

BURFORD[®] CORP.

SERVICE MANUAL

FOR YOUR

BURFORD[®] SMART ROTARY TOPPER

MODEL 9940

ORIGINAL INSTRUCTIONS

MODEL NUMBER_____

SERIAL NUMBER_____

WIRING DIAGRAM_____ **ISSUE**_____

Date: July 25, 2012

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Manual Part No. SO086351 Rev "A"



CE DECLARATION OF CONFORMITY

We hereby declare that the following machinery complies with the essential health and safety requirements of the Machinery Directive 89/392/EEC, 91/368/EEC and 93/44/EEC and other harmonized standards.

Name type or model - 9940 / MPA100 & MPH500 / 946LI-200
Serial Number - 18806 / 18826 / 18807
Machine description - **Model 9940 Smart Rotary Topper**; Industrial equipment to be utilized by bread baking facilities for the purpose of spreading bread toppings onto bread products prior to baking. A 7-nozzle spray rail applies a thin coating of filtered water onto the bread products. Afterwards, a rotating mandrel will distribute toppings onto the bread products. This mandrel is housed inside a hopper that contains a bulk quantity of toppings. **Model MPH500**; an additional, larger hopper used for automatically refilling the topper's smaller hopper. A single valve located on the 9940 topper controls the MPA's air system. The Topper is mounted to the **Model 946LI-200 Conveyor**; for transporting baking pans under the spray rails and hopper. The Conveyor's motor is controlled by the Topper's electrical panel. The Topper's electrical panel also controls vertical positioning of the Topper's spray rails and hopper. The 9940 and 946LI are on SO 86351. The MPA and MPH are on SO86888.

Name of manufacture or supplier: Burford Corp.
Full postal address including country of origin: P.O. Box 748
1 Mile North
Maysville, OK 73057
United States of America

This machinery has been designed and manufactured in accordance with the following transposed harmonized European standards:

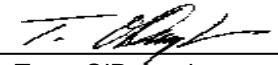
EN ISO 12100:2003 parts 1 & 2: Safety of Machinery....Basic concepts, general principles for design
BS EN ISO 13857:2008 Safety of Machinery.....Safety distances to prevent danger zones being reached by the upper limbs
BS EN 349: 1993 Safety of Machinery.....Minimum gaps to avoid crushing of parts of the human body
BS EN ISO 13850:2006 Safety of Machinery.....Emergency stop equipment, functional aspects – principles for design
BS EN 60204 part 1: 2006 Safety of Machinery.....Electrical equipment of machines

A technical construction file for this machinery is retained at the office of Burford Corp. at the above address.

Authorized representative: Terry O'Donoghue
42 Hornbeam Avenue
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Suffolk IP28 8YH
Great Britain

Declaration:

I declare that being the responsible person appointed by the manufacturer (or nominated authorized representative of the manufacturer established in the EC), the above information in relation to the supply/manufacture of this machinery is in conformity with the stated standards and other related documents following the provisions of 93/44/EEC Directives.

Signed:  Date: 7-18-2012
Name: Terry O'Donoghue Position: Authorized Representative
Employer: Burford Corp. Place of declaration: Maysville, OK - USA

SAFETY PRECAUTIONS

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

1. Read the 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® Corp. for 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.
11. This unit is not washdown ready. Do not wash the unit or any of its electrical or mechanical components, with any form of high pressure or running liquids.

DISCLAIMER

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

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

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

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

TABLE OF CONTENTS

CE DECLARATION OF CONFORMITY	ii
SAFETY PRECAUTIONS	iii
DISCLAIMER.....	iv
TABLE OF CONTENTS.....	v
1.0 INTRODUCTION.....	1-1
1.1 Specifications	1-2
1.2 Model Numbers	1-2
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.....	2-3
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.....	3-6
3.5 Machine Options	3-7
3.6 Daily Startup	3-15
3.7 Changing To Different Variety (Same Mandrel)	3-17
3.8 Changing To Different Variety (Different Mandrel).....	3-18
3.9 Changing Parameters For An Existing Variety.....	3-19
3.10 Fine-Tuning H2O Spray/Splitter Trigger Time.....	3-20
3.11 Creating A New Variety	3-21
3.12 Changing Conveyor Speed	3-24
3.13 Fine-Tuning Topping Coverage.....	3-25
3.14 Catch Tray For Varieties Without Topping	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 Purging Spray Valves	5-2
5.4 Drive Descriptions	5-3
5.5 Drive Settings	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) (210381 “K”).....	7-1
7.2 Seeder Frame Assembly (Sheet 2 of 2) (210381 “K”).....	7-4
7.3 Auto Spray Assembly (210380-001 “C”)	7-7
7.4 Water Spray Nozzle Assembly (210389 “B”).....	7-9
7.5 Conveyor Frame Assembly (86351-000 S2 “01”).....	7-11
7.6 SEW Drive Option (210934-XXX “02”).....	7-14
7.7 Pan Guide Assembly (86351-000 S3“01”)	7-16
7.8 Drip Pan Assembly (210539-XXX “02”)	7-18
7.9 Hopper Adjustment Assembly (210384 “B”).....	7-20

7.10	Pneumatic Assembly (210385 “C”)	7-22
7.11	Hopper Assembly (210404-001 “B”).....	7-24
7.12	Hopper Enclosure Assembly (210386-XXX “03”).....	7-27
7.13	Agitator Assembly (210399-XXX “01”)	7-29
7.14	Wiring Diagram (086351-WD “A”).....	7-31

TABLE OF FIGURES

Fig. 1-1 Model 9840 Right Hand	1-1
Fig. 1-2 Model 9840 Right Hand	1-2
Fig. 1-3 Model 9940 Left Hand.....	1-2
Fig. 2-1 Install Casters	2-1
Fig. 2-2 Air And Water Hookup	2-2
Fig. 2-3 Model 9840 Shown	2-3
Fig. 2-4 Upper And Lower Assemblies	2-4
Fig. 2-5 Mounting Brackets	2-4
Fig. 2-6 Air Hose Placement	2-4
Fig. 2-7 Laser Pan Sensor Alignment	2-5
Fig. 2-8 Set Screw Locations	2-6
Fig. 2-9 Anti Rotation Flex Mount.....	2-6
Fig. 3-1 Control Panel	3-2
Fig. 3-2 Main Screen	3-3
Fig. 3-3 Variety Setup Screen	3-6
Fig. 3-4 Water Spray Screen.....	3-7
Fig. 3-5 Agitator Screen	3-7
Fig. 3-6 Autofill Screen.....	3-8
Fig. 3-7 Water Splitter Screen.....	3-8
Fig. 3-8 Level Alarm Screen.....	3-9
Fig. 3-9 Hopper Lift Screen	3-9
Fig. 3-10 Pan Guides Screen.....	3-9
Fig. 3-11 Water Spray Lift Screen.....	3-10
Fig. 3-12 Water Splitter Lift Screen	3-10
Fig. 3-13 MPA Autofill Screen	3-10
Fig. 3-14 Setup And Overrides Screen	3-11
Fig. 3-15 Mandrel Override Screen	3-11
Fig. 3-16 Flour Duster Screen.....	3-12
Fig. 3-17 Hopper Override Screen	3-12
Fig. 3-18 Add/Delete Variety Screen.....	3-13
Fig. 3-19 Calculate Encoder Screen	3-13
Fig. 3-20 Motor Current Limit Screen	3-14
Fig. 3-21 Startup Screen	3-15
Fig. 3-22 Mandrel Insertion	3-15
Fig. 3-23 Reverse Rotation (A) Forward Rotation (B)	3-15
Fig. 3-24 Select Active Variety Screen.....	3-16
Fig. 3-25 Motor Moving Screen	3-16
Fig. 3-26 Changing To Different Variety.....	3-17
Fig. 3-27 Go To Dump Screen	3-18
Fig. 3-28 Information Screen.....	3-19
Fig. 3-29 Modified Variety Screen	3-19
Fig. 3-30 Bun Pan Setup Screen	3-20
Fig. 3-31 Creating A New Variety.....	3-21

Fig. 3-32 Conveyor Speed Screen	3-24
Fig. 3-33 Fine Tuning Topping Coverage	3-25
Fig. 3-34 Catch Tray Placement.....	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 Spray Valve Assembly	5-2
Fig. 5-2 Purge Valve.....	5-2
Fig. 5-3 Drive Descriptions	5-3
Fig. 5-4 Drive Settings.....	5-4

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.

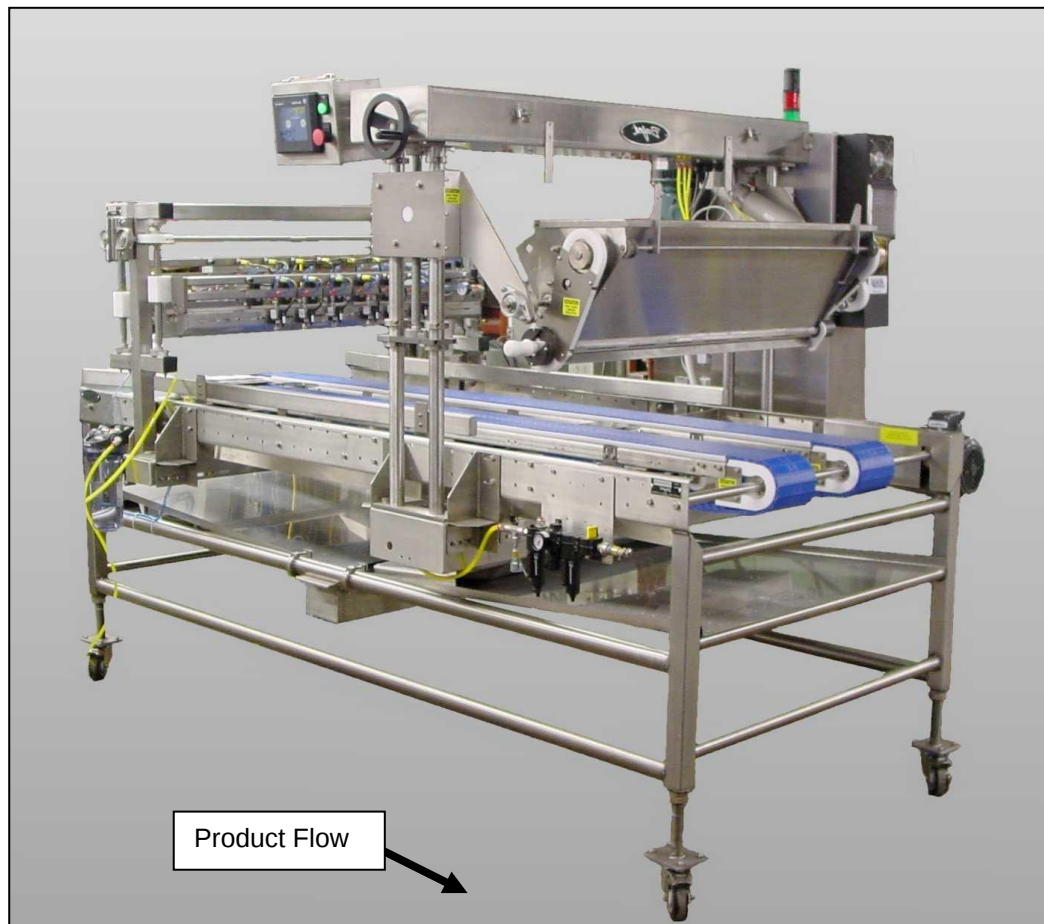


Fig. 1-1 Model 9840 Right Hand

1.0 INTRODUCTION cont'd.

1.1 Specifications

Currently the 9840S/9940S is capable of applying various toppings at a conveyor speed of up to 120 fpm.

Requirements for the 9840S/9940S:

Voltage: 110 – 220 1Ø, 220 or 360 - 512 Volts 3 Ø, 50 - 60Hz

Current: 15 Amps maximum

Air Requirements: 80 PSI @ 1 SCFM

Water Requirements: 40 PSI @ 7.2 GPH

1.2 Model Numbers

Model 9840S (Right Hand) – Product flow from left to right from operator side.

Model 9940S (Left Hand) – Product flow from right to left from operator side.

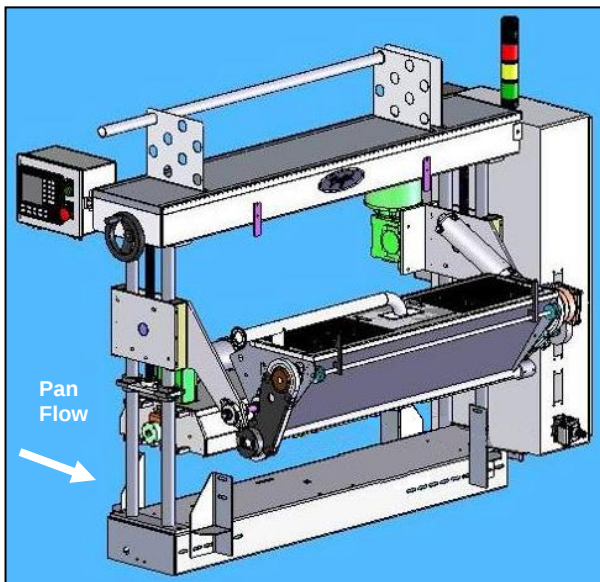


Fig. 1-2 Model 9840 Right Hand

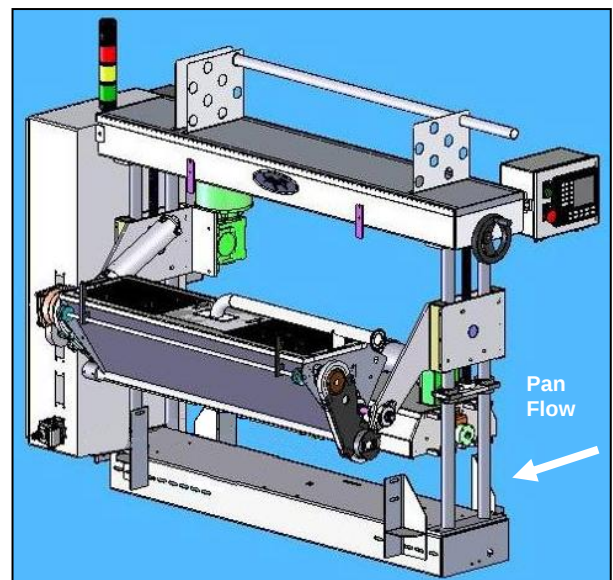


Fig. 1-3 Model 9940 Left Hand

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:

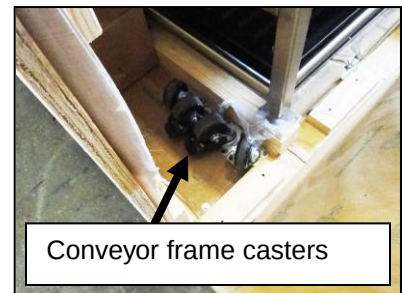
1. Proper clearance is available in area of conveyor where the unit is to be installed.
2. The conveyor system must not allow pans to backup, turn, or otherwise interfere with pans entering the topper or discharged area.

2.1.1 Main assembly installation

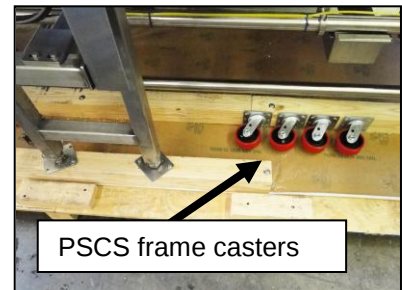
1. Determine where the unit will be placed in the production conveyor system.

Note:	For longer conveyor systems, extra casters have been shipped with the unit. Before moving the unit, secure all casters provided to the frame.
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2. Install and secure casters on all four corners of the conveyor.



