Aagard Machine Manual

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Aagard

Redefining The Standard

The Aagard Group, LLC

by The Aagard Group, LLC

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Section 1

Introduction, Safety, Installation and Training

Introduction, Safety, Installation and Training

Machinery System Serial #194
Right-Hand Knockdown Case Packer System

Thank You for your decision to purchase an ***Aagard*** automated machinery system.

We sincerely appreciate your confidence in our designs, and promise to further enhance that confidence with our technical and customer support.

We are confident our efficient designs and an emphasis on customer satisfaction will enable us to provide you with state of the art ***Aagard*** automated machinery systems for any of your future projects.

NOTE: Some items listed in this manual may not pertain to your Aagard system.

Please contact us for further assistance.

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Documentation Accuracy Statement

While every precaution has been taken in the preparation of this document, the publisher and the authors assume no responsibility for errors or omissions, or for damages resulting from the use of information contained in this document.

NOTE: Some screen shots displayed within this documentation may appear slightly different than actual due to differences in operating system platforms and user screen settings

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Printed Documentation

Printed documentation, when purchased, includes but is not limited to machine manuals, electrical drawings, spare parts lists and bill of materials.
Printed documentation is not updated in printed format. Updates to documentation are made available in electronic format only!

For the most current version of machine manuals, drawings and files, go to www.aagardmanuals.com and open the electronic version of the machine manual.
To obtain a username and password for aagardmanuals.com, please ask your supervisor to contact the Aagard service team at service@aagard.com to request access.

NOTE: A valid email address is required

Operator Training

Training

Recommended Materials for Class Participants:

- Training Topics and Completion Sheet
- Find and print the entire Sequence of Operation section in the Machine Operator Manual in PDF

Required Materials for Instructors:

- Detailed Training Topics and Completion Sheet

Training Overview

During Operator Training, you will...

- Learn how to use the Aagard Machine Manual
- Load materials required to run production
- Learn the location of the following:
  - Emergency Stop Buttons
  - Air Dump
  - High Voltage Disconnect
  - Operator Stations
- Follow lock out and tag out procedures
- Identify the meaning of stack light colors
- Identify the meaning of warning horn sounds
- Login to the Human Machine Interface (HMI)
  - Note that not all buttons are visible or enabled for all users
- Review alarm displays and navigation
- Start and stop the machine
- Clear jams
- Operate the machine in production
- Jog any device on machine
- Adjust machine to different product sizes by performing product changeover
- Have a complete understanding of mechanical adjustments
- Adjust HMI glue settings
- Confirm servo reference position settings

At the conclusion of training, you will be tested on...

- Locating and loading materials
- Showing e-stop, air dump, and high voltage disconnect locations
- Safely starting and stopping machine
- Operating machine during production
- Changing the machine from one product size to another
- Jogging a device
- Referencing a device
- Find the definition for a field on a data screen
- Find cause and remedy for an alarm
- Find device on machine using device list
- Find device on electrical drawings

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Pre-requisites for training...

- English language skills, or through customer-provided translator
- Ability to lift up to 50 pounds

NOTE: Please remember that hands-on training is the most effective method!
NOTE: Times listed in training topics are for reference only; actual times will vary greatly based on class size and skill level

How To Use This Manual

Training - Level 1

The purpose of *How To Use This Manual* is to demonstrate features of the electronic version of the Aagard Machine Manual.

Within these topics, you will learn:

- what the main sections of the manual are and what is included in them
- navigation tips and tricks
- how to access supplemental documentation
- how to use search features
- how to use the manual with supplemental documentation
- how to access Aagard Machine Manuals over the internet
- how to access the Troubleshooting Guide

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Main Sections of the Manual

Training - Level 1

The Aagard Machine Manual contains the following main topics:

Introduction, Safety, Installation and Training

The topics in this section present general safety considerations, installation and power-up instructions, and a training curriculum

Machine Description, Specifications and Operation

The topics in this section present basic operating instructions, the device list, the sequence of operation, servo reference images, and as-built documentation, such as the bill of materials and software license codes

Operator Control Panel (HMI)

The topics in this section provide a description of the screens on the HMI (Human Machine Interface)

Changeover Adjustments

The topics in this section provide a pictorial and written description of each changeover location on this machinery system

Troubleshooting and Maintenance

The topics in this section provide troubleshooting tips, a preventive maintenance schedule including lubrication, and maintenance routine instructions

NOTE: Some machinery systems use a separate Troubleshooting Guide, providing access either from a button in the HMI or from within the machine manual

Spare Parts, Drawings and Manuals

This topic presents links to supporting files not contained in this manual, including links to the Spare Parts List - Bill of Materials, Electrical Drawings, Balloon Drawings and select manufacturers' eManuals. When viewed, these files may be printed or saved to a new location.

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Navigation

Training - Level 1

Many hyperlinks, hotspots, and navigation tools are utilized in the electronic version of the Aagard Machine Manual, making navigation easy and bringing information more quickly to the user.

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Navigating Through Training Topics

Training - Level 1

Training is embedded in the Aagard Machine Manual.

The best way to navigate through training is to use the and buttons located in the upper right-hand corner of the topic title bar. Clicking the button will move to the next topic listed in the table of contents, while clicking the button will move to the previous topic listed in the table of contents.

During training, navigation may take the user away from the training topics. Use the browser back button to retrace your steps through the training topics. Of course, if you remember where you were, you may click on the topic directly in the table of contents.

Remember to use these buttons while moving through the Trainers Manual topics as well!

Try me!

NOTE: Read these instructions completely before trying, as following them will take you away from this page!

1) Make note of the selected or high-lighted topic in the table of contents
2) Click the icon in the upper right-hand corner of the topic title bar
3) Note that the next topic in the table of contents is now selected or highlighted
4) Click the to return to this topic

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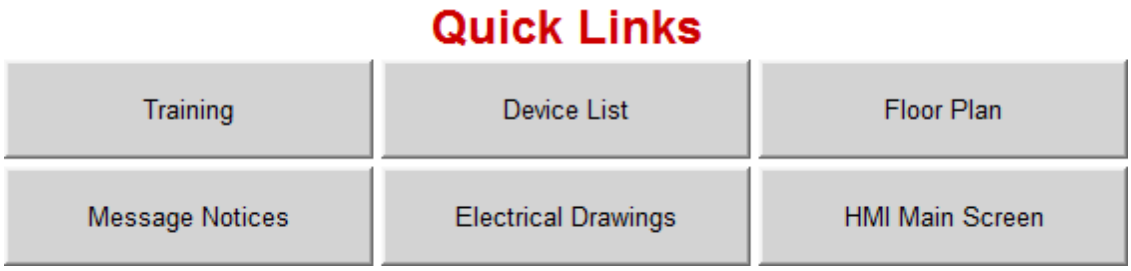
Quick Links

Training - Level 1

A group of quick links appears on the front page of the Aagard Machine Manual. These buttons link to the topics shown on the button face and may be used to navigate quickly to commonly visited topics.



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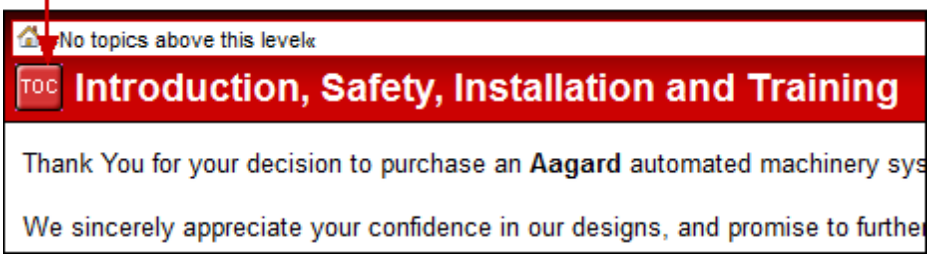
Hide and Expand Tree

Training - Level 1

NOTE: This feature is not available on Windows CE browsers (Allen-Bradley)

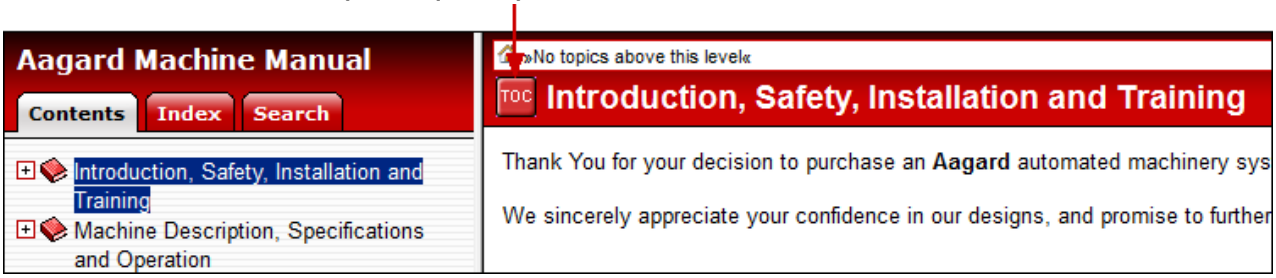
On certain topics, the viewable area may be too small. Click on the TOC button to hide the Table of Contents.

View with Table of Contents hidden



Click on the TOC button again to expand the Table of Contents.

View with Table of Contents expanded (default)



Try me!

1) Click on the TOC button in the upper left-corner of the topic title bar
2) Click it again to expand the tree

NOTE: On older manuals, this button will be located next to the topic navigation buttons in the upper right-corner of the topic title bar, as shown below

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Toggles Button

Training - Level 1

A number of topics use toggles to display expandable text and images. The mouse cursor will change from an arrow to a pointing hand when it is over a toggle that can be clicked.

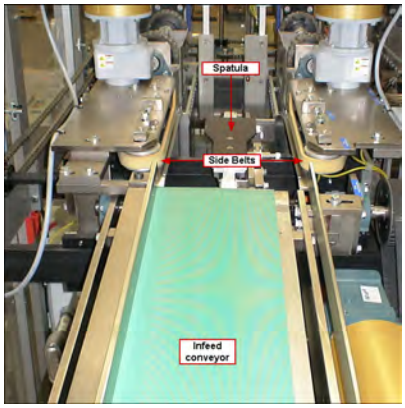
- Expandable text is formatted the same as a hyperlink. When the expandable text is clicked, instead of navigating to another topic or displaying a popup, text immediately beneath the expandable text is displayed. Click the link again, and the expandable text is hidden.
- When an image is a toggle, click on the image to enlarge it. Click on the image again to minimize it.

Try me!

1) Click on each of the examples below to expand and minimize the text or image.

- Click here to expand Example 1

Click on the Expandable Text Example 1 to minimize this example!



An image may be used as a toggle. When an image is a toggle, click on the image to enlarge it. Click on the image again to minimize it.

When expandable text is used on a topic, the icon will become enabled.

This icon is displayed in the upper right-hand corner of the topic title bar. Click it to expand or minimize all instances of expandable text. When expandable text or images are already expanded, clicking this button will minimize them.

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Try me!

1) Click on the icon in the upper right-hand corner of the topic title bar
2) Click it again to minimize all expandable text and image instances

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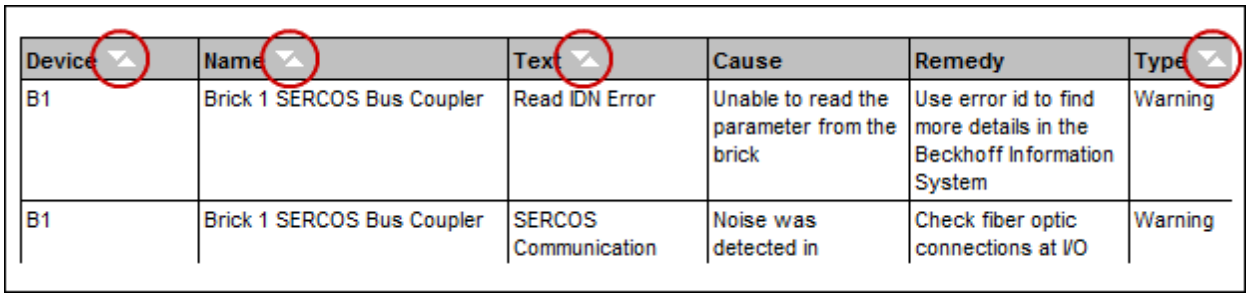
Sorting in Tables

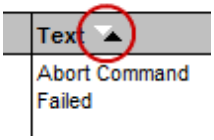
Training - Level 1

Some tables are setup to allow for sorting of content. The light-colored up/down arrows indicate that column may be sorted. Click on an up/down arrow or a column title to sort that column in ascending order. Click on the arrows or column title again to sort in descending order.



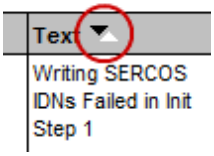
Device	Name	Text	Cause	Remedy	Type
B1	Brick 1 SERCOS Bus Coupler	Read IDN Error	Unable to read the parameter from the brick	Use error id to find more details in the Beckhoff Information System	Warning
B1	Brick 1 SERCOS Bus Coupler	SERCOS Communication	Noise was detected in	Check fiber optic connections at I/O	Warning

Icon indicates sorting in ascending order



Text
Abort Command Failed

Icon indicates sorting in descending order



Text
Writing SERCOS IDNs Failed in Init Step 1

Try me!

1) Click on a column title or up/down arrow and see results
   a) Note that Column 3 is intentionally set to be not sortable

Column 1	Column 2	Column 3 (not sortable)	Column 4
1	G	This feature enables...	76
2	D	Use search to...	78
3	R	Another way...	35

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Secondary Table of Contents

Training - Level 1

Some topics use a secondary table of contents through specially formatted text. When this feature is available, the icon will become enabled. This icon is displayed in the upper right-hand corner of the topic title bar.

Try me!

1) Click on the icon in the upper right-hand corner of the topic title bar
2) When the list appears, select an item from the list
   a) Note that the page jumps to the correct position
   b) Some browsers may momentarily flash the text to more quickly direct your eye
3) Select another item
4) Click in an open space in the topic window to hide the secondary table of contents list
   a) Optionally click to hide this list

Section One

Item One
Text from item one may appear here.

Item Two
Text from item two may appear here.

Item Three
Text from item three may appear here.

Section Two

Item Four
Text from item four may appear here.

Item Five
Text from item five may appear here.

Item Six
Text from item six may appear here.

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Training Points

Training - Level 1

Many topics in the Operator Control Panel (HMI) section of the Aagard Machine Manual include training points at the top of the topic. These training points detail items which should be addressed during training, specific to the current topic.

Try me!

1) Click on the link below.

Training Points

General Page Information

Training - Level 1

Many of the topics in the Operator Control Panel (HMI) section of the Aagard Machine Manual include expandable text with information applicable to the current page.

Try me!

1) Click on the link below.

General Page Information

The text displayed here is not specific to any button navigation, button function, or definition of a field on the page. Rather, this text is general information which may include a brief overview of how the HMI page might be used.

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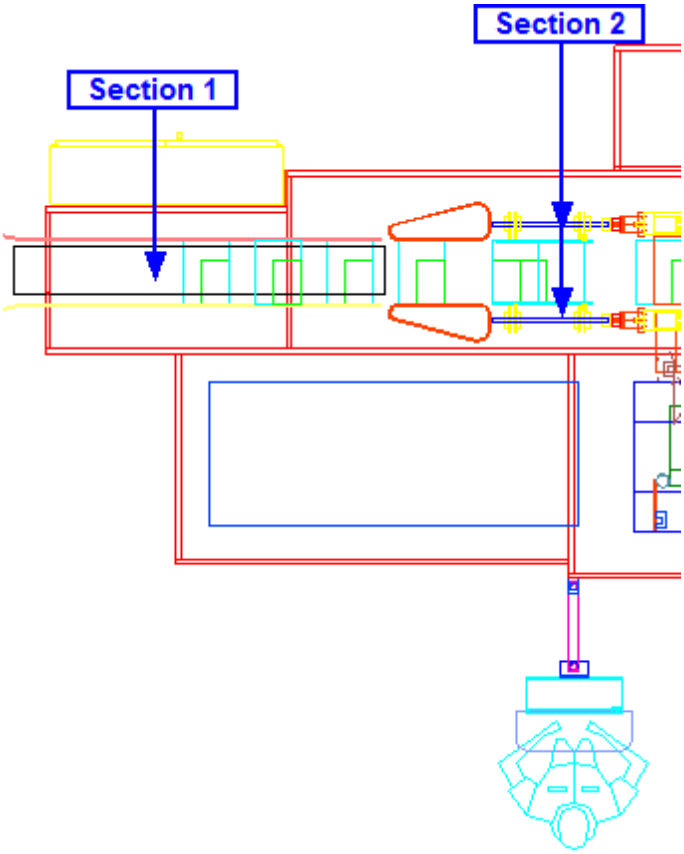
Sequence of Operation Hotspots

Training - Level 1

The Sequence of Operation topic in Aagard Machine Manuals developed after March 2011 will display a top view drawing of the machine with callouts and hotspots linking to the individual machine sections detailed in the Sequence of Operation.

Try me!

1) Click on an image callout to view the Sequence of Operation for that particular section. The mouse cursor will change from an arrow to a pointing hand when it is over a hotspot that can be clicked. This is a Sequence of Operation callout: Callout



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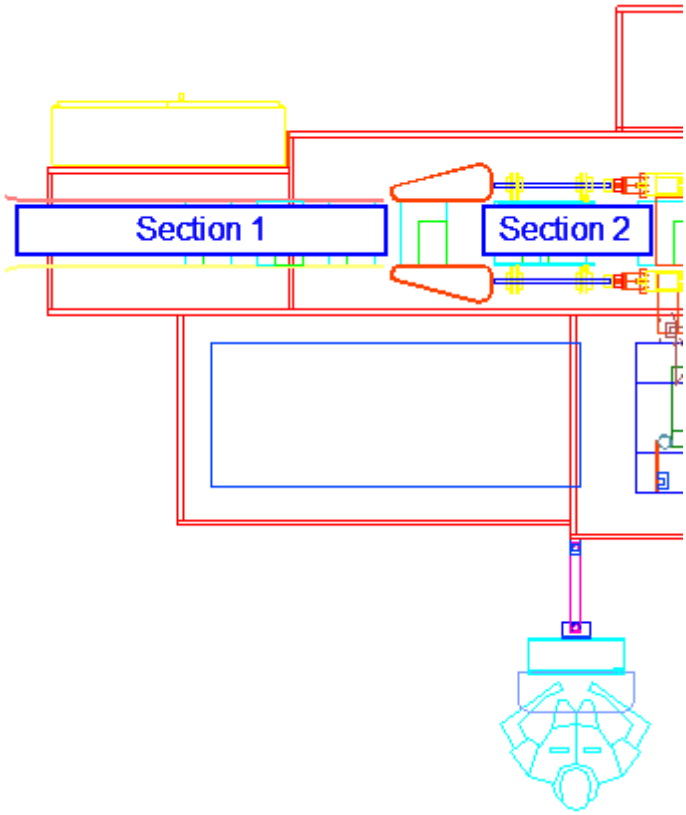
Training - Level 1

Depending on how many sections are included in the Sequence of Operation, the hotspots may be called out in the image as follows.



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Device List

Training - Level 1

Quick link buttons are provided at the top of the Device List. When a particular button is clicked, the screen will jump to the first device of that type in the table. For example, if the PX-Prox button is clicked, the screen will advance down to the first prox device listed in the table.

PE - Photo Eye | PX - Prox | SM - Servo Motor | SV - Solenoid Valve

Try me!

1) Click on a button to jump to the selected type of device
2) Scroll back to the top of the page, or press Ctrl+Home to jump to the top of the page
3) Click another button

A quick way to learn where the device is located on the machine is to click the link in the Map column. Clicking this link will display a top-view drawing of the machine, with a bullseye indicating a general location of where the device is located on the machine. Using the HMI as a vantage point, the device can quickly be located on the machine. Additionally, the prefix of the grid location indicates in which C40, or on which floor plan, the device is located. In the example shown in the table below, "S" indicates the device is in the Sleever.

Type	Number	Name	Mounted Location	Message Location	Aagard Part #	Brick Slice Point	I/O Type	Map
Photo Eye	PE00001	High Surge Lane 1 Upstream	Sleever Infeed	Sleever Infeed	Z0123440	B1 S19 P1	Input-Digital	S_G2
Prox	PX00001	Timing Screw 1	Sleever Infeed	Sleever Infeed	Z0130542	B1 S9 P1	Input-Digital	S_G8
Servo Motor	SM00	Timing Screw 1	Sleever Infeed	Sleever Infeed	Z0144194			S_G6
Solenoid Valve	SV00001	System Air Dump	Sleever Infeed	Sleever Infeed	Z0000016			S_G6

Try me!

1) Click on a Map location to display a top-view drawing of the machine
   a) The bullseye shown in the drawing indicates a general location of where the device is physically located on the machine

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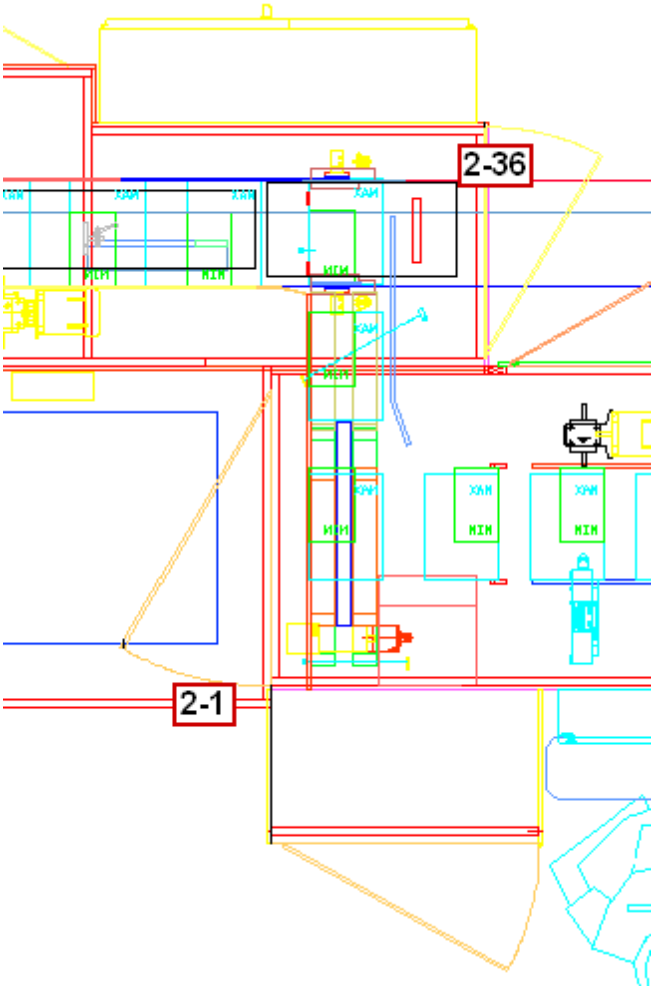
Changeover Adjustments

Training - Level 1

Helpful navigation links are provided in the Changeover topics. A top-view drawing of the machine is shown, with callouts indicating the location of the changeovers on the machine. A hotspot covers each of the callouts which, when clicked, will bring the user to a picture of an area of the machine. The mouse cursor will change from an arrow to a pointing hand when it is over a hotspot that can be clicked. This is a changeover callout: 2-1



Try me!

1) Click on a callout in the image above

Servo Reference Positions

Training - Level 1

Within the Servo Reference table, the **Servo Name** column provides a link that, when clicked, will display a detailed picture of the drive in its referenced position. Additionally, the **Servo #** column provides a link to a floor plan drawing showing the location of the servo reference indicators.

Servo #	Servo Name	Direction of Positive Movement	Probe Position	Ref. Position	Ref. Mark Position	Reference Mark Location
SM00	Spatula	Toward downstacker flights	3	-0.55	0	Upstream edge of spatula is 4-3/8" from the upstream edge of the spatula mounting plate

Try me!

1) To see a visual inspection guide for this servo drive, click on "Spatula", the servo name in the table above

Try me!

1) To see a "map" location for this servo reference location, click on "SM00", the servo number in the table above

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Supplemental Documentation

Training - Level 1

Links to a number of supplemental documents are provided in the Aagard Machine Manual. Most of the supplemental documentation is provided in the PDF file type.

As-Built Documentation
External Documents

Follow the links below for some helpful tools when working with PDF files.

Printing from PDF
Saving PDF Files

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As-Built Documentation

Training - Level 1

Included in this manual are as-built documents. These documents include:

Specification Sheet

The Specification Sheet contains information about which features and components are included on the machinery system, and details exceptions to the Aagard Equipment Standard.

Click on Sample Specification Sheet to view a sample table of contents of a Specification Sheet. When finished viewing the sample, click on the *As-Built Documentation* topic in the table of contents tree to redisplay this topic.

Aagard Equipment Standard

The Aagard Equipment Standard details the mechanical and electrical standards followed by Aagard during design and construction of the machinery system.

Click on Sample Aagard Equipment Standard to view a sample document. When finished viewing the sample, click on the *As-Built Documentation* topic in the table of contents tree to redisplay this topic.

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External Documents

Training - Level 1

Links to a number of external PDF documents are included in the Aagard Machine Manual.

Spare Parts List

The spare parts list includes Aagard part numbers, part descriptions, pricing, and lead-time information

1) Click on Sample Spare Parts & Bill of Materials to view a sample document
2) When finished viewing the sample, click on the *External Documents* topic in the table of contents tree to redisplay this topic

NOTE: In newer manuals, the Bill of Materials and Spare Parts List are combined into one PDF

Electrical Drawings

The electrical drawings, or prints, contain schematic information for the machine.

1) Click on Sample Electrical Drawings to view a sample document
2) When finished viewing the sample, click on the *External Documents* topic in the table of contents tree to redisplay this topic

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2D Balloon Drawings

2D Balloon Drawings contain two-dimensional assembly drawings along with a bill of materials for each drawing.

1) Click on Sample 2D Balloon Drawings to view a sample document
2) When finished viewing the sample, click on the *External Documents* topic in the table of contents tree to redisplay this topic

---

PDF Version of Aagard Machine Manual

To ease printing, a PDF version of this document is provided. Please note that hotspot and popup features of the Aagard Machine Manual are not available in the PDF version.

1) Click on Sample PDF Version of Aagard Machine Manual to view a sample document
2) When finished viewing the sample, click on the *External Documents* topic in the table of contents tree to redisplay this topic

---

Select eManuals

When machines are so equipped, links to select eManuals, such Nordson Glue System, Marsh Printer, or Domino Printer are provided as a courtesy.

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Using Manual with Supplemental Documentation

Training - Level 1

Let us assume a solenoid valve has faulted and a fault notice is visible on the HMI screen. The displayed fault notice provides the device number. In this example, we will use SV00001.

Working through each of the following points will demonstrate how the manual might be used in conjunction with supplemental documentation.

NOTE: Read these instructions for each item completely before trying, as following them will take you away from this page!

Using what you have learned...

- Find where this device appears in this manual
  - In a complete Aagard Machine Manual, a device such as this one may also be found in the *Message Notices* and *Drive Function and Associated Devices* topic
  - From the information in these topics, one may learn
    - where the device is physically located, the Aagard part number, and I/O information (Device List)
    - how it is used (Sequence of Operation topics)
    - how it works with other drives or devices (Drive Function and Associated Devices)
    - how to prevent a fault from reoccurring (Message Notices)

- View the Map location image of this device (Sample Device List)

- Find the Aagard part number for this device (Sample Device List)

- Find this part number on the Sample Spare Parts & Bill of Materials
  - Locate the lead time for this part
  - Locate the manufacturer part number
  - Locate the manufacturer of this part
  - Locate the vendor for this part

- Find where this device appears in the Sample Electrical Drawings
  - Zoom in for a closer look

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Printing from PDF

Training - Level 1

When printing topics from PDF documents, use the print features of the PDF.

NOTE: Depending on which version of Adobe PDF is installed, the images used and instructions given in this example may vary slightly

---

From inside the PDF, open the print dialog. There are several ways to open the print dialog.

- Click the toolbar icon
- Press Ctrl+P
- From the menu bar, click File > Print

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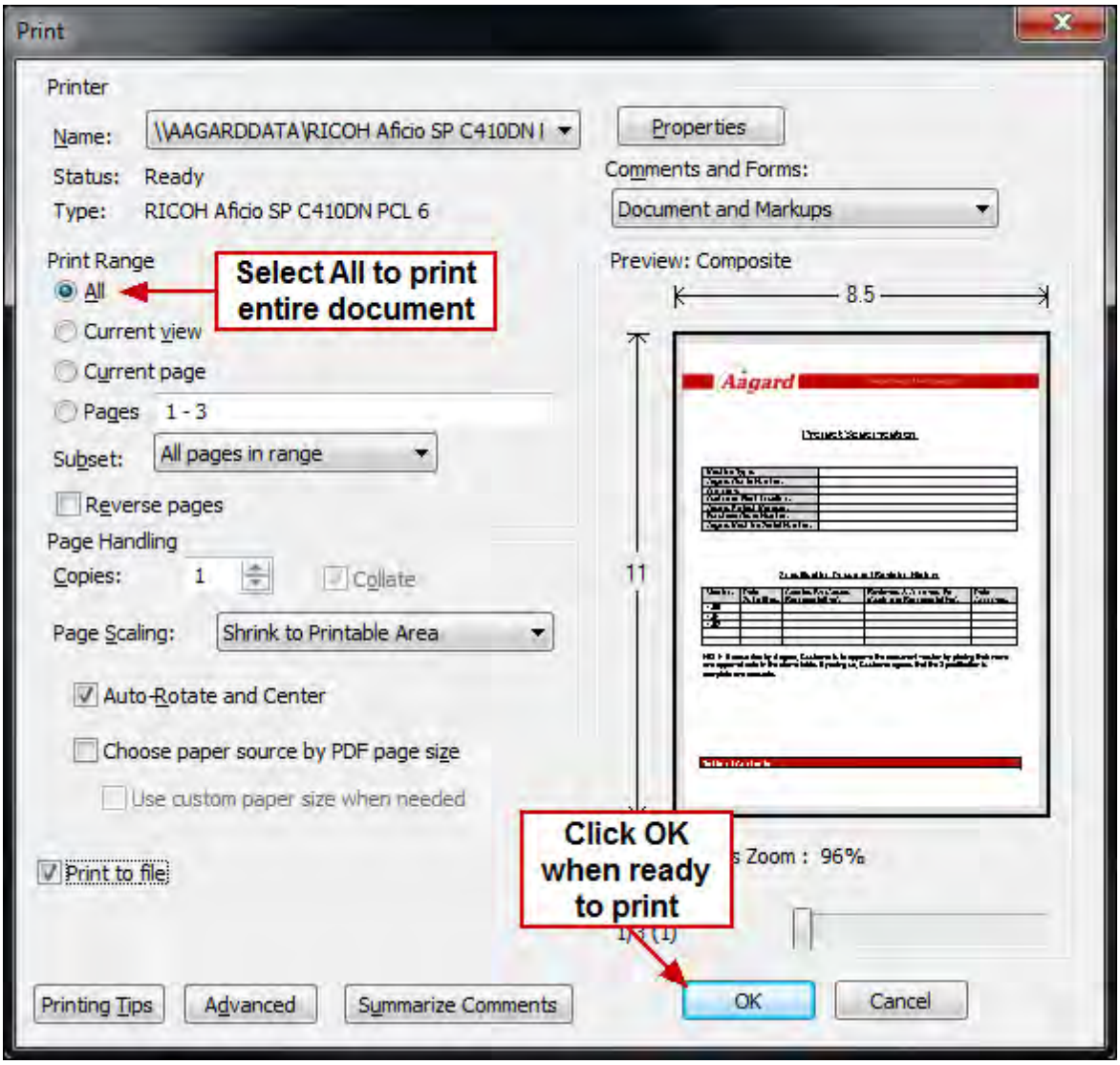
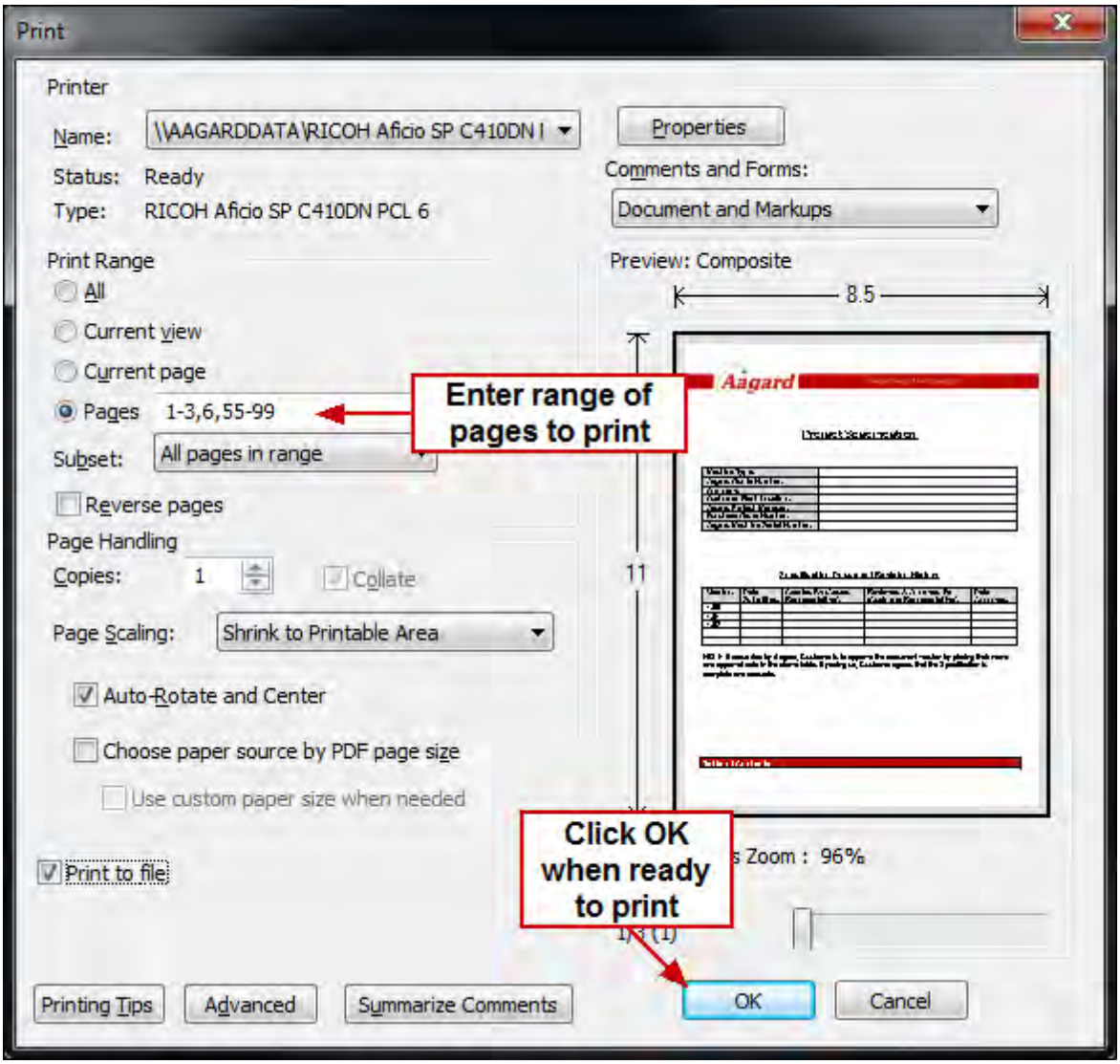
Training - Level 1

Printing the entire document



Training - Level 1

Printing a range of pages



Saving PDF Files

Training - Level 1

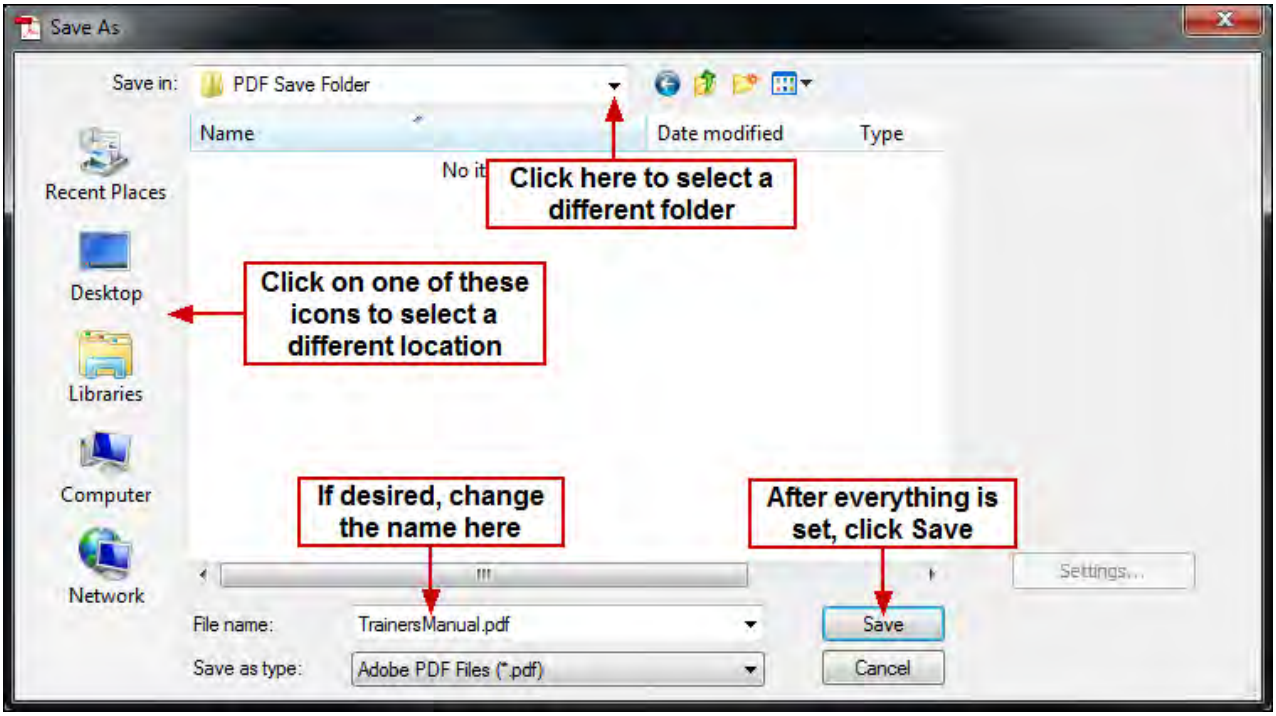
The linked PDF files are already stored on the HMI computer. It may, however, be desirable to save PDF files to a local drive on your own computer or to a network location.

NOTE: Depending on which operating system version is installed, the image used and instructions given in this example may vary slightly

---

To save a PDF to an alternate location, follow these steps from inside the PDF document:

1) From the menu bar, click File > Save As
2) Select the desired location and folder
3) Provide an alternate name, if desired
4) Click Save



Search

Training - Level 1

The search functionality of the Aagard Machine Manual is a powerful and often overlooked tool.

There are three tabs above the table of contents tree. They are: Contents, Index, and Search

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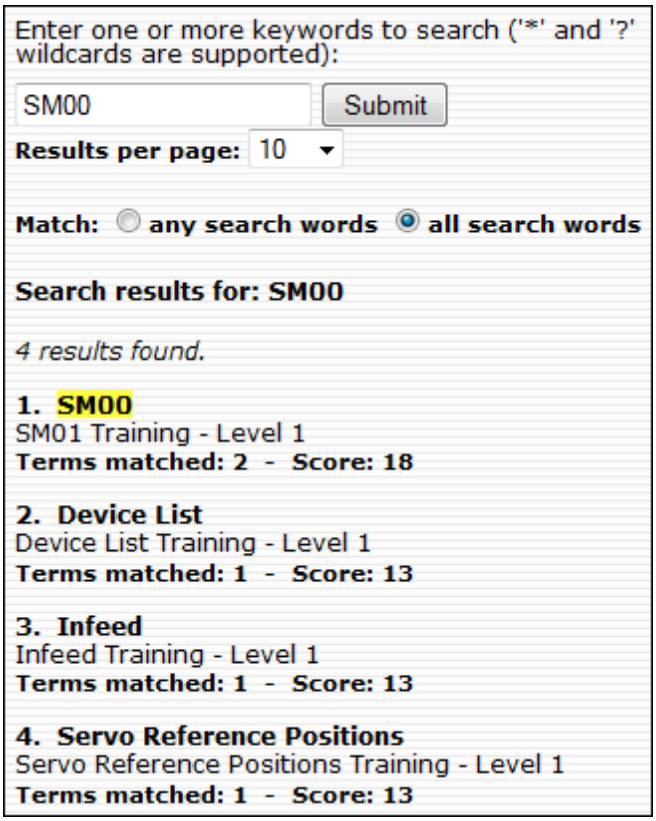
Using Search

1) Click on the Search tab above the table of contents tree to display the search tab.

2) Type "SM00" (without quotes) into the search field

3) Click

4) Note the search results



5) Click on any of the links in the search results to navigate to that page

6) When finished trying this feature, use the back button of the browser to return to the previous topics.

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NOTE: PDF documents cannot be searched using the search feature of the Aagard Machine Manual; for instructions on how to search inside PDF documents, click here

Find, Search & Zoom in PDF

Training - Level 1

Find, Advanced Search and Zoom features are also available in PDF documents. Click here for the Zoom feature.

NOTE: Depending on which version of Adobe PDF is installed, the images used and instructions given in this example may be vary slightly

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Find

Try me!

Using the Sample Spare Parts & Bill of Materials as an example:

1) Note the search box in the toolbar

   a) If a search box is not visible, click inside the PDF window and press Ctrl+F to reveal a search box
2) Type Z0000016 into the search box
3) Press enter
   a) Note that the searched-for text is highlighted
4) Click to see if there are more instances of Z0000016

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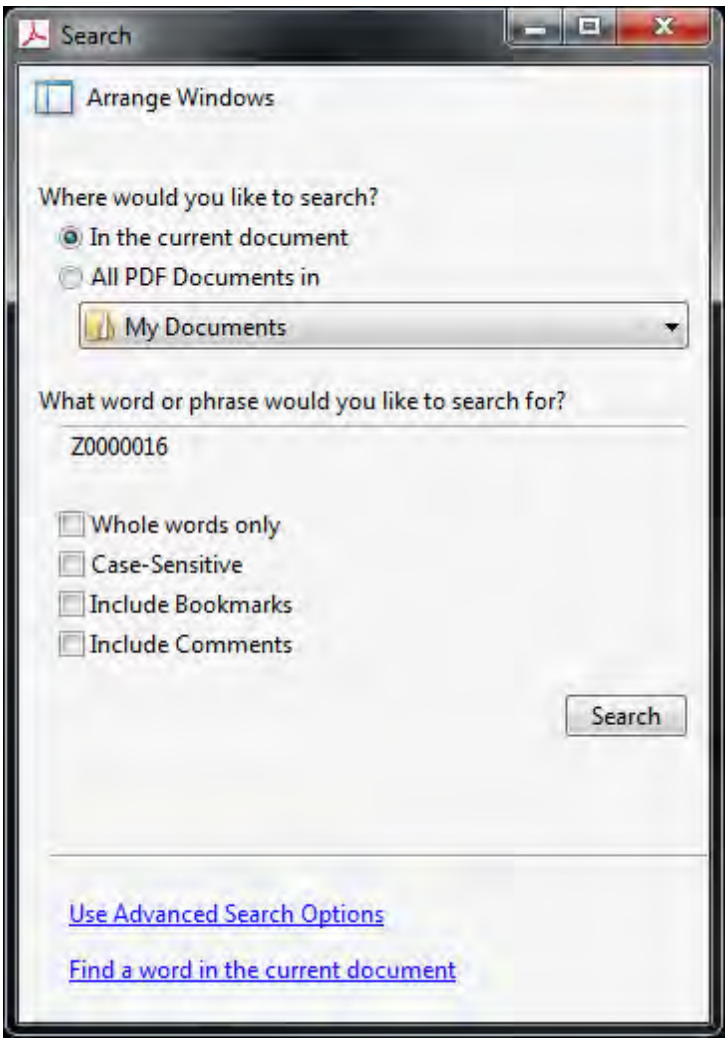
Advanced Search

Try me!

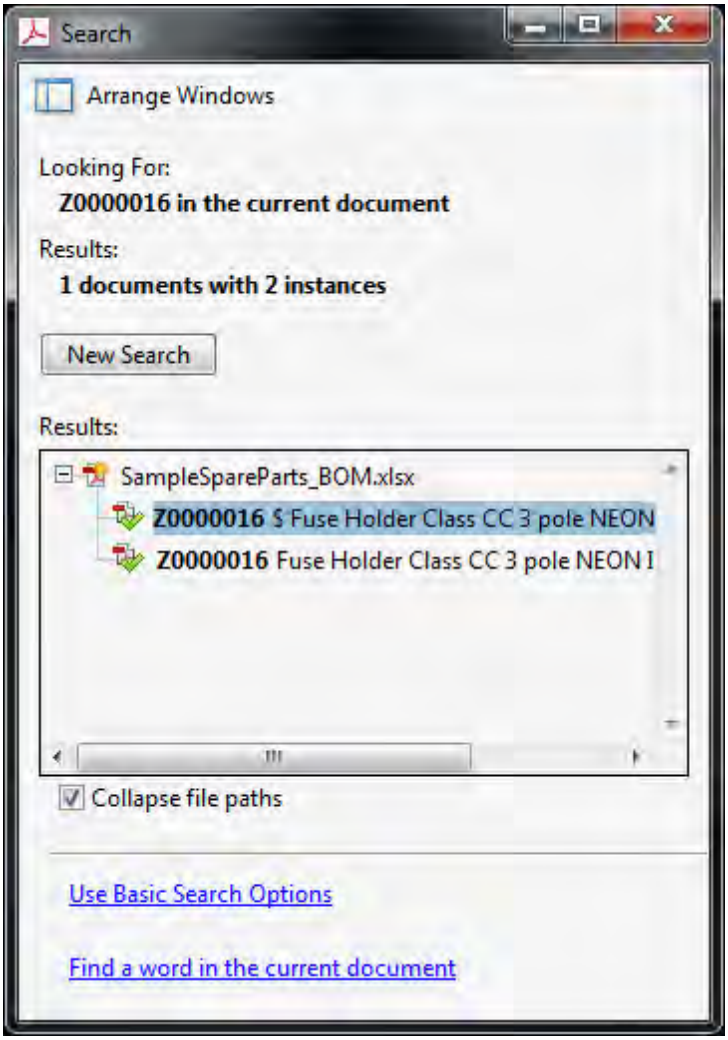
Using the Sample Spare Parts & Bill of Materials as an example:

1) From the menu bar, click Edit > Search to open the Advanced Search dialog.
   a) Optionally press Ctrl+Shift+F



2) Type Z0000016 (without quotes) into the search box and click Search.

Note that all instances of Z0000016 are displayed in the results window. If the item appears more than once, click on any of the results links to jump to that instance.



Zoom

Detail in the PDF documents may be too small to be legible. A zoom feature is available in PDF documents. Using this tool can be helpful when viewing Electrical Drawings as well as 2D Balloon Drawings.

Try me!

Using the Sample Spare Parts & Bill of Materials as an example:

1) Click on the toolbar
2) Left-click-drag the mouse over an area of the document body
3) Release the mouse
4) Use or to zoom out to default views

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When finished trying these features, close the PDF document and click on the *Find, Search & Zoom in PDF* topic in the table of contents tree to redisplay this topic.

aagardmanuals.com

Training - Level 1

All Aagard Machinery System Manuals are posted on aagardmanuals.com.

> **NOTE:** When a manual is posted on aagardmanuals.com, it will always be the latest version of the documentation!

How to Gain Access
Please see your supervisor to gain access to aagardmanuals.com. Once logged in to the secure site, you will only see manuals to which you have been granted access.

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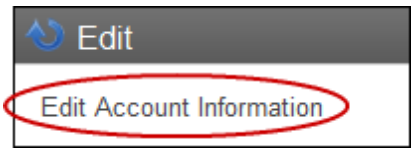
1) Open a web browser
2) Enter *http://www.aagardmanuals.com* into the address window and press enter

3) Type your email address into the Username field
4) Type your password into the password field
5) Click **LOG IN**
   a) For first-time login, accept the terms
6) Once logged in, all manuals to which you have been granted access will be available
7) Optionally change your password by clicking **EDIT ACCOUNT INFORMATION**, entering a new password, and clicking **SAVE CHANGES**



8) Close the browser to logout when finished viewing aagardmanuals.com, or click Logout

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Safety Recommendations

Training

At Aagard, we are committed to building quality automated machinery systems. Your new Aagard system is efficient, easy to maintain and safe to operate.

Before attempting to operate the equipment, become familiar with the safety recommendations and operational components of your Aagard system. This includes the technical information pertaining to outside vendor components used within your Aagard system. This information is located in the Manufacturer Information Binder and in other literature supplied with the equipment.

To maximize machine safety, you must operate the machine correctly and comply with the described safety features!

ALWAYS follow your facility's Lockout-Tagout procedures when doing maintenance and repair work!

Prior to Lockout-Tagout, contact a Level 2 or higher Operator to properly shut down the PC.

Always follow your facility's Lockout-Tagout procedures!

Lockout/Tagout (LOTO) refers to specific practices and procedures to safeguard employees from the unexpected energization or startup of machinery and equipment, or the release of hazardous energy during service or maintenance activities.

Pay special attention to the following CAUTION, WARNING and DANGER signs below. They are used through out the manual to alert the operator to the potential of INJURY or DEATH, if the recommended procedures are not followed.

DANGER

Immediate hazards which WILL result in severe personal injury or death

WARNING

Hazards or unsafe practices which COULD result in severe personal injury or death

STAY ALERT AND REMEMBER:

Safety is the responsibility of everyone who operates or services your Aagard system

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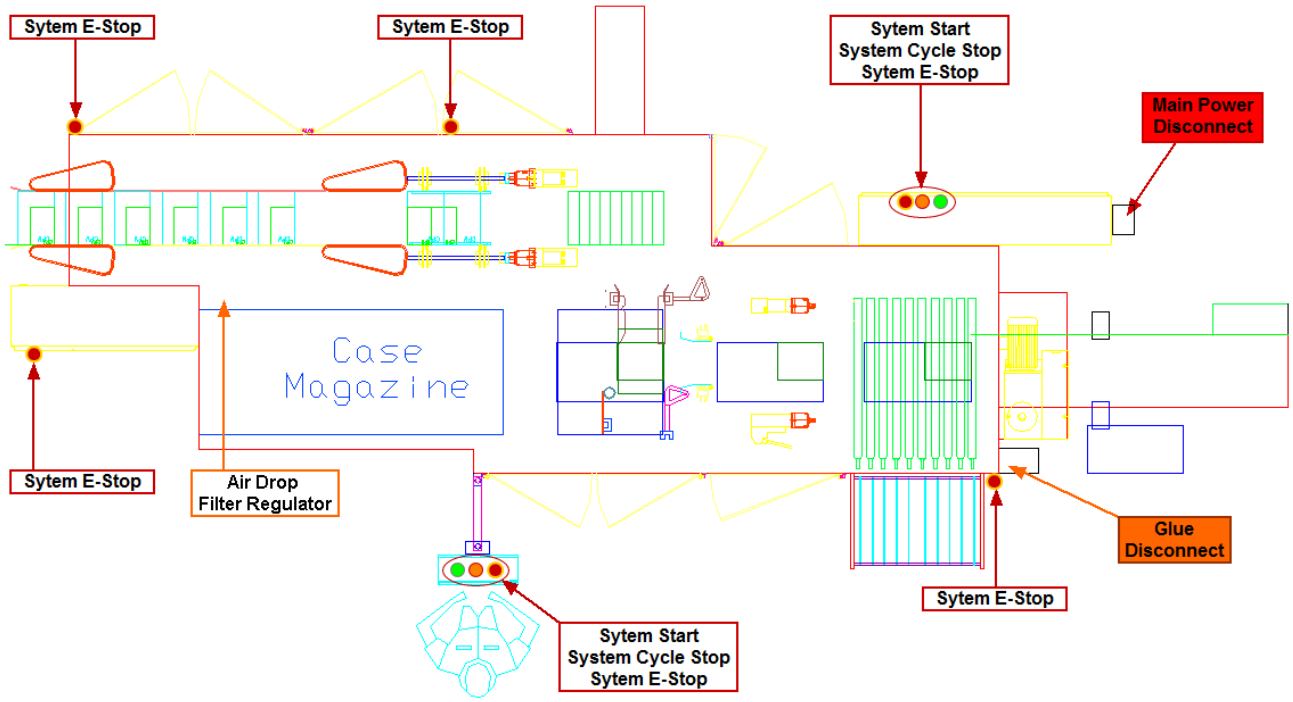
See Servo Motor with Brake for additional safety information!

E-Stop Locations

Training

All personnel who repair, maintain, or operate Aagard equipment must know the location of the EMERGENCY STOP buttons:



- **DO NOT** operate the equipment with any of the safety guards removed
- **DO NOT** wear neckties, loose clothing, or long loose-hanging hair around any equipment
- **OBSERVE** and follow the **DANGER**, **WARNING**, and **CAUTION** messages throughout this document, in vendor documentation, and displayed on the equipment
- **DO NOT** use steps or stands that allow anyone to reach over guards

Button Functions
Stack Light and Warning Horn

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Machine Operation

Training

⚠ CAUTION

Before operating equipment, see Safety Recommendations

Read and observe all safety precautions in this manual and in vendor literature before proceeding

Prior to starting your packaging system

- **CHECK TO MAKE SURE ALL PERSONNEL, TOOLS AND EQUIPMENT ARE CLEAR OF THE MACHINE**
- Turn on hot melt system; allow the system time to reach normal operating temperatures
- Install and close all guard doors
- Load the magazine(s) with blanks
- Check to make sure product is available
- Once again, **CHECK TO MAKE SURE ALL PERSONNEL, TOOLS AND EQUIPMENT ARE CLEAR OF THE MACHINE**

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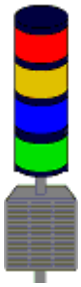
Stack Light and Warning Horn

Training

The Stack Light consists of a stack of four (4) colored lights: **Red**, **Amber**, **Blue** and **Green** (Top to Bottom). The stack light is situated to be reasonably visible from the circumference of the machine. The warning horn will produce a sound loud enough to be heard in a production environment while standing near the circumference of the machine.

The stack lights and warning horn have following meanings:

FOUR Stack Light definitions	
	**Red** (Top) ***Solid*:** • An Emergency Stop condition exists • A Fault condition exists
	Amber (Second from Top) ***Solid*:** • No product coming from upstream, or an Integrated System is not ready for operation (Example: Glue System Not Ready) • Downstream unable to accept product
	Blue (Third from Top) ***Solid:*** • Material status is low (Examples: Low Case Blanks, Low Adhesive Level)
	Green (Bottom) ***Solid*:** • System Running

Warning Horn: The *Startup Warning* horn will sound for three seconds prior to the actual energizing or startup of a machine, which includes the enabling and recovery of servo powered systems.

The operator is required to push *and hold* the start button for the entire duration (three seconds) of the warning horn. If the operator releases the start button prior to the end of the horn, the machine will not start and the horn will cease to sound. The horn cycles on and off every ½ second for the duration of the alarm.

The *Fault Warning* alarm will sound when a fault exists and has not been acknowledged. The alarm will cycle on and off every 0.2 seconds until the fault has been acknowledged.

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Button Functions

Training

Please refer to the E-Stop Locations drawing for Emergency Stop, Cycle Stop and Start Button locations.

Emergency Stop (E-Stop) Button - Pressing this button brings all machine function to an immediate and complete stop.

Opening any safety door also triggers an E-Stop.

Cycle Stop (C-Stop) Button - Pressing this button brings all machine function to a complete stop at the end of the current cycle.

C-Stop is the preferred method to stop operation in all NON-Emergency situations.

Start Button - Pressing and holding this button for three seconds (until horn stops) starts the machine.

Start Push Button Pilot Light

Solid

- All Safety Circuits of the system are engaged (no Emergency Stop Push Buttons are depressed, all Guard Doors are closed, and Safety Relays have been reset)

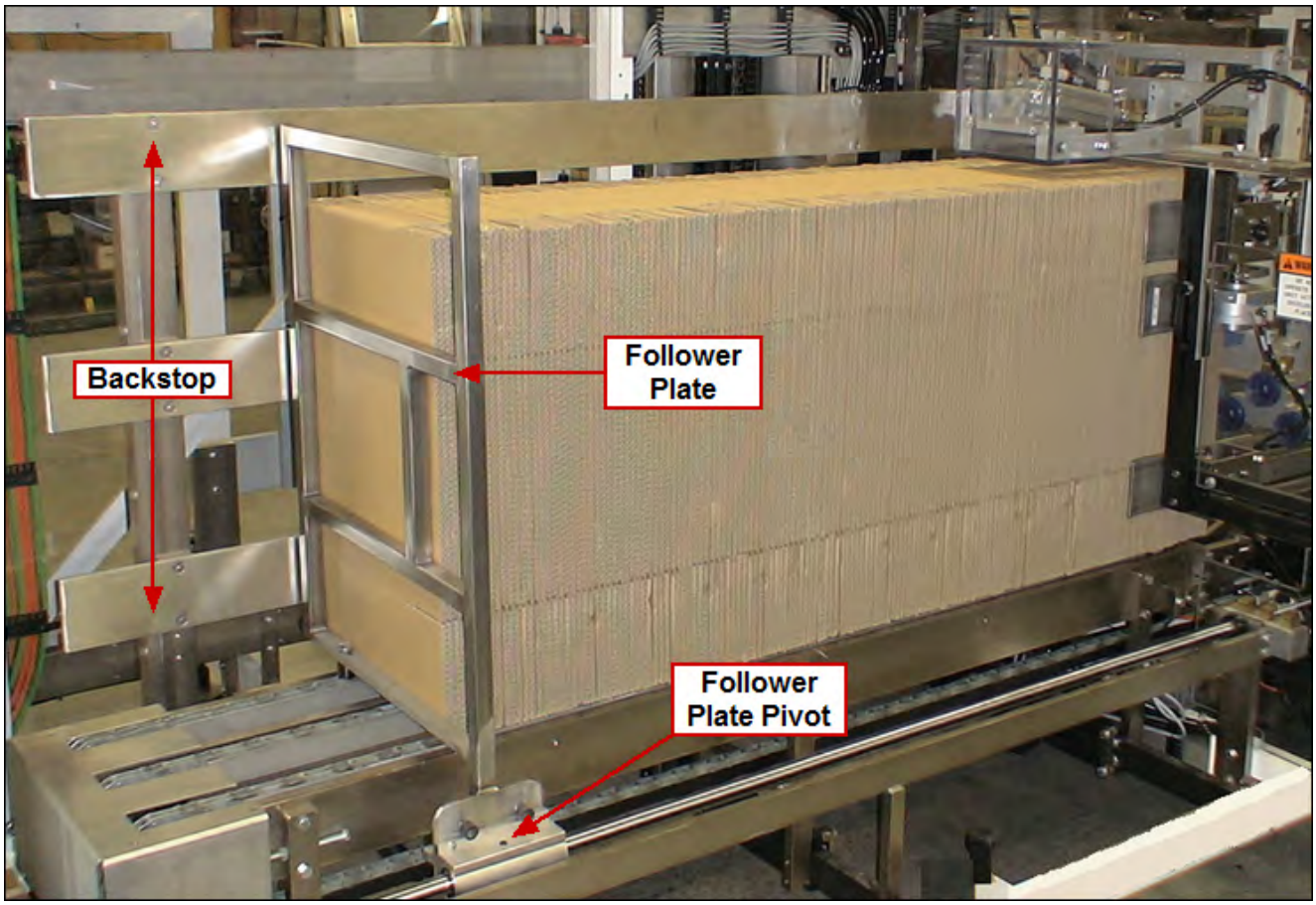
Flashing

- One or more, but not all, Safety Circuits of the system are engaged

Case Blanks

Training

To replenish the magazine while the machine is running, stack the case blanks behind the follower plate and then pivot the follower plate out from the stack. Move the follower plate to the end of the stack and push against the stack, removing any gaps that may be present before resetting the follower plate onto the chain. Make sure that the blanks are pushed up tightly against the magazine backstop.



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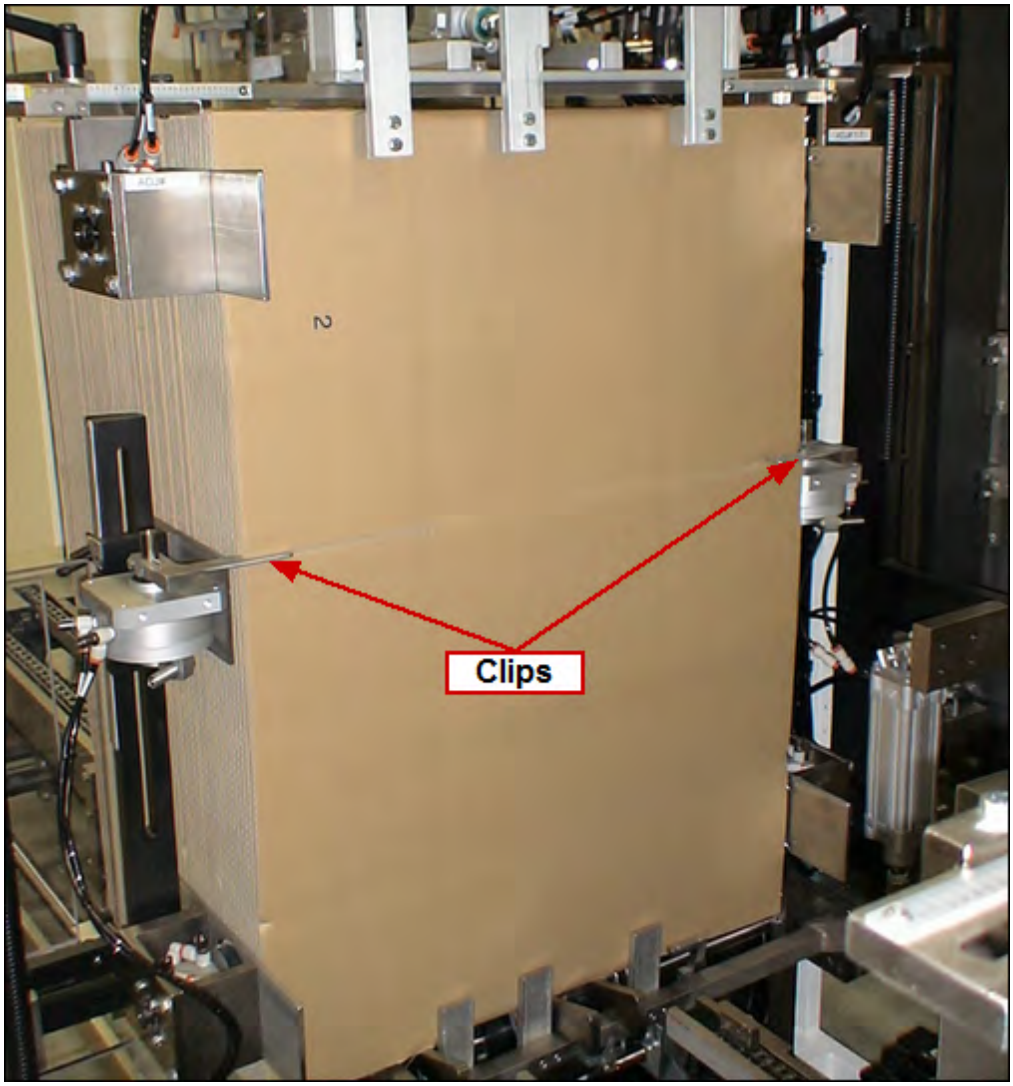
Note: On knockdown style cases, the glued manufacturer's flap should be facing upstream (toward the follower plate). When the side clips are adjusted correctly and the case is correctly loaded, the clips should align with the case score line cutout (see picture below).



Glue

Training

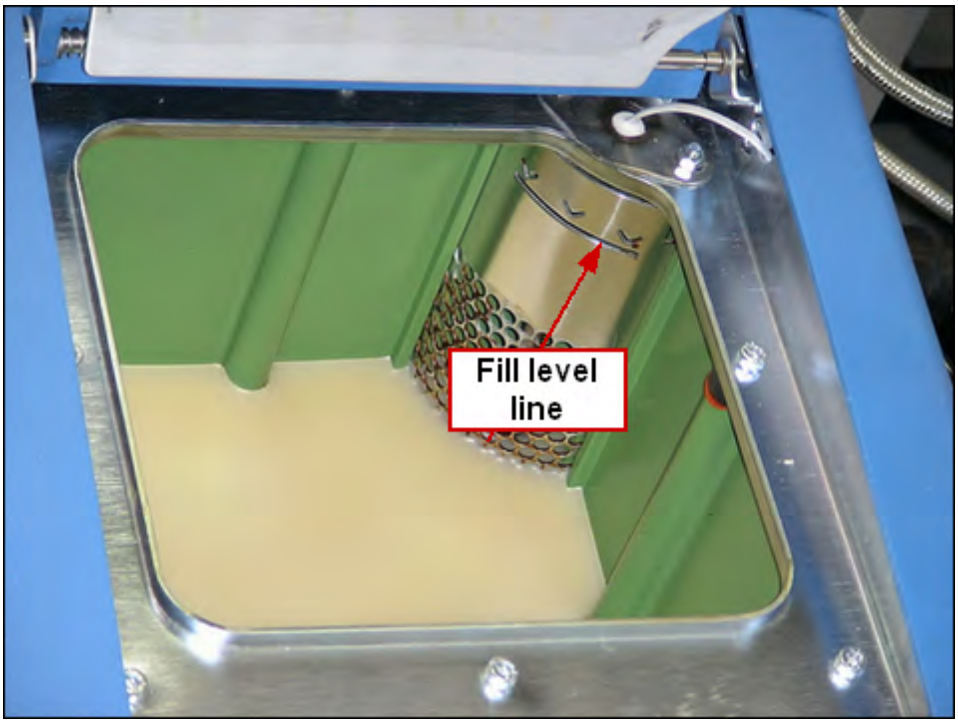
Hot melt adhesive: Replenish the hot melt adhesive in the Nordson glue system per Nordson directions as required. To load glue pellets, lift the cover of the glue tank and gently drop glue pellets into the tank. Fill to fill level line (see picture below). Close the cover.

DANGER

Under no circumstances should you reach into a hot glue tank.

Warning: Do not overfill!

SAMPLE IMAGE



Please refer to the Nordson ProBlue Adhesive System Manual for information about the hot melt applicator. The Nordson Manual contains everything from electrical wiring diagrams to operation to troubleshooting.

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Hot Melt Adhesive

Training

HOT MELT ADHESIVE REQUIREMENTS, if installed.

Set glue to the appropriate temperatures and pressure to ensure proper pattern control and clean cutoff at the glue nozzle.

Standard Settings *(for HB Fuller Advantra adhesive)*

EQUIPMENT	TEMPERATURE	PRESSURE
Tank	335°-350°	30-40 PSI
Hose	335°-350°	N/A
Guns with adjustable regulators	335°-350°	65-70 PSI *
Guns with fixed regulators	335°-350°	65 PSI

* Glue nozzle pressure for adjustable regulators is dependent on the glue nozzle model installed on the machine. If unsure of the correct setting for your machine, refer to the Nordson documentation or the pneumatic page in the electrical drawings.

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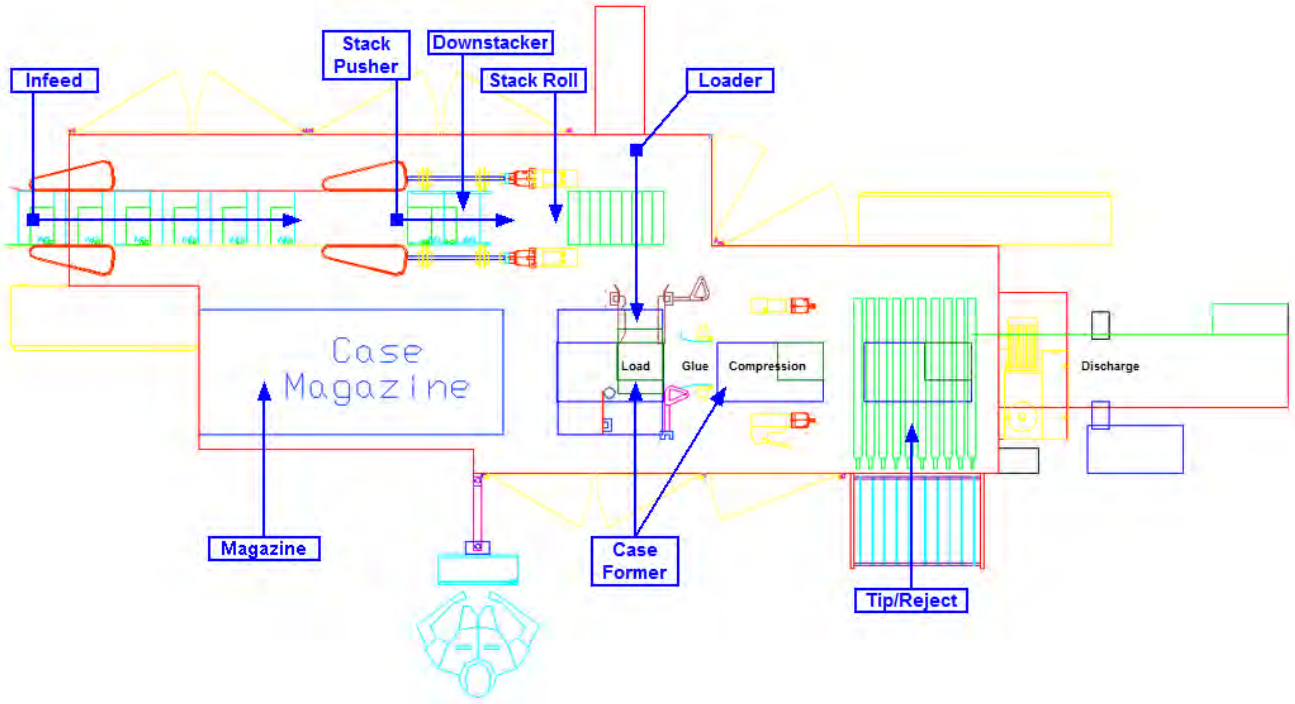
Sequence of Operation

Training

The following topics will describe, in detail, how each section of the system functions in order to help the user understand the cause and effect of each input and output. Inputs (electrical devices and signals) are discussed with references as to what occurs when they are triggered. View the Drive Function and Associated Devices topic for more information regarding how drives and sensors are used in this machine. An input is a signal which informs the machine controller that an event has occurred. An output is the machine controller sending the machine an instruction; outputs can be thought of as the signals and devices that do the work. A thorough understanding of the machine and how it functions will greatly aid in troubleshooting any problems that may arise.

Click on a Name ***in the drawing for more information!***



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Drive Function and Associated Devices

Training

The following tables indicate how devices are related to drives, and the function of the particular device.

Sample Content

Drive	Device		Function
		Infeed	
MT902	Adjustable Reject Side Belts		Transfers the correctly oriented product past the product reject chute; incorrectly oriented products w ill drop into the product reject chute
	VFD901	Reject Side Belts	Controls the speed of the belts **NOTE:** The speed of the belts are slightly faster than the maximum product rate for the selected recipe; this ensures the incorrectly oriented product drops into the reject chute; it is the responsibility of the upstream conveyor to ensure the instantaneous maximum product rate is not exceeded for the selected recipe
	OL901	Adjustable Reject Side Belts	Senses w hen the motor thermal overload has tripped
	PE36003	Carton Reject Chute Photo Eye	Detects w hen the product reject chute is full and unable to receive any more products
MT905	Fixed Reject Side Belts		Transfers the correctly oriented product past the product reject chute; incorrectly oriented products w ill drop into the product reject chute
	VFD901	Reject Side Belts	Controls the speed of the belts **NOTE:** The speed of the belts are slightly faster than the maximum product rate for the selected recipe; this ensures the incorrectly oriented product drops into the reject chute; it is the responsibility of the upstream conveyor to ensure the instantaneous maximum product rate is not exceeded for the selected recipe
	OL904	Fixed Reject Side Belts	Senses w hen the motor thermal overload has tripped
	PE36003	Carton Reject Chute Photo Eye	Detects w hen the product reject chute is full and unable to receive any more products
MT915	Infeed Conveyor		Advances product to the side belts
	VFD914	Infeed Conveyor	Controls the speed of the conveyor
MT1002	Adjustable Side Belts		Separates the product and transfers the product to the dow nstacker
	VFD1001	Side Belts	Controls the speed of the belts
	OL1001	Adjustable Side Belt	Senses w hen the motor thermal overload has tripped
	PE36007	Product in Side Belts Photo Eye	Detects products in the side belts; used to trigger the dow nstacker to index; used to trigger the spatula to cycle
MT1006	Fixed Side Belts		Separates the product and transfers the product to the dow nstacker
	VFD1001	Side Belts	Controls the speed of the belts
	OL1004	Fixed Side Belt	Senses w hen the motor thermal overload has tripped
	PE36007	Product in Side Belts Photo Eye	Detects products in the side belts; used to trigger the dow nstacker to index; used to trigger the spatula to cycle
SM02	Spatula		Prevents products from entering the dow nstacker; from snagging on the product in the stack chamber
	PE36007	Product in Side Belts Photo Eye	Detects products in the side belts; used to trigger the dow nstacker to index; used to trigger the spatula to cycle
	PX35700	Spatula Reference Prox	Reference verification, used to verify the reference sequence w as successful
System	PE36000	Product Starved Photo Eye	Detects w hen product is provided to the machine by the upstream equipment

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Device List

Training

NOTE:
"CP" preceding a map location indicates the device is in the Case Packer
"Remote" listed as a map location indicates that the device is in a remote location; outside of the machine floor plan area

Device listings with no Brick Slice Point or I/O Type indicated are intentional.
The table below is sorted alphabetically by device Number. Click on a column heading to sort by that column.

Type	Number	Name	Mounted Location	Message Location	Aagard Part #	Brick Slice Point	I/O Type	Map
Cylinder Switch	CS36203	Product Conditioner Released	CP Infeed	CP Infeed	Z0215009	B2 S10 P3	Input-Digital	CP_D11
Cylinder Switch	CS36302	Magazine Advance Advanced	CP Magazine	CP Magazine	Z0215009	B2 S11 P2	Input-Digital	CP_G7
Cylinder Switch	CS36400	Funnel In Out Out Of Case	Case Packer	Case Packer	Z0215009	B3 S11 P5	Input-Digital	CP_G10
Cylinder Switch	CS46500	Case Pusher Lowered	Case Packer	Case Packer	Z0215009	B3 S11 P0	Input-Digital	CP_H10
Cylinder Switch	CS46503	Tip Clamp Released	CP Infeed	CP Infeed	Z0215009	B3 S11 P3	Input-Digital	CP_D11
Cylinder Switch	CS46506	Funtucker In Out Out Of Case	Case Packer	Case Packer	Z0215009	B3 S11 P6	Input-Digital	CP_E11
Cylinder Switch	CS46507	Case Squaring Raised	Case Packer	Case Packer	Z0215009	B3 S11 P7	Input-Digital	CP_G13
Cylinder Switch	CS46509	Roll Product Conditioner Released	CP Infeed	CP Infeed	Z0215009	B3 S11 P4	Input-Digital	CP_D11
Cylinder Switch	CS46606	Tip Reject Stop Released	Case Packer	Case Packer	Z0215009	B3 S12 P6	Input-Digital	CP_H15
Disconnect	DS101	Main Disconnect	Case Packer	Case Packer	Z0205187			CP_E17
Disconnect	DS9402	Glue Disconnect	Case Packer	Case Packer	Z0214121			CP_I16
E-Stop Button	ES20301	System Emergency Stop Depressed	HMI Cabinet	HMI Cabinet	Z0004654	B3 S8 P3	Input-Digital	CP_K8
E-Stop Button	ES20302	Remote System Emergency Stop Depressed	CP2	CP2	Z0004654	B3 S9 P3	Input-Digital	CP_E14
E-Stop Button	ES20305	Reject Area Remote System Emergency Stop	Case Packer	Case Packer	Z0004654	B3 S9 P4	Input-Digital	CP_I15
E-Stop Button	ES20314	CP1 Remote System Emergency Stop	CP1	CP1	Z0004654	B2 S12 P5	Input-Digital	CP_G1
E-Stop Button	ES20315	Infeed Remote System Emergency Stop	CP Infeed	CP Infeed	Z0004654	B2 S12 P6	Input-Digital	CP_D2
E-Stop Button	ES20321	Downstacker Remote System Emergency Stop	Case Packer	Case Packer	Z0004654	B2 S12 P7	Input-Digital	CP_D7
Filter Regulator	FR60001	Filter Regulator	Case Packer	Case Packer	Z0214959			CP_G4
Guard Switch	GS20501	Guard Door 1_6 Open	CP Infeed	CP Infeed	Z0024688	B2 S7 P4	Input-Digital	CP_D11

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Type	Number	Name	Mounted Location	Message Location	Aagard Part #	Brick Slice Point	I/O Type	Map
Guard Switch	GS20501	Guard Door 1_6 Locked	CP Infeed	CP Infeed	Z0024688	B2 S7 P0	Input-Digital	CP_D11
Guard Switch	GS20502	Guard Door 1_7 Open	CP Infeed	CP Infeed	Z0024688	B2 S7 P5	Input-Digital	CP_D7
Guard Switch	GS20502	Guard Door 1_7 Locked	CP Infeed	CP Infeed	Z0024688	B2 S7 P1	Input-Digital	CP_D7
Guard Switch	GS20503	Guard Door 1_8 Locked	CP Infeed	CP Infeed	Z0024688	B2 S7 P2	Input-Digital	CP_D7
Guard Switch	GS20503	Guard Door 1_8 Open	CP Infeed	CP Infeed	Z0024688	B2 S7 P6	Input-Digital	CP_D7
Guard Switch	GS20504	Guard Door 1_9 Open	CP Infeed	CP Infeed	Z0024688	B2 S7 P7	Input-Digital	CP_D4
Guard Switch	GS20504	Guard Door 1_9 Locked	CP Infeed	CP Infeed	Z0024688	B2 S7 P3	Input-Digital	CP_D4
Guard Switch	GS20505	Guard Door 1_10 Locked	CP Infeed	CP Infeed	Z0024688	B2 S6 P4	Input-Digital	CP_D3
Guard Switch	GS20505	Guard Door 1_10 Open	CP Infeed	CP Infeed	Z0024688	B2 S6 P5	Input-Digital	CP_D3
Guard Switch	GS20701	Guard Door 1_1 Open	Case Packer	Case Packer	Z0024688	B3 S10 P2	Input-Digital	CP_I9
Guard Switch	GS20701	Guard Door 1_1 Locked	Case Packer	Case Packer	Z0024688	B3 S9 P5	Input-Digital	CP_I9
Guard Switch	GS20702	Guard Door 1_2 Open	Case Packer	Case Packer	Z0024688	B3 S10 P3	Input-Digital	CP_I10
Guard Switch	GS20702	Guard Door 1_2 Locked	Case Packer	Case Packer	Z0024688	B3 S9 P6	Input-Digital	CP_I10
Guard Switch	GS20703	Guard Door 1_3 Locked	Case Packer	Case Packer	Z0024688	B3 S9 P7	Input-Digital	CP_I11
Guard Switch	GS20703	Guard Door 1_3 Open	Case Packer	Case Packer	Z0024688	B3 S10 P4	Input-Digital	CP_I11
Guard Switch	GS20704	Guard Door 1_4 Open	Case Packer	Case Packer	Z0024688	B3 S10 P5	Input-Digital	CP_F13
Guard Switch	GS20704	Guard Door 1_4 Locked	Case Packer	Case Packer	Z0024688	B3 S10 P0	Input-Digital	CP_F13
Guard Switch	GS20705	Guard Door 1_5 Open	CP Infeed	CP Infeed	Z0024688	B3 S10 P6	Input-Digital	CP_D11
Guard Switch	GS20705	Guard Door 1_5 Locked	CP Infeed	CP Infeed	Z0024688	B3 S10 P1	Input-Digital	CP_D11
Light Curtain	LC21901	Reject Light Curtain	Case Packer	Case Packer	Z0216499			CP_J13
Motor	MT214	Vacuum Pump	Case Packer	Case Packer	Z0214178			CP_H16
Motor	MT202	Case Discharge Conveyor	Case Packer	Case Packer	Z0213494			CP_G19
Motor	MT902	Adjustable Reject Side Belt	Case Packer	Case Packer	Z0213764			CP_E2
Motor	MT905	Fixed Reject Side Belt	Case Packer	Case Packer	Z0213764			CP_F2
Motor	MT915	Infeed Conveyor	Case Packer	Case Packer	Z0213494			CP_F5

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Type	Number	Name	Mounted Location	Message Location	Aagard Part #	Brick Slice Point	I/O Type	Map
Motor	MT1002	Adjustable Side Belt	Case Packer	Case Packer	Z0213495			CP_E7
Motor	MT1006	Fixed Side Belt	Case Packer	Case Packer	Z0213495			CP_F7
Motor	MT1102	Case Roller Conveyor	Case Packer	Case Packer	Z0213494			CP_F15
Push Button	PB46200	System Start Depressed	HMI Cabinet	HMI Cabinet	Z0175751	B3 S8 P0	Input-Digital	CP_K8
Push Button	PB46200	System Start Light	HMI Cabinet	HMI Cabinet	Z0175751	B3 S1 P0	Output-Live	CP_K8
Push Button	PB46202	System Cycle Stop Not Depressed	HMI Cabinet	HMI Cabinet	Z0146806	B3 S8 P2	Input-Digital	CP_K8
Push Button	PB46300	Remote System Start Light	CP2	CP2	Z0175751	B3 S1 P1	Output-Live	CP_E14
Push Button	PB46300	Remote System Start Depressed	CP2	CP2	Z0175751	B3 S9 P0	Input-Digital	CP_E14
Push Button	PB46302	Remote System Cycle Stop Not Depressed	CP2	CP2	Z0146806	B3 S9 P2	Input-Digital	CP_E14
Photo Eye	PE21813	Light Curtain Mute 1	Case Packer	Case Packer	Z0123440			CP_J13
Photo Eye	PE21814	Light Curtain Mute 2	Case Packer	Case Packer	Z0123440			CP_J13
Photo Eye	PE21815	Light Curtain Mute 3	Case Packer	Case Packer	Z0123440			CP_J13
Photo Eye	PE21816	Light Curtain Mute 4	Case Packer	Case Packer	Z0123440			CP_J13
Photo Eye	PE35701	Adjustable Dow nstacker Reference	CP Infeed	CP Infeed	Z0123440	B2 S5 P1	Input-Digital	CP_E8
Photo Eye	PE35703	Fixed Dow nstacker Reference	CP Infeed	CP Infeed	Z0123440	B2 S5 P3	Input-Digital	CP_F8
Photo Eye	PE36000	Product Starved	CP Infeed	CP Infeed	Z0123440	B2 S8 P0	Input-Digital	CP_F1
Photo Eye	PE36003	Carton Reject Chute Clear	Case Packer	Case Packer	Z0123440	B2 S8 P3	Input-Digital	CP_F1
Photo Eye	PE36007	Product in Side Belts Present	CP Infeed	CP Infeed	Z0123440	B2 S8 P7	Input-Digital	CP_F6
Photo Eye	PE36102	1st Carton At Dow nstacker Present	CP Infeed	CP Infeed	Z0096984	B2 S9 P2	Input-Digital	CP_F8
Photo Eye	PE36103	2nd Carton At Dow nstacker Present	CP Infeed	CP Infeed	Z0097847	B2 S9 P3	Input-Digital	CP_E7
Photo Eye	PE36104	Dow nstacker Overfull Present	CP Infeed	CP Infeed	Z0123440	B2 S9 P4	Input-Digital	CP_E7
Photo Eye	PE36105	Stack Layer Height Present	CP Infeed	CP Infeed	Z0123440	B2 S9 P5	Input-Digital	CP_F8
Photo Eye	PE36106	Product at Stack Pusher Present	CP Infeed	CP Infeed	Z0123440	B2 S9 P6	Input-Digital	CP_E7
Photo Eye	PE36204	Stack At Loader Present	CP Infeed	CP Infeed	Z0123440	B2 S10 P4	Input-Digital	CP_E11
Photo Eye	PE36300	Case Blanks Present	CP Magazine	CP Magazine	Z0096984	B2 S11 P0	Input-Digital	CP_G7

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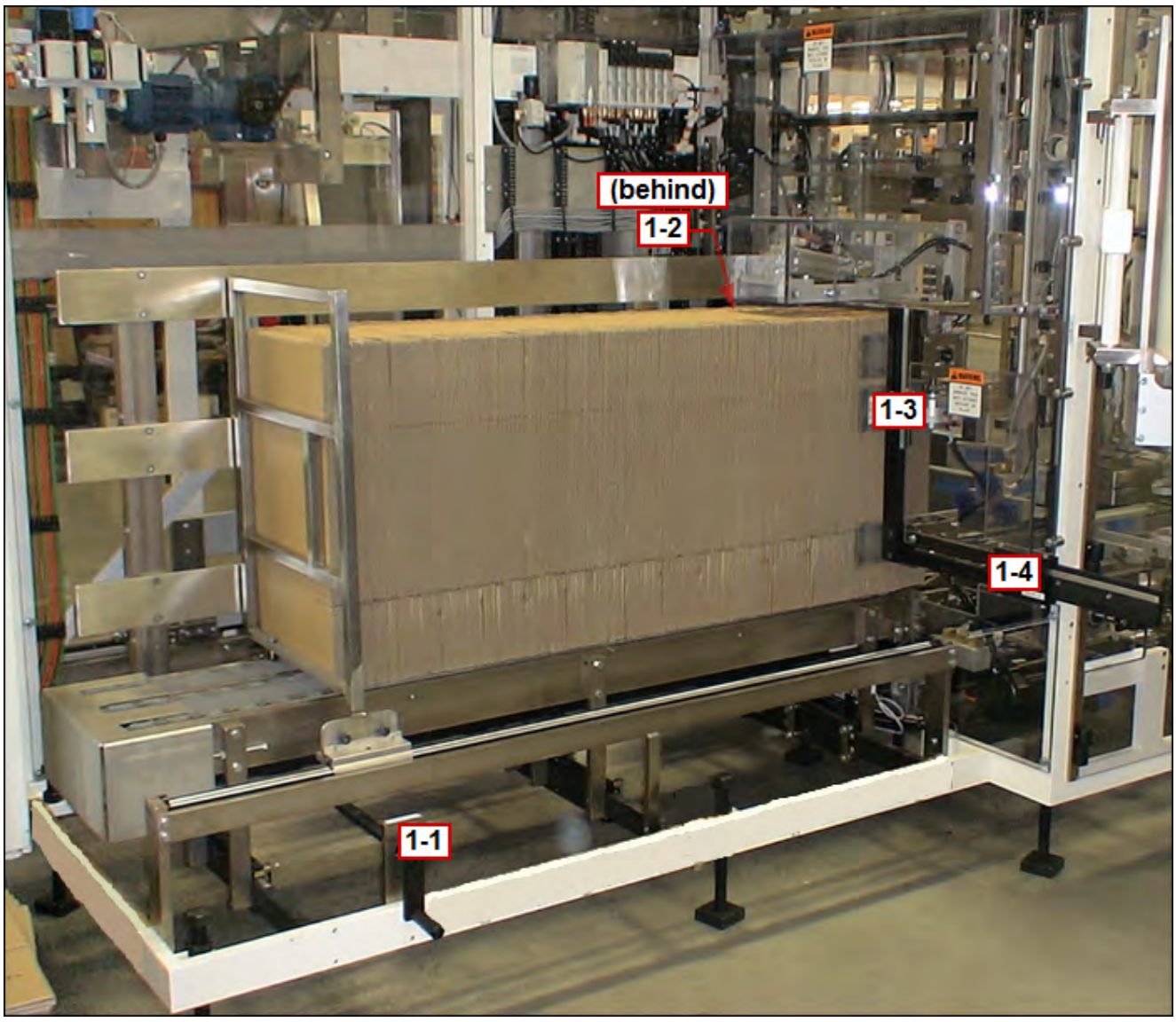
Type	Number	Name	Mounted Location	Message Location	Aagard Part #	Brick Slice Point	I/O Type	Map
Photo Eye	PE36306	Case Flights Reference	Case Packer	Case Packer	Z0123440	B2 S11 P6	Input-Digital	CP_G8
Photo Eye	PE46002	Stack In Stack Roller Present	CP Infeed	CP Infeed	Z0123440	B3 S6 P2	Input-Digital	CP_F9
Photo Eye	PE46601	Case at Load Present	Case Packer	Case Packer	Z0123440	B3 S12 P1	Input-Digital	CP_H10
Photo Eye	PE46602	Fixed Case Flap Open	Case Packer	Case Packer	Z0123440	B3 S12 P2	Input-Digital	CP_G13
Photo Eye	PE46603	Adjustable Case Flap Open	Case Packer	Case Packer	Z0123440	B3 S12 P3	Input-Digital	CP_H13
Photo Eye	PE46604	Distorted Case Present	Case Packer	Case Packer	Z0123440	B3 S12 P4	Input-Digital	CP_F11
Photo Eye	PE46700	Case at Tip Reject Present	Case Packer	Case Packer	Z0123440	B3 S13 P2	Input-Digital	CP_I15
Photo Eye	PE46701	Discharge Conveyor Clear	Case Packer	Case Packer	Z0123440	B3 S13 P1	Input-Digital	Remote
Photo Eye	PE46702	Tip Reject Stop Clear	Case Packer	Case Packer	Z0123440	B3 S13 P0	Input-Digital	CP_G15
Photo Eye	PE46707	Case at Print Present	Case Packer	Case Packer	Z0123440	B3 S13 P7	Input-Digital	CP_G17
Pressure Switch	PS35800	System Air Pressure Ready	CP Infeed	CP Infeed	Z0215018	B2 S6 P0	Input-Digital	CP_G4
Pressure Switch	PS35801	Safety Air Pressure Ready	CP Infeed	CP Infeed	Z0215018	B2 S6 P1	Input-Digital	CP_F3
Prox	PX35700	Spatula Reference	CP Infeed	CP Infeed	Z0098920	B2 S5 P0	Input-Digital	CP_F7
Prox	PX35704	Stack Pusher Reference	CP Infeed	CP Infeed	Z0098920	B2 S5 P4	Input-Digital	CP_E4
Prox	PX35706	Loader Reference	Case Packer	Case Packer	Z0098920	B2 S5 P6	Input-Digital	CP_C10
Prox	PX36303	Blank Advance Present	Case Packer	Case Packer	Z0098920	B2 S11 P3	Input-Digital	CP_G8
Prox	PX46000	Case Robot X Reference	Case Packer	Case Packer	Z0098920	B3 S6 P0	Input-Digital	CP_G9
Prox	PX46001	Case Robot Z Reference	Case Packer	Case Packer	Z0098920	B3 S6 P1	Input-Digital	CP_H10
Prox	PX46007	Tip Reject Flights Reference	Orienter	Orienter	Z0098920	B3 S6 P7	Input-Digital	CP_I15
Regulator	REG30400	Fixed Top Glue	Case Packer	Case Packer	Z0215011			CP_G11
Regulator	REG30401	Fixed Bottom Glue	Case Packer	Case Packer	Z0215011			CP_G11
Regulator	REG30402	Adjustable Top Glue	Case Packer	Case Packer	Z0215011			CP_H11
Regulator	REG30403	Adjustable Bottom Glue	Case Packer	Case Packer	Z0215011			CP_H11
Regulator	REG35102	Magazine Advance	CP Magazine	CP Magazine	Z0215011			CP_G7
Regulator	REG35201	Tip Clamp	CP Infeed	CP Infeed	Z0215011			CP_E9
Servo Motor	SM01	Stack Roller	CP Infeed	CP Infeed	Z0205087			CP_E10
Servo Motor	SM02	Spatula	CP Infeed	CP Infeed	Z0016725			CP_F6

Type	Number	Name	Mounted Location	Message Location	Aagard Part #	Brick Slice Point	I/O Type	Map
Servo Motor	SM03	Adjustable Lower Downstacker	CP Infeed	CP Infeed	Z0016725			CP_E6
Servo Motor	SM04	Adjustable Upper Downstacker	CP Infeed	CP Infeed	Z0016725			CP_E9
Servo Motor	SM05	Fixed Lower Downstacker	CP Infeed	CP Infeed	Z0016725			CP_F6
Servo Motor	SM06	Fixed Upper Downstacker	CP Infeed	CP Infeed	Z0016725			CP_F9
Servo Motor	SM07	Stack Pusher	CP Infeed	CP Infeed	Z0016725			CP_E3
Servo Motor	SM08	Loader	Case Packer	Case Packer	Z0016725			CP_C10
Servo Motor	SM09	Loader Backstop	Case Packer	Case Packer	Z0205087			CP_I9
Servo Motor	SM10	Case Robot Z	Case Packer	Case Packer	Z0024801			CP_H10
Servo Motor	SM11	Case Robot X	Case Packer	Case Packer	Z0016725			CP_G13
Servo Motor	SM12	Case Flights	Case Packer	Case Packer	Z0202763			CP_F12
Servo Motor	SM13	Funnel	Case Packer	Case Packer	Z0202763			CP_G9
Servo Motor	SM14	Funtucker	Case Packer	Case Packer	Z0202763			CP_F11
Servo Motor	SM15	Tucker	Case Packer	Case Packer	Z0202763			CP_I10
Servo Motor	SM17	Tip Fingers	Case Packer	Case Packer	Z0024801			CP_I14
Servo Motor	SM18	Tip Reject Flights	Case Packer	Case Packer	Z0016725			CP_I15
Servo Motor	SM19	Fixed Lower Compression	Case Packer	Case Packer	Z0202763			CP_G12
Servo Motor	SM20	Adjustable Lower Compression	Case Packer	Case Packer	Z0202763			CP_H12
Servo Motor	SM21	Fixed Upper Compression	Case Packer	Case Packer	Z0202763			CP_G12
Servo Motor	SM22	Adjustable Upper Compression	Case Packer	Case Packer	Z0202763			CP_H12
Solenoid Valve	SV20223	Safety Air Pressure	Case Packer	Case Packer	Z0215016			CP_F3
Solenoid Valve	SV30400	Fixed Top Glue On	Case Packer	Case Packer	Z0004483	B1 S3 P0	Output-E-Stop	CP_G11
Solenoid Valve	SV30401	Fixed Bottom Glue On	Case Packer	Case Packer	Z0004483	B1 S3 P1	Output-E-Stop	CP_G11
Solenoid Valve	SV30402	Adjustable Top Glue On	Case Packer	Case Packer	Z0004483	B1 S3 P2	Output-E-Stop	CP_H11
Solenoid Valve	SV30403	Adjustable Bottom Glue On	Case Packer	Case Packer	Z0004483	B1 S3 P3	Output-E-Stop	CP_H11
Solenoid Valve	SV35200	Roll Product Conditioner Condition	CP Infeed	CP Infeed	Z0079525	B2 S2 P0	Output-Live	CP_E9
Solenoid Valve	SV35201	Tip Clamp Contain	CP Infeed	CP Infeed	Z0079525	B2 S2 P1	Output-Live	CP_E9
Solenoid Valve	SV35202	Product Conditioner Condition	CP Infeed	CP Infeed	Z0079525	B2 S2 P2	Output-Live	CP_D11

Type	Number	Name	Mounted Location	Message Location	Aagard Part #	Brick Slice Point	I/O Type	Map
Solenoid Valve	SV35205	Load Vacuum On	Case Packer	Case Packer	Z0079522	B2 S2 P5	Output-Live	CP_H8
Solenoid Valve	SV45401	Case Pusher Push	Case Packer	Case Packer	Z0079525	B3 S4 P1	Output-Live	CP_H10
Solenoid Valve	SV45402	Setup Vacuum On	Case Packer	Case Packer	Z0079522	B3 S4 P2	Output-Live	CP_H10
Solenoid Valve	SV45403	Case Squaring Compress	Case Packer	Case Packer	Z0079525	B3 S4 P3	Output-Live	CP_G13
Solenoid Valve	SV45404	Blow Off On	Case Packer	Case Packer	Z0079525	B3 S4 P4	Output-Live	CP_F13
Solenoid Valve	SV45702	Tip Reject Stop Release	Case Packer	Case Packer	Z0079526	B3 S5 P3	Output-E-Stop	CP_F15
Solenoid Valve	SV45702	Tip Reject Stop Catch	Case Packer	Case Packer	Z0079526	B3 S5 P2	Output-E-Stop	CP_F15
Solenoid Valve	SV46506	Funtucker In Out Into Case	Case Packer	Case Packer	Z0079525	B3 S11 P6	Output-Live	CP_E10
Vacuum Switch	VS36402	Load Vacuum Analog	Case Packer	Case Packer	Z0221063	B2 S13 P0	Input-Digital	CP_I10
Vacuum Switch	VS36402	Load Vacuum Present	Case Packer	Case Packer	Z0221063	B2 S12 P2	Input-Digital	CP_I10
Vacuum Switch	VS46104	System Vacuum Analog	Case Packer	Case Packer	Z0221063	B3 S15 P0	Input-Digital	CP_I15
Vacuum Switch	VS46104	System Vacuum Present	Case Packer	Case Packer	Z0221063	B3 S7 P4	Input-Digital	CP_I15
Vacuum Switch	VS46501	Setup Vacuum Analog	CP Magazine	CP Magazine	Z0221063	B3 S15 P1	Input-Digital	CP_H10
Vacuum Switch	VS46501	Setup Vacuum Present	CP Magazine	CP Magazine	Z0221063	B3 S11 P1	Input-Digital	CP_H10
Transformer XF	XF111	480 VAC _ 120 VAC	Case Packer	Case Packer	Z0214115			CP_F15

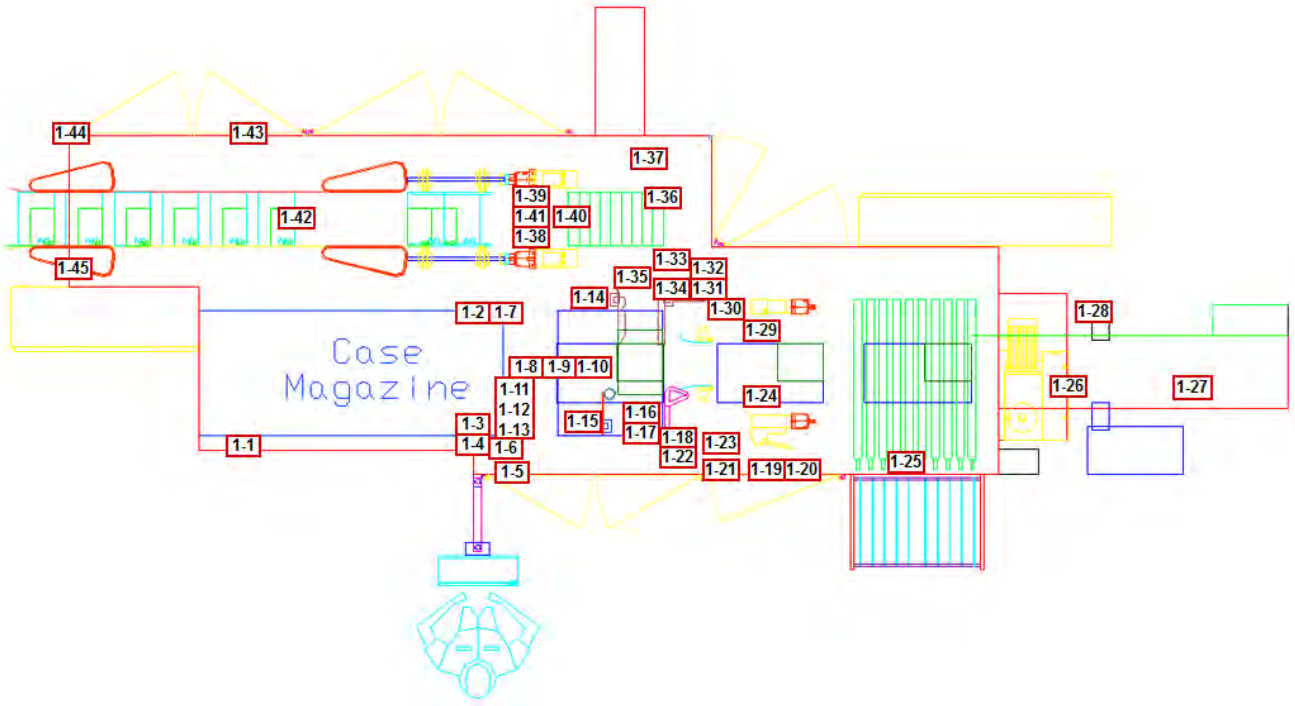
Changeover Adjustments

Training



Changeover Location Drawing

Training



Changeover Quick Reference Chart

Training

NOTE: Please refer to the HMI for the current changeover values
NOTE: Please refer to the HMI for the correct changeover sequence

Number	Name
1-1	Load Side Magazine Width
1-2	Load Side Rotate Clip
1-3	Non-Load Side Rotate Clip
1-4	Non-Load Side Clamp & Guide
1-5	Top Clip
1-6	Non-Load Side Upper Clamp
1-7	Load Side Upper Clamp
1-8	Robot Pick Cups
1-9	Robot Case Pusher Horizontal
1-10	Robot Case Pusher Vertical
1-11	Cup Vacuum Control Valve A
1-12	Cup Vacuum Control Valve B
1-13	Cup Vacuum Control Valve C
1-14	Funnel
1-15	Product Stop
1-16	Adjustable Major Flap Lift
1-17	Flap Tucker
1-18	Adjustable Upper Glue Height
1-19	Upper Compression Height
1-20	Upper Compression Width
1-21	Bedplate Width
1-22	Adjustable Lower Glue Height
1-23	Adjustable Minor Containment Rail Height
1-24	Adjustable Compression Plates
1-25	Tip Finger Extension
1-26	Discharge Conveyor Rail Width A
1-27	Discharge Conveyor Rail Width B
1-28	Markem Printer
1-29	Fixed Compression Plates
1-30	Fixed Minor Containment Rail Height
1-31	Fixed Lower Glue Height
1-32	Fixed Upper Glue Height
1-33	Fixed Major Flap Lift
1-34	Funtucker
1-35	Transfer Plate
1-36	Product Conditioner Height
1-37	Loader Plate
1-38	Fixed Downstacker Backstop
1-39	Adjustable Downstacker Backstop

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Number	Name
1-40	Stack Height
1-41	Stack Base
1-42	Downstacker Pusher Plate
1-43	Downstacker Width
1-44	Reject Side Belts Width
1-45	Funnel Width

(Print this topic as a reference when setting up new pack patterns!)

