

BURFORD[®] CORPORATION

SERVICE MANUAL

FOR YOUR

BURFORD[®] SMART ROTARY TOPPER

MODEL 9840

ORIGINAL INSTRUCTIONS

MODEL NUMBER_____

SERIAL NUMBER_____

WIRING DIAGRAM_____ISSUE_____

Date: March 22, 2012

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Manual Part No. SO078826 Rev “B”

SAFETY PRECAUTIONS

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

1. Read manual completely before attempting installation or operation of this unit.
2. This machine may contain programs that are password protected. Contact your supervisor or Burford® Corporation for current password.
3. Incoming electrical power must be properly shielded, routed, and grounded. All safety codes should be followed. Study wiring diagrams before attempting installation.
4. Disconnect power to equipment before removing any guards or covers. Replace guards or covers before resuming operation of the unit.
5. 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.
6. 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.
7. Do not bypass safety switches.
8. Do not attempt repairs while equipment is running.
9. Use only original equipment parts designed to safely operate in the equipment.
10. Only authorized personnel should be allowed to operate or perform maintenance on the unit.

DISCLAIMER

The descriptions and specifications contained in this Service Manual were in effect at the time 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[®] Corporation expressly disclaims any liability for damages and/or injuries caused as a result of negligence or misuse of its product. Such negligence or misuse includes, but is not limited to, removal of guards and installation and wiring.

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[®] Corporation in writing of the modification.

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

TABLE OF CONTENTS

SAFETY PRECAUTIONS	ii
DISCLAIMER.....	iii
TABLE OF CONTENTS.....	iv
TABLE OF FIGURES	vi
1.0 INTRODUCTION.....	1-1
2.0 INSTALLATION PROCEDURES.....	2-1
2.1 Installation With Unit Mounted On Burford® Conveyor	2-1
2.1.1 Main assembly installation.....	2-1
2.2 Installation On Existing Conveyor System	2-2
3.0 OPERATION PROCEDURES.....	3-1
3.1 Theory Of Operation	3-1
3.2 Control Panel	3-2
3.3 Main Screen	3-3
3.4 Variety Setup Screen	3-5
3.5 Machine Options	3-6
3.6 Setup And Overrides	3-12
3.7 Remote Disconnect.....	3-14
3.8 Conveyor Disconnect	3-15
3.9 Daily Startup.....	3-16
3.10 Changing To Different Variety (Same Mandrel).....	3-18
3.11 Changing To Different Variety (Different Mandrel)	3-19
3.12 Changing Parameters For An Existing Variety	3-20
3.13 Fine-Tuning Water Spray/Splitter Trigger Time	3-21
3.14 Creating A New Variety.....	3-22
3.15 Fine Tuning Topping Coverage	3-24
3.16 Catch Tray For Varieties Without Topping.....	3-25
3.17 Drive Description	3-26
3.18 Drive Settings.....	3-27
4.0 TROUBLESHOOTING.....	4-1
4.1 Alarm Banner	4-1
4.2 System Information	4-3
4.3 Sensor Troubleshooting	4-3
5.0 MAINTENANCE.....	5-1
5.1 Preventive Maintenance.....	5-1
5.1.1 Weekly.....	5-1
5.1.2 Monthly.....	5-1
5.1.3 Bi-Annual.....	5-1
5.2 Cleaning Recommendations	5-1
5.3 Splitter Valve Replacement.....	5-2
5.4 Purging Spray Valves.....	5-3
5.5 Pulsating Spray Valves	5-4
6.0 RECOMMENDED SPARE PARTS LIST	6-1
7.0 ASSEMBLY DRAWINGS AND PARTS LISTS	7-1
7.1 Seeder Frame Assembly (Sheet 1 of 2) (210382 “K”)	7-1
7.2 Seeder Frame Assembly (Sheet 2 of 2) (210382 “K”)	7-4
7.3 Hopper Adjustment Assembly (210384 “B”)	7-7
7.4 Water Spray Frame Assembly (210380-XXX “02”).....	7-9
7.5 Water Spray/Split Frame Assembly (210380-004 “B”)	7-11
7.6 Pump Booster System (301090 “I”)	7-13
7.7 Water Split Nozzle Assembly (210390 “B”).....	7-15
7.8 Spray Gun Pulsating Assembly (210389-PWM “A”).....	7-17

7.9	Water Splitter Nozzle Assembly–Bread (210390-BRD “A”).....	7-19
7.10	Pneumatic Assembly (210385 “C”)	7-21
7.11	Hopper Assembly (210404-XXX “A”)	7-23
7.12	Hopper Dump Vibrator Assembly (304497)	7-25
7.13	Hopper Enclosure Assembly (210386-XXX03).....	7-27
7.14	Conveyor Speed Rate Assembly 137 FPM (210445 “B”)	7-29
7.15	Conveyor Components (SO-78826-04 “A”)	7-31
7.16	Pan Guide Assembly Customer Conveyor (210383 “D”)	7-34
7.17	Pan Guide Assembly Burford® Conveyor (210637-XXX “02”).....	7-37
7.18	Agitator Assembly (210399-001 “A”).....	7-40
7.19	Wiring Diagram (078826-WD “A”).....	7-42

TABLE OF FIGURES

Fig. 1-1 Model 9840 Left Hand	1-1
Fig. 2-1 Air And Water Hook-Up.....	2-1
Fig. 2-2 Model 9840 Shown	2-2
Fig. 2-3 Upper And Lower Assemblies	2-3
Fig. 2-4 Mounting Brackets	2-3
Fig. 2-5 Air Hose Placement	2-3
Fig. 2-6 Laser Pan Sensor Alignment.....	2-4
Fig. 2-7 Set Screw Locations	2-5
Fig. 2-8 Anti-Rotation Flex Mount.....	2-5
Fig. 3-1 Control Panel	3-2
Fig. 3-2 Main Screen	3-3
Fig. 3-3 Variety Setup Screen	3-5
Fig. 3-4 Water Spray Screen.....	3-6
Fig. 3-5 Agitator Screen	3-7
Fig. 3-6 Water Splitter Screen	3-7
Fig. 3-7 Level Alarms Screen	3-8
Fig. 3-8 Hopper Lift Screen	3-8
Fig. 3-9 Pan Guides Screen	3-8
Fig. 3-10 Water Spray Lift Screen	3-9
Fig. 3-11 Water Splitter Lift Screen	3-9
Fig. 3-12 MPA Autofill Screen	3-10
Fig. 3-13 Auto Fill Screen.....	3-10
Fig. 3-14 Flour Duster Screen	3-11
Fig. 3-15 Troubleshooting Screen	3-11
Fig. 3-16 Setup And Overrides Screen.....	3-11
Fig. 3-17 Mandrel Override Screen	3-12
Fig. 3-18 Hopper Override Screen	3-12
Fig. 3-19 Add/Delete Variety Screen.....	3-13
Fig. 3-20 Motor Current Limit Screen	3-13
Fig. 3-21 Remote Disconnect.....	3-14
Fig. 3-22 Conveyor Disconnect	3-15
Fig. 3-23 Daily Startup.....	3-16
Fig. 3-24 Mandrel Selection	3-16
Fig. 3-25 Reverse Rotation (A) Forward Rotation (B).....	3-16
Fig. 3-26 Daily Startup.....	3-17
Fig. 3-27 Changing To Different Variety Same Mandrel.....	3-18
Fig. 3-28 Changing To Different Variety Different Mandrel.....	3-19
Fig. 3-29 Changing Parameters For An Existing Variety	3-20
Fig. 3-30 Fine Tuning Water Spray Split Trigger Time	3-21
Fig. 3-31 Creating A New Variety	3-22
Fig. 3-32 Fine Tuning Topping Coverage.....	3-24
Fig. 3-33 Catch Tray Placement.....	3-25
Fig. 3-34 Drive Description.....	3-26

Fig. 3-35 Motor Controllers.....	3-27
Fig. 4-1 Alarm Banner Screen.....	4-1
Fig. 4-2 System Information Screen.....	4-3
Fig. 4-3 Troubleshooting Screen	4-3
Fig. 5-1 Splitter Valve Replacement.....	5-2
Fig. 5-2 Spray Valve Assembly	5-3
Fig. 5-3 Purge Valve.....	5-3
Fig. 5-4 Pulsating Sprayer Valve	5-4
Fig. 5-5 Pulse Sprayer.....	5-4
Fig. 7-1 Hopper Dump Vibrator Assembly.....	7-26
Fig. 7-2 Hopper Dump Vibrator	7-26

1.0 INTRODUCTION

The Burford® Smart Rotary Series of Toppers have been designed to apply poppy seed, sesame seed, cracked wheat, bran and other factory pre-approved ingredients. The unit that you received was manufactured to apply the ingredients that were specified on your order. Your topper has been factory pre-tested with these specified toppings into pans that were furnished by your company to insure proper operation.

The following pages contain installation, operation and maintenance instructions. Please read and follow these directions carefully to ensure proper operation and maximum performance.

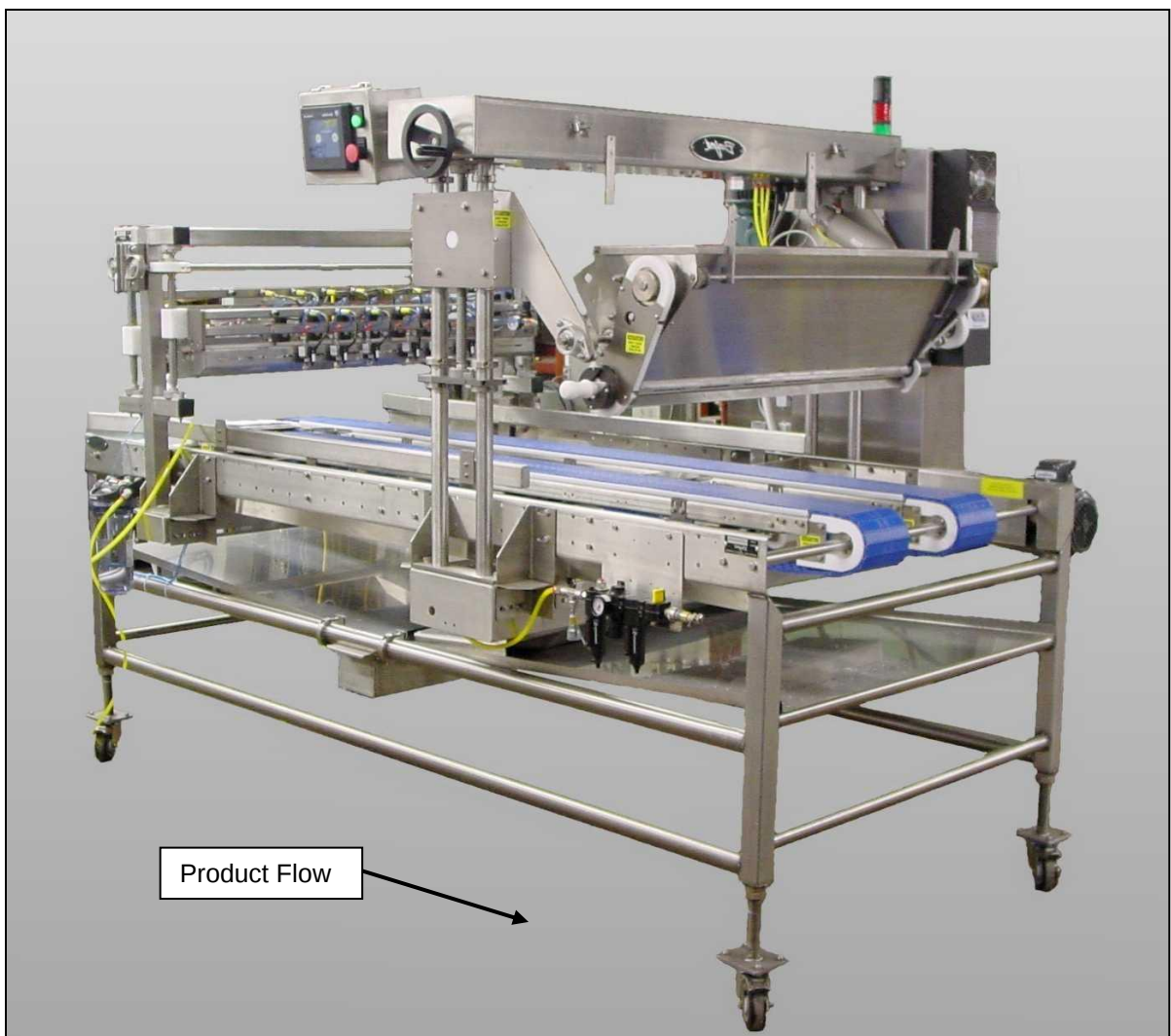


Fig. 1-1 Model 9840 Left Hand

1.0 INTRODUCTION cont'd.

1.1 Specifications

SPECIFICATIONS	
Electrical:	
	120 V _{AC} , 50/60 H _Z , 1 Φ , 15 A
Air:	
	90 PSI @ 25 SCFM
Water:	
	80 PSI @ 30 GPH

Standard voltage is 120V_{AC}, several voltage options available.

1.2 Models

MODELS
9840 RH product flows left to right viewed from operator side.
9940 LH product flows right to left viewed from operator side.

2.0 INSTALLATION PROCEDURES

2.1 Installation With Unit Mounted On Burford® Conveyor

This unit is normally shipped completely assembled and ready to install. (Special shipping needs may require the removal of the operator display. If your unit was shipped with the operator interface not attached, please refer to the wiring diagram supplied with the machine for proper hookup). When installing this unit, the following precautions must be taken.

1. Proper clearance is available in area of conveyor where the unit is to be installed.
2. The conveyor system must not allow pans to backup, turn, or otherwise interfere with pans entering the topper or discharged area.

2.1.1 Main assembly installation

1. Determine where the unit will be placed in the production conveyor system.

NOTE: 104" minimum conveyor space required. Other conveyor lengths and widths are available.

2. Roll the unit into place and adjust height to match existing conveyor system.
3. Supply air and water lines to the unit.

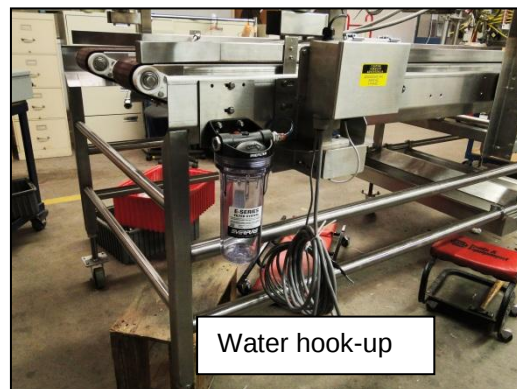
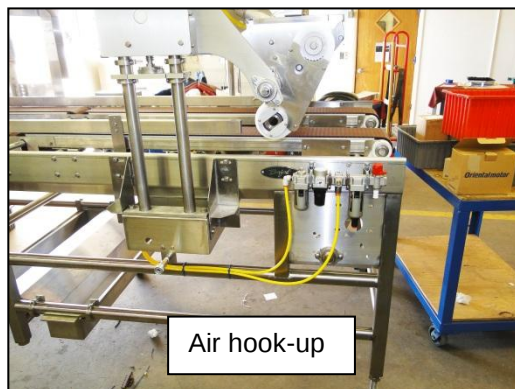


Fig. 2-1 Air And Water Hook-Up

4. Route adequate electrical supply to main enclosure and terminate wiring as shown in supplied wiring diagram.
5. Lock casters (if equipped).

2.0 INSTALLATION cont'd.

2.2 Installation On Existing Conveyor System

1. Mark and drill mounting holes using Figure 2-2 as a guide.

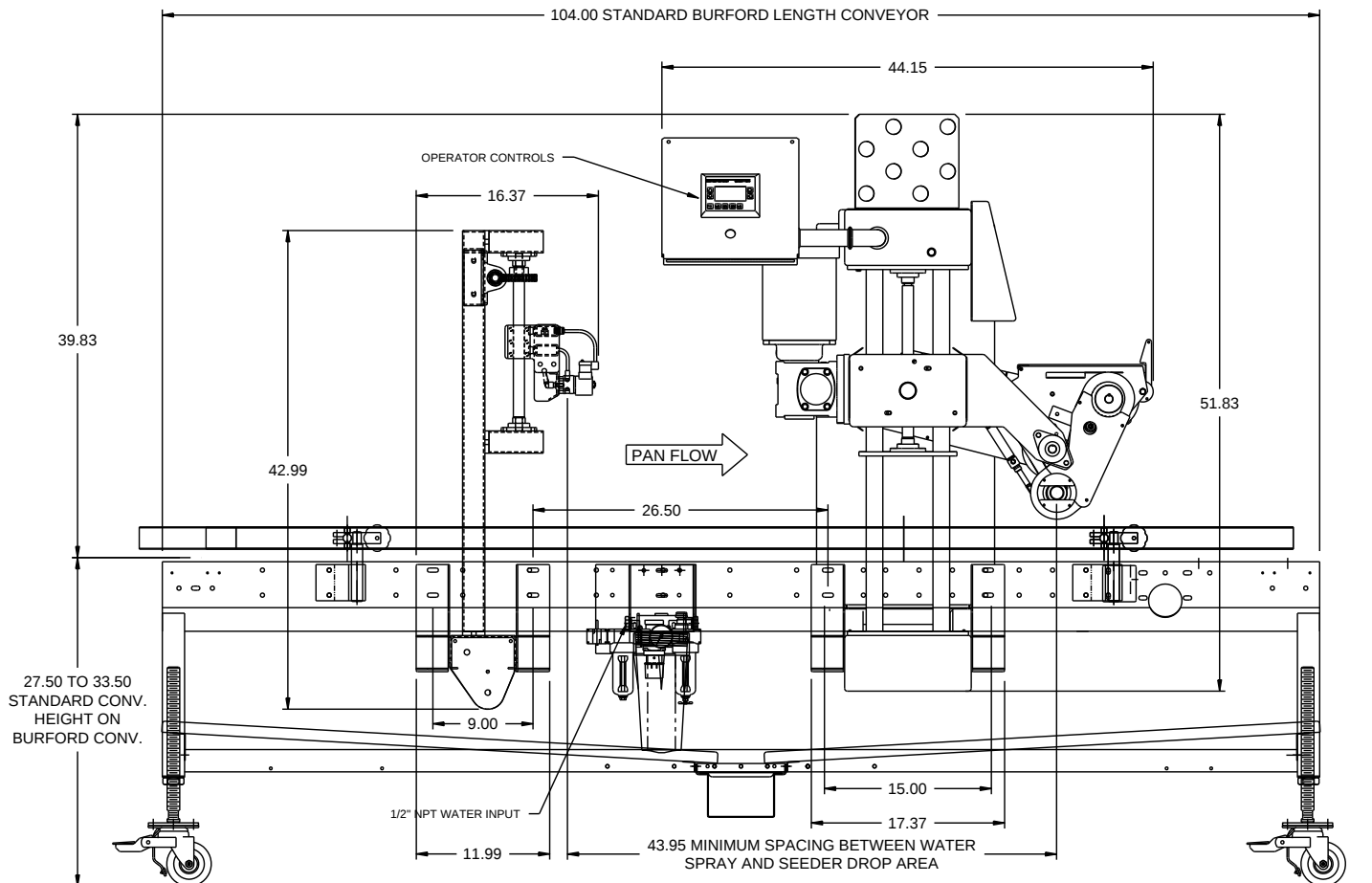


Fig. 2-2 Model 9840 Shown

2.0 INSTALLATION cont'd.

2.2 Installation On Existing Conveyor System cont'd.

2. Mark air hoses (see Figure 2-5) 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.

Note:	Upper assembly will require support with bolts removed.
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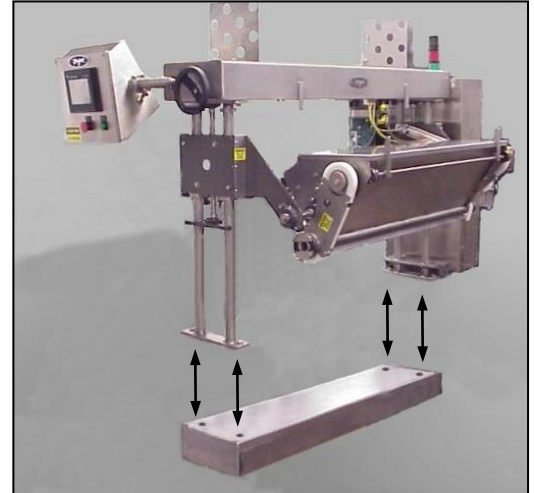


Fig. 2-3 Upper And Lower Assemblies

3. Position lower assembly and mount to conveyor walls using supplied mounting brackets.

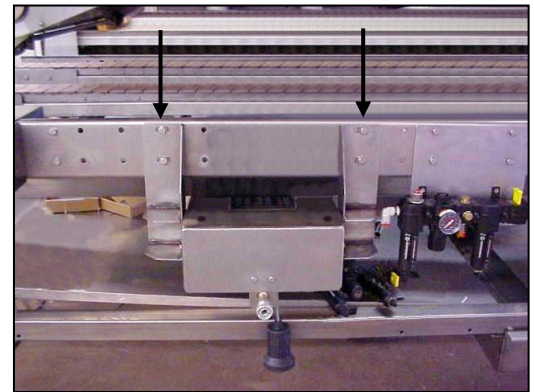


Fig. 2-4 Mounting Brackets

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

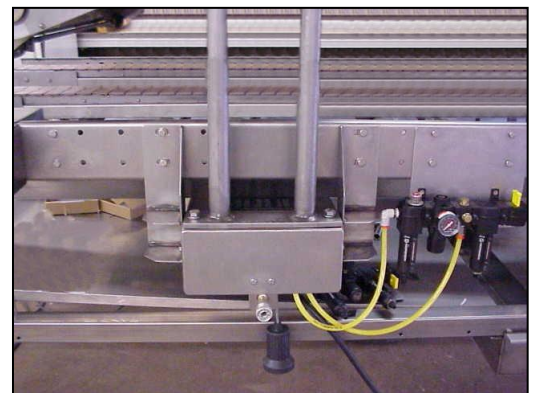


Fig. 2-5 Air Hose Placement

2.0 INSTALLATION cont'd.

2.2 Installation On Existing Conveyor System cont'd.

5. Align laser pan sensor/reflector assembly to ensure the laser path to the reflector will only be interrupted by the product.

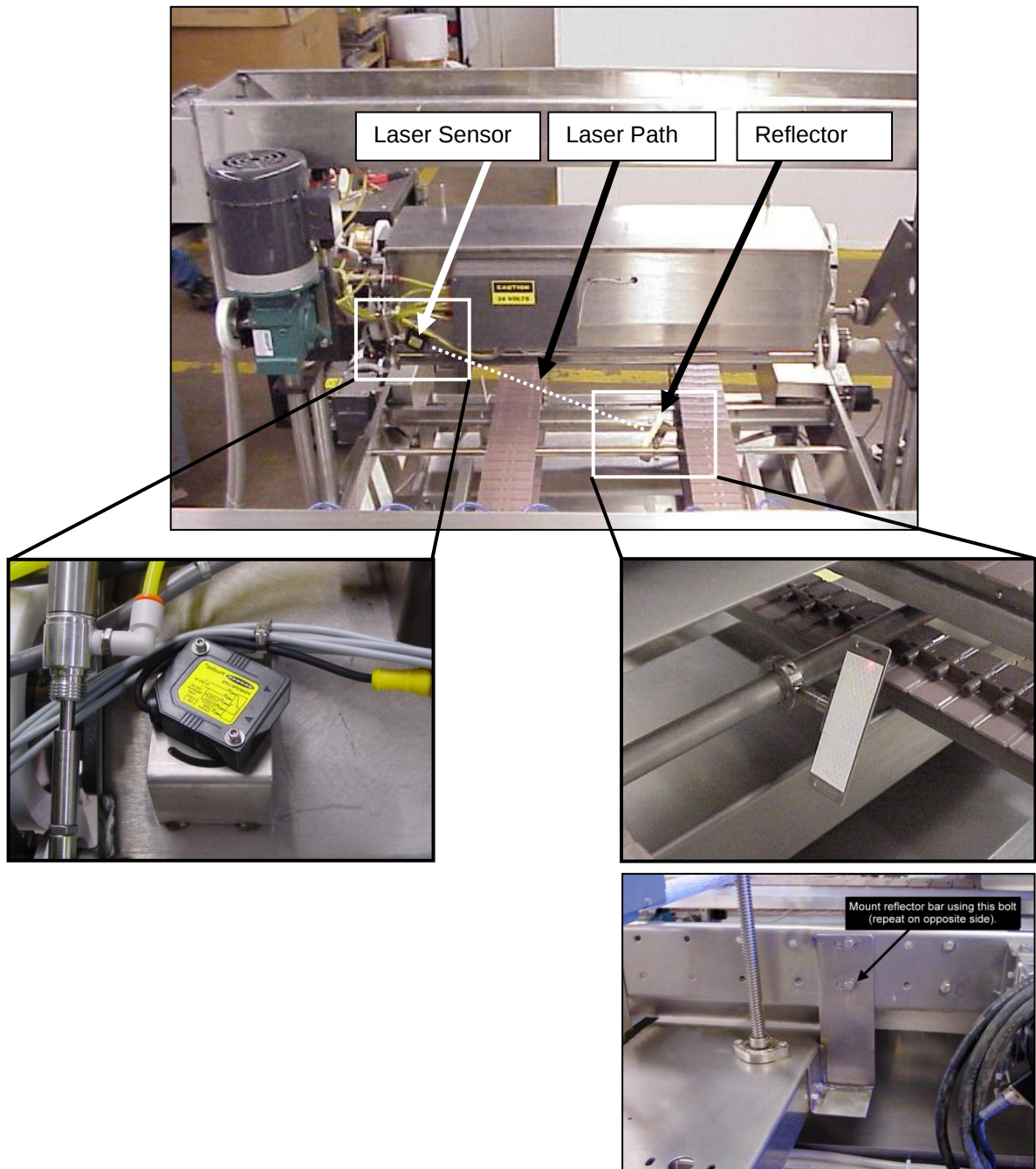


Fig. 2-6 Laser Pan Sensor Alignment

2.0 INSTALLATION cont'd.

2.2 Installation On Existing Conveyor System cont'd.

6. Install conveyor encoder.

Note: 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.

- a) Loosen all set screws securing the desired conveyor shaft to bearings and conveyor belt sprockets.
- b) Carefully slide shaft until enough clearance is gained to mount encoder.
- c) 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.
- d) Attach communication cable to encoder and conveniently route cable back to seeder enclosure. Consult supplied wiring diagram for wire termination information.

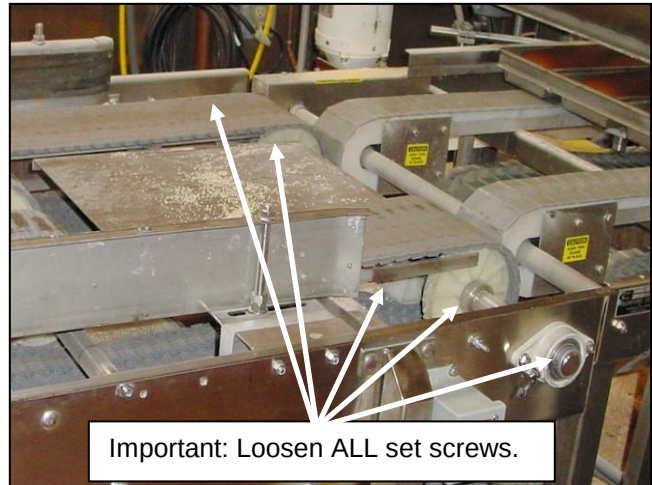


Fig. 2-7 Set Screw Locations

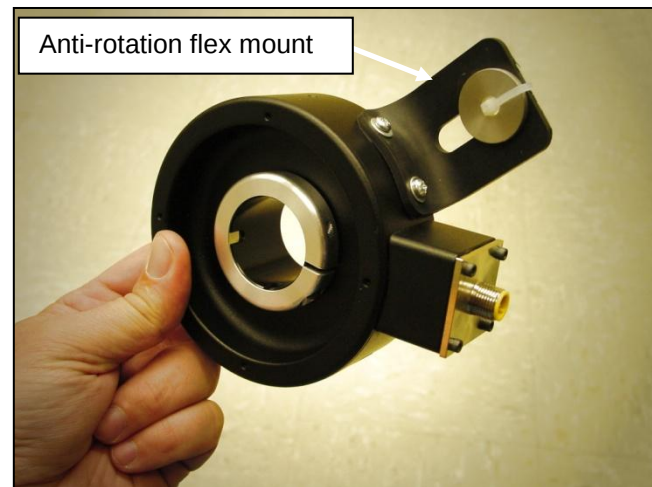


Fig. 2-8 Anti-Rotation Flex Mount

3.0 OPERATION PROCEDURES

3.1 Theory Of Operation

Pans entering the system first encounter the water spray area. 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 water spray trigger time data (Delay On/Delay Off) entered controls the timing of the water application. Note that no air is used in this process.