3. Install and secure all four casters to PSCS frame.



4. Level unit making sure all casters are in full contact with the ground.

Fig. 2-1 Install Casters

2.0 INSTALLATION PROCEDURES cont'd.

2.1 Installation With Unit Mounted On Burford® Conveyor cont'd.

2.1.1 Main assembly installation cont'd.

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

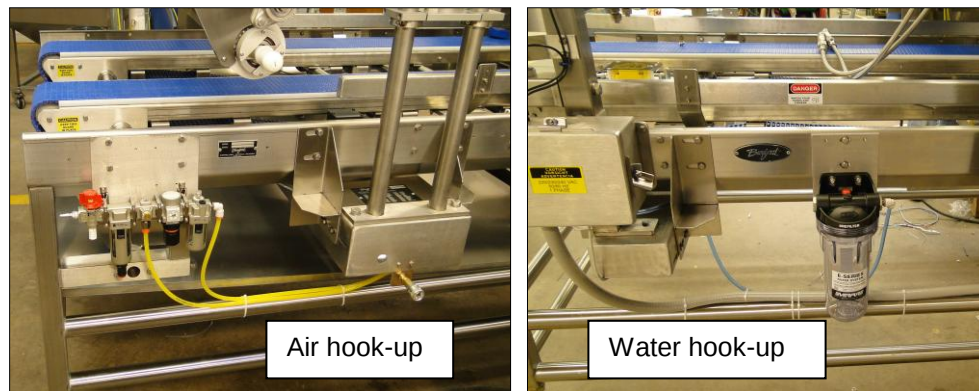


Fig. 2-2 Air And Water Hookup

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

2.0 INSTALLATION PROCEDURES cont'd.

2.2 Installation On Existing Conveyor

1. Mark and drill mounting holes using figure below as a guide.

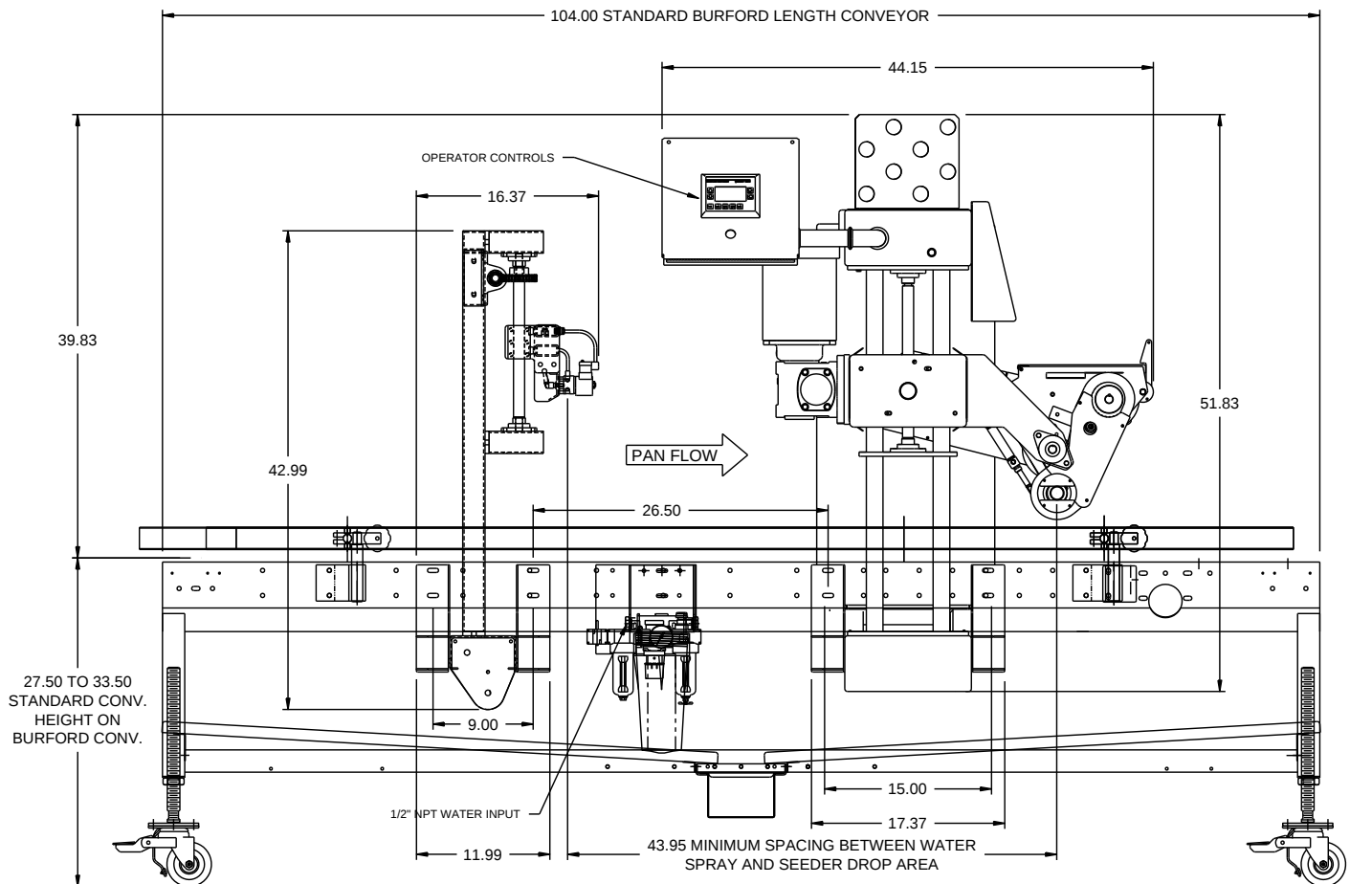


Fig. 2-3 Model 9840 Shown

2.0 INSTALLATION PROCEDURES cont'd.

2.2 Installation On Existing Conveyor cont'd.

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

Note:	Upper assembly will require support with bolts removed.
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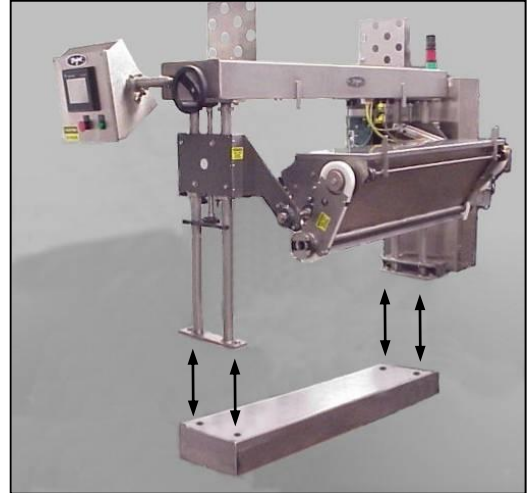


Fig. 2-4 Upper And Lower Assemblies

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

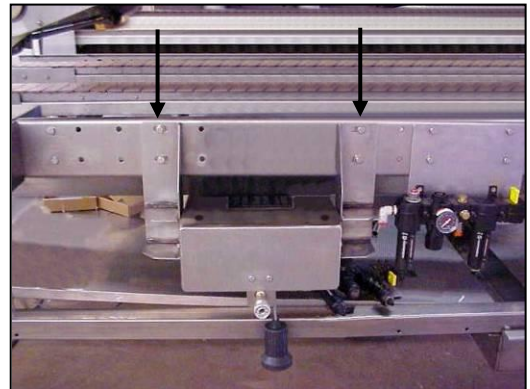


Fig. 2-5 Mounting Brackets

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

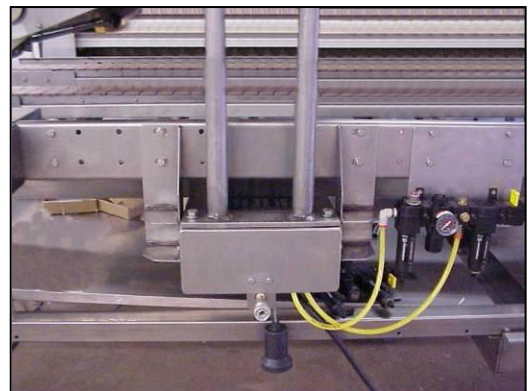


Fig. 2-6 Air Hose Placement

2.0 INSTALLATION PROCEDURES cont'd.

2.2 Installation On Existing Conveyor cont'd.

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

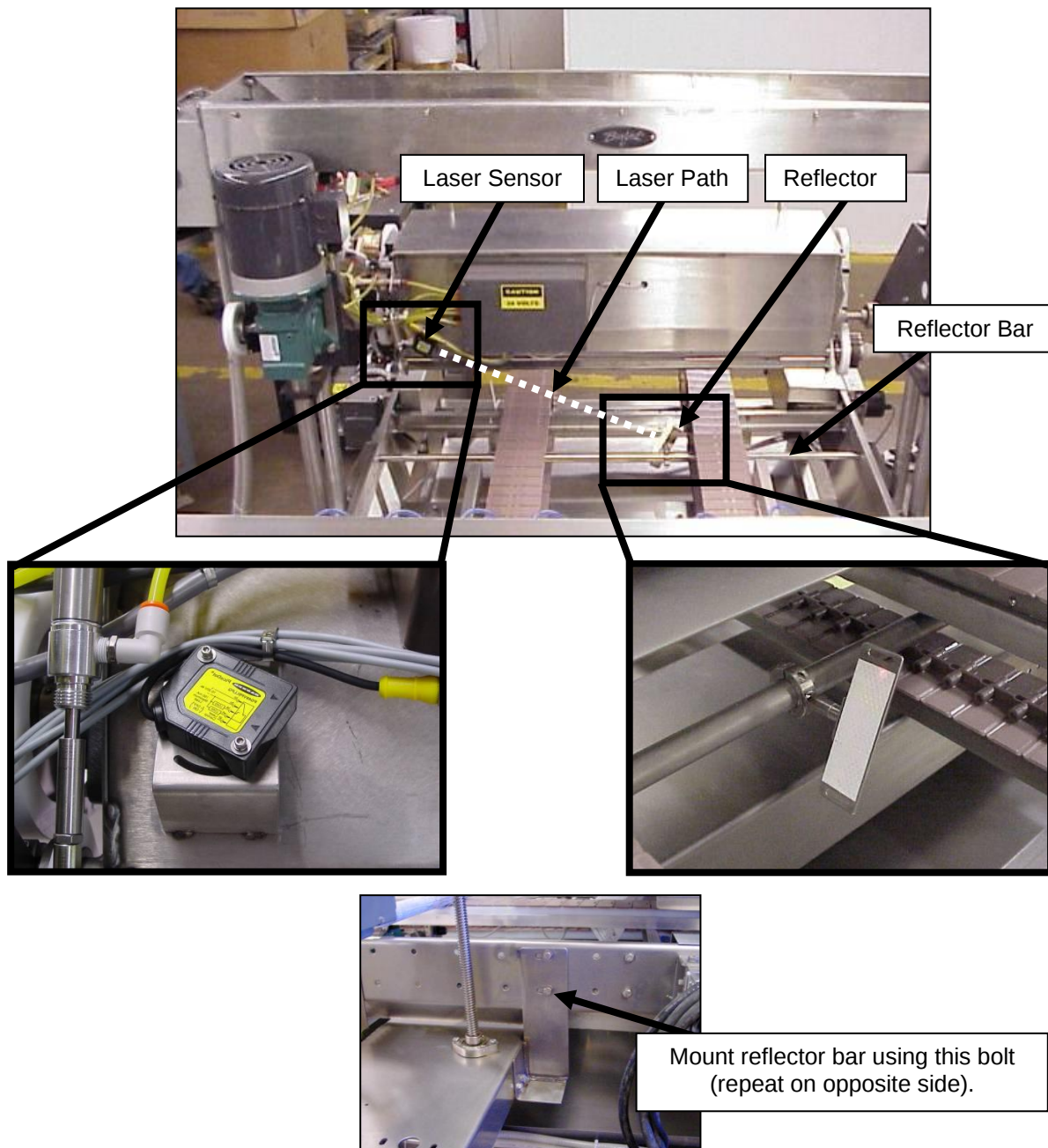


Fig. 2-7 Laser Pan Sensor Alignment

2.0 INSTALLATION PROCEDURES cont'd.

2.2 Installation On Existing Conveyor 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.

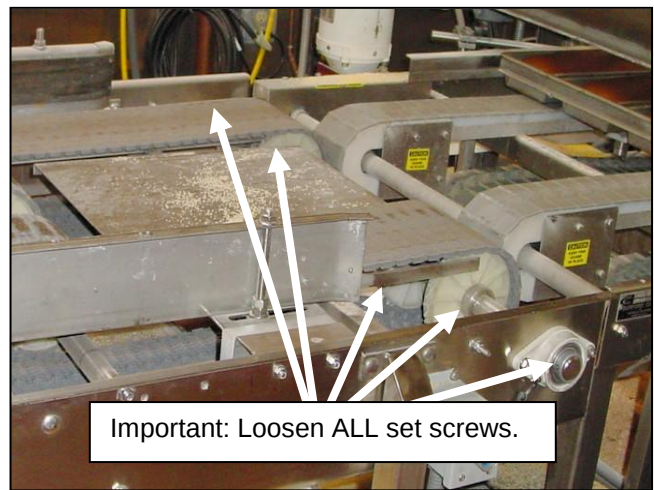


Fig. 2-8 Set Screw Locations

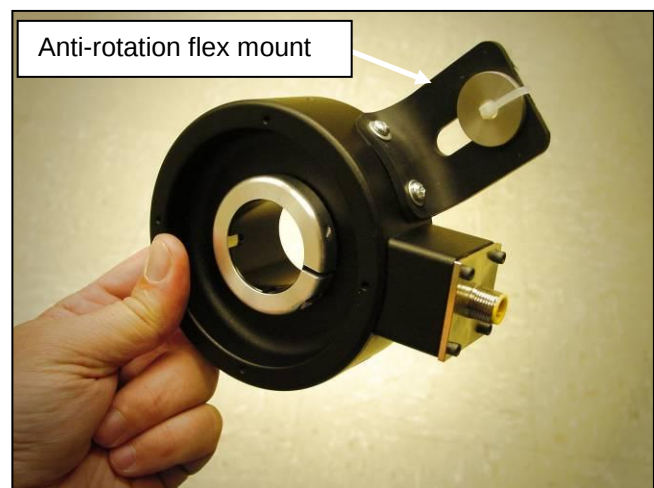


Fig. 2-9 Anti Rotation Flex Mount

3.0 OPERATION PROCEDURES

3.1 Theory Of Operation

Pans entering the system first encounter the water spray/split area (if equipped). 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.

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.

3.0 OPERATION PROCEDURES cont'd.

3.2 Control Panel

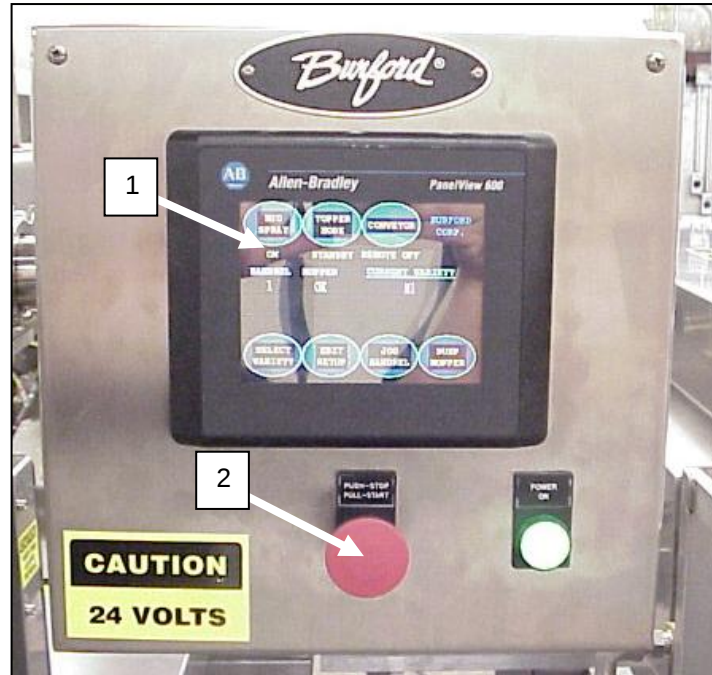


Fig. 3-1 Control Panel

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 start-up sequence.

3.0 OPERATION PROCEDURES cont'd.

3.3 Main Screen

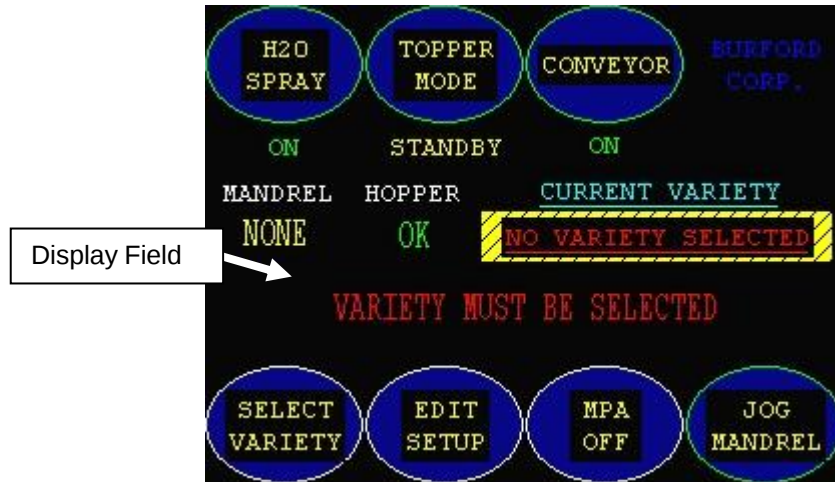


Fig. 3-2 Main Screen

Topper Mode

There are two (2) TOPPER MODES: STANDBY and RUN touch the “TOPPER MODE” box to toggle the mode.

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

Run Mode: When in this mode the unit will detect pans and dispense product. The “DUMP HOPPER” button in the bottom right corner will change to “AUTOFILL”, allowing access to control this function.

Note: All settings may be accessed and modified while in either mode.

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.

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 raised to the “DUMP” position.

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

3.0 OPERATION PROCEDURES cont'd.

3.3 Main Screen cont'd.



Function	Description
H2O Spray	This button toggles the water spray option between “ON”, “OFF” and “WATER SPRAY ONLY” status. The “WATER SPRAY ONLY” status indicates that ONLY the water sprays will be active when the pan trigger is activated. No topping will be applied.
Conveyor	This button toggles between “OFF”, “ON” and “REMOTE” if equipped with a Burford® conveyor. To control the conveyor from an external signal the REMOTE mode should be chosen. The status indicator will scroll through the different options as the button is depressed. The indicator below the button shows the current status. If REMOTE mode is chosen, after a few seconds the indicator will change to indicate the status of the external signal. REMOTE ON indicates the external signal is on and the conveyor is running. REMOTE OFF indicates that the external signal is off.
Mandrel	This indicator displays the number for the mandrel currently loaded in the unit. If the mandrel number is blinking, this indicates the mandrel override option has been activated and the variety selection display may not be using the proper mandrel.
Hopper	This indicator displays “HIGH”, “TILTED”, “OPEN”, “DUMP” or “OK”, depending upon the hopper position.
Current Variety	Displays the user-defined name of the currently selected variety.
Variety Select	This button instructs the display to advance to the variety selection screen.
Edit Setup	This button instructs the display to advance to the edit setup screen. 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.

3.0 OPERATION PROCEDURES cont'd.

3.4 Variety Setup Screen

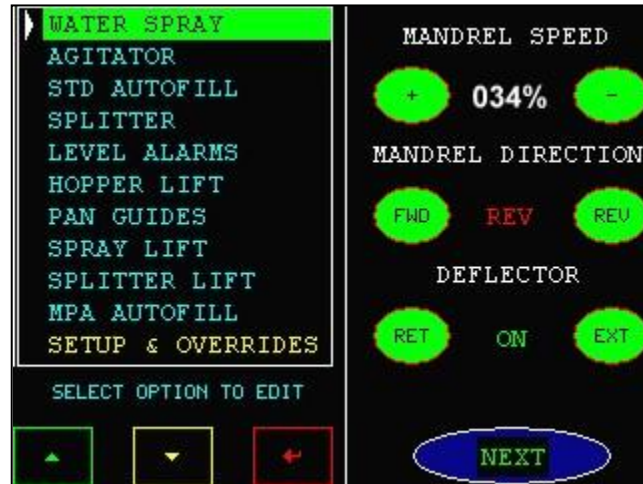


Fig. 3-3 Variety Setup Screen

This screen provides access to 15 different machine functions to allow custom machine configuration.

Function	Description
Mandrel Speed	Touch the (+) or (-) 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 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	The deflector bar is available to provide optimal product coverage. With the deflector bar in the active position, topping is dispensed by the mandrel onto the deflector bar, which allows large toppings or toppings that clump together to be more evenly applied.
Machine Options (left hand side)	Use the “UP” or “DOWN” arrow keys to position the white cursor next to the option desired, then touch the “↵” return box. See section 3.5 for individual screen descriptions.

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 “ON” or “OFF” buttons in the top half of the screen will select which individual spray valves will operate. The “H2O SPRAY OPERATION” allows the water spray function to be toggled between the “ON”, “OFF” or “H2O ONLY” setting for the particular variety being edited.

The “H2O ONLY” function allows the water to spray but prevents topping from being applied. The “H2O SPRAY TRIG. TIME” allows for precise control of the water spray in relation to the pan. The “PURGE” function will actuate all active spray valves while the button is depressed. 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.

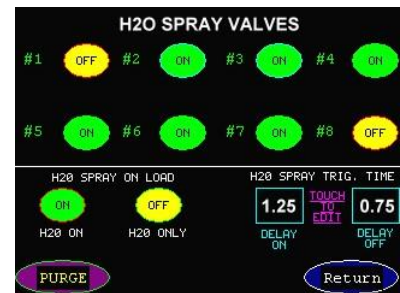


Fig. 3-4 Water Spray Screen

Agitator:

If equipped, “ON TIME” sets amount of time (seconds) the agitator rake will be stationary in the extended position. “OFF TIME” sets the amount of time (seconds) the agitator rake will be stationary in the retracted position. The speed the rake extends/retracts is controlled by flow controls on the agitator

valve located in enclosure on back of hopper. Use the “OFF” or “ON” buttons 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.