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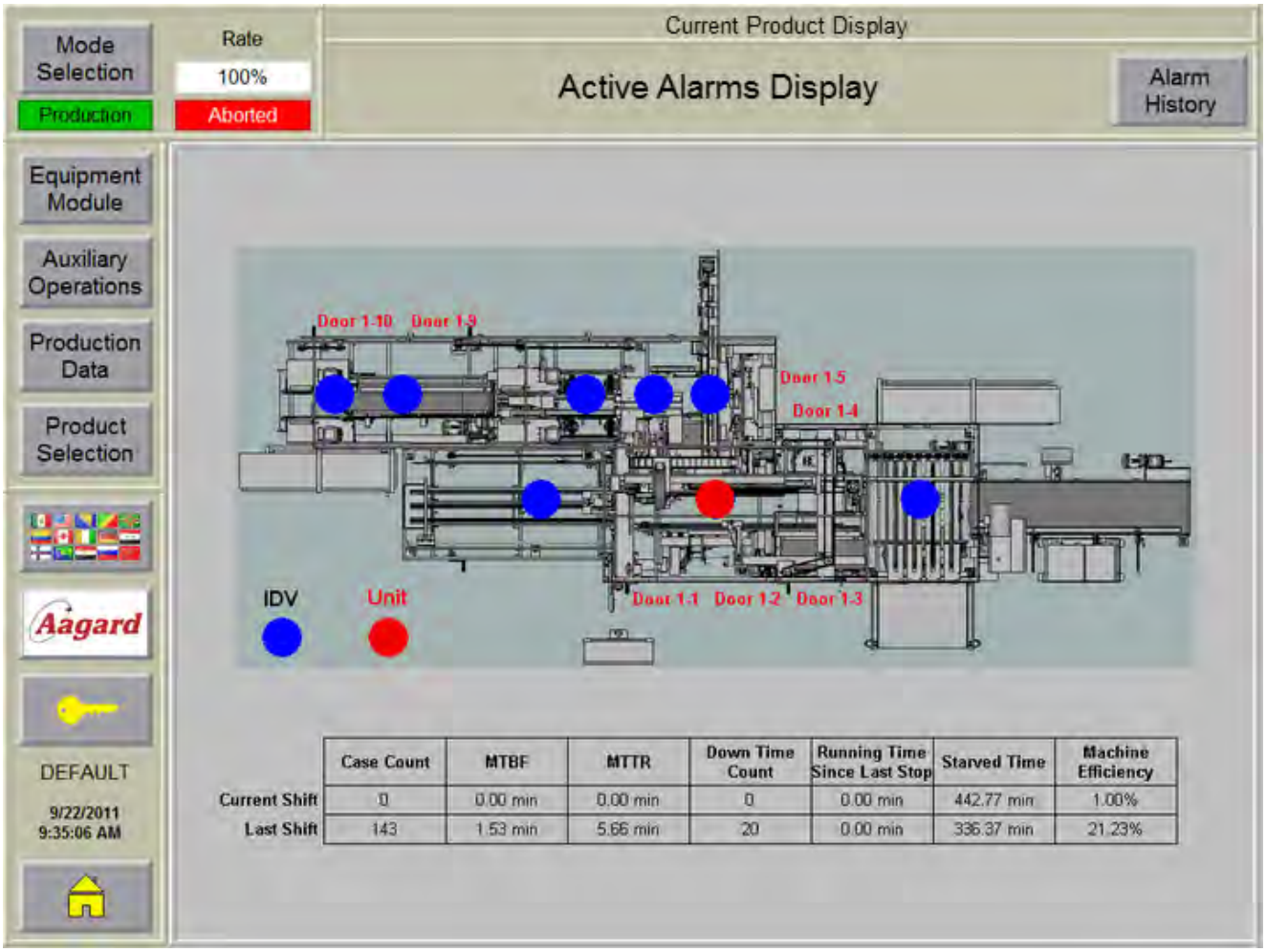
HMI Main Screen

Training

IMPORTANT NOTE: Throughout the HMI, not all buttons are visible and/or enabled for all users!



About the image displayed on this screen:

Each blue dot represents an equipment module on the machine. Tapping on the blue dot will bring the user to an equipment module detail screen.

A flashing red dot indicates a stop condition exists in that equipment module or unit.

When a guard door is open, a label indicating which door is open will be displayed next to the door which is open.

When an E-Stop button is depressed, the word **E-Stop** will display next to the E-Stop button which is depressed.

NOTE: The red dots, door and e-stop texts will be hidden when the machine is reset

---

Mode Selection Button
Tap this button to open the Select Mode dialog.

NOTE: This button will be hidden when the machine is running

Rate Display and Entry Field
When this feature is enabled, the current rate that the system is running is displayed. Authorized users may change the rate by tapping inside the entry field.

NOTE: A virtual keyboard will be displayed when editing the rate. Any whole number up to 100 is considered a valid rate.

Mode Indicator
The current mode of the machine is displayed.

State Indicator
The current state of the machine is displayed.

Current Product Display
The current product is displayed in this area.

Active Alarms Display
The active alarms are displayed in this banner.

Alarm History Button
Tap this button to view the Alarm History screen.

Equipment Module Button
Tap this button to open the Equipment Module selection screen.

Auxiliary Operations Button
Tap this button to open the Auxiliary Operations screen.

Production Data Button
When available, tap this button to open the Production Data screen.

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Product Selection Button
Tap this button to open the Product Selection screen.

Language Button
Tap this button to select a different language.

Aagard Button
Tap this button to open the Aagard Machine Manual documentation in the current screen.

NOTE: On popup windows, tap

for documentation on that window

Login Button
Tap this button to login or logout.
NOTE: A virtual keyboard will appear when logging in

Logged In User Display
The user that is currently logged in is displayed.

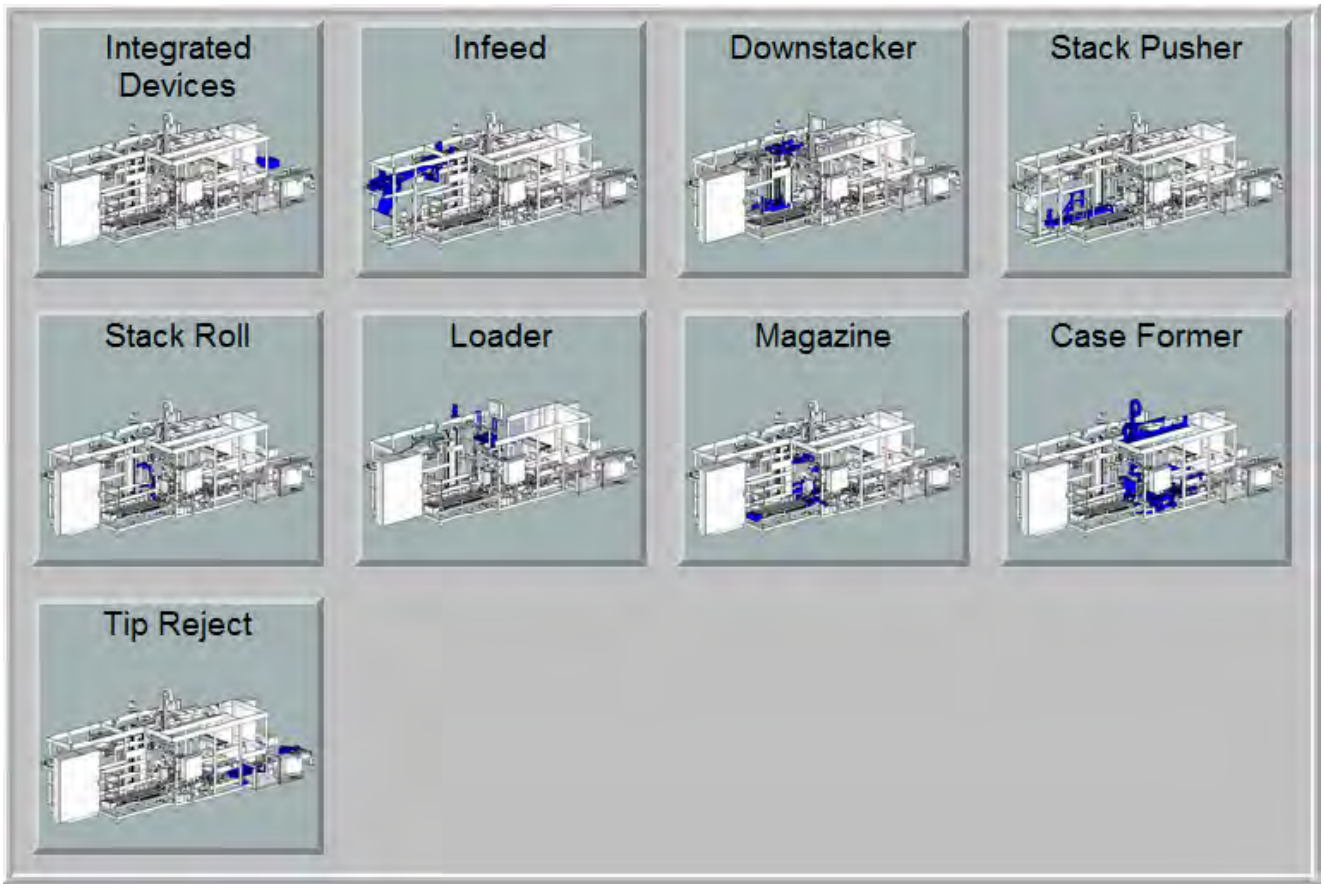
Date and Time Display
The current date and time are displayed.

Home Button
Tap this button to return to the Home screen from anywhere in the HMI.

Equipment Module Selection

Training

Tap on a button to view more information about an equipment module.



Equipment Module

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Equipment Modules

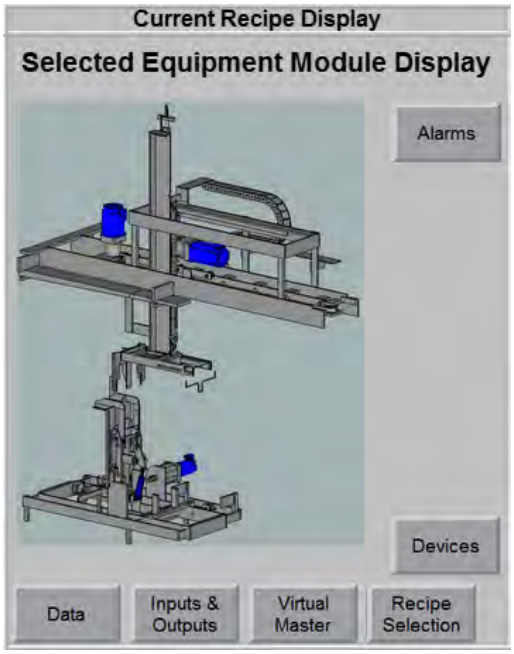
Training

How to use this screen:

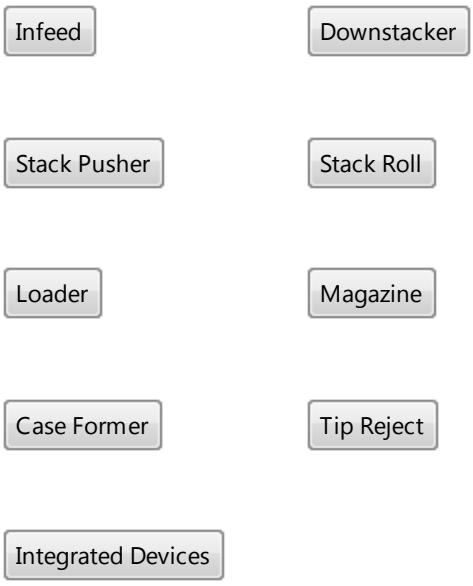
When in the HMI, tap on a device (colored in blue) to go to the device screen for that device. View details specific to an equipment module by selecting a button from the list below.

When a stop condition exists in a drive, a red dot will flash over the device with the stop condition.

SAMPLE IMAGE



Equipment Module Detail



Data Button
Tap this button to view recipe data associated with the equipment module.

Inputs & Outputs Button
Tap this button to view Inputs & Outputs for the equipment module.

Virtual Master
Tap this button to view information about the Virtual Master drive, if one exists for this equipment module.

Recipe Selection Button
Tap the Recipe Selection button to manage recipes for the equipment module.

Alarms Button
Tap this button to view alarms for this equipment module.

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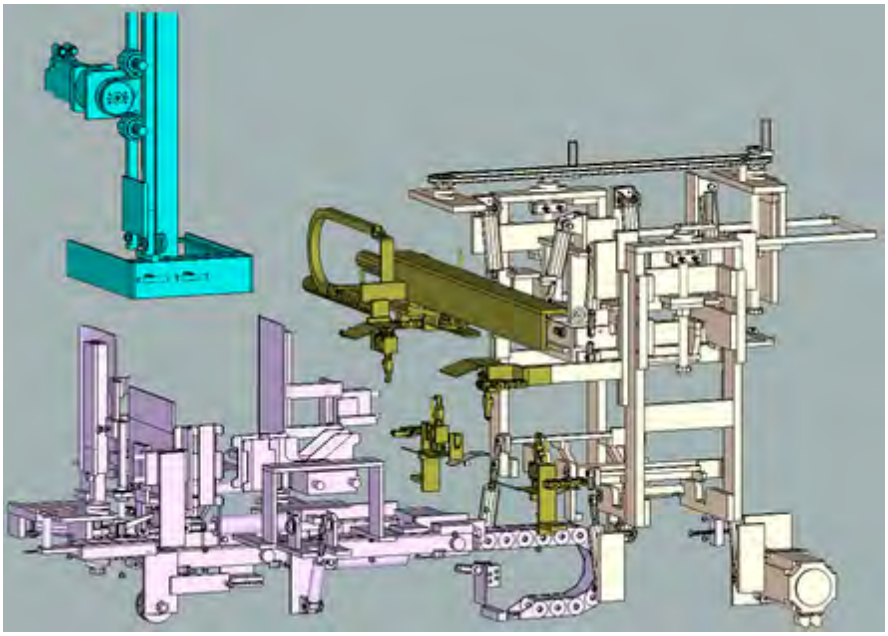
When there are too many devices to display in the overall image, an intermediate image will be displayed. In this intermediate image, tap on a colored region of the image for a more detailed view.

SAMPLE INTERMEDIATE IMAGE



Other buttons which may be available on specific equipment modules:

Reference Downstacker Flights

Tap the Reference Downstacker Flights button to reference the downstacker flights.

NOTE: This button only appears in the Downstacker equipment module

Glue Stitches Button

Tap the Glue Stitches button to view glue stitch information.

NOTE: This button only appears in the Case Former equipment module

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Servo Drive Screens

Training

NOTE: The machine must be started in manual mode in order to jog or reference a drive

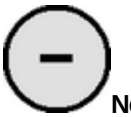
---

JOG

Accel (cm/s²)
This entry field specifies the acceleration rate the axis uses during jogging to accelerate to the specified velocity, in centimeters/second².

Velocity (cm)
This entry field specifies the velocity the axis uses during jogging, in centimeters.

Decel (cm/s²)
This entry field specifies the deceleration rate the axis uses during jogging to stop, in centimeters/second².


Negative Direction Button
Tap and hold this button to jog the servo axis in the negative direction of movement

Positive Direction Button
Tap and hold this button to jog the servo axis in the positive direction of movement.

Target Position (cm)
Enter a "move-to-position" value in this field and use the Go To button to move the servo axis to the specified position, in centimeters.

Go To Button
Tap and hold this button to move the servo axis to the position specified in the Target Position entry field via the shortest way possible.

Stop Button
Tap this button to stop the servo axis move to the target position.

REFERENCE

NOTE: When drives are referencing in a group, this section will not be visible

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Do Reference Button
Tap this button to initiate the reference routine for the servo.

Documentation Link
Tap this button to view a list of servos with reference information, including an image of the drive when it is in its referenced position.

Reference Position (cm)
This entry field specifies the position of the reference target, in centimeters.

NOTE: The servo position value is based on a calculation of the Reference Position value and the position value captured when at the reference target; during over-travel referencing, the target position is the travel limit, while during sensor referencing, the target position is the sensor location

End Position (cm)
This entry field specifies the position location where the axis will be when the reference routine of the servo is completed without error, in centimeters.

Verify Position (cm)
This entry field specifies the position of the verify reference sensor; it is used to confirm the servo position has been set correctly, in centimeters

Reference Sensor
This display indicates if the reference sensor has been made.

NOTE: The reference sensor indicator is displayed only if the drive uses a sensor for referencing

---

CONFIGURATION DATA

Immediate Stop Decel (cm/s²)
This entry field specifies the default deceleration rate for the axis used during an immediate stop, in centimeters/second².

Fast Stop Decel (cm/s²)
This entry field specifies the default acceleration rate for the axis used during a fast stop, in centimeters/second².

Jerk (%)
This entry field specifies the default rate of change in acceleration for the axis, in percent.

Pos Error Limit (cm)
This entry field specifies the default position error limit for the axis, in centimeters.

Torque Limit (%)
This entry field specifies the default torque limit for the axis, in percent.

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STATUS INDICATORS

Act Pos
This indicator displays the actual position of the servo.

Max Pos Err
This indicator displays the maximum position error which has occurred on this servo. The maximum position error is the largest position error which has occurred since the last time the reset button has been pressed.

Reset Button
Tap this button to reset the maximum position error.

Max Torque
This indicator displays the maximum torque the servo has used. The maximum torque is the highest torque which has been used since the last time the reset button has been pressed.

Reset Button
Tap this button to reset the maximum torque.

Servo Status
This indicator displays the actual status of the servo.

Advanced Status Button
Tap this button to open a screen to view servo drive statuses.

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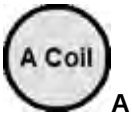
Solenoid Valve Screens

Training

NOTE: The machine must be started in manual mode in order to jog a drive

---

JOG



A Coil Button
Tap this button to energize the A Coil of the solenoid valve and de-energize the B Coil.

Stop Button
Tap this button to de-energize the A and B Coils.

B Coil Button
Tap this button to energize the B Coil of the solenoid valve and de-energize the A Coil.

CONFIGURATION DATA

A Time (ms)
This entry field specifies the amount of time allowed for the solenoid valve to energize the A Sensor before causing a fault, in milliseconds.

B Time (ms)
This entry field specifies the amount of time allowed for the solenoid valve to energize the B Sensor before causing a fault, in milliseconds.

Debounce Time (ms)
This entry field specifies the amount of time the sensor must be true before being considered a valid signal, in milliseconds.

Jam Time (ms)
This entry field specifies the amount of time the sensor signal may be false when the signal should be true before causing a fault, in milliseconds.

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STATUS INDICATORS

A Sensor
This indicator displays if the A Sensor is energized.

B Sensor
This indicator displays if the B Sensor is energized.

Done
This indicator displays when the valve has reached its final state.

Error
This indicator displays if there was a malfunction in its operation.

VFD Screens

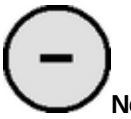
Training

NOTE: The machine must be started in manual mode in order to jog a drive

---

JOG

Speed (mpm)
This entry field specifies the speed of the axis while the motor is jogging, in meters per minute.


Negative Direction Button
Tap and hold this button to jog the drive in the negative direction of movement
NOTE: The negative direction button is not available on all VFD motors

Stop Button
Tap this button to stop the drive from moving.

Positive Direction Button
Tap and hold this button to jog the drive in the positive direction of movement.

CONFIGURATION DATA

Speed at 60 Hz (mpm)
This entry field specifies the speed of the axis while the motor is running at 60 Hz, in meters per minute.

Maximum Hz
This entry field specifies the maximum Hz for the motor.

Minimum Hz
This entry field specifies the mimimum Hz for the motor.

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STATUS INDICATORS

Forward
This indicator displays if the motor is moving in the forward direction.

Reverse
This indicator displays if the motor is moving in the reverse direction.

Enabled
This indicator displays if the motor is enabled.

Error
This indicator displays if there was a malfunction in its operation.

Speed
This indicator displays the speed of the motor.

At Speed
This indicator displays if the motor is at the specified speed.

Active
This indicator displays if the motor is currently in motion.

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Motor Screens

Training

NOTE: The machine must be started in manual mode in order to jog a drive

---

JOG

Stop Button
Tap this button to stop the drive from moving.

Positive Direction Button
Tap and hold this button to jog the drive in the positive direction of movement.

STATUS INDICATORS

A Sensor
This indicator displays if the A Sensor is energized.

B Sensor
This indicator displays if the B Sensor is energized.

Done
This indicator displays when the valve has reached its final state.

Error
This indicator displays if there was a malfunction in its operation.

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Data Screens

Training

Cartons per Layer
This entry field specifies the number of cartons per layer of the stack in the lowerator stack chamber.

Batch Complete Delay (ms)
This entry field specifies when the batch of product is complete after the last product of the batch leaves the product in side belts sensor, in meters/second.

Reject Side Belts Speed (mpm)
This entry field specifies the speed of the reject side belts, in meters/minute.

Infeed Conveyor Speed (mpm)
This entry field specifies the speed of the Infeed Conveyor, in meters/minute.

Side Belts Speed (mpm)
This entry field specifies the speed of the side belts, in meters/minute.

Spatula Changeover Position (cm)
This entry field specifies the position where the device will be at the end of the clean out procedure.

Spatula Transfer Move - move spatula into stack chamber to transfer first carton over stack
Spatula Return Move - retract spatula from stack chamber

- **Position (cm)**
  This entry field specifies the position of the named drive or move, in centimeters.

- **Velocity (cm/s)**
  This entry field specifies the velocity of the named drive or move, in centimeters/second.

- **Accel (cm/s²)**
  This entry field specifies the acceleration of the named drive or move, in centimeters/second².

- **Decel (cm/s²)**
  This entry field specifies the deceleration of the named drive or move, in centimeters/second².

- **Jerk (%)**
  This entry field specifies the change in acceleration over time in percentage of time of the specified move.

Virtual Master Screens

Training

CONFIGURATION DATA

Immediate Stop Decel (ms/s²)
This entry field specifies the deceleration rate the virtual master uses during an immediate stop.

Fast Stop Decel (ms/s²)
This entry field specifies the deceleration rate the virtual master uses during a fast stop.

Jerk (%)
This entry field specifies the rate of change in acceleration used by the virtual master.

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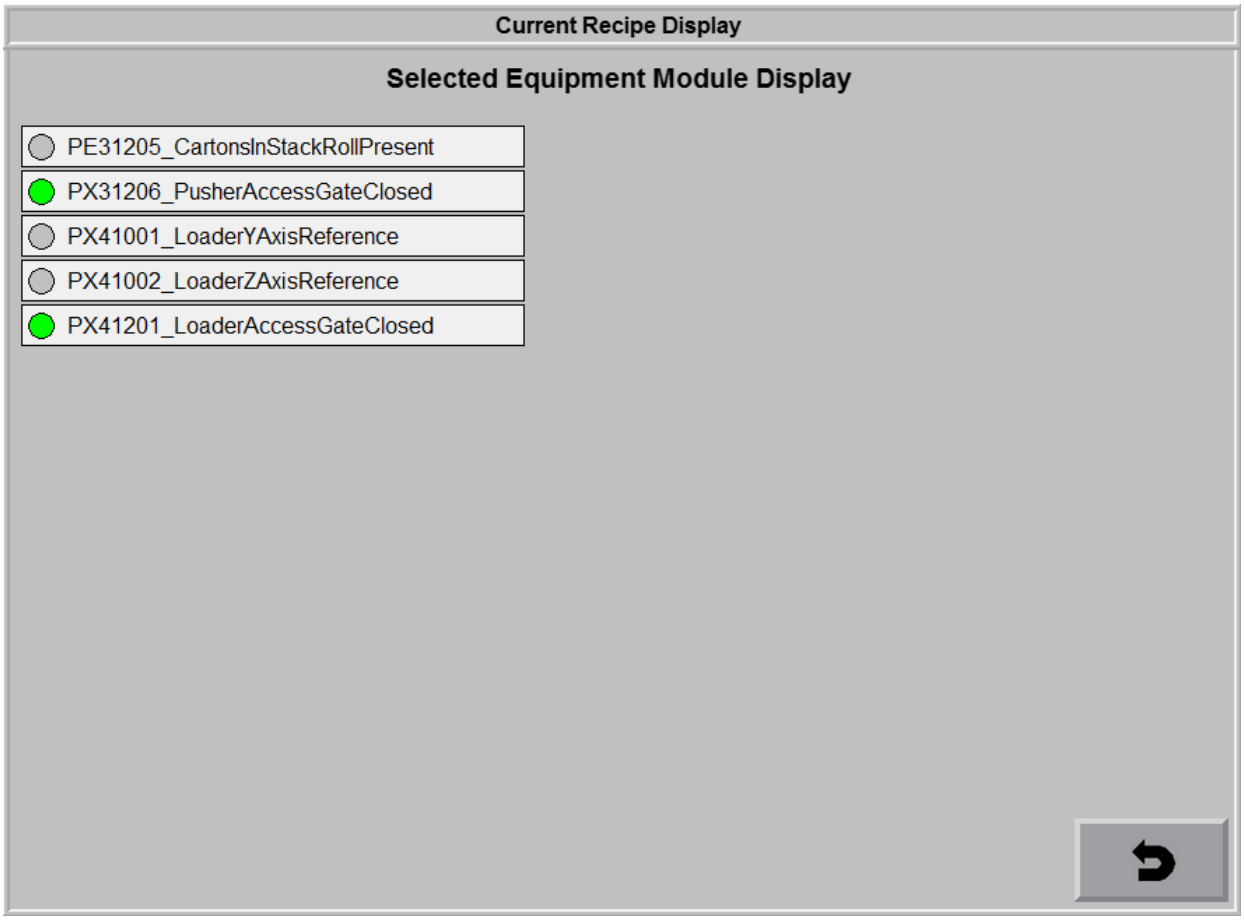
I/O Screens

Training

The available inputs and outputs for this equipment module are displayed on a screen similar to the following sample image.

This screen indicates if an I/O point is energized. When an I/O point is energized, its status indicator dot will be green.Through I/O points, the controller communicates to devices on the machine.

SAMPLE IMAGE



Alarm History

Training

Use this page to view and manage alarms.

Acknowledge All Alarms Button
Tap this button to acknowledge all alarms.

Clear History Button
Tap this button to clear alarm history from the PLC.

Alarms Button
Tap this button to display the Equipment Module Stops screen.

Messages

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Auxiliary Operations

Training

Use this screen to perform less common functions, or functions not associated with any specific equipment module.

Code Reset Button
Tap this button to reset the PLC code.
NOTE: Use with caution!

QC Case Button
Tap this button to eject one complete case from the machine for quality control purposes.

Clean Out Button
Tap this button to place the machine into a clean out mode to allow for easy removal of product from the machine.

- When in clean out mode, the Aagard system becomes unavailable to the upstream equipment
- The Aagard system will operate until no product is present in the machine
- The last case, partially filled or empty, will always be rejected from the machine

Ignore Printer Button
Tap this button to allow the Aagard machinery system to run and produce regardless of the status of the printer.

Ignore Glue Tank Button
Tap this button to allow the Aagard machinery system to run and produce even if glue system is not running, not ready, shut off, not up to the correct temperature, or faulted out.

Hold Upstream Equipment Button
Tap this button to hold upstream equipment, keeping product from entering the Aagard machinery system.

Ignore Upstream Equipment Button
Tap this button to keep the Aagard machinery system from suspending due to loss of the upstream equipment running signal.

Ignore Downstream Equipment Button
Tap this button to allow the Aagard machinery system to run and produce even when the downstream equipment is not available to receive product.

PV + Config Button
Tap this button to access the PC and configuration settings.

Change Password Button
Tap this button to change the password of the current user.

Diagnostic Messages Button
Tap this button to view diagnostic messages related to alarms.

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System I/O Button
Tap this button to open the System Inputs & Outputs screen.

Unit Status Button
Tap this button to open the Unit Status screen.

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Product Selection

Training

Use this screen to manage and load products.

Restore To Defaults Button
Tap this button to restore the selected product to its default values
NOTE: This button is not visible when the machine is running

Up Arrow Button
Tap this button to move to the previous item.

Down Arrow Button
Tap this button to move to the next item.

Set To Defaults Button
Tap this button to set the selected product to default values.
NOTE: "Default" does not mean "as-shipped"; default values are valid, hard-coded values and are not timed to any specific product

Load Button
Tap this button to load the selected product data into the current running data.
NOTE: This button is not visible when the machine is running

Copy Button
Tap this button to copy the selected product values to the product selected on the Copy Product screen.
NOTE: This button is not visible when the machine is running

Edit Name Button
Tap this button to edit the product name
NOTE: A virtual keyboard will be displayed when editing the recipe name

---

Changeover Values Button
Tap this button to open the Changeover Values screen.

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Production Data

Training

This screen displays production data by shift.

Production Data Items

Item	Description
Product Count	Generally, the count of number of products coming into the Aagard system; custom setup in the PLC
Carton Count	Count of number of cartons produced by the cartoner
Carton Reject Count	Count of number of cartons rejected by the infeed
Case Count	Count of number of cases produced by the case packer
Case Reject Count	Count of number of cases rejected by the case packer
Faulted Count	The number of instances the system was not producing, caused by a fault
Faulted Time	Total amount of downtime caused by faults
Stopped Count	Count of number of cycle stops and user E-Stops when machine state is stopping, stopped, aborting or aborted, and the state change was not caused by a fault
Stopped Time	The amount of time when the system state is stopping or stopped and the last uptime state was producing, and the stop was not caused by a fault
Down Time Count	The number of instances the system was not producing, caused by a user stop or fault
Down Time	The amount of time the system was not producing, caused by a user stop or fault > Downtime = Faulted Time + Stopped Time
Starved Count	The number of instances that upstream equipment was not delivering product but the Aagard system was available for product
Starved Time	The amount of time upstream equipment was not delivering product but the Aagard system was available for product
Blocked Count	The number of instances that downstream equipment was not receiving product but the Aagard system was in a producing state
Blocked Time	The amount of time downstream equipment was not receiving product but the Aagard system was in a producing state
Idle Count	Number of instances the system was not producing, caused by not receiving product or downstream not being available (starved and blocked)
Idle Time	Total amount of time the system was idle (starved or blocked)
Running Time	Total amount of time the system in a producing state
Available Time	Idle Time + Running Time
Machine Efficiency	Running Time / (Running Time + Down Time)
Available Efficiency	Running time / Running Time + Idle Time + Stop Time + Fault Time
MTBF (Mean Time Between Failures)	Running Time / Down Time Count
MTTR (Mean Time To Recover)	Down Time / Down Time Count
Running Time Since Last Stop	The amount of time accumulated since the last time the system went into a producing or idle state

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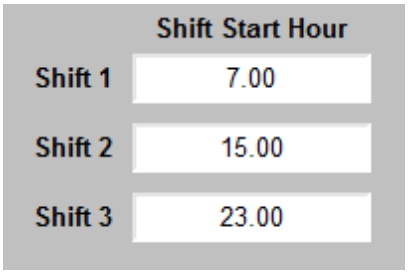
Shift Start Hour
Enter the hour that the named shift begins. **NOTE:** 24 hour format; 2 decimals



Performance Data Button
Tap this button to open the Performance Data screen.

Servo Reference Positions

Training

This section of the Aagard Machine Manual provides a pictorial and written description of each servo reference point on the machine. For each section of the machine, a table lists the servo number, name and values for each servo. Each servo drive is shown pictured in its referenced position with a visible mark or reference indicator for a quick visual check. When the servo drive has been referenced, this mark/indicator should give the operator a quick visual confirmation that the drive has been referenced properly. This is not intended to replace the use of a tape measure, squares, or other means to check reference positions. It is intended to allow operators to quickly check the reference position of a drive without the use of any tools, and continue on with minimal downtime.

Machine sections included in this manual:

Case Packer

- Servo Name = The link will display a photo of the servo motor in its referenced position
- Direction of Positive Movement = The direction of movement which causes a positive change in the position read out. (Gearbox rotation directions when facing the end of the shaft)
- Reference Mark Location = A physical description of the Reference Mark Position

Please refer to the HMI for the most current data.

Servo #	Servo Name	Direction of Positive Movement	Reference Mark Location
SM01	Stack Roller	Moving from vertical to horizontal	Bottom of stack roller frame member is aligned with top of reference indicator block and Stack Roller is horizontal
SM02	Spatula	Toward downstack chamber	Upstream edge of spatula mounting plate is aligned with the downstream edge of the reference indicator block
SM03	Adjustable Lower Downstacker	Down - toward bottom of stack chamber	Top of flight aligned with bottom of reference indicator
SM04	Adjustable Upper Downstacker	Down - toward bottom of stack chamber	Bottom of flight aligned with top of reference indicator
SM05	Fixed Lower Downstacker	Down - toward bottom of stack chamber	Top of flight aligned with bottom of reference indicator
SM06	Fixed Upper Downstacker	Down - toward bottom of stack chamber	Bottom of flight aligned with top of reference indicator
SM07	Stack Pusher	Toward the Stack Roll	Upstream edge of Stack Pusher Carriage Plate is aligned with downstream edge of reference indicator block
SM08	Loader	Toward the case	Loader Carriage Plate is aligned with reference indicator
SM09	Loader Backstop	Away from the case	Loader backstop arm is aligned with reference indicator block
SM10	Case Robot Z	Down	Robot Z is aligned with reference indicator
SM11	Case Robot X	Toward compression	Robot X Carriage Plate is aligned with reference indicator block
SM12	Case Flights	Toward compression	Leading edge of flight is aligned with upstream edge of reference indicator
SM13	Funnel	Counter-clockwise when viewed from above	Funnel Stop is parallel with reference indicator and funnel is 90 degrees to flight chain

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Servo #	Servo Name	Direction of Positive Movement	Reference Mark Location
SM14	Funtucker	Clockwise when viewed from above	Funtucker Stop is parallel with reference indicator and Funtucker funnel is 90 degrees to flight chain
SM15	Tucker	Counter-clockwise when viewed from above	Tucker post is aligned with reference indicator
SM16	*not used*	*N/A*	*N/A*
SM17	Tip Fingers	Up	Reference indicator pointer is aligned with reference indicator triangle
SM18	Tip Reject Flights	Toward reject chute	Leading edge of flight is aligned with reference indicator triangle
SM19	Fixed Lower Compression	Clockwise when viewed from end of gearbox output shaft	Compression plate is vertical inline with upper compression plate
SM20	Adj Lower Compression	Clockwise when viewed from end of gearbox output shaft	Compression plate is vertical inline with upper compression plate
SM21	Fixed Upper Compression	Counter-clockwise when viewed from end of gearbox output shaft	Compression plate is vertical inline with lower compression plate
SM22	Adj Upper Compression	Clockwise when viewed from end of gearbox output shaft	Compression plate is vertical inline with lower compression plate

Glue Settings

Training

NOTE: This button only appears in the Case Former equipment module

ON (cm) and OFF (cm) Positions
These entry fields specify the ON and OFF positions of the named glue stitches, in centimeters.

Offset Fields (cm)
These entry fields are used to offset the glue stitch position of the associated glue gun to compensate for the physical position of the glue gun.

Speed Compensation Offset (cm)
This entry field is used to offset the glue stitch position of all glue guns to compensate for speed variations.

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Alarm Messages

Training

Sample Content

Message	Cause	Remedy
CR00000 Upstream Not Sending Product	Upstream equipment is not ready to send product	Check the upstream equipment
CR00000 Dow nstream Not Available For Product	Dow nstream equipment is not available for product	Check the dow nstream equipment
CR00000 No Date Code Applied	No date code applied	Check printer system
ES00000 System Emergency Stop Depressed	The emergency stop button is depressed	Pull the emergency stop button out to resume machine operation
ES00000 Op Side Remote System Emergency Stop Depressed	The emergency stop button is depressed	Pull the emergency stop button out to resume machine operation
GS00000 Guard Door 1 Open	Door is open	Close guard door
GS00000 Guard Door 2 Open	Door is open	Close guard door
GT0000 Glue Tank Fault	The glue system has experienced an internal fault	Check glue system display for fault information
HMI00000 Test Carton	The test carton push button w as pushed on the HMI	No action required
MT0000 VFD Alarm	The VFD has an internal alarm	Check VFD for diagnostics
MT0000 VFD Fault	The VFD has an internal fault	Check VFD for diagnostics
PB00000 Discharge End Remote System Start Depressed	Button is depressed	Release button
PB00000 Discharge End Remote System Stop Depressed	Button is depressed	Release button

Messages

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Vacuum Pump Shutdown

Training

From time to time, it may be necessary or desirable to turn off the vacuum pump.

On machines with standard System Start and System Cycle Stop buttons, follow these instructions:

1) Cycle-stop the machine
2) Press the system E-Stop button
3) After the machine is E-Stopped, simultaneously press the System Start and System Cycle Stop buttons on the HMI panel
   a) This action turns off the vacuum pump

On machines which have an additional physical Reset button, follow these instructions instead:

1) Cycle-stop the machine
2) Press the system E-Stop button
3) After the machine is E-Stopped, simultaneously press the Reset and System Cycle Stop buttons on the HMI panel
   a) This action turns off the vacuum pump

If the machine has been E-stopped for one hour, the vacuum pump will automatically turn off. When the machine is started, the vacuum pump will turn on automatically; no further action is required.

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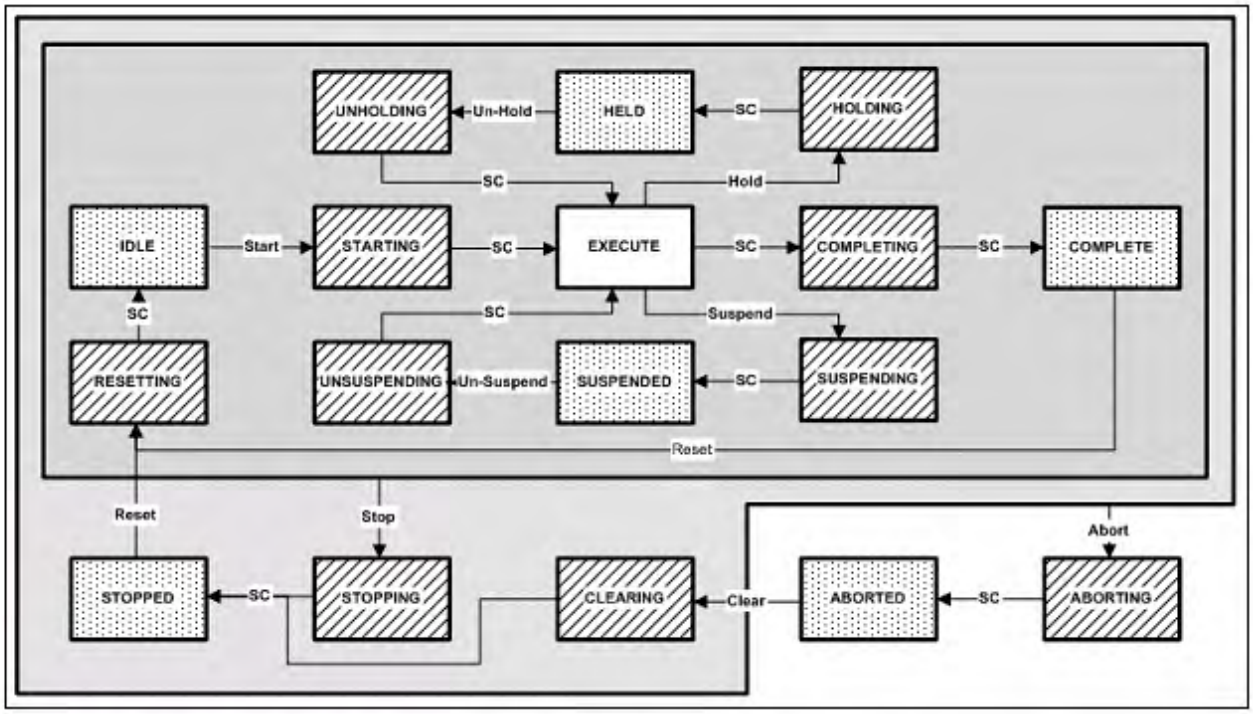
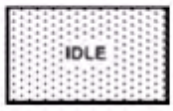
States and Modes

Training



SC = State Complete (other transition conditions are procedural Commands)



= Wait State

= Acting State

The following table shows a brief description of individual machine states:

PackML States	Description	State Type
STOPPED	In this state, the machine is powered and stationary. All communications with other systems are functioning (if applicable).	Wait
STARTING	In this state, the machine is starting as a result of a START type command (local or remote). After completing this command, the machine will begin to EXECUTE.	Acting
IDLE	This state maintains the machine conditions which were achieved during the RESETTING state.	Wait
SUSPENDING	This state is a result of a command change from the EXECUTE state. This state is typically required prior to the SUSPENDED wait state, and prepares the machine by stopping active processes prior to the SUSPEND state.	Acting
SUSPENDED	In this state, the machine may be running at the relevant set-point speed, and no product is being produced. This state is the result of an upstream or downstream machine condition or other external request, and it differs from HELD in that HELD is typically a result of a local operator request.	Wait
UNSUSPENDING	This state is a result of a request from the SUSPENDED state to return to the EXECUTE state. The actions of this state may include: ramping up speeds, turning on vacuums, or re-engaging clutches. This state prepares the machine for the EXECUTE state.	Acting
EXECUTE	In this state the machine is processing materials. The action depends on the current mode. If the machine is in the Production mode, then EXECUTE refers to the action of processing discrete parts on a continuous basis. Dual	
STOPPING	This state executes the logic which brings the machine to a controlled and safe stop.	Acting
ABORTING	In this state, the machine comes to a rapid, controlled, safe stop. Pressing the Emergency Stop button will cause the safety system to stop the machine, and it provides a signal to initiate the ABORTING state.	Acting
ABORTED	This state maintains machine status information relevant to the ABORT condition. The STOP command will force transition to the STOPPED state. The ABORTED state can be entered at any time in response to the ABORT command or on the occurrence of a machine fault.	Wait
HOLDING	When the machine is in the EXECUTE state, the HOLD command starts the HOLDING logic, which brings the machine to a controlled stop or to a state that represents HELD for the particular machine mode.	Acting
HELD	In this state, the operator can temporarily hold the machine's operation while material blockages are cleared, or stop throughput while a downstream problem is resolved.	Wait
UNHOLDING	In this state, the machine prepares to re-enter the EXECUTE state. The UNHOLDING state is typically a response to an operator command to resume EXECUTE state.	Acting
COMPLETING	In this state, normal operation has run to completion. This state is typically an automatic response from the EXECUTE state.	Acting
COMPLETE	In this state, the machine has finished the COMPLETING state and is waiting for a STOP command.	Wait
RESETTING	In this state, the machine will typically generate an audible alert and energize components, awaiting a START command. This state is the result of a RESET command from the STOPPED state.	Acting
CLEARING	In this state, the machine is clearing faults that may have occurred when ABORTING, and are present in the ABORTED state before proceeding to the STOPPED state.	Acting

An example state transition matrix is shown below.

NOTE: This image is not translated intentionally

PackML	State Commands									State
Current State	Start	Reset	Hold	Unhold	Suspend	Unsuspend	Clear	Stop	Abort	Complete
Idle	Starting							Stopping	Aborting	
Starting								Stopping	Aborting	Execute
Execute			Holding		Suspending			Stopping	Aborting	Completing
Completing		Resetting						Stopping	Aborting	Complete
Complete								Stopping	Aborting	
Resetting								Stopping	Aborting	Idle
Holding								Stopping	Aborting	Held
Held				Unholding				Stopping	Aborting	
Unholding								Stopping	Aborting	Execute
Suspending								Stopping	Aborting	Suspended
Suspended								Stopping	Aborting	
Unsuspending						Unsuspending		Stopping	Aborting	Execute
Stopping									Aborting	Stopped
Stopped		Resetting							Aborting	
Aborting										Aborted
Aborted							Clearing			
Clearing									Aborting	Stopped

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Maintenance Topics

Training

The following maintenance items, when applicable, will be addressed:

Review panel layout and devices
Remove servo motor, disassemble, and reinstall
Remove servo drive, swap with another drive, set switches and restart
Review electrical spare parts lists
Review mechanical spare parts lists
Review electrical drawings
Review entire maintenance section of this manual
Adjust HMI glue settings
Confirm servo reference position settings

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Applying Training

Training

Each class participant should demonstrate the ability to:

- Locate and load materials
- Show e-stop, air dump, and high voltage disconnect locations
- Safely start and stop machine
- Operate machine during production
- Change the machine from one product size to another
- Jog a device
- Reference a device
- Find the definition for a field on a data screen
- Find cause and remedy for an alarm
- Find device on machine using device list
- Find device on electrical drawings

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Safety

DANGER

CAUTION

Lockout power during maintenance

Do not operate without guards

Do not remove guards, clean, lubricate, or repair machinery while machine is in motion

Before operating equipment, see Safety Recommendations

Read and observe all safety precautions in this manual, and in vendor literature, before proceeding

Prior to Lockout-Tagout, contact a Level 2 or higher Operator to properly shut down the PC.

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Safety Recommendations

At Aagard, we are committed to building quality automated machinery systems. Your new Aagard system is efficient, easy to maintain and safe to operate.

Before attempting to operate the equipment, become familiar with the safety recommendations and operational components of your Aagard system. This includes the technical information pertaining to outside vendor components used within your Aagard system. This information is located in the Manufacturer Information Binder and in other literature supplied with the equipment.

To maximize machine safety, you must operate the machine correctly and comply with the described safety features!

ALWAYS follow your facility's Lockout-Tagout procedures when doing maintenance and repair work!

Prior to Lockout-Tagout, contact a Level 2 or higher Operator to properly shut down the PC.

Always follow your facility's Lockout-Tagout procedures!

Lockout/Tagout (LOTO) refers to specific practices and procedures to safeguard employees from the unexpected energization or startup of machinery and equipment, or the release of hazardous energy during service or maintenance activities.

Pay special attention to the following CAUTION, WARNING and DANGER signs below. They are used through out the manual to alert the operator to the potential of INJURY or DEATH, if the recommended procedures are not followed.

DANGER

Immediate hazards which WILL result in severe personal injury or death

WARNING

Hazards or unsafe practices which COULD result in severe personal injury or death

STAY ALERT AND REMEMBER:

Safety is the responsibility of everyone who operates or services your Aagard system

See Servo Motor with Brake for additional safety information!

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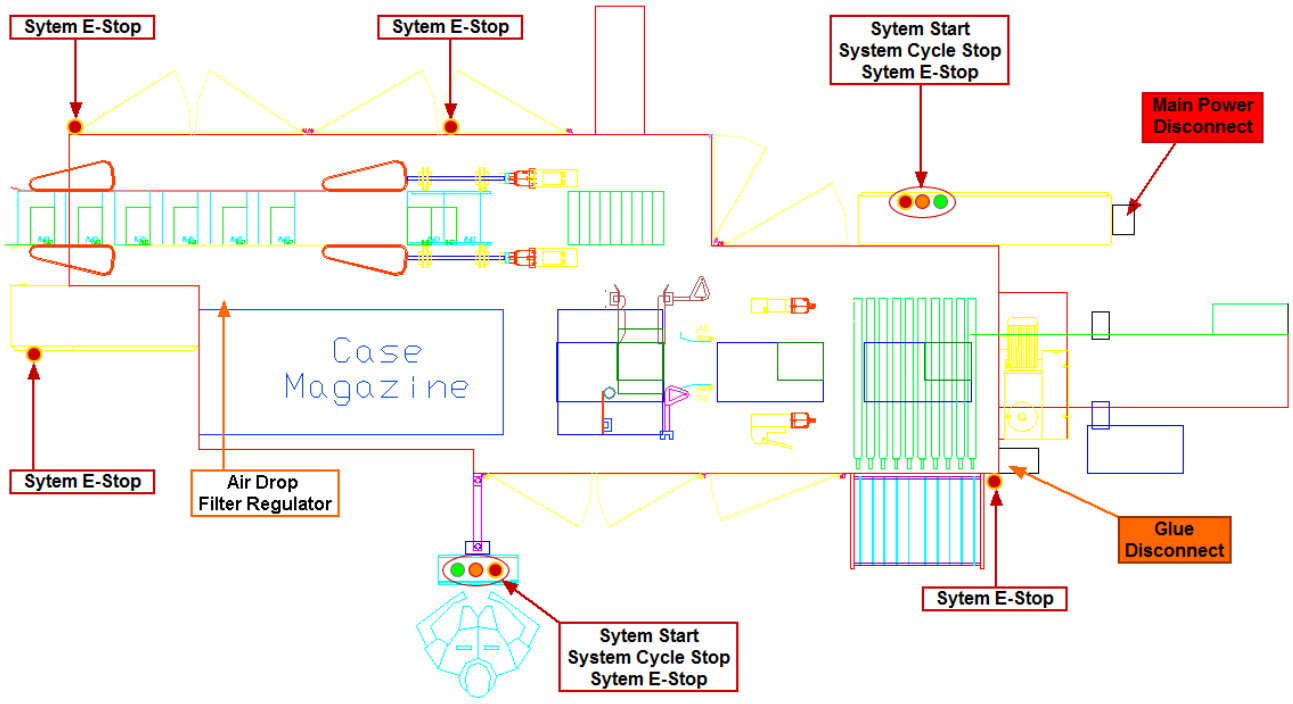
E-Stop Locations

All personnel who repair, maintain, or operate Aagard equipment must know the location of the EMERGENCY STOP buttons:



- **DO NOT** operate the equipment with any of the safety guards removed
- **DO NOT** wear neckties, loose clothing, or long loose-hanging hair around any equipment
- **OBSERVE** and follow the **DANGER**, **WARNING**, and **CAUTION** messages throughout this document, in vendor documentation, and displayed on the equipment
- **DO NOT** use steps or stands that allow anyone to reach over guards

Button Functions
Stack Light and Warning Horn

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Machine Operation

⚠ CAUTION

Before operating equipment, see Safety Recommendations

Read and observe all safety precautions in this manual and in vendor literature before proceeding

Prior to starting your packaging system

- **CHECK TO MAKE SURE ALL PERSONNEL, TOOLS AND EQUIPMENT ARE CLEAR OF THE MACHINE**
- Turn on hot melt system; allow the system time to reach normal operating temperatures
- Install and close all guard doors
- Load the magazine(s) with blanks
- Check to make sure product is available
- Once again, **CHECK TO MAKE SURE ALL PERSONNEL, TOOLS AND EQUIPMENT ARE CLEAR OF THE MACHINE**

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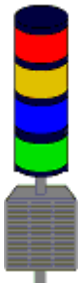
Stack Light and Warning Horn

The Stack Light consists of a stack of four (4) colored lights: **Red**, **Amber**, **Blue** and **Green** (Top to Bottom). The stack light is situated to be reasonably visible from the circumference of the machine. The warning horn will produce a sound loud enough to be heard in a production environment while standing near the circumference of the machine.

The stack lights and warning horn have following meanings:

FOUR Stack Light definitions	
	**Red** (Top) ***Solid*:** • An Emergency Stop condition exists • A Fault condition exists
	Amber (Second from Top) ***Solid*:** • No product coming from upstream, or an Integrated System is not ready for operation (Example: Glue System Not Ready) • Downstream unable to accept product
	Blue (Third from Top) ***Solid:*** • Material status is low (Examples: Low Case Blanks, Low Adhesive Level)
	Green (Bottom) ***Solid*:** • System Running

Warning Horn: The *Startup Warning* horn will sound for three seconds prior to the actual energizing or startup of a machine, which includes the enabling and recovery of servo powered systems.

The operator is required to push *and hold* the start button for the entire duration (three seconds) of the warning horn. If the operator releases the start button prior to the end of the horn, the machine will not start and the horn will cease to sound. The horn cycles on and off every ½ second for the duration of the alarm.

The *Fault Warning* alarm will sound when a fault exists and has not been acknowledged. The alarm will cycle on and off every 0.2 seconds until the fault has been acknowledged.

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Button Functions

Please refer to the E-Stop Locations drawing for Emergency Stop, Cycle Stop and Start Button locations.

Emergency Stop (E-Stop) Button - Pressing this button brings all machine function to an immediate and complete stop.

Opening any safety door also triggers an E-Stop.

Cycle Stop (C-Stop) Button - Pressing this button brings all machine function to a complete stop at the end of the current cycle.

C-Stop is the preferred method to stop operation in all NON-Emergency situations.

Start Button - Pressing and holding this button for three seconds (until horn stops) starts the machine.

Start Push Button Pilot Light

Solid

- All Safety Circuits of the system are engaged (no Emergency Stop Push Buttons are depressed, all Guard Doors are closed, and Safety Relays have been reset)

Flashing

- One or more, but not all, Safety Circuits of the system are engaged

Servo Motor with Brake

DANGER

If you begin maintenance on any servo motor which has a brake without securing it, a vertical axis may fall and cause severe personal injury or death, as well as mechanical damage!

Before performing maintenance on any servo motor with a brake, jog the vertical axis which the servo motor controls to a safe position. Place supportive material to protect both the axis and the area onto which it is being placed before jogging the servo to a safe position.

If you are unable to jog the servo motor to safely position the vertical axis, use straps to secure it. The following image is for reference only:

Installation and Power-Up

The **Aagard Group, LLC** employs skilled technicians to assist our customers with installation and startup of new equipment, as well as provide continuous technical support.

⚠ CAUTION

Before operating equipment, see Safety Recommendations

Read and observe all safety precautions in this manual and in vendor literature before proceeding!

DANGER

IMPORTANT!

Do not switch on the main power-disconnect!
The Aagard technician will perform the initial power-up

Lifting and Unloading Equipment – Aagard recommends you use qualified riggers to unload and locate machine components to avoid possible damage. Care must be taken when removing the machine and skid from the truck. Lifting on one end may bow the skid and attached machine, and is not recommended. Lift in sufficient locations to support the weight of the machine to prevent bowing, flexing and twisting. Excessive bowing and flexing will damage components within the machine and may be difficult to see.

⚠ CAUTION

Bowing in excess of 2 inches over a 40 foot span (1 inch over a 20 foot span) is unacceptable.

Twisting in excess of 1 inch over a 20 foot of length, and greater than ½ inch over an 8 foot width span, is unacceptable.

Damage that occurs while lifting and unloading may be undetectable, and can cause premature fatigue and extensive wear. Damage that occurs from improper lifting or unloading practices as noted in these guidelines may void the machine's warranty.

Machines Shipped With Steel Skids

- These skids have side lift points which should be used when lifting from the trailer, or when placing machine rollers beneath the skid. Never lift the machine and/or skid only from the ends, or from a single location along the side.
- Use machine rollers in sufficient quantities placed beneath the skid, under the machine, when moving the machine. Use a minimum of three rollers on each side of the machine.
- These skids have pull points that should be used when dragging from the trailer onto the loading dock or maneuvering to the desired location. The machine with the skids still attached should be moved to the final machine position prior to removing the skid.

- If it is not possible to leave the skid fastened to the machine frame base for maneuvering, it is important to locate additional rollers to support the frame. These rollers, when the skid is not used, should be located at approximately 6 foot intervals, and not further than 8 foot intervals. Extra care must also be taken when making corners while moving into position.
- Once the machine has been removed from the steel skid, the skid and all components of the skid are to be returned to The Aagard Group in a timely manner.

Machines Shipped With Wood Skids

- These systems are generally shipped in smaller sections. However, they should never be lifted from the ends. Even though they are shorter, the wood skids do not render as much support to the base framework as do tubular steel skids.
- Use machine rollers in sufficient quantities placed beneath the skid under the machine, when moving the machine. Use a minimum of three rollers on each side of the machine.
- Place a strap around the skid and base of the machine frame, when dragging from the trailer onto the loading dock.

Skid Removal – Use caution when removing the skids. Aagard recommends you use qualified riggers to uncrate and spot machine components to avoid possible damage. In addition, place floor pads under all legs to help eliminate floor damage and provide surface support.

- **Remove clamps** - Use caution when removing the clamps between the machine frame and the skid. Adjust the leveling legs on the frame to lift the machine from the skid. ***DO NOT LIFT THE MACHINE FROM ONE END WHEN ATTEMPTING TO REMOVE SKID. THE MACHINE SHOULD BE LIFTED UNIFORMLY.*** Remove the fasteners from the skid cross members on each side. The skid can then be removed from the sides of the machine; some of the legs may need to be left out until after the skid has been removed. Install the remainder of the leveling legs and, once in the proper location, begin the procedure to level your machine.

Certain items may have been removed from the system that will require reassembly once the system is in position. Standard wrenches are required for this reassembly.

NOTE!

Leveling the machine eliminates twisting and binding of assembled components

Leveling the Aagard Machine

- Level the machine in both the length and cross-machine dimensions.
- Perform an initial level check throughout the machine at both ends and sides when checking level using a 30 to 36 inch level. The use of a laser level will produce the best results, however, and is recommended. Use the lower horizontal frame members for leveling. Do not use the vertical supports for leveling.
- Adjust the 1” threaded legs, located in multi-support positions around the lower frame section, to level and adjust the height.
- We also recommend using silicone to seal the pads to the floor and the legs to the pads to help prevent contamination. Some components may require fastening to the floor.
- **For final leveling, use a laser level.** Start at the end of the machine, leveling side-to-side, and then along the length of the machine.
- After the leveling process is complete, use a laser level to ensure the framework is straight and free of bows along the length of the framework.

Power and Air Supply

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- Prior to installation, ***verify*** that your incoming electrical service meets all local safety and building codes. Check to ensure you are internally set up to meet the system's power requirements. See the machine Specification Chart for power requirements.
- **Check** to ensure you are able to meet the air pressure requirements. See the machine Specification Chart for air pressure requirements.
- "Clean/Dry" is defined as air filtered to five microns or less and with a pressure dew point of 40°F or lower.
- This machine is equipped with a filter regulator at the location shown on the floor layout.

Miscellaneous
- Wire power and air to glue tank, if equipped. Wires and wiring points are clearly marked.

Prior to Aagard Technician Arrival
- Plumb in air and electrical systems.
- Mount **ALL** guards.

DANGER

The initial electrical system hook-up, operational-check and inspection must be done by qualified electricians

USE EXTREME CAUTION when working at any electrical panel

The high voltage, 3-phase service enters at the main electrical cabinet

AFTER ALL OF THE ABOVE HAS BEEN COMPLETED:

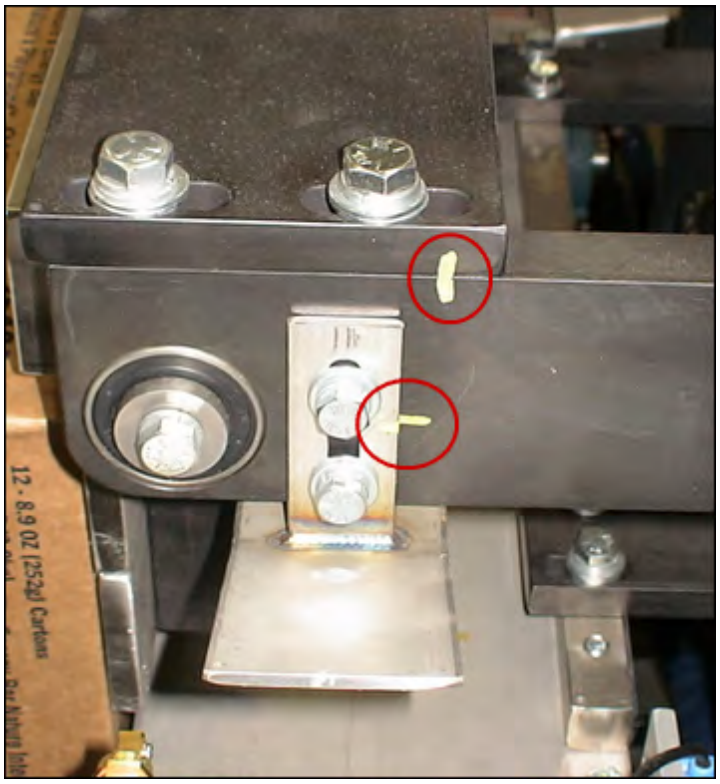
- Switch **OFF** the main power-disconnect for incoming power. Open the main electrical-control cabinet.
- Connect the wires for the 3-phase power service and ground (earth) wire.
- At the main power disconnect input, use an accurate meter to check the incoming line voltage to ensure it meets operating specifications.

Factory Settings

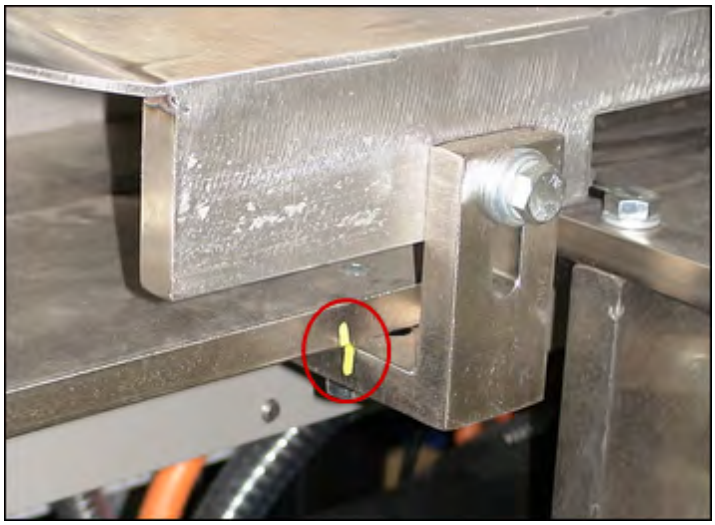
Parts that are adjusted in the initial setup of the machine are pre-set in a factory determined default position. These are the factory default settings with which the machine is shipped. These factory default settings are scribed or painted and visible on slotted or moveable parts to which default settings apply.

NOTE: Factory default settings may be adjusted as part of the machine setup process as determined by appropriate personnel

SAMPLE IMAGE



SAMPLE IMAGE



Section 2

Machine Description, Specifications and Operation

Machine Description, Specifications and Operation

As-Built Documentation
Floor Plan
Continuous Running
Sequence of Operation
Device List
Drive Function and Associated Devices
Servo Reference Positions

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As-Built Documentation

Please view following documents and topics for as-built information. These documents are considered as-built documentation at the time of machine shipment and will not be updated.

Topics:

General Terms and Conditions
Efficiency and Warranty Statement

PDF documents, external to this manual:

Specification Sheet
Aagard Equipment Standard
Changeover Values

General Terms and Conditions

NOTE: This topic is intentionally not translated

This topic is considered as-built documentation at the time of machine shipment and will not be updated

All sales, agreements for sale, offers to sell, quotations, acknowledgments and contracts of sale, including but not limited to purchase orders, installment sale contracts, leases and subsequent purchases of spare parts or change parts for the item of sale (herein IOS) shall be subject to the following terms and conditions; in addition the terms of Installment sale contracts and leases shall prevail when such terms conflict with the terms herein. Whenever the term Aagard is used, it is understood and agreed to include the corporate entity of The Aagard Group, LLC its employees, agents and representatives.

1. PRICES: All prices are subject to change without notice except those written quotations which shall expire without notice at Midnight CST sixty (60) calendar days from the date issued except such quotations can be terminated by prior written notice.

2. PAYMENT: Terms of payment are set forth herein. No discount. In the event machinery is the IOS and Aagard cannot demonstrate that the machine performs according to specifications herein, Aagard shall have the right to adjust the IOS so that the same shall perform to specifications. Purchaser shall, at Aagard's option, have the right to withhold ten (10%) percent of the purchase price without interest until such adjustments are completed. Any delinquent payment shall bear interest at the highest legal rate. If shipment is delayed by the purchaser or by anyone not a party hereto, payment shall become due on the date Aagard is prepared to make shipment. If the work covered by the purchase is delayed by the purchaser, payment shall be made forthwith based on the full purchase price or the percentage of completion to be determined at Aagard's option. If the purchaser defaults in any payment when due, then the full contract price shall become due and payable upon demand, or Aagard may, without prejudice to other lawful remedies, defer delivery or cancel the agreement and seek damages. Products held for the purchaser shall be at the risk and expense of the purchaser. If the financial condition of the purchaser at any time does not, in the judgment of Aagard, justify continuance of the work to be performed, Aagard may require full or partial payment in advance, and in the event of bankruptcy or insolvency of the purchaser or in the event any proceeding is brought by or against the purchaser under the bankruptcy or insolvency laws, Aagard shall be entitled to cancel any agreement then outstanding, and Aagard shall receive reimbursement for its damages.

3. ACCEPTANCE: No order, sale, agreement for sale, accepted quotation, offer to sell and/or contract of sale, shall be binding upon Aagard unless accepted by an Officer of Aagard at its office in the city of Alexandria, Douglas County, Minnesota, on Aagard's standard "Order Acknowledgment" form.

4. TAXES: Any taxes, including but not limited to turnover taxes, duties, fees, or other specific assessments which may be levied against the IOS shall be extra and borne by the purchaser. If Aagard is required to pay any of the above, purchaser shall reimburse Aagard upon notice, or furnish documents with the order, which exempts such payment.

5. CHANGES: No change of the agreement shall be binding without the written consent of all parties.

6. SHIPMENT: Shipments are made F.O.B. Aagard's plant of manufacture.

7. CANCELLATION: Orders acknowledged per paragraph 3 above are not cancelable by purchaser.

8. ERRORS: Stenographical and clerical errors are subject to correction.

9. DELIVERY: Shipping dates submitted are approximate. Aagard will use its best efforts to meet the approximated shipping date provided the purchaser supplies all necessary information, but Aagard shall not be held responsible for failure to do so. Shipping date is based upon construction to normal Aagard standards (unless otherwise specified herein) and further dependent upon vendor's and subcontractor's delivery commitments. Any delays due to Department of Defense priorities, shortages of labor and/or materials may change the shipment date herein set forth. Aagard shall be subject to no penalty or liability for failure to meet a shipping date and shall in no event be held responsible for loss of profits, damages incurred by the purchaser, its customers, or other consequential damages that may result there from.

10. TESTING MATERIALS: Purchaser shall furnish to point of manufacture at its expense sufficient product, sample packages, packaging materials, complete manufacturing data and other material necessary for full testing of IOS.

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11. DAMAGE OR LOSS IN SHIPMENT: Aagard shall not be responsible for damage or loss in transit and all claims must be made by the purchaser direct to the carrier. Claims for shortages or incorrect IOS must be made in writing within fifteen (15) days after receipt of the shipment by the purchaser, and failure to give Aagard written notice within that period shall be unqualified acceptance of the IOS and a waiver of all claims.

12. WARRANTY: Aagard warrants that the IOS will be constructed in accordance with normal Aagard methods of manufacture and attached specifications. The IOS is warranted to be free from defects in material and workmanship for a period of one (1) year or 7,500 operating hours, whichever occurs first, from the date of shipment. The Aagard Group will repair or replace defective components covered by outside manufacturers' warranties according to the provisions of each respective manufacturer's warranty. Freight, labor, expenses, and service rates related to replacement parts under warranty are invoiced at applicable standard rates. All equipment a part of the IOS but not manufactured by Aagard is limited in warranty and guarantee to the warranty and/or guarantee of the manufacturer and expires upon the expiration of such warranty. If the purchaser within the warranty period gives Aagard written notice of any alleged defect, Aagard will, at its option, repair or replace the same free of charge F.O.B. its manufacturing plant, installation extra. Equipment replaced under the warranty shall have the same warranty as equipment, but does not extend the warranty of the original IOS. No warranty is made with respect to: (A) Consumable items within IOS, such as vacuum cups, plastic wear guides, etc, (B) Failures not reported to Aagard within the warranty period, (C) Failures or damage due to misapplication, lack of proper maintenance, abuse, improper installation or abnormal conditions of temperature, moisture, dirt, or corrosive matter, etc., (D) Failures due to operation, either intentional or otherwise, above the rated capacities, or in an otherwise improper manner, (E) Any IOS which has been altered by anyone other than an authorized representative of Aagard, (F) Any IOS damaged without fault of Aagard. Aagard shall not be liable for any expenses incurred by the purchaser in an attempt to correct any allegedly defective IOS.

13. PURCHASER'S PRODUCT: Purchaser shall hold Aagard harmless from any action arising by reason of alleged design and construction of the products handled by the IOS or the method or process carried out thereon.

14. PURCHASER'S OPERATION: It is understood that Aagard has no special knowledge of the purchaser's operation or requirements and purchaser agrees that the IOS is purchased because of the independent determination by the purchaser of its suitability for intended use.

15. LIABILITY: The use of all guards, interlocks, electrical devices, and other safety devices on the IOS and the operation of the IOS in accordance with Aagard operating instructions is essential to the safe use of the machine, and, therefore, the purchaser agrees that it will keep in legible condition all warnings or operating instructions affixed to the IOS or parts of the IOS by Aagard, and that it will not remove or render inoperable any guards, interlocks, electrical devices, or other safety devices, that are part of the IOS, and that it will not add any devices that will render the machine unsafe and that it will operate the machine in accordance with Aagard operating instructions. The purchaser agrees to pay in behalf of Aagard all sums which Aagard becomes legally obligated to pay because of bodily injury or property damage caused by or resulting from the use or misuse of the IOS, including reasonable attorney's fees and legal expenses. The purchaser agrees to indemnify and hold Aagard harmless from all actions, claims or demands by any person, firm or corporation arising out of or in any way connected with the IOS, its operation, use or misuse, or the design, construction or composition of any product made or handled by the IOS, including all such actions, claims or demands based in whole or in part on the default or negligence of Aagard. If the purchaser allows the IOS to be used by any other party, then the purchaser agrees to indemnify and hold Aagard harmless from any and all claims, actions or demands whatsoever arising thereafter by reason of the use or misuse of the IOS.

16. LIMITATIONS: Aagard shall not be liable for any losses, costs, forfeitures and all other consequential damages (including loss of profits, liabilities of the purchaser to its customers or third persons) whether direct or indirect, and whether or not resulting from or contributed to by the default or negligence of Aagard, its agents, employees and subcontractors, which might be claimed as the result of the use or failure of the IOS. THERE IS NO FURTHER WARRANTY EITHER EXPRESS OR IMPLIED IN CONNECTION WITH THE DESIGN, SALE, MERCHANTABILITY OR USE OF THE IOS AND/OR SERVICES EXCEPT AS TO TITLE; AND AAGARD'S LIABILITY ON ITS WARRANTY SHALL IN NO EVENT EXCEED THE COST OF THE IOS.

17. PATENT INDEMNITY: Aagard agrees that it shall defend any suits that may be instituted by any party against purchaser for an alleged infringement of any U.S. patent relating to the structure of the IOS as originally furnished, provided purchaser shall have made all payments due and gives to Aagard immediate written notice of the institution of such suits, and permits Aagard, through its counsel, to defend the same, and gives all needed information, assistance and authority to enable Aagard to do so. Aagard's obligation to meet the expenses of defending such suit and for payment of any award for infringement is expressly limited to an amount no greater than the purchase price of the IOS. Subject to the foregoing and in case of final award or damages in such suit. Aagard, at its option, may pay such award or remove said IOS and refund the purchase price so that Aagard's total liability shall not exceed the purchase price of the IOS. In case the structure of the IOS in suite is held to infringe any U.S. patent and its use thereof is enjoined, Aagard may at its option: (A) Obtain for the purchaser the right to continue using the IOS, or (B) Replace the same with non-infringing equipment, or (C) Modify the IOS so that it is non-infringing or (D) Remove the IOS and refund the purchase price reduced by a factor of use allowance of twenty (20%) percent per year. Because Aagard cannot know or control the use or nature and character of products produced on the IOS, Aagard assumes no responsibility for any damages or expenses which may be incurred in the defense of infringement actions brought by third parties against the purchaser and/or his customers for infringement of patent claims directed to: (1) the package manufactured by the IOS, (2) the design and construction of the products handled by the IOS, and (3) the method or process carried out on the IOS, including, but not limited to, all infringement actions against Aagard for patent infringement or as a contributory infringer.

18. COPYING: Purchaser recognizes that the IOS has been designed and built through expenditure of substantial time and money by Aagard, and purchaser agrees not to make drawings of the IOS or any portions thereof, or permit others to do so, and will not duplicate or conspire in the duplication of the IOS.

19. DAMAGES: Aagard shall not be liable for any actual or consequential damages resulting to the purchaser by reason of this sale.

20. LOCAL LAW AND CONDITIONS: If national or local laws, regulations, orders, etc. or unusual climate conditions require modification of the IOS not within the Aagard standard specifications, the purchaser shall specify in detail and pay for such modifications according to Aagard's normal pricing policy in addition to the purchase price stated. If such modifications alter the performance or prevent the IOS from performing according to specifications, Aagard shall not be liable therefore and shall not be required to meet these specifications to the extent the performance may be adversely affected.

21. PERFORMANCE: The IOS will be deemed acceptable under the terms and conditions of this contract if the purchaser has not given written notification to Aagard to the contrary within sixty (60) days from the date of shipment or in the event the purchaser continues to use the IOS.

22. LAW: The rights and duties of all persons and the construction and effect of all provisions hereof shall be governed by and construed according to the laws of Minnesota.

23. ENTIRE AGREEMENT: This document constitutes the entire agreement between the purchaser and Aagard for the IOS and is not an acceptance of Purchaser's purchase order or subject to purchaser's delivery order, and inures only to the benefit of the purchaser. Should any of the Terms and Conditions of the purchaser's order be at variance with any of the Terms and Conditions contained herein, it is understood and agreed that Aagard Terms and Conditions will prevail.

24. COMPLIANCE WITH EXECUTIVE ORDER OF PRESIDENT: Aagard agrees to comply with the provisions of Section 202 of the President's Executive Order 11246 and any amendments thereto and the Rules and Regulations issued pursuant to Section 201 thereof and, Aagard warrants that it will comply with such Executive Order and Rules and Regulations to the extent the same are applicable to the manufacture of the IOS.

Efficiency and Warranty Statement

This topic is considered as-built documentation at the time of machine shipment and will not be updated

The Aagard Group, LLC guarantees 96% efficiency. The guarantee ensures that Aagard machines will perform as specified. All Aagard machinery is thoroughly tested to the highest standards.

The system running efficiency defined as follows:

$$\frac{\text{Total Machine Run Time}}{\text{Total Machine Available Time}}$$

460/480 = 0.96 x 100 = 96% efficiency

Total machine available time does not include time lost because of the following:

- Failure to supply products to the pre-defined quality standards
- No operators available to start the machine
- No cartons, trays and/or cases or out of specification cartons, trays and/or cases
- Upstream or downstream line stoppages
- Cleaning, preventative maintenance and scheduled downtime stoppages
- Machine ramp up/ramp down time (from stop situation – caused by line ramp up/down time)

Total machine available time does include time lost because of the following:

- Machinery adjustments
- Product jams or placement issues
- Carton, tray and/or case jams
- Adhesive faults
- Mechanical faults
- Electrical faults

Equipment covered for defects in material and/or workmanship for a period of one year, or 7500 operating hours. This warranty excludes consumables, such as plastic wear guides, vacuum cups, etc. Changes to the programmable controller logic program or mechanical modifications without written approval of The Aagard Group may result in undesirable machine operations and will void the warranty.

Outside components are covered by outside manufacturers' warranties according to the provisions of each respective manufacturer's warranty.

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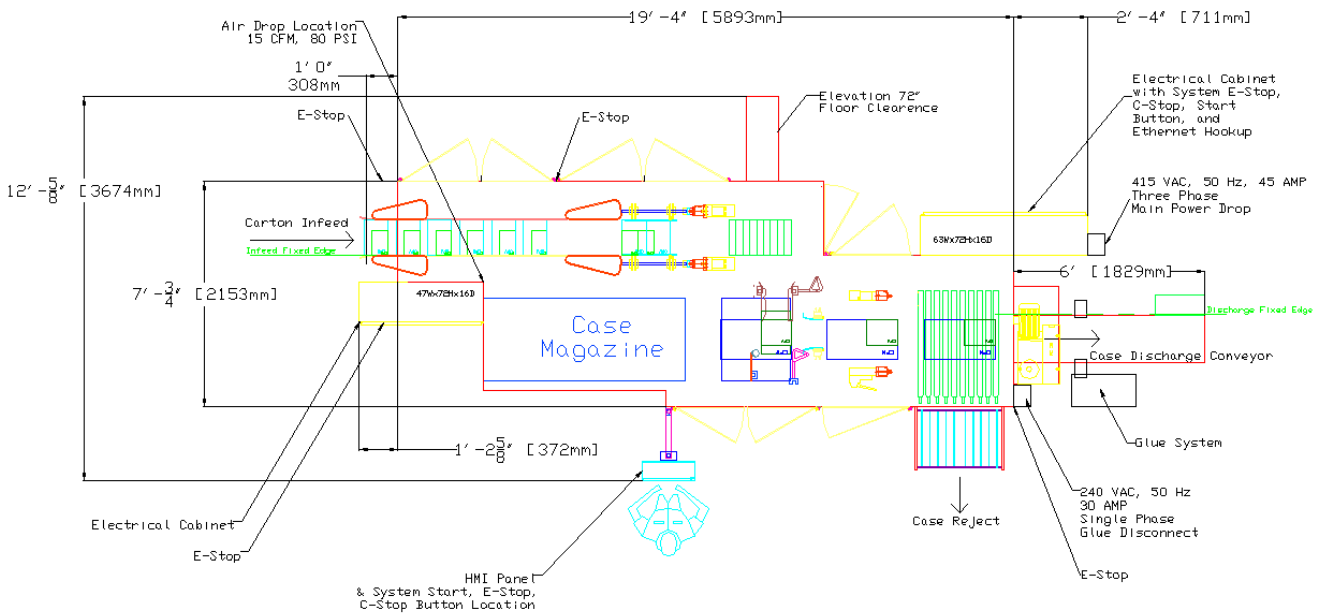
Floor Plan


Air Drop Location
15 CFM, 80 PSI
1' 0"
308mm
19' -4" [5893mm]
2' -4" [711mm]
Elevation 72"
Floor Clearence
Electrical Cabinet
with System E-Stop,
C-Stop, Start
Button, and
Ethernet Hookup
E-Stop
E-Stop
12' -5 1/8" [3674mm]
415 VAC, 50 Hz, 45 AMP
Three Phase
Main Power Drop
Carton Infeed
Infeed Fixed Edge
6' [1829mm]
7' -3/4" [2153mm]
Case
Magazine
Discharge Fixed Edge
Case Discharge Conveyor
1' -2 5/8" [372mm]
Glue System
240 VAC, 50 Hz
30 AMP
Single Phase
Glue Disconnect
Case Reject
Electrical Cabinet
E-Stop
HMI Panel
& System Start, E-Stop,
C-Stop Button Location
E-Stop

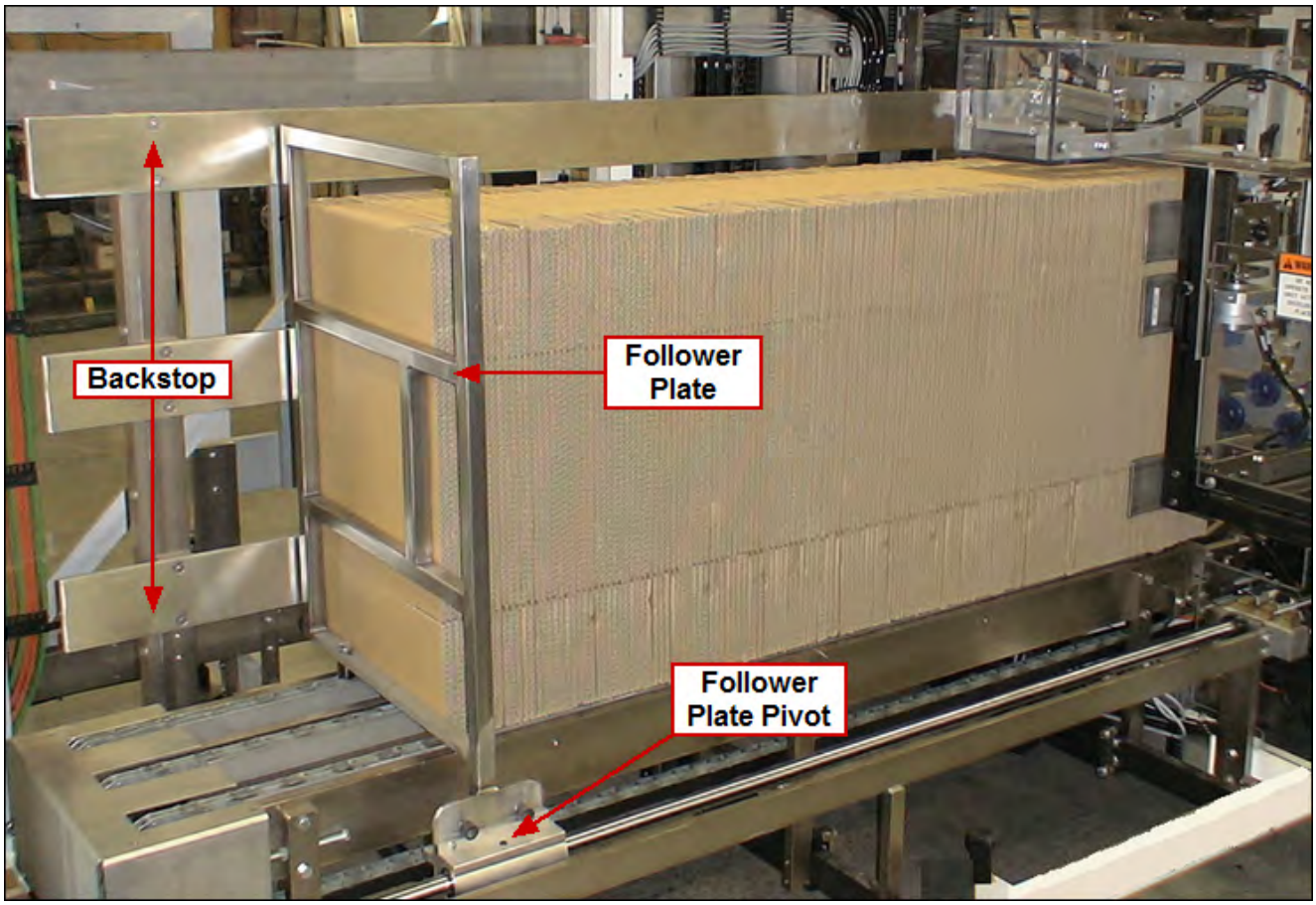
Continuous Running

The system will continue to run as long as new product is available, packaging supplies (case blanks, hot melt adhesive, etc.) are replenished, and the product is removed.

Case Blanks
Glue

Case Blanks

To replenish the magazine while the machine is running, stack the case blanks behind the follower plate and then pivot the follower plate out from the stack. Move the follower plate to the end of the stack and push against the stack, removing any gaps that may be present before resetting the follower plate onto the chain. Make sure that the blanks are pushed up tightly against the magazine backstop.



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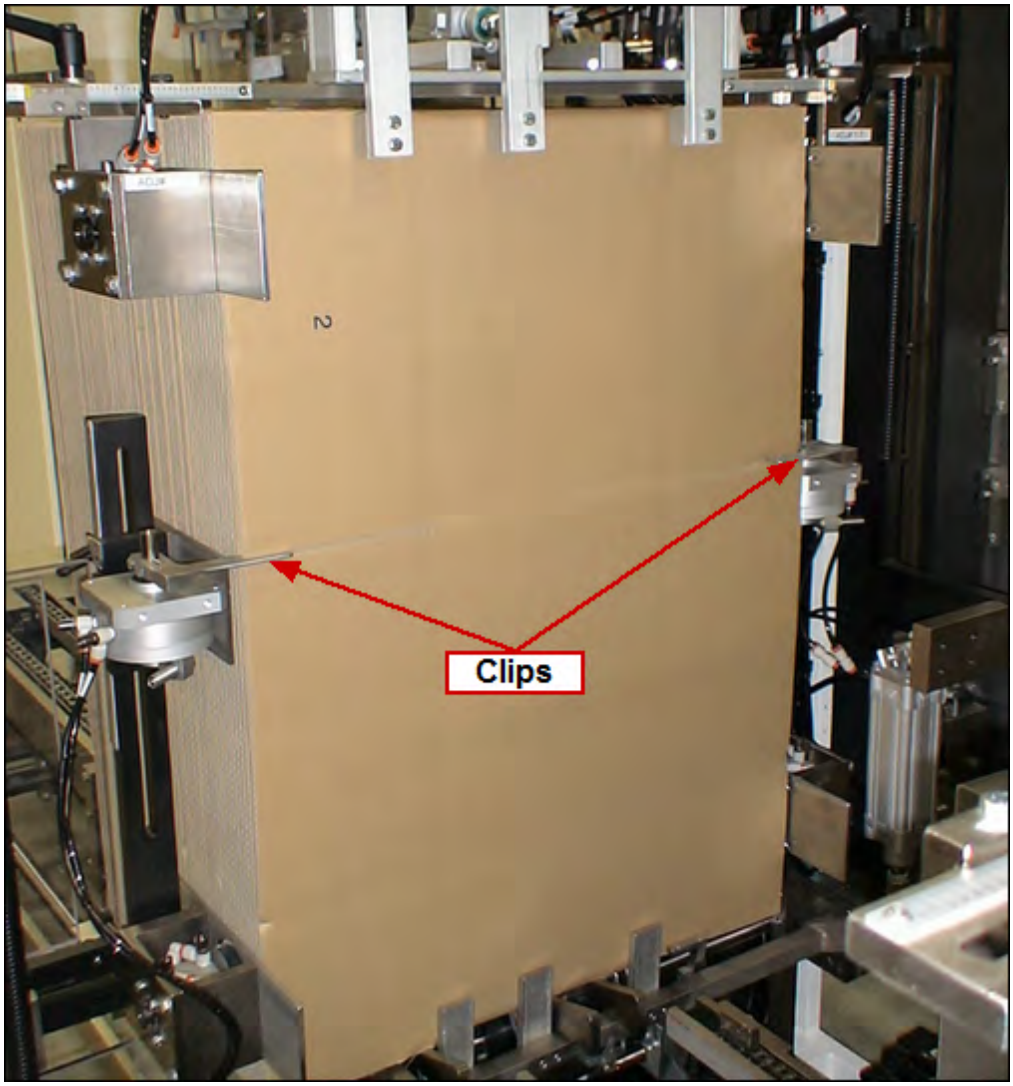
Note: On knockdown style cases, the glued manufacturer's flap should be facing upstream (toward the follower plate). When the side clips are adjusted correctly and the case is correctly loaded, the clips should align with the case score line cutout (see picture below).



Glue

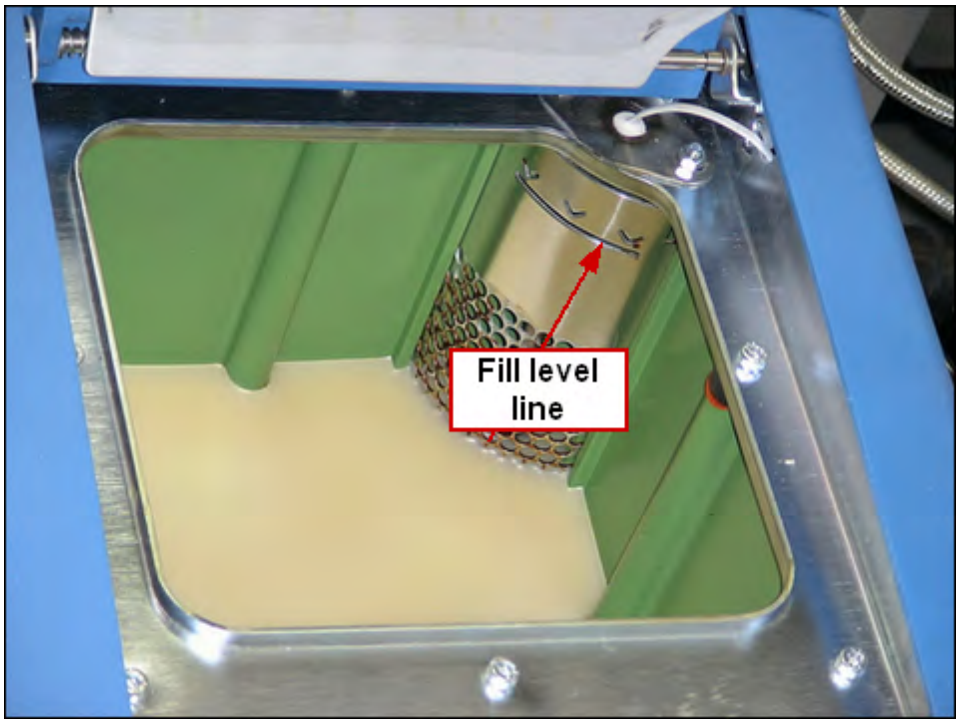
Hot melt adhesive: Replenish the hot melt adhesive in the Nordson glue system per Nordson directions as required. To load glue pellets, lift the cover of the glue tank and gently drop glue pellets into the tank. Fill to fill level line (see picture below). Close the cover.

DANGER

Under no circumstances should you reach into a hot glue tank.

Warning: Do not overfill!

SAMPLE IMAGE

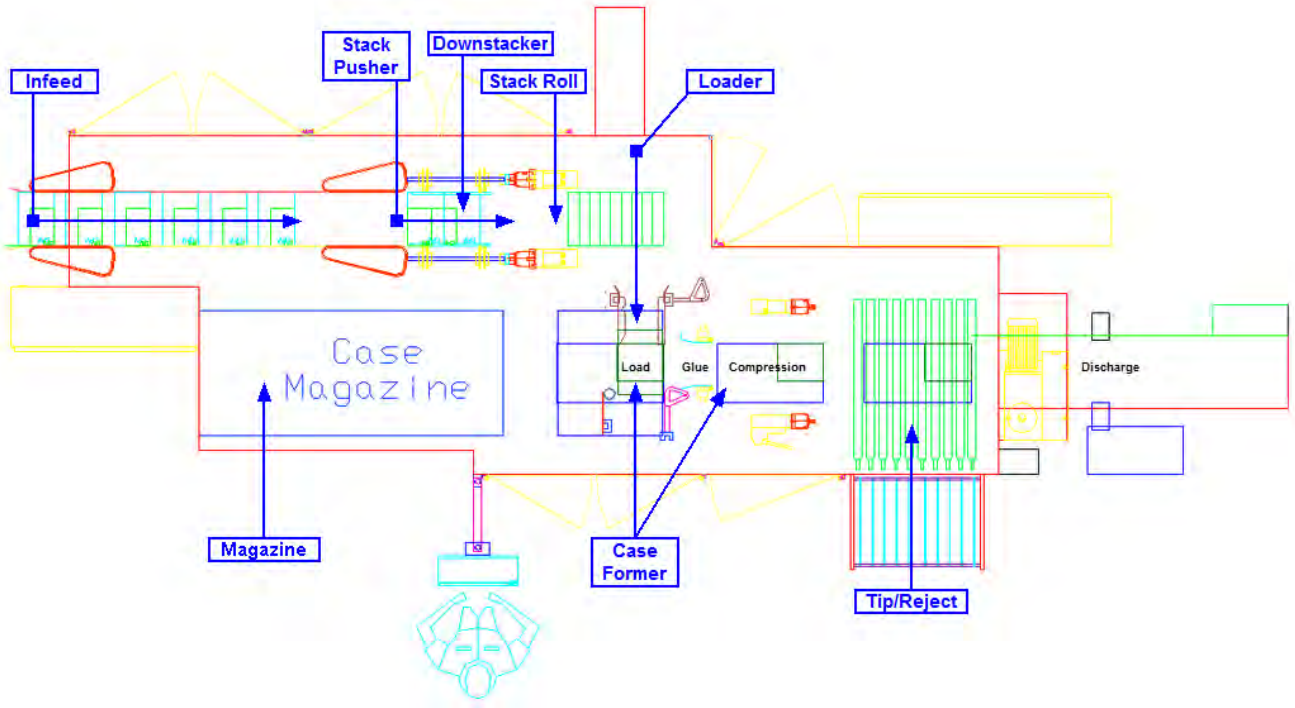


Please refer to the Nordson ProBlue Adhesive System Manual for information about the hot melt applicator. The Nordson Manual contains everything from electrical wiring diagrams to operation to troubleshooting.

Sequence of Operation

The following topics will describe, in detail, how each section of the system functions in order to help the user understand the cause and effect of each input and output. Inputs (electrical devices and signals) are discussed with references as to what occurs when they are triggered. View the Drive Function and Associated Devices topic for more information regarding how drives and sensors are used in this machine. An input is a signal which informs the machine controller that an event has occurred. An output is the machine controller sending the machine an instruction; outputs can be thought of as the signals and devices that do the work. A thorough understanding of the machine and how it functions will greatly aid in troubleshooting any problems that may arise.