Pans then pass beneath the water splitter area.

After water has been applied, the pans travel to the topping application area located directly under the unit's hopper. A laser-reflective 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 variety and encoder signals control the timing and duration of the dispensing process.

Further downstream, the pans pass beneath the "downstream" water spray area. Additional water is applied to insure proper product adhesion. Use care not to apply too much water.

3.0 OPERATION PROCEDURES cont'd.

3.2 Control Panel

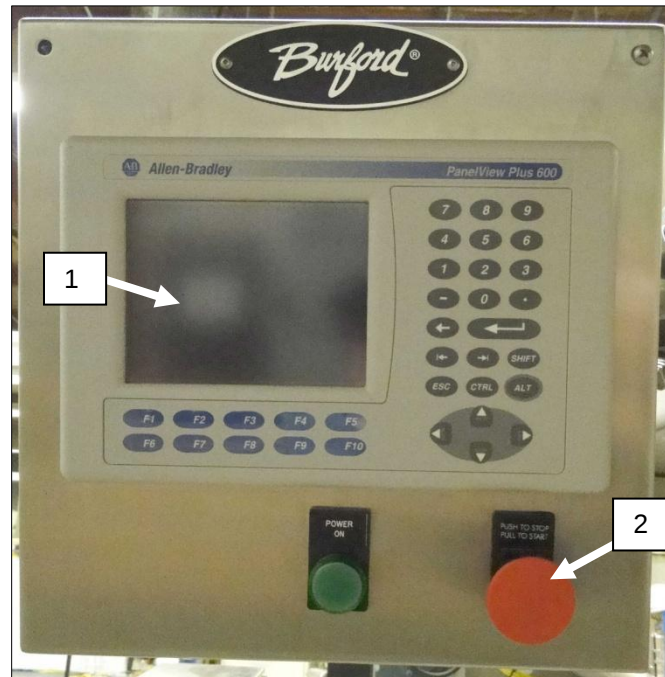


Fig. 3-1 Control Panel

Ref	Name	Description
1	Touch Screen	This is the primary operator interface with the unit, via its touch screen capabilities. Displays menus, error messages and allows access to screens required for setup and operation of the unit.
2	“STOP” switch	PUSH: Disables the power to the PLC outputs and stops all system movements. PULL: Enables the PLC outputs and initiates the machine startup sequence.

3.0 OPERATION PROCEDURES cont'd.

3.3 Main Screen

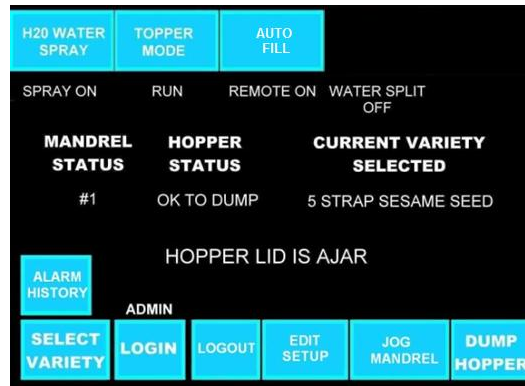


Fig. 3-2 Main Screen

Note: All settings may be accessed and modified while in either mode once “LOGIN” is successful.

The table below describes error conditions that may be displayed in the display field if RUN mode is requested but the unit cannot enter RUN mode.

Display Field	Description
Hopper is not in Run position.	Indicates that the hopper height must be adjusted before the unit will dispense product.
Hopper Lid is Ajar.	Hopper sensor is defective or Hopper lid is not fully closed.
Hopper is not fully upright.	Indicates hopper is still in “DUMP” position or is not completely returned to the full upright position.
Variety must be selected.	Indicates a variety has not been selected. Load the correct mandrel into the unit and select the desired variety.
Must Home First!	The “Select Variety” button will have changed to “Send To Home”, touch to home.
Pans Remaining Before Start	Indicates the number of pans before the topper will begin operation.
Pans Remaining Before Stop	Indicates the number of pans before the topper will suspend operations.
No Mandrel Present	Insert the desired mandrel to begin.
No Variety Setup for Current Mandrel	Create a new variety or insert a different mandrel.

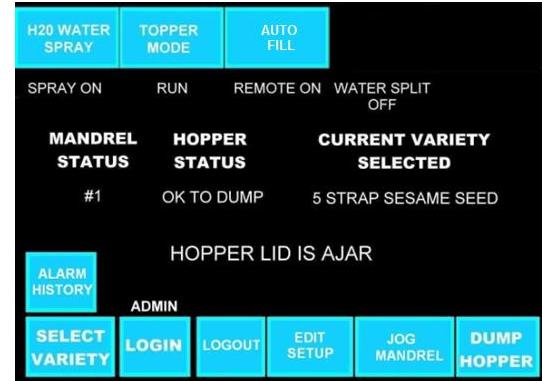
3.0 OPERATION PROCEDURES cont'd.

3.3 Main Screen cont'd.

Also refer to the hopper status indicator. It indicates if the hopper is in the proper position by displaying OK. If the hopper is not in the proper running position, the indicator will give an indication of:

HIGH: The hopper is higher than the preset run height. **TILTED** – The hopper is not fully upright.

OPEN: The hopper lid is not properly closed. **DUMP** – The hopper is lowered to the “DUMP” position.



Before attempting to enter RUN mode, adjust the unit until OK TO DUMP is displayed.

Function	Description
H2O Water Spray	This button toggles the water spray option between “ON”, “OFF” and “SPRAY ONLY” status. The “SPRAY ONLY” status indicates that ONLY the water sprays will be active when the pan trigger is activated. No topping will be applied.
Topper Mode	Pushing “TOPER MODE” will open the Pan Count Screen where you can choose between “RUN CONTINUOUSLY” or “PANS TO RUN BEFORE START/STOP”.
MPA	Pushing MPA toggles through “STANDBY”, “RUN” and “WAITING” modes for the MPA. See the MPA Auto Fill System operator manual for additional information.
H2O Split	This button toggles the water split option between “Water Split On” and “Water Split Off”.
Flour Duster	Pushing “FLOUR DUSTER” toggles the flour duster “ON” and “OFF”.
Alarm History	This button accesses the “Alarm History” screen.
Select Variety	This button will advance to the variety selection screen (see Section 3.4).
Login	Accesses the login screen. Once the correct user id and password have been entered the “Edit Setup” screen will be accessible.
Logout	Touching this button will immediately remove access to the “Edit Setup” screen.
Edit Setup	This button will advance to the screen sequence shown in Section 3.4. The setup functions are password protected to prevent unauthorized modifications.
Jog Mandrel	The topper mandrel will rotate for the duration this button is activated. Use to load mandrel with topping to verify operation and to insure the mandrel is properly loaded such that the first pan will be properly topped.
Dump Hopper	This button switches the display to hopper dump screen (se Section 3.11)
Mandrel Status	This indicator displays the number for the mandrel currently loaded in the unit (see Section 3.9)
Hopper Status	This indicator displays “OK”, “HIGH”, “TILTED”, “OPEN”, or “OK TO DUMP”, depending upon the hopper position.
Current Variety Selected	Displays the user-defined name of the currently selected variety.

3.0 OPERATION PROCEDURES cont'd.

3.4 Variety Setup Screen

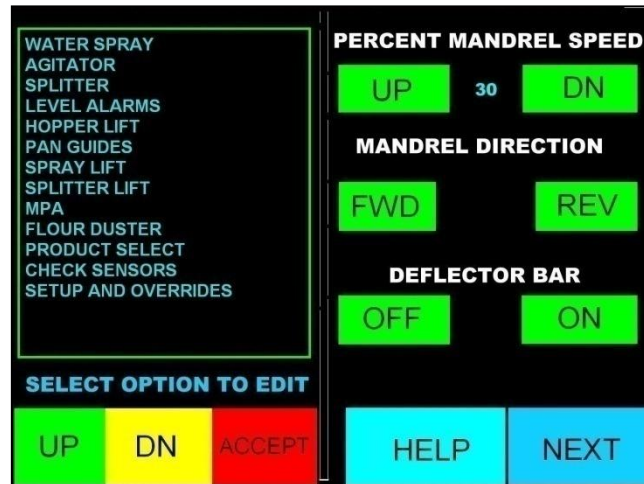


Fig. 3-3 Variety Setup Screen

This screen provides access to different machine functions to allow custom machine configuration (see Section 3.12).

Function	Description
Percent Mandrel Speed	Touch the “UP” or “DN” button to increase or decrease the rotation speed for the mandrel and the amount of topping applied. This value is expressed as a percent of maximum mandrel speed.
Mandrel Direction	Touch the “FWD” or “REV” to change the direction of mandrel rotation. By changing the direction in which the mandrel is rotating, the topping’s application and appearance may improve. This is a particular advantage when applying thin, large diameter material.
Deflector Bar	Touch the “OFF” or “ON” 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.
Machine Options (left hand side)	Use the “UP” or “DN” keys to position the cursor next to the option desired, then touch the “ACCEPT” box (see Section 3.5).
HELP	When pushed brings up a brief message about this screen.
NEXT	When pushed goes to the bread pan setup screen (see Section 3.12).

3.0 OPERATION PROCEDURES cont'd.

3.5 Machine Options

Changes to the following screens will become effective the next time the variety is selected.

Water Spray:

If equipped, touching the “VALVE SYMBOL” buttons in the top half of the screen will toggle the individual spray valves “OFF” or “ON”. The “WATER SPRAY” toggle switch allows the water spray function to be toggled either “ON” or “OFF”. The “WATER SPRAY

ONLY” toggle switch allows the water to spray but prevents topping from being applied. The “PURGE” function will actuate all active spray valves while the button is activated. The “DELAY ON” setting is the time to delay between the pan triggering the water spray sensor and turning on the water spray valves. The “DELAY OFF” setting is the time after the pan leaves the sensor until the sprays turn off. Adjust these times such that the water spray is on while the pan is beneath the spray rail. The “PERIOD”, sets the on/off cycles the valve completes per second, its ranges are toggled through the following values (5, 10, 25, 50, 100), adjust the period to increase or decrease the amount of coverage desired. The “DUTY” is the percentage of time the valves are on during one “PERIOD”, its range is (0-100) 0 means valves off and 100 means the valves are always on, the higher the “DUTY” the longer the valve stays on for a “PERIOD”, adjust the “DUTY” to fine tune the water coverage level



Fig. 3-4 Water Spray Screen

3.0 OPERATION PROCEDURES cont'd.

3.5 Machine Options cont'd.

Agitator:

If equipped, Use the “AGITATOR FUNCTION” button to select proper mode of operation. The “ON WHEN VARIETY SELECTED” function selects if the function will be automatically set to “ON” when the variety is selected. The “CYCLE TIME” box allows the user to enter the amount of time (in seconds) for the agitator rake to complete one cycle. The “PERCENT EXTEND TIME” box allows the user to enter the percentage of the cycle time to extend the agitator rake.

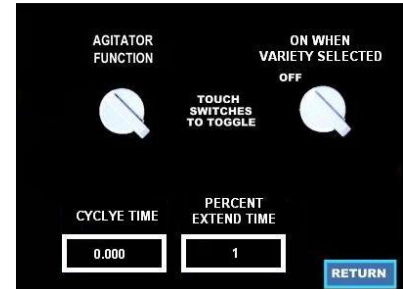


Fig. 3-5 Agitator Screen

Splitter:

If equipped, touching the “ON” or “OFF” buttons in the top half of the screen will select which individual splitter valves will operate. The “WATER SPLIT” toggle switch allows the water split function to be toggled “ON” or “OFF” for the particular variety being edited. The “PURGE” function will actuate all active splitter valves while the button is depressed. The “DELAY ON” setting is the time to delay between the pan triggering the water splitter sensor and turning on the water splitter valves. The “DELAY OFF” setting is the time after the pan leaves the sensor until the valves turn off. Adjust these times such that the valves are on while the pan is beneath the nozzles.



Fig. 3-6 Water Splitter Screen

3.0 OPERATION PROCEDURES cont'd.

3.5 Machine Options cont'd.

Level Alarms: Opens the alarm history screen where you can view and select alarm information to This screen keeps a log of error conditions (shown in red text) and set-up or machine status changes (shown in green text).



Fig. 3-7 Level Alarms Screen

Hopper Lift: If equipped, depressing the "DOWN" or "UP" button will 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 "RETURN" button to save and return to the "VARIETY SET-UP SCREEN". If an overtravel sensor is activated the "OVERTRAVEL" light will change.

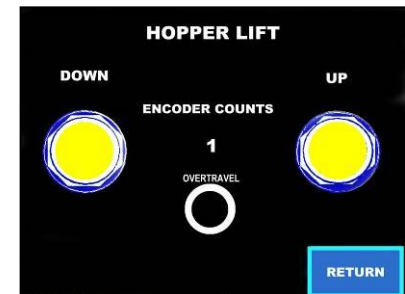


Fig. 3-8 Hopper Lift Screen

Caution: The hopper will automatically move while either the "DOWN" or "UP" buttons are depressed.

Pan Guides: If equipped, depressing the "CLOSE" or "OPEN" button will move the pan guides in the respective direction until the pan guides are in the desired position for the variety selected. Once the pan guide width is set, press the "RETURN" button to save and return to the "VARIETY SET-UP SCREEN".

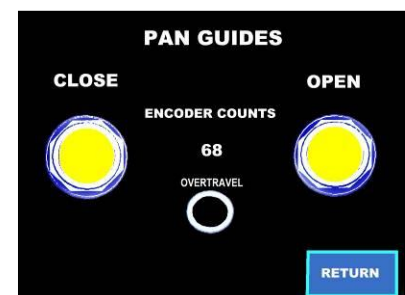


Fig. 3-9 Pan Guides Screen

If an overtravel sensor is activated the "OVERTRAVEL" light will change.

Caution: The pan guides will automatically move while either the "CLOSE" or "OPEN" buttons are depressed.

3.0 OPERATION PROCEDURES cont'd.

3.5 Machine Options cont'd.

Spray Lift:

If equipped, depressing the “DOWN” or “UP” button will move the water spray nozzle rail in the respective direction until the nozzle height is in the desired position for the variety selected. Once the nozzle height is set, press the “RETURN” button to save and return to the “VARIETY SET-UP SCREEN”. If an overtravel sensor is activated the “OVERTRAVEL” light will change.

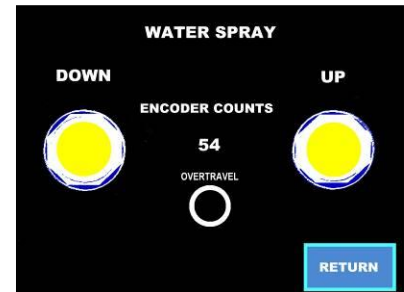


Fig. 3-10 Water Spray Lift Screen

Caution: The water spray nozzle rail will automatically move while either the “DOWN” or “UP” buttons are depressed.

Splitter Lift:

If equipped, depressing the “DOWN” or “UP” button will move the water splitter nozzle rail in the respective direction until the nozzle height is in the desired position for the variety selected. Once the nozzle height is set, press the “RETURN” button to save and return to the “VARIETY SET-UP SCREEN”. If an overtravel sensor is activated the “OVERTRAVEL” light will change.

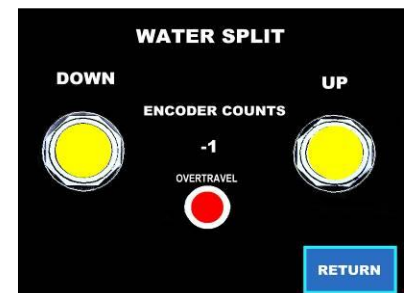


Fig. 3-11 Water Splitter Lift Screen

Caution: The water splitter nozzle rail will automatically move while either the “DOWN” or “UP” buttons are depressed.

3.0 OPERATION PROCEDURES cont'd.

3.5 Machine Options cont'd.

MPA Autofill:

If equipped, touching the “PRODUCT FILL TIME” box allows the amount of time (in seconds) to be set that is required for the unit to move product to the vacuum receiver assembly. The “PRODUCT DUMP TIME” box sets the amount of time the door; allowing product to fall from the vacuum receiver to the topper hopper, will be held open. Once the “ERROR FILL TIME” value has been met an alarm will notify the operator of a problem causing the vacuum receiver to not fill with product.



Fig. 3-12 MPA Autofill Screen

Auto Fill:

If equipped, depressing the “ON” or “OFF” buttons on the top half of the screen selects if the auto-fill function is currently active. The bottom half of this screen is used to determine if the function will always be set to active when the variety is loaded. If set to “ON”, the auto-fill will be set to active each time a variety is selected. If set to “OFF”, the current status of the auto-fill will not change when a new variety is selected.



Fig. 3-13 Auto Fill Screen

3.0 OPERATION PROCEDURES cont'd.

3.5 Machine Options cont'd.

Flour Duster:

If equipped, touching the “SPEED UP” or “SLOW DOWN” buttons will increase or decrease the amount of product applied. Touching the “JOG DUSTER” will operate the flour duster as long as the button is activated. The toggle switches allow the duster function to be toggled “ON” or “OFF” or allows for ONLY the flour duster to operate for the particular variety being edited. The “DELAY ON” setting is the time to delay between the pan triggering the water splitter sensor and turning on the flour duster. The “DELAY OFF” setting is the time after the pan leaves the sensor until the flour duster turns off. Adjust these times such that the flour duster is operating while the pan is beneath the duster.

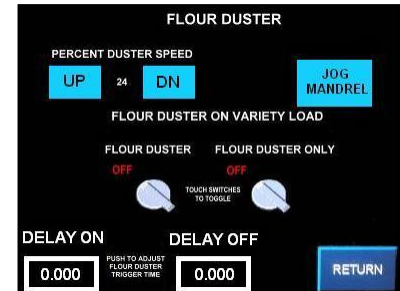


Fig. 3-14 Flour Duster Screen

Check Sensors:

The Sensor Troubleshooting screen is accessible by highlighting the “CHECK SENSORS” label from the variety setup screen. This screen is used to observe the logic state of each sensor on the Burford® Smart Rotary Topper. If sensor is not activated, then it will be displayed in a different color text.



Fig. 3-15 Troubleshooting Screen

Setup & Overrides:

From the screen shown, select the desired machine function to access and change its settings.

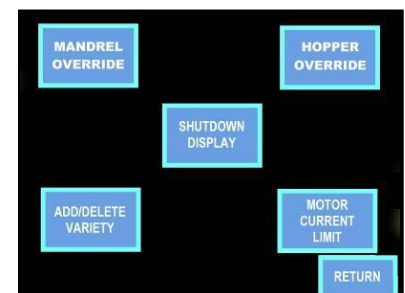
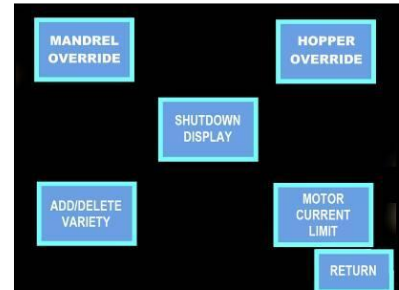


Fig. 3-16 Setup And Overrides Screen

3.0 OPERATION PROCEDURES cont'd.

3.6 Setup And Overrides

Setup And Overrides: This screen is accessed from the “Variety Setup Screen” screen (see Section 3.4). Select the desired machine function to continue.



Mandrel Override:

This option should ONLY be used if the mandrel recognition sensors are not correctly reading the mandrel that is currently inserted in the topper. Once the problem is corrected be SURE and turn this option off. Follow screen directions to enter the desired mandrel number and toggle this function to either “ON” or “OFF”. When this option is active the display field on the “MAIN SCREEN” will display a message indicating this function is active.

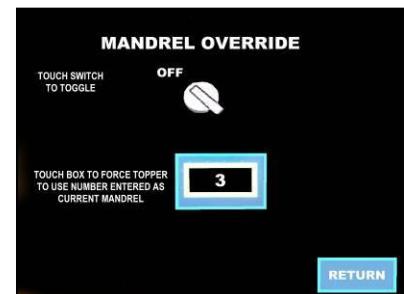


Fig. 3-17 Mandrel Override Screen

Hopper Override:

This option should ONLY be used if one of the position sensors or the lid interlock sensor is not functioning correctly. Toggle the desired override either “ON” or “OFF” using the buttons provided. Once the problem is corrected be SURE and turn this option off.

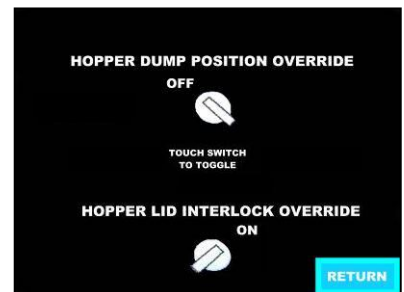


Fig. 3-18 Hopper Override Screen

Hopper Dump Position: The hopper will dump at any height.

Hopper Lid: The unit will continue to run if the hopper lid is open.

3.0 OPERATION PROCEDURES cont'd.

3.6 Setup And Overrides cont'd.

Shutdown Display: This will shut down the Burford® program and enter the Panel View 600 operating system.

Add/Del Variety: Use the “UP” or “DN” buttons to move the selection arrow to the desired variety. Touching the “DELETE” box will prompt the user to touch the “DELETE” box again if you are positive this is the variety to be deleted. Deleting a variety will assign a mandrel number of zero, return all variety options to their default state and rename the variety to “NOT USED”.



Fig. 3-19 Add/Delete Variety Screen

Note: The current selected variety cannot be deleted.

To add a variety, verify the correct mandrel is loaded into the hopper for the new variety. Move the selection arrow to an unused variety (“NOT USED”) and touch the “ADD NEW” box. Follow instructions in Section 3.4 to configure the variety.

Motor Current Limit: The values for this screen are factory preset. If changes are necessary, change these values in very small increments until the desired result is obtained. Settings too low will not allow the machine to function properly; while settings too high may result in machine damage.

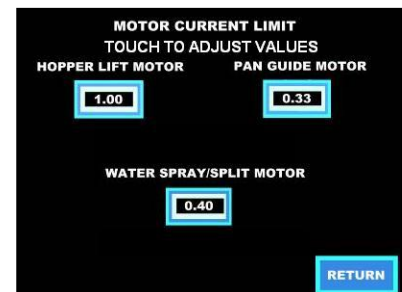


Fig. 3-20 Motor Current Limit Screen

Caution: Contact Burford® Corporation. before making changes to these values.

3.0 OPERATION PROCEDURES cont'd.

3.7 Remote Disconnect

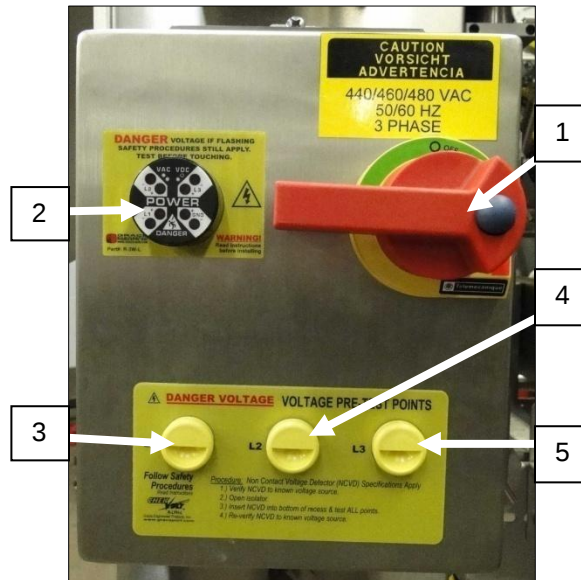


Fig. 3-21 Remote Disconnect

Ref	Description								
1	ON / OFF switches power on and off to all components other than the conveyor. The panel door may be opened while power is on or off.								
2	Flashing power warning alert detects 3-phase AC or DC voltage from 40-750VAC/30-1000VDC. The indicator flash rates for the R-3W only (L1, L2, L3, GND) are as follows:								
	3-PHASE LINE-TO-LINE	<29	30	120	240	480	600	750	
	FLASHES / SEC (TYPICAL)	0	1.3	4.2	5.8	7.3	8	8.8	
	DC OR STORED ENERGY (VDC)	<27	30	48	110	300	600	1000	
	FLASHES / SEC (TYPICAL)	0	1.6	2.5	4.5	6.9	8.8	9.1	
3	(L1) Black lead	Used to measure voltage without opening the panel for safety.							
4	(L2) White lead								
5	(L3) Red lead								

3.0 OPERATION PROCEDURES cont'd.

3.8 Conveyor Disconnect

The conveyor disconnect switch turns off power to the conveyor only.

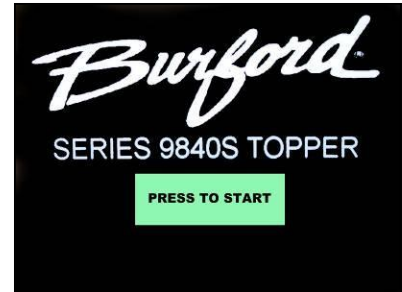


Fig. 3-22 Conveyor Disconnect

3.0 OPERATION PROCEDURES cont'd.

3.9 Daily Startup

1. Verify that the STOP switch on the display panel is depressed. Turn on electrical power via the main enclosure disconnect switch. Verify the air and water pressure settings. After the touch screen has completed the boot up process, it should display the screen shown on the right.



2. Pulling the stop button to the “OUT” position will energize the unit and advance the user display to the “Main Menu” screen.

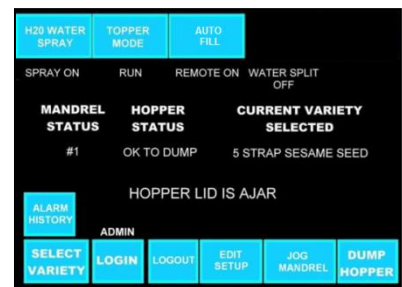


Fig. 3-23 Daily Startup

3. Select the topping mandrel to be used and insert it into hopper as shown below.



Fig. 3-24 Mandrel Selection

4. Lock the topping mandrel in place by turning it until it is solidly engaged in the mandrel drive mechanism. See Figure 3-25 for the correct mandrel locking position for a right hand machine.

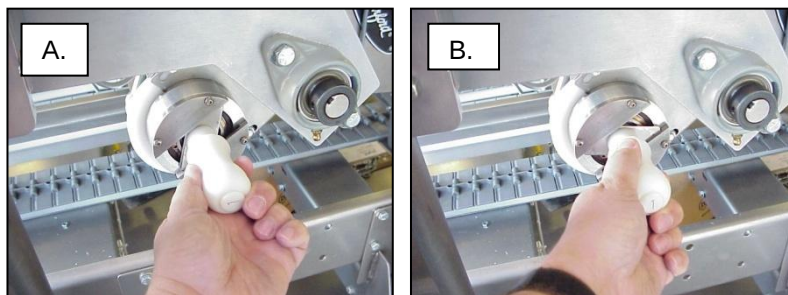
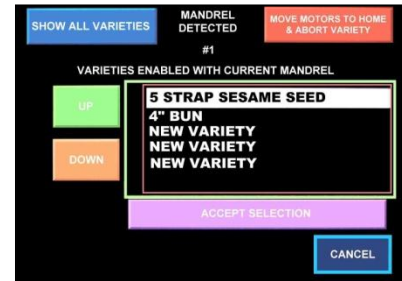


Fig. 3-25 Reverse Rotation (A) Forward Rotation (B)

3.0 OPERATION PROCEDURES cont'd.

3.9 Daily Startup cont'd.

5. Load the hopper with the required topping.
6. Press “SELECT VARIETY” to select the desired variety. Note that multiple varieties may be setup to use a single mandrel. Use the “UP/DOWN” buttons to highlight the desired variety, then touch the “ACCEPT SELECTION” button. The unit will automatically begin moving the hopper, pan guides, water spray rail and water splitter rail (if equipped) to their preset positions.
7. The unit will always move the available machine functions in the order described in step 6. The operator display will display which function is moving as shown in the example. Pressing the “STOP ALL MOTORS” button will stop all machine movement and return to the “MAIN” screen.