Fig. 3-5 Agitator Screen

3.0 OPERATION PROCEDURES cont'd.

3.5 Machine Options cont'd.

Auto Fill:

If equipped, depressing the “ON” or “OFF” buttons on the top half of the screen selects if the autofill 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 autofill will be set to active each time a variety is selected. If set to “OFF”, the current status of the autofill will not change when a new variety is selected.



Fig. 3-6 Autofill 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 “H2O SPLIT OPERATION” allows the water split function to be toggled “ON” or “OFF” for the particular variety being edited. The “H2O SPLIT TRIG. TIME” allows for precise control of the water split in relation to the pan. 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.

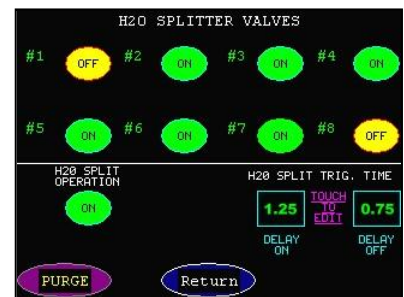


Fig. 3-7 Water Splitter Screen

3.0 OPERATION PROCEDURES cont'd.

3.5 Machine Options cont'd.

Level Alarms: Allows the displayed alarms to be toggled on or off.



Fig. 3-8 Level Alarm Screen

Hopper Lift: If equipped, depressing the “LOWER” or “HIGHER” 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”.



Fig. 3-9 Hopper Lift Screen

Caution: The hopper will automatically move while either the “LOWER” or “HIGHER” 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. 3-10 Pan Guides Screen

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 “LOWER” or “HIGHER” 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”.



Fig. 3-11 Water Spray Lift Screen

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

Splitter Lift: If equipped, depressing the “LOWER” or “HIGHER” 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”.

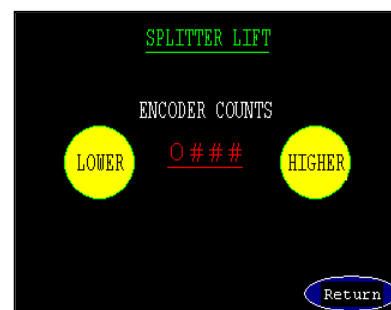


Fig. 3-12 Water Splitter Lift Screen

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

MPA Autofill: If equipped, touch the desired box to edit the setting for each of the seven functions for this machine option. See the MPA Autofill operator manual for detailed descriptions of each function.



Fig. 3-13 MPA Autofill Screen

3.0 OPERATION PROCEDURES cont'd.

3.5 Machine Options cont'd.

Setup & Overrides: From the screen shown, select the desired machine function.

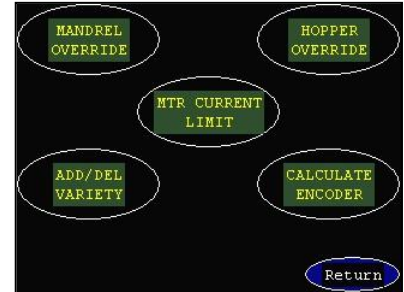


Fig. 3-14 Setup And Overrides Screen

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 mandrel number shown in the "MAIN SCREEN" will be "blinking red" to indicate the override option is active.



Fig. 3-15 Mandrel Override Screen

3.0 OPERATION PROCEDURES cont'd.

3.5 Machine Options cont'd.

Flour Duster:

If equipped, pressing “JOG” 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” and for the flour duster to operate for the particular variety being edited “YES” or “NO”. The “DELAY ON” setting is the time to delay between the pan triggering the proximity 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 product is beneath the duster.

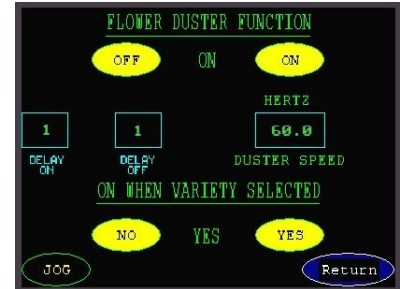


Fig. 3-16 Flour Duster Screen

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. 3-17 Hopper Override Screen

Hopper Dump Position:

The hopper will dump at any height.

Hopper Run Position:

The unit will enter run mode at any height or tilt.

Hopper Lid:

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

3.0 OPERATION PROCEDURES cont'd.

3.5 Machine Options cont'd.

Add/Del Variety:

Use the “UP” or “DOWN” 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”. NOTE: The current selected variety cannot be deleted.



Fig. 3-18 Add/Delete Variety Screen

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 “SELECT NEW” box. Follow instructions in Section 3.11 to configure the variety.

Calculate Encoder:

This machine function MUST be performed at initial installation OR if the PLC loses its memory. Follow screen directions to calculate the scaling factor for your unit.

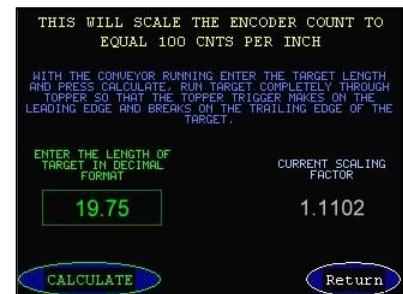


Fig. 3-19 Calculate Encoder Screen

Note: A pan equaling the dimension entered must be fed through the unit once the “calculate” button has been pressed.

Note: This function must be completed at initial installation and/or if the PLC loses its memory.

3.0 OPERATION PROCEDURES cont'd.

3.5 Machine Options cont'd.

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[®] Corp. before making changes to these values.

3.0 OPERATION PROCEDURES cont'd.

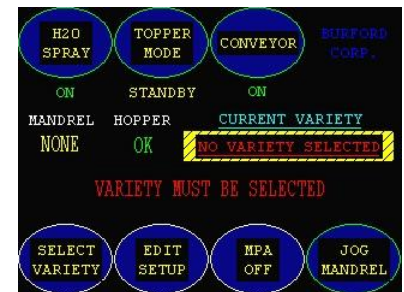
3.6 Daily Startup

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.



Fig. 3-21 Startup Screen

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



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



Fig. 3-22 Mandrel Insertion

4. Lock the topping mandrel in place by turning it until it is solidly engaged in the mandrel drive mechanism. See figure 3-23 for the correct mandrel locking position for a right hand machine.

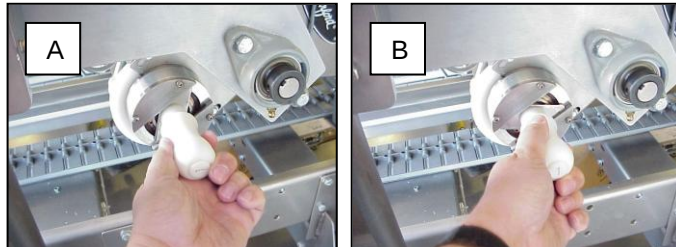


Fig. 3-23 Reverse Rotation (A) Forward Rotation (B)

3.0 OPERATION PROCEDURES cont'd.

3.6 Daily Startup cont'd.

5. Load the hopper with the required topping.
6. Press “VARIETY SELECT” 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.



Fig. 3-24 Select Active Variety Screen



Fig. 3-25 Motor Moving 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 and Conveyor modes. Toggle the “TOPPER MODE” to “RUN”.

Note: If “Calculate Encoder” has not been established for this machine, see Section 3.5.



9. Begin production.

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” (as shown).

3.0 OPERATION PROCEDURES cont'd.

3.7 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 3.8). 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. 3-26 Changing To Different Variety

3.0 OPERATION PROCEDURES cont'd.

3.8 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. 3-27 Go To Dump Screen

3. Repeat steps 3 through 8 of Section 3.9 to select the desired variety and begin operation.

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

3.0 OPERATION PROCEDURES cont'd.

3.9 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 "VARIETY SELECT" and select the variety to edit. Next, touch "EDIT SETUP". This function is password protected. Contact your supervisor or Burford® Corp. for password.



2. Once the password has been entered, the following screen will appear. Read and understand the variety displayed in the screen from step 1 will be the variety modified. Then, touch the "CONTINUE" box.



Fig. 3-28 Information Screen

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

3. 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 INV. FRQ" box and follow screen instructions. For more parameters, touch the "CONTINUE" box.



Fig. 3-29 Modified Variety Screen

3.0 OPERATION PROCEDURES cont'd.

3.9 Changing Parameters For An Existing Variety cont'd.

- This screen controls available operating parameters. Use the "UP/DOWN" arrows to move the selection arrow next to the desired machine parameter and touch the red "return" box for additional screens. When the desired changes are complete, touch the "NEXT" box. See Section 3.4 for additional information about this screen.



- Enter the pan dimensions used for this variety in the boxes provided. Enter number of rows in direction of travel. These settings are utilized by the unit to provide optimal seed coverage. Touch the "CONTINUE" box to save new entries and advance to the next screen. See Section 3.13 for detailed pan setup instruction.

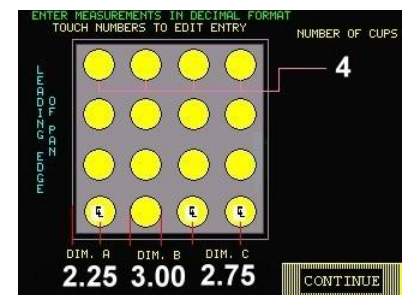


Fig. 3-30 Bun Pan Setup Screen

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.

- Select "Return" to exit variety set-up or "CONTINUE" to return to the setup menu. Select "SYSTEM INFO" to look at the error history of the unit (Section 4.2).



3.10 Fine-Tuning H2O 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.



3.0 OPERATION PROCEDURES cont'd.

3.11 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® Corp. for password.



2. Once the password has been entered the following screen will appear. Read and understand the variety displayed in the screen from step 1 will be the variety modified. Then, 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® Corp. for additional information.

3. Do Not modify the name of this variety. Touch the "CONTINUE" box to advance to the "ADD/DEL VARIETY" machine option.

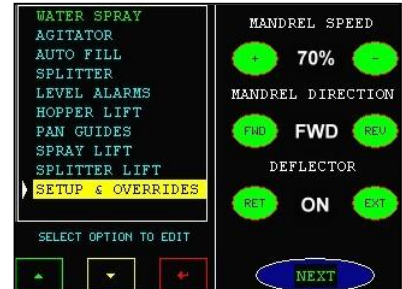


Fig. 3-31 Creating A New Variety

3.0 OPERATION PROCEDURES cont'd.

3.11 Creating A New Variety cont'd.

- This screen controls available operating parameters. Use the "UP/DOWN" arrows to move the selection arrow next to "SETUP & OVERRIDES" option and touch the red "return" box to select. From the "SETUP & OVERRIDES" screen, touch the "ADD/DEL VARIETY" button. This will advance the display to the screen shown in step 5.



- Use the "UP/DOWN" boxes to move the selection arrow next to the first available "NOT USED" variety. Touch the "SELECT NEW" box to advance to the next screen.



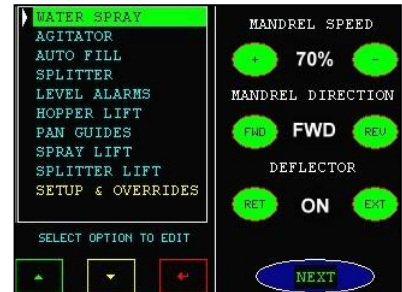
- Modify the name of the newly created variety as desired. Change the conveyor speed as required by touching the "CONVEYOR INV. FRQ" box. Once changes are complete, touch the "CONTINUE" box.



3.0 OPERATION PROCEDURES cont'd.

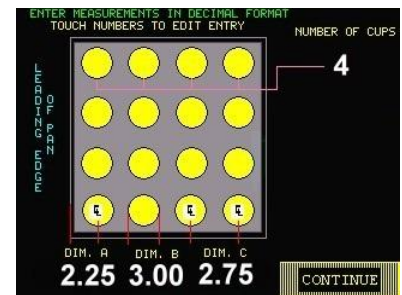
3.11 Creating A New Variety cont'd.

7. This screen controls available operating parameters. First, change the three operating parameters on the right hand side of the screen as needed. Then, use the “UP/DOWN” arrows to move the selection arrow next to the desired machine parameter and touch the red “return” box for additional screens. When the desired changes are complete, touch the “NEXT” box. See Section 3.4 for additional information about this 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. Enter the pan dimensions used for this variety in the boxes provided. Enter number of rows in direction of travel. These settings are utilized by the unit to provide optimal seed coverage. Touch the “CONTINUE” box to save new entries and advance to the next screen. See Section 3.13 for detailed pan setup instruction.



9. Touch the “RETURN” box to exit variety setup.



3.0 OPERATION PROCEDURES cont'd.

3.12 Changing Conveyor Speed

This procedure can be used to modify the conveyor speed if the unit was factory installed on a Burford® Conveyor System.

1. Touch the “EDIT SETUP” box and enter password to advance to the variety setup screen.



2. Verify this is the correct variety to be modified. This screen allows the user access to customize setup changes for each variety. Touch the “CONVEYOR INV. FRQ” (Conveyor Inverter Frequency) box to advance to the “Conveyor Speed” screen.



3. To modify the conveyor speed, touch the inverter speed display box and enter a new inverter speed from the pop-up data entry box. Touch RETURN when finished.

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

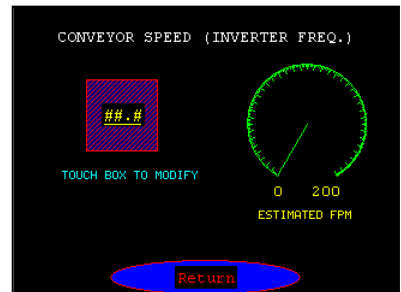


Fig. 3-32 Conveyor Speed Screen

3.0 OPERATION PROCEDURES cont'd.

3.13 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.

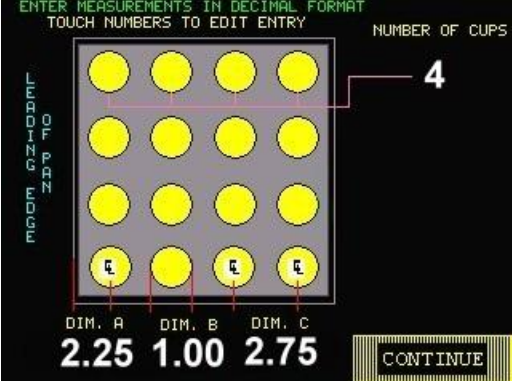
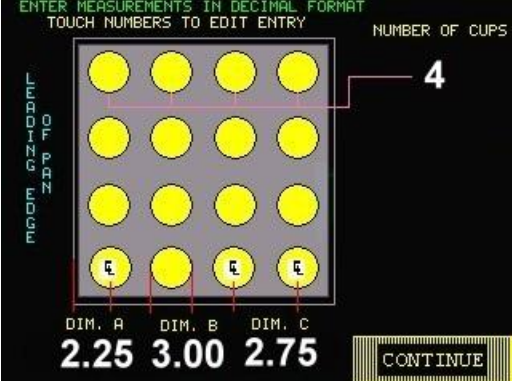
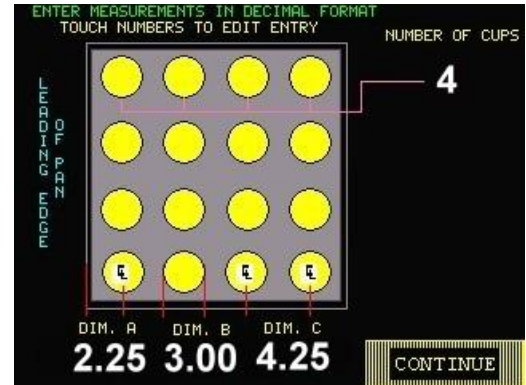
1. At this point, we are only concerned with the position of the seed on the first row of dough pieces. Begin with adjusting "DIM B" to 1.00 and measure the distance from the leading edge of the pan to the center of the first cup. Enter this dimension in "DIM A". These dimensions should provide a 1" 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.

Fig. 3-33 Fine Tuning Topping Coverage

3.0 OPERATION PROCEDURES cont'd.

3.13 Fine-Tuning Topping Coverage cont'd.

3. IF equipped with a "DIM D", 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.

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.

3.14 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.

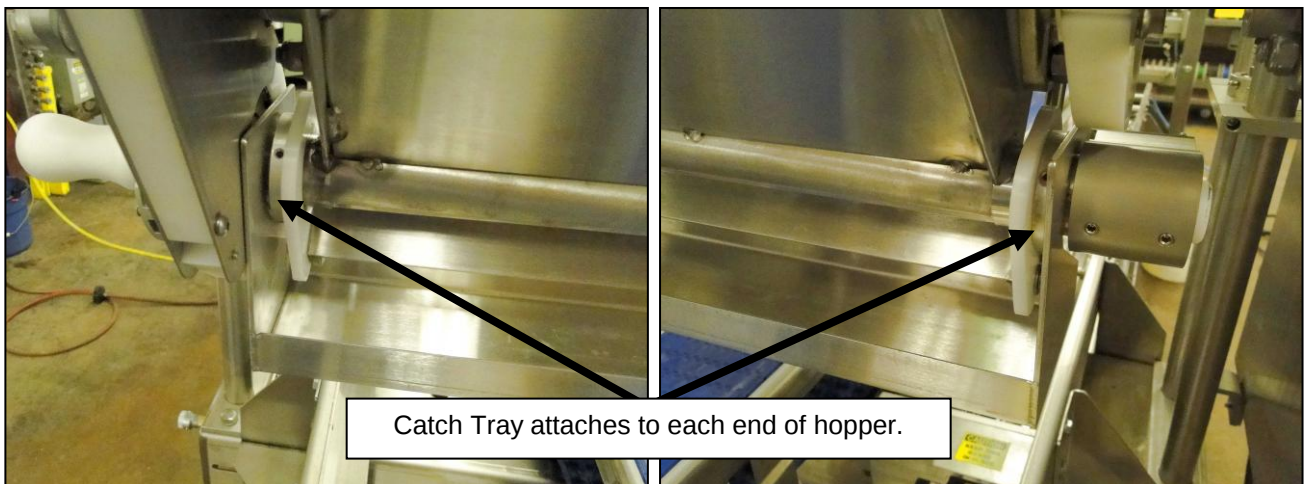


Fig. 3-34 Catch Tray Placement

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 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 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 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 set-up screen (see section 3.9 step 6). 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 touching the “CHECK SENSORS” box from the main screen. This screen is used to observe the logic state of each sensor on the Burford® Smart Rotary Topper. The text will latch green when sensor is activated. Once made, the text will stay green until the CLEAR push button is touched. If sensor is not activated, then it will be displayed by yellow text.



Fig. 4-3 Troubleshooting Screen

5.0 MAINTENANCE

Warning: Do NOT use any form of high pressure or running fluid systems for cleaning or any other purpose on this unit.

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 all spray and split valves for proper operation.
4. Check all pneumatic restrictors 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 site away from the seeder unit
2. Separate the conveyor chain and clean at a site away from the topper.

