FLEX

STRETCHWRAPPER MANUAL

Models
HPS/ LPS Flex Stretchwrapper
Revision Date - February 15, 2016
Machine Manual
Revision 3.0

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Introduction and Safety Contents

1. Introduction and Safety

Introduction

Thank you for choosing Orion stretch-wrapping equipment. It is a wise choice, which will benefit your company now and in the future.

Orion uses a unique combination of functional, rugged steel structure and sophisticated control systems to offer equipment high in durability and low in maintenance requirements. Our advance control systems mean that Orion equipment can be operated safely and efficiently without the need for special operator expertise.

Please read this manual carefully and keep it handy. Following these simple operating instructions will insure the safe and efficient performance of this machine while simple maintenance procedures will guarantee a long and productive life of the equipment.

Note: This manual covers standard features of the machine. Certain options may not be fully covered due to their unique application. Every effort has been made to ensure document accuracy however, Orion Packaging retains the right to change specifications without notice.

In order to acquire more information about custom made features of your machine and to provide quicker service, the following information is required when making an inquiry:

1. Model HPS/ LPS Flex Stretchwrapper
2. Serial Number (See sticker on electrical cabinet)
3. Built in Alexandria Minnesota, USA

About this Manual

Orion is committed to helping you maximize the productivity of your system. This manual is specifically designed for your packaging system, to assist you in the operation and maintenance of your new equipment. Please take the time to familiarize yourself with the contents of this manual.

- Section 1 is the Introduction and Safety section. This section discusses safety, lock out/ tag out, hazard messages, and installation information.
- Section 2 is the System Description section. This section discusses machine specifications. A Machine Layout Drawing is found at the end of this section.
- Section 3 is the System Operation section. This section describes the operator control panels, the Human Machine Interface, and operational procedures.
- Section 4 is the Troubleshooting section. A Troubleshooting chart is found in this section.
- Section 5 is the Maintenance section. In this section you will also find a suggested maintenance schedule including a maintenance log. Assembly drawings conclude this section.

Copyright Notice

Flex Series Warranty

Effective January 1, 2013- For all products in the Flex Series, Orion provides an industry leading warranty from the delivery date of its products to be free from defects in materials and workmanship as described below. This warranty assumes that normal service will be performed by the user.

Flex Turntable Style Machines including LPS, LPD, LPA, HPS, HPD and HPA are warranted for **Five (5) Years** from the date of the machine shipment on all standard components, both electrical and mechanical, and the structure to free from defects in material and workmanship. During the warranty period Orion will, at its option, either repair or replace the failed component.

Flex Rotary Tower Machines including RTD and RTA are warranted for **Four (4) Years** from the date of shipment on all standard components, both electrical and mechanical, to be free from defects in material and workmanship. Structural components manufactured by Orion are warranted to be free from defects in material and workmanship for a period of **Five (5) years.** During the warranty period Orion will, at its option, either repair or replace any failed component.

Components not manufactured by Orion specified by the customer and that are other than Orion Packaging Systems standard brand are warranted by Orion to the extent that they are warranted by Orion's supplier of these items.

The polyurethane pre-stretch rollers on the FLEX-HPD/LPD/HPA/LPA models carry a **Lifetime Warranty** and are guaranteed to be free from defects in material and workmanship, and to perform to Orion standards in Orion film delivery systems which have been properly maintained. Rollers are not warranted against physical damage, corrosion, abuse, or negligence. The lifetime warranty does not apply to the rollers used on LPE model and these are covered under the **Five (5) Year** portion of this warranty instead. Wear parts such as e.g. belts, fuses, light bulbs, circuit breakers, brakes, motor brushes, slip ring brushes, etc. are excluded from this warranty.

DAMAGE IN TRANSPORT

Damage in transport is the responsibility of the carrier and is not covered under our warranty.

FREIGHT CHARGES

There will be no freight charges for warranty parts that are ordered for shipment via UPS regular ground service from Orion. Any other method of shipment, (UPS red/blue, Federal Express, common carrier, etc.) will be at the expense of the customer/distributor.

PARTS RETURN POLICY

For most components valued at under $300 list price, Orion does not require that the defective component be return ed. All defective components valued at $300 or more list price must be returned to Orion in Alexandria, MN. It is at Orion's sole discretion as to whether any given component must be returned, regardless of its value, for the purpose of determination

of warranty status and the nature of the defect. Furthermore, confirmation that the part does not need to be returned must be provided by Orion at the time of order placement.

IMPORTANT EXCLUSIONS

EXCEPT AS STATED HEREIN, ORION MAKES NO OTHER WARRANTY, EXPRESSED OR IMPLIED AND IN NO EVENT SHALL BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES. ORION MAKES NO WARRANTY AS TO FITNESS OF EQUIPMENT FOR PARTICULAR PURPOSE. ORION NEITHER ASSUMES NOR AUTHORIZES ANYONE ELSE TO ASSUME FOR IT, ANY OTHER OBLIGATION OR LIABILITY RELATING TO ITS EQUIPMENT. THIS WARRANTY DOES NOT APPLY TO DAMAGE TO EQUIPMENT WHICH, IN THE JUDGMENT OF ORION, HAS BEEN SUBJECT TO INCORRECT VOLTAGE SUPPLY, NORMAL WEAR AND TEAR, TO MISUSE, NEGLECT, OR HAS BEEN REPAIRED OR ALTERED BY UNAUTHORIZED PERSONNEL. DEFECTIVE PARTS MUST BE RETURNED TO ORION, FREIGHT PREPAID, WITHIN 14 DAYS OF SHIPMENT OF THE REPLACEMENT PART, EXCEPT FOR COMPONENTS VALUED AT UNDER $300 LIST PRICE UNDER THE CONDITIONS STATED ABOVE. DEFECTIVE PARTS MUST BE RETURNED IN THEIR ORIGINAL STATE ALONG WITH A FULLY COMPLETED ORION WARRANTY PARTS RETURN FORM. DEFECTIVE PARTS THAT HAVE BEEN DISASSEMBLED, DAMAGED DURING REMOVAL, OR OTHERWISE TAMPERED WITH, WILL NOT BE COVERED UNDER WARRANTY, UNLESS OTHERWISE STATED IN WRITING. ORION'S SOLE OBLIGATION UNDER THIS WARRANTY WILL BE TO PROVIDE REPAIRS TO COMPONENTS OR REPLACEMENT PARTS, F.O.B. ORION'S POINT OF SHIPMENT EXCEPT AS STATED ABOVE. ALL ASPECTS OF THE ABOVE STATED WARRANTY AND PROCEDURES RELATED TO ORDERING PARTS UNDER WARRANTY WILL BE UPHELD WITH NO EXCEPTIONS.

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Safety

Orion's stretch wrappers should be operated with caution and common sense as any other industrial equipment. To prevent injury and/or electrical shocks, careful operation of the machine and awareness of its many automatic functions is required.

Note: All electrical power and compressed air must be disconnected prior to all inspection, maintenance or repair work.

At Orion, we are committed to building quality packaging and material handling equipment. To achieve this, our machines must be efficient, easy to maintain, and safe to operate.

Before attempting to operate the equipment, become familiar with the safety recommendations and operational components of your HPS/ LPS Flex Stretchwrapper. You should also become familiar with the technical information pertaining to components used within the system, including their operating and safety features. This information is located in the Vendor Data Manual and in other literature supplied with the equipment. To maximize machine safety and efficiency you must operate the machine correctly and comply with the safety features described.

Stay alert and remember: Safety is the responsibility of everyone who operates or services your BEC system.

System Safety Recommendations

Safeguarding personnel that operate and/or maintain automated equipment is the primary consideration. Because it is very dangerous to enter the operating space (work envelope) of a machine during operation, adequate safeguards must be in place and safety precautions must be observed.

The following general precautions are recommended for all personnel who perform system operation or maintenance.

- Do lockout-tagout procedures whenever you do maintenance and repair work.
- All personnel who repair, maintain, or operate the equipment need to know the location of all EMERGENCY STOP buttons.
- Do not operate the equipment with any of the safety guards removed.
- Do not wear neckties, loose clothing, or long loose-hanging hair around any equipment.
- Observe and follow the DANGER, WARNING, and CAUTION messages throughout this manual, in vendor manuals, and displayed on the equipment.
- DO NOT use steps or stands that allow anyone to reach over guards.
- Personnel should attend all available safety and operational training courses.
- Personnel should know and follow the recommended safety procedures whenever they must enter the packaging systems motion area.
- Personnel should not enter the packaging system while control power is "ON".
- Personnel should not power up the system if someone is in the working path of the machine
- The system should be powered down when not in use.
- Personnel should pay special attention to all the posted warnings and cautions located on any devices. Observe all safety and/or precautionary steps and procedures when working with the system.
- Personnel should keep the system clean to make it easier to spot hazards.

Hazard Messages

Notations appear on pages of this manual to alert the reader to important messages regarding a significant hazard for personnel or equipment. These messages convey three levels of risk as defined below. Failure to observe these instructions can result in death, serious injury, damaged equipment, or loss of product or production.

DANGER Denotes the possibility of serious injury or death to personnel.

WARNING Denotes the possibility of potential injury or damage to equipment.

CAUTION Denotes the possibility of damage to product or an interruption of production.

Operation Safety

The following safety precautions are recommended for all personnel who will operate this HPS/ LPS Flex Stretchwrapper.

- Operators should immediately report unsafe working conditions to a supervisor.
- The operator should understand the function of the entire system including all external devices and equipment that interact with the system.
- Before starting operation, the operator should understand the complete task that the system is designed to accomplish.
- The operator should know the location and functional status of all devices (switches, sensors, control signals) that can cause the system to move.
- The operator should know where each EMERGENCY STOP button is located for both main and external control devices. Do not hesitate to use them in an emergency.
- The operator should make sure all safety devices are functioning and periodically checked for proper operation.
- The operator should ensure that all personnel are outside the system before starting operation.
- The operator should never enter, or allow others to enter the system during automatic operation.

Maintenance Safety

The following safety precautions are recommended for all personnel who are responsible for the maintenance or service this HPS/ LPS Flex Stretchwrapper.

- Personnel should ensure that all safety devices are functioning and periodically checked for proper operation before performing maintenance.
- Before performing any maintenance, service, or inspection inside the main control panel, the power source should be turned off and locked out.
- Maintenance should be performed on the system with the power OFF. Lockout and tag out procedures should be followed to protect personnel from injury and to indicate the equipment is being serviced.
- Place a lock on the main electrical disconnect, as shown below, while performing maintenance.
- Personnel should pay careful attention to all devices that may be powered or capable of motion, such as conveyors and pneumatic devices.
- Release or block all stored energy devices (hydraulic or pneumatic) that may present a danger when working with the system. Before working with pneumatic devices, shut off the air supply and purge the air lines.
- Be aware when removing a servomotor or brake that the associated mechanical part will fall unless supported in some manner.
- Use only specified replacement parts. Never use non-specific fuses that have not been specified. Potential fire and/or damage may result.
- Before restarting the system, ensure personnel are not in the system and that the system and external devices are operating properly.

Lockout and Tagout Recommendations

Electrical System

(See OSHA 1910.147 & OSHA 1910.333 (b)(2) for exception to procedures)

To avoid hazards of electrical shock or other personal injuries, the main power disconnect for the system and any other separate sources of power for the system shall be locked out & tagged as a safety precaution during entry and maintenance to the system.

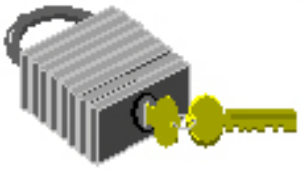
To accomplish this, set the Main Power Disconnect operating handle to the "OFF" position and install a personal locking device through the padlock hole on the operating handle. Attach a Danger tag to the handle containing a statement prohibiting unauthorized operation of the disconnect and removal of the tag signed by the individual responsible for locking out the system. If several personnel are performing maintenance, each individual shall install a lockout device and tag.

A qualified person shall verify that the equipment is de-energized by:

1. Operating controls to verify equipment cannot be restarted.
2. Using test equipment to test circuits and electrical parts that will be exposed to personnel.

Stored electric energy that might endanger personnel shall be released by discharging the circuits. Check appropriate equipment manuals on exact procedures.

To re-energize equipment, a qualified person shall conduct tests and visual inspections, as necessary, to verify that all tools, electrical jumpers, shorts, grounds, and other such devices have been removed, so that equipment can be safely energized. Personnel exposed to the hazards associated with re-energizing equipment shall be warned to stay clear of equipment. Each lock and tag shall be removed by the person who applied it or under their direct supervision. A visual determination that all personnel are clear of the equipment shall be accomplished before the operating handle on each Main Power Disconnect is placed to the "ON" position.



Danger!

When performing maintenance, inspection, repair or changeover, execute the Lockout & Tag Out procedure to prevent personal injury – before entering the machine. When you see this symbol, DO LOCK OUT/TAG OUT.

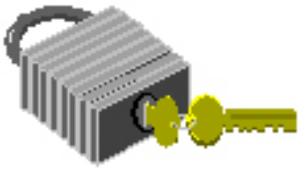
Pneumatic and Vacuum Systems

To avoid hazards of moving mechanisms, pinch points and other personal injuries, the main compressed air supply valve for the system shall be locked out & tagged as a safety precaution during entry and maintenance to the system.

1. To accomplish this, turn the Main Air Supply valve to the "OFF" position and install a personal locking device through the padlock hole on the valve handle.
2. Also attach a Danger tag to the handle containing a statement prohibiting unauthorized operation of the disconnect and removal of the tag signed by the individual responsible for locking out the system.

If several personnel are performing maintenance, each individual shall install a lockout device and tag. Qualified personnel shall vent any stored or accumulated air in pneumatic/ vacuum devices before working on them. Check appropriate equipment manuals on exact procedures.

To re-supply compressed air to the equipment, a qualified person shall conduct visual inspections, as necessary, to verify that mechanisms are properly connected, as well as all tools and other objects have been removed so that equipment can safely operate. Personnel exposed to pneumatic/vacuum hazard areas shall be warned to stay clear of equipment. Each lock and tag shall be removed by the person who applied it, or, under their direct supervision. A visual determination that all personnel are clear of the equipment shall be accomplished before the main air supply valve is turned to the “ON" position.



Danger!

When performing maintenance, inspection, repair or changeover, execute the Lockout & Tag Out procedure to prevent personal injury – before entering the machine. When you see this symbol, DO LOCK OUT/TAG OUT.

Installation and First Time Power Up

Unloading

Machine can be easily unloaded and transported by a forklift with a minimum capacity of 2500 lbs.

1. Carefully insert the forks into the lifting tubes to the maximum possible depth. Depending on the model, a forklift access may be either at the tower end of the machine frame, the tower end or both. Look for the forklift tube access stickers shown below.

Figure 1 - 1
Fork Tube Access Sticker

2. Lift the machine (or other part of system) only to the necessary height to move it with no bouncing or friction on the floor.
3. Sit the machine down assuring uniform contact with the floor, which is necessary to ensure correct and smooth operation.

Inspection

1. Remove all packing and supporting additions - these may include the blocks under the carriage and the restraining bar over the table.

Note: When removing the packing materials covering the machine, care must be taken not to cut any of the electrical wires and/ or polyurethane covering on the film carriage rollers.

2. Perform a visual inspection of the electrical and mechanical parts for loosened joints and / or broken connections. Any suspected shipping damage must be reported immediately to the freight carrier. Any transport damage cannot be claimed to Orion Packaging Inc.

Items that are vulnerable to damage and must be inspected are as follows:

- Motors and transmissions
- Junction boxes
- Electrical conduits
- Proximity and limit switches
- Photocells

3. Check around the tower to ensure that there is no crippling of the movable parts i.e. casters, center axle or drive assembly.
4. Verify the following:

- Check wires and conduits for crushed sections or loose fittings.
- Verify the film carriage to be sure that it is correctly aligned with the tower
- Verify the tension on the lift belt.
- Verify all the dials and knobs on the control panel for smooth action.

Machine Installation

- After the visual inspection has been completed, the electrical power and the compressed air (Optional) shall be connected as specified on the diagrams supplied with the machine.
- An electrical diagram is provided with each machine in the envelope attached to the panel box.
- Make sure the machine is on a level surface.
- Orion Packaging insist on a dedicated circuit be used for this wrapper. Extension cords are not allowed and can void your warranty.

Assembly Procedure

Note: The structural frames of the machine have to be installed on a leveled floor. The base deviation from vertical must not exceed 1/4" on the distance of 10 feet (angle: 0 degrees 6').

Move the wrapper into its final position. If the wrapper is to be secured to the floor, we recommend that the wrapper base section be bolted to the floor by the 1/2" concrete floor anchors (leg & shield or expandable type-Red Heads).

System Description Contents

2. System Description

Machine Specifications

Utilities

- 115 / 1ph / 60hz 20 Amp Service

Standard Speed

- 16 Rpm Variable Tower Speed Vfd Controlled Motor**

Drive

- Heavy Duty Chain Drive
- Electronically Adjustable Acceleration/deceleration And Running Speeds (At Vfd)
- Positive Alignment Feature (True Home Position)

Control Features

- Nema 12 Control Panel
- User Friendly Interface
- IP Address is Modifiable for Networking
- Easy to Use Icon Based Interface
- Web-based Production Data Dashboard
- Optional Wireless Connection to the PLC/ HMI
- Downloadable VFD Parameters
- Variable Speed Film Carriage Up/ Down Control
- Film Carriage Manual Jog Functionality
- Photocell For Automatic Load Height Detection
- Main Drive Jogging
- Variable Speed Main Drive
- Semi-automatic Reinforce Wrap Feature
- On-Screen Interactive Troubleshooting Guide

Film Delivery

- Instathread Full Corner Compensating Powered Film Drive.
- 260 % Stretch From The Factory. 20" Film Tension Delivery System. **optional 30"
- Full Authority, Corner Compensating, Vfd Powered Prestretch
- Electronic Film Tension Control Adjustment On The Panel < Or = 90 Ga Film Capacity. Higher Gauge Film Requires A Heavy Film Upgrade.
- Film Carriage Elevator Drive
- Variable Frequency Drive Motor

Structural Features

- Structural Steel Construction Throughout
- Easy Access To All Components
- Limited Proprietary Parts For Ease Of Maintenance

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System Operation Contents

3. System Operation

Operating Procedures

How to Start and Shut Down Your Wrapping System

Note: Do not use extension cords. Plug your Flex Stretch-wrapper directly into an outlet.

POWER SWITCH

Located on the panel door, the lockable power switch has two settings:

- ON - connects a power source to the machine.
- OFF - disconnects the power source.

START AND EMERGENCY STOP SWITCHES

- Press the **START** button to gain Control Power prior to starting.
- The **START** switch is used to start the cycle once the load is available.
- The cycle may be stopped at anytime by pressing the **E-STOP** button.

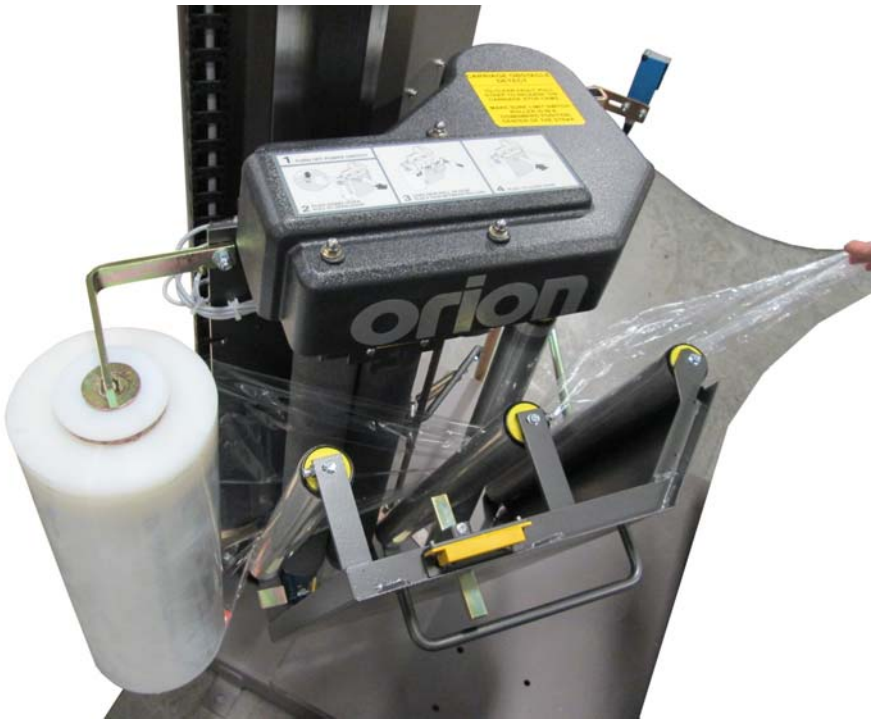
The FLEX series machines are engineered to give the operator different levels of operation, the front panel or USER settings, and MENU DRIVEN parameters. The menu driven parameters offer even more flexibility and security.

Loading The Film

The film roll can be loaded on the carriage mandrel from either end of the roll. When using tacky film, please verify that the tacky surface of the film is inward on the load.

1. Press in the E-stop.
2. Swing up the top mandrel spool.
3. Put the roll of film on the bottom mandrel.
4. Install the top mandrel on top of the roll to prevent upward movement.
5. Press the latch down and pull out on the carriage door to open the carriage. The film carriage is equipped with a magnetic switch that detects when the carriage threading door is open. When opened, it will set off an alarm on the HMI and prevent the carriage from moving.
6. Pass the roped tail of the film through opening.
7. Close the carriage door. Ensure the latch clicks shut properly.
8. When the film feeding is completed, release the E-stop.
9. For machines without a fence, press the Start button once to reset control power. If your machine has a fence, the multistretch will reset as soon as the E-stop is released.
10. Peel off the first few winds of the film (multistretch will run due to displacement of the dancer roller) and fix the film end onto the load-or film clamp if so equipped.
11. The system is now ready to begin the first wrapping cycle.
12. Press and hold the Start button for the amount of time set in the machine settings to start the machine.

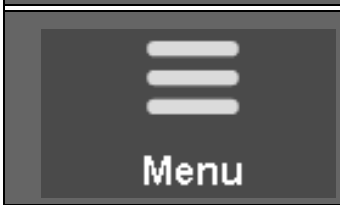
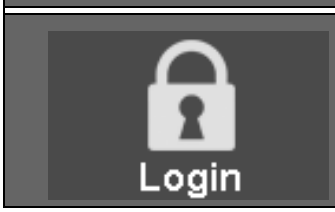
Figure 3 - 1
Loading the Film



Universal Go-To Buttons

The buttons in the chart below are found throughout most HMI screens. The buttons allow the user to easily navigate back to any of the screens.

Table 3-1. The Universal Go-To Button Descriptions

STATE 1	DESCRIPTION
	The Info icon displays information about each button on the HMI screen that you are currently viewing.
	Press this button to go to the Run Screen. The icon will illuminate in green when the screen is currently active.
	Press this button to go to the Wrap Settings Screen. The icon will illuminate in green when the screen is currently active.
	Press this button to go to the Menu Screen. The icon will illuminate in green when the screen is currently active.
	Press this button to go to the Machine Settings Screen. The icon will illuminate in green when the screen is currently active.
	Press this button to go to the Diagnostics Screen. The icon will illuminate in green when the screen is currently active.
	Press this button to go to the Security Settings Screen.

Run Screens

Run Screen

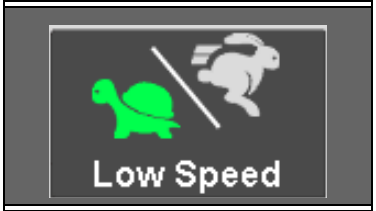
This is the Run screen used for primary functions of the machine. The red block in the Orion block logo will travel the perimeter of the logo showing the position of the turntable in relation to the home proximity sensor.

Figure 3 - 2
The Run Screen

Table 3-2. The Run Screen Button Descriptions

STATE 1	DESCRIPTION	STATE 2
	Press and hold this button to start the machine. This must be held until the Start Delay timer is complete to start the machine.	
	Press this button to pause the wrap cycle. When paused, the Carriage and Main Drive will stop, and will wait for the Resume Cycle button to be pressed before resuming the wrap cycle.	

Table 3-2. The Run Screen Button Descriptions (Continued)

STATE 1	DESCRIPTION	STATE 2
	Press this button to resume the wrap cycle, if the cycle is currently paused.	
	Press this button to either stop the current wrap cycle or reset any displayed faults.	
	Press this button to apply the predefined reinforcement wraps to the load. If the Reinforcement Wraps value is set to zero, reinforcement wraps will be applied as long as the Reinforce button is pressed.	**REINFORCING**
	Press this button to toggle between High Speed and Low Speed operation. When High Speed is selected, the Main Drive will travel at the predefined High Speed value during the wrap cycle. When Low Speed is selected, the Main Drive will travel at the predefined Low Speed value during the wrap cycle.	
	Press this button to send the machine to its Home Position. When pressed, the Carriage will travel to its bottom limit, and the Main Drive will travel to its predefined End of Cycle Position.	

Security Settings Screen

This is the Security Settings screen. This screen allows you to choose the default security setting used after the login expires.

Figure 3 - 3
The Security Settings Screen

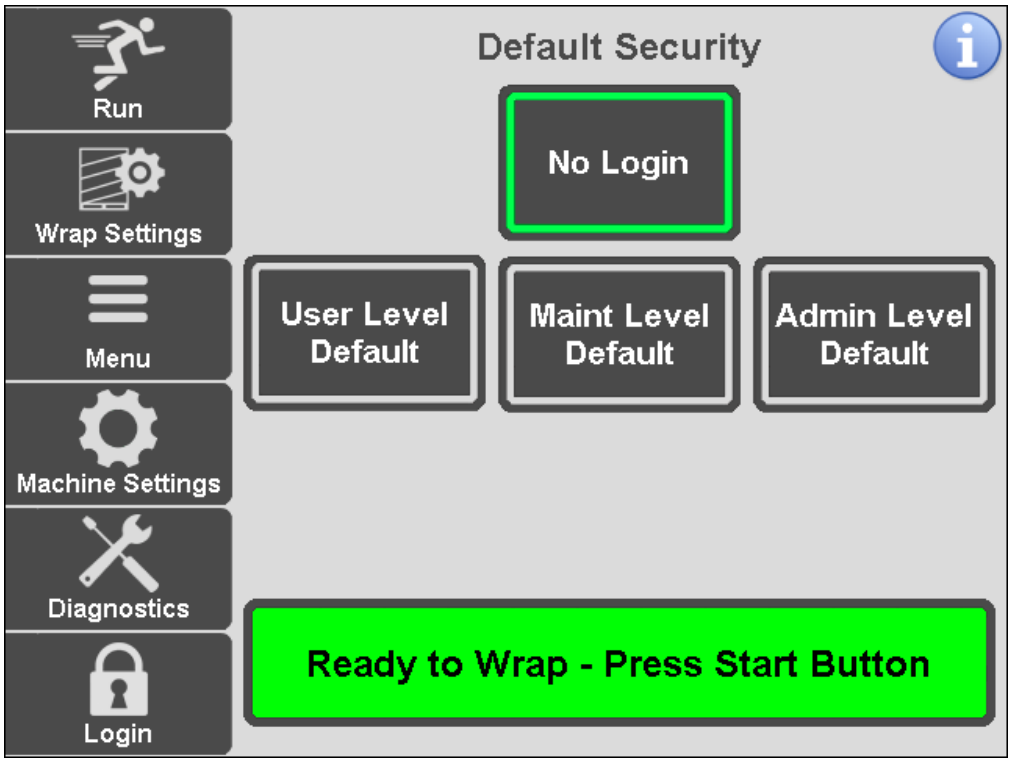


Table 3-3. The Security Settings Screen Button Descriptions

STATE 1	DESCRIPTION
NO LOGIN	Press this button to set the Default Security level to 'No Login'. When selected, the machine will automatically log out on powerup, or after the logout timer has expired.
USER LEVEL	Press this button to set the Default Security level to 'User'. When selected, the machine will automatically log in to the User security level on powerup, or after the logout timer has expired.
MAINTENANCE LEVEL	Press this button to set the Default Security level to 'Maintenance'. When selected, the machine will automatically log in to the Maintenance security level on powerup, or after the logout timer has expired.
ADMIN LEVEL	Press this button to set the Default Security level to 'Administrator'. When selected, the machine will automatically log in to the Administrator security level on powerup, or after the logout timer has expired.

Wrap Setting Screens

Wrap Settings Screen

Note: To adjust the wrap settings, you must be logged in. Press the login button in the bottom left corner of the screen. Enter ADMIN then press the checkmark, then X to close the keypad.

This is the Wrap Settings screen. This screen allows you to set the number of top and bottom wraps and the speed percentage of the carriage up and down travel. You may also choose wrap pattern options such as, Wrap Bottom First, Wrap Top First, Low Speed/ High Speed, Unstable Load Enabled or Disabled, Autoheight Enabled or Disabled, or Film Fault Enabled or Disabled. You can view each pattern settings on the Recipe Viewing Screen, see “Recipe Viewing Screen” on page 3 - 16.

Figure 3 - 4
The Wrap Settings Screen

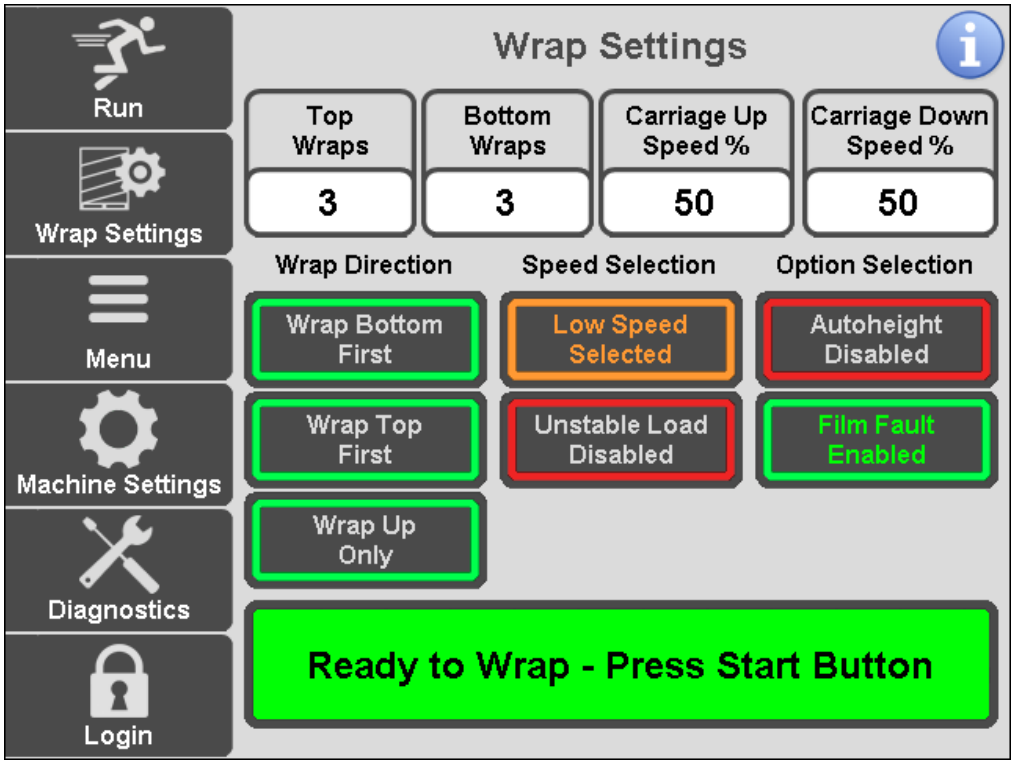


Table 3-4. The Wrap Settings Screen Button Descriptions

STATE 1	DESCRIPTION	STATE 2
TOP WRAPS	Press this button to set the number of top wraps applied to the load. Parameters are 1-20.	
BOTTOM WRAPS	Press this button to set the number of bottom wraps applied to the load. Parameters are 1-20.	