Click on a Name ***in the drawing for more information!***



Case Packer

Infeed
Downstacker
Stack Pusher
Stack Roll
Loader
Magazine
Case Former
Tip Reject

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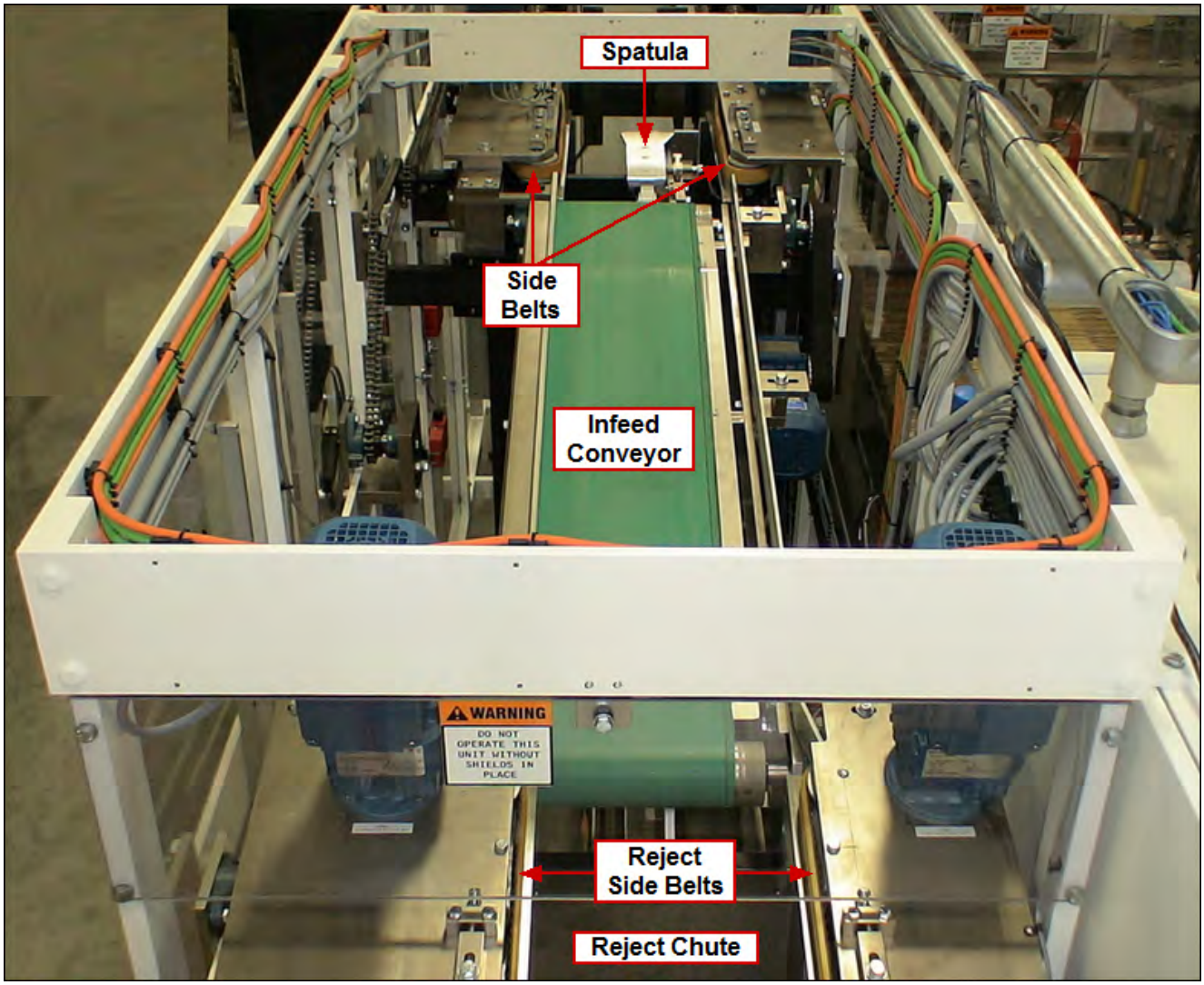
Infeed



- Reject Side Belts: The Adjustable Reject Side Belt (MT902) and Fixed Reject Side Belt (MT905) have an opening beneath them which will allow cartons which come in the wrong orientation to drop out into a reject chute and be rejected from the system. These side belts are driven with a VFD for speed control. The Reject Side belts will run at a speed which will meter the cartons into the machine at the proper rate. This rate is a recipe-specific speed

- Infeed Conveyor: The cartons of product transfer onto the Infeed Conveyor (MT915) and are conveyed into the side belts, lying flat with the wide dimension leading on a high friction metering conveyor belt. This conveyor is driven with a VFD for speed control. The speed of the conveyor is a little faster than the reject side belts to pull a small gap between cartons

- Side Belts: Downstream of the Infeed Conveyor, the cartons are run through the Side Belts, made up of the Adjustable Side Belt (MT1002) and Fixed Side Belt (MT1006). These side belts are driven with a VFD for speed control. The Side Belts run faster than the Infeed Conveyor so that a gap is pulled between each carton. The Side Belts are intended to go about two to three times the speed of the Infeed Conveyor. The gapped cartons pass by a photo eye for counting

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- Spatula: A servo driven Spatula (SM02) transfers each carton into its correct position of the top layer in the Downstacker. As the first carton of a layer is being transferred, the spatula extends out to ensure that the leading edge of the carton transfers over the seam between the two cartons of the previous layer below. The spatula then retracts while or before the second carton of that layer enters the Downstacker

See also: Drive Function & Associated Devices

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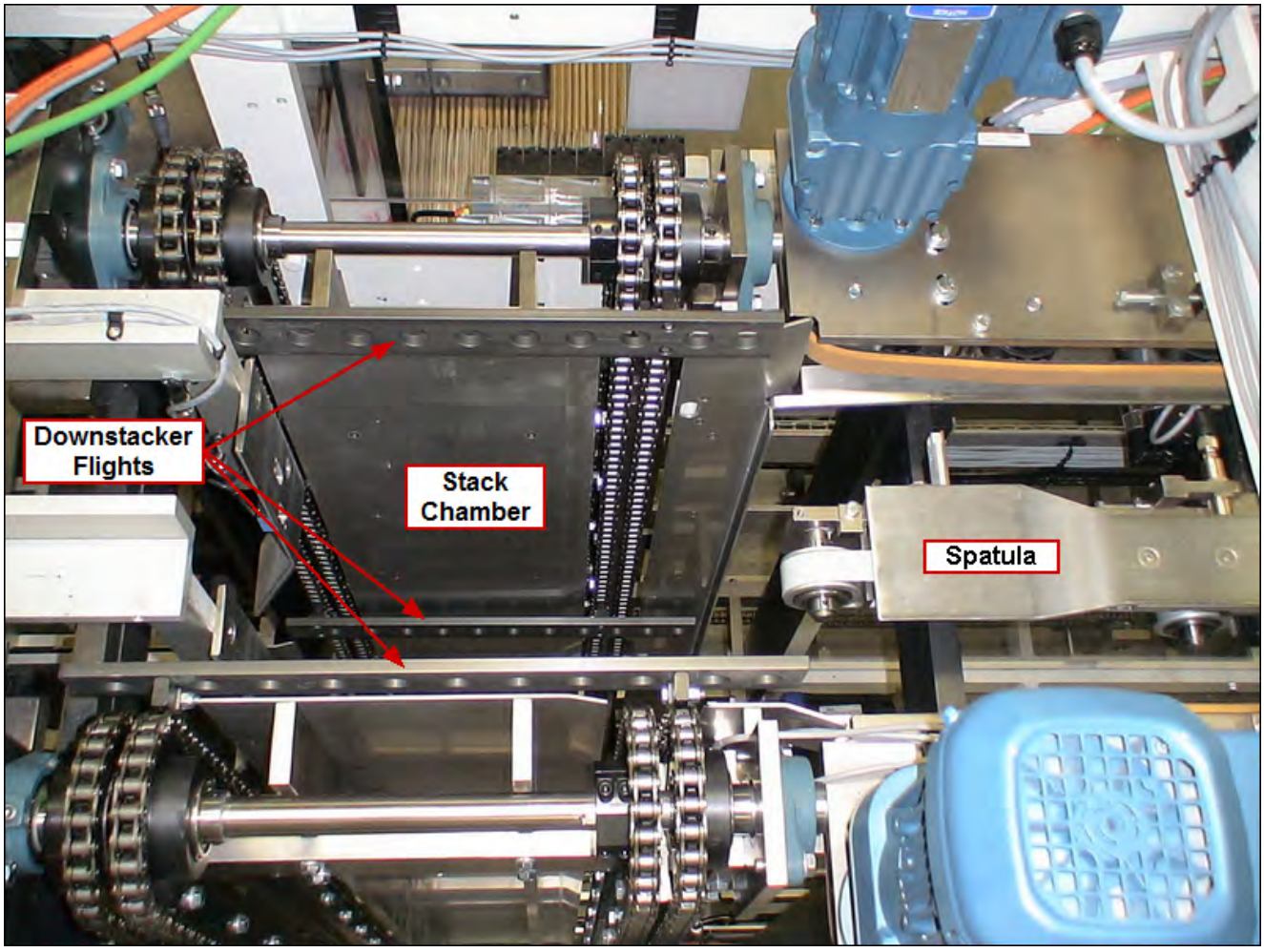
Downstacker



- The Downstacker consists of four servo-driven downstacker flights: Adjustable Lower Downstacker (SM03), Adjustable Upper Downstacker (SM04), Fixed Lower Downstacker (SM05) and Fixed Upper Downstacker (SM06). Two of the flights are on one side of the downstacker, while the other two flights are on the opposite side, directly across from each other

- After the spatula delivers a complete layer, the downstacker flights are triggered to move down one product height so that another layer can be received

- When a full stack is complete, the downstacker flights move down to the bottom of the stack chamber and another set of flights moves in to accumulate the next stack

- Only during a startup process, the current stack height and top layer count are determined by the 1st Carton At Downstacker (PE36102), 2nd Carton At Downstacker (PE36103) and Stack Layer Height Presented (PE36105) photo eyes

See also: Drive Function & Associated Devices

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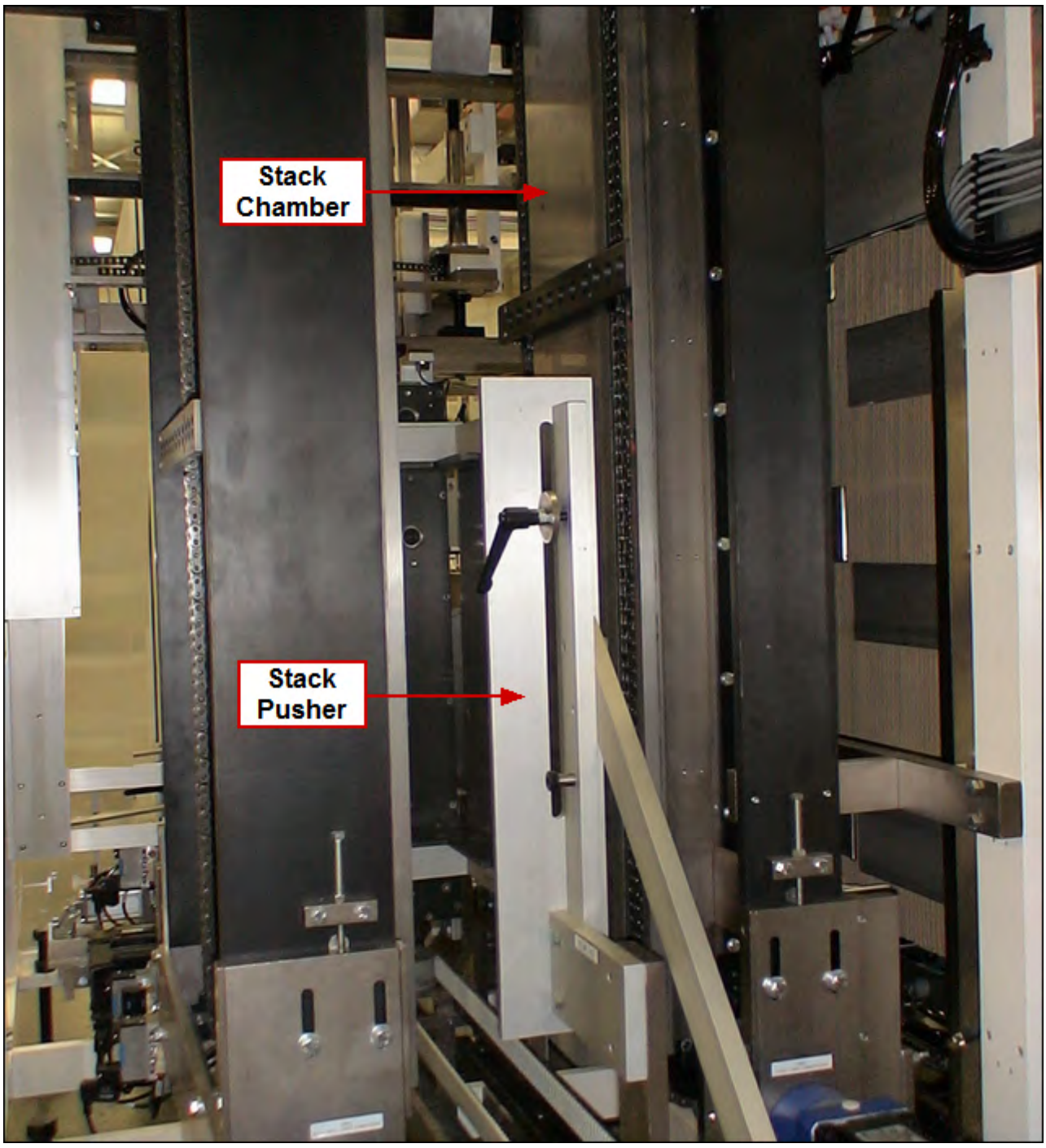
Stack Pusher



- The Product At Stack Pusher (PE36106) photo eye senses when product is present at the stack pusher. The downstacker flight location signals the Stack Pusher (SM07) to move. The servo-driven Stack Pusher will push the completed stack out of the downstack chamber to the Stack Roll station as the next stack is being built above

See also: Drive Function & Associated Devices

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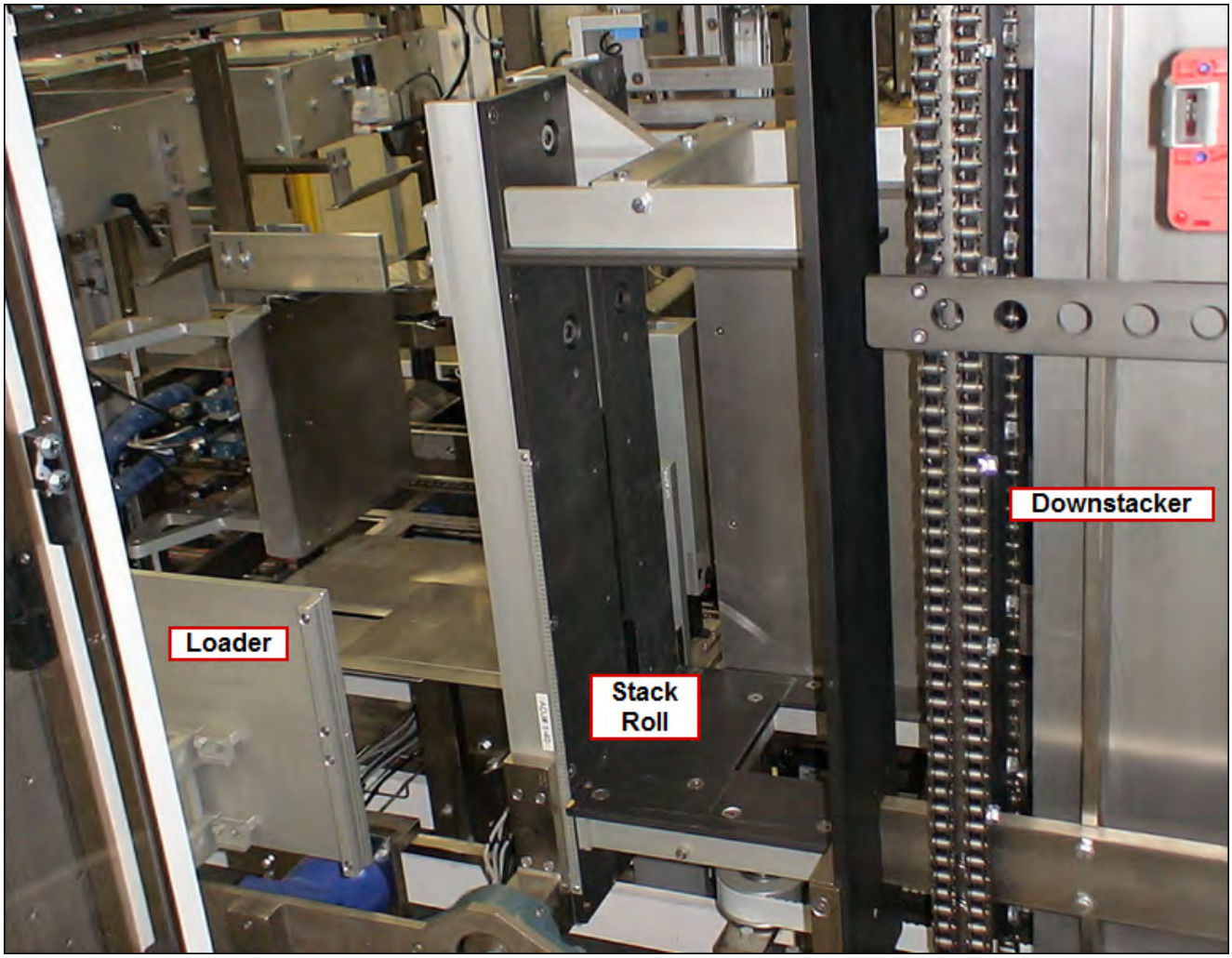
Stack Roll



- When the Stack In Stack Roller (PE46002) photo eye senses that cartons are in the stack roller (for cartons that will be rolled), the accumulated pack pattern of cartons (the stack) is rolled 90 degrees into the proper case load orientation by the servo-driven Stack Roller (SM01).
  - Some pack patterns are not rolled; in these cases, the stack roller is set to the horizontal position and cartons are pushed from the Downstacker directly into the load position on the chair. The Stack At Loader (PE36204) photo eye senses that cartons are in the load position for non-rolled product

- During the process of stack rolling, the Roll Product Conditioner (SV35200) and Tip Clamp (SV35201), located on the stack roll, condition the stack of cartons to ensure a controlled and fitted stack height before being loaded into the case. The Tip Clamp (SV35201) has adjustable force using regulated air pressure to achieve a delicate yet controlled hold on the product. If the stack is not conditioned properly, the machine produces a fault message and stops
  - For non-rolled cartons, a separate Product Conditioner (SV35202) is used to properly control the product as it is being loaded into the case

See also: Drive Function & Associated Devices

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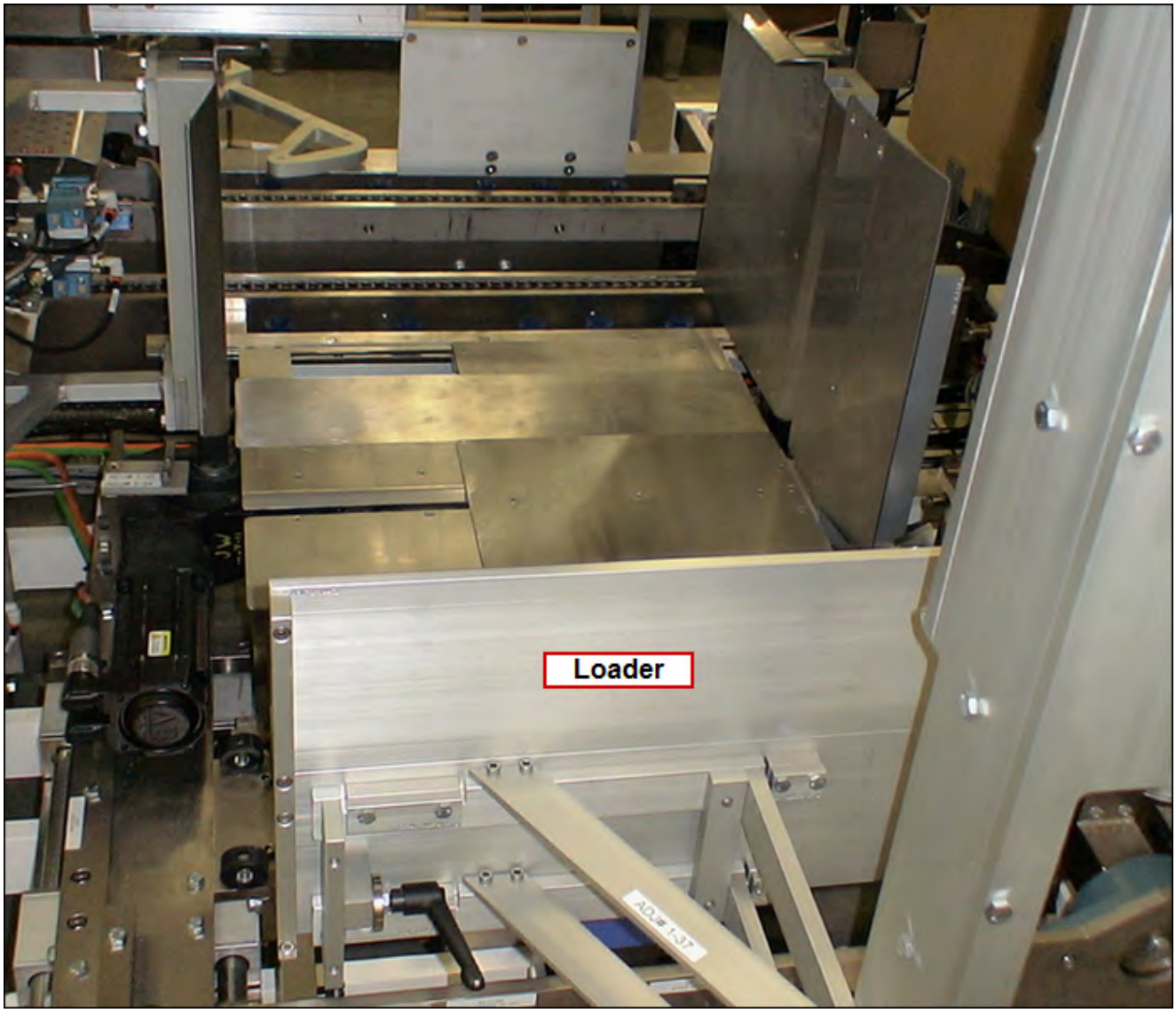
Loader



- After the product has been rolled (or pushed directly) into the load station, the Loader (SM08) begins its cycle. It will check that the Stack At Loader (PE36204) photo eye is blocked to ensure product is present. The Loader (SM08) will move the stack into the case and then return to its starting position

- The Product Conditioner (SV35202) solenoid valve moves a plate up for the next stack to be presented if non-tipped cartons are being run

See also: Drive Function & Associated Devices

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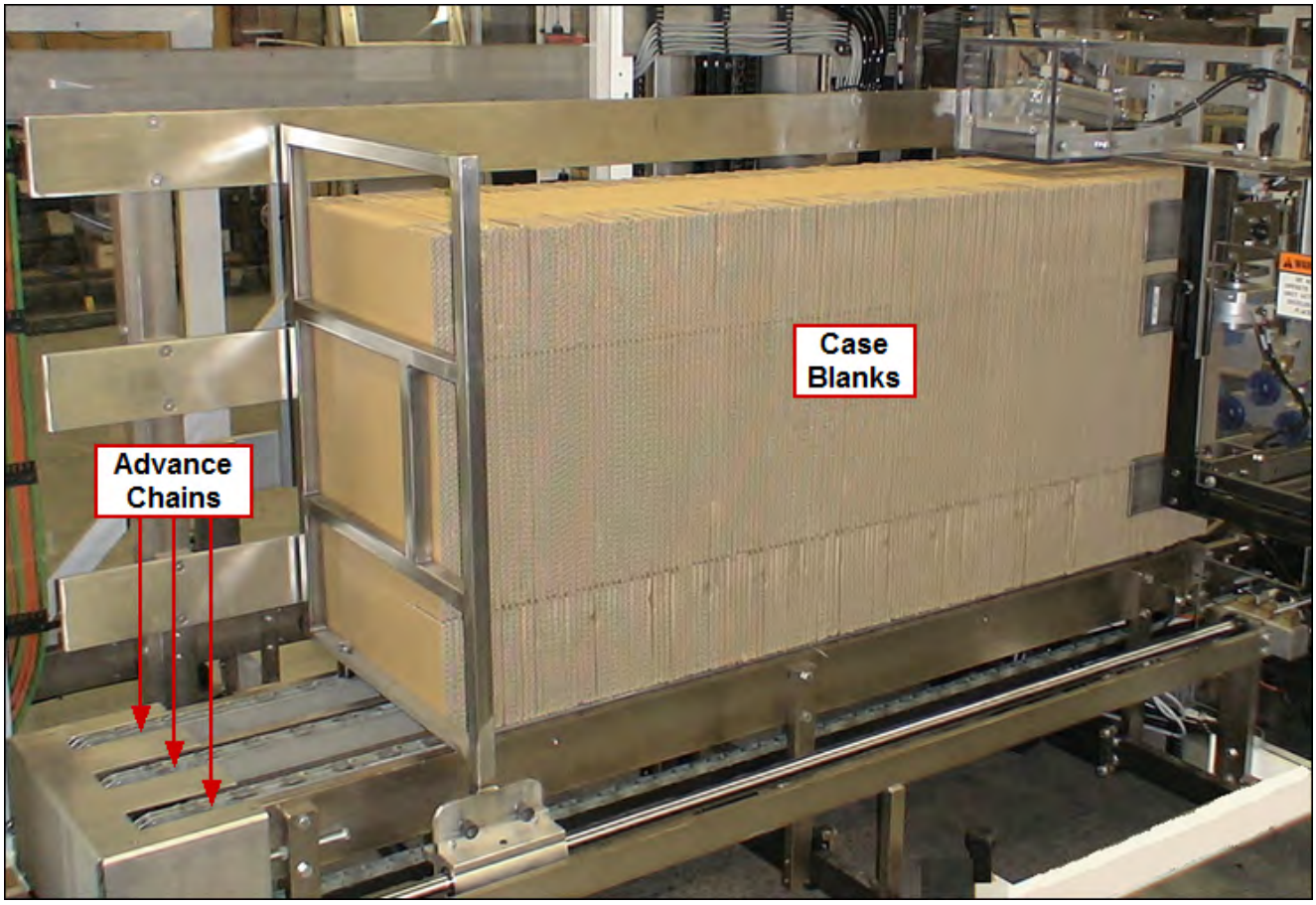
Magazine



- Case blanks are placed on the Case Magazine standing upright. The Case Blanks (PE36300) photo eye senses when magazine materials are present. The low materials status will occur if materials are not present. When the Case Blanks sensor does not detect materials and a pre-determined number of leading blanks have been removed, a fault status will be set and the magazine empty message will be displayed

- The blanks ride on chains which advance by cycling the air cylinder-driven Magazine Advance (SV35102). To advance the blanks, the advance stroke of the cylinder is commanded. The advance stroke, through a one-way bearing, rotates the head shaft of the chains. When the cylinder reaches the end of travel, detected by the Blanks Advanced (PX36303) sensor, the cylinder direction of travel is changed by commanding the recondition stroke. The head shaft will not rotate during this travel direction due to the one-way bearing. After the recondition stroke is completed, the cycle begins again

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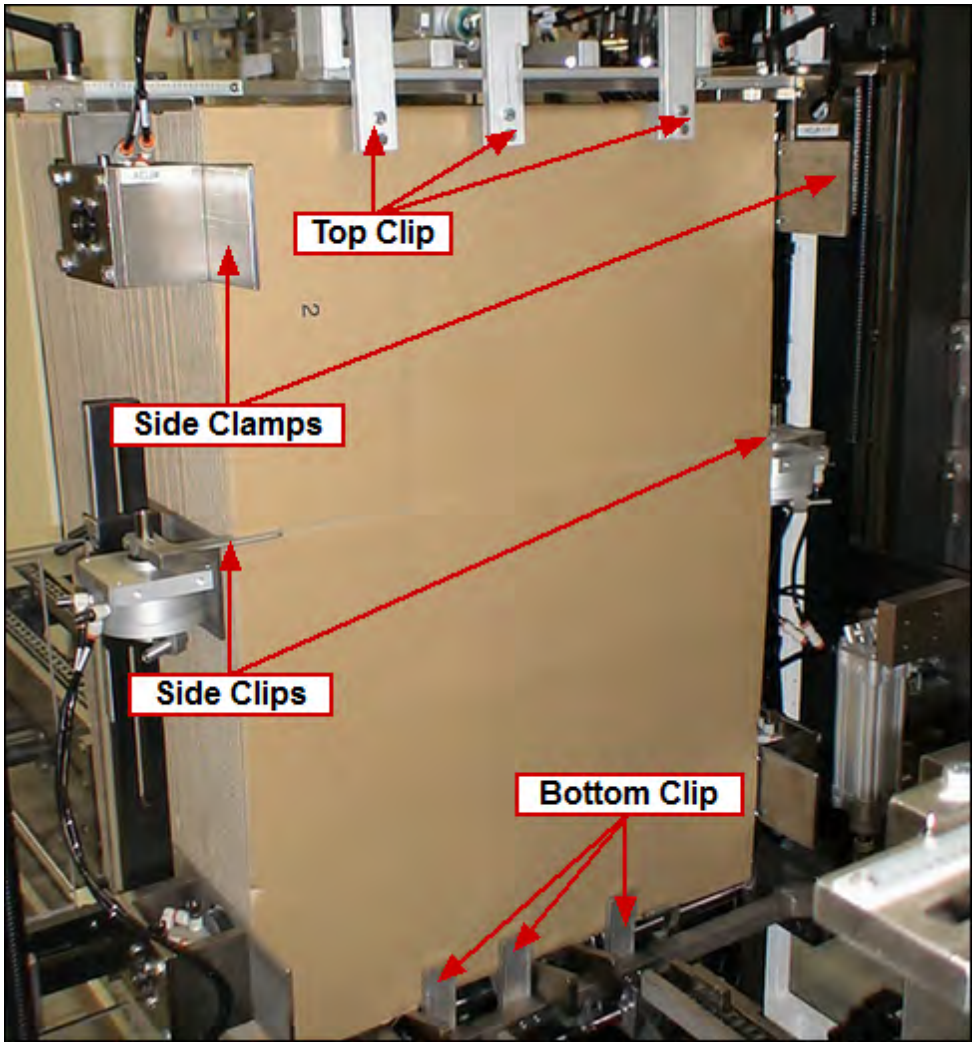

- The magazine clips consist of air cylinder-driven Magazine Top Clip (SV35500), Magazine Bottom Clip (SV35504) and Magazine Side Clips (SV35104). All clips are positioned to hold the leading blank in the magazine

- The air cylinder-driven Side Clamps (SV35103) are in the release position. When the leading blank is to be removed from the magazine, the Side Clamps are moved to the clamp position while the Magazine Bottom Clip and Magazine Top Clip are moved to the release position

- At this time, the leading blank may be removed from the magazine. As the blank is being removed, the Magazine Side Clips are used to partially open the blank. After the blank is partially opened, the Magazine Side Clips are moved to the release position. As soon as the blank is clear of the Magazine Bottom Clip, the Magazine Bottom Clip is moved to the clip position. When the blank is clear of the Magazine Top Clip, the Magazine Top Clip is moved to the clip position, and when the blank is clear of the Magazine Rotate Clips, the Magazine Rotate Clips are moved to the clip position. After all clips are in the clip position, the Side Clamps move to the release position. During the time when the Side Clamps are in the clamp position, the recondition stroke for the Magazine Advance will be commanded

- The timing for the Magazine Top Clip, Magazine Bottom Clip, Magazine Side Clips and Magazine Side Clamps is based recipe set points compared to the Case Former Master Position

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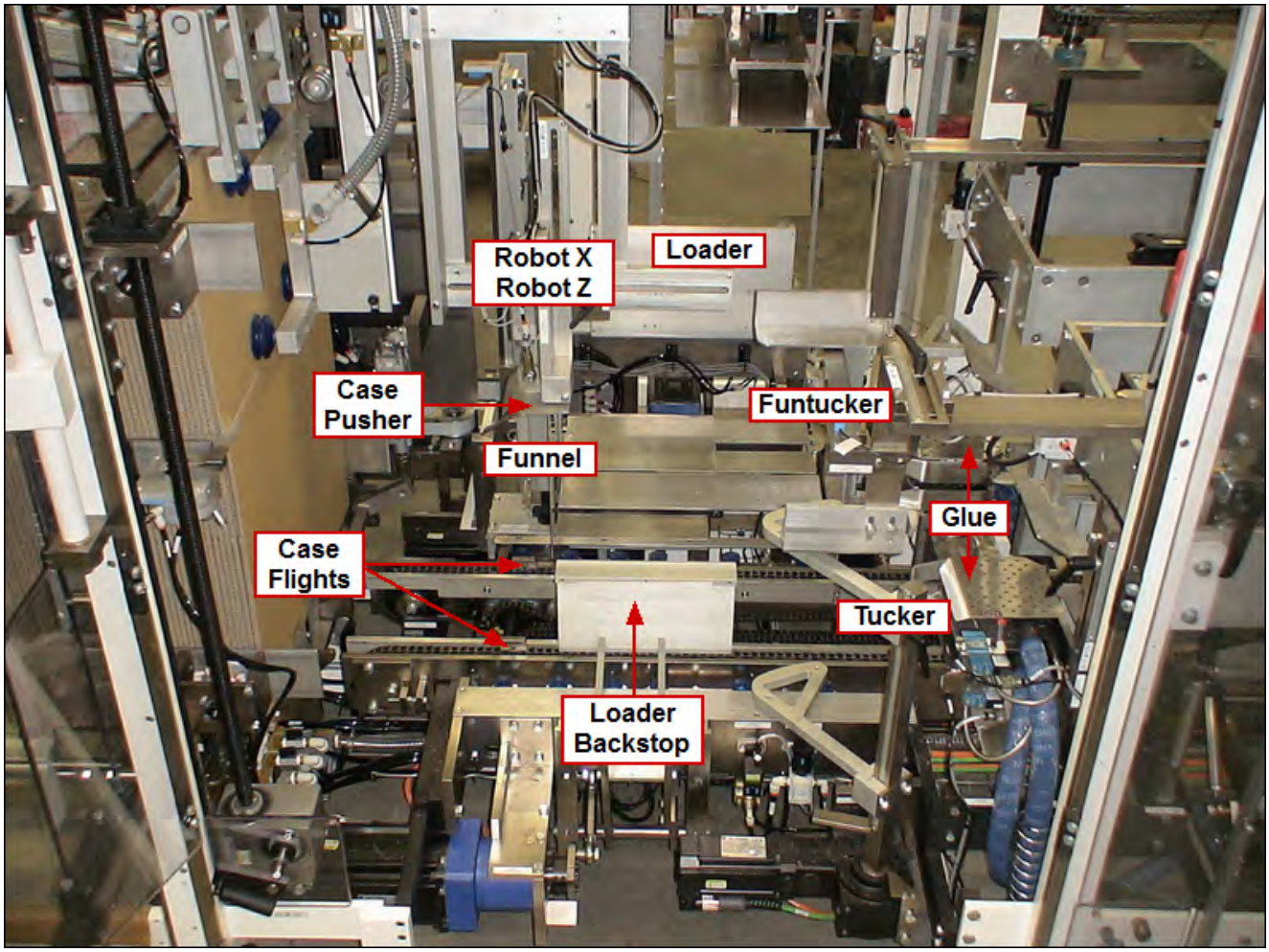
See also: Drive Function & Associated Devices

Case Former



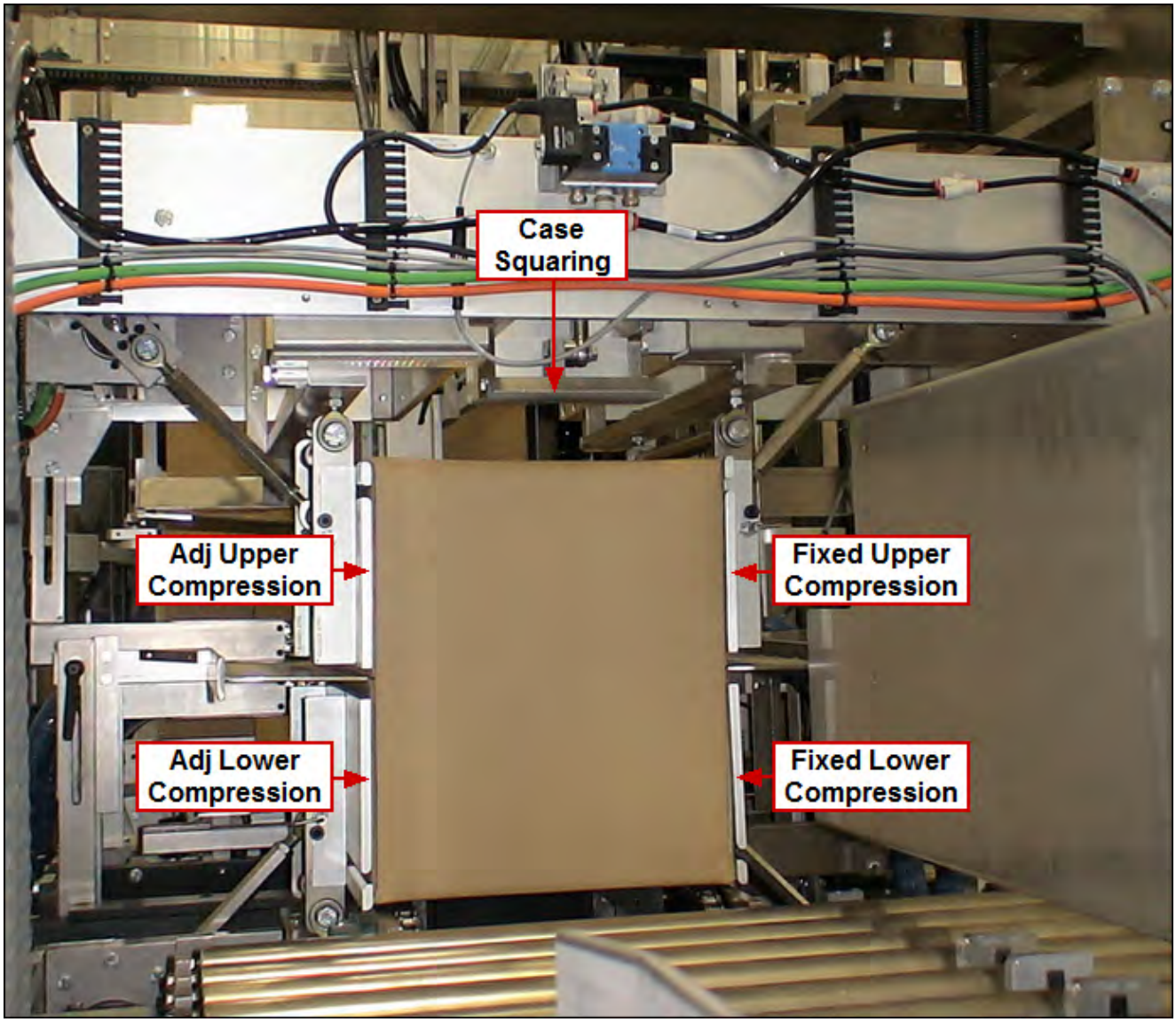
- Case Robot X, Case Robot Z, Robot Vacuum, Load Vacuum, Case Pusher:
  - Case Robot X & Case Robot Z: The robot is made of the servo-driven Case Robot X (SM11) axis and the servo-driven Case Robot Z (SM10) axis. The Case Robot X will move the robot tooling in the horizontal plane, while the Case Robot Z will move the robot tooling in the vertical plane. The robot tooling consists of a set of vacuum cups which will be used to hold onto a case blank while the blank is being set up
  - At the beginning of the robot cycle, the tooling will move toward the leading blank in the magazine. When the vacuum cups are against the leading blank, the Setup Vacuum (SV45402) is turned on
  - The robot moves the tooling away from the magazine to the setup station, bringing a case blank with it. During this motion, the case blank opens up
  - When the tooling reaches the end of the setup motion, the Load Vacuum (SV35205) is turned on and the air cylinder-controlled cups are moved up to the case bottom horizontal flaps. At this time, the load vacuum cups grab hold of the bottom horizontal flap.
    - When the case is filled, the Load Vacuum Retract (SV35506) releases the flaps and lowers the air cylinder controlled cups
  - As the load vacuum cups grab the case blank, the funnels move toward the case to hold the case open
  - After the case blank has been setup, the robot tooling will release the blank by turning off the Setup Vacuum. The robot tooling can then be moved away from the case at setup. The tooling will be moved up and over the setup case while it returns to the start position in front of the magazine. The Case At Load (PE46601) photo eye is used to determine if the setup case is correctly setup. If the Case At Load photo eye detects the top horizontal case flap and the Load Vacuum is made, the case is setup properly. If the case is not properly

setup, a fault status is set and an improper case setup message is displayed
  - While the Case Robot X is setting up the case, the Case Pusher (SV45401) attached to Case Robot X will push the previous case from the load position into compression
  - The Case Robot X, Case Robot Z, Robot Vacuum, Load Vacuum and Case Pusher are slaves to the Master. The motion profile for the Case Robot X and Case Robot Z, and the timing for the Robot Vacuum, Load Vacuum, and Case Pusher are provided through electronic cam tables

- Funnel In Out, Funtucker In Out:
  - The funnels are made of the servo-driven Funnel (SM13) and the servo-driven Funtucker (SM14). The Funnels are used to hold the case open and to provide a guide for the stack as the loader fills the case blank. As the case blank is being brought to the setup station, the air cylinder-driven Funnel In Out (SV35203) and the air cylinder-driven Funtucker In Out (SV46506) move the funnel assemblies toward the case. When the case is positioned in the setup station by the robot, the funnels rotate toward the case. When the funnels are fully rotated toward the case, the funnel tips will be inside the case past the score line. This positioning will provide a good transfer of product into the case blank. As the case is being filled, the Funnel In Out and the Funtucker In Out move the funnel assemblies away from the case. This action brings the funnel tips outside of the score line of the case, clear of the product in the case. After the case is filled, the funnels rotate away from the case
  - The Funnel and Funtucker are slaves to the Case Former Master. The motion profile for the Funnel and Funtucker are provided through electronic cam tables

- Case Tuckers:
  - The purpose of the Case Tuckers is to fold the case flaps. The tuckers are made of the servo-driven Tucker (SM15) and the servo-driven Funtucker (SM14), and are used to fold the trailing vertical flaps. Before the beginning of the tuck motion for the Funtucker, the air cylinder-driven Funtucker In Out moves the Funtucker assembly toward the case
  - The Tucker and Funtucker are slaves to the Master. The motion profile for the Tucker and Funtucker are provided through electronic cam tables

- Loader Backstop:
  - The Loader Backstop (SM09) is driven by servo motor. The Loader Backstop is used to keep product from sliding through the case as the cartons are being pushed into the case from the opposite side via the loader



- Glue:
  - o The glue station is made of four solenoid-controlled glue guns: Fixed Top Glue (SV30400), Adjustable Top Glue (SV30402), Fixed Bottom Glue (SV30401) and Adjustable Bottom Glue (SV30403). While the case is being moved from the setup/load station to the compression station, glue stitches will be applied to vertical flaps. The Distorted Case (PE46604) photo eye will be used to determine when a case is present for glue to be applied. The timing of the glue stitches will be based on the position of the Case Flights (SM12) through an electronic cam table. The setting of the stitches will be set by the operator from the glue page in the HMI. If the application of the glue stitch is interrupted for any reason, the remainder of the stitch pattern for that case will not be applied.
  - o Interrupted glue application might be caused by the following conditions:
    - no case is detected to apply the glue
    - a glue gun was dispensing glue longer than the predetermined period of time
    - the machine is cycling at a rate less than the predetermined low speed rate for glue
    - the machine was stopped in the middle of the stitch pattern

- Case Squaring:
  - o As the product is being transferred past glue into compression, a Case Squaring (SV45403) cylinder is

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extended in compression. This acts as a stop, but also ensures the case will be square prior to the compression plates folding the flaps

- Compression:
  - Compression is made up of the servo-driven Fixed Lower Compression (SM19), the Adjustable Lower Compression (SM20), the Fixed Upper Compression (SM21) and Adjustable Upper Compression (SM22). Compression is used to compress glue with compression plates while the glue sets. After a case is placed into the compression station, the Fixed Lower Compression, Adjustable Lower Compression, Fixed Upper Compression and Adjustable Upper Compression move compression plates to the compression position. Before the case in compression can be removed, the compression plates are moved to the release position

See also: Drive Function & Associated Devices

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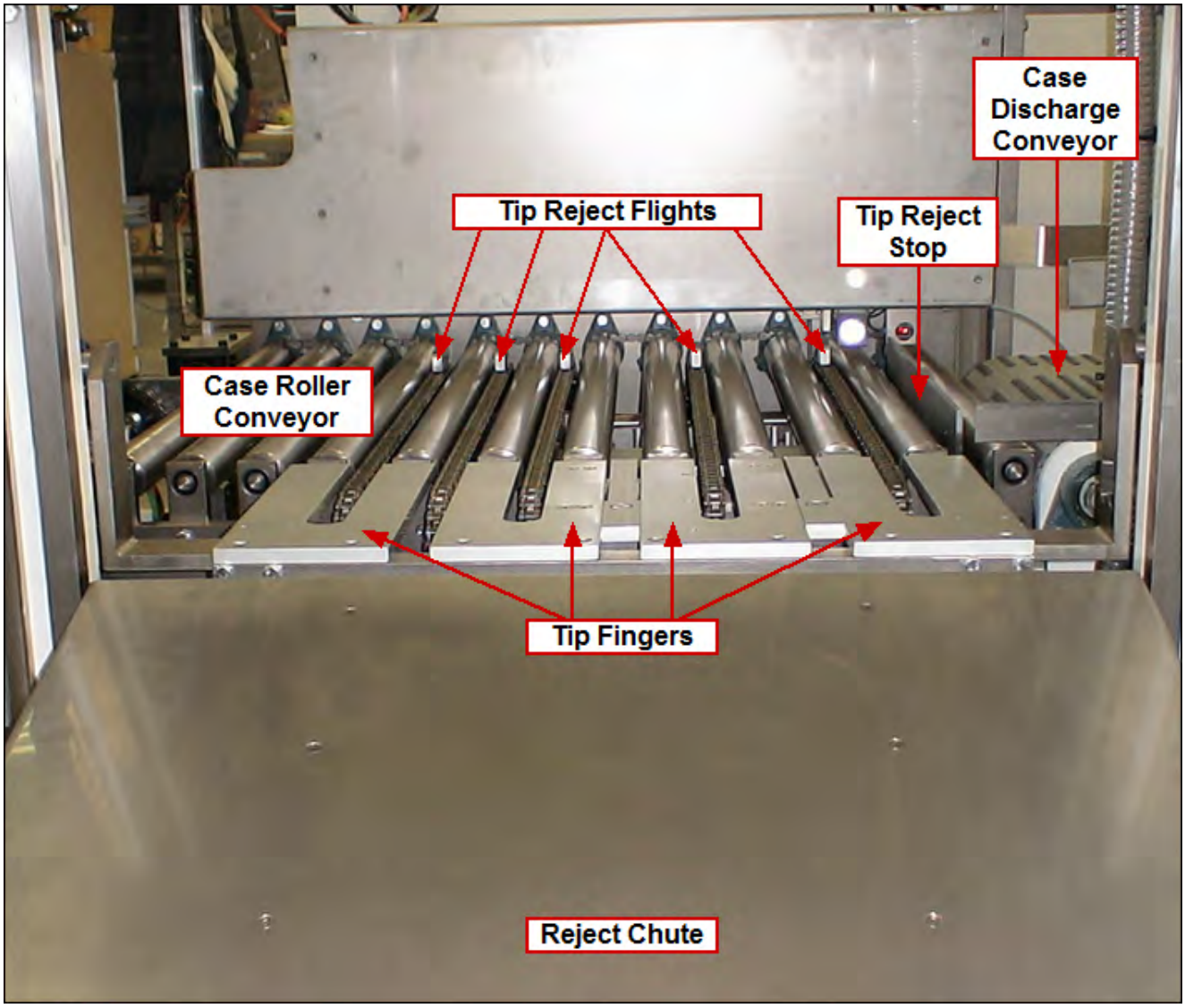
Tip Reject



- Case Roller Conveyor: The Case Flights push the case out of compression onto the Case Roller Conveyor (MT1102). As the case leaves the case packer, Adjustable Case Flap (PE46603) and Fixed Case Flap (PE46602) photo eyes monitor for open case flaps. The roller conveyor transfers the product to the Tip Reject Stop (SV45702)

- Tip Reject Stop: The Tip Reject Stop extends between the rollers on the conveyor to stop the case on the Case Roller Conveyor. This stop is triggered by Case at Tip Reject (PE46700) photo eye

- Tip Reject Flights: Once a case is against the Tip Reject Stop, the Tip Reject Flights (SM18) move to push the case toward the reject door. If open flaps were previously detected, the Tip Reject Flights will keep pushing the case until it slides out the reject door

- Tip Fingers: If open flaps were not previously detected, then servo driven Tip Fingers (SM17) extend up from the conveyor surface and, in conjunction with the Tip Reject Flights (SM18), tip the case 90 degrees back onto the Case Roller Conveyor. The Tip Reject Flights then reverse direction and push the case back to the fixed line backstop.

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- The Tip Reject Flights and Tip Fingers are slaves to a Master. The motion profile for the Tip Reject Flights and Tip Fingers are provided through electronic cam tables

- Case Discharge Conveyor: If a good case was tipped, the Tip Reject Stop (SV45702) retracts and the case is transferred out of the machine onto the Case Discharge Conveyor (MT202). The Tip Reject Stop (PE46702) photo eye tells the Tip Reject Stop (SV45702) when it is OK to extend.

See also: Drive Function & Associated Devices

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Device List

NOTE:
"CP" preceding a map location indicates the device is in the Case Packer
"Remote" listed as a map location indicates that the device is in a remote location; outside of the machine floor plan area

Device listings with no Brick Slice Point or I/O Type indicated are intentional.
The table below is sorted alphabetically by device Number. Click on a column heading to sort by that column.

Type	Number	Name	Mounted Location	Message Location	Aagard Part #	Brick Slice Point	I/O Type	Map
Cylinder Switch	CS36203	Product Conditioner Released	CP Infeed	CP Infeed	Z0215009	B2 S10 P3	Input-Digital	CP_D11
Cylinder Switch	CS36302	Magazine Advance Advanced	CP Magazine	CP Magazine	Z0215009	B2 S11 P2	Input-Digital	CP_G7
Cylinder Switch	CS36400	Funnel In Out Out Of Case	Case Packer	Case Packer	Z0215009	B3 S11 P5	Input-Digital	CP_G10
Cylinder Switch	CS46500	Case Pusher Lowered	Case Packer	Case Packer	Z0215009	B3 S11 P0	Input-Digital	CP_H10
Cylinder Switch	CS46503	Tip Clamp Released	CP Infeed	CP Infeed	Z0215009	B3 S11 P3	Input-Digital	CP_D11
Cylinder Switch	CS46506	Funtucker In Out Out Of Case	Case Packer	Case Packer	Z0215009	B3 S11 P6	Input-Digital	CP_E11
Cylinder Switch	CS46507	Case Squaring Raised	Case Packer	Case Packer	Z0215009	B3 S11 P7	Input-Digital	CP_G13
Cylinder Switch	CS46509	Roll Product Conditioner Released	CP Infeed	CP Infeed	Z0215009	B3 S11 P4	Input-Digital	CP_D11
Cylinder Switch	CS46606	Tip Reject Stop Released	Case Packer	Case Packer	Z0215009	B3 S12 P6	Input-Digital	CP_H15
Disconnect	DS101	Main Disconnect	Case Packer	Case Packer	Z0205187			CP_E17
Disconnect	DS9402	Glue Disconnect	Case Packer	Case Packer	Z0214121			CP_I16
E-Stop Button	ES20301	System Emergency Stop Depressed	HMI Cabinet	HMI Cabinet	Z0004654	B3 S8 P3	Input-Digital	CP_K8
E-Stop Button	ES20302	Remote System Emergency Stop Depressed	CP2	CP2	Z0004654	B3 S9 P3	Input-Digital	CP_E14
E-Stop Button	ES20305	Reject Area Remote System Emergency Stop	Case Packer	Case Packer	Z0004654	B3 S9 P4	Input-Digital	CP_I15
E-Stop Button	ES20314	CP1 Remote System Emergency Stop	CP1	CP1	Z0004654	B2 S12 P5	Input-Digital	CP_G1
E-Stop Button	ES20315	Infeed Remote System Emergency Stop	CP Infeed	CP Infeed	Z0004654	B2 S12 P6	Input-Digital	CP_D2
E-Stop Button	ES20321	Downstacker Remote System Emergency Stop	Case Packer	Case Packer	Z0004654	B2 S12 P7	Input-Digital	CP_D7
Filter Regulator	FR60001	Filter Regulator	Case Packer	Case Packer	Z0214959			CP_G4
Guard Switch	GS20501	Guard Door 1_6 Open	CP Infeed	CP Infeed	Z0024688	B2 S7 P4	Input-Digital	CP_D11
Guard Switch	GS20501	Guard Door 1_6 Locked	CP Infeed	CP Infeed	Z0024688	B2 S7 P0	Input-Digital	CP_D11

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Type	Number	Name	Mounted Location	Message Location	Aagard Part #	Brick Slice Point	I/O Type	Map
Guard Switch	GS20502	Guard Door 1_7 Open	CP Infeed	CP Infeed	Z0024688	B2 S7 P5	Input-Digital	CP_D7
Guard Switch	GS20502	Guard Door 1_7 Locked	CP Infeed	CP Infeed	Z0024688	B2 S7 P1	Input-Digital	CP_D7
Guard Switch	GS20503	Guard Door 1_8 Locked	CP Infeed	CP Infeed	Z0024688	B2 S7 P2	Input-Digital	CP_D7
Guard Switch	GS20503	Guard Door 1_8 Open	CP Infeed	CP Infeed	Z0024688	B2 S7 P6	Input-Digital	CP_D7
Guard Switch	GS20504	Guard Door 1_9 Open	CP Infeed	CP Infeed	Z0024688	B2 S7 P7	Input-Digital	CP_D4
Guard Switch	GS20504	Guard Door 1_9 Locked	CP Infeed	CP Infeed	Z0024688	B2 S7 P3	Input-Digital	CP_D4
Guard Switch	GS20505	Guard Door 1_10 Locked	CP Infeed	CP Infeed	Z0024688	B2 S6 P4	Input-Digital	CP_D3
Guard Switch	GS20505	Guard Door 1_10 Open	CP Infeed	CP Infeed	Z0024688	B2 S6 P5	Input-Digital	CP_D3
Guard Switch	GS20701	Guard Door 1_1 Open	Case Packer	Case Packer	Z0024688	B3 S10 P2	Input-Digital	CP_I9
Guard Switch	GS20701	Guard Door 1_1 Locked	Case Packer	Case Packer	Z0024688	B3 S9 P5	Input-Digital	CP_I9
Guard Switch	GS20702	Guard Door 1_2 Open	Case Packer	Case Packer	Z0024688	B3 S10 P3	Input-Digital	CP_I10
Guard Switch	GS20702	Guard Door 1_2 Locked	Case Packer	Case Packer	Z0024688	B3 S9 P6	Input-Digital	CP_I10
Guard Switch	GS20703	Guard Door 1_3 Locked	Case Packer	Case Packer	Z0024688	B3 S9 P7	Input-Digital	CP_I11
Guard Switch	GS20703	Guard Door 1_3 Open	Case Packer	Case Packer	Z0024688	B3 S10 P4	Input-Digital	CP_I11
Guard Switch	GS20704	Guard Door 1_4 Open	Case Packer	Case Packer	Z0024688	B3 S10 P5	Input-Digital	CP_F13
Guard Switch	GS20704	Guard Door 1_4 Locked	Case Packer	Case Packer	Z0024688	B3 S10 P0	Input-Digital	CP_F13
Guard Switch	GS20705	Guard Door 1_5 Open	CP Infeed	CP Infeed	Z0024688	B3 S10 P6	Input-Digital	CP_D11
Guard Switch	GS20705	Guard Door 1_5 Locked	CP Infeed	CP Infeed	Z0024688	B3 S10 P1	Input-Digital	CP_D11
Light Curtain	LC21901	Reject Light Curtain	Case Packer	Case Packer	Z0216499			CP_J13
Motor	MT214	Vacuum Pump	Case Packer	Case Packer	Z0214178			CP_H16
Motor	MT202	Case Discharge Conveyor	Case Packer	Case Packer	Z0213494			CP_G19
Motor	MT902	Adjustable Reject Side Belt	Case Packer	Case Packer	Z0213764			CP_E2
Motor	MT905	Fixed Reject Side Belt	Case Packer	Case Packer	Z0213764			CP_F2
Motor	MT915	Infeed Conveyor	Case Packer	Case Packer	Z0213494			CP_F5
Motor	MT1002	Adjustable Side Belt	Case Packer	Case Packer	Z0213495			CP_E7

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Type	Number	Name	Mounted Location	Message Location	Aagard Part #	Brick Slice Point	I/O Type	Map
Motor	MT1006	Fixed Side Belt	Case Packer	Case Packer	Z0213495			CP_F7
Motor	MT1102	Case Roller Conveyor	Case Packer	Case Packer	Z0213494			CP_F15
Push Button	PB46200	System Start Depressed	HMI Cabinet	HMI Cabinet	Z0175751	B3 S8 P0	Input-Digital	CP_K8
Push Button	PB46200	System Start Light	HMI Cabinet	HMI Cabinet	Z0175751	B3 S1 P0	Output-Live	CP_K8
Push Button	PB46202	System Cycle Stop Not Depressed	HMI Cabinet	HMI Cabinet	Z0146806	B3 S8 P2	Input-Digital	CP_K8
Push Button	PB46300	Remote System Start Light	CP2	CP2	Z0175751	B3 S1 P1	Output-Live	CP_E14
Push Button	PB46300	Remote System Start Depressed	CP2	CP2	Z0175751	B3 S9 P0	Input-Digital	CP_E14
Push Button	PB46302	Remote System Cycle Stop Not Depressed	CP2	CP2	Z0146806	B3 S9 P2	Input-Digital	CP_E14
Photo Eye	PE21813	Light Curtain Mute 1	Case Packer	Case Packer	Z0123440			CP_J13
Photo Eye	PE21814	Light Curtain Mute 2	Case Packer	Case Packer	Z0123440			CP_J13
Photo Eye	PE21815	Light Curtain Mute 3	Case Packer	Case Packer	Z0123440			CP_J13
Photo Eye	PE21816	Light Curtain Mute 4	Case Packer	Case Packer	Z0123440			CP_J13
Photo Eye	PE35701	Adjustable Downstacker Reference	CP Infeed	CP Infeed	Z0123440	B2 S5 P1	Input-Digital	CP_E8
Photo Eye	PE35703	Fixed Downstacker Reference	CP Infeed	CP Infeed	Z0123440	B2 S5 P3	Input-Digital	CP_F8
Photo Eye	PE36000	Product Starved	CP Infeed	CP Infeed	Z0123440	B2 S8 P0	Input-Digital	CP_F1
Photo Eye	PE36003	Carton Reject Chute Clear	Case Packer	Case Packer	Z0123440	B2 S8 P3	Input-Digital	CP_F1
Photo Eye	PE36007	Product in Side Belts Present	CP Infeed	CP Infeed	Z0123440	B2 S8 P7	Input-Digital	CP_F6
Photo Eye	PE36102	1st Carton At Downstacker Present	CP Infeed	CP Infeed	Z0096984	B2 S9 P2	Input-Digital	CP_F8
Photo Eye	PE36103	2nd Carton At Downstacker Present	CP Infeed	CP Infeed	Z0097847	B2 S9 P3	Input-Digital	CP_E7
Photo Eye	PE36104	Downstacker Overfull Present	CP Infeed	CP Infeed	Z0123440	B2 S9 P4	Input-Digital	CP_E7
Photo Eye	PE36105	Stack Layer Height Present	CP Infeed	CP Infeed	Z0123440	B2 S9 P5	Input-Digital	CP_F8
Photo Eye	PE36106	Product at Stack Pusher Present	CP Infeed	CP Infeed	Z0123440	B2 S9 P6	Input-Digital	CP_E7
Photo Eye	PE36204	Stack At Loader Present	CP Infeed	CP Infeed	Z0123440	B2 S10 P4	Input-Digital	CP_E11
Photo Eye	PE36300	Case Blanks Present	CP Magazine	CP Magazine	Z0096984	B2 S11 P0	Input-Digital	CP_G7
Photo Eye	PE36306	Case Flights Reference	Case Packer	Case Packer	Z0123440	B2 S11 P6	Input-Digital	CP_G8

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Type	Number	Name	Mounted Location	Message Location	Aagard Part #	Brick Slice Point	I/O Type	Map
Photo Eye	PE46002	Stack In Stack Roller Present	CP Infeed	CP Infeed	Z0123440	B3 S6 P2	Input-Digital	CP_F9
Photo Eye	PE46601	Case at Load Present	Case Packer	Case Packer	Z0123440	B3 S12 P1	Input-Digital	CP_H10
Photo Eye	PE46602	Fixed Case Flap Open	Case Packer	Case Packer	Z0123440	B3 S12 P2	Input-Digital	CP_G13
Photo Eye	PE46603	Adjustable Case Flap Open	Case Packer	Case Packer	Z0123440	B3 S12 P3	Input-Digital	CP_H13
Photo Eye	PE46604	Distorted Case Present	Case Packer	Case Packer	Z0123440	B3 S12 P4	Input-Digital	CP_F11
Photo Eye	PE46700	Case at Tip Reject Present	Case Packer	Case Packer	Z0123440	B3 S13 P2	Input-Digital	CP_I15
Photo Eye	PE46701	Discharge Conveyor Clear	Case Packer	Case Packer	Z0123440	B3 S13 P1	Input-Digital	Remote
Photo Eye	PE46702	Tip Reject Stop Clear	Case Packer	Case Packer	Z0123440	B3 S13 P0	Input-Digital	CP_G15
Photo Eye	PE46707	Case at Print Present	Case Packer	Case Packer	Z0123440	B3 S13 P7	Input-Digital	CP_G17
Pressure Switch	PS35800	System Air Pressure Ready	CP Infeed	CP Infeed	Z0215018	B2 S6 P0	Input-Digital	CP_G4
Pressure Switch	PS35801	Safety Air Pressure Ready	CP Infeed	CP Infeed	Z0215018	B2 S6 P1	Input-Digital	CP_F3
Prox	PX35700	Spatula Reference	CP Infeed	CP Infeed	Z0098920	B2 S5 P0	Input-Digital	CP_F7
Prox	PX35704	Stack Pusher Reference	CP Infeed	CP Infeed	Z0098920	B2 S5 P4	Input-Digital	CP_E4
Prox	PX35706	Loader Reference	Case Packer	Case Packer	Z0098920	B2 S5 P6	Input-Digital	CP_C10
Prox	PX36303	Blank Advance Present	Case Packer	Case Packer	Z0098920	B2 S11 P3	Input-Digital	CP_G8
Prox	PX46000	Case Robot X Reference	Case Packer	Case Packer	Z0098920	B3 S6 P0	Input-Digital	CP_G9
Prox	PX46001	Case Robot Z Reference	Case Packer	Case Packer	Z0098920	B3 S6 P1	Input-Digital	CP_H10
Prox	PX46007	Tip Reject Flights Reference	Orienter	Orienter	Z0098920	B3 S6 P7	Input-Digital	CP_I15
Regulator	REG30400	Fixed Top Glue	Case Packer	Case Packer	Z0215011			CP_G11
Regulator	REG30401	Fixed Bottom Glue	Case Packer	Case Packer	Z0215011			CP_G11
Regulator	REG30402	Adjustable Top Glue	Case Packer	Case Packer	Z0215011			CP_H11
Regulator	REG30403	Adjustable Bottom Glue	Case Packer	Case Packer	Z0215011			CP_H11
Regulator	REG35102	Magazine Advance	CP Magazine	CP Magazine	Z0215011			CP_G7
Regulator	REG35201	Tip Clamp	CP Infeed	CP Infeed	Z0215011			CP_E9
Servo Motor	SM01	Stack Roller	CP Infeed	CP Infeed	Z0205087			CP_E10
Servo Motor	SM02	Spatula	CP Infeed	CP Infeed	Z0016725			CP_F6
Servo Motor	SM03	Adjustable Lower Downstacker	CP Infeed	CP Infeed	Z0016725			CP_E6

Type	Number	Name	Mounted Location	Message Location	Aagard Part #	Brick Slice Point	I/O Type	Map
Servo Motor	SM04	Adjustable Upper Dow nstacker	CP Infeed	CP Infeed	Z0016725			CP_E9
Servo Motor	SM05	Fixed Low er Dow nstacker	CP Infeed	CP Infeed	Z0016725			CP_F6
Servo Motor	SM06	Fixed Upper Dow nstacker	CP Infeed	CP Infeed	Z0016725			CP_F9
Servo Motor	SM07	Stack Pusher	CP Infeed	CP Infeed	Z0016725			CP_E3
Servo Motor	SM08	Loader	Case Packer	Case Packer	Z0016725			CP_C10
Servo Motor	SM09	Loader Backstop	Case Packer	Case Packer	Z0205087			CP_I9
Servo Motor	SM10	Case Robot Z	Case Packer	Case Packer	Z0024801			CP_H10
Servo Motor	SM11	Case Robot X	Case Packer	Case Packer	Z0016725			CP_G13
Servo Motor	SM12	Case Flights	Case Packer	Case Packer	Z0202763			CP_F12
Servo Motor	SM13	Funnel	Case Packer	Case Packer	Z0202763			CP_G9
Servo Motor	SM14	Funtucker	Case Packer	Case Packer	Z0202763			CP_F11
Servo Motor	SM15	Tucker	Case Packer	Case Packer	Z0202763			CP_I10
Servo Motor	SM17	Tip Fingers	Case Packer	Case Packer	Z0024801			CP_I14
Servo Motor	SM18	Tip Reject Flights	Case Packer	Case Packer	Z0016725			CP_I15
Servo Motor	SM19	Fixed Low er Compression	Case Packer	Case Packer	Z0202763			CP_G12
Servo Motor	SM20	Adjustable Low er Compression	Case Packer	Case Packer	Z0202763			CP_H12
Servo Motor	SM21	Fixed Upper Compression	Case Packer	Case Packer	Z0202763			CP_G12
Servo Motor	SM22	Adjustable Upper Compression	Case Packer	Case Packer	Z0202763			CP_H12
Solenoid Valve	SV20223	Safety Air Pressure	Case Packer	Case Packer	Z0215016			CP_F3
Solenoid Valve	SV30400	Fixed Top Glue On	Case Packer	Case Packer	Z0004483	B1 S3 P0	Output-E-Stop	CP_G11
Solenoid Valve	SV30401	Fixed Bottom Glue On	Case Packer	Case Packer	Z0004483	B1 S3 P1	Output-E-Stop	CP_G11
Solenoid Valve	SV30402	Adjustable Top Glue On	Case Packer	Case Packer	Z0004483	B1 S3 P2	Output-E-Stop	CP_H11
Solenoid Valve	SV30403	Adjustable Bottom Glue On	Case Packer	Case Packer	Z0004483	B1 S3 P3	Output-E-Stop	CP_H11
Solenoid Valve	SV35200	Roll Product Conditioner Condition	CP Infeed	CP Infeed	Z0079525	B2 S2 P0	Output-Live	CP_E9
Solenoid Valve	SV35201	Tip Clamp Contain	CP Infeed	CP Infeed	Z0079525	B2 S2 P1	Output-Live	CP_E9
Solenoid Valve	SV35202	Product Conditioner Condition	CP Infeed	CP Infeed	Z0079525	B2 S2 P2	Output-Live	CP_D11
Solenoid Valve	SV35205	Load Vacuum On	Case Packer	Case Packer	Z0079522	B2 S2 P5	Output-Live	CP_H8

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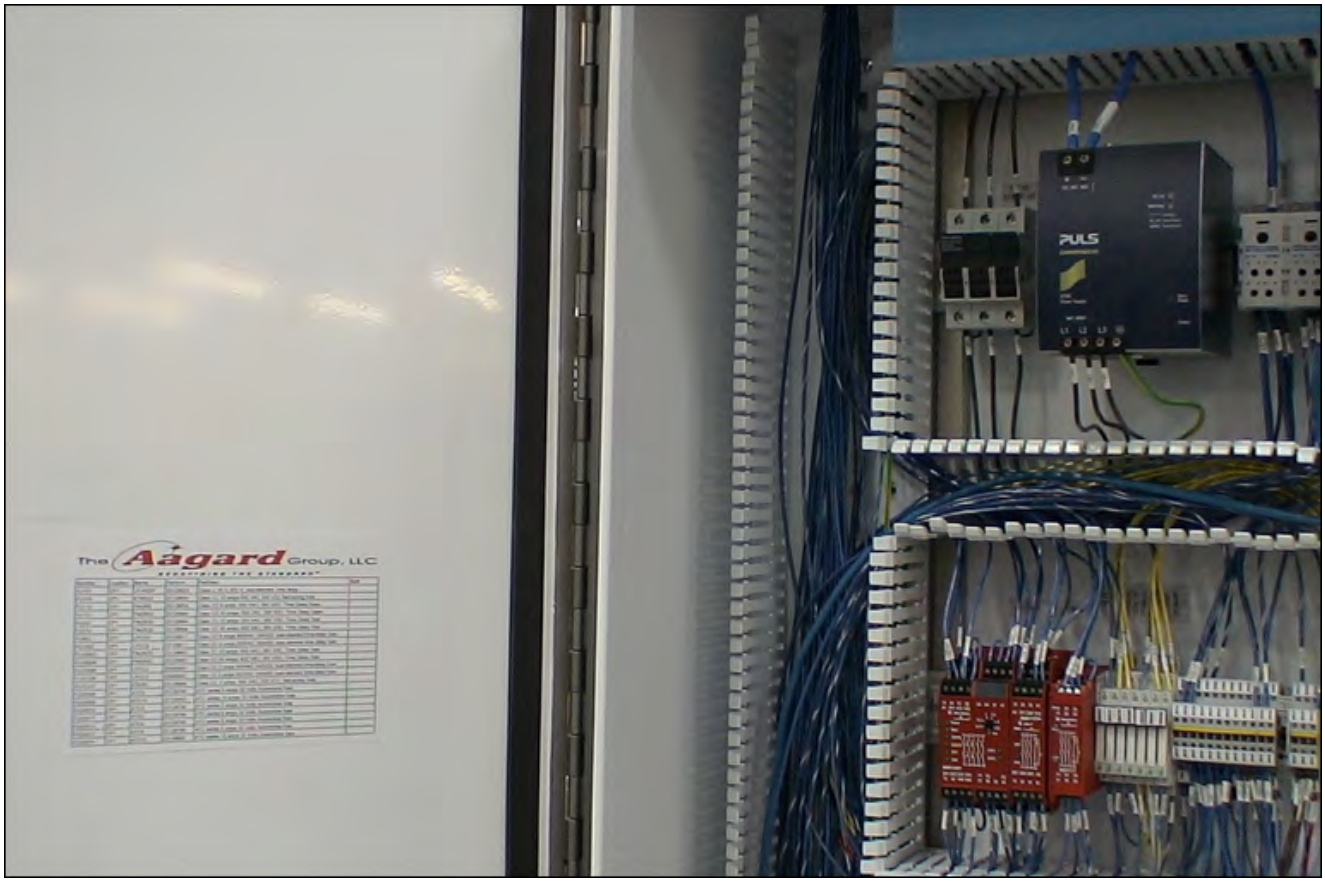
Type	Number	Name	Mounted Location	Message Location	Aagard Part #	Brick Slice Point	I/O Type	Map
Solenoid Valve	SV45401	Case Pusher Push	Case Packer	Case Packer	Z0079525	B3 S4 P1	Output-Live	CP_H10
Solenoid Valve	SV45402	Setup Vacuum On	Case Packer	Case Packer	Z0079522	B3 S4 P2	Output-Live	CP_H10
Solenoid Valve	SV45403	Case Squaring Compress	Case Packer	Case Packer	Z0079525	B3 S4 P3	Output-Live	CP_G13
Solenoid Valve	SV45404	Blow Off On	Case Packer	Case Packer	Z0079525	B3 S4 P4	Output-Live	CP_F13
Solenoid Valve	SV45702	Tip Reject Stop Release	Case Packer	Case Packer	Z0079526	B3 S5 P3	Output-E-Stop	CP_F15
Solenoid Valve	SV45702	Tip Reject Stop Catch	Case Packer	Case Packer	Z0079526	B3 S5 P2	Output-E-Stop	CP_F15
Solenoid Valve	SV46506	Funtucker In Out Into Case	Case Packer	Case Packer	Z0079525	B3 S11 P6	Output-Live	CP_E10
Vacuum Switch	VS36402	Load Vacuum Analog	Case Packer	Case Packer	Z0221063	B2 S13 P0	Input-Digital	CP_I10
Vacuum Switch	VS36402	Load Vacuum Present	Case Packer	Case Packer	Z0221063	B2 S12 P2	Input-Digital	CP_I10
Vacuum Switch	VS46104	System Vacuum Analog	Case Packer	Case Packer	Z0221063	B3 S15 P0	Input-Digital	CP_I15
Vacuum Switch	VS46104	System Vacuum Present	Case Packer	Case Packer	Z0221063	B3 S7 P4	Input-Digital	CP_I15
Vacuum Switch	VS46501	Setup Vacuum Analog	CP Magazine	CP Magazine	Z0221063	B3 S15 P1	Input-Digital	CP_H10
Vacuum Switch	VS46501	Setup Vacuum Present	CP Magazine	CP Magazine	Z0221063	B3 S11 P1	Input-Digital	CP_H10
Transformer XF	XF111	480 VAC _ 120 VAC	Case Packer	Case Packer	Z0214115			CP_F15

Fuse Locations

A fuse location label is located inside each electrical panel.

SAMPLE IMAGE



Sample Fuse Location Label

Number	Location	Name	Partnum	PartDesc	Bin#
FU304	CP2	KTKR10	Z0128852	Class CC 10 amps 600 VAC 300 VDC fast-acting fuse	
FU321	CP2	FNQR30	Z0128844	Class CC 30 amps; 600 VAC; 300 VDC; Time Delay fuses	
FU406	CP2	LPCC3	Z0005681	Class CC 3 amps 600VAC 250VDC dual-element time-delay fuse	
FU410	CP2	LPCC3	Z0005681	Class CC 3 amps 600VAC 250VDC dual-element time-delay fuse	
FU1101	CP2	LPCC6	Z0128811	Class CC 6 amps 600VAC 250VDC dual-element time-delay fuse	
FU10113	CP2	KTKR5	Z0128849	Class CC 5 amps 600 VAC 300 VDC fast-acting fuse	
FU22008	CP2	ATC5	Z0128799	ATC series 5 amps 32 Volts Automotive fuse	
FU22009	CP2	ATC10	Z0128800	ATC series 10 amps 32 Volts Automotive fuse	
FU22010	CP2	ATC5	Z0128799	ATC series 5 amps 32 Volts Automotive fuse	
FU22011	CP2	ATC5	Z0128799	ATC series 5 amps 32 Volts Automotive fuse	
FU22012	CP2	ATC5	Z0128799	ATC series 5 amps 32 Volts Automotive fuse	
FU22013	CP2	ATC5	Z0128799	ATC series 5 amps 32 Volts Automotive fuse	
FU22014	CP2	ATC1	Z0128798	ATC series 1 amps 32 Volts Automotive fuse	

Drive Function and Associated Devices

The following tables indicate how devices are related to drives, and the function of the particular device.

Infeed

Drive	Device		Function
		Infeed	
MT902	Adjustable Reject Side Belts		Transfers the correctly oriented product past the product reject chute; incorrectly oriented products will drop into the product reject chute
	VFD901	Reject Side Belts	Controls the speed of the belts **NOTE:** The speed of the belts are slightly faster than the maximum product rate for the selected recipe; this ensures the incorrectly oriented product drops into the reject chute; it is the responsibility of the upstream conveyor to ensure the instantaneous maximum product rate is not exceeded for the selected recipe
	OL901	Adjustable Reject Side Belts	Senses when the motor thermal overload has tripped
	PE36003	Carton Reject Chute Photo Eye	Detects when the product reject chute is full and unable to receive any more products
MT905	Fixed Reject Side Belts		Transfers the correctly oriented product past the product reject chute; incorrectly oriented products will drop into the product reject chute
	VFD901	Reject Side Belts	Controls the speed of the belts **NOTE:** The speed of the belts are slightly faster than the maximum product rate for the selected recipe; this ensures the incorrectly oriented product drops into the reject chute; it is the responsibility of the upstream conveyor to ensure the instantaneous maximum product rate is not exceeded for the selected recipe
	OL904	Fixed Reject Side Belts	Senses when the motor thermal overload has tripped
	PE36003	Carton Reject Chute Photo Eye	Detects when the product reject chute is full and unable to receive any more products
MT915	Infeed Conveyor		Advances product to the side belts
	VFD914	Infeed Conveyor	Controls the speed of the conveyor
MT1002	Adjustable Side Belts		Separates the product and transfers the product to the downstacker
	VFD1001	Side Belts	Controls the speed of the belts
	OL1001	Adjustable Side Belt	Senses when the motor thermal overload has tripped
	PE36007	Product in Side Belts Photo Eye	Detects products in the side belts; used to trigger the downstacker to index; used to trigger the spatula to cycle
MT1006	Fixed Side Belts		Separates the product and transfers the product to the downstacker
	VFD1001	Side Belts	Controls the speed of the belts
	OL1004	Fixed Side Belt	Senses when the motor thermal overload has tripped
	PE36007	Product in Side Belts Photo Eye	Detects products in the side belts; used to trigger the downstacker to index; used to trigger the spatula to cycle
SM02	Spatula		Prevents products from entering the downstacker; from snagging on the product in the stack chamber
	PE36007	Product in Side Belts Photo Eye	Detects products in the side belts; used to trigger the downstacker to index; used to trigger the spatula to cycle
	PX35700	Spatula Reference Prox	Reference verification, used to verify the reference sequence was successful
System	PE36000	Product Starved Photo Eye	Detects when product is provided to the machine by the upstream equipment

Downstacker

Drive	Device		Function
		Downstacker	
SM03	Adj Lower Downstacker		Accepts incoming products from the side belts and adjusts the depth of the stack chamber as the stack of product is being built; then presents the completed stack of product while building the next stack with the other set of flights
	PE36105	Stack Layer Height (Search) Photo Eye	Detects the top of the current stack in the downstack chamber as the downstacker searches for product in the chamber
	PE36104	Downstacker Overfull Photo Eye	Used while the downstacker searches for product in the chamber to detect that the stack in front of the stack pusher is of the proper height
	PE36106	Product At Stack Pusher Photo Eye	Used while the downstacker searches for product in the chamber to detect that product is in front of the stack pusher
	PE36102	1st Carton At Downstacker Photo Eye	Used while the downstacker searches for product in the chamber to detect if the 1st carton is at the top of the downstack chamber
	PE36103	2nd Carton At Downstacker Photo Eye	Used while the downstacker searches for product in the chamber to detect if the 2nd carton is at the top of the downstack chamber
	PE35701	Adjustable Downstacker Photo Eye	Senses when the servo motor is at its reference position
SM04	Adj Upper Downstacker		Accepts incoming products from the side belts and adjusts the depth of the stack chamber as the stack of product is being built; then presents the completed stack of product while building the next stack with the other set of flights
	PE36105	Stack Layer Height (Search) Photo Eye	Detects the top of the current stack in the downstack chamber as the downstacker searches for product in the chamber
	PE36104	Downstacker Overfull Photo Eye	Used while the downstacker searches for product in the chamber to detect that the stack in front of the stack pusher is of the proper height
	PE36106	Product At Stack Pusher Photo Eye	Used while the downstacker searches for product in the chamber to detect that product is in front of the stack pusher
	PE36102	1st Carton At Downstacker Photo Eye	Used while the downstacker searches for product in the chamber to detect if the 1st carton is at the top of the downstack chamber
	PE36103	2nd Carton At Downstacker Photo Eye	Used while the downstacker searches for product in the chamber to detect if the 2nd carton is at the top of the downstack chamber
	PE35701	Adjustable Downstacker Photo Eye	Senses when the servo motor is at its reference position
SM05	Fixed Lower Downstacker		Accepts incoming products from the side belts and adjusts the depth of the stack chamber as the stack of product is being built; then presents the completed stack of product while building the next stack with the other set of flights
	PE36105	Stack Layer Height (Search) Photo Eye	Detects the top of the current stack in the downstack chamber as the downstacker searches for product in the chamber
	PE36104	Downstacker Overfull Photo Eye	Used while the downstacker searches for product in the chamber to detect that the stack in front of the stack pusher is of the proper height
	PE36106	Product At Stack Pusher Photo Eye	Used while the downstacker searches for product in the chamber to detect that product is in front of the stack pusher
	PE36102	1st Carton At Downstacker Photo Eye	Used while the downstacker searches for product in the chamber to detect if the 1st carton is at the top of the downstack chamber
	PE36103	2nd Carton At Downstacker Photo Eye	Used while the downstacker searches for product in the chamber to detect if the 2nd carton is at the top of the downstack chamber
	PE35703	Fixed Downstacker Photo Eye	Senses when the servo motor is at its reference position
SM06	Fixed Upper Downstacker		Accepts incoming products from the side belts and adjusts the depth of the stack chamber as the stack of product is being built; then presents the completed stack of product while building the next stack with the other set of flights

Drive	Device		Function
	PE36105	Stack Layer Height (Search) Photo Eye	Detects the top of the current stack in the dow nstack chamber as the dow nstacker searches for product in the chamber
	PE36104	Dow nstacker Overfull Photo Eye	Used w hile the dow nstacker searches for product in the chamber to detect that the stack in front of the stack pusher is of the proper height
	PE36106	Product At Stack Pusher Photo Eye	Used w hile the dow nstacker searches for product in the chamber to detect that product is in front of the stack pusher
	PE36102	1st Carton At Dow nstacker Photo Eye	Used w hile the dow nstacker searches for product in the chamber to detect if the 1st carton is at the top of the dow nstack chamber
	PE36103	2nd Carton At Dow nstacker Photo Eye	Used w hile the dow nstacker searches for product in the chamber to detect if the 2nd carton is at the top of the dow nstack chamber
	PE35703	Fixed Dow nstacker Photo Eye	Senses w hen the servo motor is at its reference position

Stack Pusher

Drive	Device		Function
Stack Pusher			
SM07	Stack Pusher		Pushes the accumulated product out of the dow nstack chamber to the stack roll
	PE36106	Product At Stack Pusher Photo Eye	Used w hile the dow nstacker searches for product in the chamber to detect that product is in front of the stack pusher
	PX35704	Stack Pusher Reference Prox	Reference verification, used to verify the reference sequence w as successful

Stack Roll

Drive	Device		Function
Stack Roll			
SM01	Stack Roller		Receives complete stacks of product from the stack pusher and rotates the stack as it presents the product into the loader accumulation area
	PE46002	Stack In Stack Roller Photo Eye	Senses w hen the stack roll contains product
	PE36204	Stack At Loader Photo Eye	Senses w hen the loader accumulation contains product
	PX35705	Stack Roller Reference Prox	Senses w hen the servo motor is at its reference position
SV35200	Roll Product Conditioner		Applies pressure on the stacked product ensuring that it w ill fit into the case during loading
	CS46509	Roll Product Conditioner Released Cylinder Sw itch	Senses w hen the Product Conditioner is in the released position
SV35201	Tip Clamp		Applies pressure on the stacked product ensuring that it is contained during rotation
	CS46503	Tip Clamp Released Cylinder Sw itch	Senses w hen the Tip Clamp is in the released position

Loader

Drive	Device		Function
Loader			
SM08	Loader		Pushes the accumulated product out of the loader accumulation and into the partially formed case
	PE36204	Stack At Loader Photo Eye	Senses w hen the loader accumulation contains product

Drive	Device		Function
	PX35706	Loader Reference Prox	Reference verification, used to verify the reference sequence w as successful
SV35202	Product Conditioner		Applies dow nw ard pressure on the stacked product ensuring that it w ill fit into the case during loading
	CS36203	Product Conditioner Released Cylinder Sw itch	Senses w hen the Conditioner is in the released position

Magazine

Drive	Device		Function
		Magazine	
SV35102	Magazine Advance		Advances the blanks up against the magazine clips
	CS36302	Magazine Advance Cylinder Sw itch	Senses w hen the magazine advance has cycled a full advance stoke
	PE36300	Case Blanks Photo Eye	Senses w hen blanks are present on the magazine advance chains
	PX36303	Blanks Advanced Prox	Senses w hen blanks have been advanced on the magazine advance chains
SV35500	Magazine Top Clip		Contains the top of the blanks in the magazine
SV35104	Magazine Side Clips		Hold the back panel of the blank w hile the leading panel is being opened and pulled out of the magazine
SV35103	Magazine Side Clamps		Hold the stack of blanks w hile the clips are open
SV35504	Magazine Bottom Clips		Contain the bottom of the blanks in the magazine

Case Former

Drive	Device		Function
		Case Former	
SM11	Case Robot X		Moves the setup vacuum cups in the horizontal direction as the blank is being pulled from the magazine and setup at the load station for filling the case of product
	PX46000	Case Robot X Reference Prox	Reference verification, used to verify the reference sequence w as successful
SM10	Case Robot Z		Moves the setup vacuum cups in the vertical direction as the blank is being pulled from the magazine and setup at the load station for filling the case of product
	PX46001	Case Robot Z Reference Prox	Reference verification, used to verify the reference sequence w as successful
SV45402	Setup Vacuum		Supplies the vacuum to the setup vacuum cups
	VS46501	Setup Vacuum	Senses w hen sufficient vacuum is present at the setup vacuum cups for proper operation
SV45401	Case Pusher		Raises and low ers the case pusher for the purpose of pushing the loaded case into the compression station
	CS46500	Case Pusher Dow n Cylinder Sw itch	Senses w hen the case pusher is in the push case position
SM12	Case Flights		Advance the base of the case through the loading and compression areas of the machine
	PE36306	Case Flights Reference Photo Eye	Senses w hen the Case Flights are in their reference position
	PE46601	Case At Load Photo Eye	Senses w hen a case is present at the load station
	PE46603	Adjustable Case Flap Photo Eye	Detects an open case flap as the case leaves the compression area

Drive	Device		Function
	PE46602	Fixed Case Flap Photo Eye	Detects an open case flap as the case leaves the compression area
	PE46604	Distorted Case Photo Eye	Detect when a case is present for applying glue and detects open trailing minor flaps
SM15	Tucker		Tucks the trailing vertical flap as the case moves to compression
SM14	Funtucker		Guides the product into the case during loading; then tucks the trailing vertical flap as the case moves to compression
SV46506	Funtucker In Out		Moves the Funtucker assembly toward and away from the case
	CS46506	Funtucker In Out Cylinder Switch	Senses when the Funtucker is out of the case
SM13	Funnel		Guides the product into the case during loading
	CS36400	Funnel In Out Cylinder Switch	Senses when the funnel is or out of the case
SV35203	Funnel In Out		Moves the funnel assembly toward and away from the case
	CS36400	Funnel In Out Cylinder Switch	Senses when the funnel is out of the case
SV35205	Load Vacuum		Supplies the vacuum to the load vacuum cups
	VS36402	Load Vacuum Present Vacuum Switch	Senses when sufficient vacuum is present at the load vacuum cups for proper operation
SV35506	Load Vacuum Retract		Raises and lowers the load cups in order for the cases to clear as they travel downstream
SV30402	Adjustable Top Glue		Fires glue onto the formed case prior to compression
	PE46604	Distorted Case Photo Eye	Detects that a case is available for glue to be applied
SV30401	Fixed Bottom Glue		Fires glue onto the formed case prior to compression
	PE46604	Distorted Case Photo Eye	Detects that a case is available for glue to be applied
SV30400	Fixed Top Glue		Fires glue onto the formed case prior to compression
	PE46604	Distorted Case Photo Eye	Detects that a case is available for glue to be applied
SV30403	Adjustable Bottom Glue		Fires glue onto the formed case prior to compression
	PE46604	Distorted Case Photo Eye	Detects that a case is available for glue to be applied
SV45403	Case Squaring		Raises and lowers Case Squaring to provide a stop for the case in compression against which to square up before the case is compressed
	CS46507	Case Squaring Cylinder Switch	Senses when the case squaring is in the clear case position
SM21	Fixed Upper Compression		Folds the horizontal flaps and compresses the case to provide the needed set time for good adhesion of glue
SM19	Fixed Lower Compression		Folds the horizontal flaps and compresses the case to provide the needed set time for good adhesion of glue
SM22	Adj Upper Compression		Folds the horizontal flaps and compresses the case to provide the needed set time for good adhesion of glue
SM20	Adj Lower Compression		Folds the horizontal flaps and compresses the case to provide the needed set time for good adhesion of glue
SM09	Loader Backstop		Keeps the cartons from being pushed beyond the back side of the case

Tip Reject

Drive	Device		Function
			Tip Reject
MT1102	Case Roller Conveyor		Advances product to the case discharge conveyor
	VFD1101	Case Roller Conveyor	Controls the speed of the conveyor
SV45702	Tip Reject Stop		Stops the cases to allow for tipping the cases on their side, or reject the reject cases
	CS46606	Tip Reject Stop Cylinder Switch	Senses when the stop is in the clear case position
	PE46700	Case at Tip Reject Photo Eye	Senses when the product is in the tip station

Drive	Device		Function
	PE46702	Tip Reject Stop Photo Eye	Senses when the product is clear of the case stop
SM17	Tip Fingers		Tips the case over on its side in coordination with the Tip Reject Flights
SM18	Tip Reject Flights		Tips the case over on its side in coordination with the Tip Fingers, and rejects reject cases
	PX46007	Tip Reject Flight Reference Prox	Reference verification, used to verify the reference sequence was successful
SV45404	Blow Off		Blows dust off of the photo eye sensors
MT202	Case Discharge Conveyor		Discharges the case to the downstream equipment
	OL201	Case Discharge Conveyor	Senses when the motor thermal overload has tripped

Integrated Devices

Drive	Device		Function
Integrated Devices			
MT214	Vacuum Pump		Supplies vacuum to the machine
	OL213	Vacuum Pump	Senses when the motor thermal overload has tripped
	VS46104	System Vacuum	Senses when the system vacuum is sufficient for machine operation
IDV	Case Printer Controller		Applies print to each case produced by the system
	PE46707	Case at Print Photo Eye	Detects the presence of a case for the case printer to apply the printing
GT9401	Glue System		Supply the adhesive applied to the case blanks

System / Unit

Drive	Device		Function
System / Unit			
SV20223	Safety Air Pressure (Air Dump)		Supplies air pressure to the machine when the safety circuit is engaged
	PS35801	Safety Air Pressure	Senses when the safety air pressure is sufficient for machine operation
System	PS35800	System Air Pressure	Senses when the system air pressure is sufficient for machine operation
System	PE36000	Product Starved Photo Eye	Detects when product is provided to the machine by the upstream equipment

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Servo Reference Positions

This section of the Aagard Machine Manual provides a pictorial and written description of each servo reference point on the machine. For each section of the machine, a table lists the servo number, name and values for each servo. Each servo drive is shown pictured in its referenced position with a visible mark or reference indicator for a quick visual check. When the servo drive has been referenced, this mark/indicator should give the operator a quick visual confirmation that the drive has been referenced properly. This is not intended to replace the use of a tape measure, squares, or other means to check reference positions. It is intended to allow operators to quickly check the reference position of a drive without the use of any tools, and continue on with minimal downtime.

Machine sections included in this manual:

Case Packer

Case Packer

- Servo Name = The link will display a photo of the servo motor in its referenced position
- Direction of Positive Movement = The direction of movement which causes a positive change in the position read out. (Gearbox rotation directions when facing the end of the shaft)
- Reference Mark Location = A physical description of the Reference Mark Position

Please refer to the HMI for the most current data.

Servo #	Servo Name	Direction of Positive Movement	Reference Mark Location
SM01	Stack Roller	Moving from vertical to horizontal	Bottom of stack roller frame member is aligned with top of reference indicator block and Stack Roller is horizontal
SM02	Spatula	Toward downstack chamber	Upstream edge of spatula mounting plate is aligned with the downstream edge of the reference indicator block
SM03	Adjustable Lower Downstacker	Down - toward bottom of stack chamber	Top of flight aligned with bottom of reference indicator
SM04	Adjustable Upper Downstacker	Down - toward bottom of stack chamber	Bottom of flight aligned with top of reference indicator
SM05	Fixed Lower Downstacker	Down - toward bottom of stack chamber	Top of flight aligned with bottom of reference indicator
SM06	Fixed Upper Downstacker	Down - toward bottom of stack chamber	Bottom of flight aligned with top of reference indicator
SM07	Stack Pusher	Toward the Stack Roll	Upstream edge of Stack Pusher Carriage Plate is aligned with downstream edge of reference indicator block
SM08	Loader	Toward the case	Loader Carriage Plate is aligned with reference indicator
SM09	Loader Backstop	Away from the case	Loader backstop arm is aligned with reference indicator block
SM10	Case Robot Z	Down	Robot Z is aligned with reference indicator
SM11	Case Robot X	Toward compression	Robot X Carriage Plate is aligned with reference indicator block
SM12	Case Flights	Toward compression	Leading edge of flight is aligned with upstream edge of reference indicator
SM13	Funnel	Counter-clockwise when viewed from above	Funnel Stop is parallel with reference indicator and funnel is 90 degrees to flight chain
SM14	Funtucker	Clockwise when viewed from above	Funtucker Stop is parallel with reference indicator and Funtucker funnel is 90 degrees to flight chain
SM15	Tucker	Counter-clockwise when viewed from above	Tucker post is aligned with reference indicator
SM16	*not used*	*N/A*	*N/A*
SM17	Tip Fingers	Up	Reference indicator pointer is aligned with reference indicator triangle
SM18	Tip Reject Flights	Toward reject chute	Leading edge of flight is aligned with reference indicator triangle
SM19	Fixed Lower Compression	Clockwise when viewed from end of gearbox output shaft	Compression plate is vertical inline with upper compression plate
SM20	Adj Lower Compression	Clockwise when viewed from end of gearbox output shaft	Compression plate is vertical inline with upper compression plate
SM21	Fixed Upper Compression	Counter-clockwise when viewed from end of gearbox output shaft	Compression plate is vertical inline with lower compression plate

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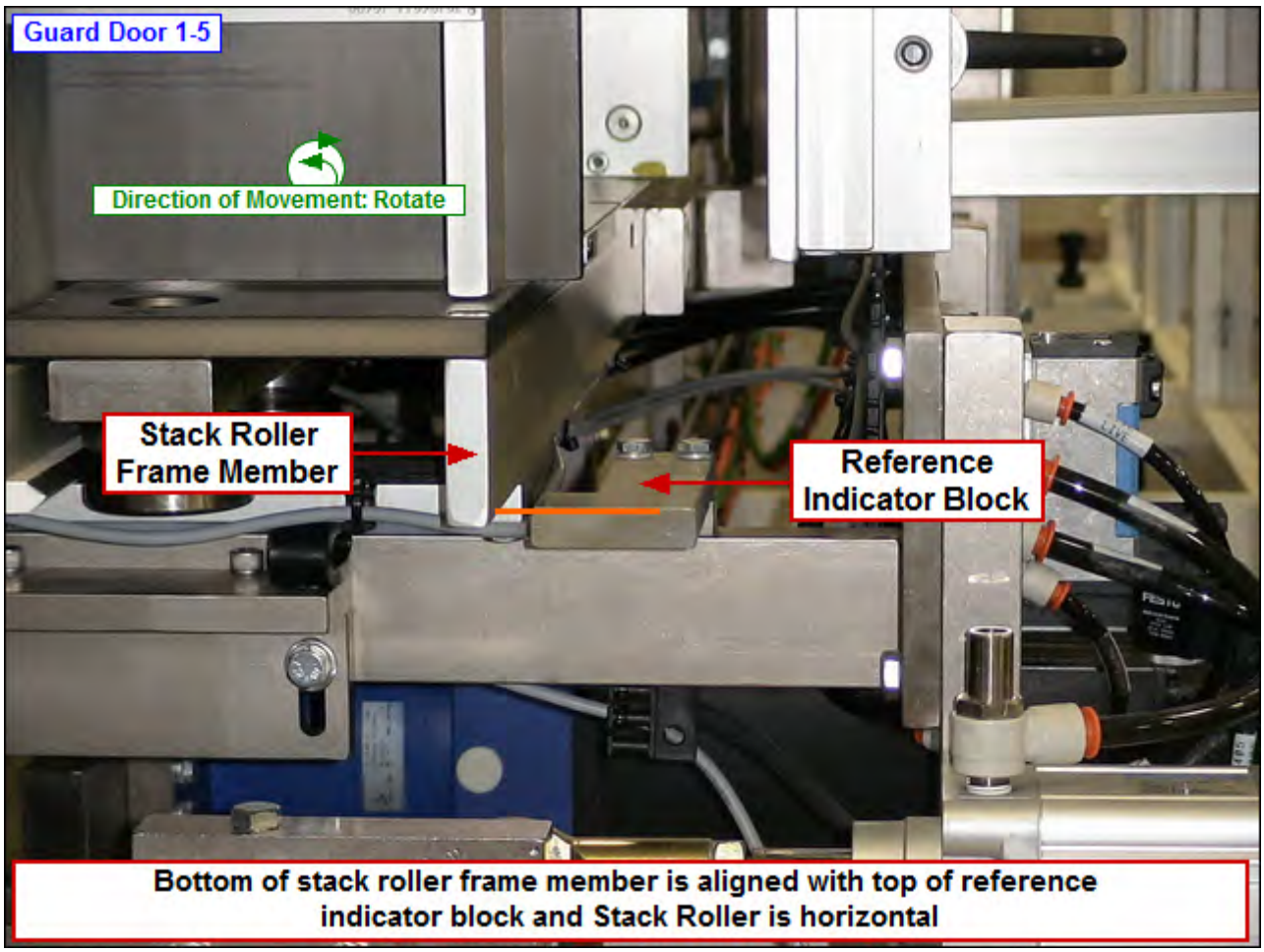
Servo #	Servo Name	Direction of Positive Movement	Reference Mark Location
SM22	Adj Upper Compression	Clockwise when viewed from end of gearbox output shaft	Compression plate is vertical inline with lower compression plate

SM01 Stack Roller



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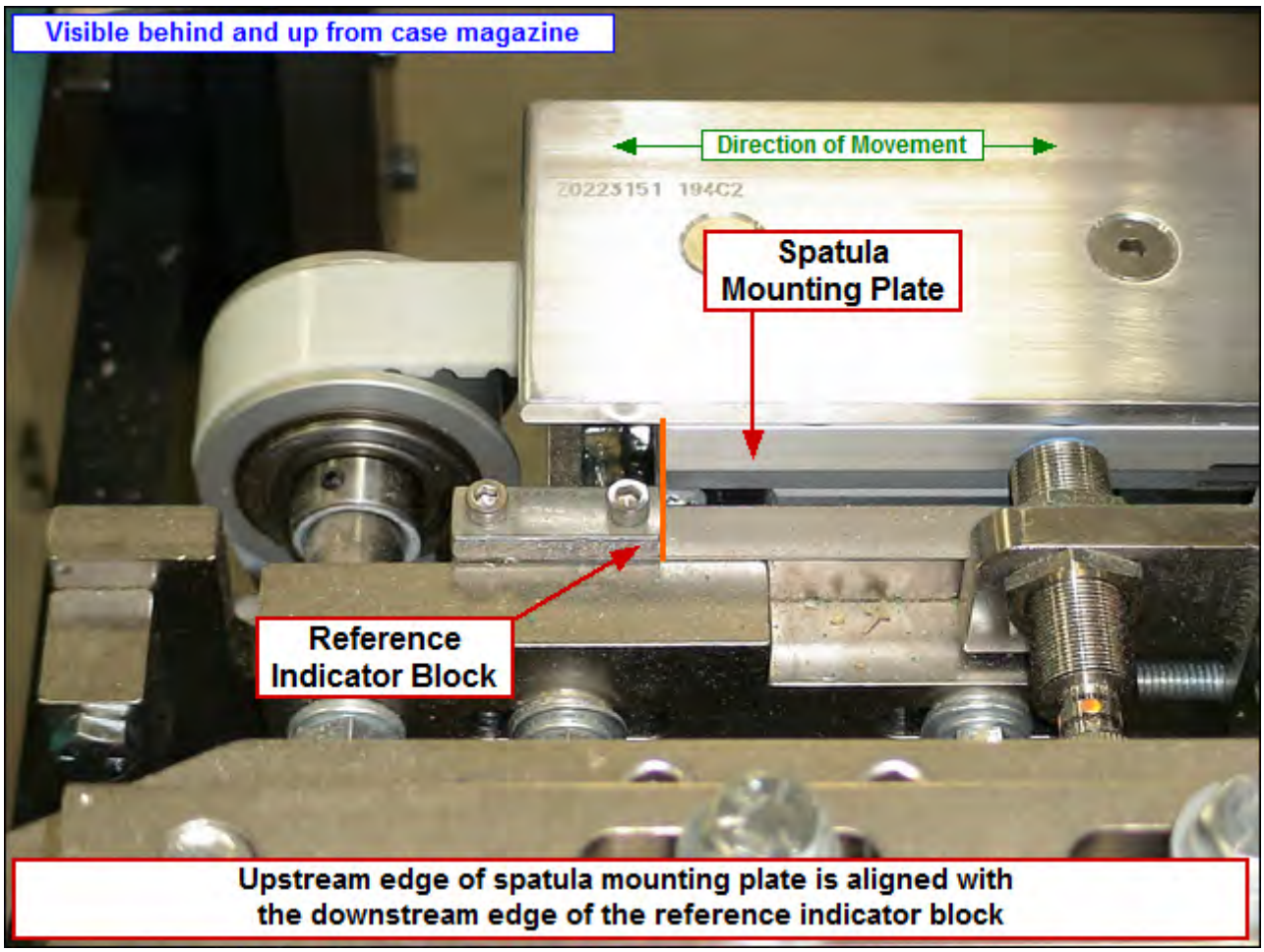
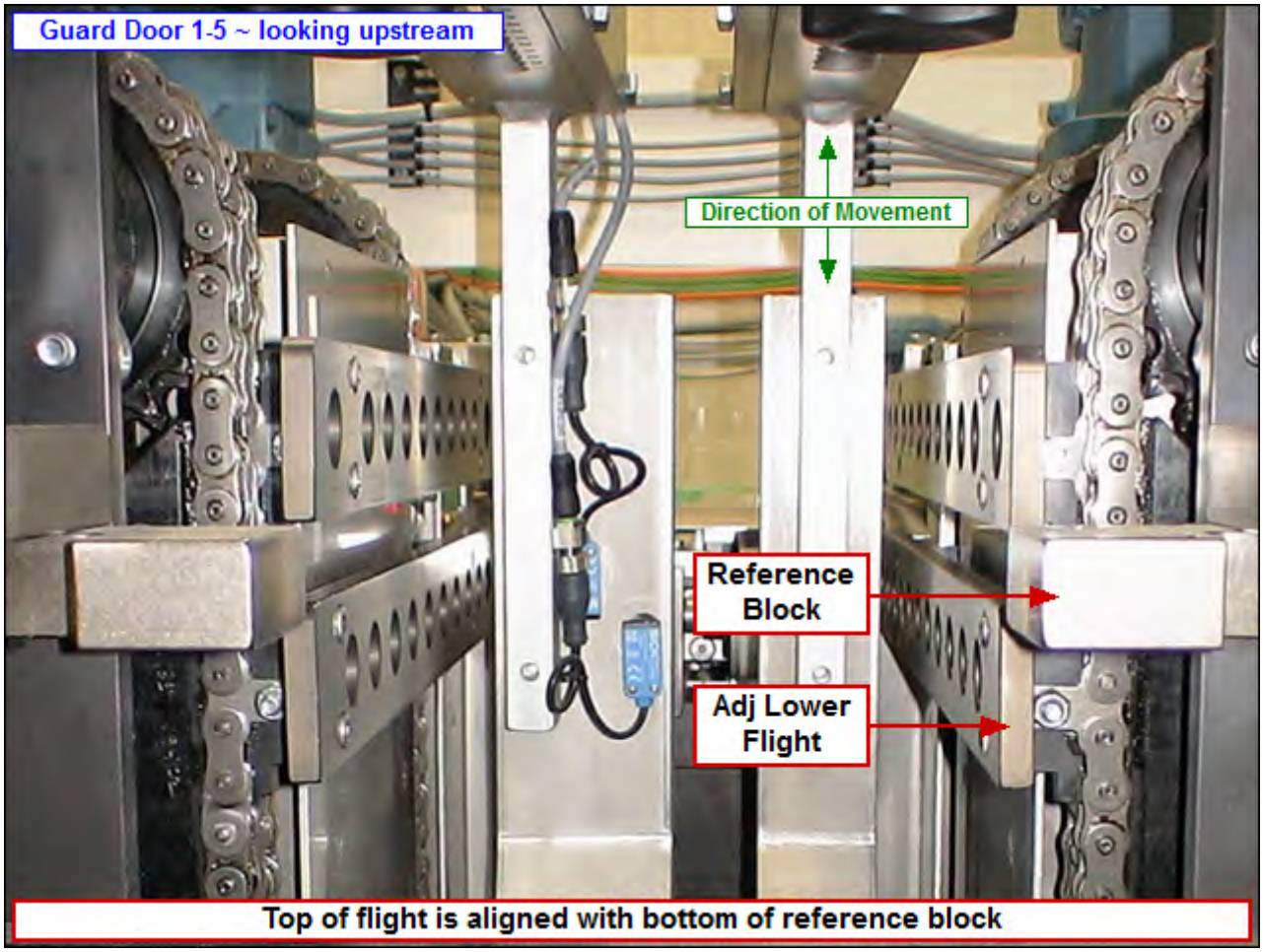
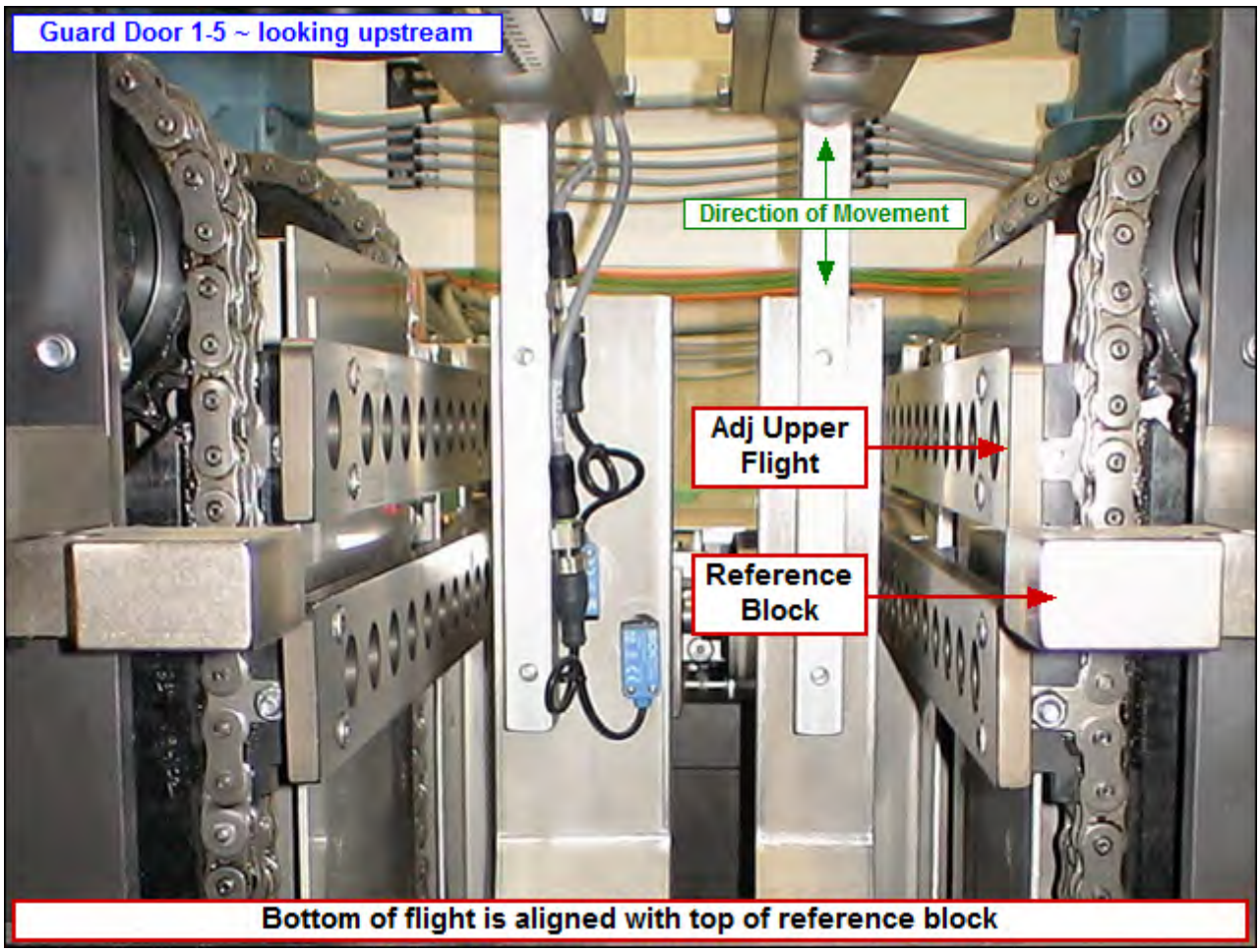
SM02 Spatula



