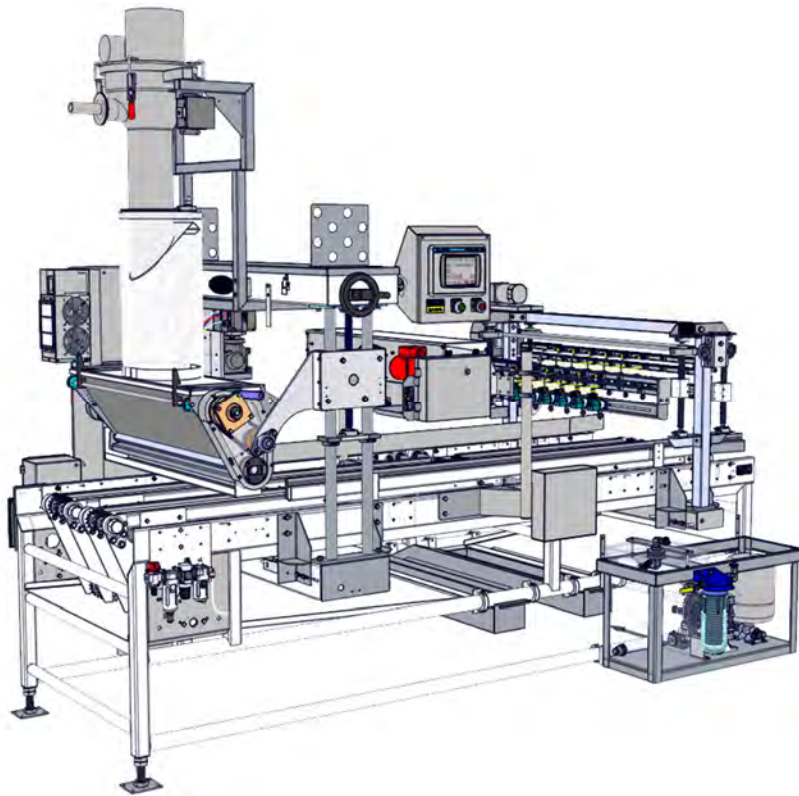




Smart Seeder

MODEL 9840 / 9940

Compact Logix



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Version 3.1 - Date: December 2017
Manual Part No. _____
Serial # _____

SAFETY PRECAUTIONS

As Burford® Corp. strives to promote safety in the maintenance and operation of Burford® equipment; we request that the following safety procedures be followed, along with any additional safety procedures set by the customer's in-plant safety officers or local codes.

Read the manual completely before attempting installation or operation of this unit.

This machine may contain programs that are password protected. Contact your supervisor or Burford® Corp. for password.

Incoming electrical power must be properly shielded, routed, and grounded. All safety codes should be followed. Study wiring diagrams before attempting installation.

Disconnect power to equipment before removing any guards or covers. Replace guards or covers before resuming operation of the unit.

Loose clothing, jewelry, and long hair should be considered a safety hazard around mechanical equipment. Ensure that they will not be entangled in the equipment.

Keep clear of moving machine parts. Bodily harm and/or serious injury may result from contact with moving gears, sprockets, chains or pneumatically controlled machine components.

Do not bypass safety switches.

Do not attempt repairs while equipment is running.

Use only original equipment parts designed for safe operation of the equipment.

Only authorized personnel should be allowed to operate or perform maintenance on the unit.

This unit is not wash-down ready. Do not wash the unit or any of its electrical or mechanical components, with any form of high pressure or running liquids.

Orange indicates bodily harm may incur if instructions are not followed.

Red indicates important instructions to prevent unit damage or adverse effects.

Blue indicates useful information to assist in installation and operation of the unit.

DISCLAIMER

The descriptions and specifications contained in this Service Manual were in effect when this manual was approved for printing. Our policy is one of continuous improvements, and we do hereby reserve the right to discontinue models at any time, or to change specifications, prices, or design without notice and without incurring obligations.

Burford® Corp. expressly disclaims any liability for damages and/or injuries caused because of negligence or misuse of its product. Such negligence or misuse includes, but is not limited to, software/program alteration, removal of guards, faulty wiring due to improper installation, subjecting the unit to wash-down environments or any physical or mechanical changes made to a Burford® unit, by anyone other than a qualified Burford® Technician.

Burford® equipment should only be used for the purpose for which it was sold, and should not be modified in any way without notifying the General Manager of Burford® Corp. in writing of the modification.

The original language for this document is English. Translations to other languages may not be accurate.

Contact Us

Questions, comments, concerns? Let us know.

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Chapter 1

Introduction

CHAPTER 1: INTRODUCTION

Congratulations on the purchase of your new Burford® Smart Seeder. We are confident that you will enjoy many years of dependable service from your new Topper.

The Burford® Smart Seeder is a proven Burford® design, backed by over 50 years of manufacturing experience. It is the most widely used topper for high volume topping applications on the market today.



The name Burford® is synonymous with innovation. Since the beginning with the first Twist Tyer machine, Burford® is focused on bringing innovation to the Baking Industry. Our passion is developing equipment that increases productivity and uniformity while decreasing production costs.

The Burford® Smart Seeder delivers labor savings and consistency to your product.

With the one touch setup, the Smart Seeder automatically adjusts its settings to provide an accurate coverage and seed savings every time.

The Burford® Smart Seeder has been designed to apply poppy, sesame, cracked wheat, bran, almonds, and other similar ingredients that have been factory approved.

Burford® offers a large lineup of bakery solutions from oilers to shakers. We invite you to visit our website at www.burford.com to see the other innovative equipment that we can offer to benefit your bakery today.

■ Specifications

ELECTRICAL

- ☐ 110 V_{AC}, 50/60 Hz, 1 Φ , 15 A
- ☐ 220 V_{AC}, 50/60 Hz, 1 Φ , 15 A
- ☐ 220 V_{AC}, 50/60 Hz, 3 Φ , 15 A
- ☐ 380/460 V_{AC}, 50/60 Hz, 1 Φ , 15 A
- ☐ 380/460 V_{AC}, 50/60 Hz, 3 Φ , 15 A

AIR REQUIREMENTS

.370 CFM@80 psi maximum

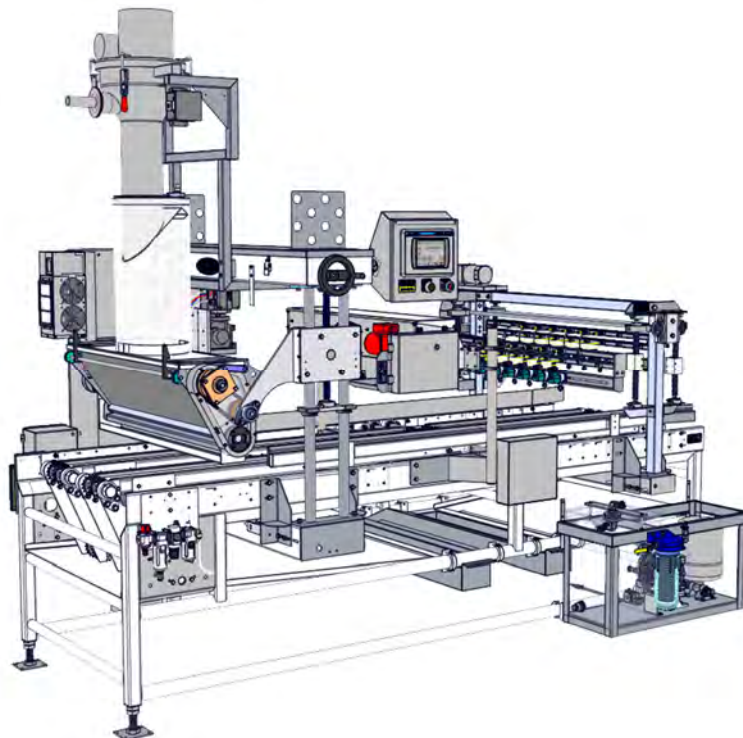
WATER REQUIREMENTS

40 psi @ 30 GPH

■ Models

MODELS

- ☐ 9840 Product flow moves left to right when viewing from operator's side.
- ☐ 9940 Product flow moves right to left when viewing from operator's side.

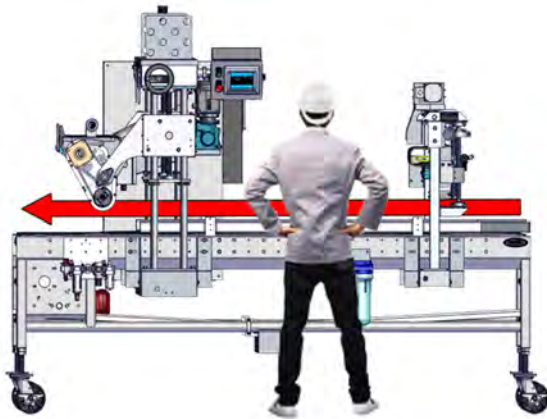


Model 9940 Shown

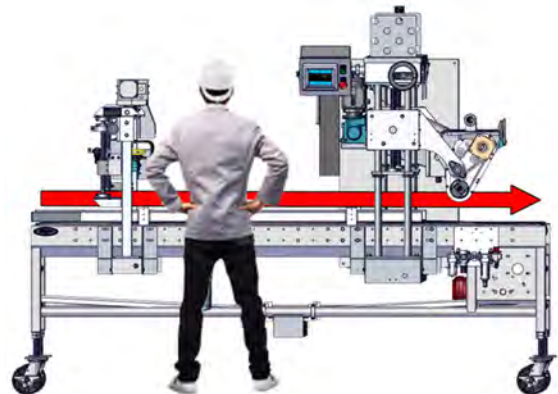
■ Models

The Burford® Smart Seeder is available in a right hand model and a left hand model. The hand determines product flow in relation to the operator controls. The first two numbers in the model indicate the hand, e.g., 98xx is a right hand unit, and 99xx is a left hand unit.

The Smart Seeder is also available in a range of hopper widths to accommodate different pan widths. The last two numbers in the model indicate the width of the hopper, e.g., xx40 is a 40-inch hopper, and xx50 is a 50-inch hopper. 40-inch is the most common and is what comes standard on the Smart Seeder.

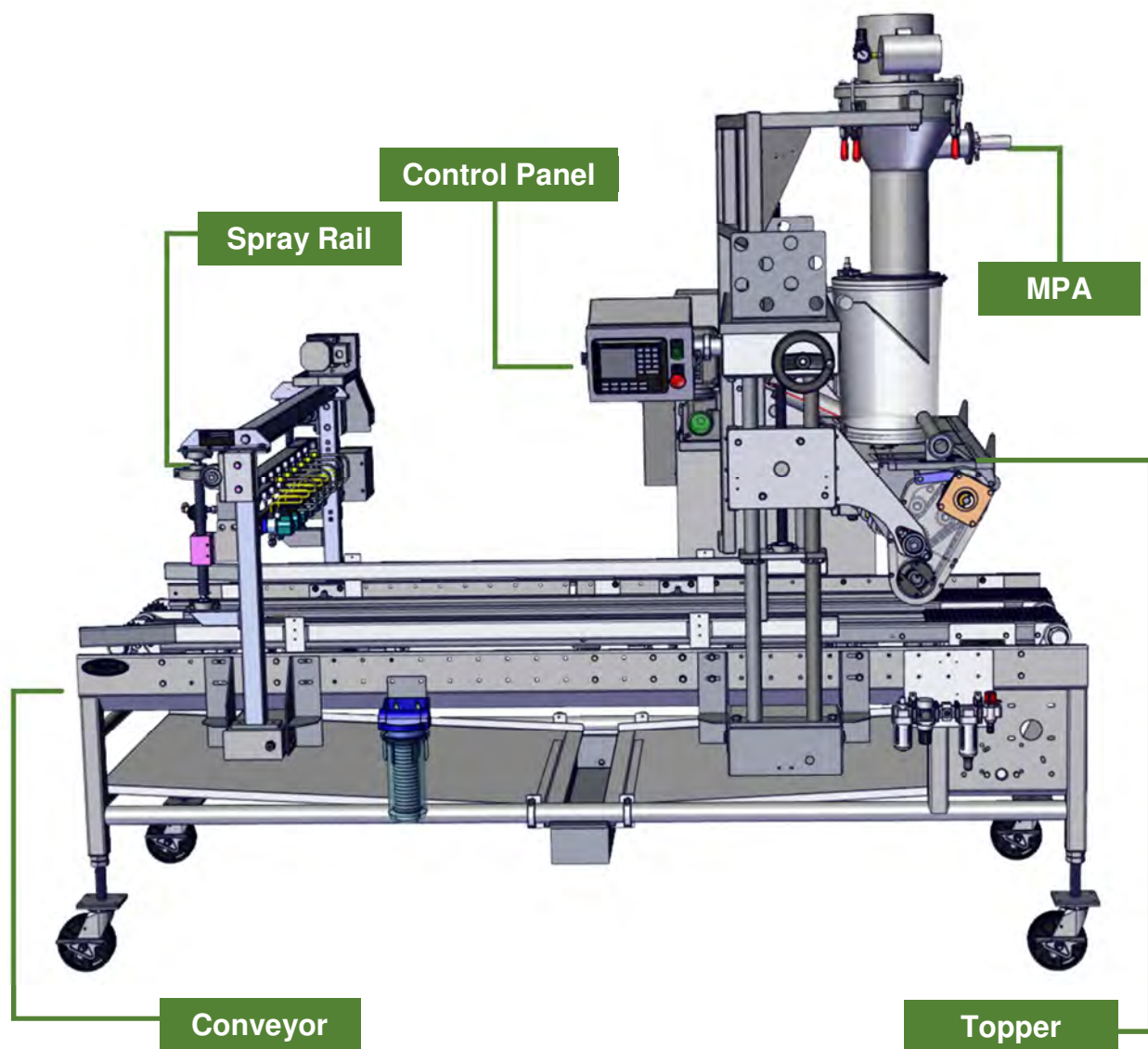


9940 – Left Hand Unit

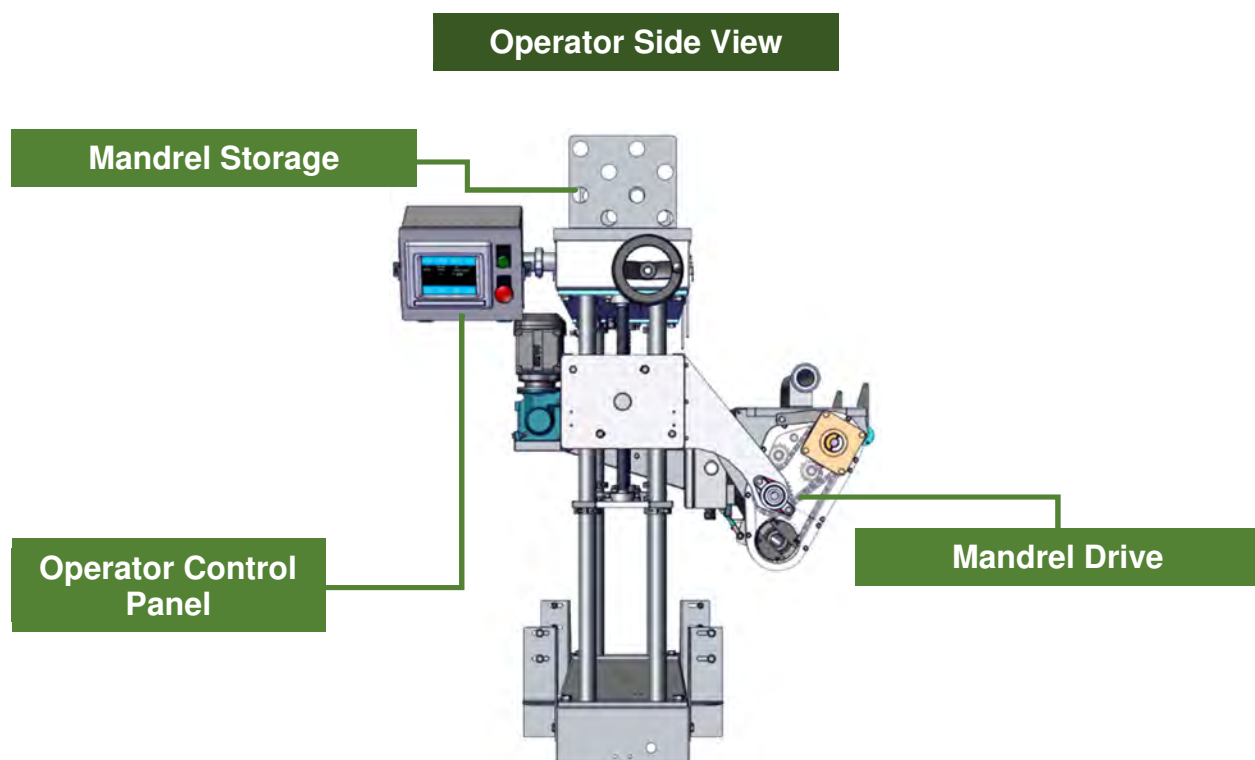
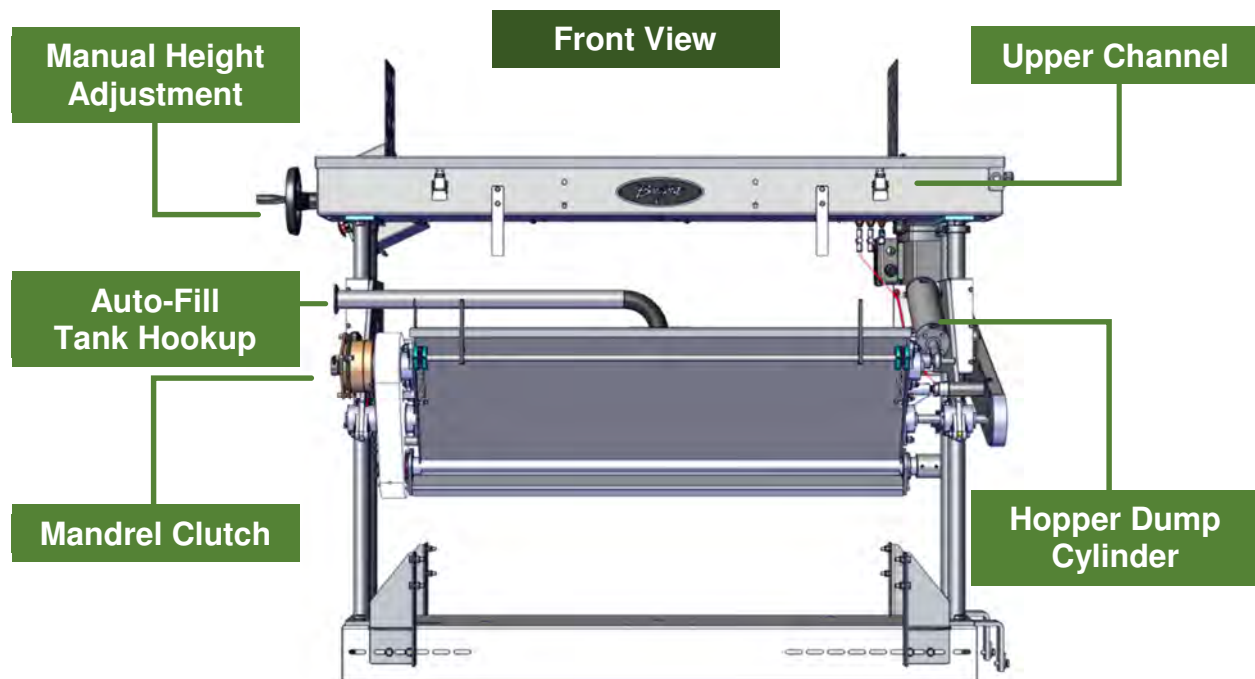


9840 – Right Hand Unit

■ Basic Topper Identification

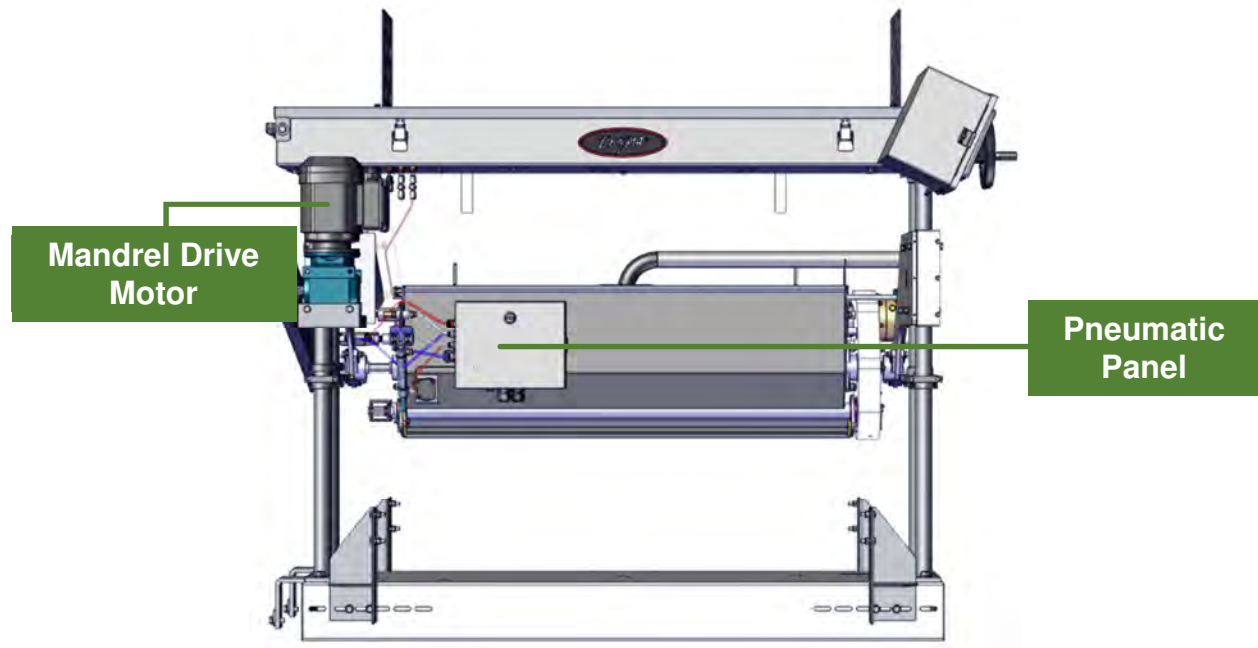


■ Topper Identification

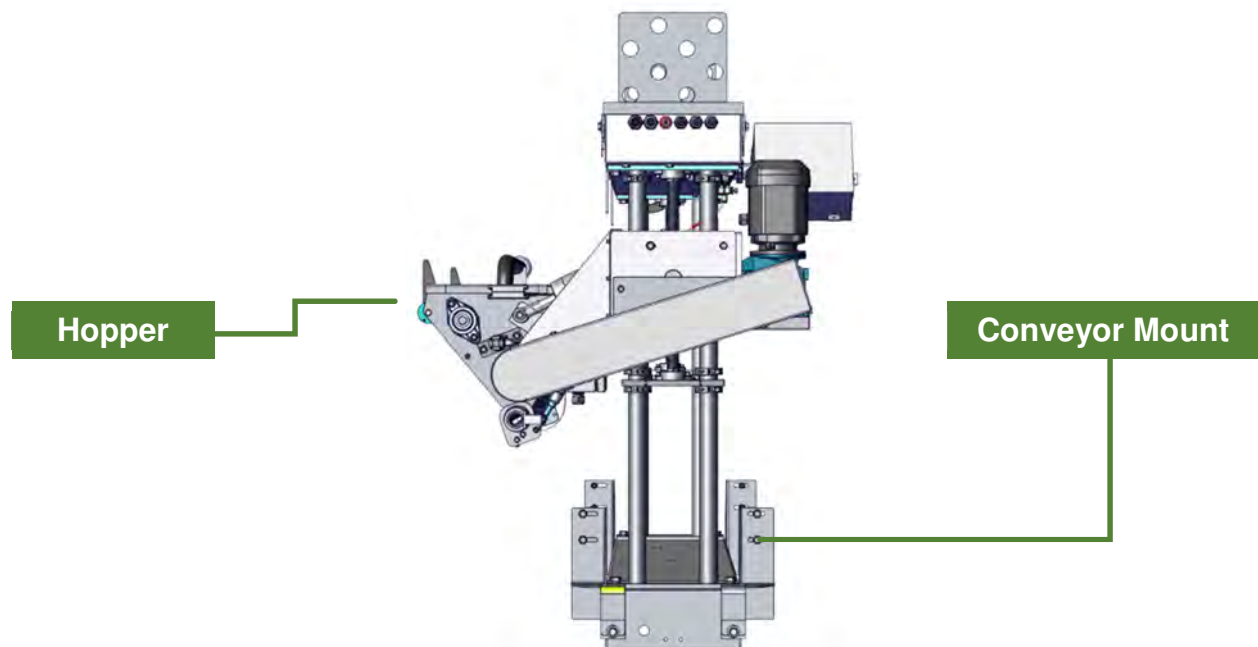


■ Topper Identification

Rear View



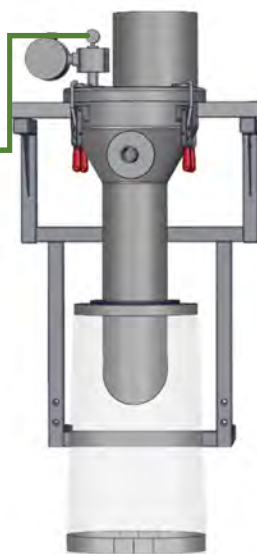
Mandrel Drive Side View



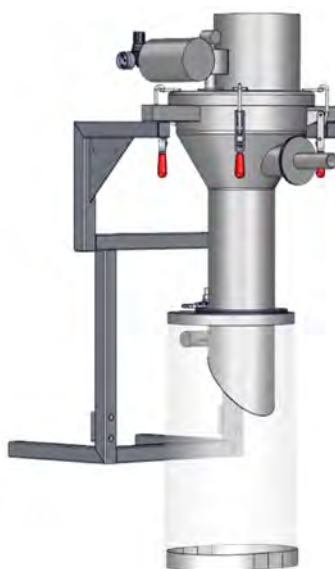
■ MPA Identification

MPA

Air Regulator

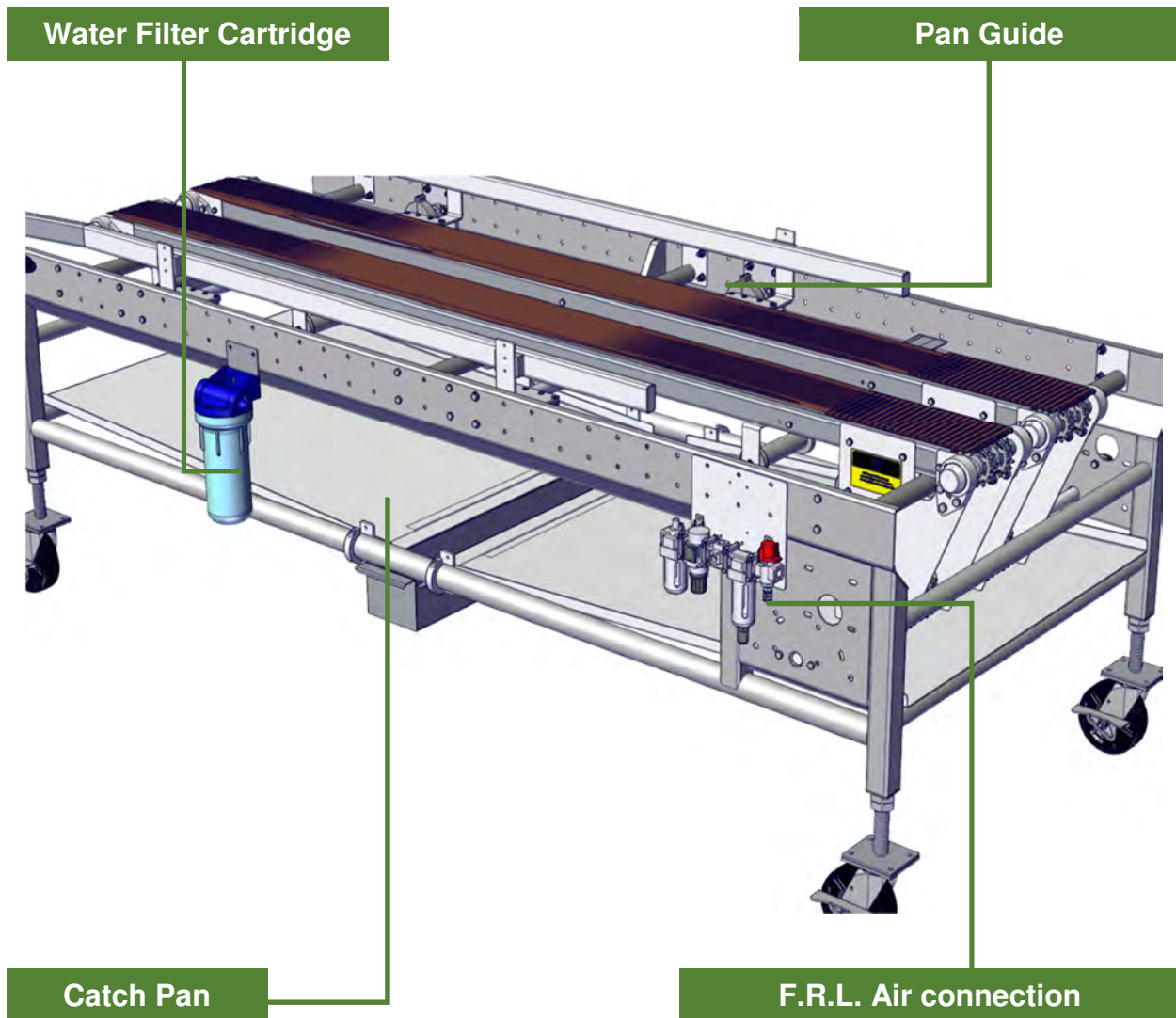


Hose Connection



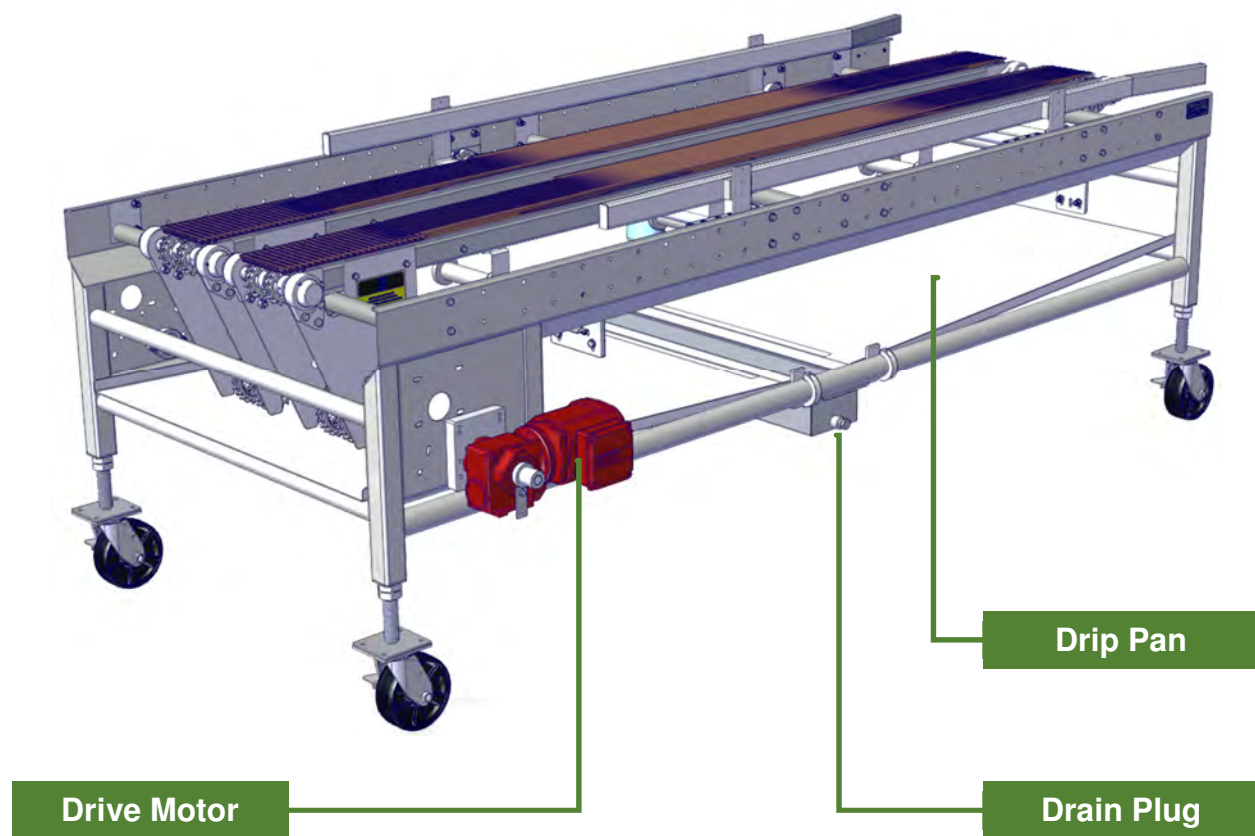
■ Conveyor Identification

Operator Side View



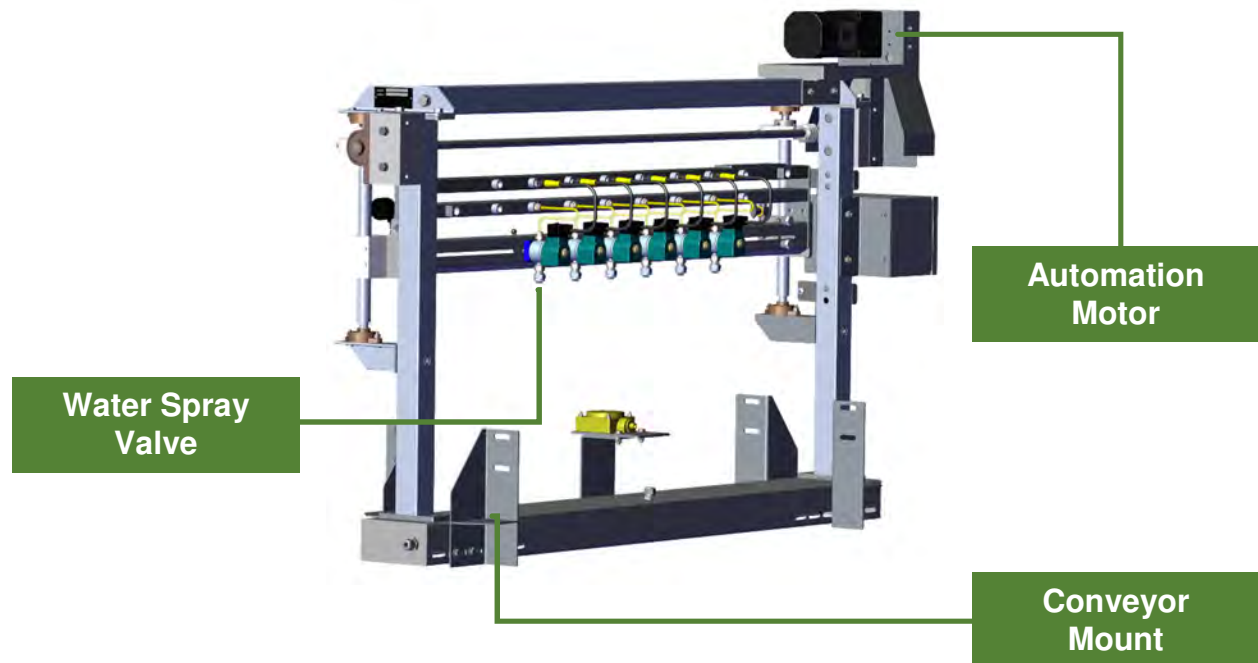
■ Conveyor Identification

Motor Drive Side View

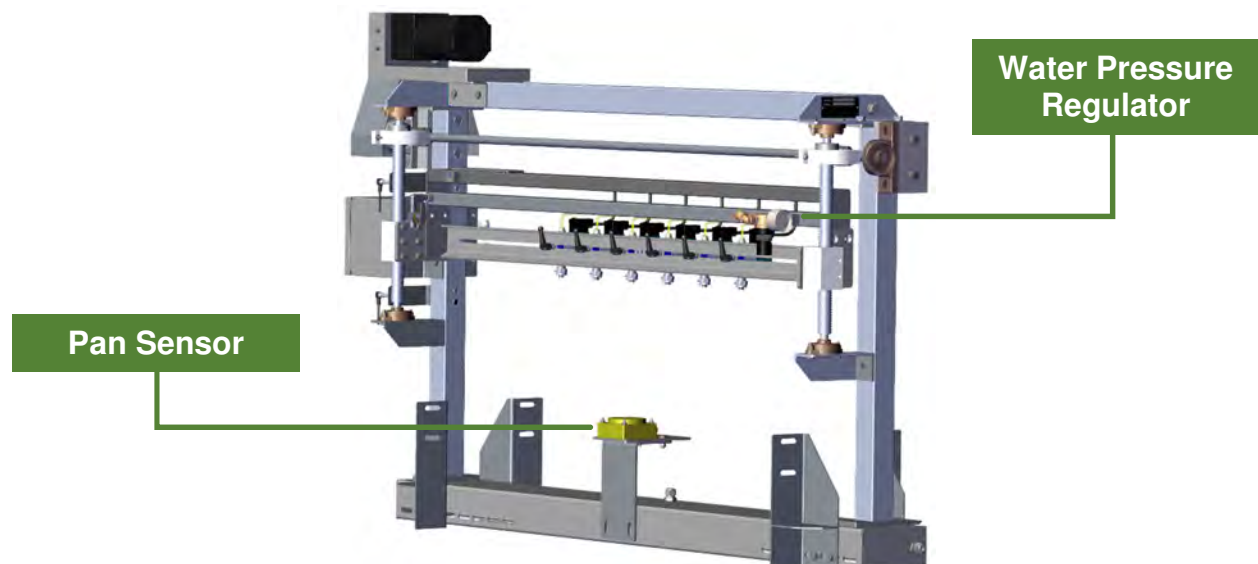


■ Spray Rail Identification

Upstream View



Downstream View



Chapter 2

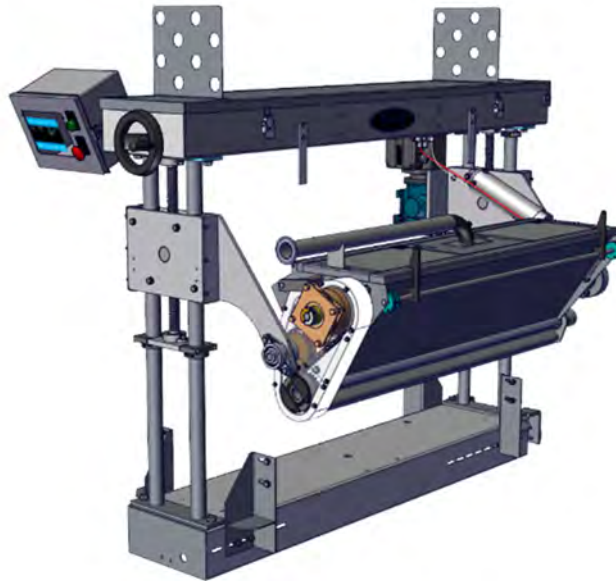
Key Components

CHAPTER 2: KEY COMPONENTS

Below is a list of key components that you must familiarize yourself with to gain a better understanding of how the Topper functions.

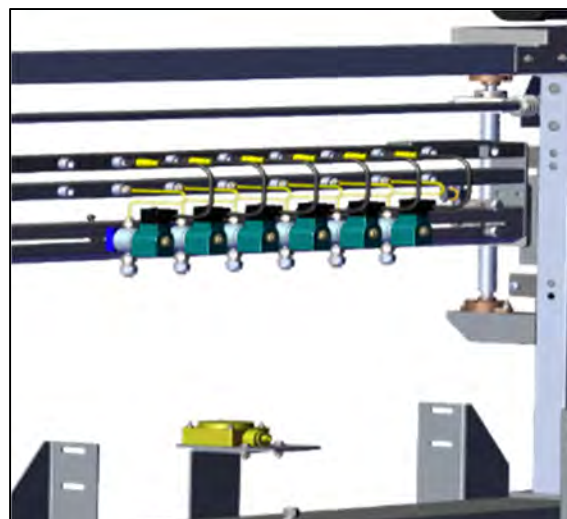
■ Topper

The Topper applies the topping onto the product. The topping is stored in the hopper and dispensed via the mandrel. The height is adjustable for a wide variety of products.



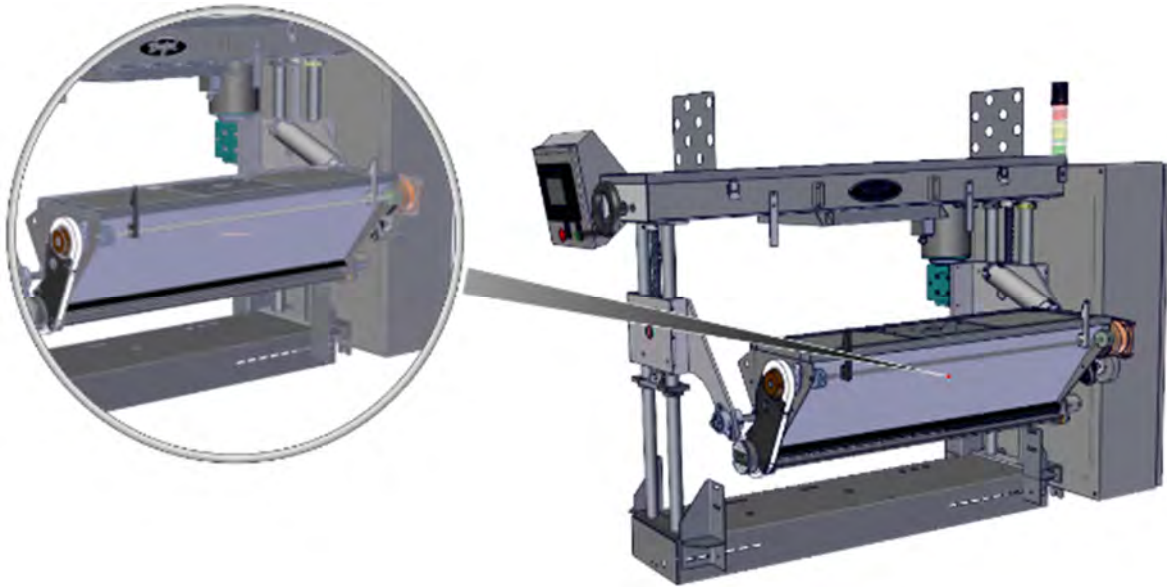
■ Water Spray

The Water Spray valves deposits water onto the product. When the water meets the dough, the dough becomes 'sticky' and adheres the topping to the product. The spray rail height is adjustable to achieve varying results.



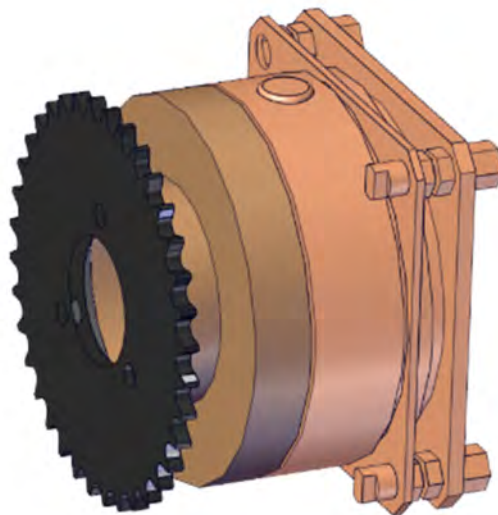
■ Hopper

The Hopper stores the topping to be dispensed unto the product. The mandrel rotates when activated and dispenses the topping. The Hopper houses the optional agitator and vibrators.



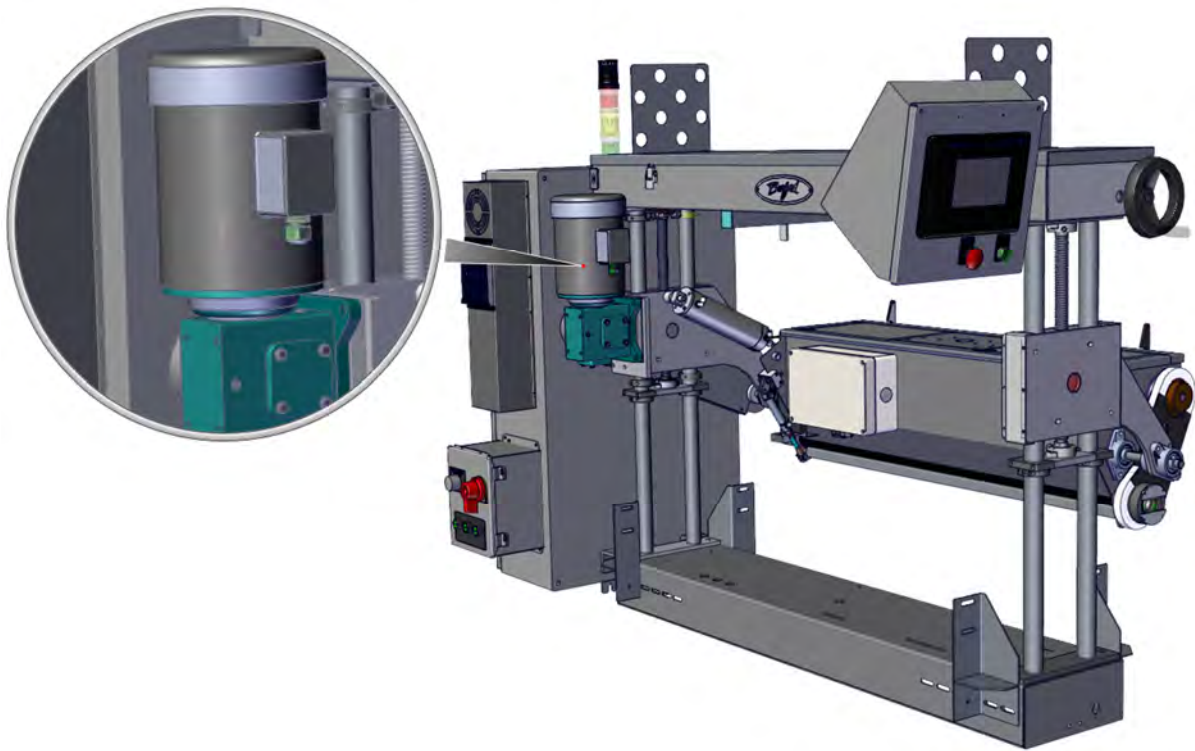
■ Clutch

The Clutch engages the mandrel drive to the motor drive system. When triggered by the product sensor, the Clutch will engage the mandrel resulting in the mandrel rotating and dispensing product. When the product sensor is no longer triggered, the clutch will disengage.



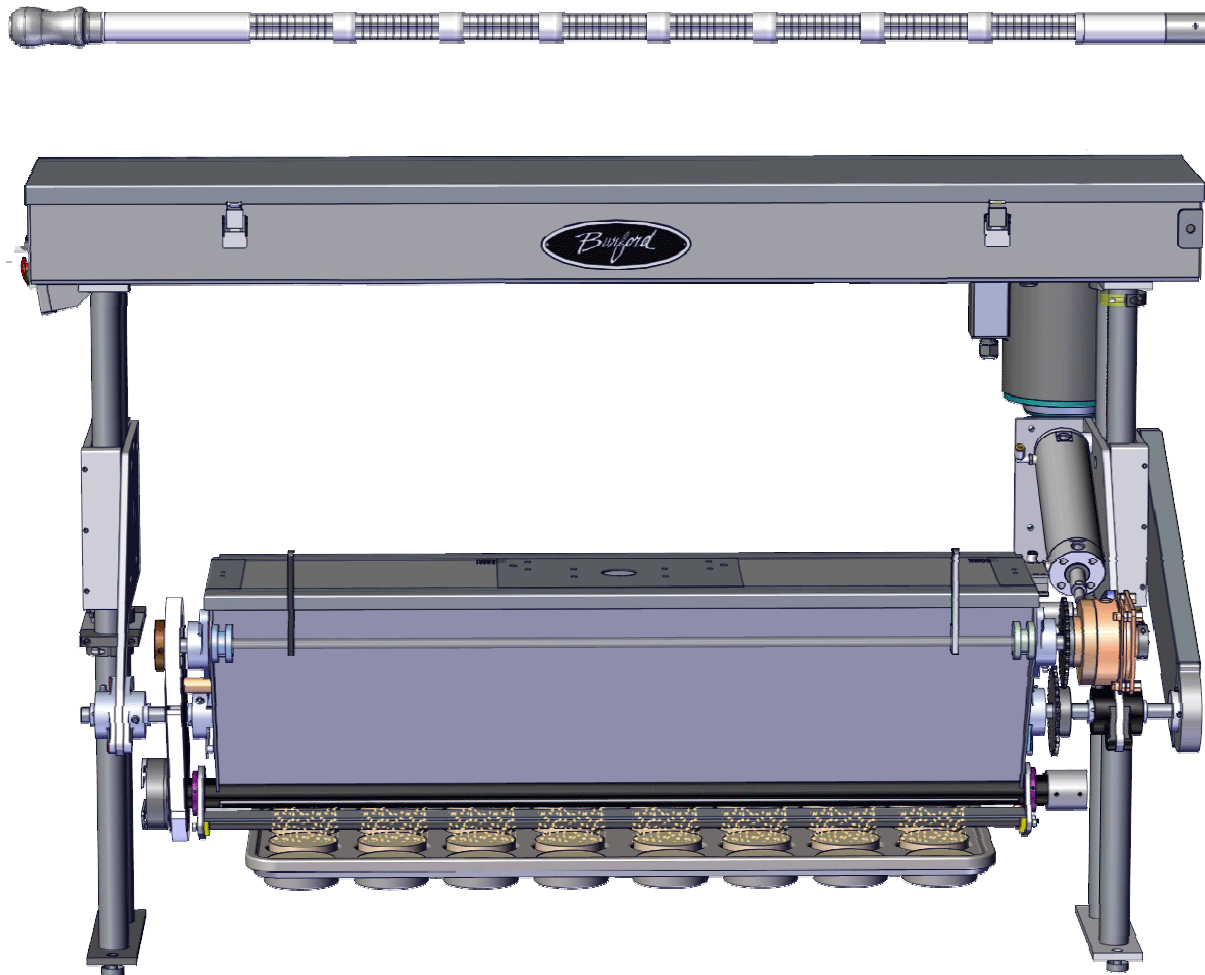
■ Mandrel Drive Motor

The Mandrel Drive Motor rotates when the unit is enabled. When the Product Sensor is triggered, a clutch is engaged that connects the mandrel to the drive motor. The speed of the drive is in direct relation the amount of topping dispensed.



■ Mandrel

The mandrel rotates and applies the topping unto your product. It is specifically designed for your pan width and type of topping used. When product is sensed by the product sensor the mandrel will rotate, dispensing toppings on your product.



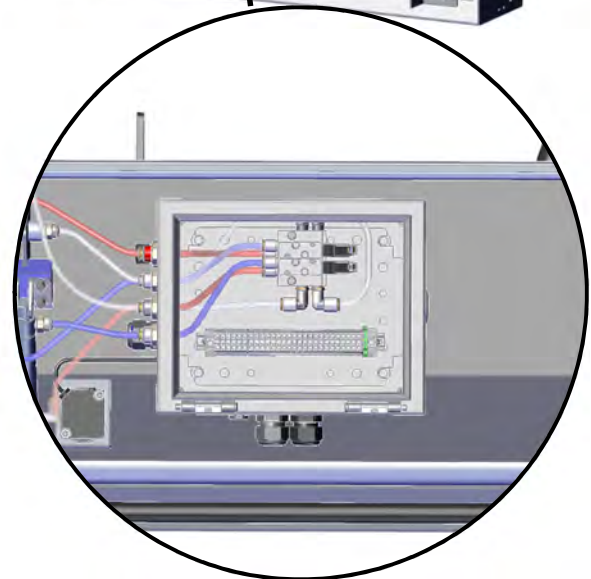
■ Air Controls

The Topper is equipped with a hopper dump cylinder, an optional agitator, and an optional vibrator. All of these components are controlled by compressed air. Some of the pneumatic lines going to these items contain flow control valves that regulate the amount of air pressure. The flow control valves are adjusted to obtain the desired effect. The flow controls valve is located either in the upper channel, the pneumatic box mounted on the hopper, or the solenoid mount above the mandrel motor.

The Pneumatic Box is located on the backside of the hopper. Remove cover to gain access to the panel.



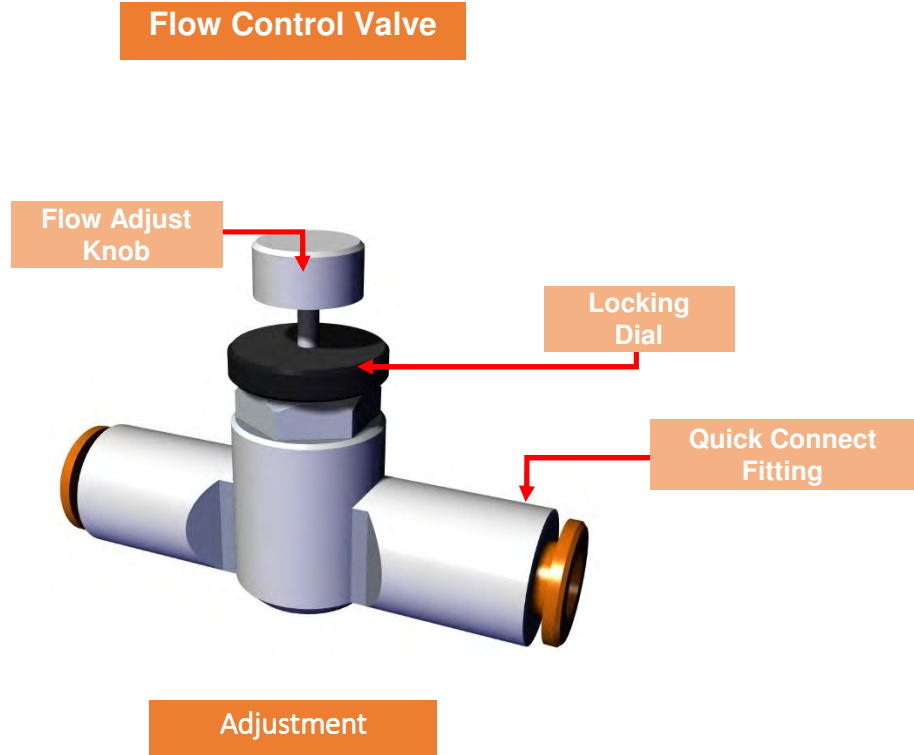
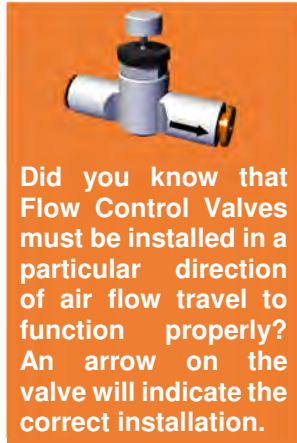
Inside the Pneumatic Box are the solenoids that control the Deflector Cylinder and Agitator. The output pressure can be controlled by the flow controls located on the solenoid.



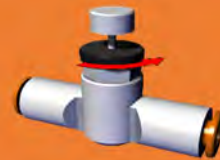
The Agitator has two flow control valves located on the solenoid. One is for the extend cycle and the other for the retract cycle. Adjust the flow valves to control the amount of airflow to the Agitator cylinder. The Vibrator has only one flow control valve.

■ Air Flow Controls

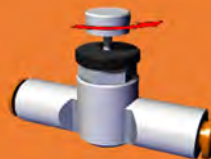
The Hopper Dump is regulated by the two Air Flow Control valves located on the pneumatic panel. The speed should be set for the desired rate, but to avoid premature wear or damage, they should be adjusted so that the hopper assembly will travel smoothly through a dump cycle, not hitting too hard or too fast in any direction.



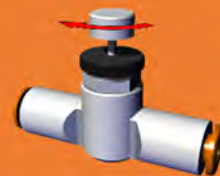
Release the locking dial by turning it anti-clockwise. This will allow the adjustment knob to turn freely.



Rotate the adjustment knob until desired flow is achieved.



Clockwise to decrease flow.



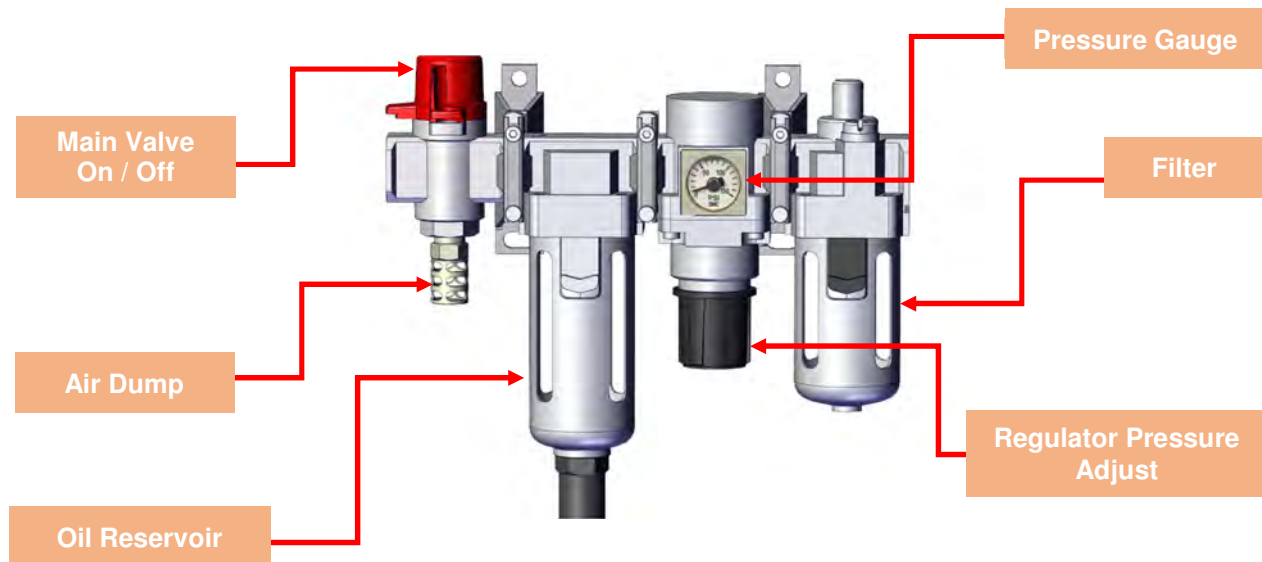
Anti-clockwise to increase flow.

Lock the valve by turning the Locking Dial clockwise until firmly seated.

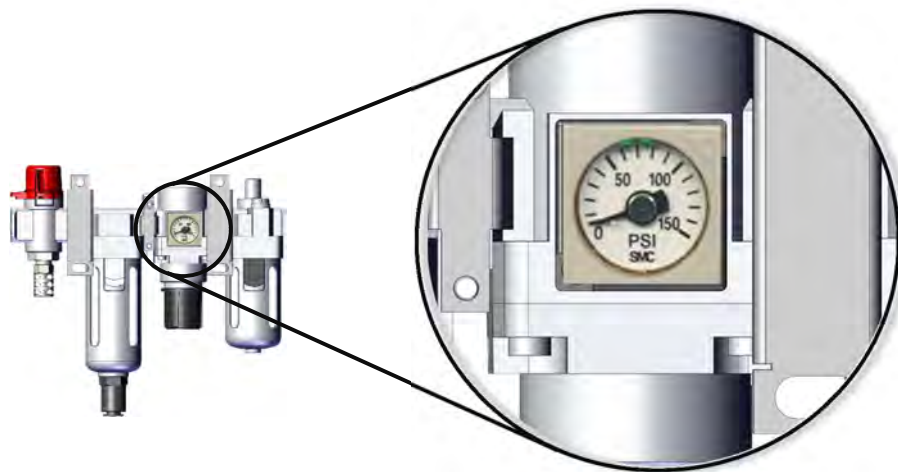


■ F.R.L. Description

F.R.L. Burford® Part # C00404



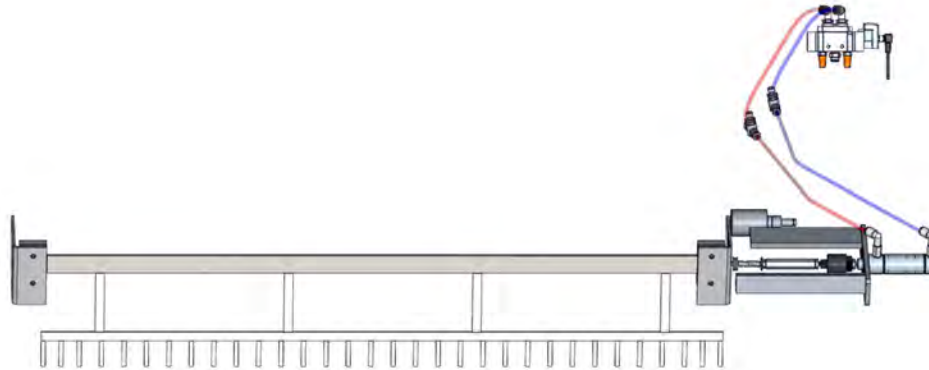
A pressure gauge indicates the output pressure of the F.R.L. The normal operating pressure is 60 psi.



Pneumatic oil must be kept in the Oil Reservoir at all times. Burford® recommends Parker Pneumatic Oil F442. Check Reservoir weekly.

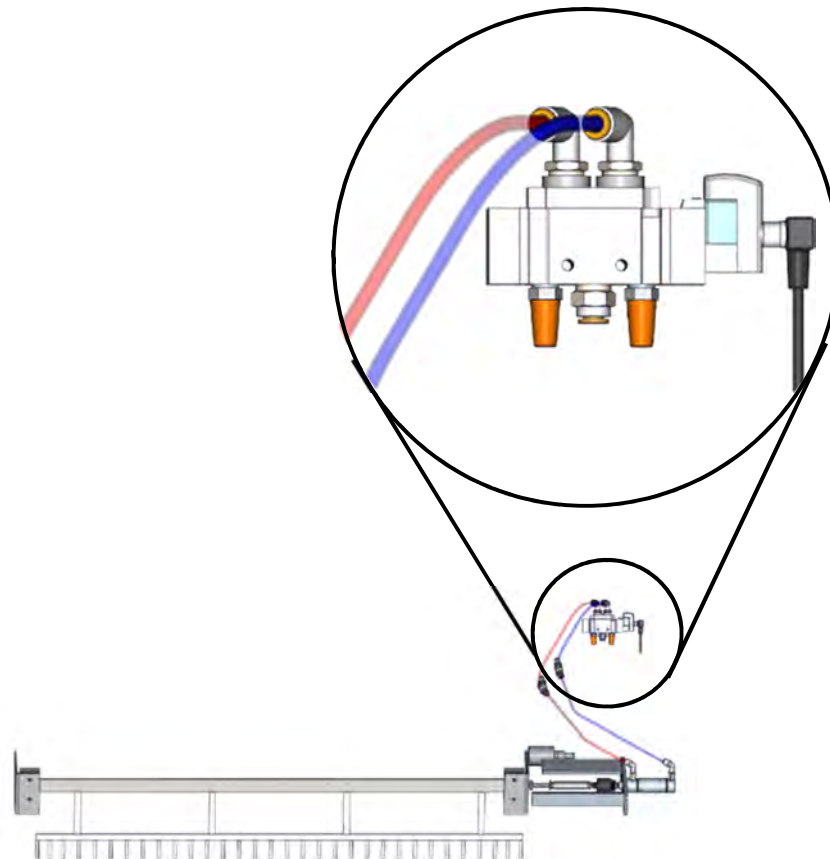
■ Agitator

The agitator is a rake device that reciprocates in the hopper to keep the topping loose during operations. When the mandrel is rotating, the agitator will reciprocate back and forth. This is to prevent any bridging from occurring. Bridging occurs when the toppings in the hopper forms a cavity around the mandrel, preventing product being dispensed.



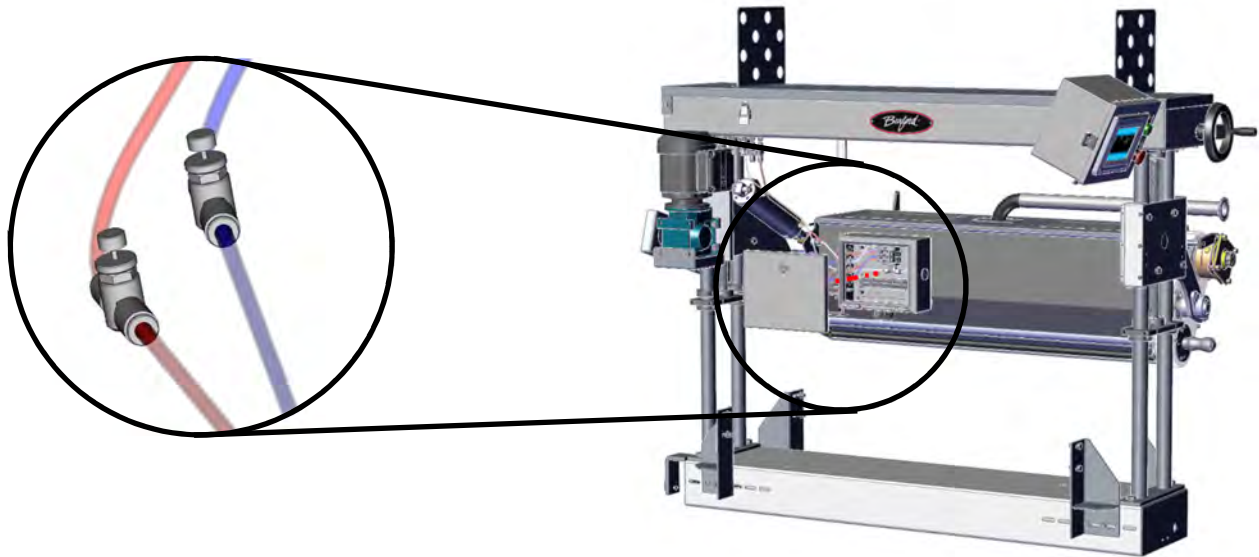
■ Agitator Solenoid

The agitator is controlled by the air cylinder. When product is detected, the agitator will be enabled. The solenoid has two outputs: extend and retract. A timer in the PLC will toggle the solenoid between supplying air to extend or retract when the agitator is enabled.



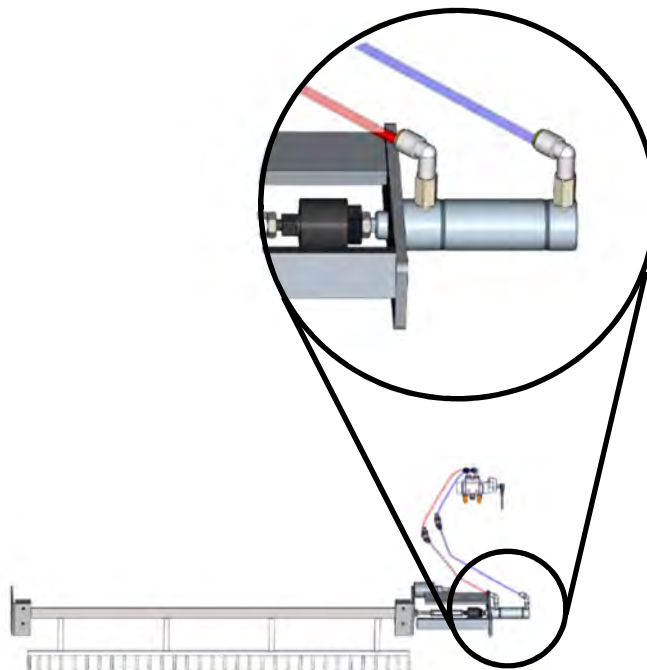
■ Agitator Flow Controls

There are two flow valves on the solenoids to control the agitator rake located in the pneumatic box attached to the hopper. One is for extend and the other to retract. The flow valves should be set for smooth operation. Hopper damage may result if agitator action is excessive.



■ Agitator Cylinder

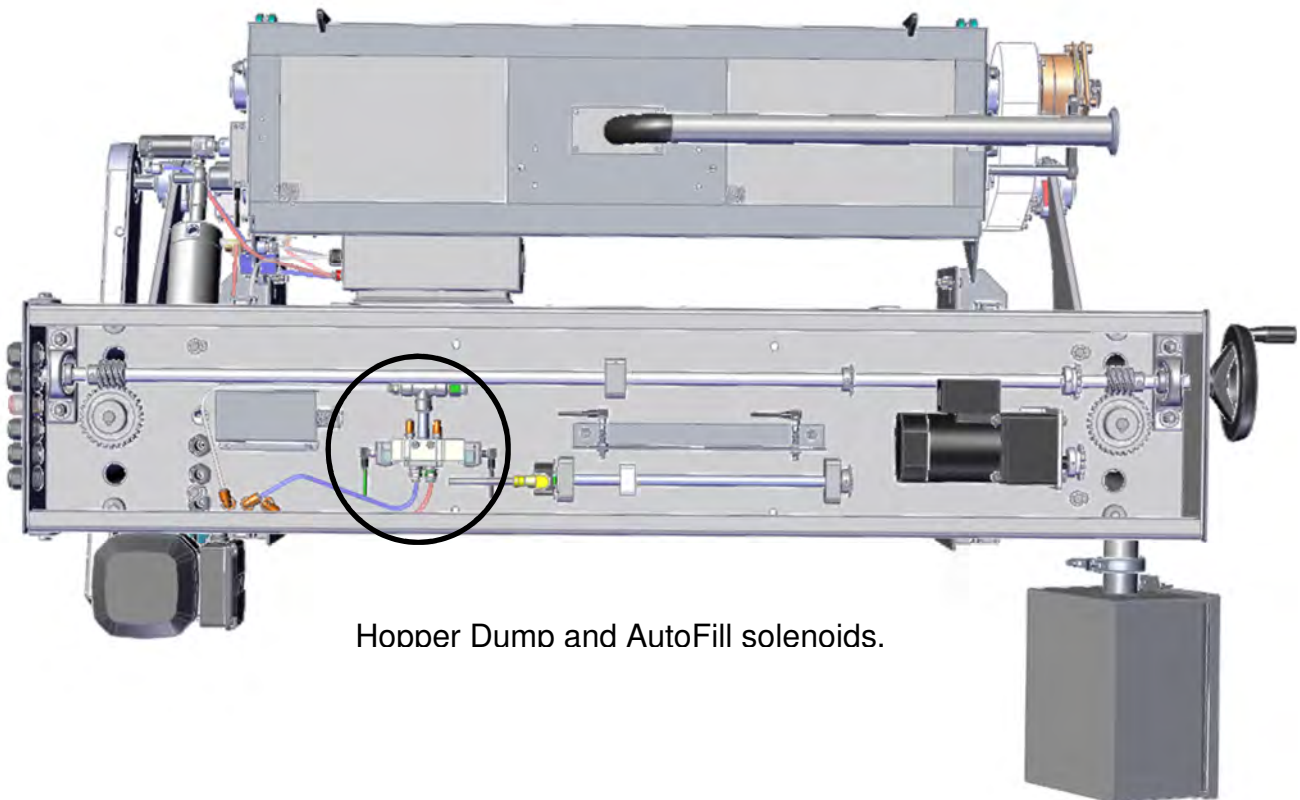
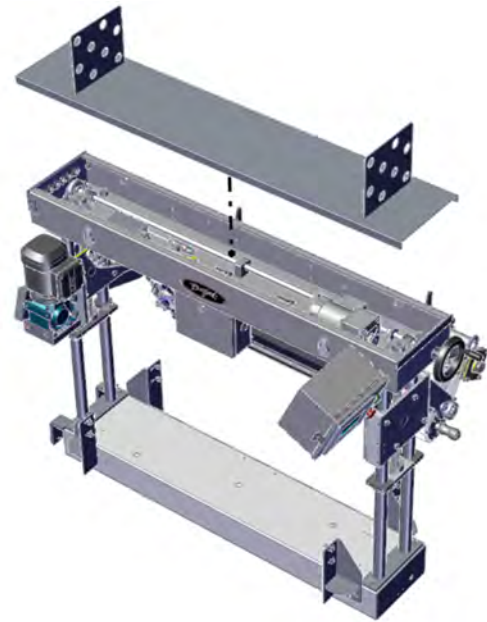
An air cylinder provides the movement for the agitator. By regulating the flow valves, you control the amount of air pressure going to the cylinder.



■ Upper Channel

Above the hopper is the Upper channel. The Upper Channel's lid can be removed by unlatching the four latches.

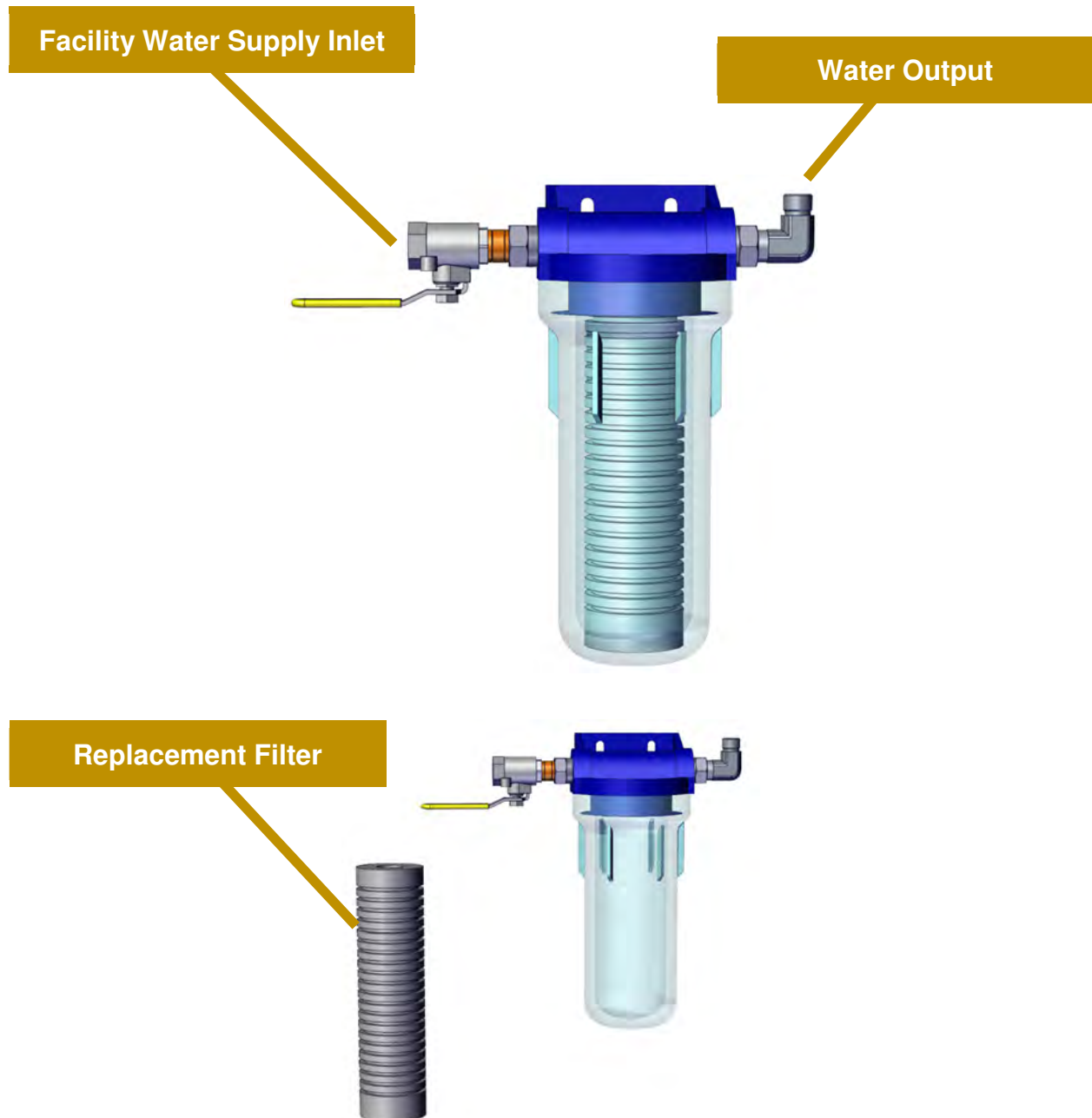
The Upper Channel houses the height automation controls and the air solenoids for the Dump and Optional AutoFill / MPA.



Hopper Dump and AutoFill solenoids.

■ Water Filter

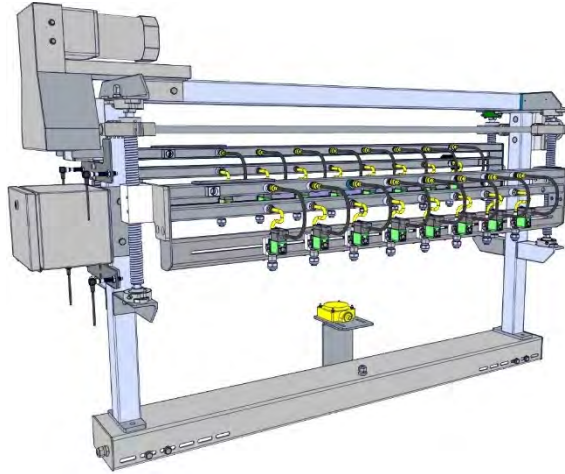
The Water Filter removes any contaminations from the water source. The filter supplied is rated at 10 microns. Replacement is recommended every 4 weeks but may differ depending upon the quality of the source water supply.



Order your replacement filters from Burford®. Call 1-877-Burford
(1-877-287-3673) Today. Part Number: C00578

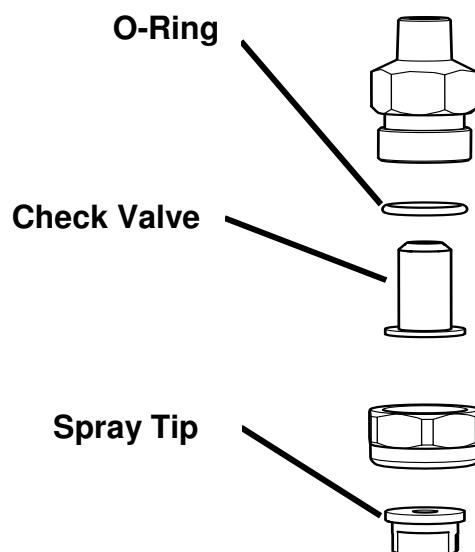
■ Spray Rail

The Spray Rail contains components to ensure a desirable coverage of water on the product.



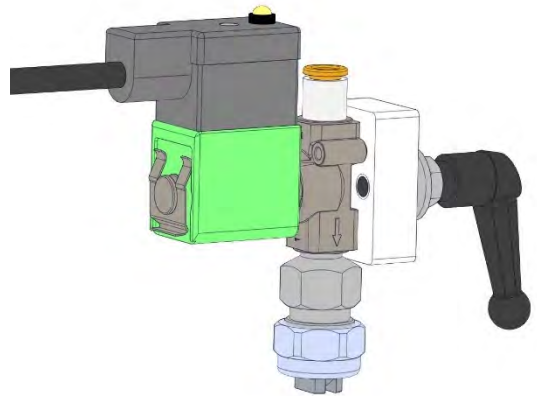
■ Spray Tip

The Spray Tip contains the components to ensure a desirable spray. A check valve may be present that is used to close the valve once the pressure reaches a minimum pressure. This prevents dripping and air getting into the hydraulic system. An O Ring gasket seals the spray nozzle and prevents any leaking. A tip is then used to direct the water into a fan with an orifice size and angle specific for your needs. Different orifice sizes and fan angles are available to meet a wide range of applications.



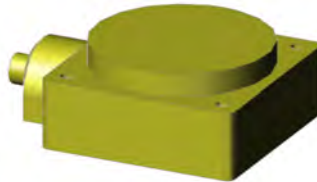
■ Electronic Valve

The Electronic Valve is controlled by the pan sensor and actuates for the set of time that the sensor is triggered. The unit contains two types of electronic valves: spray and split.



■ Product Sensor

The 80mm proximity sensor is to detect product for the water spray / split.



The CMOS Laser sensor is used to trigger the seeder. The sensor transmits a laser that reads when a pan passes through the beam. The sensor notifies the PLC that the laser has been broken. The laser sensitivity can be adjusted. Refer to the instructions at the back of this manual for more information.



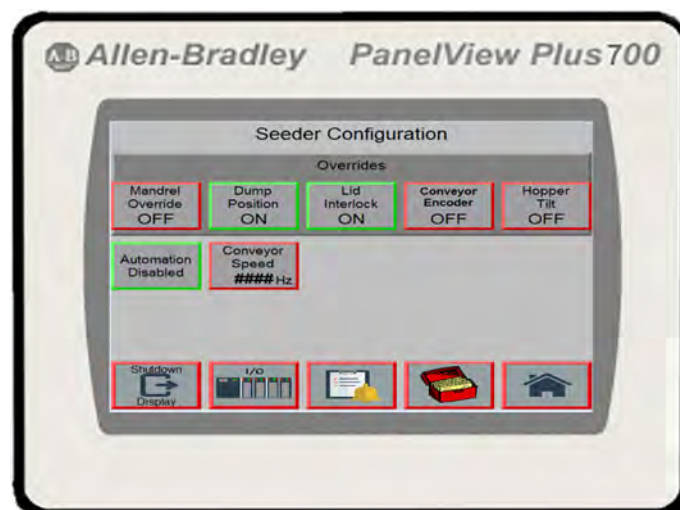
■ Operator Control Panel

The control panel contains the Operator Interface, the E-Stop, and the power ON indicator light.



■ HMI

The HMI, (Human Machine Interface), is where the interactions between the unit and software occur. It allows the operator to input parameters that controls the unit. The unit is available with two types of display, the Allen Bradley 600 Plus and the Allen Bradley 700 plus.



Allen Bradley 700 Plus Shown

■ PLC

The PLC (Programmable Logic Controller) is a digital computer used for the automation of the unit. The PLC contains proprietary Burford® software that executes the operations of the unit. This Smart Seeder comes with the upgraded Allen Bradley CompactLogix PLC.



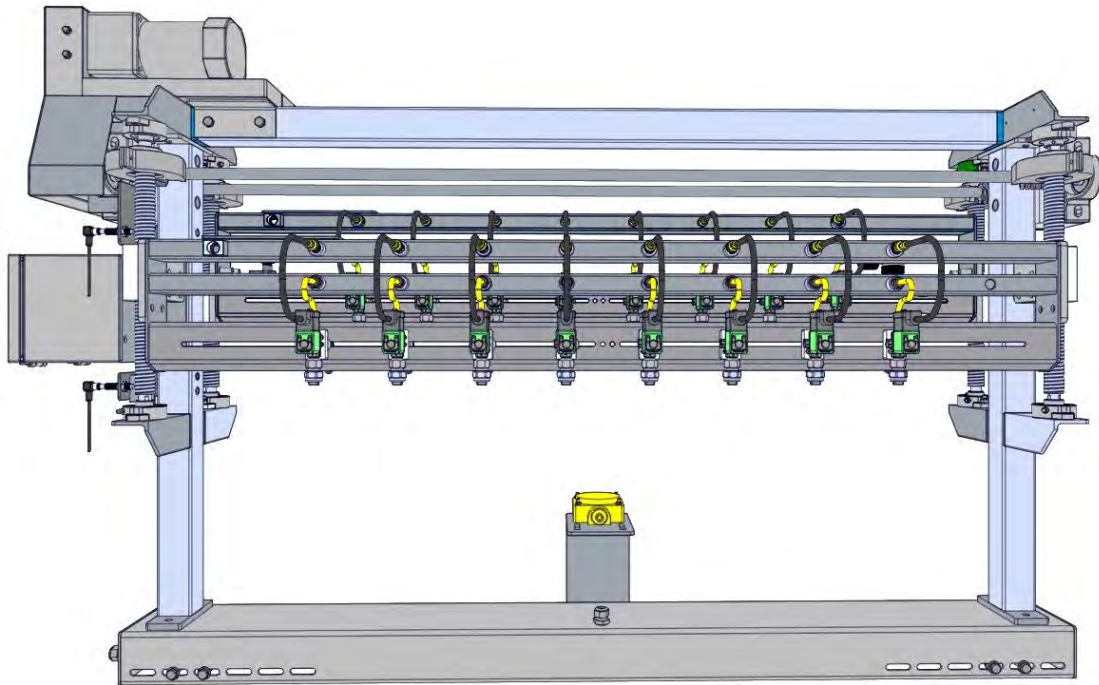
■ Optional Key Components

The following Key Components are items that may be purchased as an upgrade with the Burford® Smart Seeder. Your unit may or may not have these items on it. Contact Burford® for further information.

Order your Optional Components from Burford®. Call 1-877-Burford (1-877-287-3673) or email Sales@Burford.com today.

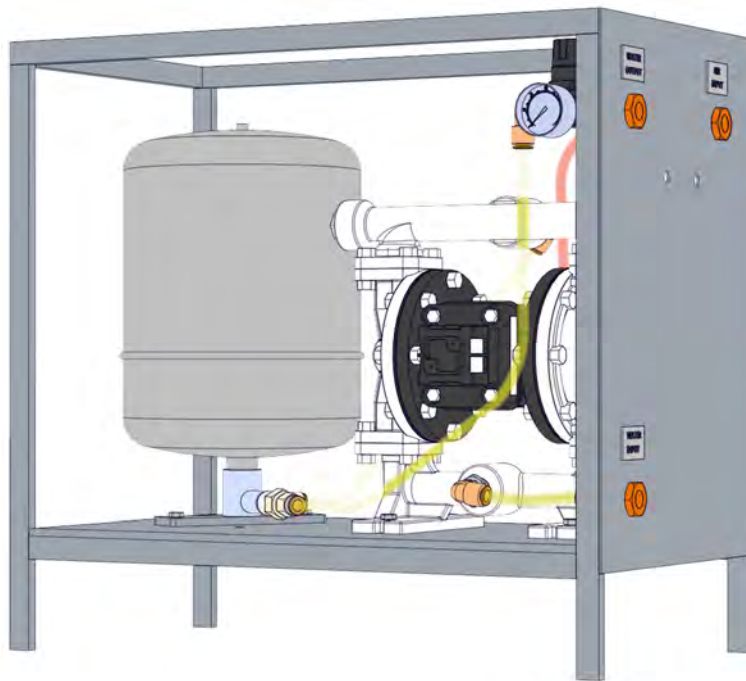
■ Split / Spray Rail

The Smart Seeder is available with an optional water splitter. With the optional splitter, the spray and split valves are installed on one automated rail. The splitter is controlled through the Seeder's HMI.



■ **Booster Pump (optional)**

The Booster Pump contains the necessary components to ensure uniform water pressure during the split sequence. It includes an air regulator, the water filter, pump, and accumulator. All of these components work in unison to deliver consistent water pressure during the split sequence.



It is vital that there are not any water pressure fluctuations during the split sequence. Any variations in water pressure may cause undesirable splits in the final product.

■ Diaphragm Pump (Part of Optional Booster)

The Diaphragm Pump is a positive displacement pump that uses a reciprocating rubber diaphragm and valves on either sides to pump the water into the hydraulic system. The pump is powered by a supply of air and pressure can be controlled by the air regulator feeding the pump. The Output pressure of the pump is a 1:1 ratio of the input air pressure.



The Accumulator is a pressure storage reservoir in which the fluid is held under pressure by an internal bladder filled with compressed gas kept at a constant pressure, also known as a hydro-pneumatic accumulator. The use of an accumulator allows the hydraulic system to respond more quickly to a temporary demand and to smooth out any pulsations that may be present in the system. The internal bladder must be kept at 80% psi of the running pressure. A standard Schrader valve is used to fill the bladder. Compressed air may be used to fill bladder.

