120 Machine Manual

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The Aagard Group, LLC

by The Aagard Group, LLC

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Machine Description, Specifications and Operation

Spare Parts, Drawings and Manuals

oduction, Safety, Installation and Training

Aagard

Introduction, Safety, Installation and Training

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.

Again, THANK YOU for purchasing Aagard's packaging equipment. Please contact us for further assistance.

Machine Serial #120

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8:00 AM to 4:30 PM

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After-Hours **Technical Service:** Option 6

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service@aagard.com
spareparts@aagard.com

For Spare Parts and Manufacturers' components information, please see the Spare Parts, Drawings and Manuals section of this manual.

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

About This Manual

About This Manual

Training

Training Levels

Level 1, Level 2, and Level 3 training curriculums are embedded in this document. The training topics are listed, in order, in the Table of Contents of this section.

Training Navigation

Toward the upper right hand corner of this panel, use the left and right arrow topic navigation buttons to move up and down in the Table of Contents topics.
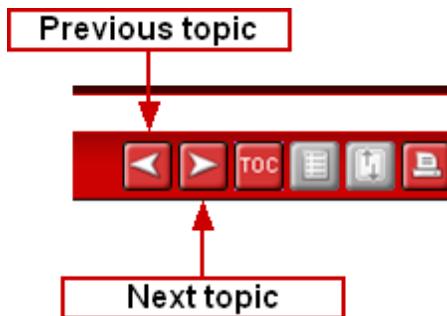
Alternately, click on each successive topic in the table of contents to navigate through the training topics

NOTE: If, during training, you follow links from a training topic, please use the browser's Back button to return to the previous topic. Then proceed by selecting the next training topic in the table of contents.

First Level 1 training topic
First Level 2 training topic
First Level 3 training topic
Maintenance training topics

Training overview for Level 1

Pre-requisites for Training

English language skills
Ability to lift up to 50 pounds

During Level 1 training, you will…

- Load materials required to run production
- Follow lock out and tag out procedures
- Learn the location of the following:
  o Emergency Stop Buttons
  o Air Dump
  o High Voltage Disconnect
  o Operator Stations
- Identify the meaning of Tower Light colors
- Identify the meaning of Warning Horn sounds

- Login to the Human Machine Interface (HMI)
- Review message notice locations and operation
- Start and stop the machine
- Clear jams
- Operate the machine in production

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

- Locate and load materials
- Show location e-stop, air dump, high voltage disconnect
- Start, stop machine
- Operate machine during production

Training overview for Level 2

During Level 2 training you will…

- Jog any device on machine
- Adjust machine to different product sizes
- Adjust machine to different case sizes
- Learn to record and communicate current changeover settings before going to a new product
- Perform a product changeover
- Have a complete understanding of mechanical adjustments
- Adjust HMI glue settings
- Confirm Servo Reference Position settings

Training overview for Level 3

During Level 3 training you will…

- Initialize and reference a servo motor
- Learn how to edit shift information
- Learn about Misc Tags and General Data information
- Learn advanced glue settings
- Have a complete understanding of motor, solenoid and servo drive data
- Understand alternating jog and servo drive tuning
- Create new and edit product recipes
- Change values and rearrange changeover adjustments
- Have a complete understanding of servo moves and cam settings

Level 1

How To Use This Manual

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:

- navigation tips and tricks
- how to use the manual with supplemental documentation
- how to use search feature
- how to access Aagard Machine Manuals over the internet

Navigation

Training

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.

This feature only applies to web version of manual

The best way to navigate through training is to use the directional buttons located in the upper right-hand corner of the topic title bar.

Clicking the right directional button will move to the next topic listed in the table of contents, while clicking the left directional button will move to the previous topic.

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.

Training Points

This feature only applies to web version of manual

Many topics in this manual include a **Training Points** link at the top of the page. When the link is clicked, a pop-up window will list training items and information specific to the current topic. These training points detail items which should be addressed during training.

Training Points

Information on these popups is intended for both trainer and trainee.

For the trainer, it can be used as a mini-syllabus for the current topic; this is particularly helpful when those who have been trained are enlisted to train others.

For the trainee, it can be referenced after training has been completed to help remember highlights of the current topic.

Supplemental Documentation

Training

Links to a number of supplemental documents may be provided in the Aagard Machine Manual at aagardmanuals.com only. Most supplemental documentation is provided in the pdf file type. These supplemental documents may include:

Spare Parts List
Electrical Drawings
3D Documentation Model (with Bill of Materials)
As-Shipped Changeover Values
Specification Sheet
Aagard Equipment Standard
Aagard Machine Control Standard

Search

📝 This feature only applies to web version of manual

Search functionality of the Aagard Machine Manual is a powerful and often overlooked tool.
There are three tabs above the table of contents tree: Contents, Index, and Search.

Using Search

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

2) Type text for which to search into search field
3) Click   Submit
4) View search results appear
5) Click on any link in search results to navigate to that page

There are several ways to find information about a specific device in the manual, particularly when that device might be triggering an alarm.

- Search for the device number
- Search for the device name
- Find it in the message notices topic of the equipment module which generated the alarm
- Find where it is physically on the machine by using the device list
- Read about it in the sequence of operation topic

aagardmanuals.com

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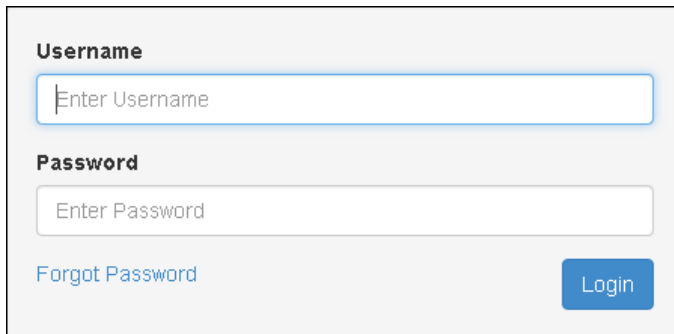
All Aagard Machinery System Manuals are posted on aagardmanuals.com.

📌 The latest documentation is always available at aagardmanuals.com

How to Gain Access
To obtain a username and password for aagardmanuals.com, please ask your supervisor to contact the Aagard service team at: service@aagard.com. Once logged in to the secure site, you will see the manuals to which you have been granted access.

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

Username

Enter Username

Password

Enter Password

Forgot Password   Login

3) Type your username into the username field
4) Type your password into the password field
5) Click Login
   a) For first-time login, accept the terms
6) Once logged in, all manuals to which you have been granted access will be available, listed by their Aagard assigned machine serial number
7) You may change your login credentials by clicking Edit Account, and then clicking Update My Account
8) When finished viewing aagardmanuals.com, click Log Out and close your browser

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!

E-Stop Locations

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

Sample E-Stop Drawing

- **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

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**

Shutdown Warning

Failure to properly shut down the PC may void the warranty!	
Switch on	The Industrial PC does not have its own main switch. The Industrial PC will start when the equipment is switched on, or when it is connected to the power supply.
Shutting down and switching off	When the plant is switched off, or when it is disconnected from its power supply, the Industrial PC will be switched off. Control software such as is typically used on Industrial PCs permits various users to be given different rights. A user who may not close software may also not switch the Industrial PC off, since data can be lost from the hard disk by switching off while software is running
⚠ Warning!	**First shut down, then switch off the PC!** If the Industrial PC is switched off as the software is writing a file to the hard disk, the file will be destroyed. Control software typically writes something to the hard disk every few seconds, so the probability of causing damage by switching off the PC while the software is running is very high!
⚠ Warning!	When you have shut down the Industrial PC, you have to switch off power supply for at least 10 seconds before rebooting the system. After resetting power supply, the PC will start booting automatically.

To properly shut down the PC, contact a Level 2 or higher Operator.

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		*THREE* Stack Light definitions	
four light stack	**Red** (Top) ***Solid***: • An Emergency Stop condition exists • A Fault condition exists	**Red** (Top) ***Solid***: • An Emergency Stop condition exists • A Fault condition exists	**three light stack**
	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	**Amber** (Middle) ***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 ***Flashing***: • Material status is low (Examples: Low Case Blanks, Low Adhesive Level)	
	Green (Third from Top) ***Solid***: • System Running	**Green** (Bottom) ***Solid***: • System Running	
	Blue (Bottom) ***Solid:*** • Material status is low (Examples: Low Case Blanks, Low Adhesive Level)		

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.

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

Log In Screen

General Page Information

This is what the Aagard HMI Screen will look like if the Log In Button is pressed while no one is currently logged in. If a user is currently logged in, the button will display the text "Log Out". If the button is pressed while the "Log Out" text is displayed, the current user will be logged out and the "Log In" text will be displayed. Consult your supervisor for the correct user name and password. The machine will be logged out upon power up.

SAMPLE IMAGE

	Machine Run	Jog, Reference & Troubleshooting	Machine Data Input	Login User Information
Operator Level 1	☑			
Operator Level 2	☑	☑		
Advanced Technician Level 3	☑	☑	☑	
Administrator Level	☑	☑	☑	☑

Keyboard

General Page Information

The Keyboard and Number Pad are part of the same program, and may be toggled between each other. The Keypad program will work with any program on the PC. Launch the Keypad program by pressing on the keypad icon located on most Aagard HMI pages. If the HMI is not open, the Keyboard and Number Pad program may be opened independently of the HMI by double-clicking "AagardKeypad.exe", located inside the same folder as "AagardHMI.exe".

Hide

The Hide button will close the keyboard/number pad.

Move

The Move button will allow the user to move the keyboard/number pad around the screen. To move the keyboard/number pad, press and hold down the Move button and then drag the keyboard/number pad to any place on the screen.

NumPad

The NumPad button will open the Number Pad and the Keyboard will disappear.

Keybd Button

The Keybd Button on the Number Pad will open the Keyboard and the Number Pad will disappear.

HMI Main Screen

General Page Information

After power up and initialization of the Packaging system, the Main screen will be displayed. This Main screen is the starting point from which everything branches. All the Message Displays combined will provide information on what is happening with the machine, displaying any faults that would prevent the system from running (guard door open, low air pressure, etc.). The Aagard HMI will go straight to the Main Screen if the HMI is closed and reopened without losing power to any part of the machine.

NOTE: The system will be in the same Mode in which it was left at power down. Correct any Fault conditions which are displayed before attempting to run the machine.

NOTE: Depending on user level, not all buttons will be visible.

System Information
This section contains the machine name, the current downloaded product name, the current system rate and any system messages. A system is also known as the S10 level of the machine.

C40 Information
This section contains the C40 name, the state and mode, and any C40 messages. An example of a C40 would be a Cartoner or a Case Packer.

Rate
This entry field will allow the machine to operate at slower speeds. 100% is equal to the maximum rate at which the machine is able to operate. 50% is half that rate and so on. This only applies while in Automatic Mode

Reset
This button will reset the selected C40. This will make the machine think that there is no product in the machine. This button is a last resort to get the machine running again. After this button is pressed, all remaining product should be cleared out of the machine and then the machine can be started again.

Fault History Button
Pressing this button will open the Fault History Page for the C40 that the button was on.

Reject History Button
Pressing this button will open the Reject History Page for the C40 that the button was on.

Data Input Button
Pressing this button will open the Data Input Page for the C40 that the button was on.

Disable/Enable
Pressing this button will Disable/Enable the selected C40. When a C40 is disabled, that section of the machine will not perform its operations. When the C40 is disabled the button will be red and the State status will be Disabled. This button can only be toggled when that C40 is in Mode: Estop.

Disable/Enable Product
Pressing this button will Disable/Enable Product on the selected C40. When a C40 has Disabled Product, the button will be red. Disabled Product is a type of a dry cycle. When the machine is started back up, that section of the machine will perform its operations as if it were receiving the amount of product per minute specified in the System Rate Display. This button can only be toggled when that C40 is in Mode: Estop.

Automatic Mode Button
When the Automatic (Run) Mode Button for the C40 is pressed, that C40 will go into Automatic Mode. Press and hold the start pushbutton for 3 seconds to begin running. If no faults are detected, the Module will continue into the Producing Mode.

Manual Mode
Pressing the Manual Mode button will put the machine in manual mode and display two additional buttons: "Jog" and "Reference".

Jog Button
Pressing this button will open the Jog Page for the C40 that the button was on.

Reference Button
Pressing this button will open the Reference Page for the C40 that the button was on.

Production Data Table
This table shows the current shift's information and the current day's information. For more on this, see the Production Data Page.

Production Data Button
Pressing this button will open the Production Data Page for the machine.

QC Case
This allows the machine to reject one (1) good case for Quality Control purposes.

Custom Buttons
Pressing this button will open the Custom Buttons Page for the machine.

Advanced Button
Pressing this button will open the Advanced Page for the machine.

Product Change Button
Pressing this button will open the Product Download Page for the machine.

Log In / Log Out Button
If the button displays "Log In", then no user is currently logged in and pressing this button will open the the Log In Screen.
If the button displays "Log Out", then a user is currently logged in and pressing this button will cause the current user to be logged out.
NOTE: The current user name is displayed in the upper left area of the Main Page.

About Button
This button will show version and build information, and will be useful when troubleshooting with Aagard technicians.

Company	Product	Version Number	Location	Description
Aagard	Aagard HMI Cube Layout Support	2.1.9.0	CubeLayout.dll	Aagard HMI custom page for cube lay
Aagard	Custom	1.0.0.0	C:\Aagard\Runtime\HMI\GMITagsCustom.dll	Custom
Aagard Group	ShiftRegister	2.2.1.0	ShiftRegister.dll	
Aagard Group, LLC	HMI	2.3.10.7	C:\Aagard\Runtime\HMI\AagardHMI.exe	Human-Machine Interface
Aagard Group, LLC	Aagard.Enterprise.Forms.VB	1.0.0.0	C:\Aagard\Runtime\HMI\Aagard.Enterprise.Forms.VB.dll	Enterprise-wide VB Forms
Aagard Group, LLC	Aagard.Enterprise.Classes	1.0.1.0	C:\Aagard\Runtime\HMI\Aagard.Enterprise.Classes.dll	Enterprise-wide Shared Classes
Aagard Group, LLC	Aagard Twincat	2.1.5.0	C:\Aagard\Runtime\HMI\AagardTwincat.dll	Provides simplified communication wit
Aagard Group, LLC	Config	2.1.3.0	C:\Aagard\Runtime\HMI\XMLConfig.dll	Simplifies reading, writing and using X
Aagard Group, LLC	PLC Interface	2.1.2.0	C:\Aagard\Runtime\HMI\PLCInterface.dll	Contains interfaces of structures that
Aagard Group, LLC	Aagard.Enterprise.Classes.VB	1.0.0.0	C:\Aagard\Runtime\HMI\Aagard.Enterprise.Classes.VB.dll	Enterprise-wide shared VB Classes
Aagard Group, LLC	CardReaderInterface	1.0.0.0	C:\Aagard\Runtime\HMI\CardReaderInterface.dll	Interface for classes used for card rea
Aagard Group, LLC	Dynamic Type Creator	2.1.1.0	C:\Aagard\Runtime\HMI\Aagard.Dynamic.dll	Dynamically creates types using reflec
Aagard Group, LLC	Framework 1 Forms	1.0.0.0	Framework1Forms.dll	Forms targeting version 1 of the PLC F
Aagard Group, LLC	Recipe Import Module	2.1.1.0	C:\Aagard\Runtime\HMI\RecipeImport.dll	Recipe import functionality
Aagard Group, LLC	Aagard.MRS.Data	1.0.0.0	C:\Aagard\Runtime\HMI\Aagard.MRS.Data.dll	Machine-related Data Handling
Aagard Group, LLC	Aagard.ADCOMS.Editor.Logic	1.0.0.0	C:\Aagard\Runtime\HMI\Aagard.ADCOMS.Editor.Logic.dll	ADCOMS Logic Layer
Aagard Group, LLC	Aagard.MRS.Data.ChangeOver	1.0.0.0	C:\Aagard\Runtime\HMI\Aagard.MRS.Data.ChangeOver.dll	Machine-related Changeover Data Ha
Aagard Group, LLC	Aagard.MRS.Data.Maintenance	1.0.0.0	C:\Aagard\Runtime\HMI\Aagard.MRS.Data.Maintence.dll	Machine-related Maintenance Data H
Aagard Group, LLC	Aagard.Configuration	1.0.0.0	C:\Aagard\Runtime\HMI\Aagard.Configuration.dll	Configuration Handling Code
Aagard Group, LLC	ProductionData	1.0.0.0	C:\Aagard\Runtime\HMI\ProductionData.dll	Used to process messages to determi
Aagard Group, LLC	Framework 1 Cam Generator	2.1.2.0	C:\Aagard\Runtime\HMI\Framework1CamGen.dll	Generates cams for use in the Aagar
Aagard Group, LLC	Aagard.ADCOMS.Editor.Forms	1.2.2.3	C:\Aagard\Runtime\HMI\Aagard.ADCOMS.Editor.Forms.dll	Forms Used in the ADCOMS Editor

About HMI

HMI
Product Version: 2.3.10.7

Aagard Group, LLC
http://www.aagard.com/

REDEFINING THE STANDARD

OK

Aagard Logo
Pressing this button will open the Aagard Machine Operator Manual from the HMI.
  o The user may be prompted to install a documentation update

States and Modes

State Model - Automatic Mode

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

STATE	Description
OFF	**State Type: Final** All pow er to machine sw itched off. This state is assumed if there is no response from the machine. This is an optional Final State. The OFF state may be reached in tw o w ays: first, pow er to the machine is sw itched off or second, pow er is removed as in a pow er utility failure. In the OFF state, it must be assured that the machine w ill go at the least to the initial stopped state w hen pow er is restored either by sw itch or restoration of the utility pow er source.
STOPPED	**State Type: Final** The machine is pow ered and stationary. All communications w ith other systems are functioning (if applicable).
STARTING	**State Type: Transient** This state allow s the machine to be prepared for running 1. This state could include such processes as heating, self-testing, or calibration.
READY	**State Type: Quiescent** This is a state w hich indicates that STARTING is complete. This state maintains the machine conditions w hich w ere achieved during the STARTING state.

STATE	Description
STANDBY	**State Type: Transient** The machine is running at the relevant set point speed, there is no product being produced. This state can be reached either in response to a Start Command from READY, or any internal machine logic that would dictate a temporary transition from the PRODUCING state, such as materials run-out. The status of "materials run-out" could be due to a lack of materials on the machine's own infeed, or a stoppage of downstream equipment.
PRODUCING	**State Type: Transient** Once the machine is processing materials, it is deemed to be producing.
STOPPING	**State Type: No Command** This state executes the logic which brings the machine to a controlled and safe stop.
ABORTING	**State Type: Transient** The ABORTED state can be entered at any time in response to the Abort Command, or on the occurrence of a machine fault. The aborting logic will bring the machine to a rapid, controlled safe stop. Operation of the Emergency Stop, or "E-Stop", will cause the machine to be tripped by its safety system. It will also provide a signal to initiate the ABORTING state.
ABORTED	**State Type: Quiescent** This state maintains machine status information relevant to the Abort condition. The Stop Command will force transition to the STOPPED state.
HOLDING	**State Type: Transient** When the machine is in STANDBY or PRODUCING, the Hold Command can be used to start Holding logic, which brings the machine to a controlled stop.
HELD	**State Type: Quiescent** The Held state would typically be used by the operator to temporarily hold the machine's operation while material blockages are cleared, or to stop throughput while a downstream problem is being resolved.

An example State transition matrix for Automatic Mode is shown below. Note the State Model does not rigidly specify the internal machine state transition logic, which will vary depending on the application.

Initial State	Machine Status						Commands				
	Power On	Power Off	Materials Run-Out	Materials Ready	Machine Fault	State Complete	Prepare	Start	Stop	Held	Abort
Off	Stopped										
Stopped		Off					Starting				
Starting					Aborting	Ready			Stopping		Aborting
Ready					Aborting			Standby	Stopping		Aborting
Standby			Producing		Aborting				Stopping	Holding	Aborting
Producing				Standby	Aborting				Stopping	Holding	Aborting
Stopping					Aborting	Stopped					Aborting
Holding					Aborting	Held					Aborting

Held					Aborting			Standby	Stopping		Aborting
Aborting						Aborted					
Aborted									Stopped		

Production Data Page

General Page Information

This page will display any production data collected by the machine. This will show how the machine is performing from day to day. The downtime tracking summary is also displayed on the page.

NOTE: The items listed and their locations on this HMI page are 100% configurable and setup by an Aagard Level user during the HMI Setup process. As such, the content on this page is a representation of a possible configuration. The items and/or their locations may change as modifications to the configuration are made on a production Aagard machine in the field. Such configuration changes may not be reflected in this machine manual.

SAMPLE IMAGE

Time Period Drop Down Menu
This drop down menu will allow information to be displayed for a certain selected time period.

Edit Shifts Button
This button will display the Edit Shifts Screen.

Back Button
This button will display the HMI Main Screen.

Production Data Information

These items are setup by an Aagard Level user during HMI Setup.

IMPORTANT! If changes are made to production data formulas, the Report Generator process *must* be restarted!

Query Name	Short Description	Detailed Description
RunningTime	Running Time Tracking	Total amount of time the system in a producing state
IdleTime	Idle Time Tracking	Total amount of time the system was idle (starved or blocked)
UserStopsTime	User Stops Time Tracking	Total amount of downtime cause by user stops (E-Stop, Guard Door, Cycle Stop)
FaultTime	Fault Time Tracking	Total amount of downtime caused by faults
FaultAckTime	Fault Acknowledgement Time Tracking	Total amount of fault acknowledgement time
RunningTimeCount	Number of Running Time Occurrences	The number of instances the system went to a producing state
IdleTimeCount	Number of Idle Time Occurrences	Number of instances the system was not producing, caused by not receiving product or downstream not being available (starved and blocked)
UserStopCount	Number of User Stop Occurrences	Number of times the system was not producing, caused by a user stop (E-Stop, Guard Door, Cycle Stop)
FaultCount	Number of faults	Number of times the system was not producing, caused by a fault
DownTimeCount	# of Stops, Down Time Count	The number of instances the system was not producing, caused by a user stop or fault
RunningTimeSinceLastStop	Running Time Since Last User Stop Or Fault Recorded In System	Amount of time accumulated since the last time the system went into a producing or idle state
TargetCapacity	Target Capacity	The total number of products which could run through this machine if the machine is running at 100% for the measured time period. The machine rate is recipe-specific, as defined in the PLC program; rate changes during the measured time period are taken into account
UserStopLoss	Capacity Loss Due To User Stops	Capacity lost due to a user initiated downtime (E-Stop, Guard Door, Cycle Stop, and materials not available)
MachineStopLoss	Capacity Loss Due to Faults Or Machine Downtime	The capacity, in units, which was lost, caused by faults and idle time
StopLoss	Capacity Loss Due to All Stops	The capacity, in units, which was lost, caused by all stops (user stop loss and machine stop loss)
IdleStopLoss	Capacity Loss Due to System Being Idle	The capacity, in units, which was lost, caused by the system being idle (starved or blocked)
ExpectedOutput	Expected Output	The difference between Normal Production (NP) Capacity and Idle Stop Loss. NP Capacity is Target Capacity less Stop Loss
M(#)InfeedCount	Machine Infeed Product Count	The number of products fed into a specific machine infeed
M(#)UnitCount	Machine Unit Count	The number of good products discharged from a specific machine
M(#)RejectCount	Machine Reject Count	The number of products rejected from a specific machine
M(#)FaultCount	Machine Number of faults	The number of fault instances in a specific machine
M(#)FaultTime	Machine Fault Time	Total amount of time the system was not producing based on a specific machine's faults
M(#)FaultAckTime	Machine Fault Acknowledgement Time	The amount of fault acknowledgement time based on a specific machine's faults
M(#)MinFaultTime	Machine Minimum Fault Time	The shortest fault time length based on a specific machine's faults

Query Name	Short Description	Detailed Description
M(#)MaxFaultTime	Machine Maximum Fault Time	The longest fault time length based on a specific machine's faults
M(#)GDAFaultTime	Machine Greatest Deviation from Average Fault Time	The greatest deviation from average of fault time length based on a specific machine's faults
M(#)MinFaultAckTime	Machine Minimum Fault Ack Time	The shortest fault acknowledgement time based on a specific machine's faults
M(#)MaxFaultAckTime	Machine Maximum Fault Ack Time	The longest fault acknowledgement time based on a specific machine's faults
M(#)GDAFaultAckTime	Machine Greatest Deviation from Average Fault Ack Time	The greatest deviation from average fault acknowledgement time based on a specific machine's faults
R(#)StopsCount	Number of stops based on Reason Code	Total number of instances the machine was not producing based on one specific reason code
R(#)StopsTime	Stops Time based on Reason Code	Total amount of time the system was not producing based on one specific reason code
R(#)StopsMinTime	Stops Minimum Time based on Reason Code	Shortest amount of time the system was not producing based on one specific reason code
R(#)StopsMaxTime	Stops Maximum Time based on Reason Code	Longest amount of time the system was not producing based on one specific reason code
R(#)StopsGDATime	Stops Greatest Deviation from Average Stop Time based on Reason Code	Greatest deviation from average time the system was not producing based on one specific reason code

Continuous Running

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

Case Blanks
Glue

Carton Blanks

Carton Blanks

To replenish the magazine while the machine is running, stack the carton blanks behind the follower plate and then slide the follower plate out from the stack. Make sure the printed side of the carton blanks is facing the follower plate, with the manufacturer's flap down. 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.

SAMPLE IMAGE

Follower Plate

Top Carton Drive

When the carton magazine is empty or if there are not enough blanks to support it, the top carton drive unit will pivot downwards. To prevent the top carton drive unit from hanging down and to make it easier to load the carton blanks, hold the drive unit up slightly, remove the support pin from it's vertical stored position, and insert the pin into the hole on the top of the unit as shown in the picture below. This will hold the top carton drive unit up and out of the way while carton blanks are being loaded. When sufficient carton blanks have been loaded, remove the pin and let the top carton drive unit rest on the top of the carton blanks. Return the support pin to it's stored position.

SAMPLE IMAGE

Pin vertical storage position

Pin (shown horizontal - holding the unit up)

Case Blanks

Case Blanks

To replenish the magazine while the machine is running, stack the case blanks behind the follower plate and then slide the follower 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 onto the chain.

Glue

Glue Tanks

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

Fill level line

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.

Hot Melt Adhesive

When a hot melt adhesive system is installed, set glue to appropriate temperatures and pressure to ensure proper pattern control and clean cutoff at glue nozzle.

NOTE: The following standard settings are for HB Fuller Advantra adhesive only!

Standard Settings *(for HB Fuller Advantra adhesive)*

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

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

Sequence of Operation

This narrative 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. A detailed list of each sensor and its function is located after this section. An input is a signal which informs the machine controller of an event occurring. 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.

CASE PACKER

Infeed

The Infeed Conveyor (MT1302) motor accepts the cartons from the upstream conveyor and delivers them to the side belts.

The Non-Operator Side Side Belt (MT1403) and Operator Side Side Belt (MT1406) motors launch the cartons into the downstacker flights. These side belts travel more quickly than the infeed conveyor to ensure proper gap between cartons.

Downstacker

The First Carton In Downstacker (PE31704) photo eye senses when the first carton is on the top of the downstacker flights, and the Second Carton In Downstacker (PE31703) photo eye senses when the second carton is on the top of the downstacker flights. As the side belts present a layer of cartons, the Downstacker Flights, driven by SM4 Fixed Flight 1, SM5 Fixed Flight 2, SM2 Adjustable Flight 1, and SM3 Adjustable Flight 2 servo motors, will lower by one product height, making room for the next layer. When the last layer is presented to the downstacker, the complete stack will be lowered to the bottom of the downstacker chamber, presenting the stack for the downstack pusher.

Downstack Pusher

Once the downstack pusher receives a stack complete signal from the downstacker, the downstack pusher virtual master begins its cycle.

The Downstack Pusher (SM6) then moves the stack to the loader and returns to its starting position. The Product Conditioner (SV30703) solenoid valve extends a plate down, to the top of the product, to ensure any bulged cartons will clear and enter the case.

Loader

After the product has been cross-pushed into the load station, the Loader (SM7), which is cammed to the loader virtual master, moves the product into the case. If the Case Present At Load (PE31903) photo eye does not sense a case has been properly set up at the load station, the loader will not advance. The system will stop and prompt the operator to remove the case from the load station.

As the stack is moving toward the case, the Fun/Tucker and Funnel (SM9 and SM8) servo motors start to rotate into the case. At the same time, the Fun/Tucker In/Out and Funnel In/Out (SV30406 and SV30407) solenoid valves are activated to move the funnels ¾" toward the case. This action positions the funnel inside the score line of the case. The funnels then guide the product into the case and are retracted before the cartons are fully in the case.

Magazine

The Magazine Top Clip and the Magazine Bottom Clip (SV30705 and SV30707) solenoid valves open when the robot is moving toward the magazine. To open the case blank, rotating clips on each side of the case blank hold the back panel of the case while the robot pulls the front panel forward and down. After the robot has partially pulled the case from the magazine, the Magazine Rotate Clip (SV30306) solenoid valve opens the clips to release the case. The top clip closes sooner than the bottom and rotating clips. The bottom and rotating clips close after the case has been fully removed from the magazine. If the Case Packer Robot Vacuum (VS31806) vacuum switch from the robot is not made, a fault message is displayed.

The Magazine Advance Cylinder (SV05) will cycle if the Magazine Advance Switch (PX18) is not made and the Robot is not picking a case blank. If the cylinder cycles more than 10 times without meeting the Magazine Advance Switch, a fault message will be displayed.

The Magazine Advance (SV30401) solenoid valve actives a cylinder which moves the magazine advance chains forward with a ratcheting motion.

When the blanks in the magazine no longer block the Case Blanks Present (PE31803) photo eye, the HMI will indicate the magazine is low, a blue stack light will illuminate, and the horn will sound. If the magazine is not filled after 25 additional case blanks have been picked, the machine will stop.

Robot

The robot's cycle stop position is at the magazine.

If the robot is signaled to pick a blank, the Robot Vacuum (SV30408) solenoid valve turns on vacuum. The robot proceeds with the new case to the load station. The Case Pusher (SV30403) extends to hold the case at the load station, keeping it vertical with the flights as it moves into compression. The initial move away from the magazine is the Robot X-Axis (SM12) move, which arcs down by adding the Robot Z-Axis (SM13) to place the case in the load station. The robot then moves up and around the case being loaded and proceeds to the magazine.

Flights

The Case Flights (SM14) servo motor matches the robot x-axis movement, and advances the loaded cases through tucking, gluing, and compression.

Load Station

When an empty case blank is set up in the load station, the Load Cup Lift (SV30801) solenoid valve extends the air cylinders, and the Load Vacuum (SV30308) solenoid valve turns on the vacuum. This action holds the case in position while loading. Before the case is moved out of the load station, vacuum is turned off and the cylinders are retracted.

Fun/Tuckers

The Funnel In/Out and the Fun/Tucker In/Out (SV30407 and SV30406) solenoid valves move the funnels into the case. The Funnel and Fun/Tucker (SM8 and SM9) servos are cammed to the case packer main virtual master for funneling the cartons into the case during loading. The funnel and fun/tucker are rotated to guide the cartons into the case. As the stack is being loaded into the case, the funnels retract while the Tucker (SM10) tucks the leading flap on the operator side of the case, and the Product Stop (SM11) partially closes the trailing flap on the operator side. Closing these flaps gives the carton stacks a surface against which to square as they are loaded into the case. As the loader retracts from the case, the funnel rotates away from the case. The fun/tucker rotates away, and continues to rotate, enabling the tuckers mounted on the back side to tuck the leading flap on the non-operator side of the case. As the case moves forward out of the load station and into compression, the fun/tucker and tucker move in unison to tuck the trailing vertical flap. The Distorted Case (PE31904) photo eye looks for the trailing edge of the case to ensure flaps are properly tucked.

Glue

Glue is applied to the vertical flaps as the case moves from the load station to compression. The Lower Glue Non-Operator Side, Lower Glue Operator Side, Upper Glue Non-Operator Side and Upper Glue Operator Side (SV30805, SV30806, SV30807 and SV30808) solenoid valves are all cammed to the case packer main virtual master. Glue is applied only if vacuum is made at the Load Vacuum (VS31708).

Compression

When the case reaches the compression station, the Case Stop (SV30402) solenoid valve extends to stop the top leading edge of the case, keeping it square. The case pusher and flights ensure that the case is pushed up against the stop.

The Lower Compression Non-Operator Side, Lower Compression Operator Side, Upper Compression Non-Operator Side and Upper Compression Operator Side (SM15, SM16, SM17 and SM18) servo motors are all cammed to the case packer main virtual master.

The compression plates fold the horizontal flaps against the glue on the vertical flaps. The flights move the case out of compression and into the orienter while the next case is moved into compression.

ORIENTER

Case Tip/Reject

The case packer flights push the case out of compression onto the Tip/Reject Roller Conveyor (MT1501) in the orienter. As the case leaves the case packer, the Non-Operator Side Open Flap and Operator Side Open Flap (PE51402 and PE51401) photo eyes ensure the case flaps are closed and properly glued. The case is stopped by the Tipper Case Stop (SV50703). If either of the open flap eyes is blocked while the case passes by, the Case Tip R (SM20) retracts and the Tipper Reject Flights (SM19) pushes the case out of the machine. If the case is good, the Case Tip R catches the top, operator side, of the case while the flights push the bottom, non-operator side, out toward the operator side of the machine. This action tips the case toward the backstop (what was the non-operator side of the case is now the bottom). The flights push the case against the backstop and retract, the tipper case stop retracts, and the roller conveyor starts to move the case forward, transferring it to the Case Conveyor (MT50701).

Case Rotate

If the product requires, case rotate is enabled by default.

The Case Rotate (SM21) servo motor rotates an arm across the conveyor. The Case At Rotate (PE51505) photo eye senses when a case is approaching the arm. When sensed, the Case Rotate Vacuum (SV50201) solenoid valve is triggered and attaches the case to the arm with a vacuum cup. The arm rotates 90 degrees (¼ turn) counter-clockwise and releases vacuum (what was the operator side of the case is now the leading side). When the case has moved past the Case Present After Rotate (PE51506) photo eye, the arm retracts and waits for the next case.

Popups and Notices

From time to time and for various reasons, certain events trigger notice popups.

These popups indicate which C40 originated the notice, device number and name, message text, message details, date and time of the notice, and number of messages currently being displayed. After the popup has been cleared, this same information is displayed in the notice history pages

SAMPLE IMAGE

NOTE: If a location is defined in the messaging database, it will be displayed between the C40 name and Device name

Edit Text Button
Users logged in Level 3 or higher may modify the message text.

Map Button
This button will appear when a location image for this device is available. Map

Info Button
Click this button to display additional PLC notice information useful when troubleshooting with Aagard personnel. Info

Clear All and **Clear Buttons**

There are a number of ways to clear notices from the HMI screen.

- Press the Clear button to clear an individual notice
- Press the Clear All button to clear all notices
- Energize the system by pressing the Start button once to clear all notices

NOTE: A Critical Fault will *not* be cleared by using the Clear All button or by pressing the Start button; it must be cleared individually by pressing the Clear button

Since this machine runs on a PC-based computer, other applications are running behind the HMI application. These applications also use popups, when necessary, to notify users of important information. An example of a TwinCAT error is shown below. TwinCAT is a background application required by the HMI application.

Message Notices

Sample Content

Device	Name	Text	Cause	Remedy	Type
B1	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
C20 4	SD Reference	Probe Sensor Not Found	The probe sensor was not detected during the reference routine	Check the probe sensor and the probe setup data	Fault
CR40201	Software Emergency Stop	Not Ready	A condition in the PLC is requiring a software emergency stop	Check reasons for PLC emergency stop condition	General
ES24305	CP Remote System E Stop	Pulled	The emergency stop button is released	No action required	General
GR22401	Sleever Guard Relay	Guard Relay Reset Failed	A check was performed after all guard doors in this circuit were closed to see if the guard relay was reset; this check failed	If problem persists, check guard circuit	Warning
GS22503	Guard Door 4	Closed	Door is closed	No action required	General
GT9401	Glue System	Low Glue Level	The glue level is low	Fill glue tank	General
MT306	System Vacuum Pump	Input Parameter Error	The configuration data for the motor is incorrect	Fix data configuration, check programming	Fault
PB41301	CP Remote System Start	Released	Button is released	No action required	General
PE41705	Manufacturer Flap	Reject Detected	Manufacturer's Flap PE was blocked in end compression station	Make sure Manufacture Glue gun is working properly and nothing is blocking the PE or Reflector	Reject
PS36502	Dumped Air Pressure	Low Air Pressure	Air pressure is low	Check air pressure	General
SM18 SM19 SM20 SM21 SM22 SM23 SM24 SM25 SM26 SM27 SM28 SM29 SM30	Loader Loader Z-Axis Case Setup Case Flights Flap Traps Fixed Funnel Adjustable Funnel Load Side Tucker Non Load Side Tucker Case Squaring Manufacturer Glue End Flap Compression Mfr Flap/Top Tucker	Fast Stop Failed	The drive was not able to fast stop successfully	Clear message and start system; if problem persists, review move data	Fault

Device	Name	Text	Cause	Remedy	Type
SR28201	Customer Global Safety Relay	Safety Relay Reset Check Failed	A check was performed after the safety circuit was reset to see if the relay is reset; this check failed	If problem persists check safety circuit	Warning
SV50602	Upper Glue Load Side	Direction A Sensor Not Made In Time	The A sensor did not make in the required time from the A direction call	Check A sensor for proper operation	Fault
TS37102	Remote HMI Cabinet Temp Sensor	Above Set Point	The cabinet temperature is above the set point	Check the cabinet for excessive heat, verify cooling system is properly functioning, check temp switch for proper operation	General, Warning
VS36503	System Vacuum	Low Vacuum Supply	Vacuum was lost when not expected	Check vacuum supply	Fault

Level 2

Product Download Page

General Page Information

The Product Change screen will automatically be displayed on machine power up. It can manually be displayed by pressing the "Product Change" button on the main page while logged in at User Level 2 or higher. Click on the desired product and press the Download button. This button will download all of the new product's information, which is now stored in the main controller, and display the Changeover Adjustments Page.

NOTE: The machine must be E-Stopped to do a product change.

The Edit Button will display the page that allows System Products to be edited. A User Level 3 is required for these features.
If no user is logged in when the Edit button is clicked, the log in screen will display and a user and password is required to continue.

SAMPLE IMAGE

Changeover Location Drawing
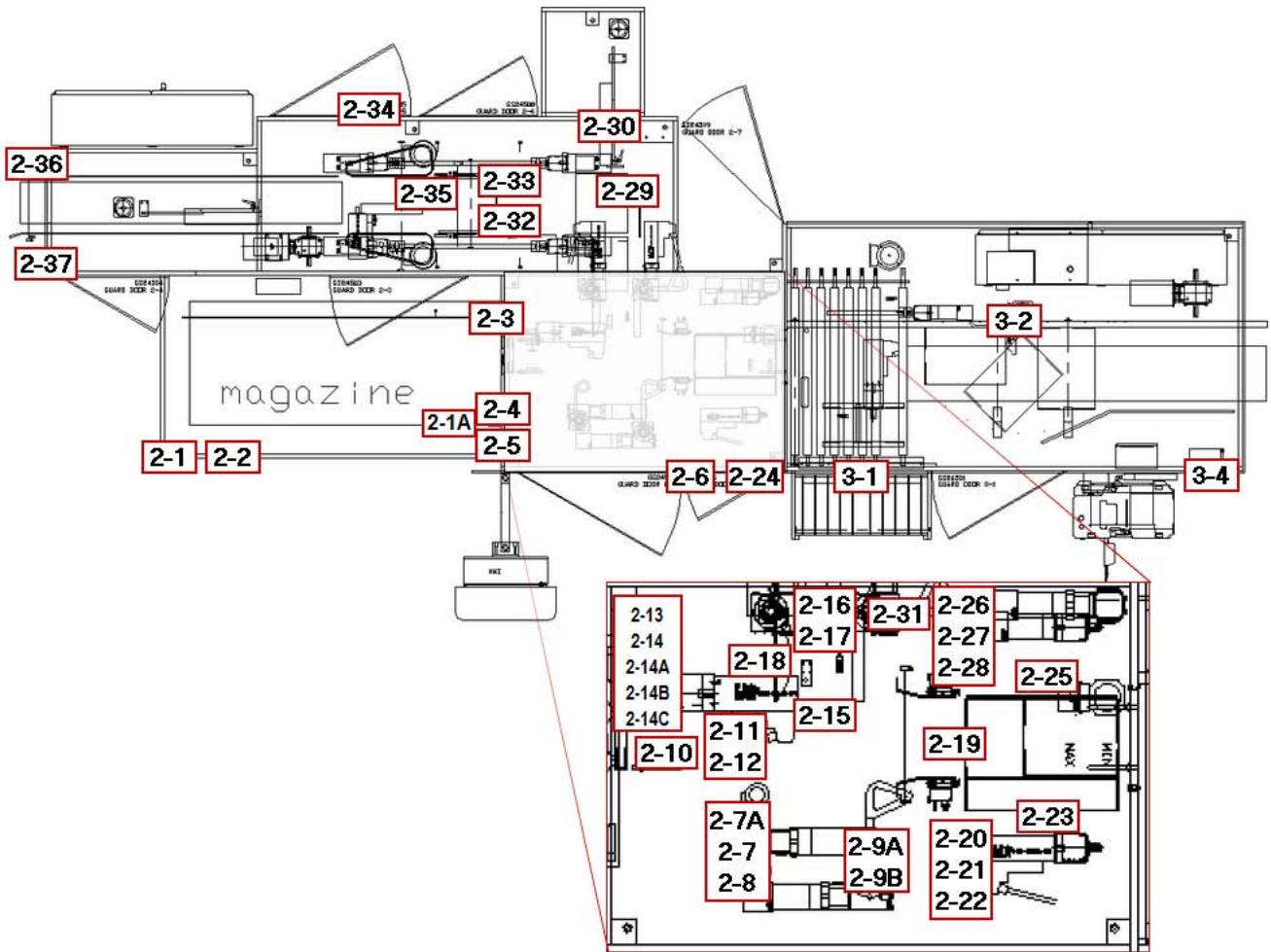
Training Index   Next Level 2 Training

Changeover Adjustments

Training Index   Next Level 2 Training

2-1

Using crank handle, adjust scale to the value shown on the View Changeover Adjustments page for this changeover location.

2-1A

Using quick handle, adjust position to the value shown on the View Changeover Adjustments page for this changeover location.

2-2

Using crank handle, adjust scale to the value shown on the View Changeover Adjustments page for this location.

2-3

Loosen quick handle and adjust the scale to the value shown on the View Changeover Adjustments page for this changeover location. Retighten quick handle!

2-4

Loosen quick handle and adjust the scale to the value shown on the View Changeover Adjustments page for this location. Retighten quick handle!

2-5

Using crank handle, adjust scale to the value shown on the View Changeover Adjustments page for this location.

Changeover Quick Reference Chart

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

Number	Name	(future products)		
CASE PACKER ADJUSTMENTS				
2-1	Operator Side Magazine Width			
2-1A	Operator Side Magazine Side Guide			
2-2	Non-Operator Side Magazine Width			
2-3	Non-Operator Side Magazine Rotate Clip			
2-4	Operator Side Magazine Rotate Clip			
2-5	Top Clip			
2-6	Bedplate Width			
2-7	Product Stop - Upper			
2-7A	Product Stop Top Plate			
2-8	Product Stop - Lower			
2-9A	Flap Tucker - Upper			
2-9B	Flap Tucker - Lower			
2-10	Robot Pick Cups			
2-11	Robot Case Pusher Horizontal			
2-12	Robot Case Pusher Vertical			
2-13	Wide Load Vacuum Control Switch A			
2-14	Wide Load Vacuum Control Switch B			
2-14A	Operator Side Load Cups On/Off			
2-14B	RR Center Load Cups On/Off			
2-14C	Operator Side Wide Load Cups On/Off			
2-15	Load Deck Transfer Plate Change Parts			
2-16	Top Flap Lift			
2-17	Product Conditioner Extension			
2-18	Funnel			
2-19	Upper Compression Height			
2-20	Operator Side Upper Glue Height			
2-21	Operator Side Tucker Rail Height			
2-22	Operator Side Lower Glue Height			
2-23	Operator Side Comp. Extension Plates			
2-24	Upper Compression Width			
2-25	Non-Operator Side Comp. Extension Plates			
2-26	Non-Operator Side Upper Glue Height			
2-27	Non-Operator Side After Tucker Rail Height			
2-28	Non-Operator Side Lower Glue Height			
2-29	Product Conditioner Height			

Number	Name	(future products)		
2-30	Loader Plate			
2-31	Fun-Tucker			
2-32	Downstacker Backstop Fixed Side			
2-33	Downstacker Backstop Adjustable Side			
2-34	Downstacker Width			
2-35	Downstack Pusher Change Part			
2-36	Infeed Conveyor Rail			
2-37	Funnel Width			
	ORIENTER ADJUSTMENTS			
3-1	Robot Tipper Horizontal			
3-2	Case Rotate Arm			
3-4	Conveyor Side Rail			

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

Training Index   Next Level 2 Training

Product Download Changeover Adjustments Page

General Page Information

This screen is active after a product download is initiated. It is a checklist for the changeover locations on the machine. Each changeover location is listed in the order that the adjustment should be executed. The target value for each changeover location is shown along with each changeover name and description. When an adjustment is completed, the button in the "Done" column may be pressed to indicate completion.

SAMPLE IMAGE

Done	Machine	Adj. Name	Description	Value
Yes	Sleever Case Packer	1-1	Example Adjustment	10
Yes	Sleever Case Packer	1-2	Example Adjustment	2
Yes	Sleever Case Packer	1-3	Example Adjustment	30
Yes	Sleever Case Packer	1-4	Example Adjustment	40
No	Sleever Case Packer	1-5	Example Adjustment	50
No	Sleever Case Packer	1-6	Example Adjustment	60
No	Sleever Case Packer	1-7	Example Adjustment	70
No	Sleever Case Packer	1-8	Example Adjustment	80
No	Sleever Case Packer	1-9	Example Adjustment	90
No	Sleever Case Packer	1-10	Example Adjustment	100
No	Sleever Case Packer	1-11A	Example Adjustment	110
No	Sleever Case Packer	1-11B	Example Adjustment	120
No	Sleever Case Packer	1-11C	Example Adjustment	130
No	Sleever Case Packer	1-11D	Example Adjustment	140
No	Sleever Case Packer	1-11E	Example Adjustment	150
No	Sleever Case Packer	1-11F	Example Adjustment	160
No	Sleever Case Packer	1-12A	Example Adjustment	170
No	Sleever Case Packer	1-12B	Example Adjustment	180

Print   Finish

Done

This column contains a Yes/No button for each changeover adjustment. When a changeover routine is in process, the Yes/No button may be selected to show whether or not the changeover adjustment has been completed during the current changeover routine.

Machine

This column lists which machine the changeover adjustment is located in.

Adj. Name

This column lists the name of the changeover adjustment. The name is typically a number that has been assigned to that particular changeover location.

Description

This column contains the description of the item.

Value

This is the value at which the changeover adjustment should be when completed.

Print

The print button will print the machine changeover screen to the default printer set up on the HMI. This printout can then be used during the machine changeover.

It is recommended that when the changeover is completed, the printout be discarded to ensure there are no obsolete copies.

Finish Button

Press this button to continue onto the HMI Main Screen after all of the adjustments have been completed. If any of the adjustments have not been marked completed, a popup will appear after the **Finish Button** has been pressed. This is a warning to verify that it is OK to continue onto the HMI Main Screen even though all the adjustments haven't been marked as completed.

Continuous Running

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

Case Blanks
Glue

Carton Blanks

Carton Blanks

To replenish the magazine while the machine is running, stack the carton blanks behind the follower plate and then slide the follower plate out from the stack. Make sure the printed side of the carton blanks is facing the follower plate, with the manufacturer's flap down. 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.

SAMPLE IMAGE

Follower Plate

Top Carton Drive

When the carton magazine is empty or if there are not enough blanks to support it, the top carton drive unit will pivot downwards. To prevent the top carton drive unit from hanging down and to make it easier to load the carton blanks, hold the drive unit up slightly, remove the support pin from it's vertical stored position,and insert the pin into the hole on the top of the unit as shown in the picture below. This will hold the top carton drive unit up and out of the way while carton blanks are being loaded. When sufficient carton blanks have been loaded, remove the pin and let the top carton drive unit rest on the top of the carton blanks. Return the support pin to it's stored position.

SAMPLE IMAGE

Case Blanks

Case Blanks

To replenish the magazine while the machine is running, stack the case blanks behind the follower plate and then slide the follower 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 onto the chain.

Glue

Glue Tanks

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

Fill level line

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.

Log In Screen

General Page Information

This is what the Aagard HMI Screen will look like if the Log In Button is pressed while no one is currently logged in. If a user is currently logged in, the button will display the text "Log Out". If the button is pressed while the "Log Out" text is displayed, the current user will be logged out and the "Log In" text will be displayed. Consult your supervisor for the correct user name and password. The machine will be logged out upon power up.

SAMPLE IMAGE

	Machine Run	Jog, Reference & Troubleshooting	Machine Data Input	Login User Information
Operator Level 1	☑			
Operator Level 2	☑	☑		
Advanced Technician Level 3	☑	☑	☑	
Administrator Level	☑	☑	☑	☑

Operator Control Panel (HMI)

HMI Main Screen

General Page Information

After power up and initialization of the Packaging system, the Main screen will be displayed. This Main screen is the starting point from which everything branches. All the Message Displays combined will provide information on what is happening with the machine, displaying any faults that would prevent the system from running (guard door open, low air pressure, etc.). The Aagard HMI will go straight to the Main Screen if the HMI is closed and reopened without losing power to any part of the machine.

NOTE: The system will be in the same Mode in which it was left at power down. Correct any Fault conditions which are displayed before attempting to run the machine.

NOTE: Depending on user level, not all buttons will be visible.

System Information

This section contains the machine name, the current downloaded product name, the current system rate and any system messages. A system is also known as the S10 level of the machine.

C40 Information

This section contains the C40 name, the state and mode, and any C40 messages. An example of a C40 would be a Cartoner or a Case Packer.

Rate
This entry field will allow the machine to operate at slower speeds. 100% is equal to the maximum rate at which the machine is able to operate. 50% is half that rate and so on. This only applies while in Automatic Mode

Reset
This button will reset the selected C40. This will make the machine think that there is no product in the machine. This button is a last resort to get the machine running again. After this button is pressed, all remaining product should be cleared out of the machine and then the machine can be started again.

Fault History Button
Pressing this button will open the Fault History Page for the C40 that the button was on.

Reject History Button
Pressing this button will open the Reject History Page for the C40 that the button was on.

Data Input Button
Pressing this button will open the Data Input Page for the C40 that the button was on.

Disable/Enable
Pressing this button will Disable/Enable the selected C40. When a C40 is disabled, that section of the machine will not perform its operations. When the C40 is disabled the button will be red and the State status will be Disabled. This button can only be toggled when that C40 is in Mode: Estop.

Disable/Enable Product
Pressing this button will Disable/Enable Product on the selected C40. When a C40 has Disabled Product, the button will be red. Disabled Product is a type of a dry cycle. When the machine is started back up, that section of the machine will perform its operations as if it were receiving the amount of product per minute specified in the System Rate Display. This button can only be toggled when that C40 is in Mode: Estop.

Automatic Mode Button
When the Automatic (Run) Mode Button for the C40 is pressed, that C40 will go into Automatic Mode. Press and hold the start pushbutton for 3 seconds to begin running. If no faults are detected, the Module will continue into the Producing Mode.

Manual Mode
Pressing the Manual Mode button will put the machine in manual mode and display two additional buttons: "Jog" and "Reference".

Jog Button
Pressing this button will open the Jog Page for the C40 that the button was on.

Reference Button
Pressing this button will open the Reference Page for the C40 that the button was on.

Production Data Table
This table shows the current shift's information and the current day's information. For more on this, see the Production Data Page.

Production Data Button
Pressing this button will open the Production Data Page for the machine.

QC Case
This allows the machine to reject one (1) good case for Quality Control purposes.

Custom Buttons

Pressing this button will open the Custom Buttons Page for the machine.

Advanced Button

Pressing this button will open the Advanced Page for the machine.

Product Change Button

Pressing this button will open the Product Download Page for the machine.

Log In / Log Out Button

If the button displays "Log In", then no user is currently logged in and pressing this button will open the the Log In Screen.

If the button displays "Log Out", then a user is currently logged in and pressing this button will cause the current user to be logged out.

NOTE: The current user name is displayed in the upper left area of the Main Page.

About Button

This button will show version and build information, and will be useful when troubleshooting with Aagard technicians.

Aagard Logo

Pressing this button will open the Aagard Machine Operator Manual from the HMI.
  o The user may be prompted to install a documentation update

Fault History Page

General Page Information

This page keeps a record of all faults generated. This may help with diagnosing any major problems or possible problems. These notices will be stored in the database for three days, and then will be deleted. The information displayed on this page is also accessible on the View Notices System Wide page.

SAMPLE IMAGE

C40 Filter
Click on the drop down arrow to view history for a particular C40. If a C40 is not listed, there are no messages to display.

Filter Buttons (Fault, Critical Fault, General, Warning, Reject, Debug, Utility, and Unhandled Not Shown)
These buttons represent different notice types. Press any button to filter those notices from the list. Pressing refresh will refresh the screen, displaying only those notice types selected.
- **Fault** – a message describing an unintended event which restricts the system's ability to produce
- **Critical Fault** – same as Fault, except the operator must acknowledge each Critical Fault individually
- **General** – an informational message which relays current existing conditions within the system
- **Warning** – a message describing an event which occurred, or an existing condition, which may cause a problem if not addressed
- **Reject** – a message describing why a product was rejected from the normal flow of product
- **Debug** – a message used during the debug stage of development to monitor for specific desired or undesired events
- **Utility** – a notice used to trigger a software utility
- **Unhandled Not Shown** – a message that is sent from the PLC but not defined in the Message data base
- **Production Data Not Shown** – a message used for production data collection

Individual Items
Click this button to display the items in the grid in chronological order.
> **NOTE:** When **Individual Items** is selected, the button color will be blue

Totaled
Click this button to display the items in the grid in a totaled fashion, displaying the number of times an item occurred. The items all totaled to allow the user to more easily view which items are occurring the most frequently.
> **NOTE:** When **Totaled** selected, the button color will be blue

A Aagard HMI - Notice History

Notice History for Inserter

Device	Location	Message	Count	
CS1AE Knife ...	Inserter	Cylinder Extend Switch Not M...	1	
MS1 Custom...	Inserter	VFD Faulted	2	
MS1 Custom...	Inserter	Invalid Program Call	16	
PE6 Register...	Inserter	Sensor Failure	8	
PE6 Register...	Inserter	Not Made During Startup	1	
PE2 Web Br...	Inserter	Web Break PE Not Blocked ...	1	
PE3 Loop Low	Inserter	Eye Not Blocked When Expe...	10	
SD2 Knife	Inserter	Lag Error	1	
SD1 Pinwheel	Inserter	Cam Load Failed	1	
CTRL1 HMI	Inserter	Switching To Sercos Phase 2 ...	1	

Edit Notes Button
Select a message in the grid and the Edit Notes Button becomes available. Click on the Edit Notes button to open a dialog window to add your notes to the messages. Double-clicking on the message itself also opens this dialog. Click OK on the dialog when finished.

Delete All Button
This button will delete the entire fault log. This will make any generated reports invalid since the Report Generator uses this fault log to generate its reports.

Refresh
This button will refresh the faults on the screen to the most current log at the time the refresh button was pressed, reflected by any filters which may have been selected.

Back Button
This button will return the user to the calling page.

Filter Drop Down List
Click on the drop down arrow to view available filters to apply to the list. Select a filter from the list to apply it. Depending on the selection, additional parameters become available to enter, such as dates and hours.

Column Options
To move a column from left to right, select a column from the dropdown list, and click Left or Right to move the column in either direction.

Device Column
This column displays the name of the device which generated the notice.

Message Column
This column displays the message which appeared on the notice. A list of possible messages, causes, and actions are given on the Message Notices section.

PLC Details Column
This column displays information received from the PLC when the notice was generated.

Shift Column

This column displays the shift in which the notice was recorded.

Down Time Column

This column displays time elapsed between notice display and when the system is started.

Ack Time Column

This column displays the length of time elapsed before the notice was acknowledged.

HMI Details Column

This column displays any additional information received from the HMI when the notice was generated.

Date Stamp Column

This column displays the date and time when the notice was generated.

Notes Column

This column displays any user entered information for the selected notice.

Notice Type

This column displays the type of notice recorded.

Location Column

This column displays the notice location or area of the machine.

Reject History Page

General Page Information

This page keeps a record of all rejects generated. This may help with diagnosing any major problems or possible problems. These notices will be stored in the database for three days, and then will be deleted. The information displayed on this page is also accessible on the View Notices System Wide page.

SAMPLE IMAGE

C40 Filter
Click on the drop down arrow to view history for a particular C40. If a C40 is not listed, there are no messages to display.

Filter Buttons (Fault, Critical Fault, General, Warning, Reject, Debug, Utility, and Unhandled Not Shown)
These buttons represent different notice types. Press any button to filter those notices from the list. Pressing refresh will refresh the screen, displaying only those notice types selected.
- **Fault** – a message describing an unintended event which restricts the system's ability to produce
- **Critical Fault** – same as Fault, except the operator must acknowledge each Critical Fault individually
- **General** – an informational message which relays current existing conditions within the system
- **Warning** – a message describing an event which occurred, or an existing condition, which may cause a problem if not addressed
- **Reject** – a message describing why a product was rejected from the normal flow of product
- **Debug** – a message used during the debug stage of development to monitor for specific desired or undesired events
- **Utility** – a notice used to trigger a software utility
- **Unhandled Not Shown** – a message that is sent from the PLC but not defined in the Message data base
- **Production Data Not Shown** – a message used for production data collection

Individual Items
Click this button to display the items in the grid in chronological order.
> **NOTE:** When **Individual Items** is selected, the button color will be blue

Totaled
Click this button to display the items in the grid in a totaled fashion, displaying the number of times an item occurred. The items all totaled to allow the user to more easily view which items are occurring the most frequently.
> **NOTE:** When **Totaled** selected, the button color will be blue

A Aagard HMI - Notice History

Notice History for Inserter

Device	Location	Message	Count	
CS1AE Knife ...	Inserter	Cylinder Extend Switch Not M...	1	
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MS1 Custom...	Inserter	Invalid Program Call	16	
PE6 Register...	Inserter	Sensor Failure	8	
PE6 Register...	Inserter	Not Made During Startup	1	
PE2 Web Br...	Inserter	Web Break PE Not Blocked ...	1	
PE3 Loop Low	Inserter	Eye Not Blocked When Expe...	10	
SD2 Knife	Inserter	Lag Error	1	
SD1 Pinwheel	Inserter	Cam Load Failed	1	
CTRL1 HMI	Inserter	Switching To Sercos Phase 2 ...	1	

Edit Notes Button

Select a message in the grid and the Edit Notes Button becomes available. Click on the Edit Notes button to open a dialog window to add your notes to the messages. Double-clicking on the message itself also opens this dialog. Click OK on the dialog when finished.

Delete All Button

This button will delete the entire fault log. This will make any generated reports invalid since the Report Generator uses this fault log to generate its reports.

Refresh

This button will refresh the faults on the screen to the most current log at the time the refresh button was pressed, reflected by any filters which may have been selected.

Back Button

This button will return the user to the calling page.

Filter Drop Down List

Click on the drop down arrow to view available filters to apply to the list. Select a filter from the list to apply it. Depending on the selection, additional parameters become available to enter, such as dates and hours.

Column Options

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PLC Details Column

This column displays information received from the PLC when the notice was generated.

Shift Column

This column displays the shift in which the notice was recorded.

Down Time Column

This column displays time elapsed between notice display and when the system is started.

Ack Time Column

This column displays the length of time elapsed before the notice was acknowledged.

HMI Details Column

This column displays any additional information received from the HMI when the notice was generated.

Date Stamp Column

This column displays the date and time when the notice was generated.

Notes Column

This column displays any user entered information for the selected notice.

Notice Type

This column displays the type of notice recorded.

Location Column

This column displays the notice location or area of the machine.

Production Data Page

General Page Information

This page will display any production data collected by the machine. This will show how the machine is performing from day to day. The downtime tracking summary is also displayed on the page.

NOTE: The items listed and their locations on this HMI page are 100% configurable and setup by an Aagard Level user during the HMI Setup process. As such, the content on this page is a representation of a possible configuration. The items and/or their locations may change as modifications to the configuration are made on a production Aagard machine in the field. Such configuration changes may not be reflected in this machine manual.

Time Period Drop Down Menu
This drop down menu will allow information to be displayed for a certain selected time period.

Edit Shifts Button
This button will display the Edit Shifts Screen.

Back Button
This button will display the HMI Main Screen.

Production Data Information

These items are setup by an Aagard Level user during HMI Setup.

IMPORTANT! If changes are made to production data formulas, the Report Generator process *must* be restarted!

Query Name	Short Description	Detailed Description
RunningTime	Running Time Tracking	Total amount of time the system in a producing state
IdleTime	Idle Time Tracking	Total amount of time the system was idle (starved or blocked)
UserStopsTime	User Stops Time Tracking	Total amount of downtime cause by user stops (E-Stop, Guard Door, Cycle Stop)
FaultTime	Fault Time Tracking	Total amount of downtime caused by faults
FaultAckTime	Fault Acknowledgement Time Tracking	Total amount of fault acknowledgement time
RunningTimeCount	Number of Running Time Occurrences	The number of instances the system went to a producing state
IdleTimeCount	Number of Idle Time Occurrences	Number of instances the system was not producing, caused by not receiving product or downstream not being available (starved and blocked)
UserStopCount	Number of User Stop Occurrences	Number of times the system was not producing, caused by a user stop (E-Stop, Guard Door, Cycle Stop)
FaultCount	Number of faults	Number of times the system was not producing, caused by a fault
DownTimeCount	# of Stops, Down Time Count	The number of instances the system was not producing, caused by a user stop or fault
RunningTimeSinceLastStop	Running Time Since Last User Stop Or Fault Recorded In System	Amount of time accumulated since the last time the system went into a producing or idle state
TargetCapacity	Target Capacity	The total number of products which could run through this machine if the machine is running at 100% for the measured time period. The machine rate is recipe-specific, as defined in the PLC program; rate changes during the measured time period are taken into account
UserStopLoss	Capacity Loss Due To User Stops	Capacity lost due to a user initiated downtime (E-Stop, Guard Door, Cycle Stop, and materials not available)
MachineStopLoss	Capacity Loss Due to Faults Or Machine Downtime	The capacity, in units, which was lost, caused by faults and idle time
StopLoss	Capacity Loss Due to All Stops	The capacity, in units, which was lost, caused by all stops (user stop loss and machine stop loss)
IdleStopLoss	Capacity Loss Due to System Being Idle	The capacity, in units, which was lost, caused by the system being idle (starved or blocked)
ExpectedOutput	Expected Output	The difference between Normal Production (NP) Capacity and Idle Stop Loss. NP Capacity is Target Capacity less Stop Loss
M(#)InfeedCount	Machine Infeed Product Count	The number of products fed into a specific machine infeed
M(#)UnitCount	Machine Unit Count	The number of good products discharged from a specific machine
M(#)RejectCount	Machine Reject Count	The number of products rejected from a specific machine
M(#)FaultCount	Machine Number of faults	The number of fault instances in a specific machine
M(#)FaultTime	Machine Fault Time	Total amount of time the system was not producing based on a specific machine's faults
M(#)FaultAckTime	Machine Fault Acknowledgement Time	The amount of fault acknowledgement time based on a specific machine's faults
M(#)MinFaultTime	Machine Minimum Fault Time	The shortest fault time length based on a specific machine's faults

Query Name	Short Description	Detailed Description
M(#)MaxFaultTime	Machine Maximum Fault Time	The longest fault time length based on a specific machine's faults
M(#)GDAFaultTime	Machine Greatest Deviation from Average Fault Time	The greatest deviation from average of fault time length based on a specific machine's faults
M(#)MinFaultAckTime	Machine Minimum Fault Ack Time	The shortest fault acknow ledgement time based on a specific machine's faults
M(#)MaxFaultAckTime	Machine Maximum Fault Ack Time	The longest fault acknow ledgement time based on a specific machine's faults
M(#)GDAFaultAckTime	Machine Greatest Deviation from Average Fault Ack Time	The greatest deviation from average fault acknow ledgement time based on a specific machine's faults
R(#)StopsCount	Number of stops based on Reason Code	Total number of instances the machine w as not producing based on one specific reason code
R(#)StopsTime	Stops Time based on Reason Code	Total amount of time the system w as not producing based on one specific reason code
R(#)StopsMinTime	Stops Minimum Time based on Reason Code	Shortest amount of time the system w as not producing based on one specific reason code
R(#)StopsMaxTime	Stops Maximum Time based on Reason Code	Longest amount of time the system w as not producing based on one specific reason code
R(#)StopsGDATime	Stops Greatest Deviation from Average Stop Time based on Reason Code	Greatest deviation from average time the system w as not producing based on one specific reason code

Advanced Page

General Page Information

This screen provides access to advanced functions on the machine.

NOTE: Depending on user level, not all buttons will be visible

Shutdown Computer

This button will activate the process of powering down the PC on which the Aagard HMI is located. Pressing this button will stop instantly any operations the machine is doing. Shutdown Warning

Failure to properly shut down the PC may void the warranty!

Switch on	The Industrial PC does not have its own main switch. The Industrial PC will start when the equipment is switched on, or when it is connected to the power supply.

Shutting down and switching off	When the plant is switched off, or when it is disconnected from its power supply, the Industrial PC will be switched off. Control software such as is typically used on Industrial PCs permits various users to be given different rights. A user who may not close software may also not switch the Industrial PC off, since data can be lost from the hard disk by switching off while software is running
⚠️ Warning!	**First shut down, then switch off the PC!** If the Industrial PC is switched off as the software is writing a file to the hard disk, the file will be destroyed. Control software typically writes something to the hard disk every few seconds, so the probability of causing damage by switching off the PC while the software is running is very high!
⚠️ Warning!	When you have shut down the Industrial PC, you have to switch off power supply for at least 10 seconds before rebooting the system. After resetting power supply, the PC will start booting automatically.

To properly shut down the PC, contact a Level 2 or higher Operator.

Restart Computer
This button will activate the process of restarting the PC on which the Aagard HMI is located. Pressing this button will stop instantly any operations the machine is doing.

ADCOMS
When ADCOMS in enabled, this button will give access to the ADCOMS pages. Full ADCOMS Documentation is available by pressing the Help button on the ADCOMS Main page.

HMI Setup
This button gives access to the Main Page tab which allows the user to choose to view the Production Data in Classic style or as an HTML page. **Level 3 access required.**

Glue Group
Changes made on these pages will only affect the current downloaded product
- These buttons will open the corresponding glue pages.

Data Group
Data on these pages is for information only, and should not need to be changed on these pages
- **View Notices System Wide Button** - This button will open the View Notices System Wide Page.
- **View Change Log Button** - This button will open the Change Log Page.
- **Misc Tags Button** - This button will open the Misc Tags Page.
- **View Changeover Adjustments Button** - This button will open the View Changeover Adjustments Page.
- **Marquee Button** - This button will open the Marquee Page, if installed.
- **GMI Tags Button** - This button will open the Tags Page, if installed.

Diagnostics Group
Data on these pages is for information only
- **Servo Drive Diagnostics Button -** This button will open the Drive Diagnostics Page.
- **Member Map Diagnostics Button -** This button will open the Member Map Diagnostics Page.
- **I/O Diagnostics Button -** This button will open the I/O Diagnostics Page.
- **Sercos Diagnostics Button** - This button will open the Sercos Diagnostics Page.

Help Group
Buttons in this group will launch Help programs
- **Servo Drive Help -** This button will launch the Servo Drive Help program.
- **Beckhoff Information System -** This button will launch the Beckhoff Information System program.
- **Aagard Logo -** This button will open the Aagard Machine Operator Manual from the HMI.
  o The user may be prompted to install a documentation update

- **Button** - When installed, this button will open the Aagard Troubleshooting Guide.
  o The user may be prompted to install a documentation update

Test Carton Qty Field
The machine will pick this number of test cartons when the Start Button is pressed during machine operation, or when the start button is held longer than three seconds when starting the machine.

Test Carton
To pick and form one empty carton, and reject it from the cartoner, press the Test Carton Button while the machine is running

Remove Aagard Available For Product
This will remove the signal sent out from the Aagard telling upstream equipment that it is available for product. Selecting this will stop upstream equipment from sending product to the Aagard system.

Ignore Downstream Available
This ignores the "Downstream Available for Product" signal coming from downstream equipment. Selecting this will allow the machine to run and produce product even when downstream equipment isn't available to take product.

Set Up Users Button
This button will open the Setup Users Page. This button is only visible when logged in as Administrator Level.

Back Button
This button will close this page and go to the HMI Main Screen.

Glue Page

General Page Information

If this feature is installed, this page allows the user to easily adjust the available glue pattern. This page shows the product as it moves through the glue heads looking at it from the operator (HMI) side of the machine (*The direction of the blue arrow indicates the direction of product flow*).

Stitch Adjust Information

To display the stitch adjustment popup in the bottom center of the screen, click on any red glue stitch that needs to be adjusted. This popup will display all the adjustment information for the selected stitch.

<div align="center">SAMPLE IMAGE</div>

- **On**

This is the on point of the selected stitch. **NOTE:** The ON value must be less than the OFF value!
- **Off**

This is the off point of the selected stitch. **NOTE:** The OFF value must be greater than the ON value!
- **Left Arrow**

This arrow will move the selected stitch point to the left relative to the product shown in the picture.

- **Right Arrow**

This arrow will move the selected stitch point to the right relative to the product shown in the picture.

- **Master Offset**

This will adjust the start of the cam relative to the designated servo axis. Usually the cam will relate to a position of a servo axis that is moving the product, such as flight chains.

- **Stitch Gap %**

This is the percent of glue stitch that is taken out of the center of the selected glue stitch.

NOTE: This setting applies to Case Packers only!

- **Use Gap Check Box**

This will allow the user to decide if there is to be a gap stitch applied or a full stitch applied.

NOTE: This setting applies to Case Packers only, when this feature is enabled!

Edit

This button will open the page in edit mode. **Aagard user level required!**

Back

This button will display the Advanced Page.

View Notices System Wide

General Page Information

This page keeps a record of all notices generated. This may help with diagnosing any major problems or possible problems. These notices will be stored in the database for three days, and then will be deleted.

SAMPLE IMAGE

C40 Filter

Click on the drop down arrow to view history for a particular C40. If a C40 is not listed, there are no messages to display.

Filter Buttons (Fault, Critical Fault, General, Warning, Reject, Debug, Utility, and Unhandled Not Shown)

These buttons represent different notice types. Press any button to filter those notices from the list. Pressing refresh will refresh the screen, displaying only those notice types selected.

- **Fault** – a message describing an unintended event which restricts the system's ability to produce
- **Critical Fault** – same as Fault, except the operator must acknowledge each Critical Fault individually
- **General** – an informational message which relays current existing conditions within the system
- **Warning** – a message describing an event which occurred, or an existing condition, which may cause a problem if not addressed
- **Reject** – a message describing why a product was rejected from the normal flow of product
- **Debug** – a message used during the debug stage of development to monitor for specific desired or undesired events
- **Utility** – a notice used to trigger a software utility
- **Unhandled Not Shown** – a message that is sent from the PLC but not defined in the Message data base
- **Production Data Not Shown** – a message used for production data collection

Individual Items
Click this button to display the items in the grid in chronological order.
>   NOTE: When **Individual Items** is selected, the button color will be blue

Totaled
Click this button to display the items in the grid in a totaled fashion, displaying the number of times an item occurred. The items all totaled to allow the user to more easily view which items are occurring the most frequently.
>   NOTE: When **Totaled** selected, the button color will be blue

Edit Notes Button
Select a message in the grid and the Edit Notes Button becomes available. Click on the Edit Notes button to open a dialog window to add your notes to the messages. Double-clicking on the message itself also opens this dialog. Click OK on the dialog when finished.

Delete All Button
This button will delete the entire fault log. This will make any generated reports invalid since the Report Generator uses this fault log to generate its reports.

Refresh
This button will refresh the faults on the screen to the most current log at the time the refresh button was pressed, reflected by any filters which may have been selected.

Back Button
This button will return the user to the calling page.

Filter Drop Down List

Click on the drop down arrow to view available filters to apply to the list. Select a filter from the list to apply it. Depending on the selection, additional parameters become available to enter, such as dates and hours.

Column Options

To move a column from left to right, select a column from the dropdown list, and click Left or Right to move the column in either direction.

Device Column

This column displays the name of the device which generated the notice.

Message Column

This column displays the message which appeared on the notice. A list of possible messages, causes, and actions are given on the Message Notices section.

PLC Details Column

This column displays information received from the PLC when the notice was generated.

Shift Column

This column displays the shift in which the notice was recorded.

Down Time Column

This column displays time elapsed between notice display and when the system is started.

Ack Time Column

This column displays the length of time elapsed before the notice was acknowledged.

HMI Details Column

This column displays any additional information received from the HMI when the notice was generated.

Date Stamp Column

This column displays the date and time when the notice was generated.

Notes Column

This column displays any user entered information for the selected notice.

Notice Type

This column displays the type of notice recorded.

Location Column

This column displays the notice location or area of the machine.

Change Log Page

General Page Information

This page will display any changes that have been made to the Aagard HMI database. This excludes any cam changes made, which are allowable and will not be displayed here. The drop down list filter in the bottom left corner of this page will allow a specific time period to be selected. The changes logged will be deleted after three months.

SAMPLE IMAGE

Delete All

This button will delete the entire contents of the change log. This will make any change log section of the generated reports invalid because the report generator uses this change log to generate its reports.

Refresh

This button will refresh the changes on the screen to the most current log at the time the refresh button was pressed.

Back Button
This button will display the Advanced Page.

Filter Drop Down List
Click on the drop down arrow to view available filters to apply to the list. Select a filter from the list to apply it. Depending on the selection, additional parameters become available to enter, such as dates and hours.

| From Date/Time: | 1/ 4/2010 ▾ | 5:59:00 AM ⬍ |
| To Date/Time: | 1/ 4/2010 ▾ | 5:59:00 PM ⬍ |

| Show Last: | 0 Hours | 0 Minutes |

Location Column
This column will display on which page the change was made.

Field Column
This column will display the name of the field to which the change was made.

Old Value Column
This column will record what the value was before the change was made.

New Value Column
This column will record what the value is after the change was made.

Product Column
This column will display the product downloaded when the change was made.

Notes Column
This column will display any notes that were entered by the user into the notes popup after the change was made.

Who Column
This column will display the user that was logged on at the time of the change.

Changed Date Column
This column will display the date that the change was made.

Changed Time Column
This column will display the time that the change was made.

View Changeover Adjustments

General Page Information

This page will display the changeover adjustments for the particular product selected. This page is identical to the Product Download Changeover Adjustments Page with the exception that it is for display purposes only. A popup screen will not be displayed if a changeover adjustment was not completed when exiting this page. Please go to the Product Download Changeover Adjustments Page for further details.

SAMPLE IMAGE

Aagard HMI - Adjustments

Done	Machine	Adj. Name	Description	Value
Yes	Sleever Case Packer	1-1	Example Adjustment	10
Yes	Sleever Case Packer	1-2	Example Adjustment	2
Yes	Sleever Case Packer	1-3	Example Adjustment	30
Yes	Sleever Case Packer	1-4	Example Adjustment	40
No	Sleever Case Packer	1-5	Example Adjustment	50
No	Sleever Case Packer	1-6	Example Adjustment	60
No	Sleever Case Packer	1-7	Example Adjustment	70
No	Sleever Case Packer	1-8	Example Adjustment	80
No	Sleever Case Packer	1-9	Example Adjustment	90
No	Sleever Case Packer	1-10	Example Adjustment	100
No	Sleever Case Packer	1-11A	Example Adjustment	110
No	Sleever Case Packer	1-11B	Example Adjustment	120
No	Sleever Case Packer	1-11C	Example Adjustment	130
No	Sleever Case Packer	1-11D	Example Adjustment	140
No	Sleever Case Packer	1-11E	Example Adjustment	150
No	Sleever Case Packer	1-11F	Example Adjustment	160
No	Sleever Case Packer	1-12A	Example Adjustment	170
No	Sleever Case Packer	1-12B	Example Adjustment	180

Print   Finish

Device List

NOTE:
"CP" preceding a grid location indicates the device is in the Case Packer
"O" preceding a grid location indicates the device is in the Orienter

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

Type	Name	Location	Description	Aagard PN	Brick Slice Point	I/O Type	Grid
Cylinder Switch	CS31606	Case Packer Infeed	Product Conditioner	Z0123202	B1 S14 P6	Input-Digital	CP_D15
Cylinder Switch	CS31901	Case Packer	Case Packer Case Stop	Z0123236	B1 S17 P1	Input-Digital	CP_I19
Cylinder Switch	CS31902	Case Packer	Case Pusher	Z0123236	B1 S17 P2	Input-Digital	CP_I17
Cylinder Switch	CS51507	Orienter	Tipper Case Stop	Z0123236	B5 S11 P7	Input-Digital	O_F4
Cylinder Switch	CS31607	Case Packer Infeed	Product Conditioner	Z0123202	B1 S14 P7	Input-Digital	CP_D15
Disconnect	DS501	Main Cabinet	Main Disconnect	Z0007466			CP_C4
Disconnect	DS9402	Case Packer	Glue Disconnect	Z0031001			O_H14
Emergency Stop	ES24301	HMI Cabinet	System Emergency Stop	Z0004654	B1 S11 P8	Input-Digital	CP_N12
Emergency Stop	ES24303	Case Packer Infeed	Case Packer Non Operator Side Emergency Stop	Z0004654	B1 S12 P5	Input-Digital	CP_C6
Emergency Stop	ES24304	Case Packer	Case Packer Operator Side Emergency Stop	Z0004654	B1 S12 P3	Input-Digital	CP_L16
Emergency Stop	ES26303	Orienter Cabinet	Orienter Non Operator Side Emergency Stop	Z0004654	B5 S7 P8	Input-Digital	O_A13
Emergency Stop	ES26304	Orienter	Orienter Operator Side Emergency Stop	Z0004654	B5 S7 P6	Input-Digital	O_H12
Filter Regulator	FR60201	Case Packer	Filter Regulator	Z0067505			CP_G5
Guard Switch	GS24501	Case Packer	Guard Door 2-1	Z0121797	B1 S13 P1	Input-Digital	CP_G4
Guard Switch	GS24502	Case Packer	Guard Door 2-2	Z0121797	B1 S13 P2	Input-Digital	CP_G8
Guard Switch	GS24503	Case Packer	Guard Door 2-3	Z0121797	B1 S13 P3	Input-Digital	CP_L16
Guard Switch	GS24504	Case Packer	Guard Door 2-4	Z0121797	B1 S13 P4	Input-Digital	CP_L17
Guard Switch	GS24505	Case Packer	Guard Door 2-5	Z0121797	B1 S13 P5	Input-Digital	CP_C16

Type	Name	Location	Description	Aagard PN	Brick Slice Point	I/O Type	Grid
Guard Switch	GS24508	Case Packer	Guard Door 2-6	Z0121797	B1 S13 P6	Input-Digital	CP_C13
Guard Switch	GS24509	Case Packer	Guard Door 2-7	Z0121797	B1 S13 P7	Input-Digital	CP_C10
Guard Switch	GS26501	Orienter	Guard Door 3-1	Z0121797	B5 S8 P1	Input-Digital	O_I6
Servo Power	HCS01	Case Packer Cabinet	Case Packer Servo Power Converter	Z0103625	B1 S11 P3	Input-Digital	CP_C6
Servo Power	HCS01	Case Packer Cabinet	Case Packer Servo Power Converter	Z0103625	B1 S2 P4	Output-Live	CP_C6
Servo Power	HCS02	Orienter Cabinet	Servo Power Converter	Z0103625	B5 S1 P4	Output-Live	O_B14
Servo Power	HCS02	Orienter Cabinet	Servo Power Converter	Z0103625	B5 S7 P4	Input-Digital	O_B14
Motor	MT807	Orienter	Case Conveyor	795042			O_C12
Motor	MT1303	Case Packer Infeed	Infeed Conveyor	Z0023823			CP_F7
Motor	MT1403	Case Packer Infeed	Non Operator Side Side Belts	Z0023823			CP_D10
Motor	MT1406	Case Packer Infeed	Operator Side Side Belts	Z0023823			CP_F10
Motor	MT1502	Orienter	Tip/Reject Conveyor	795041			O_B4
Push Button	PB19904	HMI Cabinet	PC Reset	Z0129818			CP_N12
Push Button	PB30101	HMI Cabinet	System Start	Z0005435	B1 S11 P6	Input-Digital	CP_N12
Push Button	PB30101	HMI Cabinet	System Start	Z0005435	B1 S1 P1	Output-Live	CP_N12
Push Button	PB30205	Case Packer Cabinet	Case Packer System Start	Z0005435	B1 S12 P1	Input-Digital	CP_C6
Push Button	PB30205	Case Packer Cabinet	Case Packer System Start	Z0005435	B1 S2 P5	Output-Live	CP_C6
Push Button	PB31307	HMI Cabinet	System Cycle Stop	Z0004653	B1 S11 P7	Input-Digital	CP_N12
Push Button	PB31402	Case Packer	Case Packer Non Operator Side Cycle Stop	Z0004653	B1 S12 P2	Input-Digital	CP_C6
Push Button	PB31404	Case Packer Infeed	Case Packer Operator Side Cycle Stop	Z0004653	B1 S12 P4	Input-Digital	CP_L16
Push Button	PB51105	Orienter	Orienter Operator Side Cycle Stop	Z0004653	B5 S7 P5	Input-Digital	O_H12
Push Button	PB51107	Orienter Cabinet	Orienter Non Operator Side Cycle Stop	Z0004653	B5 S7 P7	Input-Digital	O_A13
Photo Eye	PE31002	Case Packer Infeed	Non Op Side Lower Downstacker Reference	Z0123440	B1 S8 P2	Input-Digital	CP_D13
Photo Eye	PE31003	Case Packer Infeed	Non Op Side Upper Downstacker	Z0123440	B1 S8 P3	Input-Digital	CP_D11

Type	Name	Location	Description	Aagard PN	Brick Slice Point	I/O Type	Grid
			Reference				
Photo Eye	PE31004	Case Packer Infeed	Operator Side Lower Downstacker Reference	Z0123440	B1 S8 P4	Input-Digital	CP_G13
Photo Eye	PE31005	Case Packer Infeed	Operator Side Upper Downstacker Reference	Z0123440	B1 S8 P5	Input-Digital	CP_G11
Photo Eye	PE31104	Case Packer Infeed	Case Packer Flights	Z0123440	B1 S9 P4	Input-Digital	CP_H13
Photo Eye	PE31702	Case Packer Infeed	Product in Side Belts	Z0123440	B1 S15 P2	Input-Digital	CP_G10
Photo Eye	PE31703	Case Packer Infeed	2nd Carton At Downstacker	Z0097847	B1 S15 P3	Input-Digital	CP_D11
Photo Eye	PE31704	Case Packer Infeed	1st Carton At Downstacker	Z0096984	B1 S15 P4	Input-Digital	CP_E12
Photo Eye	PE31707	Case Packer Infeed	Product At Downstack Pusher	Z0123440	B1 S15 P7	Input-Digital	CP_D12
Photo Eye	PE31803	Case Packer Magazine	Case Blanks Present	Z0096984	B1 S16 P3	Input-Digital	CP_H11
Photo Eye	PE31903	Case Packer	Case Present at Load	Z0123715	B1 S17 P3	Input-Digital	CP_H15
Photo Eye	PE31904	Case Packer	Distorted Case	Z0123440	B1 S17 P4	Input-Digital	CP_H16
Photo Eye	PE31905	Case Packer Infeed	Product At Loader	Z0123440	B1 S15 P1	Input-Digital	CP_F15
Photo Eye	PE51401	Orienter	Operator Side Open Case Flap	Z0123440	B5 S10 P1	Input-Digital	CP_I19
Photo Eye	PE51402	Orienter	Non Operator Side Open Case Flap	Z0123440	B5 S10 P2	Input-Digital	CP_H19
Photo Eye	PE51503	Orienter	Case At Tip	Z0123440	B5 S11 P3	Input-Digital	O_D1
Photo Eye	PE51504	Orienter	Lower Case Reject Chute	Z0123440	B5 S11 P4	Input-Digital	O_J5
Photo Eye	PE51505	Orienter	Case At Rotate	Z0123440	B5 S11 P5	Input-Digital	O_D8
Photo Eye	PE51506	Orienter	Case Present After Rotate	Z0123440	B5 S11 P6	Input-Digital	O_D10
Photo Eye	PE51508	Orienter	Upper Case Reject Chute	Z0123440	B5 S11 P8	Input-Digital	O_J5
Pressure Switch	PS31201	Case Packer	System Air Pressure	Z0064191	B1 S10 P1	Input-Digital	CP_G5
Prox	PX31001	Case Packer Infeed	Spatula Reference	Z0098920	B1 S8 P1	Input-Digital	CP_F9
Prox	PX31006	Case Packer Infeed	Downstack Pusher Reference	Z0098920	B1 S8 P6	Input-Digital	CP_E4
Prox	PX31007	Case Packer	Loader Probe	Z0098920	B1 S8 P7	Input-Digital	CP_B15
Prox	PX31102	Case Packer	Case Packer Robot X	Z0098920	B1 S9 P2	Input-Digital	CP_G14

Type	Name	Location	Description	Aagard PN	Brick Slice Point	I/O Type	Grid
Prox	PX31103	Case Packer	Z Axis Probe	Z0098920	B1 S9 P3	Input-Digital	CP_I16
Prox	PX31908	Case Packer	Load Gate Closed	Z0098920	B1 S17 P8	Input-Digital	CP_D16
Prox	PX31804	Case Packer Magazine	Case Magazine Advance	Z0098920	B1 S16 P4	Input-Digital	CP_H13
Prox	PX51001	Orienter	Case Tip Y Reference	Z0098920	B5 S6 P1	Input-Digital	O_C4
Prox	PX51002	Orienter	Case Tipper Reference	Z0098920	B2 S5 P2	Input-Digital	O_G3
Regulator	Reg30401	Case Packer Magazine	Magazine Advance	Z0016121			CP_G12
Regulator	Reg30805	Case Packer	Lower Fixed Glue Regulator	Z0016121			CP_F17
Regulator	Reg30806	Case Packer	Lower Adjustable Glue Regulator	Z0016121			CP_J16
Regulator	Reg30807	Case Packer	Upper Fixed Glue Regulator	Z0016121			CP_H16
Regulator	Reg30808	Case Packer	Upper Adjustable Glue Regulator	Z0016121			CP_K17
Servo Motor	SM01	Case Packer Infeed	Transfer Spatula	Z0103609			CP_F9
Servo Motor	SM02	Case Packer Infeed	Non Op Side Lower Downstacker	Z0103609			CP_D9
Servo Motor	SM03	Case Packer Infeed	Non Op Side Upper Downstacker	Z0103609			CP_D14
Servo Motor	SM04	Case Packer Infeed	Operator Side Lower Downstacker	Z0103609			CP_F9
Servo Motor	SM05	Case Packer Infeed	Operator Side Upper Downstacker	Z0103609			CP_F14
Servo Motor	SM06	Case Packer Infeed	Down Stack Pusher	Z0103609			CP_E3
Servo Motor	SM07	Case Packer Infeed	Loader	Z0103609			CP_A15
Servo Motor	SM08	Case Packer Infeed	Funnel	Z0103607			CP_F15
Servo Motor	SM09	Case Packer Infeed	Fun Tucker	Z0103607			CP_F16
Servo Motor	SM10	Case Packer	Tucker	Z0103607			CP_K15
Servo Motor	SM11	Case Packer	Product Stop	Z0103607			CP_J15
Servo Motor	SM12	Case Packer	Case Packer Robot X Axis	Z0103609			CP_H18
Servo Motor	SM13	Case Packer	Case Packer Robot Z Axis	Z0103610			CP_I17
Servo Motor	SM14	Case Packer	Case Packer	Z0103607			CP_G18

Type	Name	Location	Description	Aagard PN	Brick Slice Point	I/O Type	Grid
			Flights				
Servo Motor	SM15	Case Packer	Lower Compression Non Operator Side	Z0103607			CP_G17
Servo Motor	SM16	Case Packer	Lower Compression Operator Side	Z0103607			CP_J17
Servo Motor	SM17	Case Packer	Upper Compression Non Operator Side	Z0103607			CP_G18
Servo Motor	SM18	Case Packer	Upper Compression Operator Side	Z0103607			CP_J17
Servo Motor	SM19	Orienter	Case Tip Y	Z0103607			O_D6
Servo Motor	SM20	Orienter	Case Tipper	Z0103610			O_E4
Servo Motor	SM21	Orienter	Case Rotate	Z0103607			O_D8
Solenoid Valve	SV24223	Case Packer	Manual Dump Valve	Z0067506			CP_G5
Solenoid Valve	SV24223	Case Packer	System Air Dump	Z0036804			CP_G5
Solenoid Valve	SV30306	Case Packer Magazine	Magazine Rotate Clips	Z0023954	B1 S3 P6	Output-Live	CP_G11
Solenoid Valve	SV30307	Case Packer	Load Cups Blow back	Z0023954	B1 S3 P7	Output-Live	CP_G18
Solenoid Valve	SV30308	Case Packer	Load Vacuum	Z0014917	B1 S3 P8	Output-Live	CP_H13
Solenoid Valve	SV30401	Case Packer Magazine	Magazine Advance	Z0023954	B1 S4 P1	Output-Live	CP_G11
Solenoid Valve	SV30402	Case Packer	Case Packer Case Stop	Z0024215	B1 S4 P2	Output-Live	CP_G18
Solenoid Valve	SV30403	Case Packer	Case Pusher	Z0024215	B1 S4 P3	Output-Live	CP_I15
Solenoid Valve	SV30406	Case Packer Infeed	Fun Tucker	Z0023954	B1 S4 P6	Output-Live	CP_G18
Solenoid Valve	SV30407	Case Packer Infeed	Funnel In/Out	Z0023954	B1 S4 P7	Output-Live	CP_G18
Solenoid Valve	SV30408	Case Packer	Case Packer Robot Vacuum	Z0014917	B1 S4 P8	Output-Live	CP_I6
Solenoid Valve	SV30703	Case Packer Infeed	Product Conditioner	Z0029339	B1 S6 P3	Output-E-Stop	CP_D15
Solenoid Valve	SV30703	Case Packer Infeed	Product Conditioner	Z0029339	B1 S6 P4	Output-E-Stop	CP_D15
Solenoid Valve	SV30705	Case Packer Magazine	Magazine Top Clip	Z0029339	B1 S6 P5	Output-E-Stop	CP_G11
Solenoid Valve	SV30705	Case Packer Magazine	Magazine Top Clip	Z0029339	B1 S6 P6	Output-E-Stop	CP_G11
Solenoid Valve	SV30707	Case Packer Magazine	Magazine Bottom Clip	Z0029339	B1 S6 P8	Output-E-Stop	CP_G11
Solenoid Valve	SV30707	Case Packer Magazine	Magazine Bottom Clip	Z0029339	B1 S6 P7	Output-E-Stop	CP_G11

Type	Name	Location	Description	Aagard PN	Brick Slice Point	I/O Type	Grid
Solenoid Valve	SV30801	Case Packer	Load Cups Lift	Z0029339	B1 S7 P2	Output-E-Stop	CP_G18
Solenoid Valve	SV30801	Case Packer	Load Cups Lift	Z0029339	B1 S7 P1	Output-E-Stop	CP_G18
Solenoid Valve	SV30805	Case Packer	Lower Glue Non Operator Side	Z0004483	B1 S7 P5	Output-E-Stop	CP_H16
Solenoid Valve	SV30806	Case Packer	Lower Glue Operator Side	Z0004483	B1 S7 P6	Output-E-Stop	CP_J16
Solenoid Valve	SV30807	Case Packer	Upper Glue Non Operator Side	Z0004483	B1 S7 P7	Output-E-Stop	CP_H16
Solenoid Valve	SV30808	Case Packer	Upper Glue Operator Side	Z0004483	B1 S7 P8	Output-E-Stop	CP_J16
Solenoid Valve	SV50201	Orienter	Case Rotate Vacuum	Z0014917	B5 S2 P1	Output-Live	O_C8
Solenoid Valve	SV50703	Orienter	Tipper Case Stop	Z0024214	B5 S4 P4	Output-E-Stop	O_C7
Solenoid Valve	SV50703	Orienter	Tipper Case Stop	Z0024214	B5 S4 P3	Output-E-Stop	O_C7
Vacuum Switch	VS31202	Case Packer	System Vacuum	Z0089514	B1 S10 P2	Input-Digital	O_A4
Vacuum Switch	VS31708	Case Packer	Load Vacuum	Z0089514	B1 S15 P8	Input-Digital	CP_G13
Vacuum Switch	VS31806	Case Packer	Case Packer Robot Vacuum	Z0089514	B1 S16 P6	Input-Digital	CP_I16
Vacuum Switch	VS51305	Orienter	Case Rotate Vacuum Present	Z0089514	B5 S9 P5	Input-Digital	O_D8
Transformer	XF10002	Case Packer	480 VAC - 120 VAC	794578			CP_D3

I/O Diagnostics Page

General Page Information

This page is only for status information. It shows the user whether or not an I/O point is energized on an I/O Brick and Slice. If an I/O point is energized the status dot will be red. This page will display all the I/O points on the machine. Through I/O points, the controller communicates to the devices on the machine or anything in the physical world. This is mainly a troubleshooting feature.

Hover over a point with the mouse and a tool tip will display brick, slice, and point.

Click on the + (plus symbol) to expand a node, or click on the - (minus symbol) to minimize a node.

SAMPLE IMAGE

Search

Type text into the box and click search. If what you are searching for is found, the first instance of the searched-for text is highlighted in the tree. If it is not found, the search box will turn red. Clicking search repeatedly acts as "Next".

Collapse Tree

Clicking this button collapses all nodes in the tree.

Add

Click to add an IO node.

Delete

Click to delete the selected IO node.

Back Button

This button will display the <u>Advanced Page</u>.

Jog Page

From here, the machine user is able to manually jog the prime movers that power the actions of this machine. This screen also contains the status of the selected servo drive, including Actual Position, Max Position Error, Max Torque and State – Enabled, Disabled, or Faulted. All Jogging functions are made in a manual mode, which means that no automatic functions govern their movements.

Servo Axis Jogging

To manually move a component that is driven by a servo motor, the user must define which servo axis they want to jog and select it from the servo axis drop down list. Once the machine is started and in the ready state and manual mode, the user may jog the servo axis in the desired direction. The State and Mode is displayed in the bottom left hand corner next to the Drive Status Display. Other servo jogging features include velocity, Go To Position (which sends the axis to that position), and an alternating jog function. Unlike non servo controlled motors and solenoid valves, a servo axis will only travel while the button is depressed. Once the button is released the axis will stop.

Warning: Jogging should be done very carefully and at a low velocity. This will eliminate damage to any obstructed machine parts. Use the jog velocity sliding bar to adjust velocity.

SAMPLE IMAGE

Servo Drive
To access different servo drives, use the servo drive drop down list.

Actual Position
This display will show the actual position of the Servo.

Jog Button
This button will jog the Servo Axis in the direction the button states.

Left Arrow
This button will adjust the Velocity Adjustor Bar to the left.

Jog Velocity
This bar can be dragged or moved via the Arrow buttons on the right or left of the bar to select the velocity of the Servo Axis selected in the servo drive drop down menu.

Right Arrow
This button will adjust the Velocity Adjustor Bar to the right.

Go To Target Position
This entry field will allow a position to be specified and, when the Go To Position button is pressed, the Servo Axis will move in the shortest direction to get to the specified position.

Go To Position
This button moves the Servo Axis to the position specified in the Go To Target Position entry field via the shortest way possible.

Tuning Box
The information contained in the Servo Drive Tuning Box is explained in further detail in the Servo Drive Tuning section.

Alternating Jog Box

The information contained in the Servo Drive Alternating Jog Box is explained in further detail in the Alternating Jog section.

Diagnose

This button will display a diagnostic popup for the currently selected Servo Drive. This diagnostic popup is described in further detail on the Drive Diagnostics Page.

Enable/Disable Servo Drive Button

Click this button to enable or disable this servo drive. If the drive is currently enabled, the button color will be green and the text will read Disable Servo Drive. If the drive is currently disabled, the button color will be red and the text will read Enable Servo Drive.

> **NOTE:** This feature is only available with the correct PLC framework version in place
> **NOTE:** This button will only be enabled when Manual Enabling is activated

Solenoid Valve Jogging

To manually move a component that is driven by a Solenoid Valve, the user must find which solenoid valve controls the component and select it from the solenoid valve drop down list. Once the machine is started and in the ready state and manual mode, the user may jog the solenoid valve in the desired direction. The State and Mode is displayed in the bottom left hand corner next to the Drive Status Display. Once a solenoid valve jog button is depressed, the valve will move in that direction until another direction button or a stop button is depressed.

SAMPLE IMAGE

Solenoid Valve

To access different solenoid valves, use the solenoid valve drop down list.

Left Jog Button

This button will jog the Solenoid Valve in the direction the button states. This button will energize the A Coil.

Center Jog Button

This button will jog the Solenoid Valve in the direction the button states. This button will d-energize the A and B Coils.

Right Jog Button

This button will jog the Solenoid Valve in the direction the button states. This button will energize the B Coil. Not all Solenoid Valves have this button.

Motor Jogging

To manually move a component that is driven by a non servo motor, the user must define which motor they want to jog and select it from the motor drop down list. Once the machine is started and in the ready state and manual mode, the user may jog the motor in the desired direction. The State and Mode is displayed in the bottom left hand corner next to the Drive Status Display. Once a motor jog button is depressed, the motor will continue to run in that direction until the "Stop" button is depressed or the machine is externally stopped (Cycle Stop or Emergency Stop).

SAMPLE IMAGE

Motor
To access different motors, use the motor drop down list.

Left Jog
This button will jog the Motor in the direction that the button states.

Center Jog
This button will shut off the Motor.

Right Jog
This button will jog the Motor in the direction the button states. Not all Motors have this button.

Speed
This entry field will set the speed at which the Motor will be jogged. Not all Motors have this entry field.

Drive Status Box
This box is located in the bottom left corner of this page. Information that is given is Actual Position, Max Position Error, Max Torque, and State of the Servo Drive. More information can be found on the Drive Diagnostics Page.

Servo Drive Diagnostics Button
This button will display the Drive Diagnostics Page.

Member Map Diag. Button
This button will display the Member Map Diagnostics Page.

I/O Diagnostics Button
This button will display the I/O Diagnostics Page.

Manual SD Enabling Button
This button will display the Manual SD Enabling Page.
   NOTE: This feature is only available with the correct PLC framework version in place

Back Button
This button will close this page and go to the HMI Main Screen.

Reference Page

General Page Information

Referencing is the process of setting a Servo Axis position in reference to a stationary object such as a sensor or a hard stop (travel limit). Any time the mechanical link between the servo motor and the object that the servo motor is moving has been violated (disconnected, jumped teeth), the servo motor will need to be referenced. If a servo motor is not working correctly, it may need to be replaced (please see the **Replacing an MI Drive** topic in the Troubleshooting Guide for more information).

The referencing process begins by moving the servo axis towards the stationary object used for determining the servo axis position. When the object is located, the servo motor will then move to the reference end position based on the capture position of the stationary object. When the servo axis reaches the reference end position, the motor will disable and the servo axis' position will be set. Once the position has been set, the servo axis will enable and reposition itself to the reference end position completing the reference process.

Settings for referencing each servo axis can be found on the Servo Drive Data Page.
A a summary of all servos and their reference positions can be viewed in the Servo Reference Positions topic in this manual.

SAMPLE IMAGE

Servo Drive

To access different servo drives, use the servo drive drop down list.

Do Reference Routine

This button will initiate the reference routine for the selected Servo Axis or Group of Servo Axis. The display in the bottom left hand corner of the page must display Ready and Manual in order to initiate the reference routine. If the start button is pressed until the top display changes to Starting, the machine will then get to Ready and the reference routine will be able to be initiated. Once the reference routine is finished, a window will popup which contains a picture of the servo correctly referenced. **NOTE:** If multiple servos are referenced in one routine, the window will popup after the complete routine is finished and it will contain tabs for each picture.

View Image Button
This button will open a window that displays the servo in the referenced position. This image is also displayed following the completion of a reference routine. To close window, click on the red X in right corner, click outside the popup, or press Esc.

NOTE: This button will not be visible if no image has been associated with the selected servo drive.

Actual Position
This display will show the actual position of the Servo.

Home Position
This display shows the position of the selected Servo's sensor or hard stop.

Home End Position
This display shows the actual position when the reference routine of the selected Servo is complete.

Reference Mark Position
The Reference Mark Position is the position the servo reads when lined up with the reference mark.

Reference Mark Location
The Reference Mark Location is a precise description of the reference mark placement in relation to a fixed member of the machine.

Direction of Positive Movement
The Direction of Positive Movement is the direction of movement which causes a positive change in the position read out.

Reference Done
This display will show "Reference Done" when the reference routine has completed successfully.

Reference Pos. Difference
This display will show the difference between the old reference position and the new reference position.

SD Data Input Button
This button will display the Servo Drive Data Page.

SV Data Input Button
This button will display the Solenoid Data Page.

MT Data Input Button
This button will display the Motor Data Page.

Diagnose Button

This button will display a diagnostic popup for the currently selected Servo Drive. This diagnostic popup is described in further detail on the [Drive Diagnostics Page](#).

Servo Drive Diagnostics Button

This button will display the [Drive Diagnostics Page](#).

Member Map Diag. Button

This button will display the [Member Map Diagnostics Page](#).

I/O Diagnostics Button

This button will display the [I/O Diagnostics Page](#).

Back Button

This button will close this page and go to the HMI Main Screen.

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. See the Reference page on the HMI for more information regarding servo reference positions.

Servo #	Servo Name	Direction of Positive Movement	Reference Position	End Position	Reference Mark Location
1	Spatula	Toward downstacker flights	0.25	0	Downstream edge of spatula is at the shear point. (Downstream edge of side belt bottom rails)
2	Adjustable Downstacker 1	Down with product	-24.375	0	Top of flight 1/4" below sheer point
3	Adjustable Downstacker 2	Down with product	-24.375	30.95	Top of flight in line with the top of upper drive shaft
4	Fixed Downstacker 1	Down with product	-19	0	Top of flight 1/4" below sheer point
5	Fixed Downstacker 2	Down with product	-18.875	30.827	Top of flight in line with the top of upper drive shaft
6	Downstack Pusher	Moving product downstream	-1	0	1" off of upstream hardstop (Located on upstream end of v-rail)
7	Loader	Moving product downstream	-1	0	1" from the mechanical stop in the retracted position
8	Funnel	Funnel moving out of case	-10	0	Funnel is 90 degrees to flight chain
9	Fun Tucker	Funnel moving out of case	-15	0	Funnel is 90 degrees to flight chain
10	Tucker	Tucking trailing flap	-5	0	Tucker arm is 90 degrees to flight chain
11	Product Stop	Tucking leading flap	140	0	Tucker arm is 90 degrees to flight chain
12	Casepacker Robot X-Axis	Toward palletizer	34.53	32	2.5" from the downstream mechanical stop
13	Casepacker Robot Z-Axis	Down	-1	0	1" from the mechanical stop in the retracted position
14	Casepacker Flights	Toward palletizer	0.675	0	Leading edge of flight is aligned with fixed side of load chamber
15	Lower Compression Non Operator Side	From horizontal to vertical	-4	0	Compression plate is horizontal (open)
16	Lower Compression Operator Side	From horizontal to vertical	-2	0	Compression plate is horizontal (open)
17	Upper Compression Non Operator Side	From horizontal to vertical	-8	0	Compression plate is horizontal (open)
18	Upper Compression Operator Side	From horizontal to vertical	-3	0	Compression plate is horizontal (open)
19	Case Tip Y	Moving towards operator side	-7.625	0	Operator side face of flight is aligned with operator side of sheet metal backstop
20	Case Tip R	Tipping product	-1	0	1 inch from the "up" mechanical stop
21	Case Rotate	Turning case	130	0	Vacuum cup arm is 90 degrees to conveyor

1 - Spatula

Vertical marks are aligned

Downstream edge of Spatula is aligned with downstream edge of Side Belt bottom rails

2 - Adjustable Downstacker 1

3 - Adjustable Downstacker 2

Top of flight is in line with mark and top of drive shaft

4 - Fixed Downstacker 1

Horizontal marks are aligned

5 - Fixed Downstacker 2

Top of flight is aligned with mark and top of drive shaft

6 - Downstack Pusher

Vertical
marks are
aligned

7 - Loader

Vertical marks are aligned

8 - Funnel

Vertical marks are aligned

Funnel is at a 90 degree angle to flight chain

9 - Fun Tucker

Vertical marks are aligned

Fun Tucker is at a 90 degree angle to flight chain

10 - Tucker

Vertical
marks are
aligned

11 - Product Stop

Vertical
marks are
aligned

12 - Casepacker Robot X-Axis

2 1/2"

Vertical marks are aligned

13 - Casepacker Robot Z-Axis

14 - Casepacker Flights

Vertical marks are aligned

15 - 18 Compression Plates

19 - Case Tip Y

Tip finger is flush with reference block

Reference Block

Tip Finger

20 - Case Tip R

REFERENCE MARKER

REFERENCE MARKER

Reference indicators are aligned

21 - Case Rotate

Horizontal marks are aligned

Case Rotate Arm is at a 90 degree angle to conveyor

Drive Function and Associated Devices

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

Drive	Device		Function
		Case Packer	
		Infeed	
SD1	Spatula		Guides the product into the correct position in the downstacker
	PE31704	1st Carton At Downstacker Photo Eye	Senses when the 1st carton is at the top of the downstack chamber
	PE31703	2nd Carton At Downstacker Photo Eye	Senses when the 2nd carton is at the top of the downstack chamber
	PX31001	Spatula Reference Proximity Switch	Senses when the spatula is in its reference position
MT1	Infeed Conveyor		Advances product into the machine and up to the side belts
	VFD1302	Infeed Conveyor VFD	Controls the speed of the infeed conveyor
MT2	Side Belts		Collates the incoming product and sends it into the Downstacker
	PE31702	Product In Side Belts	Senses when product is present in the side belts
	VFD1402	Side Belts VFD	Controls the speed of the side belts
		Downstacker	
SD2	Adjustable Downstacker 1		Accepts incoming products from the side belts and indexes allowing a specified number of products to accumulate prior to lowering the products onto the accumulation deck
	PE31704	1st Carton At Downstacker Photo Eye	Senses when the 1st carton is at the top of the downstack chamber
	PE31703	2nd Carton At Downstacker Photo Eye	Senses when the 2nd carton is at the top of the downstack chamber
	PE31002	Non Operator Side Lower Downstacker Reference Photo Eye	Senses when the non operator side lower downstacker is in its reference position
SD3	Adjustable Downstacker 2		Accepts incoming products from the side belts and indexes allowing a specified number of products to accumulate prior to lowering the products onto the accumulation deck
	PE31704	1st Carton At Downstacker Photo Eye	Senses when the 1st carton is at the top of the downstack chamber
	PE31703	2nd Carton At Downstacker Photo Eye	Senses when the 2nd carton is at the top of the downstack chamber
	PE31003	Non Operator Side Upper Downstacker Reference Photo Eye	Senses when the non operator side upper downstacker is in its reference position
SD4	Fixed Downstacker 1		Accepts incoming products from the side belts and indexes allowing a specified number of products to accumulate prior to lowering the products onto the accumulation deck
	PE31704	1st Carton At Downstacker Photo Eye	Senses when the 1st carton is at the top of the downstack chamber
	PE31703	2nd Carton At Downstacker Photo Eye	Senses when the 2nd carton is at the top of the downstack chamber
	PE31004	Operator Side Lower Downstacker Reference Photo Eye	Senses when the operator side lower downstacker is in its reference position
SD5	Fixed Downstacker 2		Accepts incoming products from the side belts and indexes allowing a specified number of products to accumulate prior to lowering the products onto the accumulation deck

Drive	Device		Function
	PE31704	1st Carton At Downstacker Photo Eye	Senses when the 1st carton is at the top of the downstack chamber
	PE31703	2nd Carton At Downstacker Photo Eye	Senses when the 2nd carton is at the top of the downstack chamber
	PE31005	Operator Side Upper Downstacker Reference Photo Eye	Senses when the operator side upper downstacker is in its reference position
Downstack Pusher		
SD6	Downstack Pusher		Pushes the accumulated product out of the downstack chamber delivering it to the loader
	PX31006	Downstack Pusher Reference Proximity Switch	Senses when the downstack pusher is in its reference position
SD24	Downstack Pusher Master		This is the virtual axis that the downstack pusher follows
	PE31707	Product At Downstack Pusher Photo Eye	Senses when product is present at the downstack pusher
SV30703	Product Conditioner		Applies downward pressure on the stacked product ensuring that it will fit into the case during loading
	CS31606	Product Conditioner Extended Cylinder Switch	Senses when the cylinder is extended
	CS31607	Product Conditioner Retracted Cylinder Switch	Senses when the cylinder is retracted
Loader		
SD7	Loader		Pushes the accumulated product out of the loader accumulation and into the partially formed case
	PX31007	Loader Probe Proximity Switch	Senses when the loader is in its reference position
SD25	Loader Master		This is the virtual axis that the loader follows
	PE31905	Product At Loader Photo Eye	Senses when product is present at the loader
	PX31908	Load Gate Closed Proximity Switch	Senses when the load gate is closed to allow the loader to cycle
Magazine		
SV30401	Magazine Advance		Advances the case blanks downstream toward the case former robot, maintaining sufficient pressure to pick
	PE31803	Case Blanks Present Photo Eye	Senses when case blanks are present on the magazine advance chains
	PX31804	Case Magazine Advance	Senses when cases are ready to be picked
Case Former		
SD8	Funnel		Opens the upstream minor flap and helps guide the product into the case
SD9	Fun Tucker		Opens the downstream minor flap and helps guide the product into the case, then tucks the trailing minor flap prior to compression
SD10	Tucker		Provides support for the case during loading and tucks the operator side trailing minor
SD11	Product Stop		Provides support for the case during loading and a backstop for incoming product to ensure it does not pass the operator side scoreline
SD12	Case Packer Robot X Axis		Moves the case packer robot upstream and downstream along the machines X axis
	PX31102	Case Packer Robot X Axis Probe Proximity Switch	Senses when the case packer robot X is in its reference position
SD13	Case Packer Robot Z Axis		Moves the case packer robot up and down along the machines Z axis

Drive	Device		Function
	PX31103	Case Packer Robot Z Axis Probe Proximity Switch	Senses when case packer robot Z is in its reference position
SD14	Case Packer Flights		Advance the base of the case through the loading and compression areas of the machine
	PE31104	Case Packer Flights Reference Photo Eye	Senses when the case packer flights are in their reference position
SD15	Lower Compression Non Operator Side		Compresses the lower non operator side major flap ensuring good adhesion and completing the case forming process
SD16	Lower Compression Operator Side		Compresses the lower operator side major flap ensuring good adhesion and completing the case forming process
SD17	Upper Compression Non Operator Side		Compresses the upper non operator side major flap ensuring good adhesion and completing the case forming process
SD18	Upper Compression Operator Side		Compresses the upper operator side major flap ensuring good adhesion and completing the case forming process
SD26	Packer Main Master		This is the virtual drive that all of the servo drives in the case former follow
	PE31903	Case Present At Load Photo Eye	Senses when a case is present at the load station
	PE31904	Distorted Case Present Photo Eye	Senses when a distorted case is present at the load station
	PE51402	Non Operator Side Open Case Flap Present Photo Eye	Senses when a non operator side open case flap exists
	PE51401	Operator Side Open Case Flap Present Photo Eye	Senses when a operator side open case flap exists
SV30306	Magazine Rotate Clips		Controls the sides of the cases in the magazine ensuring they are released at the proper time
SV30705	Magazine Top Clip		Controls the top of the cases in the magazine ensuring they are released at the proper time
SV30707	Magazine Bottom Clip		Controls the bottom of the cases in the magazine ensuring they are released at the proper time
SV30408	Case Packer Robot Vacuum		This valve controls the vacuum to the vacuum cups on the case packer robot head
	VS 31806	Case Packer Robot Vacuum Present Vacuum Switch	Senses when the case packer robot has sufficient vacuum for operation
SV30403	Case Pusher		raises and lowers the case pusher, pushing the loaded case into the compression station
	CS31902	Case Pusher Pushed Cylinder Switch	Senses when the case pusher cylinder is extended
SV30407	Fun Tucker In / Out		Moves the fun tucker in and out of the case to provide clearance for the case forming
SV30407	Funnel In / Out		Moves the funnel in and out of the case to provide clearance for the case forming
SV30308	Load Vacuum		This valve controls the vacuum supply to the vacuum cups at the case load station
	VS31708	Load Vacuum Present Vacuum Switch	Senses when the load vacuum has sufficient vacuum for operation
SV30801	Load Cups Lift		Raises and lowers the load cups in order for the cases to clear as they travel downstream
SV30307	Load Cups Blow back		This valve controls the blow back to the vacuum cups at the case load station causing the case to be released
SV30402	Case Stop		Lowers stopping cases coming in to the compression station from advancing to far downstream
	CS31901	Case Stop Retracted Cylinder Switch	Senses when the case stop cylinder is retracted

Drive	Device		Function
SV30805	Lower Glue Non Operator Side		Fires glue onto the formed case prior to compression
SV30806	Lower Glue Operator Side		Fires glue onto the formed case prior to compression
SV30807	Upper Glue Non Operator Side		Fires glue onto the formed case prior to compression
SV30808	Upper Glue Operator Side		Fires glue onto the formed case prior to compression
Orienter			
Case Tip / Reject			
SD19	Tip / Reject Flights		Drives the case against the Tip Axis for tipping or out the Case Reject Chute for rejecting
	PE51503	Case At Tip Present Photo Eye	Senses when a case is present in the tip / reject station
	PX51001	Tip Reject Flights Reference Proximity Switch	Senses when the tip / reject flights are in their reference position
SD20	Case Tip R		Stops the operator side of the case during the tipping process to help it roll over the flights
	PE51503	Case At Tip Present Photo Eye	Senses when a case is present in the tip / reject station
SV50703	Tipper Case Stop		Stops the advancing case on the tip reject conveyor in order for the tip / reject flights to perform the appropriate cycle
	CS51507	Case Stop Retracted Cylinder Switch	Senses when the case stop cylinder is retracted
MT9	Tip / Reject Conveyor		Advances the completed case from the compression station through the tip reject station and onto the case conveyor
	VFD1501	Tip / Reject Conveyor VFD	Controls the speed of the tip / reject conveyor
Case Rotate Accumulation			
SD21	Case Rotate		Rotates the completed case 90 degrees to orient it correctly for the downstream equipment
	PE51505	Case At Rotate Present Photo Eye	Senses when a case is present at the rotate station
	PE51506	Case Present After Rotate Photo Eye	Senses when a case has cleared the rotate station
SV50201	Case Rotate Vacuum		This valve controls the vacuum supply to the vacuum cup on the case rotate head
	VS51305	Case Rotate Vacuum Present Vacuum Switch	Senses when the case rotate has sufficient vacuum for operation
MT10	Case Conveyor		Advances the completed cases downstream from the tip / reject station to the case accumulation area
	OL806	Case Conveyor Overload	Senses when the case conveyor has been overloaded
System			
SV24223	System Air Dump		Supplies air pressure to the machine when the safety circuit is engaged
	PS31201	System Air Pressure Present Pressure Switch	Senses when the system air pressure is sufficient for machine operation

Drive Diagnostics Page

General Page Information - Servo Drives

This page will display information about the Servo Drives on the machine. This is mainly a troubleshooting feature.

SAMPLE IMAGE

```
Aagard HMI - Drive Diagnostics                                    _ □ ✕

 Servo Drives | Solenoid Valves | Motors |

 1 - Rotary Drive          ┌──────────────────────────────────────────┐
 2 - Linear Drive          │ SD#1 - Rotary Drive            [ Close ]  │
 3 - MasterOne             │                                          │
 4 - MasterTwo             │ Drive Diagnostics | Fault Codes (P192) | Diagnostic Codes (S375) |
 5 - MasterThree           │                                          │
                           │ ○ Not Used    C15: 0      Act Pos:142.636│
                           │ ○ Enabled                                │
                           │ ○ Ready                 Max Pos. Err. 0.000   Reset
                           │ ○ Active                Act Pos. Err. 0.000│
                           │ ○ Done      CW = Positive  Max Torq.1,462  Reset
                           │ ○ Faulted   CCW = Negative  Act Torq.0    │
                           │ A0013 Ready for power on                  │
                           └──────────────────────────────────────────┘

 [ Popup ]  [ Display >> ]  [ Clear All ]

                                              ┌──────────┐ ┌────────┐
                                              │Fault Code│ │        │
                                              │ History  │ │  Back  │
                                              └──────────┘ └────────┘
```

Servo Drive Diagnostic, Solenoid Valve, and Motor Selection Tabs
Each of these tabs will display a list of the possible Servo Drives, Solenoid Valves and Motors that can be selected to display the Diagnostic Box for the selected device.

Popup Button
This button will display a diagnostic popup window for the currently selected device. This diagnostic popup window will always be displayed regardless of which HMI page is open. This diagnostic popup window will show exactly what is shown in the diagnostic box for the selected device.

Display >> Button
This button will display device diagnostics for the selected device. For servo drives (types 2, 3, and 4 only), fault and diagnostic codes are displayed.

Drive Diagnostics Tab

Not Used Status
This status will signal if the Servo Drive is not used

Enabled Status
This status will signal if the Servo Drive is enabled

Ready Status
This status will signal if the Servo Drive is ready

Active Status
This status will signal if the Servo Drive is active

Done Status
This status will signal if the Servo Drive is done

Faulted Status
This status will signal if the Servo Drive is faulted

Servo Drive Display Status
This will display what the Servo Drive Display is currently displaying. This will be displayed below the faulted status on the screen.

Location Status
This status will tell by what the Servo Drive is controlled in the program.

Positive Direction
This label communicates which direction makes the Servo Drive move in a positive direction.

Negative Direction
This label communicates which direction makes the Servo Drive move in a negative direction.

Act Pos Status
This status will display the actual position of the Servo Drive.

Max Pos Err Status
This status will display the maximum position error that has occurred on that Servo Drive. Maximum Position Error is the largest position error that has occurred since the last time the machine had been stopped.

Act Pos Err Status

This status will display the actual position error of the Servo Drive.

Max Torq Status

This status will display the maximum torque that the Servo Drive has used. Maximum Torque is the highest torque that has been used since the last time the machine had been stopped.

Act Torq Status

This status will display the actual torque that the Servo Drive is using.

Reset Features

These features will reset the Max Pos. Err. or Max Torq. values to zero and start recording the new max values of each of these statuses.

Close Button

This button will close the Servo Drive Diagnostic Box for this Servo Drive.

Fault Codes (P192) Tab

Code

This column displays the code received from the selected servo drive.

Description

This column contains the description of the item.

Date/Time

This column displays the date and time the code was received.

Operating Hours

This value represents the current operating hours for this servo drive at the time the code was received, in hours:minutes:seconds.

Close Button

This button will close this Servo Drive Diagnostic Box.
> **NOTE:** This button does not appear on the Sercos Diagnostics Page

NOTE: The Drive Diagnostics tab does not appear on the Sercos Diagnostics Page

NOTE: A missing description or date/time stamp may indicate either the correct PLC framework version is not in place, the error occurred prior to startup operating hours being logged, or the code is not listed in the reference

table

Diagnostic Codes (S375) Tab

Code
This column displays the code received from the selected servo drive.

Description
This column contains the description of the item.

Date/Time
This column displays the date and time the code was received.

Operating Hours
This value represents the current operating hours for this servo drive at the time the code was received, in hours:minutes:seconds.

Close Button
This button will close this Servo Drive Diagnostic Box.
    NOTE: This button does not appear on the Sercos Diagnostics Page

NOTE: The Drive Diagnostics tab does not appear on the Sercos Diagnostics Page

NOTE: A missing description or date/time stamp may indicate either the correct PLC framework version is not in place, the error occurred prior to startup operating hours being logged, or the code is not listed in the reference table

Clear All Button
This button will clear all the displayed diagnostic boxes off the screen.

Fault Code History Button
This button will display the Fault Code History Page.
    NOTE: This feature is only available with the correct PLC framework version in place

Back Button
This button will display the Advanced Page.

General Page Information - Solenoid Valves

This page will display information about the Solenoid Valves on the machine. This is mainly a troubleshooting feature.

SAMPLE IMAGE

Solenoid Valve Diagnostic Box

    Close Button - This button will close the Solenoid Valve Member Map Diagnostic Box for that Solenoid Valve

    Internal Group

        Not Used Status - This status will signal if the Solenoid Valve is not used.

        Ready Status - This status will signal if the Solenoid Valve is ready.

        Active Status - This status will signal if the Solenoid Valve is active.

        Done Status - This status will signal if the Solenoid Valve is done.

        Faulted Status - This status will signal if the Solenoid Valve is faulted.

        Location Status - This status will tell by what the Solenoid Valve is controlled in the program.

    Output Group

        A Coil - This status will signal if the Solenoid Valve should have the A Coil energized.

        B Coil - This status will signal if the Solenoid Valve should have the B Coil energized.

    Input Group

        A Switch - This status will signal if the Solenoid Valve's A Switch is energized.

        B Switch - This status will signal if the Solenoid Valve's B Switch is energized.

General Page Information - Motors

This page will display information about the Motors on the machine. This is mainly a troubleshooting feature.

SAMPLE IMAGE

Motor Diagnostic Box

   Close Button - This button will close the Motor Member Map Diagnostic Box for that Motor.

   Speed - This status will display the speed at which the motor should be traveling.

   Internal Group

      Not Used Status - This status will signal if the Motor is not used.

      Ready Status - This status will signal if the Motor is ready.

      Active Status - This status will signal if the Motor is active.

      Done Status - This status will signal if the Motor is done.

      Faulted Status - This status will signal if the Motor is faulted.

      Location Status - This status will tell by what the Motor is controlled in the program.

   Output Group

      Enable - This status will signal if the Motor is enabled.

      Forward - This status will signal if the Motor should have the forward signal energized.

      Reverse - This status will signal if the Motor should have the reverse signal energized.

   Input Group

      Forward - This status will signal if the Motor's forward switch is energized.

      Reverse - This status will signal if the Motor's reverse switch is energized.

Fault Code History Page

NOTE: Fault and Diagnostic codes displayed on the Sercos Diagnostics Page are read directly from the servo drive, whereas errors displayed on the Fault Code History page are read from a database

Servo Drive
To access different servo drives, use the servo drive drop down list.

Column Headings and Filters
Optionally click on a column to sort the column in ascending order; click it again to sort in descending order.
Optionally click ▾ in the column header to apply filters to a column. When filters are defined, the ▾ will change to
▾.
   NOTE: Any filters applied will be used until Reset Defaults is clicked

SD#
This column displays the servo drive number.

Servo Drive Name
This column displays the servo drive name.

Type

This column displays the type of code received.

Code
This column displays the code received from the selected servo drive.

Description
This column displays the description of the code.

Date/Time
This column displays the date and time the code was received.

Operating Hours
This value represents the current operating hours for this servo drive at the time the code was received, in hours:minutes:seconds.

Time Period Selection
Click on the drop down arrow to view available time period filters to apply to the list. Select a filter from the list to apply it.

When selecting the custom date/range filter, additional date and time parameters become available to enter. After entering date and time parameters, click Apply.

NOTE: Any filters applied will be used until Reset Defaults is clicked

Individual Items
Click this button to display the items in the grid in chronological order.
NOTE: When **Individual Items** is selected, the button color will be blue

Totaled
Click this button to display the items in the grid in a totaled fashion, displaying the number of times an item occurred. The items all totaled to allow the user to more easily view which items are occurring the most frequently.
NOTE: When **Totaled** selected, the button color will be blue

Refresh Button
Click this button to update the database with the latest information from the servo drives, and then display that information on this page.

Reset Filters Button
Click this button to reset the screen to default sort and filter settings.
NOTE: This button will only appear when filters have been applied to this page
NOTE: When filters are applied, text indicating so will be displayed above the Reset Filters button

Back
This button will display the Drive Diagnostics Page.

Sercos Diagnostics Page

General Page Information

This page is only for information and used primarily during troubleshooting.

NOTE: Fault and Diagnostic codes displayed on the Sercos Diagnostics Page are read directly from the servo drive, whereas errors displayed on the Fault Code History page are read from a database

SAMPLE IMAGE

Sercos Ring

This is a drop down list containing a list of the Sercos rings. Select a ring from the list to view the diagnostics for that ring.

Master Status

This is a list of the ring status and error counts from the currently selected ring.

Sercos Control Buttons and Mode

Init / E-Stop Mode
This displays the current mode of the machine.

--- **Button**
Click this button to view all C40 modes.
   NOTE: This button will be visible when more than one C40 exists

E-Stop Mode / Initialize Mode
Click the Initialize Mode button to request Init Mode. How To Reinitialize

These steps are done via the Sercos Diagnostics Page in the HMI

1) E-Stop the machine
2) Go to the Sercos Diagnostic Page
3) Click on Initialize
4) The text on the Initialize Button changes to E-Stop
5) Click on "Reinitialize System", and wait for the machine to reinitialize the sercos ring
   NOTE: Although no physical adjustments need to be made, you will need to download the correct
   product size and Inserter recipe, if installed, and initialize the Barcode Scanner, if installed
   a) If you downloaded a product other than what was previously downloaded, the Product Download
      Changeover Adjustments Page will be displayed
6) When complete, the Sercos Diagnostics Page will be displayed
7) Click on E-Stop on the HMI screen
   a) The text on the button returns to "Initialize"
   CAUTION: If you downloaded the wrong product during the Sercos Ring re-initialization routine, you
      must go to the Main Page and download the correct product
8) Pull the E-Stop button, and restart the machine

A simple but more time consuming alternative to these steps is to restart the HMI from the Advanced Page.

NOTE: If the system is already in Init mode, this button will read **E-Stop Mode**. Click this button to take the
system out of Init mode

   NOTE: When in Init Mode, these additional buttons become available

Reinitialize System
This button will perform an initialization function when all major sections of the system are in Init mode. This button
is only available when the system is in Init mode.

   Servo Drive Data
   This button will open the Servo Drive Data page

Request Phase 1
This button, when pressed, will force the current selected ring to phase 1.

Request Phase 2
This button, when pressed, will force the current selected ring to phase 2.

Request Phase 3
This button, when pressed, will force the current selected ring to phase 3.

Request Phase 4
This button, when pressed, will force the current selected ring to phase 4.

Node Selection
This is a list of available nodes from the currently selected Ring.

Node Status
Node Status and error counts from the currently selected Node of the currently selected Ring.
IDN 28 – MST Error Count
IDN 29 – MDT Error Count
IDN 95 – Node Display Status
IDN 21 – List of IDN with invalid values for change of phase form 2 to 3
IDN 22 – List of IDN with invalid values for change of phase form 3 to 4
IDN P-192 – List of up to 50 error codes
IDN S-375 – List of up to 50 diagnostic codes

Fault Codes (P192) Tab

SD#1 - Rotary Drive				Close
Drive Diagnostics	Fault Codes (P192)	Diagnostic Codes (S375)		
Code	Description	Date/Time	Operating Hours	
F2174	Loss of motor encoder reference	11/16/2010 12:10:22 PM	6675:55:53	
F2174	Loss of motor encoder reference	11/16/2010 10:23:18 AM	6674:09:14	
F8022	Enc. 1: enc. signals incorr. (can be cl...	11/16/2010 10:18:57 AM	6674:04:53	
F2174	Loss of motor encoder reference		6430:19:46	
F2174	Loss of motor encoder reference		6430:19:39	
F2174	Loss of motor encoder reference		6430:19:35	
F2174	Loss of motor encoder reference		6430:19:30	
F2008	RL The motor type has changed.		6430:19:30	

Code
This column displays the code received from the selected servo drive.

