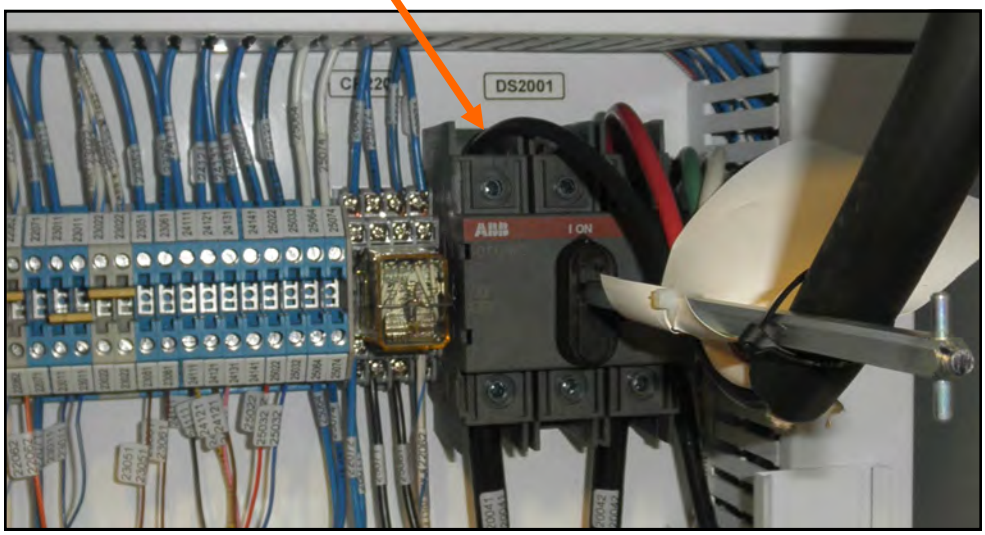
7. Have a certified electrician provide power to the batch coater system. Provide convenient shutdown switches, comply with local electrical codes and ensure that the system is properly grounded and bonded. All USC control panels must be connected adhering to the same electrical requirements as specified 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 batch coater.

Replacement Fuse Chart			
Fuse	**Line**	**Size**	**Type**
FU2206	2206	2A	FA FS
FU2301	2301	0.5A	FA FS
FU2506	2506	2A	T SB/TD GMD-2-R
FU2507	2507	2A	T SB/TD GMD-2-R
FU2707	2707	2A	T SB/TD GMD-2-R

!! WARNING !!
230Volts/ 1Phase/60 Hertz supply only.

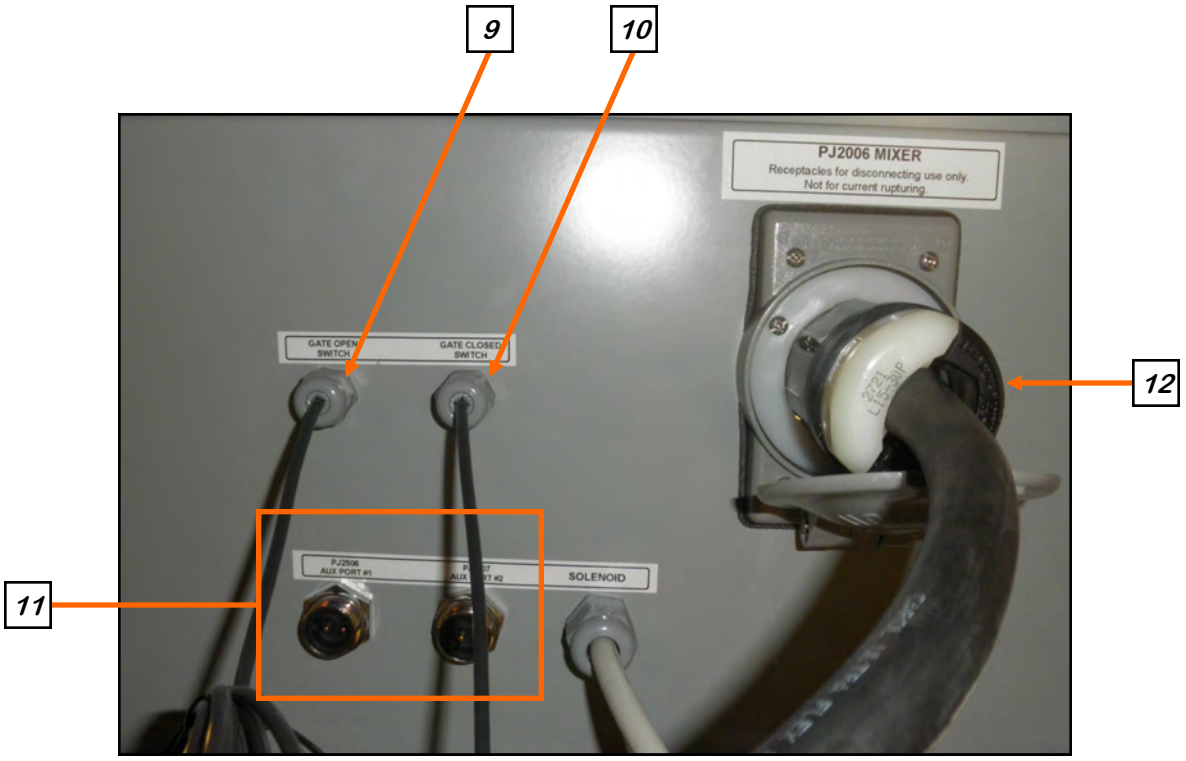
Receptacle for disconnecting use only.
Not for current rupturing.

Incoming power connected to these terminals in the Batch Coater Control Panel



SET-UP

8. Attach the yellow connector on the end of this wire to black connector attached to the wire connected to top sensor on the Bimba cylinder.
9. Attach the yellow connector on the end of this wire to black connector attached to the wire connected to bottom sensor on the Bimba cylinder
10. Connect the two pin cables from Pump Stand(s) to PJ2506 or PJ2507 auxiliary ports on the control panel.
11. Connect the cable from the pump stand motor you wish to be controlled by Auxiliary 1 button to the PJ2006 AUX PORT #1 connector. Connect the cable from the pump stand motor you wish to be controlled by Auxiliary 2 button to the PJ2007 AUX PORT #2 connector.



Use the diagram located above the pneumatic control assembly to make the connections from the ports on the bottom of the assembly to their respective locations.

12. It is required that the air supply have an in-line customer supplied air dryer to protect the air system from contamination. Supply a constant flow at 4 SCFM of air with the capability of a 25 SCFM per minute for one to two minute bursts from the dryer, through a 1/2 inch line to the port on the solenoid assembly located on the right side of the control panel (page 17, top).

SET-UP

13. Run two 1/4 inch lines from A&B WYE TO POWDER UNIT to the “Y” fitting on the back of the control panel.

14. Run one 1\4 inch line from B - GATE CLOSED to the fitting on the bottom of the slide gate air cylinder.

15. Run one 1\4 inch line from A - GATE OPEN to the fitting on the top of the slide gate air cylinder.

16. Run one 1\4 inch line from A - AUGER AIR SEAL to the bottom fitting of he auger air seal air regulator on the back of the control panel assembly.

17. Run one 1\4 inch line from B - LIQUID PURGE to the bottom fitting of he liquid purge air regulator on the back of the control panel assembly.

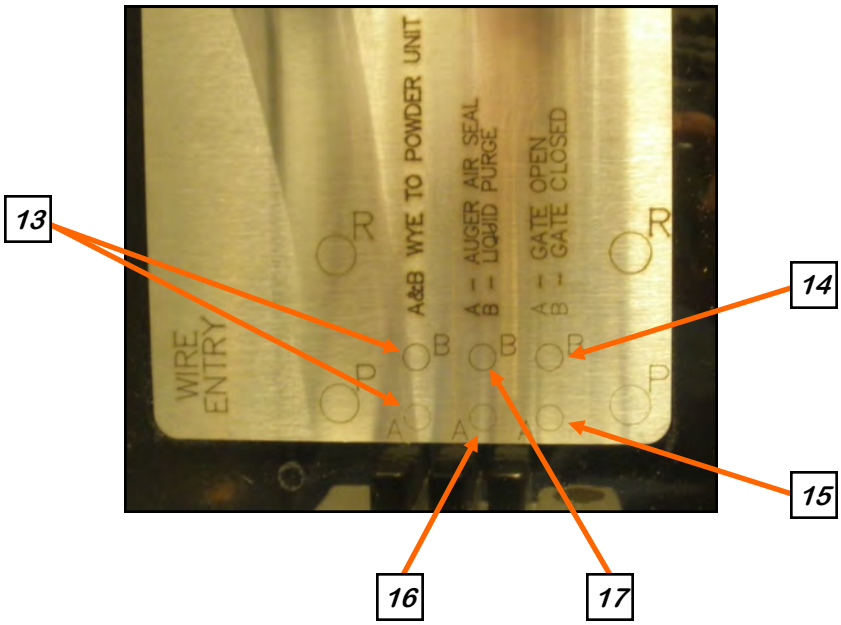
18. Run one 1\4 inch line from the top fitting of he liquid purge air regulator on the back of the control panel assembly to the fitting on the static mixer assembly.

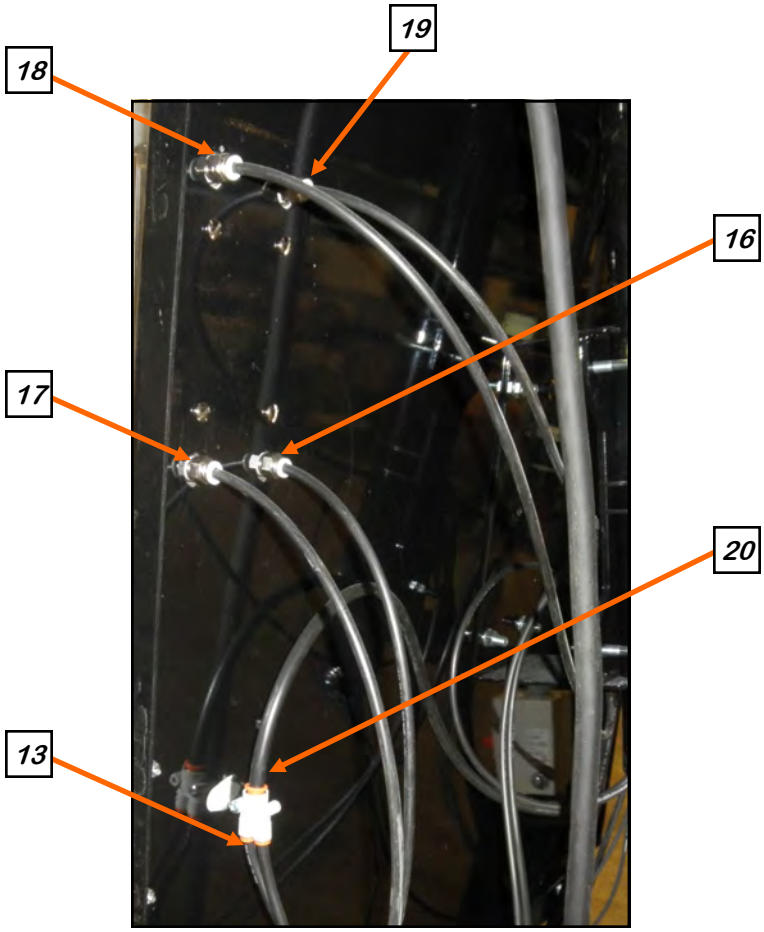
19. Run one 1\4 inch line from the top fitting of he auger air seal regulator on the back of the control panel assembly to the fitting on the bottom of the auger assembly.

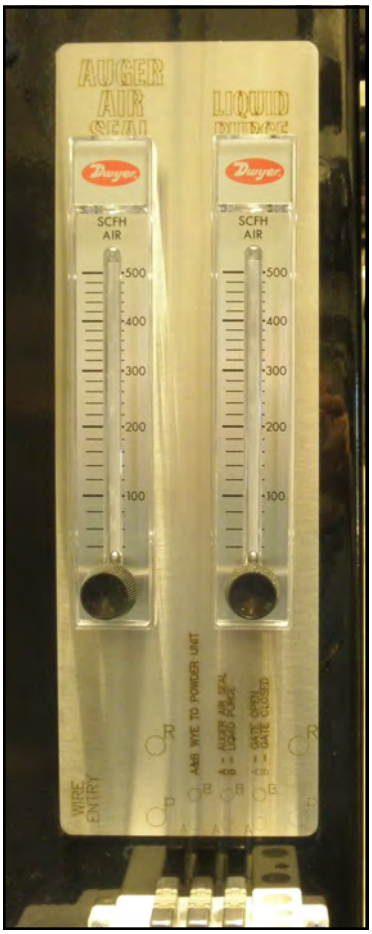
20. Run one 1/2 inch line from the top of the “Y” fitting on the back of the control panel to the fitting on the discharge assembly at the bottom the powder unit.