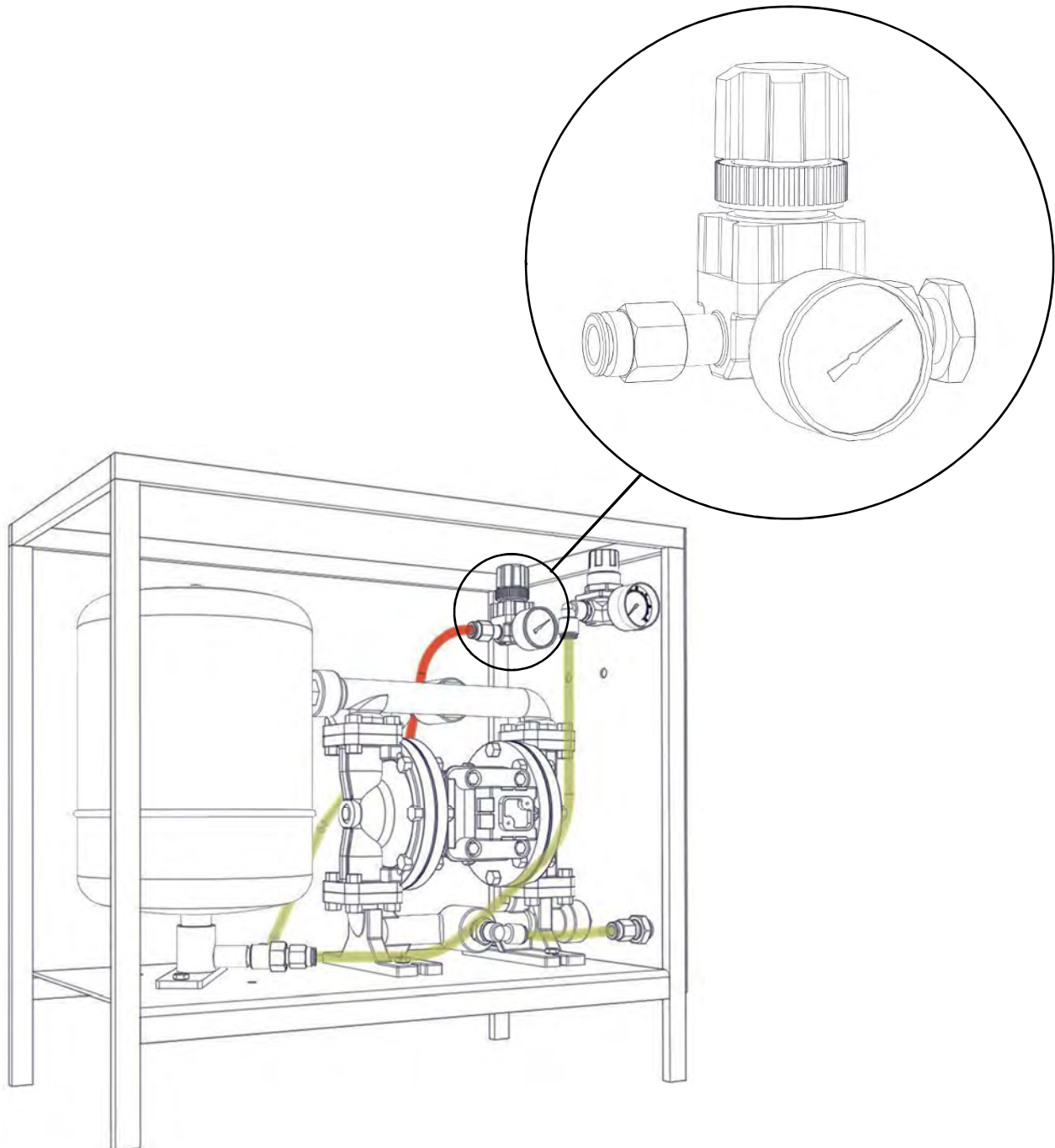


Dampener must be charged before use. Verify proper pressure before operations.

Example: If running pressure is 100 psi then the accumulator should be filled to 80 psi.

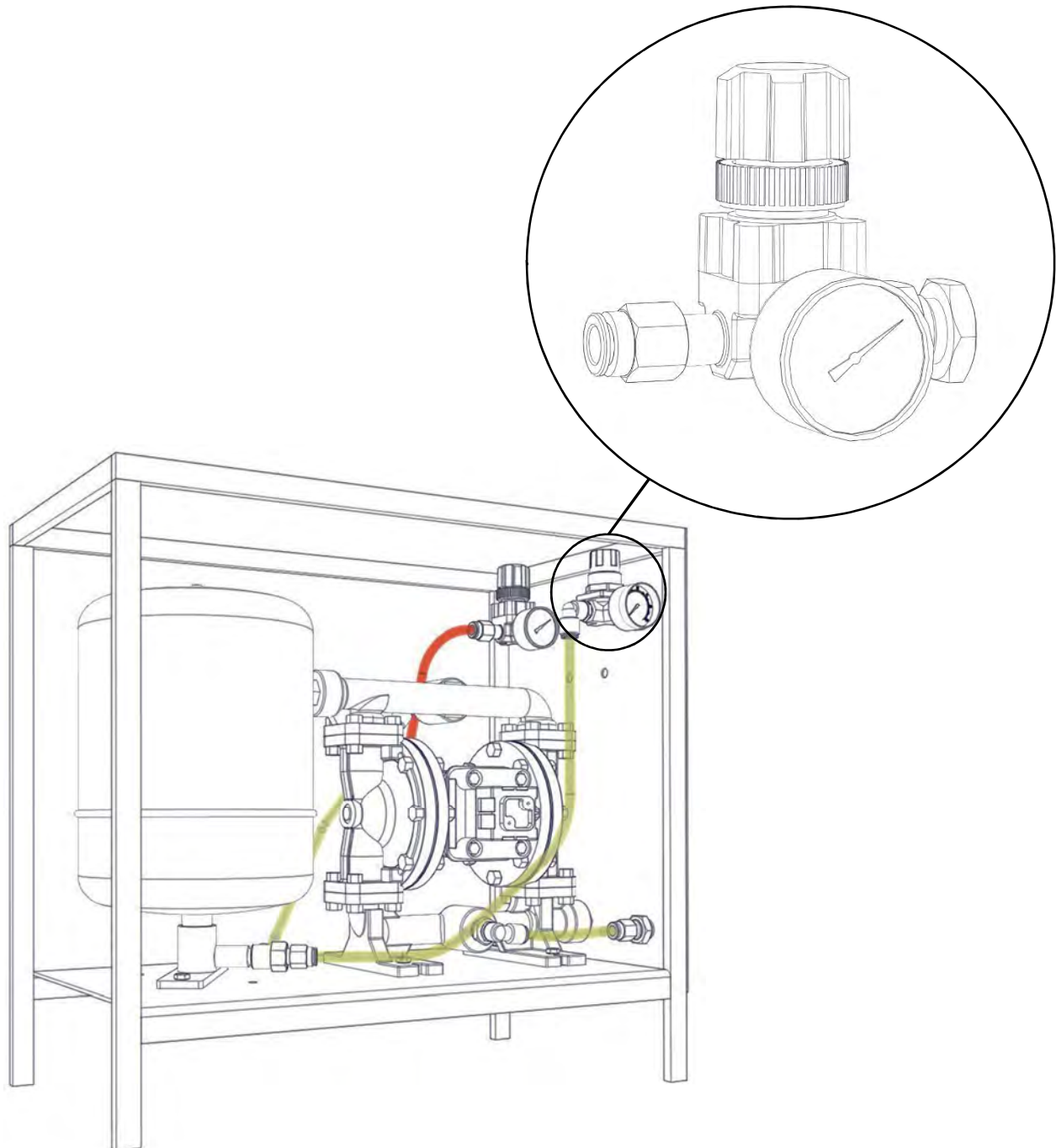
■ Pump Air Regulator (Optional Booster Pump)

The Booster Pump Air Regulator controls the pressure of the air operating the diaphragm pump. The air pressure is at a 1:1 ratio of the output water pressure of the pump. The air pressure should be set at 20% above the max operating pressure of the water pressure.



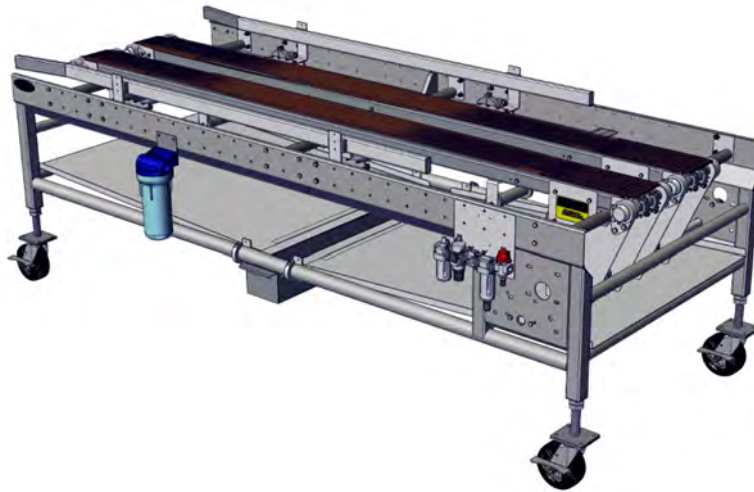
■ Pump Output Water Pressure Regulator (Optional Booster Pump)

The Pump Output Water Pressure Regulator controls the amount of water pressure supplied to the split nozzles. The amount of water pressure from the split tips determine the depth of the split into the product. Variations in dough will require adjustments to be made to the water pressure to receive the desire splits.

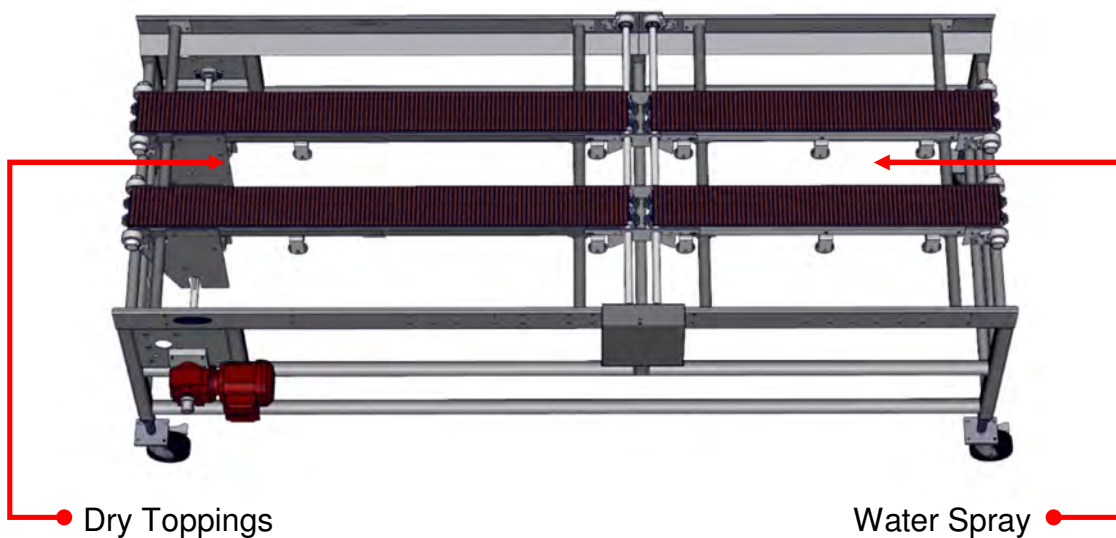


■ Conveyor

An optional conveyor is available for your Smart Seeder. The conveyor transfers product through the unit so toppings can be applied. Burford® conveyors feature a drip pan collection system that increases the sanitation of the unit. A split, wet / dry conveyor is also available to keep the topping waste separate from the water drainage.



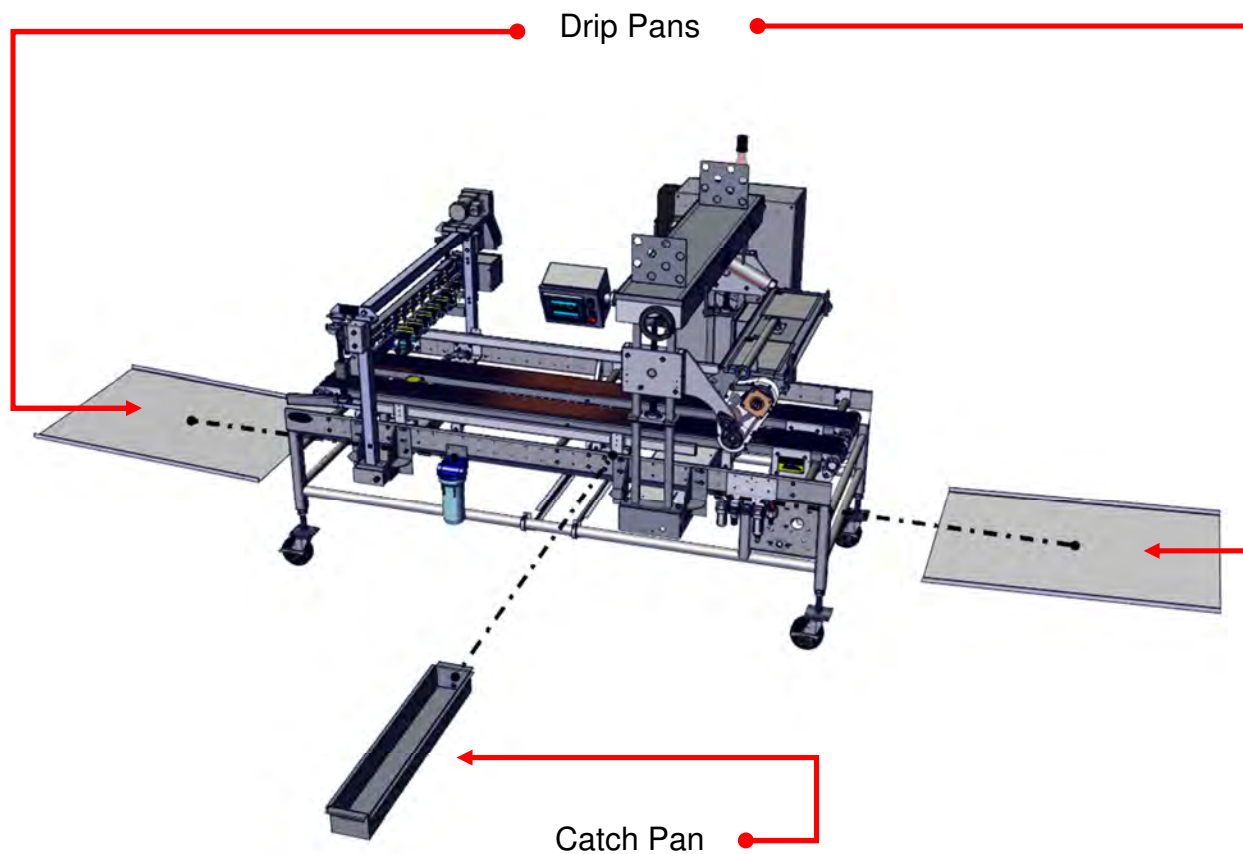
Standard Conveyor



Split Wet / Dry Conveyor

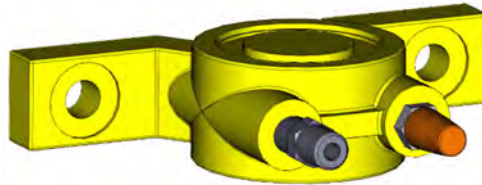
■ Conveyor Drip Pans

The conveyor system features two drip pans and a catch pan to collect any seed droppings. They are easily removable for cleaning at a different location. The catch pan contains a removable plug that can be plumbed into a drainage system if needed.



■ Vibrator

An optional Vibrator is available. The vibrators are located on the rear of the hopper. Activated by the Topper Pan Sensor, the Vibrator will enable with the agitator rake to assure uniform topping application and to prevent bridging.



■ Multi-Purpose Tank

If a MPA was ordered with your unit, then you received a portable tank. Connect the hose from the tank to the Auto Fill System located above the Topper.



■ Auto-Fill Systems

The Auto-Fill Systems are designed to operate with the Burford® Topper and Conveyor System. The operator is able to connect the transfer hose to one of multiple product hoppers. This allows the operator to change to a different topping with minimum effort.

Burford® offers two types of Auto-Fill systems: the MPA (Multi-Purpose Auto-fill), and the HS series. The MPA allows for the transfer of a wide range of toppings. The HS series is compatible with only seeds.

The MPA incorporates a vacuum assembly housed in the unit for product transfer from the tank to the hopper.

The HS series relies on compressed air to create a vacuum utilizing the Venturi effect. The model number after HS indicates the storage capacity of the tank in U.S. pounds. The HS series is available in 300lbs and 500lbs capacity. An optional Dryer is available on the HS series to keep the seed free from moisture.



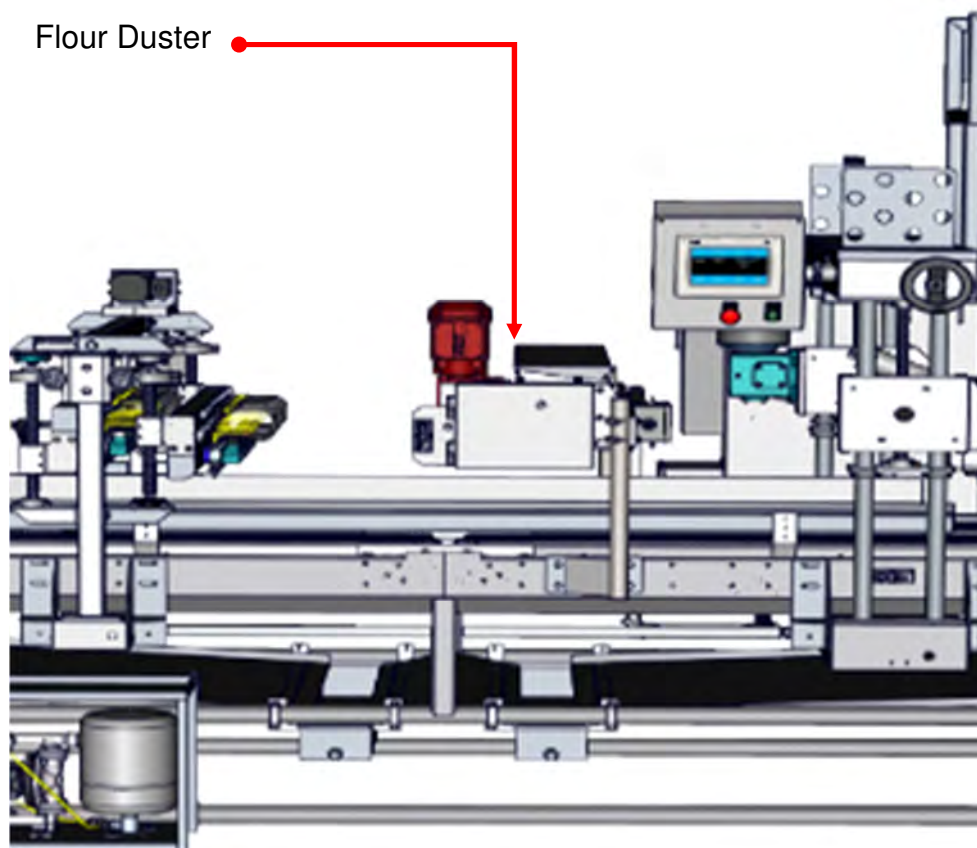
MPA System



HS-300 System with Optional Dryer

■ Flour Duster

The Flour Duster applies flour to the top of your product. An optional, integrated Flour Duster may be purchased with your Smart Seeder. A stand-alone unit is also available that can be easily installed unto your existing conveyor system. Contact Burford® for more information.



TYPICAL FLOUR DUSTER PLACEMENT
INTEGRATED INTO SMART SEEDER

Chapter 3

Installation

CHAPTER 3: INSTALLATION

Your Smart Seeder is fully assembled when it arrives at your facility.

The area chosen should not allow product to stop under the topper.

The area around the Topper installation site should be clear of any obstructions and the topper shall not be installed in such a way as to create a safety hazard, or block a normal passageway. Clearance must conform to all local safety codes.

Installation site should have ample clearance on the operator control side to allow:

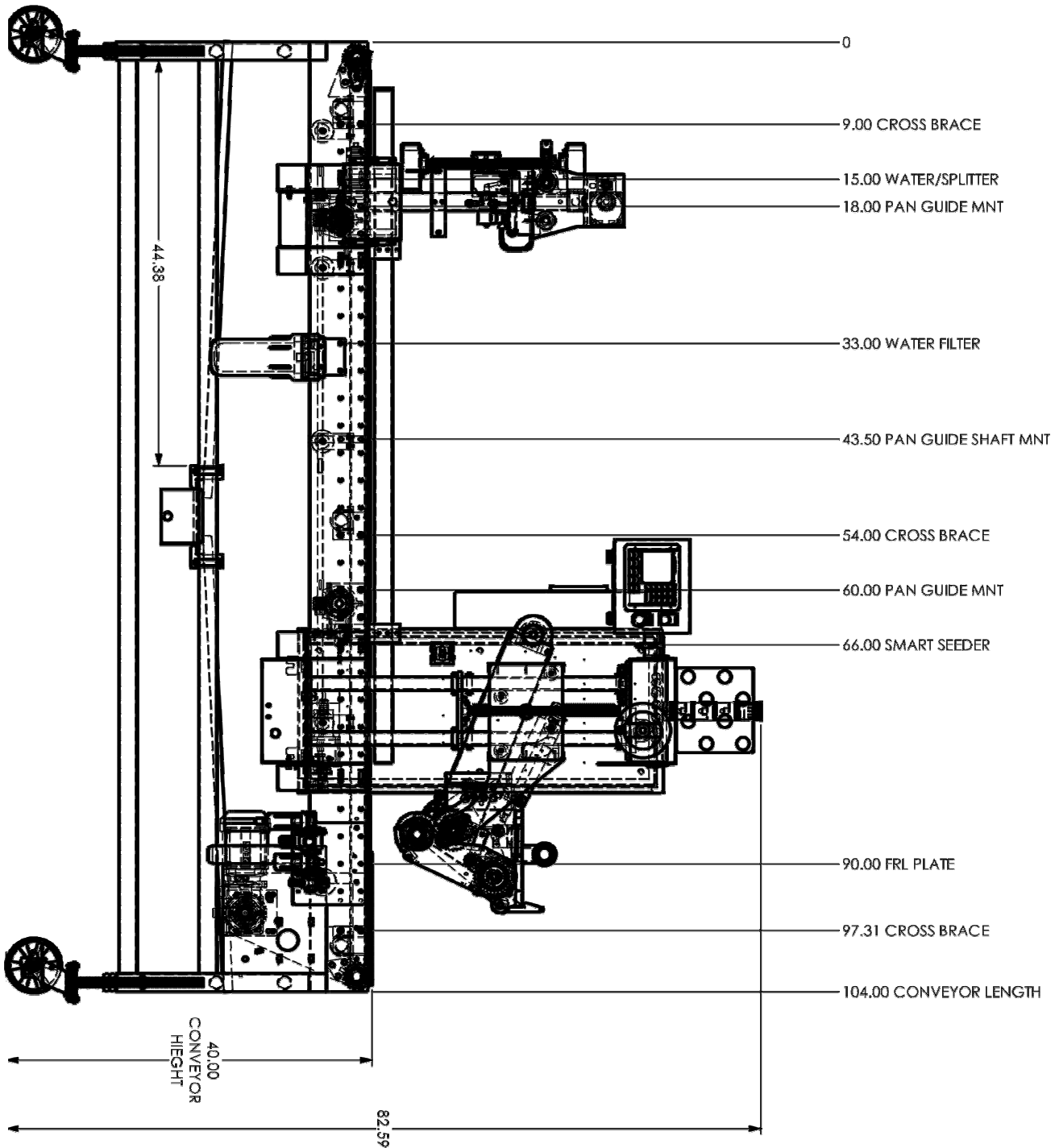
- Easy access
- Removal of Mandrel
- Normal maintenance

Consideration must be made for the possibility of product storage near installation site.

Installation Outline

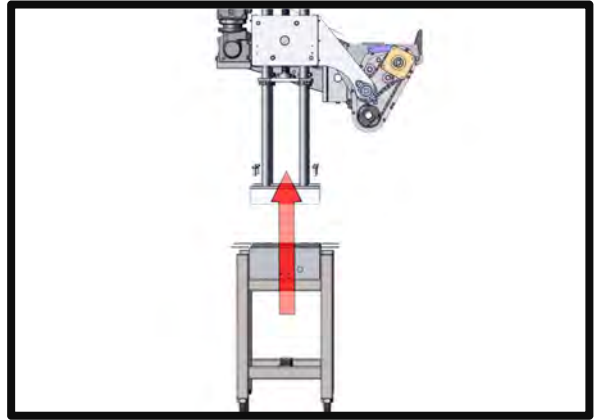
- Choose an appropriate location
- Level conveyor with existing conveyor system
- Lock castors
- Connect to utilities

■ Installation on an Existing Conveyor

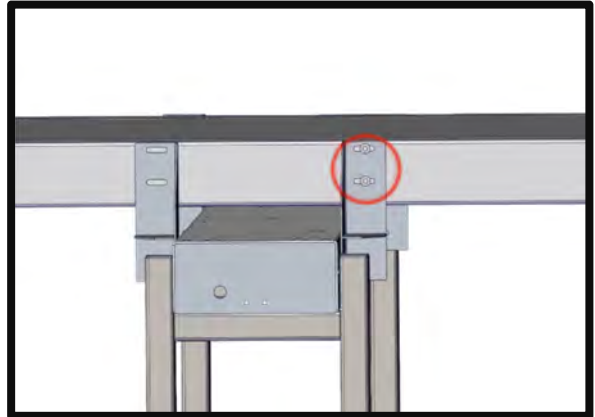


■ Installation on Existing Conveyor System, continued

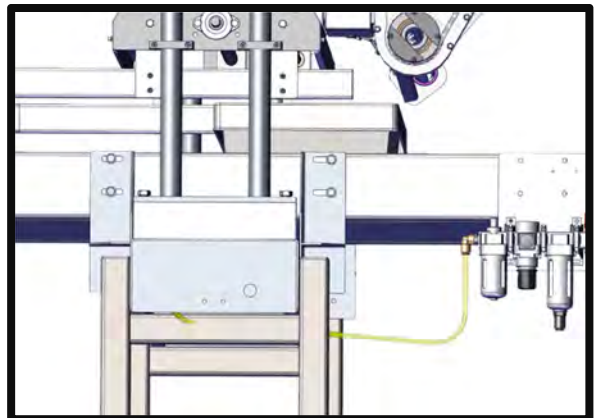
Mark air hoses (shown in bottom picture) and disconnect from filter-regulator-lubricator. Separate upper and lower assemblies. This will allow the upper and lower assemblies to be mounted as separate units.



Bolt the four mounting brackets on the sides of the lower cross frame into the sides of the lower cross frame into the corresponding mounting holes. If the exact distance cannot be obtained, then spacers, between the brackets and the conveyor frame should be used.



Carefully route air hoses through lower assembly and reconnect to filter-regulator-lubricator. Align upper assembly and mount to lower assembly.



■ Installation on Existing Conveyor System, continued

- Install conveyor encoder.
- Loosen all of the setscrews securing the desired conveyor shaft to bearings and conveyor belt sprockets.
- Carefully slide shaft until enough clearance is gained to mount encoder.
- Slide encoder onto conveyor shaft and orientate cable connector as desired, then mark and drill a 1/4" hole to secure the anti-rotation flex mount to the conveyor wall.
- Attach communication cable to encoder and conveniently route cable back to seeder enclosure. Consult supplied wiring diagram for wire termination information.



Burford® recommends that a new conveyor shaft be made that is 1-1/2" longer than the existing conveyor shaft. This will allow the encoder to be mounted on the outside of the conveyor frame, greatly simplifying future encoder maintenance.

■ Installation on a Burford® Conveyor

■ Remove Topper from Mount

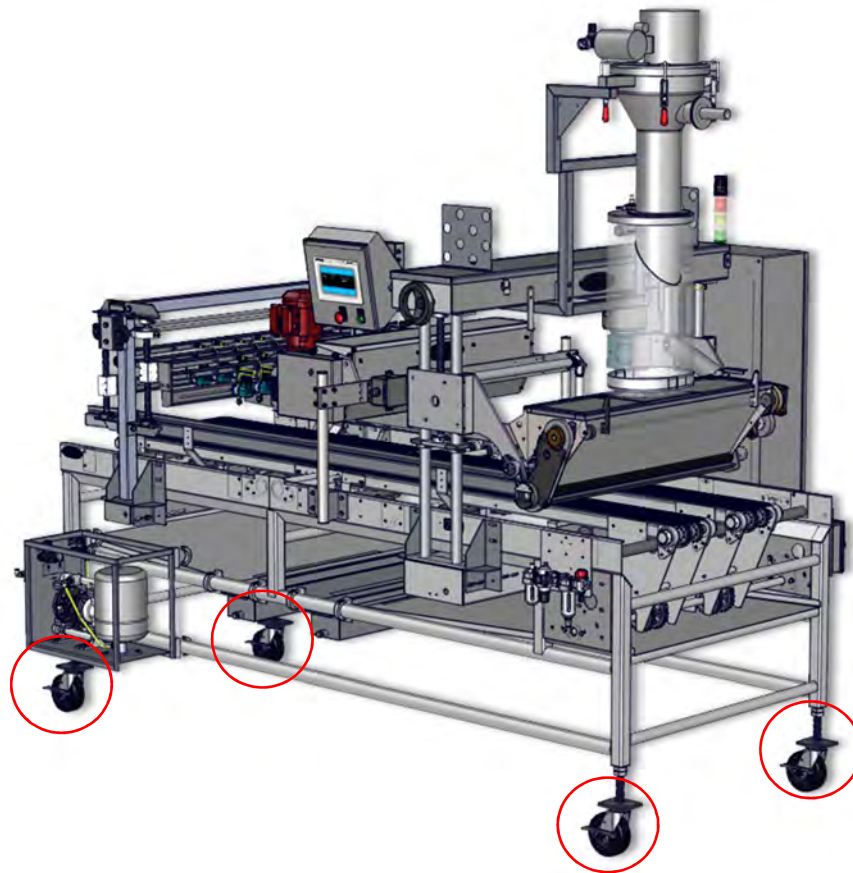
1. The unit may be mounted on castors for portability.
2. Locate an area that is clear of obstructions. The area chosen should not allow the product to stop, turn, or back-up. A supply of compressed air and power needs to be available at installation site.
3. Roll the unit into place.
4. Level both the upstream and downstream conveyor with your existing conveyor system. The transfers to and from the Burford® conveyor must be smooth so it will not damage the product during transfer.



Verify top clearance for hopper

■ Castors

The Unit may remain on the Castors for portability if permanent castors are installed, or the unit can be permanently fixed to the floor. When the unit is in operation, the Castors must be locked to prevent movement.



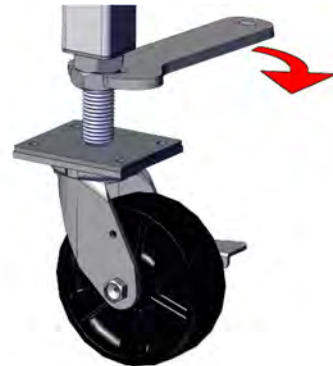
■ Level Conveyor

The unit will need to be level during operations to function properly. The support legs are adjustable. Match the height of your existing conveyor system to that of the Burford® conveyor. There are four leg supports with castors. The castors are mounted to a threaded shaft rod. The threaded shaft rod is able to extend and retract approximately 6" of travel within the leg support.

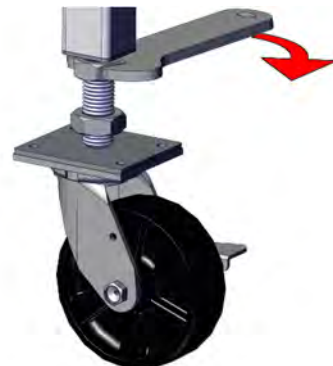
Locate the Castor strut that needs adjustment.



Loosen the bottom jam nut and bring the nut down on the shaft.



Loosen the top jam nut.



■ Level Conveyor, continued

With the nuts loosened, turn the shaft.



You may use your hand on the castor mount to aid in turning the shaft. Loosen the shaft from the frame to raise the unit. Tighten the shaft from the frame to lower the unit.



After the desired height is achieved, secure the shaft by first tightening the top jam nut to the frame then tighten the bottom jam nut to the top jam nut. This will lock the shaft.



■ Permanent Installation

The unit may be permanently fixed to the floor.



Remove all of the temporary castors.



Loosen the jam nuts.



Rotate Thread Shaft to adjust height.

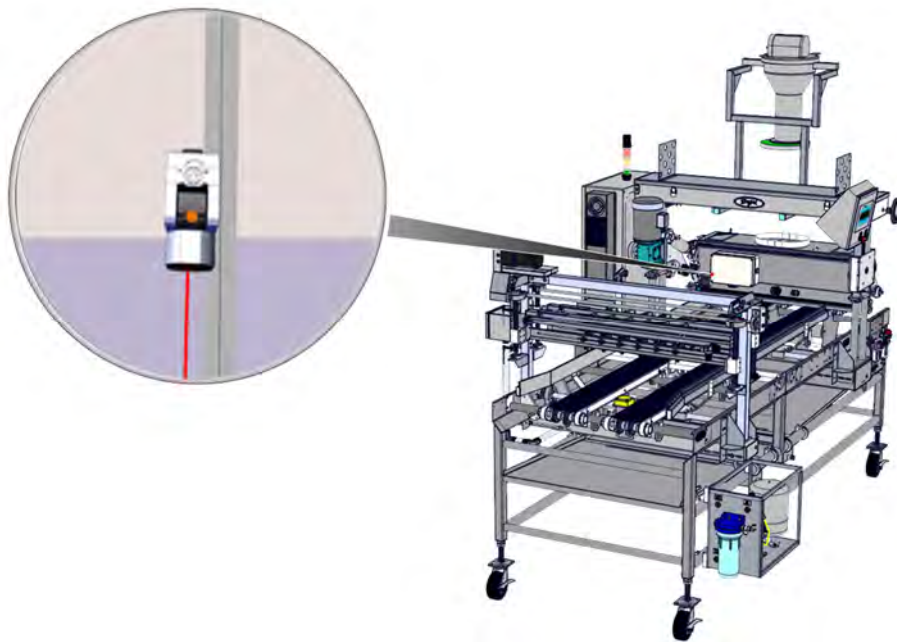


When level with existing conveyor system tighten the jam nuts.

Drill holes matching the bolt pattern of the castor mount and secure with concrete anchors.

■ Product Sensor Setup

The Product sensor for the seeder may need to be properly adjusted before operations of the Smart Seeder.

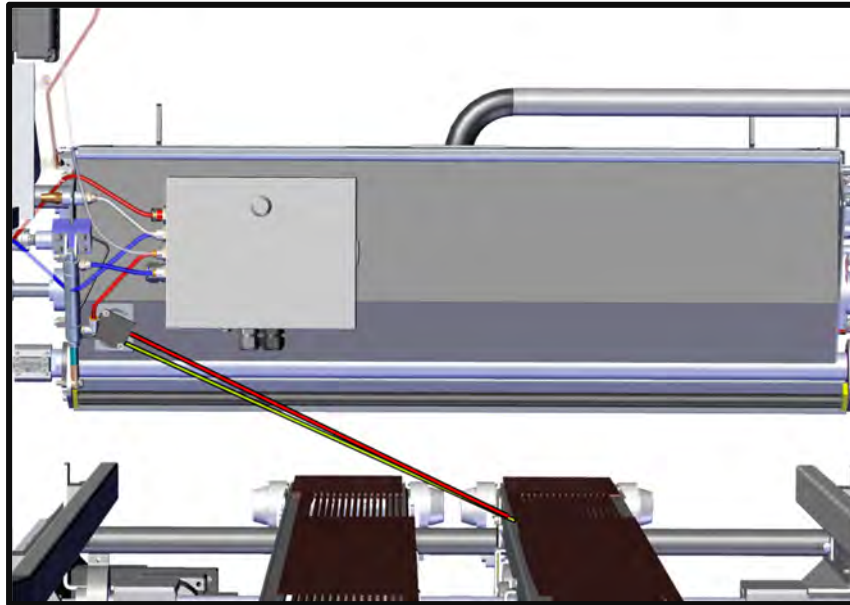


The bracket that the sensor is mounted on is slotted. This allows the sensor to be rotated for alignment purposes. The sensor transmits a light beam to a reflector. The reflector “reflects” the beam back to the sensor. When a pan passes through the beam, the sensor no longer receives the light beam reflected from the reflector and signals the PLC that a pan is present. It is critical that when a pan is not present the beam is able to reflect back to the sensor.

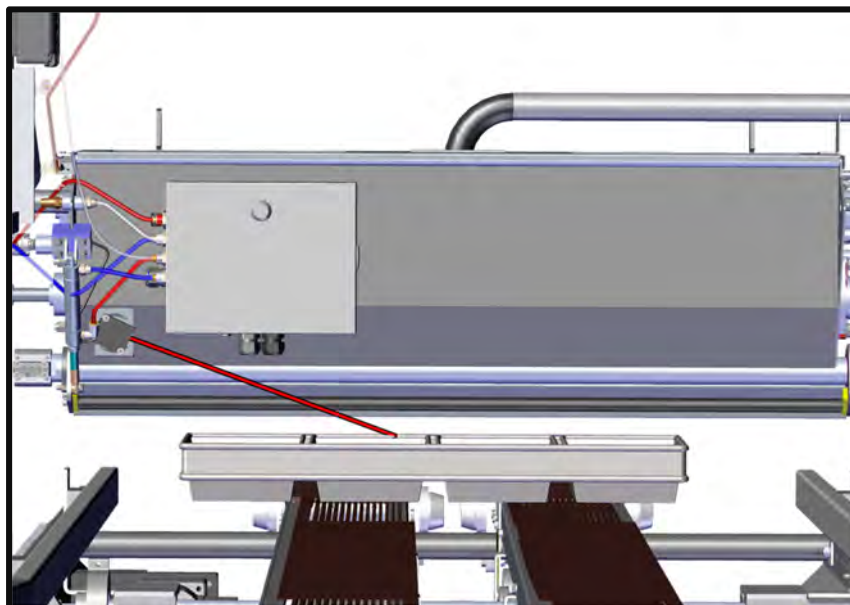


■ Reflector Product Sensor Setup

A reflector is located on the inside of the conveyor track. The sensor transmits a light beam to a reflector that returns the beam back to the sensor when not blocked.

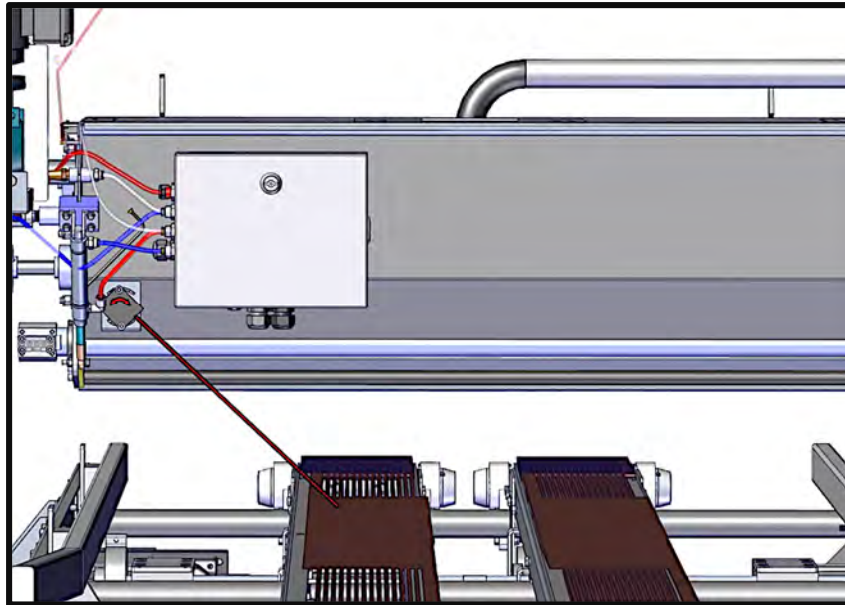


A passing pan disrupts the beam to the reflector, preventing the sensor from receiving the reflected beam. When the sensor fails to receive the reflected beam, a signal is sent to the PLC indicating that a pan is present.



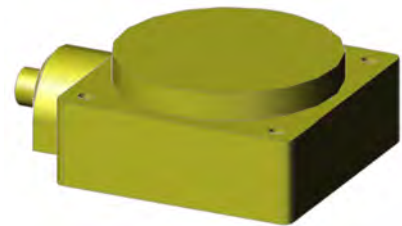
■ Product Sensor Setup, continued

The image below illustrates the wrong way for sensor setup. The example below would constantly signal the PLC that a pan is present. The sensor must be able to receive back the transmitted beam when a pan is not present. This is accomplished by the reflector.



The height of the hopper will affect the path of the beam. When setting the height of the hopper for a variety be mindful of the product sensor path to the reflector. During setup of the hopper height on a variety, verify that the product sensor is making contact the sensor.

In some situations, a photo-reflective may not be suitable. An optional 80mm proximity sensor is available.

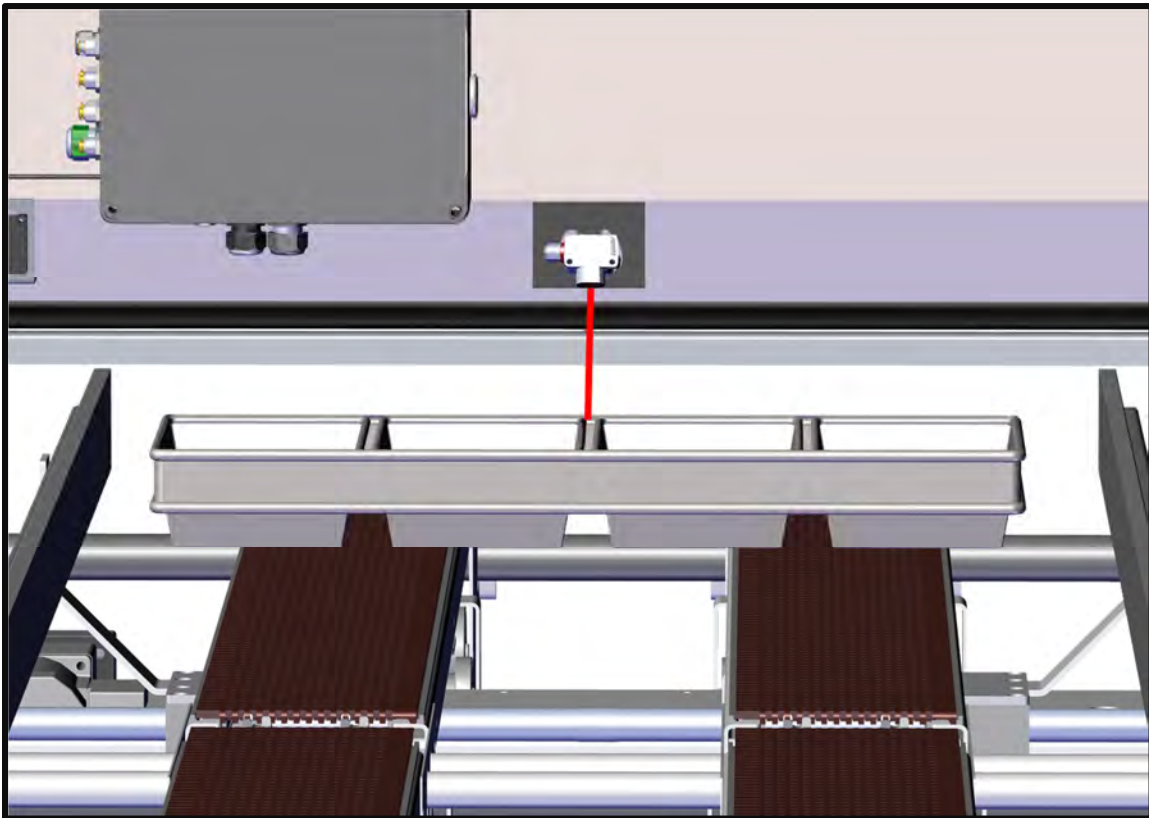


In situations where deflection is difficult, a diffuse reflective sensor may be more user friendly. Detection occurs when the light beam, emitted to the target, is reflected by a target and received.



■ Diffuse Reflective Sensor Setup

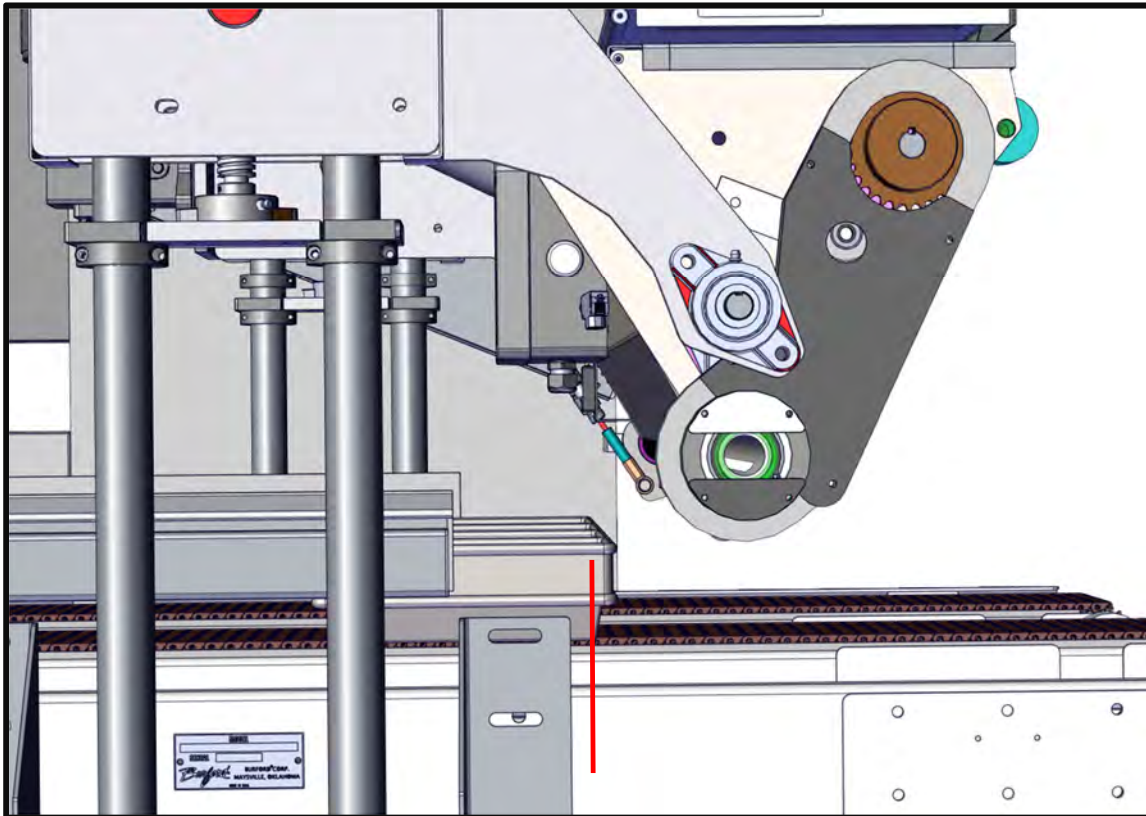
Place the product pan under the sensor and adjust the sensitivity until sensor is reading the pan.



A passing pan disrupts the beam to the reflector, preventing the sensor from receiving the reflected beam. When the sensor fails to receive the reflected beam, a signal is sent to the PLC indicating that a pan is present.

■ Diffuse Reflective Sensor Setup, continued

Test the Sensor setting by running the pan used for the recipe, through the seeder. The sensor light will let the operator know the sensor is triggered by the pan. If the sensor light blinks, the sensor needs to be adjusted to read a lower depth. More than likely, the sensor is reading the lip of the pan and not the cavity.



Recommended depth setting for the sensor is 4" below the tracks of the conveyor.

■ Install the Water Spray

The Burford® Water Spray was shipped to you completely assembled. Partial disassembly is required before the actual mounting. The disassembly of the unit should be done carefully to prevent damage to the unit.

■ Conveyor Requirements:

1. The conveyor chosen must utilize pan guides to keep the pans straight when traveling through the unit.
2. The conveyor chosen should not allow the product to stop, turn, or back-up.
3. Area around the unit installation site should be clear of any obstructions or block a normal passageway. Clearance must conform to all local safety codes.
4. Installation site should have ample clearance on operator control side for easy access and normal maintenance.
 - A. Easy access
 - B. Normal maintenance

■ Unpacking Procedure for Installation On Existing Conveyor

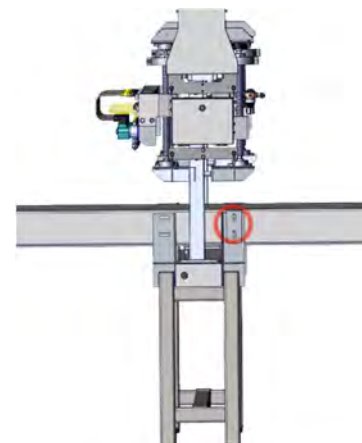
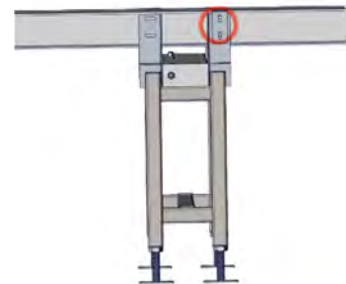
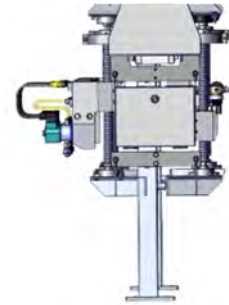
Uncrate the unit and set up right onto the packing crate cushions.

Loosen and remove the bolts that hold the lower cross frame to the uprights and remove pan proximity sensor carefully lay aside. You should now have two separate assemblies of the spray and split.

Measure the conveyor width and then bolt the four mounting brackets on the sides of the lower cross frame into the corresponding mounting holes. If the exact distance cannot be obtained, then spacers, between the brackets and the conveyor frame should be used.

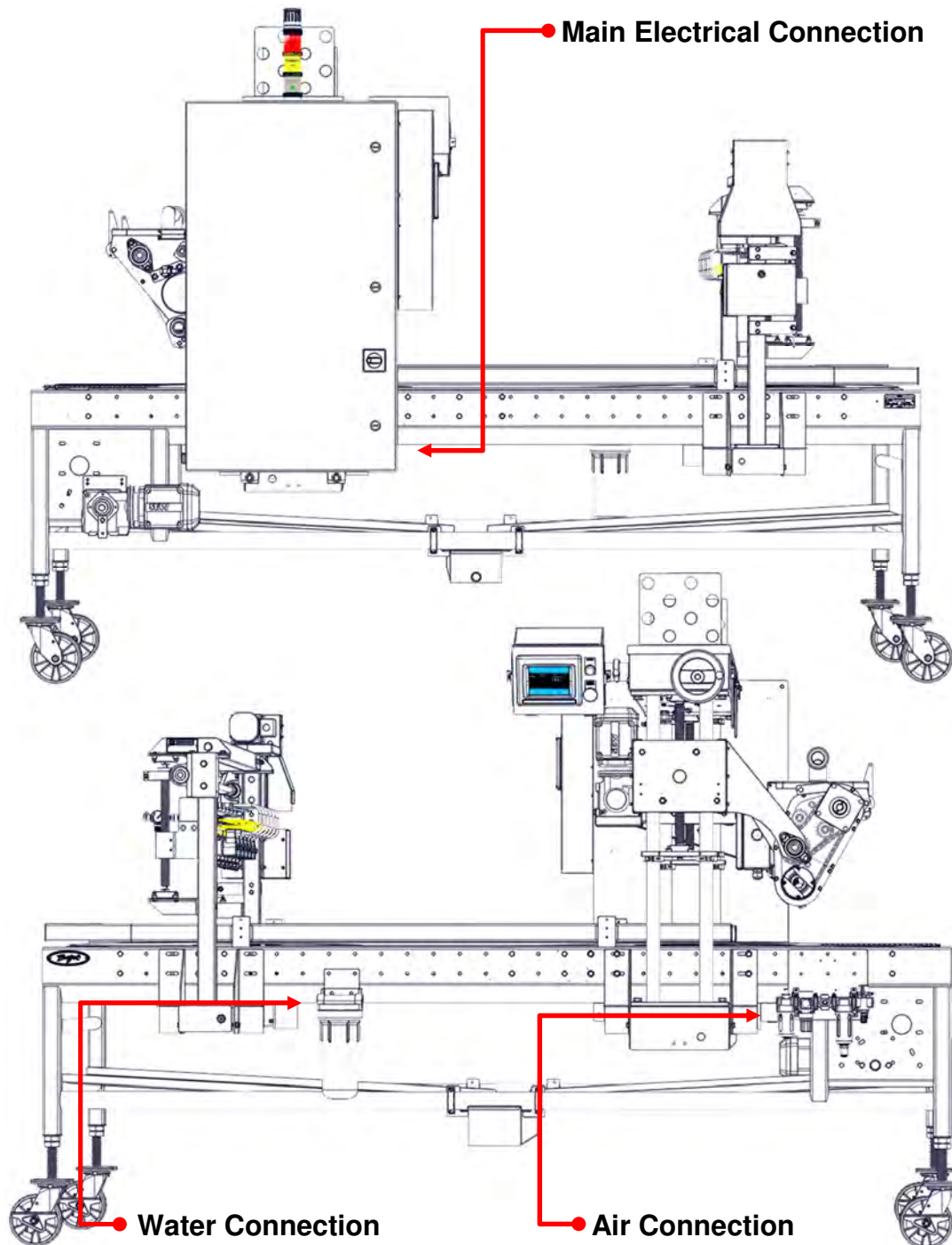
With the mounting brackets in place, slide the lower cross frame under the conveyor and raise upward until the top of the cross frame is $\frac{3}{4}$ " from the bottom of the conveyor frame. Mark and drill the mounting holes into the conveyor frame and mount the unit.

After the lower cross frame is bolted in place, the uprights can now be lowered over the top of the conveyor onto the lower cross frame and bolted on.



■ Power Connections

Connect power to the unit. A qualified electrician must make all electrical hook-ups using a suitable service with all safety requirements and compliance to local codes being followed. Refer to electrical diagram at the end of the manual for connection details.

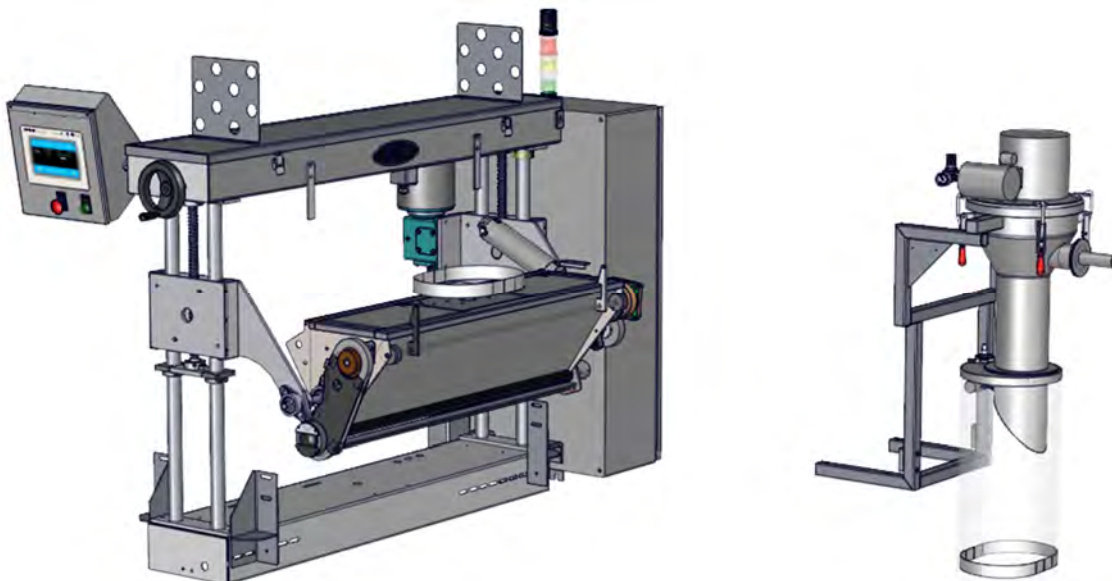


Connect air to the F.R.L. A minimum operating pressure of 60 psi is required.

■ MPA Installation

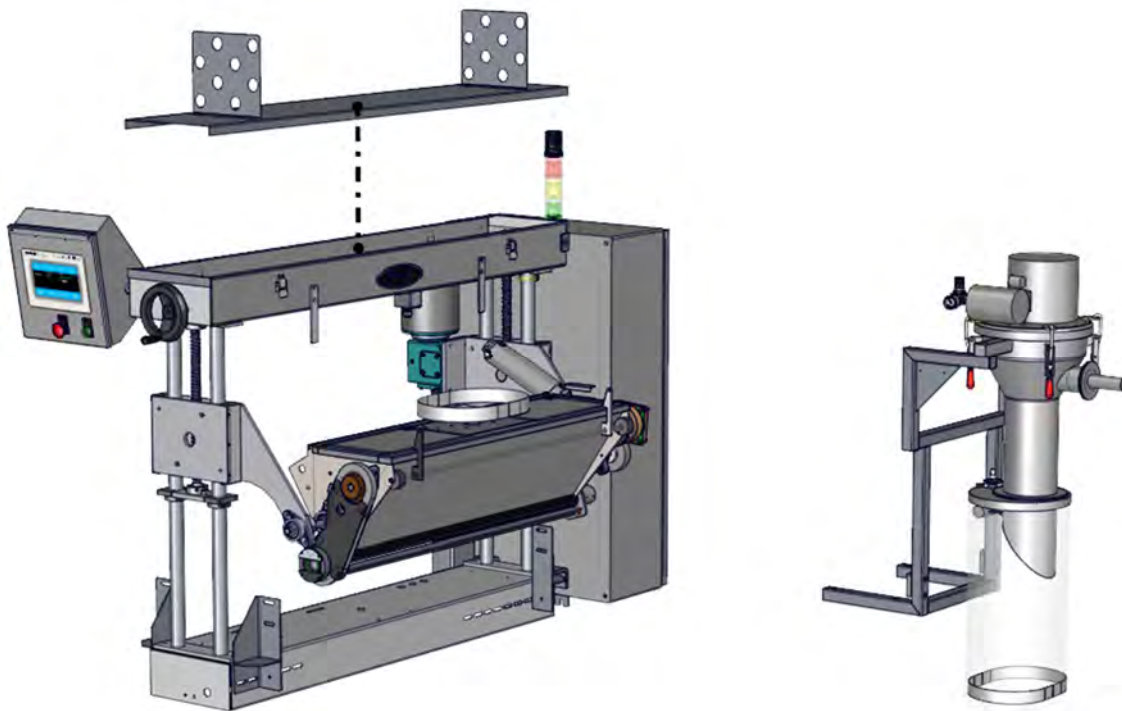
The MPA is removed during shipment to your facility. It will be necessary to install the MPA when the unit arrives.

Locate the eight MPA mounting bolts supplied with the unit.



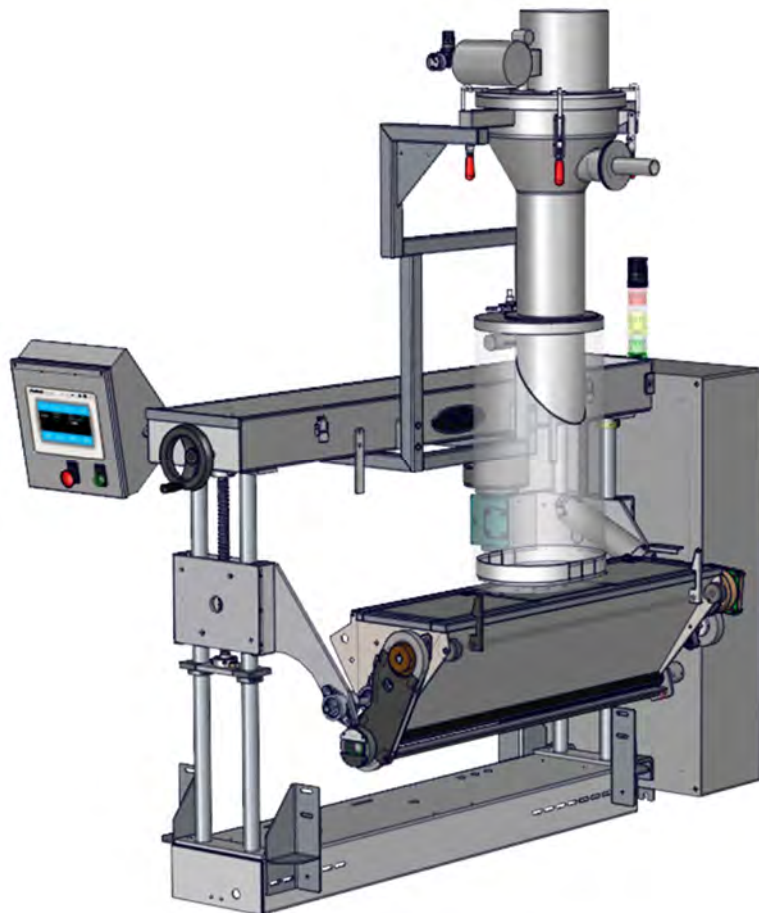
■ MPA Installation, continued

Remove the upper channel lid by releasing the four latches.



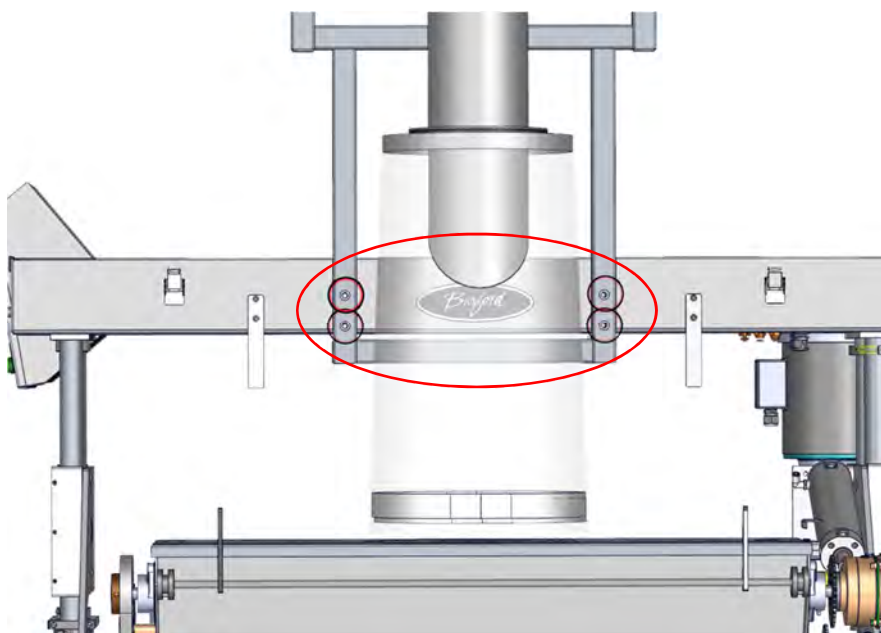
■ MPA Installation, continued

The MPA is heavy. With at least two people, position the MPA on the hopper. Be careful as not to allow the full weight of the MPA rest upon the hopper or damage may occur.

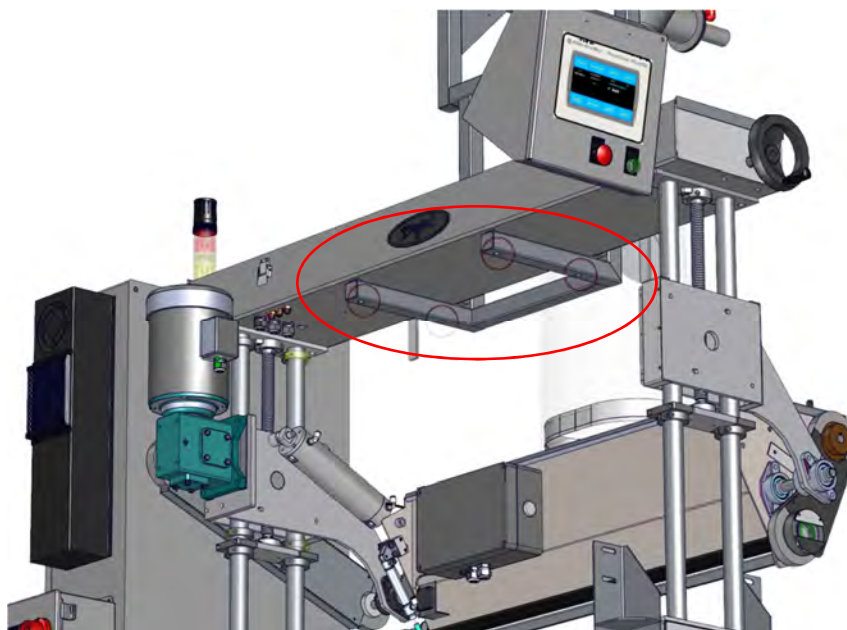


■ MPA Installation, continued

Secure four of the supplied bolts to the front of the unit.

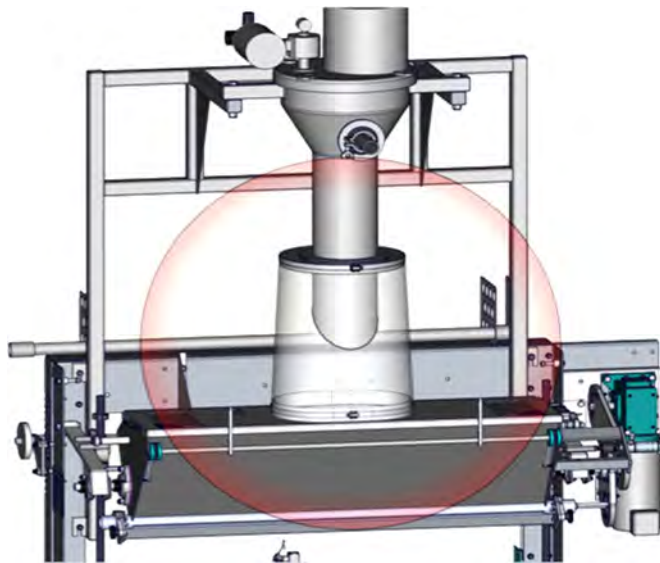
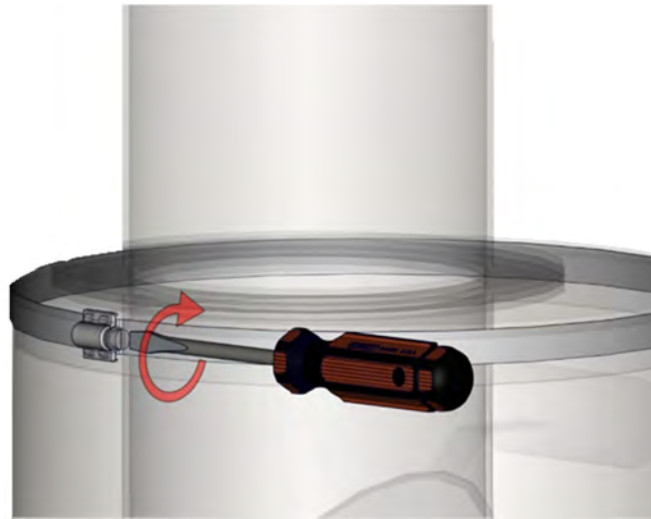


Secure the remaining four bolts the bottom of the mount.



■ MPA Installation, continued

Connect the transfer duct with the bands provided.



Route electrical, air lines along frame, and connect to vacuum receiver.

Stage the auto-fill hopper(s) to allow the supply hose to reach the vacuum receiver, and then connect supply hose and air lines as shown.

■ Utility Installation

A qualified electrician must make all electrical hook-ups and the unit must be incorporated into a suitable service with all safety requirements and compliance to local codes.

■ Installation Arrangements

A Burford® factory trained Installation Engineer may be hired for any installation. The arrangement can be made with the Service Manager:

Burford® Corp.
Maysville, Oklahoma
Phone: 1-877-BURFORD or 405-867-4467
Fax: 405-867-4219

Chapter 4

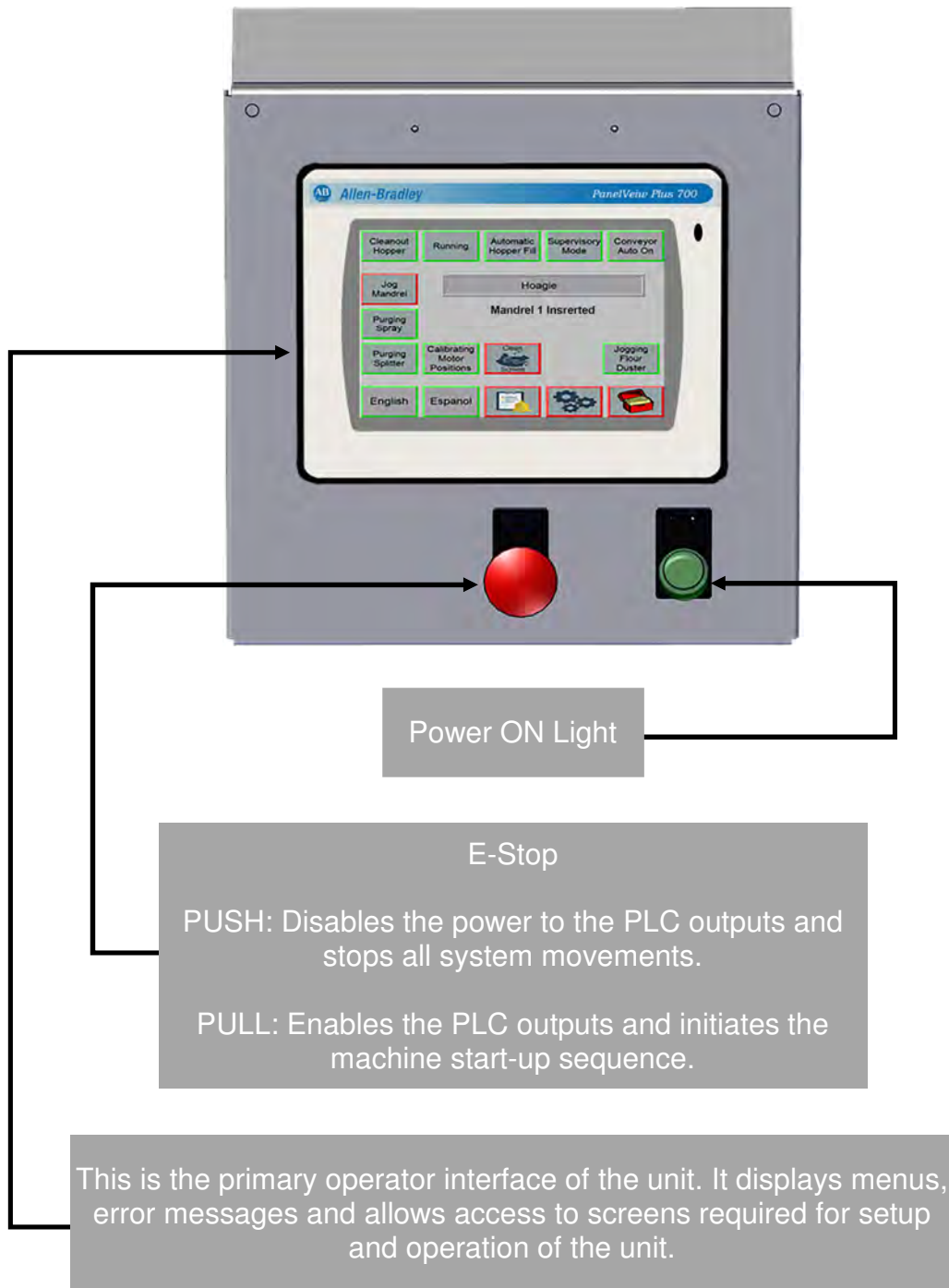
Operation

CHAPTER 4: OPERATION

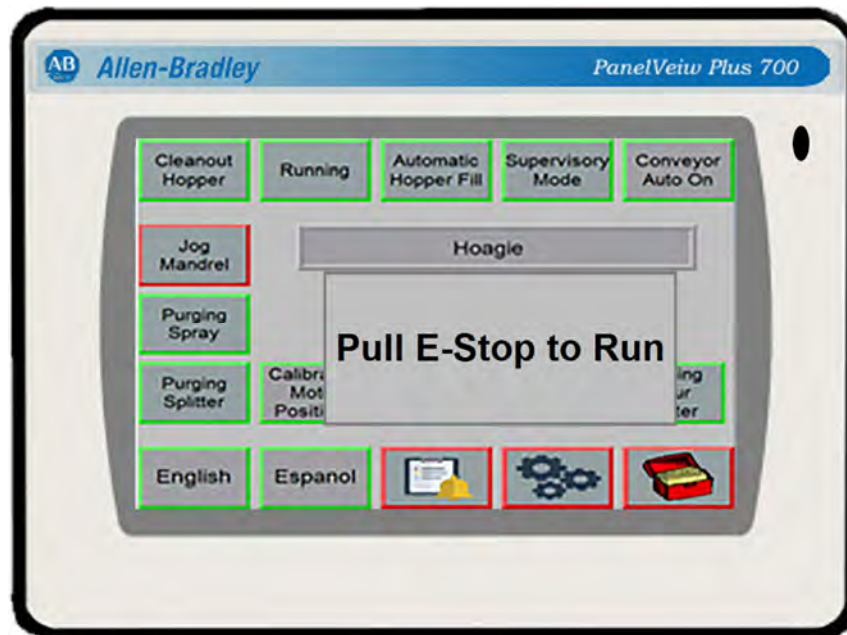


The User Interface is the space where interactions between humans and the machine occur. The interaction by the operator allows control of the machine, while the machine simultaneously sends back information that aids the operator's decision-making process. The HMI (Human-Machine Interface) is the primary method of controlling the machine. The HMI on your unit is touch screen. This provides a more versatile user experience with an intuitive design. The HMI on your unit may differ from the one shown on the following pages.

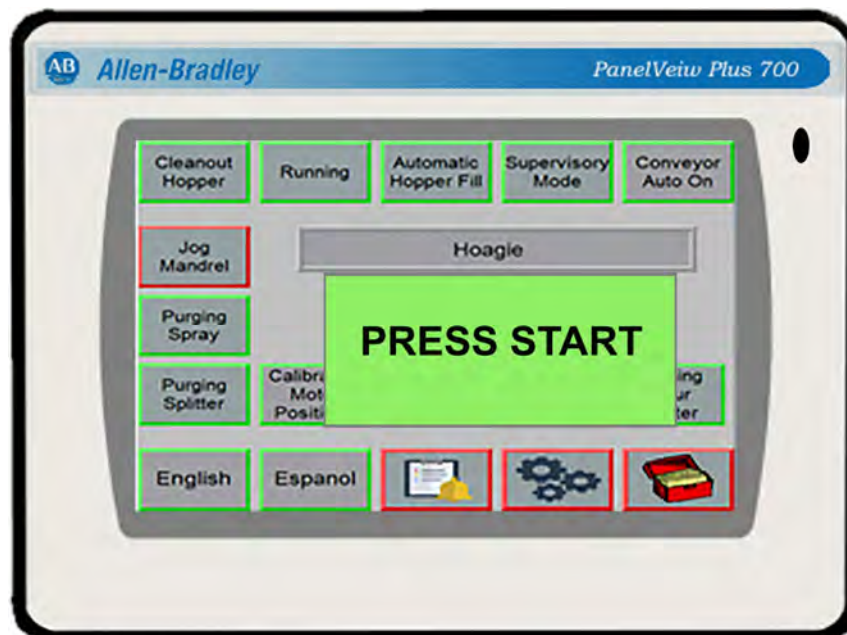
■ Control Panel



■ Start Screen

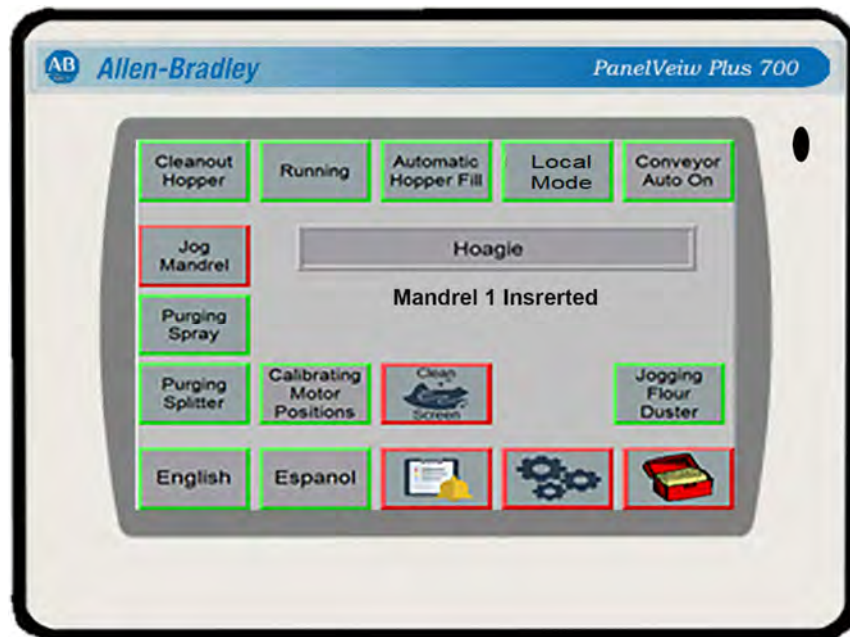


The Start Screen is displayed after initial power up. When safe Pull the E-Stop out.



Press Start to initiate the unit. If the unit is not homed, the unit will home all axis.

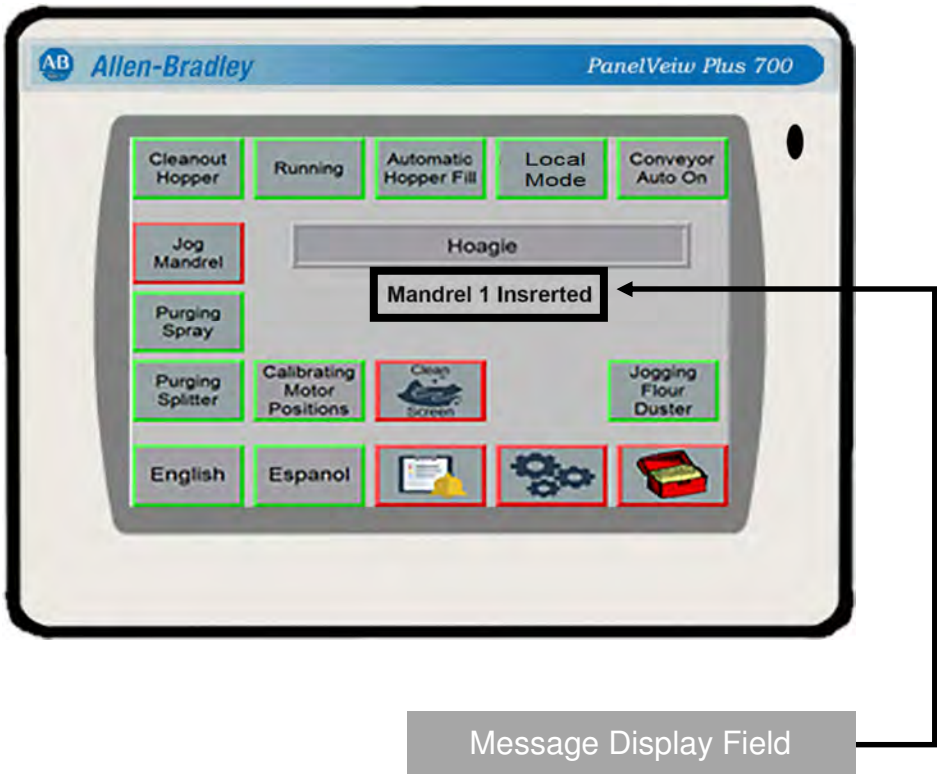
■ Main Screen



The main screen is the screen that will be available to the operator during production. It contains all of the system controls necessary to operate the unit. In the following section, we will discuss the User Interface.

Some Screen Functions will not be available on the Main Screen. Screen Functions are available depending on model, equipment, and options selected.

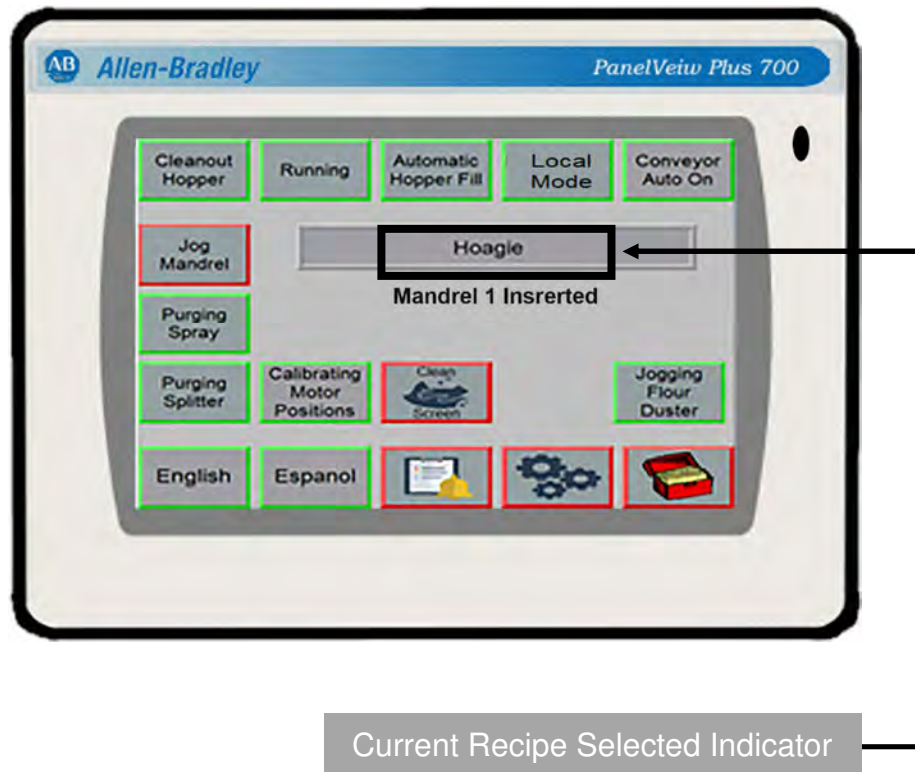
■ Main Screen - Message Display Field



DisplayField	Description
MUST INSERT MANDREL	No mandrel is present or the mandrel inserted is not used for the current recipe.
MANDREL ## INSERTED	Displays what mandrel # that is inserted into the hopper tube.

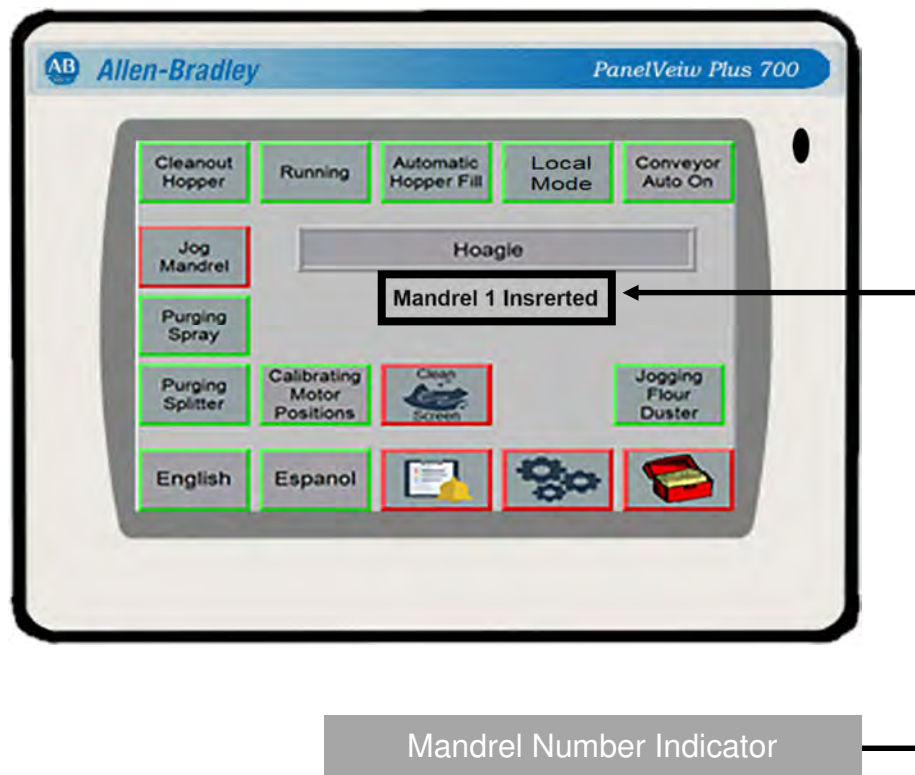
The Message Display Field will alert the operator of conditions that may prevent the unit from going into RUN mode.

■ Main Screen – Current Recipe



The Current Recipe Selected Indicator will display the variety that is currently loaded for the Topper. All adjustments for the Topper have been performed accordingly to the setup parameters entered for that variety and the unit is ready to operate.

■ Main Screen – Mandrel Indicator



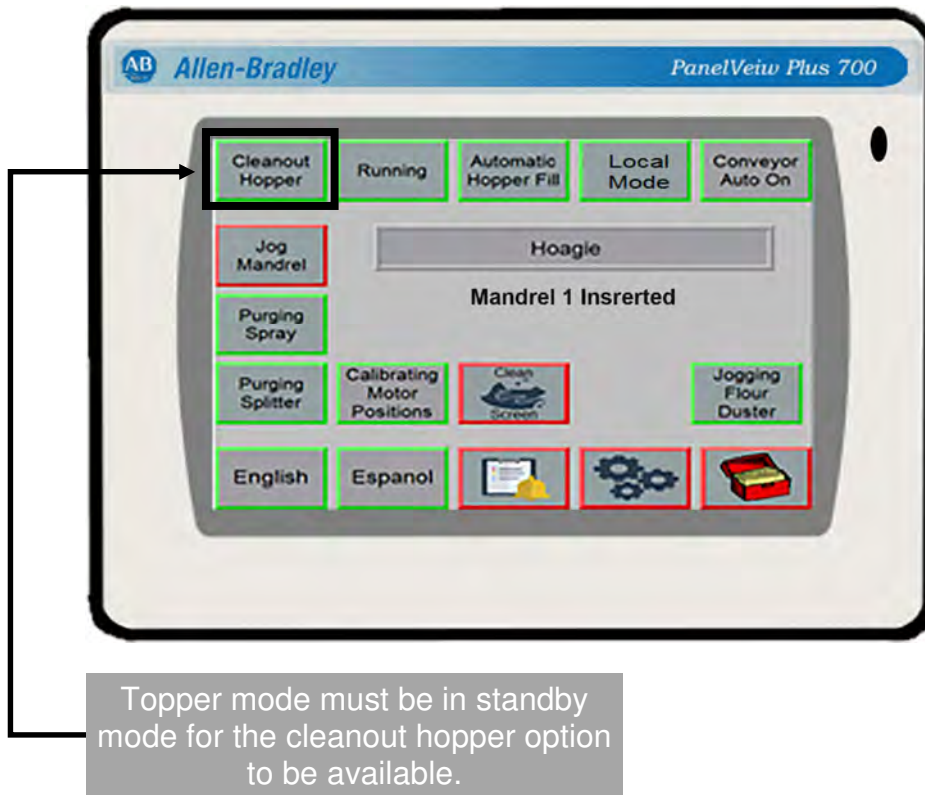
The Smart Seeder features a Mandrel Recognition System (MRS). The system automatically detects the mandrel that is inserted into the unit. This provides the correct setup parameters for the variety chosen and prevents an incorrect mandrel from being inserted inadvertently.

The Mandrel Number Indicator displays the number of the mandrel currently inserted into the unit. If there is not a Mandrel inserted NONE, will be displayed.

If the mandrel number is blinking with a red number, this indicates that the mandrel override option has been activated and the variety selection display may not be using the proper mandrel.

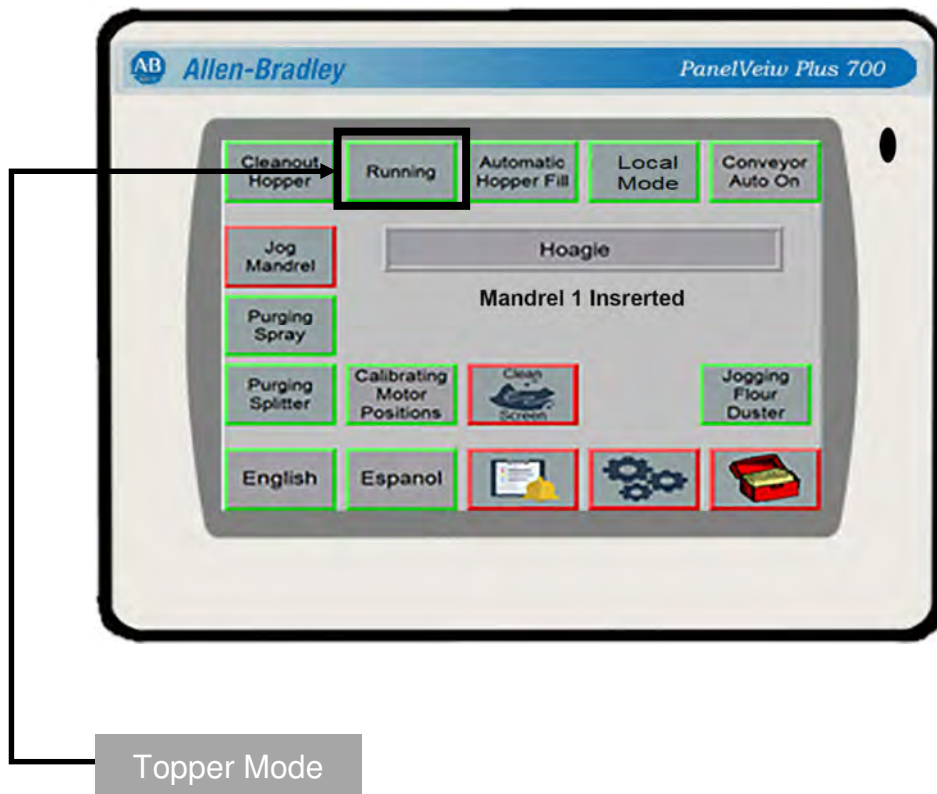
Hopper Indicator	Description
Mandrel # is inserted	Shows what Mandrel is in the hopper tube.
Insert Mandrel #	Allows the operator to know which mandrel needs to be inserted for the selected recipe.