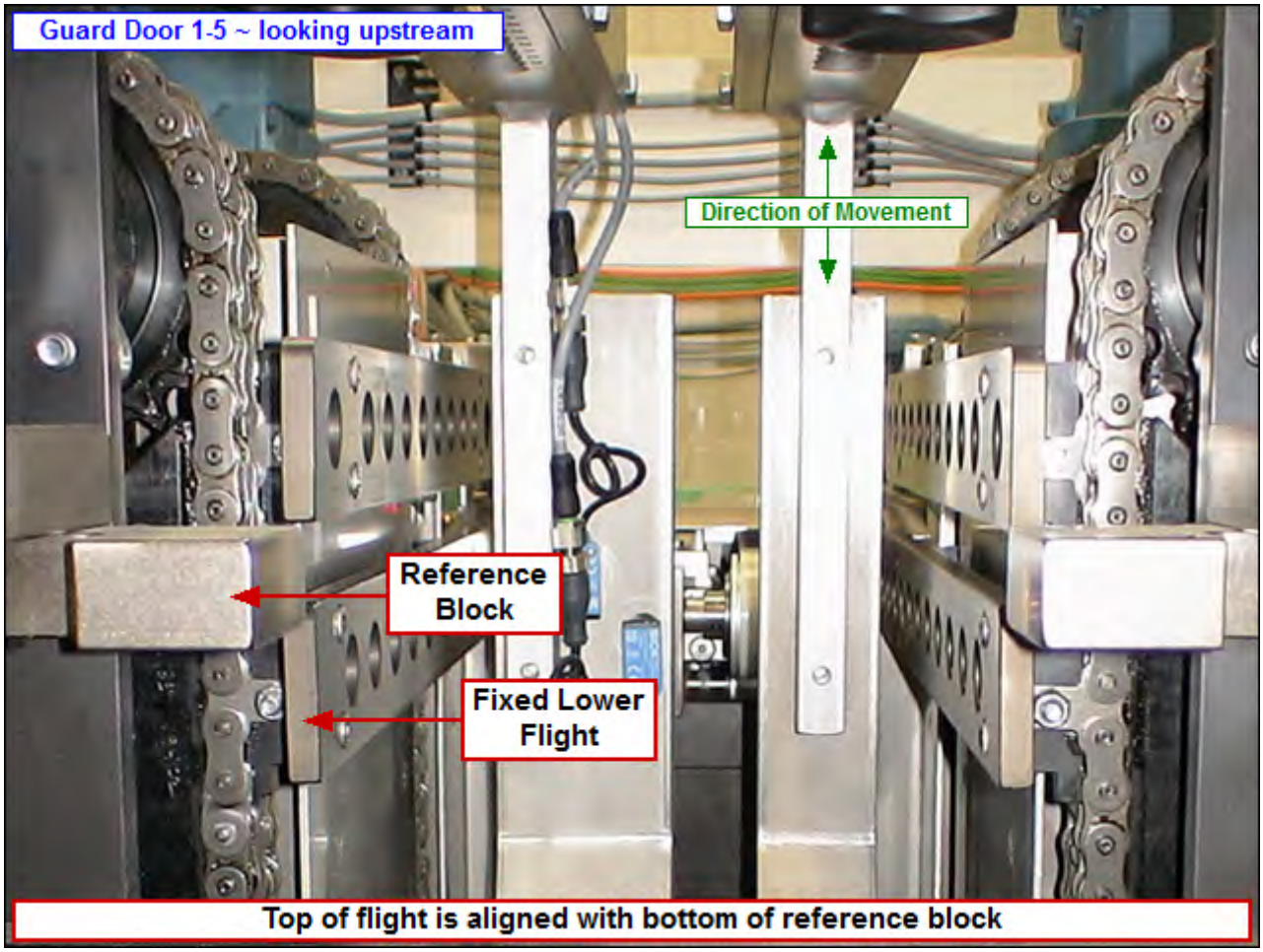
SM03 Adjustable Lower Downstacker



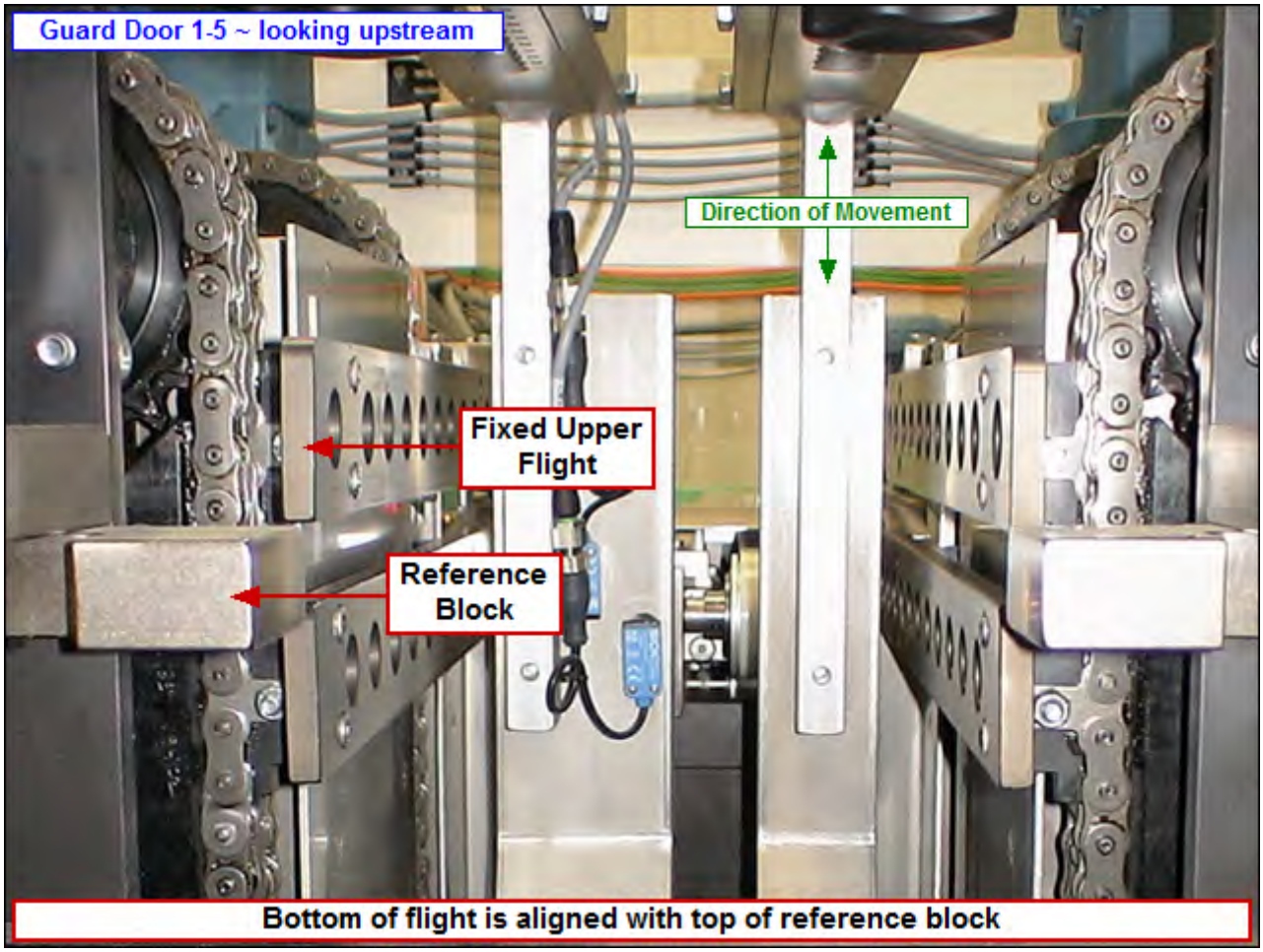
SM04 Adjustable Upper Downstacker



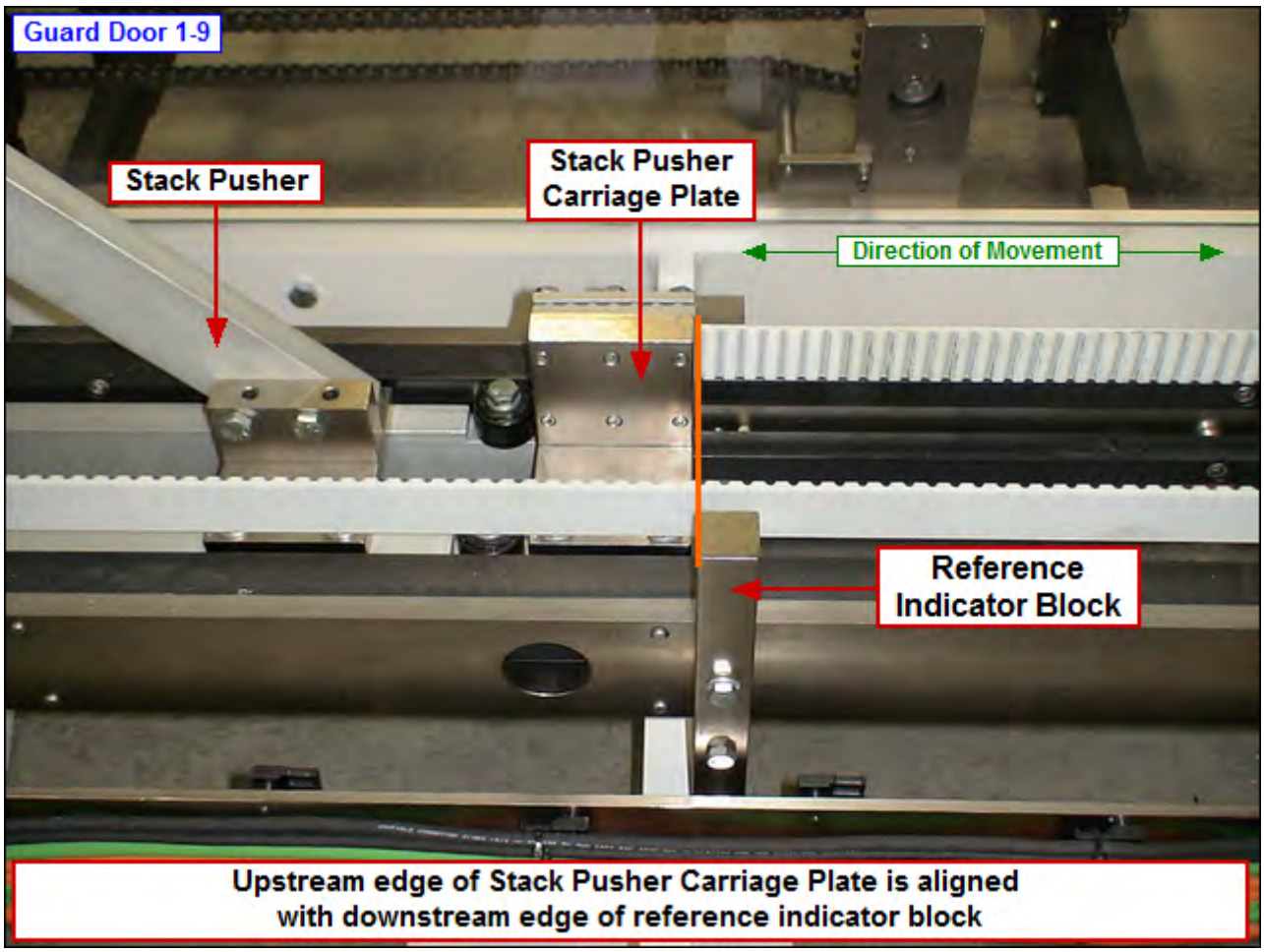
SM05 Fixed Lower Downstacker



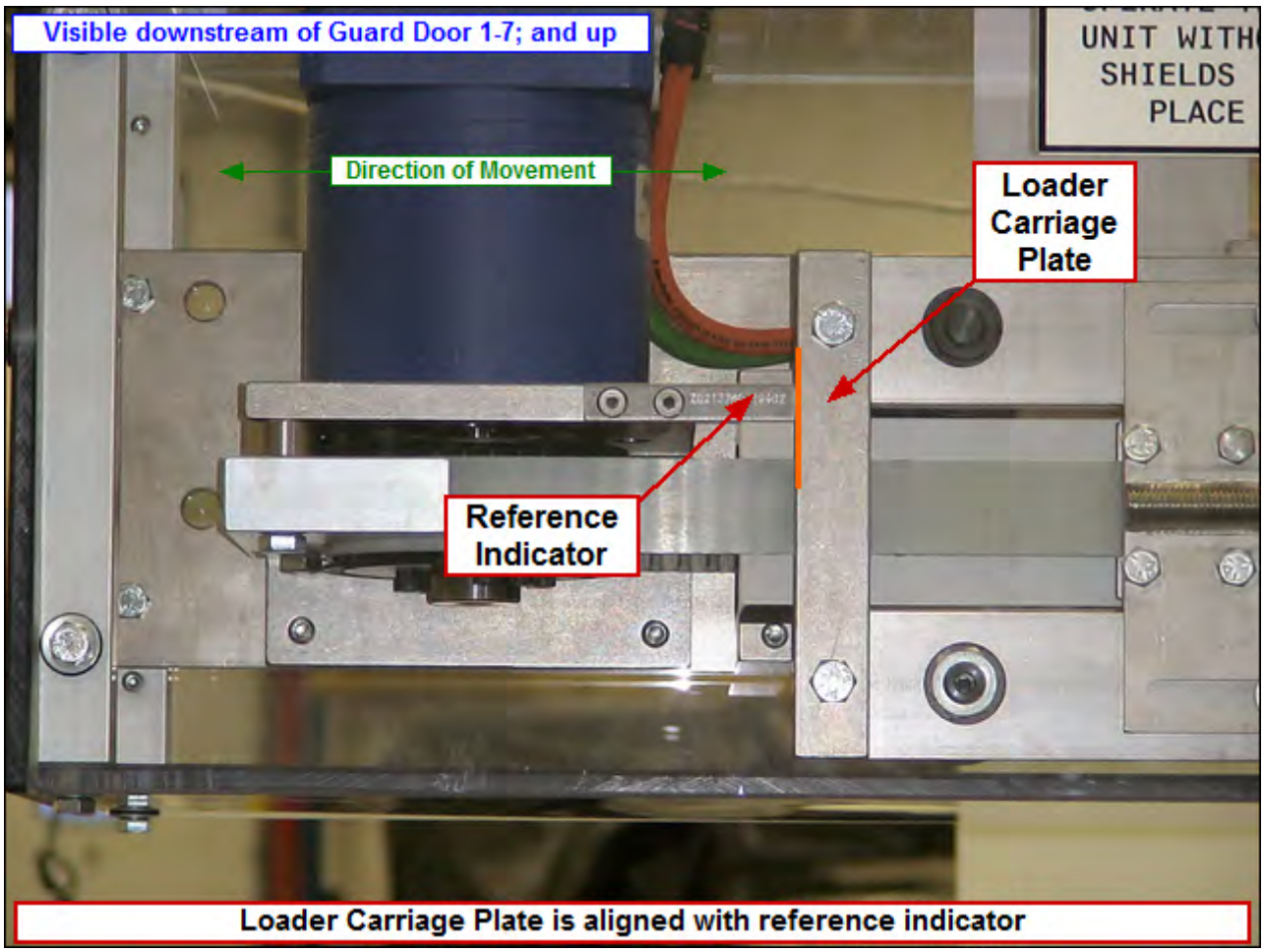
SM06 Fixed Upper Downstacker



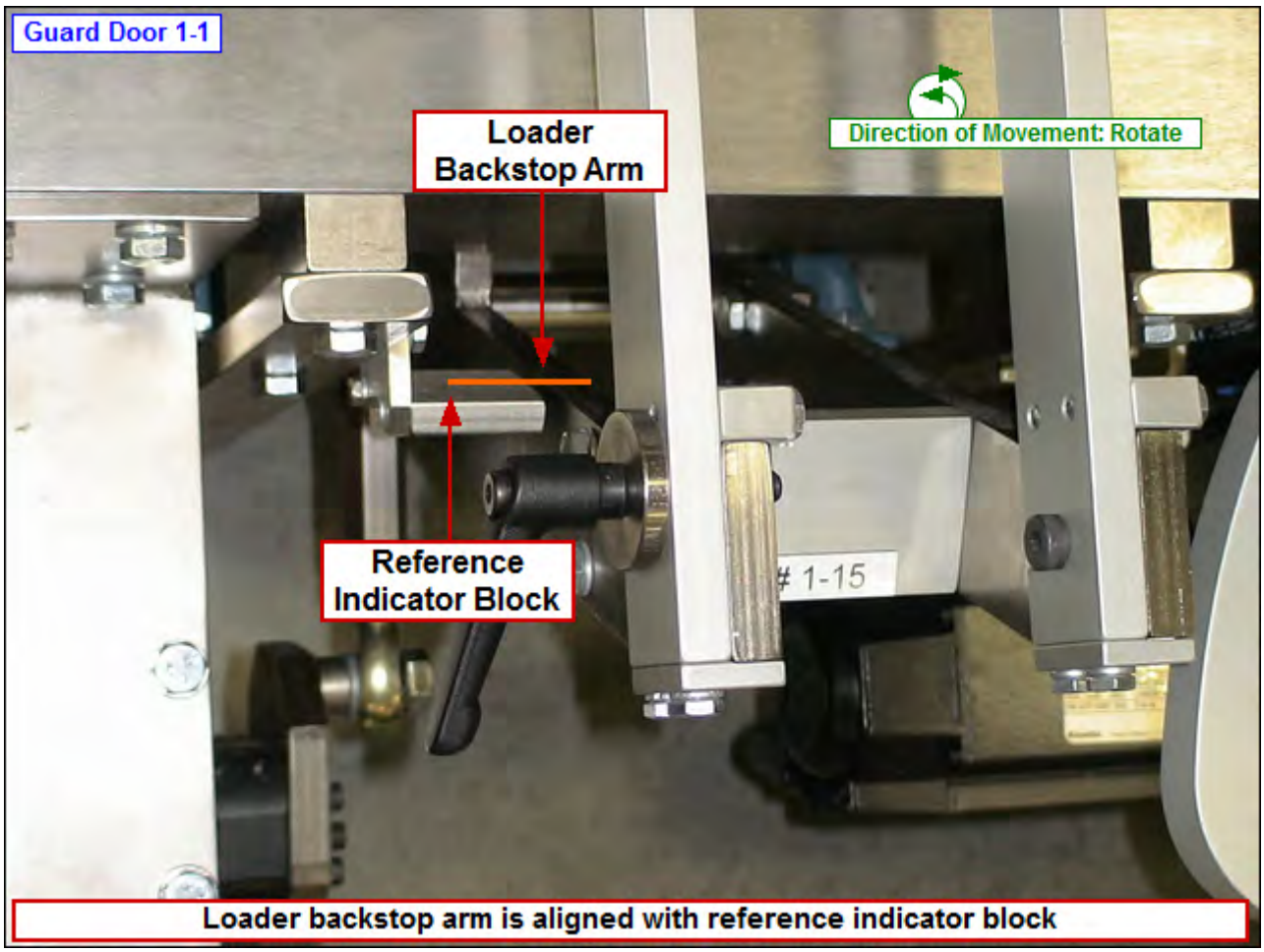
SM07 Stack Pusher



SM08 Loader


Visible downstream of Guard Door 1-7; and up
Direction of Movement
Loader Carriage Plate
Reference Indicator
UNIT WITH
SHIELDS
PLACE
Loader Carriage Plate is aligned with reference indicator

SM09 Loader Backstop



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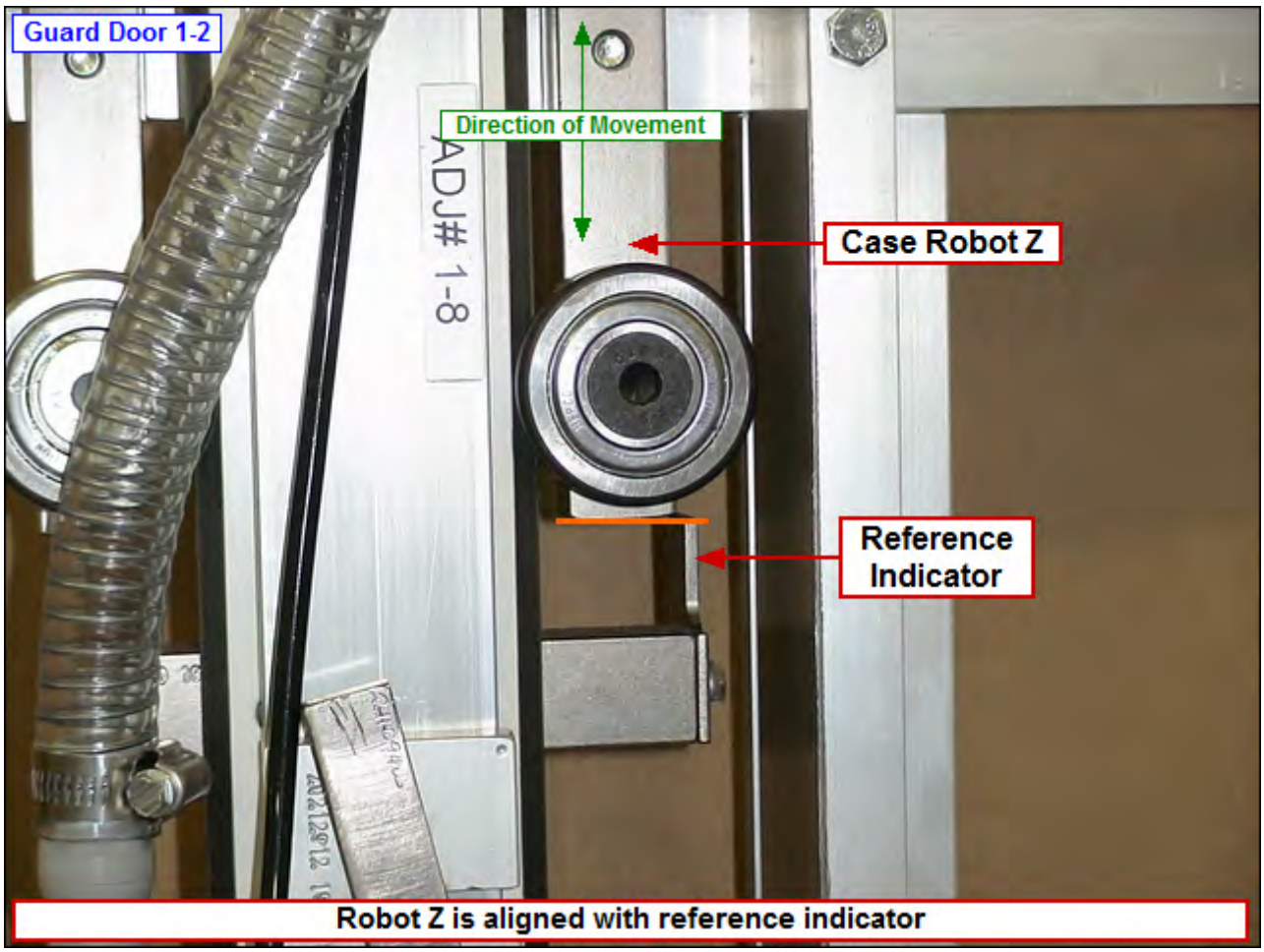
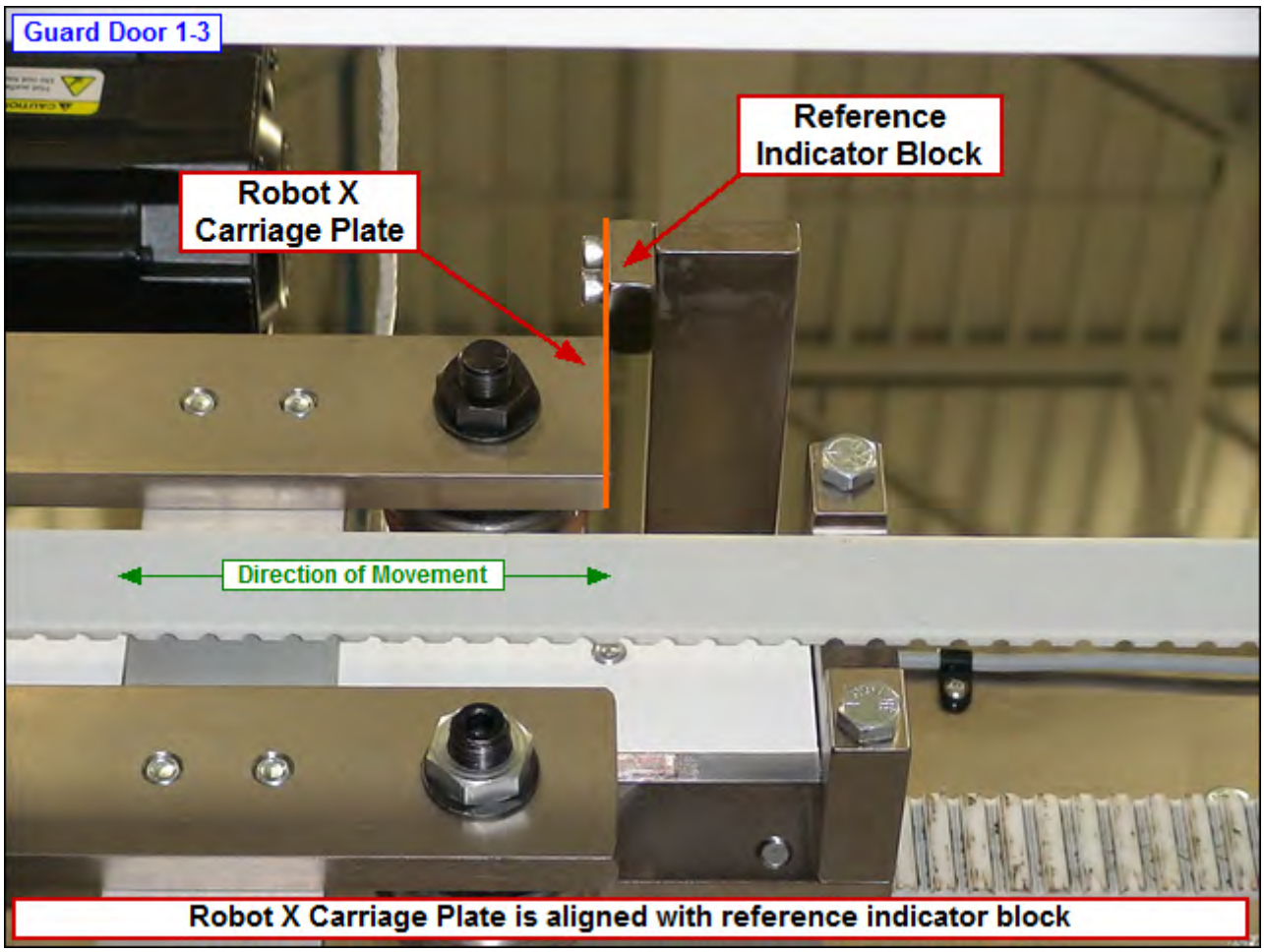
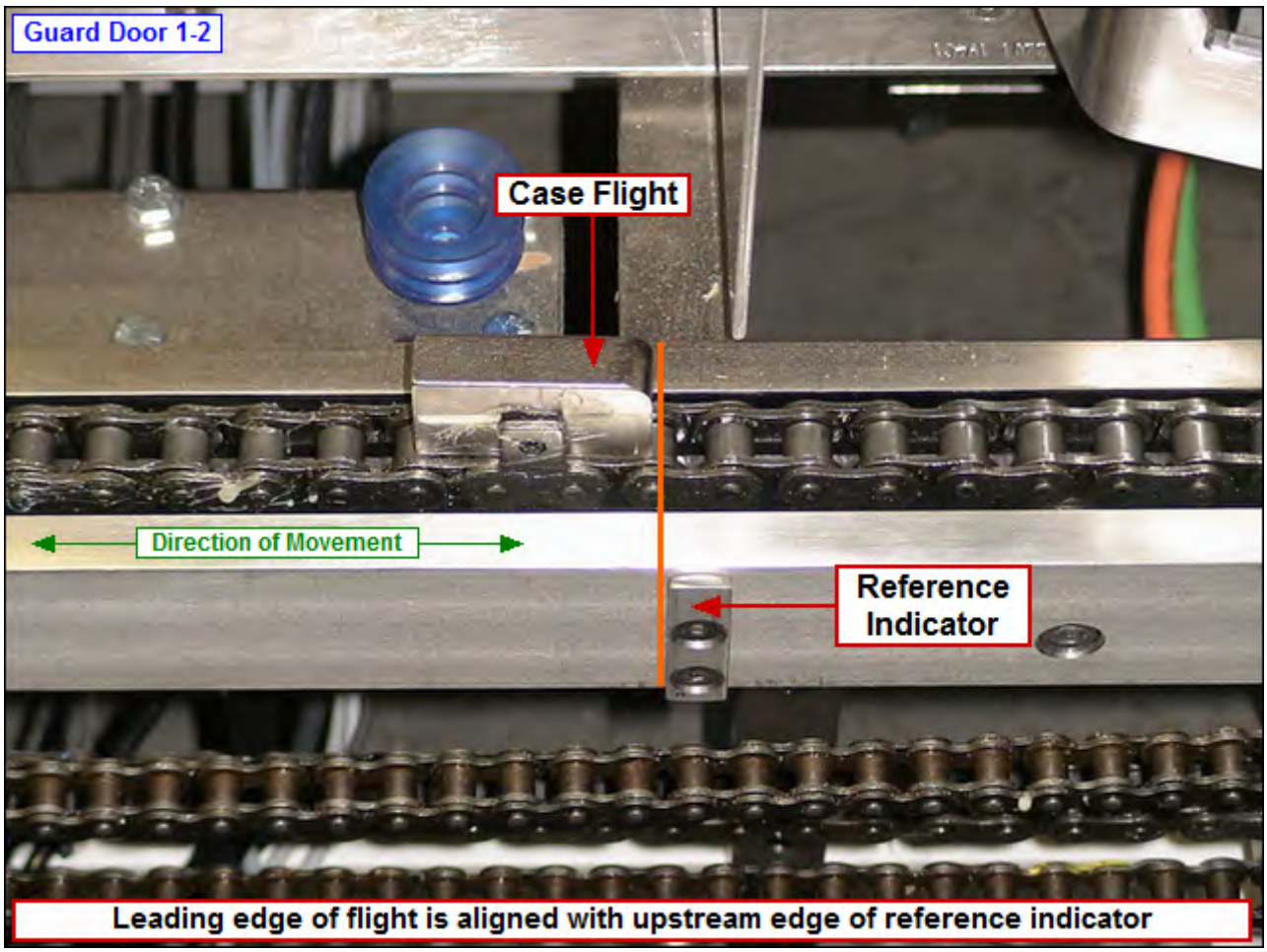
SM10 Case Robot Z



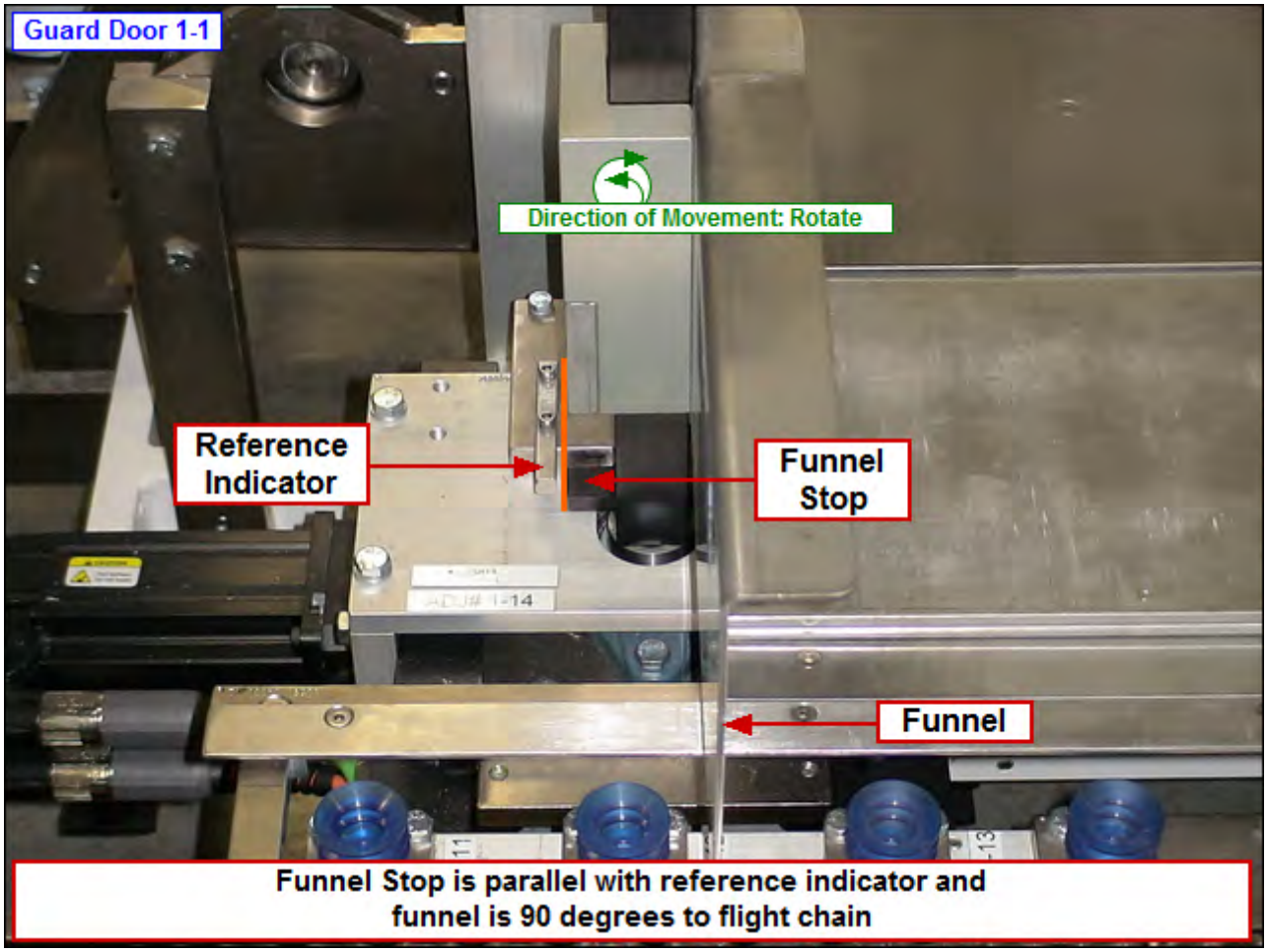
SM11 Case Robot X



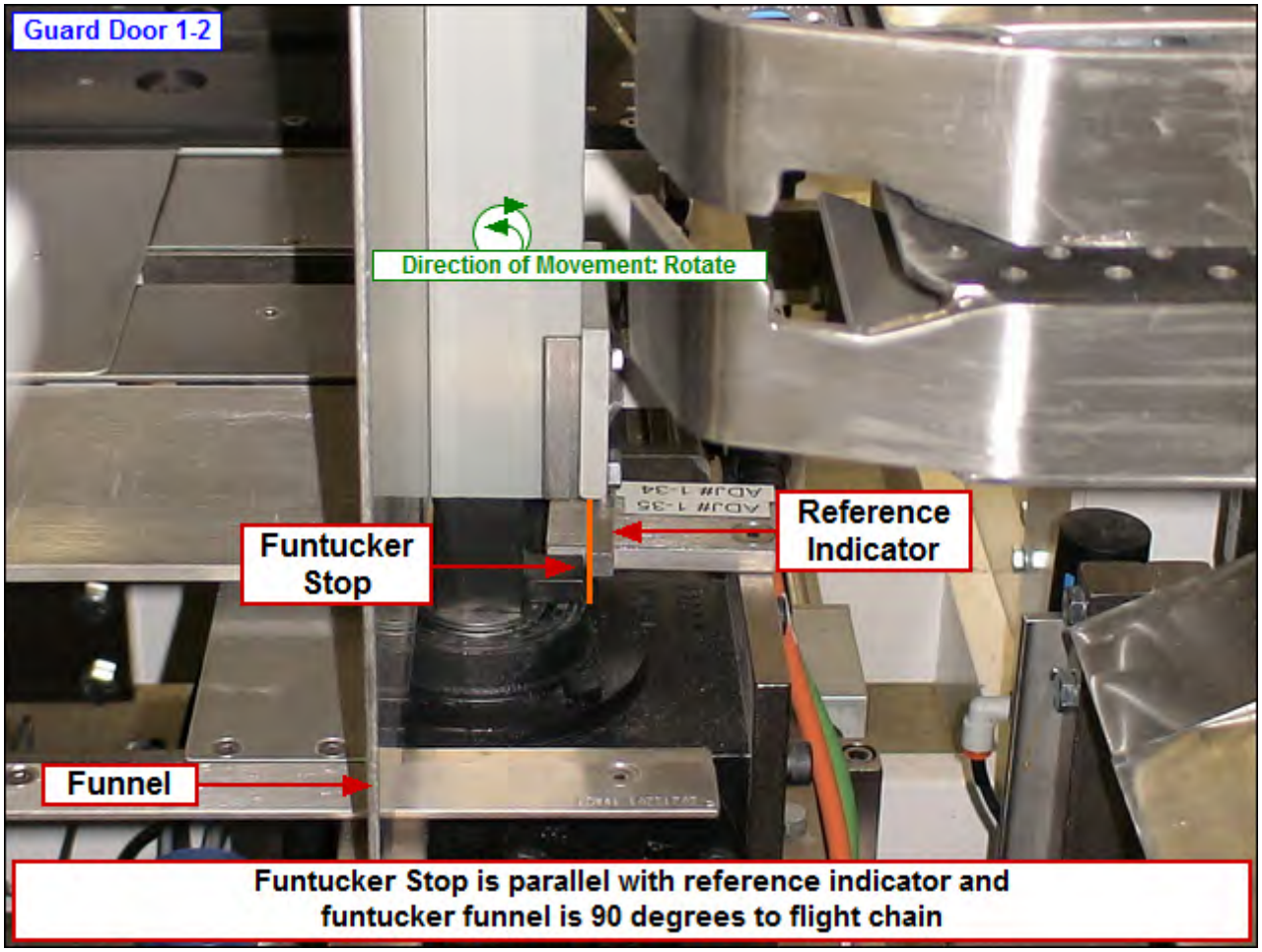
SM12 Case Flights



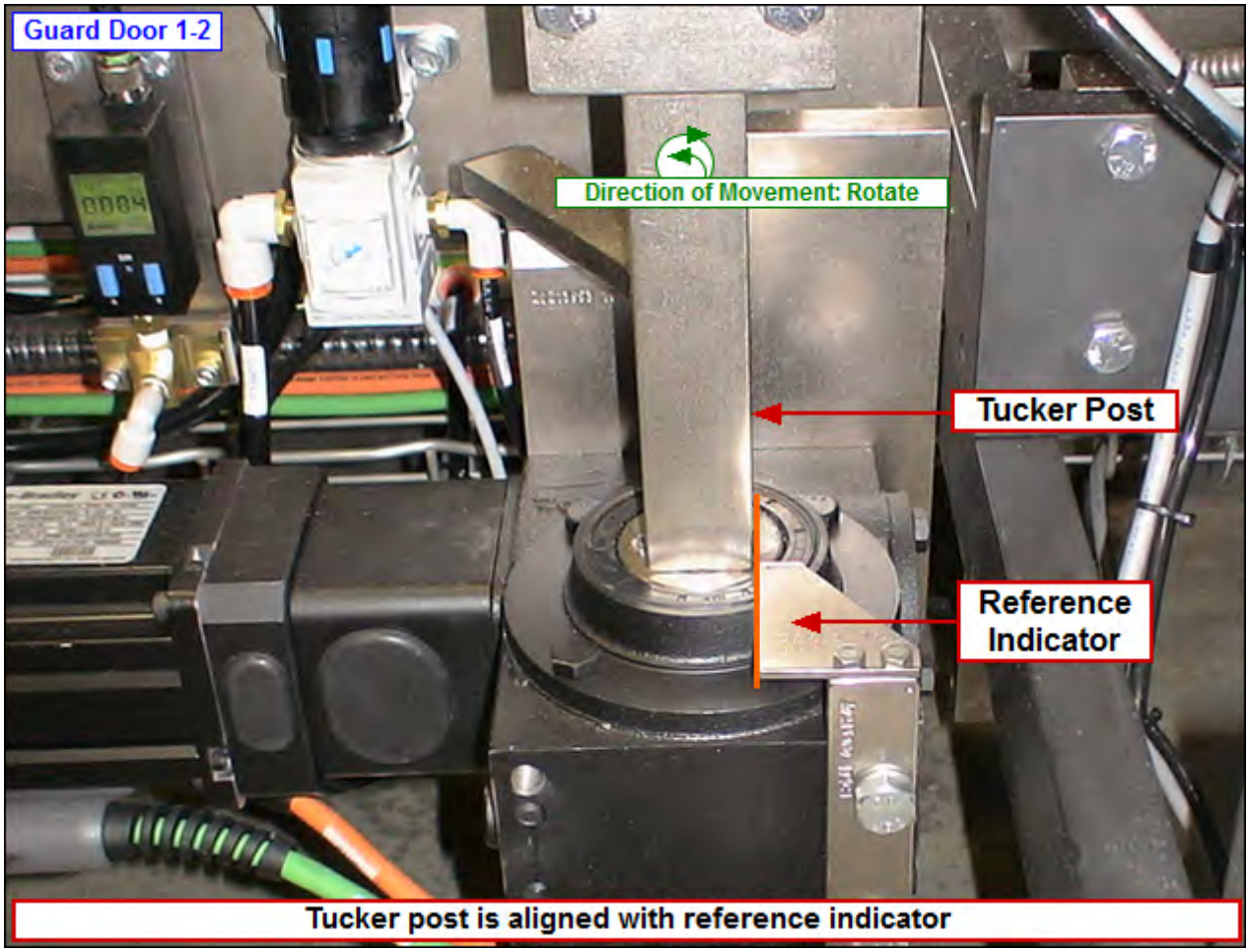
SM13 Funnel


Guard Door 1-1
Direction of Movement: Rotate
Reference Indicator
Funnel Stop
Funnel
Funnel Stop is parallel with reference indicator and funnel is 90 degrees to flight chain

SM14 Funtucker



SM15 Tucker



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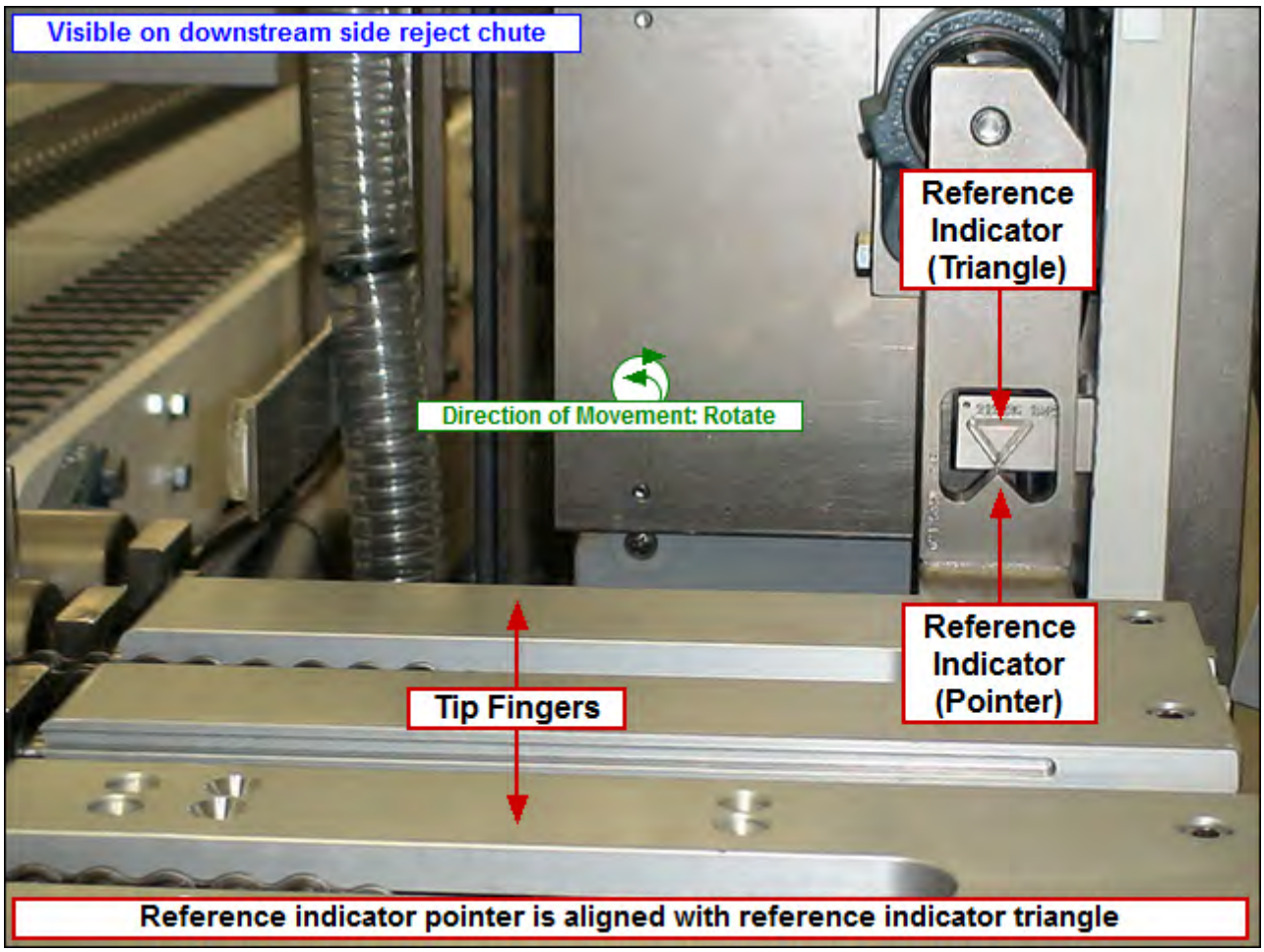
SM17 Tip Fingers



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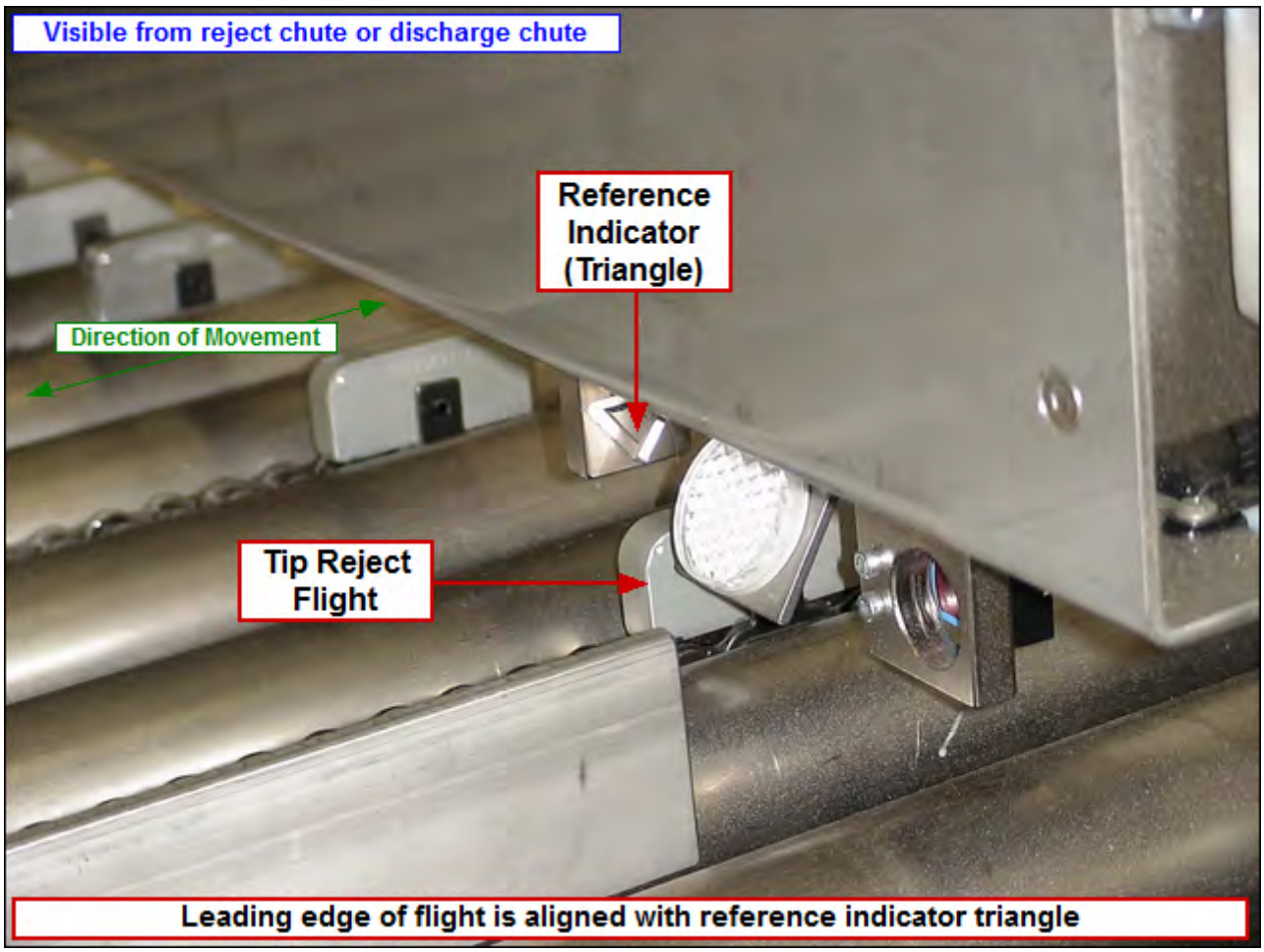
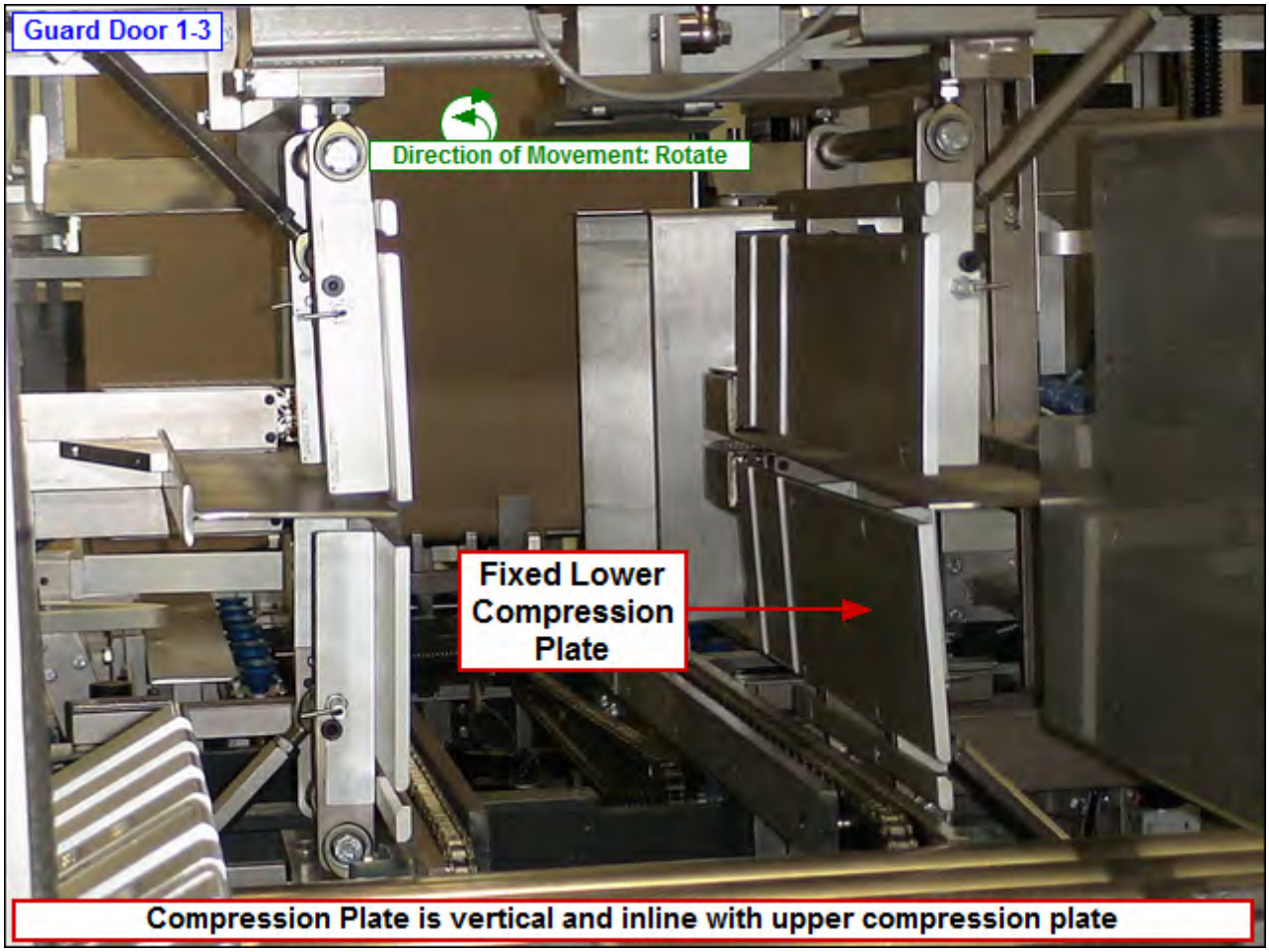
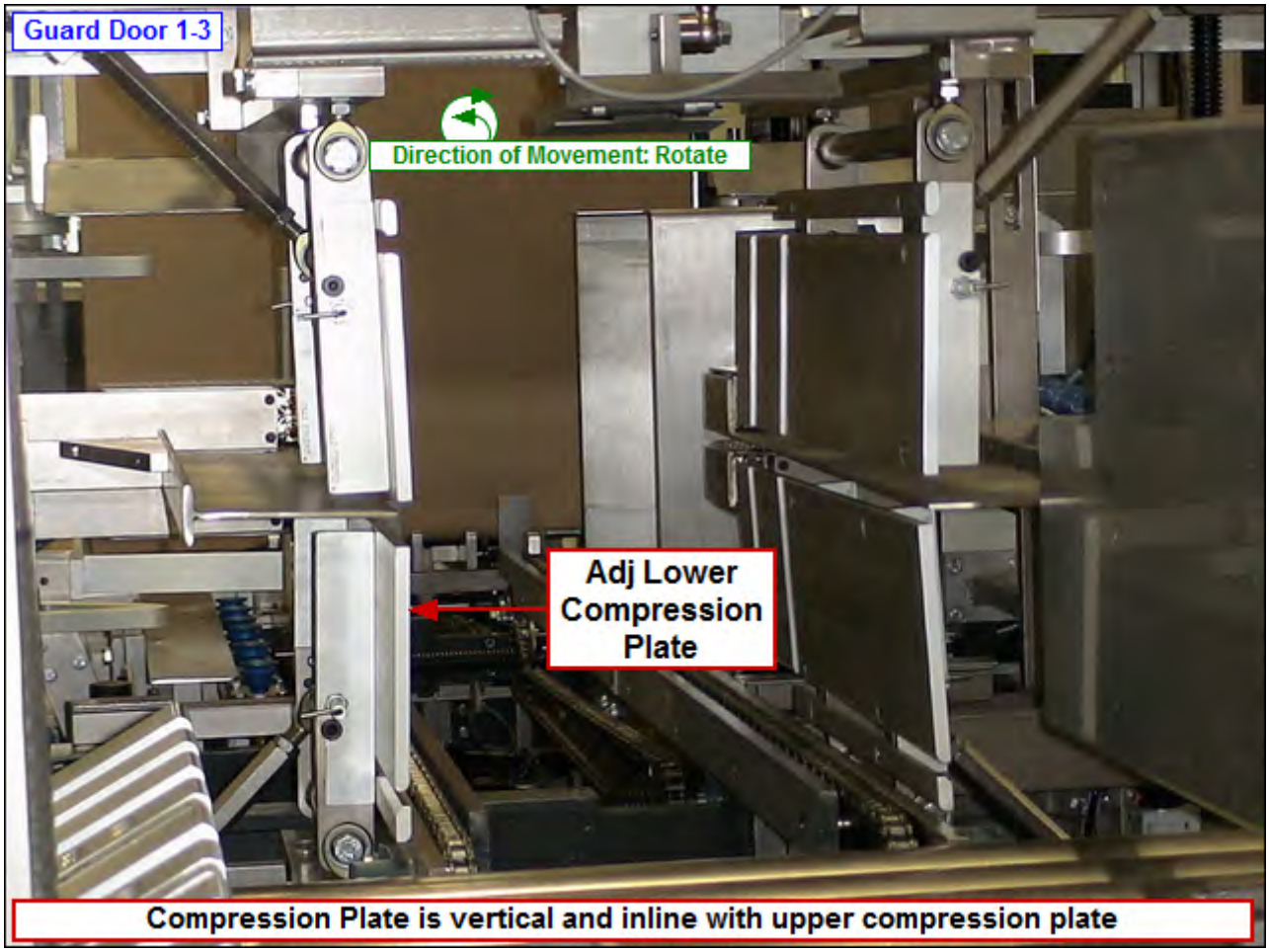
SM18 Tip Reject Flights



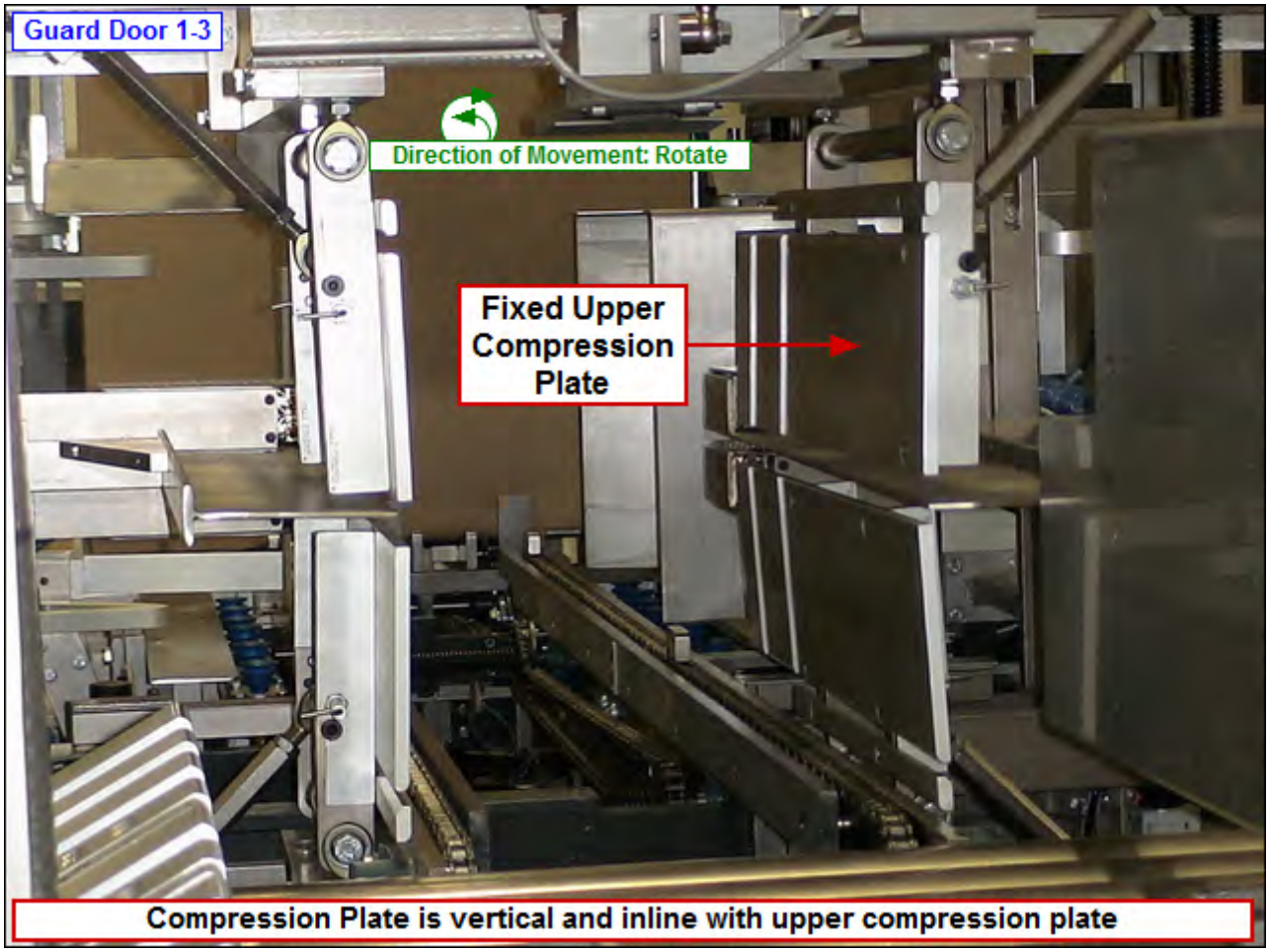
SM19 Fixed Lower Compression



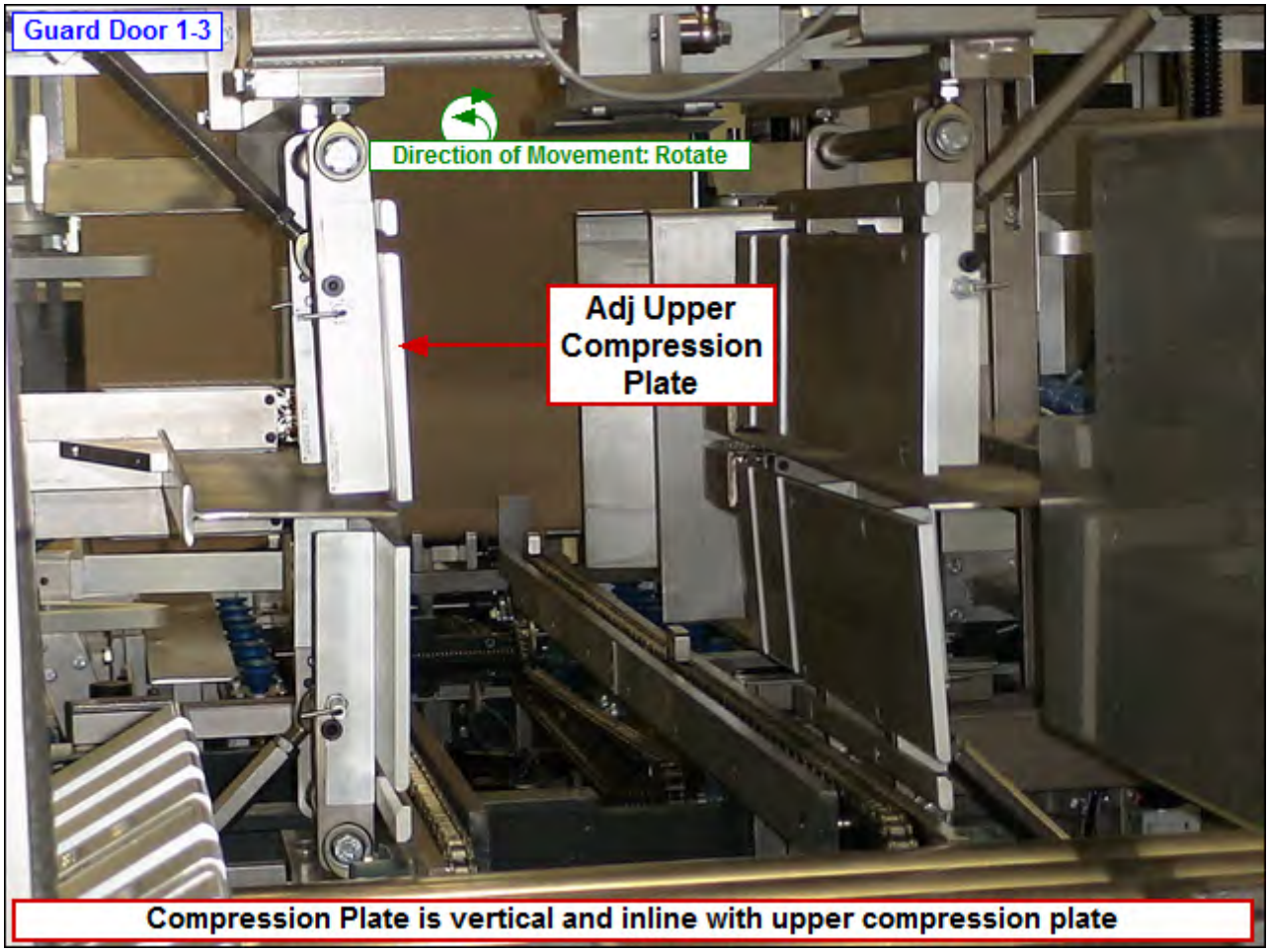
SM20 Adj Lower Compression



SM21 Fixed Upper Compression



SM22 Adj Upper Compression

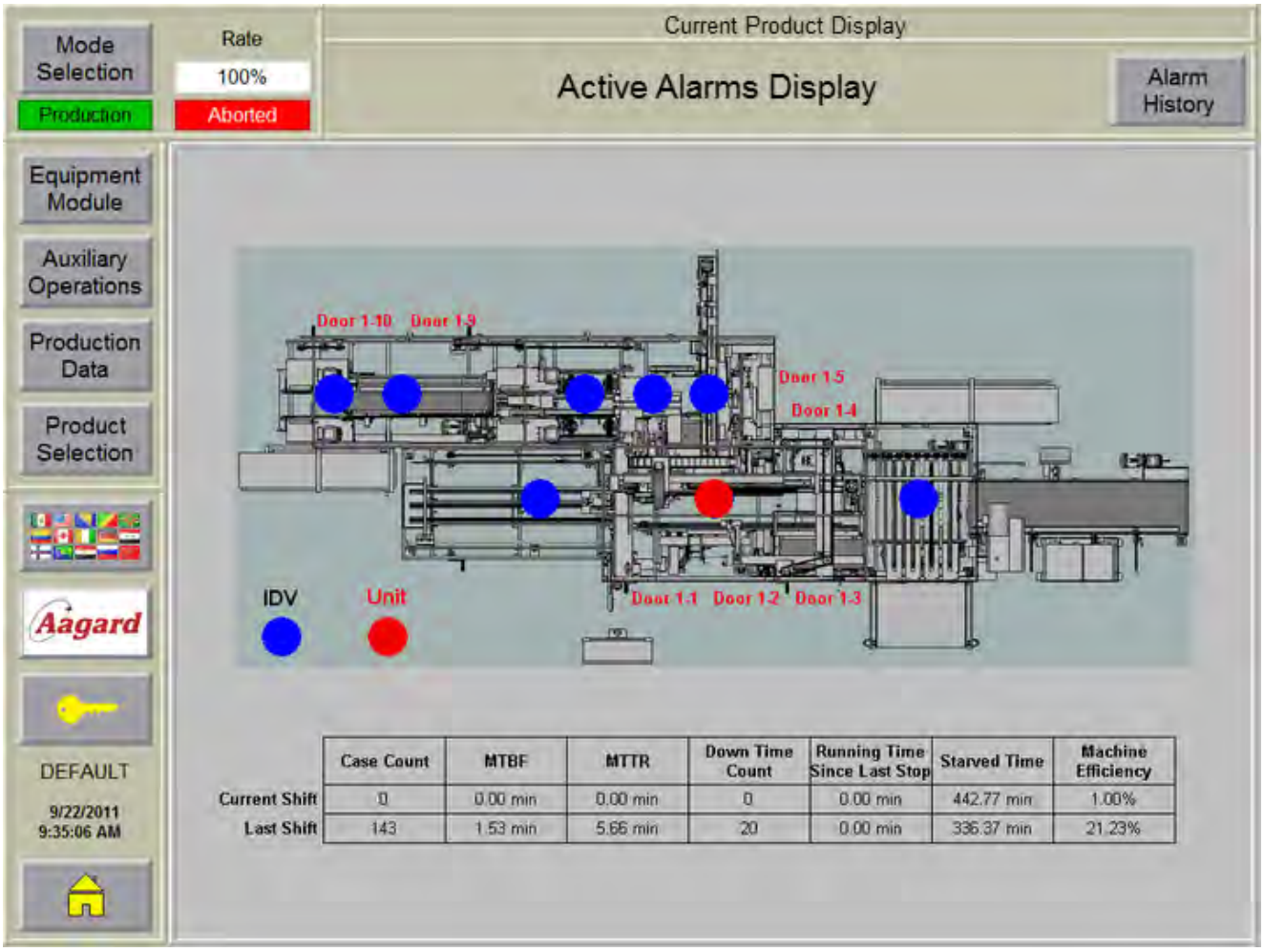


Section 3

Operator Control Panel (HMI)

Operator Control Panel (HMI)

IMPORTANT NOTE: Throughout the HMI, not all buttons are visible and/or enabled for all users!



About the image displayed on this screen:

Each blue dot represents an equipment module on the machine. Tapping on the blue dot will bring the user to an equipment module detail screen.

A flashing red dot indicates a stop condition exists in that equipment module or unit.

When a guard door is open, a label indicating which door is open will be displayed next to the door which is open.

When an E-Stop button is depressed, the word **E-Stop** will display next to the E-Stop button which is depressed.

NOTE: The red dots, door and e-stop texts will be hidden when the machine is reset

---

Mode Selection Button
Tap this button to open the Select Mode dialog.

NOTE: This button will be hidden when the machine is running

Rate Display and Entry Field
When this feature is enabled, the current rate that the system is running is displayed. Authorized users may change the rate by tapping inside the entry field.

NOTE: A virtual keyboard will be displayed when editing the rate. Any whole number up to 100 is considered a valid rate.

Mode Indicator
The current mode of the machine is displayed.

State Indicator
The current state of the machine is displayed.

Current Product Display
The current product is displayed in this area.

Active Alarms Display
The active alarms are displayed in this banner.

Alarm History Button
Tap this button to view the Alarm History screen.

Equipment Module Button
Tap this button to open the Equipment Module selection screen.

Auxiliary Operations Button
Tap this button to open the Auxiliary Operations screen.

Production Data Button
When available, tap this button to open the Production Data screen.

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Product Selection Button
Tap this button to open the Product Selection screen.

Language Button
Tap this button to select a different language.

Aagard Button
Tap this button to open the Aagard Machine Manual documentation in the current screen.

NOTE: On popup windows, tap

for documentation on that window

Login Button
Tap this button to login or logout.
NOTE: A virtual keyboard will appear when logging in

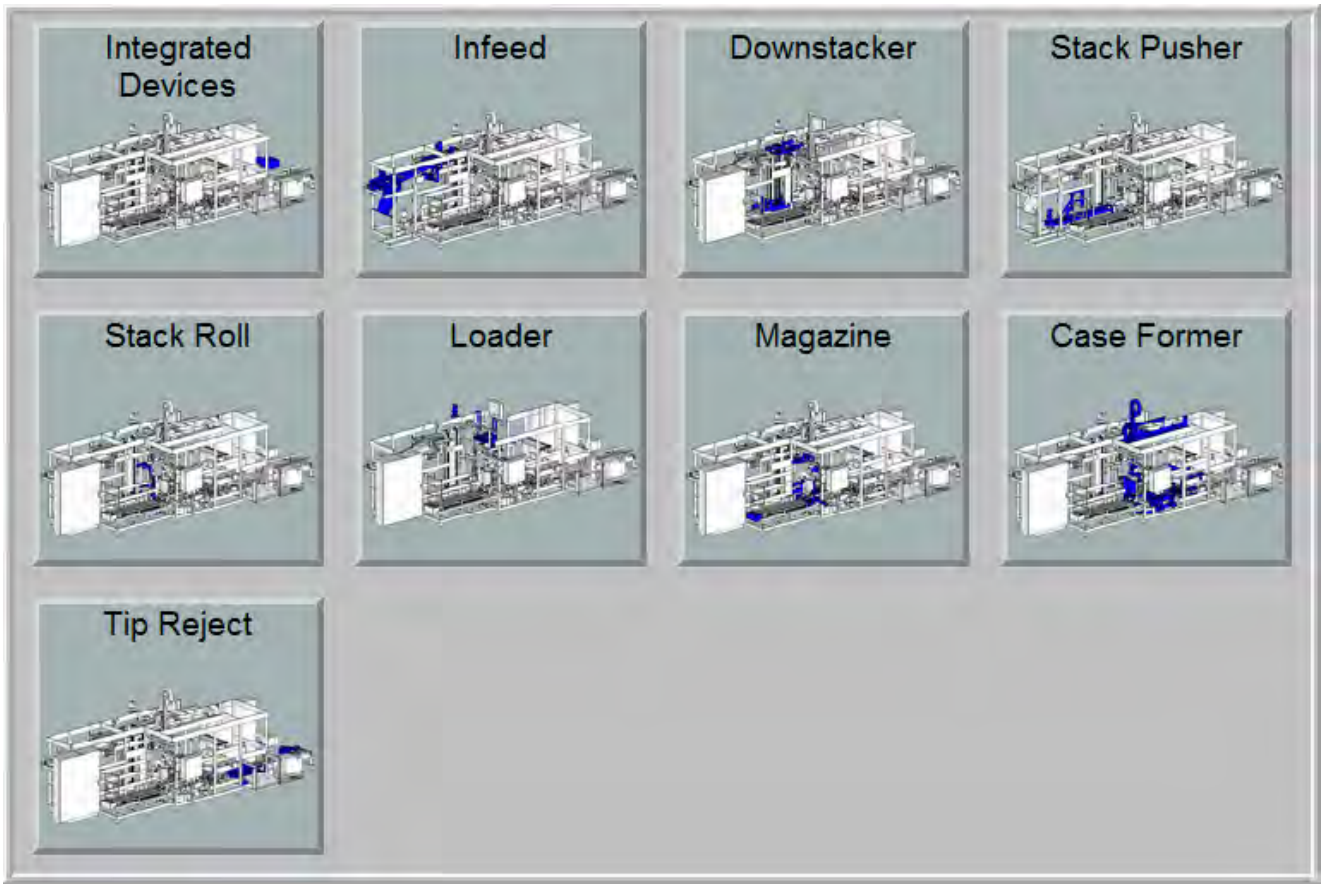
Logged In User Display
The user that is currently logged in is displayed.

Date and Time Display
The current date and time are displayed.

Home Button
Tap this button to return to the Home screen from anywhere in the HMI.

Equipment Module Selection

Tap on a button to view more information about an equipment module.



Equipment Module

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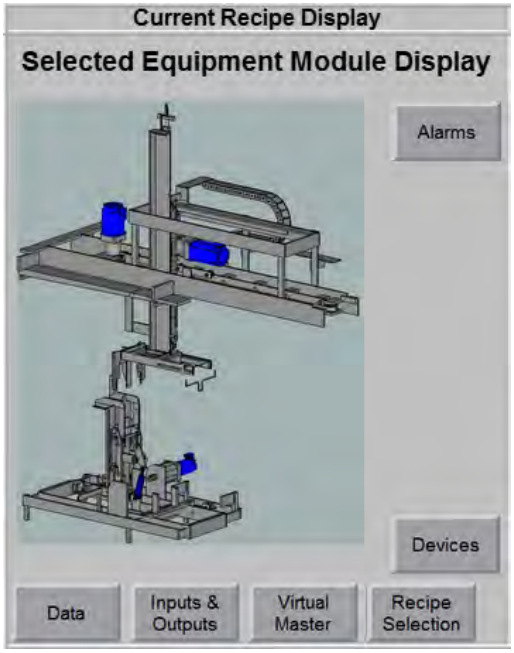
Equipment Module

How to use this screen:

When in the HMI, tap on a device (colored in blue) to go to the device screen for that device. View details specific to an equipment module by selecting a button from the list below.

When a stop condition exists in a drive, a red dot will flash over the device with the stop condition.

SAMPLE IMAGE



Equipment Module Detail

Infeed | Downstacker

Stack Pusher | Stack Roll

Loader | Magazine

Case Former | Tip Reject

Integrated Devices

Data Button
Tap this button to view recipe data associated with the equipment module.

Inputs & Outputs Button
Tap this button to view Inputs & Outputs for the equipment module.

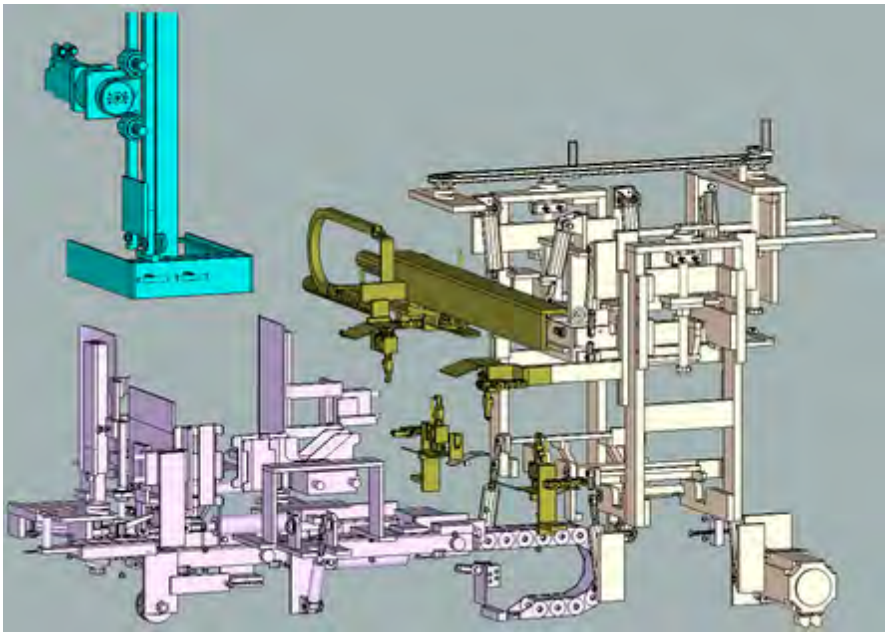
Virtual Master
Tap this button to view information about the Virtual Master drive, if one exists for this equipment module.

Recipe Selection Button
Tap the Recipe Selection button to manage recipes for the equipment module.

Alarms Button
Tap this button to view alarms for this equipment module.

When there are too many devices to display in the overall image, an intermediate image will be displayed. In this intermediate image, tap on a colored region of the image for a more detailed view.

SAMPLE INTERMEDIATE IMAGE



Other buttons which may be available on specific equipment modules:

Reference Downstacker Flights

Tap the Reference Downstacker Flights button to reference the downstacker flights.

NOTE: This button only appears in the Downstacker equipment module

Glue Stitches Button

Tap the Glue Stitches button to view glue stitch information.

NOTE: This button only appears in the Case Former equipment module

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Infeed Detail

Tap on a button for more information about this equipment module.

Sequence of Operation | Drive Function/Associated Devices

Device List | Alarms

Recipe Data

Screen Information for Jog, Reference, and Configuration Data

Solenoid Valves | VFDs | Motors

Servo Motors | Virtual Master

Screen Information for Inputs and Outputs

Inputs and Outputs

Alarms

Stop Alarm	Alarm Diagnostics	Cause	Remedy
EM Alarm	Gap Between Cartons Too Small	Gap between products in the side belts are two small for reliable operation	Determine why gap is too small
	Invalid Value for Batch Size	Batch Size data parameter is outside of allowable range	Correct data value
	Product in Side Belts Sensor Blocked Too Long	Product jammed in side belts	Remove product from side belts
	Product Present in Dry Cycle	Product was detected while dry cycling	Remove product from machine
	Rate Percent is Zero	Invalid Rate Percent value	Correct data value
	Reject Chute Blocked	Carton reject chute is full of product	Remove extra product
	Too Many Cartons	Two many products at the end of the side belts	Remove extra product
SM Spatula Alarm	Base Motion Instruction Error	A motion instruction failed in the base due to invalid data	Verify configuration data for valid values
	Cam Motion Instruction Error	A motion instruction failed in the base due to invalid cam data	Verify cam data for valid values
	Cam Recovery Motion Instruction Error	A motion instruction failed while attempting to recover the slave to the current master position	Verify cam data for valid values
	Feedback Fault	Axis feedback device is not working correctly	Use RS Logix to look up the error code
	General Fault	A general fault exists in the axis	Use RS Logix to look up the error code
	Guard Fault	Wiring in the safety circuit is not working properly	Use RS Logix to look up the error code
	Hard Stop Not Found	Travel limit used for referencing was not located	Verify the reference data is correct and that the physical travel limit is present
	Incorrect Verification Position	The position found during the reference verification procedure was outside the allowable bandwidth	Verify that the physical travel limit used for the reference position was reached during the reference procedure. Verify the verification sensor is mounted correctly and functioning properly. Verify the reference data is correct.
	Jog Motion Instruction Error	Jog motion instruction failed to execute	Verify the jog data used by the motion instruction has valid values
	Master Offset Motion Instruction Error	Applying of the master offset failed	Verify the master offset value is within range
	Motion Instruction Error	A motion instruction failed to execute	Verify the data used by the motion instruction has valid values
	Negative Overtravel	Axis exceeded the overtravel limit in the negative direction	Move the axis back into the allowable travel range and determine what commanded the axis to exceed the travel limit
	Overload Fault	The power consumption of the axis has exceeded allowable limits over time	Use RS Logix to look up the error code
	Position Error	An object or device is preventing the axis from performing the motion within tolerance	Use RS Logix to look up the error code

Stop Alarm	Alarm Diagnostics	Cause	Remedy
	Positive Overtravel	Axis exceeded the overtravel limit in the positive direction	Move the axis back into the allowable travel range and determine what commanded the axis to exceed the travel limit
	Ref Motion Instruction Error	One of the motions in the reference routine was not able to be performed	Verify all reference data values are valid
	Sensor Not Found	Sensor was not found during reference routine	Test reference sensor for proper mounting
	Set Position Error	Setting of the current position failed	Verify position data is within range
	Slave Offset Motion Instruction Error	Applying of the slave offset failed	Verify the slave offset value is within range
	Temperature Fault	The axis temperature has exceeded the limits	Use RS Logix to look up the error code
VFD Infeed Conveyor Alarm VFD Reject Side Belts Alarm VFD Side Belts Alarm	Adjustable Side Thermal Overload	The overload sensing device has been tripped	Manually reset the device
	Fixed Side Thermal Overload	The overload sensing device has been tripped	Manually reset the device
	Fwd Speed Jam	The at forward speed signal was lost for longer than the jam time while the forward direction is commanded and the at forward speed status was made	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	Not At Fwd Speed In Time	The forward sensor was not made before the forward time limit was exceeded when the forward direction was commanded	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	Not At Rev Speed In Time	The reverse sensor was not made before the reverse time limit was exceeded when the reverse direction was commanded	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	Not Stopped In Time	VFD moving status is true for longer than the stop time after a stop command was given	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	Rev Speed Jam	The at reverse speed signal was lost for longer than the jam time while the reverse direction is commanded and the at reverse speed status was made	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	VFD Fault	Refer to the VFD display to determine the cause	Use VFD operation manual to determine the corrective action
Warning		**Cause**	**Remedy**
Reject chute blocked		Carton reject chute is full of product	No Action Required

Recipe Data

Cartons per Layer
This entry field specifies the number of cartons per layer of the stack in the lowerator stack chamber.

Batch Complete Delay (ms)
This entry field specifies when the batch of product is complete after the last product of the batch leaves the product in side belts sensor, in meters/second.

Reject Side Belts Speed (mpm)
This entry field specifies the speed of the reject side belts, in meters/minute.

Infeed Conveyor Speed (mpm)
This entry field specifies the speed of the Infeed Conveyor, in meters/minute.

Side Belts Speed (mpm)
This entry field specifies the speed of the side belts, in meters/minute.

Spatula Changeover Position (cm)
This entry field specifies the position where the device will be at the end of the clean out procedure.

Spatula Transfer Move - move spatula into stack chamber to transfer first carton over stack
Spatula Return Move - retract spatula from stack chamber

- **Position (cm)**
  This entry field specifies the position of the named drive or move, in centimeters.

- **Velocity (cm/s)**
  This entry field specifies the velocity of the named drive or move, in centimeters/second.

- **Accel (cm/s²)**
  This entry field specifies the acceleration of the named drive or move, in centimeters/second².

- **Decel (cm/s²)**
  This entry field specifies the deceleration of the named drive or move, in centimeters/second².

- **Jerk (%)**
  This entry field specifies the change in acceleration over time in percentage of time of the specified move.

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Downstacker Detail

Tap on a button for more information about this equipment module.

Sequence of Operation | Drive Function/Associated Devices

Device List | Alarms

Recipe Data | Downstacker Reference

Screen Information for Jog, Reference, and Configuration Data

Solenoid Valves | VFDs | Motors

Servo Motors | Virtual Master

Screen Information for Inputs and Outputs

Inputs and Outputs

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Alarms

Stop Alarm	Alarm Diagnostics	Cause	Remedy
EM Alarm	Gearing Instruction Error	Gear instruction failed due to invalid data	Determine which data is valid and change
	Invalid Stack Height	The measured stack height is incorrect for the current recipe	Remove damaged or improperly oriented product
	Invalid Stack In Lower Section	Unexpected product in the lower section of the downstacker	Remove product from the lower section of the downstacker
	Invalid Top Layer	Top layer has cartons positioned in the wrong orientation	Correct product in top layer
	Layer Height Value is Zero	Invalid data value for the Layer Height	Correct data value
	Layers Per Stack Value is Zero	Invalid data value for the Layers per Stack	Correct data value
	Stack Chamber Overfilled	Too many products in the stack chamber	Remove extra product
	Stack Presented Distance is Zero	Stack Presented Distance data value invalid	Correct data value
	Too Many Layers in a Stack	Searching of the stack detected too many layers of product for current recipe	Remove extra product
SM Adj. Lower Flight Alarm SM Adj. Upper Flight Alarm SM Fixed Lower Flight Alarm SM Fixed Upper Flight Alarm	Base Motion Instruction Error	A motion instruction failed in the base due to invalid data	Verify configuration data for valid values
	Cam Motion Instruction Error	A motion instruction failed in the base due to invalid cam data	Verify cam data for valid values
	Cam Recovery Motion Instruction Error	A motion instruction failed while attempting to recover the slave to the current master position	Verify cam data for valid values
	Feedback Fault	Axis feedback device is not working correctly	Use RS Logix to look up the error code
	General Fault	A general fault exists in the axis	Use RS Logix to look up the error code
	Guard Fault	Wiring in the safety circuit is not working properly	Use RS Logix to look up the error code
	Hard Stop Not Found	Travel limit used for referencing was not located	Verify the reference data is correct and that the physical travel limit is present
	Incorrect Verification Position	The position found during the reference verification procedure was outside the allowable bandwidth	Verify that the physical travel limit used for the reference position was reached during the reference procedure. Verify the verification sensor is mounted correctly and functioning properly. Verify the reference data is correct.
	Jog Motion Instruction Error	Jog motion instruction failed to execute	Verify the jog data used by the motion instruction has valid values
	Master Offset Motion Instruction Error	Applying of the master offset failed	Verify the master offset value is within range
	Motion Instruction Error	A motion instruction failed to execute	Verify the data used by the motion instruction has valid values
	Negative Overtravel	Axis exceeded the overtravel limit in the negative direction	Move the axis back into the allowable travel range and determine what commanded the axis to exceed the travel limit
	Overload Fault	The power consumption of the axis has exceeded allowable limits over time	Use RS Logix to look up the error code

Stop Alarm	Alarm Diagnostics	Cause	Remedy
	Position Error	An object or device is preventing the axis from performing the motion within tolerance	Use RS Logix to look up the error code
	Positive Overtravel	Axis exceeded the overtravel limit in the positive direction	Move the axis back into the allowable travel range and determine what commanded the axis to exceed the travel limit
	Ref Motion Instruction Error	One of the motions in the reference routine was not able to be performed	Verify all reference data values are valid
	Sensor Not Found	Sensor was not found during reference routine	Test reference sensor for proper mounting
	Set Position Error	Setting of the current position failed	Verify position data is within range
	Slave Offset Motion Instruction Error	Applying of the slave offset failed	Verify the slave offset value is within range
	Temperature Fault	The axis temperature has exceeded the limits	Use RS Logix to look up the error code

Recipe Data

Layers Per Stack
This entry field specifies the number of layers in each complete stack of cartons.

Layer Height (cm)
This entry field specifies the height of product as it enters the machine, in centimeters.

Stack Presented Distance (cm)
This entry field specifies the distance above the deck position where the stack presented status is set to true, in centimeters.

Search Stack Velocity (cm/s)
This entry field specifies the speed at which the downstacker flights move during the search procedure, in centimeters/second.

1st Layer Position Move - move flights into position to receive first layer
Down Move - move flights down for each layer of product, based on carton height
Deck Move - move completed stack down to deck for presentation to downstream equipment
Prime Move - move flights to waiting position prior to 1st layer position move

- **Position (cm)**
  This entry field specifies the position of the named drive or move, in centimeters.

- **Velocity (cm/s)**
  This entry field specifies the velocity of the named drive or move, in centimeters/second.

- **Accel (cm/s²)**
  This entry field specifies the acceleration of the named drive or move, in centimeters/second².

- **Decel (cm/s²)**
  This entry field specifies the deceleration of the named drive or move, in centimeters/second².

- **Jerk (%)**
  This entry field specifies the change in acceleration over time in percentage of time of the specified move.

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Downstacker Reference

REFERENCE

Do Reference Button

Tap this button to initiate the reference routine for the servo.

Documentation Link

Tap this button to view a list of servos with reference information, including an image of the drive when it is in its referenced position.

Reference Position (cm)

This entry field specifies the position of the reference target, in centimeters.

> **NOTE:** The servo position value is based on a calculation of the Reference Position value and the position value captured when at the reference target; during over-travel referencing, the target position is the travel limit, while during sensor referencing, the target position is the sensor location

End Position (cm)

This entry field specifies the position location where the axis will be when the reference routine of the servo is completed without error, in centimeters.

STATUS INDICATORS

Act Pos

This indicator displays the actual position of the servo.

Servo Status

This indicator displays the actual status of the servo.

Stack Pusher Detail

Tap on a button for more information about this equipment module.

Sequence of Operation | Drive Function/Associated Devices

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Screen Information for Jog, Reference, and Configuration Data

Solenoid Valves | VFDs | Motors

Servo Motors | Virtual Master

Screen Information for Inputs and Outputs

Inputs and Outputs

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Alarms

Stop Alarm	Alarm Diagnostics	Cause	Remedy
EM Alarm	Stack at Deck sensor Blocked	Stack at Deck sensor blocked	Remover object blocking the sensor
SM Stack Pusher Alarm	Base Motion Instruction Error	A motion instruction failed in the base due to invalid data	Verify configuration data for valid values
	Cam Motion Instruction Error	A motion instruction failed in the base due to invalid cam data	Verify cam data for valid values
	Cam Recovery Motion Instruction Error	A motion instruction failed while attempting to recover the slave to the current master position	Verify cam data for valid values
	Feedback Fault	Axis feedback device is not working correctly	Use RS Logix to look up the error code
	General Fault	A general fault exists in the axis	Use RS Logix to look up the error code
	Guard Fault	Wiring in the safety circuit is not working properly	Use RS Logix to look up the error code
	Hard Stop Not Found	Travel limit used for referencing was not located	Verify the reference data is correct and that the physical travel limit is present
	Incorrect Verification Position	The position found during the reference verification procedure was outside the allowable bandwidth	Verify that the physical travel limit used for the reference position was reached during the reference procedure. Verify the verification sensor is mounted correctly and functioning properly. Verify the reference data is correct.
	Jog Motion Instruction Error	Jog motion instruction failed to execute	Verify the jog data used by the motion instruction has valid values
	Master Offset Motion Instruction Error	Applying of the master offset failed	Verify the master offset value is within range
	Motion Instruction Error	A motion instruction failed to execute	Verify the data used by the motion instruction has valid values
	Negative Overtravel	Axis exceeded the overtravel limit in the negative direction	Move the axis back into the allowable travel range and determine what commanded the axis to exceed the travel limit
	Overload Fault	The power consumption of the axis has exceeded allowable limits over time	Use RS Logix to look up the error code
	Position Error	An object or device is preventing the axis from performing the motion within tolerance	Use RS Logix to look up the error code
	Positive Overtravel	Axis exceeded the overtravel limit in the positive direction	Move the axis back into the allowable travel range and determine what commanded the axis to exceed the travel limit
	Ref Motion Instruction Error	One of the motions in the reference routine was not able to be performed	Verify all reference data values are valid
	Sensor Not Found	Sensor was not found during reference routine	Test reference sensor for proper mounting
	Set Position Error	Setting of the current position failed	Verify position data is within range
	Slave Offset Motion Instruction Error	Applying of the slave offset failed	Verify the slave offset value is within range
	Temperature Fault	The axis temperature has exceeded the limits	Use RS Logix to look up the error code

Recipe Data

Stack Presented Position (cm)
This entry field specifies the position at which the stack presented status is set to true, in centimeters.

Available for Product Position (cm)
This entry field specifies the position at which the stack pusher is available to receive product, in centimeters.

Stack Pusher Changeover Position (cm)
This entry field specifies the position where the device will be at the end of the clean out procedure, in centimeters.

Stack Removed Position (cm)
This entry field specifies the position where the stack pusher has removed the stack from the downstacker allowing the downstacker to move the flights from the deck position to the prime position, in centimeters.

Condition Stack Position (cm)
This entry field specifies the position where the tip product conditioner is commanded to condition the stack, in centimeters.

Stack Pusher Push Move - move to remove completed stack from upstream equipment
Stack Pusher Return Move - move to retract to clear area for next stack to be presented from upstream equipment
Stack Pusher Prepare Move - move to starting position for next cycle

- **Position (cm)**
  This entry field specifies the position of the named drive or move, in centimeters.

- **Velocity (cm/s)**
  This entry field specifies the velocity of the named drive or move, in centimeters/second.

- **Accel (cm/s²)**
  This entry field specifies the acceleration of the named drive or move, in centimeters/second².

- **Decel (cm/s²)**
  This entry field specifies the deceleration of the named drive or move, in centimeters/second².

- **Jerk (%)**
  This entry field specifies the change in acceleration over time in percentage of time of the specified move.

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Stack Roll Detail

Tap on a button for more information about this equipment module.

Sequence of Operation | Drive Function/Associated Devices

Device List | Alarms

Recipe Data

Screen Information for Jog, Reference, and Configuration Data

Solenoid Valves | VFDs | Motors

Servo Motors | Virtual Master

Screen Information for Inputs and Outputs

Inputs and Outputs

Alarms

Stop Alarm	Alarm Diagnostics	Cause	Remedy
EM Alarm	Product Left Behind	Product left in the load station when not expected to find product	Remove product from the load station
	Stack in Roll sensor Blocked	Stack in Roll sensor blocked	Remover object blocking the sensor
SM Stack Roll Alarm	Base Motion Instruction Error	A motion instruction failed in the base due to invalid data	Verify configuration data for valid values
	Cam Motion Instruction Error	A motion instruction failed in the base due to invalid cam data	Verify cam data for valid values
	Cam Recovery Motion Instruction Error	A motion instruction failed while attempting to recover the slave to the current master position	Verify cam data for valid values
	Feedback Fault	Axis feedback device is not working correctly	Use RS Logix to look up the error code
	General Fault	A general fault exists in the axis	Use RS Logix to look up the error code
	Guard Fault	Wiring in the safety circuit is not working properly	Use RS Logix to look up the error code
	Hard Stop Not Found	Travel limit used for referencing was not located	Verify the reference data is correct and that the physical travel limit is present
	Incorrect Verification Position	The position found during the reference verification procedure was outside the allowable bandwidth	Verify that the physical travel limit used for the reference position was reached during the reference procedure. Verify the verification sensor is mounted correctly and functioning properly. Verify the reference data is correct.
	Jog Motion Instruction Error	Jog motion instruction failed to execute	Verify the jog data used by the motion instruction has valid values
	Master Offset Motion Instruction Error	Applying of the master offset failed	Verify the master offset value is within range
	Motion Instruction Error	A motion instruction failed to execute	Verify the data used by the motion instruction has valid values
	Negative Overtravel	Axis exceeded the overtravel limit in the negative direction	Move the axis back into the allowable travel range and determine what commanded the axis to exceed the travel limit
	Overload Fault	The power consumption of the axis has exceeded allowable limits over time	Use RS Logix to look up the error code
	Position Error	An object or device is preventing the axis from performing the motion within tolerance	Use RS Logix to look up the error code
	Positive Overtravel	Axis exceeded the overtravel limit in the positive direction	Move the axis back into the allowable travel range and determine what commanded the axis to exceed the travel limit
	Ref Motion Instruction Error	One of the motions in the reference routine was not able to be performed	Verify all reference data values are valid
	Sensor Not Found	Sensor was not found during reference routine	Test reference sensor for proper mounting
	Set Position Error	Setting of the current position failed	Verify position data is within range
	Slave Offset Motion Instruction Error	Applying of the slave offset failed	Verify the slave offset value is within range

Stop Alarm	Alarm Diagnostics	Cause	Remedy
	Temperature Fault	The axis temperature has exceeded the limits	Use RS Logix to look up the error code
SV Tip Clamp Alarm SV Tip Product Conditioner Alarm	A Sensor Jam	The A sensor signal was lost for longer than the jam time while the A coil is commanded to be energized and the A sensor was made	Check sensor for proper operation
	A Sensor Not Made In Time	The A sensor was not made before the A Time limit was exceeded when the A Coil was commanded to be energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	A Sensor On Too Long	The A sensor was made longer than the A Time limit when the A Coil was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	B Sensor Jam	The B sensor signal was lost for longer than the jam time while the B coil is commanded to be energized and the B sensor was made	Check sensor for proper operation
	B Sensor Not Made In Time	The B sensor was not made before the B Time limit was exceeded when the B Coil was commanded to be energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	B Sensor On Too Long	B sensor was made longer than the B Time limit when the B Coil was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly

Recipe Data

Clear of Loader Position (cm)
This entry field specifies the position at which the stack roll is past the loader to allow the loader to return, in centimeters.

Stack Presented Position (cm)
This entry field specifies the position at which the stack presented status is set to true, in centimeters.

Available for Product Position (cm)
This entry field specifies the position at which the stack roll is available to receive product, in centimeters.

Stack Roll Changeover Position (cm)
This entry field specifies the position where the device will be at the end of the clean out procedure, in centimeters.

Stack Roll Bypass Button (On/Off)
This command determines if the stack roll device is used to roll the stack for the current recipe.

Stack Roll Roll Move - move to roll completed stack into downstream equipment
Stack Roll Return Move - move into position to receive next stack from upstream equipment

- **Position (cm)**
  This entry field specifies the position of the named drive or move, in centimeters.

- **Velocity (cm/s)**
  This entry field specifies the velocity of the named drive or move, in centimeters/second.

- **Accel (cm/s²)**
  This entry field specifies the acceleration of the named drive or move, in centimeters/second².

- **Decel (cm/s²)**
  This entry field specifies the deceleration of the named drive or move, in centimeters/second².

- **Jerk (%)**
  This entry field specifies the change in acceleration over time in percentage of time of the specified move.

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Loader Detail

Tap on a button for more information about this equipment module.

Sequence of Operation | Drive Function/Associated Devices

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Screen Information for Jog, Reference, and Configuration Data

Solenoid Valves | VFDs | Motors

Servo Motors | Virtual Master

Screen Information for Inputs and Outputs

Inputs and Outputs

Alarms

Stop Alarm	Alarm Diagnostics	Cause	Remedy
EM Alarm	Product at Load Station sensor Blocked	Product at Load station sensor blocked	Remover object blocking the sensor
	Product Left Behind	Product left in the load station when not expected to find product	Remove product from the load station
SM Loader Alarm	Base Motion Instruction Error	A motion instruction failed in the base due to invalid data	Verify configuration data for valid values
	Cam Motion Instruction Error	A motion instruction failed in the base due to invalid cam data	Verify cam data for valid values
	Cam Recovery Motion Instruction Error	A motion instruction failed while attempting to recover the slave to the current master position	Verify cam data for valid values
	Feedback Fault	Axis feedback device is not working correctly	Use RS Logix to look up the error code
	General Fault	A general fault exists in the axis	Use RS Logix to look up the error code
	Guard Fault	Wiring in the safety circuit is not working properly	Use RS Logix to look up the error code
	Hard Stop Not Found	Travel limit used for referencing was not located	Verify the reference data is correct and that the physical travel limit is present
	Incorrect Verification Position	The position found during the reference verification procedure was outside the allowable bandwidth	Verify that the physical travel limit used for the reference position was reached during the reference procedure. Verify the verification sensor is mounted correctly and functioning properly. Verify the reference data is correct.
	Jog Motion Instruction Error	Jog motion instruction failed to execute	Verify the jog data used by the motion instruction has valid values
	Master Offset Motion Instruction Error	Applying of the master offset failed	Verify the master offset value is within range
	Motion Instruction Error	A motion instruction failed to execute	Verify the data used by the motion instruction has valid values
	Negative Overtravel	Axis exceeded the overtravel limit in the negative direction	Move the axis back into the allowable travel range and determine what commanded the axis to exceed the travel limit
	Overload Fault	The power consumption of the axis has exceeded allowable limits over time	Use RS Logix to look up the error code
	Position Error	An object or device is preventing the axis from performing the motion within tolerance	Use RS Logix to look up the error code
	Positive Overtravel	Axis exceeded the overtravel limit in the positive direction	Move the axis back into the allowable travel range and determine what commanded the axis to exceed the travel limit
	Ref Motion Instruction Error	One of the motions in the reference routine was not able to be performed	Verify all reference data values are valid
	Sensor Not Found	Sensor was not found during reference routine	Test reference sensor for proper mounting
	Set Position Error	Setting of the current position failed	Verify position data is within range
	Slave Offset Motion Instruction Error	Applying of the slave offset failed	Verify the slave offset value is within range

Stop Alarm	Alarm Diagnostics	Cause	Remedy
	Temperature Fault	The axis temperature has exceeded the limits	Use RS Logix to look up the error code
SV Product Conditioner Alarm	A Sensor Jam	The A sensor signal was lost for longer than the jam time while the A coil is commanded to be energized and the A sensor was made	Check sensor for proper operation
	A Sensor Not Made In Time	The A sensor was not made before the A Time limit was exceeded when the A Coil was commanded to be energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	A Sensor On Too Long	The A sensor was made longer than the A Time limit when the A Coil was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	B Sensor Jam	The B sensor signal was lost for longer than the jam time while the B coil is commanded to be energized and the B sensor was made	Check sensor for proper operation
	B Sensor Not Made In Time	The B sensor was not made before the B Time limit was exceeded when the B Coil was commanded to be energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	B Sensor On Too Long	B sensor was made longer than the B Time limit when the B Coil was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly

Recipe Data

Clear of Stack Roll Position (cm)
This entry field specifies the position where the loader has moved past the stack roll allowing the stack roll to return, in centimeters.

Case Filled Position (cm)
This entry field specifies the position where the case has been filled and the loader will be clear of the funnels, in centimeters.

Available for Product Position (cm)
This entry field specifies the position at which the loader is available to receive product, in centimeters.

Loader Changeover Position (cm)
This entry field specifies the position where the device will be at the end of the clean out procedure, in centimeters.

Near Case Position (cm)
This entry field specifies the position where the funnel in out is commanded to move away from the case, in centimeters.

Loader Push Move - move to present completed stack to downstream equipment
Loader Return Move - move into position to receive next stack from upstream equipment

- **Position (cm)**
  This entry field specifies the position of the named drive or move, in centimeters.

- **Velocity (cm/s)**
  This entry field specifies the velocity of the named drive or move, in centimeters/second.

- **Accel (cm/s²)**
  This entry field specifies the acceleration of the named drive or move, in centimeters/second².

- **Decel (cm/s²)**
  This entry field specifies the deceleration of the named drive or move, in centimeters/second².

- **Jerk (%)**
  This entry field specifies the change in acceleration over time in percentage of time of the specified move.

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Magazine Detail

Tap on a button for more information about this equipment module.

Sequence of Operation | Drive Function/Associated Devices

Device List | Alarms

Recipe Data

Screen Information for Jog, Reference, and Configuration Data

Solenoid Valves | VFDs | Motors

Servo Motors | Virtual Master

Screen Information for Inputs and Outputs

Inputs and Outputs

Alarms

Stop Alarm	Alarm Diagnostics	Cause	Remedy
EM Alarm	Blanks Not Advancing	Object hindering blanks from advancing or advance mechanism is broken	Remove the object preventing the advancement of the blanks or repair advance mechanism
	Magazine Empty of Blanks	Not enough blanks in the magazine to continue running	Fill Magazine
SV Advance Alarm	Base Motion Instruction Error	The A sensor signal was lost for longer than the jam time while the A coil is commanded to be energized and the A sensor was made	Check sensor for proper operation
	Cam Motion Instruction Error	The A sensor was not made before the A Time limit was exceeded when the A Coil was commanded to be energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	Cam Recovery Motion Instruction Error	The A sensor was made longer than the A Time limit when the A Coil was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	Feedback Fault	The B sensor signal was lost for longer than the jam time while the B coil is commanded to be energized and the B sensor was made	Check sensor for proper operation
	General Fault	The B sensor was not made before the B Time limit was exceeded when the B Coil was commanded to be energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	Guard Fault	B sensor was made longer than the B Time limit when the B Coil was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
SV Bottom Clip Alarm	Fwd Speed Jam	The A sensor signal was lost for longer than the jam time while the A coil is commanded to be energized and the A sensor was made	Check sensor for proper operation
	Not At Fwd Speed In Time	The A sensor was not made before the A Time limit was exceeded when the A Coil was commanded to be energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	Not At Rev Speed In Time	The A sensor was made longer than the A Time limit when the A Coil was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	Not Stopped In Time	The B sensor signal was lost for longer than the jam time while the B coil is commanded to be energized and the B sensor was made	Check sensor for proper operation
	Rev Speed Jam	The B sensor was not made before the B Time limit was exceeded when the B Coil was commanded to be energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	VFD Fault	B sensor was made longer than the B Time limit when the B Coil was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly

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Stop Alarm	Alarm Diagnostics	Cause	Remedy
SV Side Clamps Alarm	Base Motion Instruction Error	The A sensor signal was lost for longer than the jam time while the A coil is commanded to be energized and the A sensor was made	Check sensor for proper operation
	Base Motion Instruction Error	The A sensor was not made before the A Time limit was exceeded when the A Coil was commanded to be energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	Base Motion Instruction Error	The A sensor was made longer than the A Time limit when the A Coil was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	Base Motion Instruction Error	The B sensor signal was lost for longer than the jam time while the B coil is commanded to be energized and the B sensor was made	Check sensor for proper operation
	Base Motion Instruction Error	The B sensor was not made before the B Time limit was exceeded when the B Coil was commanded to be energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	Base Motion Instruction Error	B sensor was made longer than the B Time limit when the B Coil was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
SV Side Clips Alarm	Fwd Sensor Jam	The A sensor signal was lost for longer than the jam time while the A coil is commanded to be energized and the A sensor was made	Check sensor for proper operation
	Fwd Sensor Not Made In Time	The A sensor was not made before the A Time limit was exceeded when the A Coil was commanded to be energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	Fwd Sensor On Too Long	The A sensor was made longer than the A Time limit when the A Coil was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	Overload Fault	The B sensor signal was lost for longer than the jam time while the B coil is commanded to be energized and the B sensor was made	Check sensor for proper operation
	Rev Sensor Jam	The B sensor was not made before the B Time limit was exceeded when the B Coil was commanded to be energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	Rev Sensor Not Made In Time	B sensor was made longer than the B Time limit when the B Coil was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
SV Top Clip Alarm	A Sensor Jam	The A sensor signal was lost for longer than the jam time while the A coil is commanded to be energized and the A sensor was made	Check sensor for proper operation
	A Sensor Not Made In Time	The A sensor was not made before the A Time limit was exceeded when the A Coil was commanded to be energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly

Stop Alarm	Alarm Diagnostics	Cause	Remedy
	A Sensor On Too Long	The A sensor was made longer than the A Time limit when the A Coil was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	B Sensor Jam	The B sensor signal was lost for longer than the jam time while the B coil is commanded to be energized and the B sensor was made	Check sensor for proper operation
	B Sensor Not Made In Time	The B sensor was not made before the B Time limit was exceeded when the B Coil was commanded to be energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	B Sensor On Too Long	B sensor was made longer than the B Time limit when the B Coil was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
Warning		**Cause**	**Remedy**
Low On Case Blanks		Magazine low on case blanks	Fill magazine

Recipe Data

Top Clips
Bottom Clips
Side Clips

- **Release (Master Units)**
  This entry field specifies the position where the clips release the blanks.

- **Clip (Master Units)**
  This entry field specifies the position where the clips catch the blanks.

Side Clamps

- **Clamp (Master Units)**
  This entry field specifies the position where the clamps clamp the blanks.

- **Release (Master Units)**
  This entry field specifies the position where the clamps release the blanks.

Blanks Ready Delay (ms)
This entry field specifies the time delay used to allow the magazine advance to prepare the blanks upon start up of the machine, in meters/second.

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Case Former Detail

Tap on a button for more information about this equipment module.

