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Contour™ Series S-75 Shrink-Wrapper with Tray Stacker

Service Manual

M306009

H.P. Hood
Winchester, VA

Douglas Machine Inc.

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Section 1: Safety

- General Safety
- Recognizing Safety Precautions
- Locking Out the Machine
- Safety Circuits
- Interpreting the Light Column
- Energy Isolating Device Location Floor Plan

General Safety

Guidelines

- The basic safety rules serve as a guide for proper operation of Douglas packaging equipment. All personnel who work with this machine should learn this information.
- The buyer must follow all procedures and precautions. If personnel must deviate or change from the original specifications, he/she should establish appropriate procedures for the continued safe operation of the machine.
- We design and manufacture packaging equipment with due consideration and care for generally accepted safety standards. Proper and safe operation of this equipment depends on using sound and prudent operating, maintenance, and servicing procedures under properly trained supervision.

Safety Symbols

This unsafe practice will result in severe injury or death. The use of the word **Danger** always signifies an immediate hazard with a high likelihood of severe personal injury or death if all personnel do not follow instructions and safety precautions.

This unsafe practice could result in severe injury or death. The use of the word **Warning** signifies the presence of hazards or unsafe practices that could result in severe personal injury or death if all personnel do not follow instructions and safety precautions.

This unsafe practice could result in minor injury or property damage. The use of the word **Caution** signifies possible hazards or unsafe practices that could result in minor injury or damage to property or product if all personnel do not follow instructions and safety precautions.

Operating Zone

Personnel should establish an operating zone around all machines with a painted guard rail or warning stripe.

- Only the operator(s) and other authorized personnel should work within the operating zone during machine operation.
- Do not keep tools or other equipment within the operating zone.

Installation

Only trained and authorized personnel should install electric and pneumatic power sources. Installations must comply with all applicable codes and standards, including those established by OSHA (Occupational Safety and Health Administrations, 200 Constitution Ave. NW, Washington DC 20210).

Safety Inspection

Before Starting a Machine

- Install and operate all guards and safety devices.
- Clear all personnel away from the machine.
- Remove any materials, tools, or foreign objects away from the machine.
- Ensure the machine is in operating condition.
- Verify that all indicator lights, horns, pressure gauges, and other safety devices and indicators function correctly.
- Verify the incoming voltages are correct, as specified in the wiring diagrams.

After Shutdown

Turn off all pneumatic and electrical power.

General Operating Safety

- Do not operate this machine until you read and understand the operating instructions. You should thoroughly familiarize yourself with the machine and its controls.
- Never operate a machine with a safety device or guard removed or disconnected.
- Always wait for the machine to come to a complete stop before opening a guard door.
- Always wear safety glasses, hats, shoes, ear protection, or any other required safety equipment.
- Never remove warnings displayed on the machine. Replace any torn or old labels.
- Do not start the machine until warning all personnel in the area. We recommend that other personnel move outside the operating zone.
- Remove any foreign objects or tools from the operating zone before starting.
- Do not wear loose clothing, neckties, or necklaces near an operating machine. Restrain long hair. Do not wear gloves, watches, rings, bracelets, or other jewelry near an operating machine.
- Keep the operating zone free of obstacles that could cause you to fall against the machine.
- Never sit or stand on anything that could cause you to fall against the machine.
- Horseplay around a machine at any time is dangerous and prohibited.
- Know the emergency stop procedure for the machine.

⚠ CAUTION Use the emergency stop pushbuttons in an emergency.

- Turn pneumatic and electrical power off when the machine is not in use. Lock out the power source for maximum protection.
- Never operate the machine above specified needs, pressures, or temperatures.
- Never manually operate limit switches with the power on.
- Keep alert and observe indicator lights and warnings that appear on the machine.
- Never leave the machine unattended while in operation.
- Do not operate faulty or damaged equipment. Always perform proper service and maintenance procedures.
- Avoid placing fingers, hands, or any part of your body into the machine or near moving parts when control circuits are energized.
- Ensure a safe work surface, including proper guarding of platform areas and ladders.

Service and Maintenance Safety

- Do not service a machine without thorough qualifications. Ensure familiarity with the necessary service tasks.
- Never operate any controls while other people perform maintenance on the machine.
- Do not bypass a safety device.
- Always use the proper tool for the necessary service.
- Never open covers that house electrical components when the power is on.
- Only perform maintenance on a machine in motion when properly trained and required to do so. Take extreme care when directed to make adjustments on a machine in motion.
- Relieve all pneumatic pressure before performing maintenance or loosening connections on any pressurized system.
- Turn off all pneumatic and electrical power unless required for specific servicing. Lock out the power source for maximum protection.
- Turn off and lock out the power when replacing fuses.
- Do not enter a confined space without first checking for toxic fumes and providing standby personnel on the site.

Electrical Safety

- Only trained and authorized electricians should perform electrical/electronic maintenance and service.
- Always assume that the power is on; treat all conditions as live. This practice assures a cautious approach that may prevent an accident or injury.
- To remove the load from the circuit or equipment, open the disconnect or breaker and lock in the open position. Lock out the power source for maximum protection.
- Use the proper test equipment to ensure an open circuit. Check the test equipment at regular intervals.
- Give the capacitors time to discharge, or discharge the capacitors with care.
- You may need to troubleshoot on live equipment. Under special circumstances, take the following precautions:
    - Clear all tools and personnel away from area.
    - Take extra safety measures in damp areas.
    - Be alert and avoid any outside distractions.
- Clear all personnel away from the machine before applying power to any equipment.
- Open control panel doors only when checking out the electrical equipment or wiring. After closing the panel door, ensure the disconnect handle mechanism functions properly.
- Close all covers on the junction panels.
- Ground and overload protect all electrical equipment.
- Confine all electrical connections within a sealed junction box.

Pneumatic Safety

- Never operate a pneumatic system unless covers, safety devices, and indicators are operating and in place.
- Never operate a pneumatic system above the specified pressure.
- Never loosen any pneumatic connection when the system is under pressure.
- A pneumatic system retains the pressure to complete its intended motion even after the power is off. Take care to avoid injury.

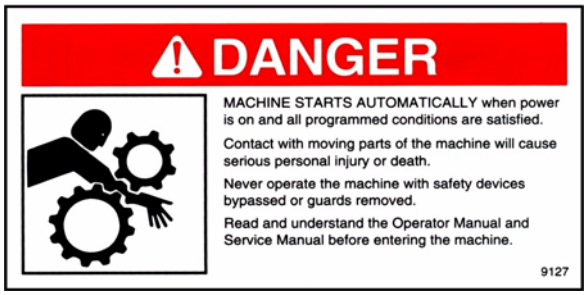
Cleaning Safety

- Do not use toxic or flammable solvents to clean a machine.
- Lock out pneumatic and electrical devices prior to cleaning a machine.
- Keep electrical panel covers closed and powered off when washing a machine. Lock out the power source for maximum protection.
- Always clean up spills around the machine as soon as possible.
- Never clean a machine in operation.
- All connections in the cleaning circuit should be tight to avoid contact with hot water or cleaning solutions.
- For a cleaning cycle controlled from a remote or automated control center, establish fail-safe procedures to avoid automatic start-up while servicing equipment.
- On equipment that includes runways, close and latch all covers before starting the cleaning cycle.

Recognizing Safety Precautions

The machine uses the following color-coded labels to warn the operator of different levels of machine hazards. Always pay attention to all safety labeling used on the machine.

Red means **Danger** and indicates immediate hazards that will result in severe personal injury or death. You will find this on any guard door that can be opened without a tool.



Orange means **Warning** and indicates hazards that could result in severe personal injury or death. You will find this mainly at product exit and entry points.

Yellow means **Caution** and indicates hazards that could result in minor personal injury, product, or property damage.

Lightning Bolt means **Caution** and indicates that the voltage in the electrical panel is 120 volts or more.

Heat Tunnel Safety Precautions

Film operation will expose you to a number of hazards. The film wrapped around the product requires heat to shrink and seal it. There are many areas on this machine where the temperatures are high enough to cause severe burns.

Another potential temperature hazard is using aerosol spray cans around the heat tunnel. Some canisters use highly flammable propellant. The temperatures inside the tunnels and especially the heater elements could be hot enough to ignite those propellants and cause an explosion.

Be careful and wait for the tunnel to cool down completely before cleaning or performing maintenance.

⚠WARNING Normal operating temperatures of this machine could cause severe burns.

Allow for sufficient cool down time after electrically disconnecting this machine before any adjustments or maintenance procedures are performed.

⚠WARNING A tripped overload clutch will allow machine parts to move when a jam is cleared and can result in serious personal injury.

Film Drive Safety Precautions

Be sure to practice proper safety procedures when reaching into the machine for cleaning or service.

Use extra caution when working around the film cutting assembly. The knife used for cutting the film is very sharp. It is very easy to lose track of the knife location while working around the cutter assembly.

Be sure all safety devices are working properly when threading the film through the machine.

Locking Out the Machine

Please refer to your facility's safety literature for specific lockout/tagout procedures.

Figure 1.1: Main Disconnect

The lockout device contains a switch designed to lock out electrical energy going to the machine when the switch is turned off. A locking device can be placed on the disconnect handle when machine lockout is necessary. This prevents the machine from starting.

Air Pressure Monitor

Figure 1.2: Air Pressure Monitor

The air pressure monitor will shut down the machine operation if the air pressure drops below 75 psi.

An inline psi gauge on the air pressure monitor shows the incoming psi setting. After the air pressure has returned to its standard operating pressure, press the machine reset pushbutton.

Press the yellow air disconnect button near the air pressure monitor to disrupt the air supply to the machine.

Safety Circuits

Theory of Operation

The safety relay is designed to monitor a double electrical circuit that surrounds the entire machine. The circuitry within the safety relay will monitor the safety circuit and will open up if either circuit is broken. The safety circuit is separate from and operates independently of the PLC.

If the machine is stopped, due to a fault or a jam, the PLC sends information to the display, which shows the proper message.

Emergency Stop Pushbuttons

Figure 1.3: Emergency Stop Pushbutton

E-Stop pushbuttons are one of the main safety features of this machine. Each switch is part of a dual safety E-Stop circuit.

E-Stop pushbuttons are located on the main control panel and other strategic points around the machine, as indicated on the machine floor plan in this manual.

Electrical power to safety-related components, such as solenoid valves for air cylinders and motor starters or contactors, is interrupted when the safety relay opens. Disconnecting power to the output cards prevents their corresponding components from operating.

E-Stop switches are not intended for routine cycle stops. They should only be used for emergencies: life, limb, or major machine damage.

The E-Stop switches also dump a portion of the machine's air supply. Machine components plumbed with a red airline are connected to the controlled air system.

Guard Door Interlock Switches

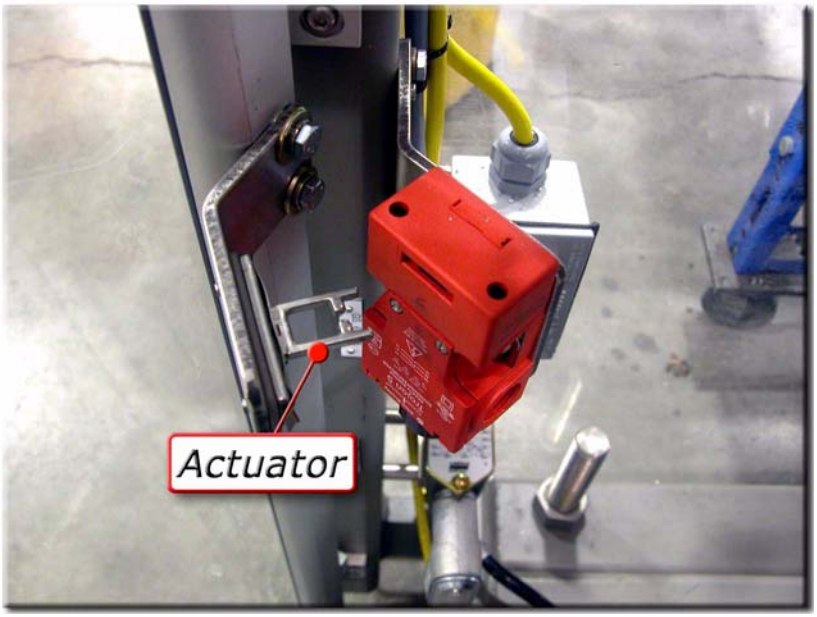


Figure 1.4: Guard Door Interlock Switch

A guard door interlock switch is mounted on any guard panel that can be opened without the use of a tool. If either set of contacts open, the relay opens and immediately stops the machine. This protects the operator from the moving parts of the machine and reduces the possibility of injury.

Under normal conditions, always cycle stop the machine before opening a perimeter guard door. If not, the machine will encounter an E-Stop condition, which will bring the machine to an immediate uncontrolled stop.

Each guard door switch controls two parallel contacts. The guard door switches operate in series to surround the machine with two series circuits. These circuits are monitored by a safety relay.

To close the safety circuit, the actuator must be inserted into the switch and the door handle rotated 180 degrees. This secures the handle to the post.

Do not climb into the machine without locking out the main disconnect switch. These switches are designed to prevent the machine from starting, not for stopping the machine. Always use the cycle stop pushbutton to stop the machine.

Interpreting the Light Column

Figure 1.5: Light Column

The stackable light column contains three lights to signal the operator of a machine condition.

Lights

The lights signify the following:

- Red - The machine has a shutdown fault condition and the machine is not ready.
- White - The machine is in a non-shutdown condition (low product or downstream backups).
- Green - The machine is running.

A flashing light takes precedence over a solid condition.

Energy Isolating Device Location Floor Plan

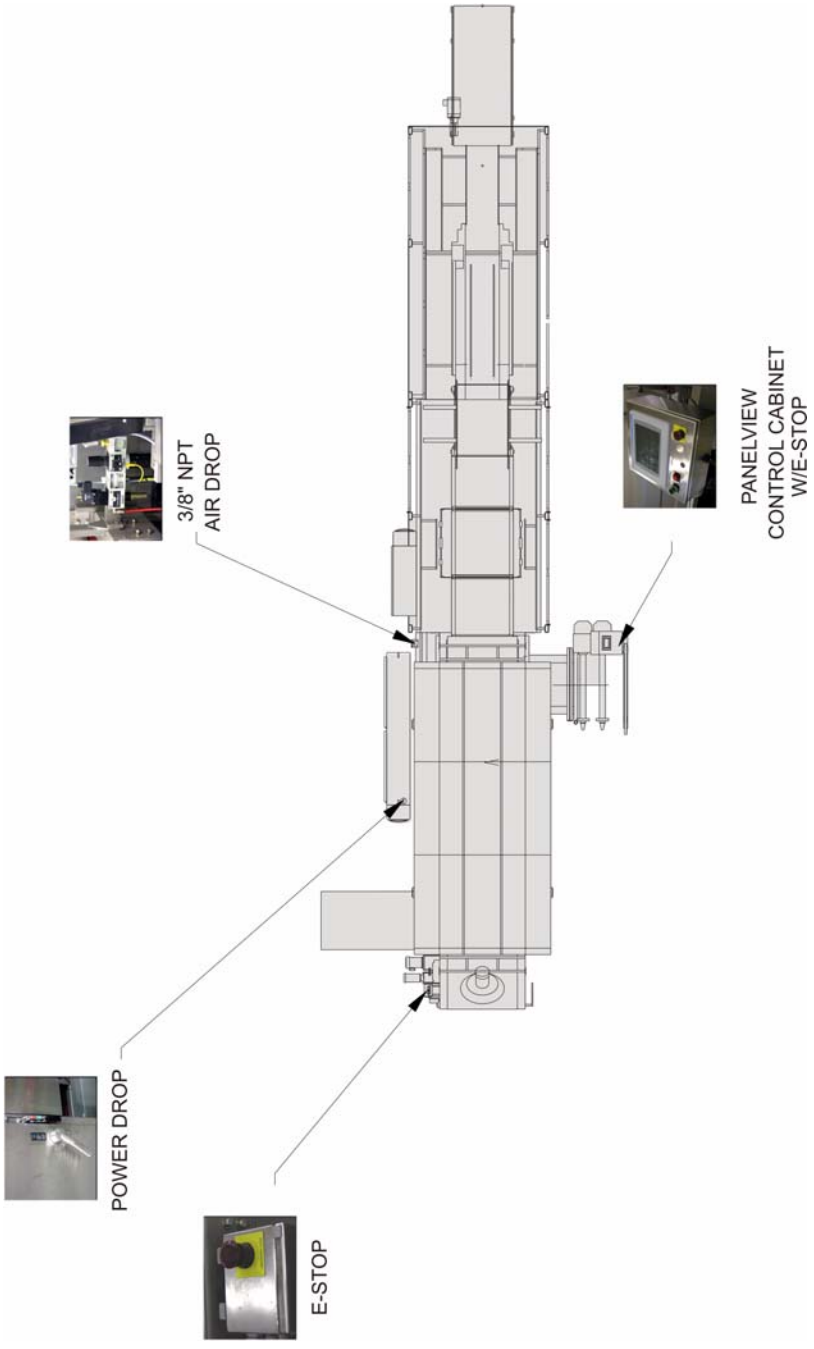


Figure 1.6: Energy Isolating Device Location Floor Plan

Section 2: Getting Started

- Inspection
- Installation

Inspection

- We have carefully inspected your Douglas packaging machine before shipment. We have crated your machine securely to ensure delivery without damage or loss of component parts.
- Upon delivery, please inspect your machine immediately for any visible damage or missing parts. Should you discover any damage or shortages, record these on the freight bill and have the delivery driver sign it.
- Uncrate the equipment as soon as possible. If you find any damage, notify the delivery carrier to return for damage inspection. The carrier will provide you with an inspection form. You should file a claim with the carrier, as they maintain responsibility for any damage that occurs during shipping.
- Please notify us if you encounter any damaged shipments. This allows us to provide you and our other customers with the best service possible.

Technical Support Department

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E-mail:	service@douglas-machine.com

Installation

You must follow these four steps to install your Douglas packaging machine: *uncrating/assembly*, *alignment*, *leveling*, and *electrical supply*.

Uncrating/Assembly

1. After you unload your machine from the delivery vehicle, place the crated machine in its permanent location before removing the shipping crate.

Do not remove the bottom skid until you have moved the machine within a few feet of the exact production location. This skid makes it easier to move the machine. Floor plan drawings for machine placement are measured from the machine frame and not the guard package.

2. Raise the unit from the skid. The recommended lift points consist of reinforced areas on the underside of the main frame members, near the legs.
3. Affix any parts that may have been removed and attached to either the inside of the crate, the working surface of the machine, or the skid runners.

Alignment

For proper machine alignment, reference infeed, discharge, and all peripheral equipment, consult your plant engineer for specific instructions. This will assure alignment according to your plant's specific needs.

Leveling

1. Begin leveling at the infeed or discharge end of the machine, depending on any conveyors already in place.

Consider the height and adjustments for the machine to match infeed/discharge conveyors.

2. Slide the first frame into the proper position. Level the end of the frame to match the conveyor.
3. Use the leg adjustments to level the frame.
4. If necessary, replace the line shaft. Slide the next frame into place and adjust the matching end flush/true with the preceeding leveled frame.
5. Finish leveling the frame. Bolt the frames together.
6. Slide the next frame into position. Repeat the leveling and bolting procedure.

Continue the leveling and bolting procedure until all frames are assembled and in place.

7. Check the frames in random locations to ensure level frames after bolting.
8. After leveling the machine, check all transfer decks for proper alignment and all guard doors for free-swinging movement.

⚠ CAUTION Do not adjust the guard doors until after leveling the machine.

Electrical Supply

1. Supply electrical power to the machine at the control cabinet.
2. Draw feed lines through any of the knockout holes. Refer to the electrical drawings on the CD that accompanies the operator manual for specific electrical details.

Section 3: Operator Controls

- Operator Controls
- Film Threading and Splicing Procedure
- Machine Operation
- Production Operation

Operator Controls

Main Control Panel

Figure 3.1: Main Control Panel

Features

The **Machine Start** pushbutton activates the machine.

The **Cycle Stop** pushbutton brings the machine to a controlled stop in a predetermined position.

The **Emergency Stop** pushbutton provides safety for personnel.

Emergency Stop operation:

- Press the E-Stop pushbutton to stop the machine. The pushbutton illuminates while in the Stop position. The *Emergency Stop* message appears on the message display bar after pressing the pushbutton.
- Pull the E-Stop pushbutton out and press the reset pushbutton to clear the message and restart the machine. The E-Stop system immediately de-energizes the drive motors and clutches. Drive brakes stop the machine.

Main Control Panel (continued)

⚠ CAUTION Use the emergency stop pushbutton only in an emergency.

The tunnel chain will stop when the emergency stop pushbutton is pressed. Start to move the tunnel chain as soon as possible to avoid product and chain damage.

Logo Screen

Figure 3.2: Logo Screen

Features

The **Operator Controls** button advances the current screen to the Operator Controls Screen.

The **PView Config** button advances the current screen to the Allen-Bradley Configuration Screen. Refer to the Allen-Bradley manual provided for further information.

Operator Controls Screen

Figure 3.3: Operator Controls Screen

Features

The **Message Display Bar** indicates current faults and machine status messages.

The **Recipe Display Bar** indicates the recipe to which the screen settings apply.

The **Cycles/Min** display indicates the current machine speed.

The **Case Count** display indicates the current number of cases produced. Press the Case Count Reset pushbutton on the Maintenance Screen to reset the count.

The **Current Position** display indicates the current machine position in degrees.

The **Mode Jog/Run** selector switch determines the operating mode of the drive motor.

- In the *Jog* position, the drive motor runs with the Machine Start pushbutton activated and stops when deactivated.
- In the *Run* position, the drive motor runs continuously with the Machine Start pushbutton activated.

The **Tunnel Start** pushbutton activates the tunnel drive.

Operator Controls Screen (continued)

The **Cool Down Stop** pushbutton provides a sequenced shutdown to the tunnel. The heaters shut down first while the blower fan and belts continue to run until the tunnel has cooled sufficiently.

The **Metering Off/Auto** selector switch deactivates and activates the metering system. Set the selector switch to *Auto* to start the metering process.

The **Metering Manual Cycle** pushbutton initiates one cycle of the metering system.

The **Machine Reset** pushbutton resets the machine for operation following a fault. The existing fault condition appears on the message display bar. After correcting the fault, pressing the pushbutton clears the fault message and allows for machine restart.

The following buttons advance the current screen to the corresponding screen:

- **Data** (Data Collection Main Screen)
- **Help**
- **Faults/Alarms** (Data Current Faults Screen)
- **Logo**
- **Film Controls**
- **Maintenance**
- **Recipe Edit** (Recipe Screen)

Film Controls Screen

Figure 3.4: Film Controls Screen

Features

The **Message Display Bar** indicates current faults and machine status messages.

The **Recipe Display Bar** indicates the recipe to which the screen settings apply.

The **Cycles/Min** display indicates the current machine speed.

The **Case Count** display indicates the current number of cases produced. Press the Case Count Reset pushbutton on the Maintenance Screen to reset the count.

The **Current Position** display indicates the current machine position in degrees.

The **Film Drive Off/On** selector switch controls the operation of the film drive.

- In the *Off* position, the selector switch disables film delivery. If running the machine when film delivery is not necessary, set the Tunnel Heat Off/Auto selector switch, located on the Maintenance Screen, to the Off position.
- In the *On* position, the selector switch allows film delivery to the product.

Film Controls Screen (continued)

The **Film Drive Load/Run** selector switch, placed in the *Load* position, removes the brake tension from the film rolls. This action causes the rolls to be free-rolling which aids in initial threading and allows the use of the Film Drive Jog pushbutton. The selector switch is placed in the *Run* position for machine operation.

The **Film Drive Manual Cycle** pushbutton cycles the film drive without product present.

The **Film Source Roll 1/Roll 2** selector switch determines the shrink-wrap roll for machine use.

The **Splice Bar Heat** pushbutton activates the splice bar heater. A timer in the program automatically turns the splice bar heat off.

The following buttons advance the current screen to the corresponding screen:

- **Data** (Data Collection Main Screen)
- **Help**
- **Faults/Alarms** (Data Current Faults Screen)
- **Operator Controls**
- **Maintenance**

Tunnel Controls Screen

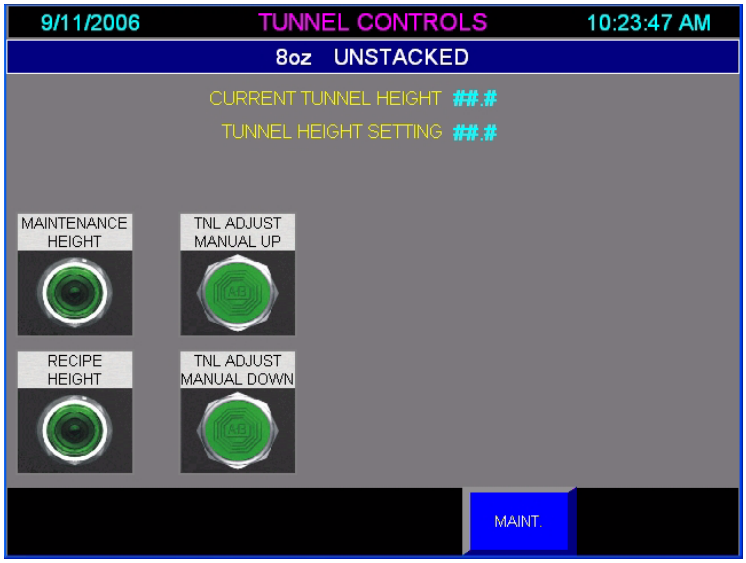


Figure 3.5: Tunnel Controls Screen

Features

The **Recipe Display Bar** indicates the recipe to which the screen settings apply.

The **Current Tunnel Height** display indicates the current tunnel height.

The **Tunnel Height Setting** display indicates the programmed tunnel height of the current recipe.

The **Maintenance Height** pushbutton automatically raises the tunnel to its maximum height.

The **Recipe Height** pushbutton automatically adjusts the height of the tunnel to the programmed height of the current recipe. The tunnel must be at the recipe height to run product.

The **Tunnel Adjust Manual Up** pushbutton raises the tunnel height.

The **Tunnel Adjust Manual Down** pushbutton lowers the tunnel height.

The **Maintenance** button advances the current screen to the Maintenance Screen.

Servo Maintenance Screen

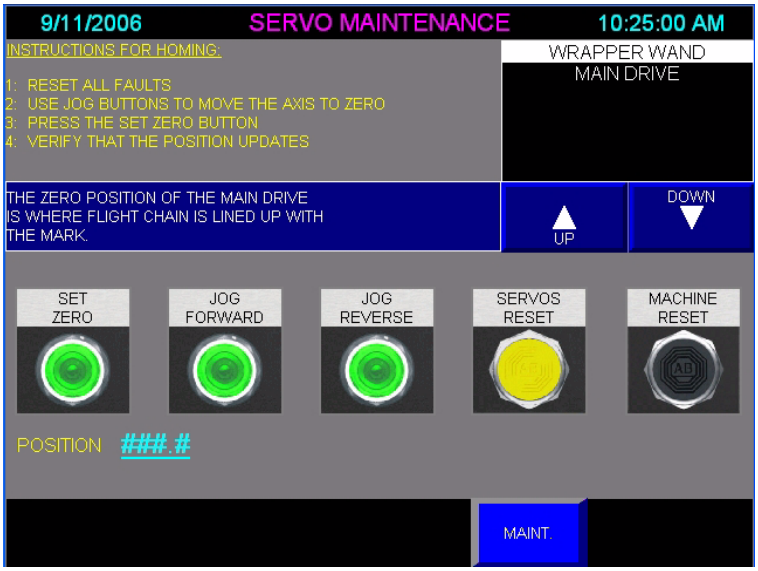


Figure 3.6: Servo Maintenance Screen

Features

Instructions for homing each servo on the machine are displayed on the top corner of this screen.

Use the **Up** and **Down** buttons to select one of the following servos for homing:

- Wrapper Wand
- Main Drive

The zero position description for the highlighted servo will appear in the blue box below the general homing instructions.

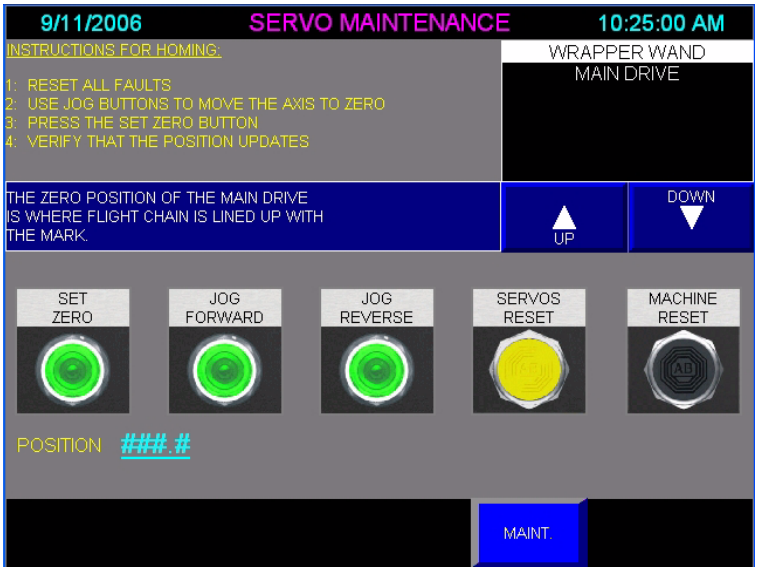
The **Set Zero/Zero Button Inactive** pushbutton sets the zero position for the selected servo. The pushbutton will illuminate and read *Set Zero* when pressed. The pushbutton will be disabled and read *Zero Button Inactive* if Steps 1 or 2 of the homing procedure have not been completed.

The **Jog Forward** pushbutton jogs the selected servo forward.

The **Jog Reverse** pushbutton jogs the selected servo backward.

The **Servos Reset** pushbutton resets the servo motors following a servo fault. Use this pushbutton only after all other servo recovery efforts have failed.

Servo Maintenance Screen (continued)



The **Machine Reset** pushbutton resets the machine for operation following a fault. The existing fault condition appears on the message display bar. After correcting the fault, pressing the pushbutton clears the fault message and allows for machine restart.

The **Position** display indicates the current machine position.

The following button advances the current screen to the corresponding screen:

- **Maintenance**

Maintenance Screen

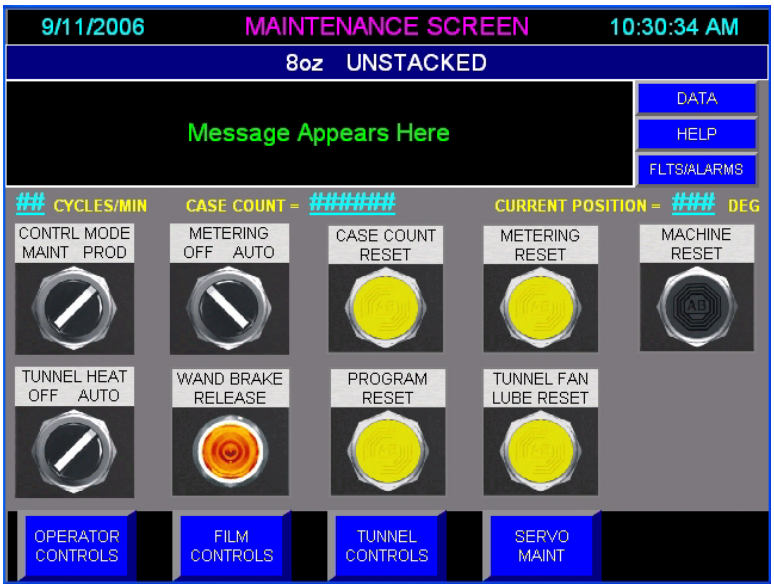


Figure 3.7: Maintenance Screen

Features

The **Message Display Bar** indicates current faults and machine status messages.

The **Recipe Display Bar** indicates the recipe to which the screen settings apply.

The **Cycles/Min** display indicates the current machine speed.

The **Case Count** display indicates the current number of cases produced. Press the **Case Count Reset** pushbutton on this screen to reset the count.

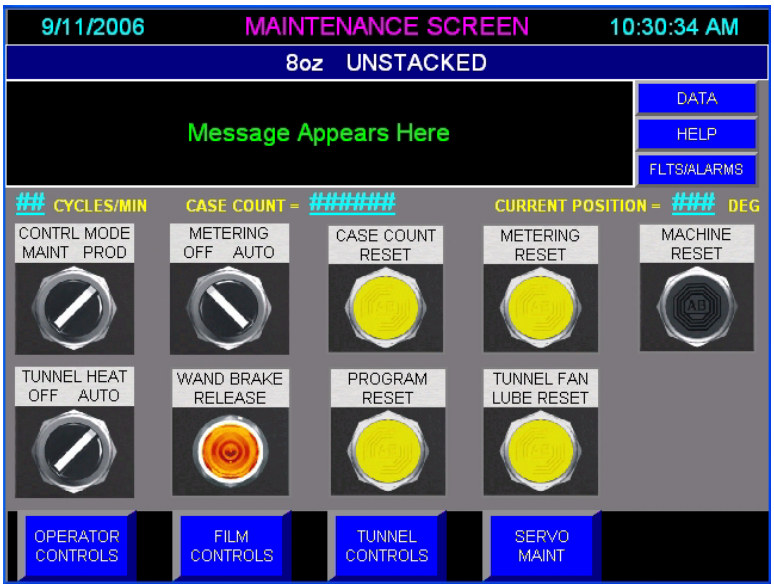
The **Current Position** display indicates the current machine position in degrees.

The **Control Mode Maintenance/Production** selector switch allows the machine to operate separately from the upstream and downstream functions when the *Maint* mode is used and allows for machine production when the *Prod* mode is used.

The **Tunnel Heat Off/Auto** selector switch activates or deactivates the tunnel heaters. Set the selector switch to *Auto* for wrapper operation. Set the switch to *Off* if the film drive is turned off.

The **Metering Off/Auto** selector switch deactivates and activates the metering system. Set the selector switch to *Auto* to start the metering process.

Maintenance Screen (continued)



The **Wand Brake Release** pushbutton releases the wrapper wand when safety circuit(s) are open, allowing the wand to move freely.

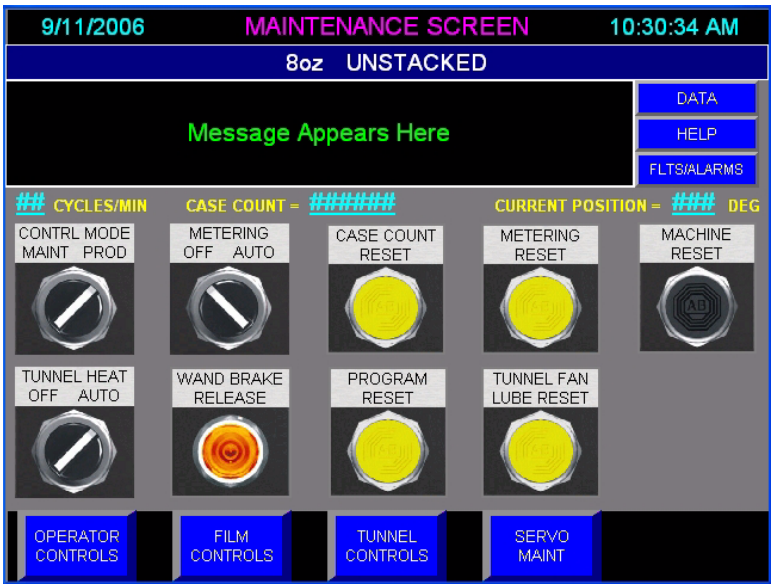
The **Program Reset** pushbutton resets all servo programs.

The **Metering Reset** pushbutton resets the metering system following a fault.

The **Tunnel Fan Lube Reset** pushbutton resets the tunnel blower lube counter system. A *Tunnel Blower Lube Fault* message will appear on the message display bar after a preset number of hours of operation, informing personnel to lubricate the tunnel fan. Failure to lubricate might result in a premature failure of the bearings. Press the pushbutton to clear the message.

The **Machine Reset** pushbutton resets the machine for operation following a fault. The existing fault condition appears on the message display bar. After correcting the fault, pressing the pushbutton clears the fault message and allows for machine restart.

Maintenance Screen (continued)



The following buttons advance the current screen to the corresponding screen:

- **Data** (Data Collection Main Screen)
- **Help**
- **Faults/Alarms** (Data Current Faults Screen)
- **Operator Controls**
- **Film Controls**
- **Tunnel Controls**
- **Servo Maintenance**

Help Screen

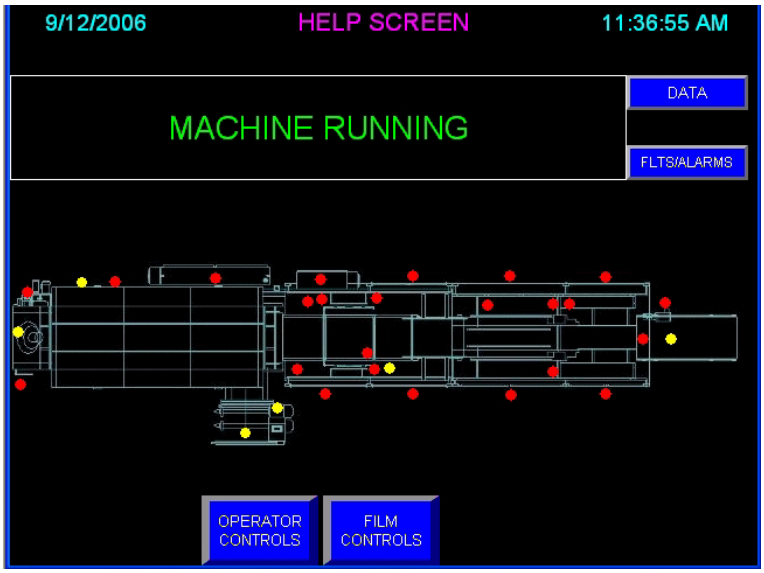


Figure 3.8: Help Screen

Features

The **Message Display Bar** indicates current faults and machine status messages.

A light will appear on the floor plan, indicating where the fault has occurred.

The following buttons advance the current screen to the corresponding screen:

- **Data** (Data Collection Main Screen)
- **Faults/Alarms** (Data Current Faults Screen)
- **Operator Controls**
- **Film Controls**

Recipe Screen

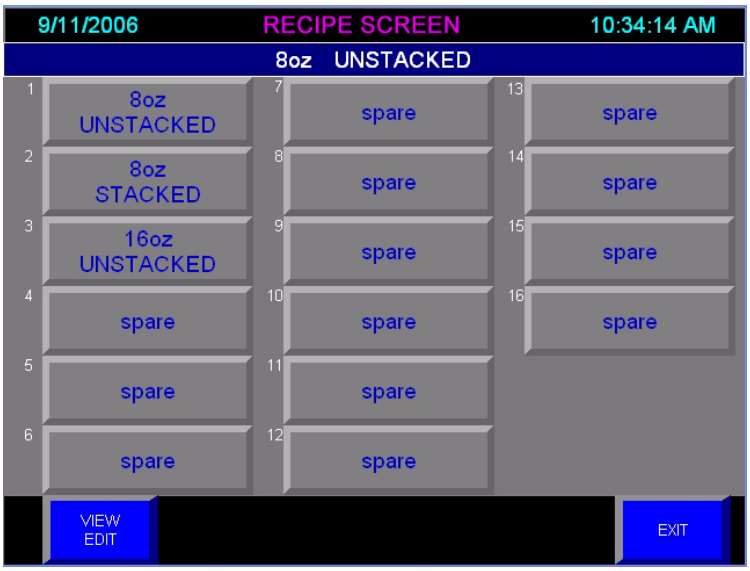


Figure 3.9: Recipe Screen

Features

A list of the available recipes appears on the screen. Press the button of the desired recipe until it is highlighted to electronically configure the machine to run the recipe.

The **Recipe Display Bar** indicates the recipe to which the screen settings apply.

The following buttons advance the current screen to the corresponding screen:

- **View Edit**
- **Exit** (Operator Controls Screen)

Enter Security Code Screen

Figure 3.10: Enter Security Code Screen

Features

The Enter Security Code Screen provides a keyboard to allow authorized personnel to perform protected edits and machine functions. Enter the password and press the arrow button to accept the password.

The following button advances the current screen to the corresponding screen:

- **Exit** (Previous Screen)

Screen Security

Figure 3.11: Screen Security - Example

A gray background indicates a protected edit is locked. A white background indicates a protected edit is unlocked.

Once providing the correct security code, all protected edits on all screens within the same security level (up to seven security levels may exist) will be accessible. They will remain unlocked until a non-secured screen (a screen that is not normally protected) is accessed for a predetermined time.

To edit a protected setting:

1. Press the cycle stop pushbutton on the main control panel if the setting to be changed affects a servo. Failure to do so will cause the machine to stop and a fault message will appear. It is unnecessary to cycle stop the machine if the setting to be changed is a PLS window or VFD-controlled conveyor speed.
2. Press the button of the desired setting to be changed.
3. A keypad will appear. Enter the new setting number followed by the arrow key.
4. If the Enter Security Code Screen appears, enter the password followed by the arrow key.
5. The edit screen will return, displaying the new setting.

To edit a protected PanelView function:

1. Press the locked PanelView function button or selector switch.
2. If the Enter Security Code Screen appears, enter the password followed by the arrow key.
3. The previous screen will appear. Press the (now unlocked) button or selector switch again to perform the Panel View function.

Edit PLS Timing 1 Screen

Figure 3.12: Edit PLS Timing 1 Screen

Features

The machine functions appearing in gray are password protected. To unlock the function, touch the desired button. Enter the security code, followed by the arrow key when the keypad appears. Refer to the Enter Security Code Screen for more information.

The **Recipe Display Bar** indicates the recipe to which the screen settings apply.

The **Current Position** display indicates the current machine position in degrees.

The **On, Off,** and **React ms** settings appear for viewing or editing the following functions:

- Machine Cycle Stop PLS 1
- PLS 2 - PLS 8

Edit PLS Timing 1 Screen (continued)

The following buttons advance the current screen to the corresponding screen:

- **Page Back** (Previous Edit Screen)
- **Page Forward** (Next Edit Screen)
- **Exit** (Recipe Screen)

Edit PLS Timing 2 Screen

Figure 3.13: Edit PLS Timing 2 Screen

Features

The machine functions appearing in gray are password protected. To unlock the function, touch the desired button. Enter the security code, followed by the arrow key when the keypad appears. Refer to the Enter Security Code Screen for more information.

The **Recipe Display Bar** indicates the recipe to which the screen settings apply.

The **Current Position** display indicates the current machine position in degrees.

The **On, Off,** and **React ms** settings appear for viewing or editing the following functions:

- PLS 9
- PLS 10
- Metering Enable PLS 11
- PLS 12
- Prod Out of Position PLS 13
- Film Vacuum Dump PLS 14
- Missing Film Check PLS 15
- Film Drive Enable PLS 16

Edit PLS Timing 2 Screen (continued)

The following buttons advance the current screen to the corresponding screen:

- **Page Back** (Previous Edit Screen)
- **Page Forward** (Next Edit Screen)
- **Exit** (Recipe Screen)

Edit Film Settings Screen

Figure 3.14: Edit Film Settings Screen

Features

The machine functions appearing in gray are password protected. To unlock the function, touch the desired button. Enter the security code, followed by the arrow key when the keypad appears. Refer to the Enter Security Code Screen for more information.

The **Recipe Display Bar** indicates the recipe to which the screen settings apply.

The **Dancer Bar Position** display indicates the current dancer bar position in degrees.

The settings appear for viewing or editing the following functions:

- Film Length (Inches)
- Film Position (Inches)
- Stop Position (Inches)
- Mark Position (Inches)
- Short Clear (Inches)
- Printed Film (Enabled or Disabled)
- Empty Film Roll Counter
- Dancer Bar Up Setpoint
- Dancer Bar Down Setpoint
- Dancer Bar Pressure (PSI)

Edit Film Settings Screen (continued)

The following buttons advance the current screen to the corresponding screen:

- **Page Back** (Previous Edit Screen)
- **Page Forward** (Next Edit Screen)
- **Exit** (Recipe Screen)

Edit Speed Settings Screen

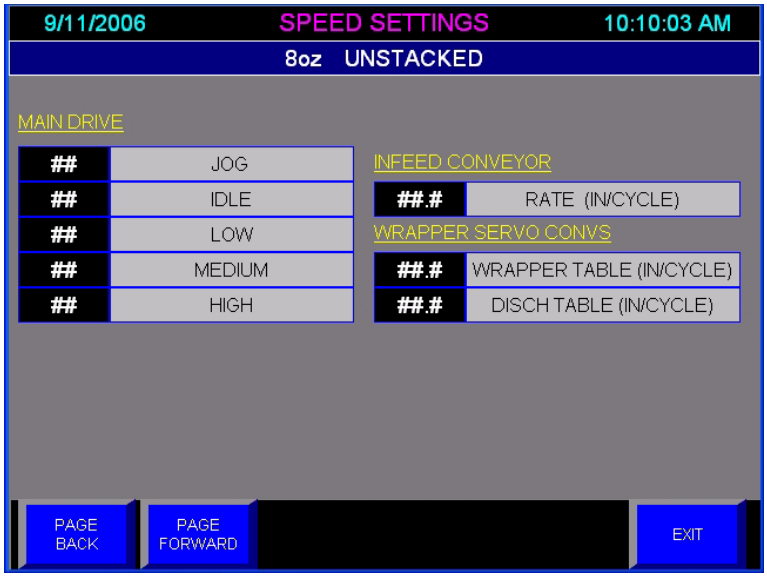


Figure 3.15: Edit Speed Settings Screen

Features

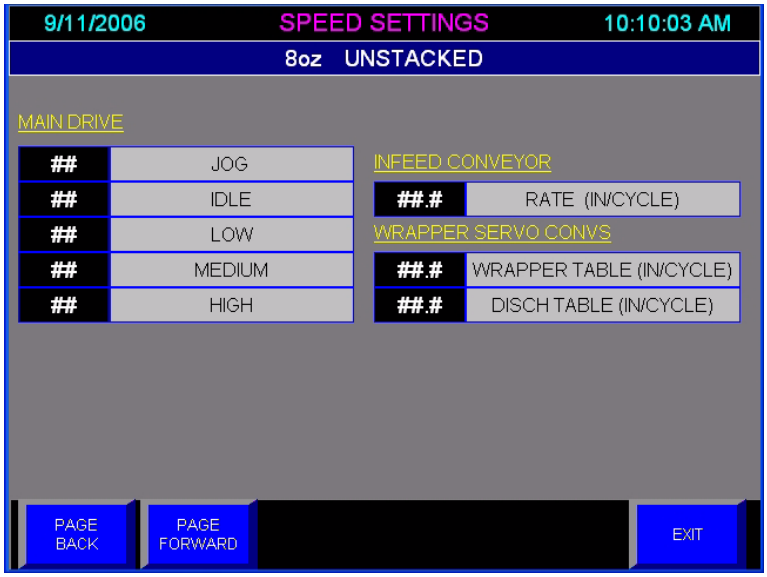
The machine functions appearing in gray are password protected. To unlock the function, touch the desired button. Enter the security code, followed by the arrow key when the keypad appears. Refer to the Enter Security Code Screen for more information.

The **Recipe Display Bar** indicates the recipe to which the screen settings apply.

The **Main Drive** settings appear for viewing or editing the following functions:

- Jog
- Idle
- Low
- Medium
- High

Edit Speed Settings Screen (continued)



The **Infeed Conveyor** setting appears for viewing or editing the following function:

- Rate (In/Cycle)

The **Wrapper Servo Conveyor** settings appear for viewing or editing the following functions:

- Wrapper Table (In/Cycle)
- Discharge Table (In/Cycle)

The following buttons advance the current screen to the corresponding screen:

- **Page Back** (Previous Edit Screen)
- **Page Forward** (Next Edit Screen)
- **Exit** (Recipe Screen)

Edit Miscellaneous Screen

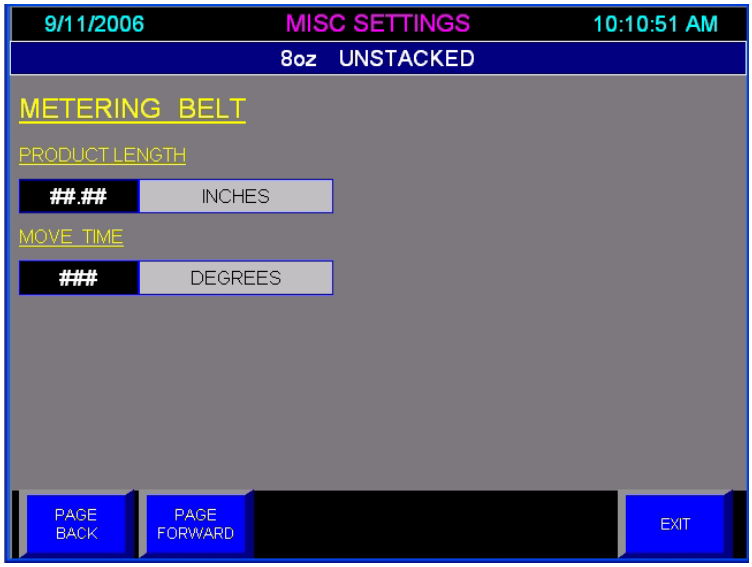


Figure 3.16: Edit Miscellaneous Screen

Features

The machine functions appearing in gray are password protected. To unlock the function, touch the desired button. Enter the security code, followed by the arrow key when the keypad appears. Refer to the Enter Security Code Screen for more information.

The **Recipe Display Bar** indicates the recipe to which the screen settings apply.

The **Metering Belt** settings appear for viewing or editing the following functions:

- Product Length (Inches)
- Move Time (Degrees)

The following buttons advance the current screen to the corresponding screen:

- **Page Back** (Previous Edit Screen)
- **Page Forward** (Next Edit Screen)
- **Exit** (Recipe Screen)

Edit Tunnel Settings Screen

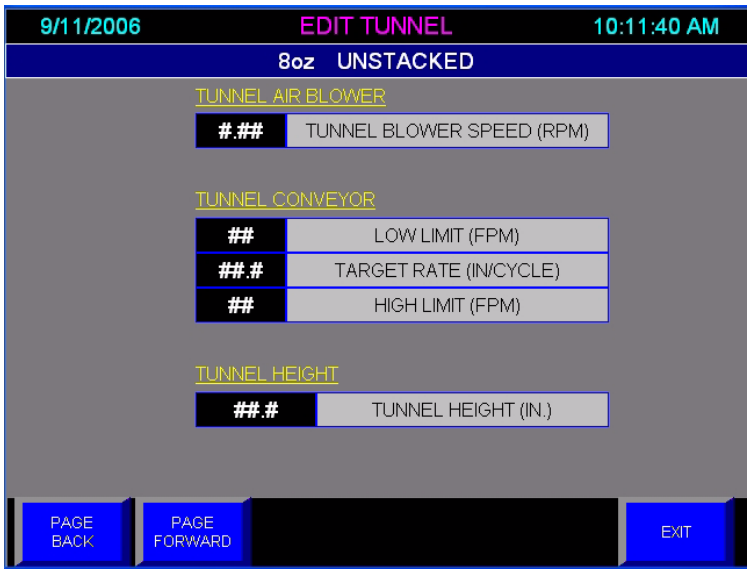


Figure 3.17: Edit Tunnel Settings Screen

Features

The machine functions appearing in gray are password protected. To unlock the function, touch the desired button. Enter the security code, followed by the arrow key when the keypad appears. Refer to the Enter Security Code Screen for more information.

The **Recipe Display Bar** indicates the recipe to which the screen settings apply.

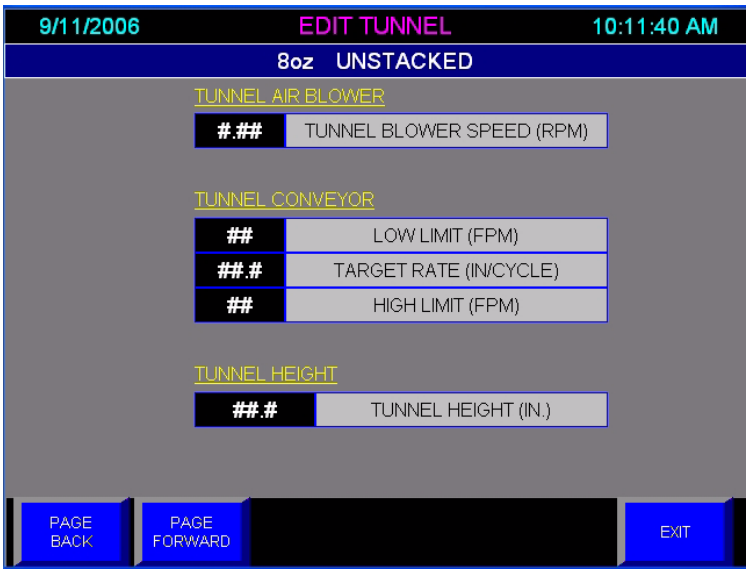
The **Tunnel Air Blower** setting appears for viewing or editing the following function:

- Tunnel Blower Speed (RPM)

The **Tunnel Conveyor** settings appear for viewing or editing the following functions:

- Low Limit (FPM)
- Target Rate (In/Cycle)
- High Limit (FPM)

Edit Tunnel Settings Screen (continued)



The **Tunnel Height** setting appears for viewing or editing the following function:

- Tunnel Height (Inches)

The following buttons advance the current screen to the corresponding screen:

- **Page Back** (Previous Edit Screen)
- **Page Forward** (Next Edit Screen)
- **Exit** (Recipe Screen)

Edit Temperature Screen

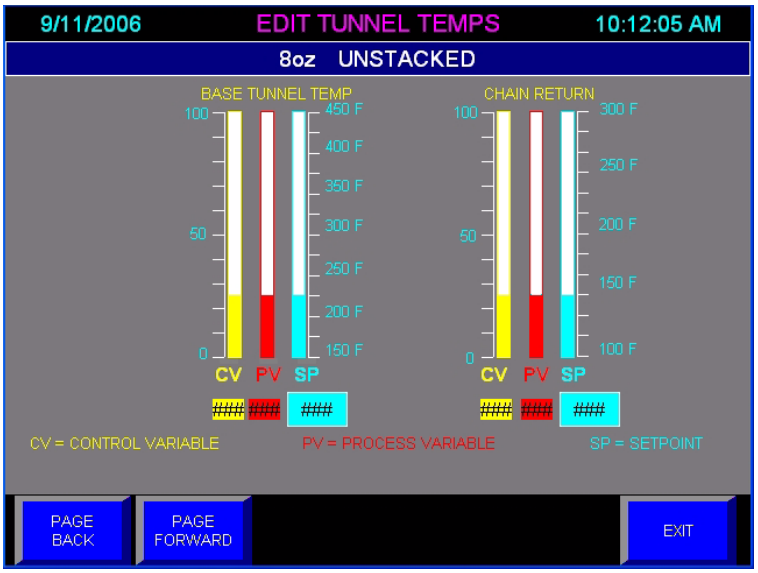


Figure 3.18: Edit Temperature Screen

Features

The **Recipe Display Bar** indicates the recipe to which the screen settings apply.

The **CV** (Control Variable), **PV** (Process Variable), and **SP** (Setpoint) settings are displayed for viewing the Base Tunnel Temperature and the Chain Return Temperature.

The following buttons advance the current screen to the corresponding screen:

- **Page Back** (Previous Edit Screen)
- **Page Forward** (Next Edit Screen)
- **Exit** (Recipe Screen)

Edit Cam Screen

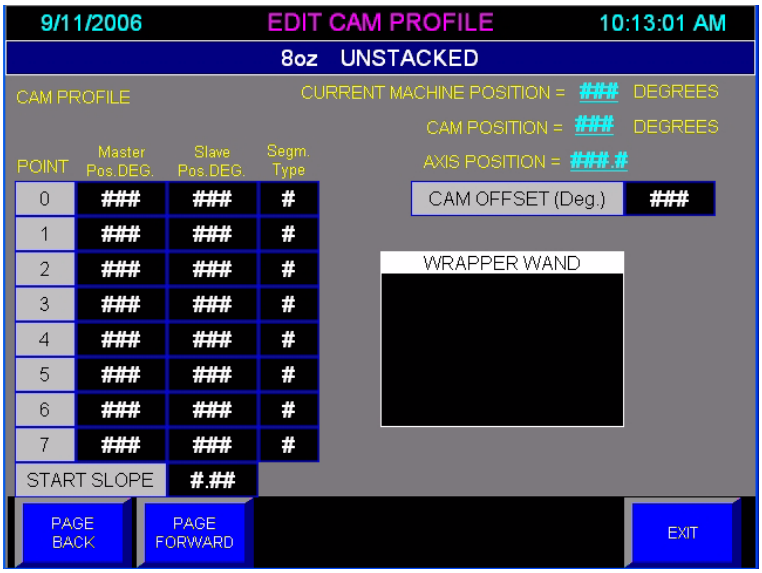


Figure 3.19: Edit Cam Screen

Features

The machine functions appearing in gray are password protected. To unlock the function, touch the desired button. Enter the security code, followed by the arrow key when the keypad appears. Refer to the Enter Security Code Screen for more information.

The **Recipe Display Bar** indicates the recipe to which the screen settings apply.

The **Current Machine Position** display indicates the current machine position in degrees.

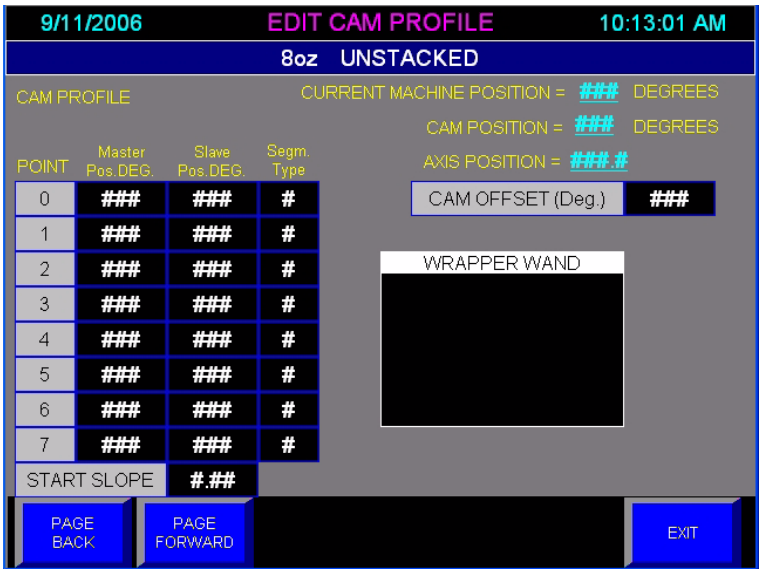
The **Cam Position** display indicates the current cam position in degrees.

The **Axis Position** display indicates the current axis position.

The **Master Position Deg., Slave Position Deg.,** and **Segment Type** appear for viewing or editing the Wrapper Wand Points.

The **Start Slope** and **Cam Offset (Deg)** settings appear for viewing or editing.

Edit Cam Screen (continued)



The following buttons advance the current screen to the corresponding screen:

- **Page Back** (Previous Edit Screen)
- **Page Forward** (Next Edit Screen)
- **Exit** (Recipe Screen)

Data Collection Main Screen

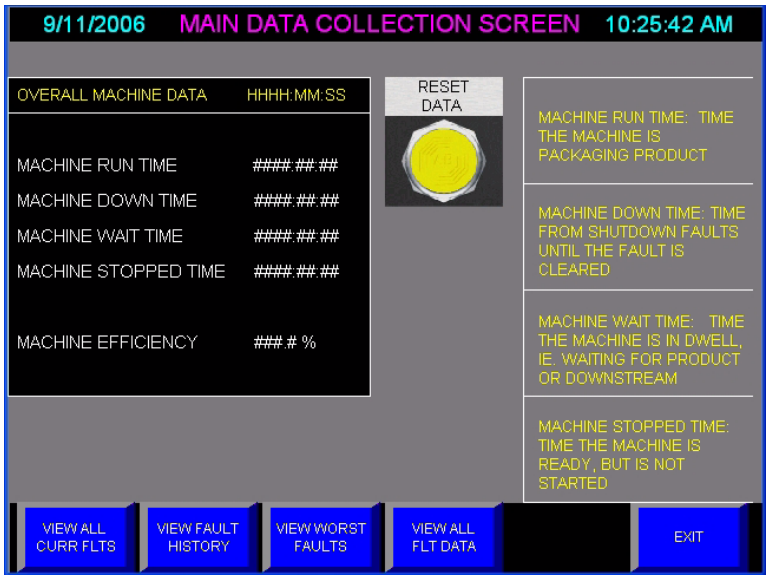


Figure 3.20: Data Collection Main Screen

Features

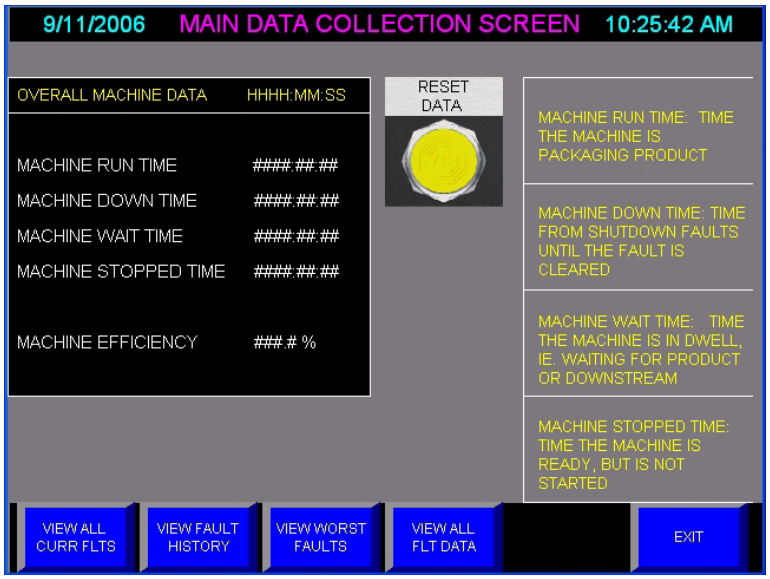
The screen allows personnel to view the following information:

- Machine Run Time
- Machine Down Time
- Machine Wait Time
- Machine Stopped Time
- Machine Efficiency (percent)

Each category, except machine efficiency, is explained on the right side of the screen. Machine efficiency is a percentage of the machine run time and machine down time.

The **Reset Data** pushbutton restarts the time counts listed on the screen.

Data Collection Main Screen (continued)



The following buttons advance the current screen to the corresponding screen:

- **View All Current Faults**
- **View Fault History**
- **View Worst Faults**
- **View All Fault Data**
- **Exit** (Previous Screen)

Data Current Faults Screen

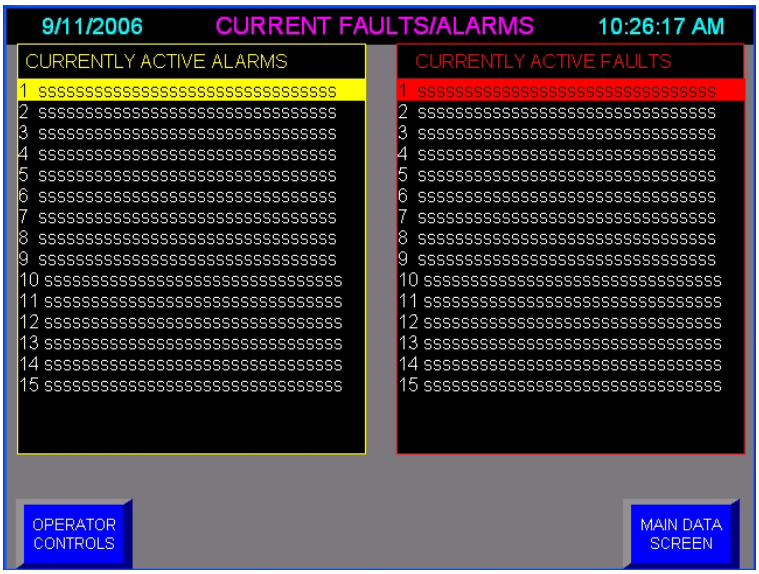


Figure 3.21: Data Current Faults Screen

Features

This screen displays the currently active alarms and currently active faults.

The following buttons advance the current screen to the corresponding screen:

- **Operator Controls**
- **Main Data Screen** (Data Collection Main Screen)

Data Fault History Screen

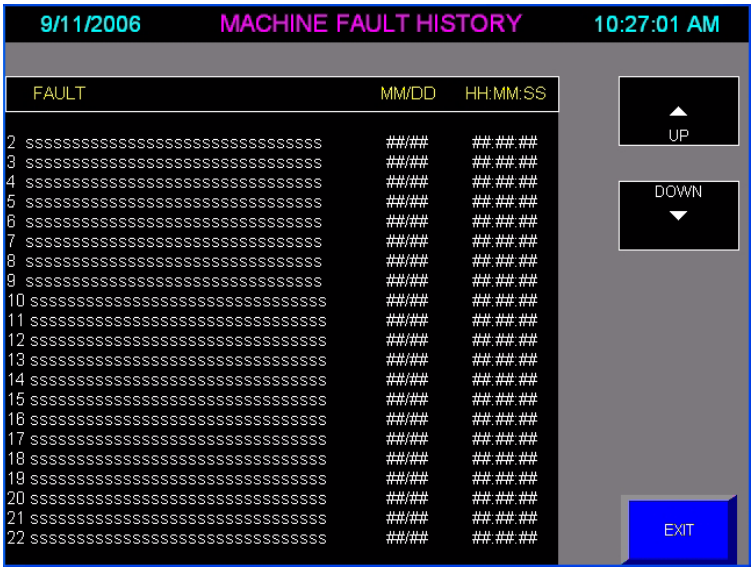


Figure 3.22: Data Fault History Screen

Features

This screen displays the machine fault history including the date and time.

Use the **Up** and **Down** buttons to scroll through the faults.

The following button advances the current screen to the corresponding screen:

- **Exit** (Data Collection Main Screen)

Data Worst Fault Time Screen

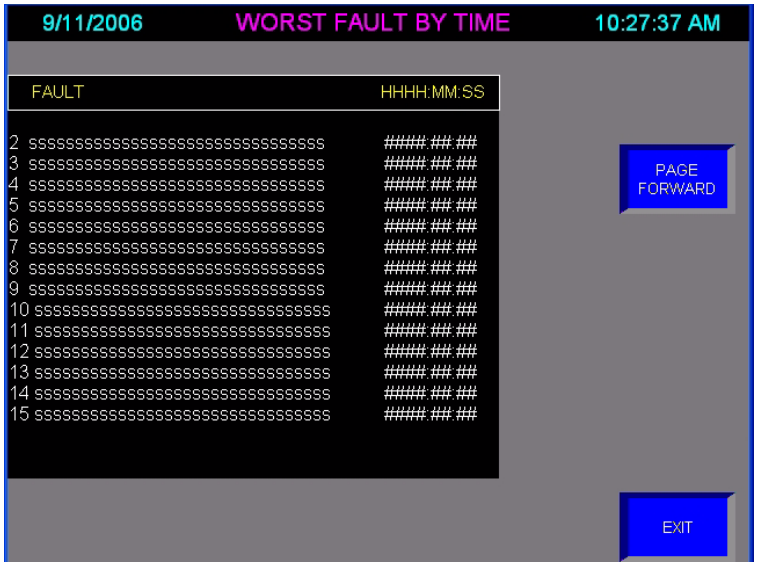


Figure 3.23: Data Worst Fault Time Screen

Features

This screen displays the worst machine faults, ranked by time.