Description
This column contains the description of the item.

Date/Time
This column displays the date and time the code was received.

Operating Hours
This value represents the current operating hours for this servo drive at the time the code was received, in hours:minutes:seconds.

Close Button
This button will close this Servo Drive Diagnostic Box.
NOTE: This button does not appear on the Sercos Diagnostics Page

NOTE: The Drive Diagnostics tab does not appear on the Sercos Diagnostics Page

NOTE: A missing description or date/time stamp may indicate either the correct PLC framework version is not in place, the error occurred prior to startup operating hours being logged, or the code is not listed in the reference table

Diagnostic Codes (S375) Tab

Code
This column displays the code received from the selected servo drive.

Description
This column contains the description of the item.

Date/Time
This column displays the date and time the code was received.

Operating Hours
This value represents the current operating hours for this servo drive at the time the code was received, in hours:minutes:seconds.

Close Button
This button will close this Servo Drive Diagnostic Box.
   NOTE: This button does not appear on the Sercos Diagnostics Page

NOTE: The Drive Diagnostics tab does not appear on the Sercos Diagnostics Page

NOTE: A missing description or date/time stamp may indicate either the correct PLC framework version is not in place, the error occurred prior to startup operating hours being logged, or the code is not listed in the reference table

Manufacturer Version
This label displays the current firmware version of the selected servo drive node.

Startup Operating Hours
This label displays the total operating hours of the selected servo drive node.

Refresh Status
When this button is pressed, the Node Status values are updated for the currently selected Node of the currently selected Ring.

Fault Code History Button
This button will display the Fault Code History Page.

NOTE: This feature is only available with the correct PLC framework version in place

Back
This button will open the previous page.

Member Map Diagnostics Page

General Page Information

This screen displays the status information for different drives and sections of the machine. This is mainly a troubleshooting function.

SAMPLE IMAGE

Member Map Diagnostic Selection Tree

This will display a list of the possible devices that can be displayed in a diagnostic box. Double click an item to open the diagnostic box.

Popup Button

This button will display a diagnostic popup window for the currently selected device. This diagnostic popup window will always be displayed regardless of which HMI page is open. This diagnostic popup window will show exactly what is shown in the diagnostic box for the selected device.

Display >> Button

This button will display device diagnostics for the selected device. For servo drives (types 2, 3, and 4 only), fault and diagnostic codes are displayed.

Drive Diagnostics Tab

Not Used Status
This status will signal if the Servo Drive is not used

Enabled Status
This status will signal if the Servo Drive is enabled

Ready Status
This status will signal if the Servo Drive is ready

Active Status
This status will signal if the Servo Drive is active

Done Status
This status will signal if the Servo Drive is done

Faulted Status
This status will signal if the Servo Drive is faulted

Servo Drive Display Status
This will display what the Servo Drive Display is currently displaying. This will be displayed below the faulted status on the screen.

Location Status
This status will tell by what the Servo Drive is controlled in the program.

Positive Direction
This label communicates which direction makes the Servo Drive move in a positive direction.

Negative Direction
This label communicates which direction makes the Servo Drive move in a negative direction.

Act Pos Status
This status will display the actual position of the Servo Drive.

Max Pos Err Status
This status will display the maximum position error that has occurred on that Servo Drive. Maximum Position Error is the largest position error that has occurred since the last time the machine had been stopped.

Act Pos Err Status
This status will display the actual position error of the Servo Drive.

Max Torq Status
This status will display the maximum torque that the Servo Drive has used. Maximum Torque is the highest torque that has been used since the last time the machine had been stopped.

Act Torq Status
This status will display the actual torque that the Servo Drive is using.

Reset Features
These features will reset the Max Pos. Err. or Max Torq. values to zero and start recording the new max values of each of these statuses.

Close Button
This button will close the Servo Drive Diagnostic Box for this Servo Drive.

Fault Codes (P192) Tab

Code
This column displays the code received from the selected servo drive.

Description
This column contains the description of the item.

Date/Time
This column displays the date and time the code was received.

Operating Hours
This value represents the current operating hours for this servo drive at the time the code was received, in hours:minutes:seconds.

Close Button
This button will close this Servo Drive Diagnostic Box.
> **NOTE:** This button does not appear on the Sercos Diagnostics Page

NOTE: The Drive Diagnostics tab does not appear on the Sercos Diagnostics Page

NOTE: A missing description or date/time stamp may indicate either the correct PLC framework version is not in place, the error occurred prior to startup operating hours being logged, or the code is not listed in the reference

table

Diagnostic Codes (S375) Tab

SD#1 - Rotary Drive				Close

Drive Diagnostics	Fault Codes (P192)	Diagnostic Codes (S375)

Code	Description	Date/Time	Operating Hours	
C0500	Reset class 1 diagnostics	11/16/2010 12:10:23 PM	6675:55:54	
F2174	Loss of motor encoder reference	11/16/2010 12:10:22 PM	6675:55:53	
C5200	Communication phase 4 transition ch....	11/16/2010 12:10:20 PM	6675:55:51	
A0003	Communication phase 3	11/16/2010 12:10:17 PM	6675:55:48	
A0002	Communication phase 2	11/16/2010 12:10:16 PM	6675:55:48	
C0100	Communication phase 3 transition ch...	11/16/2010 12:10:16 PM	6675:55:48	
A0002	Communication phase 2	11/16/2010 12:10:16 PM	6675:55:48	
C0500	Reset class 1 diagnostics	11/16/2010 12:10:16 PM	6675:55:47	

Code
This column displays the code received from the selected servo drive.

Description
This column contains the description of the item.

Date/Time
This column displays the date and time the code was received.

Operating Hours
This value represents the current operating hours for this servo drive at the time the code was received, in hours:minutes:seconds.

Close Button
This button will close this Servo Drive Diagnostic Box.
   NOTE: This button does not appear on the Sercos Diagnostics Page

NOTE: The Drive Diagnostics tab does not appear on the Sercos Diagnostics Page

NOTE: A missing description or date/time stamp may indicate either the correct PLC framework version is not in place, the error occurred prior to startup operating hours being logged, or the code is not listed in the reference table

Clear All Button
This button will clear all the displayed diagnostic boxes off the screen.

Back Button
This button will display the Advanced Page.

Motor Diagnostic Box

>**Close Button** - This button will close the Motor Member Map Diagnostic Box for that Motor.
>
>**Speed** - This status will display the speed at which the motor should be traveling.
>
>**Internal Group**
>
>>**Not Used Status** - This status will signal if the Motor is not used.
>>
>>**Ready Status** - This status will signal if the Motor is ready.
>>
>>**Active Status** - This status will signal if the Motor is active.
>>
>>**Done Status** - This status will signal if the Motor is done.
>>
>>**Faulted Status** - This status will signal if the Motor is faulted.
>>
>>**Location Status** - This status will tell by what the Motor is controlled in the program.
>
>**Output Group**
>
>>**Enable** - This status will signal if the Motor is enabled.
>>
>>**Forward** - This status will signal if the Motor should have the forward signal energized.
>>
>>**Reverse** - This status will signal if the Motor should have the reverse signal energized.
>
>**Input Group**
>
>>**Forward** - This status will signal if the Motor's forward switch is energized.
>>
>>**Reverse** - This status will signal if the Motor's reverse switch is energized.

Solenoid Valve Diagnostic Box

>**Close Button** - This button will close the Solenoid Valve Member Map Diagnostic Box for that Solenoid Valve
>
>**Internal Group**
>
>>**Not Used Status** - This status will signal if the Solenoid Valve is not used.
>>
>>**Ready Status** - This status will signal if the Solenoid Valve is ready.
>>
>>**Active Status** - This status will signal if the Solenoid Valve is active.
>>
>>**Done Status** - This status will signal if the Solenoid Valve is done.
>>
>>**Faulted Status** - This status will signal if the Solenoid Valve is faulted.
>>
>>**Location Status** - This status will tell by what the Solenoid Valve is controlled in the program.
>
>**Output Group**
>
>>**A Coil** - This status will signal if the Solenoid Valve should have the A Coil energized.
>>
>>**B Coil** - This status will signal if the Solenoid Valve should have the B Coil energized.
>
>**Input Group**
>
>>**A Switch** - This status will signal if the Solenoid Valve's A Switch is energized.
>>
>>**B Switch** - This status will signal if the Solenoid Valve's B Switch is energized.

SAMPLE IMAGE

C40 Member Map Diagnostic Box
This diagnostic box is displayed when a motor is added to the display side of the screen.
  E-Stopped Status - This status will signal if the C40 is E-stopped.
  Power Status - This status will signal if the C40 has power.
  State Status - This status will display the state of the C40.
  Mode Status - This status will display the mode of the C40.
  Rate Status - This status will tell the rate of the C40.
  Close Button - This button will close the C40 Member Map Diagnostic Box for that C40.

C20 Member Map Diagnostic Box
  In Use Status - This status will signal if the C20 is not used.
  State Complete Status - This status will signal if the C20 is state complete.
  Ready Status - This status will signal if the C20 is ready.
  Active Status - This status will signal if the C20 is active.
  Done Status - This status will signal if the C20 is done.
  Faulted Status - This status will signal if the C20 is faulted.
  Sequence Step Status - This status will indicate in which sequence step the C20 is in the program.
  Close Button - This button will close the C20 Member Map Diagnostic Box for that C20.

C15 Member Map Diagnostic Box

    In Use Status - This status will signal if the C15 is not used.

    Fault Response Complete Status - This status will signal if the C15 fault response is complete.

    Recovery Complete Status - This status will signal if the C15 recovery is complete.

    Ready Status - This status will signal if the C15 is ready.

    Active Status - This status will signal if the C15 is active.

    Done Status - This status will signal if the C15 is done.

    F-Stopped Status - This status will signal if the C15 is fault stopped.

    Use Sync Recovery Status - This status will signal if the C15 is using sync recovery.

    Wait For Sync Status - This status will signal if the C15 is waiting to be in sync.

    Faulted Status - This status will signal if the C15 is faulted.

    E-Stop Recovery Step Status - This status will tell what E-stop recovery step the C15 is in the program.

    Close Button - This button will close the C15 Member Map Diagnostic Box for that C15.

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 machine
2) Depress system E-Stop button
3) After machine is E-Stopped, simultaneously press System Start and System Cycle Stop buttons on the HMI panel

---

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

1) Cycle-stop machine
2) Depress system E-Stop button
3) After machine is E-Stopped, simultaneously press Reset and System Cycle Stop buttons on the HMI panel

---

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

Level 3

Startup Page

General Page Information

This page is the first page that will be shown after the HMI is powered up. Two buttons will be displayed on the screen. One button is the Servo Initialization Option button and the other is the Continue button. The initialization process will start automatically if no buttons are pressed by the time the timer in the bottom right hand corner of the screen has expired. After the initialization process is complete and successful, the Product Download Page will be displayed.

Servo Initialization Options Button

Pressing this button will deactivate the automatic download feature for the current initialization and display the Servo Initialization Options Page (shown below).

Sercos Diagnostics Button

This button displays the Sercos Diagnostics Page. This page is only for information and is used primarily during troubleshooting.

Initialization Data Button

This button will display the **Initialization Data Page**. This page shows Servo Drive Data for each Servo Drive on the machine. This page is identical to the [Servo Drive Data Page](#), with the addition of one check mark box in the bottom left hand corner of the screen labeled "Include This Servo In Initialization". Checking this box will do a full initialization to the Servo Drive that is currently selected the next time an initialization is done. A full initialization will load all the parameters specified under the Initialization Column on the [Servo Drive Data Page](#). Information about the parameters on this page can be found under the [Servo Drive Data Page](#). Accessing the Initialization Data Page requires a [User Level 3](#) log in.

Continue Button
The **Continue Button** does the same on either of the pages, the **Startup Page** and the **Servo Initialization Option Page**. This button will start the initialization process as soon as it is pressed.

Servo Initialize Option

Sercos Diagnostics
Initialization Data
Continue

Initialization Data Page

General Page Information

This page shows Servo Drive Data for each Servo Drive on the machine. This page is identical to the Servo Drive Data Page, with the addition of one check mark box in the bottom left hand corner of the screen labeled "Include This Servo In Initialization". Checking this box will do a full initialization to the Servo Drive that is currently selected the next time an initialization is done. A full initialization will load all the parameters specified under the Initialization Column on the Servo Drive Data Page. Information about the parameters on this page can be found under the Servo Drive Data Page.

User Level 3 required!

Initialize Data Section

Initialize Data Category

The machine controller uses this data in the machine start up to configure each servo axis. This data will require a full initialize on that servo axis before the changes will take effect. More information on how to do a full initialize on a servo axis can be found on the Start Up Page.

Referencing Data Section

Referencing Data Category

This data is for machine referencing of the currently selected servo axis. Data changed in this category will take effect immediately after entering the data.

Jog Data Section

Jog Data Category

This data is used while in manual mode and jogging the currently selected servo axis. Data changed in this category will take effect immediately after entering the data.

Motion Data Section

Motion Data Category

This data is used as default variables and starting speeds for the currently selected servo axis. Data changed in this category will take effect immediately after entering the data.

Cam Data Section

Cam Data Category

This data is used when the axis is cam coupled to a master. If zero is specified, the default value in the Motion Data Category will be used. Data changed in this category will take effect immediately after entering the data.

Torque Monitoring Section

Torque Monitoring Category

This data is used as default variables and starting speeds for the currently selected servo axis. Data changed in this category will take effect immediately after entering the data.

SAMPLE IMAGE

Fault History Page

General Page Information

This page keeps a record of all faults generated. This may help with diagnosing any major problems or possible problems. These notices will be stored in the database for three days, and then will be deleted. The information displayed on this page is also accessible on the View Notices System Wide page.

SAMPLE IMAGE

C40 Filter
Click on the drop down arrow to view history for a particular C40. If a C40 is not listed, there are no messages to display.

Filter Buttons (Fault, Critical Fault, General, Warning, Reject, Debug, Utility, and Unhandled Not Shown)
These buttons represent different notice types. Press any button to filter those notices from the list. Pressing refresh will refresh the screen, displaying only those notice types selected.
- **Fault** – a message describing an unintended event which restricts the system's ability to produce
- **Critical Fault** – same as Fault, except the operator must acknowledge each Critical Fault individually
- **General** – an informational message which relays current existing conditions within the system
- **Warning** – a message describing an event which occurred, or an existing condition, which may cause a problem if not addressed
- **Reject** – a message describing why a product was rejected from the normal flow of product
- **Debug** – a message used during the debug stage of development to monitor for specific desired or undesired events
- **Utility** – a notice used to trigger a software utility
- **Unhandled Not Shown** – a message that is sent from the PLC but not defined in the Message data base
- **Production Data Not Shown** – a message used for production data collection

Individual Items
Click this button to display the items in the grid in chronological order.
> **NOTE:** When **Individual Items** is selected, the button color will be blue

Totaled
Click this button to display the items in the grid in a totaled fashion, displaying the number of times an item occurred. The items all totaled to allow the user to more easily view which items are occurring the most frequently.
> **NOTE:** When **Totaled** selected, the button color will be blue

A Aagard HMI - Notice History

Notice History for Inserter

Device	Location	Message	Count	
CS1AE Knife ...	Inserter	Cylinder Extend Switch Not M...	1	
MS1 Custom...	Inserter	VFD Faulted	2	
MS1 Custom...	Inserter	Invalid Program Call	16	
PE6 Register...	Inserter	Sensor Failure	8	
PE6 Register...	Inserter	Not Made During Startup	1	
PE2 Web Br...	Inserter	Web Break PE Not Blocked ...	1	
PE3 Loop Low	Inserter	Eye Not Blocked When Expe...	10	
SD2 Knife	Inserter	Lag Error	1	
SD1 Pinwheel	Inserter	Cam Load Failed	1	
CTRL1 HMI	Inserter	Switching To Sercos Phase 2 ...	1	

Edit Notes Button

Select a message in the grid and the Edit Notes Button becomes available. Click on the Edit Notes button to open a dialog window to add your notes to the messages. Double-clicking on the message itself also opens this dialog. Click OK on the dialog when finished.

Delete All Button

This button will delete the entire fault log. This will make any generated reports invalid since the Report Generator uses this fault log to generate its reports.

Refresh

This button will refresh the faults on the screen to the most current log at the time the refresh button was pressed, reflected by any filters which may have been selected.

Back Button

This button will return the user to the calling page.

Filter Drop Down List

Click on the drop down arrow to view available filters to apply to the list. Select a filter from the list to apply it. Depending on the selection, additional parameters become available to enter, such as dates and hours.

Column Options

To move a column from left to right, select a column from the dropdown list, and click Left or Right to move the column in either direction.

Device Column

This column displays the name of the device which generated the notice.

Message Column

This column displays the message which appeared on the notice. A list of possible messages, causes, and actions are given on the Message Notices section.

PLC Details Column

This column displays information received from the PLC when the notice was generated.

Shift Column
This column displays the shift in which the notice was recorded.

Down Time Column
This column displays time elapsed between notice display and when the system is started.

Ack Time Column
This column displays the length of time elapsed before the notice was acknowledged.

HMI Details Column
This column displays any additional information received from the HMI when the notice was generated.

Date Stamp Column
This column displays the date and time when the notice was generated.

Notes Column
This column displays any user entered information for the selected notice.

Notice Type
This column displays the type of notice recorded.

Location Column
This column displays the notice location or area of the machine.

Reject History Page

General Page Information

This page keeps a record of all rejects generated. This may help with diagnosing any major problems or possible problems. These notices will be stored in the database for three days, and then will be deleted. The information displayed on this page is also accessible on the View Notices System Wide page.

SAMPLE IMAGE

C40 Filter

Click on the drop down arrow to view history for a particular C40. If a C40 is not listed, there are no messages to display.

Filter Buttons (Fault, Critical Fault, General, Warning, Reject, Debug, Utility, and Unhandled Not Shown)

These buttons represent different notice types. Press any button to filter those notices from the list. Pressing refresh will refresh the screen, displaying only those notice types selected.

- **Fault** – a message describing an unintended event which restricts the system's ability to produce
- **Critical Fault** – same as Fault, except the operator must acknowledge each Critical Fault individually
- **General** – an informational message which relays current existing conditions within the system
- **Warning** – a message describing an event which occurred, or an existing condition, which may cause a problem if not addressed
- **Reject** – a message describing why a product was rejected from the normal flow of product
- **Debug** – a message used during the debug stage of development to monitor for specific desired or undesired events
- **Utility** – a notice used to trigger a software utility
- **Unhandled Not Shown** – a message that is sent from the PLC but not defined in the Message data base
- **Production Data Not Shown** – a message used for production data collection

Individual Items

Click this button to display the items in the grid in chronological order.

NOTE: When **Individual Items** is selected, the button color will be blue

Totaled

Click this button to display the items in the grid in a totaled fashion, displaying the number of times an item occurred. The items all totaled to allow the user to more easily view which items are occurring the most frequently.

NOTE: When **Totaled** selected, the button color will be blue

Aagard HMI - Notice History

Notice History for Inserter

Device	Location	Message	Count	
CS1AE Knife ...	Inserter	Cylinder Extend Switch Not M...	1	
MS1 Custom...	Inserter	VFD Faulted	2	
MS1 Custom...	Inserter	Invalid Program Call	16	
PE6 Register...	Inserter	Sensor Failure	8	
PE6 Register...	Inserter	Not Made During Startup	1	
PE2 Web Br...	Inserter	Web Break PE Not Blocked ...	1	
PE3 Loop Low	Inserter	Eye Not Blocked When Expe...	10	
SD2 Knife	Inserter	Lag Error	1	
SD1 Pinwheel	Inserter	Cam Load Failed	1	
CTRL1 HMI	Inserter	Switching To Sercos Phase 2 ...	1	

Edit Notes Button

Select a message in the grid and the Edit Notes Button becomes available. Click on the Edit Notes button to open a dialog window to add your notes to the messages. Double-clicking on the message itself also opens this dialog. Click OK on the dialog when finished.

Delete All Button

This button will delete the entire fault log. This will make any generated reports invalid since the Report Generator uses this fault log to generate its reports.

Refresh

This button will refresh the faults on the screen to the most current log at the time the refresh button was pressed, reflected by any filters which may have been selected.

Back Button

This button will return the user to the calling page.

Filter Drop Down List

Click on the drop down arrow to view available filters to apply to the list. Select a filter from the list to apply it. Depending on the selection, additional parameters become available to enter, such as dates and hours.

Column Options

To move a column from left to right, select a column from the dropdown list, and click Left or Right to move the column in either direction.

Device Column

This column displays the name of the device which generated the notice.

Message Column

This column displays the message which appeared on the notice. A list of possible messages, causes, and actions are given on the Message Notices section.

PLC Details Column

This column displays information received from the PLC when the notice was generated.

Shift Column

This column displays the shift in which the notice was recorded.

Down Time Column

This column displays time elapsed between notice display and when the system is started.

Ack Time Column

This column displays the length of time elapsed before the notice was acknowledged.

HMI Details Column

This column displays any additional information received from the HMI when the notice was generated.

Date Stamp Column

This column displays the date and time when the notice was generated.

Notes Column

This column displays any user entered information for the selected notice.

Notice Type

This column displays the type of notice recorded.

Location Column

This column displays the notice location or area of the machine.

Edit Shifts Screen

General Page Information

This screen will display the edit shifts popup section. This will allow the user to edit the shift information for that machine. This will adjust anywhere the shift feature is used, such as the time period drop down menu as described on the Production Data Page. This will also affect the reports that are generated by the Report Generator. The Aagard Report Generator also uses the given shifts to generate the summary reports broken down by shift. More information about the Aagard Report Generator can be found in the Report Generator section.

NOTE: For proper recording and display of production data, the total of all shifts in one day *must* equal 24 hours

SAMPLE IMAGE

Check Box
This will allow the correct number of shifts to be used to be selected. If a shift is to be used, this box should be checked.

Begin Entry
This will be the begin time for the shift under this entry field.

End Entry
This will be the end time for the shift under this entry field.

NOTE: For proper recording and display of production data, the total of all shifts in one day *must* equal 24 hours.

Save
This button will save the Edit Shifts information and display the Production Data Page.

Cancel
This button will not save any changes made to the Edit Shifts information and display the Production Data Page.

View Notices System Wide

General Page Information

This page keeps a record of all notices generated. This may help with diagnosing any major problems or possible problems. These notices will be stored in the database for three days, and then will be deleted.

SAMPLE IMAGE

C40 Filter

Click on the drop down arrow to view history for a particular C40. If a C40 is not listed, there are no messages to display.

Filter Buttons (Fault, Critical Fault, General, Warning, Reject, Debug, Utility, and Unhandled Not Shown)
These buttons represent different notice types. Press any button to filter those notices from the list. Pressing refresh will refresh the screen, displaying only those notice types selected.
- **Fault** – a message describing an unintended event which restricts the system's ability to produce
- **Critical Fault** – same as Fault, except the operator must acknowledge each Critical Fault individually
- **General** – an informational message which relays current existing conditions within the system
- **Warning** – a message describing an event which occurred, or an existing condition, which may cause a problem if not addressed
- **Reject** – a message describing why a product was rejected from the normal flow of product
- **Debug** – a message used during the debug stage of development to monitor for specific desired or undesired events
- **Utility** – a notice used to trigger a software utility
- **Unhandled Not Shown** – a message that is sent from the PLC but not defined in the Message data base
- **Production Data Not Shown** – a message used for production data collection

Individual Items
Click this button to display the items in the grid in chronological order.
> **NOTE:** When **Individual Items** is selected, the button color will be blue
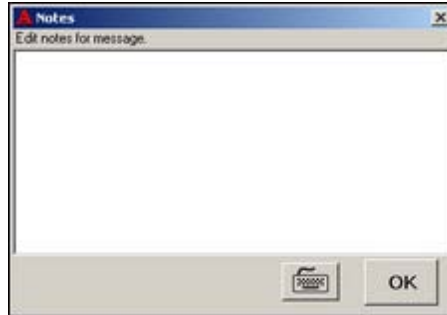
Totaled
Click this button to display the items in the grid in a totaled fashion, displaying the number of times an item occurred. The items all totaled to allow the user to more easily view which items are occurring the most frequently.
> **NOTE:** When **Totaled** selected, the button color will be blue

Edit Notes Button
Select a message in the grid and the Edit Notes Button becomes available. Click on the Edit Notes button to open a dialog window to add your notes to the messages. Double-clicking on the message itself also opens this dialog. Click OK on the dialog when finished.

Delete All Button
This button will delete the entire fault log. This will make any generated reports invalid since the Report Generator uses this fault log to generate its reports.

Refresh
This button will refresh the faults on the screen to the most current log at the time the refresh button was pressed, reflected by any filters which may have been selected.

Back Button
This button will return the user to the calling page.

Filter Drop Down List

Click on the drop down arrow to view available filters to apply to the list. Select a filter from the list to apply it. Depending on the selection, additional parameters become available to enter, such as dates and hours.

From Date/Time: 1/ 4/2010 ▼ 5:59:00 AM
To Date/Time: 1/ 4/2010 ▼ 5:59:00 PM

Show Last: 0 Hours 0 Minutes

Column Options

To move a column from left to right, select a column from the dropdown list, and click Left or Right to move the column in either direction.

Device Column

This column displays the name of the device which generated the notice.

Message Column

This column displays the message which appeared on the notice. A list of possible messages, causes, and actions are given on the Message Notices section.

PLC Details Column

This column displays information received from the PLC when the notice was generated.

Shift Column

This column displays the shift in which the notice was recorded.

Down Time Column

This column displays time elapsed between notice display and when the system is started.

Ack Time Column

This column displays the length of time elapsed before the notice was acknowledged.

HMI Details Column

This column displays any additional information received from the HMI when the notice was generated.

Date Stamp Column

This column displays the date and time when the notice was generated.

Notes Column

This column displays any user entered information for the selected notice.

Notice Type

This column displays the type of notice recorded.

Location Column

This column displays the notice location or area of the machine.

Misc Tags Page

General Page Information

This page is where the HMI stores information needed to operate the machine. Information used here is only temporary and is not retained for the next product change.

Booleans:

?	1	☐	Ignore Upstream Sending Product
?	2	☐	Ignore Downstream Available
?	3	☐	Remove Aagard Available For Product
?	4	☐	Force Aagard Sending Product
?	5	☐	Ignore Glue System Status
?	6	☐	Ignore Vacuum Supply Status
?	7	☐	Ignore Multiple Rejects
?	8	☐	Clean Out
?	10	☐	Enable Case Refeed
?	11	☐	QC Case
?	23	☐	Load Cups Clean Out

? **Button**

This button will display the **Misc Data Definition Popup.** This popup contains the definition for the related Misc Tag. To close the popup, click the red X in right corner, click outside the popup, or press Esc. **NOTE:** If logged in at Aagard level, this definition is editable.

SAMPLE IMAGE

Misc Tag Name

Definition

Back Button

This button will display the [Advanced Page](#).

Change Log Page

General Page Information

This page will display any changes that have been made to the Aagard HMI database. This excludes any cam changes made, which are allowable and will not be displayed here. The drop down list filter in the bottom left corner of this page will allow a specific time period to be selected. The changes logged will be deleted after three months.

SAMPLE IMAGE

Delete All

This button will delete the entire contents of the change log. This will make any change log section of the generated reports invalid because the report generator uses this change log to generate its reports.

Refresh

This button will refresh the changes on the screen to the most current log at the time the refresh button was pressed.

Back Button
This button will display the Advanced Page.

Filter Drop Down List
Click on the drop down arrow to view available filters to apply to the list. Select a filter from the list to apply it.
Depending on the selection, additional parameters become available to enter, such as dates and hours.

From Date/Time: 1/ 4/2010 ▾ 5:59:00 AM ▲▼
To Date/Time: 1/ 4/2010 ▾ 5:59:00 PM ▲▼

Show Last: 0 Hours 0 Minutes

Location Column
This column will display on which page the change was made.

Field Column
This column will display the name of the field to which the change was made.

Old Value Column
This column will record what the value was before the change was made.

New Value Column
This column will record what the value is after the change was made.

Product Column
This column will display the product downloaded when the change was made.

Notes Column
This column will display any notes that were entered by the user into the notes popup after the change was made.

Who Column
This column will display the user that was logged on at the time of the change.

Changed Date Column
This column will display the date that the change was made.

Changed Time Column
This column will display the time that the change was made.

Glue Page

General Page Information

If this feature is installed, this page allows the user to easily adjust the available glue pattern. This page shows the product as it moves through the glue heads looking at it from the operator (HMI) side of the machine (*The direction of the blue arrow indicates the direction of product flow*).

Stitch Adjust Information

To display the stitch adjustment popup in the bottom center of the screen, click on any red glue stitch that needs to be adjusted. This popup will display all the adjustment information for the selected stitch.

SAMPLE IMAGE

- **On**

This is the on point of the selected stitch. **NOTE:** The ON value must be less than the OFF value!
- **Off**

This is the off point of the selected stitch. **NOTE:** The OFF value must be greater than the ON value!
- **Left Arrow**

This arrow will move the selected stitch point to the left relative to the product shown in the picture.

- **Right Arrow**

This arrow will move the selected stitch point to the right relative to the product shown in the picture.

- **Master Offset**

This will adjust the start of the cam relative to the designated servo axis. Usually the cam will relate to a position of a servo axis that is moving the product, such as flight chains.

- **Stitch Gap %**

This is the percent of glue stitch that is taken out of the center of the selected glue stitch.

NOTE: This setting applies to Case Packers only!

- **Use Gap Check Box**

This will allow the user to decide if there is to be a gap stitch applied or a full stitch applied.

NOTE: This setting applies to Case Packers only, when this feature is enabled!

Edit

This button will open the page in edit mode.   **Aagard user level required!**

Back

This button will display the .

Motor Data Page

General Page Information

The configuration of each non servo motor is contained in this screen. Changing the configuration of any motor can greatly affect how the machine functions.

Motor Parameter Fields

Motor Parameter Entry Fields

These parameters are described in further detail in the Motor Data Page Items topic.

<p align="center"><strong style="color:red">SAMPLE IMAGE</p>

Motor

To access different motors, use the motor drop down list.

Notes

These notes can be edited by pressing the **Edit Button** located to the bottom right of the SD Notes Box. Once the Edit Button has been pressed, the text on the Edit Button will change to "Save" and the notes are now able to be edited. After the notes are edited, the **Save Button** will have to be pressed in order for the notes to be saved.

Copy From Button

This button will allow all the data from another motor to be copied and replace all of the data for the currently selected motor. This feature may be useful when setting up a new motor. Pressing this button will display the **Copy From Popup**.

Back Button

This button will close and save any changes and go to the Data Input Page.

Solenoid Data Page

General Page Information

The configuration of each solenoid valve controlled actuator is contained on this screen. Changing the configuration of a valve can greatly affect how the machine functions. For instance, a solenoid valve controlling vacuum must have the configuration data of a vacuum valve. A vacuum controlling solenoid valve must also have the A Sensor activated because a vacuum sensor is connected to this input. Thus, the "A" Time is the time allowed for a vacuum to be made. If a cylinder is slowed via the flow controls and the cylinder does not make the cylinder switch in the time displayed in 'sensor time', then the cylinder will give a "Jam" fault. If it is desired to slow a cylinder, make sure that the time for that direction is raised to accommodate the slower action time.

Solenoid Valve Parameters Fields

Solenoid Valve Parameter Entry Fields

The solenoid valve parameters that can be specified for a specific solenoid valve are Configuration, "A" Time, "B" Time, "DeBounce" Time, "Jam" Time, "A" Sensor, and "B" Sensor. View the Solenoid Data Page Items page for more information on each field.

SAMPLE IMAGE

Solenoid Valve

To access different solenoid valves, use the solenoid valve drop down list.

Notes

These notes can be edited by pressing the **Edit Button** located to the bottom right of the SD Notes Box. Once the Edit Button has been pressed, the text on the Edit Button will change to "Save" and the notes are now able to be edited. After the notes are edited, the **Save Button** will have to be pressed in order for the notes to be saved.

Copy From Button

This button will allow all the data from another solenoid valve to be copied and replace all of the currently selected solenoid valve data. This feature may be useful when setting up a new solenoid valve. Pressing this button will display the **Copy From Popup**.

Back Button

This button will close and save any changes and go to the Data Input Page.

Servo Drive Data Page

General Page Information

This page shows Servo Drive Data for each Servo Drive on the machine. This page is identical to the Servo Drive Data Page, with the addition of one check mark box in the bottom left hand corner of the screen labeled "Include This Servo In Initialization". Checking this box will do a full initialization to the Servo Drive that is currently selected the next time an initialization is done. A full initialization will load all the parameters specified under the Initialization Column on the Servo Drive Data Page. Information about the parameters on this page can be found under the Servo Drive Data Page.

User Level 3 required!

Initialize Data Section

Initialize Data Category

The machine controller uses this data in the machine start up to configure each servo axis. This data will require a full initialize on that servo axis before the changes will take effect. More information on how to do a full initialize on a servo axis can be found on the Start Up Page.

Referencing Data Section

Referencing Data Category

This data is for machine referencing of the currently selected servo axis. Data changed in this category will take effect immediately after entering the data.

Jog Data Section

Jog Data Category

This data is used while in manual mode and jogging the currently selected servo axis. Data changed in this category will take effect immediately after entering the data.

Motion Data Section

Motion Data Category

This data is used as default variables and starting speeds for the currently selected servo axis. Data changed in this category will take effect immediately after entering the data.

Cam Data Section

Cam Data Category

This data is used when the axis is cam coupled to a master. If zero is specified, the default value in the Motion Data Category will be used. Data changed in this category will take effect immediately after entering the data.

Torque Monitoring Section

Torque Monitoring Category

This data is used as default variables and starting speeds for the currently selected servo axis. Data changed in this category will take effect immediately after entering the data.

SAMPLE IMAGE

Servo Drive
To access different servo drives, use the servo drive drop down list.

Notes
These notes can be edited by pressing the **Edit Button** located to the bottom right of the SD Notes Box. Once the Edit Button has been pressed, the text on the Edit Button will change to "Save" and the notes are now able to be edited. After the notes are edited, the **Save Button** will have to be pressed in order for the notes to be saved.

Drive Status Box
This box is located in the bottom left corner of this page. Information that is given is Actual Position, Max Position Error, Max Torque, and State of the Servo Drive. More information can be found on the Drive Diagnostics Page.

Diagnose
This button will display a diagnostic popup for the currently selected Servo Drive. This diagnostic popup is described in further detail on the Drive Diagnostics Page.

Copy From Button

This button will allow all the data from another servo axis to be copied, replacing all of the data for the currently selected servo axis. This feature may be useful when setting up a new servo axis. Pressing this button will display the **Copy From Popup**.

Back Button

This button will close and save any changes and go to the Data Input Page.

Servo Drive Data Page - Advanced Tab

SAMPLE IMAGE

Reference Mark Location

The Reference Mark Location is a precise description of the reference mark placement in relation to a fixed member of the machine.

Direction of Positive Movement

The Direction of Positive Movement is the direction of movement which causes a positive change in the position read out.

Reference Mark Position

The Reference Mark Position is the position the servo reads when lined up with the reference mark.

Precision

Change the precision setting for the selected drive. **WARNING: Data loss will occur when going from higher precision to lower!**

Reference Image

The Reference Image is the image that will display at the end of the reference routine. Push the ⊡ button to browse to the image file location.

Note: The image can only be 640 x 480 max.

Drive Status Box

This box is located in the bottom left corner of this page. Information that is given is Actual Position, Max Position Error, Max Torque, and State of the Servo Drive. More information can be found on the [Drive Diagnostics Page](#).

Diagnose

This button will display a diagnostic popup for the currently selected Servo Drive. This diagnostic popup is described in further detail on the [Drive Diagnostics Page](#).

Copy From Button

This button will allow all the data from another servo axis to be copied, replacing all of the data for the currently selected servo axis. This feature may be useful when setting up a new servo axis. Pressing this button will display the **Copy From Popup**.

Back Button

This button will close and save any changes and go to the [Data Input Page](#).

Alternating Jog

SAMPLE IMAGE

Position 1 Entry Field
This entry field should specify the first position at which the axis should stop.

Position 2 Entry Field
This entry field should specify the second position at which the axis should stop.

Alt Dwell Entry Field
This entry field should specify how long the axis should stop at each position entered in the Position 1 and Position 2 entry fields.

Velocity Entry Field
This entry field should specify the max velocity at which the axis should be allowed to travel. If 0 is specified, then the Default Velocity specified on the [Servo Drive Data Page](#) will be used.

Accel Entry Field
This entry field should specify the acceleration rate the axis should use to accel to the specified velocity. This value will also be used for the deceleration rate. If 0 is specified, then the Default Accel specified on the [Servo Drive Data Page](#) will be used.

Torque Entry Field
This entry field should specify the torque limit the axis should use while executing the alternating jog moves. If 0 is specified, then the Default Torque specified on the [Servo Drive Data Page](#) will be used.

Pos Err Limit Entry Field
This entry field should specify the position error limit the axis should use while executing the alternating jog moves. If 0 is specified, then the Default Lag Limit specified on the [Servo Drive Data Page](#) will be used.

Start Alternating Button
Pressing this button will start the alternating jog moves as long the mode is manual and the state is ready. Getting the machine to the correct mode and state can be accomplished by starting the machine as if in automatic mode and product was going to be cycled through the machine.

Stop Alternating Button
Pressing this button will stop the axis from executing the alternating jog moves.

Servo Drive Tuning

SAMPLE IMAGE

Velocity Prop. Gain (Kp) Entry Field
This entry field should specify the proportional gain of the velocity loop of the servo.

Velocity Integral Action Time (TN) Entry Field
This entry field should specify the integral action time of the velocity loop of the servo.

Position Prop. Gain (Kv) Entry Field
This entry field should specify the proportional gain of the position loop of the servo.

Rejection Frequency Entry Field
This entry field should specify the rejection frequency of the servo.

Rejection Bandwidth Entry Field
This entry field should specify the rejection bandwidth of the servo.

Default Column
This column displays the default values for all the tuning entry fields listed above.

Apply Tuning Settings Button
Pressing this button will apply the settings entered into the entry fields listed above.

Set To Default Button
Pressing this button will set all the tuning entry fields listed above to the values displayed in the Default Column.

Manual SD Enabling

This page is used to activate the manual servo enabling feature. When activated, individual servos may be enabled on this page or on the jog page.

Servo Drive Name and ID
This label represents the name of the servo drive and its ID

Status Light
This light represents the actual enabled or disabled status of the servo drive. When the drive is enabled, the status light will be green. When the drive is disabled, the status light will be red.

Enable/Disable Servo Drive Button
Click this button to enable or disable this servo drive. If the drive is currently enabled, the button color will be green and the text will read Disable Servo Drive. If the drive is currently disabled, the button color will be red and the text will read Enable Servo Drive.

> **NOTE:** This feature is only available with the correct PLC framework version in place
> **NOTE:** This button will only be enabled when Manual Enabling is activated

Up/Down Navigation Buttons
Up and down navigation buttons will appear when not all servo drives fit onto one screen. When drives exist above the first drive shown at the top of the screen, a button with an up arrow will be displayed. When drives exist below

the last drive shown on the bottom of the screen, a button with a down arrow will be displayed.

Activate/Deactivate Manual Enabling
Press this button to activate or deactivate manual enabling of servo drives. When activated, the button color will be green and the text will read Deactivate Manual Enabling. When deactivated, the button color will be red and the text will read Activate Manual Enabling.

NOTE: When activating manual enabling, all currently enabled servo drives will become disabled

Back Button
Click here to return to the page which called this page.

Edit System Product Page

SAMPLE IMAGE

This list contains all the currently available System Products to be edited. When a System Product is selected, the appropriate C40 Recipes will be shown in the C40 Recipes Drop Down Menus to the right of the System Products List.

Cartoner Recipe
The Cartoner Recipe drop down menu contains the name of the recipe used for the currently selected product. If the machine includes a Cartoner, Case Packer, and Palletizer there will be three different Recipe drop down menus.

New Button
If the New Button is pressed, the S10 Product Name Popup will appear. This is where the new product's name will be declared for the first time.

Product Name
This entry field is where the name of the new product will be defined. The text that is entered here will be exactly what is displayed on the Product Download Page.
 The **OK Button** can then be pressed if the information is to be saved, or the **Cancel Button** will close the popup and save nothing new.

Rename Button
This button will allow the currently selected product to be renamed. When this button is pressed, a popup will appear. Replace the old name with the new name. The **OK Button** can then be pressed if the information is to be saved, or the **Cancel Button** will close the popup and save nothing new.

Delete
If this button is pressed, the current selected product will be deleted from the System Products list.

Edit C40 Recipes Button
This button will display the Edit C40 Recipes Page.

Import Recipes
This button will display the Import Recipes Page. **Aagard level required!**

Copy Changeover Data From
The Copy Changeover Data From button allows a particular system product to be selected and have changeover data product values copied over to it.

Back Button
This button will close and save any changes and go to the Product Download Page.

Edit C40 Recipes Page

<p align="center">**SAMPLE IMAGE**</p>

C40s Selection Tabs

The selection tabs will display the list of recipes for each C40 selectable by the selection tabs.

- **C40 Recipes List** - This list contains all the currently created recipes for the C40 selected by the C40s Selection Tab.
- **New Button** - If the New Button is pressed, the C40 Recipe Name Popup will appear. This is where the new recipe's name will be declared for the first time.

- **Recipe Name Entry Field** - This entry field is where the name of the new recipe will be defined. The **OK Button** can then be pressed if the information is to be saved, or the **Cancel Button** will close the popup and save nothing new.

- **Rename Button -** This button will allow the currently selected recipe to be renamed. When this button is pressed, a popup will appear. Replace the old name with the new name. The **OK Button** can then be pressed if the information is to be saved, or the **Cancel Button** will close the popup and save nothing new.

- **Delete Button -** This button will delete the current recipe selected.
- **Copy Data From Button -** This button, when pressed, will go through the process of copying the recipe information from another recipe to the current recipe selected. This will prompt for a previously created recipe to be selected from the Copy Recipe From Popup. If no recipes have been previously created, nothing will be available in the drop down menu. After a recipe has been selected, the **OK Button** will complete the operation and the **Cancel Button** will close the popup and save nothing new.

Back Button
This button will close and save any changes and go to the Edit System Products Page.

Changeover Adjustments Page

General Page Information

This page provides a list of adjustments and values for the currently downloaded product. Values are adjustable from this page.

Columns indicate the Adjustment Name, Value, and Description.

SAMPLE IMAGE

Aagard HMI - Data Input - Adjustments

Current Product:

2-1	88	Operator Side Magazine Width
2-2	21	Non-Operator Side Magazine Width
2-3	180	Non-Operator Side Magazine Rotate Clip
2-4	205	Operator Side Magazine Rotate Clip
2-5	380	Top Clip
2-6	42	Bedplate Width
2-7	100 EXTEND	Product Stop - Upper
2-8	EXTEND	Product Stop - Lower
2-9A	1/4" DOWN FRO	Flap Tucker - Upper
2-9B	145	Flap Tucker - Lower
2-10	LOWER	Robot Pick Cups
2-11	185	Robot Case Pusher Horizontal
2-12	330	Robot Case Pusher Vertical
2-13	ON	5th Cup Vacuum Control Valve
2-14	OFF	4th Cups Vacuum Control Valve

Export List Of All Values For All Products   ReArrange   Back

Export List Of All Values For All Products Button
This button will export a list of all values for all products in default order to a Microsoft Excel file, which may also be opened by other application programs.

ReArrange Button
This button will display the ReArrange Page.

Rearrange Page

General Page Information

This will allow the changeover order be adjusted when changing from one product to another. Having the changeover adjustments in the correct order for all the different size changes may eliminate any possible interferences that may occur.

SAMPLE IMAGE

A Aagard HMI - Data Input - Adjustment Order

Product Combination: From: 684 Carton To: 699 Carton

Number	Default Order	Modified Ord	Name
1-1	1	-1	Infeed Conveyor Width
1-2	2	-1	Blank Backstop Width
1-3	3	-1	Bucket Changeout
1-4	4	-1	Backstop Offset
1-5	5	-1	Side Seam Compression
1-6	6	-1	Nip Belt Height
1-7	7	-1	Picker Arm-Change Part
1-8	8	-1	Magazine Height
1-9	9	-1	Top Carton Drive Height
1-10	10	-1	Carton Blank Width
1-11	11	-1	Magazine Horizontal Adjustment
1-12	12	-1	Carton Slot Guide
1-13	13	-1	Upper Carton Clamp
1-14	14	-1	Lower Carton Clamp
1-15	15	-1	Upper Flite Chain Width
1-16	16	-1	Lower Flite Chain Width
1-17	17	-1	Tucker Height
1-18	18	-1	Operator Upstream Glue Height
1-19	19	-1	Operator Lower Compression Plate
1-20	20	-1	Operator Downstream Glue Height
1-21	21	-1	Operator Upper Compression Plate
1-22	22	-1	Discharge Conveyor Width
1-23	23	-1	Domino Laser Position
1-24	24	-1	After Tuck Rail

If the Modified Order Value = "-1" then the Default Order Value will be used in its place.
Changing The Default Order will change it for all Product Combinations.

Back

Product Combination Drop Down List

This list will allow the correct product combination to be selected when going from a particular product to another product.

Number Column

This column will show the different adjustment changeover numbers.

Default Order Column

This column will show the changeover adjustment's default order that is displayed on the Adjustments Page. This order can be changed from this page. This will change the default order on all sizes.

Modified Order Column

This will show the changeover adjustment's modified order. This column can be different depending on what Product Combination is selected. If the order needs to be modified, change the -1(Default Order) in the Modified Order Column to the appropriate number that will place it correctly in the Default Order.

Name Column

This column will display the changeover adjustment names.

General Data Page

General Page Information

The data contained on this page is provided as a means to adjust certain running parameters. These values pertain to the current downloaded product only. If changes are desired on any other products, a product download will have to be performed and then changes made to that specific downloaded product.

[Case Packer General Data Page Items](#)
[Palletizer General Data Page Items](#)

[?] **Button**

This button will display the **General Data Definition Popup.** This popup contains the definition for the related General Data item. To close the popup, click the red X in top right corner, click outside the popup, or press Esc. **NOTE:** If logged in at Aagard level, this definition is editable.

Back Button

This button will display the [Data Input Page](#).

Servo Moves Data Page

General Page Information

This screen provides a means to adjust servo axis move parameters. Most servo-controlled motions use this move data.

SAMPLE IMAGE

Servo Drive

To access different servo drives, use the servo drive drop down list.

Move

Each servo axis has a collection of moves accessible via the drop down menu. Some of these are auto calculated by the controller and values don't need to be entered for these moves. Move numbers 1 through 5 are always auto calculated. Any move numbers higher than 5 will be labeled if they are auto calculated.

New

This button will display a **New Move Popup** window. This feature will allow a new move to be created.

SD # Entry Field - This number should be the same as the Servo Drive number for which the move needs to be created.
Number - This number is equal to the move number that is specified in the controller program for this move.
Name - This is where the name of the move should be specified.
OK Button - This button will save any new information and close the popup window.
Cancel Button - This button will not save any new information and close the popup window.

Rename Button

This button will display a **Rename Move Popup** window. This feature will allow an existing move to be renamed.

Name - This is where the name of the move should be specified.
OK Button - This button will save any new information and close the popup window.
Cancel Button - This button will not save any new information and close the popup window.

Delete Button

This button will delete the currently selected move for the currently selected servo drive.

Servo Axis Move Parameters Entry Field Column

The move parameters that can be specified for a specific move are Position, Velocity, Accel, Decel, Torque, and Position Error Limit. These parameters are described in further detail on the Servo Modes Data Page Items topic.

Default Fields

This column will display the default parameters set in the Servo Drive Data Page for the selected servo drive.

Notes

These notes can be edited by pressing the **Edit Button** located to the bottom right of the SD Notes Box. Once the Edit Button has been pressed, the text on the Edit Button will change to "Save" and the notes are now able to be edited. After the notes are edited, the **Save Button** will have to be pressed in order for the notes to be saved.
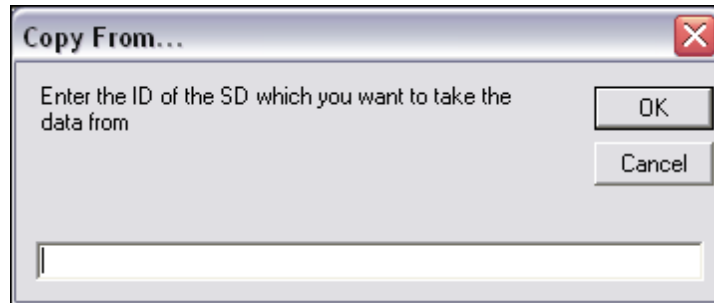
Drive Status Box

This box is located in the bottom left corner of this page. Information that is given is Actual Position, Max Position Error, Max Torque, and State of the Servo Drive. More information can be found on the Drive Diagnostics Page.

Servo Move Calculator Box

This box will display different types of possible move calculators depending on what is selected in the Servo Move Calculator Drop Down Menu. This tool will allow information about a move to be calculated once the required information is entered.

Diagnose

This button will display a diagnostic popup for the currently selected Servo Drive. This diagnostic popup is described in further detail on the Drive Diagnostics Page.

Back Button

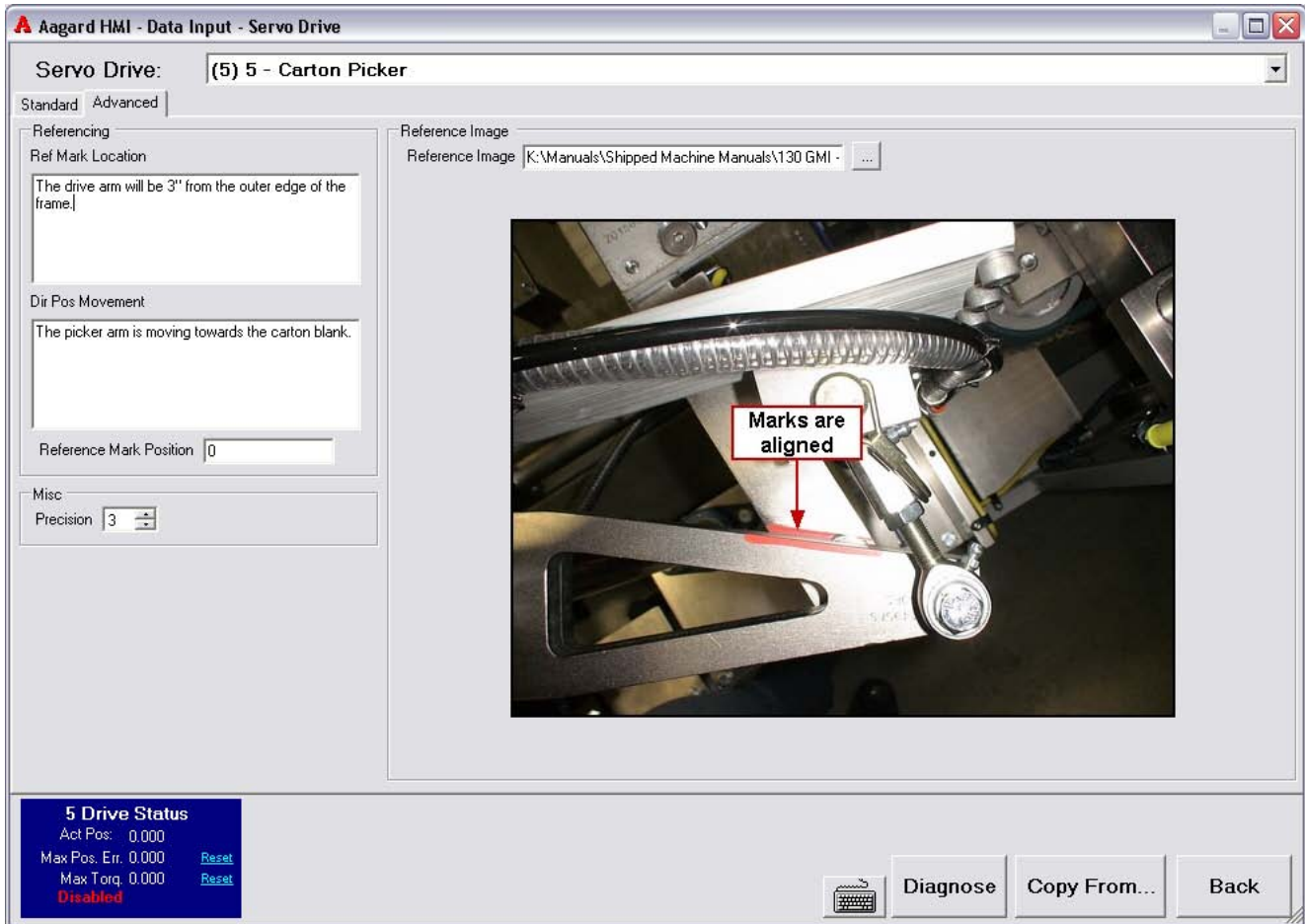This button will close and save any changes and go to the Data Input Page.

Cam Offsets Page

General Page Information

This screen allows the user to slightly adjust a complete cam while the machine is operating. It may be convenient to make slight adjustments to a cam while the machine is still in operation. Individual parts of the cam can't be adjusted from this page, but the whole cam can be adjusted slightly earlier or later. The servo drive start position of the cam can also be adjusted slightly from this page. CAUTION! Changes made here may greatly affect the performance of this machine.

SAMPLE IMAGE

Servo Drive

To access different servo drives, use the servo drive drop down list.

Solenoid Valve

To access different solenoid valves, use the solenoid valve drop down list.

Master Offset

This entry field will adjust the master offset of the cam for the selected device. This will offset the cam for the selected device by the Master Distance. For example: At 0 the cam and master will both start at the same time. If 5 is entered in the Master Offset Entry Field the cam will now be advanced by a Master Position of 5. If -5 is entered in the Master Offset Entry Field the cam will now be delayed by a Master Position of 5.

Slave Offset Entry Field

This entry field will adjust the slave offset of the cam for the selected drive. For example: At 0 the slave will start at the position specified by the cam in cam generator. If 5 is entered in the Slave Offset Entry Field the slave will now start the cam at the position specified in the cam plus 5 units. If -5 is entered in the Slave Offset Entry Field the slave will now start the cam at the position specified in the cam minus 5 units. The units will vary depending on how the drive is configured. The units of the drive are specified on the Servo Drive Data Page.

Diagnose

This button will display a diagnostic popup for the currently selected Servo Drive. This diagnostic popup is described in further detail on the Drive Diagnostics Page.

Back Button

This button will close and save any changes and go to the Data Input Page.

Cam Data Page

General Page Information

A device cam is an electronic coupling of one or more devices to a master. The Cam Data Input Page contains the master/slave positions for each device. The slave is electronically coupled to the master by position, and the table contains those position to position couplings. The points in the table are also shown on a graph. The cams are very tightly coupled with the master and even a slight position change can greatly affect machine function.

SAMPLE IMAGE

Aagard HMI - Data Input - Cam Data

Current Recipe: #1 (684 Carton)

Cam Table:

16 - Magazine Vacuum (SV)

Cam Table Length: 3   Currently Looking at # 0

Remove From Cam Generator   New   Rename   Delete

	1	2	3
Master Pos:	0	400	1050
Slave Pos:	0	1	0

Notes: Edit

Slave Pos of -1 = OFF (B Coil)
Slave Pos of 0 = OFF (B Coil)
Slave Pos of 1 = ON (A Coil)
Magazine Master is the master for this cam.

Refresh Graph   ○ Graph All (Slow)   ● Graph Current   ● Slope Graph   ○ Square Wave Graph

Position (Max: 1.00000, Min: 0.00000)

Depending on the type of cam you have selected, some of these fields could have different definitions. Click a button below to view more information on that specific cam type.

Servo Drive   Solenoid Valve   Motor

Cam Generator   Back

Cam Table

This is a drop down menu to allow any solenoid valve or motor cam to be selected. The data being displayed on the page pertains to the selected cam.

Remove From Cam Generator
Press this button to remove the selected cam from Cam Generator. **Use with caution!**

Aagard level required!

New
This button will display the **New Cam Popup** which will create a new cam.

- **Number Entry Field** - This entry field is for the new cam ID number.
- **Name Entry Field** - This entry field is for the new cam name.
- **OK Button** - This button will close and save the information entered.
- **Cancel Button** - This button will close but not save the information entered.

Rename
This button will display the **Rename Cam Popup** which will allow the currently selected cam to be renamed.

- **Name Entry Field** - This entry field is where the cam name can be edited.
- **OK Button** - This button will close and save the information entered.
- **Cancel Button** - This button will close but not save the information entered.

Delete
This button allow the currently selected cam to be deleted.

Cam Table Length
This field will allow the cam to be setup to have as many points needed to make the proper cam. The previous example screen has 4 cam points.

Currently Looking at #
This field will allow the cam point entered to be viewed on the cam table right below this entry field.

Notes
These notes can be edited by pressing the **Edit Button** located to the bottom right of the SD Notes Box. Once the Edit Button has been pressed, the text on the Edit Button will change to "Save" and the notes are now able to be edited. After the notes are edited, the **Save Button** will have to be pressed in order for the notes to be saved.

Refresh Graph
This button will refresh the graph shown.

Graph Selection
This feature displays cams in different graph formats.

- Graph All (Slow) uses all of the points in the cam to generate the graph
- Graph Current uses the points currently displayed on the screen to generate the graph

- Slope Graph displays the points in a slope (best suited for servo drives)
- Square Wave Graph displays the points in a square ware (best suited for solenoid valves)

Cam Generator Button
This button will open the Cam Generator Program. This program is used to create Servo Drive Cams. The Cam Generator is an Aagard developed application that generates cam tables. Opening the cam generator application allows the user to manipulate cam tables generated with the Aagard Cam Generator.

Back Button
This button will close and save any changes and go to the Data Input Page.

Servo Drive Cams
The servo drive cams should be altered through the Cam Generator. These cams are described in further detail in the Cam Generator help section.

Solenoid Valve Cams
The solenoid valve cams should be altered on the Cam Data Page. These cams are described in further detail in the Solenoid Valve Cams topic.

Motor Cams
The motor cams should be altered on the Cam Data Page. These cams are described in further detail in the Motor Cams topic.

Cam Generator Choose Cam Group

General Page Information

The first screen to popup after the cam generator button is pressed is the Cam Generator Choose Cam Group Screen. The cam group is a group of servo axes that may have related functions.

Existing Cam Group Option
The user is prompted to select a cam group from the existing cam groups available that contains all the information needed to build the cam table wanted.

New Cam Group Option
If a new cam group is wanted, the New Option Button will have to be pressed.

- **Name Entry Field** - A name will have to be entered in the Name Entry Field.
- **C40 Drop Down Menu** - A C40 will have to be selected from the C40 Drop Down Menu. The C40 that should be selected from this menu is the C40 in which the Servo Drive(s) are located.

OK Button
This button will save any new Cam Groups and go to the Choose Product Screen (see below).

Cancel Button
This button will exit the Cam Generator and not save any changes.

Cam Generator Choose Product

General Page Information

The next screen to popup after the OK button on the Cam Generator Choose Cam Group Screen is pressed is the Choose Product screen. The product to choose is the one to which you would like the changes applied.

A Choose Product

Existing:

684 Carton

OK   Cancel

Existing Drop Down Menu

The user is prompted to select a product from the existing list of products available that contains all the information needed to build the cam table wanted.

OK Button

This button will go to the Cam Generator Main Screen.

Cancel Button

This button will exit the Cam Generator.

Cam Generator Main Screen

General Page Information

This is the Cam Generator Main Screen. This is where all Servo Drive Cams are made and edited. Once changes are complete, the generated positions are placed into the HMI database. A product download will be needed for the modifications to take effect. The Product Download will then load the generated positions to create the new cam.

Cam Generator has different ways the created cam can be viewed, if desired. The Cam Generator will default to the Setup Viewing Feature shown on the Cam Generator Main Screen. Other possible viewing features are Graph and Points. There is also a Misc Viewing Feature, which allows notes to be assigned to each cam.

SAMPLE IMAGE

Cam Group Information

MDist Multiplier

This entry field makes the MDist displayed in the different information blocks relate to something such as time or distance of another axis. Keep in mind that the MDist is only equal to time when operating at 100% rate.

Add Cam Button - This button will display the Choose Cam Popup. This popup will allow a new cam to be added to or created in the cam generator. If the cam exists already, select the Existing Option and select the cam from the drop down menu. If the cam doesn't exist, select the New Option and specify the cam number in the left entry field and put the name of the cam in the right entry field. The OK Button will save the information, and the Cancel Button will close the popup and go to the Cam Generator Main Screen.

<div align="center">

SAMPLE IMAGE

</div>

Remove Button - This button will remove the currently selected cam.

Rename Cam - A cam can be renamed by clicking on the cam name at the top of the cam.

Number of Points to Use
This field defines the maximum number of points that the cam generator program uses to generate the table for the drive data for this cam.

NOTE: Using more points will produce smoother motion

Add Data Type Button - This button will display the Select Type of Data Popup.

Remove
This button will remove the currently selected cam data type

Move>>
This button will move the currently selected Cam Data Type to the right.

<<Move
This button will move the currently selected Cam Data Type to the left.

Master Start
This is the Master Position at which the cam should start.

Slave Start
This is the Slave (Servo Drive) Position at which the cam should start.

Velocity Start
This is the velocity at which the Servo Drive should start its cam.

Calculate
This button will calculate the Master End, Slave End, and all the status information generated in each Cam Data Type for the cam.

Master End Status

This position will be generated after the Calculate Button has been pressed. This status is the position at which the master currently ends. This should always equal the length of the master's travel after all changes have been made.

Slave End Status

This position will be generated after the Calculate Button has been pressed. The status is the position at which the slave (Servo Drive) currently ends. This position should usually equal the slave start unless the axis rolls its position over to zero at some point.

Quit Button - This button will ask if any changes want to be saved and start the process to exit cam generator and display the Cam Generator Warning Screen.

Save Button - This button will save any changes made to the cams.

Load Button - This button will ask if any changes want to be saved and go to the Cam Generator Choose Cam Group Screen to load another group of cams.

View Timing Graph

This feature displays the relationship (in time) between each segment of the cam to the overall length of the cam.

View Overlay Graph

This feature displays the position of the axis (Show Slave selection) as well as the velocity of the axis (Show Velocity selection) over the length of the cam.

View 2 Axis Graph

This feature displays the profile of a two-axis cam, graphing the position of one axis over the position of another.

Maintenance

Maintenance Topics

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

Review panel layout and devices
Remove and install knives
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

Training Topics and Completion Sheet

Please print copies as needed	Instructor:	*= Full Understanding Required!
	Training Group:	
Name:	Machine #:	1=Fully Comprehend 2=More Training Desired
Job Title/Role:	Date:	
	Shift:	

NOTE: Not all items listed here pertain to your Aagard system.

*To go to **Level 2 Training overview, click here**.*
*To go to **Level 3 Training overview, click here**.*

How To Use This Manual *	*1*	*2*
Safety Recommendations * training points	*1*	*2*

Training Points for this page (10 Mins)
 	
• Please follow this facility's Lockout-Tagout procedures!
  o During lockout, ensure all disconnects are locked out
• Learn the location of the following items for each safety zone (C40) of the machine
  o High voltage disconnect (removes high voltage from the machine)
  o Air dump (removes air pressure supply to the machine)
  o Separate high voltage disconnect for each Glue tank
  o Standard AC voltage to HMI not connected to any disconnects
• Pay special attention to the following signs and placards that might be on this machine
  o CAUTION
  o WARNING
  o DANGER
  o HOT
  o Do Not Step
• Learn of any any vertical applications which might have counter balance or brake
• Aagard machines are divided into zones: power can be removed from one zone while the other zone still has power		

E-Stop Locations * training points	*1*	*2*

Training Points for this page (10 Mins)
 	
• Learn how to read the E-Stop floor plan for this machine
  o Perform safety check (open guard doors, depress E-Stops, etc., and view HMI notices)
  o Recall that C40 is a safety zone; safety check must be performed for each C40
  o Attempt to start the machine with a guard door open
• Using E-Stop or opening of a guard door has the same effect on the safety system
 	
With this topic, the *Introduction and Safety* section is complete.
Please fill out Topic Completion Sheets at this time.		

Machine Operation **-** training points	1	2
Training Points for this page (10 Mins) • Reinforce items on this page!		
Stack Light and Warning Horn * training points	*1*	*2*
Training Points for this page (10 Mins)		

• Learn w hat each color of the stack light represents • Learn w hat the horn sounds mean		
Button Functions * training points	**1**	**2**

Training Points for this page (10 Mins)
 	
• Definitions
   o HMI = Human Machine Interface
   o E-Stop = Emergency Stop
   o C-Stop = Cycle Stop
• E-Stop: Brings machine to "fast stop" (some machines have time delay on stop)
   o NOTE: This is NOT the preferred method for stopping the machine
   o Button is illuminated w hen depressed
• Cycle Stop: Stops machine at the next position available for stopping
   o NOTE: This IS the preferred method for stopping the machine
• Start
   o Hard w ire reset on safety circuit
   o Reset faults
   o Starts machine if held on for full three seconds
   o Learn to determine meaning of flashing vs. solid green start button light		

Log In Screen * training points	**1**	**2**
Training Points for this page (10 Mins) • Login w ith the keyboard • Learn location of login status • Automatic log out after a predetermined amount of time • Learn of User Level 1, 2, 3 and Admin concept		
Keyboard / Number Pad * training points	**1**	**2**
Training Points for this page • Learn how to access on-board keyboard and number pad • Login using the HMI keyboard		
HMI Main Screen * training points	**1**	**2**

Training Points for this page (40 Mins)
 	
Level 1
 	
• This main screen w ill be displayed 95% of time machine is in production
• Learn the function of each available button for User Level 1
   o Login Button
   o Reset Button
   o Production Data Button
• Review available buttons for each C40
• Learn the location of state and mode status pilot lights
   o Three basic colors
      ▪ Red
      ▪ Blue
      ▪ Green
   o Demonstrate
      ▪ Starting
      ▪ Stopping
      ▪ E-Stopping
   o C40 Reset
      ▪ Learn code reset
      ▪ Some machines w ill need product cleaned/cleared
      ▪ Some machines might need additional special functions
      ▪ Sequence code is reset (start over from beginning)		

Level 2 • Review message notice display locations • Review Safety Zone (C40) concepts • Review States and Modes • Learn button functions • Level 2 and above users have access to considerable information When in Manual Mode, **Jog** and **Reference** buttons are available		
States and Modes	*1*	*2*
Production Data Page **-** training points	1	2
Training Points for this page (20 Mins) • This page displays up time and down time, and product number count • Machine keeps track of three days of production • This information is useful when determining how previous shift ran		
Continuous Running * training points	*1*	*2*

Training Points for this page (20 Mins)
 	
• Learn how to use Materials-related notices on the HMI
• Learn what warnings are sounded if materials are low
• Learn how to load materials
• Learn how changes in materials affect the machine
  ○ Change in glue manufacturer
  ○ New cardboard supplier
  ○ Size variations
  ○ Defective supplies		

Hot Melt Adhesive System **-** training points	1	2
Training Points for this page (10 Mins) • Learn location of glue guns • Contact with heated glue components will burn skin instantly and severely		
Sequence of Operation **-** training points	1	2
Training Points for this page (20 Mins) • Learn how product moves through the machine • Learn how to put machine in dry cycle and startup • Read each paragraph of the Sequence of Operation and, working with Message Notices, identify possible notices generated by the devices referenced in the Sequence of Operation Level 1 Training is complete Please fill out Topic Completion Sheets at this time		
Popups and Notices	*1*	*2*
Message Notices **-** training points	1	2

Training Points for this page (10 Mins)
 	
• Learn message display locations
• Learn how to decode and use this information
  ○ Device
  ○ Displayed Message
  ○ Cause
  ○ Action
• Review each notice		

Level 2		
Product Download Page * training points	*1*	*2*
Training Points for this page (10 Mins) • Become familiar with every changeover point on this machine • Learn how changeover settings affect product flow through the machine • Learn how to setup the machine based on product size • Learn how to test the machine for following a product changeover		
Changeover Location Drawings * training points	*1*	*2*
Training Points for this page (50 Mins) • This floor plan shows the location for changeover point locations • Note that the numbering sequence does not always correspond with the changeover order • The changeover order is dependent upon FROM which, and TO which, sizes you are changing! • The HMI will always show the correct changeover order • Have the class find each changeover on the Machine using the drawings		
Changeover Adjustments * training points	*1*	*2*
Training Points for this page (20 Mins) • Learn how to use Changeover Adjustment Pages		
Changeover Quick Reference Chart * training points	*1*	*2*
Training Points for this page (10 Mins) • Learn how to document and communicate any changes from the values in the Changeover Quick Reference Chart • Learn how to use Changeover Quick Reference Chart • Learn how each adjustment point works, and how it affects the machine • Learn how to test machine after a changeover has been completed		
Product Download Changeover Adjustments * training points	*1*	*2*
Training Points for this page (10 Mins) • Use this page to verify all changeovers have been completed for the current product		
Continuous Running * training points	*1*	*2*

Training Points for this page (20 Mins)
 	
• Learn how to use Materials-related notices on the HMI
• Learn what warnings are sounded if materials are low
• Learn how to load materials
• Learn how changes in materials affect the machine
  o Change in glue manufacturer
  o New cardboard supplier
  o Size variations
  o Defective supplies		

Log In Screen * training points	*1*	*2*
Training Points for this page (10 Mins) • Login with the keyboard • Learn location of login status • Automatic log out after a predetermined amount of time • Learn of User Level 1, 2, 3 and Admin concept		
Operator Control Panel	1	2
HMI Main Screen - training points	1	2
Training Points for this page (40 Mins)		

Level 2

Level 1

- This main screen will be displayed 95% of time machine is in production
- Learn the function of each available button for User Level 1
  - Login Button
  - Reset Button
  - Production Data Button
- Review available buttons for each C40
- Learn the location of state and mode status pilot lights
  - Three basic colors
    - Red
    - Blue
    - Green
  - Demonstrate
    - Starting
    - Stopping
    - E-Stopping
  - C40 Reset
    - Learn code reset
    - Some machines will need product cleaned/cleared
    - Some machines might need additional special functions
    - Sequence code is reset (start over from beginning)

Level 2

- Review message notice display locations
- Review Safety Zone (C40) concepts
- Review States and Modes
- Learn button functions
- Level 2 and above users have access to considerable information

When in Manual Mode, **Jog** and **Reference** buttons are available

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Fault History Page - training points	1	2

Training Points for this page

Level 2 (20 Mins)

- The information on this page is an excellent tool for determining problem spots or how other shifts have run
- Determine the location of problem spots other shifts may have had

Level 3 (2 Mins)

- Learn about Move column
- Learn about Delete All button

Reject History Page - training points	1	2

Training Points for this page

Level 2 (20 Mins)

- The information on this page is an excellent tool for determining problem spots or how other shifts have run
- Determine the location of problem spots other shifts may have had

Level 3 (2 Mins)

Level 2		
• Learn about Move column • Learn about Delete All button		
Production Data Page - training points	1	2
Training Points for this page (20 Mins) • This page displays up time and down time, and product number count • Machine keeps track of three days of production • This information is useful when determining how previous shift ran		
Advanced Page - training points	1	2
Training Points for this page (30 Mins) ***The items on this page are the most powerful tools available for troubleshooting.*** • Learn how to use the information behind the available buttons on this page through explanation, demonstration and review • Learn to how to access online manuals • Open other manufacturers' E-Manuals Note regarding **Shutdown** • This is the preferred method for proper power down on this PC-based machine • If customer requires power to be off during changeover procedure, follow shutdown procedure and use hard copy of this manual for changeover training • If shutdown is not required, follow Begin Changeovers at the bottom of this topic Note regarding **Restart** • Pressing this button Restarts PC, and ***will*** stop production!		
Glue Page * training points	*1*	*2*
Training Points for this page **Level 2** (20 Mins) • Learn how to change settings • **NOTE:** Changes made here are _not_ recorded in the change log! • **NOTE:** You must press "Enter" for changed values to be accepted **Level 3** (3 Mins) • Learn about Offset Position		
View Notices System Wide - training points	1	2
Training Points for this page • Learn how to use this information • Learn expand/collapse features • Learn about time stamp • Learn how to perform a custom sort • Learn how to sort by shift		
Change Log Page - training points	1	2
Training Points for this page (5 Mins) **Level 2**		

Level 2		
• Learn how to use this information • Learn sort features • The information on this page is an excellent tool for viewing changes made to the machine **Level 3** • **WARNING!** Do not use the "Delete All" button! • Learn about values and demonstrate how it works		
View Changeover Adjustments Page - training points	1	2
Training Points for this page (20 Mins) • This screen is for information purposes, showing changeover settings		
Device List * training points	*1*	*2*
Training Points for this page (2 Hours) • Learn how to use this information • Learn how to find a device on the machine • Review Device List Key (device abbreviations) • Learn how to locate identifying labels on devices • Have the class find each device on the machine using the list and map		
I/O Diagnostics Page * training points	*1*	*2*
Training Points for this page (10 Mins) • Learn how to use this information • Review of how devices are labeled • Review of how to look for a device		
Jog Page * training points	*1*	*2*
Training Points for this page **Level 2** (40 Mins) • Learn how Aagard labels devices in the machine • Device labels are referenced in message notices • Learn meaning of machine mode and state pilot lights • Pilot lights must be blue in order to jog a device • Learn how to jog a device on this machine with the touch screen and the mouse • **BEWARE:** Jogging initiates a direct link to the device – if something is obstructing the device, it WILL crash. • Learn through demonstration that all jog pages have the same layout Servo Drive Jog • Learn about the location velocity bar and how to adjust it • **BEWARE:** Ensure velocity bar is set to slow rate • Learn about GoTo position feature • Learn about Alternating Jog feature Solenoid Valve • Learn how to jog a solenoid valve Motor • Learn how to jog a motor • **NOTE:** If motor is VFD-controlled, speed number must be entered **Level 3**		

Level 2		
Alternating Jog (15-30 Mins) • Review Alternating Jog features • Learn how to use the Alternating Jog information • Demonstrate how to use the Alternating Jog page *Servo Drive Tuning (2 Mins)* • These values are set at Aagard! Do not adjust them!		
Reference Page * training points Training Points for this page (60 Mins) Many servo-controlled axes utilize an overload referencing technique. This means that they travel at a slow velocity until an elevated torque level is seen, indicating that the axis has hit a hard stop. If it contacts an obstruction and needs elevated torque to continue its motion, it is possible that the axis could reference against this obstruction and give the axis a false reference position. • Learn how to reference a servo motor • Have the class reference every servo • **NOTE:** It is important to always be in the correct position	*1*	*2*
Servo Reference Positions * training points Training Points for this page (20 Mins) • Learn how to interpret the information on this page • Hands-on application with at least two servo drives	*1*	*2*
Drive Function and Associated Devices - training points Training Points for this page (20 Mins) • Learn how to use this information • Learn the relationship of the drive to the work it performs, and to associated devices • Hands-on application with at least two drives • This information may be helpful when troubleshooting machine problems	1	2
Drive Diagnostics Page - training points Training Points for this page (10 Mins) • Learn about Aagard Control Structure • View Add and Popup features	1	2
Fault Code History Page	1	2
Sercos Diagnostics Page - training points Training Points for this page (20 Mins) • This page is for information only to the Level 2 Operator • Learn how to use the information on this page • This page provides an on-board tool for troubleshooting fiber optic and related components	1	2
Member Map Diagnostics Page - training points Training Points for this page (10 Mins) • Learn about Aagard Control Structure • View Add and Popup features	1	2
Vacuum Pump Shutdown	*1*	*2*

Level 3		
Start Up Page * training points	*1*	*2*
Training Points for this page (15 Mins) *Servo Initialize Options >> Initialize Data Button* • Only available on pow er up or PC restart • 8 seconds to select Servo Initialization Options button or initialize process w ill start automatically • Used w hen servo motor (or drive) is replaced • Hands-on: Do pow er up and select servo to initialize (Remember to reference that servo!)		
Servo Initialize Option *	*1*	*2*
Initialization Data Page *	*1*	*2*
Fault History Page * training points	*1*	*2*
Training Points for this page **Level 2** (20 Mins) • The information on this page is an excellent tool for determining problem spots or how other shifts have run • Determine the location of problem spots other shifts may have had **Level 3** (2 Mins) • Learn about Move column • Learn about Delete All button		
Reject History Page * training points	*1*	*2*
Training Points for this page **Level 2** (20 Mins) • The information on this page is an excellent tool for determining problem spots or how other shifts have run • Determine the location of problem spots other shifts may have had **Level 3** (2 Mins) • Learn about Move column • Learn about Delete All button		
Edit Shifts Screen * training points	*1*	*2*
Training Points for this page (2 Mins) • Learn how to adjust shifts from the Production Data page		
View Notices System Wide * training points	*1*	*2*
Training Points for this page **Level 2** (20 Mins) • The information on this page is an excellent tool for determining problem spots or how other shifts have run • Determine the location of problem spots other shifts may have had **Level 3** (2 Mins) • Learn about Move column • Learn about Delete All button		

Level 3		
Misc Tags Page * training points	*1*	*2*
Training Points for this page (4 Mins) • Learn brief explanation of what this information represents • Learn about the "**?**" information box • Learn how this information is used		
Change Log Page * training points	*1*	*2*
Training Points for this page (5 Mins) **Level 2** • Learn how to use this information • Learn sort features • The information on this page is an excellent tool for viewing changes made to the machine **Level 3** • **WARNING!** Do not use the "Delete All" button! • Learn about values and demonstrate how it works		
Glue Page * training points	*1*	*2*
Training Points for this page **Level 2** (20 Mins) • Learn how to change settings • **NOTE:** Changes made here are _not_ recorded in the change log! • **NOTE:** You must press "Enter" for changed values to be accepted **Level 3** (3 Mins) • Learn about Offset Position		
Motor Data Page * training points	*1*	*2*
Training Points for this page (15 Mins+) • Learn about Framework • Learn about each feature when selected and when not selected • Notice how layout of Solenoid & Motor pages are similar • Have the class move around and ask questions • **Important!** This information should be well understood!		
Solenoid Data Page * training points	*1*	*2*
Training Points for this page (15 Mins+) • Learn about Framework • Learn about each feature when selected and when not selected • Notice how layout of Solenoid & Motor pages are similar • Have the class move around and ask questions • **Important!** This information should be well understood!		
Servo Drive Data Page * training points	*1*	*2*
Training Points for this page (10-20 Mins) • This page is intended for Aagard use only (because it is accessible at Level 3, provide a brief explanation)		

Level 3		
• This page is used for the configuration of servos • Explain each section briefly • Have the class move around and ask questions • **Important!** This information should be well understood!		
Servo Drive Data Page - Advanced tab * training points	*1*	*2*
Training Points for this page (3 Mins) • Learn about reference picture paths and descriptions		
Alternating Jog * training points	*1*	*2*
Training Points for this page **Level 2** (40 Mins) • Learn how Aagard labels devices in the machine • Device labels are referenced in message notices • Learn meaning of machine mode and state pilot lights • Pilot lights must be blue in order to jog a device • Learn how to jog a device on this machine with the touch screen and the mouse • **BEWARE:** Jogging initiates a direct link to the device – if something is obstructing the device, it WILL crash. • Learn through demonstration that all jog pages have the same layout Servo Drive Jog • Learn about the location velocity bar and how to adjust it • **BEWARE:** Ensure velocity bar is set to slow rate • Learn about GoTo position feature • Learn about Alternating Jog feature Solenoid Valve • Learn how to jog a solenoid valve Motor • Learn how to jog a motor • **NOTE:** If motor is VFD-controlled, speed number must be entered **Level 3** *Alternating Jog (15-30 Mins)* • Review Alternating Jog features • Learn how to use the Alternating Jog information • Demonstrate how to use the Alternating Jog page *Servo Drive Tuning (2 Mins)* • These values are set at Aagard! Do not adjust them!		
Servo Drive Tuning * training points	*1*	*2*
Training Points for this page **Level 2** (40 Mins) • Learn how Aagard labels devices in the machine • Device labels are referenced in message notices • Learn meaning of machine mode and state pilot lights • Pilot lights must be blue in order to jog a device • Learn how to jog a device on this machine with the touch screen and the mouse • **BEWARE:** Jogging initiates a direct link to the device – if something is obstructing the device, it WILL crash. • Learn through demonstration that all jog pages have the same layout		

Level 3

Servo Drive Jog
- Learn about the location velocity bar and how to adjust it
- **BEWARE:** Ensure velocity bar is set to slow rate
- Learn about GoTo position feature
- Learn about Alternating Jog feature

Solenoid Valve
- Learn how to jog a solenoid valve

Motor
- Learn how to jog a motor
- **NOTE:** If motor is VFD-controlled, speed number must be entered

Level 3

Alternating Jog (15-30 Mins)
- Review Alternating Jog features
- Learn how to use the Alternating Jog information
- Demonstrate how to use the Alternating Jog page

Servo Drive Tuning (2 Mins)
- These values are set at Aagard! Do not adjust them!

	1	2
Manual SD Enabling	1	2

Edit System Products Page * training points — **1   2**

Training Points for this page (20 Mins)
- from Product Download Page

- Learn how to create a new recipe
- It's important to understand how we alias systems to a C40 and how the copy function works

Edit C40 Recipes Page * training points — **1   2**

Training Points for this page (20 Mins)
- from Product Download Page

- Learn how to create a new recipe
- It's important to understand how we alias systems to a C40 and how the copy function works

Changeover Adjustments Page * training points — **1   2**

Training Points for this page (3 Mins)

- Learn how to edit changeover values

Rearrange Page * training points — **1   2**

Training Points for this page (3 Mins)

- Learn how to rearrange the order in which changeover are completed

General Data Page * training points — **1   2**

Training Points for this page (10 Mins)

- Learn about each General Data item on this page
- Learn about the "**?**" information box
- Learn how this information is used

Level 3		
Servo Moves Data Page * training points	*1*	*2*
Training Points for this page (30 Mins) • Learn about move numbers #2, 3, 4 and 5 • Learn about Auto-Calc • Learn about default info		
Cam Offsets Page * training points	*1*	*2*
Training Points for this page (15-30 Mins) • Learn about Master / Slave • Learn about old mechanical line shaft and how cam could be advanced with slotted part or connecting rod • Learn through demonstration how to adjust cam offsets • Learn how cam offsets affect the machine • Hands On: Have the class make some adjustments • Remember! Stop and restart machine for changes to work!		
Cam Data Page * training points	*1*	*2*
Training Points for this page (15-30 Mins) • Learn about drop-down selection: servo drive / solenoid valve / motor function of cam • Select square wave plot • Select SV cam and learn about how it works • Learn basic concept of cams: Most Masters are in time and Slave can be almost any value, so if making an adjustment, go to Servo Setup page to see what the values are before changing. Sometimes we have to just change it and see what happens		
Cam Generator Choose Cam Group * training points	*1*	*2*
Training Points for this page • Learn about Master and Group		
Cam Generator Choose Product * training points	*1*	*2*
Training Points for this page • Each group has it's own information for each recipe		
Cam Generator Main Screen * training points	*1*	*2*
Training Points for this page (1-2 Hours) • Learn all about the Cam Generator (detailed explanation) • Remember! If end users think that they need to make a change in this area, they should call Aagard first! This area is sometimes very complex and can have effects on other areas of the machine or servos in the same group.		

Maintenance Topics (when applicable)		
Review panel layout and devices	1	2
Remove and install knives	1	2
Remove servo motor, disassemble, and reinstall	1	2
Remove servo drive, swap with another drive, set switches and restart	1	2
Review Electrical Spare Parts Lists	1	2
Review Mechanical Spare Parts Lists	1	2

Maintenance Topics (when applicable)		
Review Electrical Drawings	1	2
Review entire Maintenance Section of this manual	1	2
Adjust HMI glue settings	1	2
Confirm Servo Reference Position settings	1	2

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.

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

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See **Servo Motor with Brake** for additional safety information!

E-Stop Locations

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

Sample E-Stop Drawing

- **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

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**

Shutdown Warning

Failure to properly shut down the PC may void the warranty!	
Switch on	The Industrial PC does not have its own main switch. The Industrial PC will start when the equipment is switched on, or when it is connected to the power supply.
Shutting down and switching off	When the plant is switched off, or when it is disconnected from its power supply, the Industrial PC will be switched off. Control software such as is typically used on Industrial PCs permits various users to be given different rights. A user who may not close software may also not switch the Industrial PC off, since data can be lost from the hard disk by switching off while software is running
⚠️ Warning!	**First shut down, then switch off the PC!** If the Industrial PC is switched off as the software is writing a file to the hard disk, the file will be destroyed. Control software typically writes something to the hard disk every few seconds, so the probability of causing damage by switching off the PC while the software is running is very high!
⚠️ Warning!	When you have shut down the Industrial PC, you have to switch off power supply for at least 10 seconds before rebooting the system. After resetting power supply, the PC will start booting automatically.
To properly shut down the PC, contact a Level 2 or higher Operator.	

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		**THREE** Stack Light definitions	
four light stack	**Red** (Top) ***Solid*:** • An Emergency Stop condition exists • A Fault condition exists	**Red** (Top) ***Solid*:** • An Emergency Stop condition exists • A Fault condition exists	**three light stack**
	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	**Amber** (Middle) ***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 ***Flashing*:** • Material status is low (Examples: Low Case Blanks, Low Adhesive Level)	
	Green (Third from Top) ***Solid*:** • System Running	**Green** (Bottom) ***Solid*:** • System Running	
	Blue (Bottom) ***Solid:*** • Material status is low (Examples: Low Case Blanks, Low Adhesive Level)		

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.

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:

Fixed Member

Support this member with blocks or strap.

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	⚠ DANGER
Before operating equipment, see **Safety Recommendations** **Read and observe all safety precautions in this manual and in vendor literature before proceeding!**	*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

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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

- 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

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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
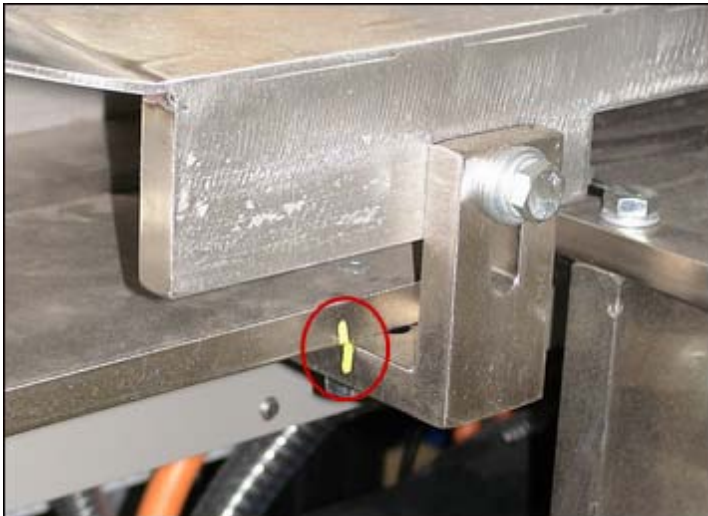
Description, Specifications and Operation

Machine Description, Specifications and Operation

AAGARD SYSTEM SERIAL #120	RH KD Case Packer with Orienter
MACHINE DIMENSIONS	25' x 10' 5"
ADHESIVE SYSTEM	Nordson ProBlue 240V-3-PH-60Hz
PRODUCT DESCRIPTION	Sealed cartons of dry cereal
CASE STYLE	RSC knock down case
CASE FLAP FOLDING SEQUENCE	Vertical flaps, then horizontal flaps

As-Built Documentation

Please view following documents and topics for as-built documentation.

Specification Sheet
General Terms and Conditions
Efficiency and Warranty Statement
Bill of Materials

These documents are considered as-built documentation at the time of machine shipment and will not be updated.

General Terms and Conditions

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.

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 97% 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:

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

466/480 = 0.97 x 100 = 97% 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.

Documentation Accuracy Statement

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

NOTE: Screen shots displayed within this documentation may appear slightly differently due to differences in operating system platforms and user screen settings

Floor Plan

Casepacker E–stop &
C–Stop Button Location

Infeed Height
3'2" +/- 3"

480 VAC 60 AMP
Power drop location

Casepacker
Electrical Cabinets

This section is removeable
for shipping

Casepacker Length
15' 5"
14' 8"

Orienter Length
9' 7"
9' 1"

Orienter E–stop &
C–stop Button Location

Orienter
Electrical Cabinet

MAX
MIN
FIXED

9' 3"

7' 7" Shipping Width

4' 11"

Fixed Discharge line

2' 10"

magazine

1' 4"

Discharge Height
1' 4" +/- 3"

Air Drop Location

Reject

240 VAC 30 Amp
With disconnect
for Glue System

System E–stop, C–stop,
& Start Button Location

Orienter E–stop &
C–stop button location

HMI LOCATION
ETHERNET HOOKUP

Removed for shipping

Casepacker Robot
Range Of Motion

Casepacker E–stop &
C–stop button location

Continuous Running

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

Case Blanks
Glue

Case Blanks

Case Blanks

To replenish the magazine while the machine is running, stack the case blanks behind the follower plate and then slide the follower 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 onto the chain.

Glue

Glue Tanks

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

This narrative 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. A detailed list of each sensor and its function is located after this section. An input is a signal which informs the machine controller of an event occurring. 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.

CASE PACKER

Infeed

The Infeed Conveyor (MT1302) motor accepts the cartons from the upstream conveyor and delivers them to the side belts.

The Non-Operator Side Side Belt (MT1403) and Operator Side Side Belt (MT1406) motors launch the cartons into the downstacker flights. These side belts travel more quickly than the infeed conveyor to ensure proper gap between cartons.

Downstacker

The First Carton In Downstacker (PE31704) photo eye senses when the first carton is on the top of the downstacker flights, and the Second Carton In Downstacker (PE31703) photo eye senses when the second carton is on the top of the downstacker flights. As the side belts present a layer of cartons, the Downstacker Flights, driven by SM4 Fixed Flight 1, SM5 Fixed Flight 2, SM2 Adjustable Flight 1, and SM3 Adjustable Flight 2 servo motors, will lower by one product height, making room for the next layer. When the last layer is presented to the downstacker, the complete stack will be lowered to the bottom of the downstacker chamber, presenting the stack for the downstack pusher.

Downstack Pusher

Once the downstack pusher receives a stack complete signal from the downstacker, the downstack pusher virtual master begins its cycle.

The Downstack Pusher (SM6) then moves the stack to the loader and returns to its starting position. The Product Conditioner (SV30703) solenoid valve extends a plate down, to the top of the product, to ensure any bulged cartons will clear and enter the case.

Loader

After the product has been cross-pushed into the load station, the Loader (SM7), which is cammed to the loader virtual master, moves the product into the case. If the Case Present At Load (PE31903) photo eye does not sense a case has been properly set up at the load station, the loader will not advance. The system will stop and prompt the operator to remove the case from the load station.

As the stack is moving toward the case, the Fun/Tucker and Funnel (SM9 and SM8) servo motors start to rotate into the case. At the same time, the Fun/Tucker In/Out and Funnel In/Out (SV30406 and SV30407) solenoid valves are activated to move the funnels ¾" toward the case. This action positions the funnel inside the score line of the case. The funnels then guide the product into the case and are retracted before the cartons are fully in the case.

Magazine

The Magazine Top Clip and the Magazine Bottom Clip (SV30705 and SV30707) solenoid valves open when the robot is moving toward the magazine. To open the case blank, rotating clips on each side of the case blank hold the back panel of the case while the robot pulls the front panel forward and down. After the robot has partially pulled the case from the magazine, the Magazine Rotate Clip (SV30306) solenoid valve opens the clips to release the case. The top clip closes sooner than the bottom and rotating clips. The bottom and rotating clips close after the case has been fully removed from the magazine. If the Case Packer Robot Vacuum (VS31806) vacuum switch from the robot is not made, a fault message is displayed.

The Magazine Advance Cylinder (SV05) will cycle if the Magazine Advance Switch (PX18) is not made and the Robot is not picking a case blank. If the cylinder cycles more than 10 times without meeting the Magazine Advance Switch, a fault message will be displayed.

The Magazine Advance (SV30401) solenoid valve actives a cylinder which moves the magazine advance chains forward with a ratcheting motion.

When the blanks in the magazine no longer block the Case Blanks Present (PE31803) photo eye, the HMI will indicate the magazine is low, a blue stack light will illuminate, and the horn will sound. If the magazine is not filled after 25 additional case blanks have been picked, the machine will stop.

Robot

The robot's cycle stop position is at the magazine.

If the robot is signaled to pick a blank, the Robot Vacuum (SV30408) solenoid valve turns on vacuum. The robot proceeds with the new case to the load station. The Case Pusher (SV30403) extends to hold the case at the load station, keeping it vertical with the flights as it moves into compression. The initial move away from the magazine is the Robot X-Axis (SM12) move, which arcs down by adding the Robot Z-Axis (SM13) to place the case in the load station. The robot then moves up and around the case being loaded and proceeds to the magazine.

Flights

The Case Flights (SM14) servo motor matches the robot x-axis movement, and advances the loaded cases through tucking, gluing, and compression.

Load Station

When an empty case blank is set up in the load station, the Load Cup Lift (SV30801) solenoid valve extends the air cylinders, and the Load Vacuum (SV30308) solenoid valve turns on the vacuum. This action holds the case in position while loading. Before the case is moved out of the load station, vacuum is turned off and the cylinders are retracted.

Fun/Tuckers

The Funnel In/Out and the Fun/Tucker In/Out (SV30407 and SV30406) solenoid valves move the funnels into the case. The Funnel and Fun/Tucker (SM8 and SM9) servos are cammed to the case packer main virtual master for funneling the cartons into the case during loading. The funnel and fun/tucker are rotated to guide the cartons into the case. As the stack is being loaded into the case, the funnels retract while the Tucker (SM10) tucks the leading flap on the operator side of the case, and the Product Stop (SM11) partially closes the trailing flap on the operator side. Closing these flaps gives the carton stacks a surface against which to square as they are loaded into the case. As the loader retracts from the case, the funnel rotates away from the case. The fun/tucker rotates away, and continues to rotate, enabling the tuckers mounted on the back side to tuck the leading flap on the non-operator side of the case. As the case moves forward out of the load station and into compression, the fun/tucker and tucker move in unison to tuck the trailing vertical flap. The Distorted Case (PE31904) photo eye looks for the trailing edge of the case to ensure flaps are properly tucked.

Glue

Glue is applied to the vertical flaps as the case moves from the load station to compression. The Lower Glue Non-Operator Side, Lower Glue Operator Side, Upper Glue Non-Operator Side and Upper Glue Operator Side (SV30805, SV30806, SV30807 and SV30808) solenoid valves are all cammed to the case packer main virtual master. Glue is applied only if vacuum is made at the Load Vacuum (VS31708).

Compression

When the case reaches the compression station, the Case Stop (SV30402) solenoid valve extends to stop the top leading edge of the case, keeping it square. The case pusher and flights ensure that the case is pushed up against the stop.

The Lower Compression Non-Operator Side, Lower Compression Operator Side, Upper Compression Non-Operator Side and Upper Compression Operator Side (SM15, SM16, SM17 and SM18) servo motors are all cammed to the case packer main virtual master.
The compression plates fold the horizontal flaps against the glue on the vertical flaps. The flights move the case out of compression and into the orienter while the next case is moved into compression.

ORIENTER

Case Tip/Reject

The case packer flights push the case out of compression onto the Tip/Reject Roller Conveyor (MT1501) in the orienter. As the case leaves the case packer, the Non-Operator Side Open Flap and Operator Side Open Flap (PE51402 and PE51401) photo eyes ensure the case flaps are closed and properly glued. The case is stopped by the Tipper Case Stop (SV50703). If either of the open flap eyes is blocked while the case passes by, the Case Tip R (SM20) retracts and the Tipper Reject Flights (SM19) pushes the case out of the machine. If the case is good, the Case Tip R catches the top, operator side, of the case while the flights push the bottom, non-operator side, out toward the operator side of the machine. This action tips the case toward the backstop (what was the non-operator side of the case is now the bottom). The flights push the case against the backstop and retract, the tipper case stop retracts, and the roller conveyor starts to move the case forward, transferring it to the Case Conveyor (MT50701).

Case Rotate

If the product requires, case rotate is enabled by default.

The Case Rotate (SM21) servo motor rotates an arm across the conveyor. The Case At Rotate (PE51505) photo eye senses when a case is approaching the arm. When sensed, the Case Rotate Vacuum (SV50201) solenoid valve is triggered and attaches the case to the arm with a vacuum cup. The arm rotates 90 degrees (¼ turn) counter-clockwise and releases vacuum (what was the operator side of the case is now the leading side). When the case has moved past the Case Present After Rotate (PE51506) photo eye, the arm retracts and waits for the next case.

Device List

NOTE:
"CP" preceding a grid location indicates the device is in the Case Packer
"O" preceding a grid location indicates the device is in the Orienter

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

Type	Name	Location	Description	Aagard PN	Brick Slice Point	I/O Type	Grid
Cylinder Switch	CS31606	Case Packer Infeed	Product Conditioner	Z0123202	B1 S14 P6	Input-Digital	CP_D15
Cylinder Switch	CS31901	Case Packer	Case Packer Case Stop	Z0123236	B1 S17 P1	Input-Digital	CP_I19
Cylinder Switch	CS31902	Case Packer	Case Pusher	Z0123236	B1 S17 P2	Input-Digital	CP_I17
Cylinder Switch	CS51507	Orienter	Tipper Case Stop	Z0123236	B5 S11 P7	Input-Digital	O_F4
Cylinder Switch	CS31607	Case Packer Infeed	Product Conditioner	Z0123202	B1 S14 P7	Input-Digital	CP_D15
Disconnect	DS501	Main Cabinet	Main Disconnect	Z0007466			CP_C4
Disconnect	DS9402	Case Packer	Glue Disconnect	Z0031001			O_H14
Emergency Stop	ES24301	HMI Cabinet	System Emergency Stop	Z0004654	B1 S11 P8	Input-Digital	CP_N12
Emergency Stop	ES24303	Case Packer Infeed	Case Packer Non Operator Side Emergency Stop	Z0004654	B1 S12 P5	Input-Digital	CP_C6
Emergency Stop	ES24304	Case Packer	Case Packer Operator Side Emergency Stop	Z0004654	B1 S12 P3	Input-Digital	CP_L16
Emergency Stop	ES26303	Orienter Cabinet	Orienter Non Operator Side Emergency Stop	Z0004654	B5 S7 P8	Input-Digital	O_A13
Emergency Stop	ES26304	Orienter	Orienter Operator Side Emergency Stop	Z0004654	B5 S7 P6	Input-Digital	O_H12
Filter Regulator	FR60201	Case Packer	Filter Regulator	Z0067505			CP_G5
Guard Switch	GS24501	Case Packer	Guard Door 2-1	Z0121797	B1 S13 P1	Input-Digital	CP_G4
Guard Switch	GS24502	Case Packer	Guard Door 2-2	Z0121797	B1 S13 P2	Input-Digital	CP_G8
Guard Switch	GS24503	Case Packer	Guard Door 2-3	Z0121797	B1 S13 P3	Input-Digital	CP_L16
Guard Switch	GS24504	Case Packer	Guard Door 2-4	Z0121797	B1 S13 P4	Input-Digital	CP_L17
Guard Switch	GS24505	Case Packer	Guard Door 2-5	Z0121797	B1 S13 P5	Input-Digital	CP_C16

Type	Name	Location	Description	Aagard PN	Brick Slice Point	I/O Type	Grid
Guard Switch	GS24508	Case Packer	Guard Door 2-6	Z0121797	B1 S13 P6	Input-Digital	CP_C13
Guard Switch	GS24509	Case Packer	Guard Door 2-7	Z0121797	B1 S13 P7	Input-Digital	CP_C10
Guard Switch	GS26501	Orienter	Guard Door 3-1	Z0121797	B5 S8 P1	Input-Digital	O_I6
Servo Power	HCS01	Case Packer Cabinet	Case Packer Servo Power Converter	Z0103625	B1 S11 P3	Input-Digital	CP_C6
Servo Power	HCS01	Case Packer Cabinet	Case Packer Servo Power Converter	Z0103625	B1 S2 P4	Output-Live	CP_C6
Servo Power	HCS02	Orienter Cabinet	Servo Power Converter	Z0103625	B5 S1 P4	Output-Live	O_B14
Servo Power	HCS02	Orienter Cabinet	Servo Power Converter	Z0103625	B5 S7 P4	Input-Digital	O_B14
Motor	MT807	Orienter	Case Conveyor	795042			O_C12
Motor	MT1303	Case Packer Infeed	Infeed Conveyor	Z0023823			CP_F7
Motor	MT1403	Case Packer Infeed	Non Operator Side Side Belts	Z0023823			CP_D10
Motor	MT1406	Case Packer Infeed	Operator Side Side Belts	Z0023823			CP_F10
Motor	MT1502	Orienter	Tip/Reject Conveyor	795041			O_B4
Push Button	PB19904	HMI Cabinet	PC Reset	Z0129818			CP_N12
Push Button	PB30101	HMI Cabinet	System Start	Z0005435	B1 S11 P6	Input-Digital	CP_N12
Push Button	PB30101	HMI Cabinet	System Start	Z0005435	B1 S1 P1	Output-Live	CP_N12
Push Button	PB30205	Case Packer Cabinet	Case Packer System Start	Z0005435	B1 S12 P1	Input-Digital	CP_C6
Push Button	PB30205	Case Packer Cabinet	Case Packer System Start	Z0005435	B1 S2 P5	Output-Live	CP_C6
Push Button	PB31307	HMI Cabinet	System Cycle Stop	Z0004653	B1 S11 P7	Input-Digital	CP_N12
Push Button	PB31402	Case Packer	Case Packer Non Operator Side Cycle Stop	Z0004653	B1 S12 P2	Input-Digital	CP_C6
Push Button	PB31404	Case Packer Infeed	Case Packer Operator Side Cycle Stop	Z0004653	B1 S12 P4	Input-Digital	CP_L16
Push Button	PB51105	Orienter	Orienter Operator Side Cycle Stop	Z0004653	B5 S7 P5	Input-Digital	O_H12
Push Button	PB51107	Orienter Cabinet	Orienter Non Operator Side Cycle Stop	Z0004653	B5 S7 P7	Input-Digital	O_A13
Photo Eye	PE31002	Case Packer Infeed	Non Op Side Lower Downstacker Reference	Z0123440	B1 S8 P2	Input-Digital	CP_D13
Photo Eye	PE31003	Case Packer Infeed	Non Op Side Upper	Z0123440	B1 S8 P3	Input-Digital	CP_D11

Type	Name	Location	Description	Aagard PN	Brick Slice Point	I/O Type	Grid
			Downstacker Reference				
Photo Eye	PE31004	Case Packer Infeed	Operator Side Lower Downstacker Reference	Z0123440	B1 S8 P4	Input-Digital	CP_G13
Photo Eye	PE31005	Case Packer Infeed	Operator Side Upper Downstacker Reference	Z0123440	B1 S8 P5	Input-Digital	CP_G11
Photo Eye	PE31104	Case Packer Infeed	Case Packer Flights	Z0123440	B1 S9 P4	Input-Digital	CP_H13
Photo Eye	PE31702	Case Packer Infeed	Product in Side Belts	Z0123440	B1 S15 P2	Input-Digital	CP_G10
Photo Eye	PE31703	Case Packer Infeed	2nd Carton At Downstacker	Z0097847	B1 S15 P3	Input-Digital	CP_D11
Photo Eye	PE31704	Case Packer Infeed	1st Carton At Downstacker	Z0096984	B1 S15 P4	Input-Digital	CP_E12
Photo Eye	PE31707	Case Packer Infeed	Product At Downstack Pusher	Z0123440	B1 S15 P7	Input-Digital	CP_D12
Photo Eye	PE31803	Case Packer Magazine	Case Blanks Present	Z0096984	B1 S16 P3	Input-Digital	CP_H11
Photo Eye	PE31903	Case Packer	Case Present at Load	Z0123715	B1 S17 P3	Input-Digital	CP_H15
Photo Eye	PE31904	Case Packer	Distorted Case	Z0123440	B1 S17 P4	Input-Digital	CP_H16
Photo Eye	PE31905	Case Packer Infeed	Product At Loader	Z0123440	B1 S15 P1	Input-Digital	CP_F15
Photo Eye	PE51401	Orienter	Operator Side Open Case Flap	Z0123440	B5 S10 P1	Input-Digital	CP_I19
Photo Eye	PE51402	Orienter	Non Operator Side Open Case Flap	Z0123440	B5 S10 P2	Input-Digital	CP_H19
Photo Eye	PE51503	Orienter	Case At Tip	Z0123440	B5 S11 P3	Input-Digital	O_D1
Photo Eye	PE51504	Orienter	Lower Case Reject Chute	Z0123440	B5 S11 P4	Input-Digital	O_J5
Photo Eye	PE51505	Orienter	Case At Rotate	Z0123440	B5 S11 P5	Input-Digital	O_D8
Photo Eye	PE51506	Orienter	Case Present After Rotate	Z0123440	B5 S11 P6	Input-Digital	O_D10
Photo Eye	PE51508	Orienter	Upper Case Reject Chute	Z0123440	B5 S11 P8	Input-Digital	O_J5
Pressure Switch	PS31201	Case Packer	System Air Pressure	Z0064191	B1 S10 P1	Input-Digital	CP_G5
Prox	PX31001	Case Packer Infeed	Spatula Reference	Z0098920	B1 S8 P1	Input-Digital	CP_F9
Prox	PX31006	Case Packer Infeed	Downstack Pusher Reference	Z0098920	B1 S8 P6	Input-Digital	CP_E4
Prox	PX31007	Case Packer	Loader Probe	Z0098920	B1 S8 P7	Input-Digital	CP_B15

Type	Name	Location	Description	Aagard PN	Brick Slice Point	I/O Type	Grid
Prox	PX31102	Case Packer	Case Packer Robot X	Z0098920	B1 S9 P2	Input-Digital	CP_G14
Prox	PX31103	Case Packer	Z Axis Probe	Z0098920	B1 S9 P3	Input-Digital	CP_I16
Prox	PX31908	Case Packer	Load Gate Closed	Z0098920	B1 S17 P8	Input-Digital	CP_D16
Prox	PX31804	Case Packer Magazine	Case Magazine Advance	Z0098920	B1 S16 P4	Input-Digital	CP_H13
Prox	PX51001	Orienter	Case Tip Y Reference	Z0098920	B5 S6 P1	Input-Digital	O_C4
Prox	PX51002	Orienter	Case Tipper Reference	Z0098920	B2 S5 P2	Input-Digital	O_G3
Regulator	Reg30401	Case Packer Magazine	Magazine Advance	Z0016121			CP_G12
Regulator	Reg30805	Case Packer	Lower Fixed Glue Regulator	Z0016121			CP_F17
Regulator	Reg30806	Case Packer	Lower Adjustable Glue Regulator	Z0016121			CP_J16
Regulator	Reg30807	Case Packer	Upper Fixed Glue Regulator	Z0016121			CP_H16
Regulator	Reg30808	Case Packer	Upper Adjustable Glue Regulator	Z0016121			CP_K17
Servo Motor	SM01	Case Packer Infeed	Transfer Spatula	Z0103609			CP_F9
Servo Motor	SM02	Case Packer Infeed	Non Op Side Lower Downstacker	Z0103609			CP_D9
Servo Motor	SM03	Case Packer Infeed	Non Op Side Upper Downstacker	Z0103609			CP_D14
Servo Motor	SM04	Case Packer Infeed	Operator Side Lower Downstacker	Z0103609			CP_F9
Servo Motor	SM05	Case Packer Infeed	Operator Side Upper Downstacker	Z0103609			CP_F14
Servo Motor	SM06	Case Packer Infeed	Down Stack Pusher	Z0103609			CP_E3
Servo Motor	SM07	Case Packer Infeed	Loader	Z0103609			CP_A15
Servo Motor	SM08	Case Packer Infeed	Funnel	Z0103607			CP_F15
Servo Motor	SM09	Case Packer Infeed	Fun Tucker	Z0103607			CP_F16
Servo Motor	SM10	Case Packer	Tucker	Z0103607			CP_K15
Servo Motor	SM11	Case Packer	Product Stop	Z0103607			CP_J15
Servo Motor	SM12	Case Packer	Case Packer Robot X Axis	Z0103609			CP_H18

Type	Name	Location	Description	Aagard PN	Brick Slice Point	I/O Type	Grid
Servo Motor	SM13	Case Packer	Case Packer Robot Z Axis	Z0103610			CP_I17
Servo Motor	SM14	Case Packer	Case Packer Flights	Z0103607			CP_G18
Servo Motor	SM15	Case Packer	Lower Compression Non Operator Side	Z0103607			CP_G17
Servo Motor	SM16	Case Packer	Lower Compression Operator Side	Z0103607			CP_J17
Servo Motor	SM17	Case Packer	Upper Compression Non Operator Side	Z0103607			CP_G18
Servo Motor	SM18	Case Packer	Upper Compression Operator Side	Z0103607			CP_J17
Servo Motor	SM19	Orienter	Case Tip Y	Z0103607			O_D6
Servo Motor	SM20	Orienter	Case Tipper	Z0103610			O_E4
Servo Motor	SM21	Orienter	Case Rotate	Z0103607			O_D8
Solenoid Valve	SV24223	Case Packer	Manual Dump Valve	Z0067506			CP_G5
Solenoid Valve	SV24223	Case Packer	System Air Dump	Z0036804			CP_G5
Solenoid Valve	SV30306	Case Packer Magazine	Magazine Rotate Clips	Z0023954	B1 S3 P6	Output-Live	CP_G11
Solenoid Valve	SV30307	Case Packer	Load Cups Blow back	Z0023954	B1 S3 P7	Output-Live	CP_G18
Solenoid Valve	SV30308	Case Packer	Load Vacuum	Z0014917	B1 S3 P8	Output-Live	CP_H13
Solenoid Valve	SV30401	Case Packer Magazine	Magazine Advance	Z0023954	B1 S4 P1	Output-Live	CP_G11
Solenoid Valve	SV30402	Case Packer	Case Packer Case Stop	Z0024215	B1 S4 P2	Output-Live	CP_G18
Solenoid Valve	SV30403	Case Packer	Case Pusher	Z0024215	B1 S4 P3	Output-Live	CP_I15
Solenoid Valve	SV30406	Case Packer Infeed	Fun Tucker	Z0023954	B1 S4 P6	Output-Live	CP_G18
Solenoid Valve	SV30407	Case Packer Infeed	Funnel In/Out	Z0023954	B1 S4 P7	Output-Live	CP_G18
Solenoid Valve	SV30408	Case Packer	Case Packer Robot Vacuum	Z0014917	B1 S4 P8	Output-Live	CP_I6
Solenoid Valve	SV30703	Case Packer Infeed	Product Conditioner	Z0029339	B1 S6 P3	Output-E-Stop	CP_D15
Solenoid Valve	SV30703	Case Packer Infeed	Product Conditioner	Z0029339	B1 S6 P4	Output-E-Stop	CP_D15
Solenoid Valve	SV30705	Case Packer Magazine	Magazine Top Clip	Z0029339	B1 S6 P5	Output-E-Stop	CP_G11
Solenoid Valve	SV30705	Case Packer Magazine	Magazine Top Clip	Z0029339	B1 S6 P6	Output-E-Stop	CP_G11

Type	Name	Location	Description	Aagard PN	Brick Slice Point	I/O Type	Grid
Solenoid Valve	SV30707	Case Packer Magazine	Magazine Bottom Clip	Z0029339	B1 S6 P8	Output-E-Stop	CP_G11
Solenoid Valve	SV30707	Case Packer Magazine	Magazine Bottom Clip	Z0029339	B1 S6 P7	Output-E-Stop	CP_G11
Solenoid Valve	SV30801	Case Packer	Load Cups Lift	Z0029339	B1 S7 P2	Output-E-Stop	CP_G18
Solenoid Valve	SV30801	Case Packer	Load Cups Lift	Z0029339	B1 S7 P1	Output-E-Stop	CP_G18
Solenoid Valve	SV30805	Case Packer	Lower Glue Non Operator Side	Z0004483	B1 S7 P5	Output-E-Stop	CP_H16
Solenoid Valve	SV30806	Case Packer	Lower Glue Operator Side	Z0004483	B1 S7 P6	Output-E-Stop	CP_J16
Solenoid Valve	SV30807	Case Packer	Upper Glue Non Operator Side	Z0004483	B1 S7 P7	Output-E-Stop	CP_H16
Solenoid Valve	SV30808	Case Packer	Upper Glue Operator Side	Z0004483	B1 S7 P8	Output-E-Stop	CP_J16
Solenoid Valve	SV50201	Orienter	Case Rotate Vacuum	Z0014917	B5 S2 P1	Output-Live	O_C8
Solenoid Valve	SV50703	Orienter	Tipper Case Stop	Z0024214	B5 S4 P4	Output-E-Stop	O_C7
Solenoid Valve	SV50703	Orienter	Tipper Case Stop	Z0024214	B5 S4 P3	Output-E-Stop	O_C7
Vacuum Switch	VS31202	Case Packer	System Vacuum	Z0089514	B1 S10 P2	Input-Digital	O_A4
Vacuum Switch	VS31708	Case Packer	Load Vacuum	Z0089514	B1 S15 P8	Input-Digital	CP_G13
Vacuum Switch	VS31806	Case Packer	Case Packer Robot Vacuum	Z0089514	B1 S16 P6	Input-Digital	CP_I16
Vacuum Switch	VS51305	Orienter	Case Rotate Vacuum Present	Z0089514	B5 S9 P5	Input-Digital	O_D8
Transformer	XF10002	Case Packer	480 VAC - 120 VAC	794578			CP_D3

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 table indicates how devices are related to drives, and the function of the particular device.

Drive	Device		Function
		Case Packer	
		Infeed	
SD1	Spatula		Guides the product into the correct position in the downstacker
	PE31704	1st Carton At Downstacker Photo Eye	Senses when the 1st carton is at the top of the downstack chamber
	PE31703	2nd Carton At Downstacker Photo Eye	Senses when the 2nd carton is at the top of the downstack chamber
	PX31001	Spatula Reference Proximity Switch	Senses when the spatula is in its reference position
MT1	Infeed Conveyor		Advances product into the machine and up to the side belts
	VFD1302	Infeed Conveyor VFD	Controls the speed of the infeed conveyor
MT2	Side Belts		Collates the incoming product and sends it into the Downstacker
	PE31702	Product In Side Belts	Senses when product is present in the side belts
	VFD1402	Side Belts VFD	Controls the speed of the side belts
		Downstacker	
SD2	Adjustable Downstacker 1		Accepts incoming products from the side belts and indexes allowing a specified number of products to accumulate prior to lowering the products onto the accumulation deck
	PE31704	1st Carton At Downstacker Photo Eye	Senses when the 1st carton is at the top of the downstack chamber
	PE31703	2nd Carton At Downstacker Photo Eye	Senses when the 2nd carton is at the top of the downstack chamber
	PE31002	Non Operator Side Lower Downstacker Reference Photo Eye	Senses when the non operator side lower downstacker is in its reference position
SD3	Adjustable Downstacker 2		Accepts incoming products from the side belts and indexes allowing a specified number of products to accumulate prior to lowering the products onto the accumulation deck
	PE31704	1st Carton At Downstacker Photo Eye	Senses when the 1st carton is at the top of the downstack chamber
	PE31703	2nd Carton At Downstacker Photo Eye	Senses when the 2nd carton is at the top of the downstack chamber
	PE31003	Non Operator Side Upper Downstacker Reference Photo Eye	Senses when the non operator side upper downstacker is in its reference position
SD4	Fixed Downstacker 1		Accepts incoming products from the side belts and indexes allowing a specified number of products to accumulate prior to lowering the products onto the accumulation deck
	PE31704	1st Carton At Downstacker Photo Eye	Senses when the 1st carton is at the top of the downstack chamber
	PE31703	2nd Carton At Downstacker Photo Eye	Senses when the 2nd carton is at the top of the downstack chamber
	PE31004	Operator Side Lower Downstacker Reference Photo Eye	Senses when the operator side lower downstacker is in its reference position
SD5	Fixed Downstacker 2		Accepts incoming products from the side belts and indexes allowing a specified number of products to accumulate prior to lowering the products onto the accumulation deck

Drive	Device		Function
	PE31704	1st Carton At Downstacker Photo Eye	Senses when the 1st carton is at the top of the downstack chamber
	PE31703	2nd Carton At Downstacker Photo Eye	Senses when the 2nd carton is at the top of the downstack chamber
	PE31005	Operator Side Upper Downstacker Reference Photo Eye	Senses when the operator side upper downstacker is in its reference position
Downstack Pusher		
SD6	Downstack Pusher		Pushes the accumulated product out of the downstack chamber delivering it to the loader
	PX31006	Downstack Pusher Reference Proximity Switch	Senses when the downstack pusher is in its reference position
SD24	Downstack Pusher Master		This is the virtual axis that the downstack pusher follows
	PE31707	Product At Downstack Pusher Photo Eye	Senses when product is present at the downstack pusher
SV30703	Product Conditioner		Applies downward pressure on the stacked product ensuring that it will fit into the case during loading
	CS31606	Product Conditioner Extended Cylinder Switch	Senses when the cylinder is extended
	CS31607	Product Conditioner Retracted Cylinder Switch	Senses when the cylinder is retracted
Loader		
SD7	Loader		Pushes the accumulated product out of the loader accumulation and into the partially formed case
	PX31007	Loader Probe Proximity Switch	Senses when the loader is in its reference position
SD25	Loader Master		This is the virtual axis that the loader follows
	PE31905	Product At Loader Photo Eye	Senses when product is present at the loader
	PX31908	Load Gate Closed Proximity Switch	Senses when the load gate is closed to allow the loader to cycle
Magazine		
SV30401	Magazine Advance		Advances the case blanks downstream toward the case former robot, maintaining sufficient pressure to pick
	PE31803	Case Blanks Present Photo Eye	Senses when case blanks are present on the magazine advance chains
	PX31804	Case Magazine Advance	Senses when cases are ready to be picked
Case Former		
SD8	Funnel		Opens the upstream minor flap and helps guide the product into the case
SD9	Fun Tucker		Opens the downstream minor flap and helps guide the product into the case, then tucks the trailing minor flap prior to compression
SD10	Tucker		Provides support for the case during loading and tucks the operator side trailing minor
SD11	Product Stop		Provides support for the case during loading and a backstop for incoming product to ensure it does not pass the operator side scoreline
SD12	Case Packer Robot X Axis		Moves the case packer robot upstream and downstream along the machines X axis
	PX31102	Case Packer Robot X Axis Probe Proximity Switch	Senses when the case packer robot X is in its reference position
SD13	Case Packer Robot Z Axis		Moves the case packer robot up and down along the machines Z axis

Drive	Device		Function
	PX31103	Case Packer Robot Z Axis Probe Proximity Switch	Senses when case packer robot Z is in its reference position
SD14	Case Packer Flights		Advance the base of the case through the loading and compression areas of the machine
	PE31104	Case Packer Flights Reference Photo Eye	Senses when the case packer flights are in their reference position
SD15	Lower Compression Non Operator Side		Compresses the lower non operator side major flap ensuring good adhesion and completing the case forming process
SD16	Lower Compression Operator Side		Compresses the lower operator side major flap ensuring good adhesion and completing the case forming process
SD17	Upper Compression Non Operator Side		Compresses the upper non operator side major flap ensuring good adhesion and completing the case forming process
SD18	Upper Compression Operator Side		Compresses the upper operator side major flap ensuring good adhesion and completing the case forming process
SD26	Packer Main Master		This is the virtual drive that all of the servo drives in the case former follow
	PE31903	Case Present At Load Photo Eye	Senses when a case is present at the load station
	PE31904	Distorted Case Present Photo Eye	Senses when a distorted case is present at the load station
	PE51402	Non Operator Side Open Case Flap Present Photo Eye	Senses when a non operator side open case flap exists
	PE51401	Operator Side Open Case Flap Present Photo Eye	Senses when a operator side open case flap exists
SV30306	Magazine Rotate Clips		Controls the sides of the cases in the magazine ensuring they are released at the proper time
SV30705	Magazine Top Clip		Controls the top of the cases in the magazine ensuring they are released at the proper time
SV30707	Magazine Bottom Clip		Controls the bottom of the cases in the magazine ensuring they are released at the proper time
SV30408	Case Packer Robot Vacuum		This valve controls the vacuum to the vacuum cups on the case packer robot head
	VS 31806	Case Packer Robot Vacuum Present Vacuum Switch	Senses when the case packer robot has sufficient vacuum for operation
SV30403	Case Pusher		raises and lowers the case pusher, pushing the loaded case into the compression station
	CS31902	Case Pusher Pushed Cylinder Switch	Senses when the case pusher cylinder is extended
SV30407	Fun Tucker In / Out		Moves the fun tucker in and out of the case to provide clearance for the case forming
SV30407	Funnel In / Out		Moves the funnel in and out of the case to provide clearance for the case forming
SV30308	Load Vacuum		This valve controls the vacuum supply to the vacuum cups at the case load station
	VS31708	Load Vacuum Present Vacuum Switch	Senses when the load vacuum has sufficient vacuum for operation
SV30801	Load Cups Lift		Raises and lowers the load cups in order for the cases to clear as they travel downstream
SV30307	Load Cups Blow back		This valve controls the blow back to the vacuum cups at the case load station causing the case to be released
SV30402	Case Stop		Lowers stopping cases coming in to the compression station from advancing to far downstream
	CS31901	Case Stop Retracted Cylinder Switch	Senses when the case stop cylinder is retracted

Drive	Device		Function
SV30805	Lower Glue Non Operator Side		Fires glue onto the formed case prior to compression
SV30806	Lower Glue Operator Side		Fires glue onto the formed case prior to compression
SV30807	Upper Glue Non Operator Side		Fires glue onto the formed case prior to compression
SV30808	Upper Glue Operator Side		Fires glue onto the formed case prior to compression
Orienter			
Case Tip / Reject			
SD19	Tip / Reject Flights		Drives the case against the Tip Axis for tipping or out the Case Reject Chute for rejecting
	PE51503	Case At Tip Present Photo Eye	Senses when a case is present in the tip / reject station
	PX51001	Tip Reject Flights Reference Proximity Switch	Senses when the tip / reject flights are in their reference position
SD20	Case Tip R		Stops the operator side of the case during the tipping process to help it roll over the flights
	PE51503	Case At Tip Present Photo Eye	Senses when a case is present in the tip / reject station
SV50703	Tipper Case Stop		Stops the advancing case on the tip reject conveyor in order for the tip / reject flights to perform the appropriate cycle
	CS51507	Case Stop Retracted Cylinder Switch	Senses when the case stop cylinder is retracted
MT9	Tip / Reject Conveyor		Advances the completed case from the compression station through the tip reject station and onto the case conveyor
	VFD1501	Tip / Reject Conveyor VFD	Controls the speed of the tip / reject conveyor
Case Rotate Accumulation			
SD21	Case Rotate		Rotates the completed case 90 degrees to orient it correctly for the downstream equipment
	PE51505	Case At Rotate Present Photo Eye	Senses when a case is present at the rotate station
	PE51506	Case Present After Rotate Photo Eye	Senses when a case has cleared the rotate station
SV50201	Case Rotate Vacuum		This valve controls the vacuum supply to the vacuum cup on the case rotate head
	VS51305	Case Rotate Vacuum Present Vacuum Switch	Senses when the case rotate has sufficient vacuum for operation
MT10	Case Conveyor		Advances the completed cases downstream from the tip / reject station to the case accumulation area
	OL806	Case Conveyor Overload	Senses when the case conveyor has been overloaded
System			
SV24223	System Air Dump		Supplies air pressure to the machine when the safety circuit is engaged
	PS31201	System Air Pressure Present Pressure Switch	Senses when the system air pressure is sufficient for machine operation

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. See the Reference page on the HMI for more information regarding servo reference positions.