■ Main Screen – Cleanout Hopper



At the end of a production run, or if there is a changeover, the operator may need to empty out the hopper of any toppings. Place the Topper Mode into Standby Mode and press the Cleanout Hopper button to advance to the Hopper Cleanout Screen.

■ Main Screen – Topper Mode



There are two modes for the unit, Standby and Run.

Touch the button to toggle the status.

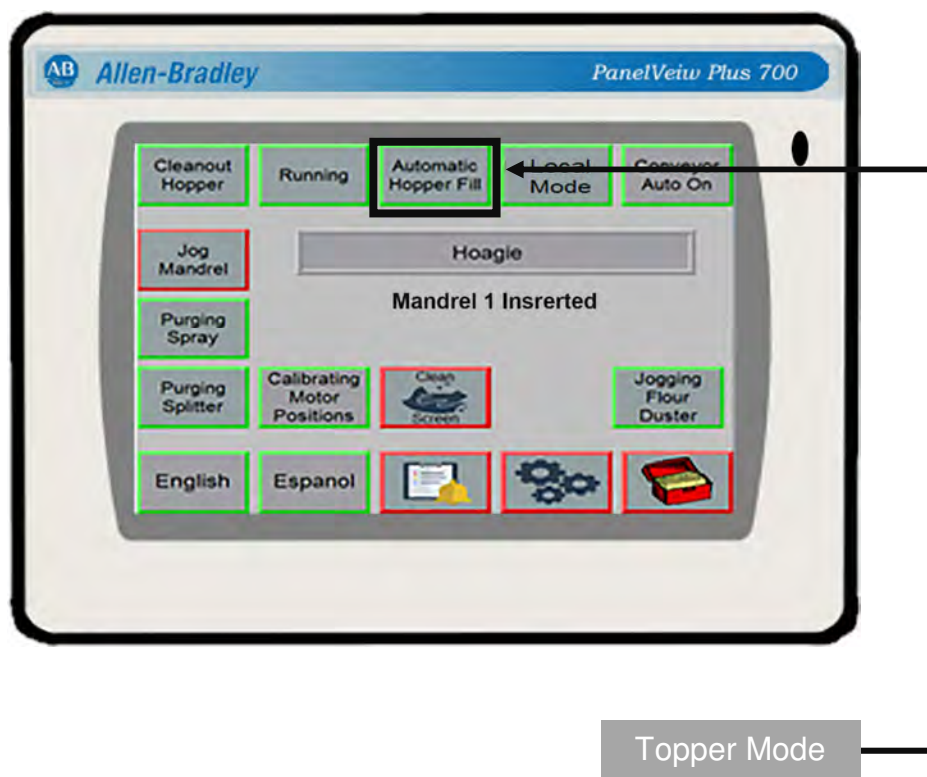
Standby Mode: When the unit is in this status, topping and water will NOT be applied.

Run Mode: When the unit is in this status, the unit will detect pans and dispense product.

The Topper must be in RUN mode for the Water Spray or Water Split to be operational.

All settings may be accessed and modified in both "Run" and "Running" modes.

■ Main Screen – Auto Hopper Fill (Optional)



Press the “Automatic Hopper Fill” button on the Main Run screen to enable or disable the Auto Hopper-Fill.

The operator can turn the Auto Hopper Fill ON or OFF.

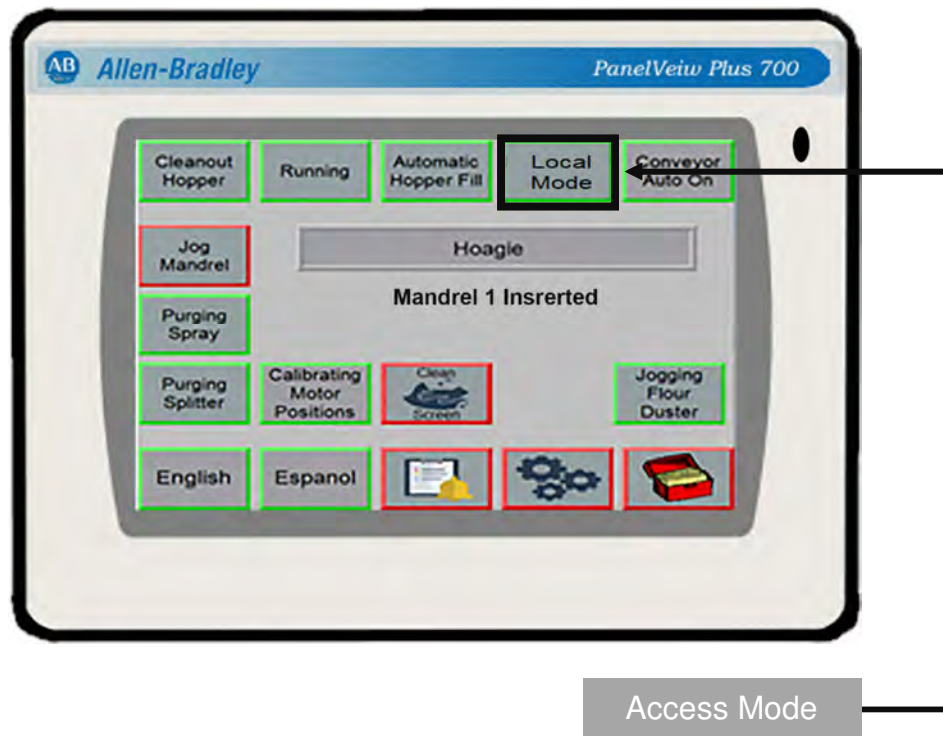
When a changeover of toppings is about to occur, it is usually a good practice to empty as much of the hopper as possible. This will make the changeover process easier as there will not be as much topping to remove from the hopper in preparation of the new toppings.

The operator can minimize the amount of topping in the hopper by turning the Auto Hopper Fill off and running the remaining topping out.

Many variables will determine the amount of product that a hopper will be able to top once the Auto Hopper Fill is deactivated. Over time, a good operator will become very familiar with the time needed to finish out a particular production run and precisely know when to disable the Auto Hopper Fill function.

Refer to page 51 to learn more about the different types of auto-fill systems Burford® has to offer.

■ Main Screen – Access Mode



The unit contains two user groups with different security privileges. Local is used primarily for operators and provides limited access to the setup features. Supervisory mode allows access to the setup features of the unit.

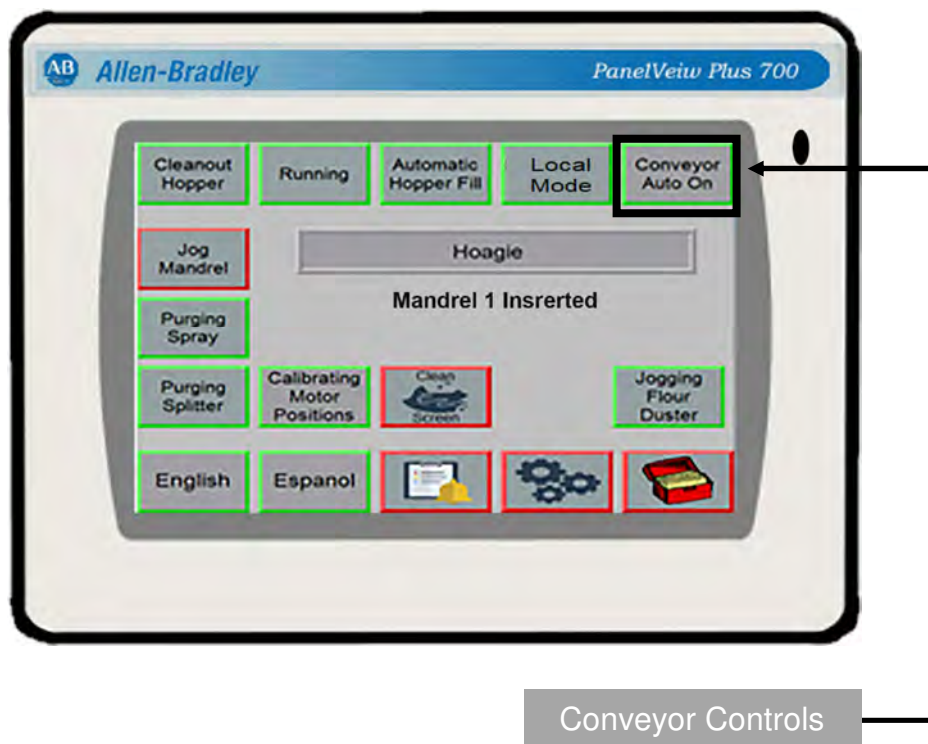
Pressing the LOCAL MODE button displays a dialog box to enter the supervisor credentials. If the correct credentials are entered, then the unit will switch into SUPERVISOR MODE.

While in LOCAL MODE, some options will not be available and the unit setup settings will not be able to be modified.

When in SUPERVISOR MODE, protected screens are still protected and must only be modified by authorized personnel.

Contact Burford for the password. Call 1-877-Burford (1-877-287-3673) or email Service@Burford.com today.

■ Main Screen - Conveyor (Optional)

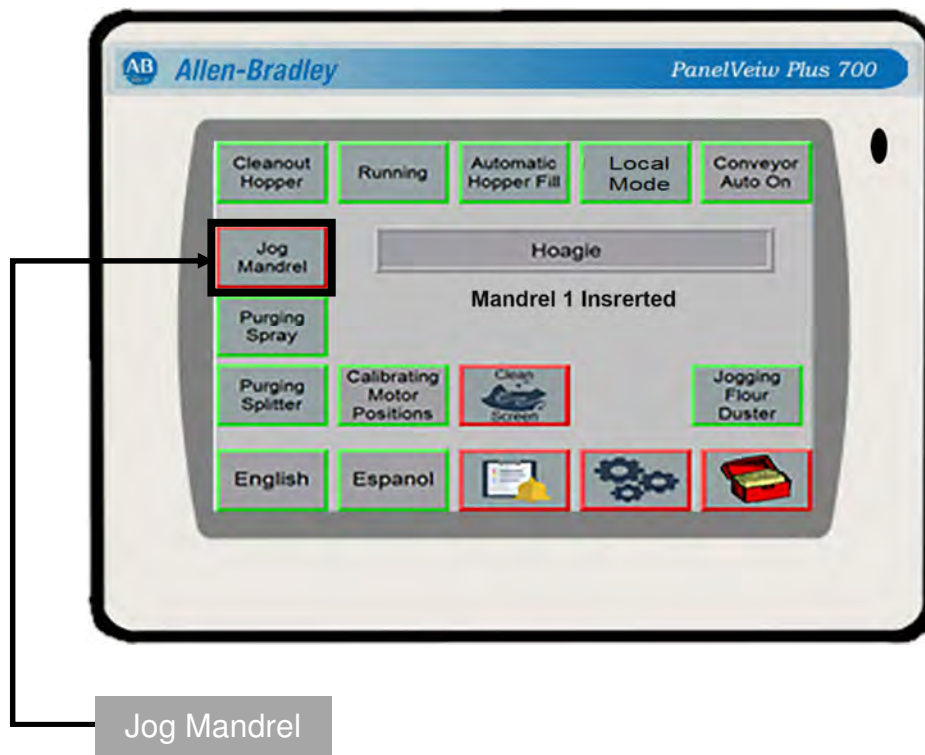


A conveyor is used to transfer product through the unit. The Burford® conveyor can be controlled either by the Topper or by an external signal. Press the  button to toggle between selections.

The status indicator is beneath the button and will alternate through the different options as the button is pressed. If “CONVEYOR AUTO” mode is chosen, after a few seconds the display will change to indicate the status of the external signal. “AUTO ON” indicates the external signal is on and the conveyor is running. “AUTO OFF” indicates that the external signal is off.

Conveyor Modes	Description
OFF	The Conveyor is disabled.
ON	The Conveyor is enabled.
AUTO	The conveyor is in remote mode and the conveyor will be dependent on an external signal to operate.
Auto Status	Description
AUTO ON	The external signal to operate the conveyor is present. The Conveyor is enabled.
AUTO OFF	The external signal to operate the conveyor is not present. The Conveyor is disabled.

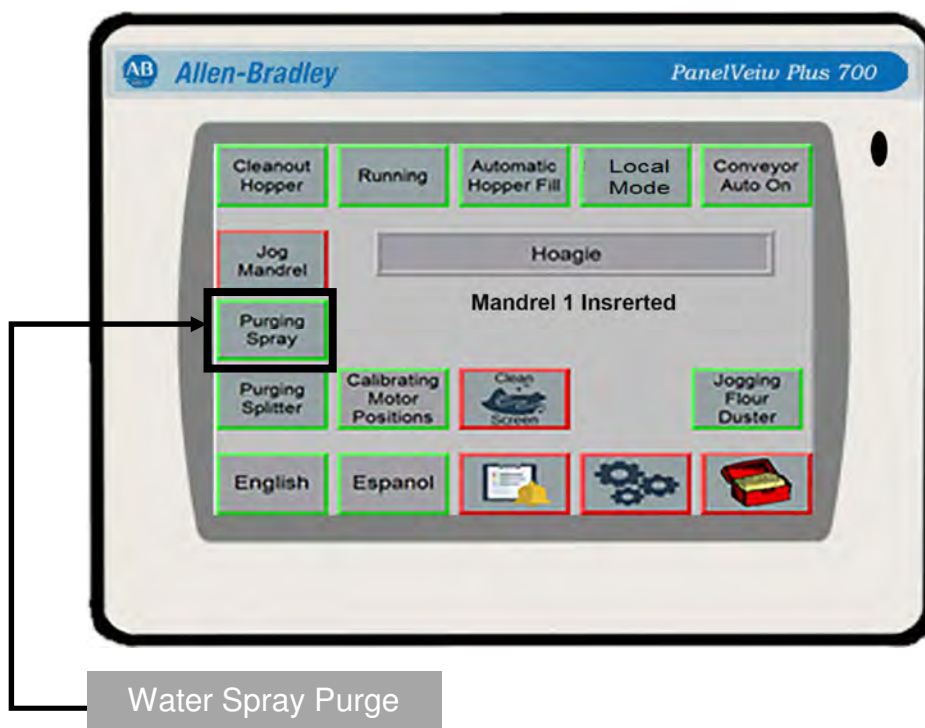
■ Main Screen - Jog Mandrel



The Jog Mandrel feature is used to load the Mandrel with toppings prior to the first pan and to verify operation.

Pressing the  button will rotate the mandrel.

■ Main Screen - Water Spray Purge



The Topper uses a spray of water applied to the dough product to aid in adhering the topping to the dough.

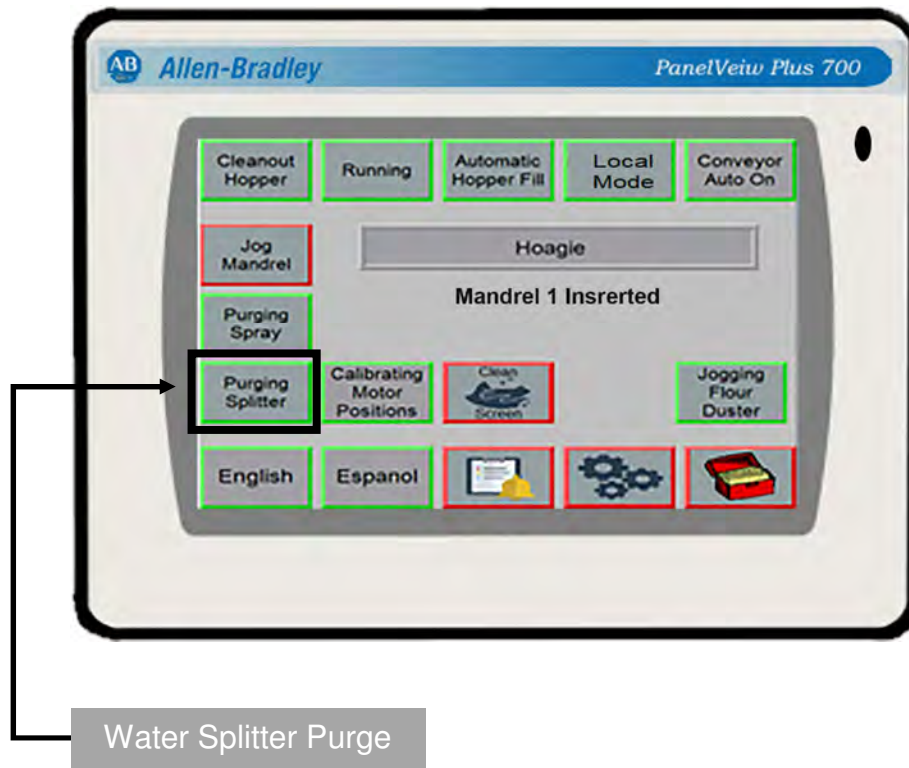
If the Water Spray is enabled for the current variety, then the operator can purge the valves.

Press the Purge Spray button to toggle the Water Spray to purge. The border around the button will turn from red to green during the purge.

Water Spray Purge	Description
PURGING SPRAY	The Water Spray valves will purge air from the water lines.
PURGE SPRAY	The Water Spray is in normal operation.

The Water Spray must be enabled for the current variety in the setup parameters for the water spray modes to be available. If the Water Spray is turned off for the current variety, the operator will not be able to purge.

■ Main Screen - Water Split Purge



The Splitter uses a jet of pressurized water applied to the dough to split the product.

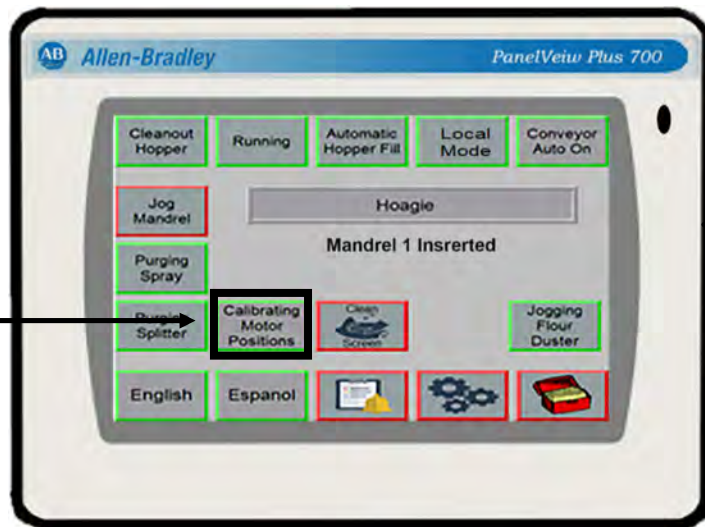
If the Water Split is enabled for the current variety then the operator can enable, disable, or choose Water Split only (this will Split the product but not apply any toppings).

Press the H20 SPLIT button to toggle the Water Split modes.

Water Spray Purge	Description
PURGING SPLITTER	The Water Split valves will purge air from the water lines.
PURGE SPLITTER	The Water Split is in normal operation.

The Water Split must be enabled for the current variety in the setup parameters for the water split modes to be available. If the Water Split is turned off for the current variety, the operator will not be able to purge.

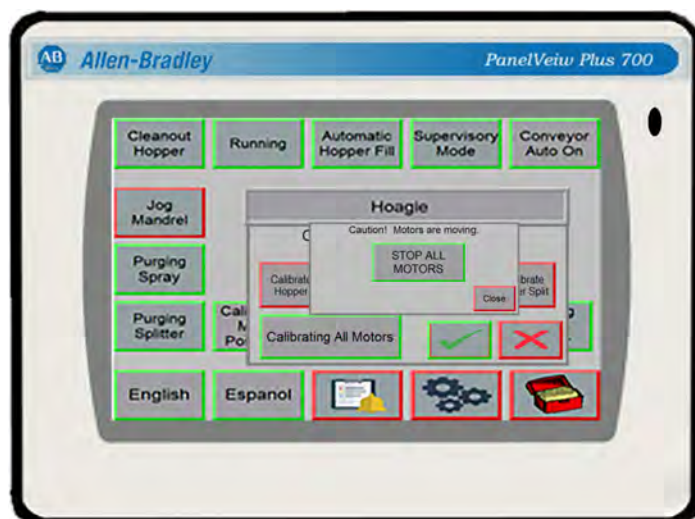
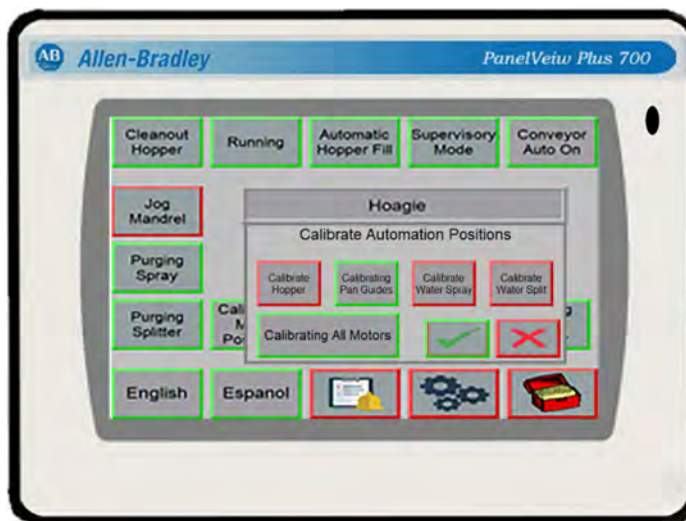
■ Main Screen – Calibrating Motor Positons



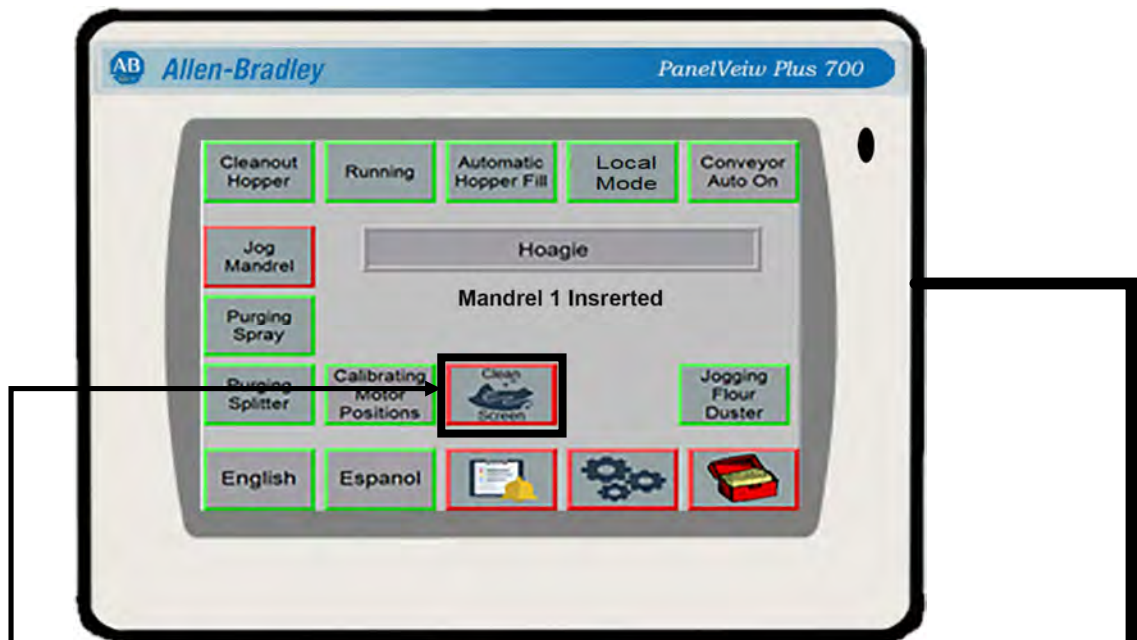
Calibrating Motors

Press **Calibrating Motor Positions** to advance to the Motor Calibration Screen.

From this screen the operator can choose to calibrate all motors or each motor individually.

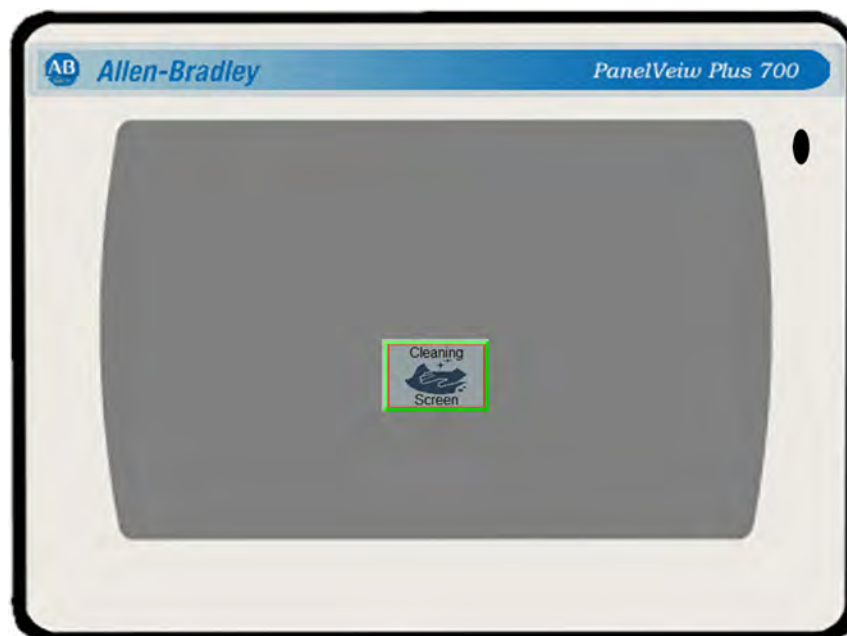


■ Main Screen – Clean Screen

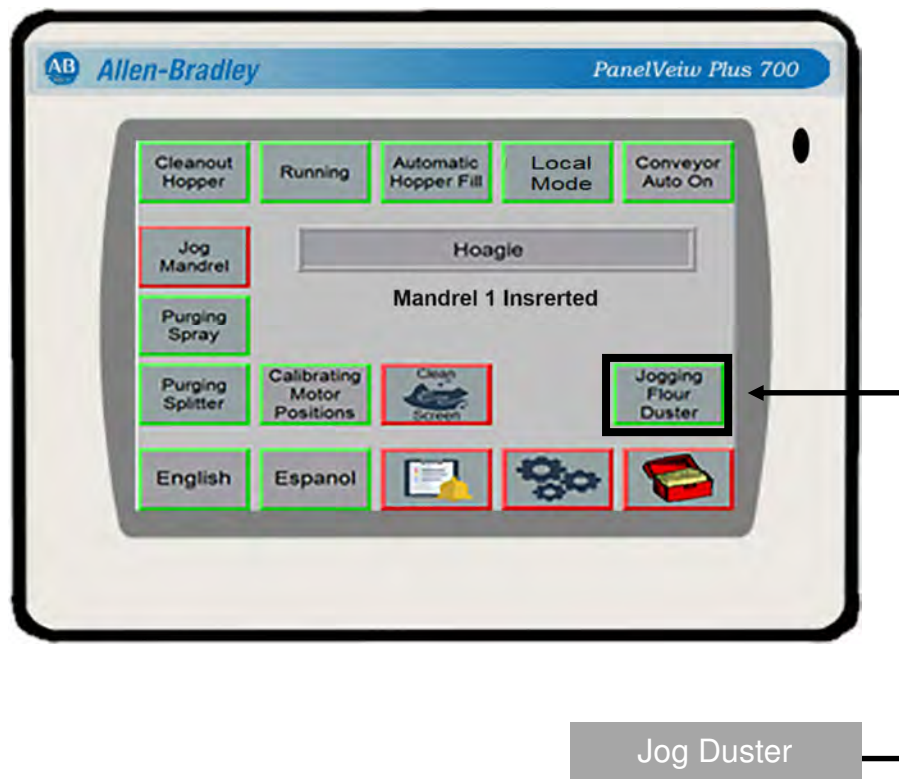


Press  to advance to the cleaning screen. This will allow the operator to clean the screen without the HMI buttons being active.

Clean Screen



■ Main Screen – Jog Flour Duster



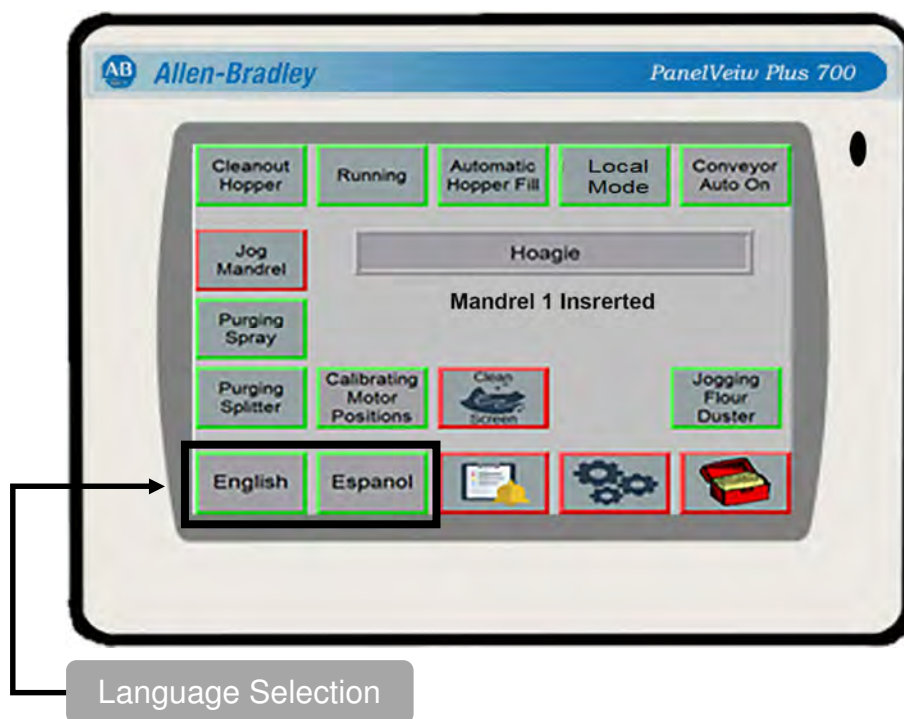
If a Flour Duster is installed and is being controlled by the Smart Seeder control system, then a button labeled  will be present on the Main Run screen.

If the Flour Duster is configured for ON mode for the variety that is loaded, then the operator will be able to control the Jog Flour Duster. Pressing the  button will toggle the mode between  and .

Pressing the  will rotate the duster brush.

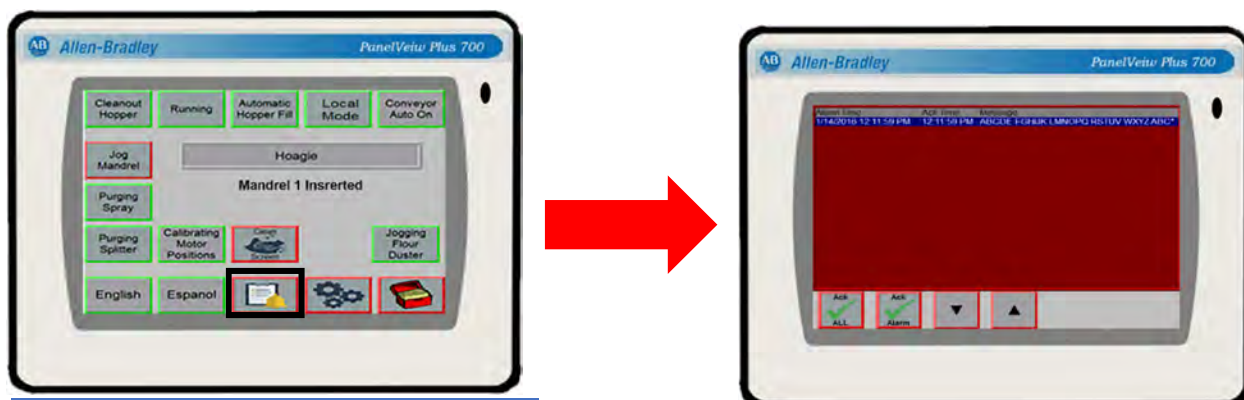
Jogging loads the brush with flour prior to the first pan.

■ Main Screen – Language Selection

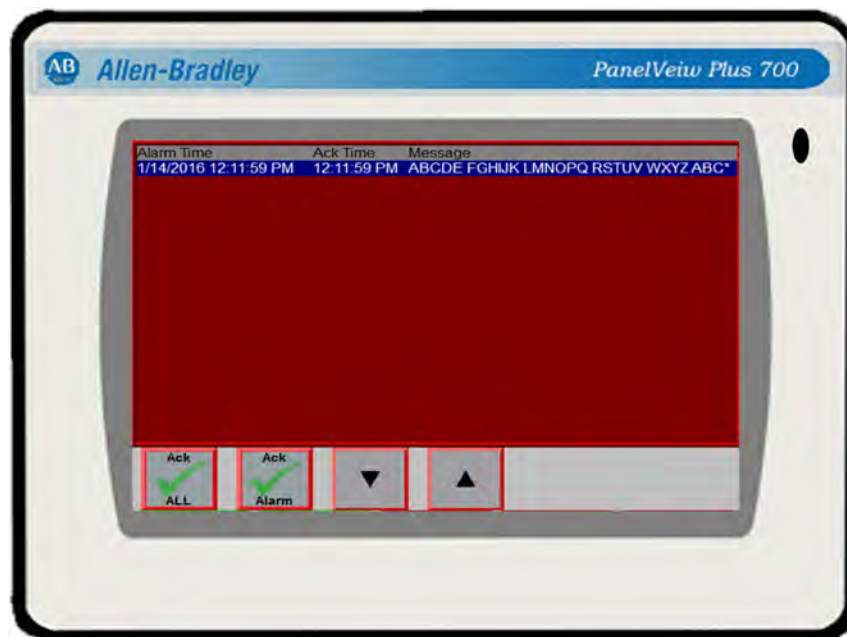


Pressing the English Espanol will translate the HMI text to the selected language.

■ Main Screen - Alarm Messages



YOU MUST BE LOGGED IN WITH SUPERVISOR PERMISSIONS TO ENTER SETUP. REFER TO PAGE 88.



Alarm Messages

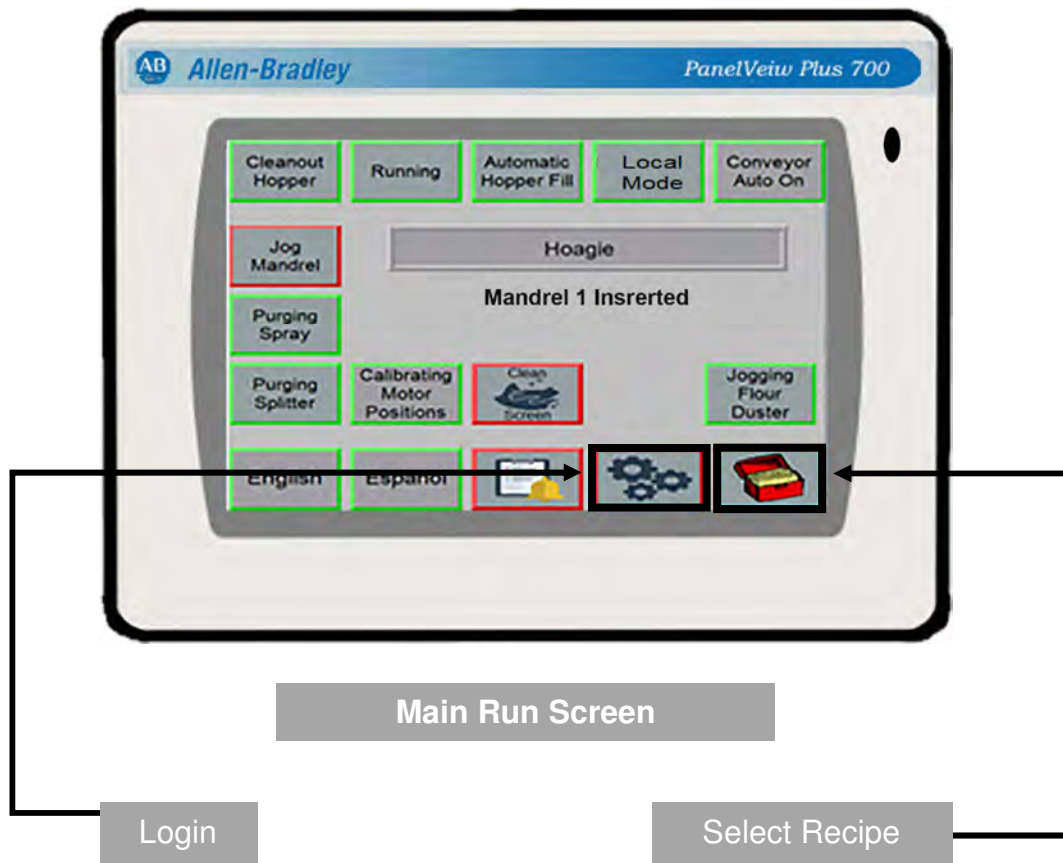
The system keeps a log of all fault conditions. The fault message will include the date and time the fault occurred with a brief description of the fault.

The most recent fault will be at the top. Press ▲ and ▼ to scroll through the list.

Press  to acknowledge the highlighted alarm or  to acknowledge all alarms.

Once you acknowledge the alarm, the previous screen will appear.

■ Main Screen - Select Recipe / Edit Setup



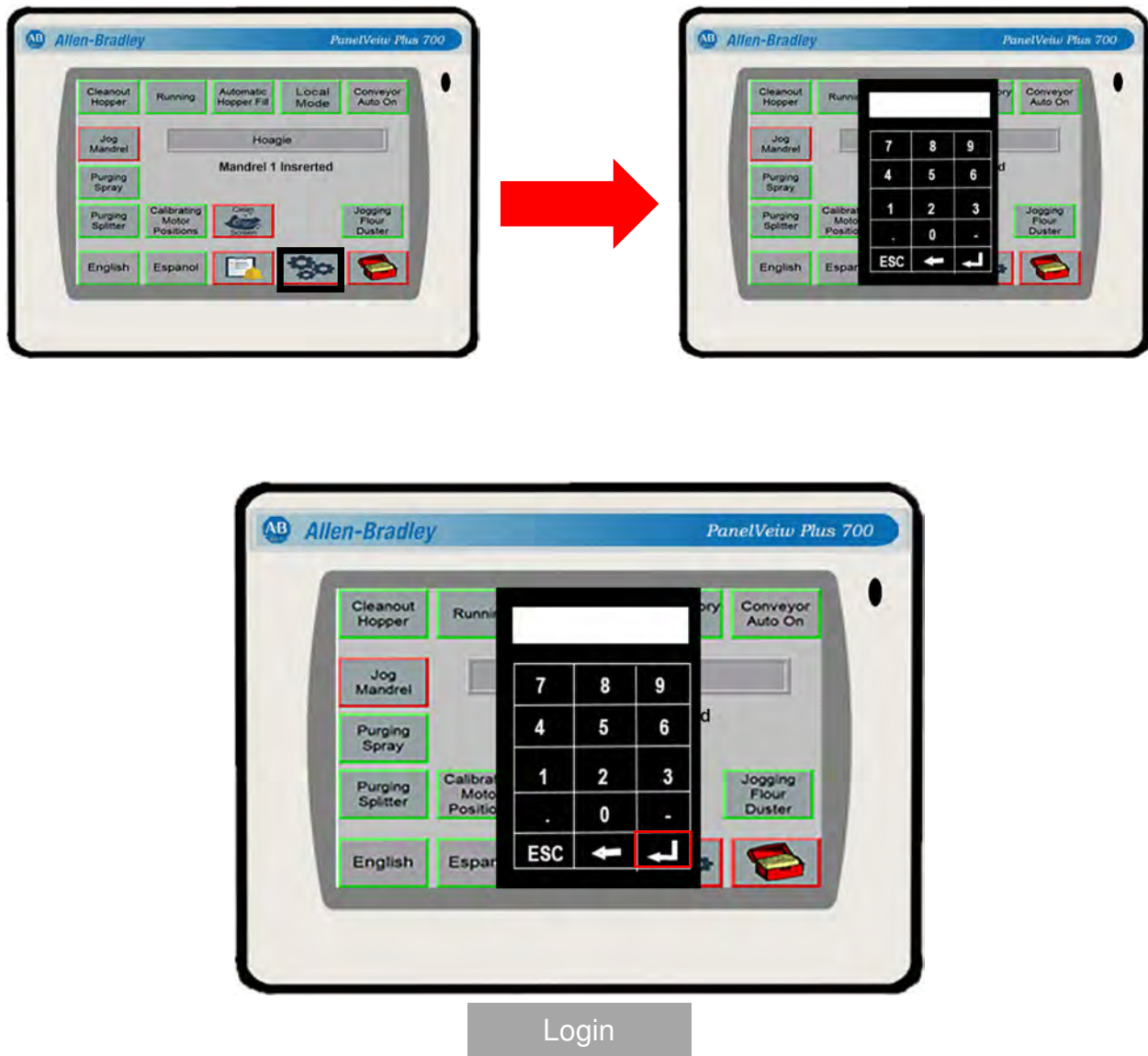
To enter EDIT SETUP, you must be logged in with supervisor credentials. Press . A dialog box will appear to enter the supervisor credentials. +

The SETUP screens are password protected and must only be modified by authorized personnel.



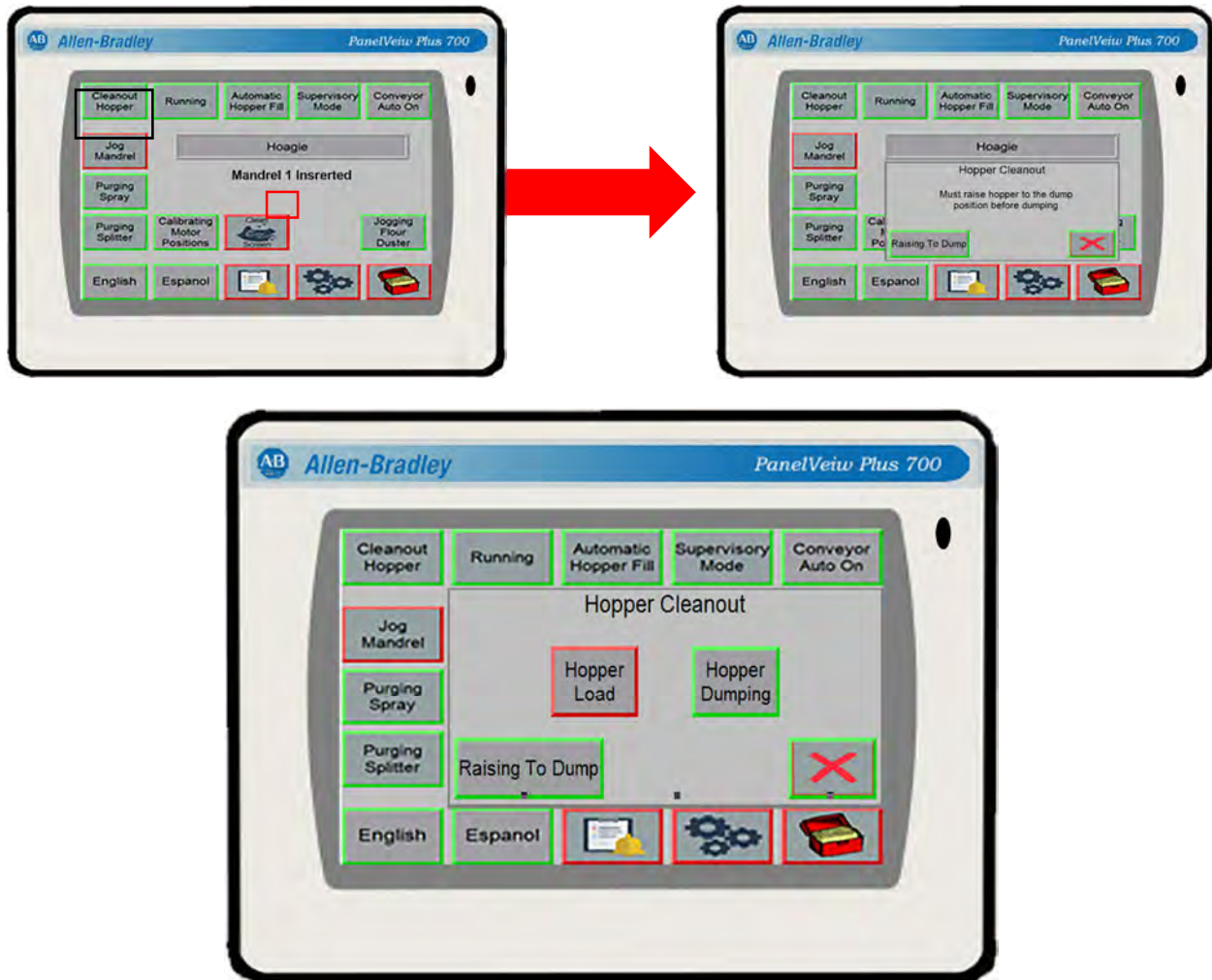
The  button advances the display to the Recipe selection screen shown on Page 113, providing a simple method to select a desired recipe.

■ Login Screen



Pressing the  button will open a dialog box. Enter the Password. Press enter to advance to Seeder Configuration page.

■ Cleanout Hopper Screen



The Cleanout Hopper screen assists the operator in removing any topping remaining in the hopper. The hopper can tilt approximately 90°.

The hopper must be at a safe height before it can tilt. Press **Raise To Dump** button to raise the hopper to the proper height.

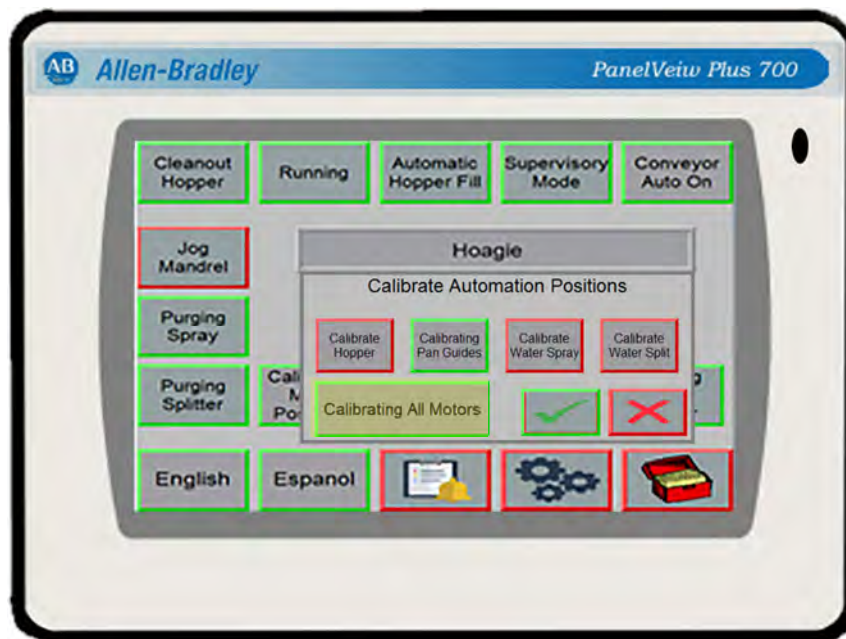
Once the hopper is at the correct height to dump, press and hold the **Hopper Dump** on the right. The button will change to **Hopper Dumping** while its dumping.

If an optional vibrator is installed on the hopper, then they will automatically vibrate. The vibrator assists in emptying the hopper of its contents.

Press the **Hopper Load** to raise the hopper back to a safe height.

Press **X** to go back to the Main Run screen.

■ Calibrate Motor Positions Screen

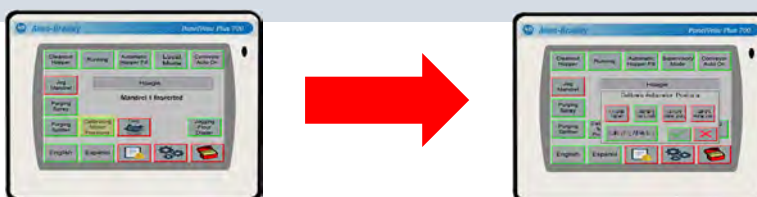


	Measures the accuracy of the Hopper's automation by moving the hopper to the limits of its top and lower positions.
	Measures the accuracy of the Pan Guides automation by moving them to the limits of its inner and outer positions.
	Measures the accuracy of the Water Spray's automation by moving the rail to the limits of its top and lower positions.
	Measures the accuracy of the Water Split's automation by moving the rail to the limits of its top and lower positions.
	Measures the accuracy of the automation by moving each motor to the limits of motion. If the button is pushed,  will appear.

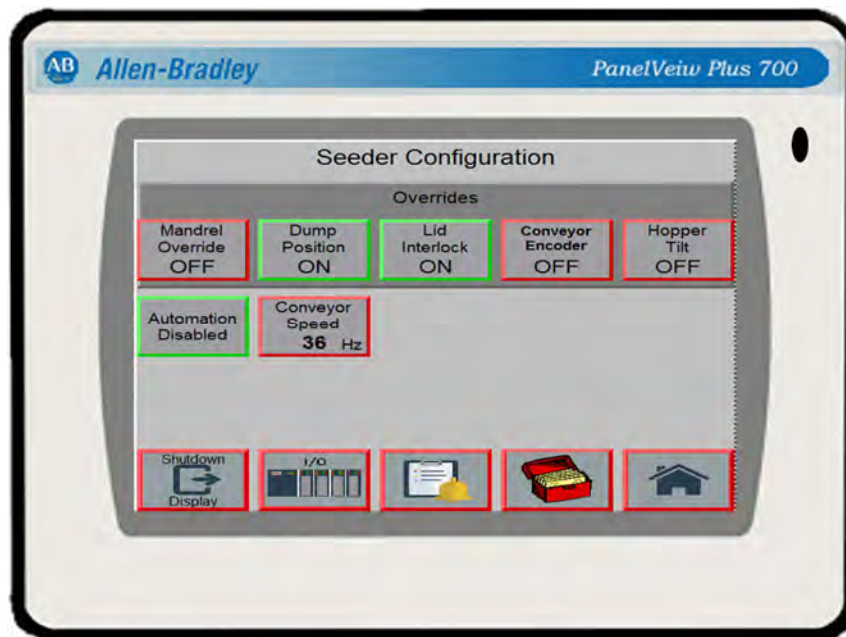
IF POWER INTERRUPTION OCCURS, IT IS RECOMMENDED TO CALIBRATE ALL MOTORS!

Press  to calibrate the selected motor. Press  to return to the Main Screen.

Navigation to the Water Calibrate Motor Positions Screen



■ Seeder Configuration Screen



Seeder Configuration screen allows you to change critical unit functions and override certain features. Use extreme caution when changing any settings.

MANDREL OVERRIDE – Bypasses the Mandrel Recognition System.

DUMP POSITION – Bypasses the Dump Position location encoder.

LID INTERLOCK – Bypasses the Hopper Lid Interlock.

CONVEYOR ENCODER – Conveyor setup.

HOPPER TILT – Bypasses hopper safeguards.

AUTOMATION DISABLED – Disables all automation motors.

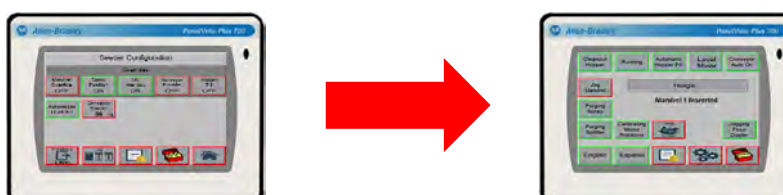
CONVEYOR SPEED – Display the Conveyor speed in hz.

SHUTDOWN DISPLAY – Turns off the display and pops up the file application screen.

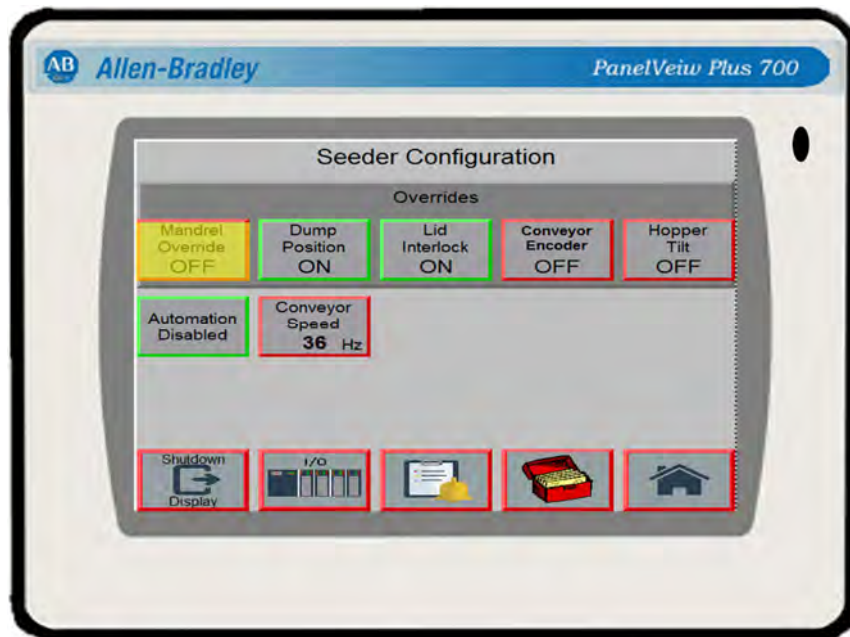
DIAGNOSTICS – Advances Operator to the Diagnostics Screen.

ALARMS – Advances the Operator the the Alarms Screen.

HOME – Takes the Operator back to the Main Screen.



■ Seeder Configuration Screen - Mandrel Override



MANDREL OVERRIDE – Bypasses the Mandrel Recognition System.

The topper uses sensors to detect which Mandrel is inserted into the unit. In rare circumstances, the sensors may fail. It may then be necessary to override the Mandrel Recognition System to run a variety. If the Mandrel Override function is turned ON, the Mandrel Recognition System will be ignored and whatever Mandrel number is in the box will be used.

Press the  to enable / disable the Mandrel Override function.

When this option is active, the mandrel number shown on the Main Run screen will be “blinking red” to indicate that the override option is active.

See next Pages for more information of the Mandrel Recognition System.

■ Mandrel

The Burford® Smart Seeder features a Mandrel Recognition System (MRS). The MRS automatically detects the inserted mandrel and only load varieties associated to that mandrel. This feature eliminates the operator from inadvertently loading the incorrect mandrel for a particular variety.

The system utilizes metal rings appropriately spaced at the end of each mandrel. Each mandrel has a unique sequence of rings. Proximity sensors located at the end of the mandrel tube detects if metal rings are present. Using a binary system, the PLC is able to detect which mandrel is inserted.

Binary System

Most of us are familiar with the decimal numbering system. That is “0” through “9”. In the decimal system, the rightest number is the One’s column. The next column to the left is the Ten’s then the Hundred’s and so forth.

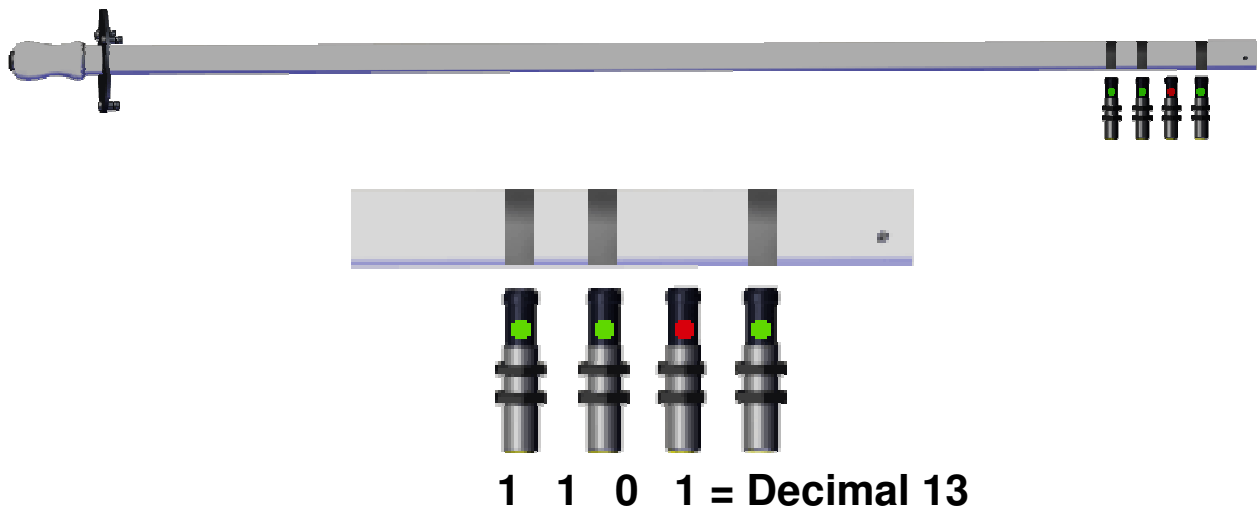
Binary is a base 2 numbering system. The only digits, or bits, are “1” and “0”. The rightest column is the 1’s column. The next column to the left is the 2’s then the 4’s, 8’s and so forth, doubling each time.

To convert a Binary number to decimal you add all of 1’s in their respective column together. For example, Binary 0100 shows that there is a “1” in the 4’s column. 0100 is the decimal equivalent of 4. Binary 0101 shows that there is “1” in the 4’s column and a “1” in the 1’s column. We add 4 + 1 to get the decimal equivalent of 5. Binary 0111 shows that there is “1” in the 4’s column, a “1” in the 2’s column, and a “1” in the 1’s column. We add 4+2+1 to get the decimal equivalent of 7. The table below lists the Binary numbers for 0 through 15.

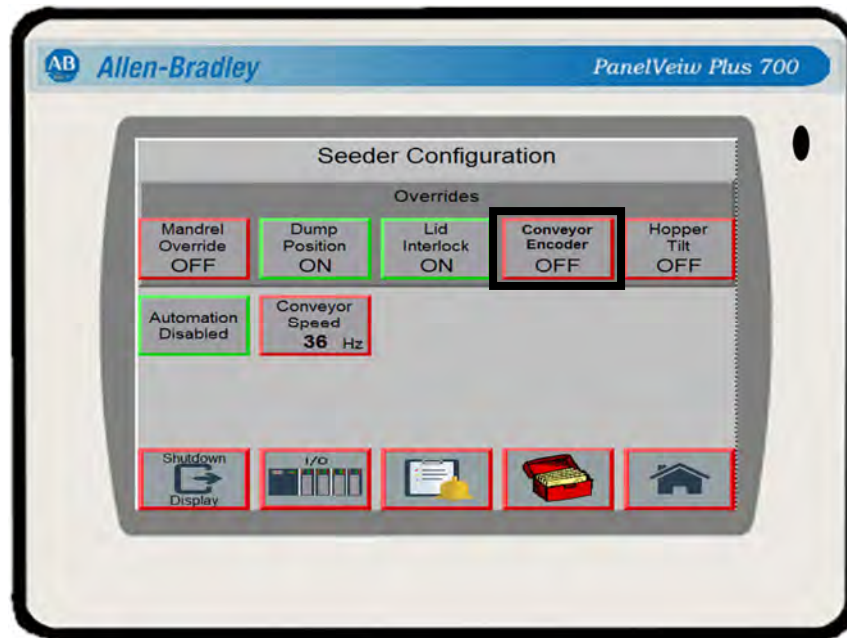
Binary Number				
8	4	2	1	Decimal
0	0	0	0	0
0	0	0	1	1
0	0	1	0	2
0	0	1	1	3
0	1	0	0	4
0	1	0	1	5
0	1	1	0	6
0	1	1	1	7
1	0	0	0	8
1	0	0	1	9
1	0	1	0	10
1	0	1	1	11
1	1	0	0	12
1	1	0	1	13
1	1	1	0	14
1	1	1	1	15

■ Mandrel Recognition System, continued

When the mandrel is inserted, certain proximity sensors will be energized dependent if a metal ring is present at the sensor's location. In the illustration below, the proximity sensors would send the binary number 1101 to the PLC. The PLC detecting that mandrel 13 has been inserted will make available to the operator the varieties that are configured for that mandrel only.



■ Seeder Configuration Screen - Hopper Overrides



The hopper has many sensors. These sensors detect the angle, height, and lid position of the hopper. In rare circumstances, the sensors may fail. It may then be necessary to override the hopper position sensors to run a variety.



Press the toggle switch ON or OFF to enable / disable the Hopper Lid Interlock override. With this enabled, you may run the unit regardless of the hopper lid position.



Press the toggle switch ON or OFF to enable / disable the Dump Position override. With this enabled, you may dump the hopper regardless of the hopper height.

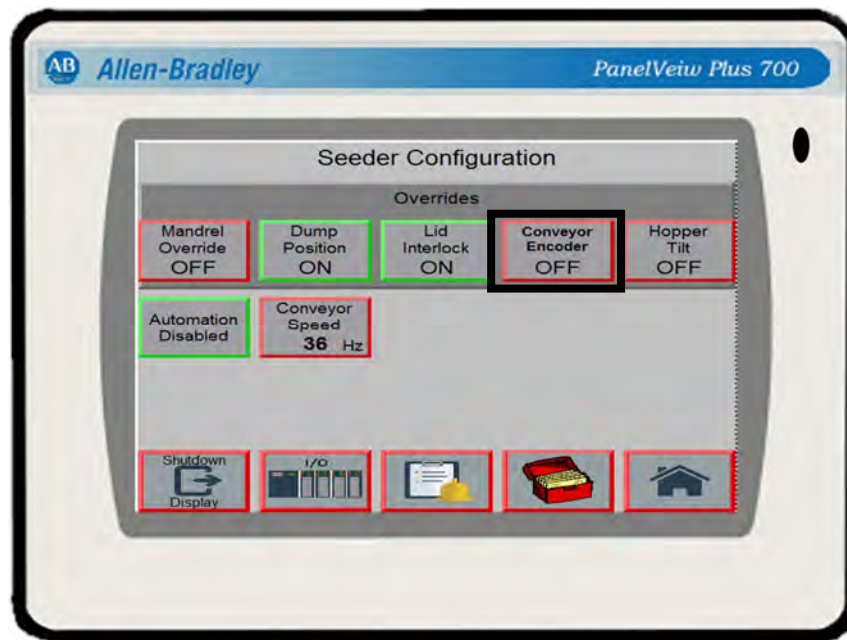


Press the toggle switch ON or OFF to enable / disable the Hopper Tilt override. With this enabled, you may run the hopper regardless of the hopper angle.

If the hopper is dumped too low, damage may occur to the unit. If the Hopper is angled too low, the application of toppings may be undesirable.

The unit will continue to run even if the hopper lid is open. Mechanical movement in the hopper can cause serious bodily injury.

■ Seeder Configuration Screen - Conveyor Encoder



The CONVEYOR ENCODER is used to calculate the speed of the conveyor. For the Smart Seeder to function properly, we must know the distance that the conveyor is traveling at any time. This is accomplished with an encoder linked to the conveyor shaft. We need to know distance of travel per encoder count.

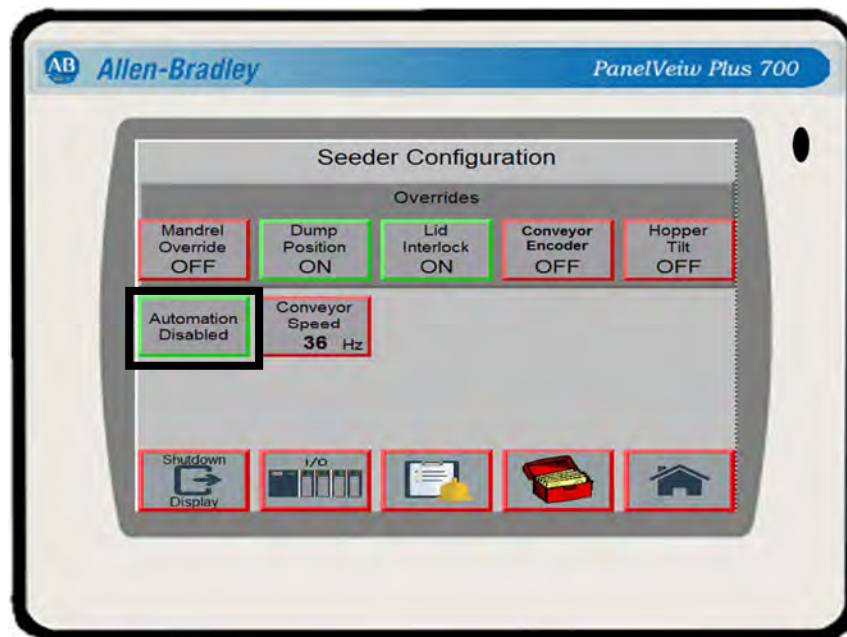
Using the topper's pan sensor and the known length of a target, a pan, we can calculate a scaling factor that can be used to ensure that 100 encoder counts equal one inch of conveyor travel.

SCALING

1. Turn ON the conveyor (page 89).
2. Verify that the speed is set to the speed that the varieties will be running in production. Locate a pan and measure the length.
3. Enter the length in a decimal format, for example, $22 \frac{1}{2}$ " would be 22.5.
4. Press calculate.
5. Release the pan upstream of the topper and allow it to travel through the unit, downstream of the topper.
6. The CURRENT SCALING FACTOR value will update.

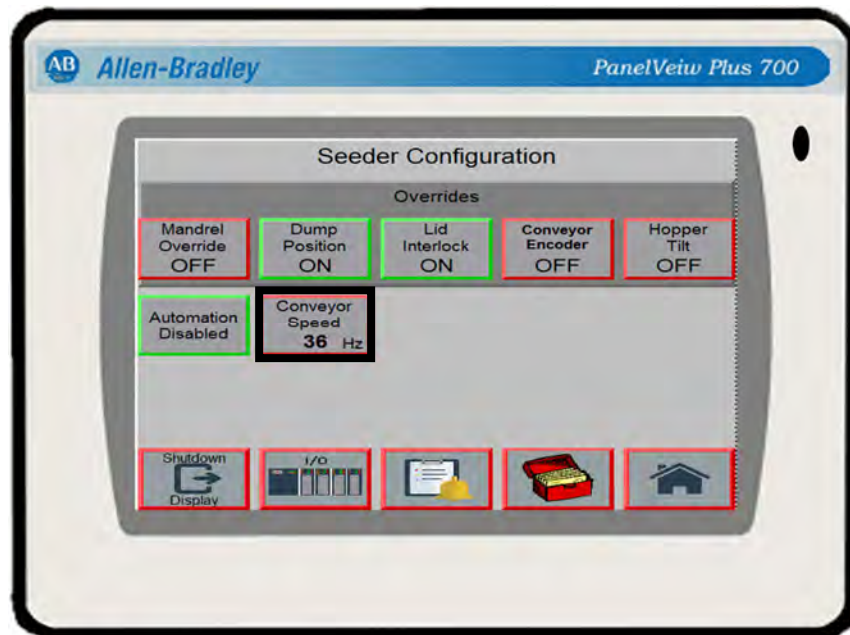
If a Burford® conveyor shipped with the unit, then the scaling was set from the factory. Scaling will need to be performed at installation if the topper is mounted on customer's conveyor. WHEN SCALING IS PERFORMED, EACH VARIETY WILL NEED TO BE RE-CONFIGURED.

■ Seeder Configuration Screen - Automation Overrides



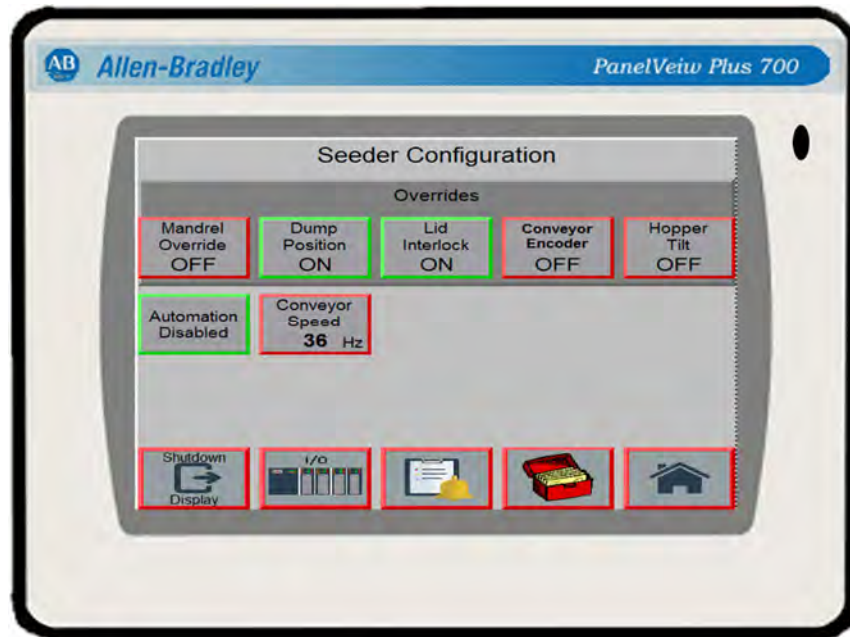
The  will disable or enable all automation motors. You can enable or disable each of the automated controls: Hopper Lift, Pan Guides, and the Spray / Split Lift.

■ Seeder Configuration Screen - Automation Overrides



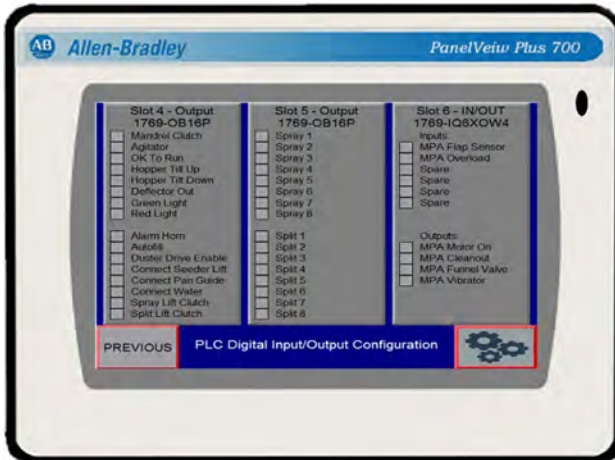
The  allows the operator to adjust and set the speed of the conveyor. The speed is measured in Hz. Use the keypad to set to the speed that the varieties will be running in production.

■ Seeder Configuration Screen - Shutdown Display



The  allows the operator to shut down the display.

■ Seeder Configuration Screen - Diagnostics



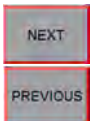
The Diagnostic Screen allows the operator to check that all sensors are communication with the PLC.

Green – indicated that the sensor is active.

Dark Green indicates that the particular sensor is energized.

Red indicates that the particular sensor is not energized.

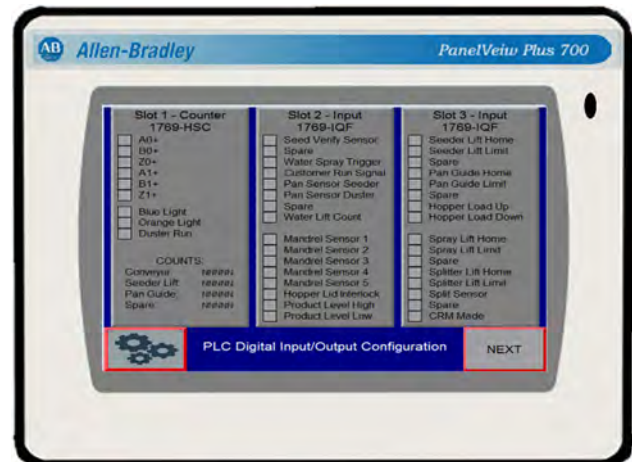
Spare will have no color in the color box.



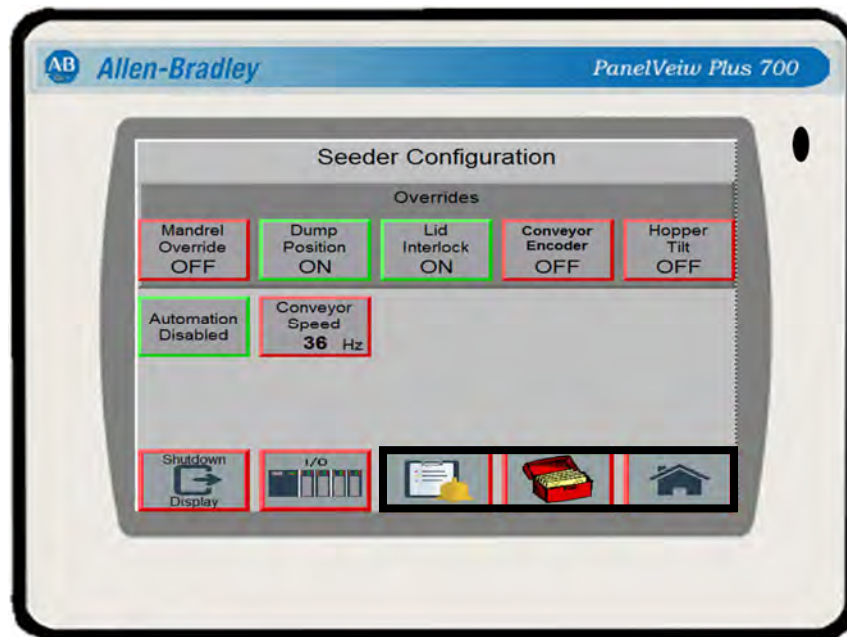
Advances to the previous or next screen.



Takes the operator back to the Seeder Configuration Screen.



■ Seeder Configuration Screen - Advance Buttons

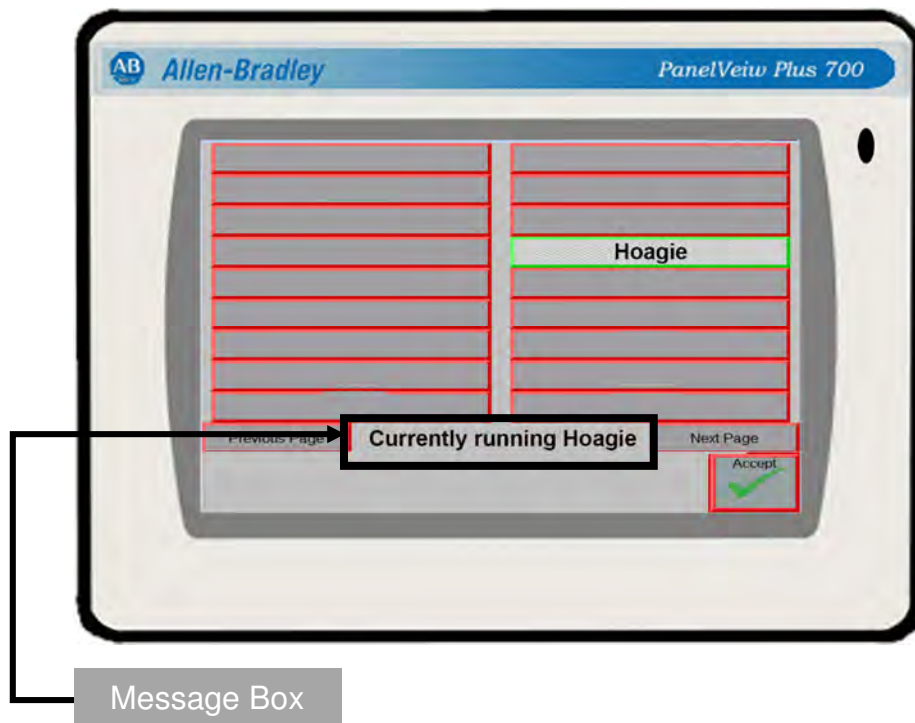


The  allows the operator to advance to the Alarm Screen.

The  allows the operator to advance to the Edit Recipe Screen.

The  allows the operator to advance to the Main Screen.

■ Select Recipe Screen



Select the recipe that you want to run. The border will turn GREEN.

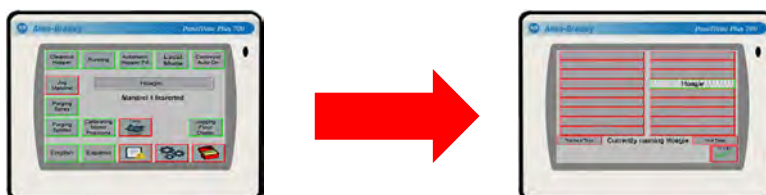
Hoagie

Verify what mandrel is used for the highlighted recipe in the message box

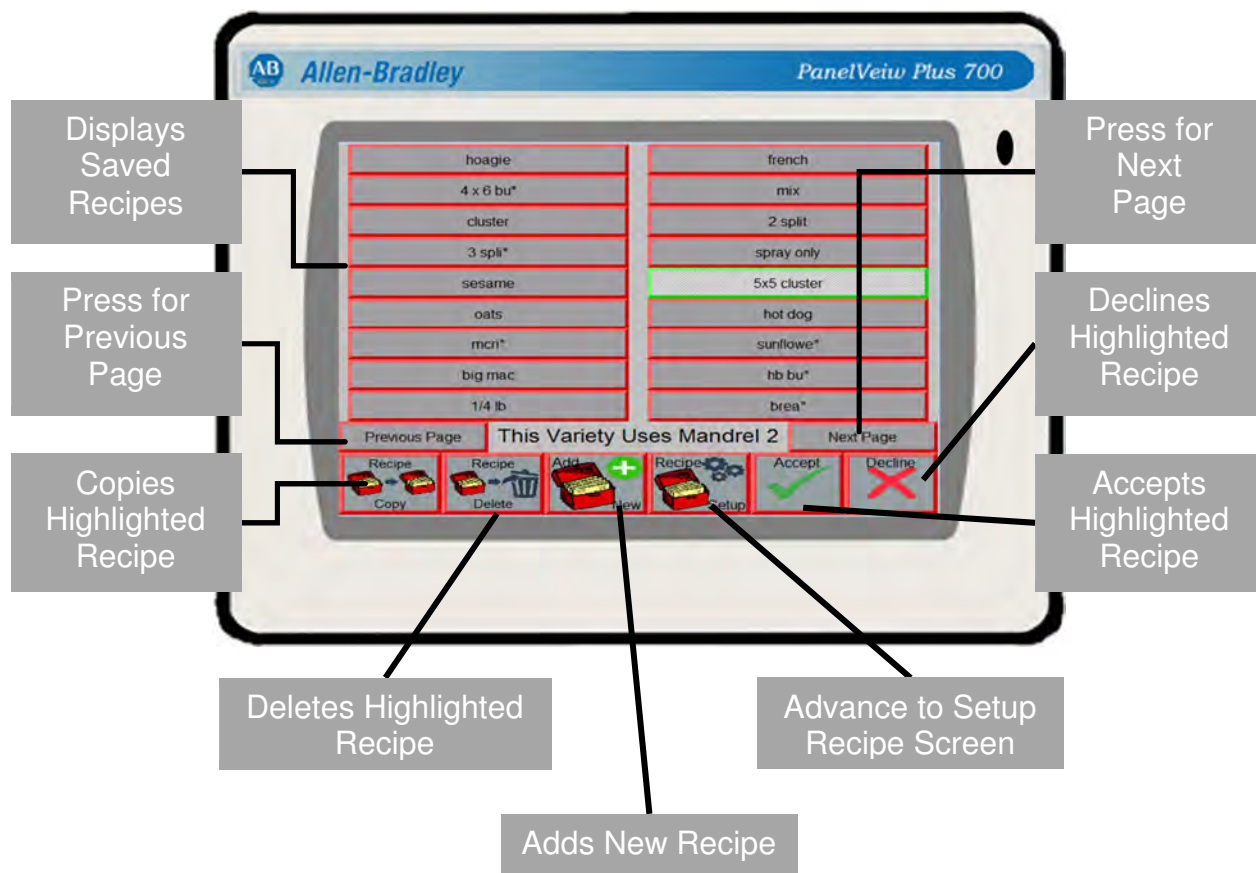
and press .

If the selected recipe requires a different mandrel than what is currently being used, then the hopper will automatically move to the dump position.

Navigation to the Recipe Select Screen



■ Recipe Edit Screen Overview



The Recipe Edit screen allows the user to make changes to, create, copy and delete recipes. The boxes at the top of the screen displays the saved recipes. An indicator at the lower center of the screen displays the current recipe. Using the PREVIOUS PAGE and NEXT PAGE allows the user to advance to other saved recipes. The RECIPE COPY button will make a copy of the highlighted recipe. To delete a recipe, highlight the recipe and press the RECIPE DELETE button and then press accept.

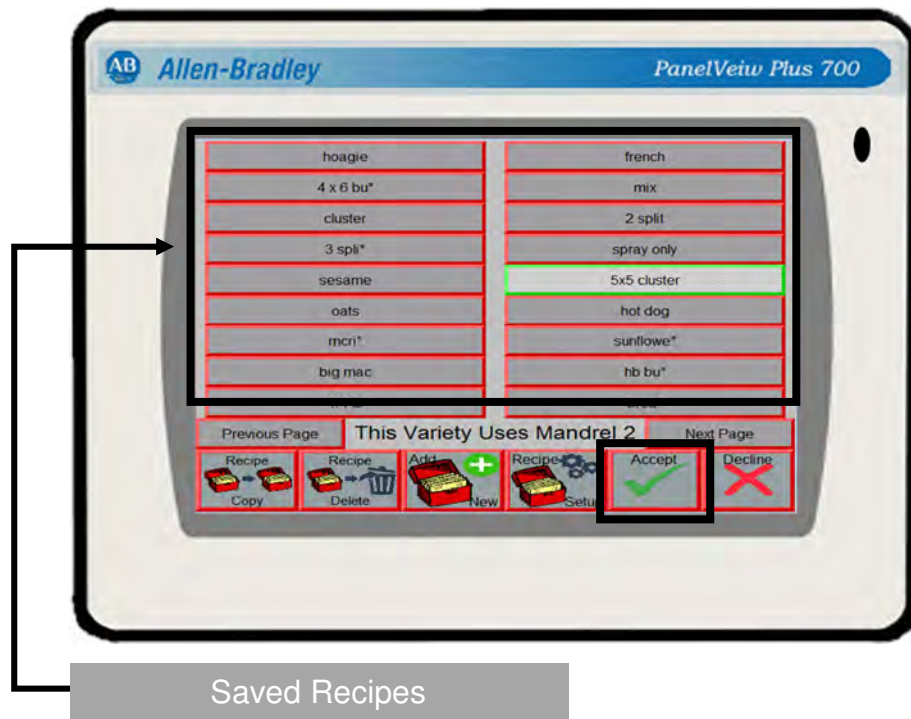
The ADD RECIPE button allows the operator to name a new recipe. After the recipe is named, the operator will push the RECIPE SETUP button to advance to the recipe configuration page.

Each recipe will be displayed in the boxes at the top of the screen. If the operator selects a recipe that is not available with the current Mandrel inserted, a dialog box will appear informing the operator of the correct Mandrel to be inserted for the recipe selected.

Once the recipe is highlighted, the operator will push the ACCEPT button. The unit will now move all of the automated adjustments to the position that was configured for that particular recipe.

Press DECLINE to return to the Main Run screen.

■ Recipe Edit Screen Setup



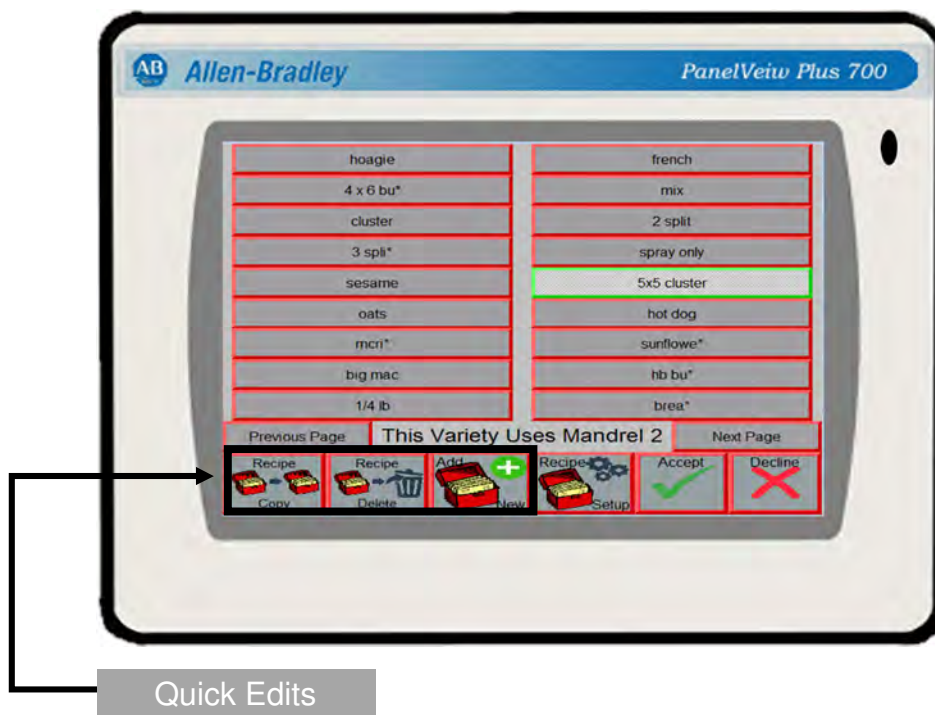
Select the recipe that you want to edit. The border will turn GREEN.

Use the editing buttons on the bottom of the screen to make changes.

The  button will appear only after the operator has highlighted a recipe and pressed an editing button. Pressing the Accept button will allow the edit to take place.



■ Recipe Edit Screen Setup



Select the recipe that you want to edit. The border will turn **GREEN**.



This button will copy the highlighted recipe as a new recipe. (example: hoagie will become hoagie copy).



This button will delete the highlighted recipe.

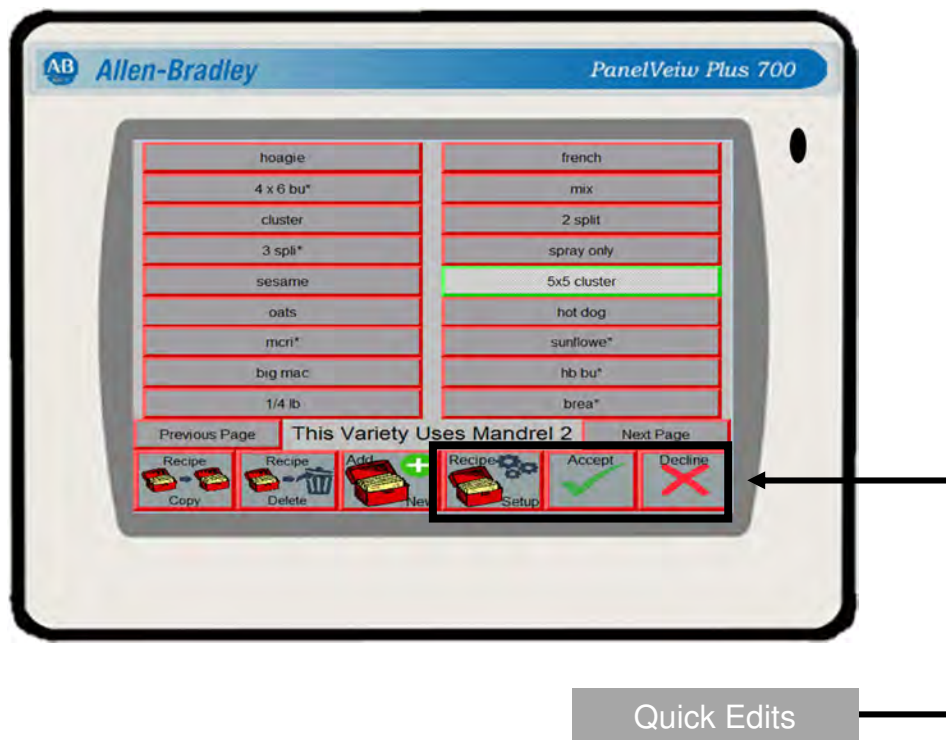


This button will add a new recipe named *new variety* to the recipe list. The name can be changed on the Setup Recipe Screen.

(example: new variety).

Edits will not go into effect until  is pressed.

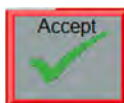
■ Recipe Edit Screen Setup



Select the recipe that you want to edit. The border will turn **GREEN**.



This button allows the operator to setup the highlighted recipe by advancing to the Recipe Setup screen.



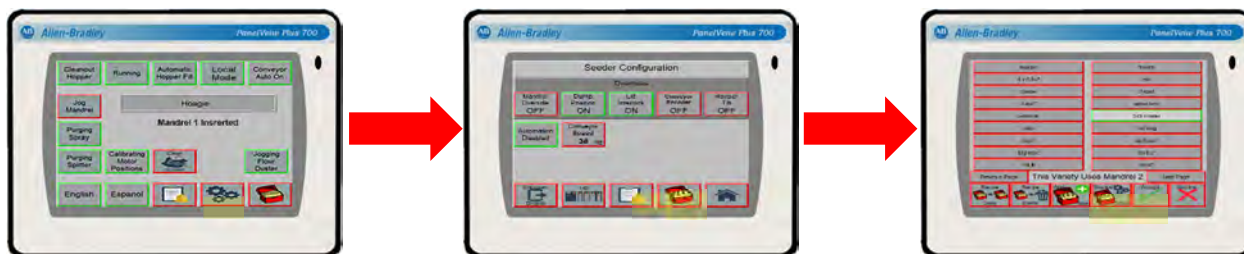
This button will accept the edit button selected and will advance to the next action.