The following buttons advance the current screen to the corresponding screen:

- **Page Forward** (Data Worst Fault Occurrence Screen)
- **Exit** (Data Collection Main Screen)

Data Worst Fault Occurrence Screen

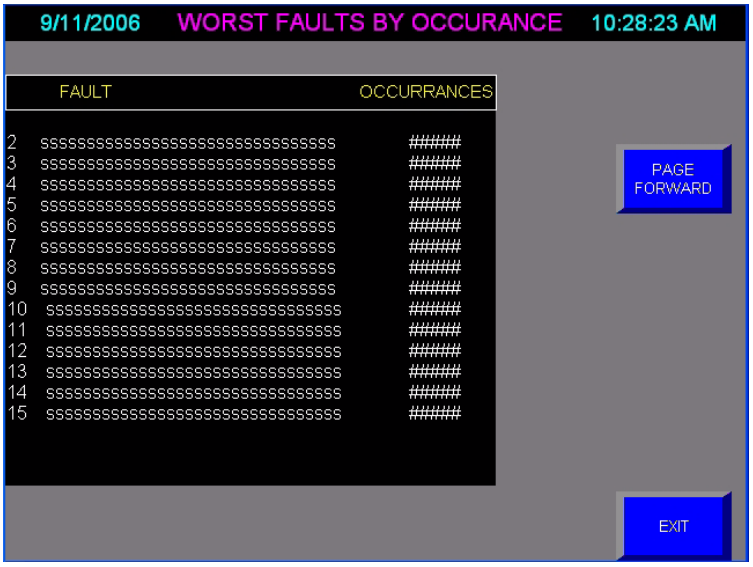


Figure 3.24: Data Worst Fault Occurrence Screen

Features

This screen displays the worst machine faults by occurrence.

The following buttons advance the current screen to the corresponding screen:

- **Page Forward** (Data All Faults Screen)
- **Exit** (Data Collection Main Screen)

Data All Faults Screen

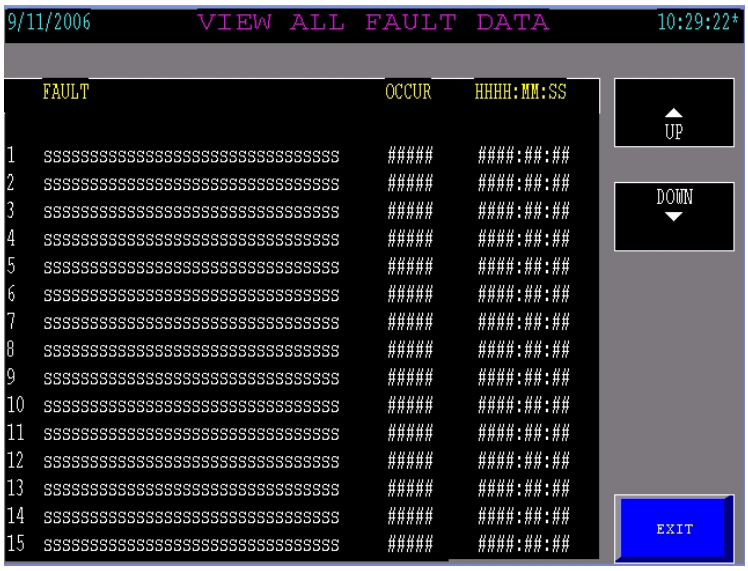


Figure 3.25: Data All Faults Screen

Features

This screen lists all machine faults including time and frequency of occurrence.

The **Up** and **Down** buttons navigate through the listed faults.

The following button advances the current screen to the corresponding screen:

- **Exit** (Data Collection Main Screen)

Film Drive Jog Pushbutton

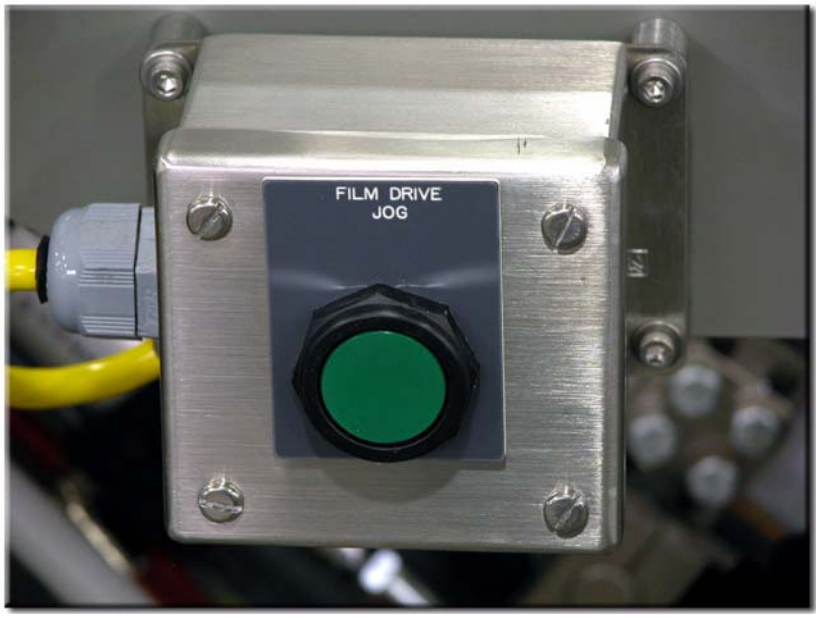


Figure 3.26: Film Drive Jog Pushbutton

Features

The **Film Drive Jog** pushbutton advances the film past the knife and into the upper set of rollers after it has been threaded into the lower set of rollers. Set the Film Drive Load/Run selector switch to Load and press this pushbutton to jog the film.

Auxiliary Emergency Stop Pushbutton

Figure 3.27: Auxiliary Emergency Stop Pushbutton

Features

The **Emergency Stop** pushbutton provides safety for personnel.

Emergency Stop operation:

- Press the E-Stop pushbutton to stop the machine. The pushbutton illuminates while in the Stop position. The *Emergency Stop* message appears on the message display bar after pressing the pushbutton.
- Pull the E-Stop pushbutton out and press the reset pushbutton to clear the message and restart the machine. The E-Stop system immediately de-energizes the drive motors and clutches. Drive brakes stop the machine.

⚠ CAUTION Use the emergency stop pushbutton only in an emergency.

Note The tunnel chain will stop when the emergency stop pushbutton is pressed. Start to move the tunnel chain as soon as possible to avoid product and chain damage.

Film Threading and Splicing Procedure

WARNING

Contact with moving parts of packaging machinery may result in serious personal injury or death.

Since power is required for film threading operation, power will be on to the film threading area when the **Film Drive Load/Run** selector switch is in the *Load* position. When entering the guard package in the film threading area, use caution. Do not deviate from the steps outlined for threading the film. Never remove or attempt to bypass the secondary guards provided for your safety.

Note

1. Some of the photos used are standard and may not be of your actual machine.
2. Guard panels were removed to provide better visibility in the photos but should remain in place during the threading or splicing procedure.

Film Threading Procedure

1. Remove the old film or any remaining debris from the machine.
2. Using the film cart, place a new film roll on the spindle.

Figure 3.28: Film Cart

3. Position the new film roll on the spindle so the edge of the roll is aligned on the scale to half the width of the film. In the example shown, the film is 24” wide so the film roll is aligned with the 12” mark.

Figure 3.29: New Film Roll

Figure 3.30: Film Scale

4. On the Film Controls Screen, set the **Film Source Roll 1/Roll 2** selector switch to the desired roll. Roll 1 is the top roll, and roll 2 is the bottom roll.
5. Set the **Film Drive Load/Run** selector switch to *Load*. The film drive brake will disengage, and the film roll will spin freely.

Figure 3.31: Film Controls Screen

6. Thread the film between the first two guide rollers.

Figure 3.32: First Guide Rollers

7. Wrap the film over the 45 degree angle bar.

Figure 3.33: 45 Degree Angle Bar

8. Position the film over the film guide bar to prevent it from dragging on the ground.

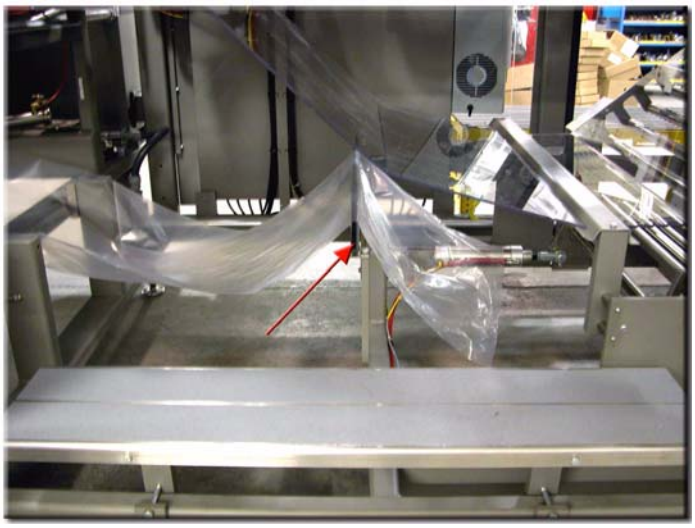


Figure 3.34: Film Guide Bar

9. Using the handle, raise the take-up rollers until they lock into position.

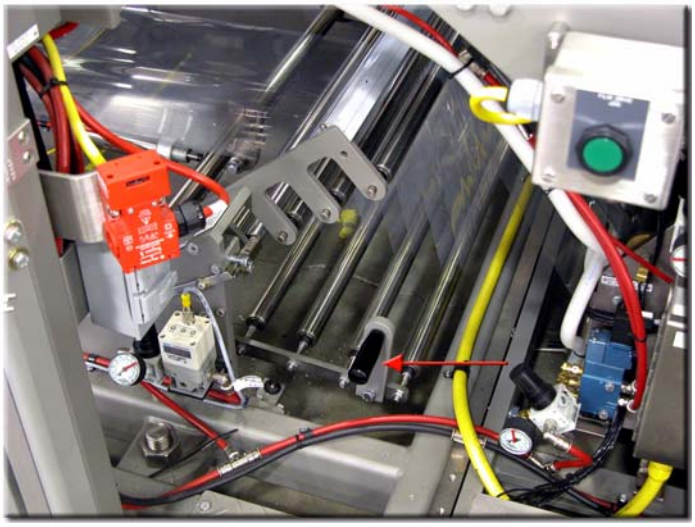


Figure 3.35: Dancer Bar Handle

10. Thread the film between the take-up rollers.

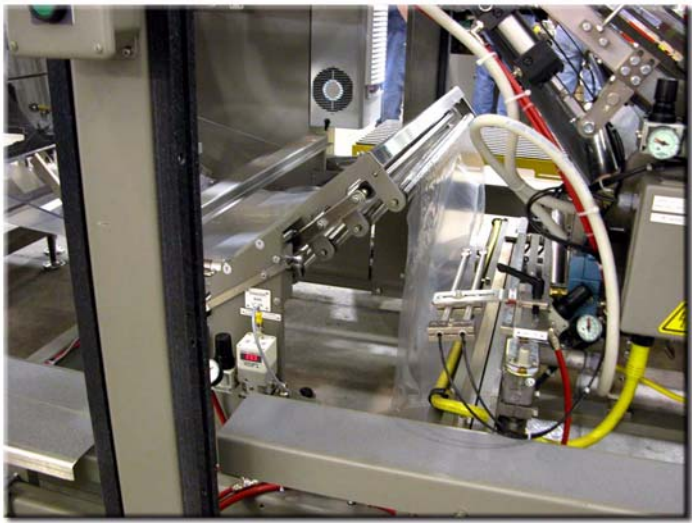


Figure 3.36: Take-Up Rollers

11. Position the film under the lower guide roller.
12. Pull the film under the static bar and the cutter assembly.

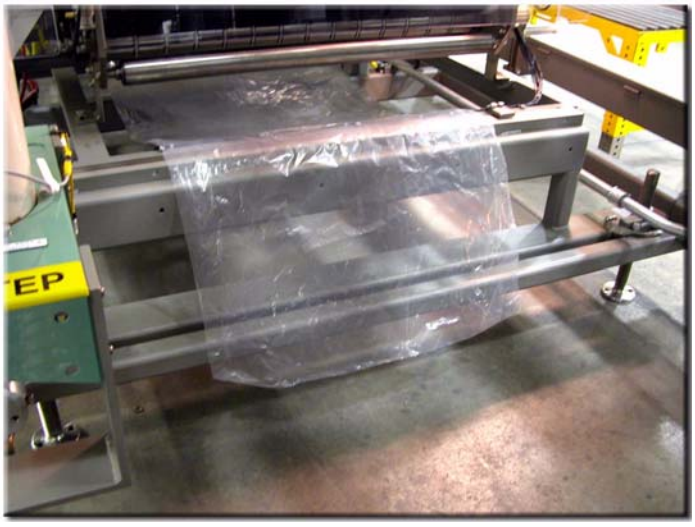


Figure 3.37: Static Bar

13. Wrap the film around the threading card. Using the pinch roller wrench, slightly elevate the lower pinch roller. Insert the threading card under the pinch roller.
14. Close the guard doors and press the **Reset** pushbutton.

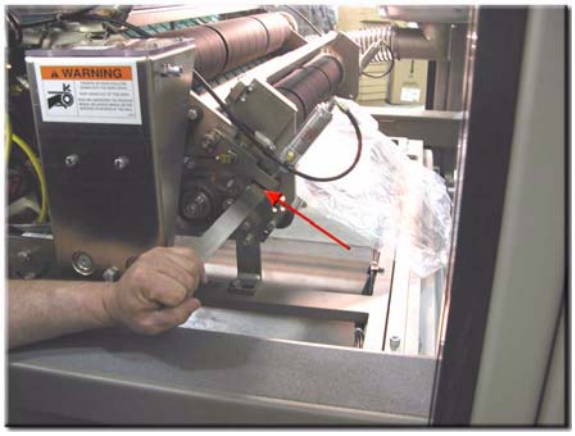


Figure 3.38: Pinch Roller Wrench

Figure 3.39: Card in Pinch Roller

15. Press the **Film Drive Jog** pushbutton to advance the film and threading card past the upper pinch roller and onto the vacuum belts. Remove the threading card.

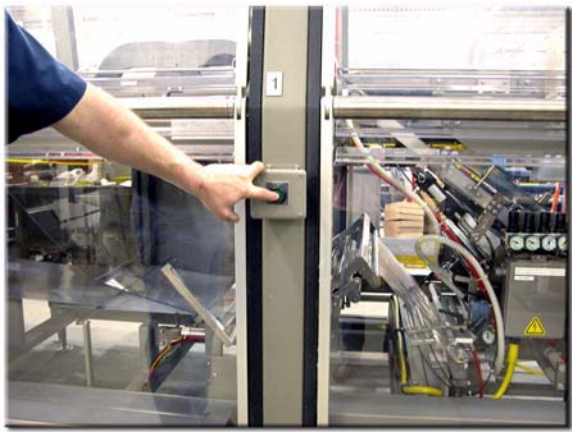


Figure 3.40: Film Drive Jog Pushbutton

Figure 3.41: Vacuum Belts

The **Film Drive Jog** pushbutton is enabled only when the **Film Drive** selector switch is set to *Load*.

⚠WARNING

The cutting edge of the bar is extremely sharp and contact with the edge (stationary or in motion) has the potential to cause serious personal injury.

When threading film or performing maintenance in this area, be careful to keep hands or fingers away from the cutting edge. When releasing the spring-loaded clutch to trip the cutter, be sure all personnel are clear of the area.

16. Slightly raise the take-up rollers with the handle; release the latch. Carefully lower the take-up rollers.

Figure 3.42: Raising the Take-Up Roller

17. Wind the new film roll backward to eliminate excess slack.

18. Set the **Film Drive Load/Run** selector switch to select *Run*. The film drive brake will engage, and the dancer bars will configure to the run position.

Figure 3.43: Film Controls Screen

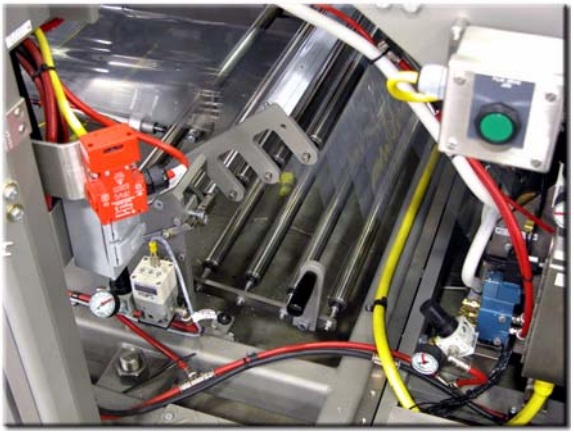


Figure 3.44: Dancer Bars in Run Position

19. Press the **Film Drive Manual Cycle** pushbutton to cycle through the wrinkled film.
20. Open the guard door and remove the scrap film from the wrapping table.

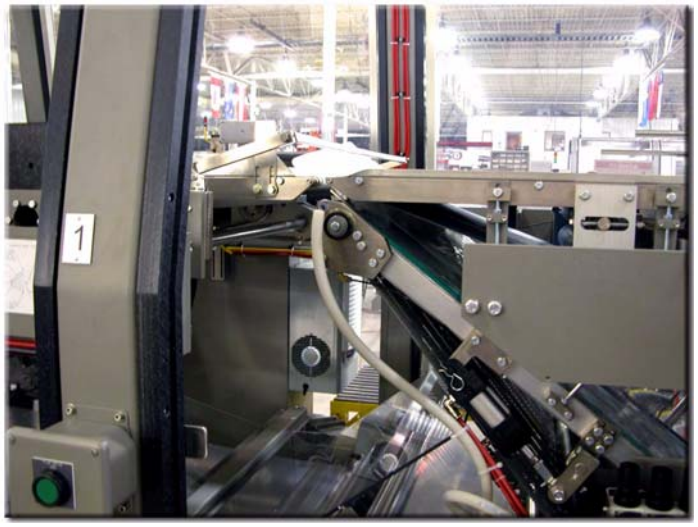
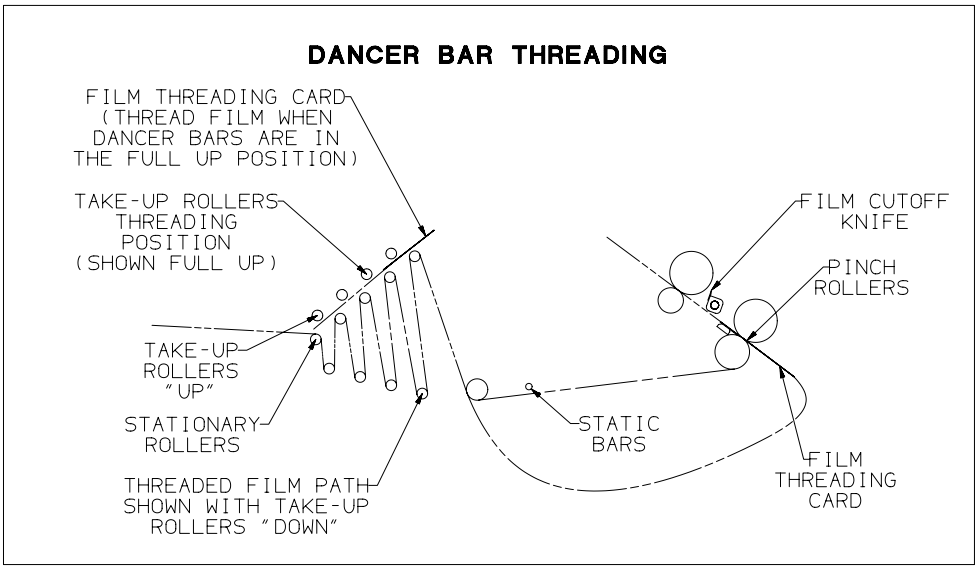


Figure 3.45: Scrap Film

21. Close the guard door and press the **Reset** pushbutton.
22. Repeat steps 19-21 until the film is smooth.

Film Threading Diagrams

The diagrams below are the film threading diagrams for your machine and are also affixed to the machine, near the film drive assembly.



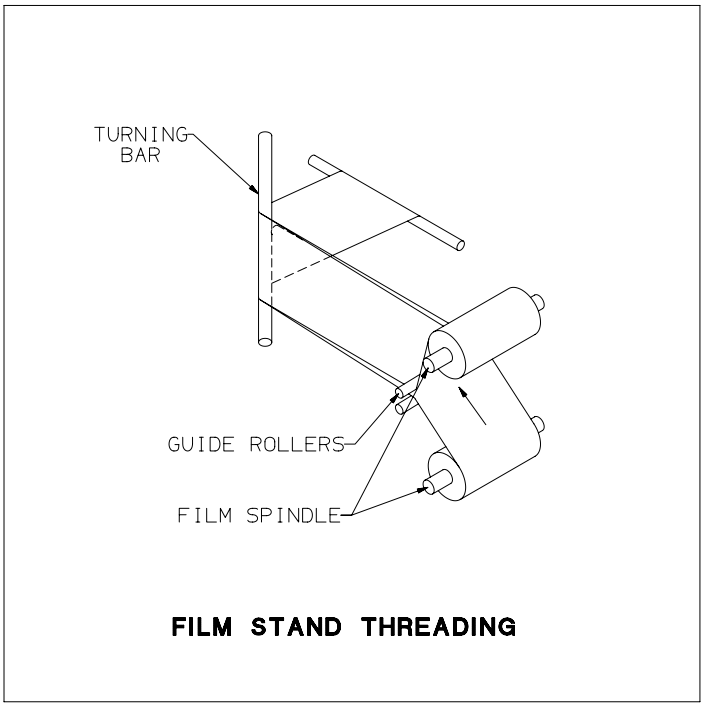


Figure 3.46: Dancer Bar and Film Stand Threading Diagrams

Film Splicing Procedure

1. On the Film Controls Screen, set the **Film Drive Load/Run** selector switch to *Load*. The film drive brake will disengage, eliminating film tension and allowing the film to roll freely.

Figure 3.47: Film Controls Screen

Figure 3.48: Slack in Film

2. Ensuring there is enough film unwound from the depleted film roll to reach the splicing bar, cautiously cut the film.

Figure 3.49: Cutting the Film

3. Place the cut film and new film in the splice bar.

The film from the bottom roll (roll 2) must always be placed on the splice bar first.

Figure 3.50: Splice Bar

4. Ensure both films extend past the splice bar approximately one foot. Align the two films without wrinkles.

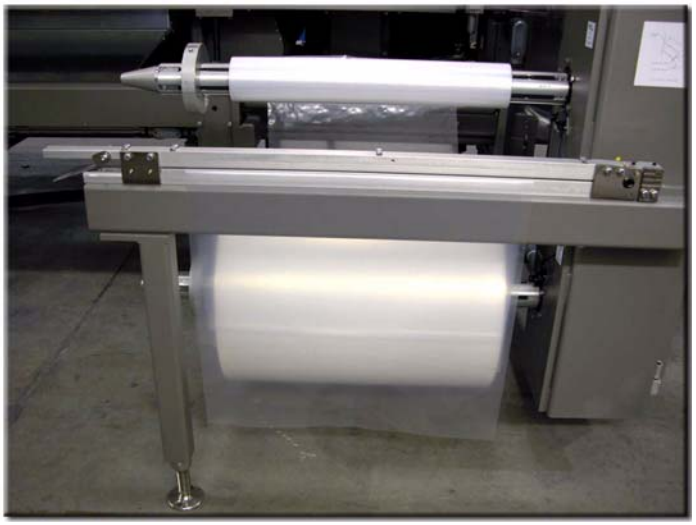


Figure 3.51: Aligning Film

5. Close the splice bar. Press the **Splice Bar Heat** pushbutton. It will illuminate.

Figure 3.52: Film Controls Screen

6. With one hand, apply pressure to the top of the splice bar. Gently pull on the film until it gives. In one motion, remove scrap. The splice bar will shut off automatically.

Figure 3.53: Remove Scrap

7. Release the film from the splice bar.
8. Wind the new roll back to remove excess slack.
9. Set the **Film Drive Load/Run** selector switch to *Run*.
10. Set the **Film Source Roll 1/Roll 2** selector switch to the roll to be used. Roll 1 is the top roll, and roll 2 is the bottom roll.
11. Reset the machine to resume automatic operation.

Machine Operation

This section will instruct personnel with the basic machine operating procedures.

1. All personnel must read and familiarize themselves with the safety precautions *before* operating this machine. Failure to observe these precautions may result in damage to the machine or serious personal injury to the operator.
2. Examine the machine, checking for closed guard doors, lock-outs, obstructions, and that the E-Stop is in the on position.

Machine Start-Up

1. Connect the power source to the machine.
2. On the Operator Controls Screen of the main control panel, press the **Tunnel Start** pushbutton. The heat tunnel will take approximately three minutes to reach the operating temperature.
3. Press the **Recipe Edit** button to advance to the Recipe Screen.
4. Press the button of the desired recipe until it is highlighted. The selected recipe will appear on the recipe display bar.
5. Press the **Exit** button to return to the Operator Controls Screen.
6. Press the **Maint.** button to advance to the Maintenance Screen.
7. Set the **Tunnel Heat Off/Auto** selector switch to *Auto.*
8. Set the **Control Mode Maint/Prod** selector switch to *Prod.*
9. Press the **Film Controls** button to advance to the Film Controls Screen.
10. Set the **Film Drive Off/On** selector switch to *On*.
11. Press the **Film Drive Manual Cycle** pushbutton two times.
12. Press the **Machine Start** pushbutton on the main control panel to begin operation.

Machine Shutdown

1. On the Operator Controls Screen, press the **Metering Manual Cycle** pushbutton until all product is cleaned out of the machine.
2. On the Main Control Panel, press the **Cycle Stop** pushbutton.
3. When all product has cleared the shrink tunnel, press the **Cool Down Stop** pushbutton on the Operator Controls Screen. When this pushbutton is pressed, the Tunnel Start pushbutton will flash and the heat tunnel will continue to run approximately 30 minutes. The heat tunnel will automatically shut down when sufficiently cooled.
4. Disconnect the power after the cooling cycle has completed and motors have stopped running.

⚠WARNING

Personnel entering the guard package, without first locking out the power, risk accidental restart and potential serious injury or death.

1. Before performing maintenance or making adjustments, padlock the main disconnect switch in the off position before entering the machine.
2. Remove the padlock ONLY when all personnel have moved away from the machine and when closing all guard doors. Older machines not equipped with a locking machine off/on switch must have the main disconnect switch locked out.

⚠CAUTION

1. Always use the cool down cycle when shutting down the machine.
2. To perform maintenance or make adjustments to Douglas Machine shrink-wrap equipment, turn off and lock the main disconnect switch before entering the machine. Do not use an Emergency Stop pushbutton for this purpose.
3. The Emergency Stop pushbuttons should only be used in an emergency.

Production Operation

Check the position of the machine before jogging. Clear any trays or products that obstruct a moving part. *Ensure the machine is at cycle stop position before restarting.*

General Production Operation Notes

- The machine receives and seals product as long as the rollers have film and product exists.
- Any overload will shut down the machine and cause the corresponding message to appear on the display.
- The machine will cease to operate if a guard door on the machine is open. Close the door and reset the machine to restart.
- Ensure the machine has come to a complete stop before opening a guard door.

The tunnel conveyor will continue to run with an open guard door.

General Fault Recovery Procedure

1. Correct the fault.
2. Reset the machine.
3. Jog the machine to ensure an overload no longer exists.
4. Place the switch in auto mode to resume automatic operation.

A faulted or overloaded servo motor will allow machine parts to move after clearing a jam and can result in serious personal injury.

1. To recover the servo motors, reset the machine and press the start button.
2. Lock out the power before opening the guards to enter the machine.

Section 4: Changeover

- Machine Adjustment and Size Changeover
- Adjustments

Machine Adjustment and Size Changeover

All personnel must read and familiarize themselves with the safety precautions before attempting to adjust this machine. Failure to observe these precautions may result in damage to the machine or serious personal injury.

- Personnel should familiarize themselves with basic machine settings before operating Douglas packaging equipment.
- The machine runs a range of products and case sizes. This section of the manual describes the adjustments required to change from one size to another.
- Adjustment numbers are attached to the machine at or near the current part. Refer to the adjustment numbers in the following instructions. Personnel will find reference scales and changeover settings for adjustments corresponding to the case blank measurements.
- Adjustments with an asterisk (*) require a change part to complete the adjustment. Personnel should remove change parts and replace with alternative parts.

Personnel should perform these adjustments to change from one size to another. Always jog the machine slowly through several cycles after making any changes and before placing in the automatic mode. This should ensure correct adjustments and proper machine operation.

To ensure maximum life of all parts, lubricate all changeover components before completing the changeover process.

Machine Adjustment Number Settings

The following chart reflects the machine's original factory settings. The chart is also included on the CD accompanying the service manual and can easily be updated to reflect the most current settings.

Adj #	Description	Reference Point	8 oz. Stacked	8 oz. Unstacked
1	Infeed Rails	Scale	A: 8-3/8 B: 20-1/4 C: 8-7/8 D: 20-1/2	A: 8-3/8 B: 20-1/4 C: 8-7/8 D: 20-1/2
2	Metering Rails	Scale	A: 5 B: 5 C: 5 D: 5	A: 5 B: 5 C: 5 D: 5
3	Overhead Metering	Position Indicator	5.50	5.50
4	Stacker Height	Position Indicator	5.50	5.50
5	Bedplate	Position Indicator	10.00	10.00
6	Stacker Arms	Position Indicator	10.00	10.00
7	Stacker Guide Rails	Reference Mark		
8	Wand Cams/ Photoeye and Bracket	Change Part/ Reference Mark	Stacked	Unstacked
9	Entry Air Knives	Scale	Operator: 4 Non-Operator: 4	Operator: 4 Non-Operator: 4
10	Exit Air Knives	Scale	Operator: 4 Non-Operator: 4	Operator: 4 Non-Operator: 4
11	Product Select	PanelView	8 oz. Stacked	8 oz. Unstacked

Footprint

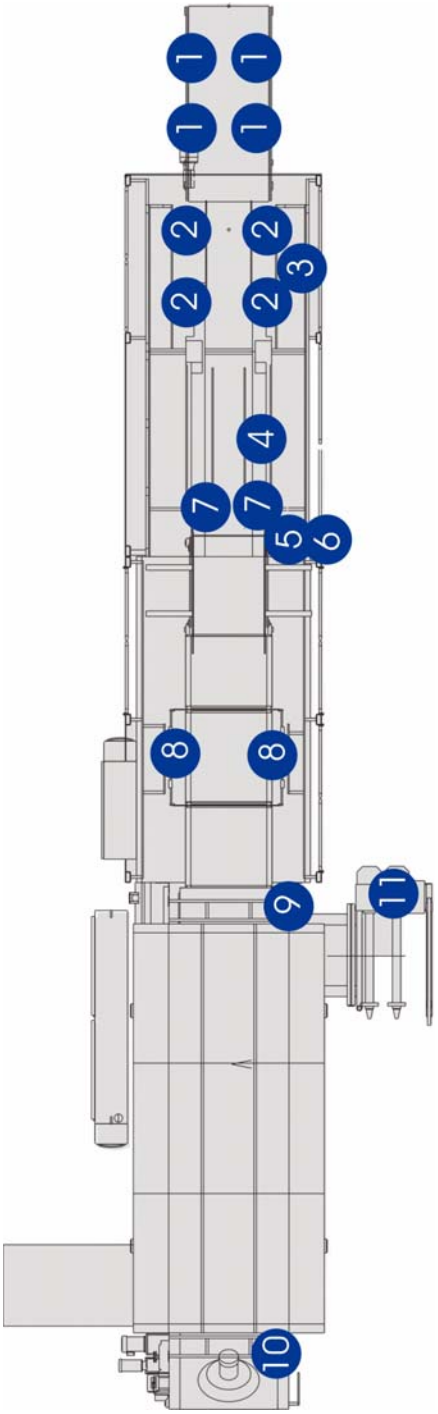
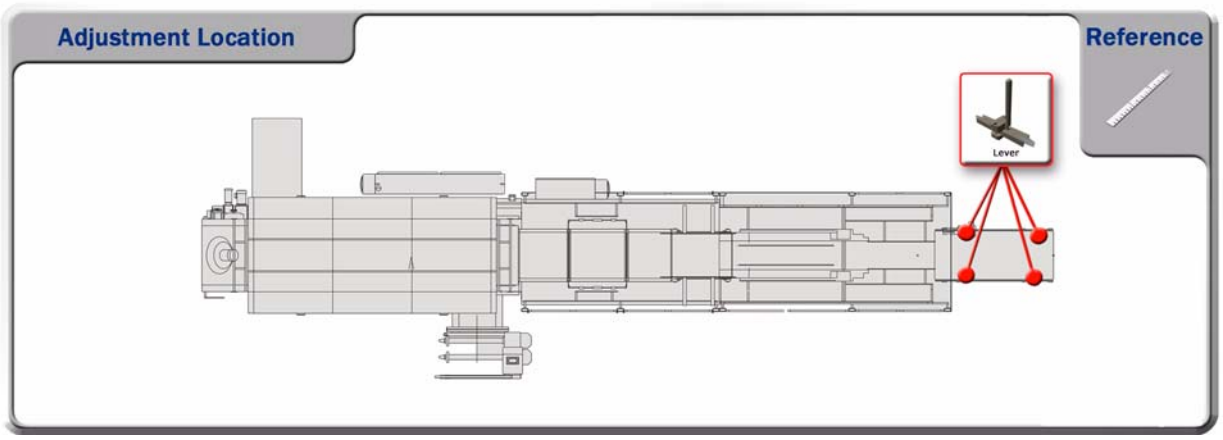


Figure 4.1: Machine Footprint

Adjustments

Adjustment 1: Infeed Rails



Reference Point	8 oz. Stacked	8 oz. Unstacked
Scale	A: 8-3/8 B: 20-1/4 C: 8-7/8 D: 20-1/2	A: 8-3/8 B: 20-1/4 C: 8-7/8 D: 20-1/2

1. Lower four levers.
2. Position to the correct scale setting.
3. Raise the levers to secure.

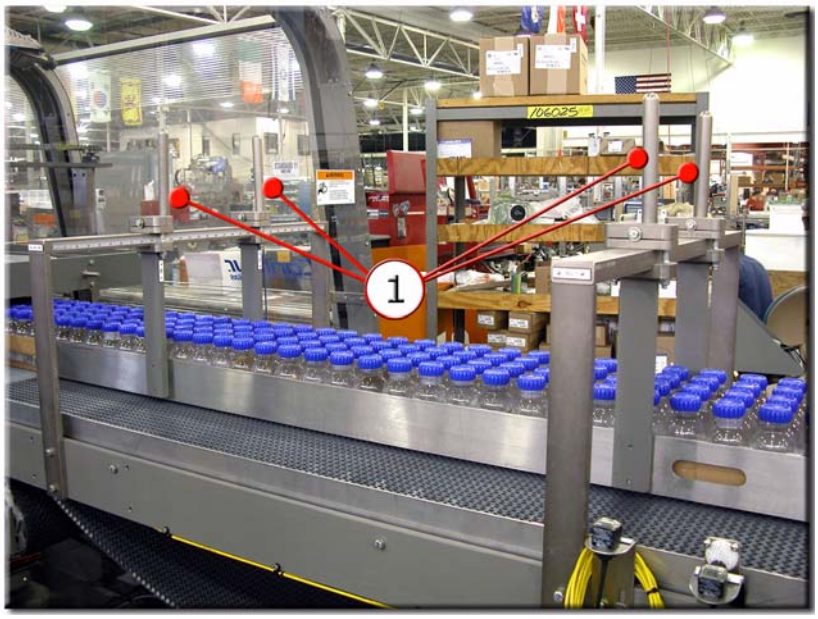
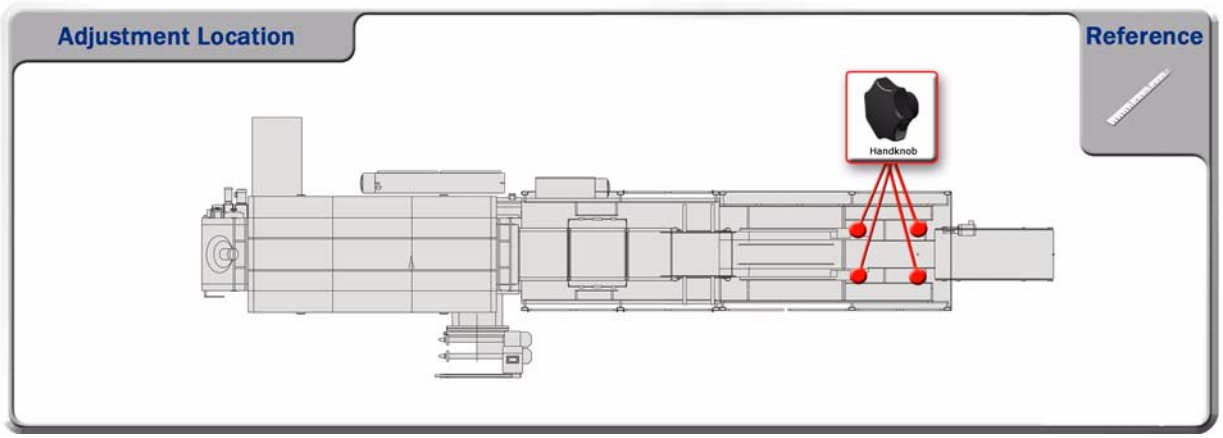


Figure 4.2: Infeed Rails

Adjustment 2: Metering Rails



Reference Point	8 oz. Stacked	8 oz. Unstacked
Scale	A: 5 B: 5 C: 5 D: 5	A: 5 B: 5 C: 5 D: 5

1. Loosen four handknobs.
2. Position to the correct scale setting.
3. Tighten the handknobs to secure.

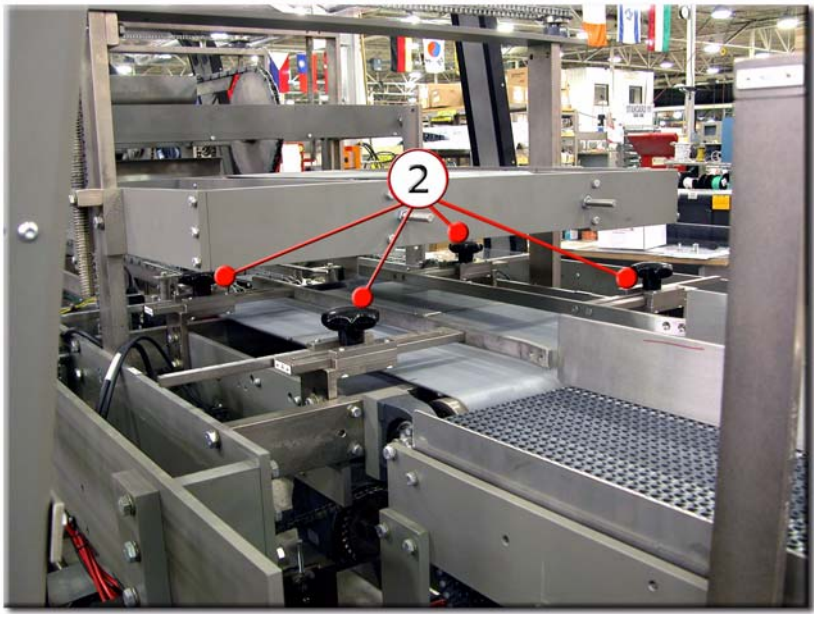
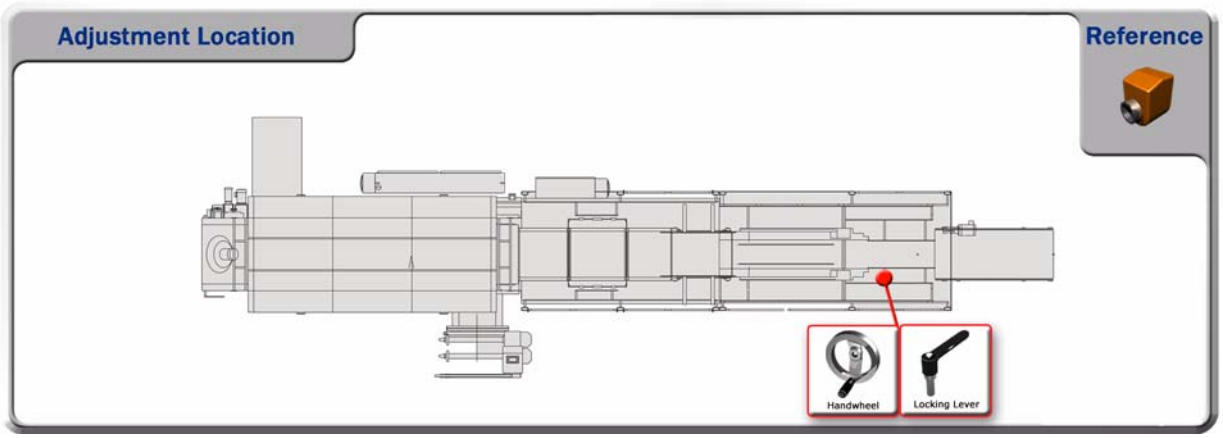


Figure 4.3: Metering Rails

Adjustment 3: Overhead Metering



Reference Point	8 oz. Stacked	8 oz. Unstacked
Position Indicator	5.50	5.50

1. Loosen the locking lever.
2. Turn the handwheel to the correct position indicator setting.
3. Tighten the locking lever to secure.

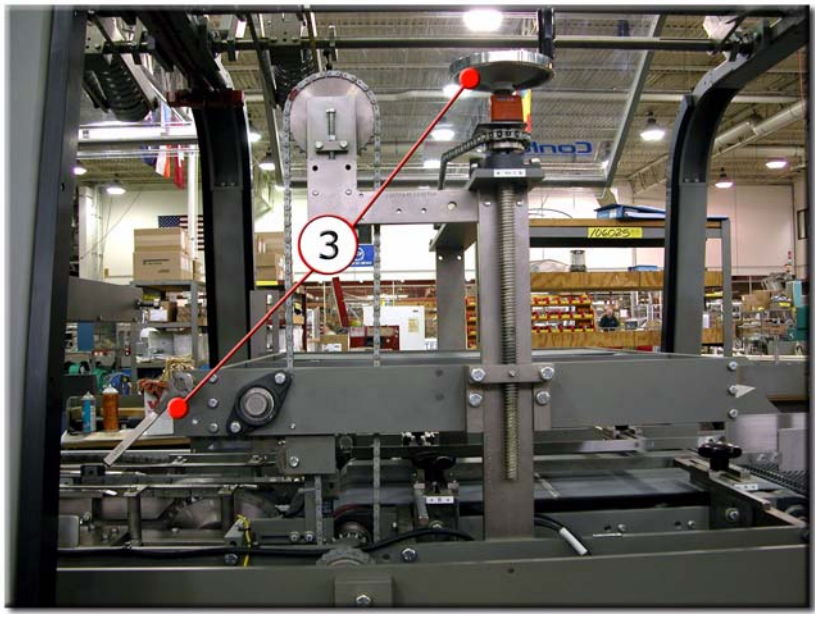
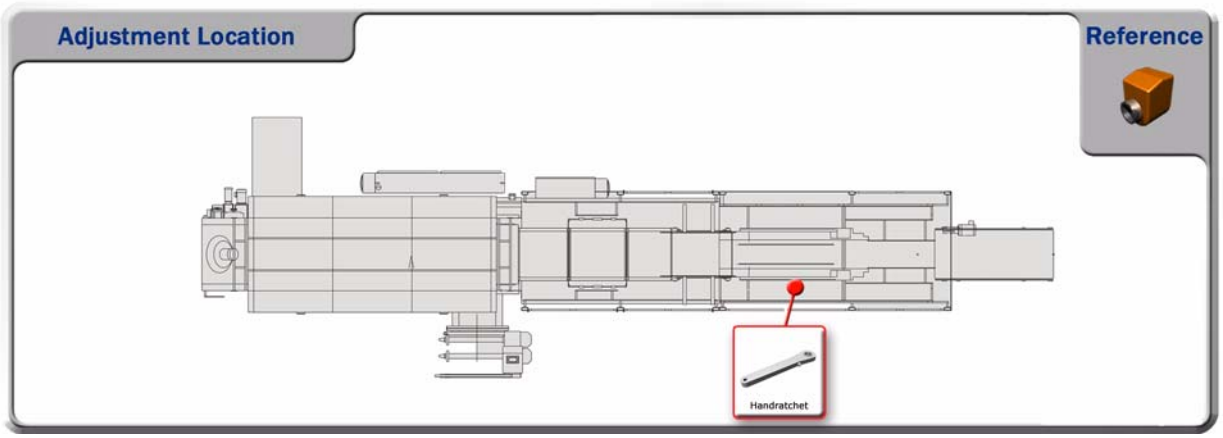


Figure 4.4: Overhead Metering

Adjustment 4: Stacker Height



Reference Point	8 oz. Stacked	8 oz. Unstacked
Position Indicator	5.50	5.50

1. Turn the handratchet to the correct position indicator setting.

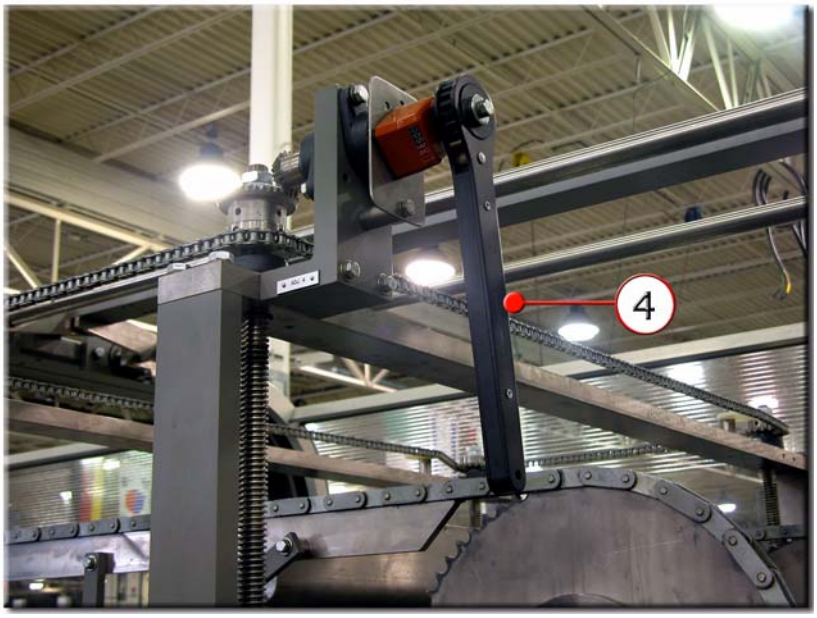
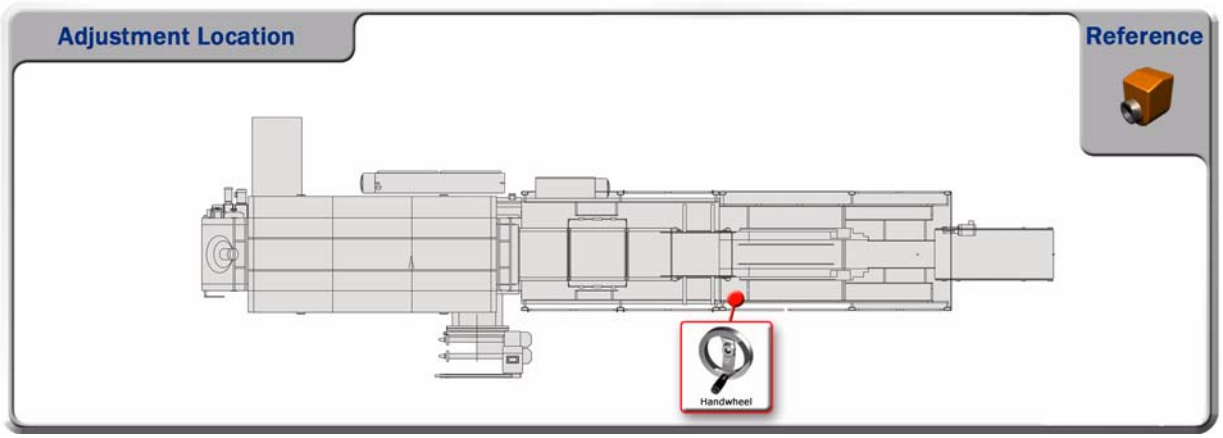


Figure 4.5: Stacker Height

Adjustment 5: Bedplate



Reference Point	8 oz. Stacked	8 oz. Unstacked
Position Indicator	10.00	10.00

1. Turn the handwheel to the correct position indicator setting.

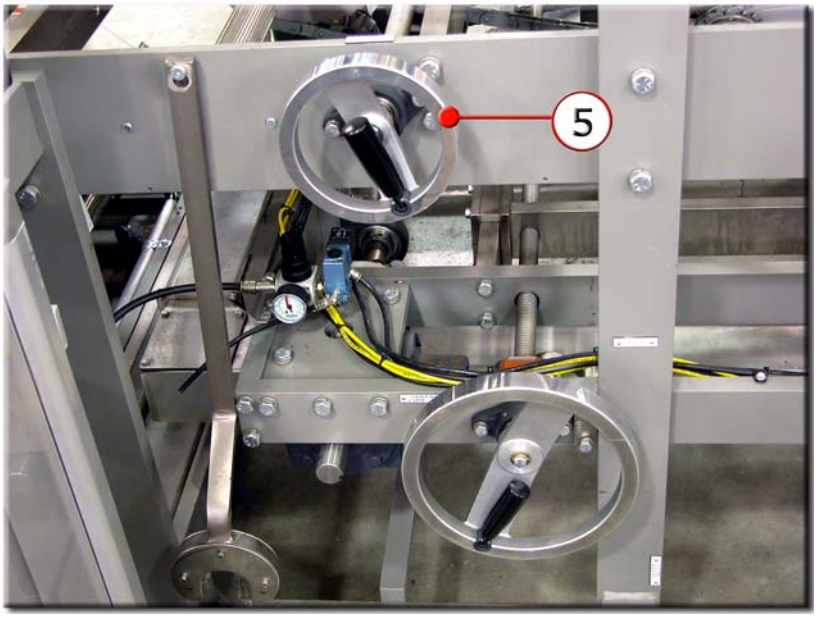
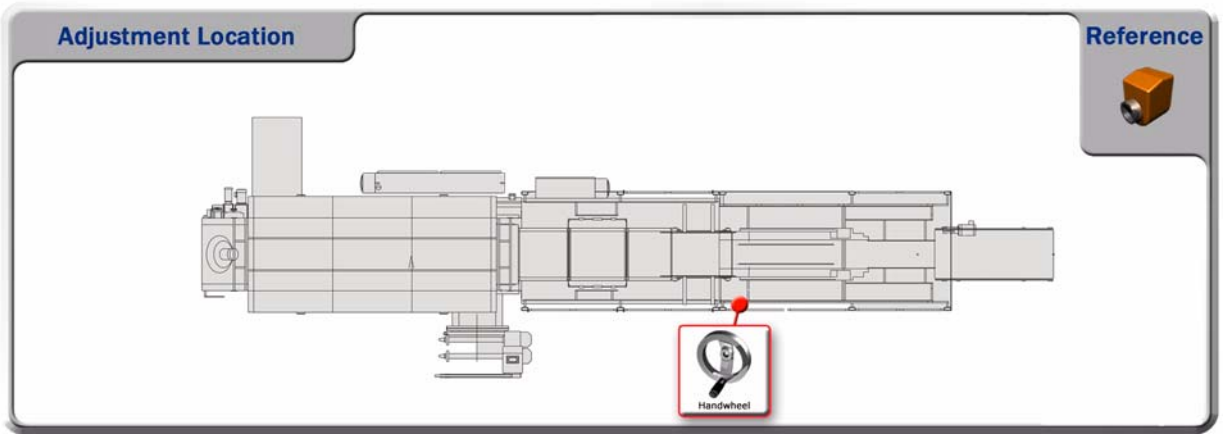


Figure 4.6: Bedplate

Adjustment 6: Stacker Arms



Reference Point	8 oz. Stacked	8 oz. Unstacked
Position Indicator	10.00	10.00

1. Turn the handwheel to the correct position indicator setting.

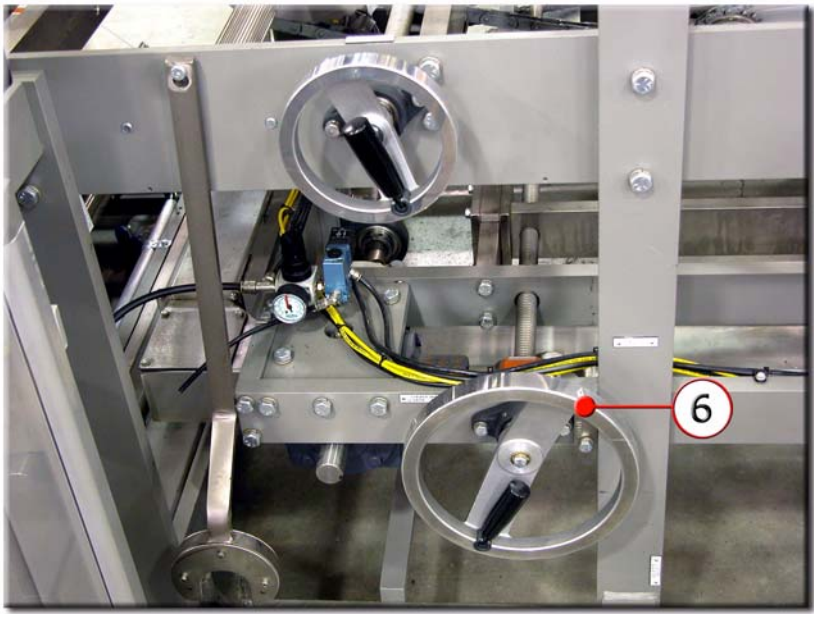
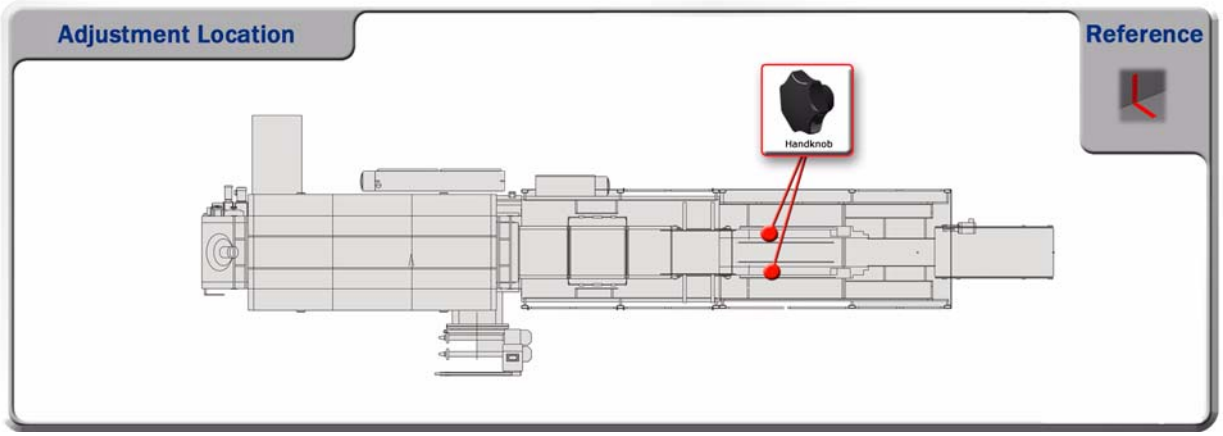


Figure 4.7: Stacker Arms

Adjustment 7: Stacker Guide Rails



Reference Point	8 oz. Stacked	8 oz. Unstacked
Reference Mark		

1. Loosen two handknobs.
2. Position to the correct reference mark.
3. Tighten the handknobs to secure.

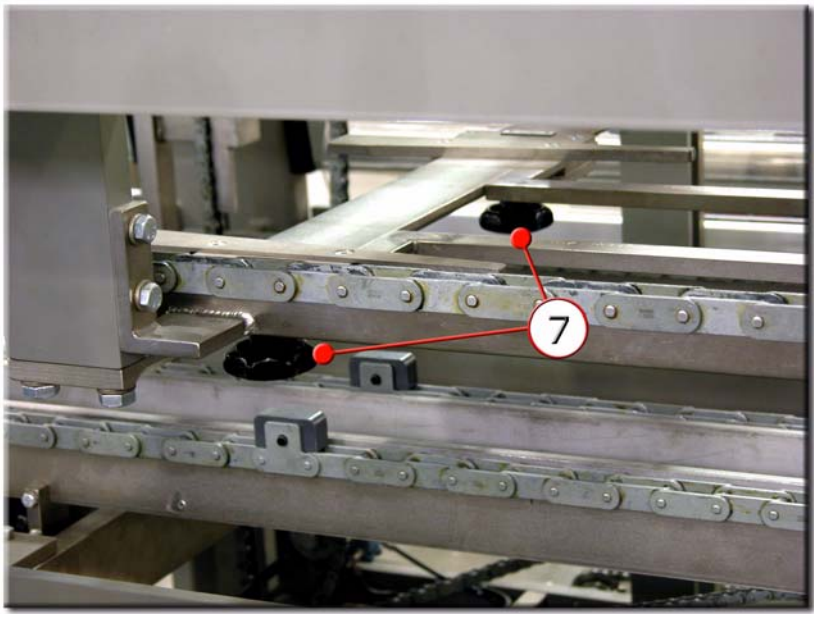
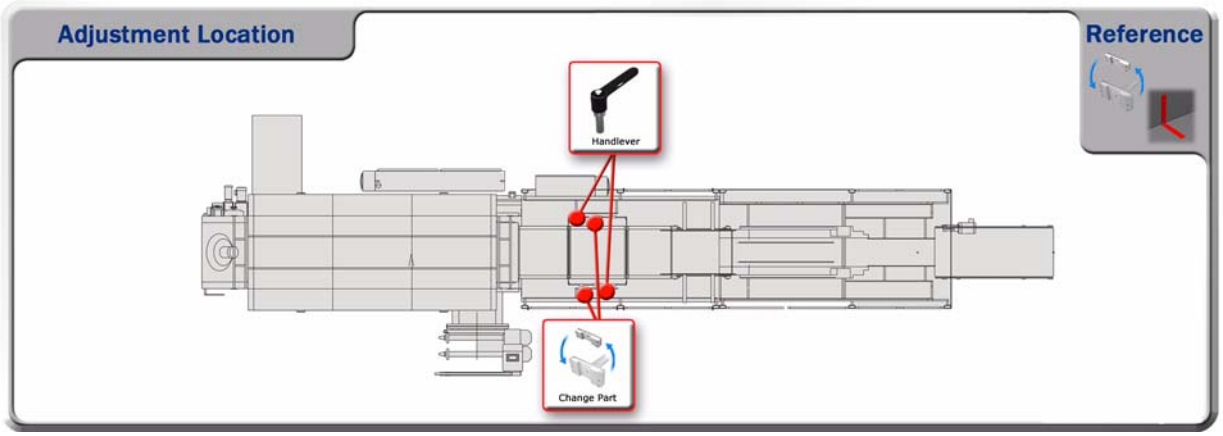


Figure 4.8: Stacker Guide Rails

*Adjustment 8: Wand Cams/Photoeye and Bracket



Reference Point	8 oz. Stacked	8 oz. Unstacked
Change Part/ Reference mark	Stacked	Unstacked

Wand Cams:

1. Unlock four locking levers, two on each cam.
2. Remove the existing part and replace with the correct change part.
3. Lock the locking levers to secure.

Continued on the following page.

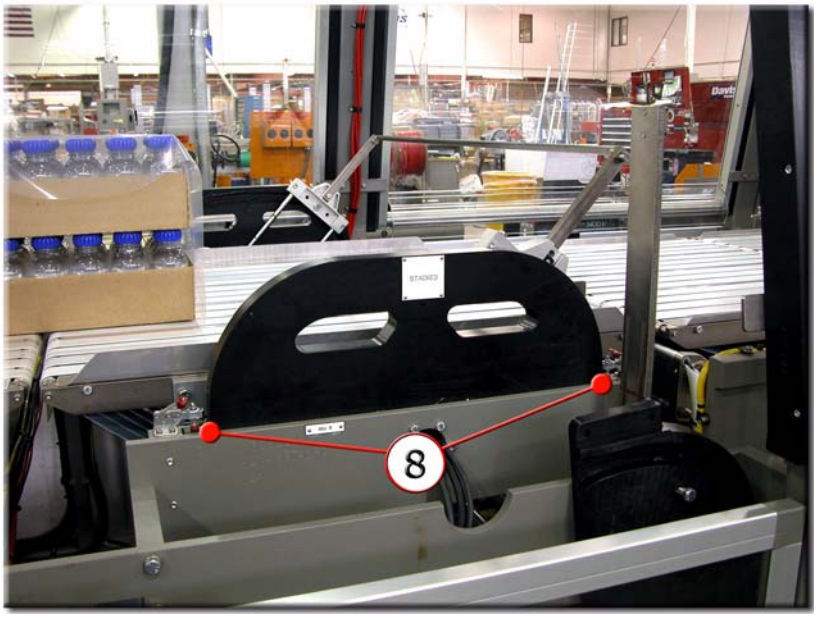


Figure 4.9: Wand Cams

Photoeye and Bracket:

4. Loosen four handlevers, two on each side of the machine.
5. Position to the correct reference mark.
6. Tighten the handlevers to secure.

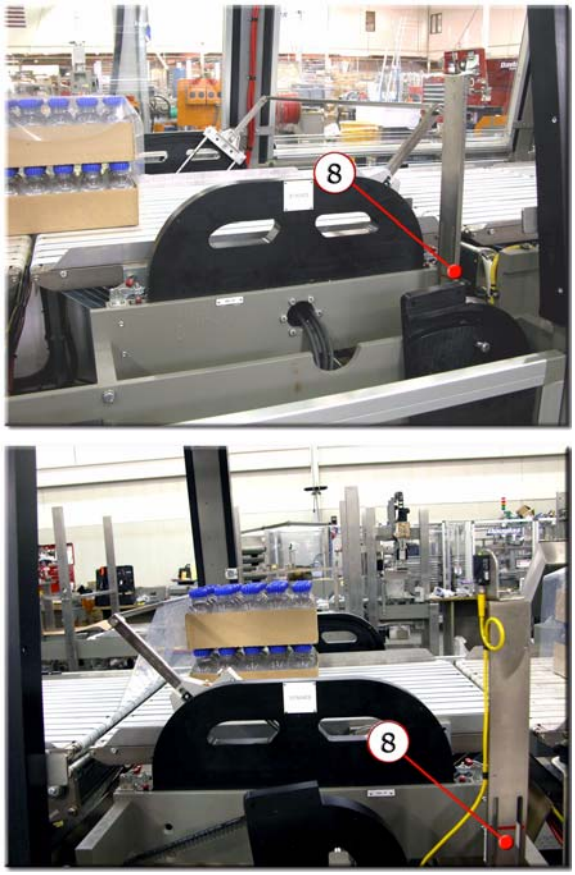
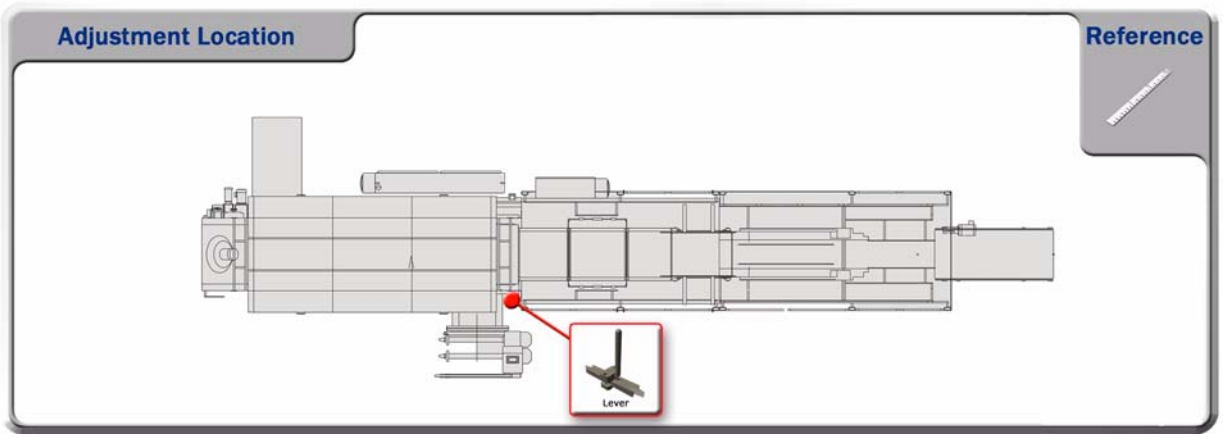


Figure 4.10: Photoeye and Bracket

Adjustment 9: Entry Air Knives



Reference Point	8 oz. Stacked	8 oz. Unstacked
Scale	Operator: 4 Non-Operator: 4	Operator: 4 Non-Operator: 4

1. Slide the levers in or out to the correct scale setting.

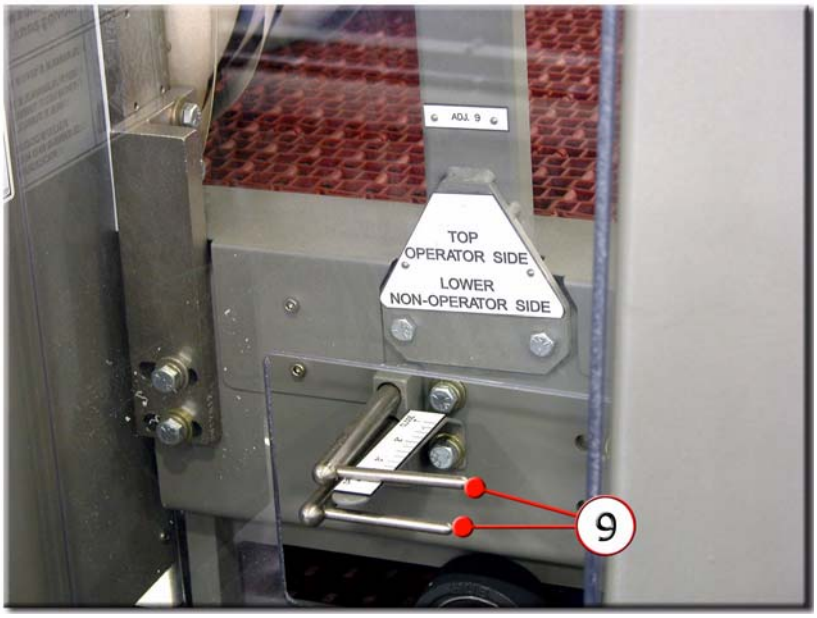
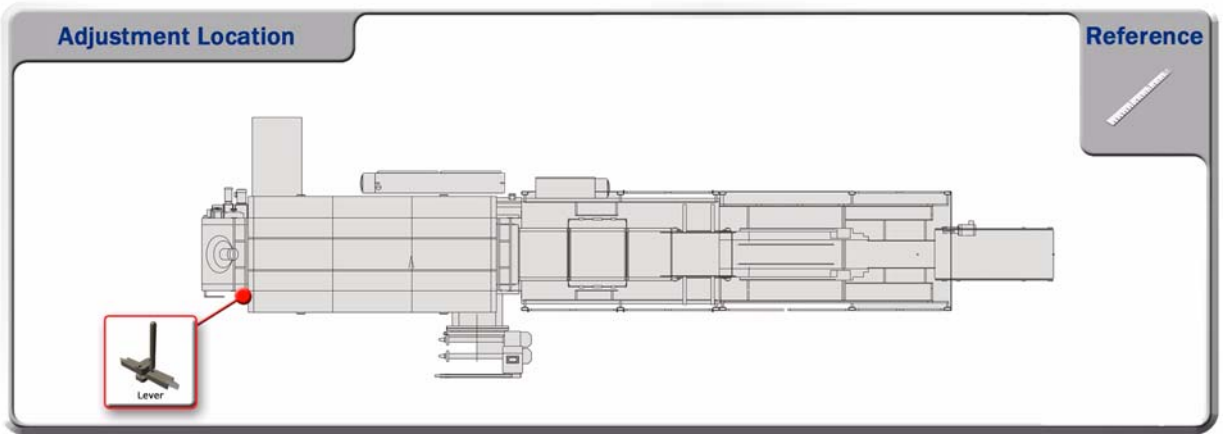


Figure 4.11: Entry Air Knives

Adjustment 10: Exit Air Knives



Reference Point	8 oz. Stacked	8 oz. Unstacked
Scale	Operator: 4 Non-Operator: 4	Operator: 4 Non-Operator: 4

1. Slide the levers in or out to the correct scale setting.

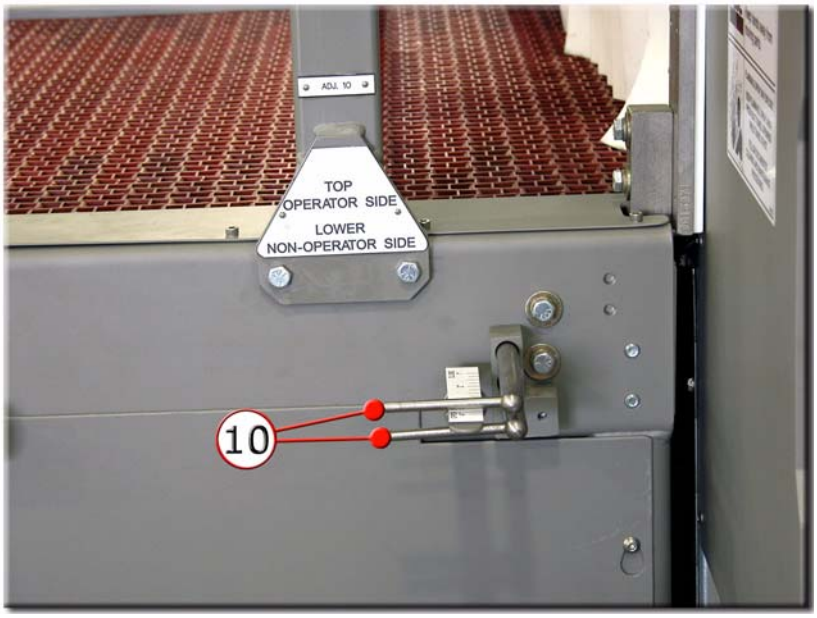
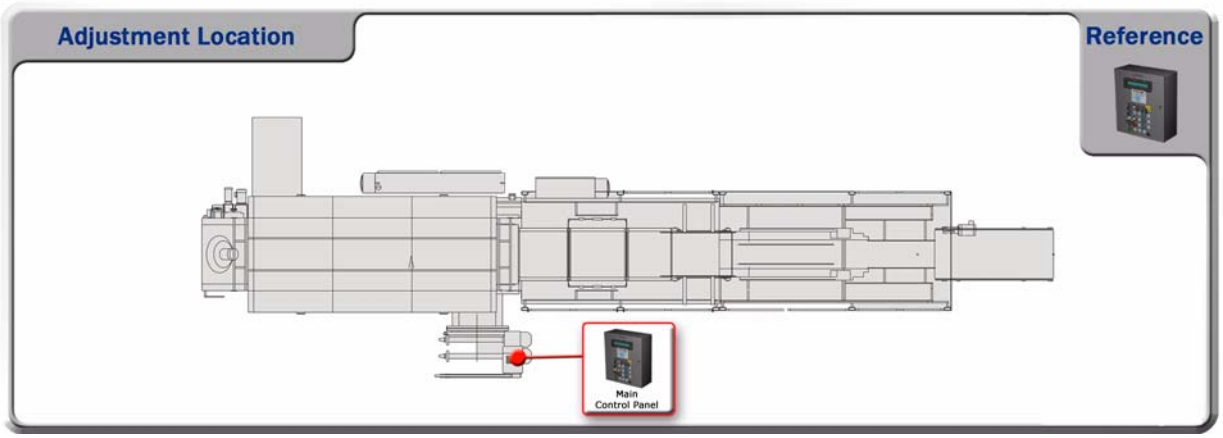


Figure 4.12: Exit Air Knives

Adjustment 11: Product Select



Reference Point	8 oz. Stacked	8 oz. Unstacked
PanelView	8 oz. Stacked	8 oz. Unstacked

1. On the main control panel, advance to the Recipe Screen.
2. Press and hold the button of the desired product until it is highlighted. The selected product will appear on the recipe display bar.
3. The machine will electronically configure to run the selection.