Servo #	Servo Name	Direction of Positive Movement	Reference Position	End Position	Reference Mark Location
1	Spatula	Toward downstacker flights	0.25	0	Downstream edge of spatula is at the shear point. (Downstream edge of side belt bottom rails)
2	Adjustable Downstacker 1	Down with product	-24.375	0	Top of flight 1/4" below sheer point
3	Adjustable Downstacker 2	Down with product	-24.375	30.95	Top of flight in line with the top of upper drive shaft
4	Fixed Downstacker 1	Down with product	-19	0	Top of flight 1/4" below sheer point
5	Fixed Downstacker 2	Down with product	-18.875	30.827	Top of flight in line with the top of upper drive shaft
6	Downstack Pusher	Moving product downstream	-1	0	1" off of upstream hardstop (Located on upstream end of v-rail)
7	Loader	Moving product downstream	-1	0	1" from the mechanical stop in the retracted position
8	Funnel	Funnel moving out of case	-10	0	Funnel is 90 degrees to flight chain
9	Fun Tucker	Funnel moving out of case	-15	0	Funnel is 90 degrees to flight chain
10	Tucker	Tucking trailing flap	-5	0	Tucker arm is 90 degrees to flight chain
11	Product Stop	Tucking leading flap	140	0	Tucker arm is 90 degrees to flight chain
12	Casepacker Robot X-Axis	Toward palletizer	34.53	32	2.5" from the downstream mechanical stop
13	Casepacker Robot Z-Axis	Down	-1	0	1" from the mechanical stop in the retracted position
14	Casepacker Flights	Toward palletizer	0.675	0	Leading edge of flight is aligned with fixed side of load chamber
15	Lower Compression Non Operator Side	From horizontal to vertical	-4	0	Compression plate is horizontal (open)
16	Lower Compression Operator Side	From horizontal to vertical	-2	0	Compression plate is horizontal (open)
17	Upper Compression Non Operator Side	From horizontal to vertical	-8	0	Compression plate is horizontal (open)
18	Upper Compression Operator Side	From horizontal to vertical	-3	0	Compression plate is horizontal (open)
19	Case Tip Y	Moving towards operator side	-7.625	0	Operator side face of flight is aligned with operator side of sheet metal backstop
20	Case Tip R	Tipping product	-1	0	1 inch from the "up" mechanical stop
21	Case Rotate	Turning case	130	0	Vacuum cup arm is 90 degrees to conveyor

1 - Spatula

Vertical marks are aligned

Downstream edge of Spatula is aligned with downstream edge of Side Belt bottom rails

2 - Adjustable Downstacker 1

3 - Adjustable Downstacker 2

Top of flight is in line with mark and top of drive shaft

4 - Fixed Downstacker 1

Horizontal marks are aligned

5 - Fixed Downstacker 2

Top of flight is aligned with mark and top of drive shaft

6 - Downstack Pusher

7 - Loader
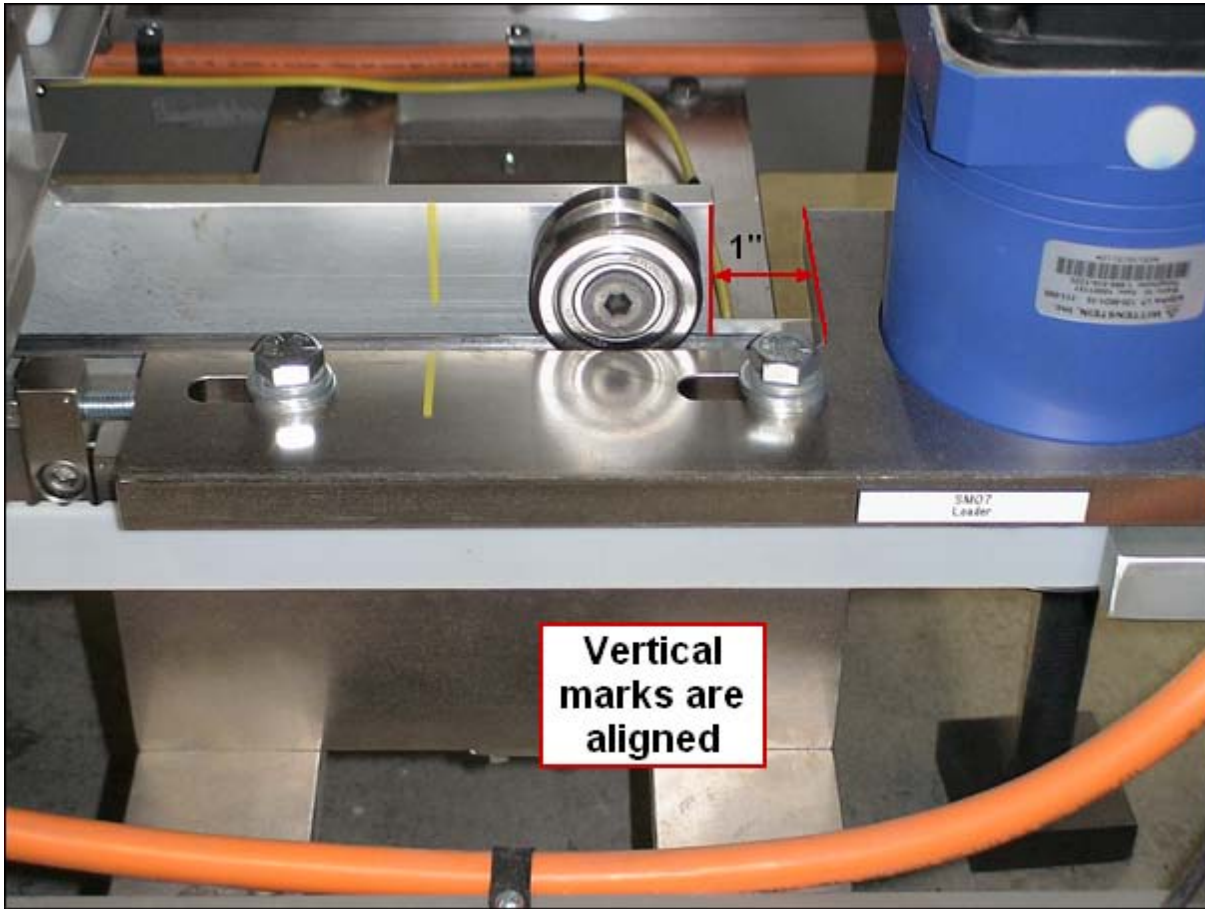
8 - Funnel

Vertical marks are aligned

Funnel is at a 90 degree angle to flight chain

9 - Fun Tucker

Vertical marks are aligned

Fun Tucker is at a 90 degree angle to flight chain

10 - Tucker

Vertical marks are aligned

11 - Product Stop

Vertical marks are aligned

12 - Casepacker Robot X-Axis

2 1/2"

Vertical marks are aligned

13 - Casepacker Robot Z-Axis

14 - Casepacker Flights

Vertical marks are aligned

15 - 18 Compression Plates

19 - Case Tip Y

Tip finger is flush with reference block

Reference Block

Tip Finger

20 - Case Tip R

REFERENCE MARKER

REFERENCE MARKER

Reference indicators are aligned

21 - Case Rotate

Horizontal marks are aligned

Case Rotate Arm is at a 90 degree angle to conveyor
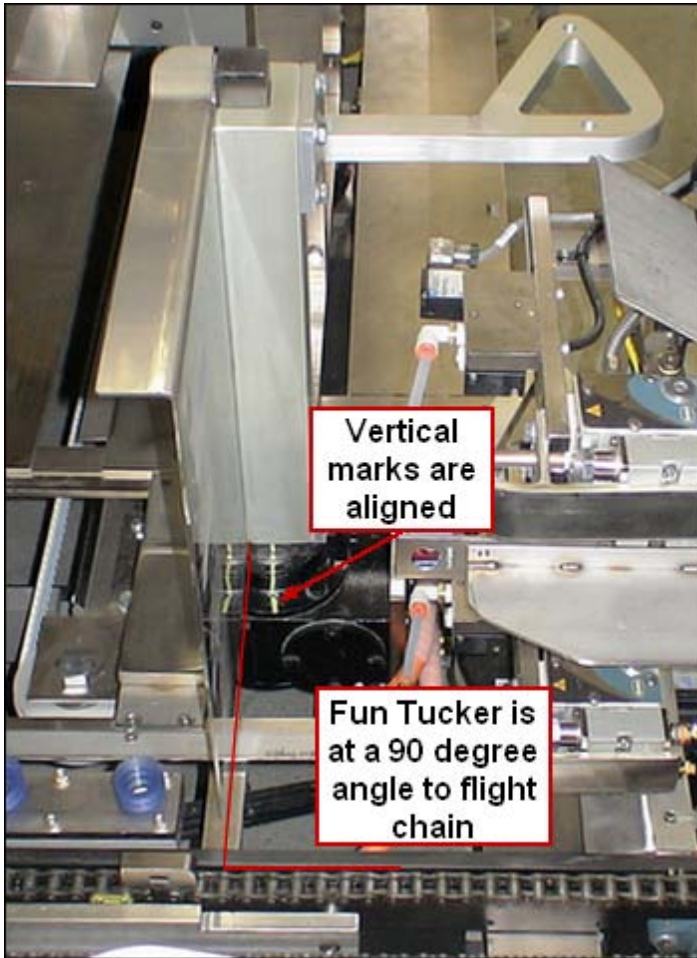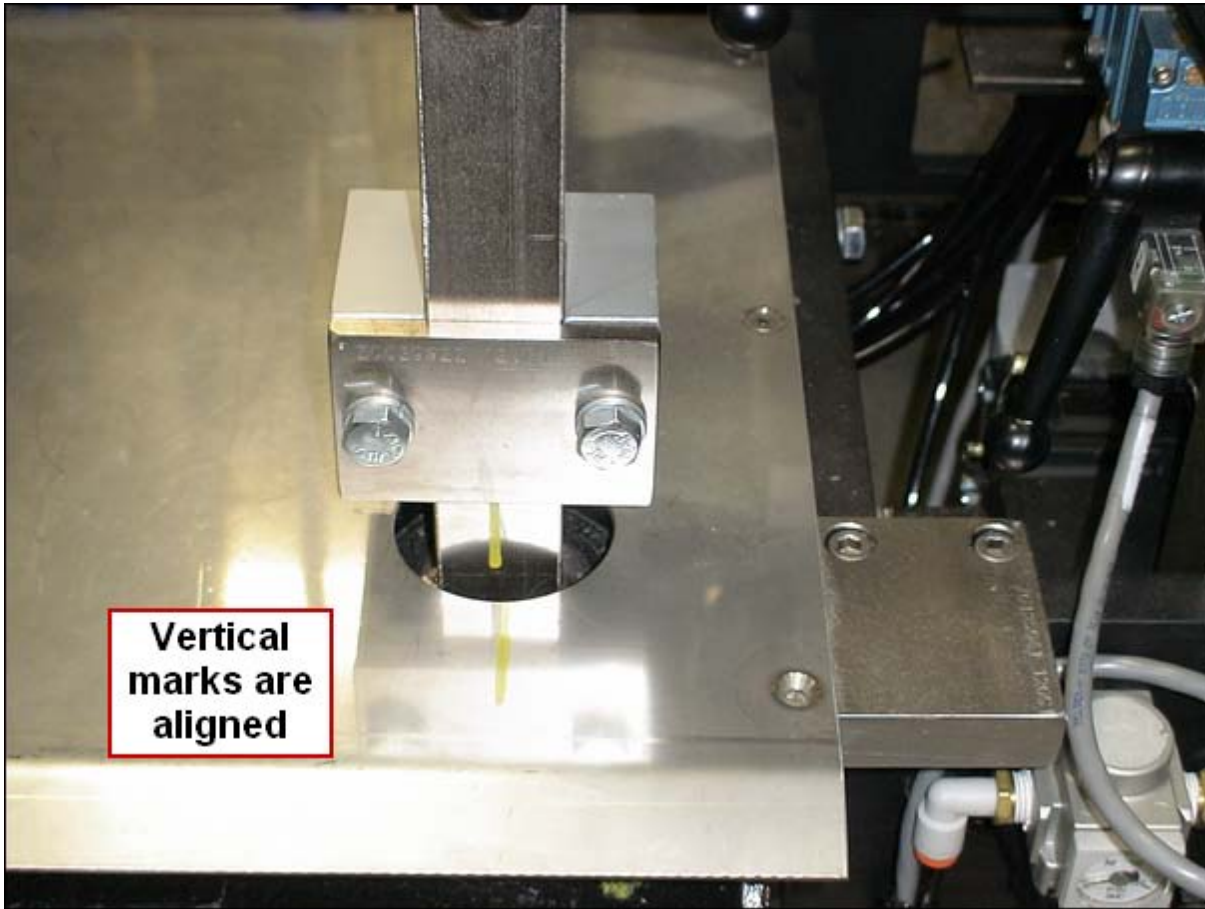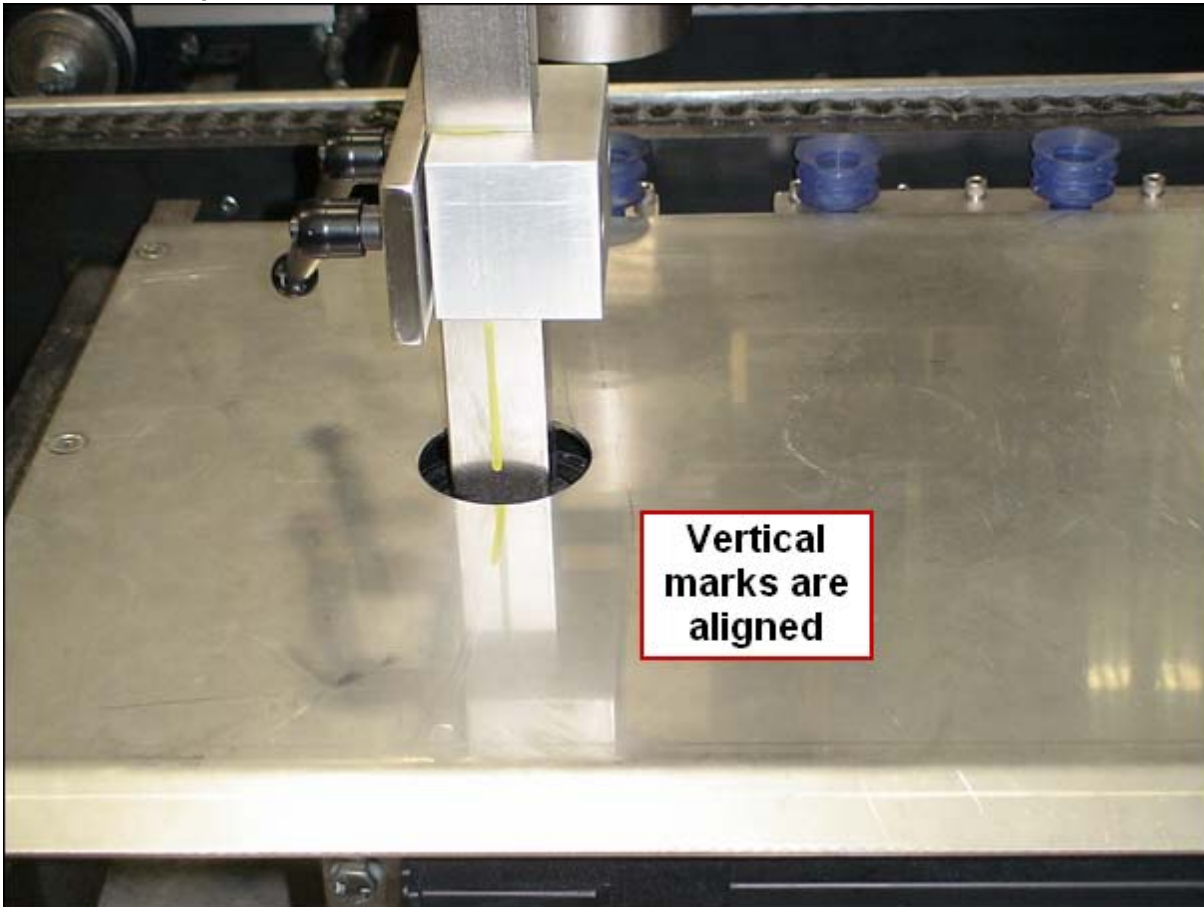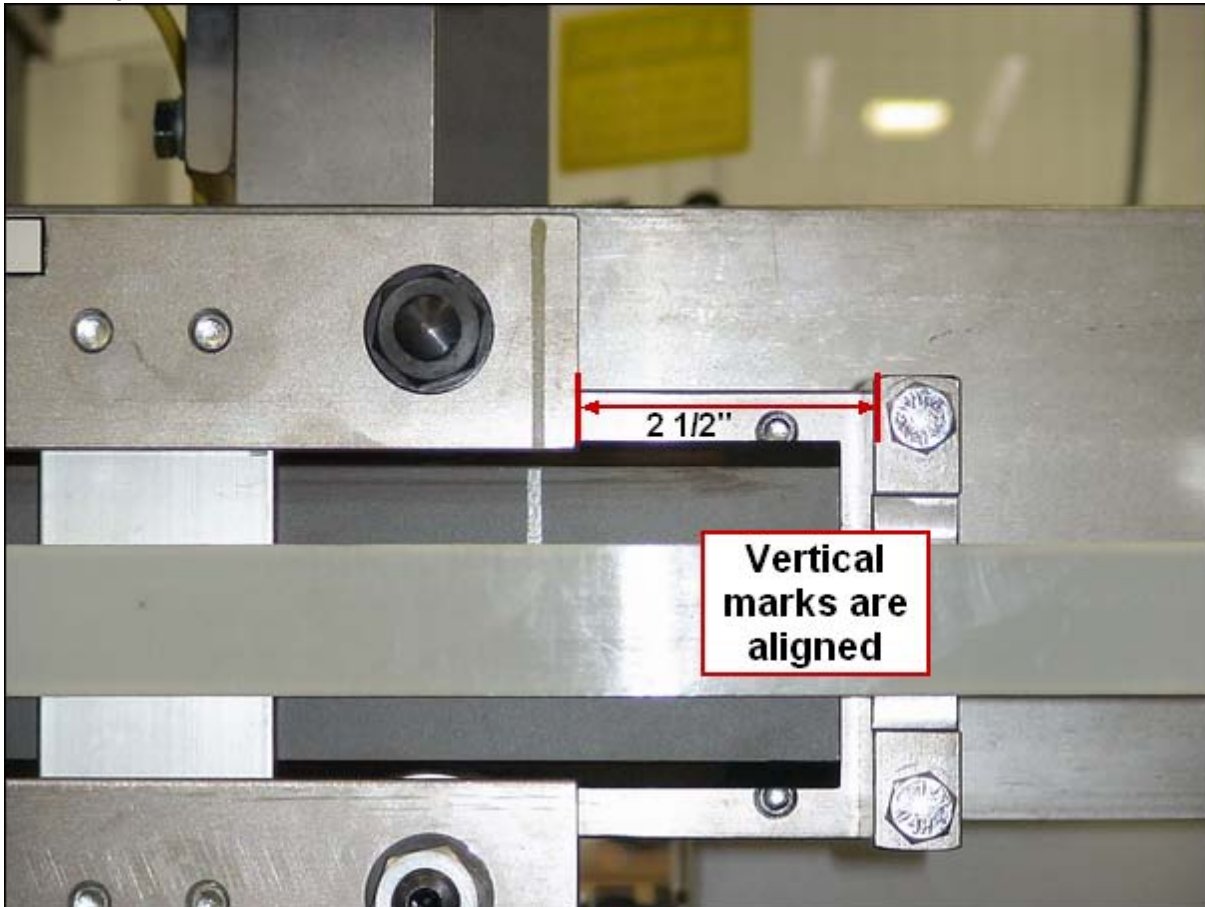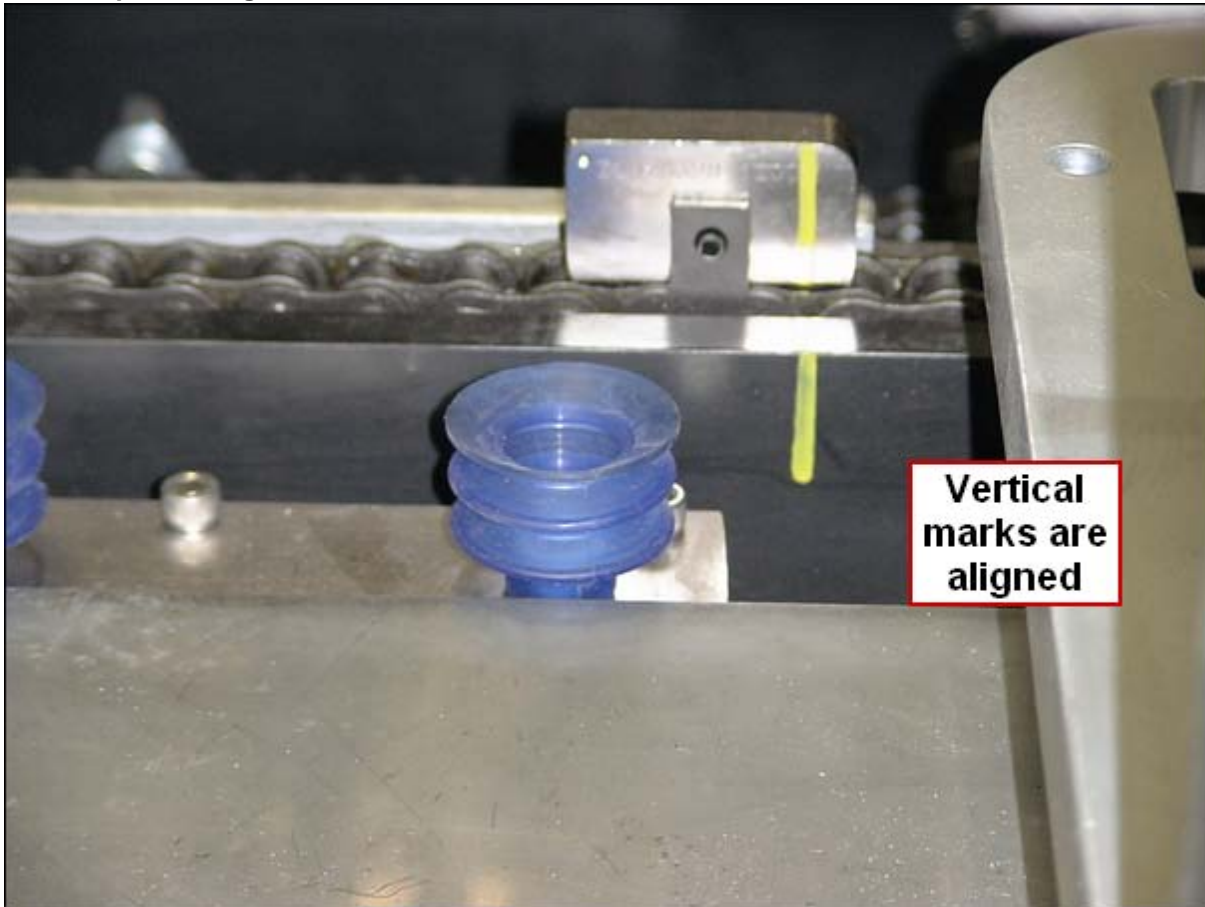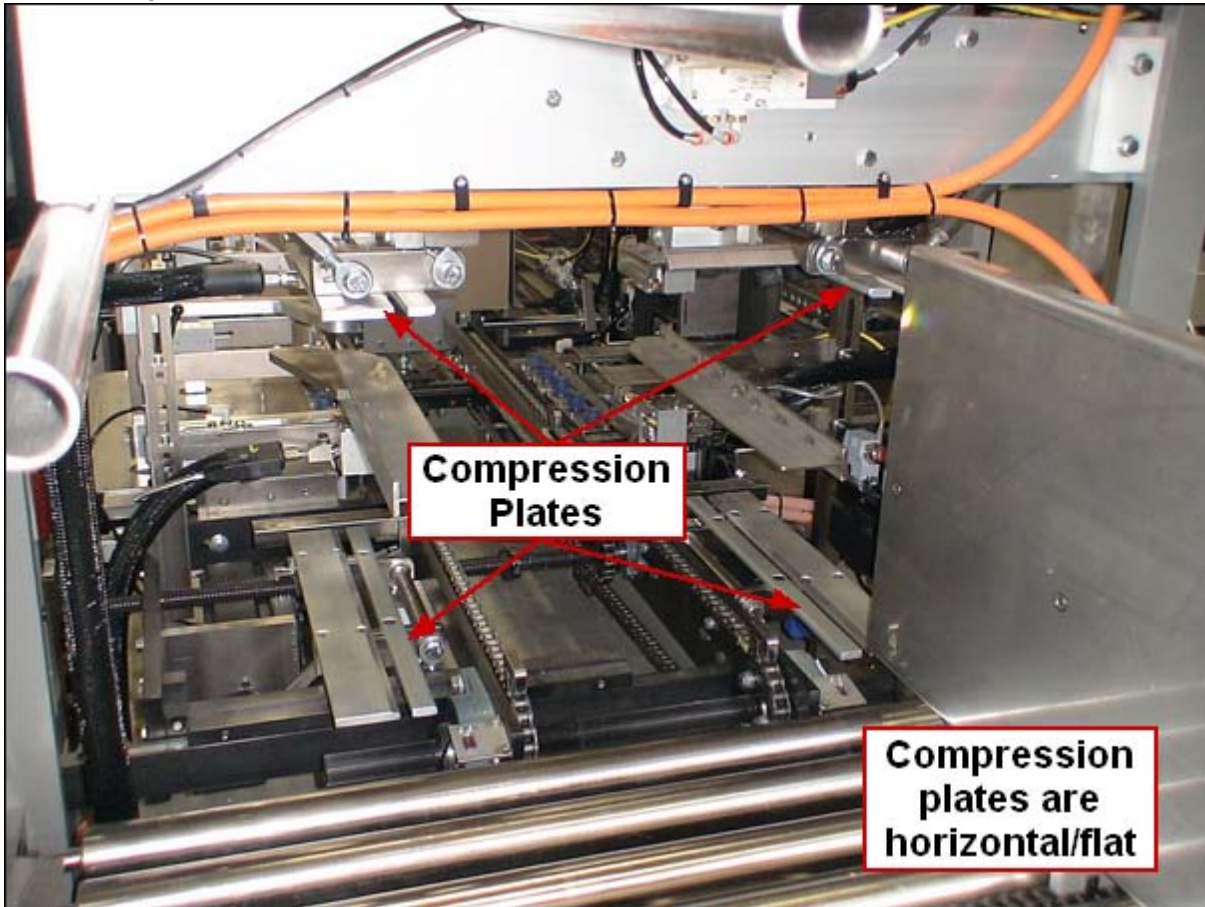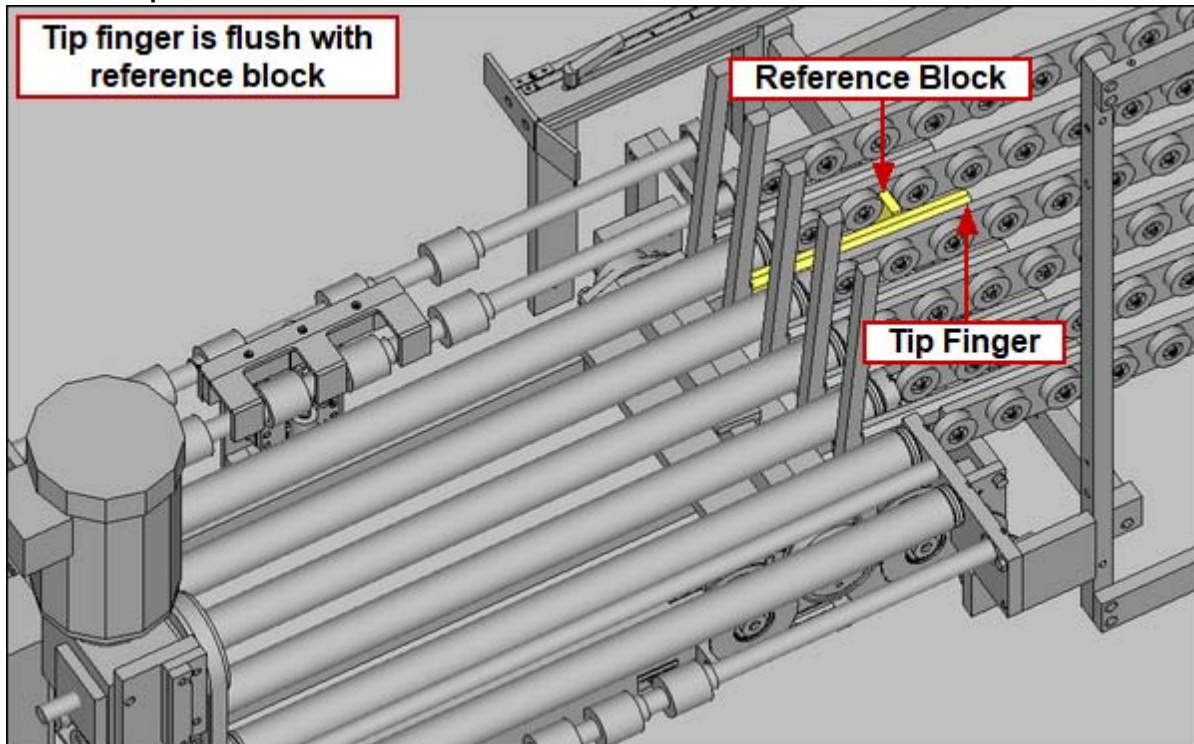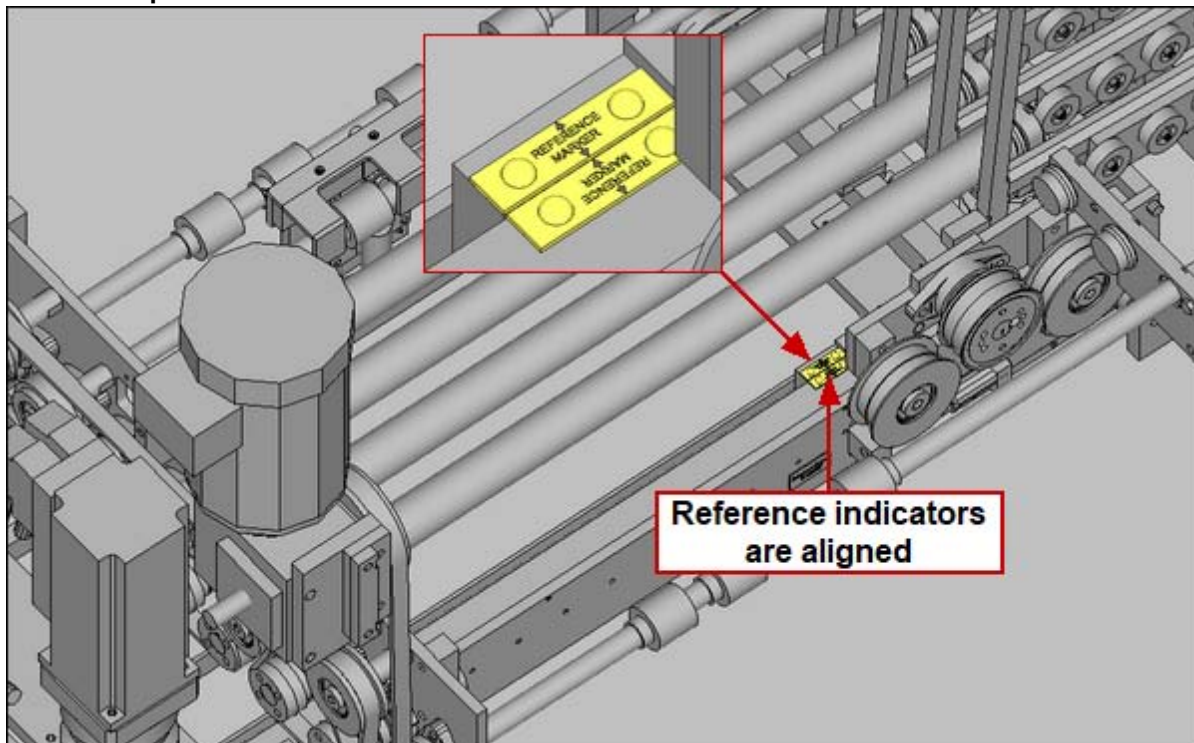
Operator Control Panel (HMI)
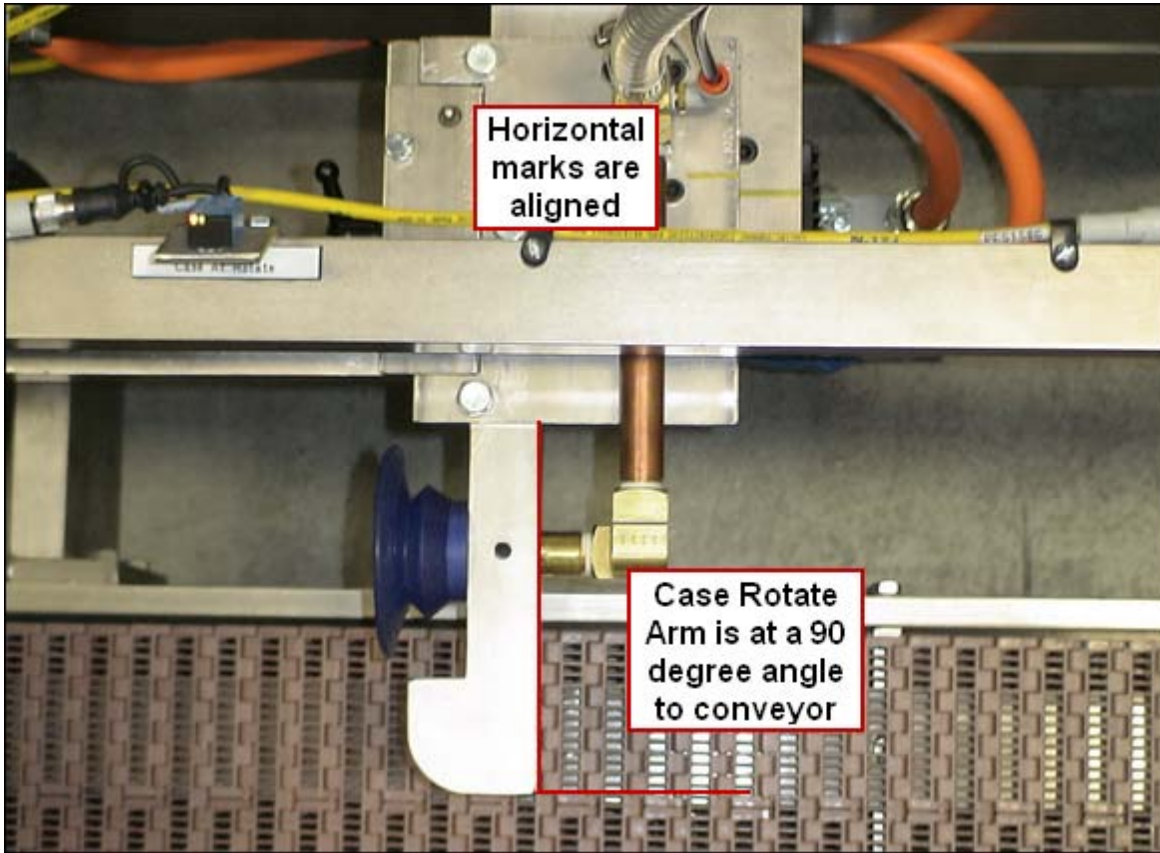
Operator Control Panel (HMI)

Operator Control Panel (HMI)

Keyboard

General Page Information

The Keyboard and Number Pad are part of the same program, and may be toggled between each other. The Keypad program will work with any program on the PC. Launch the Keypad program by pressing on the keypad icon located on most Aagard HMI pages. If the HMI is not open, the Keyboard and Number Pad program may be opened independently of the HMI by double-clicking "AagardKeypad.exe", located inside the same folder as "AagardHMI.exe".

Hide
The Hide button will close the keyboard/number pad.

Move
The Move button will allow the user to move the keyboard/number pad around the screen. To move the keyboard/number pad, press and hold down the Move button and then drag the keyboard/number pad to any place on the screen.

NumPad
The NumPad button will open the Number Pad and the Keyboard will disappear.

Keybd Button
The Keybd Button on the Number Pad will open the Keyboard and the Number Pad will disappear.

Startup and Download

When the HMI is powered up, several screens will display as part of the startup process. This section of the manual details the HMI startup sequence.

Startup Page

General Page Information

This page is the first page that will be shown after the HMI is powered up. Two buttons will be displayed on the screen. One button is the Servo Initialization Option button and the other is the Continue button. The initialization process will start automatically if no buttons are pressed by the time the timer in the bottom right hand corner of the screen has expired. After the initialization process is complete and successful, the Product Download Page will be displayed.

Servo Initialization Options Button
Pressing this button will deactivate the automatic download feature for the current initialization and display the Servo Initialization Options Page (shown below).

Sercos Diagnostics Button
This button displays the Sercos Diagnostics Page. This page is only for information and is used primarily during troubleshooting.

Initialization Data Button

This button will display the **Initialization Data Page**. This page shows Servo Drive Data for each Servo Drive on the machine. This page is identical to the Servo Drive Data Page, with the addition of one check mark box in the bottom left hand corner of the screen labeled "Include This Servo In Initialization". Checking this box will do a full initialization to the Servo Drive that is currently selected the next time an initialization is done. A full initialization will load all the parameters specified under the Initialization Column on the Servo Drive Data Page. Information about the parameters on this page can be found under the Servo Drive Data Page. Accessing the Initialization Data Page requires a User Level 3 log in.

Continue Button
The **Continue Button** does the same on either of the pages, the **Startup Page** and the **Servo Initialization Option Page**. This button will start the initialization process as soon as it is pressed.

Initializing Page

General Page Information

The machine will only have to go through the Initialize Process if the machine is powered down or the TwinCAT Program is restarted. This is the process of initializing the servo drives and getting the Sercos Ring to Phase 4. Once all the servo drives have been initialized, the Product Download page will appear.

Initializing...

Initialize Step 3 of Servo Drive 50

Product Download Page

General Page Information

The Product Change screen will automatically be displayed on machine power up. It can manually be displayed by pressing the "Product Change" button on the main page while logged in at User Level 2 or higher. Click on the desired product and press the Download button. This button will download all of the new product's information, which is now stored in the main controller, and display the Changeover Adjustments Page.

NOTE: The machine must be E-Stopped to do a product change.

The Edit Button will display the page that allows System Products to be edited. A User Level 3 is required for these features.
If no user is logged in when the Edit button is clicked, the log in screen will display and a user and password is required to continue.

SAMPLE IMAGE

Edit System Products Page

This list contains all the currently available System Products to be edited. When a System Product is selected, the appropriate C40 Recipes will be shown in the C40 Recipes Drop Down Menus to the right of the System Products List.

Cartoner Recipe
The Cartoner Recipe drop down menu contains the name of the recipe used for the currently selected product. If the machine includes a Cartoner, Case Packer, and Palletizer there will be three different Recipe drop down menus.

New Button

If the New Button is pressed, the S10 Product Name Popup will appear. This is where the new product's name will be declared for the first time.

Product Name

This entry field is where the name of the new product will be defined. The text that is entered here will be exactly what is displayed on the Product Download Page.

 The **OK Button** can then be pressed if the information is to be saved, or the **Cancel Button** will close the popup and save nothing new.

Rename Button

This button will allow the currently selected product to be renamed. When this button is pressed, a popup will appear. Replace the old name with the new name. The **OK Button** can then be pressed if the information is to be saved, or the **Cancel Button** will close the popup and save nothing new.

Delete

If this button is pressed, the current selected product will be deleted from the System Products list.

Edit C40 Recipes Button

This button will display the Edit C40 Recipes Page.

Import Recipes

This button will display the Import Recipes Page. **Aagard level required!**

Copy Changeover Data From

The Copy Changeover Data From button allows a particular system product to be selected and have changeover data product values copied over to it.

Back Button

This button will close and save any changes and go to the Product Download Page.

Edit C40 Recipes Page

C40s Selection Tabs

The selection tabs will display the list of recipes for each C40 selectable by the selection tabs.

- **C40 Recipes List** - This list contains all the currently created recipes for the C40 selected by the C40s Selection Tab.
- **New Button** - If the New Button is pressed, the C40 Recipe Name Popup will appear. This is where the new recipe's name will be declared for the first time.

- **Recipe Name Entry Field** - This entry field is where the name of the new recipe will be defined. The **OK Button** can then be pressed if the information is to be saved, or the **Cancel Button** will close the popup and save nothing new.

- **Rename Button -** This button will allow the currently selected recipe to be renamed. When this button is pressed, a popup will appear. Replace the old name with the new name. The **OK Button** can then be pressed if the information is to be saved, or the **Cancel Button** will close the popup and save nothing new.

- **Delete Button -** This button will delete the current recipe selected.
- **Copy Data From Button -** This button, when pressed, will go through the process of copying the recipe information from another recipe to the current recipe selected. This will prompt for a previously created recipe to be selected from the Copy Recipe From Popup. If no recipes have been previously created, nothing will be available in the drop down menu. After a recipe has been selected, the **OK Button** will complete the operation and the **Cancel Button** will close the popup and save nothing new.

Back Button
This button will close and save any changes and go to the Edit System Products Page.

Product Download Changeover Adjustments Page

General Page Information

This screen is active after a product download is initiated. It is a checklist for the changeover locations on the machine. Each changeover location is listed in the order that the adjustment should be executed. The target value for each changeover location is shown along with each changeover name and description. When an adjustment is completed, the button in the "Done" column may be pressed to indicate completion.

SAMPLE IMAGE

Aagard HMI - Adjustments

Done	Machine	Adj. Name	Description	Value
Yes	Sleever Case Packer	1-1	Example Adjustment	10
Yes	Sleever Case Packer	1-2	Example Adjustment	2
Yes	Sleever Case Packer	1-3	Example Adjustment	30
Yes	Sleever Case Packer	1-4	Example Adjustment	40
No	Sleever Case Packer	1-5	Example Adjustment	50
No	Sleever Case Packer	1-6	Example Adjustment	60
No	Sleever Case Packer	1-7	Example Adjustment	70
No	Sleever Case Packer	1-8	Example Adjustment	80
No	Sleever Case Packer	1-9	Example Adjustment	90
No	Sleever Case Packer	1-10	Example Adjustment	100
No	Sleever Case Packer	1-11A	Example Adjustment	110
No	Sleever Case Packer	1-11B	Example Adjustment	120
No	Sleever Case Packer	1-11C	Example Adjustment	130
No	Sleever Case Packer	1-11D	Example Adjustment	140
No	Sleever Case Packer	1-11E	Example Adjustment	150
No	Sleever Case Packer	1-11F	Example Adjustment	160
No	Sleever Case Packer	1-12A	Example Adjustment	170
No	Sleever Case Packer	1-12B	Example Adjustment	180

Print   Finish

Done

This column contains a Yes/No button for each changeover adjustment. When a changeover routine is in process, the Yes/No button may be selected to show whether or not the changeover adjustment has been completed during the current changeover routine.

Machine

This column lists which machine the changeover adjustment is located in.

Adj. Name

This column lists the name of the changeover adjustment. The name is typically a number that has been assigned to that particular changeover location.

Description

This column contains the description of the item.

Value

This is the value at which the changeover adjustment should be when completed.

Print

The print button will print the machine changeover screen to the default printer set up on the HMI. This printout can then be used during the machine changeover.

It is recommended that when the changeover is completed, the printout be discarded to ensure there are no obsolete copies.

Finish Button

Press this button to continue onto the HMI Main Screen after all of the adjustments have been completed. If any of the adjustments have not been marked completed, a popup will appear after the **Finish Button** has been pressed. This is a warning to verify that it is OK to continue onto the HMI Main Screen even though all the adjustments haven't been marked as completed.

Log In Screen

General Page Information

This is what the Aagard HMI Screen will look like if the Log In Button is pressed while no one is currently logged in. If a user is currently logged in, the button will display the text "Log Out". If the button is pressed while the "Log Out" text is displayed, the current user will be logged out and the "Log In" text will be displayed. Consult your supervisor for the correct user name and password. The machine will be logged out upon power up.

SAMPLE IMAGE

	Machine Run	Jog, Reference & Troubleshooting	Machine Data Input	Login User Information
Operator Level 1	☑			
Operator Level 2	☑	☑		
Advanced Technician Level 3	☑	☑	☑	
Administrator Level	☑	☑	☑	☑

HMI Main Screen

General Page Information

After power up and initialization of the Packaging system, the Main screen will be displayed. This Main screen is the starting point from which everything branches. All the Message Displays combined will provide information on what is happening with the machine, displaying any faults that would prevent the system from running (guard door open, low air pressure, etc.). The Aagard HMI will go straight to the Main Screen if the HMI is closed and reopened without losing power to any part of the machine.

NOTE: The system will be in the same Mode in which it was left at power down. Correct any Fault conditions which are displayed before attempting to run the machine.

NOTE: Depending on user level, not all buttons will be visible.

System Information

This section contains the machine name, the current downloaded product name, the current system rate and any system messages. A system is also known as the S10 level of the machine.

C40 Information

This section contains the C40 name, the state and mode, and any C40 messages. An example of a C40 would be a Cartoner or a Case Packer.

Rate
This entry field will allow the machine to operate at slower speeds. 100% is equal to the maximum rate at which the machine is able to operate. 50% is half that rate and so on. This only applies while in Automatic Mode

Reset
This button will reset the selected C40. This will make the machine think that there is no product in the machine. This button is a last resort to get the machine running again. After this button is pressed, all remaining product should be cleared out of the machine and then the machine can be started again.

Fault History Button
Pressing this button will open the Fault History Page for the C40 that the button was on.

Reject History Button
Pressing this button will open the Reject History Page for the C40 that the button was on.

Data Input Button
Pressing this button will open the Data Input Page for the C40 that the button was on.

Disable/Enable
Pressing this button will Disable/Enable the selected C40. When a C40 is disabled, that section of the machine will not perform its operations. When the C40 is disabled the button will be red and the State status will be Disabled. This button can only be toggled when that C40 is in Mode: Estop.

Disable/Enable Product
Pressing this button will Disable/Enable Product on the selected C40. When a C40 has Disabled Product, the button will be red. Disabled Product is a type of a dry cycle. When the machine is started back up, that section of the machine will perform its operations as if it were receiving the amount of product per minute specified in the System Rate Display. This button can only be toggled when that C40 is in Mode: Estop.

Automatic Mode Button
When the Automatic (Run) Mode Button for the C40 is pressed, that C40 will go into Automatic Mode. Press and hold the start pushbutton for 3 seconds to begin running. If no faults are detected, the Module will continue into the Producing Mode.

Manual Mode
Pressing the Manual Mode button will put the machine in manual mode and display two additional buttons: "Jog" and "Reference".

Jog Button
Pressing this button will open the Jog Page for the C40 that the button was on.

Reference Button
Pressing this button will open the Reference Page for the C40 that the button was on.

Production Data Table
This table shows the current shift's information and the current day's information. For more on this, see the Production Data Page.

Production Data Button
Pressing this button will open the Production Data Page for the machine.

QC Case
This allows the machine to reject one (1) good case for Quality Control purposes.

Custom Buttons
Pressing this button will open the Custom Buttons Page for the machine.

Advanced Button
Pressing this button will open the Advanced Page for the machine.

Product Change Button
Pressing this button will open the Product Download Page for the machine.

Log In / Log Out Button
If the button displays "Log In", then no user is currently logged in and pressing this button will open the the Log In Screen.
If the button displays "Log Out", then a user is currently logged in and pressing this button will cause the current user to be logged out.
NOTE: The current user name is displayed in the upper left area of the Main Page.

About Button
This button will show version and build information, and will be useful when troubleshooting with Aagard technicians.

About HMI

HMI
Product Version: 2.3.10.7

Aagard Group, LLC
http://www.aagard.com/

Company	Product	Version Number	Location	Description
Aagard	Aagard HMI Cube Layout Support	2.1.9.0	CubeLayout.dll	Aagard HMI custom page for cube lay
Aagard	Custom	1.0.0.0	C:\Aagard\Runtime\HMI\GMITagsCustom.dll	Custom
Aagard Group	ShiftRegister	2.2.1.0	ShiftRegister.dll	
Aagard Group, LLC	HMI	2.3.10.7	C:\Aagard\Runtime\HMI\AagardHMI.exe	Human-Machine Interface
Aagard Group, LLC	Aagard.Enterprise.Forms.VB	1.0.0.0	C:\Aagard\Runtime\HMI\Aagard.Enterprise.Forms.VB.dll	Enterprise-wide VB Forms
Aagard Group, LLC	Aagard.Enterprise.Classes	1.0.1.0	C:\Aagard\Runtime\HMI\Aagard.Enterprise.Classes.dll	Enterprise-wide Shared Classes
Aagard Group, LLC	Aagard Twincat	2.1.5.0	C:\Aagard\Runtime\HMI\AagardTwincat.dll	Provides simplified communication wit
Aagard Group, LLC	Config	2.1.3.0	C:\Aagard\Runtime\HMI\XMLConfig.dll	Simplifies reading, writing and using X
Aagard Group, LLC	PLC Interface	2.1.2.0	C:\Aagard\Runtime\HMI\PLCInterface.dll	Contains interfaces of structures that
Aagard Group, LLC	Aagard.Enterprise.Classes.VB	1.0.0.0	C:\Aagard\Runtime\HMI\Aagard.Enterprise.Classes.VB.dll	Enterprise-wide shared VB Classes
Aagard Group, LLC	CardReaderInterface	1.0.0.0	C:\Aagard\Runtime\HMI\CardReaderInterface.dll	Interface for classes used for card rea
Aagard Group, LLC	Dynamic Type Creator	2.1.1.0	C:\Aagard\Runtime\HMI\Aagard.Dynamic.dll	Dynamically creates types using reflec
Aagard Group, LLC	Framework 1 Forms	1.0.0.0	Framework1Forms.dll	Forms targeting version 1 of the PLC
Aagard Group, LLC	Recipe Import Module	2.1.1.0	C:\Aagard\Runtime\HMI\RecipeImport.dll	Recipe import functionality
Aagard Group, LLC	Aagard.MRS.Data	1.0.0.0	C:\Aagard\Runtime\HMI\Aagard.MRS.Data.dll	Machine-related Data Handling
Aagard Group, LLC	Aagard.ADCOMS.Editor.Logic	1.0.0.0	C:\Aagard\Runtime\HMI\Aagard.ADCOMS.Editor.Logic.dll	ADCOMS Logic Layer
Aagard Group, LLC	Aagard.MRS.Data.ChangeOver	1.0.0.0	C:\Aagard\Runtime\HMI\Aagard.MRS.Data.ChangeOver.dll	Machine-related Changeover Data Ha
Aagard Group, LLC	Aagard.MRS.Data.Maintenance	1.0.0.0	C:\Aagard\Runtime\HMI\Aagard.MRS.Data.Maintence.dll	Machine-related Maintenance Data H
Aagard Group, LLC	Aagard.Configuration	1.0.0.0	C:\Aagard\Runtime\HMI\Aagard.Configuration.dll	Configuration Handling Code
Aagard Group, LLC	ProductionData	1.0.0.0	C:\Aagard\Runtime\HMI\ProductionData.dll	Used to process messages to determi
Aagard Group, LLC	Framework 1 Cam Generator	2.1.2.0	C:\Aagard\Runtime\HMI\Framework1CamGen.dll	Generates cams for use in the Aagard
Aagard Group, LLC	Aagard.ADCOMS.Editor.Forms	1.2.2.3	C:\Aagard\Runtime\HMI\Aagard.ADCOMS.Editor.Forms.dll	Forms Used in the ADCOMS Editor

REDEFINING THE STANDARD

OK

Aagard Logo
Pressing this button will open the Aagard Machine Operator Manual from the HMI.
   o The user may be prompted to install a documentation update

Custom Buttons

General Page Information

NOTE: The items listed and their locations on this HMI page are 100% configurable and setup by an Aagard Level user during the HMI Setup process. As such, the content on this page is a representation of a possible configuration. The items and/or their locations may change as modifications to the configuration are made on a production Aagard machine in the field. Such configuration changes may not be reflected in this machine manual.

This page displays buttons that provide additional functionality for the running of the machine.
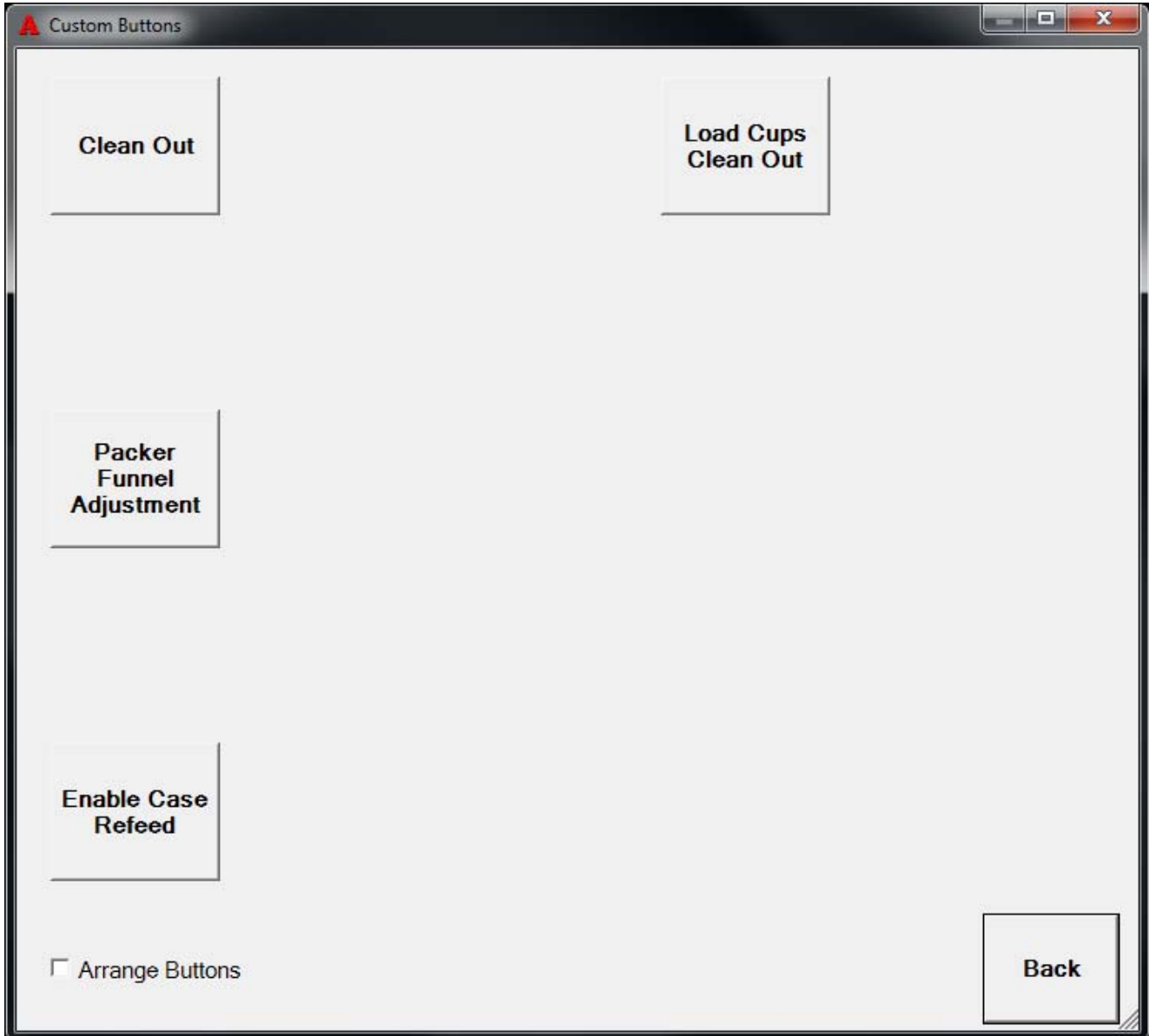
Clean Out
This will allow the machine to go into a Clean Out mode.

Load Cups Clean Out
This will cause the Case Packer to blow compressed air out of the Load Station Vacuum Cups, clearing dust and debris from the vacuum cups.

Packer Funnel Adjustment
This button will open the [Packer Funnel Adjustment Page](#).

Enable Case Refeed
This will disable the photo eyes in the case reject area, stop the Case Packer, and allow cases to be re-fed into the machine through the reject chute. Note: The Case Packer will have to be re-started once this tag is de-selected.

Arrange Buttons
This page is configurable and the buttons may be re-arranged if this checkbox is checked. **Aagard level required!**

Packer Funnel / FunTucker Adjustment Page

General Page Information

This screen provides a means for the user to make temporary adjustments to certain running parameters on the machine. These adjustments are temporary and affect only the currently downloaded product; this information is not retained from one product change to the next.

NOTE: The machine must be in E-Stop mode and re-started for the changes to take effect.
NOTE: Depending on user level, not all fields will be editable.

NOTE: The items listed and their locations on this HMI page are 100% configurable and setup by an Aagard Level user during the HMI Setup process. As such, the content on this page is a representation of a possible configuration. The items and/or their locations may change as modifications to the configuration are made on a production Aagard machine in the field. Such configuration changes may not be reflected in this machine manual.
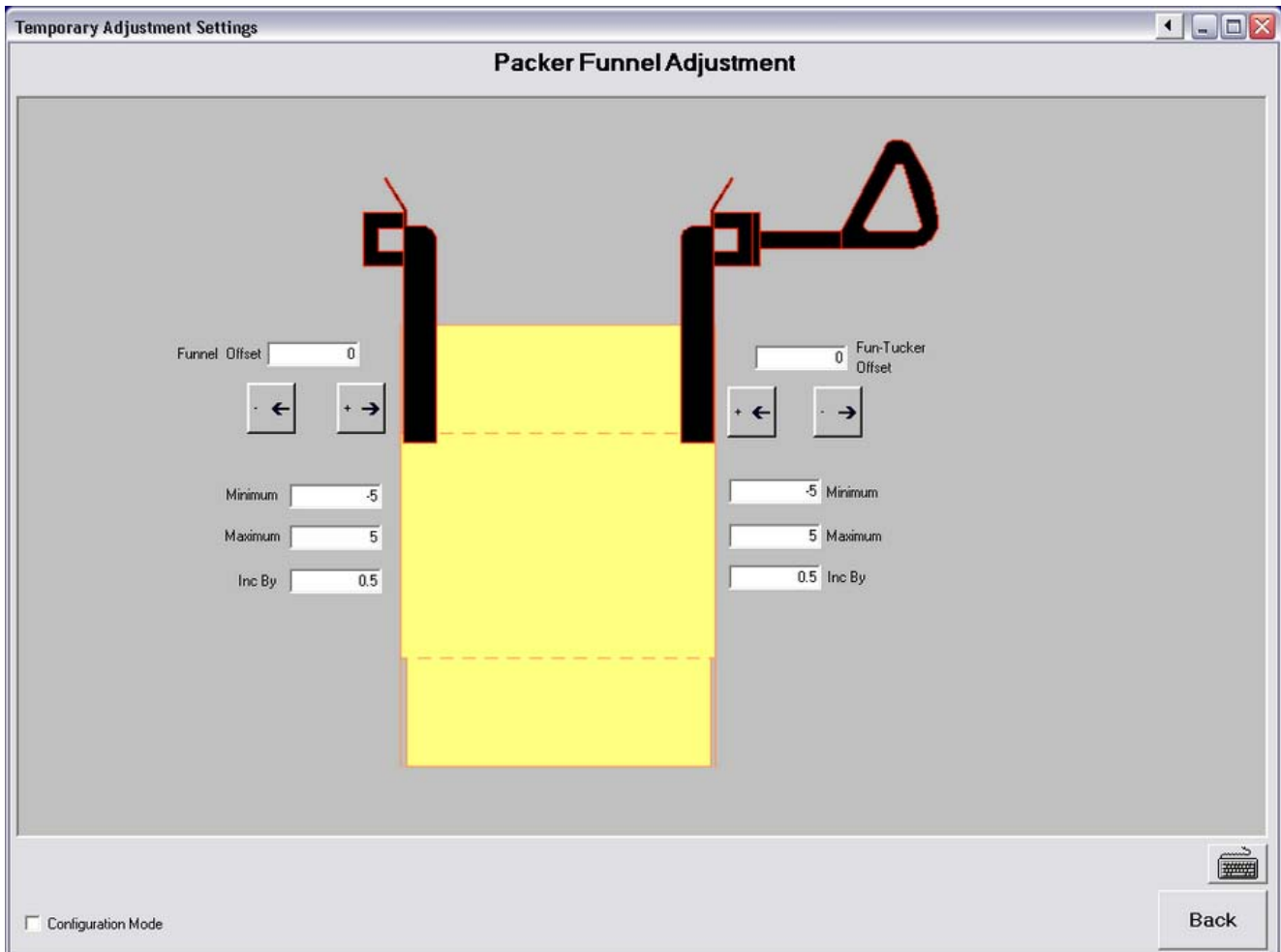
SAMPLE IMAGE
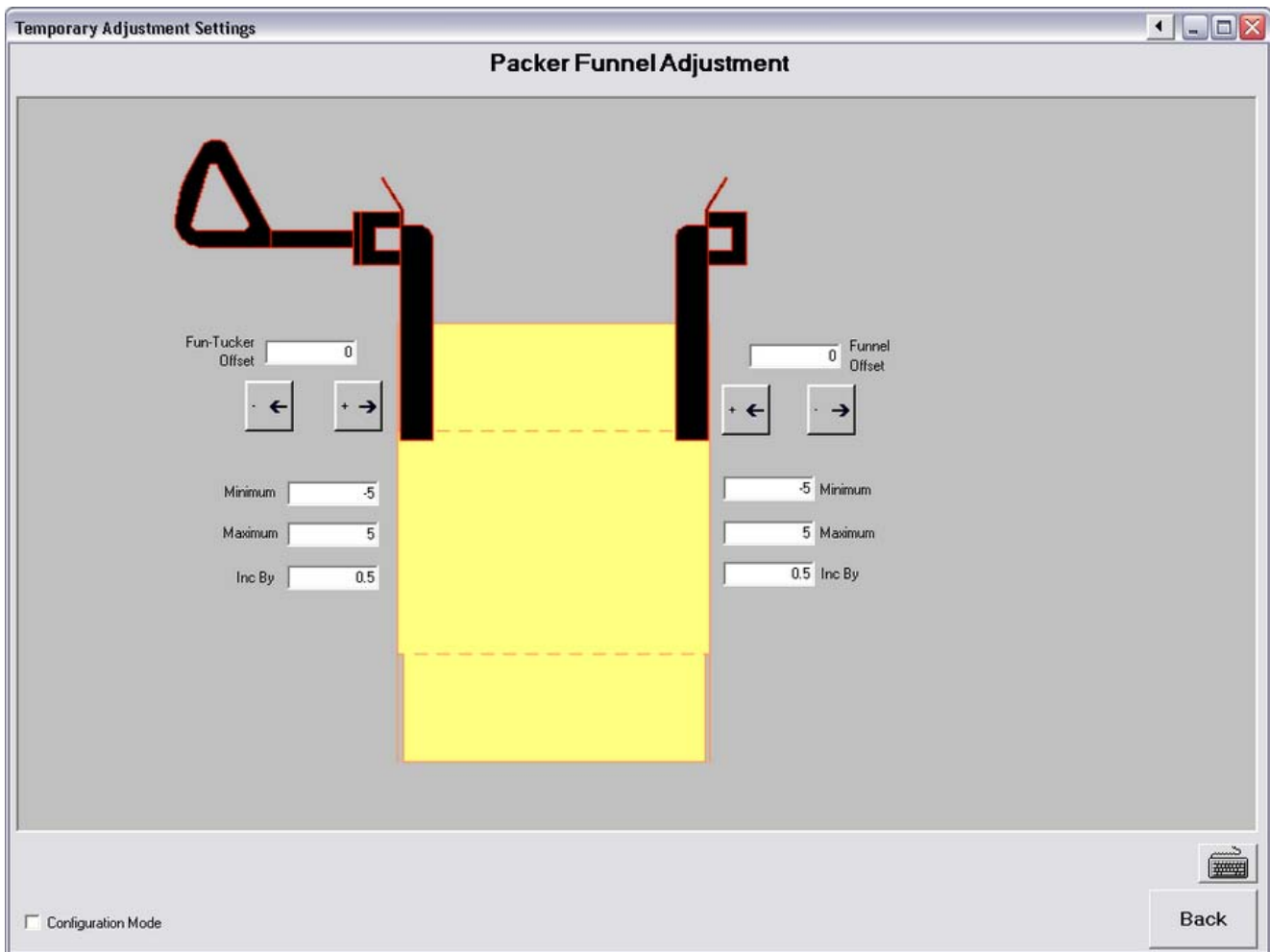
Funnel Offset

This number is the amount of cam offset applied to the Funnel.

Fun-Tucker Offset

This number is the amount of cam offset applied to the Fun/Tucker.

+ Right Arrow

This will increase the total offset amount in the Offset field by the amount in the Inc By field. Each time the **+** right arrow is clicked, the total amount of offset will increase by the Inc By amount until the Maximum amount is reached.

- Left Arrow

This will decrease the total offset amount in the Offset field by the amount in the Inc By field. Each time the **-** left arrow is clicked, the total amount of offset will decrease by the Inc By amount until the Minimum amount is reached.

Minimum

This is the minimum amount of offset allowed.

Maximum

This is the maximum amount of offset allowed.

Inc By

Increment By: This number is the amount that the Offset will increase or decrease by when the + / - arrows are clicked.

States and Modes

State Model - Automatic Mode

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

STATE	Description
OFF	**State Type: Final** All power to machine switched off. This state is assumed if there is no response from the machine. This is an optional Final State. The OFF state may be reached in two ways: first, power to the machine is switched off or second, power is removed as in a power utility failure. In the OFF state, it must be assured that the machine will go at the least to the initial stopped state when power is restored either by switch or restoration of the utility power source.
STOPPED	**State Type: Final** The machine is powered and stationary. All communications with other systems are functioning (if applicable).
STARTING	**State Type: Transient** This state allows the machine to be prepared for running 1. This state could include such processes as heating, self-testing, or calibration.
READY	**State Type: Quiescent** This is a state which indicates that STARTING is complete. This state maintains the machine conditions which were achieved during the STARTING state.

STATE	Description
STANDBY	**State Type: Transient** The machine is running at the relevant set point speed, there is no product being produced. This state can be reached either in response to a Start Command from READY, or any internal machine logic that would dictate a temporary transition from the PRODUCING state, such as materials run-out. The status of "materials run-out" could be due to a lack of materials on the machine's own infeed, or a stoppage of downstream equipment.
PRODUCING	**State Type: Transient** Once the machine is processing materials, it is deemed to be producing.
STOPPING	**State Type: No Command** This state executes the logic which brings the machine to a controlled and safe stop.
ABORTING	**State Type: Transient** The ABORTED state can be entered at any time in response to the Abort Command, or on the occurrence of a machine fault. The aborting logic will bring the machine to a rapid, controlled safe stop. Operation of the Emergency Stop, or "E-Stop", will cause the machine to be tripped by its safety system. It will also provide a signal to initiate the ABORTING state.
ABORTED	**State Type: Quiescent** This state maintains machine status information relevant to the Abort condition. The Stop Command will force transition to the STOPPED state.
HOLDING	**State Type: Transient** When the machine is in STANDBY or PRODUCING, the Hold Command can be used to start Holding logic, which brings the machine to a controlled stop.
HELD	**State Type: Quiescent** The Held state would typically be used by the operator to temporarily hold the machine's operation while material blockages are cleared, or to stop throughput while a downstream problem is being resolved.

An example State transition matrix for Automatic Mode is shown below. Note the State Model does not rigidly specify the internal machine state transition logic, which will vary depending on the application.

Initial State	Machine Status						Commands				
	Power On	Power Off	Materials Run-Out	Materials Ready	Machine Fault	State Complete	Prepare	Start	Stop	Held	Abort
Off	Stopped										
Stopped		Off					Starting				
Starting					Aborting	Ready			Stopping		Aborting
Ready					Aborting			Standby	Stopping		Aborting
Standby			Producing		Aborting				Stopping	Holding	Aborting
Producing				Standby	Aborting				Stopping	Holding	Aborting
Stopping					Aborting	Stopped					Aborting
Holding					Aborting	Held					Aborting

Held					Aborting			Standby	Stopping		Aborting
Aborting						Aborted					
Aborted									Stopped		

Popups and Notices

From time to time and for various reasons, certain events trigger notice popups.

These popups indicate which C40 originated the notice, device number and name, message text, message details, date and time of the notice, and number of messages currently being displayed. After the popup has been cleared, this same information is displayed in the notice history pages

SAMPLE IMAGE

NOTE: If a location is defined in the messaging database, it will be displayed between the C40 name and Device name

Edit Text Button
Users logged in Level 3 or higher may modify the message text.

Map Button
This button will appear when a location image for this device is available. Map

Info Button

Click this button to display additional PLC notice information useful when troubleshooting with Aagard personnel.
Info

Clear All and **Clear Buttons**
There are a number of ways to clear notices from the HMI screen.

- Press the Clear button to clear an individual notice
- Press the Clear All button to clear all notices
- Energize the system by pressing the Start button once to clear all notices

NOTE: A Critical Fault will *not* be cleared by using the Clear All button or by pressing the Start button; it must be cleared individually by pressing the Clear button

Since this machine runs on a PC-based computer, other applications are running behind the HMI application. These applications also use popups, when necessary, to notify users of important information. An example of a TwinCAT error is shown below. TwinCAT is a background application required by the HMI application.

Map

This image provides a general area grid location to help the operator locate the device on the machine.

Info

During troubleshooting, Aagard personnel may ask operators for the information displayed in the box.

SAMPLE IMAGE

App Type: 57	App Num: 10	Notice ID: 4	POU Generator ID: TestingPOU	POU Sender ID: TestingPOU

Messages: 1   Edit Text...   Map   Info   Clear All   Clear

Production Data Page

General Page Information

This page will display any production data collected by the machine. This will show how the machine is performing from day to day. The downtime tracking summary is also displayed on the page.

NOTE: The items listed and their locations on this HMI page are 100% configurable and setup by an Aagard Level user during the HMI Setup process. As such, the content on this page is a representation of a possible configuration. The items and/or their locations may change as modifications to the configuration are made on a production Aagard machine in the field. Such configuration changes may not be reflected in this machine manual.

SAMPLE IMAGE

Time Period Drop Down Menu
This drop down menu will allow information to be displayed for a certain selected time period.

Edit Shifts Button
This button will display the Edit Shifts Screen.

Back Button
This button will display the HMI Main Screen.

Production Data Information

These items are setup by an Aagard Level user during HMI Setup.

IMPORTANT! If changes are made to production data formulas, the Report Generator process *must* be restarted!

Query Name	Short Description	Detailed Description
RunningTime	Running Time Tracking	Total amount of time the system in a producing state
IdleTime	Idle Time Tracking	Total amount of time the system was idle (starved or blocked)
UserStopsTime	User Stops Time Tracking	Total amount of downtime cause by user stops (E-Stop, Guard Door, Cycle Stop)
FaultTime	Fault Time Tracking	Total amount of downtime caused by faults
FaultAckTime	Fault Acknowledgement Time Tracking	Total amount of fault acknowledgement time
RunningTimeCount	Number of Running Time Occurrences	The number of instances the system went to a producing state
IdleTimeCount	Number of Idle Time Occurrences	Number of instances the system was not producing, caused by not receiving product or downstream not being available (starved and blocked)
UserStopCount	Number of User Stop Occurrences	Number of times the system was not producing, caused by a user stop (E-Stop, Guard Door, Cycle Stop)
FaultCount	Number of faults	Number of times the system was not producing, caused by a fault
DownTimeCount	# of Stops, Down Time Count	The number of instances the system was not producing, caused by a user stop or fault
RunningTimeSinceLastStop	Running Time Since Last User Stop Or Fault Recorded In System	Amount of time accumulated since the last time the system went into a producing or idle state
TargetCapacity	Target Capacity	The total number of products which could run through this machine if the machine is running at 100% for the measured time period. The machine rate is recipe-specific, as defined in the PLC program; rate changes during the measured time period are taken into account
UserStopLoss	Capacity Loss Due To User Stops	Capacity lost due to a user initiated downtime (E-Stop, Guard Door, Cycle Stop, and materials not available)
MachineStopLoss	Capacity Loss Due to Faults Or Machine Downtime	The capacity, in units, which was lost, caused by faults and idle time
StopLoss	Capacity Loss Due to All Stops	The capacity, in units, which was lost, caused by all stops (user stop loss and machine stop loss)
IdleStopLoss	Capacity Loss Due to System Being Idle	The capacity, in units, which was lost, caused by the system being idle (starved or blocked)
ExpectedOutput	Expected Output	The difference between Normal Production (NP) Capacity and Idle Stop Loss. NP Capacity is Target Capacity less Stop Loss
M(#)InfeedCount	Machine Infeed Product Count	The number of products fed into a specific machine infeed
M(#)UnitCount	Machine Unit Count	The number of good products discharged from a specific machine
M(#)RejectCount	Machine Reject Count	The number of products rejected from a specific machine
M(#)FaultCount	Machine Number of faults	The number of fault instances in a specific machine
M(#)FaultTime	Machine Fault Time	Total amount of time the system was not producing based on a specific machine's faults
M(#)FaultAckTime	Machine Fault Acknowledgement Time	The amount of fault acknowledgement time based on a specific machine's faults
M(#)MinFaultTime	Machine Minimum Fault Time	The shortest fault time length based on a specific machine's faults

Query Name	Short Description	Detailed Description
M(#)MaxFaultTime	Machine Maximum Fault Time	The longest fault time length based on a specific machine's faults
M(#)GDAFaultTime	Machine Greatest Deviation from Average Fault Time	The greatest deviation from average of fault time length based on a specific machine's faults
M(#)MinFaultAckTime	Machine Minimum Fault Ack Time	The shortest fault acknowledgement time based on a specific machine's faults
M(#)MaxFaultAckTime	Machine Maximum Fault Ack Time	The longest fault acknowledgement time based on a specific machine's faults
M(#)GDAFaultAckTime	Machine Greatest Deviation from Average Fault Ack Time	The greatest deviation from average fault acknowledgement time based on a specific machine's faults
R(#)StopsCount	Number of stops based on Reason Code	Total number of instances the machine was not producing based on one specific reason code
R(#)StopsTime	Stops Time based on Reason Code	Total amount of time the system was not producing based on one specific reason code
R(#)StopsMinTime	Stops Minimum Time based on Reason Code	Shortest amount of time the system was not producing based on one specific reason code
R(#)StopsMaxTime	Stops Maximum Time based on Reason Code	Longest amount of time the system was not producing based on one specific reason code
R(#)StopsGDATime	Stops Greatest Deviation from Average Stop Time based on Reason Code	Greatest deviation from average time the system was not producing based on one specific reason code

Edit Shifts Screen

General Page Information

This screen will display the edit shifts popup section. This will allow the user to edit the shift information for that machine. This will adjust anywhere the shift feature is used, such as the time period drop down menu as described on the Production Data Page. This will also affect the reports that are generated by the Report Generator. The Aagard Report Generator also uses the given shifts to generate the summary reports broken down by shift. More information about the Aagard Report Generator can be found in the Report Generator section.

NOTE: For proper recording and display of production data, the total of all shifts in one day *must* equal 24 hours

SAMPLE IMAGE

Check Box
This will allow the correct number of shifts to be used to be selected. If a shift is to be used, this box should be checked.

Begin Entry
This will be the begin time for the shift under this entry field.

End Entry
This will be the end time for the shift under this entry field.

NOTE: For proper recording and display of production data, the total of all shifts in one day ***must*** equal 24 hours.

Save
This button will save the Edit Shifts information and display the Production Data Page.

Cancel
This button will not save any changes made to the Edit Shifts information and display the Production Data Page.

Fault History Page

General Page Information

This page keeps a record of all faults generated. This may help with diagnosing any major problems or possible problems. These notices will be stored in the database for three days, and then will be deleted. The information displayed on this page is also accessible on the <u>View Notices System Wide</u> page.

SAMPLE IMAGE

C40 Filter
Click on the drop down arrow to view history for a particular C40. If a C40 is not listed, there are no messages to display.

Filter Buttons (Fault, Critical Fault, General, Warning, Reject, Debug, Utility, and Unhandled Not Shown)
These buttons represent different notice types. Press any button to filter those notices from the list. Pressing refresh will refresh the screen, displaying only those notice types selected.
- **Fault** – a message describing an unintended event which restricts the system's ability to produce
- **Critical Fault** – same as Fault, except the operator must acknowledge each Critical Fault individually
- **General** – an informational message which relays current existing conditions within the system
- **Warning** – a message describing an event which occurred, or an existing condition, which may cause a problem if not addressed
- **Reject** – a message describing why a product was rejected from the normal flow of product
- **Debug** – a message used during the debug stage of development to monitor for specific desired or undesired events
- **Utility** – a notice used to trigger a software utility
- **Unhandled Not Shown** – a message that is sent from the PLC but not defined in the Message data base
- **Production Data Not Shown** – a message used for production data collection

Individual Items
Click this button to display the items in the grid in chronological order.
   NOTE: When **Individual Items** is selected, the button color will be blue

Totaled
Click this button to display the items in the grid in a totaled fashion, displaying the number of times an item occurred. The items all totaled to allow the user to more easily view which items are occurring the most frequently.
   NOTE: When **Totaled** selected, the button color will be blue

A Aagard HMI - Notice History

Notice History for Inserter

Device	Location	Message	Count	
CS1AE Knife ...	Inserter	Cylinder Extend Switch Not M...	1	
MS1 Custom...	Inserter	VFD Faulted	2	
MS1 Custom...	Inserter	Invalid Program Call	16	
PE6 Register...	Inserter	Sensor Failure	8	
PE6 Register...	Inserter	Not Made During Startup	1	
PE2 Web Br...	Inserter	Web Break PE Not Blocked ...	1	
PE3 Loop Low	Inserter	Eye Not Blocked When Expe...	10	
SD2 Knife	Inserter	Lag Error	1	
SD1 Pinwheel	Inserter	Cam Load Failed	1	
CTRL1 HMI	Inserter	Switching To Sercos Phase 2 ...	1	

Edit Notes Button

Select a message in the grid and the Edit Notes Button becomes available. Click on the Edit Notes button to open a dialog window to add your notes to the messages. Double-clicking on the message itself also opens this dialog. Click OK on the dialog when finished.

Delete All Button

This button will delete the entire fault log. This will make any generated reports invalid since the Report Generator uses this fault log to generate its reports.

Refresh

This button will refresh the faults on the screen to the most current log at the time the refresh button was pressed, reflected by any filters which may have been selected.

Back Button

This button will return the user to the calling page.

Filter Drop Down List

Click on the drop down arrow to view available filters to apply to the list. Select a filter from the list to apply it. Depending on the selection, additional parameters become available to enter, such as dates and hours.

Column Options

To move a column from left to right, select a column from the dropdown list, and click Left or Right to move the column in either direction.

Device Column

This column displays the name of the device which generated the notice.

Message Column

This column displays the message which appeared on the notice. A list of possible messages, causes, and actions are given on the Message Notices section.

PLC Details Column

This column displays information received from the PLC when the notice was generated.

Shift Column

This column displays the shift in which the notice was recorded.

Down Time Column

This column displays time elapsed between notice display and when the system is started.

Ack Time Column

This column displays the length of time elapsed before the notice was acknowledged.

HMI Details Column

This column displays any additional information received from the HMI when the notice was generated.

Date Stamp Column

This column displays the date and time when the notice was generated.

Notes Column

This column displays any user entered information for the selected notice.

Notice Type

This column displays the type of notice recorded.

Location Column

This column displays the notice location or area of the machine.

Reject History Page

General Page Information

This page keeps a record of all rejects generated. This may help with diagnosing any major problems or possible problems. These notices will be stored in the database for three days, and then will be deleted. The information displayed on this page is also accessible on the View Notices System Wide page.

SAMPLE IMAGE

C40 Filter
Click on the drop down arrow to view history for a particular C40. If a C40 is not listed, there are no messages to display.

Filter Buttons (Fault, Critical Fault, General, Warning, Reject, Debug, Utility, and Unhandled Not Shown)
These buttons represent different notice types. Press any button to filter those notices from the list. Pressing refresh will refresh the screen, displaying only those notice types selected.
- **Fault** – a message describing an unintended event which restricts the system's ability to produce
- **Critical Fault** – same as Fault, except the operator must acknowledge each Critical Fault individually
- **General** – an informational message which relays current existing conditions within the system
- **Warning** – a message describing an event which occurred, or an existing condition, which may cause a problem if not addressed
- **Reject** – a message describing why a product was rejected from the normal flow of product
- **Debug** – a message used during the debug stage of development to monitor for specific desired or undesired events
- **Utility** – a notice used to trigger a software utility
- **Unhandled Not Shown** – a message that is sent from the PLC but not defined in the Message data base
- **Production Data Not Shown** – a message used for production data collection

Individual Items
Click this button to display the items in the grid in chronological order.
    NOTE: When **Individual Items** is selected, the button color will be blue
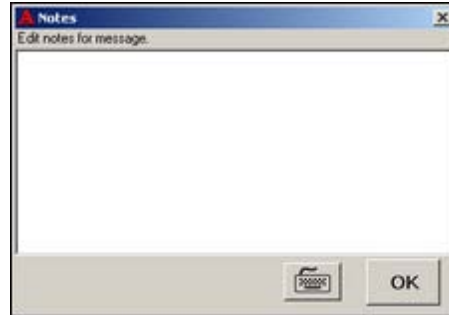
Totaled
Click this button to display the items in the grid in a totaled fashion, displaying the number of times an item occurred. The items all totaled to allow the user to more easily view which items are occurring the most frequently.
    NOTE: When **Totaled** selected, the button color will be blue

A Aagard HMI - Notice History

Notice History for Inserter

Device	Location	Message	Count	
CS1AE Knife ...	Inserter	Cylinder Extend Switch Not M...	1	
MS1 Custom...	Inserter	VFD Faulted	2	
MS1 Custom...	Inserter	Invalid Program Call	16	
PE6 Register...	Inserter	Sensor Failure	8	
PE6 Register...	Inserter	Not Made During Startup	1	
PE2 Web Br...	Inserter	Web Break PE Not Blocked ...	1	
PE3 Loop Low	Inserter	Eye Not Blocked When Expe...	10	
SD2 Knife	Inserter	Lag Error	1	
SD1 Pinwheel	Inserter	Cam Load Failed	1	
CTRL1 HMI	Inserter	Switching To Sercos Phase 2 ...	1	

Edit Notes Button

Select a message in the grid and the Edit Notes Button becomes available. Click on the Edit Notes button to open a dialog window to add your notes to the messages. Double-clicking on the message itself also opens this dialog. Click OK on the dialog when finished.

Delete All Button

This button will delete the entire fault log. This will make any generated reports invalid since the Report Generator uses this fault log to generate its reports.

Refresh

This button will refresh the faults on the screen to the most current log at the time the refresh button was pressed, reflected by any filters which may have been selected.

Back Button

This button will return the user to the calling page.

Filter Drop Down List

Click on the drop down arrow to view available filters to apply to the list. Select a filter from the list to apply it. Depending on the selection, additional parameters become available to enter, such as dates and hours.

Column Options

To move a column from left to right, select a column from the dropdown list, and click Left or Right to move the column in either direction.

Device Column

This column displays the name of the device which generated the notice.

Message Column

This column displays the message which appeared on the notice. A list of possible messages, causes, and actions are given on the Message Notices section.

PLC Details Column

This column displays information received from the PLC when the notice was generated.

Shift Column
This column displays the shift in which the notice was recorded.

Down Time Column
This column displays time elapsed between notice display and when the system is started.

Ack Time Column
This column displays the length of time elapsed before the notice was acknowledged.

HMI Details Column
This column displays any additional information received from the HMI when the notice was generated.

Date Stamp Column
This column displays the date and time when the notice was generated.

Notes Column
This column displays any user entered information for the selected notice.

Notice Type
This column displays the type of notice recorded.

Location Column
This column displays the notice location or area of the machine.

Jog Page

From here, the machine user is able to manually jog the prime movers that power the actions of this machine. This screen also contains the status of the selected servo drive, including Actual Position, Max Position Error, Max Torque and State – Enabled, Disabled, or Faulted. All Jogging functions are made in a manual mode, which means that no automatic functions govern their movements.

Servo Axis Jogging

To manually move a component that is driven by a servo motor, the user must define which servo axis they want to jog and select it from the servo axis drop down list. Once the machine is started and in the ready state and manual mode, the user may jog the servo axis in the desired direction. The State and Mode is displayed in the bottom left hand corner next to the Drive Status Display. Other servo jogging features include velocity, Go To Position (which sends the axis to that position), and an alternating jog function. Unlike non servo controlled motors and solenoid valves, a servo axis will only travel while the button is depressed. Once the button is released the axis will stop.

Warning: Jogging should be done very carefully and at a low velocity. This will eliminate damage to any obstructed machine parts. Use the jog velocity sliding bar to adjust velocity.

SAMPLE IMAGE

Servo Drive
To access different servo drives, use the servo drive drop down list.

Actual Position
This display will show the actual position of the Servo.

Jog Button
This button will jog the Servo Axis in the direction the button states.

Left Arrow
This button will adjust the Velocity Adjustor Bar to the left.

Jog Velocity
This bar can be dragged or moved via the Arrow buttons on the right or left of the bar to select the velocity of the Servo Axis selected in the servo drive drop down menu.

Right Arrow
This button will adjust the Velocity Adjustor Bar to the right.

Go To Target Position
This entry field will allow a position to be specified and, when the Go To Position button is pressed, the Servo Axis will move in the shortest direction to get to the specified position.

Go To Position
This button moves the Servo Axis to the position specified in the Go To Target Position entry field via the shortest way possible.

Tuning Box
The information contained in the Servo Drive Tuning Box is explained in further detail in the Servo Drive Tuning section.

Alternating Jog Box

The information contained in the Servo Drive Alternating Jog Box is explained in further detail in the Alternating Jog section.

Diagnose
This button will display a diagnostic popup for the currently selected Servo Drive. This diagnostic popup is described in further detail on the Drive Diagnostics Page.

Enable/Disable Servo Drive Button
Click this button to enable or disable this servo drive. If the drive is currently enabled, the button color will be green and the text will read Disable Servo Drive. If the drive is currently disabled, the button color will be red and the text will read Enable Servo Drive.

> **NOTE:** This feature is only available with the correct PLC framework version in place
> **NOTE:** This button will only be enabled when Manual Enabling is activated

Solenoid Valve Jogging
To manually move a component that is driven by a Solenoid Valve, the user must find which solenoid valve controls the component and select it from the solenoid valve drop down list. Once the machine is started and in the ready state and manual mode, the user may jog the solenoid valve in the desired direction. The State and Mode is displayed in the bottom left hand corner next to the Drive Status Display. Once a solenoid valve jog button is depressed, the valve will move in that direction until another direction button or a stop button is depressed.

SAMPLE IMAGE

Solenoid Valve
To access different solenoid valves, use the solenoid valve drop down list.

Left Jog Button
This button will jog the Solenoid Valve in the direction the button states. This button will energize the A Coil.

Center Jog Button
This button will jog the Solenoid Valve in the direction the button states. This button will d-energize the A and B Coils.

Right Jog Button
This button will jog the Solenoid Valve in the direction the button states. This button will energize the B Coil. Not all Solenoid Valves have this button.

Motor Jogging

To manually move a component that is driven by a non servo motor, the user must define which motor they want to jog and select it from the motor drop down list. Once the machine is started and in the ready state and manual mode, the user may jog the motor in the desired direction. The State and Mode is displayed in the bottom left hand corner next to the Drive Status Display. Once a motor jog button is depressed, the motor will continue to run in that direction until the "Stop" button is depressed or the machine is externally stopped (Cycle Stop or Emergency Stop).

SAMPLE IMAGE

Motor
To access different motors, use the motor drop down list.

Left Jog
This button will jog the Motor in the direction that the button states.

Center Jog
This button will shut off the Motor.

Right Jog
This button will jog the Motor in the direction the button states. Not all Motors have this button.

Speed
This entry field will set the speed at which the Motor will be jogged. Not all Motors have this entry field.

Drive Status Box
This box is located in the bottom left corner of this page. Information that is given is Actual Position, Max Position Error, Max Torque, and State of the Servo Drive. More information can be found on the [Drive Diagnostics Page](#).

Servo Drive Diagnostics Button
This button will display the [Drive Diagnostics Page](#).

Member Map Diag. Button
This button will display the [Member Map Diagnostics Page](#).

I/O Diagnostics Button
This button will display the [I/O Diagnostics Page](#).

Manual SD Enabling Button
This button will display the [Manual SD Enabling Page](#).
   NOTE: This feature is only available with the correct PLC framework version in place

Back Button
This button will close this page and go to the HMI Main Screen.

Manual SD Enabling

This page is used to activate the manual servo enabling feature. When activated, individual servos may be enabled on this page or on the jog page.

Servo Drive Name and ID
This label represents the name of the servo drive and its ID

Status Light
This light represents the actual enabled or disabled status of the servo drive. When the drive is enabled, the status light will be green. When the drive is disabled, the status light will be red.

Enable/Disable Servo Drive Button
Click this button to enable or disable this servo drive. If the drive is currently enabled, the button color will be green and the text will read Disable Servo Drive. If the drive is currently disabled, the button color will be red and the text will read Enable Servo Drive.

> **NOTE:** This feature is only available with the correct PLC framework version in place
> **NOTE:** This button will only be enabled when Manual Enabling is activated

Up/Down Navigation Buttons
Up and down navigation buttons will appear when not all servo drives fit onto one screen. When drives exist above the first drive shown at the top of the screen, a button with an up arrow will be displayed. When drives exist below

the last drive shown on the bottom of the screen, a button with a down arrow will be displayed.

Activate/Deactivate Manual Enabling

Press this button to activate or deactivate manual enabling of servo drives. When activated, the button color will be green and the text will read Deactivate Manual Enabling. When deactivated, the button color will be red and the text will read Activate Manual Enabling.

NOTE: When activating manual enabling, all currently enabled servo drives will become disabled

Back Button

Click here to return to the page which called this page.

Reference Page

General Page Information

Referencing is the process of setting a Servo Axis position in reference to a stationary object such as a sensor or a hard stop (travel limit). Any time the mechanical link between the servo motor and the object that the servo motor is moving has been violated (disconnected, jumped teeth), the servo motor will need to be referenced. If a servo motor is not working correctly, it may need to be replaced (please see the **Replacing an MI Drive** topic in the Troubleshooting Guide for more information).

The referencing process begins by moving the servo axis towards the stationary object used for determining the servo axis position. When the object is located, the servo motor will then move to the reference end position based on the capture position of the stationary object. When the servo axis reaches the reference end position, the motor will disable and the servo axis' position will be set. Once the position has been set, the servo axis will enable and reposition itself to the reference end position completing the reference process.

Settings for referencing each servo axis can be found on the Servo Drive Data Page.
A a summary of all servos and their reference positions can be viewed in the Servo Reference Positions topic in this manual.

SAMPLE IMAGE

Servo Drive

To access different servo drives, use the servo drive drop down list.

Do Reference Routine

This button will initiate the reference routine for the selected Servo Axis or Group of Servo Axis. The display in the bottom left hand corner of the page must display Ready and Manual in order to initiate the reference routine. If the start button is pressed until the top display changes to Starting, the machine will then get to Ready and the reference routine will be able to be initiated. Once the reference routine is finished, a window will popup which contains a picture of the servo correctly referenced. **NOTE:** If multiple servos are referenced in one routine, the window will popup after the complete routine is finished and it will contain tabs for each picture.

View Image Button
This button will open a window that displays the servo in the referenced position. This image is also displayed following the completion of a reference routine. To close window, click on the red X in right corner, click outside the popup, or press Esc.

NOTE: This button will not be visible if no image has been associated with the selected servo drive.

Actual Position
This display will show the actual position of the Servo.

Home Position
This display shows the position of the selected Servo's sensor or hard stop.

Home End Position
This display shows the actual position when the reference routine of the selected Servo is complete.

Reference Mark Position
The Reference Mark Position is the position the servo reads when lined up with the reference mark.

Reference Mark Location
The Reference Mark Location is a precise description of the reference mark placement in relation to a fixed member of the machine.

Direction of Positive Movement
The Direction of Positive Movement is the direction of movement which causes a positive change in the position read out.

Reference Done
This display will show "Reference Done" when the reference routine has completed successfully.

Reference Pos. Difference
This display will show the difference between the old reference position and the new reference position.

SD Data Input Button
This button will display the Servo Drive Data Page.

SV Data Input Button
This button will display the Solenoid Data Page.

MT Data Input Button
This button will display the Motor Data Page.

Diagnose Button

This button will display a diagnostic popup for the currently selected Servo Drive. This diagnostic popup is described in further detail on the [Drive Diagnostics Page](#).

Servo Drive Diagnostics Button

This button will display the [Drive Diagnostics Page](#).

Member Map Diag. Button

This button will display the [Member Map Diagnostics Page](#).

I/O Diagnostics Button

This button will display the [I/O Diagnostics Page](#).

Back Button

This button will close this page and go to the HMI Main Screen.

Advanced Page

General Page Information

This screen provides access to advanced functions on the machine.

NOTE: Depending on user level, not all buttons will be visible

Shutdown Computer

This button will activate the process of powering down the PC on which the Aagard HMI is located. Pressing this button will stop instantly any operations the machine is doing. Shutdown Warning

Failure to properly shut down the PC may void the warranty!

Switch on	The Industrial PC does not have its own main switch. The Industrial PC will start when the equipment is switched on, or when it is connected to the power supply.

Shutting down and switching off	When the plant is switched off, or when it is disconnected from its power supply, the Industrial PC will be switched off. Control software such as is typically used on Industrial PCs permits various users to be given different rights. A user who may not close software may also not switch the Industrial PC off, since data can be lost from the hard disk by switching off while software is running
⚠️ Warning!	**First shut down, then switch off the PC!** If the Industrial PC is switched off as the software is writing a file to the hard disk, the file will be destroyed. Control software typically writes something to the hard disk every few seconds, so the probability of causing damage by switching off the PC while the software is running is very high!
⚠️ Warning!	When you have shut down the Industrial PC, you have to switch off power supply for at least 10 seconds before rebooting the system. After resetting power supply, the PC will start booting automatically.

To properly shut down the PC, contact a Level 2 or higher Operator.

Restart Computer
This button will activate the process of restarting the PC on which the Aagard HMI is located. Pressing this button will stop instantly any operations the machine is doing.

ADCOMS
When ADCOMS in enabled, this button will give access to the ADCOMS pages. Full ADCOMS Documentation is available by pressing the Help button on the ADCOMS Main page.

HMI Setup
This button gives access to the Main Page tab which allows the user to choose to view the Production Data in Classic style or as an HTML page. **Level 3 access required.**

Glue Group
Changes made on these pages will only affect the current downloaded product
- These buttons will open the corresponding glue pages.

Data Group
Data on these pages is for information only, and should not need to be changed on these pages
- **View Notices System Wide Button** - This button will open the View Notices System Wide Page.
- **View Change Log Button** - This button will open the Change Log Page.
- **Misc Tags Button** - This button will open the Misc Tags Page.
- **View Changeover Adjustments Button** - This button will open the View Changeover Adjustments Page.
- **Marquee Button** - This button will open the Marquee Page, if installed.
- **GMI Tags Button** - This button will open the Tags Page, if installed.

Diagnostics Group
Data on these pages is for information only
- **Servo Drive Diagnostics Button -** This button will open the Drive Diagnostics Page.
- **Member Map Diagnostics Button -** This button will open the Member Map Diagnostics Page.
- **I/O Diagnostics Button -** This button will open the I/O Diagnostics Page.
- **Sercos Diagnostics Button** - This button will open the Sercos Diagnostics Page.

Help Group
Buttons in this group will launch Help programs
- **Servo Drive Help -** This button will launch the Servo Drive Help program.
- **Beckhoff Information System -** This button will launch the Beckhoff Information System program.
- **Aagard Logo -** This button will open the Aagard Machine Operator Manual from the HMI.
  o The user may be prompted to install a documentation update

- **Button** - When installed, this button will open the Aagard Troubleshooting Guide.
  o The user may be prompted to install a documentation update

Test Carton Qty Field
The machine will pick this number of test cartons when the Start Button is pressed during machine operation, or when the start button is held longer than three seconds when starting the machine.

Test Carton
To pick and form one empty carton, and reject it from the cartoner, press the Test Carton Button while the machine is running

Remove Aagard Available For Product
This will remove the signal sent out from the Aagard telling upstream equipment that it is available for product. Selecting this will stop upstream equipment from sending product to the Aagard system.

Ignore Downstream Available
This ignores the "Downstream Available for Product" signal coming from downstream equipment. Selecting this will allow the machine to run and produce product even when downstream equipment isn't available to take product.

Set Up Users Button
This button will open the Setup Users Page. This button is only visible when logged in as Administrator Level.

Back Button
This button will close this page and go to the HMI Main Screen.

Glue Group

Glue Page

General Page Information

If this feature is installed, this page allows the user to easily adjust the available glue pattern. This page shows the product as it moves through the glue heads looking at it from the operator (HMI) side of the machine (*The direction of the blue arrow indicates the direction of product flow).*

Stitch Adjust Information

To display the stitch adjustment popup in the bottom center of the screen, click on any red glue stitch that needs to be adjusted. This popup will display all the adjustment information for the selected stitch.

SAMPLE IMAGE

- **On**

This is the on point of the selected stitch. **NOTE:** The ON value must be less than the OFF value!

- **Off**

This is the off point of the selected stitch. **NOTE:** The OFF value must be greater than the ON value!

- **Left Arrow**

This arrow will move the selected stitch point to the left relative to the product shown in the picture.

- **Right Arrow**

This arrow will move the selected stitch point to the right relative to the product shown in the picture.

- **Master Offset**

This will adjust the start of the cam relative to the designated servo axis. Usually the cam will relate to a position of a servo axis that is moving the product, such as flight chains.

- **Stitch Gap %**

This is the percent of glue stitch that is taken out of the center of the selected glue stitch.

NOTE: This setting applies to Case Packers only!

- **Use Gap Check Box**

This will allow the user to decide if there is to be a gap stitch applied or a full stitch applied.

NOTE: This setting applies to Case Packers only, when this feature is enabled!

Edit

This button will open the page in edit mode. **Aagard user level required!**

Back

This button will display the .

Data Group

View Notices System Wide

General Page Information

This page keeps a record of all notices generated. This may help with diagnosing any major problems or possible problems. These notices will be stored in the database for three days, and then will be deleted.

SAMPLE IMAGE

C40 Filter
Click on the drop down arrow to view history for a particular C40. If a C40 is not listed, there are no messages to display.

Filter Buttons (Fault, Critical Fault, General, Warning, Reject, Debug, Utility, and Unhandled Not Shown)
These buttons represent different notice types. Press any button to filter those notices from the list. Pressing refresh will refresh the screen, displaying only those notice types selected.
- **Fault** – a message describing an unintended event which restricts the system's ability to produce
- **Critical Fault** – same as Fault, except the operator must acknowledge each Critical Fault individually
- **General** – an informational message which relays current existing conditions within the system
- **Warning** – a message describing an event which occurred, or an existing condition, which may cause a problem if not addressed
- **Reject** – a message describing why a product was rejected from the normal flow of product
- **Debug** – a message used during the debug stage of development to monitor for specific desired or undesired events
- **Utility** – a notice used to trigger a software utility
- **Unhandled Not Shown** – a message that is sent from the PLC but not defined in the Message data base
- **Production Data Not Shown** – a message used for production data collection

Individual Items
Click this button to display the items in the grid in chronological order.
> **NOTE:** When **Individual Items** is selected, the button color will be blue

Totaled
Click this button to display the items in the grid in a totaled fashion, displaying the number of times an item occurred. The items all totaled to allow the user to more easily view which items are occurring the most frequently.
> **NOTE:** When **Totaled** selected, the button color will be blue

A Aagard HMI - Notice History

Notice History for Inserter

Device	Location	Message	Count	
CS1AE Knife ...	Inserter	Cylinder Extend Switch Not M...	1	
MS1 Custom...	Inserter	VFD Faulted	2	
MS1 Custom...	Inserter	Invalid Program Call	16	
PE6 Register...	Inserter	Sensor Failure	8	
PE6 Register...	Inserter	Not Made During Startup	1	
PE2 Web Br...	Inserter	Web Break PE Not Blocked ...	1	
PE3 Loop Low	Inserter	Eye Not Blocked When Expe...	10	
SD2 Knife	Inserter	Lag Error	1	
SD1 Pinwheel	Inserter	Cam Load Failed	1	
CTRL1 HMI	Inserter	Switching To Sercos Phase 2 ...	1	

Edit Notes Button
Select a message in the grid and the Edit Notes Button becomes available. Click on the Edit Notes button to open a dialog window to add your notes to the messages. Double-clicking on the message itself also opens this dialog. Click OK on the dialog when finished.

Delete All Button
This button will delete the entire fault log. This will make any generated reports invalid since the Report Generator uses this fault log to generate its reports.

Refresh
This button will refresh the faults on the screen to the most current log at the time the refresh button was pressed, reflected by any filters which may have been selected.

Back Button
This button will return the user to the calling page.

Filter Drop Down List
Click on the drop down arrow to view available filters to apply to the list. Select a filter from the list to apply it. Depending on the selection, additional parameters become available to enter, such as dates and hours.

Column Options
To move a column from left to right, select a column from the dropdown list, and click Left or Right to move the column in either direction.

Device Column
This column displays the name of the device which generated the notice.

Message Column
This column displays the message which appeared on the notice. A list of possible messages, causes, and actions are given on the Message Notices section.

PLC Details Column
This column displays information received from the PLC when the notice was generated.

Shift Column
This column displays the shift in which the notice was recorded.

Down Time Column
This column displays time elapsed between notice display and when the system is started.

Ack Time Column
This column displays the length of time elapsed before the notice was acknowledged.

HMI Details Column
This column displays any additional information received from the HMI when the notice was generated.

Date Stamp Column
This column displays the date and time when the notice was generated.

Notes Column
This column displays any user entered information for the selected notice.

Notice Type
This column displays the type of notice recorded.

Location Column
This column displays the notice location or area of the machine.

Message Notices

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 Error - MDT Count	Noise was detected in transmission	Check fiber optic connections at I/O brick, check fiber optic connections before brick	Warning
B1	Brick 1 SERCOS Bus Coupler	SERCOS Communication Error - MST Count	Noise was detected in transmission	Check fiber optic connections at I/O brick, check fiber optic connections before brick	Warning
B5	Brick 5 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
B5	Brick 5 SERCOS Bus Coupler	SERCOS Communication Error - MDT Count	Noise was detected in transmission	Check fiber optic connections at I/O brick, check fiber optic connections before brick	Warning
B5	Brick 5 SERCOS Bus Coupler	SERCOS Communication Error - MST Count	Noise was detected in transmission	Check fiber optic connections at I/O brick, check fiber optic connections before brick	Warning
C204	Case Packer SD Reference	Invalid Axis Type	A virtual axis cannot be referenced	Do not reference a virtual axis	Fault
C204	Case Packer SD Reference	Invalid Reference Type	The reference type selected is not correct	Choose correct reference type for specified servo drive	Fault
C204	Case Packer SD Reference	Probe Sensor Not Found	The probe sensor was not detected during the reference routine	Check the probe sensor and the probe setup data	Fault
C204	Case Packer SD Reference	Reference Parameter Error	The reference type selected is not allowed on that axis type	Choose correct reference type for specified servo drive	Fault
C204	Case Packer SD Reference	Reference Routine Failed	Reference routine failed	Check message details for specific error message	Fault
C204	Case Packer SD Reference	Switch Sensor Not Found	The switch sensor was not detected during the reference routine	Check the switch sensor and the switch setup data	Fault
C205	Case Packer Downstacker Reference	Invalid Axis Type	A virtual axis cannot be referenced	Do not reference a virtual axis	Fault
C205	Case Packer Downstacker Reference	Invalid Reference Type	The reference type selected is not correct	Choose correct reference type for specified servo drive	Fault
C205	Case Packer Downstacker Reference	Probe Sensor Not Found	The probe sensor was not detected during the reference routine	Check the probe sensor and the probe setup data	Fault

Device	Name	Text	Cause	Remedy	Type
C20 5	Case Packer Downstacker Reference	Reference Parameter Error	The reference type selected is not allowed on that axis type	Choose correct reference type for specified servo drive	Fault
C20 5	Case Packer Downstacker Reference	Reference Routine Failed	Reference routine failed	Check message details for specific error message	Fault
C20 5	Case Packer Downstacker Reference	Switch Sensor Not Found	The switch sensor was not detected during the reference routine	Check the switch sensor and the switch setup data	Fault
C20 9	Palletizer SD Reference	Invalid Axis Type	A virtual axis cannot be referenced	Do not reference a virtual axis	Fault
C20 9	Palletizer SD Reference	Invalid Reference Type	The reference type selected is not correct	Choose correct reference type for specified servo drive	Fault
C20 9	Palletizer SD Reference	Probe Sensor Not Found	The probe sensor was not detected during the reference routine	Check the probe sensor and the probe setup data	Fault
C20 9	Palletizer SD Reference	Reference Parameter Error	The reference type selected is not allowed on that axis type	Choose correct reference type for specified servo drive	Fault
C20 9	Palletizer SD Reference	Reference Routine Failed	Reference routine failed	Check message details for specific error message	Fault
C20 9	Palletizer SD Reference	Switch Sensor Not Found	The switch sensor was not detected during the reference routine	Check the switch sensor and the switch setup data	Fault
C20 11	Case Packer Downstacker	Flights Too Close To Each Other	The current configuration data caused the machine to call moves on the downstacker flights such that they would have crashed together; this prevented that crash	Check the configuration data, separate the downstacker flights, and restart the machine	Fault
C20 11	Case Packer Downstacker	Invalid Product At Top Of Downstacker	The search routine of the downstacker returned an invalid product in the downstacker; the top layer contains no first product, but it contains a second product	Arrange the cartons in the downstacker correctly, check downstacker photo eyes for proper operation, and restart the machine	Fault
C20 15	Case Packer Case Former	Multiple Rejects Detected	There were three identical open flap case rejects in a row	Check the changeover adjustments, check the two open flap photo eyes and the distorted case photo eye for proper operation, and restart machine	Fault

Device	Name	Text	Cause	Remedy	Type
C20 15	Case Packer Case Former	Partial Case Reject Detected	A partial case was detected during clean out of the machine	No action required	Reject
C20 16	Palletizer Tip Reject	Case Refeed Enabled	The case refeed enable button was pressed on the HMI	When finished refeeding cases, disable the case refeed enable button on the HMI and restart case packer	Warning
C20 16	Palletizer Tip Reject	Case Refeed Mode Selected	The case refeed enable button was pressed on the HMI	When finished refeeding cases, disable the case refeed enable button on the HMI and restart case packer	General, Warning
C20 16	Palletizer Tip Reject	Clear	Not applicable	Not applicable	General
C20 16	Palletizer Tip Reject	QC Case Reject	The QC case button was pressed on the HMI	No action required	Reject
C20 19	Palletizer Slip Sheet Cube Discharge	Partial Cube Reject	The eject cube button on the HMI was pressed, or a clean out was performed	No action required	Reject
C40 2	Case Packer	Cannot Send or Accept Product	Equipment downstream of this C40 cannot accept product	Address issue with downstream being unable to accept product	General
C40 2	Case Packer	Cannot Send or Accept Product Clear	C40 is not waiting on downstream or upstream sending product	No action required	General
C40 2	Case Packer	Faulted State	Used for Louise data collection	No action required	Utility
C40 2	Case Packer	Infeed Product Count	Used for Louise data collection	No action required	Utility
C40 2	Case Packer	Products Per Unit	Used for Louise data collection	No action required	Utility
C40 2	Case Packer	Reject Unit Count	Used for Louise data collection	No action required	Utility
C40 2	Case Packer	Up-To-Standard Unit	Used for Louise data collection	No action required	Utility
C40 3	Orienter	Cannot Send or Accept Product	Equipment downstream of this C40 cannot accept product	Address issue with downstream being unable to accept product	General
C40 3	Orienter	Cannot Send or Accept Product Clear	C40 is not waiting on downstream or upstream sending product	No action required	General
C40 3	Orienter	Faulted State	Used for Louise data collection	No action required	Utility
C40 3	Orienter	Infeed Product Count	Used for Louise data collection	No action required	Utility
C40 3	Orienter	Products Per Unit	Used for Louise data collection	No action required	Utility

Device	Name	Text	Cause	Remedy	Type
C40 3	Orienter	Reject Unit Count	Used for Louise data collection	No action required	Utility
C40 3	Orienter	Up-To-Standard Unit	Used for Louise data collection	No action required	Utility
CR30201	Case Packer Software E Stop	Not Ready	A condition in the PLC is requiring a software emergency stop	Check reasons for PLC emergency stop condition	General
CR30201	Case Packer Software E Stop	Ready	Software emergency stop contact is closed	No action required	General
CR50101	Orienter Software E Stop	Not Ready	A condition in the PLC is requiring a software emergency stop	Check reasons for PLC emergency stop condition	General
CR50101	Orienter Software E Stop	Ready	Software emergency stop contact is closed	No action required	General
ES24301	System Emergency Stop	Depressed	The emergency stop button is depressed	Pull the emergency stop button out to resume machine operation	General
ES24301	System Emergency Stop	Pulled	The emergency stop button is released	No action required	General
ES24303	Case Packer Non Operator Side Emergency Stop	Depressed	The emergency stop button is depressed	Pull the emergency stop button out to resume machine operation	General
ES24303	Case Packer Non Operator Side Emergency Stop	Pulled	The emergency stop button is released	No action required	General
ES24304	Case Packer Operator Side Emergency Stop	Depressed	The emergency stop button is depressed	Pull the emergency stop button out to resume machine operation	General
ES24304	Case Packer Operator Side Emergency Stop	Pulled	The emergency stop button is released	No action required	General
ES26303	Orienter Operator Side Emergency Stop	Depressed	The emergency stop button is depressed	Pull the emergency stop button out to resume machine operation	General
ES26303	Orienter Operator Side Emergency Stop	Pulled	The emergency stop button is released	No action required	General
ES26304	Orienter Non Operator Side Emergency Stop	Depressed	The emergency stop button is depressed	Pull the emergency stop button out to resume machine operation	General
ES26304	Orienter Non Operator Side Emergency Stop	Pulled	The emergency stop button is released	No action required	General
GR20601	Case Packer Guard Relay	Guard Relay Reset Check Failed	A check was performed after all guard doors in this circuit were closed to see if the guard	If problem persists, check guard circuit	Warning

Device	Name	Text	Cause	Remedy	Type
			relay was reset; this check failed		
GR20601	Case Packer Guard Relay	Not Ready	The guard relay is not ready when all guard doors in its circuit are closed	Try opening and closing a guard door in the circuit to reset it; if that fails check guard circuit	General
GR20601	Case Packer Guard Relay	Ready	Guard relay circuit is ready	No action required	General
GR26401	Orienter Guard Relay	Guard Relay Reset Check Failed	A check was performed after all guard doors in this circuit were closed to see if the guard relay was reset; this check failed	If problem persists, check guard circuit	Warning
GR26401	Orienter Guard Relay	Not Ready	The guard relay is not ready when all guard doors in its circuit are closed	Try opening and closing a guard door in the circuit to reset it; if that fails check guard circuit	General
GR26401	Orienter Guard Relay	Ready	Guard relay circuit is ready	No action required	General
GS24501	Guard Door 2_1	Closed	Door is closed	No action required	General
GS24501	Guard Door 2_1	Open	Door is open	Close guard door	General
GS24501	Guard Door 2_1	Open When Not Expected	Door was opened while the machine safety relay was active	Properly E-Stop machine before opening a guard door	Utility
GS24502	Guard Door 2_2	Closed	Door is closed	No action required	General
GS24502	Guard Door 2_2	Open	Door is open	Close guard door	General
GS24502	Guard Door 2_2	Open When Not Expected	Door was opened while the machine safety relay was active	Properly E-Stop machine before opening a guard door	Utility
GS24503	Guard Door 2_3	Closed	Door is closed	No action required	General
GS24503	Guard Door 2_3	Open	Door is open	Close guard door	General
GS24503	Guard Door 2_3	Open When Not Expected	Door was opened while the machine safety relay was active	Properly E-Stop machine before opening a guard door	Utility
GS24504	Guard Door 2_4	Closed	Door is closed	No action required	General
GS24504	Guard Door 2_4	Open	Door is open	Close guard door	General
GS24504	Guard Door 2_4	Open When Not Expected	Door was opened while the machine safety relay was active	Properly E-Stop machine before opening a guard door	Utility
GS24505	Guard Door 2_5	Closed	Door is closed	No action required	General
GS24505	Guard Door 2_5	Open	Door is open	Close guard door	General
GS24505	Guard Door 2_5	Open When Not Expected	Door was opened while the machine safety relay was active	Properly E-Stop machine before opening a guard door	Utility
GS24508	Guard Door 2_6	Closed	Door is closed	No action required	General

Device	Name	Text	Cause	Remedy	Type
GS24508	Guard Door 2_6	Open	Door is open	Close guard door	General
GS24508	Guard Door 2_6	Open When Not Expected	Door was opened while the machine safety relay was active	Properly E-Stop machine before opening a guard door	Utility
GS24509	Guard Door 2_7	Closed	Door is closed	No action required	General
GS24509	Guard Door 2_7	Open	Door is open	Close guard door	General
GS24509	Guard Door 2_7	Open When Not Expected	Door was opened while the machine safety relay was active	Properly E-Stop machine before opening a guard door	Utility
GS26501	Guard Door 3_1	Closed	Door is closed	No action required	General
GS26501	Guard Door 3_1	Open	Door is open	Close guard door	General
GS26501	Guard Door 3_1	Open When Not Expected	Door was opened while the machine safety relay was active	Properly E-Stop machine before opening a guard door	Utility
GT9001	Glue System	Glue Level OK	The glue level is okay	No action required	General
GT9001	Glue System	Glue System Faulted	The glue system has experienced an internal fault	Check glue system display for fault information	Fault
GT9001	Glue System	Low Glue Level	The glue level is low	Fill glue tank	General
GT9001	Glue System	Not Ready	The glue system is not ready for normal operation	Check glue system	General
GT9001	Glue System	Ready	The glue system is ready for normal operation	No action required	General
HCS2	Case Packer Servo Power Converter	Failed To Clear Fault	Power supply faults were not cleared upon startup	Check the diagnostic display on the Power supply for diagnostics	Fault
HCS2	Case Packer Servo Power Converter	Power Supply Faulted	The power supply has an internal fault	Check the diagnostic display on the Power supply for diagnostics	Fault
HCS3	Orienter Servo Power Converter	Failed To Clear Fault	Power supply faults were not cleared upon startup	Check the diagnostic display on the Power supply for diagnostics	Fault
HCS3	Orienter Servo Power Converter	Power Supply Faulted	The power supply has an internal fault	Check the diagnostic display on the Power supply for diagnostics	Fault
MT807	Case Conveyor	Forward Sensor Not Made In Time	The forward sensor for the motor was not made when it was expected	Check motor for jam, check forward sensor	Fault
MT807	Case Conveyor	Input Parameter Error	The configuration data for the motor is incorrect	Fix data configuration, check programming	Fault
MT807	Case Conveyor	Invalid Program Call	The configuration data for the motor is incorrect	Fix data configuration, check programming	Fault

Device	Name	Text	Cause	Remedy	Type
MT807	Case Conveyor	Motor Overloaded	The motor has overloaded	Check motor for overload reason	Fault
MT807	Case Conveyor	Off Sensor Not Made In Time	The motor did not stop when expected	Check motor for jam, check off sensor	Fault
MT807	Case Conveyor	Reverse Sensor Not Made In Time	The reverse sensor for the motor was not made when it was expected	Check motor for jam, check reverse sensor	Fault
MT807	Case Conveyor	Vacuum Sensor Not Made In Time	The vacuum sensor for the motor was not made when it was expected	Check vacuum, check vacuum sensor	Fault
MT807	Case Conveyor	VFD Faulted	The VFD has an internal fault	Check VFD for diagnostics	Fault
MT1303	Infeed Conveyor	Forward Sensor Not Made In Time	The forward sensor for the motor was not made when it was expected	Check motor for jam, check forward sensor	Fault
MT1303	Infeed Conveyor	Input Parameter Error	The configuration data for the motor is incorrect	Fix data configuration, check programming	Fault
MT1303	Infeed Conveyor	Invalid Program Call	The configuration data for the motor is incorrect	Fix data configuration, check programming	Fault
MT1303	Infeed Conveyor	Motor Overloaded	The motor has overloaded	Check motor for overload reason	Fault
MT1303	Infeed Conveyor	Off Sensor Not Made In Time	The motor did not stop when expected	Check motor for jam, check off sensor	Fault
MT1303	Infeed Conveyor	Reverse Sensor Not Made In Time	The reverse sensor for the motor was not made when it was expected	Check motor for jam, check reverse sensor	Fault
MT1303	Infeed Conveyor	Vacuum Sensor Not Made In Time	The vacuum sensor for the motor was not made when it was expected	Check vacuum, check vacuum sensor	Fault
MT1303	Infeed Conveyor	VFD Faulted	The VFD has an internal fault	Check VFD for diagnostics	Fault
MT1502	Tip/Reject Conveyor	Forward Sensor Not Made In Time	The forward sensor for the motor was not made when it was expected	Check motor for jam, check forward sensor	Fault
MT1502	Tip/Reject Conveyor	Input Parameter Error	The configuration data for the motor is incorrect	Fix data configuration, check programming	Fault

Device	Name	Text	Cause	Remedy	Type
MT1502	Tip/Reject Conveyor	Invalid Program Call	The configuration data for the motor is incorrect	Fix data configuration, check programming	Fault
MT1502	Tip/Reject Conveyor	Motor Overloaded	The motor has overloaded	Check motor for overload reason	Fault
MT1502	Tip/Reject Conveyor	Off Sensor Not Made In Time	The motor did not stop when expected	Check motor for jam, check off sensor	Fault
MT1502	Tip/Reject Conveyor	Reverse Sensor Not Made In Time	The reverse sensor for the motor was not made when it was expected	Check motor for jam, check reverse sensor	Fault
MT1502	Tip/Reject Conveyor	Vacuum Sensor Not Made In Time	The vacuum sensor for the motor was not made when it was expected	Check vacuum, check vacuum sensor	Fault
MT1502	Tip/Reject Conveyor	VFD Faulted	The VFD has an internal fault	Check VFD for diagnostics	Fault
OL1402	Side Belt Non	Overloaded	The overload relay detected an over current to the motor	Check for jams, check that drive moves freely, check overload relay settings, and restart machine	Fault
OL1405	Side Belt Operator Side	Overloaded	The overload relay detected an over current to the motor	Check for jams, check that drive moves freely, check overload relay settings, and restart machine	Fault
PB31306	System Start	Depressed	Button is depressed	Release button	General
PB31306	System Start	Released	Button is released	No action required	General
PB31307	System Cycle Stop	Depressed	Button is depressed	Release button	General
PB31307	System Cycle Stop	Released	Button is released	No action required	General
PB31401	Case Packer System Start	Depressed	Button is depressed	Release button	General
PB31401	Case Packer System Start	Released	Button is released	No action required	General
PB31402	Case Packer Non Op Side Cycle Stop	Depressed	Button is depressed	Release button	General
PB31402	Case Packer Non Op Side Cycle Stop	Released	Button is released	No action required	General
PB31404	Case Packer Operator Side Cycle Stop	Depressed	Button is depressed	Release button	General
PB31404	Case Packer Operator Side Cycle Stop	Released	Button is released	No action required	General
PB51105	Orienter Operator Side Cycle Stop	Depressed	Button is depressed	Release button	General
PB51105	Orienter Operator Side Cycle Stop	Released	Button is released	No action required	General
PB51107	Orienter Non Operator Side Cycle Stop	Depressed	Button is depressed	Release button	General
PB51107	Orienter Non Operator Side Cycle Stop	Released	Button is released	No action required	General
PC1	HMI	Battery OK	The UPS battery is functioning properly	No action required	General

Device	Name	Text	Cause	Remedy	Type
PC1	HMI	CPU Exceeded Critical Temperature	The CPU has reached a critical temperature and must shut down	Verify PC cooling system is functioning (if applicable); check cabinet temperatures	Critical Fault
PC1	HMI	CPU Exceeded Desired Usage Amount	The CPU exceeded an expected amount.	If problem persists, check programming	Warning
PC1	HMI	Fan 0 RPM Out Of Expected Range	PC cooling system not functioning properly	Verify PC fans are operational and not jammed; remove any dirt or debris from the air intake	General, Warning
PC1	HMI	Fan 0 RPM Speed OK	Fan is functioning properly	No action required	General
PC1	HMI	Fan 1 RPM Out Of Expected Range	PC cooling system not functioning properly	Verify PC fans are operational and not jammed; remove any dirt or debris from the air intake	General, Warning
PC1	HMI	Fan 1 RPM Speed OK	Fan is functioning properly	No action required	General
PC1	HMI	Fan 2 RPM Out Of Expected Range	PC cooling system not functioning properly	Verify PC fans are operational and not jammed; remove any dirt or debris from the air intake	General, Warning
PC1	HMI	Fan 2 RPM Speed OK	Fan is functioning properly	No action required	General
PC1	HMI	HMI Requested Restart	The Restart Computer button was pressed on the Advanced page	No Action Required	Fault
PC1	HMI	HMI Requested Shutdown	The Shutdown Computer button was pressed on the Advanced page	No Action Required	Fault
PC1	HMI	Mother Board Exceeded Critical Temperature	The motherboard has reached a critical temperature and must shut down	Verify PC cooling system is functioning (if applicable); check cabinet temperatures	Critical Fault
PC1	HMI	Mother Board Exceeded Warning Temperature	The motherboard has reached a high temperature	Verify PC cooling system is functioning (if applicable); check cabinet temperatures	General, Warning
PC1	HMI	PCU Exceeded Warning Temperature	The CPU has reached a high temperature	Verify PC cooling system is functioning (if applicable); check cabinet temperatures	General, Warning
PC1	HMI	PLC Shutdown PC	The PLC Shutdown the PC	Check for other message which might indicate why the PLC shutdown the PC	Critical Fault
PC1	HMI	Power On Battery	Power is being supplied via battery voltage	Restore normal power	General, Critical Fault
PC1	HMI	Power On Line	Power is being supplied via line voltage	No action required	General
PC1	HMI	Replace UPS Battery	The UPS battery has failed	Replace the UPS battery	General, Warning

Device	Name	Text	Cause	Remedy	Type
PC1	HMI	SERCOS Communication - In Phase 4	SERCOS is in phase 4	No action required	General
PC1	HMI	SERCOS Communication Error - FibBr Count	Communication error - FibBr count was incremented	Check SERCOS ring for bad connections	Warning
PC1	HMI	SERCOS Communication Error - MST Early Count	Communication error -MST Early count was incremented	Check SERCOS ring for bad connections	Warning
PC1	HMI	SERCOS Communication Error - MST Late Count	Communication error - MST Late count was incremented	Check SERCOS ring for bad connections	Warning
PC1	HMI	SERCOS Communication Error - Not In Phase 4	SERCOS is not in phase 4	Verify ring is intact and reinitialize the system	General
PC1	HMI	SERCOS Communication Error - R Count	Communication error - R count was incremented	Check SERCOS ring for bad connections	Warning
PC1	HMI	SERCOS Communication Error - RDist Count	Communication error - RDist count was incremented	Check SERCOS ring for bad connections	Warning
PC1	HMI	SERCOS Communication Error - Timing Count 1	Communication error - timing count 1 was incremented	Check SERCOS ring for bad connections	Warning
PC1	HMI	SERCOS Communication Error - Timing Count 2	Communication error - timing count 2 was incremented	Check SERCOS ring for bad connections	Warning
PC1	HMI	Shutdown For Power Loss	Power was lost to the PC and it shut itself down	Check power supply	Critical Fault
PC1	HMI	Switching To SERCOS Phase 0 Error	Initialization failed when switching to SERCOS phase 0	Check diagnostics messages on SERCOS devices	Fault
PC1	HMI	Switching To SERCOS Phase 2 Error	Initialization failed when switching to SERCOS phase 2	Check diagnostics messages on SERCOS devices	Fault
PC1	HMI	Switching To SERCOS Phase 3 Error	Initialization failed when switching to SERCOS phase 3	Check diagnostics messages on SERCOS devices	Fault
PC1	HMI	Switching To SERCOS Phase 4 Error	Initialization failed when switching to SERCOS phase 4	Check diagnostics messages on SERCOS devices	Fault
PC1	HMI	System Exceeded Critical Temperature	The system has reached a critical temperature and must shut down	Verify PC cooling system is functioning (if applicable); check cabinet temperatures	Critical Fault

Device	Name	Text	Cause	Remedy	Type
PC1	HMI	System Exceeded Warning Temperature	The system has reached a high temperature	Verify PC cooling system is functioning (if applicable), check cabinet temperatures	General, Warning
PC1	HMI	Temp 0 Temperature OK	CPU temperature is okay	No action required	General
PC1	HMI	Temp 1 Temperature OK	System temperature is okay	No action required	General
PC1	HMI	Temp MB Temperature OK	Motherboard temperature is okay	No action required	General
PC1	HMI	Unknown Power Status	The status of the power is unknown	Verify that power is connected properly	General, Warning
PC1	HMI	Unknown UPS Battery Status	The status of the battery is unknown	Verify the battery is connected properly; replace the battery, if necessary	General, Warning
PC1	HMI	Unknown UPS Comm Status	The status of the UPS communication is unknown	Verify UPS communication	General, Warning
PC1	HMI	UPS Comm Failed	Communication with the UPS has failed	Verify UPS communication	General, Warning
PC1	HMI	UPS Comm OK	Communication with the UPS is working	No action required	General
PC1	HMI	UPS System Fault	The UPS system has faulted	Check UPS; replace the UPS system, if necessary	Warning
PC1	HMI	Volt 12 Level OK	Supply voltage is within recommended range	No action required	General
PC1	HMI	Volt 12 Out of Range	Supply voltage is not within recommended range	Verify power supply is functioning correctly; check for short circuit	General, Warning
PC1	HMI	Volt 2a Level OK	Supply voltage is within recommended range	No action required	General
PC1	HMI	Volt 2a Out of Range	Supply voltage is not within recommended range	Verify power supply is functioning correctly; check for short circuit	General, Warning
PC1	HMI	Volt 2b Level OK	Supply voltage is within recommended range	No action required	General
PC1	HMI	Volt 2b Out of Range	Supply voltage is not within recommended range	Verify power supply is functioning correctly; check for short circuit	General, Warning
PC1	HMI	Volt 3.3 Level OK	Supply voltage is within recommended range	No action required	General

Device	Name	Text	Cause	Remedy	Type
PC1	HMI	Volt 3.3 Out of Range	Supply voltage is not within recommended range	Verify power supply is functioning correctly; check for short circuit	General, Warning
PC1	HMI	Volt 5 Level OK	Supply voltage is within recommended range	No action required	General
PC1	HMI	Volt 5 Out of Range	Supply voltage is not within recommended range	Verify power supply is functioning correctly; check for short circuit	General, Warning
PE31702	Product in Side Belts	Gap Between Products Was Too Small	The photo eye was unblocked shorter than expected; incoming products were too close together for proper downstacker operation	Check the adjustment value for the downstacker width, check for proper infeed rate, and restart the machine	Fault
PE31702	Product in Side Belts	Not Blocked Long Enough	The photo eye was not blocked long enough to be a carton	Check for jams or debris in the side belts area, check for shredded side belt, check sensor for proper operation, and restart the machine	Fault
PE31702	Product in Side Belts	Product Jam In Side Belts	The photo eye was blocked longer than the cycle time of one carton	Clear any jams or debris, check the photo eye for proper operation, and restart the machine	Fault
PE31703	2nd Carton At Downstacker	Blocked Too Long During Search Routine	The photo eye was still blocked after the search routine moved to its maximum search position	Remove any excess product or debris in the downstacker, check photo eye for proper operation, and restart the machine	Fault
PE31704	1st Carton At Downstacker	Blocked Too Long During Search Routine	The photo eye was still blocked after the search routine moved to its maximum search position	Remove any excess product or debris in the downstacker, check photo eye for proper operation, and restart the machine	Fault
PE31704	1st Carton At Downstacker	Product Detected While Product Disabled	Product was detected when no product was expected in the machine	Clean product out of the downstacker chamber and restart machine	Fault
PE31705	Down Stacker Search	Blocked Too Long During Search Routine	The photo eye was still blocked after the search routine moved to its maximum search position	Remove any excess product or debris in the downstacker, check photo eye for proper operation, and restart the machine	Fault
PE31705	Down Stacker Search	Downstacker Overfull	The photo eye detected too many layers of product in the downstacker	Clean out extra product from downstacker and restart machine	Fault

Device	Name	Text	Cause	Remedy	Type
			during a search routine		
PE31705	Down Stacker Search	Unable To Accurately Count Product	Downstacker photo eyes were unable to determine the carton count in the downstacker during a search routine	Check downstacker chamber for damaged product, clean out downstacker chamber, and restart the machine; verify the correct recipe is downloaded, check changeover adjustments, and check product dimensions	Fault
PE31707	Product At Downstack Pusher	Blocked Too Long	The photo eye was blocked for an entire cycle of the downstacker master	Clear any jams or debris, check the photo eye for proper operation, and restart the machine	Fault
PE31707	Product At Downstack Pusher	Blocked Too Long During Search Routine	The photo eye was blocked for more than one cycle of the downstacker search routine	Clear any jams or debris, check the photo eye for proper operation, and restart the machine	Fault
PE31707	Product At Downstack Pusher	Blocked When Not Expected	The photo eye was blocked when no product was expected	Clear any jams in the downstacker chamber, check the photo eye for proper operation, and restart the machine	Fault
PE31707	Product At Downstack Pusher	PE Did Not Sense Stack	Stack was presented from the downstacker to the downstack pusher but the photo eye did not sense the stack	Remove any product from in front of the loader, check the photo eye for proper operation, and restart the machine	Fault
PE31707	Product At Downstack Pusher	Unblocked Too Long	The photo eye was unblocked for an entire cycle of the downstack pusher master	Check the photo eye for proper operation and restart the machine	Fault
PE31803	Case Blanks Present	Clear	Not applicable	Not applicable	General
PE31803	Case Blanks Present	Empty Magazine	The photo eye was unblocked for too many blank picks	Refill the magazine and restart machine; if problem continues, check the photo eye for proper operation	Fault
PE31803	Case Blanks Present	Low Magazine	The photo eye is unblocked while producing	Refill the magazine; if message continues, the check photo eye for proper operation	General
PE31903	Case Present at Load	Blocked Too Long	The photo eye was blocked for an entire cycle of the case former master	Clear any jams or debris, check the photo eye for proper operation, and restart the machine	Fault
PE31903	Case Present at Load	Case Not Detected	Case was not detected by photo eye after being setup	Remove case at load station, check photo eye for proper operation, and restart machine	Fault
PE31903	Case Present at Load	Case Not Detected During Load	The photo eye became unblocked unexpectedly while case is setup, most	Check the change over adjustments for the flap holder and check photo eye for proper operation at the next machine stop	Warning

Device	Name	Text	Cause	Remedy	Type
			likely during the loading of the case		
PE31903	Case Present at Load	Case Not Detected During Startup	During startup, the machine expected a case at the load station and the load vacuum switch detected a case, but the photo eye did not detect a case	Remove case at load, check the photo eye for proper operation, and restart the machine	Fault
PE31904	Distorted Case	Blocked Too Long	The photo eye was blocked for an entire cycle of the case former master	Clear any jams or debris, check the photo eye for proper operation, and restart the machine	Fault
PE31904	Distorted Case	Reject Detected	The photo eye detected an open trailing minor case flap	No action is required; if reject continues, then check the photo eye for proper operation and verify the timing of the tuckers	Reject
PE31904	Distorted Case	Unblocked Too Long	The photo eye was unblocked for an entire cycle of the case former master	Check the photo eye for proper operation and restart the machine	Fault
PE31905	Product At Loader	Blocked Too Long	The photo eye was blocked for an entire cycle of the loader master	Clear any jams, check the photo eye for proper operation, and restart the machine	Fault
PE31905	Product At Loader	Blocked Unexpectedly During Startup	The photo eye was blocked unexpectedly during startup	Remove any product or debris from in front of the loader, check the photo eye for proper operation, and restart the machine	Fault
PE31905	Product At Loader	PE Did Not Sense Stack	The downstacker pusher presented a stack to the loader but the photo eye did not detect the stack	Remove the product at the load station, check the photo eye for proper operation, and restart the machine	Fault
PE31905	Product At Loader	Product Detected After Reset	The photo eye was blocked while trying to restart the machine after a reset	Remove any product or debris from in front of the loader, check the photo eye for proper operation and restart the machine	Fault
PE31905	Product At Loader	Unblocked Too Long	The photo eye was unblocked for an entire cycle of the loader master	Check the photo eye for proper operation and restart the machine	Fault
PE51401	Operator Side Open Case Flap	Blocked Too Long	The photo eye was blocked for an entire cycle of the case former master	Clear any jams or debris, check the photo eye for proper operation, and restart the machine	Fault
PE51401	Operator Side Open Case Flap	Reject Detected	The photo eye detected an open operated side major case flap	No action required.; if reject continues, check the photo eye for proper operation, verify glue placement, and verify changeover adjustments for compression area	Reject

