

# MARQ PACKAGING SYSTEMS, INC.

3801 W. WASHINGTON AVENUE, YAKIMA, WA 98909  
P.O. BOX 9063, YAKIMA, WA 98909

509-966-4300 PHONE  
509-853-0721 FAX

## MACHINE SPECIFICATIONS

Date P.O. Rec'd:  
P.O. Number:  
Proposal Number:  
Representative: **Jim Hansen**

Date Specs Rec'd:  
SIC Number:  
Drawing Initialed:  
Drawing Number: **LFA1063-18 Rev.\*C**  
Drawing Revised:  
Drawing Initialed Rev:

Sold To / Bill To:

Phone  
Ext / Fax:

Ship To:

Phone  
Ext / Fax:

Serial Number: **Q03022 HPR-HSS-FBD-SL/MW(RH)AB**  
Type of Machine: **MARQ High Performance Random High Speed Servo Flight Bar Drive Standard Length/Medium Width Top Case Sealer with AB 5/04 PLC**

Machine Sign:  
Is Customer sending Specifications?: **No**  
Paint: **Dark Gray**  
Paint Number: **N/A**

SPK: **No**  
SPK Number: **N/A**

Type of Sealing: **Tape** Brand: **TBD**

Top Head: **Dekka High Speed Soft Touch**

Top Tape Width: **3"**

Type of Sealing: **N/A** Brand: **N/A**

Bottom Head: **N/A**

Bottom Tape Width: **N/A**

Purchase Heads: **Yes**

Motor Voltage: **220V 3 Phase w/60 amp Service**

Transformer Req'd: **Yes**

Machine Amps: **42 amps**

Air Requirements: **.6 CF Per Cycle @ Minimum 80 PSI**

**\*\* IMPORTANT - Customer supplied air connection must be 1/2" or greater \*\***

**\*\* Airline requirements between compressor and machine: 0-25ft. 1/2" pipe, 26-50ft. 3/4" pipe, over 50ft. 1" pipe.**

**\*\* Compressed air supply must be filtered and 96% moisture free.**

**Controls are to be mounted on the Left side of machine as viewed from the infeed end of machine.**

Random Rate: **12 to 13 CPM**

Random Comment: **Pending on the mix that is presented to the machine.**

Batch Rate: **18 to 22 CPM**

Batch Comment: **Pending on the mix that is presented to the machine.**

**MACHINE SPECIFICATIONS (Cont.)**

Type of Board used for Container: **Dry** Note:

Is there a gap in the major flaps after the case has been folded?

Top flaps: **No** How much gap: **N/A**  
Bottom flaps: **No** How much gap: **N/A**

Product to be packed into cases? **Yes** **Miscellaneous Gifts**

Is this product packed loose? **Yes**

Is a bottom pad used? **No**

Will case be overpacked? **No** Amount: **N/A**

Will case be underpacked? **No** Amount: **N/A**

Type of Pack: **Rigid**

Customer Sending Case Samples? **Yes**

Number of Case Samples: **100 of each case size listed including 1 roll of preferred 3" tape.**

Date of Shipment: **1/11/2008 (On Site)**

Customer Sending Product? **No**

Number product Samples: **N/A**

Date of Shipment: **(On Site)**

Keep or Return Product?  
 Keep  Return

**\*\* PLEASE SHIP FREIGHT PREPAID. NO COLLECT SHIPMENT WILL BE ACCEPTED.**

Type of infeed conveyor: **Powered**

Height: **32" - 36"** **\*\*Infeed conveyor should be powered and travel at a rate of 60 feet per minute.**

Level: **Yes** **\*\*Case must be center before entering sealer.**

Type of discharge conveyor: **Powered**

Height: **32" - 36"**

Customer purchasing installation? **No**

Approximate date of start-up: **Unknown**

Shipping Preference: **Bestway - Freight Collect**

Tag Number: **#58886**

Shipping Contact: **Name:** \_\_\_\_\_

Phone / Fax: **Phone:** \_\_\_\_\_ **Fax:** \_\_\_\_\_

**Ext:** \_\_\_\_\_

Skid /Crate?: **Skid**

Where did you hear of MARQ Packaging Systems, Inc.: **Current Customer**

Signature: \_\_\_\_\_

Shipment date:

MACHINE SPECIFICATIONS APPROVED AS LISTED:

By: \_\_\_\_\_ Print Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Inspect and approve in plant?: **No**

**\*\*Please sign and return one copy of the specifications along with the dimensional drawing by FAX as soon as possible. Your machine will be manufactured accordingly as soon as this approval is received with your purchase order and down payment.**

**ANY ADDITIONS OR CHANGES TO THE ORIGINAL ORDER COULD POSSIBLY AFFECT DELIVERY DATE. PLEASE CONSULT FACTORY.**

**\*\*Please note once signed machine specifications have been returned to MARQ, any cancellation on orders will incur the following charges.**

- 1-7 days - 10% of invoice total
- 7-30 days - 20% of invoice total
- After 30 days - 100% of invoice total

**MACHINE SPECIFICATIONS**  
**OPTIONS SHEET**

Serial Number: Q03022 HPR-HSS-FBD-SL/MW(RH)AB

Customer Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Machine Options:**

<b>OP#</b>	Bar Code Reader	Accu-Sort Model 24 Series II SC1
<b>OP#</b>	Case Drive System	Flight Bar Drive System.
<b>OP#</b>	Deck Height	32" to 36" Adjustable Deck Height.
<b>OP#</b>	Guarding Package	Mesh Guarding Painted Black 7 Access Doors Per (LFA1063-18 Rev.*C) w/switches to Disengage Power/Air when door is opened.
<b>OP#</b>	Machine Sign	HARRIET CARTER GIFTS
<b>OP#</b>	Maintenance Package - HP Equipment	Low Tape, Tape Out, Tape Movement, and Case Jam with Stack Beacon
<b>OP#</b>	Modification - Arch	Modification for 6.500" Height (Stock machine has minimum height of 8.00") Top section of machine arch will need to be modified
<b>OP#</b>	Modification - Flap Folders	Modification for 7.250 width, new top flap folders (Minimum on this stock Random case sealer is 9.00")
<b>OP#</b>	Modification - Flight Bars	Modify for 6.50" height, 4 required
<b>OP#</b>	Modification - Top Rails	Modify for height, shorter height rails for 6.50" height case
<b>OP#</b>	PLC	AB 5/04 w/ Panel View 300 Display & Battery Back-up.
<b>OP#</b>	Remote Electrical Enclosure	Remote Electrical Enclosure See Drawing LFA1063-18 Rev.*C for location
<b>OP#</b>	Self Teaching - New Case	This option allows new cases to enter machine that scanner has never recognized before and will automatically retain variables to that specific bar code. As well this option allows non bar coded case to be ran in a random mode. *All the necessary parts must be installed to accomplish this feature.
<b>OP#</b>	Servo - Pre-Centering	Servo - Pre-Centering
<b>OP#</b>	Servo - Top Carriage	Servo - Top Carriage
<b>OP#</b>	Servo - Top Rails	Servo - Top Rails

<b>OP#</b>	Tape Head	Dekka 3" High Speed Tape Head. Access from the Arch Side
<b>OP#</b>	Voltage	<b>Voltage = 220V, 3 Phase, 60 Hz.</b> <b>Control Voltage = 24VDC</b>

**MACHINE SPECIFICATIONS**  
**CASE SIZES SHEET**

Serial Number: Q03022 HPR-HSS-FBD-SL/MW(RH)AB

Customer Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Case Sizes:**

	<u>Length:</u>	<u>Width:</u>	<u>Height:</u>	<u>Weight:</u>	<u>Style:</u>	<u>KD Length</u>	<u>KD Width</u>
<b>#11</b>	9.250	7.250	6.500	TBD	RSC	N/A	N/A
Comments :							
<b>#12</b>	13.250	7.250	6.500	TBD	RSC	N/A	N/A
Comments :							
<b>#13</b>	17.250	7.250	6.500	TBD	RSC	N/A	N/A
Comments :							
<b>#21</b>	14.250	10.250	7.500	TBD	RSC	N/A	N/A
Comments :							
<b>#22</b>	18.250	10.250	7.500	TBD	RSC	N/A	N/A
Comments :							
<b>#31</b>	16.250	13.250	8.500	TBD	RSC	N/A	N/A
Comments :							
<b>#32</b>	19.250	13.250	8.500	TBD	RSC	N/A	N/A
Comments :							
<b>#8</b>	25.250	11.250	11.750	TBD	RSC	N/A	N/A
Comments :							
<b>#7 1/2</b>	25.250	9.375	7.250	TBD	RSC	N/A	N/A
Comments :							





# Machine Check List

## Customer Information:

Name: \_\_\_\_\_  
 Street: \_\_\_\_\_  
 City/ State: \_\_\_\_\_  
 Voltage: \_\_\_\_\_  
 Motors: **220V 3 Phase w/60 amp Ser**  
 Controls: \_\_\_\_\_  
 Serial No: **Q03022 HPR-HSS-FBD-SL/MW(RH)AB**

Shipped w/machine	Yes	No	Initials
Spare Parts Kit			
Encoder			

### Operation:

- Machine tested and timed?
- Staple or glue pattern set?

Checked By:	Date Checked:

### Mechanical:

- Jam nuts on cylinder ends tight?
- Exhaust control jam nuts tight?
- Chain tensioners adjusted?
- Electric cables and air lines tied down?
- Junction boxes closed up?
- All sprockets lined up and tightened?
- Bearing collars tightened?
- All nuts and bolts tight?
- All valves and switches labeled?
- Slip clutch tightened & nut locked w/ tang washer?
- Tighten flight bar?


### Electrical:

- Motors wired for proper voltage?
- Proper motor starter heaters?

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### Appearance:

- Machine cleaned up and spot painted?
- Nameplate and serial number plate attached?

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### Machines with Vibrator:

- Motors checked for counter-rotation?
- Vibrators bolted down for shipment and tagged?

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### Machines with glue units:

- Hose joints checked for leakage and wrapped with asbestos sleeves?
- Glue system serial number:
- Glue used for factory checkout?


### Machines with tape heads:

- Tape head serial number:
- N/A
- Tape #


### Overall:

- Spare fuses in control box?
- Maintenance manual shipped?
- Spare parts kit (if ordered) shipped?
- Attach tag stating glue in hotmelt system?
- Can of spray paint in control box?

Checked By:	Date Checked:

### Decals:

- Timing arrow?
- Timing marks?
- Oil in oiler?
- Safety decals?
- Name plate engraved with P.O. number proposal number?


### Electrical:

- Metal clips removed from all electrical boxes?
- Wire connections secure?
- Wire numbers correspond to print?
- Print updated to all changes?
- Check hardwire tightness on computer board?
- Check all terminal screws tightness in computer box?
- Cover over computer in place before shipping?
- Program written in program book?
- Tag "Earth Ground" on Topaz?
- Machine program archive file (signed by computer dept.)?


- Encoder ratio?
- Machine meets all customer specifications?
- Machine Schematic?