Note: To resume operation press the “GO HOME” button located in the lower left corner of the “MAIN” screen. This screen location normally displays “VARIETY SELECT”.

8. Verify Water Spray, Conveyor and Water Split modes. Toggle the “TOPPER MODE” to “RUN”.

Note: When the Topper Mode is changed to “RUN”, the “DUMP HOPPER” button located in the lower right corner of the screen will change to “AUTOFILL” (if equipped).

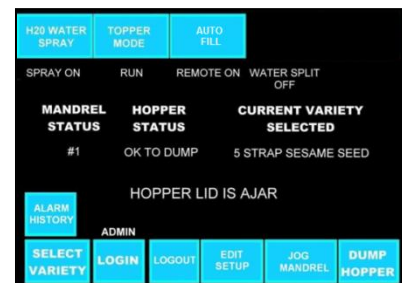


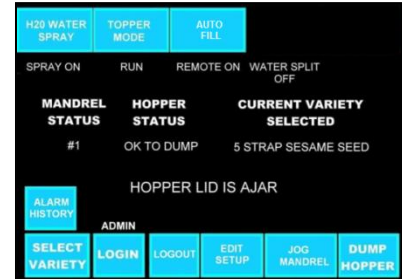
Fig. 3-26 Daily Startup

9. Begin production.

3.0 OPERATION PROCEDURES cont'd.

3.10 Changing To Different Variety (Same Mandrel)

1. Touch the “VARIETY SELECT” box to advance to the screen in step 2.



Note: If the variety change requires a different topping, place the hopper in the dump position to empty hopper.

2. This screen displays the varieties enabled for the mandrel detected by the unit. If the variety desired is not shown, it has been setup for use on a different mandrel. To change to different mandrel (see Section 3.11). Once the desired variety is highlighted, touch the “ACCEPT SELECTION” box on the bottom of the screen.
3. After selection is complete verify Water Spray and Conveyor modes and toggle the topper mode to “RUN”. The unit is ready for operation.

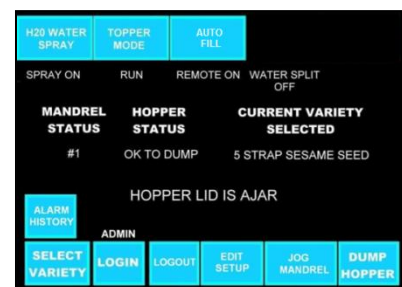
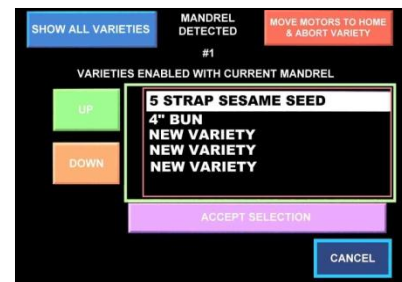


Fig. 3-27 Changing To Different Variety Same Mandrel

3.0 OPERATION PROCEDURES cont'd.

3.11 Changing To Different Variety (Different Mandrel)

1. Toggle the conveyor mode to “OFF” and topper mode to “STANDBY” by touching the respective buttons. Touch the “DUMP HOPPER” box.



2. Touch and hold the “GOTO DUMP” button until hopper is in dump position. Follow the screen directions to dump the hopper. Once the hopper is emptied, remove any remaining topping if necessary and remove the current mandrel. Insert the new mandrel and return the hopper to its upright position.

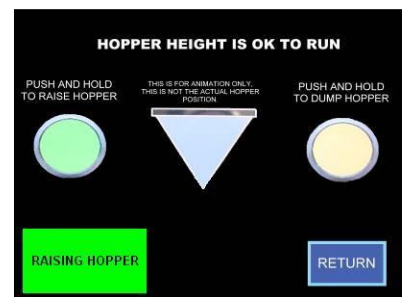


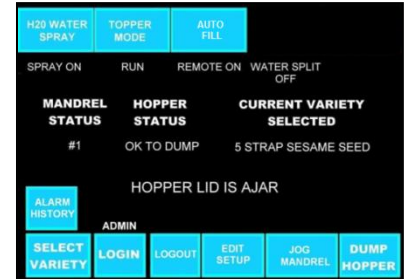
Fig. 3-28 Changing To Different Variety Different Mandrel

3. Repeat steps 3 through 9 of Section 3.9 to select the desired variety and begin operation.

3.0 OPERATION PROCEDURES cont'd.

3.12 Changing Parameters For An Existing Variety

1. To change operating parameters for a particular variety, first verify the desired mandrel is installed into the hopper. Then, touch “SELECT VARIETY” and select the variety to edit. Next, touch “EDIT SETUP”. This function is password protected. Contact your supervisor or Burford® Corporation for password.
2. To change the name of the current variety, touch the name at the center of the screen. To change the conveyor speed (if equipped with a Burford® Conveyor System), touch the “CONVEYOR SPEED” box and follow screen instructions. For more parameters, touch the “CONTINUE” box.



Note: The standard topper may be set-up with up to (15) varieties. If more than 15 varieties are required, contact Burford® Corporation for additional information.

3. This screen controls available operating parameters. Use the “UP/DN” boxes to move the selection arrow next to the desired machine parameter and touch the “ACCEPT” box for additional screens. When the desired changes are complete, touch the “NEXT” box (see Section 3.4).

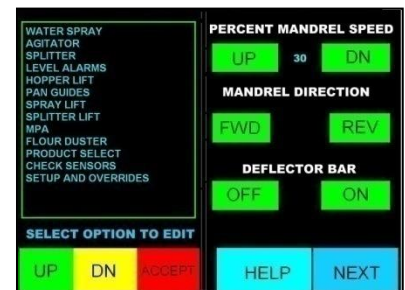
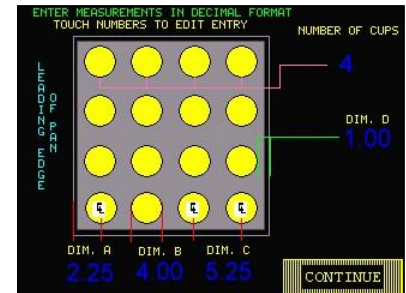


Fig. 3-29 Changing Parameters For An Existing Variety

3.0 OPERATION PROCEDURES cont'd.

3.12 Changing Parameters For An Existing Variety cont'd.

4. Enter the pan dimensions used for this variety in the boxes provided. These settings are utilized by the unit to provide optimal seed coverage. Touch the "CONT" box to save new entries and advance to the next screen.



Note: To obtain the desired topping pattern the numbers entered may not be the exact dimensions of the pan. Trial and Error will be required to obtain the optimal settings.

5. Select "Return" to exit variety set-up or "CONTINUE" to return to the setup menu.



3.13 Fine-Tuning Water Spray/Splitter Trigger Time

See Section 3.4 for steps to reach this screen. The Delay On and Delay Off boxes may be modified to fine tune the trigger time for their respective operations. Enter/verify settings until satisfactory results are reached.

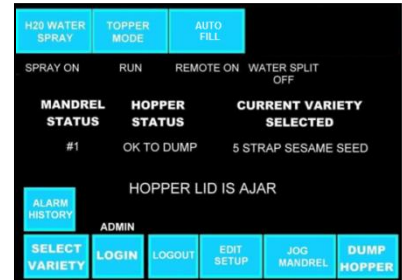


Fig. 3-30 Fine Tuning Water Spray Split Trigger Time

3.0 OPERATION PROCEDURES cont'd.

3.14 Creating A New Variety

1. To create a new variety, first verify the desired mandrel is installed into the hopper. Then, touch “EDIT SETUP”. This function is password protected. Contact your supervisor or Burford® Corporation for password.
2. Do Not modify the name of this variety. Touch the “CONTINUE” box to advance to the “ADD/DEL VARIETY” machine option.



Note: The standard topper may be set-up with up to (15) varieties. If more than 15 varieties are required, contact Burford® Corporation for additional information.

3. This screen controls available operating parameters. Use the “UP/DN” boxes to move the selection arrow next to “SETUP & OVERRIDES” option and touch the “ACCEPT” box to select.
4. Use the “UP/DN” boxes to move the selection arrow next to the first available “NOT USED” variety. Touch the “ADD” box to advance to the next screen.

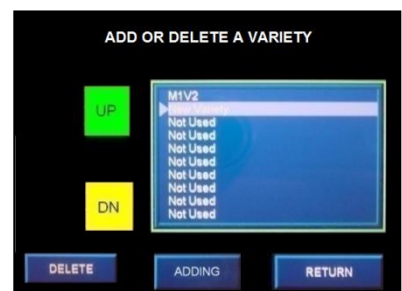
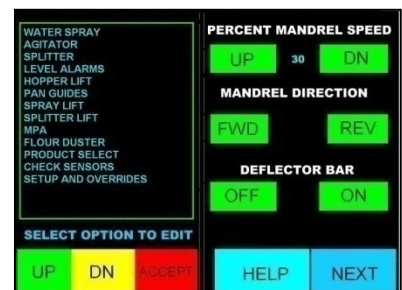


Fig. 3-31 Creating A New Variety

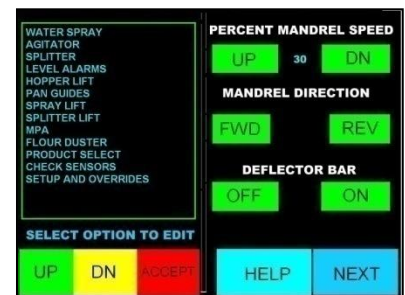
3.0 OPERATION PROCEDURES cont'd.

3.14 Creating A New Variety cont'd.

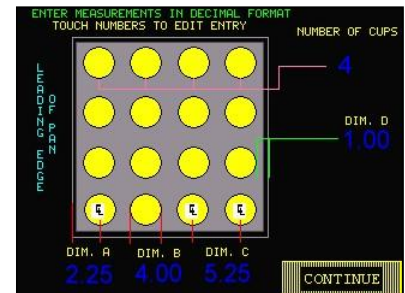
5. Modify the name of the newly created variety as desired. Change the conveyor speed as required by touching the "CONVEYOR INV. FRQ" box. Once changes are complete, touch the "CONTINUE" box.



6. This screen controls available operating parameters. Change the three operating parameters on the right hand side of the screen as needed then use the "UP/DN" boxes to move the selection arrow next to the desired machine parameter and touch the "ACCEPT" box for additional screens. When the desired changes are complete, touch the "NEXT" box (see Section 3.4).



7. Enter the pan dimensions used for this variety in the boxes provided. These settings are utilized by the unit to provide optimal seed coverage. Touch the "CONT" box to save new entries and advance to the next screen.



Note: To obtain the desired topping pattern the numbers entered may not be the exact dimensions of the pan. Trial and Error will be required to obtain the optimal settings.

8. Touch the "RETURN" box to exit variety setup.



3.0 OPERATION PROCEDURES cont'd.

3.15 Fine Tuning Topping Coverage

For initial pan set-up and/or to maximize seed savings utilize the following instructions. To complete these steps several pans with dough will be required.

Note: Numbers provided below are for reference ONLY.

1. At this point, we are only concerned with the position of the seed on the first row of dough pieces. Begin with adjusting “DIM B” to 1.00 and measure the distance from the leading edge of the pan to the center of the first cup. Enter this dimension in “DIM A”. These dimensions should provide a 1” strip of seed through the center of the first row of dough pieces. Run a test pan of dough through the unit to verify. Continue to adjust “DIM A” until the seed strip is precisely in the center of the first row of dough pieces.
2. Next, we will center the 1” strip of seed on the remaining rows of dough pieces. Determine the number of cup rows (in direction of pan travel). Enter this value. Measure the distance from the centerline of one pan cup to the next pan cup centerline. Enter this value and run a test pan. Decrease/Increase “DIM C” until the remaining rows of dough pieces display a 1” strip of seed precisely in the center.
3. Measure the distance from the trailing edge of the pan to the edge of the last cup. Enter this value. To large of a value will prevent the last row of dough pieces to be properly covered, to small of a value will allow topping to fall off the back edge of the pan.
4. Now we will adjust the overall seed coverage of the dough pieces. Begin increasing the value of “DIM B” until the dough pieces are sufficiently covered with minimal seeds falling outside the target area. Run a test pan each time “DIM B” is modified to verify machine operation.

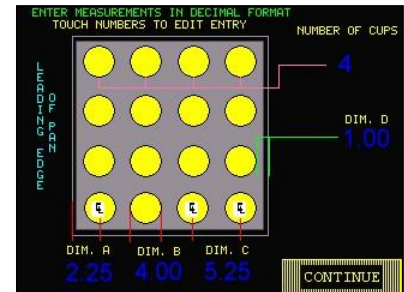


Fig. 3-32 Fine Tuning Topping Coverage

Note: Changes made to the conveyor speed or hopper height will require ALL other position settings to be modified to maintain proper coverage.

3.0 OPERATION PROCEDURES cont'd.

3.16 Catch Tray For Varieties Without Topping

Install the catch tray, as shown below, when running varieties that do not require topping. This will reduce or eliminate contamination of other dough.

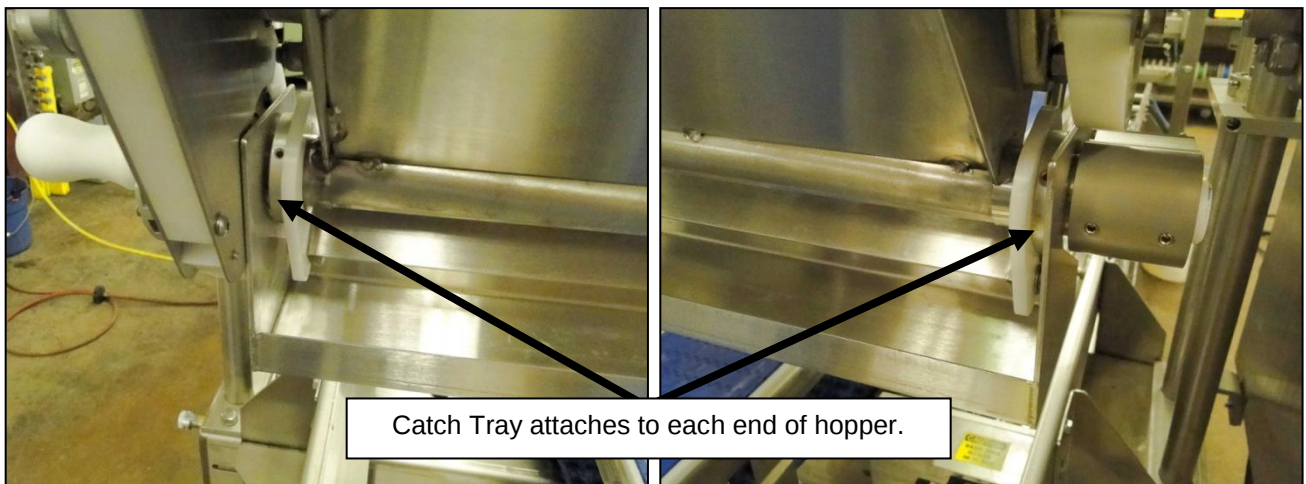


Fig. 3-33 Catch Tray Placement

3.0 OPERATION PROCEDURES cont'd.

3.17 Drive Description

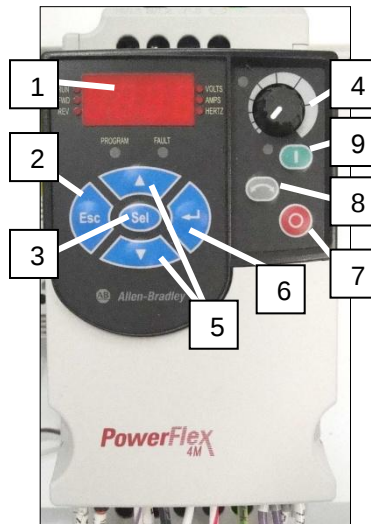


Fig. 3-34 Drive Description

The Burford® Smart Seeder is equipped with up to (3) AC motor drives to control the operation of the unit. The above programmable motor controller is an example of the drives used in the Burford® Smart Seeder. The table below provides a brief description of the function keys. See supplied motor drive manual for additional information.

Note: Determine which motor drive(s) your seeder is equipped with before making setting changes.

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 exits programming mode.
3	Select	Advance one step in programming menu. Selects a digit when viewing parameter values.
4	Speed Dial	Used to control speed of drive.
5	Scroll	Used to scroll through parameters or to increase/decrease parameter values.
6	Enter	Advance one step in programming menu. Save a change to a parameter value.
7	Stop	Used to stop the drive or clear a fault.
8	Reverse	Used to reverse direction of drive.
9	Start	Used to start the drive.

3.0 OPERATION PROCEDURES cont'd.

3.18 Drive Settings

The motor controllers have been preset at Burford® Corporation 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. Parameters NOT listed below should remain at the manufacturer's default values.

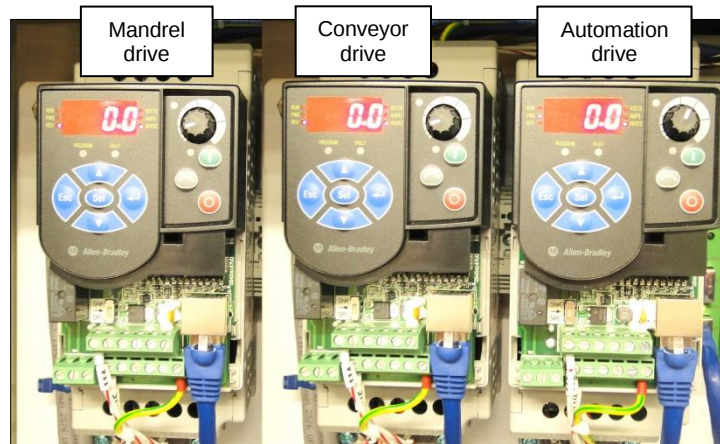


Fig. 3-35 Motor Controllers

Parameter	Mandrel (DRV1) Value	Conveyor (DRV2) Value	Automation (DRV3) Value	Flour Duster (DRV4) If Equipped	Description
T201	0	0	0	0	Digital Input 1 Select
T202	0	0	0	0	Digital Input 2 Select
A424	0.2 sec.	0.2 sec.	0.2 sec.	0.2 sec.	DC Brake Time
A425	1.0 amp	1.0 amp	1.0 amp	1.0 amp	DC Brake Level
A451	5	5	5	5	Auto Restart Tries
C302	4	4	4	4	Comm Data Rate
C304	2	2	2	2	Comm Loss Action
C305	1 sec.	1 sec.	1 sec.	1 sec.	Comm Loss Time
P101	Default	Default	220 VAC	Default	Motor Voltage (nameplate)
P106	5	5	5	5	Start Source
P107	6	6	6	6	Stop Mode
P108	5	5	5	5	Speed Reference
P109	0.1 sec.	0.1 sec.	2.0 sec.	0.1 sec.	Accel Time
P110	0.1 sec.	0.1 sec.	0.1 sec.	0.1 sec.	Decel Time

* These parameters may require minor changes from the value shown to optimize the machine operation.

4.0 TROUBLESHOOTING

4.1 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 on the right 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.



Fig. 4-1 Alarm Banner Screen

Ref	Text ID	Code	Message Displayed
1	1075	INFO 1.16	Variety 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 Undervoltage.
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 Heatsink Overtemperature.
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 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 Undervoltage.
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.

4.0 TROUBLESHOOTING cont'd.

4.1 Alarm Banner cont'd.

Ref	Text ID	Code	Message Displayed
34	2915	ERROR 3.6	Conveyor Drive Heatsink Overtemperature.
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 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 Undervoltage.
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 Heatsink Overtemperature.
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 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.

4.0 TROUBLESHOOTING cont'd.

4.2 System Information

The System Information screen is accessible from the Alarm History button on the main screen. This screen keeps a log of error conditions (shown in red text) and set-up or machine status changes (shown in green text).



Fig. 4-2 System Information Screen

4.3 Sensor Troubleshooting

The Sensor Troubleshooting screen is accessible by highlighting the “CHECK SENSORS” label from the variety setup screen. This screen is used to observe the logic state of each sensor on the Burford® Smart Rotary Topper. If sensor is not activated, then it will be displayed in a different color text.



Fig. 4-3 Troubleshooting Screen

5.0 MAINTENANCE

5.1 Preventive Maintenance

5.1.1 Weekly

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

5.1.2 Monthly

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

Caution: Keep clear of hopper when moving the hopper to “DUMP” position.

5.1.3 Bi-Annual

1. Lubricate all-threads and worm gears with food-grade grease.
2. Check all sensors for proper operation.
3. Check mandrel clutch for wear. Adjust if necessary.
4. Check all spray and split valves for proper operation.
5. Check all pneumatic flow control valves for proper operation.

5.2 Cleaning Recommendations

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

1. Remove all catch pans and catch trays from unit and thoroughly clean at a sight away from the topper.
2. Separate the conveyor chain and clean at a sight away from the topper.

5.0 MAINTENANCE cont'd.

5.3 Splitter Valve Replacement

The model 133 applicator head (Burford® P/N 304099) contains precision components. Over tightening the inlet fluid fitting can cause damage to the internal fluid tube. Wrench flats are provided on the inlet fluid fitting. When attaching or removing the supply hose always use two wrenches, one on the inlet fluid fitting the other on the supply hose fitting.

Note:	Should the inlet fluid fitting ever need to be removed or replaced, use a torque of 15 – 20 inch pounds to avoid damaging (stretching) the internal fluid tube.
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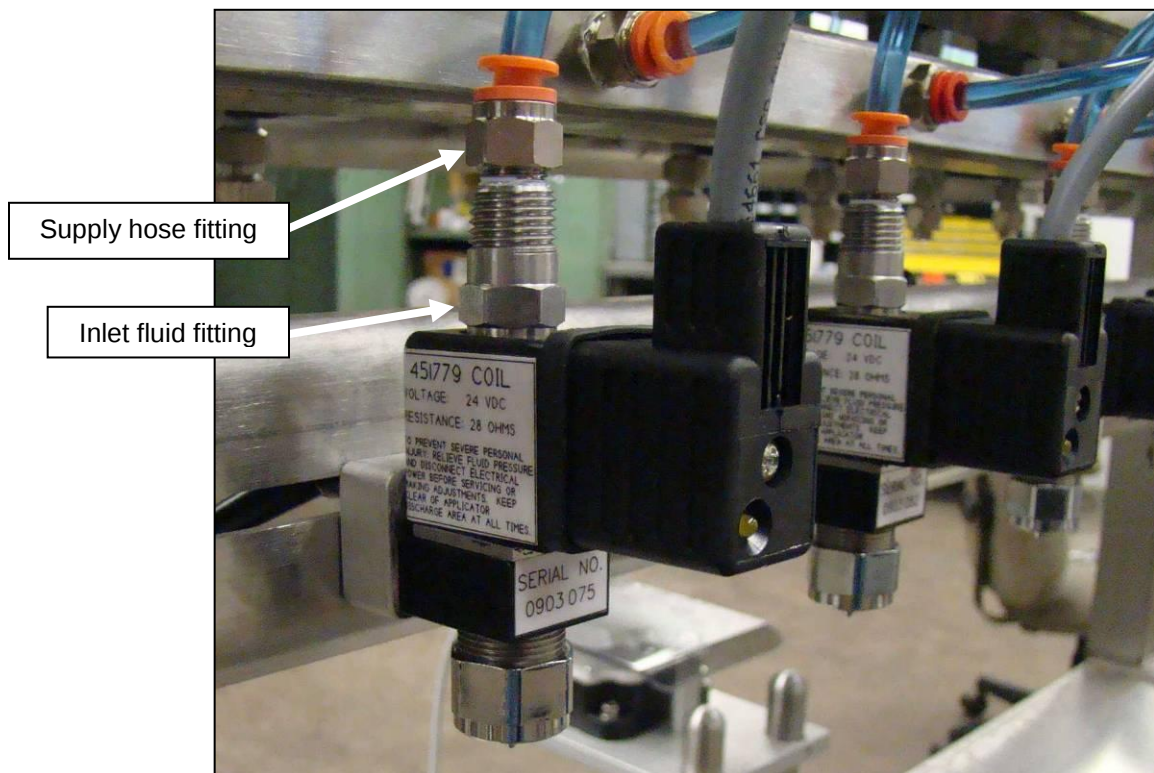


Fig. 5-1 Splitter Valve Replacement

5.0 MAINTENANCE cont'd.

5.4 Purging Spray Valves

Note: It is very important to purge all the air from the manifold and nozzles for proper operation of the water 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.

1. Remove all check-screens, o-rings and tips from valve assemblies (see Figure 5-2).
2. Connect a $\frac{1}{4}$ " line to the "PURGE" valve (see Figure 5-3) and route to a suitable container (purging may require approximately 10 – 20 gallons of water through the system).
3. With the "PURGE" valve open, depress the "purge" button see Section 3.5 for instructions to reach this machine option).
4. Allow the water to flow until a smooth, continuous stream appears.
5. Close the "PURGE" valve and repeat while monitoring the water flow from the spray valves.
6. Install the check-screens, o-rings and tips into the valve assemblies.



Fig. 5-2 Spray Valve Assembly

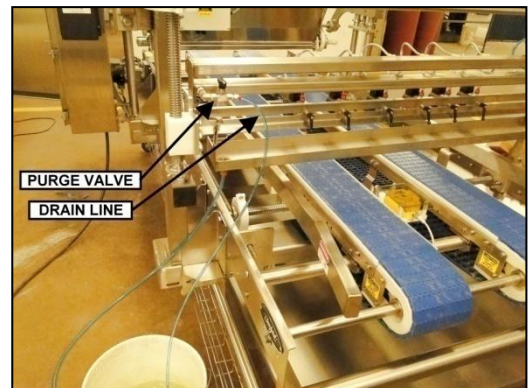


Fig. 5-3 Purge Valve

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.

5.0 MAINTENANCE cont'd.

5.5 Pulsating Spray Valves

The Electromatic 100 Series Miniature Applicator Head (Section 7.8) is designed to extrude low to medium viscosity non-flammable cold fluids. It can be used with a variety of tips to provide different patterns. The tip orifice should be selected in accordance with the viscosity of material being used, operating pressure and amount to be dispensed.

The only parts which will require replacement are the seat, plunger needle, or tip. This replacement will be due either to wear, damage, or change in pattern requirements.

Fluid is fed to the rear of the applicator head via a male $\frac{1}{2}$ -20 JIC fitting or a $\frac{1}{8}$ NPTF and $\frac{1}{4}$ NPTM input connector. A wrench flat is provided on the inlet fitting. When attaching or removing fluid supply hose always use two wrenches, one on the inlet fitting the other on the supply hose.

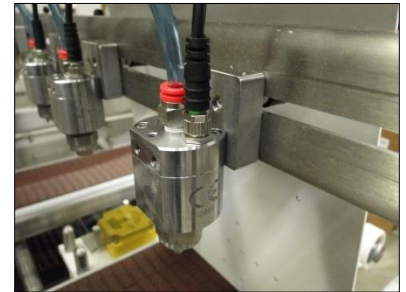


Fig. 5-4 Pulsating Sprayer Valve

Warning: Over tightening this fluid fitting can cause damage to the fluid tube.

Under normal production operating conditions foreign matter may obstruct or block the seat or tip (always check the tip first). In most cases only removal of the seat is required for cleaning. To do this, turn off fluid pressure and activate the applicator to bleed of pressure. Then remove the tip and unscrew the seat from the gun body. After cleaning replace the seat and tighten to a torque of 90-100 inch pounds.

To disassemble the fluid tube and plunger, turn off fluid pressure, activate the applicator to bleed off pressure, and disconnect the fluid supply hose. Then remove the fluid inlet adapter by unscrewing it using the provide "flats". This will allow the solenoid coil to slide off of the fluid tube, exposing two phillips screws that secure the clamp plate. After the two screws and clamp plate are removed, pull the fluid tube out of the gun body and remove the plunger with spring.