Device	Name	Text	Cause	Remedy	Type
PE51402	Non Operator Side Open Case Flap	Blocked Too Long	The photo eye was blocked for an entire cycle of the case former master	Clear any jams or debris, check the photo eye for proper operation, and restart the machine	Fault
PE51402	Non Operator Side Open Case Flap	Reject Detected	The photo eye detected an open non-operator side major case flap	No action required; if reject continues, check the photo eye for proper operation, verify glue placement, and verify changeover adjustments for compression area	Reject
PE51503	Case At Tip	Blocked After Reject	The photo eye was blocked after a reject cycle was completed and machine is expecting the photo eye to become unblocked after the reject cycle is completed	Clear any jams or debris from the tip station, check the photo eye for proper operation, and restart the machine	Fault
PE51503	Case At Tip	Blocked After Tip	The photo eye was blocked after a tip cycle was completed and machine is expecting the photo eye to become unblocked after the tip cycle is completed	Clear any jams or debris from the tip station, check the photo eye for proper operation, and restart the machine	Fault
PE51503	Case At Tip	Unexpected Case Reject	Unexpected case entered the tip station; this usually occurs because the case packer was reset with a case in compression	No action required	Reject
PE51503	Case At Tip	Unexpected Product At Startup	The photo eye was blocked unexpectedly during startup; machine does not know if product is tipped or not	Remove any product or debris in the tip station, check the photo eye for proper operation, and restart the machine	Fault
PE51504	Lower Case Reject Chute	Blocked	Blocked or sensor failure	Check sensor and remove jams	General
PE51504	Lower Case Reject Chute	Blocked Too Long While Rejecting	Blocked too long while rejecting	Check sensor and remove jams	Fault
PE51504	Lower Case Reject Chute	Blocked When Not Expected	Sensor failure or jam	Check sensor for proper functionality	Fault
PE51504	Lower Case Reject Chute	Blocked When Trying To Start	Blocked or failure when starting	Check sensor and remove jams	Fault
PE51504	Lower Case Reject Chute	Unblocked	Sensor is clear	No action required	General
PE51505	Case At Rotate	Blocked Too Long	The photo eye was blocked at the	Clear any jams or debris, check the photo eye for proper operation,	Fault

Device	Name	Text	Cause	Remedy	Type
			vacuum release position of the rotate cycle	and restart the machine	
PE51506	Case Present After Rotate	Case Conveyor Jam	The photo eye was blocked for too long	Clear any jams or debris, place unrotated case in correct orientation after the photo eye, check the photo eye for proper operation, and restart the machine	Fault
PE51506	Case Present After Rotate	Not Blocked After Rotate	The photo eye was not blocked after a rotate cycle	Clear any jams, place unrotated case in correct orientation after the photo eye, check the photo eye for proper operation, and restart the machine	Fault
PE51508	Upper Case Reject Chute	Blocked	Blocked or sensor failure	Check sensor and remove jams	General
PE51508	Upper Case Reject Chute	Blocked Too Long While Rejecting	Blocked too long while rejecting	Check sensor and remove jams	Fault
PE51508	Upper Case Reject Chute	Blocked When Not Expected	Sensor failure or jam	Check sensor for proper functionality	Fault
PE51508	Upper Case Reject Chute	Blocked When Trying To Start	Blocked or failure when starting	Check sensor and remove jams	Fault
PE51508	Upper Case Reject Chute	Unblocked	Sensor is clear	No action required	General
PS31201	System Air Pressure	Low Air Pressure	Air pressure is low	Check air pressure	General
PS31201	System Air Pressure	Low Air Pressure	Air pressure was lost when not expected	Check valve supplying pressure switch, adjust air pressure at regulator to correct PSI	Fault
PS31201	System Air Pressure	Pressure Above Set Point	Air pressure is above set point	No action required	General
PX31804	Case Magazine Advance	Case Blanks Not Advancing	Magazine advance attempted to bring the case blanks forward multiple times but was not able to make the prox; advance chains jammed; changeover adjustment incorrect; case blanks out of position	Push blanks forward; check the changeover adjustments; unjam the advance chains; check that prox target can make the prox; check prox for proper operation	Warning
PX31908	Load Gate Closed	Clear	Not applicable	Not applicable	General
PX31908	Load Gate Closed	Gate Open When Starting Machine	The proximity switch did not detect the load gate while the machine was starting	Close the load gate, check proximity switch for proper operation, and restart the machine	Warning
PX31908	Load Gate Closed	Gate Opened	The proximity switch did not detect the load gate while the machine was producing	Close the load gate, check proximity switch for proper operation, and restart the machine	Fault

Device	Name	Text	Cause	Remedy	Type
PX31908	Load Gate Closed	Open	Load gate is open	Close load gate when finished	General
S3_5	Analog Output Card	Function Block Failed	Internal error in function block	Refer to message details for more information	Fault
S5_1	Analog Output Card	Function Block Failed	Internal error in function block	Refer to message details for more information	Fault
SD1 SD2 SD3 SD4 SD5 SD6 SD7 SD8 SD9 SD10 SD11 SD12 SD13 SD14 SD15 SD16 SD17 SD18 SD19 SD20 SD21 SD40 SD41 SD42 SD43 SD44	Transfer Spatula Non Op Side Lower Downstacker Non Op Side Upper Downstacker Operator Side Lower Downstacker Operator Side Upper Downstacker Down Stack Pusher Loader Funnel Fun Tucker Tucker Product Stop Case Packer Robot X Axis Case Packer Robot Z Axis Case Packer Flights Lower Compression Non-Operator Side Lower Compression Operator Side Upper Compression Non-Operator Side Upper Compression Operator Side Case Tip Y Case Tipper Case Rotate Case Former Master Downstacker Pusher Master Loader Master Tip / Reject Master Tucker Master	Abort Command Failed	The drive was not able to abort successfully	Clear message and start system; if problem persists, review move data	Fault
SD1 SD2 SD3 SD4 SD5 SD6 SD7 SD8 SD9 SD10 SD11 SD12 SD13 SD14 SD15 SD16 SD17 SD18 SD19 SD20 SD21 SD40 SD41 SD42 SD43	Transfer Spatula Non Op Side Lower Downstacker Non Op Side Upper Downstacker Operator Side Lower Downstacker Operator Side Upper Downstacker Down Stack Pusher Loader Funnel Fun Tucker Tucker Product Stop Case Packer Robot X Axis Case Packer Robot Z Axis Case Packer Flights Lower Compression Non-Operator Side Lower Compression Operator Side Upper Compression Non-Operator Side Upper Compression Operator Side Case Tip Y Case Tipper Case Rotate Case Former Master Downstacker Pusher Master	ADS Write Error In Init Step 4	Writing of a servo drive parameter failed	Refer to the message details for further direction	Fault

Device	Name	Text	Cause	Remedy	Type
SD44	Loader Master Tip / Reject Master Tucker Master				
SD1 SD2 SD3 SD4 SD5 SD6 SD7 SD8 SD9 SD10 SD11 SD12 SD13 SD14 SD15 SD16 SD17 SD18 SD19 SD20 SD21 SD40 SD41 SD42 SD43 SD44	Transfer Spatula Non Op Side Lower Downstacker Non Op Side Upper Downstacker Operator Side Lower Downstacker Operator Side Upper Downstacker Down Stack Pusher Loader Funnel Fun Tucker Tucker Product Stop Case Packer Robot X Axis Case Packer Robot Z Axis Case Packer Flights Lower Compression Non-Operator Side Lower Compression Operator Side Upper Compression Non-Operator Side Upper Compression Operator Side Case Tip Y Case Tipper Case Rotate Case Former Master Downstacker Pusher Master Loader Master Tip / Reject Master Tucker Master	Axis Torque Threshold Exceeded	The axis approached its allowable torque during the move	Address issues that are causing increased torque	Warning
SD1 SD2 SD3 SD4 SD5 SD6 SD7 SD8 SD9 SD10 SD11 SD12 SD13 SD14 SD15 SD16 SD17 SD18 SD19 SD20 SD21 SD40 SD41 SD42 SD43 SD44	Transfer Spatula Non Op Side Lower Downstacker Non Op Side Upper Downstacker Operator Side Lower Downstacker Operator Side Upper Downstacker Down Stack Pusher Loader Funnel Fun Tucker Tucker Product Stop Case Packer Robot X Axis Case Packer Robot Z Axis Case Packer Flights Lower Compression Non-Operator Side Lower Compression Operator Side Upper Compression Non-Operator Side Upper Compression Operator Side Case Tip Y Case Tipper Case Rotate Case Former Master Downstacker Pusher Master Loader Master Tip / Reject Master Tucker Master	Brake Release IDN Write Failed	Unable to write an IDN	Refer to the message details for further direction	Fault

Device	Name	Text	Cause	Remedy	Type
SD1	Transfer Spatula	Cam Load Failed	The cam was not loaded correctly	Perform a reset; refer to the message details for further direction	Fault
SD2	Non Op Side Lower Downstacker				
SD3	Non Op Side Upper Downstacker				
SD4	Operator Side Lower Downstacker				
SD5	Operator Side Upper Downstacker				
SD6	Down Stack Pusher				
SD7	Loader				
SD8	Funnel				
SD9	Fun Tucker				
SD10	Tucker				
SD11	Product Stop				
SD12	Case Packer Robot X Axis				
SD13	Case Packer Robot Z Axis				
SD14	Case Packer Flights				
SD15	Lower Compression Non-Operator Side				
SD16					
SD17	Lower Compression Operator Side				
SD18	Upper Compression Non-Operator Side				
SD19					
SD20	Upper Compression Operator Side				
SD21	Case Tip Y				
SD40	Case Tipper				
SD41	Case Rotate				
SD42	Case Former Master				
SD43	Downstacker Pusher Master				
SD44	Loader Master				
	Tip / Reject Master				
	Tucker Master				
SD1	Transfer Spatula	Cam Move Failed	The drive was unable to perform the called move under its current condition	Clear message and start system; if problem persists, review Cam data	Fault
SD2	Non Op Side Lower Downstacker				
SD3	Non Op Side Upper Downstacker				
SD4	Operator Side Lower Downstacker				
SD5	Operator Side Upper Downstacker				
SD6	Down Stack Pusher				
SD7	Loader				
SD8	Funnel				
SD9	Fun Tucker				
SD10	Tucker				
SD11	Product Stop				
SD12	Case Packer Robot X Axis				
SD13	Case Packer Robot Z Axis				
SD14	Case Packer Flights				
SD15	Lower Compression Non-Operator Side				
SD16					
SD17	Lower Compression Operator Side				
SD18	Upper Compression Non-Operator Side				
SD19					
SD20	Upper Compression Operator Side				
SD21	Case Tip Y				
SD40	Case Tipper				
SD41	Case Rotate				
SD42	Case Former Master				
SD43	Downstacker Pusher Master				
SD44	Loader Master				
	Tip / Reject Master				
	Tucker Master				
SD1	Transfer Spatula	Cam Offset Error	Drive was not able to perform the cam offset	Refer to the message details for further direction	Fault
SD2	Non Op Side Lower Downstacker				
SD3	Non Op Side Upper Downstacker				

Device	Name	Text	Cause	Remedy	Type
SD4	Operator Side Low er Dow nstacker				
SD5	Operator Side Upper Dow nstacker				
SD6	Dow n Stack Pusher				
SD7	Loader				
SD8	Funnel				
SD9	Fun Tucker				
SD10	Tucker				
SD11	Product Stop				
SD12	Case Packer Robot X Axis				
SD13	Case Packer Robot Z Axis				
SD14	Case Packer Flights				
SD15	Low er Compression Non-Operator				
SD16	Side				
SD17	Low er Compression Operator Side				
SD18	Upper Compression Non-Operator				
SD19	Side				
SD20	Upper Compression Operator Side				
SD21	Case Tip Y				
SD40	Case Tipper				
SD41	Case Rotate				
SD42	Case Former Master				
SD43	Dow nstacker Pusher Master				
SD44	Loader Master				
	Tip / Reject Master				
	Tucker Master				
SD1	Transfer Spatula	Distance Move Failed	The drive w as unable to perform the called move under its current condition	Clear message and start system; if problem persists, review move data	Fault
SD2	Non Op Side Low er Dow nstacker				
SD3	Non Op Side Upper Dow nstacker				
SD4	Operator Side Low er Dow nstacker				
SD5	Operator Side Upper Dow nstacker				
SD6	Dow n Stack Pusher				
SD7	Loader				
SD8	Funnel				
SD9	Fun Tucker				
SD10	Tucker				
SD11	Product Stop				
SD12	Case Packer Robot X Axis				
SD13	Case Packer Robot Z Axis				
SD14	Case Packer Flights				
SD15	Low er Compression Non-Operator				
SD16	Side				
SD17	Low er Compression Operator Side				
SD18	Upper Compression Non-Operator				
SD19	Side				
SD20	Upper Compression Operator Side				
SD21	Case Tip Y				
SD40	Case Tipper				
SD41	Case Rotate				
SD42	Case Former Master				
SD43	Dow nstacker Pusher Master				
SD44	Loader Master				
	Tip / Reject Master				
	Tucker Master				
SD1	Transfer Spatula	Drive Error	The servo drive is disabled	Check servo drive diagnostics; use error id to look up specific message	Fault
SD2	Non Op Side Low er Dow nstacker				
SD3	Non Op Side Upper Dow nstacker				
SD4	Operator Side Low er Dow nstacker				
SD5	Operator Side Upper Dow nstacker				
SD6	Dow n Stack Pusher				

Device	Name	Text	Cause	Remedy	Type
SD7	Loader				
SD8	Funnel				
SD9	Fun Tucker				
SD10	Tucker				
SD11	Product Stop				
SD12	Case Packer Robot X Axis				
SD13	Case Packer Robot Z Axis				
SD14	Case Packer Flights				
SD15	Lower Compression Non-Operator Side				
SD16	Lower Compression Operator Side				
SD17	Upper Compression Non-Operator Side				
SD18	Upper Compression Operator Side				
SD19	Case Tip Y				
SD20	Case Tipper				
SD21	Case Rotate				
SD40	Case Former Master				
SD41	Downstacker Pusher Master				
SD42	Loader Master				
SD43	Tip / Reject Master				
SD44	Tucker Master				
SD1	Transfer Spatula	Fast Stop Failed	The drive was not able to fast stop successfully	Clear message and start system; if problem persists, review move data	Fault
SD2	Non Op Side Lower Downstacker				
SD3	Non Op Side Upper Downstacker				
SD4	Operator Side Lower Downstacker				
SD5	Operator Side Upper Downstacker				
SD6	Down Stack Pusher				
SD7	Loader				
SD8	Funnel				
SD9	Fun Tucker				
SD10	Tucker				
SD11	Product Stop				
SD12	Case Packer Robot X Axis				
SD13	Case Packer Robot Z Axis				
SD14	Case Packer Flights				
SD15	Lower Compression Non-Operator Side				
SD16	Lower Compression Operator Side				
SD17	Upper Compression Non-Operator Side				
SD18	Upper Compression Operator Side				
SD19	Case Tip Y				
SD20	Case Tipper				
SD21	Case Rotate				
SD40	Case Former Master				
SD41	Downstacker Pusher Master				
SD42	Loader Master				
SD43	Tip / Reject Master				
SD44	Tucker Master				
SD1	Transfer Spatula	Get Cam Info Failed	Unable to read needed cam information from the servo drive	Refer to the message details for further direction	Fault
SD2	Non Op Side Lower Downstacker				
SD3	Non Op Side Upper Downstacker				
SD4	Operator Side Lower Downstacker				
SD5	Operator Side Upper Downstacker				
SD6	Down Stack Pusher				
SD7	Loader				
SD8	Funnel				
SD9	Fun Tucker				

Device	Name	Text	Cause	Remedy	Type
SD10	Tucker				
SD11	Product Stop				
SD12	Case Packer Robot X Axis				
SD13	Case Packer Robot Z Axis				
SD14	Case Packer Flights				
SD15	Lower Compression Non-Operator				
SD16	Side				
SD17	Lower Compression Operator Side				
SD18	Upper Compression Non-Operator				
SD19	Side				
SD20	Upper Compression Operator Side				
SD21	Case Tip Y				
SD40	Case Tipper				
SD41	Case Rotate				
SD42	Case Former Master				
SD43	Downstacker Pusher Master				
SD44	Loader Master				
	Tip / Reject Master				
	Tucker Master				
SD1	Transfer Spatula	Get Current Slave Position Failed	The PLC could not capture the current slave position of the drive	Clear message and start system; if problem persists, review Cam data	Fault
SD2	Non Op Side Lower Downstacker				
SD3	Non Op Side Upper Downstacker				
SD4	Operator Side Lower Downstacker				
SD5	Operator Side Upper Downstacker				
SD6	Down Stack Pusher				
SD7	Loader				
SD8	Funnel				
SD9	Fun Tucker				
SD10	Tucker				
SD11	Product Stop				
SD12	Case Packer Robot X Axis				
SD13	Case Packer Robot Z Axis				
SD14	Case Packer Flights				
SD15	Lower Compression Non-Operator				
SD16	Side				
SD17	Lower Compression Operator Side				
SD18	Upper Compression Non-Operator				
SD19	Side				
SD20	Upper Compression Operator Side				
SD21	Case Tip Y				
SD40	Case Tipper				
SD41	Case Rotate				
SD42	Case Former Master				
SD43	Downstacker Pusher Master				
SD44	Loader Master				
	Tip / Reject Master				
	Tucker Master				
SD1	Transfer Spatula	Input/Output Revs Of GBX Cannot Be Set To 0	The gearbox ratio was set to 0	Change gearbox ratio to a valid number	Fault
SD2	Non Op Side Lower Downstacker				
SD3	Non Op Side Upper Downstacker				
SD4	Operator Side Lower Downstacker				
SD5	Operator Side Upper Downstacker				
SD6	Down Stack Pusher				
SD7	Loader				
SD8	Funnel				
SD9	Fun Tucker				
SD10	Tucker				
SD11	Product Stop				
SD12	Case Packer Robot X Axis				

Device	Name	Text	Cause	Remedy	Type
SD13	Case Packer Robot Z Axis				
SD14	Case Packer Flights				
SD15	Lower Compression Non-Operator				
SD16	Side				
SD17	Lower Compression Operator Side				
SD18	Upper Compression Non-Operator				
SD19	Side				
SD20	Upper Compression Operator Side				
SD21	Case Tip Y				
SD40	Case Tipper				
SD41	Case Rotate				
SD42	Case Former Master				
SD43	Downstacker Pusher Master				
SD44	Loader Master				
	Tip / Reject Master				
	Tucker Master				
SD1	Transfer Spatula	Invalid Data	Invalid drive setup data	Refer to the message details for further direction	Fault
SD2	Non Op Side Lower Downstacker				
SD3	Non Op Side Upper Downstacker				
SD4	Operator Side Lower Downstacker				
SD5	Operator Side Upper Downstacker				
SD6	Down Stack Pusher				
SD7	Loader				
SD8	Funnel				
SD9	Fun Tucker				
SD10	Tucker				
SD11	Product Stop				
SD12	Case Packer Robot X Axis				
SD13	Case Packer Robot Z Axis				
SD14	Case Packer Flights				
SD15	Lower Compression Non-Operator				
SD16	Side				
SD17	Lower Compression Operator Side				
SD18	Upper Compression Non-Operator				
SD19	Side				
SD20	Upper Compression Operator Side				
SD21	Case Tip Y				
	Case Tipper				
	Case Rotate				
SD1	Transfer Spatula	Invalid Reference Verification Type	The reference verification type selected is not correct	Choose correct reference verification type for specified servo drive	Fault
SD2	Non Op Side Lower Downstacker				
SD3	Non Op Side Upper Downstacker				
SD4	Operator Side Lower Downstacker				
SD5	Operator Side Upper Downstacker				
SD6	Down Stack Pusher				
SD7	Loader				
SD8	Funnel				
SD9	Fun Tucker				
SD10	Tucker				
SD11	Product Stop				
SD12	Case Packer Robot X Axis				
SD13	Case Packer Robot Z Axis				
SD14	Case Packer Flights				
SD15	Lower Compression Non-Operator				
SD16	Side				
SD17	Lower Compression Operator Side				
SD18	Upper Compression Non-Operator				
SD19	Side				
SD20	Upper Compression Operator Side				

Device	Name	Text	Cause	Remedy	Type
SD21	Case Tip Y Case Tipper Case Rotate				
SD1 SD2 SD3 SD4 SD5 SD6 SD7 SD8 SD9 SD10 SD11 SD12 SD13 SD14 SD15 SD16 SD17 SD18 SD19 SD20 SD21 SD40 SD41 SD42 SD43 SD44	Transfer Spatula Non Op Side Lower Downstacker Non Op Side Upper Downstacker Operator Side Lower Downstacker Operator Side Upper Downstacker Down Stack Pusher Loader Funnel Fun Tucker Tucker Product Stop Case Packer Robot X Axis Case Packer Robot Z Axis Case Packer Flights Lower Compression Non-Operator Side Lower Compression Operator Side Upper Compression Non-Operator Side Upper Compression Operator Side Case Tip Y Case Tipper Case Rotate Case Former Master Downstacker Pusher Master Loader Master Tip / Reject Master Tucker Master	Mechanical Slip Detected	A mechanical slip may have occurred	Reference drive; check for any source of mechanical slip and check probe for proper operation	Warning
SD1 SD2 SD3 SD4 SD5 SD6 SD7 SD8 SD9 SD10 SD11 SD12 SD13 SD14 SD15 SD16 SD17 SD18 SD19 SD20 SD21 SD40 SD41 SD42 SD43 SD44	Transfer Spatula Non Op Side Lower Downstacker Non Op Side Upper Downstacker Operator Side Lower Downstacker Operator Side Upper Downstacker Down Stack Pusher Loader Funnel Fun Tucker Tucker Product Stop Case Packer Robot X Axis Case Packer Robot Z Axis Case Packer Flights Lower Compression Non-Operator Side Lower Compression Operator Side Upper Compression Non-Operator Side Upper Compression Operator Side Case Tip Y Case Tipper Case Rotate Case Former Master Downstacker Pusher Master Loader Master Tip / Reject Master Tucker Master	Modulo Move Failed	The drive was unable to perform the called move under its current condition	Clear message and start system; if problem persists, review move data	Fault

Device	Name	Text	Cause	Remedy	Type
SD1	Transfer Spatula	Modulo Value Is Too Large	Servo drive modulo data value too large	Check modulo value; adjust to appropriate value	Fault
SD2	Non Op Side Lower Downstacker				
SD3	Non Op Side Upper Downstacker				
SD4	Operator Side Lower Downstacker				
SD5	Operator Side Upper Downstacker				
SD6	Down Stack Pusher				
SD7	Loader				
SD8	Funnel				
SD9	Fun Tucker				
SD10	Tucker				
SD11	Product Stop				
SD12	Case Packer Robot X Axis				
SD13	Case Packer Robot Z Axis				
SD14	Case Packer Flights				
SD15	Lower Compression Non-Operator				
SD16	Side				
SD17	Lower Compression Operator Side				
SD18	Upper Compression Non-Operator				
SD19	Side				
SD20	Upper Compression Operator Side				
SD21	Case Tip Y				
SD40	Case Tipper				
SD41	Case Rotate				
SD42	Case Former Master				
SD43	Downstacker Pusher Master				
SD44	Loader Master				
	Tip / Reject Master				
	Tucker Master				
SD1	Transfer Spatula	Motion Control Reset Error	Drive could not reset	Check power supply to drives; use error id to get more information	Fault
SD2	Non Op Side Lower Downstacker				
SD3	Non Op Side Upper Downstacker				
SD4	Operator Side Lower Downstacker				
SD5	Operator Side Upper Downstacker				
SD6	Down Stack Pusher				
SD7	Loader				
SD8	Funnel				
SD9	Fun Tucker				
SD10	Tucker				
SD11	Product Stop				
SD12	Case Packer Robot X Axis				
SD13	Case Packer Robot Z Axis				
SD14	Case Packer Flights				
SD15	Lower Compression Non-Operator				
SD16	Side				
SD17	Lower Compression Operator Side				
SD18	Upper Compression Non-Operator				
SD19	Side				
SD20	Upper Compression Operator Side				
SD21	Case Tip Y				
SD40	Case Tipper				
SD41	Case Rotate				
SD42	Case Former Master				
SD43	Downstacker Pusher Master				
SD44	Loader Master				
	Tip / Reject Master				
	Tucker Master				
SD1	Transfer Spatula	Phase 2 to 3 Transition Check Error	Check when transitioning from	Refer to the message details for further direction	Fault
SD2	Non Op Side Lower Downstacker				
SD3	Non Op Side Upper Downstacker				

Device	Name	Text	Cause	Remedy	Type
SD4	Operator Side Lower Downstacker		phase 2 to phase 3 failed		
SD5	Operator Side Upper Downstacker				
SD6	Down Stack Pusher				
SD7	Loader				
SD8	Funnel				
SD9	Fun Tucker				
SD10	Tucker				
SD11	Product Stop				
SD12	Case Packer Robot X Axis				
SD13	Case Packer Robot Z Axis				
SD14	Case Packer Flights				
SD15	Lower Compression Non-Operator Side				
SD16	Lower Compression Operator Side				
SD17	Upper Compression Non-Operator Side				
SD18	Upper Compression Operator Side				
SD19	Case Tip Y				
SD20	Case Tipper				
SD21	Case Rotate				
SD40	Case Former Master				
SD41	Downstacker Pusher Master				
SD42	Loader Master				
SD43	Tip / Reject Master				
SD44	Tucker Master				
SD1	Transfer Spatula	Phase 3 to 4 Transition Check Error	Check when transitioning from phase 3 to phase 4 failed	Refer to the message details for further direction	Fault
SD2	Non Op Side Lower Downstacker				
SD3	Non Op Side Upper Downstacker				
SD4	Operator Side Lower Downstacker				
SD5	Operator Side Upper Downstacker				
SD6	Down Stack Pusher				
SD7	Loader				
SD8	Funnel				
SD9	Fun Tucker				
SD10	Tucker				
SD11	Product Stop				
SD12	Case Packer Robot X Axis				
SD13	Case Packer Robot Z Axis				
SD14	Case Packer Flights				
SD15	Lower Compression Non-Operator Side				
SD16	Lower Compression Operator Side				
SD17	Upper Compression Non-Operator Side				
SD18	Upper Compression Operator Side				
SD19	Case Tip Y				
SD20	Case Tipper				
SD21	Case Rotate				
SD40	Case Former Master				
SD41	Downstacker Pusher Master				
SD42	Loader Master				
SD43	Tip / Reject Master				
SD44	Tucker Master				
SD1	Transfer Spatula	Position Following Error	The servo drive is being jammed or held by something	Look for damaged or dragging mechanical assembly	Fault
SD2	Non Op Side Lower Downstacker				
SD3	Non Op Side Upper Downstacker				
SD4	Operator Side Lower Downstacker				
SD5	Operator Side Upper Downstacker				
SD6	Down Stack Pusher				

Device	Name	Text	Cause	Remedy	Type
SD7	Loader				
SD8	Funnel				
SD9	Fun Tucker				
SD10	Tucker				
SD11	Product Stop				
SD12	Case Packer Robot X Axis				
SD13	Case Packer Robot Z Axis				
SD14	Case Packer Flights				
SD15	Lower Compression Non-Operator Side				
SD16	Lower Compression Operator Side				
SD17	Upper Compression Non-Operator Side				
SD18	Upper Compression Operator Side				
SD19	Case Tip Y				
SD20	Case Tipper				
SD21	Case Rotate				
SD40	Case Former Master				
SD41	Downstacker Pusher Master				
SD42	Loader Master				
SD43	Tip / Reject Master				
SD44	Tucker Master				
SD1	Transfer Spatula	Position Move Failed	The drive was unable to perform the called move under its current condition	Clear message and start system; if problem persists, review move data	Fault
SD2	Non Op Side Lower Downstacker				
SD3	Non Op Side Upper Downstacker				
SD4	Operator Side Lower Downstacker				
SD5	Operator Side Upper Downstacker				
SD6	Down Stack Pusher				
SD7	Loader				
SD8	Funnel				
SD9	Fun Tucker				
SD10	Tucker				
SD11	Product Stop				
SD12	Case Packer Robot X Axis				
SD13	Case Packer Robot Z Axis				
SD14	Case Packer Flights				
SD15	Lower Compression Non-Operator Side				
SD16	Lower Compression Operator Side				
SD17	Upper Compression Non-Operator Side				
SD18	Upper Compression Operator Side				
SD19	Case Tip Y				
SD20	Case Tipper				
SD21	Case Rotate				
SD40	Case Former Master				
SD41	Downstacker Pusher Master				
SD42	Loader Master				
SD43	Tip / Reject Master				
SD44	Tucker Master				
SD1	Transfer Spatula	Power Cycle Required	The functional package on the servo drive has changed and the power to the servo needs to be cycled in order to activate the change	Cycle power to the servo	Critical Fault
SD2	Non Op Side Lower Downstacker				
SD3	Non Op Side Upper Downstacker				
SD4	Operator Side Lower Downstacker				
SD5	Operator Side Upper Downstacker				
SD6	Down Stack Pusher				
SD7	Loader				
SD8	Funnel				
SD9	Fun Tucker				

Device	Name	Text	Cause	Remedy	Type
SD10	Tucker				
SD11	Product Stop				
SD12	Case Packer Robot X Axis				
SD13	Case Packer Robot Z Axis				
SD14	Case Packer Flights				
SD15	Lower Compression Non-Operator				
SD16	Side				
SD17	Lower Compression Operator Side				
SD18	Upper Compression Non-Operator				
SD19	Side				
SD20	Upper Compression Operator Side				
SD21	Case Tip Y				
	Case Tipper				
	Case Rotate				
SD1	Transfer Spatula	Read IDN Failed	Unable to read a servo drive IDN	Refer to the message details for further direction	Fault
SD2	Non Op Side Lower Downstacker				
SD3	Non Op Side Upper Downstacker				
SD4	Operator Side Lower Downstacker				
SD5	Operator Side Upper Downstacker				
SD6	Down Stack Pusher				
SD7	Loader				
SD8	Funnel				
SD9	Fun Tucker				
SD10	Tucker				
SD11	Product Stop				
SD12	Case Packer Robot X Axis				
SD13	Case Packer Robot Z Axis				
SD14	Case Packer Flights				
SD15	Lower Compression Non-Operator				
SD16	Side				
SD17	Lower Compression Operator Side				
SD18	Upper Compression Non-Operator				
SD19	Side				
SD20	Upper Compression Operator Side				
SD21	Case Tip Y				
SD40	Case Tipper				
SD41	Case Rotate				
SD42	Case Former Master				
SD43	Downstacker Pusher Master				
SD44	Loader Master				
	Tip / Reject Master				
	Tucker Master				
SD1	Transfer Spatula	Read SERCOS IDN Failed	Unable to read a servo drive IDN	Refer to the message details for further direction	Warning
SD2	Non Op Side Lower Downstacker				
SD3	Non Op Side Upper Downstacker				
SD4	Operator Side Lower Downstacker				
SD5	Operator Side Upper Downstacker				
SD6	Down Stack Pusher				
SD7	Loader				
SD8	Funnel				
SD9	Fun Tucker				
SD10	Tucker				
SD11	Product Stop				
SD12	Case Packer Robot X Axis				
SD13	Case Packer Robot Z Axis				
SD14	Case Packer Flights				
SD15	Lower Compression Non-Operator				
SD16	Side				
SD17	Lower Compression Operator Side				

Device	Name	Text	Cause	Remedy	Type
SD18	Upper Compression Non-Operator Side				
SD19					
SD20	Upper Compression Operator Side				
SD21	Case Tip Y				
SD40	Case Tipper				
SD41	Case Rotate				
SD42	Case Former Master				
SD43	Downstacker Pusher Master				
SD44	Loader Master				
	Tip / Reject Master				
	Tucker Master				
SD1	Transfer Spatula	Reference Position Check Failed	Servo sensor position was not inside the compare position window	Try to reference again; verify the axis is referencing properly	Fault
SD2	Non Op Side Lower Downstacker				
SD3	Non Op Side Upper Downstacker				
SD4	Operator Side Lower Downstacker				
SD5	Operator Side Upper Downstacker				
SD6	Down Stack Pusher				
SD7	Loader				
SD8	Funnel				
SD9	Fun Tucker				
SD10	Tucker				
SD11	Product Stop				
SD12	Case Packer Robot X Axis				
SD13	Case Packer Robot Z Axis				
SD14	Case Packer Flights				
SD15	Lower Compression Non-Operator Side				
SD16					
SD17	Lower Compression Operator Side				
SD18	Upper Compression Non-Operator Side				
SD19					
SD20	Upper Compression Operator Side				
SD21	Case Tip Y				
	Case Tipper				
	Case Rotate				
SD1	Transfer Spatula	Reference Position Set	Reference position was set	No action required	Utility
SD2	Non Op Side Lower Downstacker				
SD3	Non Op Side Upper Downstacker				
SD4	Operator Side Lower Downstacker				
SD5	Operator Side Upper Downstacker				
SD6	Down Stack Pusher				
SD7	Loader				
SD8	Funnel				
SD9	Fun Tucker				
SD10	Tucker				
SD11	Product Stop				
SD12	Case Packer Robot X Axis				
SD13	Case Packer Robot Z Axis				
SD14	Case Packer Flights				
SD15	Lower Compression Non-Operator Side				
SD16					
SD17	Lower Compression Operator Side				
SD18	Upper Compression Non-Operator Side				
SD19					
SD20	Upper Compression Operator Side				
SD21	Case Tip Y				
SD40	Case Tipper				
SD41	Case Rotate				
SD42	Case Former Master				
SD43	Downstacker Pusher Master				

Device	Name	Text	Cause	Remedy	Type
SD44	Loader Master Tip / Reject Master Tucker Master				
SD1 SD2 SD3 SD4 SD5 SD6 SD7 SD8 SD9 SD10 SD11 SD12 SD13 SD14 SD15 SD16 SD17 SD18 SD19 SD20 SD21	Transfer Spatula Non Op Side Lower Downstacker Non Op Side Upper Downstacker Operator Side Lower Downstacker Operator Side Upper Downstacker Down Stack Pusher Loader Funnel Fun Tucker Tucker Product Stop Case Packer Robot X Axis Case Packer Robot Z Axis Case Packer Flights Lower Compression Non-Operator Side Lower Compression Operator Side Upper Compression Non-Operator Side Upper Compression Operator Side Case Tip Y Case Tipper Case Rotate	Reference Verification Routine Failed	The reference verification routine failed	Try to reference again, check setup data	Fault
SD1 SD2 SD3 SD4 SD5 SD6 SD7 SD8 SD9 SD10 SD11 SD12 SD13 SD14 SD15 SD16 SD17 SD18 SD19 SD20 SD21	Transfer Spatula Non Op Side Lower Downstacker Non Op Side Upper Downstacker Operator Side Lower Downstacker Operator Side Upper Downstacker Down Stack Pusher Loader Funnel Fun Tucker Tucker Product Stop Case Packer Robot X Axis Case Packer Robot Z Axis Case Packer Flights Lower Compression Non-Operator Side Lower Compression Operator Side Upper Compression Non-Operator Side Upper Compression Operator Side Case Tip Y Case Tipper Case Rotate	Reference Verification Sensor Not Found	The verification sensor was not found during routine	Verify reference verification sensor type is correct; verify sensor is working properly	Fault
SD1 SD2 SD3 SD4 SD5 SD6 SD7 SD8 SD9 SD10	Transfer Spatula Non Op Side Lower Downstacker Non Op Side Upper Downstacker Operator Side Lower Downstacker Operator Side Upper Downstacker Down Stack Pusher Loader Funnel Fun Tucker Tucker	SERCOS Clear Error Procedure Command Error	Weak sercos ring detected	Check for bad sercos cable/connection	Fault

Device	Name	Text	Cause	Remedy	Type
SD11	Product Stop				
SD12	Case Packer Robot X Axis				
SD13	Case Packer Robot Z Axis				
SD14	Case Packer Flights				
SD15	Low er Compression Non-Operator				
SD16	Side				
SD17	Low er Compression Operator Side				
SD18	Upper Compression Non-Operator				
SD19	Side				
SD20	Upper Compression Operator Side				
SD21	Case Tip Y				
SD40	Case Tipper				
SD41	Case Rotate				
SD42	Case Former Master				
SD43	Dow nstacker Pusher Master				
SD44	Loader Master				
	Tip / Reject Master				
	Tucker Master				
SD1	Transfer Spatula	SERCOS Communication Error - MDT Count	Weak SERCOS communication	Check for bad sercos cable/connection	Warning
SD2	Non Op Side Low er Dow nstacker				
SD3	Non Op Side Upper Dow nstacker				
SD4	Operator Side Low er Dow nstacker				
SD5	Operator Side Upper Dow nstacker				
SD6	Dow n Stack Pusher				
SD7	Loader				
SD8	Funnel				
SD9	Fun Tucker				
SD10	Tucker				
SD11	Product Stop				
SD12	Case Packer Robot X Axis				
SD13	Case Packer Robot Z Axis				
SD14	Case Packer Flights				
SD15	Low er Compression Non-Operator				
SD16	Side				
SD17	Low er Compression Operator Side				
SD18	Upper Compression Non-Operator				
SD19	Side				
SD20	Upper Compression Operator Side				
SD21	Case Tip Y				
SD40	Case Tipper				
SD41	Case Rotate				
SD42	Case Former Master				
SD43	Dow nstacker Pusher Master				
SD44	Loader Master				
	Tip / Reject Master				
	Tucker Master				
SD1	Transfer Spatula	SERCOS Communication Error - MST Count	Weak SERCOS communication	Check for bad sercos cable/connection	Warning
SD2	Non Op Side Low er Dow nstacker				
SD3	Non Op Side Upper Dow nstacker				
SD4	Operator Side Low er Dow nstacker				
SD5	Operator Side Upper Dow nstacker				
SD6	Dow n Stack Pusher				
SD7	Loader				
SD8	Funnel				
SD9	Fun Tucker				
SD10	Tucker				
SD11	Product Stop				
SD12	Case Packer Robot X Axis				
SD13	Case Packer Robot Z Axis				

Device	Name	Text	Cause	Remedy	Type
SD14	Case Packer Flights				
SD15	Lower Compression Non-Operator				
SD16	Side				
SD17	Lower Compression Operator Side				
SD18	Upper Compression Non-Operator				
SD19	Side				
SD20	Upper Compression Operator Side				
SD21	Case Tip Y				
SD40	Case Tipper				
SD41	Case Rotate				
SD42	Case Former Master				
SD43	Downstacker Pusher Master				
SD44	Loader Master				
	Tip / Reject Master				
	Tucker Master				
SD1	Transfer Spatula	SERCOS Set Default Parameters Procedure Error	Unable to set the servo tuning parameters to factory default settings	Refer to the message details for further direction	Fault
SD2	Non Op Side Lower Downstacker				
SD3	Non Op Side Upper Downstacker				
SD4	Operator Side Lower Downstacker				
SD5	Operator Side Upper Downstacker				
SD6	Down Stack Pusher				
SD7	Loader				
SD8	Funnel				
SD9	Fun Tucker				
SD10	Tucker				
SD11	Product Stop				
SD12	Case Packer Robot X Axis				
SD13	Case Packer Robot Z Axis				
SD14	Case Packer Flights				
SD15	Lower Compression Non-Operator				
SD16	Side				
SD17	Lower Compression Operator Side				
SD18	Upper Compression Non-Operator				
SD19	Side				
SD20	Upper Compression Operator Side				
SD21	Case Tip Y				
SD40	Case Tipper				
SD41	Case Rotate				
SD42	Case Former Master				
SD43	Downstacker Pusher Master				
SD44	Loader Master				
	Tip / Reject Master				
	Tucker Master				
SD1	Transfer Spatula	SERCOS Set Default Tuning Command Failed	Unable so set the servo tuning parameters to factory default settings	Refer to the message details for further direction	Fault
SD2	Non Op Side Lower Downstacker				
SD3	Non Op Side Upper Downstacker				
SD4	Operator Side Lower Downstacker				
SD5	Operator Side Upper Downstacker				
SD6	Down Stack Pusher				
SD7	Loader				
SD8	Funnel				
SD9	Fun Tucker				
SD10	Tucker				
SD11	Product Stop				
SD12	Case Packer Robot X Axis				
SD13	Case Packer Robot Z Axis				
SD14	Case Packer Flights				
SD15	Lower Compression Non-Operator				
SD16	Side				

Device	Name	Text	Cause	Remedy	Type
SD17	Lower Compression Operator Side				
SD18	Upper Compression Non-Operator				
SD19	Side				
SD20	Upper Compression Operator Side				
SD21	Case Tip Y				
SD40	Case Tipper				
SD41	Case Rotate				
SD42	Case Former Master				
SD43	Downstacker Pusher Master				
SD44	Loader Master				
	Tip / Reject Master				
	Tucker Master				
SD1	Transfer Spatula	SERCOS Write Error In Init Step 3a	Writing of a servo drive parameter failed	Refer to the message details for further direction	Fault
SD2	Non Op Side Lower Downstacker				
SD3	Non Op Side Upper Downstacker				
SD4	Operator Side Lower Downstacker				
SD5	Operator Side Upper Downstacker				
SD6	Down Stack Pusher				
SD7	Loader				
SD8	Funnel				
SD9	Fun Tucker				
SD10	Tucker				
SD11	Product Stop				
SD12	Case Packer Robot X Axis				
SD13	Case Packer Robot Z Axis				
SD14	Case Packer Flights				
SD15	Lower Compression Non-Operator				
SD16	Side				
SD17	Lower Compression Operator Side				
SD18	Upper Compression Non-Operator				
SD19	Side				
SD20	Upper Compression Operator Side				
SD21	Case Tip Y				
SD40	Case Tipper				
SD41	Case Rotate				
SD42	Case Former Master				
SD43	Downstacker Pusher Master				
SD44	Loader Master				
	Tip / Reject Master				
	Tucker Master				
SD1	Transfer Spatula	SERCOS Write Error In Init Step 3b	Writing of a servo drive parameter failed	Refer to the message details for further direction	Fault
SD2	Non Op Side Lower Downstacker				
SD3	Non Op Side Upper Downstacker				
SD4	Operator Side Lower Downstacker				
SD5	Operator Side Upper Downstacker				
SD6	Down Stack Pusher				
SD7	Loader				
SD8	Funnel				
SD9	Fun Tucker				
SD10	Tucker				
SD11	Product Stop				
SD12	Case Packer Robot X Axis				
SD13	Case Packer Robot Z Axis				
SD14	Case Packer Flights				
SD15	Lower Compression Non-Operator				
SD16	Side				
SD17	Lower Compression Operator Side				
SD18	Upper Compression Non-Operator				
SD19	Side				

Device	Name	Text	Cause	Remedy	Type
SD20	Upper Compression Operator Side				
SD21	Case Tip Y				
SD40	Case Tipper				
SD41	Case Rotate				
SD42	Case Former Master				
SD43	Downstacker Pusher Master				
SD44	Loader Master				
	Tip / Reject Master				
	Tucker Master				
SD1	Transfer Spatula	SERCOS Write Failed In Init Step 2	Writing of a servo drive parameter failed	Refer to the message details for further direction; check servo drive parameters	Fault
SD2	Non Op Side Lower Downstacker				
SD3	Non Op Side Upper Downstacker				
SD4	Operator Side Lower Downstacker				
SD5	Operator Side Upper Downstacker				
SD6	Down Stack Pusher				
SD7	Loader				
SD8	Funnel				
SD9	Fun Tucker				
SD10	Tucker				
SD11	Product Stop				
SD12	Case Packer Robot X Axis				
SD13	Case Packer Robot Z Axis				
SD14	Case Packer Flights				
SD15	Lower Compression Non-Operator Side				
SD16					
SD17	Lower Compression Operator Side				
SD18	Upper Compression Non-Operator Side				
SD19					
SD20	Upper Compression Operator Side				
SD21	Case Tip Y				
SD40	Case Tipper				
SD41	Case Rotate				
SD42	Case Former Master				
SD43	Downstacker Pusher Master				
SD44	Loader Master				
	Tip / Reject Master				
	Tucker Master				
SD1	Transfer Spatula	Servo Drive Scaling Setup Invalid	Gear box input, output or inches per rev servo drive data not entered correctly	Enter valid data on servo drive page	Fault
SD2	Non Op Side Lower Downstacker				
SD3	Non Op Side Upper Downstacker				
SD4	Operator Side Lower Downstacker				
SD5	Operator Side Upper Downstacker				
SD6	Down Stack Pusher				
SD7	Loader				
SD8	Funnel				
SD9	Fun Tucker				
SD10	Tucker				
SD11	Product Stop				
SD12	Case Packer Robot X Axis				
SD13	Case Packer Robot Z Axis				
SD14	Case Packer Flights				
SD15	Lower Compression Non-Operator Side				
SD16					
SD17	Lower Compression Operator Side				
SD18	Upper Compression Non-Operator Side				
SD19					
SD20	Upper Compression Operator Side				
SD21	Case Tip Y				
SD40	Case Tipper				

Device	Name	Text	Cause	Remedy	Type
SD41 SD42 SD43 SD44	Case Rotate Case Former Master Downstacker Pusher Master Loader Master Tip / Reject Master Tucker Master				
SD1 SD2 SD3 SD4 SD5 SD6 SD7 SD8 SD9 SD10 SD11 SD12 SD13 SD14 SD15 SD16 SD17 SD18 SD19 SD20 SD21	Transfer Spatula Non Op Side Lower Downstacker Non Op Side Upper Downstacker Operator Side Lower Downstacker Operator Side Upper Downstacker Down Stack Pusher Loader Funnel Fun Tucker Tucker Product Stop Case Packer Robot X Axis Case Packer Robot Z Axis Case Packer Flights Lower Compression Non-Operator Side Lower Compression Operator Side Upper Compression Non-Operator Side Upper Compression Operator Side Case Tip Y Case Tipper Case Rotate	Servo Must Be Referenced	Servo has not been referenced since last parameter change	Reference servo motor	Fault
SD1 SD2 SD3 SD4 SD5 SD6 SD7 SD8 SD9 SD10 SD11 SD12 SD13 SD14 SD15 SD16 SD17 SD18 SD19 SD20 SD21 SD40 SD41 SD42 SD43 SD44	Transfer Spatula Non Op Side Lower Downstacker Non Op Side Upper Downstacker Operator Side Lower Downstacker Operator Side Upper Downstacker Down Stack Pusher Loader Funnel Fun Tucker Tucker Product Stop Case Packer Robot X Axis Case Packer Robot Z Axis Case Packer Flights Lower Compression Non-Operator Side Lower Compression Operator Side Upper Compression Non-Operator Side Upper Compression Operator Side Case Tip Y Case Tipper Case Rotate Case Former Master Downstacker Pusher Master Loader Master Tip / Reject Master Tucker Master	Set Reference Position Error	Servo drive unable to set reference position	Refer to the message details for further direction	Fault
SD1 SD2	Transfer Spatula Non Op Side Lower Downstacker	Unknown Drive Type Error	Unable to determine drive type	Refer to the message details for further direction	Fault

Device	Name	Text	Cause	Remedy	Type
SD3	Non Op Side Upper Downstacker				
SD4	Operator Side Lower Downstacker				
SD5	Operator Side Upper Downstacker				
SD6	Down Stack Pusher				
SD7	Loader				
SD8	Funnel				
SD9	Fun Tucker				
SD10	Tucker				
SD11	Product Stop				
SD12	Case Packer Robot X Axis				
SD13	Case Packer Robot Z Axis				
SD14	Case Packer Flights				
SD15	Lower Compression Non-Operator Side				
SD16					
SD17	Lower Compression Operator Side				
SD18	Upper Compression Non-Operator Side				
SD19					
SD20	Upper Compression Operator Side				
SD21	Case Tip Y				
SD40	Case Tipper				
SD41	Case Rotate				
SD42	Case Former Master				
SD43	Downstacker Pusher Master				
SD44	Loader Master				
	Tip / Reject Master				
	Tucker Master				
SD1	Transfer Spatula	Velocity Move Failed	The drive was unable to perform the called move under its current condition	Clear message and start system; if problem persists, review move data	Fault
SD2	Non Op Side Lower Downstacker				
SD3	Non Op Side Upper Downstacker				
SD4	Operator Side Lower Downstacker				
SD5	Operator Side Upper Downstacker				
SD6	Down Stack Pusher				
SD7	Loader				
SD8	Funnel				
SD9	Fun Tucker				
SD10	Tucker				
SD11	Product Stop				
SD12	Case Packer Robot X Axis				
SD13	Case Packer Robot Z Axis				
SD14	Case Packer Flights				
SD15	Lower Compression Non-Operator Side				
SD16					
SD17	Lower Compression Operator Side				
SD18	Upper Compression Non-Operator Side				
SD19					
SD20	Upper Compression Operator Side				
SD21	Case Tip Y				
SD40	Case Tipper				
SD41	Case Rotate				
SD42	Case Former Master				
SD43	Downstacker Pusher Master				
SD44	Loader Master				
	Tip / Reject Master				
	Tucker Master				
SD1	Transfer Spatula	Write Torque Limit Failed	Unable to write the torque limit	Refer to the message details for further direction	Fault
SD2	Non Op Side Lower Downstacker				
SD3	Non Op Side Upper Downstacker				
SD4	Operator Side Lower Downstacker				
SD5	Operator Side Upper Downstacker				

Device	Name	Text	Cause	Remedy	Type
SD6	Down Stack Pusher				
SD7	Loader				
SD8	Funnel				
SD9	Fun Tucker				
SD10	Tucker				
SD11	Product Stop				
SD12	Case Packer Robot X Axis				
SD13	Case Packer Robot Z Axis				
SD14	Case Packer Flights				
SD15	Lower Compression Non-Operator Side				
SD16	Lower Compression Operator Side				
SD17	Upper Compression Non-Operator Side				
SD18	Upper Compression Operator Side				
SD19	Case Tip Y				
SD20	Case Tipper				
SD21	Case Rotate				
	Case Former Master				
	Downstacker Pusher Master				
	Loader Master				
	Tip / Reject Master				
	Tucker Master				
SD1	Transfer Spatula	Writing SERCOS IDNs Failed in Init Step 1	Writing of a servo drive parameter failed	Refer to the message details for further direction	Fault
SD2	Non Op Side Lower Downstacker				
SD3	Non Op Side Upper Downstacker				
SD4	Operator Side Lower Downstacker				
SD5	Operator Side Upper Downstacker				
SD6	Down Stack Pusher				
SD7	Loader				
SD8	Funnel				
SD9	Fun Tucker				
SD10	Tucker				
SD11	Product Stop				
SD12	Case Packer Robot X Axis				
SD13	Case Packer Robot Z Axis				
SD14	Case Packer Flights				
SD15	Lower Compression Non-Operator Side				
SD16	Lower Compression Operator Side				
SD17	Upper Compression Non-Operator Side				
SD18	Upper Compression Operator Side				
SD19	Case Tip Y				
SD20	Case Tipper				
SD21	Case Rotate				
SD40	Case Former Master				
SD41	Downstacker Pusher Master				
SD42	Loader Master				
SD43	Tip / Reject Master				
SD44	Tucker Master				
SD40	Case Former Master	Set Master Modulo Failed	Setting the master modulo failed	Refer to the message details for further direction	Fault
SD41	Downstacker Pusher Master				
SD42	Loader Master				
SD43	Tip / Reject Master				
SD44	Tucker Master				
SR20401	Case Packer Safety Relay	Delayed Opened After Expected	The delayed contact time of the	Adjust safety relay time to be within specification	Warning

Device	Name	Text	Cause	Remedy	Type
			safety relay is too long		
SR20401	Case Packer Safety Relay	Delayed Opened Before Expected	The delayed contact time of the safety relay is too short	Adjust safety relay time to be within specification	Warning
SR20401	Case Packer Safety Relay	Immediate Made	The safety relay is closed	No action required	General
SR20401	Case Packer Safety Relay	Press Start to Continue	The safety relay is open	Press start button to continue operation	General
SR20401	Case Packer Safety Relay	Safety Relay Reset Check Failed	A check was performed after the safety circuit was reset to see if the relay is reset; this check failed	If problem persists check safety circuit	Warning
SR26201	Orienter Safety Relay	Delayed Opened After Expected	The delayed contact time of the safety relay is too long	Adjust safety relay time to be within specification	Warning
SR26201	Orienter Safety Relay	Delayed Opened Before Expected	The delayed contact time of the safety relay is too short	Adjust safety relay time to be within specification	Warning
SR26201	Orienter Safety Relay	Immediate Made	The safety relay is closed	No action required	General
SR26201	Orienter Safety Relay	Press Start to Continue	The safety relay is open	Press start button to continue operation	General
SR26201	Orienter Safety Relay	Safety Relay Reset Check Failed	A check was performed after the safety circuit was reset to see if the relay is reset; this check failed	If problem persists check safety circuit	Warning
SV30306	Magazine Rotate Clips	Direction A Jam	Sensor was made, then unmade when not expected	Check A sensor for proper operation	Fault
SV30306	Magazine Rotate Clips	Direction A Sensor Not Made In Time	The A sensor did not make in the required time from the A direction call	Check A sensor for proper operation	Fault
SV30306	Magazine Rotate Clips	Direction B Jam	Sensor was made, then unmade when not expected	Check B sensor for proper operation	Fault
SV30306	Magazine Rotate Clips	Direction B Sensor Not Made In Time	The B sensor did not make in the required time from the B direction call	Check B sensor for proper operation	Fault
SV30306	Magazine Rotate Clips	Input Parameter Error	Incorrect SV data	Fix invalid setup parameters	Fault
SV30306	Magazine Rotate Clips	Invalid Program Call	A call to the SV was invalid	Fix program call	Fault
SV30306	Magazine Rotate Clips	Off Jam	Sensor was made, then unmade when	Check off sensor for proper operation	Fault

Device	Name	Text	Cause	Remedy	Type
			not expected		
SV30306	Magazine Rotate Clips	Off Sensor Not Made In Time	The off sensor did not make in the required time from the off direction call	Check off sensor for proper operation	Fault
SV30306	Magazine Rotate Clips	Vacuum Lost	Vacuum sensor was made and then lost when not expected	Check vacuum cups for damage; ensure good product is being presented	Fault
SV30306	Magazine Rotate Clips	Vacuum Sensor Not Made In Time	Vacuum sensor was not made in time	Check vacuum cups for damage; ensure good product is being presented	Fault
SV30307	Load Cups Blow back	Direction A Jam	Sensor was made, then unmade when not expected	Check A sensor for proper operation	Fault
SV30307	Load Cups Blow back	Direction A Sensor Not Made In Time	The A sensor did not make in the required time from the A direction call	Check A sensor for proper operation	Fault
SV30307	Load Cups Blow back	Direction B Jam	Sensor was made, then unmade when not expected	Check B sensor for proper operation	Fault
SV30307	Load Cups Blow back	Direction B Sensor Not Made In Time	The B sensor did not make in the required time from the B direction call	Check B sensor for proper operation	Fault
SV30307	Load Cups Blow back	Input Parameter Error	Incorrect SV data	Fix invalid setup parameters	Fault
SV30307	Load Cups Blow back	Invalid Program Call	A call to the SV was invalid	Fix program call	Fault
SV30307	Load Cups Blow back	Off Jam	Sensor was made, then unmade when not expected	Check off sensor for proper operation	Fault
SV30307	Load Cups Blow back	Off Sensor Not Made In Time	The off sensor did not make in the required time from the off direction call	Check off sensor for proper operation	Fault
SV30307	Load Cups Blow back	Vacuum Lost	Vacuum sensor was made and then lost when not expected	Check vacuum cups for damage; ensure good product is being presented	Fault
SV30307	Load Cups Blow back	Vacuum Sensor Not Made In Time	Vacuum sensor was not made in time	Check vacuum cups for damage; ensure good product is being presented	Fault
SV30308	Load Vacuum	Direction A Jam	Sensor was made, then unmade when not expected	Check A sensor for proper operation	Fault
SV30308	Load Vacuum	Direction A Sensor Not Made In Time	The A sensor did not make in the required time from the A direction call	Check A sensor for proper operation	Fault
SV30308	Load Vacuum	Direction B Jam	Sensor was made, then unmade when not expected	Check B sensor for proper operation	Fault

Device	Name	Text	Cause	Remedy	Type
SV30308	Load Vacuum	Direction B Sensor Not Made In Time	The B sensor did not make in the required time from the B direction call	Check B sensor for proper operation	Fault
SV30308	Load Vacuum	Input Parameter Error	Incorrect SV data	Fix invalid setup parameters	Fault
SV30308	Load Vacuum	Invalid Program Call	A call to the SV was invalid	Fix program call	Fault
SV30308	Load Vacuum	Off Jam	Sensor was made, then unmade when not expected	Check off sensor for proper operation	Fault
SV30308	Load Vacuum	Off Sensor Not Made In Time	The off sensor did not make in the required time from the off direction call	Check off sensor for proper operation	Fault
SV30308	Load Vacuum	Vacuum Lost	Vacuum sensor was made and then lost when not expected	Check vacuum cups for damage; ensure good product is being presented	Fault
SV30308	Load Vacuum	Vacuum Sensor Not Made In Time	Vacuum sensor was not made in time	Check vacuum cups for damage; ensure good product is being presented	Fault
SV30401	Magazine Advance	Direction A Jam	Sensor was made, then unmade when not expected	Check A sensor for proper operation	Fault
SV30401	Magazine Advance	Direction A Sensor Not Made In Time	The A sensor did not make in the required time from the A direction call	Check A sensor for proper operation	Fault
SV30401	Magazine Advance	Direction B Jam	Sensor was made, then unmade when not expected	Check B sensor for proper operation	Fault
SV30401	Magazine Advance	Direction B Sensor Not Made In Time	The B sensor did not make in the required time from the B direction call	Check B sensor for proper operation	Fault
SV30401	Magazine Advance	Input Parameter Error	Incorrect SV data	Fix invalid setup parameters	Fault
SV30401	Magazine Advance	Invalid Program Call	A call to the SV was invalid	Fix program call	Fault
SV30401	Magazine Advance	Off Jam	Sensor was made, then unmade when not expected	Check off sensor for proper operation	Fault
SV30401	Magazine Advance	Off Sensor Not Made In Time	The off sensor did not make in the required time from the off direction call	Check off sensor for proper operation	Fault
SV30401	Magazine Advance	Vacuum Lost	Vacuum sensor was made and then lost when not expected	Check vacuum cups for damage; ensure good product is being presented	Fault
SV30401	Magazine Advance	Vacuum Sensor Not Made In Time	Vacuum sensor was not made in time	Check vacuum cups for damage; ensure good product is being presented	Fault

Device	Name	Text	Cause	Remedy	Type
SV30402	Case Packer Case Stop	Direction A Jam	Sensor was made, then unmade when not expected	Check A sensor for proper operation	Fault
SV30402	Case Packer Case Stop	Direction A Sensor Not Made In Time	The A sensor did not make in the required time from the A direction call	Check A sensor for proper operation	Fault
SV30402	Case Packer Case Stop	Direction B Jam	Sensor was made, then unmade when not expected	Check B sensor for proper operation	Fault
SV30402	Case Packer Case Stop	Direction B Sensor Not Made In Time	The B sensor did not make in the required time from the B direction call	Check B sensor for proper operation	Fault
SV30402	Case Packer Case Stop	Input Parameter Error	Incorrect SV data	Fix invalid setup parameters	Fault
SV30402	Case Packer Case Stop	Invalid Program Call	A call to the SV was invalid	Fix program call	Fault
SV30402	Case Packer Case Stop	Off Jam	Sensor was made, then unmade when not expected	Check off sensor for proper operation	Fault
SV30402	Case Packer Case Stop	Off Sensor Not Made In Time	The off sensor did not make in the required time from the off direction call	Check off sensor for proper operation	Fault
SV30402	Case Packer Case Stop	Vacuum Lost	Vacuum sensor was made and then lost when not expected	Check vacuum cups for damage; ensure good product is being presented	Fault
SV30402	Case Packer Case Stop	Vacuum Sensor Not Made In Time	Vacuum sensor was not made in time	Check vacuum cups for damage; ensure good product is being presented	Fault
SV30403	Case Pusher	Direction A Jam	Sensor was made, then unmade when not expected	Check A sensor for proper operation	Fault
SV30403	Case Pusher	Direction A Sensor Not Made In Time	The A sensor did not make in the required time from the A direction call	Check A sensor for proper operation	Fault
SV30403	Case Pusher	Direction B Jam	Sensor was made, then unmade when not expected	Check B sensor for proper operation	Fault
SV30403	Case Pusher	Direction B Sensor Not Made In Time	The B sensor did not make in the required time from the B direction call	Check B sensor for proper operation	Fault
SV30403	Case Pusher	Input Parameter Error	Incorrect SV data	Fix invalid setup parameters	Fault
SV30403	Case Pusher	Invalid Program Call	A call to the SV was invalid	Fix program call	Fault
SV30403	Case Pusher	Off Jam	Sensor was made, then unmade when not expected	Check off sensor for proper operation	Fault

Device	Name	Text	Cause	Remedy	Type
SV30403	Case Pusher	Off Sensor Not Made In Time	The off sensor did not make in the required time from the off direction call	Check off sensor for proper operation	Fault
SV30403	Case Pusher	Vacuum Lost	Vacuum sensor was made and then lost when not expected	Check vacuum cups for damage; ensure good product is being presented	Fault
SV30403	Case Pusher	Vacuum Sensor Not Made In Time	Vacuum sensor was not made in time	Check vacuum cups for damage; ensure good product is being presented	Fault
SV30406	FunTucker In/Out	Direction A Jam	Sensor was made, then unmade when not expected	Check A sensor for proper operation	Fault
SV30406	FunTucker In/Out	Direction A Sensor Not Made In Time	The A sensor did not make in the required time from the A direction call	Check A sensor for proper operation	Fault
SV30406	FunTucker In/Out	Direction B Jam	Sensor was made, then unmade when not expected	Check B sensor for proper operation	Fault
SV30406	FunTucker In/Out	Direction B Sensor Not Made In Time	The B sensor did not make in the required time from the B direction call	Check B sensor for proper operation	Fault
SV30406	FunTucker In/Out	Input Parameter Error	Incorrect SV data	Fix invalid setup parameters	Fault
SV30406	FunTucker In/Out	Invalid Program Call	A call to the SV was invalid	Fix program call	Fault
SV30406	FunTucker In/Out	Off Jam	Sensor was made, then unmade when not expected	Check off sensor for proper operation	Fault
SV30406	FunTucker In/Out	Off Sensor Not Made In Time	The off sensor did not make in the required time from the off direction call	Check off sensor for proper operation	Fault
SV30406	FunTucker In/Out	Vacuum Lost	Vacuum sensor was made and then lost when not expected	Check vacuum cups for damage; ensure good product is being presented	Fault
SV30406	FunTucker In/Out	Vacuum Sensor Not Made In Time	Vacuum sensor was not made in time	Check vacuum cups for damage; ensure good product is being presented	Fault
SV30407	Funnel In/Out	Direction A Jam	Sensor was made, then unmade when not expected	Check A sensor for proper operation	Fault
SV30407	Funnel In/Out	Direction A Sensor Not Made In Time	The A sensor did not make in the required time from the A direction call	Check A sensor for proper operation	Fault
SV30407	Funnel In/Out	Direction B Jam	Sensor was made, then unmade when not expected	Check B sensor for proper operation	Fault

Device	Name	Text	Cause	Remedy	Type
SV30407	Funnel In/Out	Direction B Sensor Not Made In Time	The B sensor did not make in the required time from the B direction call	Check B sensor for proper operation	Fault
SV30407	Funnel In/Out	Input Parameter Error	Incorrect SV data	Fix invalid setup parameters	Fault
SV30407	Funnel In/Out	Invalid Program Call	A call to the SV was invalid	Fix program call	Fault
SV30407	Funnel In/Out	Off Jam	Sensor was made, then unmade when not expected	Check off sensor for proper operation	Fault
SV30407	Funnel In/Out	Off Sensor Not Made In Time	The off sensor did not make in the required time from the off direction call	Check off sensor for proper operation	Fault
SV30407	Funnel In/Out	Vacuum Lost	Vacuum sensor was made and then lost when not expected	Check vacuum cups for damage; ensure good product is being presented	Fault
SV30407	Funnel In/Out	Vacuum Sensor Not Made In Time	Vacuum sensor was not made in time	Check vacuum cups for damage; ensure good product is being presented	Fault
SV30408	Casepacker Robot Vacuum	Direction A Jam	Sensor was made, then unmade when not expected	Check A sensor for proper operation	Fault
SV30408	Casepacker Robot Vacuum	Direction A Sensor Not Made In Time	The A sensor did not make in the required time from the A direction call	Check A sensor for proper operation	Fault
SV30408	Casepacker Robot Vacuum	Direction B Jam	Sensor was made, then unmade when not expected	Check B sensor for proper operation	Fault
SV30408	Casepacker Robot Vacuum	Direction B Sensor Not Made In Time	The B sensor did not make in the required time from the B direction call	Check B sensor for proper operation	Fault
SV30408	Casepacker Robot Vacuum	Input Parameter Error	Incorrect SV data	Fix invalid setup parameters	Fault
SV30408	Casepacker Robot Vacuum	Invalid Program Call	A call to the SV was invalid	Fix program call	Fault
SV30408	Casepacker Robot Vacuum	Off Jam	Sensor was made, then unmade when not expected	Check off sensor for proper operation	Fault
SV30408	Casepacker Robot Vacuum	Off Sensor Not Made In Time	The off sensor did not make in the required time from the off direction call	Check off sensor for proper operation	Fault
SV30408	Casepacker Robot Vacuum	Vacuum Lost	Vacuum sensor was made and then lost when not expected	Check vacuum cups for damage; ensure good product is being presented	Fault
SV30408	Casepacker Robot Vacuum	Vacuum Sensor Not Made In Time	Vacuum sensor was not made in time	Check vacuum cups for damage; ensure good product is being presented	Fault

Device	Name	Text	Cause	Remedy	Type
SV30703	Product Conditioner	Direction A Jam	Sensor was made, then unmade when not expected	Check A sensor for proper operation	Fault
SV30703	Product Conditioner	Direction A Sensor Not Made In Time	The A sensor did not make in the required time from the A direction call	Check A sensor for proper operation	Fault
SV30703	Product Conditioner	Direction B Jam	Sensor was made, then unmade when not expected	Check B sensor for proper operation	Fault
SV30703	Product Conditioner	Direction B Sensor Not Made In Time	The B sensor did not make in the required time from the B direction call	Check B sensor for proper operation	Fault
SV30703	Product Conditioner	Input Parameter Error	Incorrect SV data	Fix invalid setup parameters	Fault
SV30703	Product Conditioner	Invalid Program Call	A call to the SV was invalid	Fix program call	Fault
SV30703	Product Conditioner	Off Jam	Sensor was made, then unmade when not expected	Check off sensor for proper operation	Fault
SV30703	Product Conditioner	Off Sensor Not Made In Time	The off sensor did not make in the required time from the off direction call	Check off sensor for proper operation	Fault
SV30703	Product Conditioner	Vacuum Lost	Vacuum sensor was made and then lost when not expected	Check vacuum cups for damage; ensure good product is being presented	Fault
SV30703	Product Conditioner	Vacuum Sensor Not Made In Time	Vacuum sensor was not made in time	Check vacuum cups for damage; ensure good product is being presented	Fault
SV30705	Magazine Top Clip	Direction A Jam	Sensor was made, then unmade when not expected	Check A sensor for proper operation	Fault
SV30705	Magazine Top Clip	Direction A Sensor Not Made In Time	The A sensor did not make in the required time from the A direction call	Check A sensor for proper operation	Fault
SV30705	Magazine Top Clip	Direction B Jam	Sensor was made, then unmade when not expected	Check B sensor for proper operation	Fault
SV30705	Magazine Top Clip	Direction B Sensor Not Made In Time	The B sensor did not make in the required time from the B direction call	Check B sensor for proper operation	Fault
SV30705	Magazine Top Clip	Input Parameter Error	Incorrect SV data	Fix invalid setup parameters	Fault
SV30705	Magazine Top Clip	Invalid Program Call	A call to the SV was invalid	Fix program call	Fault
SV30705	Magazine Top Clip	Off Jam	Sensor was made, then unmade when not expected	Check off sensor for proper operation	Fault

Device	Name	Text	Cause	Remedy	Type
SV30705	Magazine Top Clip	Off Sensor Not Made In Time	The off sensor did not make in the required time from the off direction call	Check off sensor for proper operation	Fault
SV30705	Magazine Top Clip	Vacuum Lost	Vacuum sensor was made and then lost when not expected	Check vacuum cups for damage; ensure good product is being presented	Fault
SV30705	Magazine Top Clip	Vacuum Sensor Not Made In Time	Vacuum sensor was not made in time	Check vacuum cups for damage; ensure good product is being presented	Fault
SV30707	Magazine Bottom Clip	Direction A Jam	Sensor was made, then unmade when not expected	Check A sensor for proper operation	Fault
SV30707	Magazine Bottom Clip	Direction A Sensor Not Made In Time	The A sensor did not make in the required time from the A direction call	Check A sensor for proper operation	Fault
SV30707	Magazine Bottom Clip	Direction B Jam	Sensor was made, then unmade when not expected	Check B sensor for proper operation	Fault
SV30707	Magazine Bottom Clip	Direction B Sensor Not Made In Time	The B sensor did not make in the required time from the B direction call	Check B sensor for proper operation	Fault
SV30707	Magazine Bottom Clip	Input Parameter Error	Incorrect SV data	Fix invalid setup parameters	Fault
SV30707	Magazine Bottom Clip	Invalid Program Call	A call to the SV was invalid	Fix program call	Fault
SV30707	Magazine Bottom Clip	Off Jam	Sensor was made, then unmade when not expected	Check off sensor for proper operation	Fault
SV30707	Magazine Bottom Clip	Off Sensor Not Made In Time	The off sensor did not make in the required time from the off direction call	Check off sensor for proper operation	Fault
SV30707	Magazine Bottom Clip	Vacuum Lost	Vacuum sensor was made and then lost when not expected	Check vacuum cups for damage; ensure good product is being presented	Fault
SV30707	Magazine Bottom Clip	Vacuum Sensor Not Made In Time	Vacuum sensor was not made in time	Check vacuum cups for damage; ensure good product is being presented	Fault
SV30801	Load Cups Lift	Direction A Jam	Sensor was made, then unmade when not expected	Check A sensor for proper operation	Fault
SV30801	Load Cups Lift	Direction A Sensor Not Made In Time	The A sensor did not make in the required time from the A direction call	Check A sensor for proper operation	Fault
SV30801	Load Cups Lift	Direction B Jam	Sensor was made, then unmade when not expected	Check B sensor for proper operation	Fault

Device	Name	Text	Cause	Remedy	Type
SV30801	Load Cups Lift	Direction B Sensor Not Made In Time	The B sensor did not make in the required time from the B direction call	Check B sensor for proper operation	Fault
SV30801	Load Cups Lift	Input Parameter Error	Incorrect SV data	Fix invalid setup parameters	Fault
SV30801	Load Cups Lift	Invalid Program Call	A call to the SV was invalid	Fix program call	Fault
SV30801	Load Cups Lift	Off Jam	Sensor was made, then unmade when not expected	Check off sensor for proper operation	Fault
SV30801	Load Cups Lift	Off Sensor Not Made In Time	The off sensor did not make in the required time from the off direction call	Check off sensor for proper operation	Fault
SV30801	Load Cups Lift	Vacuum Lost	Vacuum sensor was made and then lost when not expected	Check vacuum cups for damage; ensure good product is being presented	Fault
SV30801	Load Cups Lift	Vacuum Sensor Not Made In Time	Vacuum sensor was not made in time	Check vacuum cups for damage; ensure good product is being presented	Fault
SV30805	Lower Glue Nonoperator Side	Direction A Jam	Sensor was made, then unmade when not expected	Check A sensor for proper operation	Fault
SV30805	Lower Glue Nonoperator Side	Direction A Sensor Not Made In Time	The A sensor did not make in the required time from the A direction call	Check A sensor for proper operation	Fault
SV30805	Lower Glue Nonoperator Side	Direction B Jam	Sensor was made, then unmade when not expected	Check B sensor for proper operation	Fault
SV30805	Lower Glue Nonoperator Side	Direction B Sensor Not Made In Time	The B sensor did not make in the required time from the B direction call	Check B sensor for proper operation	Fault
SV30805	Lower Glue Nonoperator Side	Input Parameter Error	Incorrect SV data	Fix invalid setup parameters	Fault
SV30805	Lower Glue Nonoperator Side	Invalid Program Call	A call to the SV was invalid	Fix program call	Fault
SV30805	Lower Glue Nonoperator Side	Off Jam	Sensor was made, then unmade when not expected	Check off sensor for proper operation	Fault
SV30805	Lower Glue Nonoperator Side	Off Sensor Not Made In Time	The off sensor did not make in the required time from the off direction call	Check off sensor for proper operation	Fault
SV30805	Lower Glue Nonoperator Side	Vacuum Lost	Vacuum sensor was made and then lost when not expected	Check vacuum cups for damage; ensure good product is being presented	Fault
SV30805	Lower Glue Nonoperator Side	Vacuum Sensor Not Made In Time	Vacuum sensor was not made in time	Check vacuum cups for damage; ensure good product is being presented	Fault

Device	Name	Text	Cause	Remedy	Type
SV30806	Low er Glue Operator Side	Direction A Jam	Sensor w as made, then unmade w hen not expected	Check A sensor for proper operation	Fault
SV30806	Low er Glue Operator Side	Direction A Sensor Not Made In Time	The A sensor did not make in the required time from the A direction call	Check A sensor for proper operation	Fault
SV30806	Low er Glue Operator Side	Direction B Jam	Sensor w as made, then unmade w hen not expected	Check B sensor for proper operation	Fault
SV30806	Low er Glue Operator Side	Direction B Sensor Not Made In Time	The B sensor did not make in the required time from the B direction call	Check B sensor for proper operation	Fault
SV30806	Low er Glue Operator Side	Input Parameter Error	Incorrect SV data	Fix invalid setup parameters	Fault
SV30806	Low er Glue Operator Side	Invalid Program Call	A call to the SV w as invalid	Fix program call	Fault
SV30806	Low er Glue Operator Side	Off Jam	Sensor w as made, then unmade w hen not expected	Check off sensor for proper operation	Fault
SV30806	Low er Glue Operator Side	Off Sensor Not Made In Time	The off sensor did not make in the required time from the off direction call	Check off sensor for proper operation	Fault
SV30806	Low er Glue Operator Side	Vacuum Lost	Vacuum sensor w as made and then lost w hen not expected	Check vacuum cups for damage; ensure good product is being presented	Fault
SV30806	Low er Glue Operator Side	Vacuum Sensor Not Made In Time	Vacuum sensor w as not made in time	Check vacuum cups for damage; ensure good product is being presented	Fault
SV30807	Upper Glue Nonoperator Side	Direction A Jam	Sensor w as made, then unmade w hen not expected	Check A sensor for proper operation	Fault
SV30807	Upper Glue Nonoperator Side	Direction A Sensor Not Made In Time	The A sensor did not make in the required time from the A direction call	Check A sensor for proper operation	Fault
SV30807	Upper Glue Nonoperator Side	Direction B Jam	Sensor w as made, then unmade w hen not expected	Check B sensor for proper operation	Fault
SV30807	Upper Glue Nonoperator Side	Direction B Sensor Not Made In Time	The B sensor did not make in the required time from the B direction call	Check B sensor for proper operation	Fault
SV30807	Upper Glue Nonoperator Side	Input Parameter Error	Incorrect SV data	Fix invalid setup parameters	Fault
SV30807	Upper Glue Nonoperator Side	Invalid Program Call	A call to the SV w as invalid	Fix program call	Fault
SV30807	Upper Glue Nonoperator Side	Off Jam	Sensor w as made, then unmade w hen not expected	Check off sensor for proper operation	Fault

Device	Name	Text	Cause	Remedy	Type
SV30807	Upper Glue Nonoperator Side	Off Sensor Not Made In Time	The off sensor did not make in the required time from the off direction call	Check off sensor for proper operation	Fault
SV30807	Upper Glue Nonoperator Side	Vacuum Lost	Vacuum sensor was made and then lost when not expected	Check vacuum cups for damage; ensure good product is being presented	Fault
SV30807	Upper Glue Nonoperator Side	Vacuum Sensor Not Made In Time	Vacuum sensor was not made in time	Check vacuum cups for damage; ensure good product is being presented	Fault
SV30808	Upper Glue Operator Side	Direction A Jam	Sensor was made, then unmade when not expected	Check A sensor for proper operation	Fault
SV30808	Upper Glue Operator Side	Direction A Sensor Not Made In Time	The A sensor did not make in the required time from the A direction call	Check A sensor for proper operation	Fault
SV30808	Upper Glue Operator Side	Direction B Jam	Sensor was made, then unmade when not expected	Check B sensor for proper operation	Fault
SV30808	Upper Glue Operator Side	Direction B Sensor Not Made In Time	The B sensor did not make in the required time from the B direction call	Check B sensor for proper operation	Fault
SV30808	Upper Glue Operator Side	Input Parameter Error	Incorrect SV data	Fix invalid setup parameters	Fault
SV30808	Upper Glue Operator Side	Invalid Program Call	A call to the SV was invalid	Fix program call	Fault
SV30808	Upper Glue Operator Side	Off Jam	Sensor was made, then unmade when not expected	Check off sensor for proper operation	Fault
SV30808	Upper Glue Operator Side	Off Sensor Not Made In Time	The off sensor did not make in the required time from the off direction call	Check off sensor for proper operation	Fault
SV30808	Upper Glue Operator Side	Vacuum Lost	Vacuum sensor was made and then lost when not expected	Check vacuum cups for damage; ensure good product is being presented	Fault
SV30808	Upper Glue Operator Side	Vacuum Sensor Not Made In Time	Vacuum sensor was not made in time	Check vacuum cups for damage; ensure good product is being presented	Fault
SV50201	Case Rotate Vacuum	Direction A Jam	Sensor was made, then unmade when not expected	Check A sensor for proper operation	Fault
SV50201	Case Rotate Vacuum	Direction A Sensor Not Made In Time	The A sensor did not make in the required time from the A direction call	Check A sensor for proper operation	Fault
SV50201	Case Rotate Vacuum	Direction B Jam	Sensor was made, then unmade when not expected	Check B sensor for proper operation	Fault

Device	Name	Text	Cause	Remedy	Type
SV50201	Case Rotate Vacuum	Direction B Sensor Not Made In Time	The B sensor did not make in the required time from the B direction call	Check B sensor for proper operation	Fault
SV50201	Case Rotate Vacuum	Input Parameter Error	Incorrect SV data	Fix invalid setup parameters	Fault
SV50201	Case Rotate Vacuum	Invalid Program Call	A call to the SV was invalid	Fix program call	Fault
SV50201	Case Rotate Vacuum	Off Jam	Sensor was made, then unmade when not expected	Check off sensor for proper operation	Fault
SV50201	Case Rotate Vacuum	Off Sensor Not Made In Time	The off sensor did not make in the required time from the off direction call	Check off sensor for proper operation	Fault
SV50201	Case Rotate Vacuum	Vacuum Lost	Vacuum sensor was made and then lost when not expected	Check vacuum cups for damage; ensure good product is being presented	Fault
SV50201	Case Rotate Vacuum	Vacuum Sensor Not Made In Time	Vacuum sensor was not made in time	Check vacuum cups for damage; ensure good product is being presented	Fault
SV50703	Tipper Case Stop	Direction A Jam	Sensor was made, then unmade when not expected	Check A sensor for proper operation	Fault
SV50703	Tipper Case Stop	Direction A Sensor Not Made In Time	The A sensor did not make in the required time from the A direction call	Check A sensor for proper operation	Fault
SV50703	Tipper Case Stop	Direction B Jam	Sensor was made, then unmade when not expected	Check B sensor for proper operation	Fault
SV50703	Tipper Case Stop	Direction B Sensor Not Made In Time	The B sensor did not make in the required time from the B direction call	Check B sensor for proper operation	Fault
SV50703	Tipper Case Stop	Input Parameter Error	Incorrect SV data	Fix invalid setup parameters	Fault
SV50703	Tipper Case Stop	Invalid Program Call	A call to the SV was invalid	Fix program call	Fault
SV50703	Tipper Case Stop	Off Jam	Sensor was made, then unmade when not expected	Check off sensor for proper operation	Fault
SV50703	Tipper Case Stop	Off Sensor Not Made In Time	The off sensor did not make in the required time from the off direction call	Check off sensor for proper operation	Fault
SV50703	Tipper Case Stop	Vacuum Lost	Vacuum sensor was made and then lost when not expected	Check vacuum cups for damage; ensure good product is being presented	Fault
SV50703	Tipper Case Stop	Vacuum Sensor Not Made In Time	Vacuum sensor was not made in time	Check vacuum cups for damage; ensure good product is being presented	Fault

Device	Name	Text	Cause	Remedy	Type
TS31203	Main Panel Temp Sensor	Above Set Point	The cabinet temperature is above the set point	Check the cabinet for excessive heat, verify cooling system is properly functioning, check temp switch for proper operation	General, Warning
TS31203	Main Panel Temp Sensor	Below Set Point	The cabinet temperatur is below the set point	No action required	General
TS31301	HMI Cabinet Temp Sensor	Above Set Point	The cabinet temperature is above the set point	Check the cabinet for excessive heat, verify cooling system is properly functioning, check temp switch for proper operation	General, Warning
TS31301	HMI Cabinet Temp Sensor	Below Set Point	The cabinet temperatur is below the set point	No action required	General
TS51301	Unitizer Cabinet Temp Sensor	Above Set Point	The cabinet temperature is above the set point	Check the cabinet for excessive heat, verify cooling system is properly functioning, check temp switch for proper operation	General, Warning
TS51301	Unitizer Cabinet Temp Sensor	Below Set Point	The cabinet temperatur is below the set point	No action required	General
VFD1402	Side Belts	Forward Sensor Not Made In Time	The forward sensor for the motor was not made when it was expected	Check motor for jam, check forward sensor	Fault
VFD1402	Side Belts	Input Parameter Error	The configuration data for the motor is incorrect	Fix data configuration, check programming	Fault
VFD1402	Side Belts	Invalid Program Call	The configuration data for the motor is incorrect	Fix data configuration, check programming	Fault
VFD1402	Side Belts	Motor Overloaded	The motor has overloaded	Check motor for overload reason	Fault
VFD1402	Side Belts	Off Sensor Not Made In Time	The motor did not stop when expected	Check motor for jam, check off sensor	Fault
VFD1402	Side Belts	Reverse Sensor Not Made In Time	The reverse sensor for the motor was not made when it was expected	Check motor for jam, check reverse sensor	Fault
VFD1402	Side Belts	Vacuum Sensor Not Made In Time	The vacuum sensor for the motor was not made when it was expected	Check vacuum, check vacuum sensor	Fault
VFD1402	Side Belts	VFD Faulted	The VFD has an internal fault	Check VFD for diagnostics	Fault
VS31202	System Vacuum	Low Vacuum Supply	Vacuum is low	Check vacuum supply	General
VS31202	System Vacuum	Low Vacuum Supply	Vacuum was lost when not expected	Check vacuum supply	Fault

Device	Name	Text	Cause	Remedy	Type
VS31202	System Vacuum	Vacuum Above Set Point	Vacuum is above set point	No action required	General
VS31708	Load Vacuum	Vacuum Not Made Before Case Ready Postion	The vacuum switch did not detect vacuum before the case former master reached the case ready position general data	Remove case at the load station, check the timing of the vacuum cam to the case ready position general data, check the vacuum switch for proper operation, and restart the machine	Fault
VS31708	Load Vacuum	Vacuum Not Made Durring Startup	During startup, the machine expected a case at the load station and the case present at load photo eye detected a case, but the vacuum switch did not detect a case	Remove case at load, check the vacuum switch for proper operation, and restart the machine	Fault

Change Log Page

General Page Information

This page will display any changes that have been made to the Aagard HMI database. This excludes any cam changes made, which are allowable and will not be displayed here. The drop down list filter in the bottom left corner of this page will allow a specific time period to be selected. The changes logged will be deleted after three months.

SAMPLE IMAGE

Delete All

This button will delete the entire contents of the change log. This will make any change log section of the generated reports invalid because the report generator uses this change log to generate its reports.

Refresh

This button will refresh the changes on the screen to the most current log at the time the refresh button was pressed.

Back Button
This button will display the Advanced Page.

Filter Drop Down List
Click on the drop down arrow to view available filters to apply to the list. Select a filter from the list to apply it.
Depending on the selection, additional parameters become available to enter, such as dates and hours.

From Date/Time: 1/ 4/2010 ▾ 5:59:00 AM ▴▾
To Date/Time: 1/ 4/2010 ▾ 5:59:00 PM ▴▾

Show Last: 0 Hours   0 Minutes

Location Column
This column will display on which page the change was made.

Field Column
This column will display the name of the field to which the change was made.

Old Value Column
This column will record what the value was before the change was made.

New Value Column
This column will record what the value is after the change was made.

Product Column
This column will display the product downloaded when the change was made.

Notes Column
This column will display any notes that were entered by the user into the notes popup after the change was made.

Who Column
This column will display the user that was logged on at the time of the change.

Changed Date Column
This column will display the date that the change was made.

Changed Time Column
This column will display the time that the change was made.

Misc Tags Page

General Page Information

This page is where the HMI stores information needed to operate the machine. Information used here is only temporary and is not retained for the next product change.

Booleans:

?	1	☐	Ignore Upstream Sending Product
?	2	☐	Ignore Downstream Available
?	3	☐	Remove Aagard Available For Product
?	4	☐	Force Aagard Sending Product
?	5	☐	Ignore Glue System Status
?	6	☐	Ignore Vacuum Supply Status
?	7	☐	Ignore Multiple Rejects
?	8	☐	Clean Out
?	10	☐	Enable Case Refeed
?	11	☐	QC Case
?	23	☐	Load Cups Clean Out

? Button

This button will display the **Misc Data Definition Popup.** This popup contains the definition for the related Misc Tag. To close the popup, click the red X in right corner, click outside the popup, or press Esc. **NOTE:** If logged in at Aagard level, this definition is editable.

SAMPLE IMAGE

Misc Tag Name

Definition

Back Button

This button will display the Advanced Page.

View Changeover Adjustments

General Page Information

This page will display the changeover adjustments for the particular product selected. This page is identical to the Product Download Changeover Adjustments Page with the exception that it is for display purposes only. A popup screen will not be displayed if a changeover adjustment was not completed when exiting this page. Please go to the Product Download Changeover Adjustments Page for further details.

SAMPLE IMAGE

Aagard HMI - Adjustments

Done	Machine	Adj. Name	Description	Value
Yes	Sleever Case Packer	1-1	Example Adjustment	10
Yes	Sleever Case Packer	1-2	Example Adjustment	2
Yes	Sleever Case Packer	1-3	Example Adjustment	30
Yes	Sleever Case Packer	1-4	Example Adjustment	40
No	Sleever Case Packer	1-5	Example Adjustment	50
No	Sleever Case Packer	1-6	Example Adjustment	60
No	Sleever Case Packer	1-7	Example Adjustment	70
No	Sleever Case Packer	1-8	Example Adjustment	80
No	Sleever Case Packer	1-9	Example Adjustment	90
No	Sleever Case Packer	1-10	Example Adjustment	100
No	Sleever Case Packer	1-11A	Example Adjustment	110
No	Sleever Case Packer	1-11B	Example Adjustment	120
No	Sleever Case Packer	1-11C	Example Adjustment	130
No	Sleever Case Packer	1-11D	Example Adjustment	140
No	Sleever Case Packer	1-11E	Example Adjustment	150
No	Sleever Case Packer	1-11F	Example Adjustment	160
No	Sleever Case Packer	1-12A	Example Adjustment	170
No	Sleever Case Packer	1-12B	Example Adjustment	180

Print   Finish

Marquee Page

General Page Information

If this feature is installed, this page is used to define the default message displayed on the marquee. It is also used to define the communication parameters for connecting to the marquee.

SAMPLE IMAGE
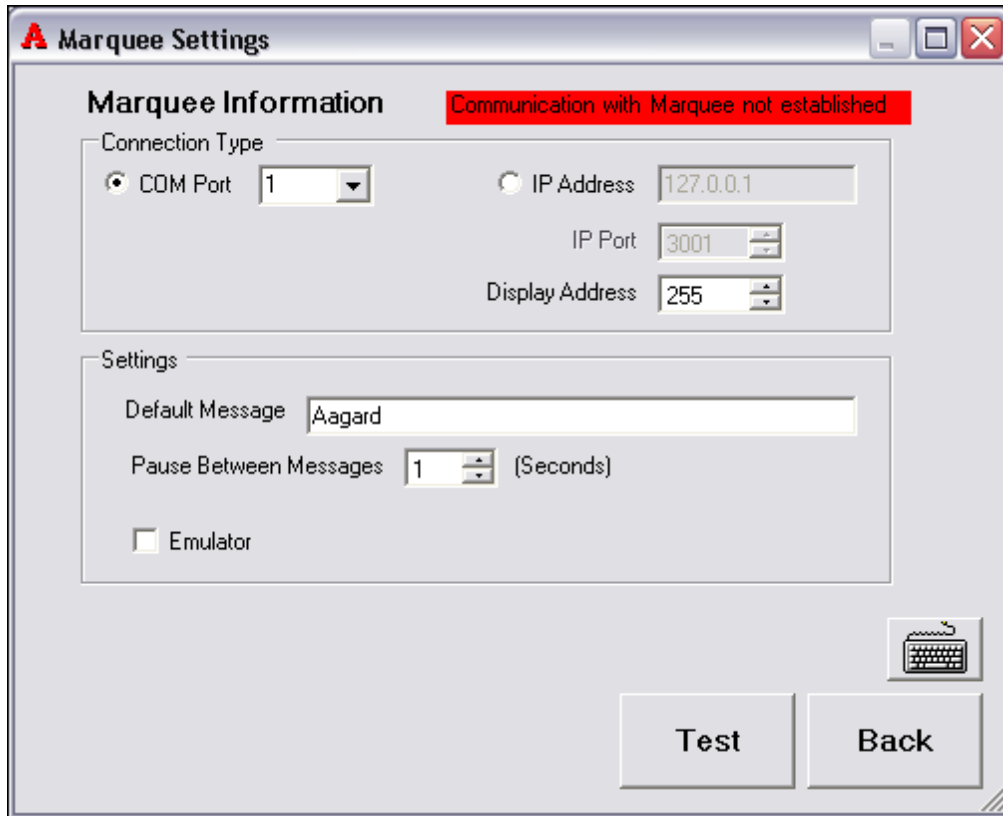
Connection Display
This will display the marquee connection status.

COM Port
When this radio button is selected, the HMI will try to communicate with the marquee via the COM Port selected in the drop down list.

IP Address
When this radio button is selected, the HMI will try to communicate with the marquee via the IP address entered in the text box.

Display Address
The display address is the numerical address used by the marquee.

Default Message
The default message is the text that will display on the marquee when there are no other system messages to display.

Pause Between Messages

The amount of time the marquee will pause between displaying messages.

Emulator

Selecting this check box will enable the marquee emulator.

Test

This button tests the connection with the marquee by attempting to display the default message.

Back

This button will save the changes and return the user to the Advanced page.

GMI Tags Page

General Page Information

If this feature is installed, this page is provided at the request of the customer, and its use is dictated by the customer's requirements.

Available tags are:

Activity Code
Deal Code
Rate Code

Please see your supervisor for information regarding the use of this page.

SAMPLE IMAGE

Diagnostics Group

Drive Diagnostics Page

General Page Information - Servo Drives

This page will display information about the Servo Drives on the machine. This is mainly a troubleshooting feature.

SAMPLE IMAGE

Servo Drive Diagnostic, Solenoid Valve, and Motor Selection Tabs
Each of these tabs will display a list of the possible Servo Drives, Solenoid Valves and Motors that can be selected to display the Diagnostic Box for the selected device.

Popup Button
This button will display a diagnostic popup window for the currently selected device. This diagnostic popup window will always be displayed regardless of which HMI page is open. This diagnostic popup window will show exactly what is shown in the diagnostic box for the selected device.

Display >> Button
This button will display device diagnostics for the selected device. For servo drives (types 2, 3, and 4 only), fault and diagnostic codes are displayed.

Drive Diagnostics Tab

Not Used Status
This status will signal if the Servo Drive is not used

Enabled Status
This status will signal if the Servo Drive is enabled

Ready Status
This status will signal if the Servo Drive is ready

Active Status
This status will signal if the Servo Drive is active

Done Status
This status will signal if the Servo Drive is done

Faulted Status
This status will signal if the Servo Drive is faulted

Servo Drive Display Status
This will display what the Servo Drive Display is currently displaying. This will be displayed below the faulted status on the screen.

Location Status
This status will tell by what the Servo Drive is controlled in the program.

Positive Direction
This label communicates which direction makes the Servo Drive move in a positive direction.

Negative Direction
This label communicates which direction makes the Servo Drive move in a negative direction.

Act Pos Status
This status will display the actual position of the Servo Drive.

Max Pos Err Status
This status will display the maximum position error that has occurred on that Servo Drive. Maximum Position Error is the largest position error that has occurred since the last time the machine had been stopped.

Act Pos Err Status

This status will display the actual position error of the Servo Drive.

Max Torq Status

This status will display the maximum torque that the Servo Drive has used. Maximum Torque is the highest torque that has been used since the last time the machine had been stopped.

Act Torq Status

This status will display the actual torque that the Servo Drive is using.

Reset Features

These features will reset the Max Pos. Err. or Max Torq. values to zero and start recording the new max values of each of these statuses.

Close Button

This button will close the Servo Drive Diagnostic Box for this Servo Drive.

Fault Codes (P192) Tab

Code

This column displays the code received from the selected servo drive.

Description

This column contains the description of the item.

Date/Time

This column displays the date and time the code was received.

Operating Hours

This value represents the current operating hours for this servo drive at the time the code was received, in hours:minutes:seconds.

Close Button

This button will close this Servo Drive Diagnostic Box.
> **NOTE:** This button does not appear on the Sercos Diagnostics Page

NOTE: The Drive Diagnostics tab does not appear on the Sercos Diagnostics Page

NOTE: A missing description or date/time stamp may indicate either the correct PLC framework version is not in place, the error occurred prior to startup operating hours being logged, or the code is not listed in the reference

table

Diagnostic Codes (S375) Tab

Code
This column displays the code received from the selected servo drive.

Description
This column contains the description of the item.

Date/Time
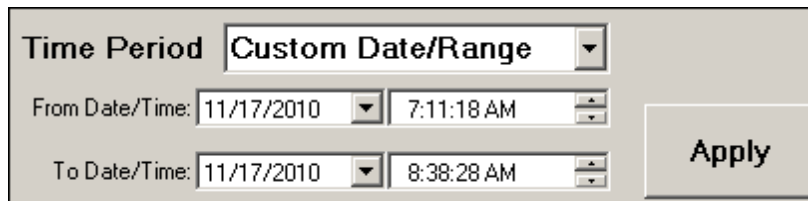This column displays the date and time the code was received.

Operating Hours
This value represents the current operating hours for this servo drive at the time the code was received, in hours:minutes:seconds.

Close Button
This button will close this Servo Drive Diagnostic Box.
    NOTE: This button does not appear on the Sercos Diagnostics Page

NOTE: The Drive Diagnostics tab does not appear on the Sercos Diagnostics Page

NOTE: A missing description or date/time stamp may indicate either the correct PLC framework version is not in place, the error occurred prior to startup operating hours being logged, or the code is not listed in the reference table

Clear All Button
This button will clear all the displayed diagnostic boxes off the screen.

Fault Code History Button
This button will display the Fault Code History Page.
    NOTE: This feature is only available with the correct PLC framework version in place

Back Button
This button will display the Advanced Page.

General Page Information - Solenoid Valves

This page will display information about the Solenoid Valves on the machine. This is mainly a troubleshooting feature.

SAMPLE IMAGE

Solenoid Valve Diagnostic Box

    Close Button - This button will close the Solenoid Valve Member Map Diagnostic Box for that Solenoid Valve

    Internal Group

        Not Used Status - This status will signal if the Solenoid Valve is not used.

        Ready Status - This status will signal if the Solenoid Valve is ready.

        Active Status - This status will signal if the Solenoid Valve is active.

        Done Status - This status will signal if the Solenoid Valve is done.

        Faulted Status - This status will signal if the Solenoid Valve is faulted.

        Location Status - This status will tell by what the Solenoid Valve is controlled in the program.

    Output Group

        A Coil - This status will signal if the Solenoid Valve should have the A Coil energized.

        B Coil - This status will signal if the Solenoid Valve should have the B Coil energized.

    Input Group

        A Switch - This status will signal if the Solenoid Valve's A Switch is energized.

        B Switch - This status will signal if the Solenoid Valve's B Switch is energized.

General Page Information - Motors

This page will display information about the Motors on the machine. This is mainly a troubleshooting feature.

SAMPLE IMAGE

Motor Diagnostic Box

    Close Button - This button will close the Motor Member Map Diagnostic Box for that Motor.

    Speed - This status will display the speed at which the motor should be traveling.

    Internal Group

        Not Used Status - This status will signal if the Motor is not used.

        Ready Status - This status will signal if the Motor is ready.

        Active Status - This status will signal if the Motor is active.

        Done Status - This status will signal if the Motor is done.

        Faulted Status - This status will signal if the Motor is faulted.

        Location Status - This status will tell by what the Motor is controlled in the program.

    Output Group

        Enable - This status will signal if the Motor is enabled.

        Forward - This status will signal if the Motor should have the forward signal energized.

        Reverse - This status will signal if the Motor should have the reverse signal energized.

    Input Group

        Forward - This status will signal if the Motor's forward switch is energized.

        Reverse - This status will signal if the Motor's reverse switch is energized.

Fault Code History Page

SAMPLE IMAGE

NOTE: Fault and Diagnostic codes displayed on the Sercos Diagnostics Page are read directly from the servo drive, whereas errors displayed on the Fault Code History page are read from a database

Servo Drive
To access different servo drives, use the servo drive drop down list.

Column Headings and Filters
Optionally click on a column to sort the column in ascending order; click it again to sort in descending order. Optionally click ▼ in the column header to apply filters to a column. When filters are defined, the ▼ will change to ▼.

    NOTE: Any filters applied will be used until Reset Defaults is clicked

SD#
This column displays the servo drive number.

Servo Drive Name
This column displays the servo drive name.

Type

This column displays the type of code received.

Code
This column displays the code received from the selected servo drive.

Description
This column displays the description of the code.

Date/Time
This column displays the date and time the code was received.

Operating Hours
This value represents the current operating hours for this servo drive at the time the code was received, in hours:minutes:seconds.

Time Period Selection
Click on the drop down arrow to view available time period filters to apply to the list. Select a filter from the list to apply it.

When selecting the custom date/range filter, additional date and time parameters become available to enter. After entering date and time parameters, click Apply.

NOTE: Any filters applied will be used until Reset Defaults is clicked

Individual Items
Click this button to display the items in the grid in chronological order.
NOTE: When **Individual Items** is selected, the button color will be blue

Totaled
Click this button to display the items in the grid in a totaled fashion, displaying the number of times an item occurred. The items all totaled to allow the user to more easily view which items are occurring the most frequently.
NOTE: When **Totaled** selected, the button color will be blue

Refresh Button
Click this button to update the database with the latest information from the servo drives, and then display that information on this page.

Reset Filters Button
Click this button to reset the screen to default sort and filter settings.
NOTE: This button will only appear when filters have been applied to this page
NOTE: When filters are applied, text indicating so will be displayed above the Reset Filters button

Back
This button will display the Drive Diagnostics Page.

Member Map Diagnostics Page

General Page Information

This screen displays the status information for different drives and sections of the machine. This is mainly a troubleshooting function.

SAMPLE IMAGE

Member Map Diagnostic Selection Tree

This will display a list of the possible devices that can be displayed in a diagnostic box. Double click an item to open the diagnostic box.

Popup Button

This button will display a diagnostic popup window for the currently selected device. This diagnostic popup window will always be displayed regardless of which HMI page is open. This diagnostic popup window will show exactly what is shown in the diagnostic box for the selected device.

Display >> Button

This button will display device diagnostics for the selected device. For servo drives (types 2, 3, and 4 only), fault and diagnostic codes are displayed.

Drive Diagnostics Tab

```
SD#2 - Linear Drive                                    Close

Drive Diagnostics | Fault Codes (P192) | Diagnostic Codes (S375)

  Not Used      C15: 0                  Act Pos:0.014
  Enabled                            Max Pos. Err. 0.000    Reset
  Ready
  Active                             Act Pos. Err. 0.000
  Done          CW = Positive           Max Torq.5         Reset
  Faulted       CCW = Negative          Act Torq.-1

A0013 Ready for power on
```

Not Used Status
This status will signal if the Servo Drive is not used

Enabled Status
This status will signal if the Servo Drive is enabled

Ready Status
This status will signal if the Servo Drive is ready

Active Status
This status will signal if the Servo Drive is active

Done Status
This status will signal if the Servo Drive is done

Faulted Status
This status will signal if the Servo Drive is faulted

Servo Drive Display Status
This will display what the Servo Drive Display is currently displaying. This will be displayed below the faulted status on the screen.

Location Status
This status will tell by what the Servo Drive is controlled in the program.

Positive Direction
This label communicates which direction makes the Servo Drive move in a positive direction.

Negative Direction
This label communicates which direction makes the Servo Drive move in a negative direction.

Act Pos Status
This status will display the actual position of the Servo Drive.

Max Pos Err Status
This status will display the maximum position error that has occurred on that Servo Drive. Maximum Position Error is the largest position error that has occurred since the last time the machine had been stopped.

Act Pos Err Status

This status will display the actual position error of the Servo Drive.

Max Torq Status

This status will display the maximum torque that the Servo Drive has used. Maximum Torque is the highest torque that has been used since the last time the machine had been stopped.

Act Torq Status

This status will display the actual torque that the Servo Drive is using.

Reset Features

These features will reset the Max Pos. Err. or Max Torq. values to zero and start recording the new max values of each of these statuses.

Close Button

This button will close the Servo Drive Diagnostic Box for this Servo Drive.

Fault Codes (P192) Tab

Code

This column displays the code received from the selected servo drive.

Description

This column contains the description of the item.

Date/Time

This column displays the date and time the code was received.

Operating Hours

This value represents the current operating hours for this servo drive at the time the code was received, in hours:minutes:seconds.

Close Button

This button will close this Servo Drive Diagnostic Box.

    NOTE: This button does not appear on the Sercos Diagnostics Page

NOTE: The Drive Diagnostics tab does not appear on the Sercos Diagnostics Page

NOTE: A missing description or date/time stamp may indicate either the correct PLC framework version is not in place, the error occurred prior to startup operating hours being logged, or the code is not listed in the reference

table

Diagnostic Codes (S375) Tab

Code
This column displays the code received from the selected servo drive.

Description
This column contains the description of the item.

Date/Time
This column displays the date and time the code was received.

Operating Hours
This value represents the current operating hours for this servo drive at the time the code was received, in hours:minutes:seconds.

Close Button
This button will close this Servo Drive Diagnostic Box.
> **NOTE:** This button does not appear on the Sercos Diagnostics Page

NOTE: The Drive Diagnostics tab does not appear on the Sercos Diagnostics Page

NOTE: A missing description or date/time stamp may indicate either the correct PLC framework version is not in place, the error occurred prior to startup operating hours being logged, or the code is not listed in the reference table

Clear All Button
This button will clear all the displayed diagnostic boxes off the screen.

Back Button
This button will display the Advanced Page.

Motor Diagnostic Box

    Close Button - This button will close the Motor Member Map Diagnostic Box for that Motor.

    Speed - This status will display the speed at which the motor should be traveling.

    Internal Group

        Not Used Status - This status will signal if the Motor is not used.

        Ready Status - This status will signal if the Motor is ready.

        Active Status - This status will signal if the Motor is active.

        Done Status - This status will signal if the Motor is done.

        Faulted Status - This status will signal if the Motor is faulted.

        Location Status - This status will tell by what the Motor is controlled in the program.

    Output Group

        Enable - This status will signal if the Motor is enabled.

        Forward - This status will signal if the Motor should have the forward signal energized.

        Reverse - This status will signal if the Motor should have the reverse signal energized.

    Input Group

        Forward - This status will signal if the Motor's forward switch is energized.

        Reverse - This status will signal if the Motor's reverse switch is energized.

Solenoid Valve Diagnostic Box

    Close Button - This button will close the Solenoid Valve Member Map Diagnostic Box for that Solenoid Valve

    Internal Group

        Not Used Status - This status will signal if the Solenoid Valve is not used.

        Ready Status - This status will signal if the Solenoid Valve is ready.

        Active Status - This status will signal if the Solenoid Valve is active.

        Done Status - This status will signal if the Solenoid Valve is done.

        Faulted Status - This status will signal if the Solenoid Valve is faulted.

        Location Status - This status will tell by what the Solenoid Valve is controlled in the program.

    Output Group

        A Coil - This status will signal if the Solenoid Valve should have the A Coil energized.

        B Coil - This status will signal if the Solenoid Valve should have the B Coil energized.

    Input Group

        A Switch - This status will signal if the Solenoid Valve's A Switch is energized.

        B Switch - This status will signal if the Solenoid Valve's B Switch is energized.

SAMPLE IMAGE

C40 Member Map Diagnostic Box
This diagnostic box is displayed when a motor is added to the display side of the screen.

    E-Stopped Status - This status will signal if the C40 is E-stopped.
    Power Status - This status will signal if the C40 has power.
    State Status - This status will display the state of the C40.
    Mode Status - This status will display the mode of the C40.
    Rate Status - This status will tell the rate of the C40.
    Close Button - This button will close the C40 Member Map Diagnostic Box for that C40.

C20 Member Map Diagnostic Box
    In Use Status - This status will signal if the C20 is not used.
    State Complete Status - This status will signal if the C20 is state complete.
    Ready Status - This status will signal if the C20 is ready.
    Active Status - This status will signal if the C20 is active.
    Done Status - This status will signal if the C20 is done.
    Faulted Status - This status will signal if the C20 is faulted.
    Sequence Step Status - This status will indicate in which sequence step the C20 is in the program.
    Close Button - This button will close the C20 Member Map Diagnostic Box for that C20.

C15 Member Map Diagnostic Box

In Use Status - This status will signal if the C15 is not used.

Fault Response Complete Status - This status will signal if the C15 fault response is complete.

Recovery Complete Status - This status will signal if the C15 recovery is complete.

Ready Status - This status will signal if the C15 is ready.

Active Status - This status will signal if the C15 is active.

Done Status - This status will signal if the C15 is done.

F-Stopped Status - This status will signal if the C15 is fault stopped.

Use Sync Recovery Status - This status will signal if the C15 is using sync recovery.

Wait For Sync Status - This status will signal if the C15 is waiting to be in sync.

Faulted Status - This status will signal if the C15 is faulted.

E-Stop Recovery Step Status - This status will tell what E-stop recovery step the C15 is in the program.

Close Button - This button will close the C15 Member Map Diagnostic Box for that C15.

I/O Diagnostics Page

General Page Information

This page is only for status information. It shows the user whether or not an I/O point is energized on an I/O Brick and Slice. If an I/O point is energized the status dot will be red. This page will display all the I/O points on the machine. Through I/O points, the controller communicates to the devices on the machine or anything in the physical world. This is mainly a troubleshooting feature.

Hover over a point with the mouse and a tool tip will display brick, slice, and point.

Click on the + (plus symbol) to expand a node, or click on the - (minus symbol) to minimize a node.

SAMPLE IMAGE

Search

Type text into the box and click search. If what you are searching for is found, the first instance of the searched-for text is highlighted in the tree. If it is not found, the search box will turn red. Clicking search repeatedly acts as "Next".

Collapse Tree

Clicking this button collapses all nodes in the tree.

Add

Click to add an IO node.

Delete

Click to delete the selected IO node.

Back Button

This button will display the [Advanced Page](#).

Sercos Diagnostics Page

General Page Information

This page is only for information and used primarily during troubleshooting.

NOTE: Fault and Diagnostic codes displayed on the Sercos Diagnostics Page are read directly from the servo drive, whereas errors displayed on the Fault Code History page are read from a database

<p align="center">**SAMPLE IMAGE**</p>

Sercos Ring

This is a drop down list containing a list of the Sercos rings. Select a ring from the list to view the diagnostics for that ring.

Master Status

This is a list of the ring status and error counts from the currently selected ring.

Sercos Control Buttons and Mode

Init / E-Stop Mode
This displays the current mode of the machine.

--- **Button**

Click this button to view all C40 modes.

    NOTE: This button will be visible when more than one C40 exists

E-Stop Mode / Initialize Mode
Click the Initialize Mode button to request Init Mode. How To Reinitialize

These steps are done via the Sercos Diagnostics Page in the HMI

1) E-Stop the machine
2) Go to the Sercos Diagnostic Page
3) Click on Initialize
4) The text on the Initialize Button changes to E-Stop
5) Click on "Reinitialize System", and wait for the machine to reinitialize the sercos ring
   NOTE: Although no physical adjustments need to be made, you will need to download the correct product size and Inserter recipe, if installed, and initialize the Barcode Scanner, if installed
   a) If you downloaded a product other than what was previously downloaded, the Product Download Changeover Adjustments Page will be displayed
6) When complete, the Sercos Diagnostics Page will be displayed
7) Click on E-Stop on the HMI screen
   a) The text on the button returns to "Initialize"
   CAUTION: If you downloaded the wrong product during the Sercos Ring re-initialization routine, you must go to the Main Page and download the correct product
8) Pull the E-Stop button, and restart the machine

A simple but more time consuming alternative to these steps is to restart the HMI from the Advanced Page.

NOTE: If the system is already in Init mode, this button will read **E-Stop Mode**. Click this button to take the system out of Init mode

   NOTE: When in Init Mode, these additional buttons become available

Reinitialize System
This button will perform an initialization function when all major sections of the system are in Init mode. This button is only available when the system is in Init mode.

   Servo Drive Data
   This button will open the Servo Drive Data page

Request Phase 1
This button, when pressed, will force the current selected ring to phase 1.

Request Phase 2
This button, when pressed, will force the current selected ring to phase 2.

Request Phase 3
This button, when pressed, will force the current selected ring to phase 3.

Request Phase 4
This button, when pressed, will force the current selected ring to phase 4.

Node Selection
This is a list of available nodes from the currently selected Ring.

Node Status

Node Status and error counts from the currently selected Node of the currently selected Ring.

    IDN 28 – MST Error Count

    IDN 29 – MDT Error Count

    IDN 95 – Node Display Status

    IDN 21 – List of IDN with invalid values for change of phase form 2 to 3

    IDN 22 – List of IDN with invalid values for change of phase form 3 to 4

    IDN P-192 – List of up to 50 error codes

    IDN S-375 – List of up to 50 diagnostic codes

Fault Codes (P192) Tab

Code	Description	Date/Time	Operating Hours	
F2174	Loss of motor encoder reference	11/16/2010 12:10:22 PM	6675:55:53	
F2174	Loss of motor encoder reference	11/16/2010 10:23:18 AM	6674:09:14	
F8022	Enc. 1: enc. signals incorr. (can be cl...	11/16/2010 10:18:57 AM	6674:04:53	
F2174	Loss of motor encoder reference		6430:19:46	
F2174	Loss of motor encoder reference		6430:19:39	
F2174	Loss of motor encoder reference		6430:19:35	
F2174	Loss of motor encoder reference		6430:19:30	
F2008	RL The motor type has changed.		6430:19:30	

SD#1 - Rotary Drive — Drive Diagnostics / Fault Codes (P192) / Diagnostic Codes (S375) — Close

Code

This column displays the code received from the selected servo drive.

Description

This column contains the description of the item.

Date/Time

This column displays the date and time the code was received.

Operating Hours

This value represents the current operating hours for this servo drive at the time the code was received, in hours:minutes:seconds.

Close Button

This button will close this Servo Drive Diagnostic Box.

    NOTE: This button does not appear on the Sercos Diagnostics Page

NOTE: The Drive Diagnostics tab does not appear on the Sercos Diagnostics Page

NOTE: A missing description or date/time stamp may indicate either the correct PLC framework version is not in place, the error occurred prior to startup operating hours being logged, or the code is not listed in the reference table

Diagnostic Codes (S375) Tab

Code
This column displays the code received from the selected servo drive.

Description
This column contains the description of the item.

Date/Time
This column displays the date and time the code was received.

Operating Hours
This value represents the current operating hours for this servo drive at the time the code was received, in hours:minutes:seconds.

Close Button
This button will close this Servo Drive Diagnostic Box.
 NOTE: This button does not appear on the Sercos Diagnostics Page

NOTE: The Drive Diagnostics tab does not appear on the Sercos Diagnostics Page

NOTE: A missing description or date/time stamp may indicate either the correct PLC framework version is not in place, the error occurred prior to startup operating hours being logged, or the code is not listed in the reference table

Manufacturer Version
This label displays the current firmware version of the selected servo drive node.

Startup Operating Hours
This label displays the total operating hours of the selected servo drive node.

Refresh Status
When this button is pressed, the Node Status values are updated for the currently selected Node of the currently selected Ring.

Fault Code History Button
This button will display the Fault Code History Page.

NOTE: This feature is only available with the correct PLC framework version in place

Back
This button will open the previous page.

Setup Users Page

General Page Information

This page is used to setup users with unique passwords and with specific permission levels. Higher permission levels will allow the user to access additional pages within the HMI.

SAMPLE IMAGE

UserName Column

This column is where the user name for a user should be entered.

Password Column

This column is where the password assigned to the user name should be entered.

UserLevel Column

This column is where the user level for the associated user name should be entered. Each level provides increased access to HMI pages. See the Login Screen for additional information.

Card Reader Enabled

This shows the name of the file that the Aagard software uses to identify and use the FOB device and it also shows the connection status of the FOB device.

FOB ID

This column displays the embedded FOB Card ID associated with the selected user.

NOTE: This ID might not be the ID printed on the face of the card

Site

This column displays the site associated with the selected user.

Remove

Clicking this button will disassociate the selected FOB Card from the selected user, and remove the card from the system.

Logged In TimeOut

This entry field specifies the length of time the HMI will stay logged on as the current user without being used. After this time limit expires, the HMI will automatically log out of this user.

Save Button

This button will save the information edited on this page and then display the Advanced Page.

Cancel Button

This button will not save any information edited on this page and then display the Advanced Page.

Data Input Page

General Page Information

Each C40 (Main Section of the machine) has a Data Input Page. From this page branch categorized data entry pages for manipulating the data needed for the machine to operate properly. The data entry pages are categorized into two groups, the "Setup Data" and the "Product Data". There are two groups for a very important reason. Data changes made to the Setup Data category will affect all products that the machine runs, not just the product currently downloaded. Data changes made to the Product Data category will only affect the product that is currently downloaded. This information is very important to remember when editing data in these pages.

SAMPLE IMAGE
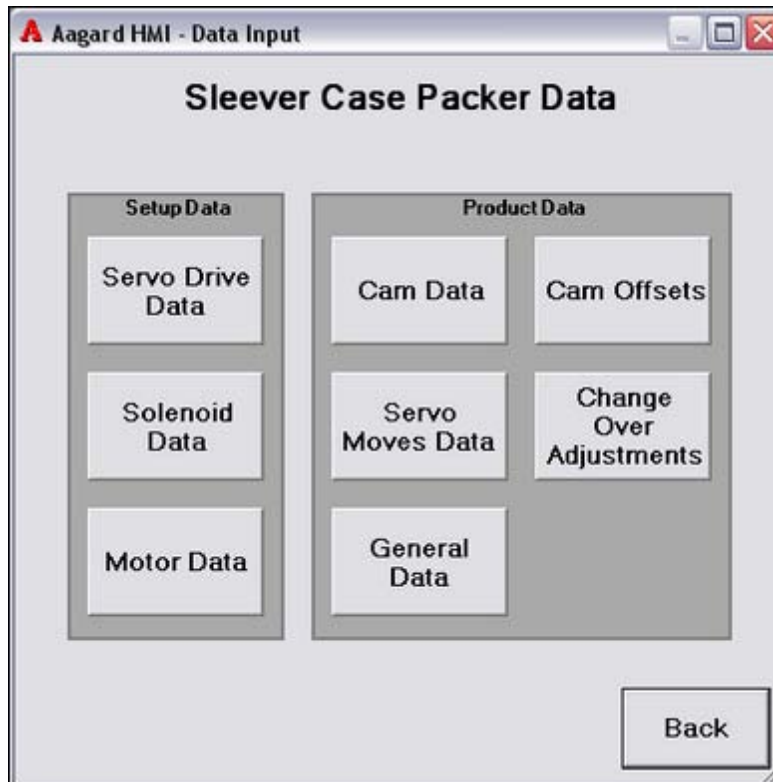
Setup Data Group
Changes made on these pages will affect all products
- **Servo Drive Data Button -** This button will open the Servo Drive Data Page.
- **Solenoid Data Button -** This button will open the Solenoid Data Page.
- **Motor Data Button -** This button will open the Motor Data Page.

Product Data Group
Changes made on these pages will only affect the current downloaded product
- **Cam Data Button** - This button will open the Cam Data Page.
- **Servo Moves Data Button** - This button will open the Servo Moves Data Page.
- **General Data Button** - This button will open the General Data Page.
- **Cam Offsets Button** - This button will open the Cam Offsets Page.
- **Change Over Adjustments Button** - This button will open the Adjustments Page.

Back Button
This button will close this page and go to the HMI Main Screen.

Servo Drive Data Page

General Page Information

This page shows Servo Drive Data for each Servo Drive on the machine. This page is identical to the Servo Drive Data Page, with the addition of one check mark box in the bottom left hand corner of the screen labeled "Include This Servo In Initialization". Checking this box will do a full initialization to the Servo Drive that is currently selected the next time an initialization is done. A full initialization will load all the parameters specified under the Initialization Column on the Servo Drive Data Page. Information about the parameters on this page can be found under the Servo Drive Data Page.

User Level 3 required!

Initialize Data Section

Initialize Data Category

The machine controller uses this data in the machine start up to configure each servo axis. This data will require a full initialize on that servo axis before the changes will take effect. More information on how to do a full initialize on a servo axis can be found on the Start Up Page.

Referencing Data Section

Referencing Data Category

This data is for machine referencing of the currently selected servo axis. Data changed in this category will take effect immediately after entering the data.

Jog Data Section

Jog Data Category

This data is used while in manual mode and jogging the currently selected servo axis. Data changed in this category will take effect immediately after entering the data.

Motion Data Section

Motion Data Category

This data is used as default variables and starting speeds for the currently selected servo axis. Data changed in this category will take effect immediately after entering the data.

Cam Data Section

Cam Data Category

This data is used when the axis is cam coupled to a master. If zero is specified, the default value in the Motion Data Category will be used. Data changed in this category will take effect immediately after entering the data.

Torque Monitoring Section

Torque Monitoring Category

This data is used as default variables and starting speeds for the currently selected servo axis. Data changed in this category will take effect immediately after entering the data.
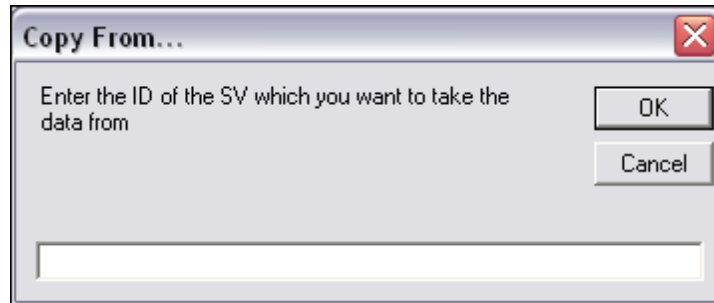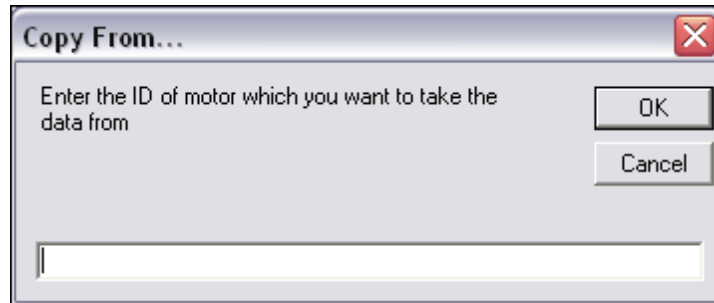
Servo Drive
To access different servo drives, use the servo drive drop down list.

Notes
These notes can be edited by pressing the **Edit Button** located to the bottom right of the SD Notes Box. Once the Edit Button has been pressed, the text on the Edit Button will change to "Save" and the notes are now able to be edited. After the notes are edited, the **Save Button** will have to be pressed in order for the notes to be saved.

Drive Status Box
This box is located in the bottom left corner of this page. Information that is given is Actual Position, Max Position Error, Max Torque, and State of the Servo Drive. More information can be found on the Drive Diagnostics Page.

Diagnose
This button will display a diagnostic popup for the currently selected Servo Drive. This diagnostic popup is described in further detail on the Drive Diagnostics Page.

Copy From Button

This button will allow all the data from another servo axis to be copied, replacing all of the data for the currently selected servo axis. This feature may be useful when setting up a new servo axis. Pressing this button will display the **Copy From Popup**.

Back Button

This button will close and save any changes and go to the Data Input Page.

Advanced Tab

Reference Mark Location
The Reference Mark Location is a precise description of the reference mark placement in relation to a fixed member of the machine.

Direction of Positive Movement
The Direction of Positive Movement is the direction of movement which causes a positive change in the position read out.

Reference Mark Position
The Reference Mark Position is the position the servo reads when lined up with the reference mark.

Precision
Change the precision setting for the selected drive. **WARNING: Data loss will occur when going from higher precision to lower!**

Reference Image

The Reference Image is the image that will display at the end of the reference routine. Push the [...] button to browse to the image file location.

Note: The image can only be 640 x 480 max.

Drive Status Box

This box is located in the bottom left corner of this page. Information that is given is Actual Position, Max Position Error, Max Torque, and State of the Servo Drive. More information can be found on the Drive Diagnostics Page.

Diagnose

This button will display a diagnostic popup for the currently selected Servo Drive. This diagnostic popup is described in further detail on the Drive Diagnostics Page.

Copy From Button

This button will allow all the data from another servo axis to be copied, replacing all of the data for the currently selected servo axis. This feature may be useful when setting up a new servo axis. Pressing this button will display the **Copy From Popup**.

Back Button

This button will close and save any changes and go to the Data Input Page.

Solenoid Data Page

General Page Information

The configuration of each solenoid valve controlled actuator is contained on this screen. Changing the configuration of a valve can greatly affect how the machine functions. For instance, a solenoid valve controlling vacuum must have the configuration data of a vacuum valve. A vacuum controlling solenoid valve must also have the A Sensor activated because a vacuum sensor is connected to this input. Thus, the "A" Time is the time allowed for a vacuum to be made. If a cylinder is slowed via the flow controls and the cylinder does not make the cylinder switch in the time displayed in 'sensor time', then the cylinder will give a "Jam" fault. If it is desired to slow a cylinder, make sure that the time for that direction is raised to accommodate the slower action time.

Solenoid Valve Parameters Fields

Solenoid Valve Parameter Entry Fields

The solenoid valve parameters that can be specified for a specific solenoid valve are Configuration, "A" Time, "B" Time, "DeBounce" Time, "Jam" Time, "A" Sensor, and "B" Sensor. View the Solenoid Data Page Items page for more information on each field.

SAMPLE IMAGE

Solenoid Valve

To access different solenoid valves, use the solenoid valve drop down list.

Notes

These notes can be edited by pressing the **Edit Button** located to the bottom right of the SD Notes Box. Once the Edit Button has been pressed, the text on the Edit Button will change to "Save" and the notes are now able to be edited. After the notes are edited, the **Save Button** will have to be pressed in order for the notes to be saved.

Copy From Button

This button will allow all the data from another solenoid valve to be copied and replace all of the currently selected solenoid valve data. This feature may be useful when setting up a new solenoid valve. Pressing this button will display the **Copy From Popup**.

```
Copy From...                                          [X]

 Enter the ID of the SV which you want to take the        [ OK ]
 data from
                                                         [ Cancel ]


 [                                                    ]
```

Back Button

This button will close and save any changes and go to the Data Input Page.

Motor Data Page

General Page Information

The configuration of each non servo motor is contained in this screen. Changing the configuration of any motor can greatly affect how the machine functions.

Motor Parameter Fields

Motor Parameter Entry Fields

These parameters are described in further detail in the Motor Data Page Items topic.

SAMPLE IMAGE

Motor

To access different motors, use the motor drop down list.

Notes

These notes can be edited by pressing the **Edit Button** located to the bottom right of the SD Notes Box. Once the Edit Button has been pressed, the text on the Edit Button will change to "Save" and the notes are now able to be edited. After the notes are edited, the **Save Button** will have to be pressed in order for the notes to be saved.

Copy From Button

This button will allow all the data from another motor to be copied and replace all of the data for the currently selected motor. This feature may be useful when setting up a new motor. Pressing this button will display the **Copy From Popup**.

Back Button

This button will close and save any changes and go to the Data Input Page.

Cam Data Page

General Page Information

A device cam is an electronic coupling of one or more devices to a master. The Cam Data Input Page contains the master/slave positions for each device. The slave is electronically coupled to the master by position, and the table contains those position to position couplings. The points in the table are also shown on a graph. The cams are very tightly coupled with the master and even a slight position change can greatly affect machine function.

SAMPLE IMAGE

Cam Table

This is a drop down menu to allow any solenoid valve or motor cam to be selected. The data being displayed on the page pertains to the selected cam.

Remove From Cam Generator
Press this button to remove the selected cam from Cam Generator. **Use with caution!**

Aagard level required!

New
This button will display the **New Cam Popup** which will create a new cam.

- **Number Entry Field** - This entry field is for the new cam ID number.
- **Name Entry Field** - This entry field is for the new cam name.
- **OK Button** - This button will close and save the information entered.
- **Cancel Button** - This button will close but not save the information entered.

Rename
This button will display the **Rename Cam Popup** which will allow the currently selected cam to be renamed.

- **Name Entry Field** - This entry field is where the cam name can be edited.
- **OK Button** - This button will close and save the information entered.
- **Cancel Button** - This button will close but not save the information entered.

Delete
This button allow the currently selected cam to be deleted.

Cam Table Length
This field will allow the cam to be setup to have as many points needed to make the proper cam. The previous example screen has 4 cam points.

Currently Looking at #
This field will allow the cam point entered to be viewed on the cam table right below this entry field.

Notes
These notes can be edited by pressing the **Edit Button** located to the bottom right of the SD Notes Box. Once the Edit Button has been pressed, the text on the Edit Button will change to "Save" and the notes are now able to be edited. After the notes are edited, the **Save Button** will have to be pressed in order for the notes to be saved.

Refresh Graph
This button will refresh the graph shown.

Graph Selection
This feature displays cams in different graph formats.

- Graph All (Slow) uses all of the points in the cam to generate the graph
- Graph Current uses the points currently displayed on the screen to generate the graph

- Slope Graph displays the points in a slope (best suited for servo drives)
- Square Wave Graph displays the points in a square ware (best suited for solenoid valves)

Cam Generator Button

This button will open the Cam Generator Program. This program is used to create Servo Drive Cams. The Cam Generator is an Aagard developed application that generates cam tables. Opening the cam generator application allows the user to manipulate cam tables generated with the Aagard Cam Generator.

Back Button

This button will close and save any changes and go to the Data Input Page.

Servo Drive Cams

The servo drive cams should be altered through the Cam Generator. These cams are described in further detail in the Cam Generator help section.

Solenoid Valve Cams

The solenoid valve cams should be altered on the Cam Data Page. These cams are described in further detail in the Solenoid Valve Cams topic.