5.0 MAINTENANCE cont'd.

5.3 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.
2. Connect a $\frac{1}{4}$ " line to the "PURGE" valve and route to a suitable container (purging may require approximately 10 – 20 gallons of water through the system).
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. 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.



Fig. 5-1 Spray Valve Assembly

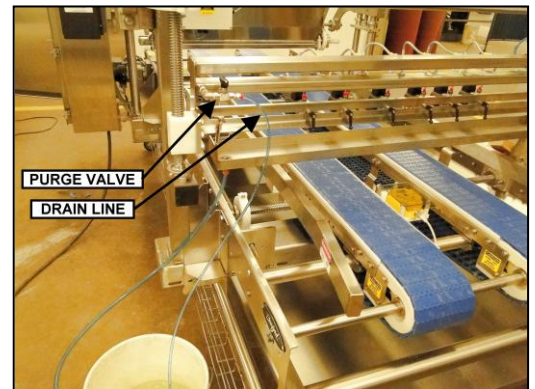


Fig. 5-2 Purge Valve

5.0 MAINTENANCE cont'd.

5.4 Drive Descriptions

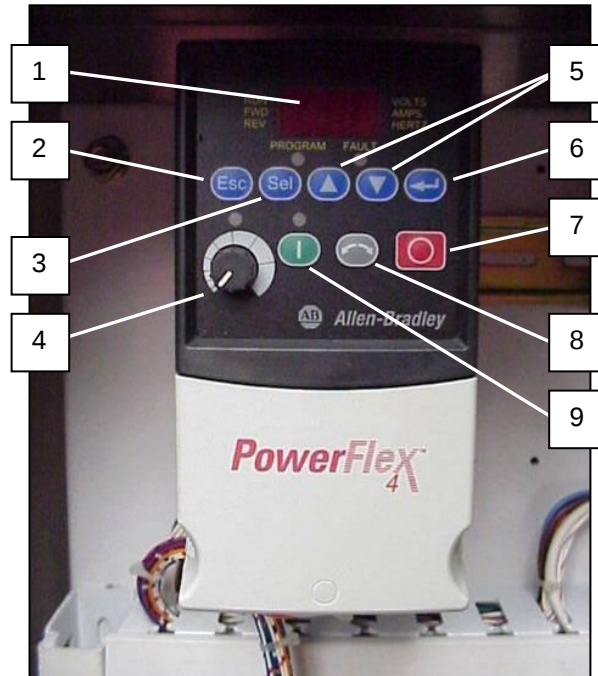


Fig. 5-3 Drive Descriptions

The Burford[®] Smart Seeder is equipped with programmable motor controllers. The motor controller shown above 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.

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.

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

5.0 OPERATION PROCEDURES cont'd.

5.5 Drive Settings

The motor controllers have been preset at Burford® Corp. for your particular application. The digital input function is used to configure the controllers for remote operation via the programmable logic controller and touch screen interface. Parameters NOT listed below should remain at the manufacturer's default values.



Fig. 5-4 Drive Settings

Parameter	Mandrel (DRV1)	Conveyor (DRV2)	Automation (DRV3)	Flour Duster (DRV4)	Description
A051	0	0	0	0	Digital Input 1 Select
A052	0	0	0	0	Digital Input 2 Select
*A080	0.2	0.2	0.3	0.5	DC Brake Time
*A081	1.5	1.5	2.0	2.5	DC Brake Level
A092	5	5	5	5	Auto Restart Tries
A103	4	4	4	4	Comm. Data Rate
A104	1	2	3	4	Comm. Node Address
A105	2	2	2	2	Comm. Loss Action
A106	1	1	1	1	Comm. Loss Time
P031	460	460	230	460	Motor Voltage (nameplate)
P035	90	Default	Default	Default	Maximum Freq
P036	5	5	2	2	Start Source
P037	7	7	7	7	Stop Mode
P038	5	5	5	5	Speed Reference
*P039	0.5	0.5	3.0	0.1	Accel Time
P040	0.1	0.1	0.1	0.1	Decel Time

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

6.0 RECOMMENDED SPARE PARTS LIST

In order to prevent valuable down time, Burford® Corp. recommends the following parts be kept in stock.

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

- Machine Voltage
- Model Number
- Serial Number

PART #	QTY	DESCRIPTION
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
304161-004	3	DRIVER,AC INVERTER,440-1 IN,220-3 OUT
304239	1	CLUTCH/BRAKE, SHAFT MOUNT, 24 VDC
304350-001	2	SENSOR PROX, 8MM, 10-30 VDC, PNP, N.C.
304650	1	VALVE, 1/8" NPT, 24 VDC, N.C., DIN CONNECTOR
610172	1	SWITCH, LIGHT BULB, 24 VDC, LED
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
610452	1	RELAY, TERMINAL MOUNTING, 110 VAC, SSR
610797	1	SENSOR, PHOTO, RETRO-REF, 10-30 VDC, N.O./N.C.
610913	1	POWER SUPPLY, 340/480-24 VDC, 10 AMP
611120-144	1	ENCODER, 1.438 THRU BORE
611103-001	1	SLEEVE, 1" BORE, ENCODER (611102)
611119	1	VALVE, SOLENOID, 24 VDC, 2 WAY, 1/4", w/FLOW CONV.
611237	2	BEARING, PILLOW BLOCK, 5/8", SST
611238	2	BEARING, FLANGE, 5/8", SST
611365	1	VALVE, SOLENOID, 24 VDC, 2 WAY, 1/8", w/FLOW CONV.
611387	2	BEARING, FLANGE, 3/4", SST
710623	1	RWK,BEARING, ROD END,1/2-20NF

7.0 ASSEMBLY DRAWINGS AND PARTS LISTS

7.1 Seeder Frame Assembly (Sheet 1 of 2) (210381 "K")

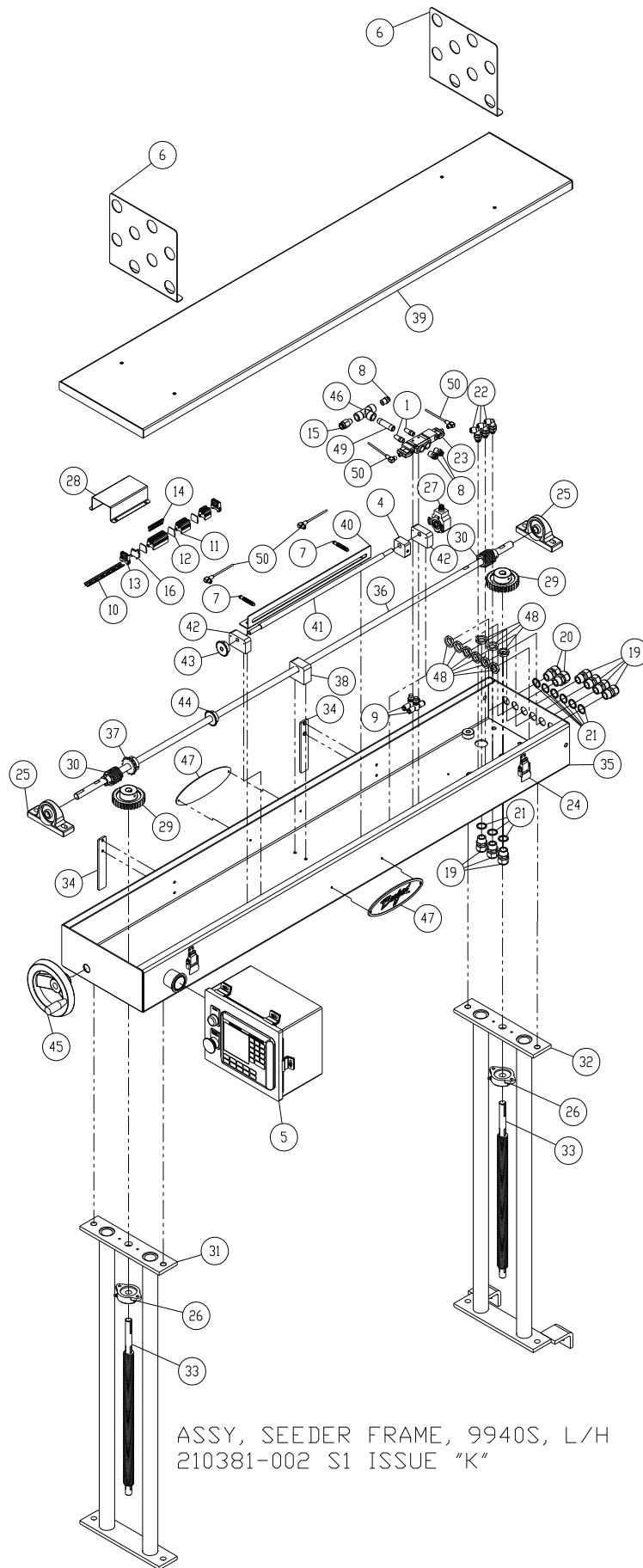
REF	PART #	QTY	DESCRIPTION
1	111497	2	MUFFLER, 1/8" NPT
2	142113	6'	CABLE, 16 AWG, 4 COND (NOT SHOWN)
3	210385	REF	ASSY, PNEUMATICS, SEEDER, 9840S
4	210411	1	ASSY, BLOCK, HEIGHT ADJ TARGET
5	210429	1	ASSY, ENCLOSURE, DISPLAY, 9840S/9940S
6	300598	2	BRACKET, MANDREL RACK
7	304350-001	2	SENSOR, PROX, 8MM, 10-30V, PNP, NC, TURCK
8	401152	3	FITTING, CONN, 1/4MPT X 1/4T, ENP, Q.R.
9	401302	2	VALVE, REG, FLOW CONTROL, ENP, Q.R.
10	610360	6"	TERMINAL, DIN RAIL, MINI
11	610361	25	TERMINAL, BLOCK, MINI
12	610362	3	TERMINAL, END COVER, MINI
13	610363	2	TERMINAL, ANCHOR, END CLAMP, MINI
14	610364	1	TERMINAL, JUMPER, 10-POL, MINI
15	610507	1	FITTING, CONN, 1/4NPT X 3/8T, ENP, Q.R.
16	610534	1	TERMINAL, GROUNDING, MINI
17	610885-05	20'	TUBING, 1/4" POLY, YELLOW (NOT SHOWN)
18	610886-05	20'	TUBING, 3/8" POLY, YELLOW (NOT SHOWN)
19	610953	7	CONNECTOR, CORD, .20-.35, DOME, NYLON
20	610954	2	CONNECTOR, CORD, .39-.56, DOME, NYLON
21	610955	9	CONNECTOR, SEAL RING, 1/2NPT, POLYETH
22	610956	3	FITTING, BLKHD ELL 1/4T, ENP, Q.R.
23	611119	1	VALVE, SOL, 24V, 3 WAY, CLOSED CEN, 1/4P
24	611165	4	LATCH, DRAW, COMPRESSION SPRING
25	611237	2	BEARING, 5/8 PILLOW BLOCK, SST

210381 (9940) LH ISSUE "K"

7.1 Seeder Frame Assembly (Sheet 1 of 2) (210381 "K") cont'd.

REF	PART #	QTY	DESCRIPTION
26	611238	2	BEARING, 5/8, 2 BOLT FLANGE, SST
27	611120-144	REF	ENCODER, 1.438 THRU BORE
28	710161	1	COVER, TERMINAL STRIP, 9840S/9940S
29	711938	2	RWK, WORM GEAR
30	711939	2	RWK, WORM STEEL, 5/8" B, 10 D.P.
31	711995	2	A/W, UPRIGHT SUPT
32	REF	REF	A/W, UPRIGHT SUPT, ENCL MT
33	712004	2	ALL-THREAD, 1"-5 ACME, HEIGHT ADJ.
34	712008	2	BAR, HOPPER LID STOP, 9840S
35	712009-WD	1	A/W, TOP SEEDER CHANNEL, WASHDOWN
36	712025	1	SHAFT, HEIGHT ADJUSTMENT, 9840S
37	712026	1	SPROCKET, REWORK, 35B14, 5/8 BORE
38	712029	1	BLOCK, SHAFT SUPT, HEIGHT ADJ.
39	712047	1	A/W, COVER, TOP CHANNEL, 9840S/9940S
40	712961	1	BRACKET, HEIGHT ADJ. PROX
41	712958	1	SHAFT, ALL-THREAD PROX COUNT
42	712219	1	BLOCK, HEIGHT ADJ SHAFT
REF	712960	1	BLOCK, HEIGHT ADJ
43	712221	1	SPROCKET, 25-B-19 3/8" BORE
44	712222	1	SPROCKET, 25-B-19 5/8" BORE
45	712376	1	HANDLE, REWORK, 6" DIA, ALUM
46	A06858	1	FITTING, TEE, 1/4 NPTF, SST
47	A08049	2	NAMEPLATE, BURFORD [®] LOGO, LARGE
48	C00174	9	LOCKING NUT, 1/2 NPT, NYLON
49	C00905	1	FITTING, NIPPLE, 1/4 NPTM X 2, SST
50	C07626	2	SENSOR, CABLE, M8, 3 WIRE, F, C, QC, 90

210381 (9940) LH ISSUE "K"



ASSY, SEEDER FRAME, 9940S, L/H
210381-002 S1 ISSUE "K"

7.2 Seeder Frame Assembly (Sheet 2 of 2) (210381 "K")

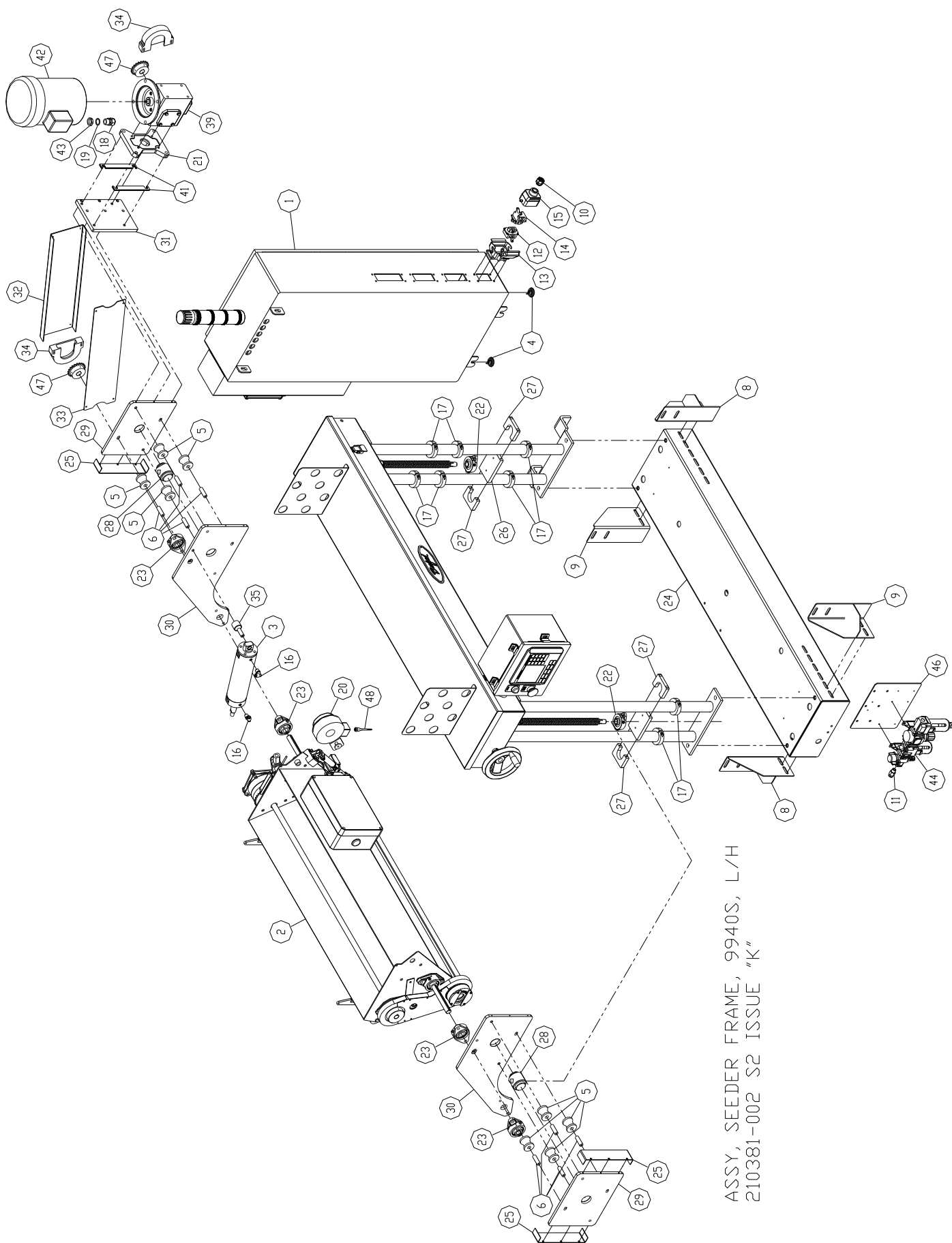
REF	PART #	QTY	DESCRIPTION
1	210400-ST	1	ASSY, ENCLOSURE, MAIN, 9840S/9940S
2	210404-001	1	ASSY, SEEDER HOPPER, 9940S, L/H
3	210446	1	ASSY, CYLINDER, HOPPER DUMP
4	303056	2	PLUG, HOLE, SST 7/8" DIA
5	304015	8	ROLLER, LIFT
6	304016	8	SHAFT SPACER ROLLER LIFT 9840
7	304365	1	A/W, CATCH PAN - SEEDER HOPPER (NOT SHOWN)
8	304830	2	A/W, ANGLE MOUNT, 9840
9	304831	2	A/W, ANGLE MOUNT, 9840S
10	610167	1	CONNCTOR, ADAPTER, PG13.5 - 1/2" NPT
11	610507	1	FITTING,CONN,1/4NPT X 3/8T,ENP,Q.R.
12	610554	1	CONNECTOR, CONTACT INSERT, 6 PIN, FEM
13	610555	1	CONNECTOR,BASE,1-LATCH,6PIN
14	610556	1	CONNECTOR, CONTACT INSERT, 6 PIN, MALE
15	610557	1	CONNECTOR, HOOD, 1-LATCH, 6 PIN
16	610602	2	FITTING, ELL, 1/4NPT X 1/4T,ENP,Q.R
17	610839	8	COLLAR,1-1/2 SPLIT, SST
18	610953	1	CONNECTOR, CORD, .20-.35, DOME, NYLON
19	610955	1	CONNECTOR,SEAL RING,1/2NPT,POLYETH
20	REF	REF	REF
21	611189	1	PLATE,BASE,TIGEAR BOLT ON
22	611238	2	BEARING, 5/8, 2 BOLT FLANGE, SST
23	611387	4	BEARING, 3/4", 2 BOLT FLANGE, SST
24	711992	1	AW, CHANNEL BASE, 9840S
25	712000	3	BRACKET, COVER UPRIGHT ROLLER, 9840S