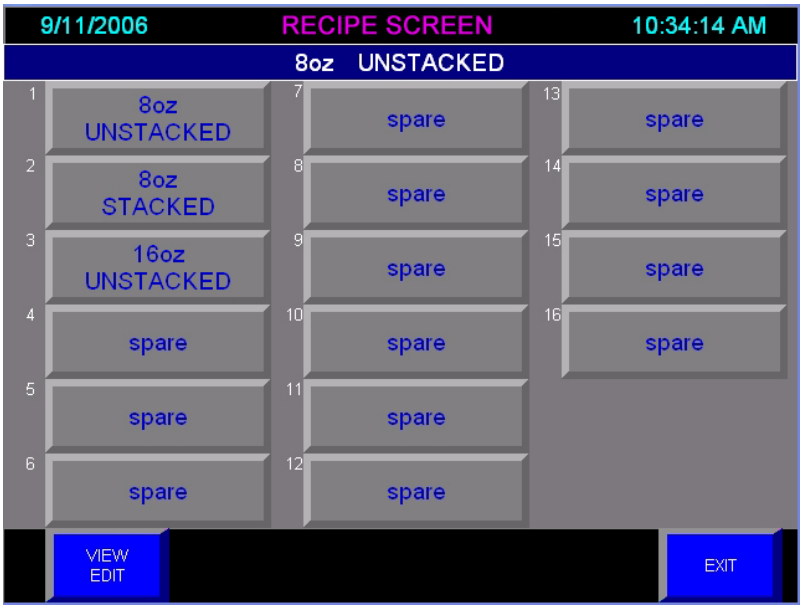


Figure 4.13: Recipe Screen

Section 5: Machine Overview

- Machine Floor Plan
- Machine Specifications
- Product Specifications
- Machine Sequence of Operation
- Theory of Operation
- Sensor Location Floor Plan

Machine Floor Plan

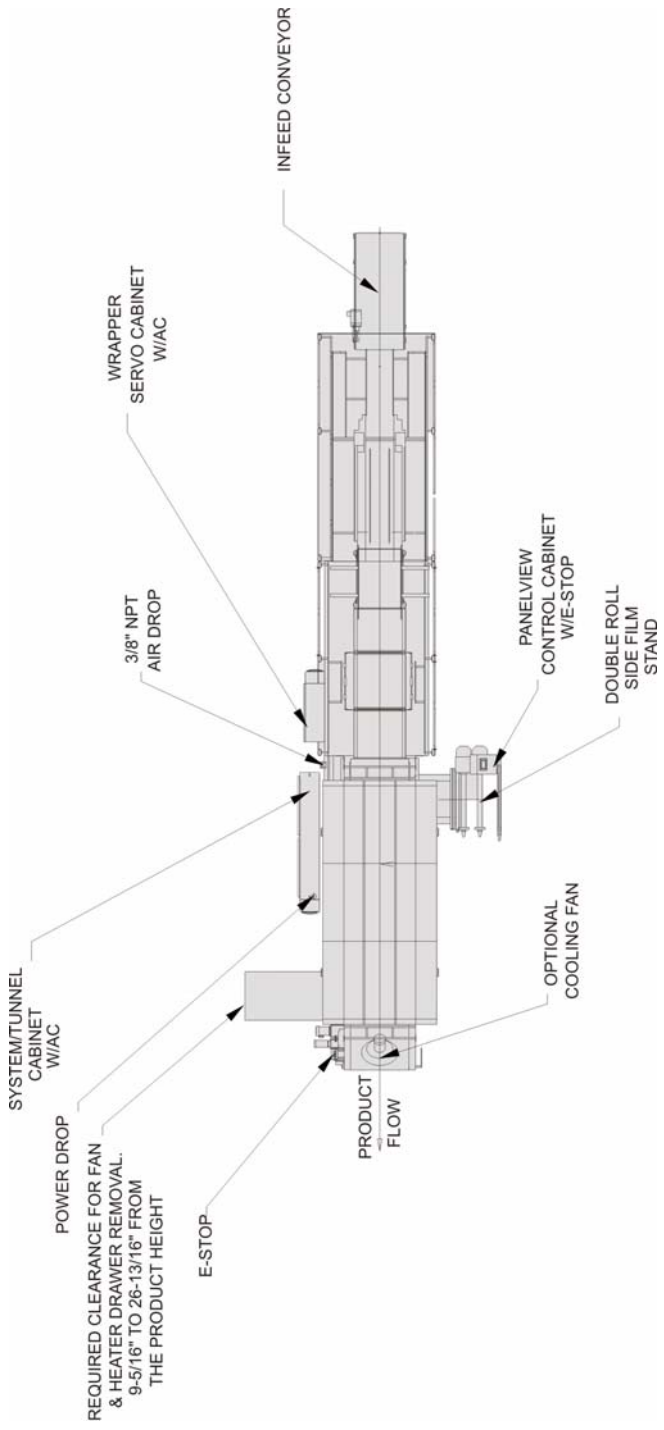


Figure 5.1: Machine Floor Plan

Machine Specifications

Size Range for Infeed Section (Outside product dimension)

	Direction of Travel	Vertical Dimension	Across Conveyor
Minimum	7.50	5.47	9.54
Maximum	12	7.25	10

Machine Specifications

Machine Speed	Machine Size	Plant Voltage
Variable, up to 60 trays per minute	Length: 43’ 0” Width: 13’ 3”	480V-3ph-60hz
Estimated Amp Load		**Estimated Air Usage**
130 amps @ 480V		8.0 scfm @ 90 psi

Product Specifications

Product Description

Product	Direction of Travel	Vertical Dimension	Across Conveyor	Requested Product Speed	Surge Speed
8 oz.	11.92	5.47	9.54	60	75
16 oz.	7.50	7.25	10.00	60	75

Pack-Patterns and Speeds

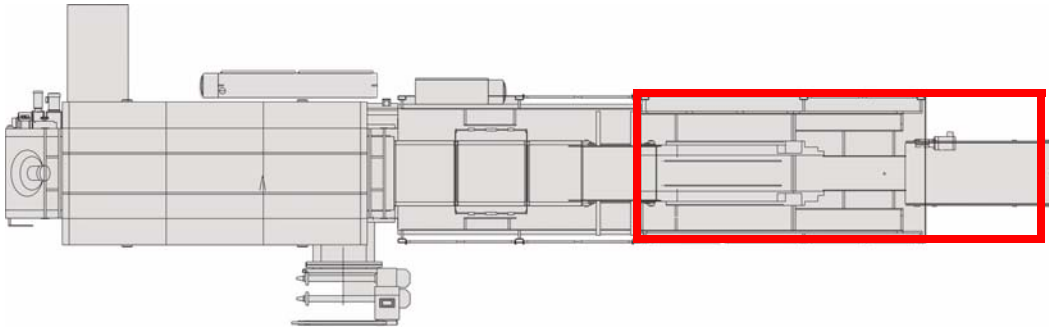
Product	Pack-Pattern AxBxC	Direction of Travel (A)	Vertical (B)	Across Machine (C)	Film	Tray Speed	Guaranteed Product Speed
8 oz. Unstacked	1x1x1	11.92	5.47	9.54	2	30	45
8 oz. Stacked	1x2x1	11.92	10.94	9.54	2	15	22.5
16 oz.	1x1x1	7.50	7.25	10.00	2	60	75

Machine Sequence of Operation

1. Product is received from upstream equipment in a single lane with the narrow side leading across the machine.
2. The product metering system requires surge to operate. Once surge has built up, the product is metered to the stacking section by a servo braking belt mechanism.
3. The first tray is lifted and staged while the second tray is fed in.
4. When the bottom tray is in position, the top tray is placed gently on top and the package is fed onto the wrapper conveyor, in time with the wrapping mechanism.
5. Film is automatically cut to the correct length and positioned under the tray.
6. The wrapping mechanism is a rotating wand that travels around the product, providing overlapped film under the tray.
7. Each tray continues through the shrink tunnel where heat is applied to all sides of the package, including the bottom.
8. The overlap is sealed by hot air passing through the open web conveyor.
9. Controlled airflow within the tunnel ensures a uniform shrink to the film.

Theory of Operation

Tray Stacker Sequence of Events



Refer to Tray Stacker Primary Components for component descriptions.

The tray stacker has the following primary functions:

- When the active recipe runs single unstacked trays, the tray stacker advances loaded trays from an upstream source to the wrapper entry conveyor.
- When the active recipe requires trays to be double stacked, the tray stacker receives loaded trays from an upstream source, double stacks the trays, and advances the double stacked trays to the wrapper entry conveyor.

The following outline describes the tray stacker sequence of events:

1. With the machine empty of trays, the machine operator starts the machine.
2. An upstream conveyor advances a single lane of loaded trays onto the infeed conveyor, which advances the trays to the stopped metering belts.
3. Trays accumulate upstream to the Minimum Surge photosensor.
4. When minimum surge is present, the metering belts begin preloading.

Figure 5.2: Product on Infeed Conveyor

5. The Metering Belt photosensor monitors the downstream end of the metering belts. The metering belts stop when this sensor detects the leading edge of a tray.

6. With the Metering selector switch set to Auto and minimum surge present, the metering belts are enabled to release the leading tray to the stacker flights. When the machine position reaches the *Metering Enable PLS 11* PLS window, the metering engages (metering belt servo begins running) to release a tray in mechanical time with a pocket in the stacker flights.

Figure 5.3: Metering Belts

7. If the active recipe runs single unstacked trays, the metering belts continue to release trays and the stacker flights advance the trays onto the wrapper infeed conveyor.

8. If the active recipe requires trays to be double stacked, the following actions occur:

   a. The metering belts release trays to the stacker flights.

   b. The stacker elevates the first tray (the top tray of a double stack) and places it on the stacker shelf while the stacker flights continue to advance the second tray (the bottom tray of a double stack).

   c. The stacker sweep advances the tray on the stacker shelf onto the tray in the stacker flights.

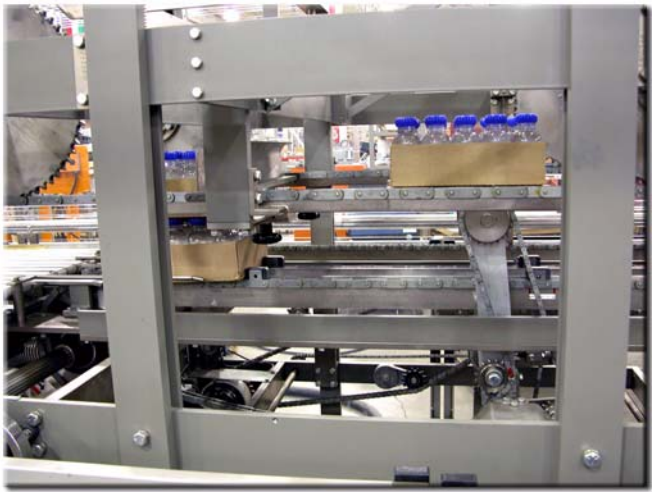
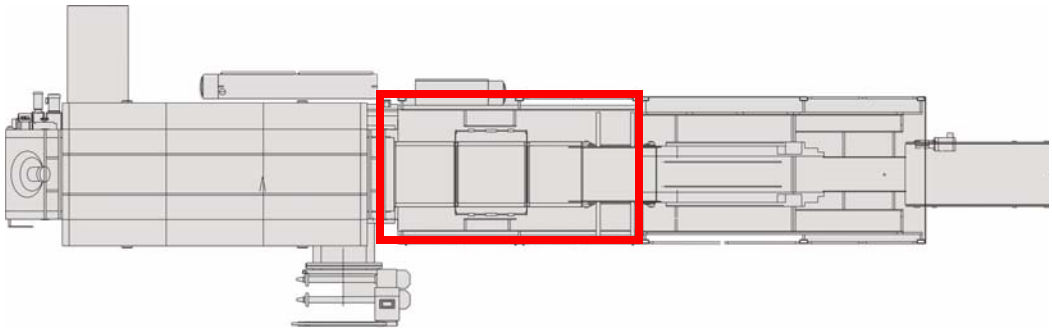


Figure 5.4: Product on Stacker

   d. The stacker flights advance the double stacked trays onto the wrapper infeed conveyor.

9. The wrapper infeed conveyor advances the single unstacked trays or double stacked trays onto the wrapper entry conveyor.

Wrapper Sequence of Events



Refer to Wrapper Primary Components for component descriptions.

The wrapper's primary functions are to merge each product group (single unstacked or double stacked loaded trays) with a sheet of shrink film, wrap the film sheet around the product, and discharge the film-wrapped product group to the shrink tunnel.

The following outline describes the wrapper sequence of events:

1. The wrapper infeed conveyor advances a product group onto the wrapper entry conveyor.

2. The Product At Wrapper photosensor monitors the wrapper entry conveyor for product approaching the wrap conveyor.

   The Product Out Of Position At Wrapper fault occurs when this sensor detects product or debris in the area between properly placed product groups.

3. The film drive is enabled in machine cycles in which the Product At Wrapper photosensor detects product.

Figure 5.5: Product on the Wrapper Infeed Conveyor

   The following actions occur while the film drive advances:

   a. As the wrapper entry conveyor advances a product group onto the wrap conveyor, the vacuum table belts deliver a film sheet's leading edge through the wrapper's first wand opening (the gap between the wrapper entry conveyor and the wrap conveyor). The film sheet's leading edge merges with the bottom of the product group.

b. A subsequent film sheet is cut to the film length as it advances onto the vacuum table.

c. A wrapper wand rises through the first wand opening as the product group moves past the opening. The vacuum dump opens to allow the wand to easily pull the film sheet off the vacuum table.

Figure 5.6: Wrapping the Product

4. The film sheet is wrapped around the product group as the wrapper wand moves in an arc above the product group and down its leading edge.

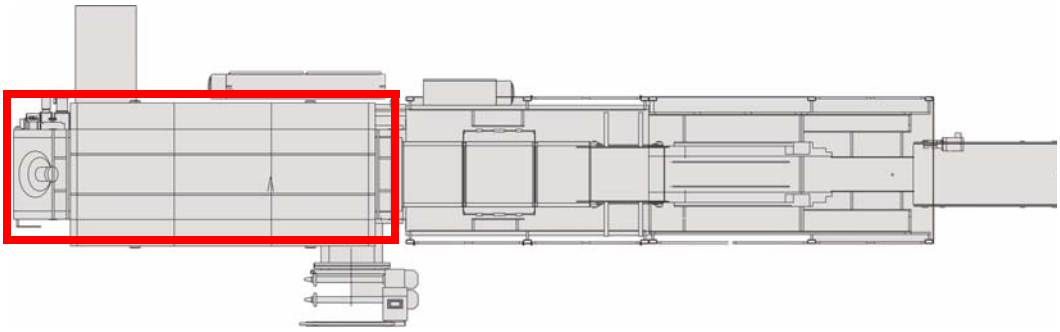
   The Missing Film fault occurs when a product group is detected on the wrap conveyor, but film is not detected on the wand.

5. The wrapper wand carries the film sheet's trailing end through the second wand opening (the gap between the wrap conveyor and the wrapper discharge conveyor).

6. As the product group advances over the opening, the film sheet's trailing end overlaps its leading end, which is held in position under the product group.

7. The wrapper discharge conveyor discharges the film-wrapped product group to the shrink tunnel, which seals the overlapped film at the bottom of the product group and shrinks the film tightly around the product.

Shrink Tunnel Sequence of Events



Refer to Shrink Tunnel Primary Components for component descriptions.

The primary functions of the shrink tunnel are to shrink the film tightly around the product and to bond the lap seal (the film sheets' overlap at the bottom of the package).

The following outline describes the shrink tunnel sequence of events:

1. The tunnel conveyor receives film-wrapped product groups from the wrapper discharge conveyor.
2. As the film-wrapped product advances through the shrink tunnel, the lap seal is welded by the heated air flowing through the tunnel conveyor's web openings.
3. Air from the side air ducts flows into the open ends of the film-wrapped product. This causes the film sleeve to "balloon up" and transfers heat to the inside and outside surfaces of the sleeve. The film begins to shrink when the film's temperature reaches its shrink range.

Figure 5.7: Product on Wrapper Discharge Conveyor

4. The cushion of air between the film and the product supports the film as it shrinks against the product.

5. The shape of the heat shroud directs heated air along the sides and top of each package. The flow of heated air around and through the film-wrapped product causes the film to shrink until it is snug around the product.

6. The suction created by the fan directs the air to the return air plenum, which directs the air to the heat source to be reheated to the desired temperature.

7. As the package exits the shrink tunnel, the film is soft and pliable. The shrink process, which is accelerated by the product cooling fan, continues until the film is cooled to a temperature below the shrink range.

Figure 5.8: Heat Tunnel

Packages should not be moved on the conveying surface during the cooling period. Moving a package results in a loose package and/or distortion of the package graphics.

Tray Stacker Primary Components

The tray stacker has the following primary functions:

- When the active recipe runs single unstacked trays, the tray stacker advances loaded trays from an upstream source to the wrapper entry conveyor.
- When the active recipe requires trays to be double stacked, the tray stacker receives loaded trays from an upstream source, double stacks the trays, and advances the double stacked trays to the wrapper entry conveyor.

The tray stacker consists of the following primary components:

- **Infeed conveyor:** This VFD-controlled conveyor receives a single lane of loaded trays from an upstream source, and advances the trays to the metering belts with controlled surge pressure.
- **Metering belts:** The servo-driven metering belts (over/under belts) receive loaded trays from the infeed conveyor. The metering belts release each tray in mechanical time with a pocket in the stacker flights.
- **Stacker drive:** The main drive servo drives the following machine components:

  Stacker flights: The stacker flights receive loaded trays from the metering belts, and advance single unstacked trays or double stacked trays onto the wrapper infeed conveyor.

  Stacker: When the active recipe requires trays to be double stacked, the stacker elevates a tray and places it on the stacker shelf.

  Stacker sweep: When the active recipe requires trays to be double stacked, the stacker sweep advances a tray from the stacker shelf onto a tray in the stacker flights.

Figure 5.9: Stacker Flights

  Wrapper infeed conveyor: This conveyor receives single unstacked trays or double stacked trays from the stacker flights and advances them onto the wrapper entry conveyor.

- **Torque limiters:** The flight chain torque limiter and stacker torque limiter protect machinery from mechanical overload. Torque limiter tension should be set light enough to protect the machinery, yet heavy enough so that the torque limiter does not trip during normal operating conditions.

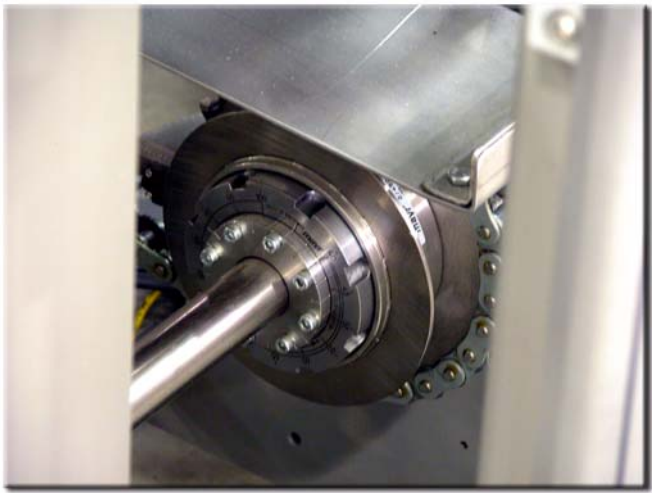


Figure 5.10: Torque Limiter

- **Stacker single position clutch:** When the active recipe requires trays to be double stacked, this single position clutch engages to drive the stacker and the stacker sweep. When the stacker is enabled, this clutch engages at a fixed position in the machine cycle. When the stacker is disabled, this clutch disengages when the machine position reaches the stacker's cycle stop position.

- **Sensors:** The tray stacker has the following sensors:

  The HIGH_SURGE (PE_25044) photosensor, which monitors an upstream conveyor for trays, is used for machine speed control.

  The MINIMUM_SURGE (PE_25041) photosensor, which monitors the infeed conveyor for trays, is used to enable the metering belt servo.

  The METERING_BELT (PE_60626) photosensor monitors the downstream end of the metering belts for the leading edge of a tray. This sensor is used for product registration.

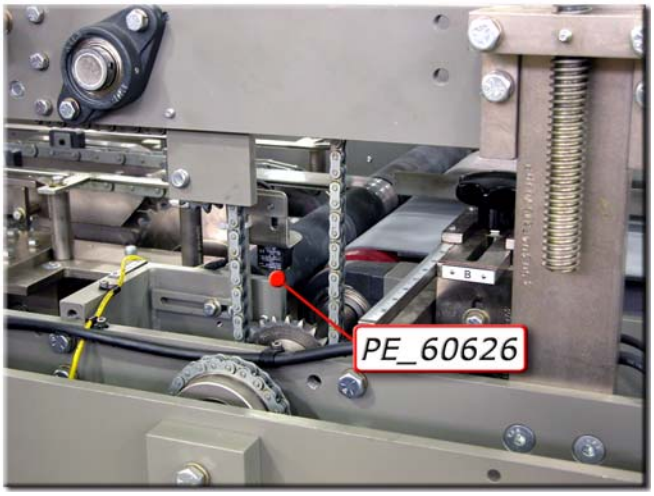


Figure 5.11: Metering Belt Photoeye

  The METERING_ENABLE_FROM_STACKER (PRX_60934) proximity sensor monitors a blip cam on the stacker line shaft. This cam is used when the active recipe requires trays to be double stacked to ensure that the metering belts release a second tray (the bottom tray of the double stack) to the stacker flights.

The STACKER_LIFT_CYCLE_STOP (PRX_60948) proximity sensor monitors a blip cam on the stacker line shaft that specifies the stacker's cycle stop position.

The STACKER_CLUTCH_DISENGAGED (PRX_60946) detects a ring on the stacker single position clutch when the clutch is disengaged.

The FLIGHT_CHAIN_OL_CLUTCH (PRX_60942) proximity sensor monitors a metal ring on the flight chain torque limiter to detect mechanical overload.

The STACKER_OL_CLUTCH (PRX_60944) proximity sensor monitors a metal ring on the stacker torque limiter to detect mechanical overload.

The Edit PLS Timing, Speed Settings, and Misc Settings control panel screens allow personnel to view or edit the wrapper infeed's adjustable parameters. Care should be taken when editing the parameters to maximize the machine's reliability.

Wrapper Primary Components

The wrapper's primary functions are to merge each product group (single unstacked or double stacked loaded trays) with a sheet of shrink film, wrap the film sheet around the product, and discharge the film-wrapped product group to the shrink tunnel.

The wrapper consists of the following primary components:

- **Film roll spindles:** A film roll is placed on each film roll spindle. A rubber bladder in the spindle selected on the Film Source selector switch is inflated against the film core to hold the roll in place. Each roll must be correctly positioned on its spindle to ensure that the film will track properly for cutting and wrapping around the product. The lower nip rollers, which are located on the film drive assembly, draw film from a roll as the film drive advances.

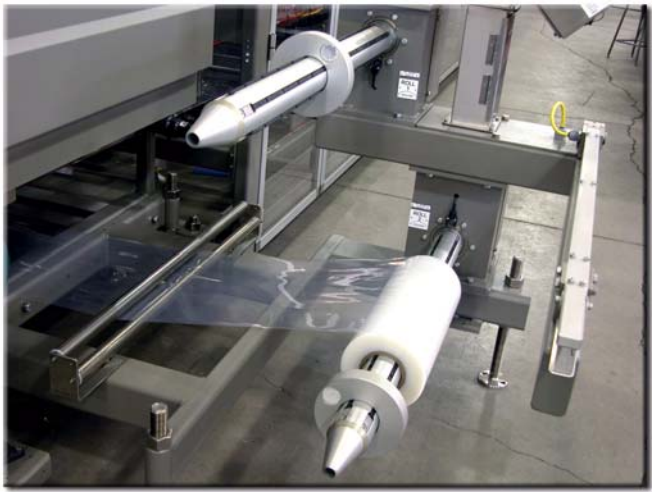


Figure 5.12: Film Stand

- **Film tensioning:** The following components work together to keep film tension between acceptable limits:

  Roll brakes (spindle brakes): Each brake controls acceleration and deceleration of its film spindle and prevents it from rotating when film is not being drawn from the roll.

  Dancer bars: As film travels from a film roll to the lower nip rollers, it passes around the 45-degree film transfer tube and through a set of dancer bars. The dancer bars dampen the acceleration and deceleration of the film roll during a wrapping cycle.

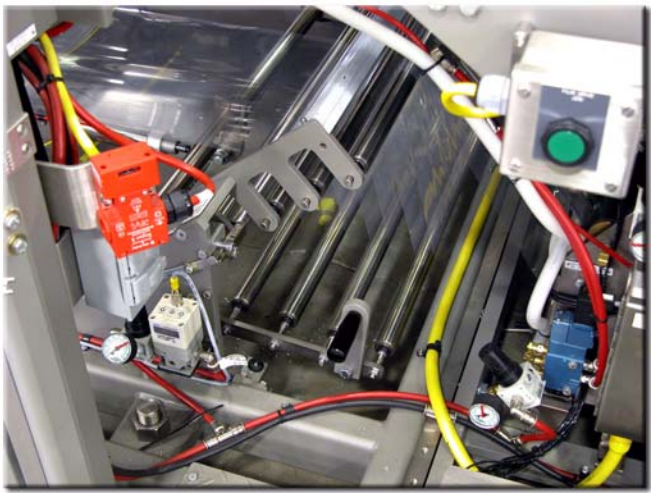


Figure 5.13: Dancer Bars

  Dancer bar tension air cylinder: This cylinder, which is attached to the dancer bars, is equipped with an internal potentiometer that provides the DANCER_BAR_POSITION_FEEDBACK analog signal to the PLC. This analog signal is converted to a position reference, which is used in PID calculations to determine the dancer bar position's rate of change and error from the target position. The target position is the midpoint of the dancer bars' range of motion.

DANCER_BAR_TENSION (ASV_61034): This analog pressure regulator valve maintains a constant pressure to the dancer bar tension air cylinder equal to the *Dancer Bar Pressure (PSI)* recipe variable.

FILM_ROLL_BRAKE (ASV_61030): This analog pressure regulator valve controls the air pressure to the roll brakes. The value of the analog signal that controls this valve is determined by PID calculations, or by the dancer bar's position being above or below the PID region. The brakes are fully released when the dancer bar is above the PID region, or when the Film Drive selector switch is set to Load. The brakes are fully on when the dancer bar position is below the PID region and the dancer bar is not moving up.

Figure 5.14: Film Roll Brake Pressure Regulator Valve

- **Film drive assembly:** The film drive draws film from a film roll, cuts film to the required length, and merges a film sheet with each product group that advances onto the wrap conveyor. The film drive is driven by the film drive servo, which is cammed to the main drive servo.

  The film drive consists of the following primary components:

  Nip rollers: The lower nip rollers draw the film from a film roll. The film passes from between the lower nip rollers to between the upper nip rollers. The difference in surface speed between the lower and upper rollers tensions the film for cutting. As the film drive advances, the upper nip rollers deliver a film sheet onto the inclined vacuum table.

  Film cutter: Film is cut by a serrated knife that is controlled by an actuator on an end of the knife shaft. When the actuator is activated, the shaft rotates in the direction of film travel and the knife swings in an arc to cut the taut film.

  A serrated steel deck is located downstream of the nip rollers and just outside of the knife arc. This deck provides a sheer point to enhance the cutting action of the knife.

Vacuum table: The vacuum table belts deliver each film sheet's leading edge through the wrapper's first wand opening (the gap between the wrapper entry conveyor and the wrap conveyor) in mechanical time with the bottom of a product group. Vacuum suction holds film sheets onto the vacuum table belts.

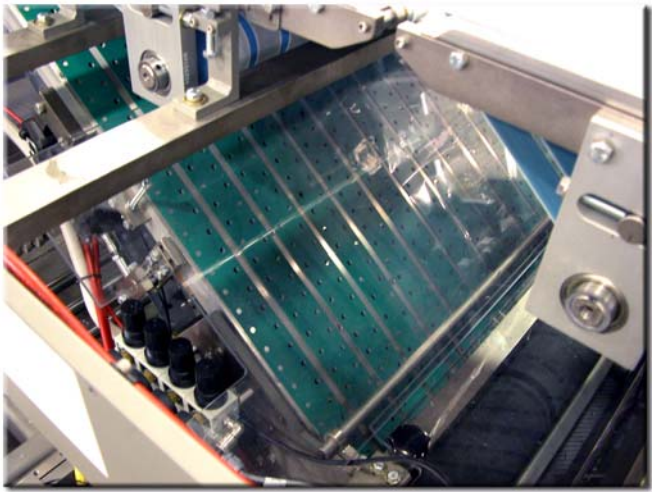


Figure 5.15: Vacuum Table

Vacuum belts dump valve: While a wand pulls a film sheet off the vacuum table, the vacuum dump valve opens the vacuum chamber to the atmosphere. With vacuum pressure released, the wand easily pulls the film sheet off the vacuum table.

- **Wrapper entry conveyor:** This conveyor receives product groups from the wrapper infeed conveyor and advances them to the wrap conveyor. The film delivery merges a film sheet with the bottom of the product group in machine cycles in which the Product At Wrapper photosensor detects product on the wrapper entry conveyor.

  This conveyor is driven by the entry-and-wrap conveyor servo, which is geared to the main drive servo.

- **Wrap conveyor:** This conveyor advances individual product groups toward the wrapper discharge conveyor as a wrapper wand wraps the product with a film sheet.

  This conveyor is driven by the entry-and-wrap conveyor servo, which is geared to the main drive servo.

- **Wrapper wands:** Two wrapper wands that are positioned 180 degrees apart travel around the wrap conveyor. A product group is wrapped with a film sheet while a film-draped wand moves in an arc above the product group and down its leading edge.

  The wrapper wands are driven by the wrapper wand servo, which is cammed to the main drive servo.

- **Wrapper discharge conveyor:** This conveyor transfers film-wrapped product groups from the wrap conveyor to the shrink tunnel conveyor.

  This conveyor is driven by the wrapper discharge conveyor servo, which is geared to the main drive servo.

- **Sensors:** The wrapper has the following sensors:

  Each of the LOW_EMPTY_FILM_ROLL_1 (PE_60930) and LOW_EMPTY_FILM_ROLL_2 (PE_60932) photosensors detects a reflector one time each film roll rotation when the corresponding film roll is nearly empty. A Film Roll Empty fault occurs when the selected film roll's sensor detects the number of film roll rotations entered in the *Empty Film Roll Counter* recipe variable.

Figure 5.16: Low Empty Film Roll 1 Photoeye

  The PRODUCT_AT_WRAPPER (PE_60924) photosensor monitors the wrapper entry conveyor for product approaching the wand conveyor. This sensor is used for the following purposes:

  - The film delivery merges a film sheet with the bottom of a product group in machine cycles in which this photosensor detects product on the entry conveyor.
  - A Product Out Of Position At Wrapper fault occurs when the following conditions are present:

    The machine position is within the *Prod Out Of Position PLS 13* window. This PLS window occurs when the area between properly placed product groups passes by the Product At Wrapper photosensor.

    The light beam of the Product At Wrapper photosensor is blocked.

  The FILM_AT_WANDS (PE_60926) photosensor monitors the wrapper wand for film. The PRODUCT_AT_WANDS (PE_60928) photosensor monitors the wand table for product.

  The Missing Film fault occurs when the following conditions are present:

  - The machine position reaches the *Missing Film Check PLS 15* PLS window.
  - The Product At Wands photosensor detects product while the Film At Wands photosensor does not detect film.

The Edit PLS Timing, Edit Film Settings, Speed Settings, and Edit Cam Profile control panel screens allow personnel to view or edit the wrapper's adjustable parameters. Care should be taken when editing the parameters to maximize the machine's reliability.

Shrink Tunnel Primary Components

The shrink tunnel's primary functions are to shrink the film tightly around the product and to bond the lap seal (the film sheets' overlap at the bottom of the package).

The shrink tunnel consists of the following primary systems:

- **Air supply unit:** Controlled airflow in the tunnel ensures a uniform shrink to the upper film and bull's-eye. The air supply unit, which heats and circulates air, consists of the following components:

  Heater elements: The heater elements heat the tunnel air. The power to the heater elements is controlled to regulate the tunnel heat to the *Base Tunnel Temp Setpoint* recipe variable.

  Heater air blowers (base): This VFD-controlled blower extends the full width of the heated air plenum to provide uniform airflow across the width of the plenum. The *Tunnel Blower Speed (RPM)* recipe variable adjusts the volume of air being circulated.

  BASE_TUNNEL_HEATER_AIR_TEMP (RTD_10910): This resistance temperature-sensing device (RTD) monitors the air temperature downstream of the base tunnel heaters. This device provides feedback to the PLC, which modifies the control variable (power level) to the heater elements to maintain the air temperatures at the selected setpoint.

  Heated air plenum: The plenum channels and directs the heated air around the product. Within each chamber, the plenum's cross-sectional area is tapered outward from the fan discharge to equalize airflow through each hole in the plenum surface. These holes are aligned with the openings in the conveyer chain web.

  Air ducts: Heated air is routed to the side air ducts, which direct air toward the ends of the product. The volume of air passing through the side air ducts can be controlled by opening or closing dampers.

  Return air plenum: The return air plenum directs air back to the heat source.

  Heat shroud: The heat shroud covers the top, sides, and ends of the heated air plenum. It contains the air around the product and directs air to the return plenum. To minimize heat loss, the heat shroud is insulated and the entrance and exit openings are covered with a curtain.

- **Tunnel conveyor system:** The VFD-controlled tunnel conveyor receives film-wrapped product from the wrapper discharge conveyor and conveys it through the tunnel to the plant's take-away conveyor. The tunnel conveyor system consists of the following components:

  Conveyor chain: The conveyor chain is a web (open mesh) with openings that allows airflow to the bottom of the packages. The film sheets' overlapped ends are welded by heated air passing through the chain's web openings.

Figure 5.17: Tunnel Conveyor Chain

  Chain cooling fan: This VFD-controlled fan, which extends the full width of the tunnel conveyor, forces air over and through the tunnel conveyor chain. To prevent film from sticking to the chain, the fan cools the chain to the *Chain Return Setpoint* recipe variable.

  TUNNEL_CHAIN_ TEMPERATURE (IR_10926): This infrared temperature sensor monitors the tunnel conveyor chain's surface temperature. This device provides feedback to the PLC, which controls power to the chain cooling fan.

- **Tunnel height adjust:** The tunnel moves to the *Tunnel Height (In.)* recipe variable to optimize the effectiveness and efficiency of the shrink tunnel's heating system.

- **Tunnel discharge:** The tunnel discharge consists of the following components:

  Product cooling fan: This fan accelerates the film cooling process by blowing ambient air onto completed packages on the plant's take-away conveyor.

  The DOWNSTREAM_SURGE (PE_10906) photosensor monitors the plant's take-away conveyor to ensure that packages are advancing. The machine cycle dwells when this sensor's light beam is blocked for a preset time.

Figure 5.18: Cooling Fan

The Edit Tunnel and Edit Tunnel Temps control panel screens allow personnel to view or edit the shrink tunnel's adjustable parameters. Care should be taken when editing the parameters to maximize the machine's reliability.

Sensor Location Floor Plan

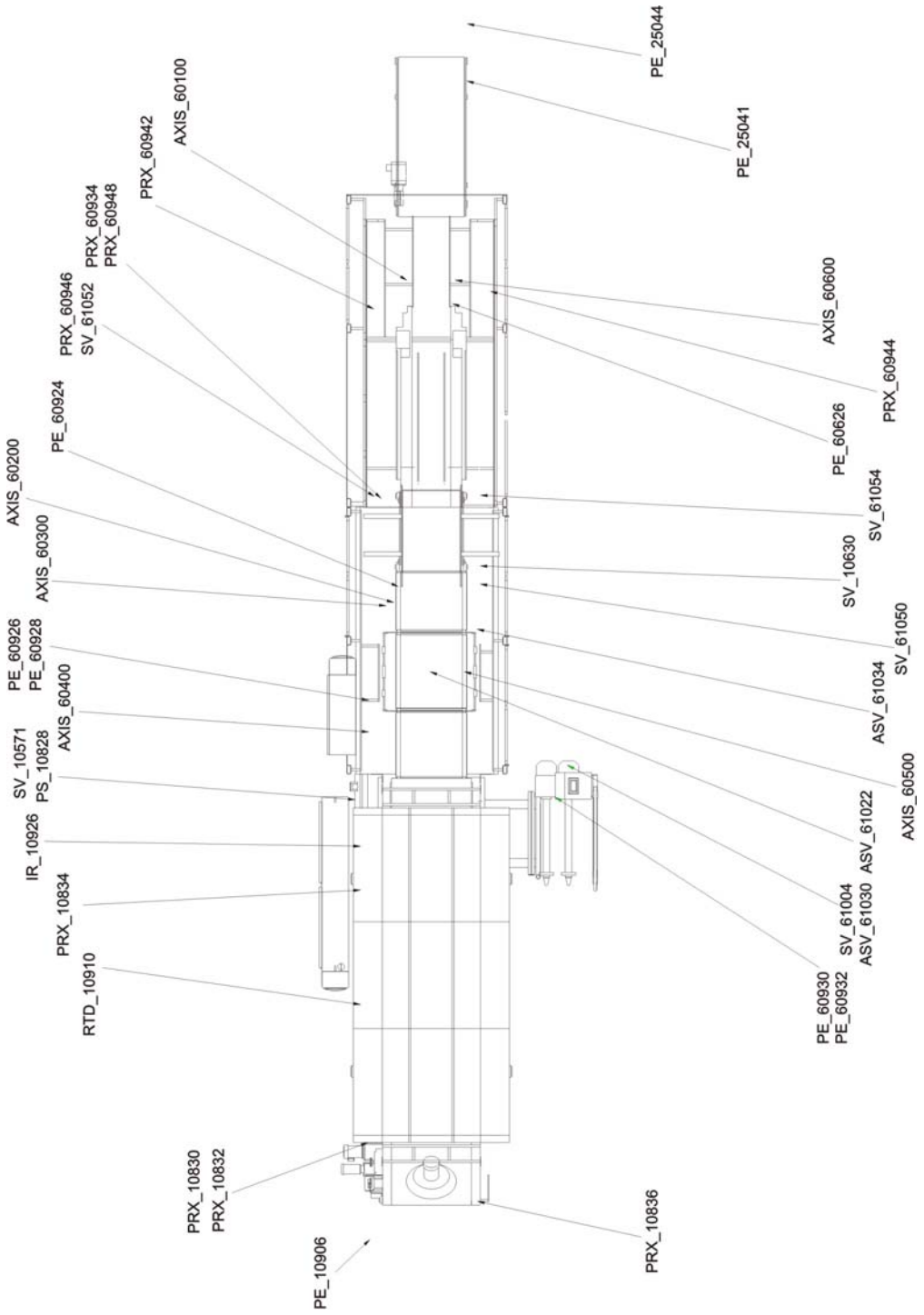


Figure 5.19: Sensor Location Floor Plan

Section 6: Components

- Film System
- Vacuum Table System
- Heat Tunnel
- Servos
- Torque Limiters
- Chain Tensioner
- Photoeyes and Switches

Film System

Film Roll Assembly

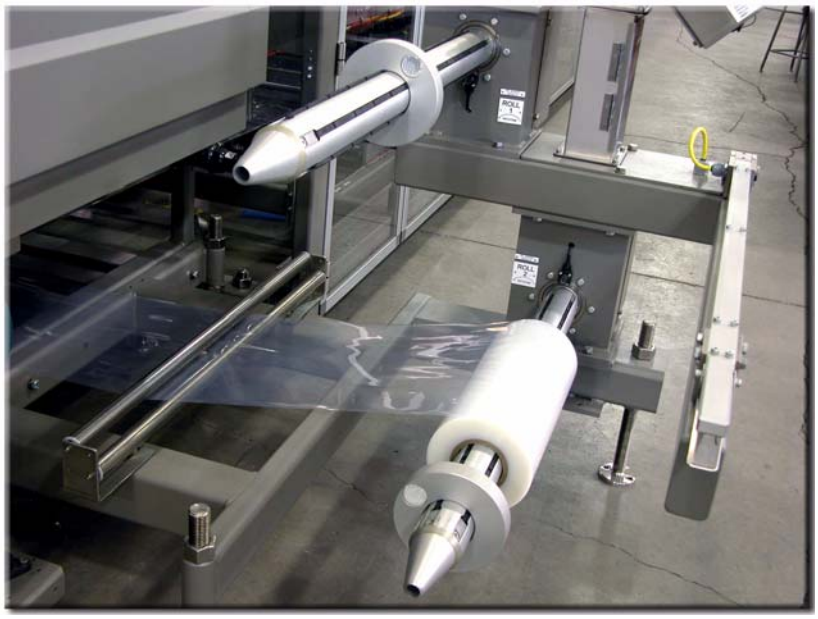


Figure 6.1: Film Stand

The film stand assembly consists of two film roll spindles and a splice bar. The main control panel is also mounted to the film stand assembly.

The Low Empty Film Roll 1 (PE_60930) and Low Empty Film Roll 2 (PE_60932) photoeyes and reflector rings are located on the corresponding spindle and are used to detect a low or empty film roll.

It is important that the reflector rings are re-installed after a new film roll is placed on the spindles. Without the reflector rings installed, the machine is unable to monitor the amount of film left on the rolls, allowing the machine to run out of film.

Film Spindles

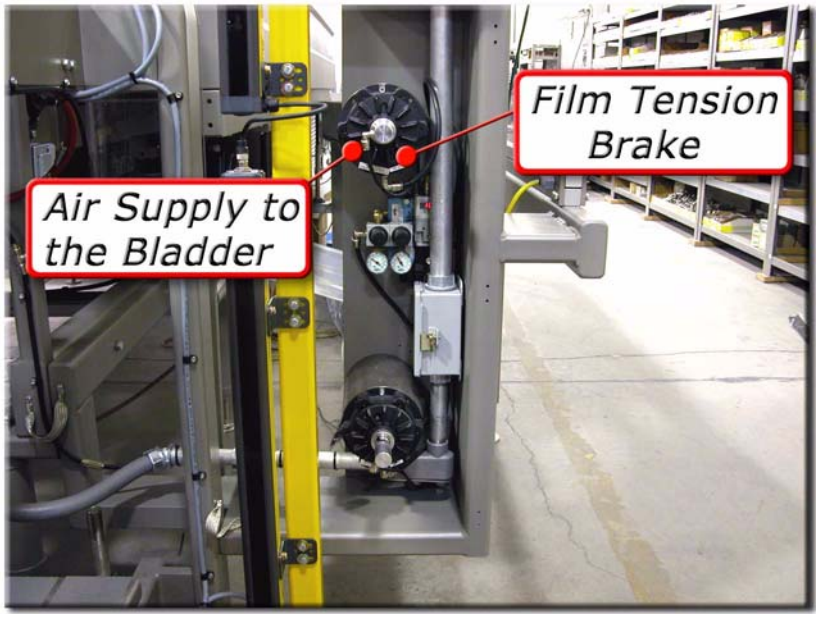


Figure 6.2: Film Spindles

The film roll spindles each contain little rubber tabs on the outside surface of the spindle and a bladder, or rubber bag, on the inside of each spindle. When the desired film roll is selected using the *Film Source Roll 1/Roll 2* selector switch on the Film Controls Screen, the corresponding bladder inflates. This causes the little rubber tabs on the surface of the corresponding spindle to push out against the core of the film roll, holding the film roll in place on the spindle.

Each spindle is also equipped with a roll brake. The roll brakes control the acceleration and deceleration of the corresponding film spindle and prevent it from rotating when the film is not being drawn from the roll.

Dancer Bar Tension System

Figure 6.3: Air Cylinder

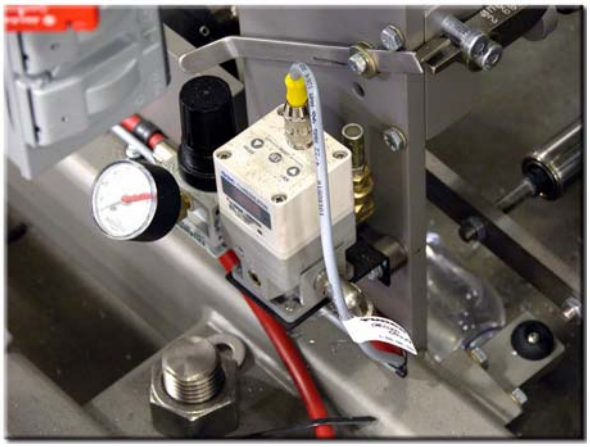


Figure 6.4: Dancer Bar Regulator

The dancer bar tension system is designed for the precise control of the dancer bar system. An air cylinder and a regulator help control the dancer bar position. A sensor located at the end of the cylinder measures the position of the dancer bars and provides feedback to the PLC. The PLC signals the regulator to control the amount of air pressure going to the roll brake regulator.

The dancer bar brake system provides constant film tension at the desired level and controls the roll brake so that the dancer bars function in the center of travel, typically moving 4-6 inches. The tension on the film is proportional to the air pressure on the cylinder.

The dancer bar position settings are displayed on the Edit Film Settings Screen of the control panel for viewing or editing.

Knife Clutch Assembly

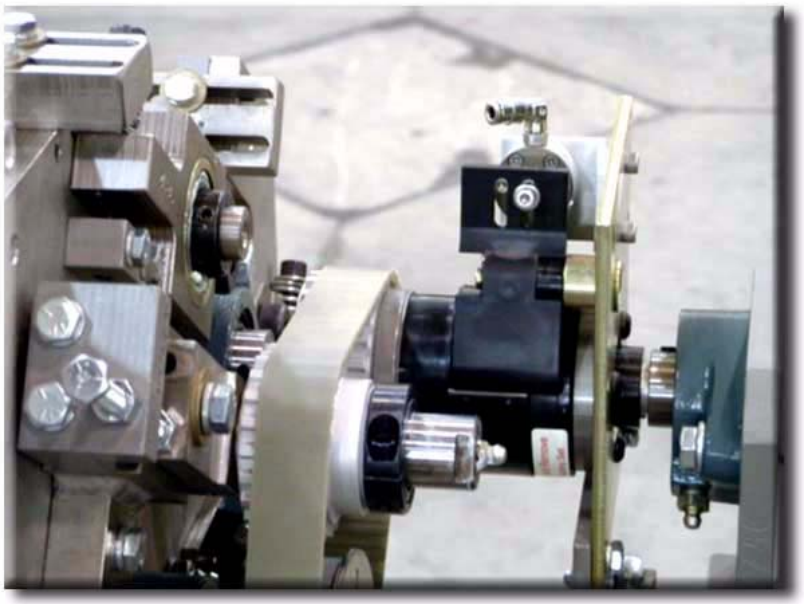


Figure 6.5: Knife Clutch

The knife clutch catch holds the clutch while the drive belt turns the pulley.

When the cylinder fires, the clutch rotates the knife shaft. The cylinder is adjusted to stop the shaft during the next cycle.

Knife

Figure 6.6: Knife

The knife shaft is made of aluminum to reduce its weight. HeliCoil thread repair inserts are installed in the holes for mounting the knife. These inserts prevent damage to the threads replacing the knife.

The knife notches allow the leading edge of the next piece of film to be guided under the upper pinch roller and hold the film down flat. The upper pinch rollers are larger in diameter than the lower pinch rollers. The pinch roller size difference causes the upper roller surface to move slightly faster, which creates the proper tension on the film, allowing for film cutting. This breaks the remaining portion of the film, which is mostly under the upper roller.

The knife should be parallel with the vacuum table and pointing at the upper pinch roller after it has cut the film. This will reduce the possibility of the film getting caught on the knife after it is cut.

The average life span of a new knife blade is three months. The character (thickness, density, coating, composition, etc.) of your film affects the length of its life span.

Douglas Machine recommends destruction and proper disposal of the old blade.

⚠WARNING	The cutting edge of the knife is extremely sharp and contact with the edge (stationary or in motion) can cause serious personal injury.

Adjusting the Stopping Position of the Knife

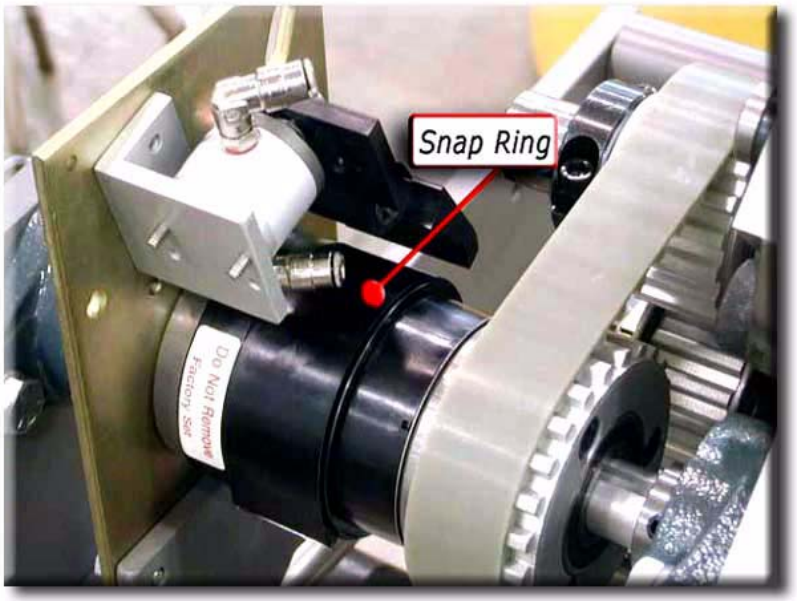


Figure 6.7: Snap Ring

The normal stopping position of the knife blade is parallel to the vacuum deck, causing an unobstructed path for the film between the rolls.

Adjust this position by taking the snap ring off the clutch and sliding the outer ring with the stop notch completely away from the teeth and repositioning in different notches.

It may take several tries to get the desired position, manually cycling the knife between adjustments.

Pinch Rollers

Adjusting the Pinch Rollers

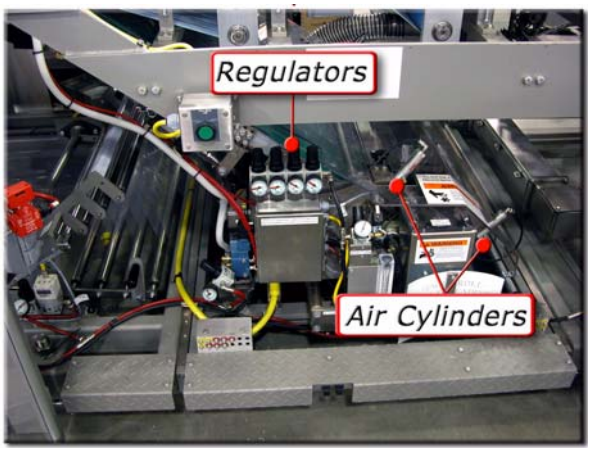


Figure 6.8: Regulators and Air Cylinders

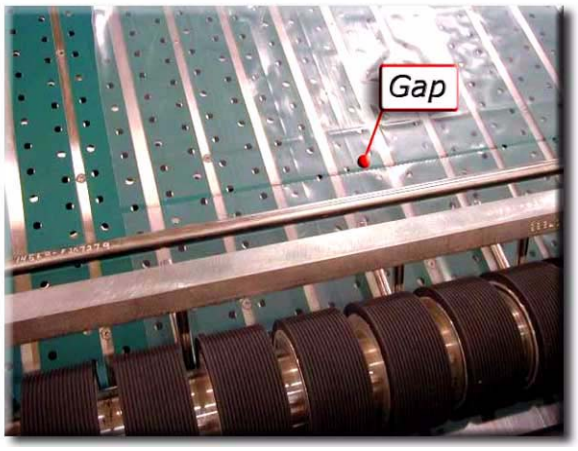


Figure 6.9: Gap Between Film Pieces

The pinch (nip) rollers can be adjusted to achieve the proper film tension on the film by the air cylinders. There are four air cylinders that apply pressure on the top and bottom pinch rollers. Each air cylinder is controlled by a regulator.

The bottom air cylinders require slightly more air pressure than the top air cylinders. The air pressure also controls the gap between the cut pieces of film as they enter the vacuum table. If the gap between the two pieces of film is uneven, adjusting the regulator will increase or decrease the gap. The more air pressure there is, the tighter the film will be.

To loosen the film, apply less air pressure. A good starting point for the bottom nip rollers is 30 psi and for the top nip rollers is 20 psi.

Pinch Roller Maintenance

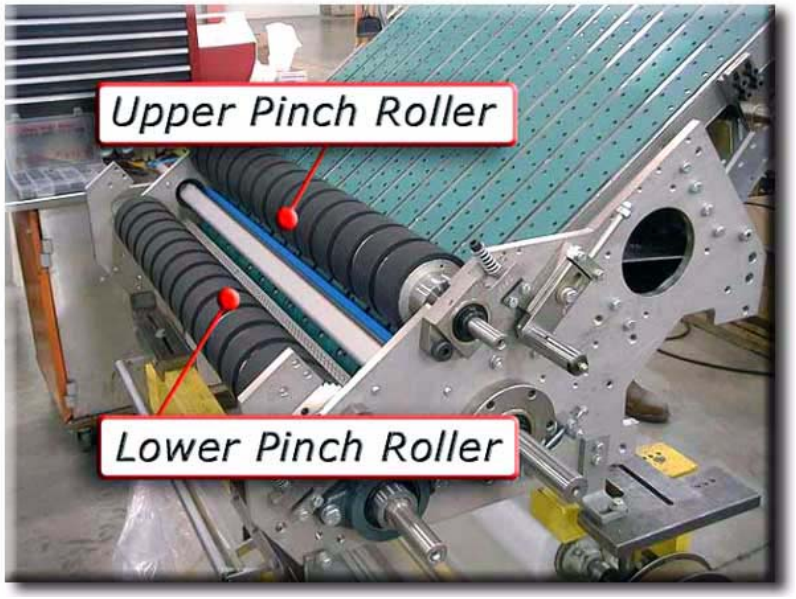


Figure 6.10: Upper and Lower Pinch Rollers

The pinch rollers should routinely be inspected for damage, build-up of film (generally, a powdery or smooth substance which can be removed with mild soap and water), and wear. Premature wear can be attributed to film textures, bearing wear, lack of preventative maintenance, and the amount of cases run through the machine.

Theory of Operation

The servo film control is the heart of the wrapper. The servo ensures the film is cut to the correct length and feeds properly at the correct time.

The servo control system is the Allen-Bradley with the ControlLogix system. This system includes the servo amplifier, servo motor, encoder, and a knife release clutch.

When the machine is operating, the lobe of a single lobe, an open face cam mounted on the wrapping wand shaft passes a proximity sensor. Each time the sensor detects the lobe, the servo amplifier will receive a pulse. The servo amplifier uses this pulse as its zero mark. An encoder driven by the main drive shaft sends a steady stream of pulses to the servo amplifier also. Each time the zero mark is received, the servo amplifier resets its count of those pulses. Therefore, each complete revolution of the wrapping wand shaft results in the servo amplifier counting 2048 (0 to 2047) equal length pulses from the encoder. With this information, the servo amplifier can determine how fast the machine is going. Additionally, it is able to calculate exactly what the position of the line shaft is, in terms of degrees of rotation. Because one complete rotation of the line shaft equals one machine cycle, the servo amplifier can relate this rotation information to actual machine position. This information is used to determine when each operation of the machine is to occur.

When the Tray at Wrapper sensor detects a package and the zero mark is received, the servo motor is directed to begin drawing film a specified (by its program) number of counts from the zero mark. The number of increments is determined by the film position value that is loaded into the interface keypad. Film will be fed until the film length value, also loaded into the interface, has been reached. When a value is entered into the interface, the distance from zero that the servo will run before firing the knife is changed. The command function that fires the knife is similar to a programmable limit switch setting. The solenoid that releases the clutch for the knife is a 24 VDC solenoid to release the knife clutch. The normal servo signal ensures that the solenoid stays energized as long as necessary to produce the desired length of film.

If the machine speeds up or slows down, the servo must track those changes. The command function that does this is called gearing. The servo is told to follow the machine in only one direction. For machines that have the servo motor on the right side (looking with product flow), the film feed is positive. For machines with the servo on the left side, the film feed is negative.

When watching the equipment operate, you will notice the movement of the servo doesn't follow the machine in a linear fashion. The servo will speed up and slow down within its cycle. It is commanded to begin acceleration and complete deceleration in time with the encoder pulses and, between the two, it must follow its program. This is done so that when the film contacts the tray/bundle, the feed rate will match it and prevent bunching up of the film behind the tray/bundle.

Vacuum Table System

Vacuum Table Schematic

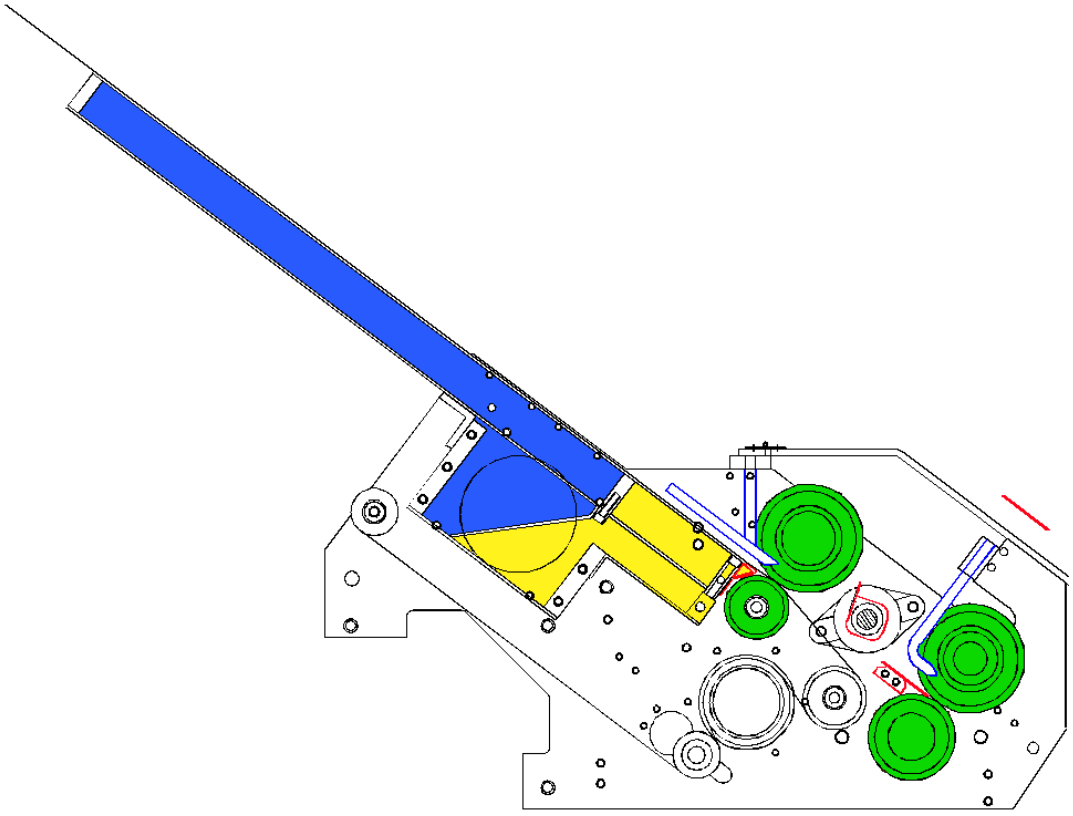


Figure 6.11: Vacuum Table Schematic Diagram

The vacuum table is divided internally into two portions:

- The upper portion (blue) vents to reduce the vacuum. This allows the removal of the film.
- The lower portion (yellow) has a constant vacuum supply to maintain constant control of the film.

Film is pulled tight and cut between the pinch rollers (highlighted in green). The stripper bars (outlined in blue) ensure that the film is removed from the rollers. The knife shaft is outlined in red.

Vacuum Table

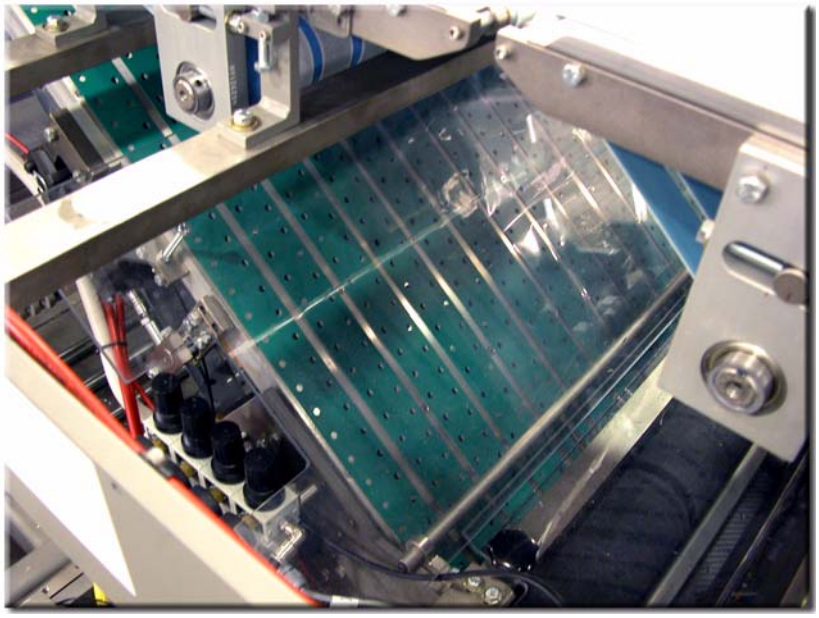


Figure 6.12: Vacuum Table

The belts on the vacuum table contain holes corresponding to the holes in the plate below the belts. This allows air to be pulled through the belts, creating a vacuum beneath the film that is on the table. The top pinch roller drive belt should be loose and the drive belt from the servo to the pinch roller should be kept tight to prevent slippage.

Vacuum suction holds the film onto the vacuum table belts. This keeps the film flat and prevents it from slipping, ensuring the proper position of the leading edge of the film. The leading edge of the film sheet advances through the wrapper's first wand opening in mechanical time with the bottom of a product group.

The film is cut to length and positioned by the film drive servo. This servo is programmed to cut the film to the proper length, according to the program that is selected in the recipe screen.

This servo also has sensors on the machine to keep track of the position and speed of the product to place the leading edge of the film in the proper position under the product.

Adjusting the Vacuum Table Belts

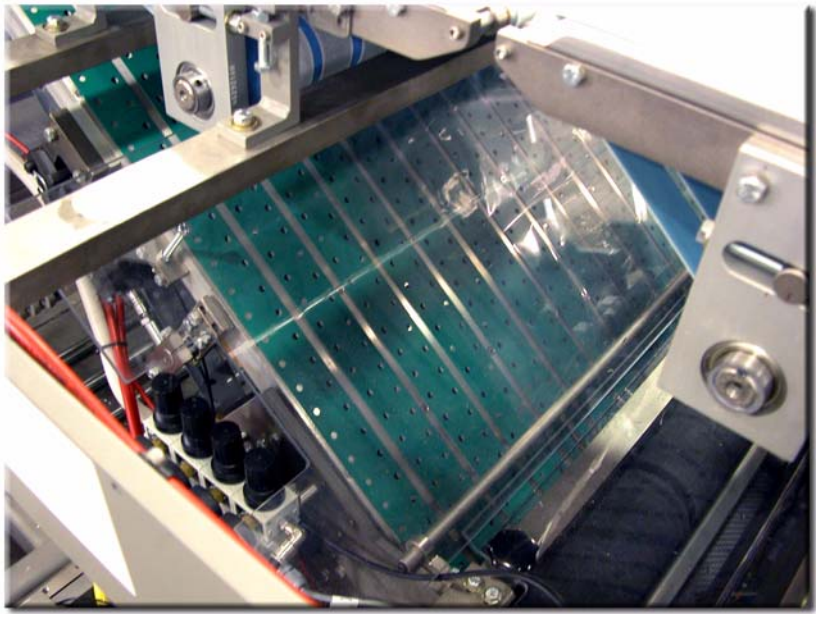


Figure 6.13: Vacuum Table Belts

The vacuum table belts are tensioned from both sides underneath. Be careful not to over stretch these belts which can cause excess stress on the belt splices. Due to the design of the belts and the crown of the pulleys, there is no need for tracking, but it is recommended that even tension be applied on both sides.