SET-UP

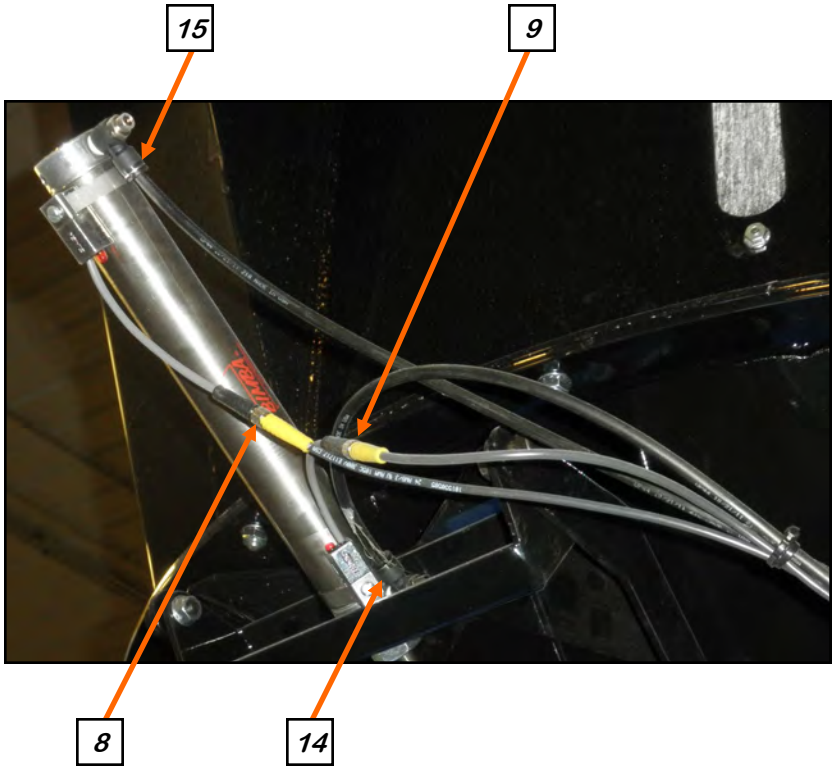
CONTROL PANEL ASSEMBLY



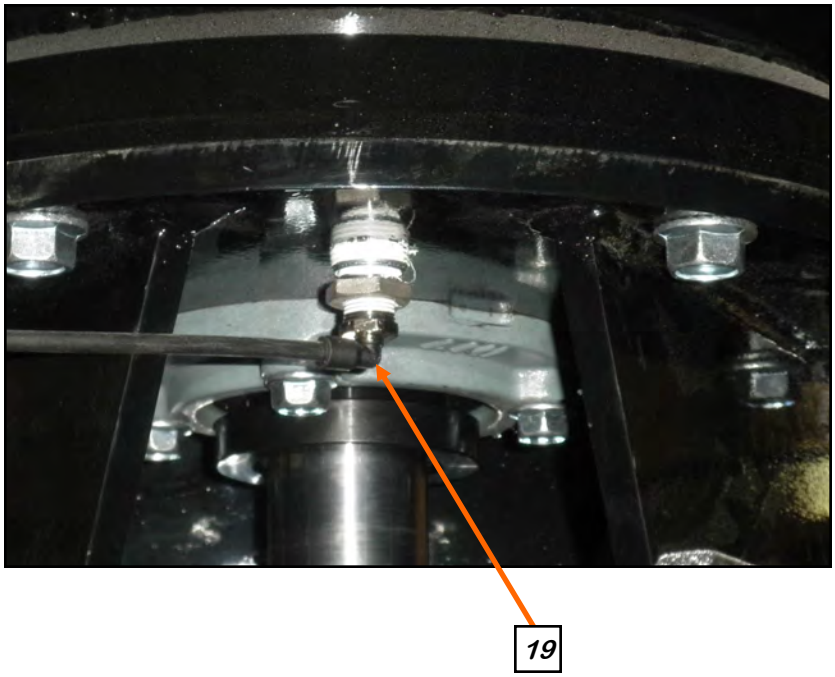




SET-UP

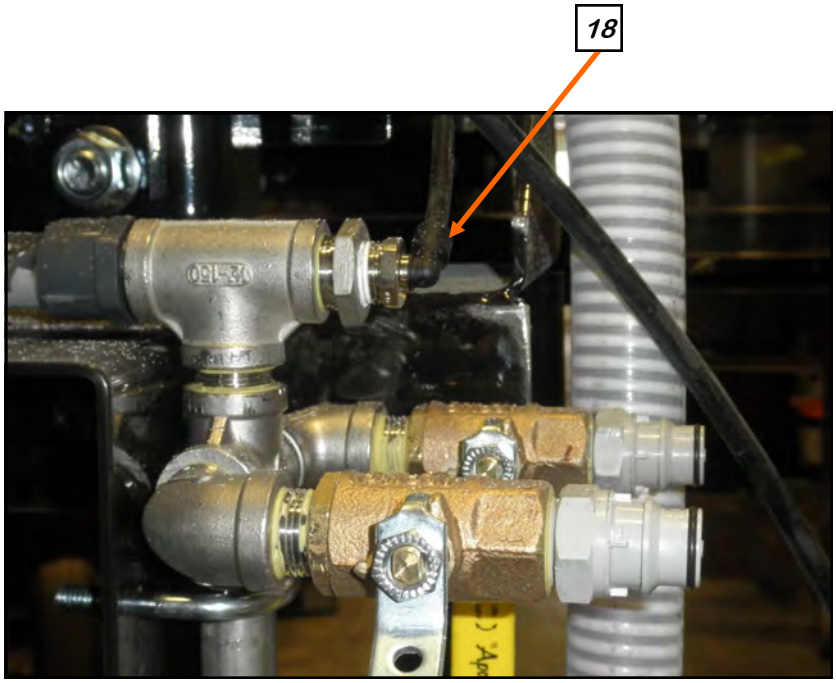


DISCHARGE GATE AIR CYLINDER

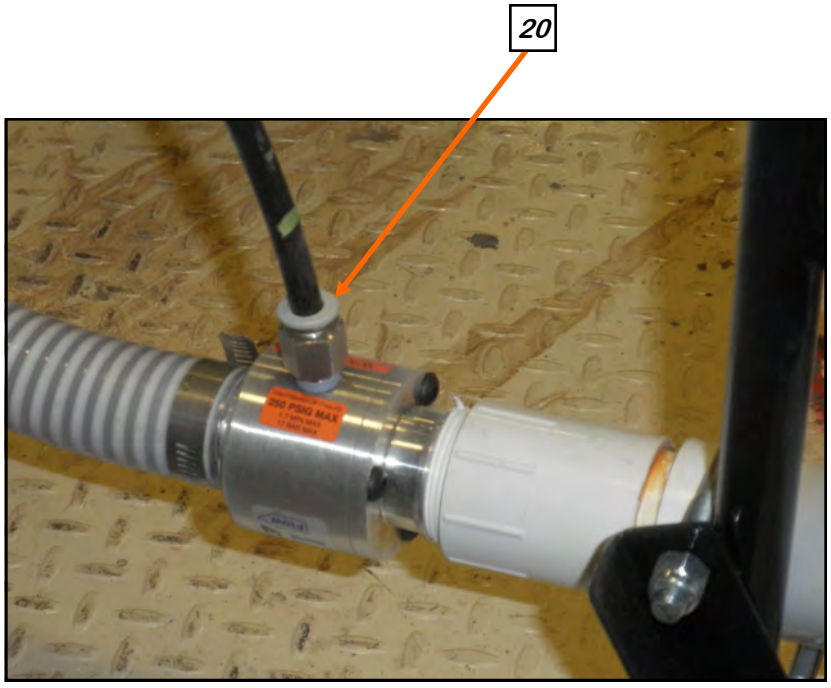


BOTTOM OF AUGER ASSEMBLY

SET-UP



STATIC MIXER ASSEMBLY

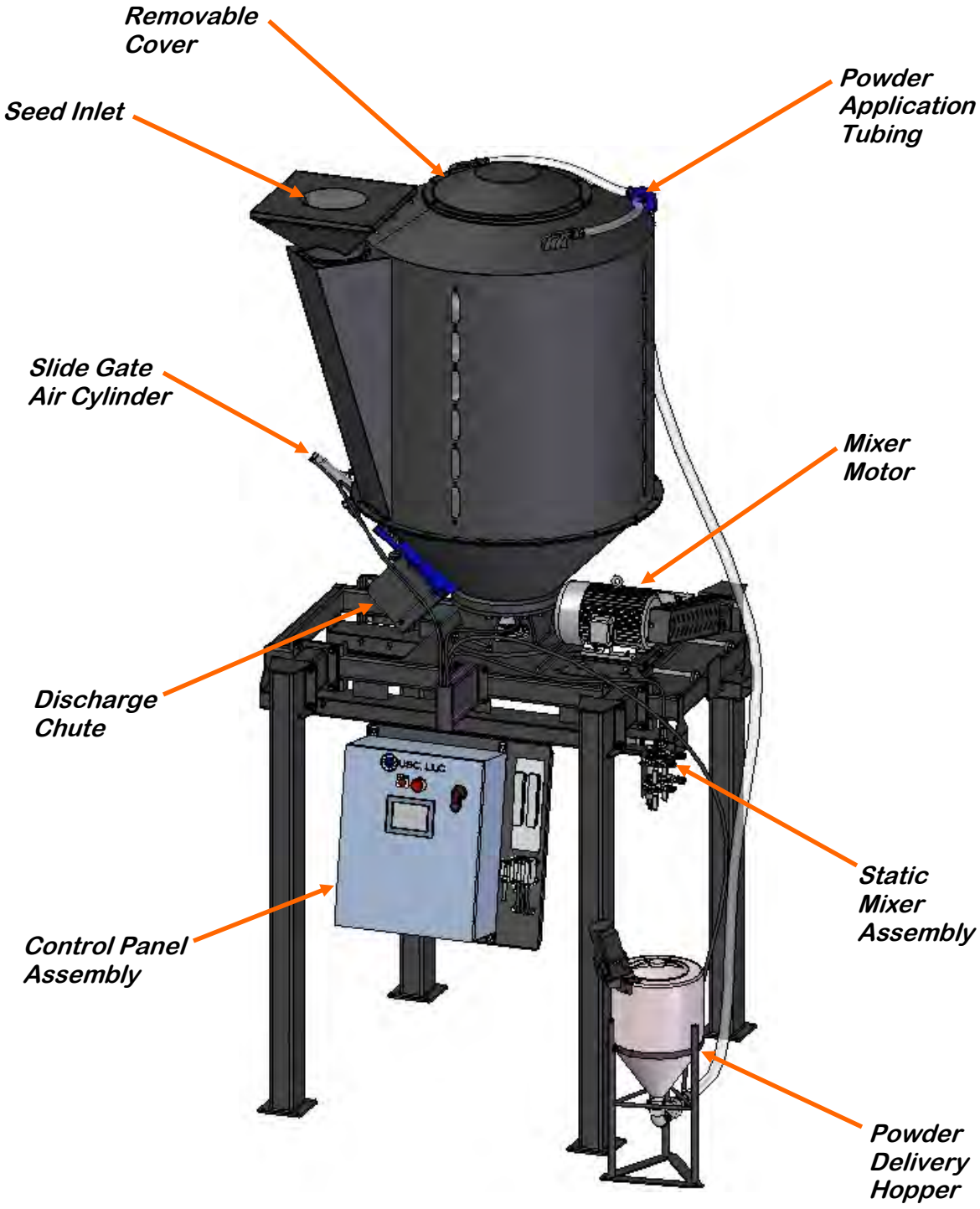


POWDER UNIT DISCHARGE

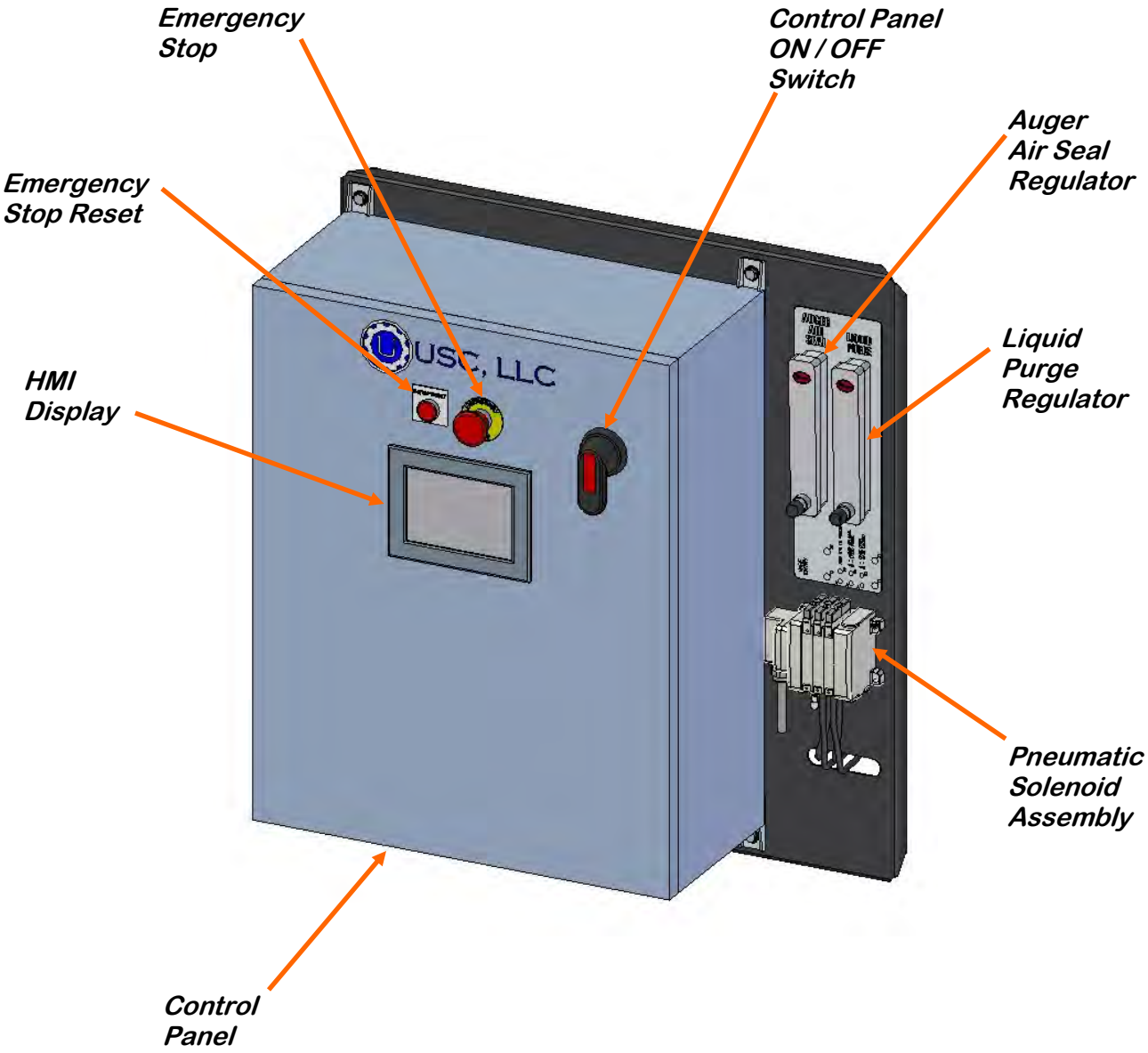
MECHANICAL OPERATION

SECTION C

BATCH COATER OVERVIEW



CONTROL PANEL ASSEMBLY OVERVIEW



ELECTRICAL OPERATION

SECTION D

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.

This section provides a general overview and description of the operator controls for the Batch Coater.

USC recommends the use of surge protection device with a minimum rating of 700VA for all Automated Main Control Panels.

General Panel Descriptions

- The Batch Coater control panel is a 30 x 24 x10 inch enclosure that contains all of the electrical control components as well as the HMI (Human/Machine Interface) touch screen. The operator is able to control the entire system through the HMI.

Batch Coater Panel

The following pages explain the function of the touch screen controls.

MAIN SCREEN

This screen is the first screen the operator will see after the system receives power.

1. MAIN SCREEN BUTTON: Pressing this button returns the operator to the MAIN screen.

2. HOA 1 BUTTON: Pressing this button advances the operator to the HOA 1 screen (see page 25).

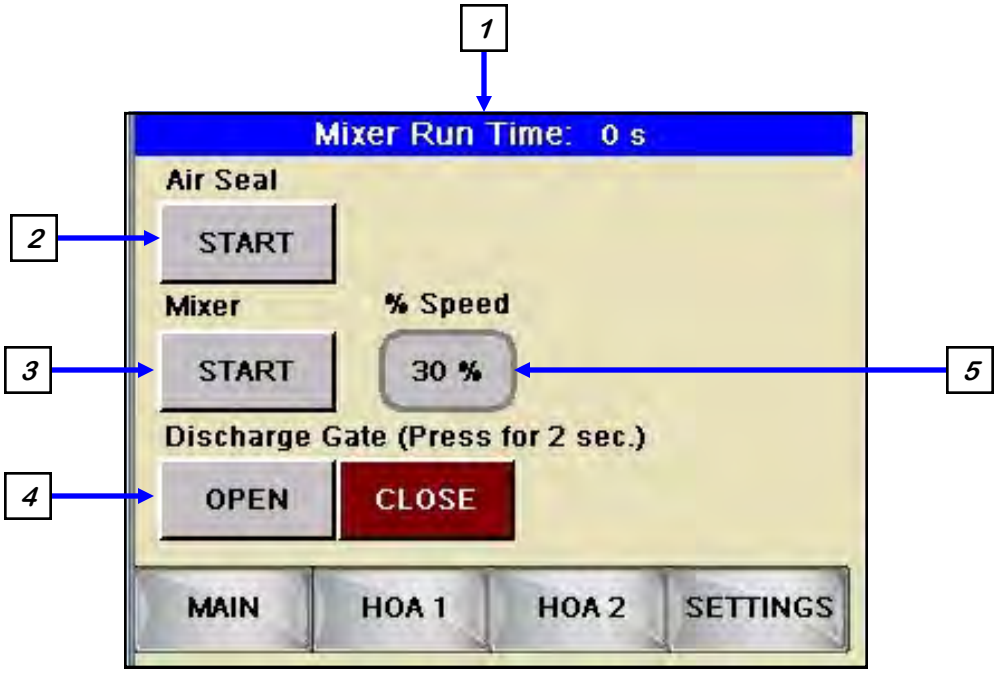
3. HOA 2 BUTTON: Pressing this button advances the operator to the HOA 2 screen (see page 27).

4. SETTINGS BUTTON: Pressing this button advances the operator to the SETTINGS screen (see page 28).

HOA 1 SCREEN

⚠ WARNING

The buttons on the HOA 1 and HOA 2 screens force the selected component to be energized or de-energized. **Be sure to understand the impact of energizing or de-energizing a component before using them. These commands are not a substitute for lockout procedures when working on or near this machine. Use proper lockout procedures to disable the equipment before servicing it.**



1. MIXER RUN TIME INDICATOR: Informs the operator of the amount of time in seconds the mixer has been running after the START button has been pressed. If the STOP button is pressed while a batch is in process, the timer will stop until the system is re-started.

2. AIR SEAL START BUTTON: Pressing this button engages the solenoid to begin air flow to the inside of the base of the auger assembly. This pushes the air to the outside to avoid any material building up inside.

3. MIXER START BUTTON: Pressing this button starts the auger rotation building up to the speed set on the speed percentage button. The current speed indicator will pop-up to the right of the speed percentage button indicating the actual percentage. Once the process is started, the START button will turn red and toggle to STOP. The Air Seal button will automatically START, turn red and become disabled. Once the mixer STOP button is pressed, the air seal button will become active again and the operator may stop it manually. The screen on page 26 is shown in process.

4. DISCHARGE GATE OPEN / CLOSE BUTTONS: After a batch has been mixed and an empty Pro Box has been placed under the discharge gate, press and hold the OPEN button for two seconds to empty the finished product. After all of the treated seed has discharged, press and hold the CLOSED button for two seconds to close the discharge gate

5. % SPEED BUTTON: Pressing this button pops up a numeric keypad (bottom) allowing the operator to enter the percentage of maximum speed they wish to mix the next batch at. The maximum speed is 117 RPM.

HOA 1 SCREEN (Batch in process)

NUMERIC KEY PAD

HOA 2 SCREEN

1. AUXILIARY 1 START BUTTON: Press the Run Time button and use the numeric keypad to enter the number of seconds for the pump stand to run. Pressing the START button sends a signal to the pump stand turning on the pumps bringing the treatment into the mixer. Once the process is started, the START button will turn red and toggle to STOP. The pump will continue for the number of seconds the operator has defined using the Run Time button. Pressing the STOP button will stop the process at any time. A two pin cable must be connected from the auxiliary port on the bottom of the coater control panel to the pump stand control panel to control the liquid flow from the HMI screen

2. AUXILIARY 2 START BUTTON: This button works the same as the auxiliary one start button when using two pump stands. Whichever pump stand is connected to AUX PORT #1 will be controlled by the Auxiliary 1 button. Whichever pump stand is connected to AUX PORT #2 will be controlled by the Auxiliary 2 button (see page 16, item 11).