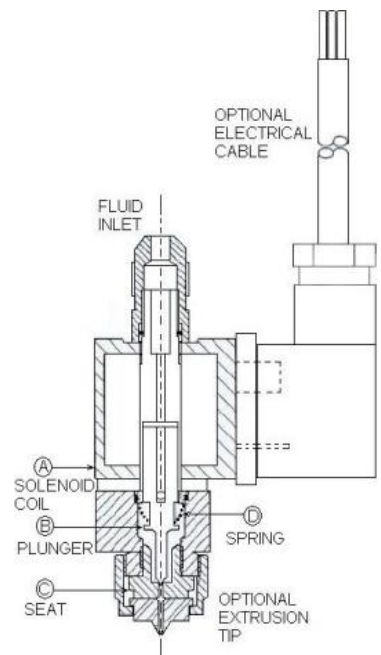


Fig. 5-5 Pulse Sprayer

Warning: Use care in handling the soft seat to avoid damaging the soft seating surface.

Assembly is the same steps in reverse.

When replacing the fluid inlet adapter, use a torque of 15-20 inch pounds to avoid damaging (stretching) fluid tube.

6.0 RECOMMENDED SPARE PARTS LIST

*	PART #	QTY	DESCRIPTION
	100378	2	BEARING, FLANGE, 3/4"
	611574	1	VALVE, APPLICATOR HEAD, PULSATING
	304350-001	2	SENSOR PROX, 8MM, 10-30 VDC, PNP, N.C.
	304239	1	CLUTCH/BRAKE, SHAFT MOUNT, 24 VDC
	304650	1	VALVE, SPRAY NOZZLE
	610151	1	SENSOR, PROX, 6.5MM, 10-30 VDC, PNP, N.C.
	610187-001	1	CABLE, MICRO-CHANGE, M12, 5 WIRE
	610404	3	RELAY, TERMINAL MOUNTING, 24 VDC, 1PDT
	610412	1	RELAY, TERMINAL MOUNTING, 220 VAC, SSR
	610421	1	RELAY, TERMINAL MOUNTING, 24 VDC, SSR
	610426	1	BEARING, ROD END, 1/2" ID, 1/2-20 UNF
	610452	1	RELAY, TERMINAL MOUNTING, 110 VAC, SSR
	611102	1	ENCODER, 1.375 THRU BORE, CONVEYOR
	610797	1	SENSOR, PHOTO, RETRO-REF, 10-30 VDC, N.O./N.C.
	610962	1	SWITCH, SOLID STATE, AIR CYLINDER
	611365	1	VALVE, SOLENOID, 24 VDC, 2 WAY, 1/8", w/FLOW CONV.
	611119	1	VALVE, SOLENOID, 24 VDC, 2 WAY, 1/4", w/FLOW CONV.
	C05724	4	VARISTOR, SURGE, 125 AMP, 25 VAC/ 31 VDC
	C06753	1	SENSOR, CABLE, M12, 5 WIRE, STRAIGHT, FEMALE, Q.C.
	C07101	1	SWITCH, CONTACT CARTRIDGE, 1 NORMALLY CLOSED
*	C07474	1	POWER SUPPLY, 110/220 – 24 VDC, 5 AMP
	610929		POWER SUPPLY, 480VAC – 24 VDC, 5 AMP, 3 PHASE
	304160		POWER SUPPLY, 110/220 – 24 VDC, 10 AMP
	610913		POWER SUPPLY, 340/576-24 VDC, 10 AMP, 3 PHASE
	611422-004	1	CONTROLLER, POWERFLEX4M, 480/-3, 480-3

* Verify machine voltage before ordering this item.

7.0 ASSEMBLY DRAWINGS AND PARTS LISTS

7.1 Seeder Frame Assembly (Sheet 1 of 2) (210382 "K")

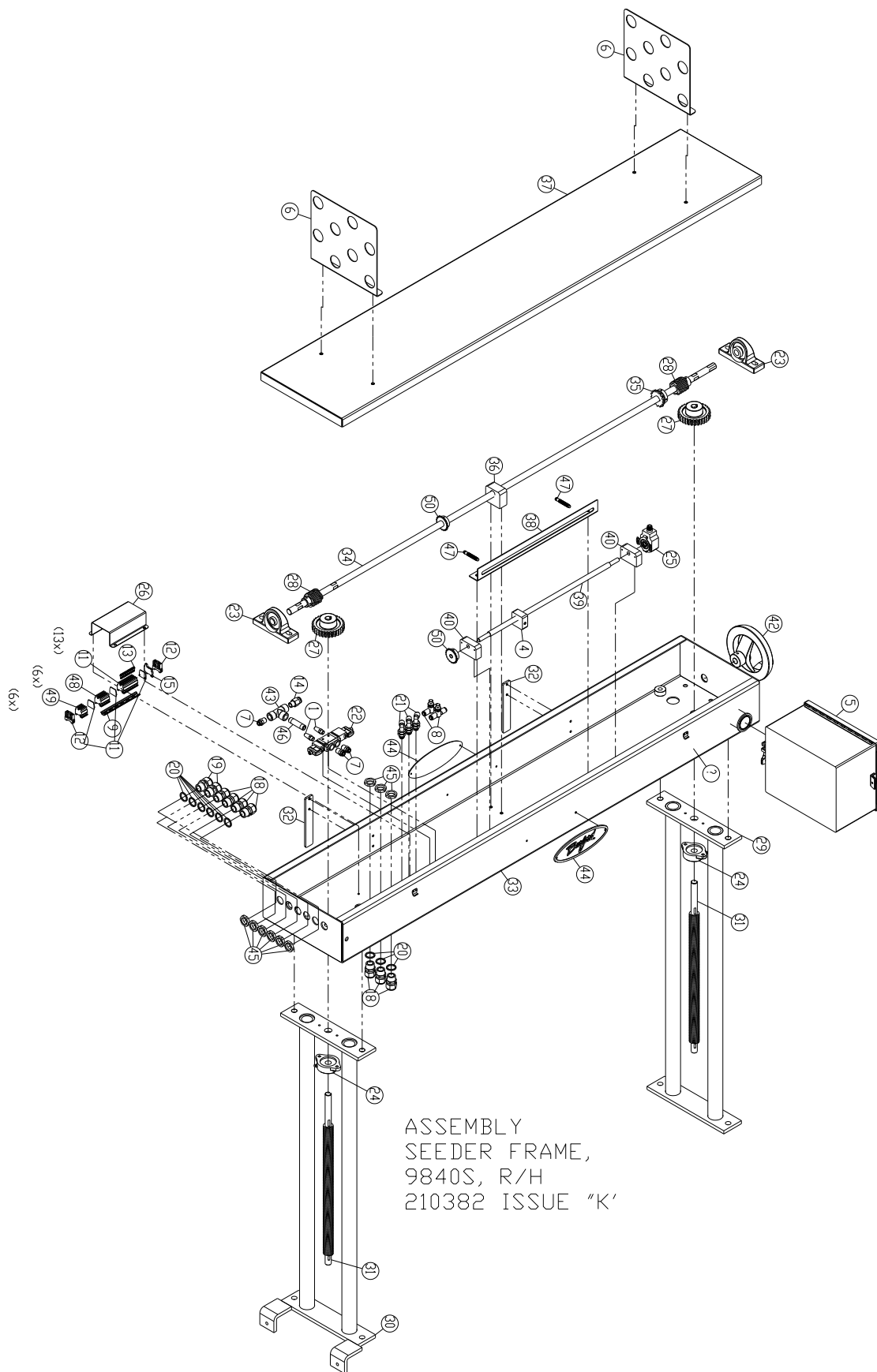
REF	PART #	QTY	DESCRIPTION
1	111497	2	MUFFLER, 1/8" NPT
2	142113	6'	CABLE, 16 AWG, 4 COND.
3	210385	1	ASSY, PNEUMATICS, SEDER, 9840S
4	210411	1	ASSY, BLOCK, HEIGHT ADJ TARGET
5	210401-004	1	ASSY,ENCLOSURE,DISPLAY,9840S/9940S
6	304109	2	BRACKET, MANDREL RACK
7	401152	3	FITTING,CONN,1/4MPT X 1/4T,ENP,Q.R.
8	401302	2	VALVE, REG, FLOW CONTROL, ENP, Q.R.
9	610360	6"	TERMINAL, DIN RAIL, MINI
10	610361	25	TERMINAL, BLOCK, MINI
11	610362	3	TERMINAL,END COVER,MINI
12	610363	2	TERMINAL,ANCHOR,END CLAMP,MINI
13	610364	1	TERMINAL, JUMPER, 10-POLE, MINI
14	610507	1	FITTING,CONN,1/4NPT X 3/8T,ENP,Q.R.
15	610534	1	TERMINAL,GROUNDING,MINI
16	610885-05	20'	TUBING, 1/4" POLYURETHANE, YELLOW
17	610886-05	20'	TUBING, 3/8" POLYURETHANE, YELLOW
18	610953	7	CONNECTOR, CORD, .20-.35, DOME, NYLON
19	610954	2	CONNECTOR, CORD, .39-.56, DOME, NYLON
20	610955	9	CONNECTOR,SEAL RING,1/2NPT,POLYETH
21	610956	3	FITTING,BLKHD ELL 1/4T,ENP,Q.R.
22	611119	1	VALVE,SOL,24V,3 WAY,CLOSED CEN,1/4P
23	611237	2	BEARING, 5/8 PILLOW BLOCK, SST
24	611238	2	BEARING, 5/8, 2 BOLT FLANGE, SST
25	611469-010	1	ENCODER, .375 THRU BORE

210382 (9840) ISSUE "K" RH
210381 (9940) ISSUE "K" LH

7.1 Seeder Frame Assembly (Sheet 1 of 2) (210382 "K") cont'd.

REF	PART #	QTY	DESCRIPTION
26	710161	1	COVER, TERMINAL STRIP, 9840S/9940S
27	711938	2	RWK, WORM GEAR
28	711939	2	RWK, WORM STEEL, 5/8" B, 10 D.P.
29	711995	1	A/W, UPRIGHT SUPT
30	711997-BBU	1	A/W, UPRIGHT SUPT, ENCL MT
31	712004	2	ALL-THREAD, 1"-5 ACME, HEIGHT ADJ.
32	712008	2	BAR, HOPPER LID STOP, 9840S
33	712010	1	A/W, TOP SEEDER CHANNEL, 9840S, R/H
34	712025	1	SHAFT, HEIGHT ADJUSTMENT, 9840S
35	712026	1	SPROCKET, REWORK, 35B14, 5/8 BORE
36	712029	1	BLOCK, SHAFT SUPT, HEIGHT ADJ.
37	712047	1	A/W, COVER, TOP CHANNEL, 9840S/9940S
38	712217	1	BRACKET, HEIGHT ADJ. PROX
39	712218	1	SHAFT, ALL-THREAD PROX COUNT
40	712219	2	BLOCK, HEIGHT ADJ SHAFT
41	611165	4	LATCH, DRAW, COMPRESSION SPRING
42	712376	1	HANDLE, REWORK, 6" DIA, ALUM
43	A06858	1	FITTING, TEE, 1/4 NPTF, SST
44	A08049	2	NAMEPLATE, BURFORD® LOGO, LARGE
45	C00174	9	LOCKING NUT, 1/2 NPT, NYLON
46	C00905	1	FITTING, NIPPLE, 1/4 NPTM X 2, SST
47	304350-001	2	SENSOR, PROX, 8MM, 10-30V, PNP, NC, TURCK
48	610361	1	TERMINAL, BLOCK, MINI
49	610361	1	TERMINAL, BLOCK, MINI
50	712222	2	SPROCKET, 25-B-19 5/8" BORE

210382 (9840) ISSUE "K" RH
210381 (9940) ISSUE "K" LH



7.2 Seeder Frame Assembly (Sheet 2 of 2) (210382 "K")

REF	9840	QTY	DESCRIPTION
1	210400-BBU	1	ASSEMBLY, MAIN ENCLOSURE
2	210404-010	1	ASSEMBLY, SEEDER HOPPER
3	210446	1	ASSEMBLY, HOPPER DUMP CYLINDER
4	303056	2	PLUG, HOLE, 7/8" DIAMETER, SST
5	304015	8	ROLLER, LIFT
6	304016	8	SPACER, ROLLER LIFT SHAFT
7	304365	1	A/W, CATCH PAN
8	304830	2	A/W, MOUNTING BRACKET
9	304831	2	A/W, MOUNTING BRACKET
10	610167	1	CONNECTOR, ADAPTER, PG13.5 TO 1/2" NPT
11	610507	1	FITTING, CONNECTOR, 1/4" NPT X 3/8" TUBE
12	610554	1	CONNECTOR, CONTACT INSERT, 6 PIN, F
13	610555	1	CONNECTOR, BASE, 1 LATCH, 6 PIN
14	610556	1	CONNECTOR, CONTACT INSERT, 6 PIN, M
15	610557	1	CONNECTOR, HOOD, 1 LATCH, 6 PIN
16	610602	2	FITTING, ELBOW, 1/4" NPT X 1/4" TUBE
17	610839	8	COLLAR, 1-1/2" SPLIT, SST
18	610953	1	CONNECTOR, CORD, .20-.35, DOME, NYLON
19	610955	1	CONNECTOR, SEAL RING, 1/2" NPT
20	611102	1	ENCODER, 1-3/8" THRU-BORE
21	611189	1	PLATE, BASE
22	611238	2	BEARING, 5/8", 2 BOLT FLANGE, SST
23	611387	4	BEARING, 3/4", 2 BOLT FLANGE, SST
24	711992	1	A/W, BASE CHANNEL
25	712000	3	BRACKET, UPRIGHT ROLLER COVER

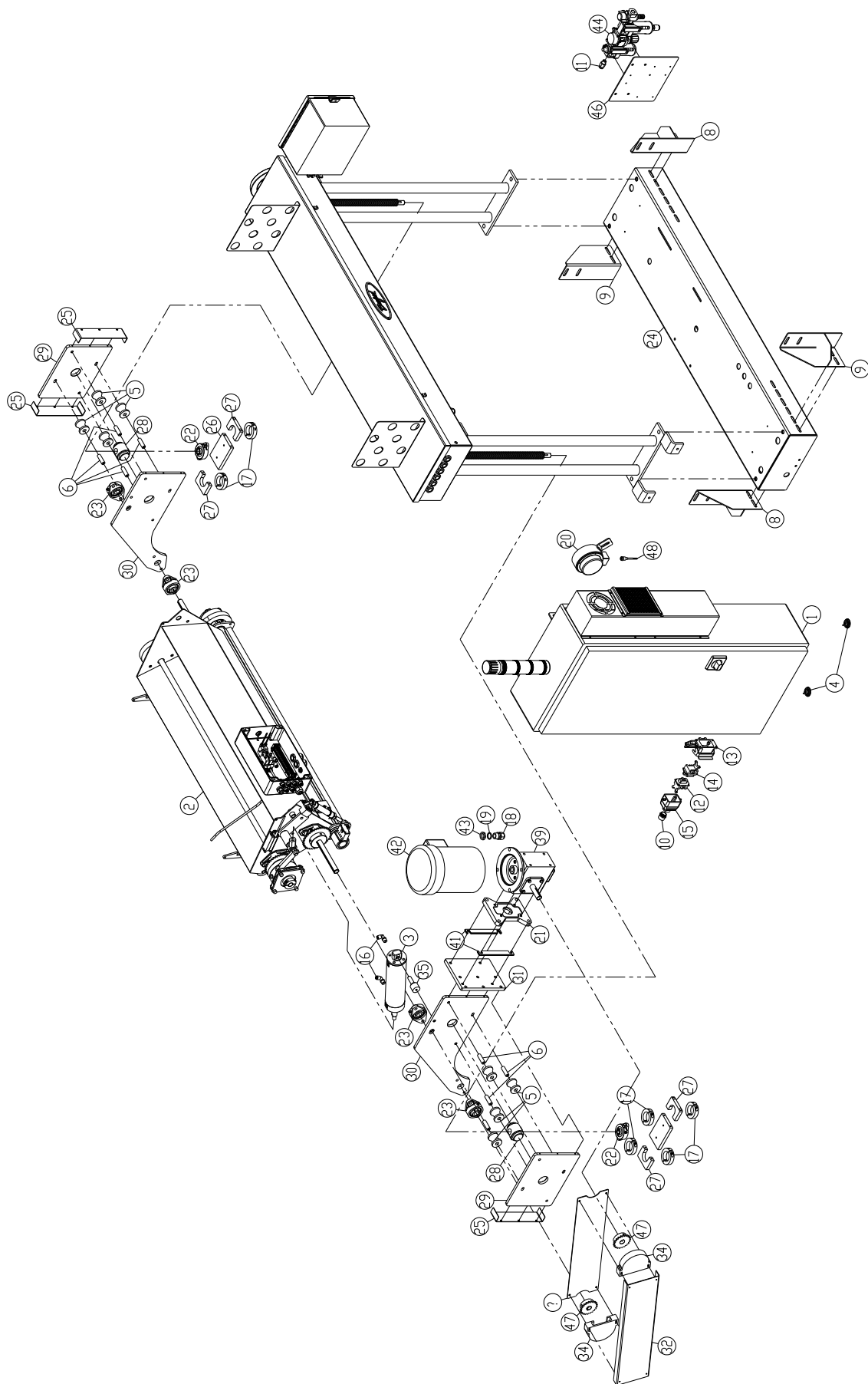
210382 (9840) ISSUE "K" RH
210381 (9940) ISSUE "K" LH

7.2 Seeder Frame Assembly (Sheet 2 of 2) (210382 "K") cont'd.

REF	9840	QTY	DESCRIPTION
26	712001	2	PLATE, HEIGHT ADJ BEARING MOUNT
27	712002	4	BLOCK, BEARING PLATE CLAMP
28	712003	2	NUT, HEIGHT ADJUSTMENT
29	712005	2	PLATE, HEIGHT ADJUSTMENT SIDE
30	712006	2	PLATE, HOPPER MOUNTING SIDE
31	712007	1	PLATE, GEAR REDUCER MOUNTING
32	712383	1	COVER, MANDREL DRIVE CHANNEL
33	712384	1	PLATE, MANDREL DRIVE COVER
34	712402	2	GUARD, MANDREL END, 21 TOOTH, #35 CHAIN
35	712853	1	ROD, CYLINDER MOUNTING
36	712980	1	TAPE, SENSOR REFLECTING, 4-3/4" X 1-1/2"
37	955400	1	NUT, HEX JAM, 1/2-20 UNF, SST
38	971808	2	SCREW, SET SOCKET, #10-24 X 1/2", SST
39	A04683	1	REDUCER, GEAR, 25:1, LEFT HAND
40	A04755	1	AW, DUMP TRAY
41	A04764	6	BAR, MOTOR SPACER
42	C00028	1	MOTOR, 1/3 HP, 230/460 VAC, NO BASE
43	C00174	1	NUT, LOCKING, 1/2" NPT, NYLON
44	C00404	1	F.R.L. COMBO w/SHUTOFF VALVE AND GAUGE
45	C01237	6'	CABLE, 22AWG, 15 CONDUCTOR, SHIELDED
46	C03335	1	PLATE, F.R.L. MOUNTING
47	C04828	2	SPROCKET, 3/4" BORE, 35-B-21
48	C06753-002	1	CABLE, SENSOR, M12, 5 WIRE, STR, SHIELDED
49	C07626	4	CABLE, SENSOR, M8, 3 WIRE, F, 90

210382 (9840) ISSUE "K" RH

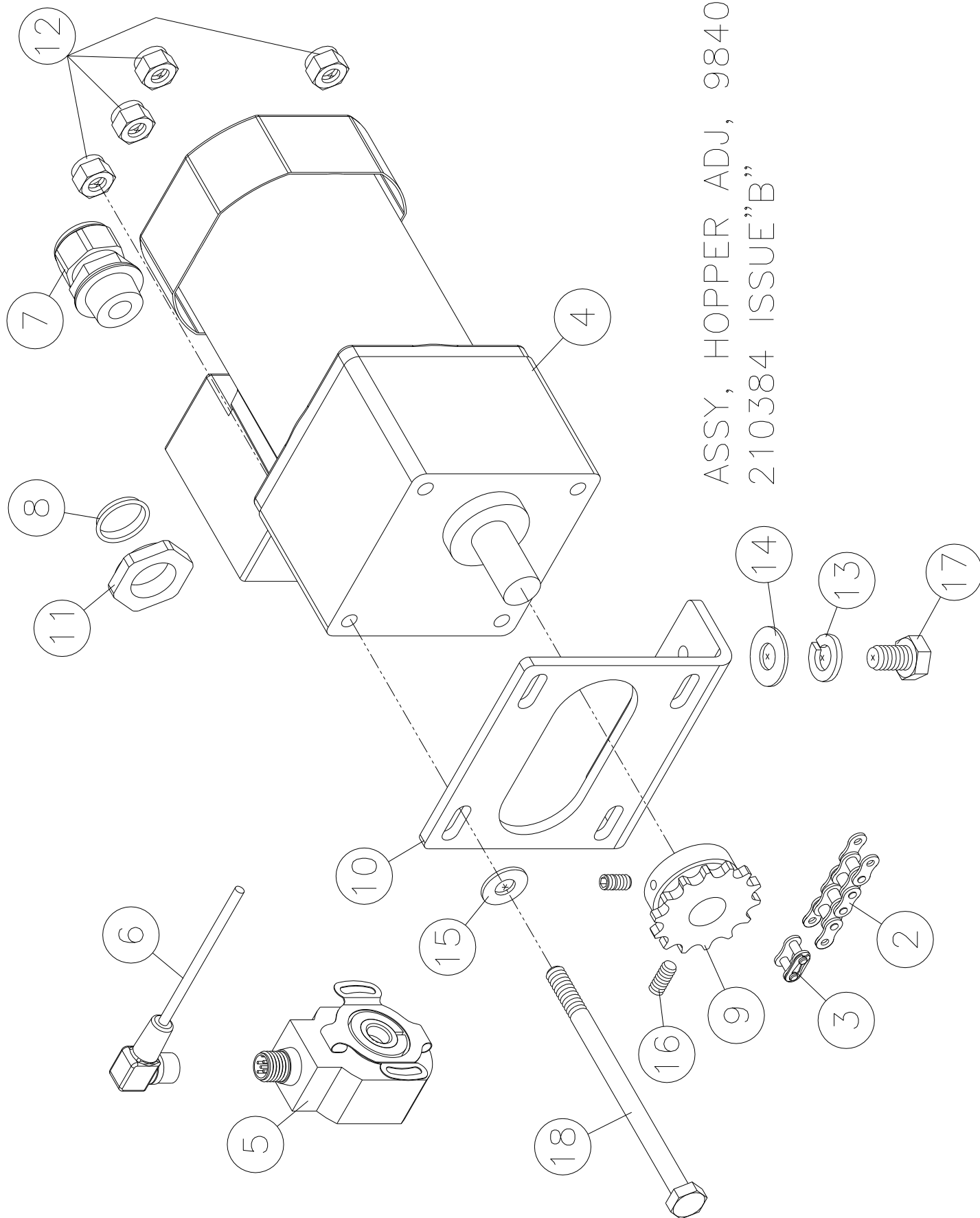
210381 (9940) ISSUE "K" LH



7.3 Hopper Adjustment Assembly (210384 "B")

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

210384 ISSUE "B"

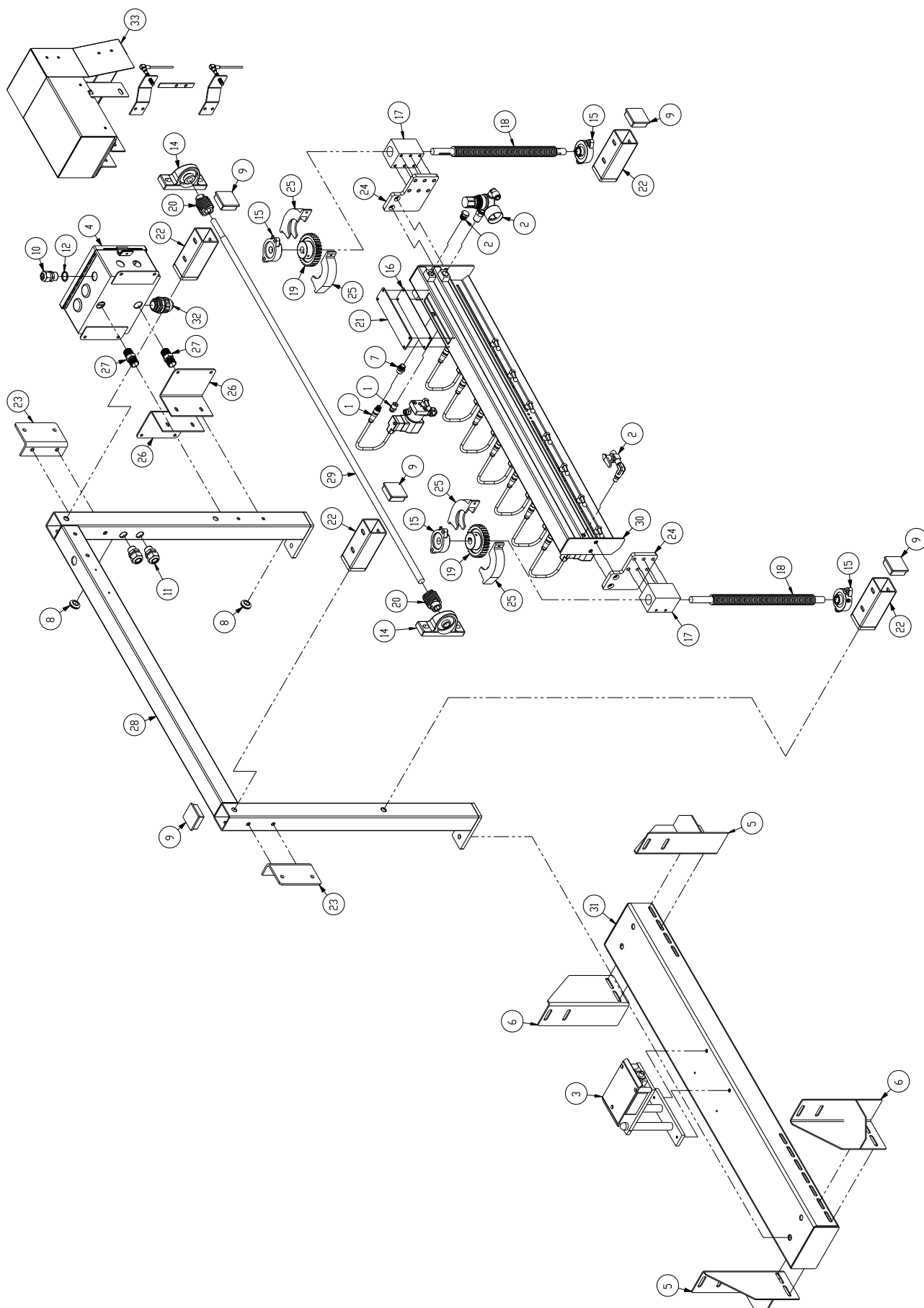


ASSY, HOPPER ADJ, 9840S
210384 ISSUE "B"