Table 3-4. The Wrap Settings Screen Button Descriptions (Continued)

STATE 1	DESCRIPTION	STATE 2
CARRIAGE UP SPEED	Press this button to change the speed of the carriage on the upward move, in terms of percentage. Min - 5% Max - 100%	
CARRIAGE DOWN SPEED	Press this button to change the speed of the carriage on the downward move, in terms of percentage. Min - 5% Max - 100%	
WRAP BOTTOM FIRST	Press this button to select the Wrap Bottom First wrap sequence. When selected, the wrapper will apply the bottom wraps first. When complete, the Carriage will travel to the top of the load and apply the top wraps. When complete, the Carriage will travel to the bottom and complete the cycle.	
WRAP TOP FIRST	Press this button to select the Wrap Top First wrap sequence. When selected, the Carriage will immediately travel to the top of the load and apply the top wraps. When complete, the Carriage will travel to the bottom, apply the bottom wraps, and complete the cycle.	
WRAP UP ONLY	Press this button to wrap up only. The machine will wrap to the top, then stop the cycle.	
LOW SPEED SELECTED	Press this button to toggle between High Speed and Low Speed operation. When High Speed is selected, the Main Drive will travel at the predefined High Speed value during the wrap cycle. When Low Speed is selected, the Main Drive will travel at the predefined Low Speed value during the wrap cycle.	HIGH SPEED SELECTED
UNSTABLE LOAD DISABLED	Press this button to enable or disable the Unstable Load wrap cycle. When enabled, the Main Drive will travel at Low Speed until the wrapper has completed one top wrap. After one top wrap is completed, the Main Drive will travel at High Speed for the remainder of the cycle. If Low Speed is selected, the Main Drive will travel at Low Speed for the entire cycle.	UNSTABLE LOAD ENABLED
AUTOHEIGHT DISABLED	Press this button to enable or disable the Autoheight photoeye. When enabled, the Carriage will travel up, during the wrap cycle, until the Autoheight photoeye no longer sees a load. It will continue to travel until the Autoheight Delay time is complete. When disabled, the Carriage will travel up, during the wrap cycle, until it reaches the Top Limit sensor.	AUTOHEIGHT ENABLED
FILM FAULT DISABLED	Press this button to enable or disable the End of Roll or Broken Film fault. When disabled, the wrap cycle will continue even if the film has broken or there is no film left on the roll.	FILM FAULT ENABLED

Menu Screens

Menu Screen

This is the Menu screen. This screen allows you to navigate the HMI screens.

Figure 3 - 5
The Menu Screen

Table 3-5. The Menu Screen Button Descriptions

STATE 1	DESCRIPTION
JOGGING	Press this button to go to the Jogging Screen. See “Jogging Screen” on page 3 - 10.
RECIPES	Press this button to go to the Recipes Screen. See “Recipe Screen” on page 3 - 14.
PRODUCTION DATA	Press this button to go to the Production Data Screen. See “Production Data Screen” on page 3 - 15.

Jogging Screen

This is the Jogging Screen. This screen allows jogging of each component of the machine.

Figure 3 - 6
The Jogging Screen

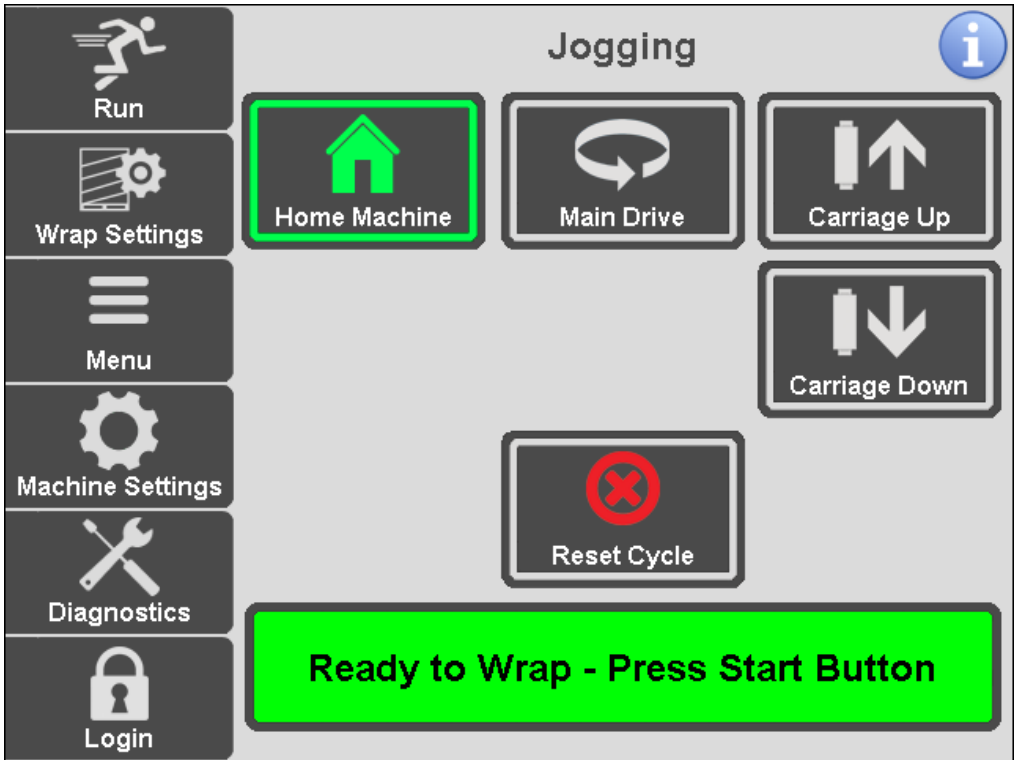


Table 3-6. The Jogging Screen Button Descriptions

STATE 1	DESCRIPTION
	Press this button to move the machine to the home position.
	Press this button to jog the main drive (turntable/ tower) in the direction of normal operation. The main drive moves until the operator releases the jog button.
	Press this button to jog the carriage upwards. The carriage move slowly upwards until the operator releases the jog button.

Table 3-6. The Jogging Screen Button Descriptions (Continued)

STATE 1	DESCRIPTION
	Press this button to jog the carriage downwards. The carriage move slowly downwards until the operator releases the jog button.
	Press this button to reset faults. If you press this button while the machine is running, the machine will abort the current wrap cycle.

Carriage Jog Screen

This is the Carriage Jog Screen. You can set the Carriage Up and Down Speeds, as well as jog the carriage up or down.

Figure 3 - 7
The Carriage Jog Screen

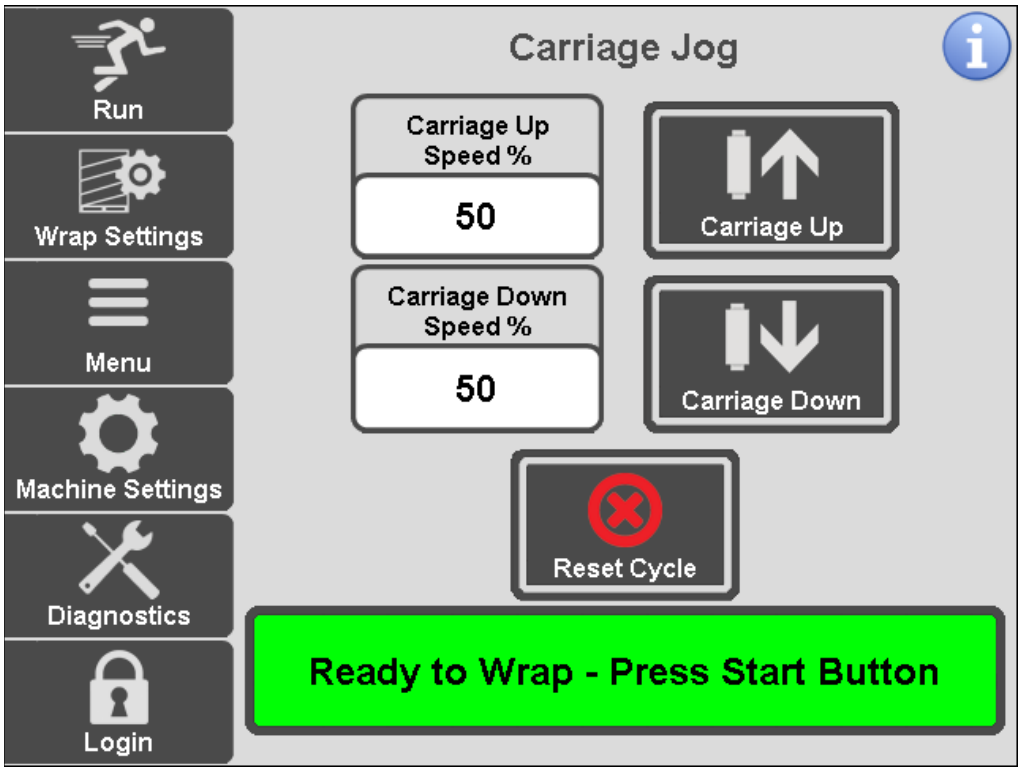


Table 3-7. The Carriage Jog Screen Button Descriptions

STATE 1	DESCRIPTION
CARRIAGE UP SPEED %	Press this button to modify the Carriage Up Speed, in terms of percentage. Min - 5% Max - 100%
CARRIAGE DOWN SPEED %	Press this button to modify the Carriage Down Speed, in terms of percentage. Min - 5% Max - 100%
	Press this button to jog the carriage upwards. The carriage move slowly upwards until the operator releases the jog button.
	Press this button to jog the carriage downwards. The carriage move slowly downwards until the operator releases the jog button.

Table 3-7. The Carriage Jog Screen Button Descriptions (Continued)

STATE 1	DESCRIPTION
	Press this button to reset faults. If you press this button while the machine is running, the machine will abort the current wrap cycle.

Recipe Screen

This is the Recipe screen. This screens allows the user to select different wrap recipes quickly. Changes made to a recipe are saved to the active recipe.

Figure 3 - 8
The Recipe Screen

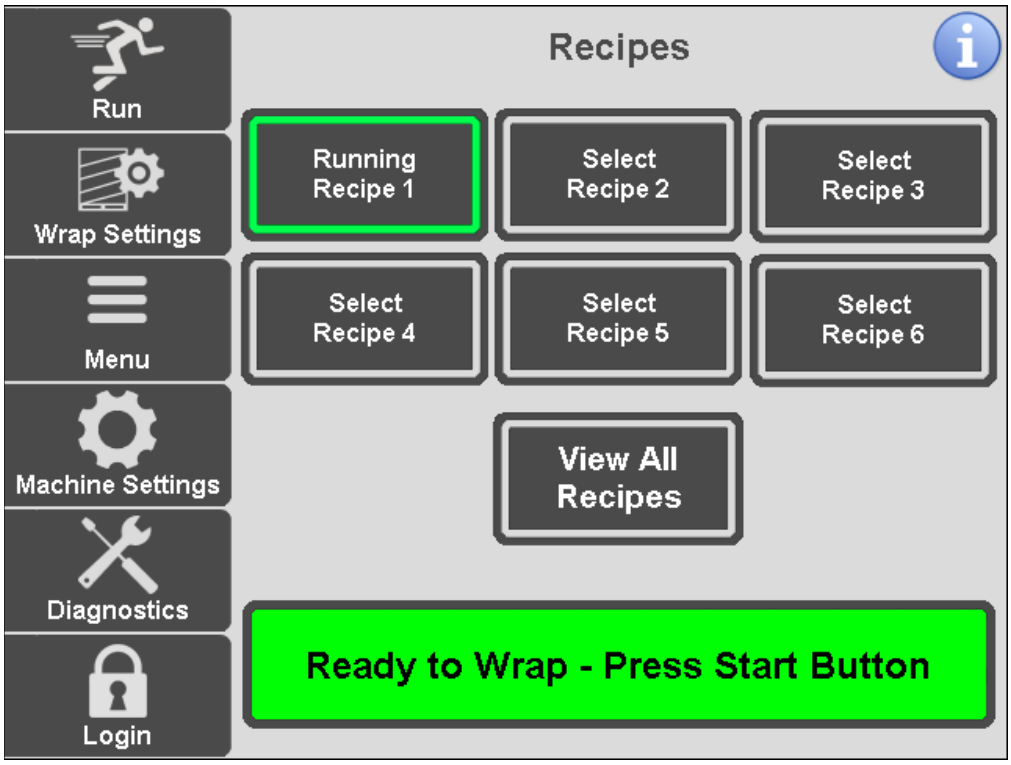


Table 3-8. The Recipe Screen Button Descriptions

STATE 1	DESCRIPTION	STATE 2
SELECT RECIPE #	Press a recipe button to choose between the different recipe wrap settings. Changes made to a recipe are saved to the active recipe. If you attempt to change to a different recipe while the wrapper is loading, then the new recipe you select will display as loading and will only change once the current wrap cycle is complete.	RUNNING RECIPE 1 LOADING RECIPE 1
VIEW ALL RECIPES	Press this button to go to the Recipe Viewing screen. See “Recipe Viewing Screen” on page 3 - 16.	

Production Data Screen

This is the Production Data screen. This screen displays the lifetime cycles and shift cycles. You may also reset the shift cycle counter.

Figure 3 - 9
The Production Data Screen

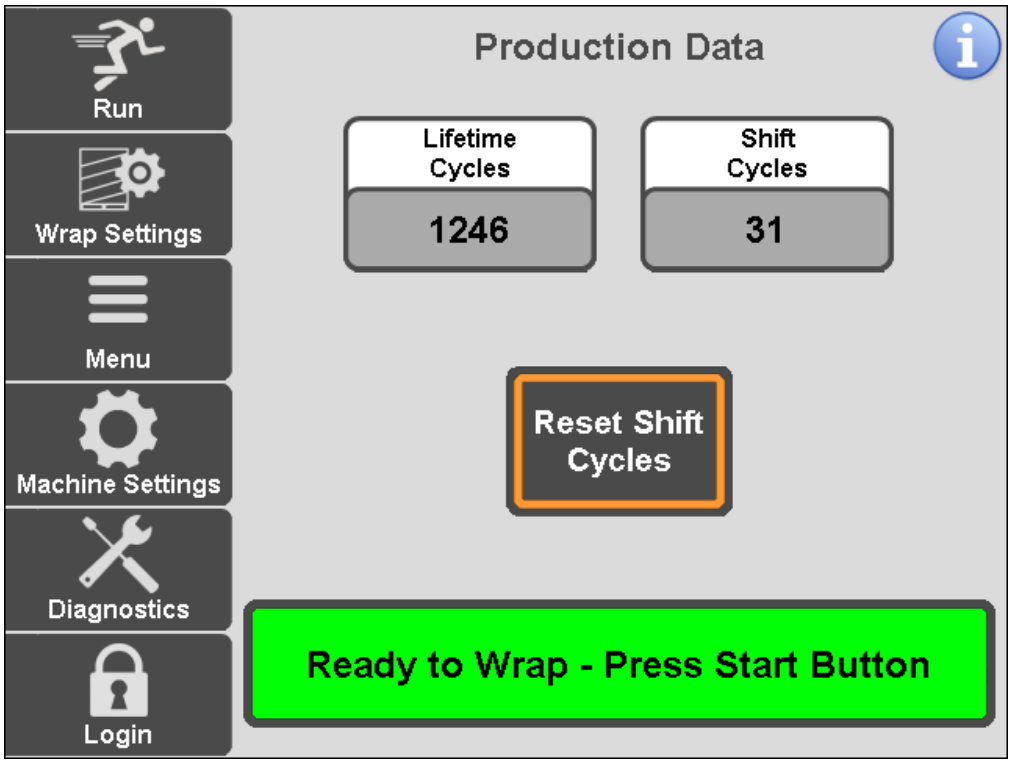


Table 3-9. The Production Data Screen Button Descriptions

STATE 1	DESCRIPTION
LIFETIME CYCLES	This display shows the number of cycles the machine has run, in total.
SHIFT CYCLES	This display shows the number of cycles the machine has run since the last shift cycle reset.
RESET SHIFT CYCLES	Press this button to reset the shift cycle counter to zero.

Recipe Viewing Screen

This is the Recipe Viewing screen. This screen allows you to view each recipe settings. This is helpful for a quick glance at each recipe's parameters.

Figure 3 - 10
The Recipe Viewing Screen

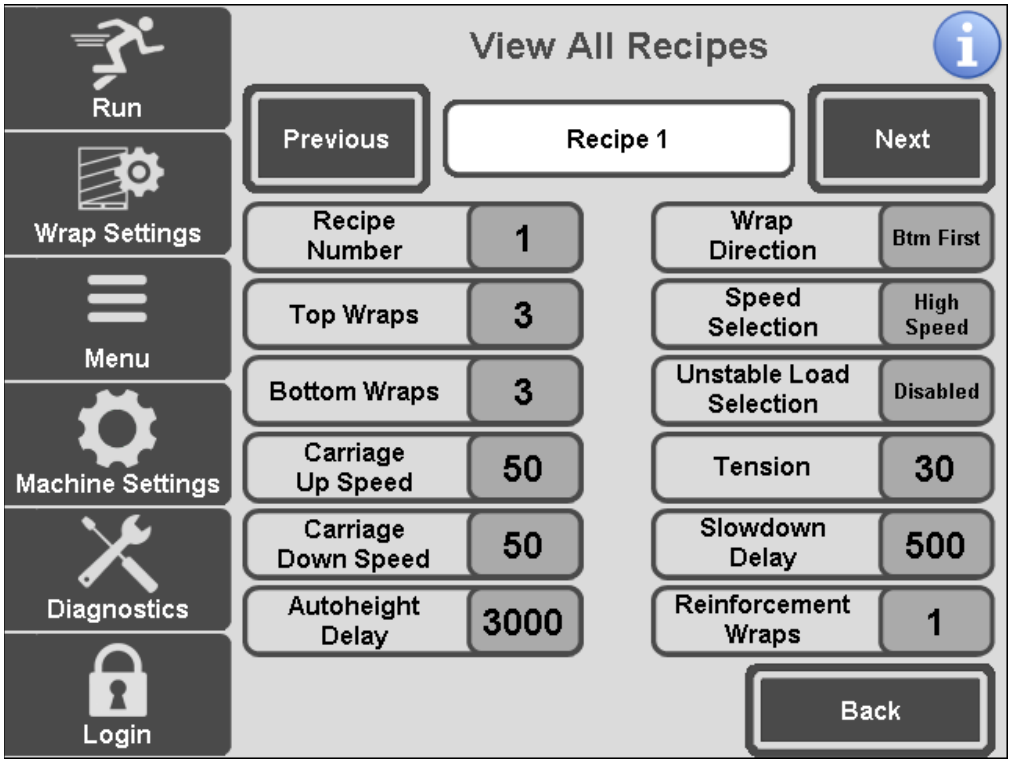


Table 3-10. The Recipe Viewing Screen Button Descriptions

STATE 1	DESCRIPTION
RECIPE	Press the recipe name to edit the name of the recipe.
PREVIOUS	Press this button to go to the previous Recipe View screen.
NEXT	Press this button to go to the next Recipe View screen.
BACK	Press this button to go back to the Recipe screen.

Machine Settings Screens

Machine Settings Screen

This is the Machine Settings Screen. This screen allows access to each of the machine setting adjustments.

Figure 3 - 11
The Machine Settings Screen

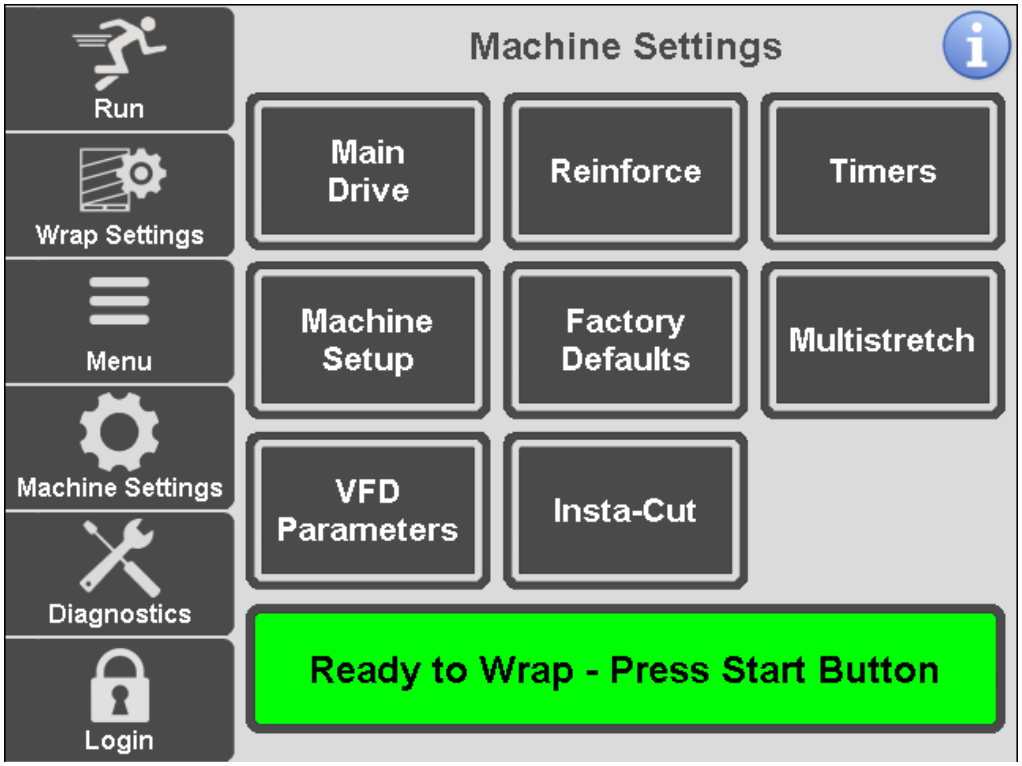


Table 3-11. The Machine Settings Screen Button Descriptions

STATE 1	DESCRIPTION
MAIN DRIVE	Press this button to go to the Main Drive Screen. See “Main Drive Screen” on page 3 - 19.
REINFORCE	Press this button to go to the Reinforce Screen. See “S Insta-Cut Screen” on page 3 - 30.
TIMERS	Press this button to go to the Timers Screen. See “Timers Screen” on page 3 - 21.
MACHINE SETUP	Press this button to go to the Machine Setup Screen. See “Machine Setup Screen” on page 3 - 23.
FACTORY DEFAULTS	Press this button to go to the Factory Defaults Screen. See “Factory Defaults Screen” on page 3 - 25.
MULTISTRETCH	Press this button to go to the Multistretch Screen. See “Multistretch Settings Screen” on page 3 - 26.

Table 3-11. The Machine Settings Screen Button Descriptions (Continued)

STATE 1	DESCRIPTION
VFD PARAMETERS	Press this button to go to the VFD Parameters Screen. See “The VFD Parameters Screen” on page 3 - 28.
INSTA-CUT	Press this button to go to the Insta-Cut Screen. See “S Insta-Cut Screen” on page 3 - 30.

Main Drive Screen

This is the Main Drive screen. This screen allows adjustment of the Main Drive (turntable or rotary arm drive.)

Figure 3 - 12
The Main Drive Screen

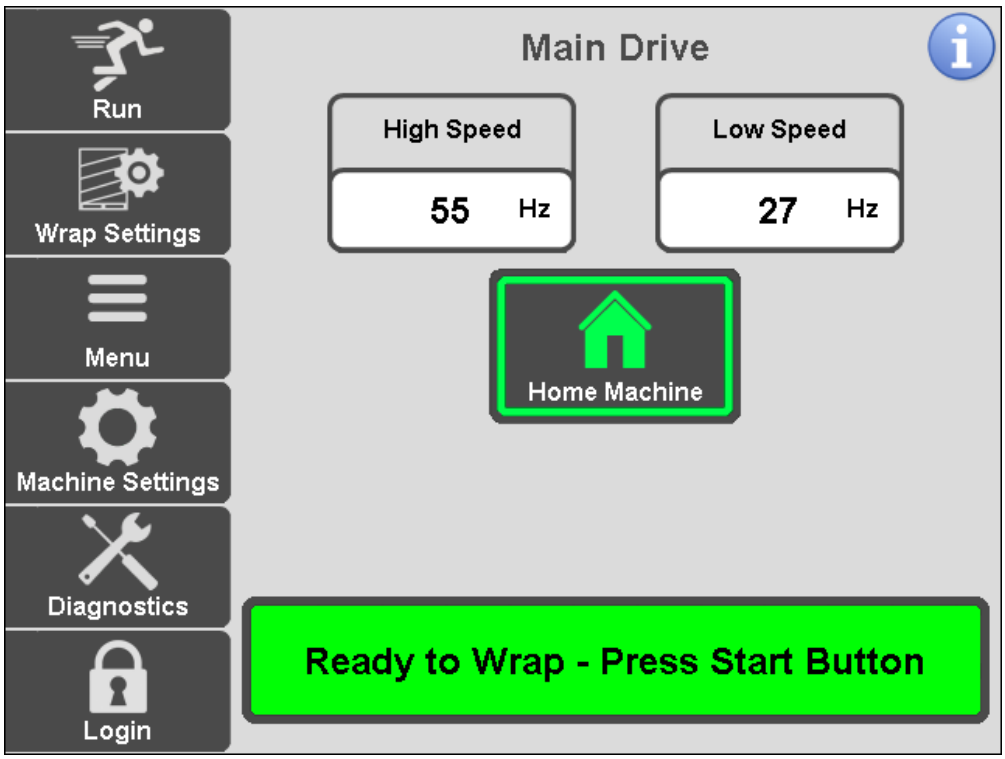


Table 3-12. The Main Drive Screen Button Descriptions

STATE 1	DESCRIPTION
HIGH SPEED	Press this button to modify the High Speed value, in terms of hertz. This value determines the speed at which the Main Drive will travel during the wrap cycle when High Speed is selected. Min - 8 Hz Max - 27 Hz
LOW SPEED	Press this button to modify the Low Speed value, in terms of hertz. This value determines the speed at which the Main Drive will travel during the wrap cycle when Low Speed is selected. Min - 27 Hz Max - 55 Hz
Home Machine	Press this button to send the machine to its Home Position. When pressed, the Carriage will travel to its bottom limit, and the Main Drive will travel to its predefined End of Cycle Position.

Reinforce Wrap Setup

This is the Reinforce Wraps Setting Screen. This screen allows the user to set the number of reinforce wraps that are applied when the reinforce button on the Run Screen is pressed.

Figure 3 - 13
The Reinforce Setup Screen

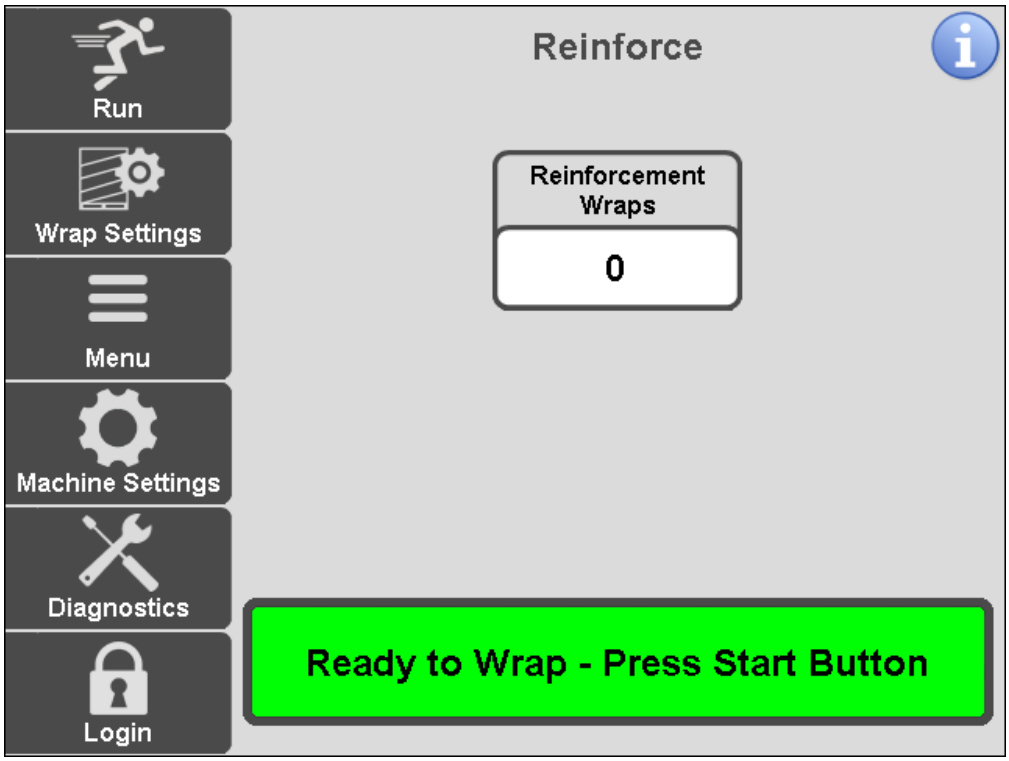


Table 3-13. The Reinforce Wraps Screen Button Descriptions

STATE 1	DESCRIPTION
REINFORCE WRAPS	Press this button to set the number of reinforce wraps that are applied when the enable reinforce wraps button is pressed on the Run screen.

Timers Screen

This is the Timers Screen. This screen allows adjustment of the timers involved in the machine cycle. See the Table below for descriptions and parameters of each setting.

Figure 3 - 14
The Timers Screen

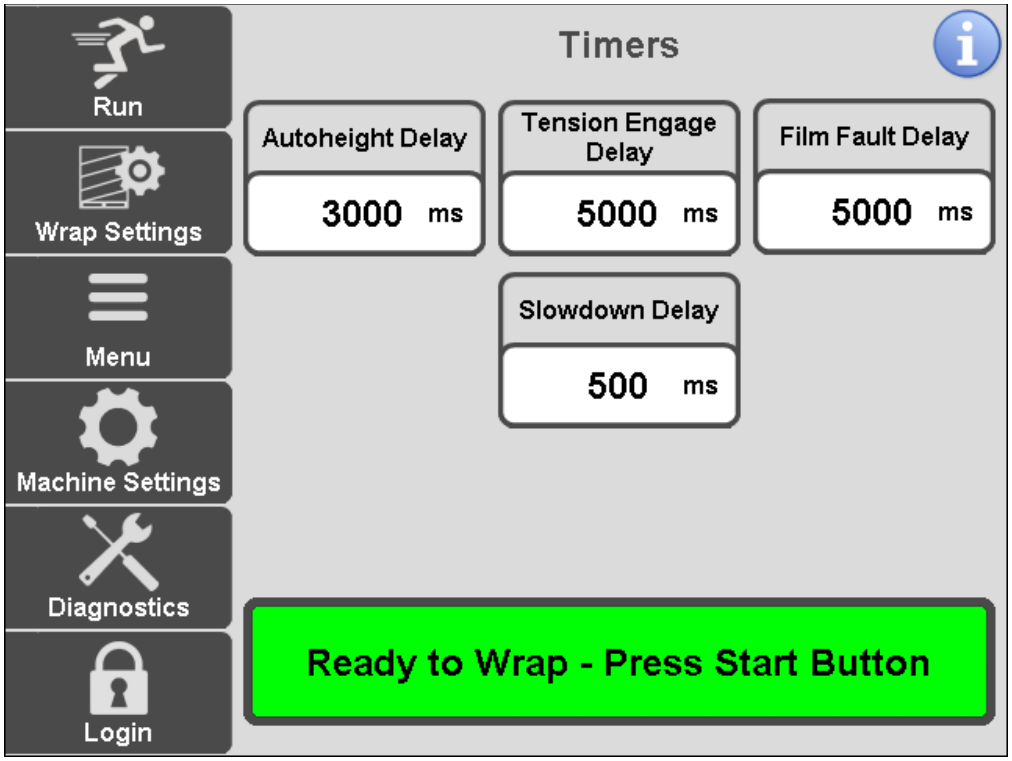


Table 3-14. The Timers Screen Button Descriptions

STATE 1	DESCRIPTION
AUTOHEIGHT DELAY	Press this button to modify the Autoheight Delay value, in terms of milliseconds. This value determines the amount of time that the Carriage will continue to travel up during the wrap cycle after the Autoheight photoeye no longer detects a load. This is used to adjust the amount of overlap on the top of the load. Min - 0 ms Max - 10000 ms
TENSION ENGAGE DELAY	Press this button to modify the Tension Engage Delay value, in terms of milliseconds. This value determines the amount of time, at the beginning of the wrap cycle, that the Multistretch will pay out film at normal speed before applying tension. This is to keep film from pulling out of the clamp or away from the load. Min - 0 ms Max - 10000 ms
FILM FAULT DELAY	Press this button to modify the Film Fault Delay value, in terms of milliseconds. This value determines the amount of time, during a wrap cycle, that the Multistretch must be inactive before triggering an End of Film Roll or Broken Film fault. Min - 0 ms Max - 10000 ms

Table 3-14. The Timers Screen Button Descriptions (Continued)

STATE 1	DESCRIPTION
SLOWDOWN DELAY	Press this button to modify the Slowdown delay timer. This value determines the position at which the Main Drive will slow down to jog speed at the end of a wrap cycle.