210381 (9940) LH ISSUE "K"

7.2 Seeder Frame Assembly (Sheet 2 of 2) (210381 "K") cont'd.

REF	PART #	QTY	DESCRIPTION
26	712001	2	PLATE, BEARING MT, HEIGHT ADJ, 9840S
27	712002	4	BLOCK, CLAMP, BEARING PLATE
28	712003	2	NUT, HIEGHT ADJ, 9840S
29	712005	2	PLATE, SIDE, HEIGHT ADJ, 9840S
30	712006	2	PLATE, SIDE, HOPPER MNT, 9840S
31	712007	1	PLATE, REDUCER MOUNT
32	712383	1	CHANNEL, COVER, MANDREL DRIVE, 9840
33	712384	1	PLATE, COVER, MANDREL DRIVE, 9840
34	712402	2	GUARD, END, MAN.,21T, #35 CHAIN
35	712853	1	ROD, CYL. MNT., HOPPER DUMP
36	712980	1	SENSOR,REFLECTR,TAPE 4 3/4X1 1/2 (NOT SHOWN)
37	955400	1	NUT HEX JAM 1/2-20 UNF SST (NOT SHOWN)
38	971808	2	SCREW SET SOC #10-24 X 1/2 SST (NOT SHOWN)
39	A04679	1	REDUCER, GEAR, 25:1
40	A04755	1	A/W, SEEDER DUMP TRAY (NOT SHOWN)
41	A04764	6	BAR, MOTOR SPACER, SEEDER
42	C00028	1	MOTOR,1/3HP,230/460V,3PH,56C,NO BASE
43	C00174	1	LOCKING NUT, 1/2 NPT, NYLON
44	C00404	1	FRL COMBO w/ SHUTOFF VALVE & GAUGE
45	C01237	6'	CABLE, 22 AWG, 15 COND, SHIELDED (NOT SHOWN)
46	C03335	1	PLATE, MOUNTING F.R.L.
47	C04828	2	SPROCKET, REWORKED 35-B-21, .75B
48	C06753-002	1	SENSOR,CABLE,M12,5WIRE,F,QC,STR,SH
REF	610962	1	SENSOR,REED,5-30VDC,2"CYL,QC

210381 (9940) LH ISSUE "K"



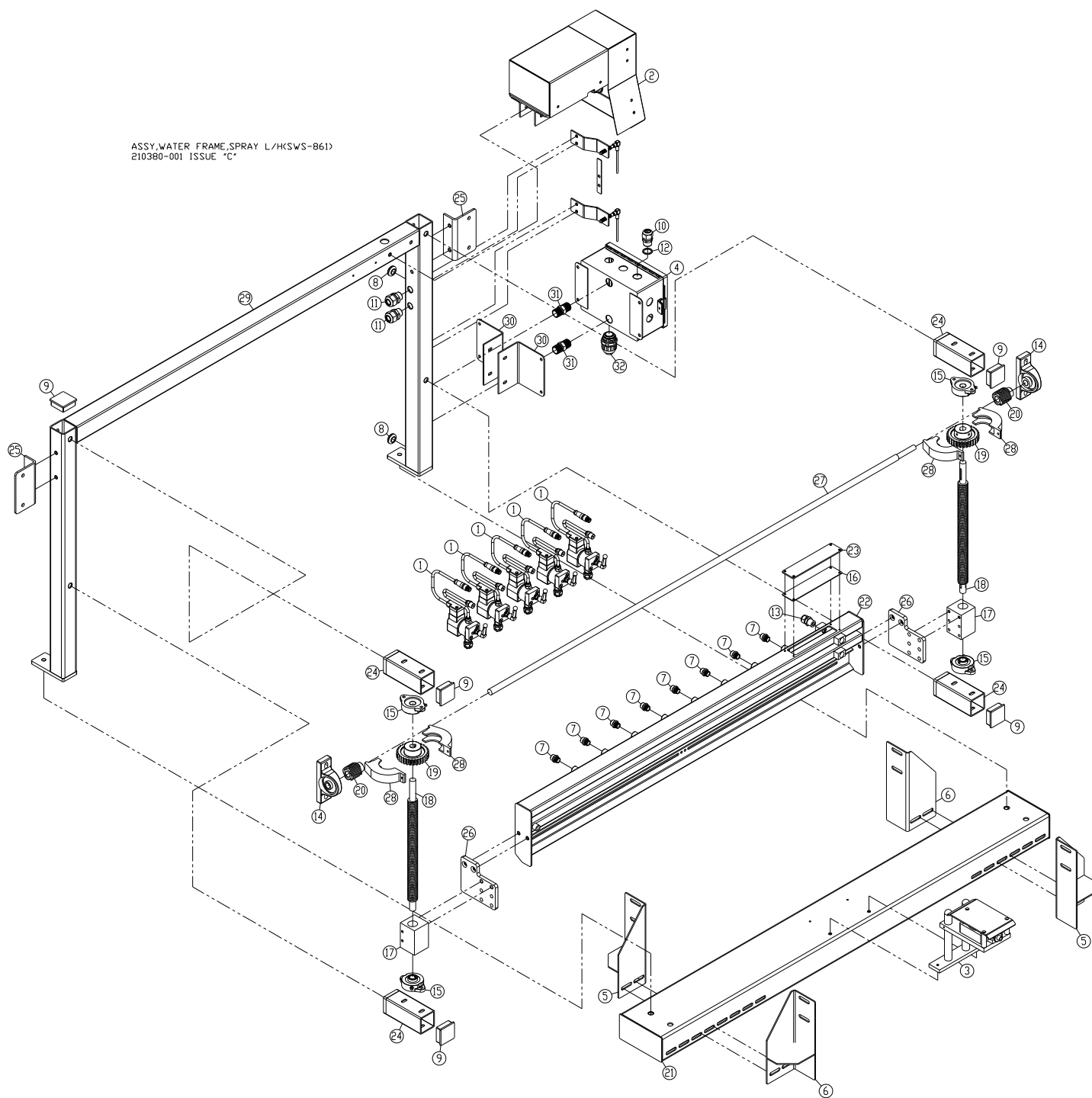
ASSY, SEEDER FRAME, 9940S, L/H
210381-002 S2 ISSUE "K"

7.3 Auto Spray Assembly (210380-001 "C")

REF	PART #	QTY	DESCRIPTION
1	210389	REF	ASSY, NOZZLE, WATER SPRAY
2	210395-001	REF	ASSY, AUTO ADJ, SINGLE SPRAY
3	210397	1	ASSY, SENSOR, PANCAKE PROX.
4	210398-001	1	ASSY, ENCLOSURE WATER SPRAY
5	304830	2	A/W, ANGLE MOUNT, 9840
6	304831	2	A/W, ANGLE MOUNT, 9840S
7	610169	8	SENSOR,BULKHEAD,M12,5 WIRE,F,QC
8	610922	2	GROMMET, 1/2B X 3/16G X 1/8W
9	610923	5	PLUG, 2" SQ TUBE, PLASTIC
10	610950	1	CONNECTOR,SEAL INSERT,.200 2HOLES
11	610954	2	CONNECTOR, CORD, .39-.56, DOME, NYLON
12	610955	1	CONNECTOR,SEAL RING,1/2NPT,POLYETH
13	610969	1	CONNECTOR,CORD,3/16-5/16 STR, NYLON
14	611237	2	BEARING, 5/8 PILLOW BLOCK, SST
15	611238	4	BEARING, 5/8, 2 BOLT FLANGE, SST
16	611534	1	GASKET, TERMINAL MANIFOLD COVER
17	711933	2	BLOCK, INNER CHASSIS, HEIGHT ADJ.
18	711934	2	SHAFT, INNER CHASSIS, HEIGHT ADJ.
19	711938	2	RWK, WORM GEAR
20	711939	2	RWK, WORM STEEL, 5/8" B, 10 D.P.
21	712050	1	A/W, BASE WATER SPRAY 46"
22	712052	1	A/W, NOZZLE/ELEC. MNT.
23	712058	1	PLATE, TERMINAL MANIFOLD COVER
24	712059	4	A/W, BEARING MNT. VERTICAL
25	712077	2	BRACKET, BEARING MNT. HORIZ.
26	712078	2	PLATE, MANIFOLD MNT. MAIN
27	712080	1	SHAFT, HEIGHT ADJUSTMENT, WATER
28	712081	4	GUARD, WORM GEAR
29	712083	1	A/W, MAIN FRAME, WATER
30	712089	2	BRACKET, ENCLOSURE MNT.
31	712883	2	NIPPLE,REWORK,1/2 NPT,WATER SPRAY
32	C00179	1	CONNECTOR, CONDUIT,3/4"-STR NYLON

210380-001 ISSUE "C"

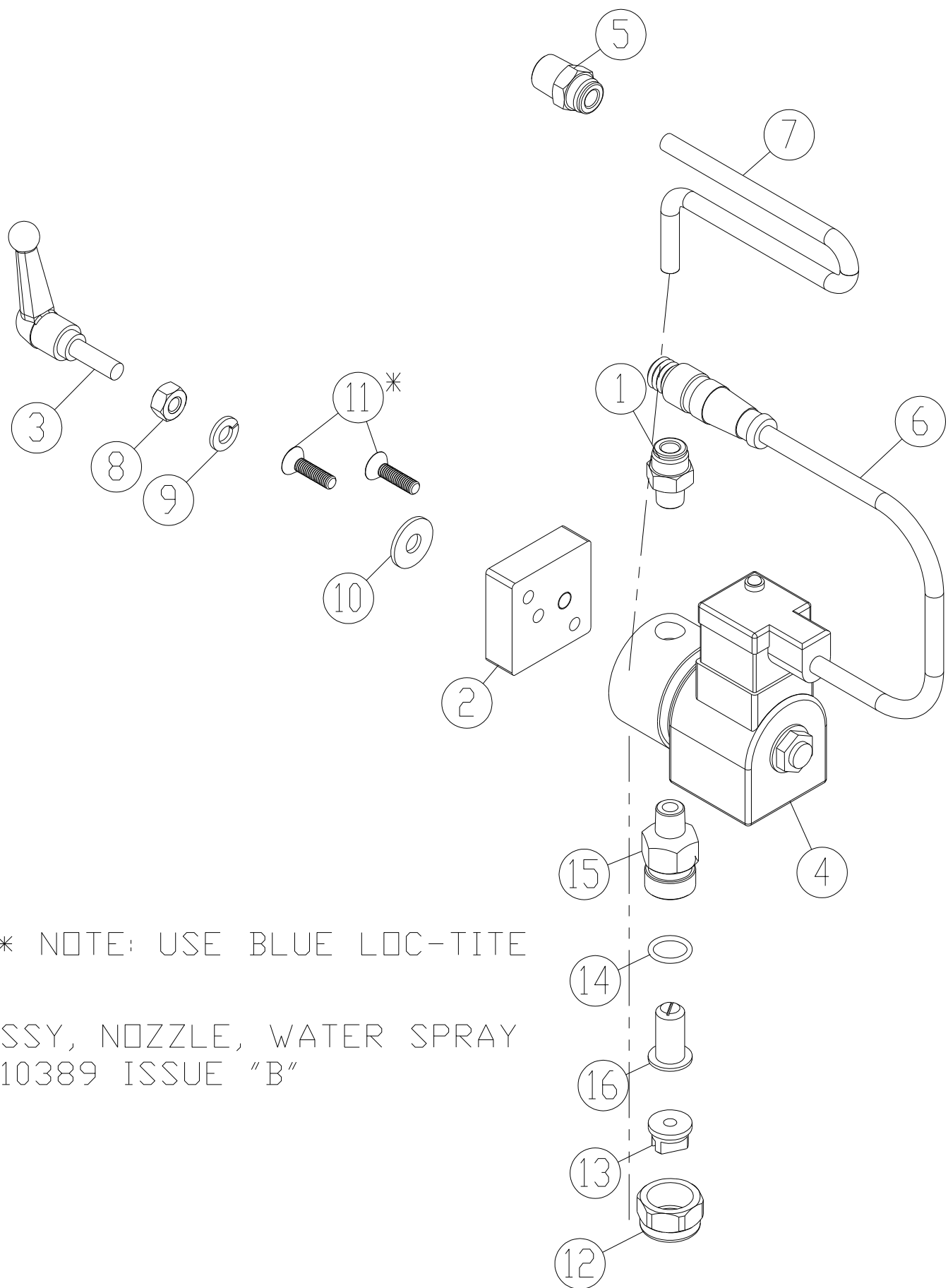
ASSY, WATER FRAME, SPRAY L/HCSWS-861D
210380-001 ISSUE "C"



7.4 Water Spray Nozzle Assembly (210389 "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	401152	1	FITTING,CONN,1/4MPT X 1/4T,ENP,Q.R.
6	610187-001	1	CABLE,MICRO-CHANGE,M12,5WIRE,SUNSCR
7	610885-02	1	TUBING 1/4" POLY BLUE
8	955409	1	NUT HEX JAM 1/4-20 UNC SST
9	955940	1	WASHER LOCK 1/4" SST
10	955977	1	WASHER FLAT 1/4" SST
11	982212	2	SCREW FLT HD SOC #10-32 X 3/4 SST
12	C00506	1	RETAINER CAP CP1325-NP
13	C00565	1	TIP #650017 SS TEE JET
14	C01164	1	O-RING, .489 ID X .070 THICK
15	C05145	1	NOZZLE BODY STAINLESS 509
16	C06047	1	STRAINER, CHECK VALVE

210389 ISSUE "B"



* NOTE: USE BLUE LOC-TITE

ASSY, NOZZLE, WATER SPRAY
210389 ISSUE "B"

7.5 Conveyor Frame Assembly (86351-000 S2 "01")

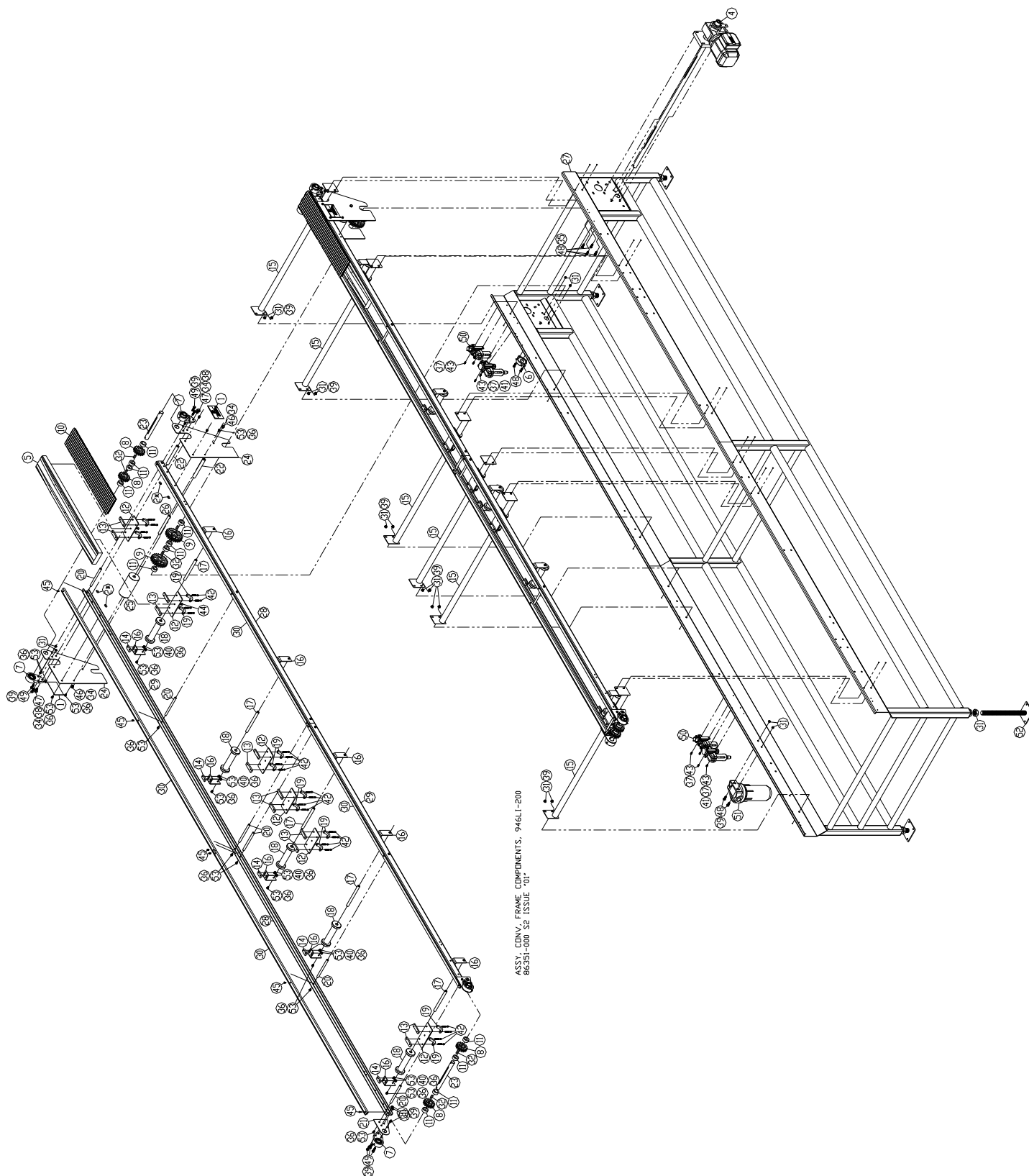
REF	PART #	QTY	DESCRIPTION
1	111174	4	DECAL, KEEP THIS GUARD IN PLACE
2*	118241	8	NUT, WELD ON 1/4-20 NC, SST.
3	210539-046 MODIFIED	1	ASSY, DRIP PAN, SINGLE, 200" CONV.
4	210935-046 MODIFIED	1	CONVEYOR,DRIVE OPTION,SEW,46"
5	610968	2	MAGNET, CONVEYOR, 4 1/2" TT X 36" L
6	611388	REF	BEARING, 1", 2 BOLT FLANGE, SST
7	611635	8	BEARING, 1" BORE 3 HOLE FLANGE
8	611723	8	SPROCKET, 16T, 3.11" OD EZ CLEAN
9	611724	4	SPROCKET, 24T, 4.65" OD EZ CLEAN
10	611725	88'	BELT,6" WIDE x 1/2" PITCH,SERIES 1100
11	711757	24	COLLAR, SET, 1" SST
12	712734	12	PLATE, CHAIN GUIDE CLAMP, MAGNET
13	712735	24	PLATE, TOP CHAN GUIDE CLAMP
14	712735-001	20	BAR, ROLLER/PROX CLAMP, ADJ.
15	712738-046	6	A/W, CONVEYOR CROSS BRACE, 46"
16	712741	20	BRACKET, ROLLER SHAFT
17	712744	10	SHAFT, ROLLER IDLER, CHAIN
18	712745	10	ROLLER, IDLER, TABLETOP CHAIN
19	712781	24	COLLAR,HALF REWORK, 1-1/2 SPLIT, SST
20	712782	12	SHAFT, SPACER, CHAIN GUIDE
21	714329-001	4	GUARD, INFEED DRIVE, BBU
22	714871	4	SHAFT, IDLER SPACER, BBU
23	714872	4	SHAFT, IDLER, M-QNB SPROCKET
24	714904	4	GUARD, MAIN CHAIN DRIVE SPROCKET
25	714908	2	ROLLER, IDLER, TABLETOP CHAIN
26	714909	2	SHAFT, IDLER ROLLER, TABLETOP CHAIN

86351-000 S2 ISSUE "01"

7.5 Conveyor Frame Assembly (86351-000 S2 "01") cont'd.

REF	PART #	QTY	DESCRIPTION
27	86355-001	1	A/W, CONVEYOR FRAME, 946LI-200
28	86355-010	4	CHANNEL, CHAIN GUIDE MOUNT, 200"
29	86355-011	4	CHANNEL, CHAIN GUIDE MOUNT, 200"
30	86355-020	8	GUIDE, TABLETOP BELTING WEAR STRIP,200"
31	955619	48	NUT HEX NYLOC 5/16-18 UNC SST
31	955390	4	NUT HEX JAM 1-1/8-7 UNC SST
32	955460	12	KEY, SQ 1/4 x 1.00 x .002 UNDERSIZE
34	955938	8	WASHER LOCK 3/8"
35	955939	4	WASHER, LOCK 5/16" SST
36	955940	96	WASHER LOCK 1/4" SST
37	955941	8	WASHER LOCK #10 SST
38	955975	4	WASHER FLAT 3/8" SST
39	955976	50	WASHER FLAT 5/16 SST
40	955977	40	WASHER FLAT 1/4" SST
41	955978	4	WASHER FLAT #10 SST
42	978328	48	SCREW SOC HD CAP 1/4-20 X 1 3/4 SST
43	978908	8	SCREW SOC HD CAP #10-24 UNC X 1/2 SST
44	981708	4	SCREW FLT HD SOC 1/4-20 X 1/2 SST
45	982908	24	SCREW FLT HD SOC #8-32 X 1/2 SST
46	988908	4	SCREW FIN HEX 3/8-16 X 1/2 SST
47	988916	4	SCREW FIN HEX 3/8-16 X 1 SST
48	989716	8	SCREW FIN HEX 5/16-18 X 1 SST
49	989720	20	SCREW FIN HEX 5/16-18 X 1 1/4 SST
50	C00404	REF	FRL COMBO w/ SHUTOFF VALVE & GAUGE
51	C00578	REF	FILTER, WATER, 3/4" NPTF
52	C03324	4	A/W, ALL-THREAD LEG, CONV.