7.4 Water Spray Frame Assembly (210380-XXX "02")

REF	PART #	QTY	DESCRIPTION
1	210389	REF	ASSEMBLY, WATER SPRAY NOZZLE
2	210391-001	REF	ASSEMBLY, WATER CIRCUIT, SINGLE SPRAY
3	210397	1	ASSEMBLY, PAN SENSOR
4	210398-001	REF	ASSEMBLY, WATER SPRAY ENCLOSURE
5	304830	2	A/W, MOUNTING ANGLE
6	304831	2	A/W, MOUNTING ANGLE
7	610169	8	CABLE, BULKHEAD, M12, 5 WIRE, FEMALE
8	610922	2	GROMMET, 1/2" BORE X 3/16" X 1/8"
9	610923	5	PLUG, 2" SQUARE PLASTIC
10	610950	1	CONNECTOR, SEAL INSERT, .200", 2 HOLES
11	610954	2	CONNECTOR, CORD, .39 -.56, DOME, NYLON
12	610955	3	CONNECTOR, O-RING, 1/2" NPT, BUNA-N
13	610969	1	CONNECTOR, CORD, 3/16" – 5/16" STRAIGHT, NYLON
14	611237	2	BEARING, 5/8" PILLOW BLOCK, SST
15	611238	4	BEARING, 5/8", 2 BOLT FLANGE, SST
16	611534	1	GASKET, MANIFOLD TERMINAL COVER
17	711933	2	BLOCK, INNER CHASSIS, HEIGHT ADJUSTMENT
18	711934	2	BLOCK, INNER CHASSIS, HEIGHT ADJUSTMENT
19	711938	2	WORM GEAR
20	711939	2	WORM STEEL
21	712058	1	PLATE, MANIFOLD TERMINAL COVER
22	712059	4	A/W, VERTICAL BEARING MOUNT
23	712077	2	BRACKET, HORIZONTAL BEARING MOUNTING
24	712078	2	PLATE, MAIN MANIFOLD MOUNT
25	712081	4	GUARD, WORM GEAR
26	712089	2	BRACKET, ENCLOSURE MOUNTING
27	712883	2	FITTING, NIPPLE, 1/2" NPT, REWORKED
28	712083	1	A/W, MAIN FRAME
29	712082	1	SHAFT, HEIGHT ADJUSTMENT
30	712052	1	A/W, NOZZLE / ELECTRICAL MOUNT
31	712050	1	A/W, WATER SPRAY BASE
32	C00179	1	CONNECTOR, CONDUIT, 3/4" STRAIGHT, NYLON
33	210395-001	REF	ASSEMBLY, AUTO ADJUST, SINGLE SPRAY

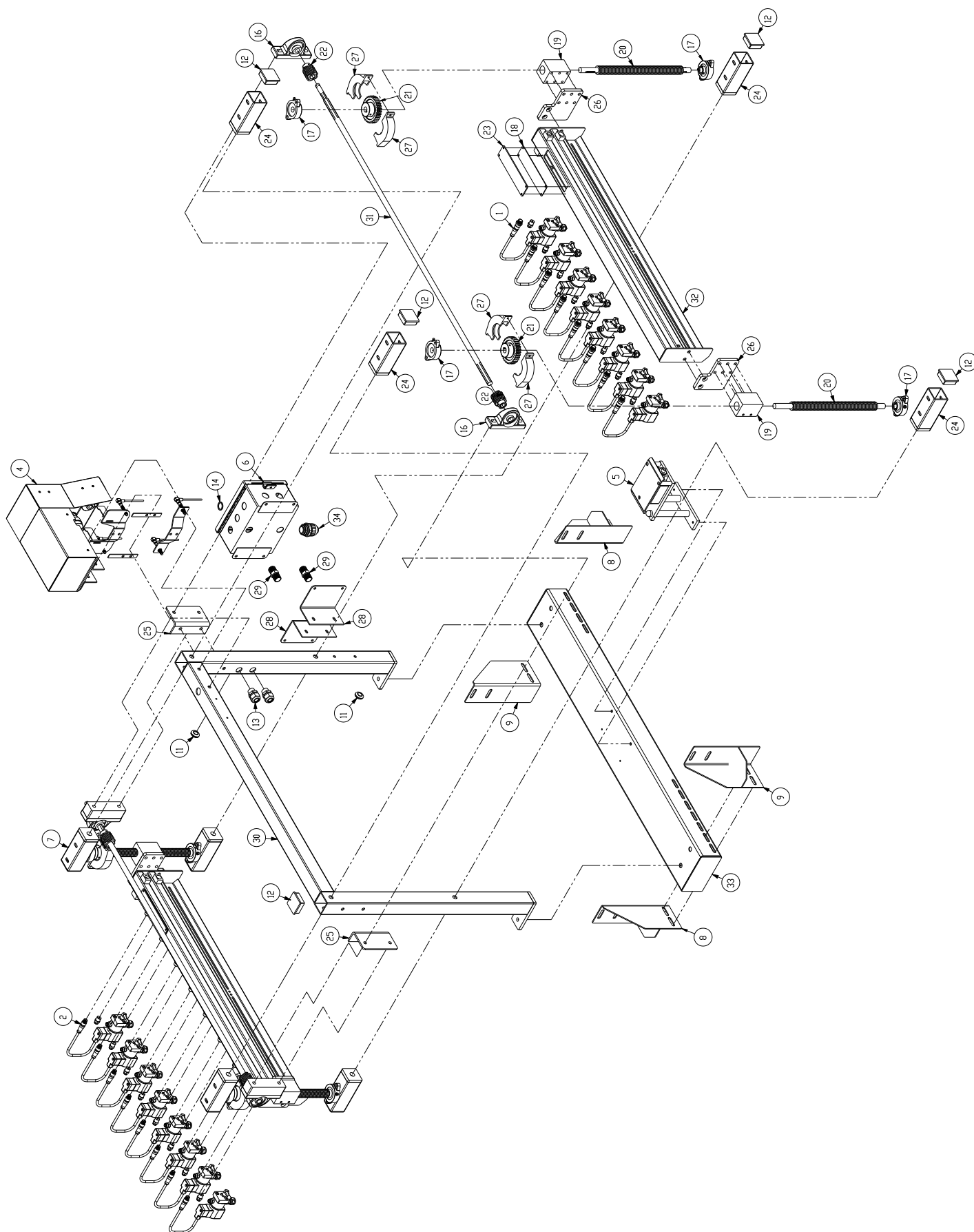
210380-XXX ISSUE "02"



7.5 Water Spray/Split Frame Assembly (210380-004 "B")

REF	9840	QTY	DESCRIPTION
1	76565-050	REF	ASSEMBLY, WATER SPRAY NOZZLE
2	210390	REF	ASSEMBLY, WATER SPLITTER NOZZLE
3	210391-002	1	ASSY, WATER CIRCUIT, DUAL SPRAY/SPLIT
4	210395-002	1	ASSEMBLY, AUTO ADJUST, DUAL SPRAY/SPLIT
5	210397	1	ASSEMBLY, PAN SENSOR
6	210398-002	1	ASSEMBLY, ENCLOSURE
7	210641-001	1	ASSEMBLY, STACKED SPLITTER
8	304830	2	A/W, MOUNTING BRACKET
9	304831	2	A/W, MOUNTING BRACKET
10	610169	8	CABLE, BULKHEAD, M12, 5 WIRE, FEMALE
11	610922	2	GROMMET, 1/2" BORE X 3/16" X 1/8"
12	610923	5	PLUG, 2" SQUARE TUBE, PLASTIC
13	610954	2	CONNECTOR, CORD, .39-.56, DOME, NYLON
14	610955	1	CONNECTOR, O-RING, 1/2" NPT, BUNA-N
15	610969	1	CONN, CORD, 3/16" – 5/16", STR, NYLON
16	611237	2	BEARING, 5/8" PILLOWBLOCK, SST
17	611238	4	BEARING, 5/8", 2 BOLT FLANGE, SST
18	611534	1	GASKET, MANIFOLD TERMINAL COVER
19	711933	2	BLOCK, INNER CHASSIS HEIGHT ADJ
20	711934	2	BLOCK, INNER CHASSIS HEIGHT ADJ
21	711938	2	WORM GEAR, REWORKED
22	711939	2	WORM STEEL, REWORKED
23	712058	1	PLATE, MANIFOLD TERMINAL COVER
24	712059	4	A/W, VERTICAL BEARING BRACKET
25	712077	2	BRACKET, HORIZONTAL BEARING MOUNT
26	712078	2	PLATE, MAIN MANIFOLD MOUNT
27	712081	4	GUARD, WORM GEAR
28	712089	2	BRACKET, ENCLOSURE MOUNTING
29	712883	2	FITTING, NIPPLE, REWORKED
30	712083	1	A/W, MAIN FRAME
31	712080	1	SHAFT, HEIGHT ADJUSTMENT
32	712052	1	A/W, NOZZLE/ELEC MOUNT
33	712050	1	A/W, BASE
34	C00179	1	CONNECTOR, CONDUIT

210380-004 (9840) ISSUE "B" RH
210380-003 (9940) ISSUE "B" LH



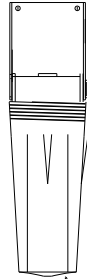
7.6 Pump Booster System (301090 "I")

REF	PART #	QTY	DESCRIPTION
1	610886-02	4'	AIR HOSE, 3/8" DIA BLUE
2	110412	1	FITTING, TEE, 1/4 FPT, BRASS
3	110414	3	FITTING, 1/4 NPTM, BRASS, NIPPLE
4	610507	4	FITTING, 1/4 NPT, 3/8 TUBE, QC
5	110432	2	FITTING, 1/2 X 1/4 REDUCER, BRASS
6	111419	1	GAUGE, 1/8" BRASS, 0-60
7	111619	3	FITTING, 1/4" BULKHEAD
8	112201	1	REGULATOR, 1/4"
9	611161	1	GAUGE, 1/4 NPT, 0-150PSI, BACK MOUNT, 1.5"
10	301087	1	LABEL, AIR INPUT
11	301088	1	LABEL, WATER INPUT
12	301089	1	LABEL, WATER OUTPUT
13	76565-040	1	FRAME A/W ASSEMBLY
14	301097	1	ELL PLATE A/W
15	A06398	1	REGULATOR, PLASTIC, 1/4 NPT
16	989716	4	SCREW, FIN, HEX 5/16-18 X 1 SST
17	955976	4	WASHER FLAT 5/16" SST
18	610505	4	FITTING, ELL, 1/4 NPT X 3/8 T, QC
19	989912	2	SCREW, FIN, HEX, 1/4-20 X 3/4 SST
20	611121	1	PUMP, AIR POWERED, DBL DIAPHRAGM
21	C06171	1	WATER TANK, PRECHARGED
22	955619	4	NUT, HEX, NYLOC, 5/16-18 UNC SST
23	955661	2	NUT, HEX, NYLOC, 1/4-20 UNC SST
24	610886-05	12"	AIR HOSE, 3/8" DIA, YELLOW
REF	712792	4	COLLAR, HALF, REWORK, 2" SPLIT, SST

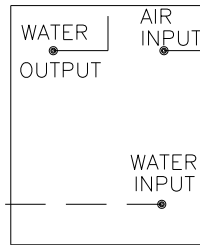
301090 ISSUE "I"

PUMP BOOSTER SYSTEM COMP.
301090 ISSUE "1"

EXISTING WATER FILTER



LINE TO BE 12' FROM BOOSTER



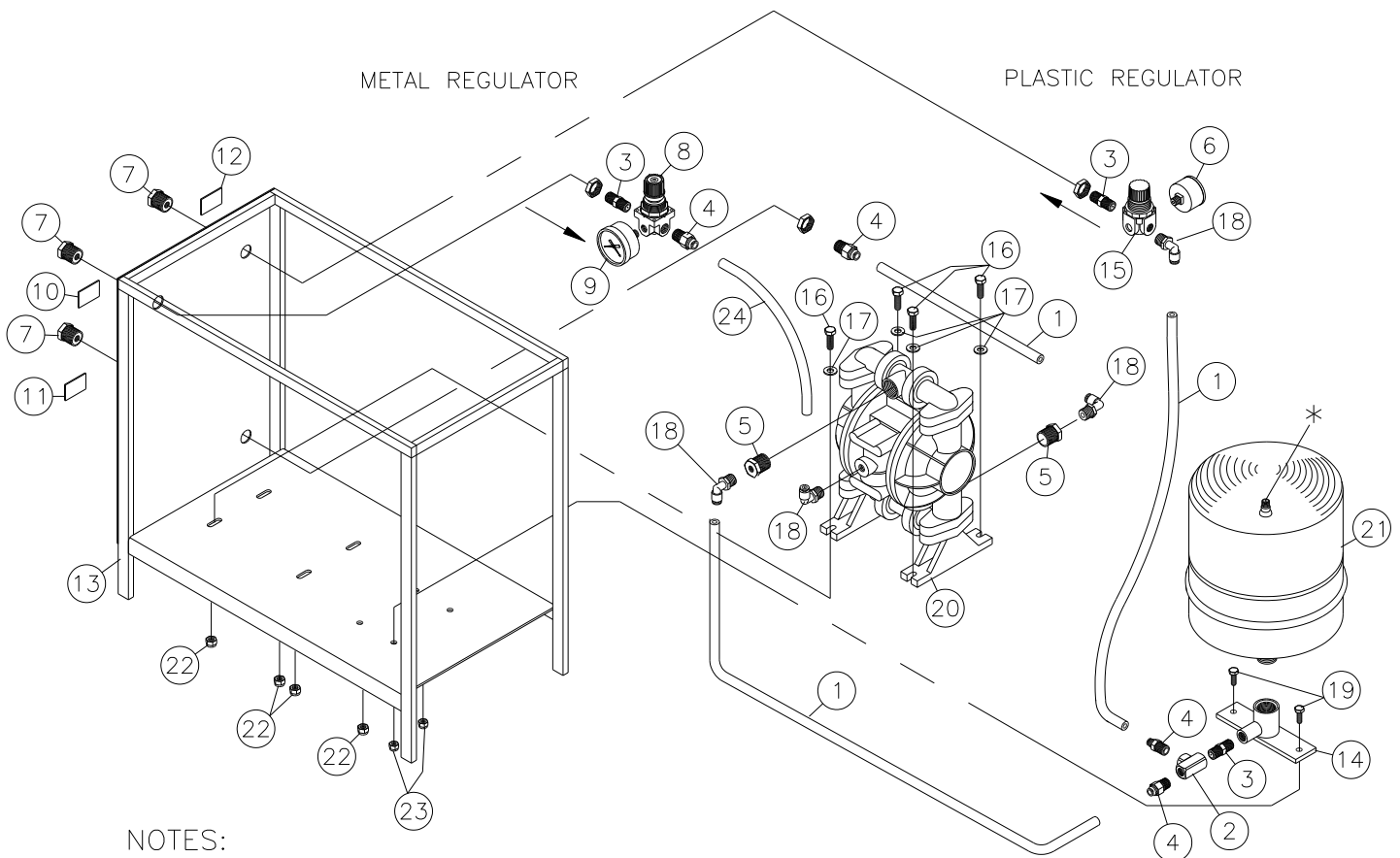
BOOSTER PUMP
ASSEMBLY

WATER SPRAY MANIFOLD

SPLITTER MANIFOLD

EXISTING FILTER-REG-LUBE

NOTE:
INSTALLATION SHOWN WATER SPRAY WITH SPLITTER.
FOR WATER SPRAY ONLY MOVE WATER SPRAY
FROM TEE TO BOOSTER OUTPUT



NOTES:

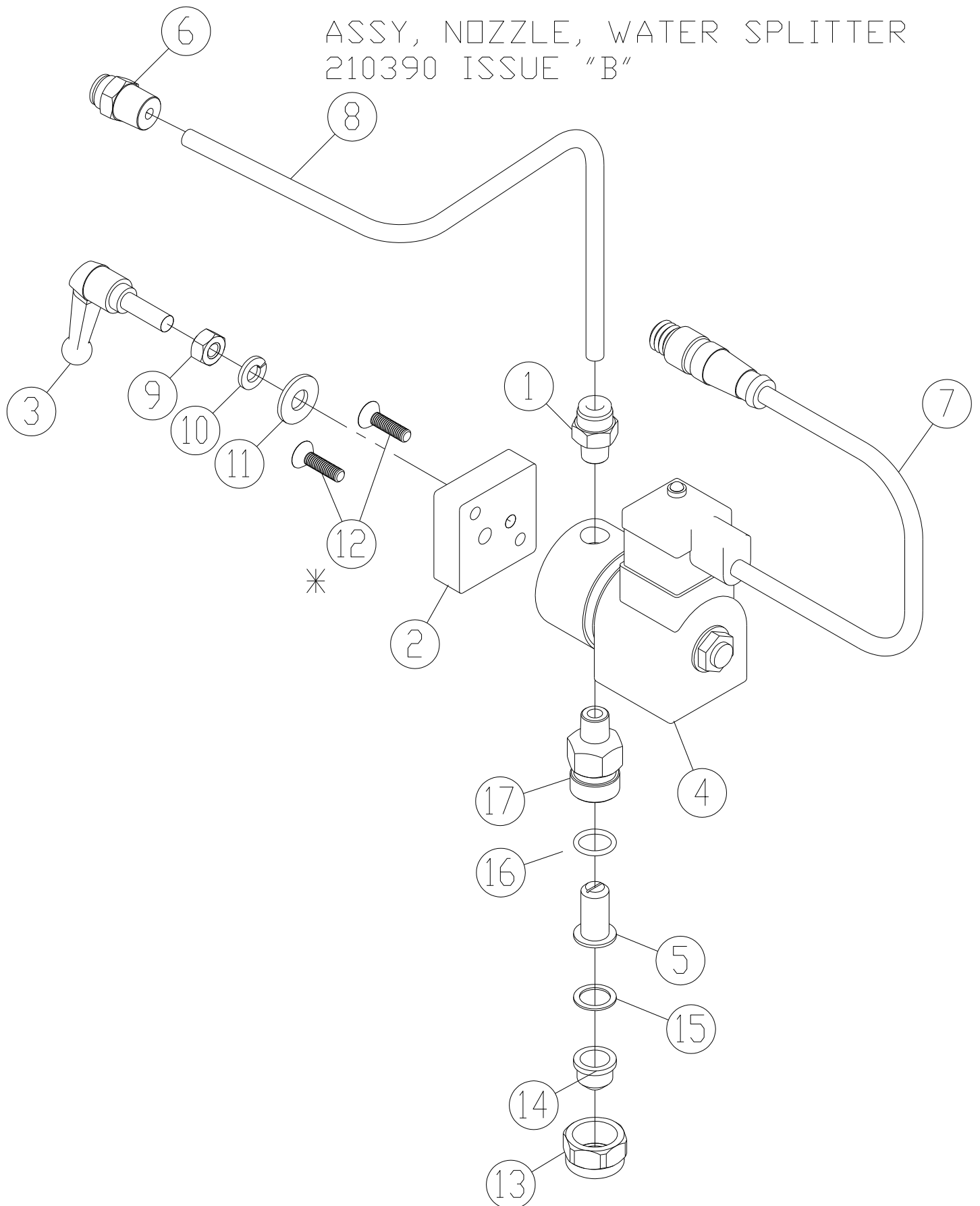
1. SET AIR INPUT REGULATOR (ITEM #8) TO 50 P.S.I.
- * 2. CHARGE WATER TANK (ITEM #21) TO 48 lbs
(NOTE: ALWAYS CHARGE TANK TO 2# LESS
THAN THE AIR INPUT SETTING.)

7.7 Water Split Nozzle Assembly (210390 "B")

REF	PART #	QTY	DESCRIPTION
1	119534	1	FITTING,CONN,1/8MPT X 1/4T,ENP,Q.R.
2	210379	1	ASSY, NOZZLE MOUNT (304650)
3	304208	1	ADJUSTABLE HANDLE 1/4-20 THREAD
4	304650	1	VALVE 1/8NPT N/C 24V DIN CONN
5	304661	1	VALVE CHECK 10 PSI SST
6	401152	1	FITTING,CONN,1/4MPT X 1/4T,ENP,Q.R.
7	610187-001	1	CABLE,MICRO-CHANGE,M12,5WIRE,SUNSCR
8	610885-02	1	TUBING 1/4" POLY BLUE
9	955409	1	NUT HEX JAM 1/4-20 UNC SST
10	955940	1	WASHER LOCK 1/4" SST
11	955977	1	WASHER FLAT 1/4" SST
12	982212	2	SCREW FLT HD SOC #10-32 X 3/4 SST
13	C00506	1	RETAINER CAP CP1325-NP
14	C00543	1	TIP, SPLITTER .019
15	C00592	1	GASKET TEFLON .593 OD X .433 ID
16	C01164	1	O-RING, .489 ID X .070 THICK
17	C05145	1	NOZZLE BODY STAINLESS 509

210390 ISSUE "B"

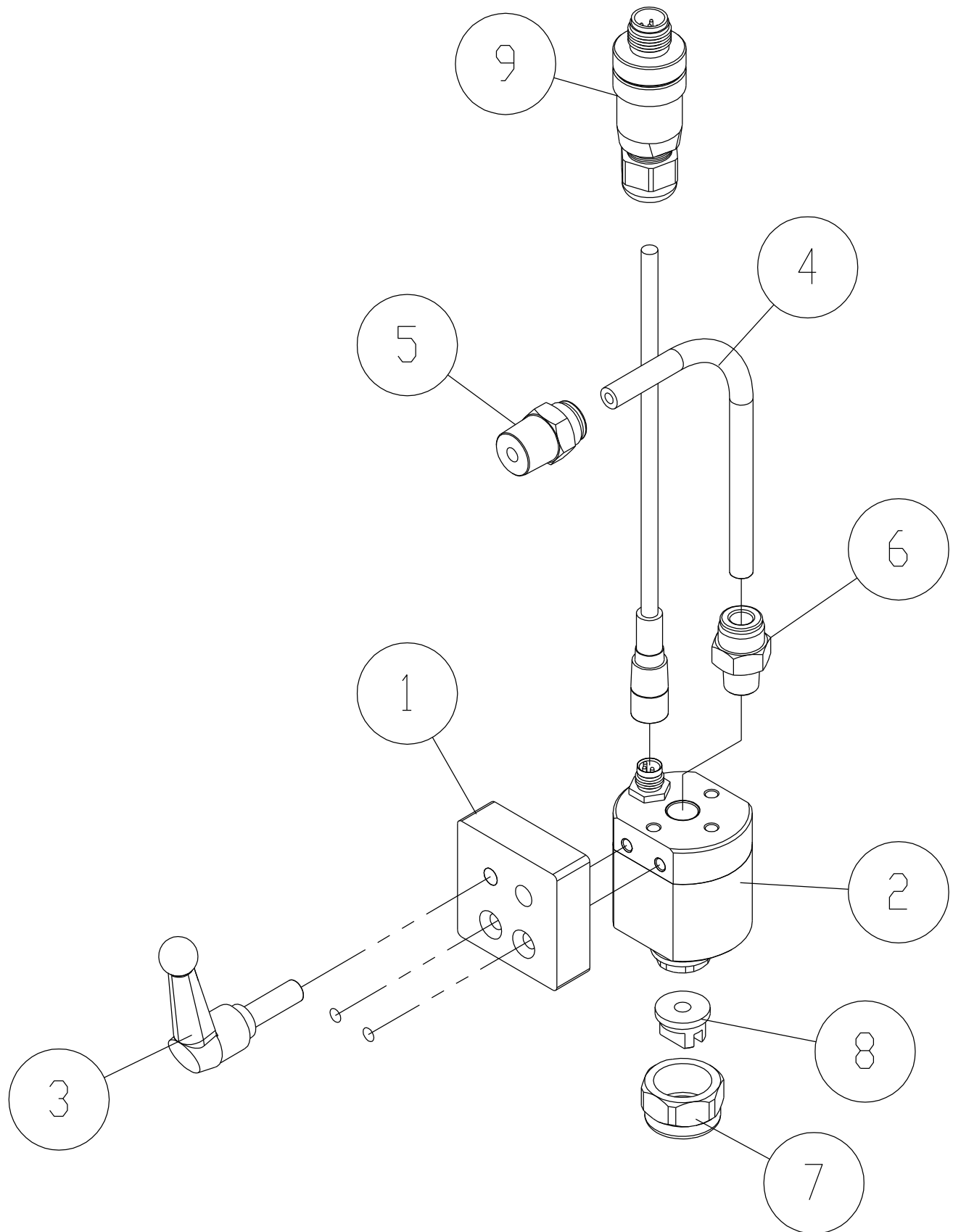
ASSY, NOZZLE, WATER SPLITTER
210390 ISSUE "B"



7.8 Spray Gun Pulsating Assembly (210389-PWM “A”)

REF	PART #	QTY	DESCRIPTION
1	210379-PWM	1	ASSY, NOZZLE MOUNTING BLOCK
2	611574	1	VALVE, PULSAJET GUN
3	304208	1	ADJUSTABLE HANDLE 1/4-20 THREAD
4	610885-02	1	TUBING, 1/4" POLYURETHANE, BLUE
5	401152	1	FITTING,CONN,1/4MPT X 1/4T,ENP,Q.R.
6	119534	1	FITTING,CONN,1/8MPT X 1/4T,ENP,Q.R.
7	C00506	1	RETAINER CAP CP1325-NP
8	C00565	1	TIP #650017 SS TEE JET
9	C07663	1	FIELD ATTACH, M12,5 WIRE,MALE

210389-PWM ISSUE “A”

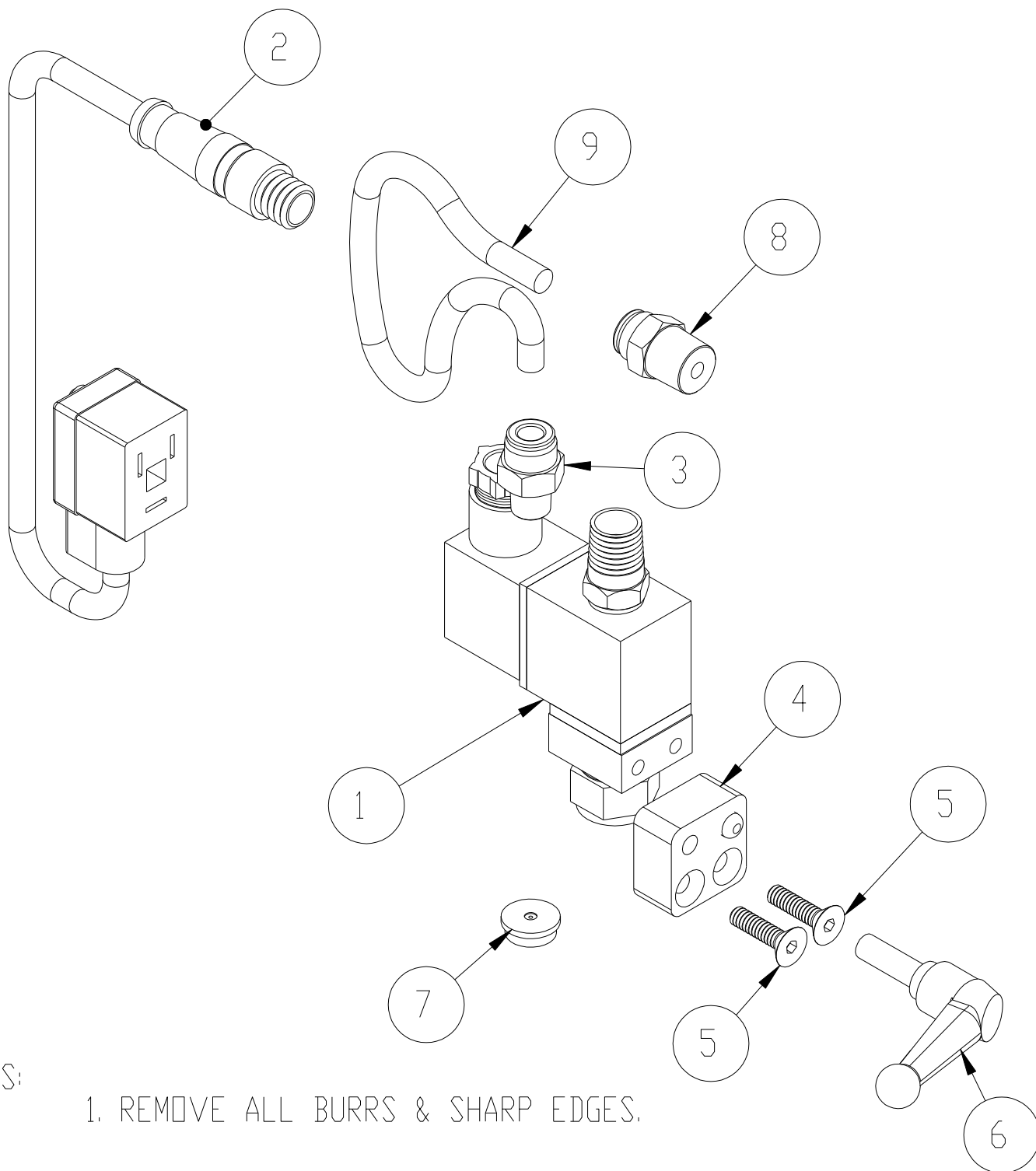


ASSY, PULSATING SPRAY GUN
210389-PWM ISSUE "A"