- Glue sent with machine?
- UL Labels?
- UL Label #:
- CFM Reading?
- Amps? \_\_\_\_\_

### Lubrication:

- Gear box full?
- Tolomatics Grease Full?

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### Testing:

- Dry run?  
Time: \_\_\_\_\_
- Cases?  
Number: \_\_\_\_\_  
Cases per minute: \_\_\_\_\_


**Specifications:**

- 1. Machine as built and order specifications match:
- 2. Speed of machine matches speed specified in order?

Checked By:	Date Checked:

**Manual/Drawings:**

- 1. Glue unit manual in machine?
- 2. Machine manual in machine?
- 3. Current schematic in machine?


**Video/Photography:**

- 1. Promotional stills taken of machine?
- 2. Engineering video taken?
- 3. Running video taken?
- 4. Promotional video taken?
- 5. Setup video in panel?


**Final Checkout:**

Crating: \_\_\_\_\_

Loading: \_\_\_\_\_

Production Manager's approval: \_\_\_\_\_

Sales' approval: \_\_\_\_\_

Final approval: \_\_\_\_\_

Date: \_\_\_\_\_

Date shipped: \_\_\_\_\_



**INNER - COMPANY CHECKOUT LIST**

**SERIAL #**            **Q03022 HPR-HSS-FBD-SL/MW(RH)AB**

**OPTIONS**

**1. OVERALL APPEARANCE**

\_\_\_\_\_ Scratches / Chips  
\_\_\_\_\_ Paint Quality (Runs, Adhesion, Etc.)

**2. BOLTS, ETC.**

\_\_\_\_\_ Excessive Loose Bolts  
\_\_\_\_\_ Missing Bolts  
\_\_\_\_\_ Washers in Improper Place

**3. PLATING**

\_\_\_\_\_ Quality  
\_\_\_\_\_ Bleed Through

**4. OVERALL WORKMANSHIP**

\_\_\_\_\_ Quality of Welds  
\_\_\_\_\_ Quality From Grindshop  
\_\_\_\_\_ Quality From Machine Shop

**5. SUGGESTIONS FOR BETTER FABRICATION**

\_\_\_\_\_ Quality

## Specification Compliance Form

**Company:** \_\_\_\_\_

**Serial Number:** **Q03022 HPR-HSS-FBD-SL/MW(RH)AB**

This machine adheres to the specifications as outlined in the Machine Specification Form.

*Signature:* \_\_\_\_\_

*Date:* \_\_\_\_\_

This machine does not adhere to the specifications outlined in the Machine Specification Form as noted below.

*Signature:* \_\_\_\_\_

*Date:* \_\_\_\_\_

# Q03022

## *HPR-HSS-FBD-SL/MW(RH)AB*

### OPTIONS:

<u>OP #</u>	<u>Option Desc.</u>	<u>Option Long Desc.</u>
	Tape Head	Dekka 3" High Speed Tape Head. Access from the Arch Side
	Self Teaching - New Case	This option allows new cases to enter machine that scanner has never recognized before and will automatically retain variables to that specific bar code. As well this option allows non bar coded case to be ran in a random mode. *All the necessary parts must be installed to accomplish this feature.
	Bar Code Reader	Accu-Sort Model 24 Series II SC1
	PLC	AB 5/04 w/ Panel View 300 Display & Battery Back-up.
	Deck Height	32" to 36" Adjustable Deck Height.
	Voltage	Voltage = 220V, 3 Phase, 60 Hz. Control Voltage = 24VDC
	Case Drive System	Flight Bar Drive System.
	Guarding Package	Mesh Guarding Painted Black 7 Access Doors Per (LFA1063-18 Rev.*C) w/switches to Disengage Power/Air when door is opened.
	Maintenance Package - HP Equipment	Low Tape, Tape Out, Tape Movement, and Case Jam with Stack Beacon
	Servo - Pre-Centering	Servo - Pre-Centering
	Servo - Top Carriage	Servo - Top Carriage
	Servo - Top Rails	Servo - Top Rails
	Remote Electrical Enclosure	Remote Electrical Enclosure See Drawing LFA1063-18 Rev.*C for location
	Machine Sign	HARRIET CARTER GIFTS
	Modification - Arch	Modification for 6.500" Height (Stock machine has minimum height of 8.00" ) Top section of machine arch will need to be modified
	Modification - Flap Folders	Modification for 7.250 width, new top flap folders (Minimum on this stock Random case sealer is 9.00")
	Modification - Flight Bars	Modify for 6.50" height, 4 required
	Modification - Top Rails	Modify for height, shorter height rails for 6.50" height case

# **Manual & Training Guide**

High Performance Random

High Speed Servo

Flight Bar Drive

Standard Length/Medium Width

Top Case Sealer

with AB 5/04 PLC

(Tape)



**Harriet Carter Gifts**  
**Louisville, KY**

Q03022 HPR-HSS-FBD-SL/MW(RH)AB



## Warranty Information

This information is needed for your warranty. Please fax to MARQ c/o Shawna E. Frank (fax# 509-452-3307) after initial installation. If no date is received, then the company will use the shipping date for the date the warranty begins.

Machine# \_\_\_\_\_

Company Name \_\_\_\_\_

Company Address \_\_\_\_\_

\_\_\_\_\_

Phone# \_\_\_\_\_

FAX# \_\_\_\_\_

E-Mail Address \_\_\_\_\_

Date of Installation \_\_\_\_\_

Purchased From \_\_\_\_\_

Head of Maintenance \_\_\_\_\_



PO Box 9063, Yakima, WA 98909  
Phone: (509) 966-4300, FAX (509) 452-3307  
Email: info@marq.net



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# Company

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**MARQ Packaging Systems, Inc.** was founded in 1965 by Ted Marquis to design and manufacture economical and reliable case erector / bottom sealers. We have expanded our manufacturing to produce a complete line of case packers, partition assembler / inserters, case erector / bottom sealers, case sealers, and trayforming equipment available with or without the Q.C. (Quick Change) option. MARQ machines seal cases with either hot melt, cold glue, pressure sensitive tape or any combination thereof. Also available are uniform sealers, random sealers, and case vibrators. MARQ innovations have helped establish new standards in many areas of the packaging industry. Each MARQ machine is designed to adjust to case sizes outside its standard making MARQ's line of basic machines adaptable to hundreds of uses.

MARQ's 65,000 square foot plant, located near the Yakima International Air Terminal, is staffed with design engineers, craftsmen, and a sales force who team up for a one-on-one effort with each of MARQ's customers. We at MARQ Packaging Systems, Inc. take pride in the fact that our products bear the MARQ of Quality and Excellence.

Over 35 years of complete customer satisfaction has proven the reliability of the combined forces of the Random Case Sealer and the computer. Allen Bradley provides the ultimate in flexibility and dependability for controlling case sealing and packaging equipment. The programmable logic controller eliminates the maintenance required on standard, electromechanical controllers.

Allen Bradley permits instant on-line modification of programs to adjust to varied case sizes and other production requirements without costly down time. Allen Bradley also has built-in protection of programs in case of power failure. If parts are required for your MARQ Allen Bradley Random Case Sealer, they may be obtained from MARQ Packaging, 3801 W. Washington Ave, Yakima, WA 98903.



THE ONE AND ONLY **CAM** (COMPUTER ADJUSTABLE MACHINE)  
CASE PACKER, PARTITION ASSEMBLY / INSERTING, CASE ERECTING, CASE SEALING,  
AND TRAYFORMING MANUFACTURER.

# Introduction

---

## **Manual Overview**

This manual contains information needed to operate, maintain, and troubleshoot your machine. The following page describes the general safety precautions you should take when you operate the Random Case Sealer. Following the safety precautions are the specifications for this machine.

The remainder of your manual is divided into three parts, Operation, Preventative Maintenance, and Service and Troubleshooting. The Operation Section contains general information about the machine operation and a complete description of the controls. Step by Step operation procedures and changeover procedures are located in the operation section. The Preventative Maintenance Section includes maintenance checklists for daily, weekly and semi-annual maintenance. Also in the Preventative Maintenance section you can find a list of suggested fluid choices for lubrication, a list of suggested spare parts, and vendor information. The Service and Troubleshooting portion of the manual contains installation information as well as a detailed sequence of operation based on program flow and the electrical schematic. The various components are gone over in detail. Service Procedures and a Troubleshooting guide comprise the last segment the manual. Each section concludes with a training guide for the appropriate personnel (operators, maintenance, and service).

Warranty information is contained on the final page of the manual.

## **Throughout this manual:**

- Any information that will be shown on the display of your controller will be shown in this font.
- The names of all **BUTTONS**, **KEYS** and **SWITCHES** will appear in **BOLD CAPITAL LETTERS**.
- Left and right references are made when standing at the user interface and looking at the discharge end of the machine.
- Optional features are marked with an asterisk (\*).

## **If you are viewing the manual on a computer screen:**

- Click on any page reference shown in blue to jump to the corresponding page.
- Click on the footer on any page to jump to the Table of Contents.

Satisfactory operation of the MARQ Random Case Sealer depends on proper application, correct installation, and proper maintenance. In addition, modifications to the equipment may result in less than satisfactory performance.

## **Contact Information:**

MARQ Packaging  
3801 W. Washington Ave.  
Yakima, WA 98903  
Phone: (509)966-4300  
FAX: (509) 452-3307

1901 Raymond Drive, Suite 5  
Northbrook, IL 60062  
Phone: (847) 753-9490

**Email: [info@marq.net](mailto:info@marq.net)**

**Internet: [www.marq.net](http://www.marq.net)**

MARQ Packaging, Chicago Facility

**PLEASE READ YOUR MANUAL BEFORE OPERATING YOUR MARQ EQUIPMENT**

**Precautions: Always maintain operator safety!**

Before working on your Random Case Sealer, disconnect all incoming power.

Turn off all electrical and air connections to this equipment before repairing, cleaning or removing jammed cases.

Do not put your hands or tools into equipment while the Random Case Sealer is operating.

Do not operate the Random Case Sealer without all guards and safety mechanisms in place.

Do not wear neckties, jewelry, loose clothing, or other items that can become caught in moving parts or mechanisms in the vicinity of the Random Case Sealer.

Wear all company-specified personal protective equipment while operating the Random Case Sealer.

Do not operate, troubleshoot, or maintain the Random Case Sealer while under the influence of any type of drug or alcohol.

Always observe all safety warnings and notices on the machine and in this manual.

Do not use flammable or toxic cleaning fluids such as gasoline, benzene, or ether when cleaning and maintaining the Random Case Sealer.

**Safety Features**

This Random Case Sealer is equipped with an Emergency Stop button. This red pushbutton is located on top of the main electrical panel on the right hand side of the machine. Press the Emergency Stop button to immediately stop machine operation. This button must be pulled back up by hand before the machine can be restarted.

Safety Guarding with interlocks is available for all MARQ machines. Machines equipped with Safety Guarding cannot be started unless ALL guard doors are closed. If any doors are opened while the machine is running the system will immediately shut down. The doors must be shut and the machine must be reset in order to restart.

**Special Caution**

Do not tamper with any interlock guard switches.