The poly drive belts on both sides of the cutter assembly must be checked occasionally for proper tension. These poly belts should be snug, but do not over tighten, as this places stress on the bearings. If the belts are too loose, film placement caused by the film or the belts slipping may occur.

Vacuum Turbine Assembly

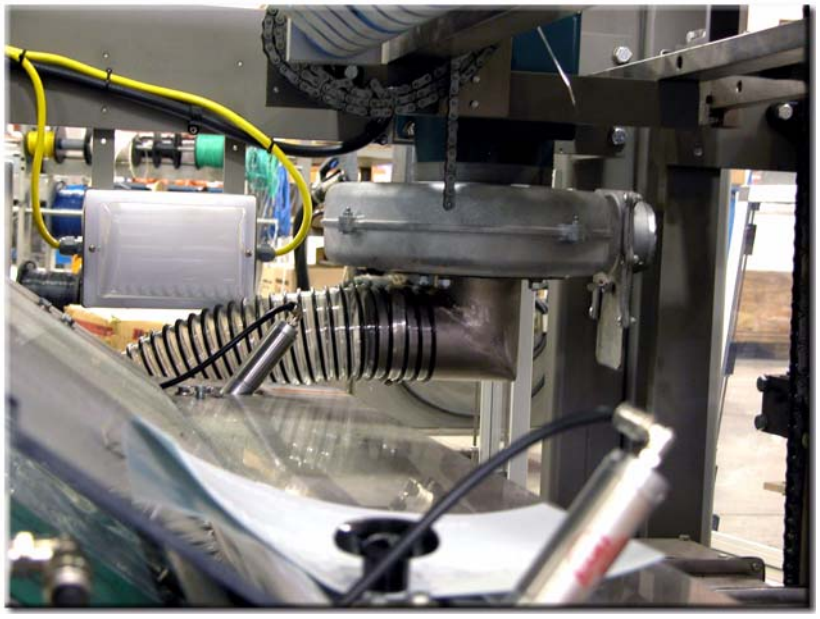


Figure 6.14: Vacuum Turbine

A vacuum turbine provides vacuum to the vacuum table. It is connected to the vacuum table by a hose, allowing the film to remain in place until it is ready to feed up under a tray.

Vacuum Table Dump Valve

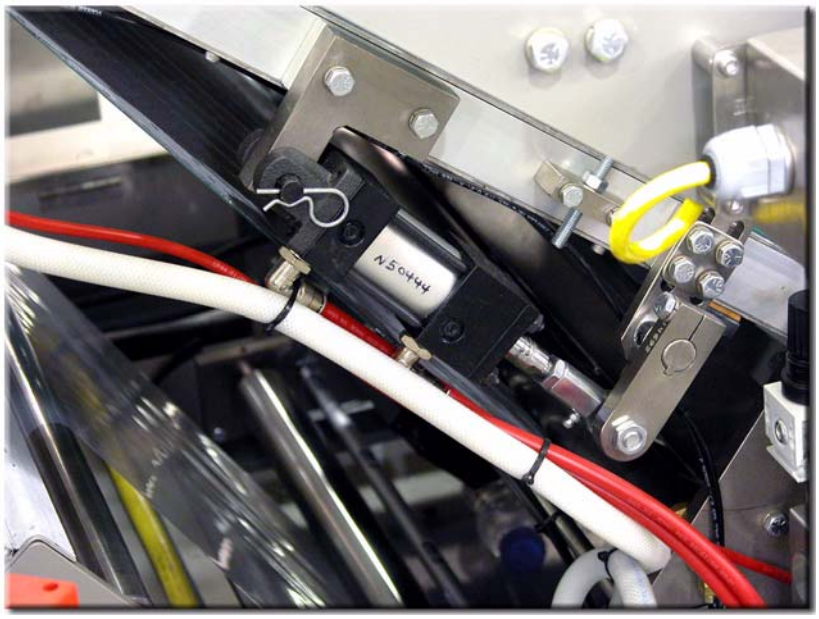


Figure 6.15: Vacuum Dump Valve

When the wrapper wand contacts the film, the PLC activates the vacuum dump valve. The valve opens and dumps the vacuum from the top portion of the vacuum table as the wand pulls the film off the table. This prevents the film from being pulled from under the product.

Vacuum Table Transfer Plate

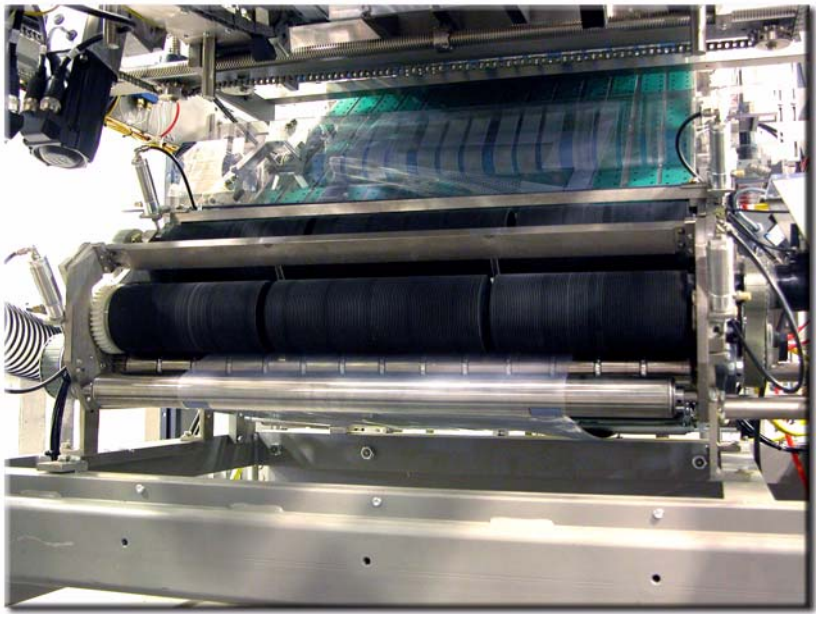


Figure 6.16: Vacuum Table Transfer Plate

The film contacts the bottom metal roller on the film drive assembly. To ensure the film properly feeds into the film drive, a transfer plate guides the film.

The transfer plate is beveled on the underside, allowing for installation close to the roller. Any damage to the metal roller, or even the finish, will create problems in handling the film.

Vacuum Table Air Tubes

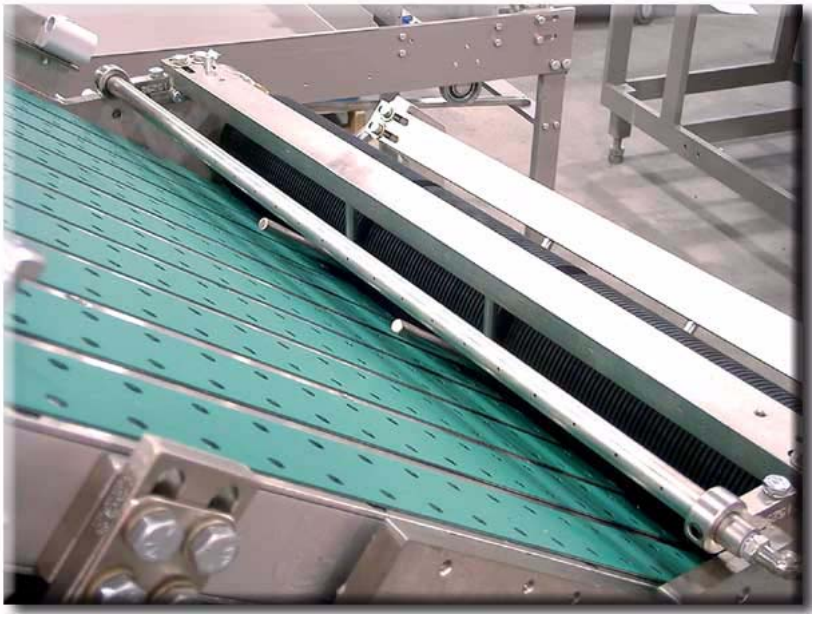


Figure 6.17: Air Tube

Air tubes guide the film while it transfers onto the wrapping table. The lower air tube creates a light cushion of air. This holds the leading end of the film down on the vacuum belts until there is enough film being held by the vacuum to keep it in place.

The upper air tubes guide the film through the gap in the wrapping table. No support exists for the film in the area between the “fingers” and the wrapping table. The air from the upper air tube guides the film up through the slot. The tubes turn, allowing the proper positioning of airflow. The fingers that guide the film up into the slot that the wand passes through must be clear of the wand and evenly aligned to properly guide the film in.

The air tubes are supported by two split set collars, which when loosened, allow the adjustment of the direction of airflow.

Heat Tunnel

Tunnel Chain Handle

Figure 6.18: Tunnel Chain Handle

The heat tunnel should never sit for more than one minute without the chain moving when the tunnel is at operating temperature. The chain will become brittle and any product still in the tunnel will be severely damaged.

If the E-Stop pushbutton is pressed or the tunnel stops, remove the tunnel chain handle from its storage position. Insert the handle into the shaft and manually turn the tunnel chain handle, rotating it toward the discharge end of the machine, to move the conveyor. This should continue until the tunnel conveyor can be restarted or the tunnel has cooled below 250 degrees. Then, remove the handle from the shaft and return it to its storage position.

Heat Tunnel Airflow

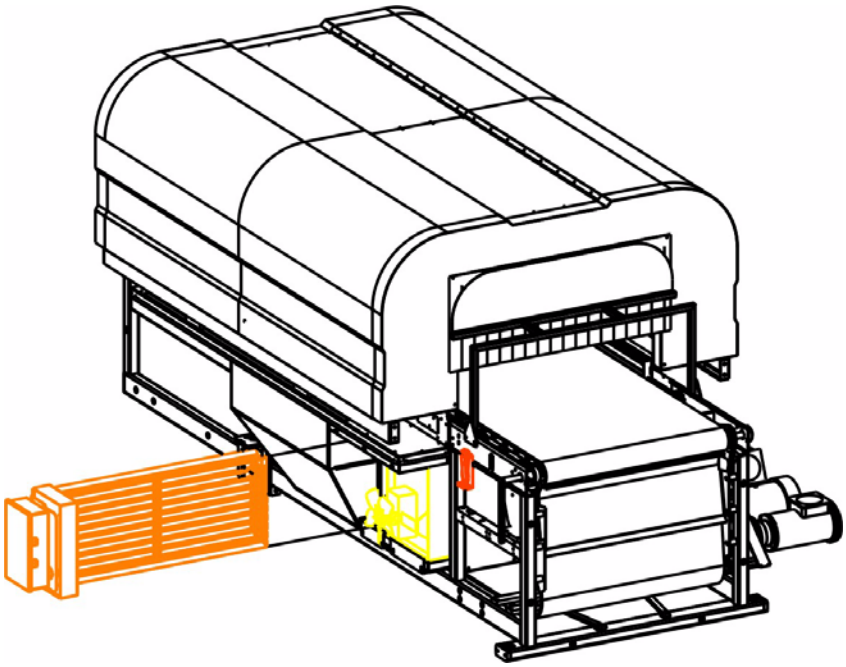


Figure 6.19: Heat Tunnel Diagram

The heat tunnel air supply consists of heater elements, a tunnel blower fan, a heated air plenum, and air ducts.

The heater elements heat the air while the tunnel blower fan draws air from the heater elements and uniformly distributes it to the heated air plenum.

The heated air plenum directs the heated air around the product. It is divided into individual chambers with an air restrictor plate controlling the airflow into each chamber. The heated air flows through small holes, which are aligned with openings in the conveyor chain. The heated air also flows to the side air ducts. The ducts direct the air toward the ends of the product. The return air plenum then directs the air back to the heater element and the cycle is repeated.

Removing the Heater Tray

Figure 6.20: Operator Controls Screen

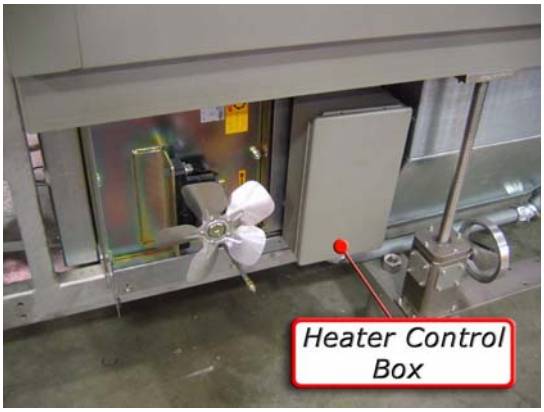


Figure 6.21: Heater Control Box

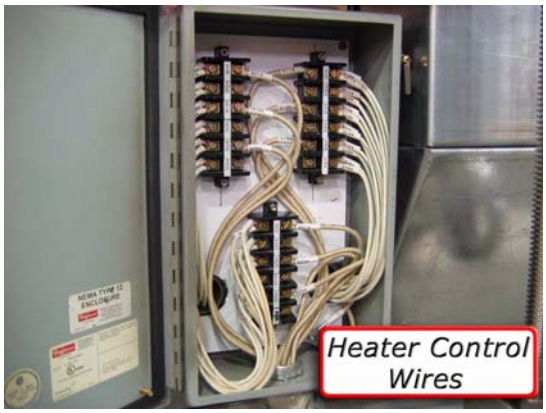


Figure 6.22: Heater Control Wires

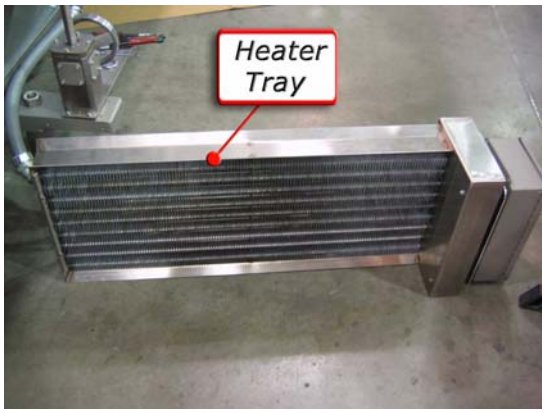


Figure 6.23: Heater Tray

To remove the heater tray, advance to the Operator Controls Screen on the control panel and press the Cool Down Stop pushbutton to shut down the heaters. Advance to the Tunnel Controls Screen and press the Maintenance Height pushbutton to raise the heat tunnel to its maximum height. Remove the guard door and open the heater control box door. Disconnect the heater control wires, located at the bottom right of the heater control box. Then, pull the heater tray out from its mounting bracket.

⚠ CAUTION

The power should be turned off and locked out before disconnecting the heater control wires.

The tray may be very hot.

Tunnel Blower Fan

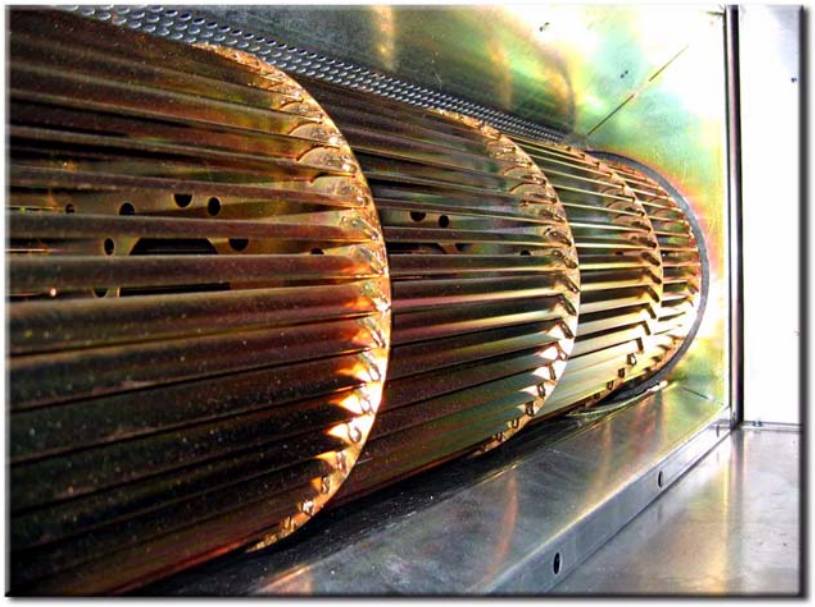


Figure 6.24: Tunnel Blower Fan

A tunnel blower fan, located inside the heat tunnel, pulls air through the heater elements and maintains a uniform airflow across the heated air plenum.

Tunnel Air Knives

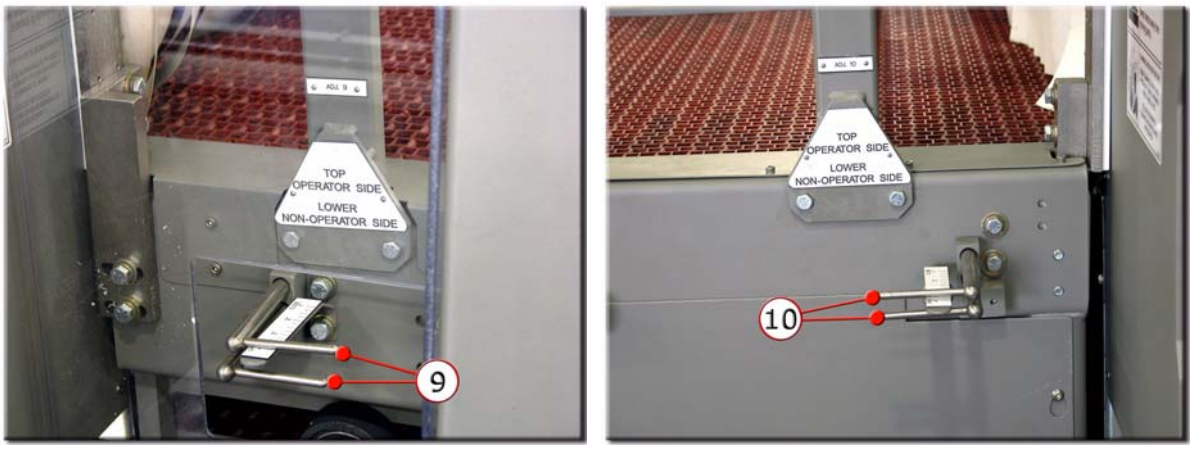


Figure 6.25: Heat Tunnel Air Knives

The air knives, located in the base of the side air ducts, help control the airflow within the tunnel by restricting the amount of air allowed to flow to the sides of the tunnel.

When the air knives are completely open, the air flows to the sides of the tunnel. Closing the air knives forces the air to the middle of the conveyor chain.

The four air knife settings determine the appearance of the bull's-eye and film shrinkage. There are no general rules to determine the correct air knife settings; however, package size, film thickness, and film type (different manufacturers) should be considered.

Refer to the Changeover section of the manual for entry tunnel air knife and base tunnel air knife settings for each recipe.

Chain Temperature Monitoring

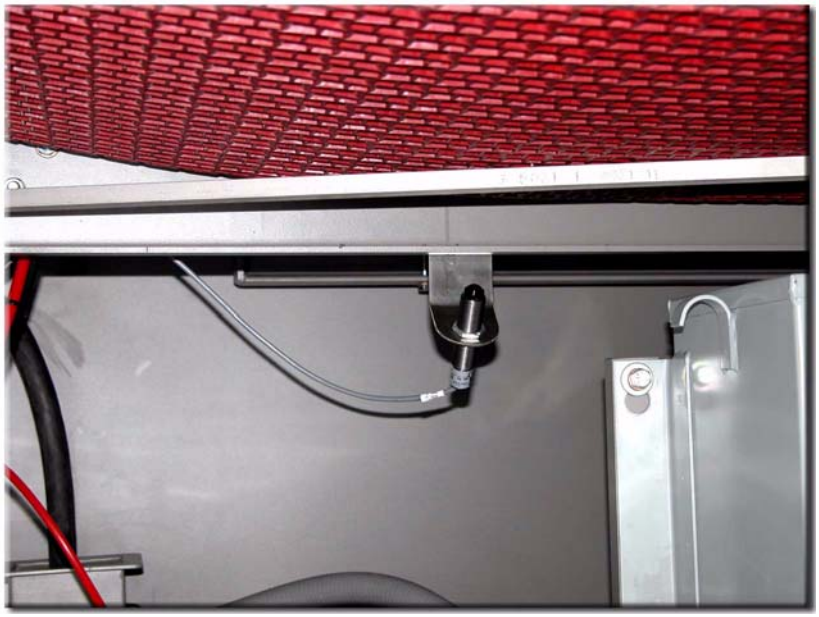


Figure 6.26: Heat Sensor

The chain temperature is controlled with the Edit Temperature Screen and an infrared non-contact heat sensor, similar to the one shown above, mounted at the tunnel entrance. The sensor monitors the temperature and sends a signal to the controller. If the temperature goes above or below the controller's set temperature, it will send a signal to the PLC. The PLC will vary the speed of the fans.

Servos

Servo Motors

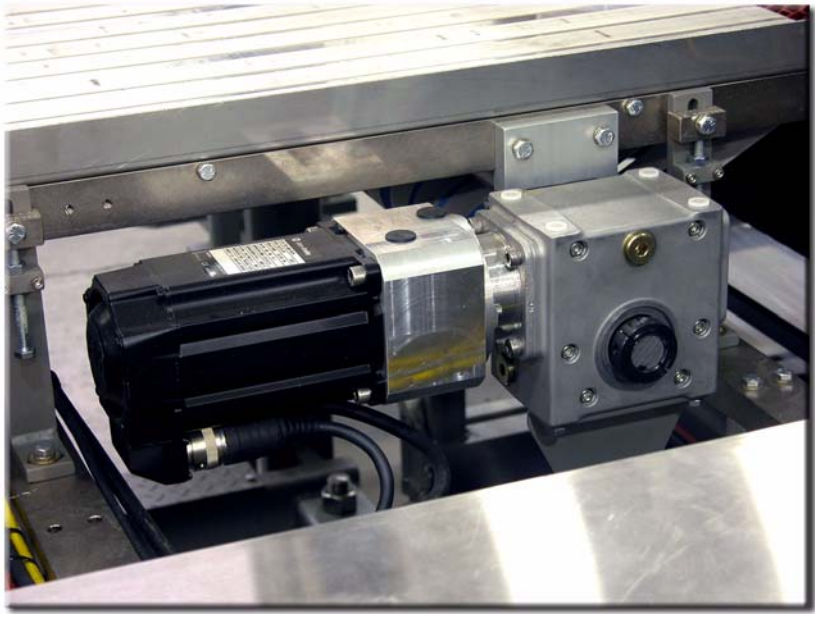


Figure 6.27: Servo Motor

Servo motors are used to drive the machine. The servo drive uses closed loop feedback to precisely position the motor. A servo motor contains fewer moving parts and a smaller footprint than conventional cam technology. On a servo machine, a servo motor properly sized for its particular function replaces each of the cams in a conventional machine.

Servo Controllers

Figure 6.28: Servo Controllers

Each servo motor has a corresponding controller in the servo electrical cabinet. The servo controllers provide the power for the servo motor and control the start, stop, and speed of the motor.

The servo controllers each contain a small digital display window on them which displays the trouble codes that are associated with specific problems in the servo system. These codes troubleshoot the entire system, including the cables, motor, amplifier, and encoder. Refer to the Allen Bradley manuals to interpret the digital readout.

Torque Limiters

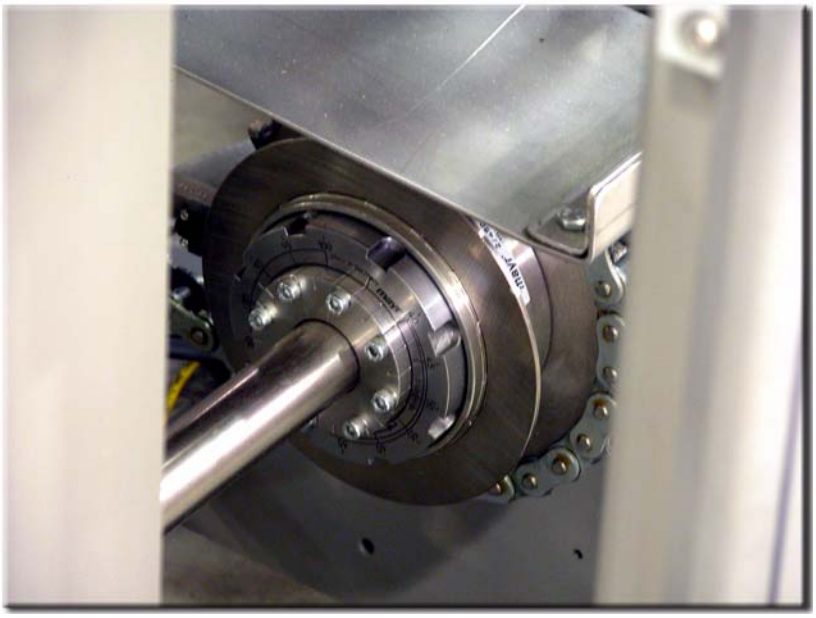


Figure 6.29: Torque Limiter

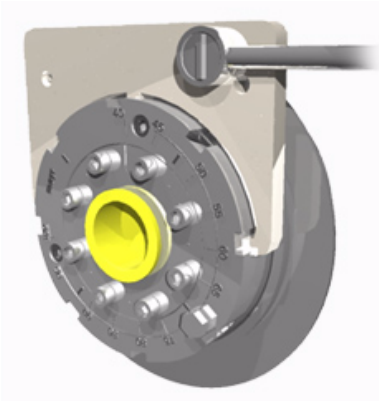
Torque limiters are used with various drives to sense overload conditions and stop the machine quickly when an overload condition occurs.

The torque limiter is designed to detect and prevent excess torque on a shaft. The excess torque forces several steel balls out of their respective detents. When the steel balls roll out, they push a sensor plate outward from the body of the torque limiter and closer to or farther from, depending on the design of your machine, a metal detecting proximity switch. The proximity switch signals the PLC that an overload has occurred. The PLC then stops the motor and will not allow the shaft to be driven until the condition is cleared and the machine reset pushbutton has been pressed. Jog the machine to reset the overload.

The trip torque adjustment should be adjusted to be great enough to prevent undesired tripping due to standard inertia and starting loads.

Replacing Tension Springs in a Mayr Torque Limiter

Torque limiters limit the torque in drives to a preset value. In case of an overload condition, they prevent costly damage due to collision or blockage of the drive.

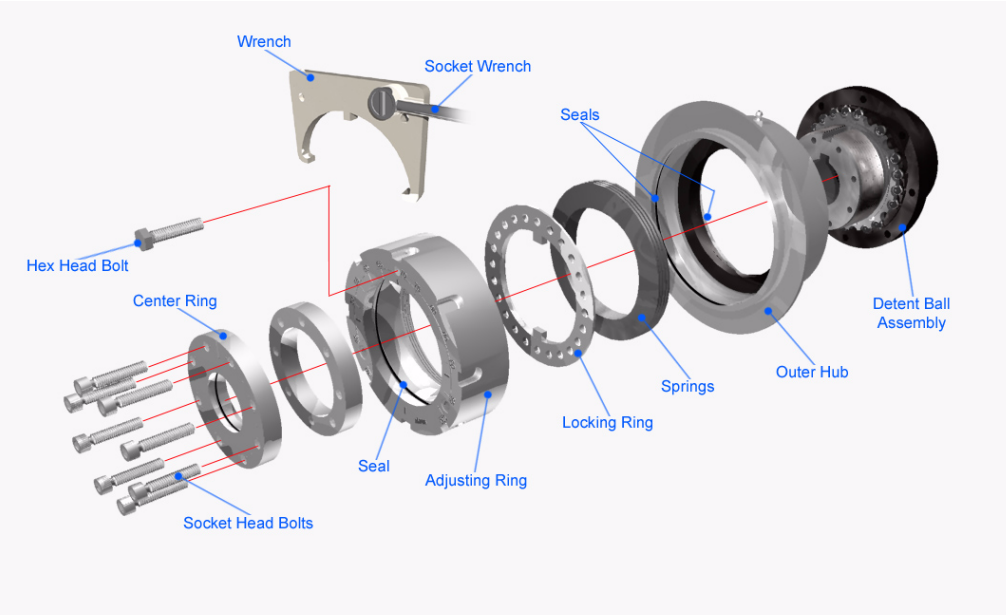


Use the following procedure to replace the o-rings in the torque limiter.

1. Loosen the hex head bolt three full turns.
2. Remove the socket head bolts from the center ring only.
3. Remove the center ring.
4. Remove the adjusting ring, using the wrench shown.
5. Remove the locking ring and springs.
6. Remove the outer hub by lifting off from the detent ball assembly. Inspect the detent ball assembly, making sure the detent balls are located in the unevenly spaced pockets.
7. Inspect the o-rings (three o-rings are used on the stub shaft system, four o-rings are used on a thru-shaft system), install in the grooves, and coat in grease. When three o-rings are used, the fourth o-ring is replaced by a plug, which is inserted into the center ring.
8. Install the outer hub.
9. Install the appropriate number of springs (1-525, 2-625, 4-725).
10. Install a lock ring with tapered side facing springs and a flat side facing adjusting ring.
11. Install an adjusting ring, making sure not to damage the o-rings. Do not allow the outer hub to rotate when installing the adjusting ring. This prevents the detent balls from being misaligned with the detent pockets. Make sure the detent assembly and outer hub are flush as shown.

If the detent assembly and out hub are not flush, the detent ball is out of alignment from the detent pockets.

Replacing the Springs (continued)



12. Tighten the adjusting ring with a wrench until it bottoms out.
13. Install the center ring with the reference mark closest to the 40% mark on the adjusting ring.
14. Loosen the adjusting ring until the hex head bolt is aligned with the closest graduation on the center ring. The clutch is now set at 40%.
15. The clutch can now be adjusted to any torque within its operation range by turning the adjusting ring until the desired setting on the engraved percentage scale is aligned with the reference mark on the graduated ring. Please note however that, as the cup springs within the clutch operate in the negative area of their characteristics, the adjusting ring is further loosened to increase the torque setting.
16. Once set at the desired level, apply Loctite to the hex head bolt and, making sure that it is aligned with one of the graduations on the center ring, tighten.

Chain Tensioner

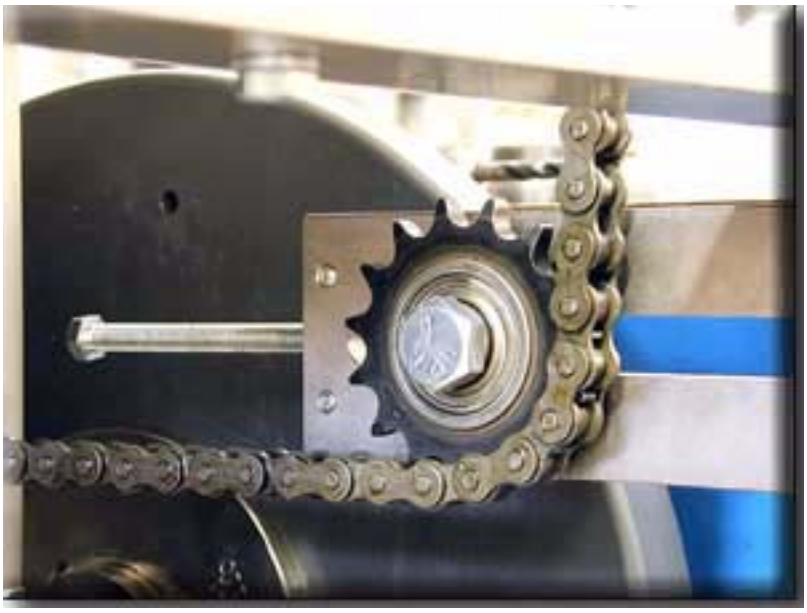
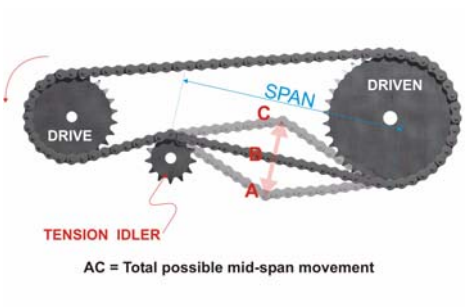


Figure 6.30: Chain Tensioner

A chain tensioner can be adjusted to maintain the proper tension on the machine's chain.

Be sure to inspect the chain and the idler sprockets during the routine maintenance inspections.

Routinely check the chain drives to make sure they are tight, but do not over-tighten (1/4" free play is desirable).



RECOMMENDED MID-SPAN MOVEMENT

Span	Horizontal Drives	Vertical Drives
10"	0.500"	0.250"
15"	0.750"	0.375"
20"	1.000"	0.500"
25"	1.250"	0.625"
30"	1.500"	0.750"
35"	1.750"	0.875"
40"	2.000"	1.000"
45"	2.250"	1.125"
50"	2.500"	1.250"

Figure 6.31: Mid-Span Movement Diagram

Photoeyes and Switches

Photoeyes

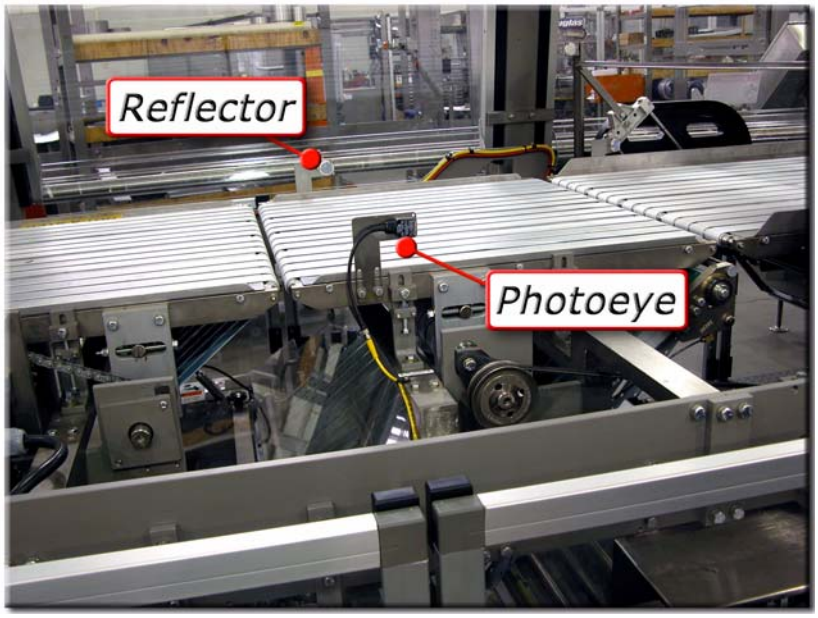


Figure 6.32: Photoeye and Reflector

A photoeye is a photo optic device capable of detecting the difference between light and dark and reacting to that difference. Typically, the reaction is in the form of a pulse that is sent to the PLC.

Proper photoeye adjustment and alignment helps the machine operate effectively. Photo sensitivity can be adjusted to various levels, depending on the application. When properly aligning the photoeye, the reflector can see the red light discharging from the photoeye.

Clean the photoeyes and reflectors often to prevent false signals from being sent to the PLC causing unnecessary downtime.

Proximity Switches

Figure 6.33: Proximity Switches

Proximity switches sense the presence of iron or steel and react to that presence. Typically, they will send a pulse to the PLC when the presence is detected.

Section 7: Maintenance

- Lubrication
- Preventive Maintenance Guide
- Heater Tray Diagnostics (480 Volts AC)
- Original Equipment Manufacturer Instructions

Lubrication

Always follow your facility's PPE (Personal Protective Equipment) program when operating or performing maintenance on this machine.

The following charts provide suggested lubrication frequency for Douglas packaging equipment. These guidelines are based on an average plant operating environment. If the conditions in your plant differ greatly from the average, you may need to increase or decrease the frequency of lubrication. Consult your plant engineer before deviating from the schedule recommended.

Machines equipped with grease zerks are fitted with a color-coded washer to indicate frequency of manual lubrication. A color-coded cap accompanies each lubrication injector to indicate the frequency of lubrication.

Bearings **not** included in the injector banks, except for the wand table and rotary pick-off bearings, do not have color-coded washers.

Figure 7.1: Grease Zerks

Lubrication Floor Plan

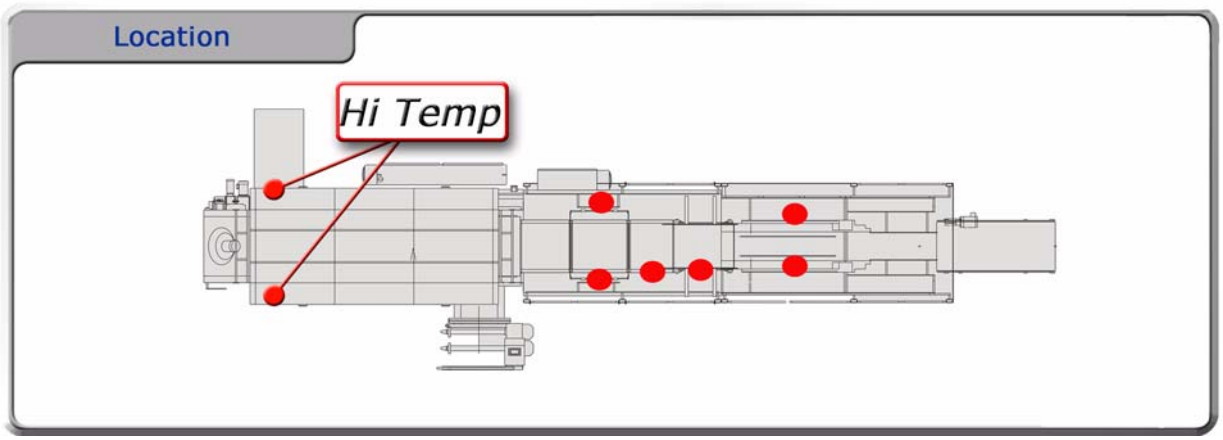


Figure 7.2: Floor Plan of Lubrication Points

Lubrication Guide

This lubrication guide offers guidelines to assist personnel. This guide should serve as a reference tool for many plant environments. Your machine may not contain some of the parts described below, or your plant environment may differ greatly from the average. Consult your plant engineer before deviating from the schedule recommended.

Every 8 Hours

Component	Maintenance Task	Color Code
Vacuum System Canisters	Clean the canisters on the vacuum system. This may need to be completed daily or more frequently, depending on environment. Refill the oiler and check the lines for damage.	N/A

Every 20 Hours

Component	Maintenance Task	Color Code
Bearing without Seals	Grease bearings without seals (include all brass bushings, RBC bearings, and cam followers).	Red

Every 40 Hours

Component	Maintenance Task	Color Code
Linear Bearings	Grease all linear bearings (Thomson blocks).	N/A
Rod Ends (Rotating Less than 360°)	Grease all rod ends that rotate less then 360°.	N/A

Every 80 Hours

Component	Maintenance Task	Color Code
Enclosed Worm Gear Units	Change initial oil filter. Change the oil on enclosed worm gear units every six to twelve months. Refer to the 6 month lubrication chart for additional information.	N/A

Every 1 Month (160 Hours)

Component	Maintenance Task	Color Code
Reducer	Check the oil level in reducer and fill with recommended lubricant.	N/A
THK Bearings (Washdown or Humid Environments)	Grease LM guides or change the grease every one month for washdown or humid environments. LM blocks with seals are filled with lithium soap based grease number 2. When LM guides operate over a long distance of travel or at high speeds, refill with grease of the same type through the grease fitting after the break-in period and before routine operation. Lubricate the LM guides with grease of the same type depending on the conditions of use.	N/A
Tunnel Blower Bearings	Grease the tunnel blower bearings with one shot of high temperature grease.	N/A

Every 2 Months (320 Hours)

Component	Maintenance Task	Color Code
Magazine Sprockets	Oil the sprockets in the magazine.	Yellow
Rod Ends (Used for Mounting Adjustment Shafts or Screws)	Grease all rod ends used for mounting adjustment shafts or screws.	Yellow

Every 3 Months (480 Hours)

Component	Maintenance Task	Color Code
THK Bearings (Non-Washdown or Dry Environments)	Grease LM guides or change the grease every three months for non-washdown or dry environments. LM blocks with seals are filled with lithium soap based grease number 2. When LM guides operate over a long distance of travel or at high speeds, refill with grease of the same type through the grease fitting after the break-in period and before routine operation. Lubricate the LM guides with grease of the same type depending on the conditions of use.	N/A

Every 6 Months (1000 Hours)

Component	Maintenance Task	Color Code
Enclosed Worm Gear Units	Change oil on enclosed worm gear units every six to twelve months, depending on conditions. During the first few days of operation, a worm gear unit will run hot. Unless the temperature exceeds 200° F, there is not cause for alarm. The companies and oil shown in the chart on the following pages in this section are typical. Any other make of oil meeting AGMA (American Gear Manufacturer's Association) standard #7C and #8C will be satisfactory. Note: This service is not necessary for machines equipped with a Tigear-type reducer.	N/A

Every 12 Months (2000 Hours)

Component	Maintenance Task	Color Code
Gear Box Fluids	Change gear box fluids and inspect for contaminants.	N/A

As Needed

Component	Maintenance Task	Color Code
Bearing Units	Refer to the following pages in this section for more information.	N/A
Continuously Rotating Components	Grease bearings as often as necessary in order to maintain a slight leakage at the seals. Note that a small amount of grease at frequent intervals is preferable to a large amount at infrequent intervals. An unusually high bearing temperature accompanied by excessive leakage of grease indicates too much grease. A high bearing temperature with no grease showing at the seals, particularly if the bearing seems noisy, usually indicates too little grease. A normal bearing temperature and a slight showing of grease at the seals indicates proper lubrication.	N/A
Flight Chains	Spray lube on the flight chain before starting production to help avoid kinked links and uneven chain lengths.	N/A
Gear Boxes	Refer to the following pages in this section for more information.	N/A
Motor Bearings	Check motor bearing lubrication every six months.	N/A
Non-Moving Parts	Grease non-moving parts (adjustment handwheels, etc.). These normally require lubrication no more than every six months.	N/A

Lubricating Gear Boxes

The gear boxes used on this machine are factory filled with a high quality synthetic lubricant and are lube-for-life. No routine maintenance is required.

In the event of a major overhaul involving strip-down and re-assembly of the gear unit, refer to the tables below for a list of approved lubricants and quantities.

Approved Lubricants

Approved Lubricant	Supplier	Lubricant Range	Grade 7H
			Oil Suppliers Corresponding Designation
Type H: Polyalphaolefin-Based Synthetic Lubricants	Exxon Mobil Corporation	SHC 600 Series	634 (-34)

The above lubricant is suitable for ambient temperatures of 32° F to 104° F (0° C to 40° C).

The number in parentheses above indicates the recommended minimum operating temperature in degrees Fahrenheit. The unit must not run below this temperature.

Lubricant Quantities

Motorized or Reducer		Unit Size								
		B02	B03	B04	B05	B06	B08	B09	B10	B11
Oil Capacity	Quarts	.14	.26	.34	.45	.58	.96	1.48	2.00	1.70
	Liters	.13	.25	.33	.43	.55	.91	1.40	1.89	1.61
Conversion Table										
Liters to US Gallons = Liters x 0.26										
Liters to Imperial Gallons = Liters x 0.22										

The lubricant quantities above are applicable for all mounting positions.

Lubricating Bearing Units

Bearings must be re-lubricated periodically to ensure long life. The length of the time between greasings is dependent on the running speed and ambient conditions. The following may be used as a guide:

Lubrication Frequency of Bearing Units

Speed	Temperature	Cleanliness	Greasing Interval
100 RPM	Up to 120°F	Clean	6 - 12 Months
500 RPM	Up to 150°F	Clean	2 - 6 Months
1000 RPM	Up to 210°F	Clean	2 Weeks - 2 Months
1500 RPM	Over 210°F	Clean	Weekly
Any Speed	Up to 150°F	Dirty	1 Week - 1 Month
Any Speed	Over 150°F	Dirty	Daily - 2 Weeks
Any Speed	Any temperature	Extreme Conditions	Daily - 2 Weeks

For normal operating conditions, the grease should conform to the NLGI grade two consistency and be free of any chemical impurities such as free acid or free alkali, dust, rust, metal particles, or abrasives.

For best results, bearings should be lubricated while in operation.

Extreme caution for personal safety must be observed when servicing rotating equipment.

Pump the grease in slowly until a slight bead forms around the seal. The bead, in addition to acting as an indicator of adequate re-lubrication, provides additional protection against the entry of foreign material.

Some bearings on this machine are lube-for-life bearings and do not require any service.

Lubrication Guidelines

Lubricant Descriptions and Computer Numbers

Lubrication Type	Recommended Lubricant	Computer Number
Edible	Lubriplate FGL1	65427
Non-Edible	Mobil Mobilux EPI	33327

⚠ CAUTION

1. Gear belt tighteners with jacking screws take up belt slack only. DO NOT overtighten. Check belt for proper tracking and tension after the machine has run for a short period of time.
2. Failure to follow the recommended preventive maintenance and lubrication guidelines may result in excessive wear and damage of your packaging machine.
3. Follow the maintenance and operating procedures outlined above and in the OEM bulletins provided to ensure that the warranty remains in force on your machine.

⚠ WARNING

All power must be disconnected and locked out during the inspection of the heaters and wiring.

Shrink-wrappers are not designed to be operated in washdown environments. Under no circumstances should water, or any other liquid, be directed at any part of the wrapper or tunnel.

Gear Oil Cross Reference

Manufactured by:	Ambient Temperature 15° F to 60° F AGMA #7C	Ambient Temperature 50° F to 125° F AGMA #8C
Amoco Oil Company	Amoco worm gear oil	Amoco cylinder oil 680
Atlantic Richfield (ARCO)		Modoc 175
Chevron Oil Company	Cylinder oil 460X	Cylinder oil 680X
Conoco Oil Company	Inca oil	
Exxon Oil Company	Cylesstic TK460	Cylesstic TK460
Fiske Brothers	Lubriplate #8	
Gulf Oil Company Senate 680	Senate 460	
Gulf Canada Senate 680	Senate 460	
Keystone-Penwalt	Keygear K-600	
Mobil Oil Corporation	Mobil 600W cylinder oil	Mobil 600W super cylinder oil
Pennzoil	Pennzoil cylinder oil #8	Pennzoil cylinder oil #8
Phillips Petroleum Company	Hector 460S	Hector 630S
Shell Oil Company	Valvata oil J460	Valvata oil J680
Sohio	Energol DC-600C	Energol DC-600C
Texaco Inc.	Vanguard 460	Honor 680
Union Oil Company of California	Steaval B110	Steaval B165

Additional Lubrication Notes

1. E.P. oils are not preferred. If an E.P. oil must be used, the customer must determine that it is not corrosive to bronze gear.
2. For ambient temperatures of -40° F to 40° F, use Mobil SCH634 or equivalent. This oil will operate satisfactorily to 100° F ambient.
3. Units running at slow speeds should carry extra high oil levels.
4. For slow input speeds (less than 100 rpm), use AGMA #8C oil in ambient temperatures of 15° F to 60° F.
5. Worm gear oil is very sticky. Reducers are filled most easily with a pump or gun.

Preventive Maintenance Guide

This preventive maintenance guide offers guidelines to assist personnel. This guide should serve as a reference tool for many plant environments. Your machine may not contain some of the parts described below, or your plant environment may differ greatly from the average. Consult your plant engineer before deviating from the schedule recommended.

Always follow your facility's PPE (Personal Protective Equipment) program when operating or performing maintenance on this machine.

Every 8 Hours

Component	Maintenance Task	Corrective Action	Interval
Air Filter	Inspect for water build-up and sediment at the bottom of the bowl.	Remove the bowl and clean out any sediment. Press the petcock to remove any residual moisture and particulate matter.	8 hours
	Clean the filter cartridge.	If it is heavily contaminated, the filter cartridge must be cleaned or replaced. Remove the bowl and clean out sediment.	8 hours
Air Intake Water Trap	Inspect.	Empty as needed.	8 hours
All Moving Parts	Check that parts are secure and guarded.	Secure loose parts and replace guards if needed.	8 hours
Belts	Check for wear and proper tension.	Replace and/or adjust.	8 hours
Compression Plates	Check for glue build-up.	Once glue has cooled, scrape it off.	8 hours
Conveyor	Check for residue.	Remove accumulation of plastic residue from conveyor.	8 hours
Conveyor Belts	Check for wear and proper tension.	Replace if needed. Always order replacement belts as a match set to allow for even tensioning.	8 hours
Drive Chains	Check tension.	Adjust to 1/4" free play.	8 hours
Film	Check that the film is smooth and feeding straight.	Adjust as needed.	8 hours
Gear Boxes	Check for oil leakage.	Replace gear box if needed.	8 hours

Every 8 Hours (continued)

Component	Maintenance Task	Corrective Action	Interval
Glue System	Check for glue build-up and/or charring on the glue nozzles.	Clean with a stiff bristle brush. Do not use a steel brush.	8 hours
	Check for contamination.	Purge one cup of glue from the tank.	8 hours
	Check for glue build-up.	Scrape glue off.	8 hours
	Check glue pattern for proper extrusion (correct timing).	Adjust glue timing.	8 hours
Guard Doors	Check that all guard doors are in place.	Secure the guard doors.	8 hours
Operator Panel	Check the controls for excessive dirt.	Use a soft cloth to wipe clean.	8 hours
	Check all lamps to ensure that they illuminate.	Replace burned out bulbs.	8 hours
Photoeyes and Reflectors	Check for dirt build-up.	Clean with a soft cloth.	8 hours
Plows	Check for glue build-up.	Scrape clean.	8 hours
Pneumatic System	Close all doors and walk around machine, listening for air leaks.	Repair as needed.	8 hours
Quality of Shrink Package	Check the quality of the shrink and appearance of the package.	Refer to the troubleshooting section of the manual for corrective measures.	8 hours
Tunnel Blower Drives	Check alignment and tension.	Adjust the tunnel blower drives to be sure that the v-belts are properly aligned and tensioned.	8 hours
Tunnel Chain	Check for excess plastic build-up.	Clean if necessary.	8 hours
Vacuum Cups	Check for excessive wear and/or dirt build-up.	Wipe cups clean with hot, soapy water and dry with a clean rag. Replace if excessively worn.	8 hours
	Check for dust and fiber accumulation in centers of cups.	Remove dust and fibers with a clean rag and wipe cups as described above.	8 hours
	Check for breaks.	Replace broken or cracked cups.	8 hours

Every 8 Hours (continued)

Component	Maintenance Task	Corrective Action	Interval
Vacuum Filter and Canister	Check for dirt build-up.	Remove filter and use compressed air to remove dirt particles. Filters and canisters can be removed by turning them counterclockwise or installed by turning them clockwise. Replace every two years. If you find that there is not enough dirt and debris in the filter to warrant a cleaning every eight hours, then you can increase the amount of time between cleanings.	8 hours
Vacuum Lines	Check for damage.	Replace with new lines.	8 hours

Every 20 Hours

Component	Maintenance Task	Corrective Action	Interval
Black Rubber Rollers	Check for white film dust.	Clean with mild soap and water.	20 hours
Fixed Film Guide Tube	Check for dirt build-up.	Clean with mild soap and water, if necessary.	20 hours
Poly Gear Belts	Check tension.	Adjust tension if necessary.	20 hours
Serrated Knife	Check for nicks or damage.	Replace if needed.	20 hours

Every 40 Hours

Component	Maintenance Task	Corrective Action	Interval
Bearings	Check for excessive play or noise.	If excessively worn, replace.	40 hours
Belts	Check belts for dirt build-up.	Clean with mild soap and water. Do not use any chemicals on the belts.	40 hours
Chain Drive	Check the tension.	Adjust the tension of the chain drive if necessary.	40 hours
Conveyor Belt	Check the tension.	Adjust the tension of the conveyor belt if necessary.	40 hours
Dancer Rollers	Check for any foreign build-up.	Clean with mild soap and water.	40 hours
Fasteners	Check for loose or missing fasteners.	Tighten or replace fasteners.	40 hours
Flight Chain	Check for dirt or glue build-up.	Scrape glue or wipe with a clean cloth.	40 hours
Guard Doors	Check for dirt build-up.	Use soap and water to clean the lexan.	40 hours
	Check to ensure that the actuator and the switch are still secure.	Retighten.	40 hours
	Check and examine all cable entries and connections.	Retighten.	40 hours
	Check that the latch is adjusted correctly.	Readjust.	40 hours
Heater Disconnect	Check for loose or burned wires.	Adjust or replace the wires.	40 hours
Static Eliminator Bar	Check for dirt build-up.	Clean with a brush or compressed air.	40 hours
	Check for ink on the bar.	Remove ink and resistant coating with isopropyl alcohol.	40 hours
Wand Overload	Check settings.	Adjust as needed.	40 hours

Every 80 Hours

Component	Maintenance Task	Corrective Action	Interval
Wand Track	Check for dirt build-up.	Clean with oily cloth.	80 hours

Every 1 Month (160 Hours)

Component	Maintenance Task	Corrective Action	Interval
Tunnel Chain Return Pans	Check the tunnel chain return pans.	Clean if necessary.	1 month

Every 2 Months (320 Hours)

Component	Maintenance Task	Corrective Action	Interval
Chain Idler Sprockets	Check for wear.	Replace if worn.	2 months
Drive Chains	Check tension.	Adjust to 1/4” free play.	2 months
Rod End Bearings	Check for excessive wear.	Replace if worn.	2 months

Every 3 Months (480 Hours)

Component	Maintenance Task	Corrective Action	Interval
Heaters and Heater Wiring	Check for signs of deterioration.	Replace if necessary.	3 months
Temperature Probes	Check for residue.	Remove accumulation of plastic residue.	3 months
Vacuum Chamber and Blower	Check for build-up.	Clean if necessary.	3 months

Every 6 Months (1000 Hours)

Component	Maintenance Task	Corrective Action	Interval
Brake Pads	Check brake pads on film roll shafts for excessive wear.	Replace if needed.	6 months
Chains, Rails, Bearings, and Belts	Check for excessive wear.	Replace if needed.	6 months
Knife Shaft and Black Rollers	Disassemble.	Replace if needed.	6 months
Sealed Bearings and Shafts	Check for excessive wear.	Replace if needed.	6 months

Every 12 Months (2000 Hours)

Component	Maintenance Task	Corrective Action	Interval
Belt Pulley Shaft Bearings	Check for excessive wear.	Replace if needed.	12 months
Conveyor and Vacuum Table Belts	Check for excessive wear.	Replace if needed.	12 months
Drive Roller Chains	Check for excessive wear.	Replace if needed.	12 months

Heater Tray Diagnostics (480 Volts AC)

WARNING

All applicable safety policies (e.g., NFPA 70E Standard for electrical safety in the workplace and lockout/tagout procedures) *must* be observed before performing any diagnostics.

Power On Voltage Checks

1. Check all incoming fuses to ensure they are not blown.
2. Check the line voltage to the Watlow controller on Terminals L1, L2, and L3.
3. Check the load voltage from the Watlow controller at Terminals T1, T2, and T3.
4. Using a clamp-on amp meter, compare the amp load between Power Wires 1, 2, and 3.

Power Off Resistance Checks

1. As illustrated below, check resistance between the following:
   - Power Wires 1 and 2 (blue arrow)
   - Power Wires 2 and 3 (red arrow)
   - Power Wires 1 and 3 (green arrow)

Resistance readings should be similar, approximately 17.5 OHMs. Readings over 20 OHMs indicate a damaged heater or loose wire.

2. If resistance readings are not similar, perform individual resistance checks on each heater element. Disconnect the heater elements from the circuit prior to taking individual readings to avoid parallel circuit resistance readings. Resistance readings for individual heaters is approximately 13.5 OHMs.

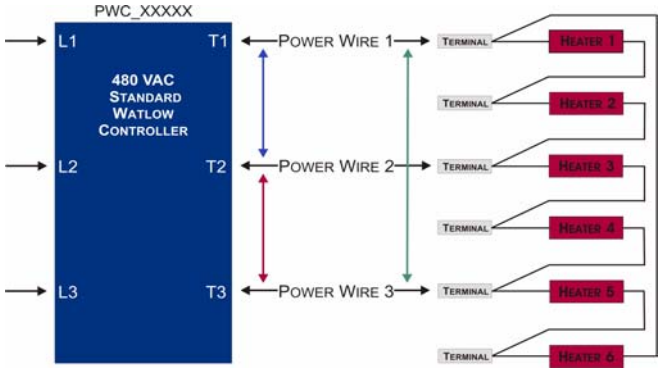


Figure 7.3: Heater Power Wire Diagram

Original Equipment Manufacturer Instructions

All available service information is supplied for OEM components constructed for your Douglas packaging machine. You will find a list of bulletins furnished at the front of the accompanying OEM bulletin.

Section 8: Electrical

- Original Factory Settings
- Recipe Variable Descriptions
- Glossary of Terms

Original Factory Settings

The following charts reflect the machine's original factory settings. Each chart is also included on the CD accompanying the service manual and can easily be updated to reflect the most current settings.

Proximity Switch Settings

Prox. #	Description of Prox.	Degrees Prox. Makes	
		On	Off
60934	Metering Enable from Stacker	252	
60948	Stacker Loft Cycle Stop	355	

8 oz. Stacked

EDIT PLS TIMING 1

		ON	OFF	REACT ms
MACHINE CYCLE STOP	PLS 1	345	5	0
	PLS 2	0	0	0
	PLS 3	0	0	0
	PLS 4	0	0	0
	PLS 5	0	0	0
	PLS 6	0	0	0
	PLS 7	0	0	0
	PLS 8	0	0	0

EDIT PLS TIMING 2

		ON	OFF	REACT ms
	PLS 9	0	0	0
	PLS 10	0	0	0
METERING ENABLE	PLS 11	80	90	0
	PLS 12	0	0	0
PROD OUT OF POSITION	PLS 13	250	310	0
FILM VACUUM DUMP	PLS 14	165	245	0
MISSING FILM CHECK	PLS 15	110	120	0
FILM DRIVE ENABLE	PLS 16	220	250	0

FILM SETTINGS

FILM LENGTH (IN.)	49.00
FILM POSITION (IN.)	7.75
STOP POSITION (IN.)	12.00
MARK POSITION (IN.)	0.00
SHORT CLEAR (IN.)	0.00
PRINTED FILM	DISABLED
EMPTY FILM ROLL COUNTER	100

DANCER BAR UP SETPOINT	5000
DANCER BAR DOWN SETPOINT	2000
DANCER BAR PRESSURE (PSI)	50

8 oz. Stacked (continued)

SPEED SETTINGS

MAIN DRIVE	
JOG	20
IDLE	20
LOW	30
MEDIUM	40
HIGH	45
INFEED CONVEYOR	
RATE (IN/CYCLE)	18.0
WRAPPER SERVO CONVS	
WRAPPER TABLE (IN/CYCLE)	20.0
WRAPR DISCH TABLE (IN/CYCLE)	18.0

MISC SETTINGS

PRODUCT LENGTH	
INCHES	12.00
MOVE TIME	
DEGREES	340

TUNNEL SETTINGS

TUNNEL AIR BLOWER	
TUNNEL BLOWER SPEED (RPM)	1600
TUNNEL CONVEYOR	
LOW LIMIT (FPM)	55
TARGET RATE (IN/CYCLE)	15.5
HIGH LIMIT (FPM)	60
TUNNEL HEIGHT	
TUNNEL HEIGHT (IN.)	15.0

8 oz. Stacked (continued)

TUNNEL TEMPS

BASE TUNNEL SETPOINT	425
CHAIN RETURN	190

WRAPPER WAND

POINT	MASTER	SLAVE	SEGM. TYPE
0	0	0	0
1	360	180	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0
7	0	0	0
CAM OFFSET (Deg.)	290		
START SLOPE	0.00		

8 oz. Unstacked

EDIT PLS TIMING 1

		ON	OFF	REACT ms
MACHINE CYCLE STOP	PLS 1	340	350	0
	PLS 2	0	0	0
	PLS 3	0	0	0
	PLS 4	0	0	0
	PLS 5	0	0	0
	PLS 6	0	0	0
	PLS 7	0	0	0
	PLS 8	0	0	0

EDIT PLS TIMING 2

		ON	OFF	REACT ms
	PLS 9	0	0	0
	PLS 10	0	0	0
METERING ENABLE	PLS 11	80	90	0
	PLS 12	0	0	0
PROD OUT OF POSITION	PLS 13	250	310	0
FILM VACUUM DUMP	PLS 14	165	245	50
MISSING FILM CHECK	PLS 15	10	20	0
FILM DRIVE ENABLE	PLS 16	170	200	0

FILM SETTINGS

FILM LENGTH (IN.)	38.00
FILM POSITION (IN.)	7.75
STOP POSITION (IN.)	15.00
MARK POSITION (IN.)	0.00
SHORT CLEAR (IN.)	0.00
PRINTED FILM	DISABLED
EMPTY FILM ROLL COUNTER	100

DANCER BAR UP SETPOINT	5000
DANCER BAR DOWN SETPOINT	2000
DANCER BAR PRESSURE (PSI)	50

8 oz. Unstacked (continued)

SPEED SETTINGS

MAIN DRIVE	
JOG	20
IDLE	20
LOW	30
MEDIUM	40
HIGH	45
INFEED CONVEYOR	
RATE (IN/CYCLE)	18.0
WRAPPER SERVO CONVS	
WRAPPER TABLE (IN/CYCLE)	22.0
WRAPR DISCH TABLE (IN/CYCLE)	20.0

MISC SETTINGS

PRODUCT LENGTH	
INCHES	12.00
MOVE TIME	
DEGREES	340

TUNNEL SETTINGS

TUNNEL AIR BLOWER	
TUNNEL BLOWER SPEED (RPM)	1200
TUNNEL CONVEYOR	
LOW LIMIT (FPM)	55
TARGET RATE (IN/CYCLE)	18.0
HIGH LIMIT (FPM)	75
TUNNEL HEIGHT	
TUNNEL HEIGHT (IN.)	15.0

8 oz. Unstacked (continued)

TUNNEL TEMPS

BASE TUNNEL SETPOINT	425
CHAIN RETURN	190

WRAPPER WAND

POINT	MASTER	SLAVE	SEGM. TYPE
0	0	0	0
1	360	180	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0
7	0	0	0
CAM OFFSET (Deg.)	212		
START SLOPE	0.00		

Recipe Variable Descriptions

Operator Controls Screen

Figure 8.1: Operator Controls Screen

Features

This screen has the following multistate indicators:

A multistate indicator displays the active recipe.

A multistate indicator displays an active fault or status message.

This screen has the following text objects:

Cycles/Min: This text object displays the machine speed (the actual velocity of the main drive servo).

Case Count: This text object displays the number of product groups that have been detected by the Product At Wands (PE_60928) photosensor since the Case Count Reset pushbutton was last pressed.

Current Position: This text object displays the machine position (the actual position of the main drive servo).

Film Controls Screen

Figure 8.2: Film Controls Screen

Features

This screen has the following multistate indicators:

A multistate indicator displays the active recipe.

A multistate indicator displays an active fault or status message.

This screen has the following text objects:

Cycles/Min: This text object displays the machine speed (the actual velocity of the main drive servo).

Case Count: This text object displays the number of product groups that have been detected by the Product At Wands (PE_60928) photosensor since the Case Count Reset pushbutton was last pressed.

Current Position: This text object displays the machine position (the actual position of the main drive servo).

Tunnel Controls Screen

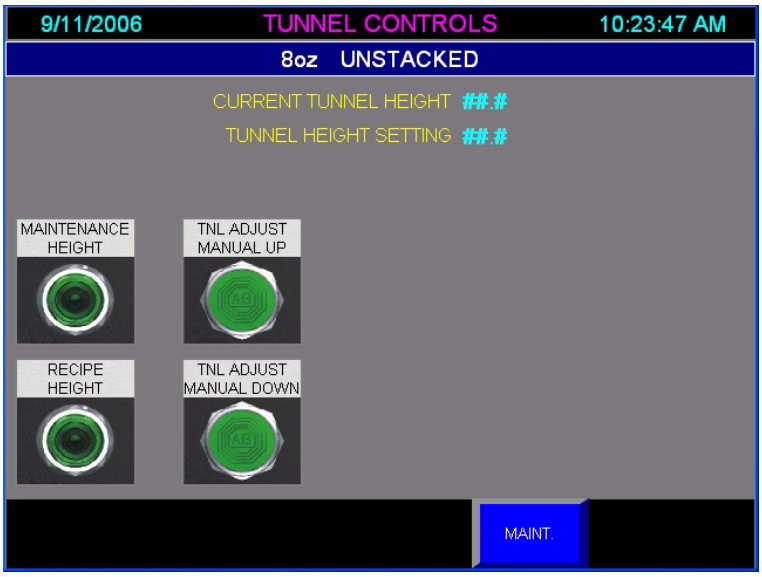


Figure 8.3: Tunnel Controls Screen

Features

This screen has the following multistate indicator:

A multistate indicator displays the active recipe.

This screen has the following text objects:

Current Tunnel Height: This text object displays the current tunnel height.

Tunnel Height Setting: This text object displays the tunnel height adjust setpoint.

Servo Maintenance Screen

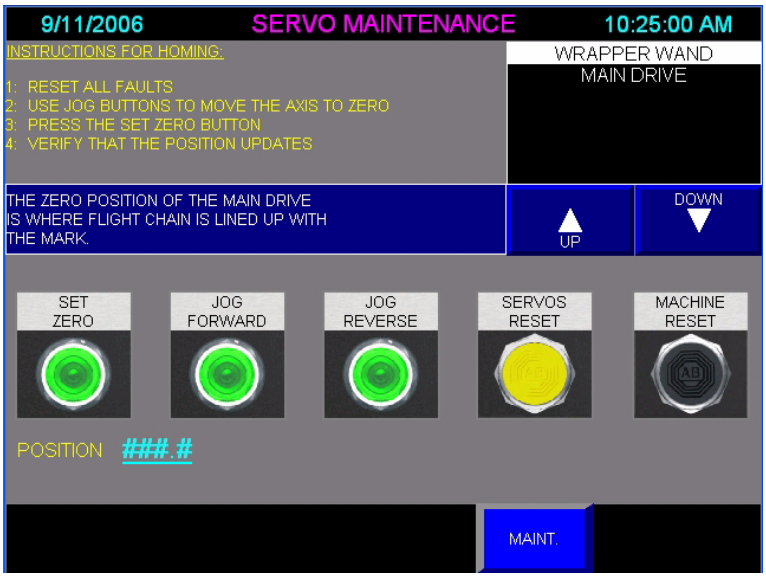


Figure 8.4: Servo Maintenance Screen

Features

This screen has the following list indicator:

A list indicator displays each servo axis that can be manually controlled from this screen or that can have its absolute zero position reset from this screen.

This screen has the following multistate indicator:

A multistate indicator displays text that describes the location of the selected servo's zero position.

This screen has the following text object:

Position: This text object displays the selected servo's actual position.