7.9 Water Splitter Nozzle Assembly–Bread (210390-BRD “A”)

REF	PART #	QTY	DESCRIPTION
1	304099	1	VALVE, APPLICATOR HEAD
2	610187-002	1	CABLE, M12, 5 WIRE, SPRAYMATION
3	119534	1	FITTING, CONNECTOR, 1/8” MPT X 1/4” TUBE
4	304379	1	ASSEMBLY, NOZZLE ADAPTER
5	982312	2	SCREW, FLAT HEAD SOCKET, #10-24 X 3/4”, SST
6	304208	1	HANDLE, ADJUSTMENT, 1/4-20 THREAD
7	611460	1	TIP, 0.015” ORIFICE, SPRAYMATION
8	401152	1	FITTING, CONNECTOR, 1/4” MPT X 1/4” TUBE
9	610885-02	1’	TUBING, 1/4” POLYURETHANE, BLUE

210390-BRD ISSUE “A”



NOTES:

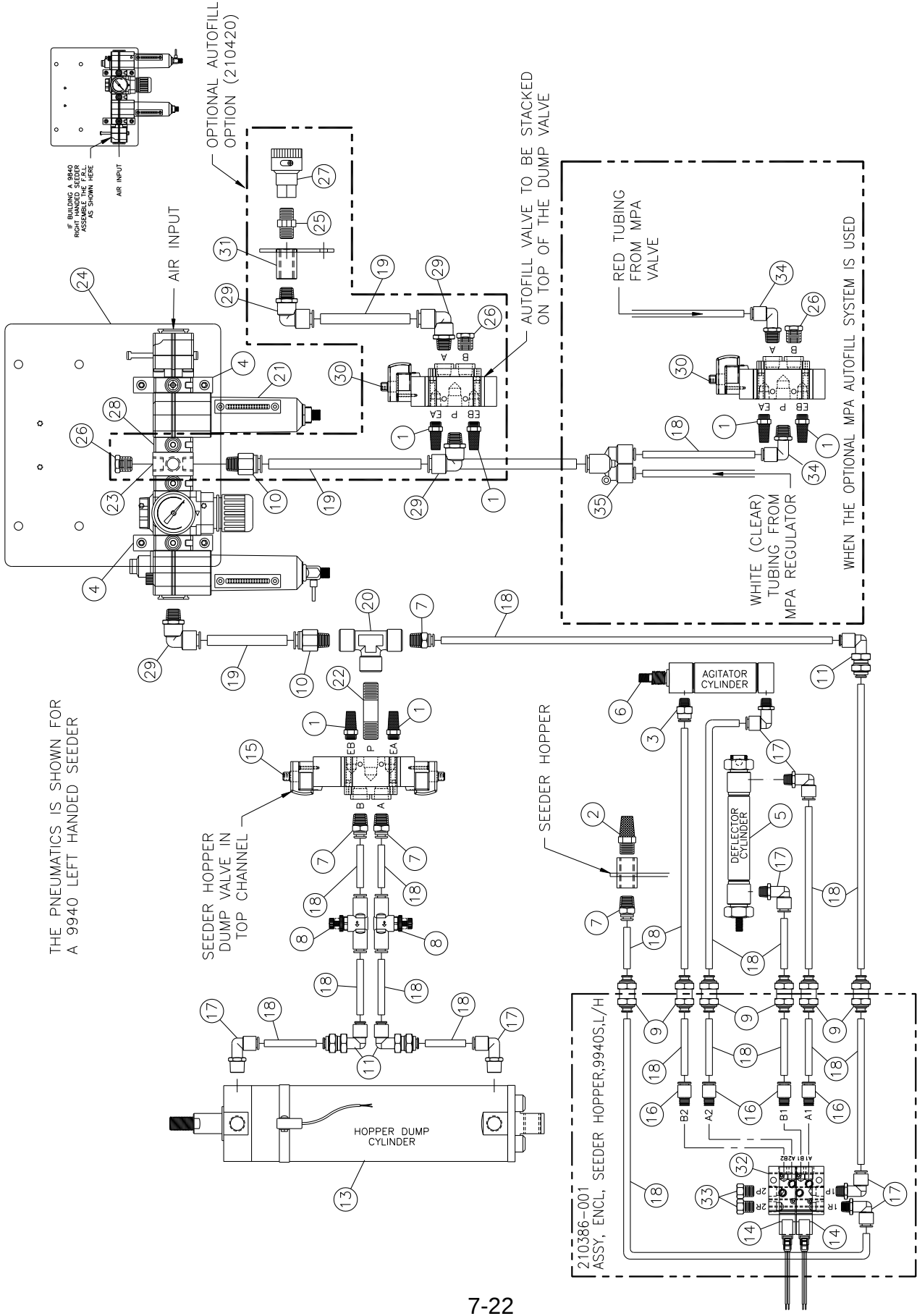
1. REMOVE ALL BURRS & SHARP EDGES.

ASSY, NOZZLE, WATER SPLITTER, BREAD
210390-BRD ISSUE "A"

7.10 Pneumatic Assembly (210385 "C")

REF	PART #	QTY	DESCRIPTION
1	111497	4	FITTING, MUFFLER, 1/8" NPTM
2	111498	1	FITTING, MUFFLER, 1/4" NPTM, BRASS
3	119534	1	FITTING, CONNECTOR, 1/8" MPT X 1/4" TEE, ENP, Q.R.
4	C00399	2	KIT, UNIVERSAL MOUNTING
5	301406	1	CYLINDER, AIR, 3/4" BORE, 2" STROKE
6	611366	1	CYLINDER, AIR, 1-1/16" BORE, 1" STROKE, MAGNETIC
7	401152	4	FITTING, CONNECTOR, 1/4" MPT X 1/4" TEE, ENP, Q.R.
8	401302	2	VALVE, REGULATOR, FLOW CONTROL, ENP, Q.R.
9	610459	6	FITTING, BULKHEAD UNION, 1/4" TEE, ENP
10	610507	2	FITTING, CONNECTOR, 1/4" NPT X 3/8" TEE, ENP, Q.R.
11	610956	3	FITTING, BULKHEAD ELL, 1/4" TEE, ENP, Q.R.
12	611363	1	PLATE, BLANK VALVE MANIFOLD
13	210446	1	ASSEMBLY, HOPPER DUMP CYLINDER
14	611365	2	VALVE, SOLENOID, 24 VDC, 2-WAY w/ FLOW CONTROLS
15	611119	1	VALVE, SOLENOID, 24 VDC, 3-WAY, CLOSED CENTER
16	610966	4	FITTING, CONNECTOR, 1/8" NPT X 1/4" TUBE
17	174049	7	FITTING, ELBOW, 1/8" MPT X 1/4" TUBE
18	610885-05	25'	TUBING, 1/4", YELLOW POLYURETHANE
19	610886-05	20'	TUBING, 3/8", YELLOW POLYURETHANE
20	A06858	1	FITTING, TEE, 1/4" NPTF, SST
21	C00404	1	FILTER-REGULATOR-LUBRICATOR COMBO, 1/4" NPTF
22	C00905	1	FITTING, NIPPLE, 1/4" NPTM X 2", SST
23	C00398	1	KIT, PORTING BLOCK INSERT
24	C03335	1	PLATE, FRL MOUNTING
25	110414	1	FITTING, HEX NIPPLE, 1/4" NPTM, BRASS
26	110423	3	FITTING, PLUG, 1/4" NPTM, BRASS
27	118872	1	FITTING, AIR, 1/4" NPTF, BRASS
28	610179	1	CLAMP, FRL QUICK CONNECT
29	610505	4	FITTING, ELBOW, 1/4" NPT X 3/8" TUBE, QUICK RELEASE
30	611117	1	VALVE, SOLENOID, 24 VDC, 2-WAY, 1/4" PORT
31	712305	1	AW, AUTOFILL MOUNT
32	611364	1	VALVE, MANIFOLD, 2 STATION, 1/8" PORT
33	C00916	2	FITTING, PLUG, 1/8" NPTM, SST
34	610976	2	FITTING, ELBOW, 1/4" NPT X 1/4" TUBE, QUICK RELEASE
35	610673	1	FITTING, "Y", 3/8" X 1/4" (2X), QUICK RELEASE

210385 ISSUE "C"



THE PNEUMATICS IS SHOWN FOR
A 9940 LEFT HANDED SEEDER

SEEDER HOPPER
DUMP VALVE IN
TOP CHANNEL

SEEDER HOPPER

HOPPER DUMP
CYLINDER

WHITE (CLEAR)
TUBING FROM
MPA REGULATOR

RED TUBING
FROM MPA
VALVE

WHEN THE OPTIONAL MPA AUTOFILL SYSTEM IS USED

AUTOFILL VALVE TO BE STACKED
ON TOP OF THE DUMP VALVE

OPTIONAL AUTOFILL
OPTION (210420)

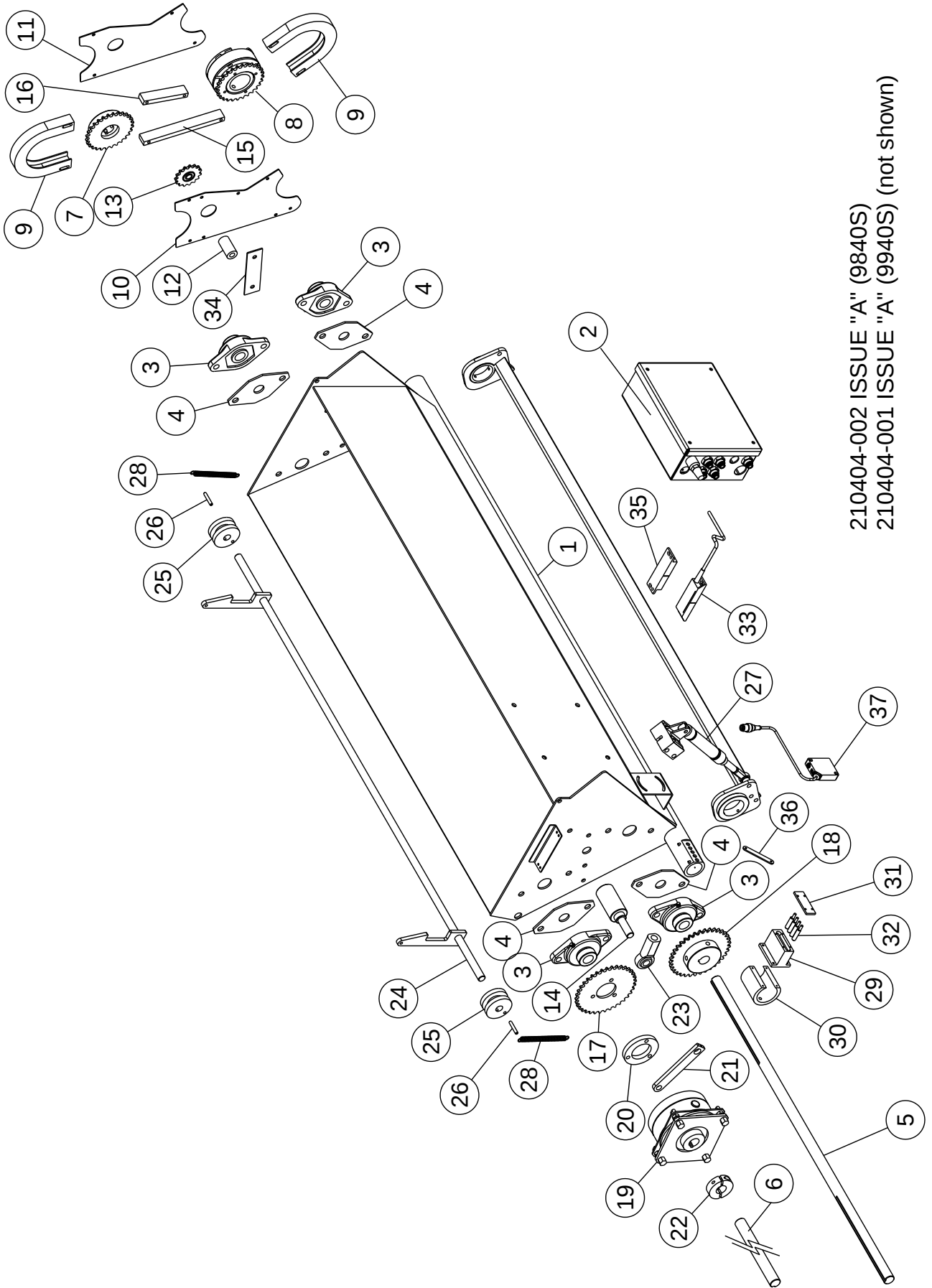
IF BLANKING A MPA
RIGHT HANDED SEEDER
AS SHOWN HERE

*NOTE: ITEM #12 IS ONLY USED
WHEN THE OPTIONAL HOPPER
AGITATOR IS TO BE INSTALLED

7.11 Hopper Assembly (210404-XXX "A")

REF	PART #	RH	DESCRIPTION
1	REF	1	A/W, HOPPER, 40", 9840
2	210386-02	1	ASSEMBLY, SEEDER HOPPER ENCLOSURE, 9840S
3	100378	4	BEARING, FLANGE, 3/4" BORE
4	A05015	4	PLATE, BEARING SEAL
5	304089	1	SHAFT, HOPPER, INNER
6	304349	1	SHAFT, CLUTCH BRAKE
7	304265	1	SPROCKET, REWORKED, 3/4" BORE, 35-B-28
8	304060	1	ASSEMBLY, MANDREL DRIVE
9	304361	2	PLATE, END GUARD, 28 TOOTH, #35
10	304351	1	PLATE, GUARD, INNER MANDREL DRIVE
11	304352	1	PLATE, GUARD, OUTER MANDREL DRIVE
12	304355	1	ROD, ECCENTRIC IDLER
13	103478	1	SPROCKET, IDLER, 3/8" BORE, 35-A-15
14	712042	1	ROD, CYLINDER MOUNT, HOPPER DUMP
15	304362	1	PLATE, FILLER GUARD
16	304363	1	PLATE, FILLER GUARD
17	304264	1	SPROCKET, REWORKED, 1.43" BORE, 35-A-36
18	103689	1	SPROCKET, 3/4" BORE, 35-B-36
19	304239	1	CLUTCH/BRAKE, SHAFT MOUNT, 24 VDC
20	304322	1	SPACER, CLUTCH SPROCKET
21	304323	1	PLATE, CLUTCH/BRAKE RESTRAINT
22	A05020	1	COLLAR, 3/4" SPLIT, SST
23	610426	1	BEARING, ROD END, 1/2" DIAMETER
24	304195	1	A/W, HOPPER COVER, LATCH, 40"
25	A04792	2	COLLAR, LATCH RETURN, HOPPER
26	958418	2	PIN, ROLL, 3/16" DIAMETER X 1-1/8", SST
27	304010	1	ASSEMBLY, DEFLECTOR
28	152186	2	SPRING, EXTENSION
29	712022	1	BLOCK, MANDREL SENSOR MOUNT
30	712023	1	CLAMP, MANDREL SENSOR BLOCK
31	712024	1	PLATE, COVER, MANDREL SENSOR
32	610151	4	SENSOR, PROX, 6.5MM, 10-30 VDC, PNP, N.O.
33	C07219	1	MAGNET, ACTUATOR
34	711573	1	PLATE, AGITATOR COVER
35	C07220	1	MAGNET, ACTUATOR
36	712107	1	PLATE, LASER BACKUP MOUNT, TAPPED
37	610797	1	SENSOR, PHOTO, RETRO-REF, 10-30 VDC, N.O./N.C.
REF	304497	2	ASSEMBLY, HOPPER DUMP VIBRATOR

210404-XXX ISSUE "A"
(210404-002-9840S RH)
(210404-001-9940S LH)



210404-002 ISSUE "A" (9840S)
 210404-001 ISSUE "A" (9940S) (not shown)

7.12 Hopper Dump Vibrator Assembly (304497)

REF	PART #	QTY	DESCRIPTION
1	111497	2	MUFFLER 1/8 NPT
2	119534	2	FITTING, CONN, 1/8 MPT X 1/4 T, ENP, Q.R.
3	174049	1	FITTING, ELL, 1/8 MPT X 1/4 T, Q.R. SHORT
4	301455	2	VIBRATOR-AIR US13
5	401302	1	VALVE, REG, FLOW CONTROL, ENP, Q.R.
6	610531	1	FITTING, 1/4 "Y", Q.R.
7	610885-05	4	TUBING, 1/4" POLYURETHANE, YELLOW
8	611267	1	SWITCH, BAND, REED, 24VDC SMC
9	611268	1	BAND, MOUNT, REED SWITCH, 24VDC SMC
10	955619	4	NUT, HEX, NYLOC, 5/16-18 UNC, SST
11	989716	4	SCREW, FIN, HEX, 5/16-18 X 1, SST
12	A06905	1	FITTING, NIPPLE, HEX, 1/8 NPTM, SST
13	C00924	1	FITTING, TEE, 1/8 NPTF, SST

No Drawing (Picture Only)

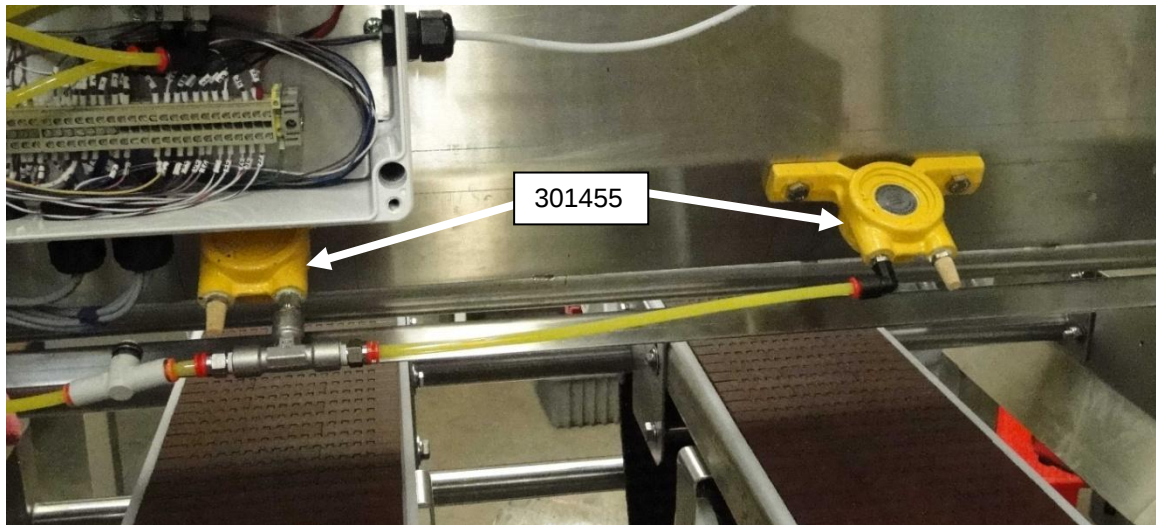


Fig. 7-1 Hopper Dump Vibrator Assembly



Fig. 7-2 Hopper Dump Vibrator

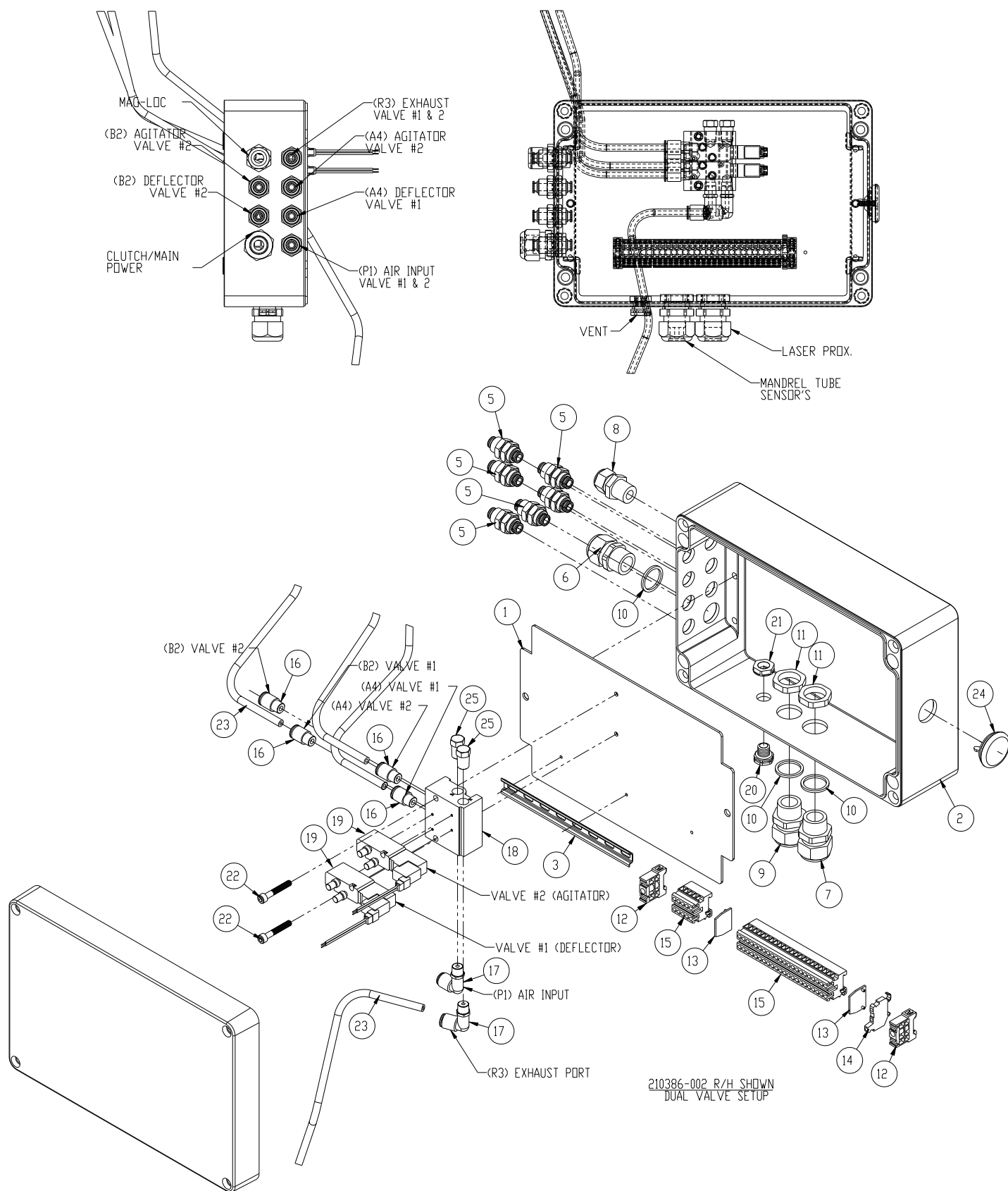
7.13 Hopper Enclosure Assembly (210386-XXX03)

REF	PART #	RH	DESCRIPTION
1	712035	1	PLATE, HOPPER ELECTRICAL PANEL
2	712385-002	-	ENCLOSURE, SEEDER HOPPER, RH
3	610630	1	TERMINAL, DIN RAIL, MINI
4	610459	6	FITTING, BULKHEAD UNION, 1/4" TUBE
5	610953	1	CNCTR, CORD, .20 - .35, DOME, NYLON
6	610954	1	CNCTR, CORD, .39 - .56, DOME, NYLON
7	610969	1	CNCTR, CORD, 3/16 - 5/16, STR, NYLON
8	610952	1	CNCTR, SEAL INSERT, .160, 4 HOLES
9	610955	2	CONNECTOR, O-RING, 1/2" NPT, BUNA-N
10	C00174	2	LOCKING NUT, 1/2" NPT, NYLON
11	610363	2	TERMINAL, END CLAMP, ANCHOR, MINI
12	610362	2	TERMINAL, END COVER, MINI, SINGLE LEVEL
13	610534	1	TERMINAL, GROUNDING, MINI
14	610361	2	TERMINAL, BLOCK, MINI, SINGLE LEVEL
15	610966	4	FITTING, CONNECTOR, 1/8" NPT X 1/4" TUBE
16	174049	2	FITTING, ELBOW, 1/8" MPT X 1/4" TUBE
17	611364	1	VALVE, MANIFOLD, 2STATION, 1/8" NPT
18	611365	2	VALVE, SOLENOID, 2WAY w/FLOW CONTROLS
19	611371	1	MEMBRANE VENT, .413"
20	611372	1	NUT, BACKING, MEMBRANE VENT
21	978820	-	SCREW, SOCKET HEAD CAP, #10-32X1-1/4", SST
22	610885-05	3	TUBING, 1/4" POLYURETHANE, YELLOW
23	303056	1	PLUG, HOLE, 7/8" DIAMETER, SST
24	C00916	-	FITTING, PLUG, 1/8" NPTM, SST
25	712385-001	1	ENCLOSURE, SEEDER HOPPER, LH

210386-XXX ISSUE "03"

210386-001 9940S RH

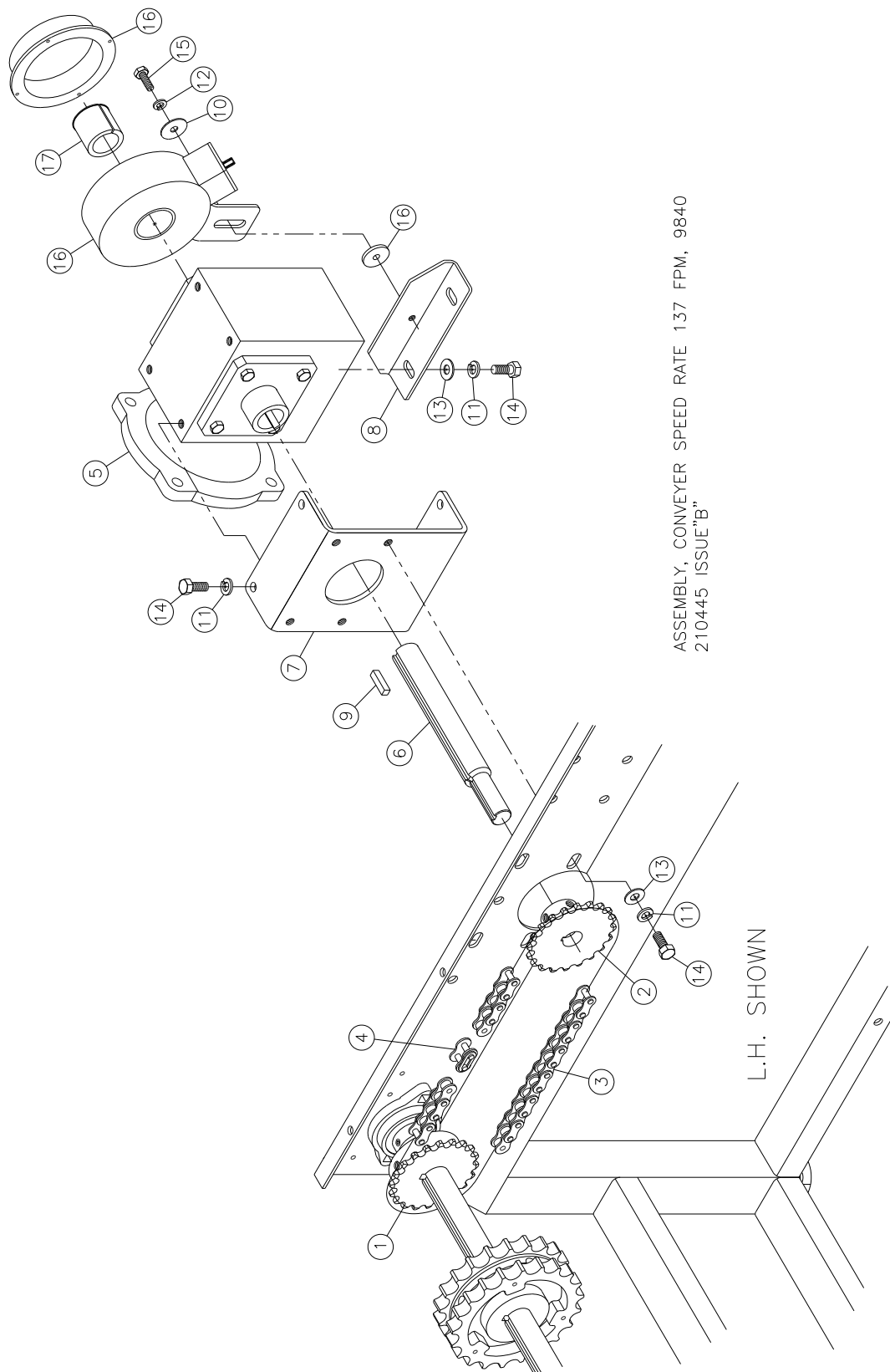
210386-002 9840S LH



7.14 Conveyor Speed Rate Assembly 137 FPM (210445 "B")

REF	PART #	QTY	DESCRIPTION
1	101876	1	SPROCKET 41-B-20 1"
2	111992	1	SPROCKET 41-B-18 ¾ BORE
3	152171	2	CHAIN #41 ROLL NICKEL PLATE
4	611038	1	CHAIN LINK #41 CONNECTING, NP
5	611123	1	GEAR REDUCER, 15:1 RATIO, ALUM
6	77037-016	1	SHAFT, GEAR REDUCER
7	712503	1	CHANNEL, GEAR REDUCER MT
8	713854	1	A/W, ENCODER MOUNT, WASHDOWN
9	955460	1	KEY SQ ¼ X 1.0 .002 UNDERSIZE
10	955877	1	WASHER FENDER 1" OD X .28 ID X .045, SST
11	955939	10	WASHER LOCK 5/16 SST
12	955940	1	WASHER LOCK ¼ SST
13	955976	6	WASHER FLAT 5/16 ST
14	989712	10	SCREW FIN HEX 5/16-18 X ¾ SST
15	989912	1	CSREW FIN HEX ¼-20 X ¾ SST
16	611249	1	ENCODER, ACCU, 10MM, SST, 300CPR
17	611103-001	REF	SLEEVE, 1" BORE, ENCODER (611102)