**DANGER**

TURN ELECTRICAL AND AIR OFF BEFORE  
CLEANING OR REPAIRING MACHINE

**DANGER**

# Specifications

---

Voltage: ..... 220V 3 Phase  
Transformers: ..... 2 3.0 KVA

Air Required: ..... 0.6 CF per cycle @ minimum 80 psi

PLC ..... AB SLC 5/04 with Battery Backup  
Display ..... PanelView 300

Sealing System:..... Dekka High Speed Soft Touch, 3”

Production Rate - Random:..... 12-13 Cases Per Minute (CPM)  
Production Rate - Batch:..... 18-22 Cases Per Minute (CPM)

Case Type:..... Regular Slotted (RSC)

Paint: ..... Dark Gray

## Options:

The following is a list of included options for machine Q03022 built for Harriet Carter Gifts.

Bar Code Reader  
Accu-Sort Model 24 Series II SC1

Flight Bars - Modify for 6.50” Height, 4 required  
Top Rolls - Modify for height, shorter height rails for  
6.50” height case

Flight Bar Drive System

Remote Electrical Enclosure  
See Drawing LFA1063-18 Rev.C for location

32” to 36” Adjustable Deck Height

Guarding Package  
Mesh Guarding Painted Black  
7 Access Doors Per LFA-1063-18  
w/switches to Disengage Power/Air when door is  
opened.

Self Teaching - New Case  
This option allows new cases to enter machine that  
scanner has never recognized before and will auto-  
matically retain variables to that specific bar code.  
As well this option allows non bar coded case to be  
ran in a random mode.

Machine Sign - HARRIET CARTER GIFTS

Servo - Precentering  
Servo - Top Carriage  
Servo - Top Rails  
480V 3 Phase (Transformer Required)

Maintenance Package - HP Equipment  
Low Tape, Tape Out, Tape Movement, and Case  
Jam with Stack Beacon

Modifications  
Arch - Modification for 6.500” Height  
Flap Folders - Modification for 7.250 Width, new  
top flap folders

Tape Head - Access From the Arch Side.  
Voltage = 220V, 3 Phase, 60 Hz  
Control Voltage = 24VDC

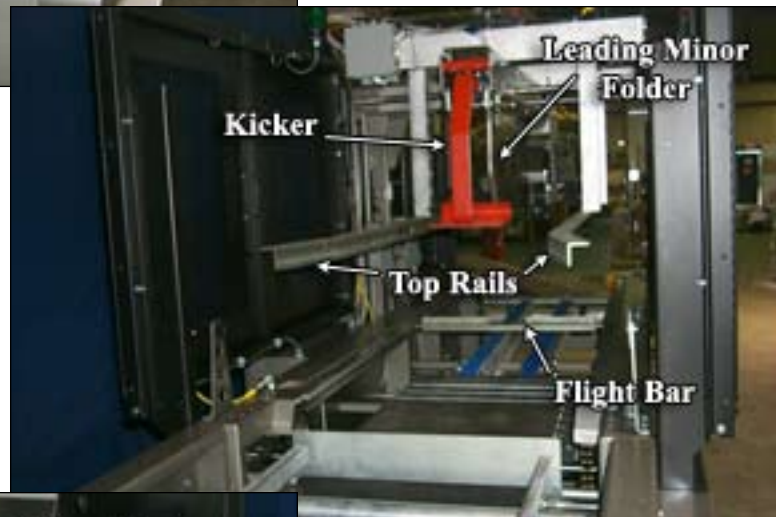
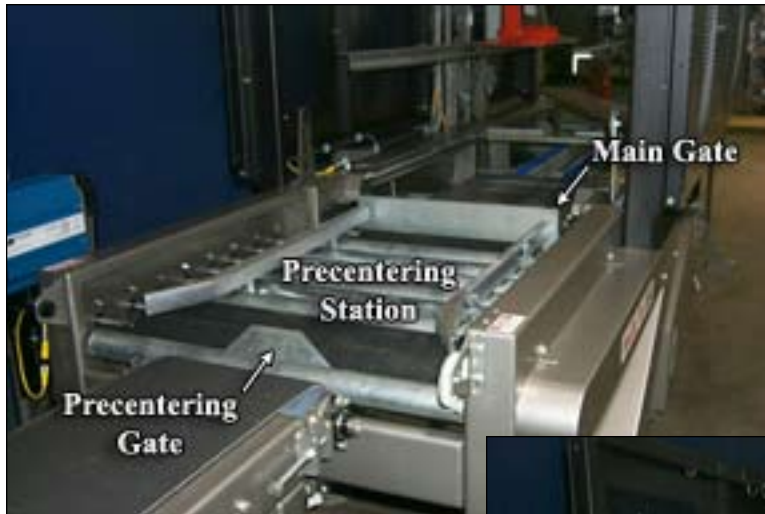
# **Operation**

# Operation Manual & Operator Training Guide





# Random Case Sealer





# Machine Operation

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figure 14-1. Case At Pre-Centering Gate

As the case passes the barcode reader the case number is determined.

When the case makes the gate photoeye and the previous case has gone completely through the precentering section, the gate drops and the case is pulled into the precentering section by the powered infeed rolls.

After the case has cleared the gate photo eye the gate comes back up to prevent the entry of a second case.

The precentering rails are adjusted based on program calculations, using values determined by the case number (barcode reader).

The arch is raised or lowered as necessary (after the previous case clears the machine) based on program calculations, using values determined by the case number (barcode reader).



figure 14-2. Second Gate PE

When the case makes the second gate photoeye and the previous case has gone completely through the machine, the gate then drops and the case is pulled into the machine by the powered infeed rolls.

After the case has cleared the gate photo eye the gate comes back up.

If the case is determined to be the same size as the previous case - within 1/4" no adjustments will be made. The second gate will drop allowing the machine to process cases in batch mode as long as the cases remain the same size.

# Machine Operation



figure 15-1. Kicker

The leading minor flap is folded over mechanically as the case passes under the 'frog legs.'

The kicker is fired, folding the trailing minor flap.



figure 15-2. Major Flap Folding Plows

The major flaps are folded just before passing beneath the tape head.



figure 15-3. Discharge & Tape Heads

Tape is applied to the top and bottom of the case just before the case exits the machine.

# Controls

---



*figure 16-1. Stop Button*

These controls are located on the main electrical panel, unless otherwise indicated. These buttons allow the operator to start and stop the machine.

## **STOP**

The STOP is a red, mushroom-shaped, button that immediately stops the machine when pushed down. In order to start the machine this button must be pulled up.

## **START**

To start the machine pull up on the STOP button and push the green START button. The START button is also used as a reset button for the machine.



*figure 16-2. Start Button*

# Operating Procedures



figure 17-2. Main Disconnect



figure 17-3. Stop Button



figure 17-4. Start Button



figure 17-5. Hold Run Switch

## Startup

1. Verify that the electrical and the pneumatic connections are established according to the instructions in the installation section, [see page 49](#).
2. Turn the **MAIN AIR VALVE** (located on the main air line) to the **SUPPLY** position. The valve has two positions, **SUPPLY** and **EXHAUST**.
3. Check the air pressure gauge next to the air regulator and make sure the air pressure is set at 80 psi. Also make sure it maintains 80 psi while the machine is running.
4. Pull up the **STOP** button on the main control console. Make sure all guard doors are secure and the machine is in **AUTO** mode.
5. Press and hold the **START** button until the startup alarm stops.

## Normal Shutdown

1. Press the **STOP** button. This will immediately stop the machine. Opening a guard door will also stop the machine immediately.
2. Turn the **MAIN AIR VALVE** to **EXHAUST** and remove the air supply from the machine.

## Emergency Shutdown

Press the **STOP** button or open a guard door to stop the machine immediately. To restart the machine pull up on the **STOP** button, secure all guard doors and press the **START** button.

## Clearing Jams

1. Shutdown the Case Sealer by pressing the STOP button or by opening a guard door.
2. Remove the case and any debris or corrugated fiber, being careful not to allow the debris to fall into any part of the machine.

*NOTE: Refer to the troubleshooting guide for possible corrective actions to prevent future jamming.*

3. Carefully inspect machine for any debris fallout.
4. Account for all tools, parts, and materials.
5. Start up the Case Sealer as described in the Startup Procedure and check for proper operation.

### **CAUTION**

**Turn Off All Electrical And Air Connections To This Equipment Before Repairing, Cleaning Or Removing Jammed Cases.  
Do Not Put Hands Or Tools Into Equipment While Case Sealer Is Operating.**



# Operator Training

## Operator Training

Trainee prerequisites: Knowledge of basic mechanical operations and reading.  
 Classroom hours: ½ hour  
 Hand-on-training: 3½ hours  
 Total training hours: 4 hours

Instructor Materials: VCR or Windows Media Player.

Trainee Materials: Setup Video (available on VHS or CD-ROM), Operation Manual (pages 11-18 of this manual), Tape Head Manual

Task or Teaching Point	Additional Information
<b><u>CLASSROOM</u></b>	
I. INTRODUCTION	
A. Briefly describe the course and what each trainee will learn.	
B. Show Setup Video for Random Case Sealers.	The Service Video is sent to each customer on a VHS tape. It is also a part of each Service CD.
II. MANUAL TRAINING	Service Manual - You may want to run copies or print the appropriate pages to hand out.
A. Normal Machine Operation	Pgs. 13-16
B. Controls	Pg. 17
D. Startup	Pg. 18
E. Shutdown & Emergency Shutdown	Pg. 18
F. Clearing Jams	Pg. 18
<b><u>HANDS-ON-TRAINING</u></b>	
I. NORMAL MACHINE OPERATION	
A. Controls	Show the trainees the locations of all controls.
B. Demonstrate Startup.	
C. Run 1 or 2 cases and discuss the machine processes.	
1. Pre Sensing	
2. Gate	
3. Arch - Kicker	
4. Glue Heads	
5. Major Flap Folding	
6. Top Compression	
C. Demonstrate Shutdown.	
II. JAMS	Set the machine up to jam before proceeding. Have a trainee start the machine.
A. Start the machine.	
B. Run a case and demonstrate the proper steps to clear the jam.	
C. Repeat 'B' and allow the operator(s) to	

# Operator Training

Task or Teaching Point	Additional Information
<p>clear the jam.</p> <ul style="list-style-type: none"><li>D. Discuss what caused the jam and the proper steps to prevent future jamming.</li><li>E. Shut the machine down (if it is running).</li></ul>	
<p>IV. DAILY MAINTENANCE</p> <ul style="list-style-type: none"><li>A. Wipe Down the Machine<ul style="list-style-type: none"><li>1. Dust</li><li>2. Product Accumulation</li><li>3. Grease</li></ul></li><li>B. Check Safety Switches<ul style="list-style-type: none"><li>1. Stop Button</li><li>2. All Guard Doors (optional)</li></ul></li></ul>	
<p>V. GLUE SYSTEM</p>	<p>See the Documentaion included with your glue head for operation, maintenance and troubleshooting information.</p>
<p>VI. TAPE HEAD</p> <ul style="list-style-type: none"><li>A. Tape Supply</li></ul>	<p>See the Documentation included with your tape head for more information.</p>

# Operator Performance Assessment

---

## **Before the Performance Assessment**

1. Verify that the work area conforms to all safety standards.
2. Set the machine up to jam.
3. Remove Tape Roll.

## **During the Performance Assessment**

1. Stress the importance of following all safety standards.
2. Ask the trainee to complete each task on the checklist.
3. Check each block of the performance checklist as the trainee satisfactorily performs the step.
4. If the trainee fails to complete a task satisfactorily:
  - a. End the evaluation.
  - b. Review the correct procedure with the trainee.
  - c. Schedule a new assessment time for the trainee.