Maintenance Screen

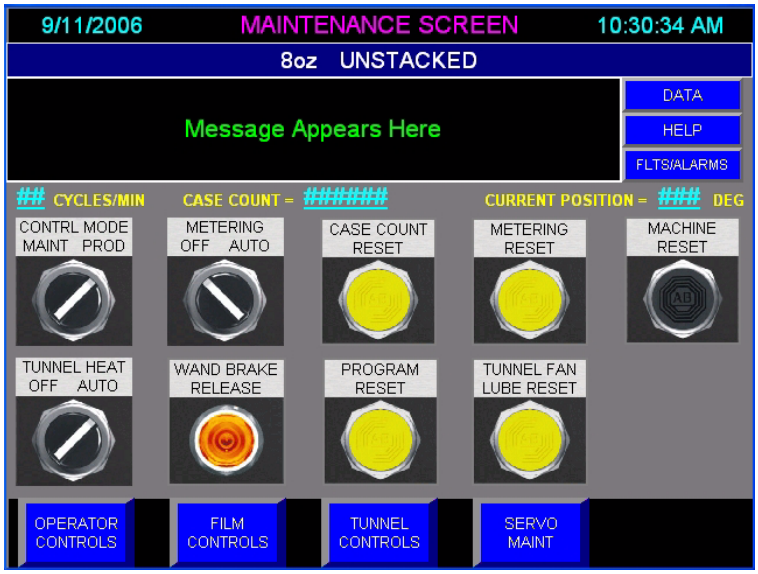


Figure 8.5: Maintenance Screen

Features

This screen has the following multistate indicators:

A multistate indicator displays the active recipe.

A multistate indicator displays an active fault or status message.

This screen has the following text objects:

Cycles/Min: This text object displays the machine speed (the actual velocity of the main drive servo).

Case Count: This text object displays the number of product groups that have been detected by the Product At Wands (PE_60928) photosensor since the Case Count Reset pushbutton was last pressed.

Current Position: This text object displays the machine position (the actual position of the main drive servo).

Help Screen

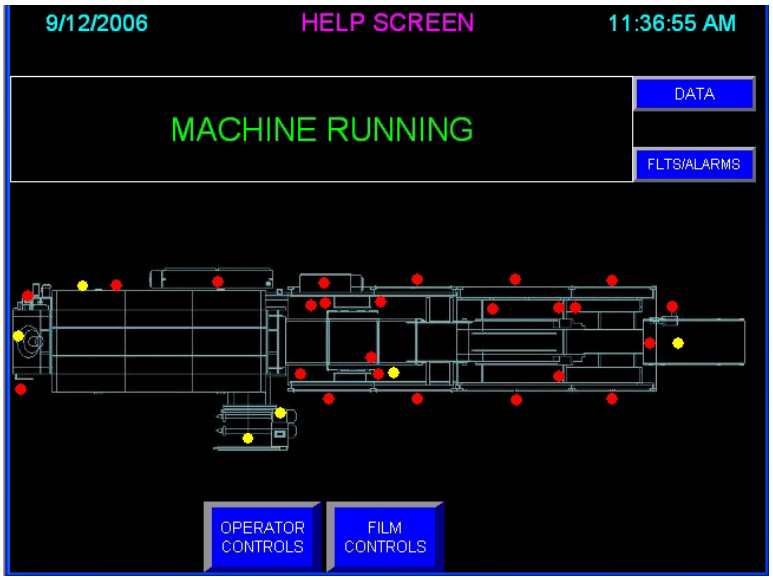


Figure 8.6: Help Screen

Features

This screen has the following multistate indicator:

A multistate indicator displays an active fault or status message.

This screen has the following image and associated multistate indicators:

An image of the machine's floor plan is populated with multistate indicators that correspond with the fault and status messages.

Recipe Screen

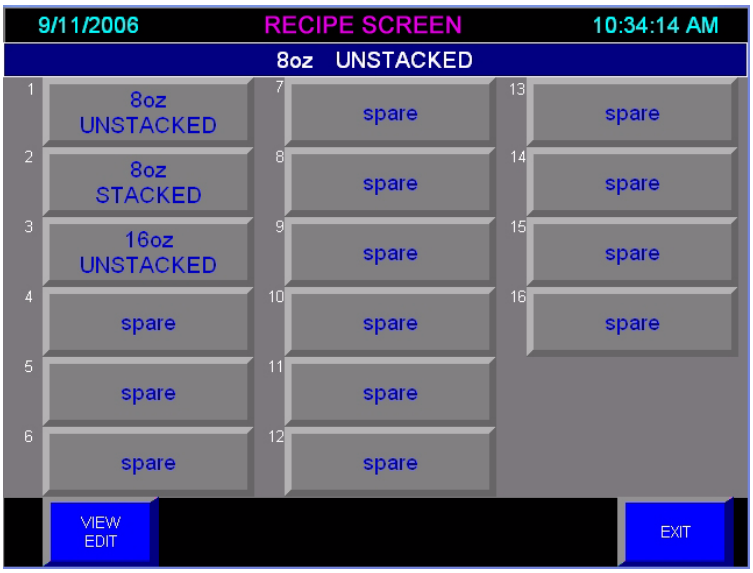


Figure 8.7: Recipe Screen

Features

This screen has the following multistate indicator:

A multistate indicator displays the active recipe.

This screen has the following momentary pushbuttons:

Momentary pushbuttons displays all available recipes, from which the desired active recipe is selected.

Edit PLS Timing 1 Screen

Figure 8.8: Edit PLS Timing 1 Screen

Features

This screen has the following multistate indicator:

A multistate indicator displays the active recipe.

This screen has the following text object:

Current Position: This text object displays the machine position (the actual position of the main drive servo).

This screen has the following numeric inputs:

On: This recipe variable specifies the leading edge of a PLS window.

Off: This recipe variable specifies the trailing edge of a PLS window.

React ms: This recipe variable specifies the speed compensation value for a PLS window.

This screen has the following PLS window:

Machine Cycle Stop PLS 1: When a cycle stop or cycle dwell condition occurs, the machine begins to decelerate. In the first machine cycle in which the actual machine speed is less than the maximum speed to cycle stop, the machine cycle stops or dwells when the machine position reaches this PLS window.

Edit PLS Timing 2 Screen

Figure 8.9: Edit PLS Timing 2 Screen

Features

This screen has the following multistate indicator:

A multistate indicator displays the active recipe.

This screen has the following text object:

Current Position: This text object displays the machine position (the actual position of the main drive servo).

This screen has the following numeric inputs:

On: This recipe variable specifies the leading edge of a PLS window.

Off: This recipe variable specifies the trailing edge of a PLS window.

React ms: This recipe variable specifies the speed compensation value for a PLS window.

Edit PLS Timing 2 Screen (continued)

This screen has the following PLS windows:

Metering Enable PLS 11: The metering belt servo is enabled to release a tray to the stacker flights in machine cycles in which the Metering selector switch is set to Auto and minimum surge is present. The metering belt servo is also enabled to release the second tray (the bottom tray) of a double stack. When enabled, the metering belt servo begins running to release a tray in mechanical time with a pocket in the stacker flights when the main drive position reaches this PLS window.

Prod Out Of Position PLS 13: This PLS window occurs when the area between properly placed product groups passes by the Product At Wrapper photosensor. A Product Out Of Position At Wrapper fault occurs when this sensor's light beam is blocked while the machine position is within this PLS window.

Film Vacuum Dump PLS 14: In machine cycles in which product is wrapped, the vacuum dump valve opens the vacuum chamber to the atmosphere during this PLS window.

Missing Film Check PLS 15: A Missing Film fault occurs when the following conditions are present:

- The machine position reaches this PLS window.
- The Product At Wands photosensor detects product while the Film At Wands photosensor does not detect film.

Film Drive Enable PLS 16: In machine cycles in which the Film Drive selector switches are set to On and Run and the Product At Wrapper photosensor detects product, the film drive servo is enabled when the machine position reaches this PLS window.

Edit Film Settings Screen

Figure 8.10: Edit Film Settings Screen

Features

This screen has the following multistate indicator:

A multistate indicator displays the active recipe.

This screen has the following text object:

Dancer Bar Position: This text object displays the value of the Dancer Bar Position Feedback analog signal that the PLC receives from a potentiometer in the dancer bar tension air cylinder.

This screen has the following momentary pushbutton:

Printed Film: This recipe variable specifies the whether printed film is disabled or enabled. At the time this document was written, this machine was not capable of running printed film because it did not have a Film Registration Eye photosensor.

This screen has the following numeric inputs:

Film Length (In.): When the recipe runs clear film, this recipe variable specifies the film length in inches.

The film length is typically three inches longer than the perimeter distance around the case (in the direction in which film is wrapped around the case). This provides a three-inch overlap of film at the bottom of the package.

Edit Film Settings Screen (continued)

Film Position (In.): This recipe variable specifies the film position in inches that locates the film sheet's overlap at the center (in the direction of travel) of the bottom of the product group.

Perform the following steps to calculate the correct *Film Position* recipe variable for the recipe:

1. Measure the product group's (container's) bottom dimension in the direction of travel in inches and divide the measurement by two to derive the Center Of The Blank value.
2. Divide the film's overlap measurement in inches by two to derive the One-Half The Film's Overlap value.
3. Add the Center Of the Blank value to the One-Half The Film's Overlap value and enter the result into the *Film Position (In.)* numeric input.

Stop Position (In.): This recipe variable specifies the film cutting knife stop position in inches. The preferred stop position is with the blade forward (pointing toward the vacuum table) and the knife parallel to the film. This position ensures that the knife contacts the film during the film drive's peak velocity, and not during acceleration or deceleration.

Mark Position (In.): When the active recipe runs printed film, this recipe variable specifies the position of the film cut. This recipe variable provides an offset to compensate for the location of the Film Registration Eye photosensor relative to the film knife.

Edit Film Settings Screen (continued)

Short Clear (In.): When the active recipe runs printed film, this recipe variable specifies the reference length that the PLC program uses to identify the short clear section. The short clear section of the film graphics is used as a registration mark for film cutting.

The Film Registration Eye photosensor is a teachable sensor that monitors the film graphics. When teach mode is performed on registered film, the PLC program determines the shortest clear section by measuring the length of the clear sections of the film graphics as film is drawn past the sensor. To compensate for film stretch and print variations, the short clear section must be shorter than other clear sections by at least 0.5 inches or 10 percent, whichever is greater.

When the trailing edge of the short clear section is detected, the PLC program compensates the current film drive position by the value of the *Mark Position (In.)* recipe variable. When the film drive reaches the mark position, the knife clutch engages and the knife cuts the film.

Empty Film Roll Counter: This recipe variable specifies the preset values for the empty film roll counters.

Dancer Bar Up Setpoint and **Dancer Bar Down Setpoint:** These recipe variables specify the dancer bar up and down setpoints. These setpoints are used to calculate the dancer bars' full range of motion. The down setpoint is also used to derive the current dancer bar position, which is used to calculate the dancer bar rate of change and error from the target position (midpoint of the dancer bars' range of motion).

Dancer Bar Pressure (PSI): This recipe variable specifies the constant pressure that the Dancer Bar Tension analog pressure regulator valve applies to the dancer bar tension air cylinder. Zero psi. of air pressure is applied to the cylinder when the Film Drive selector switch is set to Load.

Edit Speed Settings Screen

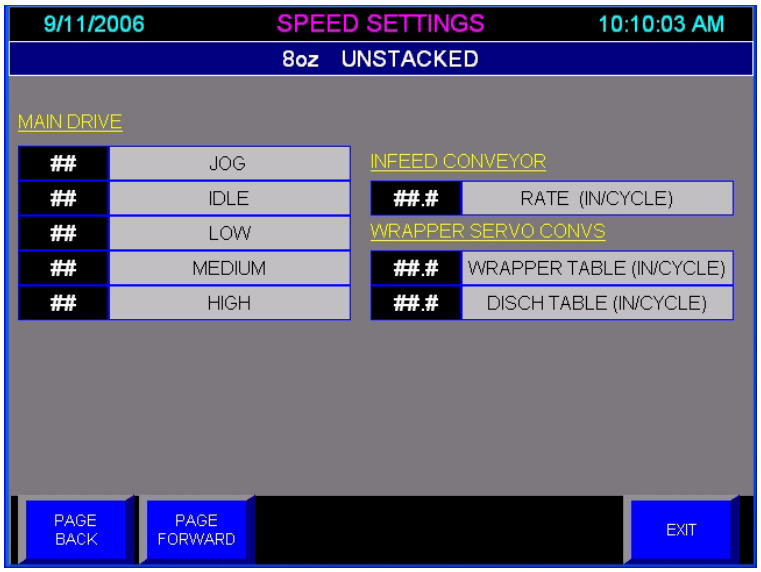


Figure 8.11: Edit Speed Settings Screen

Features

This screen has the following multistate indicator:

A multistate indicator displays the active recipe.

This screen has the following numeric inputs:

Main Drive

Jog: This recipe variable specifies the machine speed when the machine is in jog mode.

Idle: This recipe variable specifies the machine speed when the machine loses run latch or a cycle dwell condition occurs.

Low: This recipe variable specifies the machine speed when the machine has run latch and no cycle dwell conditions are present, but the infeed is not primed.

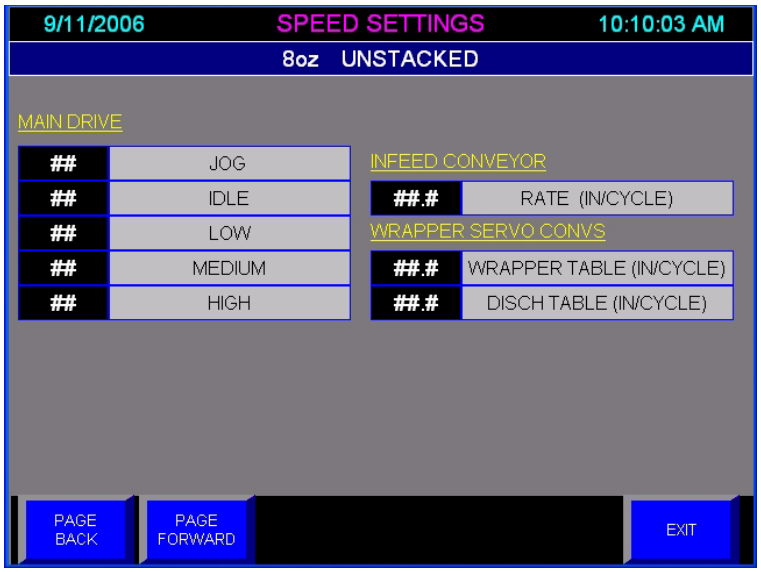
Medium: This recipe variable specifies the machine speed when infeed is primed, but high surge is not present.

High: This recipe variable specifies the machine speed when high surge is present.

Infeed Conveyor

Rate (In/Cycle): This recipe variable is used to calculate the first infeed conveyor's commanded run speed relative to the machine speed.

Edit Speed Settings Screen (continued)



Wrapper Servo Convs

Wrapper Table (In/Cycle): This recipe variable is used to calculate the entry and wrap conveyor's commanded speed relative to the machine speed (to calculate the entry and wrap conveyor servo's gear ratio to the main drive servo).

Disch Table (In/Cycle): This recipe variable is used to calculate the wrapper discharge conveyor's commanded speed relative to the machine speed (to calculate the wrapper discharge conveyor servo's gear ratio to the main drive servo).

Edit Miscellaneous Screen

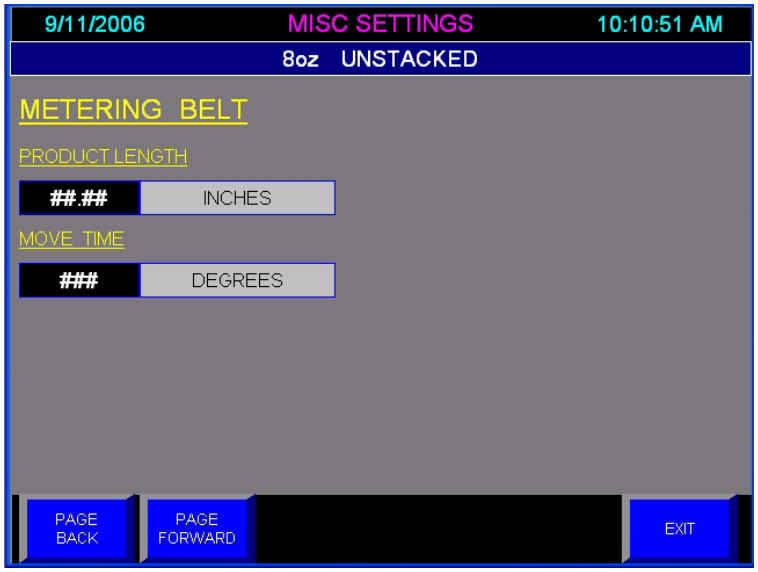


Figure 8.12: Edit Miscellaneous Screen

Features

This screen has the following multistate indicator:

A multistate indicator displays the active recipe.

This screen has the following numeric inputs:

Metering Belt

Product Length: This recipe variable specifies the tray length in the direction of travel.

Move Time: This recipe variable specifies the number of degrees in a machine cycle in which the metering belt move is performed.

Edit Tunnel Screen

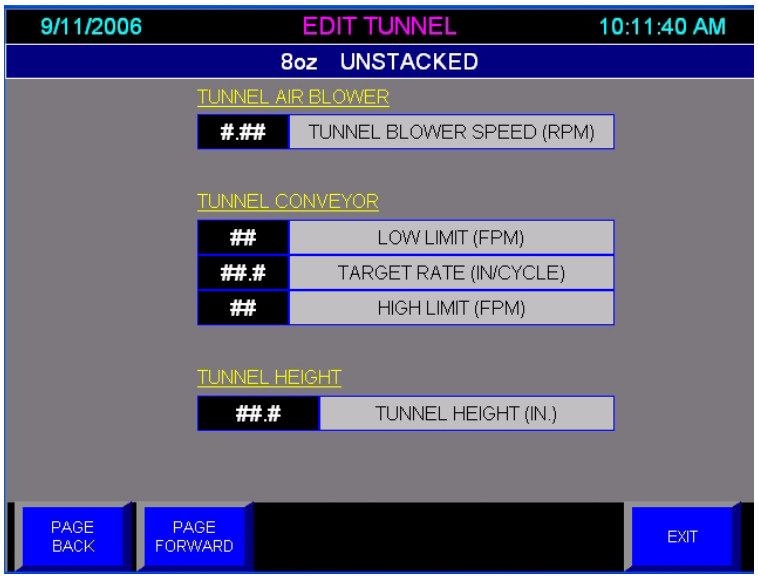


Figure 8.13: Edit Tunnel Screen

Features

This screen has the following multistate indicator:

A multistate indicator displays the active recipe.

This screen has the following numeric inputs:

Tunnel Air Blower

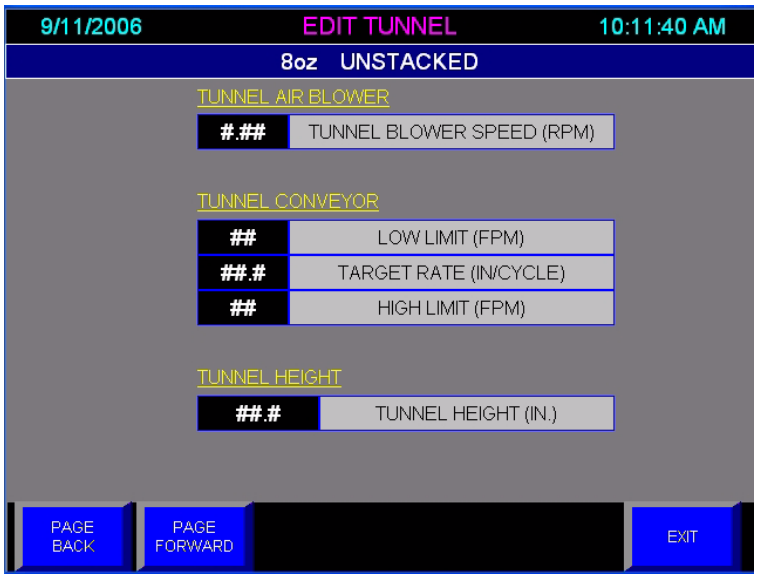
Tunnel Blower Speed (RPM): This recipe variable specifies the entry tunnel blower's commanded run speed. Low and high speed limits are enforced. When the tunnel is heating up, the blower is forced to a medium speed. When the tunnel is cooling down, the blower is forced to a higher speed to dump heat into the tunnel conveyor chain.

Tunnel Conveyor

Low Limit (FPM): This recipe variable specifies the low limit of the tunnel conveyor speed. If the tunnel conveyor's commanded run speed is less than this recipe variable, the tunnel speed is forced to this value.

Target Rate (In/Cycle): This recipe variable is used to calculate the tunnel conveyor's commanded run speed relative to the machine speed. While the tunnel is cooling down, the tunnel conveyor speed is forced to a slow speed to accelerate the cool down process.

Edit Tunnel Screen (continued)



High Limit (FPM): This recipe variable specifies the high limit of the tunnel conveyor speed. If the tunnel conveyor's commanded run speed is greater than this recipe variable, the tunnel speed is forced to this value.

Tunnel Height

Tunnel Height (In.): This recipe variable specifies the tunnel height adjust setpoint.

Edit Temperature Screen

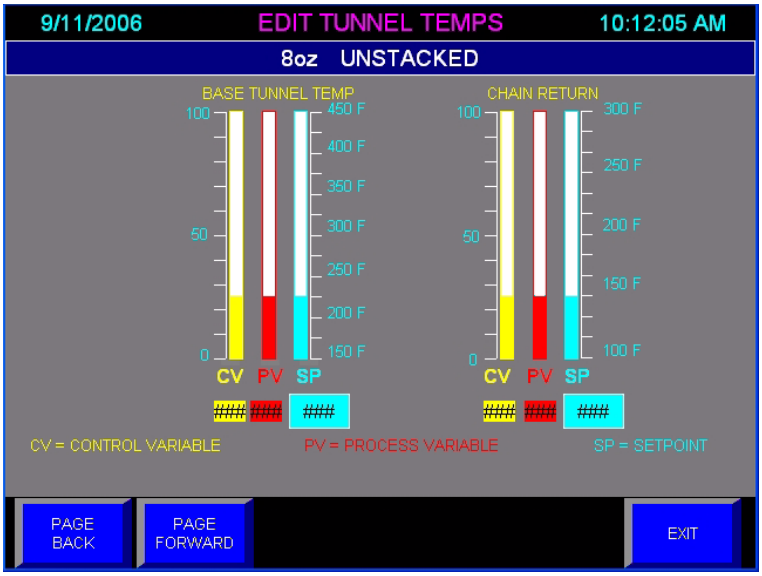


Figure 8.14: Edit Temperature Screen

Features

This screen has the following multistate indicator:

A multistate indicator displays the active recipe.

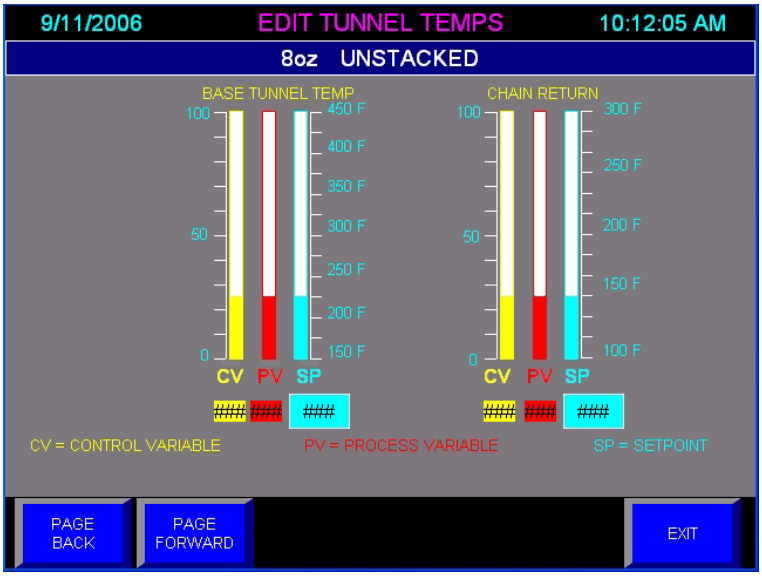
This screen has the following functions:

This screen provides bar graphs that display the current values of the control variables (CVs), the process variables (PVs), and the setpoint temperatures (SPs) for the base tunnel and tunnel conveyor chain. The process variables are the actual temperatures.

A resistance temperature-sensing device (RTD) monitors the air temperature downstream of the tunnel heaters. To maintain the tunnel temperature at the selected setpoint, the PLC uses feedback from this RTD to affect the control variable (power level) to the heater elements.

An infrared temperature sensor (IR) monitors the tunnel conveyor chain's surface temperature. To maintain the chain's surface temperature at the selected setpoint, the PLC uses feedback from this IR sensor to control power to the chain cooling fan.

Edit Temperature Screen (continued)



This screen has the following text objects and numeric inputs:

Base Tunnel Temp

CV: This text object displays the control variable (power level) to the heater elements.

PV: This text object displays the process variable (actual temperature) of the tunnel.

SP: This numeric input specifies the setpoint temperature of the tunnel.

Chain Return

CV: This text object displays the control variable (power level) to the chain cooling fan.

PV: This text object displays the process variable (actual temperature) of the tunnel conveyor chain's surface.

SP: This numeric input specifies the setpoint temperature of the tunnel conveyor chain's surface.

Edit Cam Screen

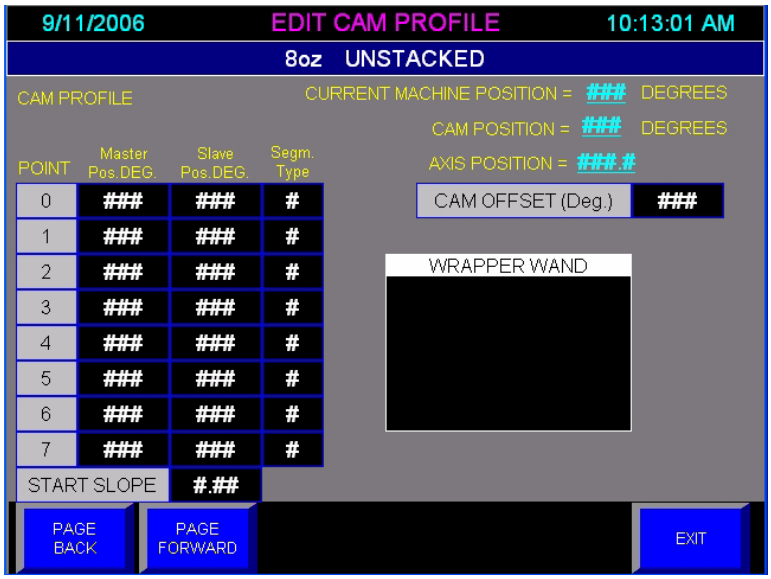


Figure 8.15: Edit Cam Screen

Features

This screen has the following multistate indicator:

A multistate indicator displays the active recipe.

This screen has the following list indicator:

A list indicator displays a list of all servos that can have their cam profiles edited through this screen. If more than one servo is displayed, the desired servo for editing is selected at this list indicator.

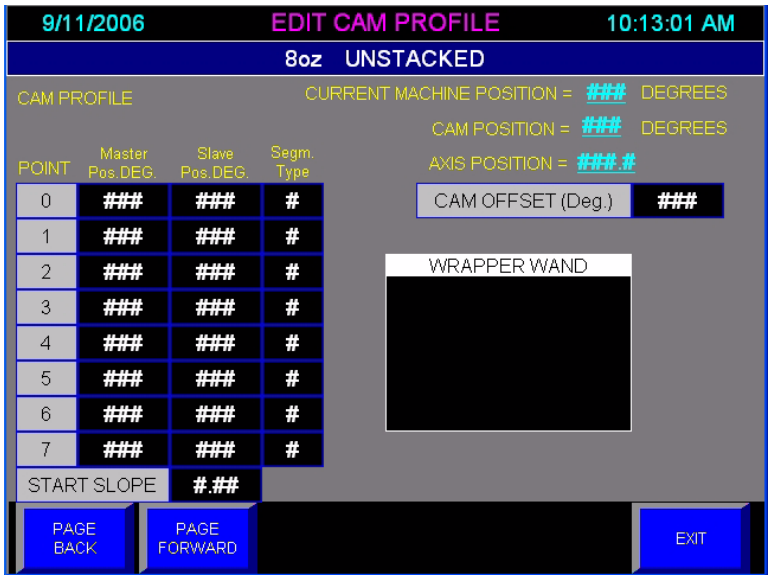
This screen has the following text objects:

Current Machine Position: This text object displays the machine position (the actual position of the main drive servo, which is the master axis).

Cam Position: This text object displays the modulo result of the difference between the master axis' actual position and the slave servo's cam offset value.

Axis Position: This text object displays the slave servo's actual position.

Edit Cam Screen (continued)



This screen has the following numeric input:

Cam Offset (Deg.): This recipe variable is used to phase a cam profile relative to its master axis. Editing this variable is comparable to rotating a box cam on its physical line shaft. The greater the numeric value of a cam offset entry, in a range of 0-359, the more the cam profile is retarded relative to the master.

This screen has following items for the selected servo's cam profile:

Point: The multistate indicators in this column display the numerically indexed sequence of cam points.

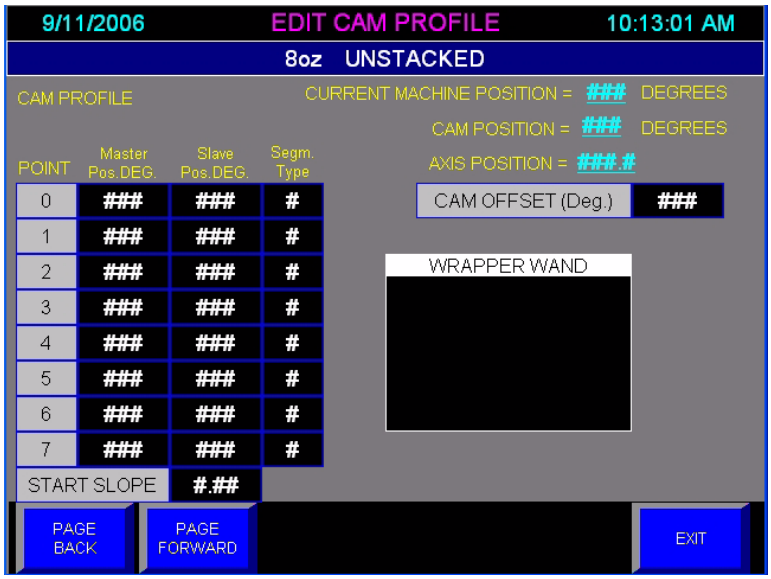
Master Pos. Deg.: Each numeric input in this column displays the position of the master axis for the corresponding cam point.

Slave Pos. Deg.: Each numeric input in this column displays the slave servo's actual position relative to its absolute zero position for the corresponding cam point.

Segm. Type: Each numeric input in this column displays the segment type (cubic or linear) for the corresponding cam segment:

- **Cubic:** A cubic segment uses non-zero acceleration, which is used to blend velocities between segments by producing a smooth curve between two or more cam points.
- **Linear:** A linear segment uses zero acceleration (constant velocity), which produces a straight line between two cam points. There is no motion when the constant velocity is zero.

Edit Cam Screen (continued)



Start Slope: This numeric input specifies the StartSlope and EndSlope operands of the MCCP (Motion Calculate Cam Profile) instruction, which calculates a cam profile based on an array of cam points:

- The start slope is the boundary condition for the first slope of the profile. It is only valid for a cubic first segment and is used to specify a slope through the first point.
- The end slope is the boundary condition for the last slope of the profile. It is only valid for a cubic last segment and is used to specify a slope through the last point.

Glossary of Terms

Absolute Position: A position referenced to an absolute (fixed) zero position.

Acceleration: The rate of change in velocity. Negative acceleration is usually described as deceleration.

Actual Position: The position as it is currently registering on the feedback element.

Array: A numerically indexed sequence of elements of the same data type.

Cam-Related Terms:

- **Cam Element:** As projected on a cam profile, a cam point and the segment immediately to the right of that point.
- **Cam Point:** A position within a cam profile determined by the coordinates of the master and slave (determined by the numeric values of the Master Position entry and Slave Position entry).
- **Cam Profile:** A representation of non-linear motion (a motion profile) which includes a start point, end point, and all points and segments in between. A cam profile is represented by an array of cam elements.
- **Cam Segment:** The path from one cam point to the next cam point.
- **Cubic Segment:** Uses non-zero acceleration, which is used to blend velocities between segments by producing a smooth curve between two or more cam points.
- **Linear Segment:** Uses zero acceleration (constant velocity), which produces a straight line between two cam points. There is no motion when the constant velocity is zero.

Command Position: The desired position that is used by control loops to move the feedback element to match.

Decrement: This term is defined as a finite decrease in a variable quantity. Each time a down counter is triggered, its accumulated value is decremented by one.

Drive: An electronic device that can control the speed, torque, horsepower, and direction of an AC or DC motor.

Encoder Resolution: A measure of the smallest positional change that can be detected by an encoder. For rotary encoders, this is the number of unique electrically identified positions occurring in 360 degrees of input shaft rotation.

Feedback Element: A transducer that converts motion, position, pressure, flow, or temperature to an electrical signal for comparison to the command signal.

Following Error: The difference between the command position and the actual position.

Increment: This term is defined as a finite increase in a variable quantity. Each time an up counter is triggered, its accumulated value is incremented by one.

Input Device: A device that supplies signals or data through input circuits to the controller.

Latched: In PLC logic, a data bit is latched when it can remain set when qualifying conditions that set the bit are removed. A latched data bit can be one of the following:

- OTL instruction, which sets the data bit when qualifying conditions are present. The data bit remains set until it is cleared, typically by an OTU instruction.
- Self-latched, in which the data bit is branched around a portion of its own qualifying conditions. This bit is unlatched by removal of specific conditions within the same rung.

Master Axis: An axis to which an axis is slaved in an electronic gearing or position cam application. A master axis may be a servo drive axis, virtual axis, or an encoder.

Modulo Result: The undivided remainder that results from dividing one numeric value by another. Modulo instructions are often used to roll a position value that exceeds a cycle's (for example, machine or line shaft cycle) number of units into the next cycle.

Negative Feedback: Feedback that is subtracted from the input reference signal. Negative feedback forms the basis for closed-loop control systems.

Offline: A state in which a device is not in direct communication.

Offset: The steady-state deviation of a controlled variable from a fixed set point.

Online: A state in which a device is in direct communication.

One-Shot: A programming technique that sets a bit for only one program scan.

Output Device: A device that receives signals or data from the controller.

Position Error: The difference between the actual and command position of an axis.

Reset: Defines the status of bits (Booleans) and values (non-Booleans). Reset indicates that a bit is binary o (Off) and that a value is zero.

Set: Defines the status of bits (Booleans) and values (non-Booleans). Set indicates that a bit is binary 1 (On) and that a value is any non-zero number.

Slave Axis: An axis that follows a master axis in an electronic gearing or position cam application. For example, a servo axis that is cammed to a virtual line shaft.

Unlatched: Refer to the term *Latched*.

Virtual Axis: An axis with full motion planner operation, but not associated with any physical device.

Section 9: Troubleshooting

- General Troubleshooting
- Machine Troubleshooting
- Machine Timing

General Troubleshooting

This troubleshooting guide offers possible problems, causes, and solutions to assist the operator in returning the machine to a normal operating condition. This guide should serve as a reference tool for many possible solutions. Some conditions may not apply to your machine.

Problem: Machine will not operate

Cause	Solution
1. There is no electrical power.	Check the power source.
2. There is no air pressure.	Inspect the air lines.
3. A guard door is open.	Check and close the guard doors.
4. The emergency stop circuit is activated.	Deactivate all emergency stop pushbuttons.
5. The main disconnect switch is off.	Place the main disconnect switch in the on position.
6. The fault circuit is activated and not cleared.	Check the selector switch.
7. There is a problem with the motor fuse.	Check the motor fuse.

Problem: Film not shrinking sufficiently

Cause	Solution
1. The film is too wide for the product.	Make sure the correct width of film is being used.
2. The tunnel temperature is too low.	Adjust the tunnel temperature.
3. The heater is burned out.	Repair or replace the heater.
4. The shrink tunnel chain speed is too fast.	Lower the shrink tunnel chain speed.
5. The air flow from the tunnel blower fan is improper.	Adjust the blower fan speed.
6. The air volume is low.	Check for the proper operation of the blower fan.
7. The shrink tunnel chain temperature is too low.	Adjust the tunnel chain temperature.
8. The airflow from the tunnel air knife is improper.	Adjust the tunnel air knife.

Problem: Film sticks to shrink tunnel

Cause	Solution
1. The shrink tunnel chain is dirty.	Clean or replace the shrink tunnel chain.
2. The film is too long.	Program setting is not correct.
3. The cooling fan is not operating.	Repair or replace the cooling fan.
4. The shrink tunnel chain speed is too slow.	Adjust the shrink tunnel chain speed.

Problem: Heaters fail prematurely

Cause	Solution
1. Repeated shutdown without the use of the cool down cycle.	Properly shut down the machine using the cool down cycle.
2. Repeated shutdown using the emergency stop.	Use the emergency stop only in an emergency; shut down the machine using the cool down cycle or cycle stop.
3. The blower fan rotation is incorrect.	Interchange leads on the motor.
4. The air volume is low.	Check the operation of the blower fan and check for any air restrictions.

Problem: Erratic temperature controller

Cause	Solution
1. The RTD is defective.	Repair or replace the RTD.
2. The wires in the RTD circuit are loose.	Inspect and tighten the wires in the RTD circuit.
3. There is an ambient temperature problem (the fan is blowing on the machine, drastic room temperature change).	Remove any outside source of uncontrolled air.

Problem: Film length not correct

Cause	Solution
1. The film program is wrong.	Change to the correct program; refer to the factory settings.
2. The film length for the product size is incorrect.	Change the film length setting; refer to the factory settings (to determine the proper film length, measure the outside dimension of the product plus 2-3” for the overlap seal).

Problem: Film pulling out from under case or bundle

Cause	Solution
1. The film is not staying under the case or bundle.	Check the vacuum dump operation.
2. The film position is wrong.	Check the edit film setting touchscreen for the setting.
3. The shrink tunnel chain speed is incorrect.	Adjust the shrink tunnel chain speed.
4. The transfer at the shrink tunnel chain is incorrect.	Adjust the conveyor table height for proper transfer; the surface of the transfer table should be 1/8” above the surface of the chain.

Problem: Machine not cutting film

Cause	Solution
1. There is a problem with the knife cylinder air pressure.	Check the pressure (40 to 60 psi.).
2. There is a problem with the knife actuator solenoid valve.	Make sure the solenoid light is working.
3. The film tension is loose.	Tighten the tension on the film between the pinch rollers.
4. The pinch rollers are dirty.	Clean the pinch rollers.
5. There is improper tension on the vacuum table belts.	Check the tension of the vacuum belts; they should be tight enough to just be able to slide a hand under them.
6. The pinch roller tension is incorrect.	Adjust the PSI setting.
7. The knife is damaged or dull.	Change the knife.
8. The vacuum dump is not opening/closing.	Repair and/or replace the vacuum dump. 1. Check for the proper psi at the cylinder (approximately 40 psi). 2. Inspect the air lines. 3. Check operation of the air cylinder. 4. Check operation of the solenoid valve. 5. Make sure mechanical parts operate freely.

Problem: Machine runs, film drive servo does not

Cause	Solution
1. There is a problem with the bypass switch.	Check the bypass switch.
2. The film drive is not on.	Turn the film drive on.
3. The servo fuses are defective.	Check the servo fuses; replace if needed.
4. There is a problem with the servo enable relay.	Check the relay.
5. The A-B controller does not read “4”.	Make sure the controller has “4”.
6. There is a problem with the controller & motor cables.	Check for damaged or disconnected cables from the controller to the motor.

Problem: Wrapping every other case or bundle

Cause	Solution
1. The wand timing is incorrect.	Check the wand setting and rehome the servo.
2. The photoeye setup is incorrect.	Photoeye should be seeing the back edge of the tray/ bundle that is approaching the wrap.

Problem: Missing film not working

Cause	Solution
1. The photoeye position with the film is incorrect.	Check to see if the photoeye is not seeing the reflector when the film is in front of the photoeye.
2. The photoeye timing with the PLS window is incorrect.	Check the timing of the missing film PLS window with the missing film photoeye.
3. The photoeye position with the reflector is incorrect.	Make sure the photoeye sees the reflector when it is not blocked.
4. The film is pulling out from under the case or bundle.	Refer to the solutions from the “film pulling out from under case or bundle” section.

Problem: Bag between pinch rollers (wrinkled film on vacuum table)

Cause	Solution
1. The pinch rollers are dirty.	Clean the pinch rollers with a Scotch Brite® pad.
2. The tension on the pinch rollers is incorrect.	Set the tension on the pinch rollers by adjusting the PSI setting.
3. The upper pinch roller drive belt tension is too tight.	Loosen the upper pinch roller drive belt tension.
4. The tabs are missing.	Replace the knife.
5. The servo drive belt is loose.	Tighten the servo drive belt.
6. The upper pinch roller drive belt tension is too loose.	Tighten the upper pinch roller drive belt.

Problem: Film rolling back at top of table

Cause	Solution
1. The clearance between the film drive and the upper table is incorrect.	Check and adjust the clearance.
2. The position of the fingers at the top of the vacuum table is incorrect.	Straighten the position of the fingers.
3. The static bar is dirty or not functioning.	Check the static bar to see if it is clean and working; refer to the manual.
4. The air tube is dirty.	Make sure the air tubes are clean and adjusted properly.
5. The leading corners of film are folded over.	Set the tension on the pinch roller by adjusting the PSI setting.

Problem: Film coming up before or after case/bundle

Cause	Solution
1. The film position setting is incorrect; the film needs to be under the front half of the product.	Adjust the film position on the edit film setting screen.
2. The table top belts are slipping.	Tighten the table top belts.
3. There is a problem with the “tray at wrapper” photoeye.	Check the “tray at wrapper” photoeye.
4. The drive belt for the table top conveyor is jumping the wand level.	Tighten the drive belt.

Problem: Holes melting in bottom of case/bundle

Cause	Solution
1. The shrink tunnel chain is dirty.	Clean the shrink tunnel chain, use a wire brush as needed.
2. The cooling fans are not operating.	Replace or repair the cooling fan.
3. The shrink tunnel temperature is incorrect.	Adjust the shrink tunnel temperature.
4. The speed of the shrink tunnel chain is incorrect.	Adjust the shrink tunnel chain speed, avoid the large gaps between the product or the product pushing into each other.
5. The air flow is incorrect.	Adjust the airflow.

Problem: Product is slipping on belts

Cause	Solution
1. Belts are dirty	Belts should be cleaned with a mild dishwashing soap/ water solution weekly.

Problem: Display blank

Cause	Solution
1. The display is in screen saver mode.	Touch the screen to re-activate.
2. The machine is not reset.	Press the machine reset.
3. There is no power to the PanelView.	Turn the power on.
4. The fuse is faulty.	Replace the fuse.
5. The transformer is not working.	Check for a loose/shorted wire or replace the transformer.

Machine Troubleshooting

A

Message	Cause	Solution
AUTO LUBE SYSTEM DID NOT PRESSURIZE	The lube pressure switch failed to detect adequate lube pressure due to: 1. The lube line is broken or disconnected. 2. The pressure switch has failed or is set incorrectly.	1. Determine and correct the cause of the fault. 2. When the fault is resolved, manual cycle the lube system to recharge the lube lines.

B

Message	Cause	Solution
BASE TUNNEL BLOWER VFD FAULT	The VFD circuit has detected an error.	1. Check the fault code to aid in troubleshooting. 2. After the problem is resolved, most faults will reset when *machine reset* is pressed. A few high level VFD faults require cycling power to reset.
BASE TUNNEL HEATER TRAY OVERTEMP	The tunnel temperature exceeded the temperature set on the heater overtemp unit in the electrical cabinet. The overtemp may be caused by loss of blower pressure.	1. Check the operation of the blower and the overtemp sensor. Check the temperature setting. 2. Manually reset the heater overtemp unit, and then press machine reset.
BASE TUNNEL NOT AT TEMP	The tunnel is running with the tunnel temperature below or slightly above its operating range.	Wait to see if the temperature goes to the proper operating temperature. If the temperature remains *low*, a heater may have failed. If necessary, replace heater.
BASE TUNNEL RTD FAULT	1. The RTD sensor has failed over or under range. 2. A channel fault has occurred.	1. Check the sensor's wiring and operation. 2. Check the analog input module.

C

Message	Cause	Solution
CHAIN TEMP SENSOR FAULT	1. The infrared temperature sensor failed over or under range. 2. The analog input module has faulted.	1. Check the sensor's wiring and operation. 2. Check the analog input module.
CHECK FILM AT WANDS PHOTO EYE	1. The photosensor or reflector is dirty or out of alignment. 2. Debris is blocking the photosensor's light beam.	1. Clean the photosensor's lens and reflector. Adjust the photosensor so that it sees its reflector. 2. Remove the debris.
CHECK PRODUCT AT WRAPPER PHOTO EYE	1. The photosensor or reflector is dirty or out of alignment. 2. Debris is blocking the photosensor's light beam.	1. Clean the photosensor's lens and reflector. Adjust the photosensor so that it sees its reflector. 2. Remove the debris.
CONTROL MODE IN MAINT	The *control mode* selector switch is set to maint (maintenance). This mode bypasses line control logic.	When production mode is desired, set the switch to prod.

D

Message	Cause	Solution
DEVICE NET FAULT	A DeviceNet status register fault is present.	1. Check the status of the DeviceNet devices (module status, each device's network status indicator). 2. Check the DeviceNet wiring.
DISCHARGE SURGE	The machine is dwelling due to: 1. Product is backed up to the *discharge surge* photosensor. 2. The photosensor or reflector is dirty or out of alignment.	1. Wait for product surge to clear. 2. Check the photosensor and reflector for blockage or misalignment. The machine resumes operation when the photosensor sees its reflector.
DOWNSTREAM NOT READY	A remote signal indicates that downstream equipment is not ready to receive packages.	Check the status of downstream equipment.

E

Message	Cause	Solution
EMERGENCY STOP SAFETY RELAY OPEN	One of the safety relay's channels is not up (LED is green when the channel is up). The safety circuit consists of two separate parallel circuits that must have continuity for the machine to run. The safety relay opens (or does not close when reset) if a problem develops in either circuit.	1. A safety relay with only one channel up will not reset until both circuits have been opened, and then closed. Put a device in the safety circuit to a position that opens both circuits. 2. Close all devices in the safety circuit. 3. Press *machine reset*. If the safety relay does not close (both LEDs green), then check the open channel for continuity.
ENTRY & WAND TABLE CONV SERVO FAULT	The most likely cause of this fault is a position error due to an obstruction in the path of the axis.	1. If there is a jam, determine and correct the cause of the jam. Clear the jam. 2. If there is not a jam, check the servo controller for fault codes, and then refer to the servo manual for aid in troubleshooting.

F

Message	Cause	Solution
FILM DRIVE DID NOT DETECT MARK MANUAL CYCLE FILM TO CORRECT	Registration marks were not detected due to one of the following: 1. The film is not tracking properly. 2. The film eye is not operating properly. 3. The film eye is not in the proper position for film.	Perform the following steps: 1. Before making any machine adjustments, manual cycle the film to see if the problem is corrected. 2. If necessary, make machine adjustments to correct the film tracking or film eye operation. 3. Manual cycle film to find the registration mark.
FILM DRIVE IN LOAD	The *film drive load/run* selector switch is set to load, which releases the roll brake(s).	For film threading, jog the cutter assembly. Set the *film drive* selector switch to run for run mode operation.
FILM DRIVE OFF	The *film drive off/on* selector switch is set to off.	When desired, set the switch to on to enable film drive.
FILM EYE SEES CLEAR FILM	This message is used for the registered film teach procedure.	
FILM EYE SEES PRINTED FILM	This message is used for the registered film teach procedure.	

Message	Cause	Solution
FILM PATTERN NOT FOUND MANUAL CYCLE FILM TO CORRECT	Registration marks were not detected due to one of the following: 1. The film is not tracking properly. 2. The film eye is not operating properly. 3. The film eye is not in the proper position for film.	Perform the following steps: 1. Before making any machine adjustments, manual cycle film to see if the problem is corrected. 2. If necessary, make machine adjustments to correct film tracking or film eye operation. 3. Manual cycle film to find the registration mark.
FILM ROLL 1 EMPTY	The *low/empty film roll* photosensor detected a number of film roll rotations after it detected low film (the empty roll counter has completed count).	Change the film roll.
FILM ROLL 2 EMPTY	The *low/empty film roll* photosensor detected a number of film roll rotations after it detected low film (the empty roll counter has completed count).	Change the film roll.
FILM SERVO FAULT	The most likely cause of this fault is a position error due to an obstruction in the path of the axis.	1. If there is a jam, determine and correct the cause of the jam. Clear the jam. 2. If there is not a jam, check the servo controller for fault codes, and then refer to the servo manual for aid in troubleshooting.
FILM SERVO RECOVERING	The servo is recovering to its proper position.	
FLIGHT CHAIN CLUTCH OL FAULT	The flight chain torque limiter has tripped out due to excessive torque. This fault may be caused by a product jam, a mechanical conflict, or a defective or misadjusted overload proximity sensor. Torque limiter tension should be set light enough to protect the machinery, yet heavy enough so that the torque limiter does not trip during normal operating conditions.	1. Determine and correct the cause of the fault. Adjust the machine, if necessary. If the torque limiter is not tripped, check the operation of the proximity sensor. 2. Clear the jam, if present, and correct or remove product and blanks. 3. Apply the reset (overload) wrench to the associated reset nut. Turn the nut in the direction of travel until you feel the torque limiter drop into its detent.

G

Message	Cause	Solution
GUARD DOOR SAFETY RELAY OPEN	One of the safety relay's channels is not up (LED is green when the channel is up). The safety circuit consists of two separate parallel circuits that must have continuity for the machine to run. The safety relay opens (or does not close when reset) if a problem develops in either circuit.	1. A safety relay with only one channel up will not reset until both circuits have been opened, and then closed. Put a device in the safety circuit to a position that opens both circuits. 2. Close all devices in the safety circuit. 3. Press *machine reset*. If the safety relay does not close (both LEDs green), then check the open channel for continuity.
GUARD DOOR XX OPEN	A guard door is open.	Close the guard door, and then press *machine reset*.

I

Message	Cause	Solution
INFEED CONVEYOR FAULT	The VFD circuit has detected an error.	1. Check the fault code to aid in troubleshooting. 2. After the problem is resolved, most faults will reset when *machine reset* is pressed. A few high level VFD faults require cycling power to reset.
INSUFFICIENT SURGE	The machine is not receiving sufficient product from upstream.	Wait for incoming product.

J

Message	Cause	Solution
JOG MODE SELECTED	The *mode* selector switch is set to jog.	When desired, set the switch to auto for run mode operation.

L

Message	Cause	Solution
LOW AIR PRESSURE	The plant air pressure has dropped below the requirements of this machine.	1. Check the air source. 2. Check the pneumatic system for leaks. 3. Check the operation of the pressure switch.
LOW FILM ROLL 1	Film roll 1 is nearly empty.	Be prepared to change the film roll when the empty film roll fault occurs.
LOW FILM ROLL 2	Film roll 2 is nearly empty.	Be prepared to change the film roll when the empty film roll fault occurs.
LOW LUBE LEVEL	The plate on top of the grease in reservoir has dropped to the proximity switch.	The reservoir should be filled as soon as possible to avoid getting air in the lube system.

M

Message	Cause	Solution
MACHINE RUNNING	The machine is running.	
MAIN DRIVE SERVO FAULT	The most likely cause of this fault is a position error due to an obstruction in the path of the axis.	1. If there is a jam, determine and correct the cause of the jam. Clear the jam. 2. If there is not a jam, check the servo controller for fault codes, and then refer to the servo manual for aid in troubleshooting.
MAIN DRIVE TORQUE OVERLOAD	The main drive servo's commanded torque exceeded its high torque limit. Fault may be caused by a product jam or mechanical conflict.	1. Determine and correct the cause of the fault. Adjust the machine, if necessary. 2. Clear the jam, if present, and correct or remove product and blanks.
MEASURING FILM SEEKING FIRST CLEAR	This message is used for the registered film teach procedure.	
MEASURING FILM SEEKING SECOND CLEAR	This message is used for the registered film teach procedure.	
METERING BELT SERVO FAULT	The most likely cause of this fault is a position error due to an obstruction in the path of the axis.	1. If there is a jam, determine and correct the cause of the jam. Clear the jam. 2. If there is not a jam, check the servo controller for fault codes, and then refer to the servo manual for aid in troubleshooting.

Message	Cause	Solution
METERING CONVEYOR ROLLOVER CONFIG. FAULT	A check that ensures that each metering conveyor servo drive is set up to roll over every 5000 inches has failed.	Set up each conveyor to roll over every 5000 inches.
METERING OFF	The *metering* selector switch is set to off.	When desired, set the switch to auto to enable metering.
MISSING FILM	1. The *missing film* photosensor is not aligned with its reflector. 2. Film is not being cut or delivered properly. 3. The wand deck is not at the correct level. 4. The film length is wrong.	1. Check the alignment of the *missing film* photosensor. 2. Check the cutting and delivery of the film. 3. Check the level of the wand deck. It should be low enough to clear the oncoming product, but if too low, the film can slip out from under the product. 4. Check the recipe settings.
MOVE TUNNEL TO MAINT HEIGHT TO REHOME	This message displays after a *tunnel height adjust not moving* fault is reset.	Press the *maintenance height* button to recalibrate the tunnel height.

P

Message	Cause	Solution
PATTERN FAILED SHORT CLEAR = ###.##	This message is used for the registered film teach procedure.	
PATTERN FAILED SHORT CLEAR NOT DETECTED	This message is used for the registered film teach procedure.	
PATTERN FOUND	This message is used for the registered film teach procedure.	
PLC BATTERY LOW	The PLC battery may not be able to retain PLC memory when power is dropped. The entire PLC program will be lost if the battery fails completely and the power is dropped.	Replace the PLC battery immediately with power to the PLC and the PLC turned on.
PLEASE WAIT TO RESET	An attempt was made to reset the machine before the VFDs and servo drives have had time to discharge their busses. A timer prevents re-setting the safety relays until it is safe to re-apply power.	Wait for the VFD bus to discharge (message disappears) before pressing *machine reset*.
PLEASE WAIT TO START	After the emergency stop safety relay (and remote disconnects) is closed, a timer prevents the machine from being started until the VFD network has had time to power up.	Wait for the VFD network to power up (message disappears) before starting the machine.

Message	Cause	Solution
PRESS START TO RECOVER SERVOS	Faults are reset, but the servos are not recovered.	1. Press *machine start*, holding for a few seconds to allow servos to recover. 2. If message does not disappear in a few seconds, re-initiate servo recovery by performing the following: Open a guard door to disable servo(s), close the guard door, press *machine reset*, and then restart the machine. 3. If this condition persists, save the online program and call Douglas Machine tech support.
PRESS TUNNEL START TO MOVE TO RECIPE HEIGHT	The tunnel is not at the recipe height.	1. Press and hold the *tunnel start* button during the tunnel adjustment start delay. 2. After the start delay, the tunnel moves to the recipe height.
PRODUCT COOLING FAN THERMAL OVERLOAD	The motor is drawing too many amps.	1. Determine the cause of the overcurrent and correct the fault condition. 2. Reset the motor protector, and then press *machine reset*.
PRODUCT OUT OF POSITION AT WRAPPER	While product advances toward the wrapping area, product or debris was detected in the area between properly placed product groups. The photosensor may have detected a tray's open flap.	1. Remove the loaded tray or stacked trays from the machine. 2. Remove the associated film sheet.
PWC XXXXX SHORTED OUTPUT	1. There is a problem with associated wiring. 2. A heater is shorted. 3. The power controller is faulty.	1. Check the associated wiring. 2. Perform continuity checks for shorts to ground. 3. Replace the power controller.

R

Message	Cause	Solution
READY	The machine is stopped, and no fault or status conditions are present.	
REGISTERED FILM LENGTH IS ZERO PERFORM TEACH TO CONTINUE	The printed film length is equal to zero while the printed film short clear length is not equal to zero.	Perform the registered film teach procedure.

S

Message	Cause	Solution
SHORT CLEAR LENGTH IS ZERO ENTER MEASURED SHORT CLEAR LENGTH TO CONTINUE	The printed film short clear length is equal to zero.	Enter measured film length, and then perform the registered film teach procedure.
STACKER CLUTCH OL FAULT	The stacker torque limiter has tripped out due to excessive torque. This fault may be caused by a product jam, a mechanical conflict, or a defective or misadjusted overload proximity sensor. Torque limiter tension should be set light enough to protect the machinery, yet heavy enough so that the torque limiter does not trip during normal operating conditions.	1. Determine and correct the cause of the fault. Adjust the machine, if necessary. If torque limiter is not tripped, check the operation of the proximity sensor. 2. Clear the jam, if present, and correct or remove product and blanks. 3. Apply the reset (overload) wrench to the associated reset nut. Turn the nut in the direction of travel until you feel the torque limiter drop into its detent.

T

Message	Cause	Solution
TEACH ABORTED	This message is used for the registered film teach procedure.	
TEST MODE RUNNING	Caution - Test mode bypasses product surge speed control, which could result in product metering jams due to loss of infeed prime. Perform the following steps to place the machine in test mode: 1. Press the *machine reset* button three times while pressing the main drive *cycle stop* button. 2. The *test mode running* message is displayed will the machine is in test mode.	1. While in test mode, press the *machine start* button to increase the machine speed. 2. Press the *cycle stop* button to exit test mode.

Message	Cause	Solution
TRAY OUT OF POSITION	The metering belt servo is in the wrong position relative to its master axis. The difference in position between the metering belt servo and its master axis (the MeteringMaster virtual axis) has exceeded the allowable amount.	Perform the following steps to initiate metering preload, which should correct the fault: 1. If a tray is blocking the *metering belt* photosensor, remove the tray from the machine. 2. If the active recipe double stacks trays, determine if a tray must be removed from the stacker to prevent a single tray from being advanced to the wrapper. If necessary, remove the tray. 3. Press *machine reset*, and then restart the machine.
TUNNEL BLOWER LUBE FAULT	The tunnel blower(s) ran a preset time since the *tunnel fan lube reset* button was last pressed.	Lube the bearings with the correct grease, and then press the *tunnel fan lube reset* button to reset the *fan hours since lubed* timer and display.
TUNNEL CHAIN COOLING FANS VFD FAULT	The VFD circuit has detected an error.	1. Check the fault code to aid in troubleshooting. 2. After the problem is resolved, most faults will reset when *machine reset* is pressed. A few high level VFD faults require cycling power to reset.
TUNNEL CONVEYOR VFD FAULT	The VFD circuit has detected an error.	1. Check the fault code to aid in troubleshooting. 2. After the problem is resolved, most faults will reset when *machine reset* is pressed. A few high level VFD faults require cycling power to reset.
TUNNEL COOLING DOWN	The tunnel is cooling down.	If tunnel heating is desired, start the tunnel with the *tunnel heat* selector switch set to auto.
TUNNEL HANDWHEEL ENGAGED	The *tunnel handwheel engaged* sensor detects the tunnel handcrank.	Removed the handcrank, and then press *machine reset*.
TUNNEL HEAT OFF	The *tunnel heat* selector switch set to off.	When tunnel heating is desired, start the tunnel with the *tunnel heat* selector switch set to auto.

Message	Cause	Solution
TUNNEL HEIGHT ADJUST OVERTRAVEL DOWN	The *tunnel height lower limit* sensor does not detect the tunnel height adjust assembly: 1. The tunnel height assembly was manually jogged down beyond the sensor. 2. The tunnel height setpoint is out of range. 3. The sensor is faulty.	1. Jog the tunnel height assembly up into range. 2. Enter correct tunnel height setpoint. 3. Check the sensor's operation. If the sensor is adjusted or replaced, press the *maintenance height* button to recalibrate the tunnel height.
TUNNEL HEIGHT ADJUST OVERTRAVEL UP	The *tunnel height upper limit* sensor does not detect the tunnel height adjust assembly: 1. The tunnel height assembly was manually jogged up beyond the sensor. 2. The tunnel height setpoint is out of range. 3. The sensor is faulty.	1. Jog the tunnel height assembly down into range. 2. Enter correct tunnel height setpoint. 3. Check the sensor's operation. If the sensor is adjusted or replaced, press the *maintenance height* button to recalibrate the tunnel height.
TUNNEL HEIGHT ADJUST THERMAL OVERLOAD	The motor is drawing too many amps.	1. Determine the cause of the overcurrent and correct the fault condition. 2. Reset the motor protector, and then press *machine reset*.
TUNNEL HEIGHT ADJUST NOT MOVING	A proximity sensor monitors a blip cam on the tunnel adjust gearbox. This fault occurs when the sensor does not detect motion while the height adjust is commanded up or down.	1. Determine and correct the cause of the fault. If not a jam, check the sensor's operation. 2. When the cause of the fault is resolved, press *machine reset*. 3. Press the *maintenance height* button to recalibrate the tunnel height.
TUNNEL NOT RUNNING	The machine has been started, but the tunnel is not running.	When desired, start the tunnel.
TUNNEL REMOTE EMERGENCY STOP	This emergency stop button has been pressed.	When the reason for the emergency stop has been resolved, pull out the e-stop button, and then press *machine reset*.

V

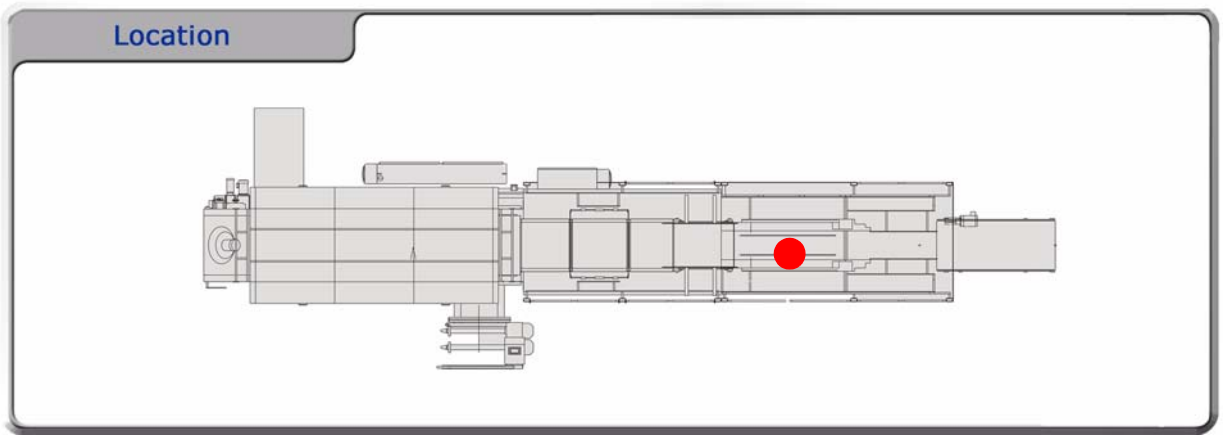
Message	Cause	Solution
VACUUM BLOWER THERMAL OVERLOAD	The motor is drawing too many amps.	1. Determine and correct the cause of the overcurrent. 2. Reset the motor protector, and then press *machine reset*.

W

Message	Cause	Solution
WRAPPER CONTROL PANEL EMERGENCY STOP	This emergency stop button has been pressed.	When the reason for the emergency stop has been resolved, pull out the e-stop button, and then press *machine reset*.
WRAPPER DISCHARGE CONV SERVO FAULT	The most likely cause of this fault is a position error due to an obstruction in the path of the axis.	1. If there is a jam, determine and correct the cause of the jam. Clear the jam. 2. If there is not a jam, check the servo controller for fault codes, and then refer to the servo manual for aid in troubleshooting.
WRAPPER WAND SERVO FAULT	The most likely cause of this fault is a position error due to an obstruction in the path of the axis.	1. If there is a jam, determine and correct the cause of the jam. Clear the jam. 2. If there is not a jam, check the servo controller for fault codes, and then refer to the servo manual for aid in troubleshooting.
WRAPPER WAND SERVO RECOVERING	The servo is recovering to its proper position.	

Machine Timing

Main Flights



Description:

The setup position occurs when the main flight chain guide aligns with the zero degree indicator.

You may need to realign the main flight chain guide with the zero degree indicator if the flight chain stretches or breaks.

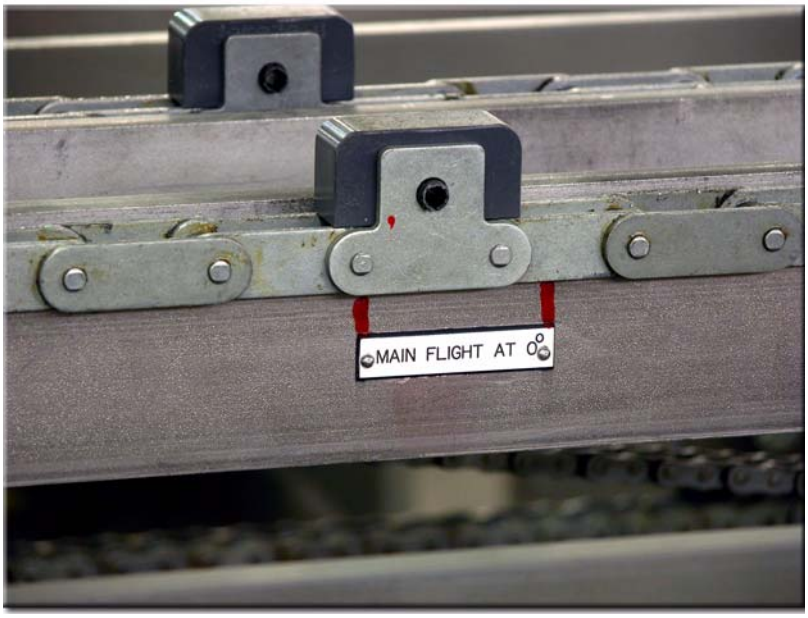
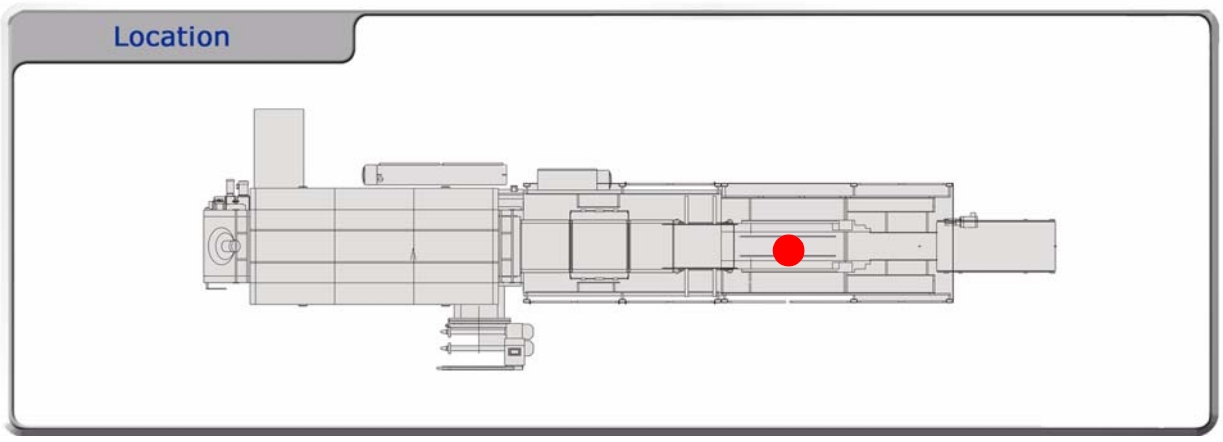


Figure 9.1: Main Flights

Overhead Sweep



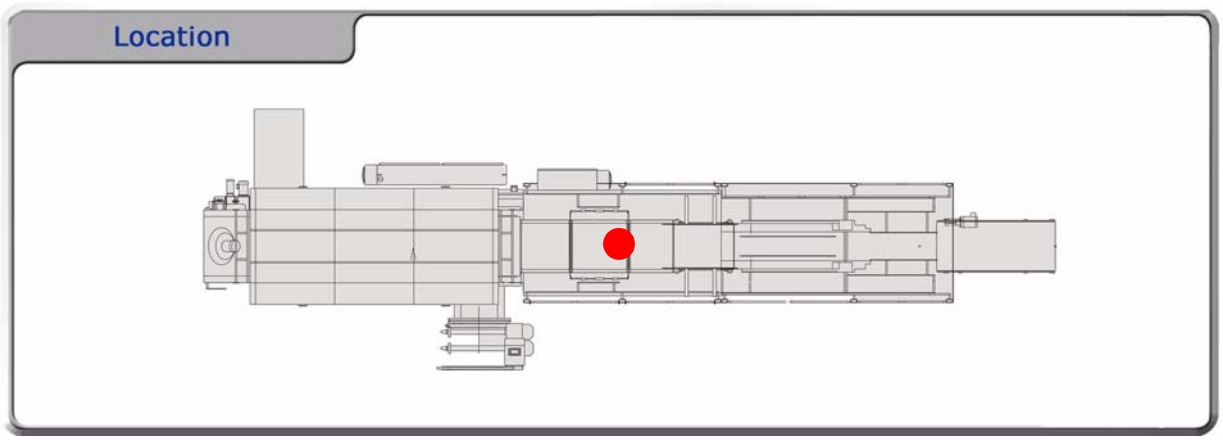
Description:

An overhead sweep bar should align with the zero position indicator when the machine is cycle stopped.