Motor Cams

The motor cams should be altered on the Cam Data Page. These cams are described in further detail in the Motor Cams topic.

Cam Generator

Choose Cam Group

General Page Information

The first screen to popup after the cam generator button is pressed is the Cam Generator Choose Cam Group Screen. The cam group is a group of servo axes that may have related functions.

Existing Cam Group Option
The user is prompted to select a cam group from the existing cam groups available that contains all the information needed to build the cam table wanted.

New Cam Group Option
If a new cam group is wanted, the New Option Button will have to be pressed.

- **Name Entry Field** - A name will have to be entered in the Name Entry Field.
- **C40 Drop Down Menu** - A C40 will have to be selected from the C40 Drop Down Menu. The C40 that should be selected from this menu is the C40 in which the Servo Drive(s) are located.

OK Button
This button will save any new Cam Groups and go to the Choose Product Screen (see below).

Cancel Button
This button will exit the Cam Generator and not save any changes.

Choose Product

General Page Information

The next screen to popup after the OK button on the Cam Generator Choose Cam Group Screen is pressed is the Choose Product screen. The product to choose is the one to which you would like the changes applied.

Existing Drop Down Menu

The user is prompted to select a product from the existing list of products available that contains all the information needed to build the cam table wanted.

OK Button

This button will go to the Cam Generator Main Screen.

Cancel Button

This button will exit the Cam Generator.

Main Screen

General Page Information

This is the Cam Generator Main Screen. This is where all Servo Drive Cams are made and edited. Once changes are complete, the generated positions are placed into the HMI database. A product download will be needed for the modifications to take effect. The Product Download will then load the generated positions to create the new cam.

Cam Generator has different ways the created cam can be viewed, if desired. The Cam Generator will default to the Setup Viewing Feature shown on the Cam Generator Main Screen. Other possible viewing features are Graph and Points. There is also a Misc Viewing Feature, which allows notes to be assigned to each cam.

SAMPLE IMAGE

Cam Group Information

MDist Multiplier

This entry field makes the MDist displayed in the different information blocks relate to something such as time or distance of another axis. Keep in mind that the MDist is only equal to time when operating at 100% rate.

Add Cam Button - This button will display the Choose Cam Popup. This popup will allow a new cam to be added to or created in the cam generator. If the cam exists already, select the Existing Option and select the cam from the drop down menu. If the cam doesn't exist, select the New Option and specify the cam number in the left entry field and put the name of the cam in the right entry field. The OK Button will save the information, and the Cancel Button will close the popup and go to the Cam Generator Main Screen.

<div align="center">

SAMPLE IMAGE

</div>

Remove Button - This button will remove the currently selected cam.

Rename Cam - A cam can be renamed by clicking on the cam name at the top of the cam.

Number of Points to Use
This field defines the maximum number of points that the cam generator program uses to generate the table for the drive data for this cam.

NOTE: Using more points will produce smoother motion

Add Data Type Button - This button will display the Select Type of Data Popup.

Remove
This button will remove the currently selected cam data type

Move>>
This button will move the currently selected Cam Data Type to the right.

<<Move
This button will move the currently selected Cam Data Type to the left.

Master Start
This is the Master Position at which the cam should start.

Slave Start
This is the Slave (Servo Drive) Position at which the cam should start.

Velocity Start
This is the velocity at which the Servo Drive should start its cam.

Calculate
This button will calculate the Master End, Slave End, and all the status information generated in each Cam Data Type for the cam.

Master End Status
This position will be generated after the Calculate Button has been pressed. This status is the position at which the master currently ends. This should always equal the length of the master's travel after all changes have been made.

Slave End Status
This position will be generated after the Calculate Button has been pressed. The status is the position at which the slave (Servo Drive) currently ends. This position should usually equal the slave start unless the axis rolls its position over to zero at some point.

Quit Button - This button will ask if any changes want to be saved and start the process to exit cam generator and display the Cam Generator Warning Screen.

Save Button - This button will save any changes made to the cams.

Load Button - This button will ask if any changes want to be saved and go to the Cam Generator Choose Cam Group Screen to load another group of cams.

View Timing Graph
This feature displays the relationship (in time) between each segment of the cam to the overall length of the cam.

View Overlay Graph
This feature displays the position of the axis (Show Slave selection) as well as the velocity of the axis (Show Velocity selection) over the length of the cam.

View 2 Axis Graph
This feature displays the profile of a two-axis cam, graphing the position of one axis over the position of another.

General Page Information

This popup will allow a new cam to be added to or created in the cam generator.
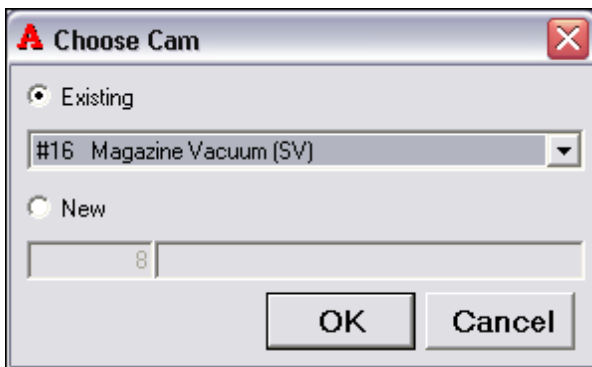
General Page Information

Cam Generator has different ways the created cam can be viewed, if desired. The Cam Generator will default to the Setup Viewing Feature shown on the Cam Generator Main Screen. Other possible viewing features are Graph and Points. There is also a Misc Viewing Feature, which allows notes to be assigned to each cam.

SAMPLE IMAGE
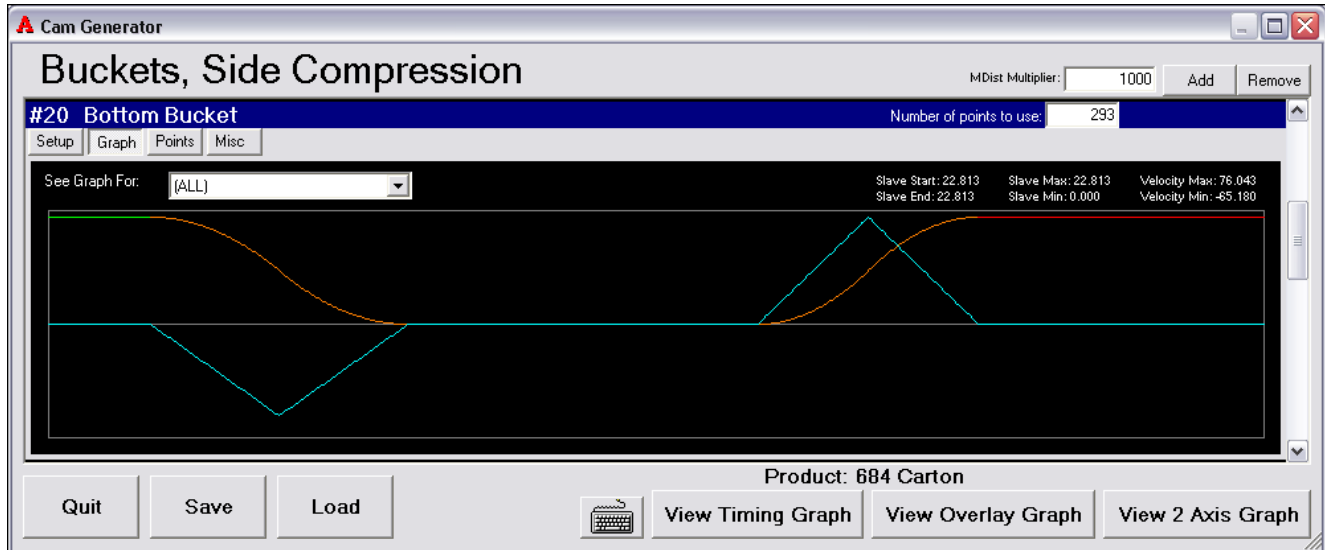
This viewing feature displays the cam shown as a graph, which allows the user to be able to clearly see the profile of the cam that is currently created.

See Graph For Drop Down List
This drop down list will allow the user to view the graph for the whole cam or just the graph for individual Cam Data Boxes.

General Page Information

This viewing feature displays the cam points shown in a spreadsheet format, displaying each cam point created by the current cam.

SAMPLE IMAGE
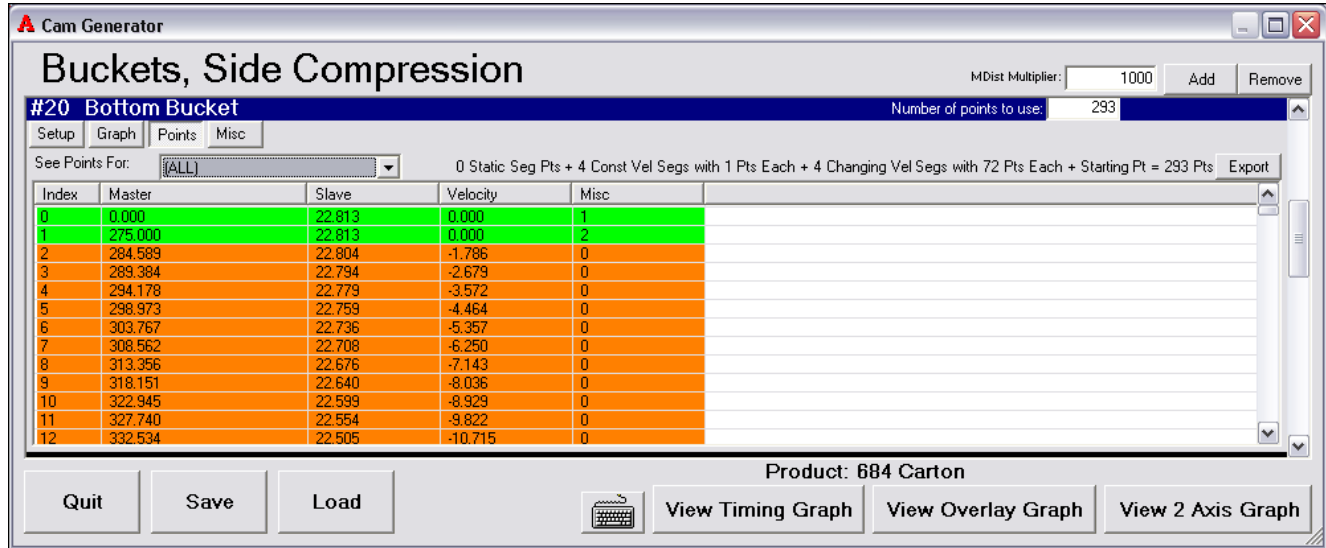
See Points For Drop Down Menu
This drop down menu will allow the user to view all the points in this cam or points for individual Cam Data Boxes.

Points View Label
- Static Seg: This displays how many static segments are in the cam, and the number of points they consume
- Const Vel Segs: This displays how many constant velocity segments are in the cam, and the number of points they consume
- Changing Vel Segs: This displays how many changing velocity segments are in the cam, and the number of points they consume
- Starting Point: This displays the starting point of the cam

Index Column
This column lists the point number for the row of information.

Master Column
This column lists the master position at that point in the cam.

Slave Column
This column lists the slave (servo axis) position at that point in the cam.

Velocity Column
This column lists the velocity at that point in the cam.

Misc Column
This column defines the beginning and end of a segment. 1 defines the beginning of a segment; 2 defines the end of a segment.

This viewing feature allows notes to be assigned to each cam.

General Page Information

This viewing feature allows notes to be assigned to each cam.

SAMPLE IMAGE
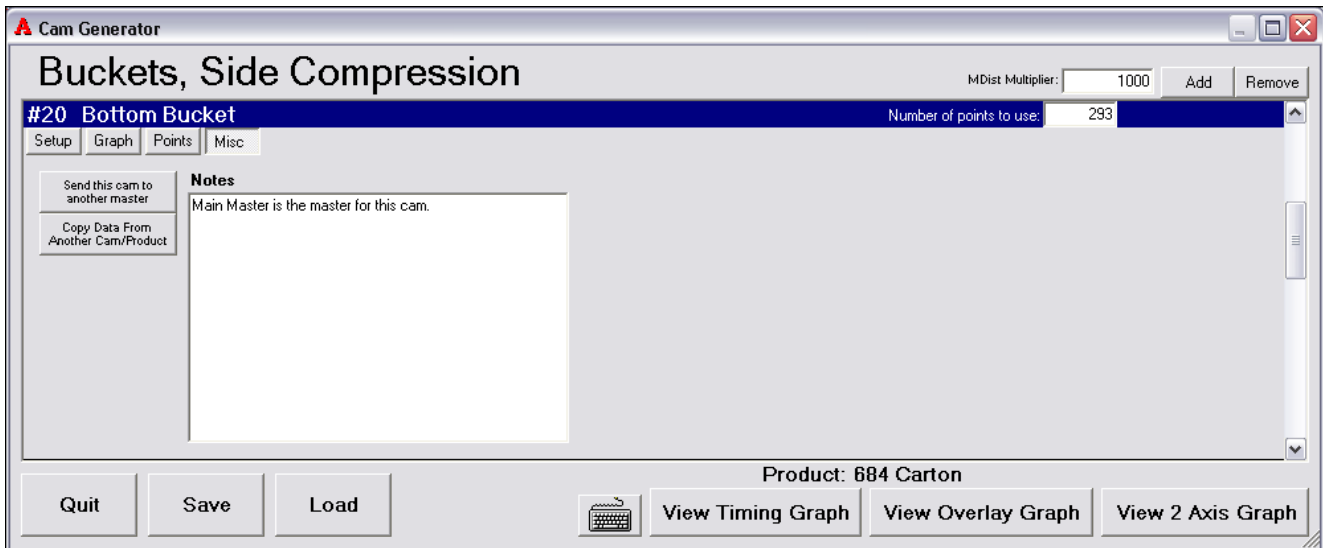
Send this cam to another master
This button will allow the user to move the cam to another cam group that is perhaps more integrated with this cam.

Copy Data From Another Cam/Product
This button will allow the user to copy data from another cam to replace the current cam profile.

Notes
This box is for notes that may need to be listed with this cam.

General Page Information

Each cam is made of a group Cam Data Types which, put together, create the servo axis motion needed to complete the function of that servo axis. Select one of the data types and it will be added to the cam. Every Cam Data Type has certain input parameters that need to be specified. The rest of the parameters can be calculated from the input parameters and are displayed below the input parameters in the Cam Data Type after the calculate button has been pressed.
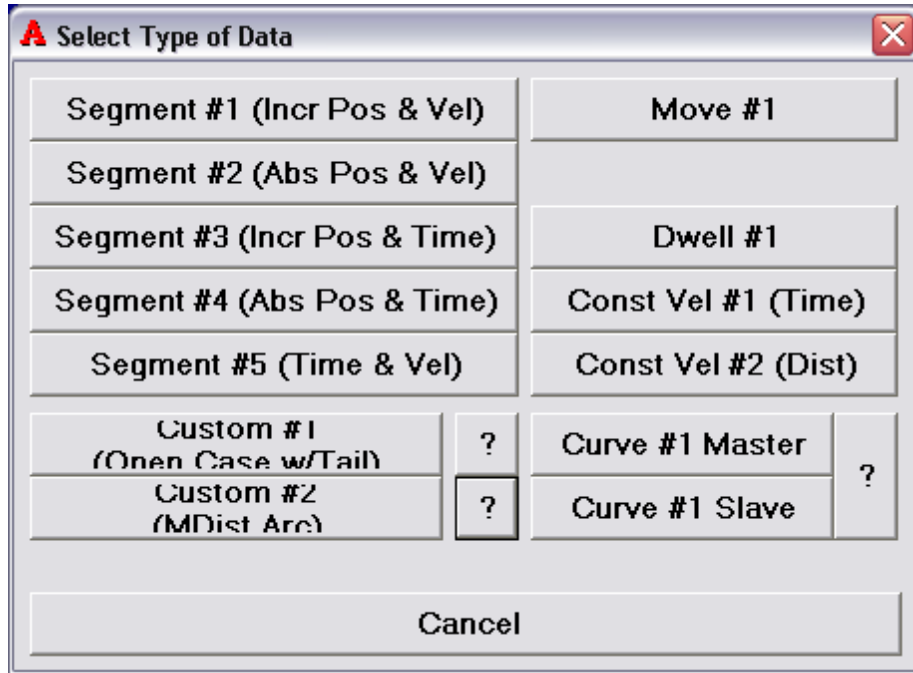
Segment #1 (Incr Pos & Vel) - This is a segment data type with input parameters of Incremental Position and Velocity. This data type will only accelerate or decelerate the Servo Axis.
   SDist - This is the Slave (Servo Axis) Distance to be traveled during this Data Type.
   End Vel - This is the velocity wanted at the end of the Data Type.

Segment #2 (Abs Pos & Vel) - This is a segment data type with input parameters of Absolute Position and Velocity. This data type will only accelerate or decelerate the Servo Axis.
   End SPos - This is the Slave (Servo Axis) Position wanted at the end of the Data Type.
   End Vel - This is the velocity wanted at the end of the Data Type.

Segment #3 (Incr Pos & Time) - This is a segment data type with input parameters of Incremental Position and Time. This data type will only accelerate or decelerate the Servo Axis.
   SDist - This is the Slave (Servo Axis) Distance that is to be traveled during this move.
   MDist - This is the Master Distance in which the segment is to be completed.

Segment #4 (Abs Pos & Time) - This is a segment data type with input parameters of Absolute Position and Time. This data type will only accelerate or decelerate the Servo Axis.
   End SPos - This is the Slave (Servo Axis) Position wanted at the end of the Data Type.
   MDist - This is the Master Distance in which the segment is to be completed.

Segment #5 (Time & Vel) - This is a segment data type with input parameters of Time and Velocity. This data type will only accelerate or decelerate the Servo Axis.

    MDist - This is the Master Distance in which the segment is to be completed.

    End Vel - This is the velocity wanted at the end of the Data Type.

Custom #1 (Open Case w/Tail) -

    Cam # - This specifies the cam number in which this custom cam is built.

    SDist \ Radius - This is the Slave (Servo Axis) Distance that is to be traveled during this move.

    Move MDist - This is the Master Distance in which the segment is to be completed.

Custom #2 (MDist Arc) -

    SDist \ Radius - This is the Slave (Servo Axis) Distance that is to be traveled during this move.

    MDist - This is the Master Distance in which the segment is to be completed.

Move #1 - This is a move data type with input parameters of Time, SDist, MaxVel, and MaxAcc. This data type will accelerate and then decelerate the Servo Axis to a stop.

    Time - This is the Master Distance in which the move is to be completed.

    SDist - This is the Slave(Servo Axis) Distance to be traveled during this move.

    MaxVel - This is the Max Velocity allowed for this move. If 0 is specified, the default max velocity specified on the [Servo Drive Data Page]() will be used. If the max velocity is reached during this move, the move profile will be a trapezoid move. If the max velocity isn't reached during this move, the move profile will be a triangle move.

    MaxAcc - This is the Max Acceleration and Deceleration wanted for this move. If 0 is specified, the default max velocity specified on the [Servo Drive Data Page]() will be used.

Dwell - This is a dwell data type with an input parameter of MDist. This data type will not move the servo axis for the amount of Master Distance specified.

    MDist - This is the Master Distance in which the segment is to be completed.

Const Vel #1 (Time) - This is a constant velocity data type with an input parameter of MDist. This data type will continue the velocity at which the Servo Axis is at the beginning of this data type for the amount of Master Distance specified.

    MDist - This is the Master Distance in which the segment is to be completed.

Const Vel #2 (Dist) - This is a constant velocity data type with an input parameter of SDist. This data type will continue the velocity at which the Servo Axis is at the beginning of this data type for the amount of Slave Distance specified.

    SDist - This is the Slave (Servo Axis) Distance that is to be traveled during this move.

Curve #1 Master - This is a move data type with input parameters of ID #, Start Angle, End Angle, X Radius, and Time. This data type along with the Curve #1 Slave data type will allow a two axis robot to move in a arc profile.

    ID # - This specifies the ID Number for the Curve Master.

    Start Angle - This specifies the Start Angle of the curve in relationship to the axes and center point of the curve.

    End Angle - This specifies the End Angle of the curve in relationship to the axes and center point of the curve.

    X Radius - This specifies X Radius of the curve.

    Time - This is the Master Distance in which the move is to be completed.

Curve #1 Slave - This is a move data type with input parameters of Master ID # and Y Radius. This data type along with the Curve #1 Master data type will allow a two axis robot to move in a arc profile.

   Master ID # - This specifies the ID Number of the Curve Master in which this Curve Slave is built.

   Y Radius - This specifies Y Radius of the curve.

? Buttons
The "?" buttons will describe what that data type is.

Cancel Button
The Cancel Button will close the popup and not add any data types.

Warning Screen

General Page Information

After exiting the Aagard Cam Generator, the operator will receive a message stating that a product download must be made after modifying the cam data in the cam generator. Because the Cam Generator is a separate application, it does not directly communicate with the machine's controller and the cams need to be downloaded independently.

After the OK Button is pressed the Cam Data Page will be displayed.

Solenoid Valve Cams

Solenoid Valve Cams

The solenoid valve cams should be altered on the Cam Data Page. The Slave Pos. row contains the data that will energize or not energize the solenoid valve. The Master Pos. row contains the master's position at each function of the solenoid valve.

- **Solenoid Master Pos.** - Master's Position of each slave position.
- **Solenoid Slave Pos.**
  - ○ Spring Return or Vacuum Solenoid Valve - 1 will energize and 0 will not energize
  - ○ Double Detent Solenoid Valve - 1 will energize and -1 will not energize

	1	2	3
Master Pos:	0	5	10
Slave Pos:	0	1	0

Example Cam in above screen - At point 1 the master position is 0 and the slave position is 0 which is not energized. Point 1 should always be master position 0 in order to know the solenoid valve's position at the start of the cycle. At point 2 the master position is 5 and the slave position is 1 which is energized. At point 3 the master position is 10 and the slave position is 0 which is not energized.

Cam Data Page

Motor Cams

Motor Cams

The motor cams should be altered on the Cam Data Page. The Slave Pos. row contains the data that will energize or not energize the motor. The Master Pos. row contains the master's position at each function of the motor.

- **Motor Master Pos. -** Master's Position of each slave position.
- **Motor Slave Pos.**
  - o VFD controlled - The number will be the device speed wanted in FPM
  - o Motor Starter controlled - 1 will energize and 0 will not energize

	1	2	3
Master Pos:	0	5	10
Slave Pos:	0	90	0

Example Cam in above screen - At point 1 the master position is 0 and the slave position is 0 which is not energized or if VFD controlled running at a speed of 0 FPM. Point 1 should always be master position 0 in order to know the motor's speed or status at the start of the cycle. At point 2 the master position is 5 and the slave position is 90 which is, if VFD controlled, running at a speed of 90 FPM. If the motor wasn't VFD controlled, then the slave position would be 1 which is energized. At point 3 the master position is 10 and the slave position is 0 which is not energized, or if VFD controlled, running at a speed of 0 FPM.

Cam Data Page

Servo Moves Data Page

General Page Information

This screen provides a means to adjust servo axis move parameters. Most servo-controlled motions use this move data.

Servo Drive

To access different servo drives, use the servo drive drop down list.

Move

Each servo axis has a collection of moves accessible via the drop down menu. Some of these are auto calculated by the controller and values don't need to be entered for these moves. Move numbers 1 through 5 are always auto calculated. Any move numbers higher than 5 will be labeled if they are auto calculated.

New
This button will display a **New Move Popup** window. This feature will allow a new move to be created.

    SD # Entry Field - This number should be the same as the Servo Drive number for which the move needs to be created.
    Number - This number is equal to the move number that is specified in the controller program for this move.
    Name - This is where the name of the move should be specified.
    OK Button - This button will save any new information and close the popup window.
    Cancel Button - This button will not save any new information and close the popup window.

Rename Button
This button will display a **Rename Move Popup** window. This feature will allow an existing move to be renamed.

    Name - This is where the name of the move should be specified.
    OK Button - This button will save any new information and close the popup window.
    Cancel Button - This button will not save any new information and close the popup window.

Delete Button
This button will delete the currently selected move for the currently selected servo drive.

Servo Axis Move Parameters Entry Field Column
The move parameters that can be specified for a specific move are Position, Velocity, Accel, Decel, Torque, and Position Error Limit. These parameters are described in further detail on the Servo Modes Data Page Items topic.

Default Fields
This column will display the default parameters set in the Servo Drive Data Page for the selected servo drive.

Notes
These notes can be edited by pressing the **Edit Button** located to the bottom right of the SD Notes Box. Once the Edit Button has been pressed, the text on the Edit Button will change to "Save" and the notes are now able to be edited. After the notes are edited, the **Save Button** will have to be pressed in order for the notes to be saved.

Drive Status Box
This box is located in the bottom left corner of this page. Information that is given is Actual Position, Max Position Error, Max Torque, and State of the Servo Drive. More information can be found on the Drive Diagnostics Page.

Servo Move Calculator Box
This box will display different types of possible move calculators depending on what is selected in the Servo Move Calculator Drop Down Menu. This tool will allow information about a move to be calculated once the required information is entered.

Diagnose

This button will display a diagnostic popup for the currently selected Servo Drive. This diagnostic popup is described in further detail on the [Drive Diagnostics Page](#).

Back Button

This button will close and save any changes and go to the [Data Input Page](#).

General Data Page

General Page Information

The data contained on this page is provided as a means to adjust certain running parameters. These values pertain to the current downloaded product only. If changes are desired on any other products, a product download will have to be performed and then changes made to that specific downloaded product.

Case Packer General Data Page Items
Palletizer General Data Page Items

? Button

This button will display the **General Data Definition Popup.** This popup contains the definition for the related General Data item. To close the popup, click the red X in top right corner, click outside the popup, or press Esc. **NOTE:** If logged in at Aagard level, this definition is editable.

Back Button

This button will display the Data Input Page.

Case Packer General Data Page Items

INFEED

Product Rate
This entry field sets the velocity of the cartoner master move.

Metering Conveyor Speed (FPF)
This entry field specifies the speed of the Metering Conveyor. The unit of measure for this entry field is feet per minute (FPM).

Side Belt Speed (FPM)
This entry field specifies the speed of the Side Belts. The Side Belts should usually travel at 400 FPM. The unit of measure for this entry field is feet per minute (FPM).

Trigger Downstack From Side Belt Sensor Delay (Time in Seconds)
This entry field delays the Downstacker Flights from downstacking a layer after the rising edge of the Side Belt PE. The unit of measure for this entry field is seconds.

Retract Spatula After First Product Delay (Time in Seconds)
This entry field delays the Spatula from returning after the first product is put into the Downstacker. The unit of measure for this entry field is seconds.

Trigger spatula Transfer From Side Belts PE Delay (Time in Seconds)
This entry field delays the Spatula from extending after the rising edge of Product seen by the Product in Side Belts PE. The unit of measure for this entry field is seconds.

DOWNSTACKER

Product Height
This entry field specifies the height of the product as it enters the machine. The unit of measure for this entry field is inches.

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

Downstack Push Plate Height From Deck (in)
This entry field specifies the position of the downstacker flights when the downstack pusher is clear to begin its cycle. The unit of measure for this entry field is Inches.

Stack Complete Position From Deck (in)
This entry field specifies the position of the downstacker flights when the Downstacker Pusher is trigger to start moving. The unit of measure for this entry field is inches.

Downstacker First Layer Delay
This entry field specifies the time delay of the downstacker. The unit of measure is seconds.

Downstacker First Layer Position
This entry field specifies the position of the downstacker flights when they are ready to accept product. The unit of measure for this field is inches.

Downstacker Prime Position
This entry field specifies the position of the downstacker flights when they are primed for the next downstacker cycle. The unit of measure for this field is inches.

DOWNSTACKER PUSHER

Downstack Pusher Stack Presented Position (Master Position)
This entry field specifies the Master Position during a cycle of the Downstack Pusher when a completed stack has been delivered to the Loader. The unit of measure for this entry field is in the Master Position of the Downstack Pusher.

Downstack Pusher Available Position (Master Position)
This entry field specifies the Master Position during a cycle of the Downstack Pusher when it is available to receive product. The unit of measure for this entry field is in the Master Position of the Downstack Pusher.

Downstack Pusher Condition Product Before Extended
This entry field specifies the downstacker pusher master position when the product conditioner comes down. The unit of measure for this field is the master position of the downstack pusher.

LOADER

Product In Case Position
This is the position of the loader master at which the product stop and tucker will move to hold the minors closed. This keeps product from continuing past the non load side score line.

Case Filled Position (Master Position)
This entry field specifies the position of the Loader Master when the Case Filled status is set. The unit of measure for this entry field is in the Master Position of the Loader Master.

Loader Available Before Cycle End Position (Master Position)
This entry field specifies the Master Position Distance of the Loader Master when the Loader becomes available to receive product before the end of the cycle. The unit of measure for this entry field is in the Master Position of the Loader Master.

Loader Release Product Conditioner Position
This entry field specifies the loader master position when the product conditioner is retracted. The unit of measure for this field is the master position of the loader.

CASE FORMER

Enable Glue Gap
This check box enables the Glue Pattern Gapping feature. If this box is checked the gapping feature is enabled. This feature should only be edited from the Case Glue Page.

Enable Glue Gap Percentage (%)
This entry field specifies the amount of gap to be used in the glue beads. This value will only be used if the Glue Pattern Gapping feature is enabled. This feature should only be edited from the Case Glue Page.

Case Ready Position (Master Position)
This entry field specifies the position of the Packer Main Master when the case is ready for the Loader to fill the case of cartons. The unit of measure for this entry field is in the Master Position of the Packer Main Master.

Palletizer General Data Page Items

TIP REJECT

Tip/Reject Conveyor Speed (FPM)
This field specifies the speed of the Tip/Reject Conveyor. The unit of measure for this entry field is Feet Per Minute (FPM).

Drop Product Stop Position (Master Position)
This entry field specifies the Master Position of the Tip/Reject Master where the Product Stop is dropped. The unit of measure for this entry field is in the Master Position of the Tip/Reject Master.

Re-Enable Tip/Reject Conveyor (Master Position)
This entry field specifies the Master Position of the Tip/Reject Master where the Tip/Reject Conveyor is turned on. The unit of measure for this entry field is in the Master Position of the Tip/Reject Master.

ROTATE AND ACCUMULATION

Rotate Cases
This check box allows for the Case Rotate to be enabled on the sizes where the case needs to be rotated in order to obtain the correct orientation.

Begin Rotate Delay Time (Time in Seconds)
This field specifies the time between when a product is sensed and the rotate cycle begins. The unit of measure for this entry field is Seconds (Sec).

Release Vacuum Early Distance (Degrees)
This field specifies the amount of rotation in degrees that will remain on the Rotate SD when vacuum is released. The unit of measure for this entry field is Degrees.

Cam Offsets Page

General Page Information

This screen allows the user to slightly adjust a complete cam while the machine is operating. It may be convenient to make slight adjustments to a cam while the machine is still in operation. Individual parts of the cam can't be adjusted from this page, but the whole cam can be adjusted slightly earlier or later. The servo drive start position of the cam can also be adjusted slightly from this page. CAUTION! Changes made here may greatly affect the performance of this machine.

SAMPLE IMAGE

Servo Drive
To access different servo drives, use the servo drive drop down list.

Solenoid Valve
To access different solenoid valves, use the solenoid valve drop down list.

Master Offset
This entry field will adjust the master offset of the cam for the selected device. This will offset the cam for the selected device by the Master Distance. For example: At 0 the cam and master will both start at the same time. If 5 is entered in the Master Offset Entry Field the cam will now be advanced by a Master Position of 5. If -5 is entered in the Master Offset Entry Field the cam will now be delayed by a Master Position of 5.

Slave Offset Entry Field

This entry field will adjust the slave offset of the cam for the selected drive. For example: At 0 the slave will start at the position specified by the cam in cam generator. If 5 is entered in the Slave Offset Entry Field the slave will now start the cam at the position specified in the cam plus 5 units. If -5 is entered in the Slave Offset Entry Field the slave will now start the cam at the position specified in the cam minus 5 units. The units will vary depending on how the drive is configured. The units of the drive are specified on the Servo Drive Data Page.

Diagnose

This button will display a diagnostic popup for the currently selected Servo Drive. This diagnostic popup is described in further detail on the Drive Diagnostics Page.

Back Button

This button will close and save any changes and go to the Data Input Page.

Changeover Adjustments Page

General Page Information

This page provides a list of adjustments and values for the currently downloaded product. Values are adjustable from this page.

Columns indicate the Adjustment Name, Value, and Description.

SAMPLE IMAGE

Aagard HMI - Data Input - Adjustments

Current Product:

2-1	88	Operator Side Magazine Width
2-2	21	Non-Operator Side Magazine Width
2-3	180	Non-Operator Side Magazine Rotate Clip
2-4	205	Operator Side Magazine Rotate Clip
2-5	380	Top Clip
2-6	42	Bedplate Width
2-7	100 EXTEND	Product Stop - Upper
2-8	EXTEND	Product Stop - Lower
2-9A	1/4" DOWN FRO	Flap Tucker - Upper
2-9B	145	Flap Tucker - Lower
2-10	LOWER	Robot Pick Cups
2-11	185	Robot Case Pusher Horizontal
2-12	330	Robot Case Pusher Vertical
2-13	ON	5th Cup Vacuum Control Valve
2-14	OFF	4th Cups Vacuum Control Valve

Export List Of All Values For All Products   ReArrange   Back

Export List Of All Values For All Products Button

This button will export a list of all values for all products in default order to a Microsoft Excel file, which may also be opened by other application programs.

ReArrange Button

This button will display the ReArrange Page.

Rearrange Page

General Page Information

This will allow the changeover order be adjusted when changing from one product to another. Having the changeover adjustments in the correct order for all the different size changes may eliminate any possible interferences that may occur.

SAMPLE IMAGE

A Aagard HMI - Data Input - Adjustment Order

Product Combination: From: 684 Carton To: 699 Carton

Number	Default Order	Modified Ord	Name
1-1	1	-1	Infeed Conveyor Width
1-2	2	-1	Blank Backstop Width
1-3	3	-1	Bucket Changeout
1-4	4	-1	Backstop Offset
1-5	5	-1	Side Seam Compression
1-6	6	-1	Nip Belt Height
1-7	7	-1	Picker Arm-Change Part
1-8	8	-1	Magazine Height
1-9	9	-1	Top Carton Drive Height
1-10	10	-1	Carton Blank Width
1-11	11	-1	Magazine Horizontal Adjustment
1-12	12	-1	Carton Slot Guide
1-13	13	-1	Upper Carton Clamp
1-14	14	-1	Lower Carton Clamp
1-15	15	-1	Upper Flite Chain Width
1-16	16	-1	Lower Flite Chain Width
1-17	17	-1	Tucker Height
1-18	18	-1	Operator Upstream Glue Height
1-19	19	-1	Operator Lower Compression Plate
1-20	20	-1	Operator Downstream Glue Height
1-21	21	-1	Operator Upper Compression Plate
1-22	22	-1	Discharge Conveyor Width
1-23	23	-1	Domino Laser Position
1-24	24	-1	After Tuck Rail

If the Modified Order Value = "-1" then the Default Order Value will be used in its place.
Changing The Default Order will change it for all Product Combinations.

Back

Product Combination Drop Down List

This list will allow the correct product combination to be selected when going from a particular product to another product.

Number Column

This column will show the different adjustment changeover numbers.

Default Order Column

This column will show the changeover adjustment's default order that is displayed on the <u>Adjustments Page</u>. This order can be changed from this page. This will change the default order on all sizes.

Modified Order Column

This will show the changeover adjustment's modified order. This column can be different depending on what Product Combination is selected. If the order needs to be modified, change the -1(Default Order) in the Modified Order Column to the appropriate number that will place it correctly in the Default Order.

Name Column

This column will display the changeover adjustment names.

About

General Page Information

This screen contains software version information and is displayed by pressing the About button on the Main page.
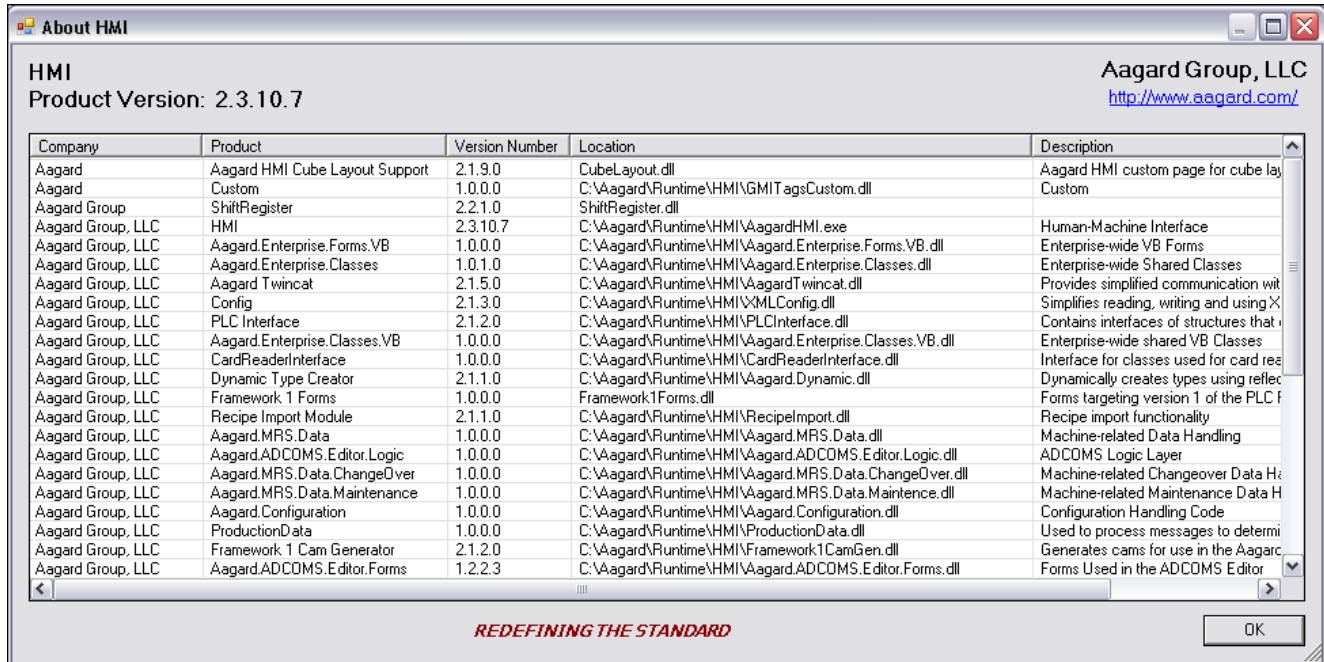
Report Generator

General Page Information

The Report Generator is a stand-alone program and is automatically loaded into memory when the HMI application runs. The Report Generator is accessible from the system tray.

This program will create reports that will assist in improving the performance of the machine. The information given is created by analyzing information stored in the Aagard HMI database. Everything documented in this generated report can be seen in the Aagard HMI. The Report Generator will create a Detailed Report and a Summary Report daily, at the beginning of the first shift for the prior day's shifts. The following information is documented in the Summary Report: HMI Recorded From, Time Report was Generated, Products downloaded for each Shift, Barcode downloaded if applicable for each Shift, Time the Product was downloaded for each Shift, Downtime Tracking Information by Section and by the whole System for each Shift, Production Data Information for each Shift. The following information is documented in the Detailed Report: System Wide Fault History Log, Change Log, Downtime Log, and System Wide Reject History Log.

This popup screen will allow the user to configure the Report Generator. The configuration setup on the popup screen will only be applied to the current logged on user. Five possible locations for reports can be specified, if desired.

If the Report Generator Program is running, the status icon should be shown in the bottom right hand corner of the PC Screen as shown below. The Aagard HMI must be logged in as Level 3 or higher in order for the PC Screen to be viewable. If the Report Generator Icon is right-clicked, the options shown below will be shown. If the Exit option is selected the Report Generator Program will be Shutdown. The Configure option will display the popup screen.

Report Generator Status Icon Options
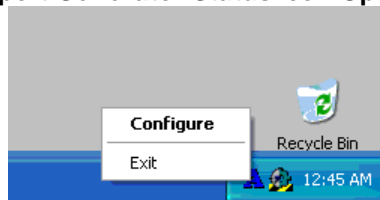
Report Generator Configure Option
SAMPLE IMAGE

Output Path Check Box
This check box will generate a Summary and Detailed Report to the Output Path specified in the Output Path entry field located to the right of the check box. If this box is not checked, no reports will be generated to the specified location.

Output Path Entry Field
This entry field will specify the location to which the Summary and Detailed Report will be generated if the Output Path check box to the left of the Output Path Entry Field is checked. If this box is not checked no reports will be generated to this specified location.

... Button
This button will allow the user to search for a location for the reports to be generated to. After a location is found, the location will be specified in the Output Path Entry Field.

Delete Files Older Than...
This entry field will specify when the files are to be deleted. The Report Generator will delete any files older than the specified amount of days prior to the current date when the new reports are generated for that day.

Archive Messages Check Box
This check box will generate an archive messages database when an Archive Path has been defined. If this box is not checked, no database will be generated to the specified location.

Archive Path
The archive messages database will be written to the folder defined in this field.

Delete Records Older Than...
To manageable file sizes, records older than the number of days filled in this field will be deleted from the MessageLogArchive database.

Report Process DLL
On some Aagard machines, extended data reporting is available. The name of the dynamic link library must be entered in this field when using extended reporting.

Report Process Config
This field is reserved for future functionality.

Entry Point
On some Aagard machines, extended data reporting is available. The name of the entry point must be entered in this field when using extended reporting.

Custom Configuration
Clicking this button opens the Custom Configuration page. This button is only available when the Report Process DLL field is filled in.

Test Reports/Output Button
This button will allow the user generate Summary and Detailed Reports for the current shift and prior shifts after the current shift for the prior day.

Shut Down Rpt Generator Button
This button will allow the user to shut down the Report Generator Program.

OK
This button will allow the user to close the Report Generator Configure screen and will save any changes that have been made.
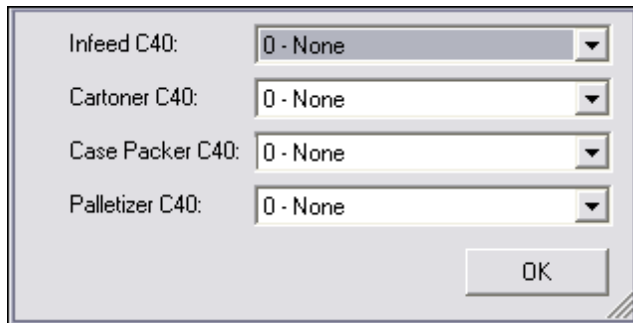
Close
This button will allow the user to close the Report Generator Configure screen and will not save any changes that have been made.

Custom Configuration

Click Custom Configuration button to configure information for extended data collection. In this screen, you must indicate which C40 is associated with the given selection.

> **IMPORTANT:** This configuration is key in order for the data to be processed properly into the ExtendedData.mdb file.

C40 Infeed
The C40 which corresponds to infeed product count

C40 Cartoner
The C40 which corresponds with a hard-coded position in the spreadsheet
NOTE: If the system does not have a cartoner, leave this field blank

C40 Case Packer
The C40 which corresponds with a hard-coded position in the spreadsheet
NOTE: If the system does not have a case packer, leave this field blank

C40 Palletizer/Unitizer
The C40 which corresponds with a hard-coded position in the spreadsheet
NOTE: If the system does not have a palletizer/unitizer, leave this field blank

Changeover Adjustments

Changeover Adjustments
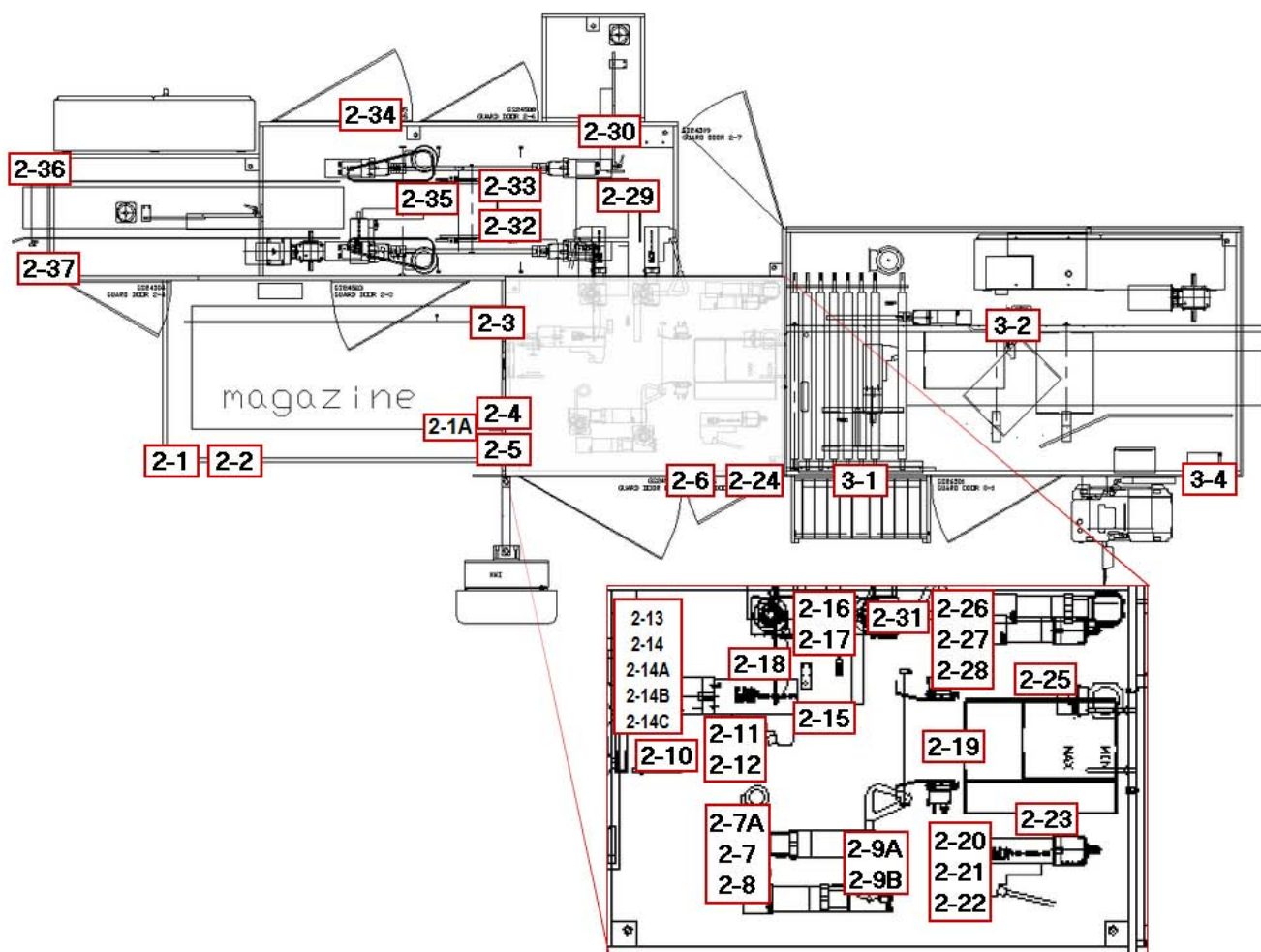
Training Index   Next Level 2 Training

2-1 to 2-5

Training Index | Next Level 2 Training

2-1

Using crank handle, adjust scale to the value shown on the View Changeover Adjustments page for this changeover location.

2-1A

Using quick handle, adjust position to the value shown on the View Changeover Adjustments page for this changeover location.

2-2

Using crank handle, adjust scale to the value shown on the View Changeover Adjustments page for this location.

2-3

Loosen quick handle and adjust the scale to the value shown on the View Changeover Adjustments page for this changeover location. Retighten quick handle!

2-4

Loosen quick handle and adjust the scale to the value shown on the View Changeover Adjustments page for this location. Retighten quick handle!

2-5

Using crank handle, adjust scale to the value shown on the View Changeover Adjustments page for this location.

2-6 to 2-24
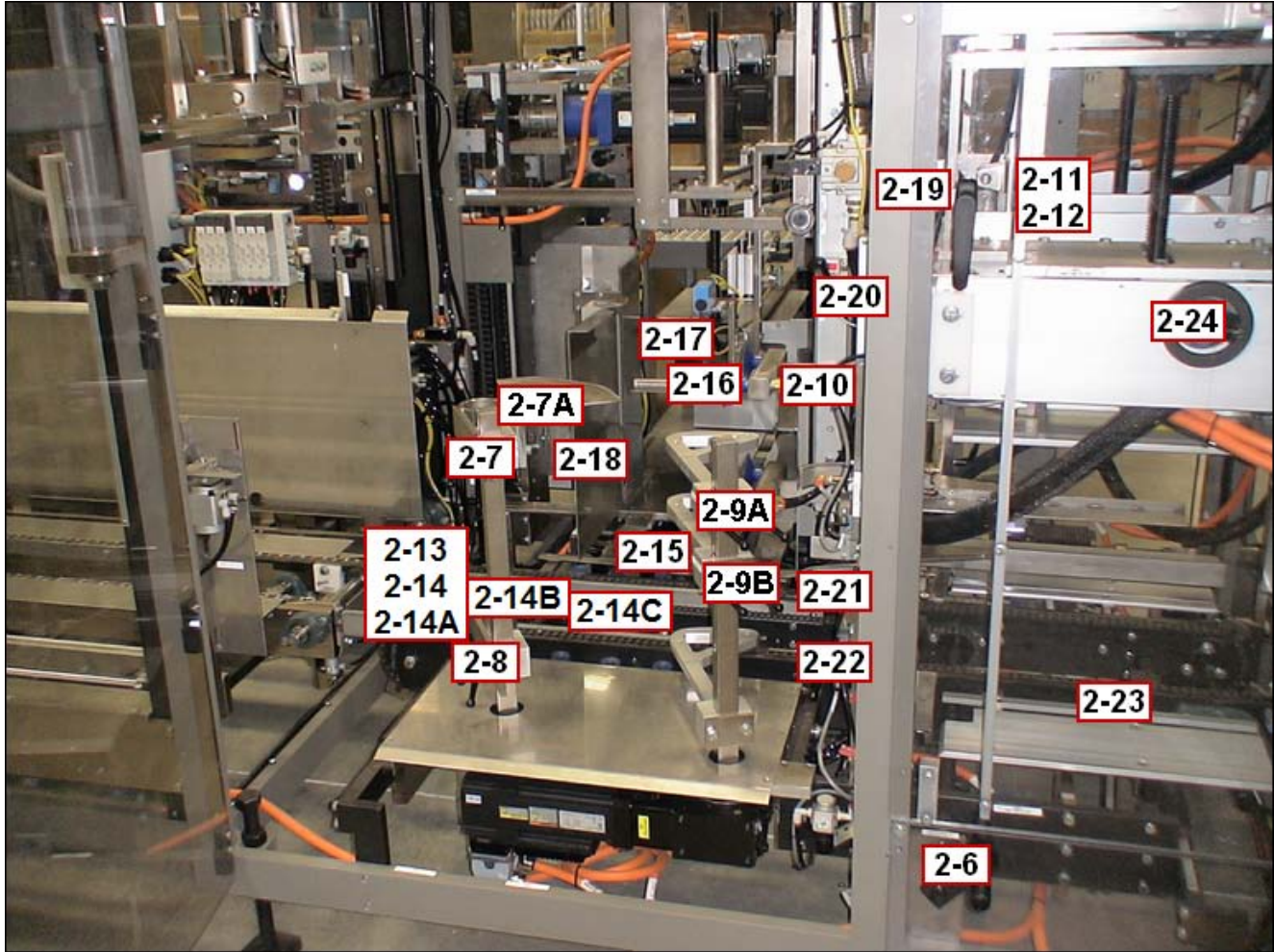
2-6
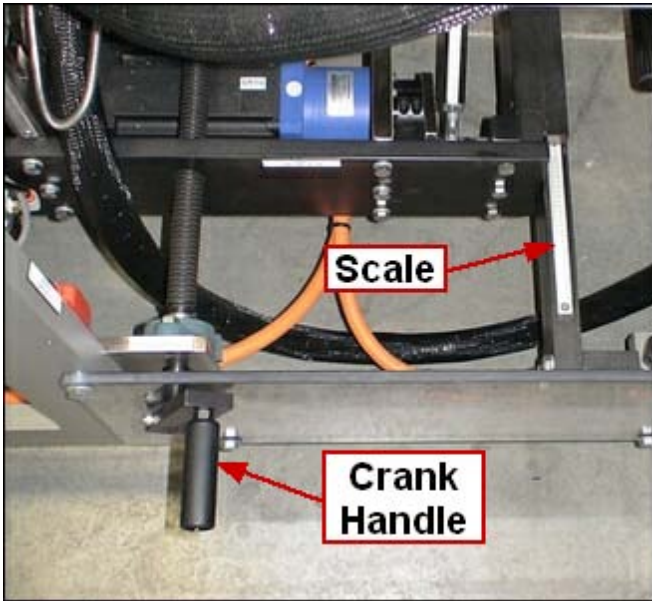
Using crank handle, adjust scale to the value shown on the View Changeover Adjustments page for this location.

2-7A
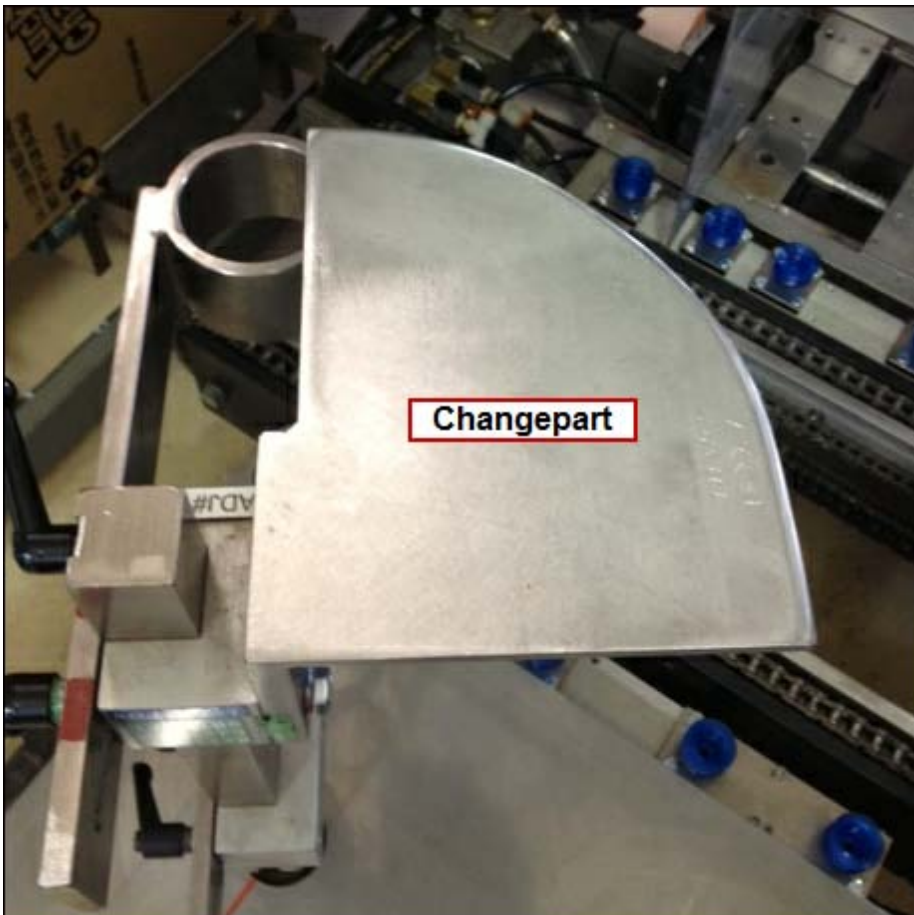
Loosen quick handles and replace part according to the value shown on the View Changeover Adjustments page for this location. Retighten quick handles!

2-7, 2-8
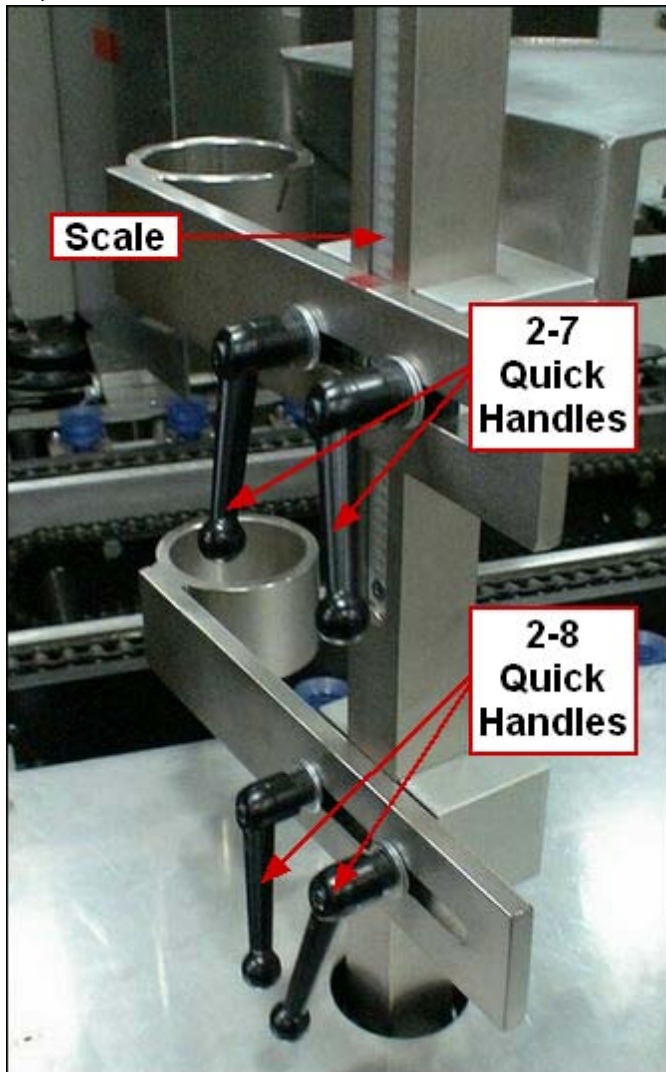
Loosen quick handles and adjust scale to the values shown on the View Changeover Adjustments page for these locations. Retighten quick handles!

2-9A, 2-9B
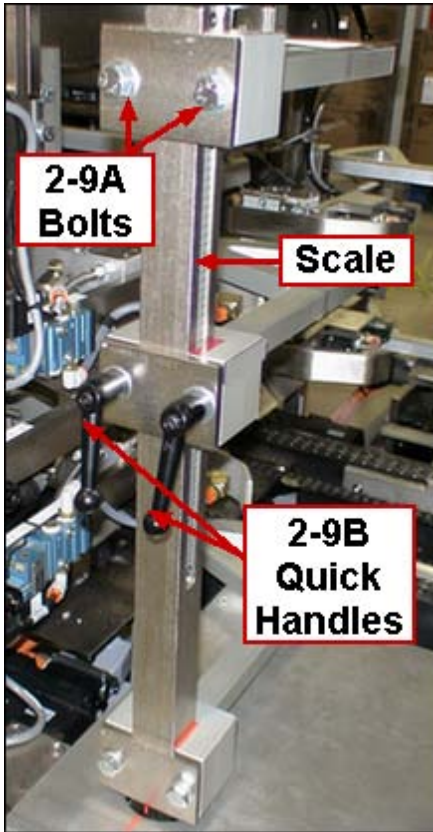
For 2-9A, loosen bolts or quick handles and adjust to the value shown on the View Changeover Adjustments page for this changeover location. Retighten bolts!

For 2-9B, loosen quick handles and adjust scale to the value shown on the View Changeover Adjustments page for this changeover location. Retighten quick handles!

2-10
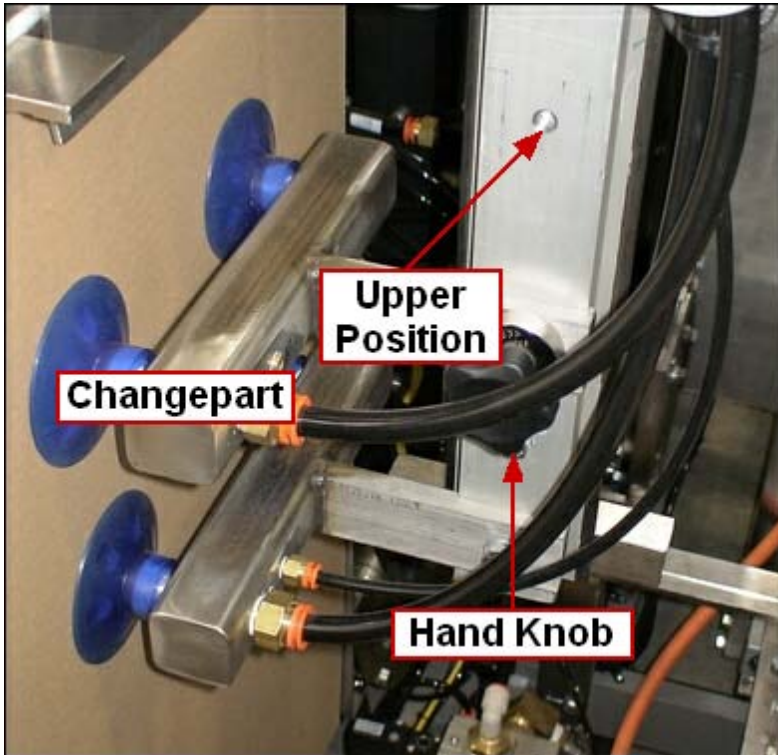
Unscrew hand knob and move part to value shown on the View Changeover Adjustments page for this location. Replace hand knob!

2-11, 2-12
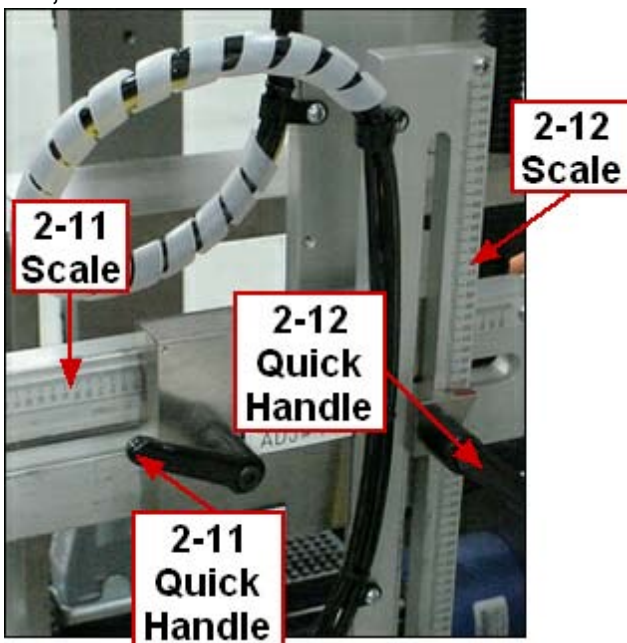
Loosen quick handles and adjust scales to the values shown on the View Changeover Adjustments page for these locations. Retighten quick handles!

2-13, 2-14, 2-14A
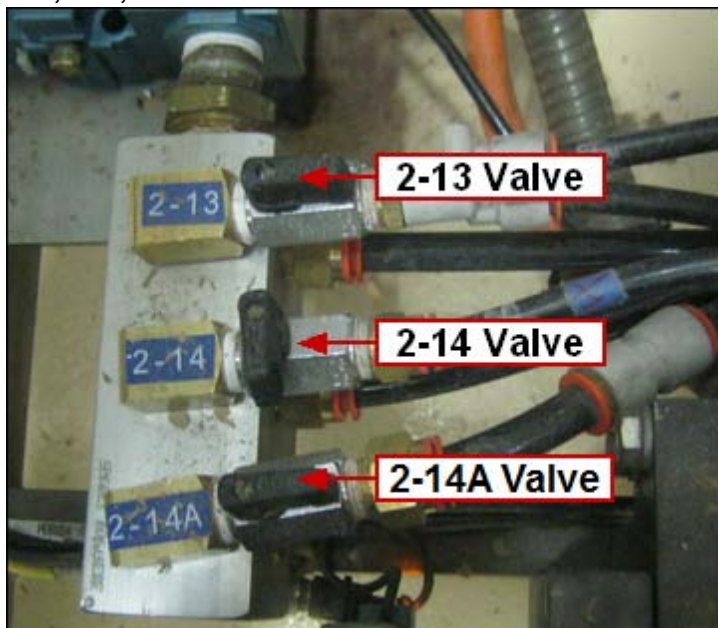
Adjust valves according to the values shown on the View Changeover Adjustments page for these locations.

NOTE: If valve is inline with hose, the valve is ON.

2-14B
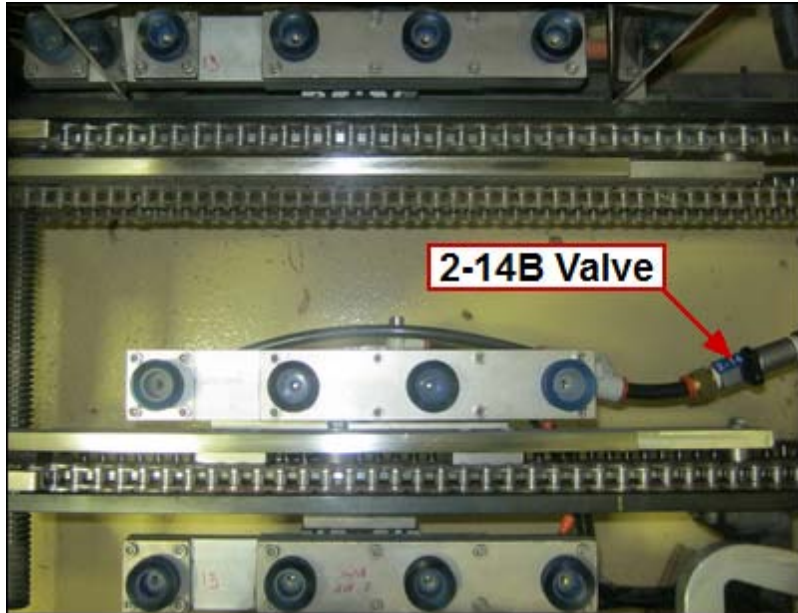
Adjust valve according to the value shown on the View Changeover Adjustments page for this location.

NOTE: If valve is inline with hose, the valve is ON.

2-14C
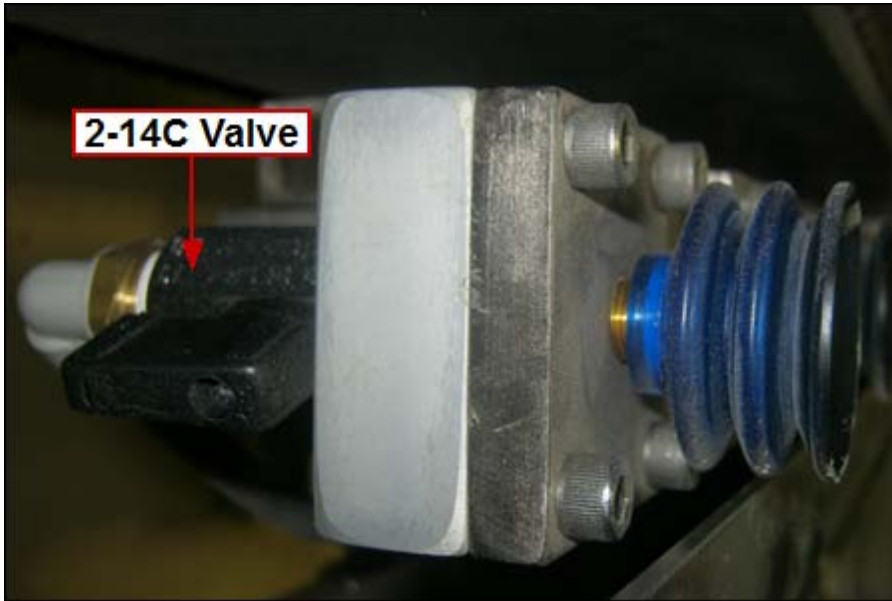
Adjust valve according to the value shown on the View Changeover Adjustments page for this location.

NOTE: If valve is inline with hose, the valve is ON.

2-15
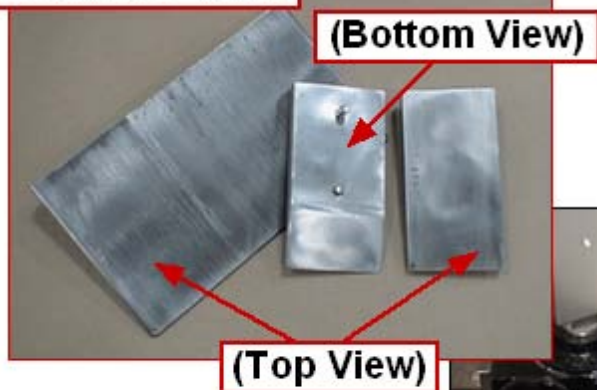
Remove or install parts according to the value shown on the View Changeover Adjustments page for this location. Tighten hand knobs underneath transfer area.

2-16
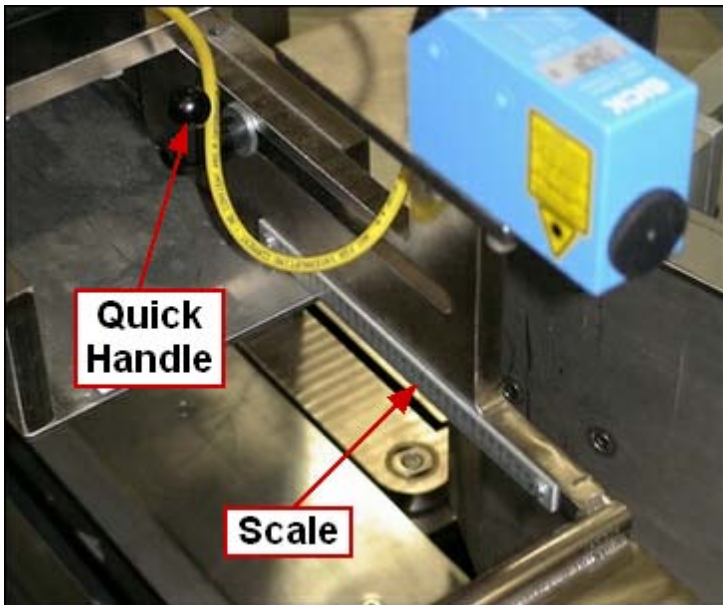
Loosen quick handle and adjust scale to the value shown on the View Changeover Adjustments page for this location. Retighten quick handle!

2-17
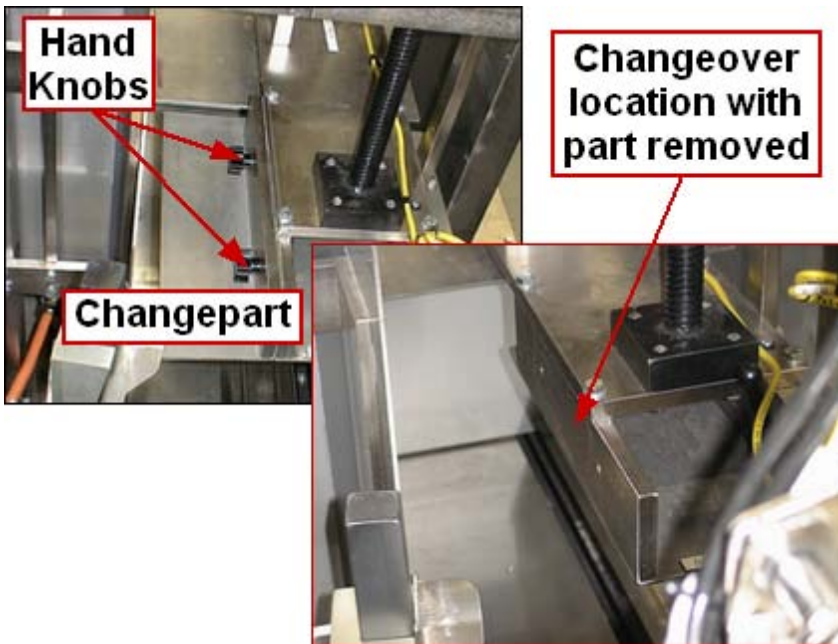
Remove or install part according to the value shown on the View Changeover Adjustments page for this location. Tighten hand knobs if installing!

2-18

Remove and install part according to the value shown on the View Changeover Adjustments page for this location.

2-19
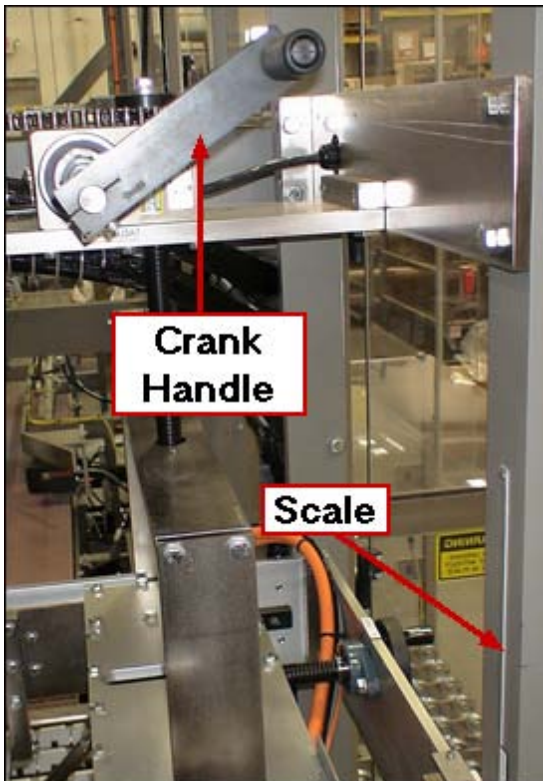
Using crank handle, adjust scale to the value shown on the View Changeover Adjustments page for this location.

2-20
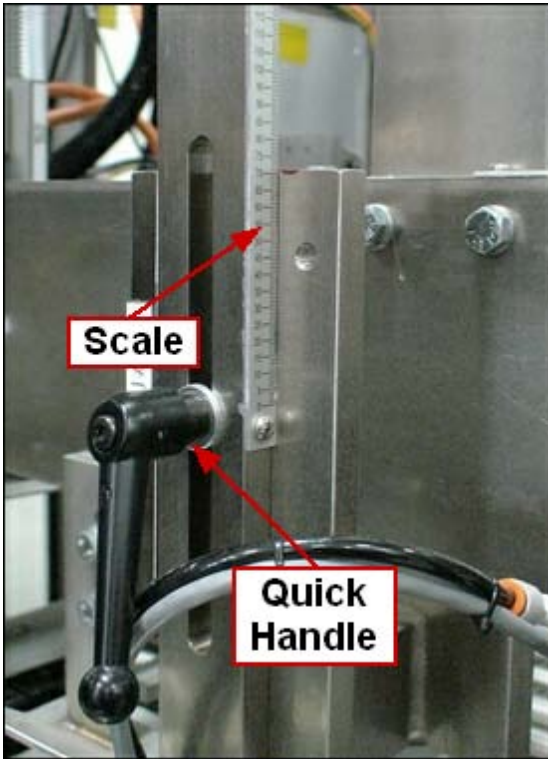
Loosen quick handle and adjust scale to the value shown on the View Changeover Adjustments page for this location. Retighten quick handle!

2-21
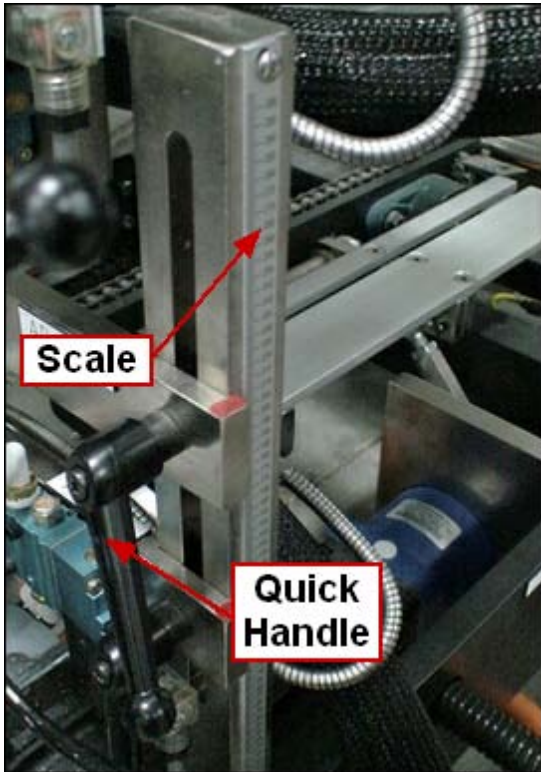
Loosen quick handle and adjust scale to the value shown on the View Changeover Adjustments page for this location. Retighten quick handle!

2-22
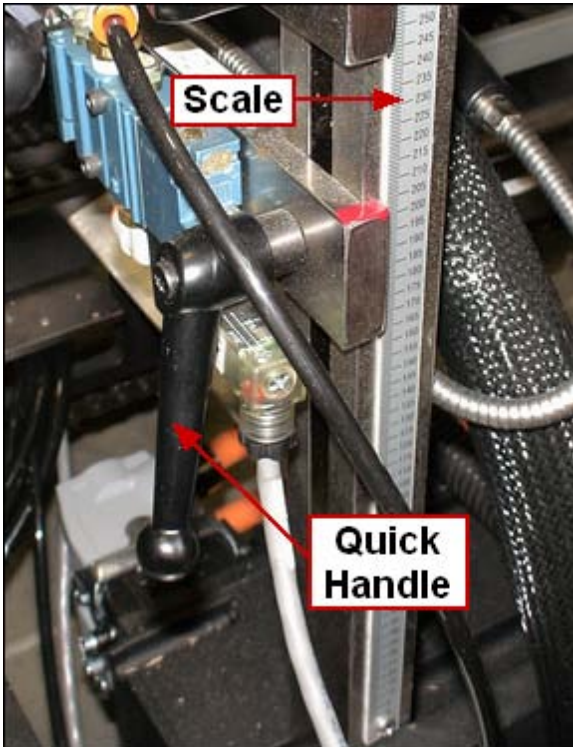
Loosen quick handle and adjust scale to the value shown on the View Changeover Adjustments page for this location. Retighten quick handle!

2-23
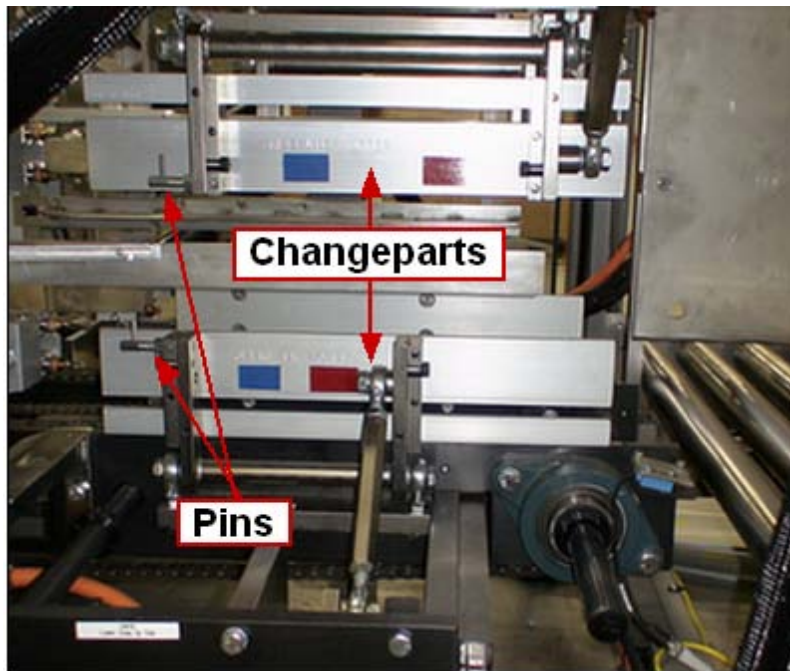
Lift pins and replace the parts according to the value shown on the View Changeover Adjustments page for this location. Reset pins!

2-24
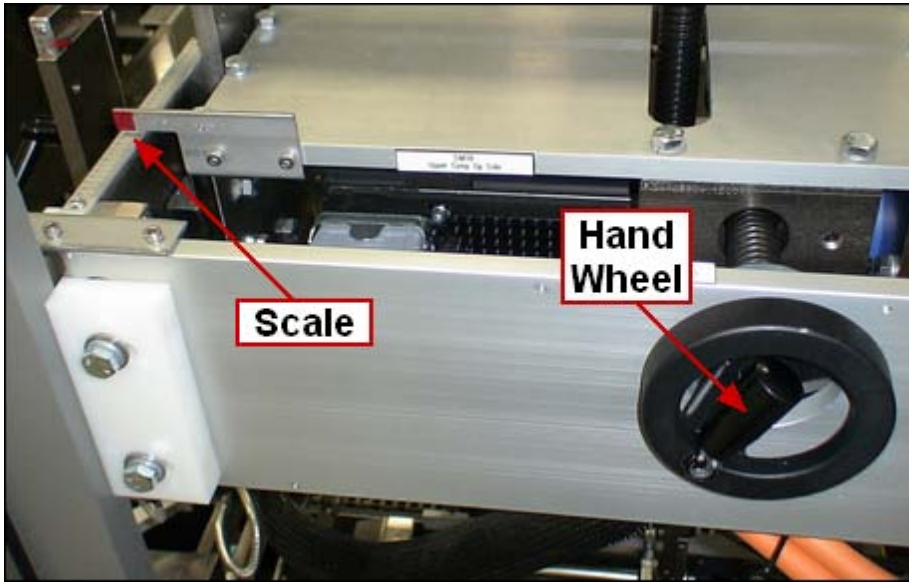
Using crank handle, adjust scale to the value shown on the View Changeover Adjustments page for this location.

2-25 to 2-31

2-25
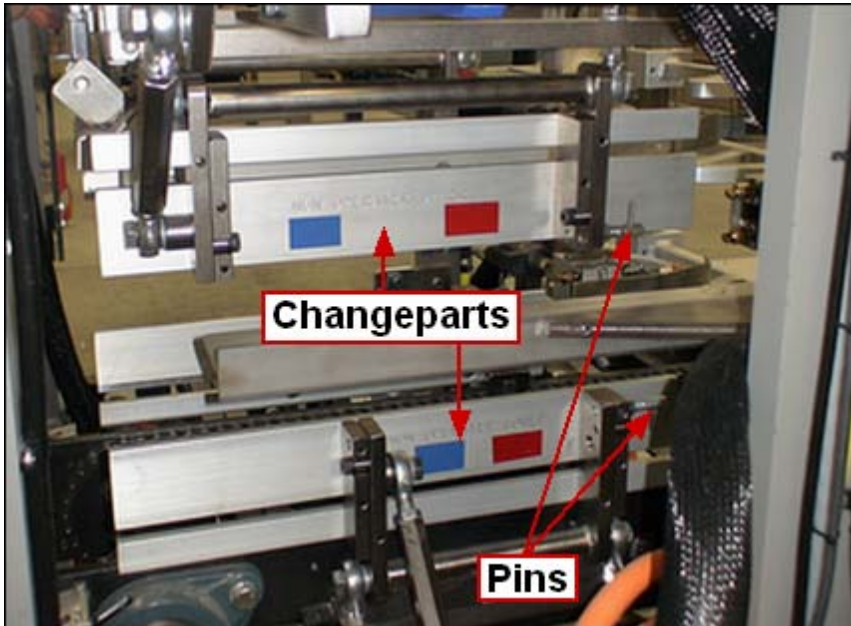
Lift pins and replace parts according to the value shown on the View Changeover Adjustments page for this location. **Reset pins!**

2-26
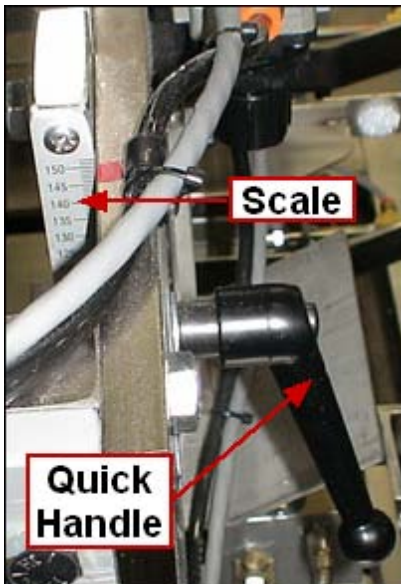
Loosen quick handle and adjust scale to the value shown on the View Changeover Adjustments page for this location. **Retighten quick handle!**

2-27
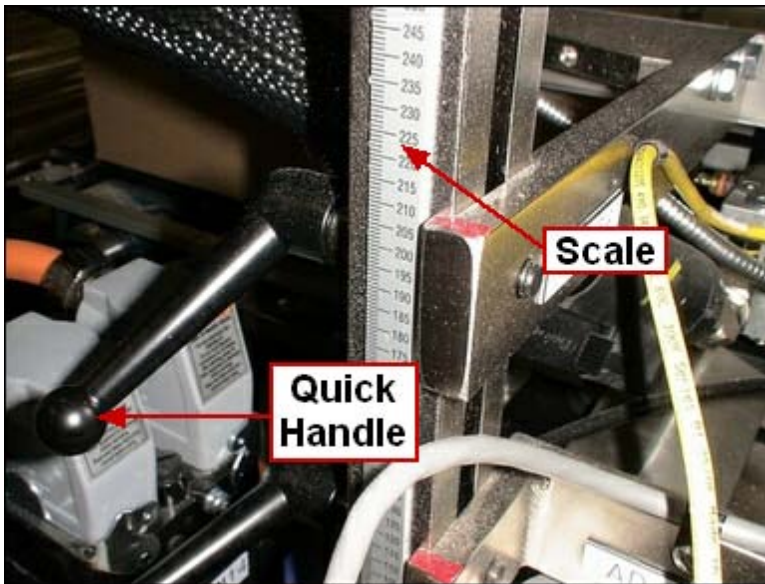
Loosen quick handle and adjust scale to the value shown on the View Changeover Adjustments page for this location. Retighten quick handle!

2-28
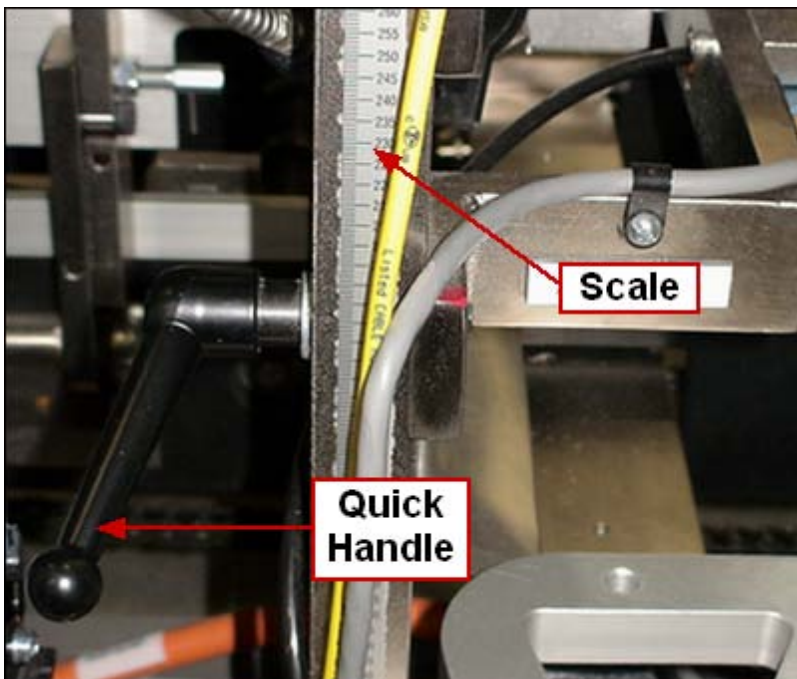
Loosen quick handle and adjust scale to the value shown on the View Changeover Adjustments page for this location. Retighten quick handle!

2-29
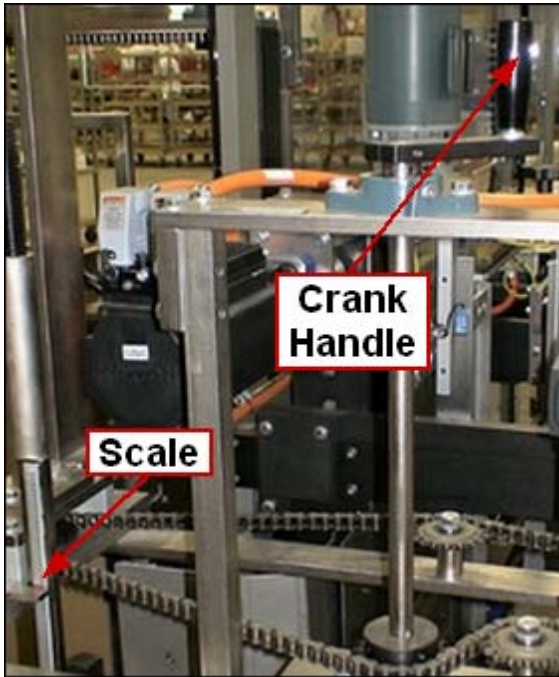
Using crank handle, adjust scale to the value shown on the View Changeover Adjustments page for this location.

2-30
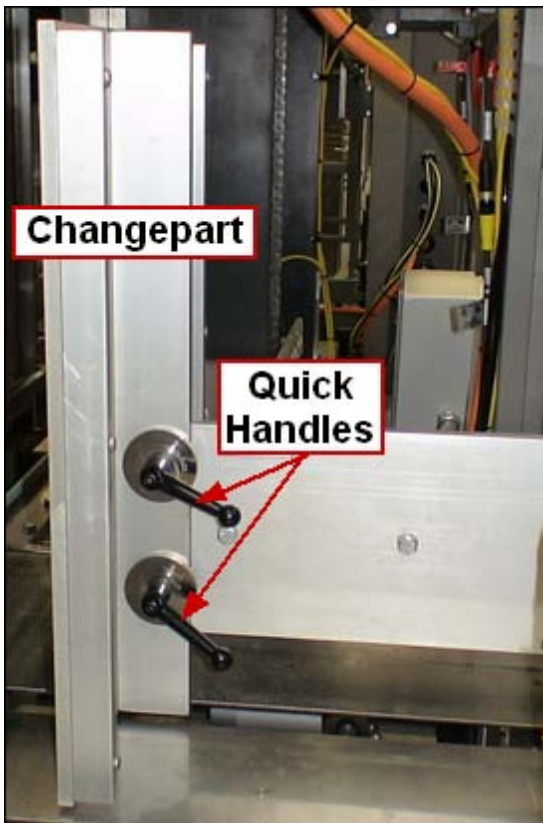
Loosen quick handles and replace part according to the value shown on the View Changeover Adjustments page for this location. Retighten quick handles!

2-31
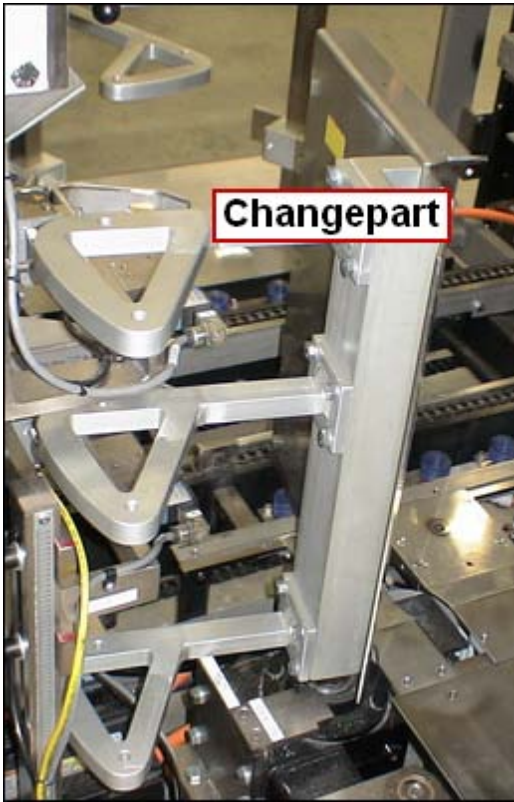
Replace part according to the value shown on the View Changeover Adjustments page for this location.

2-32 to 2-35
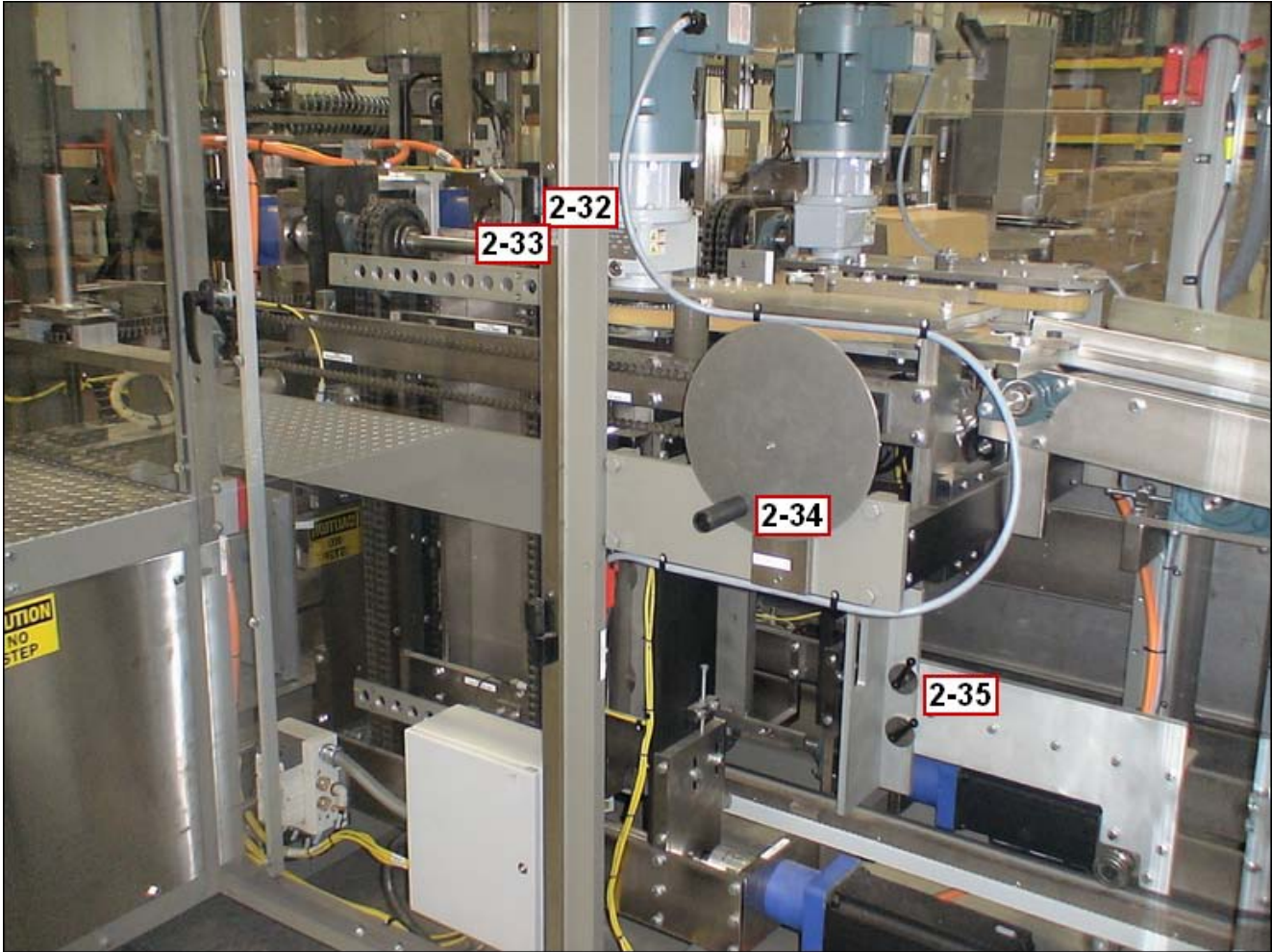
2-32, 2-33
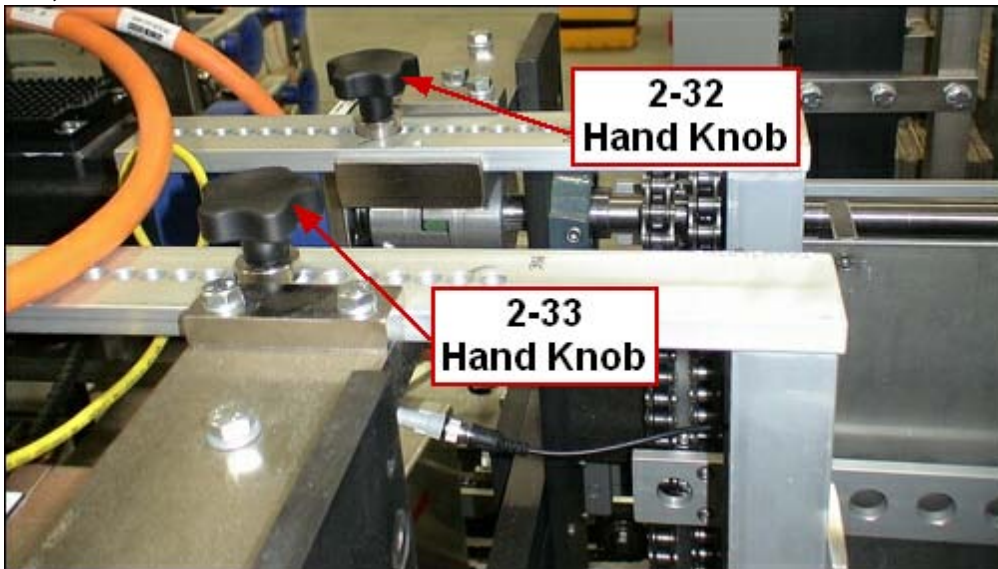
Unscrew hand knobs and move parts to correct holes according the value shown on the View Changeover Adjustments page for this location. Retighten hand knob!

2-34
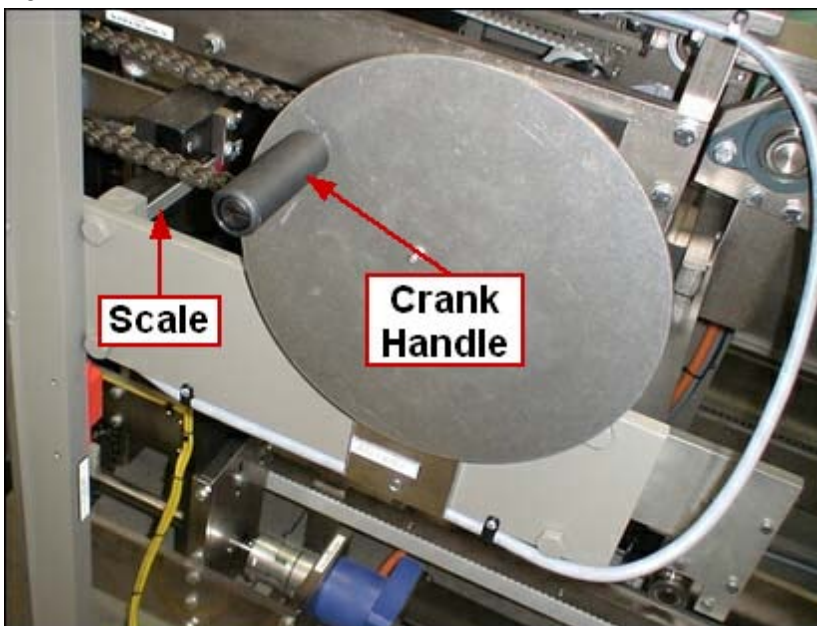
Using crank handle, adjust scale to the value shown on the View Changeover Adjustments page for this location.

2-35
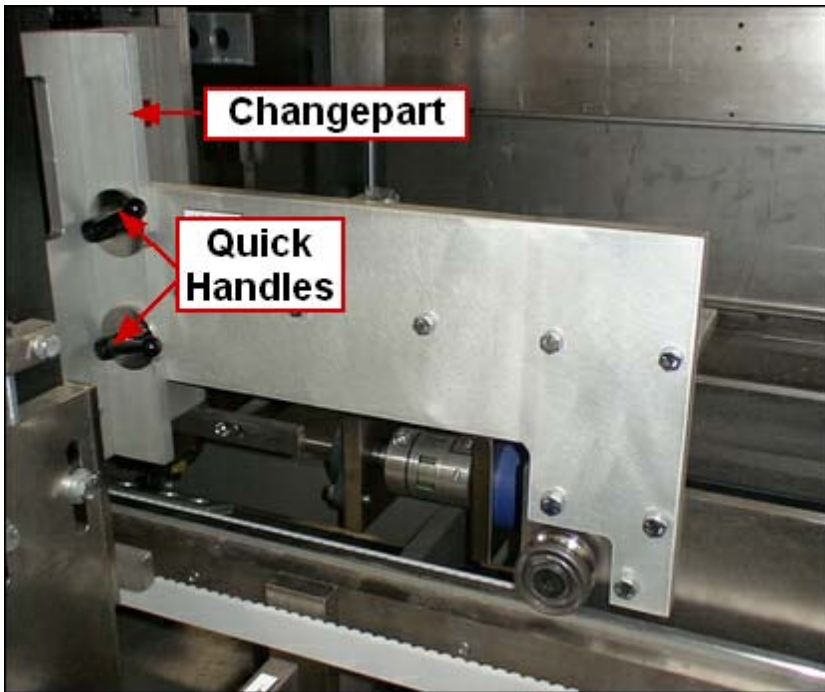
Loosen quick handles and replace part according to the value shown on the View Changeover Adjustments page for this location. Retighten quick handles!

2-36 to 2-37
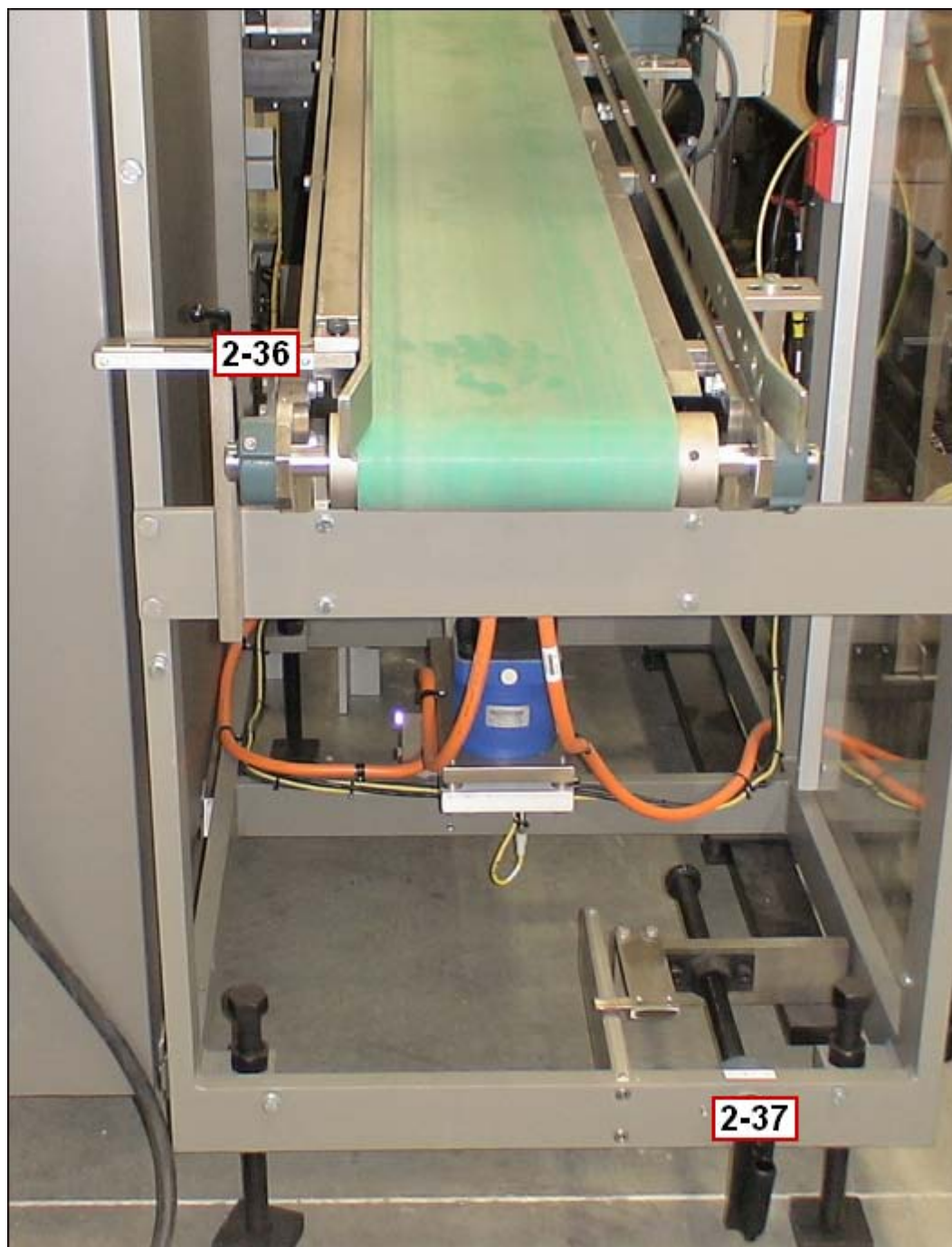
2-36
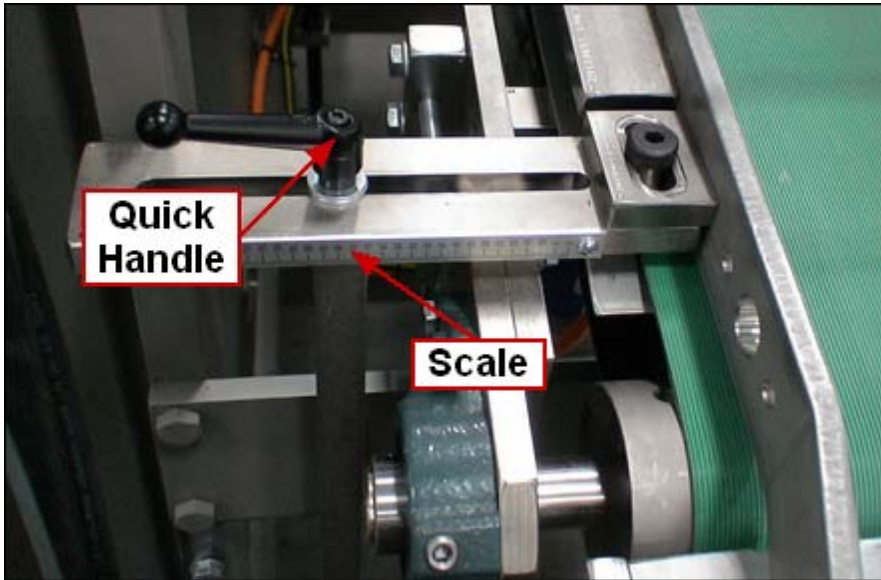
Loosen quick handle and adjust scale to the value shown on the View Changeover Adjustments page for this location. Retighten quick handle!

2-37
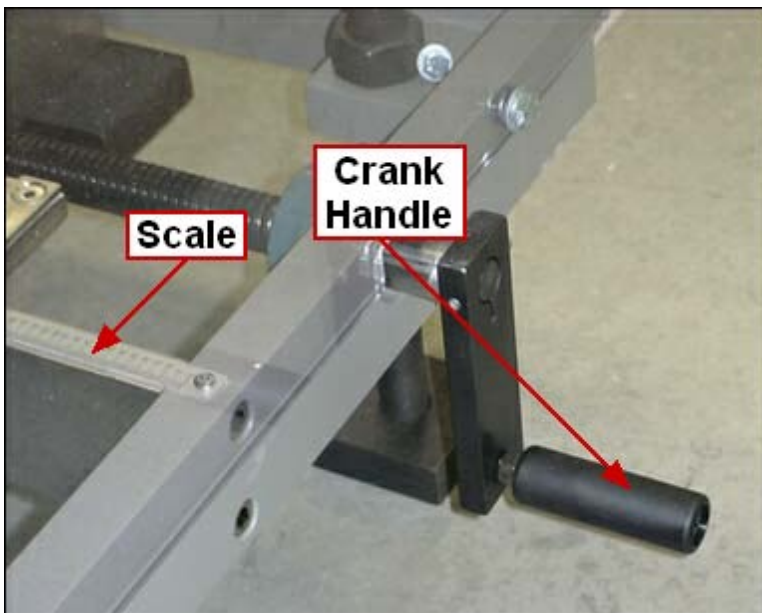
Using crank handle, adjust scale to the value shown on the View Changeover Adjustments page for this location.

3-1 to 3-2, 3-4

3-1
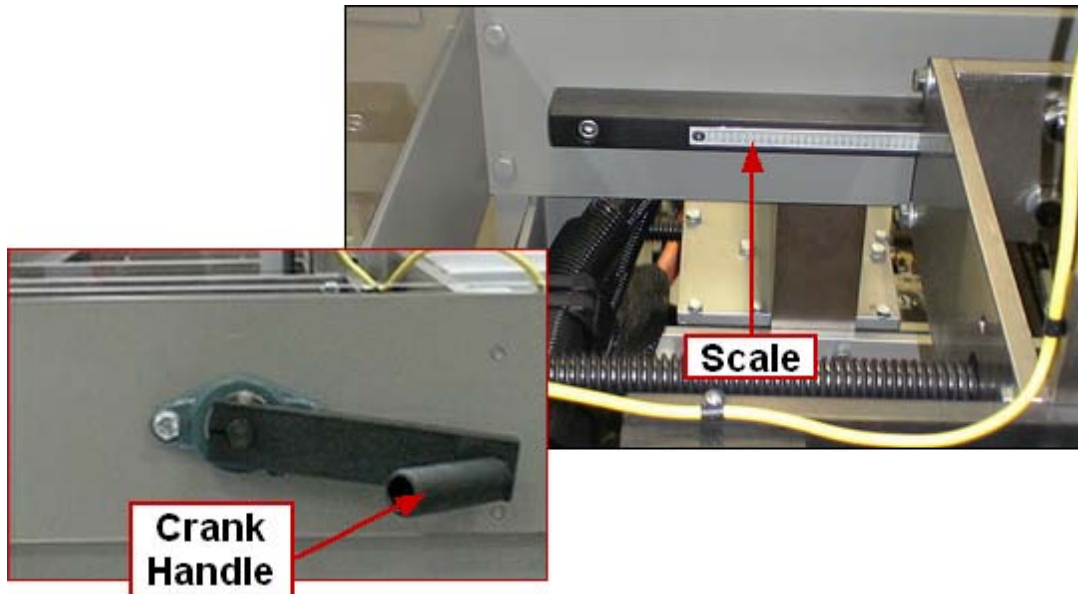
Using crank handle, adjust scale to the value shown on the View Changeover Adjustments page for this location.

3-2
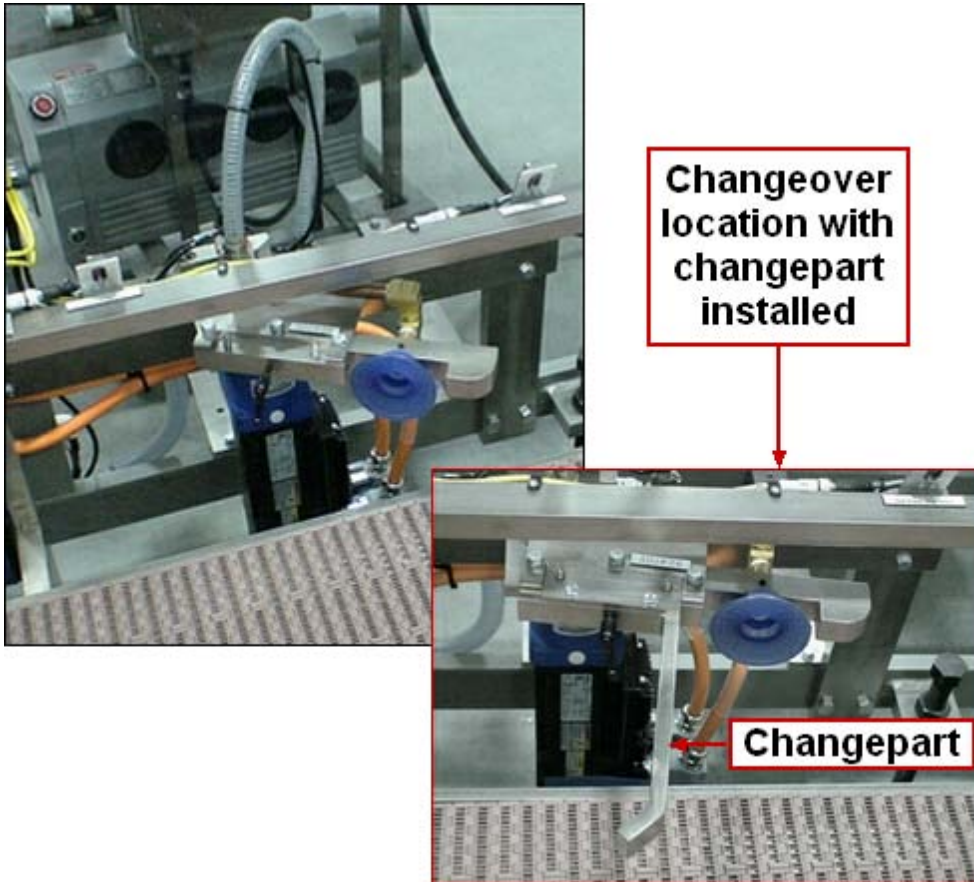
Loosen quick handle and remove or install part according to the value shown on the View Changeover Adjustments page for this location. Retighten quick handle!

3-4

Using crank handle, adjust scale to the value shown on the View Changeover Adjustments page for this location.

Changeover Quick Reference Chart

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

Number	Name	(future products)		
	CASE PACKER ADJUSTMENTS			
2-1	Operator Side Magazine Width			
2-1A	Operator Side Magazine Side Guide			
2-2	Non-Operator Side Magazine Width			
2-3	Non-Operator Side Magazine Rotate Clip			
2-4	Operator Side Magazine Rotate Clip			
2-5	Top Clip			
2-6	Bedplate Width			
2-7	Product Stop - Upper			
2-7A	Product Stop Top Plate			
2-8	Product Stop - Lower			
2-9A	Flap Tucker - Upper			
2-9B	Flap Tucker - Lower			
2-10	Robot Pick Cups			
2-11	Robot Case Pusher Horizontal			
2-12	Robot Case Pusher Vertical			
2-13	Wide Load Vacuum Control Switch A			
2-14	Wide Load Vacuum Control Switch B			
2-14A	Operator Side Load Cups On/Off			
2-14B	RR Center Load Cups On/Off			
2-14C	Operator Side Wide Load Cups On/Off			
2-15	Load Deck Transfer Plate Change Parts			
2-16	Top Flap Lift			
2-17	Product Conditioner Extension			
2-18	Funnel			
2-19	Upper Compression Height			
2-20	Operator Side Upper Glue Height			
2-21	Operator Side Tucker Rail Height			
2-22	Operator Side Lower Glue Height			
2-23	Operator Side Comp. Extension Plates			
2-24	Upper Compression Width			
2-25	Non-Operator Side Comp. Extension Plates			
2-26	Non-Operator Side Upper Glue Height			
2-27	Non-Operator Side After Tucker Rail Height			
2-28	Non-Operator Side Lower Glue Height			
2-29	Product Conditioner Height			

Number	Name	(future products)		
2-30	Loader Plate			
2-31	Fun-Tucker			
2-32	Downstacker Backstop Fixed Side			
2-33	Downstacker Backstop Adjustable Side			
2-34	Downstacker Width			
2-35	Downstack Pusher Change Part			
2-36	Infeed Conveyor Rail			
2-37	Funnel Width			
	ORIENTER ADJUSTMENTS			
3-1	Robot Tipper Horizontal			
3-2	Case Rotate Arm			
3-4	Conveyor Side Rail			

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

Training Index   Next Level 2 Training

Troubleshooting and Maintenance

Troubleshooting and Maintenance

NOTE: Not all items listed in this document pertain to your Aagard machinery system

Troubleshooting

NOTE: Not all items listed in this document pertain to your Aagard machinery system

Carton Quality

If you are experiencing skewed or crooked cartons, it is important to examine the carton closely, and to isolate the area of the cartoner and the exact cause.

Side Seam

Side Seam

Side Seam Glue Strip Not Parallel

A very slight angle may be normal for your machine, but a glue strip which is not straight indicates the carton is getting skewed before it enters the nip roller and belts. This would include Carton Picking, Moon Nip Rollers, Side Seam Rollers, and Nip Belts/Bogie Wheels.

Is the side seam glue strip not parallel to the edge of the carton?

Possible causes might be one of the following:

Warped Cartons
Incorrect Magazine Changeover Location Values
Incorrect Carton Picker Position
Vacuum Cups Wear or Damage
Incorrect Moon Nip Roller Pressure
Incorrect Nip/Metal Roller Gap
Nip Belts and Bogie Wheels Bind or Jam
Bogie Wheel Tension Against Nip Belt

Warped Cartons

Are the carton blanks badly warped?

There are *NO* special adjustments which will fix carton pick/feed problems when warped cartons are involved. However, listed here are some things that you might try:

- Raise or lower the Top Carton Guide adjustment
  - a .030 -.060 gap is desired
    - **NOTE:** A carton with warp will not stand vertically as tall as a carton without warp
- Widen the Carton Magazine Width adjustment
  - a .030" gap is desired
- Turn magazine blower off and/or turn air knifes on
  - These functions will help separate carton blanks if the warp causes excessive pressure on the clips and spring pressure bar
- Back-break a small group of cartons before loading into magazine as a last resort
  - Replacing with good cartons is desired
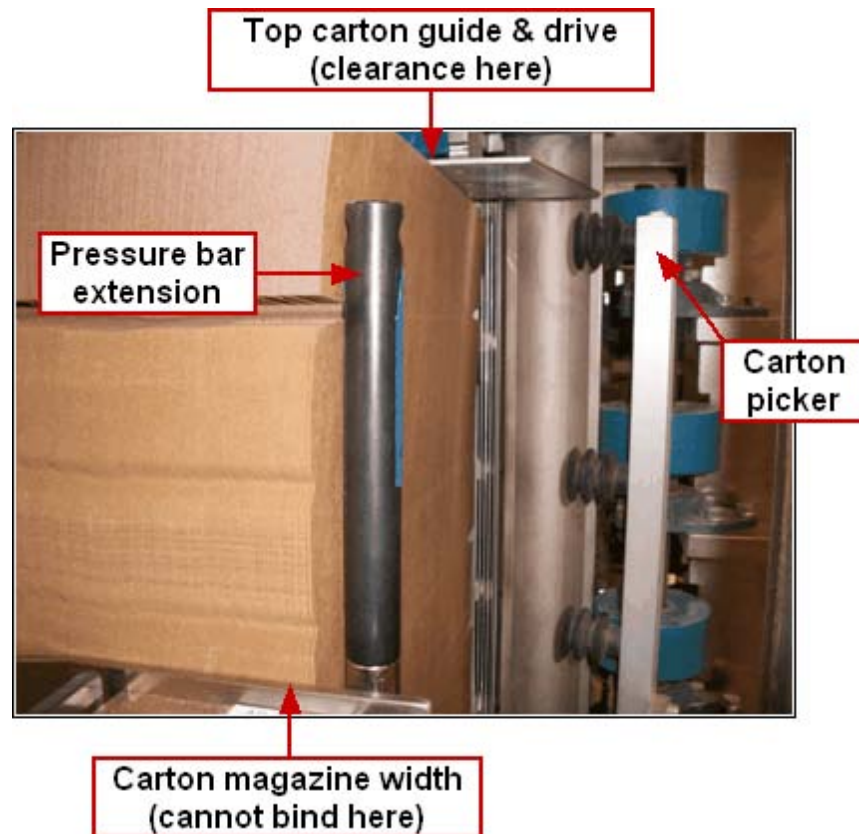
Did this solve the problem?

Incorrect Magazine Changeover Location Values

Are the magazine changeover location values correct for the currently-downloaded product?

Check values of all magazine changeover locations for accuracy.

Especially check the correct Magazine Pressure Bar Extension part for the larger carton products, and the correct Carton Pick Stop part, if used, for the smaller carton products.
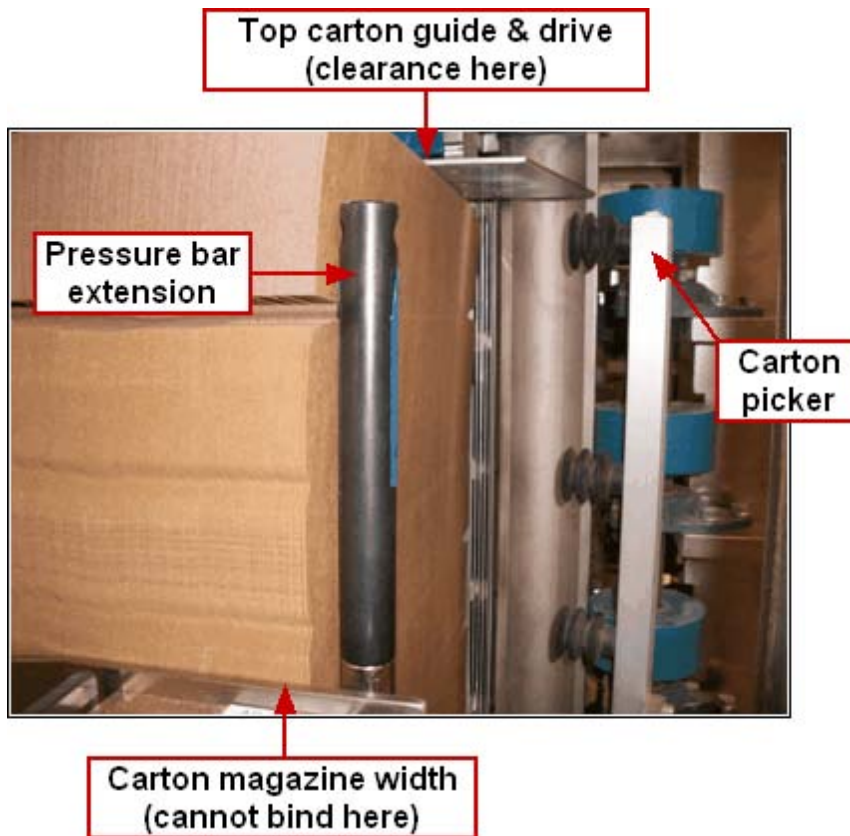
The Top Carton Guide and Carton Magazine Width adjustments are important, especially if the cartons are warped. There must be clearance so the cartons can be pulled out of the pressure bar easily. Warped cartons may bind on the top or side as they are flattened out.

Did this solve the problem?

Incorrect Carton Picker Position

Is the carton picker correctly positioned?

Reference the carton picker servo drive, if necessary
- Use the visual reference marks to verify servo has referenced to its proper location

Did this solve the problem?

Vacuum Cups Wear or Damage

Are the vacuum cups worn or damaged?

Check the vacuum cups for wear and/or damage, and replace if necessary.

> **NOTE:** The on/off vacuum timing is critical and should not be changed, unless authorized by Aagard.

Did this solve the problem?

Incorrect Moon Nip Roller Pressure

Do the four vertical urethane moon nip rollers have even pressure?
Do they just touch the outer surface of the Moon Nip?

The four vertical urethane moon nip rollers should have even pressure and just touch the outer surface of the Moon Nip.
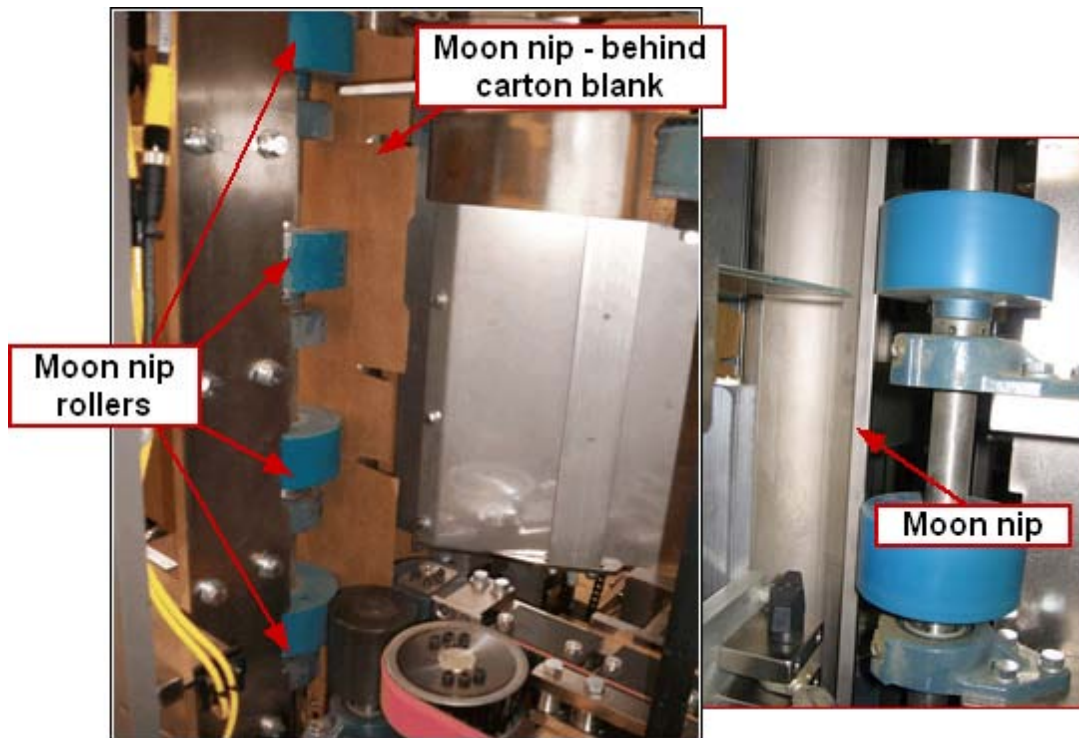
Adjusting Moon Nip Roller Pressure

The four moon nip rollers are adjustable as a group. Each roller should be adjusted within its mounting slot so they are all on the same plane. Then, the assembly plate should be adjusted at the top and bottom so the rollers just touch the outer surface of the moon nip.

Individual mounting brackets

Assembly plate

Mounting bolts
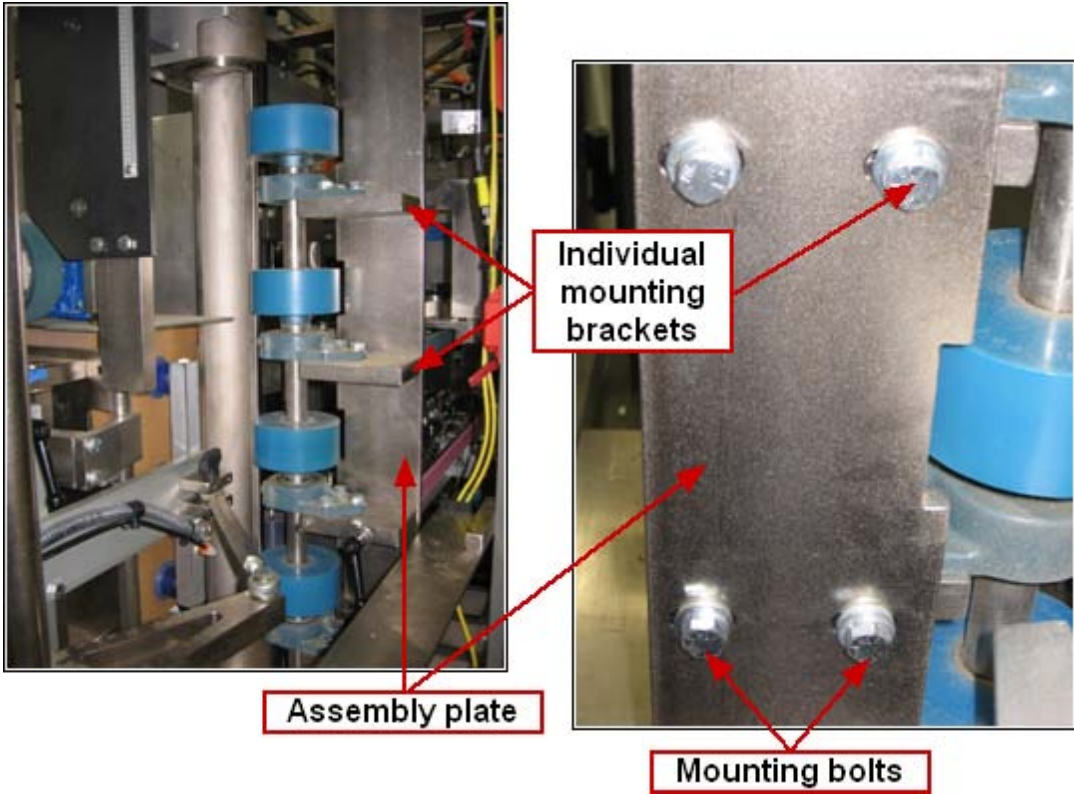
Did this solve the problem?