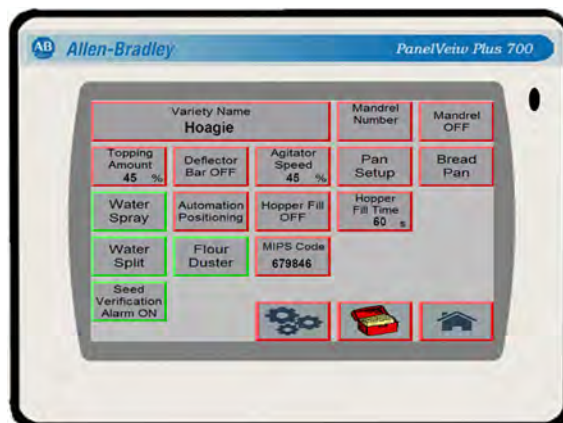
This button takes the operator to the Main Screen when pushed when no recipes are selected. If a recipe is selected and the edit button is pushed it will allow the operator to decline the edit.

Edits will not go into effect until  is pressed.

■ Recipe Setup Screen Overview



YOU MUST BE LOGGED IN WITH SUPERVISOR PERMISSIONS
TO ENTER SETUP. REFER TO PAGE 99



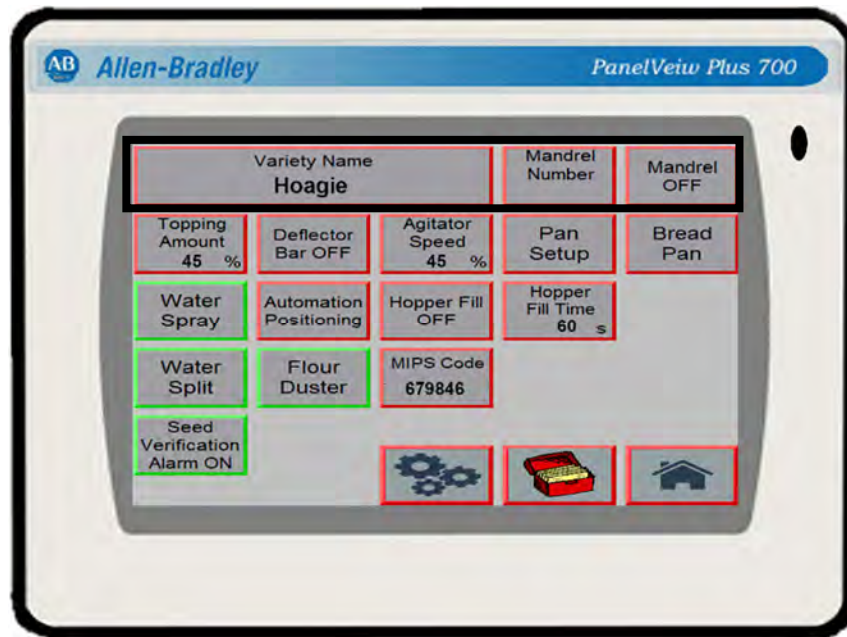
Recipe Setup Screen

Select a recipe. Press  and then  to advance to the Configure Recipe screen.

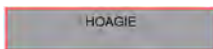
The Setup screen provides access to all of the configuration options for the recipe.

Press  to go back to the Recipe Edit Screen.

■ Recipe Setup Screen



The Recipe Setup screen is the first screen that you will encounter in the setup menus. It identifies the variety that will be modified. Verify it is the variety to modify. Changes made will only modify the variety loaded.



Pressing the box with the variety name will display a keyboard to modify the name.



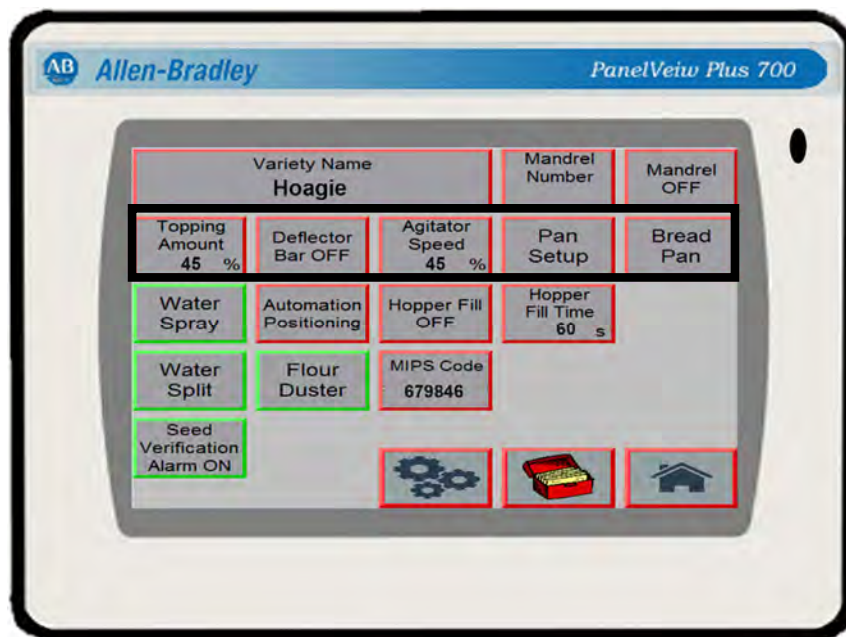
Indicates which mandrel will be used for the recipe.



Allows operator to turn mandrel OFF, rotate Forward or Reverse.

Any changes made on any setup screen will take effect to the current variety selected and will be automatically saved to the current mandrel in the Topper. Verify that you are on the correct variety prior to making any changes.

■ Recipe Setup Screen, continued



The Recipe Setup screen is the first screen that you will encounter in the setup menus. It identifies the variety that will be modified. Verify it is the variety to modify. Changes made will only modify the variety loaded.

Topping Amount Allows the operator to control the amount of topping by adjusting the speed of the mandrel, (Range 0 - 100).

Deflector Bar OFF Toggle the Deflector bar position between OFF and ON.

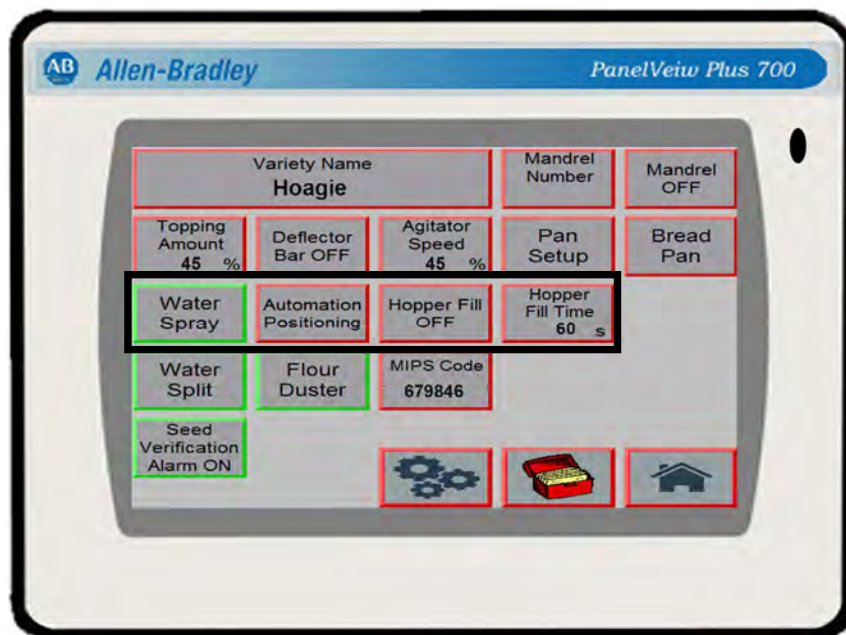
Agitator Speed Allows operator to adjust the speed of the agitator, (Range 0 - 100).

Pan Setup Advances to the pan dimension screen for bun pans.

Bread Pan Toggles between Bread Pan and Bun Pan. Select this prior to Pan Setup.

Any changes made on any setup screen will take effect to the current variety selected and will be automatically saved to the current mandrel in the Topper. Verify that you are on the correct variety prior to making any changes.

■ Recipe Setup Screen, continued



The Recipe Setup screen is the first screen that you will encounter in the setup menus. It identifies the variety that will be modified. Verify it is the variety to modify. Changes made will only modify the variety loaded.



Advances to the Water Spray setup screen.



Advances to the Automation Positioning setup screen.



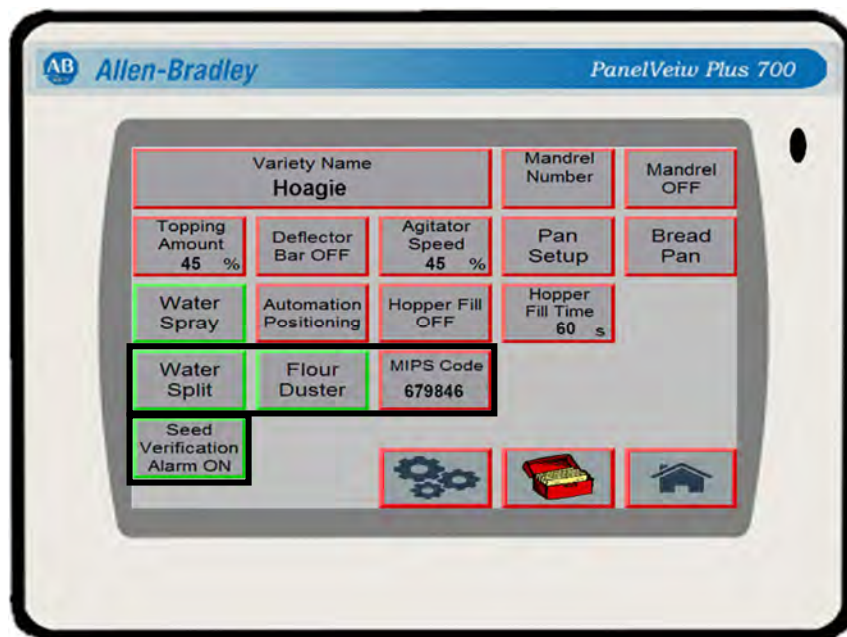
Toggles the Hopper Fill OFF and ON.



Allows the operator to set the Hopper Fill time, (Range 5 - 60).

Any changes made on any setup screen will take effect to the current variety selected and will be automatically saved to the current mandrel in the Topper. Verify that you are on the correct variety prior to making any changes.

■ Recipe Setup Screen, continued

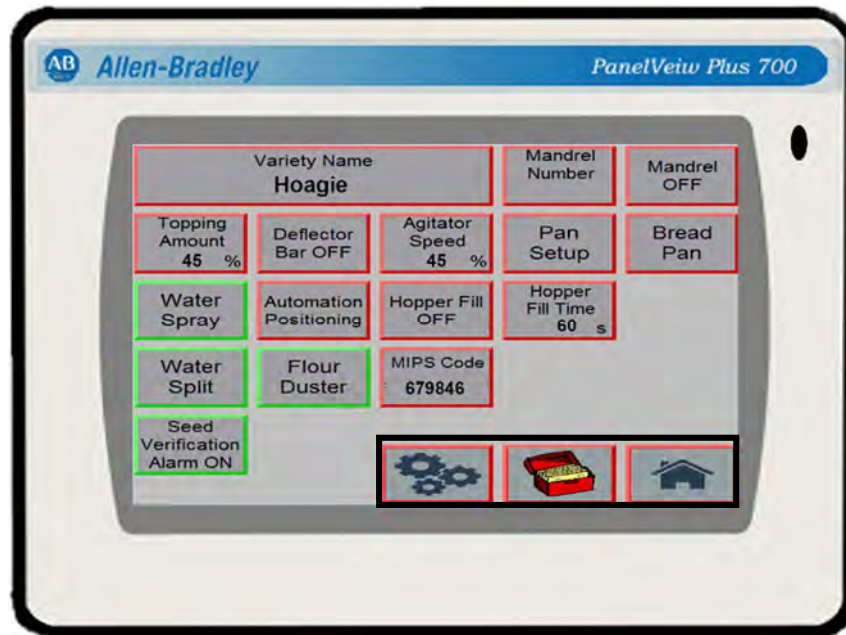


The Recipe Setup screen is the first screen that you will encounter in the setup menus. It identifies the variety that will be modified. Verify it is the variety to modify. Changes made will only modify the variety loaded.

- Water Split Advances to the Water Split setup screen.
- Flour Duster Advances to the Flour Duster setup screen.
- MIPS Code
Allows the operator to input a MIPS Code.
- Seed Verification Alarm ON Toggles the Seed Verification OFF and ON.

Any changes made on any setup screen will take effect to the current variety selected and will be automatically saved to the current mandrel in the Topper. Verify that you are on the correct variety prior to making any changes.

■ Recipe Setup Screen, continued



The Recipe Setup screen is the first screen that you will encounter in the setup menus. It identifies the variety that will be modified. Verify it is the variety to modify. Changes made will only modify the variety loaded.



Advances to the Seeder Configuration screen.



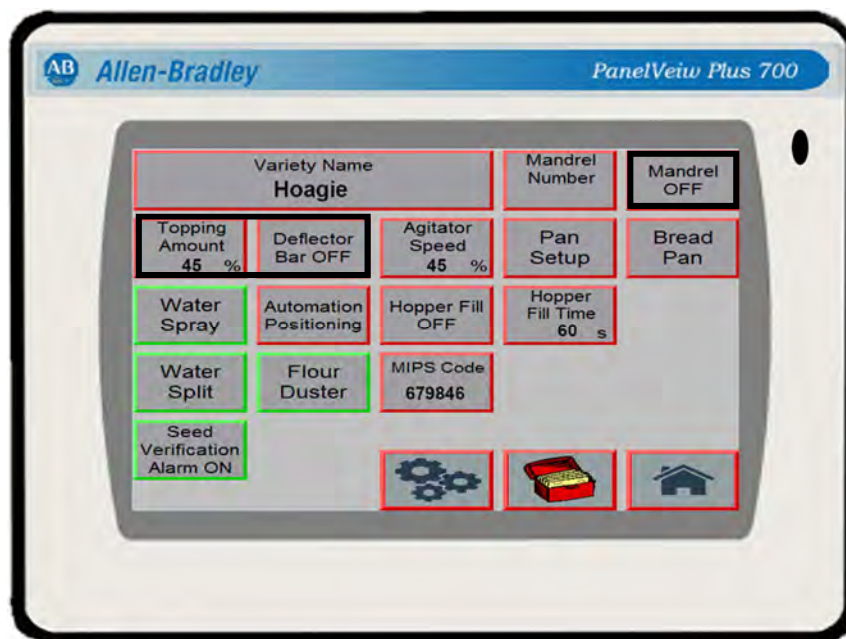
Advances to the Recipe Select screen.



Advances to the Main screen.

Any changes made on any setup screen will take effect to the current variety selected and will be automatically saved to the current mandrel in the Topper. Verify that you are on the correct variety prior to making any changes.

■ Recipe Setup Screen Application and Appearance Controls



The Application and Appearance Controls are used to modify the Mandrel speed, direction, and deflector bar position.

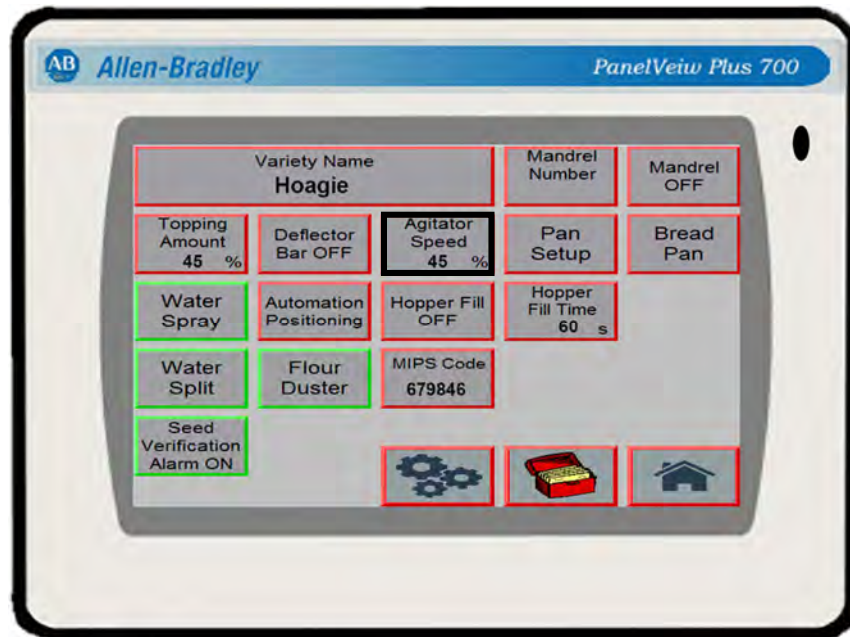
Deflector - The deflector bar is available to provide optimal product coverage. With the deflector bar in the active position, topping is dispensed by the mandrel onto the deflector bar, which allows large toppings or toppings that clump together to be more evenly applied. On smaller toppings like sesame, the deflector bar should be retracted.

Topping Speed - Is used to control the amount of toppings applied to the product. The number value is a percentage of the maximum Mandrel Speed from 0 to 99. Press the “UP” or “DN” button to increase or decrease the rotation speed of the Mandrel.

Mandrel – The button indicates the current mode selected. Press the Button to toggle between FORWARD, REVERSE, and OFF. “Forward” and “Reverse” refer to the direction that the Mandrel is turning. Changing the direction of rotation on the Mandrel may improve the topping’s application and appearance. This may be particularly beneficial on thin and large diameter toppings. Press the button until the indicator is displaying OFF, this will disable the toppings for this variety.

Any changes made on any setup screen will take effect to the current variety selected and will be automatically saved to the current mandrel in the Topper. Verify that you are on the correct variety prior to making any changes.

■ Recipe Setup Screen - Agitator Speed



The Agitator Speed enables or disables and sets the speed of the Agitator for this variety.

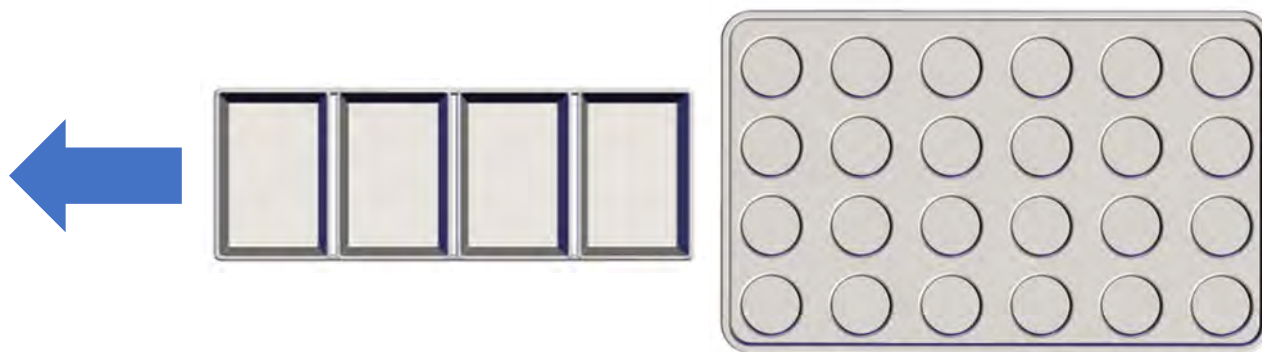
The agitator is a rake device that reciprocates in the hopper to keep the topping loose during operations. When the mandrel is rotating the agitator will reciprocate back and forth. This is to prevent any bridging from occurring. Bridging is when the toppings in the hopper form a cavity around the mandrel preventing product from being dispensed.

You are able to control the rate at which the Agitator oscillates by adjusting speed of the agitator by pressing  and inserting a numeric value in the keypad ranging from 1 – 100%.

Any changes made on any setup screen will take effect to the current variety selected and will be automatically saved to the current mandrel in the Topper. Verify that you are on the correct variety prior to making any changes.

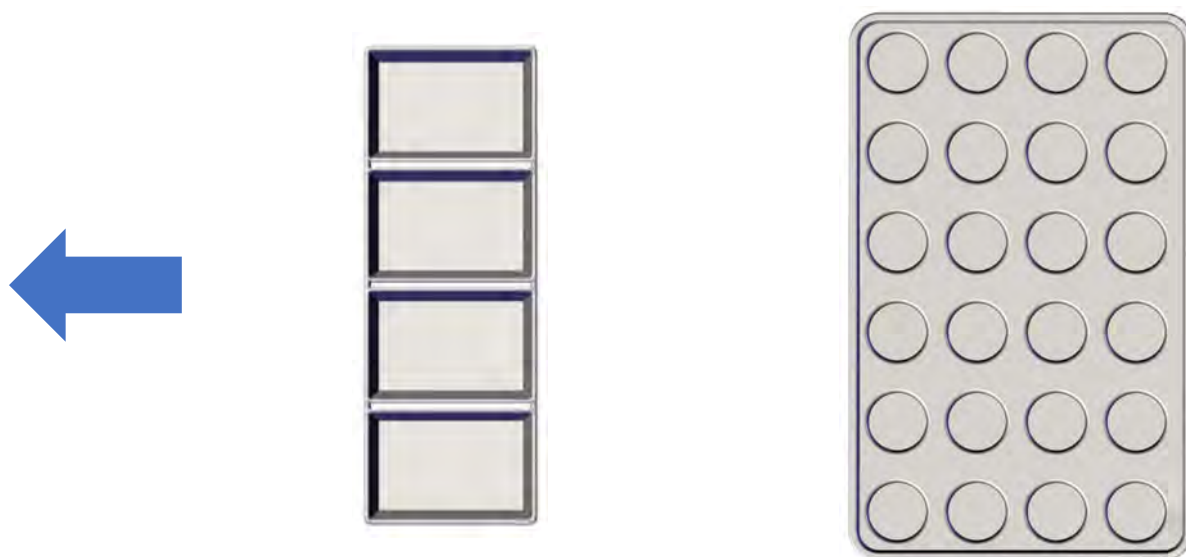
■ Pan Types

Your Smart Seeder has the ability to accommodate different types of pans: Bun and bread the hard way, or bun and bread the easy way. Hard way and easy way refers to the orientation of the pan through the conveyor system. We will discuss how to setup each variation of pan.



Bread Pan Easy Way

Bun Pan Easy Way



Bread Pan Hard Way

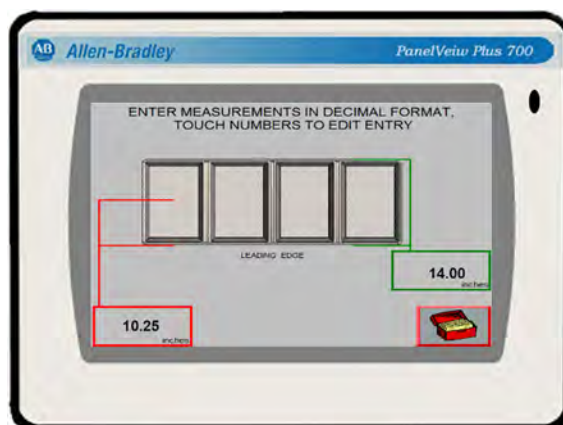
Bun Pan Hard Way

■ Pan Setup Screen (Bread)



YOU MUST BE LOGGED IN WITH SUPERVISOR PERMISSIONS
TO ENTER SETUP. REFER TO PAGE 99

YOU MUST HAVE THE BREAD PAN BUTTON PRESSED IN
ORDER TO ADVANCE TO THE BREAD PAN SETUP SCREEN.



Bun Pan Setup Screen

The Burford® Smart Seeder applies topping precisely on the dough with the ability to skip the area between rows. This significantly reduces topping consumption.

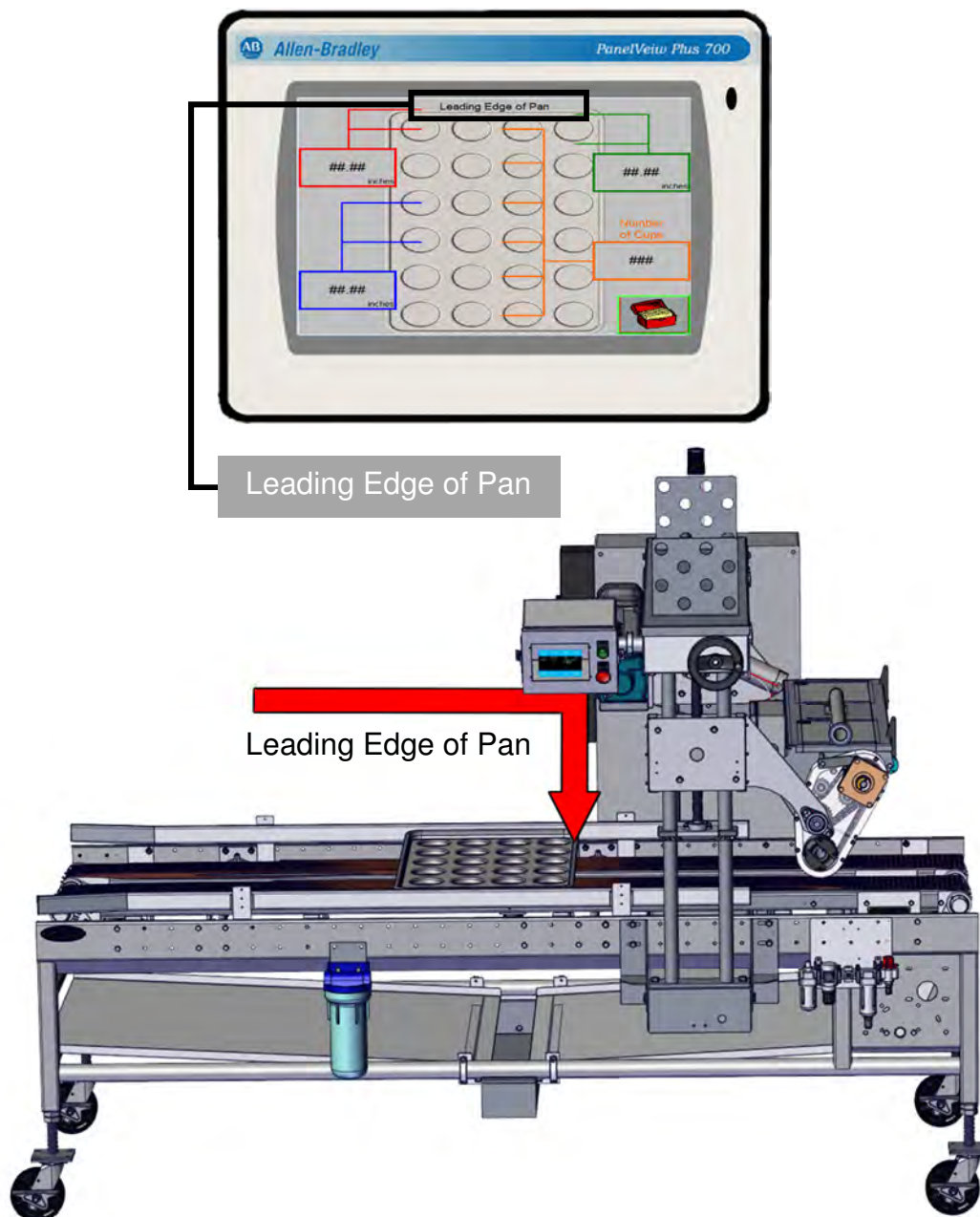
Entering your pan information for the variety allows the software to accurately calculate when to engage the topping output.

The Pan Dimension screen allows the user enter dimensions of the pan for the software to perform the computation necessary to provide topping savings.

The next few pages will discuss how to setup each pan.

■ Leading Edge

Be mindful of the leading edge of the pan. The Pan Setup is completely reliant on the proper leading edge when entering pan dimensions.



■ Pan Dimension Setup

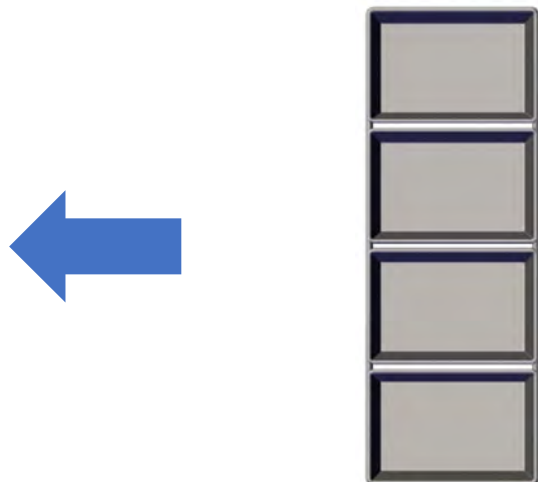
If setting up a bun pan the easy or hard way turn to page [130](#).



If setting up a bread pan the easy way turn to page [136](#).



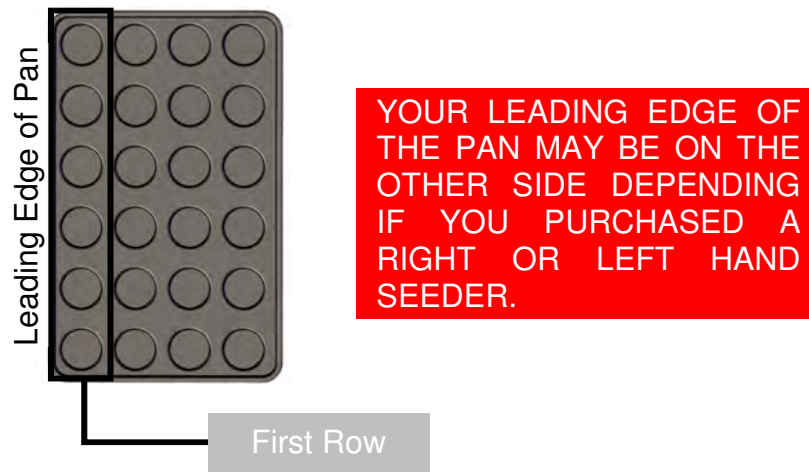
If setting up a bread pan the hard way turn to page [142](#).



■ Pan Dimension – Bun Pan Setup 1 of 5

We will fine tune the pan dimensions for the bun pan to maximize coverage and minimize the use of toppings.

The first objective is to place a small line of toppings at the center of the first row.



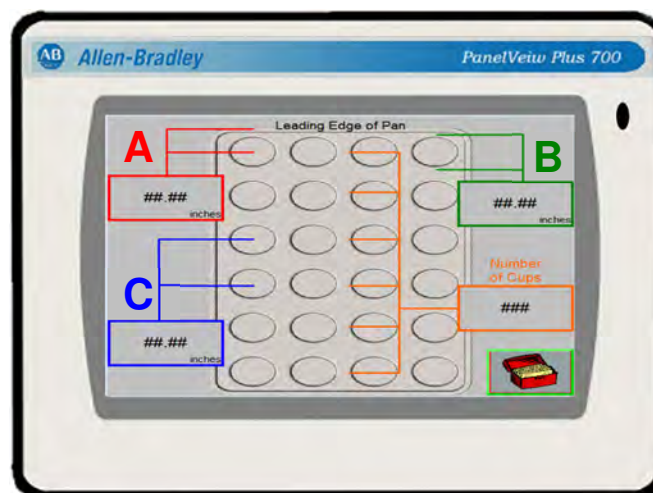
MAKE THE FOLLOWING ADJUSTMENTS

Set the NUMBER OF CUPS to 1

Set DIM A to 3.75

Set DIM B to 2.00

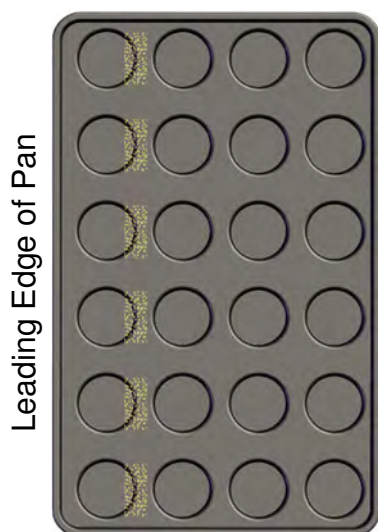
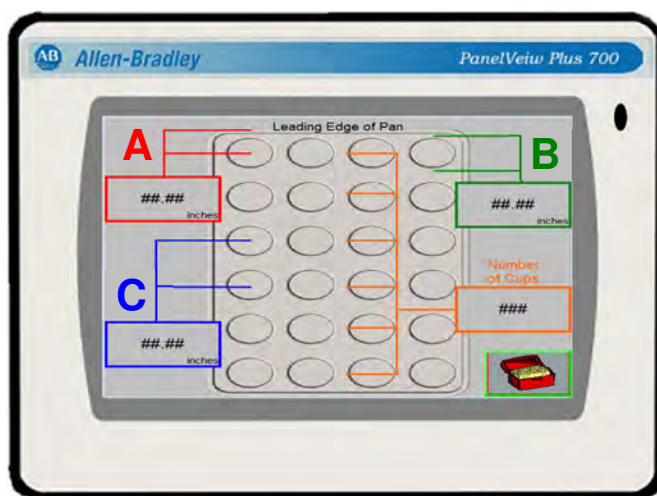
Set DIM C to 5.25



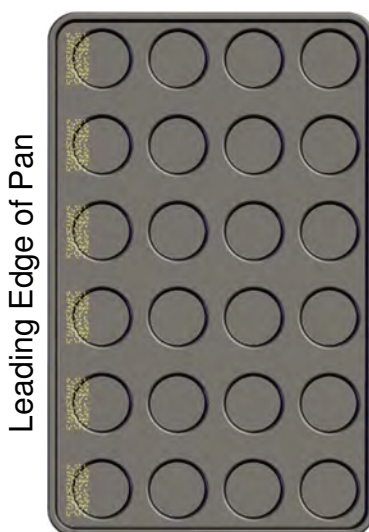
■ Pan Dimension – Bun Pan Setup 2 of 5

Begin by running pans of product through the system. It may take several pans to setup up a variety. There should be dough in the pan to achieve the best results.

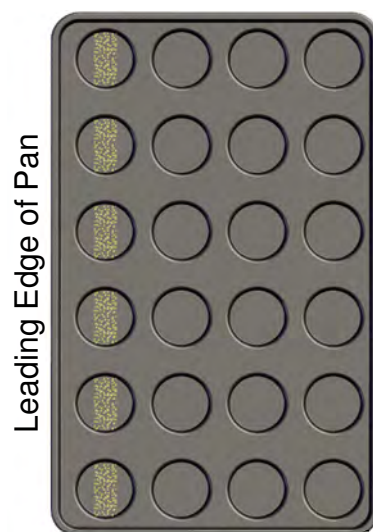
Adjust Dim A until the row of toppings are exactly at the center of the first row. Adjust in increments of .25. To move the row away from the leading edge increase DIM A. To move the row closer to the leading edge decrease DIM A. When close to the center, adjusting with smaller increments may be necessary.



Decrease DIM A



Increase DIM A



Move to next step

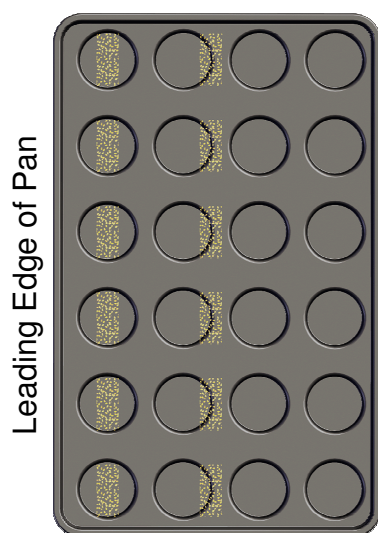
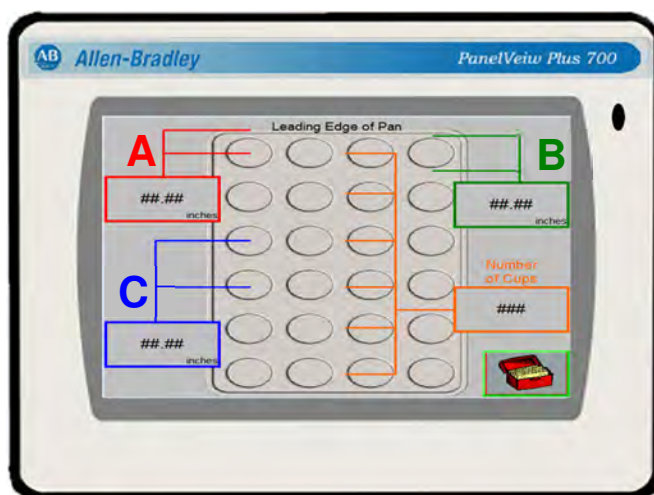


■ Pan Dimension – Bun Pan Setup 3 of 5

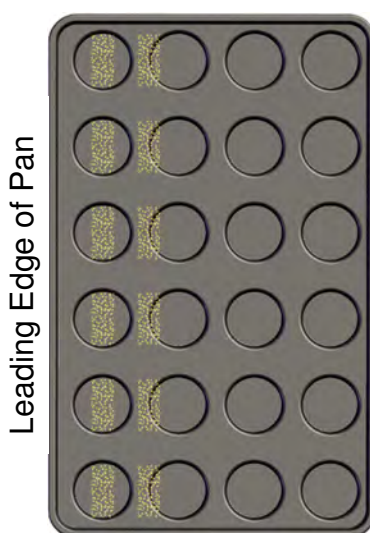
The second objective is to place a small line of toppings at the center of row 1 and row 2.

Change the NUMBER OF ROWS to 2.

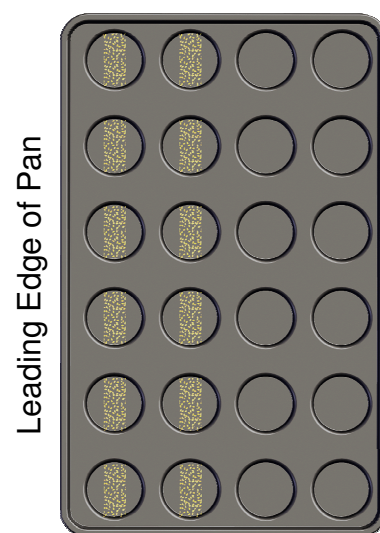
Adjust Dim C until row “2” toppings are exactly at the center of the second row. Adjust in increments of .25. To move the row away from the leading edge increase DIM C. To move the row closer to the leading edge decrease DIM C. When close to the center of the second row, adjusting with smaller increments may be necessary.



Decrease DIM C



Increase DIM C



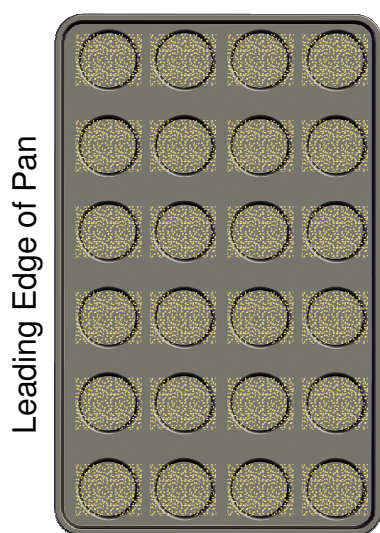
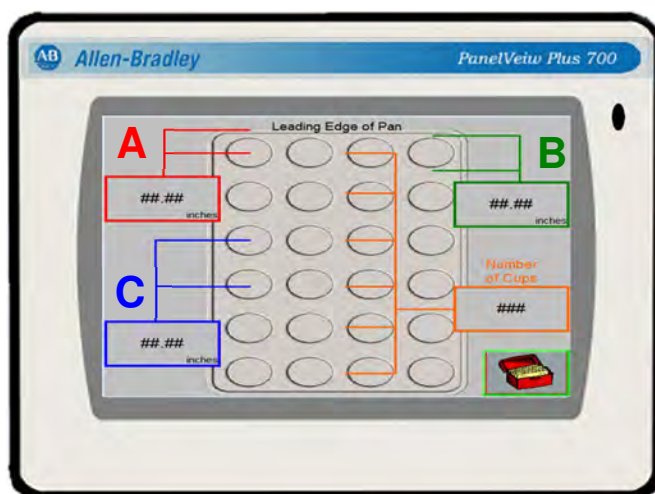
Move to next step



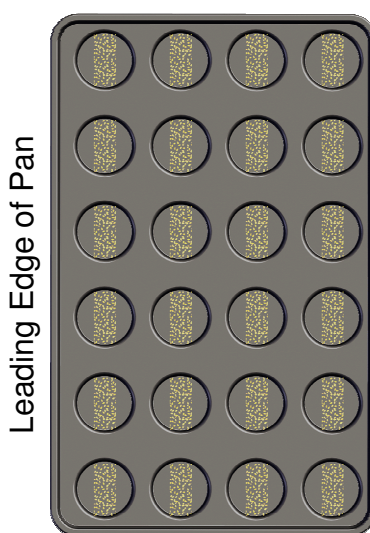
■ Pan Dimension – Bun Pan Setup 4 of 5

Now we will increase the width of the cup size with DIM B until the topping is covering the entire cup.

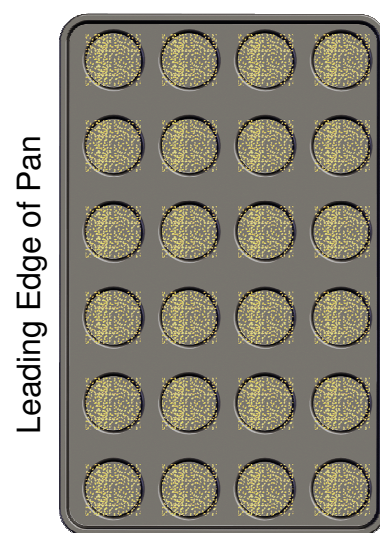
Adjust Dim B until the toppings just barely cover the entire product. Adjust in increments of .10. To widen the width of the topping in the cup increase DIM B. To narrow the width of the topping in the cup, decrease DIM B.



Decrease DIM B



Increase DIM B



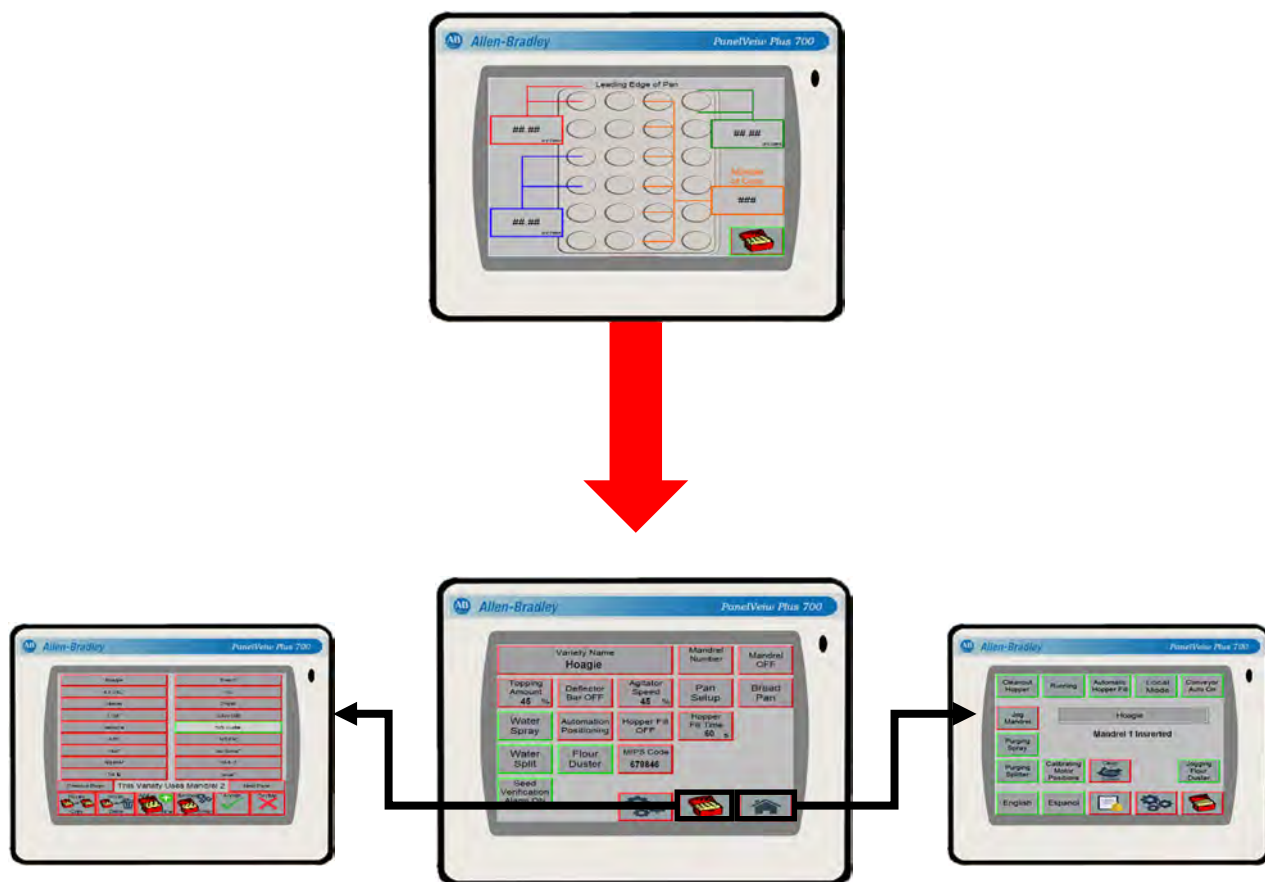
Move to next step



■ Pan Dimension – Bun Pan Setup 5 of 5

This setup method should provide you with close to ideal settings; however, you may need to fine-tune some of the pan dimension values. When fine-tuning, do so when the product is running. Make small incremental changes. If set properly it should be evident by the starting and stopping of the mandrel between the rows of the cups.

Press  when satisfied with the results.



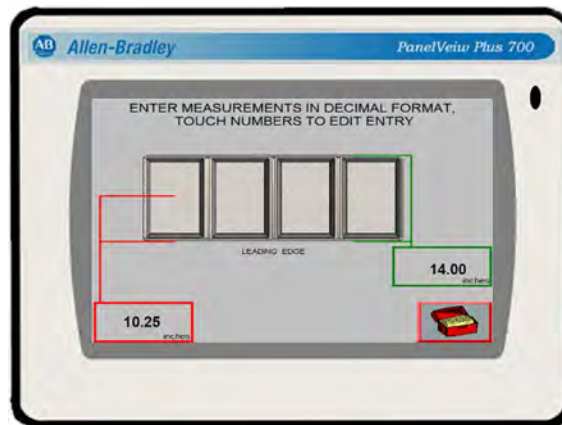
From the Setup screen press  to go to the Main Run screen. Press  to go to the Recipe Edit screen. You may find it necessary to re-adjust some of the Variety Topper Options.

■ Pan Setup Screen (Bread)



YOU MUST BE LOGGED IN WITH SUPERVISOR PERMISSIONS
TO ENTER SETUP. REFER TO PAGE 99

YOU MUST HAVE THE BREAD PAN BUTTON PRESSED IN
ORDER TO ADVANCE TO THE BREAD PAN SETUP SCREEN.



Bread Pan Setup Screen

The Burford® Smart Seeder applies topping precisely on the dough with the ability to skip the area between rows. This significantly reduces topping consumption.

Entering your pan information for the variety allows the software to accurately calculate when to engage the topping output.

The Pan Dimension screen allows the user to enter dimensions of the pan for the software to perform the computations necessary to provide topping savings.

The Topper can be used with Bun Pans or Bread Pans.

In next few pages we will go over the proper setup procedures of setting up your pan dimensions.

This step is critical to maximize the cost saving benefits of your Burford® Smart Seeder.

■ Bread Pan Easy Way Setup

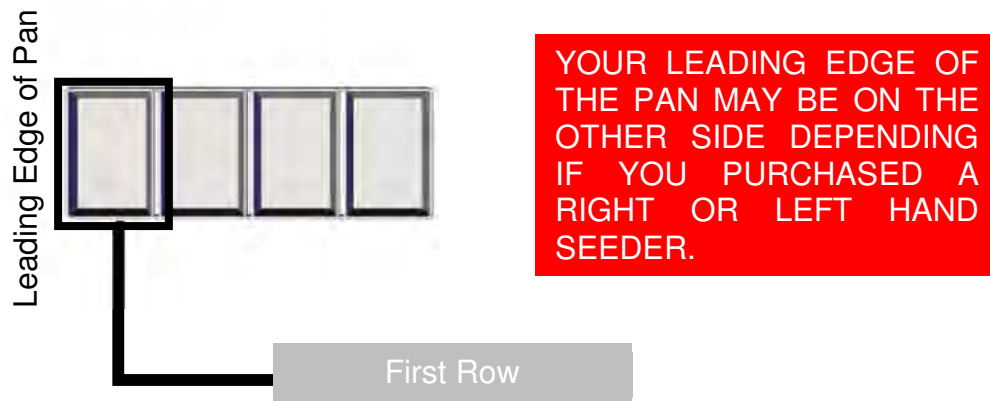
The following setup instructions will be for a bread pan going the EASY WAY.



■ Pan Dimension – Bread Pan Easy Way Setup 1 of 5

We will fine tune the pan dimensions for the bread pan, easy way, to maximize coverage and minimize use of toppings.

The first objective is to place a small line of toppings at the center of the first row.



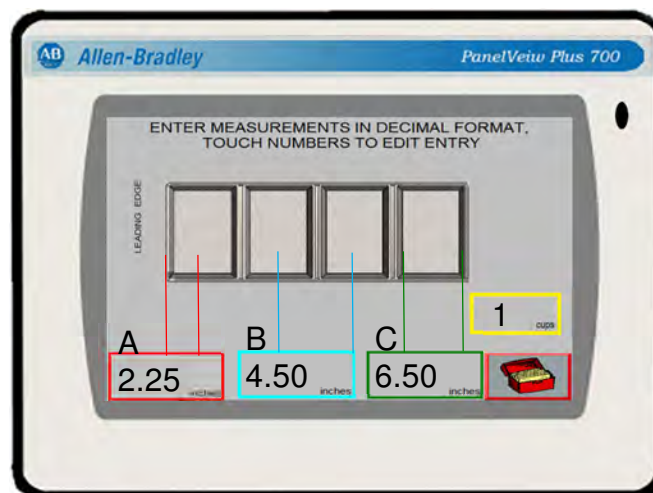
MAKE THE FOLLOWING ADJUSTMENTS

Set the NUMBER OF CUPS to 1

Set DIM A to 2.25

Set DIM B to 4.50

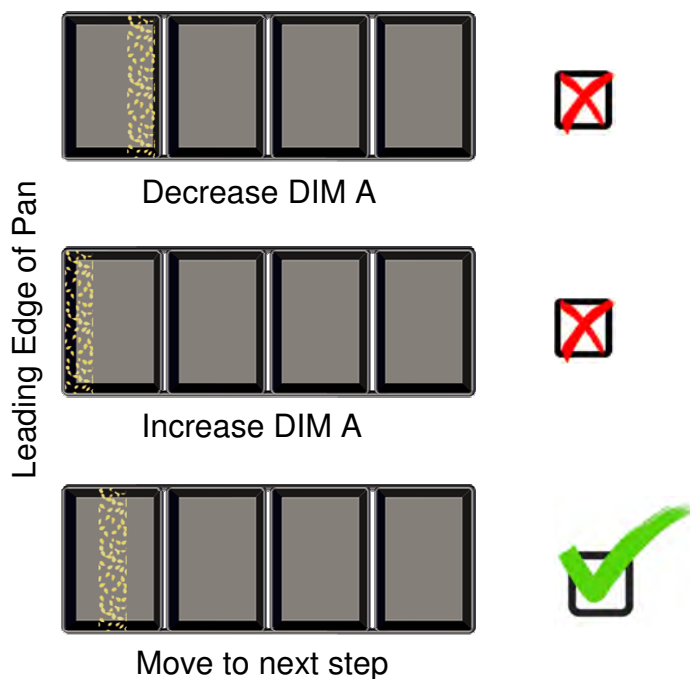
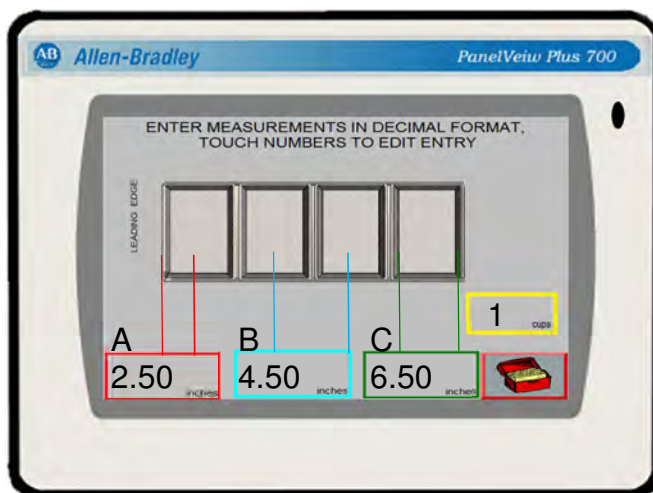
Set DIM C to 6.50



■ Pan Dimension – Bread Pan Easy Way Setup 2 of 5

Begin by running pans of product through the system. It may take several pans to setup up a variety. There should be dough in the pan to achieve the best results.

Adjust Dim A until the row of toppings are exactly at the center of the first row. Adjust in increments of .25. To move the row away from the leading edge increase DIM A. To move the row closer to the leading edge decrease DIM A. When close to the center, adjusting with smaller increments may be necessary.

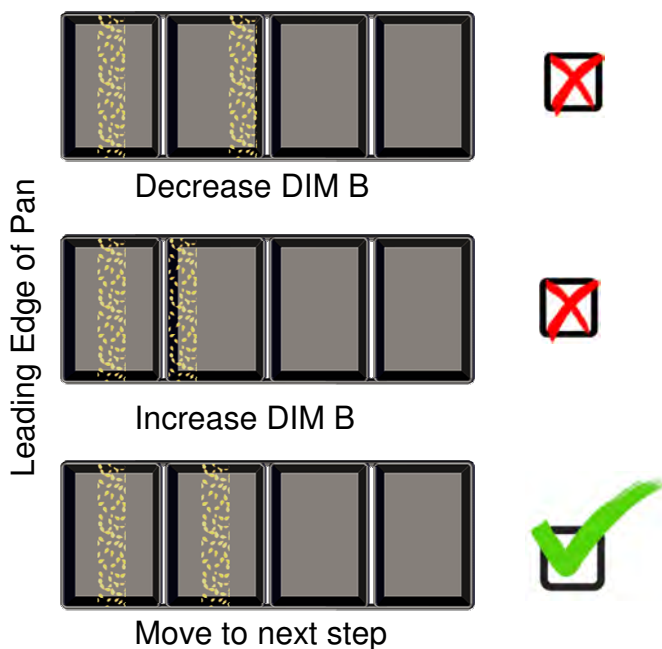
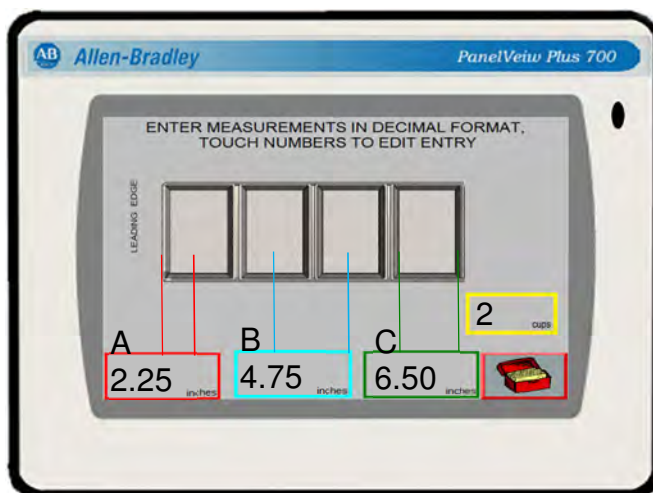


■ Pan Dimension – Bread Pan Easy Way Setup 3 of 5

The second objective is to place a small line of toppings at the center of row 1 and row 2.

Change the NUMBER OF ROWS to 2.

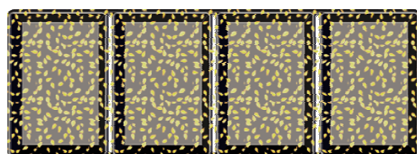
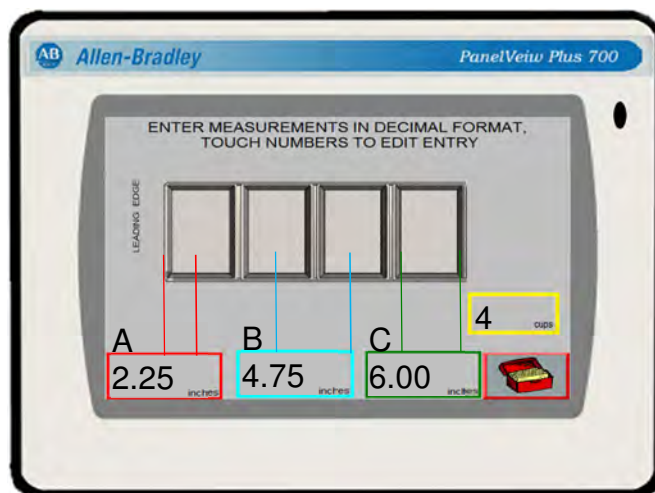
Adjust Dim C until row the toppings are exactly at the center of the second row. Adjust in increments of .25. To move the row away from the leading edge increase DIM C. To move the row closer to the leading edge decrease DIM C. When close to the center of the second row, adjusting with smaller increments may be necessary.



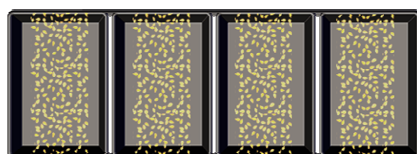
■ Pan Dimension – Bread Pan Easy Way Setup 4 of 5

Change the NUMBER OF ROWS to the number of rows in your pan.

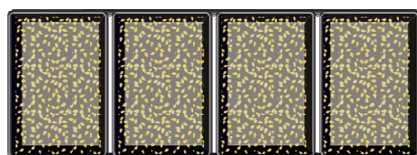
Now we will increase the width of the cup size with DIM B until the topping is covering the entire cup.



Decrease DIM C



Increase DIM C



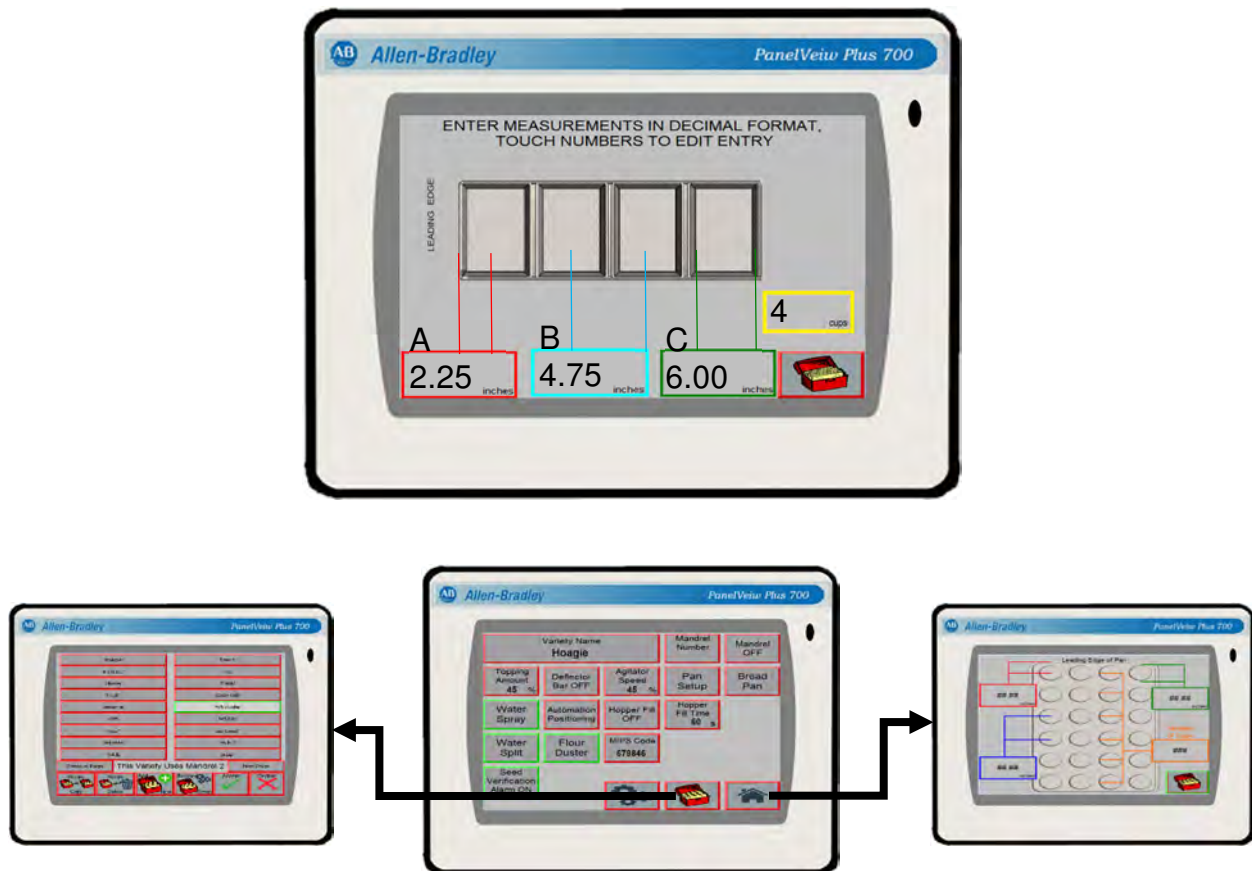
Move to next step

Leading Edge of Pan

■ Pan Dimension – Bread Pan Easy Way Setup 5 of 5

This setup method should provide you with close to ideal settings; however, you may need to fine-tune some of the pan dimension values. When fine-tuning, do so when the product is running. Make small incremental changes. If set properly it should be evident by the stopping of the mandrel between the rows of the cups.

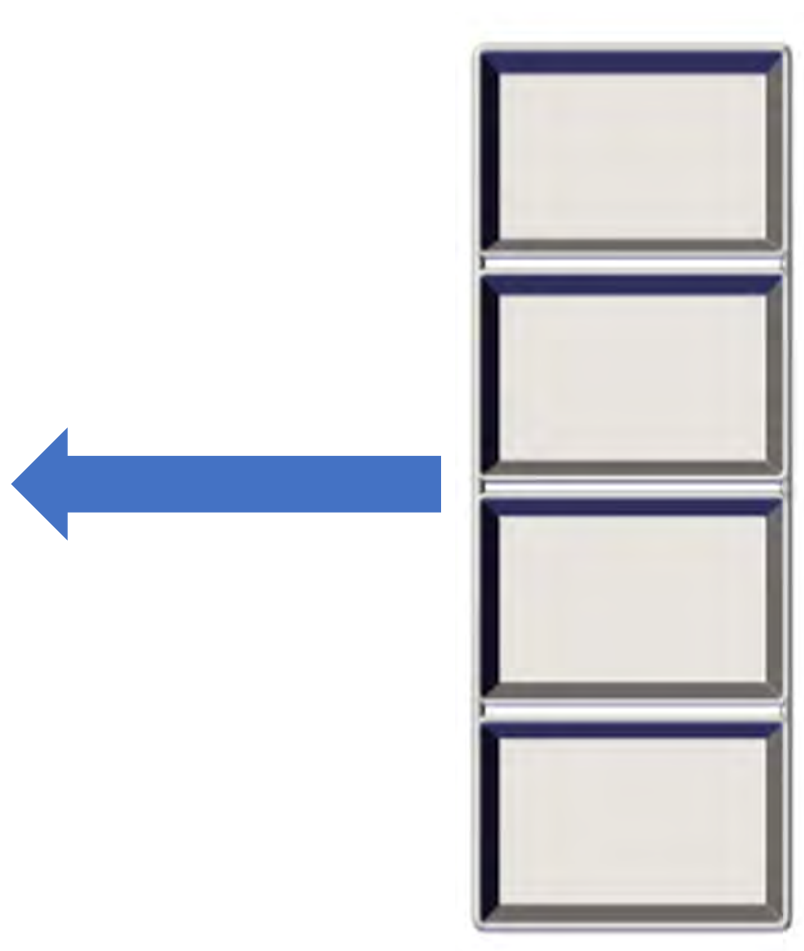
Press the RECIPE icon when satisfied with the results.



From the Setup screen press HOME to go to the Main Run screen. Press Continue to go to the Main Setup screen. You may find it necessary to re-adjust some of the Variety Topper Options.

■ Bread Pan Hard Way Setup

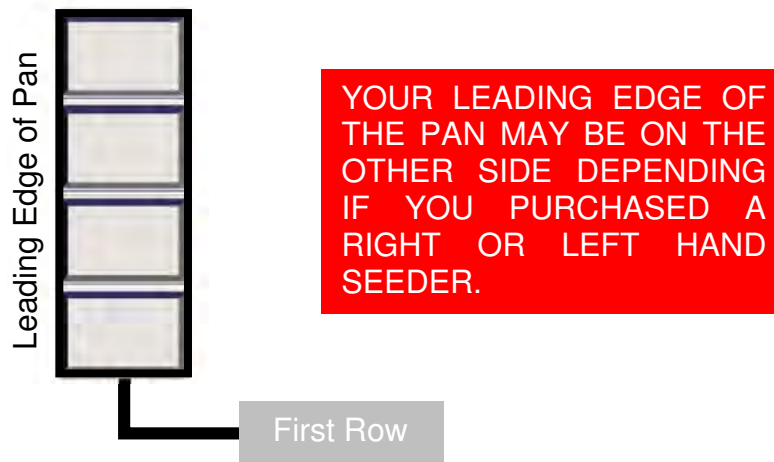
The following setup instructions will be for a bread pan going the Hard Way.



■ Pan Dimension – Bread Pan Hard Way Setup 1 of 4

We will fine tune the pan dimensions for the bread pan, hard way, to maximize coverage and minimize use of toppings.

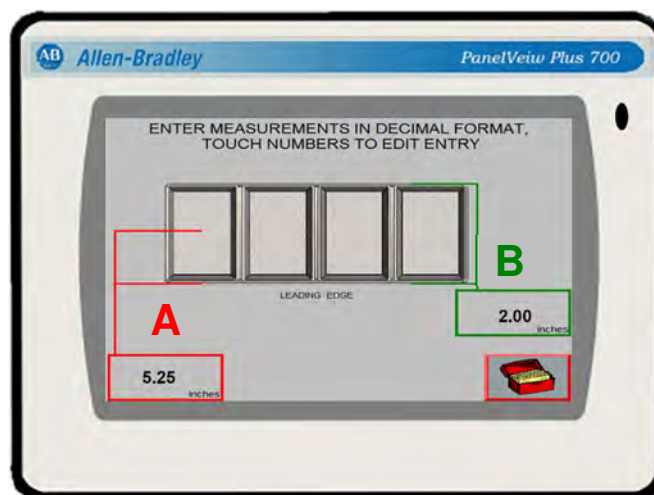
The first objective is to place a small line of toppings at the center of the first row.



MAKE THE FOLLOWING ADJUSTMENTS

Set DIM A to 5.25

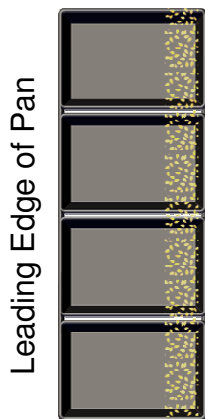
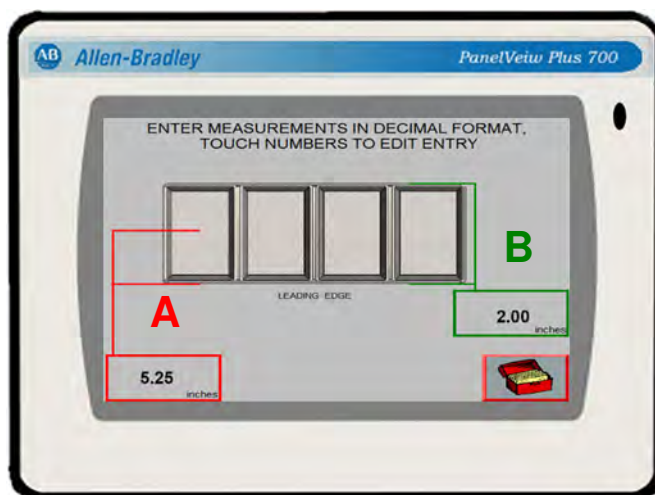
Set DIM B to 2.00



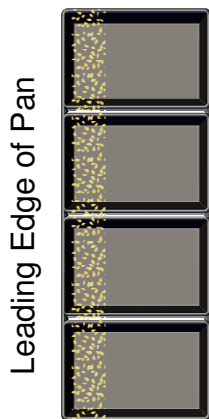
■ Pan Dimension – Bread Pan Hard Way Setup 2 of 4

Begin by running pans of product through the system. It may take several pans to setup up a variety. There should be dough in the pan to achieve the best results.

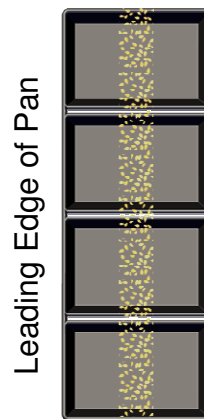
Adjust Dim A until the row of toppings are exactly at the center of the row. Adjust in increments of .25. To move the row away from the leading edge increase DIM A. To move the row closer to the leading edge decrease DIM A. When close to the center, adjusting with smaller increments may be necessary.



Decrease DIM A



Increase DIM A



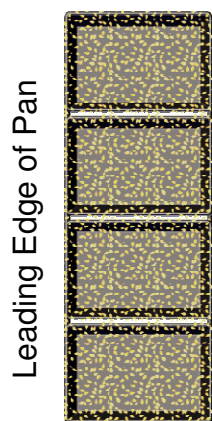
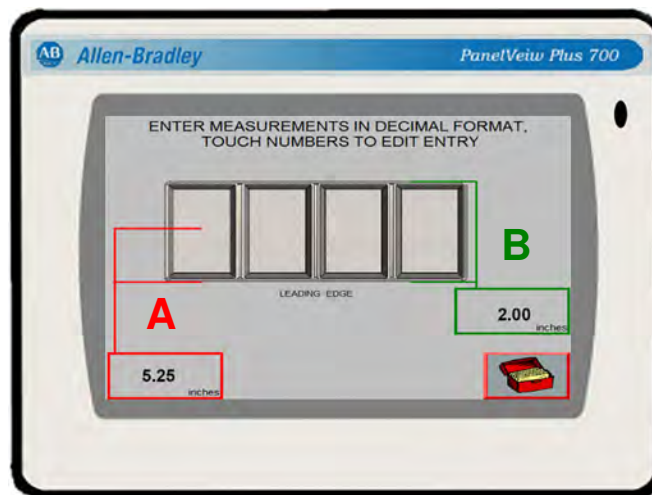
Move to next step



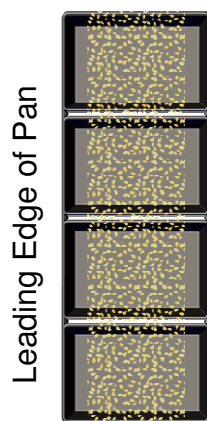
■ Pan Dimension – Bread Pan Hard Way Setup 3 of 4

The second objective is to cover the entire product.

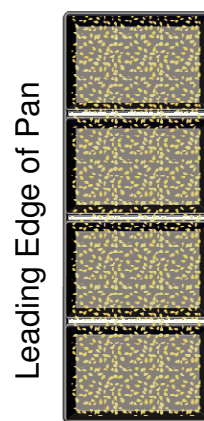
Adjust Dim B until the toppings are covering the entire product. Adjust in increments of .25. To increase the coverage, increase DIM B. To decrease the coverage, decrease DIM B.



Decrease DIM B



Increase DIM B



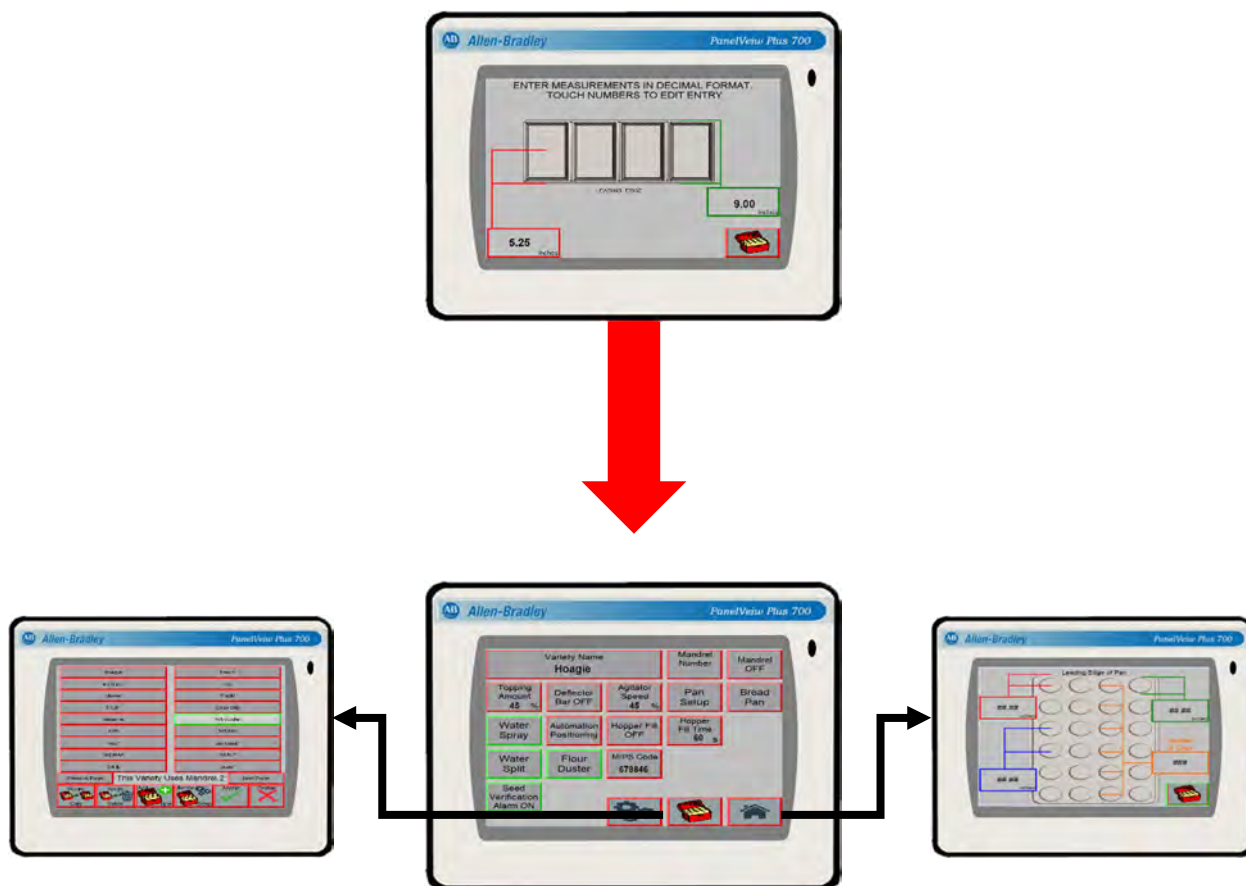
Move to next step



■ Pan Dimension – Bread Pan Hard Way Setup 4 of 4

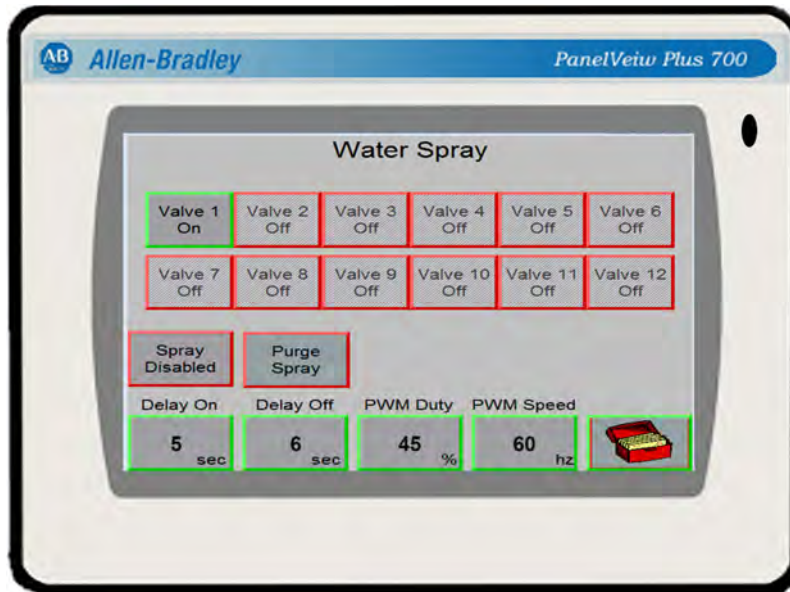
This setup method should provide you with close to ideal settings; however, you may need to fine-tune some of the pan dimension values. When fine-tuning, do so when the product is running. Make small incremental changes. If set properly it should be evident by the starting and stopping of the mandrel between the rows of the cups.

Press  when satisfied with the results.



From the Setup screen press  to go to the Main Run screen. Press  to go to the Recipe Edit screen. You may find it necessary to re-adjust some of the Variety Topper Options, go to page 119 for more instructions.

■ Water Spray



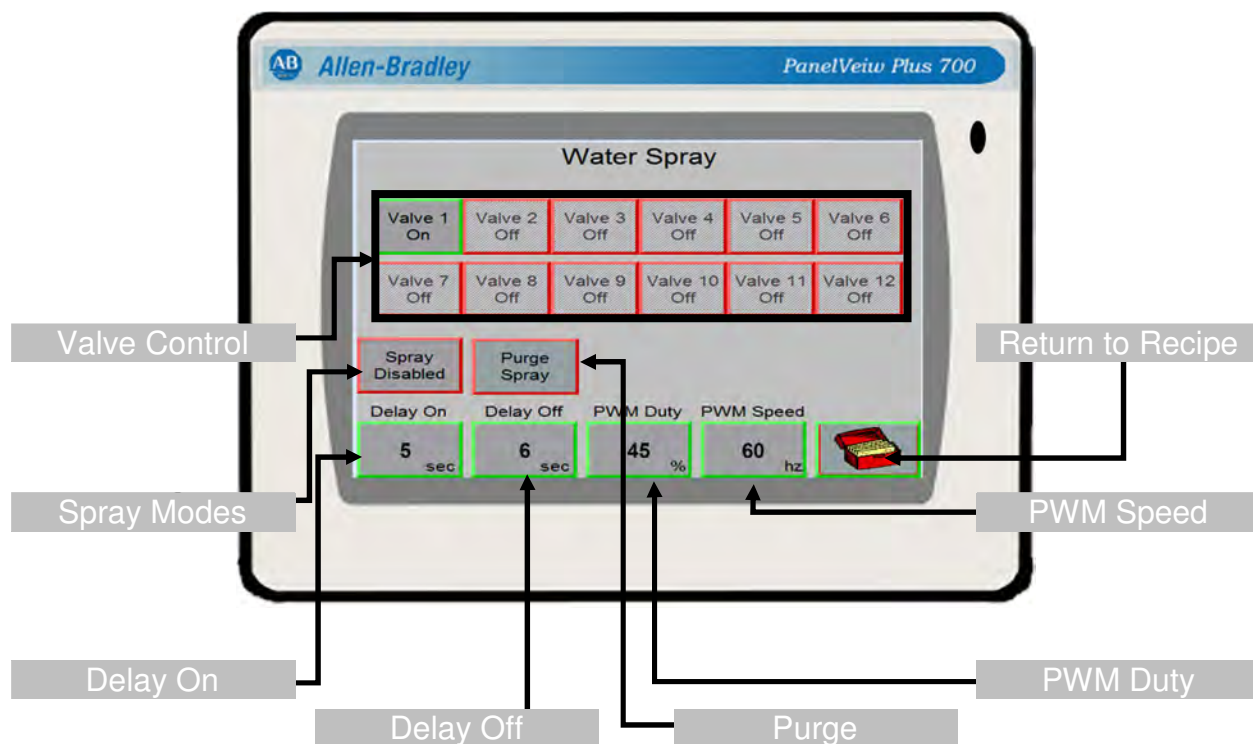
The Topper uses a spray of water applied to the dough product to aid in adhering the topping to the dough.

The spray rail consists of water spray valves that can be turned ON and OFF dependent on variety needs. The standard unit is equipped with six valves but additional valves may have been purchased when your unit was ordered.

Navigation to the Water Spray Setup Screen



■ Water Spray Setup Screen Overview



Valve Control – Allows individual control of spray valves.

Spray Modes – Press to toggle between Enabled and Disabled modes.

Delay On and Delay OFF – Allows precise control of water spray actuation.

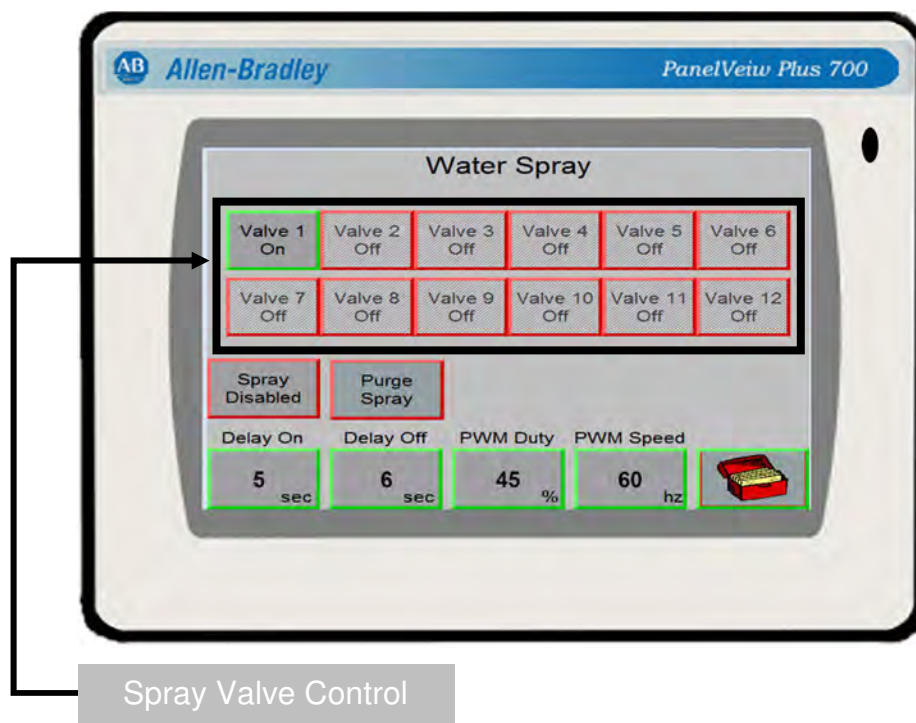
Purge – Activates all enabled water spray valves.

PWM Duty and Speed – If equipped with the optional PWM spray valves, enter setup parameters.

Return – Takes you back to the Recipe Setup screen.

Any changes made on any setup screen will take effect to the current variety selected and will be automatically saved to the current mandrel in the Topper. Verify that you are on the correct variety prior to making any changes.

■ Water Spray Setup - Valve Control



Spray Valve Control – The standard unit is equipped with six valves. Additional valves may have been purchased when your unit was ordered. Eight valves are the most common configuration.

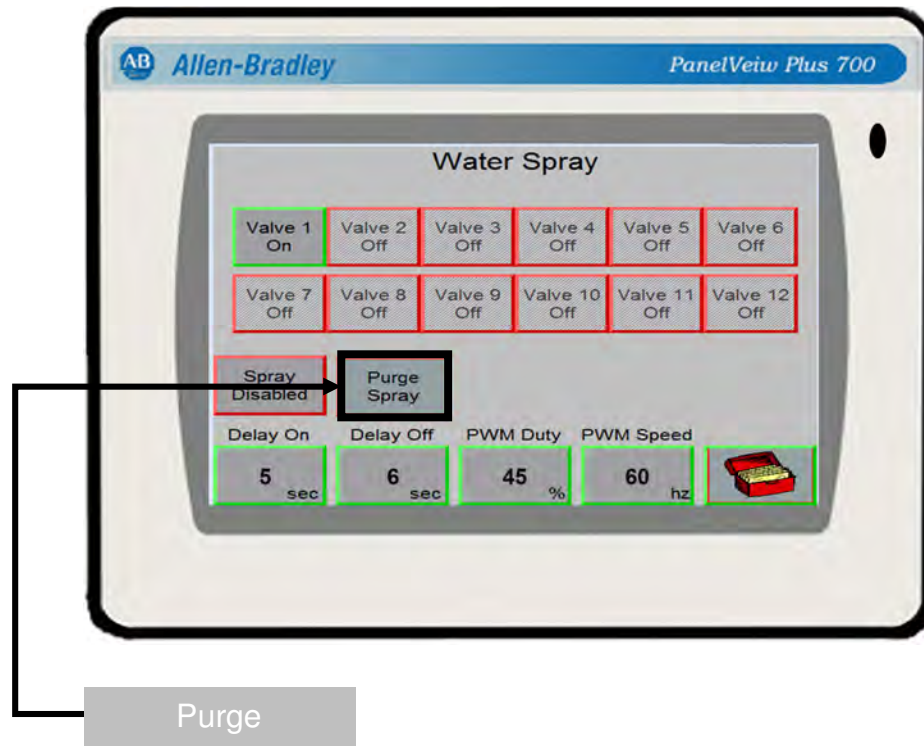
If the unit is equipped with six Spray Valves, then spray valve 1-3 and 10-12 will not be operational. Spray valves 4 through 9 will control the six valves.

The width of the pan, the number of cups, and the amount of water spray desired, will determine the number of water spray valves that will need to be enabled. Press the button below each respective valve number to toggle the state of the valve. Green indicates that the valve is enabled. Red indicates that the valve is disabled.

The button will change from  to  when the valve is active.

Any changes made on any setup screen will take effect to the current variety selected and will be automatically saved to the current mandrel in the Topper. Verify that you are on the correct variety prior to making any changes.

■ Water Spray Setup - Purge



Purge – When  is pressed, all enabled valves will turn on.

Purge is primarily used to remove any air from the Water Spray valves. Any air in the system will cause adverse effects.

In proper operation the valves should turn on and off immediately without any dripping. The spray should be fanned evenly. If you experience undesirable results, then the valves may need to be purged. Press and hold the purge button for 10 seconds. Release the button shortly and repeat. Repeat until desirable results.

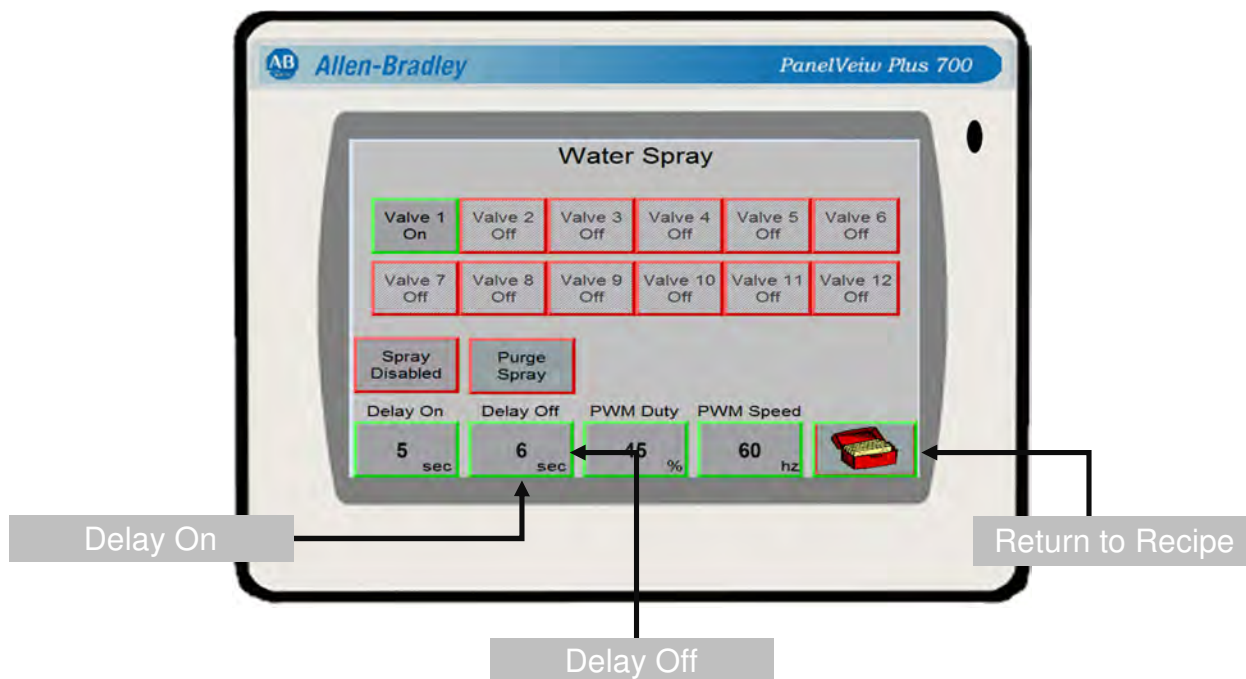
You may also use Purge to verify your valve configuration and placement with the current variety.

Press and release the Purge button to momentarily turn on the enabled valves.

Press  to go back to the Main Setup screen.

If after several minutes of purging, you are unable to obtain desirable results check for any air leaks in the water lines. Verify that the nozzle tips are seated and properly tightened.