You may need to realign the flight chain guide with the zero degree indicator if the flight chain stretches or breaks.

Figure 9.2: Overhead Sweep

Wrapper Wand



Description:

1. On the main control panel, advance to the Servo Maintenance Screen.
2. Use the **Up** or **Down** buttons to highlight the *Wrapper Wand* servo.
3. Press the **Jog Forward** or **Jog Reverse** pushbuttons until the wand is flush with the wrapper entry conveyor and the wrapping table.
4. Press the **Set Zero** pushbutton.
5. Press the **Machine Start** pushbutton on the main control panel to continue operation.

Figure 9.3: Wrapper Wand

Section 10: Parts

- Limited Warranty Statement
- Working with Douglas Documentation
- Working with Douglas Documentation
- Identifying Machine Parts
- Ordering Replacement Parts
- Class Code Numbers
- Computer Abbreviations
- Recommended Spare Parts
- Bill of Materials

Limited Warranty Statement

All new packaging equipment manufactured and supplied by Douglas Machine Inc. is warranted to be free from defects in materials and workmanship for the period of time specified in this statement. The warranty period commences from the date the equipment is shipped from our facility.

- Base Frame: Lifetime
- Douglas Standard Components: 3 years
- Buyer Specified Components: 1 year

The following limitations and restrictions apply to this warranty:

1. The base frame limited lifetime warranty applies to structural and welding failures such as breaking, cracking or bending.
2. Douglas Standard Components include all non-wear parts that are fabricated or purchased by Douglas Machine and incorporated into the supplied equipment.
3. Buyer Specified Components include all non-wear parts that differ from Douglas' Standard Components and are incorporated into the supplied equipment per Buyer's specification requirements.
4. Most wear components shall not be warranted. However, select wear components are warranted for 1-2 years depending upon the original manufacturer's warranty. A warranty claim against a wear part may be made if it is determined the part failed due to a factory defect. If it is determined the part failed due to a factory defect, the claim will follow the normal returns process. Consult with Douglas Machine for complete listings of non-warranted and warranted wear components.
5. Wear and tear on the equipment that is considered standard in the industry shall not be warranted.
6. Equipment that is purchased by Douglas Machine and incorporated into the supplied equipment shall be subject to the original manufacturer's standard warranty. Such equipment includes, but is not limited to, conveyors, accumulators, inspection systems and coders.
7. Unless specified otherwise, frame and component finishes shall not be warranted if the equipment is installed in a wet environment, or exposed to harsh cleaners or high-pressure wash downs.
8. Equipment that has been misused, poorly maintained, neglected, or improperly moved, repaired or altered by anyone other than Douglas Machine or its authorized agents shall not be warranted.
9. Douglas Machine shall not be responsible for any removal, handling, or shipping charges (including applicable duties, taxes and inspection fees) that the Buyer incurs to return a component for warranty evaluation.

10. Douglas Machine shall be responsible for the repair or replacement of components that are, in its sole determination, defective and covered by warranty. This responsibility includes handling and non-expedited shipping charges to return a component to the Buyer, but excludes all applicable duties, taxes and inspection fees. Douglas Machine shall not be responsible for any labor costs to reinstall components or for line downtime during repair.
11. This warranty is for the sole benefit of the original Buyer and is not transferable.
12. This warranty is in lieu of all other warranties, expressed or implied, or merchantability, or fitness for a particular purpose, performance or otherwise.

Working with Douglas Documentation

Machine Documentation

Every machine comes with the following documentation:

Operator Manual: This manual contains the following information: machine description, operator controls, start-up and shutdown procedures, and safety.

OEM Manual (Original Equipment Manufacturers): This manual contains a collection of all the slips, brochures, etc. that are packed with the various purchased components.

Program Schematic CD: This CD contains the electrical programs, electrical and pneumatic drawings (dwg and pdf formats), and the operator screens (pdf format).

Service Manual: This manual contains the following information: theory of operation, machine specifications, machine adjustments, maintenance, factory settings, troubleshooting, spare parts, bill of materials.

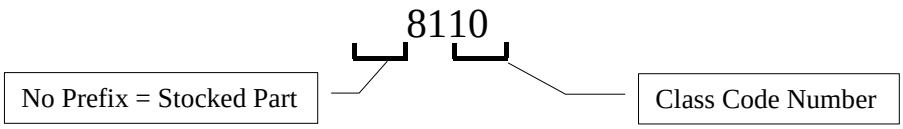
Documentation CD: This CD contains the operator and service manuals (pdf format), factory settings, machine adjustment number settings, recommended spare parts, and bill of materials (excel format).

Assembly Drawings: The assembly drawings are furnished either on paper or on a CD (pdf format).

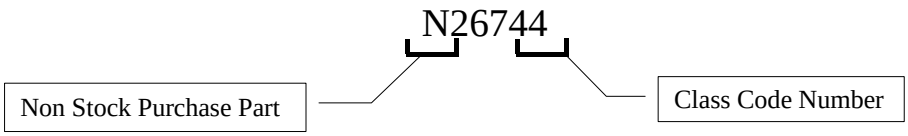
Identifying Machine Parts

The machine components appear in the following pages. These pages contain information regarding specific parts of the machine.

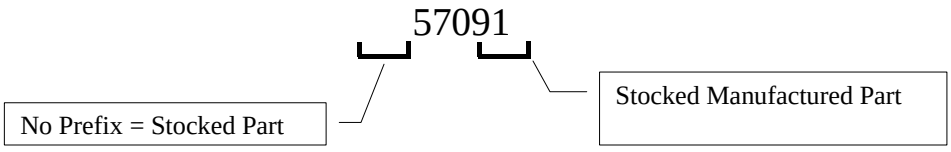
- **Purchased Parts** consist of parts purchased from outside vendors. Each purchased part is listed in the bill of materials with its class code number, computer number, description, vendor code, and quantity used.
- **Stock Purchased Parts** consist of commercial parts stocked in our in-house inventory. These parts are kept in stock and are used in the construction of Douglas equipment. These parts are listed in the bill of materials with no prefix and under the class code number that identifies the part category. Below is a part number example for a purchased part that is stocked.



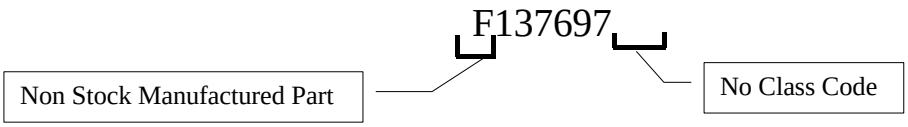
- **Non-Stock Purchased Parts** consist of commercial parts used in the construction of Douglas equipment. We do not stock these parts in our in-house inventory. These parts are listed in the bill of materials with an “N” prefix and are assigned a class code number. Below is a part number example for a purchased part that is not stocked.



- **Electrical** and **Pneumatic Parts** are purchased parts and are listed under the appropriate class code numbers on the bill of materials and are designated stock or non-stock as described above.
- **Stock Manufactured Parts** are Douglas parts which are stocked in our in-house inventory. These parts are kept in stock and are used in the construction of Douglas equipment. These parts are listed in the bill of materials with no prefix and under class code 91 or 92. Below is a part number for a manufactured part that is stocked.



- **Non-Stock Manufactured Parts** are Douglas parts which are used in the construction of Douglas equipment but are not stocked in our in-house inventory. These parts are shown on the assembly prints with an “F” prefix and are not assigned a class code. Below is a part number example for a manufactured part that is not stocked.



- **Modified Stock Parts** are stock parts (manufactured or purchased) modified according to the print number listed with each part. These parts are shown on the assembly prints with an “F” prefix and are not assigned a class code.

For further information, please contact your Douglas Service Representative.

Ordering Replacement Parts

When ordering parts for your Douglas equipment, please follow these guidelines:

1. When your instruction manuals were shipped, a print package was included with them. It will be necessary to use the main machine assembly drawing(s) to identify part numbers for the various parts of the machine.
2. Mail or telephone your purchase order number. List all parts by item number (computer number) or print number, and include a name or description of the part.
3. On the assembly blueprint, all parts are called out by an item number. If any part cannot be found on the assembly print, please describe the part as fully as possible, indicating location on the machine, length, width, bore, diameter, voltage, etc.
4. Always give the machine serial number (Douglas number only). This number is found at the upper left of each page of the bill of materials (under order no.). This number is also on the serial number plate attached to your machine (M-100000, for example).
5. **Remember**, we are unable to make shipments without your purchase order number. Please include on your purchase order the name of a contact person; this will allow us to provide you with better service in handling your order.
6. Please note, when ordering non-stock manufactured parts, allow two weeks plus shipping time for delivery. Also note that non-stock purchased parts ("N" prefix) require extra lead time.
7. We will make every effort to expedite shipment of your parts order in an emergency — please inform our **Replacement Parts** personnel if your order is to be handled as an emergency.
8. Please contact our **Replacement Parts** representative for current price quotations and parts availability.

Douglas Machine Information

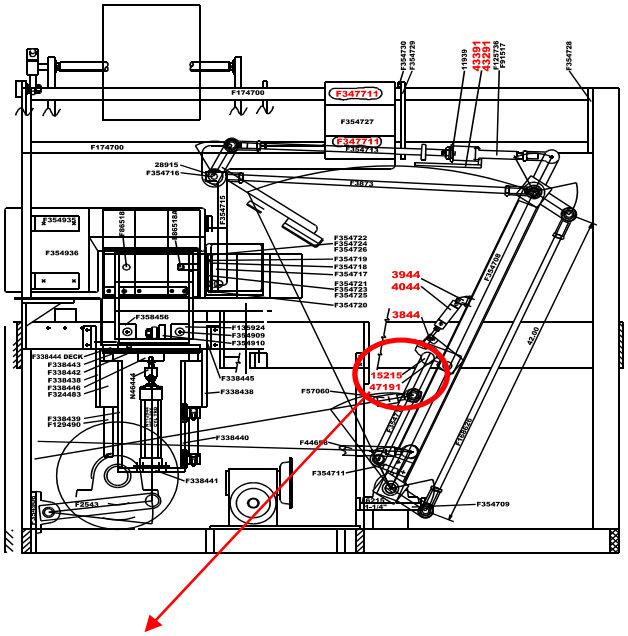
Telephone:	Technical Support: 320.763.5507 Main Line: 320.763.6587
Fax:	320.763.9666
Address:	Douglas Machine Inc. 3404 Iowa St. Alexandria, MN 56308
Website:	www.douglas-machine.com
E-mail:	service@douglas-machine.com

We appreciate the opportunity to serve you.

Refer to the following documents when ordering parts:

1. **Assembly Prints** to determine whether parts are stock (no prefix) or non-stock ("F" or "N" prefix). Note: Some components may have a "P" prefix number; these are phantom numbers and it will be necessary to refer to the subassembly print to identify the individual part numbers.
2. **Bill of Materials** for description of manufactured stock or non-stock parts (class code 91 or 92) or purchased stock and non-stock parts (class code other than 91 or 92). The description will be found by referring to the item number called out on the assembly print.

Locating Part Numbers on Your Machine



Item	Class	U. O. M.	Quantity	Item Description
N83810	10	EA	1	GBX HC 264 A 50:1 143 TC
15215	15	EA	3	BRG CR-1-1/2 SM CF-1-1/2 MG
3015	15	EA	2	BRG B8-L 1/2 RBC
N45820	20	FT	3	CHN POML 1843 TAB 200 RAM
15320	20	FT	1	CHN N4 DELRIN (#40) MRS
N9427	27	EA	1	HWR 5100-150 SNAP RING TRUARC
4030	30	EA	2	GLE 244-519 90 NOZ NORD
N19834	34	SI	68	PLS 1-1/2X24X48 HYFLEX UHMW
11934	34	EA	40	PLS MLDED CHNBLK 2060 #11934
70735	35	EA	1	RDE MW 6ZK 3/8RHF AURORA

Figure 10.1: Part Location Diagram

Class Code Numbers

The class code number categories listed below are those that are included on the standard list of recommended spare parts for Douglas packaging equipment. The recommended spare parts list that follows is based on the bill of materials for your machine. You may wish to add to or delete from this list, based on your experience with the operating conditions in your own facility.

Recommended Spare Parts Class Code Numbers and Descriptions

Class Code #	Description	Class Code #	Description
10	Gearboxes	65	Relays (All)
15	Bearings, Cam Followers, Bushings, Thrust Washers (Cam Followers, Cam Yoke Rollers, only)	67	Micro Switch (Limit Switches)
16	Belts, Gear Belts (all gear belts, V-belts, etc.)	68	Spectrol (Potentiometers only)
17	Helicoils	69	Solenoid (All)
21	Clutch/Brakes (FormSprag Clutch only)	71	Timer (All)
30	Glue Systems	77	Square - D (Switches, Pushbuttons, Lenses, etc.)
35	Rod Ends (All)	79	General Electric (Resistors, etc.)
40	Tubing (Plastic Vacuum Tubing, including VacuFlex)	81	Regulator - Wilkerson Combination (All Regulators)
42	Vacuum Cups, Vacuum Pumps (all cups; filters)	82	Mufflers (All)
43	Springs (All)	83	Valves (All)
51	Allen Bradley - (Relays, Switches, Pushbuttons, Lenses, Servo Motors)	85	Gauges (All)
58	Fuse (All)	86	Filters (All)
59	Electric Eye (All)	87	Lubricators (All)
60	Heater (All)	98	Electric Misc. (Resistors, Fuses; also Switches, Pushbuttons, Lenses, etc. other than A-B or Sq. D)
64	Electric Motors	99	Miscellaneous

The last two digits of the item numbers on the bill of materials consist of the class code numbers. The following key will help locate parts on the inventories:

Bill of Materials Class Code Numbers and Descriptions

Number	Description	Number	Description
10	Gear Boxes, Angle Drives, Reducers	38	Tensioners, Flat Face Idlers
11	Cold Rolled Steel (CRS)	39	Torque Limiters
12	Aluminum	40	Tubing
14	Cams	41	Tension Pins
15	Bearings, Cam Followers, Bushings, Thrust Washers	42	Vacuum Cups, Vacuum Pumps
16	Belts, Gear Belts	43	Springs
18	Fasteners	44	Cylinders
20	Chain, Attachments, Harkness Flights	51	Allen Bradley, Legend Plate
21	Clutch / Brakes	52	Relay Base
22	Couplings, U-Joints, Ribbed	53	Adapter: Browning T.L., Bushing & Horton T.L., Dodgle T.L.
23	Casters	54	Conduit
24	Clamps	55	Condulet
25	Fittings	56	Connector
26	Hubs	57	Motor Mount
27	Hardware, Handles, Latches	58	Fuse
28	Lube Systems	59	Electric Eye
29	Lubrication, Grease, Oils	60	Heater
30	Glue Systems	61	Hoffman
31	O-Rings	62	Hubs
32	Paint	64	Motor
33	Pulleys, Browning Gear Belts, Sheaves	65	Relays (RLY)
34	Plastic	66	Receptacles
35	Rod Ends	67	Micro Switch
36	Sprockets, Idlers	68	Spectrol
37	Seals	69	Solenoid
70	Sealtite	84	Fittings
71	Timer	85	Gauges

Number	Description	Number	Description
72	Terminal	86	Filters
73	Transformer	87	Lubricators
74	Wire	88	Couplers
75	Wireway	89	Clamps
76	Wiremaker	90	Blank Casting
77	Sq. D.	91	Fabricated Parts
78	Cutler - Hammer	95	Instparts
79	General Electric	97	Gears
81	Regulator - Wilkerson Combination	98	Electric Misc.
82	Mufflers	99	Misc.
83	Valves		

Computer Abbreviations

These abbreviations for parts and/or vendors appear throughout the following bill of materials:

Computer Abbreviations for Parts/Vendors

Abr	Vendor	Abr	Vendor
AB	ALLEN BRADLEY	ACC	ACCESSORIES
ADH	ADHESIVE	ADJ	ADJUSTABLE
ADP	ADAPTER	ADV	ADVANCED
AL	ALUMINUM	ALBN	ALBION
ALCH	ALLIS CHALMERS	ALLIG	ALLIGATOR
ALUM	ALUMINUM	AMPH	AMPHENOL
ASSY	ASSEMBLY	ATTACH	ATTACHMENT
AUTO	AUTOMATIC	BA	BASE
BC	BLANK CASTING	BLDR	BALDOR
BLK	BLACK	BLT	BELT
BLU	BLUE	BOS	BOSTON
BP	BRIDGEPORT	BR	BRAKE
BRG	BEARING	BRKR	BREAKER
BRKT	BRACKET	BRN	BROWNING
BSHP	BISHOP	BSTC	BOSTITCH
BUSH	BUSHING	CAN	CHAIN
CART	CARTRIDGE	CDL	CONDULET
CDT	CONDUIT	CENT	CENTRIC
CF	CAM FOLLOWER	CH	CUTLER-HAMMER
CHAR	CHARACTER	CIR	CIRCUIT
CLM	CLAMP	CLP	CLAMP
CLR	COUPLER	CM	CEILING MOUNT
CL	CONNECTOR LINK	CLEV	CLEVIS
CLH	CLUTCH	COL	COLLAR
CNR	CONNECTOR	CNT	CONTROL
COD	CODER	CONF	CONFIGURATION
CONT	CONTINUOUS	CONW	CONWAY

Abr	Vendor	Abr	Vendor
CPG	COUPLING	CRS	COLD ROLLED STEEL
CST	CASTER	CYL	CYLINDER
CYR	CAM YOKE ROLLER	DAN	DANGER
DBL	DOUBLE	DCO	DELCO
DG	DODGE	DGRH	DIAGRAPH
DISC	DISCONNECT	DNLY	DANLEY
DP	DISPOSABLE PARTS	DYN	DYNAMICS
ECC	ECCENTRIC	EL	ELBOW
ELE	ELECTRIC EYE	ELEC	ELECTRIC
ELM	ELECTRICAL MSC.	EM	MOTOR (ELECTRIC)
FER	FERGUSON	FL	FLANGE
FLT	FILTER	FOSG	FORMSPRAG
FS	FASTENER	FSE	FUSE
FTN	FITTING	GA	GAUGE
GB	GEAR BELT	GBP	GEAR BELT PULLEY
GBX	GEAR BOX	GDE	GUIDE
GE	GENERAL ELECTRIC	GEN	GENERAL ELECTRIC
GF	GREASE FITTING	GFI	GREASE FITTING INPUT
GFL	GREASE FITTING LEFT	GFO	GREASE FITTING OUTPUT
GFR	GREASE FITTING RIGHT	GGE	GAUGE
GLE	GLUE	GM	GENERAL MOTORS
GND	GROUND	GRN	GREEN
HBE	HUB (ELECTRIC)	HC	HUB CITY
HFM	HOFFMAN	HILL	HILLIARD
HORT	HORTON	HRTH	HARDEN TEETH
HUMP	HUMPHREY	HWR	HARDWARE
IDSP	INDUSTRIAL SUPPLY	IMP	IMPERIAL
INJ	INJECTOR	INST	INSERTER
INTR	INTRALOX	JPMI	JONES
KALA	KALAMAZOO	KNLY	KINSLEY
LANC	LANCASTER	LBR	LUBRICATOR
LINC	LINCOLN	LT	LIGHT

Abr	Vendor	Abr	Vendor
LVJY	LOVEJOY	MACH	MACHINE
MARN	MARTIN	MAUR	MAUREY
MERC	MERCER	MFR	MUFFLER
MG	MCGILL	MLR	MILLER
MMCR	MCMASTER - CARR	MMRY	MEMORY
MNT	MOUNT	MOD	MODEL
MOSI	MOSIER	MR	MUSHROOM
MRM	MOTOR MOUNT	MRS	MORSE
MSC	MISCELLANEOUS	MSW	MICRO SWITCH
MTG	MOUNTING	N	NICKLE CHAIN
NA	NAIL	NEO	NEOPRONE
NIPP	NIPPLE	NO	NUMBER
NORD	NORDSON	NORG	NORGREN
NOZ	NOZZLE	NPK	NOPAK
OL	OVERLOAD	OPER	OPERATOR
OR	ORIFICE	ORG	O-RING
ORN	ORANGE	PARK	PARKWAY PRODUCTS
PH	PHASE	PIN	PINION
PL	PLATE	PLL	PULLEY
PLS	PLASTIC	PNT	PAINT
PO	POSITION	POS	POSITION
PPES	PREPARED ENDLESS	PRKR	PARKER
PWR	POWER	RBS	RELAY BASE
RCP	RECEPTACLE	RDE	ROD END
RE	REDUCER	REL	RELIANCE
REON	REDINGTON	REX	REXNORD
RGL	REGULATOR	RL	ROLLER LINK
RLY	RELAY	RVS	REEVES
SAML	SAMUEL	SEL	SELECTOR
SGNW	SAGINAW	SH	SHAFT
SH	SHIELD	SHK	SHANK
SILV	SILVER	SLMR	SEALMASTER

Abr	Vendor	Abr	Vendor
SLTBH	SLAUTTERBACH	SM	SMITH
SOCO	SOUTHCO	SPR	SPRING
SQD	SQUARE D	SSWH	SS WHITE
ST	STRAIGHT	STD	STANDARD CONVEYOR
STIN	STILSON	STL	STEEL
SW	SWITCH	SYNT	SYNTRON
STB	TUBING	TD	TIMING DIAL
TGC	TORQ GARD CLUTCH	TMP	THOMSON
TMR	TIMER	TNR	TENSIONER
TORR	TORRINGTON	TQL	TORQUE LIMITER
TRANS	TRANSFORMER	TRM	TERMINAL
TU	TAKE-UP	TYP	TYPE
VAC	VACUUM	VB	VICTOR BALATA
VEED	VEEDER ROOT	VLV	VALVE
VR	VON RUDEN	WHT	WHITE
WIL	WILKERSON	WIN	WINSMITH
WM	WALL MOUNT	WM	WIRE MARKER
WP	WATER PROOF	WS	WIDE SLOT
WWY	WIREWAY	YEL	YELLOW

Recommended Spare Parts

PS Level	Item	Qty	Item Description	Description
1	N185251	1	AB 2090-SCEP-0-1 FIBER 4 IN *	Allen Bradley
1	N173651	1	AB 2090-SCVP-15-0 FIBER OPTIC*	Allen Bradley
1	N171151	1	AB 42EF-E1EZB-Y4 24V 4PIN QD*	Allen Bradley
1	N175751	2	AB 42EF-G1MPA-Y4 FIBER DC *	Allen Bradley
1	147651	2	AB 42EF-P2MPB-Y4 POLAR DC *	Allen Bradley
1	N171251	1	AB 42EF-R9MPBV-Y4 24V 4PIN QD *	Allen Bradley
1	N148551	1	AB 42KC-P2LPSM-P4	Allen Bradley
1	144151	2	AB 440K-T11118 SAFETY SWITCH*	Allen Bradley
1	217851	1	AB 440R-N23135 MSR127RP MNTR *	Allen Bradley
1	N184751	1	AB 60-2754 PHOTO EYE W/FIBERS*	Allen Bradley
1	N50359	2	ELE BANNER 1A1.53PMTA FIBER	Electric Eyes
1	80398	2	ELM BI5-Q08-AP6X2-0.2M-PSG3F*	Misc - Electrical
1	N328598	1	ELM TURCK NI10-G18-AP6X-B1341*	Misc - Electrical
1	130598	2	ELM TURCK PKG 3Z-6 PICO CBL *	Misc - Electrical
1	294998	2	ELM TURCK PKG 4M-6M PICO CBL	Misc - Electrical
1	N20658	2	FSE ABC-4 FUSE	Fuses
1	N136858	2	FSE ABC-5 FUSE	Fuses
1	N27558	2	FSE JJS40 FUSE	Fuses
1	12158	2	FSE LPJ10 SP	Fuses
1	12258	2	FSE LPJ15 SP	Fuses
1	N29758	2	FSE LPJ2 SP	Fuses
1	26558	2	FSE LPJ20 SP	Fuses
1	N29458	2	FSE LPJ250 SP	Fuses
1	N17558	2	FSE LPJ30 SP	Fuses
1	N29058	2	FSE LPJ5 SP	Fuses
1	19158	2	FSE MDA-.5 FUSE	Fuses
1	17958	2	FSE MDA-10 FUSE	Fuses
1	18958	2	FSE MDA-2 FUSE	Fuses
1	18358	2	FSE MDA-5 FUSE	Fuses
1	28358	2	FSE MDA-6 FUSE	Fuses
1	47058	2	FSE GBB 10	Fuses

PS Level	Item	Qty	Item Description	Description
1	6565	1	RLY IDEC RH2B-UL-24VDC	Relays
1	N8365	1	RLY IDEC RY22S-U-24VDC	Relays
1	N8765	1	RLY IDEC RY22S-U-AC120V	Relays
1	14660	4	HEATER WATLOW 2-51-44-1	Heaters
1	3416	1	BLT B-53	Belts
1	N102536	9	SPKT PL 5S11C 1-1/4B KEY&SET *	Sprockets
1	N137220	36	CHN F52 NYLON/GLASS W/SS PINS*	Chain
1	N137220	432	CHN F52 NYLON/GLASS W/SS PINS*	Chain
1	8492	28	CONVEYOR TABLES IDLER RLLRS	Shrink Wrap Stock Parts
1	11615	4	BRG SUPER 8 LINEAR TMP	Bearings
1	212816	14	“BLT FNB-5E 1.5””WDX79.38””LG *”	Belts
1	212916	14	“BLT FNI-5ER 1.5””WDX70.38””LG *”	Belts
1	N20521	1	CLH SUPER CB-6 CCW *	Clutches
1	68499	1	MSC SERRATED KNIFE *	Misc
1	83044	1	CYL FPS-501-D10 FABCO TD-5-X-*	Cylinders
1	84937	4	SEALS 63456 VICTOR	Seals
1	F458325	36	BRONZE WASHER	-
1	F466705	2	WAND	-
1	F467299	10	SUPPORT SPACER	-
1	F474753	2	THOMSON SHAFT	-
1	F474754	2	THOMSON SHAFT SUPPORT PLATE	-
1	N107316	14	“BLT FNB-5E 1.5””WDX64.37””LG *”	Belts
1	N61415	2	BRG CR-1 XC SM	Bearings
1	7981	2	RGL NUM MR14R-02 1/4NPT MANIF	Regulator
1	7881	1	RGL NUM R14R-02 1/4NPT	Regulator
1	N8781	1	RGL SMC ITV2030-03N2CN4 72 PSI	Regulator
1	55283	1	VLV MAC 45A-AA1-DDAJ-1JM 5.4W	Valves
2	N189751	1	AB 1734-D-IB8XOB8E 24VDC DNET *	Allen Bradley
2	N169151	1	AB 1734-FPD FIELD POTENTL DIST	Allen Bradley
2	N168851	1	AB 1734-IB4 24VDC 4 SINK INPUT	Allen Bradley
2	N169551	1	AB 1734-IE2V ANALOG VOLTAGE IN	Allen Bradley
2	N178851	1	AB 1734-IR2 POINT I/O RTD *	Allen Bradley
2	N168951	2	AB 1734-OB4E 24VDC 4 OUT MOD	Allen Bradley

PS Level	Item	Qty	Item Description	Description
2	N171051	1	AB 1734-OE2C ANALOG OUTPUT *	Allen Bradley
2	N203098	1	ELM SIMCO D167RY POWER UNIT	Allen Bradley
2	N220498	1	ELM SIMCO MEJ33X35.50 ST BAR	Misc - Electrical
2	N241098	1	ELM SOLA SDN10-24-100 24VDC*	Misc - Electrical
2	N219498	1	ELM TURCK RK4.4T-6 6M CABLE	Misc - Electrical
2	N212398	1	ELM TURCK WK40-6M CABLE 20FT.	Misc - Electrical
2	N148798	1	ELM WATLOW DC20-60F0-S000 SSPC	Misc - Electrical
2	8592	1	FILM SPLICE WIRE	Shrink Wrap Stock Parts
2	104327	1	HWR EUCANIA CROSS FLOW BLOWER*	Hardware
2	22634	2	PLS SILICONE COATED FABRIC *	Plastic
2	34734	2	PLS TUNNEL CURTAIN 17.25X33.2*	Plastic
2	9692	1	CUTTER DRIVE GEAR	Shrink Wrap Stock Parts
2	9792	1	CUTTER NIP ROLLER DRIVEN GEAR	Shrink Wrap Stock Parts
2	20592	1	LOWER NIP ROLLER	Shrink Wrap Stock Parts
2	20692	1	UPPER NIP ROLLER	Shrink Wrap Stock Parts
2	20792	1	VACUUM DUMP SEAL	Shrink Wrap Stock Parts
2	78716	1	BLT 25T10-610	Belts
2	102616	1	BLT 32DT10-1700	Belts
2	226516	1	“BLT 10-1/2””WDX64.50LG ASTER”	Belts
2	226616	1	“BLT 20””WDX102.50””LG ASTER LWB”	Belts
2	73515	4	BRG 6906B NICE	Bearings
2	N102427	4	HWR ACP 83120 GAS SPRING *	Hardware
2	N102944	1	CYL PFC-31-F-XBP BIMBA *	Cylinders
2	N184316	1	BLT BRECO 25AT10/700 BFX *	Belts
2	N188016	1	BLT BRECO 25AT10/610 BFX*	Belts
2	N195916	2	BLT 8MGT-1200-12 GATES *	Belts
2	N94616	1	“BLT 2””WDX29-1/8”” GREY STICKY”	Belts
2	N201316	1	BLT 8MGT-800-12 GATES PC GT2*	Belts
2	142299	1	MSC ROLFLEX CUSHION ROLLER	Misc
2	329098	1	ELM PARKER MPS-P31N-PC DG PRS*	Misc - Electrical
2	2785	1	GGE NUM GA100A 0-100PSI 1/8NPT	Gauges

PS Level	Item	Qty	Item Description	Description
2	3485	1	GGE NUM GB60A 0-60PSI 1/4NPT	Gauges
2	N43883	1	VLV MAC 811C-PM-591JJ-152 4X *	Valves
2	69083	1	VLV NUM S22E-03BKMXS01 24VDC	Valves
3	N125651	1	AB 100-C09ZJ10 IEC CONTACTOR	Misc - Electrical
3	N126451	1	AB 100-C30ZJ10 CONTACTOR	Allen Bradley
3	N127251	1	AB 104-C09ZJ22 REV CONTACTOR	Allen Bradley
3	N159551	1	AB 140M-C2E-B10 MTR PR.63-1.0	Allen Bradley
3	N161451	1	AB 140M-C2E-B16 MTR PR1.0-1.6	Allen Bradley
3	N164851	1	AB 140M-D8E-B40 2.5-4.0 A	Allen Bradley
3	N159151	1	AB 1756-DNB DEVICENET SCANNER	Allen Bradley
3	N174551	1	AB 1756-ENBT ETHERNET COMM MOD	Allen Bradley
3	215551	1	AB 1756-L62/B CONTROLLER 4MEG	Allen Bradley
3	N174251	1	AB 1756-M08SE SERCOS MODULE	Allen Bradley
3	N178951	1	AB 1756-M16SE SERCOS MODULE *	Allen Bradley
3	N145751	1	AB 1756-OB16E 24VDC OUTPUT MOD	Allen Bradley
3	N142551	1	AB 1756-PA72 POWER SUPPLY	Allen Bradley
3	N185151	2	AB 2090-XXNFMP-S09 9M *	Allen Bradley
3	N191851	2	AB 2090-XXNPMP-14S09 9M *	Allen Bradley
3	N191151	1	AB 2094-BC02-M02 INT AXIS MOD*	Allen Bradley
3	N186051	1	AB 2094-BM01 460V 8.7A AXIS MD	Allen Bradley
3	N186151	1	AB 2094-BM02 460V 14.5A AXIS M	Allen Bradley
3	N202751	1	AB 2094-PRS5 POWER RAIL (SLIM)	Allen Bradley
3	N203051	1	AB 2094-PRS8 POWER RAIL (SLIM)	Allen Bradley
3	N192551	1	AB 22B-D010N104 AC DRIVE 5HP	Allen Bradley
3	221151	1	AB 22B-D4P0F104 2HP W/HTSINK*	Allen Bradley
3	N192651	1	AB 22B-D4P0N104 AC DRIVE 2HP	Allen Bradley
3	211351	1	AB 22B-D6P0F104 3HP W/HTSINK*	Allen Bradley
3	N192751	1	AB 22-COMM-D DEV NET ADAPTER	Allen Bradley
3	N209851	1	AB 2711P-T10C4D1 PANELVIEW *	Allen Bradley
3	120998	1	ELM DART 125DV-C DRIVE	Allen Bradley
3	N316598	1	ELM HIRSCHMANN SPIDER 5TX	Allen Bradley
3	N308998	1	ELM RAYTEK CI3B10L INFRARED *	Allen Bradley

PS Level	Item	Qty	Item Description	Description
3	N327998	1	ELM WATLOW LVC2PW06000800A *	Misc - Electrical
3	163810	1	GBX HC HI4062G 17.50:1 56C B3*	“Gear Boxes, Indexers”
3	18821	1	CLH 827823 S-450 BRAKE NIEXEN *	Clutches
3	N74764	1	EM REL 2HP P56X1536 FF56C *	Motors
3	N142999	1	“MSC GOLDENROD 3””ODX37.562LONG*”	Misc
3	N154410	1	GBX HC 175 A 1:1 *	“Gear Boxes, Indexers”
3	40764	1	EM REL 1/3HP P56H3119 EA56C *	Motors
3	N45564	1	EM REL 1HP P56X1531 FC56C *	Motors
3	N90164	1	EM REL 5HP P18S3074A 184TCY *	Motors
3	77344	1	CYL SR-091-D-B BIMBA 5/16SHFT*	Cylinders
3	N154610	1	GBX CONE DRIVE B03 7.5:1 LDW *	“Gear Boxes, Indexers”
3	N15821	1	CLH 913022 HORT 5H40P-SPE	Clutches
3	N27021	1	CLH T600 BRAKE EN 820603 HORT	Clutches
3	N20939	1	TQL EAS-COM 2/490.625-C 1.50B	Torque Limiter
3	N21139	1	TQL EAS-COM 2/490.625-C 1.25B	Torque Limiter
3	N203651	1	AB MPL-B540K-MJ22AA SRV MTR	Allen Bradley
3	N186451	1	AB MPL-B330P-MK22AA SRV MTR *	Allen Bradley
3	N191251	1	AB MPL-B430P-MK22AA SRV MTR *	Allen Bradley
3	N193151	1	AB MPL-B540K-MK22AA SRV MTR	Allen Bradley
3	N50444	1	CYL TA-MP2 1-1/2X1 HC BP TRD	Cylinders
3	N92516	14	“BLT 1.938””W HAM-5P PUNCHED *”	Belts

Bill of Materials

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
		M306009					
.1	PS	M306009-PR1		EA	1	PARTIALRELEASE#1 KKH	
.1	PS	M306009-PR2		EA	1	PARTIALRELEASE#2 KKH	
..2	PS	M306009-002	M306009-002	EA	1	WRAPPER MAIN FRAME-BOLT KKH	
...3	FNUM	F458376PC	FRAME CROSSMEMBER	EA	1	FRCM-CRS - -N- - - -	LOWER 005.30 Y
...3	FNUM	F466700PC	FRAME CROSSMEMBER	EA	1	FRCM-CRS - -N- - - -	LOWER 007.55 Y
...3	FNUM	F466740PC	FRAME SIDE PLATE	EA	1	FRPL-CRS - -N- - - -	0.50X05.00X025.75
...3	FNUM	F467023PC	PLATE	EA	12	PLTE-CRS - -N- - - -	LT 0.50X01.90X003.00 S B 06H 00S BE
...3	FNUM	F471242PC	PLATE	EA	1	PLTE-CRS - -N- - - -	LT 0.50X02.00X006.00 S C 04H 00S NE
...3	FNUM	F471245PC	PLATE	EA	2	PLTE-CRS - -N- - - -	LT 1.00X03.00X058.00 S C 18H 00S NE
...3	FNUM	F471246PC	GUARD	EA	6	GRD -CRS - -N- - - -	U 12GA 03.25 19.12 0 F RH
...3	FNUM	F471248PC	RECTANGULAR TUBE	EA	3	RCTB-CRS - -Y- - - -	2.00X4.00X035.00
...3	FNUM	F472909PC	FRAME CROSSMEMBER	EA	1	FRCM-CRS - -N- - - -	LOWER 005.30 Y
...3	FNUM	F474710PC	FRAME SIDE PLATE	EA	1	FRPL-CRS - -N- - - -	0.50X05.00X025.75
...3	FNUM	F474793PC	FRAME CROSSMEMBER	EA	1	FRCM-CRS - -Y- - - -	LOWER 007.55 Y W/TAB OPP F471243
...3	FNUM	F475983PC	FRAME SIDE PLATE	EA	1	FRPL-CRS - -N- - - -	0.50X06.00X059.00
...3	FNUM	F475984PC	FRAME SIDE PLATE	EA	1	FRPL-CRS - -N- - - -	0.50X06.00X072.66
...3	FNUM	F475986PC	MOUNT	EA	12	MNT -ALUM- -N- - - -	LT FRAME CORNER FOR CRS TUBE S-75 SHORT
...3	PS	M306009-002-WD	M306009-002	EA	1	WRAPPER MAIN FRAME-WELD KKH	
....4	FNUM	F471254PC	RECTANGULAR TUBE	EA	2	RCTB-CRS - -Y- - - -	2.00X4.00X037.62
....4	FNUM	F474750PC	RECTANGULAR TUBE	EA	1	RCTB-CRS - -Y- - - -	2.00X4.00X060.00 1/4 WALL WITH TAB OPPF4

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
....4	FNUM	F475967PC	RECTANGULAR TUBE	EA	1	RCTB-CRS - -Y- - - -	2.00X4.00X060.00 1/4 WALL
....4	FNUM	F475969PC	RECTANGULAR TUBE	EA	1	RCTB-CRS - -Y- - - -	2.00X4.00X120.00
....4	FNUM	F475970PC	RECTANGULAR TUBE	EA	1	RCTB-CRS - -Y- - - -	2.00X4.00X074.00
....4	FNUM	F475971PC	PLATE	EA	2	PLTE-CRS - -N- - - -	LT 0.50X05.50X008.00 S T 02H 00S NE
....4	FNUM	F475973PC	RECTANGULAR TUBE	EA	2	RCTB-CRS - -Y- - - -	2.00X4.00X060.00 1/4 WALL CUTTER
....4	FNUM	F475974PC	RECTANGULAR TUBE	EA	1	RCTB-CRS - -N- - - -	2.00X4.00X006.00
....4	FNUM	F475975PC	FRAME CROSSMEMBER	EA	2	FRCM-CRS - -N- - - -	LOWER 044.00 N 1/2X2
....4	FNUM	F475976PC	FRAME CROSSMEMBER	EA	6	FRCM-CRS - -N- - - -	LOWER 002.13 N 1X4
....4	FNUM	F475977PC	RECTANGULAR TUBE	EA	1	RCTB-CRS - -N- - - -	2.00X4.00X004.00
....4	FNUM	F475979PC	RECTANGULAR TUBE	EA	3	RCTB-CRS - -Y- - - -	2.00X4.00X066.97
....4	FNUM	F475980PC	RECTANGULAR TUBE	EA	1	RCTB-CRS - -Y- - - -	2.00X4.00X066.97
....4	FNUM	F475981PC	RECTANGULAR TUBE	EA	1	RCTB-CRS - -Y- - - -	2.00X4.00X066.97
....4	FNUM	F475982PC	RECTANGULAR TUBE	EA	1	RCTB-CRS - -Y- - - -	2.00X4.00X066.97
....4	FNUM	F490424PC	RECTANGULAR TUBE	EA	1	RCTB-CRS - -Y- - - -	2.00X4.00X007.75
....4	FNUM	F490426PC	RECTANGULAR TUBE	EA	1	RCTB-CRS - -Y- - - -	2.00X4.00X060.00 1/4 WALL
..2	PS	M306009-013	M306009-001	EA	1	CONVTABLESDRIVE KKH	
...3	FNUM	F458359PC	L BRACKET	EA	1	LBRK-CRS - -Y- - - -	FX A 0.50X06.19X06.00 0.50X06.19X04.00
...3	FNUM	F458360HP	SHAFT	EA	1	SHFT-CRS - -N- - - -	1.00X007.50 02RR NT
....4	27	9227	HARDWARE	EA	2	HWR 5100-100 SNAP RING TRUARC	
...3	FNUM	F458361HP	NO DESCRIPTION AVAILABLE	EA	1	KEY -CRS - -N- - - -	0.25X0.19X03.25
...3	FNUM	F486188PC	PLATE	EA	1	PLTE-CRS - -N- - - -	LT 0.38X01.50X002.00 S B 03H 00S NE

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
..2	PS	M306009-013-NP	M306009-001	EA	1	CONV TABLES DRIVE MINORS KKH	
...3	33	N102133	PULLEY	EA	4	PLL ST 8MX-32-12 TYPEG NF*	PURCHASE W/NO FINISH-HPNI @ DOUGLAS
...3	99	N144099	MISCELLANEOUS	EA	6	“MSC TYP HJ90-1-1/4””-8”” NGI *”	FIXED BASE
...3	10	N154610	GEAR BOXES	EA	1	GBX CONE DRIVE B03 7.5:1 LDW*	MODEL B03-57589 400123 MOUNTS
...3	51	N191251	ALLEN BRADLEY	EA	1	AB MPL-B430P-MK22AA SRV MTR *	460V MULTI-TURN ENCODER
...3	16	N195916	BELTS	EA	2	BLT 8MGT-1200-12 GATES *	“12MM WIDE X 47.24””LONG 150 TEETH”
...3	53	10053	ADAPTORS	EA	3	ADP 1210 1 NF*	PURCHASE W/NO FINISH-LPNI @ DOUGLAS
...3	53	9953	ADAPTORS	EA	1	ADP 1210 3/4 NF*	PURCHASE W/NO FINISH-LPNI @ DOUGLAS
..2	PS	M306009-028	M306009-028	EA	1	CUTTER ASSY KKH	PURCHASE W/NO FINISH-LPNI @ DOUGLAS
...3	FNUM	F143525AN	PULLEY	EA	1	PLLY-ALUM-AN-N- - - -	“47T10/32-2 1.75 BORE FOR 6202240 1”” TRAN”
....4	33	64033	PULLEY	EA	1	PLL AL 47T10/32-2 NF*	PURCHASE W/ZN PLATED RINGS-NF @ DOUGLAS
...3	FNUM	F143526	PULLEY	EA	1	PLLY-ALUM- -N- - - -	47T10/32-2 2.36 BORE FOR BIKON 1006-IN 1
....4	33	64033	PULLEY	EA	1	PLL AL 47T10/32-2 NF*	PURCHASE W/ZN PLATED RINGS-NF @ DOUGLAS
...3	FNUM	F143527AN	PULLEY	EA	1	PLLY-ALUM-AN-N- - - -	40T10/24-2 1.25 GBP
....4	33	55733	PULLEY	EA	1	PLL AL 40T10/24-2 GBP NF*	PURCHASE W/ZN PLATED RINGS-NF @ DOUGLAS
...3	FNUM	F143528AN	PULLEY	EA	1	PLLY-ALUM-AN-N- - - -	“40T10/30-2 1.50 BORE FOR 6202160 3/4”” TR”
....4	33	64233	PULLEY	EA	1	PLL AL 40T10/30-2 NF*	PURCHASE W/ZN PLATED RINGS-NF @ DOUGLAS
...3	FNUM	F143530AN	PULLEY	EA	1	PLLY-ALUM-AN-N- - - -	“40T10/36-2 1.75 BORE FOR 6202240 1”” TRAN”

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
....4	33	64433	PULLEY	EA	1	PLL AL 40T 10/36-2 NF*	PURCHASE W/ZN PLATED RINGS-NF @ DOUGLAS
...3	FNUM	F162856HP	PLATE	EA	1	PLTE-CRS - -N- - - -	AJ 0.50X03.00X014.50 N B 09H 01S NE
...3	FNUM	F162871HP	PLATE	EA	2	PLTE-CRS - -N- - - -	SL 0.38X01.44X001.50 S C 02H 00S NE
...3	FNUM	F164828	PULLEY	EA	1	PLLY-ALUM- -N- - - -	40T10/24-2 1.56 GBP
....4	33	55733	PULLEY	EA	1	PLL AL 40T10/24-2 GBP NF*	PURCHASE W/ZN PLATED RINGS-NF @ DOUGLAS
...3	FNUM	F170316AN	PLATE	EA	1	PLTE-ALUM- -N- - - -	HT 0.32X01.00X011.22 S T 02H 00S NE
...3	FNUM	F170347HP	PLATE	EA	2	PLTE-CRS - -N- - - -	SL 0.38X01.50X001.50 S C 04H 00S NE
...3	FNUM	F171203AN	PLATE	EA	1	PLTE-ALUM- -N- - - -	SL 0.50X01.50X003.00 S C 02H 00S NE
...3	FNUM	F176079HP	ROUND SPACER	EA	2	RSPC-CRS - -N- - - -	0.34X1.00X0.18
...3	FNUM	F180517AN	PLATE	EA	1	PLTE-ALUM- -N- - - -	HT 1.10X01.12X011.22 S T 02H 00S NE
...3	FNUM	F184027AN	ROLLER	EA	1	RLLR-ALUM- -N- - - -	1.25 ID 2.50 OD 1.50 LG
....4	15	25415	BEARINGS	EA	2	BRG B1612 OH TORR	
...3	FNUM	F184032	PULLEY	EA	1	PLLY-ALUM- -N- - - -	47T10/25-2 1.25 GBP SERVO IDLER
....4	33	64133	PULLEY	EA	1	PLL AL 47T10/25-2 NF*	PURCHASE W/ZN PLATED RINGS-NF @ DOUGLAS
....4	15	25415	BEARINGS	EA	2	BRG B1612 OH TORR	
...3	FNUM	F184041HP	PLATE	EA	1	PLTE-CRS - -N- - - -	SL 0.75X01.00X016.00 S C 06H 00S NE
...3	FNUM	F184042HP	PLATE	EA	1	PLTE-CRS - -N- - - -	SL 0.50X01.00X002.00 S B 03H 00S 1E
...3	FNUM	F184046	BUSHING	EA	1	BUSH-BRNZ- -N- - - -	NF 1.03X2.00X0.31
...3	FNUM	F184047	BUSHING	EA	1	BUSH-BRNZ- -N- - - -	NF 1.03X2.00X0.10
...3	FNUM	F188867HP	STAND-OFF	EA	1	STOF-CRS - -N- - - -	.31X0.75X02.00 1E TAPPED .38 SCLEAR
...3	FNUM	F189740HP	PLATE	EA	1	PLTE-CRS - -N- - - -	SL 0.50X05.00X007.00 S B 08H 00S NE

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
...3	FNUM	F189741	BUSHING	EA	7	BUSH-BRNZ- -N- - - -	NF 0.77X2.00X0.28
...3	FNUM	F194134AN	PLATE	EA	2	PLTE-ALUM- -N- - - -	HT 0.50X01.50X033.56 N T 25H 00S BE
...3	FNUM	F194520HP	PLATE	EA	1	PLTE-CRS - -N- - - -	AJ 0.25X02.50X004.75 S T 02H 02S NE
...3	FNUM	F194521HP	PLATE	EA	1	PLTE-CRS - -N- - - -	SL 0.31X01.50X001.62 S C 02H 00S NE
...3	FNUM	F194522HP	STAND-OFF	EA	1	STOF-CRS - -N- - - -	.25X0.75X02.00
...3	FNUM	F196295HP	STAND-OFF	EA	3	STOF-CRS - -N- - - -	.38X1.25X07.78
...3	FNUM	F199817	BUSHING	EA	1	BUSH-BRNZ- -N- - - -	NF 0.77X1.44X0.28
...3	FNUM	F204825HP	PLATE	EA	1	PLTE-CRS - -N- - - -	SL 0.25X03.50X004.25 N B 03H 00S NE
...3	FNUM	F207217	GUIDE	EA	2	GDE -SS - -N- - - -	NF PULLEY RING 4.25OD 2.62ID 3.30BC 12GA
...3	FNUM	F207218	GUIDE	EA	2	GDE -SS - -N- - - -	NF PULLEY RING 3.50OD 2.00ID 2.40BC 12GA
...3	FNUM	F207221	GUIDE	EA	2	GDE -SS - -N- - - -	NF PULLEY RING 4.25OD 2.62ID 3.30BC 12GA
...3	FNUM	F207222HP	ROUND SPACER	EA	3	RSPC-CRS - -N- - - -	0.53X1.25X2.00
...3	FNUM	F207223	GUIDE	EA	2	GDE -SS - -N- - - -	NF PULLEY RING 5.00OD 3.00ID 3.82BC 12GA
...3	FNUM	F207276	SHAFT	EA	3	SHFT-SS - -N- - - -	0.87X034.49 0000 2E
....4	15	69215	BEARINGS	EA	6	BRG IR7194 INNER RACE RBC	
...3	FNUM	F207277	SHAFT	EA	1	SHFT-SS - -N- - - -	0.87X037.40 0000 2E
....4	15	69215	BEARINGS	EA	2	BRG IR7194 INNER RACE RBC	
...3	FNUM	F207278	SHAFT	EA	1	SHFT-SS - -N- - - -	0.87X036.61 0000 2E
....4	15	69215	BEARINGS	EA	2	BRG IR7194 INNER RACE RBC	
...3	FNUM	F207279HP	ROUND TUBE	EA	2	RDTB-RDTB- -N- - - -	0.62X036.00
...3	FNUM	F207280HP	ROLLER	EA	1	RLLR-RDTB- -Y- - -	STRAIGHT W/PRESS FIT FOR BRG SJ7194
....4	15	69315	BEARINGS	EA	2	BRG SJ7194-SS OUTER RACE RBC	

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
...3	FNUM	F207281HP	ROLLER	EA	2	RLLR-RDTB- -Y- - - -	STRAIGHT W/PRESS FIT FOR BRG SJ7194
....4	15	69315	BEARINGS	EA	4	BRG SJ7194-SS OUTER RACE RBC	
...3	FNUM	F207283HP	PULLEY	EA	1	PLLY-CRS - -Y- - - -	TAPER PULLEY W/ PRESS FIT FOR BRG SJ7194
....4	15	69315	BEARINGS	EA	2	BRG SJ7194-SS OUTER RACE RBC	
...3	FNUM	F207292AN	SQUARE SHAFT	EA	1	SQSH-ALUM- -N- - - -	1.38 043.40 SJ W/$10-24 HELI-COILS 1 KEY
....4	92	11192	NO DESCRIPTION AVAILABLE	EA	1	SQSH-ALUM- -N- - - -	1.38 043.40 SJ W/$10-24 HELI-COILS 1 KEY
....4	17	34517	TOOLING	EA	15	DP #10-24 R-1185-3 HELI COIL	
...3	FNUM	F207295HP	GUIDE	EA	1	GDE -HRS - -N- - - -	PL 10GAX04.12X033.75 W/FINGERS
...3	FNUM	F207296HP	PLATE	EA	1	PLTE-CRS - -N- - - -	HT 0.50X01.25X034.49 S T 18H 00S BE
...3	FNUM	F207299HP	PLATE	EA	1	PLTE-CRS - -N- - - -	HT 0.62X00.62X033.86 S B 11H 00S BE
...3	FNUM	F207300AN	PLATE	EA	1	PLTE-ALUM- -N- - - -	HT 0.50X01.50X033.86 S B 30H 00S BE
...3	FNUM	F209202HP	PLATE	EA	1	PLTE-CRS - -N- - - -	HT 0.62X01.00X034.48 S T 13H 00S BE
...3	FNUM	F209203HP	PLATE	EA	1	PLTE-CRS - -N- - - -	HT 0.62X04.00X034.48 S T 09H 00S BE
...3	FNUM	F209204	NO DESCRIPTION AVAILABLE	EA	1	GRDM-GALV- -N- - - -	NF 12GAX05.25X034.44 S C 05H 05S NE
...3	FNUM	F209205	NO DESCRIPTION AVAILABLE	EA	1	GRDM-GALV- -N- - - -	NF 12GAX06.90X034.44 S C 10H 00S NE
...3	FNUM	F209206HP	PLATE	EA	1	PLTE-CRS - -N- - - -	HT 0.62X03.00X034.48 S T 10H 00S BE
...3	FNUM	F209207PC	ANGLE	EA	1	ANGL-HRS - -N- - - -	1.50X1.50X0.25X033.09
...3	FNUM	F212587HP	PLATE	EA	1	PLTE-CRS - -N- - - -	SL 0.75X01.50X004.00 S B 02H 01S NE
...3	FNUM	F212588HP	BRACKET	EA	1	BRKT-CRS - -N- - - -	SL 0.50X02.00X003.50 06H 00S SHRINK TI M
...3	FNUM	F215967HP	MOUNT	EA	1	MNT -CRS - -N- - - -	SL SERVO BELT TIGHTENER SLIDE SHRINK L
...3	FNUM	F222552HP	MOUNT	EA	1	MNT -CRS - -Y- - - -	SL 0.50X01.50X003.06 N2 SHFT SLIDE MNT S

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
...3	FNUM	F222555HP	PLATE	EA	3	PLTE-CRS - -N- - - -	SL 0.62X00.75X001.26 S B 03H 00S NE
...3	FNUM	F222556HP	PLATE	EA	1	PLTE-CRS - -N- - - -	SL 12GAX00.50X033.75 S C 07H 00S NE
...3	FNUM	F229074AN	PULLEY	EA	1	PLLY-ALUM-AN-N- - - -	40T10/20-2 1.25 GBP
....4	33	N53833	PULLEY	EA	1	PLL AL 40T10/20-2 NF*	PURCHASE W/ZN PLATED RINGS-NF @ DOUGLAS
....4	15	25415	BEARINGS	EA	2	BRG B1612 OH TORR	
...3	FNUM	F264740HP	MOUNT	EA	1	MNT -CRS - -N- - - -	SL JACK SCREW MOUNT SHRINK
...3	FNUM	F264741HP	PLATE	EA	1	PLTE-CRS - -N- - - -	SL 0.88X01.50X004.00 S B 04H 01S 1E
...3	FNUM	F264742HP	MOUNT	EA	1	MNT -CRS - -Y- - - -	SL BELT TIGHTENER SLIDE MOUNT
...3	FNUM	F264761HP	SHAFT	EA	1	SHFT-CRS - -Y- - - -	0.75X036.8802IE NT V
...3	FNUM	F265645HP	PLATE	EA	2	PLTE-CRS - -N- - - -	SL 0.50X00.50X002.00 S T 04H 00S NE
...3	FNUM	F265646HP	PLATE	EA	2	PLTE-CRS - -N- - - -	SL 0.50X00.50X002.50 S B 05H 00S NE
...3	FNUM	F265648HP	MOUNT	EA	1	MNT -HRS - -N- - - -	SL SHRINKWRAP CUTTER LEXAN MOUNT
...3	FNUM	F265649HP	PLATE	EA	1	PLTE-CRS - -N- - - -	HT 0.50X16.91X027.50 N B 69H 03S NE
...3	FNUM	F265650HP	PLATE	EA	1	PLTE-CRS - -N- - - -	HT 0.50X16.91X027.50 N B 66H 03S 1E
...3	FNUM	F302926AN	PLATE	EA	1	PLTE-ALUM- -N- - - -	SL 0.50X02.00X033.14 S B 11H 06S NE
...3	FNUM	F302927	DECK	EA	1	DECK-SS - -N- - - -	12GAX33.11X035.00 SR7 LONG SLOT
...3	FNUM	F302928	DECK	EA	1	DECK-SS - -N- - - -	12GAX23.33X033.11 SR7 BTM DECK
...3	FNUM	F303448	PLATE	EA	1	PLTE-CRS - -N- - - -	HT 16GAX01.54X033.00 S C 00H 06S NE
...3	FNUM	F303449AN	PLATE	EA	1	PLTE-ALUM- -N- - - -	SL 0.50X01.75X033.09 S B 29H 05S BE
...3	FNUM	F313632	PULLEY	EA	1	PLLY-ALUM- -N- - - -	47T10/32-2 2.36 BORE FOR 32X60/303 RFN
....4	33	64033	PULLEY	EA	1	PLL AL 47T10/32-2 NF*	PURCHASE W/ZN PLATED RINGS-NF @ DOUGLAS

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
...3	FNUM	F313653	PLATE	EA	1	PLTE-SS - -N- - - -	HT 12GAX05.69X034.49 S C 08H 00S NE
...3	FNUM	F313654AN	PLATE	EA	5	PLTE-ALUM- -N- - - -	SL 0.50X01.50X033.56 N T 16H 00S BE
...3	FNUM	F316624HP	PLATE	EA	2	PLTE-CRS - -N- - - -	HT 12GAX01.50X001.50 S C 04H 00S NE
...3	FNUM	F357842	ROUND TUBE	EA	1	RDTB-RDTB- -Y- - - -	2.00X032.13 SS
...3	FNUM	F357845HP	SHAFT	EA	1	SHFT-CRS - -Y- - - -	3.23X042.12 0000 1E
...3	FNUM	F391645HP	GUIDE	EA	1	GDE -CRS - -Y- - - -	PL GUIDE PINS FOR FILM ON SHRINK WIDEBOD
...3	FNUM	F391673HP	GUIDE	EA	1	GDE -CRS - -Y- - - -	PL FILM GUIDE WB 2 FINGERS SHORT
...3	FNUM	F396698	ELECTRICAL (MISC ELECT.MTG BRKTS)	EA	2	ELEC-SS - -N- - - -	FX 10GA STATIC BAR MOUNTING BRKT
...3	FNUM	F406417HP	PLATE	EA	2	PLTE-CRS - -N- - - -	HT 0.50X01.50X002.13 S C 02H 00S NE
...3	FNUM	F406506HP	PLATE	EA	1	PLTE-CRS - -N- - - -	HT 0.62X07.25X008.82 N B 16H 00S NE
...3	FNUM	F419221	DECK	EA	1	DECK-SS - -N- - - -	14GAX06.00X033.71 FILM STRIPPER DECK OPP
...3	FNUM	F420960HP	SHAFT	EA	1	SHFT-CRS - -N- - - -	0.62X034.48 0000 2E
...3	FNUM	F423301	BRACKET	EA	1	BRKT-LEXN- -N- - - -	LT 0.25X21.17X048.00 SHRINK WRAP CUTTER
...3	FNUM	F423302	BRACKET	EA	1	BRKT-LEXN- -N- - - -	LT LEXAN DUST GRD VACUUM TABLE 18.63X46.
...3	FNUM	F427436	FASTENER	EA	1	FSNR-FSNR- -N- - - -	NF 5/8X3/4 SHOULDER BOLT 1/2 LONG THREAD
....4	18	148118	FASTENERS	EA	1	FS 5/8X3/4 SKT SHD BOLT SS	
...3	FNUM	F430753HP	PLATE	EA	1	PLTE-CRS - -N- - - -	HT 0.25X01.00X011.00 S C 01H 01S NE
...3	FNUM	F441676HP	MOUNT	EA	1	MNT -CRS - -N- - - -	SL CUTTER CYLINDER MOUNT OPP F441677
...3	FNUM	F441677HP	MOUNT	EA	1	MNT -CRS - -N- - - -	SL CUTTER CYLINDER MOUNT OPP F441676
...3	FNUM	F441678HP	MOUNT	EA	1	MNT -CRS - -N- - - -	SL CUTTER CYLINDER MOUNT OPP F441679
...3	FNUM	F441679HP	MOUNT	EA	1	MNT -CRS - -N- - - -	SL CUTTER CYLINDER MOUNT OPP F441678

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
...3	FNUM	F458347HP	L BRACKET	EA	2	LBRK-CRS - -Y- - - -	AJ A 0.38X01.50X04.88 0.38X01.50X02.00
...3	FNUM	F458348HP	L BRACKET	EA	2	LBRK-CRS - -Y- - - -	AJ A 0.38X01.50X04.50 0.38X01.50X02.00
...3	FNUM	F458350HP	PLATE	EA	1	PLTE-CRS - -N- - - -	HT 0.75X01.00X050.00 S B 07H 00S NEOPPF4
...3	FNUM	F458351HP	PLATE	EA	1	PLTE-CRS - -N- - - -	HT 0.75X01.00X050.00 S B 07H 00S NEOPPF4
...3	FNUM	F458352HP	PLATE	EA	1	PLTE-CRS - -N- - - -	HT 0.75X01.00X050.00 S B 05H 00S NEOPPF4
...3	FNUM	F458353HP	PLATE	EA	1	PLTE-CRS - -N- - - -	HT 0.75X01.00X050.00 S B 05H 00S NEOPPF4
...3	FNUM	F474701PC	GUARD	EA	1	GRD -CRS - -N- - - -	L 0.10 04.75 51.38 0 F RH
...3	FNUM	F485007HP	SHAFT	EA	1	SHFT-CRS - -N- - - -	0.50X034.45 0000 2E
...3	FNUM	F485009PC	PLATE	EA	1	PLTE-CRS - -N- - - -	LT 0.25X02.00X005.00 S B 04H 00S NE REGU
...3	FNUM	F501280PC	PLATE	EA	1	PLTE-CRS - -N- - - -	LT 0.25X02.00X009.25 S B 06H 00S NE REG
...3	92	13292	NO DESCRIPTION AVAILABLE	EA	2	PLTE-CRS - -N- - - -	SL 0.38X01.50X003.84 S C 02H 04S 1E
....4	15	106015	BEARINGS	EA	2	BRG 3/4X1X1/2 B-1216-04	
...3	92	13792	NO DESCRIPTION AVAILABLE	EA	1	BRKT-CRS - -Y- - - -	SL 4.00 DIA FLANGE FOR SHRINK WRAP VACUU
...3	92	15292	NO DESCRIPTION AVAILABLE	EA	2	CLR -CRS - -Y- - - -	5/8 SET W/ 0.50X0.50X2.00 TAB 1HOLE SHRIN
....4	27	78927	HARDWARE	EA	2	HWR 5/8 SET COLLAR	
...3	92	20092	NO DESCRIPTION AVAILABLE	EA	1	SW SNGL ROLL FILM THREAD CARD	
....4	16	135116	BELTS	EA	1	“BLT FILM FEED PAD 8:WDX10””LG *”	WITH ONE EDGE OPEN AND RECESSED
...3	92	20392	NO DESCRIPTION AVAILABLE	EA	1	PLTE-CRS - -N- - - -	HT 0.75X03.60X005.56 N B 10H 00S NE OPP
....4	15	N101815	BEARINGS	EA	1	BRG AR-2-012T SKWEZLOC SLMR	
...3	92	20492	NO DESCRIPTION AVAILABLE	EA	1	PLTE-CRS - -N- - - -	HT 0.75X03.60X005.56 N B 10H 00S NE OPP
....4	15	N101815	BEARINGS	EA	1	BRG AR-2-012T SKWEZLOC SLMR	

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
...3	92	20592	ROLLER	EA	1	RLLR-SS - -Y- - - -	Y VULCANIZED ROLLER FOR WIDEBODY
...3	92	20692	ROLLER	EA	1	RLLR-SS - -Y- - - -	2.32X034.06 W/RUBBER VULCANIZING
....4	15	69315	BEARINGS	EA	2	BRG SJ7194-SS OUTER RACE RBC	
...3	92	20792	NO DESCRIPTION AVAILABLE	EA	1	PLTE-PVC - -N- - - -	LT 0.38X02.00X033.23 S T 05H 00S NE SW V
....4	17	29317	TOOLING	EA	5	DP 1/4-20 R1185-4 HELI COIL	
...3	92	20992	NO DESCRIPTION AVAILABLE	EA	1	BRKT-CRS - -Y- - - -	SL FLANGE FOR SHRINK WRAP VACUUM TABLE
...3	92	21092	NO DESCRIPTION AVAILABLE	EA	1	VACUUM FAN 480 VOLT *	SHRINK-WRAP
....4	42	N16742	VACUUM CUPS	EA	1	VAC AMERICAN FAN AF9-1015 *	ARRANGEMENT #4 WITH OUTLET GUARD
...3	92	21192	NO DESCRIPTION AVAILABLE	EA	1	RSPC-RDTB- -N- - - -	3.00X3.38X2.00 BLAST GATE MOUNT
...3	91	88691	NO DESCRIPTION AVAILABLE	EA	4	MNT -ALUM- -N- -A- -	HT GUARD HINGE BODY
....4	90	4690	BLANKS/CASTINGS	EA	4	BC GUARD HINGE BODY DIE 4716	
...3	91	88791	GUARD	EA	2	D-1519A GUARD HINGE PIN	GUARD HINGE PIN & PLUG
...3	91	94491	NO DESCRIPTION AVAILABLE	EA	1	PLTE-CRS - -N- -A- -	LT 0.62X00.62X002.00 S B 03H 00S NE
...3	92	10092	NO DESCRIPTION AVAILABLE	EA	1	HUB -CRS - -N- - - -	2.50R 5.00X1.29 1654DC NICE & AR BRG
....4	15	69115	BEARINGS	EA	1	BRG AR-1-14 SLMR	
...3	92	10592	NO DESCRIPTION AVAILABLE	EA	1	SHFT-SS - -N- - - -	1.50X036.43 0000 2E
...3	92	12292	FASTENER	EA	8	SW LUBE BOLT 3/8-16	“3/8-16NC X 1”” HHCS W/ GREASE FITTING”
....4	18	5018	FASTENERS	EA	8	FS 3/8X1 HHCS GR5 ZN +	
...3	92	12592	NO DESCRIPTION AVAILABLE	EA	1	RSPC-SS - -N- - - -	0.75X1.00X0.61
...3	92	13492	NO DESCRIPTION AVAILABLE	EA	1	STOF-CRS - -N- - - -	.31X0.62X05.13 W/ 5/16-24 THRD ON 1E
...3	92	13592	NO DESCRIPTION AVAILABLE	EA	1	RSPC-SS - -N- - - -	0.75X1.00X0.82