3. POWDER START BUTTON: Press the Run Time button and use the numeric keypad to enter the number of seconds for the air to run while delivering powder from the hopper to the top of the seed hopper. Pressing the START button engages the solenoid to begin air flow to the powder delivery hopper.

4. LIQUID PURGE START BUTTON: Pressing this button engages the solenoid to begin air flow to check valve located on the top of the static mixer assembly. The compressed air will purge the supply lines of standing liquid. The operator must continue to press the button for as long as it takes to clear the lines.

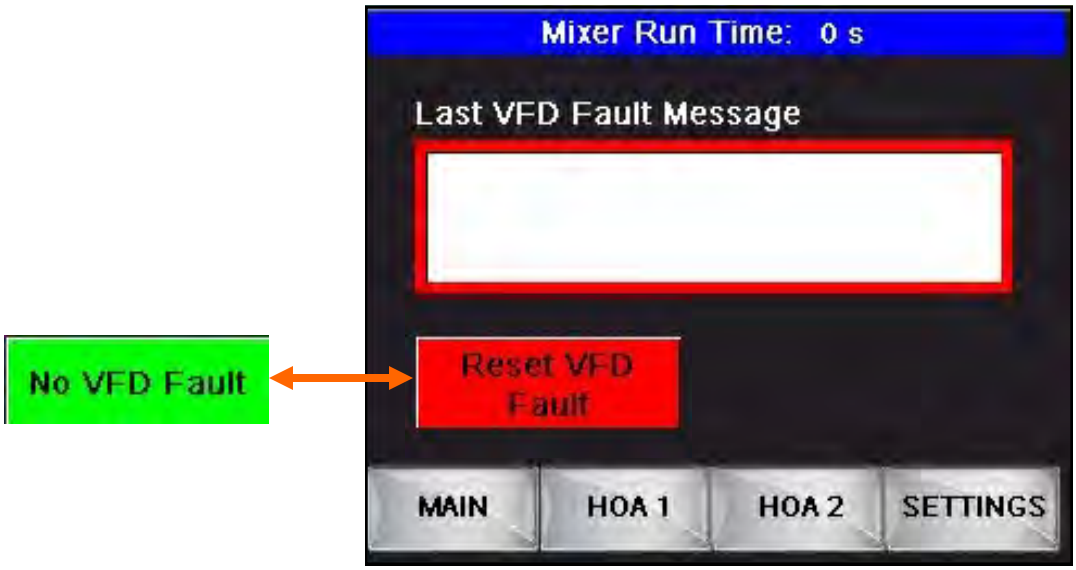
SETTINGS SCREEN

1. SHOW / SOUND ACTIVE ALARMS BUTTON: When the system alarms, the SETTINGS button will begin to flash on and off red. Pressing this button brings up the SETTINGS screen. The active alarms button is now red. Press it and the alarms popup screen will appear with a message at the top indicating the problem and the action required to resolve it (page 29, bottom). Pressing the ACKNOWLEDGE button will temporarily stop the alarm and allow the operator to continue with the batch. However, the alarm is still active and will still need to be resolved.

2. SETPOINTS BUTTON: Pressing this button advances the operator to the SetPoints 1 screen (see page 30).

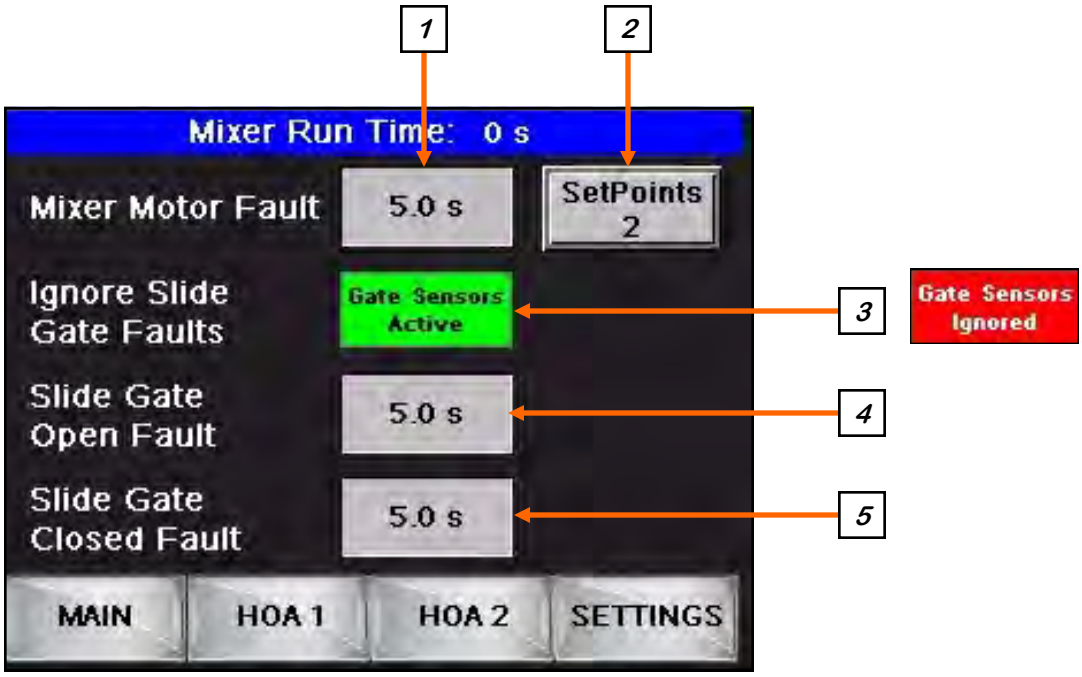
3. SCREEN EXIT BUTTON: Pressing this button closes the SETTINGS screen.

4. VFD RESET BUTTON: Pressing this button advances the operator to the VFD Fault Message screen (page 29, top). The text in the white box will describe the last VFD fault. Press the red Reset the VFD Fault button below the message window. After the VFD has reset, the button will turn green and indicate No VFD Fault.



ACTIVE FAULT POPUP SCREEN

SETPOINTS 1 SCREEN



1. MIX MOTOR FAULT BUTTON: Pressing this button pops up a numeric keypad allowing the operator to enter the number of seconds from the time the mix motor start button is pressed to the alarm activating if the motor does not start.

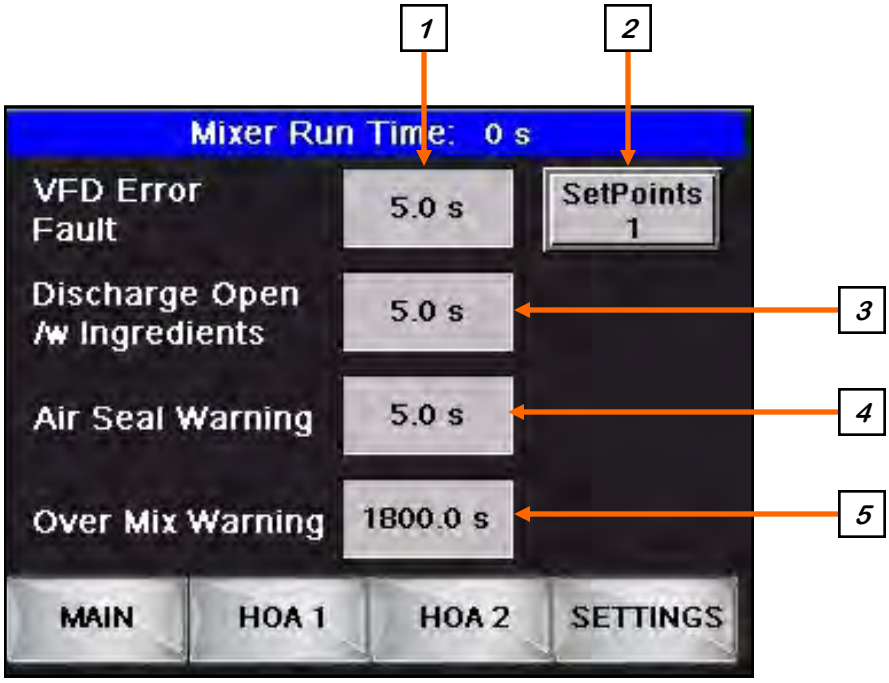
2. SET POINT PAGE SELECTION BUTTON: Pressing this button advances the operator to the SetPoints 2 screen (see page 31).

3. IGNORE SLIDE GATE FAULTS BUTTON: When this button is green, the gate sensors are active and will alarm after a pre-defined number of seconds has passed, and the gate has not moved after the OPEN or CLOSED button is pushed on the HOA 1 screen. Pressing the button will turn the button red and make the gate sensors inactive. With the sensors inactive, there will be no alarm if the gate fails to open or close completely.

4. SLIDE GATE OPEN FAULT BUTTON: Pressing this button pops up a numeric keypad allowing the operator to enter the number of seconds from the time the Discharge Gate OPEN button is pressed to alarm if the gate does not fully open.

4. SLIDE GATE CLOSED FAULT BUTTON: Pressing this button pops up a numeric keypad allowing the operator to enter the number of seconds from the time the Discharge Gate CLOSED button is pressed to alarm if the gate does not fully close.

SETPOINTS 2 SCREEN



1. VFD ERROR FAULT BUTTON: Pressing this button pops up a numeric keypad allowing the operator to enter the number of seconds from the time a VFD fault is detected until the system alarm activates.

2. SETPOINTS 1 BUTTON: Pressing this button returns the operator to the SetPoints 1 screen (see page 30).

3. DISCHARGE OPEN /W INGREDIENTS BUTTON: Pressing this button pops up a numeric keypad allowing the operator to enter the number of seconds until an alarm sounds from the time either of the pump stand motors start or the air begins to feed powder from the applicator when the discharge gate is in the open position.

4. AIR SEAL WARNING BUTTON: Pressing this button pops up a numeric keypad allowing the operator to enter the number of seconds from the time the Air Seal should begin before issuing a warning. It is unlikely this will activate because the Mixer and Air Seal buttons are interlocked

5. OVER MIX WARNING BUTTON: Pressing this button pops up a numeric keypad allowing the operator to enter the maximum number of seconds that a batch may run before a popup warning informs the operator that it has been running longer than the amount of time designated here.

SECTION E TROUBLESHOOTING

TROUBLESHOOTING

Below is a table describing the most frequent problems and solutions with the USC Batch Coater . For further assistance, contact the USC Service department at (785) 431-7900.

Problem	Possible Cause	Solution
System has power but will not start .	1. E-Stop switch engaged. 2. Motor VFD fault.	1. Pull out E-Stop switch and press E-Stop reset button. 2. Reset VFD and clear alarm.
Discharge gate will not completely close.	1. Tubing to cylinder not connected. 2. Lack of air pressure. 3. Debris not allowing gate to close.	1. Check pneumatic connection to air cylinder. 2. Check pneumatic connections and pressure regulation. 3. Power unit down and clear debris from discharge gate. Power up unit and press the discharge gate CLOSE button.
Pump is fluctuating.	1. Restriction in tubing 2. Filter is plugged or missing gasket. 3. Hoses are worn out.	1. Flush tubing and check filter for any restrictions. 2. Clean filter and check for gasket. 3. Replace hoses.
Pump Stand mix motor will not start	1. Power cord not plugged in.	1. Plug in power cord.
Powder not being delivered to top of coater	1. Powder hopper is empty. 2. Lack of air pressure.	1. Check powder hopper, fill as needed. 2. Check pneumatic connections and pressure regulation.

MAINTENANCE

SECTION F

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

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

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.

Lubrication Oil

The lubricant is a factory filled high performance, H1 grade synthetic. The standard ambient temperature range is –10 degrees to +130 degrees Fahrenheit.
Other lubricants, including Mobile SHC series must not be mixed with the factory supplied lubricant.

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.

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

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

DRIVE ASSEMBLY

- Remove drive belt guards and check for any play in the drive motor or reducer shafts.
- Check the drive belt tension. Adjust if necessary (see page 35).
- Grease the upper and lower auger shaft bearings every 40 hours of operation.
- The reducer is filled with synthetic lubricant and requires no periodic maintenance. However, an occasional visual inspection to check for hardware tightness, leakage and the general overall condition of the reducer is good practice.

COATING HOPPER

- Run clean water through the static mixer assembly and purge with compressed air regularly to avoid chemical build-up.
- Clean the entire hopper, including the slide gate assembly with clean water regularly to avoid chemical build-up.
- Grease the upper and lower auger shaft bearings every 40 hours of operation.

ELECTRICAL PANEL

- Check and tighten wire connections.
- Check quick connects on bottom of control panel.
- Check to see if starters and/or overloads are tripped.
- Check to see if relays, timers and/or breakers are tripped.
- Check quick connects on end of Auxiliary cord.
- Check and tighten wire connections.
- Check relay and fuse holder.
- Check power cords for cuts or frays and ensure ground is present.

Belt Tensioning Specification

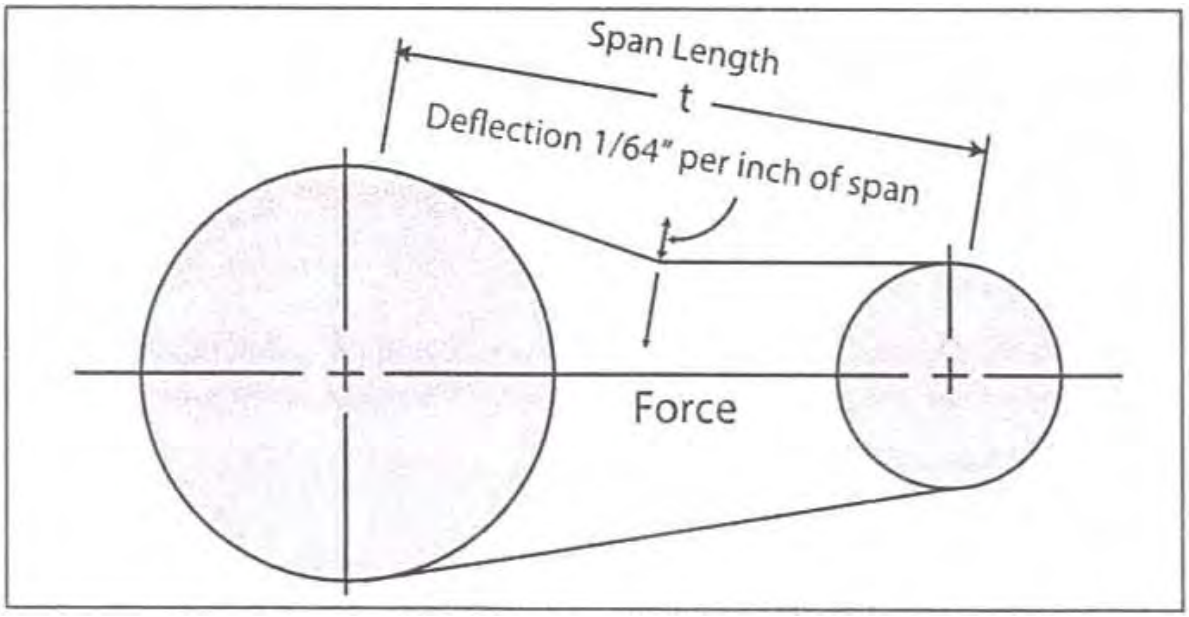
Section G

Synchronous Belts

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

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

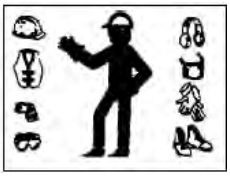
The following range of deflection forces are normally adequate for a used drive belt.



BELT PITCH	BELT WIDTH	DEFLECTION FORCE
POLY CHAIN SYNCHRONOUS	8MM	8.0 to 8.8 lbs
POLY CHAIN SYNCHRONOUS	14MM	25 to 27 lbs

SECTION H STORAGE

When storing the Batch Coater for long periods of time, the following procedure must be followed to reduce the chance of rust, corrosion and fatigue of the conveyor. You can also use these steps when storing the machine for the winter.