■ Water Spray Setup Trigger Times



Water Spray Trigger Times – The pan sensor for the water spray rail is located upstream from the water spray valves. It may be necessary to delay the start and stop of the water spray valves to ensure complete coverage of the product.

Delay On – The Delay On is the time from when the pan first makes the pan sensor and the spray valves turn on. When the pan sensor is made, the PLC will wait the value of DELAY ON before turning the water spray valves on. The value of DELAY ON should have the water spray valves turn on when product is directly beneath the valves. The goal is to prevent overspray and wasted water.

Delay On

Press the  box to modify the value.

Delay Off – The Delay Off is the time from when the pan is no longer making the pan sensor and the spray valves turn off. When the pan sensor is no longer made, the PLC will wait the value of DELAY OFF before turning the water spray valves off. The value of DELAY OFF should have the water spray valves turn off when product is no longer directly beneath the valves. The goal is to prevent overspray and wasted water.

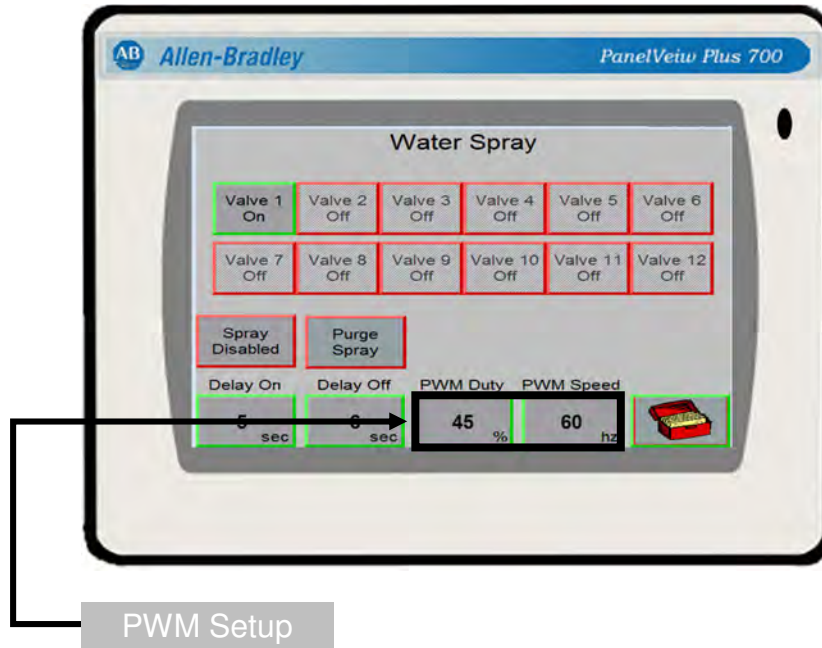
Delay Off

Press the  box to modify the value.

Press  to return to the Recipe select screen.

Any changes made on any setup screen will take effect to the current variety selected and will be automatically saved to the current mandrel in the Topper. Verify that you are on the correct variety prior to making any changes.

■ Water Spray Setup – Optional PWM



PWM Setup – An optional PWM spray system is available for your water spray unit.

PWM (Pulse Width Modulation) Flow Control involves switching spray nozzles on and off very quickly in order to control the flow rate. This cycling takes place so quickly that the flow often appears to be constant. PWM Flow Control requires the use of electrically actuated nozzles and a spray controller.

PWM Speed



Touch the  box to select between the available frequencies of the spray valves. The frequency determines the number of cycles per second.

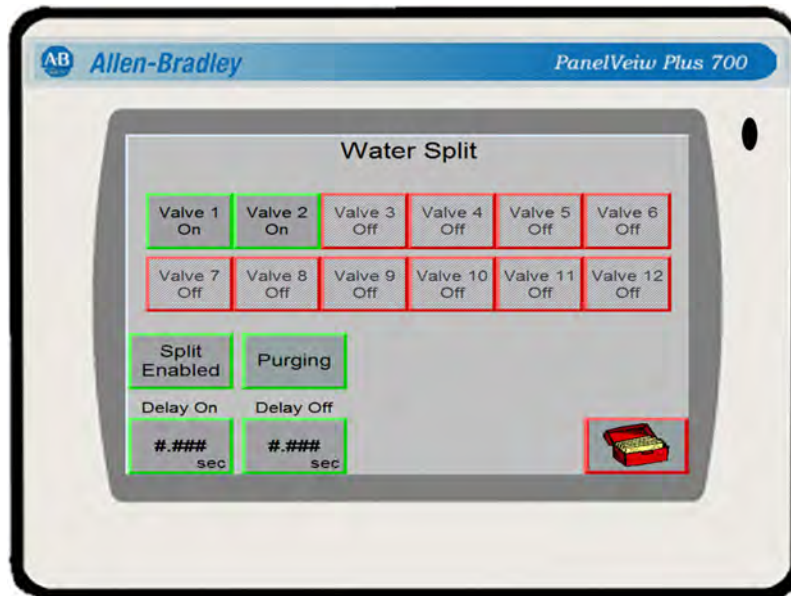
PWM Duty



Touch the  box to select between the available durations of the spray valves. The duty determines the time that the spray valve is on during each cycle.

Any changes made on any setup screen will take effect to the current variety selected and will be automatically saved to the current mandrel in the Topper. Verify that you are on the correct variety prior to making any changes.

■ Water Split



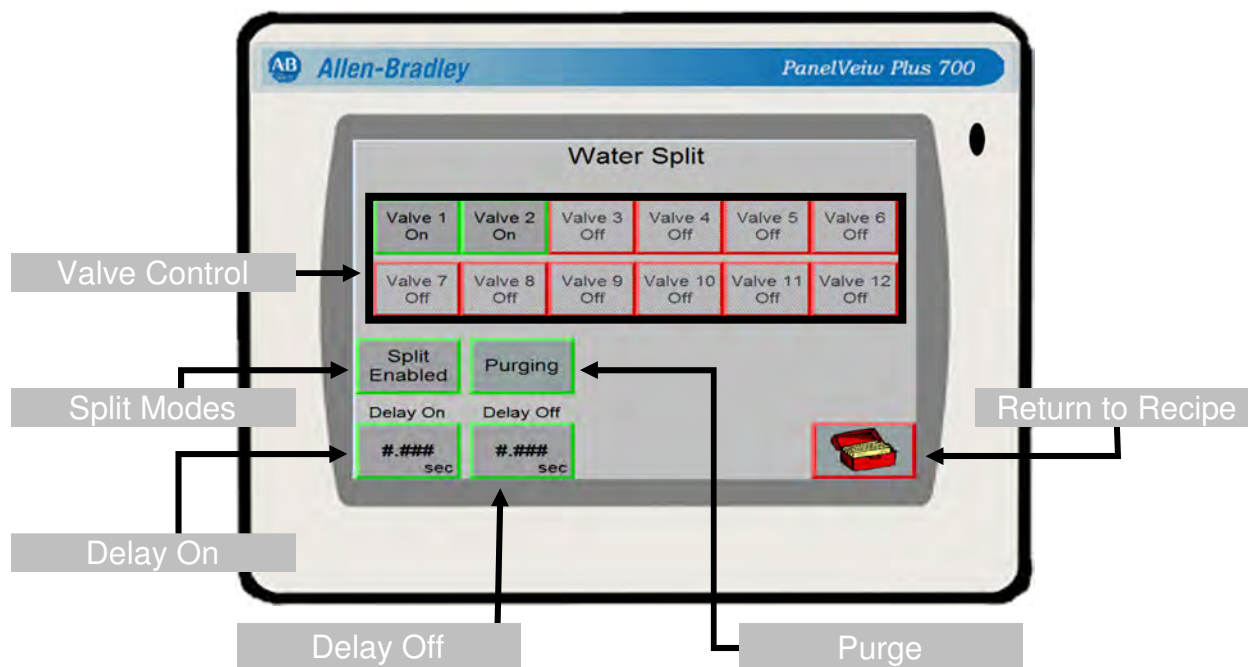
The Topper features an optional Splitter that is available to enhance your product.

The Split rail consists of water split valves that can be turned ON and OFF dependent on the variety needs. The standard Splitter is equipped with six valves but additional valves may have been purchased when your unit was ordered.

Navigation to the Water Spray Setup Screen



Water Split Setup Screen Overview



Valve Control – Allows individual control of spray valves.

Spray Modes – Press to toggle between Enabled and Disabled modes.

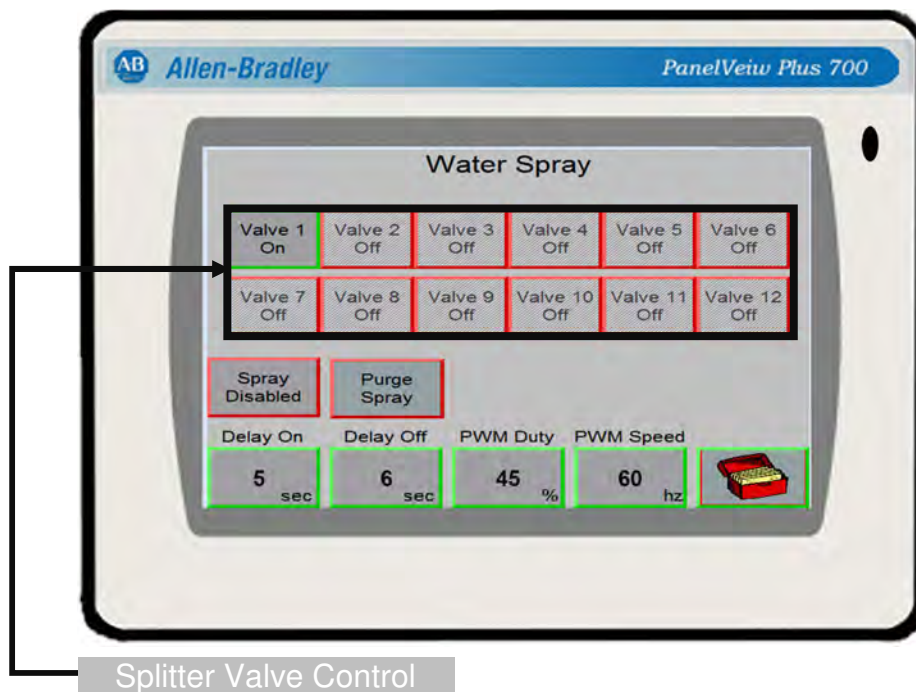
Delay On and Delay OFF – Allows precise control of water spray actuation.

Purge – Activates all enabled water spray valves.

Return – Takes you back to the Recipe Setup screen.

Any changes made on any setup screen will take effect to the current variety selected and will be automatically saved to the current mandrel in the Topper. Verify that you are on the correct variety prior to making any changes.

Water Split Setup - Valve Control



Split Valve Control – The standard unit is equipped with six valves. Additional valves may have been purchased when your unit was ordered. Eight valves are the most common configuration.

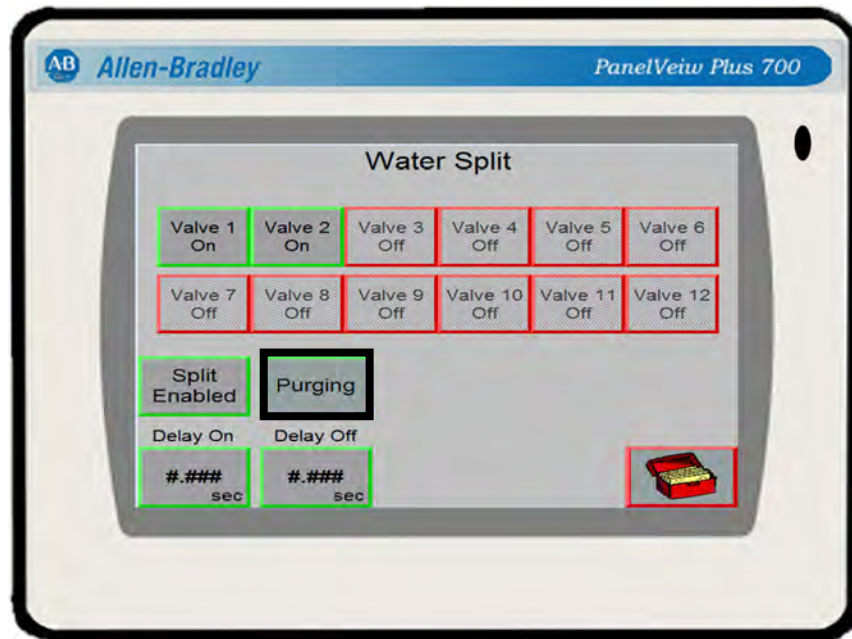
If the unit is equipped with six Split Valves, then spray valve 1-3 and 10-12 will not be operational. Spray valves 4 through 9 will control the six valves.

The number of cups will determine the number of water split valves that are needed. Press the oval button below each respective valve number to toggle the state of the valve. Green indicates that the valve is enabled. Red indicates that the valve is disabled.

The button will change from  to  when the valve is active.

Any changes made on any setup screen will take effect to the current variety selected and will be automatically saved to the current mandrel in the Topper. Verify that you are on the correct variety prior to making any changes.

■ Water Split Setup - Purge



Purge – When  is pressed, all enabled valves will turn on for 45 seconds.

Purge is primarily used to remove any air from the Water Split valves. Any air in the system will cause adverse effects.

In proper operation the valves should turn on and off immediately without any dripping. The split should be very fine with a tight jet of water. If you experience undesirable results, then the valves may need to be purged. Press and hold the purge button for 10 seconds. Release the button shortly and repeat. Repeat until desirable results.

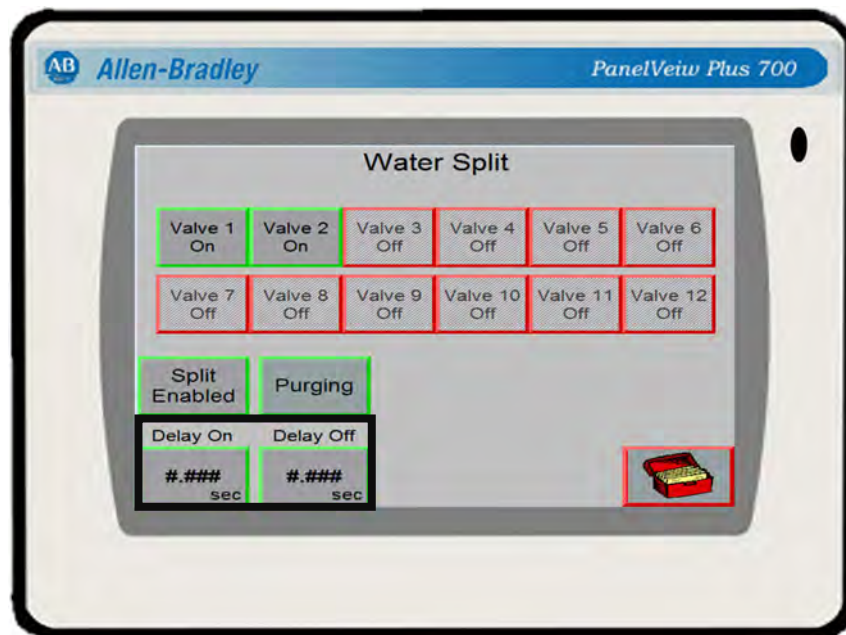
You may also use Purge to verify your valve configuration and placement.

Press and release the Purge button shortly to turn on the enabled valves.

Press  to go back to the Main Setup screen.

If after several minutes of purging, you are unable to obtain desirable results check for any air leaks in the water lines. Verify that the nozzle tips are seated and tighten properly.

■ Water Split Setup - Trigger Times



Water Spray Trigger Times – The pan sensor for the water spray rail is located upstream from the water spray valves. It may be necessary to delay the start and stop of the water spray valves to ensure complete coverage of the product.

Delay On – The Delay On is the time from when the pan first makes the pan sensor and the spray valves turn on. When the pan sensor is made, the PLC will wait the value of DELAY ON before turning the water spray valves on. The value of DELAY ON should have the water spray valves turn on when product is directly beneath the valves. The goal is to prevent overspray and wasted water.

Press the **DELAY ON** box to modify the value.

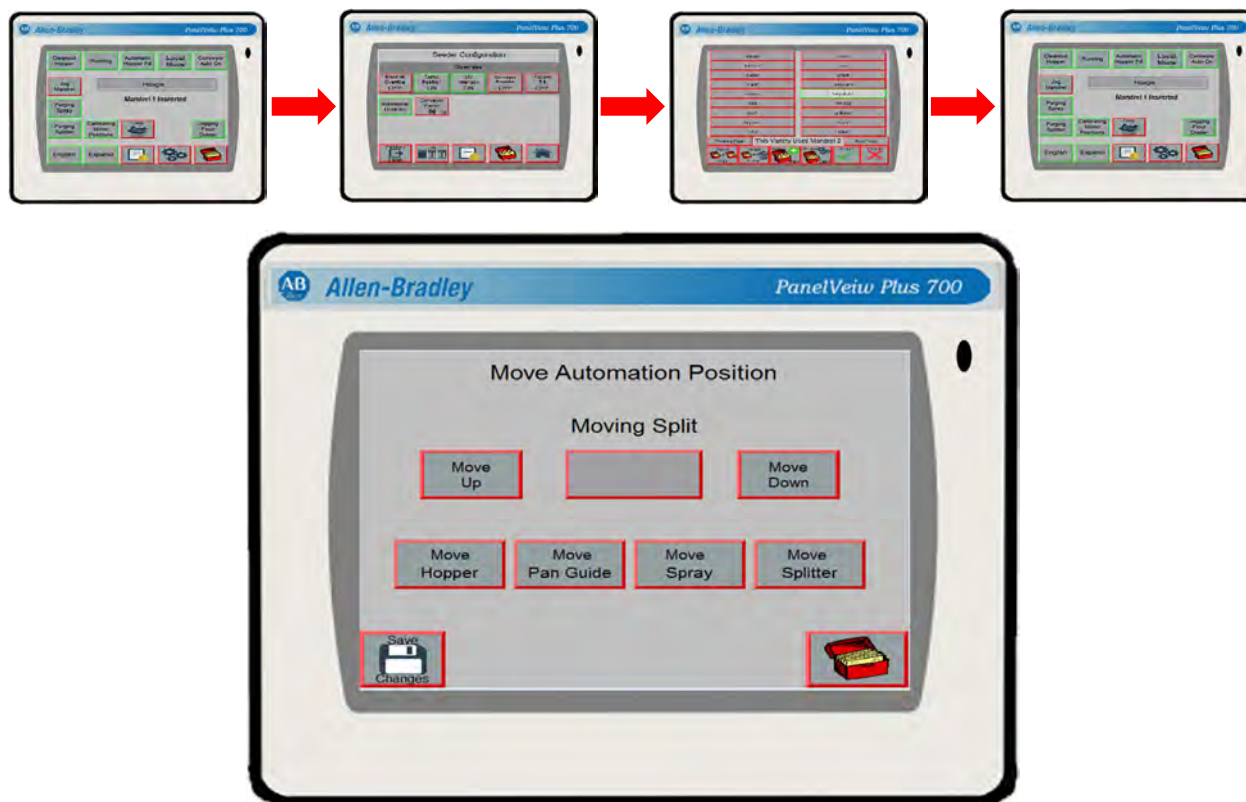
Delay OFF – The Delay Off is the time from when the pan is no longer making the pan sensor and the spray valves turn off. When the pan sensor is no longer made, the PLC will wait the value of DELAY OFF before turning the water spray valves off. The value of DELAY OFF should have the water spray valves turn off when product is no longer directly beneath the valves. The goal is to prevent overspray and wasted water.

Press the **DELAY OFF** box to modify the value.

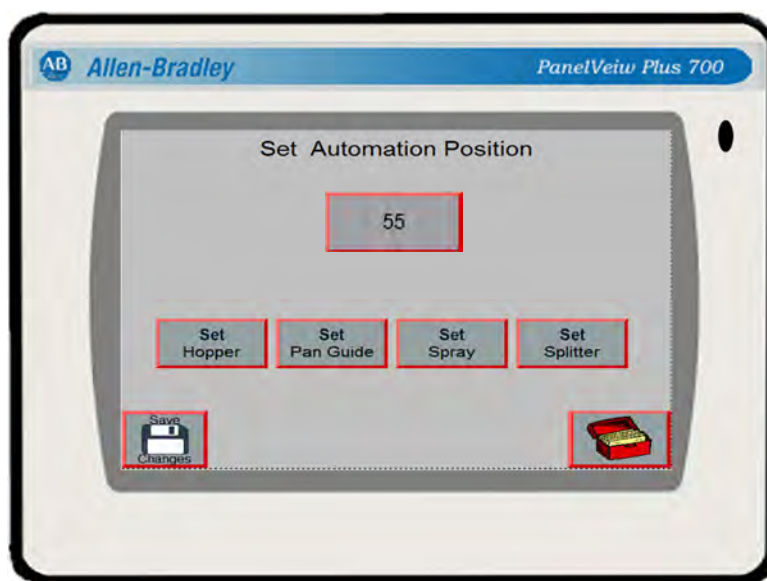
Press  to return to the Recipe select screen.

For best results, the Trigger Times should be adjusted with the pan and conveyor speed that will be used for the variety in production.

■ Automation Setup Screen

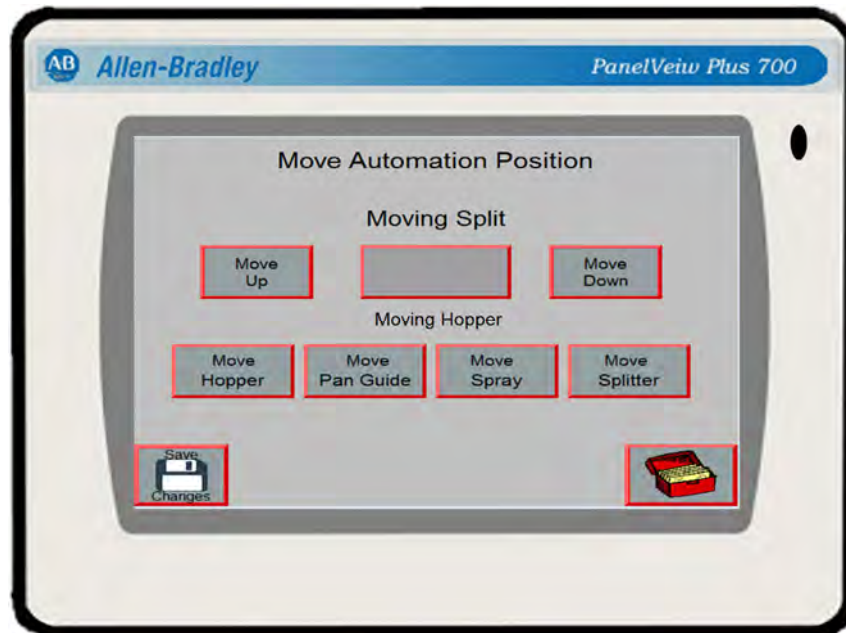


The Automation Setup Screen allows the operator to move and set the Hopper, Pan Guides, Spray Rail and Split Rail to a location specific to the recipe that is currently running.



The Automation Setup Screen will only allow the operator to set the location if you are setting up a recipe that is not currently running.

■ Automation Setup Screen - Hopper



The height of the hopper may affect the application of your topping. The adjustable height hopper will return to the exact height every time the variety is selected. Normally 2 to 3 inches above the product is acceptable for most toppings.

Press the MOVE HOPPER button and it will change to HOPPER MOVING.

When setting the height of the hopper, it is preferable to do so with the product in production. This way you can immediately see the results while adjusting.

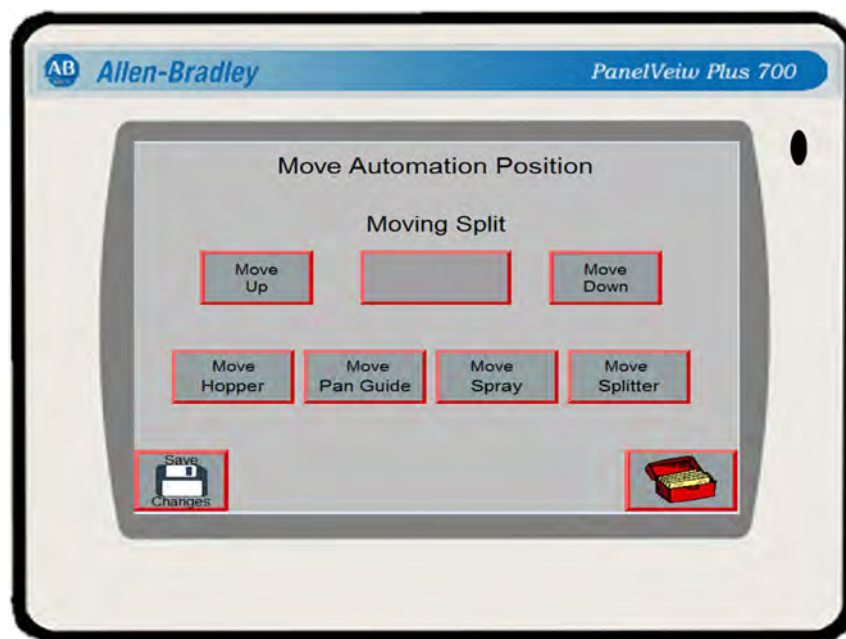
The numeric value in the center displays the number of encoder counts from the home position. This is for reference only.

Press the MOVE UP or MOVE DOWN buttons to move the hopper in the respective direction until the hopper is in the desired position for the variety selected.

Once the hopper height is set, press the SAVE button to save the changes.

Move to the next automation or press  to go back to the Recipe Setup Screen.

■ Automation Setup Screen – Pan Guide



Determine the width of the Pan Guides for this variety. Place the pan for this variety on the conveyor. Close the guides until there is 1/2" gap from the sides of the pan to the guides.

Press the  and it will turn to .

When setting the width of the pan guide it is preferably to do so with the product in production. This way you can immediately see the results while adjusting.

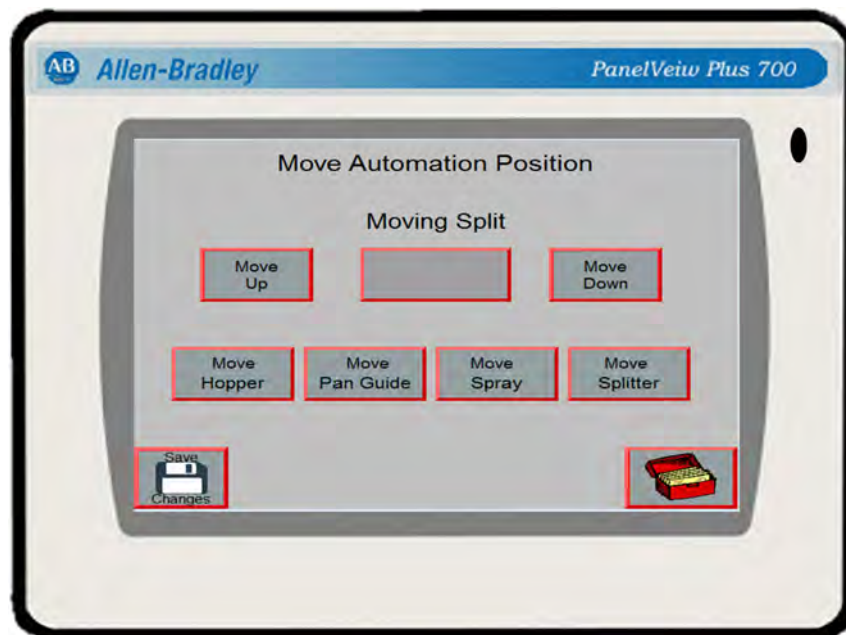
The numeric value in the center displays the number of encoder counts from the home position. This is for reference only.

Press the  or  button to move the pan guide in the respective direction until the hopper is in the desired position for the variety selected.

Once the pan guide is set, press the  button to save the changes.

Move to the next automation or press  to go back to the Recipe Setup Screen.

■ Automation Setup Screen – Spray



Determine the height of the Spray Rail for this variety. Place the pan for this variety on the conveyor. Lower the rail to a position that allows complete coverage of water to the product.

Press the  and it will change to .

When setting the height of the spray rail it is preferably to do so with the product in production. This way you can immediately see the results while adjusting.

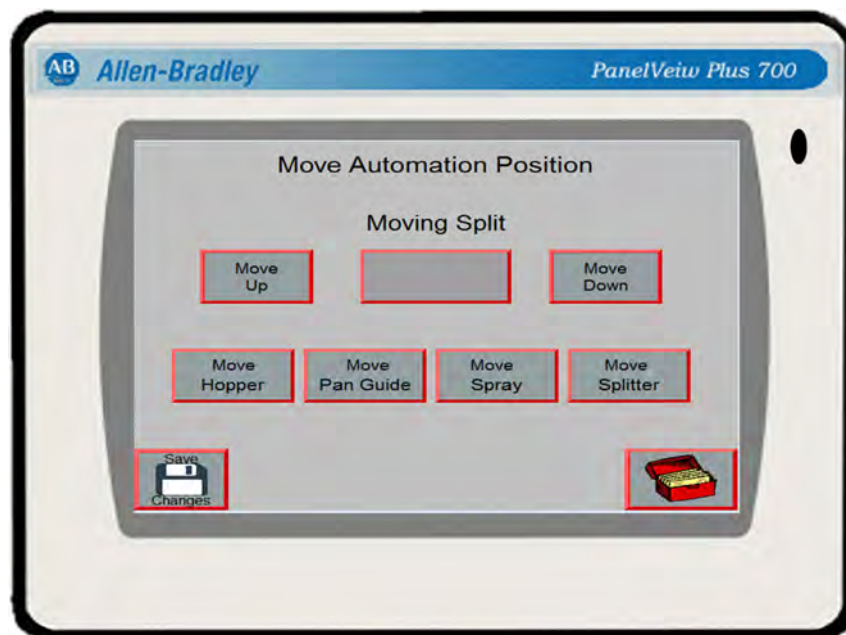
The numeric value in the center displays the number of encoder counts from the home position. This is for reference only.

Press the  or  button to move the rail in the respective direction until the hopper is in the desired position for the variety selected.

Once the spray rail height is set, press the  button to save the changes.

Move to the next automation or press  to go back to the Recipe Setup Screen.

■ Automation Setup Screen – Splitter



Determine the height of the Splitter Lift for this variety. The height of the Splitter Rail and the water pressure will affect the split of the product.

Press the  and it will change to .

When setting the height of the split rail it is preferably to do so with the product in production. This way you can immediately see the results while adjusting.

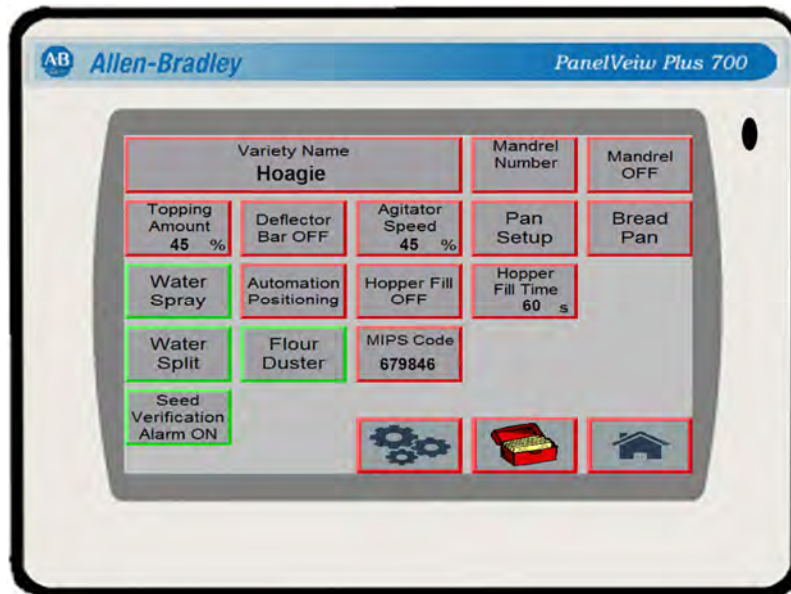
The numeric value in the center displays the number of encoder counts from the home position. This value is for reference only.

Press the  or  button to move the rail in the respective direction until the hopper is in the desired position for the variety selected.

Once the split rail height is set, press the  button to save the changes.

Move to the next automation or press  to go back to the Recipe Setup Screen.

■ Hopper - Fill (Optional)



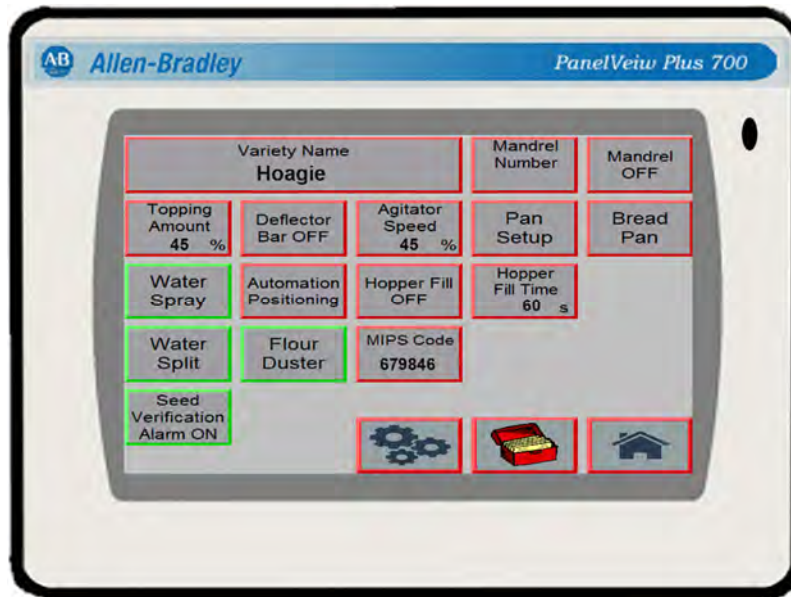
The Hopper-Fill allows the Seeder to be connected to a larger external hopper that will automatically refill the Seeder when it becomes low of toppings.

The Hopper is designed to keep product in the hopper during production runs. An external large capacity tank is used to transfer product from the tank to the hopper located on the seeder.

Navigation to the Water Spray Setup Screen



■ Hopper - Fill Time

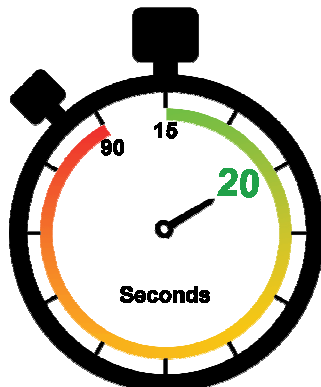


The Hopper-Fill allows the Seeder to be connected to a larger external hopper that will automatically refill the Seeder when it becomes low of toppings.

The Hopper is designed to keep product in the hopper during production runs. An external large capacity tank is used to transfer product from the tank to the hopper located on the seeder.



The Hopper Fill Time is the amount of time that the Auto-Fill will transfer product from the tank to the hopper once a low-level trigger is received from the Seeder. The system will transfer product for this time regardless of product level in the hopper. This value is in seconds.

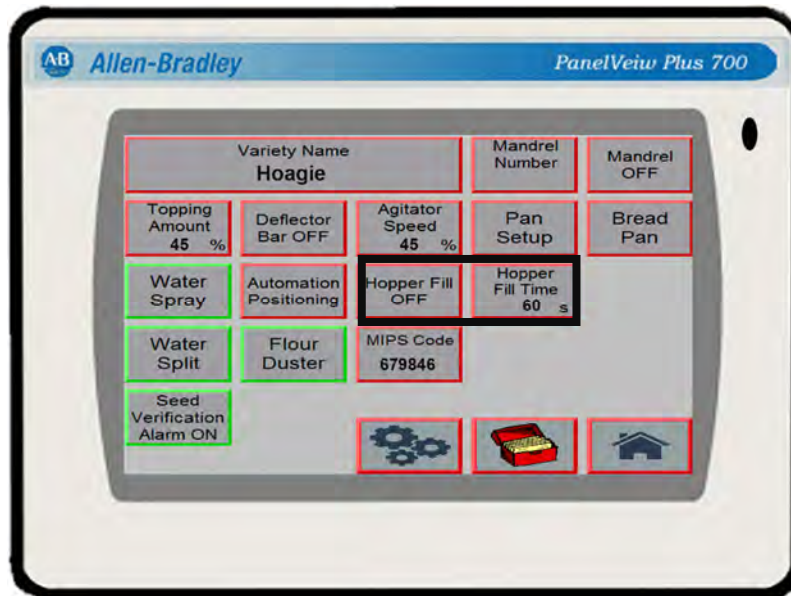


Fill Time Setting

Range: 5 – 60 seconds

Recommended Setting: 20 seconds

■ Hopper Fill Setup



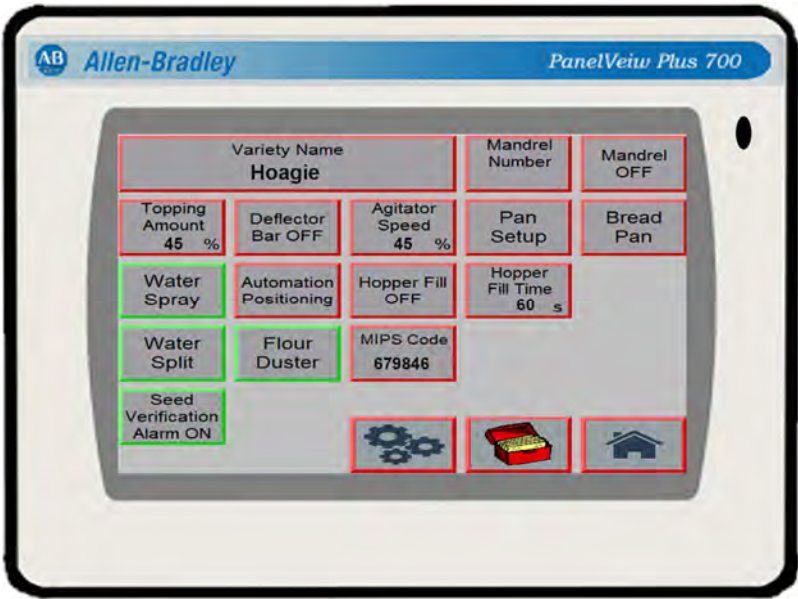
Press the  (Hopper Fill OFF) to select if the Hopper-fill function is available for this variety. The button will change to  when available.

If the Hopper Fill is ON for this variety, then the operator will be able to control it from  on the Main Run screen.

The  function allows the operator to set the time that the Auto fill will remain on ranging from 5 – 60 seconds. This is the time that the MPA or Topper Hopper will vacuum product from the product source. In most cases, the source will be mobile.

If  is selected, then the next time the variety is loaded the Auto-Fill function will be automatically enabled.

■ Seed Verification Alarm (Optional)

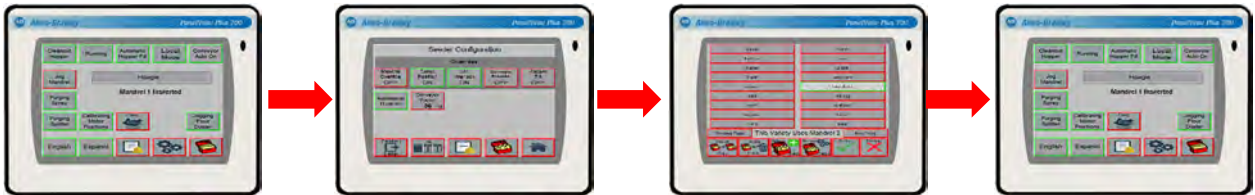


The Low Level Alarms can alert the operator if either the Seeder’s hopper or the AutoFil’s Hopper become low. The alarm should provide the operator with enough time to refill the respected hopper.

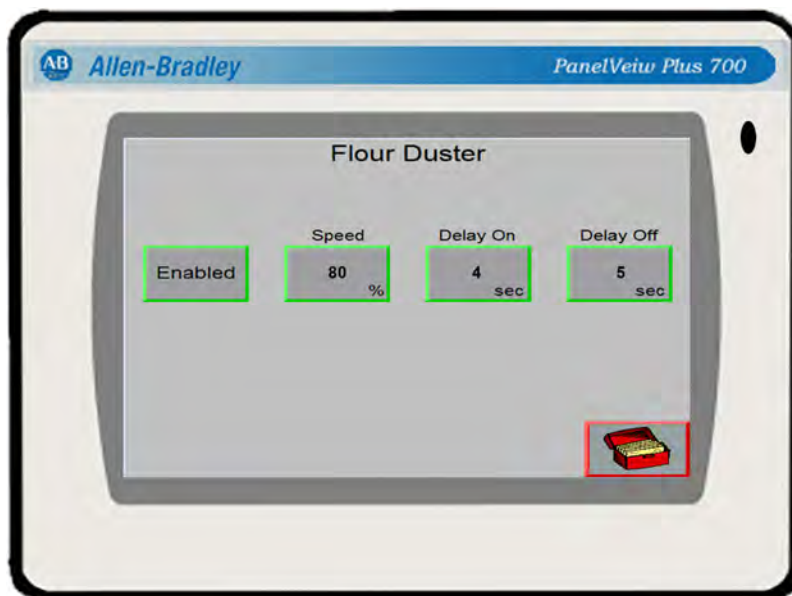
Press the  toggle switch to enable or disable the Low Level Alarms.



Navigation to the Water Spray Setup Screen



■ Flour Duster (Optional)

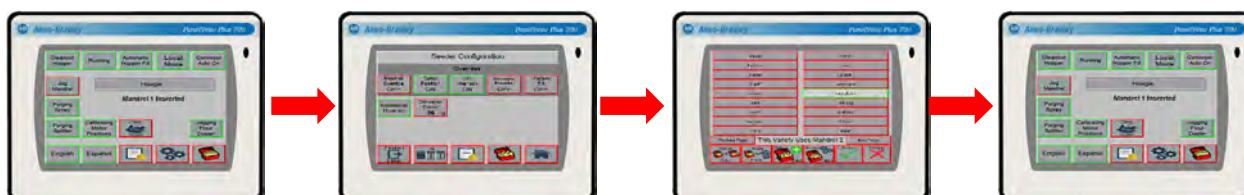


The Smart Seeder is available with an optional Flour Duster. The Flour Duster applies a flour dusting to your product. The Flour Duster can be used in unison with the Topper.

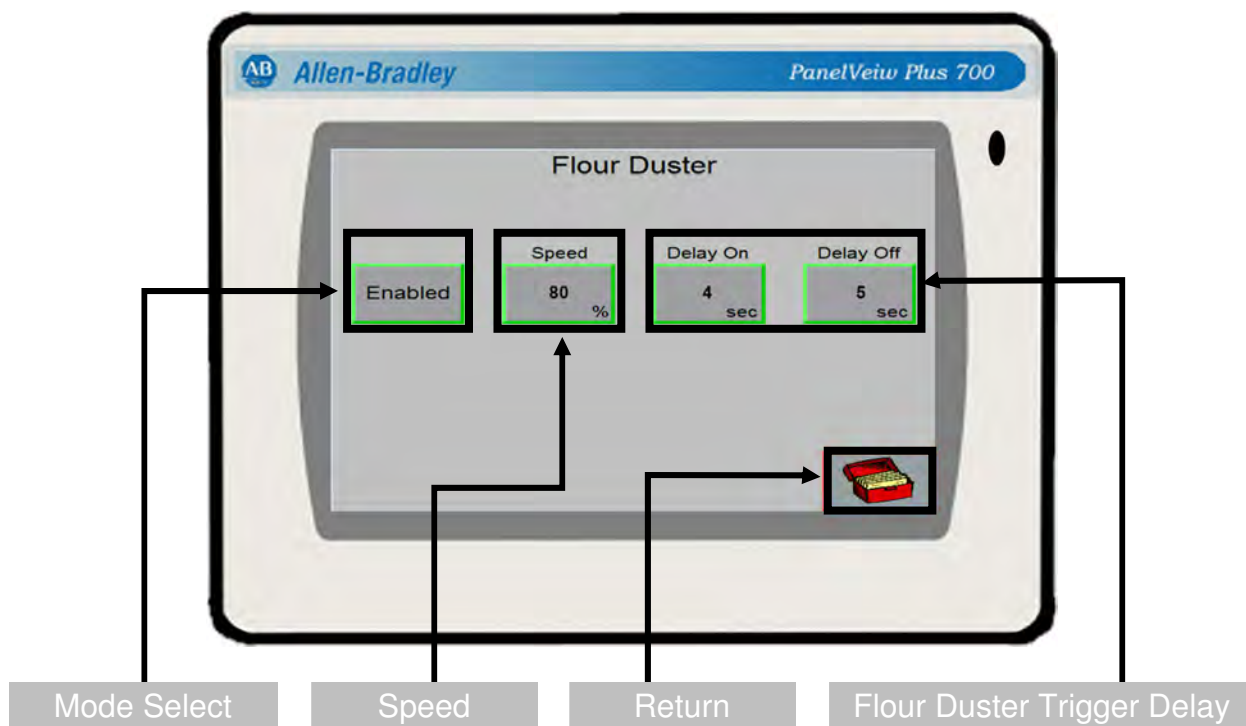
The Flour Duster may be incorporated into the Smart Seeder controls system or can be a standalone unit. If you purchased a standalone unit, please refer to the manual that came with your unit.

The following information is for the Flour Duster that is incorporated into the Smart Seeder control systems.

Navigation to the Water Spray Setup Screen



■ Flour Duster Setup Screen



The Burford® Flour Duster is designed to provide a uniform application of flour dusting automatically to your product without interruption. A variable speed controlled motor allows easy adjustment of the amount of applied to your product.

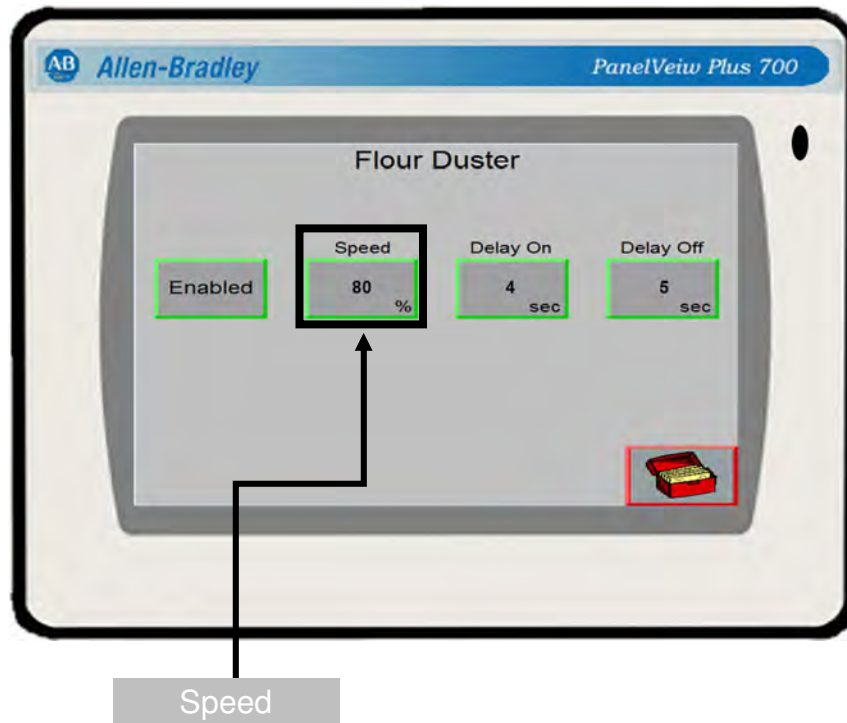
Percent Duster Speed – Controls the amount of flour applied to product.

Flour Duster Trigger Time – Allows precise control of the dispensed flour.

Mode Select – Flour Duster operating mode.

Return – Takes you back to the Recipe Setup screen.

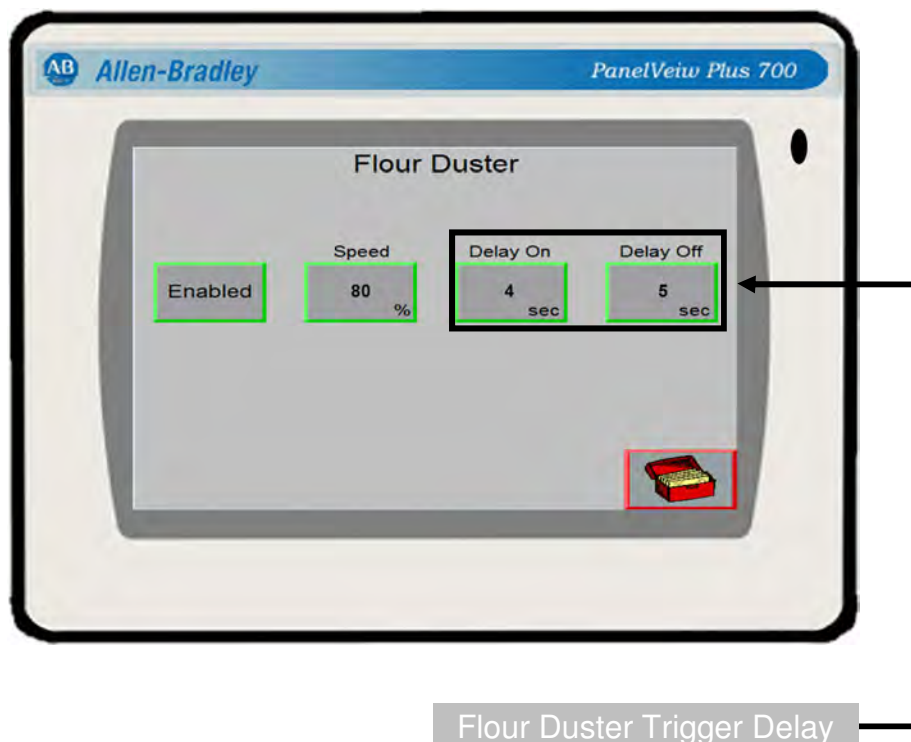
■ Flour Duster – Speed Control



The Speed Input is used to control the amount of flour applied to the product. The number value is a percentage of the maximum applicator speed from 0 to 99. Use the keypad to set a numeric value speed percentage that controls the rotation of the flour applicator.

An increase in the speed will result in more flour being dispensed in relation to the speed of the conveyor. A decrease in the speed will result in less flour being dispensed in relation to the speed of the conveyor.

■ Flour Duster – Delay Times



Flour Duster Trigger Times – The pan sensor for the Flour Duster is located upstream from the applicator dispense. It may be necessary to delay the start and stop of the flour applicator to ensure complete coverage of the product without any waste.

DELAY ON - The time from when the pan first makes the product sensor and the flour applicator turns on. When the product sensor is made, the PLC will wait the value of DELAY ON before turning the flour applicator on. The value of DELAY ON should turn the flour applicator on when the product is directly beneath the applicator dispense. The goal is to prevent wasted and ensure complete product coverage.

Press the DELAY ON box to modify the value.

DELAY OFF - The time from when the pan is no longer making the product sensor and the flour applicator turns off. When the product sensor is no longer being made, the PLC will wait the value of DELAY OFF before turning the flour applicator off. The value of DELAY OFF should turn off the flour applicator when product is no longer directly beneath the applicator dispense. The goal is to prevent waste and ensure complete product coverage.

Press the DELAY OFF box to modify the value.

Chapter 5

Creating a New Variety

CHAPTER 5: CREATING A NEW VARIETY

■ New Recipe - Introduction

The Burford® Smart Seeder uses varieties to store the setup information from the user. The system is capable of storing up to 60 individual varieties.

Each recipe will have a mandrel number associated with it. Varieties can only be linked to one mandrel number at a time. The mandrel number that is associated with the recipe must be inserted into the unit to be able to run that recipe.

The Recipe stores all of the data needed to be able to return to the user set position each time.

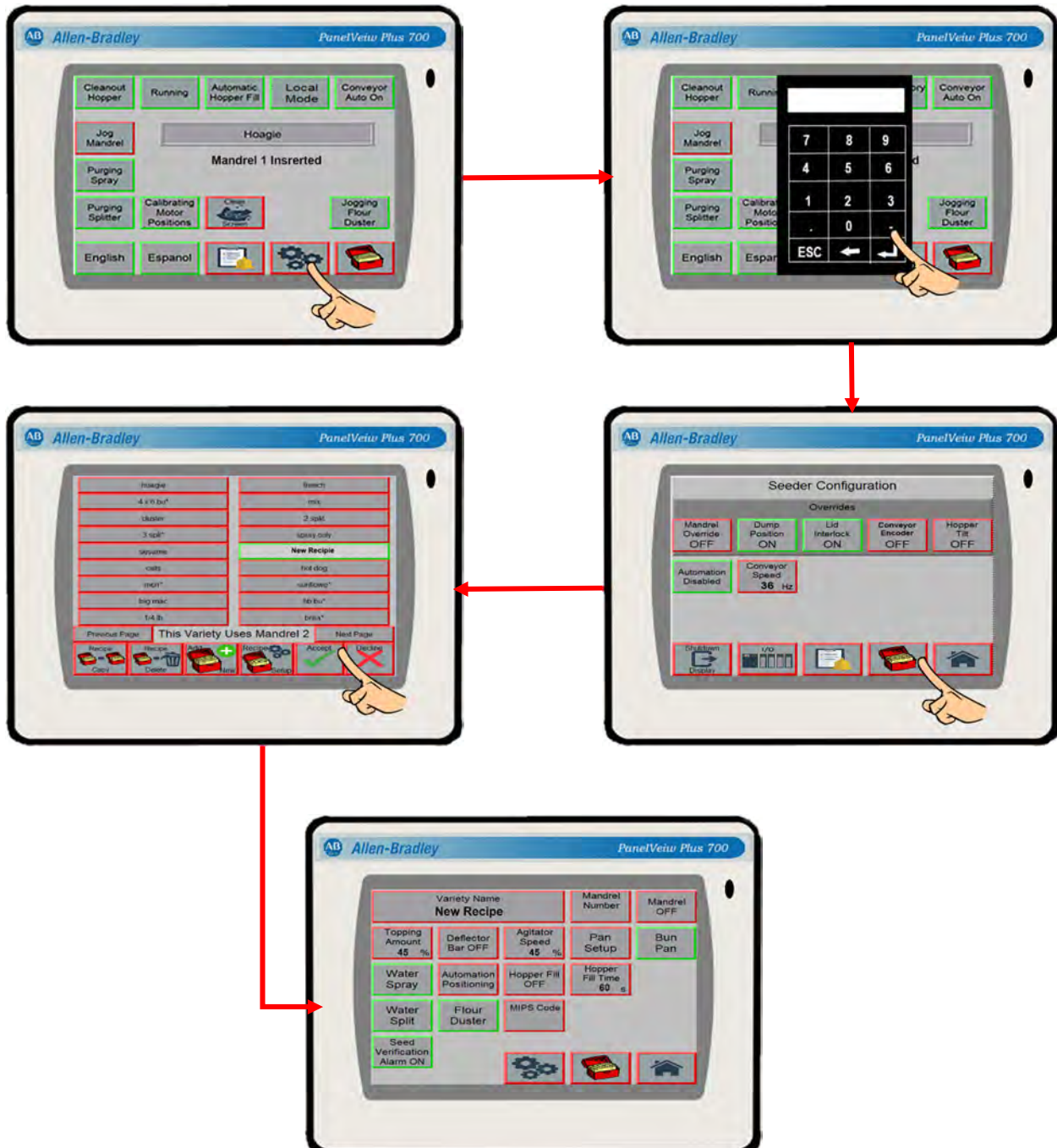
As we create a recipe, we go through all of the features available on the Burford® Smart Seeder. Some of these optional features may not be on your particular unit. Advance to the next section if we are discussing an option that is not on your unit.

Setting up a new recipe will require several pans of the product that you would like to create the recipe for to pass through the system.

The user should familiarize themselves with Chapter 4, *User Interface*, before attempting to create a new recipe.

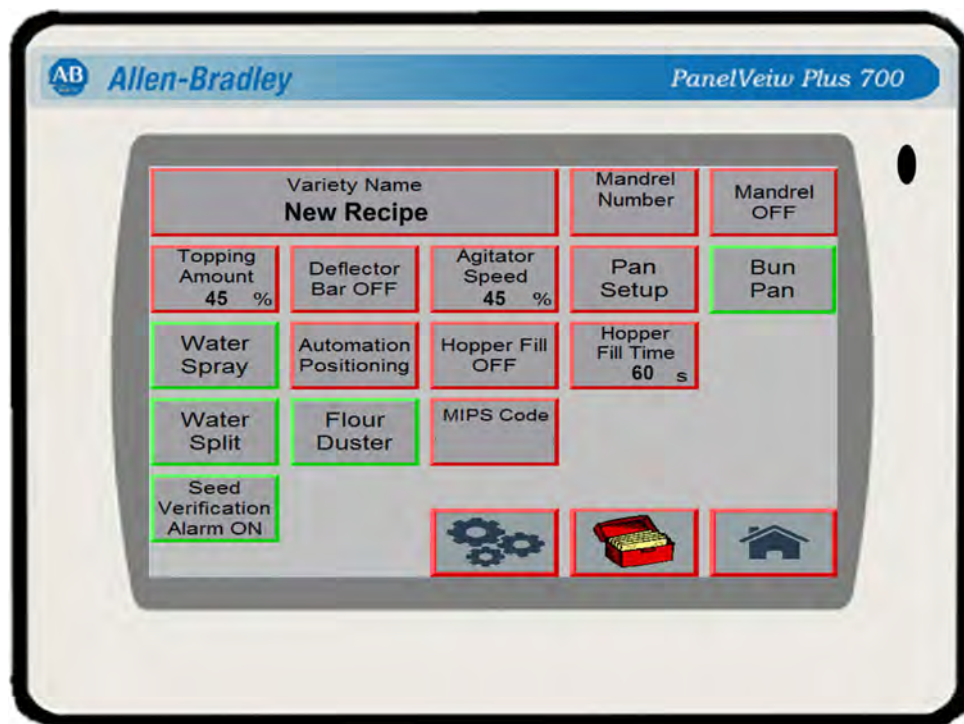
■ New Recipe - User Interface (HMI)

We will begin from the Main Run screen. To add a recipe, we must advance to the Recipe Setup screen. To have access to the setup screens you must be logged in with supervisor privileges. For more information, please contact your supervisor or Burford® Corp. The operator will press the SETTINGS button to log in and advance to the Seeder Configuration Screen. Press the RECIPE button to advance to the Edit Recipe button. From the Edit Recipe, the operator will select the ADD NEW button and then press ACCEPT for that edit to advance to the Recipe Setup Screen.



■ Recipe Setup Screen

This Recipe Setup Screen is where the operator will be able to modify the New Recipe. For more information, as to what all the buttons on this screen does refer to page 119.

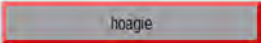


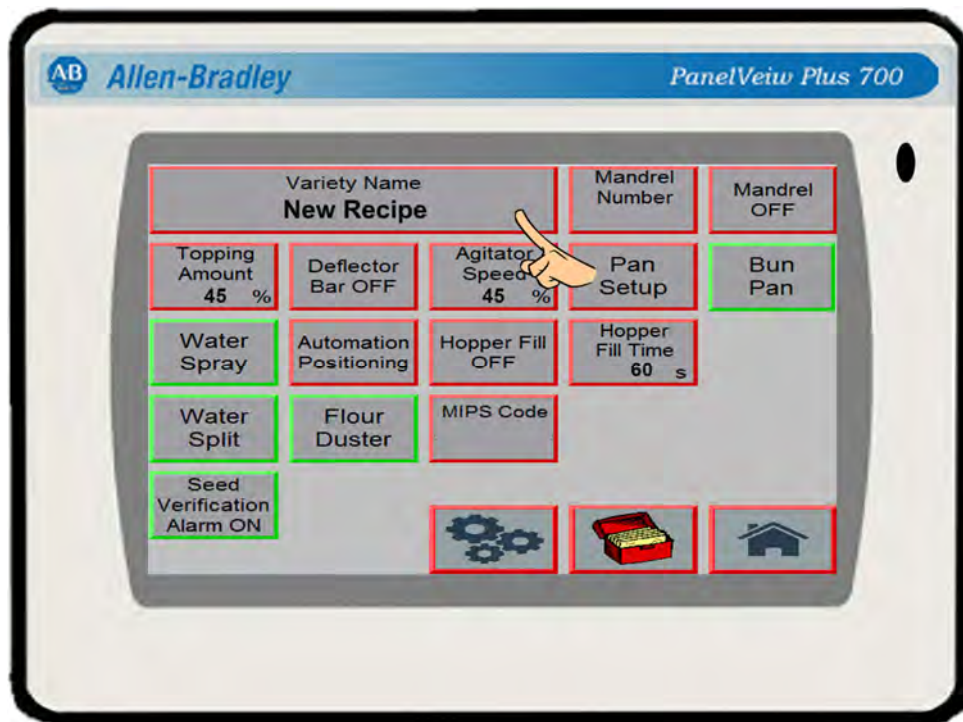
SOME OPTIONS WILL NOT BE AVAILABLE DEPENDING ON WHAT WAS PURCHASED.

Authorized personnel should only modify these settings. Damage to the unit and / or bodily injury may occur. Exercise extreme caution when making changes.

■ New Recipe – Name the Recipe

Type in the name of the new variety with the on-screen keyboard. Press the Return key when finished. In our example, the name Hoagie.

Press the  to name the New Recipe. In this example we will use  as the recipe name.

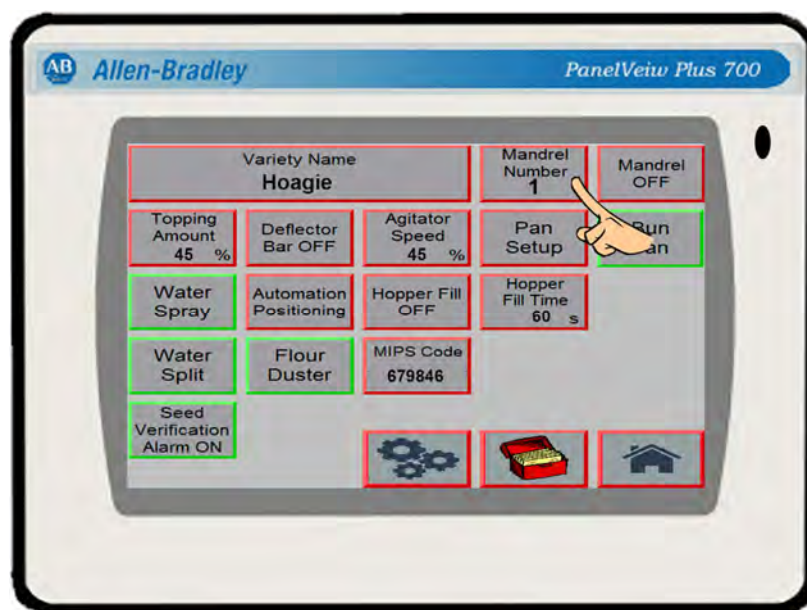
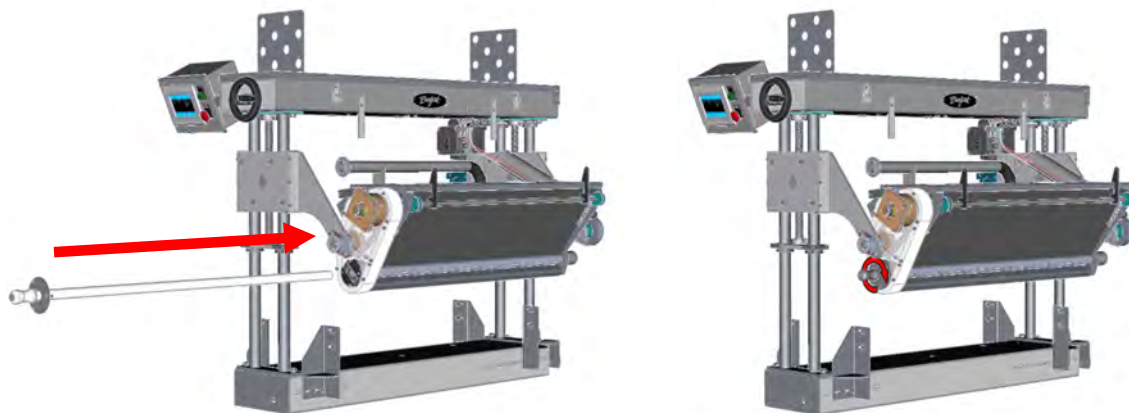


Authorized personnel should only modify these settings. Damage to the unit and / or bodily injury may occur. Exercise extreme caution when making changes.

■ New Recipe – Mandrel Select

Determine which mandrel will have the new variety and insert it into the topper. The Hopper will automatically move to the Dump position and perform Dump Procedures.

Twist the mandrel to lock it into the hopper. In this example, we will use Mandrel 1.



The Mandrel Label Button will show what mandrel is inserted. The operator is also able to input the mandrel that will be used in the recipe by pressing the Mandrel Label Button and inputting number on the keypad and pressing ENTER.

Enable the Mandrel drive by pressing  .

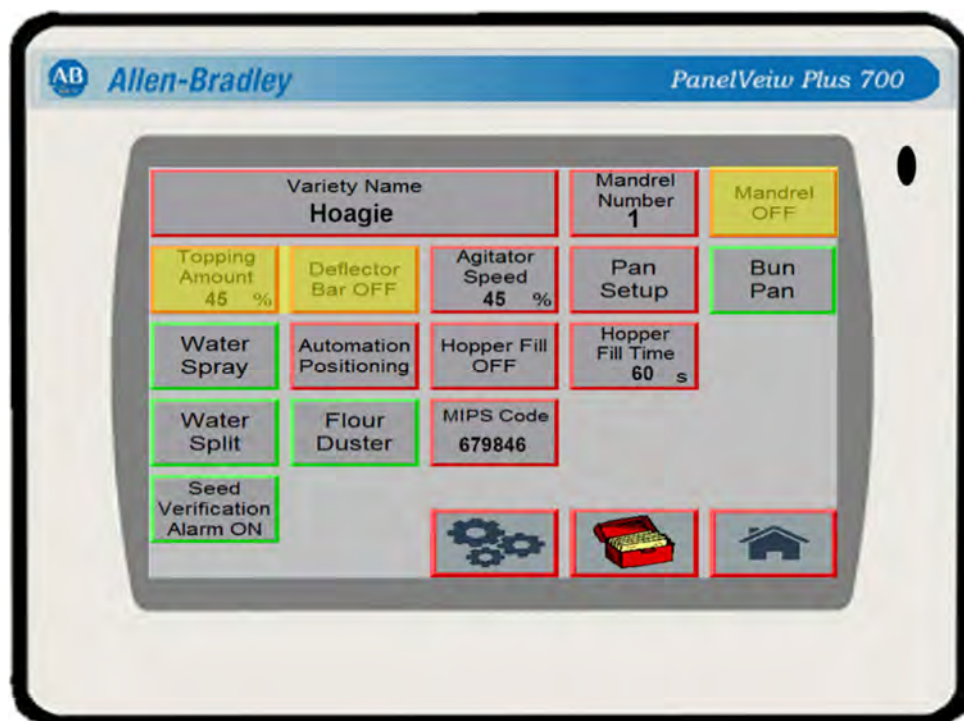
■ New Recipe – Hopper Controls

We will now setup the mandrel controls.

Set the Mandrel Speed by pressing the  button and input a numeric percentage. The higher the number the more toppings applied to the product.

Set the Mandrel Direction by pressing  the button until the direction of your choosing appears. Usually  will be chosen.

Extend  (ON), or Retract  (OFF), the Deflector bar.



■ New Recipe – Agitator Setup

Determine if the Agitator is needed for this variety.

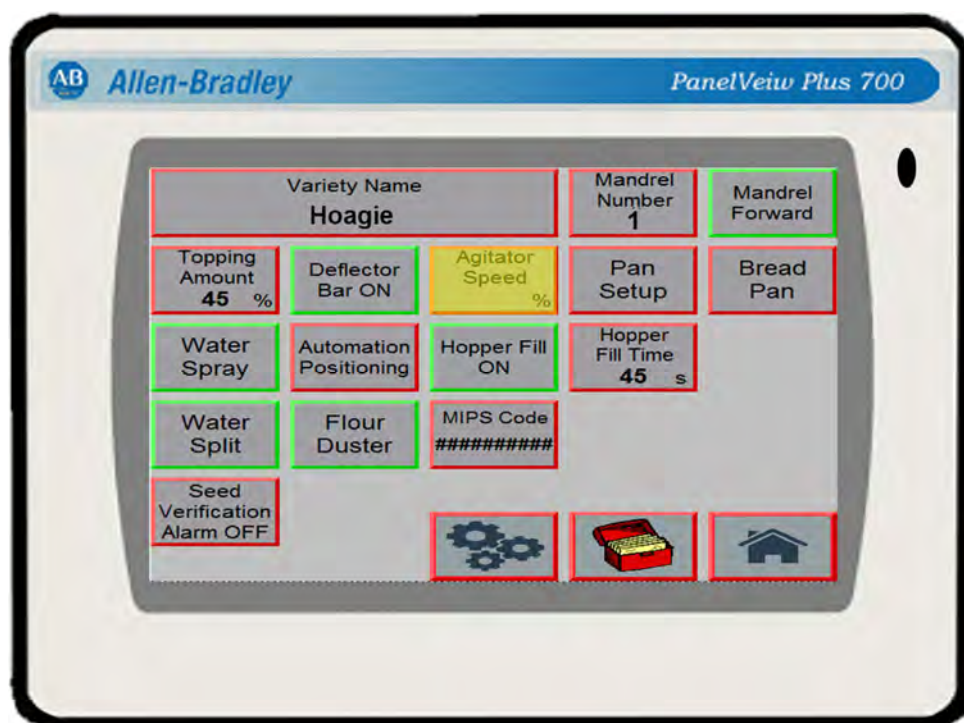
If the Agitator is enabled, set the speed in which the Agitator reciprocates by pressing the **AGITATOR SPEED** button  and inputting a numeric value.

The greater the number the faster the Agitator will reciprocate.

If the Agitator is not needed for the recipe, then set the speed to 0 (zero).

For this example, we will use 45  as the speed.

For more information on the Agitator, refer to page [125](#).



■ New Recipe – Hopper Position

On the Recipe Setup Screen, select  (Automation Positioning).

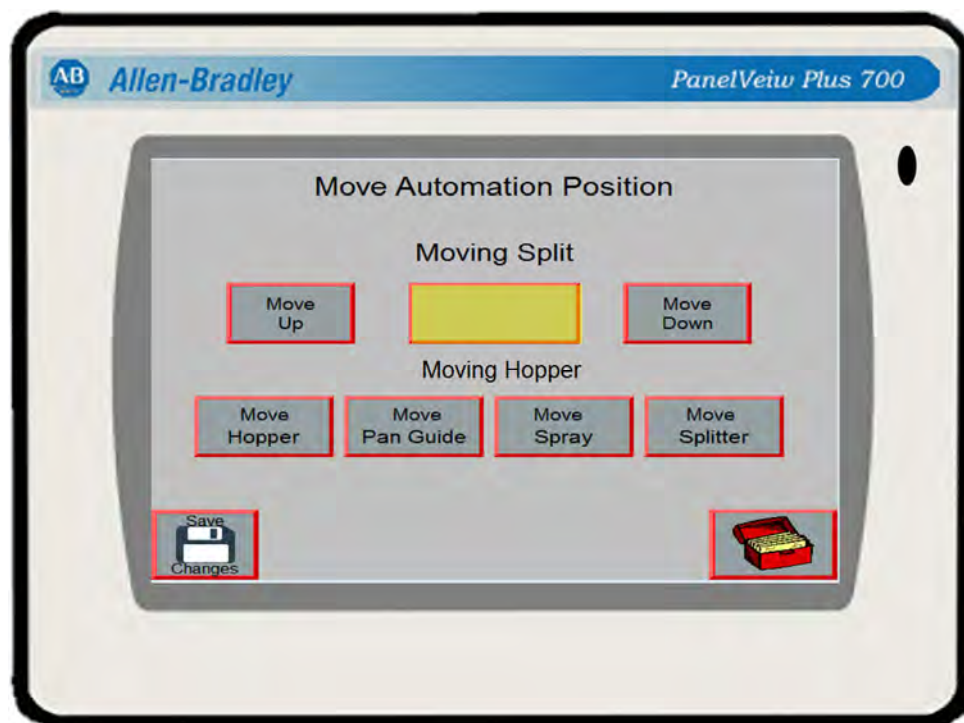
Determine the height of the hopper for this variety by placing a pan with the product that will be used during this recipe on the conveyor under the hopper.

Press  to lower the Hopper.

Press  to raise the Hopper.

Normally 2 to 3 inches above the product is acceptable for most toppings.

For Complete information on Hopper Position setup, see page 159.



Press  to save this setting.

■ New Recipe – Pan Guide

On the Recipe Setup Screen, select  (Automation Positioning).

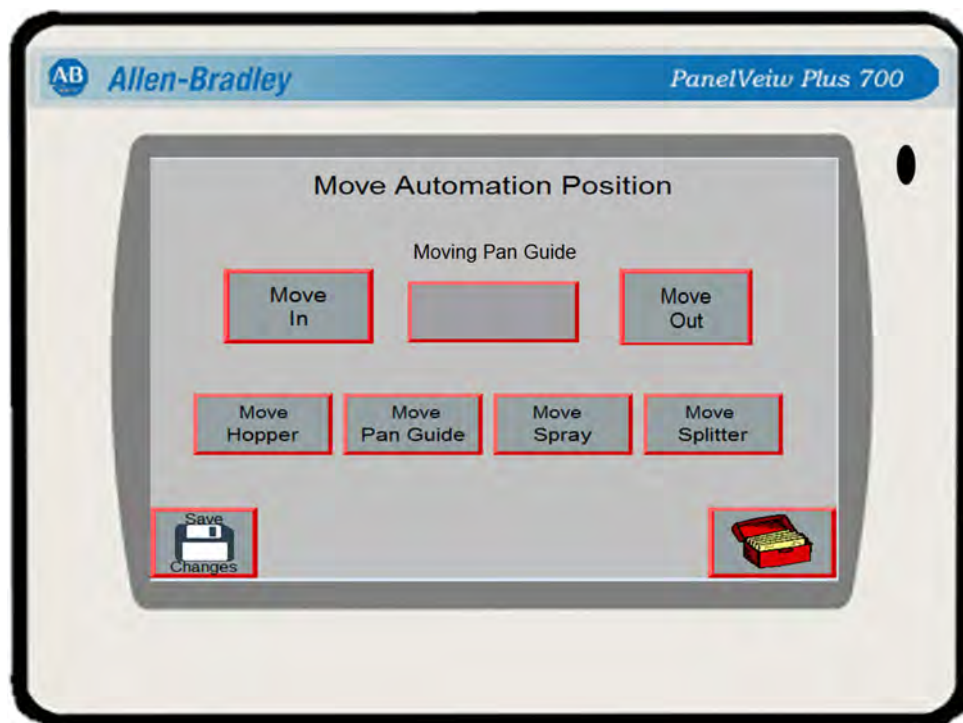
Determine the width of the pan guides for this variety by placing a pan with the product that will be used during this recipe at the infeed and outfeed positions of the conveyor.

Press  to close the Pan Guide distance.

Press  to increase the Pan Guide distance.

Normally 1/4 inch on both sides of the pan is acceptable.

For Complete information on Pan Guide setup, see page 160.



Press  to save this setting.

■ New Recipe – Spray Lift

On the Recipe Setup Screen, select **Automation Positioning** (Automation Positioning).

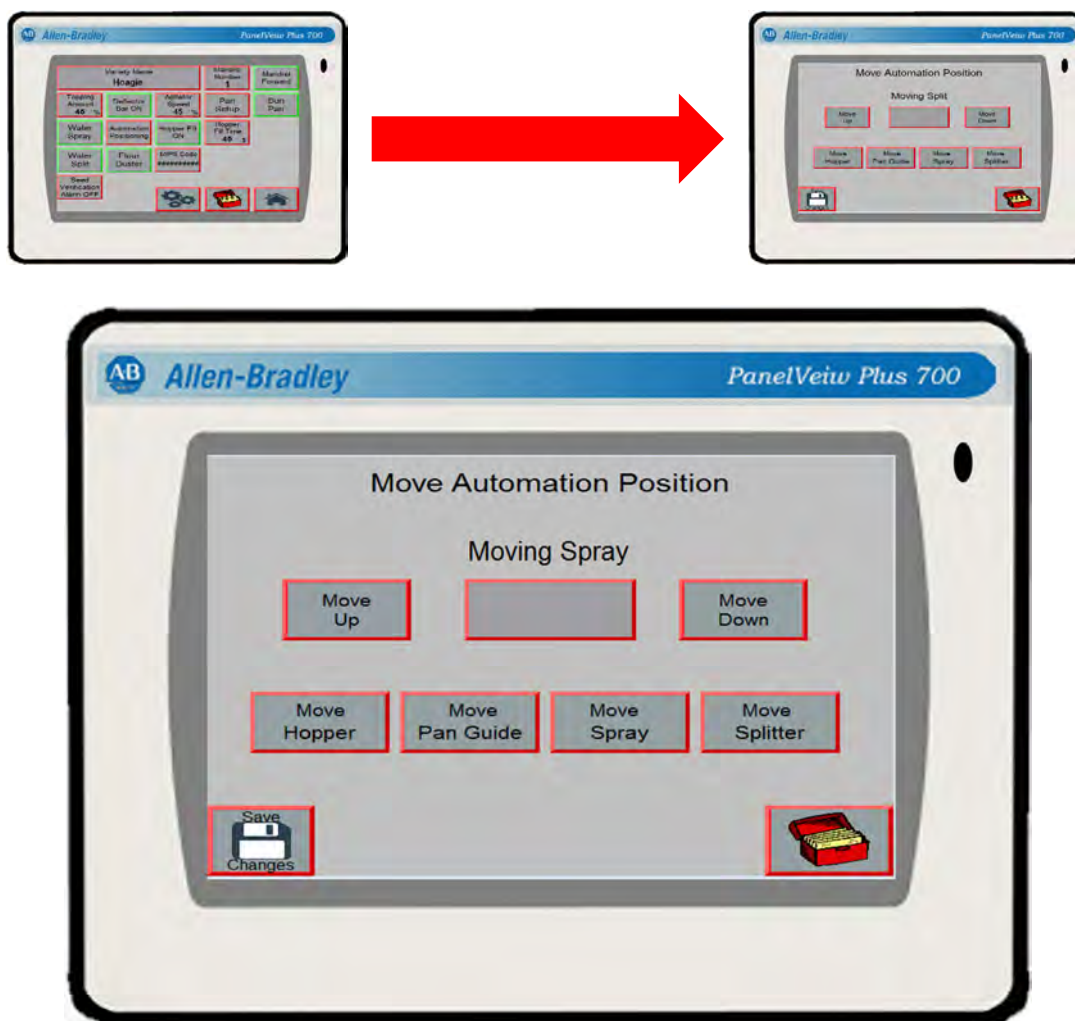
Determine the height of the Spray Rail for this variety by placing a pan with the product that will be used during this recipe under the spray rail.

Press **Move Down** to lower the Spray Rail.

Press **Move Up** to raise the Spray Rail.

Normally 5 to 6 inches above the product is acceptable for most toppings.

For Complete information on Hopper Lift setup, see page 161.



Press **Save Changes** to save this setting.

■ New Recipe – Split Lift

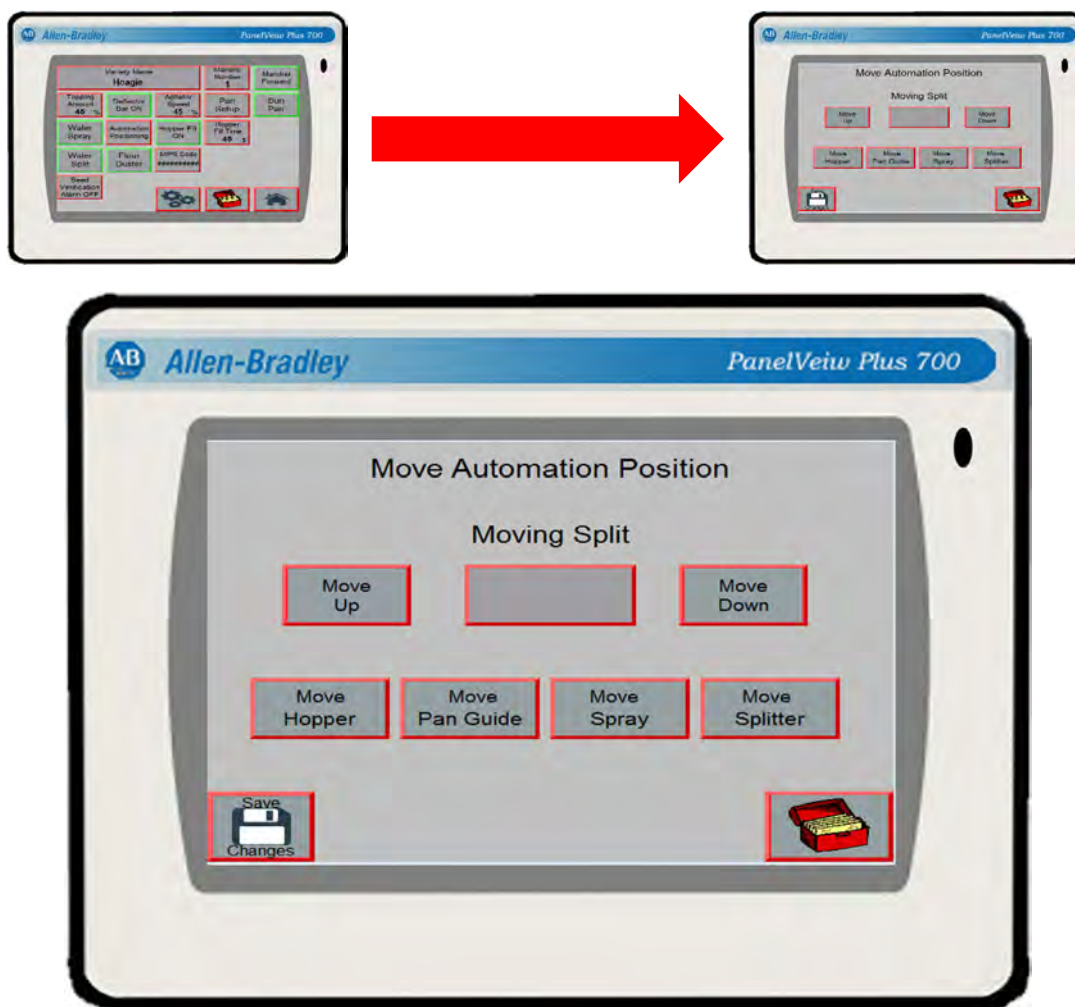
On the Recipe Setup Screen, select  (Automation Positioning).

Determine the height of the Split Rail for this variety by placing a pan with the product that will be used during this recipe on the conveyor. Run the pan under the rail until you achieve the split desired.

Press  to lower the split rail.

Press  to raise the split rail.

For Complete information on Hopper Lift setup, see page 162.



Press  to save this setting.

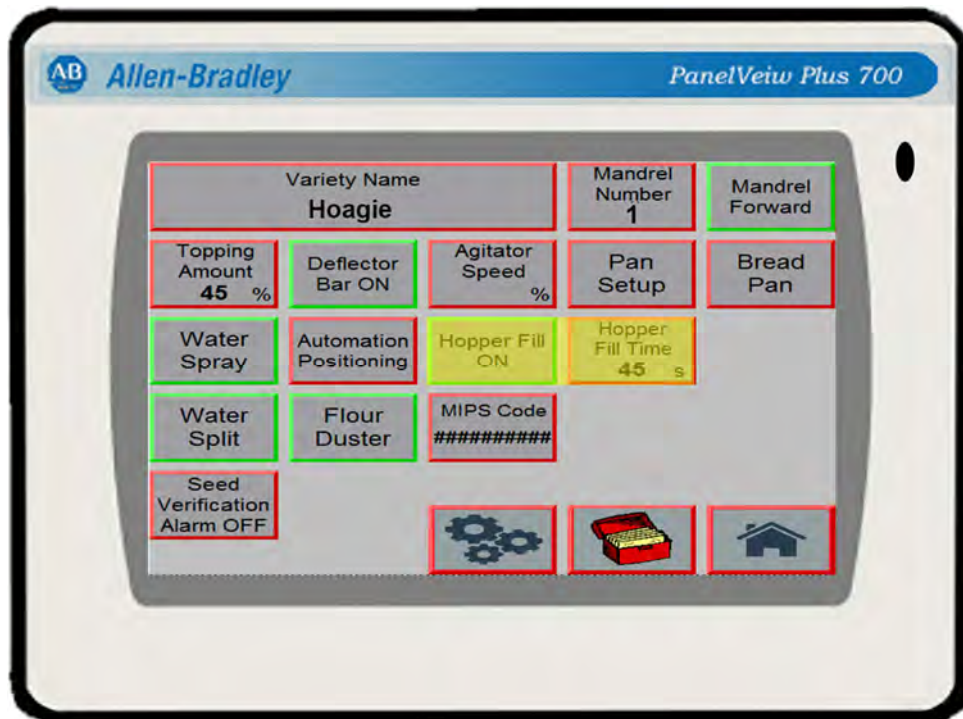
■ New Recipe – Hopper Fill (Optional)

Determine if the Hopper Fill is needed for this variety. Select whether the Hopper Fill will be available for this variety when loaded by the toggling the  and  on the top half of the screen.

If the Auto-Fill will be available on this variety, then select the time of the Hopper Fill by placing a numeric value in seconds in the .

For this example, we will use 45 seconds as the fill time.

For Complete information on the Hopper Fill setup, see page 163.

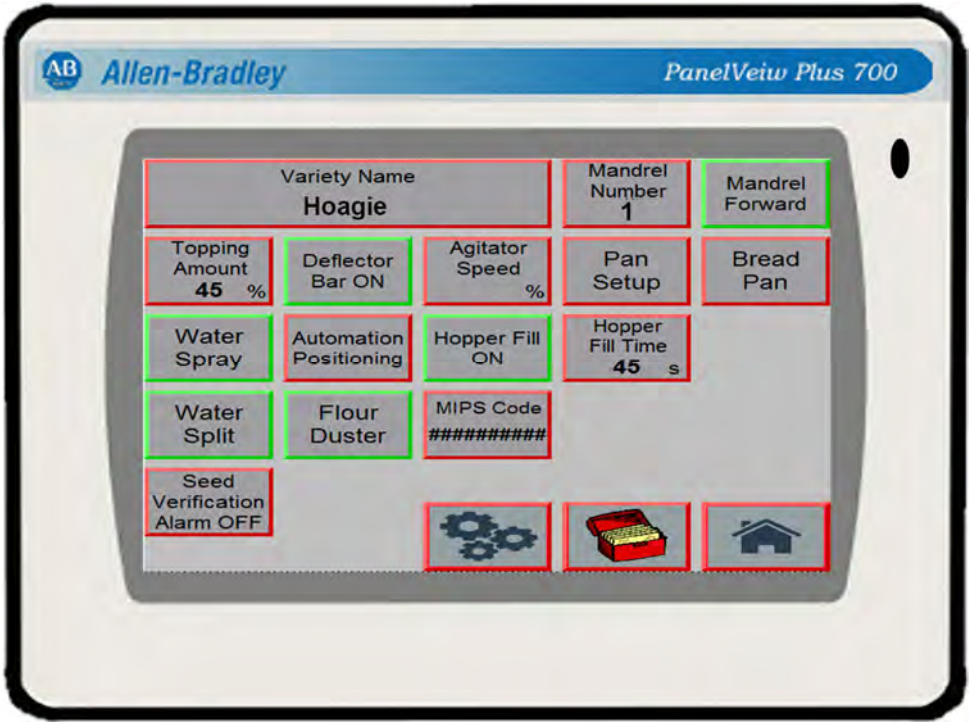


■ New Recipe - Seed Level Alarms (Optional)

Determine if the Seed Verification Alarms are needed for this variety.

Turn the Seed Verification Alarm ON or OFF by pressing  and .

For Complete information on Level Alarms setup, see page 166.