## **After the Performance Assessment**

1. Verify that the work area has been cleaned up.
2. Verify that the work area is safe.
3. Review the Performance Checklist with the trainee.
4. Sign and date the Performance Checklist on the line provided.
5. Have the trainee sign and date the Performance Checklist on the line provided.
7. Forward all records to the appropriate department, for record maintenance (ie. Training Department, Personnel...)



# Operator Performance Assessment

---

Tasks	Sat	Unsat
-------	-----	-------

---

## **Tape Supply**

- |                                 |                          |                          |
|---------------------------------|--------------------------|--------------------------|
| 1. Properly replaced tape roll. | <input type="checkbox"/> | <input type="checkbox"/> |
|---------------------------------|--------------------------|--------------------------|
- 

## **Glue Supply**

- |   |                          |                          |
|---|--------------------------|--------------------------|
| 1. Checked Glue Supply and Refilled if necessary. | <input type="checkbox"/> | <input type="checkbox"/> |
|---|--------------------------|--------------------------|
- 

## **Startup the MARQ Case Sealer**

- |  |                          |                          |
|--|--------------------------|--------------------------|
| 1. Turn the Main Air Valve to the Supply Position. | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Check the Air Pressure.                         | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Pull up the STOP button.                        | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Push the START button.                          | <input type="checkbox"/> | <input type="checkbox"/> |
- 

## **Clear a jam from the MARQ Case Sealer**

- |   |                          |                          |
|---|--------------------------|--------------------------|
| 1. Push the STOP button.  | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Remove the case and any debris or corrugated fiber.                          | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Inspect for equipment damage or debris fallout.                              | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Account for all tools, parts, or materials.                                  | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Press the START button.  | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Check the next five cartons to make sure the machine is operating correctly. | <input type="checkbox"/> | <input type="checkbox"/> |
- 

## **Comments**

---

Evaluator Signature and Date

---

Trainee Signature and Date

# Preventative Maintenance Maintenance Manual & Training Guide





# Program Interface

## Main Level Screens

### Main

Cycle Off - E-Stop is up and Green Start has been pressed, the machine is ready to start when powered rolls come on.  
Cycle On - Machine has been started. New cases will be processed.

Random Sealer			
Cycle Off		No Scan Rev'd	
Auto - F1 Toggle		Arch Down Lim	
F5 Setup	F6 Monitor	F7 Diagnostics	

figure 25-1. Main Screen

Press 'F1' to toggle between Auto and Manual modes.  
The current mode is displayed directly below the Toggle instructions.

Press 'F5' to go to the Setup screens.

Press 'F6' to go to the Monitor Screen.

Press 'F7' to go to the Main Diagnostic screen.

### Error Messages:

**OK** - Machine Ready to Run

**Motors Fault** - A motor starter was commanded to turn on but did not turn on.

**Precent Gate Jam / Main Gate Jam** - The case is taking too long to enter the machine. The corresponding Gate PE has been blocked for an excessive amount of time.

**Flight Bar Slow** - Too much time has passed since the sync switch was last made.

**Top / Bot Tape Apply** - Tape was not applied to the case correctly. Not enough pulses were generated by the corresponding tape motion sensor.

**Top / Bottom Tape Cut** - Tape was not cut after the last case. Too many pulses were generated by the corresponding tape motion sensor.

**No Tape Top / Bottom** - The Tape Supply is exhausted. Please replace the current roll.

**Low Tape Top / Bottom** - The Tape Supply is low. Replace the roll when convenient.

**No Scan R'cvd** - Scanner did not respond - Power? Cable?

**Bad / No Bar** - Scanner reports it didn't see a bar.

**Bar Not Found** - Found Bar Code hasn't been entered.

**Bar / Case Not Sent** - Entered bar codes servo positions haven't been set up.

### Servo Messages

**Servo On Limit** - If one of the servo controlled components makes the corresponding limit switch the machine will stop and this message will be displayed. If a servo limit is being made at the time of startup, however the system will attempt to move the corresponding components to home prior to continuing startup sequence.

**Servo OK** - Machine is ready to run.

# Program Interface

## Monitor

The current Case Count and the current Case Rate are displayed on this screen

Press 'F3' to reset the case count

Press 'F5' to move to the Main Screen

Press 'F6' to move to the Bar Code Monitor Screen

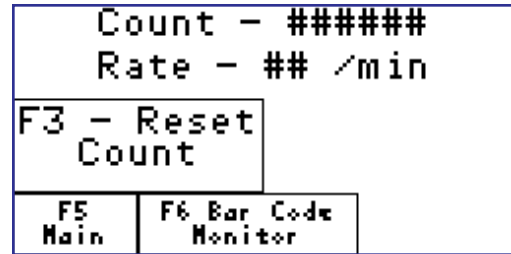


figure 26-1. Monitor Screen

## Bar Code Monitor

This display only screen shows the current and previous barcode.

Press 'F5' to move to the Monitor Screen.

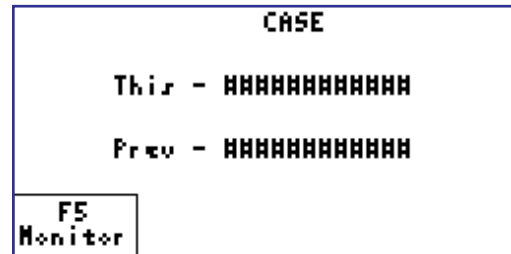


figure 26-2. Gate Setup

## Setup Screens

To Change Values -

1. Use Left or Right (◀ / ▶) to select numeric control:
2. Press Enter (↵) to change the value of the selected control

## Gate Setup

### Flight Bar Gate Stop Point

The encoder count past sync at which the flight bars will stop if a case is currently entering.

The latest encoder count past sync at which the gate will drop when a case makes the gate photoeye is the Flight Bar Gate Stop Point.



figure 26-2. Gate Setup

### Gate Minimum Drop Point

The earliest encoder count past sync at which the gate will drop if the gate photoeye is blocked.

Press 'F5' to return to the Main Screen.

Press 'F6' to move to the Kick Setup Screen.

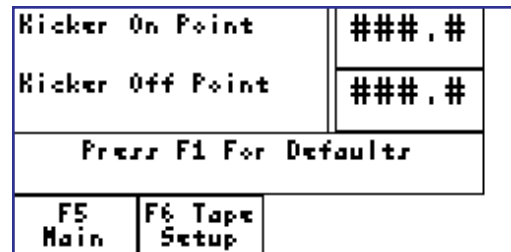


figure 26-3. Kick Setup

## Kicker Setup

### Kicker On Point

The encoder count, past sync, at which the kicker will fire down.

### Kicker Off Point

The encoder count, past sync, at which the kicker will return up.

Press 'F1' to restore default settings for all screens.

Press 'F5' to return to the Main Screen.

Press 'F6' to move to the Tape Setup Screen.

# Program Interface

## Setup Screens

To Change Values -

1. Use Left or Right (◀ / ▶) to select numeric control:
2. Press Enter (↵) to change the value of the selected control

### Tape Setup

Press 'F2' to enable or disable Tape Detect.

Press 'F5' to return to the Main Screen.

Press 'F6' to move to the Case Setup Screen.

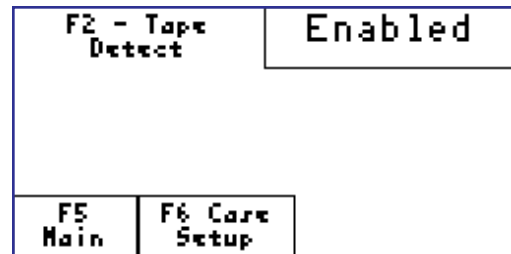


figure 27-1. Tape Setup

### Case Setup

Press 'F1' to Select or Add a Case - Enter or change the Barcode.

Press 'F2' to Setup the servo positions for an already added case.

Press 'F5' to move to the Gate Setup Screen.

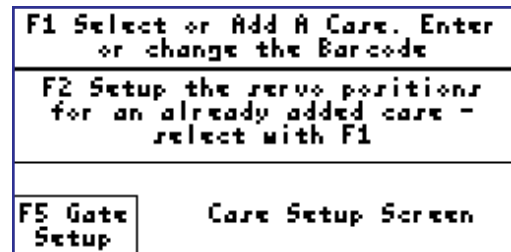


figure 27-2. Case Setup

### Case Select

Press 'F1' then press up/down across to select case. View entered bar cod number in right window.

Press 'F2'. Enter new barcode number (numeric portion only) for this case.

*Note: after a barcode scan, only the numeric portion is used for comparison.*

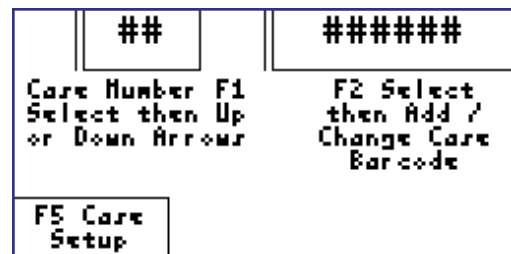


figure 27-3. Case Select

## Preset Values

These values were determined when testing the machines at the factory with customer cases.

Please note any changes made for future reference.

Flight Bar Gate Stop Point	42.0	_____
Gate Minimum Drop Point	37.0	_____
Kicker On Point	6.0	_____
Kicker Off Point	20.0	_____
Tape Detect	Enabled	_____

# Program Interface

## Servo Setup

1. Observe case number and barcode number. If not correct, return to 'Case Select' to choose the correct case.
2. Press 'F1' (Read) to show current servo positions for this case.
3. After modifying servo positions press 'F2'. Set before adjusting.
4. 'F3' (Do Home) must be performed (Manual Mode Only) once after starting main power.
5. 'F4' (Do Adjust) (Manual Mode Only) - If machine has been homed, will move the servos to the last 'set' positions.
6. Press 'F8' for a reminder of these procedures.

## Diagnostics

Access to these screens is password protected. The password set by the factory is 9664300.