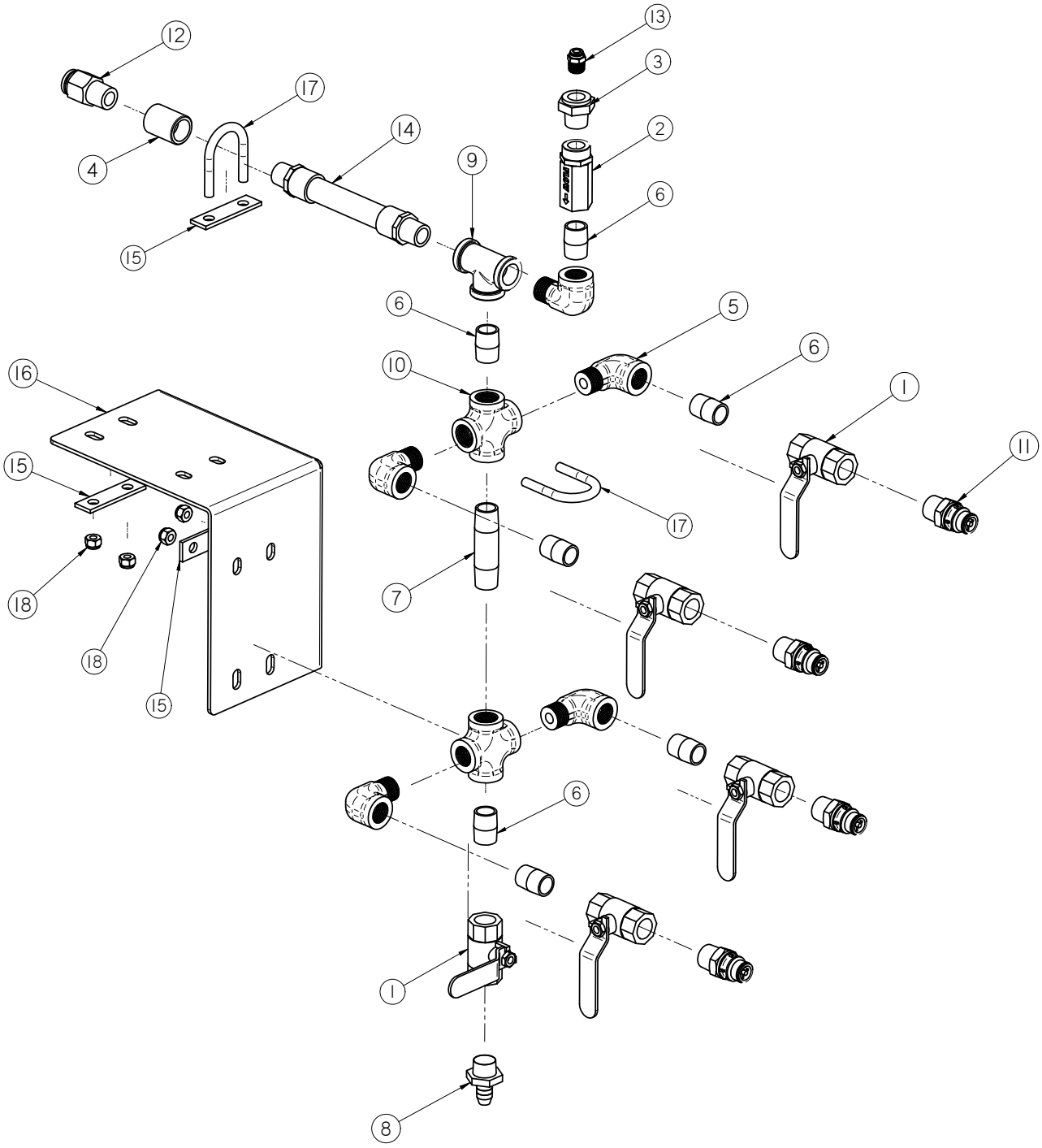
A dust mask and protective rubber gloves shall be used when cleaning the machine.

1. Clear the area of bystanders, especially small children.
2. Thoroughly wash the entire machine to remove all dirt, mud, debris or residue.
3. Inspect all moving or rotating parts to see if anything has become entangled in them. Remove the entangled material.
4. 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.
5. Remove drive assembly covers. Clean entire area and ensure drive belts are clean and free of debris.
6. Touch up all paint nicks and scratches to prevent rusting.
7. Store the machine inside a protective building to keep it from being exposed to the weather. Select an area that is dry, level and free of debris. If storing outside, cover with a waterproof tarpaulin.
8. Store machine in an area away from human activity.
9. Do not allow children to play on or around the stored machine.

NOTES

SECTION I MECHANICAL DRAWINGS

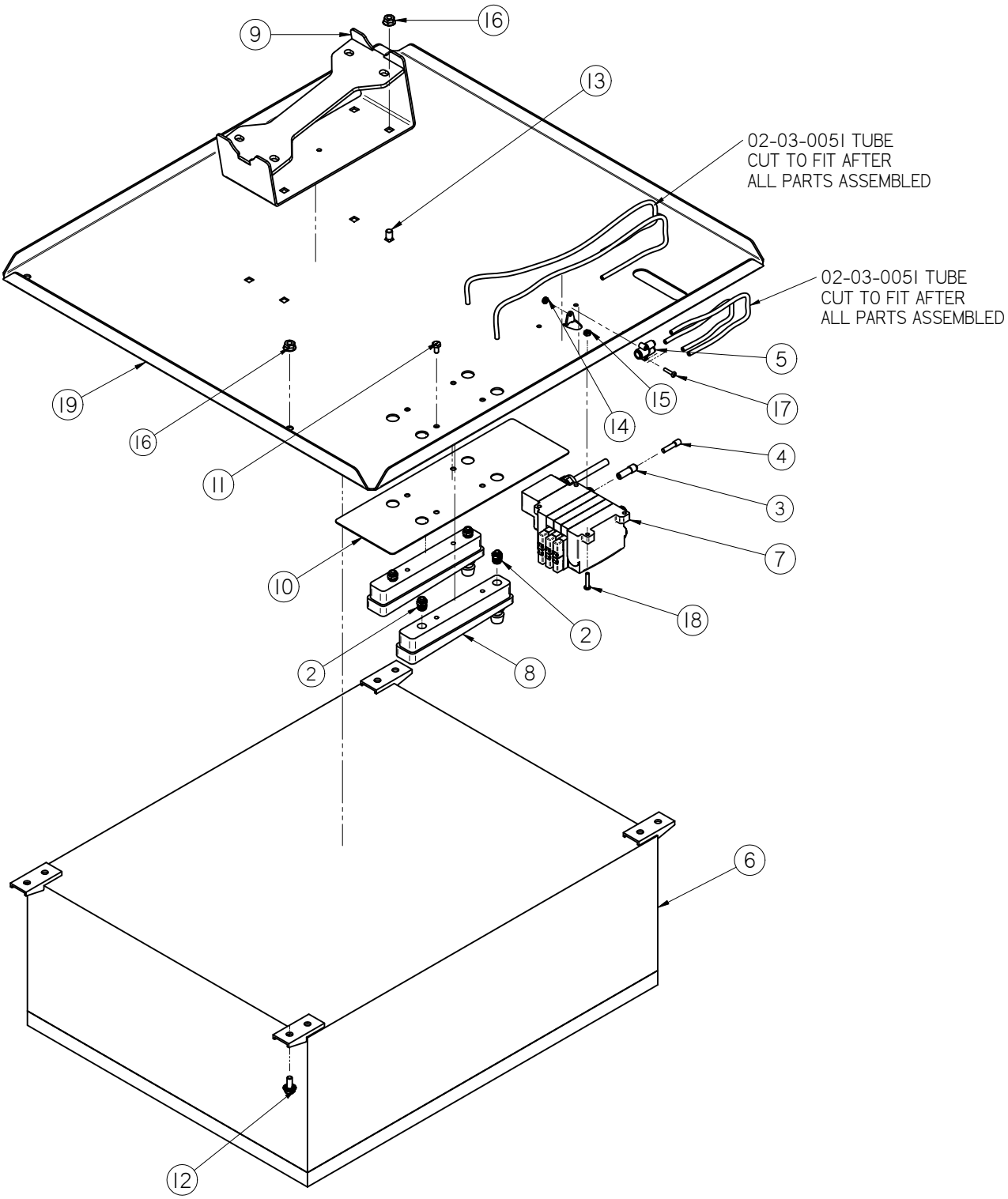
STATIC MIXER ASSEMBLY (04-03-0226)



STATIC MIXER ASSEMBLY (04-03-0226)

Item #	Part #	Description	Qty
1	02-02-0006	.500-14 NPT X 2-WAY VALVE	5
2	02-02-0008	CHECK VALVE, .500 SS	1
3	02-04-0001	FTTG BUSH .500NPT X.250NPT BP	1
4	02-05-0005	FTTG CPLG .500 NPT FM SS	1
5	02-06-0020	FTTG 90 DEG STRT.500NPTX .500NPT SS	5
6	02-07-0007	FTTG NIP .500NPTX1.125 TBE SS CLOSE	7
7	02-07-0019	FTTG NIP .500 NPT X 3.00 TBE SS	1
8	02-08-0007	FTTG STGHT .500HB X .500NPT ML NYL	1
9	02-09-0003	FTTG TEE .500 NPT FM SS	1
10	02-11-0001	FTTG CROSS .500 NPT FM SS	2
11	02-15-0014	FTTG CPLG .500 NPT QCK DISC INSERT	4
12	02-16-0028	FTTG PUSH .625OD X .500 NPT ML	1
13	02-16-0041	FTTG PUSH .250 OD X .250 NPT	1
14	04-03-0030	MXR IL PVC 6ELEMENT .500PIPE X 7.00	1
15	05-10-4277	SPCR STTC MXR MNT	3
16	05-10-4356	PLT STTC MIXER SUPP BATCH TRTR	1
17	06-01-0037	BOLT U .313-18 X 1.38 X 2.188 ZP	2
18	06-03-0002	NUT NYL LOCK .313-18 ZP GR5	4

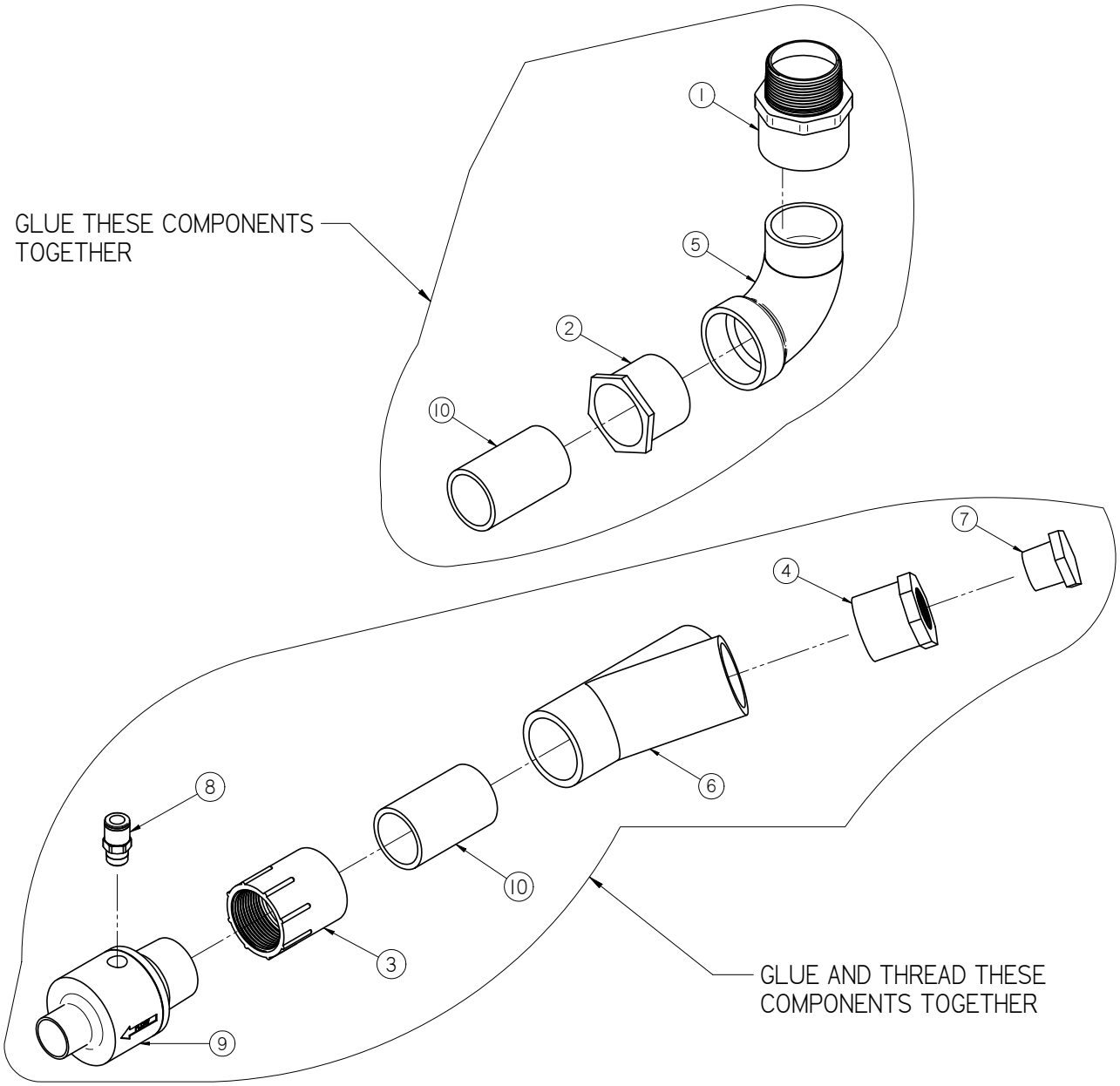
CONTROL PACKAGE ASSEMBLY (13-12-0135)



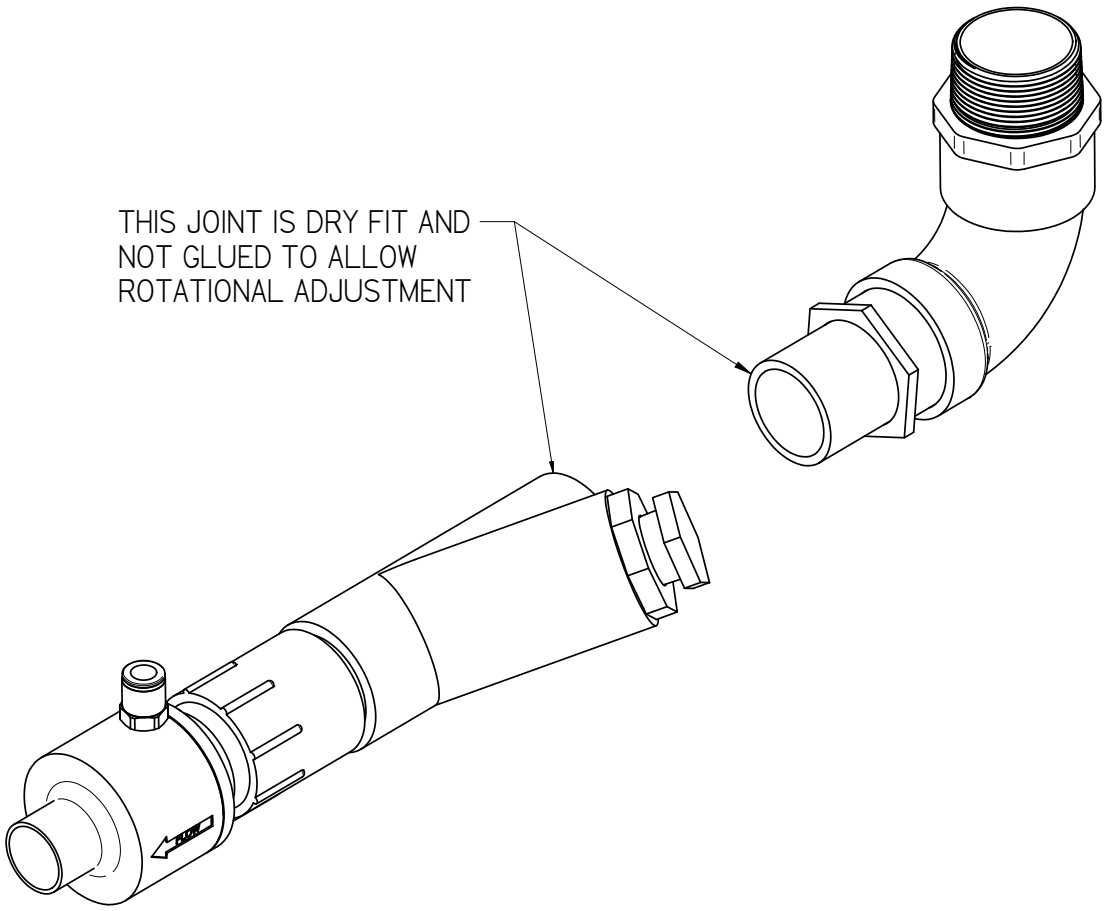
CONTROL PACKAGE ASSEMBLY (13-12-0135)

Item #	Part #	Description	Qty
1	02-03-0051	TBG .250 OD NYL BLK - FEET	6
2	02-16-0041	FTTG PUSH .250 OD X .250 NPT	4
3	02-16-0053	FTTG PUSH RDCG .375 ML X .250 FM	1
4	02-16-0054	FTTG PUSH .25 BLANKING PLUG	1
5	02-16-0057	FTTG PUSH BRANCH .375 X .250 X .250	1
6	03-12-0389	PNL CNTL MNL BATCH COATER 230V 1PH	1
7	03-17-0108	VLV SOL 24V VC GATE-SEAL-PURGE-CON*	1
8	03-18-0031	FLMT VISUAL ADJ .8-8 SCFM	2
9	05-03-1479	WDMT PNL ADJ	1
10	05-10-4357	LBL FLMT-CNTL VLV VC	1
11	06-01-0004	BOLT, .250-20 X .500 UNC ZP GRADE 5	4
12	06-01-0124	BOLT FLG .375-16 X .750 ZP GR5	4
13	06-01-0153	BOLT CRG .375-16X.750 ZP SHORT NECK	4
14	06-02-0034	NUT 8-32 K-LOCK ZP	1
15	06-02-0043	NUT,LOCK, #10-24 ZP NYLON INSERT	4
16	06-03-0014	NUT LOCK FLG .375-16 ZP GR5	8
17	06-06-0012	SCRW MACH 8-32 X .750 PHLP RDHD ZP	1
18	06-06-0038	SRCW, PAN HD, 10-24 X 1.00 ZP	4
19	103EF4	PLT MNT ENCL	1