Sequence of Operation | Drive Function/Associated Devices

Device List | Alarms

Recipe Data | Glue Stitches

Screen Information for Jog, Reference, and Configuration Data

Solenoid Valves | VFDs | Motors

Servo Motors | Virtual Master

Screen Information for Inputs and Outputs

Inputs and Outputs

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Alarms

Stop Alarm	Alarm Diagnostics	Cause	Remedy
EM Alarm	Case Left in Load Station	Case was left in the load station	Remove case
	Missing Case At Load Station	Case at load station sensor did not detect the case	Remove damaged case
	Distorted Case Sensor Blocked	Sensor blocked at the end of the cycle.	Remove blockage
	Open Flap Adjustable Side Sensor Blocked	Sensor blocked at the end of the cycle.	Remove blockage
	Open Flap Fixed Side Sensor Blocked	Sensor blocked at the end of the cycle.	Remove blockage
SM Adj Lower Compression Alarm SM Adj Upper Compression Alarm SM Fixed Lower Compression Alarm SM Fixed Upper Compression Alarm SM Flights Alarm SM Funtucker Alarm SM Funnel Alarm SM Loader Back Stop Alarm SM Robot X Alarm SM Robot Z Alarm SM Tucker Alarm	Base Motion Instruction Error	A motion instruction failed in the base due to invalid data	Verify configuration data for valid values
	Cam Motion Instruction Error	A motion instruction failed in the base due to invalid cam data	Verify cam data for valid values
	Cam Recovery Motion Instruction Error	A motion instruction failed while attempting to recover the slave to the current master position	Verify cam data for valid values
	Feedback Fault	Axis feedback device is not working correctly	Use RS Logix to look up the error code
	General Fault	A general fault exists in the axis	Use RS Logix to look up the error code
	Guard Fault	Wiring in the safety circuit is not working properly	Use RS Logix to look up the error code
	Hard Stop Not Found	Travel limit used for referencing was not located	Verify the reference data is correct and that the physical travel limit is present
	Incorrect Verification Position	The position found during the reference verification procedure was outside the allowable bandwidth	Verify that the physical travel limit used for the reference position was reached during the reference procedure. Verify the verification sensor is mounted correctly and functioning properly. Verify the reference data is correct.
	Jog Motion Instruction Error	Jog motion instruction failed to execute	Verify the jog data used by the motion instruction has valid values
	Master Offset Motion Instruction Error	Applying of the master offset failed	Verify the master offset value is within range
	Motion Instruction Error	A motion instruction failed to execute	Verify the data used by the motion instruction has valid values
	Negative Overtravel	Axis exceeded the overtravel limit in the negative direction	Move the axis back into the allowable travel range and determine what commanded the axis to exceed the travel limit
	Overload Fault	The power consumption of the axis has exceeded allowable limits over time	Use RS Logix to look up the error code
	Position Error	An object or device is preventing the axis from performing the motion within tolerance	Use RS Logix to look up the error code
	Positive Overtravel	Axis exceeded the overtravel limit in the positive direction	Move the axis back into the allowable travel range and determine what commanded the axis to exceed the travel limit
	Ref Motion Instruction Error	One of the motions in the reference routine was not able to be performed	Verify all reference data values are valid

Stop Alarm	Alarm Diagnostics	Cause	Remedy
	Sensor Not Found	Sensor was not found during reference routine	Test reference sensor for proper mounting
	Set Position Error	Setting of the current position failed	Verify position data is within range
	Slave Offset Motion Instruction Error	Applying of the slave offset failed	Verify the slave offset value is within range
	Temperature Fault	The axis temperature has exceeded the limits	Use RS Logix to look up the error code
SV Adj Lower Glue Gun Alarm SV Adj Upper Glue Gun Alarm SV Fixed Lower Glue Gun Alarm SV Fixed Upper Glue Gun Alarm SV Funtucker In Out Alarm SV Funnel In Out Alarm SV Load Cup Lift Alarm SV Load Vacuum Alarm SV Robot Vacuum Alarm SV Case Pusher Alarm SV Case Square Alarm	A Sensor Jam	The A sensor signal was lost for longer than the jam time while the A coil is commanded to be energized and the A sensor was made	Check sensor for proper operation
	A Sensor Not Made In Time	The A sensor was not made before the A Time limit was exceeded when the A Coil was commanded to be energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	A Sensor On Too Long	The A sensor was made longer than the A Time limit when the A Coil was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	B Sensor Jam	The B sensor signal was lost for longer than the jam time while the B coil is commanded to be energized and the B sensor was made	Check sensor for proper operation
	B Sensor Not Made In Time	The B sensor was not made before the B Time limit was exceeded when the B Coil was commanded to be energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	B Sensor On Too Long	B sensor was made longer than the B Time limit when the B Coil was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
VM Master Alarm	Base Motion Instruction Error	A motion instruction failed in the base due to invalid data	Verify configuration data for valid values

Recipe Data

Case Length At Load Station (cm)
This entry field specifies the length of the case at the load station. **NOTE:** This value will effect the squareness of the case at the compression station.

Funnel In Case Offset (Degrees)
This entry field specifies the position offset which will be applied to the funnel as it sits in the case. A greater value will move the funnel further into the case.

Funtucker In Case Offset (Degrees)
This entry field specifies the position offset which will be applied to the funtucker as it sits in the case. A greater value will move the funtucker further into the case.

Case Ready Position (Master Units)
This entry field specifies the position in which the case is said to be ready for filling.

Check Case for Glue Position (Master Units)
This entry field specifies the position where the check for the presence of a case to apply glue to occurs.

Check Trailing Flap Position (Master Units)
This entry field specifies the position where the check for the presence of a trail open flap is preformed.

Check Case Status Position (Master Units)
This entry field specifies the position where the reject case status is set based on the monitored conditions of the case.

Send Funnel In Out Into Case Position (Master Units)
This entry field specifies the position where the funnel in out is commanded to move the funnels towards the case.

ON (Master Units)
The entry field specifies the ON position of the named solenoid valve, in seconds of the master.

OFF (Master Units)
The entry field specifies the OFF position of the named solenoid valve, in seconds of the master.

Changeover Position (cm)
These entry fields specify the position where the named device will be at the end of the clean out procedure.

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Glue Stitches

NOTE: This button only appears in the Case Former equipment module

ON (cm) and OFF (cm) Positions
These entry fields specify the ON and OFF positions of the named glue stitches, in centimeters.

Offset Fields (cm)
These entry fields are used to offset the glue stitch position of the associated glue gun to compensate for the physical position of the glue gun.

Speed Compensation Offset (cm)
This entry field is used to offset the glue stitch position of all glue guns to compensate for speed variations.

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Tip Reject Detail

Tap on a button for more information about this equipment module.

Sequence of Operation | Drive Function/Associated Devices

Device List | Alarms

Recipe Data

Screen Information for Jog, Reference, and Configuration Data

Solenoid Valves | VFDs | Motors

Servo Motors | Virtual Master

Screen Information for Inputs and Outputs

Inputs and Outputs

Alarms

Stop Alarm	Alarm Diagnostics	Cause	Remedy
EM Alarm	Case At Stop Blocked Too Long	Case at Stop sensor blocked	Remove object that is blocking the sensor
	Case Clear of Stop Blocked Too Long	Case Clear of Stop sensor blocked	Remove object that is blocking the sensor
	Too Many Rejects in a Row	More rejects in a row than the allowable limit	Determine the reason for the reject and repair
MT Discharge Conveyor Alarm	Fwd Sensor Jam	The forward sensor signal was lost for longer than the jam time while the forward direction is commanded	Remove the object which caused the motor to slow down
	Fwd Sensor Not Made In Time	The forward sensor was not made before the forward Time limit was exceeded when the forward direction was commanded	Remove the object which prevented the motor from making the sensor
	Fwd Sensor On Too Long	Fwd sensor was made longer than the Fwd Time limit when the Forward was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	Overload Fault	The overload sensing device has be tripped	Manually reset the device
	Rev Sensor Jam	The reverse sensor signal was lost for longer than the jam time while the reverse direction is commanded	Remove the object which caused the motor to slow down
	Rev Sensor Not Made In Time	The reverse sensor was not made before the reverse Time limit was exceeded when the reverse direction was commanded	Remove the object which prevented the motor from making the sensor
	Rev Sensor On Too Long	Rev sensor was made longer than the Rev Time limit when the Reverse was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
SM Tip Fingers Alarm SM Tip Reject Flights Alarm	Base Motion Instruction Error	A motion instruction failed in the base due to invalid data	Verify configuration data for valid values
	Cam Motion Instruction Error	A motion instruction failed in the base due to invalid cam data	Verify cam data for valid values
	Cam Recovery Motion Instruction Error	A motion instruction failed while attempting to recover the slave to the current master position	Verify cam data for valid values
	Feedback Fault	Axis feedback device is not working correctly	Use RS Logix to look up the error code
	General Fault	A general fault exists in the axis	Use RS Logix to look up the error code
	Guard Fault	Wiring in the safety circuit is not working properly	Use RS Logix to look up the error code
	Hard Stop Not Found	Travel limit used for referencing was not located	Verify the reference data is correct and that the physical travel limit is present
	Incorrect Verification Position	The position found during the reference verification procedure was outside the allowable bandwidth	Verify that the physical travel limit used for the reference position was reached during the reference procedure. Verify the verification sensor is mounted correctly and functioning properly. Verify the reference data is correct.

Stop Alarm	Alarm Diagnostics	Cause	Remedy
	Jog Motion Instruction Error	Jog motion instruction failed to execute	Verify the jog data used by the motion instruction has valid values
	Master Offset Motion Instruction Error	Applying of the master offset failed	Verify the master offset value is within range
	Motion Instruction Error	A motion instruction failed to execute	Verify the data used by the motion instruction has valid values
	Negative Overtravel	Axis exceeded the overtravel limit in the negative direction	Move the axis back into the allowable travel range and determine what commanded the axis to exceed the travel limit
	Overload Fault	The power consumption of the axis has exceeded allowable limits over time	Use RS Logix to look up the error code
	Position Error	An object or device is preventing the axis from performing the motion within tolerance	Use RS Logix to look up the error code
	Positive Overtravel	Axis exceeded the overtravel limit in the positive direction	Move the axis back into the allowable travel range and determine what commanded the axis to exceed the travel limit
	Ref Motion Instruction Error	One of the motions in the reference routine was not able to be performed	Verify all reference data values are valid
	Sensor Not Found	Sensor was not found during reference routine	Test reference sensor for proper mounting
	Set Position Error	Setting of the current position failed	Verify position data is within range
	Slave Offset Motion Instruction Error	Applying of the slave offset failed	Verify the slave offset value is within range
	Temperature Fault	The axis temperature has exceeded the limits	Use RS Logix to look up the error code
SV Case Stop Alarm	A Sensor Jam	The A sensor signal was lost for longer than the jam time while the A coil is commanded to be energized and the A sensor was made	Check sensor for proper operation
	A Sensor Not Made In Time	The A sensor was not made before the A Time limit was exceeded when the A Coil was commanded to be energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	A Sensor On Too Long	The A sensor was made longer than the A Time limit when the A Coil was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	B Sensor Jam	The B sensor signal was lost for longer than the jam time while the B coil is commanded to be energized and the B sensor was made	Check sensor for proper operation
	B Sensor Not Made In Time	The B sensor was not made before the B Time limit was exceeded when the B Coil was commanded to be energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	B Sensor On Too Long	B sensor was made longer than the B Time limit when the B Coil was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly

Stop Alarm	Alarm Diagnostics	Cause	Remedy
VFD Roller Conveyor Alarm	Fwd Speed Jam	The at forward speed signal was lost for longer than the jam time while the forward direction is commanded and the at forward speed status was made	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	Not At Fwd Speed In Time	The forward sensor was not made before the forward time limit was exceeded when the forward direction was commanded	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	Not At Rev Speed In Time	The reverse sensor was not made before the reverse time limit was exceeded when the reverse direction was commanded	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	Not Stopped In Time	VFD moving status is true for longer than the stop time after a stop command was given	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	Rev Speed Jam	The at reverse speed signal was lost for longer than the jam time while the reverse direction is commanded and the at reverse speed status was made	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	VFD Fault	Refer to the VFD display to determine the cause	Use VFD operation manual to determine the corrective action
VM Master Alarm	Base Motion Instruction Error	A motion instruction failed in the base due to invalid data	Verify configuration data for valid values

Recipe Data

Roller Conveyor Speed (mpm)
This entry field specifies the speed of the case roller conveyor, in meters/minute

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Roller Conveyor On Position (Master Units)
This entry field specifies the position where the roller conveyor is activated to discharge the case.

Release Case Position (Master Units)
This entry field specifies the position where the case stop is dropped to allow the case to be discharged.

Available for Product Position (Master Units)
This entry field specifies the position at which the tip reject is available to receive product.

Flights Changeover Position (cm)
This entry field specifies the position where the device will be at the end of the clean out procedure.

Fingers Changeover Position (deg)
This entry field specifies the position where the device will be at the end of the clean out procedure.

Flights Reject Move - move to reject case from machine

- **Position (cm)**
  This entry field specifies the position of the named drive or move, in centimeters.

- **Velocity (cm/s)**
  This entry field specifies the velocity of the named drive or move, in centimeters/second.

- **Accel (cm/s²)**
  This entry field specifies the acceleration of the named drive or move, in centimeters/second².

- **Decel (cm/s²)**
  This entry field specifies the deceleration of the named drive or move, in centimeters/second².

- **Jerk (%)**
  This entry field specifies the change in acceleration over time in percentage of time of the specified move.

Integrated Devices Detail

Tap on a button for more information about this equipment module.

Drive Function/Associated Devices

Device List | Alarms

Recipe Data

Screen Information for Jog, Reference, and Configuration Data

Solenoid Valves | VFDs | Motors

Servo Motors | Virtual Master

Screen Information for Inputs and Outputs

Inputs and Outputs

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Alarms

Stop Alarm	Alarm Diagnostics	Cause	Remedy
EM Alarm	Glue Tank Faulted	Glue Tank is Faulted	Refer to the Glue Tank Display and Glue System Manual
	Glue Tank Not Ready	Glue Tank has not reach operating temperature	Wait for temperature of glue system to reach operational temperature
MT Vacuum Pump Alarm	Fwd Sensor Jam	The forward sensor signal was lost for longer than the jam time while the forward direction is commanded	Remove the object which caused the motor to slow down
	Fwd Sensor Not Made In Time	The forward sensor was not made before the forward Time limit was exceeded when the forward direction was commanded	Remove the object which prevented the motor from making the sensor
	Fwd Sensor On Too Long	Fwd sensor was made longer than the Fwd Time limit when the Forward was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	Overload Fault	The overload sensing device has been tripped	Manually reset the device
	Rev Sensor Jam	The reverse sensor signal was lost for longer than the jam time while the reverse direction is commanded	Remove the object which caused the motor to slow down
	Rev Sensor Not Made In Time	The reverse sensor was not made before the reverse Time limit was exceeded when the reverse direction was commanded	Remove the object which prevented the motor from making the sensor
	Rev Sensor On Too Long	Rev sensor was made longer than the Rev Time limit when the Reverse was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
SV Blow Off Alarm	A Sensor Jam	The A sensor signal was lost for longer than the jam time while the A coil is commanded to be energized and the A sensor was made	Check sensor for proper operation
	A Sensor Not Made In Time	The A sensor was not made before the A Time limit was exceeded when the A Coil was commanded to be energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	A Sensor On Too Long	The A sensor was made longer than the A Time limit when the A Coil was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	B Sensor Jam	The B sensor signal was lost for longer than the jam time while the B coil is commanded to be energized and the B sensor was made	Check sensor for proper operation
	B Sensor Not Made In Time	The B sensor was not made before the B Time limit was exceeded when the B Coil was commanded to be energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly

Stop Alarm	Alarm Diagnostics	Cause	Remedy
	B Sensor On Too Long	B sensor was made longer than the B Time limit when the B Coil was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
Warning		**Cause**	**Remedy**
Glue Tank Not Ready		Glue system not up to operating temperature	Wait for glue system to reach operating temperature
Low Glue Level		Glue tank is low in adhesive	Fill glue tank with more adhesive
No Vacuum Supply		Vacuum supply is not supplying sufficient vacuum for continued operation	Supply sufficient vacuum

Recipe Data

Time Between Blast (ms)
This entry field specifies the time between blasts of air used to blow off dust from sensors.

Time Duration of Blast (ms)
This entry field specifies the duration of time the blast of air that is used to blow off dust from sensors is on.

Device Screens

Solenoid Valve Jog & Config Data

NOTE: The machine must be started in manual mode in order to jog a drive

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JOG

A Coil Button
Tap this button to energize the A Coil of the solenoid valve and de-energize the B Coil.

Stop Button
Tap this button to de-energize the A and B Coils.

B Coil Button
Tap this button to energize the B Coil of the solenoid valve and de-energize the A Coil.

CONFIGURATION DATA

A Time (ms)
This entry field specifies the amount of time allowed for the solenoid valve to energize the A Sensor before causing a fault, in milliseconds.

B Time (ms)
This entry field specifies the amount of time allowed for the solenoid valve to energize the B Sensor before causing a fault, in milliseconds.

Debounce Time (ms)
This entry field specifies the amount of time the sensor must be true before being considered a valid signal, in milliseconds.

Jam Time (ms)
This entry field specifies the amount of time the sensor signal may be false when the signal should be true before causing a fault, in milliseconds.

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STATUS INDICATORS

A Sensor
This indicator displays if the A Sensor is energized.

B Sensor
This indicator displays if the B Sensor is energized.

Done
This indicator displays when the valve has reached its final state.

Error
This indicator displays if there was a malfunction in its operation.

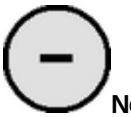
VFD Jog & Config Data

NOTE: The machine must be started in manual mode in order to jog a drive

---

JOG

Speed (mpm)
This entry field specifies the speed of the axis while the motor is jogging, in meters per minute.


Negative Direction Button
Tap and hold this button to jog the drive in the negative direction of movement
NOTE: The negative direction button is not available on all VFD motors

Stop Button
Tap this button to stop the drive from moving.

Positive Direction Button
Tap and hold this button to jog the drive in the positive direction of movement.

CONFIGURATION DATA

Speed at 60 Hz (mpm)
This entry field specifies the speed of the axis while the motor is running at 60 Hz, in meters per minute.

Maximum Hz
This entry field specifies the maximum Hz for the motor.

Minimum Hz
This entry field specifies the mimimum Hz for the motor.

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STATUS INDICATORS

Forward
This indicator displays if the motor is moving in the forward direction.

Reverse
This indicator displays if the motor is moving in the reverse direction.

Enabled
This indicator displays if the motor is enabled.

Error
This indicator displays if there was a malfunction in its operation.

Speed
This indicator displays the speed of the motor.

At Speed
This indicator displays if the motor is at the specified speed.

Active
This indicator displays if the motor is currently in motion.

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Motor Jog

NOTE: The machine must be started in manual mode in order to jog a drive

JOG

Stop Button
Tap this button to stop the drive from moving.

Positive Direction Button
Tap and hold this button to jog the drive in the positive direction of movement.

STATUS INDICATORS

A Sensor
This indicator displays if the A Sensor is energized.

B Sensor
This indicator displays if the B Sensor is energized.

Done
This indicator displays when the valve has reached its final state.

Error
This indicator displays if there was a malfunction in its operation.

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Servo Motor Jog, Reference & Config Data

NOTE: The machine must be started in manual mode in order to jog or reference a drive

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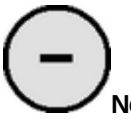
JOG

Accel (cm/s²)
This entry field specifies the acceleration rate the axis uses during jogging to accelerate to the specified velocity, in centimeters/second².

Velocity (cm)
This entry field specifies the velocity the axis uses during jogging, in centimeters.

Decel (cm/s²)
This entry field specifies the deceleration rate the axis uses during jogging to stop, in centimeters/second².


Negative Direction Button
Tap and hold this button to jog the servo axis in the negative direction of movement

Positive Direction Button
Tap and hold this button to jog the servo axis in the positive direction of movement.

Target Position (cm)
Enter a "move-to-position" value in this field and use the Go To button to move the servo axis to the specified position, in centimeters.

Go To Button
Tap and hold this button to move the servo axis to the position specified in the Target Position entry field via the shortest way possible.

Stop Button
Tap this button to stop the servo axis move to the target position.

REFERENCE

NOTE: When drives are referencing in a group, this section will not be visible

Do Reference Button

Tap this button to initiate the reference routine for the servo.

Documentation Link

Tap this button to view a list of servos with reference information, including an image of the drive when it is in its referenced position.

Reference Position (cm)

This entry field specifies the position of the reference target, in centimeters.

NOTE: The servo position value is based on a calculation of the Reference Position value and the position value captured when at the reference target; during over-travel referencing, the target position is the travel limit, while during sensor referencing, the target position is the sensor location

End Position (cm)

This entry field specifies the position location where the axis will be when the reference routine of the servo is completed without error, in centimeters.

Verify Position (cm)

This entry field specifies the position of the verify reference sensor; it is used to confirm the servo position has been set correctly, in centimeters

Reference Sensor

This display indicates if the reference sensor has been made.

NOTE: The reference sensor indicator is displayed only if the drive uses a sensor for referencing

---

CONFIGURATION DATA

Immediate Stop Decel (cm/s²)

This entry field specifies the default deceleration rate for the axis used during an immediate stop, in centimeters/second².

Fast Stop Decel (cm/s²)

This entry field specifies the default acceleration rate for the axis used during a fast stop, in centimeters/second².

Jerk (%)

This entry field specifies the default rate of change in acceleration for the axis, in percent.

Pos Error Limit (cm)

This entry field specifies the default position error limit for the axis, in centimeters.

Torque Limit (%)

This entry field specifies the default torque limit for the axis, in percent.

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STATUS INDICATORS

Act Pos
This indicator displays the actual position of the servo.

Max Pos Err
This indicator displays the maximum position error which has occurred on this servo. The maximum position error is the largest position error which has occurred since the last time the reset button has been pressed.

Reset Button
Tap this button to reset the maximum position error.

Max Torque
This indicator displays the maximum torque the servo has used. The maximum torque is the highest torque which has been used since the last time the reset button has been pressed.

Reset Button
Tap this button to reset the maximum torque.

Servo Status
This indicator displays the actual status of the servo.

Advanced Status Button
Tap this button to open a screen to view servo drive statuses.

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Virtual Master Config Data

CONFIGURATION DATA

Immediate Stop Decel (ms/s²)
This entry field specifies the deceleration rate the virtual master uses during an immediate stop.

Fast Stop Decel (ms/s²)
This entry field specifies the deceleration rate the virtual master uses during a fast stop.

Jerk (%)
This entry field specifies the rate of change in acceleration used by the virtual master.

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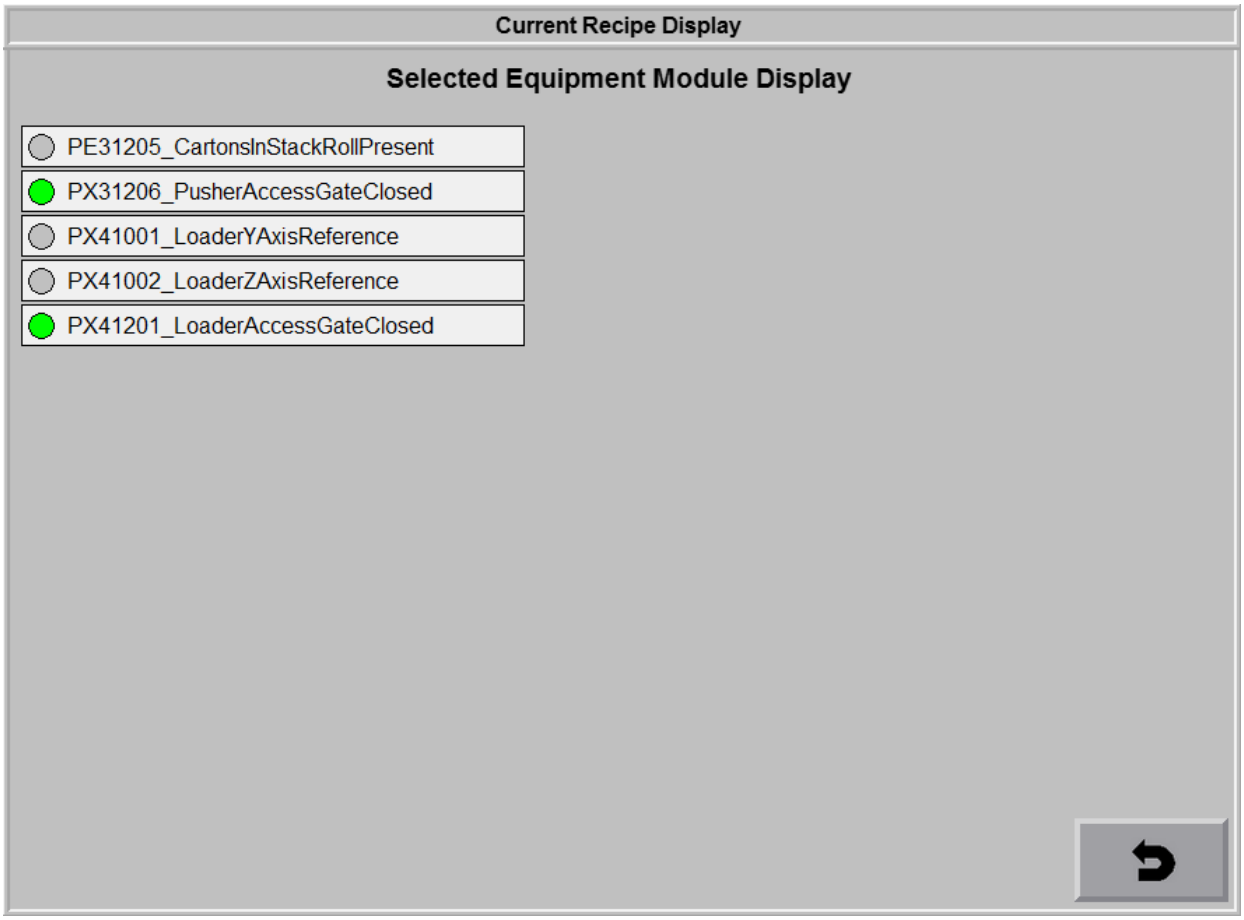
Inputs & Outputs

The available inputs and outputs for this equipment module are displayed on a screen similar to the following sample image.

This screen indicates if an I/O point is energized. When an I/O point is energized, its status indicator dot will be green.Through I/O points, the controller communicates to devices on the machine.

SAMPLE IMAGE



Recipe Selection

Use this screen to manage and load recipes.

Restore To Defaults Button
Tap this button to restore the selected recipe to its default values
NOTE: This button is not visible when the machine is running

Up Arrow Button
Tap this button to move to the previous item.

Down Arrow Button
Tap this button to move to the next item.

Set To Defaults Button
Tap this button to set the selected recipe to default values.
NOTE: "Default" does not mean "as-shipped"; default values are valid, hard-coded values and are not timed to any specific product

Load Button
Tap this button to load the selected recipe data into the current running data.
NOTE: This button is not visible when the machine is running

Copy Button
Tap this button to copy the selected product values to the recipe selected on the Copy Recipe screen.
NOTE: This button is not visible when the machine is running

Edit Name Button
Tap this button to edit the recipe name
NOTE: A virtual keyboard will be displayed when editing the recipe name

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Copy Recipe

Use this screen to copy the recipe selected in the previous screen into the recipe selected in this screen.

Up Arrow Button
Tap this button to move to the previous item.

Down Arrow Button
Tap this button to move to the next item.

Copy Button
Tap this button to copy the recipe in memory into the selected recipe.

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Mode Selection

NOTE: A mode selection may only be made when the machine is stopped

Manual
Manual mode is used when jogging and referencing drives.

Production
Production mode is used during the normal running of product.

Dry Cycle
Dry Cycle mode is used to run the machine through its cycle continuously without introducing any product.

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Alarm History

Equipment Module Stops

This screen displays the stop event status for the unit and each equipment module.

NOTE: When the indicator is red, a stop event is active.

Tap on the unit or equipment module to view the stop events for the unit or selected equipment module.

Unit Details Listing

Tap on an item to open the Stop Events list for this equipment module or unit.

Messages

Stop Events

This screen displays the stop events for the selected selected equipment module or unit.

NOTE: When the indicator is red, a stop event is active.

Tap on the stop event label to view stop event details of the selected stop event.

Unit List
Tap an item in the list to open the Stop Event Details screen.

General Messages Button
Tap this button to view active General Messages messages.

Warning Messages Button
Tap this button to view active Warning Messages messages.

Messages

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Stop Event Details

This screen displays stop event details of the selected stop event.

NOTE: The message is active when the indicator light is illuminated red

NOTE: Blank indicators are intentional placeholders

Return Button

Tap this button to return to the previous screen.

Messages

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General and Warning Messages

This screen displays active general or warning messages.

NOTE: The message is active when the indicator light is illuminated red

NOTE: Blank indicators are intentional placeholders

Return Button

Tap this button to return to the previous screen.

Messages

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Alarm Messages

Unit

Stop Alarm	Alarm Diagnostics	Cause	Remedy
E-Stop Alarm	HMI E-Stop Depressed	Emergency stop was depressed	Lift up emergency stop
	Remote E-Stop Depressed	Emergency stop was depressed	Lift up emergency stop
Guard Door Alarm	Guard Door 1-1 Open	Guard Door is Open	Close Guard Door
	Guard Door 1-10 Open	Guard Door is Open	Close Guard Door
	Guard Door 1-2 Open	Guard Door is Open	Close Guard Door
	Guard Door 1-3 Open	Guard Door is Open	Close Guard Door
	Guard Door 1-4 Open	Guard Door is Open	Close Guard Door
	Guard Door 1-5 Open	Guard Door is Open	Close Guard Door
	Guard Door 1-6 Open	Guard Door is Open	Close Guard Door
	Guard Door 1-7 Open	Guard Door is Open	Close Guard Door
	Guard Door 1-8 Open	Guard Door is Open	Close Guard Door
	Guard Door 1-9 Open	Guard Door is Open	Close Guard Door
Guard Lock Alarm	Guard Door 1 Lock Not Ready	Guard Door blade is not engage correctly	Properly engage guard door switch blade
	Guard Door 10 Lock Not Ready	Guard Door blade is not engage correctly	Properly engage guard door switch blade
	Guard Door 2 Lock Not Ready	Guard Door blade is not engage correctly	Properly engage guard door switch blade
	Guard Door 3 Lock Not Ready	Guard Door blade is not engage correctly	Properly engage guard door switch blade
	Guard Door 4 Lock Not Ready	Guard Door blade is not engage correctly	Properly engage guard door switch blade
	Guard Door 5 Lock Not Ready	Guard Door blade is not engage correctly	Properly engage guard door switch blade
	Guard Door 6 Lock Not Ready	Guard Door blade is not engage correctly	Properly engage guard door switch blade
	Guard Door 7 Lock Not Ready	Guard Door blade is not engage correctly	Properly engage guard door switch blade
	Guard Door 8 Lock Not Ready	Guard Door blade is not engage correctly	Properly engage guard door switch blade
	Guard Door 9 Lock Not Ready	Guard Door blade is not engage correctly	Properly engage guard door switch blade
Guard Relay Alarm	Case Packer Guard Relay Not Ready	One or both safety circuit channels is open	Open both channels than close both channels at the same time
	Infeed Guard Relay Not Ready	One or both safety circuit channels is open	Open both channels than close both channels at the same time
Light Curtain Alarm	Reject Light Curtain Not Ready	Light Curtain is blocked	Clear light curtain
Safety Circuit Alarm	Safety Circuit Reset Failed	The monitoring circuit not in a safe state or one or both safety circuit channels is open	Satisfy monitoring circuit or open both channels then close both channels at the same time
Software SR Alarm	Software SR Not Ready	Logical condition exist that is commanding an emergency stop	Fix Software Safety Relay
Supply Alarm	System Air Pressure Low	Air supply too low for machine operation	Supply the correct amount of air pressure to the machine

Stop Alarm	Alarm Diagnostics	Cause	Remedy
	Safety Air Pressure Low	Safety Air Supply value did not reset	Fix Safety Air value
Warning		**Cause**	**Remedy**
CP1 Enclosure High Temperature		CP1 Enclosure Temperature is High	Check air conditioner for proper operation
CP2 Enclosure High Temperature		CP2 Enclosure Temperature is High	Check air conditioner for proper operation
HMI Enclosure High Temperature		Main Enclosure Temperature is High	Check air conditioner for proper operation
Motion Group Inhibit Status		The motion group has been inhibited; therefore axis w ill not respond to any commands	No Action Required
Motion Group Not Synced		The Motion Group is not synced to the master clock.	No Action Required
General		**Cause**	**Remedy**
Complete		Execution is completed	No action required
Executing		Machine is in execution state	No action required
Held		Dow nstream equipment not available	No action required
Hold Requested		Hold button depressed	No action required
Machine Stopped - No Alarm		Machine Stopped - no fault	No action required
Resetting		Machine preparing for execution	No action required
Starting		Machine starting the execution process	No action required
Stop Requested		Stop button depressed	No action required
Stopping		Machine is stopping	No action required
Suspended		Upstream is not sending any product for production	No action required
Waiting For Start Button		Waiting for start to be depressed to continue	Press start to continue

Infeed

Stop Alarm	Alarm Diagnostics	Cause	Remedy
EM Alarm	Gap Betw een Cartons Too Small	Gap betw een products in the side belts are tw o small for reliable operation	Determine w hy gap is too small
	Invalid Value for Batch Size	Batch Size data parameter is outside of allow able range	Correct data value
	Product in Side Belts Sensor Blocked Too Long	Product jammed in side belts	Remove product from side belts
	Product Present in Dry Cycle	Product w as detected w hile dry cycling	Remove product from machine
	Rate Percent is Zero	Invalid Rate Percent value	Correct data value
	Reject Chute Blocked	Carton reject chute is full of product	Remove extra product

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Stop Alarm	Alarm Diagnostics	Cause	Remedy
	Too Many Cartons	Two many products at the end of the side belts	Remove extra product
SM Spatula Alarm	Base Motion Instruction Error	A motion instruction failed in the base due to invalid data	Verify configuration data for valid values
	Cam Motion Instruction Error	A motion instruction failed in the base due to invalid cam data	Verify cam data for valid values
	Cam Recovery Motion Instruction Error	A motion instruction failed while attempting to recover the slave to the current master position	Verify cam data for valid values
	Feedback Fault	Axis feedback device is not working correctly	Use RS Logix to look up the error code
	General Fault	A general fault exists in the axis	Use RS Logix to look up the error code
	Guard Fault	Wiring in the safety circuit is not working properly	Use RS Logix to look up the error code
	Hard Stop Not Found	Travel limit used for referencing was not located	Verify the reference data is correct and that the physical travel limit is present
	Incorrect Verification Position	The position found during the reference verification procedure was outside the allowable bandwidth	Verify that the physical travel limit used for the reference position was reached during the reference procedure. Verify the verification sensor is mounted correctly and functioning properly. Verify the reference data is correct.
	Jog Motion Instruction Error	Jog motion instruction failed to execute	Verify the jog data used by the motion instruction has valid values
	Master Offset Motion Instruction Error	Applying of the master offset failed	Verify the master offset value is within range
	Motion Instruction Error	A motion instruction failed to execute	Verify the data used by the motion instruction has valid values
	Negative Overtravel	Axis exceeded the overtravel limit in the negative direction	Move the axis back into the allowable travel range and determine what commanded the axis to exceed the travel limit
	Overload Fault	The power consumption of the axis has exceeded allowable limits over time	Use RS Logix to look up the error code
	Position Error	An object or device is preventing the axis from performing the motion within tolerance	Use RS Logix to look up the error code
	Positive Overtravel	Axis exceeded the overtravel limit in the positive direction	Move the axis back into the allowable travel range and determine what commanded the axis to exceed the travel limit
	Ref Motion Instruction Error	One of the motions in the reference routine was not able to be performed	Verify all reference data values are valid
	Sensor Not Found	Sensor was not found during reference routine	Test reference sensor for proper mounting
	Set Position Error	Setting of the current position failed	Verify position data is within range
	Slave Offset Motion Instruction Error	Applying of the slave offset failed	Verify the slave offset value is within range
	Temperature Fault	The axis temperature has exceeded the limits	Use RS Logix to look up the error code
VFD Infeed Conveyor Alarm	Adjustable Side Thermal Overload	The overload sensing device has been tripped	Manually reset the device

Stop Alarm	Alarm Diagnostics	Cause	Remedy
VFD Reject Side Belts Alarm VFD Side Belts Alarm	Fixed Side Thermal Overload	The overload sensing device has been tripped	Manually reset the device
	Fwd Speed Jam	The at forward speed signal was lost for longer than the jam time while the forward direction is commanded and the at forward speed status was made	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	Not At Fwd Speed In Time	The forward sensor was not made before the forward time limit was exceeded when the forward direction was commanded	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	Not At Rev Speed In Time	The reverse sensor was not made before the reverse time limit was exceeded when the reverse direction was commanded	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	Not Stopped In Time	VFD moving status is true for longer than the stop time after a stop command was given	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	Rev Speed Jam	The at reverse speed signal was lost for longer than the jam time while the reverse direction is commanded and the at reverse speed status was made	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	VFD Fault	Refer to the VFD display to determine the cause	Use VFD operation manual to determine the corrective action
Warning		**Cause**	**Remedy**
Reject chute blocked		Carton reject chute is full of product	No Action Required

Downstacker

Stop Alarm	Alarm Diagnostics	Cause	Remedy
EM Alarm	Gearing Instruction Error	Gear instruction failed due to invalid data	Determine which data is valid and change
	Invalid Stack Height	The measured stack height is incorrect for the current recipe	Remove damaged or improperly oriented product
	Invalid Stack In Lower Section	Unexpected product in the lower section of the downstacker	Remove product from the lower section of the downstacker
	Invalid Top Layer	Top layer has cartons positioned in the wrong orientation	Correct product in top layer
	Layer Height Value is Zero	Invalid data value for the Layer Height	Correct data value
	Layers Per Stack Value is Zero	Invalid data value for the Layers per Stack	Correct data value
	Stack Chamber Overfilled	Too many products in the stack chamber	Remove extra product
	Stack Presented Distance is Zero	Stack Presented Distance data value invalid	Correct data value
	Too Many Layers in a Stack	Searching of the stack detected too many layers of product for current recipe	Remove extra product

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Stop Alarm	Alarm Diagnostics	Cause	Remedy
SM Adj. Lower Flight Alarm SM Adj. Upper Flight Alarm SM Fixed Lower Flight Alarm SM Fixed Upper Flight Alarm	Base Motion Instruction Error	A motion instruction failed in the base due to invalid data	Verify configuration data for valid values
	Cam Motion Instruction Error	A motion instruction failed in the base due to invalid cam data	Verify cam data for valid values
	Cam Recovery Motion Instruction Error	A motion instruction failed while attempting to recover the slave to the current master position	Verify cam data for valid values
	Feedback Fault	Axis feedback device is not working correctly	Use RS Logix to look up the error code
	General Fault	A general fault exists in the axis	Use RS Logix to look up the error code
	Guard Fault	Wiring in the safety circuit is not working properly	Use RS Logix to look up the error code
	Hard Stop Not Found	Travel limit used for referencing was not located	Verify the reference data is correct and that the physical travel limit is present
	Incorrect Verification Position	The position found during the reference verification procedure was outside the allowable bandwidth	Verify that the physical travel limit used for the reference position was reached during the reference procedure. Verify the verification sensor is mounted correctly and functioning properly. Verify the reference data is correct.
	Jog Motion Instruction Error	Jog motion instruction failed to execute	Verify the jog data used by the motion instruction has valid values
	Master Offset Motion Instruction Error	Applying of the master offset failed	Verify the master offset value is within range
	Motion Instruction Error	A motion instruction failed to execute	Verify the data used by the motion instruction has valid values
	Negative Overtravel	Axis exceeded the overtravel limit in the negative direction	Move the axis back into the allowable travel range and determine what commanded the axis to exceed the travel limit
	Overload Fault	The power consumption of the axis has exceeded allowable limits over time	Use RS Logix to look up the error code
	Position Error	An object or device is preventing the axis from performing the motion within tolerance	Use RS Logix to look up the error code
	Positive Overtravel	Axis exceeded the overtravel limit in the positive direction	Move the axis back into the allowable travel range and determine what commanded the axis to exceed the travel limit
	Ref Motion Instruction Error	One of the motions in the reference routine was not able to be performed	Verify all reference data values are valid
	Sensor Not Found	Sensor was not found during reference routine	Test reference sensor for proper mounting
	Set Position Error	Setting of the current position failed	Verify position data is within range
	Slave Offset Motion Instruction Error	Applying of the slave offset failed	Verify the slave offset value is within range
	Temperature Fault	The axis temperature has exceeded the limits	Use RS Logix to look up the error code

Stack Pusher

Stop Alarm	Alarm Diagnostics	Cause	Remedy
EM Alarm	Stack at Deck sensor Blocked	Stack at Deck sensor blocked	Remover object blocking the sensor
SM Stack Pusher Alarm	Base Motion Instruction Error	A motion instruction failed in the base due to invalid data	Verify configuration data for valid values
	Cam Motion Instruction Error	A motion instruction failed in the base due to invalid cam data	Verify cam data for valid values
	Cam Recovery Motion Instruction Error	A motion instruction failed while attempting to recover the slave to the current master position	Verify cam data for valid values
	Feedback Fault	Axis feedback device is not working correctly	Use RS Logix to look up the error code
	General Fault	A general fault exists in the axis	Use RS Logix to look up the error code
	Guard Fault	Wiring in the safety circuit is not working properly	Use RS Logix to look up the error code
	Hard Stop Not Found	Travel limit used for referencing was not located	Verify the reference data is correct and that the physical travel limit is present
	Incorrect Verification Position	The position found during the reference verification procedure was outside the allowable bandwidth	Verify that the physical travel limit used for the reference position was reached during the reference procedure. Verify the verification sensor is mounted correctly and functioning properly. Verify the reference data is correct.
	Jog Motion Instruction Error	Jog motion instruction failed to execute	Verify the jog data used by the motion instruction has valid values
	Master Offset Motion Instruction Error	Applying of the master offset failed	Verify the master offset value is within range
	Motion Instruction Error	A motion instruction failed to execute	Verify the data used by the motion instruction has valid values
	Negative Overtravel	Axis exceeded the overtravel limit in the negative direction	Move the axis back into the allowable travel range and determine what commanded the axis to exceed the travel limit
	Overload Fault	The power consumption of the axis has exceeded allowable limits over time	Use RS Logix to look up the error code
	Position Error	An object or device is preventing the axis from performing the motion within tolerance	Use RS Logix to look up the error code
	Positive Overtravel	Axis exceeded the overtravel limit in the positive direction	Move the axis back into the allowable travel range and determine what commanded the axis to exceed the travel limit
	Ref Motion Instruction Error	One of the motions in the reference routine was not able to be performed	Verify all reference data values are valid
	Sensor Not Found	Sensor was not found during reference routine	Test reference sensor for proper mounting
	Set Position Error	Setting of the current position failed	Verify position data is within range
	Slave Offset Motion Instruction Error	Applying of the slave offset failed	Verify the slave offset value is within range
	Temperature Fault	The axis temperature has exceeded the limits	Use RS Logix to look up the error code

Stack Roll

Stop Alarm	Alarm Diagnostics	Cause	Remedy
EM Alarm	Product Left Behind	Product left in the load station when not expected to find product	Remove product from the load station
	Stack in Roll sensor Blocked	Stack in Roll sensor blocked	Remover object blocking the sensor
SM Stack Roll Alarm	Base Motion Instruction Error	A motion instruction failed in the base due to invalid data	Verify configuration data for valid values
	Cam Motion Instruction Error	A motion instruction failed in the base due to invalid cam data	Verify cam data for valid values
	Cam Recovery Motion Instruction Error	A motion instruction failed while attempting to recover the slave to the current master position	Verify cam data for valid values
	Feedback Fault	Axis feedback device is not working correctly	Use RS Logix to look up the error code
	General Fault	A general fault exists in the axis	Use RS Logix to look up the error code
	Guard Fault	Wiring in the safety circuit is not working properly	Use RS Logix to look up the error code
	Hard Stop Not Found	Travel limit used for referencing was not located	Verify the reference data is correct and that the physical travel limit is present
	Incorrect Verification Position	The position found during the reference verification procedure was outside the allowable bandwidth	Verify that the physical travel limit used for the reference position was reached during the reference procedure. Verify the verification sensor is mounted correctly and functioning properly. Verify the reference data is correct.
	Jog Motion Instruction Error	Jog motion instruction failed to execute	Verify the jog data used by the motion instruction has valid values
	Master Offset Motion Instruction Error	Applying of the master offset failed	Verify the master offset value is within range
	Motion Instruction Error	A motion instruction failed to execute	Verify the data used by the motion instruction has valid values
	Negative Overtravel	Axis exceeded the overtravel limit in the negative direction	Move the axis back into the allowable travel range and determine what commanded the axis to exceed the travel limit
	Overload Fault	The power consumption of the axis has exceeded allowable limits over time	Use RS Logix to look up the error code
	Position Error	An object or device is preventing the axis from performing the motion within tolerance	Use RS Logix to look up the error code
	Positive Overtravel	Axis exceeded the overtravel limit in the positive direction	Move the axis back into the allowable travel range and determine what commanded the axis to exceed the travel limit
	Ref Motion Instruction Error	One of the motions in the reference routine was not able to be performed	Verify all reference data values are valid
	Sensor Not Found	Sensor was not found during reference routine	Test reference sensor for proper mounting
	Set Position Error	Setting of the current position failed	Verify position data is within range

Stop Alarm	Alarm Diagnostics	Cause	Remedy
	Slave Offset Motion Instruction Error	Applying of the slave offset failed	Verify the slave offset value is within range
	Temperature Fault	The axis temperature has exceeded the limits	Use RS Logix to look up the error code
SV Tip Clamp Alarm SV Tip Product Conditioner Alarm	A Sensor Jam	The A sensor signal was lost for longer than the jam time while the A coil is commanded to be energized and the A sensor was made	Check sensor for proper operation
	A Sensor Not Made In Time	The A sensor was not made before the A Time limit was exceeded when the A Coil was commanded to be energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	A Sensor On Too Long	The A sensor was made longer than the A Time limit when the A Coil was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	B Sensor Jam	The B sensor signal was lost for longer than the jam time while the B coil is commanded to be energized and the B sensor was made	Check sensor for proper operation
	B Sensor Not Made In Time	The B sensor was not made before the B Time limit was exceeded when the B Coil was commanded to be energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	B Sensor On Too Long	B sensor was made longer than the B Time limit when the B Coil was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly

Loader

Stop Alarm	Alarm Diagnostics	Cause	Remedy
EM Alarm	Product at Load Station sensor Blocked	Product at Load station sensor blocked	Remover object blocking the sensor
	Product Left Behind	Product left in the load station when not expected to find product	Remove product from the load station
SM Loader Alarm	Base Motion Instruction Error	A motion instruction failed in the base due to invalid data	Verify configuration data for valid values
	Cam Motion Instruction Error	A motion instruction failed in the base due to invalid cam data	Verify cam data for valid values
	Cam Recovery Motion Instruction Error	A motion instruction failed while attempting to recover the slave to the current master position	Verify cam data for valid values
	Feedback Fault	Axis feedback device is not working correctly	Use RS Logix to look up the error code
	General Fault	A general fault exists in the axis	Use RS Logix to look up the error code
	Guard Fault	Wiring in the safety circuit is not working properly	Use RS Logix to look up the error code
	Hard Stop Not Found	Travel limit used for referencing was not located	Verify the reference data is correct and that the physical travel limit is present

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Stop Alarm	Alarm Diagnostics	Cause	Remedy
	Incorrect Verification Position	The position found during the reference verification procedure was outside the allowable bandwidth	Verify that the physical travel limit used for the reference position was reached during the reference procedure. Verify the verification sensor is mounted correctly and functioning properly. Verify the reference data is correct.
	Jog Motion Instruction Error	Jog motion instruction failed to execute	Verify the jog data used by the motion instruction has valid values
	Master Offset Motion Instruction Error	Applying of the master offset failed	Verify the master offset value is within range
	Motion Instruction Error	A motion instruction failed to execute	Verify the data used by the motion instruction has valid values
	Negative Overtravel	Axis exceeded the overtravel limit in the negative direction	Move the axis back into the allowable travel range and determine what commanded the axis to exceed the travel limit
	Overload Fault	The power consumption of the axis has exceeded allowable limits over time	Use RS Logix to look up the error code
	Position Error	An object or device is preventing the axis from performing the motion within tolerance	Use RS Logix to look up the error code
	Positive Overtravel	Axis exceeded the overtravel limit in the positive direction	Move the axis back into the allowable travel range and determine what commanded the axis to exceed the travel limit
	Ref Motion Instruction Error	One of the motions in the reference routine was not able to be performed	Verify all reference data values are valid
	Sensor Not Found	Sensor was not found during reference routine	Test reference sensor for proper mounting
	Set Position Error	Setting of the current position failed	Verify position data is within range
	Slave Offset Motion Instruction Error	Applying of the slave offset failed	Verify the slave offset value is within range
	Temperature Fault	The axis temperature has exceeded the limits	Use RS Logix to look up the error code
SV Product Conditioner Alarm	A Sensor Jam	The A sensor signal was lost for longer than the jam time while the A coil is commanded to be energized and the A sensor was made	Check sensor for proper operation
	A Sensor Not Made In Time	The A sensor was not made before the A Time limit was exceeded when the A Coil was commanded to be energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	A Sensor On Too Long	The A sensor was made longer than the A Time limit when the A Coil was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	B Sensor Jam	The B sensor signal was lost for longer than the jam time while the B coil is commanded to be energized and the B sensor was made	Check sensor for proper operation

Stop Alarm	Alarm Diagnostics	Cause	Remedy
	B Sensor Not Made In Time	The B sensor was not made before the B Time limit was exceeded when the B Coil was commanded to be energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	B Sensor On Too Long	B sensor was made longer than the B Time limit when the B Coil was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly

Magazine

Stop Alarm	Alarm Diagnostics	Cause	Remedy
EM Alarm	Blanks Not Advancing	Object hindering blanks from advancing or advance mechanism is broken	Remove the object preventing the advancement of the blanks or repair advance mechanism
	Magazine Empty of Blanks	Not enough blanks in the magazine to continue running	Fill Magazine
SV Advance Alarm	Base Motion Instruction Error	The A sensor signal was lost for longer than the jam time while the A coil is commanded to be energized and the A sensor was made	Check sensor for proper operation
	Cam Motion Instruction Error	The A sensor was not made before the A Time limit was exceeded when the A Coil was commanded to be energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	Cam Recovery Motion Instruction Error	The A sensor was made longer than the A Time limit when the A Coil was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	Feedback Fault	The B sensor signal was lost for longer than the jam time while the B coil is commanded to be energized and the B sensor was made	Check sensor for proper operation
	General Fault	The B sensor was not made before the B Time limit was exceeded when the B Coil was commanded to be energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	Guard Fault	B sensor was made longer than the B Time limit when the B Coil was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
SV Bottom Clip Alarm	Fwd Speed Jam	The A sensor signal was lost for longer than the jam time while the A coil is commanded to be energized and the A sensor was made	Check sensor for proper operation
	Not At Fwd Speed In Time	The A sensor was not made before the A Time limit was exceeded when the A Coil was commanded to be energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	Not At Rev Speed In Time	The A sensor was made longer than the A Time limit when the A Coil was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly

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Stop Alarm	Alarm Diagnostics	Cause	Remedy
	Not Stopped In Time	The B sensor signal was lost for longer than the jam time while the B coil is commanded to be energized and the B sensor was made	Check sensor for proper operation
	Rev Speed Jam	The B sensor was not made before the B Time limit was exceeded when the B Coil was commanded to be energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	VFD Fault	B sensor was made longer than the B Time limit when the B Coil was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
SV Side Clamps Alarm	Base Motion Instruction Error	The A sensor signal was lost for longer than the jam time while the A coil is commanded to be energized and the A sensor was made	Check sensor for proper operation
	Base Motion Instruction Error	The A sensor was not made before the A Time limit was exceeded when the A Coil was commanded to be energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	Base Motion Instruction Error	The A sensor was made longer than the A Time limit when the A Coil was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	Base Motion Instruction Error	The B sensor signal was lost for longer than the jam time while the B coil is commanded to be energized and the B sensor was made	Check sensor for proper operation
	Base Motion Instruction Error	The B sensor was not made before the B Time limit was exceeded when the B Coil was commanded to be energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	Base Motion Instruction Error	B sensor was made longer than the B Time limit when the B Coil was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
SV Side Clips Alarm	Fwd Sensor Jam	The A sensor signal was lost for longer than the jam time while the A coil is commanded to be energized and the A sensor was made	Check sensor for proper operation
	Fwd Sensor Not Made In Time	The A sensor was not made before the A Time limit was exceeded when the A Coil was commanded to be energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	Fwd Sensor On Too Long	The A sensor was made longer than the A Time limit when the A Coil was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	Overload Fault	The B sensor signal was lost for longer than the jam time while the B coil is commanded to be energized and the B sensor was made	Check sensor for proper operation
	Rev Sensor Jam	The B sensor was not made before the B Time limit was exceeded when the B Coil was commanded to be energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly

Stop Alarm	Alarm Diagnostics	Cause	Remedy
	Rev Sensor Not Made In Time	B sensor was made longer than the B Time limit when the B Coil was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
SV Top Clip Alarm	A Sensor Jam	The A sensor signal was lost for longer than the jam time while the A coil is commanded to be energized and the A sensor was made	Check sensor for proper operation
	A Sensor Not Made In Time	The A sensor was not made before the A Time limit was exceeded when the A Coil was commanded to be energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	A Sensor On Too Long	The A sensor was made longer than the A Time limit when the A Coil was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	B Sensor Jam	The B sensor signal was lost for longer than the jam time while the B coil is commanded to be energized and the B sensor was made	Check sensor for proper operation
	B Sensor Not Made In Time	The B sensor was not made before the B Time limit was exceeded when the B Coil was commanded to be energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	B Sensor On Too Long	B sensor was made longer than the B Time limit when the B Coil was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
Warning		**Cause**	**Remedy**
Low On Case Blanks		Magazine low on case blanks	Fill magazine

Case Former

Stop Alarm	Alarm Diagnostics	Cause	Remedy
EM Alarm	Case Left in Load Station	Case was left in the load station	Remove case
	Missing Case At Load Station	Case at load station sensor did not detect the case	Remove damaged case
	Distorted Case Sensor Blocked	Sensor blocked at the end of the cycle.	Remove blockage
	Open Flap Adjustable Side Sensor Blocked	Sensor blocked at the end of the cycle.	Remove blockage
	Open Flap Fixed Side Sensor Blocked	Sensor blocked at the end of the cycle.	Remove blockage
SM Adj Lower Compression Alarm SM Adj Upper Compression Alarm SM Fixed Lower Compression Alarm	Base Motion Instruction Error	A motion instruction failed in the base due to invalid data	Verify configuration data for valid values
	Cam Motion Instruction Error	A motion instruction failed in the base due to invalid cam data	Verify cam data for valid values
	Cam Recovery Motion Instruction Error	A motion instruction failed while attempting to recover the slave to the current master position	Verify cam data for valid values

Stop Alarm	Alarm Diagnostics	Cause	Remedy
SM Fixed Upper Compression Alarm SM Flights Alarm SM Funtucker Alarm SM Funnel Alarm SM Loader Back Stop Alarm SM Robot X Alarm SM Robot Z Alarm SM Tucker Alarm	Feedback Fault	Axis feedback device is not working correctly	Use RS Logix to look up the error code
	General Fault	A general fault exists in the axis	Use RS Logix to look up the error code
	Guard Fault	Wiring in the safety circuit is not working properly	Use RS Logix to look up the error code
	Hard Stop Not Found	Travel limit used for referencing was not located	Verify the reference data is correct and that the physical travel limit is present
	Incorrect Verification Position	The position found during the reference verification procedure was outside the allowable bandwidth	Verify that the physical travel limit used for the reference position was reached during the reference procedure. Verify the verification sensor is mounted correctly and functioning properly. Verify the reference data is correct.
	Jog Motion Instruction Error	Jog motion instruction failed to execute	Verify the jog data used by the motion instruction has valid values
	Master Offset Motion Instruction Error	Applying of the master offset failed	Verify the master offset value is within range
	Motion Instruction Error	A motion instruction failed to execute	Verify the data used by the motion instruction has valid values
	Negative Overtravel	Axis exceeded the overtravel limit in the negative direction	Move the axis back into the allowable travel range and determine what commanded the axis to exceed the travel limit
	Overload Fault	The power consumption of the axis has exceeded allowable limits over time	Use RS Logix to look up the error code
	Position Error	An object or device is preventing the axis from performing the motion within tolerance	Use RS Logix to look up the error code
	Positive Overtravel	Axis exceeded the overtravel limit in the positive direction	Move the axis back into the allowable travel range and determine what commanded the axis to exceed the travel limit
	Ref Motion Instruction Error	One of the motions in the reference routine was not able to be performed	Verify all reference data values are valid
	Sensor Not Found	Sensor was not found during reference routine	Test reference sensor for proper mounting
	Set Position Error	Setting of the current position failed	Verify position data is within range
	Slave Offset Motion Instruction Error	Applying of the slave offset failed	Verify the slave offset value is within range
	Temperature Fault	The axis temperature has exceeded the limits	Use RS Logix to look up the error code
SV Adj Lower Glue Gun Alarm SV Adj Upper Glue Gun Alarm SV Fixed Lower Glue Gun Alarm SV Fixed Upper Glue Gun Alarm	A Sensor Jam	The A sensor signal was lost for longer than the jam time while the A coil is commanded to be energized and the A sensor was made	Check sensor for proper operation
	A Sensor Not Made In Time	The A sensor was not made before the A Time limit was exceeded when the A Coil was commanded to be energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly

Stop Alarm	Alarm Diagnostics	Cause	Remedy
SV Funtucker In Out Alarm SV Funnel In Out Alarm SV Load Cup Lift Alarm SV Load Vacuum Alarm SV Robot Vacuum Alarm SV Case Pusher Alarm SV Case Square Alarm	A Sensor On Too Long	The A sensor was made longer than the A Time limit when the A Coil was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	B Sensor Jam	The B sensor signal was lost for longer than the jam time while the B coil is commanded to be energized and the B sensor was made	Check sensor for proper operation
	B Sensor Not Made In Time	The B sensor was not made before the B Time limit was exceeded when the B Coil was commanded to be energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	B Sensor On Too Long	B sensor was made longer than the B Time limit when the B Coil was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
VM Master Alarm	Base Motion Instruction Error	A motion instruction failed in the base due to invalid data	Verify configuration data for valid values

Tip Reject

Stop Alarm	Alarm Diagnostics	Cause	Remedy
EM Alarm	Case At Stop Blocked Too Long	Case at Stop sensor blocked	Remove object that is blocking the sensor
	Case Clear of Stop Blocked Too Long	Case Clear of Stop sensor blocked	Remove object that is blocking the sensor
	Too Many Rejects in a Row	More rejects in a row than the allowable limit	Determine the reason for the reject and repair
MT Discharge Conveyor Alarm	Fwd Sensor Jam	The forward sensor signal was lost for longer than the jam time while the forward direction is commanded	Remove the object which caused the motor to slow down
	Fwd Sensor Not Made In Time	The forward sensor was not made before the forward Time limit was exceeded when the forward direction was commanded	Remove the object which prevented the motor from making the sensor
	Fwd Sensor On Too Long	Fwd sensor was made longer than the Fwd Time limit when the Forward was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	Overload Fault	The overload sensing device has be tripped	Manually reset the device
	Rev Sensor Jam	The reverse sensor signal was lost for longer than the jam time while the reverse direction is commanded	Remove the object which caused the motor to slow down
	Rev Sensor Not Made In Time	The reverse sensor was not made before the reverse Time limit was exceeded when the reverse direction was commanded	Remove the object which prevented the motor from making the sensor

Stop Alarm	Alarm Diagnostics	Cause	Remedy
	Rev Sensor On Too Long	Rev sensor was made longer than the Rev Time limit when the Reverse was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
SM Tip Fingers Alarm SM Tip Reject Flights Alarm	Base Motion Instruction Error	A motion instruction failed in the base due to invalid data	Verify configuration data for valid values
	Cam Motion Instruction Error	A motion instruction failed in the base due to invalid cam data	Verify cam data for valid values
	Cam Recovery Motion Instruction Error	A motion instruction failed while attempting to recover the slave to the current master position	Verify cam data for valid values
	Feedback Fault	Axis feedback device is not working correctly	Use RS Logix to look up the error code
	General Fault	A general fault exists in the axis	Use RS Logix to look up the error code
	Guard Fault	Wiring in the safety circuit is not working properly	Use RS Logix to look up the error code
	Hard Stop Not Found	Travel limit used for referencing was not located	Verify the reference data is correct and that the physical travel limit is present
	Incorrect Verification Position	The position found during the reference verification procedure was outside the allowable bandwidth	Verify that the physical travel limit used for the reference position was reached during the reference procedure. Verify the verification sensor is mounted correctly and functioning properly. Verify the reference data is correct.
	Jog Motion Instruction Error	Jog motion instruction failed to execute	Verify the jog data used by the motion instruction has valid values
	Master Offset Motion Instruction Error	Applying of the master offset failed	Verify the master offset value is within range
	Motion Instruction Error	A motion instruction failed to execute	Verify the data used by the motion instruction has valid values
	Negative Overtravel	Axis exceeded the overtravel limit in the negative direction	Move the axis back into the allowable travel range and determine what commanded the axis to exceed the travel limit
	Overload Fault	The power consumption of the axis has exceeded allowable limits over time	Use RS Logix to look up the error code
	Position Error	An object or device is preventing the axis from performing the motion within tolerance	Use RS Logix to look up the error code
	Positive Overtravel	Axis exceeded the overtravel limit in the positive direction	Move the axis back into the allowable travel range and determine what commanded the axis to exceed the travel limit
	Ref Motion Instruction Error	One of the motions in the reference routine was not able to be performed	Verify all reference data values are valid
	Sensor Not Found	Sensor was not found during reference routine	Test reference sensor for proper mounting
	Set Position Error	Setting of the current position failed	Verify position data is within range
	Slave Offset Motion Instruction Error	Applying of the slave offset failed	Verify the slave offset value is within range
	Temperature Fault	The axis temperature has exceeded the limits	Use RS Logix to look up the error code

Stop Alarm	Alarm Diagnostics	Cause	Remedy
SV Case Stop Alarm	A Sensor Jam	The A sensor signal was lost for longer than the jam time while the A coil is commanded to be energized and the A sensor was made	Check sensor for proper operation
	A Sensor Not Made In Time	The A sensor was not made before the A Time limit was exceeded when the A Coil was commanded to be energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	A Sensor On Too Long	The A sensor was made longer than the A Time limit when the A Coil was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	B Sensor Jam	The B sensor signal was lost for longer than the jam time while the B coil is commanded to be energized and the B sensor was made	Check sensor for proper operation
	B Sensor Not Made In Time	The B sensor was not made before the B Time limit was exceeded when the B Coil was commanded to be energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	B Sensor On Too Long	B sensor was made longer than the B Time limit when the B Coil was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
VFD Roller Conveyor Alarm	Fwd Speed Jam	The at forward speed signal was lost for longer than the jam time while the forward direction is commanded and the at forward speed status was made	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	Not At Fwd Speed In Time	The forward sensor was not made before the forward time limit was exceeded when the forward direction was commanded	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	Not At Rev Speed In Time	The reverse sensor was not made before the reverse time limit was exceeded when the reverse direction was commanded	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	Not Stopped In Time	VFD moving status is true for longer than the stop time after a stop command was given	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	Rev Speed Jam	The at reverse speed signal was lost for longer than the jam time while the reverse direction is commanded and the at reverse speed status was made	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	VFD Fault	Refer to the VFD display to determine the cause	Use VFD operation manual to determine the corrective action
VM Master Alarm	Base Motion Instruction Error	A motion instruction failed in the base due to invalid data	Verify configuration data for valid values

Integrated Devices

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Stop Alarm	Alarm Diagnostics	Cause	Remedy
EM Alarm	Glue Tank Faulted	Glue Tank is Faulted	Refer to the Glue Tank Display and Glue System Manual
	Glue Tank Not Ready	Glue Tank has not reach operating temperature	Wait for temperature of glue system to reach operational temperature
MT Vacuum Pump Alarm	Fwd Sensor Jam	The forward sensor signal was lost for longer than the jam time while the forward direction is commanded	Remove the object which caused the motor to slow down
	Fwd Sensor Not Made In Time	The forward sensor was not made before the forward Time limit was exceeded when the forward direction was commanded	Remove the object which prevented the motor from making the sensor
	Fwd Sensor On Too Long	Fwd sensor was made longer than the Fwd Time limit when the Forward was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	Overload Fault	The overload sensing device has been tripped	Manually reset the device
	Rev Sensor Jam	The reverse sensor signal was lost for longer than the jam time while the reverse direction is commanded	Remove the object which caused the motor to slow down
	Rev Sensor Not Made In Time	The reverse sensor was not made before the reverse Time limit was exceeded when the reverse direction was commanded	Remove the object which prevented the motor from making the sensor
	Rev Sensor On Too Long	Rev sensor was made longer than the Rev Time limit when the Reverse was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
SV Blow Off Alarm	A Sensor Jam	The A sensor signal was lost for longer than the jam time while the A coil is commanded to be energized and the A sensor was made	Check sensor for proper operation
	A Sensor Not Made In Time	The A sensor was not made before the A Time limit was exceeded when the A Coil was commanded to be energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	A Sensor On Too Long	The A sensor was made longer than the A Time limit when the A Coil was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	B Sensor Jam	The B sensor signal was lost for longer than the jam time while the B coil is commanded to be energized and the B sensor was made	Check sensor for proper operation
	B Sensor Not Made In Time	The B sensor was not made before the B Time limit was exceeded when the B Coil was commanded to be energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly
	B Sensor On Too Long	B sensor was made longer than the B Time limit when the B Coil was commanded to be de-energized	Remove the object which is hindering the motion, or repair the device which is wearing out causing the motion from being executed properly

Stop Alarm	Alarm Diagnostics	Cause	Remedy
Warning		**Cause**	**Remedy**
Glue Tank Not Ready		Glue system not up to operating temperature	Wait for glue system to reach operating temperature
Low Glue Level		Glue tank is low in adhesive	Fill glue tank with more adhesive
No Vacuum Supply		Vacuum supply is not supplying sufficient vacuum for continued operation	Supply sufficient vacuum

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Auxiliary Operations

Use this screen to perform less common functions, or functions not associated with any specific equipment module.

Code Reset Button
Tap this button to reset the PLC code.
NOTE: Use with caution!

QC Case Button
Tap this button to eject one complete case from the machine for quality control purposes.

Clean Out Button
Tap this button to place the machine into a clean out mode to allow for easy removal of product from the machine.

- When in clean out mode, the Aagard system becomes unavailable to the upstream equipment
- The Aagard system will operate until no product is present in the machine
- The last case, partially filled or empty, will always be rejected from the machine

Ignore Printer Button
Tap this button to allow the Aagard machinery system to run and produce regardless of the status of the printer.

Ignore Glue Tank Button
Tap this button to allow the Aagard machinery system to run and produce even if glue system is not running, not ready, shut off, not up to the correct temperature, or faulted out.

Hold Upstream Equipment Button
Tap this button to hold upstream equipment, keeping product from entering the Aagard machinery system.

Ignore Upstream Equipment Button
Tap this button to keep the Aagard machinery system from suspending due to loss of the upstream equipment running signal.

Ignore Downstream Equipment Button
Tap this button to allow the Aagard machinery system to run and produce even when the downstream equipment is not available to receive product.

PV + Config Button
Tap this button to access the PC and configuration settings.

Change Password Button
Tap this button to change the password of the current user.

Diagnostic Messages Button
Tap this button to view diagnostic messages related to alarms.

System I/O Button
Tap this button to open the System Inputs & Outputs screen.

Unit Status Button
Tap this button to open the Unit Status screen.

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Unit Status

This screen displays which equipment modules currently have a stop event.

State Model
Tap this button to display the State Model screen.

State Model

This screen displays a graphic image of the state model of this machinery system.

Start, Stop, Reset, Clear, and Hold Buttons
Tap these buttons to perform the actions listed on the buttons.

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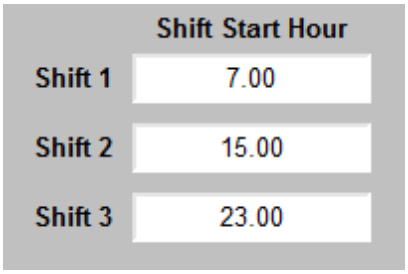
Production Data

This screen displays production data by shift.

Production Data Items

Item	Description
Product Count	Generally, the count of number of products coming into the Aagard system; custom setup in the PLC
Carton Count	Count of number of cartons produced by the cartoner
Carton Reject Count	Count of number of cartons rejected by the infeed
Case Count	Count of number of cases produced by the case packer
Case Reject Count	Count of number of cases rejected by the case packer
Faulted Count	The number of instances the system was not producing, caused by a fault
Faulted Time	Total amount of downtime caused by faults
Stopped Count	Count of number of cycle stops and user E-Stops when machine state is stopping, stopped, aborting or aborted, and the state change was not caused by a fault
Stopped Time	The amount of time when the system state is stopping or stopped and the last uptime state was producing, and the stop was not caused by a fault
Down Time Count	The number of instances the system was not producing, caused by a user stop or fault
Down Time	The amount of time the system was not producing, caused by a user stop or fault > Downtime = Faulted Time + Stopped Time
Starved Count	The number of instances that upstream equipment was not delivering product but the Aagard system was available for product
Starved Time	The amount of time upstream equipment was not delivering product but the Aagard system was available for product
Blocked Count	The number of instances that downstream equipment was not receiving product but the Aagard system was in a producing state
Blocked Time	The amount of time downstream equipment was not receiving product but the Aagard system was in a producing state
Idle Count	Number of instances the system was not producing, caused by not receiving product or downstream not being available (starved and blocked)
Idle Time	Total amount of time the system was idle (starved or blocked)
Running Time	Total amount of time the system in a producing state
Available Time	Idle Time + Running Time
Machine Efficiency	Running Time / (Running Time + Down Time)
Available Efficiency	Running time / Running Time + Idle Time + Stop Time + Fault Time
MTBF (Mean Time Between Failures)	Running Time / Down Time Count
MTTR (Mean Time To Recover)	Down Time / Down Time Count
Running Time Since Last Stop	The amount of time accumulated since the last time the system went into a producing or idle state

Shift Start Hour
Enter the hour that the named shift begins. **NOTE:** 24 hour format; 2 decimals



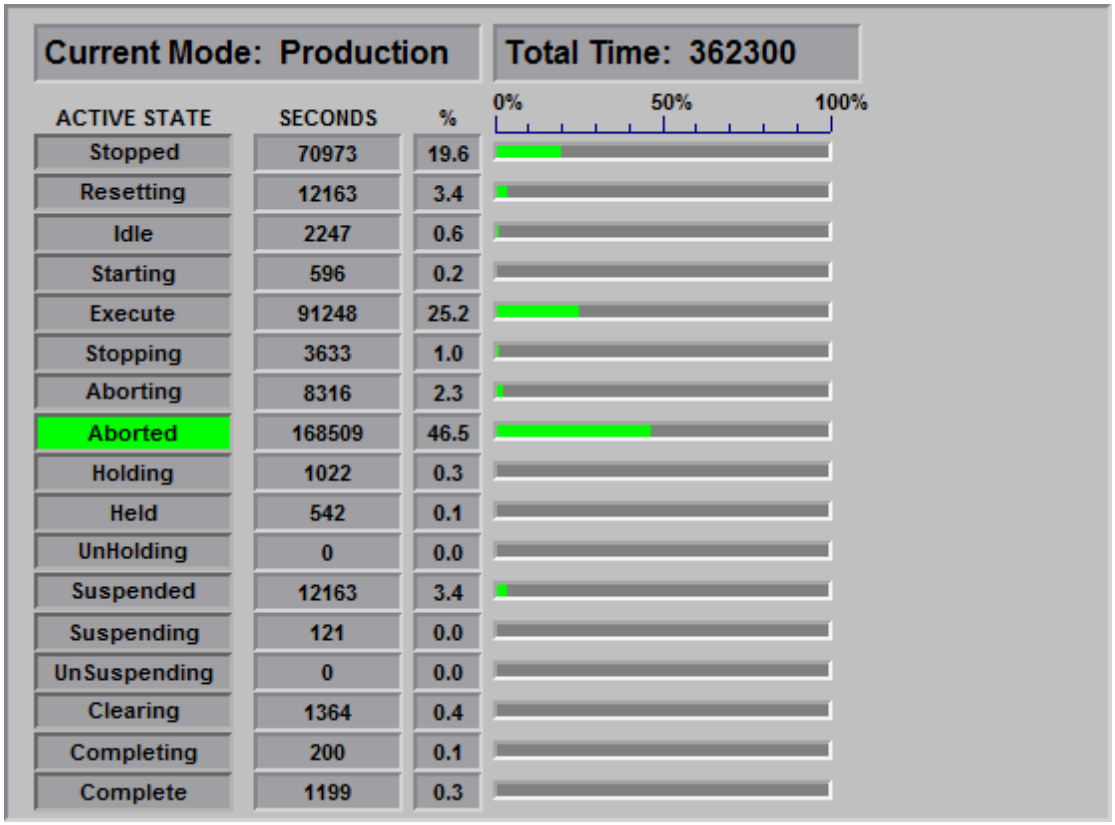
Performance Data Button
Tap this button to open the Performance Data screen.

Performance Data

This screen displays current performance data. Performance data is determined by counting the number of seconds for each active state, and then calculating a percentage for each state based on total time. A bar graph is displayed to quickly view performance highs and lows.

NOTE: The active state will be highlighted green; for more information regarding machine states, see the States and Modes topic

SAMPLE IMAGE



Language Selection

Multiple languages may be available on this HMI.

Select your language of choice and tap the back button. All translated items will now appear in the selected language.

NOTE: Not all items in the HMI are translatable
NOTE: Supporting files available from within this documentation are not translated

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Product Selection

Use this screen to manage and load products.

Restore To Defaults Button
Tap this button to restore the selected product to its default values
NOTE: This button is not visible when the machine is running

Up Arrow Button
Tap this button to move to the previous item.

Down Arrow Button
Tap this button to move to the next item.

Set To Defaults Button
Tap this button to set the selected product to default values.
NOTE: "Default" does not mean "as-shipped"; default values are valid, hard-coded values and are not timed to any specific product

Load Button
Tap this button to load the selected product data into the current running data.
NOTE: This button is not visible when the machine is running

Copy Button
Tap this button to copy the selected product values to the product selected on the Copy Product screen.
NOTE: This button is not visible when the machine is running

Edit Name Button
Tap this button to edit the product name
NOTE: A virtual keyboard will be displayed when editing the recipe name

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Changeover Values Button
Tap this button to open the Changeover Values screen.

Copy Product

Use this screen to copy the product values of the selected product in the previous screen into the product selected in this screen.

Up Arrow Button
Tap this button to move to the previous item.

Down Arrow Button
Tap this button to move to the next item.

Copy Button
Tap this button to copy the product in memory into the selected product.

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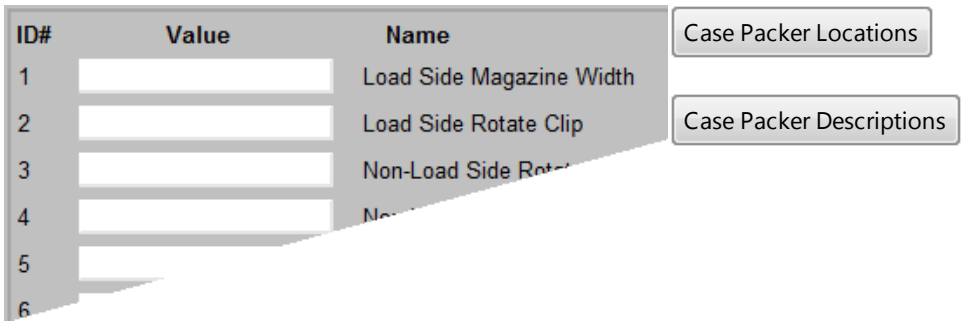
Changeover Values

Changeover locations on this screen appear in the sequence in which they are to be performed.

NOTE: Failure to perform changeovers in the correct sequence may damage the machine!

SAMPLE IMAGE



ID# Column
This label displays the number of the changeover location, as indicated on the placard attached to the machine near the changeover location.

Value Column
This entry field specifies the value of the changeover location for the current product.

Name Column
This label displays the name of the changeover location.

NOTE: The name of the changeover location is somewhat description of what is being adjusted

Buttons
When there are more changeover locations than can fit onto this screen, Left and Right directional buttons will be available. Tap these buttons to navigate to additional screens.

Edit Button
Tap the edit button to view changeover locations in numeric order

NOTE: Authorized users may edit changeover values from these screens

Only the Number and Text fields are editable.

- The number field is a numeric field only, and will hold the scale or digital counter value
- The text field will have information such as "Install", "Remove", or "Blue" to indicate the non-numeric changeover value for the specific location

NOTE: Due to screen size, it is not advised to use the text field for instructions; please refer to the Changeover Adjustments section of this manual for specific instructions

Print Button
Tap the print button to send a screen shot of the changeover values page to the default printer setup on the HMI. This printout may be used during a changeover procedure.

NOTE: It is recommend that the printout be discarded when the changeover has been completed to ensure there are no obsolete copies

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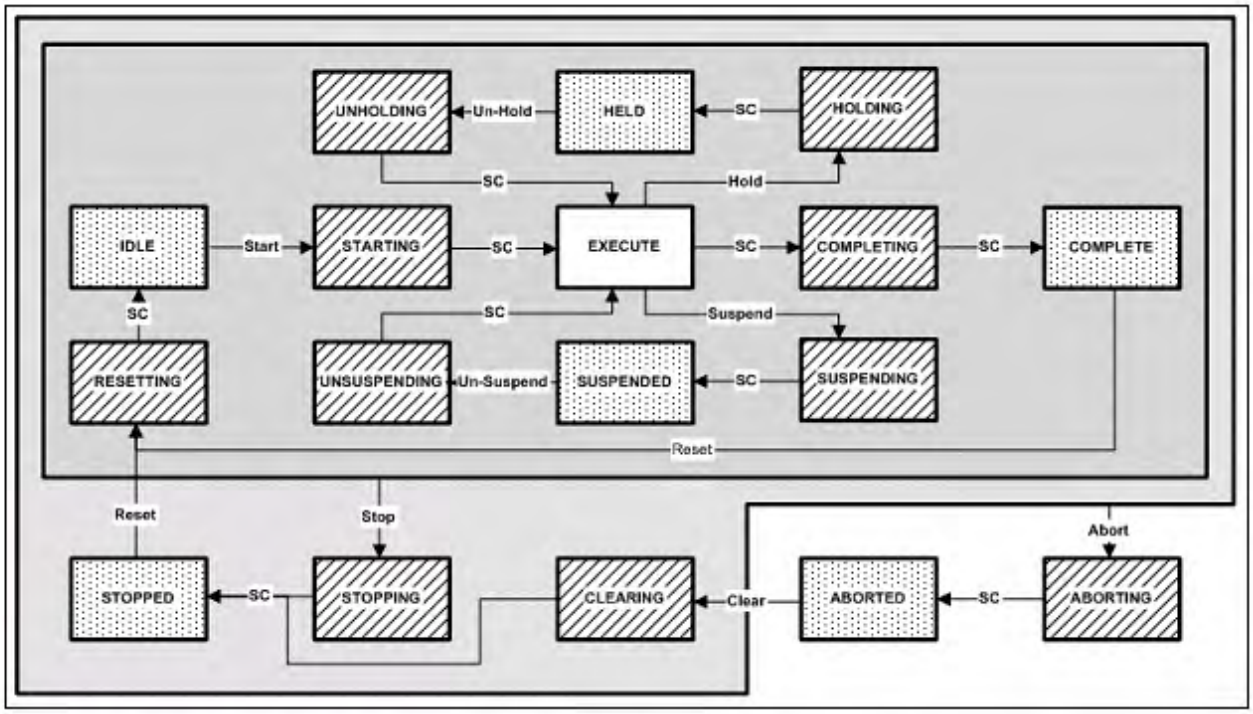
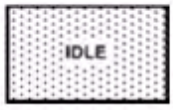
Miscellaneous

States and Modes

States and Modes



SC = State Complete (other transition conditions are procedural Commands)



= Wait State

= Acting State

The following table shows a brief description of individual machine states:

PackML States	Description	State Type
STOPPED	In this state, the machine is powered and stationary. All communications with other systems are functioning (if applicable).	Wait
STARTING	In this state, the machine is starting as a result of a START type command (local or remote). After completing this command, the machine will begin to EXECUTE.	Acting
IDLE	This state maintains the machine conditions which were achieved during the RESETTING state.	Wait
SUSPENDING	This state is a result of a command change from the EXECUTE state. This state is typically required prior to the SUSPENDED wait state, and prepares the machine by stopping active processes prior to the SUSPEND state.	Acting
SUSPENDED	In this state, the machine may be running at the relevant set-point speed, and no product is being produced. This state is the result of an upstream or downstream machine condition or other external request, and it differs from HELD in that HELD is typically a result of a local operator request.	Wait
UNSUSPENDING	This state is a result of a request from the SUSPENDED state to return to the EXECUTE state. The actions of this state may include: ramping up speeds, turning on vacuums, or re-engaging clutches. This state prepares the machine for the EXECUTE state.	Acting
EXECUTE	In this state the machine is processing materials. The action depends on the current mode. If the machine is in the Production mode, then EXECUTE refers to the action of processing discrete parts on a continuous basis. Dual	
STOPPING	This state executes the logic which brings the machine to a controlled and safe stop.	Acting
ABORTING	In this state, the machine comes to a rapid, controlled, safe stop. Pressing the Emergency Stop button will cause the safety system to stop the machine, and it provides a signal to initiate the ABORTING state.	Acting
ABORTED	This state maintains machine status information relevant to the ABORT condition. The STOP command will force transition to the STOPPED state. The ABORTED state can be entered at any time in response to the ABORT command or on the occurrence of a machine fault.	Wait
HOLDING	When the machine is in the EXECUTE state, the HOLD command starts the HOLDING logic, which brings the machine to a controlled stop or to a state that represents HELD for the particular machine mode.	Acting
HELD	In this state, the operator can temporarily hold the machine's operation while material blockages are cleared, or stop throughput while a downstream problem is resolved.	Wait
UNHOLDING	In this state, the machine prepares to re-enter the EXECUTE state. The UNHOLDING state is typically a response to an operator command to resume EXECUTE state.	Acting
COMPLETING	In this state, normal operation has run to completion. This state is typically an automatic response from the EXECUTE state.	Acting
COMPLETE	In this state, the machine has finished the COMPLETING state and is waiting for a STOP command.	Wait
RESETTING	In this state, the machine will typically generate an audible alert and energize components, awaiting a START command. This state is the result of a RESET command from the STOPPED state.	Acting
CLEARING	In this state, the machine is clearing faults that may have occurred when ABORTING, and are present in the ABORTED state before proceeding to the STOPPED state.	Acting

An example state transition matrix is shown below.

NOTE: This image is not translated intentionally

PackML	State Commands									State
Current State	Start	Reset	Hold	Unhold	Suspend	Unsuspend	Clear	Stop	Abort	Complete
Idle	Starting							Stopping	Aborting	
Starting								Stopping	Aborting	Execute
Execute			Holding		Suspending			Stopping	Aborting	Completing
Completing		Resetting						Stopping	Aborting	Complete
Complete								Stopping	Aborting	
Resetting								Stopping	Aborting	Idle
Holding								Stopping	Aborting	Held
Held				Unholding				Stopping	Aborting	
Unholding								Stopping	Aborting	Execute
Suspending								Stopping	Aborting	Suspended
Suspended								Stopping	Aborting	
Unsuspending						Unsuspending		Stopping	Aborting	Execute
Stopping									Aborting	Stopped
Stopped		Resetting							Aborting	
Aborting										Aborted
Aborted							Clearing			
Clearing									Aborting	Stopped

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Section 4

Changeover Adjustments

Changeover Adjustments

This section of the Aagard Machine Manual provides a pictorial and written description of each changeover location on the machine. For each section of the machine, a floor plan drawing shows the general location of each changeover. Each changeover location is shown with a reference picture which includes a description of how that changeover is performed. A Quick Reference chart contains the changeover number and description, with links to the page which contains the picture and description of the changeover.

NOTE: Please refer to the HMI for the current changeover values
NOTE: Please refer to the HMI for the correct changeover sequence
NOTE: Skips in the numbering sequence are intentional

Machine sections included in this manual:

Case Packer

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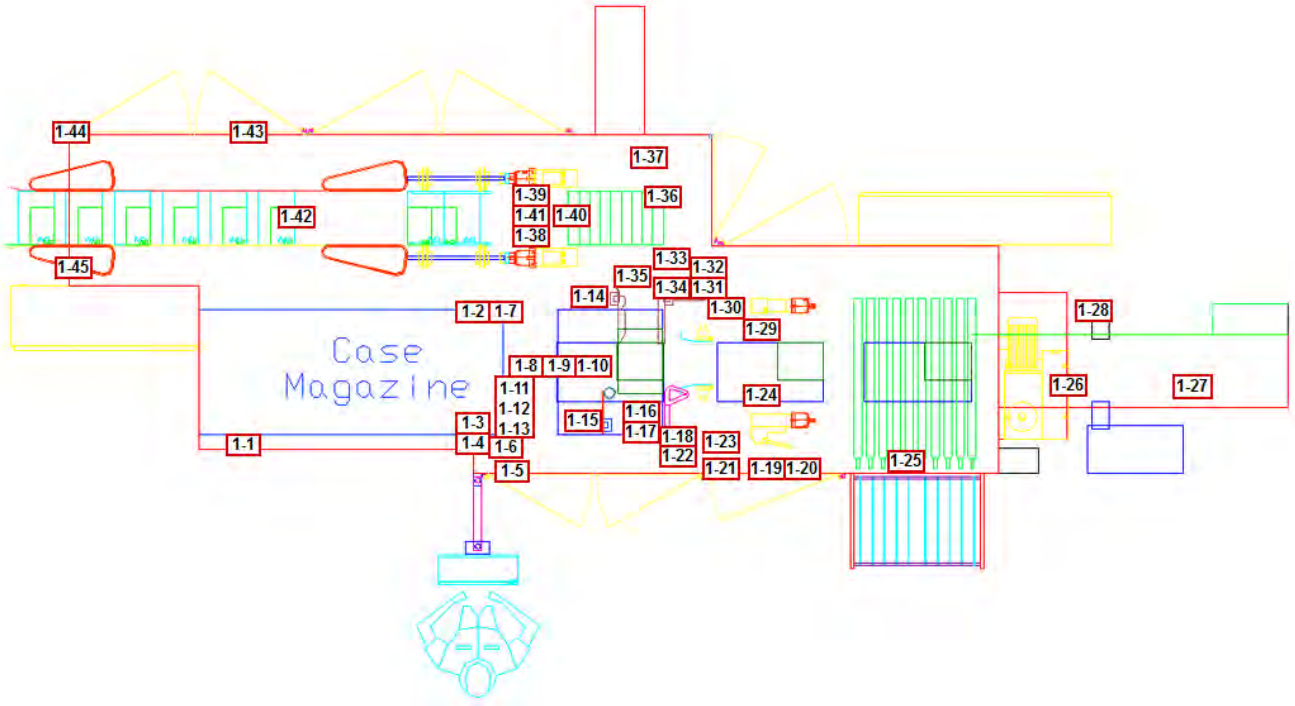
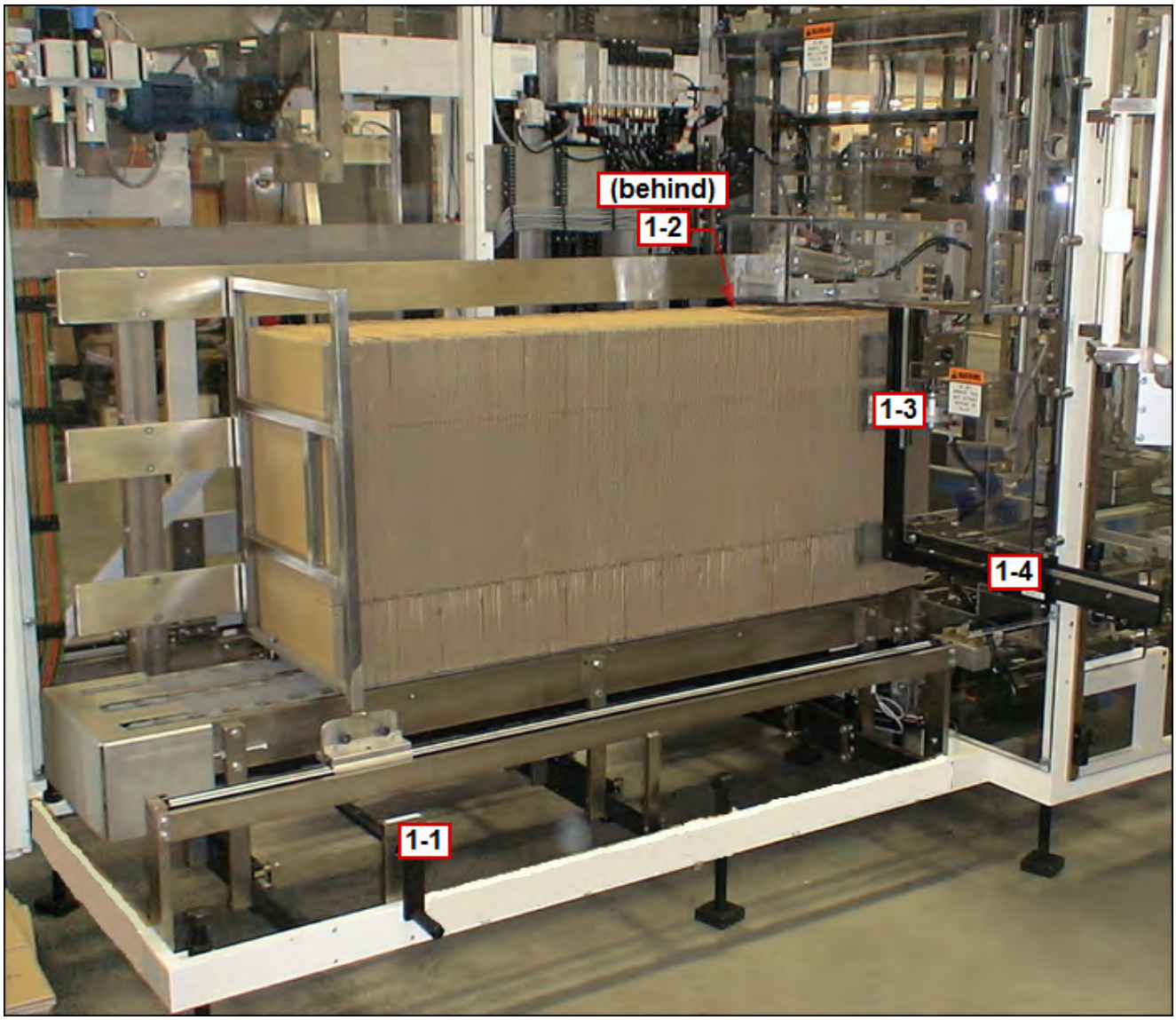
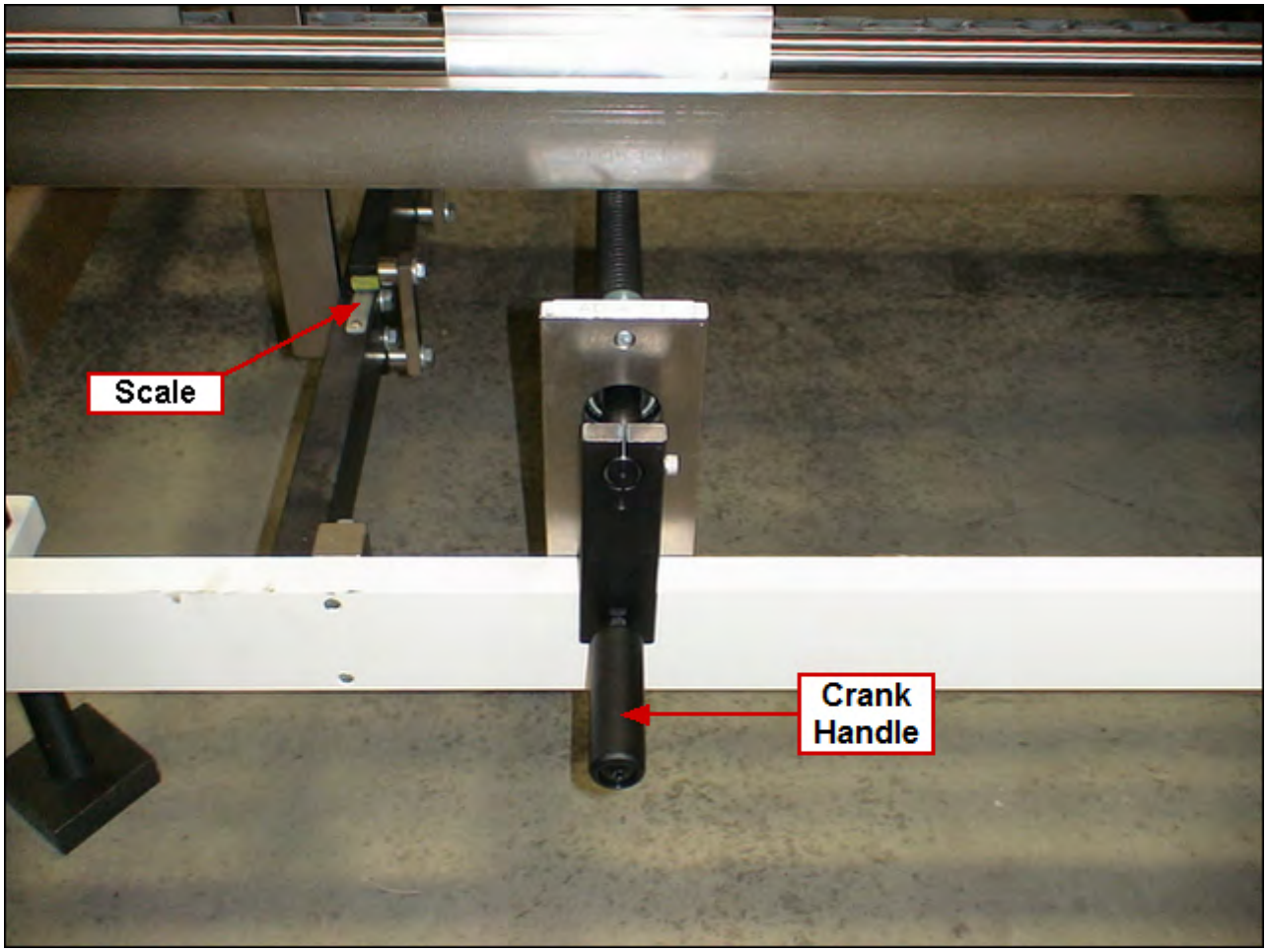
Case Packer


1-44
1-43
1-37
1-39
1-41
1-38
1-40
1-36
1-42
1-45
1-33
1-35
1-32
1-34
1-31
1-14
1-30
1-29
1-2
1-7
Case
Magazine
1-8
1-9
1-10
1-11
1-12
1-13
1-3
1-4
1-6
1-5
1-1
1-15
1-16
1-17
1-18
1-22
1-23
1-21
1-19
1-20
1-24
1-25
1-28
1-26
1-27

1-1 to 1-4

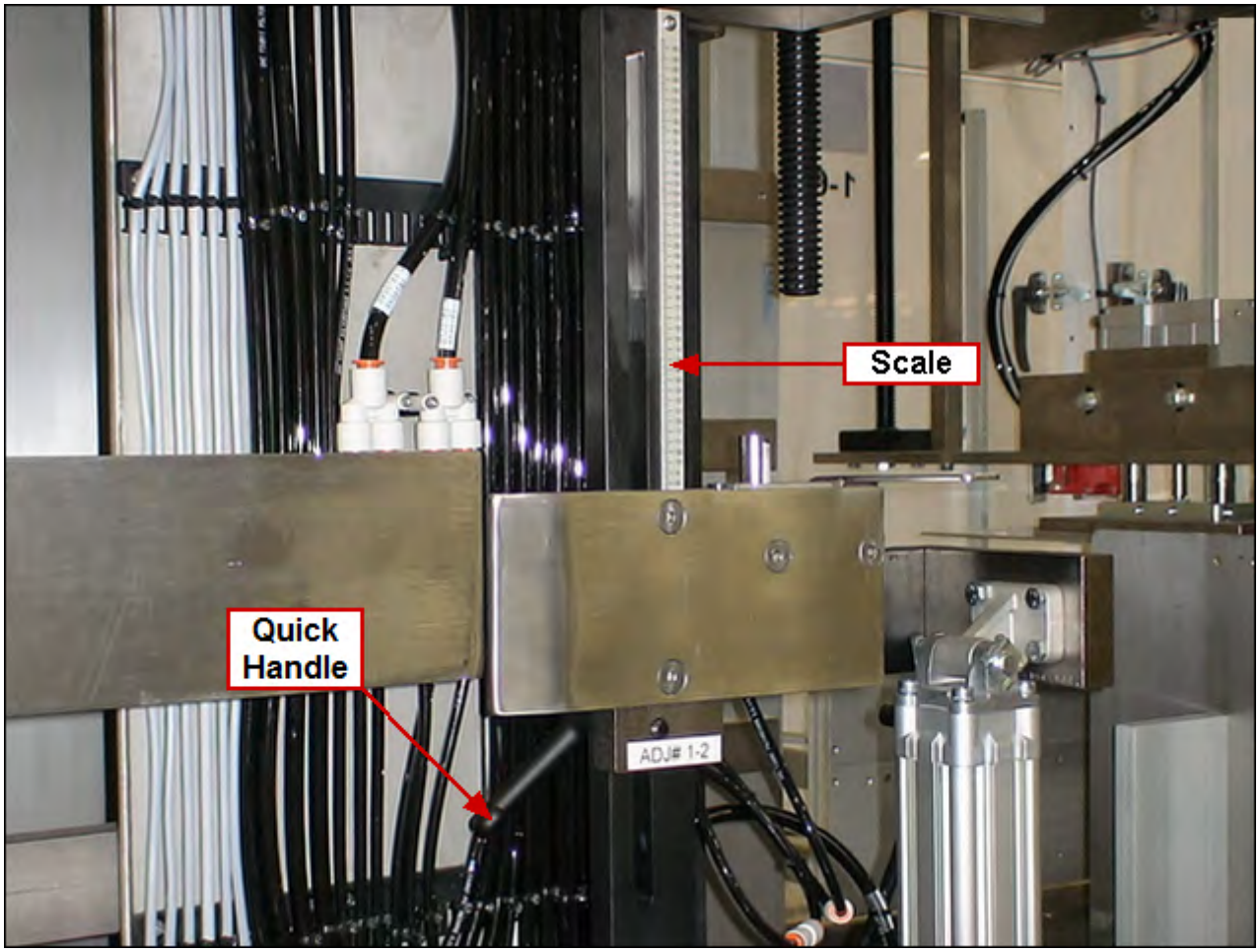


1-1 Load Side Magazine Width



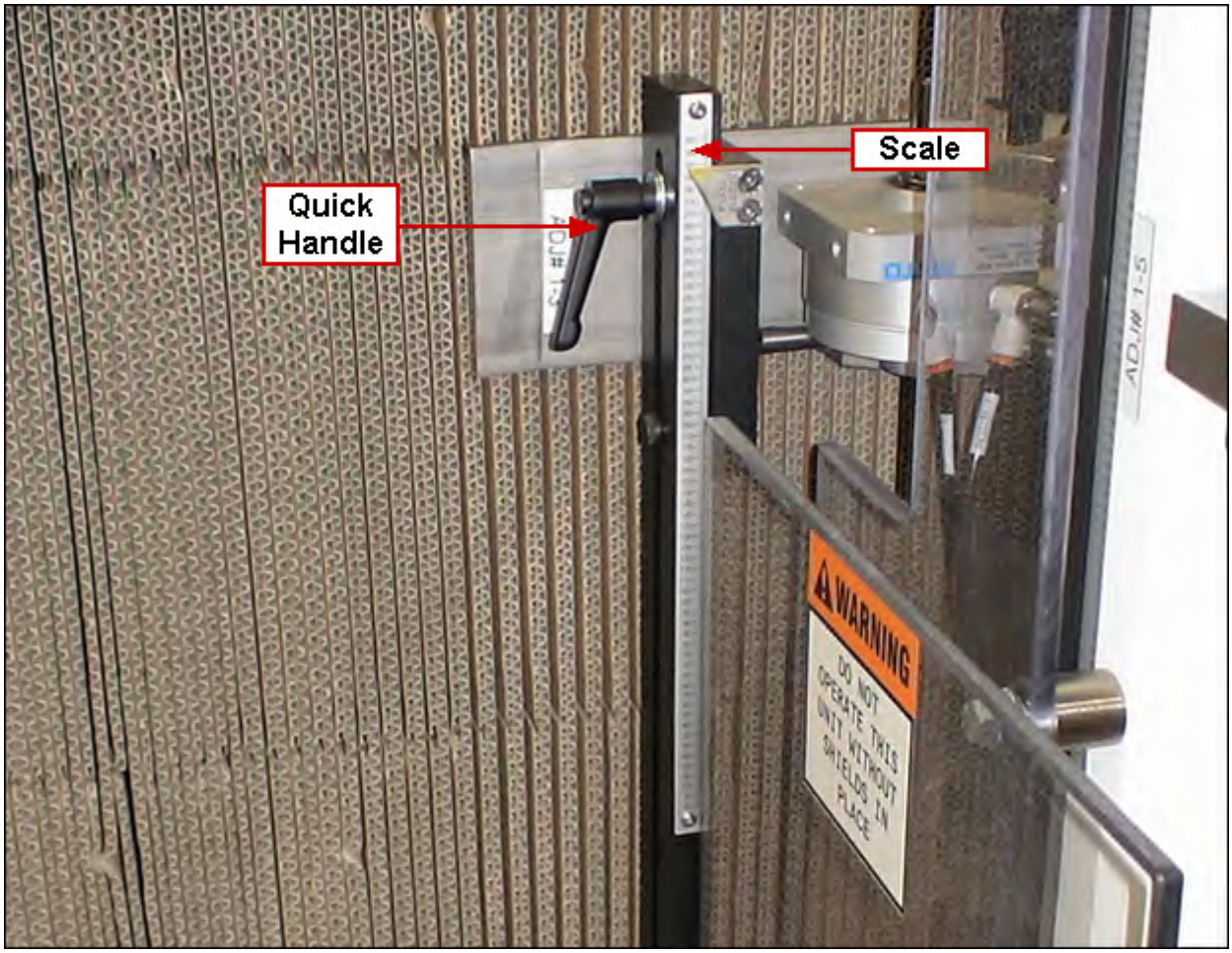
Using crank handle, adjust scale to the value shown on the Changeover Values screen for this changeover location.

1-2 Load Side Rotate Clip



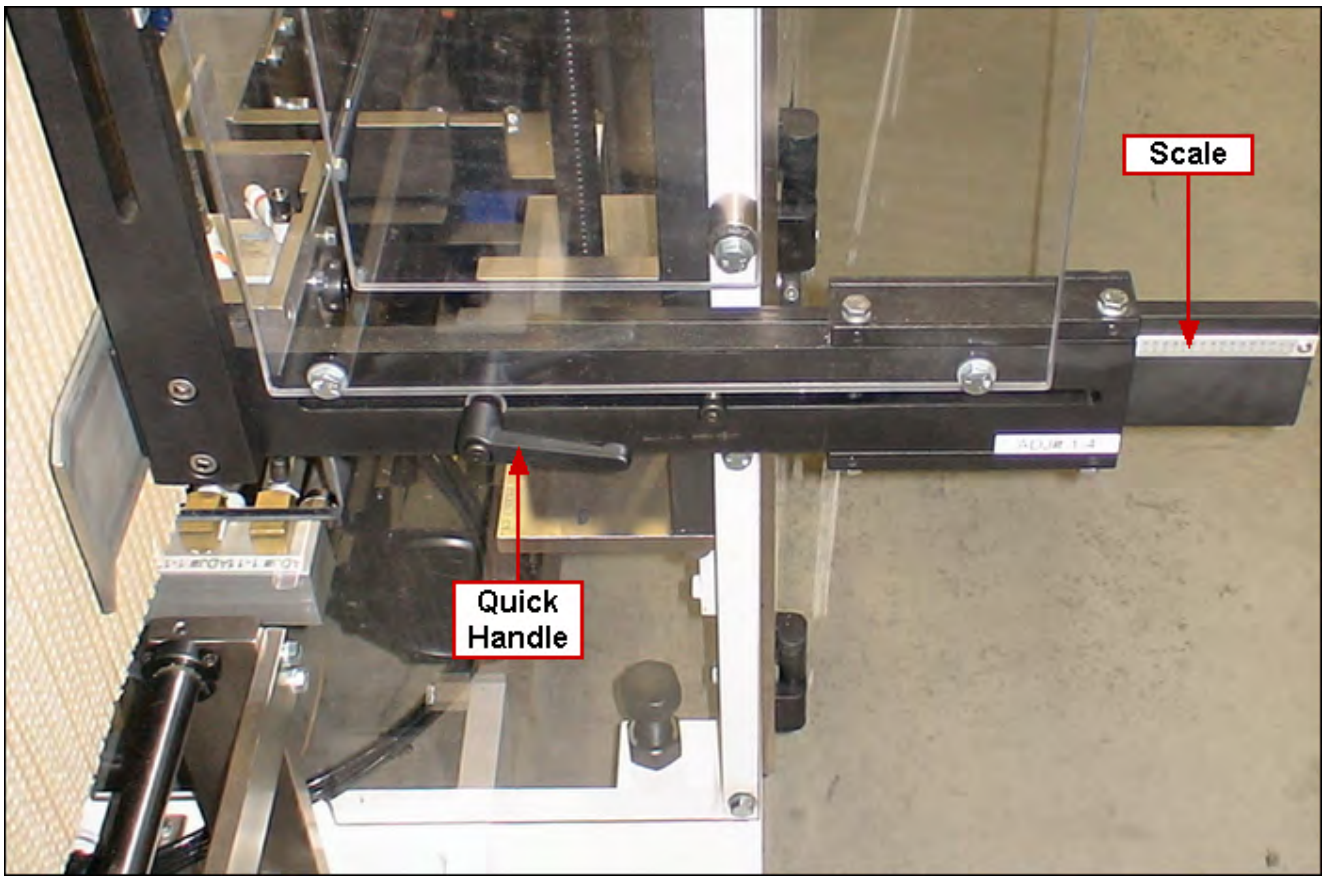
Loosen quick handle and adjust scale to the value shown on the Changeover Values screen for this changeover location. Re-tighten quick handle!