Incorrect Nip/Metal Roller Gap

Is there proper gap between the urethane nip roller and the bottom metal roller?

There should be a .008" - .010" gap between the bottom metal and urethane nip rollers
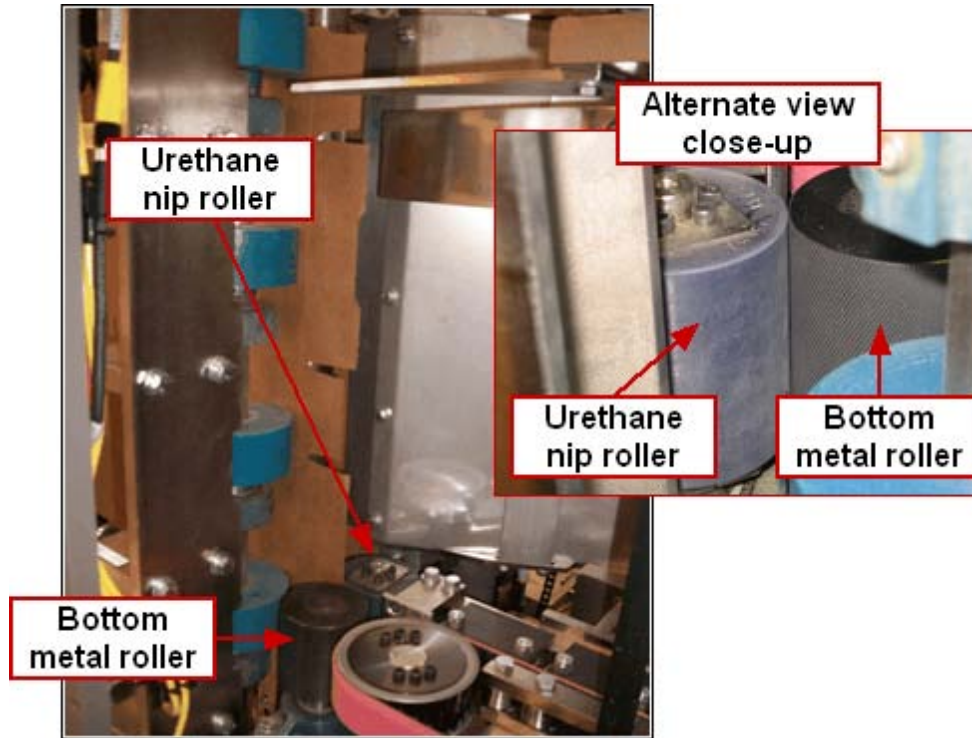
The gap between the metal and neoprene rollers is adjusted using a jacking bolt on the neoprene roller assembly. Care should be taken to loosen all the mounting bolts before adjusting.

NOTE: Some bolts may be mounted from beneath the assembly
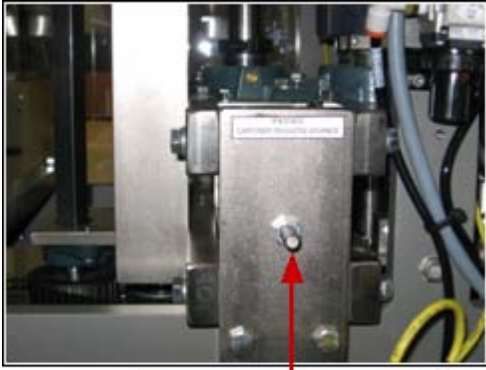
Adjustment bolt
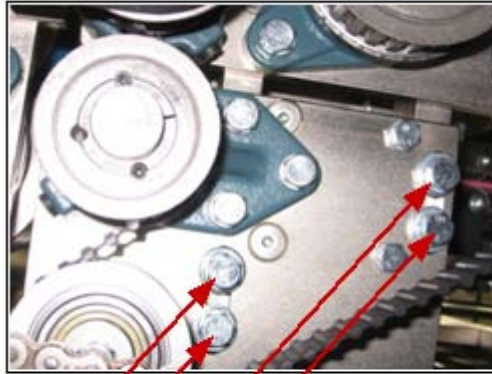
Mounting bolts
(beneath assembly)

Did this solve the problem?

Nip Belts & Bogie Wheels Bind or Jam

Do the bogie wheels bind or jam when pushed against the spring?

When the bogie wheels are pushed against the spring, they must not bind or jam.

- Inspect belts and replace, if necessary
- Inspect wheels and replace, if necessary

Did this solve the problem?

Bogie Wheel Tension Against Nip Belt

Does the bogie wheel assembly have equal tension along the belt?

The Bogie wheel assembly must have equal tension along the belt.

- Adjust the wheels so they just touch the belt, and then go in against the belt an additional 1/8"
- When a carton is in the nip belts, it should not slip
- When turning the nip belts by hand, the carton cannot be held or slip in the belts
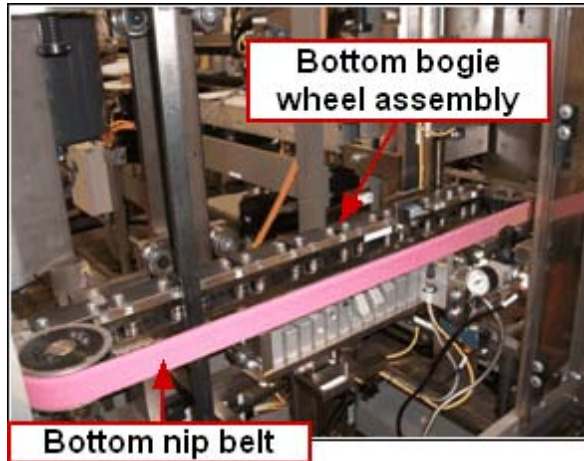
Did this solve the problem?

Uneven Side Seams

Are any of the buckets bent or damaged?

A bent bucket can cause uneven side seams.

- Inspect each bucket

Did this solve the problem?

Side Seam Fold Not on Score Line

Is the glue strip straight but the flap is not folded on the score line?

The score line of the side seam will line up with the bottom side of the rail, as indicated with the "Side seam score line" callout below.

- Adjust the Side Seam Height adjustment
- Examine rollers for binds and dirt buildup; clean, if necessary
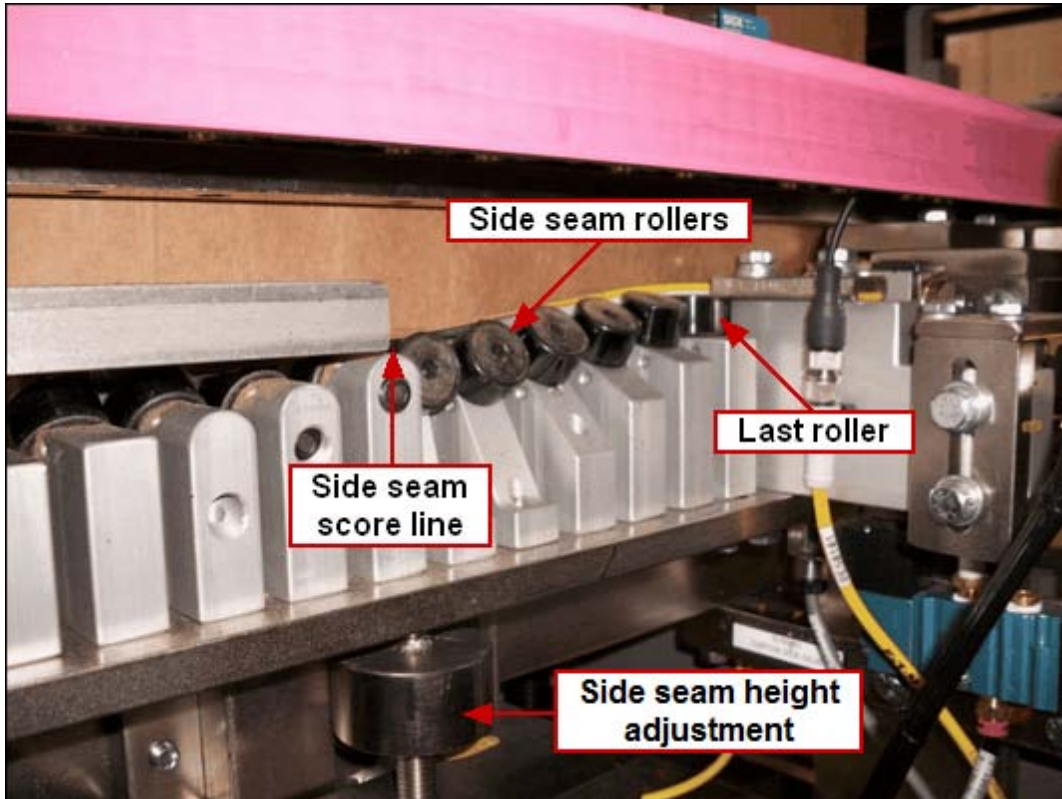
The last roller is adjustable and should not be changed from its factory setting. If it is too tight, it will drag too hard on the side seam, causing the carton to skew in the nip belts.

Did this solve the problem?

Side Seam Not Straight

Is the side seam not straight?

If the side seam is not straight, check the adjustment of the Carton Forming Overhead Rail Height adjustment. *This is a critical adjustment.*

- The rail should be 1/32" – 1/16" (approximately 1 mark on the scale) above the top edge of the bucket
  - If this is too high, the side seam will be above the score line

CAUTION: If the adjustment is too low, it can cause damage to the buckets and/or skew the carton

Side seam too high
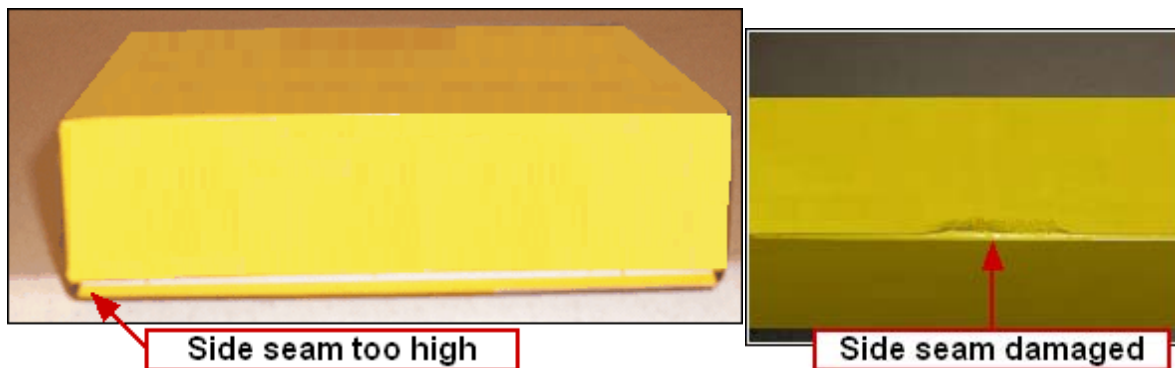
Side seam damaged

Additionally, check items in Side Seam Fold Not on Score Line

Did this solve the problem?

Deck Extension Fingers Damage

Are the side seam extension fingers bent?

If fingers are bent down, the bottom of the carton drops down causing the side seam to be too high.

Side seam too high
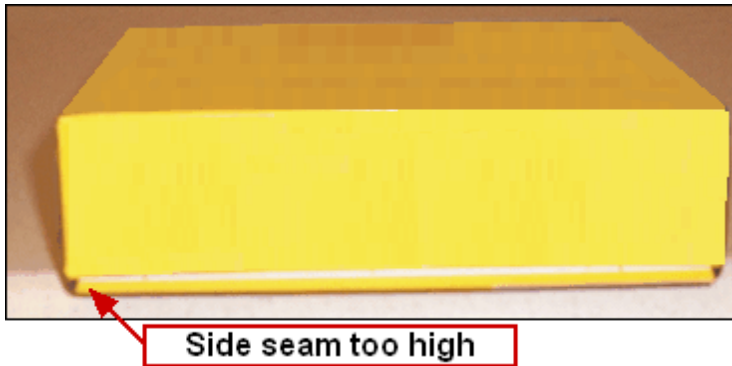
The fingers are located in the deck opening where the compression comes up from underneath. See the top view mechanical drawing below.

Deck extension fingers
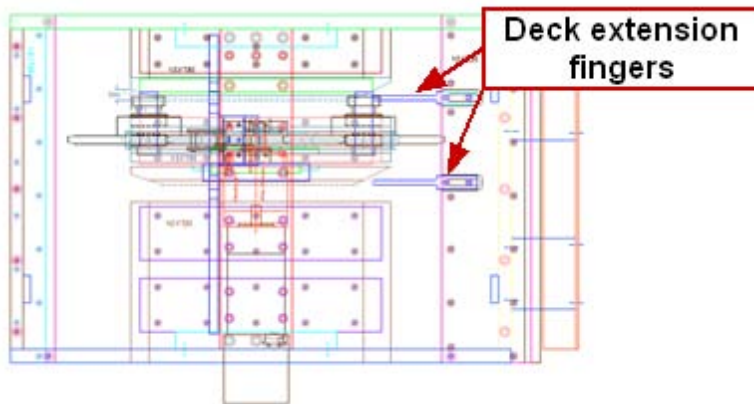
Did this solve the problem?

Side Seam Damage

Is the side seam damaged?

The compression flight and/or the tucker timing might be off causing the flap to come down on top of the flight

- Reference barrel cam if timing is off

Did this solve the problem?

Incorrect Carton Magazine Horizontal Adjustment Value

Is the distance between the carton stop and carton slot guide correct?

The Carton Magazine Horizontal adjustment sets the distance between the carton stop and the carton slot guide.

- It should be approximately 1/16" greater than the carton width
  - If it is too loose, the carton can tip
  - If it is too tight, the carton can skew when forming around the bucket

Clearance

Must not skew or buckle
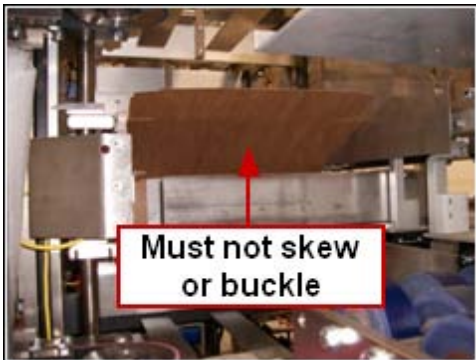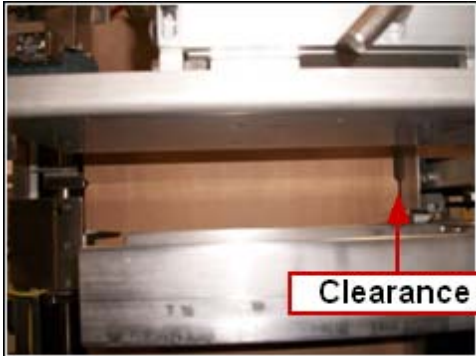
Did this solve the problem?

End Flaps

Out-of-Square End Flaps

Are any of the buckets bent or damaged?

A bent bucket can cause out-of-square end flaps.

- Inspect each bucket

Did this solve the problem?

Incorrect Magazine Height Adjustment Value

Are the operator side and/or non-operator side end flaps bent or damaged?

The Magazine Height adjustment should be adjusted so the carton slot lines up with the welded tab on the bucket.

Did this solve the problem?

Incorrect Vertical Slot Guide Adjustment Value

Are the operator side and/or non-operator side end flaps bent or damaged?

With a carton aligned with the tab on the bucket and its non-operator side edge flat against the Carton Stop, the Vertical Slot Guide adjustment must line up with the operator side carton slot.

One way to check the vertical slot guide is to hang a carton by its slots between the bucket tab and the vertical slot guide. The top edge of a straight bucket can be compared to the carton score line.
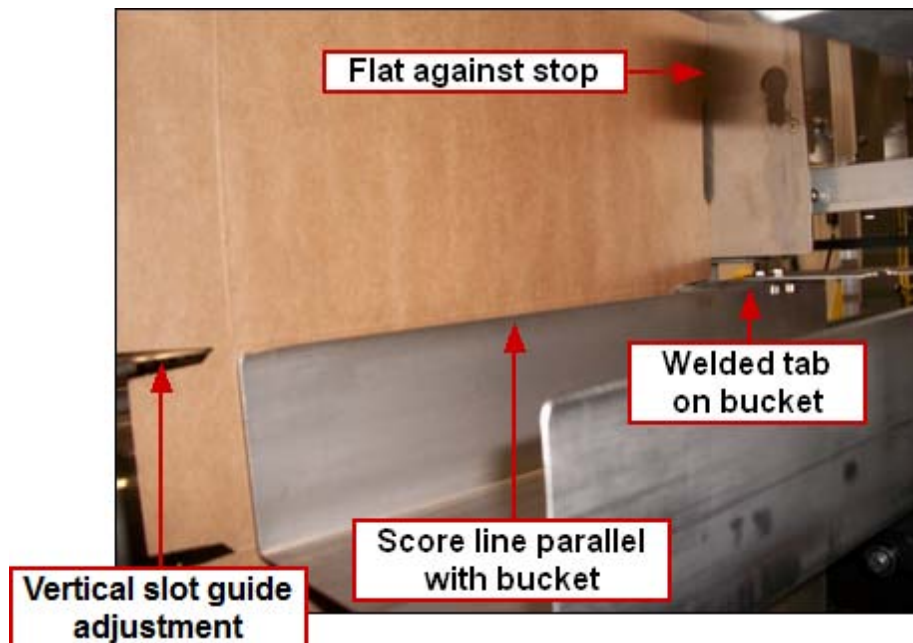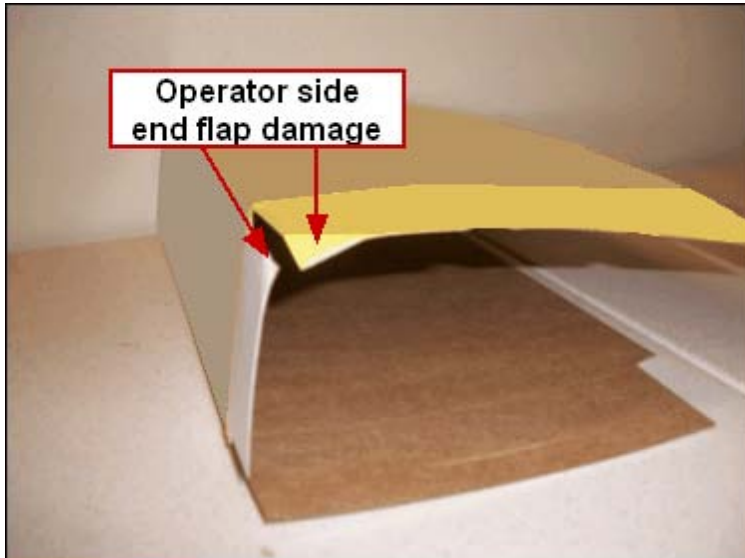
Did this solve the problem?

End Flaps Damage

Are the operator side end flaps and/or non-operator side end flaps bent or damaged?

- Reference the barrel cam

Did this solve the problem?

Cartons Not Cut Correctly

Are the cartons cut correctly?

Examine the cartons closely to ensure they are made to specifications.

Determine if the cartons really are not square, or if they are square but the end flaps are cut so they just appear crooked? If the end flaps are cut crooked, determine if the carton blanks are acceptable for use. Replace if necessary.

Did this solve the problem?

Incorrect Overhead Rail Height Adjustment Value

Is the Overhead Rail adjustment correct?

Check adjustment of the Overhead Floating Top Rail. The Overhead Floating Rail is adjusted with the Overhead Rail adjustment.

- Verify the Floating Rail does not bind and is free to move up or down
- The Overhead Rail can be adjusted slightly lower to help with warped cartons, but it must not be so low that it causes cartons to drag.
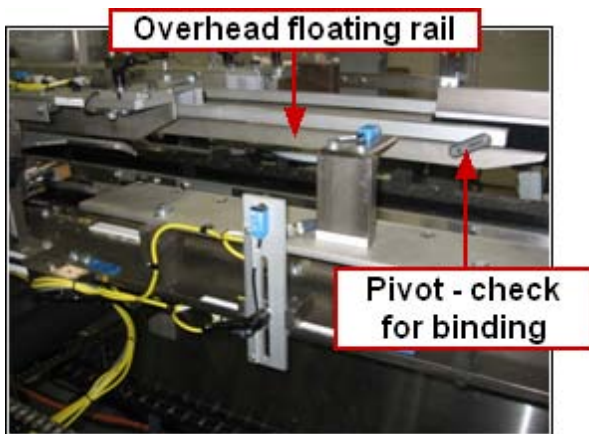
Did this solve the problem?

Incorrect Bed Plate Adjustment Values

Are the operator side and non-operator side bed plates too tight or too loose?

- When the Operator Side Bed Plates or Non-Operator Side Bed Plates adjustments are too tight, the carton can drag /skew backwards
- Bed plates too loose will allow the carton to move and skew before the glue is dry

---
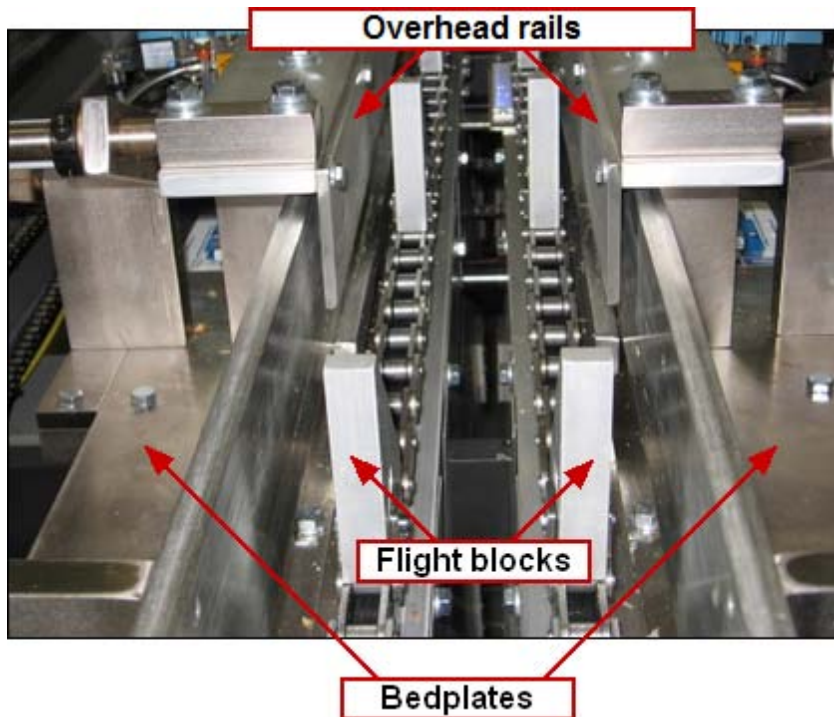
Did this solve the problem?

Incorrect Tucker Disk Installed

Is the correct tucker disk installed on the downstream tucker?

- Verify correct disk(s) are installed on downstream tucker
- After correct tucker disk is installed, verify correct timing; reference barrel cam if necessary
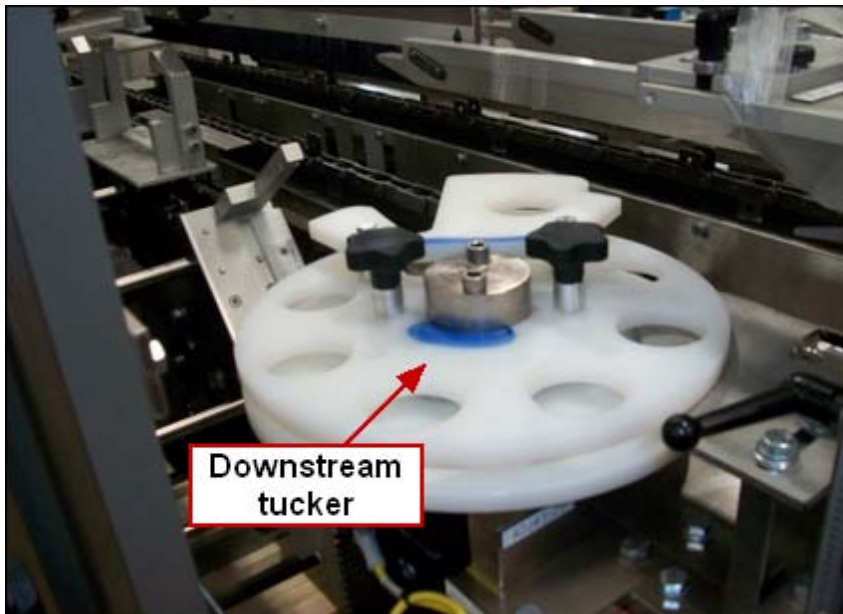
Damaged end flaps can also be an indication of feed problems. Check: <u>Side Seam Fold Not on Score Line</u>

Did this solve the problem?

Skewed End Flaps

Are the end flaps skewed because the side seam is crooked?

Skewed end flaps may be caused when the side seam is skewed. Check to ensure the side seam is straight.
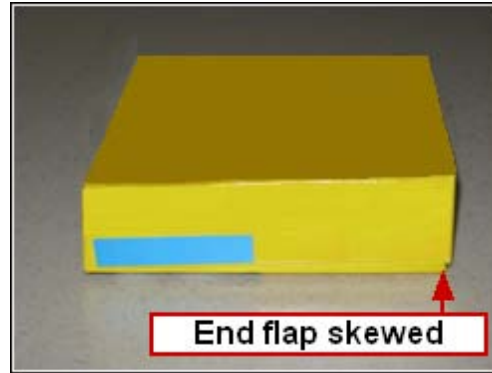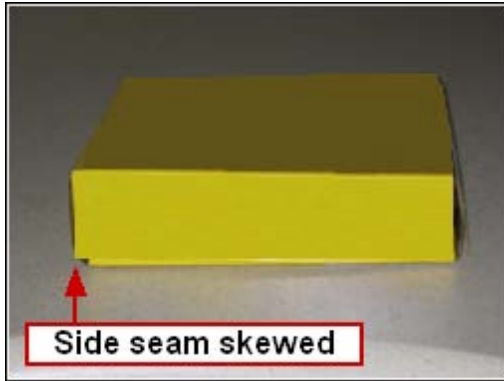
Did this solve the problem?

Bent Dust Flap Plows

Are the dust flap blows bent?

Check the condition of the top and bottom Dust Flap Plows.
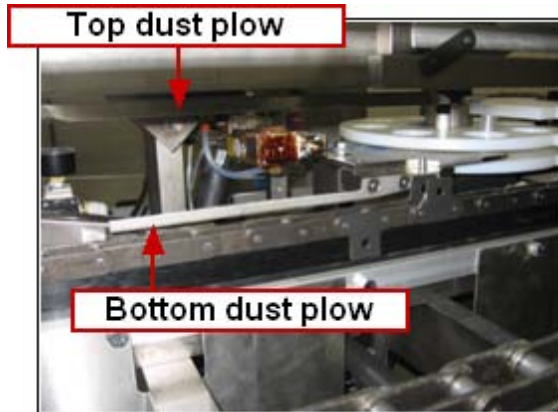
Did this solve the problem?

Glue Buildup - Dust Flap Plows

Is glue build up causing the carton to drag?

Check for glue buildup on the top and bottom Dust Flap Plows. Glue buildup can cause the carton to drag.
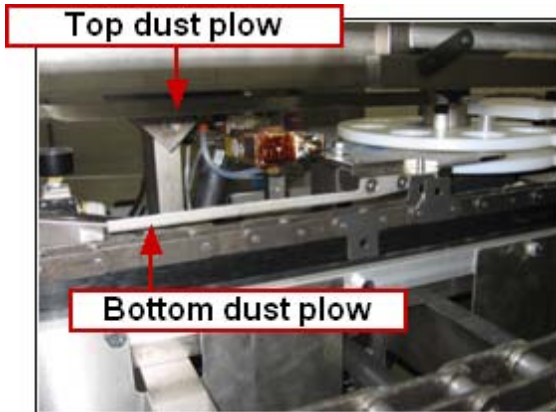
Did this solve the problem?

Glue Buildup - Major Flap Plows

Is there glue buildup on the Top and Bottom major flap closing plows?

- Check for glue buildup on the Top and Bottom major flap closing plows
- Check to ensure Top and Bottom major flap plows are in their factory-marked positions
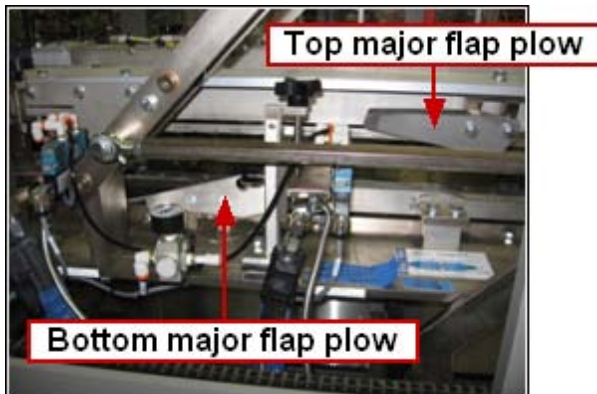
Did this solve the problem?

Glue Buildup - Side Rails

Is there glue buildup on the Side Rails?

Carton must stay back against aluminum flight block to ensure proper dust flap tucking and squareness.
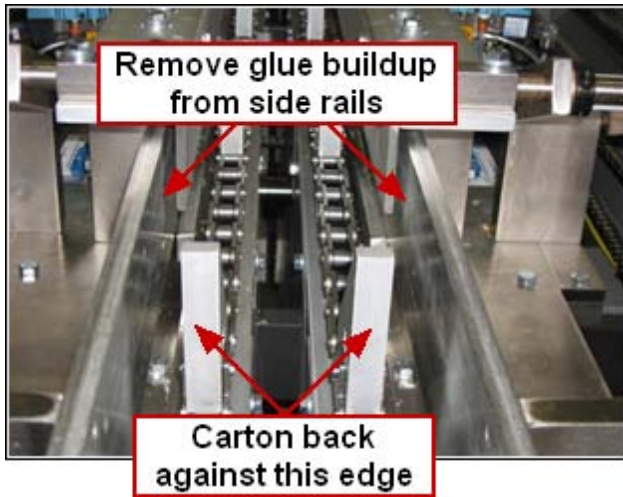
Did this solve the problem?

Glue Buildup - Carton Forming

Is there glue buildup in the Carton Forming area?

Check for glue build-up in the Carton Forming area, especially the side seam compression.
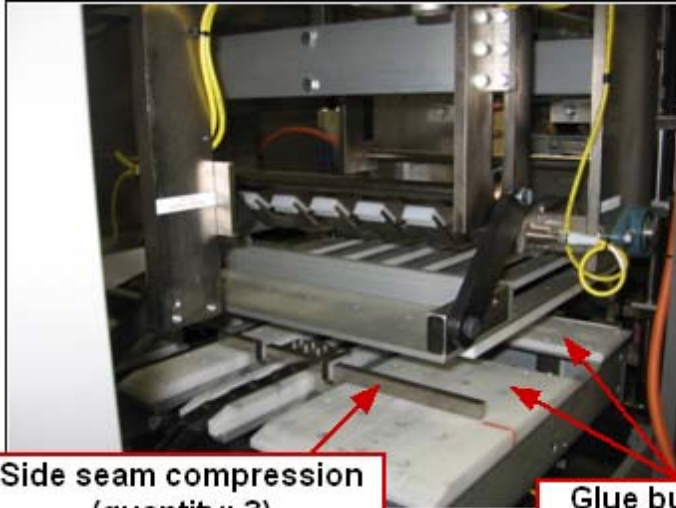
Did this solve the problem?

Incorrect Overhead Brush Position

Is the Overhead Brush in the correct position?

The Brush is adjusted with the Carton Forming Overhead Rail adjustment. It should never be adjusted separately using the slotted mounting holes; the factory setting is marked and should not be changed.
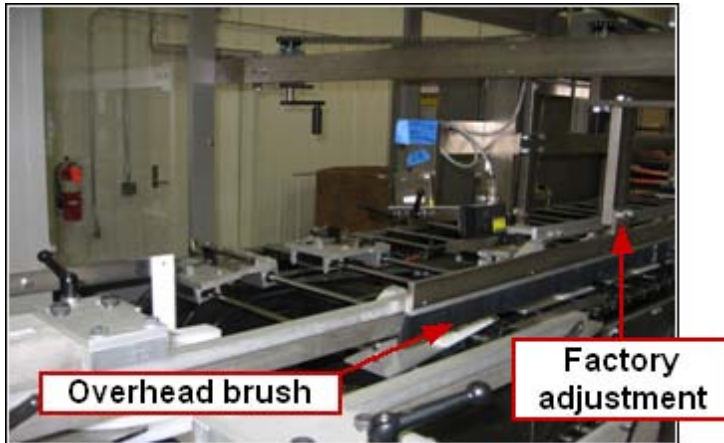
Did this solve the problem?

Locked Dust Flap Corners

Are the dust flaps locked?

Warped cartons can sometimes cause the dust flaps to lock with the top and/or bottom end major flaps. This will cause open flaps and/or skewed cartons.

- Check the corners of the dust flaps
- Lower Overhead Rail Height adjustment

Dust flap corners bent, catching on top major flap
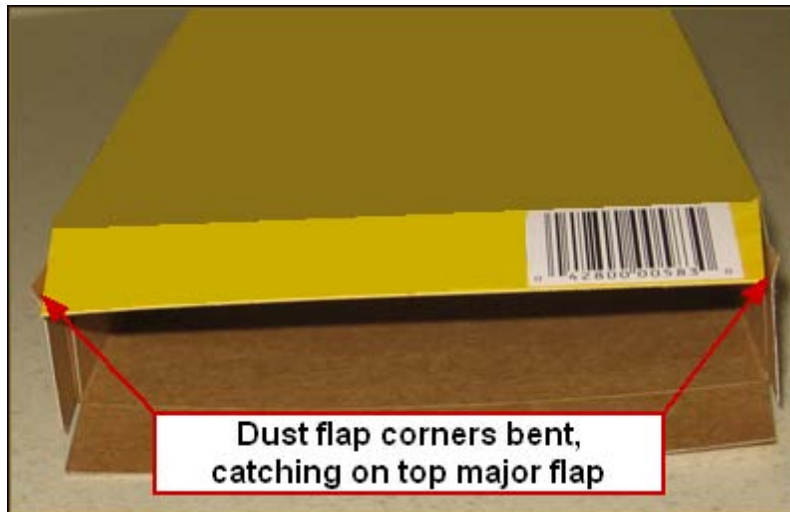
Did this solve the problem?

Film

Film

Film Not Aligned

Tracking Running Constantly or Side to Side

Is the tracking running constantly, running to one side or the other?

Tracking running constantly, or running to one side or the other may be caused by one of the following:

- Dirty rollers
- Film not being sensed
- Faulty photo eyes
- Film out of specification

Take these steps to resolve this issue:

- Clean nip rollers and tracking rollers
- Clean photo eye
- Check film to see if it is within specification

Did this solve the problem?

Films Not Aligned At Side Seal

Are the two films not aligned at the side seal?

The two films not aligned at the side seal may be caused by the following:

- Alignment film alignment sensor is incorrect
- Film is incorrectly placed on spool

Take these steps to resolve this issue:

- Clean nip rollers
- Clean tracking rollers
- Clean photo eyes
- Adjust lower nip roller tracking photo eye (PE42101)
- Adjust upper nip roller tracking photo eye (PE57904

Did this solve the problem?

Check Photo Eyes

1) Check function of photo eyes
    a) If the photo eye is functioning correctly but is not seeing the reflector, replace reflector
    b) If the photo eye is not functioning correctly, replace the photo eye

Did this solve the problem?

Film Not Sealing Properly

Is the film not sealing properly?

Film not sealing properly may be caused by the following:

- The temperature is set incorrectly

Take these steps to resolve this issue:

- Clean sealing bars
- Check alignment of sealing bars
- Adjust heater bar temperatures

Did this solve the problem?

Splice Tape In Side Seal

Is film broken or non-sealed?

Broken or non-sealed film may be caused by the following:

- Missed changeover adjustment

Take these steps to resolve this issue:

- Check changeover adjustment position
- Review film path to ensure it is correct

Did this solve the problem?

Safety Circuit

Messages on HMI Screen

Which of the following messages are appearing on the HMI?

Case Packer Software E-stop message
> Follow this [link](#)

Unitizer Software E-stop message
> Follow this [link](#)

Case Packer Safety Relay message
> Follow this [link](#)

Unitizer Safety Relay message
> Follow this [link](#)

Case Packer Guard Relay message
> Follow this [link](#)

Unitizer Guard Relay message
> Follow this [link](#)

Emergency Stop message
> Pull all depressed E-Stop buttons

Guard Door message
> Close all open guard doors

Light Curtain message
> Remove light curtain obstructions

Did this solve the problem?

✔ ⊘

Prior Safety Circuit Rewiring

Was any rewiring done on safety circuit prior to this issue?
If so, was power removed from machine when this was done?

If not, then you may need to cycle power to reset 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

Did this solve the problem?

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 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

Did this solve the problem?

Safety Reset Relay Malfunction

Is 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 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

Did this solve the problem?

Open Monitoring Loop

Is monitoring loop closed?

Verify that monitoring loop is closed by checking terminal points Y1 to Y2 on main safety relays for each machine section.

Sample Image

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 component has failed. Replace if necessary.

Did this solve the problem?

Channel 1 and 2 Output Lights

Are both channel 1 and 2 output lights lit when 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 relay with screw driver handle will jar contacts loose to make it work again, but the relay still needs to be replaced.

Sample Image

Did this solve the problem?

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, 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 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 start of 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 end of the loop, looking for lack of voltage.

Once an "open" in the circuit is found, check device preceding that "open" in the circuit; it is most likely the cause of the issue.

Check for loose or frayed wiring, or if component has failed. Replace if necessary.

Sample Image

More help:
SensaGuard RFID Switches
Guard Master TSL-GD2 Switches

Did this solve the problem?

SensaGuard RFID Switches

Is guard door indicator light, at guard door, flashing green/orange?

Typically, this means magnet is too far way from switch in threshold area; switch will still work, allowing guard circuit to function properly.

Take loose magnet and move next to switch to be sure switch indicator light changes to green only
- If it does not change to green only or flashing green, then 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 threshold range

Is guard door indicator light, at guard door, flashing green?

This means an upstream guard door is open.
Follow guard door loop back to open guard door and close it.

Is guard door indicator light, at guard door, red?

This means a guard door is open.
Close guard door.

Is guard door indicator light, at guard door, flashing red?

This means there is a hard fault.
Try cycling power to safety circuit and 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

Servo Drives

Blown Fuses

Are you experiences a high rate of blown fuses?

---

1) View fault history for all drives
2) View and record the Fault Status on the HCS (servo power supply) display by viewing the HCS display in the electrical cabinets
3) If fuses have blown, locate the KCU (servo control unit) which has the blown fuses and determine which one controls which motor drive combinations in the electrical cabinet
4) Power down the machine for at least 3 minutes to allow the DC Bus Voltage to dissipate
   IMPORTANT: Verify that the Bus voltage has dissipated with a volt/ohm meter
5) Visually and physically inspect the cables (kinked, cut, cracked, too tight bend radius, loose connectors) and remove, if necessary
   SAFETY: Only remove if power has been removed from the servo system and capacitors have drained. There can be a potential for up to 700 volts DC in the system; running hands across cables before power has been removed is not recommended
6) Visually and physically inspect all plug connections, ensuring they are tight and secure, both out at the motors and on the KCU
7) If there is a second KCU tied to the HCS, remove it from the HCS by removing the bus bars and the ribbon cable
8) Locate the terminating plug at the end of the line for the KCU unit which has the blown fuses
9) Relocate this plug to the first motor drive combo on that line, eliminating the rest of the motors and cables on the machine for that KCU unit. The first motor on the line is the first one on the orange what from the electrical cabinet
10) Replace **BOTH** fuses in the KCU unit and the supply fuses for the HCS (power supply), even if only one fuse is blown
    NOTE: The **KCU** unit fuses are 30 amp fuses
    NOTE: The **HCS** fuses are 15 amp fuses in the 480 supply
11) Restore power to the machine and monitor the incoming power to the HCS with an amp meter on power up and during testing
12) Test the motor drive combo for proper operation. If operation is correct, power down the machine for a minimum of 3 minutes and verify bus voltage has dissipated before moving on to the next motor drive combo. If the operation of the motor drive combo does not operate and blows the fuses, refer back to steps 1, 2, 4, 10, and then step 13
13) Determine if the motor drive combo or the cable is bad. Inspect the cable for damage. If there are no signs of damage to the cable, replace the motor drive combo. If there is no physical damage to the cable, this does not mean that the cable is NOT bad. If the cable appears to be damaged, replace the cable. If there are no error messages on the drive, then suspect the cable
14) Keep moving the terminating plug to the next motor drive combo until the fuses blow in the KCU unit. Once found that the fuses have blown or proper operation does not occur, refer back to steps 1, 2, 4, 10 and then step 13

NOTE: This test cannot be performed without disabling the motor drive combos that are not in the loop of communication, or the ones that are past the terminator plug for that KCU unit. Only Aagard can disable each of the drives at this time

NOTE: If at any time during this process a faulty or damaged component is found, it is still recommended to continue adding one servo at a time to the loop to ensure that no other problems exist; if they do exist, we would be able to isolate them in an effective manner

---

Did this solve the problem?

F8060 Errors

Are you seeing F8060 drive errors?

The F8060 drive error indicates over-current in the power section.

1. Restart machine

Did this solve the problem?

✔️ 🚫

Cycle Power

After restarting the machine, do the F8060 errors persist?

1) Cycle power on the machine
2) Restart machine

Did this solve the problem?

✔ 🚫

Check Cabling

After cycling power, do the F8060 errors persist?

1) Check all cabling to drive (kinked, cut, cracked, too tight bend radius, loose connectors) and address any problems

Did this solve the problem?

✔ ⊘

Replace Drive

After completing all previous troubleshooting methods, do the F8060 errors persist?

1) Replace drive

Additional Verification Steps:

If the issue has been resolved by replacing the drive, reinstall the faulty drive to verify failure. If the error returns, reinstall the replacement drive; if the error does not return, monitor the drive for other error codes or how quickly the F8060 error code may return, and under which circumstances

Did this solve the problem?

SERCOS Communication

Ring

Introduction

SERCOS is an abbreviation for SErial Real-time COmmunication System

IMPORTANT NOTE: Due to the complex nature of SERCOS, it is highly recommended to contact Aagard for SERCOS related support issues

If you are experiencing issues with SERCOS, this guide will help you troubleshoot the SERCOS ring. First, before doing any troubleshooting on the ring, locate the electrical prints and go to the SERCOS Loop page. Below is a simple example which demonstrates the SERCOS loop starting at the PC and continuing through the rest of the devices in the system, and then finally returning to the PC.

```
   PC   --- SERCOS 1 --->   BRICK 1   --- SERCOS 2 --->   KCU 1
   ^                                                        |
   |                                                    SERCOS 3
   +--------------------------------------------------------+
```
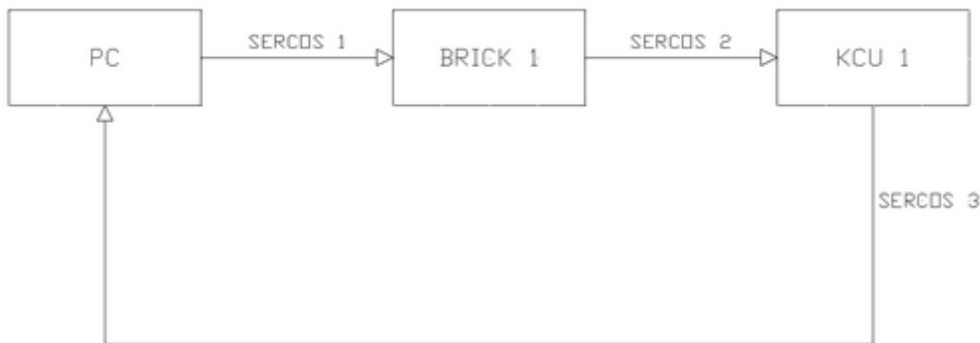
NOTE: The system may have two SERCOS rings, with one setup as the master; if the master ring goes down, the slave ring will go down as well. If the slave ring goes down, the master ring might not go down.

NOTE: If your system is using MI motors, the SERCOS will go from the KCU through all of the drives on that KCU before communication leaves the KCU. If your system uses IndraDrive motors, the SERCOS loop will go through each servo drive through fiber optic cable

NOTE: Machines built prior to 2009 may not have the SERCOS Loop page defined in the electrical drawings; it is a good idea to draw one out.

IMPORTANT NOTE: References to the SERCOS loop page in the prints will be made throughout the rest of the document, so please keep it handy. Also, it is important to remember that, in troubleshooting SERCOS, you will always start from the PC and work your way through the devices in the order in which they appear in the loop

---

Before troubleshooting may begin, the System Manager must be open. To open the System Manager, follow this link.

If you already know how to open the TwinCAT system manager, click here.

Opening System Manager

To open the TwinCAT system manager to help troubleshoot phases and count issues, follow these steps.

---

1) Go to C:\Aagard\Source Code\Controller and open the TwinCAT System Manager (.tsm) file labeled with the machine # (### Proj.tsm)
2) Once open, go to the SERCOS device in the tree on the left, shown in this example.
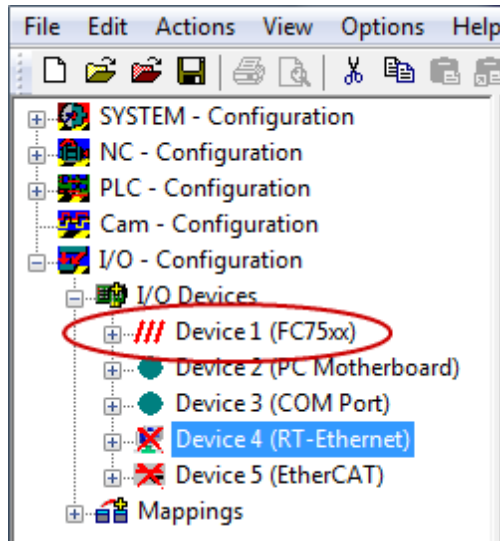
NOTE: Each SERCOS device will have three slanted red lines as a symbol. From this point, we can manually change phases, set up parameters on the SERCOS card, and view error counts.

We will be using the online tab to help us manually cycle through phases.
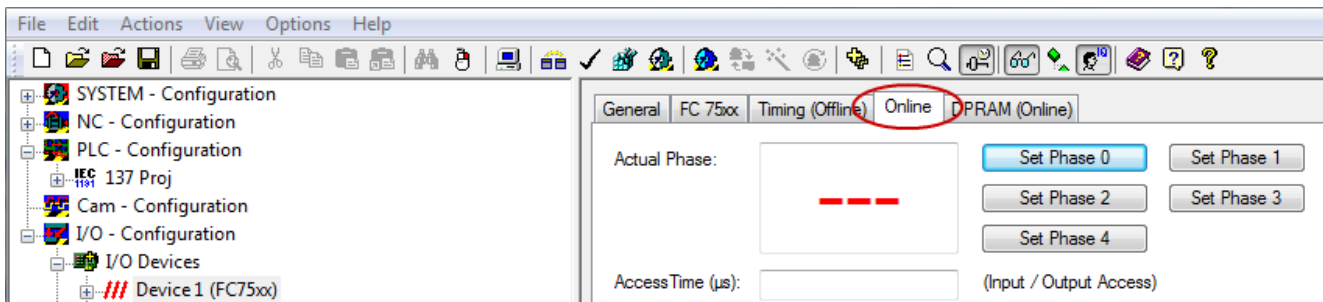
Now that we have the SERCOS loop print page and TwinCAT system manager open, we are ready to begin troubleshooting.

Begin Troubleshooting

Which Sercos Issue?

Which issue are you having with SERCOS?

Cannot Get Phase 0
Cannot Get Phase 1
Cannot Get Phase 2
Cannot Get Phase 3
Cannot Get Phase 4
Losing Phase 4
Multiple Error Counts and Unstable Ring

Cannot Get Phase 0

Are you unable to achieve phase 0?

To achieve phase 0, there must be a complete and closed loop. If you cannot achieve phase 0, the ring is not closed, meaning there is a break somewhere in the loop.

First, start by checking the most obvious items in the loop. Using the SERCOS loop page from the prints, start at the PC and work your way out.

Inspecting Cables
1) Check each cable for proper connection. Connections should be hand tightened only; no wrenches should be used. If over-tightened, the fitting can become damaged
2) Check cables for damage. Look for any obvious damage to cables, splices, wear and tear, and repair if any damage is found
3) Check cable radius. Cables should not have a bend in them with a radius of less than six inches; a small radius in the cable can cause SERCOS errors
4) See SERCOS Fiber Optic Cable Assembly for more information

Did this solve the problem?

Inspecting Bricks

Inspecting Bricks

1) Ensure bricks inside the electrical cabinets have power. Check 24-volt power to each brick; voltage should be greater than 24-volts and stable
2) Check LED status. The LEDs on the brick can give immediate information about the brick. Check LED status for error. For more information, see page 17 and 18 in [SERCOS Coupler BK7500](). Look for *The diagnostic LEDs, Code of flashes* paragraphs and the *Terminal bus error* table
3) Ensure baud rate is set correctly. Check the first I/O page in the electrical drawings for baud rate setting and set brick accordingly

NOTE: Changing the baud rate will require cycling the power on the brick for it to take effect. For more information, see *Setting the Transmission Rate* topic on page 19 in [SERCOS Coupler BK7500]()

4) Check intensity setting. Make sure transmission setting is set to those in the electrical drawings (first I/O page) and it matches the proper length of the corresponding SERCOS cable. For more information, see the *Setting the Cable Length* topic on page 19 in [SERCOS Coupler BK7500]()

Did this solve the problem?

Drive type?

Which type of drive do you have?

IndraDrive   MI Drive

Inspecting Servo Drives *(applies to IndraDrive)*

1) Ensure drives have power
2) Ensure baud rate is set correctly
3) Check transmission setting. For information on how to check the transmission setting, see the *Switch S20* section on page 137 and 138 in Rexroth ECODRIVE03 Drive Controllers

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Did this solve the problem?

✔ ⊘

Inspecting KCU *(applies to MI drives)*
1) Ensure HCS and KCU have power
2) Check transmission setting. Make sure transmission setting is set to those in the electrical drawings (See servo wiring pages) and it matches the proper length of the corresponding SERCOS cable. For more information, see *S6, SERCOS Transmission Power* table on page 65 in Rexroth IndraDrive MI Drive Systems
3) Check wiring sequence of motors from KCU. SERCOS communication travels through each motor after being converted in the KCU from optic to electrical. The sequence of cables to each MI motor and the terminating plug must be properly set up. For more information, view Proper Wiring Order for MI Motors

---

Did this solve the problem?

✔ ⊘

Inspecting TwinCAT System Manager Settings

To inspect the TwinCAT System Manager Settings, follow these steps.

1) On the FC75xx tab, check transmission setting (Send Power)
2) Ensure baud rate is set correctly. The baud rate must match those in the electrical drawings for the devices
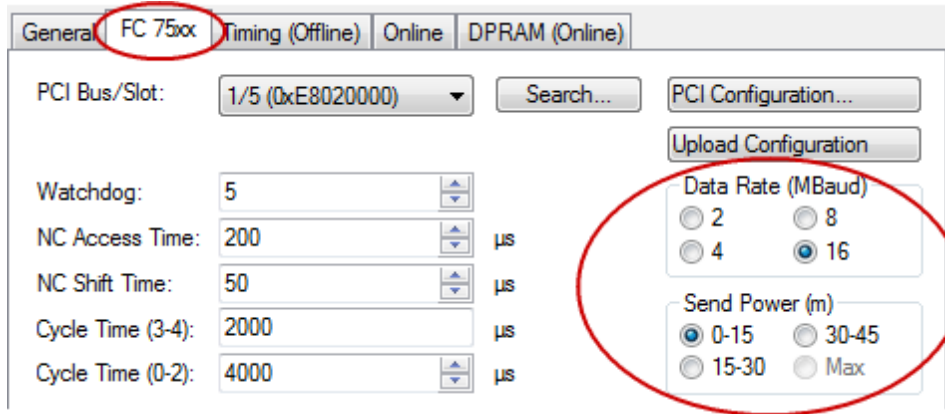
Did this solve the problem?

Eliminate Items in the Loop

If you have checked all of these items above and did not find a problem, then there is a simple technique to locate the break in the loop. To start this process of elimination, you must first get a SERCOS test cable and then systematically work your way out from the PC.

1) Start by connecting a test cable to the receive (Rx) and transmit (Tx) ports of the SERCOS card in the PC
2) Check if you have phase 0
   a) If you do not have phase 0, the card has failed
   b) If you do have phase 0, run the test cable from the Rx port of the card to the Tx port of the first device in the loop
      i) If you do not have phase 0, the issue is either with the device or with the cable between Tx port of the card and the Rx port of the cable. To determine if it is the device or the cable, use another test cable from the Rx port of the first device in the loop back to the Tx port of the card
         (1) If you have phase 0, the cable has failed
         (2) If you do not have phase 0, the device has failed
3) Sequentially, move to subsequent devices, repeat the above steps to isolate the problem
      NOTE: Always connect the test cable connected to the card Tx port with the device Rx port
      NOTE: When a second test cable is required to determine if a specific cable or device has failed, always connect the Tx port of the previous device with the Rx port of the current device

If you make it through all the devices with phase 0 at every point, then the problem may reside in the last cable back to the PC. While this method will quickly find where a break may occur, additional troubleshooting will be needed to determine issues with devices in the loop.

Did this solve the problem?

SERCOS Fiber Optic Cable Assembly

1) Cut the sheath of the 6mm fiber optic cable 2" from the end of the cable
2) Cut the fiber optic cable 1" from the end of the sheath
3) Strip the fiber optic jacket ½" from the end of the sheath with the 1mm fiber optic stripper
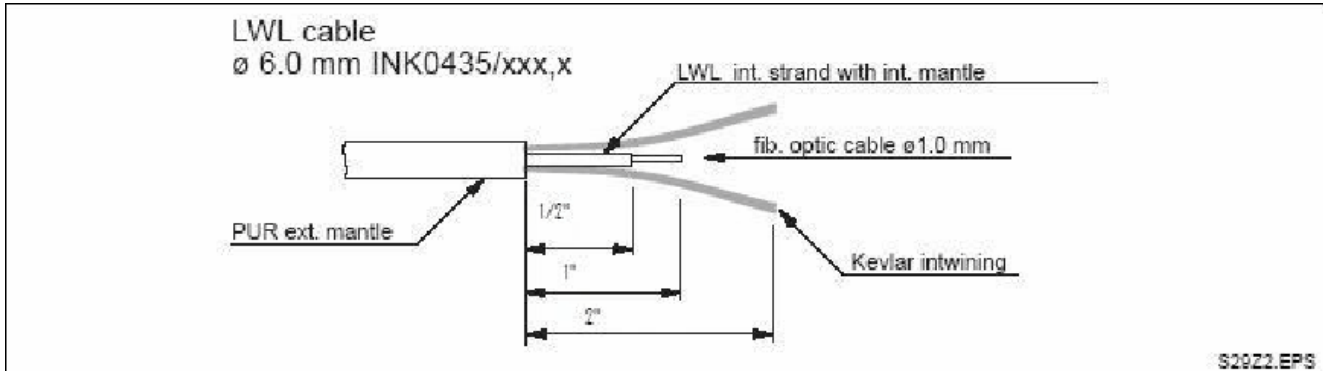
4) Slide the Rubber Strain relief onto cable
5) Slide metal crimp sleeve onto cable
6) Assemble the connecting nut and the connecting nose and slide onto cable, make sure the connecting nose is pushed under the sheath up to the raised knurled stop
7) Crimp with the "A" opening on the fiber optic crimper as shown in the diagram below
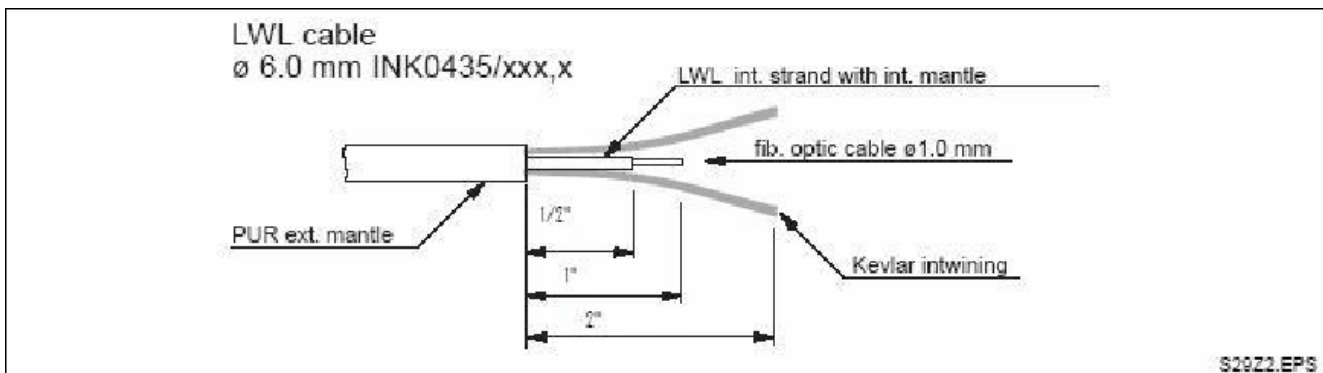
8) Pull Kevlar stands to remove any slack bunched up under the sheath
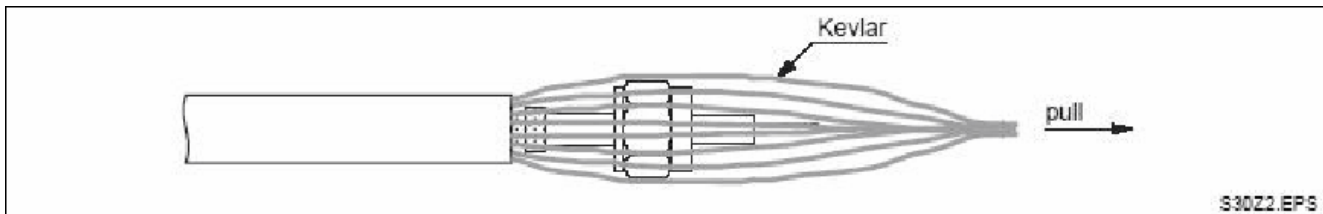
9) Cut the Kevlar strands ½" from the end of the sheath
10) Trim the fiber cable from the front of the nose, leaving enough to sand flush

Crimp sleeve

1/2"

Cut excess fiber away, but allow enough for sanding

S30Z3.EPS
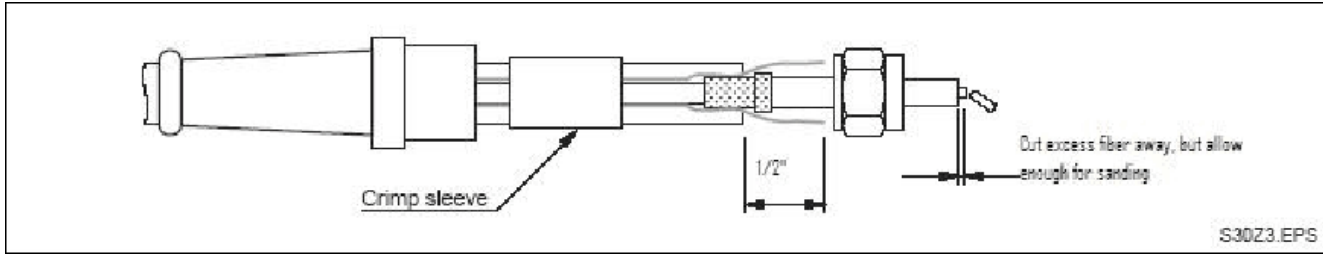
11) Apply plastic half shell as shown in the diagram below
12) Slide the Metal crimp sleeve over the plastic half shell
13) Crimp the Metal sleeve with the "B" opening on the fiber optic crimper

Crimp sleeve

plastic half shells (do not separate)

Kevlar

Crimping in sleeve center (opening "B")

S26Z3.EPS
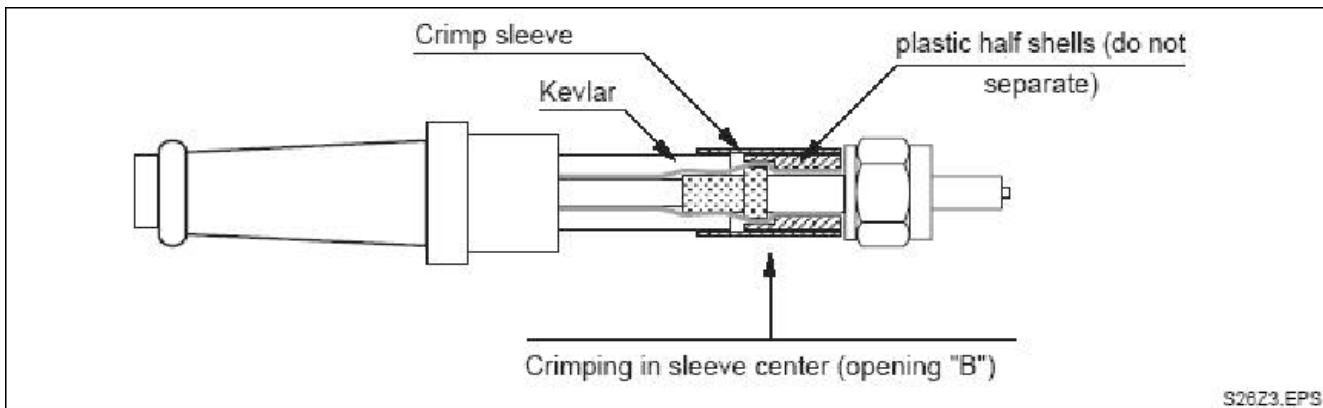
14) Screw the new cable end completely into the fiber optic sanding puck
15) Place a fine sheet of sanding paper on a flat surface
16) Sand the fiber in a figure eight motion using the sanding puck

Technical Notes
Max Bend Radius:

2.2mm = 2" (Internal cabinet use)
6.0mm = 3.5" (External Cabinet use)

The not shielded cable must never be used outside an electrical cabinet.

Avoid coiling the Fiber Optic cables, this distorts the attenuation of the light waves.

Cannot Get Phase 1

When transitioning to Phase 1, the device addresses are checked. If an address is not found, it cannot transition to Phase 1. Typically, a message like this will be displayed:

TwinCAT I/O will report the address it cannot find. Check that device for proper address.

Setting drive addresses

1) For information on how to set the brick address, see the *Setting the Station Address* topic on page 20 in SERCOS Coupler BK7500.
2) For information on how to set the IndraDrive address, see the *H1, S1, S2, S3: Diagnostic display, Reset key, Address switch* topic on page 202 and the *Setting the Drive Address* topic on 203 in Rexroth ECODRIVE03 Drive Controllers
3) To set the MI motor address, see the S5 and S4 settings in the *Setting/Description* table on page 108 in Rexroth IndraDrive Mi Drive Systems

Did this solve the problem?

Cannot Get Phase 2

In transitioning to phase 2, load communication parameters are checked.
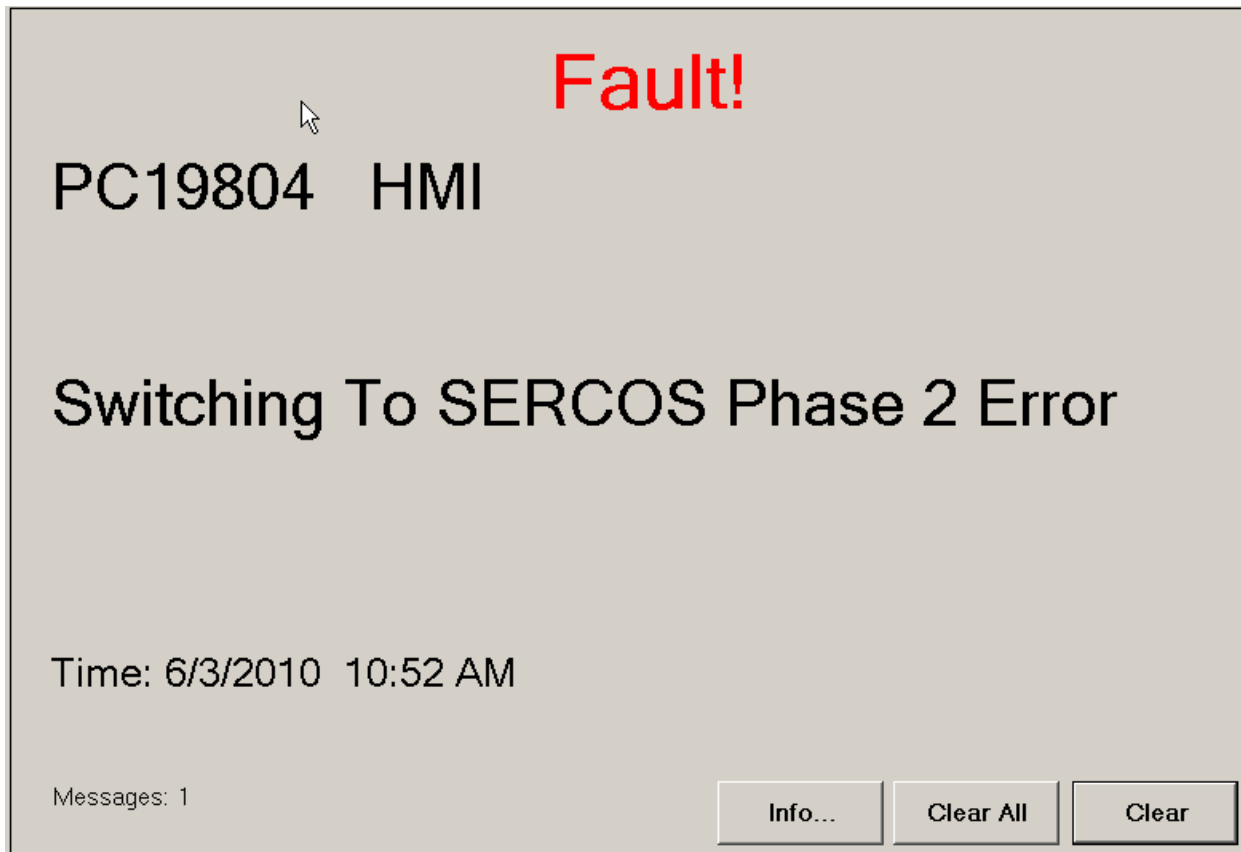
Issues with IDNs on the servo drives may need to be resolved.

1) Try doing a full initialization for the drive that has the error, through the SERCOS diagnostics page in the HMI; if problem persists go to the next step
2) Try replacing drive which has the error
3) **Do not attempt this step without first calling Aagard for support:** Read IDN S-0-0021 for invalid list of IDNs. Change the operation data for those IDNs within value range and insert those IDNs in the Edit Slave Startup List. Read S18 to determine if there are specific IDNs which must be sent. Check to see if phase 3 communication check passed

Did this solve the problem?

Cannot Get Phase 3

In transitioning to phase 3, the process loads other drive parameters. If it fails here, there may be an issue with drive data.

1) Try doing a full initialization for the drive that has the error, through the SERCOS diagnostics page in the HMI; if problem persists go to the next step
2) Check HMI drive data to ensure it is valid by checking the HMI Change Log to determine if changes were made. Otherwise contact Aagard support to determine valid drive data
3) **Do not attempt this step without first calling Aagard for support:** Read IDN S-0-0022 for invalid list of IDNs. Change the operation data for those IDNs within value range and insert those IDNs in the Edit Slave Startup List. Also read IDN S-0-0019 to be sure all IDNs required in phase 3 have been sent. Check to see if phase 4 communication check passed

---

Did this solve the problem?

Cannot Get Phase 4

In transitioning to phase 4, the ring begins exchanging cyclic data. If it fails here, there may be an issue with drive data, or the firmware of the drive.

1) Try doing a full initialization for the drive that has the error, through the SERCOS diagnostics page in the HMI; if problem persists go to the next step
2) Check HMI drive data to ensure it is valid by checking the HMI Change Log to determine if changes were made. Otherwise contact Aagard support to determine valid drive data
3) **Do not attempt this step without first calling Aagard for support:** Read IDN S-0-0022 for invalid list of IDNs. Change the operation data for those IDNs within value range and insert those IDNs in the Edit Slave Startup List
4) **Do not attempt this step without first calling Aagard for support:** Read IDN S-0-0030 for manufacturer version; make sure the version is V30 (MPB-04V30)

Did this solve the problem?

Losing Phase 4

Losing Phase 4 can be caused by error counts in the ring (for example, lost packets of data) or loss of power.

1) Check 24-volt power source to devices in the ring, and make sure power is not being lost
2) If error counts precede the loss of SERCOS, consider stabilizing the ring

Did this solve the problem?

Multiple Error Counts and Unstable Ring

It is highly recommended to call Aagard for support for this topic.

Error counts are caused by lost information in the ring. These error counts come as warnings, but may point out a future failure waiting to happen. When error counts are seen, it is a good idea to stabilize the ring.

NOTE: The higher you can set the baud rate, the more stable you can get the ring. If you can set the baud rate to 8 MBaud, then stabilize it, and then set it down to 4 MBaud; the ring will be more stable

NOTE: It is a good idea, before beginning this process, to follow the same instructions on checking devices and cables in the system as described in the Cannot Get to Phase 0 topic
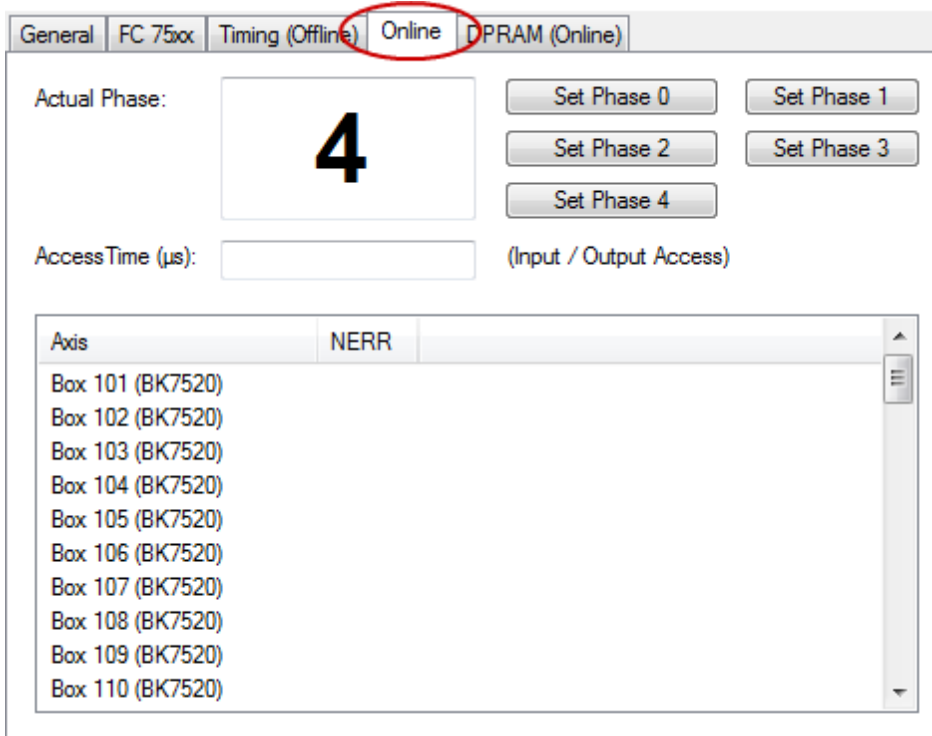
Working your way out from the start of the ring, follow these instructions:

1) Make sure that each intensity setting is set to the appropriate length of cable through which it is sending
2) Get the ring to phase 4 by clicking the Set Phase 4 button on the Online tab
3) One by one, check how far the cable end can be removed from the device before the ring goes down; only one end per cable needs to be tested
   NOTE: The ring will need to be reset to phase 4 before testing the next cable
4) If the ring goes down before the connector is about half way unscrewed, boost the intensity on the FC 75xx tab through that cable by one notch and re-test
   NOTE: If the intensity setting is modified, the configuration file must be activated
5) If still unstable, check and/or replace the cable and test again

6) After all the cables have been checked in this fashion, run the machine. After multiple e-stops and starts, check the error counters on the input section of the SERCOS card in TwinCat system manager; these should be all zero
7) If the error counters are not all zero, then check IDN S-0-0028 and IDN S-0-0029 on each of the SERCOS devices. These are error counters in the devices themselves
   a) If there is a device with more errors than others, suspect the cable or intensity immediately before this device
   b) If all of the devices have errors, but they all have the same amount, suspect the first cable out of the SERCOS Card, or the intensity setting of the SERCOS Card
   c) If none of the devices have errors, but there are still error counts on the SERCOS card, suspect the last cable, or the intensity setting of the last device

NOTE: Too weak of a signal will have the same symptoms as too strong of a signal. This is because a weak signal will not be strong enough to decipher, but too strong of a signal will distort the electronics of the optic receiver, also making the signal undecipherable

Did this solve the problem?

Functional Stability

NOTE: This topic applies to the Rexroth MI drive system

To test the functional stability of SERCOS communication, check the following areas of concern:

Error Counters
Drive Firmware Version
Control Voltage
Motor Temperature
Noise Measurement

Checklist to Record Test Results

Error Counters

Stable Condition:

Circled error counts in the sample image below should not be incrementing.

How to Check:

From the HMI Main Screen, navigate to Advanced > Motion Bus Diagnostics
- The counts circled in red should be a small number, incrementing less than 5 per hour
- For each drive, the counts circled in blue should be a small number, incrementing less than 10 per hour
   NOTE: These counts continue to increment until the SERCOS ring is reset or power cycled; this means the numbers may be higher if the system has been powered up for an extended period of time

---
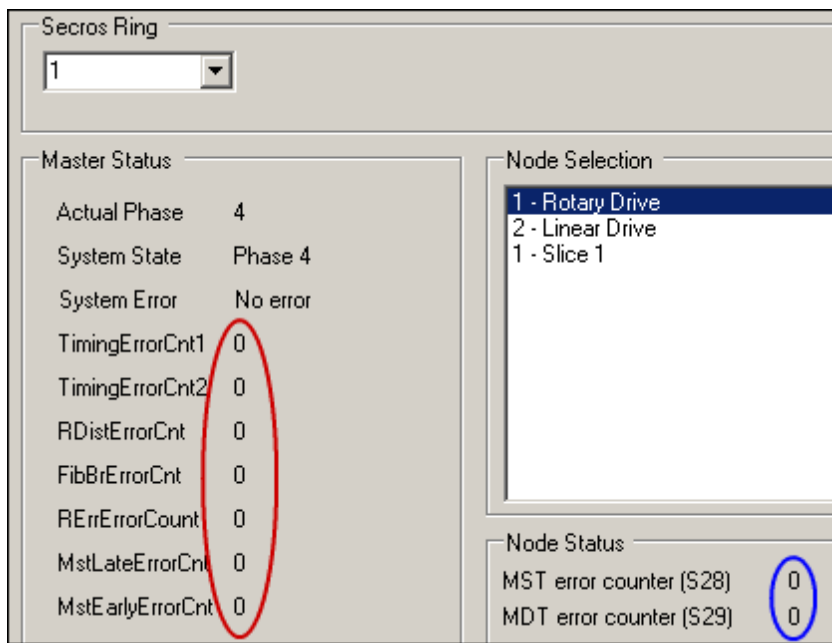
Resolutions:

If SERCOS Error counters are high:
- Look for loose servo cables
- Look for loose or kinked fiber optic cables
- Verify the SERCOS intensity setting switch matches the print

Drive Firmware Version

Stable Condition:

For each drive, the drive firmware should be 04V30 as shown in the following image.

How to Check:

From the HMI Main Screen, navigate to Advanced > Motion Bus Diagnostics
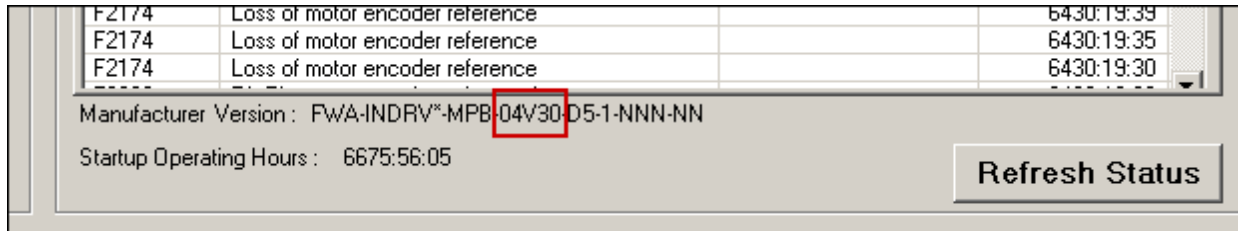
Resolution:

Update the firmware to 04V30 if it is incorrect.

Control Voltage

IMPORTANT NOTE: The machine must be running to test control voltage!

Stable Condition:

No drive Error Codes of F8069 or F8070 are recorded and the HCS and KCU control units is between 24 and 27 volts DC.

How to Check:

From the HMI Main Screen, navigate to Advanced > Motion Bus Diagnostics
- For each drive, look for Error Codes of F8069 or F8070

- Measure the control voltage to the HCS and KCU units to be between 23 and 26 volts DC
  - o Measure voltage at the device

Fault Codes (P192)	Diagnostic Codes (S375)	
Error Code	**Description**	**Date/Time**
F2174	Loss of motor encoder reference	11/16/2010
F2174	Loss of motor encoder reference	11/16/2010
F8022	Enc. 1: enc. signals incorr. (can be cleared in ph...	11/16/2010
F2174	Loss of motor encoder reference	
F2174	Loss of motor encoder reference	
F2174	Loss of motor encoder reference	
F2174	Loss of motor encoder reference	

Manufacturer Version : FWA-INDRV*-MPB-04V24-D5-1-NNN-NN

Resolutions:

- Check power supplies
  - o Output voltage
  - o Error status
  - o Intermittent issues
- Wiring Issues
  - o Loose wires
  - o Bad connections
  - o etc.

Motor Temperature

Stable Condition:

The temperature of each drive should not exceed 90° C after continuous running (approximately eight hours)

How to Check:

Open System Manager and navigate to I/O Configuration > I/O Devices > Device 1
- On the online tab, view the S-0-0384 parameter value for each axis listed

---

Resolutions:

- If too hot, clean the motor so it can dissipate heat properly
- Look for mechanical binding issues
- Compare motion profile of drive to baseline values
- Compare torque limits to baseline values

Noise Measurement

IMPORTANT NOTE: The machine must be running to test noise measurement!

Stable Condition:

Excessive noise should not be detected at the 24V connections of the PC, KCU units, or other components in the SERCOS ring, such as 24V power supply or I/O modules.

How to Check:

Using a 200 MHz or greater oscilloscope, verify voltage noise amplitude is less than 6 volts at the following points:

NOTE: 200µs (microseconds) per division recommended

- Probe on PC +24V wire, common on PC 0V wire
- Probe on PC +24V wire, common on ground connection
- Probe on KCU +24V wire, common on KCU 0V wire
- Probe on KCU +24V wire, common on ground connection
- On the power supply which provides power to sercos devices
  - Probe on +24VDC power supply wire, common on 0V wire
  - Probe on +24VDC power supply wire, common on ground connection

Resolutions:

- Check for loose ground wires especially on the servo and VFD cable shields
- Check for noise issues on incoming power to the machine

Scope View 2

NOTE: Scope View 2 is an upgrade option

The purpose of these topics is to provide a basic overview for using Scope View 2 with Aagard machinery systems.

These topics are not intended to duplicate or replace the help document from Beckhoff, accessible by pressing F1 from inside Scope View 2.

What Is Scope View 2

Scope View 2 is an analysis tool with graphical output to evaluate system states and system variables, with the ability of showing signal processes of multiple devices. The graphical output may be recorded for later analysis.

Usage and Benefits

- Troubleshoot unexpected machine behavior
- Troubleshoot sensor failures
- Analyze and monitor servo positions
- Monitor for false triggers, or blips, in sensors
- Scopes may be triggered to start or stop recording based on a specific tag value
- Recorded scopes may be viewed by Aagard personnel to assist in troubleshooting
- Existing scopes may be easily modified to expand use

Audience

- PSEs
- Level 3 Technicians
- Plant Engineers

How To Find

- Access to Scope View 2 is from the Windows start menu
  - Start > All Programs > TwinCAT System > TwinCAT Scope 2 > TwinCAT Scope View 2

- A Level 3 HMI login is required to minimize the HMI and access start menu
- Depending on HMI setup, links to predefined scopes may be available from a button in the HMI

Using Scope View 2

Servo drive axes and I/O devices are of primary interest in setting up scopes for Aagard machinery system applications. Axes and I/O devices are identified and added to scopes.

First, a few notes about how Aagard names tags for I/O devices in the PLC code:

B = Boolean

    A Boolean has only two values: 0 or 1

        *Typically, the zero and one translate into **False** and **True, Not Made** and **Made,** or **Low** and **High***

I = Input

    An Input is a signal <u>from</u> a device, such as a photo eye

    A Boolean Input tag will always have this prefix: BI_

Q = Output

    An Output is a signal <u>to</u> a device, such as a solenoid valve or VFD

    A Boolean Output tag will always have this prefix: BQ_

Aagard I/O tag names are made up of its tag type, its device-type abbreviation or acronym, its I/O assignment, its description, and its I/O name. The description and I/O name are intended to be somewhat indicative of the purpose of the device.

Tag examples:

BI_GS23111GUARDDOOR1_18LOCKED

    Boolean Input - Guard Switch 23111 (Column 231, Row 11) Guard Door 1-18 Locked

    When its value is 1 (high), the guard door switch is expected to be locked

        (Recall that, typically, a value of 1 translates into High, True, or Made)

BI_PE34003BAGAATLAUNCHPRESENT

    Boolean Input - Photo Eye 34003 (Column 340, Row 3) Bag At Launch Present

    When its value is 1 (true), a bag is expected to be present at launch

BQ_BL39102BEACONLIGHTRED

    Boolean Output - Beacon Light 39102 (Column 391, Row 2) Beacon Light Red

    When its value is 1 (made), the red beacon light is expected to be illuminated

BQ_SV36401MANUFACTURERGLUEON

    Boolean Output - Solenoid Valve 36410 (Column 364, Row 10) Manufacturer Glue On

    When its value is 1, the manufacturer glue solenoid valve is expected to be on

Basic View

The following image shows the default view for Scope View 2.
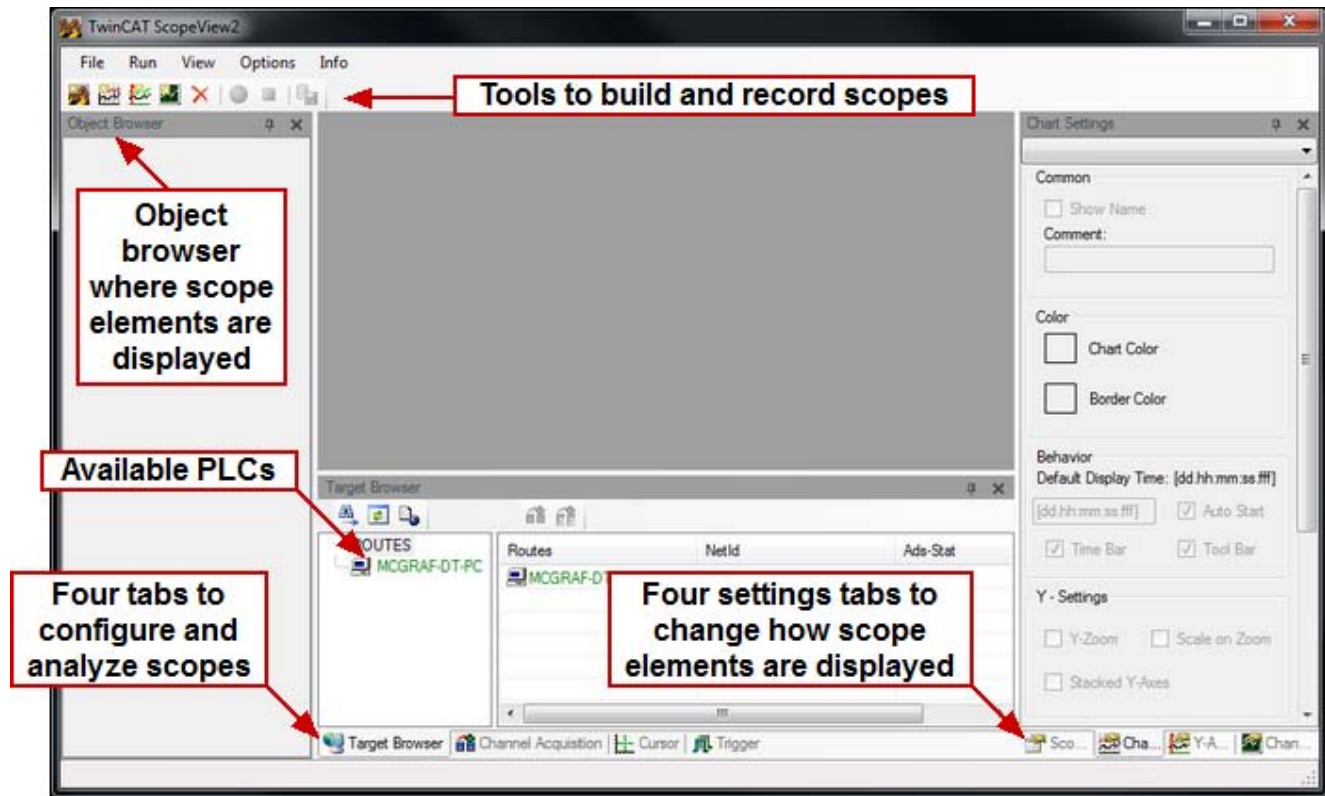
Reopen Closed Tabs

If any of the tabs or the object browser have been closed, they may be reopened by clicking View, followed by the desired item. To restore the default view, select Reset Layout.

Location of Axes

1. Click on desired node under ROUTES, and then on the + to expand the node
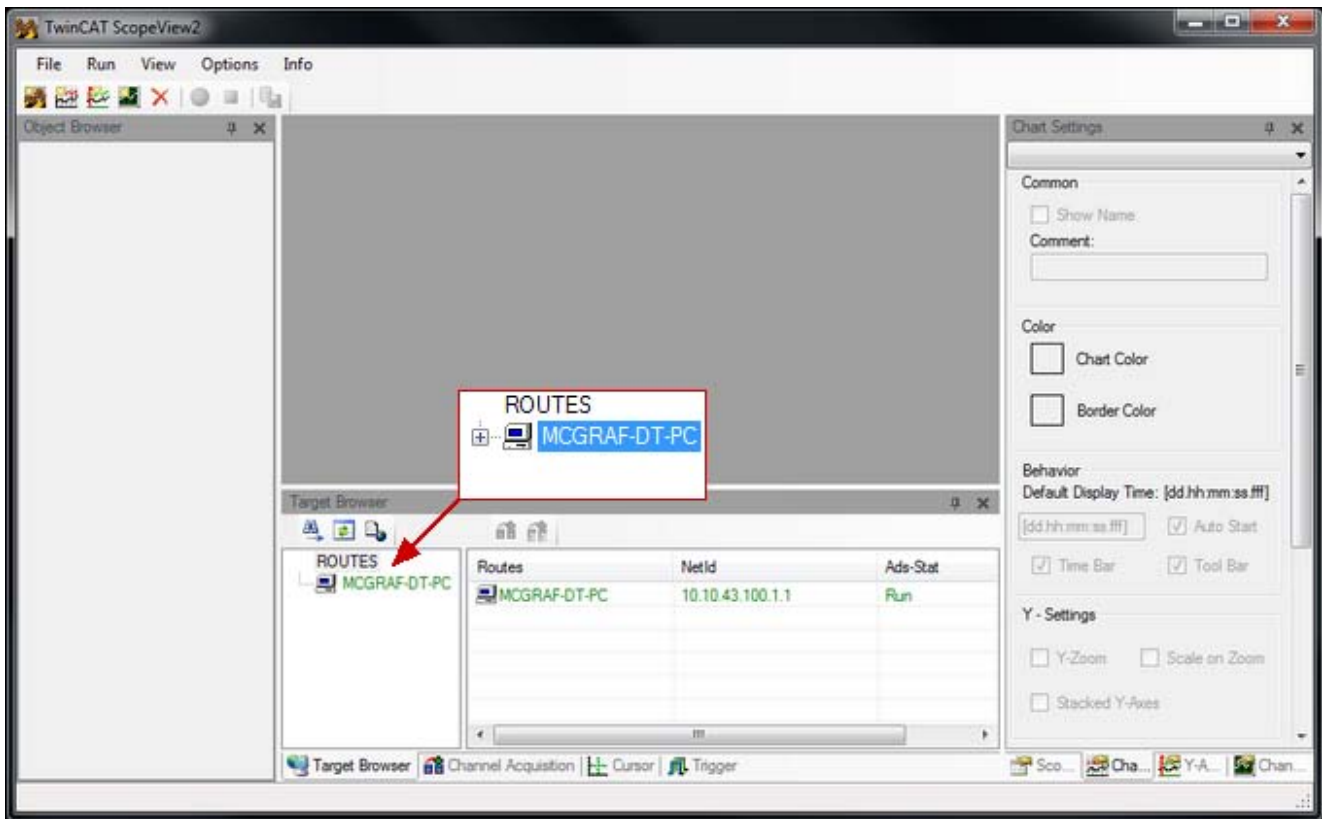
1. Click on TCNC.Nc... and then on the + to expand TCNC.Nc...
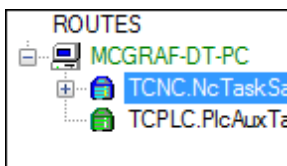
2. Click on the + to expand the Axes node
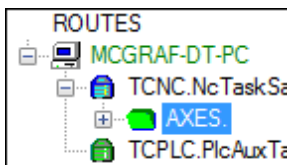
3. Click on an axis, and view the available tags in the tag name panel immediately to the right
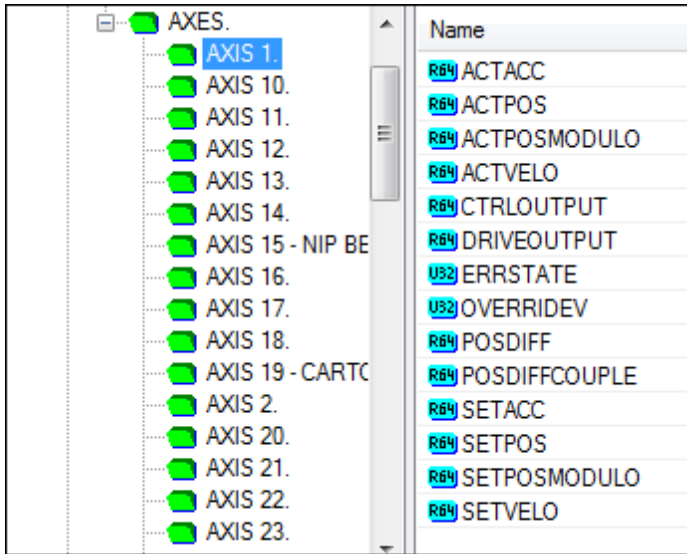
4. The servo drive tags of interest are those beginning with ACT and SET
   a. ACTACC = Actual Acceleration
   b. ACTPOS = Actual Position
   c. ACTPOSMODULO = Actual Position Modulo
   d. ACTVEL = Actual Velocity
   e. SETACC = Set (or Commanded) Acceleration
   f. SETPOS = Set (or Commanded) Position
   g. SETPOSMODULO = Set (or Commanded) Position Modulo
   h. SETVEL = Set (or Commanded) Velocity

Location of I/O

1. Click on desired node under ROUTES, and then on the + to expand the node
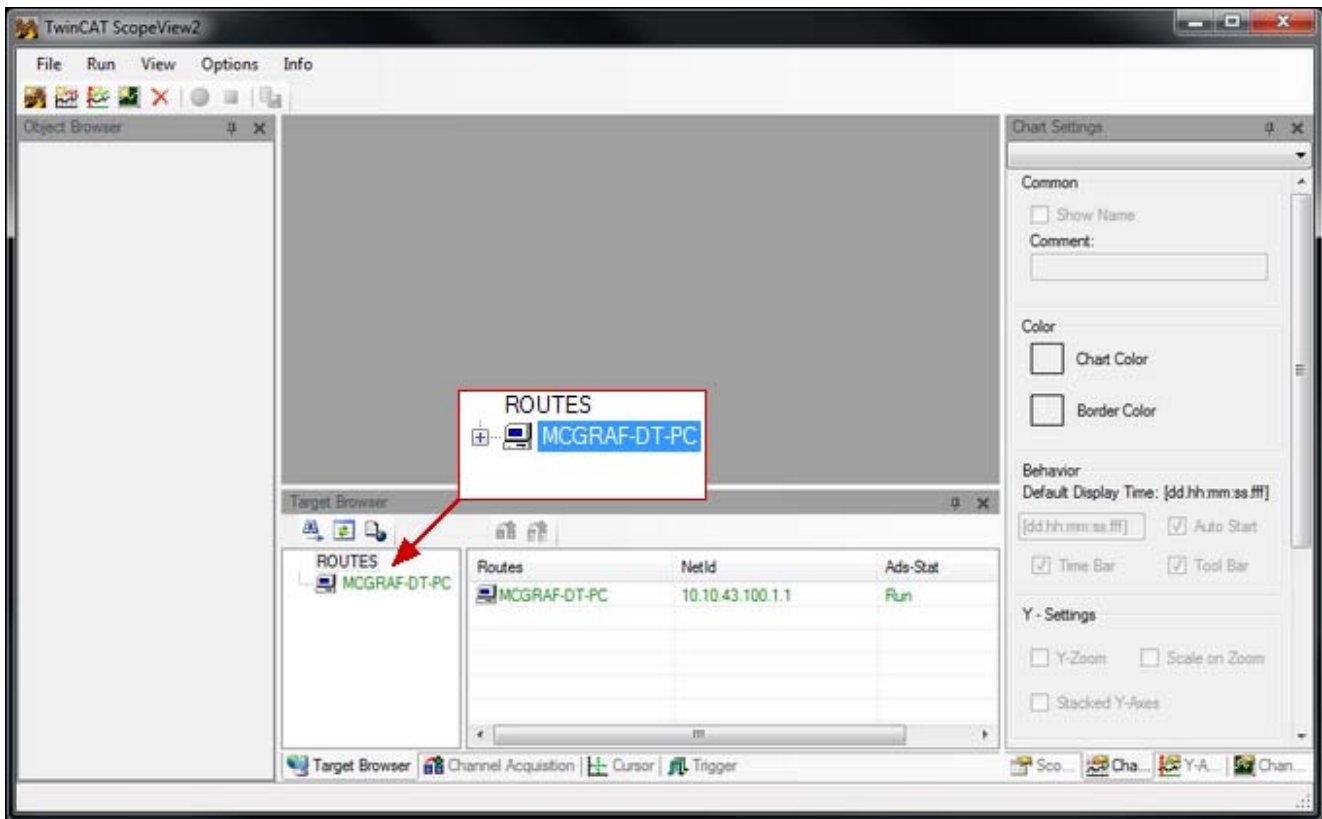
2. Click on TCPLC.Plc... and then on the + to expand TCPLC.Plc...
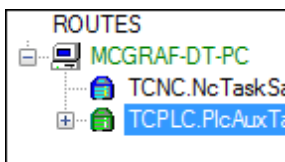
3. Click on the first node which shows the period (.), and view the available tags in the tag name panel immediately to the right
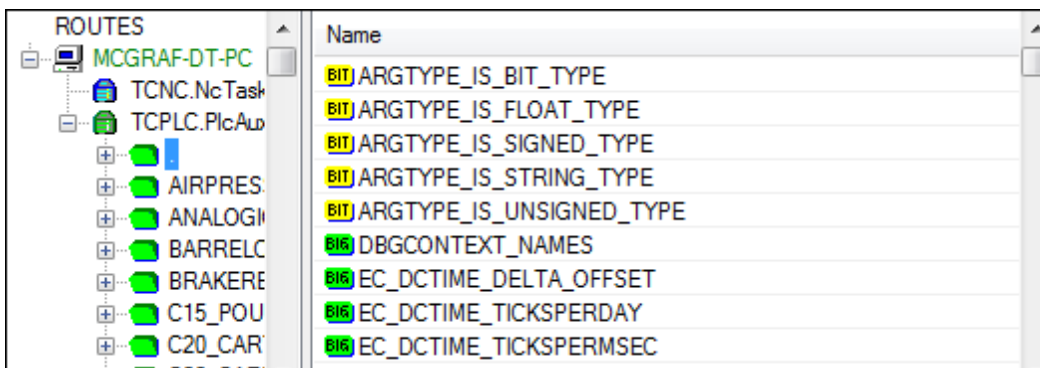
4. Scroll down in the tag names panel to identify BI_ and BQ_ tags of interest

Creating a Scope

1. Find a tag you want included in the scope:
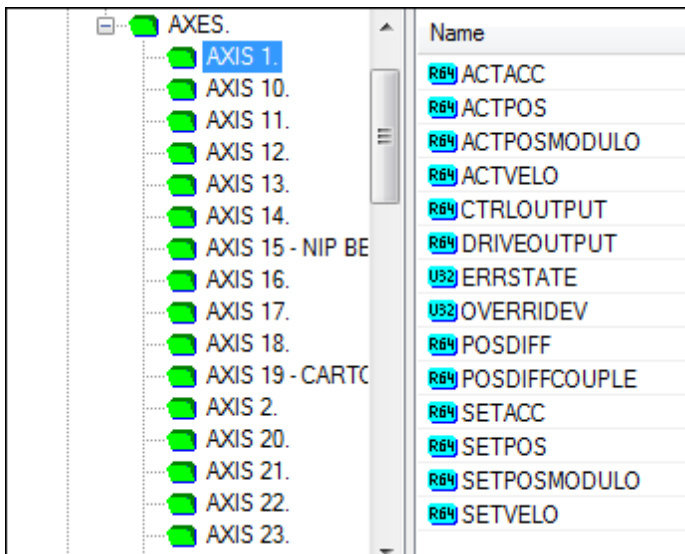
2. In the target browser, double-click directly on the tag
   a. The scope, chart, axis, and channel (tag) are added to the object browser
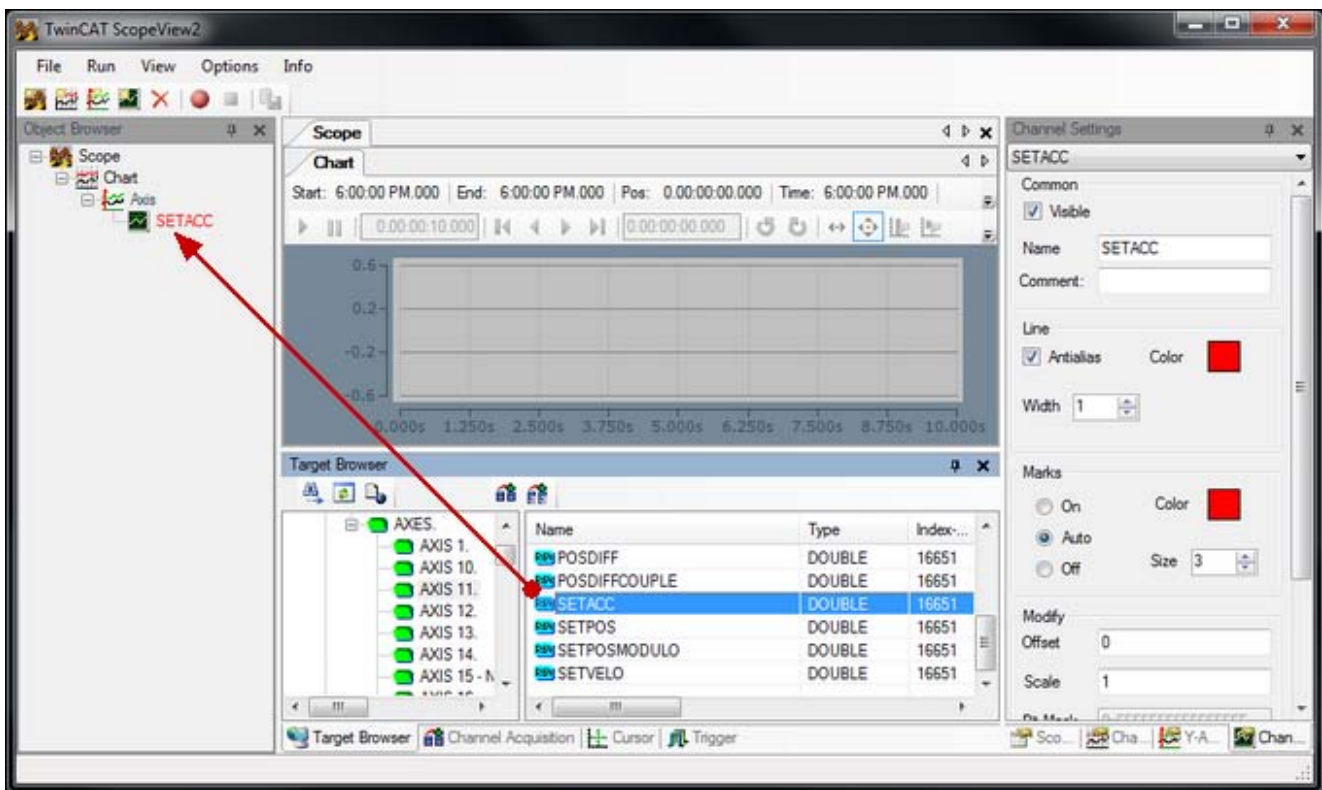
3. Double-click another tag in the target browser
   a. The channel is added to the existing scope
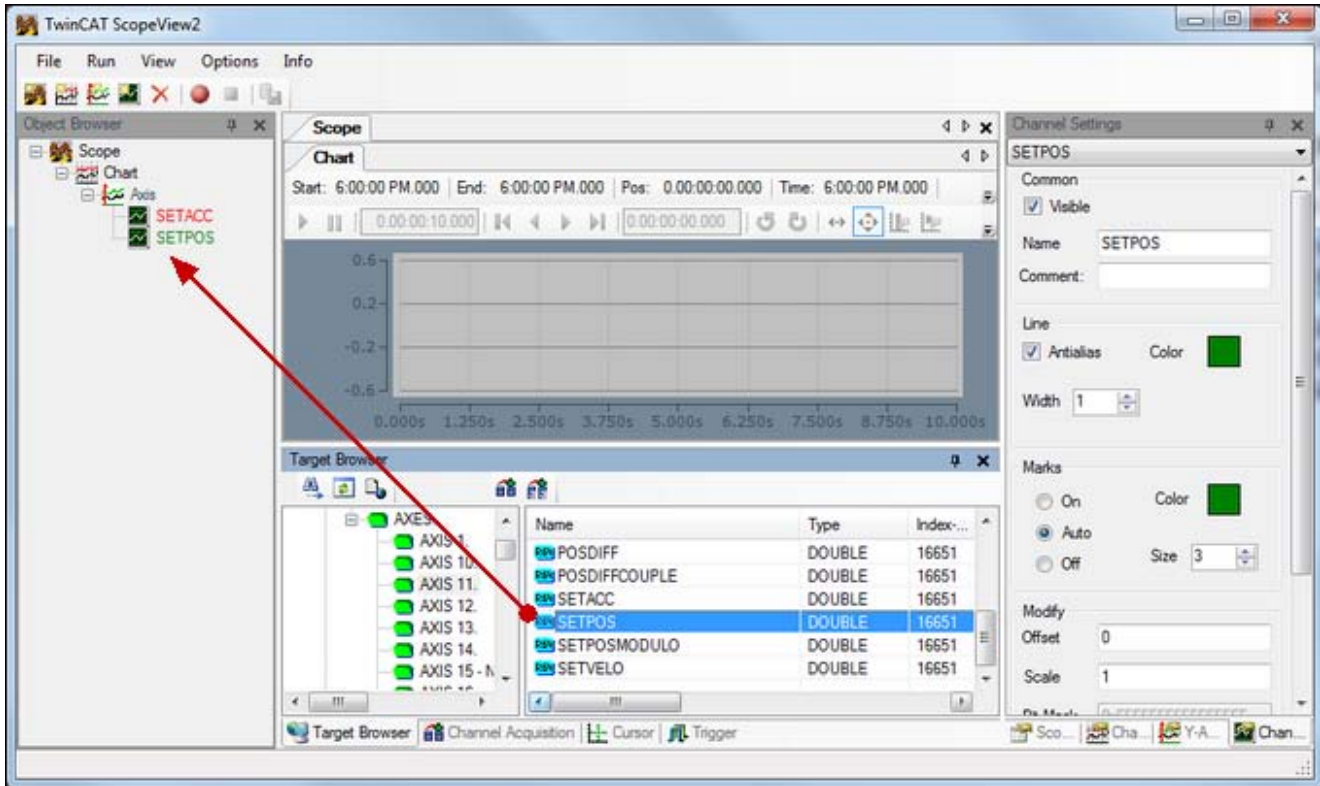
NOTES:

- Note color coding of channels
- By default, the channel name is the name of the double-clicked tag
  - o You may optionally rename any node in the object browser to help understand the scope
    - ▪ To do so, click on the item in the node, press F2, type a new name, and then press enter

Running a Scope

Click here to start recording a scope

Click here to stop recording a scope

Click here to pause playing a scope which is currently recording

Start: 10:42:58 AM.964 | End: 10:45:08 AM.547 | Pos: 0.00:00:00.000 | Time: 10:42:58 AM.964 | Date: Wednesday, February 22, 2012

0.00:00:10.000 | 0.00:00:00.000 | Max
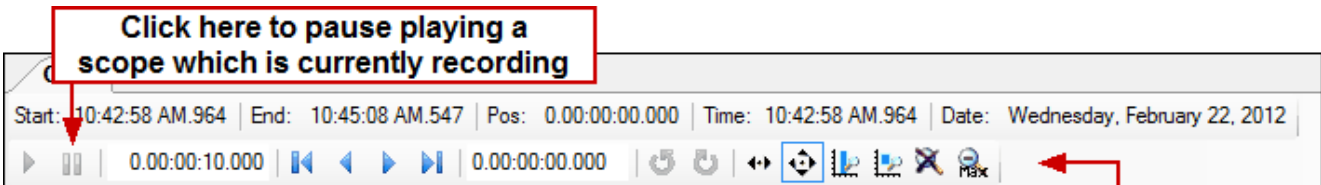
Click here to resume playing a scope which has been paused while recording

Use these additional tools to zoom the view, slide the scope, or jump to a specific time of a recorded scope.

Many of these tools are much like a digital video player on a computer.

Deciphering a Scope

This topic will decipher scope results by comparing them with the physical action on a machine.

NOTE: For the purposes of this illustration, the colors in the model have been matched to those used in the scope

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[3D Model](#)
[Sequence of Operation](#)
[Scope Results](#)
[Offsets](#)
[What the Lines Represent](#)
[Putting It All Together](#)

3D Model
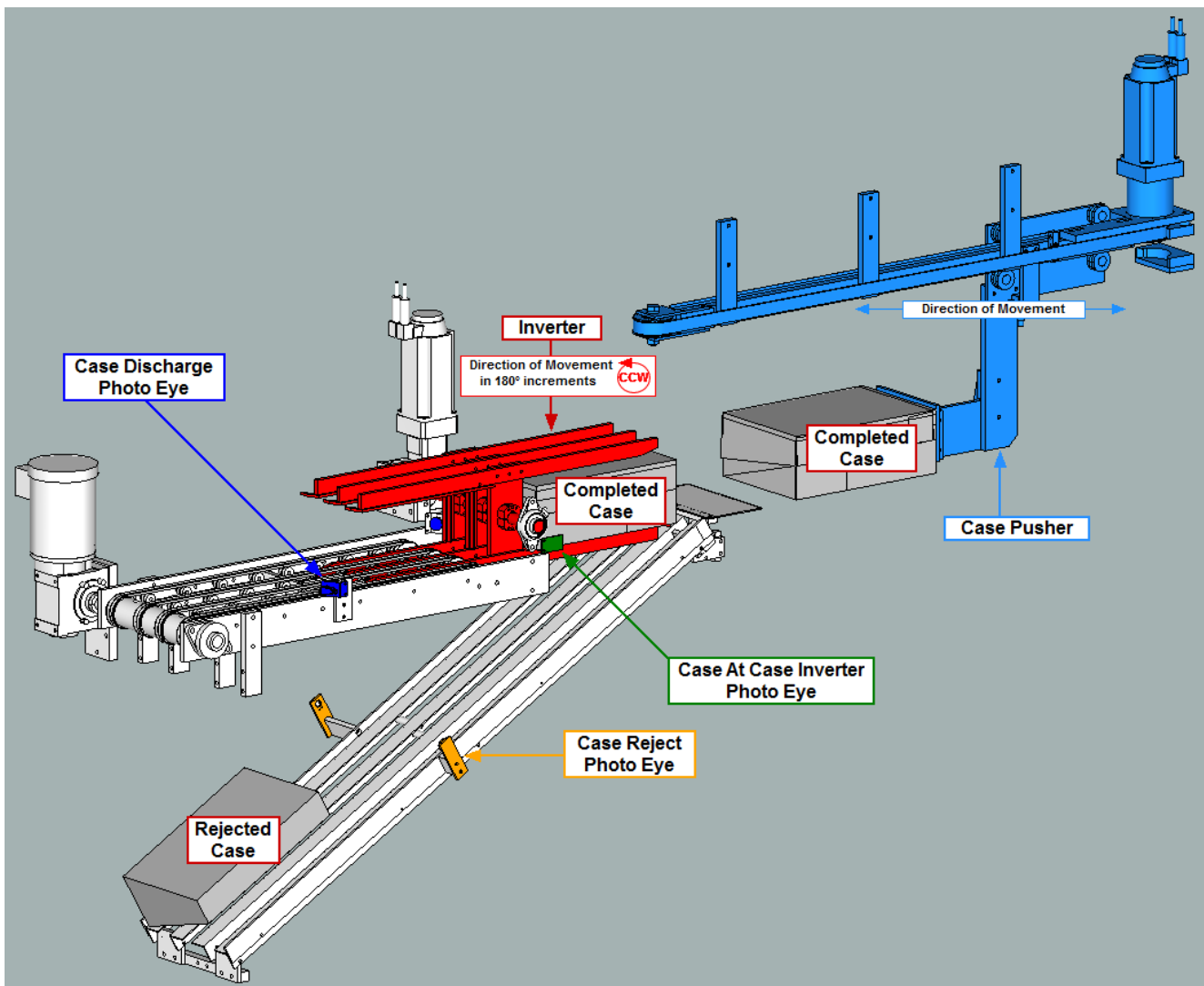
Sequence of Operation

1. A completed case is pushed downstream into the **INVERTER** by the **CASE PUSHER**. After its push stroke, the **CASE PUSHER** returns to its resting position.

2. When the **CASE PUSHER** has reached a defined position during its return move, the **CASE AT CASE INVERTER** photo eye is evaluated to see if it is blocked. If the **CASE AT CASE INVERTER** photo eye is blocked, the **INVERTER** will begin its motion. The **INVERTER** has a circular motion, rotating 180° at a time to invert the completed case; what was the top of the case is now the bottom.

3. The inverted case is released onto a discharge conveyor. When no longer blocked, the **CASE DISCHARGE** photo eye signals the **INVERTER** that it is clear to begin its next cycle.

4. When a case is rejected from the machine, the **INVERTER** starts its cycle but holds at a defined position as the rejected case is pushed onto the reject chute. When the **CASE REJECT** photo eye is no longer blocked, the **INVERTER** is signaled that it may continue with its cycle.

Scope Results
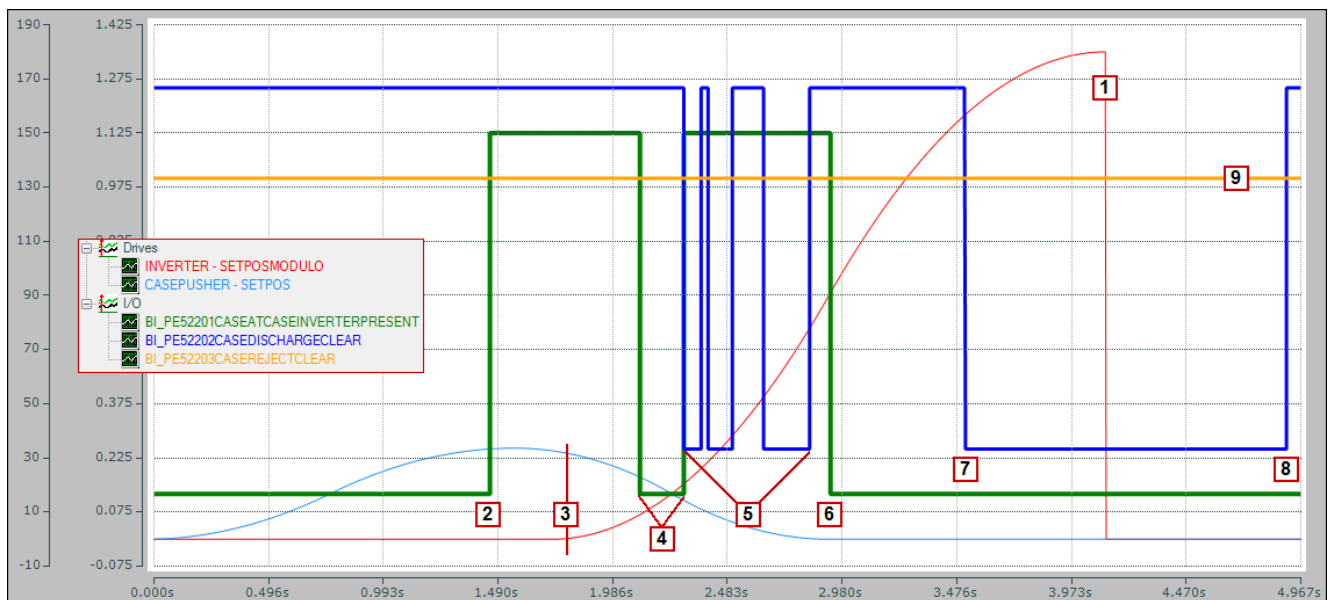
Offsets

Recall that I/O devices are of type Boolean, which means they only have values of 0 and 1. As such, the three I/O devices in this example have been offset from each other to make it easier to see their values. The two drives have quite different profiles and are easy to see. Therefore, they have not been offset from each other.

What the Lines Represent

- The red line is the modulo set position of the Inverter
  - The straight vertical drop indicates the start and end point of the modulo (its circular cycle) - see [1]
  - Click here for a more detailed **MODULO DEFINITION**

> When working with servo drives, the length of a modulo refers to a circular move, where the end position of one cycle (360° for example) is the same as beginning of the next (0° for example). In simpler terms, think of an analog clock: 12:00am and 12:00pm occupy the same space. With each rotation, the cycle starts over at zero.
>
> Other Aagard uses of modulo:
>
> - Flight chain - with each index of the flights, the modulo position starts at zero again
> - Virtual master - virtual masters, tying two or more physical drives together, are often setup with units representing milliseconds, and the modulo value of the virtual is set to the cycle time of the assembly (2.5 seconds, for example); then, for each cycle of the machine, the master moves from 0ms to 2500ms and rolls over to 0 for the start of the next cycle

- The light blue line is the set position of the Case Pusher
  - The up/down slope of the line indicates the positions during its back and forth (upstream and downstream) motion
- The green line is the 0 (low)/1 (high) value of the Case At Case Inverter photo eye
  - When high (blocked), its value is 1, meaning something is blocking the photo eye
  - Note that this photo eye is setup to be high when blocked, while the other photo eyes in this example are setup to be high when *not* blocked
- The dark blue line is the false/true value of the Case At Discharge photo eye
  - When high (not blocked), its value is 1, meaning nothing is blocking the photo eye
- The orange line is the false/true value of the Case Reject photo eye
  - When high (not blocked), its value is 1, meaning nothing is blocking the photo eye

---

Putting It All Together

1. As the case is pushed into the Inverter, the Case At Case Inverter photo eye becomes blocked - see [2]
2. When the Pusher has retracted to a defined position, the Inverter begins its motion - see [3]
3. Since the case is not pushed all the way to the backstop of the Inverter, there is a brief moment when the Case At Case Inverter photo eye is not blocked during the motion of the Inverter
    i. That is why the green line blips low/high - see [4]
    ii. Since this brief moment is not long enough, the Pusher is not signaled to push the next case
4. As the Inverter rotates, each of the three fingers blocks and unblocks the Case At Discharge photo eye
    a. That is why the dark blue line blips low/high - see [5]
    b. Since these moments are not long enough, the Inverter does not stop and start its cycle
5. As the Inverter is rotating, the Case At Case Inverter photo eye becomes unblocked (low) - see [6]
6. Also as the Inverter is rotating, the Case At Discharge photo eye becomes blocked (low) with a case - see [7]
7. At [8], the Case At Discharge becomes no longer blocked (high) and the next full cycle may begin, providing a case is ready
8. The cycle in this example did not have a rejected case, so the Case Reject photo eye was not blocked (high) throughout the entire cycle - see [9]

Tips

This topic provides other miscellaneous items or ideas for working with Scope View 2.

- The Axis node does not mean axis as in a drive, but rather axis of the scope or chart
- Consider putting I/O channels on a separate axis from drive channels to make the changes in value easier to see due to scaling
- Consider stacking or offsets to separate axes from each other
- Changes cannot be made to a scope which is recording; first stop recording before making changes
- Nodes in the object browser may be dragged and dropped from axis to axis
  - Nodes cannot be easily reordered within the axis

Please view Beckhoff's Scope View 2 documentation for more information by pressing F1 while inside the Scope View 2 application.

Scope View Tutorial

Documentation from Beckhoff provides much more information on configuring, visualizing, running, analyzing, modifying, and saving defined scopes. Reading through it will provide more ideas on how to best customize scopes for your particular situation.

You are encouraged to read through the Scope 2 Handbook and Scope 2 Tutorial sections inside the Beckhoff help documentation (press F1)

IMPORTANT NOTE: Do not run the TwinCAT test project available inside the Bechkhoff help documentation unless you are using a computer with TwinCAT which is NOT running the PLC of an Aagard machinery system!

Imaged 4 GB CF Card Will Not Boot

On some occasions, the C6325 Beckhoff PC may not boot imaged 4 GB compact flash cards properly. A BIOS setting must be changed in order to resolve this issue.

Please follow these steps:

1) Shut down PC
2) Reboot into BIOS
   a) Press **DELETE** key during reboot and before Windows starts
3) Select Integrated Peripherals
4) Select OnChip IDE Device
5) Select IDE Primary Master UDMA
   a) Disable it
6) Select ID Primary Slave UDMA
   a) Disable it
7) Select IDE Secondary Master UDMA
   a) Disable it
8) Select IDE Secondary Slave UDMA
   a) Disable it
9) Press F10
10) Press Enter to save changes
11) Allow the PC to reboot

Now the PC is not limited to any specific compact flash card version, nor is it limited to using only a 2 GB compact flash card.

Did this solve the problem?

Yes No

General Troubleshooting Suggestions

NOTE: Not all items listed in this document pertain to your Aagard machinery system

AIR CYLINDER
Cylinder not extending or retracting
- Check air supply
- Check cylinder switches for proper function; switches should "make" at ends of 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 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 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 glue head fitting, these filters should be replaced regularly
- Check for debris in 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 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 sensitivity level setting
- Check input and output in electrical cabinet(s)

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, 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; vacuum switch or gauge should show adequate vacuum levels)
- Check vacuum lines
- Ensure vacuum cups contact 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

Diagnostics

Barcode Scanner Diagnostics

NOTE: This feature may not be installed on all machinery systems

To test the barcode scanner, follow these steps:

1) Place a case under the barcode scanner head as if the case was being run through compression, with the barcode on the case under the barcode scanner head
2) Press the Start Testing Bar Code Scanner Button
   a) A percentage bar will be displayed while the barcode is being scanned
3) If the barcode scanner is having trouble reading and the scanner head position is determined to be the problem, the scanner head may be adjusted to improve the reading reliability of the barcode scanner
4) When testing is completed, press the Stop Testing Barcode Scanner Button to deactivate testing

This same principle applies to the other barcode scanners which may be installed on this machine.

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, login as level 2 or higher
2) Press the Advanced button
3) Press the I/O Diagnostics button
4) Click on the box next to the group which includes the device you want to check.
   a) For example: Photo Eye PE31803 would be in group 318
5) Watch the circle next to the device name (in this case PE31803) 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 red when its input is energized

Clear Notices

There are a number of ways to clear notices from the HMI screen.

- Press the Clear button to clear an individual notice
- Press the Clear All button to clear all notices
- Energize the system by pressing the Start button once to clear all notices

NOTE: A Critical Fault will *not* be cleared by using the Clear All button or by pressing the Start button; it must be cleared individually by pressing the Clear button

Dry Cycle

SAMPLE IMAGE

| Sleever Case Packer | State: Stopped | Mode: EStop | Rate: 100 % | Reset |
| CR35207   Software Emergency Stop: Not Ready | | | | |

| Fault History | Reject History | Data Input | Disable | Disable Product | | | Automatic Mode | Manual Mode |

1) On the HMI Main Screen, place the machine in automatic mode
2) Press the Disable Product button
   a) The button color will turn to red, and the text will read Enable Product
3) Start the machine by pressing and holding the start button for three seconds
4) The machine will operate as if it is receiving product
5) Use the rate field to slow the operation down for further diagnostic assistance

Motor Jogging

To manually move a component that is driven by a non servo motor, the user must define which motor they want to jog and select it from the motor drop down list. Once the machine is started and in the ready state and manual mode, the user may jog the motor in the desired direction. The State and Mode is displayed in the bottom left hand corner next to the Drive Status Display. Once a motor jog button is depressed, the motor will continue to run in that direction until the "Stop" button is depressed or the machine is externally stopped (Cycle Stop or Emergency Stop).

SAMPLE IMAGE

Reinitialize

These steps are done via the Sercos Diagnostics Page in the HMI

1) E-Stop the machine
2) Go to the Sercos Diagnostic Page
3) Click on Initialize
4) The text on the Initialize Button changes to E-Stop
5) Click on "Reinitialize System", and wait for the machine to reinitialize the sercos ring
   NOTE: Although no physical adjustments need to be made, you will need to download the correct product size and Inserter recipe, if installed, and initialize the Barcode Scanner, if installed
   a) If you downloaded a product other than what was previously downloaded, the Product Download Changeover Adjustments Page will be displayed
6) When complete, the Sercos Diagnostics Page will be displayed
7) Click on E-Stop on the HMI screen
   a) The text on the button returns to "Initialize"
   CAUTION: If you downloaded the wrong product during the Sercos Ring re-initialization routine, you must go to the Main Page and download the correct product
8) Pull the E-Stop button, and restart the machine

A simple but more time consuming alternative to these steps is to restart the HMI from the Advanced Page.

Servo Axis Jogging

To manually move a component that is driven by a servo motor, the user must define which servo axis they want to jog and select it from the servo axis drop down list. Once the machine is started and in the ready state and manual mode, the user may jog the servo axis in the desired direction. The State and Mode is displayed in the bottom left hand corner next to the Drive Status Display. Other servo jogging features include velocity, Go To Position (which sends the axis to that position), and an alternating jog function. Unlike non servo controlled motors and solenoid valves, a servo axis will only travel while the button is depressed. Once the button is released the axis will stop.

Warning: Jogging should be done very carefully and at a low velocity. This will eliminate damage to any obstructed machine parts. Use the jog velocity sliding bar to adjust velocity.

SAMPLE IMAGE

Servo Referencing

NOTE: Before referencing a servo, remove all product from the machine; remove any other material that might interfere with the movement of the servo. Any obstruction could cause the servo to reference to the wrong position. It is very important to visually check the position after you have referenced a servo.

SAMPLE IMAGE
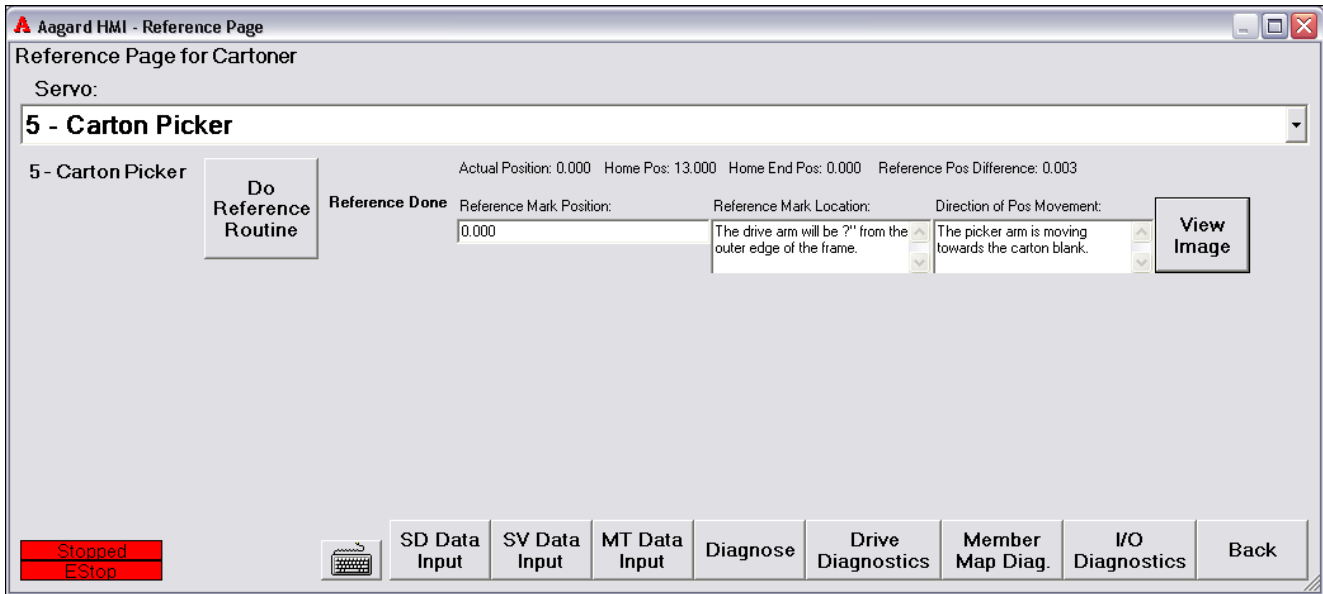
1) Login to the HMI as level 2 or higher
2) Put machine in manual mode by pressing manual mode button
3) Press the Reference button on the right side of the HMI main screen
   a) Make sure the machine is in the ready state and in manual mode (the mode and state are displayed in the bottom left corner of the reference page)
4) Select the servo you want to reference from the drop-down menu
5) Press the "Do Reference Routine" button and, if possible, watch the machine while pressing the button to verify movement
6) After the Reference Done message appears, depress an Emergency Stop and, with visual inspection, verify the reference routine completed correctly by ensuring that the position of the drive matches the reference description and the displayed image

Solenoid Valve Jogging

To manually move a component that is driven by a Solenoid Valve, the user must find which solenoid valve controls the component and select it from the solenoid valve drop down list. Once the machine is started and in the ready state and manual mode, the user may jog the solenoid valve in the desired direction. The State and Mode is displayed in the bottom left hand corner next to the Drive Status Display. Once a solenoid valve jog button is depressed, the valve will move in that direction until another direction button or a stop button is depressed.