CONVEYOR AIR INLET ASSEMBLY (05-07-0811)

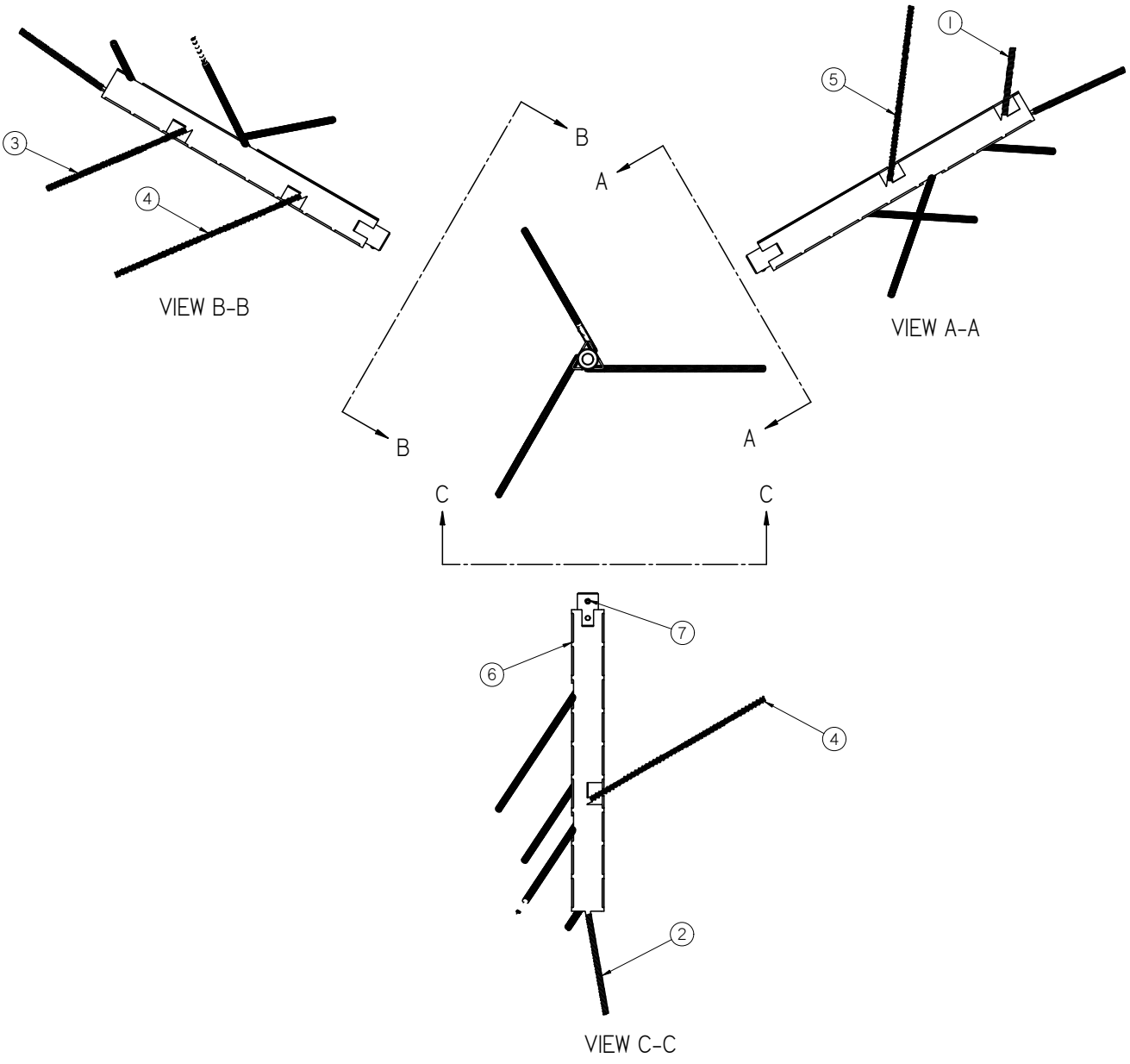


CONVEYOR AIR INLET ASSEMBLY (05-07-0811)



Item #	Part #	Description	Qty
1	02-04-0040	FTTG ADPT 1.50 SCKT X 1.50 MNPT PVC	1
2	02-04-0041	FTTG BUSH 1.50 SCKT X 1.25 SCKT PVC	1
3	02-04-0042	FTTG ADPT 1.25 SCKT X 1.25 FNPT PVC	1
4	02-04-0043	FTTG ADPT 1.25 SCKT X 0.75 FNPT PVC	1
5	02-06-0085	FTTG 90 DEG STRT 1.50 SCKT WELD PVC	1
6	02-10-0005	FTTG WYE 1.25 SCKT PVC	1
7	02-14-0014	FTTG PLUG .750-14 NPT PLUG BP	1
8	02-16-0015	FTTG PUSH .375OD X .250 NPT ML	1
9	04-04-0015	LINE VAC 1.25NPT IN 1.25OD OUT	1
10	103F2D	NIPPLE 1.25 OD PVC	2

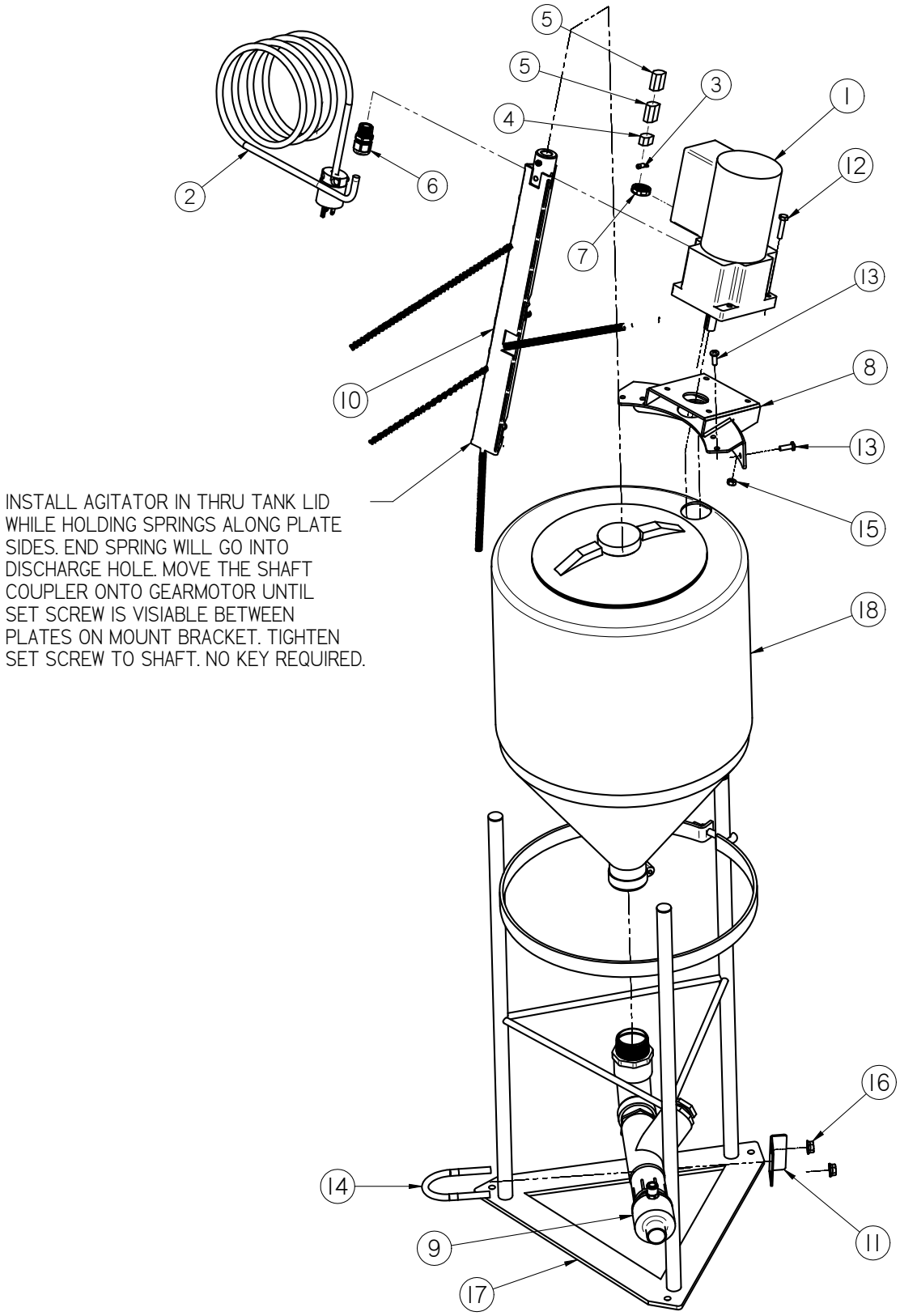
AGITATION SHAFT ASSEMBLY (05-08-0474)



AGITATION SHAFT ASSEMBLY (05-08-0474)

Item #	Part #	Description	Qty
1	01-04-0079	SPG EXT .375OD .063 WIRE 4IN LG	1
2	01-04-0080	SPG EXT .375OD .063 WIRE 6IN LG	1
3	01-04-0081	SPG EXT .375OD .063 WIRE 9IN LG	1
4	01-04-0082	SPG EXT .375OD .063 WIRE 12IN LG	2
5	01-04-0083	SPG EXT .375OD .063 WIRE 10.5IN LG	1
6	05-08-0473	WDMT SHAFT AGITATION POWDER SS	1
7	06-06-0085	SETSCREW .312-18 X .375 SS CUP PNT	1

POWDER AGITATION HOPPER ASSEMBLY (13-05-0383)

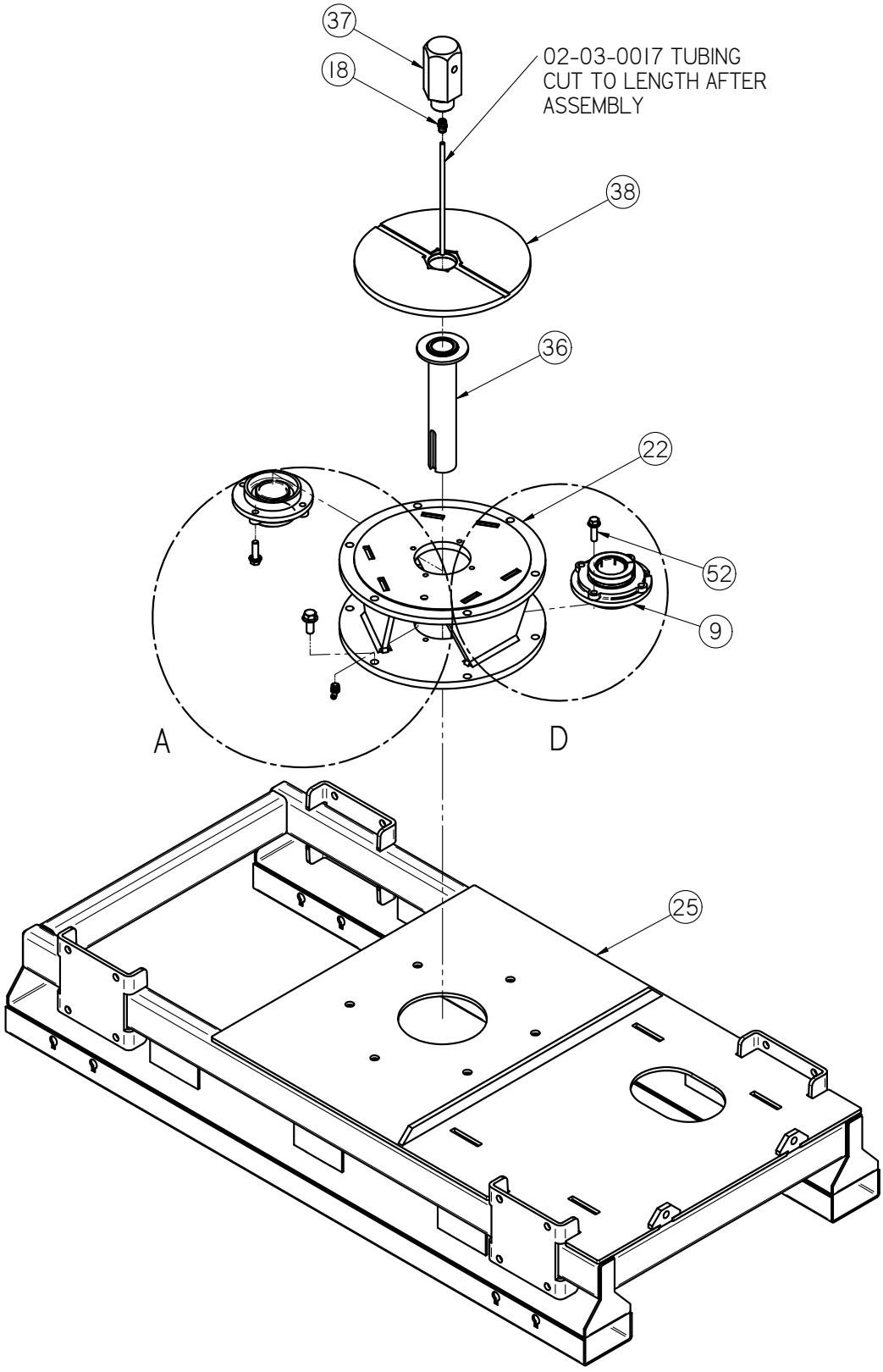


INSTALL AGITATOR IN THRU TANK LID WHILE HOLDING SPRINGS ALONG PLATE SIDES. END SPRING WILL GO INTO DISCHARGE HOLE. MOVE THE SHAFT COUPLER ONTO GEARMOTOR UNTIL SET SCREW IS VISIABLE BETWEEN PLATES ON MOUNT BRACKET. TIGHTEN SET SCREW TO SHAFT. NO KEY REQUIRED.

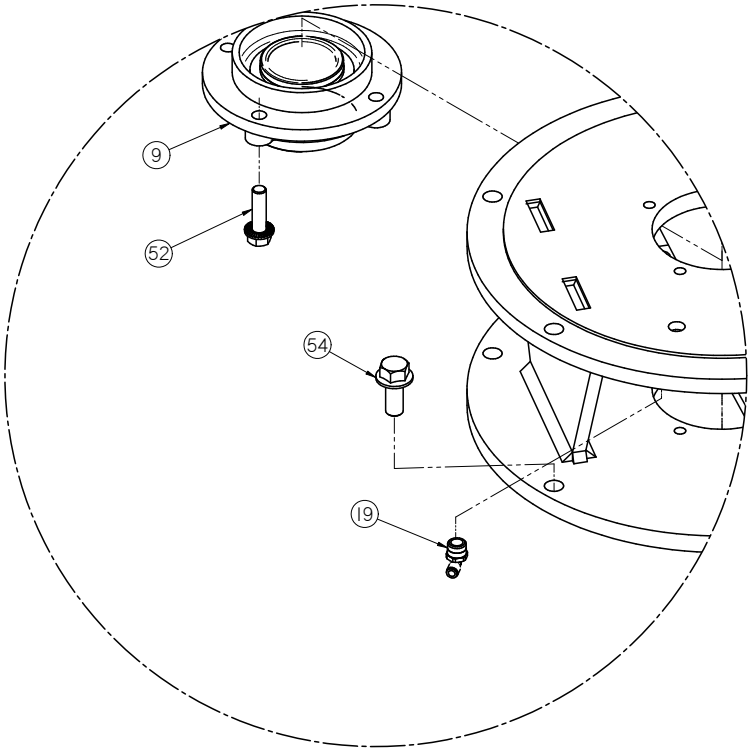
POWDER AGITATION HOPPER ASSEMBLY (13-05-0383)

Item #	Part #	Description	Qty
1	01-01-0182	MOTOR .16HP 9075 RPM 1PH	1
2	03-07-0124	CORD POWER MOLDED 14/3 10FT	1
3	03-08-0201	CONN RING TMNL 14-16AWG #6-10 STUD	1
4	03-08-0268	CONN COMPACT TNML BLK 2-CON 222-412	1
5	03-08-0270	CONN COMPACT TNML BLK 5-CON 222-415	2
6	03-08-0299	CONN CG 0.5NPT .170-.450 3232LTF	1
7	03-08-0308	NUT NYLOC .500 NPT 8464	1
8	05-03-1578	WDMT FR GMTR MNT	1
9	05-07-0811	CNVR AIR 1.25OD OUT 1.50 FNPT INLET	1
10	05-08-0474	ASSY SHAFT AGITATION POWDER SS	1
11	05-10-4358	PLT BRKT CLMP U-BOLT	1
12	06-01-0008	BOLT, .250-20 X 1 1/4" UNC ZP GRADE 5	4
13	06-01-0215	SCRW MACH #14 X .750 SS PLASTITE	6
14	06-01-0294	BOLT U .375-16 X 2.50 X 3.625 ZP	1
15	06-02-0001	NUT FULL .250-20 ZP GR5	4
16	06-03-0014	NUT LOCK FLG .375-16 ZP GR5	2
17	07-02-0034	WDMT FR 7-10GAL CONE BTM TNK	1
18	07-02-0035	TNK 10GAL 55 DEG 1.50 FNPT FD	1