Machine Setup Screen

This is the Machine Setup Screen. This screen is used when setting up the initial machine configuration. The technicians who assembled you machine already set the type of machine you have on this screen. You will not need to make any changes on this screen in day-to-day use.

Figure 3 - 15
The Machine Setup Screen

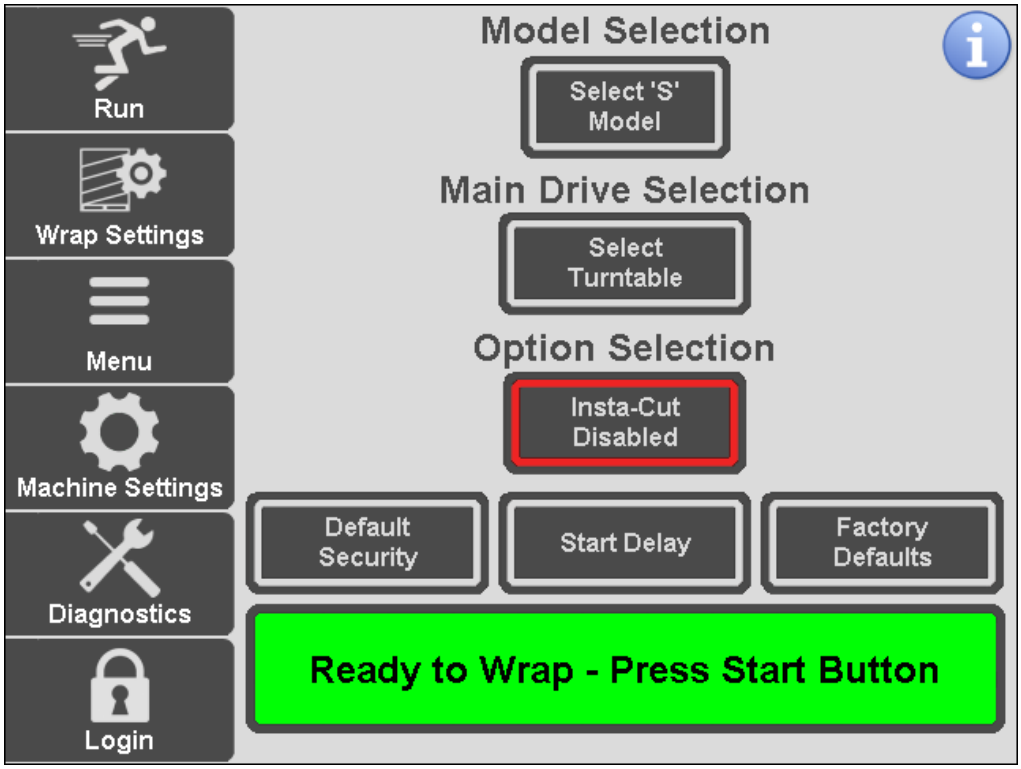


Table 3-15. The Machine Setup Screen Button Descriptions

STATE 1	DESCRIPTION	STATE 2
SELECT S MODEL	Press this button to select model S. If S is selected and the machine is actually an A or a D model, the revologic tooth counting is de-activated.	S MODEL SELECTED
SELECT TURNTABLE	Press this button to select that the machine is a turn-table machine.	TURNTABLE SELECTED
SELECT ROTARY ARM	Press this button to select that the machine is a rotary arm machine.	ROTARY ARM SELECTED
INSTA-CUT DISABLED	Press this button to activate or de-activate Insta-Cut.	INSTA-CUT ENABLED
DEFAULT SECURITY	Press this button to go to the Security Settings Screen.	
START DELAY	Press this button to go to the Start Delay Screen.	
FACTORY DEFAULTS	Press this button to go to the Factory Defaults Screen.	

Start Delay Screen

This is the Start Delay screen. On this screen, you may set the amount of time, in milliseconds that the start button must be pressed before the machine starts.

Figure 3 - 16
The Start Delay Screen

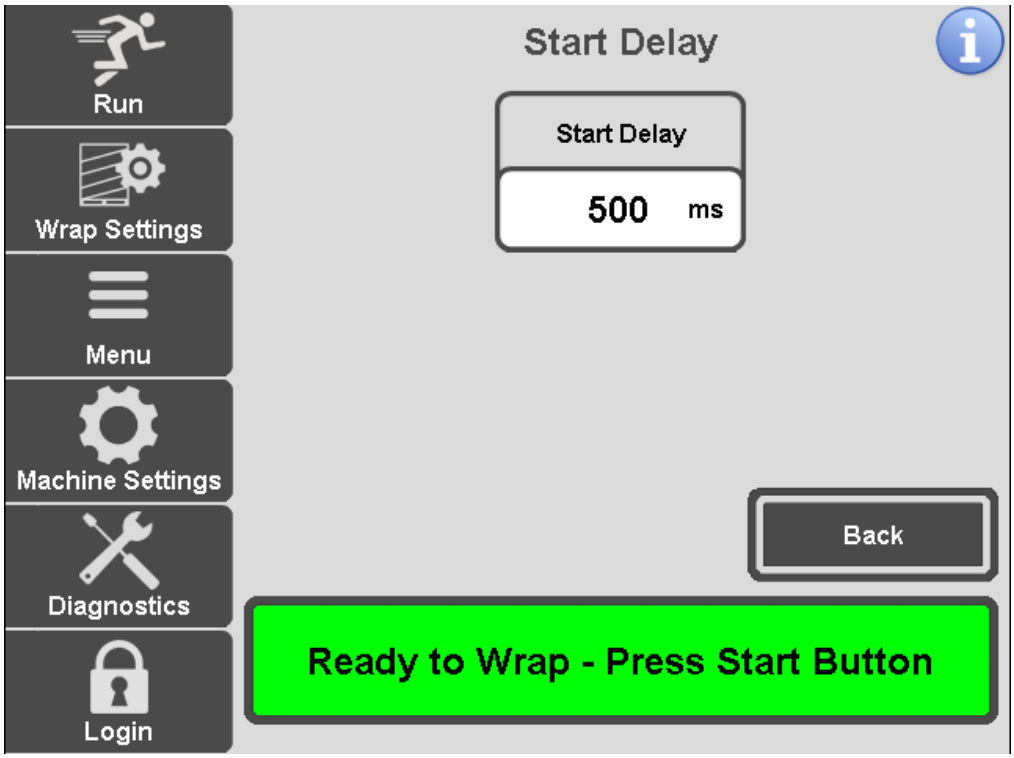


Table 3-16. The Start Delay Screen Button Descriptions

STATE 1	DESCRIPTION
START DELAY	Press this button to modify the Start Delay value, in terms of milliseconds. This value determines the amount of time that the Start pushbutton must be pressed before the machine will start. Min - 500 ms Max - 5000 ms
BACK	Press this button to go to the Machine Setup screen.

Factory Defaults Screen

This is the Factory Defaults Screen. This screen allows authorized users to go back to the factory default settings.

Figure 3 - 17
The Factory Defaults Screen

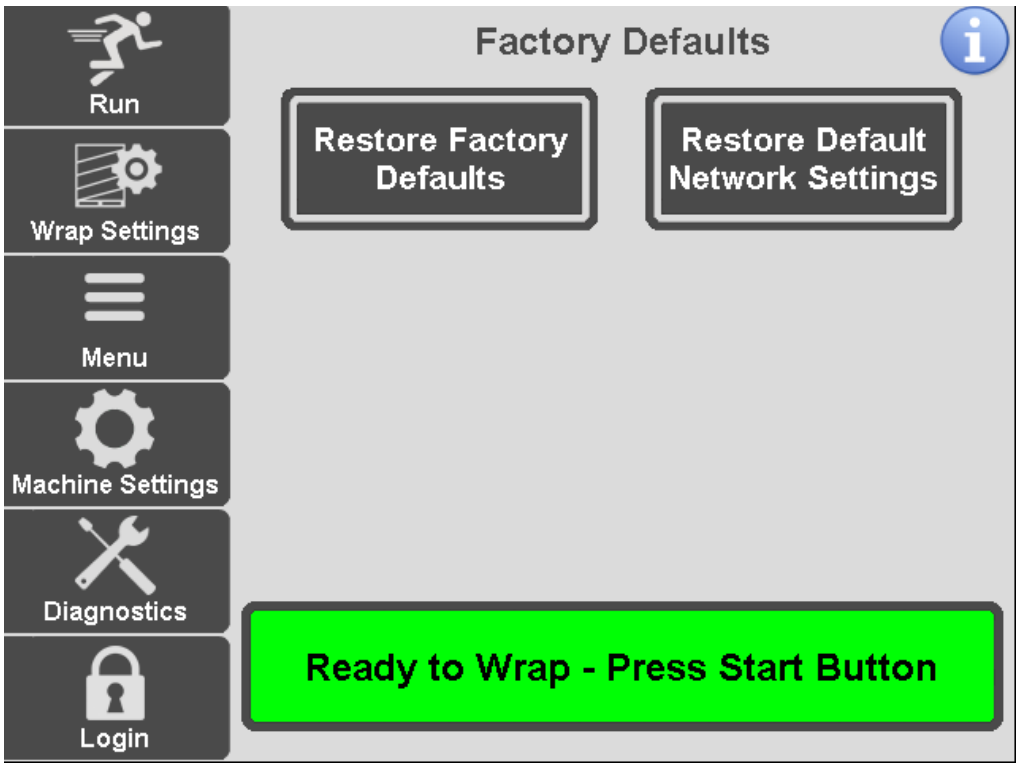


Table 3-17. The Factory Defaults Screen Button Descriptions

STATE 1	DESCRIPTION
RESTORE FACTORY DEFAULTS	Press this button to delete the currently entered factory settings and replace them with the original factory default settings. This will replace all Wrap Settings, Machine Settings, and Recipes with the factory default parameters.
RESTORE DEFAULT NETWORK SETTINGS	Press this button to restore default network settings to the machine.

Multistretch Settings Screen

This is the Multistretch Settings (MIB) screen. This page is useful primarily to repair personnel when troubleshooting the machine.

Figure 3 - 18
The Multistretch Screen

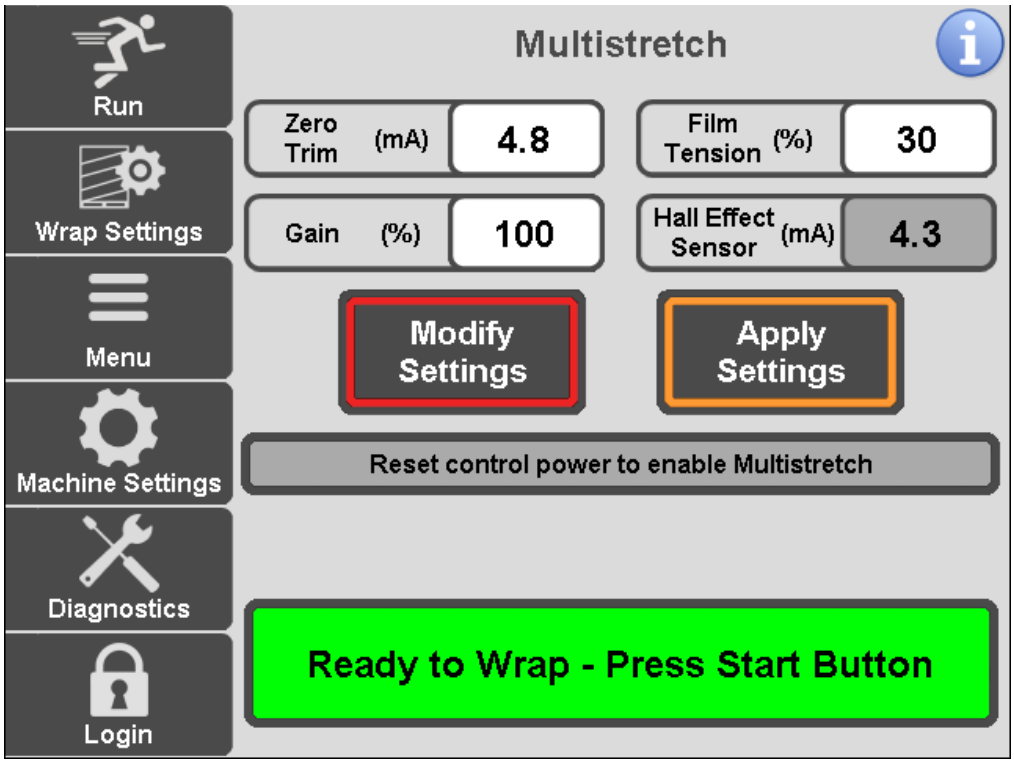


Table 3-18. The Multistretch Screen Button Descriptions

STATE 1	DESCRIPTION
ZERO TRIM	Press this button to modify the Zero Trim datapoint, in terms of milliamps. This value determines at which point the Multistretch will begin paying out film as the dancer bar is deflected. This value should be .5 mA higher than the Hall Effect Sensor reading with the dancer bar at rest. Min - 3.mA Max - 8 mA
GAIN	Press this button to modify the Gain datapoint, in terms of percentage. This value sets percentage of deflection of the dancer bar that is required for the Multistretch to pay out film at maximum speed. Min - 10% Max - 100%
FILM TENSION	Press this button to modify the Film Tension datapoint, in terms of percentage. This value limits the maximum speed at which the Multistretch will pay out film, which creates tension. Min - 0% Max - 100%
HALL EFFECT SENSOR	This displays the current dancer bar Hall Effect Sensor reading, in terms of milliamps.
MODIFY SETTINGS	Press this button for access to modify the Zero Trim or Gain datapoints. The Multistretch is disabled while modifying the datapoints.

Table 3-18. The Multistretch Screen Button Descriptions (Continued)

STATE 1	DESCRIPTION
APPLY SETTINGS	Press this button to accept the current Zero Trim and Gain datapoints and apply them to the Multistretch. When complete, the drive will be enabled again.

The VFD Parameters Screen

This is the VFD Parameters screen. On this screen, you can identify the horsepower for each drive or transfer VFD parameters from the PLC to the VFD's.

Figure 3 - 19
The VFD Parameters Screen

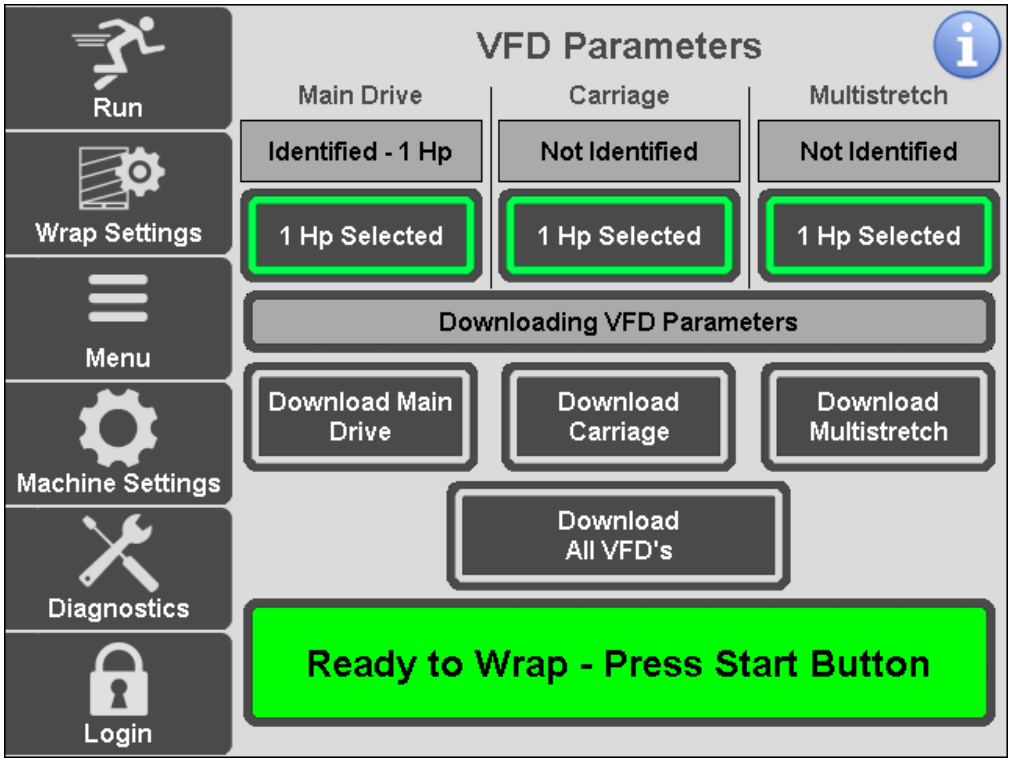


Table 3-19. The VFD Parameters Screen Button Descriptions

STATE 1	DESCRIPTION
NOT IDENTIFIED	Displayed if the machine cannot automatically identify the size of VFD currently installed. In this case, the VFD size must be manually selected before downloading.
1/2 HP IDENTIFIED	Displayed if the machine identifies the current VFD as half horsepower drive.
1 HP IDENTIFIED	Displayed if the machine identifies the current VFD as a one horsepower drive.
SELECT VFD SIZE	If the machine cannot automatically identify the size of the VFD, press this button to manually select the size of VFD currently installed.
1/2 HP SELECTED	Displayed if the current VFD is manually selected as a half horsepower drive.
1 HP SELECTED	Displayed if the current VFD is manually selected as a one horsepower drive.
DOWNLOAD MAIN DRIVE	Downloads the default Main Drive VFD parameters from the PLC to the VFD.
DOWNLOAD CARRIAGE	Downloads the default Carriage VFD parameters from the PLC to the VFD.

Table 3-19. The VFD Parameters Screen Button Descriptions (Continued)

STATE 1	DESCRIPTION
DOWNLOAD MULTISTRETCH	Downloads the default Multistretch VFD parameters from the PLC to the VFD.
DOWNLOAD ALL VFD'S	Downloads the default VFD parameters from the PLC to the VFD.

S Insta-Cut Screen

This is the S Insta-Cut screen. This screen allows adjustments to the timing and speed setting associated with the Insta-Cut on the HPS or LPS machines, if so equipped.

Figure 3 - 20
The S Insta-Cut Screen

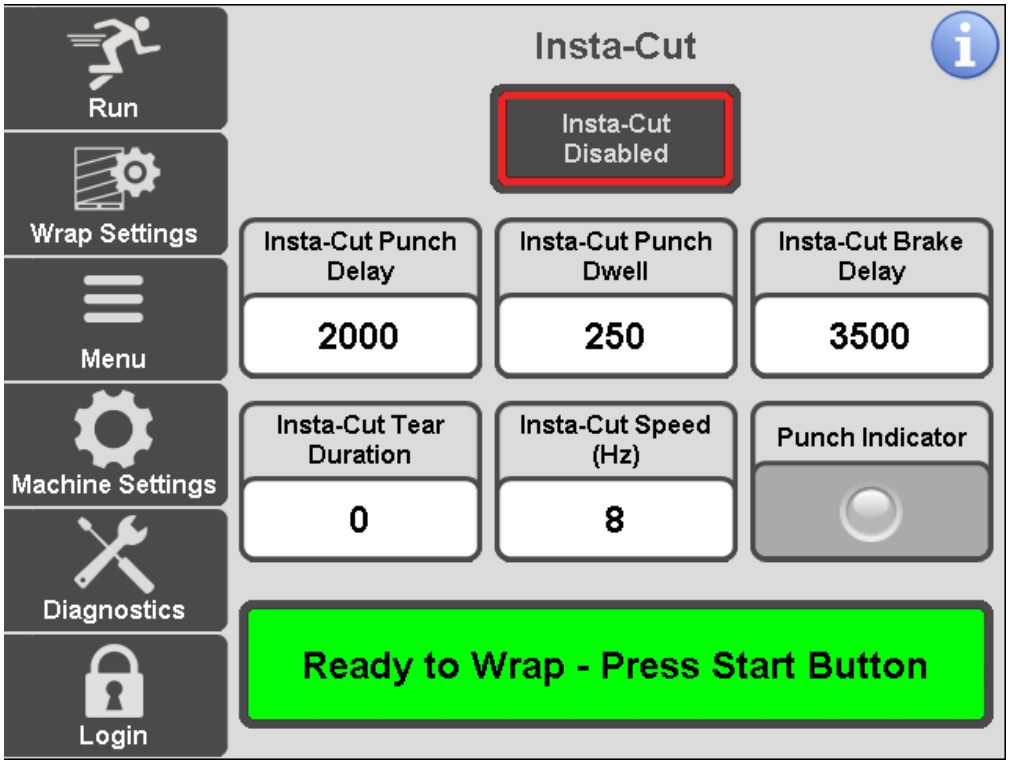


Table 3-20. The Insta-Cut "S" Screen Button Descriptions

STATE 1	DESCRIPTION	STATE 2
INSTA- CUT ENABLED	Press this button to toggle between Insta-Cut On or Insta-Cut Off. This allows the operator to disable the Insta-Cut function.	INSTA-CUT DISABLED
INSTA-CUT PUNCH POSITION	Press this button to modify the Insta-Cut Punch Position. This is the tooth count position at which the Insta-Cut puncher activates to punch a hole in the film.	
INSTA-CUT PUNCH DWELL	Press this button to modify the Insta-Cut Punch Dwell. This is the amount of teeth that the Insta-Cut puncher will stay activated to create a hole in the film.	
INSTA-CUT BRAKE POSITION	Press this button to modify the Insta-Cut Brake Position. This is the tooth count position at which the Multistretch will stop paying out film, which causes the film to tear. Min - (Insta-Cut Punch Position + Insta-Cut Punch Dwell)	
INSTA-CUT TEAR DURATION	Press this button to modify the Insta-Cut Tear Duration. This is the amount of teeth that the Main Drive will continue to travel at the predefined Insta-Cut Speed before slowing down to Jog Speed and stopping at home.	

Table 3-20. The Insta-Cut "S" Screen Button Descriptions (Continued)

STATE 1	DESCRIPTION	STATE 2
INSTA-CUT SPEED HZ	Press this button to modify the Insta-Cut Speed. This is the speed at which the Main Drive will travel during the Insta-Cut sequence.	
	This indicator will glow green when the Insta-Cut puncher is active.	

Diagnostics Screens

Diagnostics Screen

This is the Diagnostics screen. This screen allows navigation to each of the Diagnostic Screens.

Figure 3 - 21
The Diagnostics Screen

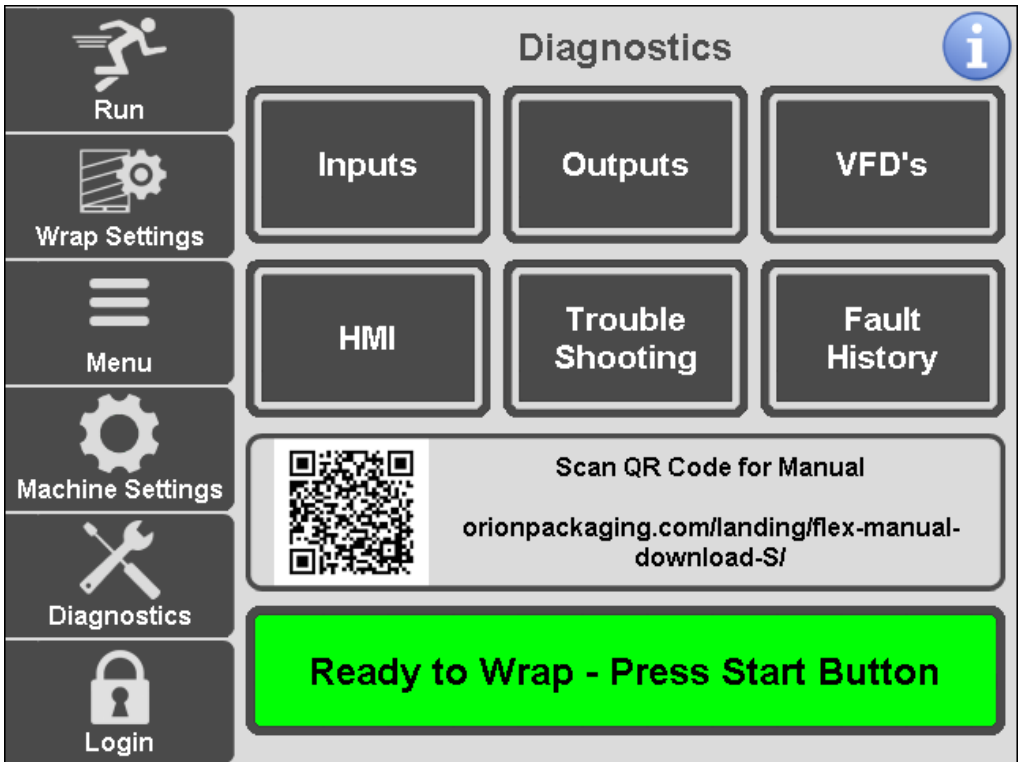


Table 3-21. The Diagnostics Screen Button Descriptions

STATE 1	DESCRIPTION
INPUTS	Press this button to go to the Inputs Screen. See “The Inputs Screens” on page 3 - 33.
OUTPUTS	Press this button to go to the Outputs Screen. See “The Outputs Screens” on page 3 - 34.
VFD’S	Press this button to go to the VFD’s Screen. See “The VFD Diagnostics Screen” on page 3 - 35.
HMI	Press this button to go to the HMI Screen. See “HMI Setup” on page 3 - 36.
TROUBLESHOOTING	Press this button to display the interactive troubleshooting guide. You can press links on the first page to view the help topic needed. Maintenance information is also included at the end of the guide.
FAULT HISTORY	Press this button to go to the Fault History Screen. See “Fault History Screen” on page 3 - 38.

The Inputs Screens

This is the Inputs screen. This screen shows the status of the machine inputs. There is another screen similar to this for displaying output status.

Figure 3 - 22
The Inputs Screen

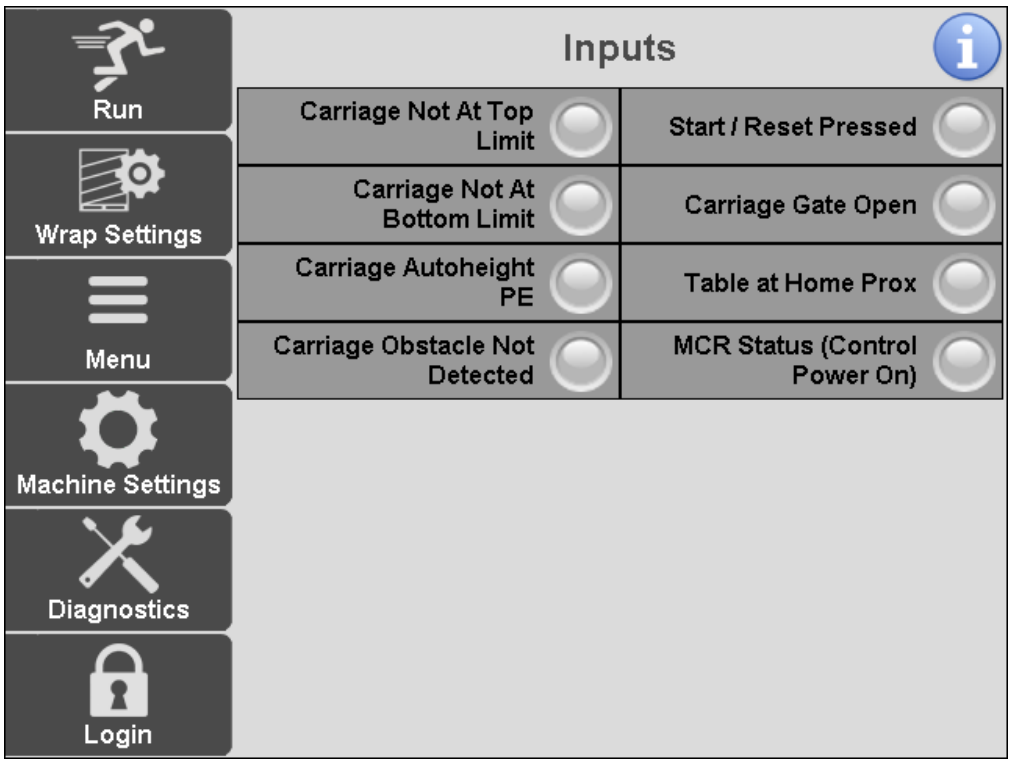
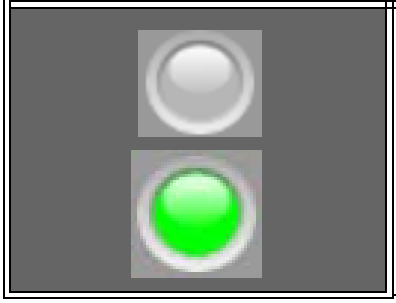


Table 3-22. The Input Screen Button Descriptions

STATE 1	DESCRIPTION
	Grey represents an inactive input. Green represents an active input.

The Outputs Screens

This is the Outputs screen. This screen shows the status of the machine outputs. There is another screen similar to this for displaying input status.

Figure 3 - 23
The Outputs Screen

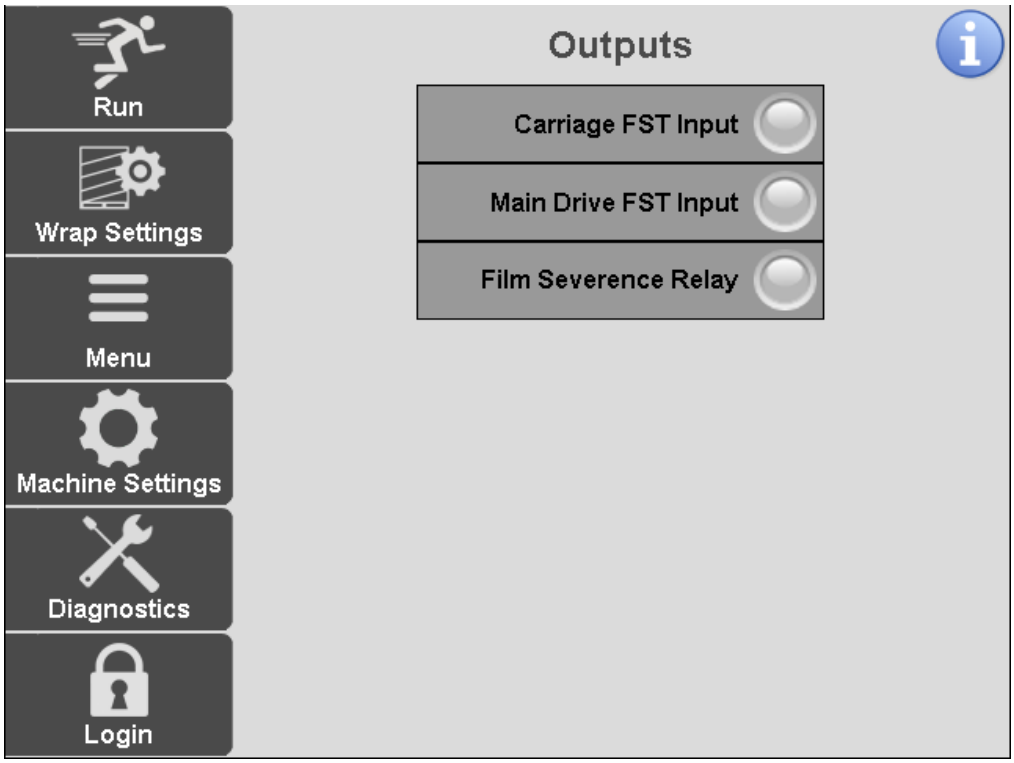
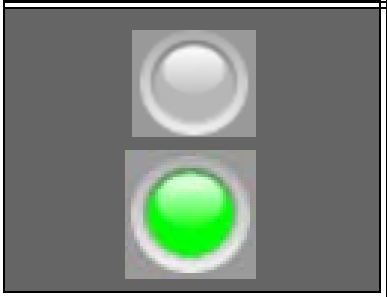


Table 3-23. The Output Screen Button Descriptions

STATE 1	DESCRIPTION
	Grey represents an inactive output. Green represents an active output.