## To Test Inputs and Outputs

1. Press Left or Right arrows (◀ / ▶) to toggle selection cursor to upper (outputs) or lower (inputs) selection controls
2. Once a control is selected use the Up or Down arrows (▲ / ▼) to select the appropriate item.  
*Note: that some items may not be testable do to options selected for this machine.*
3. Press **F1** to fire a selected output (manual mode only)
4. Observe the status of the selected input in the 'Diag' circle (dark is actuated)

##		#####	
PreCent	Top	Arch	
HH.HH	HH.HH	HH.HH	
F1 Read	F2 Set	F3 Do Home	F4 Do Adjust
F5 Case Setup		F8 Servo Position Help	

figure 28-4. Servo Setup

Output	▶ Wiper	
	Glue Fire	
Input	▶ G08	
	Pre-Cent Gate PE	
F1 - Jog	<input type="radio"/>	
F5 Main	F6 Servo Jog	Main Diagnostics

figure 28-1. Main Diagnostics Screen

Output	▶ Pre-Cent Out Fast	
	Pre-Cent In Fast	
Input	▶ Top Rail Out Limit	
	Top Rail In Limit	
F1 - Jog	<input type="radio"/>	
F5 Main	F6 Main Diag	Servo Jog Diagnostics

figure 28-2. Servo Diagnostics Screen

# Case Management

---

## **Preliminary Information**

1. Information about each case that the sealer expects to receive is stored in the integer files N16 through N18. Each case's information takes up 1 entry in each file. The files are set up to hold up to 50 cases (1-49).
2. The expected numeric portion of the barcodes are stored in N26. After a barcode is read the numeric portion is extracted then compared with this list.
3. The case number of this case is compared to the case number from the previous case (stored in N7:96). If neither is zero and they are the same then a bit B3:8/11 CASESAME\_LATCH is set to inform sections of the program that the same case as the previous is coming through.

## **Case modification using an attached PC running RSLogix 500**

### Changing A Case

1. Locate the entry in integer files N26 which deal with the case to be changed. Note the index within the file.
2. Continue with Adjusting Axis Positions below.

### Deleting A Case

1. This is only necessary if the case is being permanently deleted, it was the last case defined (the next entry is zero) and you wish to shorten the table.
2. Locate the entries in integer files N16-N18 that deal with the case to be deleted. Just set each entry to zero to indicate it as the next free location.

### Adding A Case

1. Locate the last entry in integer files N16-N18 that have information. We will use the next entry in each file. Set the enter the barcode numeric position in file N26. Enter preliminary values for the setting of the 3 axes (N16-N18).
2. Continue with Adjusting Axis Positions below.

### Adjusting Axis Positions

1. Run the case, noting the positions of the axes. Decide on any adjustments to the axis positions and make them to the line in the N16-N18 tables. (Note assignments is information #3 above)
2. Zero out locations N7:95 and N7:96 so that running the same case again does cause a re-adjustment of the axes.
3. Continue 1 and 2 until the operation is proper.



# Case Management

## Case modification using the display

Set the display to manual mode then start the machine. Enter the 'Setup' section. Move to the Servo Setup Screen and press F3 (Do Home)

## Changing / Replacing A Case

1. Move to the Case Select screen. Set the desired case.
2. Continue with Adjusting Axis Positions below.

## Deleting A Case

*Note: This is only necessary if the case is being permanently deleted, it was the last case defined and you wish to shorten the table.*

1. From the Case Select screen. Press 'F1' then the 'up' arrow to verify that the case is the last one defined.
2. Press 'F2' and set the barcode number to zero (0).

## Adding A Case

1. Move to the Case Select screen.
2. Press 'F1' then the arrows to reach the first free case number.
3. Press 'F2' then enter the numeric portion of the barcode.

## Adjusting Axis Positions

If the machine has not been 'homed' since startup then move to the Servo Setup screen and press F3 (Do Home)

1. Press 'F1' (Read).
2. Press F4 (Do Adjust) to move the axes to their set positions.
3. Check the positions using a case. If they are correct then stop.
4. If the positions are not correct then modify the Targets, save them using F2 and re-size using F4
5. Continue adjusting and checking until the operation is proper. You may need to return to this area if running the case indicates the need for adjustments.

*Note: Modifying and setting ('F2') targets for a selected case may be made in 'Run' mode. 'F3' Home and 'F4' Adjust are only active in 'Manual' mode.*

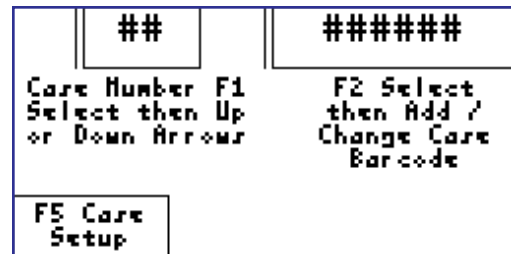


figure 30-3. Case Select

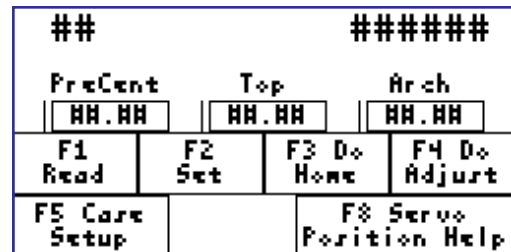


figure 30-4. Servo Setup

**DANGER**

TURN ELECTRICAL AND AIR OFF BEFORE  
CLEANING OR REPAIRING MACHINE

**DANGER**

## Suggested Fluids

Air Lubricator .....ATF Fluid

Servo Motors..... SAE 10

Gear Box .....Mobil 600W Gear Oil or equivalent

Tol-O-Matic Gear Boxes..... Anderol 786 or equivalent

Grease for Moving Parts .....Lithium #1 or #2

**DO NOT USE WD-40.** WD-40 gums up and causes seals to wear out.

## IMPORTANT NOTE:

The lubricant in the gear box must be checked and changed on a regular basis. Failure to do so may cause equipment damage or failure. Now is the time to set up a maintenance schedule and follow it closely. The following instructions are reprinted from BOSTON GEAR BOX:

*“...it is important that the proper type of oil be used since many oils are not suitable for the lubrication of gears. Various types of gearing require different types of lubricants.*

*The lubricant must remain free from oxidation and contamination by water or debris, since only a thin film of oil stands between efficient operation and failure. To assure long service life, the reducer should be periodically drained (preferably while warm) and refilled to the proper level with a recommended gear oil. Under normal environmental conditions oil changes are suggested after the initial 250 hours of operation and thereafter at regular intervals of 2500 hours.”*

This has to be done. **Failure to do so may void your warranty.** MARQ recommends the oil to be changed after an initial 80 hours and every week after that. MARQ’s recommendation is more than the manufacturer recommends due to varying stress and conditions.

# Maintenance

**DANGER**

TURN ELECTRICAL AND AIR OFF BEFORE  
CLEANING OR REPAIRING MACHINE

**DANGER**

## Daily Preventative Maintenance

---

### Clean the machine

Clean off the dust, product accumulation, grease, etc.

---

### Servo System

Lube

---

### Check the electrical safety switches for correct operation

#### Stop Button(s)

Main

Remote \*

#### Guard Door Interlocks \*

Right, Infeed #1

Right, Infeed #2

Right, Discharge #1

Right, Discharge #2

Left

# Maintenance

**DANGER**

TURN ELECTRICAL AND AIR OFF BEFORE  
CLEANING OR REPAIRING MACHINE

**DANGER**

## Weekly Preventative Maintenance

Check the air system lubricators operation and fluid level and fill as needed

Check the operation and tightness of mounting hardware for all limit switches

Check all photo eyes obstructions and proper operation.

Check the operation of all proximity sensors.

Remove encoder guard, check for proper chain tension, and/or wear.

Adjust all axis full travel, check for binding.

Inspect adjusting chains for proper tension or excessive wear.

Check the air cylinders, the control valves, and the air lines for leaks and loose connections.

Check the solenoid valves for leaks and loose connections.

Manually operate all air driven devices check for proper operation and speed.

Lubricate/grease machine.

Motor Gearbox.

Bearings for the main drive shafts.

Flight chain.

Tol-O-Matic gear boxes.

Check all the chains and fasteners for tightness.

Inspect lug chains for wear, and proper tension.

Insure arch section is level.

Run several cases through machine, to insure system variables are optimized.

Verify all guards have been replaced.

## Monthly Preventative Maintenance

Check all the sprockets for alignment and tighten the set screws.

Check the entire machine for loose or worn parts.

Clean out the air line filters.

# Maintenance

**DANGER**

TURN ELECTRICAL AND AIR OFF BEFORE  
CLEANING OR REPAIRING MACHINE

**DANGER**

## Semiannual Maintenance

- Check the air cylinders and rebuild them if necessary
- Check all electrical connections in the panel

## Air Filter Regulator Maintenance

The air filter regulator is a group of modules sealed by O-rings. See [page 57](#) for picture and operation of each module.

Each module can be removed by releasing the brackets that hold the modules together. If air is leaking between the modules, replace the O-rings.

The filter that removes debris from the air is located in the air filter module. To clean this filter remove the housing. Pull down the black release, turn the housing so that the two notches line up and then pull the housing off. Unscrew the black cap that holds the filter on. Wash the filter in soap and water and replace it in its original position. To put the housing back on, line up the notches then push in and turn until the black release snaps into position.

The soft start module can be cleaned in soap and water. Remove the electrical switch located at the top of the soft start module. **DO NOT WASH THE ELECTRICAL SWITCH.** Disassemble the soft start module and clean the interior with soap and water. (Make sure that it is properly reassembled)

These components should be washed as indicated above about once every 6-12 months.

# Spare Parts Kit

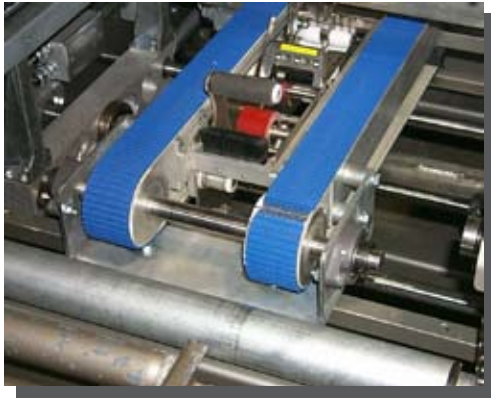


figure 35-1. MARQ Part# 2B2050-55



figure 35-2. MARQ Part# 270

## **MARO Part# SPK861-17**

SPK861-17 includes the following parts:

### **MARO Part# 7216-8**

2 Air Cylinder Repair Kit; Parker  
Rods, 1.5-2.5

### **MARO Part# 7216-8A**

2 Air Cylinder Repair Kit; Parker  
Seals, 1.5-2.5

### **MARO Part# 659**

1 Rod End Bearing, 7/16 F RH

### **MARO Part# 7768-5**

2 Idler Drive Roll 19.688; Pomona

### **MARO Part# 2B2050-63**

2 Belt w/"V" Guide 2 1/4 x 152" Carboxulated "Blue"

### **MARO Part# 9000-1**

1 Parker Hanafin 24V Air Valve; Parker

### **MARO Part# 270**

2 1" 2 Bolt Flange Bearings; Pacific

### **MARO Part# 870**

1 1 1/4" 4 Bolt Flange Bearing; Pacific

### **MARO Part# 1341B**

4 Cooling Fan Replacement Filter

### **MARO Part# 7709-4A**

1 Proximity Switch; Centsable  
DC QD Micro

### **MARO Part# 6825-2**

1 Polar Reflective Photoeye; Allen Bradley  
3M DC QD

# Spare Parts Kit

---



figure 36-1. MARQ Part# 101

## **MARO Part# 101**

- 4 Limit Switch; Square D C54A2

## **MARO Part# 9999**

- 1 Limit Switch; Square D C68T10

## **MARO Part# 105**

- 4 Switch Actuator; Square D 3" Long



figure 36-2. MARQ Part# 1A6-2

## **MARO Part# 1A6-2**

- 4 Limit Switch Arm; MARQ Packaging 4.5" Long

## **MARO Part# [D42PS]**

- 6 Drive Sprocket; MARQ Packaging 60A17/875

## **MARO Part# 965-1**

- 4 Link; MARQ Packaging 60A-2, 1/4 Hole

## **MARO Part# 1364**

- 1 Nylon Timing Pulley; Martin 18 x 3/8K

## **MARO Part# 1364-1**

- 1 Nylon Timing Pulley; Martin 36 x 3/4K

## **MARO Part# 1370**

- 1 Timing Blet; Martin 36 x 3/4

## **MARO Part# 269-1**

- 4 2 Bolt 3/4" Precision Flange Bearing; Hub City



figure 36-3. MARQ Part# 269-1

## **MARO Part# [1B770PS]**

- 2 3/4 End Ball Screw Bearing; MARQ Packaging

## **MARO Part# 1375B**

- 2 Ball Nut Flange Wiper 3/4"

# Vendor Information

---

## **Tol-O-Matic, Inc.**

3800 County Road 116

Hamel, MN 55340

Ph: 478-8000

Fax: 478-8080

Toll-Free: 1-800-328-2174

## **Boston Gear Box**

The Company warrants that all 700 Series reducers will be free from defects in material and workmanship of the lifetime of the product.

Oil Seals are considered to be a replaceable maintenance items.

Any products which shall be proved to the Company's satisfaction to have been defective at the time of delivery in these respects will be replaced or repaired by the Company by its option. Freight is the responsibility of the customer. The Company's liability under this warranty is limited to such replacement and repair and is shall not be held liable in any form of action for direct or consequential damages to property or person. THE FOREGOING WARRANTY IS EXPRESSLY MADE IN LIEU OF ALL OTHER WARRANTIES WHATSOEVER, IMPLIED OR STATUTORY AND INCLUDING; WITHOUT LIMITATION THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS.

No employee, agent, distributor, or other person is authorized to give additional warranties on behalf of Boston Gear, nor to assume for Boston Gear any other liability in connection with any of its products, except an officer of Boston Gear by a signed writing.

Call Toll Free for the name and location of your local Distributer: 1-800-225-5280  
(In Massachusetts, call 617-328-5690)

## **Vendor Websites**

Aurora - [www.aurorabearing.com](http://www.aurorabearing.com)

SquareD - [www.squared.com](http://www.squared.com)

Parker - [www.parker.com](http://www.parker.com)

Piab - [www.piab.com](http://www.piab.com)

Festo - [www.festo.com](http://www.festo.com)





# Maintenance Training

## Maintenance Training

Trainee prerequisites:	Completion of Operator Training, Knowledge of basic maintenance operations, and reading.
Classroom hours:	¾ hour
Hands-on-training:	3 ¼ hours
Total training hours:	4 hours
Instructor Materials:	Two (2) Locks with keys for Air Dump and Main Electrical Panel, Screw Driver Set, Volt Meter, Basic Tool Kit, 1/4-3/8" driver set.
Trainee Materials:	Preventative Maintenance Guide (pages 23-38 of this manual) and Vendor documentation showing maintenance information for machine components.

Task or Teaching Point	Additional Information
<b><u>CLASSROOM</u></b>	
I. INTRODUCTION	
A. Briefly describe the course and what each trainee will learn.	
II. MANUAL TRAINING	Service Manual - You may want to run copies or print the appropriate pages to hand out.
A. Program Display	Pgs. 25-28
B. Case Management	Pgs. 29-31
C. Lubrication Fluids	Pg. 32
D. Daily Maintenance	Pg. 33
E. Weekly Maintenance	Pg. 34
F. Monthly Maintenance	Pg. 34
G. Semi Annual Maintenance	Pg. 35
H. Air/Filter/Regulator Maintenance	Pgs. 35 & 57
<b><u>HANDS-ON-TRAINING</u></b>	
I. PROGRAM DISPLAY	Each task should be demonstrated for the trainees and whenever possible the trainees should be allowed to perform the tasks.
A. Main Screen and Monitor Screen Functions	
B. Setup Screens	
C. Diagnostics	
D. Error Screens	
E. Special Screens	
II. LOCK OUT PROCEDURES	
A. Panel	
B. Air System	
III. DAILY MAINTENANCE	

# Maintenance Training

Task or Teaching Point	Additional Information
<ul style="list-style-type: none"> <li>A. Clean the machine               <ul style="list-style-type: none"> <li>1. Dust, Product Accumulation, grease, etc.</li> </ul> </li> <li>B. Check Safety Switches               <ul style="list-style-type: none"> <li>1. Stop Button(s)</li> <li>2. Guard Doors (optional)</li> </ul> </li> </ul>	
<p>IV. WEEKLY MAINTENANCE</p> <ul style="list-style-type: none"> <li>A. Air System Lubricators               <ul style="list-style-type: none"> <li>1. Sight Guage</li> <li>2. Fill</li> </ul> </li> <li>B. Check All Limit Switches               <ul style="list-style-type: none"> <li>1. Tighten Mounting Hardware</li> <li>2. Check Operation</li> </ul> </li> <li>C. Check All Photo Eyes               <ul style="list-style-type: none"> <li>1. Clean</li> <li>2. Check Operation</li> </ul> </li> <li>D. Proximity Sensors</li> <li>E. Encoder</li> <li>F. Adjust all Axis Full Travel</li> <li>G. Adjusting Chains</li> <li>H. Air Leaks and Loose Connections               <ul style="list-style-type: none"> <li>1. Air Cylinders</li> <li>2. Solenoid Valves</li> <li>3. Air Lines</li> </ul> </li> <li>I. Check Operation of Air Driven Devices</li> <li>J. Oil Level - Gear Box</li> <li>K. Grease Bearings and Running Shafts</li> <li>L. Lubricate Flight Chain</li> <li>M. Lubricate Tolomatic Gearcase</li> <li>N. Check Chains and Fasteners for tightness.</li> <li>O. Check Arch Level</li> <li>P. Variables</li> <li>Q. Guard Replacement</li> </ul>	<p>Demonstrate Oiler Adjustment. Show the appropriate level for the oil supply.</p> <p>Indicate all possible locations where air leaks may occur as well as the location of each connection.</p> <p>Indicate how to determine current oil level and the proper procedure for adding oil.</p> <p>Demonstrate procedure for chain tension adjustment.</p>
<p>V. MONTHLY MAINTENANCE</p> <ul style="list-style-type: none"> <li>A. Check Sprockets               <ul style="list-style-type: none"> <li>1. Alignment</li> <li>2. Tighten set screws</li> </ul> </li> <li>B. Check entire machine for loose or worn parts.</li> </ul>	
<p>VI. SEMI-ANNUAL MAINTENANCE</p> <ul style="list-style-type: none"> <li>A. Check Air Cylinders</li> </ul>	

# Maintenance Training

Task or Teaching Point	Additional Information
C. Check all electrical connections in the panel.	
VII. AIR FILTER REGULATOR MAINTENANCE A. O-Ring Replacement B. Air Filter C. Soft Start Module	
VIII. GLUE SYSTEM	Check the documentation provided with your glue system for system operation, maintenance and troubleshooting.
IX. TAPE HEAD	Check the documentation for your tape head for information on preventative maintenance.



# Maintenance Performance Assessment

---

## **Before the Performance Assessment**

1. Verify that the work area conforms to all safety standards.

## **During the Performance Assessment**

1. Stress the importance of following all safety standards.
2. Ask the trainee to complete each task on the checklist.  
*Note: The machine may not require the completion of some maintenance tasks. In the case of these tasks the trainee should be able to demonstrate the ability to complete the task, by explaining the procedure or going through the motions as if completing the task.*
3. Check each block of the performance checklist as the trainee satisfactorily performs or satisfactorily demonstrates the ability to perform the step.
4. If the trainee fails to complete a task satisfactorily:
  - a. End the evaluation.
  - b. Review the correct procedure with the trainee.
  - c. Schedule a new assessment time for the trainee.

## **After the Performance Assessment**

1. Verify that the work area has been cleaned up.
2. Verify that the work area is safe.
3. Review the Performance Checklist with the trainee.
4. Sign and date the Performance Checklist on the line provided.
5. Have the trainee sign and date the Performance Checklist on the line provided.
7. Forward all records to the appropriate department, for record maintenance (ie. Training Department, Personnel...)



# Maintenance Performance Assessment

---

Tasks	Sat	Unsat
-------	-----	-------

---

## Program Display

- |   |                          |                          |
|---|--------------------------|--------------------------|
| 1. Change machine from Auto Mode to Manual Mode.                                    | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Demonstate understanding of each variable and it's purpose.                      | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Demonstrate an ability to use diagnostics by testing various outputs and inputs. | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Demonstrate an ability to manage cases (add or change).                          | <input type="checkbox"/> | <input type="checkbox"/> |
- 

## Daily Maintenance

- |   |                          |                          |
|---|--------------------------|--------------------------|
| 1. Clean the machine.<br>Clean off dust, product accumulation, grease, etc. | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Check the electrical safety switches for correct operation.              | <input type="checkbox"/> | <input type="checkbox"/> |
- 

## Weekly Maintenance

- |  |                          |                          |
|--|--------------------------|--------------------------|
| 1. Check the air system lubricators operation and fluid level and fill as needed.        | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Check the operation and tightness of mounting hardware of all limit switches.         | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Check all photo eyes for obstructions and proper operation.                           | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Check the operation of all proximity sensors.   | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Remove the encoder guard, check for proper chain tension and/or wear.                 | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Adjust all axis full travel and check for binding                                     | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Inspect adjusting chians for proper tension or excessive wear.                        | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. Check the air cylinders, the control valves, and the air lines for leaks.             | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. Check the air cylinders, the control valves, and the air lines for loose connections. | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. Check the solenoid valves for leaks and loose connections.                           | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. Bleed the air lines.   | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. Manually operate all air driven devices, check for proper operation and speed.       | <input type="checkbox"/> | <input type="checkbox"/> |
| 13. Check the oil level in the gear box and fill if necessary.                           | <input type="checkbox"/> | <input type="checkbox"/> |
| 14. Grease the bearings and running shafts using a grease head.                          | <input type="checkbox"/> | <input type="checkbox"/> |
| 15. Lubricate the flight chain using chain lube.   | <input type="checkbox"/> | <input type="checkbox"/> |
| 16. Add lubricant to the Tol-O-Matic gear boxes.   | <input type="checkbox"/> | <input type="checkbox"/> |
| 17. Check all the chains and fasteners for tightness.                                    | <input type="checkbox"/> | <input type="checkbox"/> |
| 18. Check variables.   | <input type="checkbox"/> | <input type="checkbox"/> |
| 19. Replace guards.  | <input type="checkbox"/> | <input type="checkbox"/> |
- 

## Monthly Preventative Maintenance

- |  |                          |                          |
|--|--------------------------|--------------------------|
| 1. Check all the sprockets for alignment and tighten the set screws. | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Check the entire machine for loose or worn parts.                 | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Clean out the air line filters.                                   | <input type="checkbox"/> | <input type="checkbox"/> |
- 

## Semi-annual Maintenance

- |  |                          |                          |
|--|--------------------------|--------------------------|
| 1. Check the air cylinders.                          | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Check all the electrical connections in the panel | <input type="checkbox"/> | <input type="checkbox"/> |
- 

## Air/Filter/Regulator Maintenance

- |                      |                          |                          |
|----------------------|--------------------------|--------------------------|
| 1. Clean air filter. | <input type="checkbox"/> | <input type="checkbox"/> |
|----------------------|--------------------------|--------------------------|
-





# Service & Troubleshooting Service Manual & Training Guide





# Installation

Each MARQ HPE is tested prior to shipping to ensure proper operation. Due to variations in case sizes, packing conditions, bulge and weight, it may be necessary to make minor changes in the settings discussed below to obtain optimum performance and operation.