86351-000 S2 ISSUE "01"



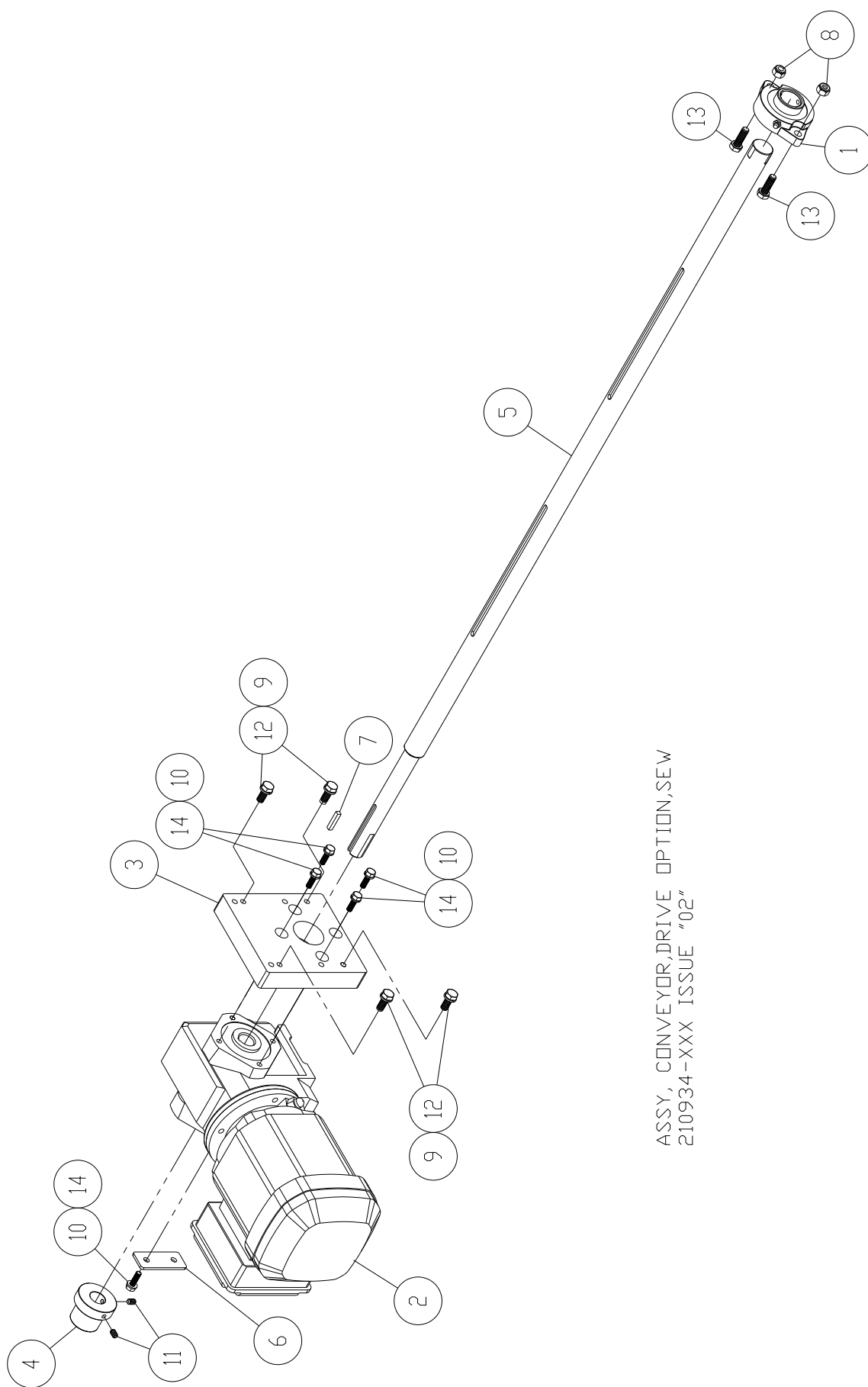
ASSY. CONV. FRAME COMPONENTS, 94611-200
86391-000 S2 ISSUE "01"

7.6 SEW Drive Option (210934-XXX "02")

REF	PART #	QTY	DESCRIPTION
1	611388	1	BEARING, 1", 2 BOLT FLANGE, SST
2	611606	1	GEARMOTOR, 1/2HP, 400-50-3, RH
	611605	1	GEARMOTOR,1/2HP,400-50-3,LH
3	715348	1	PLATE, GEARMOTOR MOUNT, SEW
4	715349	1	SLEEVE, ENCODER MOUNT, SEW
5	86355-019	1	SHAFT, LOWER CONV. DRIVE, 46", SEW
6	715351	1	PLATE, ENCODER MOUNT, SEW
7	955470	1	KEY, SQ 3/16 X 1.00 .002 UNDERSIZE
8	955619	2	NUT HEX NYLOC 5/16-18 UNC SST
9	955939	4	WASHER, LOCK 5/16" SST
10	955940	5	WASHER LOCK 1/4" SST
11	971206	2	SCREW SET SOC 1/4-20 X 3/8 SST
12	989712	4	SCREW FIN HEX 5/16-18 X 3/4 SST
13	989716	2	SCREW FIN HEX 5/16-18 X 1 SST
14	991312	5	SCREW FIN HEX M6-1 X 20 MM SST

210934-XXX RH ISSUE "02"

210935-XXX LH ISSUE "02"

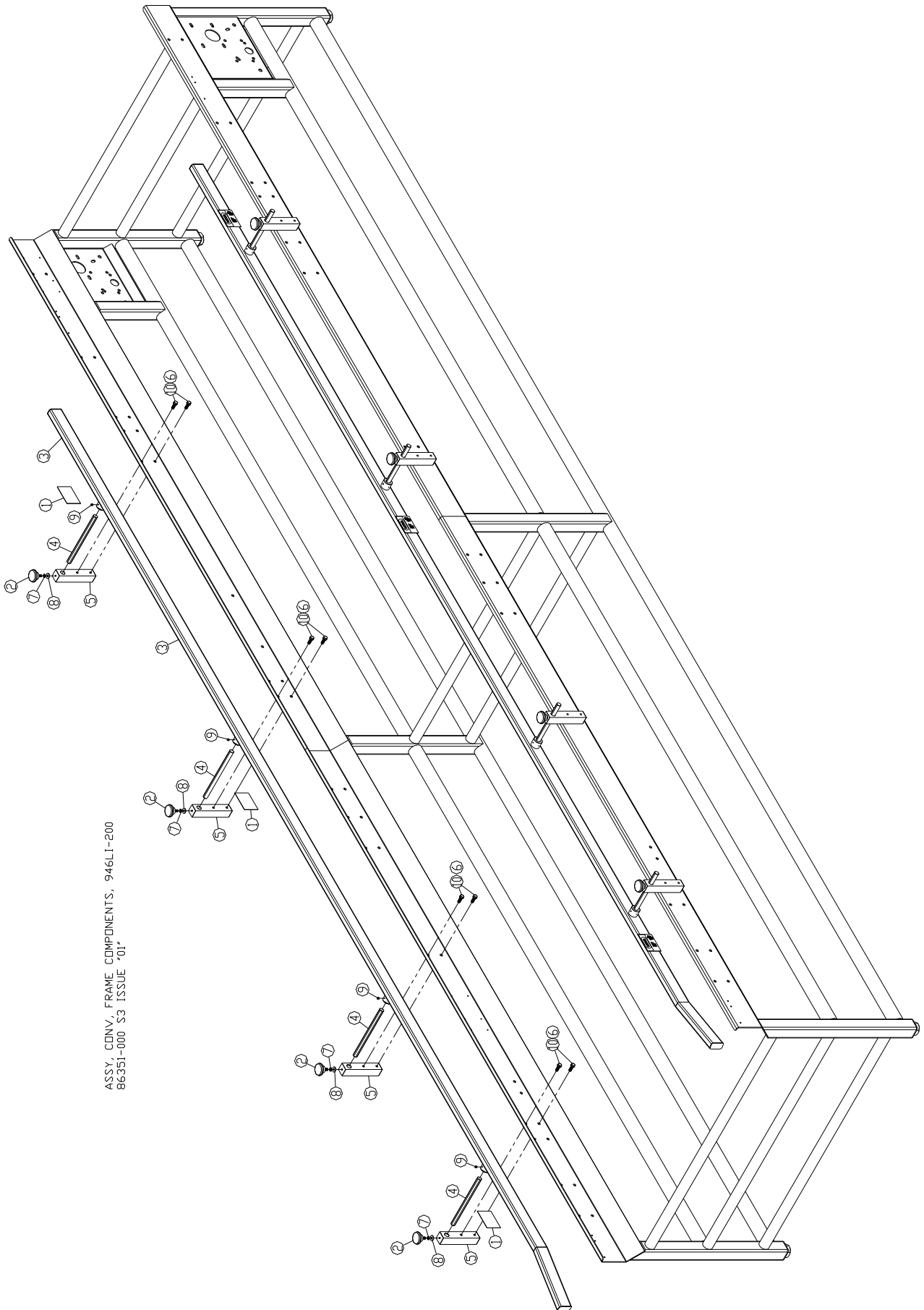


ASSY, CONVEYOR,DRIVE OPTION,SEW
210934-XXX ISSUE "02"

7.7 Pan Guide Assembly (86351-000 S3“01”)

REF	PART #	QTY	DESCRIPTION
1	302801	6	DECAL SMALL HAND DANGER
2	304399	8	ASSY, KNOB, 1/4-20
3	86355-009	2	AW, BUN PAN GUIDE, 200" CONV.
4	86355-013	8	SHAFT, PAN GUIDE ADJ.
5	86355-015	8	BLOCK, PAN GUIDE ADJ.
6	955939	16	WASHER, LOCK 5/16" SST
7	955940	8	WASHER LOCK 1/4" SST
8	955977	8	WASHER FLAT 1/4" SST
9	971204	16	SCREW SET SOC 1/4-20 X 1/4 SST
10	989716	16	SCREW FIN HEX 5/16-18 X 1 SST

86351-000 S3 ISSUE “01”

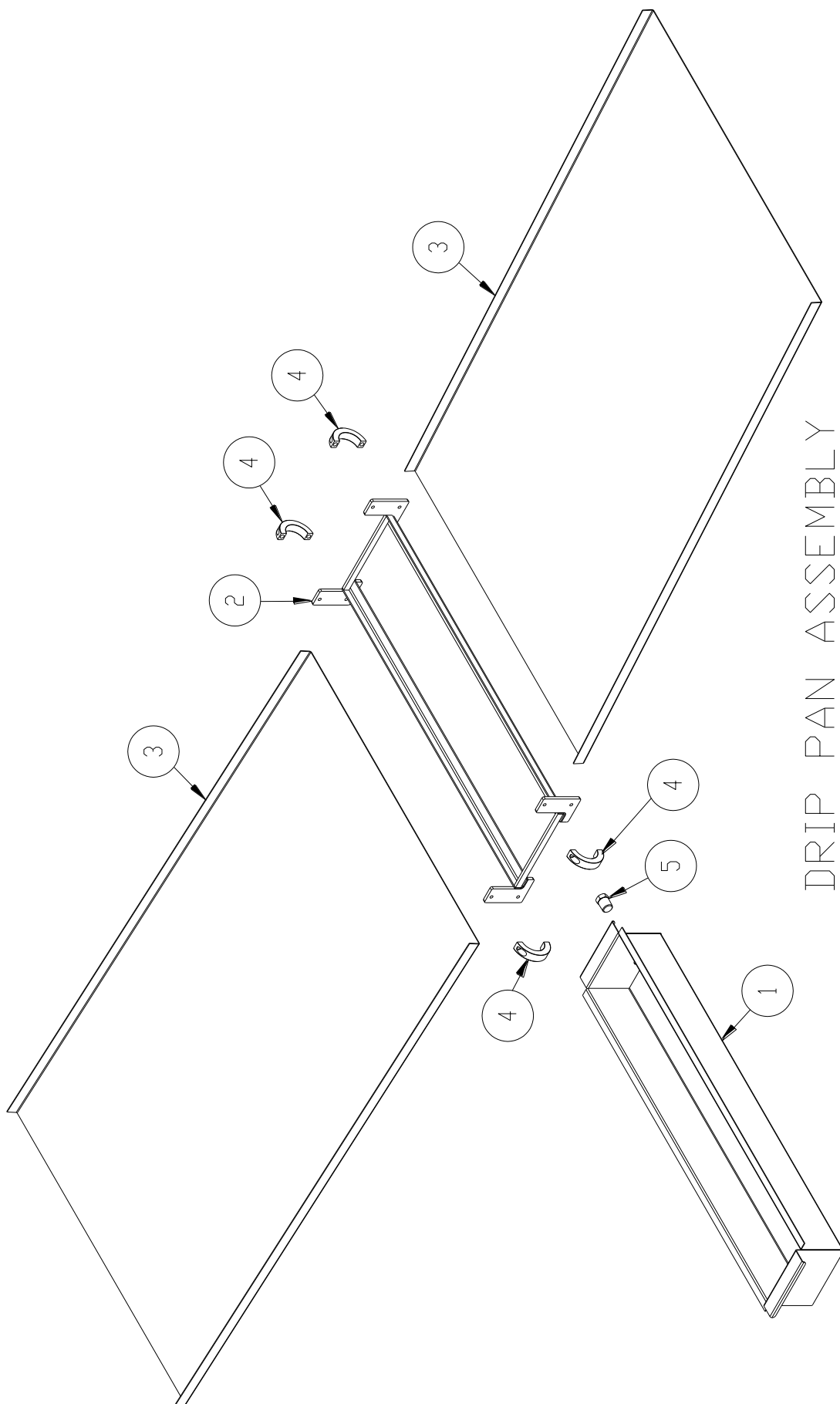


ASSY, CONV., FRAME COMPONENTS, 946L1-200
86351-000 S3 ISSUE "01"

7.8 Drip Pan Assembly (210539-XXX "02")

200" CONVEYOR			
REF	PART #	QTY	DESCRIPTION
1	301727	2	A/W, CATCH TRAY, 46" CONV.
2	712754-046	2	A/W, DRIP PAN SUPPORT, 46" CONV.
3	86355-002	2	A/W, WATER DEFLECTOR END, 46x200
4	712792	8	COLLAR, HALF REWORK, 2" SPLIT, SST
5	A07726	2	FITTING, PLUG 1/2" PVC
6	977628	16	SCREW SOC HD CAP 5/16-24 X1-3

210539-XXX ISSUE "02"