The VFD Diagnostics Screen

This is the VFD Diagnostics screen.This screen allows you to view the diagnostics information about each VFD.

Figure 3 - 24
The VFD Diagnostics Screen

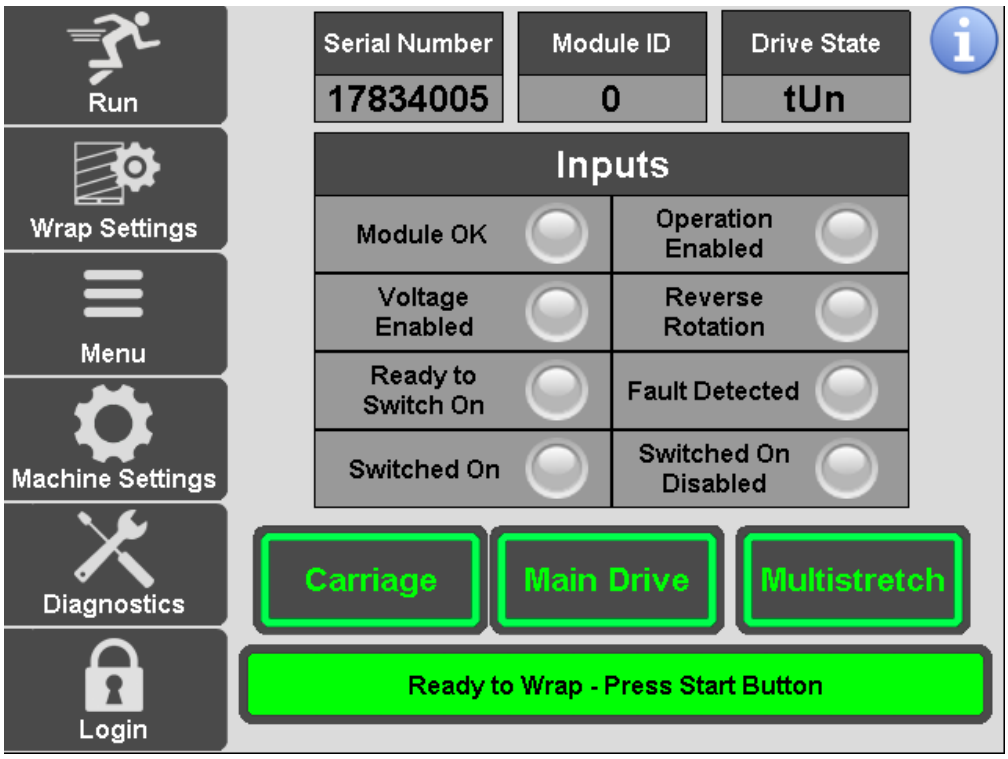


Table 3-24. The VFD Diagnostics Screen Button Descriptions

STATE 1	DESCRIPTION
SERIAL NUMBER	This displays the serial number of the selected VFD.
MODULE ID	This displays the Module ID of the selected VFD.
DRIVE STATE	This displays the current Drive State of the selected VFD.
CARRIAGE	Press this button to select the Carriage input view.
TURNTABLE	Press this button to select the Turntable input view.
MULTISTRETCH	Press this button to select the Multistretch input view.
	Gray represents an inactive input. Green represents an active input.

HMI Setup

This is the HMI Setup Screen. This screen allows you to choose the HMI language, set the screen brightness, adjust the network settings, calibrate the touchscreen touch points, and set the date and time.

Figure 3 - 25
The HMI Setup Screen

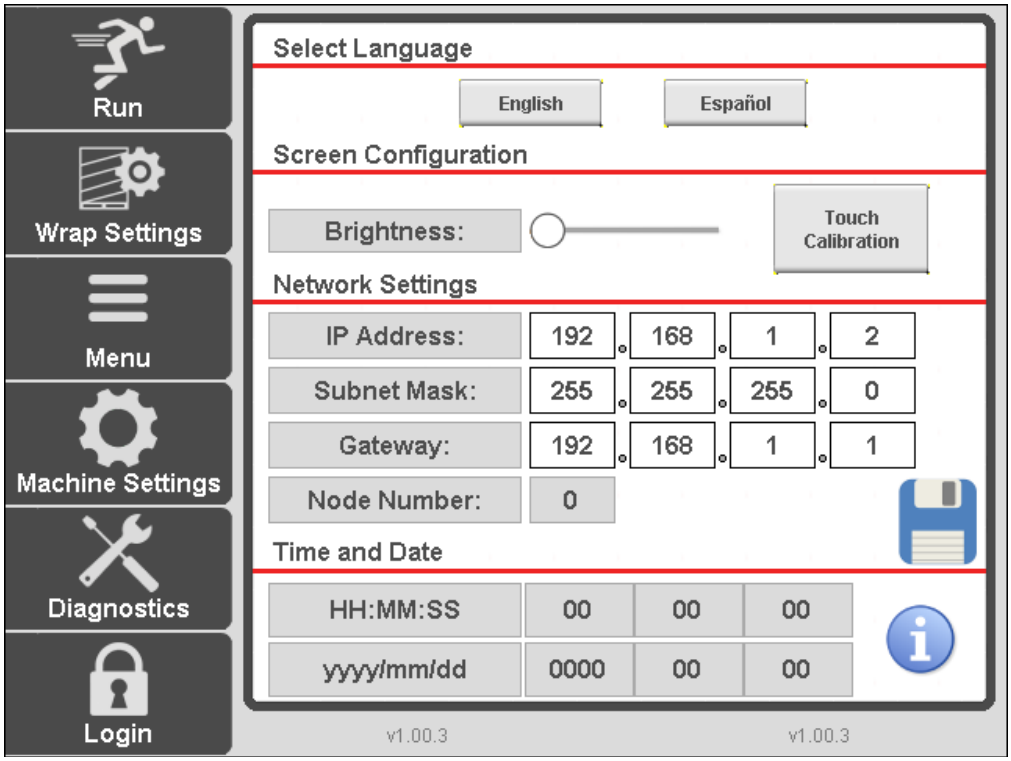


Table 3-25. The HMI Setup Screen Button Descriptions

STATE 1	DESCRIPTION
ENGLISH	Press this button to switch the HMI text to English.
ESPANOL	Press this button to switch the HMI text to Spanish.
BRIGHTNESS	Use the slider to adjust the brightness of the HMI screen. Slide to the right to increase the brightness. Slide to the left to decrease the brightness.
TOUCH CALIBRATION	Press this button to go to the touch calibration screen. This is used to set the alignment of the touch screen. There are multiple targets to press to align the screen.
NETWORK SETTINGS	When logged in as an Administrator, you can edit the IP Address, Subnet Mask, Gateway, or Node number. Press save, when done editing. If you are not logged in with the correct credentials, these settings are read-only.

Table 3-25. The HMI Setup Screen Button Descriptions (Continued)

STATE 1	DESCRIPTION
	Press this button to save the Network Settings. If you navigate away from the screen without saving, the entered network settings will not take effect.
TIME AND DATE	Press the numbers to edit the time and date. The format is hours (01-24), minutes (0-59), seconds (0-59). The date is set by year (####), month (1-12), and day (1-31).

Fault History Screen

This is the Fault History screen. The screen displays the faults and the time they occurred.

Figure 3 - 26
The Fault History Screen

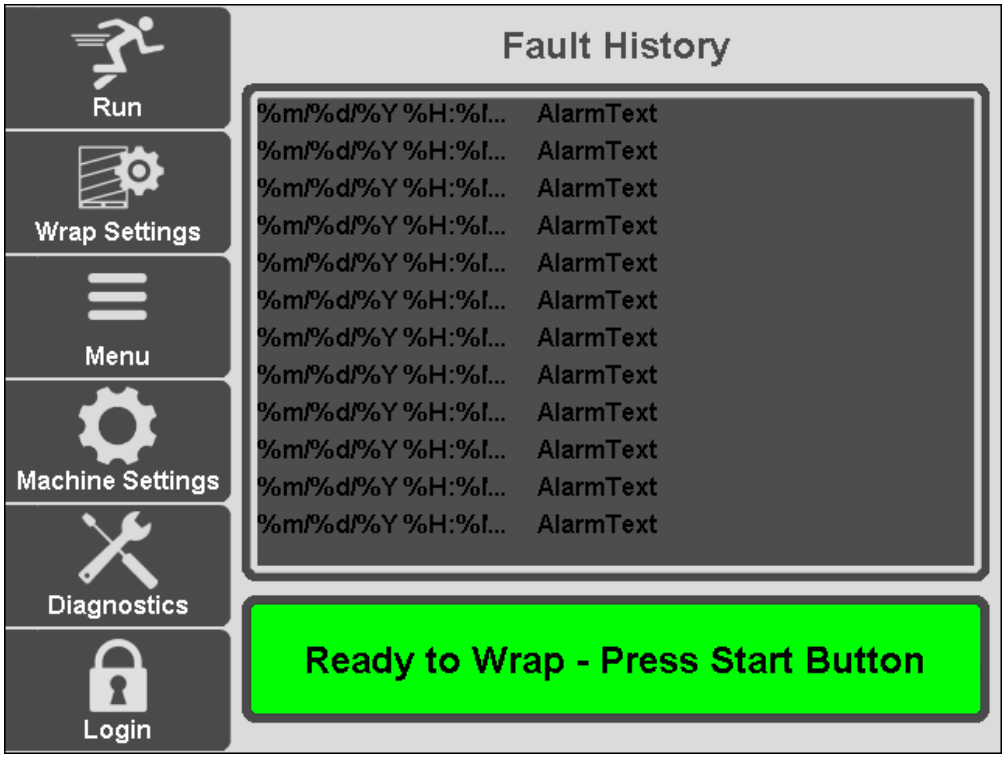


Table 3-26. The Fault History Screen Button Descriptions

STATE 1	DESCRIPTION
ANY DISPLAY	The displays on this screen cannot be altered on this screen. These displays show the Fault History Log.

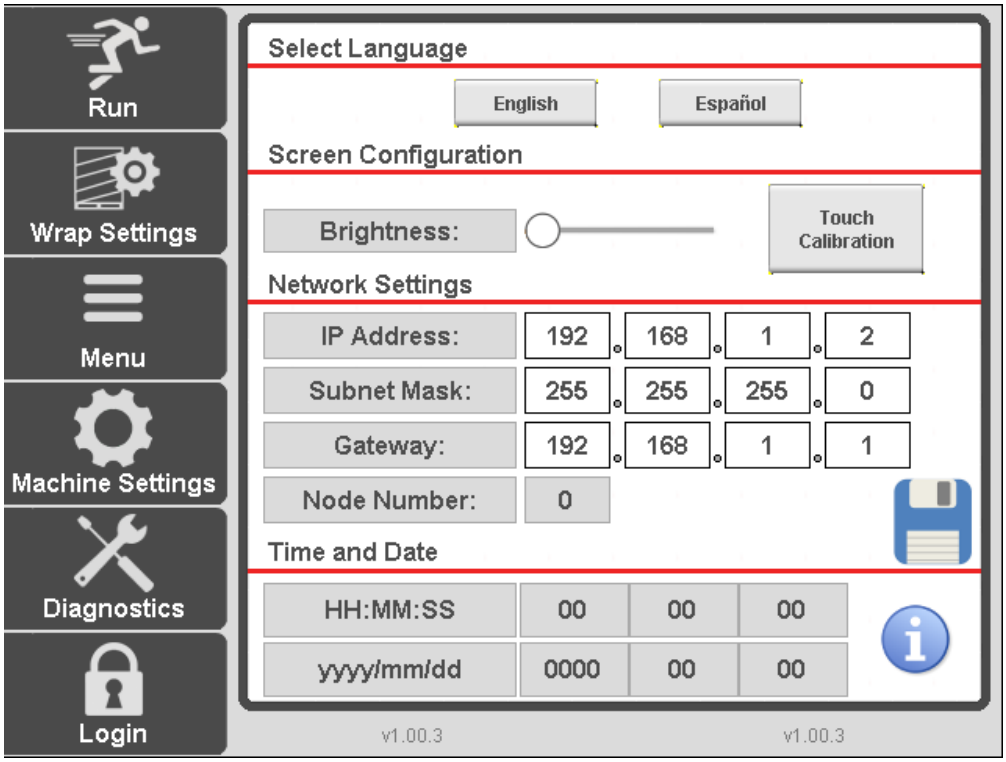
Flex Dashboard Remote Viewing

Setting up Dashboard Remote Viewing

Your new flex machine has the capability of remotely viewing the status from your computer browser on the same network. You will need your network administrator to advise what IP address should be used for your flex machine.

1. Press Login to log into Admin level security.
2. Enter the user password. Press Enter.
3. Press Diagnostics.
4. Press HMI.
5. Enter the IP network settings approved by your system administrator.
6. Press Save (Disk Icon.)

Figure 3 - 27
Setting the IP Address

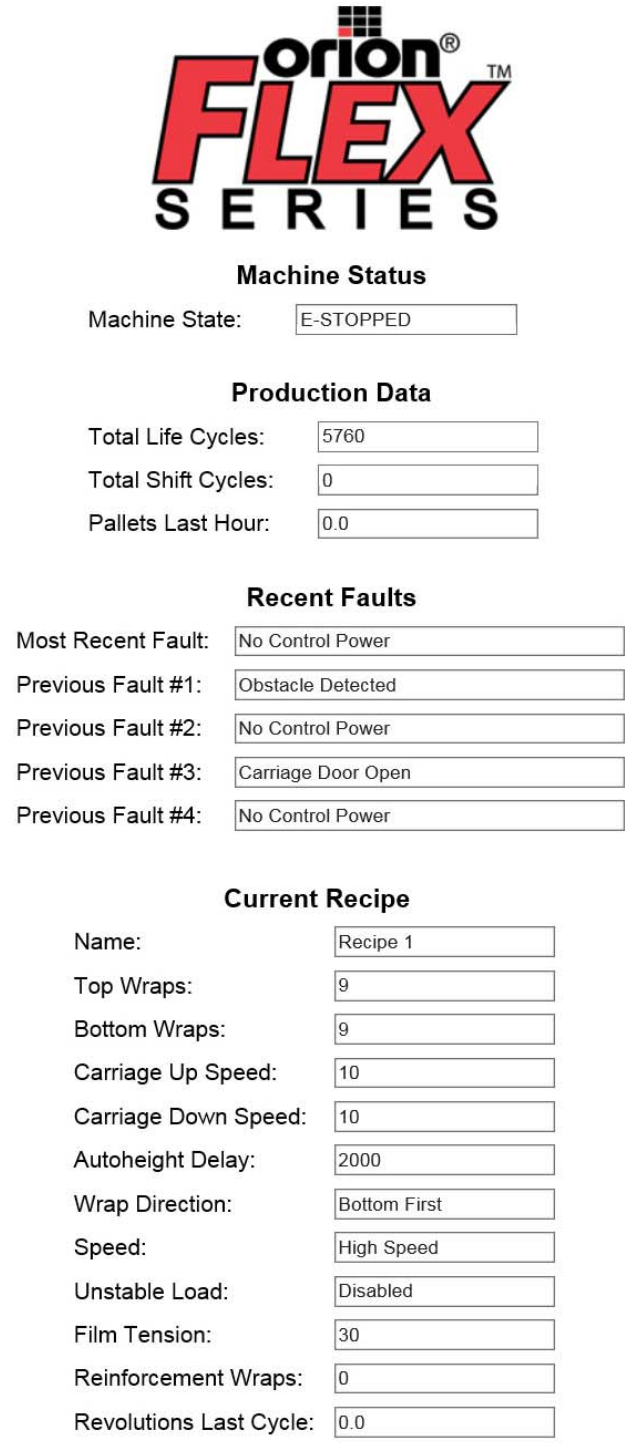


7. On the back of the HMI, connect an ethernet cord to the Eth IF2 connector. Route to your network router.
8. On your computer bowser connected to the same network, enter the IP address you assigned to the flex machine then /dashboard.asp.
9. Example: **192.168.1.2/dashboard.asp**

(Continued on Next Page)

10. Once the correct address is entered followed by /dashboard.asp, the dashboard will display.
11. This screen allows you to view the Status of your machine, the Production data, Recent Faults, and Current Recipe running.

Figure 3 - 28
Flex Dashboard



Information & Alarm Messages

The message and alarm displays are divided into two separate charts in this section.

- Message Displays - Various non-critical status messages
- Alarm Displays - Operation critical alarms/faults

Message Displays

The messages in this section are the various non-critical status messages. These messages are for informational purposes. For critical alarms, see “Alarm Displays” on page 3 - 45.

Note: Not all messages in this list are applicable to your machine. The alarm messages on you machine may vary based on machine options.

Table 3-27. The Information and Alarm Displays

MESSAGE	DESCRIPTION	CORRECTION
MACHINE SETUP REQUIRED - SELECT MACHINE OPTIONS	The machine setup parameters are not set.	See “Machine Setup Screen” on page 3 - 23.
APPLYING TOP WRAPS	The machine is currently applying the top wraps.	This is for informational purposes only. No correction necessary.
END OF FILM ROLL OR BROKEN FILM	The film has broken or the roll ran out.	Re-load a new roll if out. If broken, monitor the film. Replace roll if problem persists. See troubleshooting chart for broken film troubleshooting tips.
CYCLE ENDING	The cycle is ending.	This is for informational purposes only. No correction necessary.
CYCLE PAUSED	The cycle is paused.	Resume, when ready. Press the resume button on the Run screen.
E-STOP PRESSED	The E-stop button is currently pressed.	Release the E-stop button to allow operation. Press Start to reset control power, then press and hold start for the amount of time set up in the parameters.

Table 3-27. The Information and Alarm Displays (Continued)

MESSAGE	DESCRIPTION	CORRECTION
CARRIAGE GATE OPEN	The carriage gate is currently open.	Close the carriage to allow operation. Check the interlock switch.
HOMING MACHINE	The machine is homing.	Allow the machine to home prior to starting.
LOW AIR PRESSURE	The machine pneumatic pressure is low.	Check the pneumatic supply. Ensure 80 PSI is available.
PRESS START BUTTON TO RESET CONTROL POWER	The machine is not reset.	Press Start to reset control power prior to starting.
MOVING TO BOTTOM OF LOAD	The carriage is moving to the bottom of the load.	This is for informational purposes only. No correction necessary.
MOVING TO TOP OF LOAD	The carriage is moving to the top of the load.	This is for informational purposes only. No correction necessary.
CARRIAGE OBSTACLE DETECTED - CLEAR & PRESS RESET	The obstacle detection is tripped.	See “Loading The Film” on page 3 - 2.
READY TO WRAP - PRESS & HOLD START BUTTON	The machine is reset and ready to run.	Press and hold the start button for the amount of time set in the parameters to start the machine.
APPLYING REINFORCEMENT WRAPS	Reinforce wraps are currently being applied.	Once the reinforce wraps are completed, the machine will continue its cycle.
TOWER OBSTACLE DETECTED	The tower has an obstruction.	Check for a mechanical bind. Clear the cause of the fault. Reset and restart, when ready.
APPLYING BOTTOM WRAPS	The bottom wraps are currently being applied.	This is for informational purposes only. No correction necessary.
WRAP CYCLE IS COMPLETE	The wrap cycle is now complete.	Remove the load, when ready.

Table 3-27. The Information and Alarm Displays (Continued)

MESSAGE	DESCRIPTION	CORRECTION
CLAMIPING & CUTTING FILM	The machine is now in the clamp and cut cycle.	This is for informational purposes only. No correction necessary.
INITIALIZING	The machine is initializing.	There is a brief initialization sequence once the machine is reset. Allow the machine to initialize prior to starting.
LIGHT CURTAIN BLOCKED	The light curtain is blocked (if equipped.)	Clear the obstruction from the light curtain to allow operation.
SAFETY SYSTEM NOT READY	The safety controller is not ready to run.	Allow the safety system to initialize prior to running.
FAULTS EXIST	Faults currently exist.	Correct the cause of the fault. Press reset to reset the fault condition once the cause is corrected.
CARRIAGE MOVING UP TOO SLOWLY	The carriage is moving upward too slowly.	Check for the cause of the carriage not moving correctly. Check the belt drive behind the back panel. Check for a jam or obstruction on the track.
CARRIAGE MOVING DOWN TOO SLOWLY	The carriage is moving downward too slowly.	Check for the cause of the carriage not moving correctly. Check the belt drive behind the back panel. Check for a jam or obstruction on the track.
BRUSH AND CUTTER NOT HOME	The brush and cutter are not home.	Cycle the brush and cutter. Check why the brush and cutter can’t reach the home position.
MULTISTRETCH VFD NOT READY	The indicated VFD is not ready to run.	Check the fault code on the VFD display in the electrical cabinet. See VFD manual for fault code information.
MAIN DRIVE VFD NOT READY		
CARRIAGE VFD NOT READY		

Table 3-27. The Information and Alarm Displays (Continued)

MESSAGE	DESCRIPTION	CORRECTION
DOWNLOADING VFD PARAMETERS - PLEASE WAIT	The VFD parameters are transferring to the VFD's from the PLC.	Wait until the process is completed.
X2X COMMUNICATION FAULT - PRESS E-STOP TO CLEAR FAULT	There is an X2X communication fault, press and release the E-stop button to clear the fault.	Contact Orion Packaging if problem persists.
RS485 COMMUNICATION FAULT - PRESS E-STOP TO CLEAR FAULT	There is an RS485 communication fault, press and release the E-stop button to clear the fault.	Contact Orion Packaging if problem persists.
MODIFYING MULTISTRETCH SETTINGS	The stretch settings modification is in progress.	Allow the settings to complete prior to start-up.

Alarm Displays

The messages in this section are the various critical status messages. For non-critical alarms, see “Message Displays” on page 3 - 41.

Correct the condition and press the Fault Reset button to clear the message and continue machine operation. A description of these messages appears on the following pages.

Note: Not all messages in this list are applicable to your machine. The alarm messages on you machine may vary based on machine options.

Table 3-28. The Information and Alarm Displays

MESSAGE	DESCRIPTION	CORRECTION
NO CONTROL POWER	Control Power is not present.	Press the Control Power reset button prior to starting the machine.
CARRIAGE GATE OPEN DURING CYCLE	The carriage gate opened during the cycle.	Check for the cause of the unlatch. Re-latch and restart, when ready.
END OF ROLL OR BROKEN FILM	The film has broken or the roll ran out.	Re-load a new roll if out. If broken, monitor the film. Replace roll if problem persists. See troubleshooting chart for broken film troubleshooting tips.
CARRIAGE MOVING UP TOO SLOWLY	The carriage is moving upward too slowly.	Check for the cause of the carriage not moving correctly. Check the belt drive behind the back panel. Check for a jam or obstruction on the track.
CARRIAGE MOVING DOWN TOO SLOWLY	The carriage is moving downward too slowly.	Check for the cause of the carriage not moving correctly. Check the belt drive behind the back panel. Check for a jam or obstruction on the track.
CARRIAGE DOOR OPEN	The carriage door is currently open.	Close the carriage door to allow operation.
LOW AIR PRESSURE	The machine pneumatic pressure is low.	Check the pneumatic supply. Ensure 80 PSI is available.
BRUSH AND CUTTER NOT HOME	The brush and cutter are not home.	Cycle the brush and cutter. Check why the brush and cutter can’t reach the home position.

Table 3-28. The Information and Alarm Displays (Continued)

MESSAGE	DESCRIPTION	CORRECTION
OBSTACLE DETECTED	The tower has an obstruction.	Check for a mechanical bind. Clear the cause of the fault. Reset and restart, when ready.
MULTISTRETCH VFD NOT READY	The indicated VFD is not ready to run.	Check the fault code on the VFD display in the electrical cabinet. See VFD manual for fault code information.
MAIN DRIVE VFD NOT READY		
CARRIAGE VFD NOT READY		
X2X COMMUNICATION ERROR	There is an X2X communication fault, press and release the E-stop button to clear the fault.	Contact Orion Packaging if problem persists.
RS485 COMMUNICATION ERROR	There is an RS485 communication fault, press and release the E-stop button to clear the fault.	Contact Orion Packaging if problem persists.

Troubleshooting Contents

4. Troubleshooting

Troubleshooting

This troubleshooting chart details problems you may encounter with your Flex series stretchwrapper along with the cause and solution. If the problem(s) cannot be solved after consulting this section and/or appropriate sections of this manual, call Orion at (800) 333-6556.

Table 4-1. Troubleshooting Chart

PROBLEM	POSSIBLE CAUSE	SOLUTION
Control Panel / Error Messaging - No Control Power / E-stop Is Flashing	E-Stop circuit is activated. E-stop is depressed.	Perform E-Stop reset sequence. 1. Reset all safety's (close carriage door, latchcarriagesafetyswitchbar[RTonly]. 2. Pull E-Stop to the OUT position. 3. Press Green Start Button. 4. Press Cycle Reset button on screen.
	Safety Photocells not aligned. Photocell alignment (RT models and Table machines with safety fencing) Photocell lights should change state when objects block, then unblock photocells.	Re-align photocells with their respective reflectors, then perform an E-Stop Reset.
	Wiring in the E-stop circuit is compromised. Perform continuity Check on all wiring in the e-stop circuit.	Refer to the electrical schematic for wiring layout and wire numbers.
	Components in the E-Stop circuit have failed. Test components individually including contact bodies.	Refer to the electrical schematic for wiring layout and wire numbers.
Stored Values Revert To Zero Or Unusable Settings.	High voltage spike or voltage brownout below 100 VAC has occurred. With a meter, observe voltage at the main power switch on the control panel during a wrap cycle.	1. Remove all household extension cords. 2. Move machine to a different power outlet. 3. Have an electrician verify site power supply.

Table 4-1. Troubleshooting Chart (Continued)

PROBLEM	POSSIBLE CAUSE	SOLUTION
Turntable / Tower Rotation- Turntable / Tower Will Not Stop In The Correct Position. (Table Does Stop At End Of Cycle-but In Wrong Position	Turntable end of cycle positioning counter value is set incorrectly. Observe the Turntable end of cycle positioning counter value on the HMI.	Refer to the factory default settings value list.
	Slow Down Position for Tower / Turntable Timer is adjusted too high. Observe the Slow Down Position for Tower /Turntable Timer value on the HMI.	Refer to the factory default settings value list.
	Table / Tower preset speeds are set incorrectly. The table / turntable is overhauling and the drive can not stop the load fast enough. Check the value of the SP-2-SP-3 and SP-4 parameters on the Table / Tower VFD. Ensure that they are set within correct values.	Refer to the factory default settings value list.
	Table / Tower deceleration value is set incorrectly. The table / turntable is overhauling and the drive can not stop the load fast enough. Check the value of the DEC parameter on the Table / Tower VFD. Ensure that it is set within the Orion factory default values.	Refer to the factory default settings value list.
	Component failure.	Check error message on the Table / Tower VFD display. Refer to the supplied VFD user manual for error message. Replace if needed.

Table 4-1. Troubleshooting Chart (Continued)

PROBLEM	POSSIBLE CAUSE	SOLUTION
Turntable / Tower Will Not Stop In The Correct Position. (Table Does Not Stop Until E-stop Is Depressed Or Power Is Removed)	Table Sprocket tooth count in the global setup screen is set incorrectly-for instance; a 96 tooth setting is chosen for a machine shipped with a 112 tooth sprocket or vice-versa.	Verify the machine type against the settings screen. Note: Standard E and D models are shipped with 96 tooth table sprockets, only A and HD (heavy duty) models are shipped with a 112 tooth sprocket. Refer to the Initial machine setup instructions to toggle the table tooth count settings. Reminder-password is required.
	Revo-logic™ sensor is misaligned with the table / tower driven sprocket.	Verify the gap setting between the Revo-logic™ sensor and the driven sprocket. Readjust if needed. Check the pulse count input on the PLC for an LED indication as each tooth passes in front of the Revo-logic™ sensor.
	Revo-logic™ sensor has failed.	Check for 24VDC at the sensor. Check for 24VDC Switching on the return wire to PLC at the sensor. No VDC Switching out? Replace sensor.
	Wiring in the Revo-logic™ sensor circuit has failed.	Run a continuity test on wiring from the sensor to the PLC and 24VDC supply rails. No continuity on any wire? Repair or replace wiring.
	True Home sensor has failed.	Check for 24VDC at the sensor. Check for 24VDC Switching on the return wire to PLC at the sensor. No VDC Switching out? Replace sensor.
	Wiring in the True Home sensor circuit has failed.	Run a continuity test on wiring from the sensor to the PLC and 24VDC supply rails. No continuity on any wire? Repair or replace wiring.
Special Extended Mast, Split-base Or Any Models With The Mast Shipped Disconnected From The Base	Revologic™ and True Home sensor wires crossed during final assembly on-site.	Wire numbers should match at the M12 quick disconnects. The connectors for both the Revologic™ and the True Home sensors can physically interchange. If the wire numbers do not match, Swap the M12 quick disconnect connectors located in the lower part of the tower.

Table 4-1. Troubleshooting Chart (Continued)

PROBLEM	POSSIBLE CAUSE	SOLUTION
Turntable / Tower Rotates Inconsistently-(Table / Tower Turns With A Jerking Motion)	Current Limiter in the rotation VFD is activating.	Check for a mechanical bind in the rotation mechanicals, such as: worn bearing(s) or casters, incorrectly tensioned chain, worn chain, alignment issues etc. Identify and repair or replace worn parts.
	VFD parameter settings are incorrect.	Review the parameter settings in the VFD. Refer to the supplied VFD Manual for procedure. Refer to the VFD manual and the Orion parameter settings sheet supplied with the machine for maximum frequency settings.
	Machine's supply voltage is too low.	Check AC voltage (at the On-Off switch terminals) while the machine is running under load. If voltage drops below 115, the supply is not strong enough to run the machine correctly. Contact plant electrician. Do not use household extension cords with the machine.
	Loose connections in the rotation circuit.	Remove power from machine. Check for loose connections in the rotation circuit such as; Primary supply to the rotation VFD, Secondary supply from the VFD to the drive motor and all connections in between. Re-seat all loose connections. Tighten connections correctly.
	Motor Failure.	Perform motor test per motor manufacturer's recommendations. Replace motor as needed.
	Reducer Failure.	Remove rotation reducer-separate motor from reducer. Rotate input shaft and check for binding. Replace reducer as needed.

Table 4-1. Troubleshooting Chart (Continued)

PROBLEM	POSSIBLE CAUSE	SOLUTION
Turntable / Tower Will Not Rotate	No control Power / E-Stop Condition.	E-Stop button is Flashing or Green Start button is not illuminated. Perform E-Stop Reset (pull E-Stop button to the out position then press the Green Start button so that it is Illuminated. Press Cycle reset on the Touchscreen.
	Machine is in Cycle Pause.	Observe the Cycle Pause Icon on the Run Screen. If it is illuminated, the machine is in a Pause state. Press Resume to resume wrapping.
	VFD parameter settings are incorrect.	Review the parameter settings in the VFD. Refer to the supplied VFD Manual for procedure. Refer to the VFD manual and the Orion parameter settings sheet supplied with the machine for maximum frequency settings.
	Blown Fuse.	Locate Table / Tower rotation control fuse. Remove fuse and check continuity. Bad Fuse? Replace with correct type.
	VFD Error.	Check the status of the table / tower motor controller (VFD) for error message. Refer to the VFD manual supplied with the machine for error messaging solutions.
	Open circuit to the motor.	Check wire continuity from VFD to Motor. Repair or replace open wiring.
	Motor Failure.	Perform motor test per motor manufacturer's recommendations. Replace Motor as needed.