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
...3	92	14592	NO DESCRIPTION AVAILABLE	EA	1	LBRK-CRS - -N- - - -	SL B 0.75X01.00X03.50 0.75X01.50X03.00
...3	92	14692	NO DESCRIPTION AVAILABLE	EA	1	STAM-CRS - -N- - - -	0.75R 0.44TAP 02.00
...3	92	16292	NO DESCRIPTION AVAILABLE	EA	1	PLTE-PVC - -N- - - -	LT 0.25X05.38X006.00 S C 04H 00S NE
...3	92	16392	NO DESCRIPTION AVAILABLE	EA	1	MNT -ALUM- -N- - - -	HT 0.18X0.75X1.50X2.00 PANCAKE AIR CYLIN
...3	92	17292	NO DESCRIPTION AVAILABLE	EA	2	ARM -CRS - -N- - - -	3/4X5.25 SPADE SHAPED ARM W/BB
....4	15	117115	BEARINGS	EA	2	BRG 5/8X3/4X5/8 OLT P62-5	
...3	92	18592	NO DESCRIPTION AVAILABLE	EA	1	GRD -CRS - -Y- - - -	L 0.10 06.00 11.63 2 F LH SPRING WRAP CL
...3	92	19792	NO DESCRIPTION AVAILABLE	EA	1	RLLR-SS - -Y- - - -	3.23X044.90 0000 NT W/ RUBBER COATING
...3	92	9692	NO DESCRIPTION AVAILABLE	EA	1	GEAR-CRS - -N- - - -	SPR 1.38 S1032H
....4	97	11297	GEAR	EA	1	GEAR S1032H SPUR MARTIN NF*	PURCHASE W/NO FINISH-SEE SPEC SHEET
...3	92	9792	NO DESCRIPTION AVAILABLE	EA	1	GEAR-CRS - -N- - - -	SPR 2.38 S1040H
....4	97	12997	GEAR	EA	1	GEAR GNFA1040 SPUR NYL SOLIDUR	
...3	92	9892	NO DESCRIPTION AVAILABLE	EA	2	PLTE-CRS - -N- - - -	HT 1.00X02.50X005.19 S B 03H 01S NE
....4	15	117115	BEARINGS	EA	2	BRG 5/8X3/4X5/8 OLT P62-5	
....4	15	72715	BEARINGS	EA	2	BRG AR-2-012 SLMR	
...3	92	9992	NO DESCRIPTION AVAILABLE	EA	1	HUB -CRS - -N- - - -	“1.75DIA THRU 5””OD .65WD 1”” FLANGE MOUNT”
..2	PS	M306009-028-NP	M306009-028	EA	1	CUTTER ASSY MINORS KKH	HOT FINISHED SEAMLESS CRS
...3	10	N148410	GEAR BOXES	EA	1	GBX ALPHA LP120-M01-003-1 *	A-B MPL-X5XX
...3	51	N193151	ALLEN BRADLEY	EA	1	AB MPL-B540K-MK22AA SRV MTR	
...3	21	N21721	CLUTCHES	EA	1	CLH SUPER CB-6 CCW *	“3/4”” BORE 1 STOP AO ALS WARNER”
...3	64	N44164	MOTORS	EA	1	EM REL 1/2HP P56H1423 EA56C *	W/F 208/230/460 VOLT TENV 3600 RPM

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
...3	53	N48453	ADAPTORS	EA	1	ADP 32X60/303 RINGFEDER *	NICKEL PLATED
...3	15	15215	BEARINGS	EA	6	BRG CR-1-1/2 SM CF-1-1/2 MG	
...3	43	17643	SPRINGS	EA	1	SPRING LEE COMP LC-092H-7 MW	
...3	27	22027	HARDWARE	EA	1	HWR KEEP HANDS OUT WARNING	
...3	27	22227	HARDWARE	EA	1	HWR PINCH POINT WARNING SIGN	
...3	15	29415	BEARINGS	EA	2	BRG 7610 DLG NICE	
...3	90	3190	BLANKS/CASTINGS	EA	1	“BC HANDKNOB 1/4-20 2”” *+”	“DIN 6336 PL-50-1-1/4-20-K 2”””
...3	27	34727	HARDWARE	EA	1	“HWR 1788K12 4”” BLAST GATE MMCR”	
...3	99	68499	MISCELLANEOUS	EA	1	MSC SERRATED KNIFE *	“32.678””X1.181””X.070”” DRAWING #68499”
...3	44	77344	CYLINDERS	EA	4	CYL SR-091-D-B BIMBA 5/16SHFT*	“1”” STROKE 1-1/16 BORE SS ROD”
...3	27	79027	HARDWARE	EA	3	HWR 3/4 SET COLLAR	
...3	27	9827	HARDWARE	EA	3	HWR 1 SPLIT SET COLLAR NF*	PURCHASE W/NO FINISH-HPNI @ DOUGLAS
...3	24	N1024	CLAMPS	EA	2	CLM QS100-M64H HOSE	
...3	53	N33453	ADAPTORS	EA	1	ADP BIKON 1006-IN 1-1/4 NF*	PURCHASE W/NO FINISH-INSTALL & PAINT
...3	35	N3935	ROD END	EA	1	RDE MM 5ZK 5/16RHM AURORA	
...3	44	N50444	CYLINDERS	EA	1	CYL TA-MP2 1-1/2X1 HC BP TRD	
...3	40	N6940	TUBING	FT	5	“TBG TIGERFLEX GT400 4”” HOSE”	
...3	16	N92516	BELTS	EA	14	“BLT 1.938””W HAM-5P PUNCHED *”	“1.938”” X 98.68 NEL SPLICED ENDLESS”
...3	16	102616	BELTS	EA	1	BLT 32DT10-1700	
...3	38	12538	TENSIONERS	EA	3	TNR N-3 BRN	
...3	53	13153	ADAPTORS	EA	2	“ADP 6202240 1”” TRANTORQUE NF*”	PURCHASE W/NO FINISH-INSTALL & PAINT

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
...3	53	20053	ADAPTORS	EA	1	“ADP 6202160 3/4”” NF*”	PURCHASE W/NO FINISH-INSTALL & PAINT
...3	27	30227	HARDWARE	EA	1	HWR 9378K12 RUBBER STUD BUMPER	
...3	15	4115	BEARINGS	EA	1	BRG 1630DC NICE	
...3	15	4915	BEARINGS	EA	3	“BRG 3/4”” 2-BF”	
...3	15	5115	BEARINGS	EA	1	“BRG 1”” 2-BF”	
...3	15	5315	BEARINGS	EA	2	“BRG 1-1/4”” 2-BF LARGE HOUSING”	
...3	27	53527	HARDWARE	EA	2	HWR 4X7-1/2 WARNING KNIFE	
...3	28	56428	LUBE SYSTEM	EA	22	LUBE 66716 MALE EL 1/8 LINC	
...3	35	71035	ROD END	EA	1	RDE MW 7ZK 7/16RHF AURORA	
...3	16	78716	BELTS	EA	2	BLT 25T10-610	
...3	44	83044	CYLINDERS	EA	1	CYL FPS-501-D10 FABCO TD-5-X-*	“MR-SPECIAL=8-32X3/4”” MALE ROD THREAD”
...3	27	9727	HARDWARE	EA	1	HWR 3/4 SPLIT SET COLLAR NF*	PURCHASE W/NO FINISH-HPNI @ DOUGLAS
..2	PS	M306009-069	M306009-001	EA	1	DANCER BAR ASSY KKH	PURCHASE W/NO FINISH-HPNI @ DOUGLAS
...3	FNUM	F306185	HANDLE	EA	1	HDL -SS - -Y- - - -	REMOTE DANCER BAR LOCK RELEASE
...3	FNUM	F309477PC	PLATE	EA	1	PLTE-CRS - -N- - - -	LT 1.00X01.50X003.50 S T 04H 00S 1E
...3	FNUM	F328853PC	PLATE	EA	2	PLTE-ALUM- -N- - - -	LT 0.38X04.12X013.35 S B 14H 00S NE
...3	FNUM	F404462PC	PLATE	EA	2	PLTE-CRS - -N- - - -	LT 0.25X03.00X003.56 S C 03H 00S NE
...3	FNUM	F404463HP	ARM	EA	1	ARM -CRS - -N- - - -	“0.75X02.50X005.63 1.50”” REAM”
...3	FNUM	F404469HP	PIN	EA	1	PIN -CRS - -N- - - -	0.63X02.06 PIN
...3	FNUM	F458339HP	ARM	EA	1	ARM -CRS - -Y- - - -	“DANCER BAR PIVOT ARM 1.50”” DIA 42.88LG”
...3	FNUM	F458340PC	L BRACKET	EA	1	LBRK-CRS - -Y- - - -	LT A 0.75X01.25X03.75 0.75X02.00X01.88

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
...3	FNUM	F458341PC	PLATE	EA	2	PLTE-CRS - -N- - - -	LT 0.50X03.50X006.00 S T 04H 00S NE
...3	FNUM	F458342HP	SHAFT	EA	5	SHFT-CRS - -N- - - -	0.38X037.00 0000 NT
...3	FNUM	F458343HP	SHAFT	EA	4	SHFT-CRS - -N- - - -	0.38X039.00 0000 NT ENDS THREADED
...3	FNUM	F458344	ROUND TUBE	EA	9	RDTB-SS - -Y- - - -	1.25X034.00 .906 C'BORE
...3	FNUM	F458345	ROUND TUBE	EA	1	RDTB-RDTB- -Y- - - -	2.00X034.00 SS
...3	FNUM	F458346HP	SHAFT	EA	1	SHFT-CRS - -N- - - -	0.62X038.88 0000 NT
...3	FNUM	F466722HP	PLATE	EA	2	PLTE-CRS - -N- - - -	HT 0.75X03.25X003.50 S B 05H 00S NE
...3	FNUM	F471239HP	MOUNT	EA	1	MNT -CRS - -N- - - -	HT DANCER BAR LATCH ARM 3.18LONG
...3	FNUM	F474788	RAIL	EA	1	RAIL-HYFL- -N- - - -	NF 0.62X00.75X037.50 00 SOLUS VG-SSR-10-
...3	FNUM	F475997PC	PLATE	EA	1	PLTE-CRS - -N- - - -	LT 0.50X05.00X015.36 S C 07H 00S NE
...3	FNUM	F475998PC	MOUNT	EA	1	MNT -CRS - -Y- - - -	LT 0.50X05.00X015.36 S C 07H 00S NE
...3	FNUM	F475999PC	PLATE	EA	2	PLTE-CRS - -N- - - -	LT 0.50X01.00X009.18 S N 01H 00S 1E
...3	FNUM	F494580PC	PLATE	EA	1	PLTE-CRS - -N- - - -	LT 0.50X01.50X005.75 S B 02H 00S NE
..2	PS	M306009-069-NP	M306009-069-NP	EA	1	DANCER BAR ASSY MINORS KKH	
...3	44	N120944	CYLINDERS	EA	1	CYL PFC-31-4-XBP BIMBA *	POS. FEEDBACK
...3	27	N14227	HARDWARE	EA	2	HWR VG-012-01-316 SOLUS *	WAS SGA-7036 NOLU
...3	27	N36827	HARDWARE	EA	1	HWR 9540K26 RUBBER BMPR MMCR *	50/PK
...3	27	19627	HARDWARE	EA	1	HWR GN598-PL-26-M10 *	REPLACEMENT HANDLE FOR HANDWHEEL
...3	15	29415	BEARINGS	EA	2	BRG 7610 DLG NICE	
...3	15	5415	BEARINGS	EA	2	"BRG 1-1/2"" 2-BF"	
...3	35	71535	ROD END	EA	1	RDE MW 8ZK 1/2RHF AURORA	
...3	15	73515	BEARINGS	EA	18	BRG 6906B NICE	

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
..2	PS	M306009-081	M306009-081	EA	1	SECONDARY ENTRY CONV TABLE KKH	
...3	FNUM	F309444PC	PLATE	EA	4	PLTE-CRS - -N- - - -	LT 0.50X00.63X001.25 S B 03H 00S NE
...3	FNUM	F309445HP	PLATE	EA	4	PLTE-CRS - -N- - - -	AJ 0.75X00.75X001.50 N C 02H 00S NE
...3	FNUM	F458325	ROUND SPACER	EA	36	RSPC-BRNZ- -N- - - -	0.50X0.75X0.06
...3	FNUM	F462921AN	PLATE	EA	2	PLTE-ALUM- -N- - - -	SL 0.75X03.50X006.50 S B 04H 01S 1E SOLI
...3	FNUM	F462959HP	ROUND TUBE	EA	1	RDTB-RDTB- -N- - - -	2.00X030.25 .38 WALL
...3	FNUM	F462960HP	SHAFT	EA	1	SHFT-CRS - -N- - - -	0.75X033.38 0000 ST
...3	FNUM	F466711PC	L BRACKET	EA	4	LBRK-CRS - -Y- - - -	FX A 0.38X01.25X05.25 0.38X01.25X02.13
...3	FNUM	F466725PC	PLATE	EA	1	PLTE-CRS - -N- - - -	LT 0.50X03.50X003.50 S B 03H 00S NE
...3	FNUM	F467299HP	BUSHING	EA	10	BUSH-RDTB- -N- - - -	PL 0.50X0.75X0.41 SHRINK
...3	FNUM	F471265HP	FRAME CROSSMEMBER	EA	1	FRCM-CRS - -Y- - - -	UPPER 059.00 Y (2) 5/ 16-18NC TOP 3/8-16N
...3	FNUM	F474730HP	FRAME CROSSMEMBER	EA	1	FRCM-CRS - -Y- - - -	UPPER 059.00 Y (2) 5/ 16-18NC TOP 3/8-16N
...3	FNUM	F474753	THOMSON SHAFT	EA	2	THSH-THMS- -N- - - -	0.50X030.89 ET 0.22 *CLEARANCE HOLES*
...3	FNUM	F474754HP	PLATE	EA	2	PLTE-CRS - -N- - - -	HT 0.50X01.63X030.89 S C 11H 00S NE
...3	FNUM	F486183HP	PLATE	EA	2	PLTE-CRS - -N- - - -	HT 0.50X01.50X026.75 S B 12H 00S NE
...3	FNUM	F486184AN	PLATE	EA	1	PLTE-ALUM- -N- - - -	HT 0.50X30.89X022.88 S B 24H 03S NE CONV
...3	FNUM	F486185	DECK	EA	1	DECK-SS - -N- - - -	16GAX25.38X032.78 STUDS & HOLES
....4	18	175118	FASTENERS	EA	18	FS 1/4-20 X 5/8 NFSS STUD	
...3	FNUM	F486186HP	CONVEYOR PULLEY	EA	1	CNPL-4140-OS-N- - - -	40.72 02.00 KEYED T 01.50 BELT (14)
...3	FNUM	F496809	ELECTRICAL (MISC ELECT.MTG BRKTS)	EA	2	ELEC-SS - -N- - - -	12GAX3.69X5.00 EYE & REF MNT BOLT ON
...3	FNUM	F501283	MOUNT	EA	1	MNT -CRS - -N- - - -	FX BEARING MOUNT
...3	92	8492	NO DESCRIPTION AVAILABLE	EA	28	CNPL-ALUM- -N- - - -	01.82 00.88 NOKEY T 01.57BELT

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
....4	15	86915	BEARINGS	EA	56	BRG .504IDX.62750DX.875 LG BRG	
..2	PS	M306009-081-NP	M306009-081	EA	1	SECONDARY ENTRY CONV MINOR KKH	
...3	15	N102215	BEARINGS	EA	2	“BRG 1”” INSERT STANDARD”	
...3	16	N107316	BELTS	EA	14	“BLT FNB-5E 1.5””WDX64.37””LG *”	HAB FINGER SPLICE
...3	15	28915	BEARINGS	EA	2	BRG 7612 DLG NICE	
...3	15	5115	BEARINGS	EA	1	“BRG 1”” 2-BF”	
..2	PS	M306009-083	M306009-083	EA	1	DISCHARGE CONV TABLE KKH	
...3	FNUM	F207402HP	REDDI-ROD	EA	3	RDRD-RDRD- -Y- - - -	0.25X03.00 RH
...3	FNUM	F309444PC	PLATE	EA	4	PLTE-CRS - -N- - - -	LT 0.50X00.63X001.25 S B 03H 00S NE
...3	FNUM	F309445HP	PLATE	EA	4	PLTE-CRS - -N- - - -	AJ 0.75X00.75X001.50 N C 02H 00S NE
...3	FNUM	F458325	ROUND SPACER	EA	36	RSPC-BRNZ- -N- - - -	0.50X0.75X0.06
...3	FNUM	F461606HP	NO DESCRIPTION AVAILABLE	EA	1	KEY -CRS - -N- - - -	0.25X0.19X04.12
...3	FNUM	F462921AN	PLATE	EA	2	PLTE-ALUM- -N- - - -	SL 0.75X03.50X006.50 S B 04H 01S 1E SOLI
...3	FNUM	F462959HP	ROUND TUBE	EA	1	RDTB-RDTB- -N- - - -	2.00X030.25 .38 WALL
...3	FNUM	F462960HP	SHAFT	EA	1	SHFT-CRS - -N- - - -	0.75X033.38 0000 ST
...3	FNUM	F466706HP	FRAME CROSSMEMBER	EA	2	FRCM-CRS - -N- - - -	UPPER 059.00 Y (2) 5/16-18NC TOP 3/8-16N
...3	FNUM	F466721PC	L BRACKET	EA	4	LBRK-CRS - -Y- - - -	FX A 0.38X01.25X07.25 0.38X01.25X02.13
...3	FNUM	F467299HP	BUSHING	EA	10	BUSH-RDTB- -N- - - -	PL 0.50X0.75X0.41 SHRINK
...3	FNUM	F474719HP	CONNECTING ROD	EA	1	CNRD-CRS - -N- - - -	0.31X003.00 ROD 2E
...3	FNUM	F474720PC	L BRACKET	EA	1	LBRK-HRS - -N- - - -	LT A 0.18X05.00X04.51 0.18X05.00X01.25
...3	FNUM	F474729HP	CONVEYOR PULLEY	EA	1	CNPL-4140-OS-N- - - -	39.34 02.00 KEYED T 01.50 BELT (14)
...3	FNUM	F474753	THOMSON SHAFT	EA	2	THSH-THMS- -N- - - -	0.50X030.89 ET 0.22 *CLEARANCE HOLES*

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
...3	FNUM	F474754HP	PLATE	EA	2	PLTE-CRS - -N- - - -	HT 0.50X01.63X030.89 S C 11H 00S NE
...3	FNUM	F474755HP	PLATE	EA	2	PLTE-CRS - -N- - - -	HT 0.50X01.50X029.87 S B 12H 00S NE
...3	FNUM	F474756AN	PLATE	EA	1	PLTE-ALUM- -N- - - -	HT 0.50X30.89X026.00 S B 24H 03S NE CONV
...3	FNUM	F474757	DECK	EA	1	DECK-SS - -N- - - -	16GAX34.78X033.81 STUDS & HOLES
....4	18	175118	FASTENERS	EA	18	FS 1/4-20 X 5/8 NFSS STUD	
...3	FNUM	F478100PC	PLATE	EA	1	PLTE-CRS - -N- - - -	LT 1.00X02.00X002.00 S T 03H 00S BE
...3	92	8492	NO DESCRIPTION AVAILABLE	EA	28	CNPL-ALUM- -N- - - -	01.82 00.88 NOKEY T 01.57BELT
....4	15	86915	BEARINGS	EA	56	BRG .504IDX.62750DX.875 LG BRG	
..2	PS	M306009-083-NP	M306009-083	EA	1	DISCHARGE CONV TABLE MINOR KKH	
...3	15	N102215	BEARINGS	EA	2	“BRG 1”” INSERT STANDARD”	
...3	10	N154610	GEAR BOXES	EA	1	GBX CONE DRIVE B03 7.5:1 LDW*	MODEL B03-57589 400123 MOUNTS
...3	51	N191251	ALLEN BRADLEY	EA	1	AB MPL-B430P-MK22AA SRV MTR *	460V MULTI-TURN ENCODER
...3	35	13535	ROD END	EA	1	RDE MG 5ZK 5/16LHF AURORA	
...3	16	212916	BELTS	EA	14	“BLT FNI-5ER 1.5””WDX70.38””LG *”	HAB FINGER SPLICE IN MATCHED SET
...3	15	28915	BEARINGS	EA	2	BRG 7612 DLG NICE	
...3	35	3735	ROD END	EA	1	RDE MW 5ZK 5/16RHF AURORA	
...3	27	9827	HARDWARE	EA	2	HWR 1 SPLIT SET COLLAR NF*	PURCHASE W/NO FINISH-HPNI @ DOUGLAS
..2	PS	M306009-094	M306009-001	EA	1	GUARDING KKH	PURCHASE W/NO FINISH-HPNI @ DOUGLAS
...3	FNUM	F327560PC	PLATE	EA	2	PLTE-ALUM- -N- - - -	LT 0.25X02.00X006.00 S B 06H 00S NE TROJ
...3	FNUM	F464657PC	PLATE	EA	4	PLTE-CRS - -N- - - -	LT 0.25X00.62X002.25 S C 02H 00S NE KEY

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
...3	FNUM	F464663AN	MOUNT	EA	12	MNT -ALUM- -N- - - -	HT 9009810 HINGE BODY
...3	FNUM	F464664AN	MOUNT	EA	12	MNT -ALUM- -N- - - -	HT 9009812 HINGE BODY
...3	FNUM	F470126PC	PLATE	EA	8	PLTE-CRS - -N- - - -	LT 0.75X03.00X007.00 S C 03H 00S NE
...3	FNUM	F470131	SHAFT	EA	8	SHFT-SS - -N- - - -	2.00X001.00 0000 NT
...3	FNUM	F471201HP	SHAFT	EA	4	SHFT-CRS - -N- - - -	1.25X053.25 04IR NT
...3	FNUM	F471202AN	PLATE	EA	4	PLTE-ALUM- -N- - - -	SL 0.50X01.50X049.38 S N 04H 00S BE
...3	FNUM	F471203	ROUND TUBE	EA	4	RDTB-SS - -N- - - -	2.00X048.38 GRD DR HNDL
...3	FNUM	F472901HP	L BRACKET	EA	4	LBRK-CRS - -Y- - - -	HT C 1.00X02.00X08.25 0.50X01.75X05.69
...3	FNUM	F472902HP	L BRACKET	EA	4	LBRK-CRS - -Y- - - -	HT C 1.00X02.00X08.25 0.50X01.75X05.69
...3	FNUM	F472903HP	STANDARD ARM	EA	4	STAM-CRS - -N- - - -	1.25R 0.31TAP 03.09
...3	FNUM	F474752PC	NO DESCRIPTION AVAILABLE	EA	1	GRDM-ALUM- -N- - - -	NF 0.13X04.88X51.00 0.13X02.50X51.00OPF4
...3	FNUM	F475989	GUIDE	EA	8	GDE -HYFL- -N- - - -	NF 1.00X06.55X42.16 GUARD DOOR TRACK NO
...3	FNUM	F475990AN	MOUNT	EA	3	MNT -ALUM- -N- - - -	HT 1.00X02.00 GUARD DR SIDE OPP F475991
...3	FNUM	F475991AN	MOUNT	EA	3	MNT -ALUM- -N- - - -	HT 1.00X02.00 GUARD DR SIDE OPP F475990
...3	FNUM	F475992	GUARD	EA	3	GRD -LEXN-OS-N- - - -	U 0.24 50.12 41.93 2 D LIFT UP
...3	FNUM	F475993PC	PLATE	EA	2	PLTE-CRS - -N- - - -	LT 1.00X01.00X036.00 S B 09H 00S NE
...3	FNUM	F475994	GUARD	EA	1	GRD -LEXN-OS-N- - - -	U 0.24 50.12 40.86 2 D LIFT UP
...3	FNUM	F478106	NO DESCRIPTION AVAILABLE	EA	4	GDFR-ALUM- -N- - - -	31.35 MP EDG 04 HI
...3	FNUM	F478107	NO DESCRIPTION AVAILABLE	EA	8	GDFR-ALUM- -N- - - -	23.20 MP EDG 00 NO
...3	FNUM	F478108	NO DESCRIPTION AVAILABLE	EA	2	GDFR-ALUM- -N- - - -	23.20 MP EDG 04 SK
...3	FNUM	F478109	NO DESCRIPTION AVAILABLE	EA	2	GDFR-ALUM- -N- - - -	23.20 MP EDG 04 SK
...3	FNUM	F478110	NO DESCRIPTION AVAILABLE	EA	3	GDFR-ALUM- -N- - - -	23.20 MP EDG 04 SK

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
...3	FNUM	F478111	NO DESCRIPTION AVAILABLE	EA	3	GDFR-ALUM- -N- - - -	23.20 MP EDG 04 SK
...3	FNUM	F478112	PLATE	EA	18	PLTE-HYFL- -N- - - -	LT 0.75X01.50X003.00 S C 02H 00S NE GUAR
...3	FNUM	F478113	PLATE	EA	6	PLTE-HYFL- -N- - - -	LT 0.75X01.50X002.50 S C 03H 00S NE GUAR
...3	FNUM	F478114	PLATE	EA	6	PLTE-HYFL- -N- - - -	LT 0.75X02.00X002.00 S C 03H 00S NE GUAR
...3	FNUM	F478115HP	SHAFT	EA	6	SHFT-CRS - -N- - - -	0.25X032.88 0000 NT 1/8 DIA (4
...3	FNUM	F478116PC	PLATE	EA	3	PLTE-ALUM- -N- - - -	LT 1.00X01.00X002.25 S N 00H 02S NE
...3	FNUM	F478117PC	PLATE	EA	3	PLTE-ALUM- -N- - - -	LT 1.00X01.00X002.25 S N 00H 02S NE
...3	FNUM	F478118	PLATE	EA	6	PLTE-HYFL- -N- - - -	LT 0.63X00.75X002.50 S C 00H 01S NE GUAR
...3	FNUM	F478119PC	L BRACKET	EA	3	LBRK-HRS - -N- - - -	FX A 0.25X06.63X02.75 0.25X06.63X02.25
...3	FNUM	F478120PC	L BRACKET	EA	4	LBRK-HRS - -N- - - -	FX A 0.25X03.00X03.00 0.25X03.00X01.37
...3	FNUM	F478121PC	PLATE	EA	4	PLTE-CRS - -N- - - -	LT 0.50X03.00X002.19 S T 04H 00S 1E GUAR
...3	FNUM	F478122PC	ANGLE	EA	13	ANGL-CRS - -N- - - -	2.50X2.50X0.25X001.00 L-BRACKET
...3	FNUM	F478123PC	NO DESCRIPTION AVAILABLE	EA	2	GRDM-ALUM- -N- - - -	NF 0.13X04.88X51.00 0.13X02.50X51.00 DIA
...3	FNUM	F478125PC	PLATE	EA	1	PLTE-CRS - -N- - - -	LT 0.50X01.00X037.75 S C 04H 00S NE
...3	FNUM	F478126PC	NO DESCRIPTION AVAILABLE	EA	1	GRDM-ALUM- -N- - - -	NF 0.13X04.88X10.50 0.13X02.50X10.50 DIA
...3	FNUM	F478127	GUARD	EA	6	GRD -LEXN- -N- - - -	L 0.24 24.19 32.31 0 D RH OR LH
...3	FNUM	F478128	GUARD	EA	1	GRD -LEXN- -N- - - -	L 0.24 04.13 36.00 0 D RH OR LH
...3	FNUM	F478129	GUARD	EA	1	GRD -LEXN- -N- - - -	L 0.24 12.88 36.00 0 D RH OR LH
...3	FNUM	F478187AN	MOUNT	EA	1	MNT -ALUM- -N- - - -	HT 1.00X02.00 GUARD DR SIDE OPP F478188
...3	FNUM	F478188AN	MOUNT	EA	1	MNT -ALUM- -N- - - -	HT 1.00X02.00 GUARD DR SIDE OPP F478187
...3	FNUM	F479342	PLATE	EA	2	PLTE-SS - -N- - - -	LT 0.25X01.50X008.00 S C 02H 00S NE

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
...3	FNUM	F479343	PLATE	EA	4	PLTE-SS - -N- - - -	LT 0.25X01.50X006.00 S C 02H 00S NE
...3	FNUM	F490469	NO DESCRIPTION AVAILABLE	EA	1	GDFR-ALUM- -N- - - -	31.35 MP EDG 02 SK
...3	FNUM	F490470	NO DESCRIPTION AVAILABLE	EA	1	GDFR-ALUM- -N- - - -	31.35 MP EDG 02 SK
...3	FNUM	F490471	ELECTRICAL (MISC ELECT.MTG BRKTS)	EA	2	ELEC-SS - -N- - - -	7GAX02.75X05.25 TROJAN SWITCH MNT
...3	FNUM	F490472	ELECTRICAL (MISC ELECT.MTG BRKTS)	EA	2	ELEC-SS - -N- - - -	7GAX01.50X04.59 TROJAN KEY MNT
...3	FNUM	F490483PC	PLATE	EA	2	PLTE-CRS - -N- - - -	LT 1.00X02.00X006.75 S B 02H 00S NE
...3	FNUM	F494559HP	PLATE	EA	4	PLTE-CRS - -N- - - -	AJ 0.44X00.44X004.50 S T 02H 02S NE
...3	FNUM	F494560	L BRACKET	EA	4	LBRK-SS - -N- - - -	AJ A 0.10X02.05X02.29 0.10X02.05X01.33
...3	FNUM	F494561PC	PLATE	EA	2	PLTE-CRS - -N- - - -	LT 0.50X00.62X001.50 S C 02H 00S NE
...3	FNUM	F494570	NO DESCRIPTION AVAILABLE	EA	1	GRDM-LEXN- -N- - - -	NF 0.24X08.00X013.75X43.0 0 DISC END GUAR
...3	FNUM	F494571	NO DESCRIPTION AVAILABLE	EA	1	GRDM-LEXN- -N- - - -	NF 0.24X08.00X013.75X22.0 0 DISC END GUAR
...3	91	88791	GUARD	EA	12	D-1519A GUARD HINGE PIN	GUARD HINGE PIN & PLUG
...3	FSLD	9018204	ASSEMBLY	EA	4	ASSY-ASSY-NF-N- - - -	CONTOUR SERIES GUARD LIFT SPRING ASSY
....4	43	18543	SPRINGS	EA	4	SPRING ASSOCIATED RAYMOND *	C457-0500-1323-30P
....4	FSLD	9018304	PIVOT	EA	4	PVT -ASSY-HP-N- - - -	GUARD LIFT SPRING PIVOT
.....5	15	26215	BEARINGS	EA	8	BRG 1-1/2X1-3/4X1-1/ 4 B2428-10	
.....5	FSLD	9018302	PIVOT	EA	4	PVT -CRS -NF-N- - - -	GUARD LIFT SPRING PIVOT
.....5	FSLD	9018303	SHAFT	EA	4	SHFT-CRS -NF-N- - - -	1.00X002.00 0000 NT
.....5	FSLD	9031735	SHAFT	EA	4	SHFT-CRS -NF-N- - - -	1.00X002.00 0000 NT
....4	FSLD	9018305	SHAFT	EA	4	SHFT-CRS -HP-N- - - -	4.38X001.75 0000 NT

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
.....5	15	118615	BEARINGS	EA	4	BRG 5/8X3/4X3/4 OLT P62-6	
.....5	FSLD	9018301	SHAFT	EA	4	SHFT-CRS -NF-N- - - -	1.50X015.63 0000 NT
....4	FSLD	9018306	MOUNT	EA	4	MNT -CRS -HP-N- - - -	SL GUARD LIFT SPRING MOUNT
....4	FSLD	9018309	ARM	EA	8	ARM -ASSY-HP-N- - - -	CONTOUR SERIES GUARD LIFT SPRING ARM
.....5	15	N114115	BEARINGS	EA	8	BRG 1-1/4X1-1/2X1/2 SS-4048-8	
.....5	15	N114215	BEARINGS	EA	8	BRG 1X1-1/4X1/2 SS-3240-8	
.....5	FSLD	9018308	ARM	EA	8	ARM -CRS -NF-N- - - -	CONTOUR SERIES GUARD LIFT SPRING ARM
....4	FSLD	9027098	STANDARD ARM	EA	8	STAM-CRS -HP-N- - - -	1.25R 0.62CLE 03.09
.....5	15	28315	BEARINGS	EA	8	BRG 5/8X7/8X1 OLT P64-8	
.....5	FSLD	9027099	STANDARD ARM	EA	8	STAM-CRS -NF-N- - - -	1.25R 0.62CLE 03.09
....4	27	9227	HARDWARE	EA	8	HWR 5100-100 SNAP RING TRUARC	
....4	27	9427	HARDWARE	EA	4	HWR 5100-150 SNAP RING TRUARC	
...3	FSLD	9022851	ARM	EA	4	ARM -ASSY-HP-N- - - -	CONTOUR SERIES GUARD LIFT SPRING ARM
....4	15	N114115	BEARINGS	EA	4	BRG 1-1/4X1-1/2X1/2 SS-4048-8	
....4	FSLD	9022850	ARM	EA	4	ARM -CRS -NF-N- - - -	CONTOUR SERIES GUARD LIFT SPRING ARM
..2	PS	M306009-094-NP	M306009-001	EA	1	GUARDING MINORS KKH	
...3	27	N102427	HARDWARE	EA	4	HWR ACP 83120 GAS SPRING *	ALLEGIS
...3	31	N4531	O-RINGS	EA	8	ORG 126 BUNA O PACK/5 PER PACK	
...3	99	N66199	MISCELLANEOUS	EA	8	MSC SPD BS-1005 10MM BALL STD*	AUSTIN # AC 98 STUD

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
...3	27	N97627	HARDWARE	EA	24	HWR L15640 2-WAY CORNER CPLG *	FOR JOINING PROFILE A40801
...3	27	10027	HARDWARE	EA	4	HWR 1-1/2 SPLIT SET COLLAR NF*	PURCHASE W/NO FINISH-HPNI @ DOUGLAS
...3	43	10943	SPRINGS	EA	6	SPRING MYERS X14-2-13	
...3	15	28815	BEARINGS	EA	8	BRG 7620 DLG NICE	
...3	27	78627	HARDWARE	EA	12	HWR 1/4 SET COLLAR	
..2	PS	M306009-186	M306009-186	EA	1	WRAPPER CONV TABLE KKH	
...3	FNUM	F207402HP	REDDI-ROD	EA	3	RDRD-RDRD- -Y- - - -	0.25X03.00 RH
...3	FNUM	F458325	ROUND SPACER	EA	36	RSPC-BRNZ- -N- - - -	0.50X0.75X0.06
...3	FNUM	F462921AN	PLATE	EA	1	PLTE-ALUM- -N- - - -	SL 0.75X03.50X006.50 S B 04H 01S 1E SOLI
...3	FNUM	F462959HP	ROUND TUBE	EA	1	RDTB-RDTB- -N- - - -	2.00X030.25 .38 WALL
...3	FNUM	F462960HP	SHAFT	EA	1	SHFT-CRS - -N- - - -	0.75X033.38 0000 ST
...3	FNUM	F466713HP	PULLEY	EA	1	PLLY-PLLY- -N- - - -	8MX-32S-12 1.31 BORE GATES GT2
....4	33	N104033	PULLEY	EA	1	PLL ST 8MX-32S-12-PB TYPED NF*	PURCHASE W/NO FINISH-HPNI @ DOUGLAS
....4	15	N101915	BEARINGS	EA	1	“BRG BH-1612 1”” ID NEEDLE BRG *”	TORRINGTON
...3	FNUM	F466714AN	PLATE	EA	1	PLTE-ALUM- -N- - - -	SL 0.75X03.50X007.75 S B 04H 01S 1E SOLI
....4	17	4317	TOOLING	EA	2	DP 5/16-18 R1185-5 HELI COIL	
...3	FNUM	F467299HP	BUSHING	EA	10	BUSH-RDTB- -N- - - -	PL 0.50X0.75X0.41 SHRINK
...3	FNUM	F474716HP	PLATE	EA	1	PLTE-CRS - -N- - - -	HT 0.75X02.50X005.00 S B 03H 01S NEOPPF4
...3	FNUM	F474728HP	CONVEYOR PULLEY	EA	1	CNPL-4140-OS-N- - - -	35.41 02.00 KEYED T 01.50 BELT (14) 2.69
...3	FNUM	F474753	THOMSON SHAFT	EA	2	THSH-THMS- -N- - - -	0.50X030.89 ET 0.22 *CLEARANCE HOLES*
...3	FNUM	F474754HP	PLATE	EA	2	PLTE-CRS - -N- - - -	HT 0.50X01.63X030.89 S C 11H 00S NE

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
...3	FNUM	F474758HP	PLATE	EA	2	PLTE-CRS - -N- - - -	HT 0.50X01.50X034.12 S B 10H 00S NE
...3	FNUM	F474759AN	PLATE	EA	1	PLTE-ALUM- -N- - - -	HT 0.50X30.89X026.00 S B 24H 03S NE CONV
...3	FNUM	F474760	DECK	EA	1	DECK-SS - -N- - - -	16GAX34.78X032.74 STUDS & HOLES
....4	18	175118	FASTENERS	EA	18	FS 1/4-20 X 5/8 NFSS STUD	
...3	92	8492	NO DESCRIPTION AVAILABLE	EA	28	CNPL-ALUM- -N- - - -	01.82 00.88 NOKEY T 01.57BELT
....4	15	86915	BEARINGS	EA	56	BRG .504IDX.62750DX.875 LG BRG	
..2	PS	M306009-186-NP	M306009-186	EA	1	WRAPPER CONV TABLE MINORS KKH	
...3	33	N102133	PULLEY	EA	1	PLL ST 8MX-32-12 TYPEG NF*	PURCHASE W/NO FINISH-HPNI @ DOUGLAS
...3	15	N102215	BEARINGS	EA	2	“BRG 1”” INSERT STANDARD”	
...3	16	N201316	BELTS	EA	1	BLT 8MGT-800-12 GATES PC GT2 *	“12MM WIDE X 31.50””LONG 100 TEETH”
...3	53	10053	ADAPTORS	EA	1	ADP 1210 1 NF*	PURCHASE W/NO FINISH-LPNI @ DOUGLAS
...3	38	12438	TENSIONERS	EA	1	TNR N-2 BRN	
...3	16	212816	BELTS	EA	14	“BLT FNB-5E 1.5””WDX79.38””LG *”	HAB FINGER SPLICE IN MATCHED SET
...3	15	28915	BEARINGS	EA	2	BRG 7612 DLG NICE	
..2	PS	M306009-211	M306009-211	EA	1	CUTTER CART.FRAME-BOLT KKH	
...3	PS	M306009-211-WD	M306009-211	EA	1	CUTTER CART.FRAME-WELD KKH	
....4	FNUM	F458355PC	FRAME CROSSMEMBER	EA	1	FRCM-CRS - -N- - - -	LOWER 035.75 Y 3/4X2
....4	FNUM	F458356PC	FRAME CROSSMEMBER	EA	1	FRCM-CRS - -N- - - -	LOWER 016.38 Y 3/4 X 2
....4	FNUM	F458358PC	FRAME CROSSMEMBER	EA	2	FRCM-CRS - -N- - - -	LOWER 050.00 Y W/ CAM FOLLOWER HOLES

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
....4	FNUM	F477405PC	FRAME CROSSMEMBER	EA	1	FRCM-CRS - -N- - - -	LOWER 037.75 Y
....4	FNUM	F494592PC	FRAME CROSSMEMBER	EA	1	FRCM-CRS - -N- - - -	LOWER 039.75 Y OPP F494593
..2	PS	M306009-212	M306009-212	EA	1	WRAPPER ASSY KKH	
...3	FNUM	F37829HP	ROUND SPACER	EA	2	RSPC-CRS - -N- - - -	0.34X0.75X0.88
...3	FNUM	F420284	ELECTRICAL (MISC ELECT.MTG BRKTS)	EA	1	ELEC-SS - -N- - - -	LT 12GA AB MINISIGHT MOUNT FOR N148551 O
...3	FNUM	F462923HP	SHAFT	EA	2	SHFT-CRS - -N- - - -	3.25X001.80 0000 NT
...3	FNUM	F462924	THOMSON SHAFT	EA	4	THSH-THMS- -N- - - -	0.50X019.50 ET 0.25 BOTH ENDS
...3	FNUM	F462925AN	PLATE	EA	4	PLTE-ALUM- -N- - - -	HT 1.25X03.00X006.50 S B 07H 00S NE
...3	FNUM	F462926AN	BLOCK	EA	2	BLCK-ALUM- -N- - - -	SERVO WAND ROTARY SLIDE BLOCK
...3	FNUM	F462927	PULLEY	EA	1	PLLY-ALUM- -N- - - -	L32 AT10 0.98 (BRECO) FLANGES
....4	33	N100933	PULLEY	EA	1	PLL AL LS42AT10/32-2 HUB NF*	PURCHASE W/ZN PLATED RINGS-NF @ DOUGLAS
...3	FNUM	F462928	PULLEY	EA	3	PLLY-ALUM- -N- - - -	L32 AT10 1.00 (BRECO) FLANGES
....4	33	N100933	PULLEY	EA	3	PLL AL LS42AT10/32-2 HUB NF*	PURCHASE W/ZN PLATED RINGS-NF @ DOUGLAS
...3	FNUM	F462930HP	SHAFT	EA	1	SHFT-CRS - -N- - - -	3.50X005.50 0000 NT
...3	FNUM	F462931HP	MOUNT	EA	1	MNT -CRS - -Y- - - -	HT WAND DRIVE GEARBOX MOUNT
...3	FNUM	F462933HP	SHAFT	EA	1	SHFT-CRS - -N- - - -	3.50X005.50 0000 NT
...3	FNUM	F462935PC	PLATE	EA	1	PLTE-CRS - -N- - - -	LT 12GAX03.25X014.00 S C 04H 00S NE
...3	FNUM	F462942AN	PLATE	EA	1	PLTE-ALUM- -N- - - -	HT 0.75X10.31X004.00 N B 06H 00S NE OPP
....4	17	21717	TOOLING	EA	2	DP 3/8-16 R1185-6 HELI COIL	
...3	FNUM	F462943AN	PLATE	EA	1	PLTE-ALUM- -N- - - -	HT 0.75X10.31X004.00 N B 06H 00S NE OPP
....4	17	21717	TOOLING	EA	2	DP 3/8-16 R1185-6 HELI COIL	
...3	FNUM	F462945HP	BRACKET	EA	4	BRKT-CRS - -N- - - -	SL A 1.00X02.25X04.00

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
...3	FNUM	F462946	CAM TRACK	EA	2	CAMT-DLRN- -N- - - -	1.25X08.25X21.75 0.75 SPIN SERVO WAND
...3	FNUM	F466702HP	SHAFT	EA	1	SHFT-CRS - -N- - - -	0.75X008.75 01IE NT SNAP RING
....4	27	26227	HARDWARE	EA	1	HWR 5100-75 SNAP RING	
...3	FNUM	F466703	SHAFT	EA	1	SHFT-SS - -N- - - -	1.25X039.75 0000 NT
...3	FNUM	F466705	ROUND TUBE	EA	2	RDTB-SS - -Y- - - -	0.50X041.62 FLATTENED FOR WAND
...3	FNUM	F471271HP	PLATE	EA	4	PLTE-CRS - -N- - - -	HT 0.50X00.75X007.75 S B 03H 00S 1E
...3	FNUM	F472906HP	L BRACKET	EA	1	LBRK-CRS - -Y- - - -	AJ A 0.38X02.00X20.38 0.38X02.00X02.00
...3	FNUM	F472907HP	PLATE	EA	1	PLTE-CRS - -N- - - -	AJ 0.38X02.00X020.00 S T 02H 02S NE
...3	FNUM	F472908	ELECTRICAL (MISC ELECT.MTG BRKTS)	EA	1	ELEC-SS - -N- - - -	07GAX01.50X03.50 1-1/4 REF MNT 1.00 SLOT
...3	FNUM	F474717AN	PLATE	EA	1	PLTE-ALUM- -N- - - -	AJ 0.75X09.00X034.89 S B 18H 04S NEOPPF4
....4	17	21717	TOOLING	EA	2	DP 3/8-16 R1185-6 HELI COIL	
...3	FSLD	9010765	CAM TRACK	EA	2	CAMT-DLRN-NF-N- - - -	1.25X11.00X21.75 1.00 CPPH DUAL WAND LOW
..2	PS	M306009-212-NP	M306009-212	EA	1	WRAPPER ASSY MINORS KKH	
...3	33	N101133	PULLEY	EA	2	PLL ST 42AT10/48-0 SPECIAL NF*	PURCHASE W/NO FINISH-HPNI @ DOUGLAS
...3	33	N102133	PULLEY	EA	1	PLL ST 8MX-32-12 TYPEG NF*	PURCHASE W/NO FINISH-HPNI @ DOUGLAS
...3	15	N102215	BEARINGS	EA	2	“BRG 1”” INSERT STANDARD”	
...3	15	N104515	BEARINGS	EA	4	BRG 6915DD NSK DEEP GROOVE *	SEALED BALL BEARING
...3	10	N142810	GEAR BOXES	EA	1	GBX ALPHA LP090-M01-010-1 *	A-B MPL-X3XX
...3	16	N184316	BELTS	EA	2	BLT BRECO 25AT10/ 700 BFX *	STEEL TENSION MEMEBERS
...3	51	N186451	ALLEN BRADLEY	EA	1	AB MPL-B330P-MK22AA SRV MTR *	460V 5000RPM MULTI-TURN ENCODER
...3	16	N188016	BELTS	EA	1	BLT BRECO 25AT10/ 610 BFX *	STEEL TENSION MEMBERS

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
...3	53	N19553	ADAPTORS	EA	3	ADP 1 RFN 7012-IN *	NICKEL PLATED
...3	24	N2624	CLAMPS	EA	4	CLM TC-305-U TOGGLE DE-STA-CO	
...3	53	N46453	ADAPTORS	EA	1	ADP 22X47 RFN 7012 *	NICKEL PLATED
...3	27	N47127	HARDWARE	EA	8	HWR N5000-87 SNAP RING TRUARC	
...3	15	N61415	BEARINGS	EA	4	BRG CR-1-XC SM	
...3	53	10053	ADAPTORS	EA	1	ADP 1210 1 NF*	PURCHASE W/NO FINISH-LPNI @ DOUGLAS
...3	15	11615	BEARINGS	EA	8	BRG SUPER 8 LINEAR TMP	
...3	18	124418	FASTENERS	EA	4	FS TE-CO SLOT NUT 1/4-20 *	41402T MUST BE THREADED ALL THE WAY
...3	95	208495	NO DESCRIPTION AVAILABLE	EA	4	RSPC-ALUM- -N- -I- -	0.56X0.88X1.00
...3	27	26227	HARDWARE	EA	1	HWR 5100-75 SNAP RING	
...3	15	28915	BEARINGS	EA	2	BRG 7612 DLG NICE	
...3	37	84937	SEALS	EA	8	SEALS 63456 VICTOR	
..2	PS	M306009-218		EA	1	SPARE PARTS KKH	
...3	FNUM	F466705	ROUND TUBE	EA	2	RDTB-SS - -Y- - - -	0.50X041.62 FLATTENED FOR WAND
..2	PS	M306009-218-NP		EA	1	SPARE PARTS MINORS KKH	
...3	99	68499	MISCELLANEOUS	EA	1	MSC SERRATED KNIFE *	“32.678””X1.181””X.070”” DRAWING #68499”
.1	FSLD	9042913	ASSEMBLY	EA	1	ASSY-ASSY-NF-N- - - -	M306009 HP HOOD TOP LEVEL 12FT LH
..2	99	N144099	MISCELLANEOUS	EA	8	“MSC TYP HJ90-1-1/ 4””-8”” NGI *”	FIXED BASE
..2	99	151999	MISCELLANEOUS	EA	2	“MSC TYP HJ90-1-1/ 4””-15”” NGI *”	FIXED BASE
..2	FSLD	9031738	NO DESCRIPTION AVAILABLE	EA	1	MAIN ASSY 001	HEAT TUNNEL 12FT LH CR S PREM MA
...3	64	N45564	MOTORS	EA	1	EM REL 1HP P56X1531 FC56C *	230/460 VOLT 3PH 60HZ 1725RPM TENV

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
...3	64	N74764	MOTORS	EA	2	EM REL 2HP P56X1536 FF56C *	230/460 VOLT 3 PH 60 HZ 1800 RPM TEFC-X
...3	64	N90164	MOTORS	EA	1	EM REL 5HP P18S3074A 184TCY *	230/460 VOLT 3PH 60HZ 1800RPM TEFC-SABRE
...3	64	40764	MOTORS	EA	1	EM REL 1/3HP P56H3119 EA56C *	“208,230,460 VOLT 1800 RPM TENV”
...3	FSLD	9012530	MOUNT	EA	1	MNT -CRS -NF-N- - - -	FX PROX MOUNT
...3	FSLD	9012562	HEAT TUNNEL	EA	1	HTNL-SS -NF-N- - - -	J-HOOK FOR MANUAL ADVANCE CRANK
...3	FSLD	9016888	ASSEMBLY	EA	1	ASSY-ASSY-NF-N- - - -	PRODUCT COOLING W/ NO MOTOR
....4	27	21427	HARDWARE	EA	1	HWR DAYTON FAN GUARD 4C434	
....4	27	21727	HARDWARE	EA	1	HWR DAYTON FAN BLADE 4C462	
....4	FSLD	9014166	PLATE	EA	1	PLTE-ALUM-PC-N- - - -	LT 0.38X04.00X007.00 S T 08H 00S BE
....4	FSLD	9014167	MOUNT	EA	2	MNT -CRS -PC-N- - - -	LT BARN FAN MOUNT
....4	FSLD	9014168	MOUNT	EA	2	MNT -CRS -PC-N- - - -	LT BARN FAN MOUNT CLAMP
....4	FSLD	9018203	ROUND SPACER	EA	1	RSPC-SS -NF-N- - - -	4.56X7.00X0.18 W/(4)13/ 32 DIA ON 5.88 B.
...3	FSLD	9021602	ELEVATOR CHANNEL	EA	1	ELCH-ASSY-PC-Y- - - -	ELECTRICAL CABINET W/ ANGLE IRON MOUNTS
....4	FSLD	9021601	ANGLE	EA	4	ANGL-CRS -NF-N- - - -	2X2X0.25X002.00 W/ 3/8 TAP
...3	FSLD	9021722	ASSEMBLY	EA	1	ASSY-ASSY-NF-N- - - -	MANUAL CONVEYOR ADVANCE CRANK
....4	27	19627	HARDWARE	EA	1	HWR GN598-PL-26-M10 *	REPLACEMENT HANDLE FOR HANDWHEEL
....4	FSLD	9010494	ASSEMBLY	EA	1	ASSY-ASSY-HP-Y- - - -	MANUAL ADVANCE CRANK SQ SHFT
.....5	FSLD	9010489	ROUND TUBE	EA	1	RDTB-CRS -NF-N- - - -	1.00X007.00
.....5	FSLD	9010490	ROUND TUBE	EA	1	RDTB-CRS -NF-N- - - -	1.44X002.00
.....5	FSLD	9010491	PLATE	EA	1	PLTE-CRS -NF-N- - - -	FX 0.50X01.00X018.00 S T 01H 00S NE

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
...3	FSLD	9024821	ASSEMBLY	EA	1	ASSY-ASSY-NF-N- - - -	12FT TUNNEL HOOD
....4	27	106727	HARDWARE	EA	4	HWR WARNING HOT-CRUSH-NO *	SPRAY 3 IN 1 TUNNEL STICKER
....4	27	79927	HARDWARE	EA	4	HWR 1/4-28 ST GREASE ZERK	
....4	FSLD	9003149	HEAT TUNNEL	EA	4	HTNL-CRS -HP-N- - - -	SCREW BLOCK HEIGHT ADJ
....4	FSLD	9009423	HEAT TUNNEL	EA	4	HTNL-CRS -HP-Y- - - -	SCREW TUBE ASSY
.....5	FSLD	9003178	NO DESCRIPTION AVAILABLE	EA	4	RWMT-CRS -NF-N- - - -	SCREW TUBE BASE
.....5	FSLD	9003179	NO DESCRIPTION AVAILABLE	EA	4	RWMT-CRS -NF-N- - - -	SCREW TUBE END CAP
.....5	FSLD	9010317	NO DESCRIPTION AVAILABLE	EA	4	RWMT-CRS -NF-N- - - -	1.13X1.07X019.00 22GA WALL
....4	FSLD	9009426	HEAT TUNNEL	EA	2	HTNL-CRS -PC-Y- - - -	HOOD SUPPORT CHANNEL IRON
.....5	FSLD	9009424	HEAT TUNNEL	EA	2	HTNL-CRS -NF-N- - - -	HOOD CHANNEL IRON SUPPORT
.....5	FSLD	9009425	PLATE	EA	4	PLTE-CRS -NF-N- - - -	FX 0.25X01.75X004.00 S N 00H 00S NE
....4	FSLD	9010322	PLATE	EA	4	PLTE-CRS -PC-N- - - -	FX 0.13X00.75X016.88 S C 04H 00S NE
....4	FSLD	9010323	PLATE	EA	4	PLTE-CRS -PC-N- - - -	FX 0.13X00.75X026.13 S N 05H 00S NE
....4	FSLD	9012548	PLATE	EA	2	PLTE-CRS -PC-N- - - -	FX 0.13X00.75X047.75 S C 10H 00S NE
....4	FSLD	9014137	HEAT TUNNEL	EA	2	HTNL- -NF-N- - - -	144.75 TADPOLE GASKET
.....5	99	N135799	MISCELLANEOUS	IN	289.5	MSC 0.50X1.75 FIBERGL TADPOLE*	8815K24
....4	FSLD	9016896	HEAT TUNNEL	EA	4	HTNL-CRS -NF-N- - - -	HOOD END CAP RIB STIFFNER
....4	FSLD	9017837	ASSEMBLY	EA	2	ASSY-ASSY-NF-N- - - -	TUNNEL HOOD INNER AND OUTER SKIN SPLICES
.....5	FSLD	9009419	PLATE	EA	4	PLTE-SS -NF-N- - - -	FX 0.50X01.50X003.75 S B 05H 00S 1E
.....5	FSLD	9009435	ASSEMBLY	EA	2	ASSY-CRS -CE-Y- - - -	INNER SKIN HOOP
......6	FSLD	9009415	HEAT TUNNEL	EA	4	HTNL-CRS -NF-N- - - -	INNER SKIN HOOP

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
.....6	FSLD	9009416	HEAT TUNNEL	EA	4	HTNL-CRS -NF-N- - - -	INNER SKIN HOOP
.....6	FSLD	9010321	HEAT TUNNEL	EA	56	HTNL-CRS -NF-N- - - -	INSIDE SKIN CLIP
.....5	FSLD	9010482	HEAT TUNNEL	EA	2	HTNL-SS -NF-N- - - -	SS HOOD STANDOFF
.....5	FSLD	9017851	PLATE	EA	2	PLTE-CRS -NF-N- - - -	FX 0.06X03.00X018.25 S C 08H 00S NE
....4	FSLD	9017839	ASSEMBLY	EA	3	ASSY-ASSY-NF-N- - - -	4FT SECTION OF TUNNEL HOOD INSIDE AND OU
.....5	FSLD	9009411	HEAT TUNNEL	EA	12	HTNL-CRS -NF-N- - - -	INNER SKIN
.....5	FSLD	9009414	ANGLE	EA	6	ANGL-CRS -PC-N- - - -	3X3X0.25X048.00
.....5	FSLD	9009419	PLATE	EA	6	PLTE-SS -NF-N- - - -	FX 0.50X01.50X003.75 S B 05H 00S 1E
.....5	FSLD	9009420	HEAT TUNNEL	EA	6	HTNL-CRS -NF-N- - - -	INNER SKIN TOP
.....5	FSLD	9009435	ASSEMBLY	EA	3	ASSY-CRS -CE-Y- - - -	INNER SKIN HOOP
.....6	FSLD	9009415	HEAT TUNNEL	EA	6	HTNL-CRS -NF-N- - - -	INNER SKIN HOOP
.....6	FSLD	9009416	HEAT TUNNEL	EA	6	HTNL-CRS -NF-N- - - -	INNER SKIN HOOP
.....6	FSLD	9010321	HEAT TUNNEL	EA	84	HTNL-CRS -NF-N- - - -	INSIDE SKIN CLIP
.....5	FSLD	9010482	HEAT TUNNEL	EA	3	HTNL-SS -NF-N- - - -	SS HOOD STANDOFF
.....5	FSLD	9014135	HEAT TUNNEL	EA	9	HTNL-INSL-NF-N- - - -	INSULATION TUNNEL HOOD
.....6	99	126999	MISCELLANEOUS	SI	54000	MSC FIBERGLASS INSULATION *	“2LB DENSITY 1””X48””X44””
.....5	FSLD	9017838	ASSEMBLY	EA	6	ASSY-ASSY-PC-Y- - - -	HOOD OUTER SKIN
.....6	FSLD	9003157	HEAT TUNNEL	EA	30	HTNL-CRS -NF-N- - - -	CLIP
.....6	FSLD	9017846	HEAT TUNNEL	EA	6	HTNL-CRS -NF-N- - - -	OUTSIDE SKIN SPLICE
.....6	FSLD	9017847	HEAT TUNNEL	EA	6	HTNL-CRS -NF-N- - - -	OUTER SKIN 4FT VER 2
.....5	FSLD	9017848	HEAT TUNNEL	EA	3	HTNL-CRS -PC-N- - - -	OUTER SKIN TOP

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
....4	FSLD	9024849	ASSEMBLY	EA	2	ASSY-ASSY-NF-N- - - -	TUNNEL HOOD END CAPS
.....5	FSLD	9009419	PLATE	EA	4	PLTE-SS -NF-N- - - -	FX 0.50X01.50X003.75 S B 05H 00S 1E
.....5	FSLD	9009422	HEAT TUNNEL	EA	2	HTNL-CRS -NF-N- - - -	INNER SKIN END CAP
.....5	FSLD	9010324	HEAT TUNNEL	EA	2	HTNL-CRS -CE-Y- - - -	INNER SKIN END RIB
......6	FSLD	9009421	HEAT TUNNEL	EA	2	HTNL-CRS -NF-N- - - -	INNER SKIN END RIB
......6	FSLD	9010321	HEAT TUNNEL	EA	24	HTNL-CRS -NF-N- - - -	INSIDE SKIN CLIP
.....5	FSLD	9010338	HEAT TUNNEL	EA	4	HTNL-CRS -HP-N- - - -	INSIDE SKIN CLIP
.....5	FSLD	9012575	HEAT TUNNEL	EA	4	HTNL-BELT-NF-N- - - -	INNER CURTAIN LONG PIECE
.....5	FSLD	9012576	HEAT TUNNEL	EA	4	HTNL-BELT-NF-N- - - -	INNER CURTAIN SHORT PIECE
.....5	FSLD	9012577	PLATE	EA	2	PLTE-CRS -NF-N- - - -	LT 0.06X01.00X041.25 S C 05H 00S NE
.....5	FSLD	9014264	HEAT TUNNEL	EA	6	HTNL-INSL-NF-N- - - -	INSULATION END CAP 1IN THICKNESS
......6	99	126999	MISCELLANEOUS	SI	21600	MSC FIBERGLASS INSULATION *	“2LB DENSITY 1””X48””X44””
.....5	FSLD	9016906	HEAT TUNNEL	EA	4	HTNL-CRS -GA-N- - - -	HOOD END CAP SPACER
.....5	FSLD	9016912	SPECIAL CAM ARM	EA	4	SPCA-SS -HP-N- - - -	STAINLESS STANDOFF
.....5	FSLD	9017845	HEAT TUNNEL	EA	2	HTNL-ASSY-PC-Y- - - -	HOOD END CAP
......6	FSLD	9003157	HEAT TUNNEL	EA	10	HTNL-CRS -NF-N- - - -	CLIP
......6	FSLD	9009431	HEAT TUNNEL	EA	2	HTNL-CRS -NF-N- - - -	END CAP TOP
......6	FSLD	9017846	HEAT TUNNEL	EA	2	HTNL-CRS -NF-N- - - -	OUTSIDE SKIN SPLICE
......6	FSLD	9017849	HEAT TUNNEL	EA	2	HTNL-CRS -NF-N- - - -	MAIN END CAP
......6	FSLD	9017850	HEAT TUNNEL	EA	4	HTNL-CRS -NF-N- - - -	END CAP PIECE
......6	FSLD	9017852	PLATE	EA	2	PLTE-CRS -NF-N- - - -	FX 0.06X03.00X018.25 S C 08H 00S NE

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
...3	FSLD	9027189	CHAIN	EA	1	CHN -CHN -NF-N- - - -	036.00FT FALCON CHAIN 36IN
....4	20	N137220	CHAIN	IN	432	CHN F52 NYLON/ GLASS W/SS PINS*	“36””WD FALCON”
...3	FSLD	9029296	ASSEMBLY	EA	1	ASSY-ASSY-NF-N- - - -	12FT CR STREGNTHENED FRAME BASE TUNNEL A
....4	10	N154310	GEAR BOXES	EA	1	GBX SPARTAN AL505 18:1 56C	
....4	91	36491	NO DESCRIPTION AVAILABLE	EA	1	ELSC-CRS - -N- - - -	1.00 LIM 2.50 W/90 DEG DWELL
....4	FSLD	9009451	HEAT TUNNEL	EA	2	HTNL-SS -NF-N- - - -	CHAIN RETURN RAIL
....4	FSLD	9012627	HEAT TUNNEL	EA	2	HTNL-SS -NF-N- - - -	CHAIN RETURN RAIL 87.2 HOLE SPACING
....4	FSLD	9014156	SHAFT	EA	1	SHFT-CRS -HP-N- - - -	1.00X071.44 03RR NT
....4	FSLD	9015582	ELECTRICAL (MISC ELECT.MTG BRKTS)	EA	1	ELEC-SS -NF-N- - - -	872C SERIES PROX MOUNT
....4	FSLD	9015583	ROUND SPACER	EA	2	RSPC-CRS -PC-N- - - -	0.41X0.75X0.50
....4	FSLD	9019889	FRAME CROSSMEMBER	EA	1	FRCM-ASSY-PC-Y- - - -	LT BOLT ON CROSSMEMBER
.....5	FSLD	9014823	ROUND SPACER	EA	2	RSPC-CRS -NF-N- - - -	1.28X1.50X2.00
.....5	FSLD	9014825	ROUND SPACER	EA	2	RSPC-CRS -NF-N- - - -	0.63X1.00X2.00
.....5	FSLD	9019893	RECTANGULAR TUBE	EA	1	RCTB-CRS -NF-N- - - -	2.00X4.00X069.88
.....5	FSLD	9019897	PLATE	EA	1	PLTE-CRS -NF-N- - - -	LT 1.00X02.00X069.88 S C 02H 00S NE
.....5	FSLD	9030541	PLATE	EA	1	PLTE-CRS -NF-N- - - -	LT 0.25X00.00X043.50 S N 00H 00S NE
.....5	FSLD	9030542	ROUND SPACER	EA	2	RSPC-CRS -NF-N- - - -	TUBE FRAME INSERT 1/ 2 CLAER 4IN LONG
....4	FSLD	9019896	FRAME CROSSMEMBER	EA	1	FRCM-CRS -PC-N- - - -	LOWER 071.13 Y
....4	FSLD	9019898	PLATE	EA	2	PLTE-CRS -PC-N- - - -	FX 1.00X02.00X045.50 S C 05H 00S NE
....4	FSLD	9021612	PLATE	EA	2	PLTE-CRS -PC-N- - - -	FX 1.00X02.00X042.75 S B 04H 00S NE

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
....4	FSLD	9021665	ASSEMBLY	EA	1	ASSY-CRS -PC-N- - - -	“12’ HEAT TUNNEL MIDDLE FRAME (20’, 24’ O”
.....5	FSLD	9014287	PLATE	EA	2	PLTE-CRS -NF-N- - - -	LT 0.25X02.00X002.00 S N 00H 00S NE
.....5	FSLD	9014841	HEAT TUNNEL	EA	2	HTNL-CRS -NF-N- - - -	RAIL
.....5	FSLD	9014843	PLATE	EA	2	PLTE-CRS -NF-N- - - -	LT 0.38X01.50X009.50 S T 02H 00S NE
.....5	FSLD	9014847	SQUARE TUBE	EA	1	SQTB-SQTB-NF-N- - - -	2.00X040.00
.....5	FSLD	9019841	PLATE	EA	2	PLTE-CRS -NF-N- - - -	FX 0.75X03.00X009.50 S C 04H 00S NE
.....5	FSLD	9019846	PLATE	EA	2	PLTE-CRS -NF-N- - - -	LT 0.75X03.00X009.50 S T 04H 00S NE
.....5	FSLD	9021605	SQUARE TUBE	EA	2	SQTB-SQTB-NF-N- - - -	2.00X017.88
.....5	FSLD	9021666	RECTANGULAR TUBE	EA	1	RCTB-CRS -NF-N- - - -	3.00X6.00X046.50
.....5	FSLD	9021667	RECTANGULAR TUBE	EA	1	RCTB-CRS -NF-N- - - -	3.00X6.00X046.50
....4	FSLD	9026018	ASSEMBLY	EA	2	ASSY-ASSY-NF-N- - - -	TUNNEL ADJUSTING SCREW BASE SUB ASSY
.....5	10	N154410	GEAR BOXES	EA	2	GBX HC 175 A 1:1 *	W/NILOS RINGS ON BOTH OUTPUT BEARINGS
.....5	22	N17322	COUPLINGS	EA	2	CPG LVJY L-090 SOX INSERT11070	
.....5	27	N46927	HARDWARE	EA	2	HWR 3/4 SS SPLIT SET COLLAR	
.....5	36	18136	SPROCKET	EA	4	SPKT ST 40B18X3/4 K&S NF*	PURCHASE W/NO FINISH-SEE SPEC SHEET
.....5	15	4915	BEARINGS	EA	2	“BRG 3/4”” 2-BF”	
.....5	FSLD	9010311	ROUND SPACER	EA	4	RSPC-CRS -HP-N- - - -	1.00X000.13
.....5	FSLD	9013719	ELECTRICAL (BOX)	EA	2	BOX -CRS -NF-N- - - -	CHAIN COVER
.....5	FSLD	9013720	ELECTRICAL (BOX)	EA	4	BOX -CRS -NF-N- - - -	CHAIN COVER
.....5	FSLD	9013725	CHAIN RAIL	EA	2	CHRL-HYFL-NF-N- - - -	CHAIN GUIDE

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
.....5	FSLD	9013726	ROUND SPACER	EA	8	RSPC-SS -NF-N- - - -	0.38X0.28X00.40
.....5	FSLD	9013729	ASSEMBLY	EA	2	ASSY-ASSY-NF-N- - - -	CHAIN TIGHTENER
......6	43	17643	SPRINGS	EA	2	SPRING LEE COMP LC-092H-7 MW	
......6	FSLD	9013730	CHAIN RAIL	EA	2	CHRL-CRS -HP-N- - - -	CHAIN TIGHTENER
......6	FSLD	9013731	PLATE	EA	2	PLTE-CRS -NF-N- - - -	LT 0.10X00.75X001.75 S C 03H 00S NE
.....5	FSLD	9013732	NO DESCRIPTION AVAILABLE	EA	2	DRCL-CHN -NF-N- - - -	139.50 CHN 40HSC
......6	20	90920	CHAIN	IN	279	CHN 40HSC	
.....5	FSLD	9014155	MODIFIED PURCHASE	EA	4	MPUR-MPUR-NF-N--- -	LOVEJOY W/EXTRA SET SCREW TAP
......6	22	N17122	COUPLINGS	EA	4	CPG LVJY L-090 1.00 31296	
.....5	FSLD	9015564	PLATE	EA	2	PLTE-CRS -PC-N- - - -	LT 0.75X04.44X005.50 S C 08H 00S BE
.....5	FSLD	9017892	CHAIN RAIL	EA	4	CHRL-NYLN-NF-N- - - -	CHAIN TIGHTNER BUMPER
.....5	FSLD	9019868	PLATE	EA	4	PLTE-CRS -PC-N- - - -	LT 0.63X05.00X010.50 S C 07H 00S 1E
.....5	FSLD	9019869	ROUND SPACER	EA	2	RSPC-CRS -HP-N- - - -	SCREW COVER
.....5	FSLD	9019894	FRAME CROSSMEMBER	EA	2	FRCM-ASSY-PC-Y- - - -	HOLES 071.25 NBOLT ON CROSSMEMBER
......6	FSLD	9013722	PLATE	EA	2	PLTE-CRS -NF-N- - - -	LT 0.25X01.80X004.63 S T 02H 00S NE
......6	FSLD	9014257	PLATE	EA	2	PLTE-CRS -NF-N- - - -	LT 0.38X00.38X035.00 S T 04H 00S NE
......6	FSLD	9019895	FRAME CROSSMEMBER	EA	2	FRCM-CRS -NF-N- - - -	HOLES 084.06 N SCREW ADJUST CROSSMEMBER
......6	FSLD	9021603	PLATE	EA	2	PLTE-CRS -NF-N- - - -	FX 1.00X02.00X005.00 S N 00H 01S NE
......6	FSLD	9021647	MOUNT	EA	4	MNT -CRS -NF-N- - - -	FX LEG STANDOFF MOUNT
......6	FSLD	9021648	ROUND SPACER	EA	4	RSPC-CRS -NF-N- - - -	1.28X1.50X1.88
.....5	FSLD	9021789	ADJUSTING SCREW	EA	4	ADSC-ACME-QP-N--- -	1.00 RH 0.75X02.86X034.80