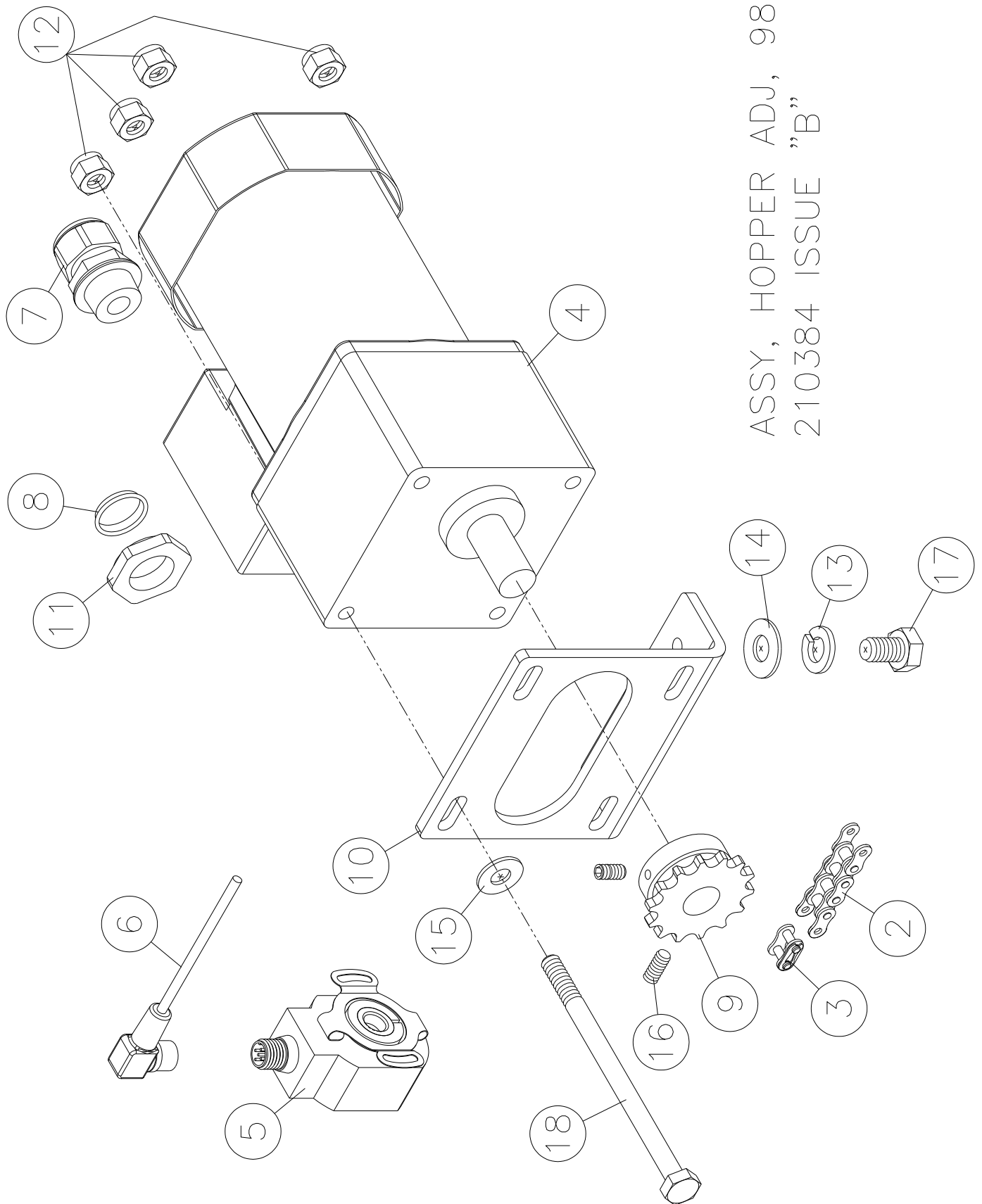


DRIP PAN ASSEMBLY

7.9 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	611249-025	1	ENCODER, ACCU, 10MM, ST, 25CPR
6	C06754-002	1	SENSOR, CABLE, M12, 5WIRE, F, QC, 90, SH
7	610954	1	CONNECTOR, CORD, .39-.56, DOME, NYLON
8	610955	1	CONNECTOR, O RING, ½ 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, ½ NPT, NYLON
12	955661	4	NUT HEX NYLOC ¼-20 UNC SST
13	955939	2	WASHER LOCK 5/16" SST
14	955976	2	WASHER FLAT 5/16" SST
15	955977	4	WASHER FLAT ¼" SST
16	971808	2	SCREWE SET SOC 10-24 X ½ SST
17	989610	4	SCREW FIN HEX 5/16-24 X 5/8 SST
18	989964	4	SCREW FIN HEX ¼-20 X 4 SST
REF	610972	1	COUPLING, FLEXIBLE, 10MM TO 3/8 DIA
REF	712959	2	BAR, ENCODER SPACER, W-DWN SEEDER

210384 ISSUE "B"

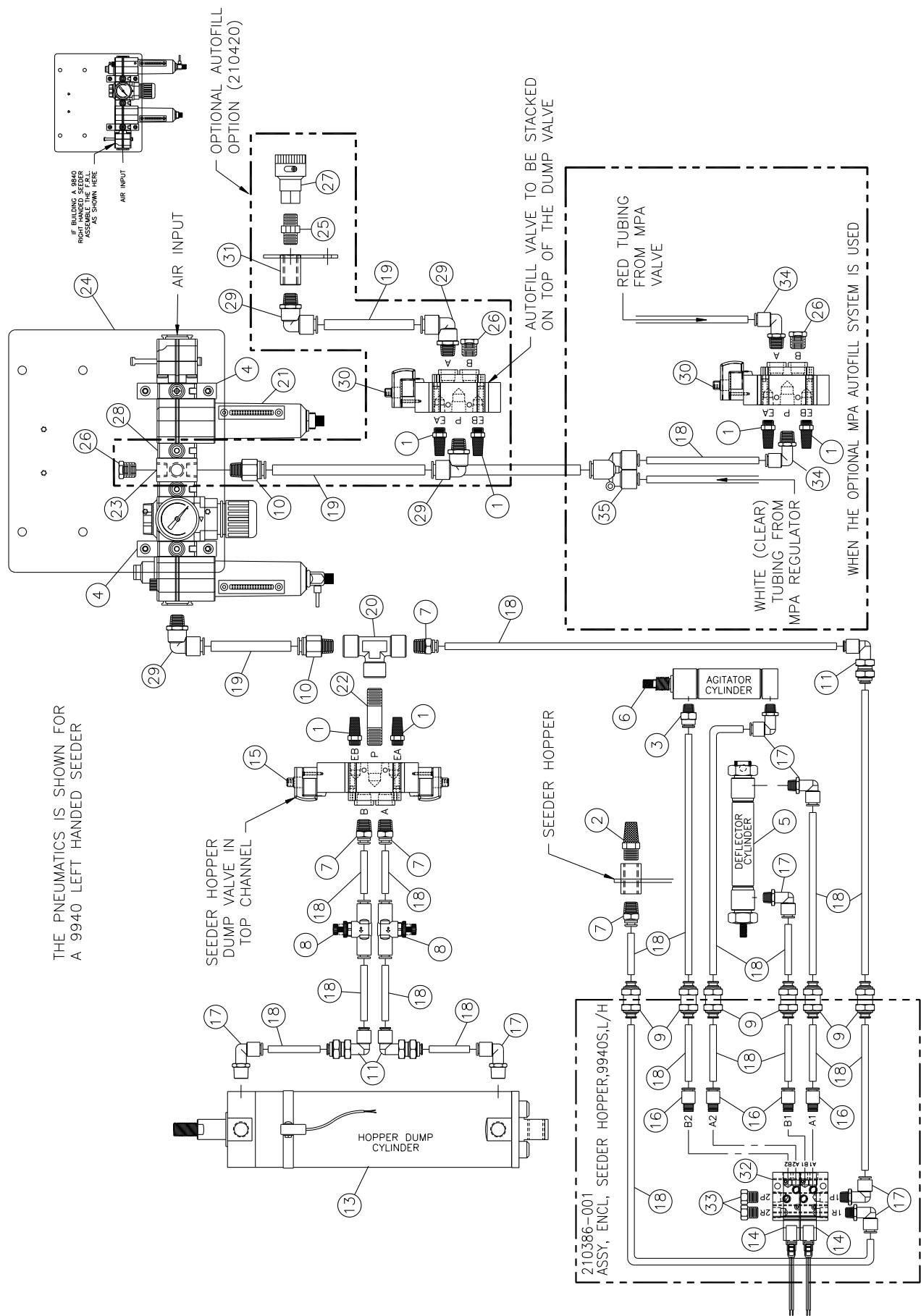


ASSY, HOPPER ADJ, 9840S
210384 ISSUE "B"

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	A/W, 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"



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

7.11 Hopper Assembly (210404-001 "B")

REF	PART #	QTY	DESCRIPTION
1	REF	1	A/W, SEEDER HOPPER, 9940S, L/H
2	103478	1	SPROCKET IDLER, 35-A-15 3/8" BORE
3	103689	1	SPROCKET, 35-B-36 3/4" BORE
4	304060	1	ASSY, MANDREL DRIVE
5	304089	1	SHAFT, HOPPER INNER, 9840
6	304195	1	A/W, HOPPER COVER LATCH, 9840
7	304239	1	CLUTCH/BRAKE, SHAFT MOUNT 24 V.
8	304264	1	SPROCKET RWK 35-A-36 1.43" B
9	304265	1	SPROCKET, RWK 35-B-28 3/4" BORE
10	304322	1	SPACER, CLUTCH SPROCKET
11	304323	1	PLATE, RESTRAINT C/B, 9840
12	304349	1	SHAFT, CLUTCH BRAKE, 9840
13	304351	1	PLATE, GUARD INNER MAND. DRIVE
14	304352	1	PLATE, GUARD OUTER MAND. DRIVE
15	304355	1	ROD, ECCENTRIC IDLER, 9840
16	304361	2	PLATE, GUARD END 28 T #35
17	304362	1	PLATE, FILLER GUARD, 9840
18	304363	1	PLATE, FILLER GUARD, 9840
19	610151	4	SENSOR,PROX,6.5MM,10-30VDC,PNP,N.O.
20	610797	1	SENSOR,PHOTO,RETRO-REF,10-30V,N.O/C
21	711573	1	PLATE, AGITATOR COVER
22	712022	1	BLOCK, MANDREL SENSOR MT, 9840S
23	712023	1	CLAMP, MANDREL SENSOR BLOCK

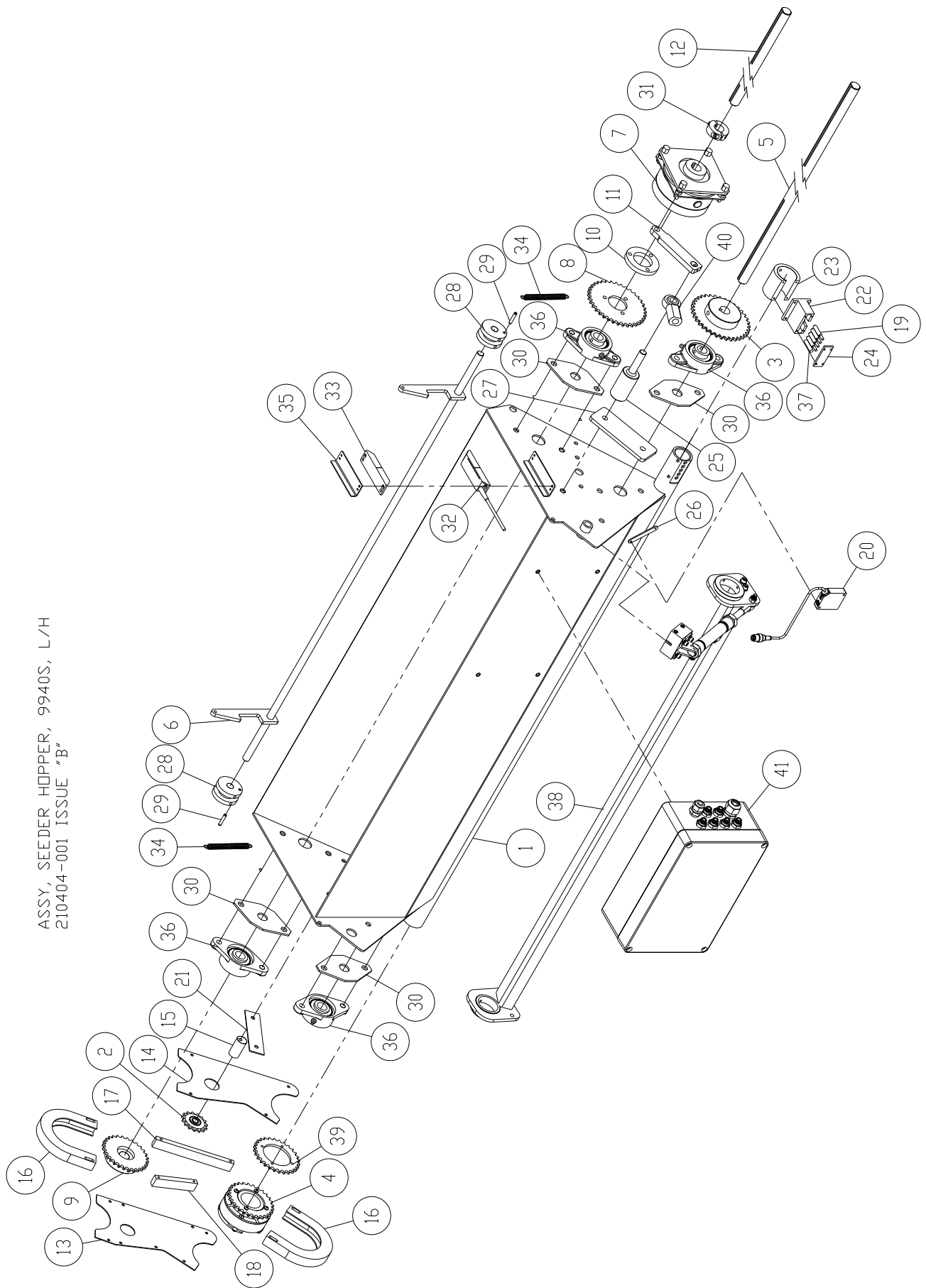
210404-001 ISSUE "B"

7.11 Hopper Assembly (210404-001 "B") cont'd.

REF	PART #	QTY	DESCRIPTION
24	712024	1	PLATE, COVER, MANDREL SENSOR, 9840S
25	712042	1	ROD, CYLINDER MT, HOPPER DUMP, 9840S
26	712107	1	PLATE, TAPPED, LASER BACKUP MT
27	712127	1	BAR, HOPPER AIR CYL. STIFFENER
28	A04792	2	COLLAR, LATCH RETURN, HOPPER
29	958416	2	PIN ROLL 3/16 X 1 SST
30	A05015	4	PLATE, BEARING SEAL
31	A05020	1	COLLAR, 3/4" SPLIT, SST
32	C07219	1	SWITCH, MAGNETIC, KEYED
33	C07220	1	ACTUATOR, MAGNET
34	152186	2	SPRING EXTENSION
35	300684	2	BRACKET, SEEDER MAGLOCK MT, CE
36	611387	4	BEARING, 3/4", 2 BOLT FLANGE, SST
37	712377	1	ROD, SENSOR BLOCK PLUG
38	210421	1	ASSY, DEFLECTOR BAR, 9840S/9940S
39	304360	1	SPROCKET, SEEDER CLUTCH 35-A-28
40	710623	1	RWK, BEARING, ROD END, 1/2-20NF
41	210386-001	1	ASSY, ENCL, SEEDER HOPPER, 9840S/9940S
42	152169	3'	CHAIN, ROLL, #35, NICKEL PLATED
43	152175	3	CHAIN, LINK, 35, CONNECTING, NICKEL
44	152180	1	CHAIN, LINK, #35, OFFSET, SHORT PIN, NP
45	303633	1	CHAIN, LINK, #35, OFFSET, LONG PIN, N.P.

210404-001 ISSUE "B"

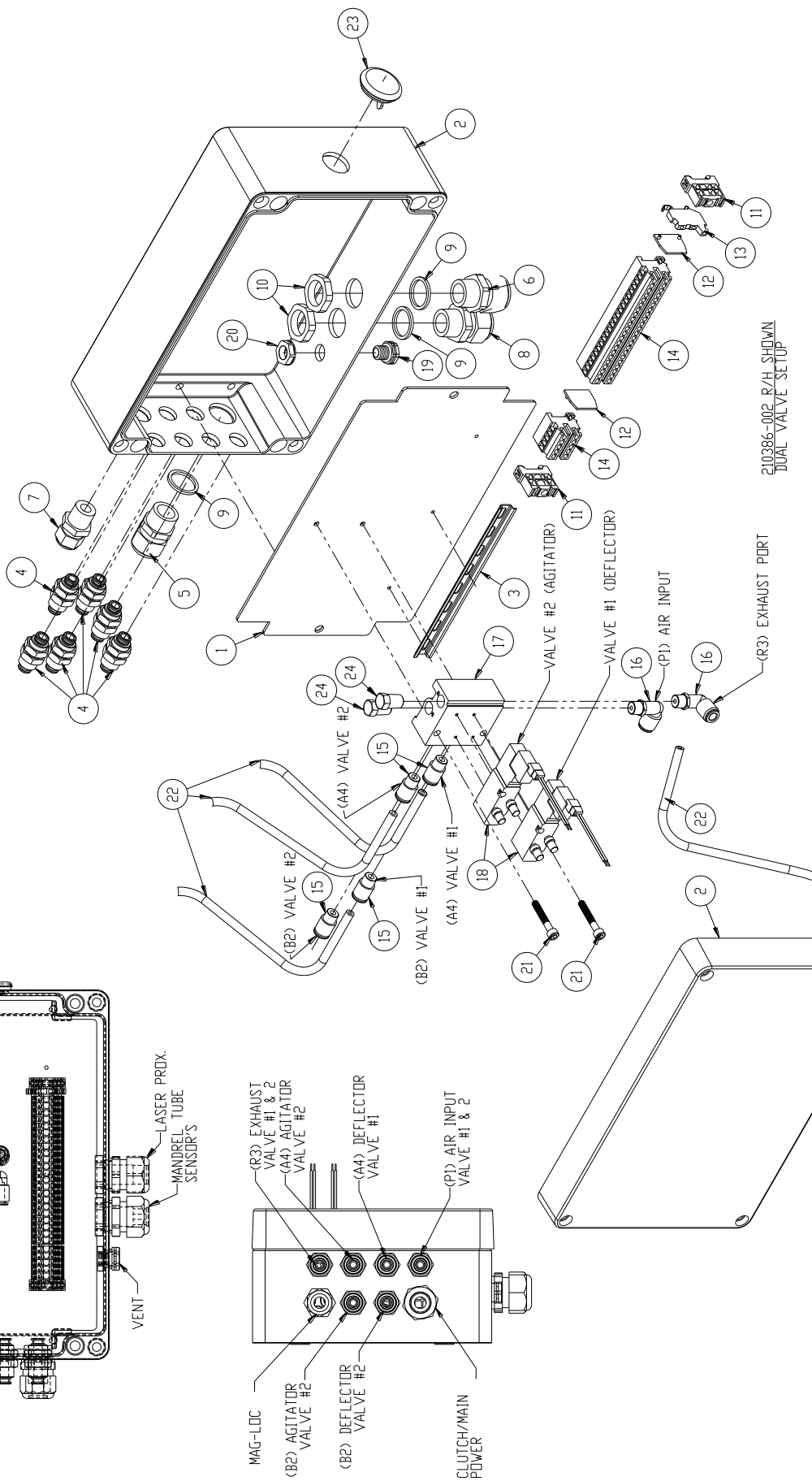
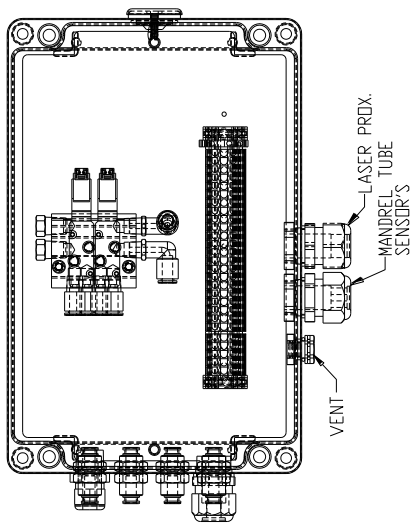
ASSY, SEEDER HOPPER, 9940S, L/H
210404-001 ISSUE "B"