Table 4-1. Troubleshooting Chart (Continued)

PROBLEM	POSSIBLE CAUSE	SOLUTION
Carriage Lift (Up & Down) Carriage Will Not Move Up Or Down (In Either Manual Mode Or During An Auto Wrap Cycle)	Carriage Speeds set below 5%.	Check the numerical value of the carriage up and down speeds on the touchscreen. Password may be required depending on the Security Settings. Increase the carriage up and down speeds on the touchscreen to above 5%.
	Carriage Travel limit strikers set improperly.	Check the physical positions of the travel limit strikers. 1. Set the Up Travel limit striker to the highest wrapping requirement position within the machine's capability or a jam may occur. 2. Position the Bottom travel striker to the lowest wrapping requirement level within the machine's capability or a false Belt Error may occur.
	Lift Belt Error (Visible obstruction) has occurred.	Check for a physical obstruction in the carriage toward travel path and Lift Belt Error shown on the touchscreen. If there is an actual obstruction, refer to the "Carriage Obstacle Detect Error Recovery" inset in your manual.
	VFD parameter settings are incorrect.	Review the parameter settings in the VFD. Refer to the supplied VFD Manual for procedure. Refer to the VFD manual and the Orion parameter settings sheet supplied with the machine for maximum frequency settings.

Table 4-1. Troubleshooting Chart (Continued)

PROBLEM	POSSIBLE CAUSE	SOLUTION
Carriage Lift (Up & Down) Carriage Will Not Move Up Or Down (In Either Manual Mode Or During An Auto Wrap Cycle)	A False (No visible obstruction) lift belt error has occurred.	Remove upper-rear access panel on the back of the mast. Observe the position of the lift belt roller switch at the top, inside of the mast. The belt should be between the metal frame and the switch's roller lever. The lever roller should be activated. If the belt is placed incorrectly, re-set belt so that it is between the frame and the switch's lever roller. The switch may need to be re-positioned as to not give a false signal.
	Current Limiter in the carriage lift VFD is activating.	Check for a mechanical bind in the carriage lift mechanicals, such as, worn belt wheel bearings incorrectly aligned belt or carriage safety cam-locks. Identify and repair or replace worn parts.
	Maximum speed setting on the VFD is incorrect.	Review the maximum frequency parameter settings in the VFD. Refer to the supplied VFD Manual for procedure. Refer to the VFD manual and the Orion parameter settings sheet supplied with the machine for maximum frequency settings.
	Machine's supply voltage is too low.	Check AC voltage (at the On-Off switch terminals) while the machine is running under load. If voltage drops below 115, the supply is not strong enough to run the machine correctly. Contact plant electrician. Do not use household extension cords with the machine.
	Loose connections in the carriage lift circuit.	Remove power from machine. Check for loose connections in the carriage lift circuit such as; Primary supply to the Lift VFD, Secondary supply from the VFD to the drive motor and all connections in between. Re-seat all loose connections. Tighten connections correctly.

Table 4-1. Troubleshooting Chart (Continued)

PROBLEM	POSSIBLE CAUSE	SOLUTION
Carriage Lift (Up & Down) Carriage Will Not Move Up Or Down (In Either Manual Mode Or During An Auto Wrap Cycle)	Blown Fuse.	Locate carriage lift control fuse. Remove fuse and check continuity. Bad Fuse? Replace with correct type.
	Motor failure.	Perform motor test per motor manufacturer's recommendation. Replace Motor as needed.
	Reducer failure.	Remove Carriage Lift reducer-separate motor from reducer. Rotate input shaft and check for binding Replace reducer as needed.
Carriage Will Not Move Up Or Down (In Auto Wrap Cycle Only-but Works Fine In Manual Mode).	Auto-height photocell positioned incorrectly.	Check the position of the Auto-height photocell. Make sure it is aimed at the load. If the load is too short for the photocell to see, the carriage will not move up-this is normal. Re-Aim the photocell correctly.
	Auto-height sensor has failed.	Check for 24VDC at the sensor. Check for 24VDC switching on the return wire to PLC at the sensor. No VDC Switching out at the sensor? Replace sensor.
	Wiring in the Auto-height sensor circuit has failed.	Run a continuity test on wiring from the sensor to the PLC and 24VDC supply rails. No continuity on any wire?= repair or replace wiring.

Table 4-1. Troubleshooting Chart (Continued)

PROBLEM	POSSIBLE CAUSE	SOLUTION
Carriage Is Jammed At The Top Of The Mast. (Carriage Will Not Move Up Or Down)	Carriage bottom travel switch did not activate correctly, possibly sticking.	Belt is tangled around drum. Belt is wrapped backwards or twisted. Check switch by manually activating (wiggling) the roller tip. If the switch does not activate and release it's input on the PLC correctly, replace the switch. The belt will need to be removed and re-wound correctly. The carriage will need to be brought down manually. Refer to the "Carriage Obstacle Detect Error Recovery" inset in your manual.
	Carriage bottom travel striker is set too low for switch to activate properly.	Belt is tangled around drum. Belt is wrapped backwards or twisted. Raise the bottom limit striker so that the carriage travel switch activates it's PLC input before the carriage physically hits the machine's framework. The belt will need to be removed and re-wound correctly. The carriage will need to be brought down manually. Refer to the "Carriage Obstacle Detect Error Recovery" inset in your manual.
Film Feed / Stretch Functions No Power Feed	No control -power / E-Stop condition.	E-Stop button is flashing or green start button is not illuminated Perform E-Stop reset sequence. 1. Reset all safety's (close carriage door, latchcarriagesafetyswitchbar[RTonly]. 2. Pull E-Stop to the OUT position. 3. Press Green Start Button. 4. Press Cycle Reset button on screen.
	Film is threaded incorrectly.	Compare film with threading diagram on top of carriage. Re-thread film carriage.
	VFD parameter settings are incorrect .	Review the parameter settings in the VFD. Refer to the supplied VFD Manual for procedure. Refer to the VFD manual and the Orion parameter settings sheet supplied with the machine for maximum frequency settings.

Table 4-1. Troubleshooting Chart (Continued)

PROBLEM	POSSIBLE CAUSE	SOLUTION
Film Feed / Stretch Functions No Power Feed	Zero or Gain settings for the hall effect (Film Feed Trigger) are incorrect.	Observe the feedback value of the hall effect located on the touchscreen. Re-set the ZERO and GAIN values according to the film feed setup instructions in the manual. ZERO setting should be a value of at least ten above the hall effect feedback value to operate properly.
	Maximum speed setting on the VFD is incorrect.	Review the maximum frequency parameter settings in the VFD. Refer to the supplied VFD Manual for procedure. Refer to the VFD manual and the Orion parameter settings sheet supplied with the machine for maximum frequency settings.
	hall effect device is positioned incorrectly.	Check to make sure hall effect device is not touching the dancer bar cam. Adjust the hall effect-to-cam gap is correct... approx 16th of an inch gap.
	Dancer bar cam is positioned incorrectly.	Make sure the cam rotates in such a way as to create a gap between the hall effect device and the cam itself. Adjust the cam correctly.
	hall effect sensor has failed.	Check for 24VDC at the sensor. Check for variable 24VDC on the return wire to PLC at the sensor. No variable VDC out? Replace sensor.
	Open circuit from the hall effect device to the analog input card.	Check wire continuity from hall effect device to the analog input card. Repair or replace open wiring.
	Analog I.O. card has failed.	Check the hall effect feedback value on the MIB screen. If the hall effect value increases with dancer movement, but the analog I.O. card toes not fluctuate voltage out, then the analog I.O. card has failed. Replace analog I.O card.
	Open circuit from the PLC analog card to the VFD analog input.	Check wire continuity from the PLC analog card output to the VFD analog input. Repair or replace open wiring.
	Open circuit from the stretch VFD to the film feed motor	Check wire continuity from the stretch VFD outputs to the film feed motor. Repair or replace open wiring.

Table 4-1. Troubleshooting Chart (Continued)

PROBLEM	POSSIBLE CAUSE	SOLUTION
Film Feed / Stretch Functions No Power Feed	Motor failure.	Perform motor test per motor manufacturer's recommendations. Replace Motor as needed.
Film Feed Runs Or Creeps Continuously	MIB values at the touchscreen are out of calibration.	Observe the feedback value of the hall effect located on the touchscreen. Re-set the ZERO and GAIN values according to the film feed setup instructions in the manual. ZERO setting should be a value of at least ten above the hall effect feedback value to operate properly.
	Hall effect device is positioned incorrectly.	Check to make sure hall effect device is not touching the dancer bar cam. Adjust the hall effect-to-cam gap is correct… approx 16th of an inch gap.
	Dancer bar cam is positioned incorrectly.	Make sure the cam rotates in such a way as to create a gap between the hall effect device and the cam itself. Adjust the cam correctly.
	Hall effect device has failed	Perform tests mentioned above. If this does not resolve the issue, replace the hall effect device.
	Minimum speed setting on the VFD is incorrect.	Review the minimum frequency parameter settings in the VFD. Refer to the supplied VFD Manual for procedure. Refer to the VFD manual and the Orion parameter settings sheet supplied with the machine for minimum frequency settings.
Film Breakage Issues Film Breaks Inside The Carriage (Usually Between The Rubber Stretch Rollers)	Incorrect gauge / type film is being used for the application.	Review the film's stretch capability. The film used should be able to effectively stretch 280% at ambient temperatures. Remove any film that does not comply with the machine's requirements or, change the stretch sprocket on the machine to stretch below the film's fatigue value.
	Film is damaged.	Observe the edges and sides of the roll for damage from handling. Replace improper film with film in good condition.

Table 4-1. Troubleshooting Chart (Continued)

PROBLEM	POSSIBLE CAUSE	SOLUTION
Film Breakage Issues Film Breaks Inside The Carriage (Usually Between The Rubber Stretch Rollers)	Film is wound incorrectly.	Film may be wound incorrectly from the manufacturer. Look for heavy, raised stripes along the feed axis of the film. This is known as "gauge banding". Replace improper film with film in good condition.
	Film core is damaged or incorrectly sized.	The film core should fit the machine's film mandrels. Cores that are too small or damaged can cause the film to not rest in the correct position. Replace improper film with film in good condition.
	Film roll sets too low in relation to the feed rollers.	Look for film traveling under the bottom edge of the trailing rubber roller. Adjust the bottom film mandrel to allow the bottom edge of the film to run correctly on the trailing rubber roller.
	Film mandrel drag or resistance is not allowing the film to unwind properly.	Look for excessive wear under the bottom mandrel. Lubricate the bottom and center of the mandrel. Replace worn parts.
	Film carriage aluminum "pressure" rollers are mis-aligned with the rubber rollers. Film is slipping across the rollers.	With the film removed from the carriage, look for an inconsistent gap between the aluminum and rubber rollers-top and bottom on both sides of the rubber rollers. Using the socket head cap screws, re-align the aluminum rollers to the rubber rollers. Set the gap between the aluminum and rubber rollers so that there is only a slight rotational resistance between the rollers.
	Aluminum pressure rollers are damaged.	Carefully review the aluminum rollers for cuts or nicks. Any raised spots can damage the film and propagate a tear. Polish the affected areas with a fine abrasive until the protrusions are leveled or replace with a new part.

Table 4-1. Troubleshooting Chart (Continued)

PROBLEM	POSSIBLE CAUSE	SOLUTION
Film Breakage Issues Film Breaks Inside The Carriage (Usually Between The Rubber Stretch Rollers)	Rubber rollers are damaged	Carefully review the rubber rollers for cuts or nicks. Any raised spots can damage the film and propagate a tear. Raised spots can be carefully shaved or sanded smooth but if the surface showing craters or holes so that the surface is not level, then the roller needs to be replaced.
Film Is Breaking Between The Last Aluminum Roller And The Load	Film tension is set too high.	Film runs through the carriage properly and there are no sharp corners on the load, but the film still breaks. Lower the film tension value at the touchscreen.
	Zero or Gain settings for the hall effect (Film Feed Trigger) are incorrect.	Observe the feedback value of the hall effect located on the touchscreen. Re-set the ZERO and GAIN values according to the film feed setup instructions in the manual. ZERO setting should be a value of at least ten above the hall effect feedback value to operate properly.
	Tension spring is too heavy for the application.	Film carriage appears to be calibrated correctly and film appears to be correct. Film still breaks or damages a light load with the film tension set at values below 10%. Replace the standard tension spring with the light duty tension spring (supplied with the machine).
	Film roll sets too low in relation to the feed rollers.	Look for film traveling under the bottom edge of the trailing rubber roller. Adjust the bottom film mandrel to allow the bottom edge of the film to run correctly on the trailing rubber roller.
	Sharp edges are cutting the film	Observe the load. See if the film break starts at any one sharp edge. Options are: 1. Correct the load if possible. 2. Reduce the film tension at the touchscreen. 3. Change film type used. 4. Reduce the prestretch ratio.

Table 4-1. Troubleshooting Chart (Continued)

PROBLEM	POSSIBLE CAUSE	SOLUTION
Film Is Breaking Between The Last Aluminum Roller And The Load	Pallet greatly overhangs the load.	Observe the load. See if the film break starts at the corners of the pallet. Options are: 1. Reduce the film tension at the touch-screen. 2. Reduce the stretch ratio. 3. Do not wrap the pallet with the load. Raise the bottom position striker.
	Film is damaged.	Observe the edges and sides of the roll for damage from handling. Replace improper film with film in good condition.
	Film is wound incorrectly.	Film may be wound incorrectly from the manufacturer. Look for heavy, raised stripes along the feed axis of the film. This is known as "gauge banding". Replace improper film with film in good condition.
	Stretch chain and / or belt geometry is incorrect. Out of alignment components can cause feed drag.	Remove film carriage cover. Look for loose chain and / or belt. Look for the belt pulleys and the chain sprockets to be in correct alignment. Adjust as needed by repositioning the combination sprocket-pulley.
	Intermittent break in the cabling between the carriage and the control panel.	Observe the film feed during a cycle. If the film only breaks when the carriage is in a certain spot in it's travel, then continuity is suspect. Perform a continuity check on all wiring pertaining to the carriage while jogging the carriage up and down. If a break in continuity occurs, repair or replace the cable.

Table 4-1. Troubleshooting Chart (Continued)

PROBLEM	POSSIBLE CAUSE	SOLUTION
"A" Model Specific Issues Film Clamp Not Operating Properly. (Opening And Closing Inconsistently)	Clamp close delay timer at the touchscreen is incorrect for the application.	Look for the clamp to close smoothly, but at the wrong time. Observe the factory preset value on the settings screen. Re-adjust the clamp close delay timer as needed.
	Air pressure to the machine is too low.	Observe the pressure gauge at the pressure regulator behind the lower rear access panel. Air supply to the machine should be 80 PSI @ 3CFM.
	Air cylinder flow controls are set incorrectly.	If the regulator shows correct pressure, the flow controls are suspect. Check the flow controls by manually activating the clamp jog function on the touchscreen. Adjust the flow controls on the clamp cylinders so that they operate smoothly.
	Air lines are pinched or obstructed.	observe all 1/4 inch polyflow tubing. Remove any obstruction. Correct any pinched lines.
	Debris or condensation is in the air lines.	Purge the air filter / regulator. If water appears, then condensation is in the air lines. Correct the water issue, then purge the air lines by manually jogging the clamp until no water remains.
	Break in the wiring to the clamp solenoid.	There is DC voltage at the clamp PLC output, but no voltage at the clamp solenoids. Locate and repair break in the signal wiring between the PLC and solenoids.
	Clamp solenoids are defective	There is DC voltage at the clamp solenoids but the solenoids do not activate. Replace the clamp solenoids.
	Dual air passage is leaking.	Rotate the table manually with a load positioned on the table. Listen for any air leaks as the table rotates. If leakage is suspect, replace dual air passage.

Table 4-1. Troubleshooting Chart (Continued)

PROBLEM	POSSIBLE CAUSE	SOLUTION
Film Cutter/ Brush Arm Not Operating Properly	Brush extend timer at the touch-screen is incorrect for the application.	Look for the arm to activate smoothly, but at the wrong time. Observe the factory preset value on the settings screen. Re-adjust the brush extend timer as needed.
	Air pressure to the machine is too low.	Observe the pressure gauge at the pressure regulator behind the lower rear access panel. Air supply to the machine should be 80 PSI @ 3CFM.
	Air cylinder flow controls are set incorrectly.	If the regulator shows correct pressure, the flow controls are suspect. Check the flow controls by manually activation of the cutter jog function on the touchscreen. Adjust the flow controls on the clamp cylinders so that they operate smoothly.
	Air lines are pinched or obstructed.	observe all 1/4 inch polyflow tubing. Remove any obstruction. Correct any pinched lines.
	Debris or condensation is in the air lines.	Purge the air filter / regulator. If water appears, then condensation is in the air lines. Correct the water issue, then purge the air lines by manually jogging the cutter/ brush until no water remains.
	Break in the wiring to the cutter solenoid.	There is DC voltage at the cutter PLC output, but no voltage at the cutter/ brush solenoid. Locate and repair break in the signal wiring between the PLC and solenoids.
	Cutter / brush solenoids are defective	There is DC voltage at the cutter / brush solenoids but the solenoids do not activate. Replace the cutter/ brush solenoids.

Table 4-1. Troubleshooting Chart (Continued)

PROBLEM	POSSIBLE CAUSE	SOLUTION
Film Cutter Not Cutting Film	Load not positioned properly.	Look for underhung loads, or loads that are not centered on the table or in the proper wrap zone (RT only). The rear side of the load must be in line with the pallet stop for the clamp, brush and cutter to work properly. Re-center the load to the proper position on the table (or wrap zone on RT machines).
	Brush extend timer at the touch-screen is incorrect for the applica-tion.	Look for the arm to activate smoothly, but at the wrong time. Observe the factory preset value on the settings screen. Re-adjust the brush extend timer as needed.
	Cutter wire is loose.	Check for wavy or bent cutter wire. The wire expands as it is heated. If the wire is not straight and under tension, then it will not be in the correct position to cut prop-erly. If wire is loose or bent, repair or replace the wire.
	Blown Fuse.	Locate hot wire control fuse. Remove fuse and check continuity. Bad Fuse? Replace with correct type.

Maintenance Contents

5. Maintenance

Maintenance

All general information about machine maintenance is based on normal machine working conditions: indoor, moderate dust and low moisture environment, and maximum rotation of 15 RPM. They should be regarded as guidelines, reviewed and corrected according to requirements of actual use and conditions.

Motor Maintenance

The drive motors require little maintenance. Simply blow out debris with compressed air on a regular basis.

Reducer Oil Change

All external cap screws and plugs on the reducing transmission should be checked for tightness after the first week. It is recommended to change the oil every six months or at least 1800 hours of operation, whichever comes first. When adding or changing oil, the transmission should never be filled above the oil level mark indicated, because leakage and overheating may occur. Below is the list of the type of lubricant that should be used. List of recommended reducer oils:

Table 5-1. Recommended Reducer Lubricants

MANUFACTURER	LUBRICANT
American Oil Co.	American Cyl Oil no: 196-L
Cities Service Oil Co.	Citgo Cyl Oil 100-5
Gulf Oil Corp.	Gulf Senate 155
Mobil Oil Corp.	Mobil 600 W Suer-r Cyl. Oil
Philips Oil Corp.	Andes S 180
Texaco Inc.	624 + 650T Cyl.Oil
Shell Oil Co.	Velvata Oil J82
Union Oil of Cal.	Red Line Worm Gear Lube 140

Note: For most applications, Mobil One Synthetic 75/90 gear lube is a preferred lubricant.

Tower Raceways Maintenance

The film distributor (carriage) is sliding on the plastic guides attached behind its back plate. The section of the tower on which the plastic guides move (raceways) should be cleaned and re-greased approximately every 600 hours of machine operation.

Note: If the machine works in a dusty and corrosive environment, the raceways should be re-greased more often (at least every 100 hours).

Chain Maintenance

To clean the stretch chain, wipe it with an oily cloth once a service.quarter.

When machine is working in a dusty and damp environment, it may be necessary to repeat the cleaning operation more often.

Regarding chain lubricants please use the most common chain lubricants on the market. With time, the chain will tend to stretch.

The tower is equipped with automatic chain tensioner and does not need any adjustment.

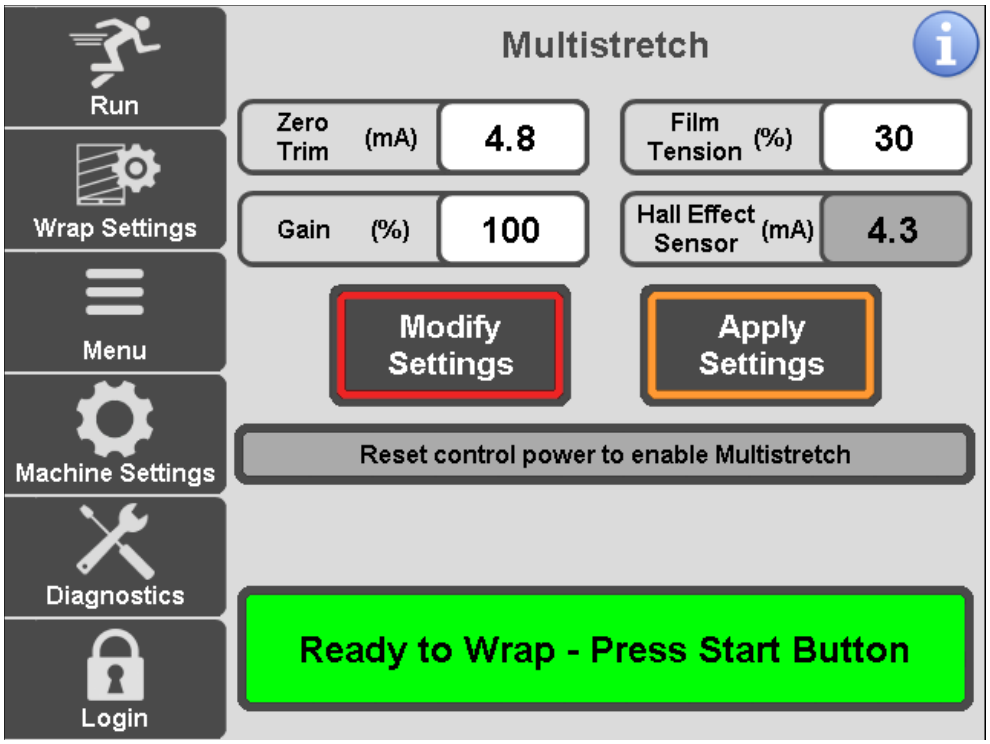
Note: First chain tension inspection must be done after the first two weeks of machine usage.

Proximity Sensor Adjustment

Occasionally the Feed Back Proximity Sensor may need some adjustment. The position of the feed back proximity sensor against the cam is shown in Figure 5 - 1.

1. Power down machine.
2. Remove the carriage cover.
3. Unbolt the two nuts holding the proximity switch.
4. Turn the Proximity sensor to create the gap between the cam and the front side of proximity sensor about 1/8."
5. Tighten on the nuts securing the Proximity Sensor.
6. Put the cover back on.
7. Power up machine.
8. To adjust the multistretch settings, you must be logged in. Press the login button in the bottom left corner of the screen
9. Enter the password then press the X to close the keypad.
10. Press the Machine Settings button.
11. Press the Multistretch button to go to the Multistretch Screen.
12. Press the Modify Settings button.
13. Adjust the Zero Trim to .5 mA over the current Hall Effect Sensor reading shown on the screen.

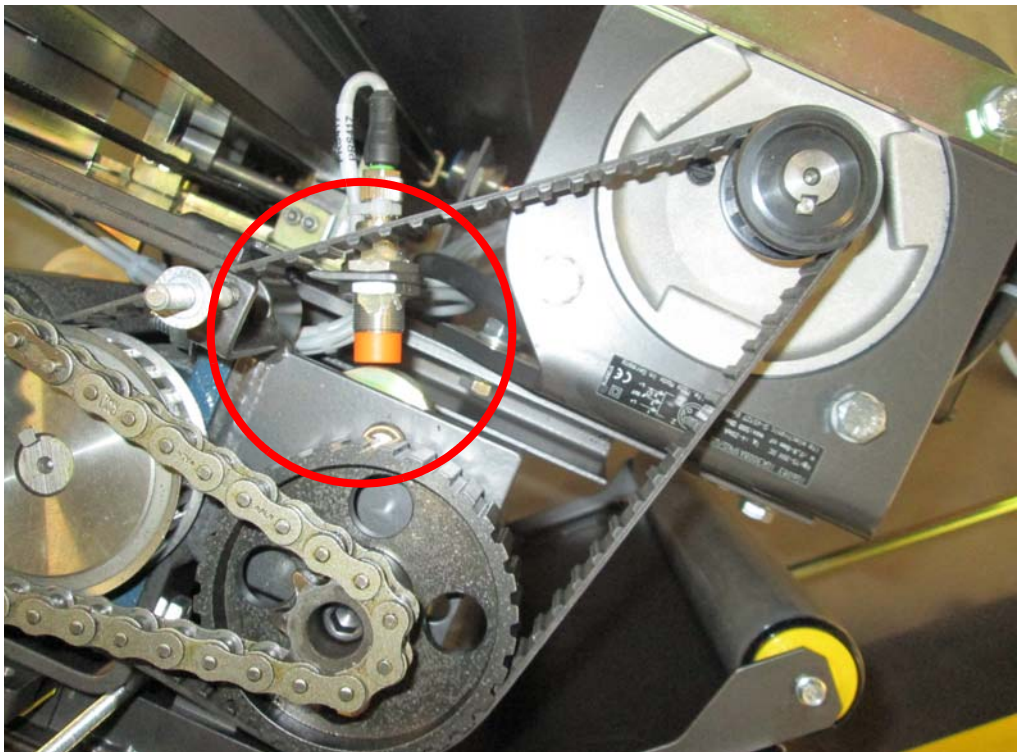
Figure 5 - 1
The Multistretch Screen



(Continued on Next Page)

14. If not satisfied repeat the procedure.

Figure 5 - 2
Proximity Sensor Adjustment



Cleaning The Stretch Rollers

The film carriage requires the most attention when cleaning. The film carriage requires regular cleaning even if there are no product spills into the carriage area. Absolutely DO NOT use wash down methods on the film carriage.

- As the film goes though the rollers, a static charge develops from the film and pulls air borne dust and contaminants into the rollers. The glue that is impregnated to the film, called Tackifier, traps these contaminants to the rollers. Finally, the aluminum pressure rollers on the threading gate press the debris into the rollers causing the rubber rollers to glaze.
- If the rollers become glazed, the film may slip, causing film shear, thus causing film payout to be inconsistent or cause the film to tear regularly. This is completely normal under continued use and occurs on every stretch wrapper made-no matter who the manufacturer is.
- The rubber rollers are recommended to be cleaned at every 2000 hours of running. Do not clean the rollers more than once a month unless special circumstances demand. This can cause the rollers to dry out. The cleaning requires only a stiff nylon bristle brush, rubbing alcohol (only)*, and compressed air. The procedure is as follows.

CAUTION This procedure should only be performed by qualified service personnel.

1. Raise carriage to chest height.
2. Disconnect power from the machine.
3. Remove the film from the carriage.
4. Open the threading gate.
5. With the brush wet with rubbing alcohol, lightly scrub both rubber rollers while rotating them. The goal is to just get any debris out of the rollers.

Note: Rubbing alcohol is recommended because it is light enough to penetrate the rubber and it evaporates quickly.

6. After the entire rollers' surface has been cleaned, apply compressed air to the rollers to dry quickly.
7. Re-apply power.
8. Re-load film as discussed earlier.

Preventative Maintenance Schedule

PM Intervals

PM Intervals are based on an average usage of a 16 hour production day.

Table 5-2. PM Frequency

FREQUENCY	PERIOD	DESCRIPTION
12	**LPH**	**(Hour)**
96	**LPS**	**(Shift)**
192	**LPD**	**(Day)**
5760	**LPM**	**(Month)**
17,280	**LP3M**	**(3Months)**
34,560	**LP6M**	**(6Months)**

All general information about machine maintenance is based on normal machine working conditions: indoor, moderate dust and low moisture environment, and maximum rotation of 15 RPM. They should be regarded as guidelines, reviewed and corrected according to requirements of actual use and conditions.

HPS LPS Standard Series

5,760 Loads or one month

- Inspect rubber stretch rollers. Clean as needed per instructions in manual.
- Inspect belt condition. Adjust as needed.

17,280 Loads or three months.

- Inspect under turntable. Clean debris as needed.
- Inspect turntable support casters for good condition.
- Inspect turntable chain. Apply a light coating of lubricant per instructions in manual.
- Inspect prestretch chain and belt. Tension as needed. Apply a light coating of lubricant per instructions in manual.

All H&L Heavy Duty (Ring Bearing) Series

5,760 Loads Or One Month

- Inspect rubber stretch rollers. Clean as needed per instructions in manual.
- Inspect belt condition. Adjust as needed.

17,280 Loads or three months.

- Inspect under turntable. Clean debris as needed.
- Inspect turntable support casters for good condition.
- Inspect turntable chain. Apply a light coating of lubricant per instructions in manual.
- Inspect prestretch chain and belt. Tension as needed. Apply a light coating of lubricant per instructions in this manual.

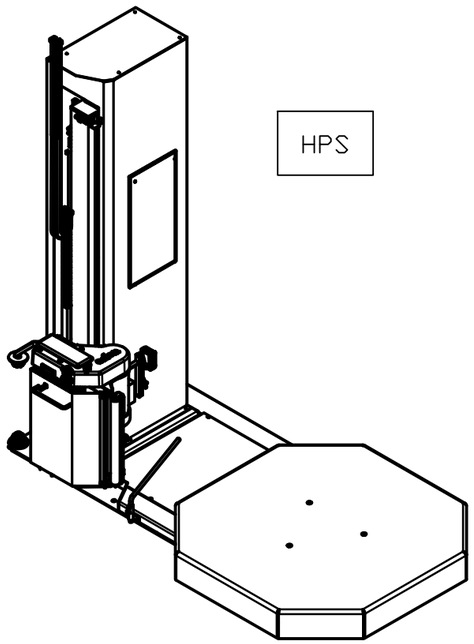
34,560 Loads or 6 months.

- Lubricate ring bearing per instructions in this manual.

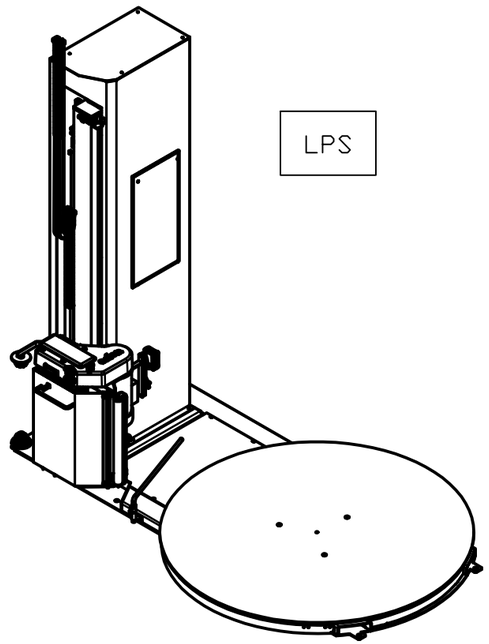
Electrical Prints and Mechanical Drawings

6. Electrical Prints and Mechanical Drawings

Electrical Prints



HPS



LPS

SH	DWGDESC	DWGDESC2	DWGDESC3
1	COVER PAGE		
2	115VAC POWER DROP	AND DISTRIBUTION	100/200
3	115VAC VFD		300/400
4	START/STOP CIRCUIT	AND REMOTE START	500/600
5	X20 I/O POWER /	INPUTS	30100/30200
6	X20 I/O OUTPUT /	POWER SUPPLY	30300/30400
7	X20 RS485 COMM		30500/30600
8	CARRIAGE I/O BLOCK		50100/50200
9	SPLIT BASE	EXTENDED TOWER	70100/70200
10	ENCLOSURES AND	PANEL AND BOM	
11	MACHINE FIELD AND	CARRIAGE BOM	
12	SPARE PAGE		
13	SPARE PAGE		
14	SPARE PAGE		

WIRING COLOR AND SIZE
115VAC (RED) 14 AWG MINIMUM
NEUTRAL (WHITE) 14 AWG MINIMUM
GND (GREEN/YELLOW) 14 AWG MINIMUM
+24VDC (BLUE) 18 AWG MINIMUM
DC COMMON (WHITE/BLUE) 18 AWG MINIMUM
CABLE COLORS AND GAUGE ARE LISTED IN PRINTS

NOTES
1. SILICONE BASE PRODUCTS SHALL NOT BE USED ANYWHERE IN THIS ASSEMBLY.
2. ALL FIELD CONTROL WIRE TO BE A MINIMUM 14 AWG 75C COPPER, UNLESS OTHERWISE NOTED.
3. ALL CONDUIT HUB RATINGS MUST BE EQUAL TO OR SURPASS THE ASSEMBLY ENVIRONMENT RATING.
4. WHEN ORDERING REPLACEMENT PARTS, PLEASE SUPPLY THE JOB NUMBER AS SHOWN INSIDE THE CONTROL PANEL DOOR.
5. MANUFACTURES OF COMPONENTS USED IN THIS ASSEMBLY ARE SUBJECT TO CHANGE WITHOUT NOTICE.
6. THIS DOCUMENT IS THE PROPERTY OF THE END USER, PLEASE DO NOT REMOVE FROM THE ELECTRICAL CONTROL ENCLOSURE.
7. ALL WIRES CONNECTED TO THE B&R X20 IO MUST HAVE FERRULS.