210445 ISSUE "B"



ASSEMBLY, CONVEYER SPEED RATE 137 FPM, 9840
210445 ISSUE "B"

7.15 Conveyor Components (SO-78826-04 "A")

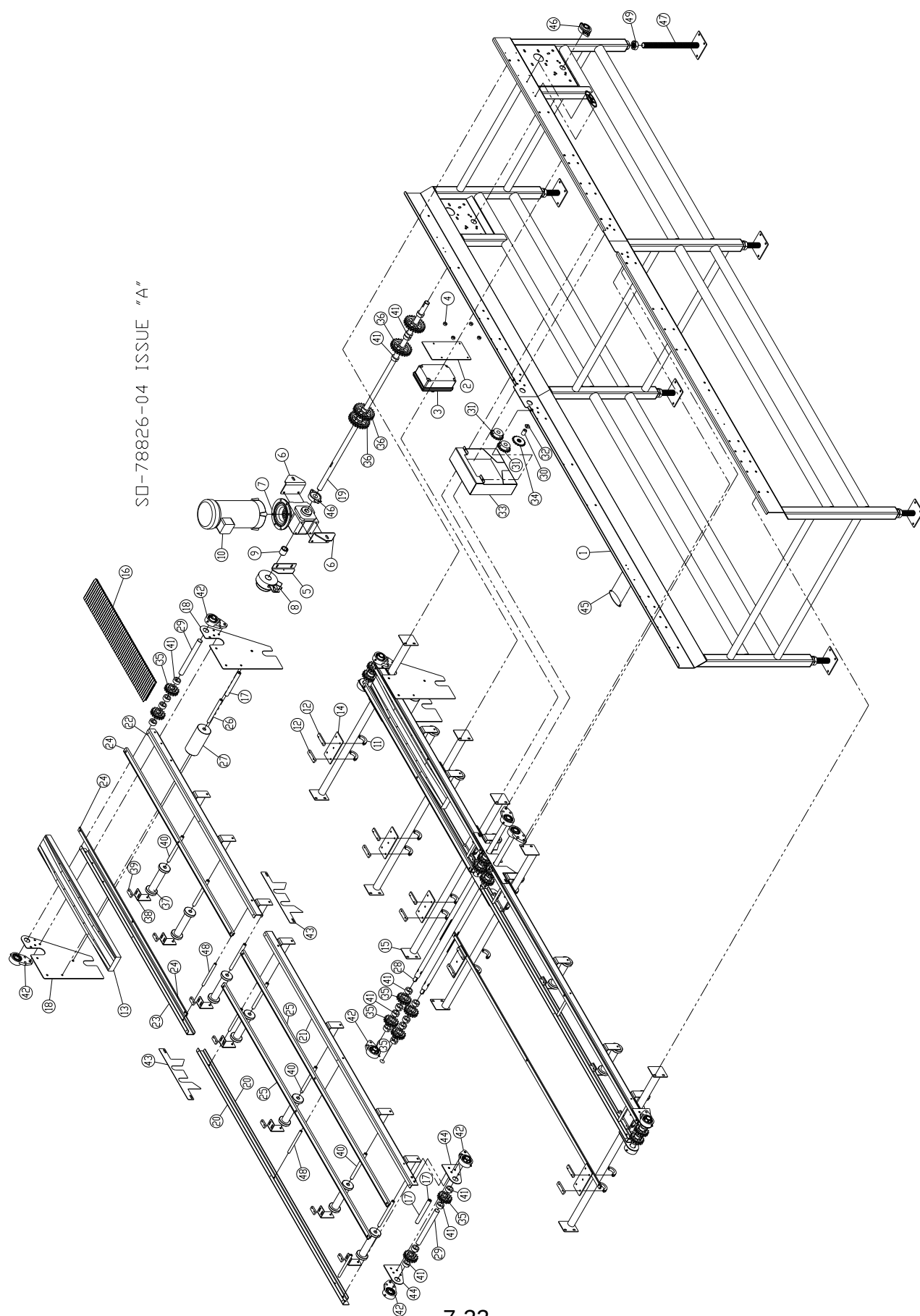
REF	PART #	QTY	DESCRIPTION
1	78826-001	1	A/W, CONVEYOR FRAME, 946RI-140S
2	78822-008	1	PLATE MOUNT MOTOR DISC. BOX
3	611536	1	ENCLOSURE,DISCONNECT SWITCH BOX
4	713357	4	SPACER, .343 X .75. X .30 LG
5	712504	1	BRACKET, ENCODER MNT, 9840/CONV.
6	713718	2	BRACKET, GEARBOX MNT.
7	611123	1	GEAR REDUCER, 15:1 RATIO, ALUM
8	611102	1	ENCODER, 1.375 THRU BORE
9	611103-XXX	1	SLEEVE, BORE, ENCODER
10	611579	1	AC MOTOR 1 HP
11	712781	20	COLLAR,HALF REWORK, 1-1/2 SPLIT, SST
12	712735	20	PLATE, TOP CHAN GUIDE CLAMP
13	610968	2	MAGNET, CONVEYOR, 4 1/2" TT X 36" L
14	712734	10	PLATE, CHAIN GUIDE CLAMP, MAGNET
15	712738-046	5	A/W, CONVEYOR CROSS BRACE, 46"
16	611725	51	BELT,6" WIDE x 1/2" PITCH,SERIES 1100
17	714871	4	SHAFT, IDLER SPACER, BBU
18	714904	4	GUARD, MAIN CHAIN DRIVE SPROCKET
19	78822-028	1	SHAFT, MAIN LOWER DRIVE
20	78826-006	2	CHANNEL, CHAIN GUIDE MNT, 140"
21	78826-007	2	CHANNEL, CHAIN GUIDE MNT, 140"
22	78826-005	2	CHANNEL, CHAIN GUIDE MNT, 140"
23	78826-004	2	CHANNEL, CHAIN GUIDE MNT, 140" CONV.
24	78826-002	4	GUIDE, TABLETOP CHAIN, 140"

SO-78826-04 ISSUE "A"

7.15 Conveyor Components (SO-78826-04 "A") cont'd.

REF	PART #	QTY	DESCRIPTION
25	78826-003	4	GUIDE, TABLETOP CHAIN, 140"
26	714909	2	SHAFT, IDLER ROLLER, TABLETOP CHAIN
27	714908	2	ROLLER, IDLER, TABLETOP CHAIN
28	78822-009	2	SHAFT, TRANSFER DRIVE
29	714872	4	SHAFT, IDLER, M-QNB SPROCKET
30	714359	1	SHAFT, ECCENTRIC IDLER
31	714357	2	SPROCKET, RWK, 40-B-17, 5/8" B
32	714358	1	T-NUT, TRANSFER IDLER ADJ.
33	714360	1	AW, COVER INTERLACE DRIVE
34	210647	1	ASSY, SPRKT IDLER, 40-A-17, 3/8" BORE
35	611723	16	SPROCKET, 16T, 3.11" OD EZ CLEAN
36	611724	4	SPROCKET, 24T, 4.65" OD EZ CLEAN
37	712745	14	ROLLER, IDLER, TABLETOP CHAIN
38	712741	28	BRACKET, ROLLER SHAFT
39	712735-001	28	BAR, ROLLER/PROX CLAMP, ADJ.
40	712744	16	SHAFT, ROLLER IDLER, CHAIN
41	711757	40	COLLAR, SET, 1" SST
42	611635	12	BEARING, 1" BORE 3 HOLE FLANGE
43	714330	4	GUARD, TRANSFER CENTER DRIVE
44	714329-001	4	GUARD, INFEED DRIVE, BBU
45	303000	2	LABEL,BURFORD LOGO,4.25 SCRIPT
46	611388	2	BEARING, 1", 2 BOLT FLANGE, SST
47	C03324	6	AW, ALL-THREAD LEG, CONV.
48	712782	8	SHAFT, SPACER, CHAIN GUIDE
49	955390	6	NUT HEX JAM 1-1/8-7 UNC SST

SO-78826-04 ISSUE "A"



SD-78826-04 ISSUE "A"

7.16 Pan Guide Assembly Customer Conveyor (210383 "D")

REF	PART #	QTY	DESCRIPTION
1	111666	1	GROMMET, ¼" ID (FITS 3/8" HOLE)
2	113646	16	WASHER, SPRING, BELLEVILLE (NOT SHOWN)
3	303631	1.5'	CHAIN, ROLL, #35, NICKEL PLATE (NOT SHOWN)
4	303632	1	CHAIN, LINK, CONNECTING, #35 (NOT SHOWN)
5	304123-001	1	MOTOR, GEAR, 1/8 HP, 100 RPM, 3.6:1 RATIO
6	304267	1	BRACKET, ENCODER MOUNT
7	304383	4	ASSEMBLY, BEARING BLOCK, PAN GUIDE
8	610164	1	FITTING, ADAPTER, PG21 TO ½" NPT
9	610551	1	CONNECTOR, HOOD, 1 LATCH, 16 PIN
10	610553	1	CONNECTOR, BASE, 1 LATCH, 16 PIN
11	610563	1	CONNECTOR, CONTACT INSERT, 16 PIN, F
12	610564	1	CONNECTOR, CONTACT INSERT, 16 PIN, MALE
13	610884	3	HANGER, TY-RAP MOUNTING
14	610953	1	CONNECTOR, CORD, .20 - .35, DOME, NYLON
15	610955	1	CONNECTOR, SEAL RING, ½" NPT, POLYETHYLENE
16	611238	2	BEARING, 5/8", 2 BOLT FLANGE, SST
17	611469-010	1	ENCODER, 3/8" THRU-BORE
18	712002	8	BLOCK, CLAMP, BEARING PLATE
19	712026	2	SPROCKET, 5/8" BORE, REWORK
20	712195	2	AW, PAN GUIDE, 34"
21	712197	1	CHANNEL, PAN GUIDE, TOP COVER
22	712198	2	BLOCK, OVERTRAVEL SENSOR MOUNTING
23	712199	4	BAR, PAN GUIDE MOUNT
24	712201	1	BLOCK, PAN GUIDE ADJUSTMENT, 1" ACME, LH
25	712202	1	BLOCK, PAN GUIDE ADJUSTMENT, 1" ACME, RH
26	712203	2	CHANNEL, PAN GUIDE, BLOCK MOUNT
27	712204	2	PLATE, PAN GUIDE, MAIN, ENCODER/MOTOR
28	712205	2	SHAFT, LINEAR SLIDE, PAN GUIDE
29	712206	1	SHAFT, DIRECT DRIVE
30	712207	4	BAR, MOTOR SPACER, PAN GUIDE
31	712209	2	COVER, PAN GUIDE, SIDE
32	712378	1	PLATE, MOTOR MOUNT, PAN GUIDE
33	712379	1	AW, CHAIN GUARD, PAN GUIDE

210383 ISSUE "D"

7.16 Pan Guide Assembly Customer Conveyor (210383 "D") cont'd.

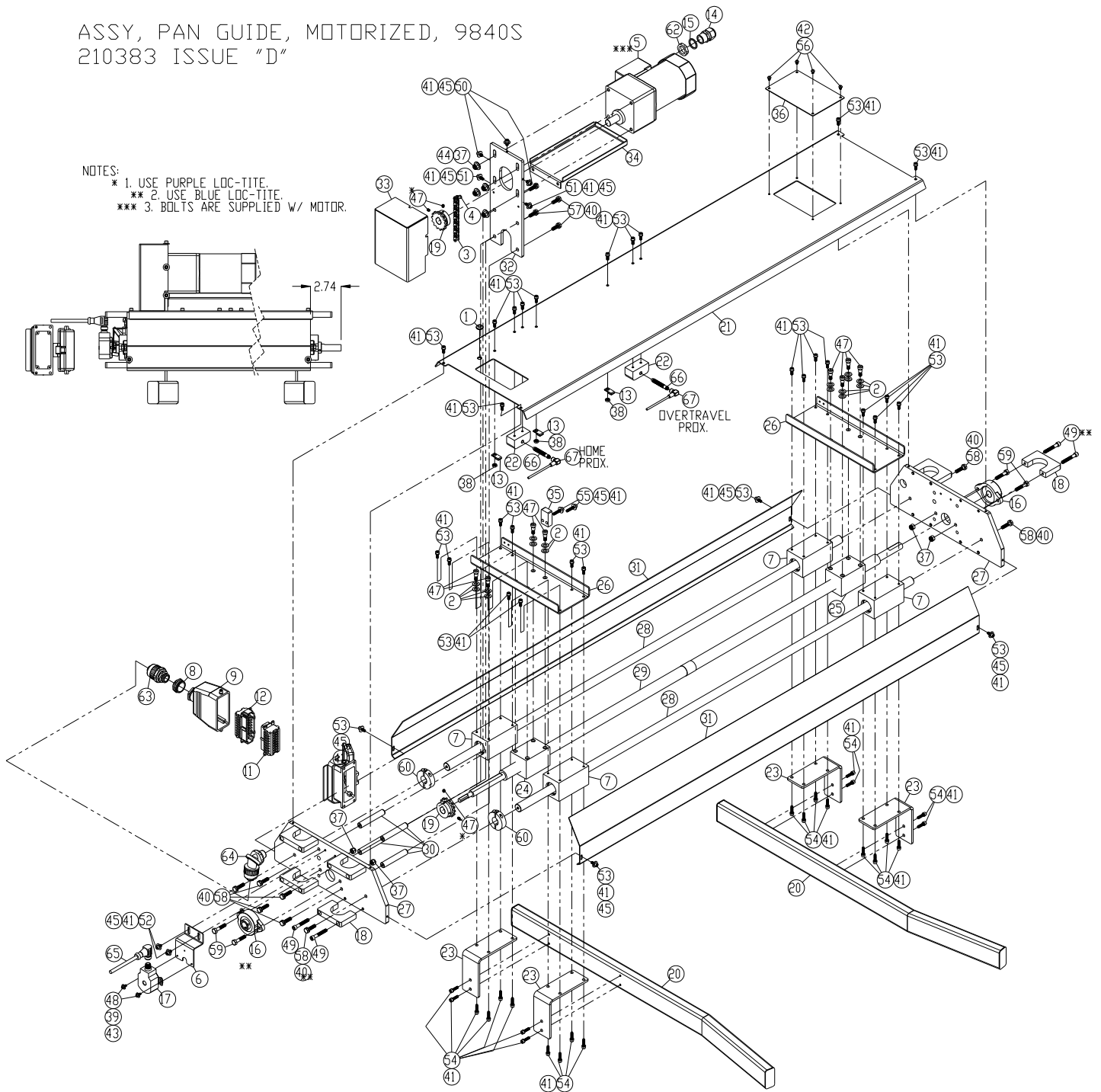
REF	PART #	QTY	DESCRIPTION
34	712390	1	AW, DRIP PAN CHANNEL, PAN GUIDE
35	712394	1	BLOCK, OVERTRAVEL SENSOR, PAN GUIDE
36	712397	1	PLATE, COVER, ALL-THREAD ADJUSTMENT
37	955661	8	NUT, HEX NYLOC, 1/4-20 UNC, SST
38	955823	3	NUT, HEX MACHINE, #10-24 UNC, SST
39	955936	2	WASHER, LOCK, #6, SST
40	955940	12	WASHER, LOCK, 1/4", SST
41	955941	64	WASHER, LOCK, #10, SST
42	955942	4	WASHER, LOCK, #8, SST
43	955972	2	WASHER, FLAT, #6, SST
44	955977	4	WASHER, FLAT, 1/4", SST
45	955978	13	WASHER, FLAT, #10, SST
46	971804	4	SCREW, SET SOCKET, #10-24 X 1/4", SST
47	975006	8	SCREW, SHOULDER, 5/16" X 3/8" X 1/4-20, SST
48	976906	2	SCREW, SOCKET HEAD CAP, #6-32 X 3/8", SST
49	978326	16	SCREW, SOCKET HEAD CAP, 1/4-20 X 1-5/8", SST
50	978806	3	SCREW, SOCKET HEAD CAP, #10-32 X 3/8", SST
51	978808	2	SCREW, SOCKET HEAD CAP, #10-32 X 1/2", SST
52	978906	2	SCREW, SOCKET HEAD CAP, #10-24 X 3/8", SST
53	978908	31	SCREW, SOCKET HEAD CAP, #10-24 X 1/2", SST
54	978912	24	SCREW, SOCKET HEAD CAP, #10-24 X 3/4", SST
55	978916	2	SCREW, SOCKET HEAD CAP, #10-24 X 1", SST
56	986904	4	SCREW, BUTTON HEAD SOCKET, #8-32 X 1/4", SST
57	989912	4	SCREW, FIN HEX, 1/4-20 X 3/4", SST
58	989916	8	SCREW, FIN HEX, 1/4-20 X 1", SST
59	989920	4	SCREW, FIN HEX, 1/4-20 X 1-1/4", SST
60	A05020	2	COLLAR, 3/4" SPLIT, SST
61	C00171	3'	CONDUIT, 1/2" NON-METALLIC (NOT SHOWN)
62	C00174	1	NUT, LOCKING, 1/2" NPT, NYLON
63	C00177	1	CONNECTOR, CONDUIT, 1/2" STRAIGHT, NYLON
64	C00196	1	CONNECTOR, CONDUIT, SWIVEL, 1/2" NPT
65	C06754-002	1	CABLE, SENSOR, M12, 5 WIRE, FEMALE, 90, SHIELDED
66	304350-001	2	SENSOR, PROXIMITY, 8MM, 10-30 VDC, PNP, N.C.
67	C07626	2	CABLE, SENSOR, M8, 3 WIRE, FEMALE, 90 DEGREE

210383 ISSUE "D"

ASSY, PAN GUIDE, MOTORIZED, 9840S
210383 ISSUE "D"

NOTES:

- * 1. USE PURPLE LOC-TITE.
- ** 2. USE BLUE LOC-TITE.
- *** 3. BOLTS ARE SUPPLIED W/ MOTOR.



7.17 Pan Guide Assembly Burford® Conveyor (210637-XXX "02")

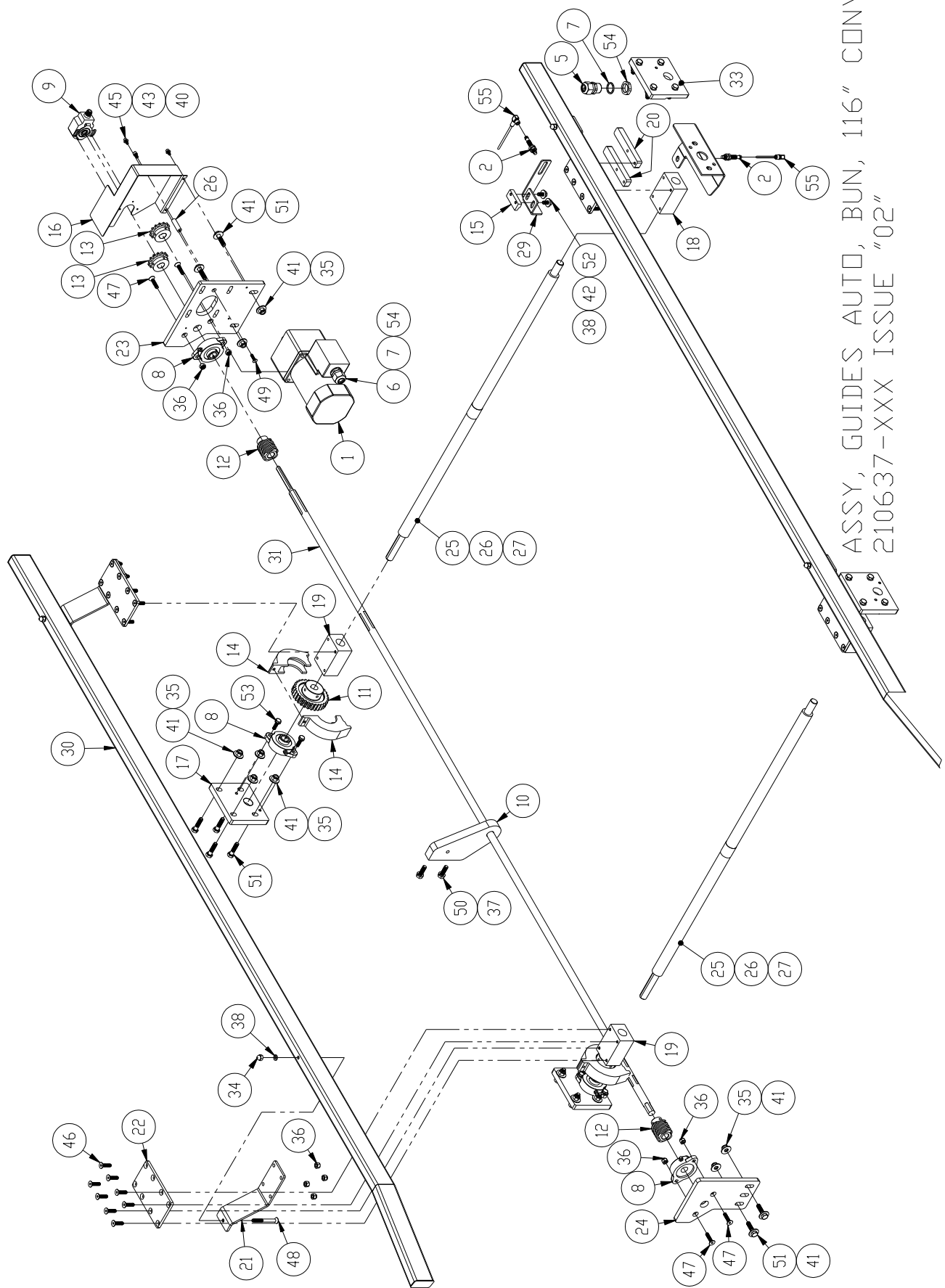
REF	PART #	QTY	DESCRIPTION
1	304123-001	1	MOTOR,GEAR,1/8HP,200/230-50/6,3.6:1
2	304350-001	2	SENSOR,PROX,8MM,10-30V,PNP,NC,TURCK
3	610551	1	CONNECTOR, HOOD, 1-LATCH, 6 PIN
4	610553	1	CONNECTOR,BASE,1-LATCH,16PIN
5	610950	1	CONNECTOR,SEAL INSERT,.200 2HOLES
6	610953	1	CONNECTOR, CORD, .20-.35, DOME, NYLON
7	610955	2	CONNECTOR,SEAL RING,1/2NPT,POLYETH
8	611238	6	BEARING, 5/8, 2 BOLT FLANGE, SST
9	611469-010	1	ENCODER, .375 THRU BORE
10	710832	2	SUPPORT, PAN GUIDE SHAFT
11	711938	2	RWK, WORM GEAR
12	711939	2	RWK, WORM STEEL, 5/8" B, 10 D.P.
13	712026	2	SPROCKET, REWORK,35B14, 5/8 BORE
14	712081	4	GUARD, WORM GEAR
15	712735-001	1	BAR, ROLLER/PROX CLAMP, ADJ.
16	712859	1	AW, GUARD, PAN GUIDE DRIVE
17	712860	3	BLOCK, BEARING MOUNT
18	712861	2	BLOCK, PAN GUIDE, 1" ACME, LH
19	712862	2	BLOCK, PAN GUIDE, 1" ACME, RH
20	714869	2	BLOCK, PROX TRAVEL, SHORT
21	712851	4	BRACKET, BUN PAN GUIDE MNT.
22	712866	4	PLATE, PAN GUIDE MNT
23	712870	1	PLATE, MOTOR MOUNT, PAN GUIDE
24	712871	1	PLATE, BEARING MOUNT, PAN GUIDE
25	712873		SHAFT, PAN GUIDE, 37" DRIVE
26	712876	1	STANDOFF, CHAIN GUARD COVER
27	712877		SHAFT, PAN GUIDE, 42" DRIVE
28	712878	2	SHAFT, PAN GUIDE, 46" DRIVE

210637-XXX ISSUE "02"

7.17 Pan Guide Assembly Burford® Conveyor (210637-XXX "02") cont'd.

REF	PART #	QTY	DESCRIPTION
29	712903	1	BRACKET, PROX MNT, 9840
30	78822-020	2	AW, BUN PAN GUIDE, AUTO 140"
31	78822-019	1	SHAFT, PAN GUIDE, AUTO, 140"
32	712987	1	BRACKET, PROX MOUNT
33	712988	1	BLOCK RWK, BEARING MOUNT
34	955615	4	NUT HEX ACORN 1/4-20 UNC SST
35	955619	20	NUT HEX NYLOC 5/16-18 UNC SST
36	955661	16	NUT HEX NYLOC 1/4-20 UNC SST
37	955939	2	WASHER, LOCK 5/16" SST
38	955940	14	WASHER LOCK 1/4" SST
39	955941	1	WASHER LOCK #10 SST
40	955942	2	WASHER LOCK #8 SST
41	955976	24	WASHER FLAT 5/16 SST
42	955977	2	WASHER FLAT 1/4" SST
43	955979	2	WASHER FLAT #8 SST
44	978906	1	SCREW SOC HD CAP #10-24 X 3/8 SST
45	979506	2	SCREW SOC HD CAP #8-32 UNC X 3/8 SST
46	981716	32	SCREW FLT HD SOC 1/4-20 X 1 SST
47	981718	4	SCREW FLT HD SOC 1/4-20 X 1 1/8 SST
48	981740	4	SCREW FLT HD SOC 1/4-20 X 2 1/2 SST
49	982312	1	SCREW FLT HD SOC #10-24 X 3/4 SST
50	989716	2	SCREW FIN HEX 5/16-18 X 1 SST
51	989720	20	SCREW FIN HEX 5/16-18 X 1 1/4 SST
52	989910	2	SCREW FIN HEX 1/4-20 X 5/8" SST
53	989914	8	SCREW FIN HEX 1/4-20 X 7/8 SST
54	C00174	2	LOCKING NUT, 1/2 NPT, NYLON
55	C07626	2	SENSOR,CABLE,M8,3WIRE,F,QC,90

210637-XXX ISSUE "02"