SAMPLE IMAGE
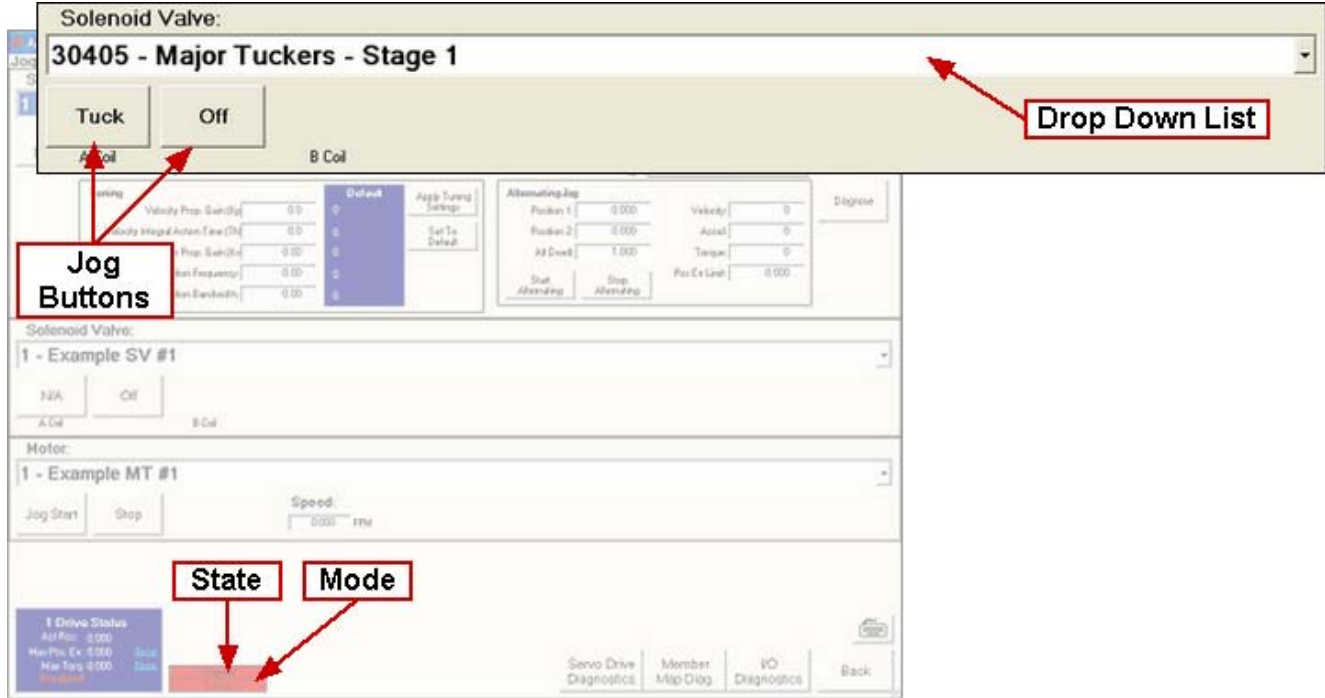
HMI Operations

Clean Out

1) While the machine is running, press the Cleanout button to activate this feature
2) Wait for the machine to complete the cleanout function
3) When Cleanout is complete, a "Cleanout Done" warning message will be displayed

Enable Case Refeed Mode

1) While machine is running, click 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 upstream Aagard equipment is in State: Held, the Case Reject Clear photo eye is disabled
    a) If equipped, Z-Axis Tipper robot is retracted
4) Reach through Case Reject Chute and place case against backstop in same orientation in which it was AFTER case was tipped
5) When finished, click on Enable Case Refeed Mode Button; machine will resume normal operation

Load Cups Cleanout

If your machine does not have a Load Cups Cleanout button on the HMI Main Screen, use the following procedure:

SAMPLE IMAGE
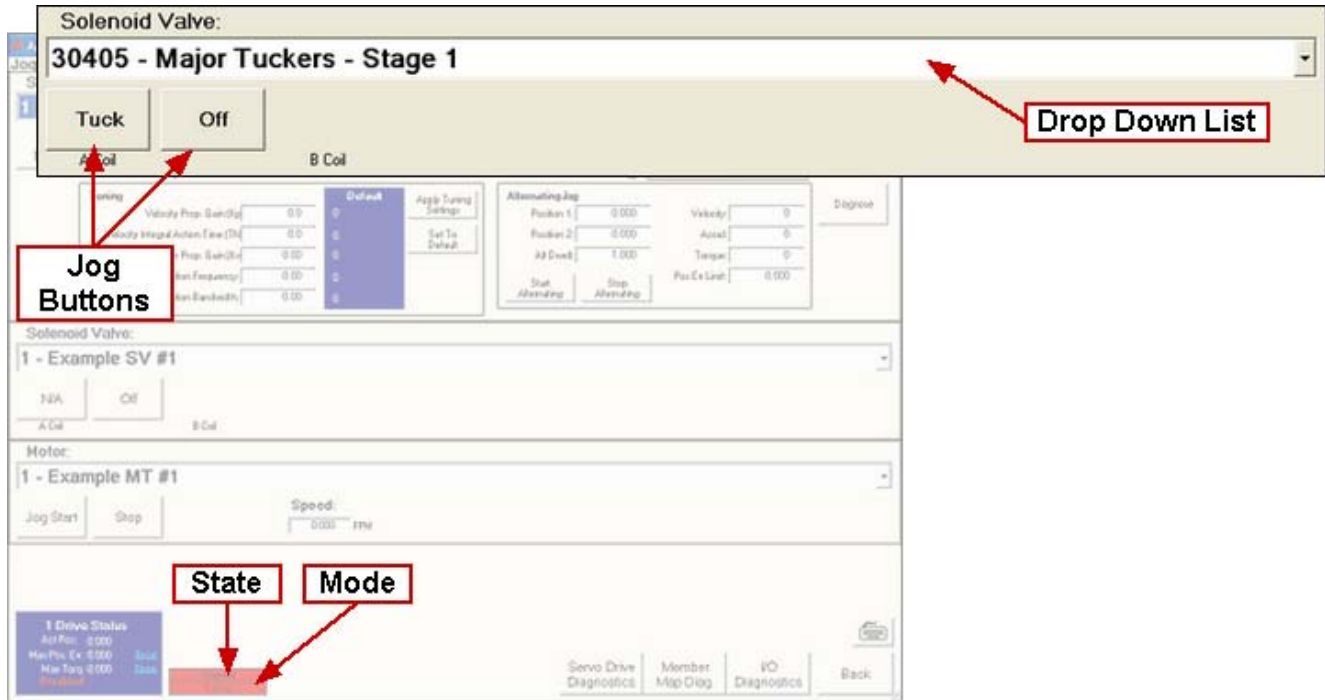
1) Login as level 2 or higher
2) On the HMI Main Screen press the manual button to put machine in manual mode
3) Press the Jog button
4) Select Load Cups Blowback from the solenoid valve drop down list
5) Machine must be in ready state and manual mode
6) Press the On button to blow air, press the Off button to stop

Retract Mechanism

NOTE: This feature may not be installed on all machinery systems

1) After a jam has caused the machine to fault and come to a stop, with the machine energized, press the applicable Retract Button (Retract Vertical Tip Access, Retract Packer Robot, etc.) to move the mechanism out of the way
   a) If necessary, press the Start Button once to energize the system

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 machine
2) Depress system E-Stop button
3) After machine is E-Stopped, simultaneously press System Start and System Cycle Stop buttons on the HMI panel

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

1) Cycle-stop machine
2) Depress system E-Stop button
3) After machine is E-Stopped, simultaneously press Reset and System Cycle Stop buttons on the HMI panel

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

Maintenance

General Information

Maintenance Schedule

These maintenance items should be checked and performed periodically to ensure optimum performance of your system.

NOTE: Not all items listed in this document pertain to your Aagard machinery 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
Vacuum cooling fan intake filter
Every 50 Hours of Operation
Check chain drive for tension and adjust to 1/2" to 3/4" 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
Inspect cooling fan exhaust filter
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. For more information, see: How To
Check chain adjustment; lightly oil roller chains
Replace cooling fan intake filter
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, set screws on the coupling between the motor and Alpha gearbox are set to manufacturer's recommended torque setting; this setting is size-dependent. Set screws on bevel gears coupling the infeed side belt motors to their gearbox are set per manufacturer's recommendation. Torque settings may be found in Manufacturers' Information Binder which was provided at delivery with the Aagard machine.

Replacing Parts

NOTE: The position of adjustable parts should be marked and/or measured before removal so the new parts can be installed in the exact same position.

While replacing parts, always square them with their mating part. This especially applies to critical or adjustable parts.

Tucker Arm

This topic applies to Case Packers only

There are three tucker arms on the tucker in the case setup area. At this time, all three tucker arms are not required for all sizes. Depending on the size of product being run on a machine, the top arm is generally kept in the very top position and is not used. However, the top arm is provided for possible future sizes, or if certain conditions occur where it would be beneficial to have a third tucker arm.

Access to Machine

Second End Seal Lift

NOTE: This topic applies to vertical cartoner machines

From time to time, it may be necessary to gain access to the second end seal area for maintenance.
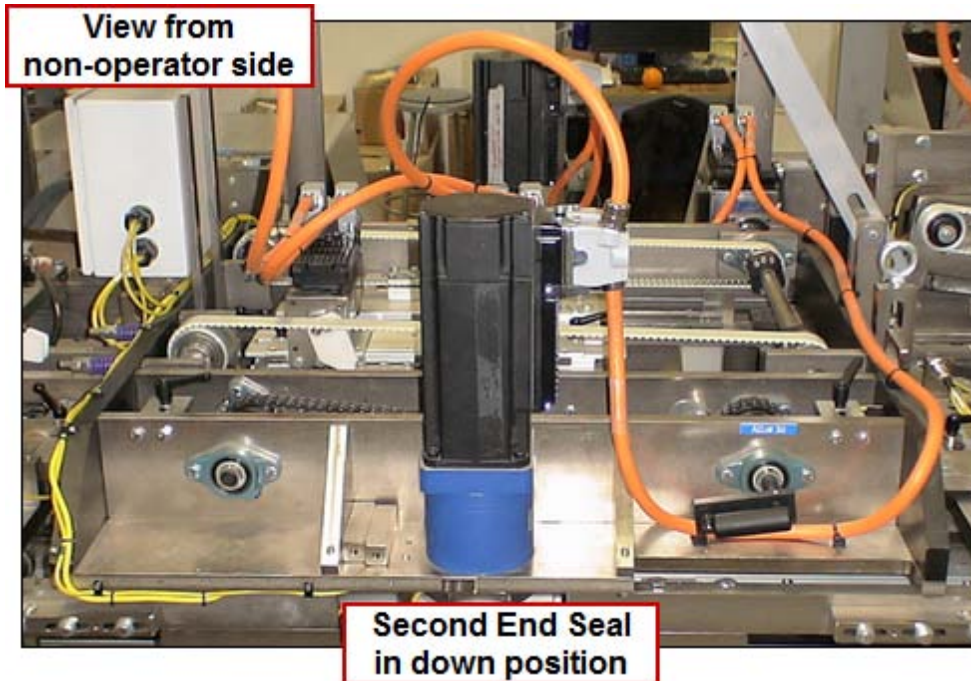
To gain access to the second end seal area, follow these steps:

1) Stop the machine
2) On the HMI, navigate to Custom Buttons Page > Manual Operations Page
3) Energize the system by pressing the green start button
   NOTE: Do not start the machine by holding the button down!
4) Press the **LIFT SECOND END SEAL** button
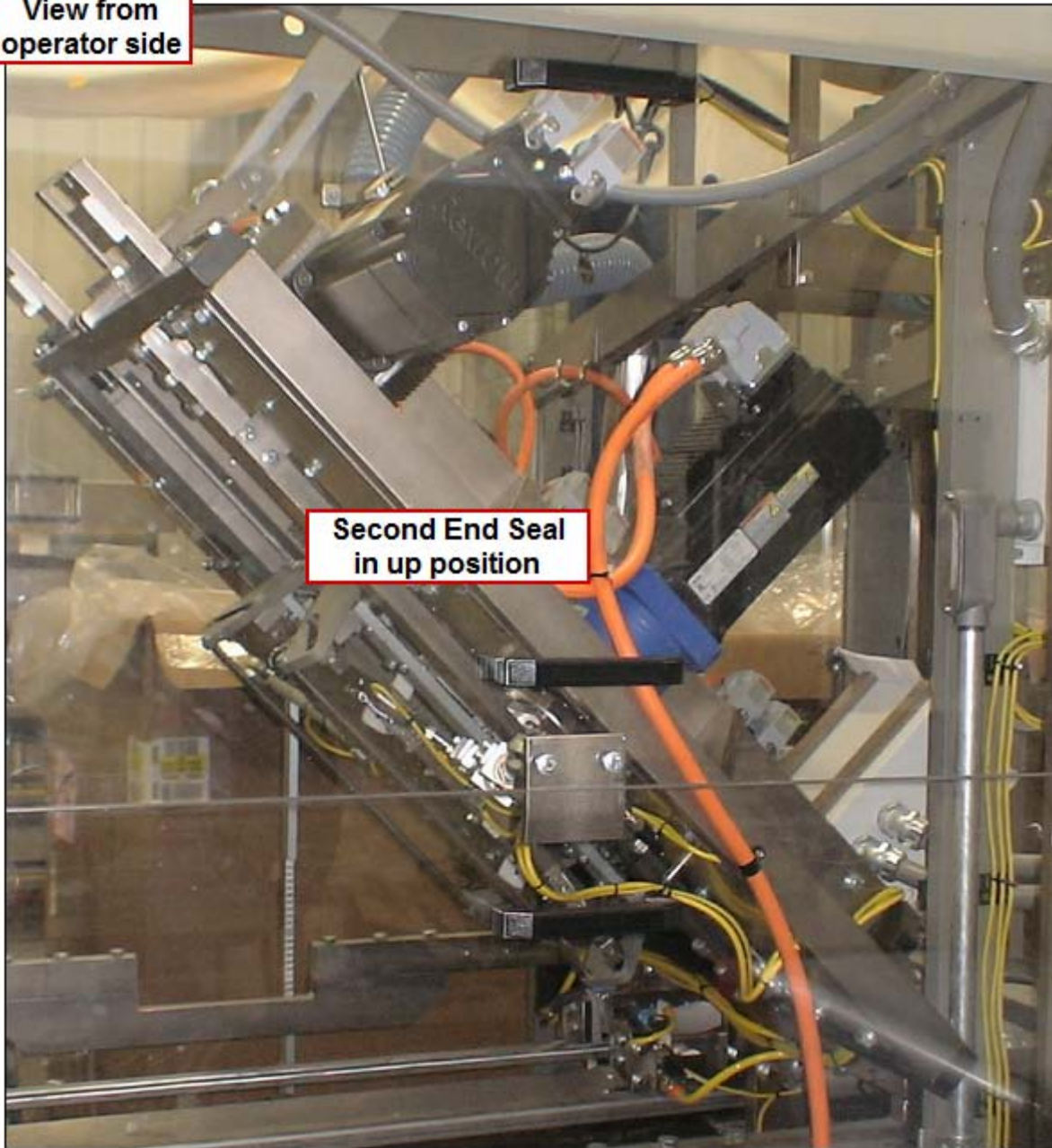
5) Depress any E-Stop button
6) Attach safety cable!

⚠ **DANGER** Do not enter area without safety

cables attached! ⚠

7) For additional security, secure the raised assembly with blocks of wood
8) Perform maintenance as required
9) ⚠️ **CAUTION** Remove safety cable and store

10) Close any open guard doors
11) Pull out any depressed E-Stops
12) Energize the system by pressing the green start button
    NOTE: Do not start the machine by holding the button down!
13) Press the **LOWER SECOND END SEAL** button

Adhesives

Adhesives

Adjust Glue Head Position

When replacing a glue head (nozzle), it is important to position the new head at exactly 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 glue head angle so 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°F-350°F	30-40 PSI
Hose	335°F-350°F	N/A
Guns with adjustable regulators	335°F-350°F	65-70 PSI *
Guns with fixed regulators	335°F-350°F	65 PSI

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

All Aagard machines use regulators to set 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 strips 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, while 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 regulator knob to unlock it, turn knob until gauge shows correct pressure, and push regulator knob back down to lock.

The Aagard recommended glue head pressure on adjustable regulators should typically be set at 65 – 70 PSI. Glue head pressure is dependent on model of glue head installed on machine. If you are unsure of correct setting for your machine, refer to pneumatic page in the electrical drawings.

Most heads use an internal spring to shut off glue. Increasing air pressure will cause glue to shut off more slowly as the spring must overcome more pressure. Air pressure set too high may also cause the valve to slam into the spring, causing the spring to become stuck.
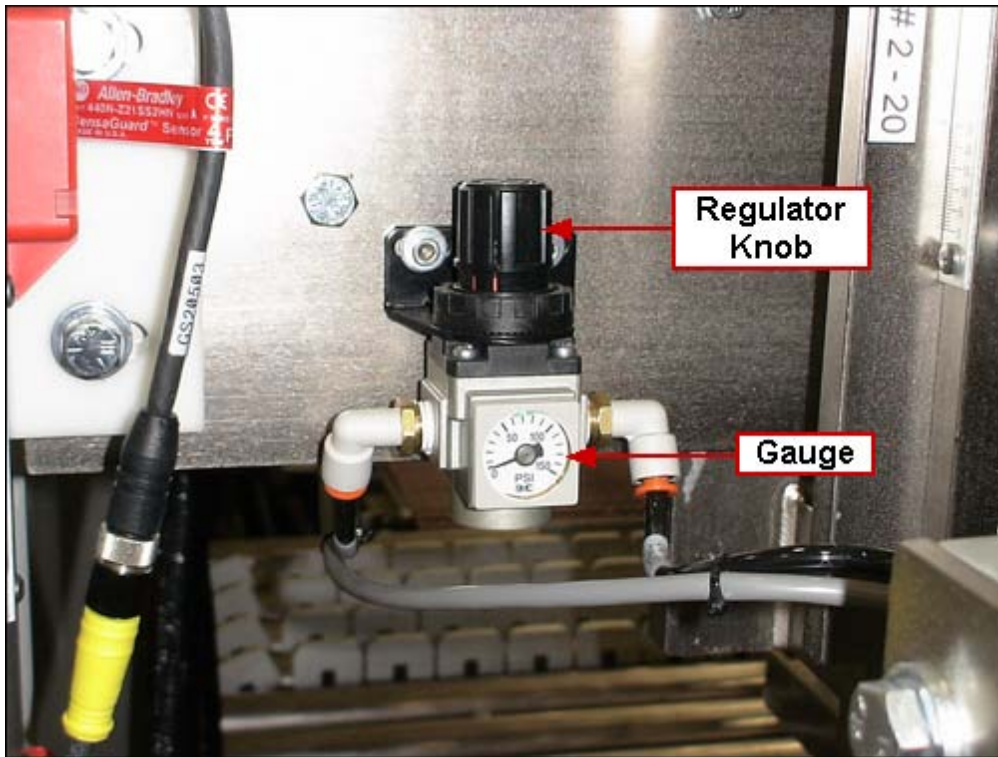
Adjust Glue Tank Pressure & Temperature

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°F-350°F	30-40 PSI
Hose	335°F-350°F	N/A
Guns with adjustable regulators	335°F-350°F	65-70 PSI *
Guns with fixed regulators	335°F-350°F	65 PSI

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

SAMPLE IMAGE
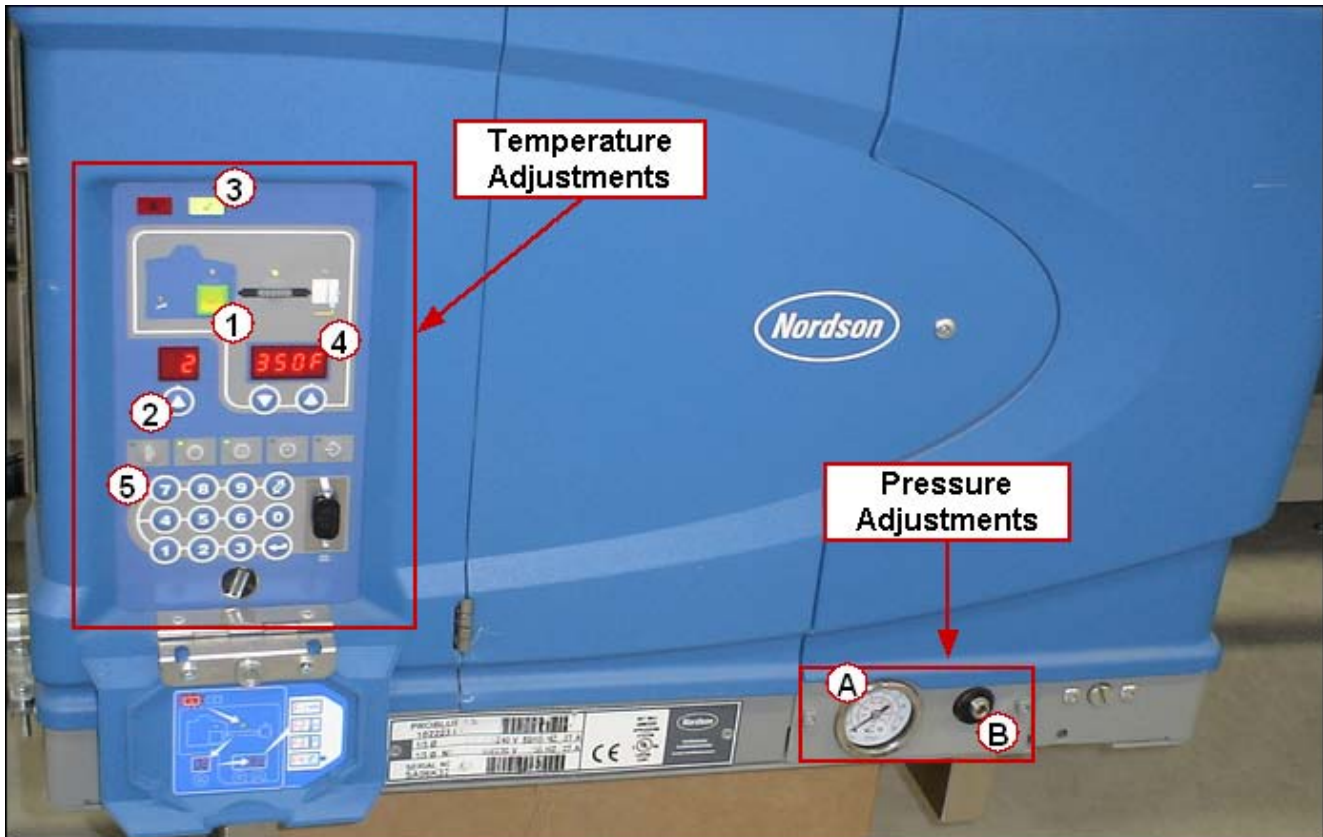
Adjust Glue Tank Temperature:

To globally set all glue components to same temperature, do the following:

1) Press and hold tank key for three seconds; left display will flash
2) Use arrow key to scroll left display to 0
3) Press enter key
4) Right display flashes
5) Use keypad to enter temperature recommended by glue manufacturer; Aagard recommended glue temperature is 335°F - 350°F
6) Press tank key again (see first step); all components will begin to heat/cool to 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 glue tank air pressure:

1) Gauge indicates the air pressure supplied to tank pump
2) Use Allen head adjusting screw located to right of gauge to adjust air pressure

Glue Filter Replacement

Tools Required:

• Metric Wrench Set

Routine:

1) Turn off glue system
2) Wait one hour for system to cool down
3) Remove filter with metric wrench; filter is next to glue head
4) Put new filter in and tighten (snug down with wrench, but do not over tighten)
5) Turn on glue system

Glue Gun Replacement

Tools Required:

- Standard Wrench Set
- Metric Allen Pack

Routine:

1) Turn off glue system
2) Wait one hour for system to cool down
3) Unhook all air and glue lines from head
4) Remove head from mount
5) Replace with new head
6) Hook all lines back up
7) Turn on glue system

Glue Hose Replacement

Tools Required:

- Standard Wrench Set

Routine:

1) Turn off glue system
2) Wait one hour for system to cool down
3) Remove hose from glue head and glue tank
4) Put in new hose
5) Tighten both ends of hose
6) Turn on glue system

Glue Nozzle Jig

These drawings and instructions pertain only to Aagard systems with hot adhesive systems.

When setting glue nozzles, nut on nozzle must be loose.
Insert jig over both nozzles.
Hold nozzles with jig while tightening nuts.

Opposite side

Jig

Exploded view

Screwdriver slot
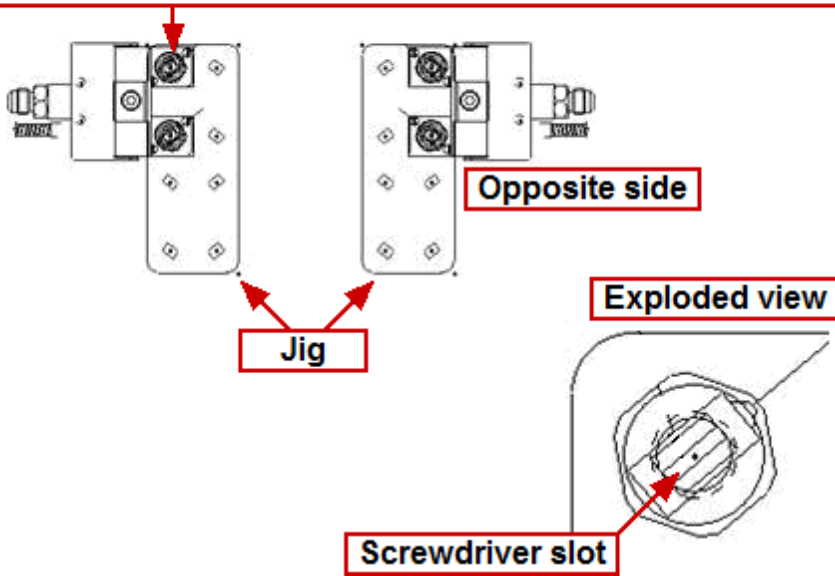
Glue Nozzle Replacement

Tools Required:

- Metric Wrench Set

Routine:

1) Turn off glue system
2) Let system cool down for one hour
3) Remove old nozzle with 14 mm wrench and replace with new one
4) Tighten down snug with 14mm wrench
5) Turn on glue system

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 valve
3) Remove bolts that mount valve
4) Replace old valve with new valve (you may use same fitting or get new ones)
5) Mount new valve with same bolts
6) Reconnect all air lines and electrical wires (see electrical prints)
7) Turn on main air

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:

NOTE: This procedure may require use of Nordson Manual

1) Record the following four glue tank settings of unit to be replaced, if possible:
    a) Tank Temperature
    b) Line Temperature
    c) Gun Temperature
    d) Air Pressure
2) Drain glue into a leak proof container using drain behind lower front panel of unit
3) When glue is drained, remove power from unit using Glue Disconnect
4) Allow glue tank to cool (minimum of 1 hour)
5) Once glue tank has cooled, disconnect all hoses and power cords at tank
6) Loosen or remove mounting hardware
7) Remove old unit from its mounting brackets
8) Set new unit in place
9) Attach new glue tank unit to mounting brackets
10) Reconnect power and hoses
11) Apply power
12) Fill tank with new glue pellets
13) Adjust settings for new unit to original settings recorded earlier; use the Nordson Manual as needed
14) Typical setting ranges for Aagard glue are as follows:
    NOTE: These settings may vary depending on application and machine set up

Standard Settings *(for HB Fuller Advantra adhesive)*

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

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

Hot Melt Adhesive System

When a hot melt adhesive system is installed, set glue to appropriate temperatures and pressure to ensure proper pattern control and clean cutoff at glue nozzle.

Standard Settings *(for HB Fuller Advantra adhesive)*

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

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

Bearings, Pulleys and Shafts

Bearing and Shaft Replacement

Tools Required:

- Standard Wrench Set
- Standard Allen Pack

Routine:

1) Remove drive belt or chain
2) Loosen set screws on bearing
3) Remove sprocket or pulley off shaft
4) Take bearings off of mounts and slide off shaft
5) Remove bearing plate
6) If bearings are pressed in, press out bearings which need to be replaced
7) Place new bearings in plate
8) Place plate back in machine
9) Place new bearings on ends of shaft and put hardware in mount but do not tighten
10) Make sure shaft is square
11) Tighten bearings down
12) Tap on shaft to set bearings (make sure inner race spins freely on shaft)
13) Tighten set screws on bearing
14) Place drive belt or chains back in

Pulley and Idler Shaft Replacement

Tools Required:

- Standard Wrench Set

Routine:

1) Loosen tension so belt can be removed
2) Keep spacers
   a) 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

Rod Ends Replacement

Tools Required:

- Standard Wrench Set

Routine:

1) Measure amount of thread left on cylinder shaft before moving anything
2) Loosen jam nut on shaft with one half inch wrench
3) Take bolt out of rod end
4) Take rod end off
5) Put new rod end on with same amount of thread left on cylinder shaft
6) Lock down jam nut

Slip Sheet Pick Bearing Replacement

This topic only applies to Unitizers

Tools Required:

- Standard Wrench Set
- Standard Allen Pack

Routine:

1) Remove pivot arms that are connected to shaft
2) Loosen set screws on bearings
3) Take bearings off of mounts and slide off shaft
4) Place new bearings on ends of new shaft and put hardware in mount but do not tighten
5) Make sure shaft is square
6) Tighten bearings down
7) Tap on shaft to set bearings
    a) Make sure inner race spins freely on shaft
8) Tighten set screws on bearing
9) Reattach the pivot arms

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.
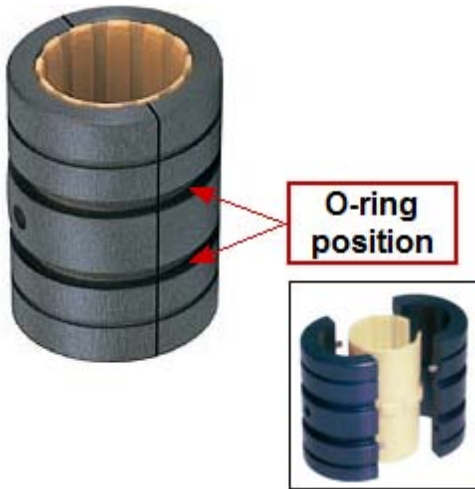
First, a few precautions and notes:

- For ease access, Overhead Carton Loader assembly should be lifted into 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 same time
- Work will need to be done on both sides of machine

Follow these steps to remove and replace the failed bearing:

1) Raise Overhead Carton Loader assembly into changeover position
2) Following first part of changeover routine, remove all loader plates
3) Follow Lockout/Tagout procedures of your facility
4) On non-operator side of machine, slide load gate air cylinder toward operator side of machine
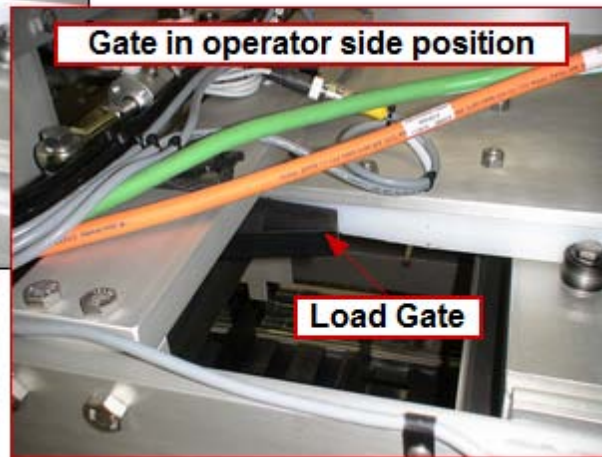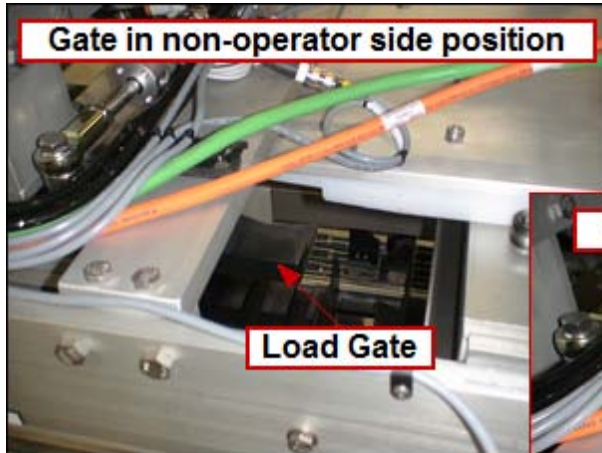
5) Manually rotate Overhead Carton Loader to make non-operator side end cap accessible
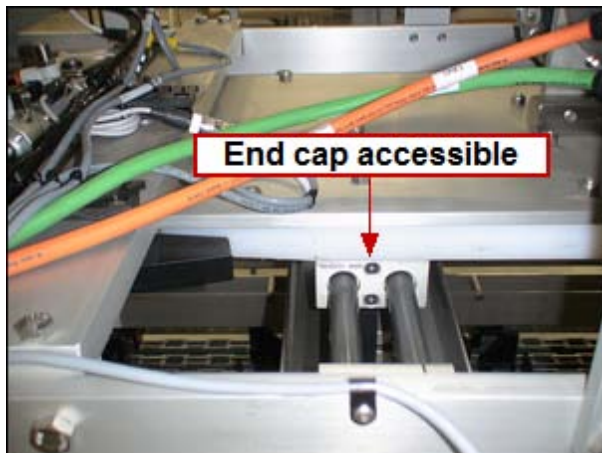
6) To make operator side end cap accessible, remove upstream containment rail by removing four 7/16" bolts
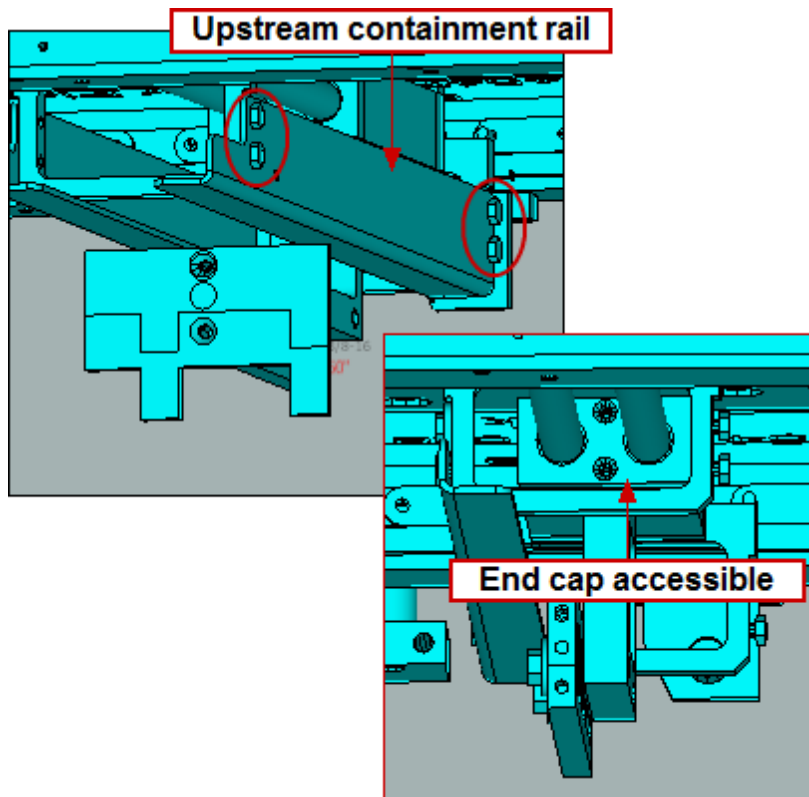
7) Remove screws and end caps
8) Carefully pull out split bearings

⚠ Do not scratch coated surface of shaft ⚠

⚠ Do not break or tear o-rings when removing bearings ⚠

   a) Replacing o-rings requires opening both drive chains and removing containment assembly from the Overhead Carton Loader
   b) If necessary, gently pull on 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 o-rings to slide 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 next loader carriage into position

16) Repeat previous steps for each four bearings in each of 11 loader carriages
17) Install correct loader plates
18) Restore Lockout/Tagout
19) Lower Overhead Carton Loader into run position

Belts, Chains and Rollers

Adjust Belt Tension

When 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). Force should be applied perpendicular to belt and in center of span. When Aagard tensioners are used with a spring, spring should be compressed down to 2" in length.
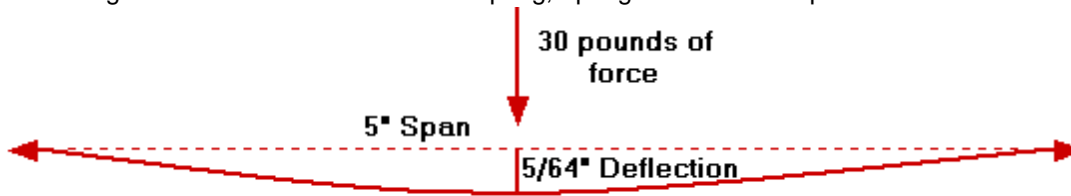
Span is defined as distance between drive pulley/sprocket (usually at motor) and driven pulley/sprocket (usually at shaft which is being driven).

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

Belts with Spring Tensioner:
Loosen locking bolts and turn spring adjustment bolt until spring is 2" in length. Re-tighten locking bolts!
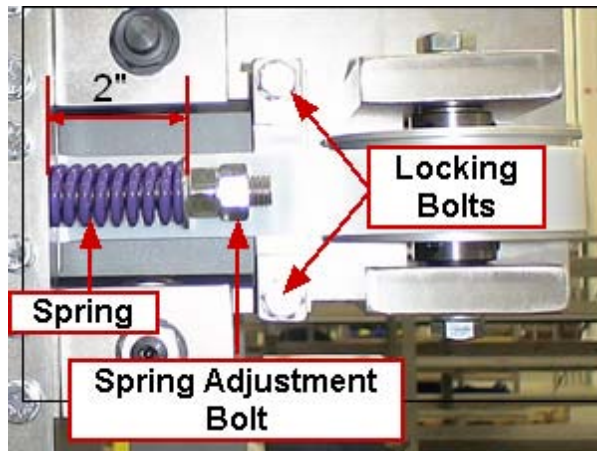
Belts with Jack Bolt Tensioner:
Loosen locking bolts and turn jack bolt until you have proper tension. Re-tighten locking bolts!
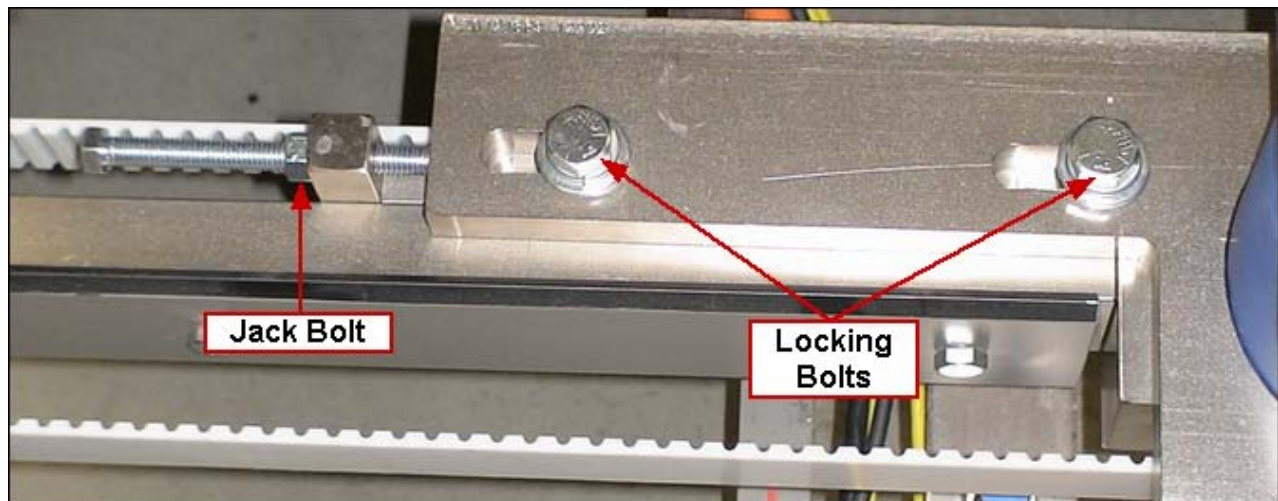
Adjust Chain Tension

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).
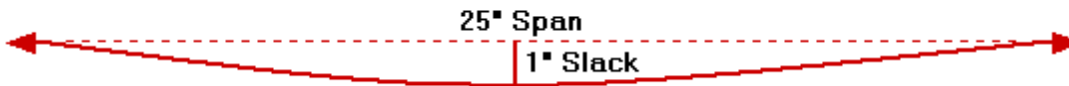
For heavy loads and frequent starting, it should be 2% of the span.
    For example: 25" of span = 0.5" of slack (25" x 0.02 = 0.5").

Span is defined as distance between drive pulley/sprocket (usually at motor) and driven pulley/sprocket (usually at shaft which is being driven).

Chains with Jack Bolt Tensioner:
Loosen locking bolts and turn jack bolt until you have proper tension. Retighten locking bolts!
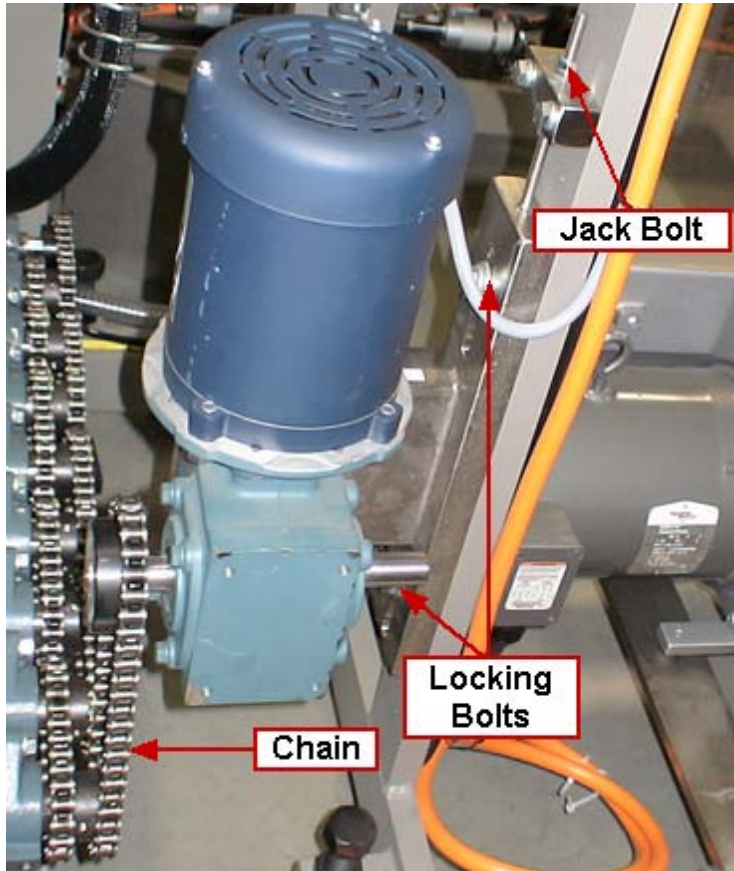
Chains with Sprocket Tensioner

Loosen locking bolts and adjust sprocket (move up or down) until you have proper tension. Retighten locking bolts!
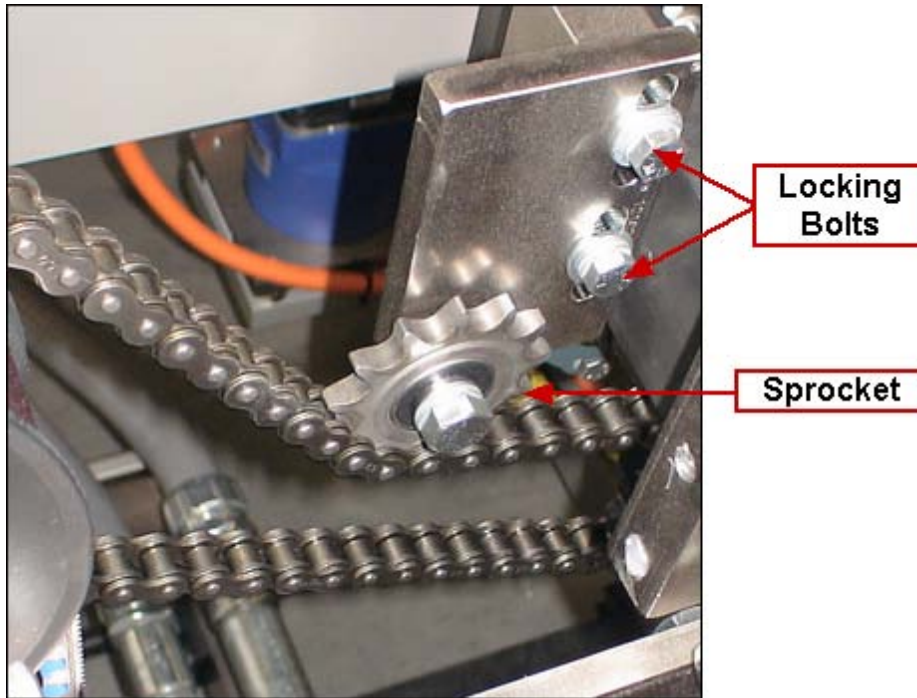
Special note for vertical cartoner:

Chain tensioners on the discharge section have multiple holes in the bracket to allow for increased take up range.

Top View

Take-Up Holes

Take-Up Bracket

Bottom View

Slide Washers
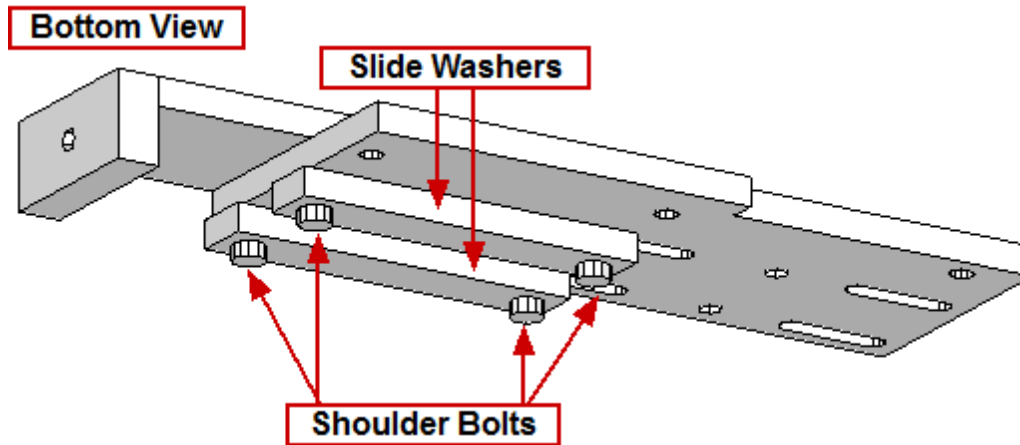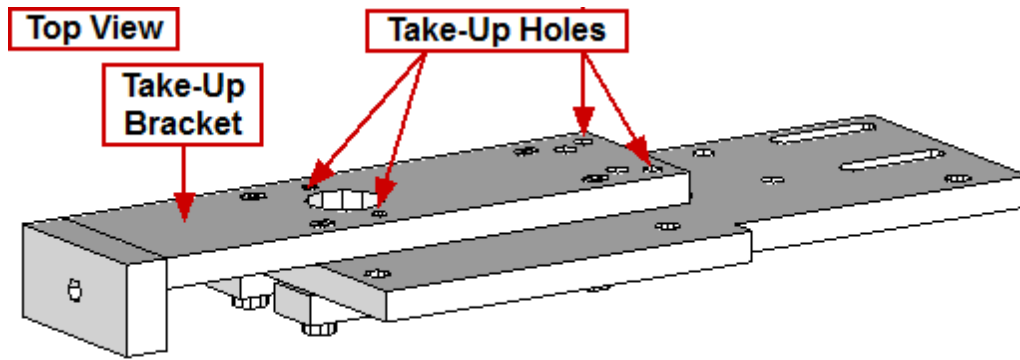
Shoulder Bolts

1) Remove four slide washer shoulder bolts
2) Reposition take-up bracket with take-up holes over slide washer holes
3) Re-tighten shoulder bolts

Adjust Chain Tension - Downstackers

NOTE: This topic relates specifically to downstackers; for general chain tension instructions, see: 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 tension for each set of chains using tightest chain. Chains are not always exactly the same length and chains stretch differently. Using tightest chain will ensure no chain is too tight. Chains tensioned too tightly cause stress on the shaft, bearings, and gearbox.

Proper slack on tightest chain should be 2% of span; slack should be measured halfway between the span. Span is defined as distance between drive sprocket and driven sprocket.
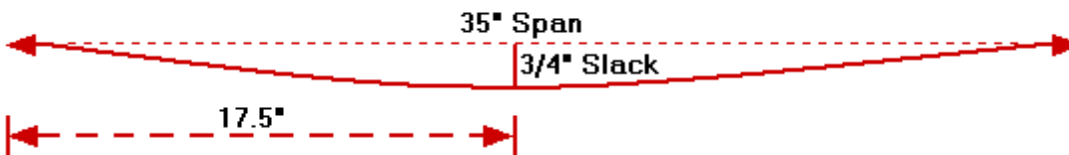
Downstacker chain span, from sprocket to sprocket, is approximately 35 inches. Using the 2% guide, 35" of span translates to .7" of slack (35 X .02 = 0.7), or roughly 3/4". The measurement for slack should be made 17.5" between sprockets.

Care must also be taken to ensure jack bolts are adjusted equally on upstream and downstream side of machine, ensuring shaft is not on an angle.

Adjust V-Rail Rollers

1) Tighten 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 tension is correct, one should be able to spin adjustable wheel by hand, or very easily with a channel lock
   NOTE: Both wheels need to contact both sides of track. If both sides of all rollers are not contacting V track and rollers are considered tight, the assembly is probably not square

NOTE: You should always check roller tension in several locations along track to make sure there are no tight spots

Belt Replacement

Tools Required:

- Standard Wrench Set

Routine:

1) Loosen pulley jack bolt and move pulley so belt is loose
2) Loosen bolts that clamp belt down on pusher
3) Remove belt from both sides of clamp
4) Take a new belt of same length and replace old one
5) Place new belt in both sides of clamp evenly
6) Tighten bolts on the clamp just enough so belt stays in clamp but still moves slightly
7) Tighten jack bolt to tension belt; tension so belt moves about 1/2" when pushed on in center
8) Move pusher back and forth a couple of times so belt straightens itself out
9) Tighten bolts on clamp and on pulley mount

Chain Replacement

Tools Required:

- Pliers
- Chain Pliers

Routine:

1) Remove materials from chain area
2) Find connector link on chain
3) Remove connector link with pliers
4) Replace chain with a new chain of same length
5) Put new connector link in

Downstacker Chain Replacement

This topic only applies to Case Packers

Tools Required:

- Standard Wrench Set
- Pliers

Routine:

1) Take flights off of chain
2) Loosen jack bolts on bottom of downstacker (both sides)
3) Loosen assembly so servo and shaft move up far enough so chain is loose
4) Find connector link on each chain and take them off with pliers
5) Remove old chain and replace it with new one
6) Place connector link back on chains
7) Re-tension assembly on bottom so chains are tight
8) Tighten all bolts
9) Put flights back on

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: [Adjust Belt Tension](#)
4) Tighten bolts under gearbox

End Seal Belt Path

NOTE: This topic applies only to the 1st and 2nd end seals stations of the vertical cartoner machines

In the diagram below, the pulleys and belts are color-coded to indicate which belt goes on which pulley; this is for illustration purposes only! Actual belts and pulleys may not be colored.

The top belt goes with the red pulleys, while the lower belt goes with the black pulleys.
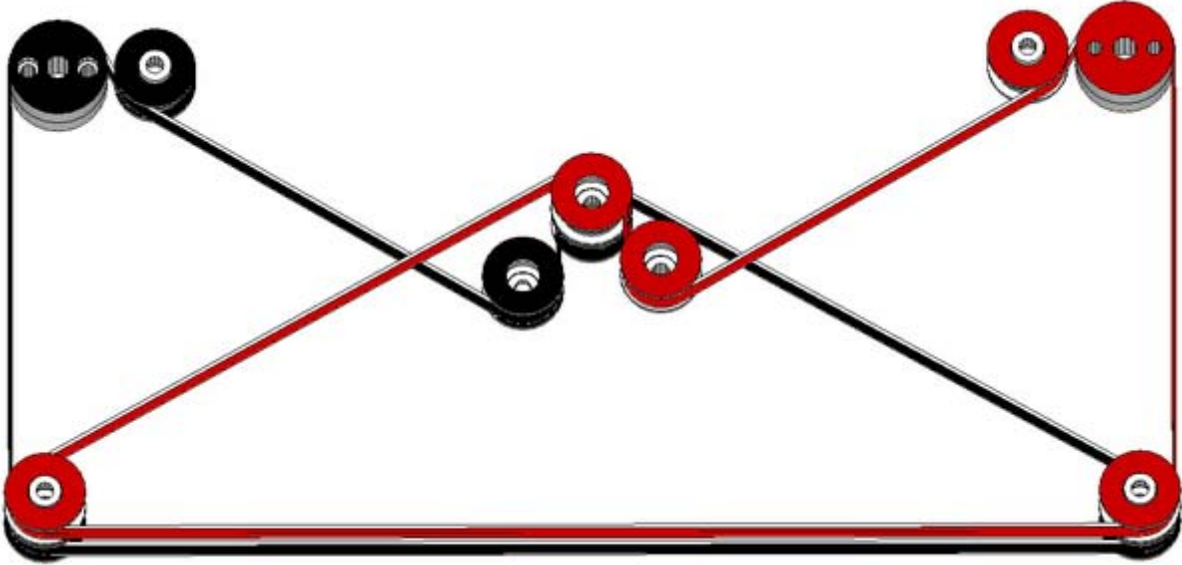
Infeed Flight Position

This topic applies to Cartoners with Case Packers only

Main Cartoner Flight to Case Packer Infeed Flight
Mechanical position requirement

Main Cartoner Flights — 20.50 — Carton Stop Rail

Case Packer
Infeed Flight
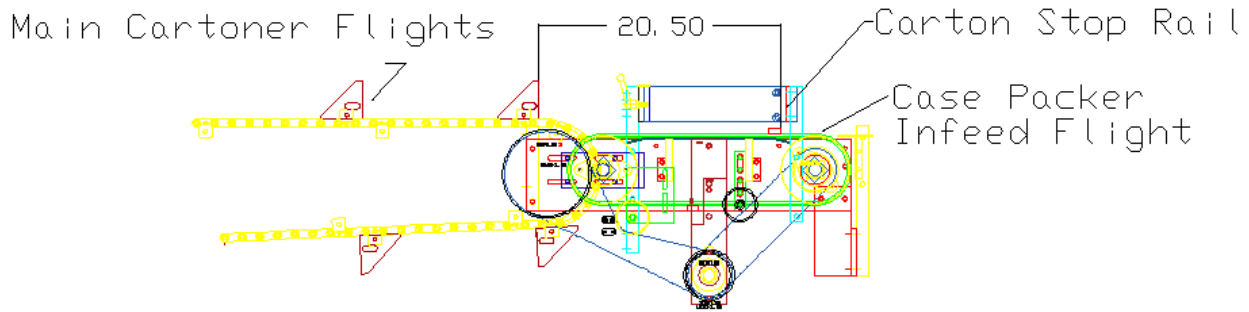
SETUP NOTE:
FACE OF CARTON FLIGHT TO FACE OF FLIGHT
ON MATTOP IN CASEPACKER INFEED IS 20.50"

Infeed Product Belt Replacement

This topic only applies to Case Packers

Tools Required:

- Standard Wrench Set
- Pliers

Routine:

1) Locate clipper lace on belt and move to accessible area
2) Loosen belt tensioners on both sides of belt so belt hangs loosely
3) Remove pin in clipper lace
4) Remove belt
5) Place new belt in and put pin in clipper lace making sure belt is centered
6) Re-tension belt so it does not sag, making sure both tensioners are equal
7) Tighten down tensioners, making sure not to over-tighten

Mattop Conveyor Belt Replacement

Tools Required:

- Long punch
- Hammer

Routine:

1) Remove guard at end of transfer conveyor
2) Take conveyor belt slack up to a workable position so you can get to red pins on side
3) Take long punch and remove one pin with hammer
4) Now remove old conveyor belt and replace it with a new one of same length
5) Put link back in using a hammer if necessary
6) Allow slack under conveyor to fall back in its usual position

Replace Barrel Cam Chain

There are several steps involved in replacing barrel cam chains. Two key steps, however, are aligning (phasing) chains and adjusting tensioner cylinder switches.

NOTE: Images displayed in this topic are for reference only; your machine may be slightly different

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NOTE: Replacing 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
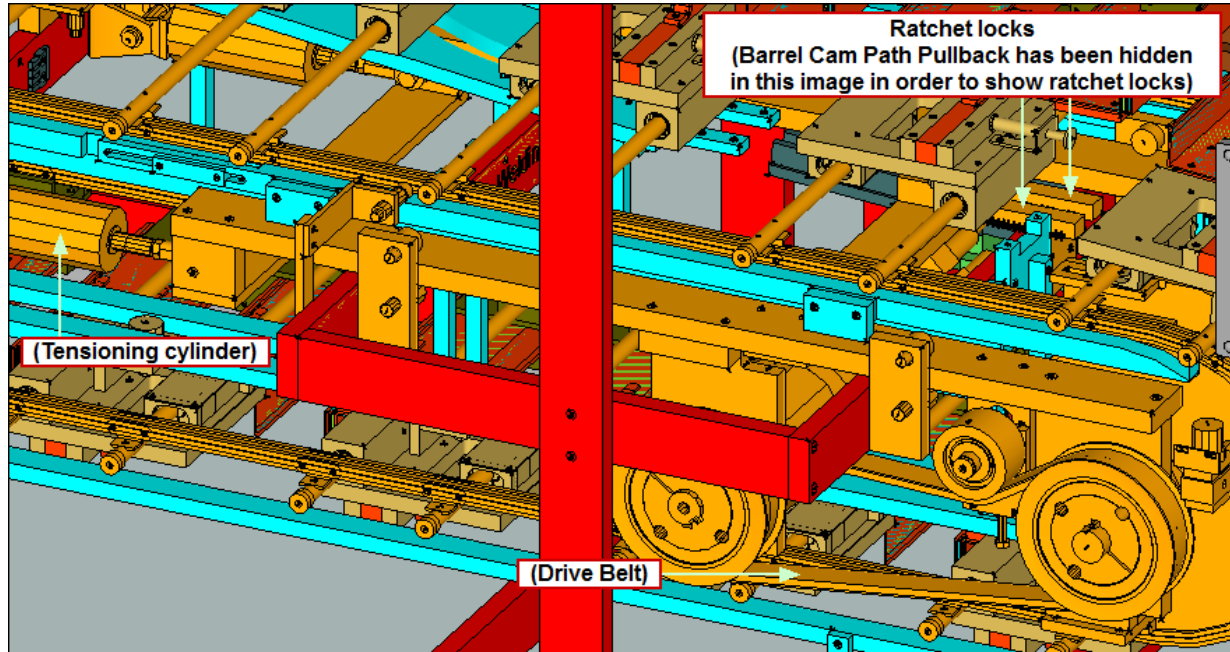
4)   Remove drive belt to make it easier to manually move entire barrel cam
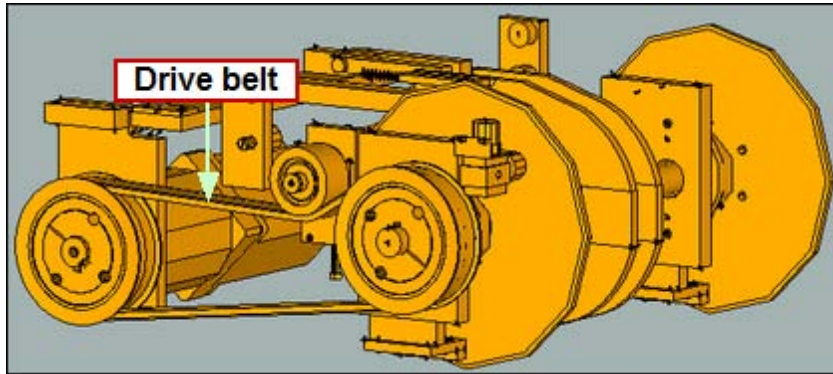
5)   Remove bucket carriages by removing bolts from underside of tabs which are attached to chains
   a)   There are eight bolts, four on each end of barrel cam

   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
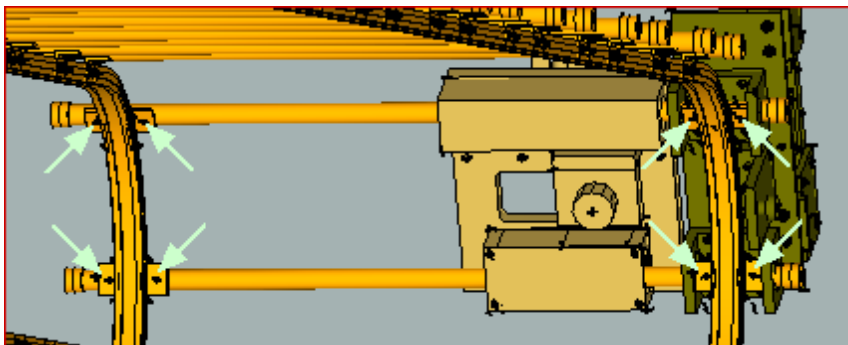
6) Look for master links, which are generally painted a different color
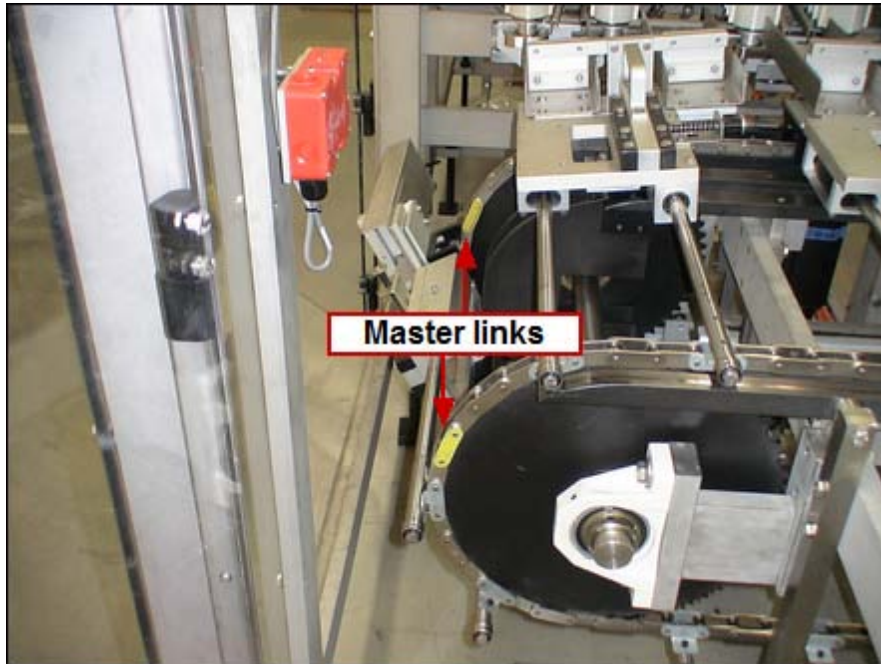
7) Remove chains
8) Move tensioner assembly at downstream end of barrel cam back and forth to make sure it moves freely without side-to-side movement, and that it is square
    a) Remember to lift ratchet locks
    b) If it is not free, locate bind point and correct
    c) If it is not square or has 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 type (inner or outer) 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
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
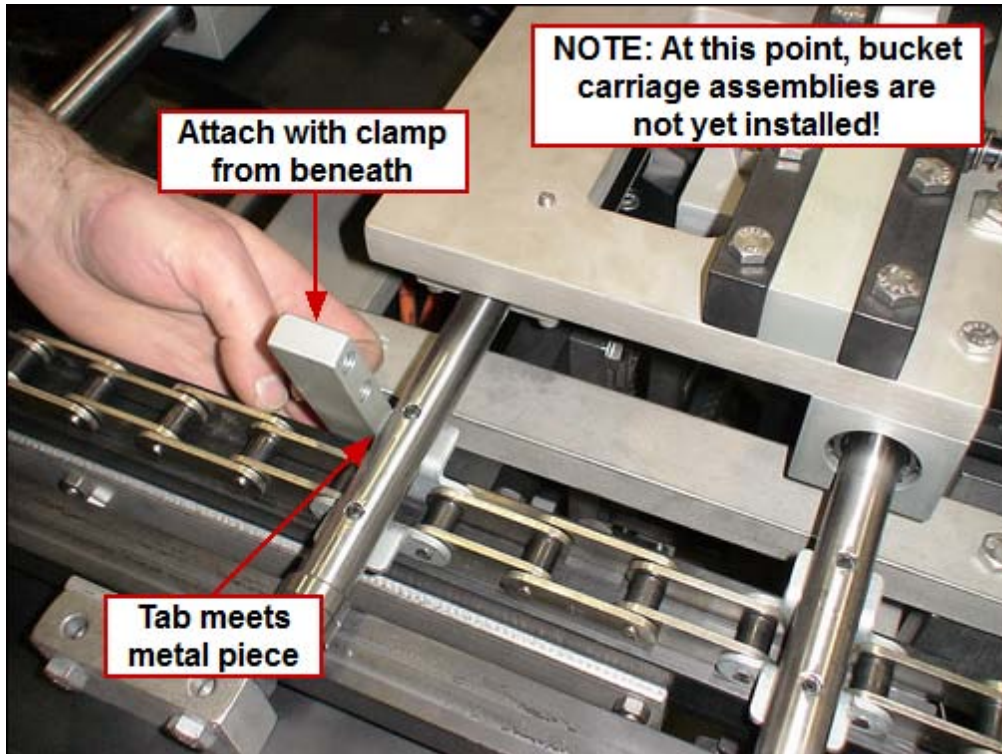
d) Move barrel cam chains so tabs meet attached squaring blocks
e) If tabs from both chains do not meet attached squaring blocks at exactly the same time, chains need to be phased
  i) To phase chains, loosen bolts on slotted sprocket on driven end
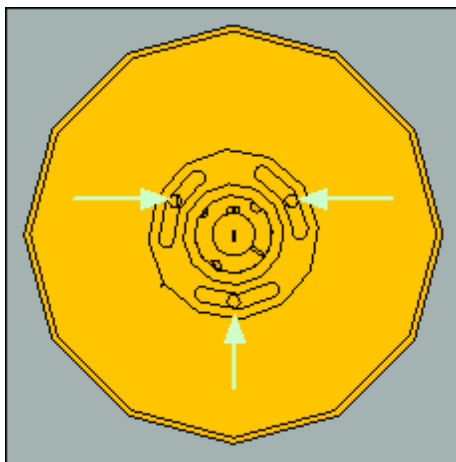
  ii) Turn sprocket in slots to adjust chain to match chain position on other side of barrel cam exactly
  iii) Re-tighten bolts
  iv) Re-test phasing
  v) Remove squaring blocks and clamps

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 according to specifications; see: Adjust Belt Tension
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

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
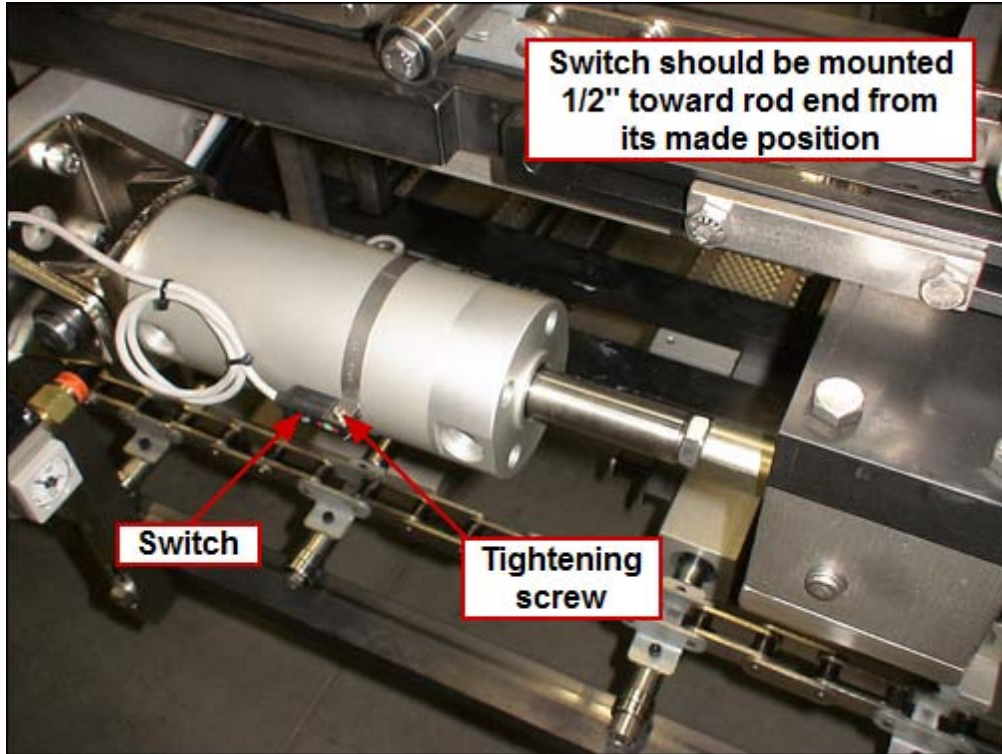
NOTE: If each cylinder has a switch, be sure to adjust both

Side Belt Replacement

This topic only applies to Case Packers

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 pulley so belt can be removed
4) Remove plate mount to gain access to belt
5) Remove belt
6) Replace old belt with the new one
   a) Make sure arrows are in right direction
7) Replace plate mount
8) Tension belt with jack bolt
9) Average static tension (tension when belt is idle) is 1/64" deflection per every 1" 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

Unitizer Slip Sheet Roller Replacement

This topic only applies to Unitizers

Tools Required:

- Standard Wrench Set
- Standard Allen Pack

Routine:

1) Remove caps on both ends of rollers
2) Remove chains connecting each roller
3) Remove old roller and replace it with new roller
4) Put chains back on
5) Put caps back on

Unitizer Slip Sheet Roller Replacement

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 prevent V rail edge from being damaged
3) Adjustable / eccentric wheels should be lower wheels if track is horizontal
   a) If track is vertical, be sure eccentric wheels are both on same side, and on side where they can be adjusted 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 they are flush with mount but loose enough so eccentric wheels can still be turned
   c) Tighten by turning clock wise until wheel just makes contact with track
   d) Tighten the nut fully and then check wheel tension against track
      i) Always check after tightening nut since wheels normally will tighten slightly more after nut is tightened

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 correct tension then there is a problem with the assembly, such as it is not square or it may be bent.

Computer and Software

Flash Drive Replacement

1) Power down the PC from the Advanced Page
2) Open the HMI panel
3) Remove Drive: C
4) Install "C: Spare from Aagard"
5) Reboot PC
   a) The HMI will start automatically
6) Login to the HMI, and then close the HMI application using the X in the top right corner of the screen
7) Open Windows Explorer and navigate to the D: Drive
8) Open the desired "D:\Aagard Critical Back Up"
9) In a separate window, open "C:\Aagard"
10) Replace the Source Code and Runtime Folders in the C: drive with the ones from the D: drive.
    a) You may first need to unzip the files and place them into the designated folders
11) Once the folders have been replaced, open "C:\Aagard\SourceCode\Controller\###Proj.pro"
    a) ### is the number of the machine
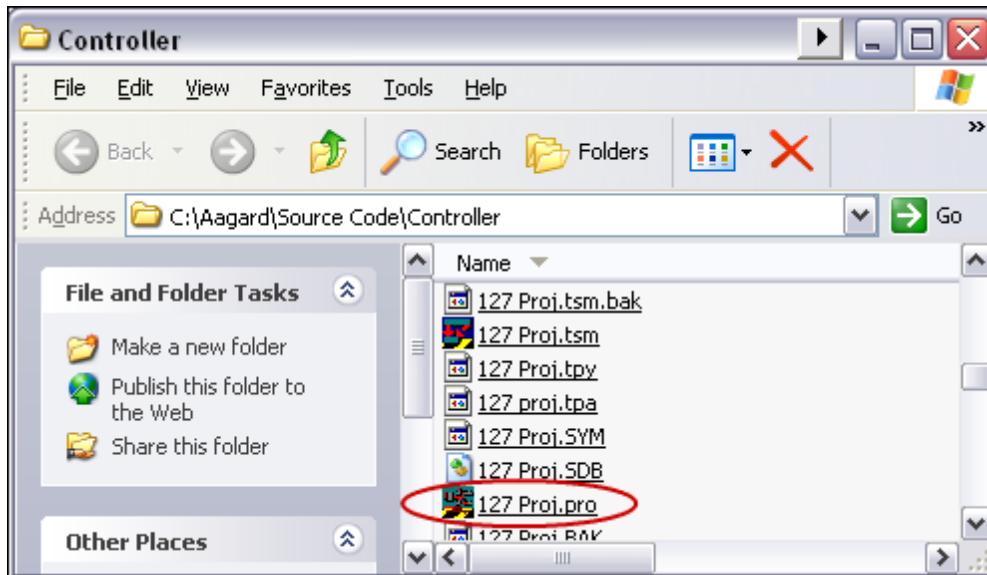
12) Click Project > Clean All
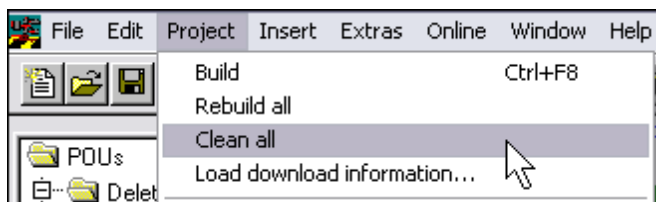
13) A dialog box may appear displaying, "Attention! After this action you can no longer login without download! Do you wish to continue?" Select Yes
14) A dialog box will appear displaying, "Attention! Would you like to keep the TwinCAT_configuration unchanged?" Select No
15) Save by either clicking the Save icon or by going to the "File" menu and selecting "Save"
16) Click Project > Rebuild All
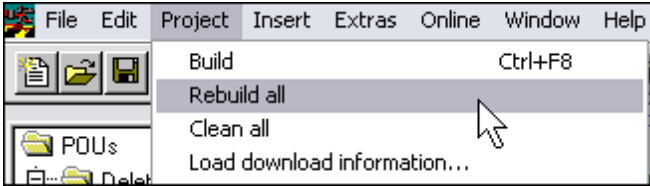
17) Save by either clicking the Save icon or by going to the "File" menu and selecting "Save"
18) Go back to the "Controller" folder and open the ".tsm" file, ("C:\Aagard\SourceCode\Controller\###Proj.tsm"), (Where ### is the number of the machine)
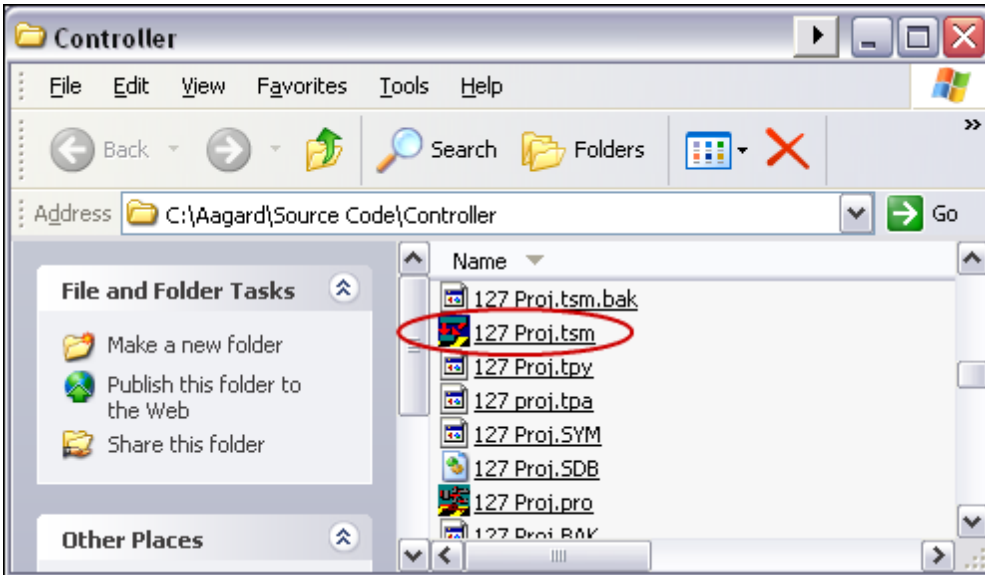
19) On the tree to the left, expand "PLC – Configuration". Then Right-click on the child tree item labeled by for this machine number and project under, "PLC – Configuration" and select "Rescan Project…"
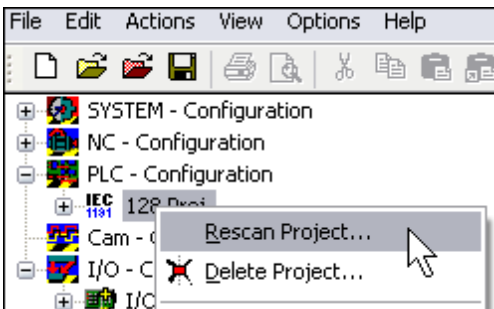
20) Save by either clicking the Save icon or by going to the "File" menu and selecting "Save"
21) Click Actions > Activate Configuration
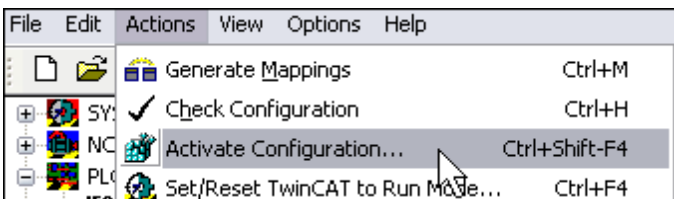
22) A dialog box will appear displaying, "Document is modified! Generate mapping before activate configuration?" Select Yes

23) A dialog box will appear displaying "Activate configuration, (Old Configurations will be overwritten!)" Select OK

24) A dialog box will appear displaying, "Restart TwinCAT System in Run Mode?" Select OK

25) An error message box may display: "TwinCAT PLC Server: PLC Error(1804)loading boot project of run time system1. Run time started without boot project"

26) This is expected and not a problem, so just select OK

27) Click File > Save

28) Close the TwinCAT System Manager file (which is the .tsm file)

29) Go back to the PLC program (the .pro file)

30) Click Online > Login

31) A dialog box will appear. "The program has changed! Download the new program?" Select Yes.

32) Click Online > Create Bootproject
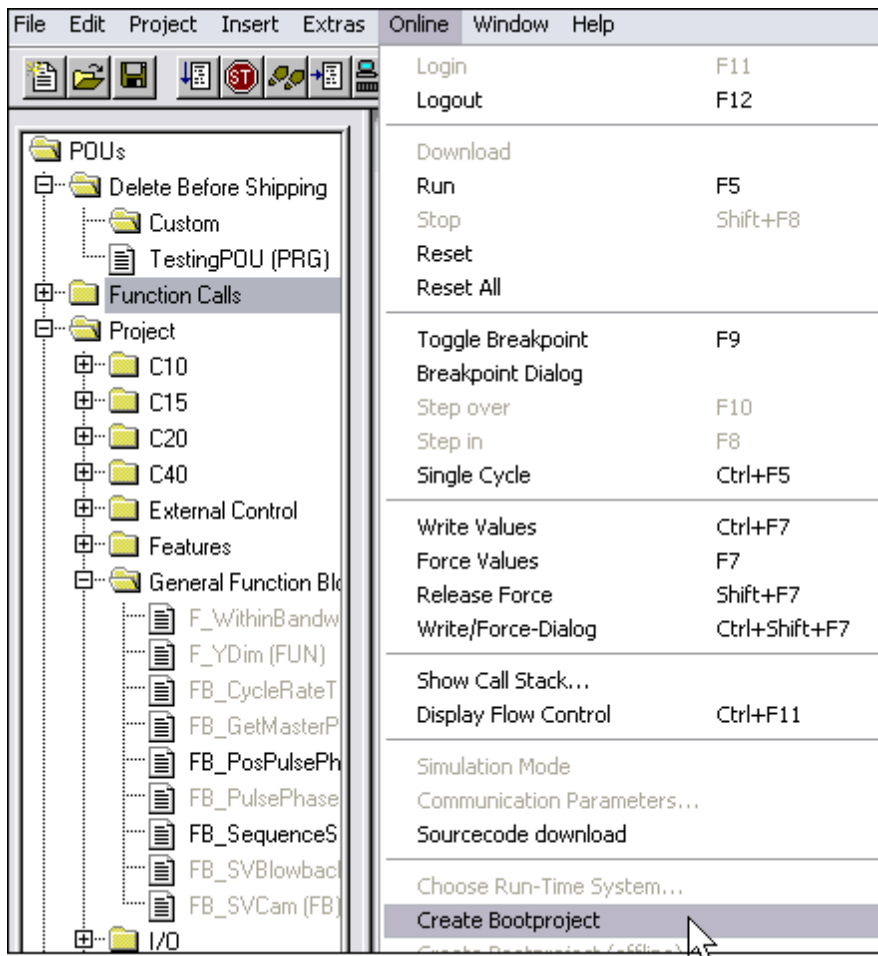
33) Click File > Save

34) Close the TwinCAT Project file (which is the ###proj.pro file)

35) Click Start > Restart and wait for the HMI to reinitialize
   a) You may have to Click Start > Shut Down > Restart

CRITICAL NOTE: A new cloned spare flash drive should be obtained as soon as possible!

To Update the Manuals and Help Files:

NOTE: This procedure updates the manuals and help files so that they are at the most recent level. This Procedure should be done but is not required for the machine to run, and can can be done at any time once machine is up and producing after Flash Drive Replacement.

1) Go to "D:\Aagard General Files Backup"
2) Open "General Files Back up month of ####-##-## (year-month-day)" (Where # stands for the current date in year, month, day order)
3) Copy "Aagard Icons" and "Help" Folders
4) Go to "C:\Aagard Documents"
5) Replace existing "Aagard Icons" and "Help" Folders with the ones you copied from the D:Drive

Shutting Down PC

Failure to properly shut down the PC may void the warranty!

Switch on	The Industrial PC does not have its own main switch. The Industrial PC will start when the equipment is switched on, or when it is connected to the power supply.
Shutting down and switching off	When the plant is switched off, or when it is disconnected from its power supply, the Industrial PC will be switched off. Control software such as is typically used on Industrial PCs permits various users to be given different rights. A user who may not close software may also not switch the Industrial PC off, since data can be lost from the hard disk by switching off while software is running
⚠️ **Warning!**	**First shut down, then switch off the PC!** If the Industrial PC is switched off as the software is writing a file to the hard disk, the file will be destroyed. Control software typically writes something to the hard disk every few seconds, so the probability of causing damage by switching off the PC while the software is running is very high!
⚠️ **Warning!**	When you have shut down the Industrial PC, you have to switch off power supply for at least 10 seconds before rebooting the system. After resetting power supply, the PC will start booting automatically.

To properly shut down the PC, contact a Level 2 or higher Operator.

Drives

Servo Drives

Downstacker Servo Gearbox Coupling Replacement

This topic only applies to Case Packers

Tools Required:

- Standard Wrench Set
- Standard Allen Pack
- Metric Allen Pack

Routine:

1) Disconnect main power
2) Unhook servo cables
3) Mark position of hub on both shafts with a marker before removing them
4) Remove servo gearbox assembly with mount attached
5) Take coupling assembly out and replace it with new one (put it in same position as old one as marked on shafts)
6) Put servo gearbox assembly back in; it should go back together with very little force
7) Tighten all bolts
8) Reconnect servo cables
9) Reconnect main power

Indradrive C Purge Assembly

This system is put in place to verify that a vacuum will not be generated inside the servo motor housing while the servo heats up and cools down. There is a 5/32" tube connected to each servo motor at the encoder connection which is fed from an air preparation assembly near the main air drop to the machine. This air preparation assembly removes particulates and humidity from the air which could possibly damage the motor.

The parts of this assembly are as follows:

- manual dump valve
- standard air filter
- water separator
- mist & micro-mist (oil) separator
- air dryer
- precision regulator (set & locked at 2 psi)
- relief valve (set & locked at 3 psi)
- pressure sensor
- flow sensor

The manual dump valve is provided to release pressure from the system when maintenance to the system is required. Pressure should remain in the system at all other times to ensure that substance ingress is kept to a minimum.

The four filters preceding the air dryer are to ensure the long life of the drying unit. These filters and drying unit reduce the relative humidity of the air supplied to the motors to a point which is acceptable to the manufacturer.

The precision regulator is set and locked at manufacturer suggested 2 psi, and a relief valve is provided, set, and locked at 3 psi to ensure that pressure stays below the manufacturer stated servo motor limits (3 psi).

A pressure switch is installed to give the HMI indication if pressure goes outside of acceptable limits, and a flow switch is installed to give indication if there is excessive leakage in the system (i.e. tubing disconnecting from the motor fitting).

MI Drive Replacement

To replace an MI Drive, follow these steps:

1) Shutdown the HMI computer
2) Remove 480V power
3) Follow lockout/tagout procedures

⚠️ **WARNING** Allow 30 minutes for the internal capacitors to discharge before removing any cables

4) Remove the cables from the failed motor by opening the metal clamps and pulling the cables off of the motor

5) Remove mounting hardware which holds the servo motor and related mechanical assemblies in place
6) Remove failed motor
7) Install new motor in the same orientation as the failed motor
8) Replace mounting hardware
9) Set the address 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. Example, for servo axis 08: H = 0, L = 8
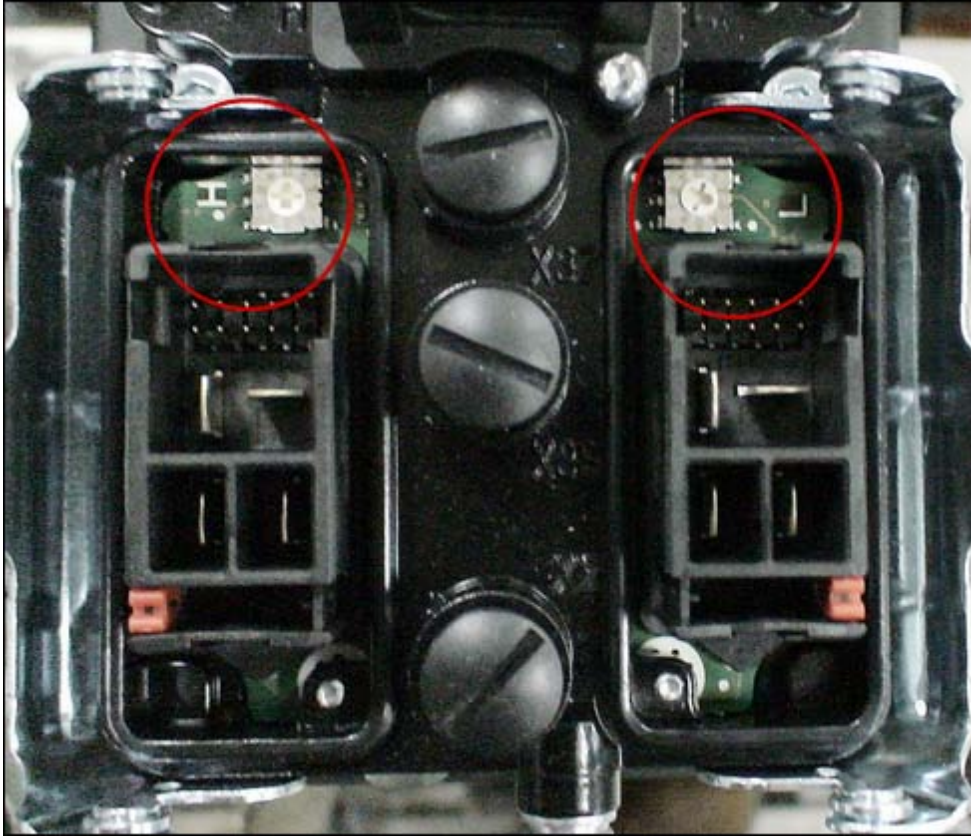
10) Reattach the cables (cables are keyed so they will only go onto the correct terminal) and secure by pushing in on the metal clamps
11) Restore 480V power
12) Launch the HMI
13) Select Servo Initialization Options from the following screen - within nine seconds!
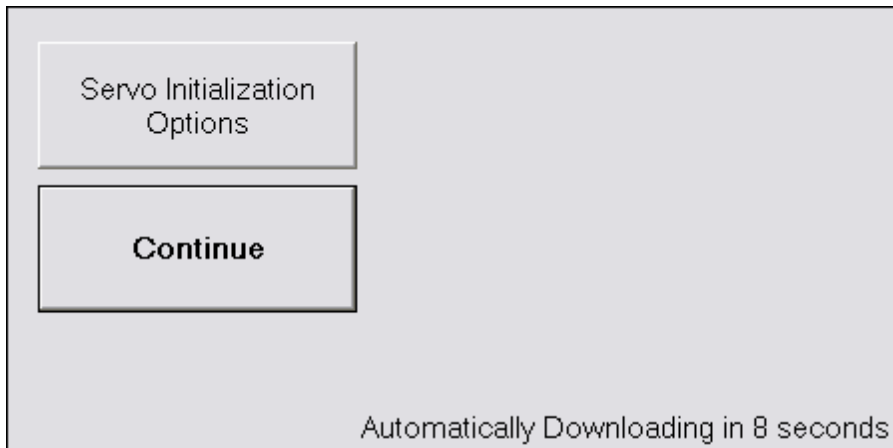
14) Enter your username and password
15) Select Initialization Data from the following screen

16) Select the correct drive from the dropdown list and check the Include This Servo in Initialization checkbox

SAMPLE IMAGE
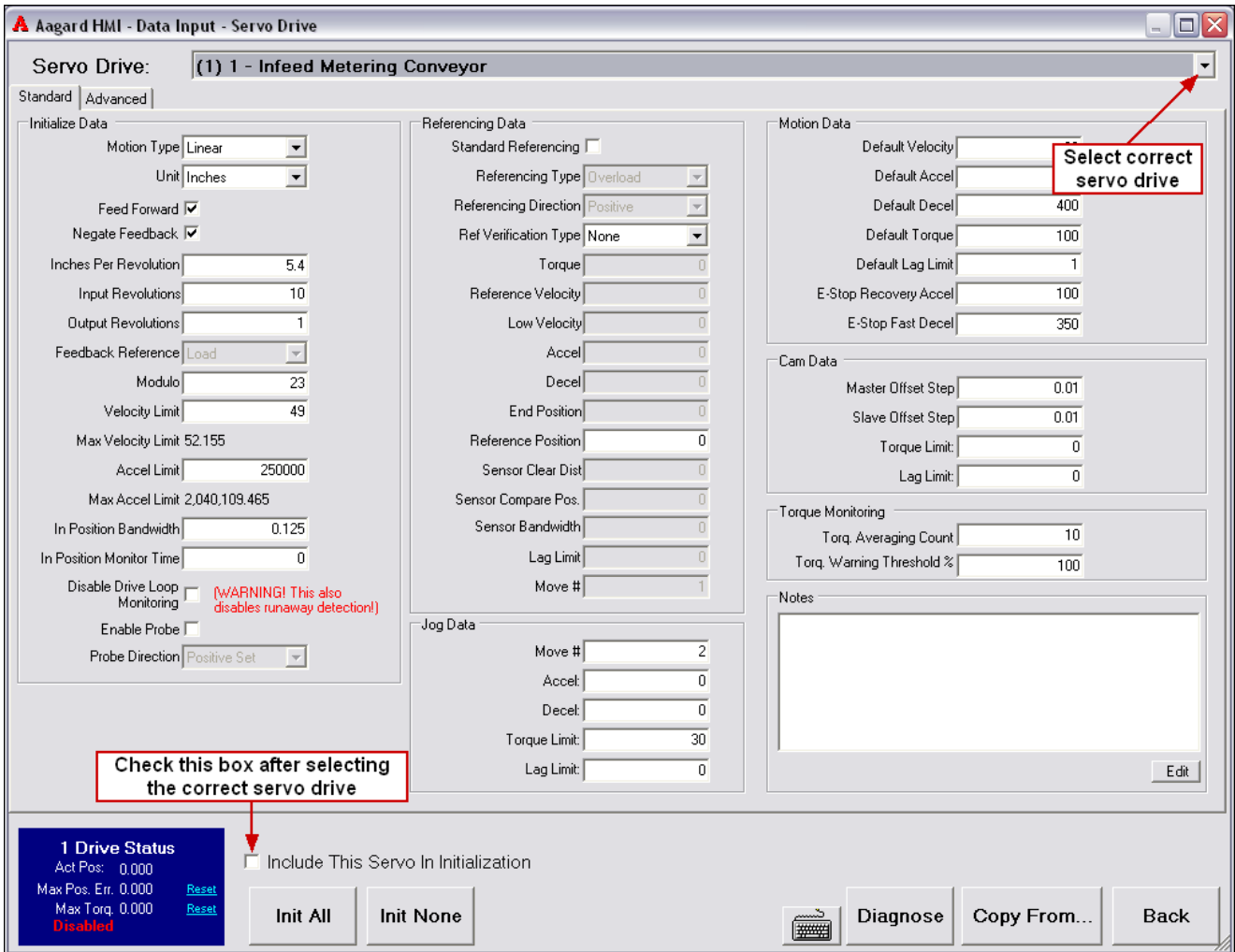
17) Click Back
18) Click Continue
19) Once the initialization process is complete, reference the drive (see Servo Referencing)

Purchasing MI Servos Directly From Rexroth

Due to known issues with MI servo motors using firmware later than 4V30, be sure to specify Firmware 4V30 when ordering MI servo motors directly from Rexroth or through your own supplier.

The <u>manufacturer</u> part number for Firmware 4V30 is R911330522.

> **NOTE:** The correct firmware version will be used when ordering MI servo motors through Aagard

Sealing Rexroth Servo Assemblies

This topic applies to Nema 4 and 4x machinery systems.

Sealing Servo Motor to Gearbox

1) Use Loctite 518 sealant between the servo and the Alpha gearbox
    a) Loctite 518 usually comes with the washdown GCR Alpha gearboxes
2) When the servo motor does not cover the mounting plate on the Alpha gearbox, the exposed part of the counterbore, after the motor is mounted, will need to be filled and sealed with Loctite 5512 or Henkel MS939
    a) If a gasket plate is used, apply Loctite 518 to both sides of the gasket, sealing the gasket to both the servo motor and gearbox
3) Use Loctite 574 sealant on the washdown GCR Alpha gearbox screw in plug
4) If the gearbox input bushing has a keyway in it, put food-grade high-temp anti-seize on the servo output shaft when mounting to the Alpha gearbox

CAUTION: Do not put anti-seize on the outside of the bushing

CAUTION: If there is no keyway in the bushing, no anti-seize should be used

Sealing Gearbox to Mount Plate

1) Put a bead of Loctite 518 around the output housing between output housing and outer bearing race to keep moisture from entering the gearbox and to seal the gearbox to the mounting plate

2) If an O-ring seal is used on the Alpha gearbox output shaft, apply food grade high-temp anti-seize to the O-ring fitted over the output shaft
    NOTE: Do not allow Loctite to come in contact with O-Ring
3) Seal the O-ring cover plate to the gearbox mount plate with Loctite 518

End Seal-Cap Edge Sealing *(Rexroth MI Motors Only)*

Each **Rexroth MI** servo motor must have the end seal-cap edge sealed with Loctite 5512 or Henkel MS939.

   NOTE: Rexroth IndraDrive C motors will not need end caps sealed (new washdown servo motors)

IMPORTANT NOTE: Do not void your warranty by removing the end seal-cap!

---

1) Clean the end seal-cap where it attaches to the motor
2) Seal the joint between the end cap and the motor with a 1/4" to 3/8" bead of Loctite 5512 or Henkel MS939
3) Use the following images as a reference

Run sealer past this seal approximatley one inch

4) Use your finger to push down on the Loctite to create a sound seal
   NOTE: Moisten your fingers with soapy water to keep the Loctite from sticking to your fingers
5) Let the motor sit for at least 24 hours before using

Installing Clamp *(Rexroth MI Motors Only)*

When the motor is mounted, the cable clamp needs to be installed.

Torque settings for clamps are as follows:

- 61/76 clamps (tapped, using blue Loctite) with 15 inch-pounds (+/- 25%)
- 41 clamps (with SS Nyloc nut) with 24 inch-pounds (+/- 25%)

A general rule of thumb is when the clamp being installed is tight enough, the existing clamps on the motor will be loose.

If the clamps are over-tightened, the motor will not initialize. If this occurs, remove the clamp, initialize the machine, and reinstall the clamp.

Servo Cable Replacement

Tools Required:

- Flathead Screwdriver Set

Routine:

1) Disconnect main power
   a) Wait 30 minutes
2) Flip open cable clamp on servo with screw driver, one end of cable at a time
3) Pull cable plug straight down
   a) Do not twist or bend it
4) Do same to other end of cable
5) Put in new cable, in reverse order
6) Clamp both ends of cable down with servo clamp
7) Reconnect main power

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) Disconnect main power
2) Remove cables from failed motor by opening metal clamps and gently pulling cables off of motor to prevent damage to plug
3) Remove small cap that covers set screw in gear box and loosen set screw but Do NOT REMOVE IT
4) Remove mounting hardware that holds servo motor and related mechanical assemblies in place
5) Remove failed motor
6) Compare part numbers of old and new motors to make sure new motor is correct motor
7) Clean all mating surfaces and install new motor in same orientation as 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
   a) Use only Grade 8 Bolts
9) Torque set screw in gear box to one of the following:
   a) Gear box LPB090, Torque to 23 (Nm)
   b) Gear box LPB120, Torque to 45(Nm)
10) Replace small plastic cap that covers set screw hole on gear box
11) Set address for new motor inside of termination plugs
    a) One side will have an H stamped inside; set this potentiometer to left most digit in servo address
    b) The other side will have an L stamped inside; set this potentiometer to right most digit in servo address for example: for servo axis 08: H = 0, L = 8
       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
12) Reattach cables, being careful not to damage connectors
    a) Cables are keyed so they will only go onto correct terminal
       i) Secure cables by pushing in on metal clamps
13) Replace KCU module fuses
14) Reconnect main power
15) Reference drive

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 valve
3) Remove bolts that mount valve
4) Replace old valve with new valve (you may use same fitting or get new ones)
5) Mount new valve with same bolts
6) Reconnect all air lines and electrical wires (see electrical prints)
7) Turn on main air

Motors

Motor and Gearbox Replacement

Tools Required:

- Standard Wrench Set
- Standard Allen Pack

Routine:

1) Disconnect main power
2) Disconnect wires to motor
3) Loosen bolts on bottom of gearbox and loosen tensioner to take belt off of gearbox pulley
4) Take pulley off of gearbox
   a) Save key!
5) Remove motor and gearbox assembly by taking bolts completely out of bottom of gearbox by mount
6) Remove motor from gearbox
   a) Mount should slide out without force
   b) Save key
7) Put anti-seize on edge of new gearbox where motor surface mounts
8) Place new motor and new gearbox together with same key in motor shaft
   a) It should slide together without force
   b) You may need to modify key or get a new one
9) Use existing bolts to secure motor and gearbox together
10) Place assembly back into machine
11) Use same bolts to mount gearbox to machine
12) Reconnect wires to motor
13) Reconnect main power

Motor and Gearbox Replacement for Side Belts

This topic only applies to Case Packers

Tools Required:

- Standard Wrench Set
- Standard Allen Pack

Routine:

1) Disconnect main power
2) Disconnect wires to motor
3) Loosen belt tensioner, and take off belt
4) Take pulley off of gearbox
   a) Save key
5) Loosen bolts on bottom of gearbox and loosen tensioner to take belt off gearbox pulley
6) Remove motor and gearbox assembly by taking bolts completely out of bottom of gearbox by mount
7) Remove motor from gearbox
   a) Mount should slide out without force
   b) Save key
8) Put anti-seize on edge of new gearbox where motor surface mounts
9) Place new motor and new gearbox together with same key in motor shaft
   a) It should slide together without force
   b) You may need to modify key or get a new one
10) Use existing bolts to secure motor and gearbox together
11) Place assembly back into machine
12) Use same bolts to mount gearbox to machine
13) Put pulley back on
14) Put belt back on and tension
15) Reconnect wires to motor
16) Reconnect main power

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

Knives

Knife Replacement and Setup

NOTE: This topic only applies to Machines 62 and 94

If this feature is installed, use this document for knife replacement and operating specifications.

| **Anvil** | **Knife** | **Anvil and Knife Combined** |

<u>General Operation of the knife mechanism</u>:

The anvil is in a fixed position, while the knife travels up and down and rides against the front face of the anvil. The cutting edge must be the only point of contact between the knives. Pressure to cutting edges is applied by two springs pushing out on the upper edge of the knife.

<u>NOTE</u>: *If springs are replaced, springs must be identical with respect to wire gauge, diameter and length.*

The following steps detail the necessary procedure to properly and safely remove and replace the fly knife and anvil, and to set the proper gap.

<u>NOTE</u>: *Knife and Anvil must be replaced as a set!*

To remove the Fly Knife and Anvil:

1. Dump the air supply to the machine
2. Turn the bellcrank to raise the fly knife mount, and lock it into position with the stored pin
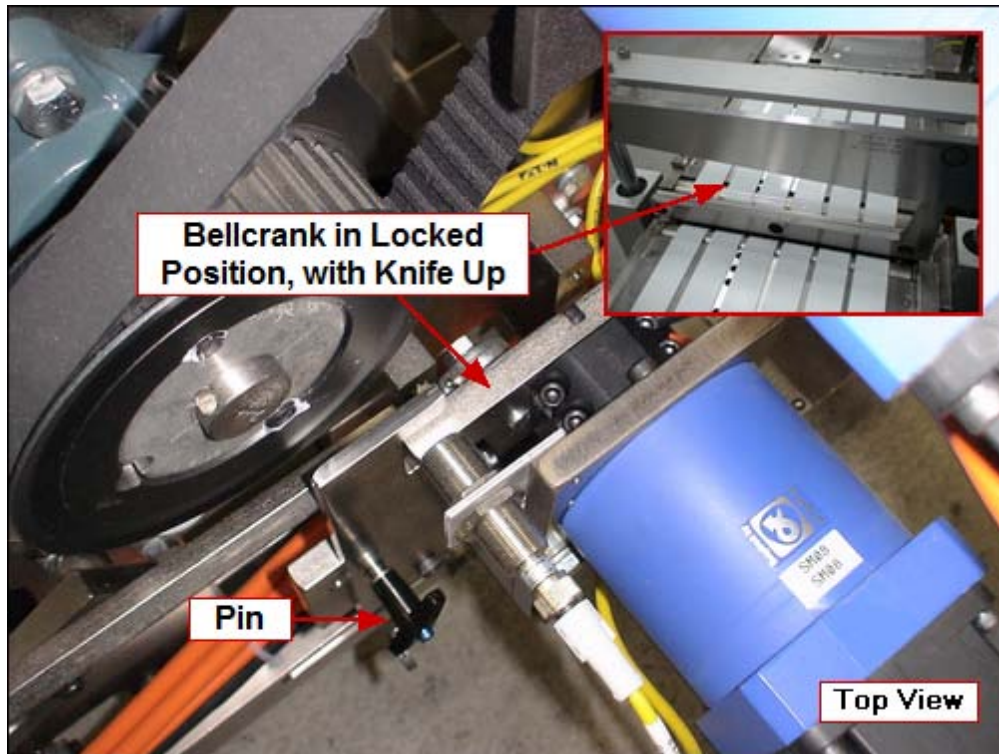
Image may be reversed with opposite flow Inserter.

3. Remove the anvil bolts, and pull off the anvil
4. Remove the knife bolts and nyloc nuts, and pull off the fly knife. **Don't lose the springs!**
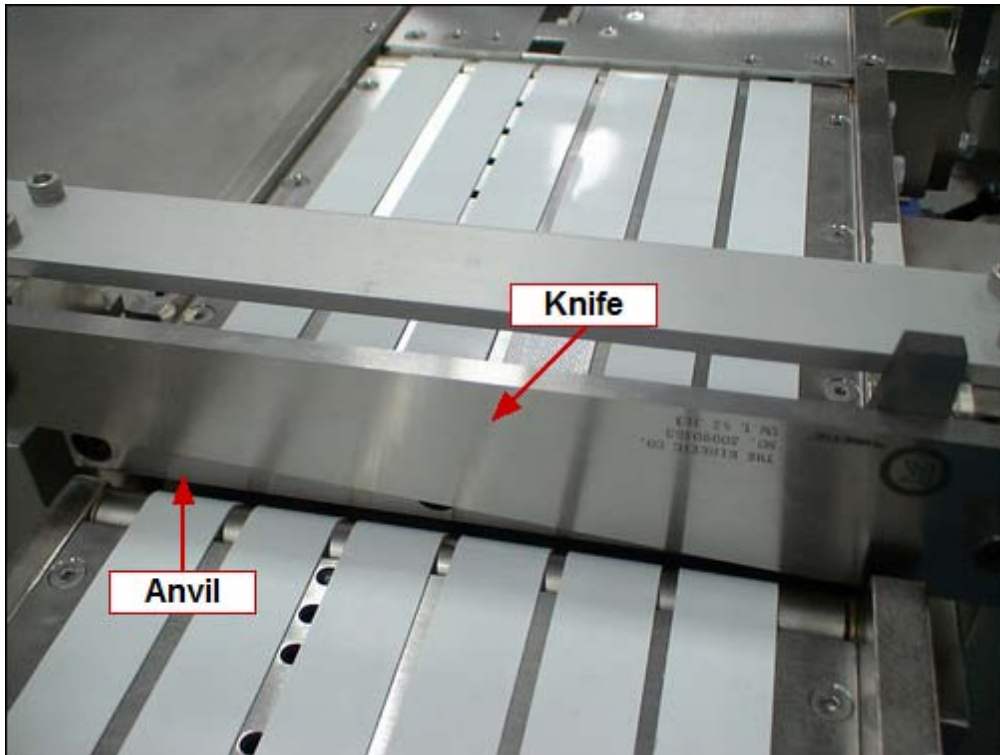
To replace the Anvil and Fly Knife, and set proper gap:

1. If the bellcrank is no longer locked in the up position, do so now
2. Fasten anvil into place
3. Unlock bellcrank and lower knife to lowest position, and store pin in unlocked position
4. Restore air supply
5. Insert springs between knife and mount while seating nyloc nut into the slot
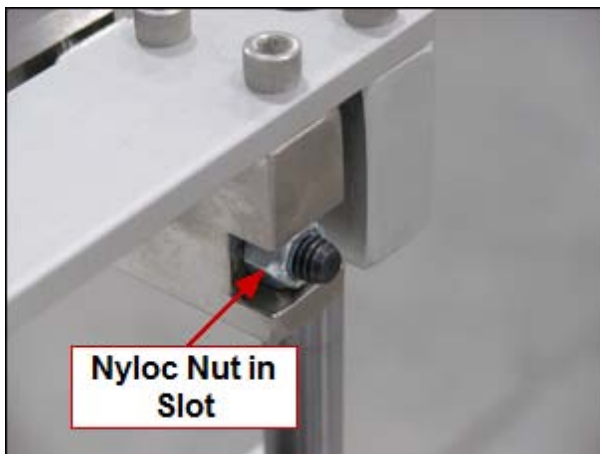
6. Insert grade-8 socket heads and tighten enough to keep springs and nyloc nuts in place. **Do not tighten all the way!**
7. Draw the guided side in until it just makes contact with anvil from top to bottom
8. Draw the non-guided side in until it just makes contact
9. Back out guided side until the gap is between .013" and .016" at the bottom edge of the knife
10. Draw non-guided side in until top edge of guided side closes to .001" - .002" (paper thickness)
11. You may need to readjust the guided or non-guided sides until the target gaps are achieved

Note: Knife must be in closed or "cut"
position when setting clearances.

(Exagerated Clearances Shown)
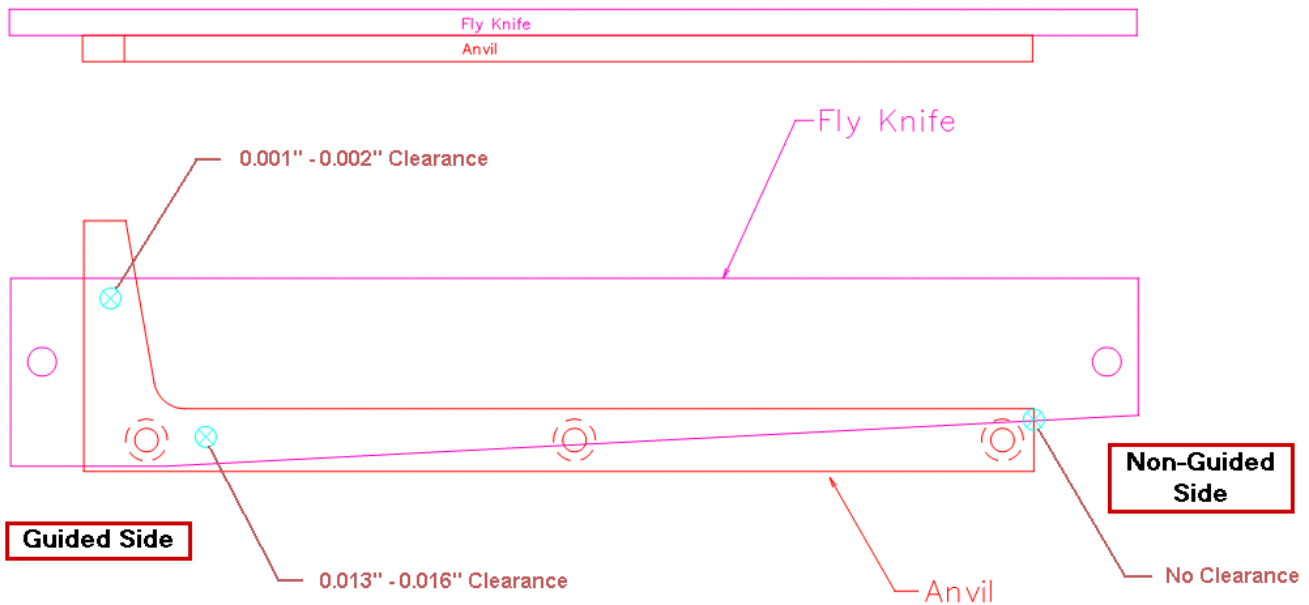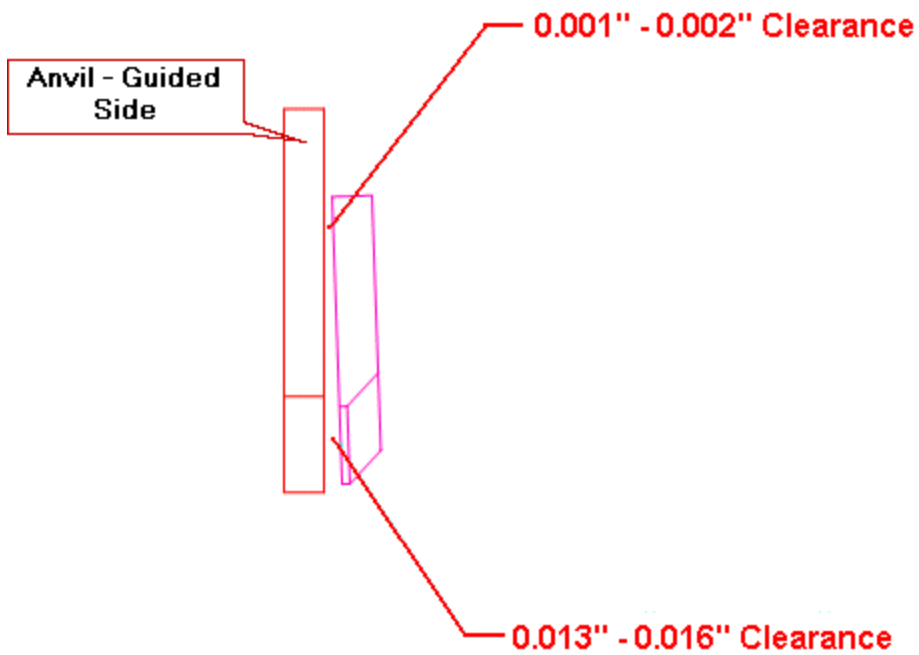
Fly Knife

Anvil

Fly Knife

0.001" - 0.002" Clearance

Non–Guided
Side

Guided Side

0.013" - 0.016" Clearance

Anvil

No Clearance

0.001" - 0.002" Clearance

Anvil - Guided
Side

0.013" - 0.016" Clearance

(Exagerated Clearances Shown)

Knife Replacement and Setup

NOTE: This topic only applies to Machines 146 and 147

| Anvil | Knife | Anvil and Knife Combined |

The anvil (upper knife) is a fixed knife, while the fly knife (lower knife) travels in an upstream / downstream direction, and rides against the front face of the anvil. The cutting edge must be the only point of contact between the knives. Pressure to cutting edges is applied by two springs pushing out on upper edge of the fly knife.

NOTE: If springs are replaced, springs must be identical with respect to wire gauge, diameter and length.

The following steps detail the necessary procedure to properly and safely remove and replace the fly knife and anvil, and to set the proper gap.

To remove the Fly Knife and Anvil:

1) Turn the knife crank arm so the knife is extended to its downstream position and lock into position with lock pin

2) Loosen the two (2) fly knife assembly bolts; while holding the bolts, remove nyloc nuts, and pull off the fly knife carefully. Don't lose the springs!

3) Remove the three (3) anvil knife assembly bolts and remove the anvil from the machine

To replace the Anvil and Fly Knife, and set proper gap:

1) If the knife crank arm is no longer extended to its downstream position and locked in place, do so now
2) Fasten anvil into place with three (3) bolts
3) Insert springs into fly knife mount blocks
4) Re-install fly knife with the two (2) bolts with cutting edge toward the anvil and facing down; then screw on nyloc nuts
5) Unlock the lock pin on the knife crank arm and move the knife assembly to its farthest upstream position ("cut" position)
6) Turn fly knife bolts in to draw fly knife close to anvil
7) Adjust the guided side in until it just makes contact with anvil from top to bottom
8) Adjust the non-guided side in until it just makes contact
9) Back out guided side until there is approximately .020" gap at the top edge of the knife
10) Adjust non-guided side in until top edge of guided side closes to .001 - .002 (paper thickness)
    NOTE: Now you should have a .013 to .016" gap at the lower guided side.
11) **Important!** When knife replacement process is complete, ensure that the crank arm lock pin is **not** in the lock position!

NOTE: Knife must be in closed or "cut" position when setting clearances

Anvil

Fly Knife

Non-Operator Side

Guided Side

0.001" - 0.002" Clearance

0.013" - 0.016" Clearance

Operator Side

Non-Guided Side

Fly Knife

Top View

Anvil

No Clearance

Exaggerated clearances shown

Anvil Guided Side

0.013" - 0.016" Clearance

0.001" - 0.002" Clearance

Exaggerated clearances shown

Knife Replacement and Setup

NOTE: This topic only applies to Machine 148

| **Anvil** | **Knife** | **Anvil and Knife Combined** |

The anvil (upper knife) is a fixed knife, while the fly knife (lower knife) travels in an upstream / downstream direction, and rides against the front face of the anvil. The cutting edge must be the only point of contact between the knives. Pressure to cutting edges is applied by two springs pushing out on upper edge of the fly knife.

NOTE: If springs are replaced, springs must be identical with respect to wire gauge, diameter and length.

The following steps detail the necessary procedure to properly and safely remove and replace the fly knife and anvil, and to set the proper gap.

To remove the Fly Knife and Anvil:

1) Turn the knife crank arm so the knife is extended to its downstream position and lock into position with lock pin

Crank Arm
(shown in the locked position)

Lock pin

2) Loosen the two (2) fly knife assembly bolts; while holding the bolts, remove nyloc nuts, and pull off the fly knife carefully. Don't lose the springs!

3) Remove the three (3) anvil knife assembly bolts and remove the anvil from the machine

To replace the Anvil and Fly Knife, and set proper gap:

1) If the knife crank arm is no longer extended to its downstream position and locked in place, do so now
2) Fasten anvil into place with three (3) bolts
3) Insert springs into fly knife mount blocks
4) Re-install fly knife with the two (2) bolts with cutting edge toward the anvil and facing down; then screw on nyloc nuts
5) Unlock the lock pin on the knife crank arm and move the knife assembly to its farthest upstream position ("cut" position)
6) Turn fly knife bolts in to draw fly knife close to anvil
7) Adjust the guided side in until it just makes contact with anvil from top to bottom
8) Adjust the non-guided side in until it just makes contact
9) Back out guided side until there is approximately .020" gap at the top edge of the knife
10) Adjust non-guided side in until top edge of guided side closes to .001 - .002 (paper thickness)
    NOTE: Now you should have a .013 to .016" gap at the lower guided side.
11) **Important!** When knife replacement process is complete, ensure that the crank arm lock pin is **not** in the lock position!

NOTE: Knife must be in closed or "cut" position when setting clearances

Anvil

Fly Knife

Operator Side

Guided Side

0.001" - 0.002"
Clearance

0.013" - 0.016"
Clearance

Non-Operator Side

Non-Guided Side

Fly Knife

Top View

Anvil

No
Clearance

Exaggerated clearances shown

Anvil
Guided Side

0.001" - 0.002"
Clearance

0.013" - 0.016"
Clearance

Exaggerated clearances shown

Taper Knife Replacement

NOTE: This topic only applies to Machines 88 and 114

From time to time, the taper knives may need to be changed.
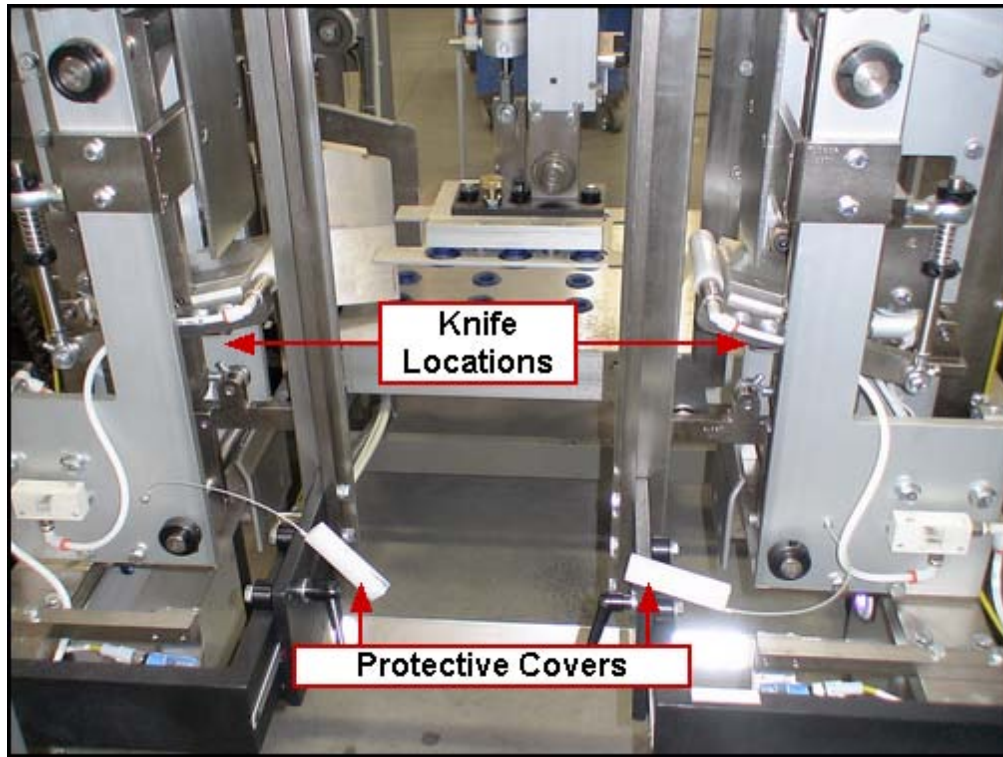
To do so, cover the knives with the protective cover. Loosen the three bolts with a 5/32" Allen wrench, and carefully remove the knives. Remove the protective cover.
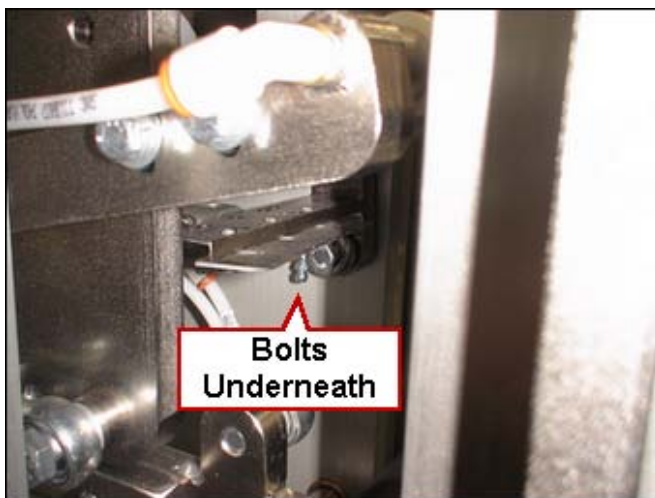
Upstream Knife   **Downstream Knife**

Install new knives, making sure they are out far enough and at an angle (drawings are not to scale).

Operator Side   9/16 in.

Upstream End

7/8 in.

Upstream Knife Measurements (top view)

Operator Side   9/16 in.

Downstream End

7/8 in.
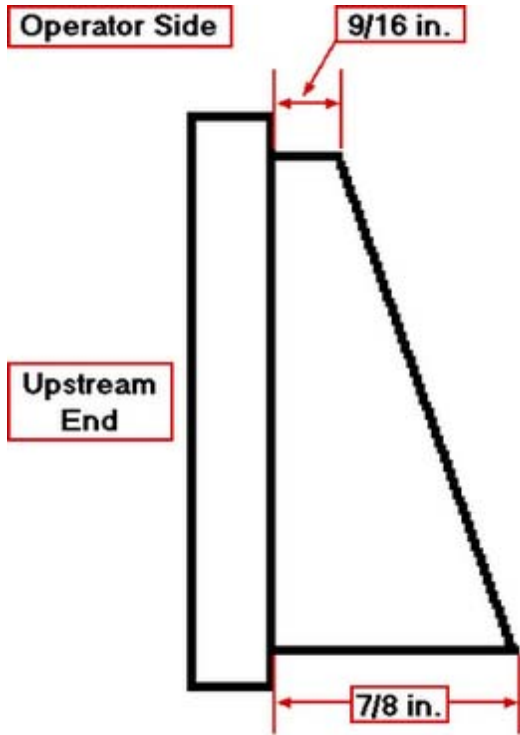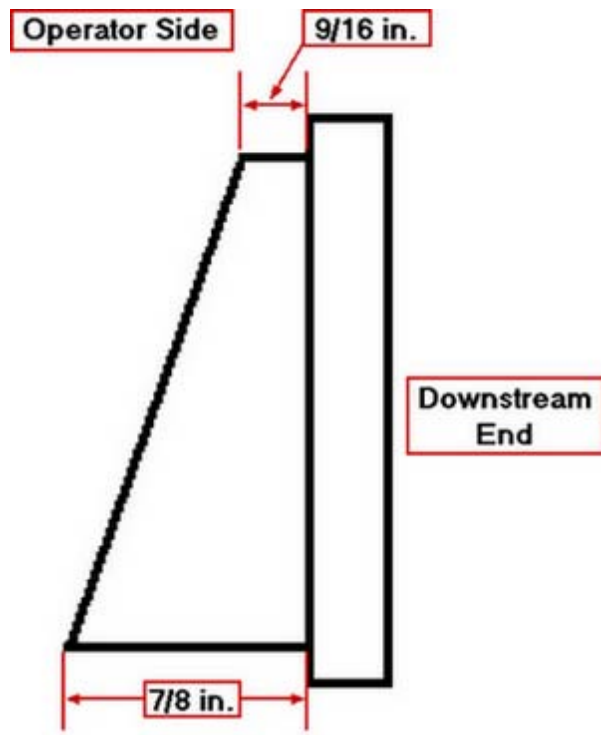
Downstream Knife Measurements (top view)

Knife Replacement - Vertical Cartoner

NOTE: This topic applies to vertical cartoner machines

Based on the number of machine cycles, the knife may need to be changed periodically. Because the knife blade is inside the lower seal jaw assembly, the upper seal jaw assembly must be positioned out of the way so that the knife can be removed from the top of the lower seal jaw assembly.

1) Remove the connecting rod bolt from the upper seal jaw assembly
   CAUTION: Hold the assembly securely so it doesn't drop once the bolt is removed!
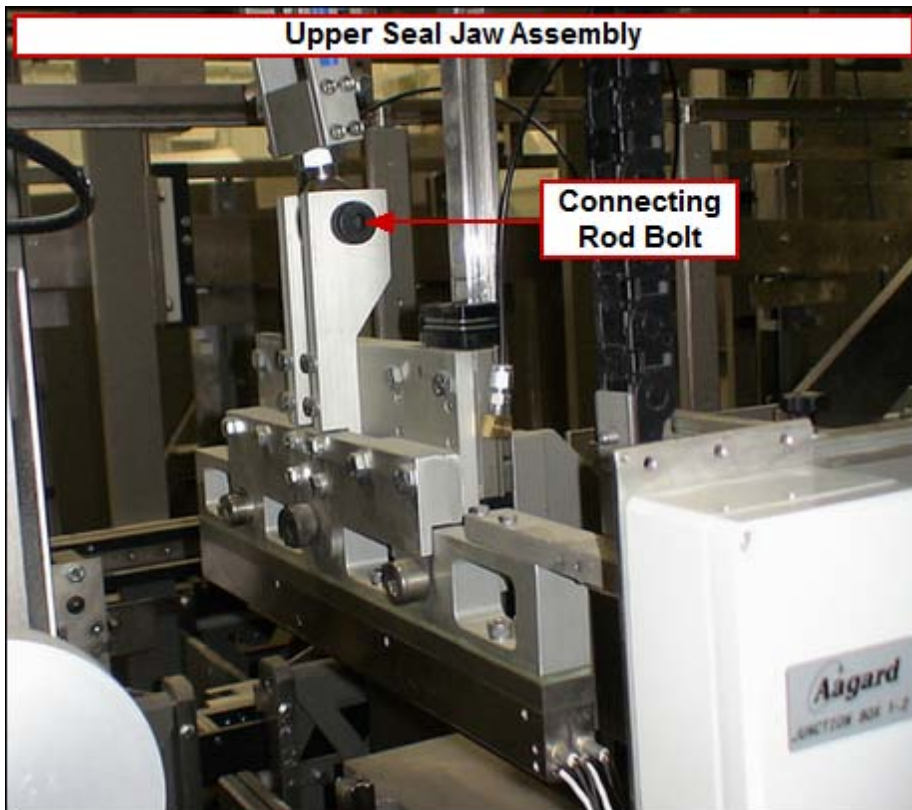
2) Raise seal jaw assembly fully up and secure in the raised position
   NOTE: A small C-clamp clamped on the rail works well
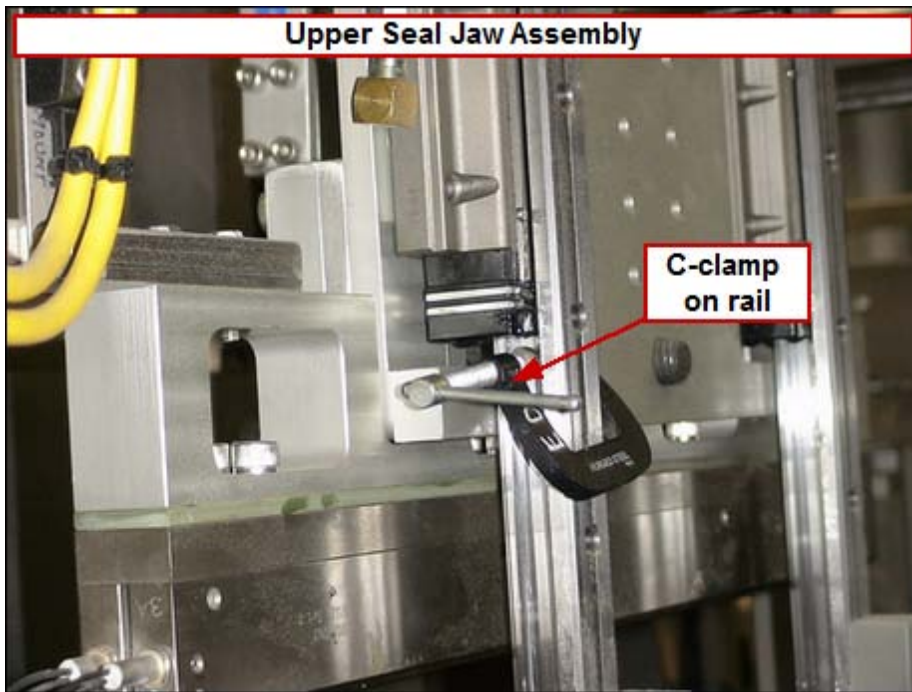
3) Remove the two (2) bolts securing the knife

Lower Seal Jaw Assembly

(2) Knife Bolts
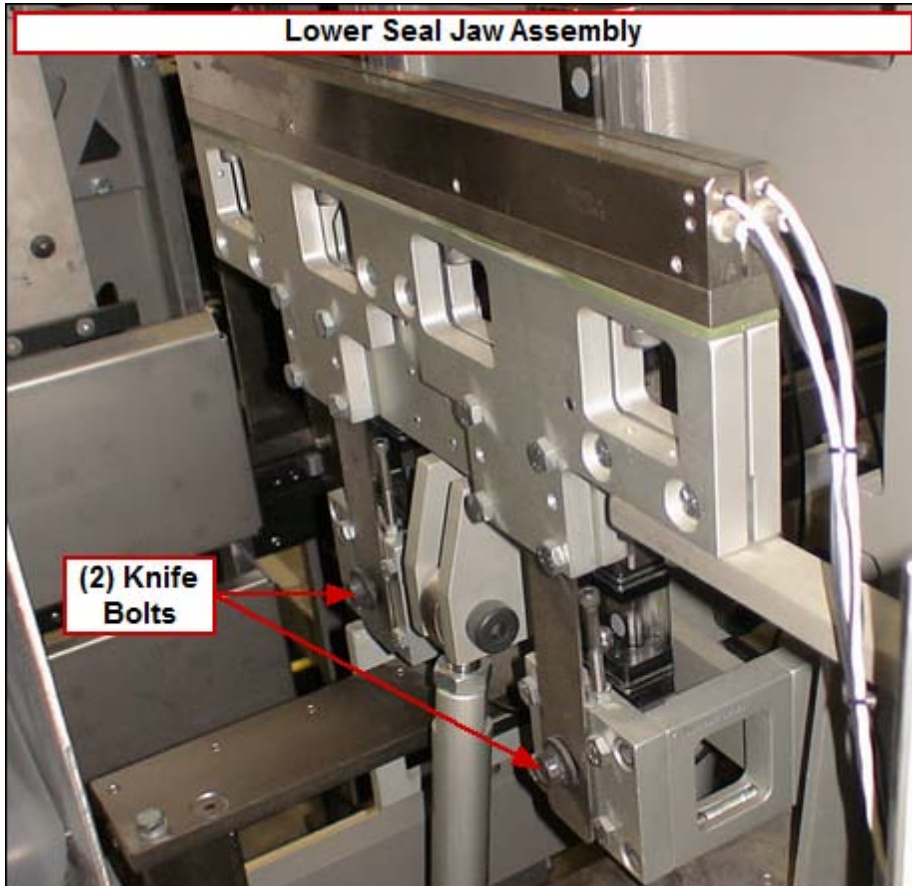
4) Carefully lift knife up and out of lower seal jaw. Note the orientation of the knife cutting angle. The angle should face toward the front of the seal jaw (upstream).