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NO.	DATE	REVISION	BY

DWG TITLE

FLEX (30" CARRIAGE)
HPS/LPS
COVER PAGE

ENGINEER	CHECKED BY
JOB NO	DRAWN BY
SCALE: NO SCALE	DATE: 11/2015

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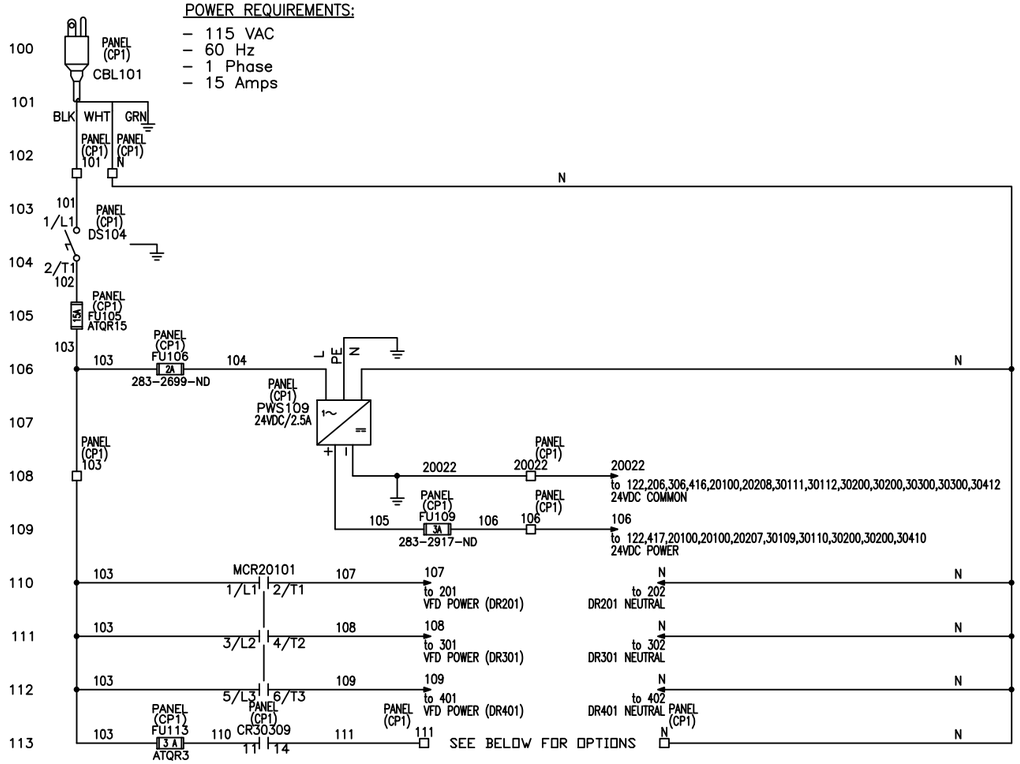
1 OF 14

CAD DWG FILE I:\ELEC_ FLEX 10-2015\HPS-LPS 30 IN CARRIAGE\PG1.dwg

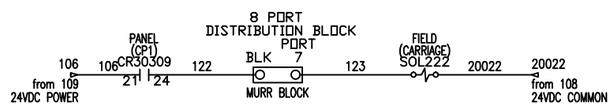
POWER REQUIREMENTS:
- 115 VAC
- 60 Hz
- 1 Phase
- 15 Amps

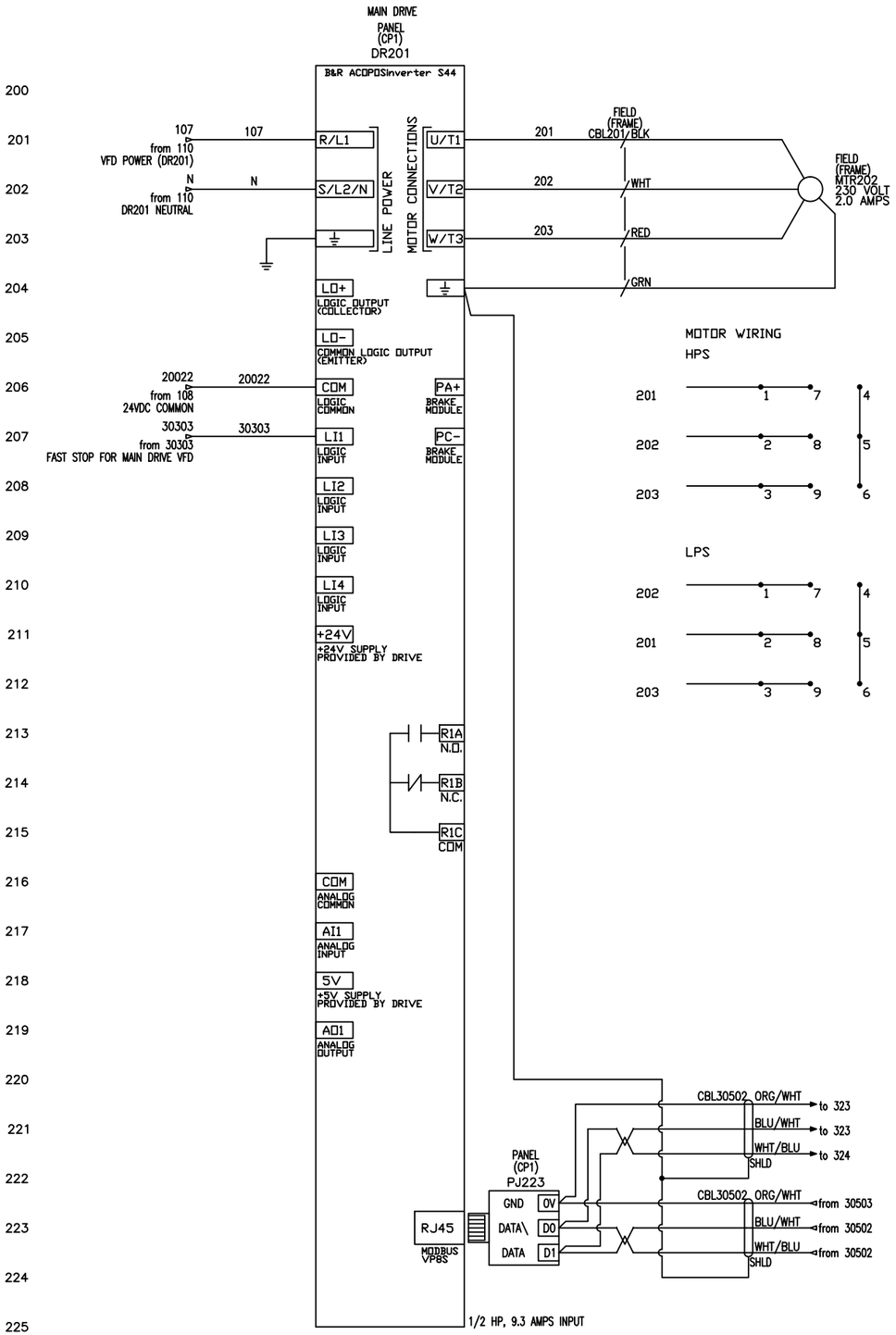


STANDARD NO WIRING

INSTA CUT OPTION
120 VOLT AC

INSTA CUT OPTION
24 VOLT DC





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DWG TITLE

FLEX (30" CARRIAGE) HPS/LPS 115VAC POWER DROP AND DISTRIBUTION

ENGINEER	CHECKED BY
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SCALE NO SCALE	DATE 11/2015

DWG NO
742551(V1.0)

SHEET NO
2 OF 14

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FILM CARRIAGE
PANEL
(CP1)
DR301

B&R ACOPOSinverter S44

108 from 111 VFD POWER (DR301) — 108 — R/L1
N from 111 DR301 NEUTRAL — N — S/L2/N
⏚
LINE POWER

U/T1 — 301 — FIELD (FRAME) CBL301/BLK
V/T2 — 302 — WHT
W/T3 — 303 — RED
⏚ — GRN
MOTOR CONNECTIONS

FIELD (FRAME) MTR302 230 VOLT 2.0 AMPS

LO+ LOGIC OUTPUT (COLLECTOR)
LO- COMMON LOGIC OUTPUT (EMITTER)
20022 from 108 24VDC COMMON — 20022 — COM LOGIC COMMON
30301 from 30301 — 30301 — LI1 LOGIC INPUT
LI2 LOGIC INPUT
LI3 LOGIC INPUT
LI4 LOGIC INPUT
+24V +24V SUPPLY PROVIDED BY DRIVE
PA+ BRAKE MODULE
PC- BRAKE MODULE

MOTOR WIRING
HPS/LPS

302	1	7	4
301	2	8	5
303	3	9	6

R1A N.O.
R1B N.C.
R1C COM

COM ANALOG COMMON
AI1 ANALOG INPUT
5V +5V SUPPLY PROVIDED BY DRIVE
AO1 ANALOG OUTPUT

PANEL (CP1) PJ323
RJ45 MODBUS VPBS
GND 0V
DATA\ D0
DATA D1

CBL30502 ORG/WHT — to 423
BLU/WHT — to 423
WHT/BLU — to 424
SHLD

CBL30502 ORG/WHT — from 221
BLU/WHT — from 221
WHT/BLU — from 222
SHLD

1/2 HP, 9.3 AMPS INPUT

MULTISTRETCH
PANEL
(CP1)
DR401

B&R ACOPOSinverter S44

109 from 112 VFD POWER (DR401) — 109 — R/L1
N from 112 DR401 NEUTRAL — N — S/L2/N
⏚
LINE POWER

U/T1 — 401 — FIELD (FRAME) CBL401/BLK 1
V/T2 — 402 — BLK 2
W/T3 — 403 — BLK 3
⏚ — GRN
MOTOR CONNECTIONS

FIELD (CARRIAGE) MTR402 230 VOLT 3.4 AMPS

LO+ LOGIC OUTPUT (COLLECTOR)
LO- COMMON LOGIC OUTPUT (EMITTER)
COM LOGIC COMMON
LI1 LOGIC INPUT
LI2 LOGIC INPUT
LI3 LOGIC INPUT
LI4 LOGIC INPUT
+24V +24V SUPPLY PROVIDED BY DRIVE
PA+ BRAKE MODULE
PC- BRAKE MODULE

MOTOR WIRING
HPS/LPS

402	1	7	4
401	2	8	5
403	3	9	6

R1A N.O.
R1B N.C.
R1C COM

20022 from 108 24VDC COMMON — 20022 — COM ANALOG COMMON
FILM BAR ANALOG PROX PRS417 — PANEL (CP1) 417 417
106 from 109 24VDC POWER — 106 BLU — BRN BLK — FIELD (CARRIAGE)
AI1 ANALOG INPUT
5V +5V SUPPLY PROVIDED BY DRIVE
AO1 ANALOG OUTPUT

PANEL (CP1) R420 120 OHMS
PANEL (CP1) PJ423
RJ45 MODBUS VPBS
GND 0V
DATA\ D0
DATA D1

CBL30502 ORG/WHT — from 321
BLU/WHT — from 321
WHT/BLU — from 322
SHLD

1 HP, 15.7 AMPS INPUT

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DWG TITLE
FLEX (30" CARRIAGE) HPS/LPS 115VAC VFD

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SHEET NO: 3 OF 14	

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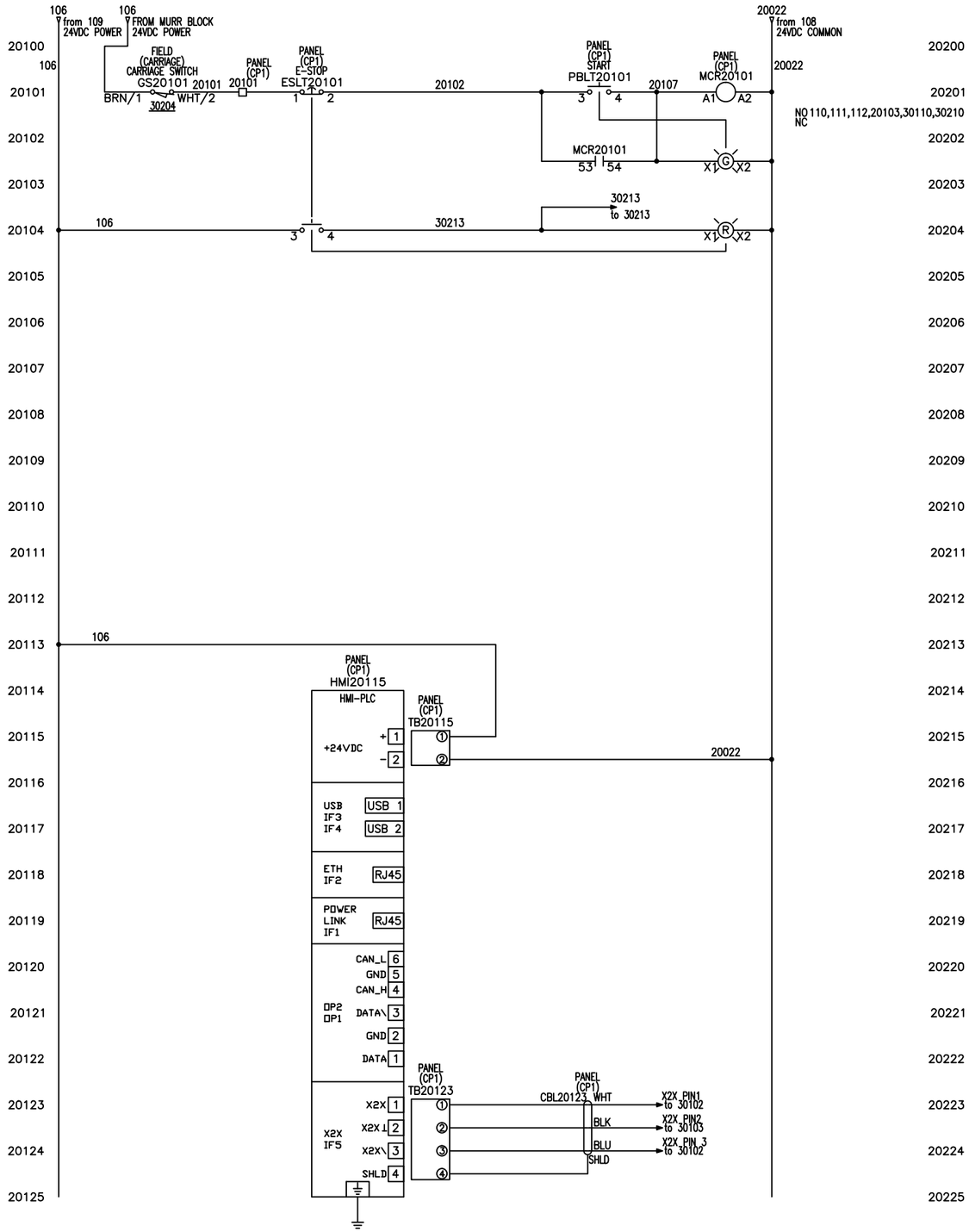

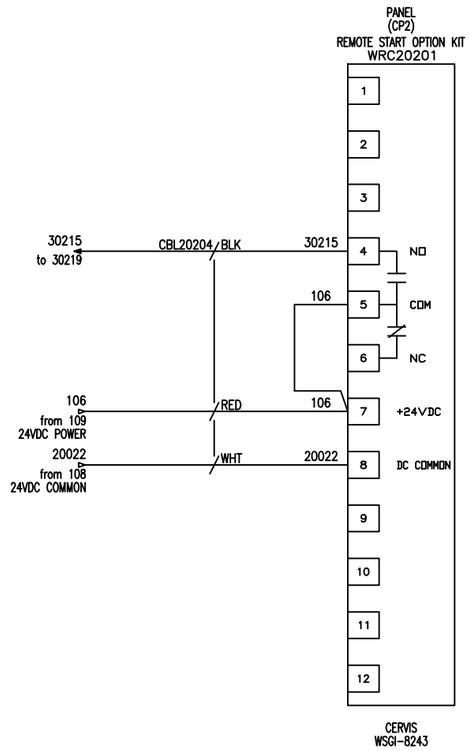

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DWG TITLE

FLEX (30" CARRIAGE) HPS/LPS START/STOP CIRCUIT AND REMOTE START

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SCALE: NO SCALE	DATE: 11/2015

DWG NO

742551(V1.0)

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4 OF 14

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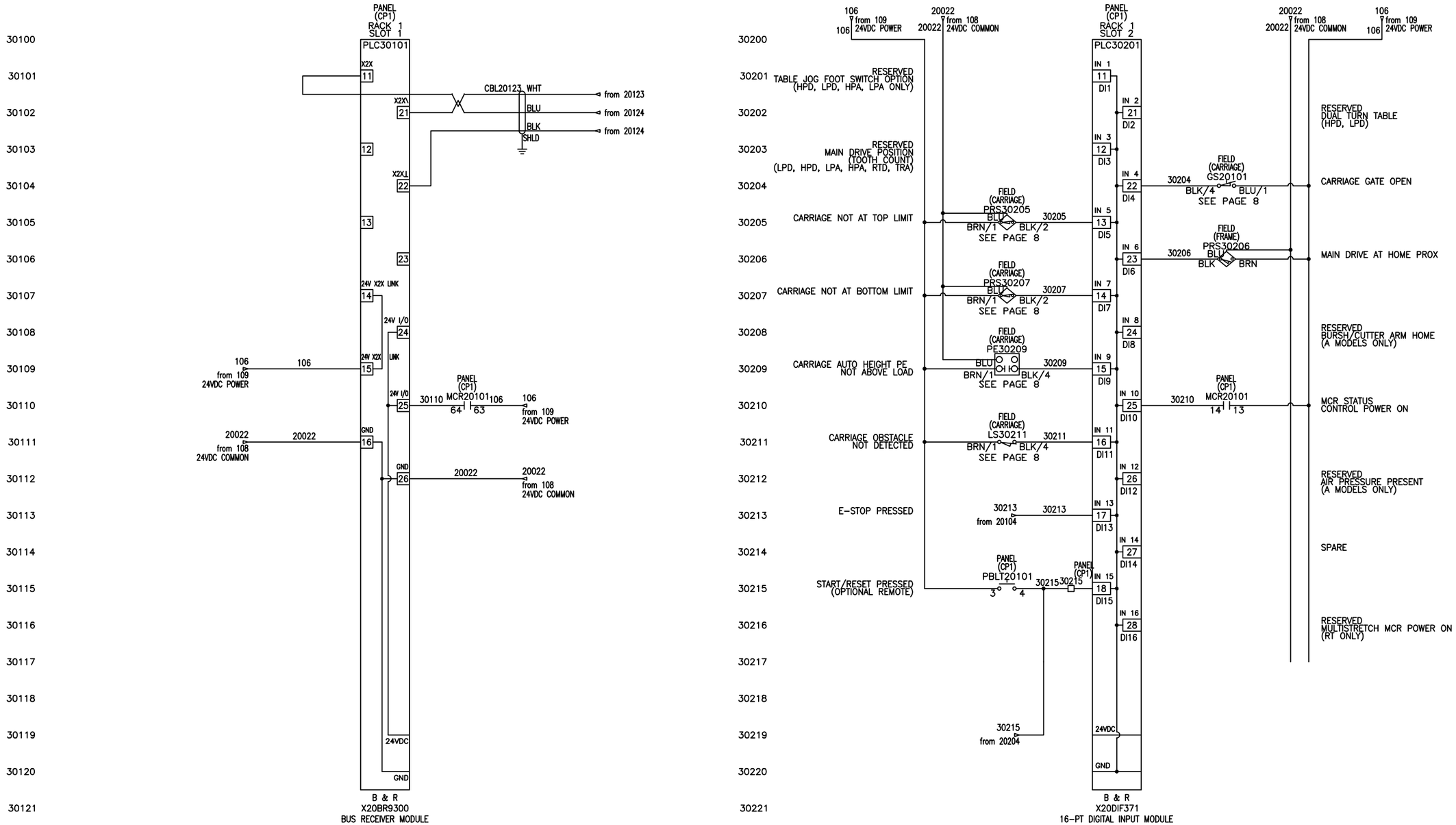

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NO.	DATE	REVISION	BY

DWG TITLE

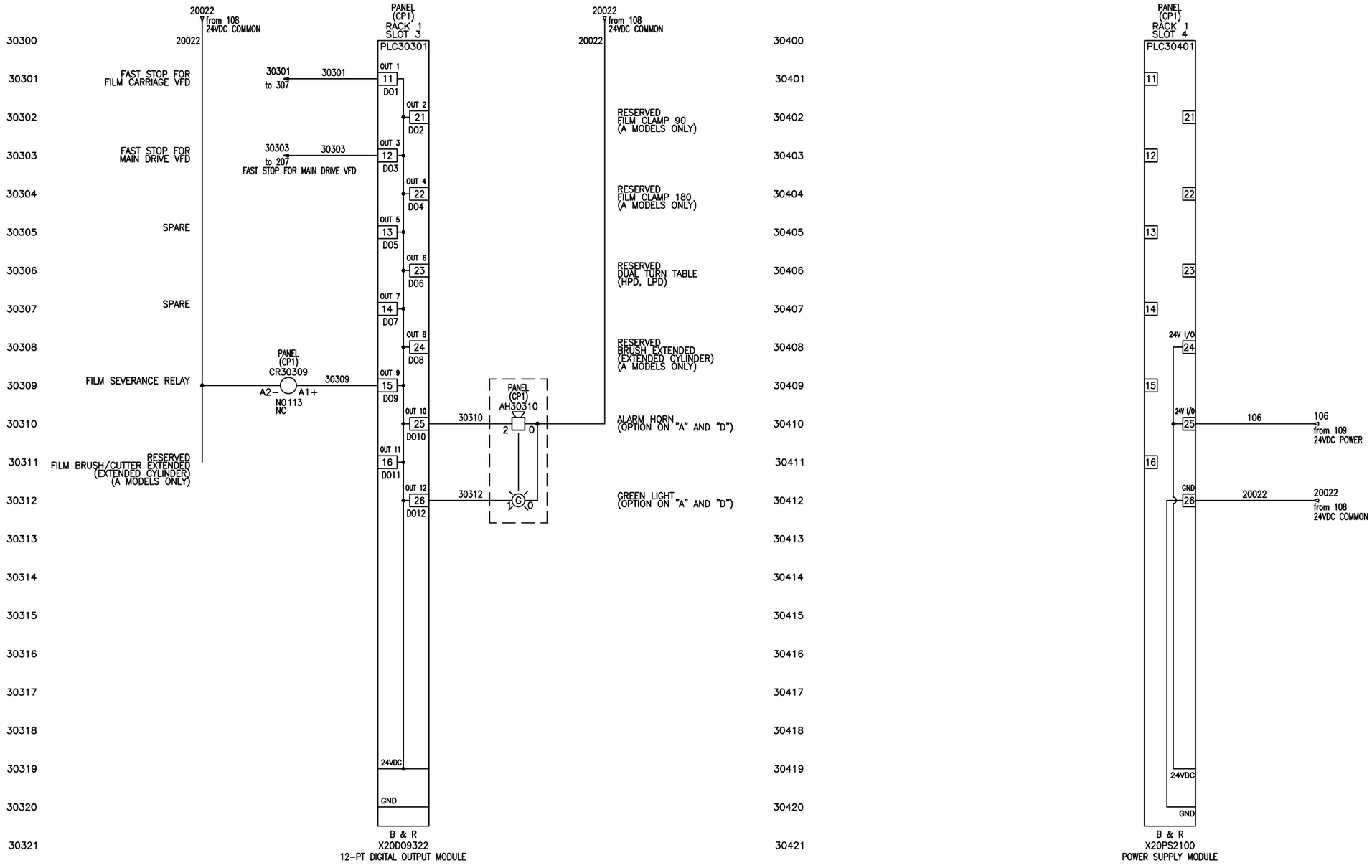
FLEX (30" CARRIAGE) HPS/LPS X20 I/O POWER / INPUTS

ENGINEER	CHECKED BY
JOB NO	DRAWN BY
SCALE NO SCALE	DATE 11/2015

DWG NO *742551(V1.0)*

SHEET NO *5 OF 14*

CAD DWG FILE i:\ELEC_ FLEX 10-2015\HPS-LPS 30 IN CARRIAGE\PG5.dwg



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DWG TITLE

FLEX (30" CARRIAGE)
HPS/LPS
X20 I/O OUTPUT / POWER SUPPLY

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SCALE: NO SCALE	DATE: 11/2015

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6 OF 14

CAD DWG FILE I:\ELEC_ FLEX 10-2015\HPS-LPS 30 IN CARRIAGE\PG6.dwg

30500
30501
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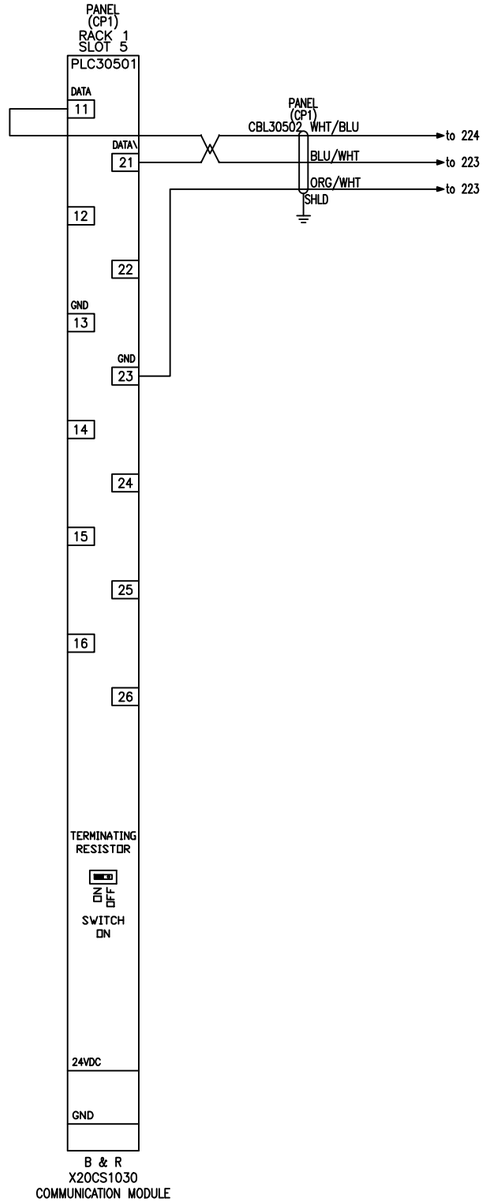

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DWG TITLE

FLEX (30" CARRIAGE)
HPS/LPS
X20 RS485 COMM

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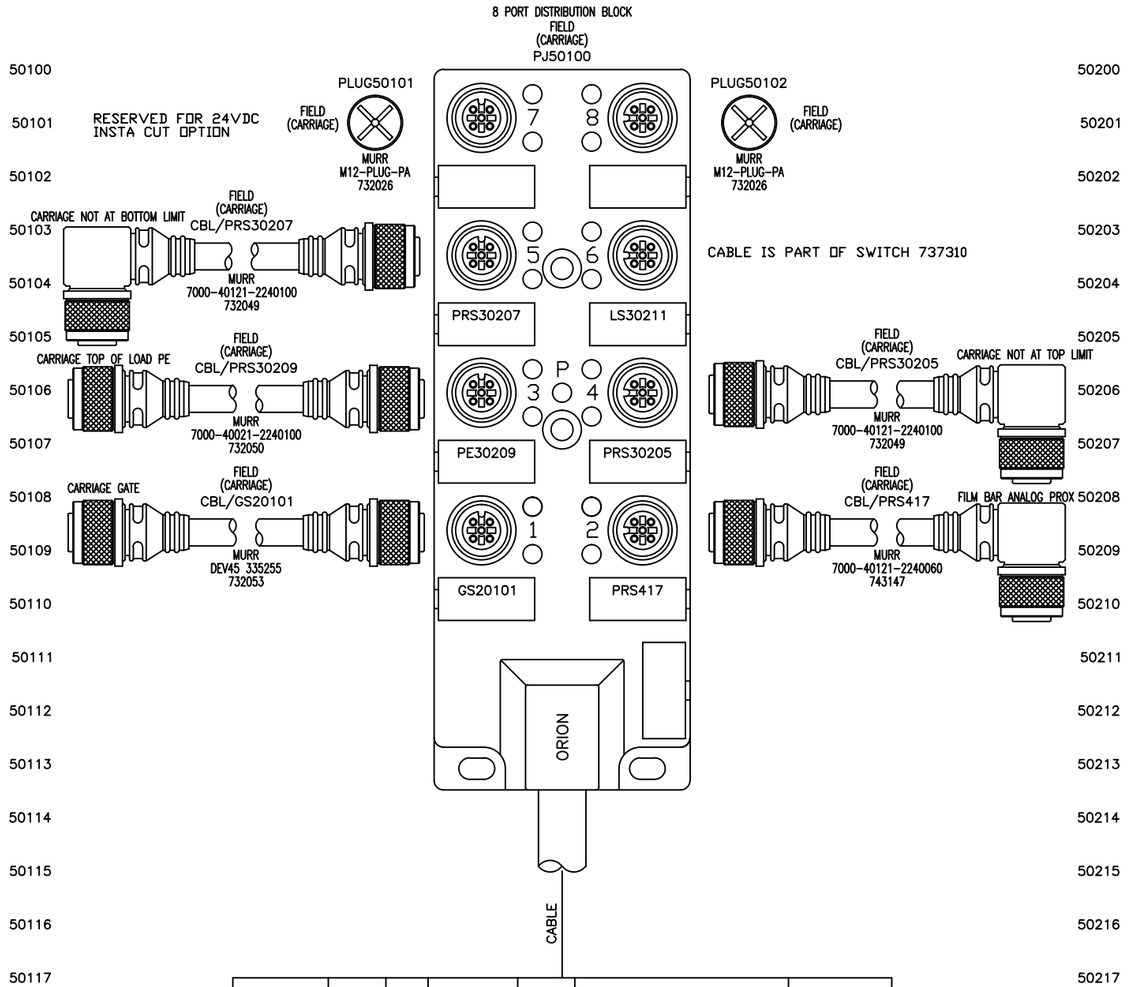
CAD DWG FILE I:\ELEC_ FLEX 10-2015\HPS-LPS 30 IN CARRIAGE\P67.dwg