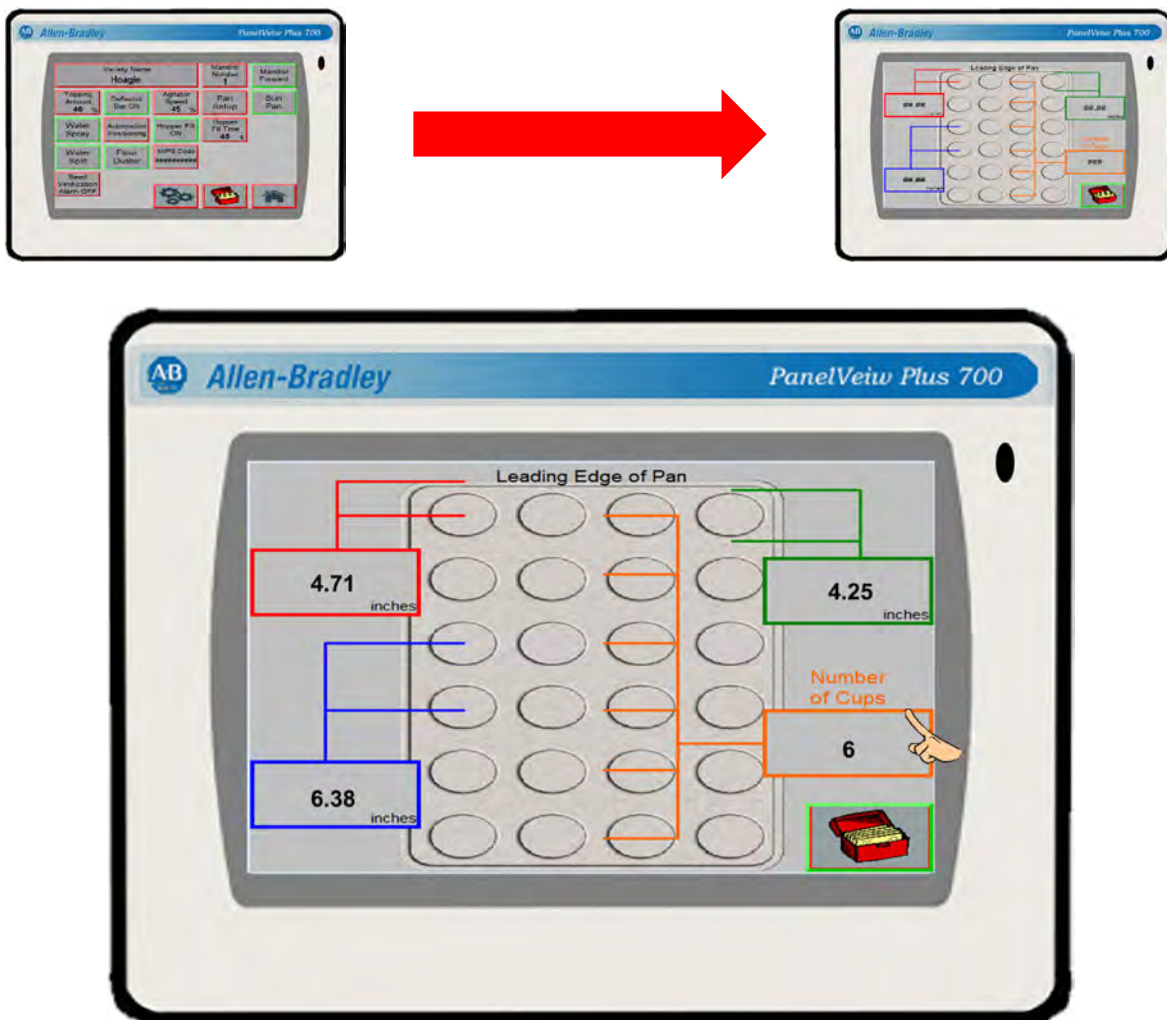


■ New Recipe – Pan Setup, continued

Begin by running pans of product through the system. It may take several pans to setup up a variety. There should be dough in the pan to achieve the best results.

Set the Pan Dimensions by pressing the corresponding input selections on the screen that are associated with the dimension of the pan. The software utilizes the dimensions entered to calculate the necessary amount of topping to dispense into each cup, minimizing the topping consumption.

To learn how to set the dimensions refer to page 130.



Press  to return to the Recipe Setup Screen.

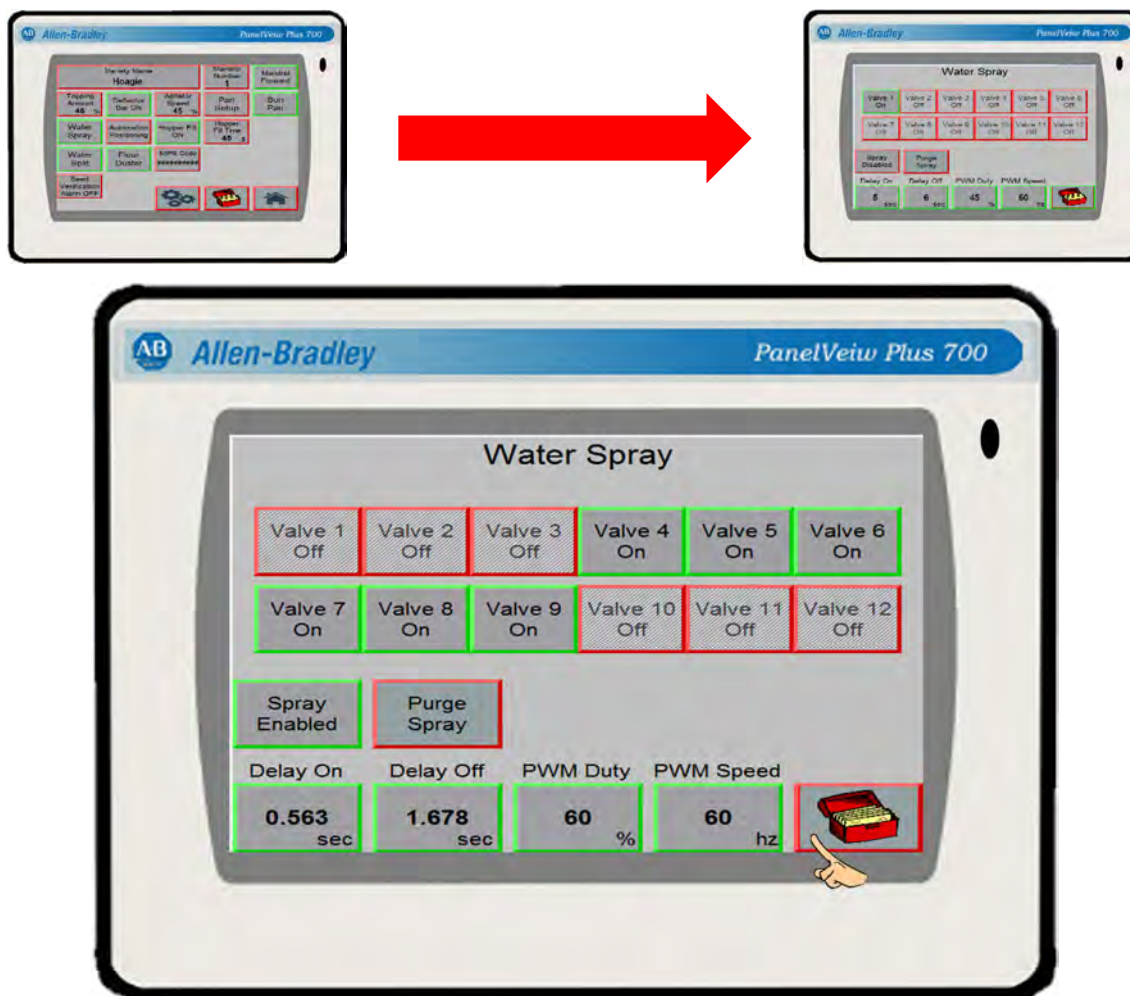
■ New Recipe – Water Spray

Determine if the variety will be sprayed when variety is loaded. Select the  button to advance to the Water Spray Setup Screen.

With a pan for the variety present, turn on the valves that will be enabled when the recipe is loaded. Position the valves on the spray rail in alignment with the pan. *Refer to page 207 for information on Topper Spray Nozzle position.*

With the conveyor running, place the pan on it and allow it to pass under the spray rail. Observe the ON and OFF actuation of the valves in reference to the beginning and end of the pan. Adjust the ON and OFF delays until you are satisfied with spray coverage.

For Complete information on Water Spray setup, see page 161.



Press  to return to the Recipe Setup Screen.

■ New Recipe – Water Split

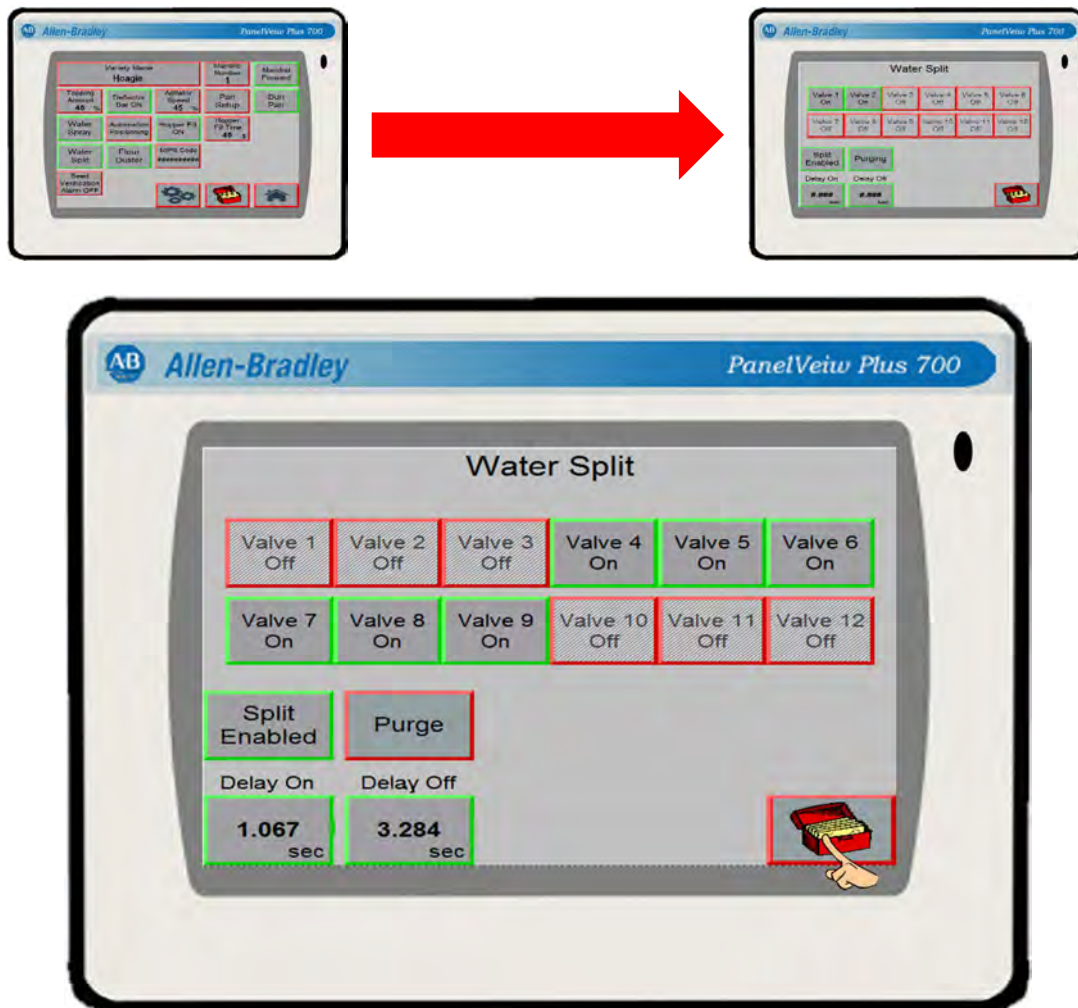
9

Determine if the variety will be Split when loaded. Select the **Automation Positioning** button for the Water Splitter Setup Screen.

With a pan for the variety present, turn on the valves that will be enabled when the variety is loaded. Position the valves on the splitter rail in alignment with the pan.

With the conveyor on, place the pan on it and pass the pan under the split rail. Observe the ON and OFF actuation of the valves in reference to the beginning and end of the pan. Adjust the ON and OFF delays until you are satisfied with spray coverage.

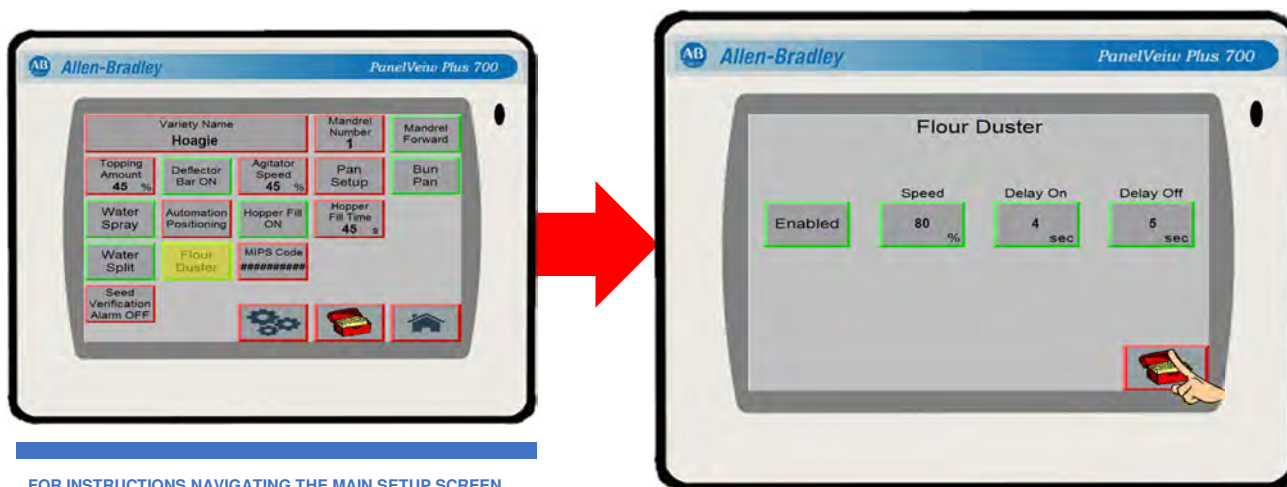
For Complete information on Splitter setup, see page 162.



Press  to return to the Recipe Setup Screen.

■ New Recipe – Flour Duster (optional)

On the Main Setup Screen press  (Flour Duster).



If equipped with a Flour Duster, enter the parameters for setup.

Select the mode for this variety by pressing  and enable or disable the Flour Duster for this recipe.

Enter the PERCENT DUSTER SPEED by pressing  and putting in a numeric value.

Enter the DELAY ON and DELAY OFF time values.

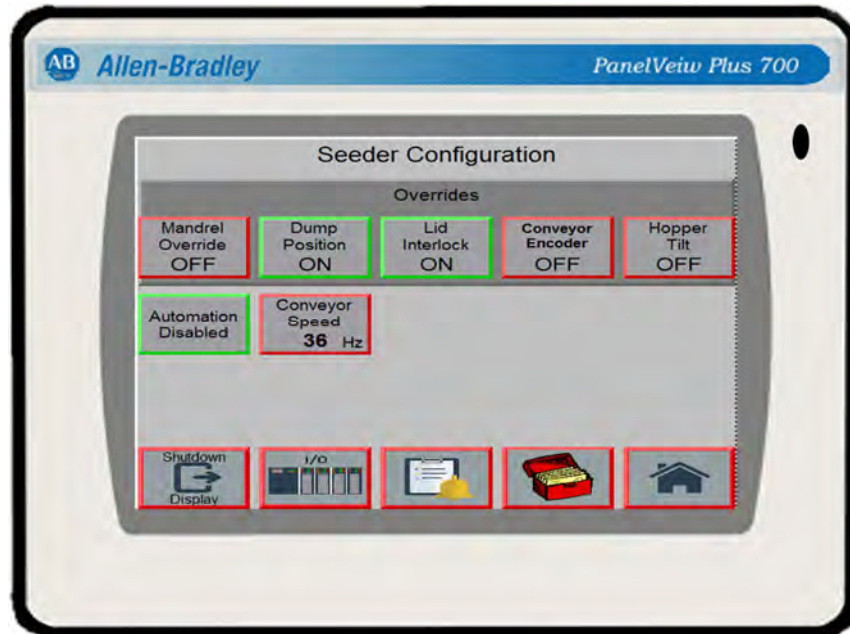


For Complete information on the Flour Duster setup, see page 168.

Press  to return to the Recipe Setup Screen.

■ New Recipe – Seeder Configuration

Press  to return to the Main Screen.



Set the critical unit functions to the recipe by return to the Main Screen and pressing the Setup button to advance to the Seeder Configuration Screen.

Use extreme caution when changing any settings.

Refer to page 102 for more information regarding the Seeder Configuration Screen.

Congratulations! You have now set a new recipe.

Chapter 6

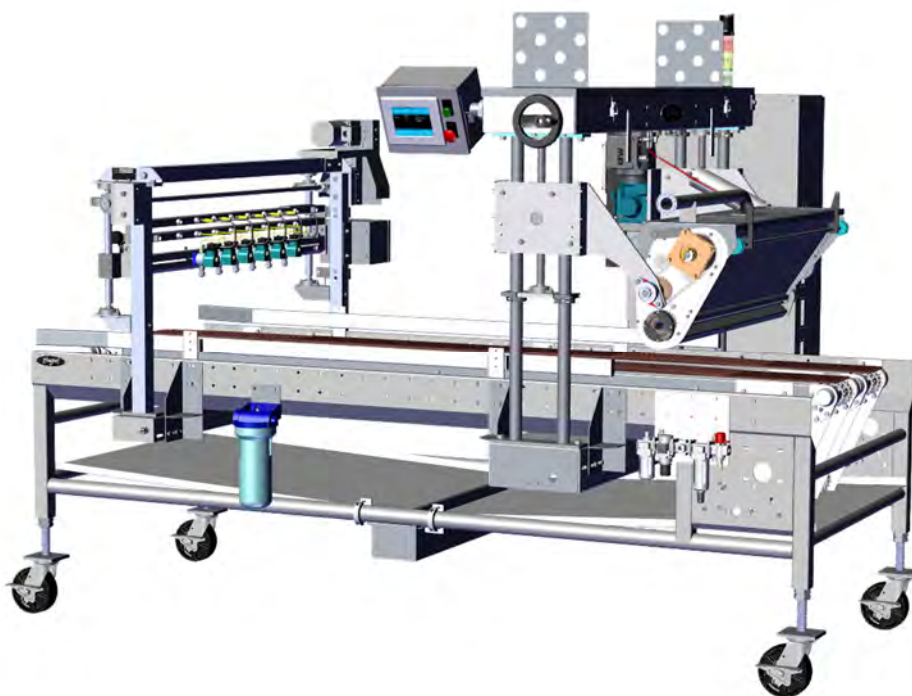
Operation Procedures

CHAPTER 6: OPERATION PROCEDURES

■ Theory of Operation

Product begins to flow onto the unit's conveyor. As the product moves down the conveyor chain it encounters a product sensor. Once the product has actuated the product sensor for the amount of time entered in the "SPRAY DELAY" the spray sequence begins (determined by the setup information provided via the control panel). Product then travels beneath the spray head assemblies. The application of water is a crucial step in the application of topping since it helps bond the topping to the dough. An insufficient application of water will lead to the topping bouncing or slipping off the product; too much water can lead to spotting during bake out. The product then exits the spray / split area and continues downstream.

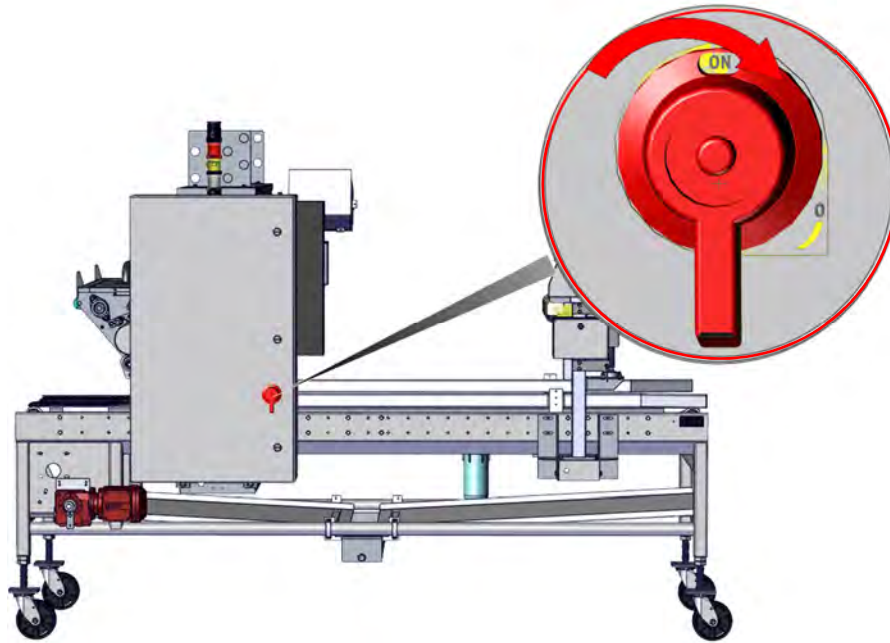
After water has been applied, the pans travel to the topping application area located directly under the unit's hopper. A pan sensor is used to sense the leading edge of the pan. When a pan is sensed, an electrically controlled clutch/brake is actuated, causing the mandrel assembly to rotate and dispense topping. The pan dimension data entered for the particular recipe and encoder signals control the timing and duration of the dispensing process.



■ Main Disconnect

The main disconnect controls the power to the unit. This is where the machine is turned “ON” or “OFF”. Turn the Unit “ON” by turning the disconnect Switch to the “ON” position.

Turn the Unit “ON” by turning the disconnect Switch to the “ON” position. The HMI will perform a self-diagnostic test.



Shown above is the disconnect switch in the “ON” position. Turn the handle 90° clockwise to turn the unit OFF.

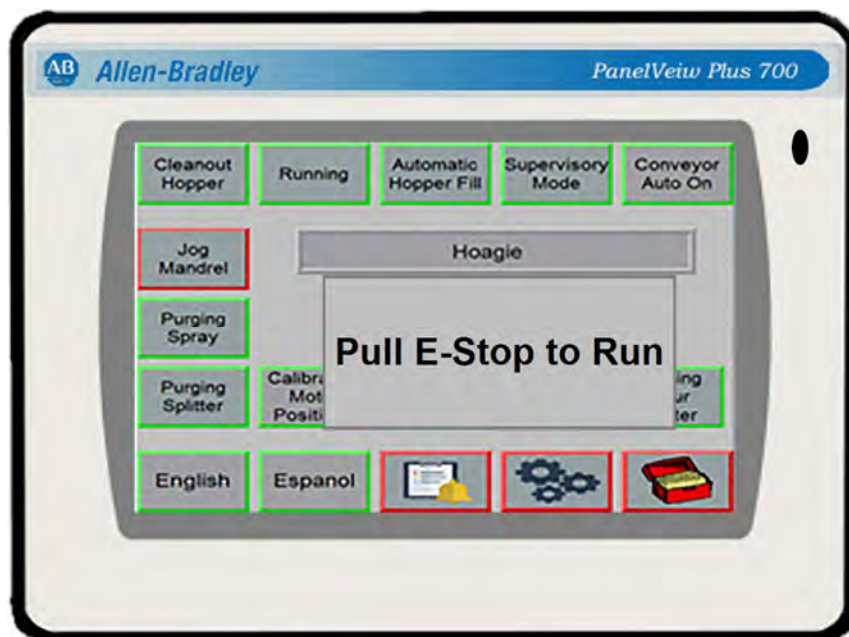
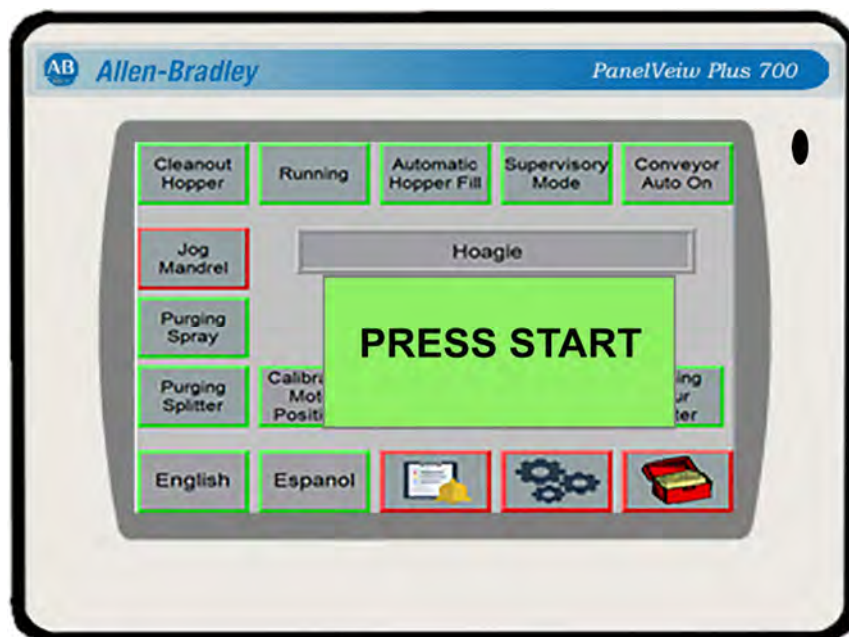
■ E-Stop

When safe to do so, pull the E-Stop out to initialize the unit. The HMI will perform self-diagnostic tests.



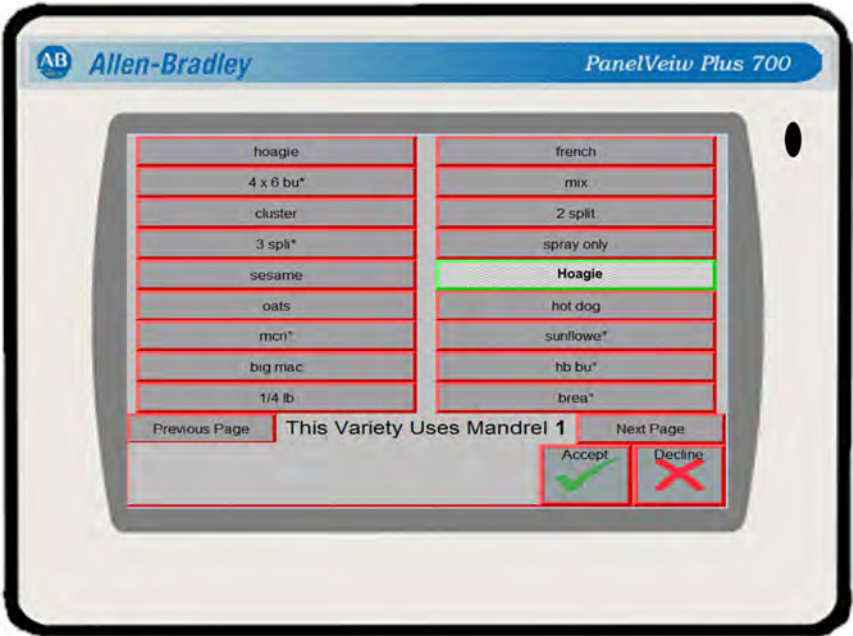
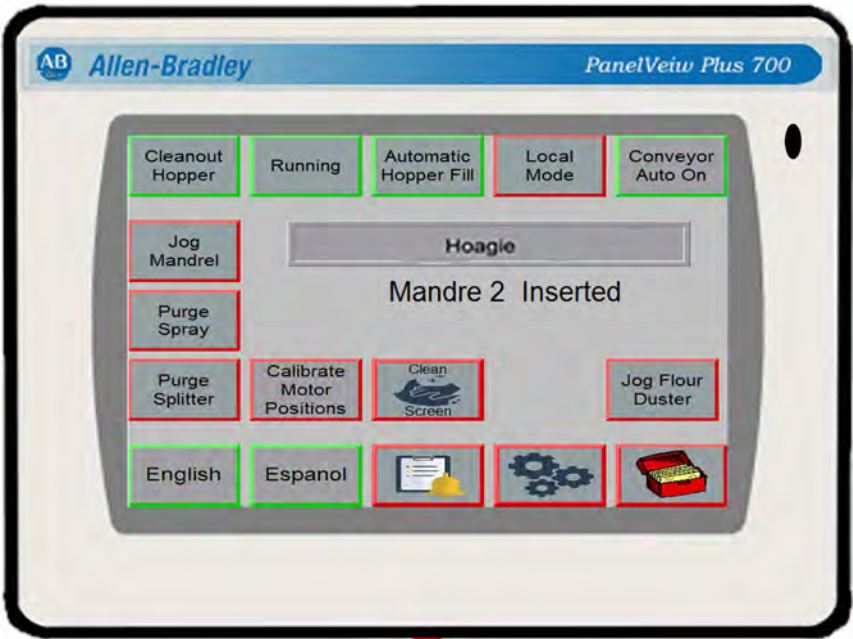
■ Press Start

The unit will begin moving to in the following sequence: Hopper Lift, Pan Guides, Spray Lift, and Split Lift. The homing process can take several minutes. Do not interrupt the homing of the unit.

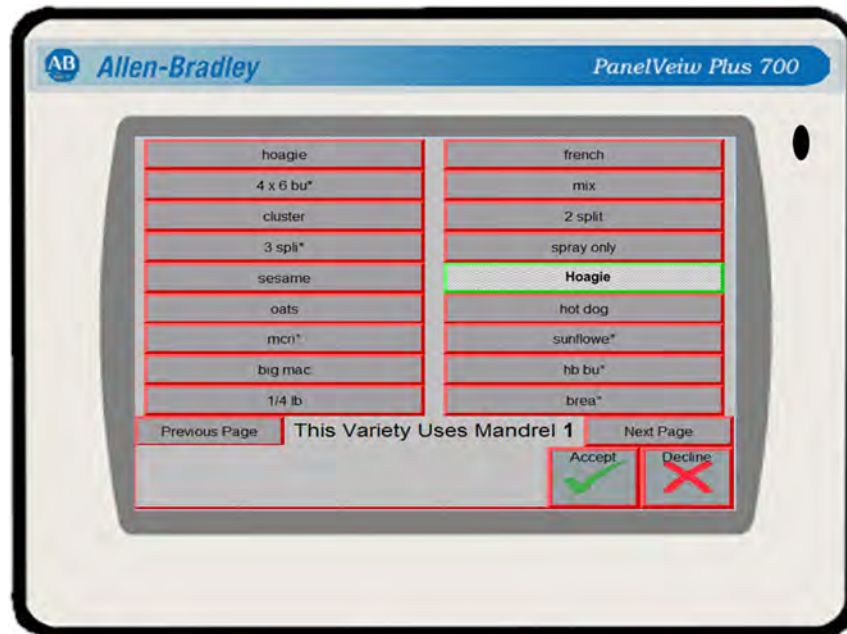


■ **Select Recipe**

After the homing process, you will be at the Main Run screen. To select a recipe, press the  button. You will advance to the select recipe screen.



■ Select Recipe, continued



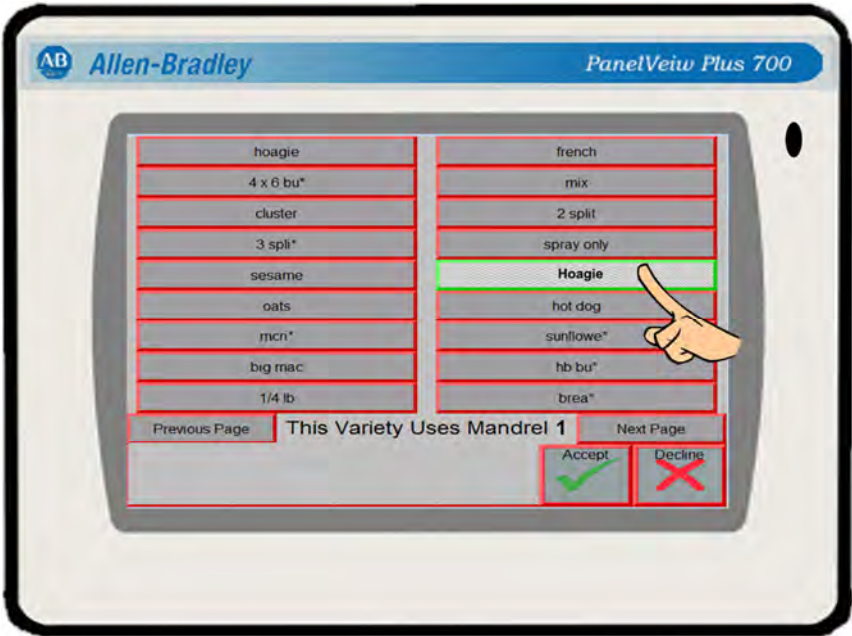
The Select Variety screen allows the user to change the current variety selected. An indicator at the lower middle of the screen displays the Mandrel needed for the highlighted recipe. Once the variety is highlighted, the operator will push the ACCEPT button. The unit will now move all of the automated adjustments to the position that was configured for that particular variety.

If the operator then selects a variety that is not available with the current Mandrel inserted, a dialog box will appear informing the operator of the correct Mandrel to be inserted for the variety selected. Once the correct Mandrel is inserted, the unit will begin moving to dump and wait for the correct mandrel. Once the correct mandrel is inserted, the unit will move to the configured positions for that Recipe.

Press DECLINE to return to the Main Run screen.

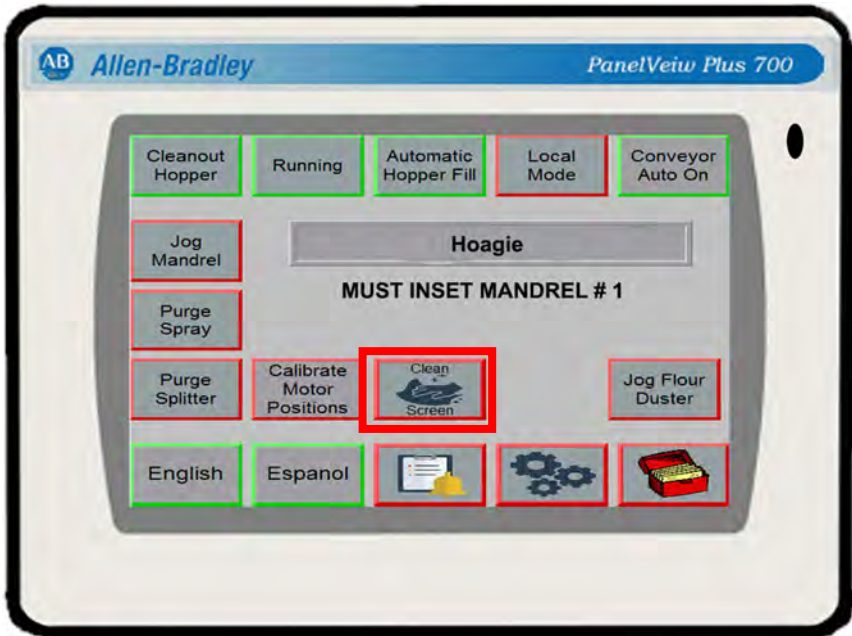
■ **Select Recipe, continued**

This will display all of the varieties that are installed on the unit. Highlight the desired variety that you want to load. The message box will display what mandrel is used with the recipe.



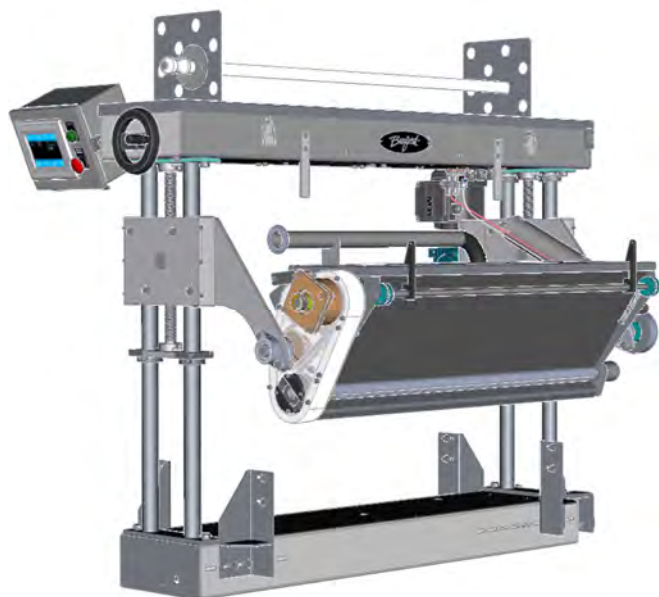
Select a recipe by touching the recipe box and then press,  ACCEPT.

If the recipe calls for a different mandrel than what is inserted, then the hopper will move to the dump position and perform the dump procedure.



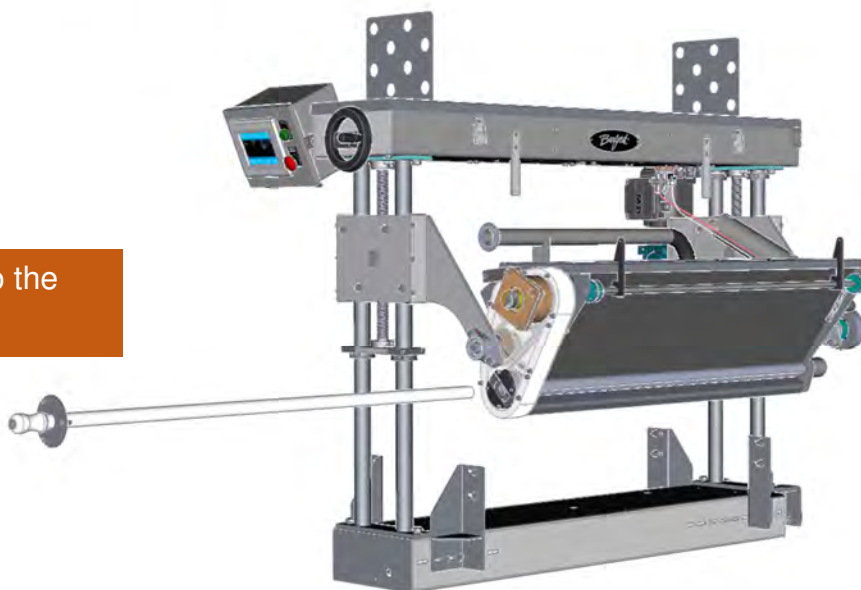
■ Insert Mandrel

Insert the Mandrel number indicated as follows.



Retrieve the mandrel from the mandrel storage.

Insert the mandrel into the mandrel tube.



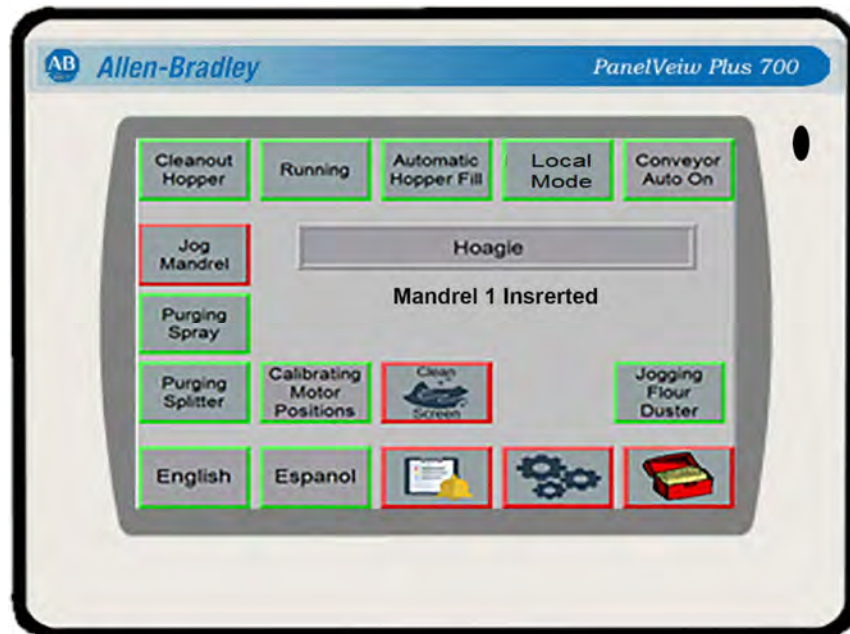
Twist the mandrel to lock it into drive.



■ Run Mode

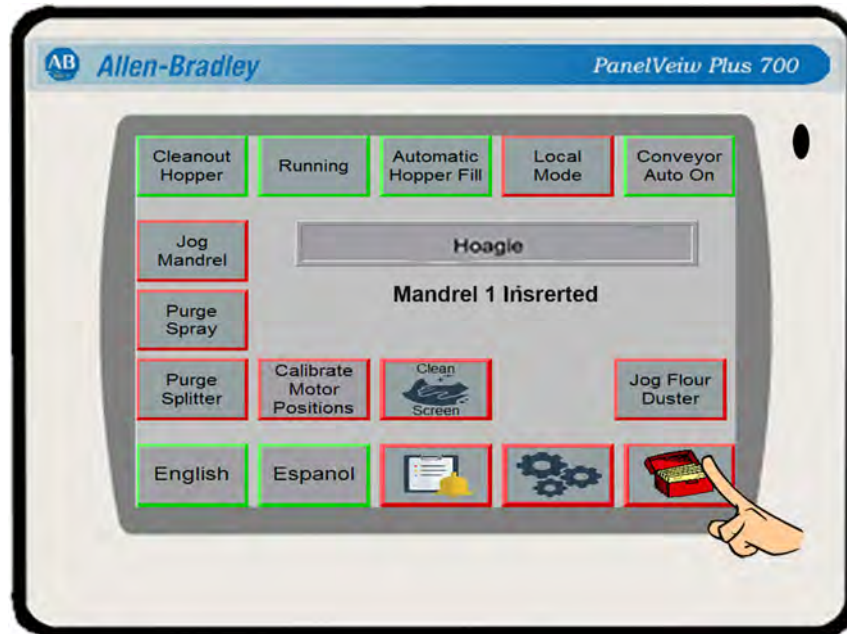
Verify Water Spray and Water Split are working by pressing Purge. Verify Topper, Conveyor, Auto-fill and Flour Duster are on in accordance with the selected recipe.

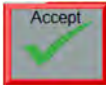
To set up a recipe refer to Chapter 5.

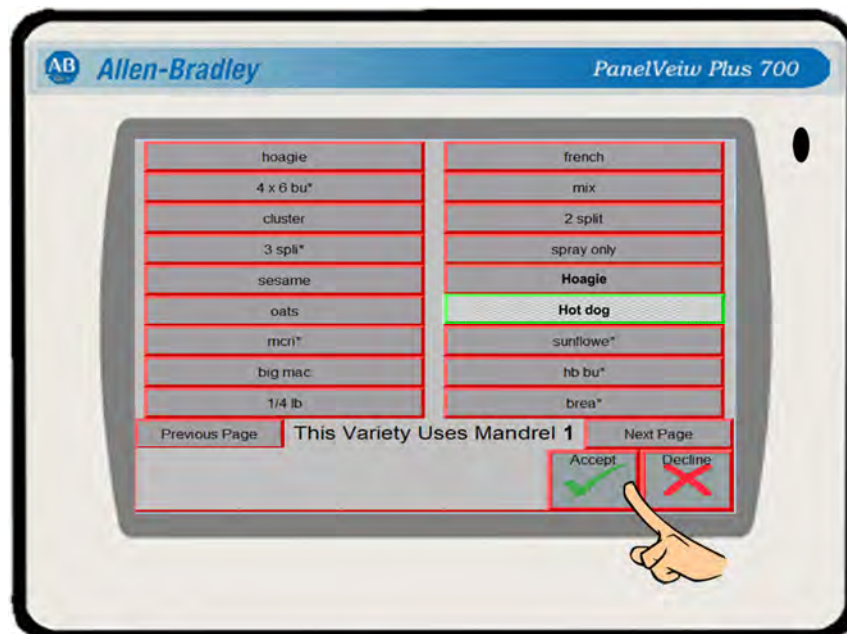


■ Recipe Change Same Mandrel

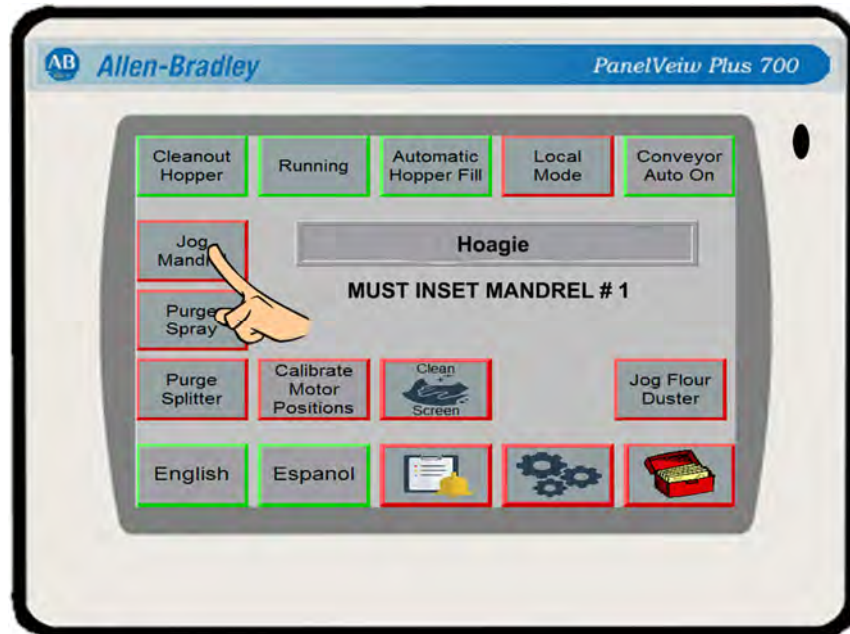
The SELECT Recipe button advances the display to the variety selection screen shown on following page, providing a simple method to select a desired recipe.



Highlight the recipe that you would like to run and press . The unit will move to the set parameters for that recipe.



■ Recipe Change - Jog Mandrel



Pressing the JOG MANDREL button will rotate the mandrel. The Mandrel will remain rotating for 15 seconds.

The Jog Mandrel feature is used to load the Mandrel with toppings prior to the first pan and to verify operation.

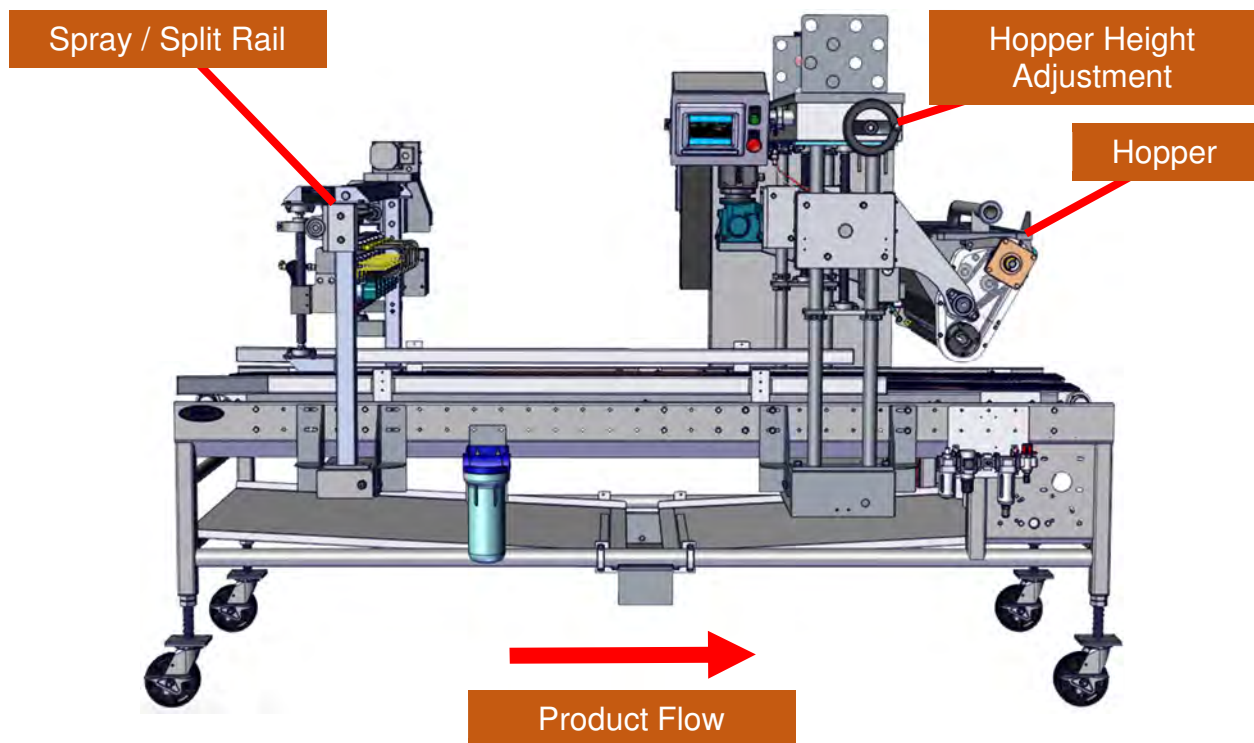
■ Options

Depending on options purchased, your unit may or may not be fully automated. The next few pages reviews the procedures for manual setup of the pan guides, Hopper height. Spray and Split lift. If your unit is fully automated, refer to Chapter 4 and 5 on how to set the automation of your Unit.

■ Models Without Automation

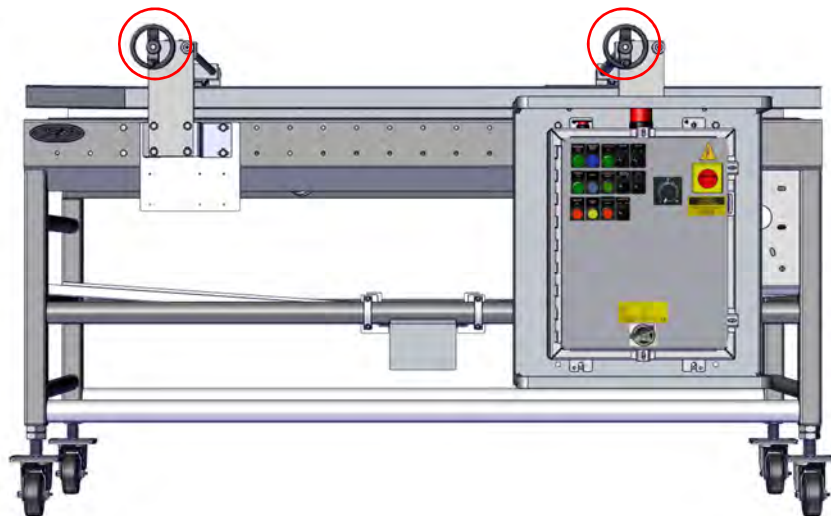
Before running a recipe, the Topper must be setup properly. If the unit is fully automated, the Topper will automatically position itself for the recipe selected. Depending on the automation options purchased, the operator may have to adjust:

- Pan Guides
- Hopper Height
- Water Spray / Water Split Height

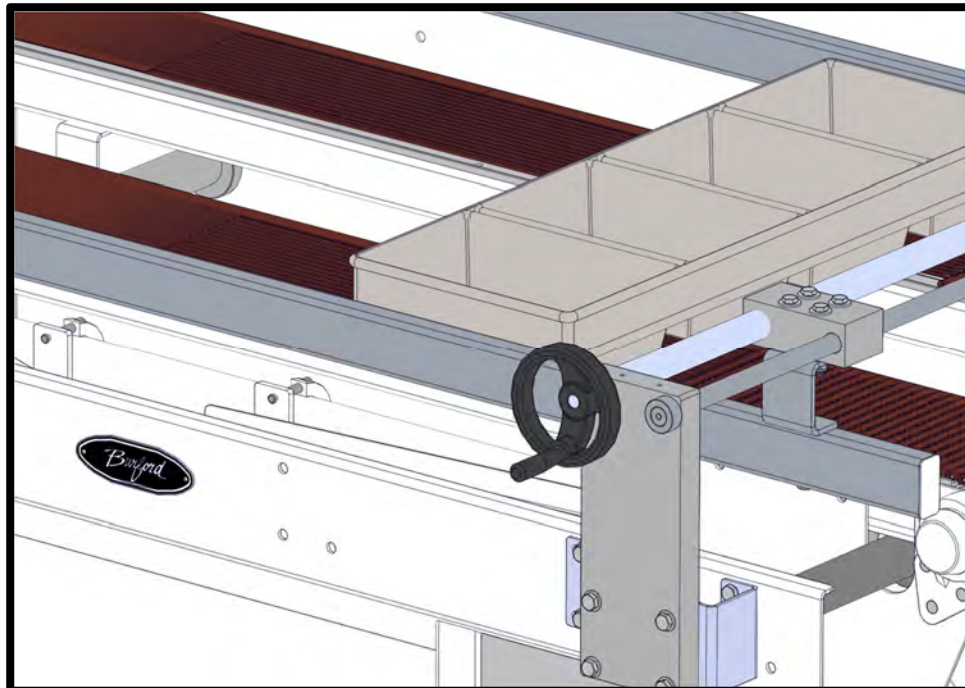


■ Pan Guide Adjustment - Manual

Place your pan on the conveyor and adjust the pan guide so that there is not more than a 1/4" gap on either side. The pan must be squared beneath the topper hopper.



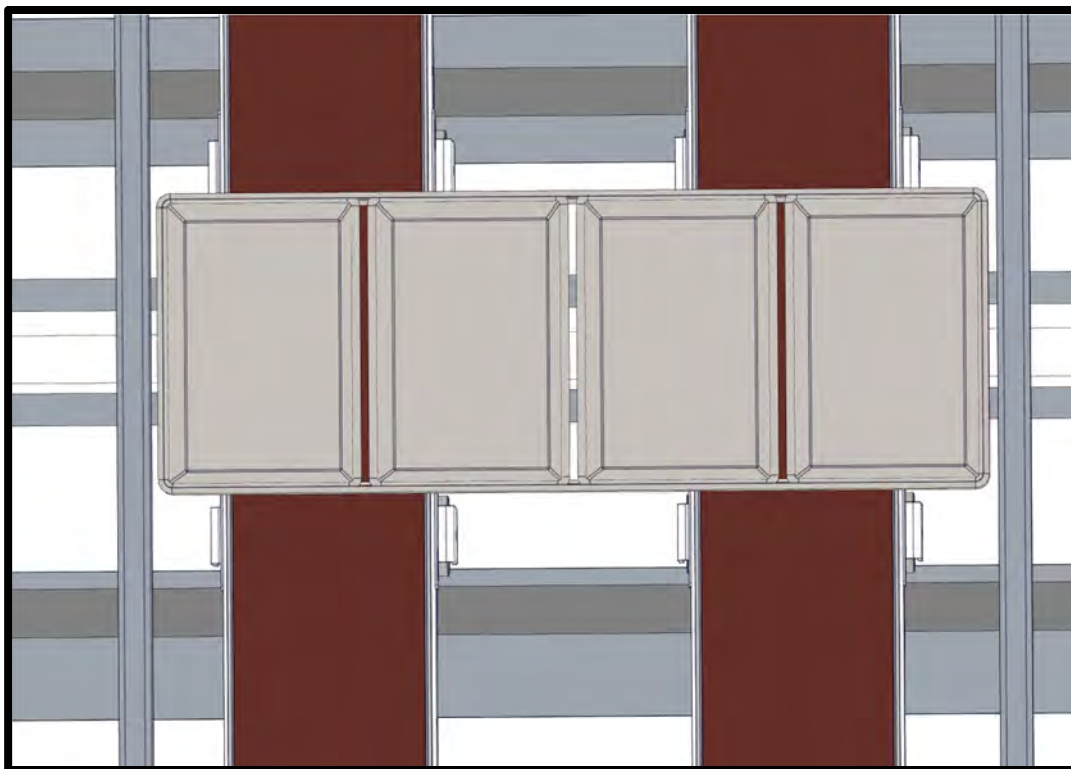
The Pan Guide system has two hand cranks for adjustment.



When making adjustments, both hand cranks **MUST** be turned simultaneously to prevent binding of pan guide mechanism.

■ Pan Guide Adjustment - Manual, continued

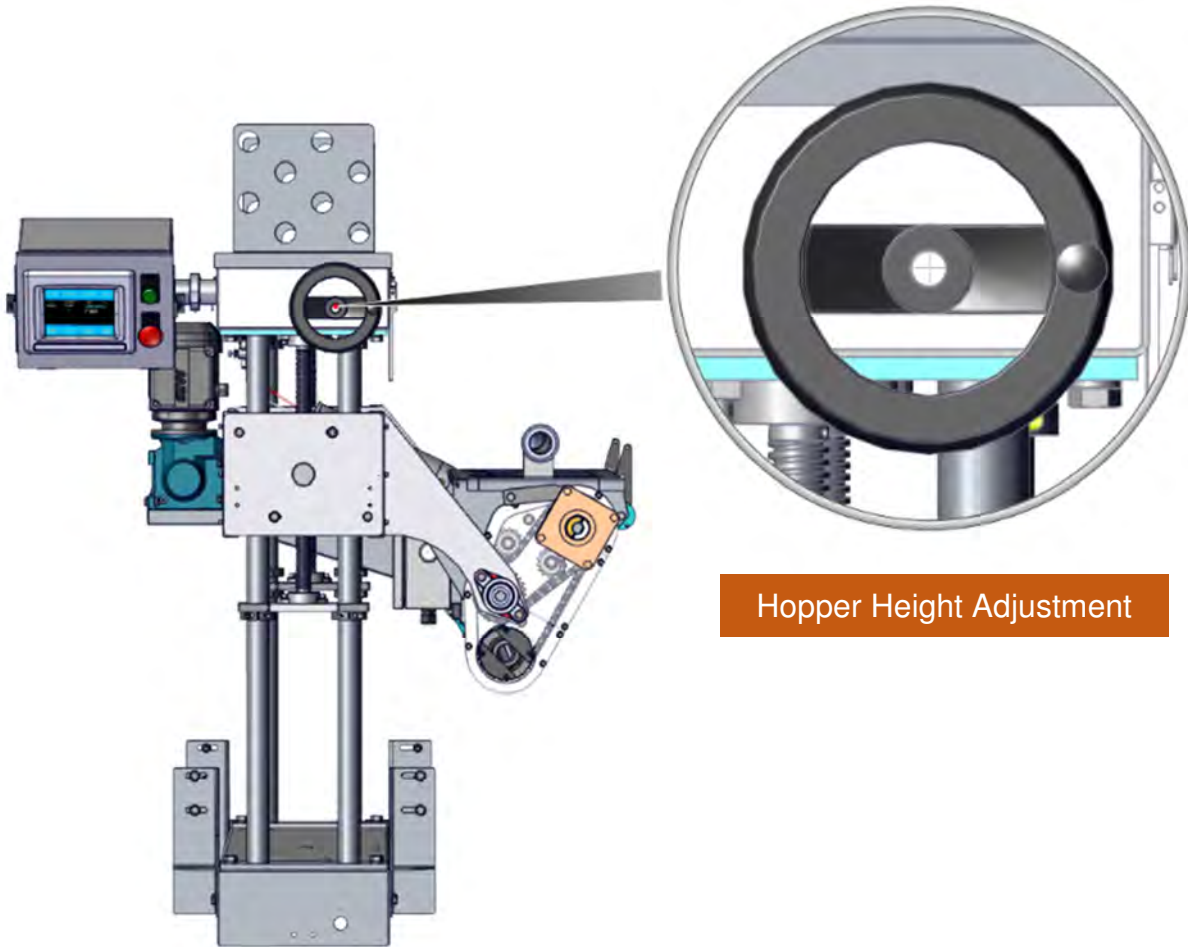
The pan guides need to be adjusted to prevent the pan from turning during transfer through the Topper. It is important that the pan travels straight under the Topper dispense for proper topping coverage. A slight gap must be present on the sides of the pan to prevent pans from stopping on the conveyor.



There should be a $\frac{1}{4}$ " gap on either side of pan in relation to the pan guide.

■ Topper Height Adjustment – Manual

Locate the hand crank shown below. Adjust the height of the hopper so that it is approximately 2" - 3" above the product.



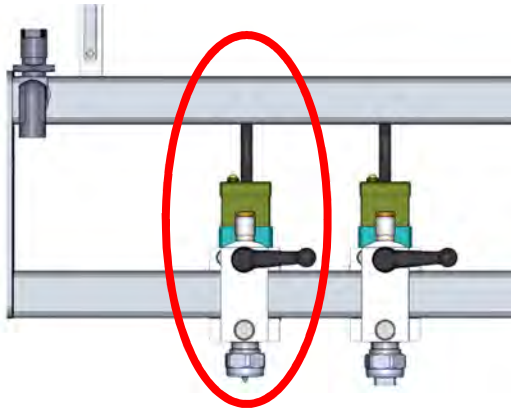
Hopper Height Adjustment

2" – 3" above product

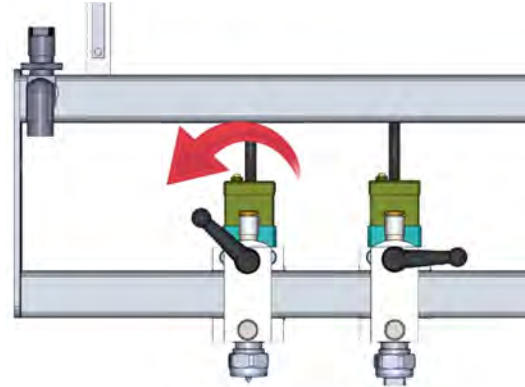
■ Topper Spray Nozzle Position

The position of the nozzles should be set so the spray is directly over the cups of the pan. All of the nozzles should be set in a direct line with one another. The nozzles can easily be moved by the use of the T-handle lock on each nozzle.

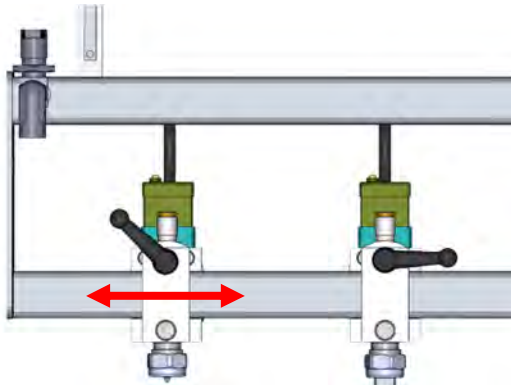
The Nozzles are adjustable laterally for alignment with product.



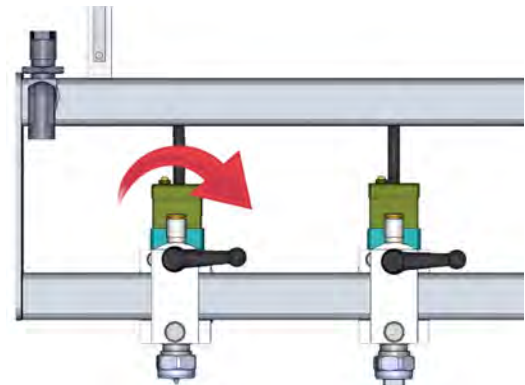
Locate nozzle to be positioned.



Rotate lever to free nozzle.



Position nozzle to desired location.



Rotate lever to lock nozzle.

When positioning nozzles be mindful of the water hoses and electrical connections. Plumbing and connectors to the nozzles should not be taut.

■ Topper Nozzle Dampness Output

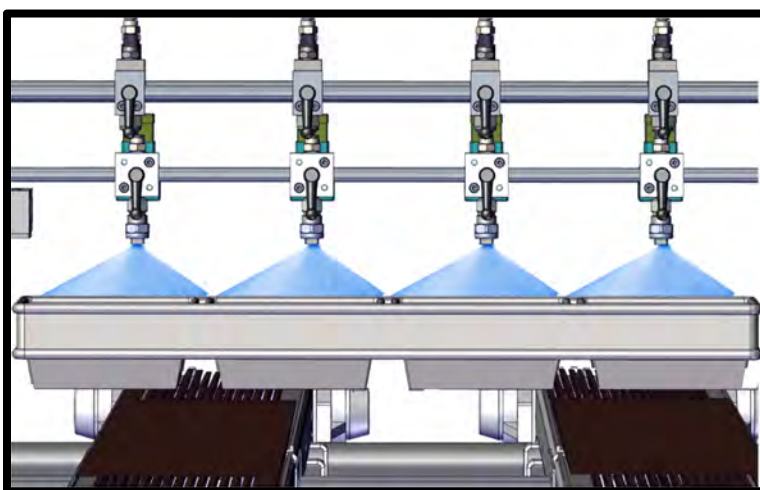
The degree of dampness obtained on the product will be determined by the number of nozzles used, water pressure, and orifice size used in each nozzle.

Each nozzle may be individually turned off or on and should be used accordingly to the number of cups in the pan.

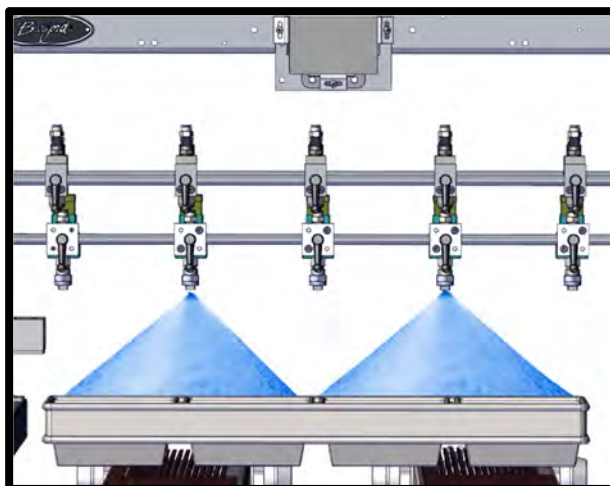
The recommended pressure setting is 40 psi for water.

The orifice size of each nozzle as it came from factory is .012. This size should be sufficient for your product, but larger or smaller sizes may be obtained if needed.

Below is an example of using one spray nozzle for each cup. This will supply more volume of water.

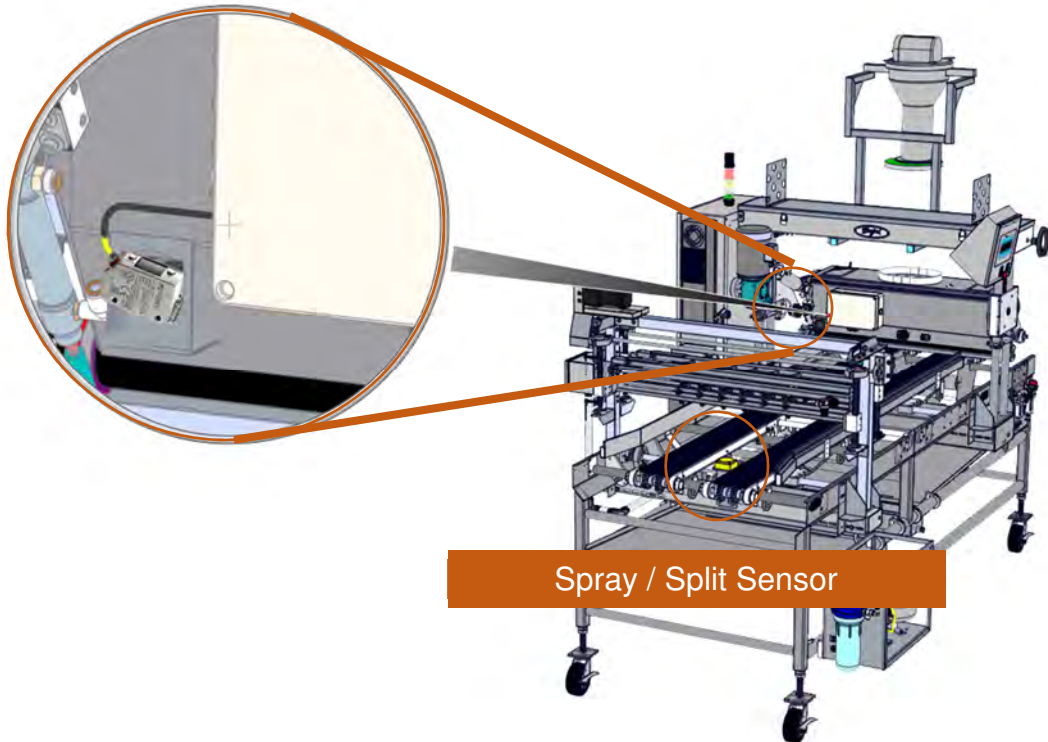


Below is an example of using one nozzle for two cups. This will supply less volume of water.



■ Topper Product Sensors Topper

The 9840S Topper has two product sensors assemblies. One for the Spray / Split and the other for the Topper.

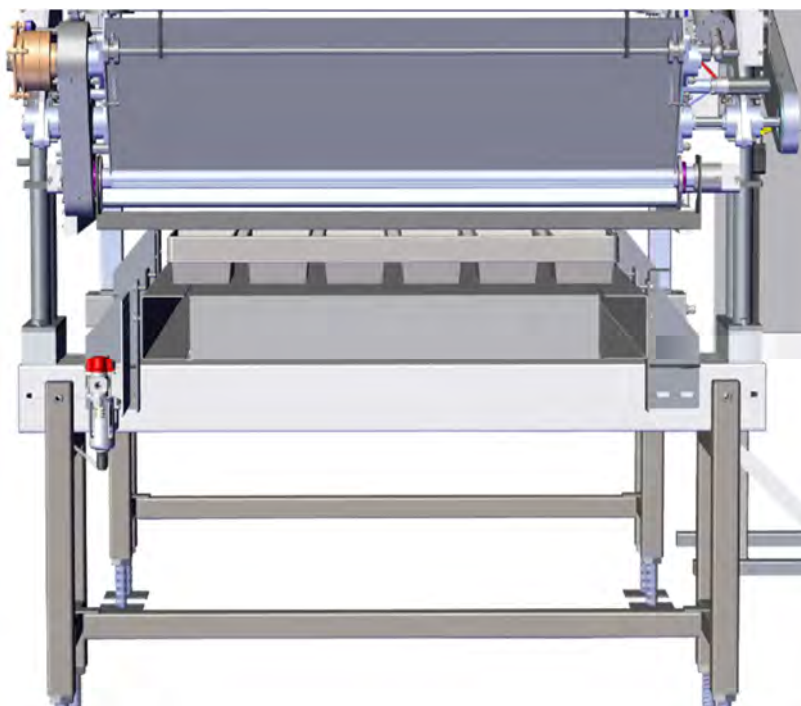


Spray / Split Sensor

Topper Sensor

■ Catch Tray

Install the Catch Tray as shown below when running varieties that do not require toppings. This will reduce or eliminate the contamination of other doughs.



Chapter 7

Troubleshooting

CHAPTER 7: TROUBLESHOOTING**■ Topper****Problem****Product not damp enough for topping to stick.**

Possible Causes	Solutions
Nozzles set too high from product.	Decrease hopper height.
Water pressure too low.	Increase water pressure.
Nozzles not centered over cups of pan.	Re-adjust nozzles.
Nozzle tips too small.	Order larger tips.
Conveyor moving too fast.	Slow conveyor speed.

Problem**Spot spray system not activating.**

Possible Causes	Solutions
Water spray control switch is turned off.	Check switch control.
Limit switch not sensing cups.	Check switch.
Pan guides allowing pans to turn and not activating limit switch.	Re-adjust pan guides.

Problem**Nozzles not dispensing water.**

Possible Causes	Solutions
Water pressure too low.	Increase air pressure.
Valve(s) turned off.	Check operator panel.
Obstruction in nozzle tip.	Clean tip.

Problem**Not enough topping on product.**

Possible Causes	Solutions
Mandrel speed too slow.	Increase Mandrel speed.
Hopper set too high over product.	Lower hopper height.

Problem**Too much topping on product**

Possible Causes	Solutions
Mandrel speed set too fast.	Slow Mandrel speed down.
Pans slow down when going over sensor.	Re-adjust pan guides.

Problem

Topper not activating.

Possible Causes

Control switch turned off.

Product sensors not sensing cups.

Pan guides allowing pans to turn and miss product sensor.

Unit set to Remote Conveyor and not Receiving signal.

Conveyor Encoder not sending data

Solutions

Turn control on.

Set sensor properly.

Re-adjust pan guide.

Check Signal and setting.

Check Encoder signal.

Problem

Topping not dispensing.

Possible Causes

Air pressure too low.

Mandrel not engaging

Foreign material in hopper.

Clutch not receiving signal

Solutions

Increase air pressure.

Replace Clutch.

Clean hopper.

Check Clutch Circuit.

Problem

Streaks showing on product.

Possible Causes

Foreign material in hopper, restricting flow of topping.

Pan guides off-center.

Solutions

Clean out hopper.

Re-adjust pan guides to center cups of pan to pattern mandrel.

Problem

Product not topped from one end to the other.

Solutions

Adjust Pan Dimensions.

Check Product Sensor.

Check pans for warped bottom.

■ Water Splitter Troubleshooting

Problem:

UNIT WILL NOT POWER UP

- A. Check incoming power supply.

Problem:

INADEQUATE SPLITTING DEPTH

- A. Check nozzle height setting.
- B. Check manifold output setting.
- C. Check product sensor to nozzle timing.

Problem:

EXCESSIVE SPLITTING DEPTH

- A. Check manifold output setting.
- B. Check nozzle height setting.

Problem:

LOSS OF NOZZLE PRESSURE

- A. Check fluid output setting.
- B. Check fluid filter.
- C. Check for dirty tips.

Problem:

UNEVEN DISTRIBUTION OF SPLITS

- A. Check nozzle height setting.
- B. Check sensor to nozzle timing.
- C. Check for dirty tips.

Problem:

SENSOR NOT DETECTING PRODUCT

- A. Check sensor height.
- B. Check sensor alignment.
- C. Check for product.

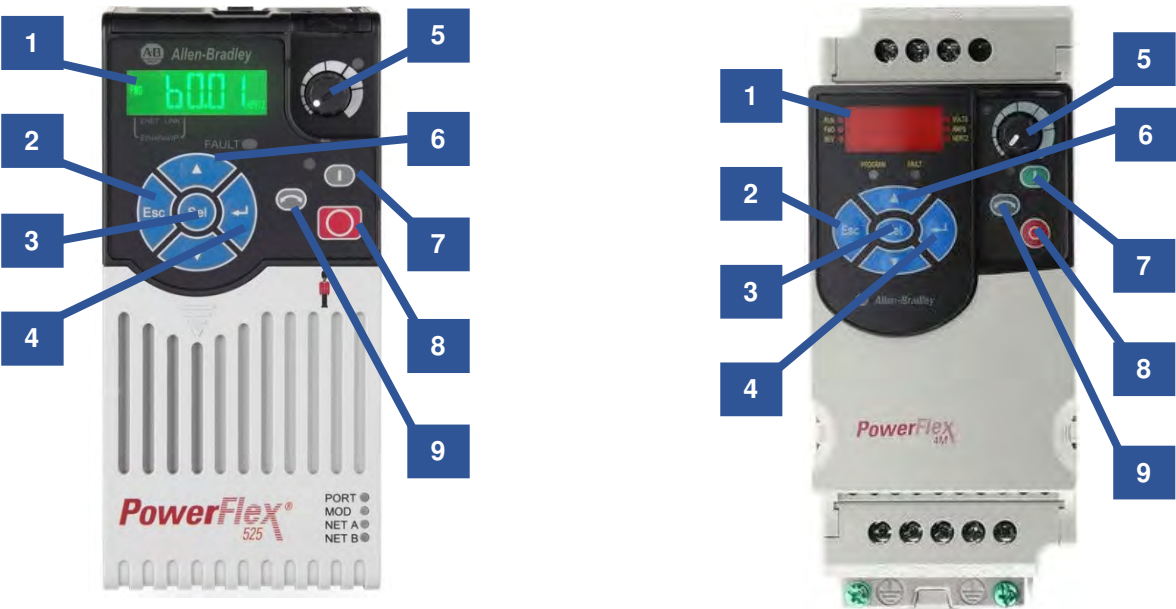
Chapter 8

Maintenance

CHAPTER 8: MAINTENANCE

■ Drive Settings

The Burford® Unit is equipped with up to (4) AC motor drives to control the operation of the unit. The above programmable motor controller is an example of the drives used. The table below provides a brief description of the function keys. See supplied motor drive manual for additional information.



REF	FUNCTION	DESCRIPTION
1	Display	Displays parameter groups and values. Also contains status LEDs. See accompanying owner manual for more information.
2	Escape	Back one step in programming menu. Cancels a change and exit programming mode.
3	Select	Advance one step in programming menu. Selects a digit when viewing parameter values.
4	Enter	Advance one step in programming menu. Save a change to a parameter value.
5	Speed Dial	Used to control speed of drive.
6	Scroll	Used to scroll through parameters or to increase/decrease parameter values.
7	Start	Used to start the drive.
8	Stop	Used to stop the drive or clear a fault.
9	Reverse	Used to reverse direction of drive.

■ Drive Parameters

The motor controllers have been preset at Burford® Corp. for your particular application. The digital input function is used to configure the controllers for remote operation via the programmable logic controller and touch screen interface. See Drive Settings in Drawings and Parts for the settings of your unit.

■ Recommended Weekly Maintenance

Drain air filter.
Check and fill lubricator.
Inspect water/air lines and replace if defective.
Check and clean water filter.
Inspect electrical enclosure air filter. Clean if necessary.
Use compressed air to clean dust and debris from the smart seeder.

■ Recommended Monthly Maintenance

Check all mounting screws and insure they are secure.
Check sprocket setscrews and keys for tightness.
Check the chain alignment and lightly lubricate chains.
Remove product from hopper and clean thoroughly.
Replace water filter.

■ Recommended Bi-Annual Maintenance

Lubricate all-threads and worm gears with food-grade grease.
Check all sensors for proper operation.
Check all spray and split valves for proper operation.
Check all pneumatic restrictors for proper operation.

■ Cleaning Recommendations

Remove all catch pans and catch trays from unit and thoroughly clean at a site away from the topper.

Separate the conveyor chain and clean at a site away from the topper.

■ Maintenance Procedures

■ Purging Spray Valves

When the unit is initially installed, all water lines must be purged, which can take 15-20 minutes to accomplish. However, once the main lines have been purged, they will stay full of water so that subsequent purging, due to changing of tips or check screens, can be done more quickly.

The proper procedure is as follows:

Remove all check-screens, O-rings, and tips from valve assemblies.

Connect a 1/4" line to the "PURGE" valve and route to a suitable container (purging may require approximately 10 – 20 gallons of water through the system).

With the "PURGE" valve open, depress the "purge" button.

Allow the water to flow until a smooth, continuous stream appears.

Close the "PURGE" valve and repeat while monitoring the water flow from the spray valves.

Install the check-screens, O-rings, and tips into the valve assemblies. Purge the unit: every time the water is turned off, the stream spraying from the tips should have a clean and instant cut off. There should be no dribbling or slow stopping of water. If this occurs, you will need to repeat the steps for purging until a clean stop of water is apparent.

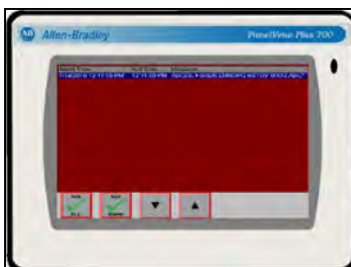
Keep clear of hopper when moving the hopper to "DUMP".

The Smart Seeder has multiple sensors and electronic components that may be damaged by water. Keep the Smart Seeder dry.

**It is very important to purge all the air from the manifold and nozzles for proper operation of the water spray valves.
Keep the Smart Seeder dry.**

■ Alarm Banner

The Alarm Banner is configured to pop up over any screen to display that an error has occurred with the unit. A sample alarm banner below indicates a failure has occurred with the Hopper movement. The banner will remain until the “Acknowledge” box is touched or the condition has been resolved. There are 77 different alarm banners to assist with troubleshooting the unit.



Item	Text ID	Code	Message Displayed
1	1075	INFO 1.16	Recipe Change
2	1076	INFO 1.17	Mandrel Change
3	1082	ERROR 1.01	Mandrel Drive COM Error-Read. PLC was unable to read data from the device.
4	1086	ERROR 1.03	Conveyor Drive COM Error-Read. PLC was unable to read data from the device.
5	1087	ERROR 1.02	Mandrel Drive COM Error-Write. PLC was unable to write data to the device.
6	1090	ERROR 1.04	Conveyor Drive COM Error-Write. PLC was unable to write data to the device.
7	1345	INFO 1.18	System Restart
8	2884	ERROR 2.1	Mandrel Drive Power Loss.
9	2885	ERROR 2.2	Mandrel Drive Under voltage.
10	2886	ERROR 2.3	Mandrel Drive Overvoltage.
11	2887	ERROR 2.4	Mandrel Drive Motor Stalled.
12	2888	ERROR 2.5	Mandrel Drive Motor Overload.
13	2889	ERROR 2.6	Mandrel Drive Heat Sink Over temperature.
14	2890	ERROR 2.7	Mandrel Drive HW Overcurrent (300%).
15	2891	ERROR 2.8	Mandrel Drive Ground Fault.
16	2893	ERROR 2.9	Mandrel Drive Auto Reset Tries.
17	2894	ERROR 2.10	Mandrel Drive Phase U to Ground Short.
18	2895	ERROR 2.11	Mandrel Drive Phase V to Ground Short.
19	2896	ERROR 2.12	Mandrel Drive Phase W to Ground Short.
20	2897	ERROR 2.13	Mandrel Drive Phase UV Short.
21	2898	ERROR 2.14	Mandrel Drive Phase UW Short.
22	2899	ERROR 2.15	Mandrel Drive Phase VW Short.
23	2900	ERROR 2.16	Mandrel Drive Software Overcurrent.
24	2901	ERROR 2.17	Mandrel Drive Overload.
25	2902	ERROR 2.18	Mandrel Drive Power Unit Fail.
26	2904	ERROR 2.19	Mandrel Drive Communication Loss.
27	2905	ERROR 2.20	Mandrel Drive Parameter Checksum Error.
28	2906	ERROR 2.21	Mandrel Drive I/O Board Fail.
29	2910	ERROR 3.1	Conveyor Drive Power Loss.
30	2911	ERROR 3.2	Conveyor Drive Under voltage.
31	2912	ERROR 3.3	Conveyor Drive Overvoltage.
32	2913	ERROR 3.4	Conveyor Drive Motor Stalled.
33	2914	ERROR 3.5	Conveyor Drive Motor Overload.

■ Alarm Banner, continued

Item	Text ID	Code	Message Displayed
34	2915	ERROR 3.6	Conveyor Drive Heat Sink Over temperature.
35	2916	ERROR 3.7	Conveyor Drive HW Overcurrent (300%)
36	2917	ERROR 3.8	Conveyor Drive Ground Fault.
37	2919	ERROR 3.9	Conveyor Drive Auto Reset Tries.
38	2920	ERROR 3.10	Conveyor Drive Phase U to Ground Short.
39	2921	ERROR 3.11	Conveyor Drive Phase V to Ground Short.
40	2922	ERROR 3.12	Conveyor Drive Phase W to Ground Short.
41	2923	ERROR 3.13	Conveyor Drive Phase UV Short.
42	2924	ERROR 3.14	Conveyor Drive Phase UW Short.
43	2925	ERROR 3.15	Conveyor Drive Phase VW Short.
44	2926	ERROR 3.16	Conveyor Drive Software Overcurrent.
45	2927	ERROR 3.17	Conveyor Drive Overload.
46	2928	ERROR 3.18	Conveyor Drive Power Unit Fail.
47	2930	ERROR 3.19	Conveyor Drive Communications Loss.
48	2931	ERROR 3.20	Conveyor Drive Parameter Checksum Error.
49	2932	ERROR 3.21	Conveyor Drive I/O Board Fail.
50	2935		Axis Option Drive Power Loss.
51	2936		Axis Option Drive Under voltage.
52	2937		Axis Option Drive Overvoltage.
53	2938		Axis Option Drive Motor Stalled.
54	2939		Axis Option Drive Motor Overload.
55	2940		Axis Option Drive Heat Sink Over temperature.
56	2941		Axis Option Drive HW Overcurrent (300%)
57	2942		Axis Option Drive Ground Fault.
58	2944		Axis Option Drive Auto Reset Tries.
59	2945		Axis Option Drive Phase U to Ground Short.
60	2946		Axis Option Drive Phase V to Ground Short.
61	2947		Axis Option Drive Phase W to Ground Short.
62	2948		Axis Option Drive Phase UV Short.
63	2949		Axis Option Drive Phase UW Short.
64	2950		Axis Option Drive Phase VW Short.
65	2951		Axis Option Drive Software Overcurrent.
66	2952		Axis Option Drive Overload.
67	2953		Axis Option Drive Power Unit Fail.
68	2955		Axis Option Drive Communications Loss.
69	2956		Axis Option Drive Parameter Checksum Error.
70	2957		Axis Option Drive I/O Board Fail.
71	2984	ERROR 1.05	Topping Hopper Product Level Low.
72	3116	ERROR 1.06	Hopper Movement Failed. Unable to move to programmed position. Unit will continue to setup. You must move this axis to position manually!
73	3117	ERROR 1.08	Spray Rail Movement Failed. Unable to move to programmed position. Unit will continue to setup. You must move this axis to position manually!
74	3118	ERROR 1.07	Pan Guide Movement Failed. Unable to move to programmed position. Unit will continue to setup. You must move this axis to position manually!
75	3122	ERROR 1.09	Splitter Movement Failed. Unable to move to programmed position. Unit will continue to setup. You must move this axis to position manually!
76	3136	ERROR 1.10	Pan Sensor Blocked. Check for pan spacing or reflector dirty or damaged. Check for sensor problem.
77	3174	ERROR 1.11	Autofill Hopper Product Level Low.

Chapter 9

Parts & Drawings

CHAPTER 9: PARTS & DRAWINGS

■ Recommended Spare Parts

In order to prevent unnecessary down time, Burford® Corp. recommends the list of parts in the Drawings and Parts section be kept in stock.

Contents

Recommended Spare Parts	1	Catch Pan Assembly	40
Seeder Assembly (MOD)	2	Pan Guide Assembly	42
Seeder Hopper Main Assembly	4	Catch Pans	44
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Water Spray/Split Frame Assembly (MOD)	18		
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Call 1-877-BURFORD or fax
405-867-4219 to order your parts.

Proprietary

The following information is the exclusive property of Burford Corp., Maysville, Oklahoma and is confidential, provided only for reference. Do not copy or reproduce.

Drawings & Parts

Seeder Assembly (MOD) 211107 Rev A

Recommended Spare Parts

Please have the following machine information on hand before calling Burford®.

- Machine Voltage **480 Vac**
- Model Number **9950BBU-UL, STS-862, MPAS-100, FD1150BLE, 948LI-160S**
- Serial Number **21058, 21060, 21059, 21061, 21062**

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9950BBU-UL on SO118568		
QTY	PART #	DESCRIPTION
1	304123-001	Motor,Gear,1/8HP,200/230-50/6,3.6:1
1	610913	Power Supply, 480VAC-24 VDC,10A,3PH
1	304239	Clutch/Brake, Shaft Mount, 24 VDC
2	304350-001	Sensor, Prox, 8mm, 10-30 VDC, PNP N.C.
1	304430	Cable,Sensor,M12,5Wire,F,QC,Str
1	610151	Sensor, Prox, 6.5mm, 10-30 VDC, PNP, N.C.
1	610172	Switch, Light Bulb, 24 VDC, LED
3	610404	Relay, Terminal Mounting, 24 VDC, 6A, 1 PDT
1	610421	Relay, Terminal Mounting, 24 VDC, 2A, SSR
1	610426	Bearing, Rod End, 1/2" ID, 1/2-20 UNF
1	612061	Sensor, Keyence Laser Distance, 2M
1	611102	Encoder, 1.375 Thru Bore
1	611119	Valve, Solenoid, 24 VDC, 3-Way, Closed Cen 1/4P
2	611237	Bearing, Pillow Block, 5/8" SST
2	611238	Bearing, Flange, 5/8" SST
1	611365	Valve, Solenoid, 24 VDC, 2-Way, With Flow Controls
2	611387	Bearing, Flange, 3/4" SST
1	611603	Gearmotor,1/3HP,230/460-60-3,LH
1	611937	Plc,Compactlogix,L30ER,1M
1	611574	Valve, Pulsajet Gun
1	612008	Valve,SOL, SS 1/8NPT 2 Way 24VDC
2	612018	Tip,Split,Bete,.020",1/8" NPT
1	612563	PLC.Display,PV+(7)Touch, Ethernet
1	612045-004	Controller, Power Flex 525,480-3
2	C00565	Spray Tip, SS, Tee Jet
1	C00579	Filter, Water, Replacement #AP110
4	C05724	Varistor, Surge, 125A, 25 VAC / 31 VDC
1	C06753	Sensor, Cable, M12, 5-Wire, Straight, Female, QC
1	C07101	Switch, Contact Cartridge, 1, N.C.