1-3 Non-Load Side Rotate Clip



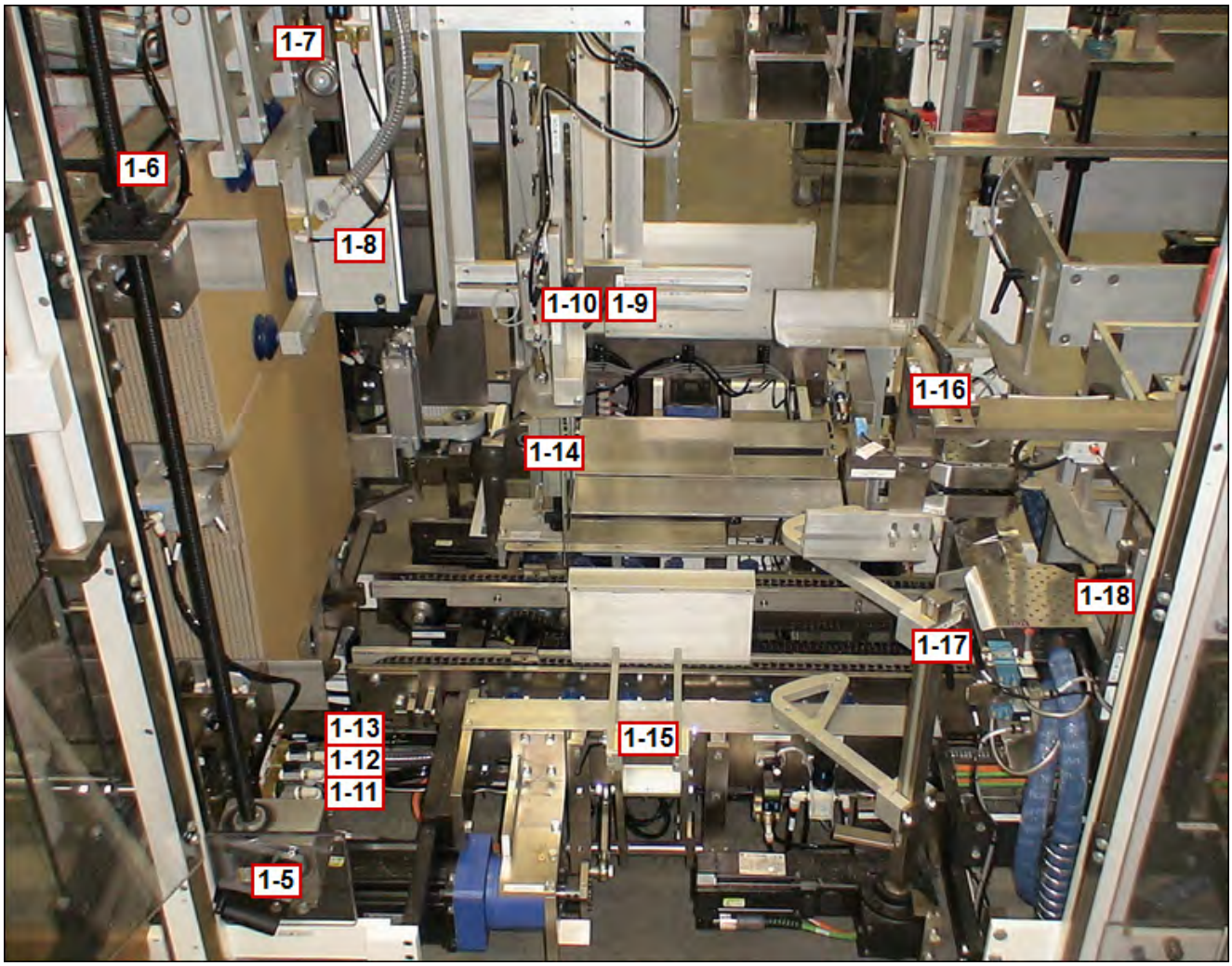
Loosen quick handle and adjust scale to the value shown on the Changeover Values screen for this changeover location. Re-tighten quick handle!

1-4 Non-Load Side Clamp & Guide



Loosen quick handle and adjust scale to the value shown on the Changeover Values screen for this changeover location. Re-tighten quick handle!

1-5 to 1-18



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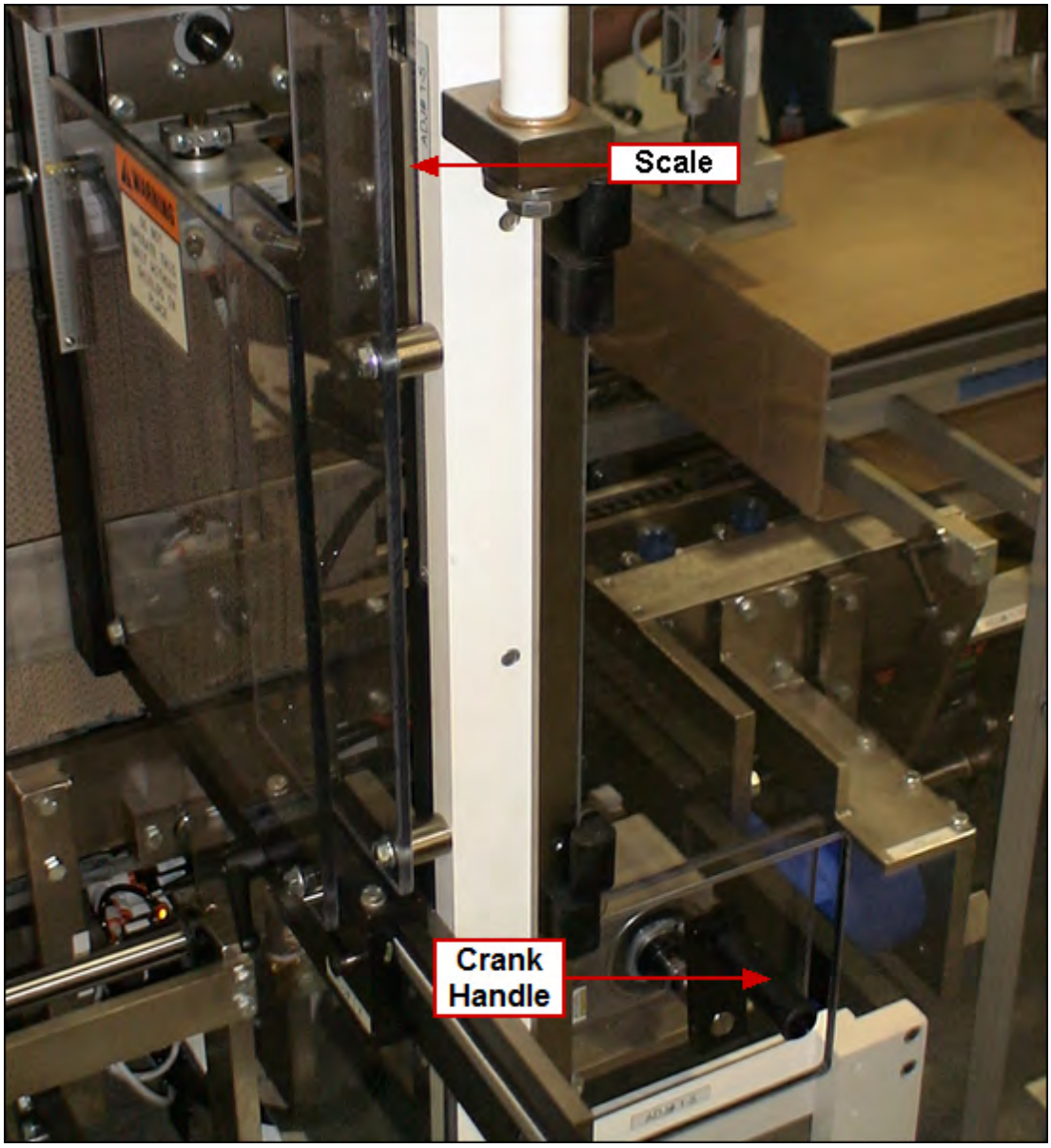
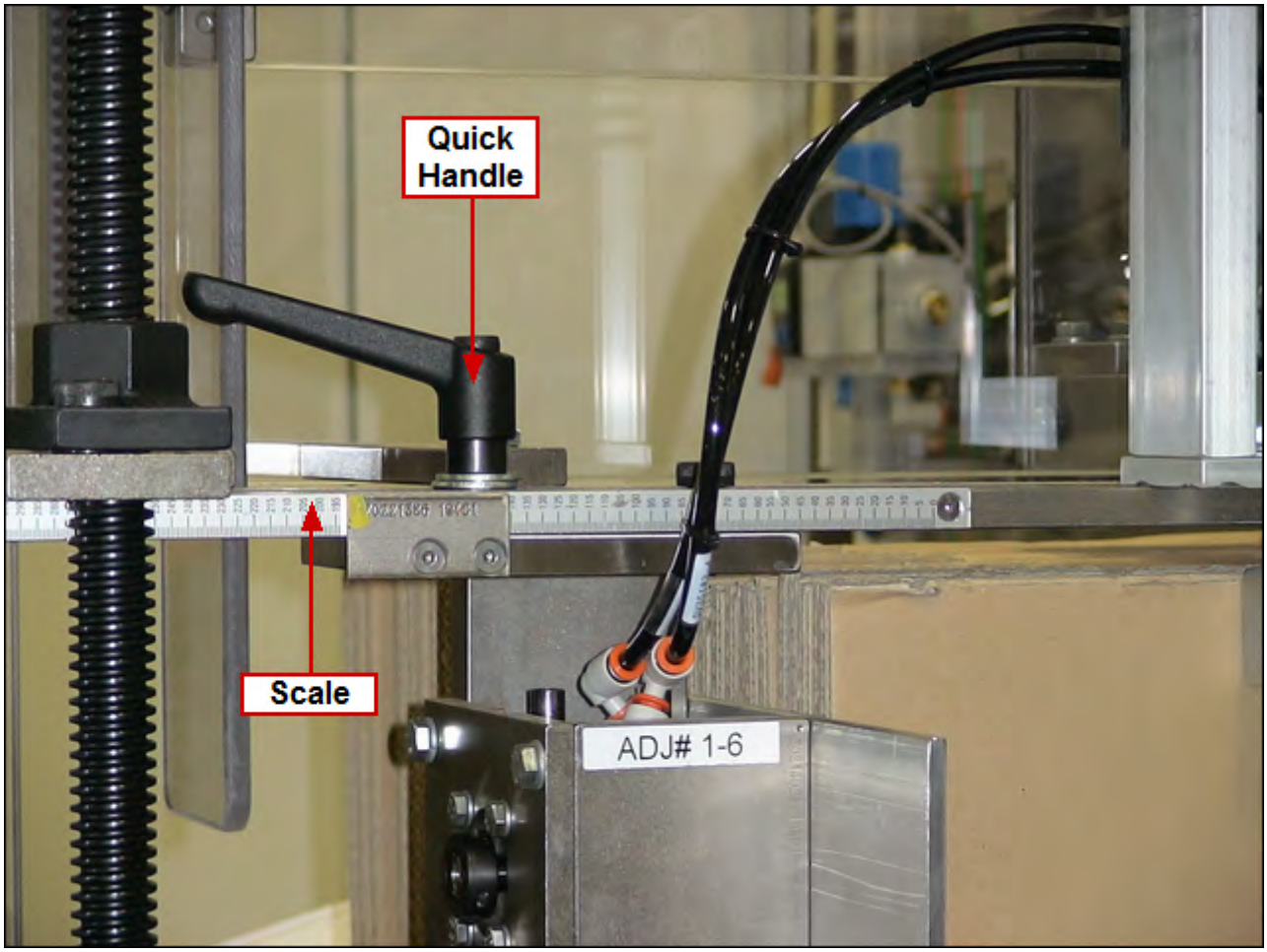
1-5 Top Clip



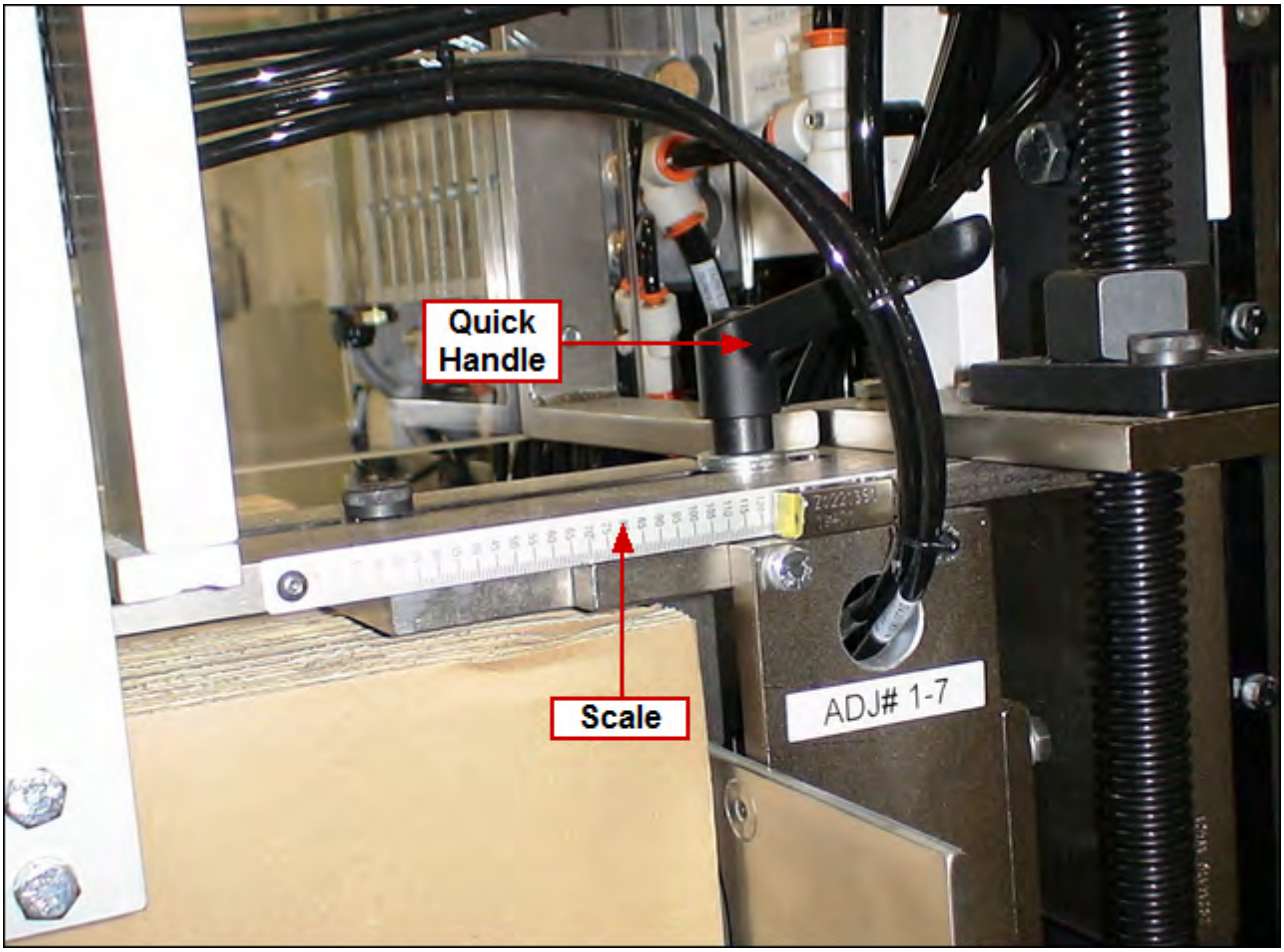
Using crank handle, adjust scale to the value shown on the Changeover Values screen for this changeover location.

1-6 Non-Load Side Upper Clamp



Loosen quick handle and adjust scale to the value shown on the Changeover Values screen for this changeover location. Re-tighten quick handle!

1-7 Load Side Upper Clamp



Loosen quick handle and adjust scale to the value shown on the Changeover Values screen for this changeover location. Re-tighten quick handle!

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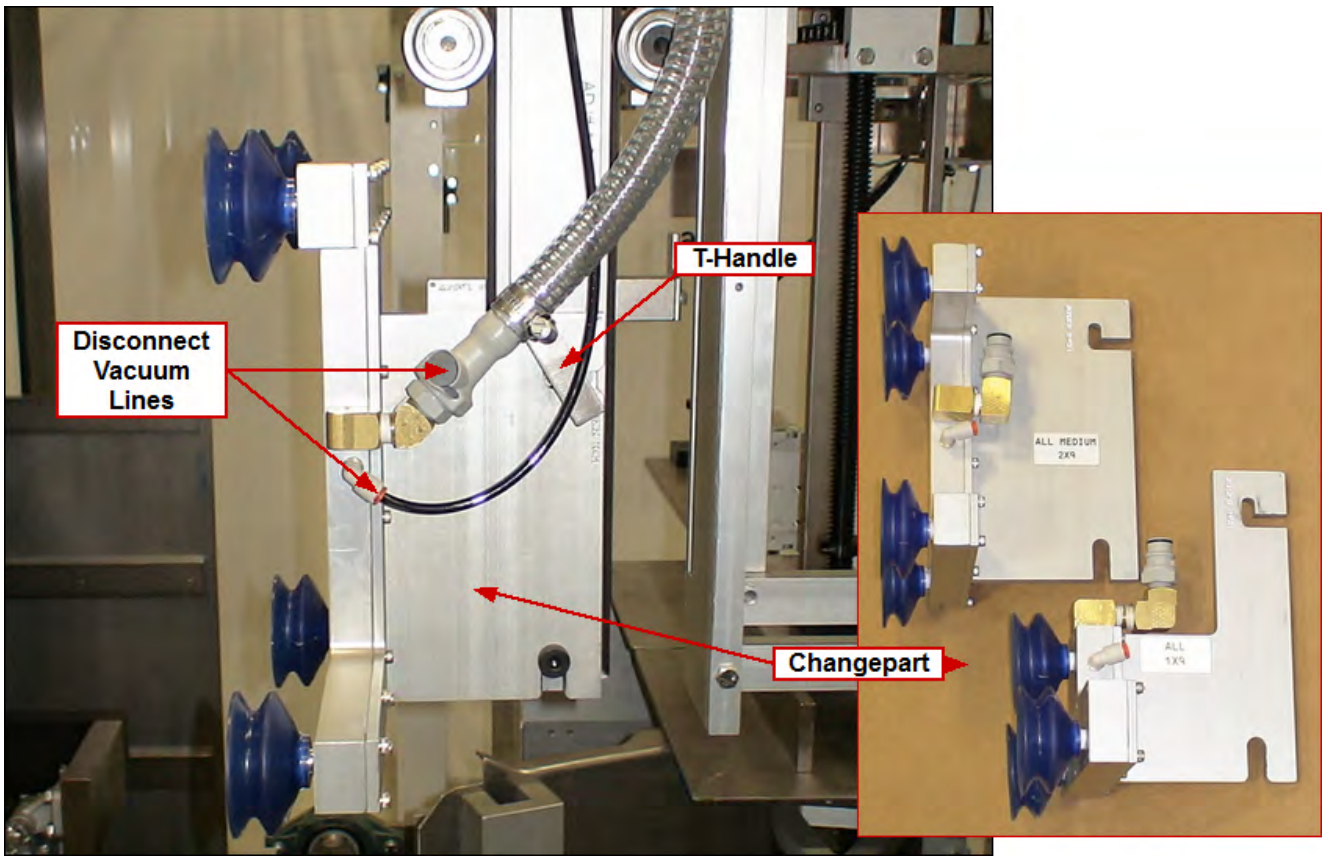
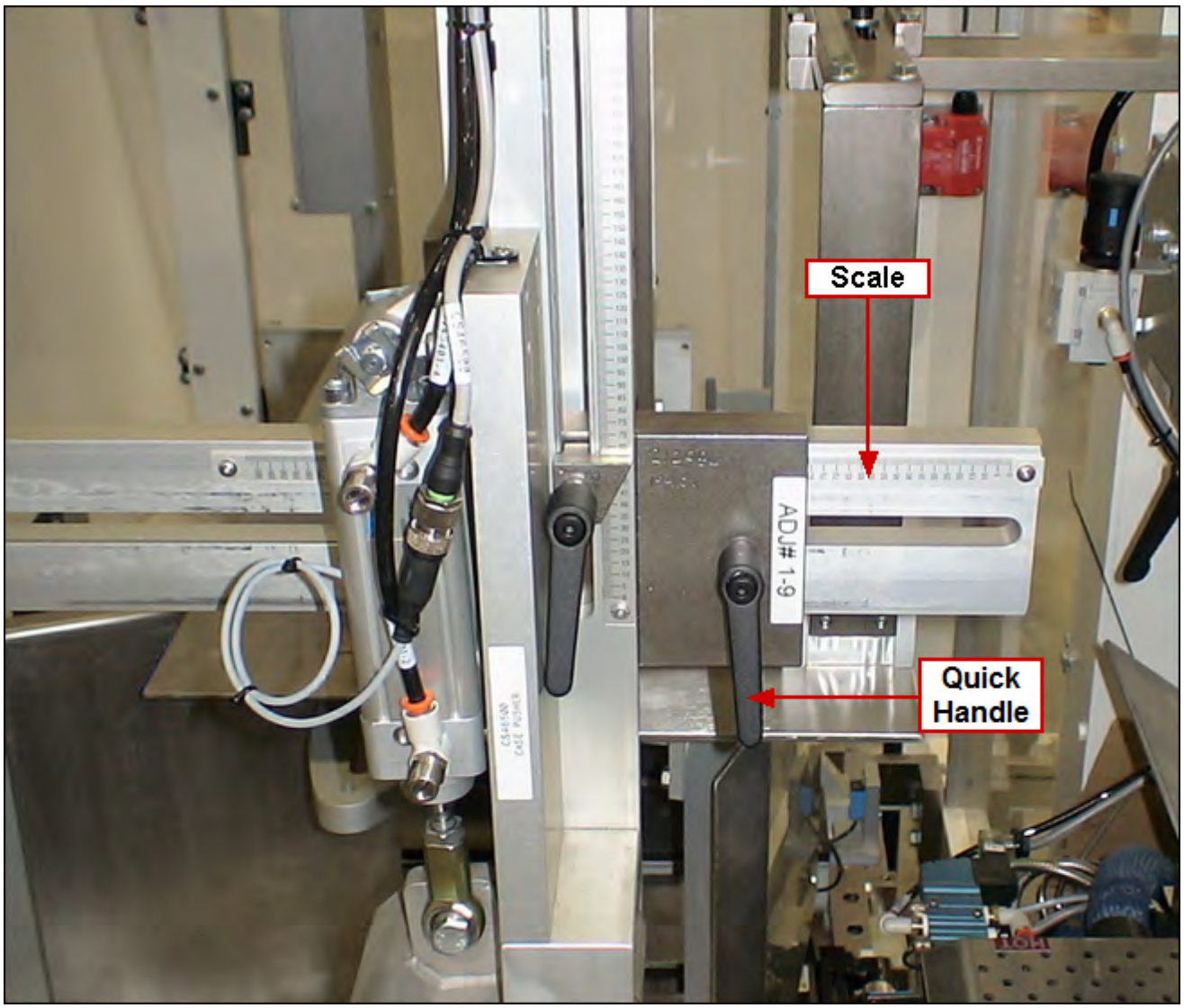
1-8 Robot Pick Cups



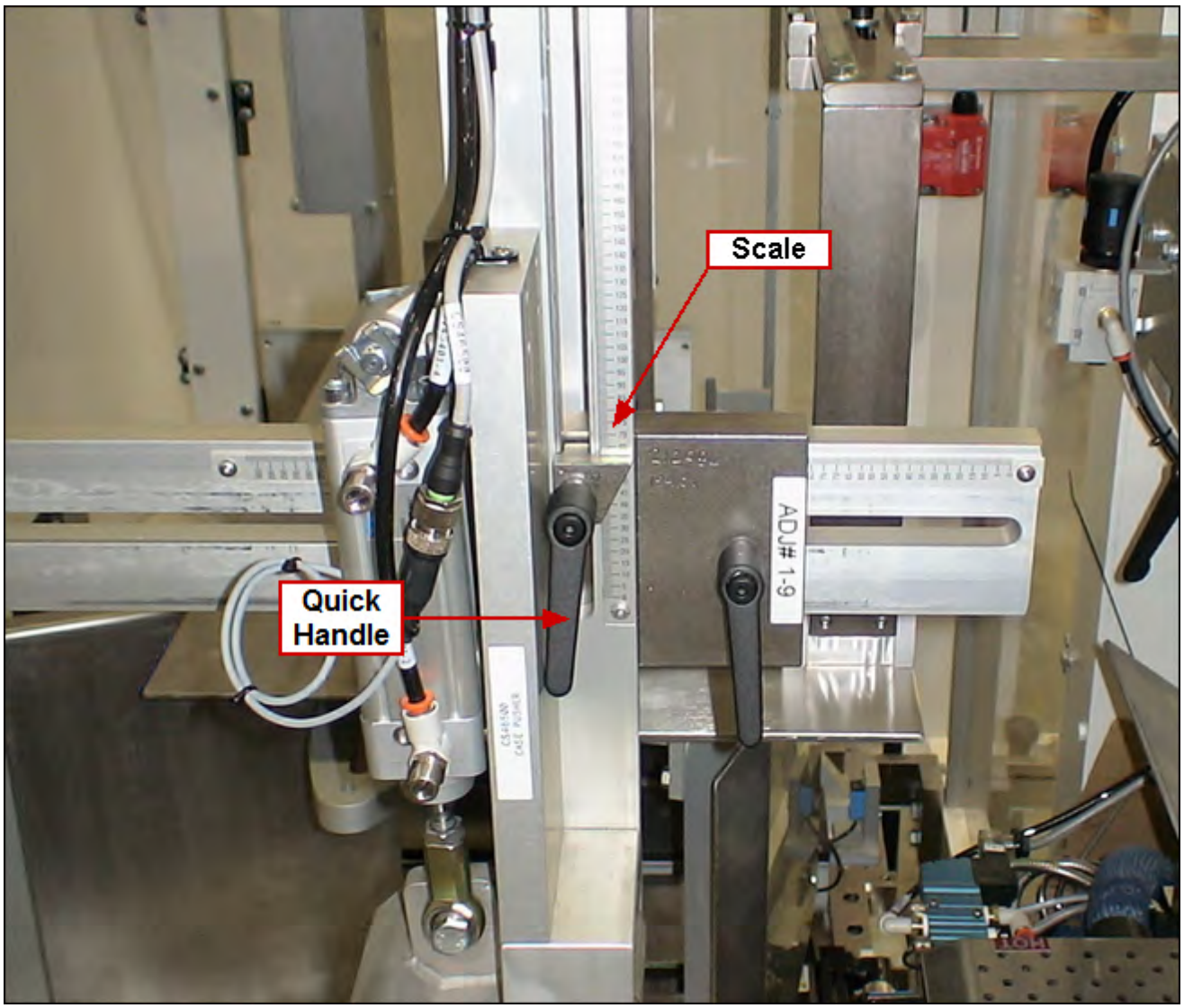
1. Disconnect two (2) vacuum lines from robot pick cups changepart
2. Loosen T-Handle
3. Remove and replace part with the size indicated on the Changeover Values screen for this changeover location
4. Re-tighten T-Handle
5. Reconnect two (2) vacuum lines

1-9 Robot Case Pusher Horizontal



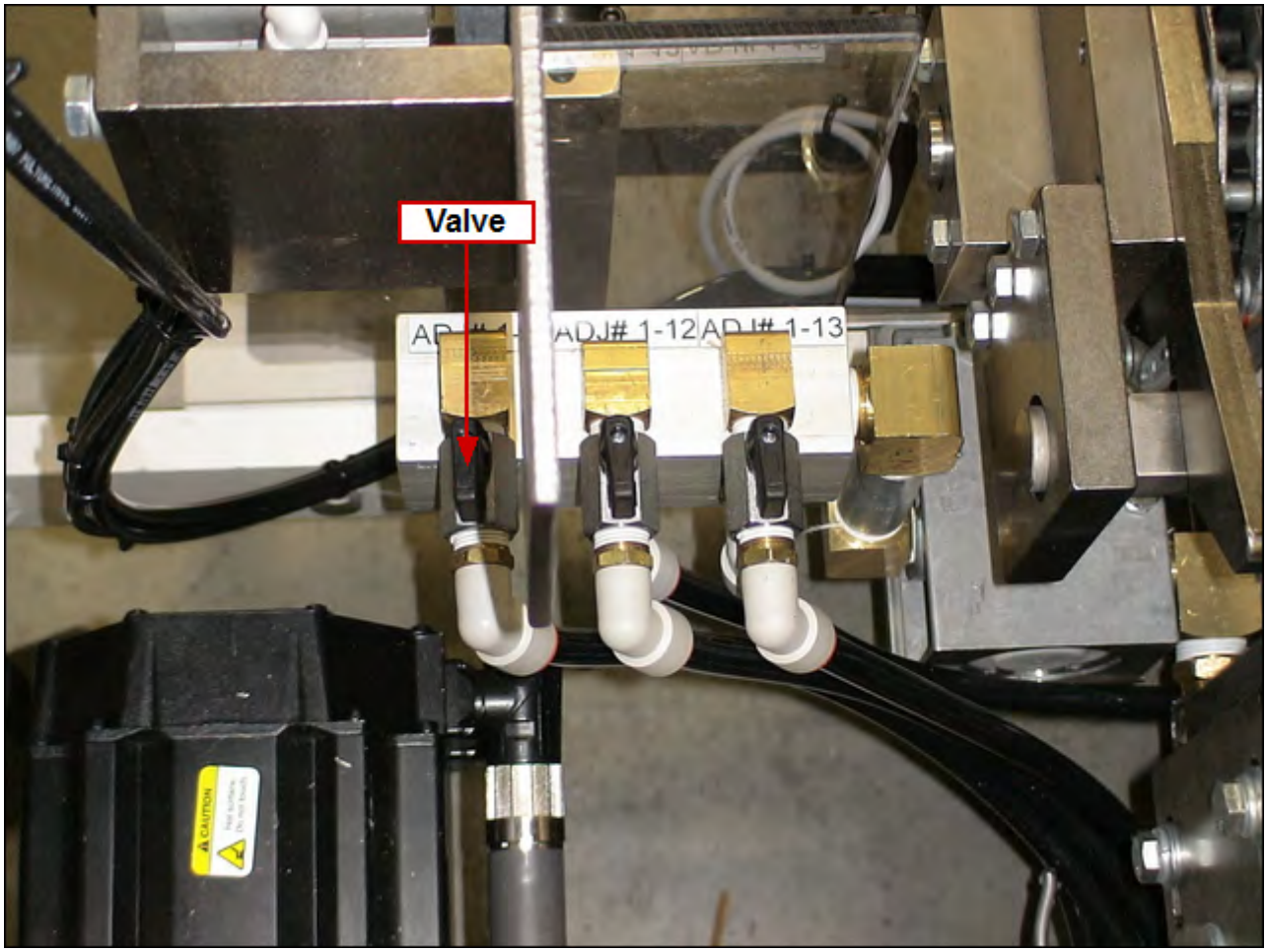
Loosen quick handle and adjust scale to the value shown on the Changeover Values screen for this changeover location. Re-tighten quick handle!

1-10 Robot Case Pusher Vertical



Loosen quick handle and adjust scale to the value shown on the Changeover Values screen for this changeover location. Re-tighten quick handle!

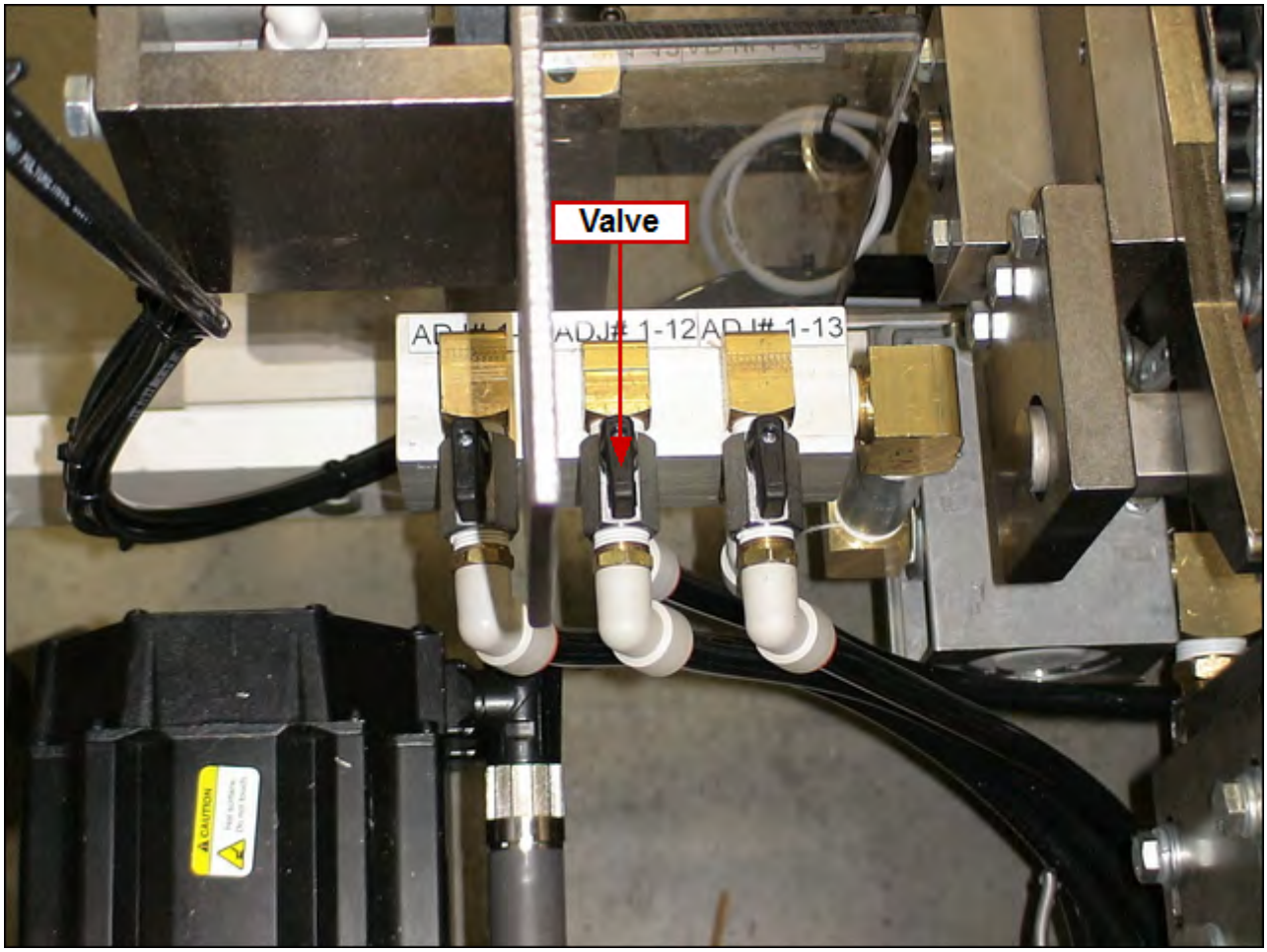
1-11 Cup Vacuum Control Valve A



Adjust valve according to the value shown on the Changeover Values screen for this changeover location.

NOTE: If valve handle is inline with hose, the valve is ON

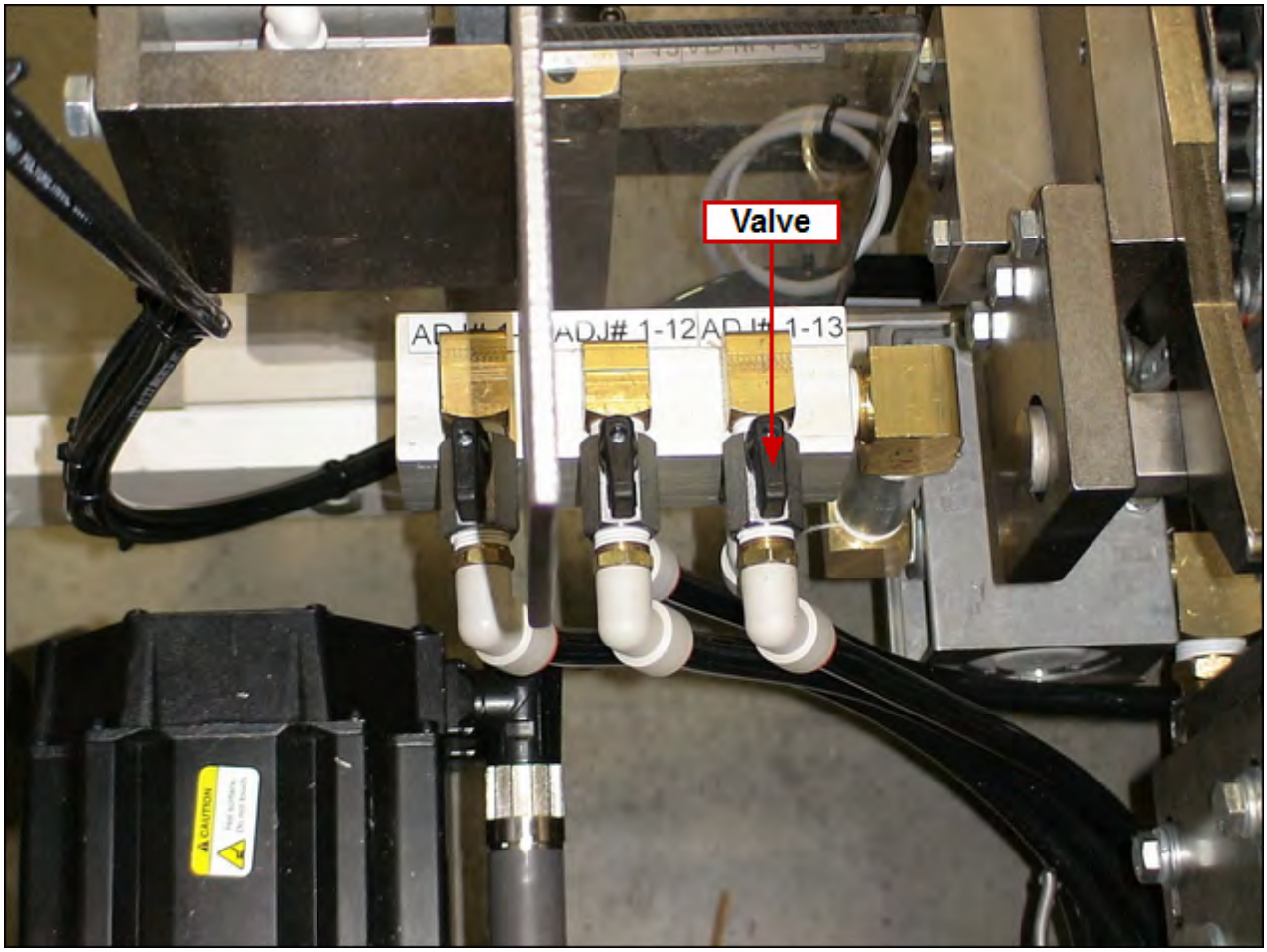
1-12 Cup Vacuum Control Valve B



Adjust valve according to the value shown on the Changeover Values screen for this changeover location.

NOTE: If valve handle is inline with hose, the valve is ON

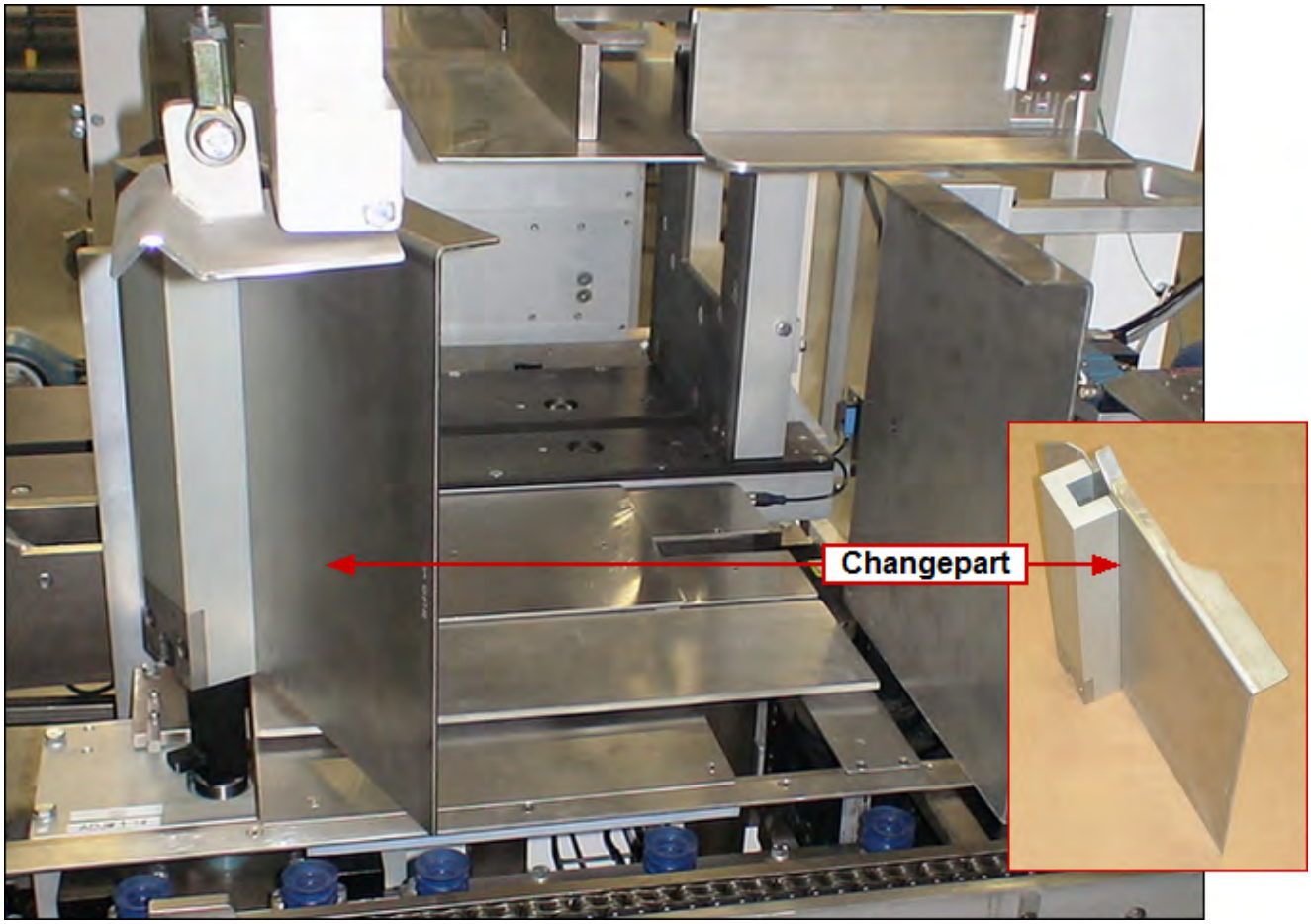
1-13 Cup Vacuum Control Valve C



Adjust valve according to the value shown on the Changeover Values screen for this changeover location.

NOTE: If valve handle is inline with hose, the valve is ON

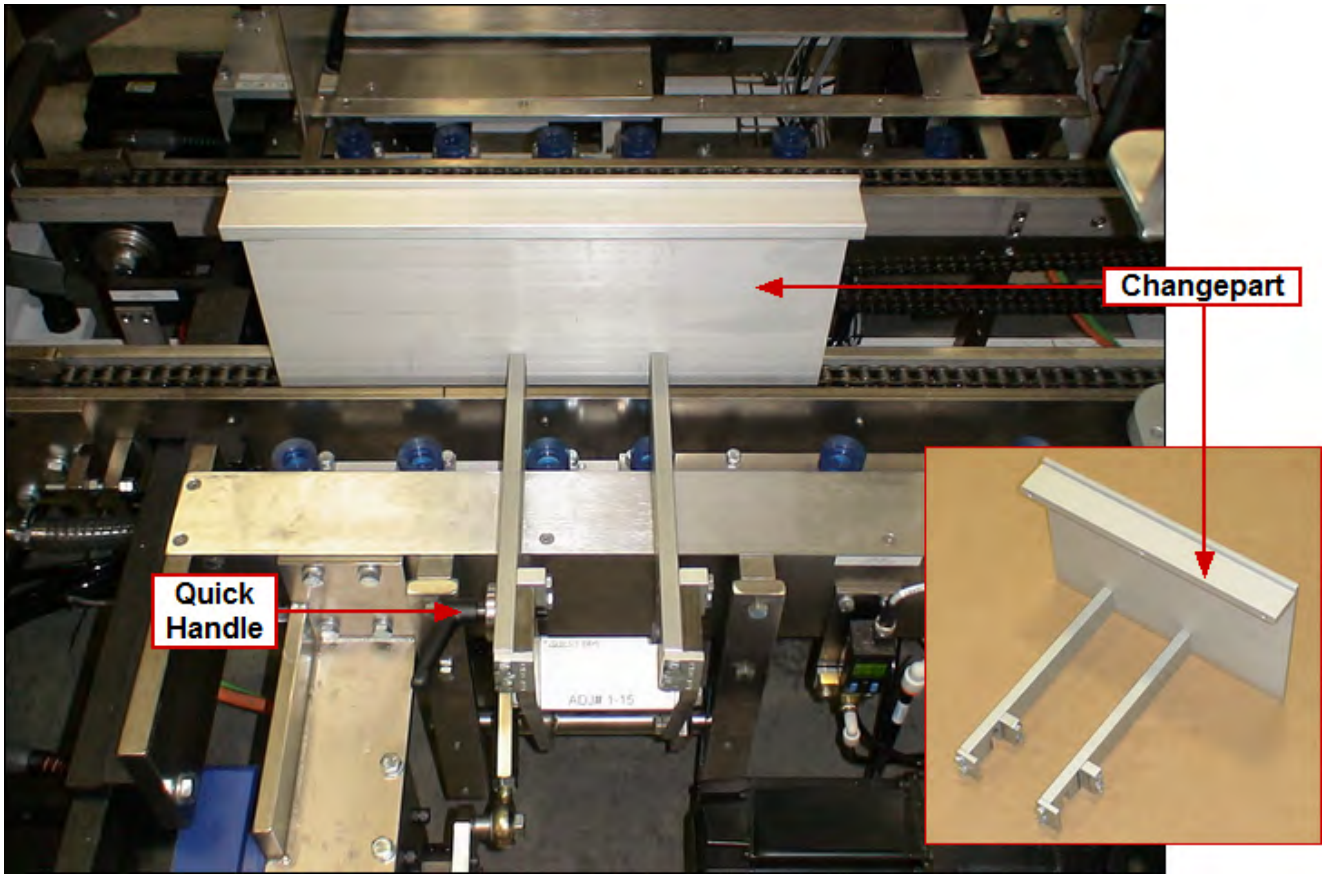
1-14 Funnel



Replace part with the size indicated on the Changeover Values screen for this changeover location

To install: slide part down onto shaft. Do not allow part to drop!
To remove: slide part up and off

1-15 Product Stop



Replace part with the size indicated on the Changeover Values screen for this changeover location

To install: slide part into position and tighten quick handle
To remove: loosen quick handle and slide part off

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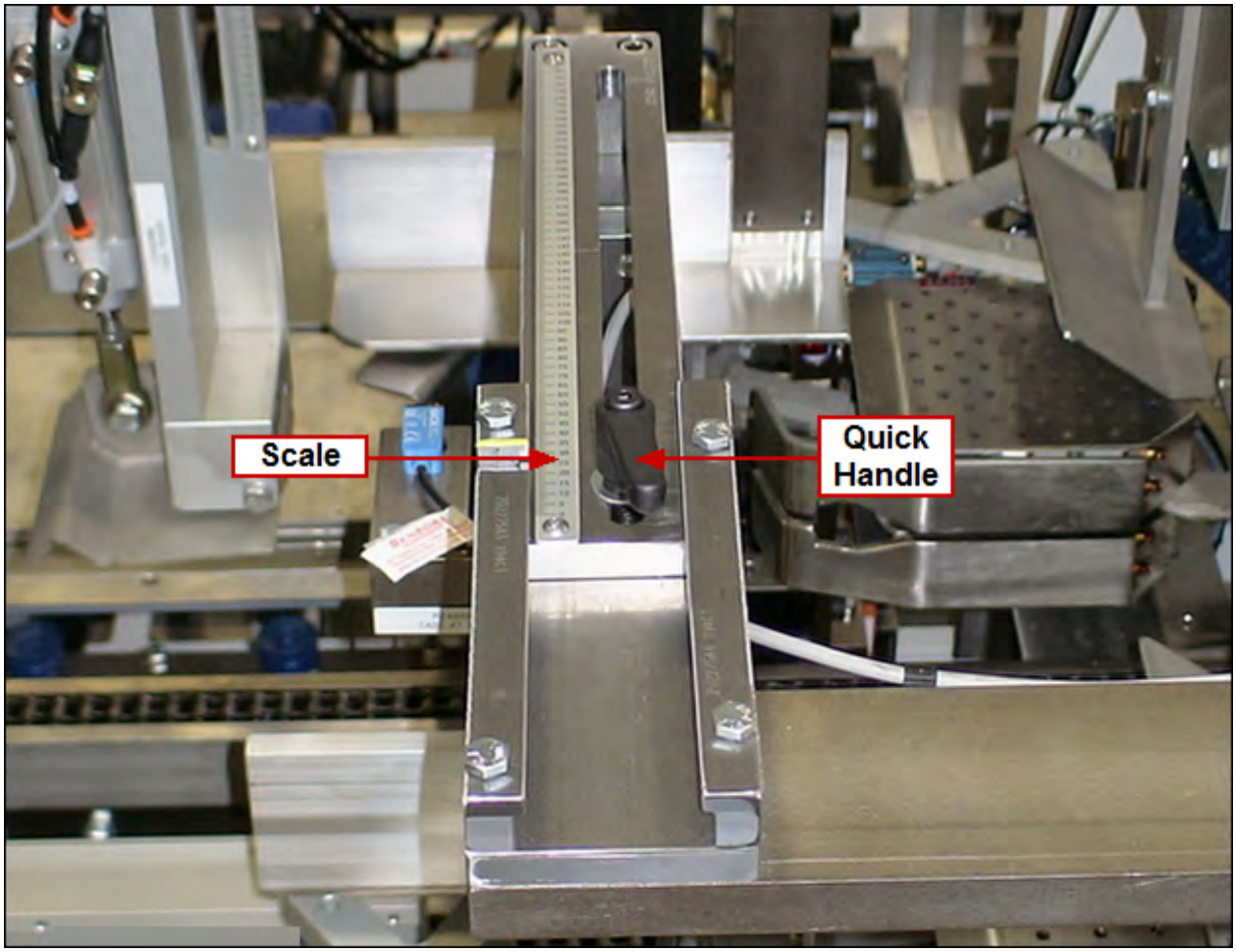
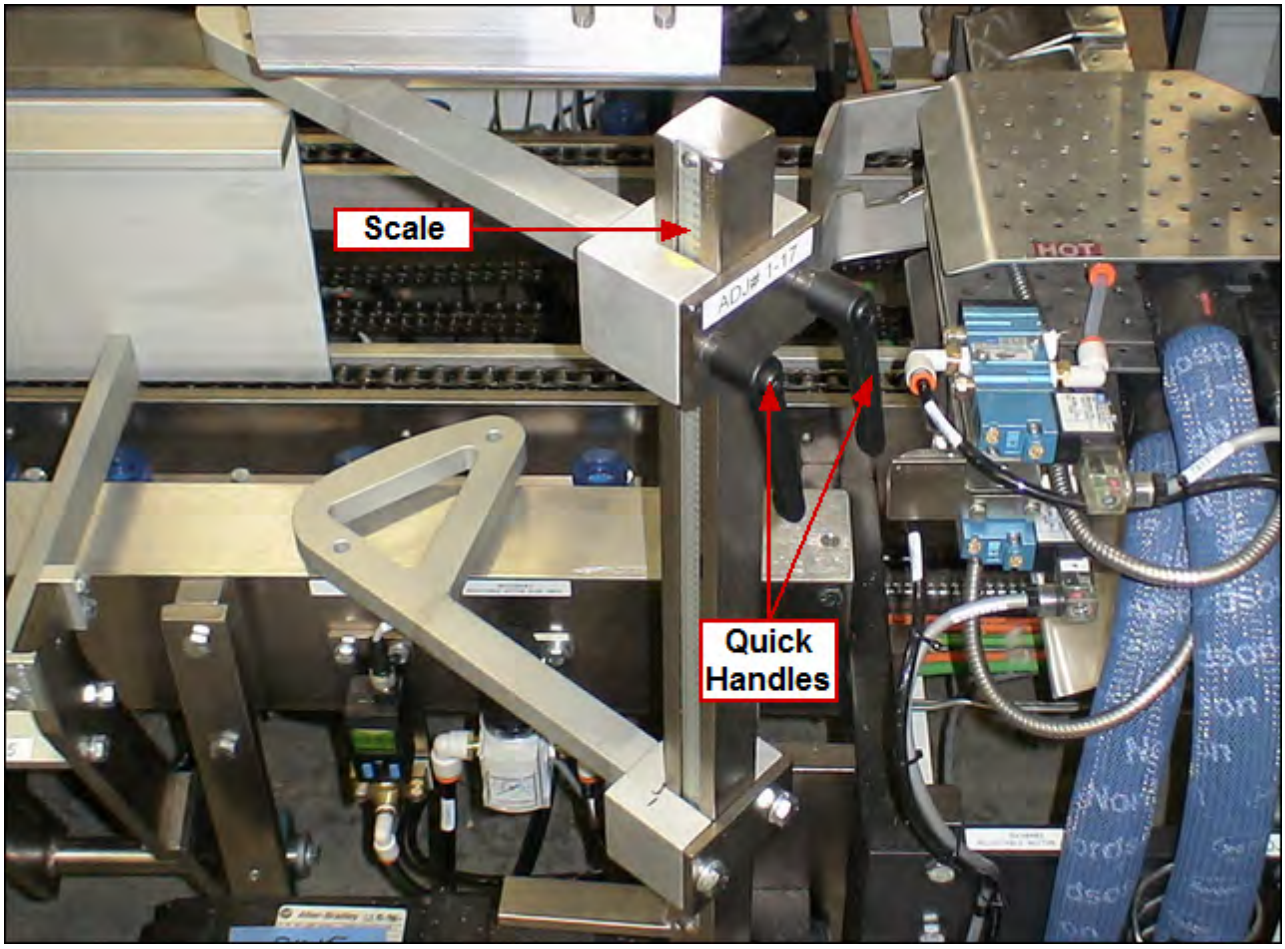
1-16 Adjustable Major Flap Lift



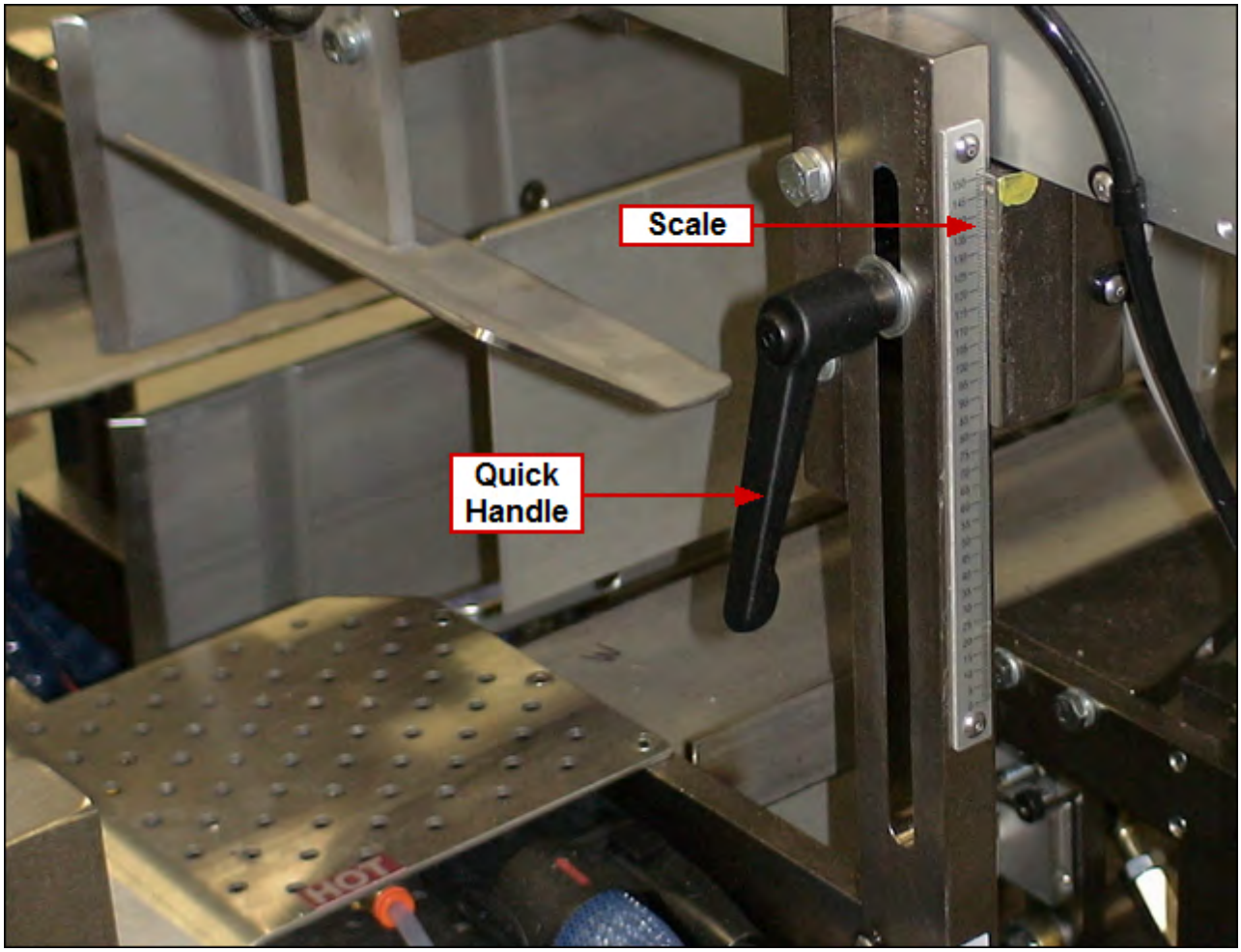
Loosen quick handle and adjust scale to the value shown on the Changeover Values screen for this changeover location. Re-tighten quick handle!

1-17 Flap Tucker



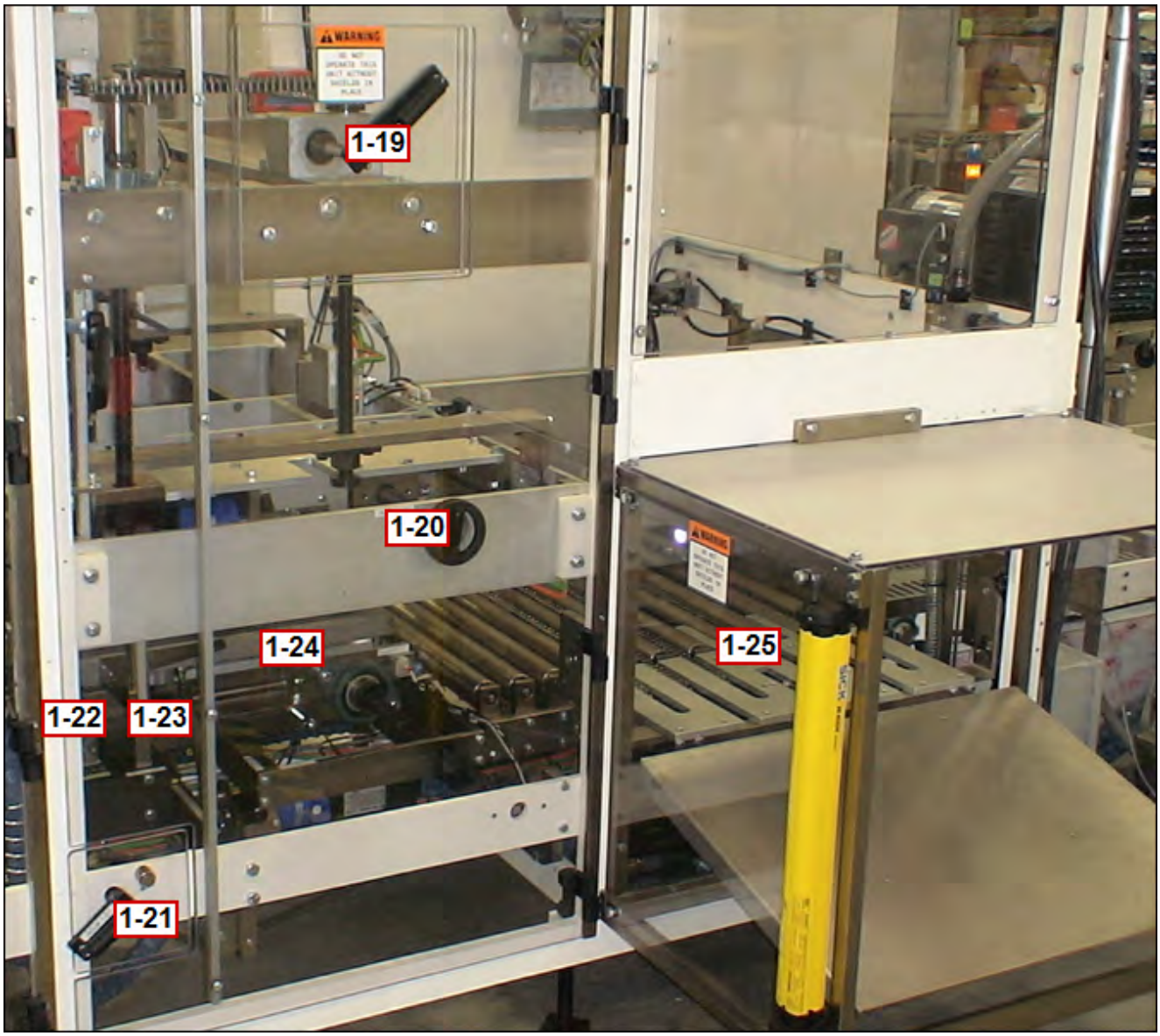
Loosen quick handles and adjust scale to the value shown on the Changeover Values screen for this changeover location. Re-tighten quick handles!

1-18 Adjustable Upper Glue Height



Loosen quick handle and adjust scale to the value shown on the Changeover Values screen for this changeover location. Re-tighten quick handle!

1-19 to 1-25



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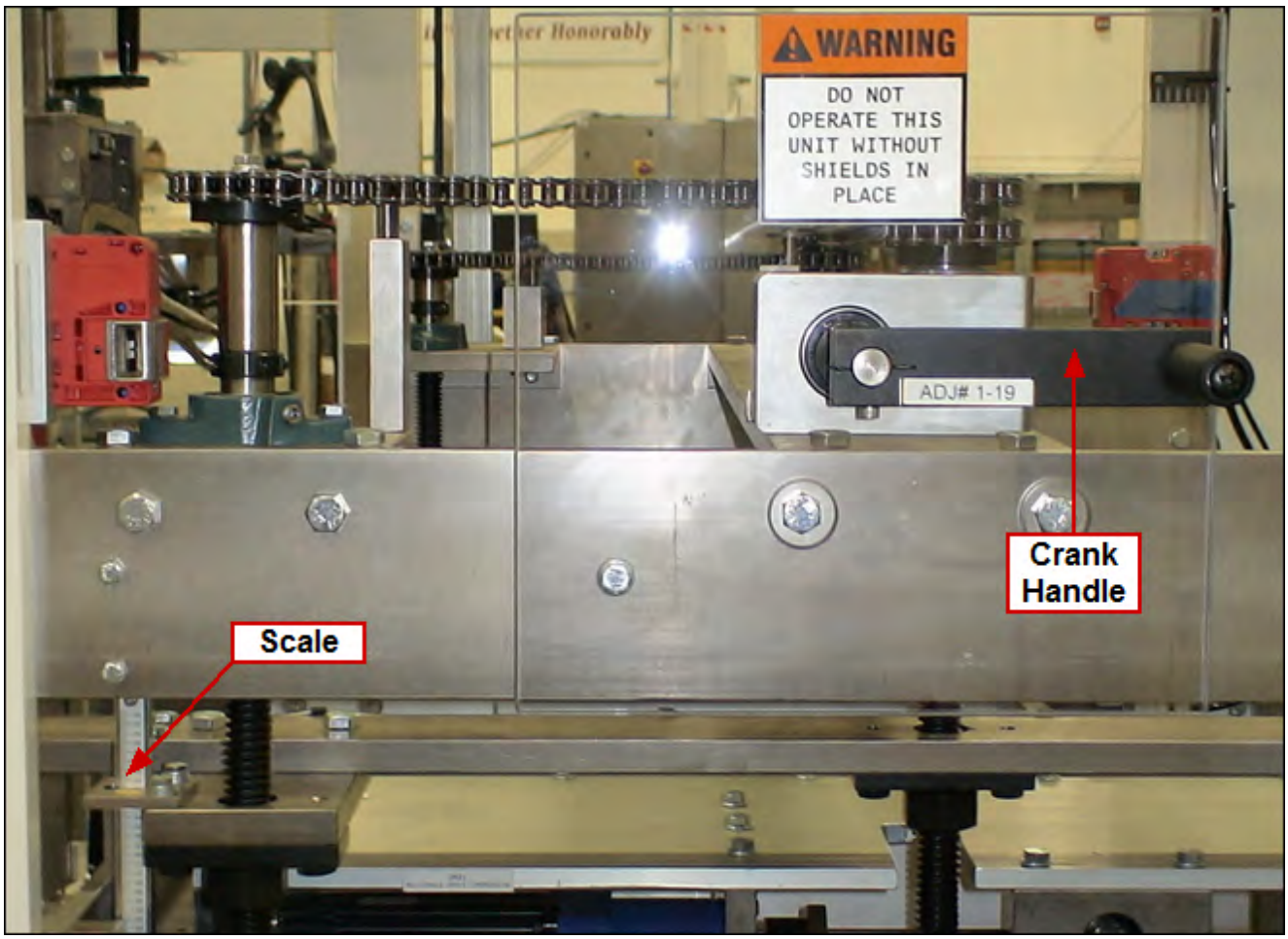
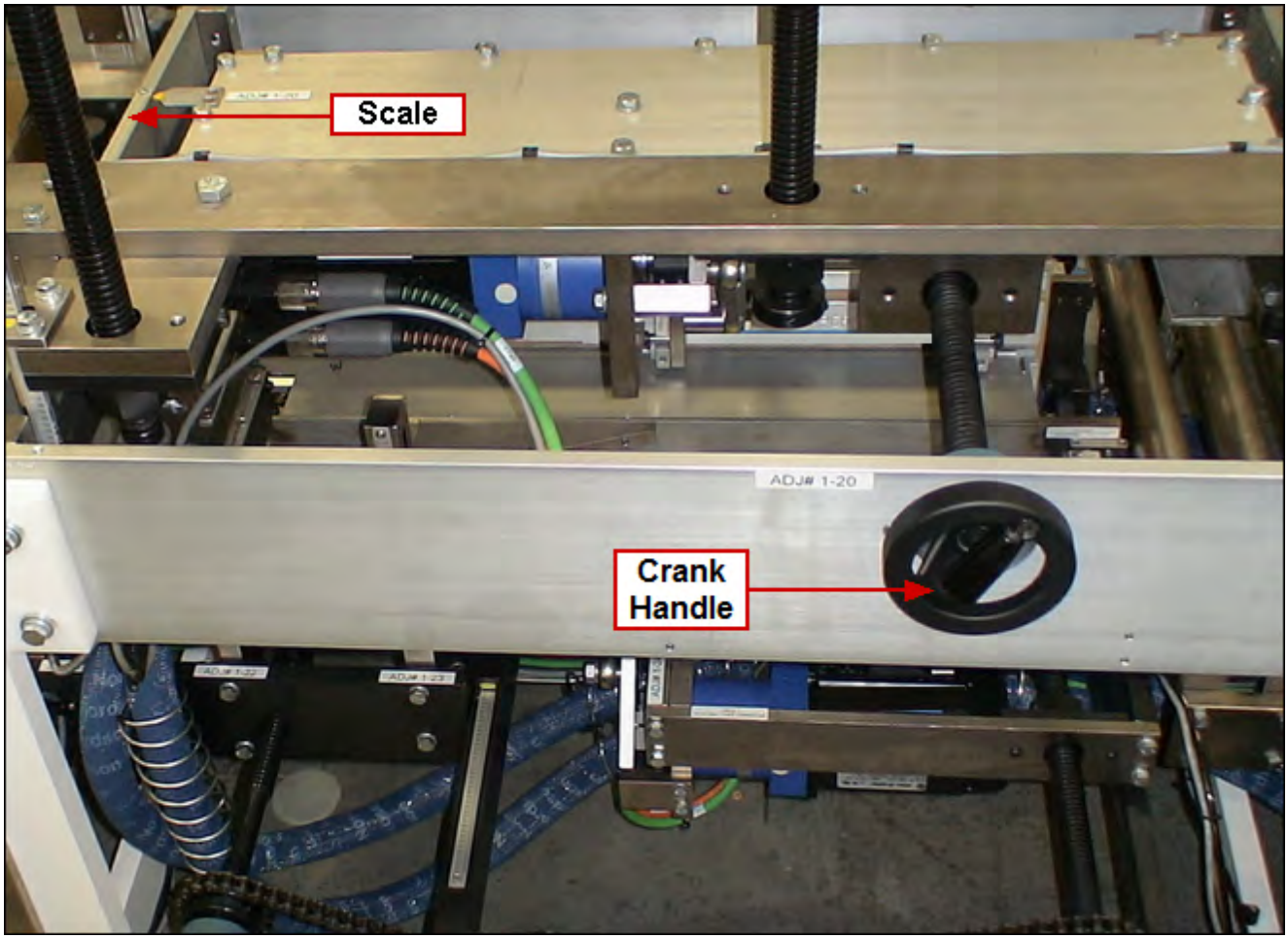
1-19 Upper Compression Height



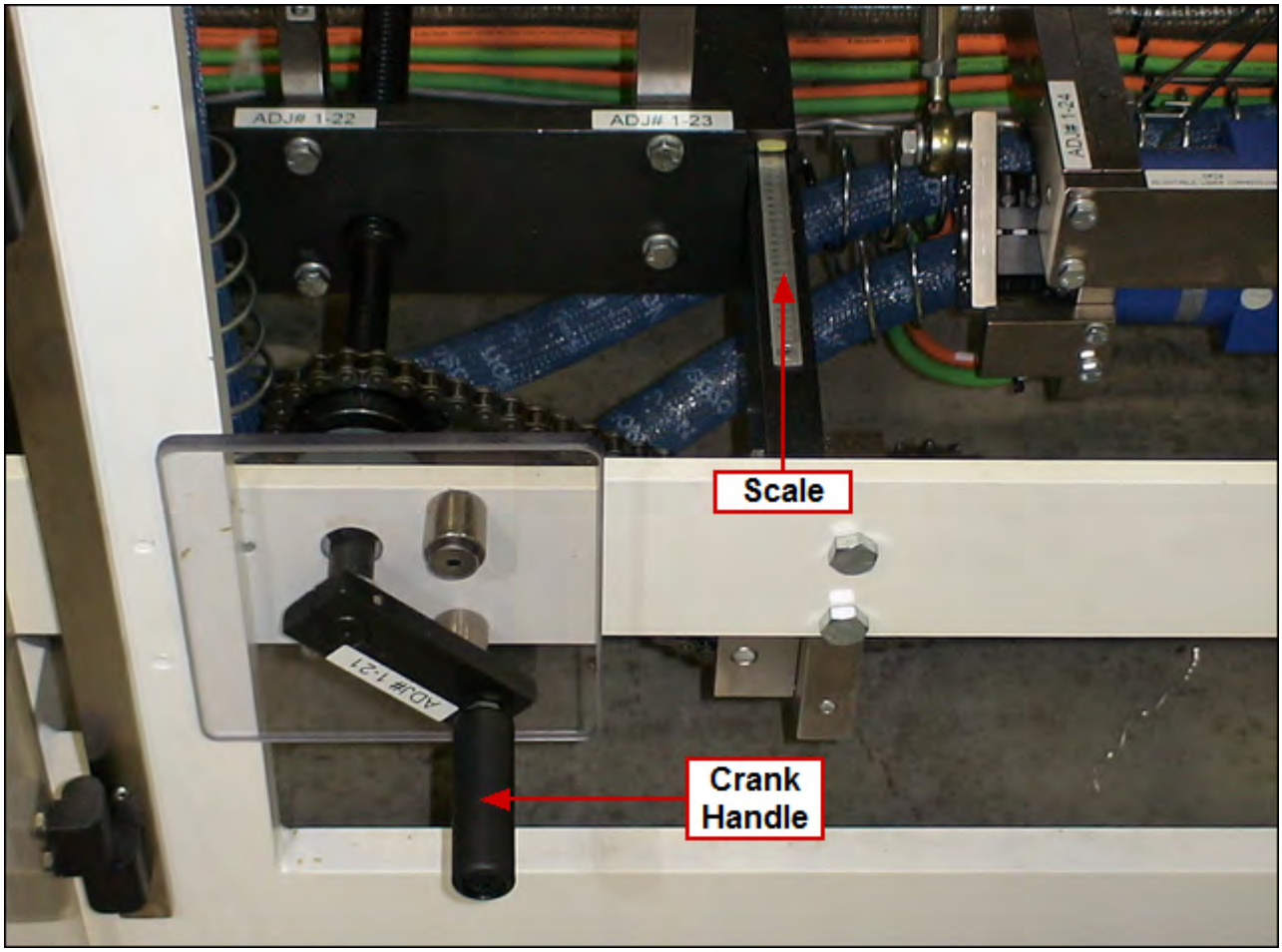
Using crank handle, adjust scale to the value shown on the Changeover Values screen for this changeover location.

1-20 Upper Compression Width



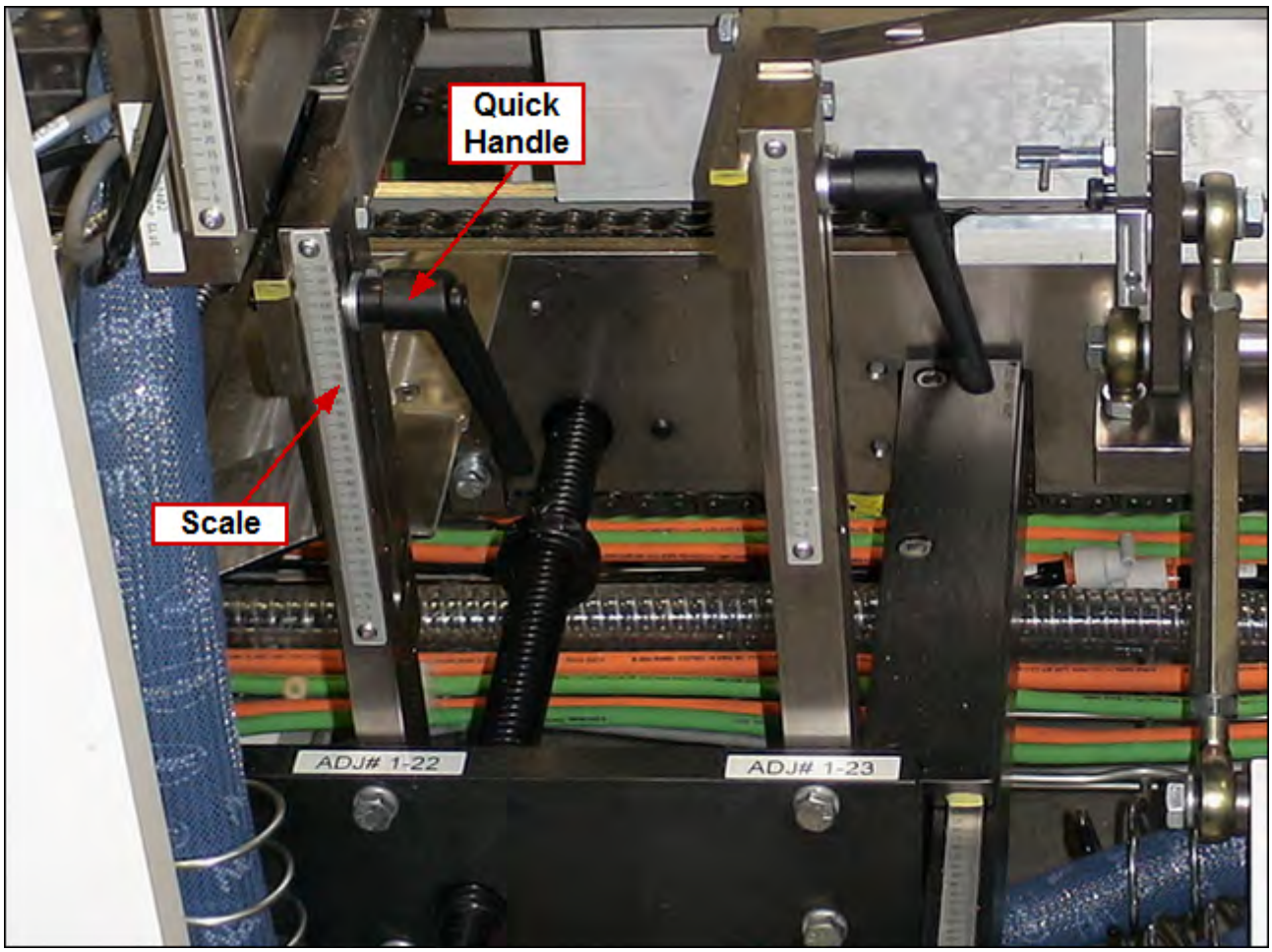
Using crank handle, adjust scale to the value shown on the Changeover Values screen for this changeover location.

1-21 Bedplate Width



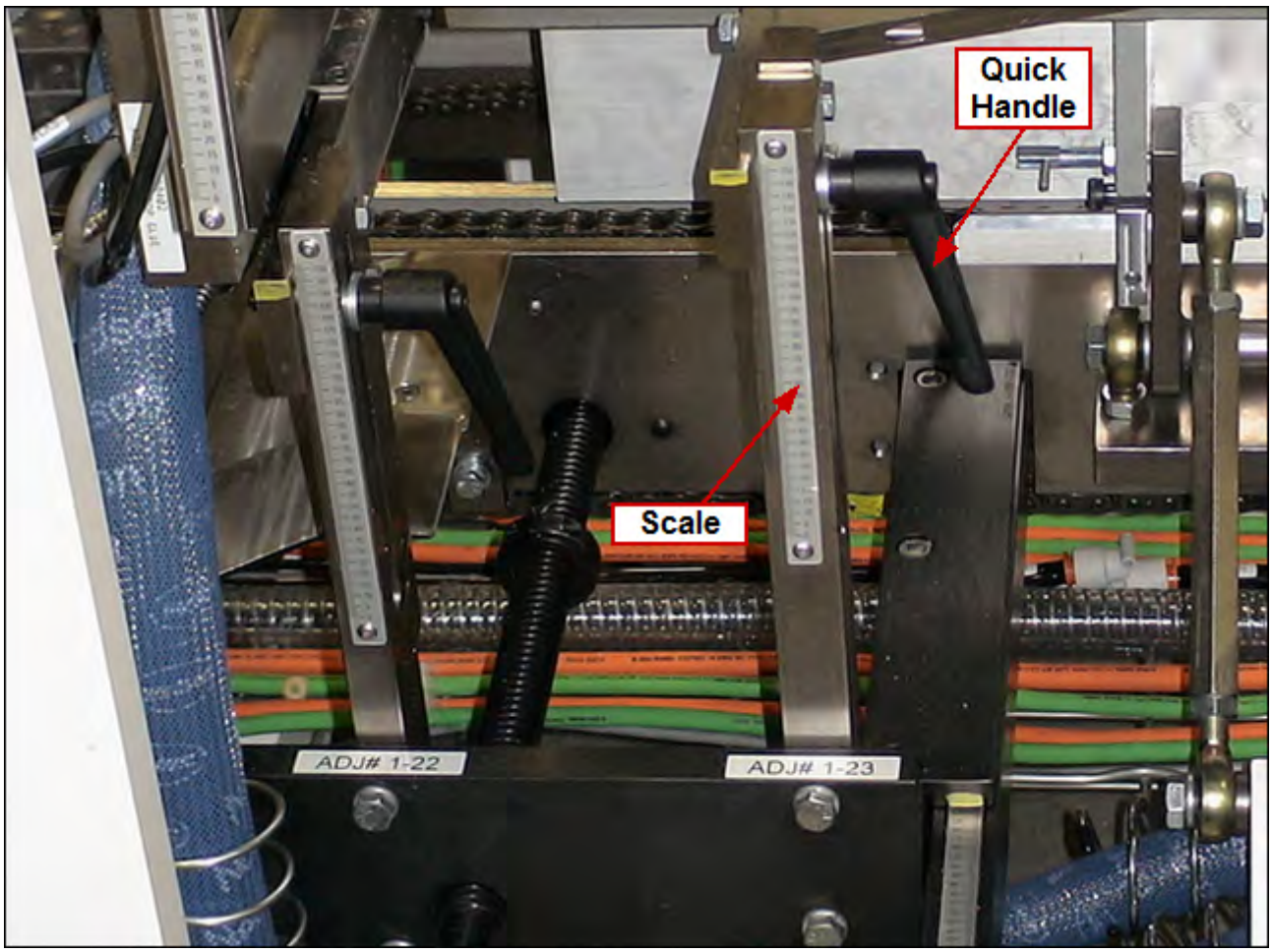
Using crank handle, adjust scale to the value shown on the Changeover Values screen for this changeover location.

1-22 Adjustable Lower Glue Height



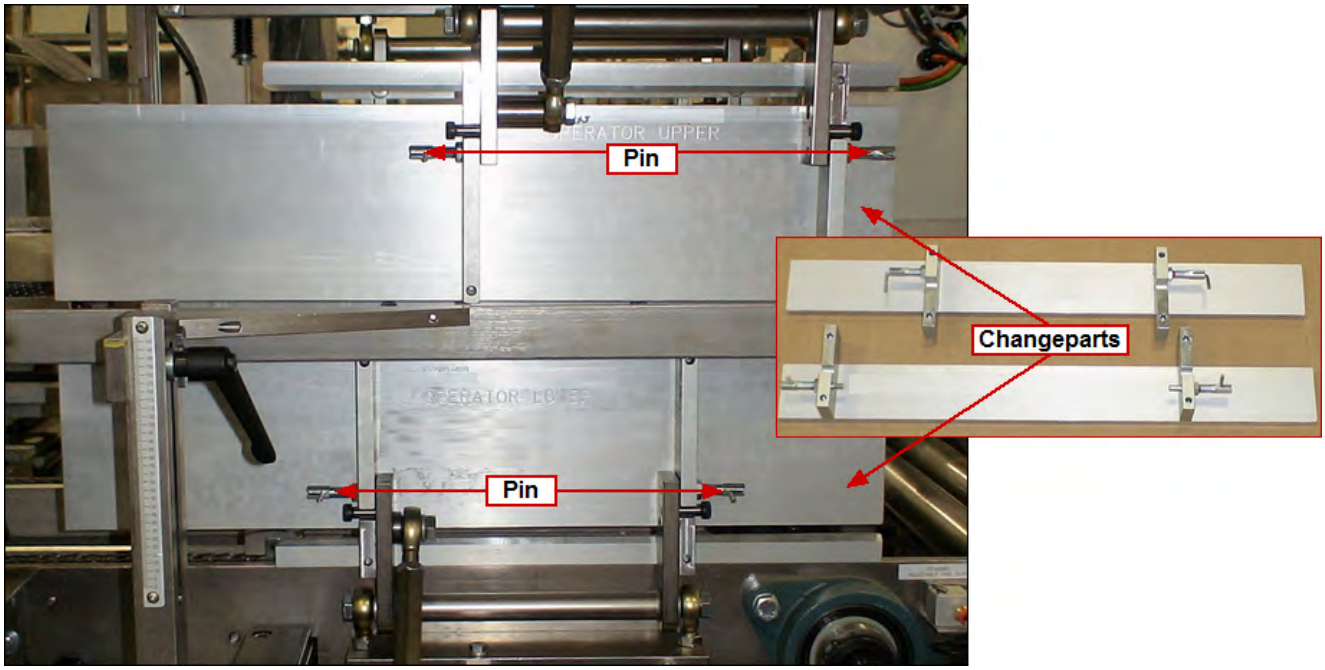
Loosen quick handle and adjust scale to the value shown on the Changeover Values screen for this changeover location. Re-tighten quick handle!

1-23 Adjustable Minor Containment Rail Height



Loosen quick handle and adjust scale to the value shown on the Changeover Values screen for this changeover location. Re-tighten quick handle!

1-24 Adjustable Compression Plates



Replace part with the size indicated on the Changeover Values screen for this changeover location

To install: slide part into position and set lock pins
To remove: pull out set pins and lift part off

NOTE: There are two (2) adjustable compression plates (upper and lower), each having two (2) set pins
NOTE: Changeparts are labeled "Operator Upper" and "Operator Lower"

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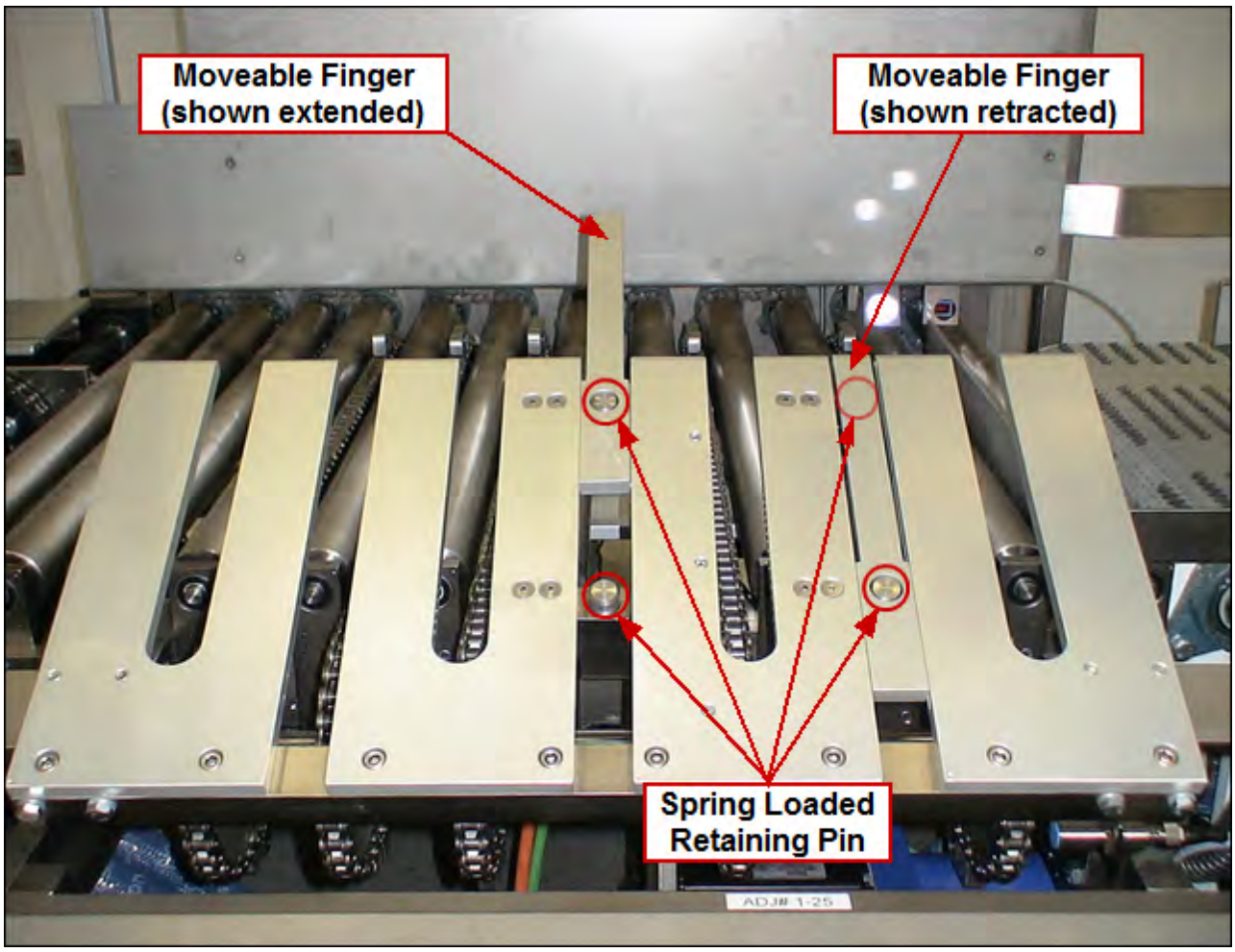
1-25 Tip Finger Extension

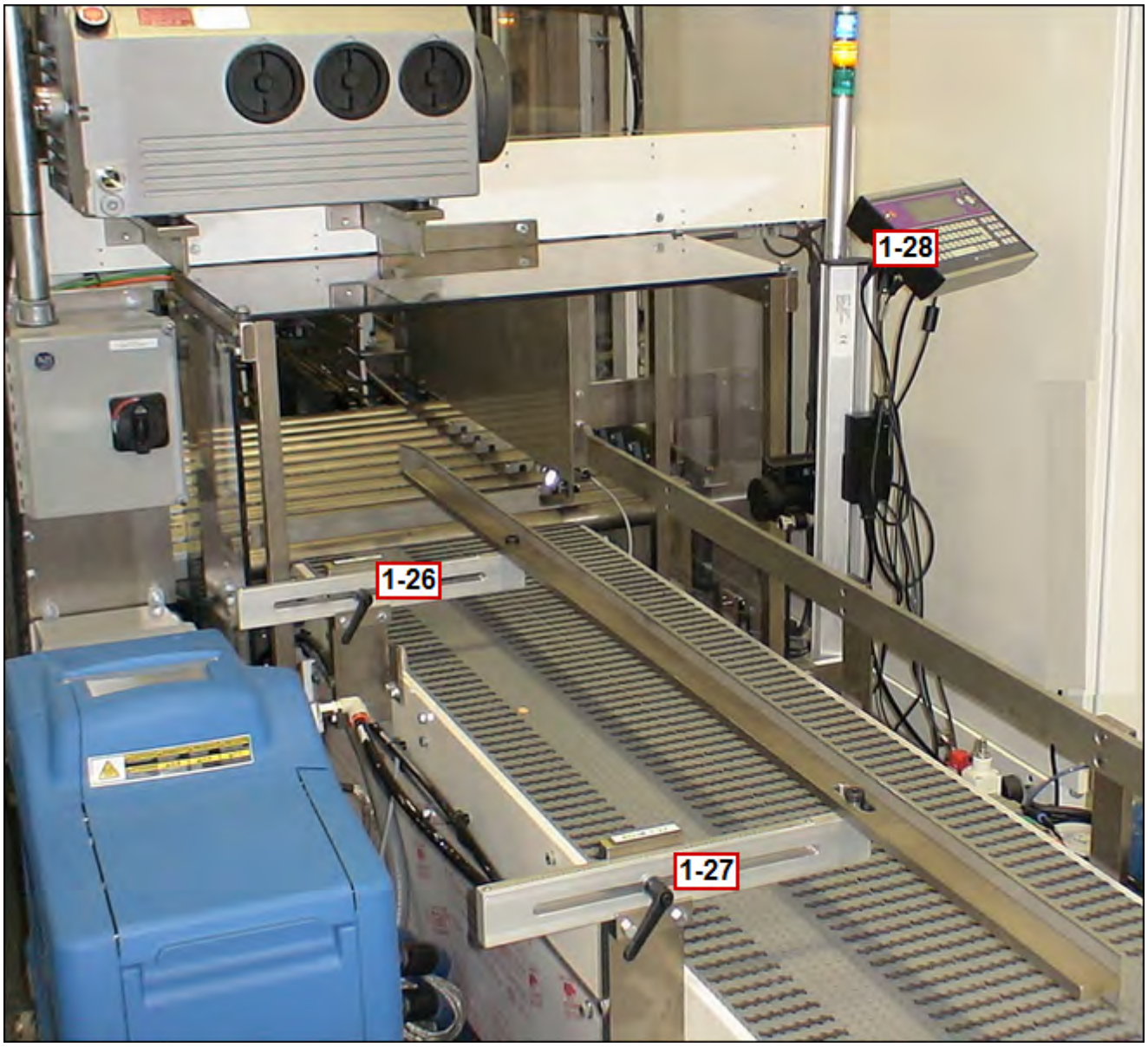


Adjust fingers according to the value shown on the Changeover Values screen for this changeover location

To extend or retract: push spring loaded retaining pin down and slide finger in or out until the pin snaps into the hole

NOTE: Both fingers must be set to the same position. The picture above shows one finger extended and one finger retracted for illustration purposes only.

1-26 to 1-28



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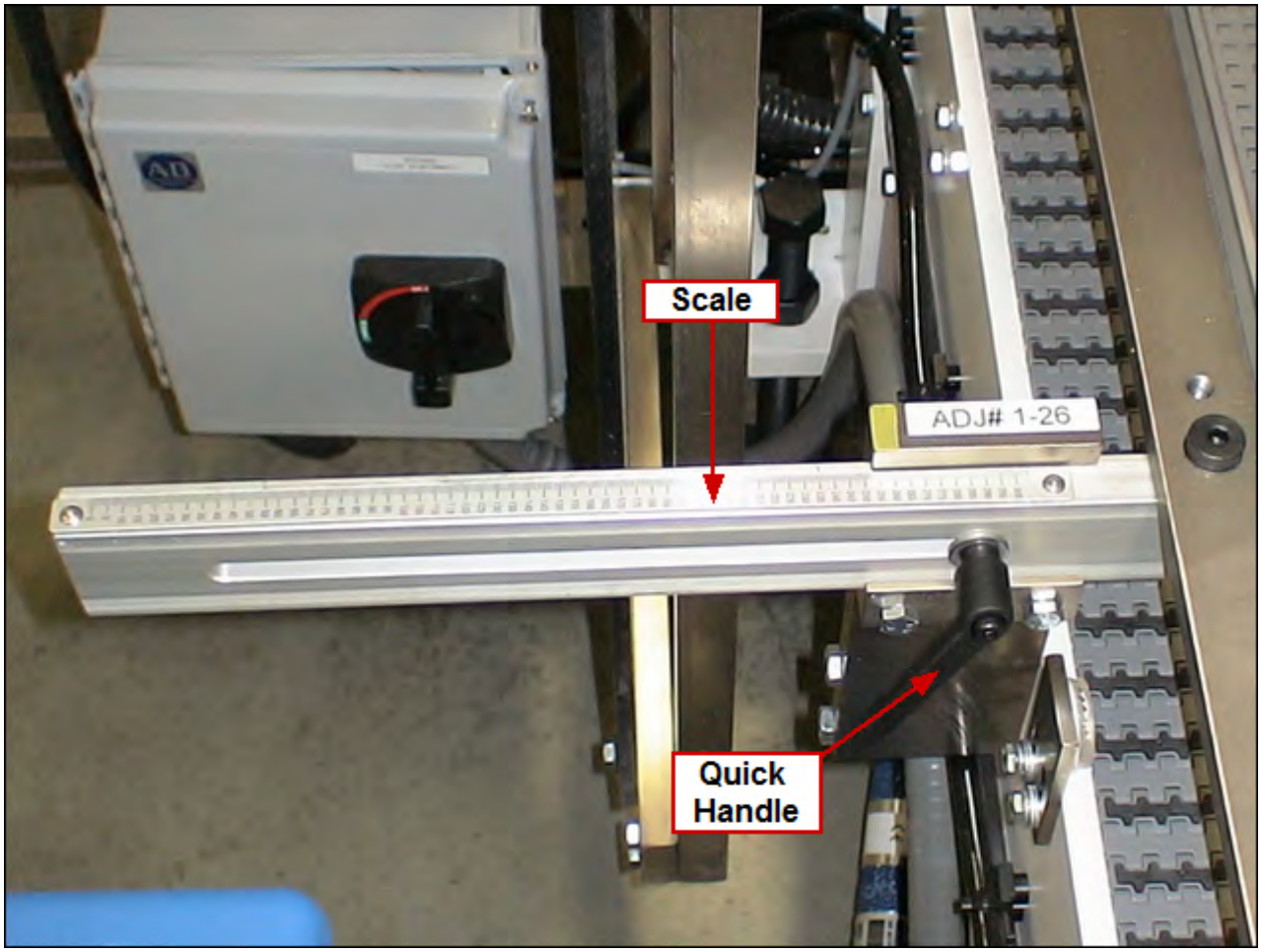
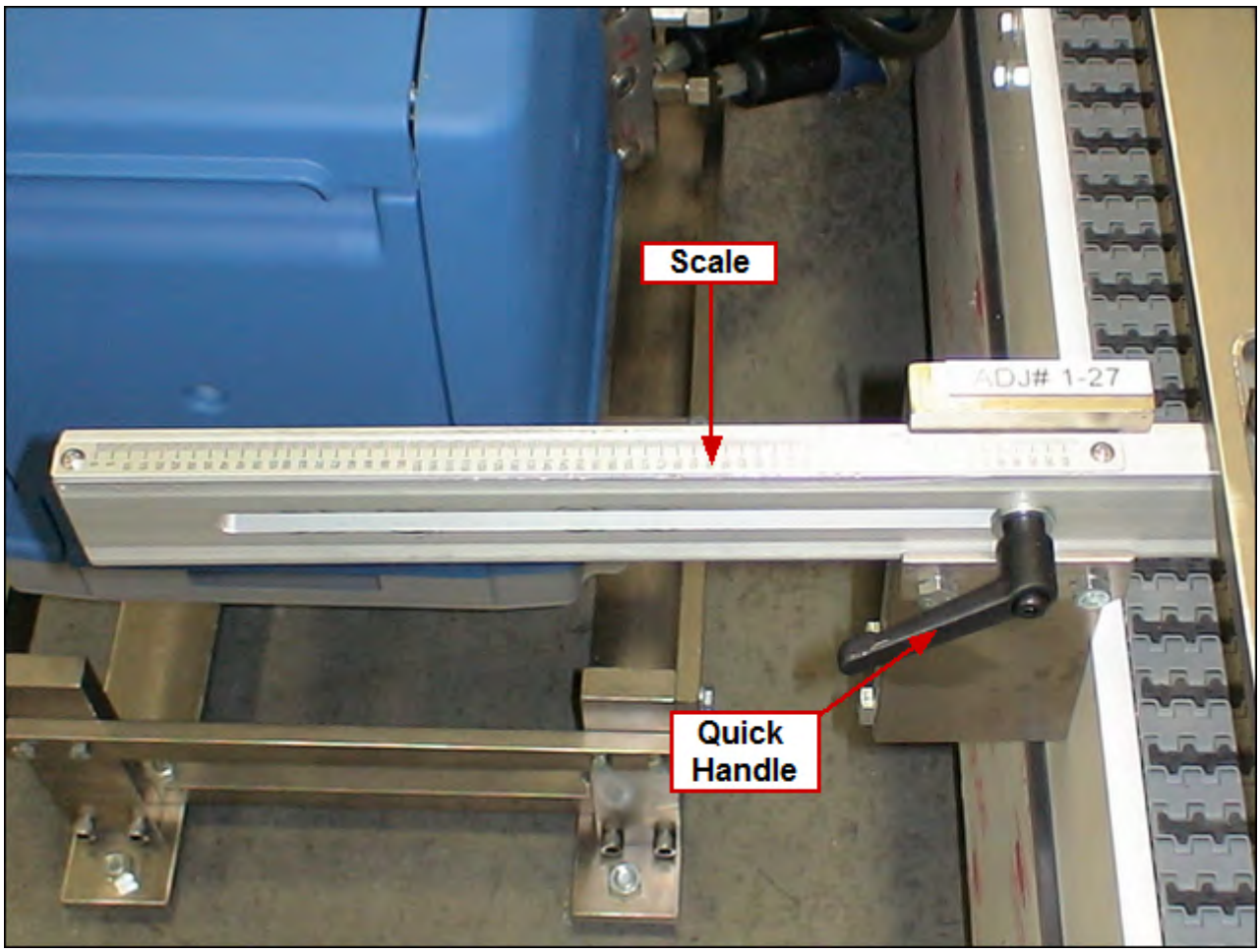
1-26 Discharge Conveyor Rail Width A



Loosen quick handle and adjust scale to the value shown on the Changeover Values screen for this changeover location. Re-tighten quick handle!

1-27 Discharge Conveyor Rail Width B

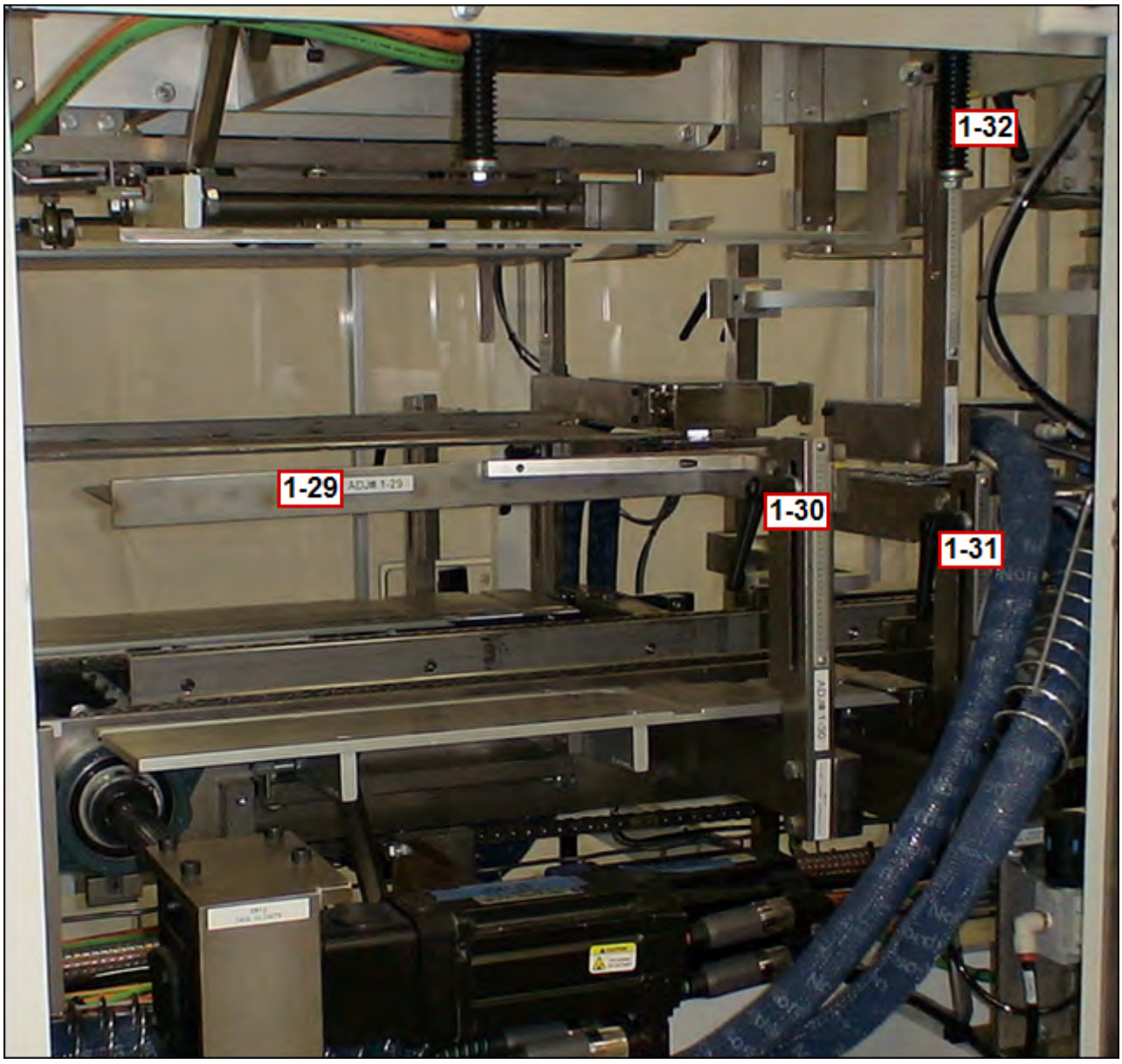


Loosen quick handle and adjust scale to the value shown on the Changeover Values screen for this changeover location. Re-tighten quick handle!