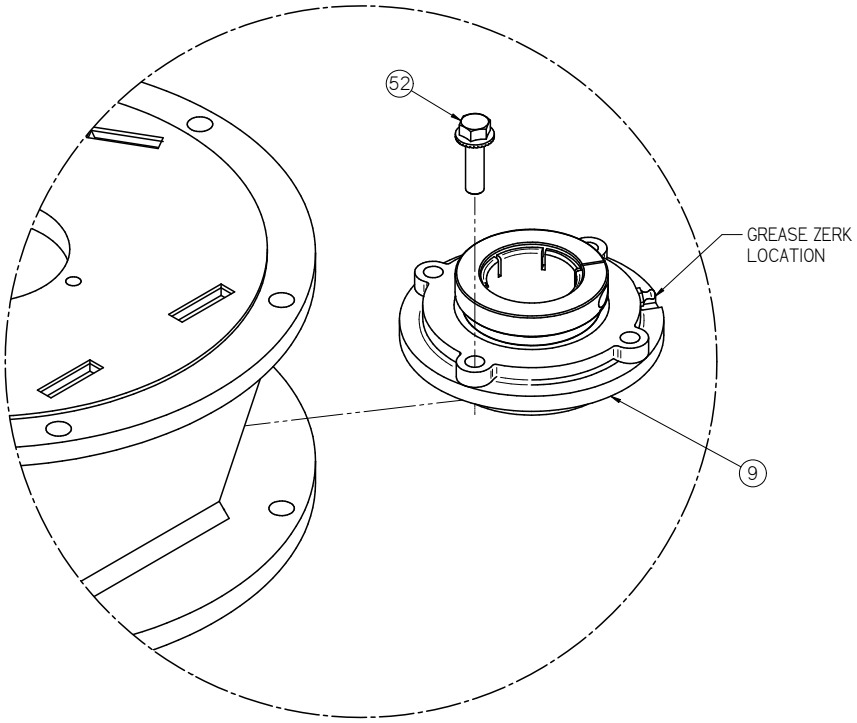
BATCH COATER BASE ASSEMBLY (13-11-0033)



BATCH COATER BASE ASSEMBLY (13-11-0033)

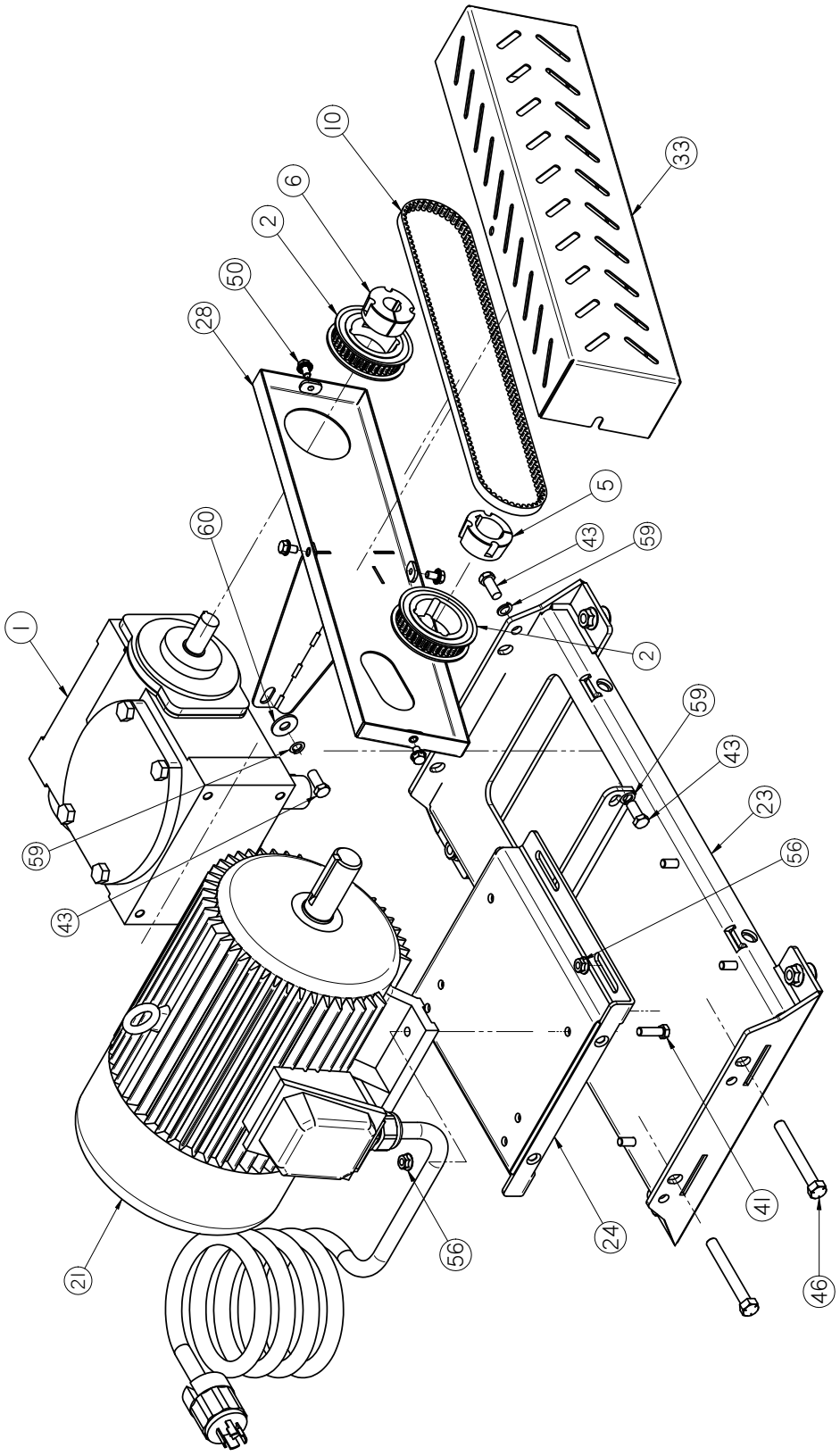


DETAIL A

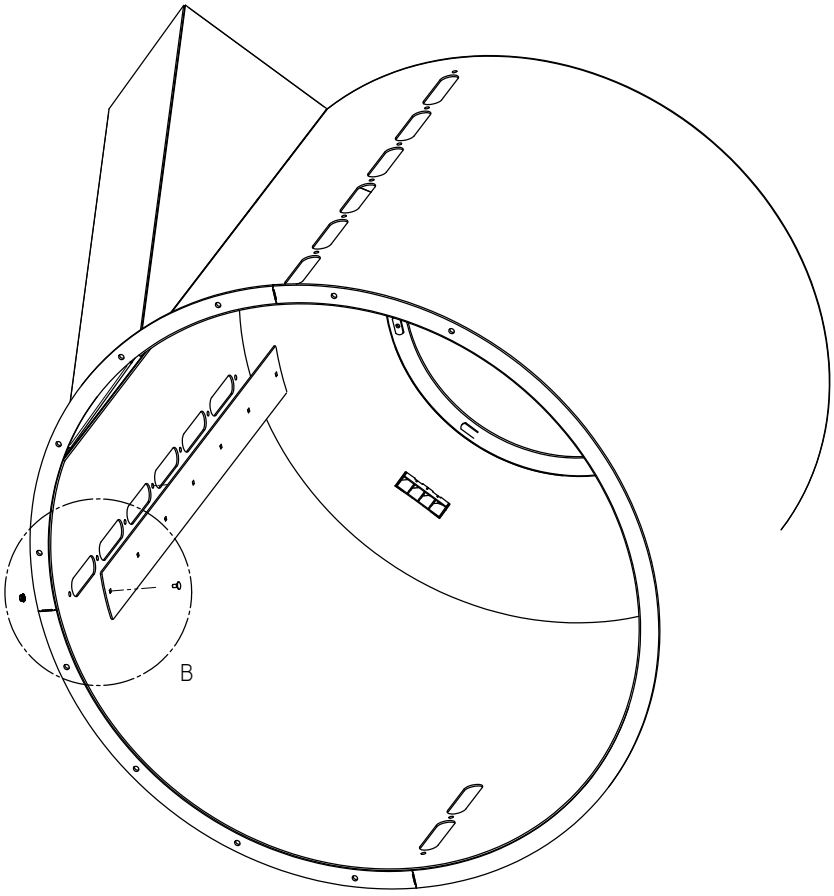


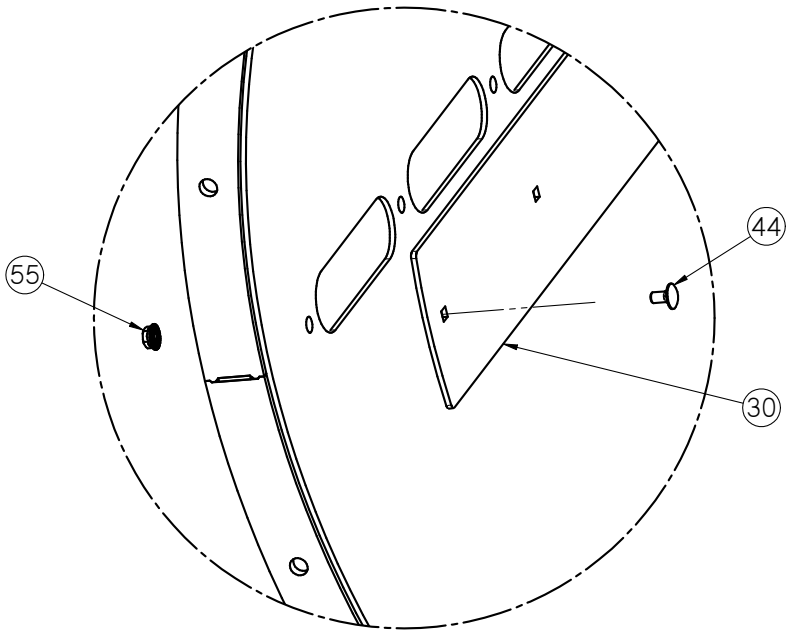
DETAIL D

BATCH COATER BASE ASSEMBLY (13-11-0033)



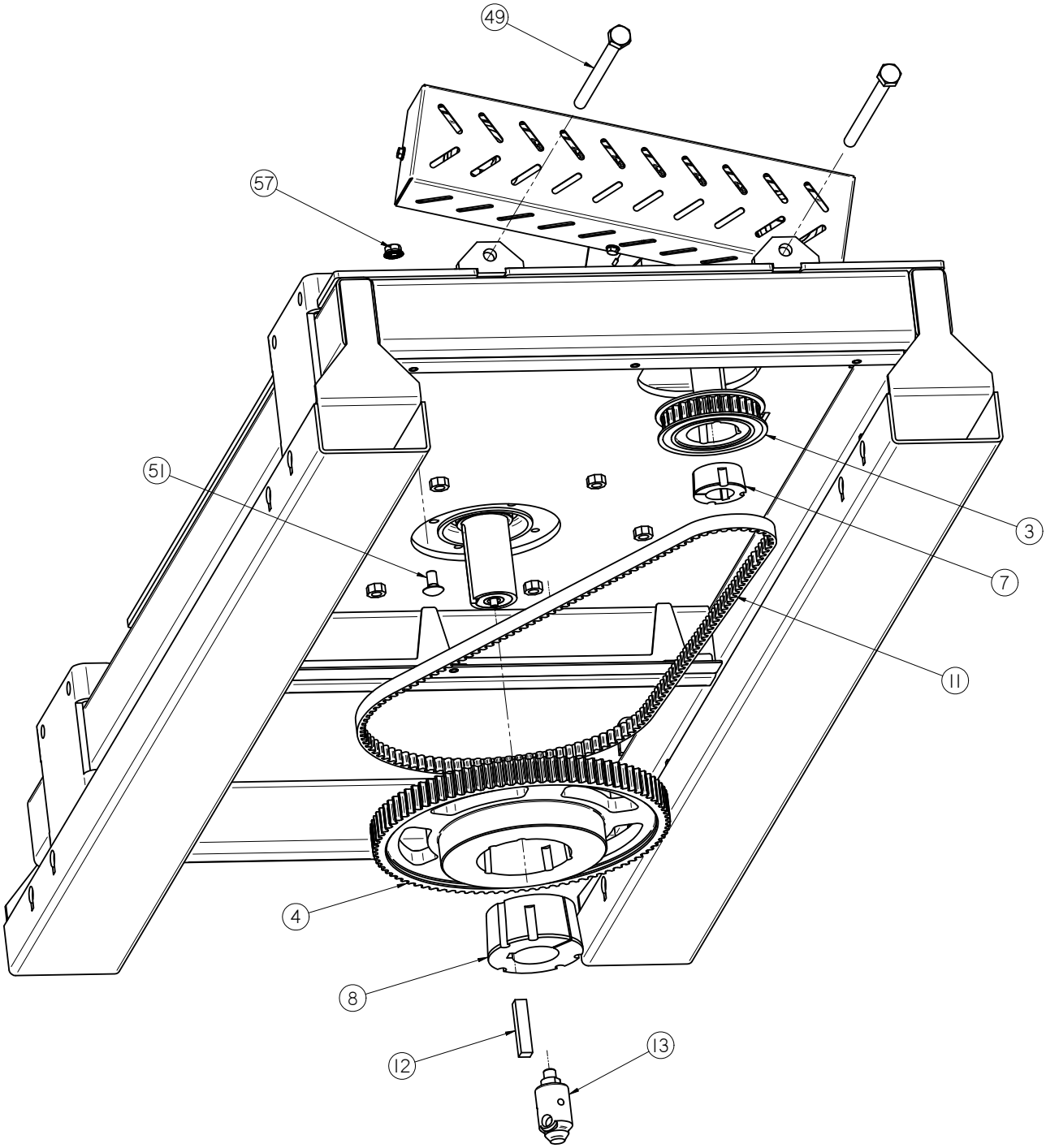
BATCH COATER BASE ASSEMBLY (13-11-0033)