*NOTE: It is very important that once the machine arrives, it is checked carefully for any damage that may have occurred in transit. Since MARQ's terms are F.O.B. Yakima, it is your responsibility to contact the carrier and file any necessary damage claims with them.*

## **Leveling and Adjusting Height**

The machine is equipped with four adjustable pads that are located at the corners of the frame. The pads can be adjusted to obtain conveyor bed heights from 24½ to 28 inches without optional casters. Adjust and level the machine as follows:

- Use ½-ton or greater capacity jacks at the lift points located on the inner corners of the frame.
- Raise the infeed end of the machine to height desired.
- Loosen the locknuts on the footpads and lower the pad to the floor. Tighten the locknuts.
- Check for levelness across the leg frame.
- Remove the jacks and repeat the procedure on the discharge end of the machine.
- Make sure the machine is level front to back and side to side.

## **Electrical Connections**

The following electrical connections are required:

- Main Disconnect in panel: Connect 220VAC, Single Phase 60Hz to the top of the disconnect with a ground.
- Other voltages available on request.

## **Air Connections**

An air supply capable of delivering the required volume of air at 80 psi should be connected to the machine using a filter / regulator / lubricator. Air line requirements between the compressor and the machine should be as follows:

- 0-25 ft. --- ½” pipe
- 26-50 ft. --- ¾” pipe
- Over 50 ft. --- 1” pipe

## **Adjusting Air Cylinder Speed**

The air valves on the machine have exhaust restrictors to control the speed of the air cylinders they operate. To increase the speed of an air cylinder, open the exhaust restrictor until the desired speed is reached. To decrease the speed of an air cylinder, close the exhaust restrictor until the desired speed is reached. For more information on the adjustment of the exhaust restrictors see [page 58](#).

## **Conveyor**

For optimal performance both the infeed and discharge conveyors should be powered. The infeed conveyor should be powered at .75 feet per second or slower to insure case separation at the gate.

### IMPORTANT - BREAK IN PERIOD

For the first 6 months of running check the chain tension weekly.  
Tighten as necessary. See [page 65](#) for adjustment information.

# Sequence of Operation

---

## **Power Application**

1. 220 VAC power is applied through a disconnect to the motor starters for the Side Lug Drive (1M), and the Precentering Rolls (2M).
2. Power is also applied to the primary of the control transformer through its fuses. 220V AC is fed to the Servo Drives contactors.
3. The output of the control transformer (110VAC) is applied through its secondary fuse to power up wire #3.
4. Wire #3 powers up the +24VDC power supply, producing +24VDC on wire #21 with wire #32 as DC Common. Wire #3 is also applied to the Utility Outlet through its fuse, to the input of the SLC-500 PLC.

## **Guard Doors and E-Stop**

1. 24VDC is applied to the guard door chain. If all guard doors are closed, CR1 is energized.
2. A contact of CR1 applies 24V DC from wire #21 to the E-Stops. Pulling up both E-Stop buttons applies power to the start button.
3. Pressing start button energizes the warning timer (TMR1). Its normally closed contact turns on the warning buzzer (BZ1). If the start button is held through this timing the normally open contact closes and lights the green start lights, and turns on 1MCR and the air dump (SOL1).
4. A contact of 1MCR latches across the start button.
5. An auxiliary contact of 1M switches 24VDC power to wire #24 for the controller outputs.

## **Startup**

1. The SLC-500 senses that the Guard Door Relay has been closed through wire #104. It also senses that 1M AUX has closed by monitoring wire #24.
2. The operator pressing the start button energizes wire #102.
3. If it has been less than 10 seconds since the MCR was last off then the system waits for the remainder of this time. This allows the Servo controllers to fully shut down during the power off.
4. If in 'Auto' mode the SLC500 senses if any Servo axis is on a limit. If so it issues the proper commands to move them off these limits. After this, the SLC-500 issues 'home' commands to all the servos. If the Servo axes are already on their home switches they move off. They all then move to their home switch position.
5. The SLC-500 system waits a moment to allow the air pressure to build.

## **Automatic Mode (The Auto/Manual switch is in Auto)**

### **Automatic Reset**

1. Once the SLC-500 verifies that all axes have completed their homing functions, the SLC-500 turns on the Flight Lugs On (SOL4) output. This energizes the air clutch/brake to run the flight lugs.
2. The SLC-500 waits until a flight lug contacts the Sync switch (LS1).
3. From this point the encoder pulses are counted by the Counter Module. (The pulses are at the rate of 10 per inch of flight lug travel).
4. When the encoder count reaches that set into the GATE\_POINT variable (N7:10) the flight lugs stop and the gate sequence is enabled.

## **Precentering Section**

1. If the Precentering section is clear of a previous case, the rails are at their home positions, the downstream detection is not blocked, and a case is at the Precentering photoeye (PE1), the PLC energizes the bar code scanner laser trigger. When the scanner recognizes a bar code it sends the scan to the PLC. The PLC extracts the numeric portion and compares this to its internal table. If a match

# Sequence of Operation

---

occurs the PLC turns off the barcode laser trigger. If this is the same as the previous case then 'Case.Same.Latch' is internally set.

2. The Precentering Gate (SOL5) is energized. The Precentering Rolls (2M) are turned on at this point, if they had been turned off due to a large time gap from the previous case.
3. The case and the Pre-Centering rails move to the position entered for this case.

## **Gate Sequence**

1. When a case comes to the Main Gate it breaks the Gate Photo Eye (PE2).
2. If the Case\_Same\_Latch was not set then the previous case must exit the machine. After this, the remaining two axes (Top Rails, and Arch) are commanded to begin moving to their positions. After a brief delay the case may enter.
3. The Main Gate (SOL2) is energized to allow the case in.
4. The Infeed Rolls move the case into the machine.
5. When the back of the case clears the Gate PE the gate is released.

## **Arch - Kicker Sequence**

1. After a momentary delay (T4:17) the SLC-500 turns on the Flight Lugs On (SOL4). This brings the side lugs into contact with the rear of the case and moves it forward.
2. The Kicker will be energized at the KICK\_ON point while driving forward.

## **Major Flap -Taping Sequence**

1. The case continues to drive forward. The angled flap folding rods fold the major flaps.
2. At the GATE\_POINT, the Gate Sequence is re-enabled.

## **Tape Apply / Cut Detection**

*Note: this processing does not take place for a head if the respective 'Tape Detect' is disabled. Bottom testing only takes place if the head is installed (Optional)*

1. At the actuation of the Front Of Box-Tape Switch (LS10), the Bottom Pulse Counter (C5:4) is reset then begins counting pulses from the Tape Pulse Bottom proximity detector (PRX2) which are generated by tape being pulled around the cam roller.
2. Pulses are counted until the rear of the case reaches a point set by N7:9. The counter is tested to see whether it has counted to its preset. If so then tape has applied properly. If the counter has not counted to its preset then a Tape Apply Failure has taken place. The machine stops, the red beacon comes on and the yellow beacon flashes and the Jam Number (N7:16) is set to 33.
3. If the tape applied properly to the bottom then the counter is reset and continues to count pulses. These would be generated if the tape failed to cut and is still being pulled from the roll. If the counter reaches its preset then a Tape Cut Failure has taken place. The machine stops, the red beacon comes on and the yellow beacon flashes and the Jam Number (N7:16) is set to 34.
4. Similar testing is made for the Top Tape Head using pulses from the Top Tape Motion Proximity (PRX1).

## **Stopping**

1. Press either E-Stop button.
2. After the shutdown, the Start button may be pressed to restart.

# Sequence of Operation

---

## **Manual (Diagnostics) Mode (The Auto/Manual switch is in Manual)**

1. Use the display to select the Diagnostic section.
2. If Inputs are selected use the Next or Previous buttons to move to the desired input. Observe the status of the input on the display. (Note: this can be performed even while the machine is running in automatic mode.)
3. If Outputs are selected use the Next or Previous buttons to move to the desired output. Check that the affected area of the machine is clear, then press the JOG button to activate the output. (Note: this activation is not performed in any cycle sequence. The operator has complete control.)
4. Move the Auto/Manual switch to Auto to exit the Manual mode.

# PLC Lights

	PR WV U / UNQ V 4	KPR WV U / UNQ V 5
2		
3	0 cugt E qvqtanT grc { *0 ET 3+	F txxg Q M / C tej Ugtxq *Q wvrv %3+
4	Urctg	Kp 0 qvqp / C tej Ugtxq *Q wvrv %4+
5	Urctg	Urctg
6	l wctf fqqtu enugf *ET 3+	Urctg
7	Urctg	F txxg Q M / Vqr Tcku Ugtxq *Q wvrv %3+
8	Urctg	Kp 0 qvqp / Vqr Tcku Ugtxq *Q wvrv %4+
9	0 clp l cvg *RG 4+	F txxg Q M / RtgE gpvgtlp i Ugtxq *Q wvrv %3+
:	Vqr Vcrg 0 qvqp *RTZ 3+	Kp 0 qvqp / RtgE gpvgtlp i Ugtxq *Q wvrv %4+
;	Dqwqo Vcrg 0 qvqp *RTZ 4+	HtqpvQ hDqz / Vcrg *NU32+
32	Rtgegpgvgtlp i Tqmu Q p *40 cwz0+	U {pe / *NU 3+
33	Urctg	Vqr Nqy Vcrg *ET 9+
34	C tej Ugtxq Q p *60 +	Vqr P q Vcrg *ET :+
35	E wuqo gt Uwr rrgf *RG 5+	Dqwqo Nqy Vcrg *RG6+
36	Vqr TckUgtxq Q p *80 +	Vqr P q Vcrg *RG7+
37	Rtgegpgvgtlp i Ugtxq Q p *90 +	Urctg



# PLC Lights

	wv rw vu / Unq v 6	Q wv rw vu / Unq v 7
2		
3	Y ctpi Nki jv*[grqy qp Uvcem+ ,	Urctg
4	Twp Nki jv*I tggp qp Uvcem+ ,	Vqr TckUgtxq *80 +
5	Urctg	Rtgegpvgtpi Ugtxq *90 +
6	Urctg	Rqy gt Tqmu *40 xlc 4Q N+
7	Urctg	Urctg
8	Urctg	Urctg
9	Urctg	Urctg
:	I cvg *UQ N4+	Gpcdrq Ugtxq
;	M lmgf *UQ N5+	Urctg
32	Hrki jvNwiu. D tomg1E mwvej *UQ N6+	Urctg
33	Rtgegpvgtpi I cvg *UQ N7+	Urctg
34	Hrki jvDct Gpcdrq *E T5+	Urctg
35	Hrki jvDct Urggf Ugrgev *E T6+	Urctg
36	Urctg	Urctg
37	Urctg	Dcteqfg Vtki igt *E T8+

# Variable Speed Drive Control











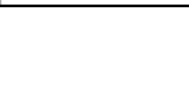
The image at left was taken from the Allen-Bradley PowerFlex 4 Quick Start Manual (page 8).