Blade Angle

Knife Blade

Upstream

Knife blade in lower seal jaw assembly
Angle of the blade faces upstream
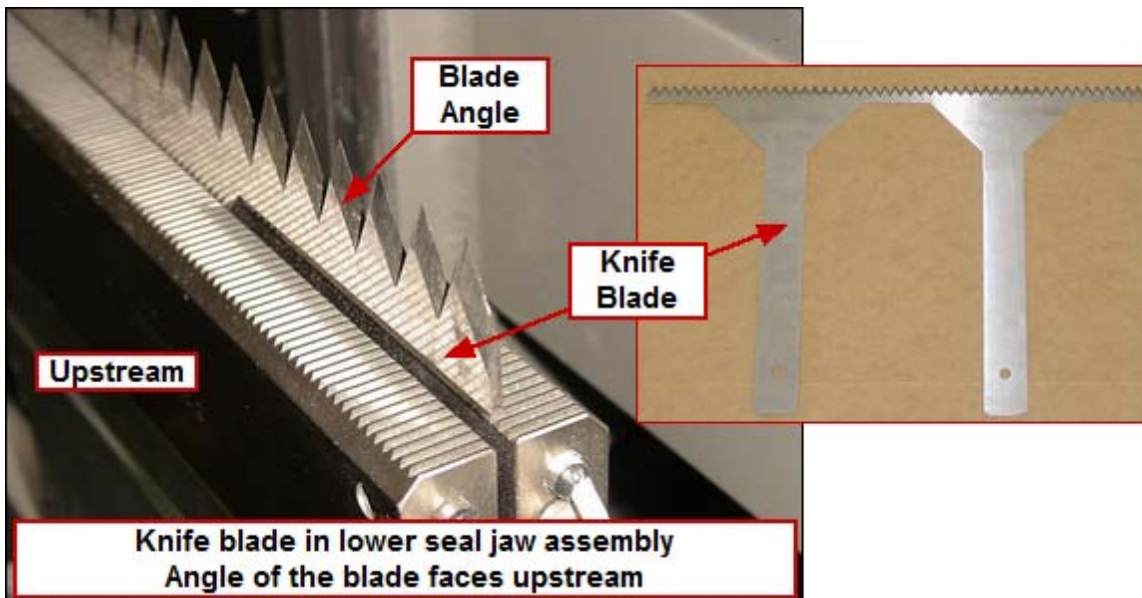
Lubrication

Bundler Unitizer Lube Points

NOTE: This topic applies to bundler unitizer machines

There are three points on the Bundler Unitizer which require lubrication approximately one time per week: Turner Assembly, Nip Roller Assembly and Knife Assembly. Apply the recommended amount of grease to each grease zerk.

NOTE: Each bearing manufacturer has different requirements for amount, frequency and type of lubrication; always follow manufacturer guidelines when lubricating the machine

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Turner Assembly

(2) Turner Assembly Lubrication Points

Nip Roller Assembly

(2) Nip Roller Assembly Lubrication Points
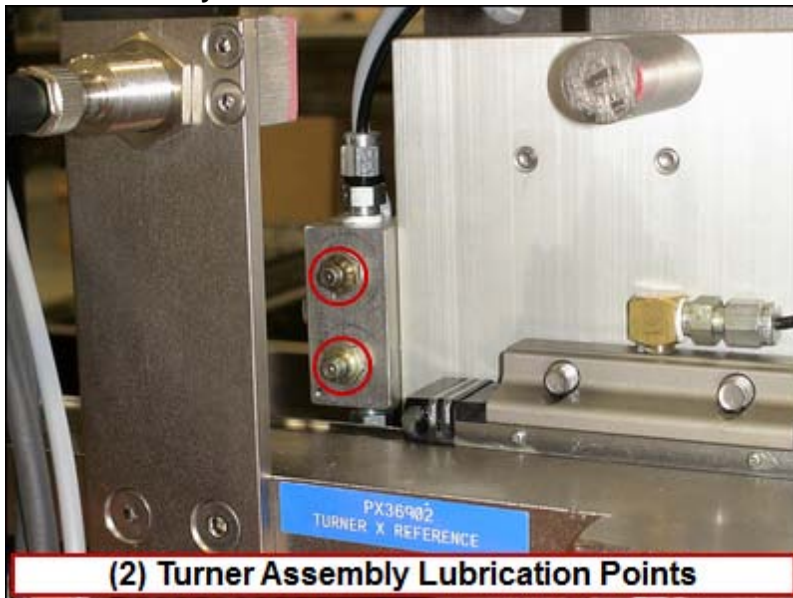
Knife Assembly

(6) Knife Assembly Lubrication Points

Vertical Cartoner Lube Points

NOTE: This topic applies to vertical cartoner machines

There are several points on the Vertical Cartoner which require regular lubrication. Apply the recommended amount of grease to each grease zerk.

> **NOTE:** Each bearing manufacturer has different requirements for amount, frequency and type of lubrication; always follow manufacturer guidelines when lubricating the machine

NOTE: Flip image for opposite-hand machines!

Side Seal	Magazine
Shuttle (6) Bottom Seal (2) Top Seal (2) Knife (2) Rod Ends (if any exist)	Wheels (2) Push Clip (2) Bottom Magazine Clip (2) Carton Slide Rod End (1) Nip Belt Drive Shaft (2) Floating Blank Guide (2)
First End Seal Shuttle (4) Bottom Seal (2) Top Seal (2) Rod Ends (if any exist) Fingers (4) (n/a on Aagard 149) In/Out Axis (2) (n/a on Aagard 149)	**Second End Seal** Shuttle (4) Operator Side Seal (2) Non-Operator Side Seal (2) Rod Ends (if any exist) Fingers (4) (n/a on Aagard 149) In/Out Axis (2) (n/a on Aagard 149)
First End Tuck (1)	**Second End Tuck** (1)

Installation procedure

1) Before installation process, clean and inspect all mounting surfaces
   a) Look for and remove burrs, nicks, dirt, etc.
2) Remove anti-rust/preservative oil
3) Install lube fitting/piping joint into the block
4) Lubricate block according to recommendations
5) Carefully slide block onto rail using arbor – be sure to keep the carriage in line with the rail
   IMPORTANT: Do not angle or force carriage onto rail; you will potentially loose ball bearings
6) Install plugs in bolt holes of rail, keeping plugs flush with the top of the rails

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Additional Documentation

[THK Grease Amounts for Blocks](#)

Manufacturer's Information

[THK, LM Guide Installation](#)
[THK AFG MSDS](#)

Machine 200

NOTE: This topic only applies to Machine 200

Tray Loading	
tray lift	1 cylinder
tray transfer	1 cylinder
bullet transfer from dagger boards to slides	2 cylinders
bullet pick	5 cylinders
bullet stops	5 cylinders
trolley dump	1 cylinder
bullet hopper	1 cylinder
linkage arms on the bullet pick transfer area	12 lube points
Cartoner	
carton transfer into star wheel	1 cylinder
carton reject	1 cylinder
carton squaring	1 cylinder
one each side, flap tuck	2 cylinders
carton load (tray load into carton)	1 cylinder
tray reject and refeed	2 cylinders
tray refeed up stack	1 cylinder
tray up stack before loader	1 cylinder
Mega Cartoner	
Carton pick	2 cylinders
mega compression (one each side)	2 cylinders
mega funnels (one each side)	2 cylinders
carton load into mega carton	1 cylinder
mega reject	1 cylinder
mega carton transfer	1 cylinder
Case Packer / Palletizer	
compression	4 cylinders
flap tuck before compression	2 cylinders
case magazine	1 cylinder
case magazine access clamp	1 cylinder
case rotate robot	1 cylinder

case pusher robot	1 cylinder
carton load into case	2 cylinders
lowerator	1 cylinder
linkage for case rotate	2 lube points

Pneumatics

Cylinder Replacement

Tools Required:

- External Snap Ring Pliers
- Standard Wrench Set
- Metric Wrench Set
- Standard Allen Pack

Routine:

1) Turn off main air
2) For top and bottom cylinders, remove bolt at end of rod
3) Use snap ring pliers to remove pin at base of cylinder
4) Remove cylinders and replace with new ones, remove with wrench; you may use same fittings or new ones
5) Use same rod ends
6) Put cylinders back in reverse order
7) For cylinders on the side, remove finger on top of shaft
8) Remove all bolts which mount cylinder to plate
9) Replace 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 main air

Suction Cup Replacement

Tools Required:

- Standard Allen Pack
- Standard Wrench Set

Routine:

1) Use Allen wrench to remove mounting bolt on inside of cup
2) Replace old cup with new cup
   a) Use new thread tape on new cups
3) Make sure all new cups are turned in same length so vacuum is even on all cups

Valve Bank Replacement

Tools Required:

- Standard Allen Pack

Routine:

1) Turn off main air
2) Remove all air lines from valve bank
   a) 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 valve is working properly

Printers and Scanners

Create/Adjust Printer Message
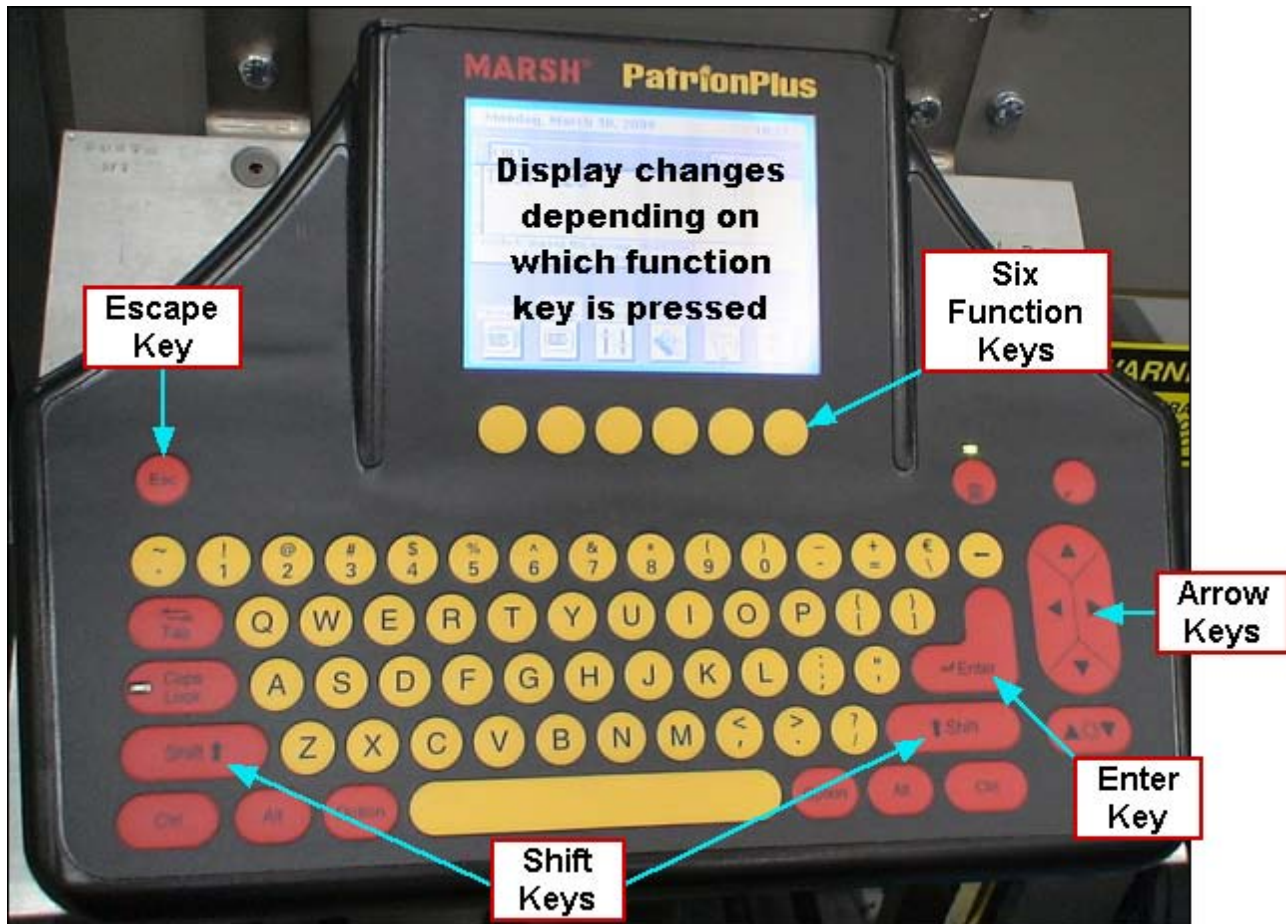
Create Message On Marsh Printer
1) On the Marsh Printer Controller's home screen, press the Messages function key
2) Use the arrow keys to highlight the New menu item
3) Press Enter to display the new message screen
4) After keying in your message, press the Messages function key
5) Use the arrow keys to highlight the Save menu item, then press Enter
6) Key in a name for your message in the Save Message As field
7) Press the OK function key to add the name to the list of existing messages
8) Press Esc to return to the home screen

Adjust Message Position on Marsh Printer
1) On the Marsh Printer Controller's home screen, press the Print Settings function key to display the character width screen
2) Use the arrow keys to highlight the Print Position menu item and press Enter to display the print position screen
3) Press the Move Left or Move Right function key to move one space at a time
4) To move left or right ten spaces, press the Shift key in combination with the Move Left or Move Right function key
5) Press the OK function key to save your changes and return to the home screen

Adjust Message Width on Marsh Printer

1) On the Marsh Printer Controller's home screen, press Print Settings to display the character width screen
2) To change width, press the Narrower or Wider function key
3) Press the OK function key to save your changes and return to the home screen

For more information on the Marsh Printer, please view the Marsh Printer manual.

Marsh Ink Head Replacement

Tools Required:

- Metric Wrench Set

Routine:

1) Turn off air and power to the printer
2) Disconnect all ink lines and wires to the print head
3) Remove the bolts under head and mount
4) Replace the old head with the new head
5) Make sure the dip switches inside the head are set the same as the old head
6) Reconnect all ink lines and wires
7) Turn on air and power

Marsh Ink Supply Tank Replacement

Tools Required:

- None

Routine:

1) Remove all air lines and ink lines from the tank
2) Remove the cap with ink lines that is on the tank
3) Replace the old tank with the new tank
4) Put the original cap with the ink lines on the new tank
5) Reconnect all air and ink lines

Marsh Printer Controller Replacement

Tools Required:

- Metric Wrench Set

Routine:

1) Turn off power to the printer
2) Disconnect all wires behind the controller
3) Remove mount on the bottom of the controller
4) Remove the old controller and replace with the new controller
5) Mount the new controller
6) Reconnect all wires
7) Turn on power to the printer

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 computer connecting to 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
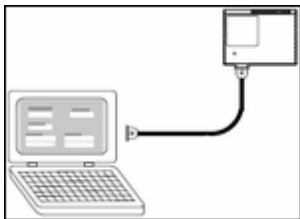
   a) Insert 15-pin end of cable into barcode scanner, in same port as standard cable, the cable used while machine is running
   b) Insert 9-pin end of cable into serial port on computer
2) **NOTE:** ESP software must be installed
   a) Connect power wires from cable using previously installed quick connect 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

3) Open ESP software
4) Select MS-820
5) Check Skip EZ Mode

6) Click OK
7) When prompted, click Yes to "Would you like to connect to the MS-860?"
   a) If not prompted, click Connect > Connect > Connect
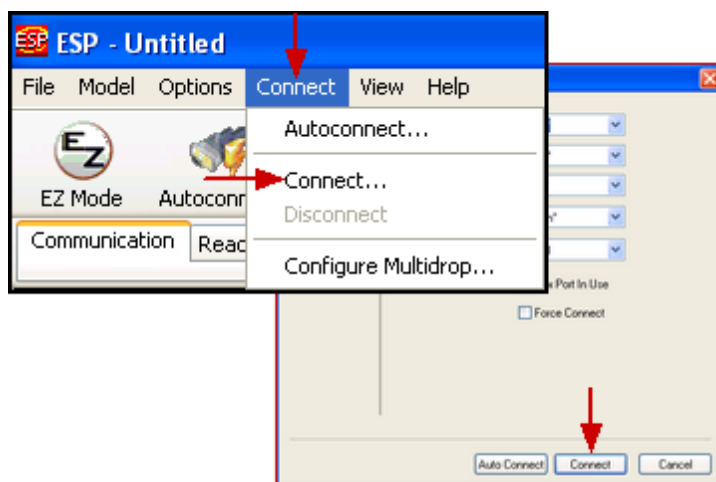
8) Open saved configuration file
   a) File name and path may be similar to the following: C:\Aagard\Source Code\Misc\MicroScan\### MicroScan backup file.esp
9) Click Send/Receive
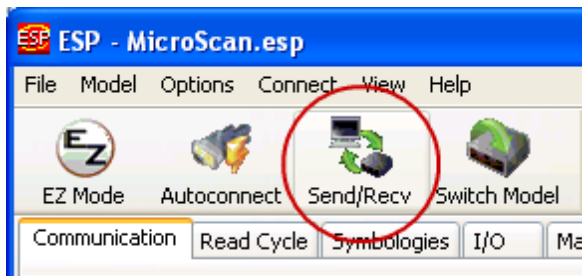
10) Click Save to Reader
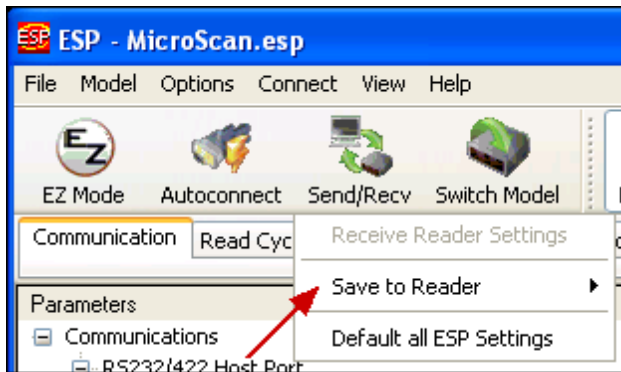
11) Click Send and Save
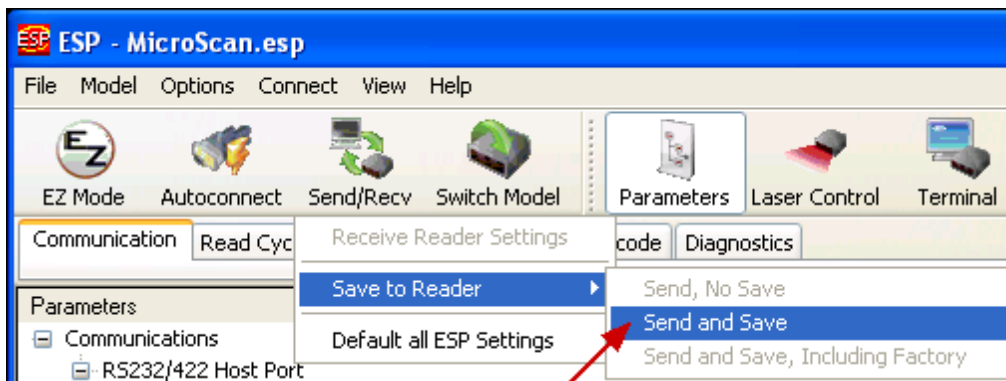
12) When completed, reconnect normal operation cable to barcode scanner

Printer Hose Replacement

Tools Required:

- Wire cutter
- Pliers

Routine:

1) Turn off air to the printer
2) Unhook both sides of the hose on the tank and head
3) Cut all zip ties
4) Replace the old hose with the new one
5) Zip tie back in place
6) Reconnect both sides of the hose on the tank and head
7) Turn on air to the printer

Purge Printer
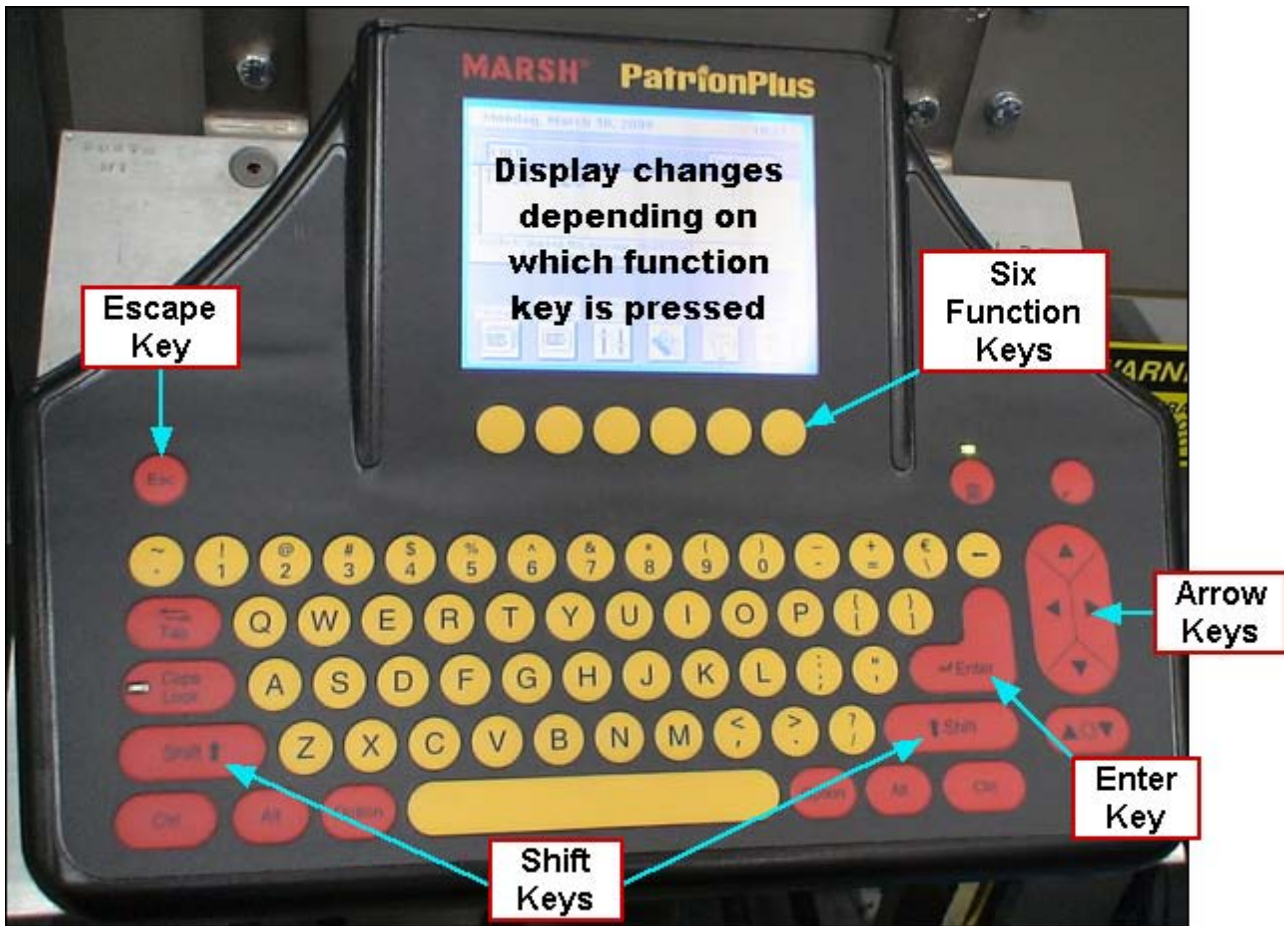
⚠️ **Without something to catch the ink, the printhead will spray the inside of the machine with ink!**

On the Marsh Controller:
1) Press the Utility function key
2) Use the arrow keys to highlight the Purge menu item and press the Enter key
3) Press the Select Printhead function key to toggle between printheads. The LED on the back of the selected printhead will flash amber
4) Select the printhead you want to purge, and then press the Add Head function key
5) If you want to purge an individual nozzle, use the up down arrow keys to select the nozzle, otherwise all nozzles will purge
6) Press the Enable Purge function key. It doesn't matter if the green LED is lit on the controller for the purge to enable

Block the "case at printer" (also often called "case present after rotate") photo eye to start purging. This is the upstream photo eye closest to the print heads. If the photo eye is unblocked, the purging will stop.

For more information on the Marsh Printer, please view the Marsh Printer manual.

SICK 400 Series Barcode Scanner

This procedure applies to configuring replacement SICK 400 Series Serial Communication Barcode Scanners.

NOTE: To configure barcode scanner, CLV Setup from SICK must be installed on computer connecting to barcode

To configure a SICK 400 Series barcode scanner, follow these steps:

1) Evaluate how current barcode scanner is connected to computer
2) Evaluate how current barcode scanner is powered

   NOTE: You may need a custom cable to provide power to scanner while also connecting it to a computer

3) Determine if CLV Setup is installed on HMI
4) Connect barcode scanner to computer
5) Open CLV Setup
6) Click OK on Welcome to CLV Setup screen
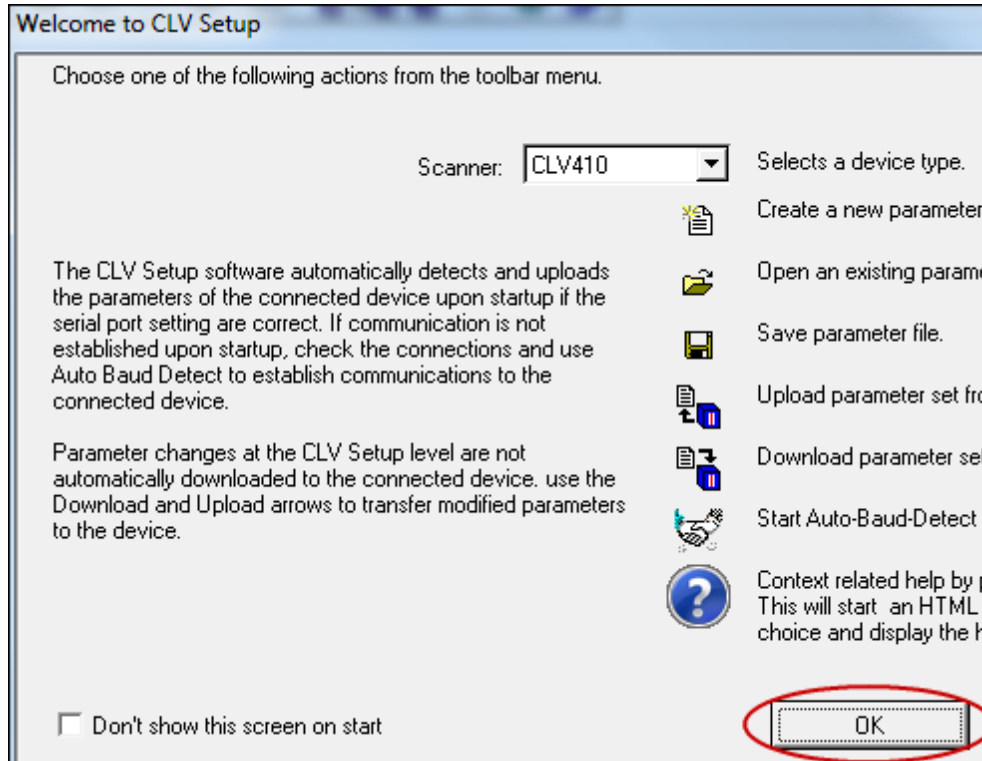
7) Click File > Open
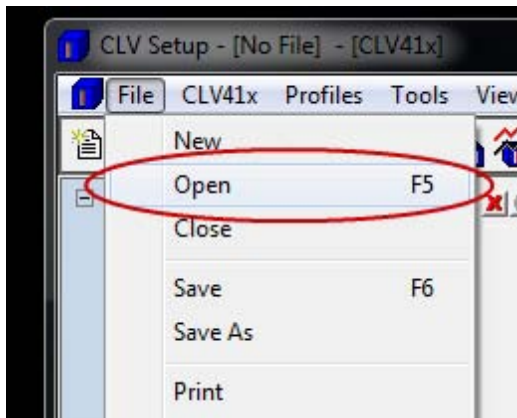
8) Locate and open backup configuration file
9) Naming conventions used in the past follow these patterns: "MachineNumber_CLV ScannerModel SickBarCodeScanner.scl" or "MachineNumberSickBarCodeScanner.scl"
10) Click OK to acknowledge file was loaded
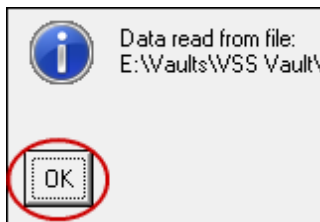
11) Note "No Connection!" status in bottom right corner of application window
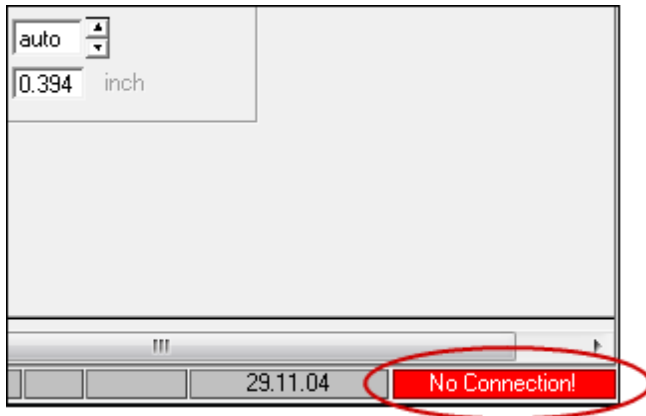
12) Click Tools > CLV Assistant
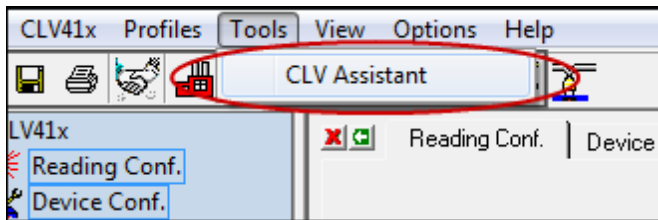
13) Select Parametrize a scanner and click Next
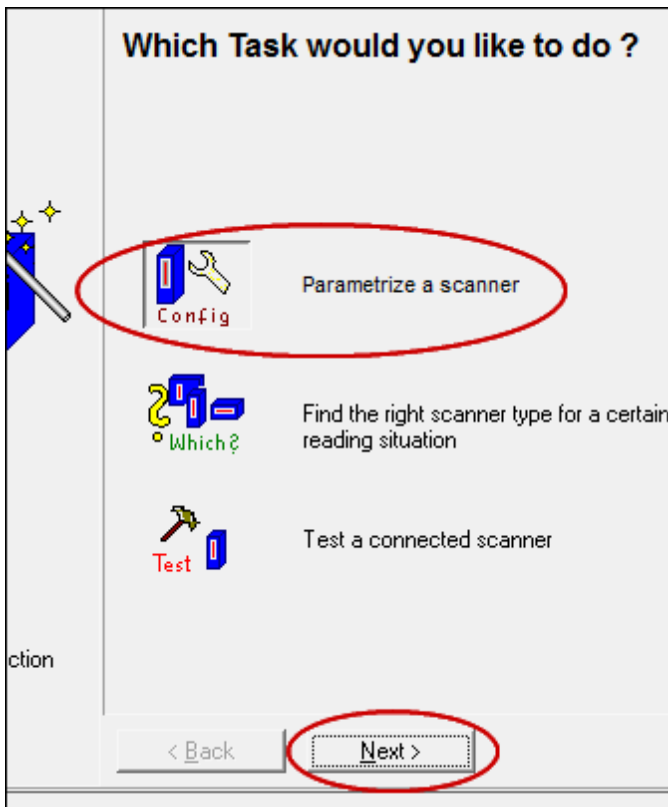
14) Click Next
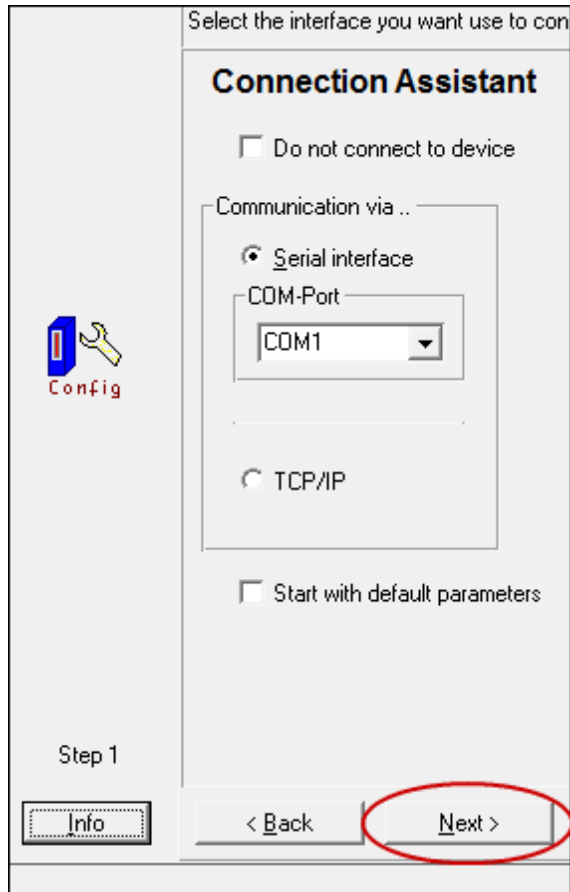
15) Once connected, click Next

16) Click Next

Do you want to use the following setting ?

Scanner Type: CLV414
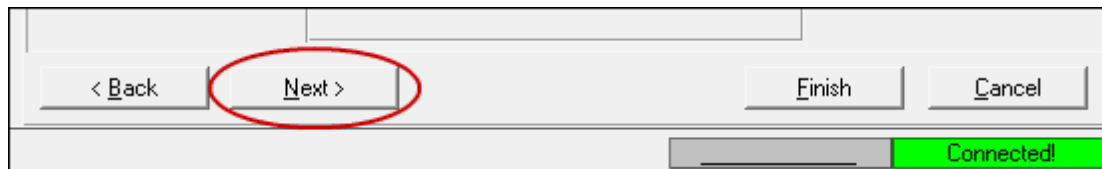
< Back   Next >
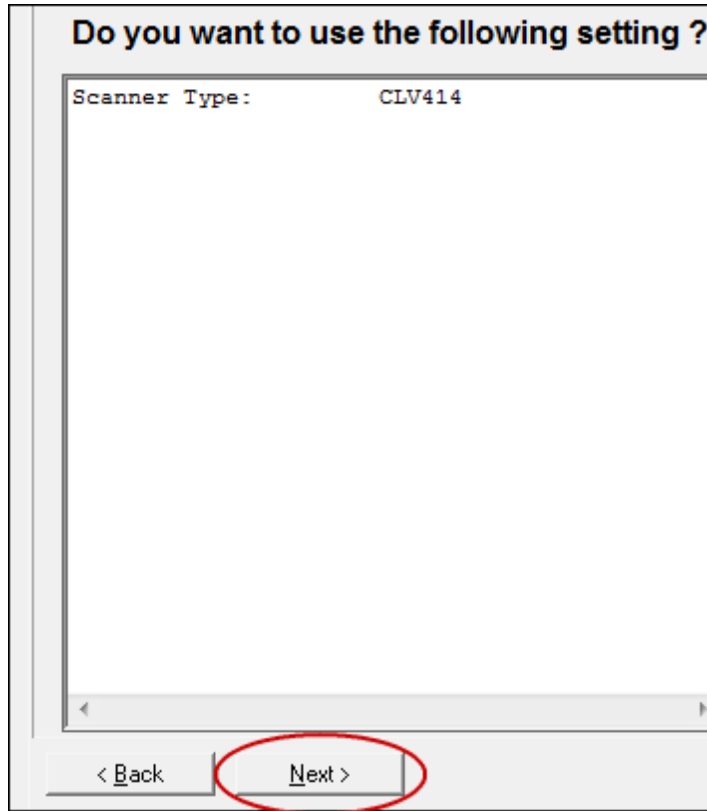
17) Default settings are loaded
18) Click CLV### and select Download to device

CLV Setup - [No File*] - [CLV41x]

File | CLV41x | Profiles Tools View Options

Upload from device   F3

Download to device   F4

Export Parameters

Device Functions   ▶

Network Detect

Data Strings

Extras
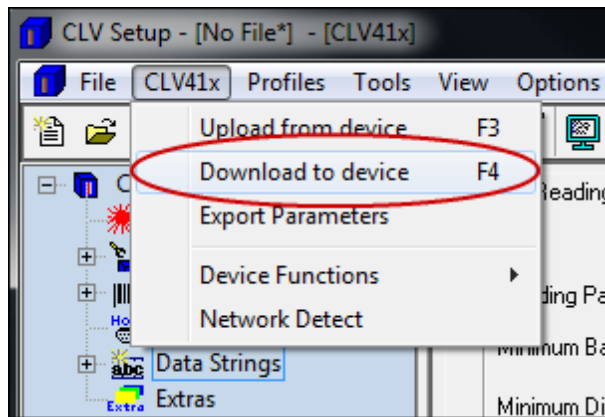
19) Select Permanent to store the parameters on the scanner

Download Parameters

You are downloading the parameter settings from CLV Setup into the connected device.
Choose one of the buttons below to start the download procedure.

Push "Permanent" to store the parameters in the non volatile memory area of the connected device and in CMC if connected.

Push "Temporary" to download the parameters into the volatile memory area. Changes will be lost on power up.

"Cancel" will terminate the download procedure.

☑ Reset CLV41x Host Interface

[Permanent]   [Temporary]   [Cancel]

20) Close CLV Setup
21) Disconnect barcode scanner from computer and reconnect it to machine
22) Test scanner

SICK 600 Series Barcode Scanner

This procedure applies to configuring replacement SICK 600 Series Serial Communication Barcode Scanners.

1) **IMPORTANT NOTE:** Different methods for configuring SICK 600 series barcode scanners have been used

Configured by PLC code
With backup micro SD card
With backup .spr file

Configured by PLC code

1) Install and connect replacement barcode scanner
2) Test scanner

PLC will automatically configure barcode scanner

With backup micro SD card

Some cards have a backup Micro SD card with a parameter file clone.

1) Install and connect replacement barcode scanner
2) Locate micro SD card
   a) Card may be in HMI cabinet or in old scanner
3) Insert micro SD card into scanner
4) Cycle power to the scanner
5) Test scanner
6) Remove micro SD card and store in HMI cabinet

With backup .spr file

NOTE: SOPAS from SICK must be installed on computer connecting to barcode; software may already be installed on HMI

1) Connect barcode scanner to computer which has SOPAS
2) Open SOPAS software

3) Locate and open backup project file (*.spr)
4) Connect software to device
5) Click Communication > Download all Parameters to Device
6) Save
7) When using a computer other than the HMI,disconnect scanner from computer and reconnect it to machine
8) Test scanner

Sanitation

Hoppers

NOTE: This topic applies to vertical cartoner machines

For sanitation purposes, it will be necessary to gain access to the hopper area.

To gain access to the hopper area, follow these steps:

1) Using the changeover procedure for Buckets, remove buckets
   a) When removal of all buckets is not required, remove at least 8 buckets for this procedure
   b) If not all buckets have been removed from the machine, manually rotate the bucket carousel in reverse until the opening created by removing the buckets is in front of the hopper area; do so from the bucket changeover location

2) ⚠ Remove high voltage and lockout the machine
3) Fully open Guard Doors 9 and 11
4) Open and remove Guard Door 10 by lifting it off of its hinges
   a) Store guard door out of the way
5) Using 1/2" wrench, remove the two center guard door posts

Upstream post

Downstream post

Remove bolt

Remove bolts

Bolt storage

Remove bolt
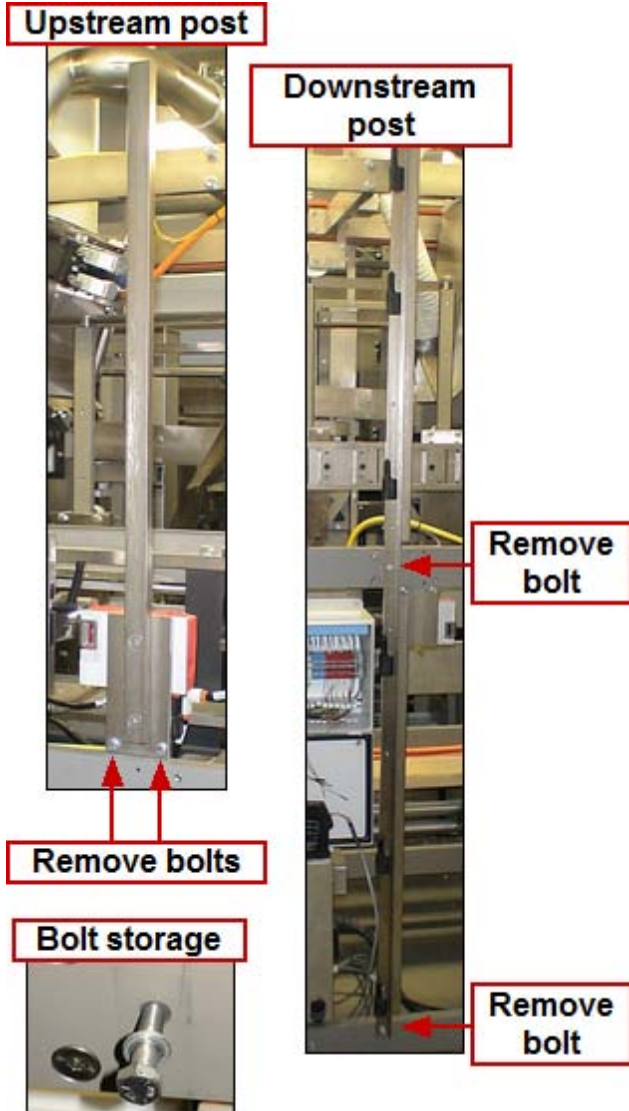
a) Store upstream post as shown below

Upstream post storage during routine

b) Store downstream post out of the way

6) Place a board or other solid object inside the machine to create a platform on which to stand

7) Remove all dust collection hoses and tubing from both upstream and downstream hoppers
   a) **NOTE:** Use either side of the machine for best access
   b) **IMPORTANT NOTE:** When standing inside the machine on the non-operator side of the machine, do not stand on chains!
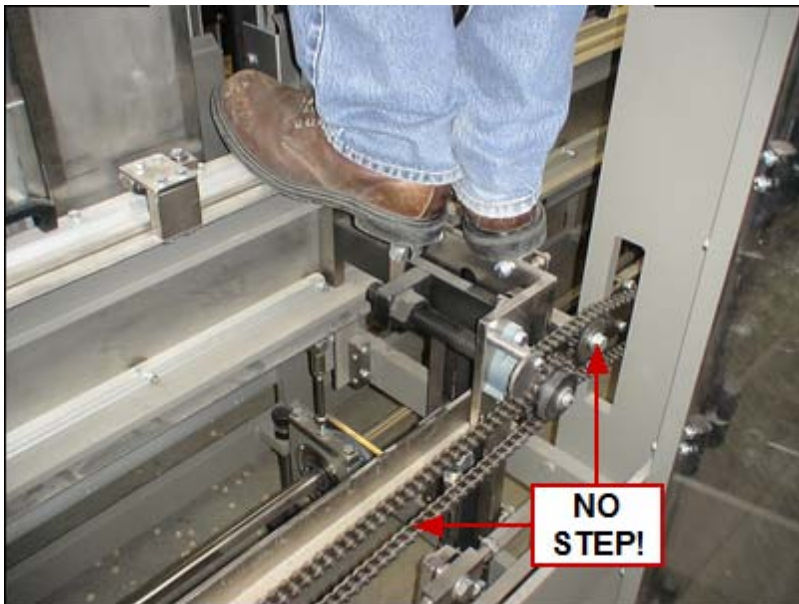
8) Lift and prop up the drop chute by placing a block between the frame member and tube collar

   a) Repeat this process on the second drop chute

9) Using 1/2" wrench, remove bolts securing rail
   a) **NOTE:** If working alone, use a c-clamp to hold up one end of the rail
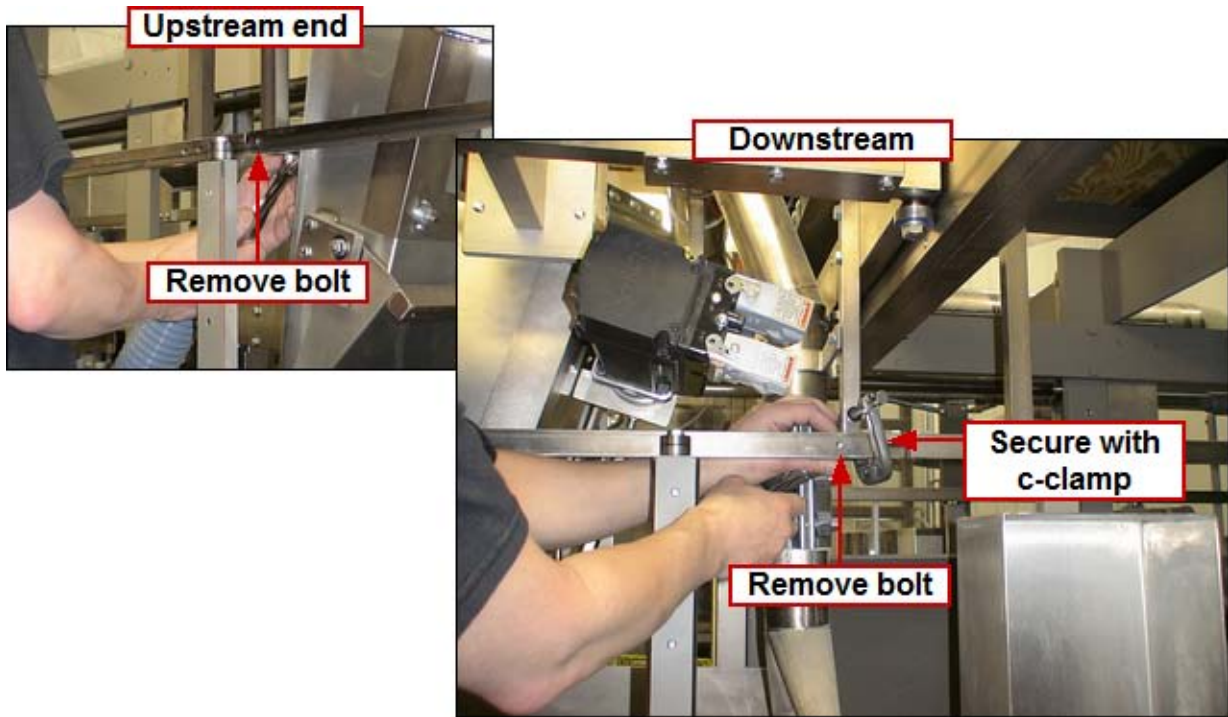
10) Carefully lower rail and store inside bucket carousel

11) Carefully tip bucket "T" bars in and down

Bucket "T" bars

Lowered bucket "T" bar
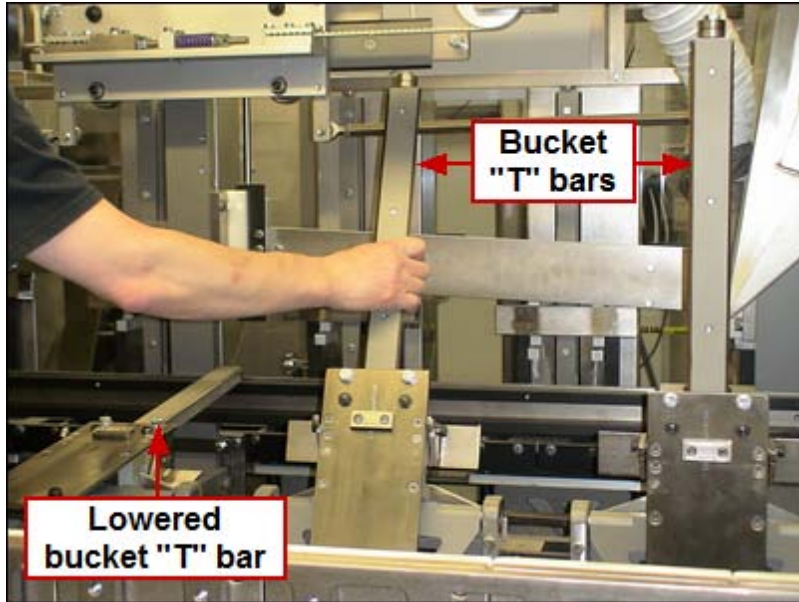
   a) If necessary for clearance, manually rotate the bucket carousel; do so from the bucket changeover location

12) Release the assembly by turning the manual valve into the **RETRACT** position, with the valve handle pointing down

Pin extended, in locked position

Valve in EXTEND position (pointing up)

Pin retracted

Valve in RETRACT position (pointing down)
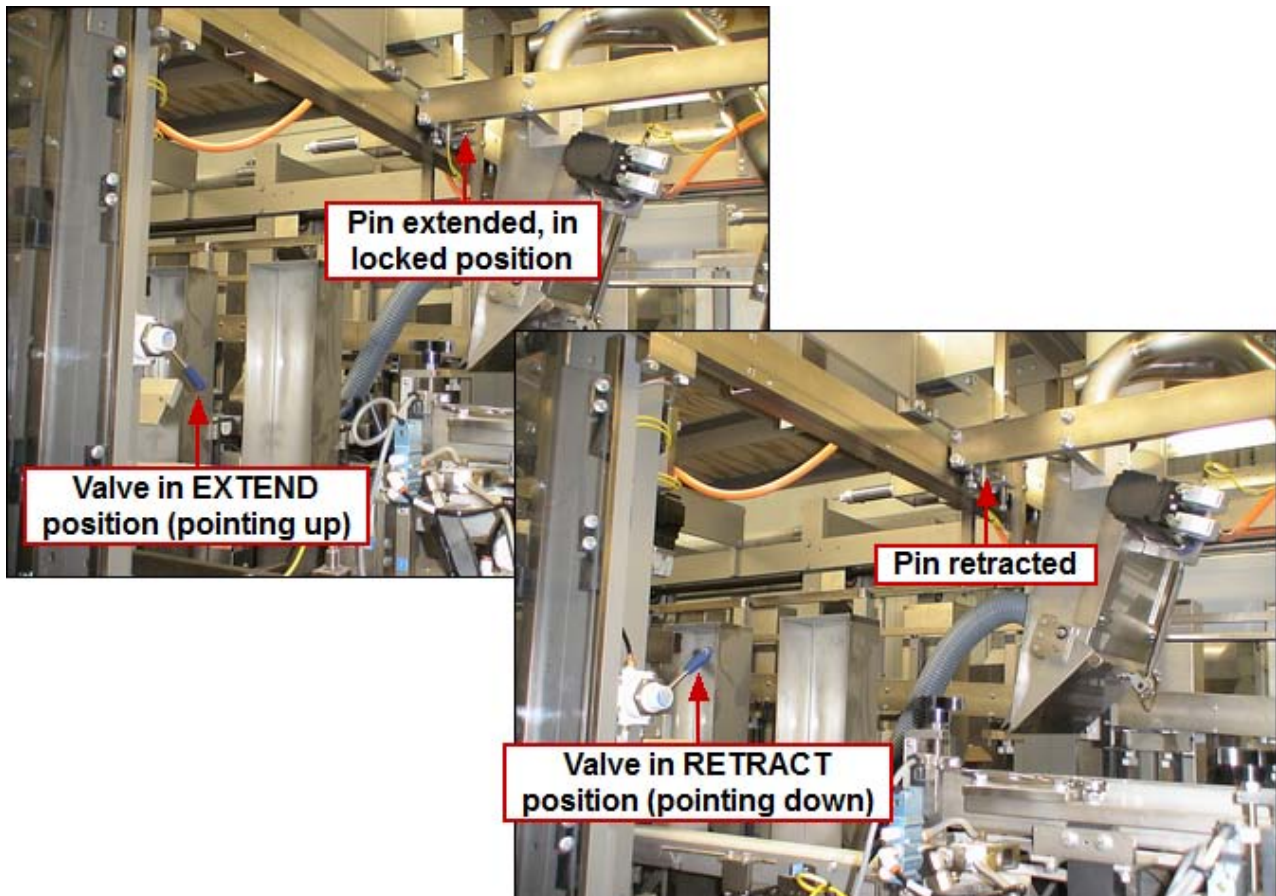
13) Carefully and slowly pull the entire assembly toward the operator side of the machine

a) **NOTE:** Watch for clearance!

14) With the assembly fully extended, secure it with a c-clamp

Assembly fully extended

Assembly secured with c-clamp
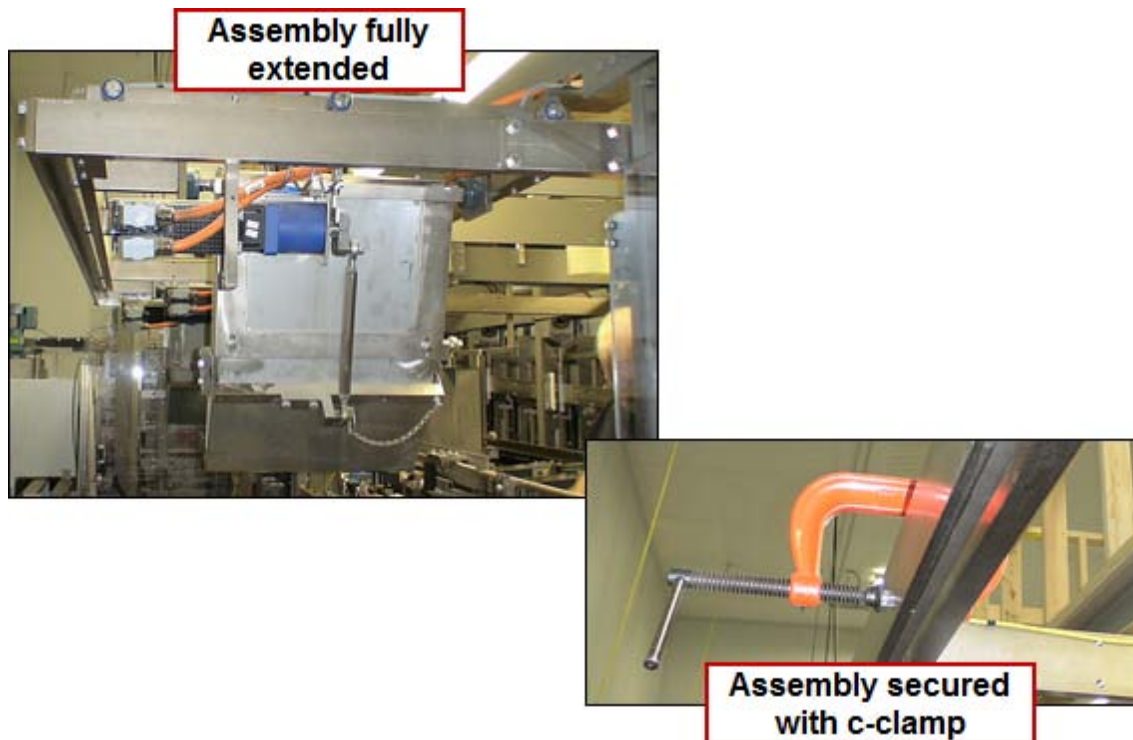
15) Remove the pin from rod end mount on downstream side of hopper
   a) Allow pin to dangle
16) Pull rod off of rod end mount
   a) Allow rod end to dangle
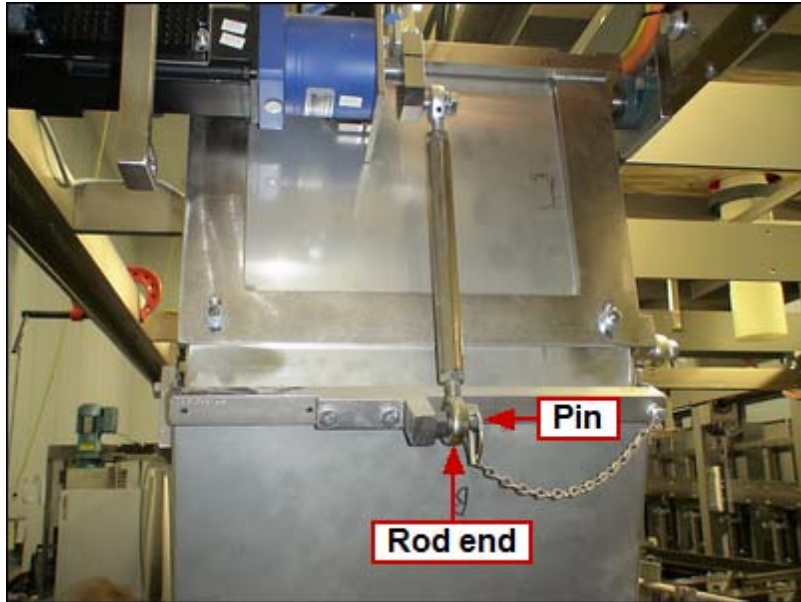
17) Using 9/16" wrench, remove hopper nuts on downstream side of hopper
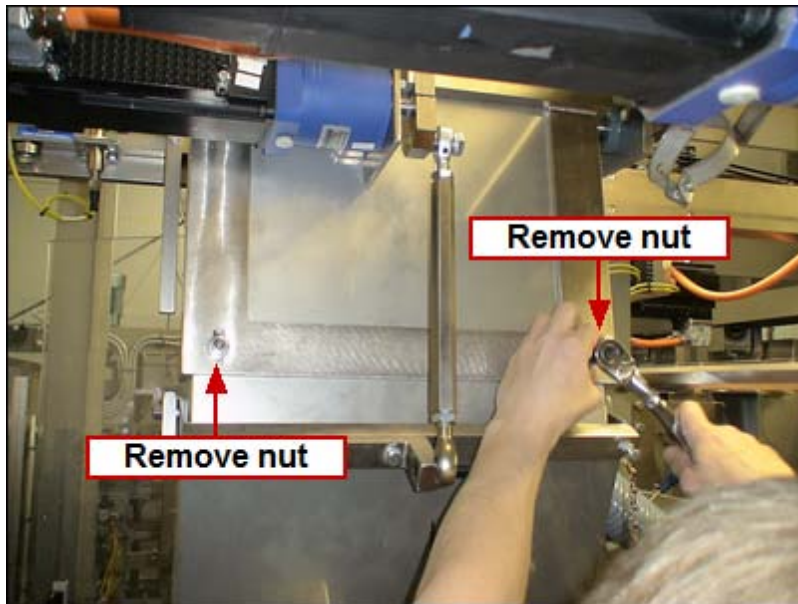
18) Standing on upstream side of hopper, pull hopper upstream, and lift up and out

To remove hopper,
pull upstream and lift up
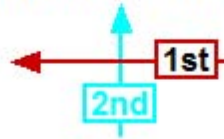
19) After sanitation or repairs have been completed, reassemble in reverse order

Machine Heat Up Process

When heat is used for sanitary purposes, special steps must be taken to protect the machine.

IMPORTANT! Machine and its components must not exceed 150°F!

Prior to heat up cycle, Urethane belts must be removed from pulleys and in a relaxed state to prevent additional stretching due to heating process. Some integrated equipment may also need to be removed during heat up process.

Listed below are 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

Sealing Rexroth Servo Assemblies

This topic applies to Nema 4 and 4x machinery systems.

Sealing Servo Motor to Gearbox

1) Use Loctite 518 sealant between the servo and the Alpha gearbox
   a) Loctite 518 usually comes with the washdown GCR Alpha gearboxes
2) When the servo motor does not cover the mounting plate on the Alpha gearbox, the exposed part of the counterbore, after the motor is mounted, will need to be filled and sealed with Loctite 5512 or Henkel MS939
   a) If a gasket plate is used, apply Loctite 518 to both sides of the gasket, sealing the gasket to both the servo motor and gearbox
3) Use Loctite 574 sealant on the washdown GCR Alpha gearbox screw in plug
4) If the gearbox input bushing has a keyway in it, put food-grade high-temp anti-seize on the servo output shaft when mounting to the Alpha gearbox

CAUTION: Do not put anti-seize on the outside of the bushing

CAUTION: If there is no keyway in the bushing, no anti-seize should be used

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Sealing Gearbox to Mount Plate

1) Put a bead of Loctite 518 around the output housing between output housing and outer bearing race to keep moisture from entering the gearbox and to seal the gearbox to the mounting plate

---

2) If an O-ring seal is used on the Alpha gearbox output shaft, apply food grade high-temp anti-seize to the O-ring fitted over the output shaft
   NOTE: Do not allow Loctite to come in contact with O-Ring
3) Seal the O-ring cover plate to the gearbox mount plate with Loctite 518

End Seal-Cap Edge Sealing *(Rexroth MI Motors Only)*

Each **Rexroth MI** servo motor must have the end seal-cap edge sealed with Loctite 5512 or Henkel MS939.

   NOTE: Rexroth IndraDrive C motors will not need end caps sealed (new washdown servo motors)

IMPORTANT NOTE: Do not void your warranty by removing the end seal-cap!

1) Clean the end seal-cap where it attaches to the motor
2) Seal the joint between the end cap and the motor with a 1/4" to 3/8" bead of Loctite 5512 or Henkel MS939
3) Use the following images as a reference

Run sealer past this seal approximatley one inch

4) Use your finger to push down on the Loctite to create a sound seal
   NOTE: Moisten your fingers with soapy water to keep the Loctite from sticking to your fingers
5) Let the motor sit for at least 24 hours before using

Installing Clamp *(Rexroth MI Motors Only)*

When the motor is mounted, the cable clamp needs to be installed.

Torque settings for clamps are as follows:

- 61/76 clamps (tapped, using blue Loctite) with 15 inch-pounds (+/- 25%)
- 41 clamps (with SS Nyloc nut) with 24 inch-pounds (+/- 25%)

A general rule of thumb is when the clamp being installed is tight enough, the existing clamps on the motor will be loose.

If the clamps are over-tightened, the motor will not initialize. If this occurs, remove the clamp, initialize the machine, and reinstall the clamp.

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 washdown!

For more information regarding washdown on this machine, please view the Aagard Equipment Standard.

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 washdown
- Cover 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 washdown components

After Washdown

- Blow off machine after washdown to remove standing water
- Dry off areas which come in contact with liquid-absorbent materials
- Grease after each washdown since some washdown chemicals are a degreaser
    - The higher the pressure used to washdown, the more likely grease will be washed out of bearings
    - Using a washdown 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 machine after entire washdown is complete; doing so gets new lubrication worked into bearings; this is especially important if machine will be idle for a long period of time after washdown

Sensors, Switches and Gauges

Aagard

Your Aagard Machine contains proximity switches, Hall effect guard door switches, cylinder switches, and photo electric eyes.

- The Hall Effect guard door switches use a magnet, which makes or breaks an electrical contact.
- Proximity switches generate a high frequency electromagnetic field. When an object enters this field, the prox's circuit recognizes a change and turns its solid state output ON or OFF.
- Cylinder switches detect the extended or retracted position of an actuating cylinder.
- There are three types of Photoelectric switches - **Reflective Units**, **Thru- Beam Units**, and **Fiber Optic Units**.
  - **Reflective Units** project a beam from a transmitter/receiver unit to a reflector. Object detection occurs when the beam is interrupted.
  - **Thru-Beam Units** project a beam from a transmitter unit to a receiver unit. Object detection occurs when the beam is interrupted.
  - **Fiber Optic Units** function as either Reflective Units or Thru-Beam Units. (The transmitter and receiver are in the same housing.)

Please see the Manufacturers' Information Binder and Manuals, provided during machine installation, for specific product information on the sensors located on your Aagard Machine.

Cognex Checker Replacement

NOTE: This topic only applies to Aagard Machines with a Cognex Checker installed

Overview Steps

- Power down machine
- Disconnect quick-disconnect connectors on top of checker
- Unbolt Cognex checker from mount
- Bolt replacement Cognex checker to mount
- Connect both quick-disconnects on top of checker
- Power up machine
- Set personality type
- Set Cognex focus
- Set Cognex name
- Load jobs to new checker
- Apply job control settings

NOTE: Due to differences in 3G and 4G software, some screens may appear differently

Specific Steps

1) After the PC has started, login to the HMI with Level 3 or higher access, and minimize the HMI application
2) From the Windows Start bar, click Start > All Programs > Cognex >
    a) For 3G software, the path continues to: Checker Vision Sensors 2.6 > Checker 2.6
    b) For 4G software, the path continues to: Checker Vision Sensors 3.1 > Checker 3.1

3) Once the Cognex interface software is running, select the new checker from the Checkers Column in the Connection panel, and click Connect.

      NOTE: The new checker will show up in the list as a number; it has not yet been named
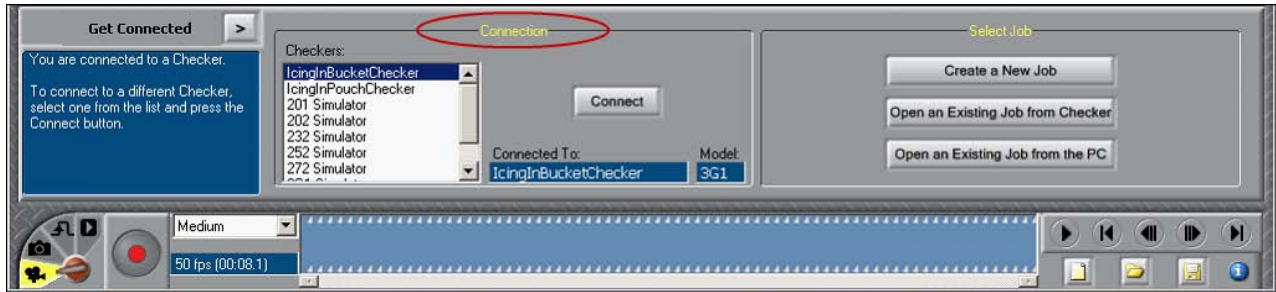
Please continue with one of the following series of steps.

4G Connection and Configuration
3G Configuration

4G Connection and Configuration

1) Click **ADD CHECKER BY IP** to connect to a 4G Cognex Checker
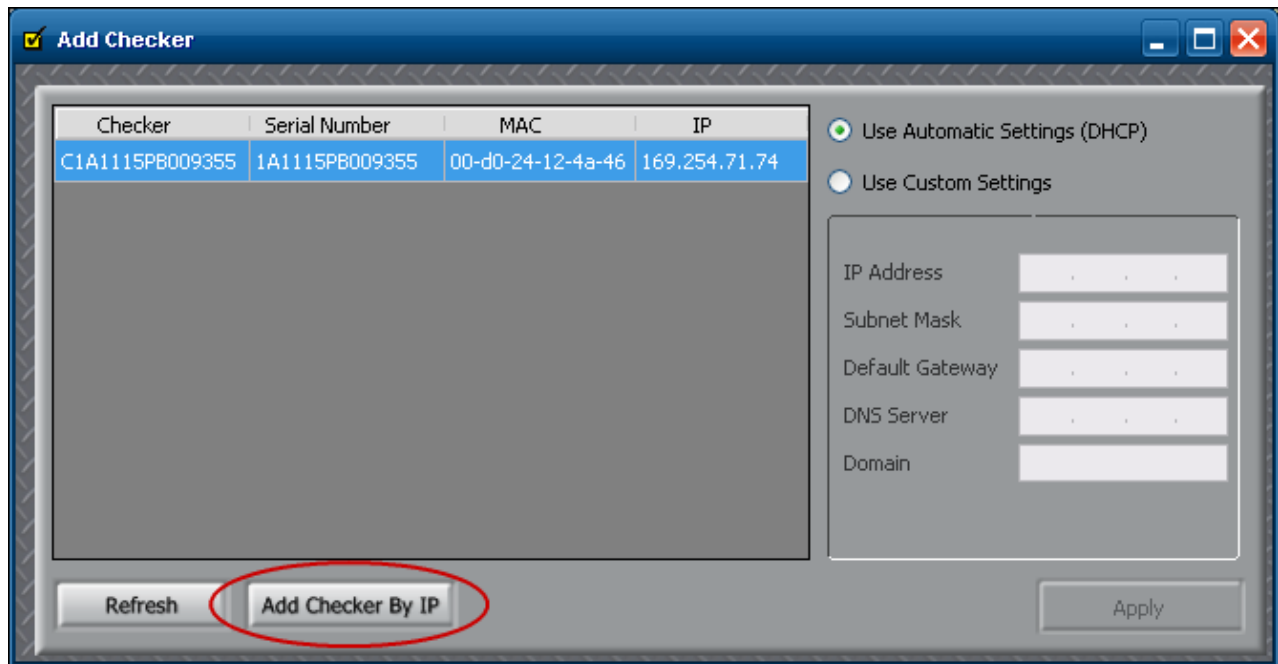
2) Enter IP Address

3) Click **OK**
4) Select **USE CUSTOM SETTINGS**
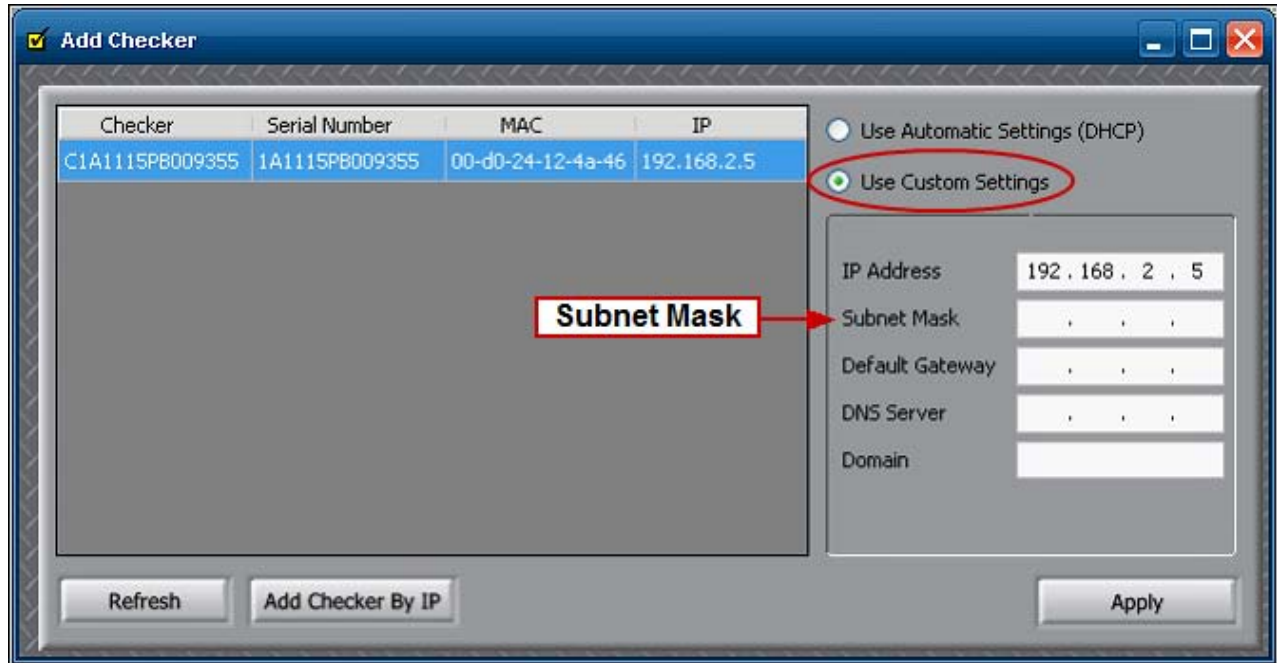
5) Enter Subnet Mask
6) Click **APPLY**
7) **NOTE:** The added checker will be shown in the list
8) Once the checker is added, click **CONNECT**
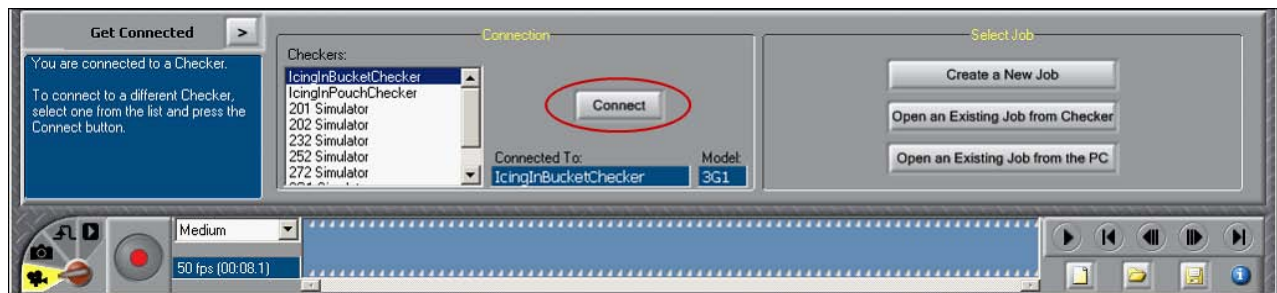
9) The configuration menu will appear

a) Click **SET PERSONALITY**
   i) Select **PRESENCE**
b) Click **SET I/O MODE**
   i) Select **JOB CHANGE**
c) Click **NETWORK SETTINGS**
   i) Verify pre-filled information is correct
d) Click **PASSWORDS**
   i) Accept default settings
e) Click **PROTOCOL SETTINGS**
   i) Accept default settings
f) Job Control - skip this step for now
g) Click **MANAGE JOBS**
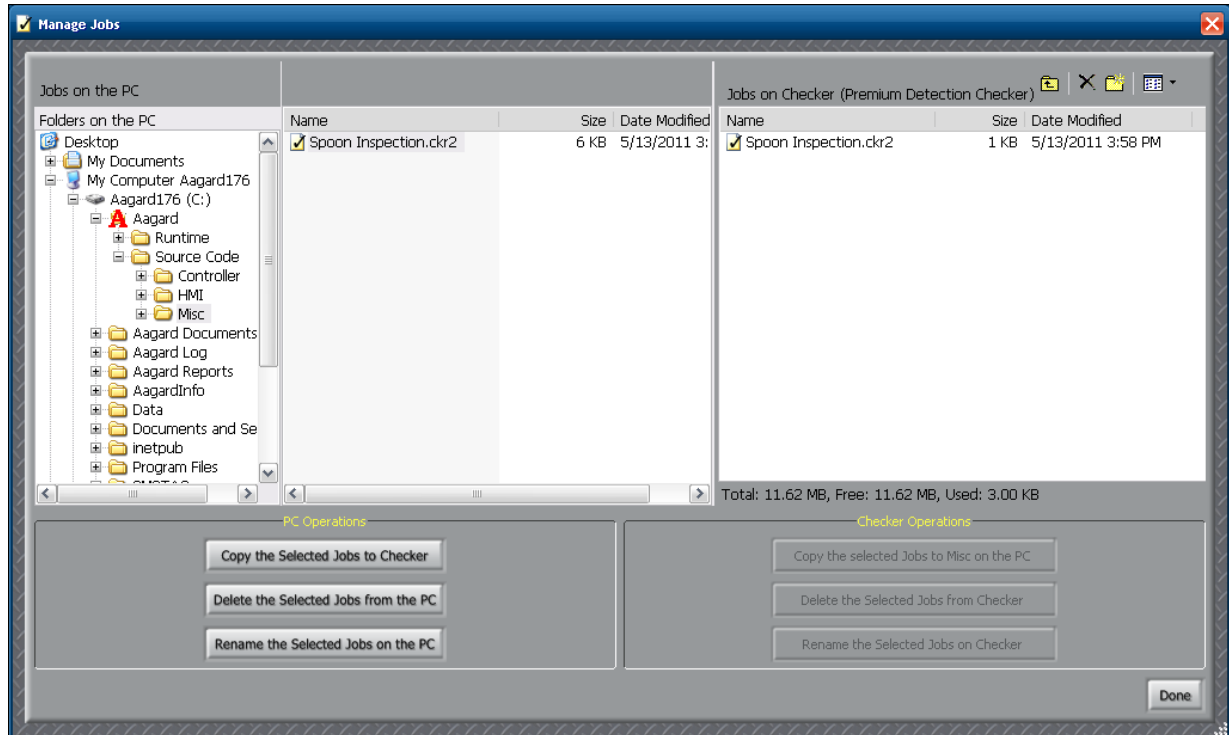
i) Add pre-existing jobs, if any are available on the PC
   (1) Browse to the job location
   (2) Make the appropriate **PC OPERATIONS** selection(s)
   (3) Click **DONE**
h) Click **JOB CONTROL,** if pre-existing jobs were added in manage jobs
i) Set jobs to the desired job slots
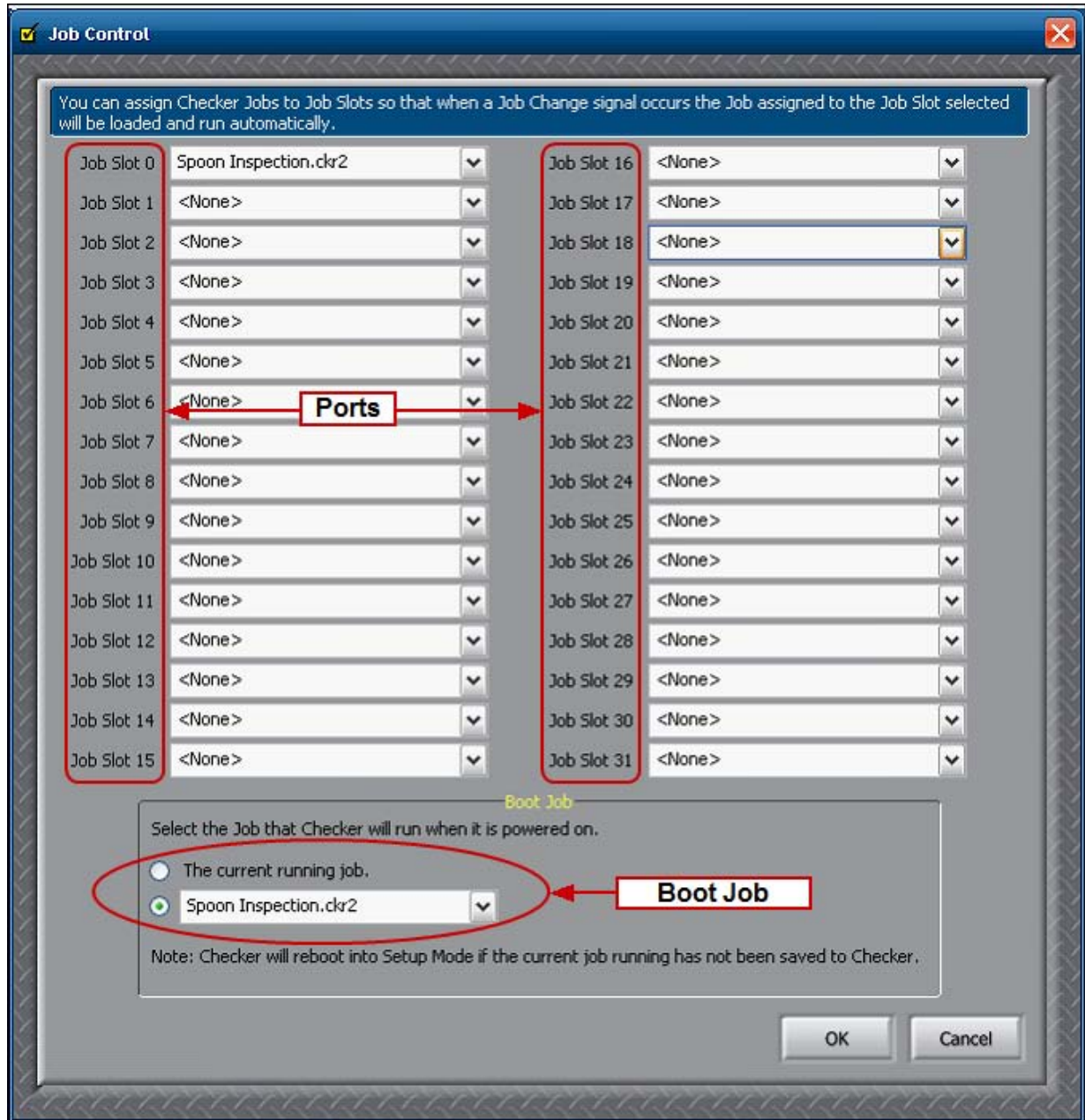
j)   Set up Boot Job to run
   i)   If there are multiple jobs, select **THE CURRENT RUNNING JOB** as the boot job
   ii) If there is only one job, as in the above example, select it as the boot job
   iii) Click **OK**
10) Click **OK** again to close the configuration window

NOTE: 4G Cognex Checker connection and configuration is complete!
NOTE: If new jobs are created, they will have to be configured

3G Configuration

1) Set personality type
   a) From the menu bar, click Checker > Select Personality...

   b) Click Presence to select it as the personality type
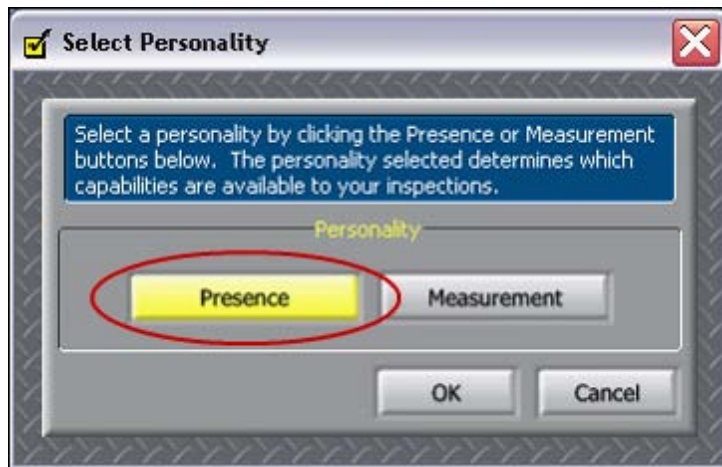
2) Set Cognex focus
   a) To see the camera view, click on Create a New Job
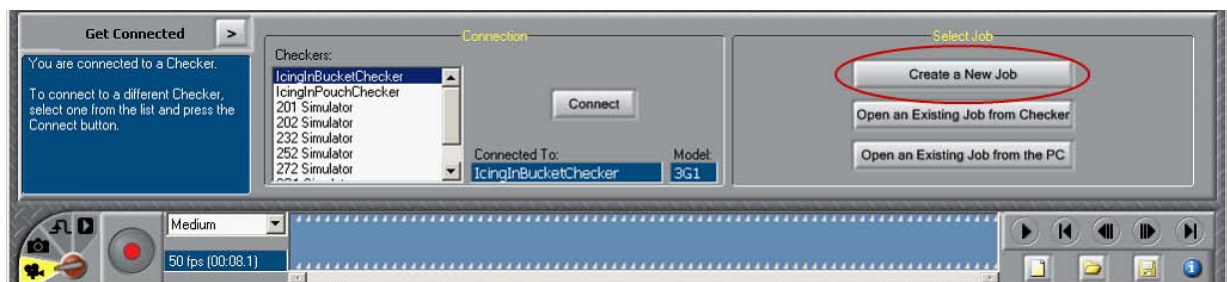
   b) Go the setup image screen, where the brightness can be adjusted to see the image properly
3) **NOTE:** This job is only used temporarily for adjusting the focus, and will not be saved

    a) Reference electrical prints to find focal distance required for the Checker; place an object at that distance in front of the lens, and focus the camera onto that object by rotating the lens cover of the Cognex

4) **NOTE:** There is a set screw which will need to be loosened to rotate the lens cover; retighten when finished!

5) **NOTE:** In some cases, it may be easier to focus the camera before mounting it to the machine

6) Set Cognex name

    a) From the menu bar, click Checker > Rename Checker...
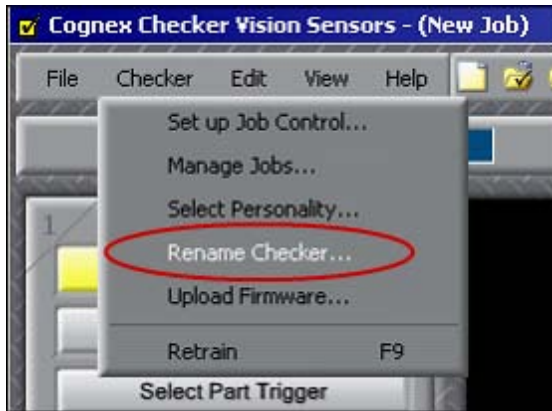
7) Type the new name of the checker which was replaced; for this machine, use either IcingInBucketChecker or IcingInPouchChecker
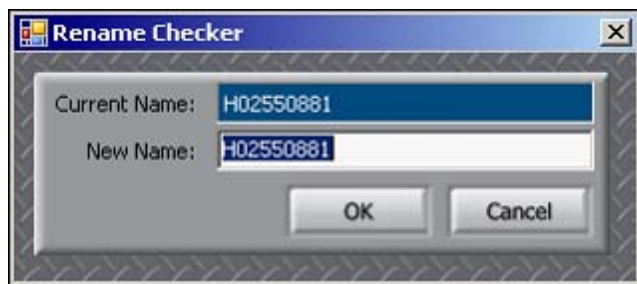
8) Click OK

9) Load jobs to new Checker

    a) From the menu bar, click Checker > Manage Jobs...
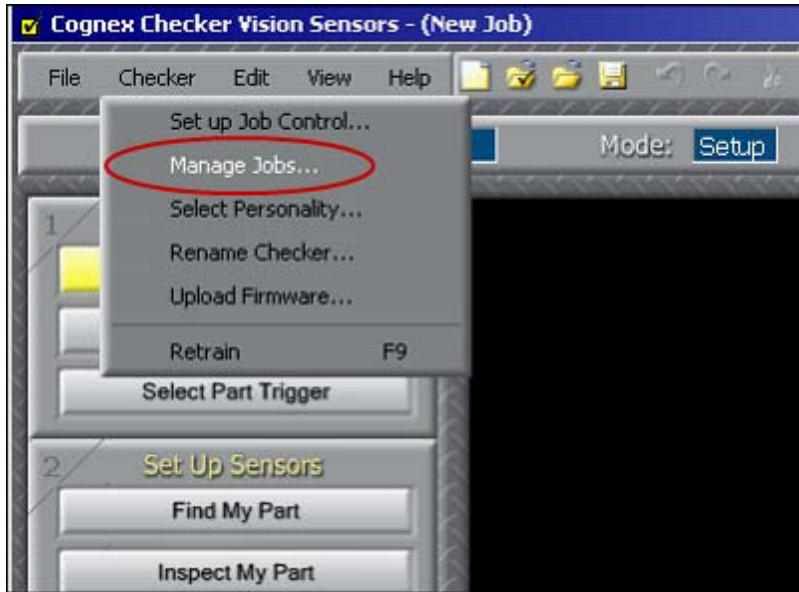
b) In the *Folders on the PC* panel of the *Manage Jobs* dialog, browse to: My Computer\Aagard### (C:)
\Aagard\Source Code\Misc\Cognex Checker
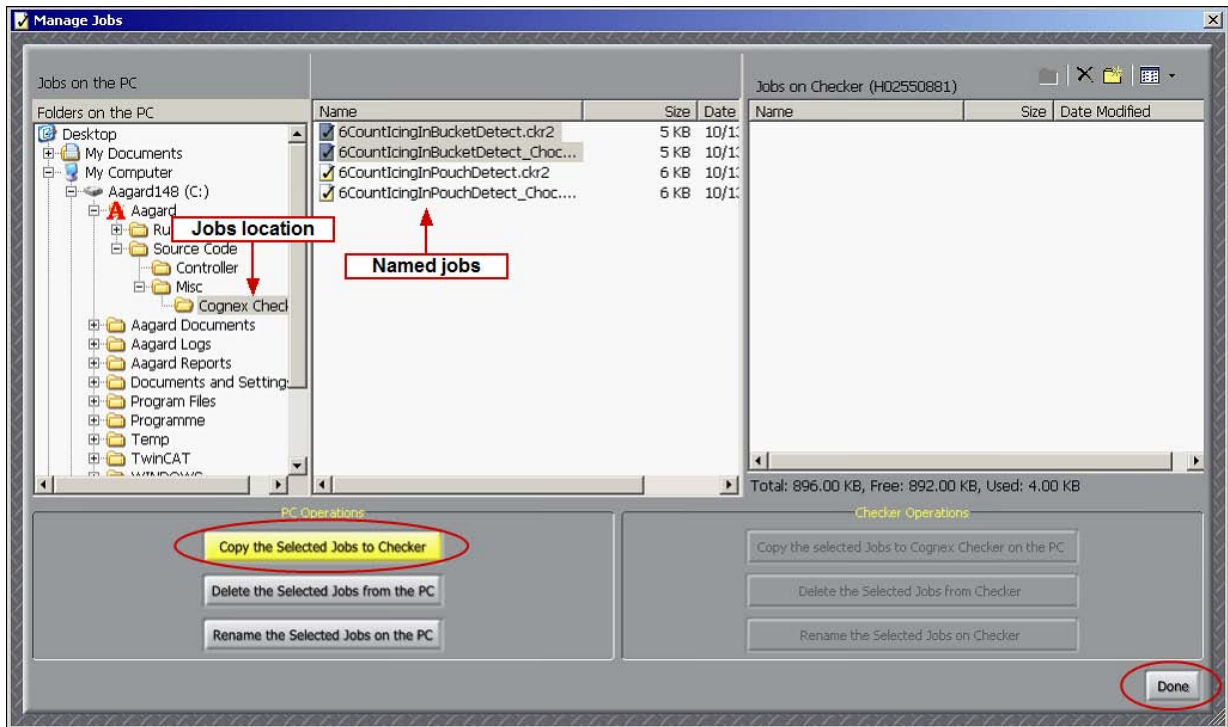
c) Select the job files appropriate for the checker
d) Click Copy the Selected Jobs to Checker
e) Click Done
10) Set up the Job Control:
   a) From the menu bar, click Checker > Set up Job Control...

b) If prompted to save current job, click No
c) Set up Job Slot 0 and Job Slot 1 as shown below
d) **NOTE:** Specific job name is dependent on the checker
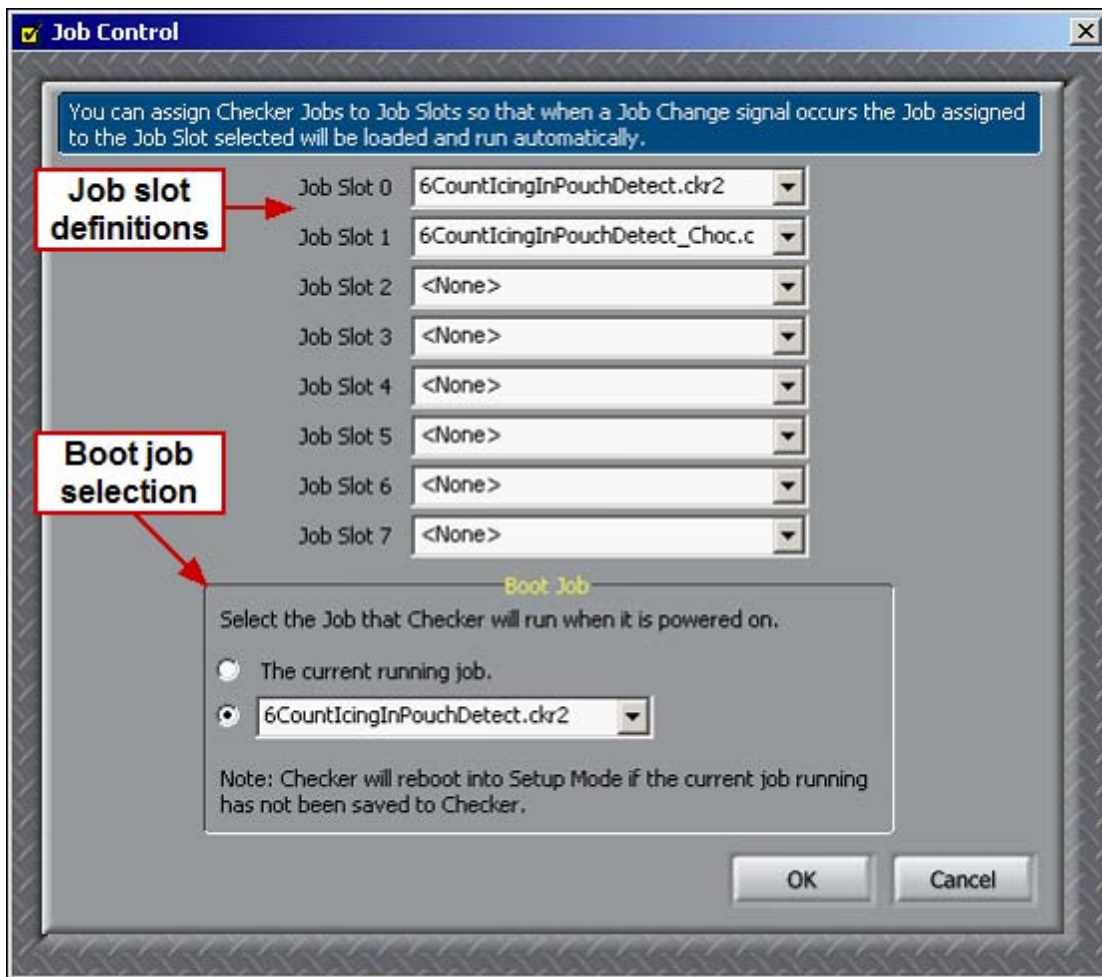
11) Select the Boot Job. Click OK when done
12) Close interface software
    a) If prompted to save current job, click No

NOTE: 3G Cognex Checker configuration is complete!

Guard Door Switch Replacement

Tools Required:

- Phillips Screwdriver Set

Routine:

1) Disconnect wires to guard switch
2) Remove guard switch with screwdriver
3) Put new switch in
4) Reconnect wires to new switch
5) If magnet is bad, remove magnet with screwdriver
6) Replace magnet with a new one
   a) Make sure magnet is in same direction as old one

Light Curtain Replacement

Tools Required:

- Standard Wrench Set
- Metric Wrench Set

Routine:

1) Disconnect main power
2) Disconnect all electric cables from light curtains
3) Remove 1/4 x 20 bolts with standard wrench on bottom and top of light curtains
4) Put new light curtains together with metric wrench, using old light curtains as a reference
5) Place new light curtains on machine using standard wrench
6) Tighten down all mounting bolts
7) Reconnect all electric wires to light curtains
8) Reconnect main power

Photo Eye Cleaning

Use air to blow dust and dirt off of photo eyes and reflectors. If further cleaning is required, use a damp cloth. Make sure cloth is just slightly damp. Unless your machine is designed as a washdown machine, too much moisture can cause harm to photo eye. Avoid using paper towels which can scratch photo eye lens or reflector.

Photo Eye Excess Wire Loops

Photo eyes generally have excess wire loops. Excess wire is intentional, done at Aagard when the machine is built, so we can easily make minor changes to photo eye location. For the same reason, if the photo eye or cable is replaced, it is recommended that excess be maintained for possible future modifications and/or new product sizes.

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" reflector; if not, adjust accordingly
6) Tighten screws after adjustment

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 eye will detect various shades of cases, we recommend using light material when doing this procedure. Factory default static 2-point teach-in method is used to set photo eye. For more information, refer to document sent with photo eye.

To set photo eye, do the following:

1) Place a sheet of white paper on top of top flap lift to simulate a case present while pressing and releasing SET button
   a) Wait at least one second
2) Remove piece of material so eye hits 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.

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 old photo eye
2) Install new photo eye and plug in cable
   NOTE: Make sure photo eye and reflector are clean, and no product is between eye and reflector

3) On the top of photo eye turn dial to Teach

4) LED will blink after 2 seconds
5) Once LED starts blinking, turn the dial to Mode II
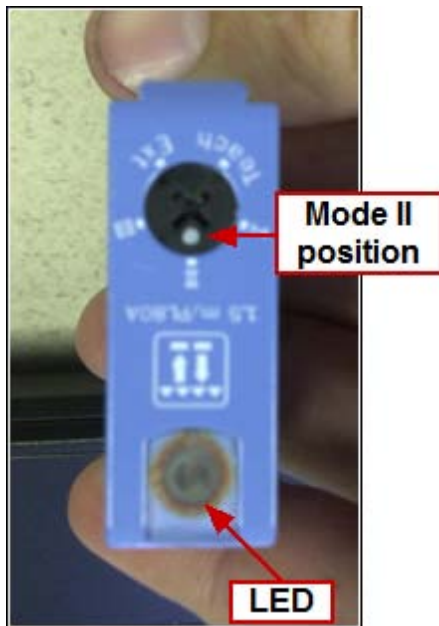
6) Setup is complete and photo eye is ready to use

Pressure Regulator Gauge Replacement

Tools Required:

- None

Routine:

1) Turn off main air
2) Remove all air lines from regulator
3) Remove plastic nut from on top of regulator
4) Once removed, regulator should come out without force
5) Replace old regulator with new regulator
   a) Same fittings may be used
6) Put plastic nut back on and tighten by hand
7) Reconnect all air lines to regulator
8) Turn on main air

Pressure Sensor Replacement and Setup

Replacement

Tools Required:

- Adjustable Wrench

Routine:

1) Turn off main air
2) Disconnect electrical wire on sensor
3) Loosen sensor using crescent wrench
4) Remove sensor and replace with new one
    a) Be sure to use thread tape
5) Tighten sensor down so it is easily readable
6) Reconnect electrical wire on sensor
7) Turn on main air

ISE40A Pressure Switch Setup (A model only):

1) Enter Function Selection mode – Press and hold S key (> 2 sec.) until display reads F 0
2) From F 0 press UP button to navigate to F 1 and press S key 3 times until display reads P_1
3) Using UP and DOWN buttons, set display to setting on Aagard wiring diagram
    a) Aagard standard setting is 65 psi
4) Press S key once to display H_1
    a) Using UP and DOWN buttons set display to 1.0
    b) Press S key 2 times to return to F 1.
5) Return to main display by pressing and holding S key for > 2 seconds; main display should be showing a low number reading

   NOTE: 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 ISE40A switch up in this manner, 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.

Proximity Sensor Replacement

Tools Required:

• Proximity Wrenches

Routine:

1) Measure distance of thread on either side of prox mount so that new prox can be put in same exact same spot
2) Remove wire on proximity sensor
3) Use proximity wrenches to remove proximity sensor
4) Replace old sensor with new sensor
5) Put proximity sensor in same exact spot as old one and tighten down nuts
6) Reconnect proximity wire

Slip Sheet in Place Switch Replacement

This topic only applies to Unitizers

Tools Required:

- Flathead Screwdriver Set
- Metric Allen Set
- Standard Allen Set

Routine:

1) Disconnect wires to switch
2) Remove vertical mount with 5/32" Allen wrench
3) Remove switch from mount with Allen wrench
4) Replace old switch with new switch and secure on mount
5) Place mount back on machine
6) Reconnect wires to the switch
7) Adjust new switch with small flat screw driver so it sees slip sheet

Vacuum Switch Setup

ZSE40 Vacuum Switch Setup:

1) In Aagard wiring diagram, find correct ON and OFF trigger values
2) Press and hold SET button until a unit of measure is displayed (example KPa)
3) Use UP and DOWN buttons to navigate until inH is displayed (inches of mercury)
4) Press and release SET button; this will set inH as unit of measure and display should show a low number as current reading
5) Press and release SET button; display should toggle between P_1 and a number
6) Use arrow buttons to adjust number of ON trigger value (example -15.0)
7) Press and release SET button; display should toggle between P_2 and a number
8) Use arrow buttons again to adjust number of OFF trigger value (example -12)
9) Press and release SET button; display will toggle between P_3 and a number
10) Default value is used for P_3; press/release SET button to go to P_4
11) Again, default value is used for P_4; press/release SET button until display is back to main page, which should be showing a low number reading

OUT 1 indicator should not be illuminated, and you are ready for production. Vacuum switch will provide an output when vacuum gets to ON trigger value (example -15.0) and will not turn off output unless vacuum drops below OFF trigger value (example -12.0).

ZSE40A Vacuum Switch Setup:

1) In Aagard wiring diagram, find correct P1 and H1 values
2) Press and hold SET button until a function is displayed (example F 0)
3) Use UP and DOWN buttons to navigate until Uni is displayed
    a) Use UP key to set display to inH (inches of mercury)
4) Press and release SET button; this will set inH as unit of measure and display should show a low number as current reading
5) From F 0, press UP key once to navigate to F 1
    a) Press SET button 3 times so display reads P_1
6) Use UP and DOWN buttons to adjust set point to what is stated on wiring diagram
7) Press SET button 1 more time so display reads H_1
8) Use UP and DOWN buttons to set display to 3.0
9) Press SET button 2 times to return to F 1
10) Press and hold SET button until display is back to main page; main display should be showing a low number reading

OUT 1 indicator should not be illuminated, and you are ready for production. Vacuum switch will provide an output when vacuum gets to ON trigger value (example -15.0) and will not turn off output unless vacuum drops below OFF trigger value (example -12.0).

Vacuum

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 top of sight glass
3) First oil change should be after 500 hours of operation
    a) Subsequent oil changes should be at 500-2000 hours intervals
4) Turn pump off
5) Using metric Allen wrench, drain oil from plug under sight glass
6) Put plug back in
7) Refill pump with oil
    a) About three quarts
8) Put cap back on

Suction Cup Replacement

Tools Required:

- Standard Allen Pack
- Standard Wrench Set

Routine:

1) Use Allen wrench to remove mounting bolt on inside of cup
2) Replace old cup with new cup
   a) Use new thread tape on new cups
3) Make sure all new cups are turned in same length so vacuum is even on all cups

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 old filter out and replace it with new filter
5) Put cover back on
6) Close latches on filter housing

Vacuum Hose Replacement

Tools Required:

- Flathead Screwdriver Set

Routine:

1) Make sure vacuum pump is off
2) Verify hose size
3) Loosen hose clamps
4) Pull hose off fittings on both sides
5) Replace old hose with new hose
   a) The same hose clamps may be used
6) Tighten hose clamps

Vacuum Hub Replacement

Although this topic applies specifically to machine 197, principles may apply to other Aagard rotary placer assemblies.

Replacement Procedure
Phase Pick Arm Assembly
Inspection and Lubrication

The vacuum hub is a wear part which will, from time to time, need to be replaced.
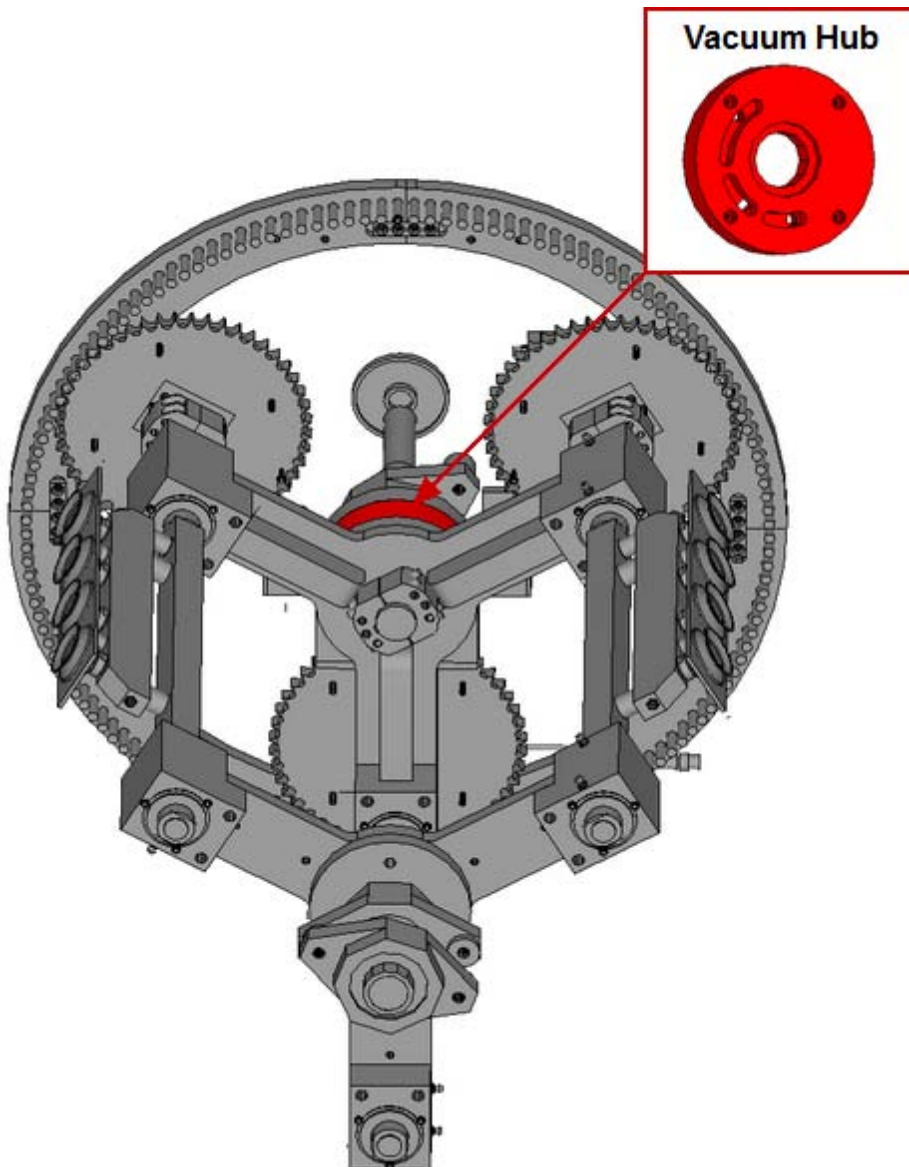
Replacement Procedure

1) Remove pick head assemblies by removing two 9/16" bolts on each pick head assembly end (12 bolts total)
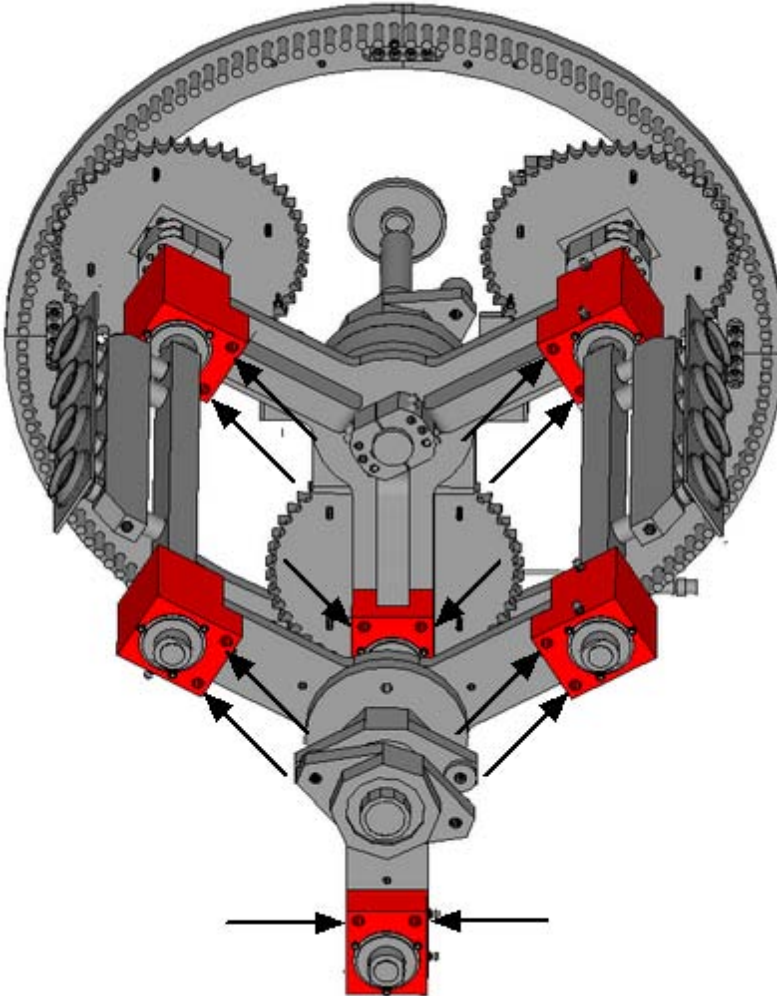
2) Loosen four Allen head bolts (red arrows) on Aagard hub

   NOTE: Three Allen head bolts on face of Aagard hub (blue arrows) may also need to be loosened
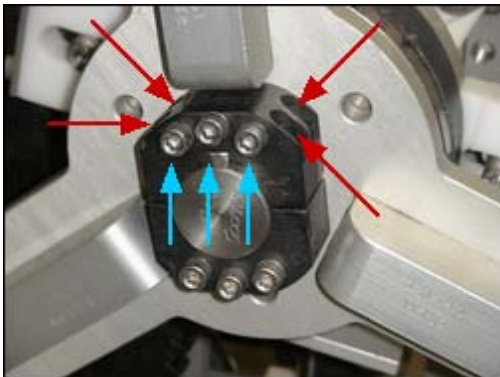
3) Push rotary pick arm assembly toward motor and gearbox, and remove key
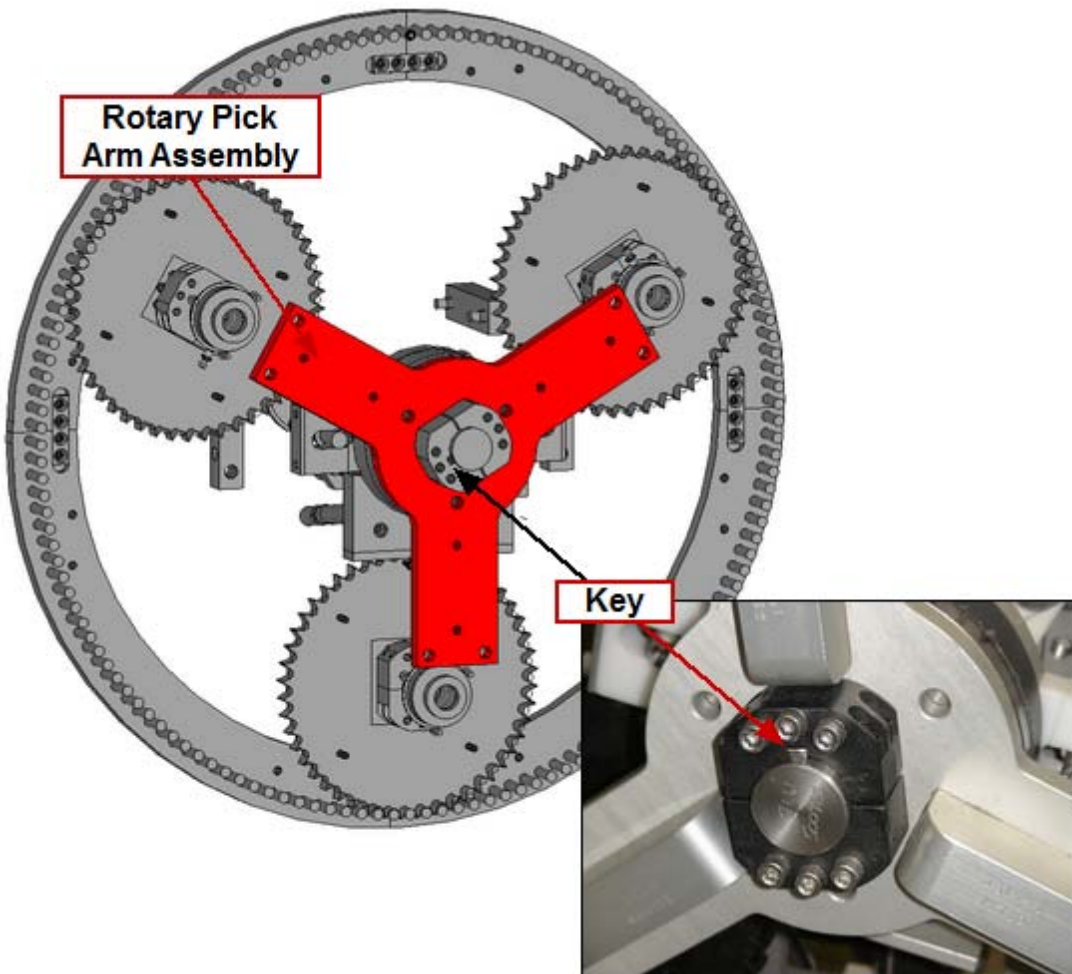
4) Remove rotary pick arm assembly
5) Remove four Allen head bolts holding vacuum hub to vacuum hub mounting plate
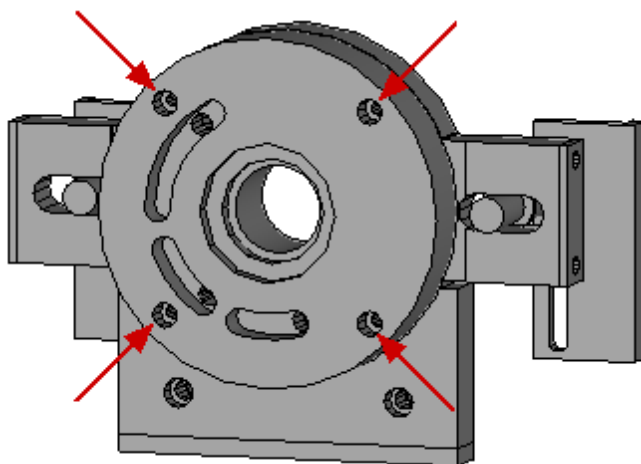
6) Remove vacuum hub

7) Clean vacuum hub mounting plate, removing grease which may be inside vacuum ports
8) Apply DOW Corning® High Vacuum Grease to replacement vacuum hub

   NOTE: Do not apply grease into any of the vacuum ports

9) Reassemble in reverse order
   a. When re-installing pick head assemblies, rotate each assembly so it is in top center position, at 0°
   b. Button head of pick head sprocket must be aligned with button head of the dowel pin plate

   NOTE: Pick head pick cups must be pointed 180° in opposite direction of button head
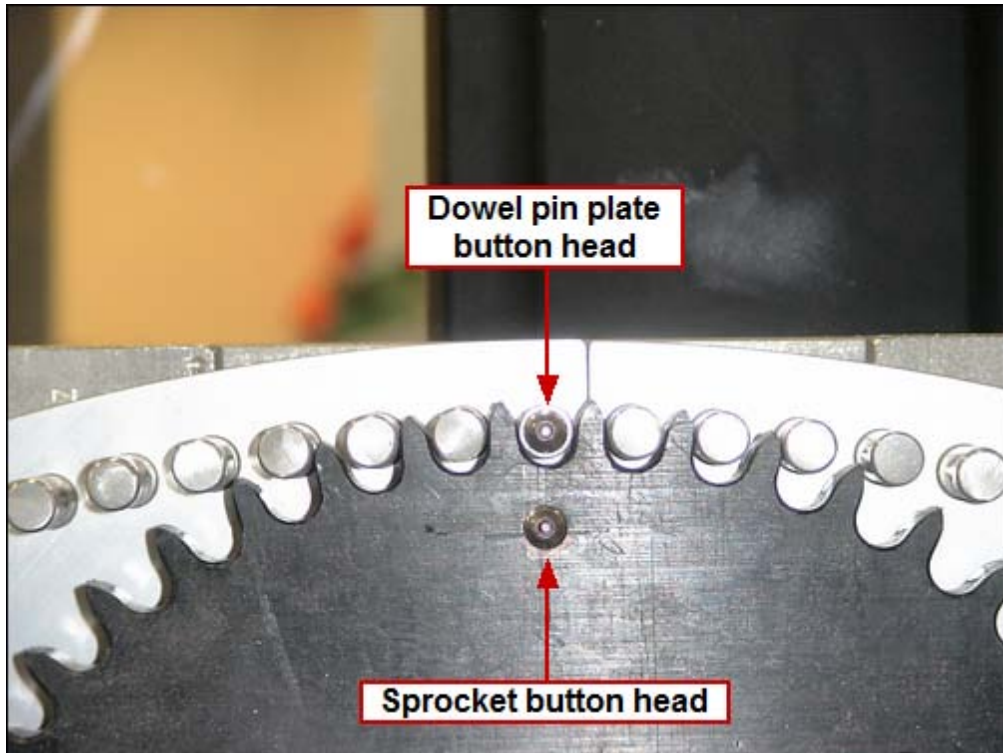
Phase Pick Arm Assembly

Phase each pick arm assembly to adjust when sleeves are picked and placed, if necessary.

1) Loosen bolts in slots on both sides of the vacuum hub assembly

This surface between 84° and 85°

Loosen here and opposite side

Opposite side
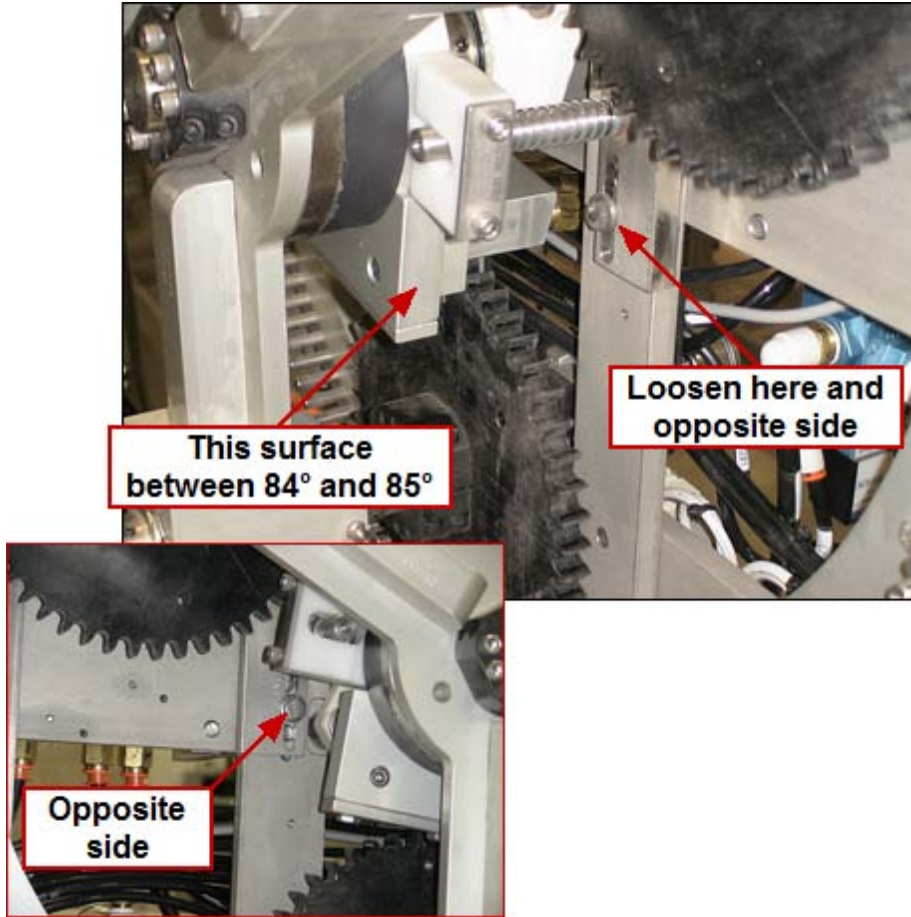
2) Using an angle finder, rotate pick arm assembly to position between 84° and 85°, left of center

3) Re-tighten bolts

Inspection and Lubrication

It is recommended that vacuum hub assembly surfaces and lubrication inspections be made frequently until wear history has been established.

Inspect for:
- nicks and gouges
- excess or missing lubrication
- lubrication inside vacuum ports
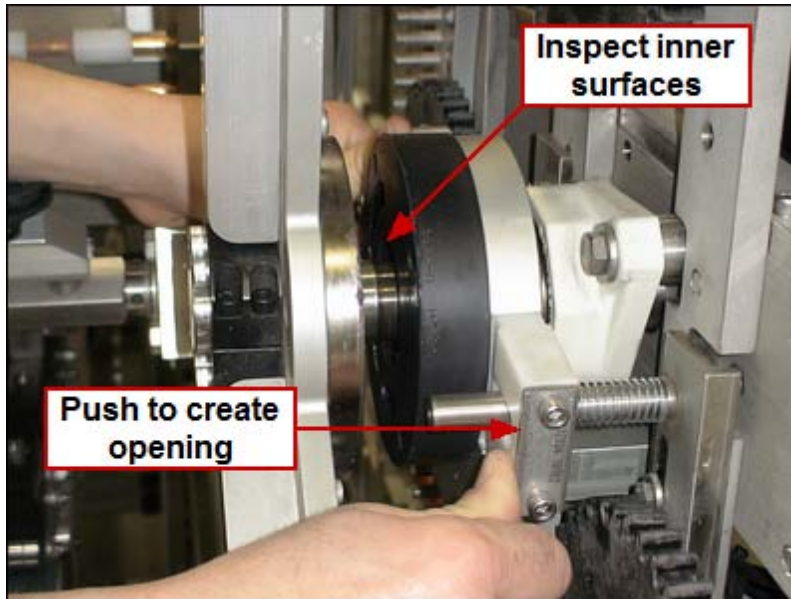
Vacuum Sensor Replacement

Tools Required:

- Standard Wrench Set

Routine:

1) Turn off vacuum
2) Disconnect electrical wire on sensor
3) Loosen sensor with standard wrench
4) Remove sensor and replace it with new one
   a) 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

Vacuum Switch Setup

ZSE40 Vacuum Switch Setup:

1) In Aagard wiring diagram, find correct ON and OFF trigger values
2) Press and hold SET button until a unit of measure is displayed (example KPa)
3) Use UP and DOWN buttons to navigate until inH is displayed (inches of mercury)
4) Press and release SET button; this will set inH as unit of measure and display should show a low number as current reading
5) Press and release SET button; display should toggle between P_1 and a number
6) Use arrow buttons to adjust number of ON trigger value (example -15.0)
7) Press and release SET button; display should toggle between P_2 and a number
8) Use arrow buttons again to adjust number of OFF trigger value (example -12)
9) Press and release SET button; display will toggle between P_3 and a number
10) Default value is used for P_3; press/release SET button to go to P_4
11) Again, default value is used for P_4; press/release SET button until display is back to main page, which should be showing a low number reading

OUT 1 indicator should not be illuminated, and you are ready for production. Vacuum switch will provide an output when vacuum gets to ON trigger value (example -15.0) and will not turn off output unless vacuum drops below OFF trigger value (example -12.0).

ZSE40A Vacuum Switch Setup:

1) In Aagard wiring diagram, find correct P1 and H1 values
2) Press and hold SET button until a function is displayed (example F 0)
3) Use UP and DOWN buttons to navigate until Uni is displayed
   a) Use UP key to set display to inH (inches of mercury)
4) Press and release SET button; this will set inH as unit of measure and display should show a low number as current reading
5) From F 0, press UP key once to navigate to F 1
   a) Press SET button 3 times so display reads P_1
6) Use UP and DOWN buttons to adjust set point to what is stated on wiring diagram
7) Press SET button 1 more time so display reads H_1
8) Use UP and DOWN buttons to set display to 3.0
9) Press SET button 2 times to return to F 1
10) Press and hold SET button until display is back to main page; main display should be showing a low number reading

OUT 1 indicator should not be illuminated, and you are ready for production. Vacuum switch will provide an output when vacuum gets to ON trigger value (example -15.0) and will not turn off output unless vacuum drops below OFF trigger value (example -12.0).

Ventillation

Cooling Fan Filter - Hoffman SR1616424

An electrical enclosure may have a Hoffmann SR1616424 cooling fan installed.
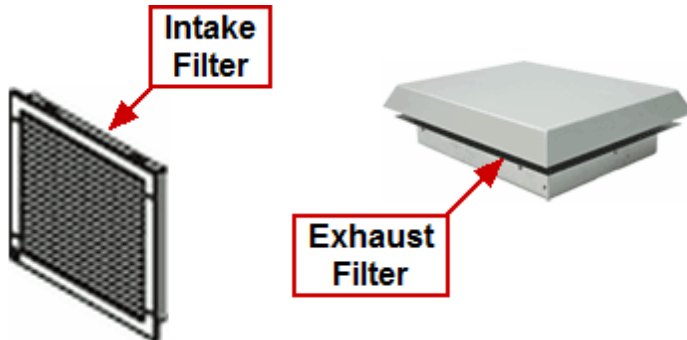
At a minimum, the intake filter should be vacuumed daily and replaced monthly. If the intake filter is properly maintained, the exhaust filter should be inspected every 100 hours.

> **NOTE:** Aagard recommends vacuuming the filter instead of blowing it out so that filtered material is not reintroduced into the environment

Adjust frequency of inspection and cleaning based on environmental conditions.

Intake Filter
Remove cover to remove mat for cleaning or replacement.

Exhaust Filter
Carefully lift mat from behind the four screws and over the fan hood.
> **NOTE:** There is one screw centered on each side of the exhaust filter housing

When vacuuming alone is not sufficient to clean filters, follow these manufacturer guidelines:

Wash filter mat in water of up to 104°F, with a mild detergent added if necessary. To clean filter, it is also possible to beat, vacuum, or blow with compressed air. In case of greasy substances, wash filter mat in benzine, trichlorethylene, or warm water with grease solvent added. Do not wring mat or use sharp jet.

Spare Parts, Drawings and Manuals

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Spare Parts, Drawings and Manuals

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Follow these links to view the following files:

Spare Parts Lists

Electrical Drawings

3D Documentation Model
> 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), when so equipped
Marsh Printer Manual (for PDF version, click here), when so equipped
SmartScan Light Curtain Manual (for PDF version, click here), when so equipped

To open a .PDF version of this **Machine Operator Manual**, click here.

To contact Aagard regarding Machine Serial #120 :

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