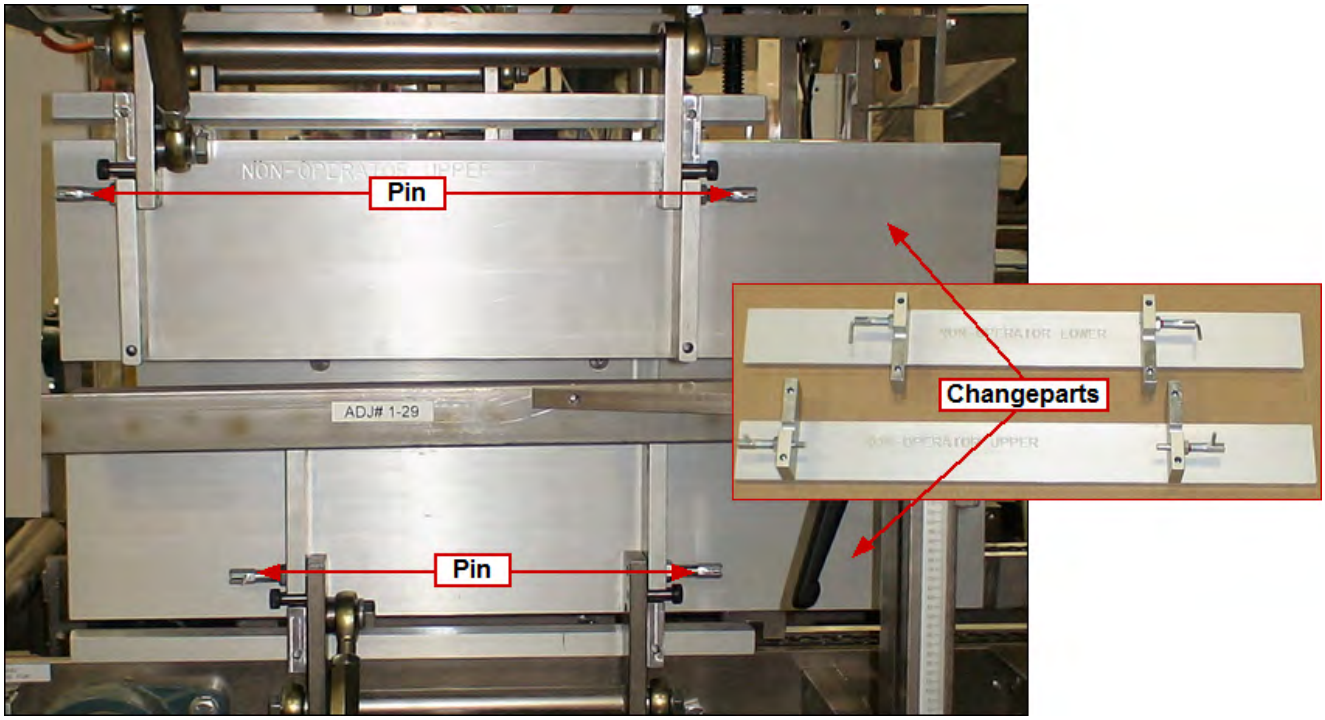
1-28 Markem Printer

Set Markem Imaje 4020 printer values

1-29 to 1-32



1-29 Fixed Compression Plates

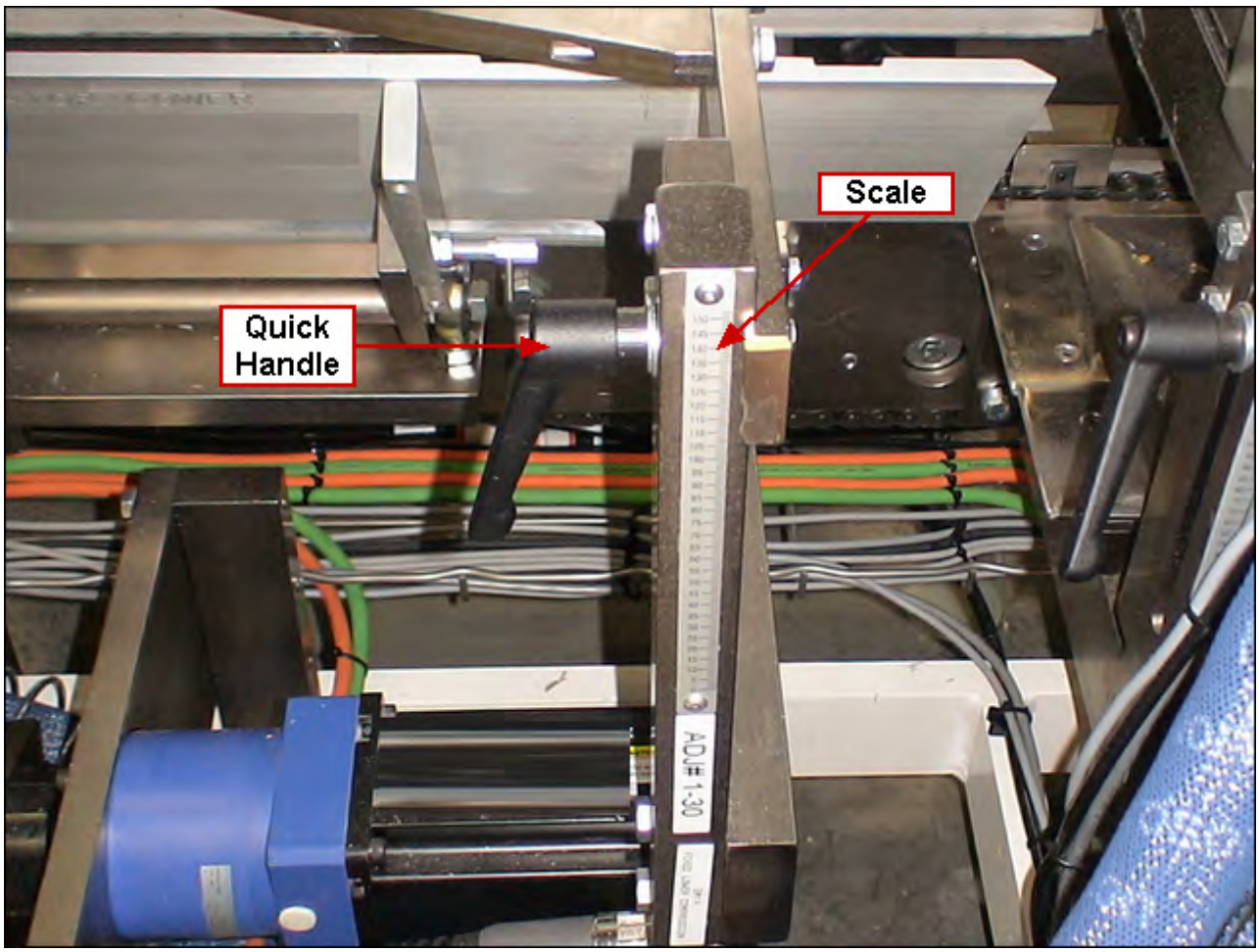


Replace part with the size indicated on the Changeover Values screen for this changeover location

To install: slide part into position and set lock pins
To remove: pull out set pins and lift part off

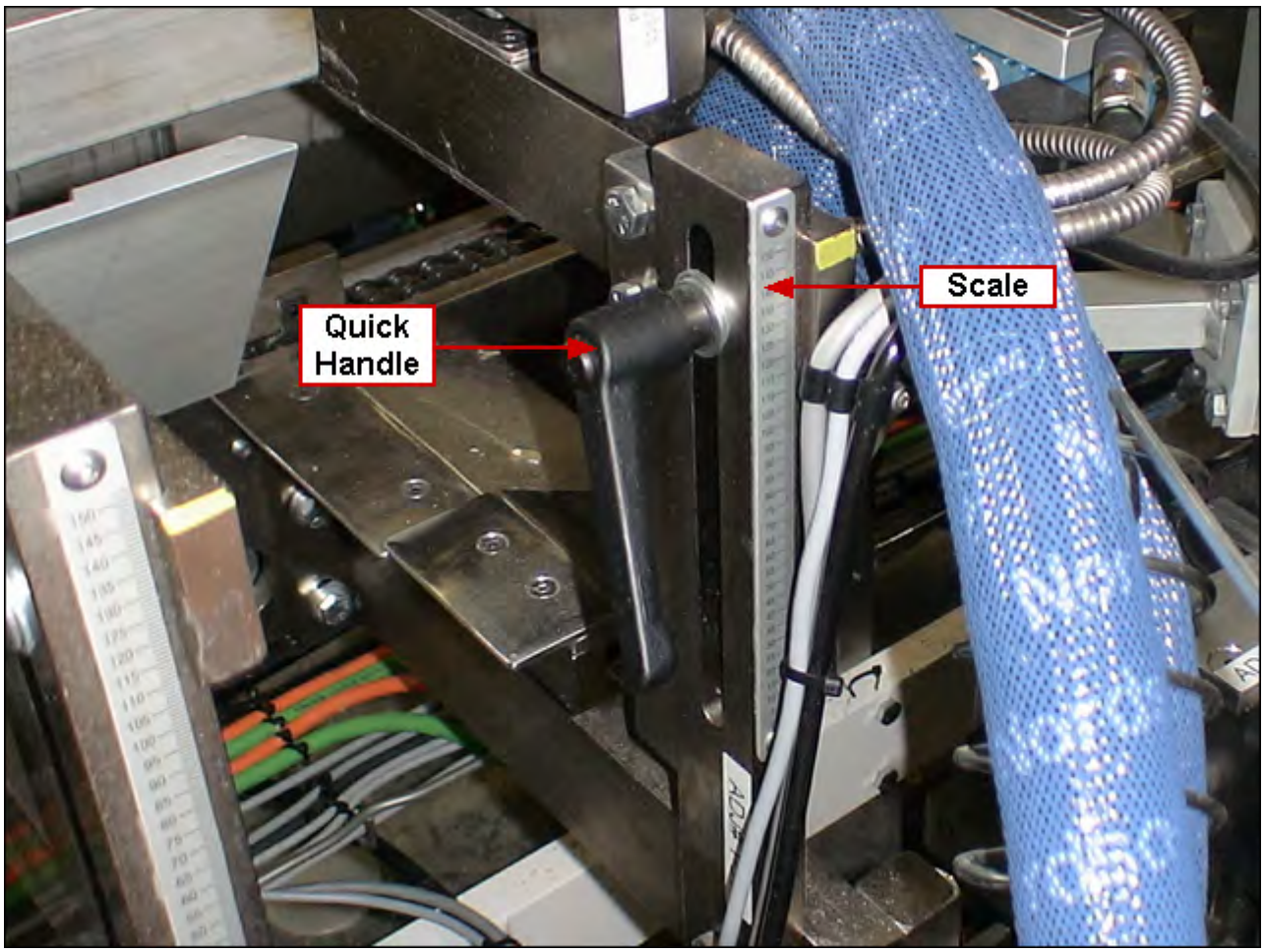
NOTE: There are two (2) fixed compression plates (upper and lower), each having two (2) set pins
NOTE: Changeparts are labeled "Non-Operator Upper" and "Non-Operator Lower"

1-30 Fixed Minor Containment Rail Height



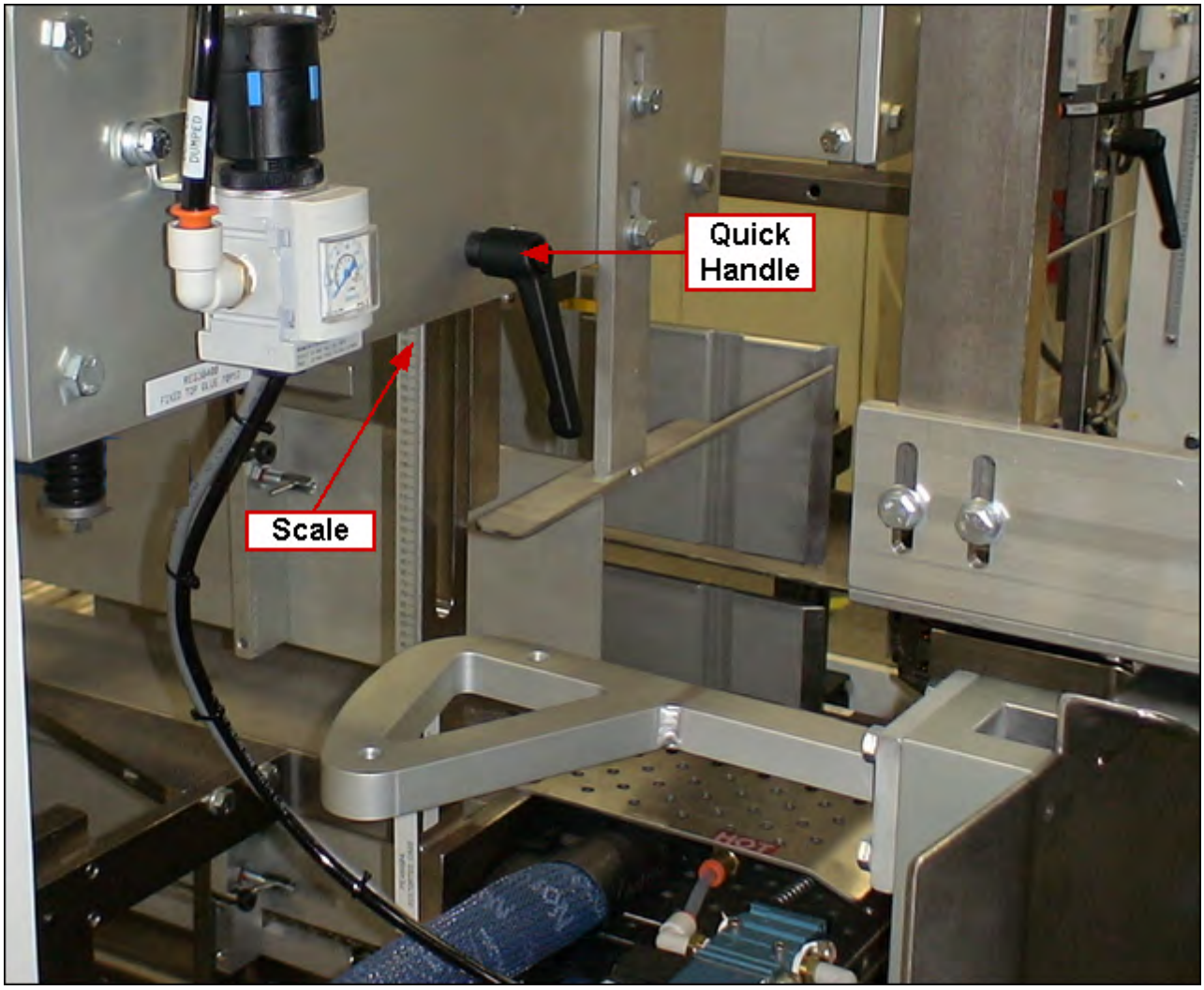
Loosen quick handle and adjust scale to the value shown on the Changeover Values screen for this changeover location. Re-tighten quick handle!

1-31 Fixed Lower Glue Height



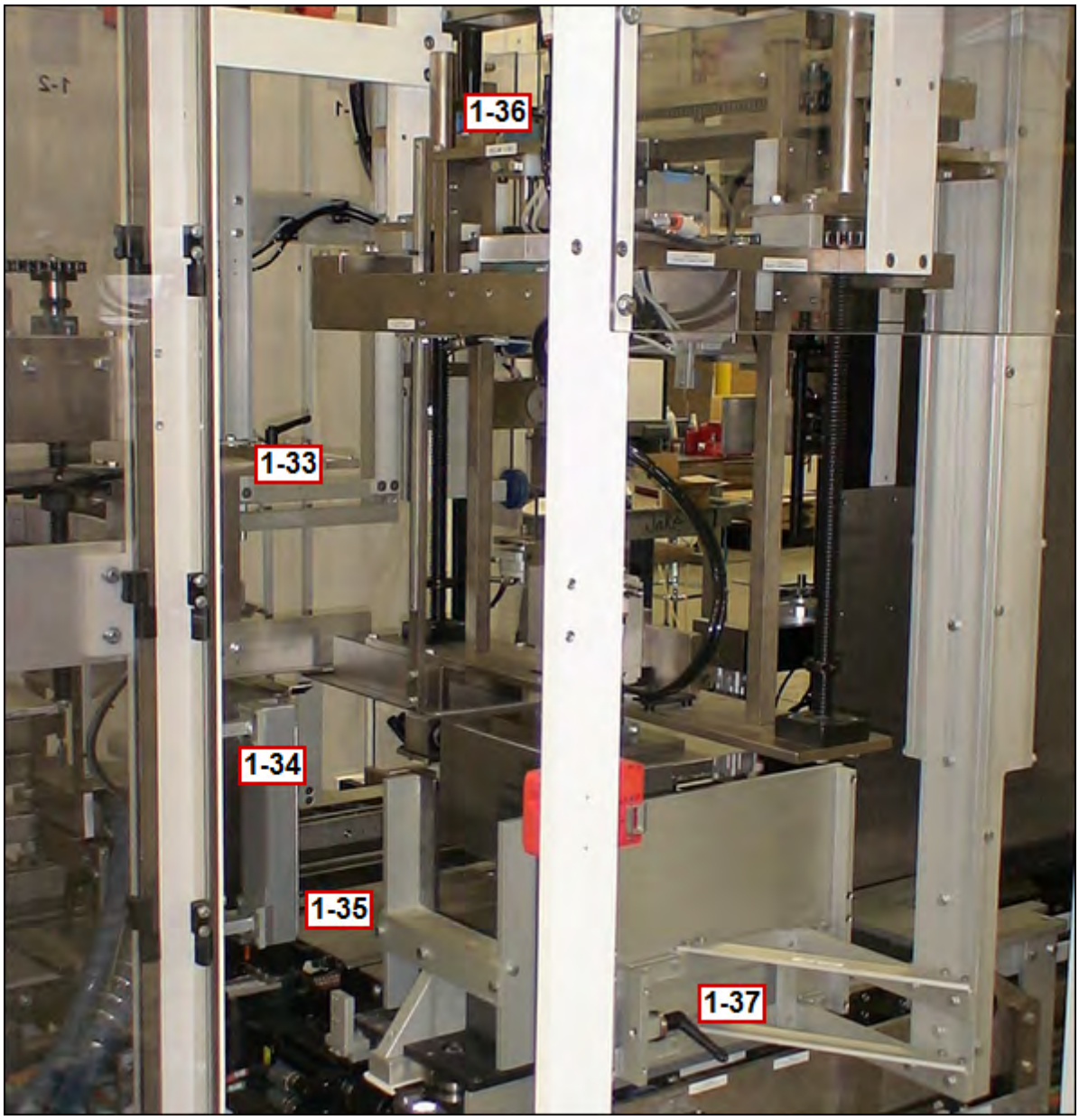
Loosen quick handle and adjust scale to the value shown on the Changeover Values screen for this changeover location. Re-tighten quick handle!

1-32 Fixed Upper Glue Height

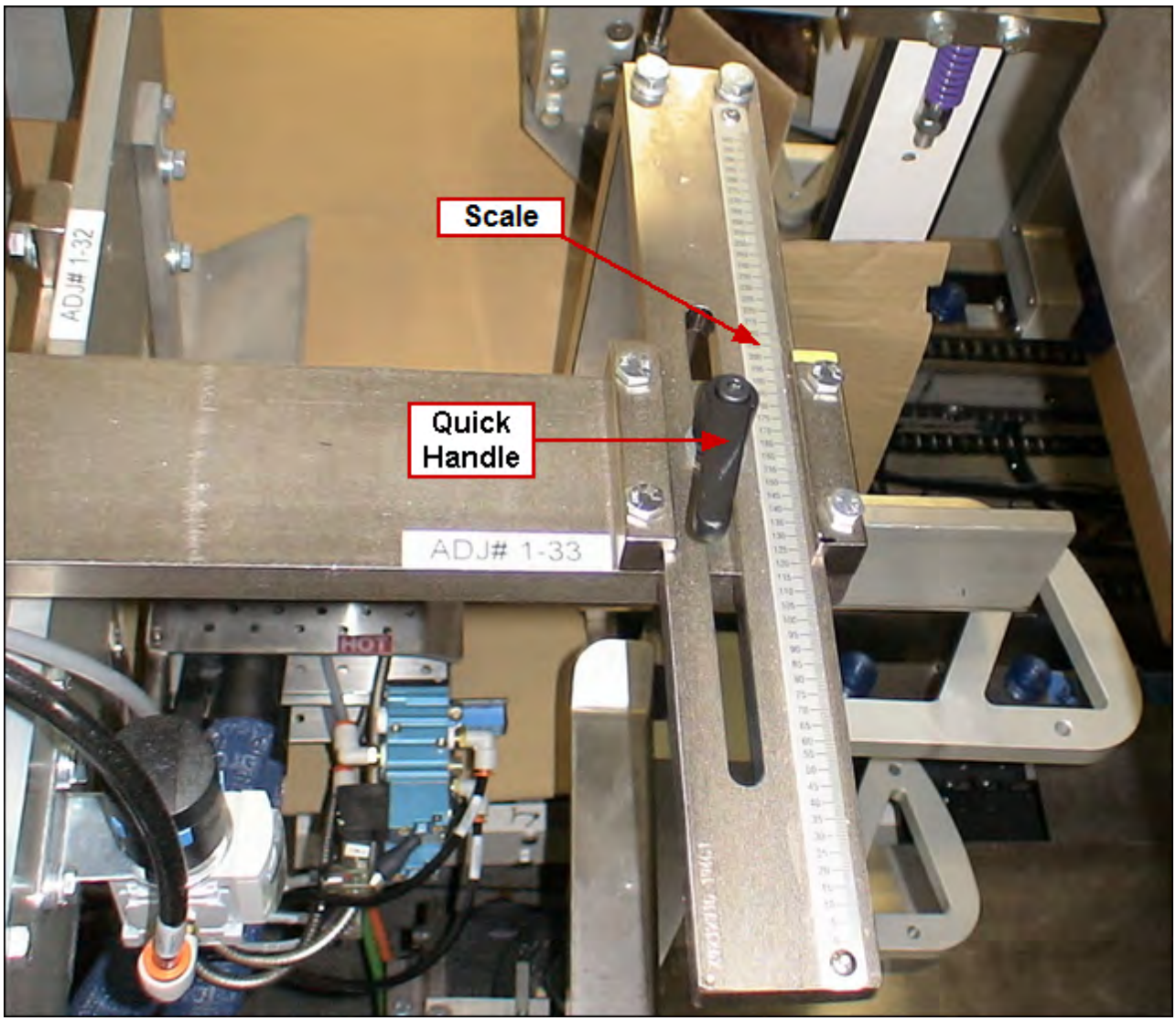


Loosen quick handle and adjust scale to the value shown on the Changeover Values screen for this changeover location. Re-tighten quick handle!

1-33 to 1-37

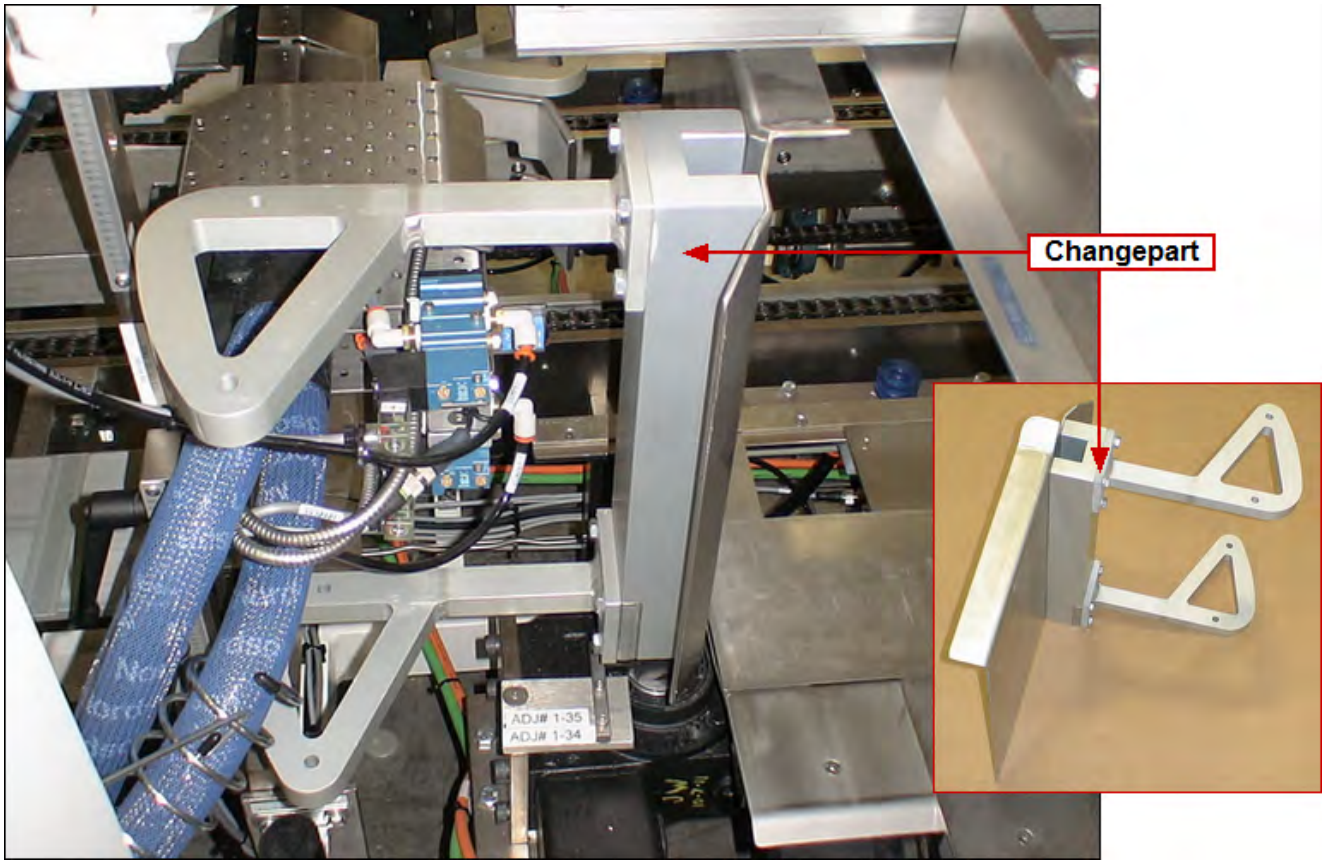


1-33 Fixed Major Flap Lift



Loosen quick handle and adjust scale to the value shown on the Changeover Values screen for this changeover location. Re-tighten quick handle!

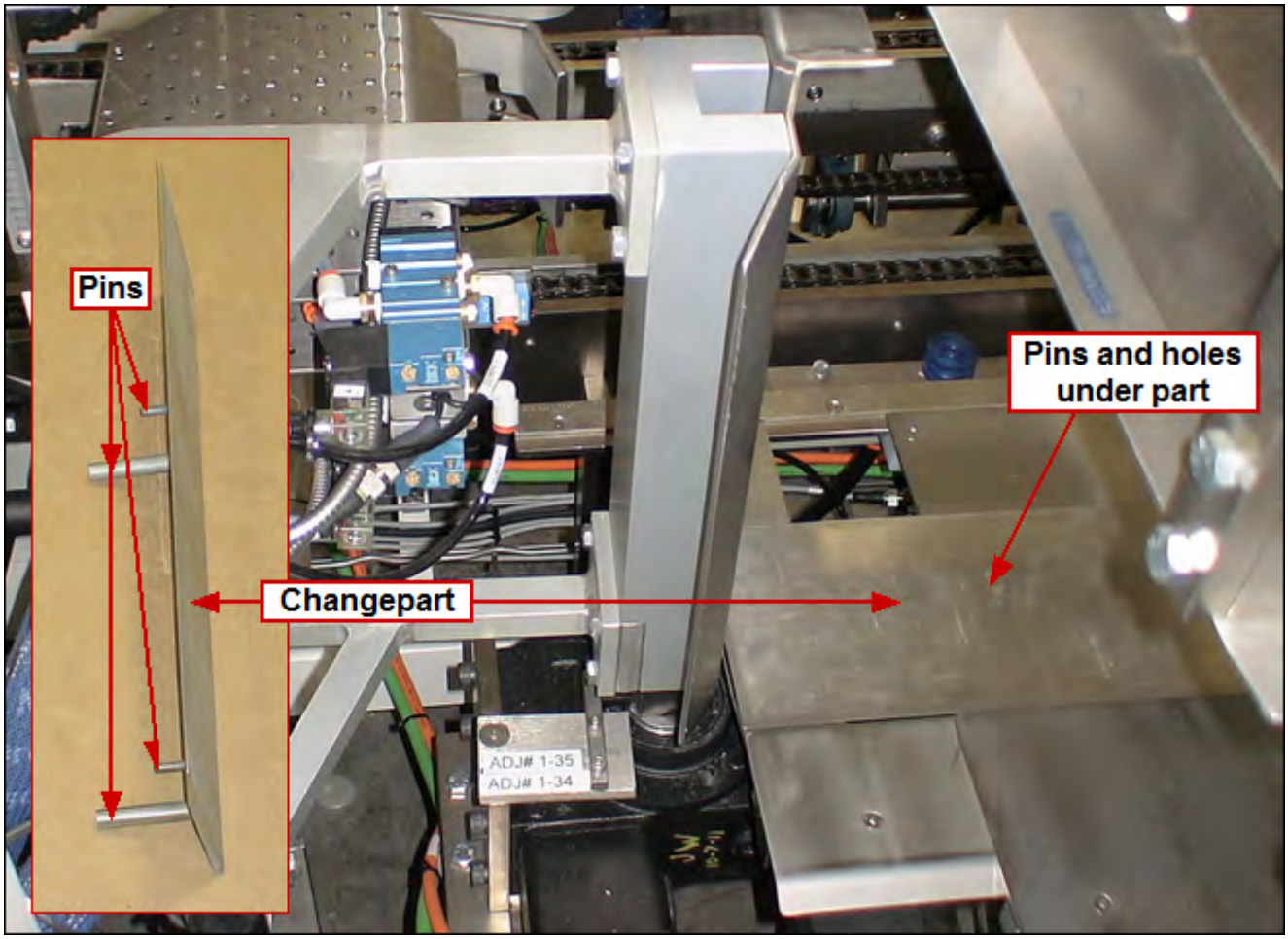
1-34 Funtucker



Replace part part with the size indicated on the Changeover Values screen for this changeover location

To install: slide part down onto shaft. Do not allow part to drop!
To remove: slide part up and off

1-35 Transfer Plate

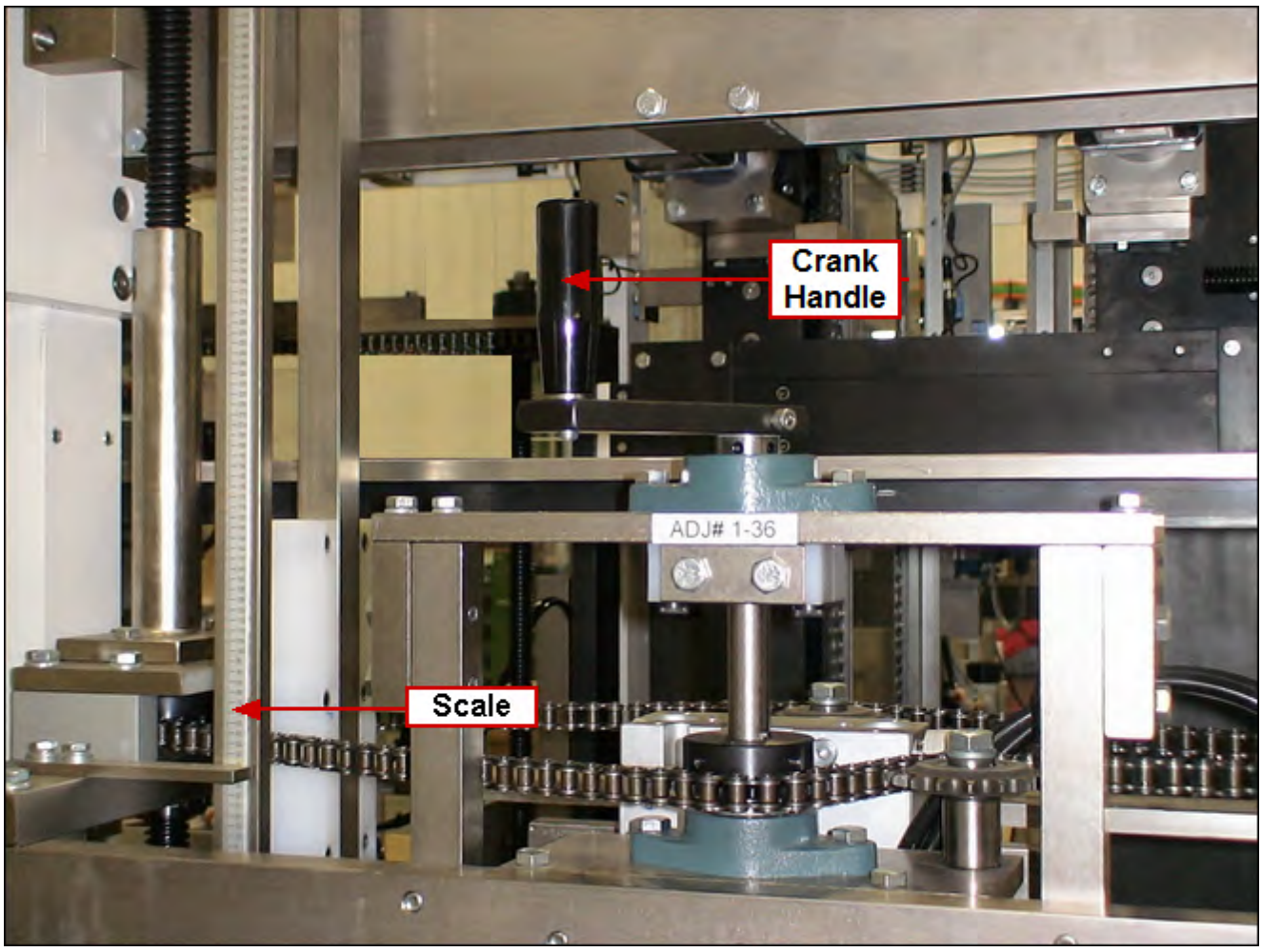


Replace part part with the size indicated on the Changeover Values screen for this changeover location

To install: fit the four (4) pins on transfer plate into the four (4) holes in machine
To remove: lift part up and off

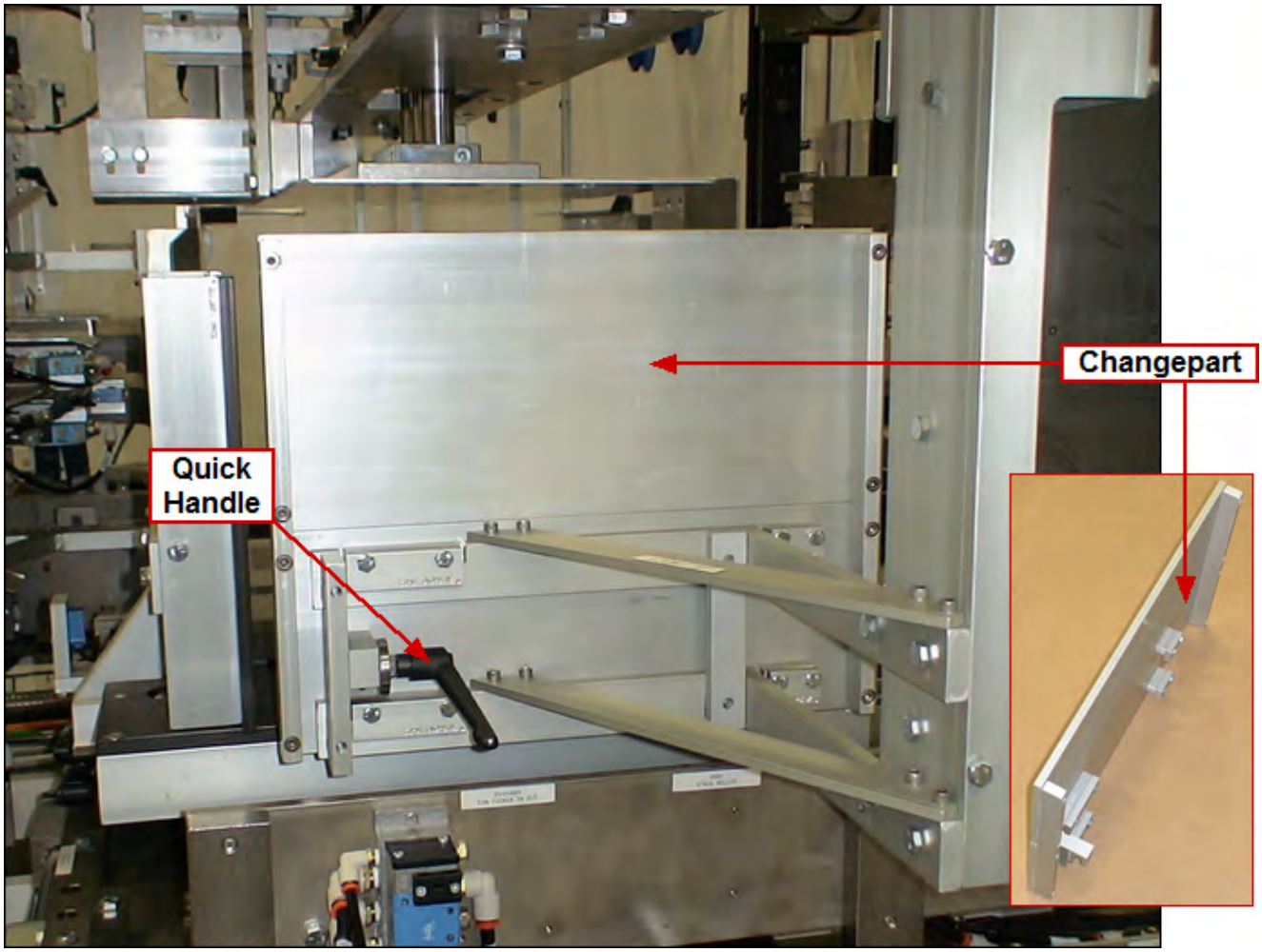
NOTE: The four (4) pins on the changepart face down

1-36 Product Conditioner Height



Using crank handle, adjust scale to the value shown on the Changeover Values screen for this changeover location.

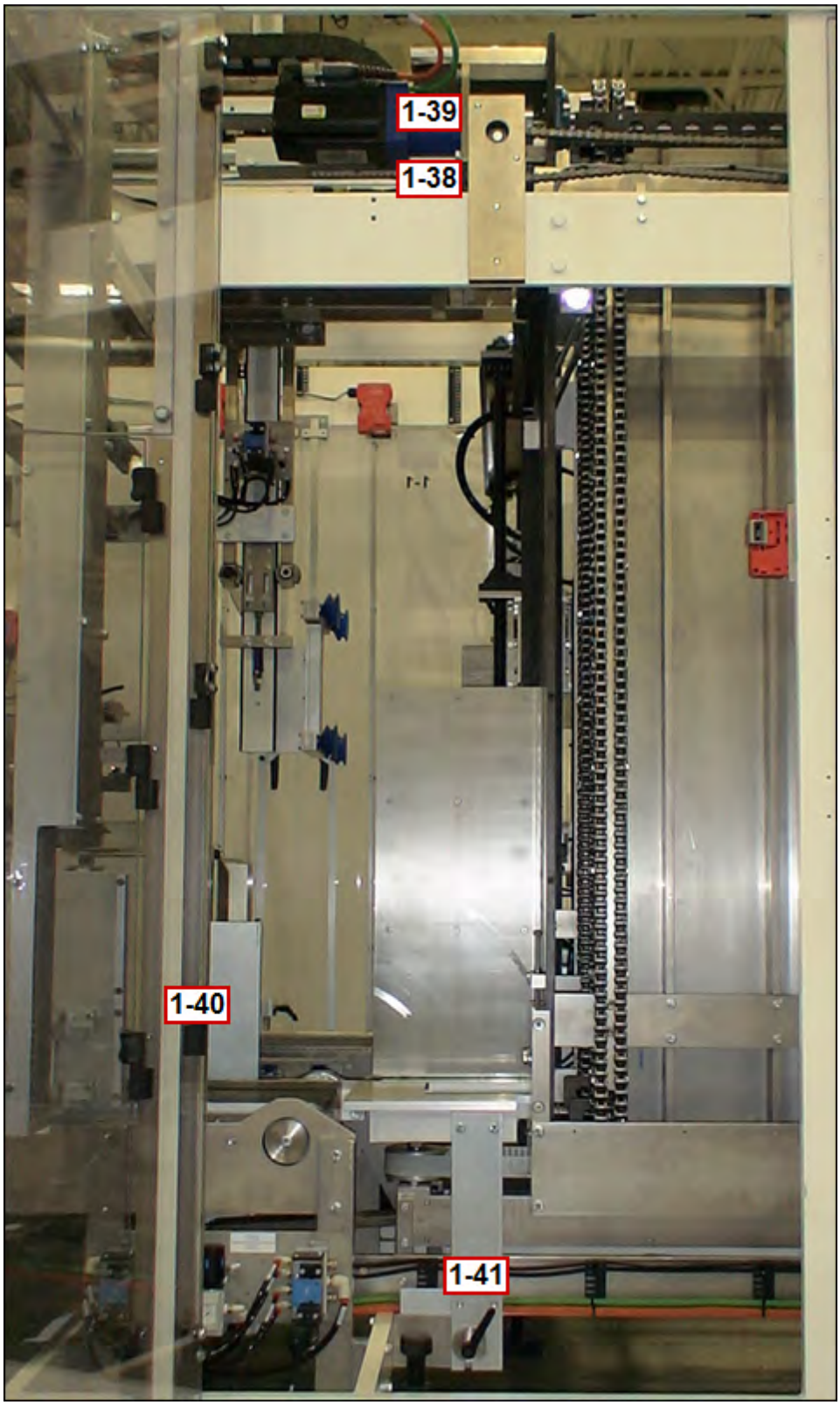
1-37 Loader Plate



Replace part with the size indicated on the Changeover Values screen for this changeover location

To install: slide part into position and tighten quick handle
To remove: loosen quick handle and slide part off

1-38 to 1-41



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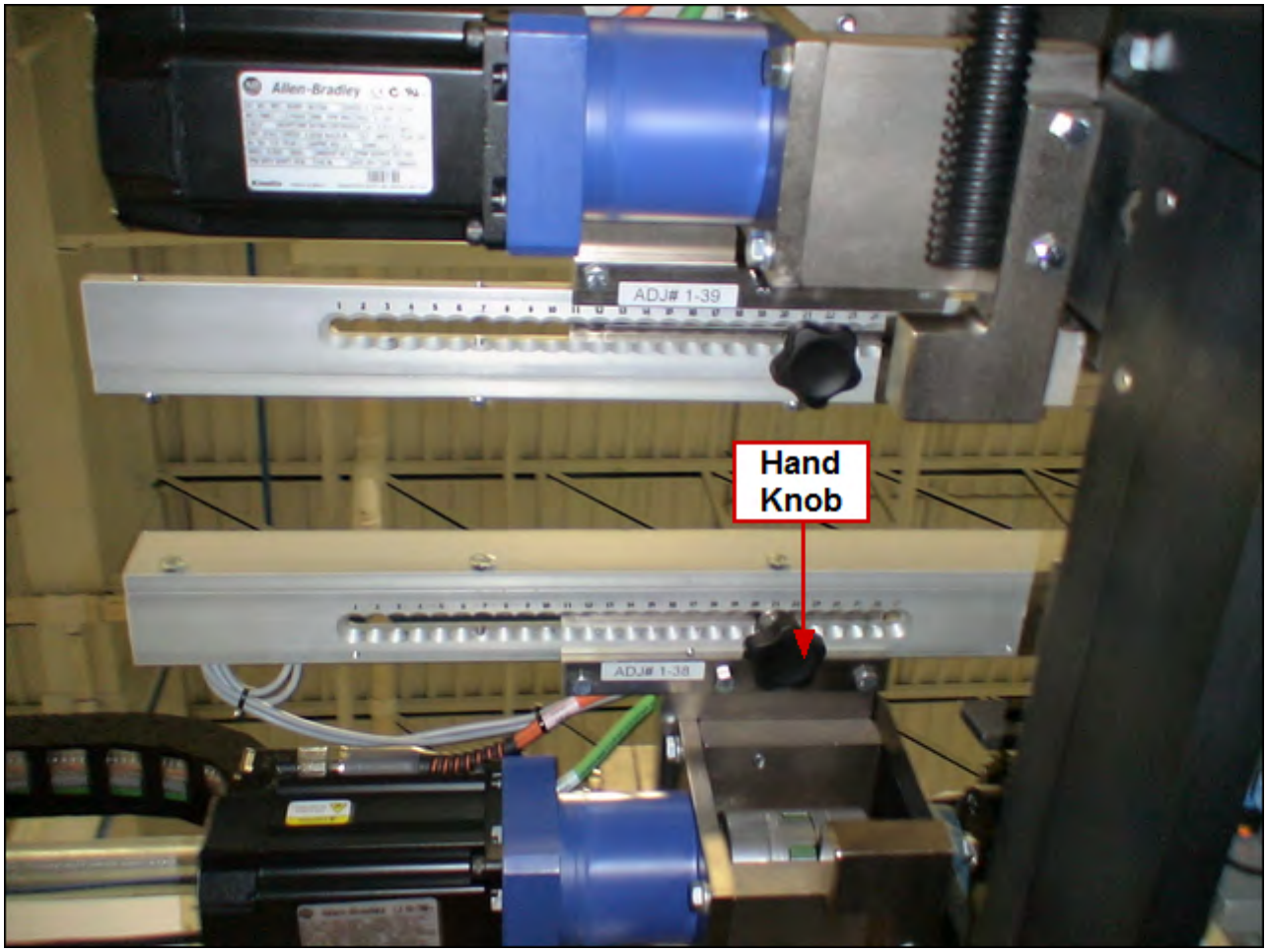
1-38 Fixed Downstacker Backstop

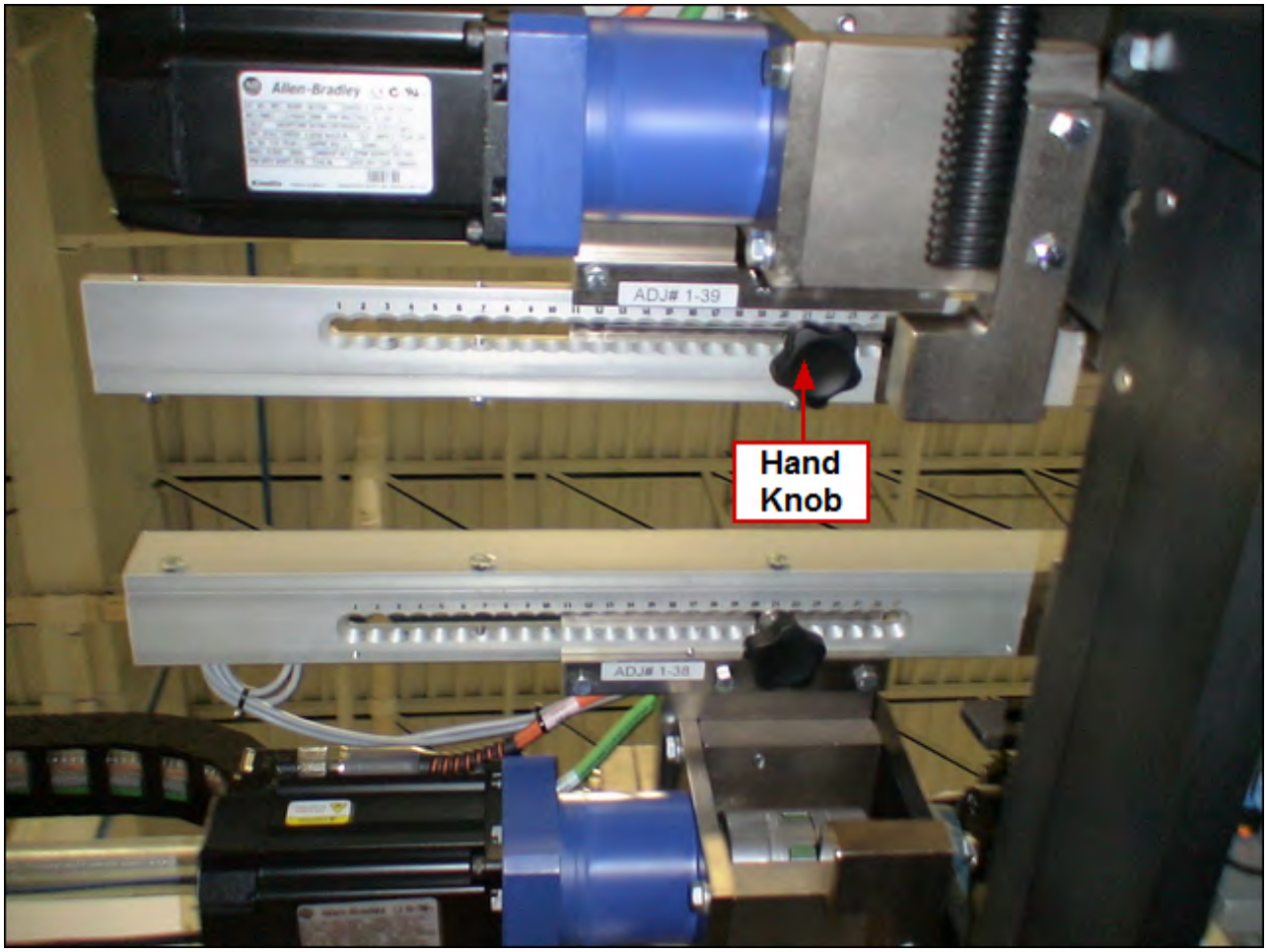
NOTE: Both 1-38 Fixed Downstacker Backstop and 1-39 Adjustable Downstacker Backstop must be in the same position!



Loosen hand knob and move scale to the correct position according to the value shown on the Changeover Values screen for this changeover location. Re-tighten hand knob!

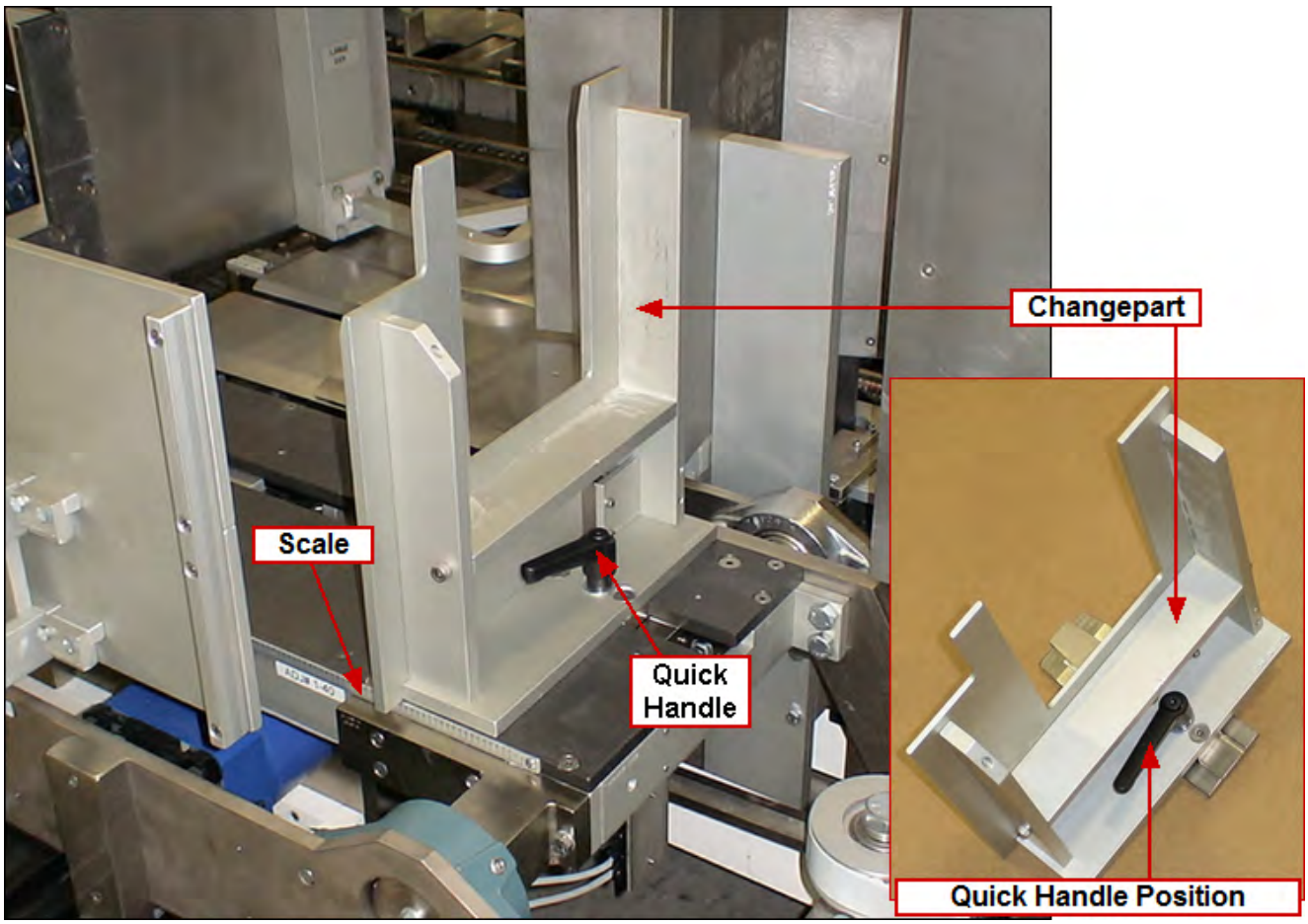
1-39 Adjustable Downstacker Backstop

NOTE: Both 1-38 Fixed Downstacker Backstop and 1-39 Adjustable Downstacker Backstop must be in the same position!



Loosen hand knob and move scale to the correct position according to the value shown on the Changeover Values screen for this changeover location. Re-tighten hand knob!

1-40 Stack Height



Install or remove part according to the value indicated on the Changeover Values screen for this changeover location
If part is installed, adjust scale to the value shown on the Changeover Values screen for this changeover location and re-tighten quick handle!

To install: slide part into position and tighten quick handle
To remove: loosen quick handle and slide part off

NOTE: To prevent damage to the machine, position quick handle (as shown) so that it does not extend beyond the edge of the Stack Height changepart!

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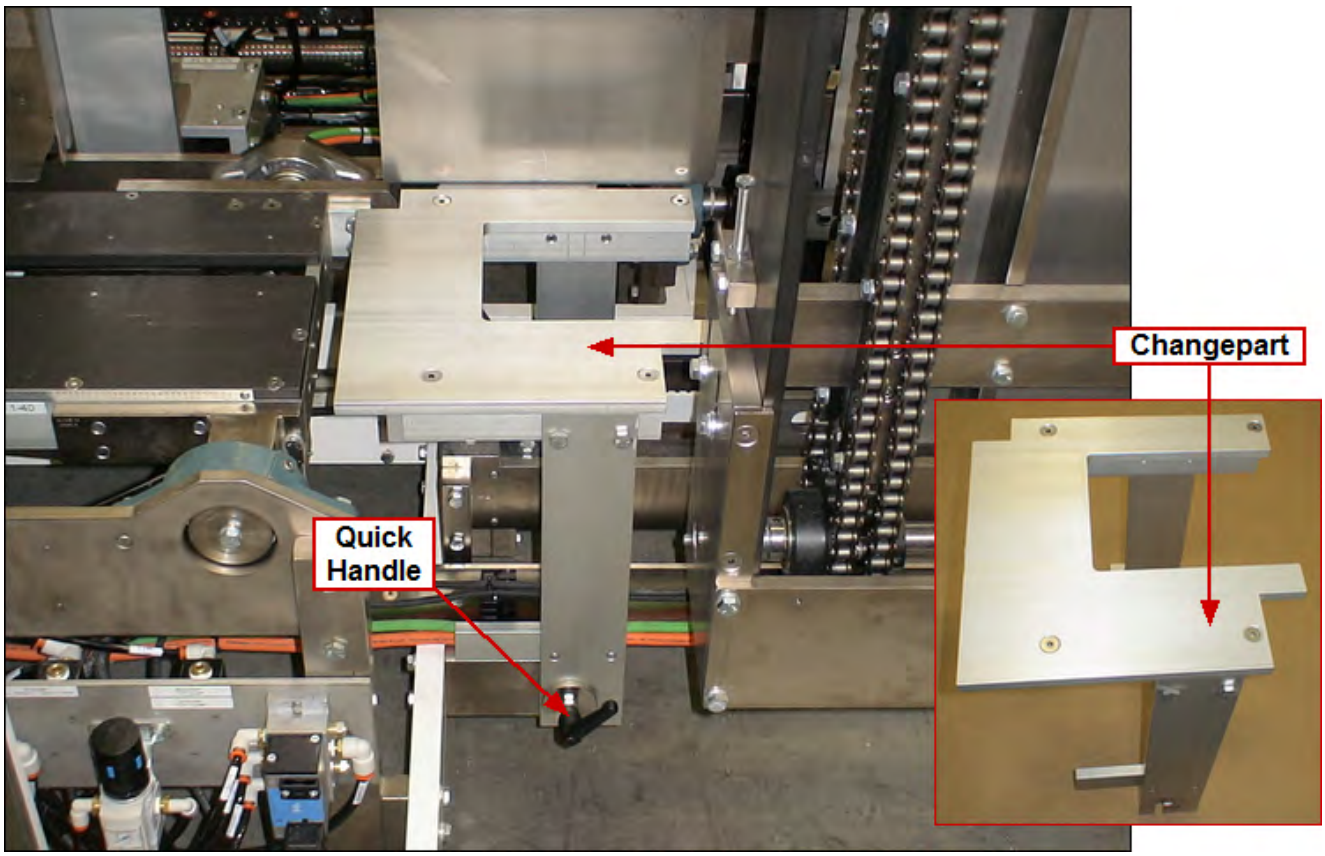
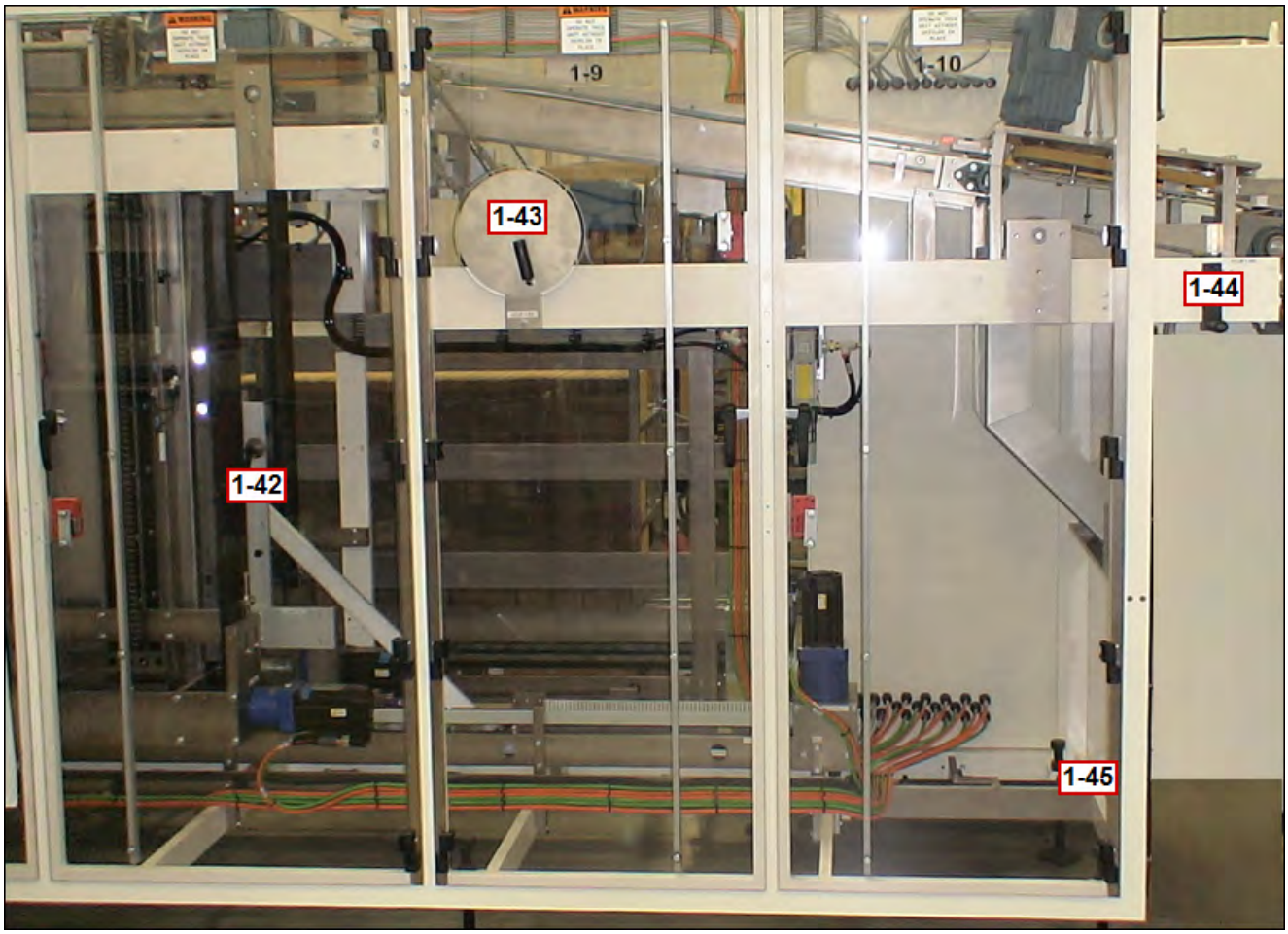
1-41 Stack Base



Install or remove part according to the value indicated on the Changeover Values screen for this changeover location

To install: slide part into position and tighten quick handle
To remove: loosen quick handle and slide part off

1-42 to 1-45



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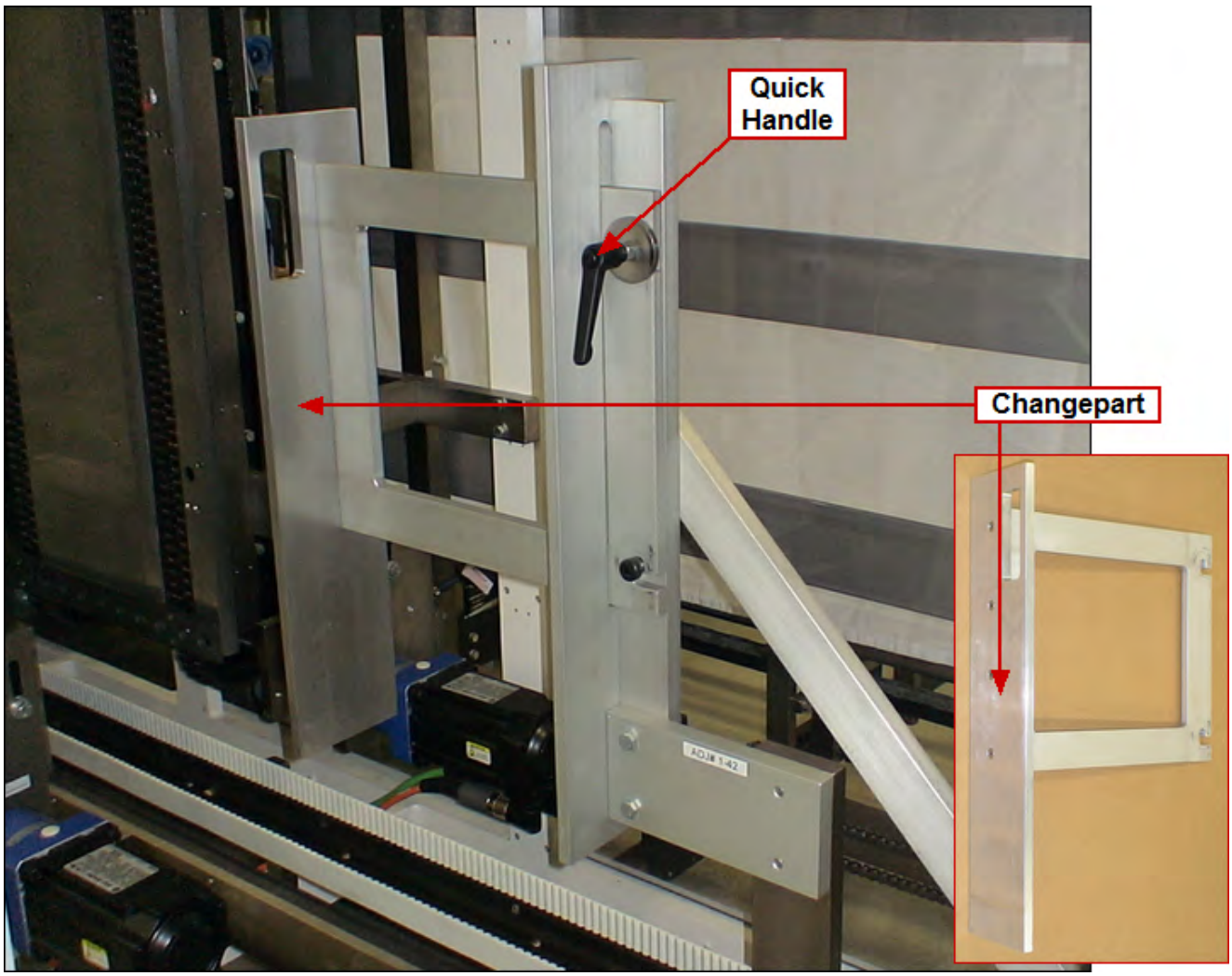
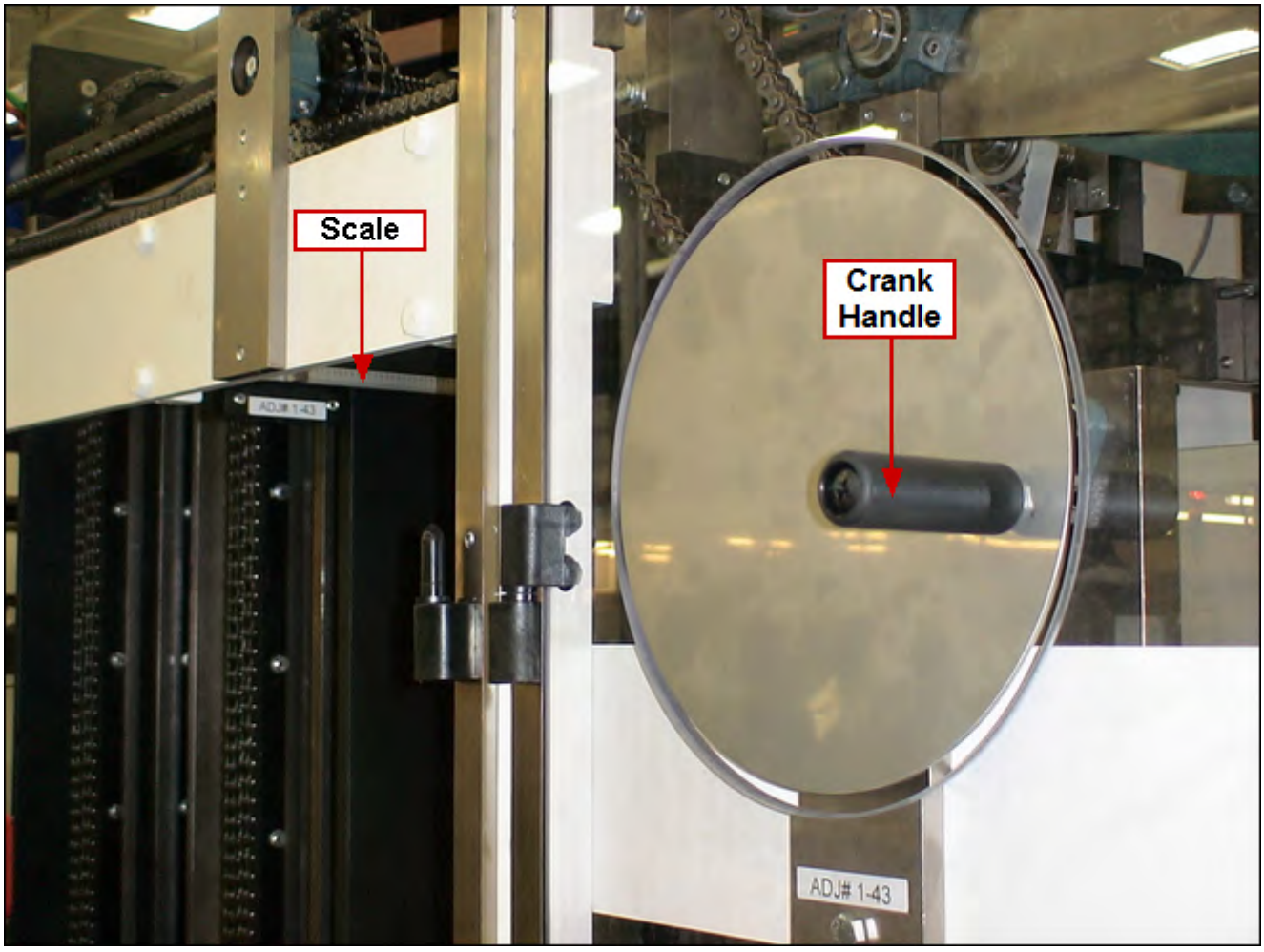
1-42 Downstacker Pusher Plate



Install or remove part according to the value indicated on the Changeover Values screen for this changeover location

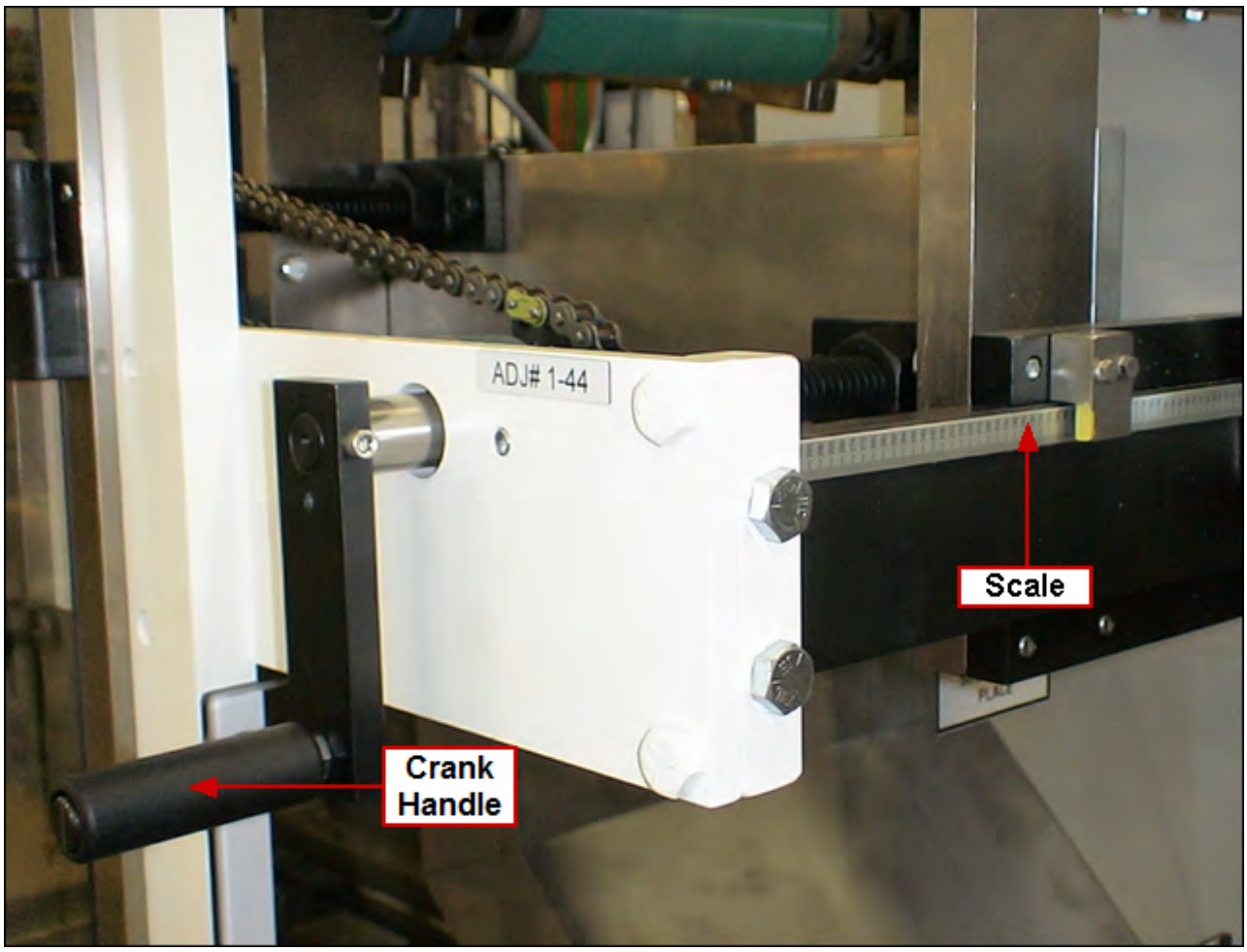
To install: slide part into position and tighten quick handle
To remove: loosen quick handle and slide part off

1-43 Downstacker Width



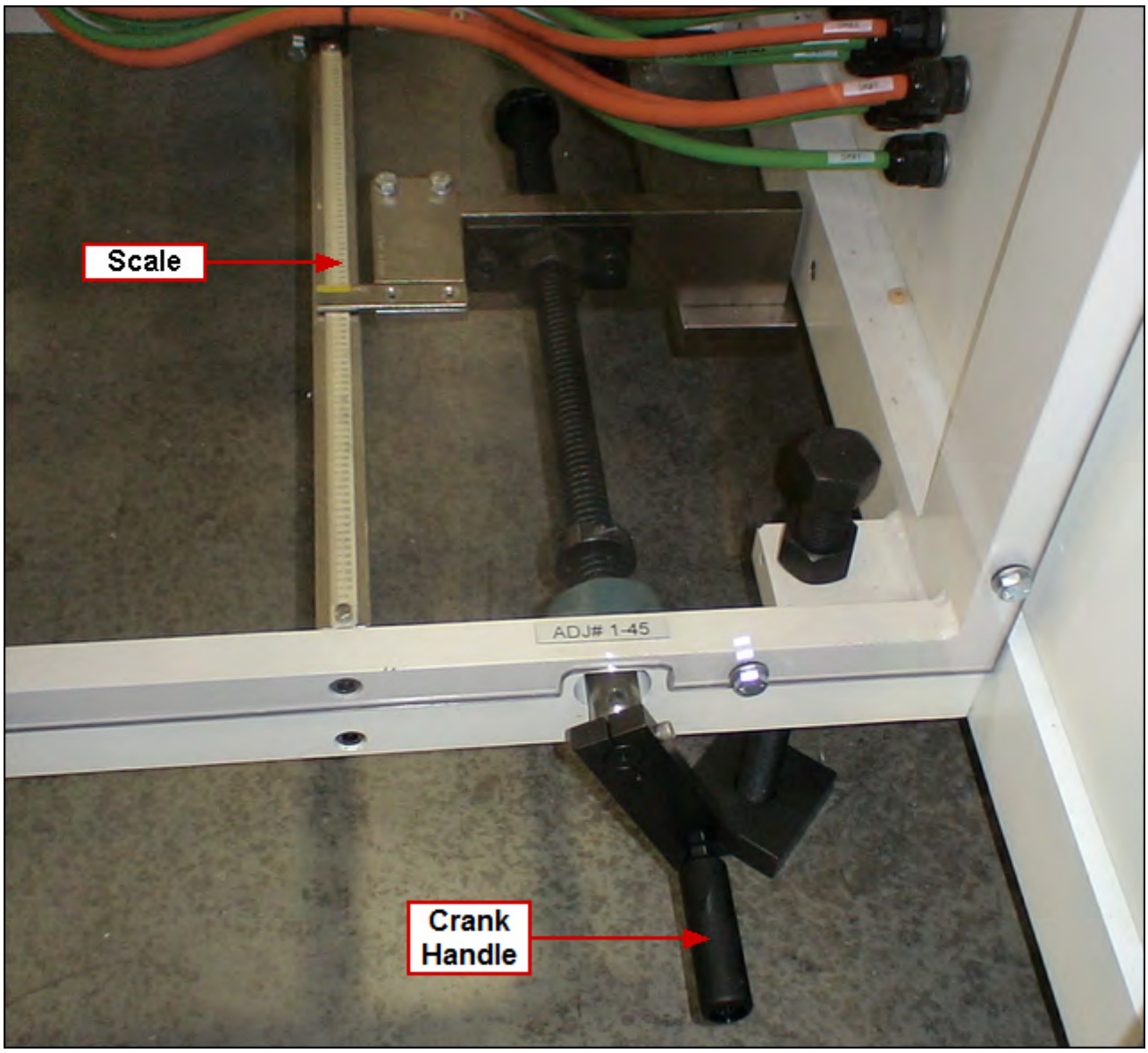
Using crank handle, adjust scale to the value shown on the Changeover Values screen for this changeover location.

1-44 Reject Side Belts Width



Using crank handle, adjust scale to the value shown on the Changeover Values screen for this changeover location.

1-45 Funnel Width



Using crank handle, adjust scale to the value shown on the Changeover Values screen for this changeover location.

Case Packer Quick Reference

NOTE: Please refer to the HMI for the current changeover values
NOTE: Please refer to the HMI for the correct changeover sequence

Number	Name
1-1	Load Side Magazine Width
1-2	Load Side Rotate Clip
1-3	Non-Load Side Rotate Clip
1-4	Non-Load Side Clamp & Guide
1-5	Top Clip
1-6	Non-Load Side Upper Clamp
1-7	Load Side Upper Clamp
1-8	Robot Pick Cups
1-9	Robot Case Pusher Horizontal
1-10	Robot Case Pusher Vertical
1-11	Cup Vacuum Control Valve A
1-12	Cup Vacuum Control Valve B
1-13	Cup Vacuum Control Valve C
1-14	Funnel
1-15	Product Stop
1-16	Adjustable Major Flap Lift
1-17	Flap Tucker
1-18	Adjustable Upper Glue Height
1-19	Upper Compression Height
1-20	Upper Compression Width
1-21	Bedplate Width
1-22	Adjustable Lower Glue Height
1-23	Adjustable Minor Containment Rail Height
1-24	Adjustable Compression Plates
1-25	Tip Finger Extension
1-26	Discharge Conveyor Rail Width A
1-27	Discharge Conveyor Rail Width B
1-28	Markem Printer
1-29	Fixed Compression Plates
1-30	Fixed Minor Containment Rail Height
1-31	Fixed Lower Glue Height
1-32	Fixed Upper Glue Height
1-33	Fixed Major Flap Lift
1-34	Funtucker
1-35	Transfer Plate
1-36	Product Conditioner Height
1-37	Loader Plate
1-38	Fixed Downstacker Backstop
1-39	Adjustable Downstacker Backstop
1-40	Stack Height
1-41	Stack Base
1-42	Downstacker Pusher Plate

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Number	Name
1-43	Downstacker Width
1-44	Reject Side Belts Width
1-45	Funnel Width

(Print this topic as a reference when setting up new pack patterns!)

Changeover Changeparts

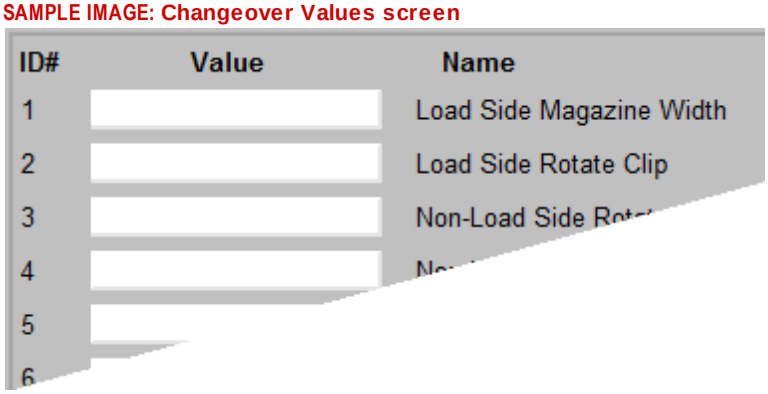
When a changeover adjustment requires parts of the machine to be installed, removed or replaced to fit a different product size, the changepart value may be referred to by size, color or letter. The value is listed between its adjustment number and description on the HMI Changeover Values screen (shown below). The size, color or letter codes correspond to the product sizes the changepart is used to run, and the machine changeparts are marked to match these specifications.

For instance:
If the value listed on the Changeover Values screen is "RED", the changepart required will have a red color code painted on it.
If the value listed on the Changeover Values screen is "A", the changepart required will have an "A" marked on it.
If the value listed on the Changeover Values screen is a size, the changepart required will be marked or labeled with the specified size designation.

NOTE: A combination of codes may be used. Codes are specific to a machinery system.

For more information, see the Changeover Values topic.

SAMPLE IMAGE: Changeover Values screen



Section 5

Troubleshooting and Maintenance

Troubleshooting and Maintenance

Welcome to the Aagard Troubleshooting and Maintenance Guide

Troubleshooting
How To
- Diagnostics
- HMI Operations
- Maintenance

NOTE: Not all items listed in this document pertain to your Aagard machinery system.

Version 2.1.0

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Troubleshooting

Search for your issue, or select from the tree.

Safety Circuit
General Troubleshooting Suggestions

NOTE: Not all items listed in this document pertain to your Aagard machinery system.

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Safety Circuit

There are several possibilities which may cause a safety circuit reset failure. Please select from the following:

Prior Safety Circuit Rewiring
Channel 1 and 2 Safety Relay Lights
Safety Reset Relay Malfunction
Open Monitoring Loop
Channel 1 and 2 Output Lights
Channel 1 and 2 Guard Relay Lights

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Prior Safety Circuit Rewiring

Was any rewiring done on the safety circuit prior to this issue?

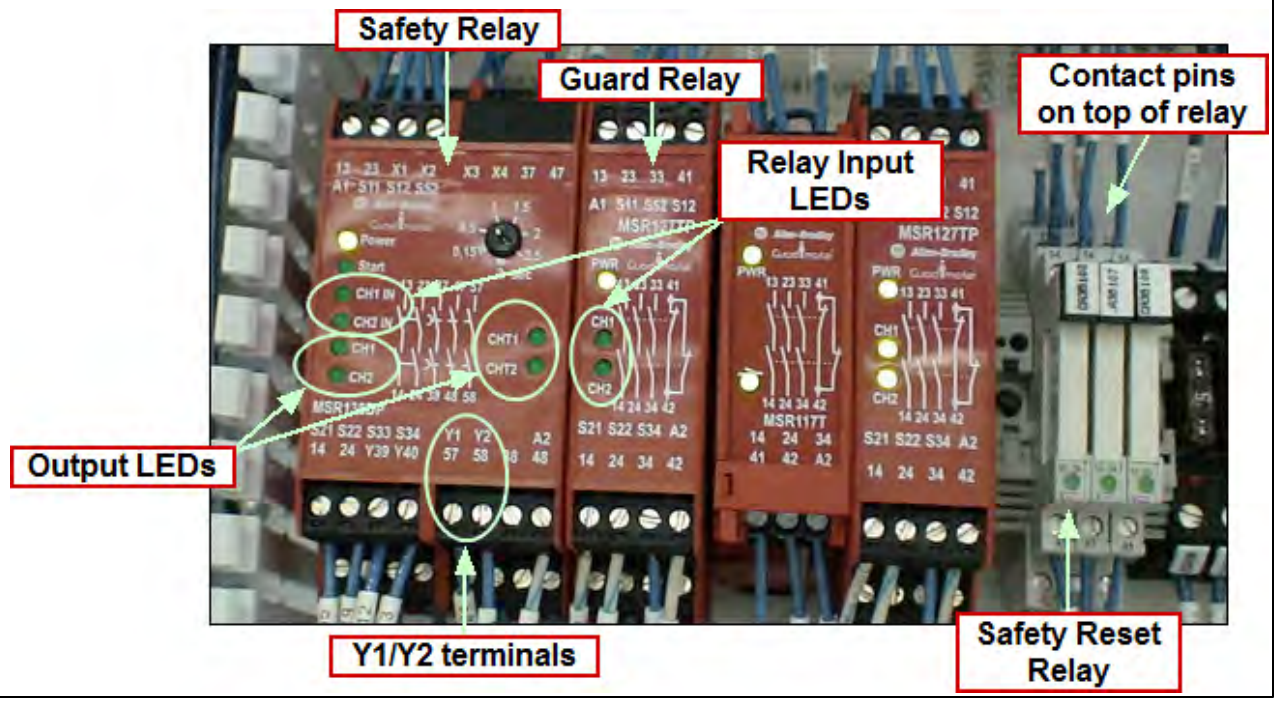
If so, was power removed from the machine when this was done?

If “No”, then you may need to cycle power to reset the safety relays.

If either channel 1 or 2 is open before the other, it can cause the safety relay to go into a lockup. This situation requires power cycling to reset. This typically happens if someone was working on guard circuit wiring and hooked up one channel before the other; both channels need to open and close at the same time.

Sample Image

Sample image showing safety relay, guard relay, and safety reset relay. Please note the location of the safety and guard relay input LEDs, as well as the location of safety reset relay contact pins.



Did this solve the problem?

Yes No

Channel 1 and 2 Safety Relay Input Lights

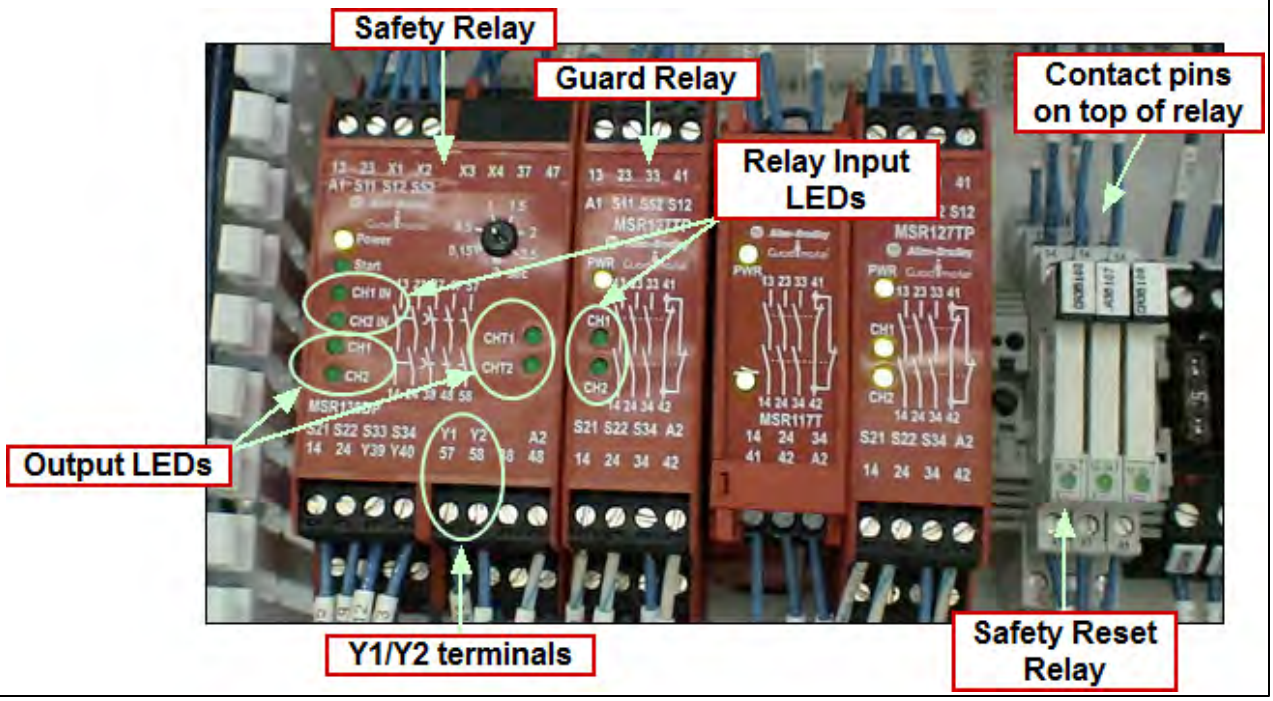
Are channel 1 & 2 safety relay inputs lit when all guard doors are closed and E-stops pulled out?

If one or both channels are not lit, use a volt ohm meter to check each loop. Once an "open" in the circuit is found, check the device preceding that "open" in the circuit.

E-Stop Buttons, Guard Relays, and Software E-Stop Relays are in the channel 1 & 2 safety loops.

Sample Image

Sample image showing safety relay, guard relay, and safety reset relay. Please note the location of the safety and guard relay input LEDs, as well as the location of safety reset relay contact pins.



Did this solve the problem?

Yes No

Safety Reset Relay Malfunction

Is the safety reset relay functioning when output is turned on?

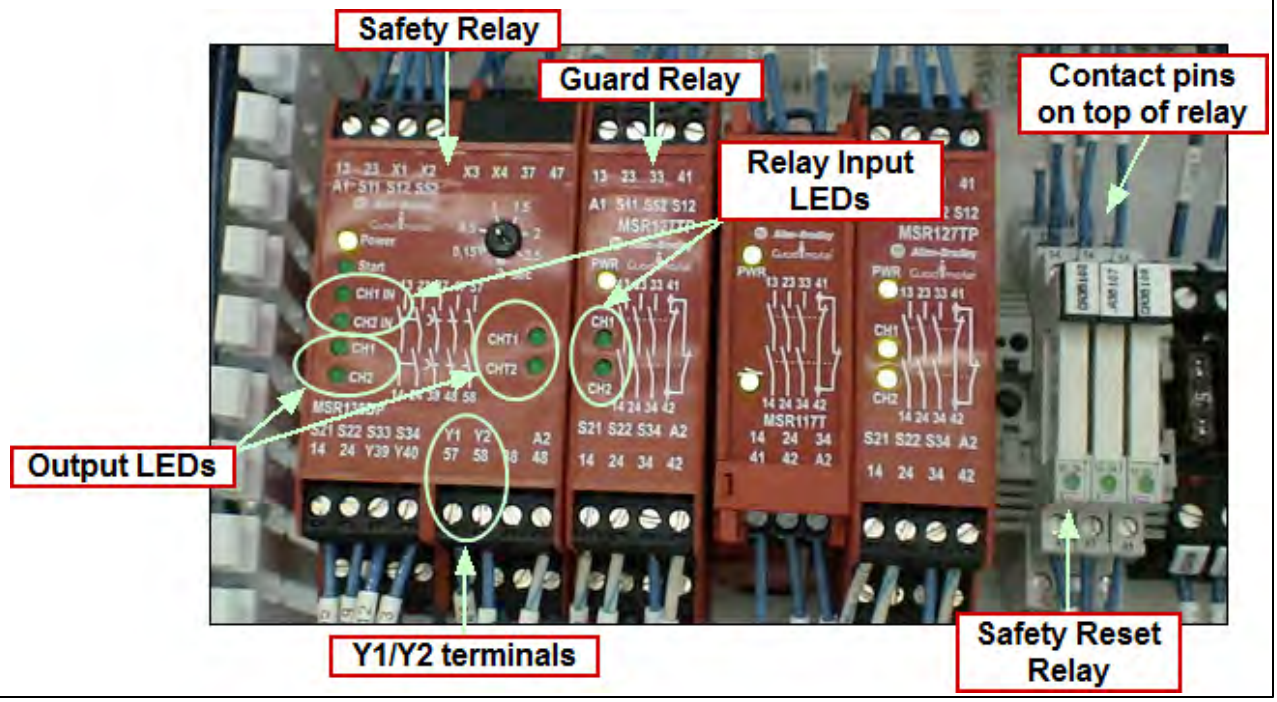
If not, there are two possibilities:

Check wiring from output slice to relay and 24VDC common wire. If wiring is good and power is getting to the relay when the output is turn on but relay doesn't function, replace relay.

Check to make sure contacts are closed from pins 11 to 14 on the relay when it is energized. If contacts are not closing when relay is energized, replace relay.

Sample Image

Sample image showing safety relay, guard relay, and safety reset relay. Please note the location of the safety and guard relay input LEDs, as well as the location of safety reset relay contact pins.



Did this solve the problem?

Yes No

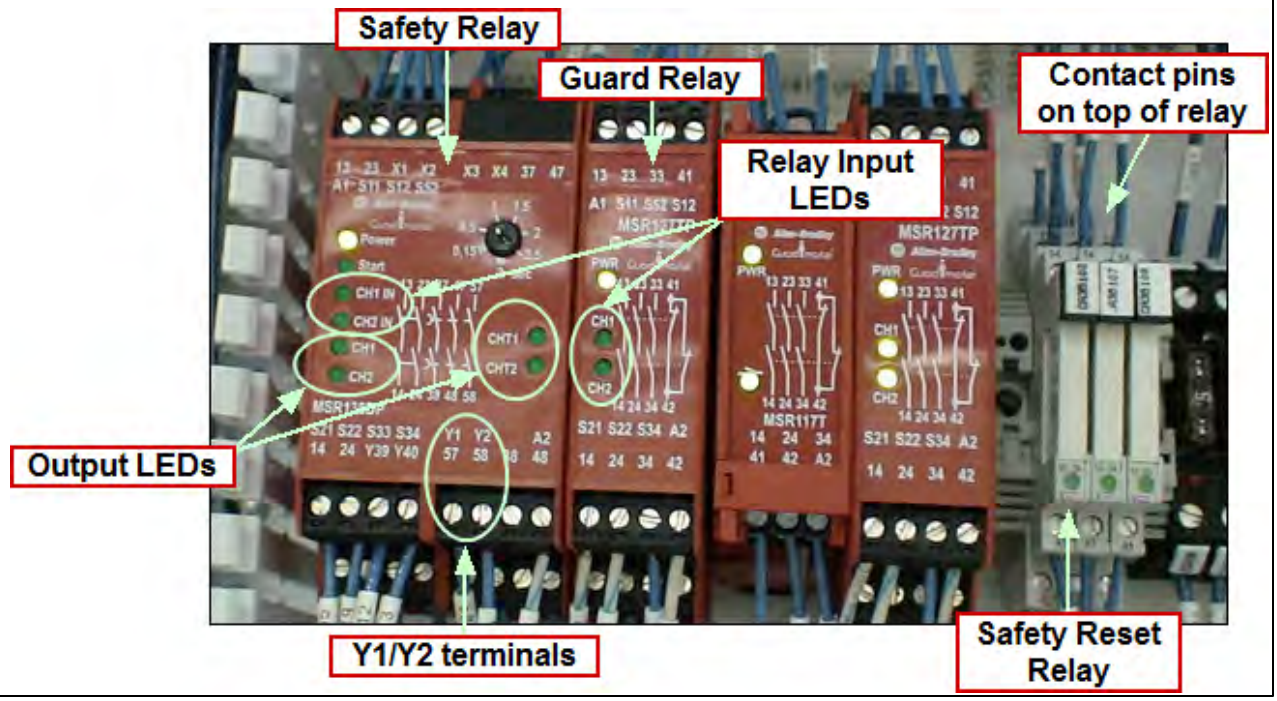
Open Monitoring Loop

Is the monitoring loop closed?

Verify that the monitoring loop is closed by checking terminal points Y1 to Y2 on the main safety relays for each section of the machine.

Sample Image

Sample image showing safety relay, guard relay, and safety reset relay. Please note the location of the safety and guard relay input LEDs, as well as the location of safety reset relay contact pins.



If there is an open in this circuit, determine which component is causing the open; every component in this circuit should have N/C contact.

Check for loose wiring or if the component has failed. Replace if necessary.

Did this solve the problem?

Yes No

Channel 1 and 2 Output Lights

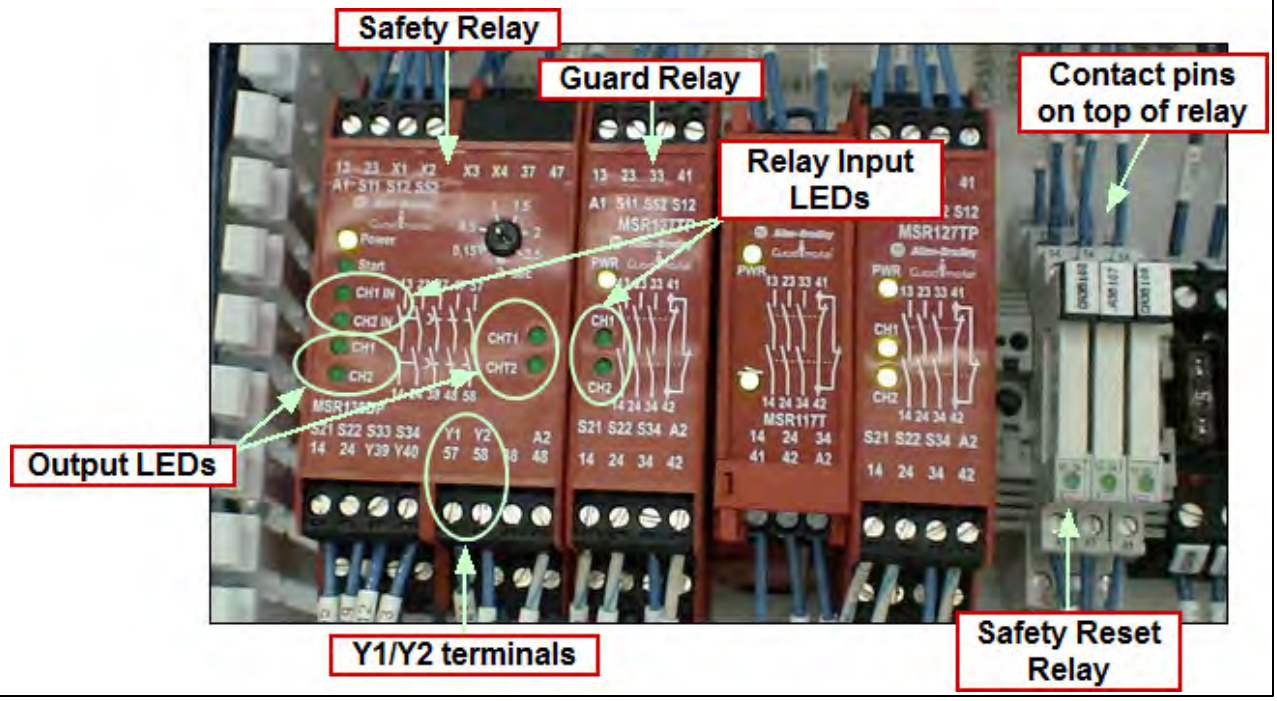
Are both channel 1 and 2 output lights lit when the system is reset?

If one or both lights are not lit, it is possible there is a faulty relay with a sticking output contact. Replace relay.

Sometimes tapping rather aggressively on the relay with the handle of a screw driver will jar the contacts loose to make it work again, but the relay still needs to be replaced.

Sample Image

Sample image showing safety relay, guard relay, and safety reset relay. Please note the location of the safety and guard relay input LEDs, as well as the location of safety reset relay contact pins.



Did this solve the problem?

Yes No

Channel 1 and 2 Guard Relay Lights

Are channel 1 and 2 guard relay lights lit when all guard doors are closed and E-stops pulled out?

If one or both channels are not lit, up use a volt ohm meter to check each loop.

Older Aagard systems with Sentrol guard switches will need to have continuity checked from the start of the channel loop to each termination point, until the complete loop is checked for an open point. Check continuity with an ohm meter from the start of the loop, checking each component as you move through the loop.

NOTE: Always keep one end at the start of the loop.

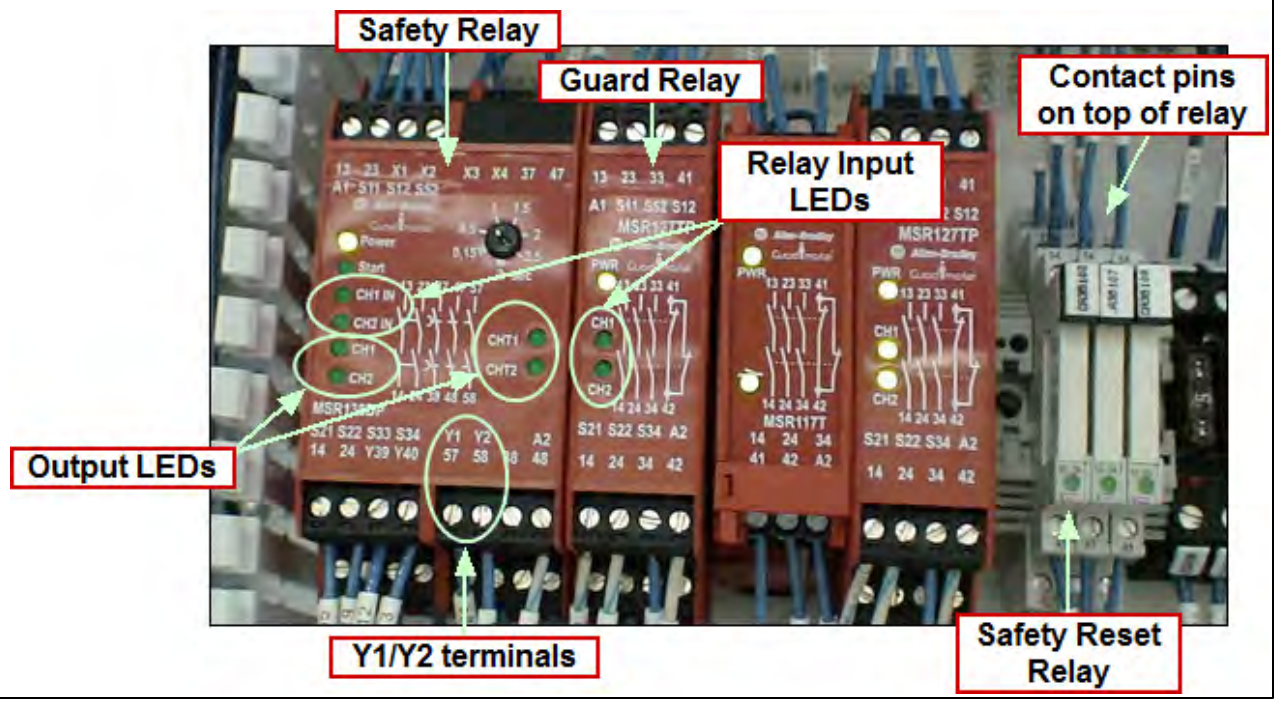
Newer Aagard systems with RFID guard switches can be checked for voltage at each termination point from the start of the channel loop until the end of the loop, looking for lack of voltage.