948LI-160S on SO118568		
QTY.	PART #	DESCRIPTION
1	612045-004	Controller,Pwr FLX525, 480-3
1	611388	Bearing, 1" Bore, 2 Bolt Flange, SST
2	611635	Bearing, 1" Bore, 3 Bolt Flange
2	611723	Sprocket, 16T, 3.11" OD, EZ Clean
2	611724	Sprocket, 24T, 4.65" OD, EZ Clean
1	611906	Gearmotor, 1/2 HP, 460-60-3, 109 RPM RH
4	611725	Belt, 6' x 1/2" Pitch, Series 1100 *sold per ft*
FD1150LE on SO118568		
QTY.	PART #	DESCRIPTION
1	612045-004	Controller, Pwr Flx525, 480-3
1	612330-050	Brush, Flour Duster, 50"
1	C07678	Sensor, Interlock
1	612455	Motor, Clutch Brake, 1/8 HP, 90:1
1	C07670-001	Sensor, Prox, Capacity, 30mm, 24V
1	611027	Sensor, Photo, Diffuse, 10-30 VDC Wide
MPAS-100 on SO118568		
QTY.	PART #	DESCRIPTION
1	210453	Filter, Dust, Unifilter
1	210454	Gasket, Rim, White Silicone
1	610295	Sensor, Prox 18 mm, 24 VDC
1	610739	PLC,ML1500,I/O Module 6IN/4OUT
1	611117	Valve, Solenoid, 24 VDC
1	611951	Vacuum Motor 220V MPA
1	612338	Cable,25 Pin D-Sub,1.5 Meter
1	C06597-001	Relay, Overload, 3-Ph, Adj, 5.5-8.0A
1	C06702-001	Relay, Motor Starter, 24VDC, 10A
1	C07670	Sensor, Prox, 30 mm, 24 VDC

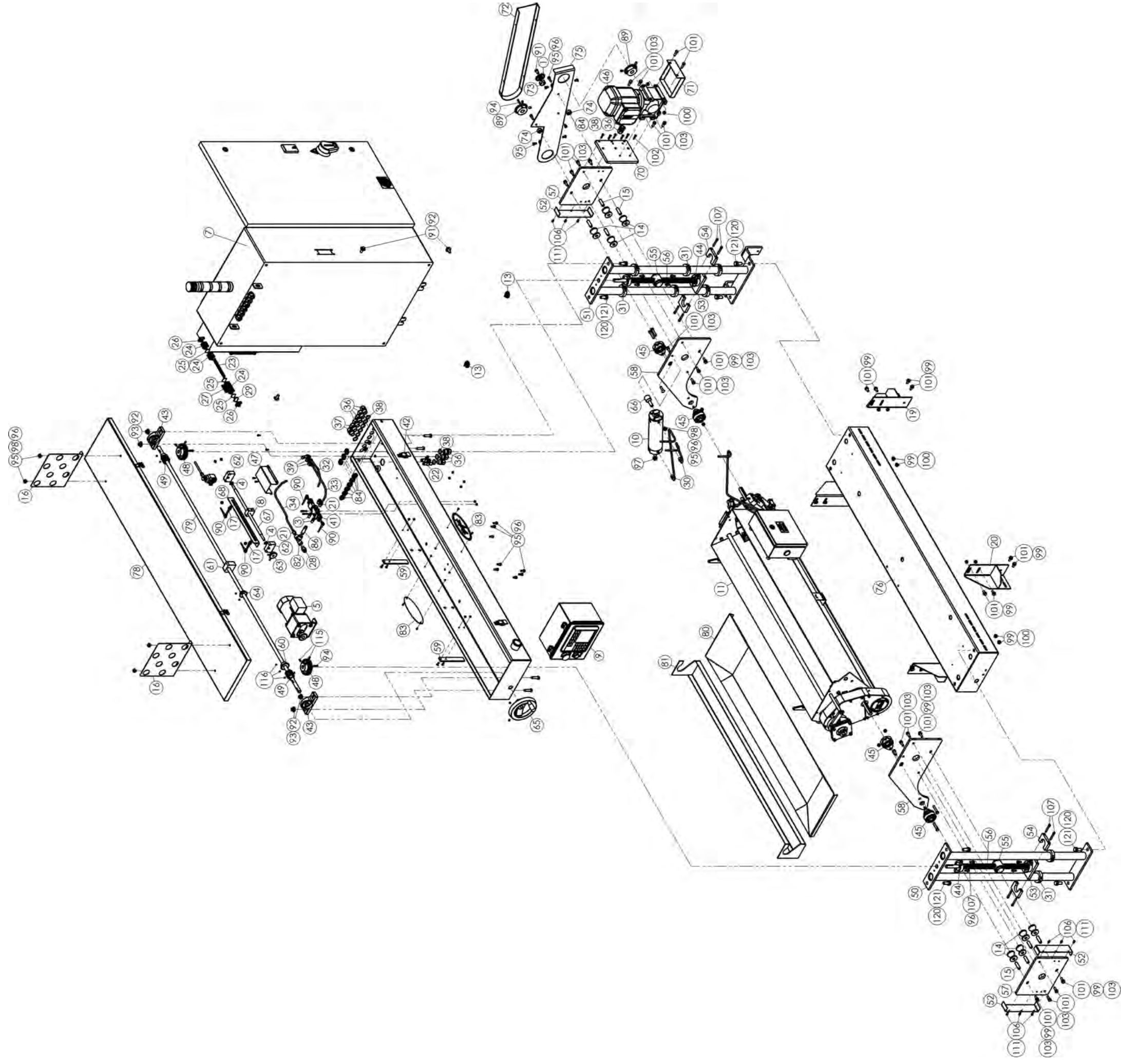
ITEM #	QTY.	PART#	DESCRIPTION
1	1	103478	SPROCKET IDLER, 35-A-15 3/8" BORE
2	6'	108331	CABLE,18AWG,4 COND,BLACK CORD
3	2	111497	MUFFLER, 1/8" NPT
4	2	122228	BUSHING 3/8 X 3/4 X .024 MACH
5	REF.	210384	ASSY, HEIGHT ADJ., HOPPER, 9840S
6	1	210385	ASSY, PNEUMATICS, SEEDER, 9840S
7	1	210400-BBU	ASSY,ENCL,MAIN,9840-BBU
8	1	210411	ASSY, BLOCK, HEIGHT ADJ TARGET
9	1	210401-001	ASSY,ENCL,DISP,PV700+,9940,L/H,BBU
10	1	210446	ASSY, CYLINDER, HOPPER DUMP
11	1	211109	ASSY, SEEDER HOPPER, 9950
12	5	302361	DECAL,SMALL,KEEP GUARD IN PLACE
13	2	303056	PLUG, HOLE, SST 7/8" DIA
14	8	304015	ROLLER, LIFT
15	8	304016	SHAFT SPACER ROLLER LIFT 9840
16	2	304109	BRACKET, MANDREL RACK
17	2	304350-001	SENSOR,PROX,8MM,10-30V,PNP,NC,TURCK
18	1	304430	CABLE,SENSOR,M12,5WIRE,F, QC,STR
19	2	304830	A/W, ANGLE MOUNT, 9840
20	2	304831	A/W, ANGLE MOUNT, 9840S
21	3	401152	FITTING,CONN,1/4MPT X 1/4T,ENP,Q.R.
22	2	401302	VALVE, REG, FLOW CONTROL, ENP, Q.R.
23	6"	610360	TERMINAL, DIN RAIL, MINI
24	25	610361	TERMINAL, BLOCK, MINI
25	3	610362	TERMINAL,END COVER,MINI
26	2	610363	TERMINAL,ANCHOR,END CLAMP,MINI
27	1	610364	TERMINAL, JUMPER, 10-POLE, MINI
28	3	610507	FITTING,CONN,1/4NPT X 3/8T,ENP,Q.R.
29	1	610534	TERMINAL,GROUNDING,MINI
30	2	610602	FITTING, ELL, 1/4NPT X 1/4T,ENP,Q.R
31	8	610839	COLLAR,1-1/2 SPLIT, SST
32	3'	610885-02	TUBING, 1/4" POLYURETHANE, BLUE
33	3'	610885-04	TUBING, 1/4" POLYURETHANE, RED
34	10'	610885-07	TUBING, 1/4" POLYURETHANE, CLEAR
35	20'	610886-07	TUBING, 3/8" POLYURETHANE, CLEAR
36	8	610953	CONNECTOR, CORD, .20-.35, DOME, NYLON
37	2	610954	CONNECTOR, CORD, .39-.56, DOME, NYLON
38	10	610955	CONNECTOR,SEAL RING,1/2NPT,POLYETH
39	3	610956	FITTING,BLKHD ELL 1/4T,ENP,Q.R.
40	1	611102	ENCODER, 1.375 THRU BORE
41	1	611119	VALVE,SOL,24V,3 WAY,CLOSED CEN,1/4P
42	4	611165	LATCH, DRAW, COMPRESSION SPRING
43	2	611237	BEARING, 5/8 PILLOW BLOCK, SST
44	4	611238	BEARING, 5/8, 2 BOLT FLANGE, SST
45	4	611387	BEARING, 3/4", 2 BOLT FLANGE, SST
46	1	611603	GEARMOTOR,1/3HP,230/460-60-3,LH
47	1	710161	COVER, TERMINAL STRIP, 9840S/9940S
48	2	711938	RWK, WORM GEAR
49	2	711939	RWK, WORM STEEL, 5/8" B, 10 D.P.
50	1	711995	A/W, UPRIGHT SUPT
51	1	711997-BBU	A/W, UPRIGHT SUPT ENCL MT,9840-BBU
52	3	712000	BRACKET, COVER UPRIGHT ROLLER, 9840S
53	2	712001	PLATE, BEARING MT, HEIGHT ADJ, 9840S
54	4	712002	BLOCK, CLAMP, BEARING PLATE
55	2	712003	NUT, HIEGHT ADJ, 9840S
56	2	712004	ALL-THREAD, 1"-5 ACME, HEIGHT ADJ.
57	2	712005	PLATE, SIDE, HEIGHT ADJ, 9840S
58	2	712006	PLATE, SIDE, HOPPER MNT, 9840S
59	2	712008	BAR, HOPPER LID STOP, 9840S
60	1	712026	SPROCKET, REWORK,35B14, 5/8 BORE
61	1	712029	BLOCK, SHAFT SUPT, HEIGHT ADJ.
62	2	712219	BLOCK, HIEGHT ADJ SHAFT
63	1	712221	SPROCKET, 25-B-19 3/8" BORE

ITEM #	QTY.	PART#	DESCRIPTION
64	1	712222	SPROCKET, 25-B-19 5/8" BORE
65	1	712376	HANDLE,REWORK, 6" DIA, ALUM
66	1	712853	ROD, CYL. MNT., HOPPER DUMP
67	1	712958	SHAFT, ALL-THREAD PROX COUNT
68	1	712961	BRACKET, HEIGHT ADJ. PROX
69	1	712980	SENSOR,REFLCTR,TAPE 4-3/4 X 1-1/2
70	1	714506	PLATE, MOTOR MNT, MANDREL DRIVE
71	1	714507	A/W, CATCH PAN, MANDREL MOTOR
72	1	715528	A/W, MANDREL DRIVE GUARD, OUTER
73	1	715531	ROD, ECCENTRIC IDLER, 9840
74	2	715532	SPACER, MANDREL DRIVE GUARD
75	1	715533	A/W, MANDREL DRIVE, GUARD MNT.
76	1	716100	A/W, CHANNEL BASE, 9850
77	1	716103	A/W, TOP SEEDER CHANNEL, 9950
78	1	716106	A/W, COVER, TOP CHANNEL,9850/9950
79	1	716108	SHAFT, HEIGHT ADJUSTMENT, 9850
80	1	716129	A/W, SEEDER DUMP TRAY,9850
81	1	716131	A/W, CATCH PAN, 9850 HOPPER
82	1	A06858	FITTING,TEE,1/4 NPTF,SST
83	2	A08049	NAMEPLATE,BURFORD LOGO,LARGE
84	10	C00174	LOCKING NUT, 1/2 NPT, NYLON
85	1	C00404	F.R.L. COMBO, 1/4 NPTF, 72 SERIES
86	1	C00905	FITTING,NIPPLE,1/4 NPTM X 2,SST
87	6'	C01237	CABLE,22AWG, 15 COND, SHIELDED
88	1	C03335	PLATE, FRL MOUNTING
89	2	C04828	SPROCKET, REWORKED 35-B-21, .75B
90	4	C07626	SENSOR,CABLE,M8,3WIRE,F,QC,90
91	9	988916	SCREW FIN HEX 3/8-16 X 1 SST
92	8	955975	WASHER FLAT 3/8" SST
93	6	955620	NUT HEX NYLOC 3/8-16 UNC SST
94	3	955470	KEY, SQ 3/16 X 1.00 .002 UNDERSIZE
95	20	989912	SCREW FIN HEX 1/4-20 X 3/4 SST
96	22	955940	WASHER LOCK 1/4" SST
97	1	955400	NUT HEX JAM 1/2-20 SST
98	5	955977	WASHER FLAT 1/4" SST
99	31	955976	WASHER FLAT 5/16 SST
100	22	955619	NUT HEX NYLOC 5/16-18 UNC SST
101	42	989728	SCREW FIN HEX 5/16-18 X 1 3/4 SST
102	10	982310	SCREW FLT HD SOC #10-24 X 5/8 SST
103	20	955939	WASHER, LOCK 5/16" SST
104	4	972008	SCREW SET SOC 5/16-18 UNC X 1/2 SST
105	2	955938	WASHER, LOCK 3/8" SST
106	9	978906	SCREW SOC HD CAP #10-24 UNC X 3/8 SST
107	16	978328	SCREW SOC HD CAP 1/4-20 X 1 3/4 SST
108	1	981620	SCREW FLT HD SOC 5/16-18 UNC X 1 1/4 SST
109	4	979520	SCREW SOC HD CAP #8-32 UNC X 1 1/4 SST
110	6	955625	NUT HEX NYLOC #8-32 UNC SST
111	9	955941	WASHER LOCK #10 SST
112	4	987506	SCREW BUTT HD SOC #6-32 X 3/8 SST
113	4	955624	NUT HEX NYLOC #6-32 UNC SST
114	2	955661	NUT HEX NYLOC 1/4-20 UNC SST
115	6	971208	SCREW SET SOC 1/4-20 UNC X 1/2 SST
116	10	971804	SCREW SET SOC #10-24 UNC X 1/4 SST
117	2	955972	WASHER FLAT #6 SST
118	2	955936	WASHER LOCK #6 SST
119	2	976906	SCREW SOC HD CAP #6-32 X 3/8 SST
120	8	955937	WASHER LOCK 1/2 SST
121	8	988320	SCREW FIN HEX 1/2-13 X 1 1/4 SST
122	2	998908	SCREW RD HD SLOT #8-32 X 1/2 SST
123	4	955621	NUT HEX NYLOC #10-24 UNC SST
124*	1	304497	ASSY HOPPER DUMP VIBRATOR
125*	1	718188	A/W, FINGER GUARD 9850/9950
126*	1	717373	BAR, BACKUP, SENSOR BRACKET

*NOT SHOWN

Seeder Assembly (MOD)

211107 Rev A



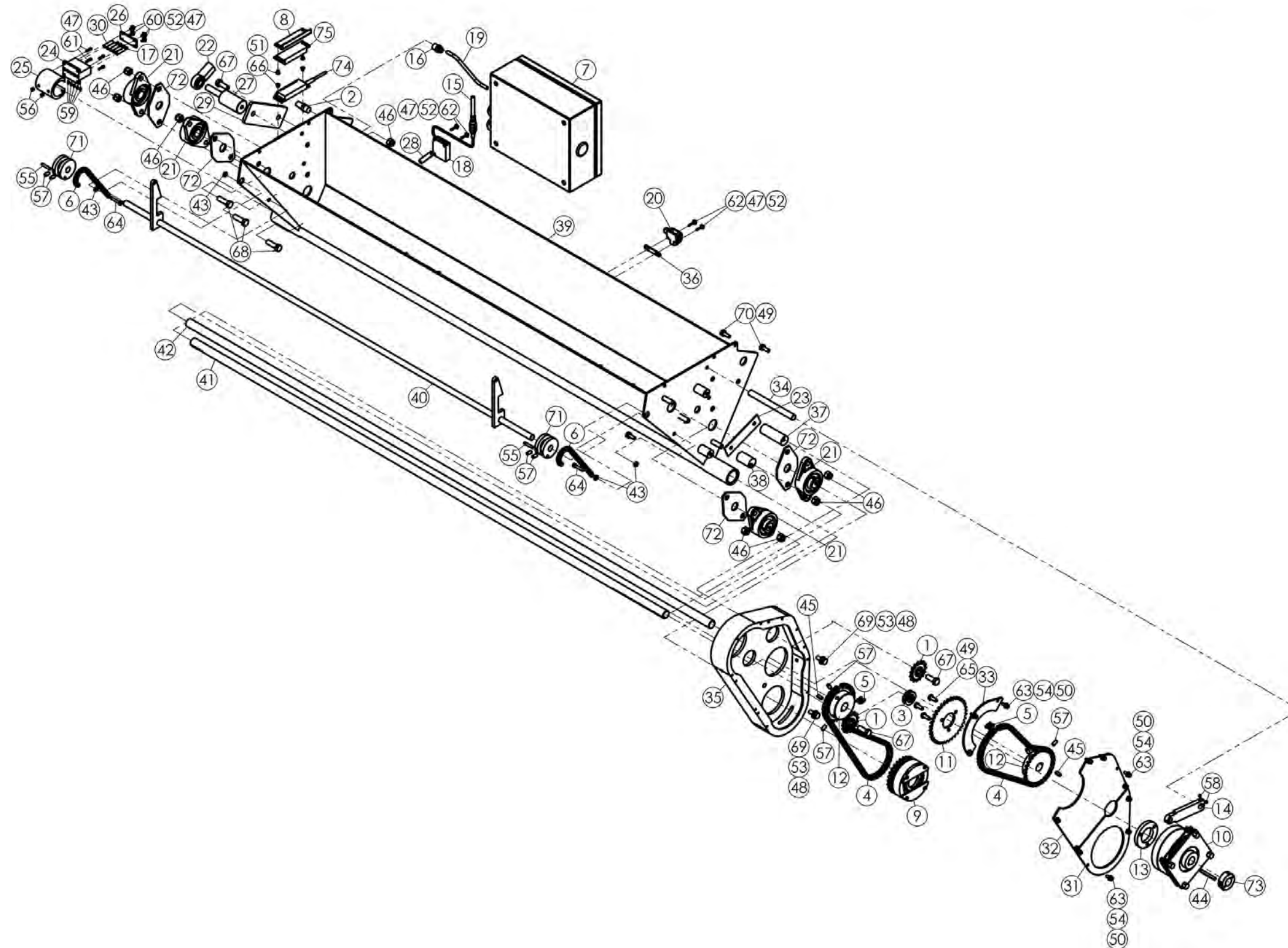
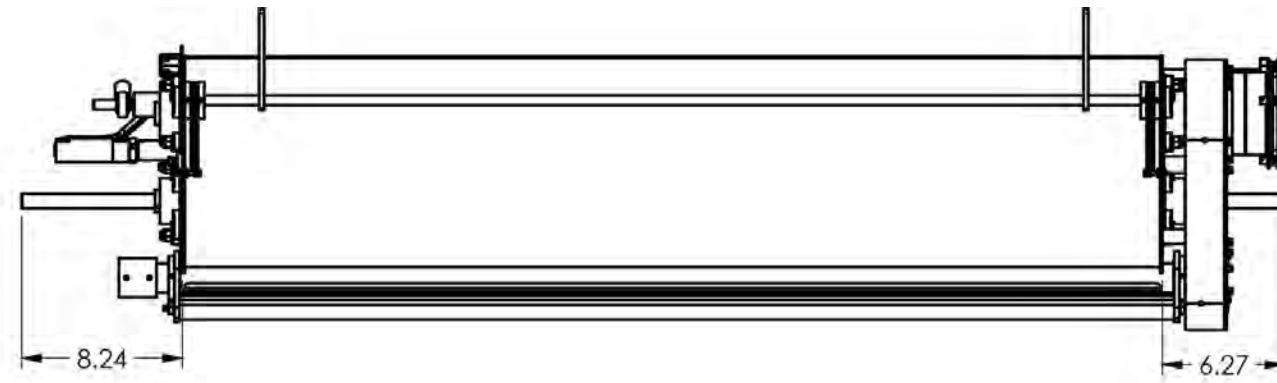
Seeder Hopper Main Assembly
211109 Rev B

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ITEM #	QTY.	PART#	DESCRIPTION	ITEM #	QTY.	PART#	DESCRIPTION
1	2	103478	SPROCKET IDLER, 35-A-15 3/8" BORE	39	1	716109	A/W, SEEDER HOPPER, 9950, LH
2	1	111498	FITTING,MUFFLER,1/4 NPTM,BRS	40	1	716115	A/W, HOPPER COVER LATCH, 9850
3	5	122223	BUSH,MACH 3/4ID 1-1/4 ODX.0747	41	1	716117	SHAFT, CLUTCH BRAKE, 98450/9950
4	2	152169	CHAIN,ROLL,#35,NICKEL PLATED	42	1	716118	SHAFT, HOPPER INNER, 9850/9950
5	2	152175	CHAIN LINK #35 CONNECTING N.P.	43	4	955380	NUT HEX JAM #10-24 UNC SST
6	2	152186	SPRING EXTENSION	44	1	955455	KEY, SQ 3/16 X 1 3/4 (CUT FROM C01260)
7	1	210386-003	ASSY, ENCL, SEEDER HOPPER, 9940-BBU	45	2	955457	KEY SQ 3/16 X 1/2 .002 UNDER SIZE
8	1	300684	BRACKET, SEEDER MAGLOCK MT, CE	46	9	955620	NUT HEX NYLOC 3/8-16 UNC SST
9	1	304060	ASSY, MANDREL DRIVE	47	12	955935	WASHER LOCK #4 SST
10	1	304239	CLUTCH/BRAKE, SHAFT MOUNT 24 V.	48	2	955939	WASHER, LOCK 5/16" SST
11	1	304264	SPROCKET RWK 35-A-36 1.43" B	49	6	955940	WASHER LOCK 1/4" SST
12	2	304265	SPROCKET, RWK 35-B-28 3/4" BORE	50	13	955941	WASHER LOCK #10 SST
13	1	304322	SPACER, CLUTCH SPROCKET	51	4	955942	WASHER LOCK #8 SST
14	1	304323	PLATE, RESTRAINT C/B, 9840	52	8	955971	WASHER FLAT #4 SST
15	1	304430	CABLE,SENSOR,M12,5WIRE,F,QC,STR	53	2	955976	WASHER FLAT 5/16 SST
16	1	401152	FITTING,CONN,1/4MPT X 1/4T,ENP,Q.R.	54	13	955978	WASHER FLAT #10 SST
17	4	610151	SENSOR,PROX,6.5MM,10-30VDC,PNP,N.O.	55	2	958416	PIN ROLL 3/16 X 1 SST
18	1	610797	SENSOR,PHOTO,RETRO-REF,10-30V,N.O/C	56	2	971204	SCREW SET SOC 1/4-20 UNC X 1/4 SST
19	1	610885-07	TUBING, 1/4" POLYURETHANE, CLEAR	57	8	971208	SCREW SET SOC 1/4-20 UNC X 1/2 SST
20	1	611027	SENSOR,PHOTO,DIFFUSE,500MM,10-30V,QC	58	2	971803	SCREW SET SOC #10-24 UNC X 3/16 SST
21	4	611387	BEARING, 3/4", 2 BOLT FLANGE, SST	59	5	972704	SCREW SET SOC #6-32 X 1/4 SST
22	1	710623	RWK,BEARING, ROD END,1/2-20NF	60	4	976006	SCREW SOC HD CAP #4-40 X 3/8 SST
23	1	711573	PLATE, AGITATOR COVER	61	4	976008	SCREW SOC HD CAP #4-40 X 1/2 SST
24	1	712022	BLOCK, MANDREL SENSOR MT, 9840S	62	4	976012	SCREW SOC HD CAP #4-40 X 3/4 SST
25	1	712023	CLAMP, MANDREL SENSOR BLOCK	63	13	978908	SCREW SOC HD CAP #10-24 UNC X 1/2 SST
26	1	712024	PLATE, COVER, MANDREL SENSOR, 9840S	64	2	978916	SCREW SOC HD CAP #10-24 UNC X 1 SST
27	1	712042	ROD, CYLINDER MT, HOPPER DUMP, 9840S	65	3	985712	SCREW BUTT HD SOC 1/4-20 X 3/4 SST
28	1	712107	PLATE, TAPPED, LASER BACKUP MT	66	4	986904	SCREW BUTT HD SOC #8-32 X 1/4 SST
29	1	712127	BAR, HOPPER AIR CYL. STIFFENER	67	3	988916	SCREW FIN HEX 3/8-16 X 1 SST
30	1	712377	ROD, SENSOR BLOCK PLUG	68	6	988920	SCREW FIN HEX 3/8-16 X 1 1/4 SST
31	1	715524	COVER, MANDREL DRIVE SPROCKET, LWR	69	2	989712	SCREW FIN HEX 5/16-18 X 3/4 SST
32	1	715525	COVER, MANDREL DRIVE SPRKT, MID	70	3	989912	SCREW FIN HEX 1/4-20 X 3/4 SST
33	1	715526	COVER, MANDREL DRIVE SPRKT,TOP	71	2	A04792	COLLAR, LATCH RETURN, HOPPER
34	1	715527	STANDOFF, C/B SHAFT LOCK	72	4	A05015	PLATE, BEARING SEAL
35	1	715537-001	GUARD, CHAIN, MANDREL/CLUTCH, LH	73	1	A05020	COLLAR,3/4" SPLIT,SST
36	1	715595	PLATE, TAPPED, LASER BACKUP MT	74	1	C07219	SENSOR,INTERLOCK,MAGNETIC,KEYED
37	1	715614	ROD, ECCENTRIC IDLER, LONG	75	1	C07220	ACTUATOR, MAGNET
38	1	715615	ECCENTRIC, IDLER SHAFT, SHORT				

Seeder Hopper Main Assembly

211109 Rev B

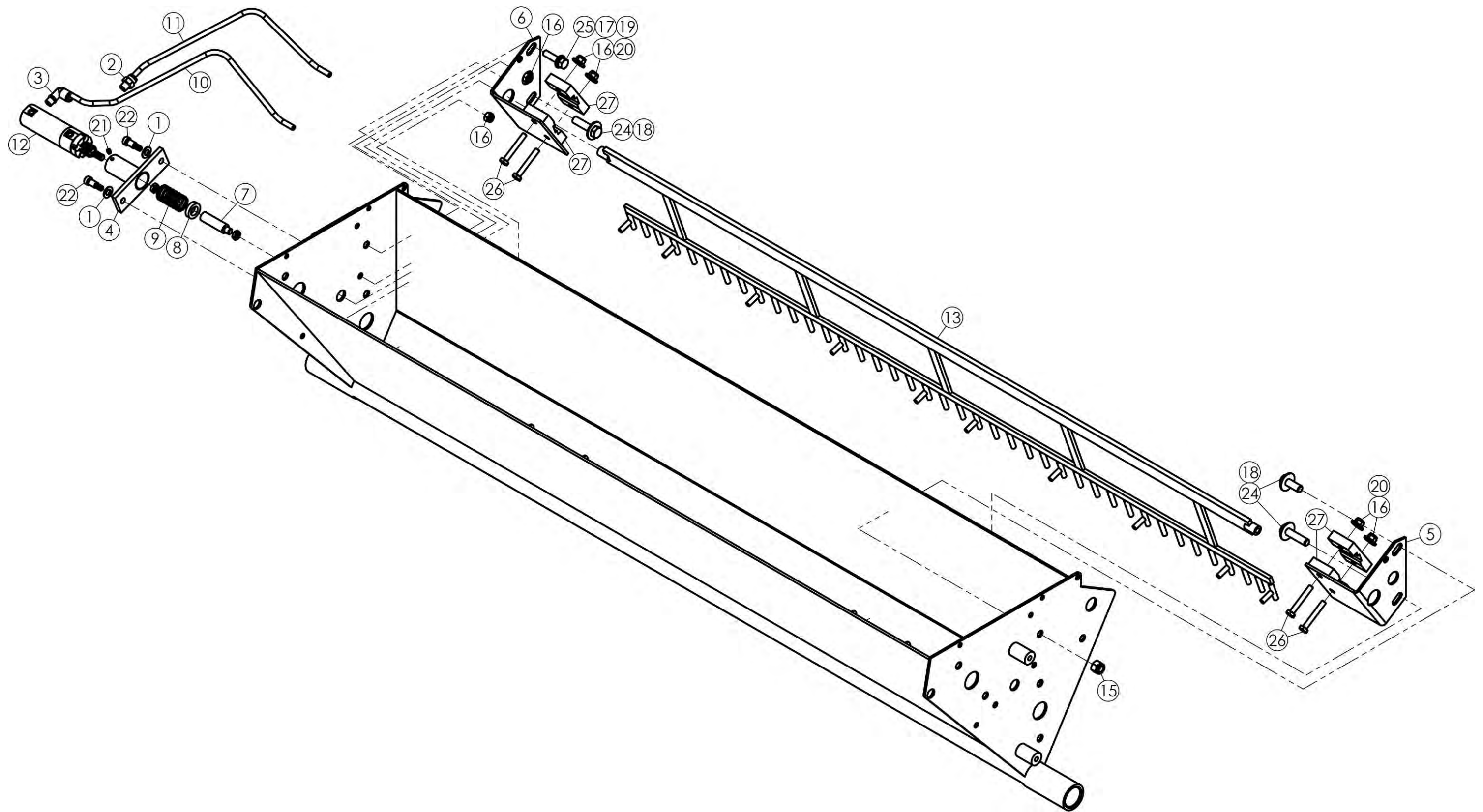


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Hopper Agitator Assembly
211109 Rev B

ITEM #	QTY.	PART#	DESCRIPTION
1	6	113646	WASHER BELLEVILLE SPRING
2	1	119534	FITTING,CONN,1/8MPT X 1/4T,ENP,Q.R.
3	1	174049	FITTING,ELL,1/8MPT X 1/4T,Q.R,SHORT
4	1	304280	A/W, MOUNT CYLINDER AGIT, 9840
5	1	304284	BRACKET, SLIDE MOUNT AGIT, 9940
6	1	304285	BRACKET, SLIDE MOUNT AGIT, 9940
7	1	304610	SHAFT, AGITATOR CONNECTOR
8	1	304611	SEAL, HOPPER AGITATOR
9	1	610504	SPRING,COMP .88 OD X .067 WD X 1.5 FL
10	1	610885-02	TUBING, 1/4" POLYURETHANE, BLUE
11	1	610885-04	TUBING, 1/4" POLYURETHANE, RED
12	1	611366	CYLINDER, AIR, 1" BORE, 1" STRK, MAG
13	1	716122	A/W, DUAL AGITATOR RAKE, 9850
14	2	955379	NUT HEX 1/4-20 UNC SST
15	1	955620	NUT HEX NYLOC 3/8-16 UNC SST
16	6	955661	NUT HEX NYLOC 1/4-20 UNC SST
17	1	955939	WASHER, LOCK 5/16" SST
18	3	955975	WASHER FLAT 3/8" SST
19	1	955976	WASHER FLAT 5/16 SST
20	4	955977	WASHER FLAT 1/4" SST
21	1	971804	SCREW SET SOC #10-24 UNC X 1/4 SST
22	2	975008	SCREW SHLDR 5/16 X 1/2, 1/4-20 SST
23	1	988916	SCREW FIN HEX 3/8-16 X 1 SST
24	2	988924	SCREW FIN HEX 3/8-16 X 1 1/2 SST
25	1	989720	SCREW FIN HEX 5/16-18 X 1 1/4 SST
26	4	989928	SCREW FIN HEX 1/4-20 X 1 3/4 SST
27	4	A04348	BLOCK, BEARING, SEEDER

Hopper Agitator Assembly
211109 Rev B



FOLD OUT TO VIEW DRAWING

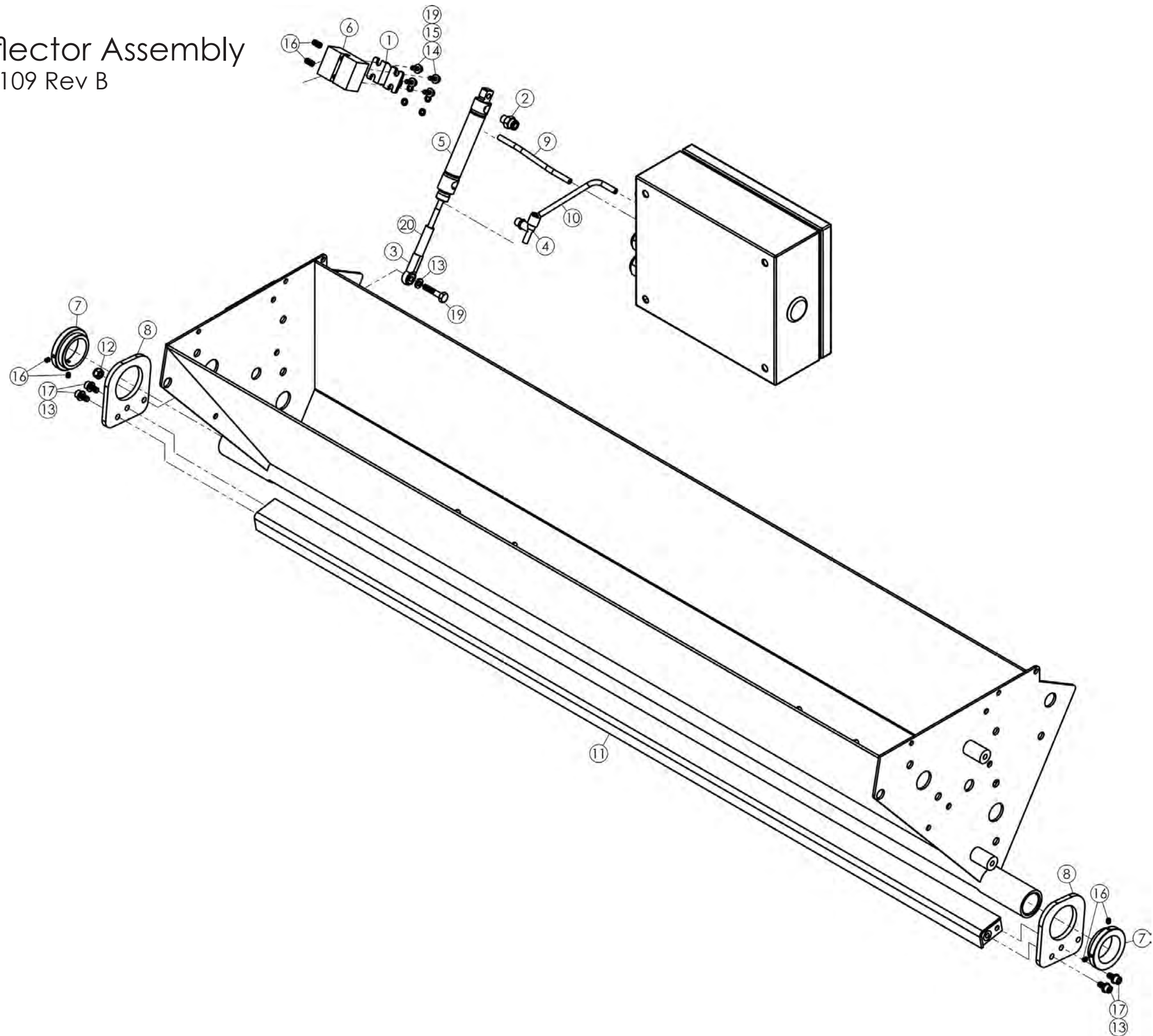
Hopper Deflector Assembly

211109 Rev B

ITEM #	QTY.	PART#	DESCRIPTION
1	1	111937	PIVOT BRACKET CYLINDER (PKG)
2	1	119534	FITTING,CONN,1/8MPT X 1/4T,ENP,Q.R.
3	1	152074	ROD END, BEARING 1/4"
4	1	174049	FITTING,ELL,1/8MPT X 1/4T,Q.R,SHORT
5	1	301406	CYLINDER, AIR, 3/4" BORE, 2" STROKE
6	1	304130	BLOCK CYL MOUNT DEFL. 9840
7	2	304192	COLLAR PIVOT DEFLECTOR 9840
8	2	304193	PLATE, SWIVEL DEFLECTOR
9	1	610885-02	TUBING, 1/4" POLYURETHANE, BLUE
10	1	610885-04	TUBING, 1/4" POLYURETHANE, RED
11	1	716119	A/W, DEFLECTOR, 9850/9950
12	1	955661	NUT HEX NYLOC 1/4-20 UNC SST
13	5	955940	WASHER LOCK 1/4" SST
14	4	955978	WASHER FLAT #10 SST
15	2	971208	SCREW SET SOC 1/4-20 UNC X 1/2 SST
16	4	971804	SCREW SET SOC #10-24 UNC X 1/4 SST
17	4	978308	SCREW SOC HD CAP 1/4-20 X 1/2 SST
18	4	978908	SCREW SOC HD CAP #10-24 UNC X 1/2 SST
19	1	989920	SCREW FIN HEX 1/4-20 X 1 1/4 SST
20	1	C02463	TRIP COLLAR
21	4	955941	WASHER LOCK #10 SST

Hopper Deflector Assembly

211109 Rev B



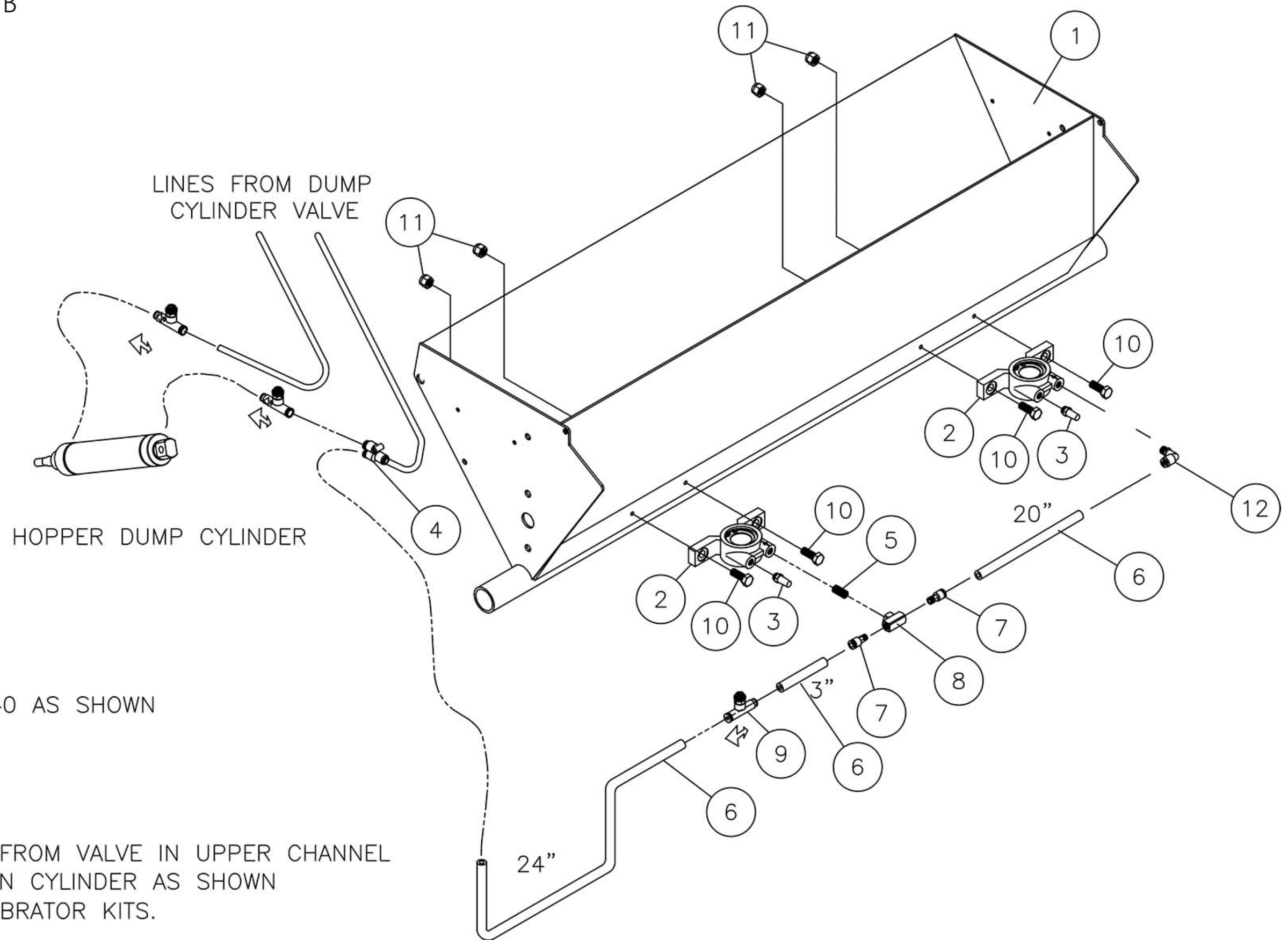
Dump Vibrator Assembly
304497 Rev B

QTY. ITEM		PART #	DESCRIPTION
1	1	03-MI9200-002	INST HOPPER MOD FOR DUAL AIR VIB
2	2	301455	VIBRATOR-AIR US13
3	2	111497	MUFFLER 1/8 NPT
4	1	610531	FITTING, 1/4"Y", Q.R.
5	1	A06905	FITTING,NIPPLE,HEX,1/8 NPTM,SST
6	4'	610885-05	TUBING, 1/4" POLYURETHANE, YELLOW
7	2	119534	FITTING,CONN,1/8MPT X 1/4T,ENP,Q.R.
8	1	C00924	FITTING,TEE,1/8 NPTF,SST
9	1	401302	VALVE, REG, FLOW CONTROL, ENP, Q.R.
10	4	989716	SCREW 5/16-18 N.C. X 1 SS
11	4	955619	NUT HEX NYLOC 5/16-18 UNC SST
12	1	174049	FITTING,ELL,1/8MPT X 1/4T,Q.R,SHORT

FOLD OUT TO VIEW DRAWING

Dump Vibrator Assembly

304497 Rev B



L.H. MODEL 9940 AS SHOWN

NOTE: MOVE RESTRICTORS FROM VALVE IN UPPER CHANNEL AND RELOCATE ON CYLINDER AS SHOWN WITH VIBRATOR KITS.

FOLD OUT TO VIEW DRAWING

Hopper Enclosure Assembly
210386-003 Rev A

ITEM #	QTY.	PART#	DESCRIPTION
1	1	113315	DECAL,24 VOLTS
2	2	174049	FITTING,ELL,1/8MPT X 1/4T,Q.R,SHORT
3	1	303056	PLUG, HOLE, SST 7/8" DIA
4	7"	610360	TERMINAL, DIN RAIL, MINI
5	27	610361	TERMINAL, BLOCK, MINI
6	2	610362	TERMINAL,END COVER,MINI
7	2	610363	TERMINAL,ANCHOR,END CLAMP,MINI
8	1.5	610364	TERMINAL, JUMPER, 10-POLE, MINI
9	6	610459	FITTING, BULKHEAD UNION 1/4T, ENP
10	2'	610885-04	TUBING, 1/4" POLYURETHANE, RED
10	1	610534	TERMINAL,GROUNDING,MINI
11	2'	610885-02	TUBING, 1/4" POLYURETHANE, BLUE
13	2'	610885-07	TUBING, 1/4" POLYURETHANE, CLEAR
14	1	610952	CONNECTOR, SEAL INSERT, .160 4 HOLES
15	1	610953	CONNECTOR, CORD, .20-.35, DOME, NYLON
16	1	610954	CONNECTOR, CORD, .39-.56, DOME, NYLON
17	3	610955	CONNECTOR,SEAL RING,1/2NPT,POLYETH
18	4	610966	FITTING,CONN,1/8NPT x 1/4T, Q.R.,HEX
19	1	610969	CONNECTOR,CORD,3/16-5/16 STR, NYLON
20	1	610974	CONNECTOR,LOCKING-NUT,3/8NPT,NYLON
21	1	610975	CONNECTOR O-RING 3/8 NPT .51 OD .06 THK
22	1	611364	VALVE, MANIFOLD, 2 STATION, 1/8"NPT PORTS
23	2	611365	VALVE,SOL,2-WAY,w/ FLOW CNTRLs
24	1	611371	MEMBRANE VENT, .413"
25	1	611372	NUT, BACKING, MEMBRANE VENT
26	1	715536-001	RWK, ENCLOSURE, 9.84x7.87x 3.98 (611875)
27	3	C00174	LOCKING NUT, 1/2 NPT, NYLON
28	2	C00916	FITTING,PLUG,1/8 NPTM,SST
29	4	C05724	VARISTOR,SURGE,125A,25VAC,31VDC
30	6'	C07066	CABLE,22AWG,25 COND
31	2	978820	SCREW SOC HD CAP #10-32 UNF X 1 1/4" SST
32	3	955936	WASHER LOCK #6 SST
33	3	999504	SCREW RD HD SLOT #6-32 X 1/4 SST

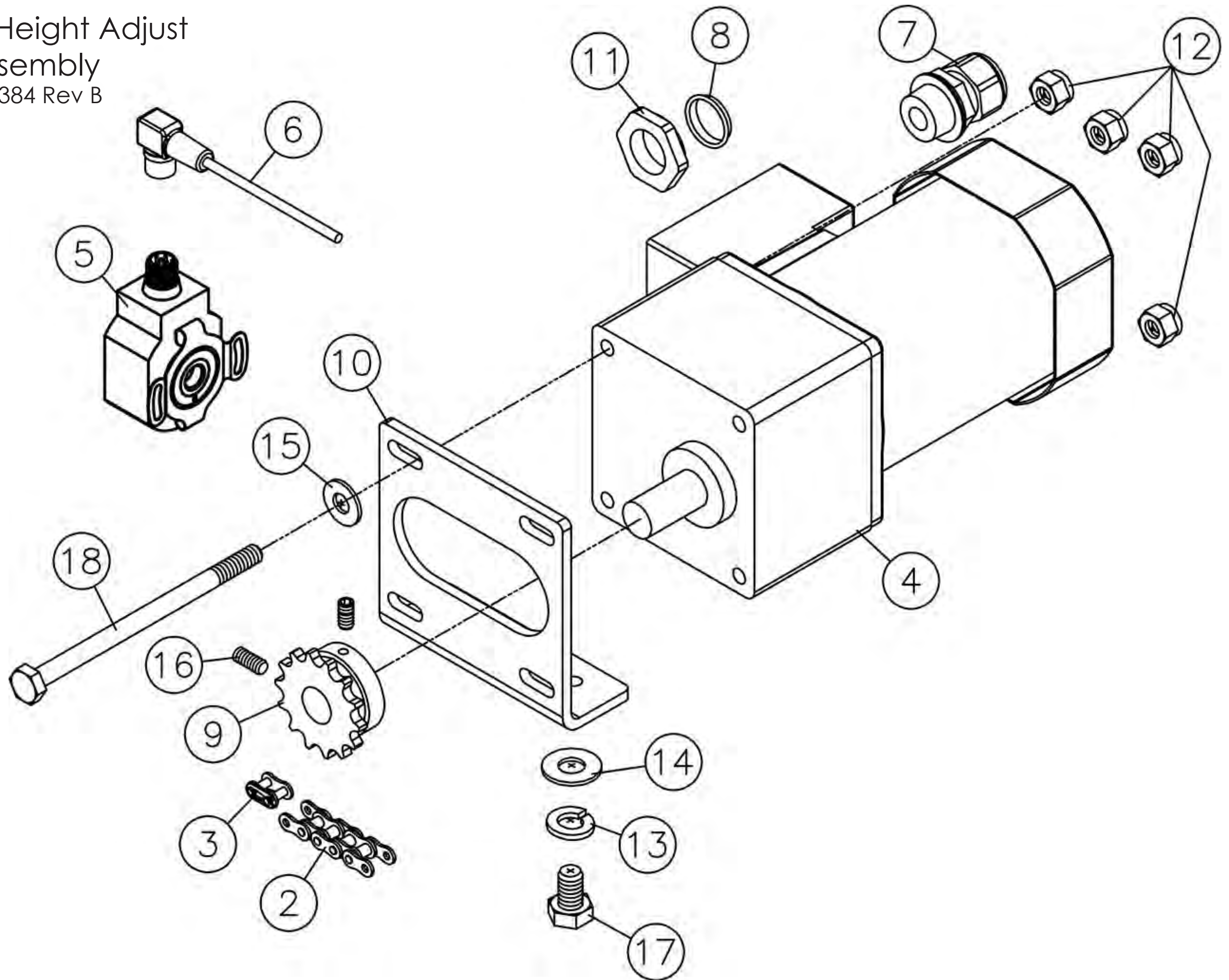
FOLD OUT TO VIEW DRAWING

Hopper Height Adjust Assembly

210384 Rev B

ITEM #	QTY.	PART#	DESCRIPTION
1	5'	142113	CABLE, 16AWG, 4 COND
2	1'	303631	CHAIN LINK #35 ROLL NICKEL PLATE
3	1	152175	CHAIN LINK #35 CONNECTING
4	1	304123-001	GEARMOTOR, 1/8HP, 100RPM, 3.6:1 RATIO
5	1	611469-010	ENCODER, 3/8 BORE, IP64,10CPR,SMJ
6	1	C06754-002	SENSOR, CABLE M12,5WIRE,F,QC,90,SH
7	1	610954	CONNECTOR, CORD,,39-.56, DOME, NYLON
8	1	610955	CONNECTOR,O RING,1/2NT,BUNA-N
9	1	712026	SPROCKET, REWORK, 35B14 5/8 BORE
10	1	712027	BRACKET, MOTOR MT, HEIGHT ADJ, 9840S
11	1	C00174	CONNECTOR, LOCKING NUT,1/2NPT, NYLON
12	4	955661	NUT HEX NYLOC 1/4-20 UNC SST
13	2	955939	WASHER LOCK 5/16 SST
14	2	955976	WASHER FLAT 5/16 SST
15	4	955977	WASHER FLAT 1/4 SST
16	2	971808	SCREW SET SOC 10-24 X 1/2 SST
17	4	989610	SCREW FIN HEX 5/16-24 X 5/8 SST
18	4	989964	SCREW FIN HEX 1/4-20 X 4 SST

Hopper Height Adjust Assembly 210384 Rev B



Seeder Pneumatic System 210385 Rev D

FOLD OUT TO VIEW DRAWING

1	36	110417	FITTING, STREET ELL, 1/4M X 1/4F, BRS
1	35	610673	FITTING "Y" 3/8 X 1/4 2X QR
4	34	610602	FITTING, ELL, 1/4NPT X 1/4T, ENP, Q.R.
2	33	C00916	FITTING, PLUG, 1/8 NPTM, SST
1	32	611364	VALVE, MANIFOLD, 2 STATION, 1/8" PORT
1	31	712305	A/W, AUTO FILL Q.C. MOUNT
1	30	611117	VALVE, SOL, 24V, 2 WAY, 1/4P
4	29	610505	FITTING, ELL, 1/4NPT X 3/8T, Q.R.
1	28	A06858	FITTING, TEE, 1/4 NPTF, SST
1	27	118872	FITTING, QC, BODY, AIR, 1/4 NPTF, BRS
1	26	110423	FITTING, PLUG, 1/4 NPTM, BRS
1	25	110414	FITTING, NIPPLE, HEX, 1/4 NPTM, BRS
1	24	C03335	PLATE, FRL MOUNTING
1	23	C00398-002	PORTING BLOCK INSERT KIT
1	22	C00905	FITTING, NIPPLE, 1/4 NPTM X 2, SST
1	21	C00404	F.R.L. COMBO, 1/4 NPTF, 72 SERIES
30'	20	610885-07	TUBING, 1/4" POLYURETHANE, CLEAR
20'	19	610886-07	TUBING, 3/8" POLYURETHANE, CLEAR
25'	18	610885-04	TUBING, 1/4" POLYURETHANE, RED
7'	17	610885-02	TUBING, 1/4" POLYURETHANE, BLUE
4	16	610966	FITTING, CONN, 1/8NPT X 1/4T, Q.R., HEX
1	15	611119	VALVE, SOL, 24V, 3 WAY, CLOSED CEN, 1/4P
2	14	611365	VALVE, SOL, 24VDC, 2-WAY, W/FLOW CTRLS
1	13	210446	ASSY, CYLINDER, HOPPER DUMP
1	12	611363	VALVE, MANIFOLD, BLANK PLATE(611364)
3	11	610956	FITTING, BLKHD ELL 1/4T, ENP, Q.R.
2	10	610507	FITTING, CONN, 1/4NPT X 3/8T, ENP, Q.R.
6	9	610459	FITTING, BULKHEAD UNION 1/4T, ENP
2	8	401302	VALVE, REG, FLOW CONTROL, ENP, Q.R.
4	7	401152	FITTING, CONN, 1/4MPT X 1/4T, ENP, Q.R.
1	6	611366	CYLINDER AIR 1 1/16 BORE 1" STR MAG
1	5	301406	CYLINDER, AIR, 3/4" BORE, 2" STROKE
2	4	174049	FITTING, ELL, 1/8MPT X 1/4T, Q.R, SHORT
1	3	119534	FITTING, CONN, 1/8MPT X 1/4T, ENP, Q.R.
1	2	111498	FITTING, MUFFLER, 1/4 NPTM, BRS
4	1	111497	FITTING, MUFFLER, 1/8 NPTM
QTY	ITEM	PART #	DESCRIPTION

Seeder Pneumatic System

210385 Rev D

THE PNEUMATICS IS SHOWN FOR
A 9940 LEFT HANDED SEEDER

SEEDER HOPPER
DUMP VALVE IN
TOP CHANNEL

SEEDER HOPPER

210386-001
ASSY, ENCL, SEEDER HOPPER,9940S,L/H

DEFLECTOR
CYLINDER

AGITATOR
CYLINDER

AIR INPUT

OPTIONAL AUTOFILL
OPTION (210420)

AUTOFILL VALVES TO BE STACKED
ON TOP OF THE DUMP VALVE
ITEM #15

RED TUBING
FROM MPA
VALVE

WHITE (CLEAR)
TUBING FROM
MPA REGULATOR

WHEN THE OPTIONAL MPA AUTOFILL SYSTEM IS USED

IF BUILDING A 9840
RIGHT HANDED SEEDER
ASSEMBLE THE F.R.L.
AS SHOWN HERE

AIR INPUT

NOTE: 1. COLOR CODE FOR AIRLINE TUBING
CLEAR = AIR SUPPLY
RED = FOR RETRACT
BLUE = FOR EXTEND

Water Spray/Split Frame Assembly (MOD)

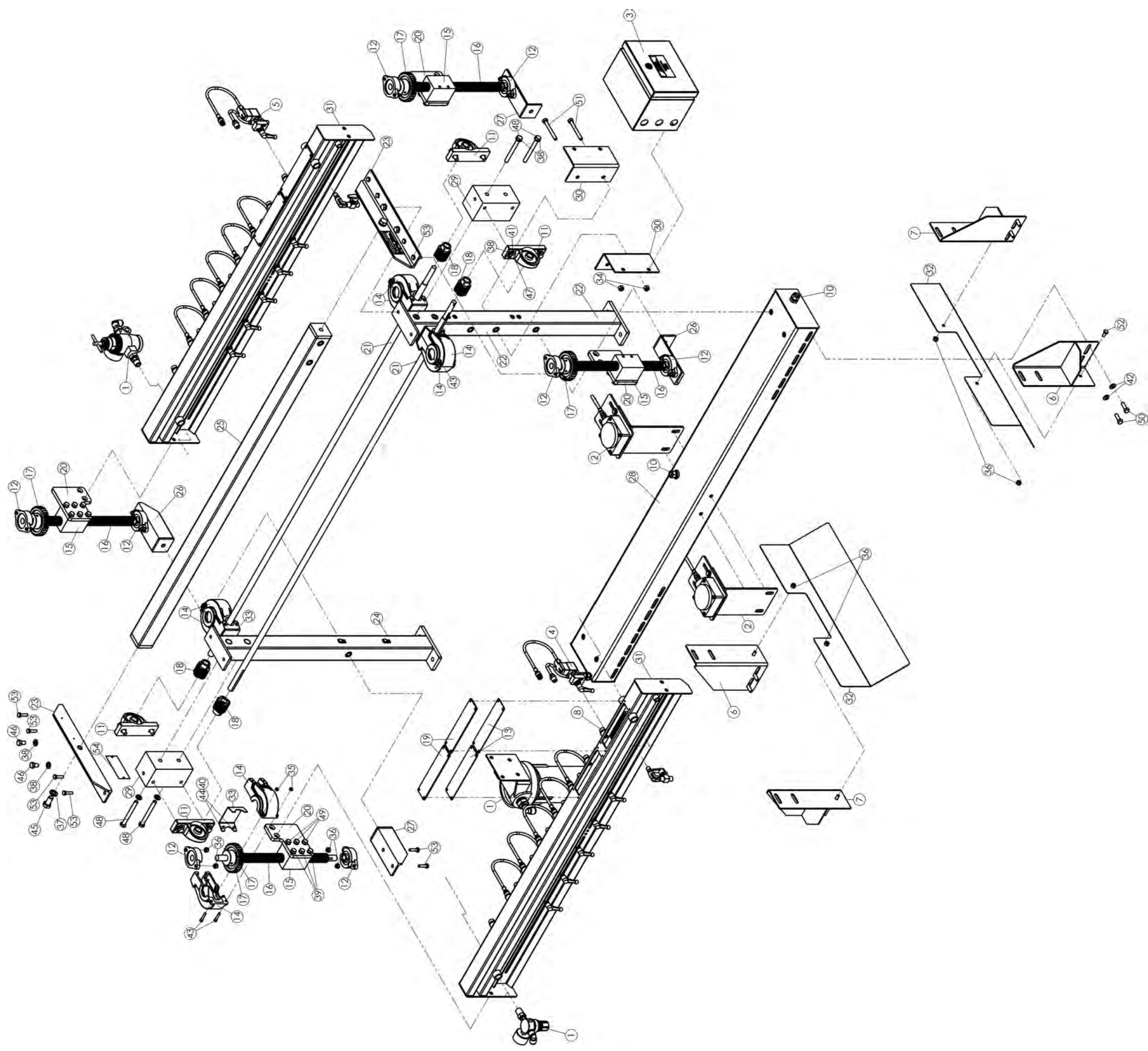
210766-001 Rev F

FOLD OUT TO VIEW DRAWING

ITEM #	QTY.	PART#	DESCRIPTION	ITEM #	QTY.	PART#	DESCRIPTION
1	1	210391-002	ASSY, CIRCUIT, WATER, DUAL SPRAY/SPLIT	29	2	715665	BLOCK, WATER SPRAY, BEARING MT.
2	2	210397-003	ASSY, SENSOR, PANCAKE PROX.	30	2	715666	BRACKET, ENCLOSURE MOUNT, WATER
3	1	118568-800	ASSY, ENCLOSURE WATER, SPRAY/SPLIT	31	1	715668	A/W, MANIFOLD, WATER 8 NOZ, R/H
4	REF.	210389-PWM	ASSY,PULSATING SPRAY GUN	32	2	716159	PLATE,SPLASH GUARD,WATER SPRAY
5	REF.	211099	ASSY, NOZZLE, WATER SPLITTER, 9840	33	4	716468	CHANNEL, WORM GEAR END PLATE
6	2	304830	A/W, ANGLE MOUNT, 9840	34	3	955619	NUT HEX NYLOC 5/16-18 UNC SST
7	2	304831	A/W, ANGLE MOUNT, 9840S	35	8	955621	NUT HEX NYLOC #10-24 UNC SST
8	16	610169	SENSOR,BULKHEAD,M12,5 WIRE,F,QC	36	20	955661	NUT HEX NYLOC 1/4-20 UNC SST
9	2	610967	TERMINAL,STRIP,BREAK-A-PART,MINI 12	37	6	955937	WASHER LOCK 1/2 SST
10	2	610969	CONNECTOR,CORD,3/16-5/16 STR, NYLON	38	16	955938	WASHER, LOCK 3/8" SST
11	4	611237	BEARING, 5/8 PILLOW BLOCK, SST	39	24	955939	WASHER, LOCK 5/16" SST
12	8	611238	BEARING, 5/8, 2 BOLT FLANGE, SST	40	8	955942	WASHER LOCK #8 SST
13	4	611534	GASKET, TERMINAL MANIFOLD COVER	41	8	955975	WASHER FLAT 3/8" SST
14	8	612307	GUARD, WORM GEAR HOUSING	42	9	955976	WASHER FLAT 5/16 SST
15	4	711933	BLOCK, INNER CHASSIS, HEIGHT ADJ.	43	8	978916	SCREW SOC HD CAP #10-24 UNC X 1 SST
16	4	711934	SHAFT, INNER CHASSIS, HEIGHT ADJ.	44	8	979506	SCREW SOC HD CAP #8-32 UNC X 3/8 SST
17	4	711938	RWK, WORM GEAR	45	2	988316	SCREW FIN HEX 1/2-13 X 1 SST
18	4	711939	RWK, WORM STEEL, 5/8" B, 10 D.P.	46	4	988910	SCREW FIN HEX 3/8-16 X 5/8 SST
19	4	712058	PLATE, TERMINAL MANIFOLD COVER	47	8	988920	SCREW FIN HEX 3/8-16 X 1 1/4 SST
20	4	712078	PLATE, MANIFOLD MNT. MAIN	48	4	988956	SCREW FIN HEX 3/8-16 X 3 1/2 SST
21	2	712080	SHAFT, HEIGHT ADJUSTMENT, WATER	49	24	989712	SCREW FIN HEX 5/16-18 X 3/4 SST
22	1	118568-025	A/W, UPRIGHT, WATER SPRAY FRAME	50	8	989716	SCREW FIN HEX 5/16-18 X 1 SST
23	2	715639	ANGLE, SPRAY/SPLIT, MANIFOLD MT, TOP	51	2	989744	SCREW FIN HEX 5/16-18 X 2 3/4 SST
24	1	715641	A/W, UPRIGHT, WATER SPRAY FRAME	52	4	989910	SCREW FIN HEX 1/4-20 X 5/8 SST
25	1	715643	A/W, TOP CROSS SUPPORT, WATER FRAME	53	16	989916	SCREW FIN HEX 1/4-20 X 1 SST
26	2	715645	A/W, SPRAY MANIFOLD BEARING MT, LWR	54	2	A05584	PLATE-SERIAL NUMBER
27	2	715647	A/W,SPRAY MANIFOLD BEARING MT, LWR	55*	1	118568-021	AW,MANIFOLD,WATER 14 NOZ
28	1	715662	A/W, BASE WATER SPRAY 46"	56*	4	118568-024	BRACKET,ENCL MNT, WATER SPRAY

*NOT SHOWN

Water Spray/Split Frame
Assembly (MOD)
210766-001 Rev F



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Pan Sensor Assembly
210397-003 Rev B

ITEM #	QTY.	PART#	DESCRIPTION
1	1	304430	CABLE,SENSOR,M12,5WIRE,F,QC,STR
2	1	715600	PLATE, PROX. MNT.
3	1	715601	BRACKET, PROX. MNT
4	4	955621	NUT HEX NYLOC #10-24 UNC SST
5	2	955661	NUT HEX NYLOC 1/4-20 UNC SST
6	2	955977	WASHER FLAT 1/4" SST
7	4	982324	SCREW FLT HD SOC #10-24 X 1 1/2 SST
8	2	989914	SCREW FIN HEX 1/4-20 X 7/8 SST
9	1	C06752	SENSOR,PROX,80MM,10-55VDC,NPN,EDDY

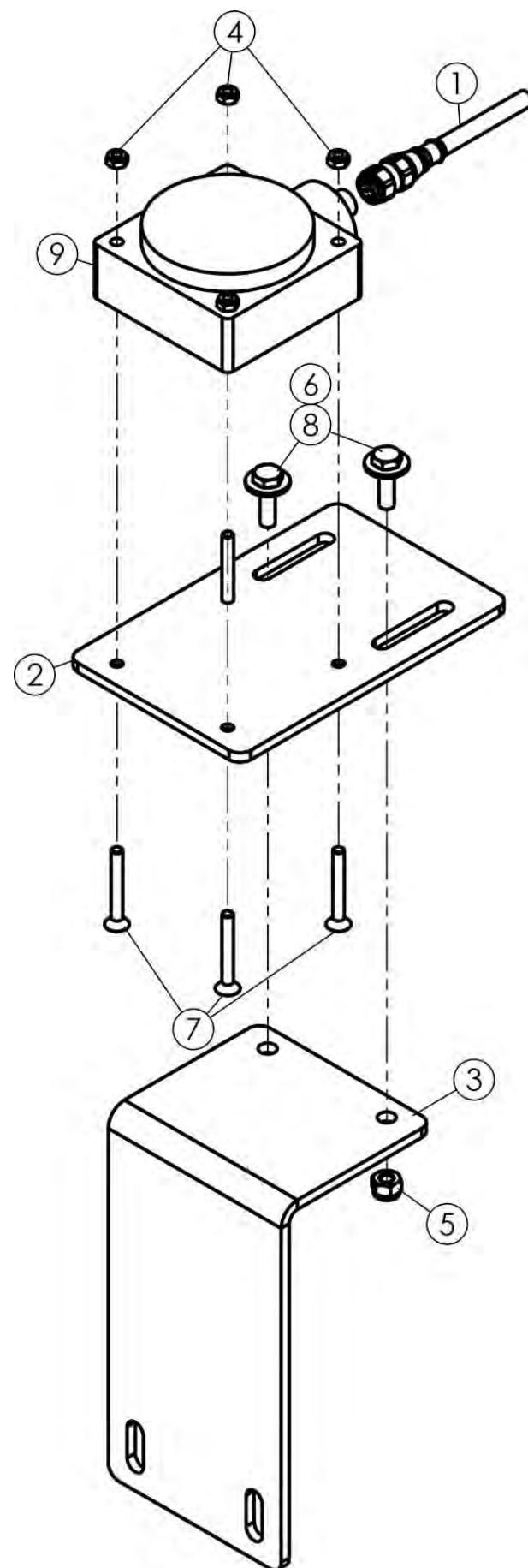
Splitter Nozzle Assembly
211099 Rev B

ITEM #	QTY.	PART#	DESCRIPTION
1	1	211100	ASSY, NOZZLE MOUNT (612008)
2	1	304208	ADJUSTABLE HANDLE 1/4-20 THREAD
3	1	401152	FITTING,CONN,1/4MPT X 1/4T,ENP,Q.R.
4	1	610187-002	CABLE,MICRO-CHANGE,M12,5WIRE,SPRAYM
5	1	610885-05	TUBING, 1/4" POLYURETHANE, YELLOW
6	1	610966	FITTING,CONN,1/8NPT x 1/4T, Q.R.,HEX
7	1	612008	VALVE,SOL SS 1/8NPT 2 WAY 24VDC
8	1	612018	TIP, SPLIT, BETE, .020", 1/8" NPT
9	1	955409	NUT JAM 1/4-20 UNC
10	1	955940	WASHER LOCK 1/4" SST
11	1	955977	WASHER FLAT 1/4" SST
12	2	MC0320	SCREW, FLAT HD, 3 X 20 MM

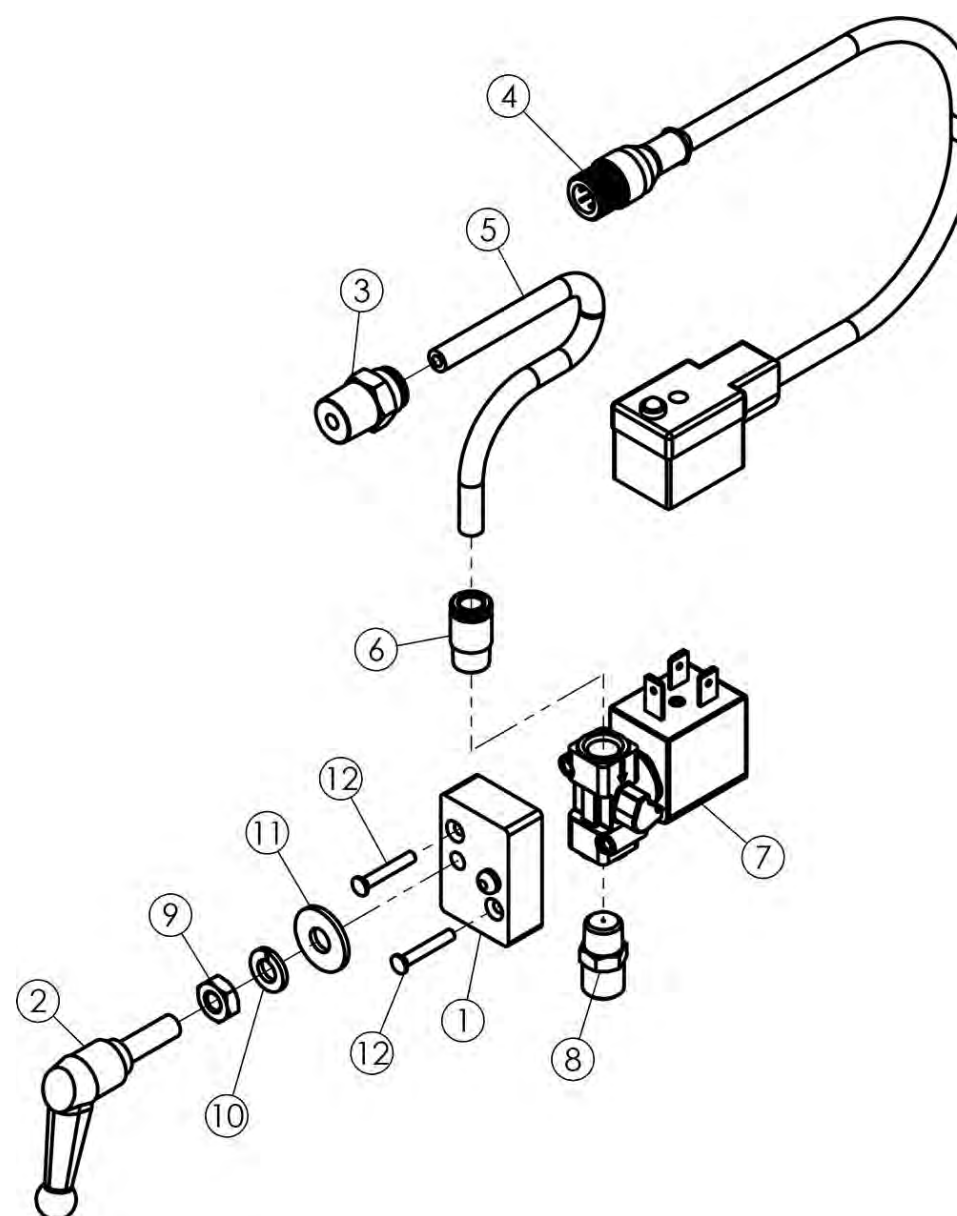
Pulsating Spray Gun Assembly
210389-PWM Rev B

ITEM #	QTY.	PART#	DESCRIPTION
1	1	119534	FITTING,CONN,1/8MPT X 1/4T,ENP,Q.R.
2	1	210379-PWM	ASSY, NOZZLE MOUNTING BLOCK
3	1	304208	ADJUSTABLE HANDLE 1/4-20 THREAD
4	1	401152	FITTING,CONN,1/4MPT X 1/4T,ENP,Q.R.
5	1'	610885-05	TUBING, 1/4" POLYURETHANE, YELLOW
6	1	611574	VALVE, PULSAJET GUN
7	1	955409	NUT HEX JAM 1/4-20 UNC SST
8	1	955940	WASHER LOCK 1/4" SST
9	1	955977	WASHER FLAT 1/4" SST
10	2	982912	SCREW FLT HD SOC #8-32 X 3/4 SST
11	1	C00506	RETAINER CAP CP1325-NP
12	1	C00565	TIP #650017 SS TEE JET
13	1	C07663	FIELD ATTACH, M12,5 WIRE,MALE

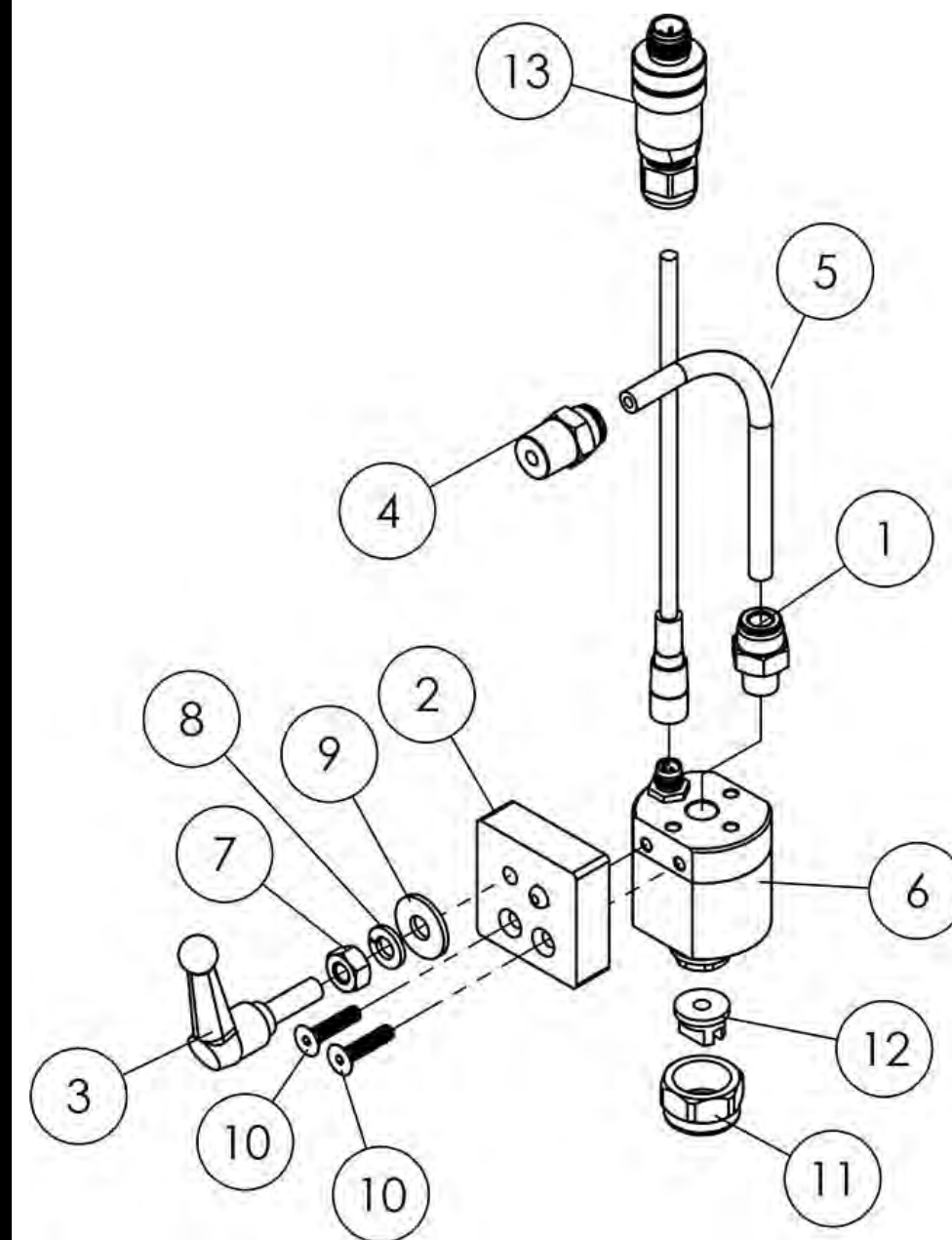
Pan Sensor Assembly 210397-003 Rev B



Splitter Nozzle Assembly 211099 Rev B



Pulsating Spray Gun Assembly 210389-PWM Rev B



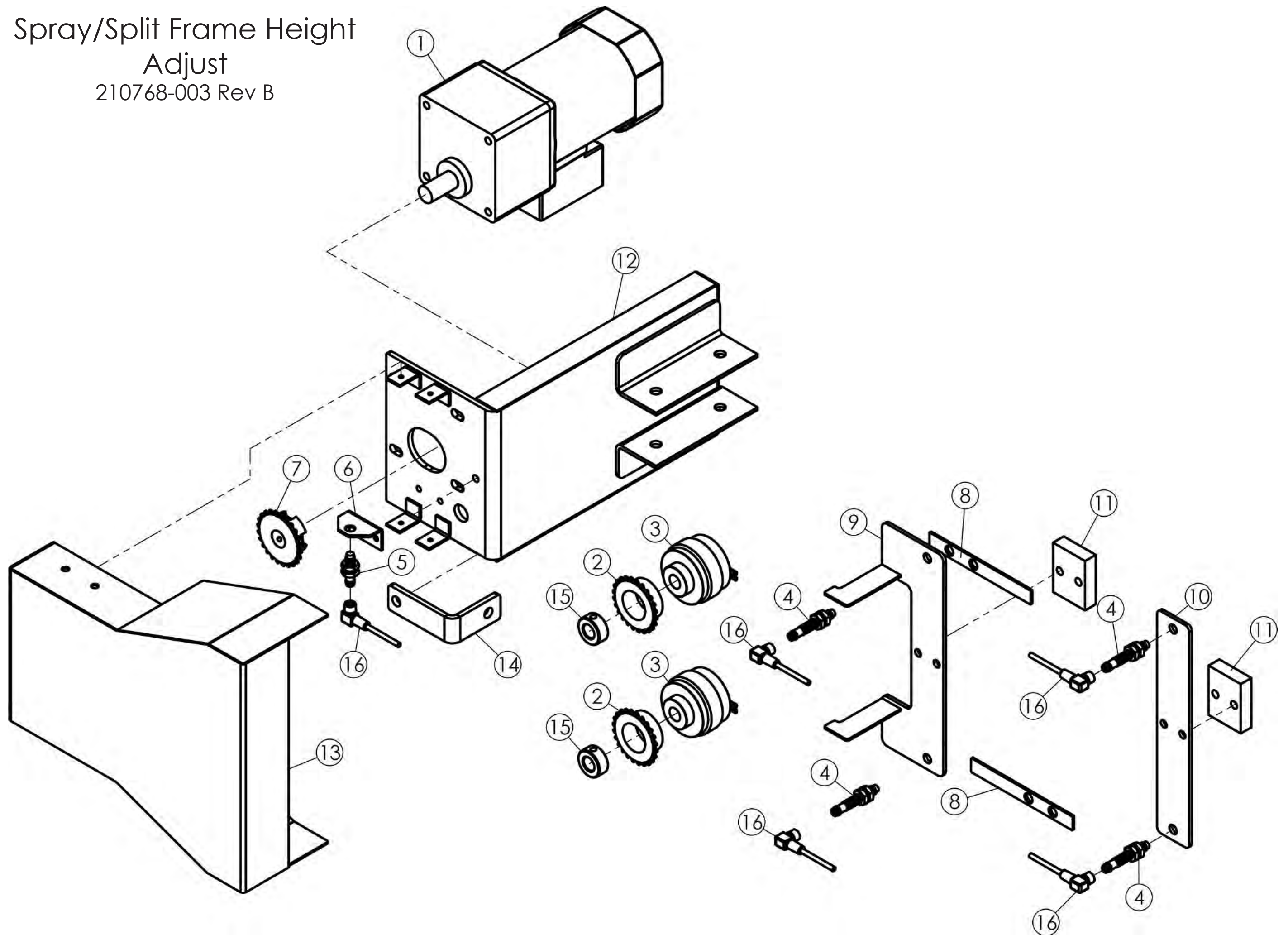
Spray/Split Frame Height Adjust
210768-003 Rev B

ITEM #	QTY.	PART#	DESCRIPTION
1	1	304123-001	MOTOR,GEAR,1/8HP,200/230-50/6,3.6:1
2	2	304219	SPROCKET,RWK,25-B-24 1.104 BORE
3	2	304238-001	CLUTCH,24 VDC,9840
4	4	304350-001	SENSOR,PROX,8MM,10-30V,PNP,NC,TURCK
5	1	304350-003	SENSOR,PROX,8MM,10-30V,PNP,NC,TURCK
6	1	712075	BRACKET, ENCODER MOTOR H2O
7	1	712076	SPROCKET, MOTOR H2O
8	2	712082-001	PLATE, SENSOR MNT.
9	1	715650	A/W, HOME SENSOR/CLUTCH TAB
10	1	715651	PLATE, OVERTRAVEL SENSOR MT
11	2	715653	BLOCK, SPACER, WATER SPRAY SENSOR
12	1	715654	A/W, MOTOR MOUNT, WATER
13	1	715657	A/W, CHAIN COVER FRONT, WATER
14	1	715661	BRACKET, MOTOR MNT SUPT
15	2	C05448	COLLAR,1/2" SET,SST
16	5	C07626	SENSOR,CABLE,M8,3WIRE,F,QC,90

FOLD OUT TO VIEW DRAWING

Spray/Split Frame Height Adjust

210768-003 Rev B

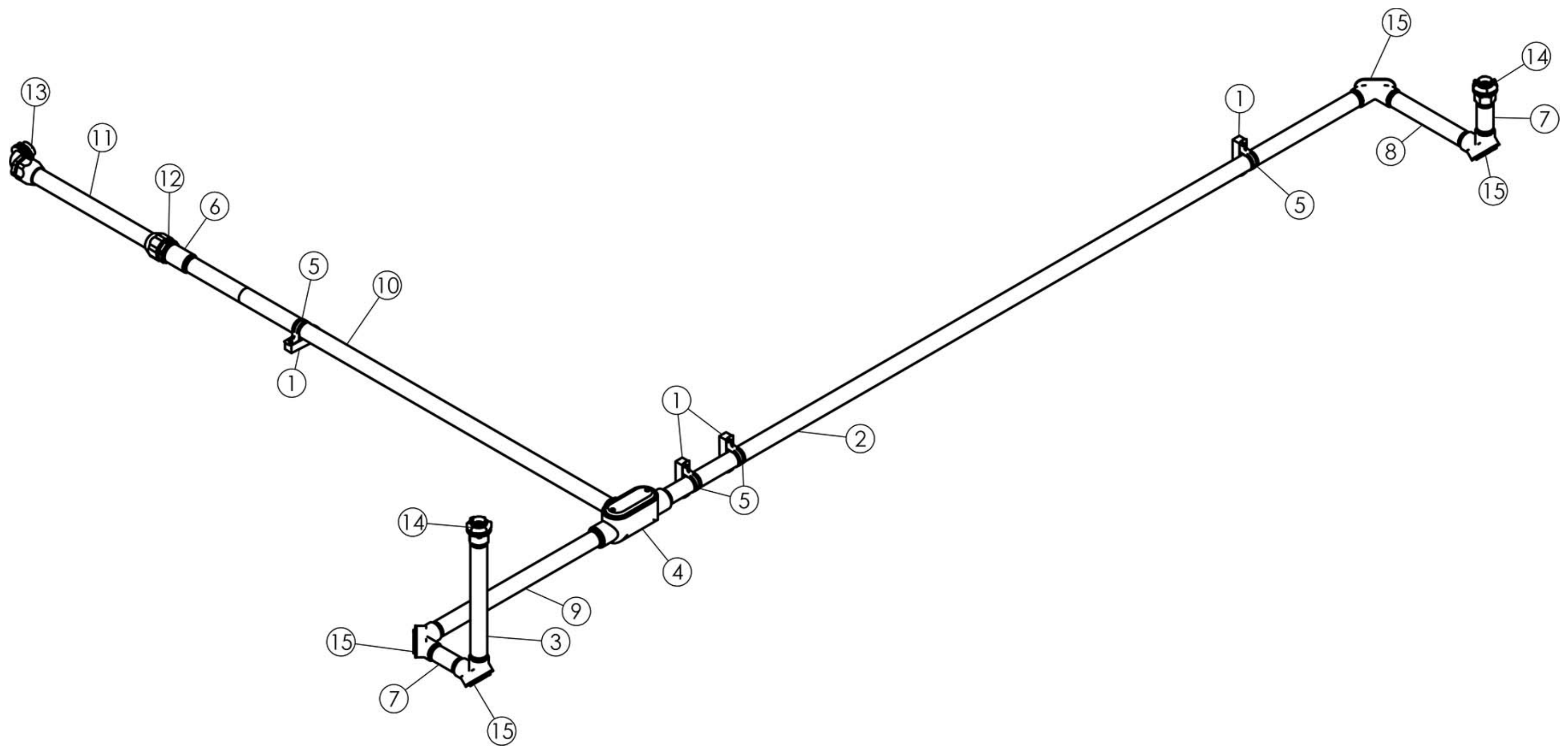


Conduit Assembly
118568-105

ITEM #	QTY.	PART#	DESCRIPTION
1	4	118568-007	BAR, CONDUIT CLAMP
2	1	118568-031	CONDUIT, 1" RIGID, THREADED X 4.25"
3	1	118568-032	CONDUIT, 1" RIGID, THREADED X 12.50"
4	1	118568-400	CONDUIT, TEE, 1" NPT, FEMALE, ZP
5	4	118568-401	CONDUIT CLAMP, 1" RIGID, SST
6	1	118568-403	FITTING, COUPLING, 1" NPS, ALUM
7	2	715629-0425	CONDUIT, 1" RIGID, THREADED X 4.25"
8	1	715629-0950	CONDUIT, 1" RIGID, THREADED X 9.50"
9	1	715629-1925	CONDUIT, 1" RIGID, THREADED X 19.25"
10	1	715629-4800	CONDUIT, 1" RIGID, THREADED X 48.00"
11	1	C00173	CONDUIT,1" NON-METALLIC
12	1	C00181	CONNECTOR, CONDUIT, 1/2 STR, NYLON
13	1	C00182	CONNECTOR,CONDUIT,1"-90 NYLON
14	2	C00887	CONNECTOR,CONDUIT,1"HUB
15	4	C00892	CONNECTOR,CONDUIT,1"PULL-ELBOW

FOLD OUT TO VIEW DRAWING

Conduit Assembly
118568-105



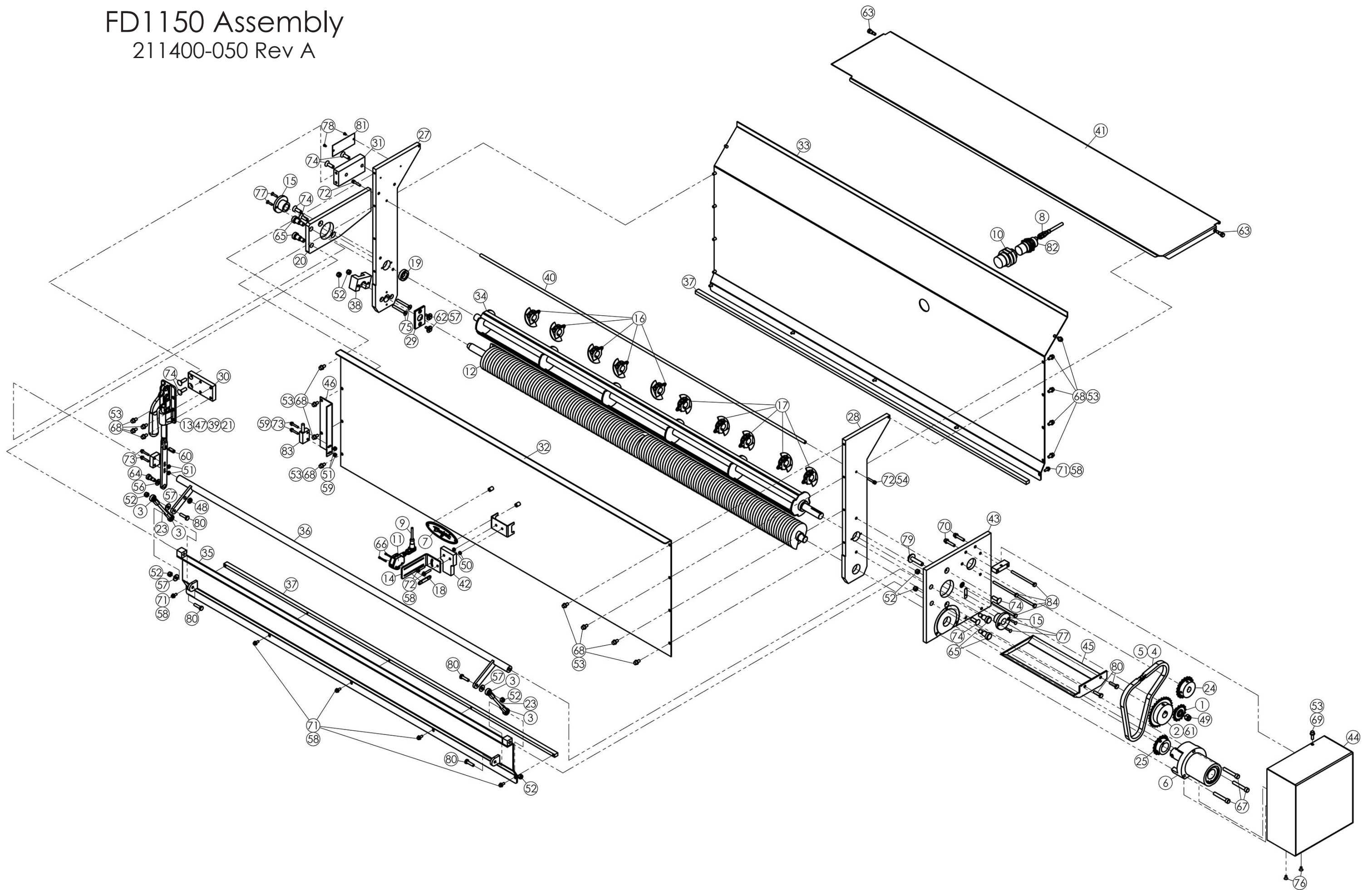
FD1150 Assembly
211400-050 Rev A

FOLD OUT TO VIEW DRAWING

ITEM #	QTY.	PART #	DESCRIPTION	ITEM #	QTY.	PART #	DESCRIPTION
1	1	103478	SPROCKET IDLER, 35-A-15 3/8" BORE	43	1	717621	MOTOR PLATE LH
2	1	114055	SPROCKET, 41-B-30, 3/4" B	44	1	717623	A/W, GUARD LH
3	4	152074	ROD END, BEARING 1/4"	45	1	717625	A/W, CATCH PAN LH
4	2.50'	152169	DRIVE CHAIN	46	1	717626	ANGLE BRACKET LH
5	1	152175	CHAIN LINK #35 CONNECTING N.P.	47	1	955405	NUT HEX JAM 3/8-16 UNC SST
6	1	211372	HOUSING AND BEARING	48	1	955407	NUT HEX JAM 5/16-18 UNC SST
7	1	303000	LABEL,BURFORD LOGO,4.25 SCRIPT	49	1	955620	NUT HEX NYLOC 3/8-16 UNC SST
8	1	304430	CABLE,SENSOR,M12,5WIRE,F,QC,STR	50	2	955621	NUT HEX NYLOC #10-24 UNC SST
9	1	304431	CABLE,SENSOR,M12,5WIRE,F,QC,90	51	4	955625	NUT HEX NYLOC #8-32 UNC SST
10	1	610858	WELL, 30MM SENSOR MNT, DELRIN	52	8	955661	NUT HEX NYLOC 1/4-20 UNC SST
11	1	611027	SENSOR,PHOTO,DIFFUSE,500MM,10-30V,QC	53	25	955940	WASHER LOCK 1/4" SST
12	1	612330-050	BRUSH, FLOUR DUSTER 50"	54	2	955941	WASHER LOCK #10 SST
13	1	612331	STRAIGHT LINE ACTION CLAMP	55	1	955975	WASHER FLAT 3/8" SST
14	1	711570	BRACKET PHOTOEYE DUSTER	56	1	955976	WASHER FLAT 5/16 SST
15	2	711726	BUSHING DELRIN SHAFT PIVOT FD200	57	6	955977	WASHER FLAT 1/4" SST
16	5	714312	AUGER, SPLIT COLLAR RIGHT	58	11	955978	WASHER FLAT #10 SST
17	5	714313	AUGER, SPLIT COLLAR LEFT	59	6	955979	WASHER FLAT #8 SST
18	1	715595	PLATE, TAPPED, LASER BACKUP MT	60	1	958712	PIN, ROLL, 5/16" DIA X 3/4", SST
19	2	716855	SPACER, COLLAR, FD300	61	2	971210	SCREW SET SOC 1/4-20 UNC X 5/8 SST
20	1	717321	TORQUE SHAFT END SUPPORT	62	2	974904	SCREW SHLDR 1/4 X 1/4, #10-24 SST
21	1	717323	MAIN LINK	63	2	975006	SCREW SHLDR 5/16 X 3/8, 1/4-20 SST
22	1	717326	IDLER SPACER	64	1	975106	SCREW SHLDR 3/8 X 3/8, 5/16-18 SST
23	2	717328	LINKAGE ROD	65	4	975210	SCREW SHLDR 1/2 X 5/8, 3/8-16 SST
24	1	717329	SPROCKET-35B20 15MM BORE, RWRK	66	2	976016	SCREW SOC HD CAP #4-40 X 1 SST
25	1	717330	SPROCKET, 35B18, 1.125 BORE	67	3	977732	SCREW SOC HD CAP 5/16-18 x 2 SST
26	1	717332	BLOCK MOUNT	68	22	978308	SCREW SOC HD CAP 1/4-20 X 1/2 SST
27	1	717340	NON-MOTOR END PLATE	69	1	978312	SCREW SOC HD CAP 1/4-20 X 3/4 SST
28	1	717341	MOTOR END PLATE	70	2	978320	SCREW SOC HD CAP 1/4-20 X 1 1/4 SST
29	1	717342	END PLATE	71	10	978908	SCREW SOC HD CAP #10-24 UNC X 1/2 SST
30	1	717347	SIDE BLOCK	72	4	978916	SCREW SOC HD CAP #10-24 UNC X 1 SST
31	1	717348	END BLOCK	73	4	979516	SCREW SOC HD CAP #8-32 UNC X 1 SST
32	1	717349-050	A/W PANEL, FRONT, FD1050	74	8	981616	SCREW FLT HD SOC 5/16-18 UNC X 1 SST
33	1	717351-050	PANEL, REAR, FD1050	75	2	981732	SCREW FLT HD SOC 1/4-20 X 2 SST
34	1	717352-050	A/W, AUGER W CHURN, FD1050	76	2	982306	SCREW FLT HD SOC #10-24 X 3/8 SST
35	1	717356-050	A/W, HINGED PANEL, FRONT, FD1050	77	4	982912	SCREW FLT HD SOC #8-32 X 3/4 SST
36	1	717358-050	A/W, LEVER ARM, FD1050	78	2	987504	SCREW BUTT HD SOC #6-32 X 1/4 SST
37	2	717359-050	TEMPLATE MTG. BAR	79	1	988928	SCREW FIN HEX 3/8-16 X 1 3/4 SST
38	1	717360	END BEARING	80	6	989916	SCREW FIN HEX 1/4-20 X 1 SST
39	1	717362	A/W, CLEVIS	81	1	A05584	PLATE-SERIAL NUMBER
40	1	717363-050	ROD INNER HOPPER EXT.	82	1	C07670-001	SENSOR,PROX,CAPAC,30MM,24V,PNP,NC
41	1	717364-050	COVER, FD1150 DUSTER	83	1	C07678	SENSOR,INTLK,CODED MAGNETIC SAFETY
42	1	717370	BLOCK, SIDE ALIGN	84	4	MA0690	SCREW, FIN HEX, 6 X 90 MM