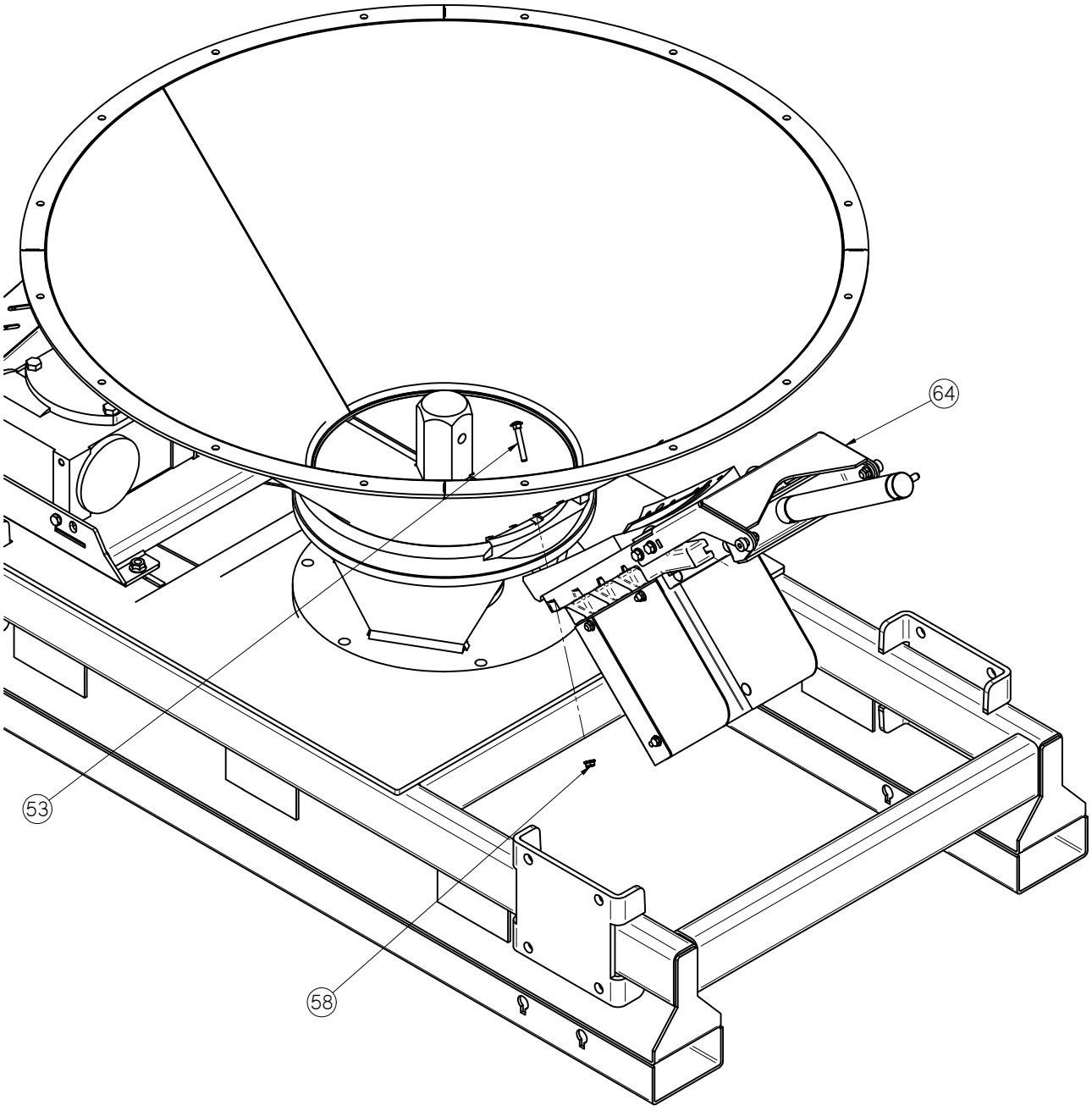


DETAIL B

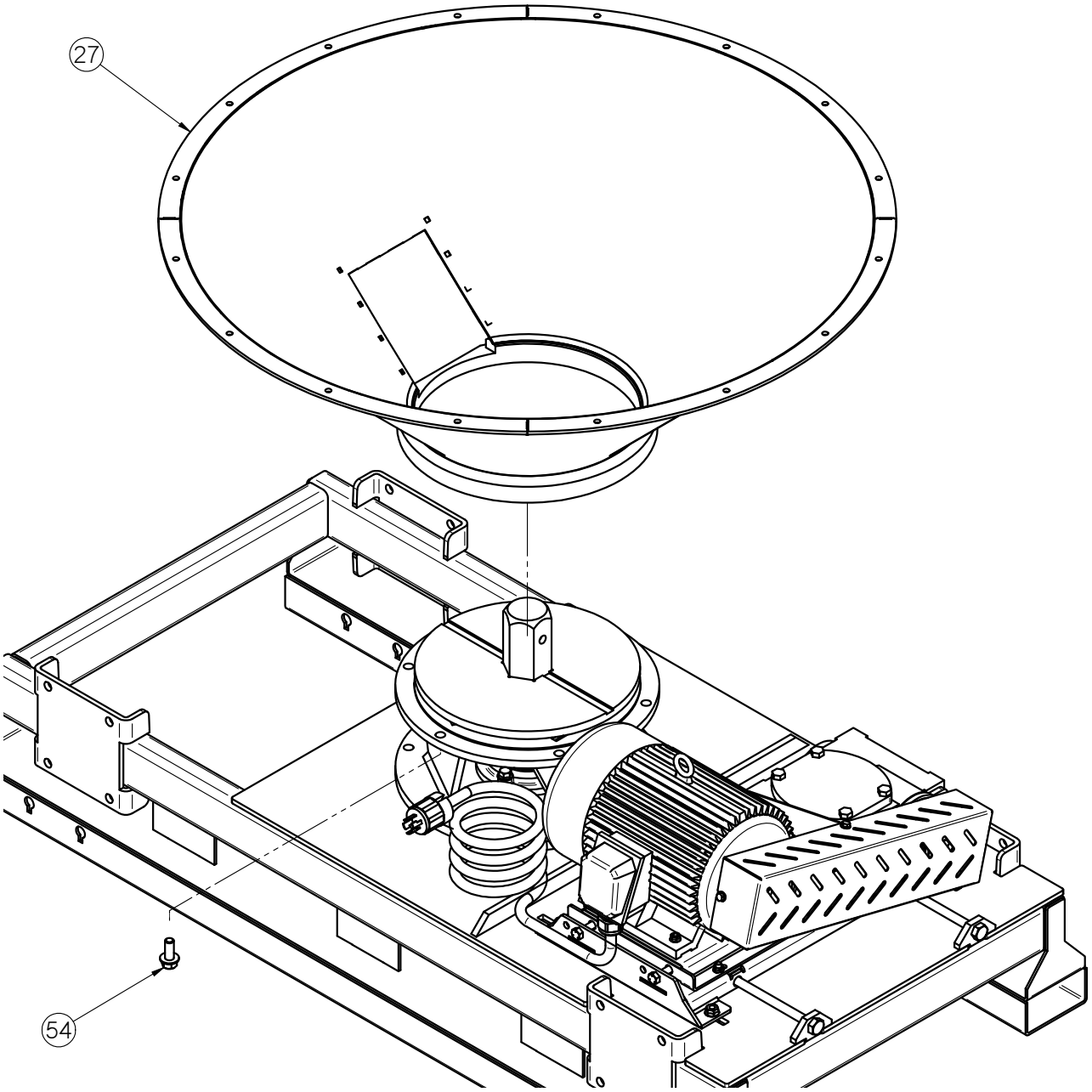
BATCH COATER BASE ASSEMBLY (13-11-0033)



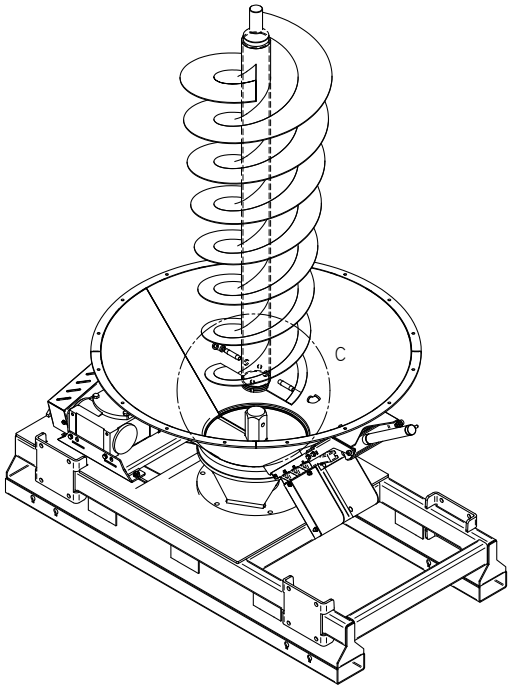
BATCH COATER BASE ASSEMBLY (13-11-0033)

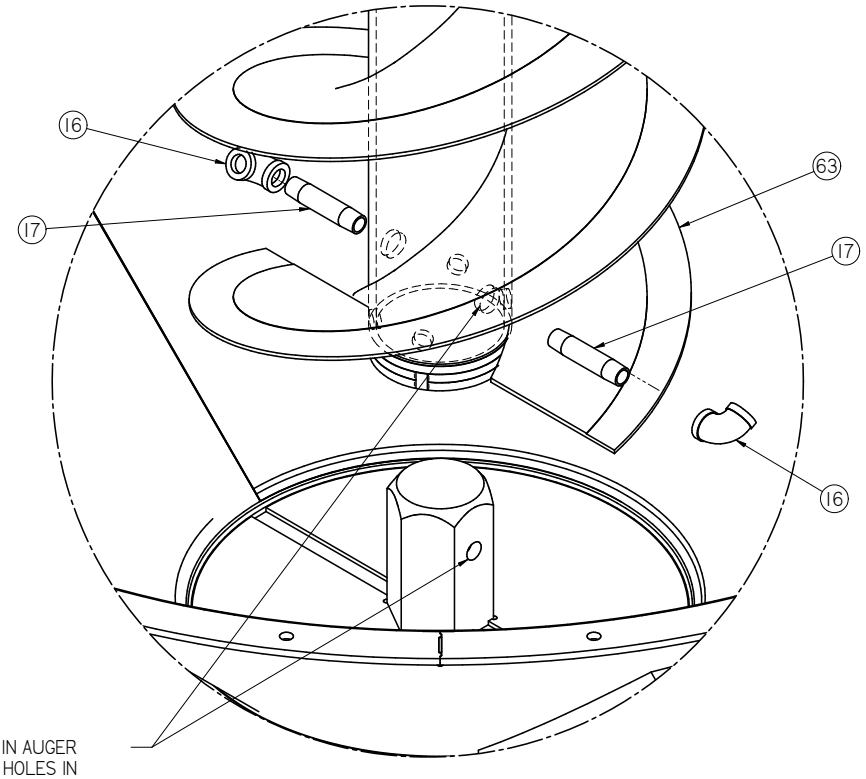


BATCH COATER BASE ASSEMBLY (13-11-0033)



BATCH COATER BASE ASSEMBLY (13-11-0033)

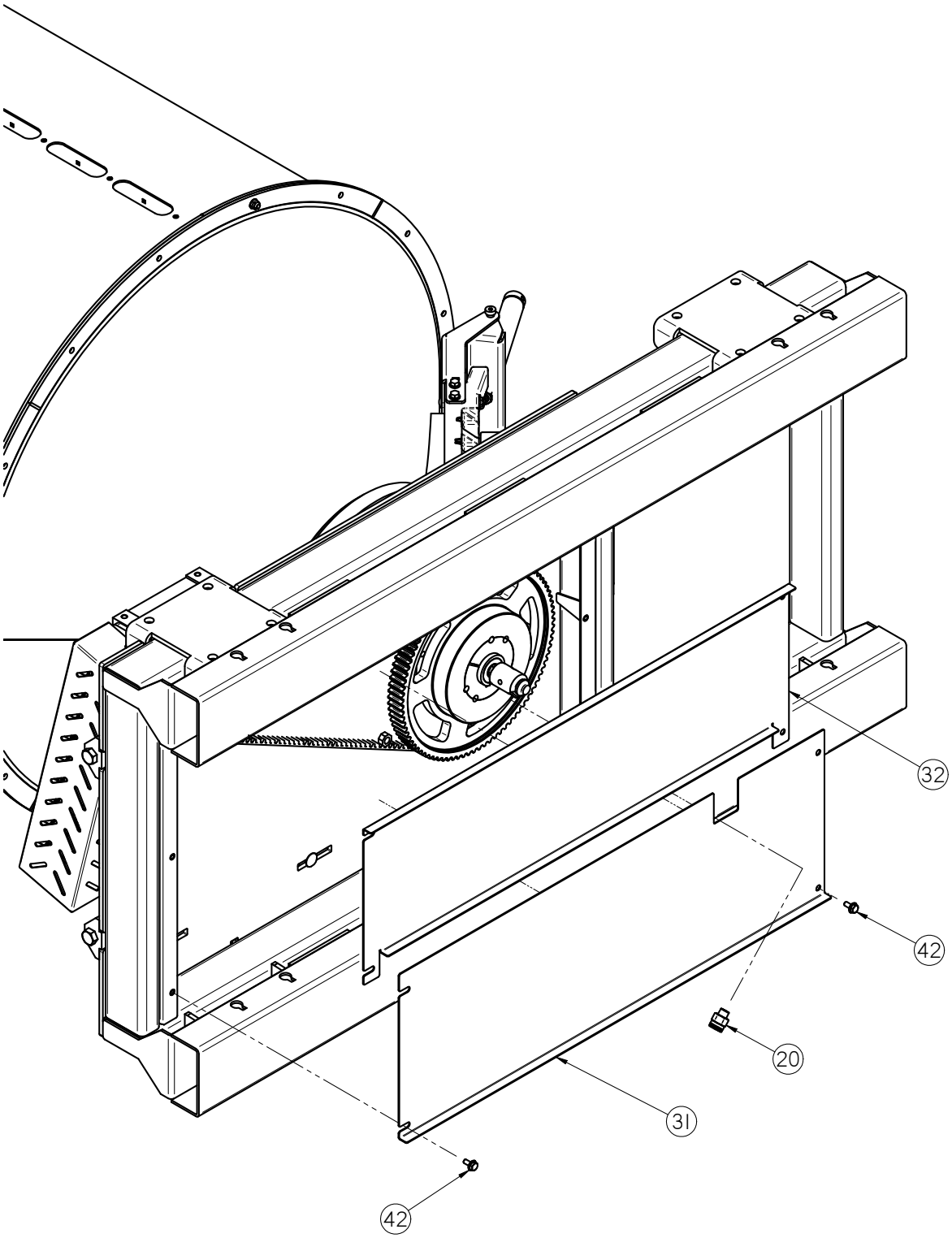




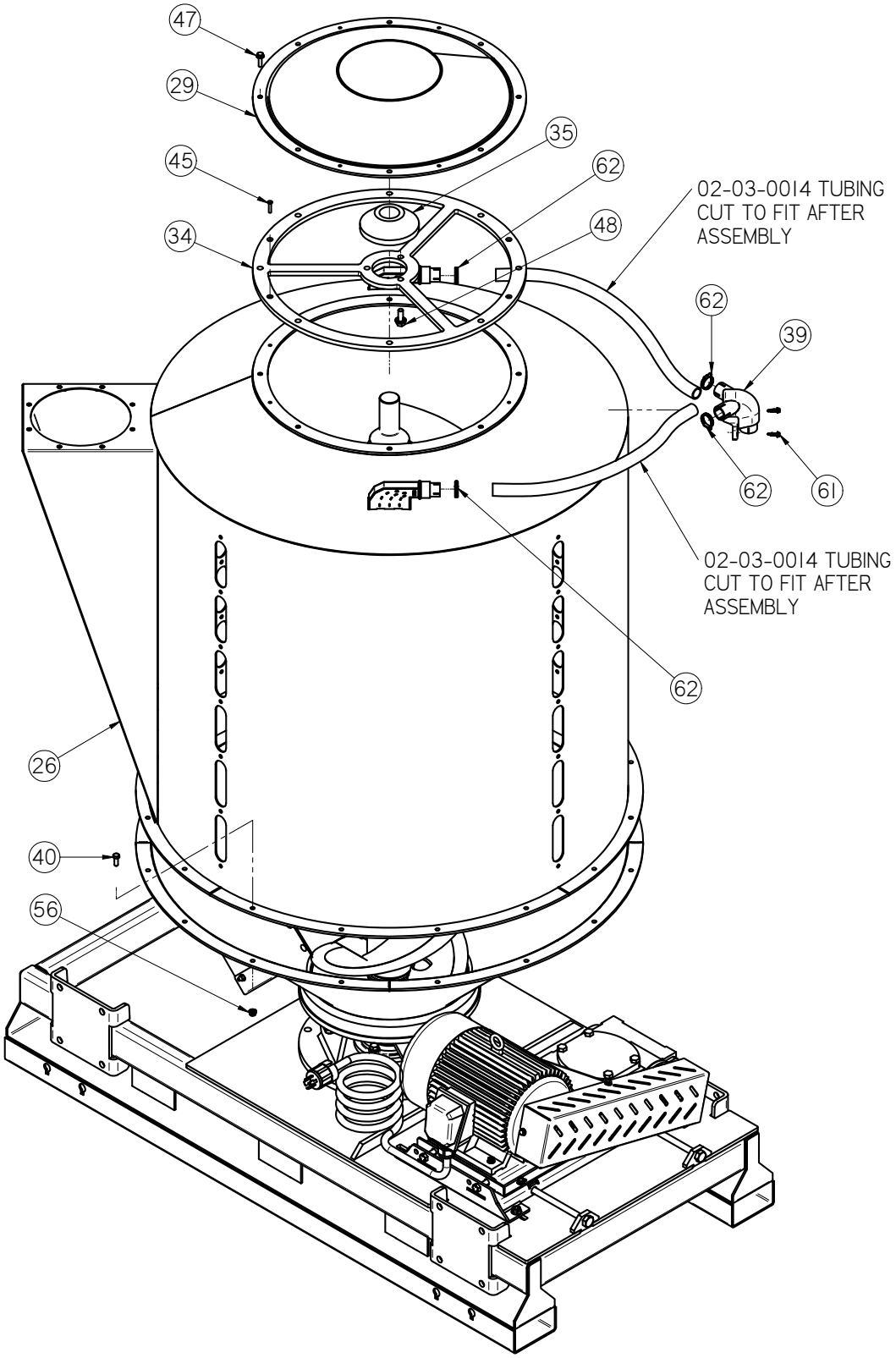
DETAIL C

ALIGN HOLES IN AUGER WITH THREAD HOLES IN IN DRIVE SHAFT. ONCE IN PLACE ON SHAFT INSTALL FITTINGS AND SET ANGLE OF ELBOW AROUND 30 DEGREES ABOVE HORIZONAL.