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
.....5	FSLD	9021794	ROUND SPACER	EA	2	RSPC-CRS -PC-N- - - -	1.06X2.00X0.50
....4	FSLD	9027142	ASSEMBLY	EA	1	ASSY-ASSY-NF-N- - - -	TUNNEL HOOD GUIDE
.....5	FSLD	9016917	PLATE	EA	2	PLTE-TFLN-NF-N- - - -	FX 0.25X00.56X005.50 S C 03H 00S NE
.....5	FSLD	9016919	PLATE	EA	1	PLTE-CRS -HP-N- - - -	FX 0.38X02.00X001.75 S B 06H 00S NE
.....5	FSLD	9016971	PLATE	EA	1	PLTE-CRS -HP-N- - - -	FX 0.38X01.75X005.50 S B 10H 00S NE
.....5	FSLD	9016974	PLATE	EA	2	PLTE-TFLN-NF-N- - - -	FX 0.25X00.56X002.00 S N 02H 00S NE
.....5	FSLD	9017813	MOUNT	EA	1	MNT -ASSY-HP-Y- - - -	FX TUNNEL HOOD GUIDE MOUNT
......6	FSLD	9017810	PLATE	EA	1	PLTE-CRS -NF-N- - - -	FX 0.50X02.00X002.50 S N 00H 02S NE
......6	FSLD	9017811	PLATE	EA	1	PLTE-CRS -NF-N- - - -	FX 0.63X01.75X007.00 S N 00H 02S NE
.....5	FSLD	9027145	PLATE	EA	1	PLTE-CRS -HP-N- - - -	FX 0.25X04.06X005.50 N B 11H S S NE
.....5	FSLD	9027146	PLATE	EA	1	PLTE-TFLN-NF-N- - - -	FX 0.25X02.81X005.50 S C 05H 00S NE
....4	FSLD	9027143	ASSEMBLY	EA	1	ASSY-ASSY-NF-N- - - -	TUNNEL HOOD GUIDE
.....5	FSLD	9016917	PLATE	EA	2	PLTE-TFLN-NF-N- - - -	FX 0.25X00.56X005.50 S C 03H 00S NE
.....5	FSLD	9016919	PLATE	EA	1	PLTE-CRS -HP-N- - - -	FX 0.38X02.00X001.75 S B 06H 00S NE
.....5	FSLD	9016971	PLATE	EA	1	PLTE-CRS -HP-N- - - -	FX 0.38X01.75X005.50 S B 10H 00S NE
.....5	FSLD	9016974	PLATE	EA	2	PLTE-TFLN-NF-N- - - -	FX 0.25X00.56X002.00 S N 02H 00S NE
.....5	FSLD	9016976	MOUNT	EA	1	MNT -ASSY-HP-Y- - - -	FX TUNNEL HOOD GUIDE MOUNT
......6	FSLD	9016972	PLATE	EA	1	PLTE-CRS -NF-N- - - -	FX 1.00X01.00X004.50 S N 00H 02S NE
......6	FSLD	9016973	PLATE	EA	1	PLTE-CRS -NF-N- - - -	FX 1.00X02.00X003.75 S N 00H 02S NE
.....5	FSLD	9027145	PLATE	EA	1	PLTE-CRS -HP-N- - - -	FX 0.25X04.06X005.50 N B 11H S S NE
.....5	FSLD	9027146	PLATE	EA	1	PLTE-TFLN-NF-N- - - -	FX 0.25X02.81X005.50 S C 05H 00S NE

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
....4	FSLD	9027144	ASSEMBLY	EA	1	ASSY-ASSY-NF-N- - - -	TUNNEL HOOD GUIDE
.....5	FSLD	9016917	PLATE	EA	2	PLTE-TFLN-NF-N- - - -	FX 0.25X00.56X005.50 S C 03H 00S NE
.....5	FSLD	9016919	PLATE	EA	1	PLTE-CRS -HP-N- - - -	FX 0.38X02.00X001.75 S B 06H 00S NE
.....5	FSLD	9016971	PLATE	EA	1	PLTE-CRS -HP-N- - - -	FX 0.38X01.75X005.50 S B 10H 00S NE
.....5	FSLD	9016974	PLATE	EA	2	PLTE-TFLN-NF-N- - - -	FX 0.25X00.56X002.00 S N 02H 00S NE
.....5	FSLD	9016977	MOUNT	EA	1	MNT -ASSY-HP-Y- - - -	FX TUNNEL HOOD GUIDE MOUNT
......6	FSLD	9016972	PLATE	EA	1	PLTE-CRS -NF-N- - - -	FX 1.00X01.00X004.50 S N 00H 02S NE
......6	FSLD	9016973	PLATE	EA	1	PLTE-CRS -NF-N- - - -	FX 1.00X02.00X003.75 S N 00H 02S NE
.....5	FSLD	9027145	PLATE	EA	1	PLTE-CRS -HP-N- - - -	FX 0.25X04.06X005.50 N B 11H S S NE
.....5	FSLD	9027146	PLATE	EA	1	PLTE-TFLN-NF-N- - - -	FX 0.25X02.81X005.50 S C 05H 00S NE
....4	FSLD	9027147	ASSEMBLY	EA	1	ASSY-ASSY-NF-N- - - -	TUNNEL HOOD GUIDE
.....5	FSLD	9016917	PLATE	EA	2	PLTE-TFLN-NF-N- - - -	FX 0.25X00.56X005.50 S C 03H 00S NE
.....5	FSLD	9016919	PLATE	EA	1	PLTE-CRS -HP-N- - - -	FX 0.38X02.00X001.75 S B 06H 00S NE
.....5	FSLD	9016971	PLATE	EA	1	PLTE-CRS -HP-N- - - -	FX 0.38X01.75X005.50 S B 10H 00S NE
.....5	FSLD	9016974	PLATE	EA	2	PLTE-TFLN-NF-N- - - -	FX 0.25X00.56X002.00 S N 02H 00S NE
.....5	FSLD	9017812	MOUNT	EA	1	MNT -ASSY-HP-Y- - - -	FX TUNNEL HOOD GUIDE MOUNT
......6	FSLD	9017810	PLATE	EA	1	PLTE-CRS -NF-N- - - -	FX 0.50X02.00X002.50 S N 00H 02S NE
......6	FSLD	9017811	PLATE	EA	1	PLTE-CRS -NF-N- - - -	FX 0.63X01.75X007.00 S N 00H 02S NE
.....5	FSLD	9027145	PLATE	EA	1	PLTE-CRS -HP-N- - - -	FX 0.25X04.06X005.50 N B 11H S S NE
.....5	FSLD	9027146	PLATE	EA	1	PLTE-TFLN-NF-N- - - -	FX 0.25X02.81X005.50 S C 05H 00S NE
....4	FSLD	9027156	ASSEMBLY	EA	1	ASSY-ASSY-NF-N- - - -	8IN COOLING FAN FOR RH MACHINE NO MOTOR

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
.....5	27	104227	HARDWARE	EA	1	HWR EUCANIA CROSS FLOW BLOWER*	“TG8X32CCW-5/ 8B,FRAGILE-CRUSH PROOF”
.....5	27	104427	HARDWARE	EA	1	HWR EUCANIA TBS8X35.375 *	BAFFLE & SCROLL FOR TG8X32 FAN
.....5	15	4715	BEARINGS	EA	1	“BRG 1/2”” 2-BF”	
.....5	FSLD	9021619	PLATE	EA	1	PLTE-CRS -PC-N- - - -	FX 0.50X01.75X035.44 S N 00H 00S BE
.....5	FSLD	9021622	ROUND TUBE	EA	1	RDTB-SS -NF-N- - - -	0.50X035.44
.....5	FSLD	9021727	STAND-OFF	EA	1	STOF-CRS -PC-N- - - -	10X0.31X04.00 10-24 TAPS
.....5	FSLD	9021774	PLATE	EA	1	PLTE-CRS -PC-N- - - -	FX 0.38X12.00X011.19 S B 09H 00S 1E
.....5	FSLD	9021775	PLATE	EA	1	PLTE-CRS -PC-N- - - -	FX 0.75X02.00X039.50 S C 04H 00S NE
.....5	FSLD	9021777	GUARD	EA	1	GRD -CRS -PC-N- - - -	PUNCHED FAN GAURD
.....5	FSLD	9027148	PLATE	EA	1	PLTE-CRS -PC-N- - - -	FX 0.38X08.00X008.00 S B 13H 00S NE
.....5	FSLD	9027149	PLATE	EA	1	PLTE-CRS -HP-N- - - -	FX 0.38X06.50X006.50 S C 09H 00S NE
.....5	FSLD	9027154	PLATE	EA	1	PLTE-CRS -PC-N- - - -	FX 0.38X12.00X011.19 S B 13H 00S NE
....4	FSLD	9027176	GUARD	EA	1	GRD -CRS -PC-N- - - -	L 0.10 12.34 64.50 2 F RH SCREW ADJSUT
....4	FSLD	9027177	GUARD	EA	1	GRD -CRS -PC-N- - - -	F 0.10 10.57 43.44 2 F RH
....4	FSLD	9027178	GUARD	EA	1	GRD -CRS -PC-N- - - -	L 0.10 10.70 10.94 0 F RH SCREW ADJUST
....4	FSLD	9027179	GUARD	EA	1	GRD -CRS -PC-N- - - -	L 0.10 10.57 13.27 4 F RH
....4	FSLD	9027183	PLATE	EA	2	PLTE-CRS -HP-N- - - -	FX 1.00X05.00X009.00 S B 05H 00S BE
....4	FSLD	9027184	PLATE	EA	1	PLTE-CRS -PC-N- - - -	LT 0.75X04.13X021.75 S C 12H 00S NE
....4	FSLD	9029298	ASSEMBLY	EA	1	ASSY-ASSY-NF-N- - - -	LH CR DISCAHRGE FRAME AND COMPONENTS
.....5	36	N102536	SPROCKET	EA	8	SPKT PL 5S11C 1-1/ 4B KEY&SET *	NYLON FALCON
.....5	15	108915	BEARINGS	EA	2	“BRG 1”” 3-BF”	

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
.....5	36	14336	SPROCKET	EA	2	SPKT ST 50B18TLH NF*	PURCHASE W/NO FINISH-SEE SPEC SHEET
.....5	10	163810	GEAR BOXES	EA	1	GBX HC HI4062G 17.50:1 56C B3*	“1-1/4”” OUTPUT SHAFT”
.....5	53	5953	ADAPTORS	EA	2	ADP 1610 1-1/4 NF*	PURCHASE W/NO FINISH-LPNI @ DOUGLAS
.....5	27	79427	HARDWARE	EA	16	HWR 1-1/4 SET COLLAR	
.....5	FSLD	9010488	RECTANGULAR TUBE	EA	1	RCTB-CRS -PC-N- - - -	2.00X3.00X002.75
.....5	FSLD	9012573	HEAT TUNNEL	EA	2	HTNL-BELT-NF-N- - - -	OUTER CURTAIN LONG PIECE
.....5	FSLD	9012574	HEAT TUNNEL	EA	2	HTNL-BELT-NF-N- - - -	OUTSIDE CURTAIN SHORT PIECE
.....5	FSLD	9014298	MOUNT	EA	1	MNT -CRS -HP-N- - - -	LT MOTOR MOUNT
.....5	FSLD	9015537	MOUNT	EA	1	MNT -CRS -HP-Y- - - -	SL BLOWER MOTOR MOUNT
......6	FSLD	9015533	PLATE	EA	1	PLTE-CRS -NF-N- - - -	LT 0.75X03.00X011.00 S T 04H 00S NE
......6	FSLD	9015534	PLATE	EA	1	PLTE-CRS -NF-N- - - -	LT 0.75X03.00X011.00 S C 04H 00S NE
......6	FSLD	9015535	PLATE	EA	1	PLTE-CRS -NF-N- - - -	LT 0.75X03.00X006.75 S N 00H 00S NE
......6	FSLD	9015536	PLATE	EA	1	PLTE-CRS -NF-N- - - -	LT 0.75X03.00X006.75 S N 00H 00S NE
.....5	FSLD	9015553	GUARD	EA	1	GRD -CRS -PC-N- - - -	U 0.06 17.73 43.50 4 F RHTUNNEL PINCH GU
.....5	FSLD	9015586	ANGLE	EA	1	ANGL-CRS -PC-N- - - -	2.00X2.00X0.25X024.75
.....5	FSLD	9015599	NO DESCRIPTION AVAILABLE	EA	1	BELT-BELT-NF-N- - - -	BLT B-53
......6	16	3416	BELTS	EA	1	BLT B-53	
.....5	FSLD	9017548	GUARD	EA	2	GRD -CRS -PC-N- - - -	U 0.25 00.75 17.40 0 F RH
.....5	FSLD	9017549	GUARD	EA	2	GRD -CRS -PC-N- - - -	U 0.25 00.75 06.50 0 F RH
.....5	FSLD	9018206	PULLEY	EA	1	PLLY-PLLY-NF-N- - - -	BC54 0.88 K&S
......6	33	N85933	PULLEY	EA	1	PLL CA BC42 1-1/8 MAUR NF*	PURCHASE W/NO FINISH-PC @ DOUGLAS

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
.....5	FSLD	9018738	PLATE	EA	1	PLTE-CRS -PC-N- - - -	SL 0.38X02.00X002.50 S T 03H 00S NE
.....5	FSLD	9021710	HEAT TUNNEL	EA	1	HTNL-CRS -PC-Y- - - -	CURTAIN FRAME
......6	FSLD	9003687	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	TUBE
......6	FSLD	9003688	HEAT TUNNEL	EA	2	HTNL-CRS -NF-N- - - -	MOUNT
......6	FSLD	9003690	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	TUBE
......6	FSLD	9012629	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	TUBE FOR CURTAIN FRAME
......6	FSLD	9021711	SQUARE TUBE	EA	2	SQTB-CRS -NF-N- - - -	TUBE
......6	FSLD	9044736	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	TUBE FOR CURTAIN FRAME
.....5	FSLD	9026012	MOUNT	EA	1	MNT -ASSY-HP-Y-Y- - -	AJ TUNNEL CONVEYOR DRIVE GEARBOX MOUNT
......6	FSLD	9026013	PLATE	EA	1	PLTE-CRS -NF-N-Y- - -	SL 0.75X06.00X008.00 S N 00H 04S NE
......6	FSLD	9026014	PLATE	EA	1	PLTE-CRS -NF-N- - - -	LT 1.00X01.25X008.00 S N 00H 00S NE
......6	FSLD	9026015	PLATE	EA	1	PLTE-CRS -NF-N- - - -	HT 0.75X10.00X012.00 S T 05H 00S NE
.....5	FSLD	9026017	NO DESCRIPTION AVAILABLE	EA	1	DRCL-CHN -NF-N- - - -	053.10 CHAIN 50HSC
......6	20	91220	CHAIN	IN	53.1	CHN 50HSC	
.....5	FSLD	9026038	GUARD	EA	1	GRD -CRS -PC-N- - - -	L 0.06 07.00 09.88 0 F RH
.....5	FSLD	9026913	GUARD	EA	1	GRD -CRS -PC-N- - - -	L 0.10 13.76 19.67 2 F RH
.....5	FSLD	9027163	ASSEMBLY	EA	1	ASSY-CRS -PC-Y- - - -	HEAT TUNNEL DISC. FRAME (ALL LENGTHS)
......6	FSLD	9014276	ROUND SPACER	EA	4	RSPC-CRS -NF-N- - - -	0.63X1.00X2.06
......6	FSLD	9014814	ROUND SPACER	EA	2	RSPC-CRS -NF-N- - - -	1.25X1.50X2.00
......6	FSLD	9014816	PLATE	EA	2	PLTE-CRS -NF-N- - - -	LT 0.00X00.00X000.00 S T 01H 00S NE
......6	FSLD	9018715	RECTANGULAR TUBE	EA	1	RCTB-CRS -NF-N- - - -	2.00X4.00X050.00

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
.....6	FSLD	9018716	PLATE	EA	2	PLTE-SS -NF-N- - - -	LT 2.00X04.00X050.00 S T 02H 00S NE
.....6	FSLD	9019841	PLATE	EA	2	PLTE-CRS -NF-N- - - -	FX 0.75X03.00X009.50 S C 04H 00S NE
.....6	FSLD	9019845	PLATE	EA	2	PLTE-CRS -NF-N- - - -	LT 0.25X02.75X005.75 S N 00H 00S NE
.....6	FSLD	9019855	MOUNT	EA	2	MNT -ASSY-PC-Y- - - -	LT LOWER UNIT MOUNT
.....7	FSLD	9019856	PLATE	EA	4	PLTE-CRS -NF-N- - - -	LT 0.38X02.00X002.00 S C 01H 00S NE
.....7	FSLD	9019875	PLATE	EA	2	PLTE-CRS -NF-N- - - -	LT 0.50X02.00X022.00 S B 02H 03S NE
.....6	FSLD	9021604	SQUARE TUBE	EA	2	SQTB-CRS -NF-N- - - -	2.00X024.17
.....6	FSLD	9027161	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	SIDE RAIL
.....6	FSLD	9027162	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	SIDE RAIL
.....6	FSLD	9027196	RECTANGULAR TUBE	EA	1	RCTB-CRS -NF-N- - - -	3.00X6.00X091.25
.....6	FSLD	9027197	RECTANGULAR TUBE	EA	1	RCTB-CRS -NF-N- - - -	3.00X6.00X091.25
.....6	FSLD	9027198	SQUARE TUBE	EA	2	SQTB-SQTB-NF-N- - - -	2.00X024.17
.....6	FSLD	9031384	ROUND SPACER	EA	2	RSPC-CRS -NF-N- - - -	TUBE FRAME INSERT 1/ 2 CLAER 4IN LONG
.....5	FSLD	9027193	HEAT TUNNEL	EA	1	HTNL-SS -NF-N-Y- - -	CHAIN RETURN
.....5	FSLD	9027620	SHAFT	EA	1	SHFT-CRS -HP-N- - - -	1.25X044.65 09IR NT
.....5	FSLD	9027633	GUARD	EA	1	GRD -SM -PC-N- - - -	L 0.00 00.00 25.75 1 F RH
.....5	FSLD	9027643	SCREW BLOCK	EA	1	SCBK-CRS -PC-N- - - -	0.75X1.00X2.00 TAPED SCREW BLOCK
.....5	FSLD	9027648	ASSEMBLY	EA	1	ASSY-ASSY-NF-N--- -DISCHAR	GE HERRINGBONE DECK ASSY
.....6	FSLD	9003455	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- - - -	0.75X024.88
.....6	FSLD	9003456	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- - - -	0.75X017.75
.....6	FSLD	9003457	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- - - -	0.75X012.25

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
.....6	FSLD	9003458	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- - - -	0.75X006.50
.....6	FSLD	9003459	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- - - -	0.75X024.88
.....6	FSLD	9003460	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- - - -	0.75X021.13
.....6	FSLD	9003461	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- - - -	0.75X015.13
.....6	FSLD	9003462	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- - - -	0.75X009.63
.....6	FSLD	9003463	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- - - -	0.75X004.13
.....6	FSLD	9003464	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- - - -	0.75X023.88
.....6	FSLD	9003465	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- - - -	0.75X026.50
.....6	FSLD	9003466	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- - - -	0.75X020.50
.....6	FSLD	9003467	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- - - -	0.75X014.88
.....6	FSLD	9003468	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- - - -	0.75X009.13
.....6	FSLD	9003469	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- - - -	0.75X024.00
.....6	FSLD	9003470	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- - - -	0.75X018.00
.....6	FSLD	9003471	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- - - -	0.75X012.44
.....6	FSLD	9003472	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- - - -	0.75X006.88
.....6	FSLD	9003473	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- - - -	0.75X023.63
.....6	FSLD	9003474	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- - - -	0.75X027.13
.....6	FSLD	9008827	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	12GAX24.35X036.77
.....6	FSLD	9027647	PLATE	EA	2	PLTE-CRS -HP-N- - - -	FX 0.50X02.00X043.63 S B 06H 00S BE
.....5	FSLD	9027649	PLATE	EA	1	PLTE-CRS -HP-N- - - -	SL 0.75X01.50X001.50 S B 03H 00S NE
.....5	FSLD	9027651	HEAT TUNNEL	EA	1	HTNL-CRS -PC-N- - - -	AIR KNIFE ADJUSTMENT INDICATOR MOUNT

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
.....5	FSLD	9027655	PLATE	EA	1	PLTE-CRS -HP-N- - - -	SL 0.75X01.50X002.38 S B 03H 00S NE
.....5	FSLD	9027656	SHAFT	EA	2	SHFT-CRS -HP-N- - - -	0.25X003.00 0000 NT
.....5	FSLD	9027658	ASSEMBLY	EA	1	ASSY-CRS -HP-Y- - - -	ADJUSTMENT SLIDE ROD
......6	FSLD	9027657	PLATE	EA	1	PLTE-CRS -NF-N- - - -	SL 0.50X00.50X001.25 S T 01H 00S NE
......6	FSLD	9027660	SHAFT	EA	1	SHFT- -NF-N- - - -	0.50X044.50 0000 ST
.....5	FSLD	9027659	SLIDE BLOCK	EA	1	SLBL-CRS -HP-N- - - -	01.00X01.75X03.00
.....5	FSLD	9027669	BLOCK	EA	1	BLCK-CRS -PC-N- - - -	GUIDE BLOCK
.....5	FSLD	9027670	SHAFT	EA	1	SHFT-CRS -HP-N- - - -	0.50X008.38 0000 ST
.....5	FSLD	9027671	ARM	EA	2	ARM -CRS -HP-N- - - -	0.50X0.63X03.31 ARM WITH SLOT AND MILLOU
.....5	FSLD	9027672	SHAFT	EA	2	SHFT-CRS -HP-N- - - -	0.38X011.50 0000 NT
.....5	FSLD	9030543	GUARD	EA	1	GRD -SM -PC-N- - - -	U 0.06 05.46 27.25 2 F LH
.....5	FSLD	9030545	GUARD	EA	1	GRD -SM -PC-N- - - -	U 0.06 05.46 27.25 2 F RH
.....5	FSLD	9030547	GUARD	EA	1	GRD -SM -PC-N- - - -	L 0.10 06.52 26.25 1 F RH
.....5	FSLD	9030548	GUARD	EA	1	GRD -SM -PC-N- - - -	L 0.10 18.00 26.25 1 F RH
.....5	FSLD	9032514	PLATE	EA	1	PLTE-CRS -PC-N- - - -	FX 0.50X02.50X003.00 S B 04H 00S NE
....4	FSLD	9029299	ASSEMBLY	EA	1	ASSY-ASSY-NF-N- - - -	INFEED FRAME
.....5	36	N102536	SPROCKET	EA	18	SPKT PL 5S11C 1-1/ 4B KEY&SET *	NYLON FALCON
.....5	15	109015	BEARINGS	EA	4	“BRG 1-1/4”” 3-BF”	
.....5	27	79427	HARDWARE	EA	36	HWR 1-1/4 SET COLLAR	
.....5	FSLD	9003426	PLATE	EA	2	PLTE-CRS -HP-N- - - -	LT 0.75X01.50X044.63 N T 05H S NE
.....5	FSLD	9003428	SHAFT	EA	1	SHFT-CRS -HP-N- - - -	0.75X044.63 01IR NT

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
.....5	FSLD	9003429	PLATE	EA	2	PLTE-SS -PC-N- - - -	LT 0.75X01.50X044.63 S T 09H 00S BE
.....5	FSLD	9003430	MOUNT	EA	3	MNT -CRS -PC-N- - - -	LT MOUNTING BRACKET
.....5	FSLD	9003431	HEAT TUNNEL	EA	1	HTNL-SS -NF-N- - - -	10GAX12.50X037.00
.....5	FSLD	9009403	HEAT TUNNEL	EA	1	HTNL-SS -NF-N- - - -	CHAIN RETURN
.....5	FSLD	9009404	HEAT TUNNEL	EA	1	HTNL-SS -NF-N- - - -	CHAIN RETURN GUIDE
.....5	FSLD	9010464	PLATE	EA	1	PLTE-CRS -PC-N- - - -	FX 0.50X00.75X039.00 S T 04H 00S NE
.....5	FSLD	9010477	SHAFT	EA	1	SHFT-CRS -HP-N- - - -	1.25X043.25 01IR NT
.....5	FSLD	9012573	HEAT TUNNEL	EA	2	HTNL-BELT-NF-N- - - -	OUTER CURTAIN LONG PIECE
.....5	FSLD	9012574	HEAT TUNNEL	EA	2	HTNL-BELT-NF-N- - - -	OUTSIDE CURTAIN SHORT PIECE
.....5	FSLD	9015553	GUARD	EA	1	GRD -CRS -PC-N- - - -	U 0.06 17.73 43.50 4 F RHTUNNEL PINCH GU
.....5	FSLD	9021611	HEAT TUNNEL	EA	2	HTNL-SS -NF-N- - - -	CHAIN RETURN RAIL
.....5	FSLD	9021710	HEAT TUNNEL	EA	1	HTNL-CRS -PC-Y- - - -	CURTAIN FRAME
.....6	FSLD	9003687	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	TUBE
.....6	FSLD	9003688	HEAT TUNNEL	EA	2	HTNL-CRS -NF-N- - - -	MOUNT
.....6	FSLD	9003690	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	TUBE
.....6	FSLD	9012629	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	TUBE FOR CURTAIN FRAME
.....6	FSLD	9021711	SQUARE TUBE	EA	2	SQTB-CRS -NF-N- - - -	TUBE
.....6	FSLD	9044736	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	TUBE FOR CURTAIN FRAME
.....5	FSLD	9024869	MOUNT	EA	2	MNT -SS -PC-N- - - -	FX COOLING FAN
.....5	FSLD	9024879	ROUND SPACER	EA	2	RSPC-SS -NF-N- - - -	1.00X0.41X0.75
.....5	FSLD	9024888	HEAT TUNNEL	EA	1	HTNL-SS -NF-N- - - -	COOLING FAN AIR DEFLECTOR

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
.....5	FSLD	9027159	ASSEMBLY	EA	1	ASSY-ASSY-PC-Y- - - -	HEAT TUNNEL INFD FRAME (ALL LENGTHS)
......6	FSLD	9014809	STAND-OFF	EA	4	STOF-CRS -NF-N- - - -	1/2X1.00X01.73
......6	FSLD	9014834	HEAT TUNNEL	EA	2	HTNL-CRS -NF-N- - - -	RAIL
......6	FSLD	9014835	PLATE	EA	2	PLTE-CRS -NF-N- - - -	LT 0.25X02.00X002.00 S N 00H 00S NE
......6	FSLD	9014836	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	FRAME CROSSMEMBER
......6	FSLD	9018259	FRAME CROSSMEMBER	EA	1	FRCM-CRS -PC-N- - - -	LOWER 038.00 N
......6	FSLD	9019843	RECTANGULAR TUBE	EA	1	RCTB-CRS -NF-N- - - -	3.00X6.00X051.25
......6	FSLD	9019844	RECTANGULAR TUBE	EA	1	RCTB-CRS -NF-N- - - -	3.00X6.00X051.25
......6	FSLD	9019845	PLATE	EA	2	PLTE-CRS -NF-N- - - -	LT 0.25X02.75X005.75 S N 00H 00S NE
......6	FSLD	9019846	PLATE	EA	2	PLTE-CRS -NF-N- - - -	LT 0.75X03.00X009.50 S T 04H 00S NE
......6	FSLD	9019876	PLATE	EA	2	PLTE-CRS -NF-N- - - -	
......6	FSLD	9021609	SQUARE TUBE	EA	2	SQTB-CRS -NF-N- - - -	2.00X017.88
......6	FSLD	9021610	SQUARE TUBE	EA	2	SQTB-SQTB-NF-N- - - -	2.00X022.71
......6	FSLD	9027157	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	FRAME SIDE PLATE
......6	FSLD	9027158	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	FRAME SIDE PLATE
.....5	FSLD	9027634	GUARD	EA	1	GRD -CRS -PC-N- - - -	U 0.06 07.04 13.00 3 F RH
.....5	FSLD	9027635	GUARD	EA	1	GRD -CRS -PC-N- - - -	U 0.06 07.04 13.00 3 F RH
.....5	FSLD	9027649	PLATE	EA	1	PLTE-CRS -HP-N- - - -	SL 0.75X01.50X001.50 S B 03H 00S NE
.....5	FSLD	9027651	HEAT TUNNEL	EA	1	HTNL-CRS -PC-N- - - -	AIR KNIFE ADJUSTMENT INDICATOR MOUNT
.....5	FSLD	9027655	PLATE	EA	1	PLTE-CRS -HP-N- - - -	SL 0.75X01.50X002.38 S B 03H 00S NE
.....5	FSLD	9027656	SHAFT	EA	2	SHFT-CRS -HP-N- - - -	0.25X003.00 0000 NT

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
.....5	FSLD	9027658	ASSEMBLY	EA	1	ASSY-CRS -HP-Y- - - -	ADJUSTMENT SLIDE ROD
......6	FSLD	9027657	PLATE	EA	1	PLTE-CRS -NF-N- - - -	SL 0.50X00.50X001.25 S T 01H 00S NE
......6	FSLD	9027660	SHAFT	EA	1	SHFT- -NF-N- - - -	0.50X044.50 0000 ST
.....5	FSLD	9027659	SLIDE BLOCK	EA	1	SLBL-CRS -HP-N- - - -	01.00X01.75X03.00
.....5	FSLD	9027669	BLOCK	EA	1	BLCK-CRS -PC-N- - - -	GUIDE BLOCK
.....5	FSLD	9027670	SHAFT	EA	1	SHFT-CRS -HP-N- - - -	0.50X008.38 0000 ST
.....5	FSLD	9027671	ARM	EA	2	ARM -CRS -HP-N- - - -	0.50X0.63X03.31 ARM WITH SLOT AND MILLOU
.....5	FSLD	9027672	SHAFT	EA	2	SHFT-CRS -HP-N- - - -	0.38X011.50 0000 NT
...3	FSLD	9029297	ASSEMBLY	EA	1	ASSY-ASSY-NF-N- - - -	12FT S LH LOWERUNIT AND COMPONETS
....4	60	14860	HEATERS	EA	1	HEATER 18 FIREBAR 2-1-11-1-X *	460-480V 72000W WATLOW
....4	FSLD	9003606	HEAT TUNNEL	EA	3	HTNL-CRS -HP-N- - - -	HERRINGBONE TUBE
....4	FSLD	9009436	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	INSULATION BOX
....4	FSLD	9009437	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	INSULATION COVER
....4	FSLD	9009439	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	
....4	FSLD	9009440	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	INSULATION COVER
....4	FSLD	9012648	HEAT TUNNEL	EA	2	HTNL-INSL-NF-N- - - -	INSULATION LOWER UNIT SMALLER END CAP
.....5	99	126999	MISCELLANEOUS	SI	960	MSC FIBERGLASS INSULATION *	“2LB DENSITY 1””X48””X44””
....4	FSLD	9012653	HEAT TUNNEL	EA	2	HTNL-INSL-NF-N- - - -	INSULATION LOWER UNIT END CAP
.....5	99	126999	MISCELLANEOUS	SI	2688	MSC FIBERGLASS INSULATION *	“2LB DENSITY 1””X48””X44””
....4	FSLD	9014692	ANGLE	EA	1	ANGL-CRS -HP-N- - - -	1.00X0.75X0.06X095.25 PINCH GUARD ANGLE
....4	FSLD	9014693	ANGLE	EA	1	ANGL-CRS -HP-N- - - -	1.00X0.81X0.06X095.25 PINCH GUARD ANGLE

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
....4	FSLD	9014696	ANGLE	EA	1	ANGL-CRS -HP-N- - - -	1.00X0.75X0.06X095.25 PINCH GUARD ANGLE
....4	FSLD	9014697	ANGLE	EA	1	ANGL-CRS -HP-N- - - -	1.00X0.81X0.06X095.25 PINCH GUARD ANGLE
....4	FSLD	9014698	ANGLE	EA	2	ANGL-CRS -HP-N- - - -	901490.75X0.06X047.25 PINCH GUARD ANGLE
....4	FSLD	9014699	ANGLE	EA	2	ANGL-CRS -HP-N- - - -	1.00X0.81X0.06X047.25 PINCH GUARD ANGLE
....4	FSLD	9021669	ASSEMBLY	EA	1	ASSY-ASSY-NF-N- - - -	4FT LOWER UNIT EXTENSION NO AIR LANES
.....5	FSLD	9004735	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	12GAX15.48X048.00 SIDE PANEL
.....5	FSLD	9007523	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	12GAX48.75X059.80 BOTTOM PAN
.....5	FSLD	9007524	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	12GAX41.84X056.24 PLENUM DIVIDER
.....5	FSLD	9007525	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	12GAX15.48X048.00 SIDE PANEL
.....5	FSLD	9007529	HEAT TUNNEL	EA	1	HTNL-CRS -CE-N- - - -	16GAX04.48X041.80 END PANEL
.....5	FSLD	9007530	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	16GAX08.84X048.00 SIDE SUPPORT
.....5	FSLD	9007535	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	16GAX03.12X047.90 AIR KNIFE SCROLL
.....5	FSLD	9007536	HEAT TUNNEL	EA	2	HTNL-CRS -NF-N- - - -	16GAX04.07X047.87 SIDE AIR KNIFE
.....5	FSLD	9007539	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	16GAX03.05X035.00 HERRINGBONE SPLICE
.....5	FSLD	9007549	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	12GAX02.50X037.00 SPLICE PLATE
.....5	FSLD	9007550	HEAT TUNNEL	EA	2	HTNL-CRS -NF-N- - - -	16GAX03.00X005.90 SPLICE PLATE
.....5	FSLD	9007556	HEAT TUNNEL	EA	1	HTNL- -NF-N- - - -	16GAX04.76X059.59 SIDE PANEL
.....5	FSLD	9007557	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	16GAX04.76X059.59 SIDE PANEL
.....5	FSLD	9007558	HEAT TUNNEL	EA	2	HTNL-CRS -NF-N- - - -	16GAX12.95X049.18 COVER
.....5	FSLD	9007559	HEAT TUNNEL	EA	2	HTNL-CRS -NF-N- - - -	16GAX02.86X049.80 GASKET RETAINER
.....5	FSLD	9009469	HEAT TUNNEL	EA	2	HTNL-CRS -NF-N- - - -	16GAX02.86X08.55 GASKET RETAINER

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
.....5	FSLD	9010466	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	16GAX03.12X047.90 AIR KNIFE SCROLL
.....5	FSLD	9011899	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	16GAX08.84X048.00 SIDE SUPPORT
.....5	FSLD	9012645	HEAT TUNNEL	EA	4	HTNL-INSL-NF-N- - - -	INSULATION FOR 4' EXTENSION
......6	99	126999	MISCELLANEOUS	SI	1152 0	MSC FIBERGLASS INSULATION *	"2LB DENSITY 1""X48""X44""
.....5	FSLD	9014124	HEAT TUNNEL	EA	20	HTNL-CRS -NF-N- - - -	16GAX01.00X020.81 BAFFLE FOR SR3
.....5	FSLD	9021670	HEAT TUNNEL	EA	3	HTNL-CRS -NF-N- - - -	16GAX05.30X047.98 LANE DIVIDER NO AIR LA
.....5	FSLD	9021671	HEAT TUNNEL	EA	3	HTNL-CRS -NF-N- - - -	16GAX05.30X047.98 LANE DIVIDER
.....5	FSLD	9021672	PLATE	EA	4	PLTE-CRS -NF-N- - - -	FX 0.06X05.38X042.00 S C 06H 00S NE
.....5	FSLD	9021673	ASSEMBLY	EA	1	ASSY-ASSY-NF-N- - - -	"ASSY, 4' HERRINGBONE DECK NO AIR LANES"
......6	FSLD	9005778	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- - - -0	.06X019.26HERRINGBONE TUBE
......6	FSLD	9005779	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- - - -0	.75X013.71HERRINGBONE TUBE
......6	FSLD	9005780	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- - - -	0.75X008.17HERRINGBONE TUBE
......6	FSLD	9005781	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- - - -0	.75X022.03HERRINGBONE TUBE
......6	FSLD	9005782	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- - - -0	.75X016.48HERRINGBONE TUBE
......6	FSLD	9005783	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- - - -0	.75X010.94HERRINGBONE TUBE
......6	FSLD	9005784	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- - - -0	.75X005.39HERRINGBONE TUBE
......6	FSLD	9005785	SQUARE TUBE	EA	16	SQTB-CRS -HP-N- - - -	0.75X024.80HERRINGBONE TUBE
......6	FSLD	9005786	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- - - -0	.75X020.74HERRINGBONE TUBE
......6	FSLD	9005787	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- - - -0	.75X015.20HERRINGBONE TUBE
......6	FSLD	9005788	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- - - -0	.75X009.65HERRINGBONE TUBE

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
.....6	FSLD	9005789	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- - - -	0.75X004.11HERRINGBONE TUBE
.....6	FSLD	9005790	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- - - -0	.75X023.52HERRINGBONE TUBE
.....6	FSLD	9005791	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- - - -0	.75X017.97HERRINGBONE TUBE
.....6	FSLD	9005792	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- - - -	0.75X012.43HERRINGBONE TUBE
.....6	FSLD	9005793	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- - - -	0.75X006.88HERRINGBONE TUBE
.....6	FSLD	9007541	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- - - -0	.75X002.50HERRINGBONE TUBE
.....6	FSLD	9021674	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	16GAX39.09X047.90HERRINGBONE PLATE NO AI
.....5	FSLD	9027164	HEAT TUNNEL	EA	2	HTNL-CRS -HP-N- - - -	“INNER TUBE, AIR KNIFE FLOW CONTROL”
.....5	FSLD	9027165	HEAT TUNNEL	EA	2	HTNL-CRS -LP-N- - - -	“OUTER TUBE, AIR KNIFE FLOW CONTROL”
.....5	FSLD	9027654	HEAT TUNNEL	EA	2	HTNL-CRS -NF-N- - - -	AIR KNIFE FLOW CONTROL HOLD DOWN
.....5	FSLD	9027675	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	0.10X002.41X003.93 SHEETMETAL AIR KNIFE
.....5	FSLD	9027676	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	0.10X002.41X003.93
.....5	FSLD	9027677	PLATE	EA	2	PLTE-CRS -HP-N- - - -	FX 0.88X00.39X000.38 S C 02H 00S NE
....4	FSLD	9024845	HEAT TUNNEL	EA	2	HTNL-CRS -NF-N- - - -	PINCH GUARD END CAP
....4	FSLD	9024846	PLATE	EA	10	PLTE-BRNZ-NF-N- - - -	SL 0.38X02.00X001.25 S C 02H 00S NE
....4	FSLD	9024860	GUARD	EA	6	GRD -ASSY-HP-N- - - -	U 0.06 16.14 46.00 2 F RH PINCH GUARD
.....5	FSLD	9024861	GUARD	EA	6	GRD -CRS -NF-N- - - -	U 0.06 16.25 48.00 1 F RH PINCH GUARD FR
.....5	FSLD	9024862	GUARD	EA	6	GRD -CRS -NF-N- - - -	U 0.06 16.14 46.00 0 F RH PINCH GUARD SC
....4	FSLD	9024863	HEAT TUNNEL	EA	2	HTNL-CRS -NF-N- - - -	PINCH GUARD END CAP
....4	FSLD	9024868	PLATE	EA	1	PLTE-CRS -HP-N- - - -	FX 0.25X01.00X002.25 S B 06H 00S NE
....4	FSLD	9026020	ASSEMBLY	EA	1	ASSY-ASSY-NF-N- - - -	LOWER UNIT BLOWER

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
.....5	FSLD	9005798	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	12GAX21.53X031.25 VENTED SHROUD
.....5	FSLD	9007521	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	16GAX14.00X020.26 HEATER DRAWER COVER
.....5	FSLD	9010425	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	HEATER DRAWER END CAP
.....5	FSLD	9011892	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	12GAX21.53X031.26 VENTED SHROUD
.....5	FSLD	9012521	PLATE	EA	1	PLTE-CRS -NF-N- - - -	FX 0.06X07.00X017.00 S C 02H 16S NE
.....5	FSLD	9012551	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	FAN GAURD W/ BELT CUTOUT
.....5	FSLD	9029295	ASSEMBLY	EA	1	ASSY-ASSY-NF-N- - - -	LOWER UNIT BLOWER MINOR
......6	53	50653	ADAPTORS	EA	1	ADP 35X60 RFN 7012 *	NICKEL PLATED
......6	FSLD	9003712	MODIFIED PURCHASE	EA	1	MPUR-ALUM-NF-N- - - -	“10”””” CW FAN BLADE”
.......7	27	N92627	HARDWARE	EA	1	“HWR FAN BLADE 10””DIAMETER CW *”	27 DEGREE PITCH ACMEMIAMI 3106
......6	FSLD	9003713	HUB	EA	1	HUB -CRS -HP-N- - - -	“HUB FOR 10”””” FAN BLADE”
......6	FSLD	9005728	MODIFIED PURCHASE	EA	1	MPUR-ALUM-NF-N- - - -	“10”””” CCW FAN BLADE”
.......7	27	N93727	HARDWARE	EA	1	“HWR FAN BLADE 10””DIAMETER CCW*”	27 DEGREE PITCH ACMEMIAMI 3116
......6	FSLD	9017895	NO DESCRIPTION AVAILABLE	EA	2	GRDM-SS -NF-N- - - -	NF GREASE GUARD
......6	FSLD	9018207	NO DESCRIPTION AVAILABLE	EA	1	MPR -ASSY-NF-N- - - -	MODIFIED LTG FAN
.......7	27	91827	HARDWARE	EA	1	HWR LTG VQH250/ 925 RLW BLOWER*	“10”” DIA X 36.4”” LONG WHEEL”
......6	FSLD	9027503	PULLEY	EA	1	PLLY-CRS -HP-N- - - -	PULLEY BH-58 WITH BORE FOR 35X60 RFN
......6	FSLD	9027504	HUB	EA	1	HUB -CRS -HP-N- - - -	“HUB FOR 10”””” FAN BLADE”
....4	FSLD	9026023	ROUND TUBE	EA	1	RDTB-ALUM-NF-N- - - -	
.....5	28	16828	LUBE SYSTEM	FT	1	LUBE 629509STR TUBE 3/8 SS *	20 FT STRAIGHT LENGTH LINC

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
....4	FSLD	9027168	ASSEMBLY	EA	1	ASSY-ASSY-NF-N- - - -	8’ LOWER UNIT FOR 12FT W/O ENERGY CHANNE
.....5	FSLD	9002852	SQUARE TUBE	EA	4	SQTB-CRS -HP-N- - - -	1.00X040.00 HEATER DRAWER SLIDE
.....5	FSLD	9005759	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	16GAX11.89X093.90 SIDE SUPPORT
.....5	FSLD	9005763	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	12GAX11.72X041.63
.....5	FSLD	9005764	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	16GAX09.09X036.50 FAN SHROUD
.....5	FSLD	9005797	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	16GAX11.35X35.25 AIR DEFLECTOR
.....5	FSLD	9010459	HEAT TUNNEL	EA	2	HTNL-CRS -NF-N- - - -	16GAX04.03X95.78 SIDE AIR KNIFE
.....5	FSLD	9010460	HEAT TUNNEL	EA	2	HTNL-CRS -NF-N- - - -	16GAX03.12X095.78 AIR KNIFE SCROLL
.....5	FSLD	9011894	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	16GAX11.89X093.90 SIDE SUPPORT
.....5	FSLD	9012456	CLIP	EA	1	CLIP-CRS -NF-N- - - -	12GAX03.78X008.00 HEATER MOUNTING CLIP
.....5	FSLD	9012545	CLIP	EA	2	CLIP-CRS -NF-N- - - -	12GAX03.81X011.00 FAN MOUNTING CLIP
.....5	FSLD	9014121	PLATE	EA	2	PLTE-CRS -NF-N- - - -	LT 0.06X03.00X007.25 N C 03H 00S NESLOT
.....5	FSLD	9014122	HEAT TUNNEL	EA	3	HTNL-CRS -NF-N- - - -	16GAX08.40X095.15 AIR LANE DIVIDER FOR 6
.....5	FSLD	9014123	HEAT TUNNEL	EA	3	HTNL-CRS -NF-N- - - -	16GAX08.40X095.15 AIR LANE DIVIDER
.....5	FSLD	9014124	HEAT TUNNEL	EA	42	HTNL-CRS -NF-N- - - -	16GAX01.00X020.81 BAFFLE FOR SR3
.....5	FSLD	9014262	ASSEMBLY	EA	1	“ASSY-ASSY-NF-N---ASSY, 8”	‘ HERRINGBONE DECK FOR LOW SPEED
......6	FSLD	9005778	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- - - -0	.06X019.26HERRINGBONE TUBE
......6	FSLD	9005779	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- - - -0	.75X013.71HERRINGBONE TUBE
......6	FSLD	9005780	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- - - -	0.75X008.17HERRINGBONE TUBE
......6	FSLD	9005781	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- - - -0	.75X022.03HERRINGBONE TUBE

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
.....6	FSLD	9005782	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- ---0	.75X016.48HERRINGBONE TUBE
.....6	FSLD	9005783	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- ---0	.75X010.94HERRINGBONE TUBE
.....6	FSLD	9005784	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- ---0	.75X005.39HERRINGBONE TUBE
.....6	FSLD	9005785	SQUARE TUBE	EA	41	SQTB-CRS -HP-N- - - -	0.75X024.80HERRINGBONE TUBE
.....6	FSLD	9005786	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- ---0	.75X020.74HERRINGBONE TUBE
.....6	FSLD	9005787	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- ---0	.75X015.20HERRINGBONE TUBE
.....6	FSLD	9005788	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- ---0	.75X009.65HERRINGBONE TUBE
.....6	FSLD	9005789	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- - - -	0.75X004.11HERRINGBONE TUBE
.....6	FSLD	9005790	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- ---0	.75X023.52HERRINGBONE TUBE
.....6	FSLD	9005791	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- ---0	.75X017.97HERRINGBONE TUBE
.....6	FSLD	9005792	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- - - -	0.75X012.43HERRINGBONE TUBE
.....6	FSLD	9005793	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- - - -	0.75X006.88HERRINGBONE TUBE
.....6	FSLD	9005794	SQUARE TUBE	EA	1	SQTB-CRS -HP-N- ---0	.75X002.30HERRINGBONE TUBE
.....6	FSLD	9014263	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	16GAX39.09X95.90HERRINGBONE PLATE STD HO
.....5	FSLD	9015590	HEAT TUNNEL	EA	2	HTNL- -NF-N- - - -	118.00 TADPOLE GASKET U-SHAPED
.....6	99	N135799	MISCELLANEOUS	IN	332	MSC 0.50X1.75 FIBERGL TADPOLE*	8815K24
.....5	FSLD	9018759	ASSEMBLY	EA	1	“ASSY-ASSY-NF-N- ---ASSY,”	8’ LOWER UNIT INSULATION PACKAGE
.....6	18	N183618	FASTENERS	EA	6	FS SO CO 1/4 TURN RECEPTACLE *	85-35-295-20 SS RIVET
.....6	FSLD	9005754	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	12GAX33.48X096.00 SIDE RAIL
.....6	FSLD	9005756	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	12GAX29.97X053.17 FAN/HEATER SUPPORT
.....6	FSLD	9005757	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	PLENUM DIVIDER

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
.....6	FSLD	9005758	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	12GAX16.31X041.62 PLENUM DIVIDER
.....6	FSLD	9005767	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	16GAX04.76X047.59 UPPER SIDE PANEL
.....6	FSLD	9007543	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	12GAX48.00X048.99 LOWER PANEL
.....6	FSLD	9007544	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	12GAX16.72X060.00 FRONT PANEL
.....6	FSLD	9007545	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	BOTTOM SKIN
.....6	FSLD	9007547	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	16GAX16.07X032.66 INSULATION BOX
.....6	FSLD	9007548	HEAT TUNNEL	EA	2	HTNL-CRS -NF-N- - - -	16GAX09.59X024.80 COVER
.....6	FSLD	9007554	HEAT TUNNEL	EA	2	HTNL-CRS -NF-N- - - -	16GAX02.86X097.80 GASKET RETAINER
.....6	FSLD	9007555	HEAT TUNNEL	EA	2	HTNL-CRS -NF-N- - - -	16GAX10.95X037.30 COVER
.....6	FSLD	9008845	PLATE	EA	2	PLTE-CRS -HP-N- - - -	LT 0.38X01.00X020.00 S T 03H 00S NE
.....6	FSLD	9009460	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	INSULATION CUP
.....6	FSLD	9009461	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	INSULATION CUP
.....6	FSLD	9009462	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	INSULATION CUP
.....6	FSLD	9009464	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	INSULATION CUP
.....6	FSLD	9009465	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	INSULATION CUP
.....6	FSLD	9009466	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	INSULATION CUP
.....6	FSLD	9009469	HEAT TUNNEL	EA	4	HTNL-CRS -NF-N- - - -	16GAX02.86X08.55 GASKET RETAINER
.....6	FSLD	9009470	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	16GAX16.07X032.66 INSULATION BOX
.....6	FSLD	9009495	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	INSULATION CUP
.....6	FSLD	9011896	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	16GAX04.76X047.59 UPPER SIDE PANEL
.....6	FSLD	9011898	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	12GAX33.48X096.00 SIDE RAIL

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
.....6	FSLD	9012640	HEAT TUNNEL	EA	2	HTNL- -NF-N- - - -	INSULATION LOWER UNIT 2IN THICK
.....7	99	126999	MISCELLANEOUS	SI	8012	MSC FIBERGLASS INSULATION *	“2LB DENSITY 1””X48””X44””
.....6	FSLD	9012641	HEAT TUNNEL	EA	2	HTNL-INSL-NF-N- - - -	INSULATION LOWER UNIT 2IN THICK
.....7	99	126999	MISCELLANEOUS	SI	5956	MSC FIBERGLASS INSULATION *	“2LB DENSITY 1””X48””X44””
.....6	FSLD	9012642	HEAT TUNNEL	EA	2	HTNL-INSL-NF-N- - - -	INSULATION LOWER UNIT 1IN THICK
.....7	99	126999	MISCELLANEOUS	SI	5760	MSC FIBERGLASS INSULATION *	“2LB DENSITY 1””X48””X44””
.....6	FSLD	9012643	HEAT TUNNEL	EA	4	HTNL-INSL-NF-N- - - -	INSULATION LOWER UNIT
.....7	99	126999	MISCELLANEOUS	SI	2400	MSC FIBERGLASS INSULATION *	“2LB DENSITY 1””X48””X44””
.....6	FSLD	9012644	HEAT TUNNEL	EA	2	HTNL-INSL-NF-N- - - -	INSULATION LOWER UNIT 1IN THICK
.....7	99	126999	MISCELLANEOUS	SI	2352	MSC FIBERGLASS INSULATION *	“2LB DENSITY 1””X48””X44””
.....6	FSLD	9012647	HEAT TUNNEL	EA	6	HTNL-INSL-NF-N- - - -	INSULATION ABOVE HEATER DRAWER 1IN THICK
.....7	99	126999	MISCELLANEOUS	SI	3456	MSC FIBERGLASS INSULATION *	“2LB DENSITY 1””X48””X44””
.....6	FSLD	9012652	HEAT TUNNEL	EA	6	HTNL-INSL-NF-N- - - -	INSULATION LOWER UNIT SIDE
.....7	99	126999	MISCELLANEOUS	SI	4812	MSC FIBERGLASS INSULATION *	“2LB DENSITY 1””X48””X44””
.....6	FSLD	9014126	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	12GAX26.22X046.34 TOP LOWER SIDE PANEL
.....6	FSLD	9014127	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	12GA LOWER SIDE PANEL
.....6	FSLD	9014128	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	12GA LOWER SIDE PANEL
.....6	FSLD	9014129	HEAT TUNNEL	EA	1	HTNL-CRS -NF-N- - - -	12GA TOP LOWER SIDE PANEL
.....5	FSLD	9018760	ROUND SPACER	EA	2	RSPC-CRS -HP-N- - - -	9/32X00.80
.....5	FSLD	9018761	PLATE	EA	4	PLTE-CRS -NF-N- - - -	FX 0.02X05.38X065.00 S C 08H 00S NE

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
.....5	FSLD	9027164	HEAT TUNNEL	EA	4	HTNL-CRS -HP-N- - - -	“INNER TUBE, AIR KNIFE FLOW CONTROL”
.....5	FSLD	9027165	HEAT TUNNEL	EA	4	HTNL-CRS -LP-N- - - -	“OUTER TUBE, AIR KNIFE FLOW CONTROL”
.....5	FSLD	9027646	HEAT TUNNEL	EA	2	HTNL-CRS -NF-N- - - -	AIR KNIFE FLOW CONTROL HOLD DOWN 8FT
.....5	FSLD	9027675	HEAT TUNNEL	EA	2	HTNL-CRS -NF-N- - - -	0.10X002.41X003.93 SHEETMETAL AIR KNIFE
.....5	FSLD	9027676	HEAT TUNNEL	EA	2	HTNL-CRS -NF-N- - - -	0.10X002.41X003.93
.....5	FSLD	9027677	PLATE	EA	4	PLTE-CRS -HP-N- - - -	FX 0.88X00.39X000.38 S C 02H 00S NE
.....5	FSLD	9027678	SLUG	EA	2	SLUG-CRS -HP-N- - - -	0.88X01.00 AIR KNIFE FLOW CONTROL 8FT SP
...3	FSLD	9032712	ELEVATOR CHANNEL	EA	1	ELCH-ASSY-PC-Y- - - -	ELECTRICAL CABINET W/ ANGLE IRON MOUNTS
....4	FSLD	9021601	ANGLE	EA	4	ANGL-CRS -NF-N- - - -	2X2X0.25X002.00 W/ 3/8 TAP
..2	FSLD	9033400	NO DESCRIPTION AVAILABLE	EA	1	SIDE FILM STAND ASSY 221	LH 2 ROLL SIDE FILM STAND WITH SPLICE BA
...3	FSLD	9009032	MOUNT	EA	1	MNT -CRS -PC-Y- - - -	LT MODULAR TUBING SPLICE BAR MOUNT LH O
....4	FSLD	9009012	STAND-OFF	EA	8	STOF-CRS -NF-N- - - -	.50X1.00X04.00 1/2-13NC BOTH ENDS
....4	FSLD	9009031	RECTANGULAR TUBE	EA	2	RCTB-CRS -NF-N- - - -	2.00X4.00X026.00 W/4 1.00 DIA HOLES
....4	FSLD	9009048	RECTANGULAR TUBE	EA	1	RCTB-CRS -NF-N- - - -	2.00X4.00X048.75 FOR MODULAR SPLICE BAR
....4	FSLD	9016704	PLATE	EA	4	PLTE-CRS -NF-N- - - -	SL 0.19X01.75X003.75 S N 00H 00S NE
....4	FSLD	9016716	ROUND SPACER	EA	4	RSPC-CRS -NF-N- - - -	.34X0.75X04.00
...3	FSLD	9009065	ASSEMBLY	EA	1	ASSY-ASSY-NF-N- - - -	SIDE FILM REGULATORS AND VALVES (3 BANK)
...3	FSLD	9011843	ASSEMBLY	EA	1	ASSY-ASSY-NF-N- - - -	SPLICE BAR
....4	43	10943	SPRINGS	EA	2	SPRING MYERS X14-2-13	

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
....4	92	11592	NO DESCRIPTION AVAILABLE	EA	2	PIN -SS - -N- - - -	0.38 DIA X 2.06 W/ MILLED FLAT CENTER
....4	92	11692	NO DESCRIPTION AVAILABLE	EA	1	PLTE-CRS - -N- - - -	LT 0.50X00.68X001.25 S C 02H 00S 1E 9/32
....4	92	11792	NO DESCRIPTION AVAILABLE	EA	1	PLTE-CRS - -N- - - -	LT 0.25X01.25X002.50 S T 06H 00S NE W/2
....4	92	11892	NO DESCRIPTION AVAILABLE	EA	2	PLTE-CRS - -N- - - -	HT 0.25X02.50X003.00 S C 04H 00S NE GUID
....4	92	11992	NO DESCRIPTION AVAILABLE	EA	1	PLTE-CRS - -N- - - -	HT 0.38X02.50X003.50 N B 05H 00S NE W/1/
.....5	15	29715	BEARINGS	EA	1	BRG 3/8X1/2X3/8 OLT P38-3	
....4	92	12092	NO DESCRIPTION AVAILABLE	EA	1	PLTE-CRS - -N- - - -	HT 0.38X02.50X003.50 N B 04H 00S NE
.....5	15	29715	BEARINGS	EA	1	BRG 3/8X1/2X3/8 OLT P38-3	
....4	92	12192	NO DESCRIPTION AVAILABLE	EA	2	PLTE-CRS - -N- - - -	HT 0.38X01.50X002.62 S C 03H 00S NE W/BB
.....5	15	29715	BEARINGS	EA	2	BRG 3/8X1/2X3/8 OLT P38-3	
....4	92	13192	NO DESCRIPTION AVAILABLE	EA	1	BLCK-ALUM- -N- - - -	1.25X01.25X004.38
....4	92	1492	NO DESCRIPTION AVAILABLE	EA	2	SW PLUG TENSIONER A468A272	
.....5	17	32517	TOOLING	EA	2	DP #8-32 R-1185-2 HELI COIL	
....4	92	15692	NO DESCRIPTION AVAILABLE	EA	1	GDE -SS - -N- - - -	NF 16GAX1.28(INSIDE)X5.5 0 U-SHAPED
....4	92	8592	NO DESCRIPTION AVAILABLE	EA	1	WIRE-WIRE- -Y- - - -	20GA 34.31 W/BRONZE TABS
.....5	FNUM	F0000	NO DESCRIPTION AVAILABLE	EA	1	ENGINEERING DRAWING REFERENCE	20GA 34.31 W/BRONZE TABS
....4	FSLD	9018227	MODIFIED PURCHASE	EA	2	MPUR-MPUR-NF-N--- -N21834	VITON 70A DUR
....4	92	9092	NO DESCRIPTION AVAILABLE	EA	1	SPBR-ALUM- -N- - - -	044.44 UPPER STD
....4	92	9192	NO DESCRIPTION AVAILABLE	EA	1	SPBR-ALUM- -N- - - -	033.25 UPPER STD
....4	92	9292	NO DESCRIPTION AVAILABLE	EA	1	PLTE-ALUM- -N- - - -	HT 1.25X01.25X043.81 N B 10H 00S 1E

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
...3	FSLD	9027506	MOUNT	EA	1	MNT -CRS -PC-N- - - -	LT 3 BANK PNUEMATICS GUAGE MNT 12GAX7.81
...3	FSLD	9027513	ASSEMBLY	EA	2	ASSY-CRS -PC-Y-Y- - -	SPINDLE BOX MOUNT GUARD
....4	FSLD	9027511	GUARD	EA	2	GRD -CRS -PC-N- - - -	F 0.06 10.75 25.24 4 F RH SPINDLE BOX MN
....4	FSLD	9027512	GUARD	EA	2	GRD -CRS -PC-N- - - -	F 0.06 06.47 09.00 0 F RHSPINDLE BOX MNT
...3	FSLD	9030529	ASSEMBLY	EA	2	ASSY-ASSY-NF-N- - - -	INLINE SINGLE ROLL FILM SPINDLE AND STAN
....4	99	N142999	MISCELLANEOUS	EA	2	“MSC GOLDENROD 3””ODX37.562LONG*”	W/5 RUBBER LEDGE EXPANDERS
....4	27	N30327	HARDWARE	EA	2	HWR 5100-177 SNAP RING TRUARC	
....4	15	N66915	BEARINGS	EA	4	BRG 6209 2Z 45X85X19 SKF	
....4	92	12492	NO DESCRIPTION AVAILABLE	EA	2	RSPC-RDTB- -N- - - -	1.78X2.25X6.38
....4	92	15792	NO DESCRIPTION AVAILABLE	EA	2	RSPC-ALUM- -N- - - -	0.53X2.50X3.50 AIR SHAFT NOSE CONE
....4	92	18692	NO DESCRIPTION AVAILABLE	EA	2	ELEC-ALUM- -N- - - -	“6.50”” DIA. SW LOW FILM STD REF MNT”
.....5	17	21717	TOOLING	EA	2	DP 3/8-16 R1185-6 HELI COIL	
....4	21	18821	CLUTCHES	EA	2	CLH 827823 S-450 BRAKE NEXEN *	25MM BORE WITH LOCO FRICTION FACINGS
....4	92	8992	NO DESCRIPTION AVAILABLE	EA	2	BHUB-RDTB- -N- - - -	3.00X06.00X8.19
....4	FSLD	9030528	MOUNT	EA	2	MNT -CRS -PC-Y- - - -	LT STACKABLE FILM SPINDLE MOUNT 9.50X10
.....5	FSLD	9005933	PLATE	EA	2	PLTE-CRS -NF-N- - - -	LT 0.50X10.00X009.50 S C 04H 00S NE FILM
.....5	FSLD	9009051	PLATE	EA	2	PLTE-CRS -NF-N- - - -	LT 0.50X09.00X011.00 S C 09H 00S NE FILM
.....5	FSLD	9009053	PLATE	EA	2	PLTE-CRS -NF-N- - - -	LT 0.06X17.30X25.24 N N 10H 1SS NEFILM
.....5	FSLD	9030527	PLATE	EA	4	PLTE-CRS -NF-N- - - -	LT 0.50X06.00X011.00 S T 04H 00S NE GUSS
...3	FSLD	9032705	ASSEMBLY	EA	1	ASSY-ASSY-NF-N- - - -	45 DEGREE WIREWAY HMI ASSY

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
....4	FSLD	9024148	ELECTRICAL (MISC ELECT.MTG BRKTS)	EA	1	ELEC-MPUR-PC-N- - - -	“4””””” WIREWAY F44WP COVER 3975 W/ (3) 3/4”””
.....5	75	3975	WIREWAYS	EA	1	WWY F44WP CLOSURE	
....4	FSLD	9024149	ELECTRICAL (MISC ELECT.MTG BRKTS)	EA	1	ELEC-MPUR-PC-N- - - -	“4.00X3””””” LONG F44WH3 WIREWAY (N4475) W/”
.....5	75	N4475	WIREWAYS	EA	1	WWY F44WN3 NIPPLE	
....4	FSLD	9032706	GUARD	EA	1	GRD -CRS -PC-N- - - -	F 0.25 09.25 16.00 0 F RH FRONTSPLICE BA
...3	FSLD	9041087	NO DESCRIPTION AVAILABLE	EA	1	SIDE FILM STAND FRAME 220	CRS-MODULAR SIDE FILM STAND FRAME (LH OR
....4	FSLD	9041088	SQUARE TUBE	EA	2	SQTB-CRS -NF-Y- - - -	4.00X022.00 (1) 3/4 INSERT
.....5	FSLD	9009014	STAND-OFF	EA	2	STOF-CRS -NF-N- - - -	.38X0.75X04.00 WITH BLIND 3/8 TAP ON BOT
.....5	FSLD	9041089	SQUARE TUBE	EA	2	SQTB-CRS -NF-N- - - -	4.00X022.00 (1) 3/4 DIA HOLE
....4	FSLD	9041090	PLATE	EA	2	PLTE-CRS -NF-N- - - -	LT 0.10X01.44X003.44 S N 00H 00S NE
....4	FSLD	9041091	RECTANGULAR TUBE	EA	1	RCTB-CRS -NF-Y- - - -	LOWER 043.06 N WITH FRAME LEG TUBE ON (1
.....5	FSLD	9041092	RECTANGULAR TUBE	EA	1	RCTB-CRS -NF-N- - - -	2.00X4.00X043.25 WITH CURVED END FOR FRA
....4	FSLD	9041093	RECTANGULAR TUBE	EA	1	RCTB-CRS -NF-Y- - - -	HOLES 043.88 Y 2X4 TUBING (4) 3/8-16 (4)
.....5	FSLD	9009014	STAND-OFF	EA	2	STOF-CRS -NF-N- - - -	.38X0.75X04.00 WITH BLIND 3/8 TAP ON BOT
.....5	FSLD	9016706	STAND-OFF	EA	3	STOF-CRS -NF-N- - - -	.50X1.00X02.00
.....5	FSLD	9021772	PLATE	EA	1	PLTE-CRS -NF-N- - - -	FX 2.00X04.00X003.06 S B 05H 00S NE
.....5	FSLD	9041094	RECTANGULAR TUBE	EA	1	RCTB-CRS -NF-N- - - -	2.00X4.00X039.63 WITH (5) 1 DIA HOLES
....4	FSLD	9041095	RECTANGULAR TUBE	EA	1	RCTB-CRS -NF-Y- - - -	LOWER 022.19 Y WITH FILM ROLL PLATE AND
.....5	FSLD	9009011	PLATE	EA	2	PLTE-CRS -NF-N- - - -	LT 0.50X10.00X009.50 S T 04H 00S NE FILM
.....5	FSLD	9041096	RECTANGULAR TUBE	EA	1	RCTB-CRS -NF-N- - - -	4.00X6.00X022.19 (1) 2.00 DIA HOLES

PS Level	Class	Item	General Description	U/M	QTY	Detailed Description	Extended Description
....4	FSLD	9041097	PLATE	EA	1	PLTE-CRS -NF-N- - - -	LT 0.10X03.56X005.56 S N 00H 00S NE
..2	FSLD	9033404	ASSEMBLY	EA	1	ASSY-ASSY-NF-N- - - -	3.50 TALL SIDE FILM STAND ROLLERS (2)
...3	FSLD	9007296	ASSEMBLY	EA	2	ASSY-ASSY-NF-N- - - -	1.25X36.00 DANCER BAR ROLLER W/BRGS AND
....4	15	N116115	BEARINGS	EA	4	BRG 8MMX22MMX7MM ROLLERSKATE *	MINI-LOGO (NEED TO ORDER 20 PACKS OF 8)
....4	27	N99427	HARDWARE	EA	4	HWR .631-.138-.335 CONE MNT *	SILICONE MOUNT STOCKCAP 552620
....4	FSLD	9007289	COLLAR	EA	4	CLR -NYLN-NF-N- - - -	DANCER BAR BEARING MOUNT
....4	FSLD	9007295	ROLLER	EA	2	RLLR-SS -NF-N- - - -	1.25X36.00 DANCER BAR TUBE
...3	FSLD	9033460	MOUNT	EA	2	MNT -SS -NF-N- - - -	FX TRANSITION ROLLER MOUNT 3.50 HIGH ROL
..2	FSLD	9033478	ASSEMBLY	EA	1	ASSY-ASSY-NF-N- - - -	LH TURNING BAR ASSEMBLY
...3	FSLD	9033473	PLATE	EA	1	PLTE-CRS -HP-N- - - -	AJ 0.38X06.00X009.50 S T 01H 02S NE
...3	FSLD	9033474	ANGLE	EA	1	ANGL-CRS -PC-N- - - -	4.00X4.00X0.25X004.88
...3	FSLD	9033475	HEAT TUNNEL	EA	1	HTNL-SS -NF-Y- - - -	TURNING BAR
....4	FSLD	9009405	ROUND TUBE	EA	1	RDTB-SS -NF-N- - - -	1.50X052.15 TURNING BAR TUBE
....4	FSLD	9033476	MOUNT	EA	2	MNT -SS -NF-N- - - -	LT TURNING BAR MOUNT