7.12 Hopper Enclosure Assembly (210386-XXX "03")

REF	PART #	001	002	DESCRIPTION
1	712035	1	1	PLATE, ELEC. PANEL, HOPPER, 9840
2	712385-002	-	1	ENCLOSURE,REWORK,SEEDER HOPPER,R/H
2	712385-001	1	-	ENCLOSURE,REWORK,SEEDER HOPPER,L/H
3	610630	1	1	TERMINAL, DIN RAIL, MINI
4	610459	6	6	FITTING, BULKHEAD UNION 1/4T, ENP
5	610953	1	1	CONNECTOR, CORD, .20-.35, DOME, NYLON
6	610954	1	1	CONNECTOR, CORD, .39-.56, DOME, NYLON
7	610969	1	1	CONNECTOR,CORD,3/16-5/16 STR, NYLON
8	610952	1	1	CONNECTOR, SEAL INSERT, .160 4 HOLES
9	610955	2	3	CONNECTOR,SEAL RING,1/2NPT,POLYETH
10	C00174	2	2	LOCKING NUT, 1/2 NPT, NYLON
11	610363	2	2	TERMINAL,ANCHOR,END CLAMP,MINI
12	610362	2	2	TERMINAL,END COVER,MINI
13	610534	1	1	TERMINAL,GROUNDING,MINI
14	610361	2	2	TERMINAL, BLOCK, MINI
15	610966	4	2	FITTING,CONN,1/8NPT x 1/4T, Q.R.,HEX
16	174049	2	2	FITTING,ELL,1/8MPT X 1/4T,Q.R,SHORT
17	611364	1	1	VALVE, MANIFOLD, 2 STATION, 1/8"NPT PORTS
18	611365	2	1	VALVE,SOL,2-WAY,w/ FLOW CNTRLs
19	611371	1	1	MEMBRANE VENT, .413"
20	611372	1	1	NUT, BACKING, MEMBRANE VENT
21	978820	-	2	SCREW SOC HD CAP #10-32 UNF X 1 1/4 SST
22	610885-05	3	4	TUBING, 1/4" POLYURETHANE, YELLOW
23	303056	1	1	PLUG, HOLE, SST 7/8" DIA
24	C00916	-	2	FITTING,PLUG,1/8 NPTM,SST

210386-XXX ISSUE "03"
(210386-002) 9840S RH
(210386-001) 9940S LH



210386-002 R/H SHOWN
DUAL VALVE SETUP

ASSY. ENCL. SEEDER HOPPER, 9840S
210386-XXX ISSUE *03*

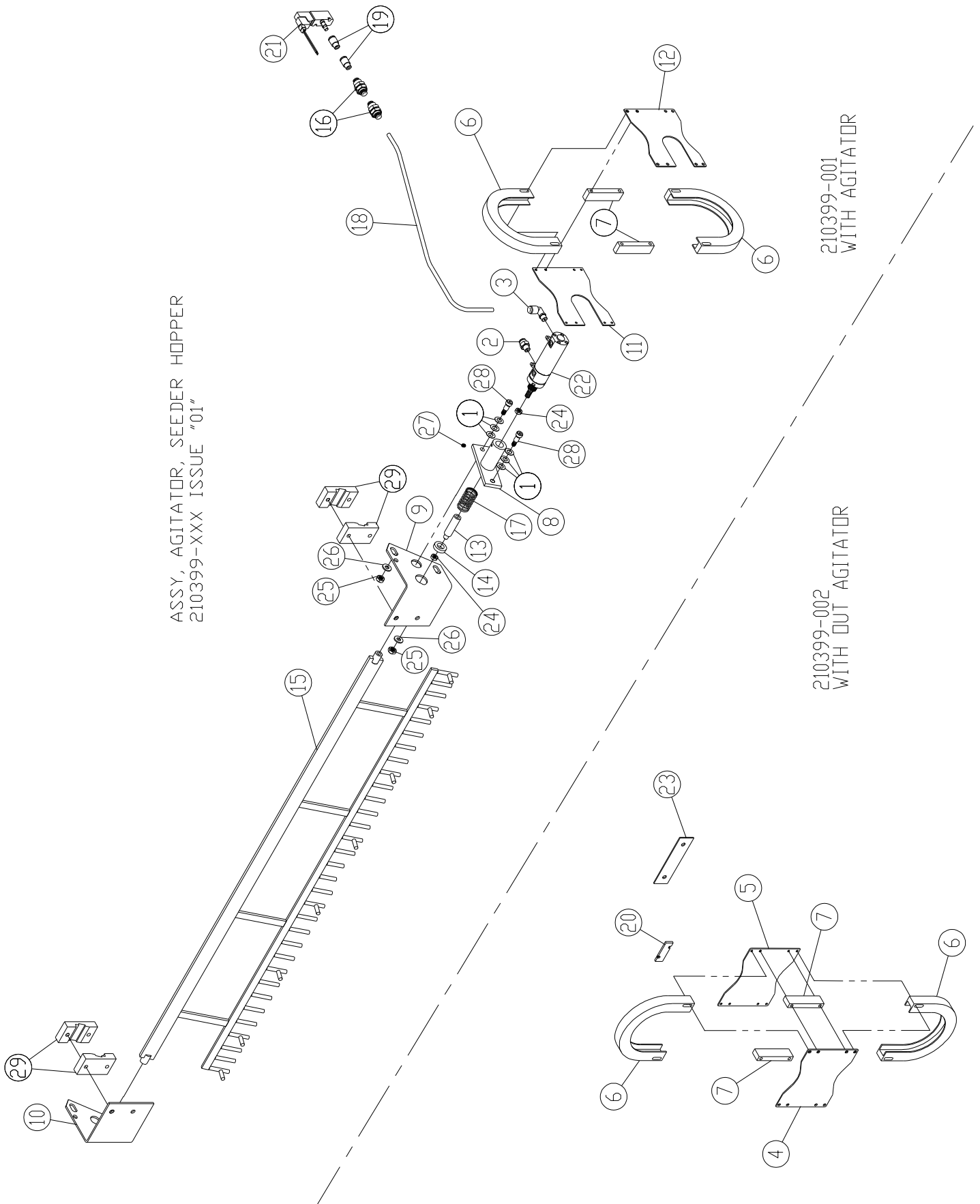
7.13 Agitator Assembly (210399-XXX "01")

REF	PART #	001	002	DESCRIPTION
1	113646	6	-	WASHER BELLEVILLE SPRING
2	119534	1	-	FITTING,CONN,1/8MPT X 1/4T,ENP,Q.R.
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	-	A/W, 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	-	A/W, 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-XXX ISSUE "01"

001-WITH AGITATOR

002-WITHOUT AGITATOR



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

7.14 Wiring Diagram (086351-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	C05843	164	TERMINAL, MARKER STRIP, BLANK
10	TB1	C06387	2	BRACKET, DIN RAIL MOUNTING, 30"
11	PNL1	304456	1	PANEL, MAIN ELECTRICAL
12	PLC1	610691	1	PLC, ML1500, MEMORY MODULE
13	PLC1	610632	1	PLC, ML1500, OUTPUT MODULE, 16 OUT
14	PLC1	610580	1	PLC, ML1500, BASE,24VDC,16 IN/12 OUT
15	PLC1	610547	1	PLC, ML1500,PROCESSOR,12K MEMORY
16	PLC1	610494	1	PLC, ML1500, END CAP
17	LT2/AH1	C01399	1	LIGHT TREE,24VDC,TOP MOUNT/HORN
18	GND	C06488	1	LUG, GROUNDING
19	EXC1	610741-001	1	HEAT EXCHANGER, 24 VDC
20	ENCL1	304455	1	ENCLOSURE, MAIN ELECTRICAL
21	DISC1	610342-001	1	SHAFT, DISCONNECT, 7.1"
22	DISC1	A02346	1	HANDLE, DISCONNECT SWITCH
23	DISC1	A02345	1	SWITCH, DISCONNECT, 40 AMP, 3 POLE
24	CRM,1-11 P/O	610387	10	PLATE, RELAY TERMINAL SEPARATING
25	CR11	610412	1	RELAY, TERMINAL MOUNTING, 220 VAC
		610452		RELAY, TERMINAL MOUNTING, 110 VAC
26	CR1,5-8,10	610421	7	RELAY, TERM MNTG,24VDC (BLACK)
27	CRM,CR9,10	610404	7	RELAY, TERM MNTG,24VDC (WHITE)
28	CBL2	304471	1	CABLE, RS232 – DSI CONVERTER

086351-WD ISSUE “A”

7.14 Wiring Diagram (086351-WD "A") cont'd.

ASSEMBLY, ENCLOSURE, DISPLAY, (210429)				
REF	SYMBOL	PART #	QTY	DESCRIPTION
1	CBL1	304470	1	CABLE, PLC OPERATING, ML1500, 16.4'
2	DISP1	304277	1	DISPLAY, PLC, PV-600 (TOUCH ONLY)
3	ENCL2	711988	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, N.C.
11	PB1	C05395	1	NAMEPLATE, "PUSH-STOP/PULL-START"
12	-	C07277	20'	CABLE, 8 CONDUCTOR, 20 AWG
ASSEMBLY, SEEDER FRAME, (210381/210382)				
1	MTR1	C00028	1	MOTOR, 1/3 HP, 230/460-50/60-3
2	PRS6,7	304350-001	2	SENSOR, PROX, 8MM, 10-30VDC, PNP, N.C.
3	PRS6,7	C07626	2	CABLE, SENSOR, M8, 3 WIRE, 90°
4	PRS7	712217	1	BRACKET, SENSOR HEIGHT ADJ
5	PRS**	304022	1	ANGLE, CENTER LIFT SENSOR MOUNT
6	PRS13	611267	1	SENSOR, REED, SSR, 2" WIRE, 24 VDC
7	PRS13	611268	1	STRAP, REED SENSOR
8	SOL21,22	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	COVER, TERMINAL STRIP
16	-	C01237	6'	CABLE, 22 AWG, 15 CONDUCTOR
17	-	142113	6'	CABLE, 16 AWG, 4 CONDUCTOR

086351-WD ISSUE "A"

7.14 Wiring Diagram (086351-WD "A") cont'd.

ASSEMBLY, SEEDER HOPPER, (210404-001/002)				
REF	SYMBOL	PART #	QTY	DESCRIPTION
1	INTLK1	C07219	1	INTERLOCK, MAGNETIC KEYED
2	INTLK1	C07220	1	ACTUATOR, INTERLOCK MAGNET
3	PRS1-4(5)	610151	4	SENSOR, PROX, 6.5MM, 10-30VDC, PNP, N.O.
4	PSC1	610797	1	SENSOR, PHOTO, REFLECTIVE, 10-24VDC
	PRS14	C06752-001		SENSOR, PROX, 80MM, 10-55VDC, PNP, EDDY
5	SOL24	304239	1	CLUTCH, SHAFT MOUNTING, 24 VDC
ASSEMBLY, ENCLOSURE, SEEDER HOPPER, (210386-001/002)				
1	ENCL3	712385-002	1	ENCLOSURE, SEED HOPPER, RH
		712385-001		ENCLOSURE, SEED HOPPER, LH
2	PNL3	712035	1	PANEL, ELECTRICAL, SEED HOPPER
3	PSC1/PRS14	C06753	1	CABLE, SENSOR, M12, 5 WIRE, STRAIGHT
4	SOL23/25	611364	1	BASE, SOLENOID VALVE
5	SOL23	611365	1	VALVE, SOLENOID, 1/8" PORT, 24 VDC
6	SUP23-26	C05724	4	VARISTOR, SURGE, 125A, 25VAC/31VDC
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
AGITATOR CIRCUIT (210399)				
1	SOL25	611365	1	VALVE, SOLENOID, 24 VDC, 2 WAY
HOPPER DUMP VIBRATOR CIRCUIT (304497)				
1	PRS12	611267	1	SENSOR, REED, SSR, 2" WIRE, 24 VDC
2	PRS12	611268	1	STRAP, REED SENSOR
AUTOFILL POWER CIRCUIT				
1	PL*	113393	1	CONNECTOR, TWISTLOCK, M, 3 POLE
2	PL*	A05379	1	CONNECTOR, TWISTLOCK, F, 3 POLE
3	PL*	C07644	1	COVER, WEATHERPROOF (113393)
4	PL*	C07645	1	COVER, WEATHERPROOF (A05379)

086351-WD ISSUE "A"

7.14 Wiring Diagram (086351-WD “A”) cont’d.

HOPPER LID LOW-LEVEL ALARM CIRCUIT (210409)				
REF	SYMBOL	PART #	QTY	DESCRIPTION
1	PRS20	C07670	1	SENSOR,PROX,30MM,10-30VDC,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,PROX,30MM,10-30VDC,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	SOL26	611117	1	VALVE, SOLENOID, 24 VDC, 2 WAY
MPA-100 AUTOFILL CIRCUIT (210443-001)				
1	CB7	C07650-208	1	CIRCUIT BREAKER,8A,DIN RAIL MNTG.
2	M1	C06702	1	RELAY, MOTOR STARTER, 24 VDC
3	MTR6	210450	1	MOTOR, VACCUM, 220-60-1
4	OL1	C06597	1	RELAY,OVERLOAD,3P,ADJ,5.5–8A(220 VAC)
5	OL1 P/O	C07692	1	RELAY, OVERLOAD, AUX CONTACTS, 1 N.O.
6	PL*	A00511	1	CONNECTOR,TWISTLOCK,F,2POLE
7	PL*	A00512	1	CONNECTOR, TWISTLOCK, MALE, 2 POLE
8	PL*	C07636	1	COVER, WEATHERPROOF (A00511)
9	PL*	C07637	1	COVER, WEATHERPROOF (A00512)
10	PLC1	610739	1	PLC, ML1500, IN/OUT MODULE, 6 IN/4 OUT
11	PRS25	610295	1	SENSOR, PROX, M12, 3 WIRE, PNP, N.O.
12	PRS25	304154	1	CABLE, SENSOR, M12, 4 WIRE, 90°
13	SOL29,30	611117	2	VALVE, SOLENOID, 24 VDC, 2 WAY
14	T1	A07013	1	TRANSFORMER,3KVA,190/480-50/60
15	T1 P/O	C03403	1	PLATE, TRANSFORMER MOUNTING

086351-WD ISSUE “A”

7.14 Wiring Diagram (086351-WD “A”) cont’d.

VARIABLE FREQUENCY DRIVE 380/480 VAC CIRCUIT (210403-004)				
REF	SYMBOL	PART #	QTY	DESCRIPTION
1	CB1	C07650-315	1	CIRCUIT BREAKER,15A,DIN RAIL MNTG
2	CB2-5	C07650-305	4	CIRCUIT BREAKER,5A,DIN RAIL MNTG
3	CB6	C07650-005	1	CIRCUIT BREAKER,5A,DIN RAIL MNTG
4	CR2-4	610404	9	RELAY,TERM MOUNTING,24VDC (WHITE)
5	CR2-4	610387	2	PLATE, RELAY TERMINAL SEPARATING
6	DRV1-3	304161-004	3	DRIVER,AC INVERTER,440-1 IN,220-3 OUT
7	PLC1	610632	1	PLC,ML1500,OUTPUT MODULE,16 OUT
8	PLC1	610657	1	PLC, ML1500, INPUT MODULE, 16 IN
9	PSM1	610913	1	POWER SUPPLY, 340/480-24 VDC, 10 AMP
VARIABLE FREQUENCY DRIVE CABLES (210402-003)				
1	CBL3	304472	2	CABLE, RJ45 SPLITTER
2	CBL4	304494	2	CABLE, ORANGE PATCH, 2' SHIELDED
SEEDER LIFT CIRCUIT (210384)				
1	ENCO3	611469-010	1	ENCODER, DIRECTIONAL, 2 CHANNEL
2	ENCO3	C06754-002	1	CABLE,SENSOR,M12,5WIRE,FEMALE,90°
3	MTR3	304123-001	1	MOTOR,GEAR,1/8HP,100RPM,3.6:1 RATIO
4	-	142113	5'	CABLE, 16 AWG, 4 CONDUCTOR

086351-WD ISSUE “A”

7.14 Wiring Diagram (086351-WD "A") cont'd.

CONVEYOR CIRCUIT (210387-210388)				
REF	SYMBOL	PART #	QTY	DESCRIPTION
1	ENCO1	611102	1	ENCODER, INCREMENTAL, 3 CHANNEL
2	ENCO1	C06753-002	1	CABLE,SENSOR,M12,5WIRE,F,STR,SHIELD
3	MTR2	C00028	1	MOTOR, 1/3 HP, 230/460-50/60-3
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
9	-	142113	20'	CABLE, 16 AWG, 4 CONDUCTOR
ENCLOSURE WATER SPRAY CIRCUIT (210398-001)				
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	610532	1	TERMINAL, JUMPER, 2 POSITION, MINI
12	TB6	610533	1	TERMINAL, JUMPER, 3 POSITION, MINI
13	TB6	610534	1	TERMINAL, GROUNDING, MINI
14	TB7	610967	1	TERMINAL, BREAK-A-PART, 12 POSITION
15	-	C07066	18'	CABLE, 22 AWG, 25 CONDUCTOR
16	-	C00172	22'	CONDUIT, ¾" NON-METALLIC
17	-	C00179	1	CONNECTOR,CONDUIT,¾" STR,NYLON
18	-	C00180	1	CONNECTOR, CONDUIT, ¾" 90°, NYLON
19	-	610165	1	CONNECTOR, ADAPTER, PG21 – ¾" NPT
WATER SPRAY NOZZLE CIRCUIT (210389)				
1	SOL1-10	304650	10	VALVE, APPLICATOR HEAD
2	SOL1-10	610169	10	CABLE,BULKHEAD,M12,5WIRE,FEMALE
3	SOL1-10	610174	10	CAP, BULKHEAD CABLE, M12, FEMALE
4	SOL1-10	610187-001	10	CABLE,MICROCHANGE,M12,5WIRE/SUPP

086351-WD ISSUE "A"

7.14 Wiring Diagram (086351-WD "A") cont'd.

WATER SPRAY SENSOR CIRCUIT (210397)				
REF	SYMBOL	PART #	QTY	DESCRIPTION
1	PSC2	610797	1	SENSOR, PHOTO, RETRO-REF, 10-24VDC
1	PRS9	C06752-001	1	SENSOR, PROX, 80MM, 10-55VDC, PNP, EDDY
2	PSC2/PRS9	304153	1	CABLE, SENSOR, M12, 4 WIRE, STR
3	PRS9	610953	1	CONNECTOR, CORD, 0.20"–0.35", DOME, NYLON
4	PRS9	610955	1	CONNECTOR, O-RING, ½" NPT
WATER SPRAY LIFT CIRCUIT (210395-001)				
1	MTR5	304123-001	1	MOTOR, GEAR, 1/8HP, 100RPM, 3.6:1 RATIO
2	PRS15,16	304350-001	2	SENSOR, PROX, 8MM, 10-30VDC, PNP, N.C.
3	PRS17	304350-003	1	SENSOR, PROX, 8MM, 10-30VDC, PNP, N.C., SMALL
4	PRS15-17	C07626	3	CABLE, SENSOR, M8, 3 WIRE, 90°
5	-	142113	20'	CABLE, 16 AWG, 4 CONDUCTOR

086351-WD ISSUE "A"