BATCH COATER BASE ASSEMBLY (13-11-0033)



BATCH COATER BASE ASSEMBLY (13-11-0033)



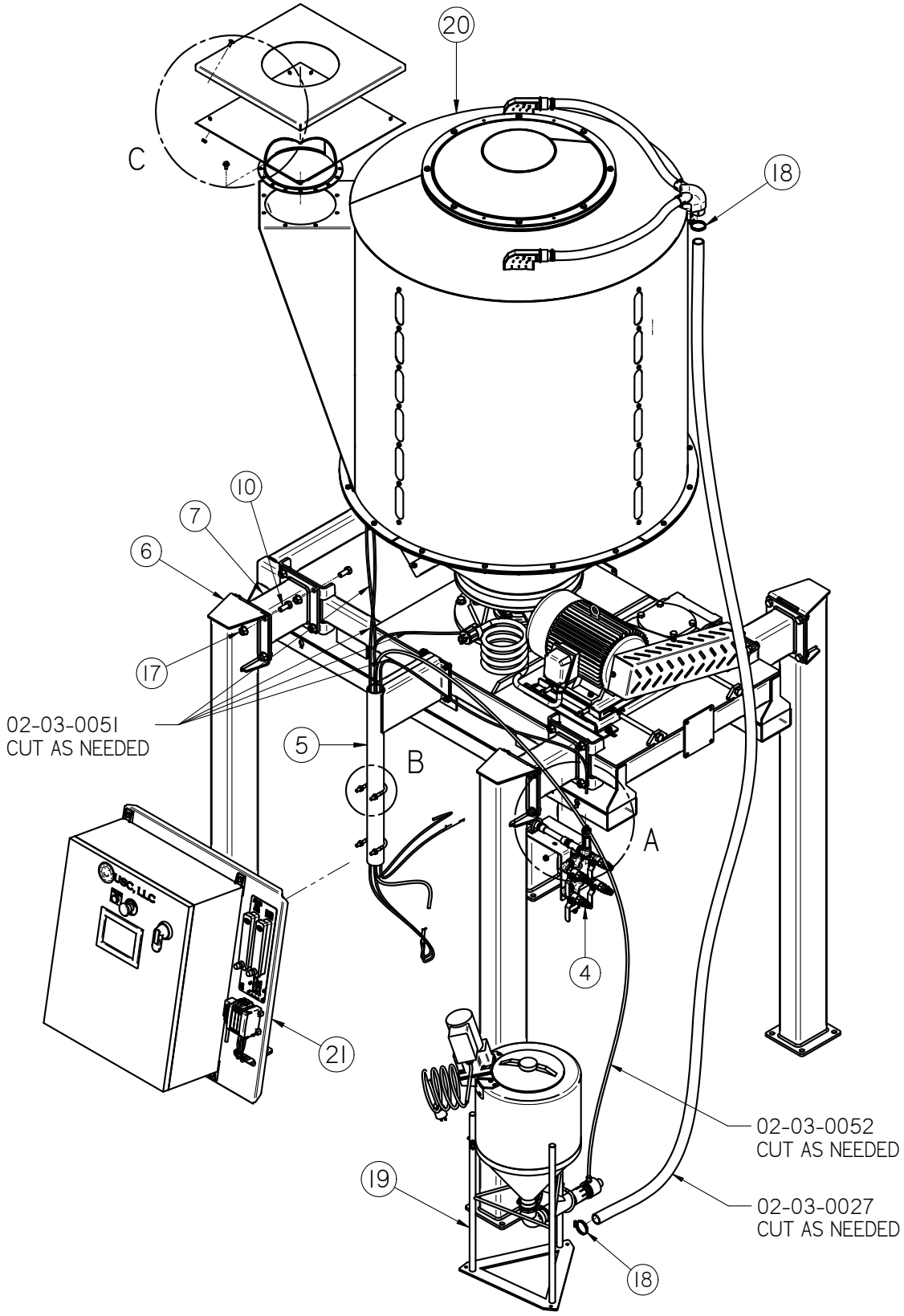
BATCH COATER BASE ASSEMBLY (13-11-0033)

Item #	Part #	Description	Qty
1	01-01-0218	GBOX RA 5:1 GR 1.50 OUT .875 IN	1
2	01-02-0123	PLLY GBLT 8MX-34S-12 TL 1610	2
3	01-02-0124	PLLY GBLT 14MX-30S-20 TL 2012	1
4	01-02-0125	PLLY GBLT 14MX-90S-20 TL 3525	1
5	01-02-0126	BUSH 1.375 BORE TYPE TL 1610	1
6	01-02-0127	BUSH 0.875 BORE TYPE TL 1610	1
7	01-02-0128	BUSH 1.500 BORE TYPE TL 2012	1
8	01-02-0129	BUSH 2.437 BORE TYPE TL 3525	1
9	01-03-0065	BRG FLG 2.4375ID 4BOLT 6IN PLTD	2
10	01-04-0077	GBLT 8MGT-1120-12	1
11	01-04-0078	GBLT 14MGT-2100-20	1
12	01-10-0010	KEY .625 X 3.00 CS UNDERSIZE	1
13	02-02-0084	ROTARY UNION .625-18 RH X.375NPT	1
14	02-03-0014	HOSE RNT 1.00 CLEAR - FEET	5
15	02-03-0017	TBG .375 OD POLYE COMP - FEET	1.5
16	02-06-0008	FTTG 90 DEG .375NPT FM SS	2
17	02-07-0020	FTTG NIP .375 NPT X 3.00 TBE SS	2
18	02-16-0016	FTTG PUSH .375OD X .375 NPT ML	1
19	02-16-0049	FTTG PUSH 90 DEG .25 OD X .375 NPT	1
20	02-16-0056	FTTG PUSH .625OD X .375 NPT ML	1
21	03-20-0172	KIT MTR BT 10HP AUGER DRV	1
22	05-03-1515	WDMT HSG BRG VC	1
23	05-03-1569	WDMT FR GBOX DRV	1
24	05-03-1570	WDMT FR MTR MNT	1
25	05-03-1571	WDMT FR BASE 4 LEG VC	1
26	05-03-1574	WDMT HOPP TOP SIDE FILL VC	1
27	05-03-1575	WDMT HOPP DSCHG SIDE FILL VC	1
28	05-06-0113	GRD BACK GBOX DRV	1
29	05-06-0114	WDMT CVR TOP VC CONE	1
30	05-10-4320	CVR CLEAR VP VC	4
31	05-10-4349	PLT GRD AUGER DRV VC CS	1
32	05-10-4349	PLT GRD AUGER DRV VC CS	1
33	05-10-4350	PLT GRD GBOX DRV VC CS	1
34	05-10-4351	PLT TOP BRG SUPP CS	1
35	05-11-0410	BRG BLOCK UHMW VC	1

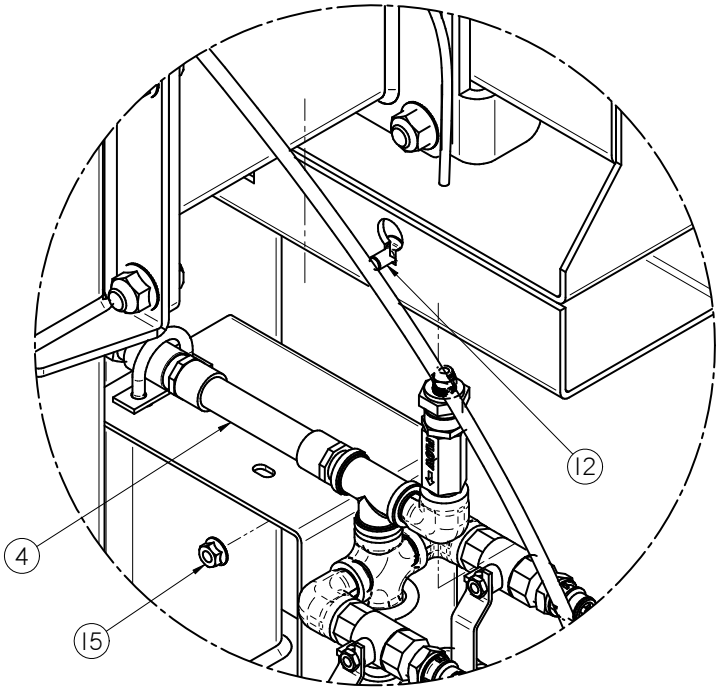
BATCH COATER BASE ASSEMBLY (13-11-0033)

Item #	Part #	Description	Qty
36	05-11-0426	SHAFT DRV HLLW CS	1
37	05-11-0427	SPUD HEX DRV-TEE CS	1
38	05-11-0428	PLT END BTM LIVE HLLW CS	1
39	05-11-0439	TEE 90DEG 1.25 X 1.00 X 1.00 ABS	1
40	06-01-0016	BOLT .375-16 X 1.00 ZP GR5	16
41	06-01-0053	BOLT .375-16 X 1.25 ZP GR5	4
42	06-01-0124	BOLT FLG .375-16 X .750 ZP GR5	6
43	06-01-0132	BOLT,.4375-14 G5 ZP 1.00	6
44	06-01-0150	BOLT, CARRIAGE, .250-20x.50 G5 ZP	28
45	06-01-0155	SCRW MACH .250-20 X 1.25 SH FLHD	4
46	06-01-0157	BOLT, .500-13 X 4" UNC ZP GRADE 5 fth	2
47	06-01-0189	BOLT FLG .375-16 X 1.250 ZP GR5	8
48	06-01-0232	BOLT FLG .500-13 X 1.250 ZP GR5	3
49	06-01-0249	BOLT .625-11 X 9.00 ZP GR5 FTH	2
50	06-01-0261	BOLT FLG .3125-18 X .500 ZP GR5	4
51	06-01-0270	BOLT CRG .500-13 X 1.00 ZP GR5	4
52	06-01-0271	BOLT FLG .500-13 X 1.750 ZP	8
53	06-01-0289	BOLT CRG .313-18 X 2.25 ZP GR5	8
54	06-01-0292	BOLT FLG .625-11 X 1.500 GR5 ZP	12
55	06-03-0013	NUT,LOCK, FLG .250-20 ZP SERRATTED	28
56	06-03-0014	NUT LOCK FLG .375-16 ZP GR5	24
57	06-03-0015	NUT LOCK FLG .500-13 ZP GR5	4
58	06-03-0019	NUT LOCK FLG .3125-18 ZP GR5	8
59	06-04-0011	WASHER, .4375 LOCK ZP	6
60	06-05-0020	WASHER, .4375 FLAT ZP	2
61	06-06-0037	SCRW SDST .250-14 X 1.000 HH ZP	2
62	06-07-0010	HOSE CLAMP, 15/16" to 1-1/2"	4
63	11-05-0022	AUGER WDMT RH DF 3.0IN DRV - 64 LG*	1
64	12-04-0031	ASSY SLGT DSCHG 7IN VC	1

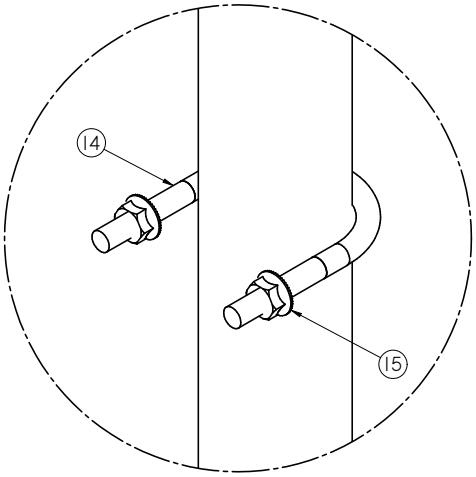
BATCH COATER FINAL ASSEMBLY (13-01-0308)



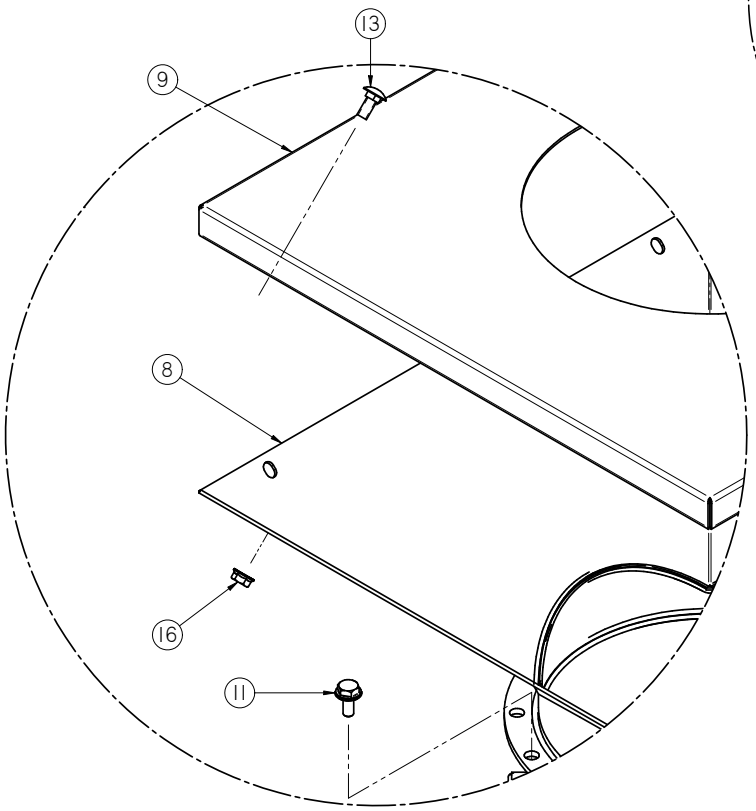
BATCH COATER FINAL ASSEMBLY (13-01-0308)



DETAIL A



DETAIL B



DETAIL C

BATCH COATER FINAL ASSEMBLY (13-01-0308)

Item #	Part #	Description	Qty
1	02-03-0027	HOSE PVC 1.250 ID CLEAR LINE VAC - FEET	14
2	02-03-0051	TBG .250 OD NYL BLK - FEET	36
3	02-03-0052	TBG .375 OD NYL BLK - FEET	14
4	04-03-0226	ASSY STTC MXR & VLVS BATCH TRTR	1
5	05-04-0179	WDMT ARM PNL MNT VC	1
6	05-05-0122	WDMT LEG VERT VC PRO BOX	4
7	05-05-0123	WDMT LEG HORZ VC 10IN	4
8	05-07-0809	WDMT CHUTE INLET VC	1
9	05-10-4355	PLT CVR HOPP INLET VC	1
10	06-01-0031	BOLT,.625-11 G5 ZP 1.50	32
11	06-01-0124	BOLT FLG .375-16 X .750 ZP GR5	12
12	06-01-0153	BOLT CRG .375-16X.750 ZP SHORT NECK	2
13	06-01-0171	BOLT CRG .3125-18X.750 ZP SHORT NECK	12
14	06-01-0294	BOLT U .375-16 X 2.50 X 3.625 ZP	2
15	06-03-0014	NUT LOCK FLG .375-16 ZP GR5	10
16	06-03-0019	NUT LOCK FLG .3125-18 ZP GR5	12
17	06-03-0029	NUT WHIZ LOCK FLG .625-11 GR5	32
18	06-07-0019	HOSE CLAMP, 1.00" to 2.00"	2
19	13-05-0383	POWDER AGITATION & DELIVERY HOPP 10	1
20	13-11-0033	ASSY BASE VC58 BATCH COATER CS	1
21	13-12-0135	CNTL PKG BATCH COATER 230V 1PH	1

USC 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 18 months from date of shipment. If the Products do not conform to this Limited Warranty during the warranty period, Buyer shall notify Manufacturer in writing of the claimed defects and demonstrate to Manufacturer satisfaction that said defects are covered by this Limited Warranty. If the defects are properly reported to Manufacturer within the warranty period, and the defects are of such type and nature as to be covered by this warranty, Manufacturer shall, at its expense, furnish replacement Products or, at Manufacturer's option, replacement parts for the defective products. Shipping and installation of the replacement Products or replacement parts shall be at the Buyer's expense.

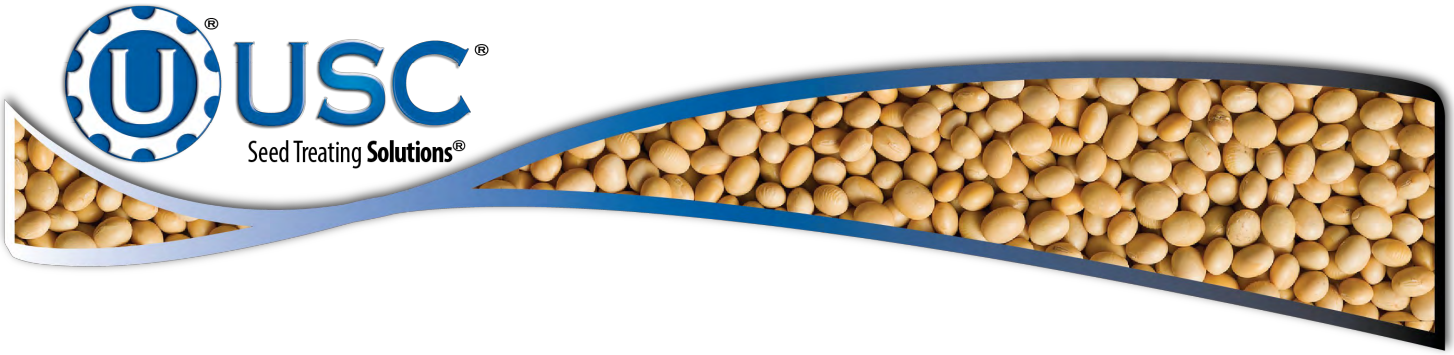
2. **Other Limits:** THE FOREGOING IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Manufacturer does not warrant against damages or defects arising from improper installation (where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