Once an "open" in the circuit is found, check the device preceding that "open" in the circuit; it is most likely the cause of the issue.

Check for loose or frayed wiring, or if the component has failed. Replace if necessary.

Sample Image

Sample image showing safety relay, guard relay, and safety reset relay. Please note the location of the safety and guard relay input LEDs, as well as the location of safety reset relay contact pins.



More help:

[SensaGuard RFID Switches]
[Guard Master TSL-GD2 Switches]

Did this solve the problem?

Yes No

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SensaGuard RFID Switches

Is the guard door indicator light, at the guard door, flashing green/orange?

Typically this means the magnet is too far way from the switch, in the threshold area; the switch will still work, allowing the guard circuit to function properly.

Take loose magnet and move next to the switch to be sure the switch indicator light changes to green only
- If it does not change to green only or flashing green, then the faulty switch which needs to be replaced
- If it does change to green, then remount magnet or switch closer to each other so they are not in the threshold range

Is the guard door indicator light, at the guard door, flashing green?

This means that an upstream guard door is open.
Follow guard door loop back to the open guard door and close it.

Is the guard door indicator light, at the guard door, red?

This means that a guard door is open.
Close guard door.

Is the guard door indicator light, at the guard door, flashing red?

This means there is a hard fault.
Try cycling power to the safety circuit and the inputs.

Additional resource for SensaGuard RFID switches troubleshooting:
SensaGuard Rectangular Flat Pack Install

Guard Master TLS-GD2 Switches

Additional resources for TLS-GD2 Guard Master switches troubleshooting:
TLS-GD2
TLS_GD2 Locking Guard Door Switch

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General Troubleshooting Suggestions

NOTE: Not all items listed here pertain to your Aagard system. This topic is intended to provide general troubleshooting suggestions.

AIR CYLINDER
Cylinder not extending or retracting
- Check air supply
- Check cylinder switches for proper function; the switches should “make” at the ends of the cylinder stroke
- Check flow controls
- Check to ensure cylinder is not bent or broken
- Check valve to ensure it is functioning properly
- Manually cycle valve to ensure cylinder is receiving proper signal

BEARINGS
Bearing noise
- Check for proper lubrication
- Check for proper shaft alignment
- Check for broken housings
- Ensure all setscrews are in place and tight

Bearing Seized
- Replace

CHAIN WEAR
Excessive Chain Wear
- Check chain and sprocket alignment
- Check drive requirements
- Check for abnormal tension
- Check for components interfering with the chain

CONVEYOR
Conveyor not running
- Check bearings, motors and drives
- Check for proper chain lubrication
- Check drive fuses
- Check E-Stop buttons
- Check for adequate power to the drive or contactor
- Check for VFD faults (reference manufacturer’s documentation)
- Check guard doors
- Check motor starters and contactors for functionality
- Check photo eyes
- Check upstream surge controls, photo eyes etc.
- Clear any jams
- Ensure motor is running
- Ensure product availability

FLAPS
Flaps not glued
- Check air supply to tank and glue heads
- Check for clogged nozzles (most common condition) - NOTE: if this machine has in-line filters in the hose at the glue head fitting, these filters should be replaced regularly
- Check for debris in the glue path
- Check for proper nozzle aim and glue placement
- Check glue tank for product and correct temperature
- Ensure glue bead settings have not been changed or altered
- Ensure glue heads are functioning
- Ensure sensor is functioning (if a sensor is used)
- Call for Technical Support

MACHINE FAULT
Fault will not reset
- Clear all fault pop-up messages on message center
- Clear all fault causes
- Ensure all guard doors are closed
- Ensure all guard door switches are functioning properly
- Call for Technical Support

MACHINE START OR RUN
Machine will not start or run
- Check air supply level
- Check magazine levels
- Check message center
- Ensure machine faults have been reset
- Ensure all guard doors are closed
- Ensure E-Stop buttons are not pressed
- Check upstream surge controls
- Ensure adequate vacuum levels exist
- Ensure all guard door switches are functioning properly
- Ensure glue systems are ready
- Ensure servos are in proper start position

MOTOR (AC OR DC)
Motor not running as expected
- Check drive and/or motor starter fuses
- Check Variable Frequency Drive to ensure proper function
- Ensure proper voltage is being supplied to the motor

PHOTO EYES
Photo eyes not responding as expected
- Ensure LED cycles when blocked and unblocked
- Ensure photo eye has not been moved or bumped out of position
- Ensure photo eye is clean and its sight path is uninhibited
- Ensure reflector is in place
- Ensure photo eye and cable are correctly connected
- Check the sensitivity level setting
- Check input and output in electrical cabinet(s)

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SERVO MOTOR

Servo motor not performing correct motion profile

- Ensure motion path is free from obstructions
- Ensure settings on HMI are correct
- Check motor and feedback cable for damaged or broken wires
- Replace drive
- Replace motor
- Call for Technical Support

Servo motor not in reference or correct position

- Check for jam not allowing motor to finish motion profile
- Check for bent or broken parts
- Check if values for reference positions have changed on HMI
- Ensure mechanical attachment is tight and has not moved, for instance: belt clamp and belt
- Re-reference motor to reference location
- Check if motor is referenced against correct permanent stop
- Check if motor is properly referenced and triggering homing prox

Noisy servo motor

- Check for outside interferences
- Ensure internal brake is off/on at proper times (for most brake motors, the brake engages when power is removed, such as in an E-Stop condition)
- Ensure mechanical coupling is tight and not slipping
- Call for Technical Support

VACUUM

Vacuum cups or heads not picking case, carton, or product

- Check vacuum cups for damage, debris, tears or leaks (place a non-porous material over vacuum cups; the vacuum switch or gauge should show adequate vacuum levels)
- Check vacuum lines
- Ensure vacuum cups contact the case or product (see servo positions)
- Check for plugged lines or orifices
- Check product for areas that may cause leaks or lack of vacuum
- Check system vacuum by activating vacuum valve manually and checking vacuum level

Call for Support

The Aagard Group, LLC
3711 Iowa Street
Alexandria, MN 56308
www.aagard.com

Normal Business Hours:
Monday through Friday
8:00 AM to 4:30 PM

320-763-6043 (Voice)
320-763-7859 (Fax)

Parts: Option 4
Technical Service: Option 5
***After-Hours* Technical Service:** Option 6

E-Mail:
service@aagard.com
spareparts@aagard.com

How To

The How To section offers instructions for many common tasks, as well as for some diagnostic tools and maintenance items.

NOTE: Not all items listed in this document pertain to your Aagard machinery system.

How To Sections

Diagnostics
HMI Operations
Maintenance

Diagnostics

Check I/O Device
Dry Cycle
Motor Jogging
Servo Referencing

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Check I/O Device

When checking I/O devices, it is important to also check the wiring associated with the device. Input devices, such as photo eyes, may change states when being blocked or unblocked, but this might not be sensed by the machine controls due to faulty wiring or a bad connection.

To check I/O devices, follow these steps:

1) On the HMI Main Screen, tap the Equipment Modules button
2) Tap the desired Equipment Module button
3) Tap the Devices button
4) Tap the Inputs & Outputs button
5) Watch the color of the circle next to the device name while someone else flags the device
6) Verify the state changes as this is done
    a) The circle next to the device name will be green when its input is energized

Dry Cycle

1) Stop the machine using a cycle stop button
2) On the HMI Main Screen, tap Select Mode
3) Tap the Manual button
4) Start the machine by pressing and holding the start button for three seconds
5) The machine will operate as if it is receiving product

Jogging

1) Stop the machine using a cycle stop button
2) On the HMI Main Screen, tap Select Mode
3) Tap the Manual button
4) Tap the Equipment Module button
5) Tap the desired Equipment Module
6) Tap the Devices button
7) Select the desired drive to jog
8) Start the machine by pressing and holding the start button for three seconds
9) Tap the directional jog buttons to jog the drive

Servo Referencing

1) Stop the machine using a cycle stop button
2) On the HMI Main Screen, tap Select Mode
3) Tap the Manual button
4) Tap the Equipment Module button
5) Tap the desired Equipment Module
6) Select the desired servo motor to reference
7) Start the machine by pressing and holding the start button for three seconds
8) Tap the "Do Reference" button to reference the drive

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HMI Operations

Clean Out
Enable Case Refeed Mode
Vacuum Pump Shutdown

Clean Out

To clean out a machine, follow these steps.

1) Start the machine in manual mode
2) Tap the Auxiliary Operations button
3) Tap the Cleanout button

Enable Case Refeed Mode

1) While the machine is running, click on the Enable Case Refeed Mode Button on the Auxiliary Operations screen or select the Case Refeed selector switch at the case refeed station
2) Wait for upstream Aagard equipment to enter State: Held
   a) Any downstream Aagard equipment will continue to run
3) While the upstream Aagard equipment is in State: Held, the Case Reject Clear photo eye is disabled
   a) If equipped, the Z-Axis Tipper robot is retracted
4) Reach through the Case Reject Chute and place the case against the backstop in the same orientation in which it was AFTER the case was tipped
5) When finished, click on the Enable Case Refeed Mode Button; the machine will resume normal operation
   NOTE: On some Aagard systems, this button is located on the HMI Main Screen

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Vacuum Pump Shutdown

From time to time, it may be necessary or desirable to turn off the vacuum pump.

On machines with standard System Start and System Cycle Stop buttons, follow these instructions:

1) Cycle-stop the machine
2) Press the system E-Stop button
3) After the machine is E-Stopped, simultaneously press the System Start and System Cycle Stop buttons on the HMI panel
    a) This action turns off the vacuum pump

On machines which have an additional physical Reset button, follow these instructions instead:

1) Cycle-stop the machine
2) Press the system E-Stop button
3) After the machine is E-Stopped, simultaneously press the Reset and System Cycle Stop buttons on the HMI panel
    a) This action turns off the vacuum pump

If the machine has been E-stopped for one hour, the vacuum pump will automatically turn off. When the machine is started, the vacuum pump will turn on automatically; no further action is required.

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Maintenance

General Information
Adhesives
Bearings, Pulleys and Shafts
Belts, Chains and Rollers
Drives
Pneumatics
Sanitation
Sensors, Switches and Gauges
Vacuum

General Information

Maintenance Schedule
Bolt Torque Settings
Replacing Parts

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Maintenance Schedule

These maintenance items should be checked and performed periodically to ensure optimum performance of your system.

NOTE: Not all items listed here pertain to your Aagard system.

Every Shift, or Daily
Check conveyor belts for wear, alignment and cleanliness
Check gearboxes for leaks
Check photo eyes and reflectors for proper operation and positioning
Check vacuum lines, hoses and cups
Clean dust and debris from photo eyes
Clean glue from machine
Drain air filters and regulators
Inspect machine for unusual component wear or fatigue
Remove debris, dirt, grime, dust and other foreign materials from moving parts to lengthen life
Every 50 Hours of Operation
Check chain drive for tension and adjust to ½ to ¾ inch total play between sprockets, if needed
Grease rod ends, using #1 or #2 food grade grease
Grease Thomson bearings on magazine, using #1 or #2 food grade grease compatible with Mystic FG 2
Lightly oil roller chain if it runs continuously
Every 100 Hours of Operation
Check vacuum pump oil level and fill as needed. Refer to Manufacturer's data sheet for recommended oil and maintenance information
Weekly
Check air cylinders, replace as needed
Check and clean or replace vacuum filters
Check chain and belt tension
Check chains for wear and proper alignment
Check for loose fasteners
Lightly oil v-wheel rollers and rails
Monthly
Check all safety circuits (Guard Doors, E-Stop Buttons)
Check cartridge bearings, replace as needed
Check for bent shafts, screws or other components
Check V-rollers periodically; tighten if required How To
Check chain adjustment; lightly oil roller chains
Every Six Months
Check gear box fluid levels and refill as necessary. Refer to Manufacturer's data sheet for recommended oil, grease and maintenance information
Grease Elmo Rietschle Vacuum Pump, applying 1 full pump of grease. (or alternatively, 2 grease pumps once per year) **Important!** Do not over-grease or grease can get into motor windings and cause motor damage!

Bolt Torque Settings

Aagard always uses the manufacturer’s recommendation for torque settings. On Aagard machines with servo motors, the set screws on the coupling between the motor and the Alpha gearbox are set to the manufacturer’s recommended torque setting; this setting is size-dependent. The set screws on the bevel gears coupling the infeed side belt motors to their gearbox are set per the manufacturer's recommendation. Torque settings may be found in the Manufacturers' Information Binder which was provided at delivery with the Aagard machine.

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Replacing Parts

NOTE: The position of adjustable parts should be marked and/or measured before removal so the new part can be installed in the exact same place.

While replacing parts, always square them with their mating part. This especially applies to critical or adjustable parts.

Adhesives

Adjust Glue Head Position
Adjust Glue Head Pressure
Adjust Glue Tank Temperature
Glue Filter Replacement
Glue Gun Replacement
Glue Hose Replacement
Glue Nozzle Jig
Glue Nozzle Replacement
Glue Solenoid Valve Replacement
Glue Tank Replacement
Hot Melt Adhesive System

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Adjust Glue Head Position

When replacing a glue head (nozzle), it is important to position the new head at the same angle as the old one. Some case packers have a guide for proper positioning (part # Z0098687). If your nozzles are at 90 degrees and you do not have a guide, as a general rule, set them flat horizontally. If either of these do not apply to your machine, set the glue head angle so the glue strip is positioned the same vertically on both sides of the case or carton.

Adjust Glue Head Pressure

Set glue to appropriate pressure to ensure proper pattern control and clean cutoff at glue nozzle.

Standard Settings *(for HB Fuller Advantra adhesive)*

EQUIPMENT	TEMPERATURE	PRESSURE
Tank	335°-350°	30-40 PSI
Hose	335°-350°	N/A
Guns with adjustable regulators	335°-350°	65-70 PSI *
Guns with fixed regulators	335°-350°	65 PSI

* Glue nozzle pressure for adjustable regulators is dependent on the glue nozzle model installed on the machine. If unsure of the correct setting for your machine, refer to the Nordson documentation or the pneumatic page in the electrical drawings.

All Aagard machines use regulators to set the glue head air pressure. These regulators either control each head individually, or in a set grouped by location of glue strip. For example, the operator side upper glue strip(s) on a case may have two heads but are controlled by one regulator, while the bottom head or heads are controlled by another regulator.

Some regulators (on older machines) are adjustable so the air pressure can be changed, and some do not adjust and have a fixed setting of 65 psi. It is recommended that all heads have the same pressure. If the regulator is adjustable, to adjust air pressure, pull up on the regulator knob to unlock it, turn the knob until the gauge shows the correct pressure, and push the regulator knob back down to lock.

The Aagard recommended glue head pressure on adjustable regulators should typically be set at 65 – 70 psi. The glue head pressure is dependent on the model of glue head installed on the machine. If you are unsure of the correct setting for your machine, refer to the pneumatic page in the electrical drawings.

SAMPLE IMAGE

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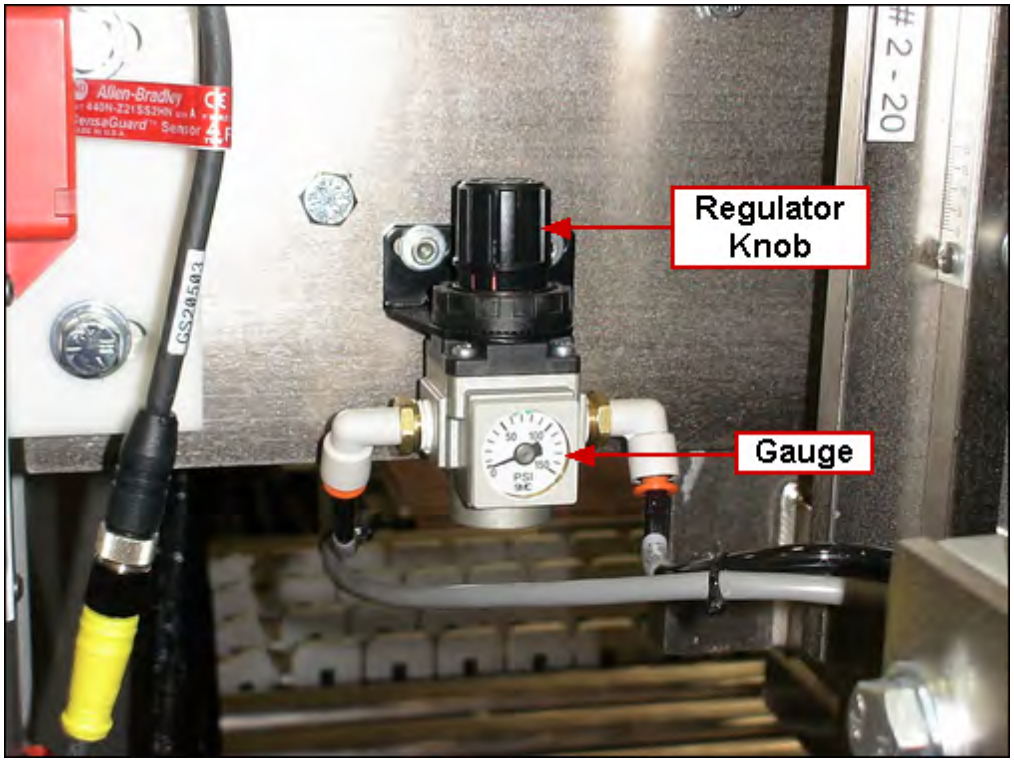


NOTE: Most heads use a spring to shut off glue; increasing air pressure, therefore, will cause the glue to be shut off more slowly as the spring must overcome more pressure

Adjust Glue Tank Pressure & Temperature

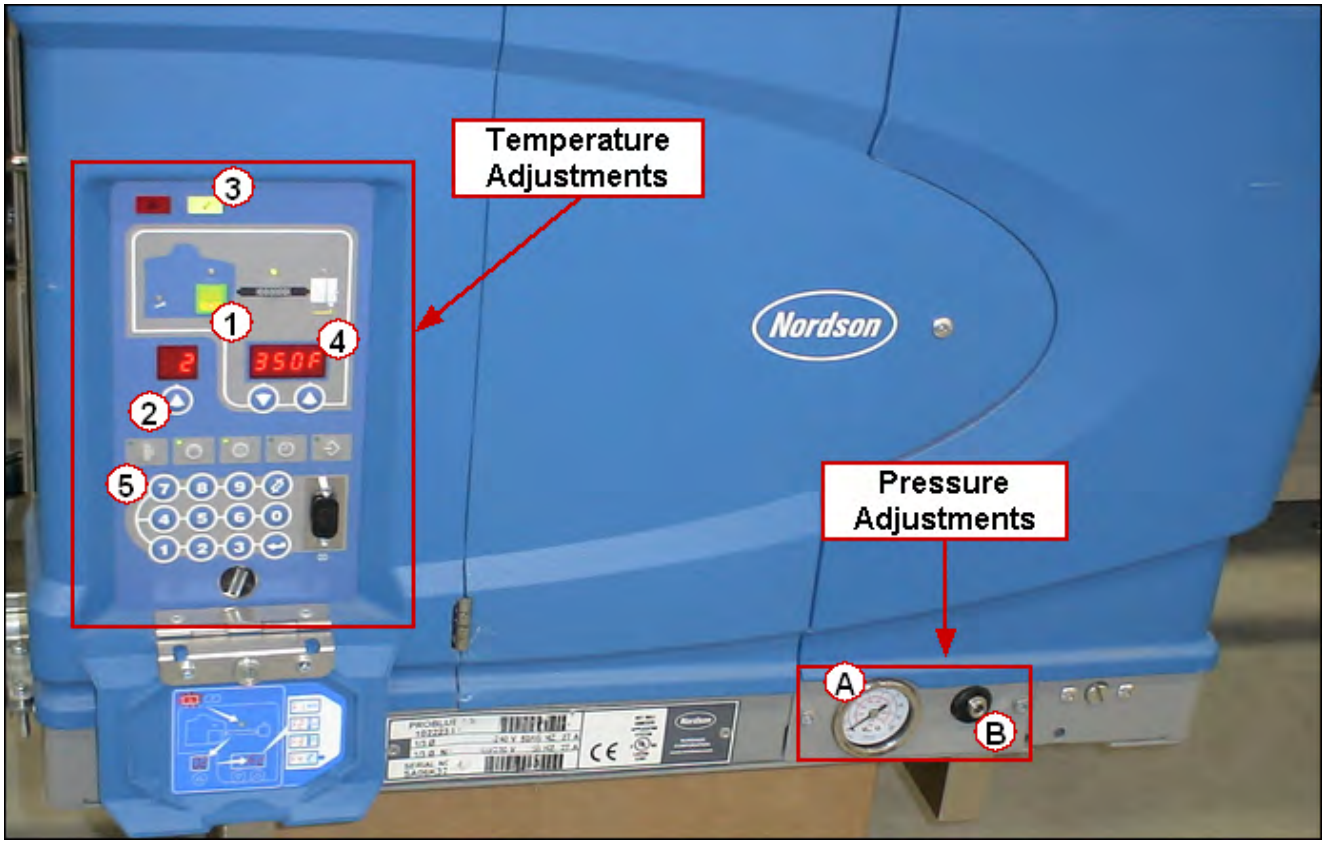
Set glue to appropriate temperature to ensure proper pattern control and clean cutoff at glue nozzle.

Standard Settings *(for HB Fuller Advantra adhesive)*

EQUIPMENT	TEMPERATURE	PRESSURE
Tank	335°-350°	30-40 PSI
Hose	335°-350°	N/A
Guns with adjustable regulators	335°-350°	65-70 PSI *
Guns with fixed regulators	335°-350°	65 PSI

* Glue nozzle pressure for adjustable regulators is dependent on the glue nozzle model installed on the machine. If unsure of the correct setting for your machine, refer to the Nordson documentation or the pneumatic page in the electrical drawings.

SAMPLE IMAGE



Adjust Glue Tank Temperature:
To globally set all glue components to the same temperature, do the following:

1) Press and hold the tank key for three seconds. The left display will flash
2) Use the arrow key to scroll the left display to 0
3) Press the enter key

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4) The right display flashes
5) Use the keypad to enter the temperature recommended by the glue manufacturer. The Aagard recommended glue temperature is 335 - 350 degrees
6) Press the tank key again (see first step). All components will begin to heat/cool to the new temperature

Set Auto-Standby:
Configure auto-standby by setting parameters on the Nordson control panel. You can automatically go into standby mode a number of different ways. Typically, however, it is done after a certain amount of inactivity (0 to 1440 minutes, or 0-24 hours). You may also set the amount that the temperature will drop (default is 100°F). Additionally, you may take the tank out of standby manually, using a function key, or automatically after a set amount of time. Information on how to configure these settings may be found in the Nordson Manual (Section 3, Setting Up the Melter).

Adjust Glue Tank Pressure:
Follow these instructions to set the glue tank air pressure:

1) The gauge indicates the air pressure supplied to the tank's pump
2) Use the Allen head adjusting screw located to the right of the gauge to adjust the air pressure

Glue Filter Replacement

Tools Required:

- Metric Wrench Set

Routine:

1) Turn off the glue system
2) Wait one hour for the system to cool down
3) Remove the filter with the metric wrench; the filter is next to the glue head
4) Put the new filter in and tighten (snug down with the wrench, but do not over tighten)
5) Turn on the glue system

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Glue Gun Replacement

Tools Required:

- Standard Wrench Set
- Metric Allen Pack

Routine:

1) Turn off the glue system
2) Wait one hour for the system to cool down
3) Unhook all air and glue lines from the head
4) Remove the head from the mount
5) Replace with the new head
6) Hook all lines back up
7) Turn on the glue system

Glue Hose Replacement

Tools Required:

- Standard Wrench Set

Routine:

1) Turn off the glue system
2) Wait one hour for system to cool down
3) Remove the hose from glue head and glue tank
4) Put in the new hose
5) Tighten both ends of the hose
6) Turn on the glue system

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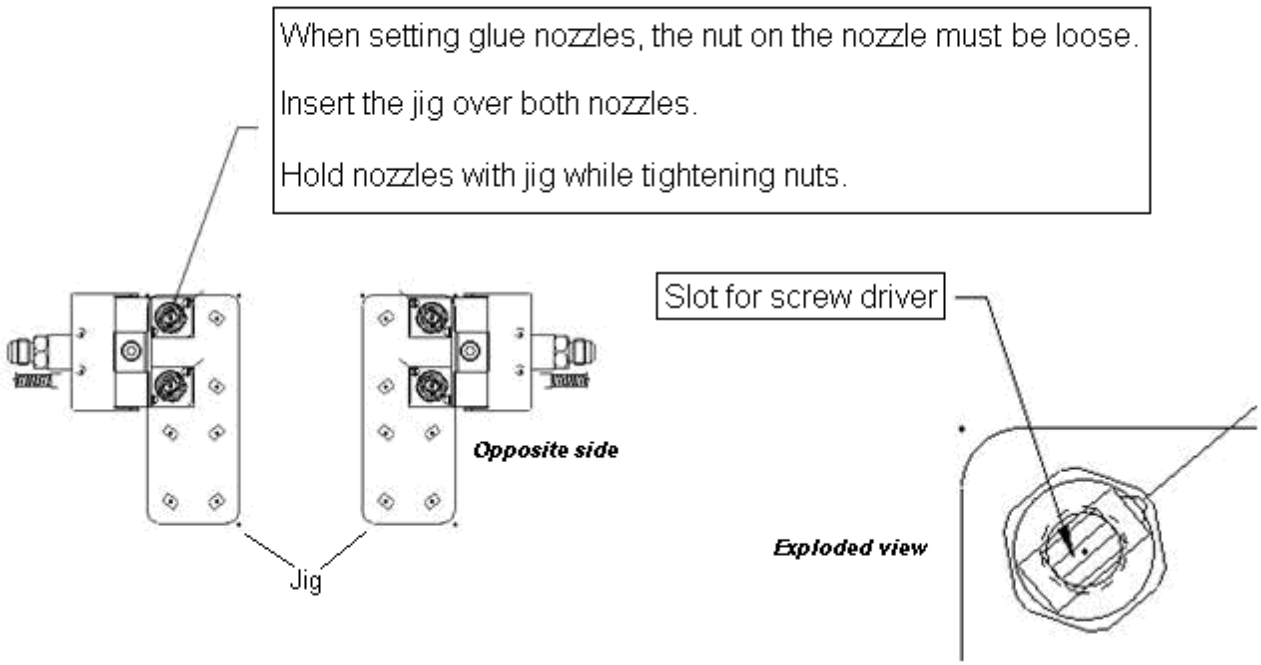
Glue Nozzle Jig

These drawings and instructions pertain only to Aagard systems with hot adhesive systems.

Glue Nozzle Aiming Jig



Glue Nozzle Replacement

Tools Required:

- Metric Wrench Set

Routine:

1) Turn off the glue system
2) Let the system cool down for one hour
3) Remove the old nozzle with 14 mm wrench and replace with the new one
4) Tighten down snug with 14mm wrench
5) Turn on the glue system

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Glue Solenoid Valve Replacement

Tools Required:

- Flathead Screwdriver Set
- Electrical Prints

Routine:

1) Turn off main air
2) Disconnect all air lines and electrical wires on the valve
3) Remove the bolts that mount the valve
4) Replace the old valve with the new valve (you may use the same fitting or get new ones)
5) Mount the new valve with the same bolts
6) Re-connect all air lines and electrical wires (see electrical prints)
7) Turn on main air

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Glue Tank Replacement

Tools Required:

- Standard Wrench Set
- Standard Allen Pack
- Flathead Screwdriver Set
- Phillips Screwdriver Set
- Nordson Manual
- Leak-Proof Container (for draining glue tank)

Routine:

1) Note that this procedure may require the use of the Nordson Manual
2) Record the following four settings of the glue tank unit to be replaced, if possible:
   a) Tank Temperature
   b) Line Temperature
   c) Gun Temperature
   d) Air Pressure
3) Drain the glue into a leak proof container using the drain behind the lower front panel of the unit
4) When the glue is drained, remove the power from the unit using the Glue Disconnect
5) Allow the glue tank to cool, (minimum of 1 hour)
6) Once the glue tank has cooled, disconnect all hoses and power cords at the tank
7) Loosen or remove mounting hardware
8) Remove the old unit from its mounting brackets
9) Set the new unit in place
10) Attach the new glue tank unit to the mounting brackets
11) Reconnect power and hoses
12) Apply power
13) Fill the tank with new glue pellets
14) Adjust settings for new the unit to original settings recorded earlier (use the Nordson Manual as needed)
15) Typical setting ranges for Aagard glue are as follows: NOTE: These settings may vary depending on application and machine set up
16) Tank Temperature: 330 to 340 Degrees
17) Line Temperature: 340 to 345 Degrees
18) Gun Temperature: 345 to 350 Degrees

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Hot Melt Adhesive System

HOT MELT ADHESIVE REQUIREMENTS, if installed.

Set glue to the appropriate temperatures and pressure to ensure proper pattern control and clean cutoff at the glue nozzle.

Standard Settings *(for HB Fuller Advantra adhesive)*

EQUIPMENT	TEMPERATURE	PRESSURE
Tank	335°-350°	30-40 PSI
Hose	335°-350°	N/A
Guns with adjustable regulators	335°-350°	65-70 PSI *
Guns with fixed regulators	335°-350°	65 PSI

* Glue nozzle pressure for adjustable regulators is dependent on the glue nozzle model installed on the machine. If unsure of the correct setting for your machine, refer to the Nordson documentation or the pneumatic page in the electrical drawings.

Bearings, Pulleys and Shafts

Bearing and Shaft Replacement
Pulley and Idler Shaft Replacement
Rod Ends Replacement
Slip Sheet Pick Bearing Replacement
Split Linear Bearing Replacement

Bearing and Shaft Replacement

Tools Required:

- Standard Wrench Set
- Standard Allen Pack

Routine:

1) Remove the drive belt or chain
2) Loosen the set screws on the bearing
3) Remove sprocket or pulley off shaft
4) Take bearings off of mounts and slide off the shaft
5) Remove the bearing plate
6) If bearings are pressed in, press out the bearings which need to be replaced
7) Place the new bearings in the plate
8) Place the plate back in machine
9) Place the new bearings on the ends of the shaft and put the hardware in the mount but do not tighten
10) Make sure shaft is square
11) Tighten the bearings down
12) Tap on the shaft to set the bearings (make sure the inner race spins freely on the shaft)
13) Tighten the set screws on the bearing
14) Place the drive belt or chains back in

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Pulley and Idler Shaft Replacement

Tools Required:

- Standard Wrench Set

Routine:

1) Loosen tension so the belt can be removed
2) Keep spacers (if spacers need to be replaced, do so at this time)
3) If bolts are bad replace with new ones
4) Replace pulleys and bearings with new ones
5) Tighten all bolts for pulleys
6) Put belt back on
7) Re-tension belt

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Rod Ends Replacement

Tools Required:

- Standard Wrench Set

Routine:

1) Measure the amount of thread left on the cylinder shaft before moving anything
2) Loosen jam nut on shaft with one half inch wrench
3) Take the bolt out of the rod end
4) Take the rod end off
5) Put the new rod end on with the same amount of thread left on the cylinder shaft
6) Lock down jam nut

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Slip Sheet Pick Bearing Replacement

This topic applies to Unitizers only

Tools Required:

- Standard Wrench Set
- Standard Allen Pack

Routine:

1) Remove the pivot arms that are connected to the shaft
2) Loosen the set screws on the bearings
3) Take the bearings off of the mounts and slide off the shaft
4) Place the new bearings on the ends of the new shaft and put the hardware in the mount but do not tighten
5) Make sure the shaft is square
6) Tighten bearings down
7) Tap on the shaft to set the bearings (make sure the inner race spins freely on the shaft)
8) Tighten the set screws on bearing
9) Reattach the pivot arms

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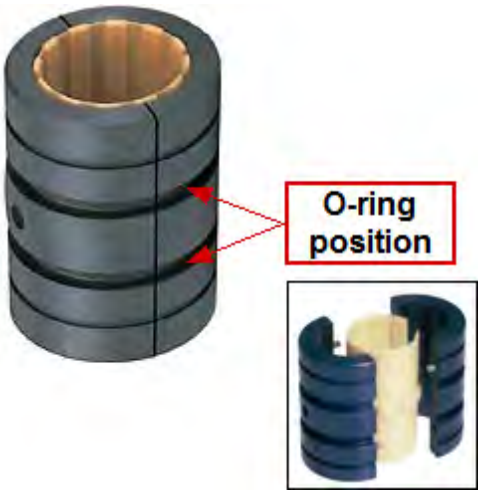
Split Linear Bearing Replacement

NOTE: This topic only applies to Machine 180

The Overhead Carton Loader assembly shafts use a non-lubricated split linear bearing manufactured by Igus, Inc.

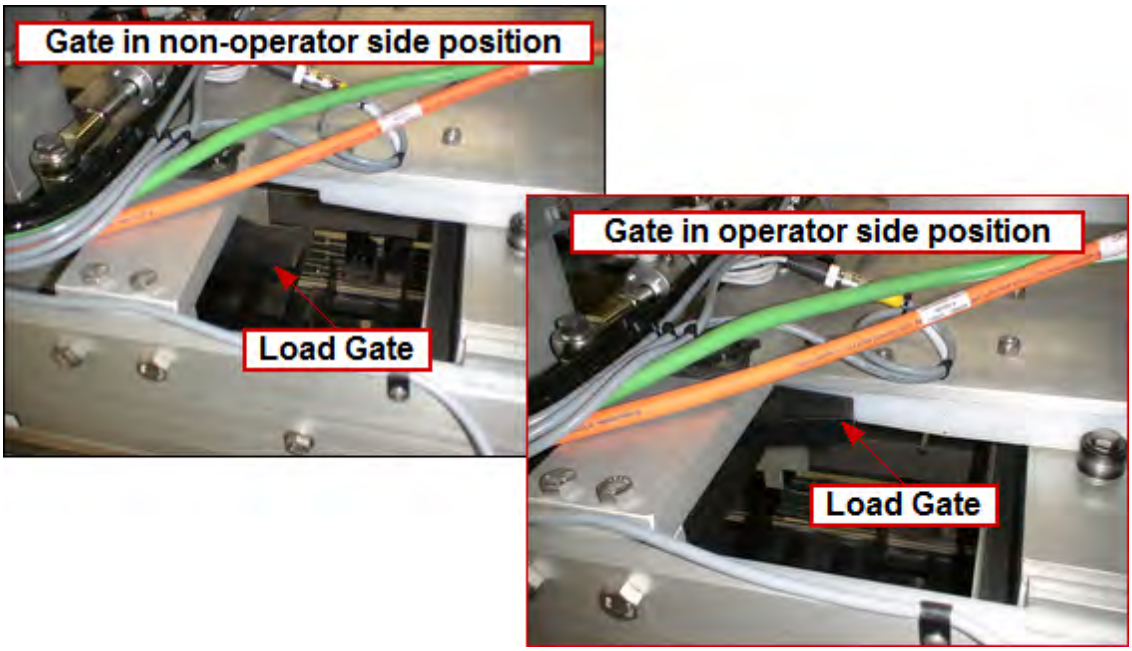


First, a few precautions and notes:

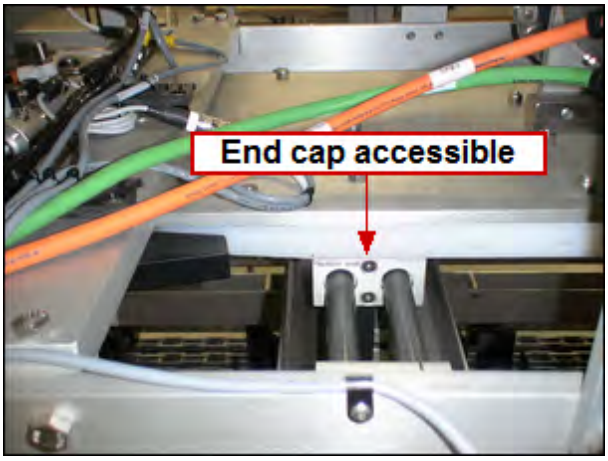
- For ease access, the Overhead Carton Loader assembly should be lifted into the changeover position
- Follow Lockout/Tagout procedures
- There are four split bearings inside each bearing enclosure
  - ⚠ Do not break or tear o-rings when removing bearings
  - It is recommended that all four bearings be replaced at the same time
- Work will need to be done on both sides of the machine

Follow these steps to remove and replace the failed bearing:

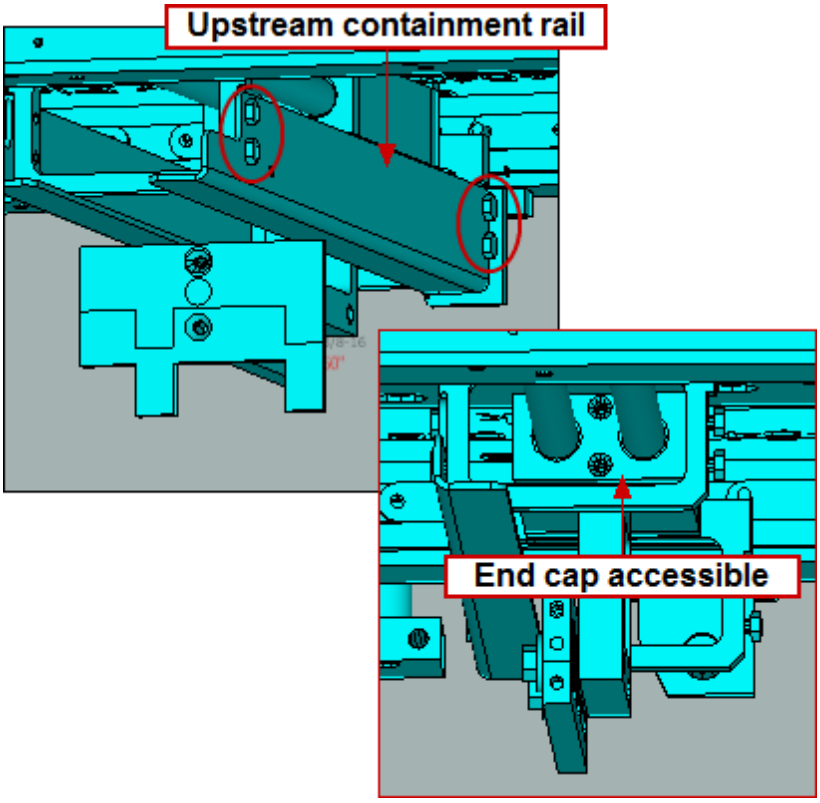
1) Raise the Overhead Carton Loader assembly into the changeover position
2) Following the first part of the changeover routine, remove all loader plates
3) Follow the Lockout/Tagout procedures of your facility
4) On the non-operator side of the machine, slide the load gate air cylinder toward operator side of the machine



5) Manually rotate the Overhead Carton Loader to make the non-operator side end cap accessible



6) To make the operator side end cap accessible, remove the upstream containment rail by removing the four 7/16" bolts



7) Remove screws and end caps
8) Carefully pull out split bearings

⚠ Do not scratch the coated surface of the shaft ⚠
⚠ Do not break or tear o-rings when removing bearings ⚠

   a) Replacing o-rings requires opening both drive chains and removing the containment assembly from the Overhead Carton Loader
   b) If necessary, gently pull on the exposed bearing end with channel locks
9) Slip off o-rings
10) Remove and replace split bearing and clearance gasket
11) Slip on o-ring
12) Move bearing with o-rings into position
   a) It may be helpful to apply a very small amount of grease on the o-rings to slide the replacement bearing into position

⚠ These split linear bearings are lubricant free; do not apply any grease to the bearing itself ⚠

13) Reinstall end caps
14) Reinstall upstream containment rail
15) Move the next loader carriage into position
16) Repeat previous steps for each four bearings in each of the 11 loader carriages
17) Install correct loader plates
18) Restore Lockout/Tagout

19) Lower Overhead Carton Loader into the run position

Belts, Chains and Rollers

Adjust Belt Tension
Adjust Chain Tension
Adjust V-Rail Rollers
Belt Replacement
Chain Replacement
Downstacker Chain Replacement
Drive Belt Replacement
Infeed Product Belt Replacement
Mattop Conveyor Belt Replacement
Replace Barrel Cam Chain
Side Belt Replacement
Unitizer Slip Sheet Roller Replacement
V Roller Replacement

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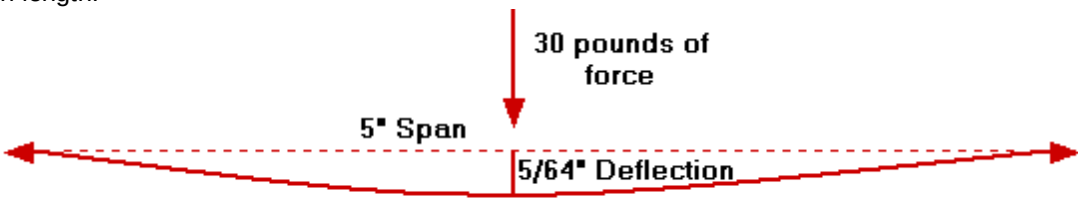
Adjust Belt Tension

When the belt is idle, there should be 1/64" deflection for every 1” of span length with 30 pounds of force for a single belt (60 pounds of force for a double belt). The force should be applied perpendicular to the belt and in the center of the span. When Aagard tensioners are used with a spring, the spring should be compressed down to 2” in length.



Span is defined as the distance between the drive pulley/sprocket (usually at the motor) and the driven pulley/ sprocket (usually at the shaft that is being driven).

First, a few simple rules:

1. Check tension on a new drive belt frequently during first 24 to 48 hours
2. Do not tension belt by feel as this may cause performance problems
3. Too much tension will shorten life of belt and bearings
4. The average static tension will shorten life of belt and bearings
5. Be sure one pulley is free to rotate; make sure an even force is applied to entire length of belt
6. Be careful not to over tighten belt clamp plates to prevent plates from bending or wrapping over belt

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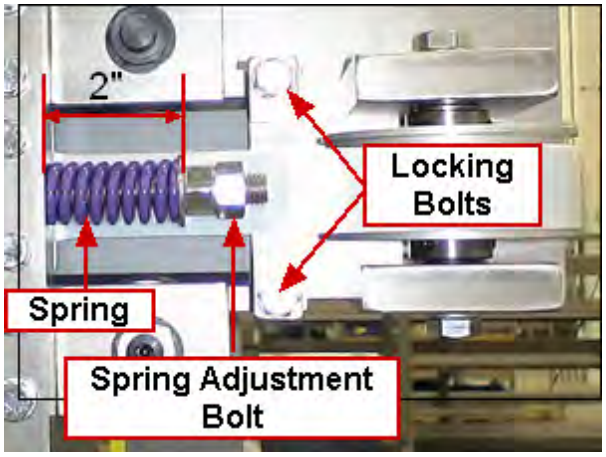
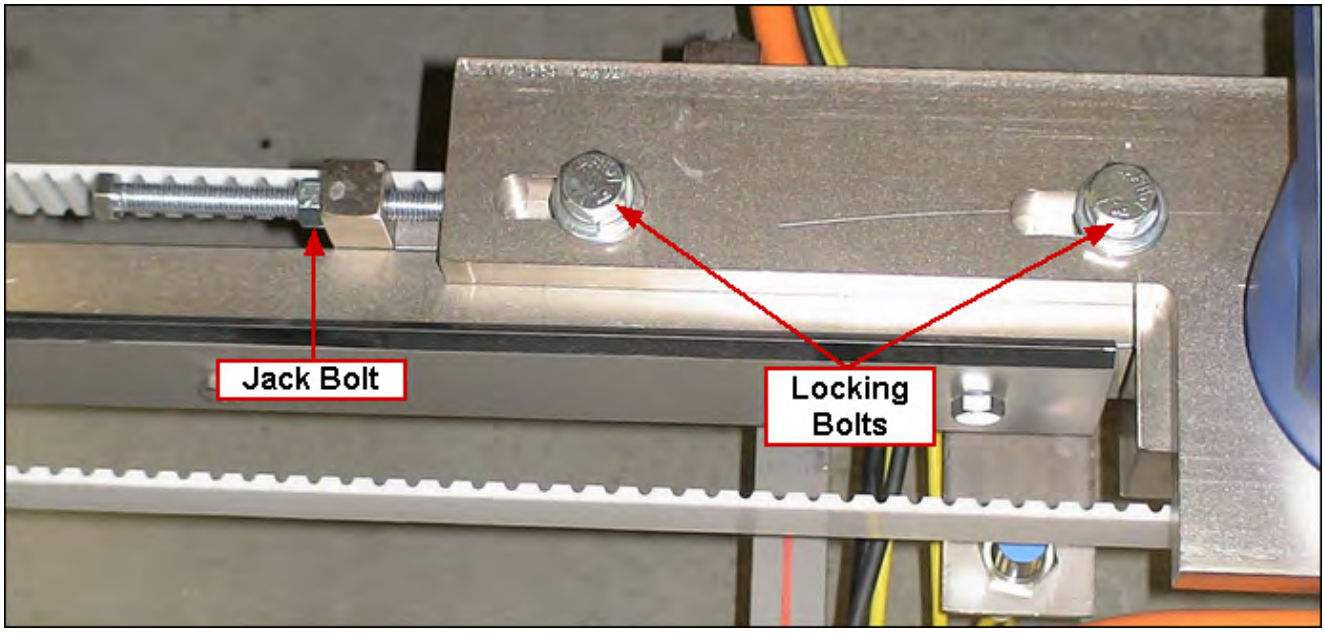
Belts with Spring Tensioner:
Loosen the locking bolts and turn the spring adjustment bolt until spring is 2" in length. Re-tighten the locking bolts!

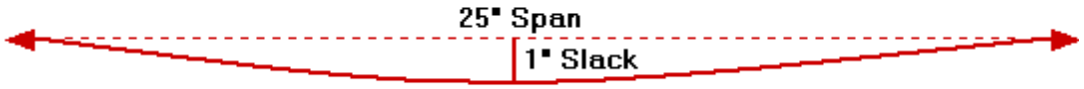


Belts with Jack Bolt Tensioner:
Loosen the locking bolts and turn the jack bolt until you have proper tension. Re-tighten the locking bolts!



Adjust Chain Tension

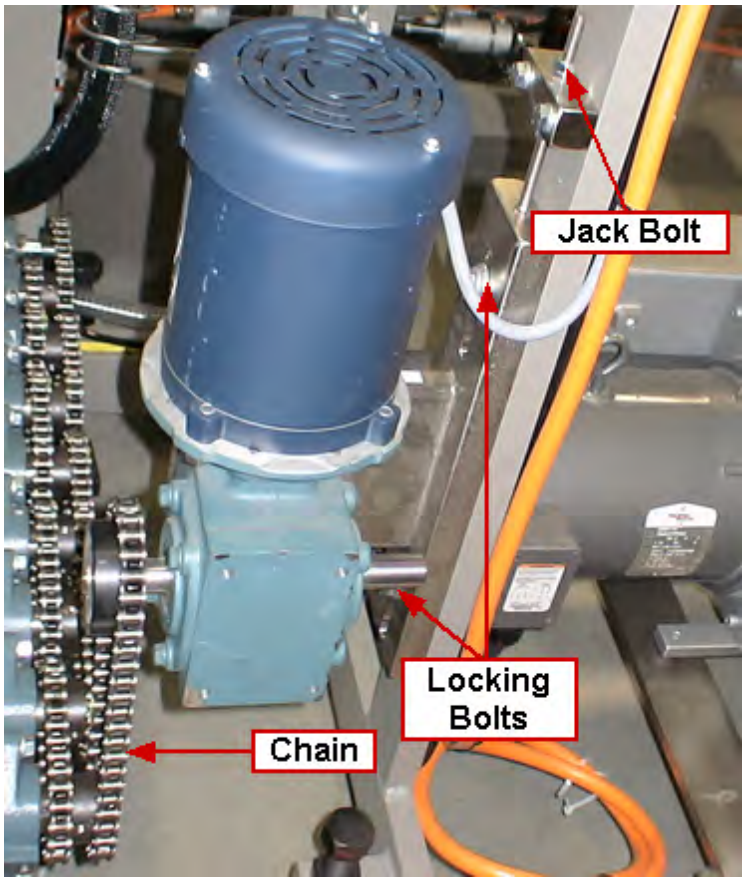
Chain slack should be 4% of the span. Slack should be measured halfway between the span.
For Example: 25” of span = 1” of slack (25" x 0.04 = 1).



For heavy loads and frequent starting, it should be 2% of the span.
For example: 25" of span = 0.5” of slack (25" x 0.02 = 0.5").

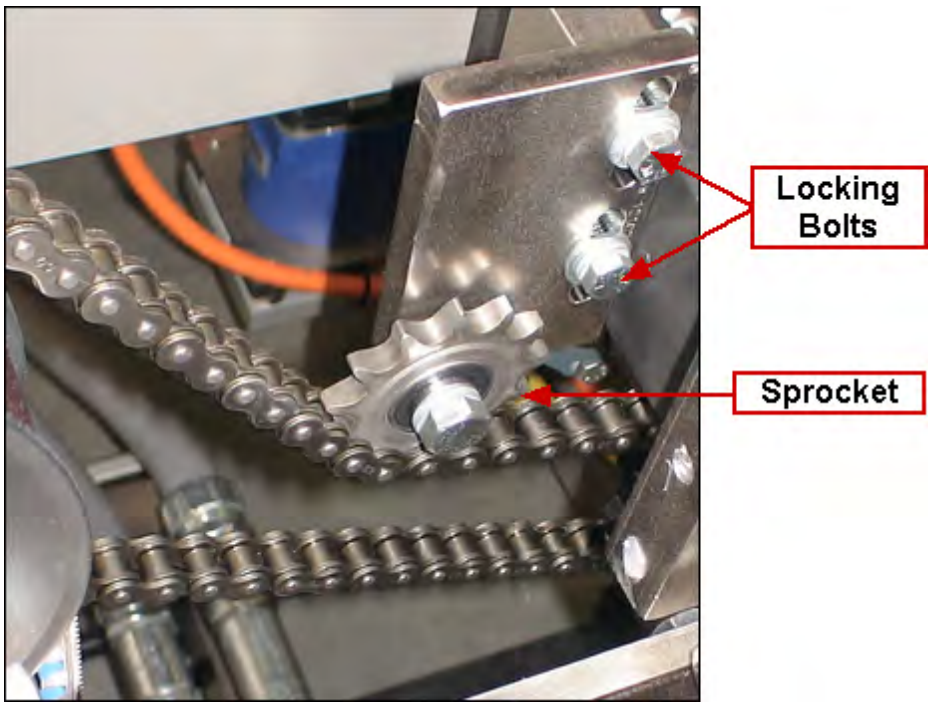
Span is defined as the distance between the drive pulley/sprocket (usually at the motor) and the driven pulley/ sprocket (usually at the shaft that is being driven).

Chains with Jack Bolt Tensioner:
Loosen the locking bolts and turn the jack bolt until you have proper tension. Retighten the locking bolts!



Chains with Sprocket Tensioner

Loosen the locking bolts and adjust sprocket (move up or down) until you have proper tension. Retighten the locking bolts!

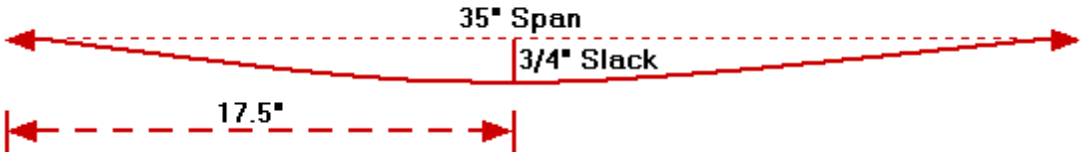


Adjust Chain Tension - Downstackers

NOTE: This topic relates specifically to downstackers; for general chain tension instructions, follow this link: Adjust Chain Tension

Since the downstacker has four chains on the operator side and another four chains on the non-operator side, it is important to always adjust the tension for **each set** of chains using the tightest chain. Chains are not always exactly the same length and chains stretch differently. Using the tightest chain will ensure no chain is too tight. Chains tensioned too tightly cause stress on the shaft, bearings, and gearbox.

The proper slack on the tightest chain should be 2% of span; slack should be measured halfway between the span. Span is defined as the distance between the *drive* sprocket and the *driven* sprocket.



The downstacker chain span, from sprocket to sprocket, is approximately 35 inches. Using the 2% guide, 35" of span translates to .7" of slack (35 X .02 = 0.7), or roughly 3/4". The measurement for slack should be made 17.5" between the sprockets.

Care must also be taken to ensure the jack bolts are adjusted equally on the upstream and downstream side of the machine, ensuring the shaft is not on an angle.

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Adjust V-Rail Rollers

1) Tighten the adjustable rollers by turning clockwise until wheel just makes contact with track
2) Tighten lock nut fully, and then check roller tension against track
   NOTE: Always check after tightening nut because rollers normally will get tighter after nut is tightened
3) When the tension is correct, one should be able to spin the adjustable wheel by hand, or very easily with a channel lock
   NOTE: Both wheels need to contact both sides of the track. If both sides of all rollers are not contacting V track and the rollers are considered tight, the assembly is probably not square

NOTE: You should always check roller tension in several locations along the track to make sure there are no tight spots

Belt Replacement

Tools Required:

- Standard Wrench Set

Routine:

1) Loosen pulley jack bolt and move the pulley so the belt is loose
2) Loosen the bolts that clamp the belt down on the pusher
3) Remove the belt from both sides of the clamp
4) Take a new belt of the same length and replace the old one
5) Place the new belt in both sides of the clamp evenly
6) Tighten the bolts on the clamp just enough so the belt stays in the clamp but still moves slightly
7) Tighten jack bolt to tension belt. Tension so the belt moves about ½ inch when pushed on in the center
8) Move the pusher back and forth a couple of times so the belt straightens itself out
9) Tighten the bolts on the clamp and on the pulley mount

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Chain Replacement

Tools Required:

- Pliers
- Chain Pliers

Routine:

1) Remove materials from the chain area
2) Find the connector link on the chain
3) Remove the connector link with the pliers
4) Replace the chain with a new chain of the same length
5) Put the new connector link in

Downstacker Chain Replacement

This topic applies to Case Packers only

Tools Required:

- Standard Wrench Set
- Pliers

Routine:

1) Take the flights off of the chain
2) Loosen the jack bolts on the bottom of downstacker (both sides)
3) Loosen assembly so servo and shaft move up far enough so chain is loose
4) Find the connector link on each chain and take them off with the pliers
5) Remove the old chain and replace it with the new one
6) Place the connector link back on the chains
7) Re-tension the assembly on the bottom so the chains are tight
8) Tighten all bolts
9) Put the flights back on

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Drive Belt Replacement

Tools Required:

- Standard Wrench Set

Routine:

1) Loosen the gearbox from the mount and loosen the tensioner (jack bolt) so the belt can be removed
2) Replace old belt with new one
3) Re-tension belt according to specifications
4) Tighten bolts under gearbox

Infeed Product Belt Replacement

This topic applies to Case Packers only

Tools Required:

- Standard Wrench Set
- Pliers

Routine:

1) Locate clipper lace on the belt and move to accessible area
2) Loosen the belt tensioners on both sides of the belt so that the belt hangs loosely
3) Remove the pin in clipper lace
4) Remove the belt
5) Place the new belt in and put the pin in clipper lace (make sure the belt is centered)
6) Re-tension the belt so that it does not sag (make sure both tensioners are equal)
7) Tighten down tensioners (make sure not to over-tighten)

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Mattop Conveyor Belt Replacement

Tools Required:

- Long punch
- Hammer

Routine:

1) Remove the guard at end of the transfer conveyor
2) Take the conveyor belt slack up to a workable position so you can get to the red pins on the side
3) Take the long punch and remove one pin with the hammer
4) Now take the old conveyor belt out and replace it with a new one of the same length
5) Put the link back in using a hammer if necessary
6) Allow slack to fall under the conveyor back in it's usual position

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Replace Barrel Cam Chain

There are several steps involved in replacing the barrel cam chains. Two key steps, however, are aligning (phasing) the chains and adjusting the tensioner cylinder switches.

NOTE: The images displayed in this topic are for reference only; your machine may be slightly different

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NOTE: Replacing the barrel cam chain is a two-person job

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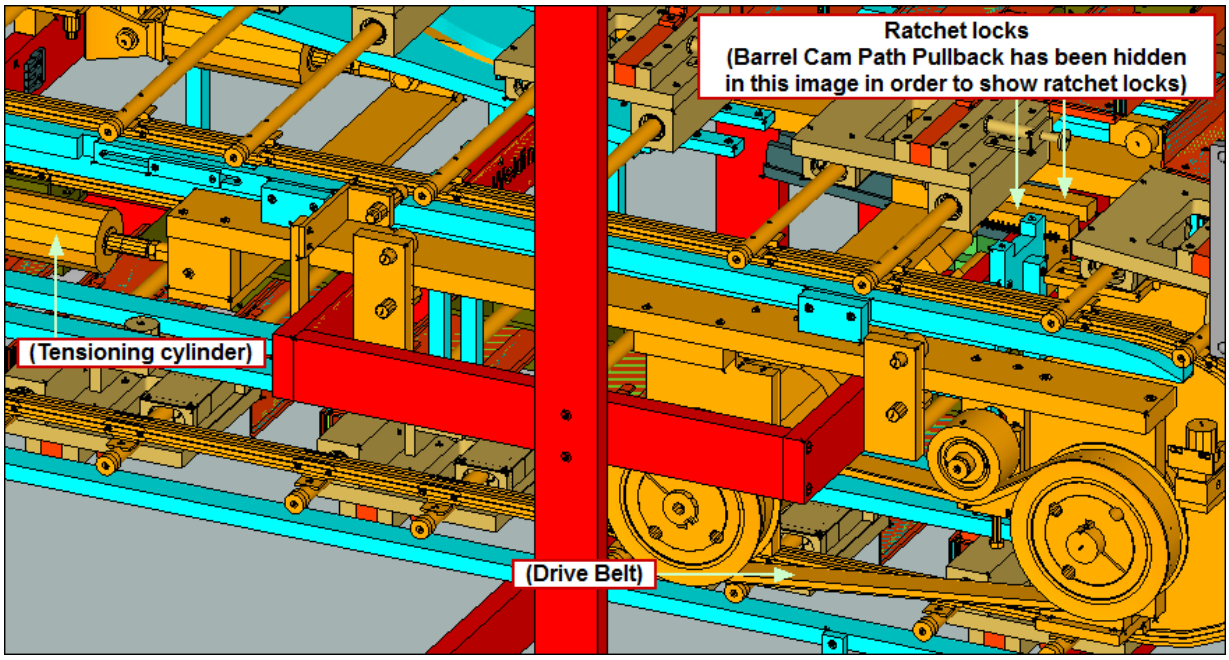
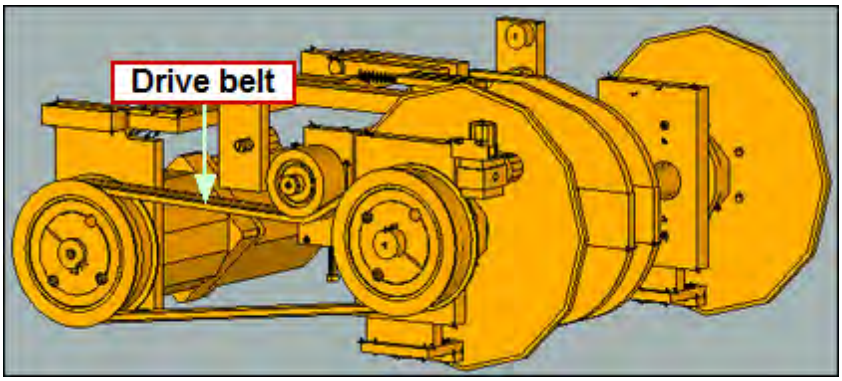
1. Remove buckets
2. Lockout/Tagout
3. If air on tensioner has not been dropped, do so now
   a. Make sure ratchet locks are lifted while dropping air

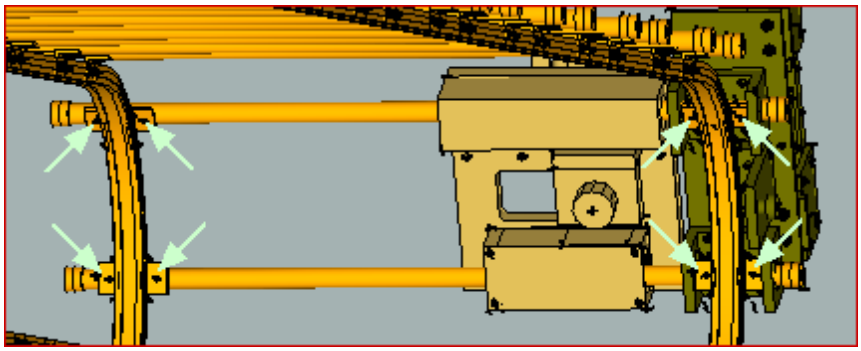


4. Remove drive belt to make it easier to manually move entire barrel cam

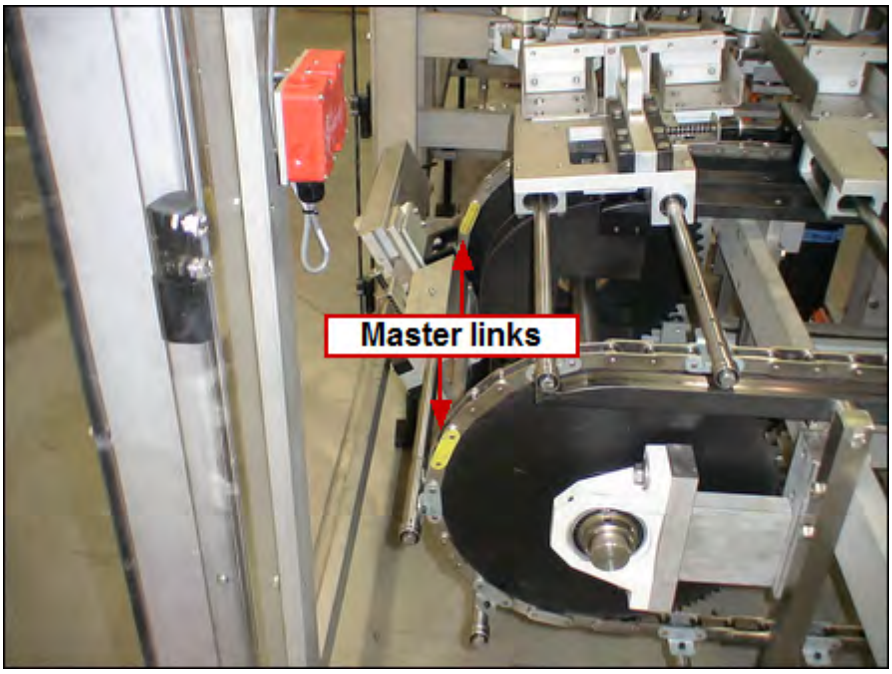


5. Remove bucket carriages by removing bolts from underside of tabs which are attached to chains
   a. There are eight bolts, four on each side of barrel cam

   NOTE: The best access point is on upstream end of barrel cam assembly
   NOTE: Take care when moving bucket carriage assemblies as shafts freely slide out



6. Look for master links, which are generally painted a different color



7. Remove chains
8. Move tensioner assembly at downstream end of barrel cam back and forth to make sure it moves freely without side-to-side movement, and that it is square
   a. Remember to lift ratchet locks
   b. If it is not free, locate bind point and correct
   c. If it is not square or has side-to-side movement, check bolts on tensioner assembly for tightness; square and re-tighten bolts if necessary
9. Install new chains
10. Make sure chains are aligned
    a. The same link (inner or outer) type should be in same position and on same sprocket tooth when looking across sprockets
    b. Position master links so they are generally across from each other

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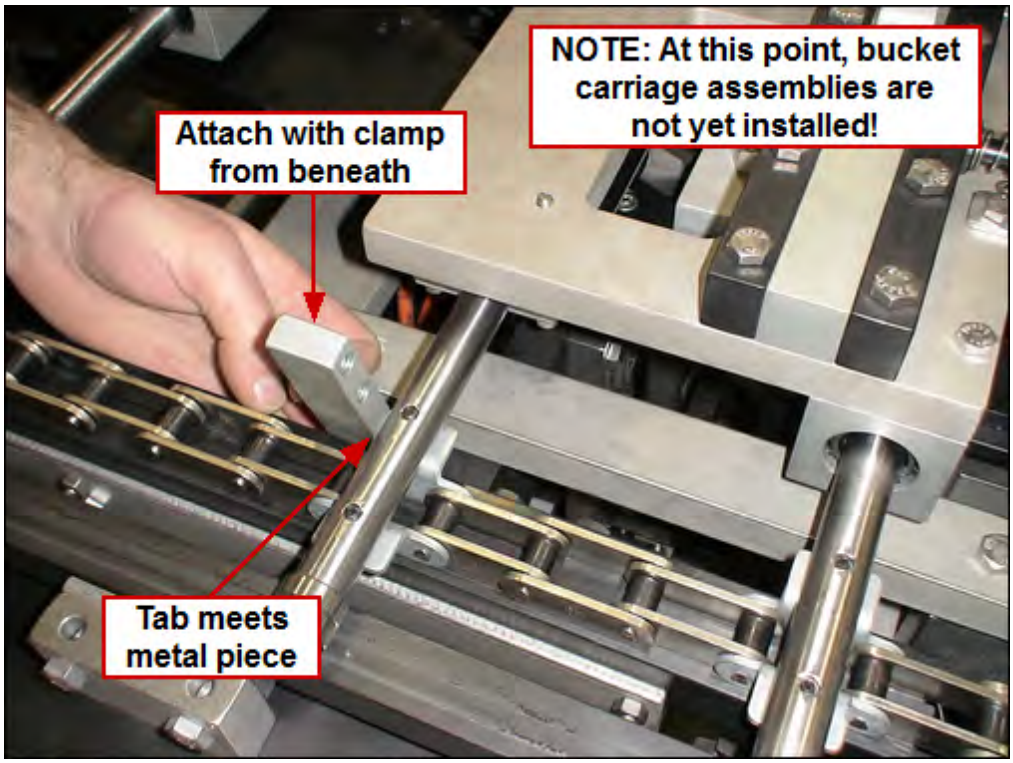
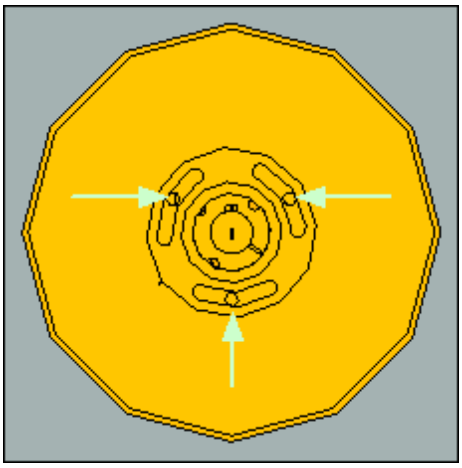
11. Align chains with each other
    a. Clamp a metal squaring block to a cross member
    b. Position squaring block so carriage assembly tabs attached to chain meet it
    c. Do this for both chains

    NOTE: Make sure squaring block is positioned on same side of tab and on same side of frame member as on opposite side of barrel cam



    d. Move barrel cam chains so tabs meet attached squaring blocks
    e. If tabs from both chains do not meet attached squaring blocks at exactly same time, chains need to be phased
        i. To phase chains, loosen bolts on slotted sprocket on driven end



   ii. Turn sprocket in slots to adjust chain to match chain position on other side of barrel cam exactly
   iii. Re-tighten bolts
   iv. Re-test phasing
   v. Remove squaring blocks and clamps
12. Reattach one bucket carriage assembly
   a. Use Loctite blue (medium)
13. Manually rotate barrel cam one full revolution to verify chains are in rails
14. Reattach rest of bucket carriage assemblies
   a. Use Loctite blue (medium)
15. Again, manually rotate barrel cam one full revolution to check if chains are in rails
16. If rails have been replaced, install one bucket
   a. Rotate barrel cam to check bucket to forming/compression deck clearance
   b. Adjust deck if necessary
      i. Clearance should be thickness of one carton

      NOTE: Carton must move freely, without binding

17. Install remaining buckets
18. Restore air to tensioning cylinder(s)
   a. Set to 50psi
19. Remove LOTO
20. Reinstall drive belt
   a. Tension drive belt to specifications
21. Reference barrel cam
22. If carton flight chain has been replaced on an older machine which has carton flight reference prox located near compression and rotary tuckers, cam offset may need to adjusted; call Aagard for support
23. Run barrel cam for at least 30 minutes
   a. This step is required to ensure chain is run in and tensioning cylinders are at a position where they will stay for some time

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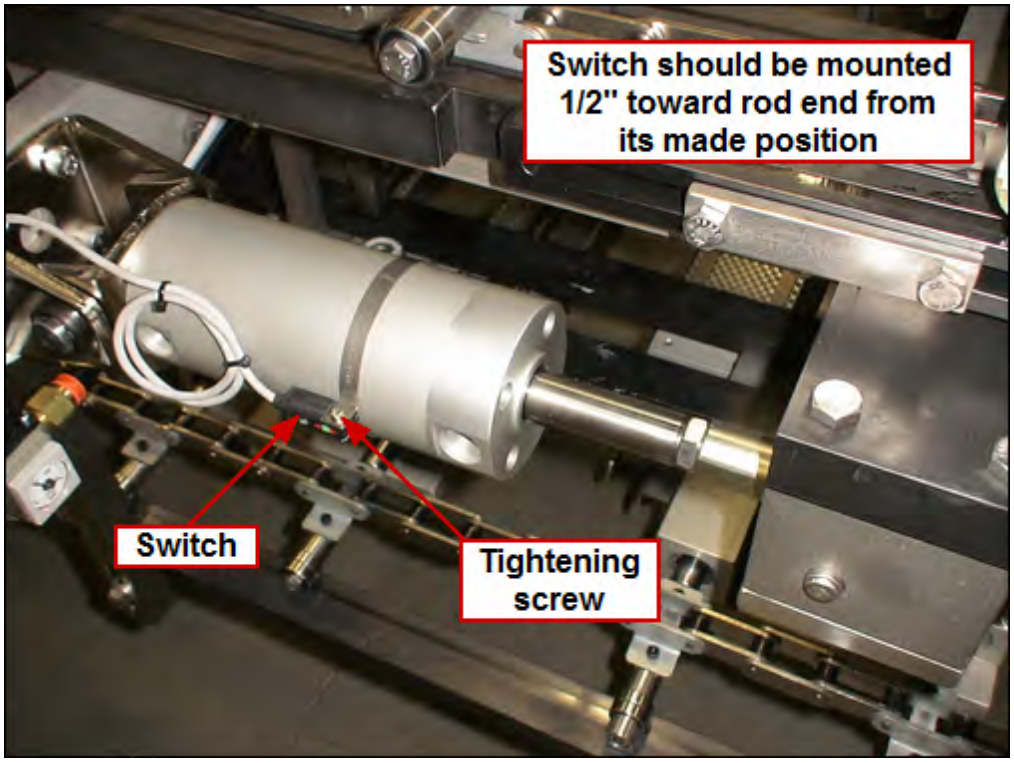
24. With pressure still on air cylinders, loosen tightening screw attaching switch to cylinder
    a. Slide switch until it is made (light turns on)
    b. Mark its position
    c. From its made position, move switch toward rod end 1/2"
    d. Re-tighten screw



NOTE: If each cylinder has a switch, be sure to adjust both

Side Belt Replacement

This topic applies to Case Packers only

Tools Required:

- Standard Wrench Set
- Standard Allen Pack

Routine:

1) Remove product rail below belt
2) Loosen jack bolt tensioner and loosen pulley mount
3) Move the pulley so the belt can be removed
4) Remove plate mount to gain access to the belt
5) Remove belt
6) Replace the old belt with the new one (make sure the arrows are in the right direction)
7) Replace plate mount
8) Tension the belt with the jack bolt
9) The average static tension (tension when the belt is idle) is 1/64 inch deflection per every 1 inch of span length with 30 pounds of force for single belt, 60 pounds for double belt
10) Tighten down pulley mount
11) Re-install product rail

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Unitizer Slip Sheet Roller Replacement

This topic applies to Unitizers only

Tools Required:

- Standard Wrench Set
- Standard Allen Pack

Routine:

1) Remove the caps on both ends of rollers
2) Remove the chains connecting each roller
3) Remove the old roller and replace it with new roller
4) Put chains back on
5) Put caps back on

V Roller Replacement

Tools Required:

- Standard Allen Pack

Routine:

1) Loosen eccentric rollers so you have more room to work
2) Remove “V” rollers carefully so the “V” rail edge doesn’t get damaged
3) Adjustable / eccentric wheels should be the lower wheels if track is horizontal. If track is vertical, just be sure eccentric wheels are both on the same side and on the side where they can be adjusted the easiest
4) Check to make sure that the “V” rail edge is clean and not damaged or bent
5) Wheel installation:
    a) Install and fully tighten fixed wheels
    b) Install and snug adjustable wheels tight enough so that they are flush with mount but loose enough so that eccentric wheels can still be turned.
    c) Tighten by turning clock wise until wheel just makes contact with the track
    d) Tighten the nut fully and then check wheel tension against track. Always check after tightening nut because wheels normally will tighten slightly more after nut is tightened
    e) With correct tension, you should be able to spin wheel by hand or very easily with a channel lock. Wheels need to contact both sides of rail. If both sides of all wheels are not contacting rail and wheels are at the correct tension then there is a problem with the assembly, such as it is not square or it may be bent.

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Drives

Servo Drives
Solenoid Valves
Motors

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Servo Drives

Downstacker Servo Gearbox Coupling Replacement
Servo Cable Replacement
Servo Gearbox Replacement
Slide-Rite Gearbox Lubrication

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Downstacker Servo Gearbox Coupling Replacement

This topic applies to Case Packers only

Tools Required:

- Standard Wrench Set
- Standard Allen Pack
- Metric Allen Pack

Routine:

1) Turn off power to the machine
2) Unhook the servo cables
3) Mark the position of the hub on both shafts with a marker before removing them
4) Remove the servo gearbox assembly with mount attached
5) Take the coupling assembly out and replace it with the new one (put it in the same position as the old one as marked on shafts)
6) Put the servo gearbox assembly back in - It should go back together with very little force
7) Tighten all bolts
8) Hook the servo cables back up
9) Turn on power to the machine

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Servo Cable Replacement

Tools Required:

- Flathead Screwdriver Set

Routine:

1) Turn off power to the machine and wait 30 minutes
2) Flip open cable clamp on servo with screw driver, one end of the cable at a time
3) Pull the cable plug straight down (do not twist or bend it)
4) Do the same to the other end of the cable
5) Put the new cable in, in reverse order
6) Clamp both ends of the cable down with the servo clamp
7) Turn on power to the machine

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Servo Gearbox Replacement

Tools Required:

- Flathead Screwdriver Set
- Metric Allen Wrench Set
- Torque Wrench with Metric Allen Sockets
- LP+/LPB+ Operating Manual
- Rexroth IndraDrive Instruction Manual

Routine:

1) Close HMI
2) Remove the cables from the failed motor by opening the metal clamps and gently pulling the cables off of the motor so you don't damage the plug
3) Remove the small cap that covers the set screw in the gear box and loosen the set screw but Do NOT REMOVE IT
4) Remove the mounting hardware that holds the servo motor and related mechanical assemblies in place
5) Remove the failed motor
6) Compare the part numbers of the old and new motors to make sure the new motor is the correct motor
7) Clean all the mating surfaces and install new motor in the same orientation as the failed motor. Motor should slide into gearbox with very little resistance
8) Apply a small amount of Loctite (#243) to bolts and then bolt motor to gearbox. (Use only Grade 8 Bolts)
9) Torque the set screw in the gear box to one of the following: (Gear box LPB090, Torque to 23 (Nm) and Gear box LPB120, Torque to 45(Nm))
10) Replace the small plastic cap that covers the set screw hole on the gear box
11) Set the address for the new motor inside of the termination plugs. One side will have an H stamped inside; set this potentiometer to the left most digit in the servo address. The other side will have an L stamped inside; set this potentiometer to the right most digit in the servo address for example: for servo axis 08: H = 0, L = 8
12) Note: New version drives use SW 4 and SW5 for setting node address. (SW5 = Value of tens, SW4 = Value of ones), for example: for servo axis 08: SW5=0 and SW4=8
13) Reattach the cables, be careful not to damage the connectors. The cables are keyed so they will only go onto the correct terminal. Secure them by pushing in on the metal clamps
14) Replace the KCU module fuses
15) Launch the HMI
16) Once the initialization process is complete, the drive must be referenced

Slide-Rite Gearbox Lubrication

The Slide-Rite gearbox is lubricated at the factory and ready for installation. For most applications, the gearbox is lubricated for life. In the instance where additional lubrication is needed, an extreme-pressure synthetic lubrication which exhibits excellent anti-wear and rust protection qualities, such as Anderol® 786 [14 oz. cartridge #0100-1604] or equivalent, is recommended.

NOTE: For hand-crank applications, additional lubrication is not required

Solenoid Valves

Glue Solenoid Valve Replacement

Glue Solenoid Valve Replacement

Tools Required:

- Flathead Screwdriver Set
- Electrical Prints

Routine:

1) Turn off main air
2) Disconnect all air lines and electrical wires on the valve
3) Remove the bolts that mount the valve
4) Replace the old valve with the new valve (you may use the same fitting or get new ones)
5) Mount the new valve with the same bolts
6) Re-connect all air lines and electrical wires (see electrical prints)
7) Turn on main air

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Motors

Motor and Gearbox Replacement
Motor and Gearbox Replacement for Side Belts
Slide-Rite Gearbox Lubrication

Motor and Gearbox Replacement

Tools Required:

- Standard Wrench Set
- Standard Allen Pack

Routine:

1) Shut down the HMI
2) Disconnect main power
3) Disconnect the wires to the motor
4) Loosen the bolts on the bottom of the gearbox and loosen the tensioner to take the belt off of the gearbox pulley
5) Take the pulley off of the gearbox (save the key)
6) Remove the motor and gearbox assembly by taking the bolts completely out of the bottom of the gearbox by the mount
7) Remove the motor from the gearbox (the mount should slide out without force. Save the key)
8) Put anti-seize on the edge of the new gearbox where the motor surface mounts
9) Place the new motor and new gearbox together with the same key in the motor shaft (it should slide together without force. You may need to modify the key or get a new one)
10) Use the existing bolts to secure the motor and gearbox together
11) Place the assembly back into the machine
12) Use the same bolts to mount the gearbox to the machine
13) Re-connect the wires to the motor
14) Re-connect main power
15) Restart HMI

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Motor and Gearbox Replacement for Side Belts

This topic applies to Case Packers only

Tools Required:

- Standard Wrench Set
- Standard Allen Pack

Routine:

1) Shut down the HMI
2) Disconnect main power
3) Disconnect wires to the motor
4) Loosen the belt tensioner, and take off the belt
5) Take the pulley off of the gearbox (save the key)
6) Loosen the bolts on the bottom of the gearbox and loosen the tensioner to take the belt off gearbox pulley
7) Remove the motor and gearbox assembly by taking the bolts completely out of the bottom of the gearbox by the mount
8) Remove the motor from the gearbox (the mount should slide out without force. save the key)
9) Put anti-seize on the edge of the new gearbox where the motor surface mounts
10) Place the new motor and new gearbox together with the same key in motor shaft (it should slide together without force. You may need to modify the key or get a new one)
11) Use existing bolts to secure the motor and gearbox together
12) Place the assembly back into the machine
13) Use the same bolts to mount the gearbox to the machine
14) Put the pulley back on
15) Put the belt back on and tension
16) Re-connect wires to the motor
17) Re-start the HMI

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Slide-Rite Gearbox Lubrication

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NOTE: For hand-crank applications, additional lubrication is not required

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Pneumatics

Cylinder Replacement
Suction Cup Replacement
Valve Bank Replacement

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Cylinder Replacement

Tools Required:

- External Snap Ring Pliers
- Standard Wrench Set
- Metric Wrench Set
- Standard Allen Pack

Routine:

1) Turn off the main air supply for the machine
2) For top and bottom cylinders, remove the bolt at the end of the rod
3) Use the snap ring pliers to remove the pin at the base of the cylinder
4) Remove the cylinders and replace with new ones, remove with wrench. You may use the same fittings or new ones.
5) Use the same rod ends
6) Put the cylinders back in reverse order
7) For the cylinders on the side, remove the finger on the top of the shaft
8) Remove all the bolts which mount the cylinder to the plate
9) Replace the old cylinder with the new one. You may use same fittings or new ones
10) Put new cylinders back in reverse order
11) Turn on the main air supply for the machine

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Suction Cup Replacement

Tools Required:

- Standard Allen Pack
- Standard Wrench Set

Routine:

1) Use Allen wrench to remove mounting bolt on the inside of the cup
2) Replace old cup with new cup. Use new thread tape on new cups
3) Make sure all new cups are turned in the same length so vacuum is even on all cups

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Valve Bank Replacement

Tools Required:

- Standard Allen Pack

Routine:

1) Turn off main air
2) Remove all air lines from the valve bank (make sure all lines are labeled)
3) Replace single valve or whole bank with new one
4) Refer to pneumatics print and hook up all air lines
5) Turn on main air
6) Manually fire each valve to make sure the valve is working properly

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Printers and Scanners

Microscan Barcode Scanner Replacement

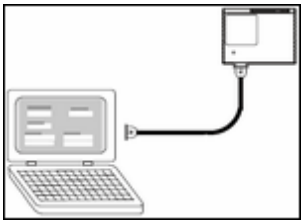
Microscan Barcode Scanner Replacement

This procedure applies to the Microscan MS- 820 Serial Communication Barcode Scanner.

NOTE: ESP software from Microscan must be installed on the computer connecting to the barcode scanner

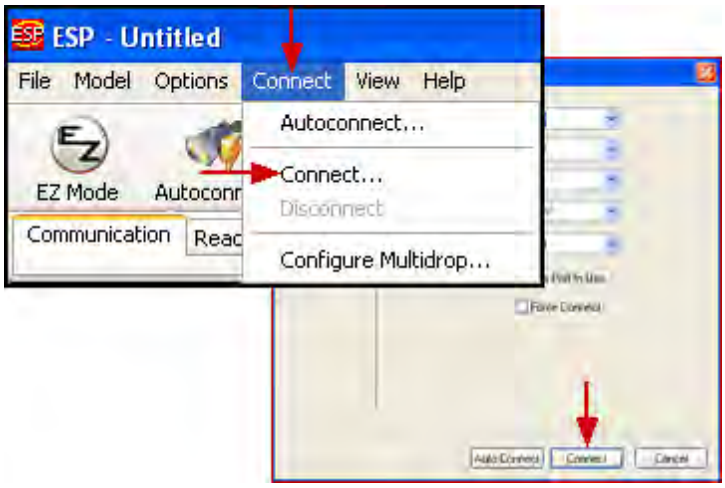
IMPORTANT NOTE: Aagard custom-made barcode scanner configuration cable, part number Z0239915, is required for this procedure

1) Connect Aagard custom-made barcode scanner configuration cable

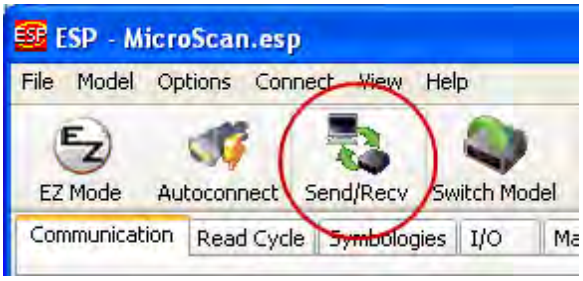


   a) Insert 15-pin end of cable into barcode scanner, in same port as standard cable, the cable used while machine is running
   b) Insert 9-pin end of cable into serial port on computer
      NOTE: ESP software must be installed
   c) Connect power wires from cable using previously installed quick connect dongle
      i. On machines with Beckhoff controls, the dongle is most likely inside the HMI panel
      ii. On machines with Allen-Bradley controls, the dongle is most likely inside a junction box near the barcode scanner
2) Open ESP software
3) Click **MS-820**
4) Click **SKIP EZ MODE**

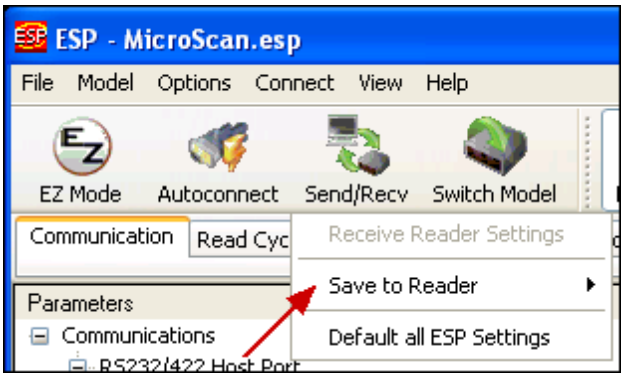
5) Click **OK**
6) When prompted, click **YES** to "Would you like to connect to the MS-860?"
   a) If not prompted, click Connect > Connect > Connect



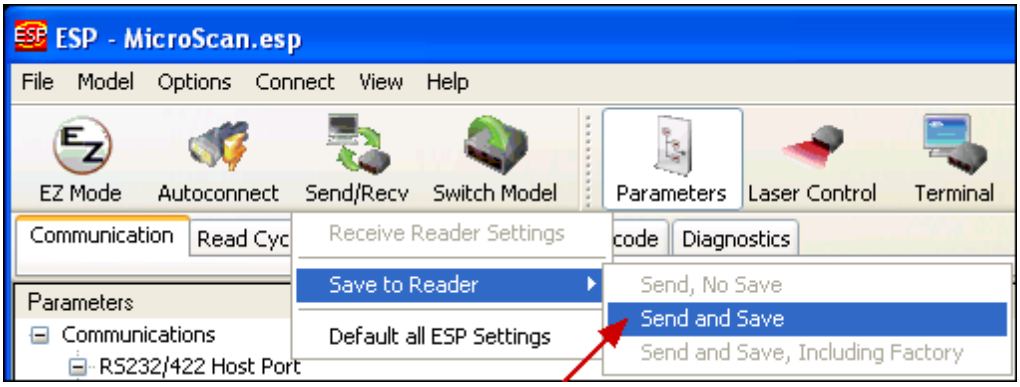
7) Open saved configuration file
   a) File name and path may be similar to the following: C:\Aagard\Source Code\Misc\MicroScan\### MicroScan backup file.esp
8) Click **SEND/RECEIVE**



9) Click **SAVE TO READER**



10) Click **SEND AND SAVE**



11) When completed, reconnect normal operation cable to barcode scanner

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Sanitation

Machine Heat Up Process
Washdown Considerations

Machine Heat Up Process

When heat is used for sanitary purposes, special steps must be taken to protect the machine. **IMPORTANT! The machine and its components must not exceed 150° F (degrees Fahrenheit)!**

Prior to the heat up cycle, the Urethane belts must be removed from the pulleys and in a relaxed state to prevent additional stretching due to the heating process. Some of the integrated equipment may also need to be removed during the heat up process.

Listed below are the manufacturer storage temperature specifications for their products which may be installed on this machinery system:

- Allen Bradley – 120° F
- Domino – 140° F
- Marsh – 120° F

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Washdown Considerations

If this machine is washdown, there are specific points to consider in order to properly maintain your system.

NOTE: Not all sections of this system may be wash down!

Please view the Aagard Equipment Standard topic in the machine manual for more information.

Before Washdown

- Avoid direct spray to electrical components where possible (AC motors, sensors, solenoid valves, and especially on servo drives)
- Cover glue tanks
- Cover printers or other components not rated for wash down
- Cover the entire HMI cabinet where possible

> **NOTE:** Use of high pressure or reduced nozzles to create more pressure, including using a finger on the end of a hose, may cause moisture to reach inside wash down components

After Washdown

- Blow off machine after wash down to remove standing water
- Dry off areas which come in contact with liquid-absorbent materials
- Grease after each wash down since some wash down chemicals are a degreaser
  - The higher the pressure used to wash down, the more likely grease will be washed out of bearings
  - Using a wash down degreaser chemical increases the possibility of grease being washed from bearings
- Apply a light coat of oil to all linear rails (Thomson, THK, V-Rails, etc.)
  - Do not contaminate the surrounding areas by applying too much oil

> **IMPORTANT NOTE:** Dry cycle the machine after all of this is complete; doing so gets new lubrication worked into the bearings. This is especially important if the machine will be idle for a long period of time after wash down

Sensors, Switches and Gauges

Guard Door Switch Replacement
Light Curtain Replacement
Photo Eye Cleaning
Photo Eye Excess Wire Loops
Photo Eye Replacement
Photo Eye Setup: KT8L
Photo Eye Setup: WL12G
Pressure Regulator Gauge Replacement
Pressure Sensor Replacement and Setup
Proximity Sensor Replacement
Slip Sheet in Place Switch Replacement
Vacuum Switch Setup

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Guard Door Switch Replacement

Tools Required:

- Phillips Screwdriver Set

Routine:

1) Disconnect the wires to guard switch
2) Remove the guard switch with the screwdriver
3) Put the new switch in
4) Reconnect the wires to the new switch
5) If the magnet is bad, remove the magnet with the screwdriver
6) Replace the magnet with a new one. Make sure it’s in the same direction as old one

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Light Curtain Replacement

Tools Required:

- Standard Wrench Set
- Metric Wrench Set

Routine:

1) Turn off power to the machine
2) Disconnect all electric cables from light curtains
3) Remove 1/4 x 20 bolts with standard wrench on the bottom and top of the light curtains
4) Put the new light curtains together with metric wrench (use the old light curtains as a reference)
5) Place the new light curtains on the machine using standard wrench
6) Tighten down all mounting bolts
7) Reconnect all electric wires to the light curtains
8) Turn on power to the machine

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Photo Eye Cleaning

Use air to blow dust/dirt off of photo eyes and reflectors. If further cleaning is required, use a damp cloth. Make sure the cloth is just slightly damp. Unless your machine is designed as a wash down machine, too much moisture can cause harm to the photo eye. Avoid using paper towels which can scratch the photo eye lens or reflector.

Photo Eye Excess Wire Loops

Photo eyes generally have excess wire loops. The excess wire is intentional, done at Aagard when the machine is built, so we can easily make minor changes to the photo eye location. For the same reason, if the photo eye or cable is replaced, it is recommended that the excess be maintained for possible future modifications and/or new product sizes.

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Photo Eye Replacement

Tools Required:

- Metric Allen Pack

Routine:

1) Disconnect wire to photo eye
2) Remove photo eye with metric allen wrench
3) Replace old photo eye with new one
4) Reconnect wires
5) Make sure photo eye "sees" the reflector -- if not, adjust accordingly
6) Tighten screws after adjustment

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Photo Eye Setup: KT8L

Aagard Part Number: Z0123715

Possible Usage(s):
Case Present At Load

The Sick KT8L Photo Eye measures contrast difference between a case present and no case present (reflecting off the top flap lift). To ensure the eye will detect various shades of cases, we recommend using light material when doing this procedure. The factory default static 2-point teach-in method is used to set the photo eye. For more information refer to the document sent with the photo eye.

To set the photo eye, do the following:

1) Place a sheet of white paper on top of the top flap lift to simulate a case present while pressing and releasing the SET button. Wait at least one second.
2) Remove the piece of material so the eye hits the top flap, press and release the SET button again.

The green LEDs indicate the contrast difference. More lights on indicates a higher contrast difference. To ensure good detection reliability, you should have four or more LEDs on when there is no case present.

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Photo Eye Setup: WL12G

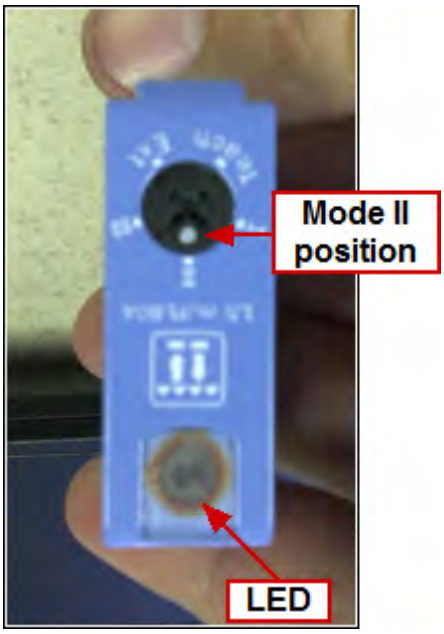
Aagard Part Number: Z0154591

Possible Usage(s):
Smart Belt Infeed

To correctly setup the Sick WL12G photo eye, follow these steps to ensure proper operation:

1) Disconnect cable and remove the old photo eye
2) Install new photo eye and plug in cable
   NOTE: Make sure the photo eye and reflector are clean, and no product is between the eye and reflector
3) On the top of the photo eye turn the dial to Teach

4) The LED will blink after 2 seconds
5) Once the LED starts blinking, turn the dial to Mode II



6) The set up is complete and the photo eye is ready to use

Pressure Regulator Gauge Replacement

Tools Required:

- None

Routine:

1) Turn off main air
2) Remove all air lines from the regulator
3) Remove the plastic nut from on top of the regulator
4) Once removed, the regulator should come out without force
5) Replace the old regulator with the new regulator (you can use the same fittings)
6) Put the plastic nut back on and tighten by hand
7) Reconnect all air lines to the regulator
8) Turn on main air

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Pressure Sensor Replacement and Setup

Replacement

Tools Required:

- Adjustable Wrench

Routine:

1) Turn off main air
2) Disconnect the electrical wire on the sensor
3) Loosen the sensor using the crescent wrench
4) Remove the sensor and replace with the new one (be sure to use thread tape)
5) Tighten the sensor down so it's easily readable
6) Reconnect the electrical wire on the sensor
7) Turn on main air

ISE40A Pressure Switch Setup (A model only):

1) Enter Function Selection mode – Press and hold the S key (> 2 sec.) until the display reads F 0
2) From F 0 press the UP button to navigate to F 1 and press the S key 3 times until the display reads P_1
3) Using the UP and DOWN buttons set display to the setting on the Aagard wiring diagram (Aagard standard setting is **65 psi**)
4) Press the S key once to display H_1
   a) Using the UP and DOWN buttons set display to 1.0
   b) Press the S key 2 times to return to F 1.
5) Return to the main display by pressing and holding the S key for > 2 seconds; the main display should be showing a low number reading

NOTE: The Out 1 indicator should not be illuminated at this point if system air has not yet been applied

System pressure switch settings – P_1 = 65.0

By setting the **ISE40A** switch up in this manner, the pressure switch will provide an output when system pressure gets to 65.0 PSI; it will loose its signal when it drops below 64.0 PSI.

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Proximity Sensor Replacement

Tools Required:

- Proximity Wrenches

Routine:

1) Measure the distance of thread on either side of the prox mount so that the new prox can be put in exactly the same spot
2) Remove wire on proximity sensor
3) Use proximity wrenches to remove proximity sensor
4) Replace the old sensor with the new sensor
5) Put the proximity sensor in exactly the same spot as the old one and tighten down the nuts
6) Reconnect proximity wire

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Slip Sheet in Place Switch Replacement

NOTE: This topic applies to Unitizers only

Tools Required:

- Flathead Screwdriver Set
- Metric Allen Set
- Standard Allen Set

Routine:

1) Disconnect wires to the switch
2) Remove the vertical mount with the five-thirty-second inch Allen wrench
3) Remove the switch from the mount with the metric Allen wrench
4) Replace the old switch with the new switch and secure on the mount
5) Place the mount back on the machine
6) Reconnect wires to the switch
7) Adjust the new switch with small flat screw driver so its sees the slip sheet

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Vacuum Switch Setup

ZSE40 Vacuum Switch Setup:

1) In the Aagard wiring diagram, find the correct **ON** and **OFF** trigger values
2) Press and hold the **SET** button until a unit of measure is displayed (example KPa)
3) Use the **UP** and **DOWN** buttons to navigate until **inH** is displayed (inches of mercury)
4) Press and release the **SET** button; this will set **inH** as the unit of measure and the display should show a low number as the current reading
5) Press and release the **SET** button; the display should toggle between P_1 and a number
6) Use the arrow buttons to adjust the number of the **ON** trigger value (example -15.0)
7) Press and release the **SET** button; the display should toggle between **P_2** and a number
8) Use the arrow buttons again to adjust the number of the **OFF** trigger value (example -12)
9) Press and release the **SET** button; the display will toggle between **P_3** and a number
10) The default value is used for **P_3**; press/release the **SET** button to go to **P_4**
11) Again, the default value is used for **P_4**; press/release the **SET** button until the display is back to the main page, which should be showing a low number reading

The **OUT 1** indicator should not be illuminated, and you are ready for production. The vacuum switch will provide an output when vacuum gets to the **ON** trigger value (example -15.0) and will not turn off the output unless the vacuum drops below the **OFF** trigger value (example -12.0).

ZSE40A Vacuum Switch Setup:

1) In the Aagard wiring diagram, find the correct P1 and H1 values
2) Press and hold the SET button until a function is displayed (example F 0)
3) Use the UP and DOWN buttons to navigate until **Uni** is displayed
   a) Use the UP key to set display to **inH** (inches of mercury)
4) Press and release the SET button; this will set **inH** as the unit of measure and the display should show a low number as the current reading
5) From F 0, press the UP key once to navigate to F 1
   a) Press the SET button 3 times so the display reads P_1
6) Use the UP and DOWN buttons to adjust the set point to what is stated on the wiring diagram
7) Press the SET button 1 more time so the display reads H_1
8) Use the UP and DOWN buttons to set the display to 3.0
9) Press SET button 2 times to return to F 1
10) Press and hold the SET button until the display is back to the main page; the main display should be showing a low number reading

The OUT 1 indicator should not be illuminated, and you are ready for production. The vacuum switch will provide an output when vacuum gets to the ON trigger value (example -15.0) and will not turn off the output unless the vacuum drops below the OFF trigger value (example -12.0).

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Vacuum

Oil Level and Changing Oil in Vacuum Pump
Suction Cup Replacement
Vacuum Filter Replacement
Vacuum Hose Replacement
Vacuum Sensor Replacement
Vacuum Switch Setup

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Oil Level and Changing Oil in Vacuum Pump

Tools Required:

- Metric Allen Pack

Routine:

1) Check oil level in sight glass once daily
2) If necessary, put oil in pump to the top of the sight glass
3) First oil change should be after 500 hours of operation
4) After first oil change should be 500-2000 hours
5) Turn pump off
6) Using metric Allen wrench, drain oil from the plug under the sight glass
7) Put plug back in
8) Refill pump with oil (about three quarts)
9) Put cap back on

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Suction Cup Replacement

Tools Required:

- Standard Allen Pack
- Standard Wrench Set

Routine:

1) Use Allen wrench to remove mounting bolt on the inside of the cup
2) Replace old cup with new cup. Use new thread tape on new cups
3) Make sure all new cups are turned in the same length so vacuum is even on all cups

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Vacuum Filter Replacement

Tools Required:

- None

Routine:

1) Make sure vacuum pump is off
2) Open latches on filter housing
3) Bleed off vacuum pressure by pressing manual override on valve, or wait for vacuum to dissipate inside canister
4) Take the old filter out and replace it with the new filter
5) Put the cover back on
6) Close latches on filter housing
7) Vacuum Filter maintenance routine complete

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Vacuum Hose Replacement

Tools Required:

- Flathead Screwdriver Set

Routine:

1) Make sure vacuum pump is off
2) Verify the size of the hose
3) Loosen hose clamps
4) Pull the hose off fittings on both sides
5) Replace the old hose with the new hose (you can use the same hose clamps)
6) Tighten the hose clamps

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Vacuum Sensor Replacement

Tools Required:

- Standard Wrench Set

Routine:

1) Turn off vacuum
2) Disconnect the electrical wire on the sensor
3) Loosen sensor with standard wrench
4) Remove the sensor and replace it with the new one (be sure to use thread tape)
5) Tighten the new sensor down so it is easily readable
6) Reconnect the electrical wire on the sensor
7) Turn vacuum on

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Vacuum Switch Setup

ZSE40 Vacuum Switch Setup:

1) In the Aagard wiring diagram, find the correct **ON** and **OFF** trigger values
2) Press and hold the **SET** button until a unit of measure is displayed (example KPa)
3) Use the **UP** and **DOWN** buttons to navigate until **inH** is displayed (inches of mercury)
4) Press and release the **SET** button; this will set **inH** as the unit of measure and the display should show a low number as the current reading
5) Press and release the **SET** button; the display should toggle between P_1 and a number
6) Use the arrow buttons to adjust the number of the **ON** trigger value (example -15.0)
7) Press and release the **SET** button; the display should toggle between **P_2** and a number
8) Use the arrow buttons again to adjust the number of the **OFF** trigger value (example -12)
9) Press and release the **SET** button; the display will toggle between **P_3** and a number
10) The default value is used for **P_3**; press/release the **SET** button to go to **P_4**
11) Again, the default value is used for **P_4**; press/release the **SET** button until the display is back to the main page, which should be showing a low number reading

The **OUT 1** indicator should not be illuminated, and you are ready for production. The vacuum switch will provide an output when vacuum gets to the **ON** trigger value (example -15.0) and will not turn off the output unless the vacuum drops below the **OFF** trigger value (example -12.0).

ZSE40A Vacuum Switch Setup:

1) In the Aagard wiring diagram, find the correct P1 and H1 values
2) Press and hold the SET button until a function is displayed (example F 0)
3) Use the UP and DOWN buttons to navigate until **Uni** is displayed
   a) Use the UP key to set display to **inH** (inches of mercury)
4) Press and release the SET button; this will set **inH** as the unit of measure and the display should show a low number as the current reading
5) From F 0, press the UP key once to navigate to F 1
   a) Press the SET button 3 times so the display reads P_1
6) Use the UP and DOWN buttons to adjust the set point to what is stated on the wiring diagram
7) Press the SET button 1 more time so the display reads H_1
8) Use the UP and DOWN buttons to set the display to 3.0
9) Press SET button 2 times to return to F 1
10) Press and hold the SET button until the display is back to the main page; the main display should be showing a low number reading

The OUT 1 indicator should not be illuminated, and you are ready for production. The vacuum switch will provide an output when vacuum gets to the ON trigger value (example -15.0) and will not turn off the output unless the vacuum drops below the OFF trigger value (example -12.0).

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Section 6

Spare Parts, Drawings and Manuals

Aagard

Redefining The Standard

Spare Parts, Drawings and Manuals

The files made available on this page are the PDF file type and are primarily associated with Adobe Acrobat. When viewing these electronic files, it is possible to click the SAVE button on the Adobe Acrobat toolbar and save a copy of the file being viewed to a new location.

For the most current version of drawings and files, go to www.aagardmanuals.com and open the electronic version of the machine manual. From this page (Spare Parts, Drawings and Manuals) in the electronic manual, files may be opened, printed, downloaded and saved. To obtain a username and password for aagardmanuals.com, please ask your supervisor to contact the Aagard service team at service@aagard.com to request access. **NOTE:** A valid email address for the person requesting access is required.

The following files are included with this machine manual:

Spare Parts and Bill of Materials

Electrical Drawings

3D CasePacker Documentation Model

How-To: 3D Documentation Model Tutorial

NOTE: 3D Documentation Models are not available on the HMI PC!

Please reference the following items provided during machine installation:

Manufacturers' Information Binder

NOTE: The following manufacturers' manuals are provided as a courtesy to our customers. These manuals were provided to Aagard when the components were purchased for inclusion on this machine. Updated eManuals may be available from the manufacturers' websites.

- Nordson ProBlue Manual (for PDF version, click here),

Contact Information

To contact Aagard regarding Machine Serial #194 :

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Parts: Option 4
Technical Service: Option 5
***After-Hours* Technical Service:** Option 6

E-Mail:
service@aagard.com
spareparts@aagard.com

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Wiring 6-2
Wiring Diagram 6-2