WIRE COLOR	PORT#	PIN#	DEVICE TAG	WIRE#	DESCRIPTION	I/O ADDRESS
WHITE	1	4	GS20101	30204	CARRIAGE GATE OPEN	
GRY/PNK	1	2	GS20101	20101	CARRIAGE GATE CLOSED	
GREEN	2	4				
RED/BLU	2	2	PRS417	417	ANALOG PROX	
YELLOW	3	4	PE30209	30209	CARRIAGE AUTO HEIGHT	
WHT/GRN	3	2				
GRAY	4	4				
BRN/GRN	4	2	PRS30205	30205	CARRIAGE TOP LIMIT	
PINK	5	4				
WHT/YEL	5	2	PRS30207	30207	CARRIAGE BOTTOM LIMIT	
RED	6	4	LS30211	30211	CARRIAGE OBSTACLE DETECT	
YEL/BRN	6	2				
BLACK	7	4	SOL222	222	INSTA CUT OPTION 24 VDC	
WHT/GRY	7	2				
VIOLET	8	4				
GRY/BRN	8	2				
BROWN	1 – 8	1		106	24VDC +	
BLUE	1 – 8	3		20022	0VDC –	
GRN/YEL	1 – 8	5		GND	GROUND	

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NO.	DATE	REVISION	BY

DWG TITLE

FLEX (30" CARRIAGE)
HPS/LPS
CARRIAGE I/O BLOCK

ENGINEER	CHECKED BY
JOB NO	DRAWN BY
SCALE: NO SCALE	DATE: 11/2015

DWG NO
742551(V1.0)

SHEET NO
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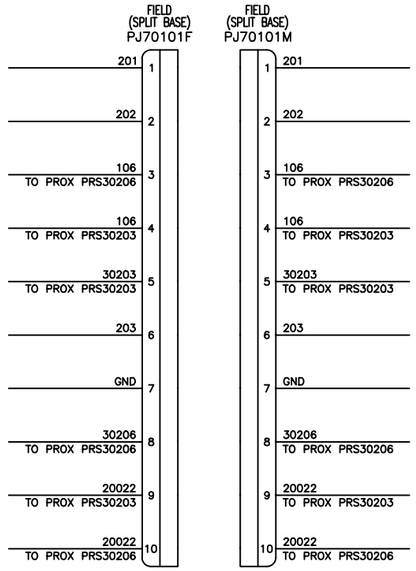
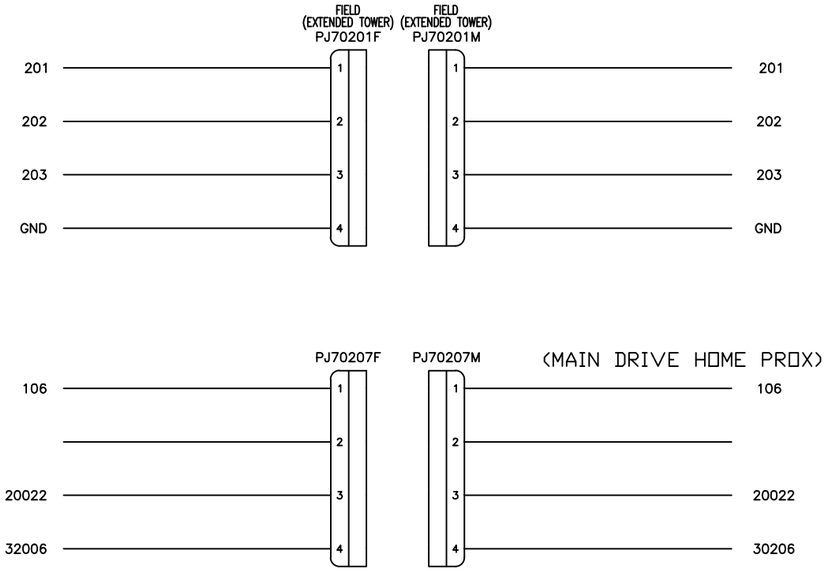
SPLIT BASE OPTION (HPS ONLY)



TAGS	QTY	SUB	ASSYCODE	MFG	CATALOG
PJ70101F	1	*1	728490	T&B	PB410A
		*1	728489	T&B	FS110A
		*4	706526	ALTECH	502-5214
		*6	706074	ALTECH	502-2114
PJ70101M	1	*1	728491	T&B	TH910A
		*1	728488	T&B	MS210A
		*4	706526	ALTECH	502-5214
		*6	706074	ALTECH	502-2114

EXTENDED TOWER OPTION (HPS AND LPS)



TAGS	QTY	SUB	ASSYCODE	MFG	CATALOG
PJ70201F	1	*1	731279	T&B	CH803A
		*1	731277	T&B	FS103A
		*4	706526	ALTECH	502-5214
PJ70201M	1	*1	731278	T&B	TH803A
		*1	731276	T&B	MS203A
		*4	706526	ALTECH	502-5214
PJ70207F	1		738870	MURR	7000-12221-0140500
PJ70207M	1		736697	HTM	FC-12MS4P-PG7/9

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NO.	DATE	REVISION	BY

DWG TITLE

FLEX (30" CARRIAGE)
HPS/LPS
SPLIT BASE
EXTENDED TOWER

ENGINEER	CHECKED BY
JOB NO	DRAWN BY
SCALE: NO SCALE	DATE: 11/2015

DWG NO
742551(V1.0)

SHEET NO
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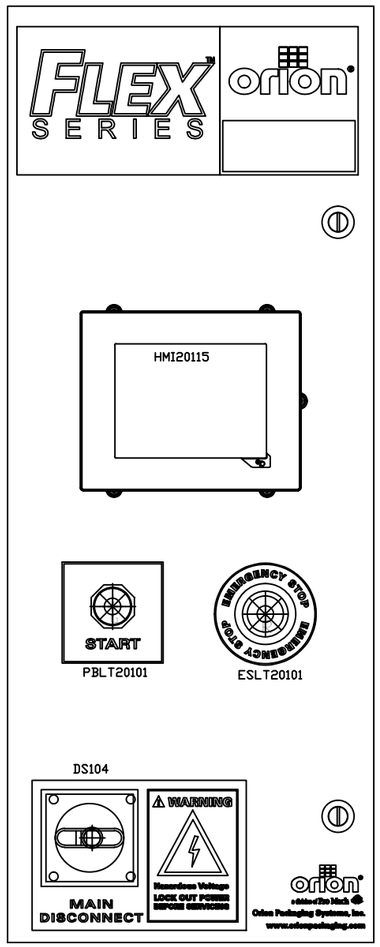
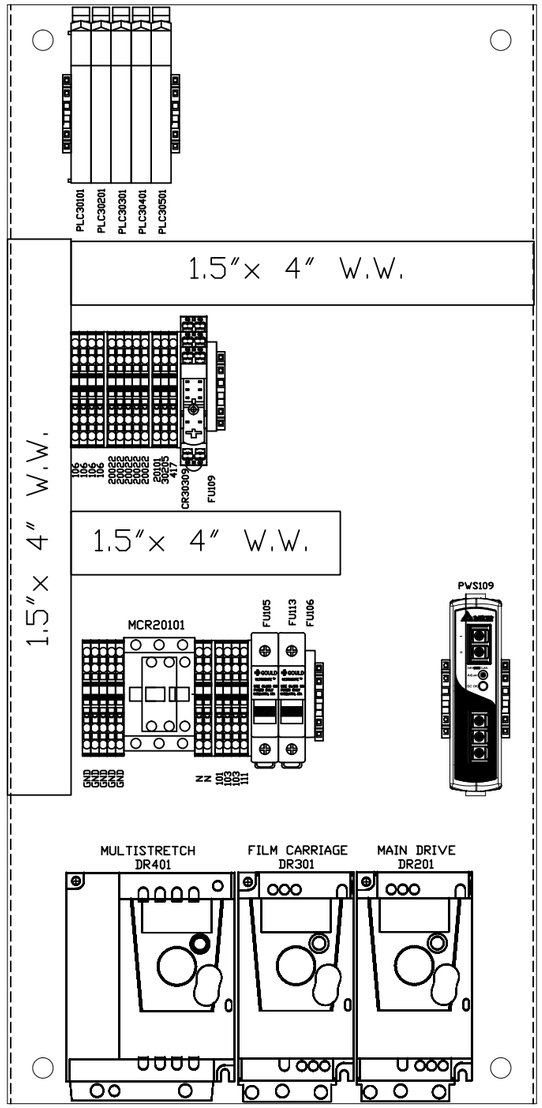
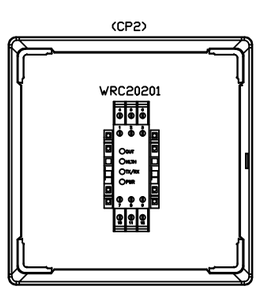




TAGS	QTY	SUB	ASSYCODE	MFG	CATALOG
AH30310	1		729175	AB	EC-B24D3P1
CR30309	1		742987	PHOENIX	2903334
DR201 DR301	2		742975	B&R	8I44S100037.000-1
DR401	1		742976	B&R	8I44S100075.000-1
DS104	1		742978	EATON	P1-25/EA/SVB
FU113	1	*1	742985	EATON	C383FHMD
		*1	731039	LITTELFUSE	KLDR003
FU105	1	*1	742985	EATON	C383FHMD
		*1	731049	LITTELFUSE	KLDR015
FU109	1	*1	742986	PHOENIX	3211861
		*1	742989	DIGITKEY	283-2917-ND (BK/GMD-3-R)
FU106	1	*1	742986	PHOENIX	3211861
		*1	742988	DIGITKEY	283-2699-ND (BK/S506-2-R)
CBL101	1		738880	HARTFIEL	9-1051193
TB20115	1		738883	B & R	OTB6102.2110-01
TB20123	1		738894	B & R	OTB5104.2110-01
HMI20115	1		742974	B & R	4PPC70.0573-20B
PJ223 PJ323 PJ423	3		743142	B & R	8I0XC002.100.1
MCR20101	1	*1	742979	EATON	XTCE009B10TD
		*1	742980	EATON	XTCEXFAC20
PBLT20101	1	*1	742983	EATON	M22-DL-G
		*2	737822	EATON	M22-K10
		*1	742983	EATON	M22-DL-G
		*1	732103	EATON	M22-LED-G
ESLT20101	1	*1	742981	EATON	M22-PVL
		*1	737822	EATON	M22-K10
		*1	742982	EATON	M22-K01
		*1	742984	EATON	M22-LED-R
PLC30101	1	*1	731535	B & R	X20BR9300
		*1	742087	B & R	X20BM01
		*1	742088	B & R	X20TB12
PLC30501	1	*1	738900	B & R	X20CS1030
		*1	742083	B & R	X20BM11
		*1	742088	B & R	X20TB12
PLC30201	1	*1	742084	B & R	X20DIF371
		*1	742083	B & R	X20BM11
		*1	742082	B & R	X20TB1F
PLC30301	1	*1	742996	B & R	X20DO9322
		*1	742083	B & R	X20BM11
		*1	742088	B & R	X20TB12
PLC30401	1	*1	738899	B & R	X20PS2100
		*1	742087	B & R	X20BM01
		*1	742088	B & R	X20TB12
PWS109	1		742977	DELTA	DRP024V060W1AZ
R420	1		ANY	120 OHM	0.25 W
	6		742993	PHOENIX	3209578
	1		742994	PHOENIX	3209594
CBL30502	6		743145	HARTFIEL	THC50961
CBL20123	2		743144	HARTFIEL	THC50967

NOTE:
BACK PANEL INSTALLED
INSIDE TOWER UNIT



TAGS	QTY	SUB	ASSYCODE	MFG	CATALOG
WRC20201	1	*1	741591	CERVIS	WSGI-8243
		*1	731782	CERVIS	SMART-901R-24V-WSGI-8243 (3175124)
		*1	729265	CARLON	E987R (105436)
		*2	740238	LAPP	S2509 (1578387)
		*10	098087	BELDEN	8489 18/4C
		*1	741594	OMEGA	3FAL1 (1992537)
		*2	741595	CH	XBA3ES35C (2243439)

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NO.	DATE	REVISION	BY

DWG TITLE
FLEX (30" CARRIAGE) HPS/LPS ENCLOSURES AND PANEL AND BOM

ENGINEER	CHECKED BY
JOB NO	DRAWN BY
SCALE NO SCALE	DATE 11/2015

DWG NO
742551(V1.0)

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FIELD FRAME BOM

TAGS	QTY	SUB	ASSYCODE	MFG	CATALOG
MTR202 MTR302	2		SEE	MECHANICAL	BOM
PRS30206	1	*1	SEE	LISTED	OPTIONS
		*1	712551 (LPS)	SICK	1040780/IME12-08NPSZC0S
		*1	728707 (HPS)	SICK	1041046/IME30-20NPSZC0S
		*1	738870	MURR	7000-12221-0140500
CBL20204	1	*10	098087	BELDEN	8489 18/4C
CBL401	1	*0	739676	LUTZE	111371
CBL201 CBL301	2	*0	730915	SOUTH WIRE	16/4 SLEOOW
CBL115	1	*0		IGUS	CF10-10-03

FIELD CARRIAGE BOM

TAGS	QTY	SUB	ASSYCODE	MFG	CATALOG
CBL/GS20101	1		732053	MURR	DEV45 335255
PLUG50101 PLUG50102	2		732026	MURR	M12-PLUG-PA
CBL/PRS30209	1		732050	MURR	7000-40021-2240100
CBL/PRS417	1		743147	MURR	7000-40121-2240060
CBL/PRS30205 CBL/PRS30207	2		732049	MURR	7000-40121-2240100
PJ50100	1		732045	MURR	8000-88510-3980500
MTR402 SOL115	2		SEE	MECHANICAL	BOM
GS20101	1		739147	SICK	1059505/RE21-SAC
LS30211	1	*1	737310	TELEMECANIQUE	XEP4E1FDA454J03
PE30209	1	*1	SEE	LISTED	OPTIONS
		*1	729603 (STANDARD)	SICK	1025905/WT18-3P420
		*1	729206 (TIME DELAY)	SICK	1027753/WTB27-3F2411
		*1	731972 (DARK LOAD)	SICK	1019229/WT34-B410
		*1	731971 (DARK LOAD TIME DELAY)	SICK	1019230/WT34-B420
		*1	730312 (LONG RANGE)	SICK	1016933/WT24-2B410
PRS417	1		731785	IFM	IG6083
PRS30205 PRS30207	2		731955	SICK	1041033/IME30-15BP0-ZC0K

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DWG TITLE

FLEX (30" CARRIAGE) HPS/LPS MACHINE FIELD AND CARRIAGE BOM

ENGINEER	CHECKED BY
JOB NO	DRAWN BY
SCALE: NO SCALE	DATE: 11/2015

DWG NO

742551(V1.0)

SHEET NO

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CAD DWG FILE I:\ELEC_ FLEX 10-2015\HPS-LPS 30 IN CARRIAGE\PG11.dwg

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NO.	DATE	REVISION	BY

DWG TITLE

FLEX (30" CARRIAGE)
HPS/LPS
SPARE PAGE

ENGINEER	CHECKED BY
JOB NO	DRAWN BY
SCALE: NO SCALE	DATE: 11/2015

DWG NO
742551(V1.0)

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CAD DWG FILE I:\ELEC_ FLEX 10-2015\HPS-LPS 30 IN CARRIAGE\PG12.dwg

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NO.	DATE	REVISION	BY

DWG TITLE

FLEX (30" CARRIAGE)
HPS/LPS
SPARE PAGE

ENGINEER	CHECKED BY
JOB NO	DRAWN BY
SCALE: NO SCALE	DATE: 11/2015

DWG NO
742551(V1.0)

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CAD DWG FILE I:\ELEC_ FLEX 10-2015\HPS-LPS 30 IN CARRIAGE\PG13.dwg

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NO.	DATE	REVISION	BY

DWG TITLE

FLEX (30" CARRIAGE)
HPS/LPS
SPARE PAGE

ENGINEER	CHECKED BY
JOB NO	DRAWN BY
SCALE: NO SCALE	DATE: 11/2015

DWG NO
742551(V1.0)

SHEET NO
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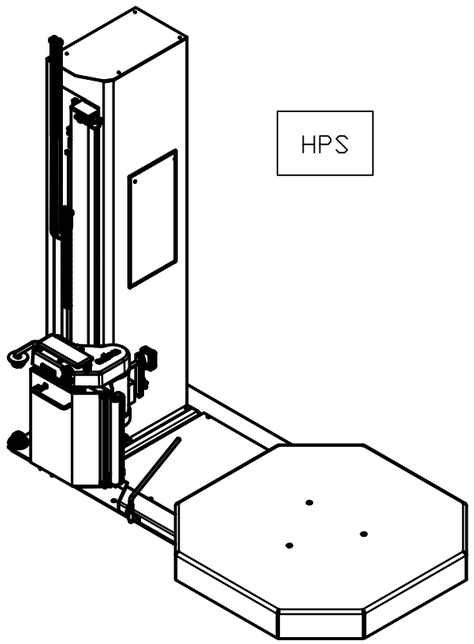

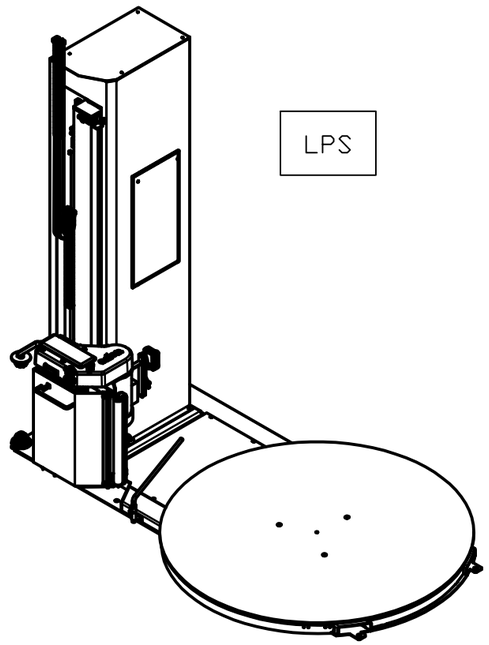

SH	DWGDESC	DWGDESC2	DWGDESC3
1	COVER PAGE		
2	115VAC POWER DROP	AND DISTRIBUTION	100/200
3	115VAC VFD		300/400
4	START/STOP CIRCUIT	AND REMOTE START	500/600
5	X20 I/O POWER /	INPUTS	30100/30200
6	X20 I/O OUTPUT /	POWER SUPPLY	30300/30400
7	X20 RS485 COMM		30500/30600
8	CARRIAGE I/O BLOCK		50100/50200
9	SPLIT BASE	EXTENDED TOWER	70100/70200
10	ENCLOSURES AND	PANEL AND BOM	
11	MACHINE FIELD AND	CARRIAGE BOM	
12	SPARE PAGE		
13	SPARE PAGE		
14	SPARE PAGE		

WIRING COLOR AND SIZE
115VAC (RED) 14 AWG MINIMUM
NEUTRAL (WHITE) 14 AWG MINIMUM
GND (GREEN/YELLOW) 14 AWG MINIMUM
+24VDC (BLUE) 18 AWG MINIMUM
DC COMMON (WHITE/BLUE) 18 AWG MINIMUM
CABLE COLORS AND GAUGE ARE LISTED IN PRINTS

NOTES
1. SILICONE BASE PRODUCTS SHALL NOT BE USED ANYWHERE IN THIS ASSEMBLY.
2. ALL FIELD CONTROL WIRE TO BE A MINIMUM 14 AWG 75C COPPER, UNLESS OTHERWISE NOTED.
3. ALL CONDUIT HUB RATINGS MUST BE EQUAL TO OR SURPASS THE ASSEMBLY ENVIRONMENT RATING.
4. WHEN ORDERING REPLACEMENT PARTS, PLEASE SUPPLY THE JOB NUMBER AS SHOWN INSIDE THE CONTROL PANEL DOOR.
5. MANUFACTURES OF COMPONENTS USED IN THIS ASSEMBLY ARE SUBJECT TO CHANGE WITHOUT NOTICE.
6. THIS DOCUMENT IS THE PROPERTY OF THE END USER, PLEASE DO NOT REMOVE FROM THE ELECTRICAL CONTROL ENCLOSURE.
7. ALL WIRES CONNECTED TO THE B&R X20 IO MUST HAVE FERRULS.

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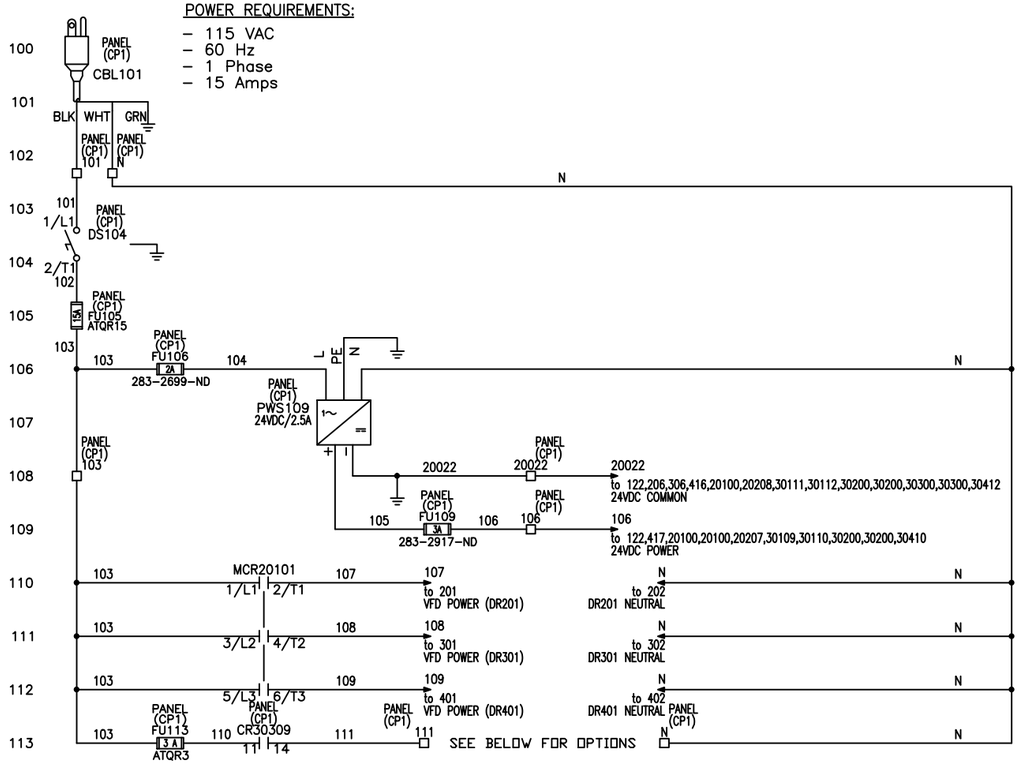
DWG TITLE

FLEX (STANDARD)
HPS/LPS
COVER PAGE

ENGINEER	CHECKED BY
JOB NO	DRAWN BY
SCALE NO SCALE	DATE 11/2015
DWG NO 742548(V1.0)	
SHEET NO 1 OF 14	

CAD DWG FILE I:\ELEC_ FLEX 10-2015\HPS-LPS STANDARD\PG1.dwg

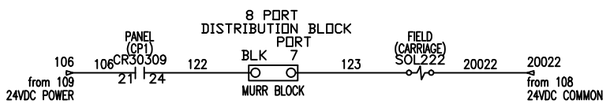
POWER REQUIREMENTS:
- 115 VAC
- 60 Hz
- 1 Phase
- 15 Amps

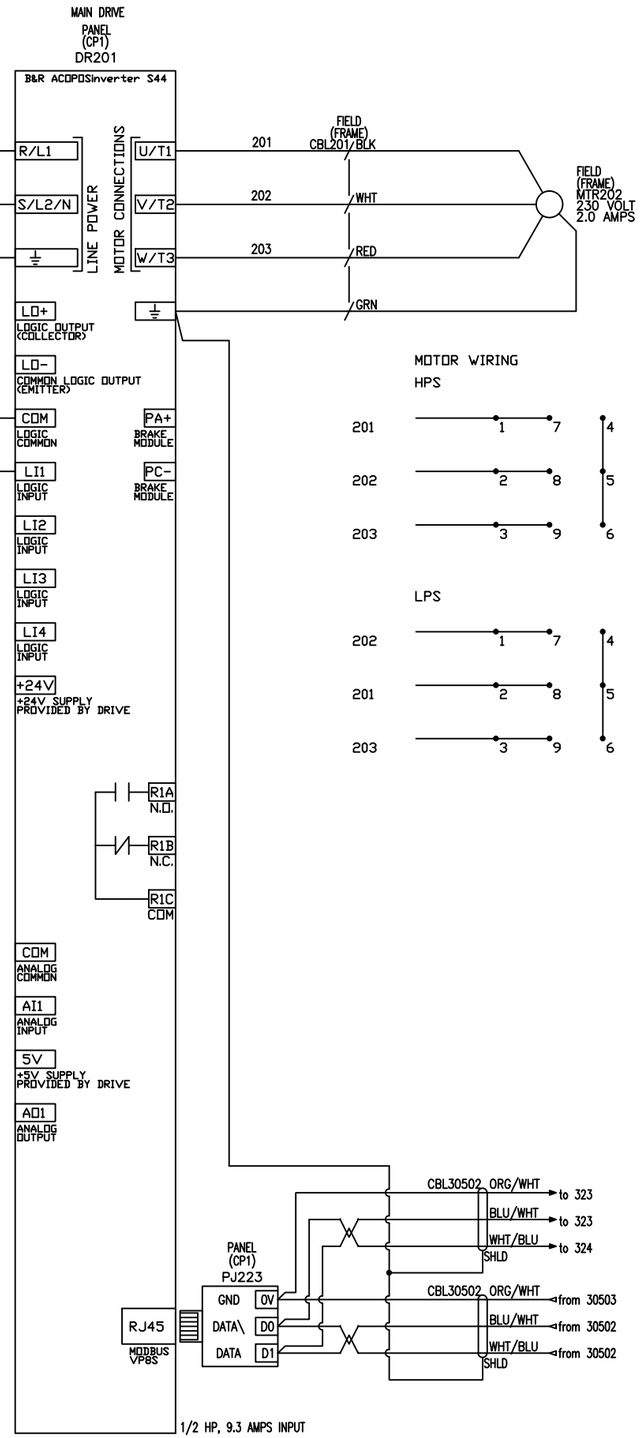


STANDARD NO WIRING

INSTA CUT OPTION
120 VOLT AC

INSTA CUT OPTION
24 VOLT DC





MOTOR WIRING

HPS

LPS

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NO.	DATE	REVISION	BY

DWG TITLE

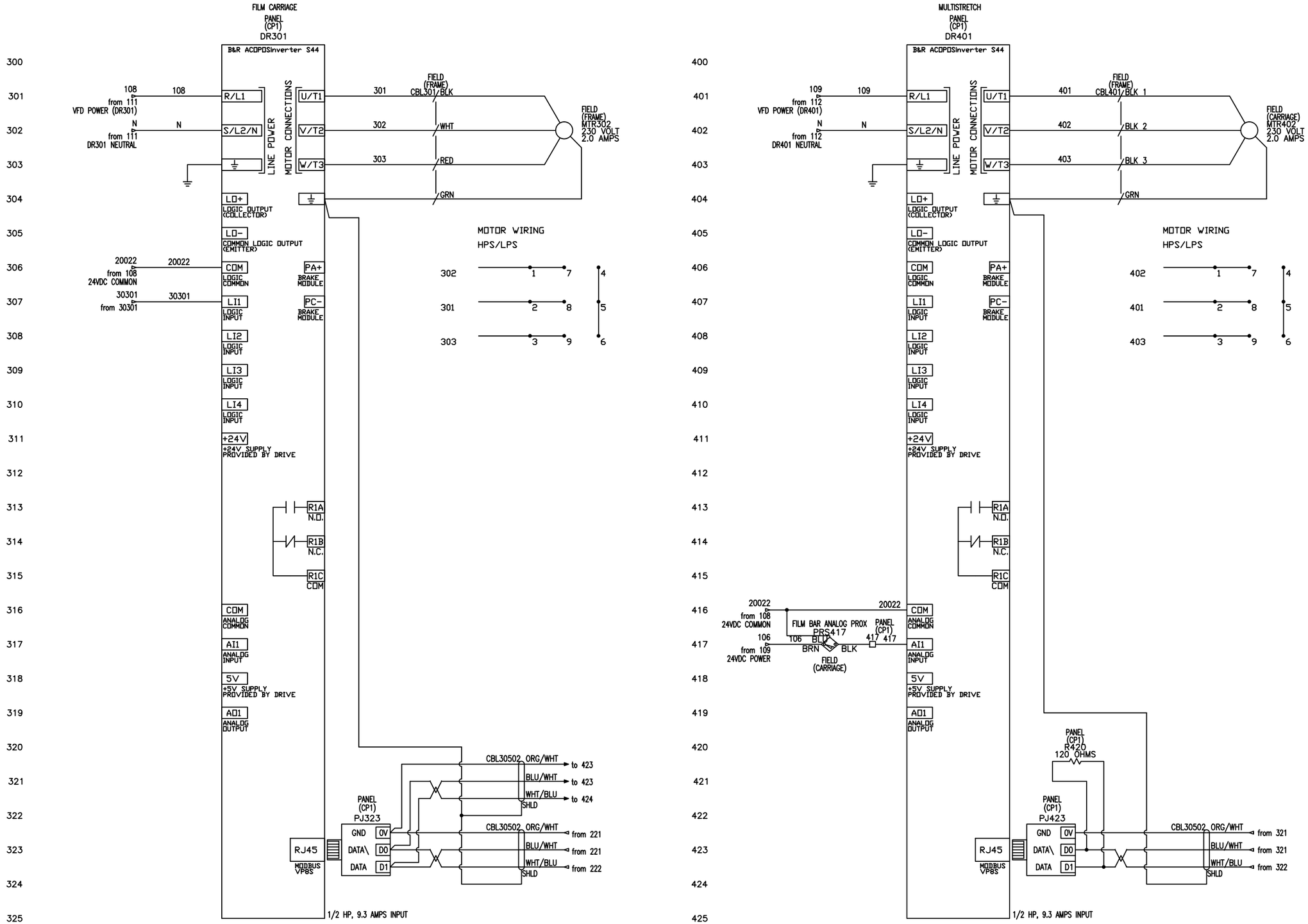
FLEX (STANDARD) HPS/LPS 115VAC POWER DROP AND DISTRIBUTION

ENGINEER	CHECKED BY
JOB NO	DRAWN BY
SCALE NO SCALE	DATE 11/2015

DWG NO
742548(V1.0)