FD1150 Assembly

211400-050 Rev A



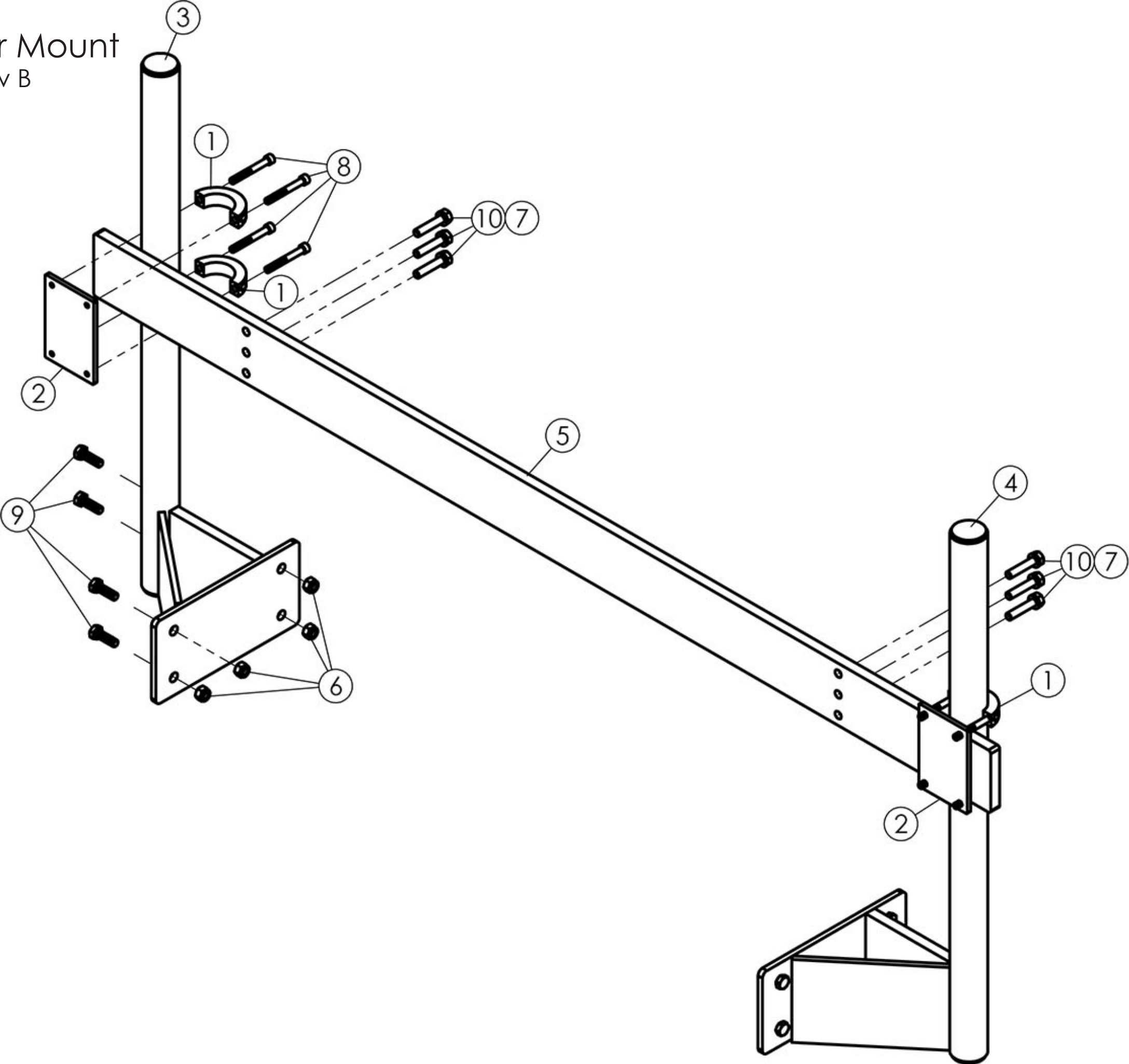
Duster Conveyor Mount

211375-050 Rev B

ITEM #	QTY.	PART#	DESCRIPTION
1	4	712781	COLLAR,HALF REWORK, 1-1/2 SPLIT, SST
2	2	716079	PLATE CLAMPING BAR CONV MOUNT
3	1	716084	A/W, CONV. MNT, EL90 32-45"
4	1	716090	A/W, CONV. MNT, EL90 32"-45"
5	1	717288-050	BAR, FD1X50 CONV. CROSS MOUNT
6	8	955619	NUT HEX NYLOC 5/16-18 UNC SST
7	6	955939	WASHER, LOCK 5/16" SST
8	8	978332	SCREW SOC HD CAP 1/4-20 X 2 SST
9	8	989716	SCREW FIN HEX 5/16-18 X 1 SST
10	6	989724	SCREW FIN HEX 5/16-18 X 1 1/2 SST

FOLD OUT TO VIEW DRAWING

Duster Conveyor Mount
211375-050 Rev B



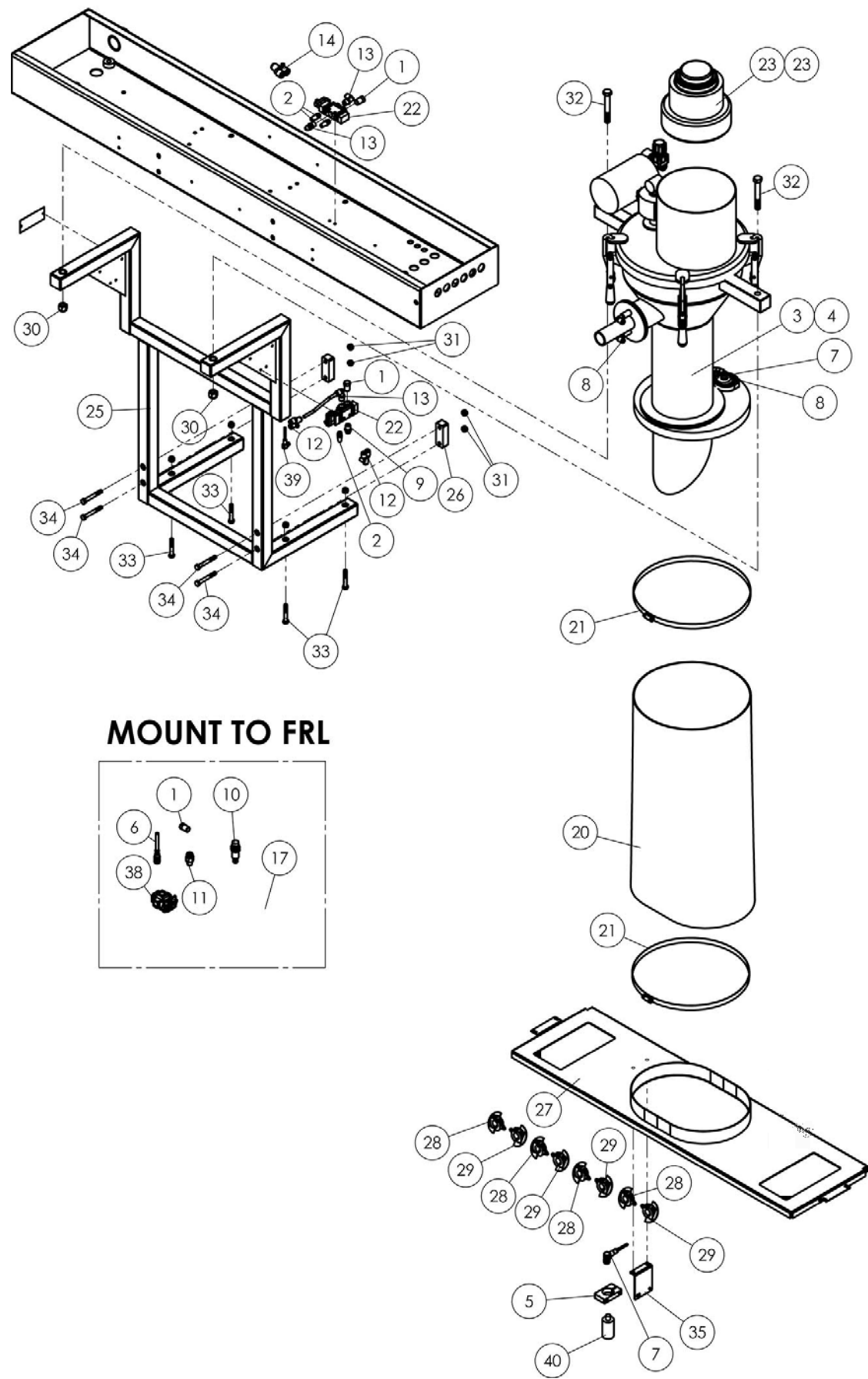
FOLD OUT TO VIEW DRAWING

MPA Frame Mount Assembly
210443-008 Rev E

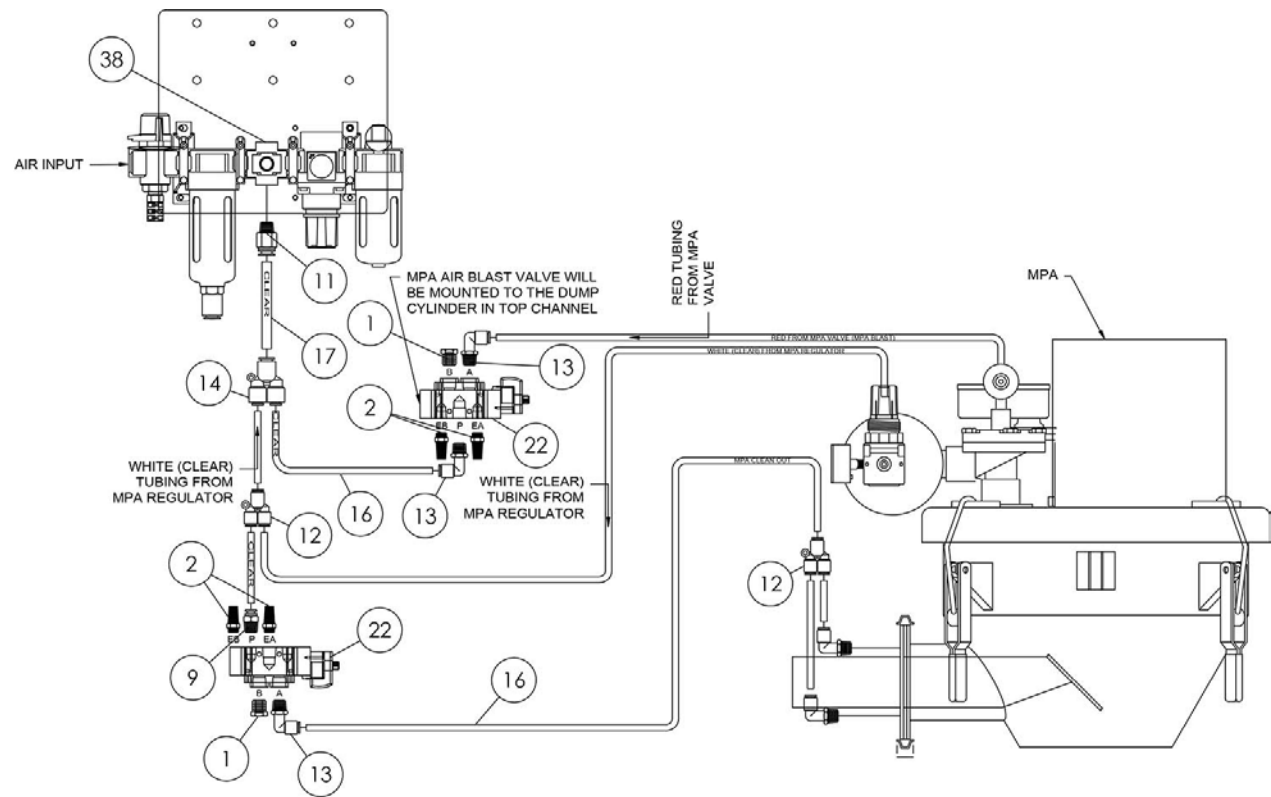
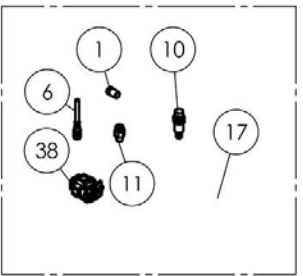
ITEM #	QTY.	PART #	DESCRIPTION
1	3	110423	FITTING, 1/4" NPT PLUG
2	4	111497	MUFFLER, 1/8" NPT
3	REF.	210430	ASSY, MPA-100, AUTO-FILL, 110V
4	REF.	210450	ASSY,MPA-100 AUTO-FILL,220VAC MOTOR
5	1	304268	BLOCK, 30MM, PROX MT, AUTO-FILL, 9840
6	1	304430	CABLE,SENSOR,M12,5WIRE,F,QC,STR
7	1	304431	CABLE,SENSOR,M12,5WIRE,F,QC,90
8	1	305772	INLET TUBE REWORK MPA-100
9	1	401152	FITTING,CONN,1/4MPT X 1/4T,ENP,Q.R.
10	1	610295	SENSOR,PROX,18MM,10-30VDC,PNP,N.O.
11	1	610507	FITTING,CONN,1/4NPT X 3/8T,ENP,Q.R.
12	2	610531	FITTING, 1/4"Y", Q.R.
13	3	610602	FITTING, ELL, 1/4NPT X 1/4T,ENP,Q.R
14	1	610673	FITTING "Y" 3/8 X 1/4 2X QR
15	1	610739	PLC,ML1500,I/O MODULE 6IN/4OUT
16	10'	610885-07	TUBING, 1/4" POLYURETHANE, CLEAR
17	15'	610886-07	TUBING, 3/8" POLYURETHANE, CLEAR
18	3	610954	CONNECTOR, CORD, .39-.56, DOME, NYLON
19	3	610955	CONNECTOR,SEAL RING,1/2NPT,POLYETH
20	5'	611047	HOSE, 12" ID CLEAR VIEW, PVC
21	2	611051	HOSE CLAMP, 12"
22	2	611117	VALVE,SOL,24V,2 WAY,1/4P
23	REF	611950	VACUUM MOTOR 110V(MPA)
24	REF	611951	VACUUM MOTOR 220V (MPA)
25	1	712432	A/W, MPA-100 SUPPORT FRAME, 9840S
26	2	712438	BLOCK, VAC. FRAME SPACER
27	REF.	712444	A/W, HOPPER COVER, 9840S / MPA-100
28	4	714312	AUGER, SPLIT COLLAR RIGHT
29	4	714313	AUGER, SPLIT COLLAR LEFT
30	2	955618	NUT HEX NYLOC 1/2-13 UNC SST
31	8	955619	NUT HEX NYLOC 5/16-18 UNC SST
32	2	988356	SCREW FIN HEX 1/2-13 X 3 1/2 SST
33	4	989732	SCREW FIN HEX 5/16-18 X 2 SST
34	4	989740	SCREW FIN HEX 5/16-18 X 2 1/2 SST
35	1	A05038	BRACKET, PROXIMITY MTG.
36	1	A05584	PLATE-SERIAL NUMBER
37	3	C00174	LOCKING NUT, 1/2 NPT, NYLON
38	1	C00398-002	PORTING, BLOCK INSERT KIT, 1/4NPT
39	1	C07626	SENSOR,CABLE,M8,3WIRE,F,QC,90
40	1	C07670	SENSOR,CAPACITIVE,30MM,DC,PNP-N/C
41*	REF.	C00892	CONNECTOR,CONDUIT,1"PULL-ELBOW
42*	REF.	C00887	CONNECTOR,CONDUIT,1"HUB
43*	REF.	715599	BRACKET, JUNCTION BOX MNT
44*	REF.	715611	REWORK, JUNCTION BOX, MPA
45*	REF.	715629-0950	CONDUIT, 1" RIGID, THREADED, 9.50"
46*	REF.	715629-1928	CONDUIT, 1" RIGID, THREADED, 19.25"
47*	REF.	174049	FITTING,ELL,1/8MPT X 1/4T,Q.R.SHORT

*NOT SHOWN

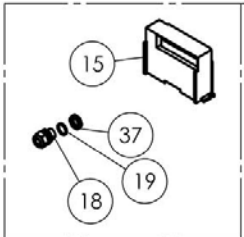
MPA Frame Mount Assembly
210443-008 Rev E



MOUNT TO FRL



IN MAIN ENCLOSURE



SCALE 1:8

FOLD OUT TO VIEW DRAWING

HS-300 Assembly
306102 Rev E

ITEM #	QTY.	PART#	DESCRIPTION
1	1	211240	KIT MPHS-300/500
2	1	306100	HOPPER HS-300

MPHS-300/500 Kit
211240 Rev C

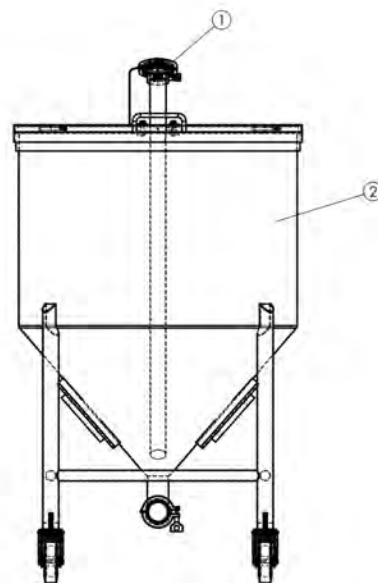
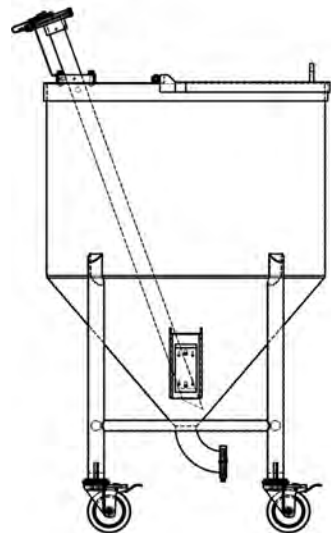
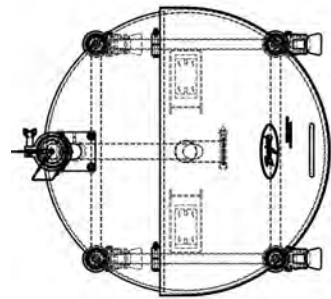
ITEM #	QTY.	PART#	DESCRIPTION
1	1	611014	LANYARD, QUICK RELEASE PIN, CABLE
2	1	611097	CLAMP, TRI-CLOVER, 2 1/2"
3	1	611098	GASKET 2 1/2"
4	1	611285	CLAMP, HEAVYWEIGHT, 2"
5	1	612039	LANYARD, CABLE 6"
6	1	712514	PLATE DOWN TUBE MPH300
7	1	712516	A/W CONNECTOR HOPPER
8	1	716539	END CAP SOLID 2 1/2 RWK
9	1	716702	WAND PICK UP
10	4	955940	WASHER LOCK 1/4" SST
11	1	955941	WASHER LOCK #10 SST
12	4	955977	WASHER FLAT 1/4" SST
13	2	971204	SCREW SET SOC 1/4-20 UNC X 1/4 SST
14	2	971210	SCREW SET SOC 1/4-20 UNC X 5/8 SST
15	1	978906	SCREW SOC HD CAP #10-24 UNC X 3/8
16	4	989920	SCREW FIN HEX 1/4-20 X 1 1/4 SST
17	1	C00532	CAP # 16AMP-2 2"
18	1	C01005	GASKET 2"

MPA Connecting Hose
210438-020 Rev B

ITEM #	QTY.	PART#	DESCRIPTION
1	2	268074	CLAMP HOSE 1 1/2 TO 3/4
2	20'	305084	HOSE, POLYWIRE, VAC TRANSFER 1.5 ID
3	1	712517	A/W CONNECTOR HOPPER

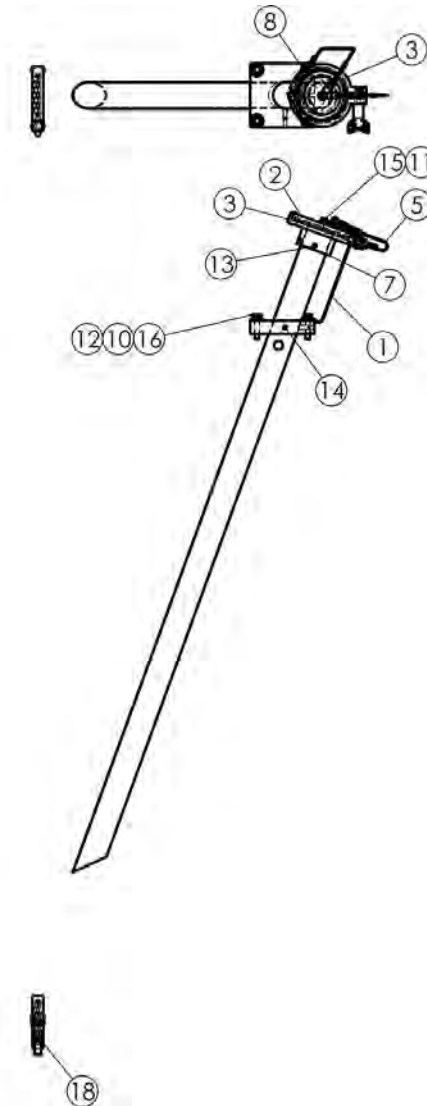
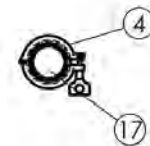
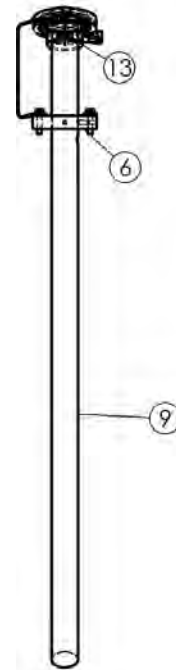
HS-300 Assembly

306102 Rev E



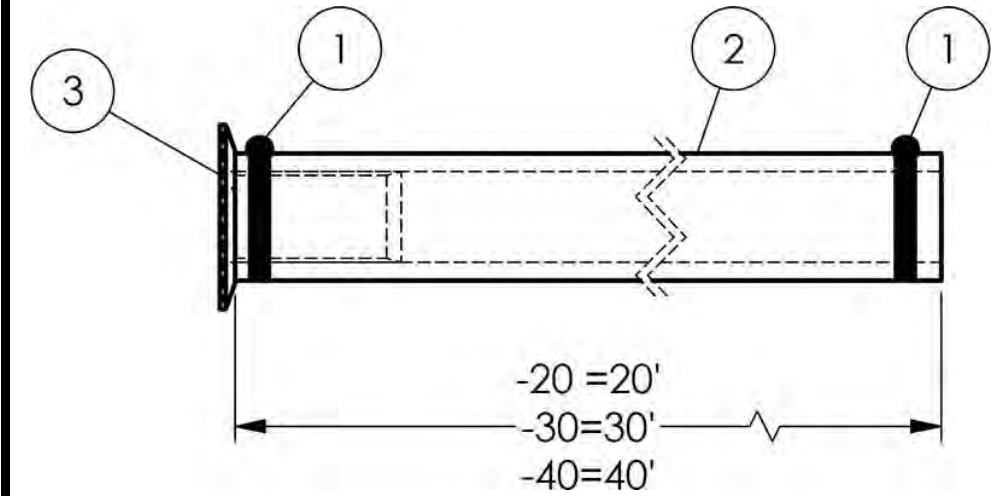
MPHS-300/500 Kit

211240 Rev C



MPA Connecting Hose

210438-020 Rev B

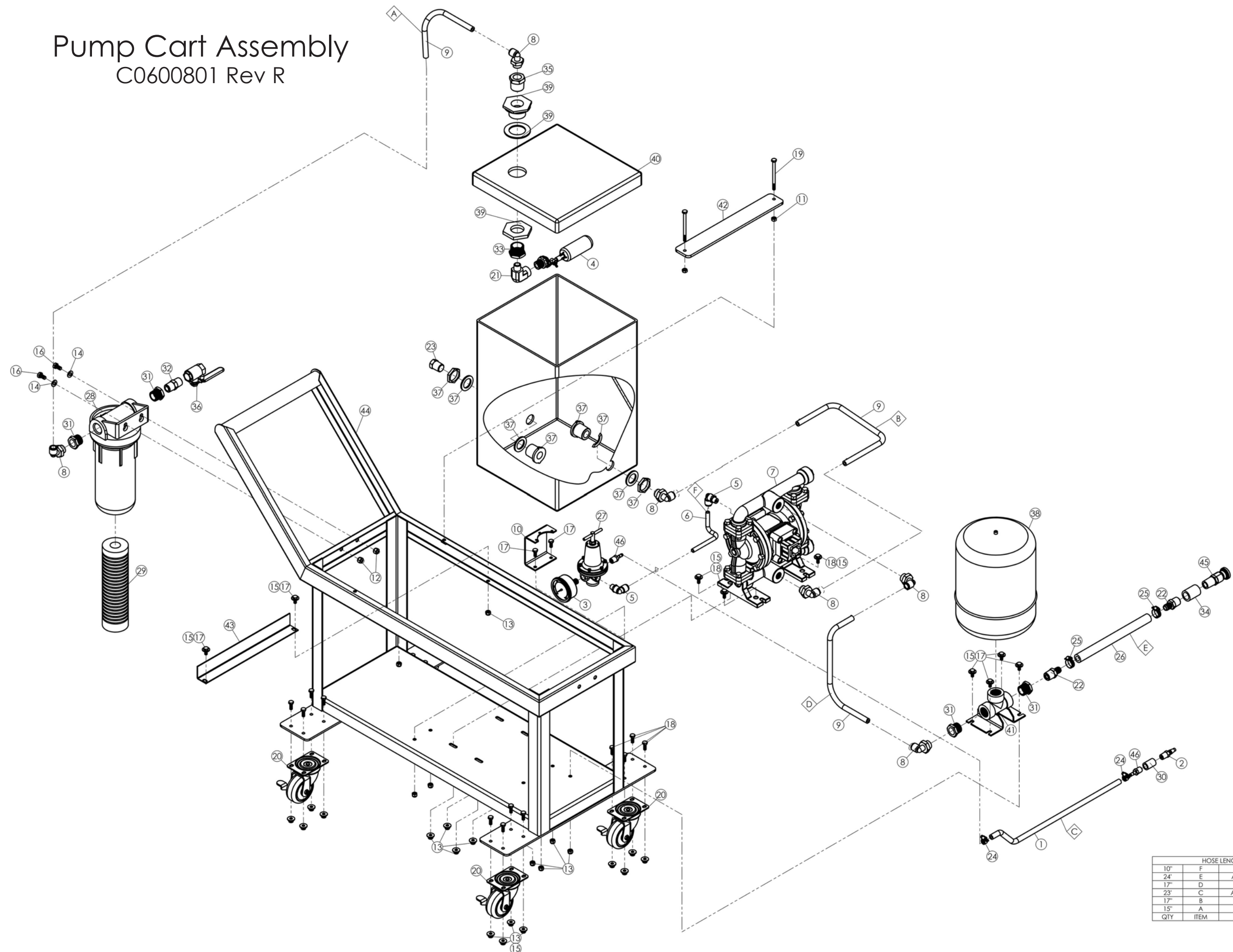


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Pump Cart Assembly
C0600801 Rev R

ITEM #	QTY	PART#	DESCRIPTION
1	23'	103878	HOSE, AIR 1/4" DIA NEOPRENE
2	1	118871	FITTING,QC,STEM,AIR,1/4 NPTM
3	1	303674	GAUGE 0-200 PSI 1/4 NPT BACK MT SST
4	1	305716	FLOAT VALVE MINI ADJ 1/2"
5	2	610505	FITTING,ELL,1/4NPT X 3/8T, ENP, Q.R
6	3'	610886-07	TUBING, 3/8" POLYURETHANE, CLEAR
7	1	611121	PUMP, AIR POWERED DBL DIAPHRAGM
8	6	611343	FITTING,ELL,1/2NPT X 1/2,ENP,Q.R.
9	5'	611350-05	TUBING,1/2" POLYURETHANE,YELLOW
10	1	713714	REGULATOR BRACKET, PUMP CART
11	2	955409	NUT HEX JAM 1/4-20 UNC SST
12	2	955619	NUT HEX NYLOC 5/16-18 UNC SST
13	28	955661	NUT HEX NYLOC 1/4-20 UNC SST
14	2	955976	WASHER FLAT 5/16 SST
15	30	955977	WASHER FLAT 1/4" SST
16	2	989710	SCREW FIN HEX 5/16-18 X 5/8 SST
17	8	989910	SCREW FIN HEX 1/4-20 X 5/8" SST
18	20	989912	SCREW FIN HEX 1/4-20 X 3/4" SST
19	2	989956	SCREW FIN HEX 1/4-20 X 3 1/2 SST
20	4	A04225	CASTER, 3" LOCKING/SWIVEL, 145#
21	1	A06856	FITTING, REDUCING ELL 1/2F X 3/8M SS
22	2	A06859	FITTING, 1/2MPT X 1/2 TUBE
23	1	A07726	FITTING, PLUG 1/2" PVC
24	2	C00414	CLAMP 1/4" TO 5/8" SST
25	2	C00415	CLAMP #6 STAINLESS HOSE
26	24'	C00435	HOSE, 1/2" VINYL W/ POLYESTER
27	1	C00537	REGULATOR, AIR, 1/4 NPT PORTS
28	1	C00578	FILTER, WATER, 3/4" NPTF
29	1	C00579	FILTER REPLACEMENT # AP110
30	1	C00900	FITTING,COUPLING,1/4 NPTF,SST
31	4	C01013	FITTING, REDUCER, 3/4MPT X 1/2FPT, SST
32	1	C01018	FITTING,NIPPLE,HEX,1/2 NPTM,SST
33	1	C01958	FITTING,REDUCER,1" MPT X 3/8FPT,SST
34	1	C03613	FITTING,COUPLING,1/2 NPTF,SST
35	1	C05339	FITTING, REDUCER, 1" x 1/2" PVC
36	1	C05431	VALVE, 1/2 NPT 2-WAY, BALL, SST
37	2	C05576	FITTING, 1/2 NPT BULKHEAD, PL.
38	1	C06171	TANK, WATER RECHARGER
39	1	C06174	FITTING, BULKHEAD 1" POLY
40	1	C06176	RWK, TANK & COVER
41	1	C06183	TEE MOUNT A/W
42	1	C06195	PLATE, COVER CLAMP
43	1	C06196	BRACKET, UPPER TANK
44	1	C06200	A/W, TANK BASE
45	1	C07623	QUICK CONNECT BODY, 1/2 MPT
46	2	C01953	FITTING,HOSE BARB,1/4MPT X 1/4H,SST

Pump Cart Assembly
C0600801 Rev R



HOSE LENGTH SCHEDULE		
10"	F	PUMP TO REGULATOR
24"	E	ACCUMULATOR TO SYSTEM
17"	D	PUMP TO ACCUMULATOR
23"	C	AIR LINE - SOURCE TO PUMP
17"	B	TANK TO PUMP
15"	A	FILTER TO TANK
QTY	ITEM	DESCRIPTION

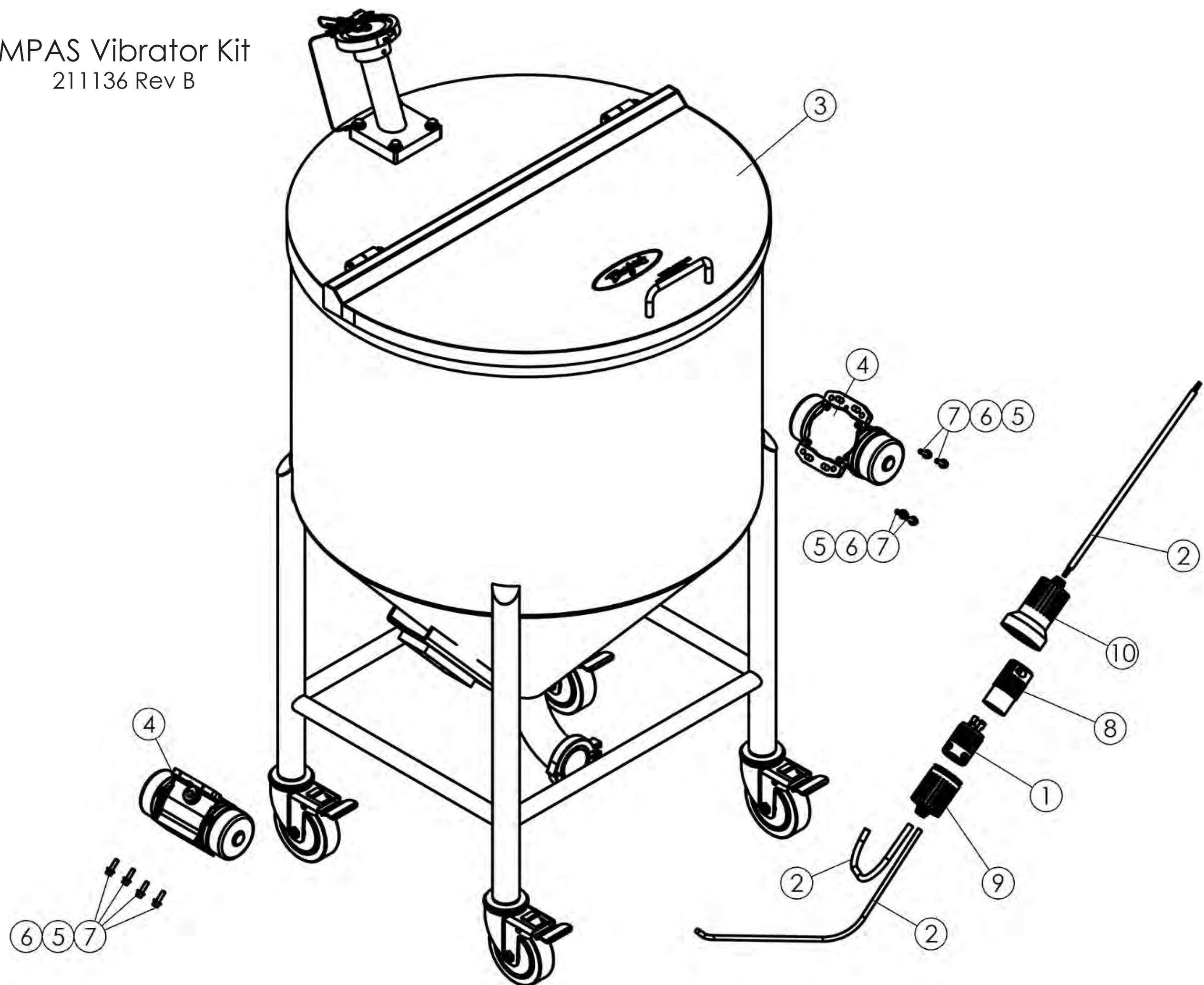
MPAS Vibrator Kit
211136 Rev B

ITEM #	QTY.	PART#	DESCRIPTION
1	1	113393	PLUG MALE 3 POLE TWIST LOCK
2	2	142007	CABLE, 16AWG, 3 COND., BLACK CORD
3	REF.	306102	HOPPER ASSEMBLY MPHS-300
4	2	612297	VIBRATOR 115V NEA5050
5	8	955941	WASHER LOCK #10 SST
6	8	955978	WASHER FLAT #10 SST
7	8	978912	SCREW SOC HD CAP #10-24 UNC X 3/4 SST
8	1	A05379	PLUG FEMALE 3 POLE TWIST LOCK
9	1	C07644	COVER, WEATHER PROOF - 113393
10	1	C07645	COVER, WEATHER PROOF - A05379

FOLD OUT TO VIEW DRAWING

MPAS Vibrator Kit

211136 Rev B



Conveyor Components

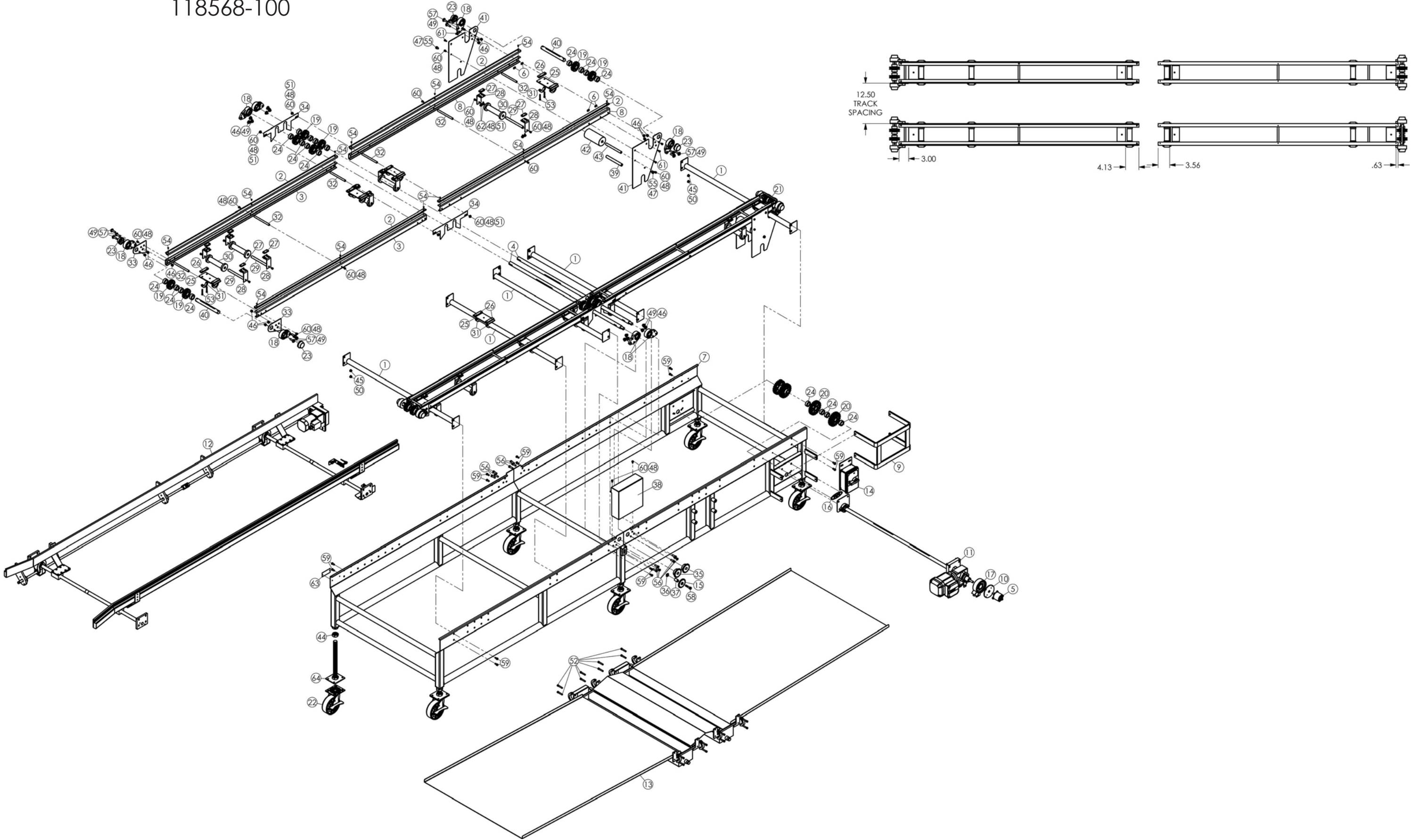
118568-100

FOLD OUT TO VIEW DRAWING

ITEM #	QTY.	PART#	DESCRIPTION	ITEM #	QTY.	PART#	DESCRIPTION
1	5	107026-009	A/W, 48" CONV. CROSS BRACE	33	4	714329-001	GUARD, INFEEED DRIVE, BBU
2	8	107026-017	GUIDE, TABLETOP CHAIN, 140" SPLIT	34	4	714330	GUARD, TRANSFER CENTER DRIVE
3	4	107026-019	CHANNEL, CHAIN GUIDE MNT 140" SPLIT	35	2	714357	SPROCKET, RWK, 40-B-17, 5/8" B
4	2	107026-031	SHAFT, TRANSFER DRIVE, 48"	36	1	714358	T-NUT, TRANSFER IDLER ADJ.
5	REF.	117781-407	ENCODER, ETHERNET/IP	37	1	714359	SHAFT, ECCENTRIC IDLER
6	8	118241	NUT, WELD ON 1/4-20 NC, SST.	38	1	714360	A/W, COVER INTERLACE DRIVE
7	1	118568-001	A/W, CONVEYOR FRAME, 948LI-160S	39	2	714871	SHAFT, IDLER SPACER, BBU
8	4	118568-006	CHANNEL, CHAIN GUIDE MNT 160" SPLIT	40	4	714872	SHAFT, IDLER, M-QNB SPROCKET
9	1	118568-011	A/W. CONV MOTOR GUARD	41	4	714904	GUARD, MAIN CHAIN DRIVE SPROCKET
10	1	118568-020	COVER, ENCODER MNT	42	2	714908	ROLLER, IDLER, TABLETOP CHAIN
11	1	118568-103	ASSY, CONV,DRIVE 48,SEW,LH	43	2	714909	SHAFT, IDLER ROLLER, TABLETOP CHAIN
12	1	118568-200	ASSY,AUTO PAN GUIDES, 946LI-160S	44	6	955390	NUT HEX JAM 1-1/8-7 UNC SST
13	1	118568-300	ASSY, CATCH PANS, 948LI-160S	45	16	955619	NUT HEX NYLOC 5/16-18 UNC SST
14	1	210369	ASSY,MOTOR DISCONNECT,600V,15A	46	36	955620	NUT HEX NYLOC 3/8-16 UNC SST
15	1	210647	ASSY, SPRKT IDLER, 40-A-17, 3/8" BORE	47	5	955938	WASHER LOCK 3/8"
16	1	303000	LABEL,BURFORD LOGO,4.25 SCRIPT	48	90	955940	WASHER LOCK 1/4" SST
17	1	611102	ENCODER, 1.375 THRU BORE	49	36	955975	WASHER FLAT 3/8" SST
18	12	611635	BEARING, 1" BORE 3 HOLE FLANGE	50	16	955976	WASHER FLAT 5/16 SST
19	16	611723	SPROCKET, 16T, 3.11" OD EZ CLEAN	51	48	955977	WASHER FLAT 1/4" SST
20	4	611724	SPROCKET, 24T, 4.65" OD EZ CLEAN	52	16	977728	SCREW SOC HD CAP 5/16-18 x 1 3/4 SST
21	59 ft.	611725	BELT,6" WIDE x 1/2" PITCH,SERIES 1100	53	32	978328	SCREW SOC HD CAP 1/4-20 X 1 3/4 SST
22	6	611730	CASTER, 6" SWIVEL LOCKING, SST	54	24	983506	SCREW FLT HD SOC #6-32 X 3/8 SST
23	8	611868	END CAP, BEARING (611635)	55	4	988910	SCREW FIN HEX 3/8-16 X 5/8 SST
24	40	711757	COLLAR, SET, 1" SST	56	12	988920	SCREW FIN HEX 3/8-16 X 1 1/4 SST
25	10	712734	PLATE, CHAIN GUIDE CLAMP, MAGNET	57	24	988924	SCREW FIN HEX 3/8-16 X 1 1/2 SST
26	20	712735	PLATE, TOP CHAN GUIDE CLAMP	58	1	988932	SCREW FIN HEX 3/8-16 X 2 SST
27	20	712735-001	BAR, ROLLER/PROX CLAMP, ADJ.	59	16	989712	SCREW FIN HEX 5/16-18 X 3/4 SST
28	20	712741	BRACKET, ROLLER SHAFT	60	50	989908	SCREW FIN HEX 1/4-20 X 1/2 SST
29	10	712744	SHAFT, ROLLER IDLER, CHAIN	61	8	989910	SCREW FIN HEX 1/4-20 X 5/8 SST
30	10	712745	ROLLER, IDLER, TABLETOP CHAIN	62	40	989912	SCREW FIN HEX 1/4-20 X 3/4 SST
31	20	712781	COLLAR,HALF REWORK, 1-1/2 SPLIT, SST	63	1	A05584	PLATE-SERIAL NUMBER
32	12	712782	SHAFT, SPACER, CHAIN GUIDE	64	6	C03324	A/W, ALL-THREAD LEG, CONV.

Conveyor Components

118568-100

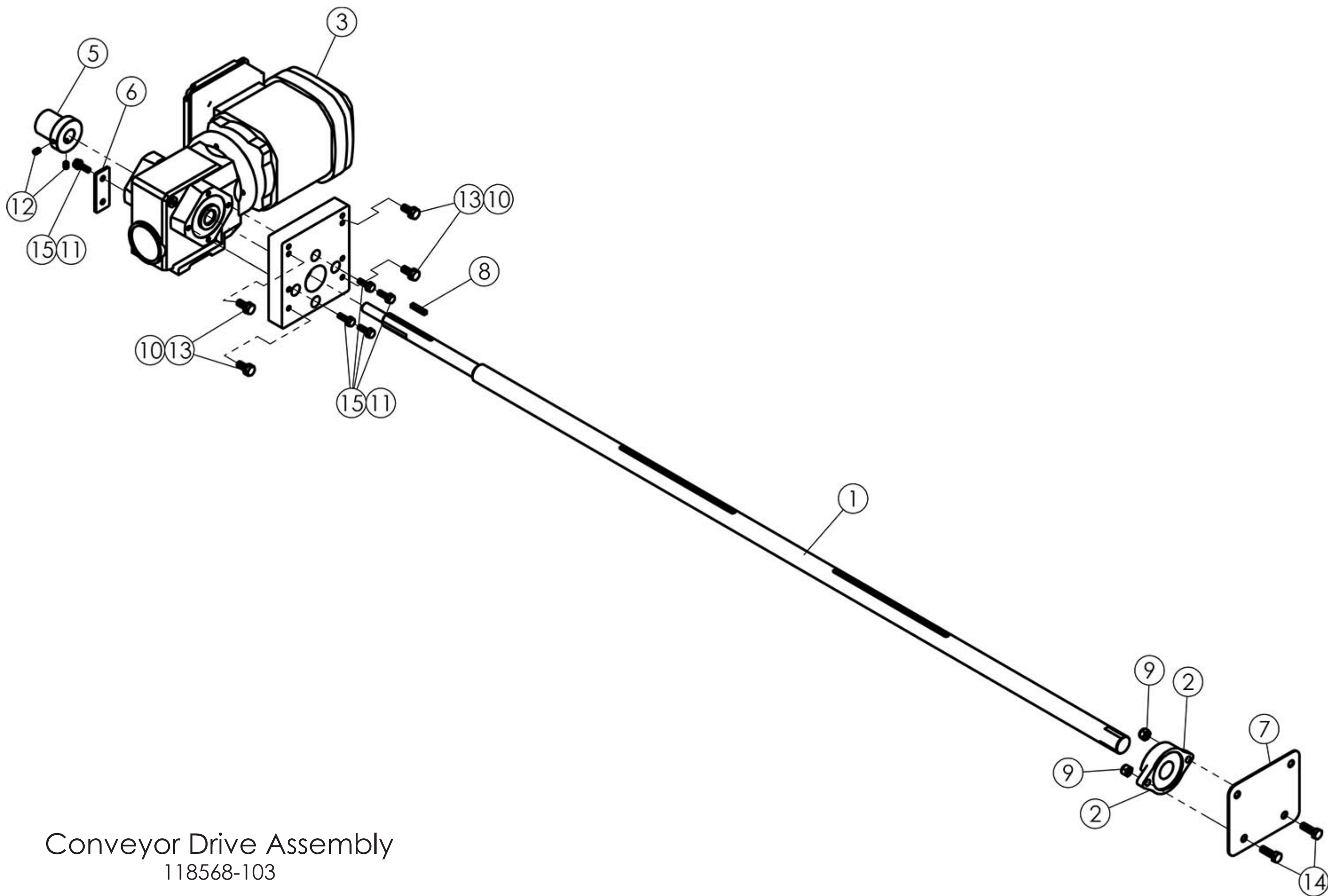


Catch Pan Assembly

118568-103

ITEM #	QTY.	PART#	DESCRIPTION
1	1	118568-030	SHAFT, LOWER CONV. DRIVE, 48"
2	1	611388	BEARING, 1", 2 BOLT FLANGE, SST
3	1	611606	GEARMOTOR, 1/2HP, 400-50-3, RH
4	1	715348	PLATE, GEARMOTOR MOUNT, SEW
5	1	715349	SLEEVE, ENCODER MOUNT, SEW
6	1	715351	PLATE, ENCODER MOUNT, SEW
7	1	716891	PLATE, BEARING COVER
8	1	955470	KEY, SQ 3/16 X 1.00 .002 UNDERSIZE
9	2	955619	NUT HEX NYLOC 5/16-18 UNC SST
10	4	955939	WASHER LOCK 5/16" SST
11	5	955940	WASHER LOCK 1/4" SST
12	2	971206	SCREW SET SOC 1/4-20 X 3/8 SST
13	4	989712	SCREW FIN HEX 5/16-18 X 3/4 SST
14	2	989716	SCREW FIN HEX 5/16-18 X 1 SST
15	5	991312	SCREW FIN HEX M6-1 X 20 MM SST

FOLD OUT TO VIEW DRAWING



Conveyor Drive Assembly
118568-103

FOLD OUT TO VIEW DRAWING

Pan Guide Assembly
118568-200

ITEM #	QTY.	PART#	DESCRIPTION
1	2	107026-014	SHAFT, PAN GUIDE, 48" DRIVE
2	1	118568-012	A/W, PAN GUIDE, AUTO, 160S
3	2	118568-013	3" J-LEG, UHMW EXTRUSION
4	1	118568-015	A/W, PAN GUIDE, AUTO, 160S
5	1	118568-018	BRACKET, PROX MOUNT
6	1	118568-201	SHAFT, PAN GUIDE, AUTO,160" DIS
7	1	118568-202	SHAFT, PAN GUIDE, AUTO,160"
8	1	304123-001	MOTOR,GEAR,1/8HP,200/230-50/6,3.6:1
9	2	304350-001	SENSOR,PROX,8MM,10-30V,PNP,NC,TURCK
10	1	610953	CONNECTOR, CORD, .20-.35, DOME, NYLON
11	1	610955	CONNECTOR,SEAL RING,1/2NPT,POLYETH
12	1	610991	COUPLING, FLEXIBLE SHAFT, 5/8" BORE
13	8	611238	BEARING, 5/8, 2 BOLT FLANGE, SST
14	1	611469-010	ENCODER, .375 THRU BORE
15	4	612307	GUARD, WORM GEAR HOUSING
16	1	710832	SUPPORT, PAN GUIDE SHAFT
17	2	711938	RWK, WORM GEAR
18	2	711939	RWK, WORM STEEL, 5/8" B, 10 D.P.
19	2	712026	SPROCKET, REWORK,35B14, 5/8 BORE
20	1	712735-001	BAR, ROLLER/PROX CLAMP, ADJ.
21	3	712831	SUPPORT, PAN GUIDE SHAFT
22	1	712859	AW, GUARD, PAN GUIDE DRIVE
23	3	712860	BLOCK, BEARING MOUNT
24	2	712861	BLOCK, PAN GUIDE, 1" ACME, LH
25	2	712862	BLOCK, PAN GUIDE, 1" ACME, RH
26	4	712865	BRACKET, PAN GUIDE MNT
27	4	712866	PLATE, PAN GUIDE MNT
28	1	712870	PLATE, MOTOR MOUNT, PAN GUIDE
29	1	712876	STANDOFF, CHAIN GUARD COVER
30	1	712903	BRACKET, PROX MNT, 9840
31	1	712988	BLOCK RWK, BEARING MOUNT
32	2	714869	BLOCK, PROX TRAVEL, SHORT
33	2	716468	CHANNEL, WORM GEAR END PLATE
34	1	C00174	LOCKING NUT, 1/2 NPT, NYLON
35	2	C07626	SENSOR,CABLE,M8,3WIRE,F,QC,90

Pan Guide Assembly

118568-200

This exploded view diagram illustrates the assembly of a Pan Guide. The main components are the guide rails (1, 2, 3, 4) and the guide shoes (5, 6, 7, 8). The diagram shows the following parts and their assembly sequence:

- Guide Rails (1, 2, 3, 4):** The main structural rails.
- Guide Shoes (5, 6, 7, 8):** The components that slide along the rails.
- Assembly Sequence:**
 - Parts 1, 2, 3, and 4 are the main rails.
 - Parts 5, 6, 7, and 8 are the guide shoes.
 - Parts 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, and 35 are various fasteners, pins, and small components used in the assembly.

The diagram uses dashed lines to indicate the assembly path and the relative positions of the components.

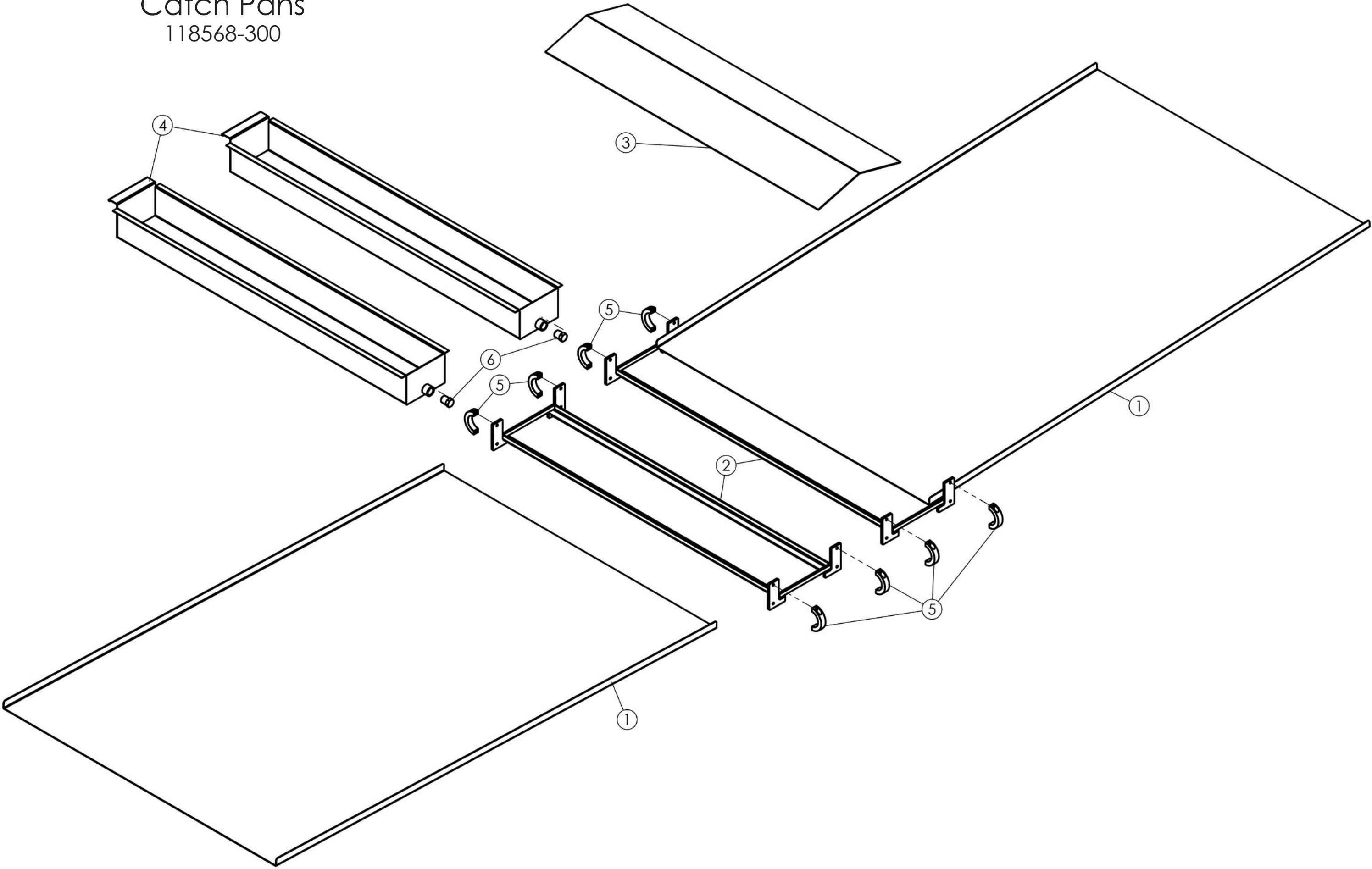
Catch Pans

118568-300

ITEM #	QTY.	PART#	DESCRIPTION
1	2	107026-020	A/W, WATER DEFLECTOR END
2	2	107026-024	A/W, DRIP PAN SUPPORT, 48" CONV.
3	1	107026-026	A/W, CENTER DEFL, WET-DRY, 48"
4	2	107026-028	A/W, CATCH TRAY, 48" CONV.
5	8	712792	COLLAR, HALF REWORK, 2" SPLIT, SST
6	2	A07726	FITTING, PLUG 1/2" PVC

FOLD OUT TO VIEW DRAWING

Catch Pans
118568-300



Drive Settings/ Electrical Schematics

Drive Settings

Parameters not listed below should remain at the manufacturer's default values. Verify the Inverter that is installed in your unit before checking the settings below.

9840/9940							
SMART TOPPER (POWERFLEX 525)							
DRV1	Mandrel		DRV2	Automation		DRV3	Duster
			P031	230 V		P031	230 V
						P036	1600 RPM
P041	0.10 Sec		P041	2.00 Sec		P041	0.10 Sec
P042	0.10 Sec		P042	0.10 Sec		P042	0.10 Sec
P045	6		P045	6		P045	3
P046	5		P046	5		P046	5
P047	15		P047	15		P047	15
P048	1						
C128	1		C128	1		C128	1
C129	10		C129	10		C129	10
C130	10		C130	10		C130	10
C131	50		C131	50		C131	50
C132	164		C132	162		C132	165
C133	255		C133	255		C133	255
C134	255		C134	255		C134	255
C135	255		C135	255		C135	255
C137	10		C137	10		C137	10
C138	10		C138	10		C138	10
C139	50		C139	50		C139	50
C140	1		C140	1		C140	1
T434	0.2 Sec		T434	0.2 Sec			
T435	0.5 A		T435	0.5 A			

*Power cycle inverter for any changes to take affect.

FOLD OUT TO VIEW DRAWING

Electrical BOM

118568-WD

MOD*FLOUR DUSTER ASSY OPTION (118568--210645--011--014)

CBL6	1	C07650-001	CIRCUIT BREAKER,3AMP,600V
	1	304502-003	CABLE,YELLOW PATCH,3' SHIELDED
	1	C07670-001	?
	1	C07679	?
	1	C07678	?
INTLK2	1	C07678	?
	1	304431	?
DRV4	1	612045-004	DRIVER,PWR-FLEX 525,440--3PH,440--3PH.
	1	?	?
PSC3	1	611027	SENSOR,PHOTO,DIFFUSE,500MM,24VDC
	1	304430	SENSOR,CABLE,M12,5WIRE,STR
SYMBOL	QTY	PART #	DESCRIPTION

WATER SPLIT LIFT CIRCUIT (210395--002)			
PRS18,19	2	304350-001	SENSOR,PROX,8MM,10--30VDC,PNP,NC
PRS18,19	2	C07626	SENSOR,CABLE,M8,3WIRE,90°
SOL23,24	2	304238-001	CLUTCH,SHAFT MTG,24VDC
SUP23,24	2	C05724	SUPPRESSOR,TRANSIENT,25VAC/31VDC
SYMBOL	QTY	PART #	DESCRIPTION

WATER SPLIT SENSOR CIRCUIT (210397)			
PRS22	1	C06752-001	SENSOR,PROX,80MM,10--55VDC,PNP,EDDY
PRS22	1	304430	SENSOR,CABLE,M12,5WIRE,STR
SYMBOL	QTY	PART #	DESCRIPTION

WATER SPLITTER NOZZLE CIRCUIT (210390)			
SOL9-16A	14	612008	VALVE,APPLICATOR HEAD
SOL9-16A	14	610187-002	CABLE,MICRO-CHANGE,M12,5WIRE,W/SUP
SOL9-16A	14	610169	CABLE,BULKHEAD,M12,5WIRE,F,Q/C.
SOL9-16A	14	610174	CABLE,CAP,BULKHEAD,M12,F,Q/C.
SYMBOL	QTY	PART #	DESCRIPTION

WATER SPRAY LIFT CIRCUIT (210395--001)			
MTR5	1	304123-001	MOTOR,GEAR,1/8HP,100RPM,3.6:1
PRS15,16	2	611393	MOTOR,GEAR,1/8HP,100RPM,3.6:1.WD
PRS17	1	304350-003	SENSOR,PROX,8MM,10--30VDC,PNP,NC
PRS15,16,17	3	C07626	SENSOR,CABLE,M8,3WIRE,90°
20'	142113	CABLE,16AWG,4 COND.	
SYMBOL	QTY	PART #	DESCRIPTION

WATER SPRAY SENSOR CIRCUIT (210397)			
PRS9	1	C06752-001	SENSOR,PROX,80MM,10--55VDC,PNP,EDDY
PRS9	1	304430	SENSOR,CABLE,M12,5WIRE,STR
SYMBOL	QTY	PART #	DESCRIPTION

MOD* WATER SPRAY NOZZLE CIRCUIT (118568--110)

PLC2	1	117006--415	PLC,POINTIO,1734,ETH,MODULE
	1	117227-410	PLC,POINTIO,1734,PWM OUT
	1	117006-417	PLC,POINTIO,1734,8PT INPUT
	3	117006-418	PLC,POINTIO,1734,8PT OUT,PRO
	1	117227-411	PLC,POINTIO,1734,4PT OUT,PRO
PLC2	1	612183	PLC, COMPACTLOGIX, FDP MODULE
PLC2	6	612224	PLC, COMPACTLOGIX I/O TERMINAL BASE
CR1A-8A	2	610404-001	RELAY,TERMINAL MTG,24VDC (WHITE)
CTRL1	1	611573	VALVE,CONTROLLER,DRIVER,PULSAJET
FLTR1	1	611569	VALVE,PULSAJET,LINE FILTER
SOL1-8	8	612008	VALVE,APPLICATOR HEAD
SOL1-8	8	610187-002	CABLE,MICRO-CHANGE,M12,5WIRE,W/SUP
SOL1-8	8	610169	CABLE,BULKHEAD,M12,5WIRE,F,Q/C.
SOL1-8	8	610174	CABLE,CAP,BULKHEAD,M12,F,Q/C.
SYMBOL	QTY	PART #	DESCRIPTION

MOD* ENCLOSURE WATER SPRAY CIRCUIT (118568-800)			
ENCL4	1	118568-911	ENCLOSURE,16X16X6 (118568-410)
PNL4	1	118568-912	PANEL,ELEC (118568-411)
TB6	20"	C06464	RAIL,DIN,MOUNTING
TB6	10	C07117	TERMINAL,BLOCK,DUAL
TB6	18	612545	TERMINAL,BLOCK,DUAL,IND
TB6	6	C06465	ANCHOR,END CLAMP
TB6	1	C06463	JUMPER,TERMINAL,3-POS
TB6	1	C06525	TERMINAL,GROUNDING
TB6	112	C05843	TERMINAL,MARKERS
CR7,8	2	610421-001	RELAY,TERMINAL MTG,24VDC (BLACK)
TB7	1	610967	TERMINAL,BREAK-A-PART,12POS.
SYMBOL	QTY	PART #	DESCRIPTION

CONVEYOR CIRCUIT (210387--210388)			
ENCO1	1	611102	ENCODER,INCREMENTAL,3 CHANNEL
ENCO1	1	611249	ENCODER,INCREMENTAL,3 CHANNEL,WD
ENCO1	1	304431	SENSOR,CABLE,M12,5WIRE,F,OC,90
MTR2	1	611906	MOTOR,GEAR,1/2HP,230/460-60-3,RH
MTR2	1	611907	MOTOR,GEAR,1/2HP,230/460-60-3,LH
SYMBOL	QTY	PART #	DESCRIPTION

210369 REMOTE DISCONNECT ENCLOSURE			
DISC2	1	611536	ENCLOSURE,DISCONNECT,SWITCH BOX
DISC2	1	611537	AUX. CONTACT,SWITCH BOX
DISC2	1	611538	BULKHEAD,CHANGE-OUT,14-4,600V,15A
DISC2	1	611539	CABLE,CHANGE-OUT,14-4,600V,15A,6'
DISC2	1	304666	PLATE,MOUNT SWITCH BOX
SYMBOL	QTY	PART #	DESCRIPTION

SIZING BAR CIRCUIT (210383)			
ENCO3	1	611469-010	ENCODER,DIRECTIONAL,2 CHANNEL
ENCO3	1	611249-025	ENCODER,DIRECTIONAL,2 CHANNEL,WD
ENCO3	1	304431	SENSOR,CABLE,M12,5WIRE,F,OC,90
MTR4	1	304123-001	MOTOR,GEAR,1/8HP,100RPM,3.6:1
PRS10,11	2	611393	MOTOR,GEAR,1/8HP,100RPM,3.6:1.WD
PRS10,11	2	304350-001	SENSOR,PROX,8MM,10--30VDC,PNP,NC
PRS10,11	2	C07626	SENSOR,CABLE,M8,3WIRE,90°
SYMBOL	QTY	PART #	DESCRIPTION

SEEDER LIFT CIRCUIT (210384)			
ENCO2	1	611469-010	ENCODER,DIRECTIONAL,2 CHANNEL
ENCO2	1	611249-025	ENCODER,DIRECTIONAL,2 CHANNEL,WD
ENCO2	1	304431	SENSOR,CABLE,M12,5WIRE,F,OC,90
MTR3	1	304123-001	MOTOR,GEAR,1/8HP,100RPM,3.6:1
PRS22	1	611393	MOTOR,GEAR,1/8HP,100RPM,3.6:1.WD
5'	142113	CABLE,16AWG,4 COND.	
SYMBOL	QTY	PART #	DESCRIPTION

FREQ. DRIVE 380/480VAC CIRCUIT (210403--014)			
ACO	1	611662-001	CONNECTOR,ETHERNET,120 GFCI PLUG,3A
CBL1,2,3,4	4	C07650-303	CIRCUIT BREAKER,3AMP,600V
CBL1-4 P/O	1	C07701-003	CIRCUIT BREAKER,CONN-RAIL 18POS.
CBL4 P/O	3	C07703	CIRCUIT BREAKER,TERMINAL CAP
CBL2,7,8	3	304502	CABLE,YELLOW PATCH,2' SHIELDED
CBL3,4,5	3	304502-003	CABLE,YELLOW PATCH,3' SHIELDED
CR2,CR3,CR4	9	610404-001	RELAY,TERMINAL MTG,24VDC (WHITE)
CR2,CR3,CR4	2	610387-001	RELAY,TERMINAL MTG,SEPARATION PLATE
DRV1,2,3	3	612045-004	DRIVER,PWR-FLEX 525,440--3PH,440--3PH.
FU1,2,3	3	C07076-001	FUSE,HOLDER,AC 600V,13/32x1-1/2
FU1,2,3	3	C07062	FUSE,LPC,20A,600V,13/32x1-1/2
PSM1	1	610913	POWER SUPPLY,340/576-24VDC,10A,3PH
SYMBOL	QTY	PART #	DESCRIPTION

MPA-100 AUTO-FILL CIRCUIT (210443--001)			
CBL7	1	C07650-203	CIRCUIT BREAKER,3AMP,600V
M1	1	C06702-001	RELAY,MOTOR STARTER,24VDC
MTR6	1	210430	MOTOR,VACUUM,110-60-1
	1	210450	MOTOR,VACUUM,220-60-1
OL1	1	C08735-001	RELAY,OVERLOAD,3PH,ADJ,10-16AMP
PLC1	1	C08692-001	RELAY,OVERLOAD,3PH,ADJ,5.5-8.0AMP
PRS25	1	610739	PLC,M1500IN/OUT,MODULE 6IN/4OUT
PRS25	1	610735	SENSOR,CABLE,M12,5WIRE,PNP,NO,CC.
SOL25,26	2	304431	SENSOR,CABLE,M12,5WIRE,90°
SOL25,26	2	611117	VALVE,SOLENOID,24VDC,2 WAY
11	2	C07626	SENSOR,CABLE,M8,3WIRE,90°
11	1	A06997	TRANSFORMER,1.5KVA,190/480-50/60
T1 P/O	1	C03403	TRANSFORMER MOUNT PLATE (A06997)
SYMBOL	QTY	PART #	DESCRIPTION
PRS20,21	2	C07670	SENSOR,PROX,30MM,10--30VDC,PNP,N.C.
PRS20,21	2	304431	SENSOR,CABLE,M12,5WIRE,90°
PRS20,21	2	304768	SENSOR,PROX MOUNT BLOCK
PRS20	1	A05038	SENSOR,PROX MOUNT PLATE EMPTY
PRS21	1	A05018	SENSOR,PROX MOUNT PLATE,LOW
SYMBOL	QTY	PART #	DESCRIPTION
HOPPER DUMP VIBRATOR CIRCUIT (304497)			
PRS14	1	610962	SENSOR,REED,3WIRE,24VDC (BIMBA)
PRS14	1	611267	SENSOR,REED,2WIRE,24VDC (SMC)
SYMBOL	QTY	PART #	DESCRIPTION

AGITATOR CIRCUIT (210399-001/002)			
SOL21	1	611365	VALVE,SOLENOID,24VDC,2 WAY
SYMBOL	QTY	PART #	DESCRIPTION

ASSY,ENCLOSURE,SEEDER HOPPER (210386--003/004)			
ENCL3	1	1715536-001	ENCLOSURE,REWORK,SEED HOPPER L/H
PNL3	1	P/O ENCL3	PANEL,ELEC,REWORK,SEED HOPPER
PSC1/PRS14	1	304430	SENSOR,CABLE,M12,5WIRE,STR
SOL19/21	1	611364	VALVE,SOLENOID,BASE
SOL19	1	611365	VALVE,SOLENOID,1/8" PORT,24VDC
SUP19-22	4	C05724	VARIATOR,SURGE,125A,25VAC,31VDC
TB5	27	610360	RAIL,DIN,MOUNTING,MINI
TB5	2	610361	TERMINAL,BLOCK,MINI
TB5	2	610362	END COVER,TERMINAL,MINI
TB5	2	610363	ANCHOR,END CLAMP,MINI
TB5	15	610364	JUMPER,TERMINAL,10-POS,MINI
TB5	1	610334	TERMINAL,GROUNDING,MINI
	2	303056	PLUG,HOLE,SS1,7/8" DIA.
	6	C07066	CABLE,22AWG,25 COND.
SYMBOL	QTY	PART #	DESCRIPTION

ASSY,SEEDER HOPPER (210404-007/008,009/010)			
INTLK1	1	C07219	INTERLOCK,MAGNETIC,KEYED
INTLK1	1	C07220	ACTUATOR,MAGNET
PRS1-4(5)	5	610151	SENSOR,PROX,6.5MM,10--30VDC,PNP,NO
PSC1	1	611027	SENSOR,LASER,RETRO-REF,10-24VDC
PRS12	1	C06752-001	SENSOR,PROX,80MM,10--55VDC,PNP,EDDY
SOL20	1	304239	CLUTCH,SHAFT MTG,24VDC
SYMBOL	QTY	PART #	DESCRIPTION

ASSY,SEEDER FRAME (210381/210382-007/008)			
MTR1	1	611603	MOTOR,1/3HP,230/460-50/60-3,LH
	1	611604	MOTOR,1/3HP,230/460-50/60-3,RH
	1	304570	MOTOR,1/2HP,230/460-50/60-3,WD
PRS6,7	2	304350-001	SENSOR,PROX,8MM,10--30VDC,PNP,NC
PRS6,7	2	C07626	SENSOR,CABLE,M8,3WIRE,90°
PRS7	1	712217	BRACKET,HEIGHT ADJ,PROX
PRS**	1	304022	ANGLE,PROX MOUNT,LIFT CTR
PRS13	1	610962	SENSOR,REED,3WIRE,24VDC (BIMBA)
	1	611267	SENSOR,REED,2WIRE,24VDC (SMC)
PRS13	1	611268	SENSOR,REED,STRAP (SMC)
SOL17,18	1	611119	VALVE,SOLENOID,DUAL,24VDC
SOL17,18	2	C07626	SENSOR,CABLE,M8,3WIRE,90°
TB11	6	610360	RAIL,DIN,MOUNTING,MINI
TB11	25	610361	TERMINAL,BLOCK,MINI
TB11	2	610362	END COVER,TERMINAL,MINI
TB11	2	610363	ANCHOR,END CLAMP,MINI
TB11	1	610364	JUMPER,TERMINAL,10-POS,MINI
TB11	1	610334	TERMINAL,GROUNDING,MINI
TB11	1	710161	TERMINAL,STRIP COVER
	6	C01237	CABLE,22AWG,15 COND.
SYMBOL	QTY	PART #	DESCRIPTION

MOD*ASSY,ENCLOSURE,DISPLAY (118568-210401-001/002)			
CBL1	1	304502-014	CABLE,YELLOW PATCH,14FT SHIELDED
DISP1	1	612563	PLC,DISPLAY,PANELVIEW+700,ETHERNET
ENCL2	1	115704-901	A/W,ENCLOSURE,DISPLAY,9940 L/H
ENCL2 P/O	1	712044	A/W,TRI-CLAMP,1.50"
ENCL2 P/O	1	610760	GASKET,TEFLON,1.50"
L11	1	C07716	NAMEPLATE,POWER ON,800T
L11	1	111231	NAMEPLATE,POWER ON,800T
L11	REF	610172	BULB REPLACEMENT,24VDC,800F,LED
PB1	1	C07175	SWITCH,PUSH/PULL,RED,MUSHROOM,800T
PB1	1	C05397	NAMEPLATE,PUSH-STOP/FULL-START
TB10	1	610967	TERMINAL,BREAK-A-PART,12POS.
	1	113515	DECAL,24 VOLTS
	20'	C07277	CABLE,20AWG,8COND.
SYMBOL	QTY	PART #	DESCRIPTION

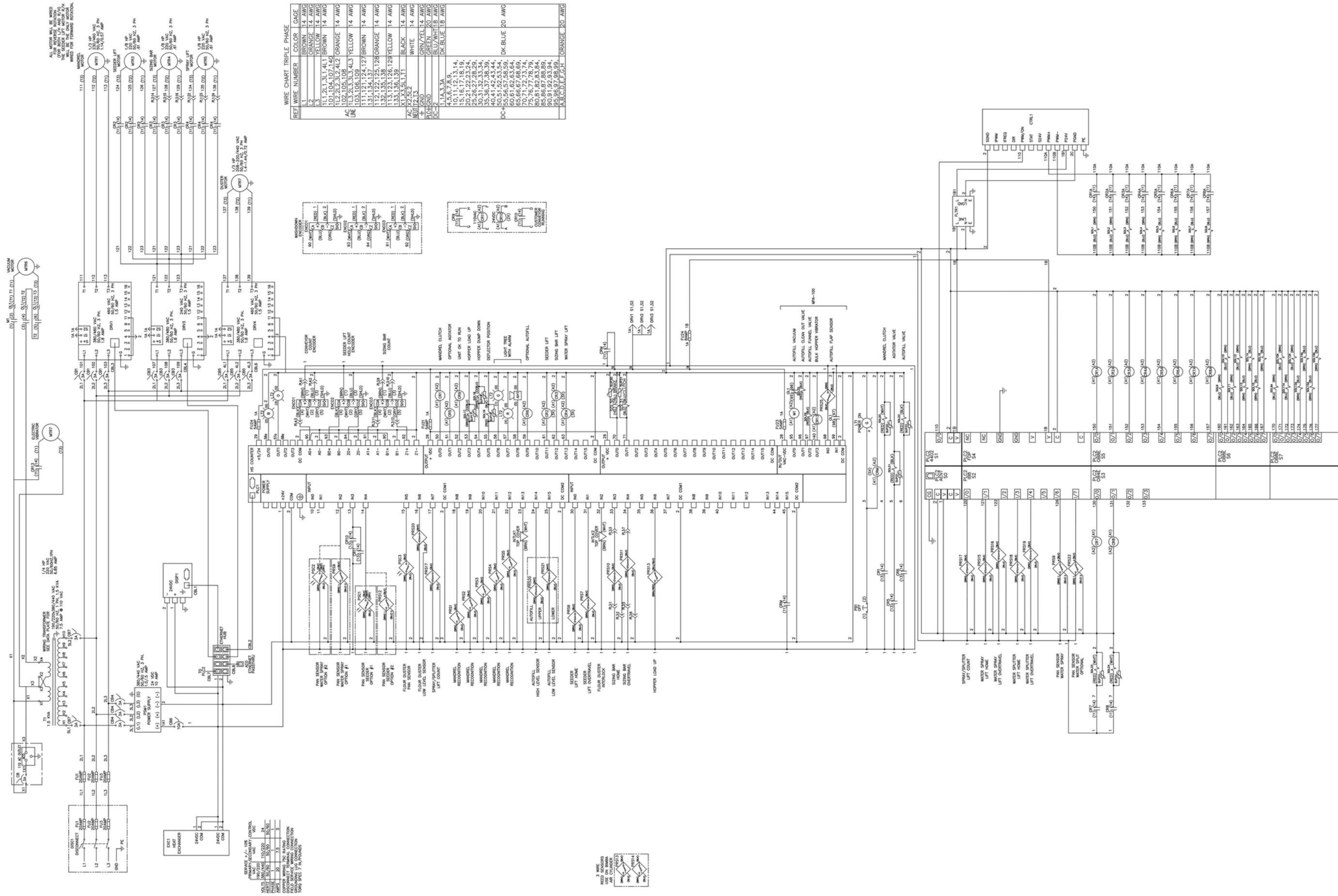
210122 ASSY,DISC-BOX ARC FLASH			
DISC1	1	C07631	DISCONNECT CIRCUIT BREAKER,FUSIBLE
DISC1	1	C07632	DISCONNECT CIRCUIT BREAKER,HANDLE
DISC1	1	C07633	DISCONNECT CIRCUIT BREAKER,SHAFT
ENCL5	1	C07740	ENCLOSURE,REWORK,SSI
FU1,2,3	3	C07062	FUSE,LPC,20A,600V,13/32x1-1/2
GND	2	C06488	LUG,GROUNDING,ENCLOSURE
PNL5	1	C07741	PANEL,ELEC,REWORK
SYMBOL	QTY	PART #	DESCRIPTION

MOD*ASSY,MAIN ENCLOSURE CIRCUIT (118568-210400-BBU)			
REF	210122	ASSY,DISC-BOX ARC FLASH	
CBL6	1	C07649-010	CIRCUIT BREAKER,250V,10AMP
CBL1,2,7,8	4	304466	CONNECTOR,RJ-45 CAT5
CRM,CR9,CR10	7	610404-001	RELAY,TERMINAL MTG,24VDC (WHITE)
CR1,CR5-8,10	7	610421-001	RELAY,TERMINAL MTG,24VDC (BLACK)
CR11	1	610452-001	RELAY,TERMINAL MTG,110VAC (BLACK)
	1	610417-001	RELAY,TERMINAL MTG,220VAC (BLACK)
CRM-11 P/O	6	610387-001	RELAY,TERMINAL MTG,SEPARATION PLATE
CRM-11 P/O	1	610443-011	RELAY,TERM JUMPER,32A,500MM RED
CRM-11 P/O	1	610443-012	RELAY,TERM JUMPER,32A,500MM BLUE
CRM-11 P/O	1	610443-013	RELAY,TERM JUMPER,32A,500MM GREY
ENCL1	1	304425	ENCLOSURE,LOCK COVER,1/4 TURN
EXCL1	1	611811	HEAT EXCHANGER,24VDC
EXCL1	1	610741-001	HEAT EXCHANGER,48VDC
EXCL1	1	611163	FUSE,HOLDER,AC/DC,1/4X1-1/4
FBL1,2,23,24	4	C06731	FUSE,HOLDER,AC/DC,1/4X1-1/4
FBL4 P/O	1	C06732	FUSE,HOLDER,END COVER
FU21,22,23	3	111925	FUSE,MOL,5A,250V,1/4x1-1/4
FU24	1	111667	FUSE,MOL,1A,250V,1/4x1-1/4
GND	1	C06488	GROUND LUG
HUB1	1	304500	PLC,ETHERNET MODULE,N-TRON
L12/AH1	1	611591	LIGHT TREE,24VDC,W/HORN TOP MTG
L12 P/O	1	C07298-004	LIGHT TREE,MODULE,BLUE
L12 P/O	1	611592-001	BULB,24VDC,LED
PLC1	1	610494	PLC,COMPACTLOGIX,END CAP
PLC1	1	611937	PLC,COMPACTLOGIX,PROC,130ER,1M
PLC1	1	611132	PLC,COMPACTLOGIX,HIGH SPEED COUNTER
PLC1	1	610882	PLC,COMPACTLOGIX,POWER SUPPLY,PB4
PLC1	1	610832	PLC,CP OUTPUT MODULE,16 OUT
PLC1	2	611122	PLC,CP INPUT MODULE,16 IN,FAST
PNL1	1	304463	PANEL,REWORK,MAIN (304461)
TB1	2	C06387	BRACKET,MOUNT

FOLD OUT TO VIEW DRAWING

Electrical Ladder
118568-WD

Electrical Ladder

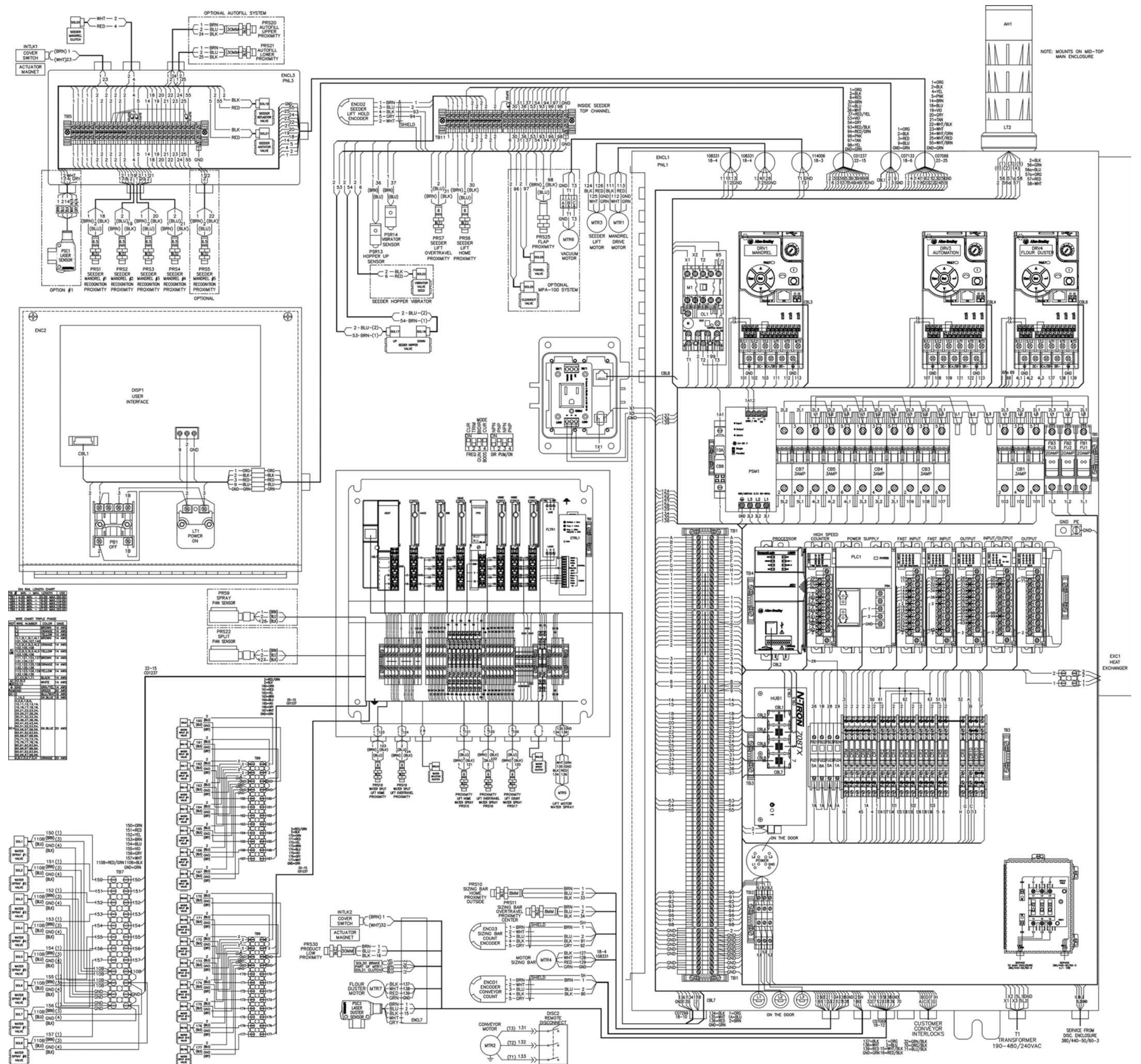


FOLD OUT TO VIEW DRAWING

Electrical Layout
118568-WD

Electrical Layout

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FOLD OUT TO VIEW DRAWING