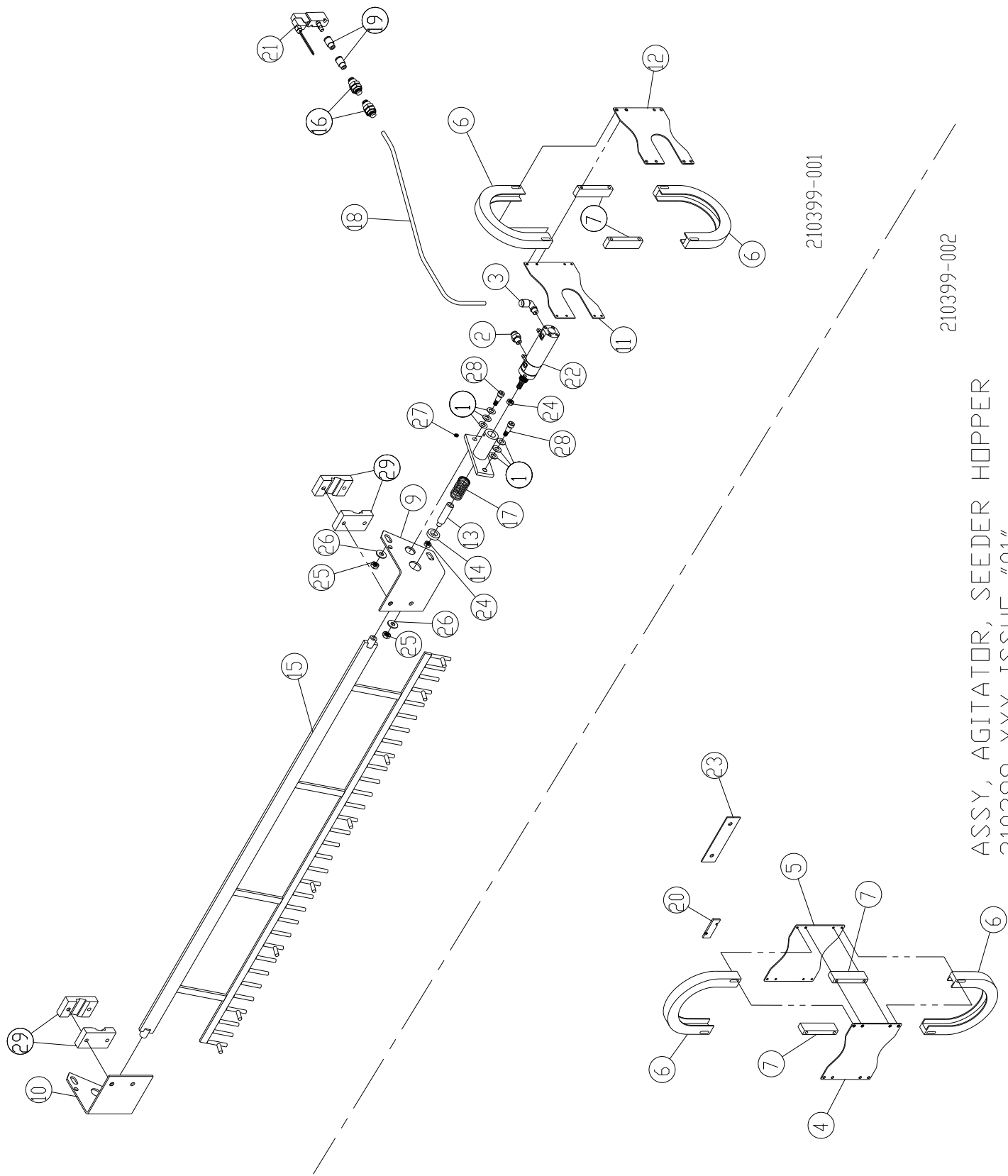


ASSY, GUIDES AUTO, BUN, 116" CONV.
210637-XXX ISSUE "02"

7.18 Agitator Assembly (210399-001 "A")

REF	PART #	001	002	DESCRIPTION
1	113646	6	-	WASHER BELLEVILLE SPRING
2	119534	1	-	FITTING, CONN, 1/8MPT X 1/4T, ENP, QR
3	174049	1	-	FITTING, ELL, 1/8MPT X 1/4T, Q.R, SHORT
4	304260	-	1	PLATE, CHAIN GUARD, 9840
5	304261	-	1	PLATE, CHAIN GUARD, 9840
6	304262	2	2	GUARD, CHAIN, 36 T #35
7	304263	2	2	PLATE, FILLER GUARD CLUTCH #35
8	304280	1	-	AW, MOUNT CYLINDER AGIT, 9840
9	304284	1	-	BRACKET, SLIDE MOUNT AGIT, 9940
10	304285	1	-	BRACKET, SLIDE MOUNT AGIT, 9940
11	304290	1	-	PLATE, CHAIN GUARD AGIT, 9840
12	304291	1	-	PLATE, CHAIN GUARD AGIT, 9840
13	304610	1	-	SHAFT, AGITATOR CONNECTOR
14	304611	1	-	SEAL, HOPPER AGITATOR
15	304986	1	-	AW, DUAL RAKE, 9840 AGITATOR
16	610459	2	-	FITTING, BULKHEAD UNION 1/4T, ENP
17	610504	1	-	SPRING, COMP .88 OD X .067 WD X 1.5 FL
18	610885-05	8'	-	TUBING, 1/4" POLYURETHANE, YELLOW
19	610966	2	-	FITTING, CONN, 1/8NPT x 1/4T, Q.R., HEX
20	611363	-	1	VALVE, MANIFOLD, BLANK PLATE (611364)
21	611365	1	-	VALVE, SOL, 2-WAY, w/ FLOW CNTRLs
22	611366	1	-	CYLINDER, AIR, 1" BORE, 1" STRK, MAG
23	711573	-	1	PLATE, AGITATOR COVER
24	955379	2	-	NUT HEX 1/4-20 UNC SST
25	955406	2	-	NUT HEX JAM 5/16-24 UNF SST
26	955977	2	-	WASHER FLAT 1/4" SST
27	971804	1	-	SCREW SET SOC #10-24 UNC X 1/4 SST
28	975008	2	-	SCREW SHLDR 5/16 X 1/2, 1/4-20 SST
29	A04348	4	-	BLOCK, BEARING, SEEDER

210399-001 ISSUE "A"



ASSY, AGITATOR, SEEDER HOPPER
210399-XXX ISSUE "01"

7.19 Wiring Diagram (078826-WD "A")

ASSEMBLY, MAIN ENCLOSURE CIRCUIT (210400)				
REF	SYMBOL	PART #	QTY	DESCRIPTION
1	-	C07689	96"	COVER, WIRE DUCT, 1" X 6'
2	-	C07687	96"	DUCT, WIRE, 1" X 1" X 6'
3	TB1	C06525	10	TERMINAL, GROUNDING
4	TB1-4	C06465	8	TERMINAL, ANCHOR, END CLAMP
5	TB1-4	C06464	48"	RAIL, DIN MOUNTING
6	TB1	C06463	1.5	TERMINAL, JUMPER, 10 POSITION
7	TB1	C06462	1	TERMINAL, END COVER, SINGLE LEVEL
8	TB1	C06461	82	TERMINAL, BLOCK, SINGLE LEVEL
9	TB1	C06369	1	JUMPER, TERMINAL, 2-POS
10	TB1	C05843	164	TERMINAL, MARKER STRIP, BLANK
11	TB1	C06387	2	BRACKET, DIN RAIL MOUNTING, 30"
12	PNL1	304463	1	PANEL, MAIN ELECTRICAL
13	PLC1	611662	1	PLC, ETHERNET PORT, 120VAC PLUG
14	PLC1	611227	1	PLC, ETHERNET MODULE HIRSCHMANN
15	PLC1	611224	1	PLC, COMPACTLOGIX, DRIVE COMM MODULE
16	PLC1	611122	1	PLC, CP, INPUT MODULE, 16 IN FAST
17	PLC1	610657	1	PLC, CP, INPUT MODULE, 16 IN
18	PLC1	610632	2	PLC, OUTPUT MODULE, 16 OUT
19	PLC1	610882	1	PLC, COMPACTLOGIX, POWER SUPPLY, PB4
20	PLC1	611132	1	PLC, COMPACTLOGIX, HIGH SPEED COUNTER
21	PLC1	611134	1	PLC, COMPACTLOGIX, MEMORY CARD, 64 MB
22	PLC1	611166	1	PLC, COMPACTLOGIX, PROCESSOR, ETHERNET
23	PLC1	610494	1	PLC, COMPACTLOGIX, END CAP
24	LT2/AH1	611591	1	LIGHT TREE, 24 VDC, TOP MOUNT w/HORN
25	GND	C06488	1	LUG, GROUNDING
26	EXC1	610741-001	1	HEAT EXCHANGER, 24 VDC
27	ENCL1	304462	1	ENCLOSURE, MAIN ELECTRICAL
28	CRM,1-11 P/O	610387	10	PLATE, RELAY TERMINAL SEPARATING
29	CR11	610412	1	RELAY, TERMINAL MOUNTING, 220 VAC
		610452	1	RELAY, TERMINAL MOUNTING, 110 VAC
30	CR1,5-8,10	610421	7	RELAY, TERMINAL MOUNTING, 24 VDC (BLACK)
31	CRM,CR9,10	610404	7	RELAY, TERMINAL MOUNTING, 24 VDC (WHITE)
ASSEMBLY, ENCLOSURE, DISPLAY, (210401-001, 002)				
1	CBL1	304503-010	1	CABLE, BLUE PATCH, 10 FEET, SHIELDED
2	DISP1	076565-400	1	DISPLAY, PLC, PV-600, ETHERNET
3	ENCL2	076565-100	1	A/W, DISPLAY ENCLOSURE
4	ENCL2 P/O	712044	1	A/W, TRI-CLAMP, 1-1/2"
5	ENCL2 P/O	610760	1	GASKET, TEFLON, 1-1/2"
6	LT1	C01301	1	ASSEMBLY, LIGHT w/LATCH, 24 VDC
7	LT1	C01218	1	LENS, GREEN
8	LT1	C01263	1	NAMEPLATE, "POWER ON"
9	PB1	C07213	1	SWITCH, PUSH/PULL, RED, MUSHROOM
10	PB1	C07101	1	CONTACT CARTRIDGE, NORMALLY CLOSED
11	PB1	C05395	1	NAMEPLATE, "PUSH - STOP / PULL - START"
12	TB10	610967	1	TERMINAL, BREAK-A-PART, 12 POS
13	-	C07277	20'	CABLE, 8 CONDUCTOR, 20 AWG

078826-WD ISSUE "A"

7.19 Wiring Diagram (078826-WD"A") cont'd.

ASSEMBLY, SEEDER FRAME, (210381/210382)				
REF	SYMBOL	PART #	QTY	DESCRIPTION
1	MTR1	C00028	1	MOTOR, 1/3 HP, 230/460-50/60-3
2	PRS6,7	304350-001	2	SENSOR, PROX, 8MM, 10-30 VDC, PNP, N.C.
3	PRS6,7	C07626	2	CABLE, SENSOR, M8, 3 WIRE, 90°
4	PRS7	712217	1	BRACKET, SENSOR HEIGHT ADJUSTMENT
5	PRS**	304022	1	ANGLE, CENTER LIFT SENSOR MOUNT
6	PRS13	610962	1	SENSOR, REED, 3" WIRE, 24 VDC (BIMBA)
7	PRS13	611268	1	STRAP, REED SENSOR
8	SOL17,18	611119	1	VALVE, SOLENOID, DUAL, 24 VDC
9	TB11	610360	6"	RAIL, DIN MOUNTING, MINI
10	TB11	610361	25	TERMINAL, BLOCK, MINI
11	TB11	610362	3	TERMINAL, END COVER, MINI
12	TB11	610363	2	TERMINAL, ANCHOR, END CLAMP, MINI
13	TB11	610364	1	TERMINAL, JUMPER, 10 POSITION, MINI
14	TB11	610534	1	TERMINAL, GROUNDING, MINI
15	TB11	710161	1	TERMINAL STRIP, COVER
16	-	C01237	6'	CABLE, 22 AWG, 15 CONDUCTOR
ASSEMBLY, SEEDER HOPPER, (210404-001/002)				
1	INTLK1	C07219	1	INTERLOCK, MAGNETIC KEYED
2	INTLK1	C07220	1	ACTUATOR, INTERLOCK MAGNET
3	PRS1-4(5)	610151	4	SENSOR, PROX, 6.5MM, 10-30 VDC, PNP, NORMALLY
4	PSC1	610797	1	SENSOR, PHOTO, RETRO-REFLECTIVE, 10-24 VDC
5	PRS12	C06752-001	1	SENSOR, PROX, 80MM, 10-55 VDC, PNP, EDDY
6	SOL20	304239	1	CLUTCH, SHAFT MOUNTING, 24 VDC
ASSEMBLY, ENCLOSURE, SEEDER HOPPER, (210386-001, 002)				
1	ENCL3	712385-002	1	ENCLOSURE, SEED HOPPER, RIGHT HAND
		712385-001		ENCLOSURE, SEED HOPPER, LEFT HAND
2	PNL3	712035	1	PANEL, ELECTRICAL, SEED HOPPER
3	PSC1/PRS14	C06753	1	CABLE, SENSOR, M12, 5 WIRE, STRAIGHT
4	SOL19/21	611364	1	BASE, SOLENOID VALVE
5	SOL19	611365	1	VALVE, SOLENOID, 1/8" PORT, 24 VDC
6	SUP19-22	C05724	4	VARIATOR, SURGE, 125 AMP, 25 VAC/31 VDC
7	TB5	610360	7"	RAIL, DIN MOUNTING, MINI
8	TB5	610361	27	TERMINAL, BLOCK, MINI
9	TB5	610362	2	TERMINAL, END COVER, MINI
10	TB5	610363	2	TERMINAL, ANCHOR, END CLAMP, MINI
11	TB5	610364	1.5	TERMINAL, JUMPER, 10 POSITION, MINI
12	TB5	610534	1	TERMINAL, GROUNDING, MINI
13	-	303056	2	PLUG, HOLE, 7/8" DIAMETER, SST
14	-	C07066	6'	CABLE, 22 AWG, 25 CONDUCTOR

078826-WD ISSUE "A"

7.19 Wiring Diagram (078826-WD"A") cont'd.

AGITATOR CIRCUIT (210399)				
REF	SYMBOL	PART #	QTY	DESCRIPTION
1	SOL21	611365	1	VALVE, SOLENOID, 24 VDC, 2 WAY
HOPPER DUMP VIBRATOR CIRCUIT (304497)				
1	PRS12	610962	1	SENSOR, REED, 3 WIRE, 24 VDC (BIMBA)
		611267	1	SENSOR, REED, SSR, 2" WIRE, 24 VDC (SMC)
2	PRS12	611268	1	STRAP, REED SENSOR (SMC)
AUTOFILL POWER CIRCUIT				
1	PL*	113393	1	CONNECTOR, TWISTLOCK, MALE, 3 POLE
2	PL*	A05379	1	CONNECTOR, TWISTLOCK, FEMALE, 3 POLE
3	PL*	C07644	1	COVER, WEATHERPROOF (113393)
4	PL*	C07645	1	COVER, WEATHERPROOF (A05379)
HOPPER LID LOW-LEVEL ALARM CIRCUIT (210409)				
1	PRS20	C07670	1	SENSOR, PROXIMITY, 30MM, 10-30 VDC, PNP, N.C.
2	PRS20	304154	1	CABLE, SENSOR, M12, 4 WIRE, 90°
3	PRS20	304268	1	BLOCK, SENSOR MOUNTING
4	PRS20	A05038	1	PLATE, SENSOR MOUNTING, "EMPTY"
HOPPER LID AUTOFILL CIRCUIT (210407-002)				
1	PRS20,21	C07670	2	SENSOR, PROXIMITY, 30MM, 10-30 VDC, PNP, N.C.
2	PRS20,21	304154	2	CABLE, SENSOR, M12, 4 WIRE, 90°
3	PRS20,21	304268	2	BLOCK, SENSOR MOUNTING
4	PRS20	A05038	1	PLATE, SENSOR MOUNTING, "EMPTY"
5	PRS21	A05018	1	PLATE, SENSOR MOUNTING, "LOW"
6	SOL22	611117	1	VALVE, SOLENOID, 24 VDC, 2 WAY

078826-WD ISSUE "A"

7.19 Wiring Diagram (078826-WD"A") cont'd.

VARIABLE FREQUENCY DRIVE 110/220 VAC CIRCUIT (210403-011,012)				
REF	SYMBOL	PART #	QTY	DESCRIPTION
1	ACO	C07634	1	MODULAR, AC RECEPTACLE, DIN RAIL MOUNTING
2	ACO P/O	C07635-001	1	MODULAR, AC RECEPTACLE, 125V, 15A, USA
3	CB2,3,5	C07650-003	3	CIRCUIT BREAKER, 3 AMP, DIN RAIL MOUNTING
4	CB7	C07650-005	1	CIRCUIT BREAKER, 5 AMP, DIN RAIL MOUNTING
5	CBL2,3	304494	2	CABLE ORANGE PATCH, 2' SHIELDED
6	CBL5,6	304503	2	CABLE BLUE PATCH, 2' SHIELDED
7	CR2-4	610404	9	RELAY, TERMINAL MOUNTING, 24 VDC (WHITE)
8	CR2-4	610387	2	PLATE, RELAY TERMINAL SEPARATING, MOUNTING
9	DRV1,2	611422-001	2	CONTROLLER, PWR FLEX 4M, 110-1, 220-3
		611422-004	2	CONTROLLER, PWR FLEX 4M, 220-3, 220-3
10	FLTR1	304009	1	FILTER, LINE, 110 VAC, 20 AMP
		304011	1	FILTER, LINE, 220 VAC, 20 AMP
11	PSM1	304160	1	POWER SUPPLY, 110/220-24 VDC, 10AMP, 3 PHASE
SEEDER LIFT CIRCUIT (210384)				
1	ENCO3	611469-010	1	ENCODER, DIRECTIONAL, 2 CHANNEL
		611392-010	1	ENCODER, DIRECTIONAL, 2 CHANNEL WD
2	ENCO3	C06754-002	1	CABLE, SENSOR, M12, 5 WIRE, FEMALE, 90°
3	MTR3	304123-001	1	MOTOR, GEAR, 1/8 HP, 100 RPM, 3.6:1 RATIO
		611393	1	MOTOR, GEAR, 1/8 HP, 100 RPM, 3.6:1 RATIO WD
4	-	142113	5'	CABLE, 16 AWG, 4 CONDUCTOR
SIZING BAR CIRCUIT (210383)				
1	ENCO2	611469-010	1	ENCODER, DIRECTIONAL, 2 CHANNEL
		611392-010	1	ENCODER, DIRECTIONAL, 2 CHANNEL WD
2	ENCO2	C06754-002	1	CABLE, SENSOR, M12, 5 WIRE, FEMALE, 90°
3	MTR4	304123-001	1	MOTOR, GEAR, 1/8 HP, 100 RPM, 3.6:1 RATIO
		611393		MOTOR, GEAR, 1/8 HP, 100 RPM, 3.6:1 RATIO WD
4	PL3	610551	1	CONNECTOR, HOOD, 1 LATCH, 16 PIN
5	PL3	610553	1	CONNECTOR, BASE, 1 LATCH, 16 PIN
6	PL3	610563	1	CONNECTOR, FEMALE INSERT, 16 PIN
7	PL3	610564	1	CONNECTOR, MALE INSERT, 16 PIN
8	PRS10,11	304350-001	2	SENSOR, PROXIMITY, 8MM, 10-30 VDC, PNP, N.C.
9	PRS10,11	C07626	2	CABLE, SENSOR, M8, 3 WIRE, 90°
10	-	610164	1	CONNECTOR, ADAPTER, PG21 – ½" NPT
11	-	C00171	3'	CONDUIT, ½" NON-METALLIC
12	-	C00177	1	CONNECTOR, CONDUIT, ½", STRAIGHT, NYLON
13	-	C00178	1	CONNECTOR, CONDUIT, ½" – 90 NYLON
CONVEYOR CIRCUIT (210387-210388)				
1	ENCO1	611102	1	ENCODER, INCREMENTAL, 3 CHANNEL
		611391	1	ENCODER, INCREMENTAL, 3 CHANNEL WD
2	ENCO1	C06753-002	1	CABLE, SENSOR, M12, 5 WIRE, FEMALE, QC STRAIGHT, SHIELD
3	MTR2	C01041	1	MOTOR, 1 HP, 230/460-50/60-3
		611579	1	MOTOR, 1 HP, 230/460-50/60-3, GOLD
4	PL4	610554	1	CONNECTOR, FEMALE INSERT, 6 PIN
5	PL4	610555	1	CONNECTOR, HOOD, 1 LATCH, 6 PIN
6	PL4	610556	1	CONNECTOR, MALE INSERT, 6 PIN
7	PL4	610557	1	CONNECTOR, BASE, 1 LATCH, 6 PIN
8	-	610167	1	CONNECTOR, ADAPTER, PG13.5 – ½" NPT

078826-WD ISSUE "A"

7.19 Wiring Diagram (078826-WD"A") cont'd.

ENCLOSURE WATER SPRAY CIRCUIT (210398-001)				
REF	SYMBOL	PART #	QTY	DESCRIPTION
1	ENCL4	712090	1	ENCLOSURE, 8 X 6 X 4 (C01959)
2	PL1	610620	1	CONNECTOR, FEMALE INSERT, 24 PIN
3	PL1	610621	1	CONNECTOR, MALE INSERT, 24 PIN
4	PL1	610622	1	CONNECTOR, HOOD, 1 LATCH, 24 PIN
5	PL1	610623	1	CONNECTOR, BASE, 1 LATCH, 24 PIN
6	PNL4	C01367	1	PANEL, ELECTRICAL (C01962)
7	TB6	610360	5"	RAIL, DIN MOUNTING, MINI
8	TB6	610361	20	TERMINAL, BLOCK, MINI
9	TB6	610362	2	TERMINAL, END COVER, MINI
10	TB6	610363	2	TERMINAL, ANCHOR, END CLAMP, MINI
11	TB6	610533	2	TERMINAL, JUMPER, 3 POSITION, MINI
12	TB6	610534	1	TERMINAL, GROUNDING, MINI
13	TB7	610967	1	TERMINAL, BREAK-A-PART, 12 POSITION
14	-	C00172	22'	CONDUIT, 3/4" NON-METALLIC
15	-	610165	1	CONNECTOR, ADAPTER, PG21 - 3/4" NPT
WATER SPRAY NOZZLE CIRCUIT				
1	CTRL1	611573	1	VALVE, CONTROLLER, DRIVER, PULSAJET
2	FLTR1	611569	1	VALVE, PULSAJET, LINE FILTER
3	BCR1	611658	1	IP COUPLER WITH ETHERNET
4	BCR1	611657	1	INLINE PULSE INTERFACE MODULE
5	BCR1	611659	2	INLINE DIGITAL OUTPUT MODULE
6	SOL1-6	611574	6	VALVE, APPLICATOR HEAD
7	SOL1-6	C07663	6	FIELD ATTACH, M12, 5 WIRE, MALE QC STRAIGHT
8	SOL1-8	610169	8	CABLE, BULKHEAD, M12, 5 WIRE, FEMALE QC
9	SOL1-8	610174	4	CAP, BULKHEAD CABLE, M12, FEMALE QC
WATER SPRAY SENSOR CIRCUIT (210397)				
1	PRS9	C06752-001	1	SENSOR, PROXIMITY, 80MM, 10-55 VDC, PNP, EDDY
2	PRS9	304153	1	CABLE, SENSOR, M12, 4 WIRE, STRAIGHT
WATER SPRAY LIFT CIRCUIT (210395-001)				
1	MTR5	304123-001	1	MOTOR, GEAR, 1/8 HP, 100 RPM, 3.6:1 RATIO
		611393	1	MOTOR, GEAR, 1/8 HP, 100 RPM, 3.6:1 RATIO WD
2	PRS15,16	304350-001	2	SENSOR, PROXIMITY, 8MM, 10-30 VDC, PNP, N.C.
3	PRS17	304350-003	1	SENSOR, PROXIMITY, 8MM, 10-30 VDC, PNP, N.C., SMALL
4	PRS15-17	C07626	3	CABLE, SENSOR, M8, 3 WIRE, 90°
ENCLOSURE WATER SPRAY/SPLIT CIRCUIT (210398-002)				
1	PL2	610551	1	CONNECTOR, HOOD, 1 LATCH, 16 PIN
2	PL2	610553	1	CONNECTOR, BASE, 1 LATCH, 16 PIN
3	PL2	610563	1	CONNECTOR, FEMALE INSERT, 16 PIN
4	PL2	610564	1	CONNECTOR, MALE INSERT, 16 PIN
5	TB8	610360	5"	RAIL, DIN MOUNTING, MINI
6	TB8	610361	20	TERMINAL, BLOCK, MINI
7	TB8	610362	2	TERMINAL, END COVER, MINI
8	TB8	610363	2	TERMINAL, ANCHOR, END CLAMP, MINI
9	TB8	610533	2	TERMINAL, JUMPER, 3 POSITION, MINI
10	TB8	610534	1	TERMINAL, GROUNDING, MINI
11	TB9	610967	1	TERMINAL, BREAK-A-PART, 12 POSITION
12	-	610164	1	CONNECTOR, ADAPTER, PG21 - 1/2" NPT

078826-WD ISSUE "A"

7.19 Wiring Diagram (078826-WD"A") cont'd.

WATER SPLITTER NOZZLE CIRCUIT (210390)				
REF	SYMBOL	PART #	QTY	DESCRIPTION
1	SOL9-16	304650	8	VALVE, APPLICATOR HEAD (BUN)
		304099	8	VALVE, APPLICATOR HEAD (BREAD)
2	SOL9-16	610187-002	8	CABLE, MICRO-CHANGE, M12, 5 WIRE (BREAD)
		610187-001	8	CABLE, MICRO-CHANGE, M12, 5 WIRE (BUN)
3	SOL9-16	610169	8	CABLE, BULKHEAD, M12, 5 WIRE, FEMALE, QUICK CONNECT
4	SOL9-16	610174	8	CABLE, BULKHEAD CAP, M12, FEMALE, QUICK CONNECT
WATER SPLITTER LIFT CIRCUIT (210395-002)				
1	PRS18,19	304350-001	2	SENSOR, PROXIMITY, 8MM, 10-30 VDC, PNP, N.C.
2	PRS18,19	C07626	2	CABLE, SENSOR, M8, 3 WIRE, 90°
3	SOL23,24	304238-001	2	CLUTCH, SHAFT MOUNTING, 24 VDC
4	SUP23,24	C05724	2	SUPPRESSOR, TRANSIENT, 25 VAC / 31 VDC
SIDE MOUNT DISCONNECT ENCLOSURE FUSED				
1	DISC1	C07631	1	DISCONNECT, CIRCUIT BREAKER, FUSIBLE
2	DISC1	C07632	1	DISCONNECT, CIRCUIT BREAKER, HANDLE
3	DISC1	C07633	1	DISCONNECT, CIRCUIT BREAKER, SHAFT
4	ENCL5	713613	1	ENCLOSURE, 10X8X6 SST
5	FU1-3	C07062	3	FUSE, LPCC, 15A, 600V, 1 3/32 X 1 1/2
6	GND	C06488	1	LUG, GROUNDING, ENCLOSURE
7	PNL5	713614	1	PANEL, ELEC, 8 3/4 X 6 7/8
8	TB10	C06464	2	TERMINAL DIN RAIL
9	TB10	C06465	2	TERMINAL, END ANCHOR, CLAMP
10	TB10	C07117-001	3	TERMINAL, BLOCK, DUAL, 10 AWG
11	TB10	C07118-001	1	TERMINAL, END COVER, DUAL, 10 AWG
12	-	611660	1	VOLTAGE, PRE-TEST POINTS KIT
13	-	611661	1	VOLTAGE, VISION (R-3W) KIT
CONVEYOR DICONNECT ENCLOSURE (210369)				
1	DISC2	611536	1	ENCLOSURE, DISCONNECT, SWITCH BOX
2	DISC2	611537	1	AUX, CONTACT, SWITCH BOX
3	DISC2	611538	1	BULKHEAD, CHANGE-OUT, 14-4, 600V, 15A
4	DISC2	611539	1	CABLE, CHANGE-OUT, 14-4, 600V, 15A, 6'
5	DISC2	304666	1	PLATE, MOUNT, SWITCH BOX

078826-WD ISSUE "A"