SHEET NO
2 OF 14

CAD DWG FILE I:\ELEC_ FLEX 10-2015\HPS-LPS STANDARD\VP62.dwg



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NO.	DATE	REVISION	BY

DWG TITLE

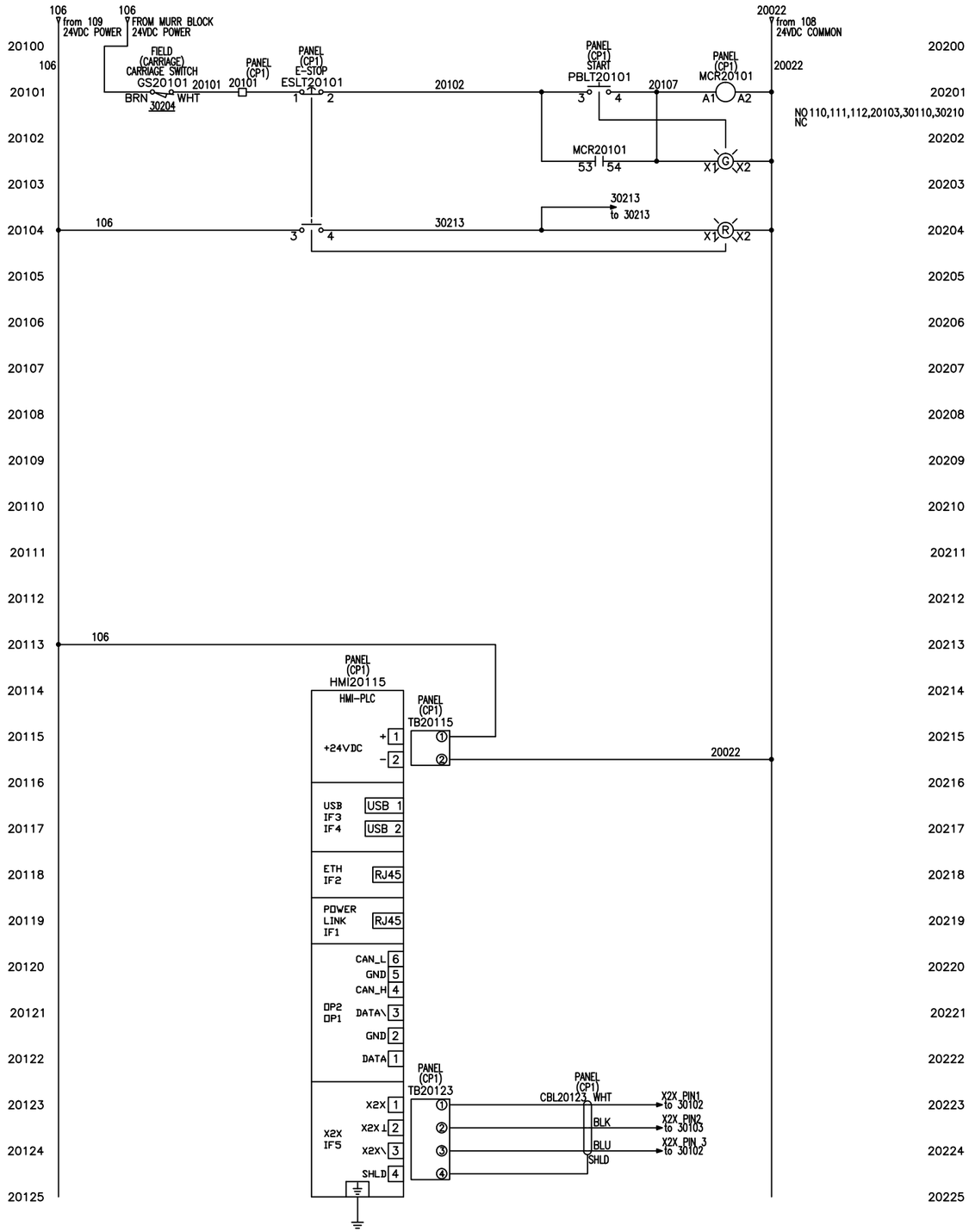
FLEX (STANDARD)
HPS/LPS
115VAC VFD

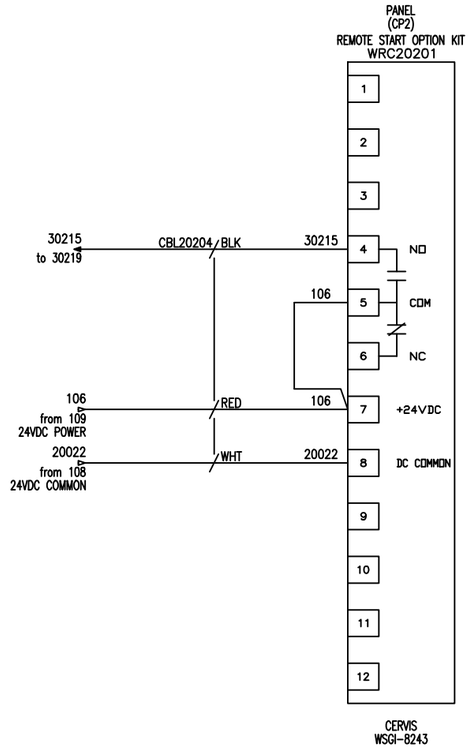
ENGINEER	CHECKED BY
JOB NO	DRAWN BY
SCALE: NO SCALE	DATE: 11/2015

DWG NO
742548(V1.0)

SHEET NO
3 OF 14

CAD DWG FILE I:\ELEC_ FLEX 10-2015\HPS-LPS STANDARD\PG3.dwg





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NO.	DATE	REVISION	BY

DWG TITLE

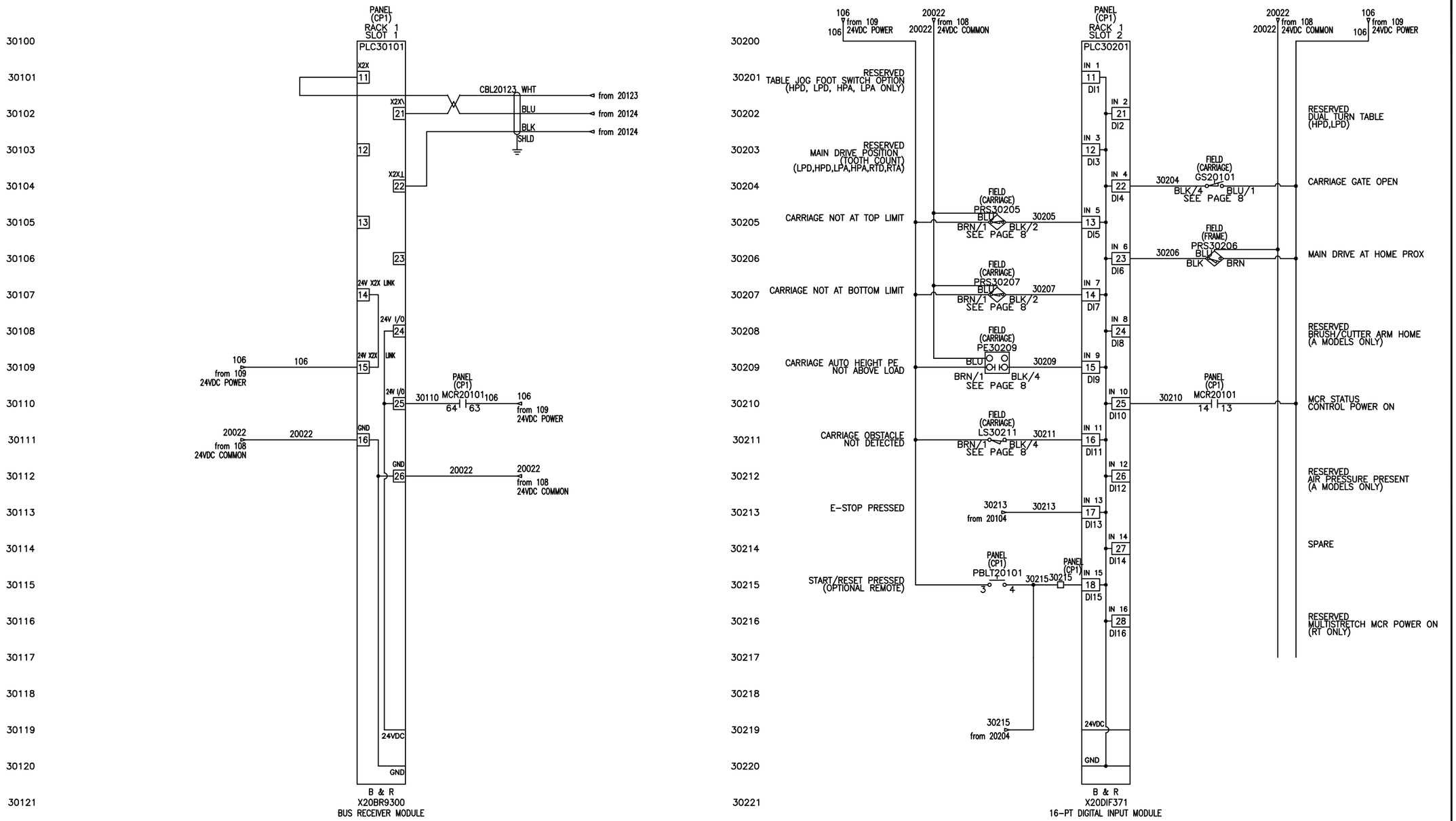
FLEX (STANDARD)
HPS/LPS
START/STOP CIRCUIT
AND REMOTE START

ENGINEER	CHECKED BY
JOB NO	DRAWN BY
SCALE: NO SCALE	DATE: 11/2015

DWG NO
742548(V1.0)

SHEET NO
4 OF 14

CAD DWG FILE I:\ELEC_ FLEX 10-2015\HPS-LPS STANDARD\FG4.dwg



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NO.	DATE	REVISION	BY

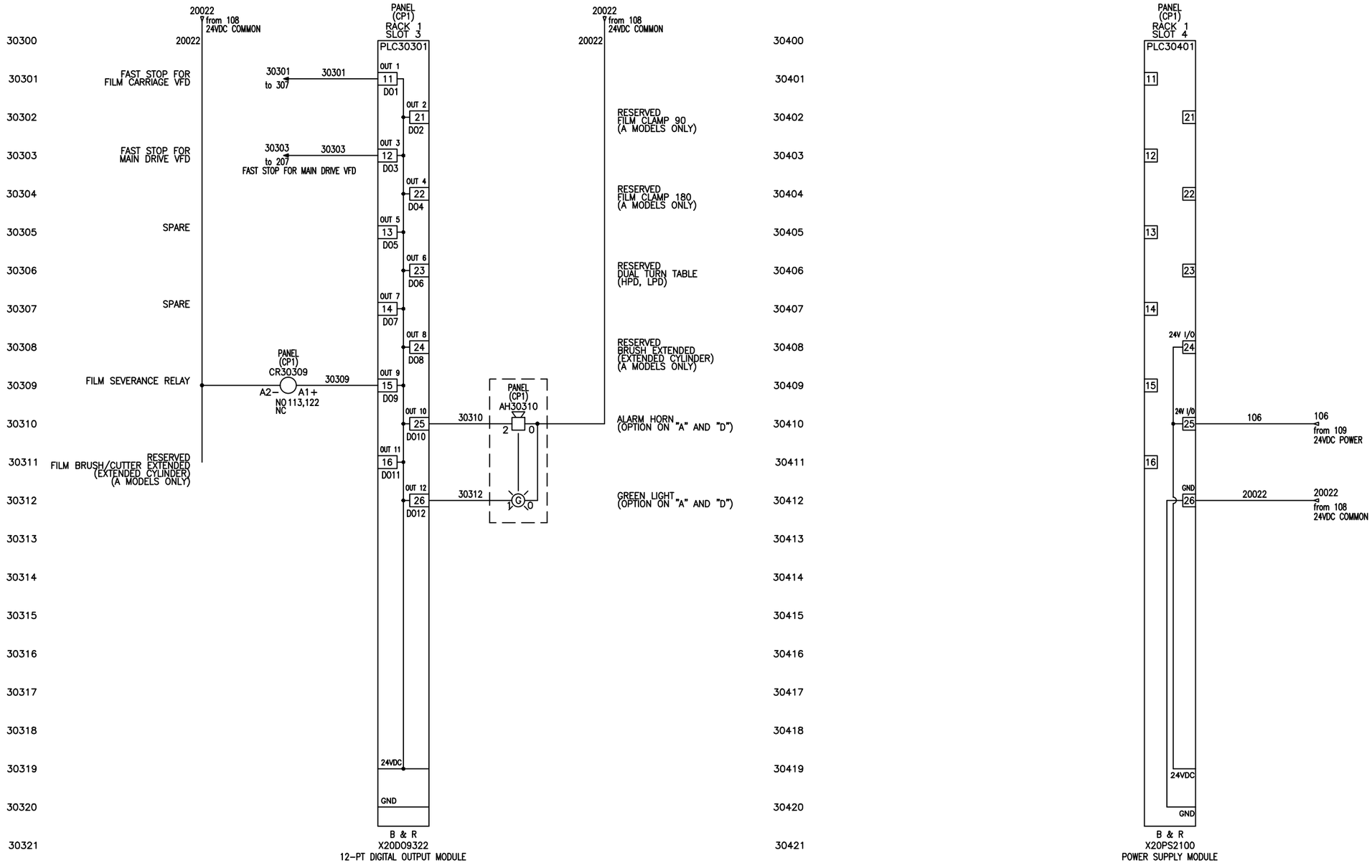
DWG TITLE

FLEX (STANDARD) HPS/LPS X20 I/O POWER / INPUTS

ENGINEER	CHECKED BY
JOB NO	DRAWN BY
SCALE NO SCALE	DATE 11/2015

DWG NO *742548(V1.0)*

SHEET NO *5 OF 14*



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NO.	DATE	REVISION	BY

DWG TITLE

FLEX (STANDARD)
HPS/LPS
X20 I/O OUTPUT / POWER SUPPLY

ENGINEER	CHECKED BY
JOB NO	DRAWN BY
SCALE: NO SCALE	DATE: 11/2015

DWG NO
742548(V1.0)

SHEET NO
6 OF 14

30500
30501
30502
30503
30504
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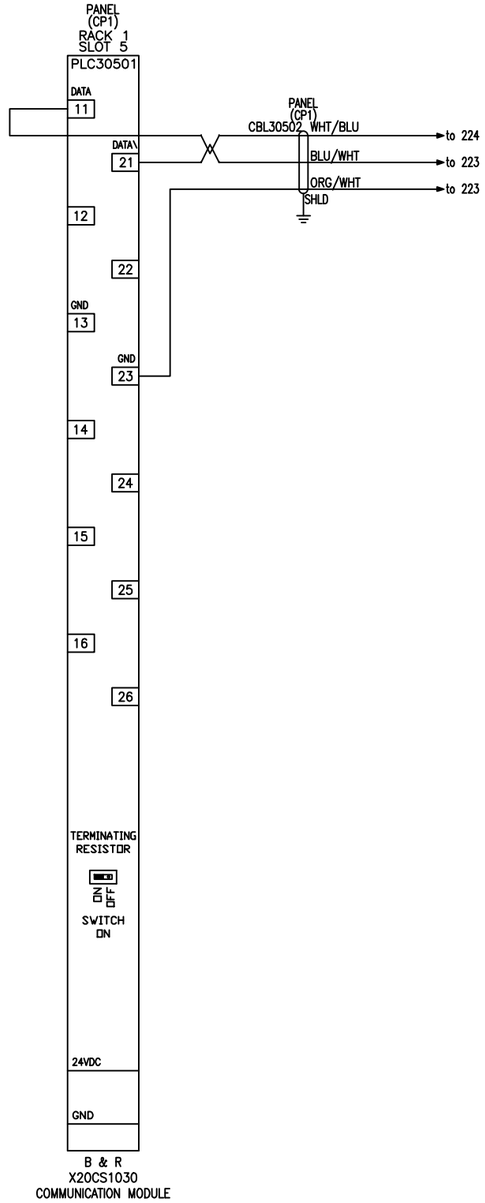

30600
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PH 800-535-2730

NO.	DATE	REVISION	BY

DWG TITLE

FLEX (STANDARD)
HPS/LPS
X20 RS485 COMM

ENGINEER	CHECKED BY
JOB NO	DRAWN BY
SCALE NO SCALE	DATE 11/2015

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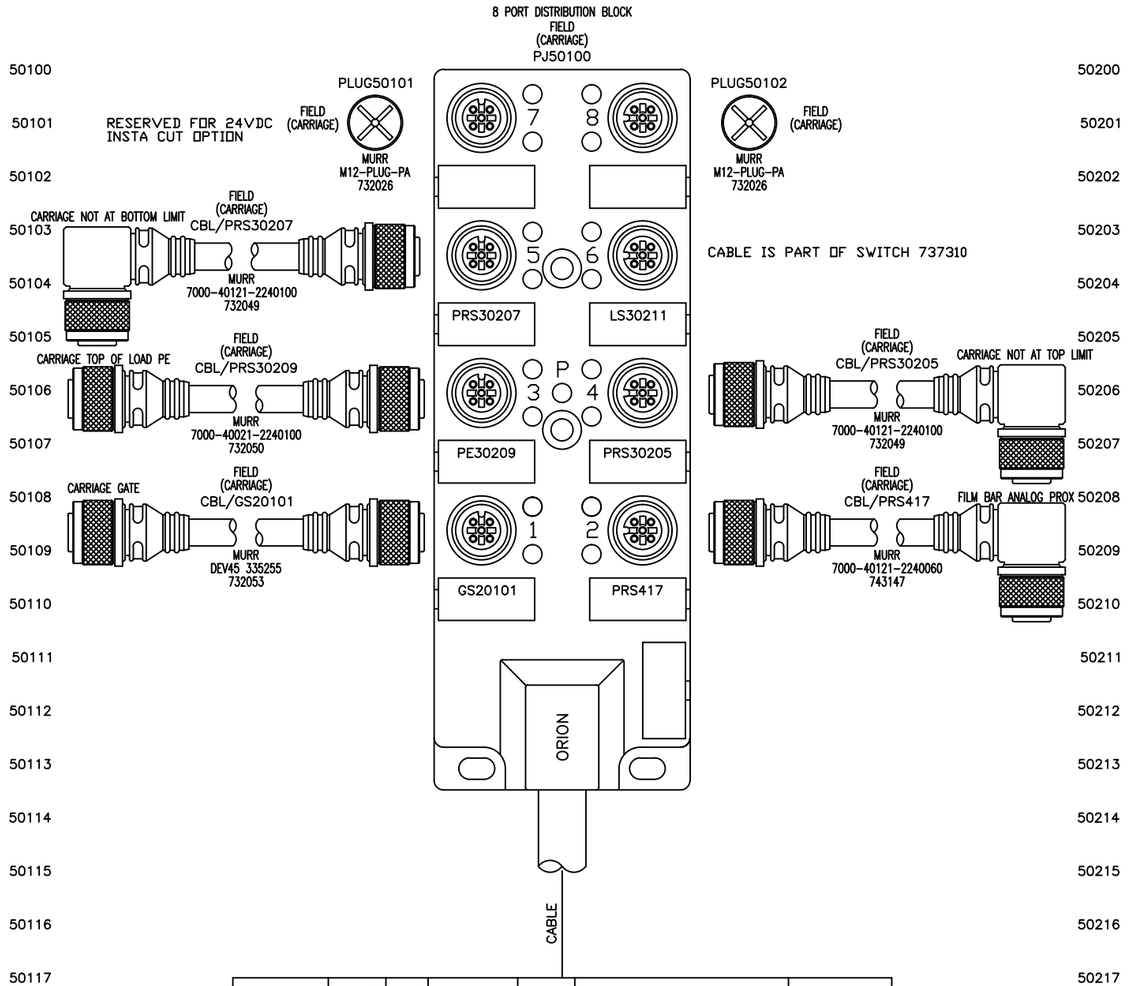

WIRE COLOR	PORT#	PIN#	DEVICE TAG	WIRE#	DESCRIPTION	I/O ADDRESS
WHITE	1	4	GS20101	30204	CARRIAGE GATE OPEN	
GRY/PNK	1	2	GS20101	20101	CARRIAGE GATE CLOSED	
GREEN	2	4				
RED/BLU	2	2	PRS417	417	ANALOG PROX	
YELLOW	3	4	PE30209	30209	CARRIAGE AUTO HEIGHT	
WHT/GRN	3	2				
GRAY	4	4				
BRN/GRN	4	2	PRS30205	30205	CARRIAGE TOP LIMIT	
PINK	5	4				
WHT/YEL	5	2	PRS30207	30207	CARRIAGE BOTTOM LIMIT	
RED	6	4	LS30211	30211	CARRIAGE OBSTACLE DETECT	
YEL/BRN	6	2				
BLACK	7	4	SOL222	222	INSTA CUT OPTION 24VDC	
WHT/GRY	7	2				
VIOLET	8	4				
GRY/BRN	8	2				
BROWN	1 – 8	1		106	24VDC +	
BLUE	1 – 8	3		20022	0VDC –	
GRN/YEL	1 – 8	5		GND	GROUND	

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FLEX (STANDARD)
HPS/LPS
CARRIAGE I/O BLOCK

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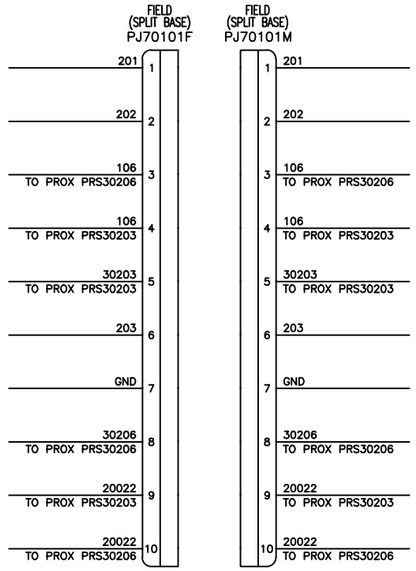
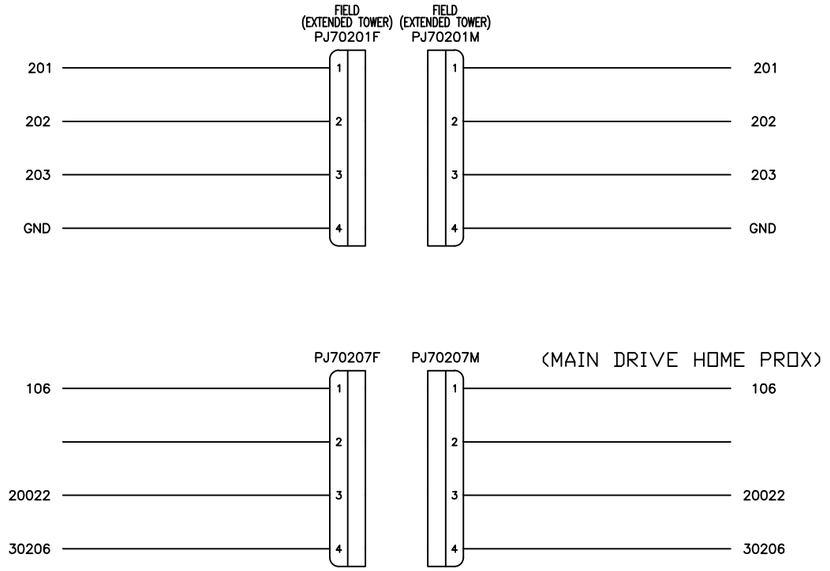
SPLIT BASE OPTION (HPS ONLY)



TAGS	QTY	SUB	ASSYCODE	MFG	CATALOG
PJ70101F	1	*1	728490	T&B	PB410A
		*1	728489	T&B	FS110A
		*4	706526	ALTECH	502-5214
		*6	706074	ALTECH	502-2114
PJ70101M	1	*1	728491	T&B	TH910A
		*1	728488	T&B	MS210A
		*4	706526	ALTECH	502-5214
		*6	706074	ALTECH	502-2114

EXTENDED TOWER OPTION (HPS AND LPS)



TAGS	QTY	SUB	ASSYCODE	MFG	CATALOG
PJ70201F	1	*1	731279	T&B	CH803A
		*1	731277	T&B	FS103A
		*4	706526	ALTECH	502-5214
PJ70201M	1	*1	731278	T&B	TH803A
		*1	731276	T&B	MS203A
		*4	706526	ALTECH	502-5214
PJ70207F	1		738870	MURR	7000-12221-0140500
PJ70207M	1		736697	HTM	FC-12MS4PP-PG7/9

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FLEX (STANDARD) HPS/LPS SPLIT BASE EXTENDED TOWER

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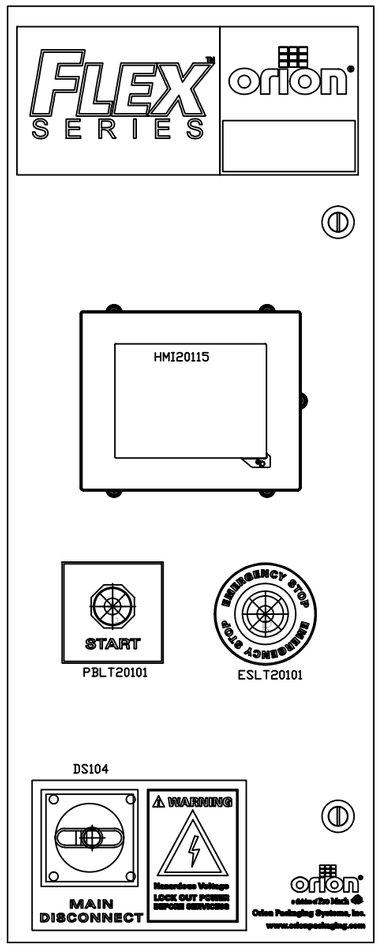
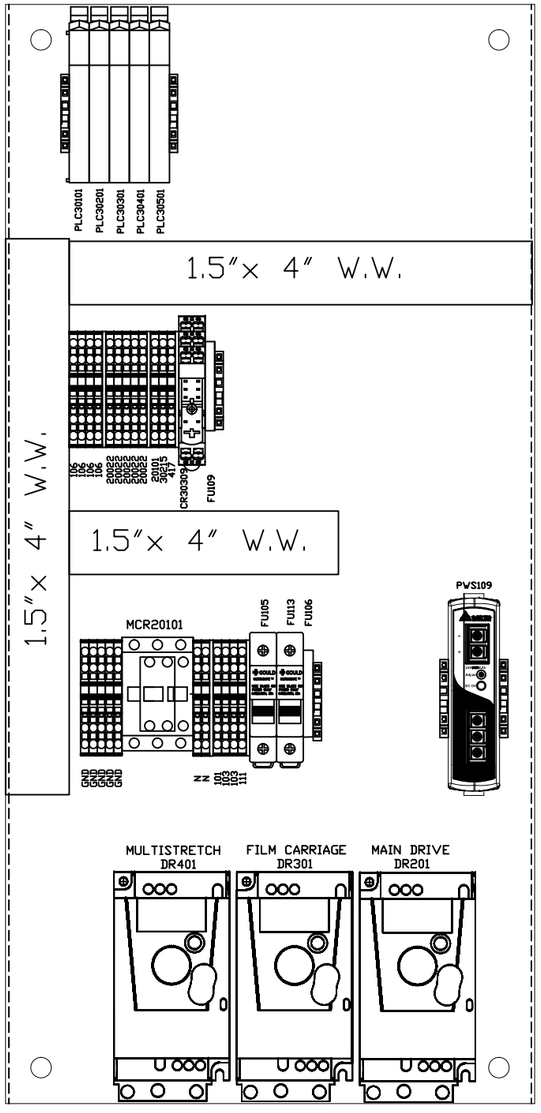
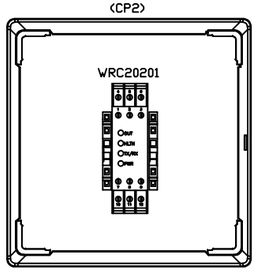




TAGS	QTY	SUB	ASSYCODE	MFG	CATALOG
AH30310	1		729175	AB	EC-B24D3P1
CR30309	1		742987	PHOENIX	2903334
DR201 DR301 DR401	3		742975	B&R	8I44S100037.000-1
DS104	1		742978	EATON	P1-25/EA/SVB
FU113	1	*1	742985	EATON	C383FHMD
		*1	731039	LITTELFUSE	KLDR003
FU105	1	*1	742985	EATON	C383FHMD
		*1	731049	LITTELFUSE	KLDR015
FU109	1	*1	742986	PHOENIX	3211861
		*1	742989	DIGITKEY	283-2917-ND (BK/GMD-3-R)
FU106	1	*1	742986	PHOENIX	3211861
		*1	742988	DIGITKEY	283-2699-ND (BK/S506-2-R)
CBL101	1		738880	HARTFIEL	9-1051193
TB20115	1		738883	B & R	OTB6102.2110-01
TB20123	1		738894	B & R	OTB5104.2110-01
HMI20115	1		742974	B & R	4PPC70.0573-20B
PJ223 PJ323 PJ423	3		743142	B & R	8I0XC002.100.1
MCR20101	1	*1	742979	EATON	XTCE009B10TD
		*1	742980	EATON	XTCEXFAC20
PBLT20101	1	*1	742983	EATON	M22-DL-G
		*2	737822	EATON	M22-K10
		*1	742983	EATON	M22-DL-G
		*1	732103	EATON	M22-LED-G
ESLT20101	1	*1	742981	EATON	M22-PVL
		*1	737822	EATON	M22-K10
		*1	742982	EATON	M22-K01
		*1	742984	EATON	M22-LED-R
PLC30101	1	*1	731535	B & R	X20BR9300
		*1	742087	B & R	X20BM01
		*1	742088	B & R	X20TB12
PLC30501	1	*1	738900	B & R	X20CS1030
		*1	742083	B & R	X20BM11
		*1	742088	B & R	X20TB12
PLC30201	1	*1	742084	B & R	X20DIF371
		*1	742083	B & R	X20BM11
		*1	742082	B & R	X20TB1F
PLC30301	1	*1	742996	B & R	X20DO9322
		*1	742083	B & R	X20BM11
		*1	742088	B & R	X20TB12
PLC30401	1	*1	738899	B & R	X20PS2100
		*1	742087	B & R	X20BM01
		*1	742088	B & R	X20TB12
PWS109	1		742977	DELTA	DRP024V060W1AZ
R420	1		ANY	120 OHM	0.25 W
	6		742993	PHOENIX	3209578
	1		742994	PHOENIX	3209594
CBL30502	6		743145	HARTFIEL	THC50961
CBL20123	2		743144	HARTFIEL	THC50967

NOTE:
BACK PANEL INSTALLED
INSIDE TOWER UNIT



TAGS	QTY	SUB	ASSYCODE	MFG	CATALOG
WRC20201	1	*1	741591	CERVIS	WSGI-8243
		*1	731782	CERVIS	SMART-901R-24V-WSGI-8243 (3175124)
		*1	729265	CARLON	E987R (105436)
		*2	740238	LAPP	S2509 (1578387)
		*10	098087	BELDEN	8489 18/4C
		*1	741594	OMEGA	3FAL1 (1992537)
		*2	741595	CH	XBA3ES35C (2243439)

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DWG TITLE
FLEX (STANDARD) HPS/LPS ENCLOSURES AND PANEL AND BOM

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FIELD FRAME BOM

TAGS	QTY	SUB	ASSYCODE	MFG	CATALOG
MTR202 MTR302	2		SEE	MECHANICAL	BOM
PRS30206	1	*1	SEE	LISTED	OPTIONS
		*1	712551 (LPS)	SICK	1040780/IME12-08NPSZC0S
		*1	728707 (HPS)	SICK	1041046/IME30-20NPSZC0S
		*1	738870	MURR	7000-12221-0140500
CBL20204	1	*10	098087	BELDEN	8489 18/4C
CBL401	1	*0	739676	LUTZE	111371
CBL201 CBL301	2	*0	730915	SOUTH WIRE	16/4 SLEOOW
CBL115	1	*0		IGUS	CF10-10-03

FIELD CARRIAGE BOM

TAGS	QTY	SUB	ASSYCODE	MFG	CATALOG
CBL/GS20101	1		732053	MURR	DEV45 335255
PLUG50101 PLUG50102	2		732026	MURR	M12-PLUG-PA
CBL/PRS30209	1		732050	MURR	7000-40021-2240100
CBL/PRS417	1		743147	MURR	7000-40121-2240060
CBL/PRS30205 CBL/PRS30207	2		732049	MURR	7000-40121-2240100
PJ50100	1		732045	MURR	8000-88510-3980500
MTR402 SOL115	2		SEE	MECHANICAL	BOM
GS20101	1		739147	SICK	1059505/RE21-SAC
LS30211	1		737310	TELEMECANIQUE	XEP4E1FDA454J03
PE30209	1	*1	SEE	LISTED	OPTIONS
		*1	729603 (STANDARD)	SICK	1025905/WT18-3P420
		*1	729206 (TIME DELAY)	SICK	1027753/WTB27-3F2411
		*1	731972 (DARK LOAD)	SICK	1019229/WT34-B410
		*1	731971 (DARK LOAD TIME DELAY)	SICK	1019230/WT34-B420
		*1	730312 (LONG RANGE)	SICK	1016933/WT24-2B410
PRS417	1		731785	IFM	IG6083
PRS30205 PRS30207	2		731955	SICK	1041033/IME30-15BP0-ZC0K

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FLEX (STANDARD) HPS/LPS MACHINE FIELD AND CARRIAGE BOM

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FLEX (STANDARD)
HPS/LPS
SPARE PAGE

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FLEX (STANDARD)
HPS/LPS
SPARE PAGE

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FLEX (STANDARD)
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Mechanical Drawings

Download the mechanical drawings for your particular model on the Orion Webpage.
http://www.orionpackaging.com/landing/flex-manual-download-S/