The following parameter values were adjusted during factory testing for optimal performance.

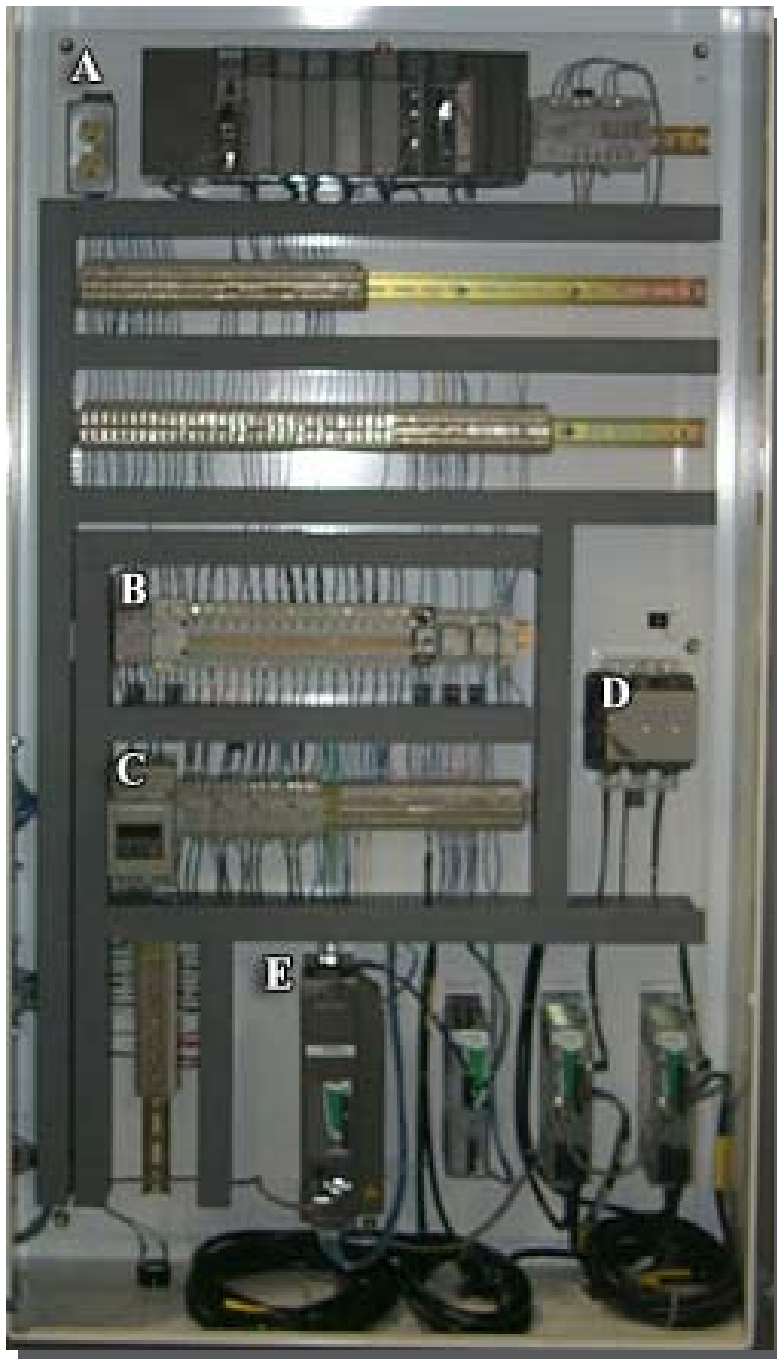
Number	Value	Parameter Name
P033	12.0	Motor OL Current
P036	3 (2-W Lvl Sens)	Start Source
P038	4 (Preset Freq)	Speed Reference
P039	0.5	Accel Time 1
P040	0.5	Decel Time 1
A070	20.0	Preset Freq 0
A071	10.0	Preset Freq 1
A089	18.0	Current Limit
A092	9	Auto Restart Tries
A093	1.5	Auto Restart Delay

### Viewing and Editing Parameters

The last user-selected Display Group parameter is saved when power is removed and is displayed by default when power is reapplied.  
The following is an example of basic integral keypad and display functions. This example provides basic navigation instructions and illustrates how to program the first Program Group parameter.

Step	Key(s)	Example Displays
1. When power is applied, the last user-selected Display Group parameter number is briefly displayed with flashing characters. The display then defaults to that parameter's current value. (Example shows the value of d001 [Output Freq] with the drive stopped.)		
2. Press Esc once to display the Display Group parameter number shown on power-up. The parameter number will flash.	Esc	
3. Press Esc again to enter the group menu. The group menu letter will flash.	Esc	
4. Press the Up Arrow or Down Arrow to scroll through the group menu (d, P and A).	△ or ▽	
5. Press Enter or Sel to enter a group. The right digit of the last viewed parameter in that group will flash.	↵ or Sel	
6. Press the Up Arrow or Down Arrow to scroll through the parameters that are in the group.	△ or ▽	
7. Press Enter or Sel to view the value of a parameter. If you do not want to edit the value, press Esc to return to the parameter number.	↵ or Sel	
8. Press Enter or Sel to enter program mode to edit the parameter value. The right digit will flash and the Program LED will illuminate if the parameter can be edited.	↵ or Sel	
9. Press the Up Arrow or Down Arrow to change the parameter value. If desired, press Sel to move from digit to digit or bit to bit. The digit or bit that you can change will flash.	△ or ▽	
10. Press Esc to cancel a change. The digit will stop flashing, the previous value is restored and the Program LED will turn off. Or Press Enter to save a change. The digit will stop flashing and the Program LED will turn off.	Esc  ↵	
11. Press Esc to return to the parameter list. Continue to press Esc to back out of the programming menu.  If pressing Esc does not change the display, then d001 [Output Frequency] is displayed. Press Enter or Sel to enter the group menu.	Esc	

# Main Electrical Panel



- A. 110V Utility Outlet  
Allen Bradley SLC 5/04  
24VDC Power Supply
- B. Output Fuses
- C. Flight Bar Drive Motor Contact (1M)  
PreCentering Rolls Motor Overload (2OL)  
Startup & General Fuses  
Startup Timer (TMR1)  
Master Control Relay (1MCR)  
Guard Door Relay (CR1)  
Flight Bar Enable Relay (CR3)  
Flight Bar Speed Select (CR4)  
Brake Release Relay (CR5)
- D. Variable Speed Control for Flight Bar Drive  
PreCentering Rolls Motor Contact (2M)  
Arch Servo Motor Contact (4M)  
Top Rail Servo Motor Contact (6M)  
PreCentering Servo Motor Contact (7M)
- E. Main Disconnect
- F. Arch Servo Controller  
Arch Regen Unit  
Top Rails Servo Controller  
PreCentering Servo Controller

*figure 56-1. Main Electrical Panel*

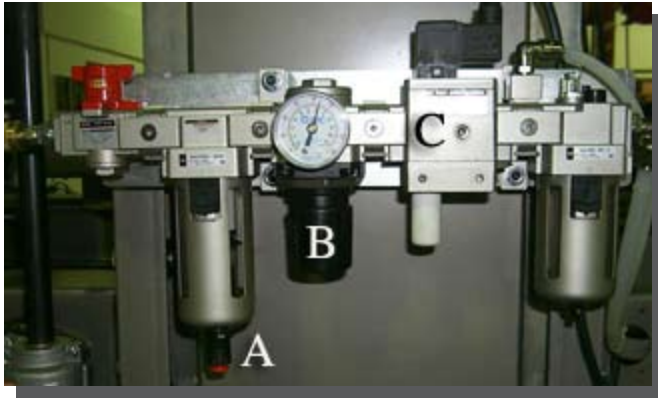


figure 57-1. Main Air Prep Unit

## **Main Air Prep Unit**

The main air prep unit has a two-position gate valve that directs or shuts off high-pressure air to the machine. (see figure 57-2)

## **Air Pressure Regulator / Filter / Lubricator**

A sight gauge shows the amount of air pressure in pounds per square inch (psi). For the machine to operate correctly this must read at a constant 80 psi. (see figure 57-3)

The regulating hand knob adjusts the air pressure. It is located just below the sight gauge. Pulling down and turning the knob clockwise increases air pressure. Pushing the knob back up locks the adjustment in place. (see figure 57-3 or 57-1B)

The filter assembly removes debris from the air system. (see figure 57-4)

On the bottom of the filter assembly casing there is a screw-type pet cock for draining accumulated moisture. (see figure 57-1A)

A soft start adjustment screw lets you adjust the speed of the air flow being applied to the machine. (see figure 57-1C)

An oil reservoir supplies lubricant to the air lines. (see figure 57-5)

Adjust the amount of oil supplied in the air system by turning the adjustment knob on top of the oil reservoir. A window allows for counting of the drops supplied. Adjust lubricant to 1 drop for every 10-15 cases. Turn either left (positive) to increase, or right (negative) to decrease. (see figure 57-6)

The oil reservoir is filled with a non-detergent hydraulic oil. A 10W or transmission fluid will work in this system as long as it is a non-detergent oil.



figure 57-2. Air



figure 57-3.  
Pressure Gauge



figure 57-4. Air  
Filter



figure 57-5. Oil  
Reservoir



figure 57-6. Oil  
Window

# Air System

---



*figure 58-1. Parker Hanafin Valve Bank*

## Solenoid Valve

A solenoid valve (figure 58-1) receives an electrical signal from the controller to shuttle a plunger back and forth. The plunger directs air from the air lines to the air driven devices on the machine.

The manual override is a small blue screw on the top of the solenoid valve (figure 58-2). It can be turned, using a screwdriver, to override the electrical signal, which causes the plunger to shift and direct air from the “B” port of the valve to the “A” port, causing the cylinder to actuate.

The exhaust restrictors are located on the bottom of each valve. Turn the screw to increase (counter-clockwise) or decrease (clockwise) the air flow.



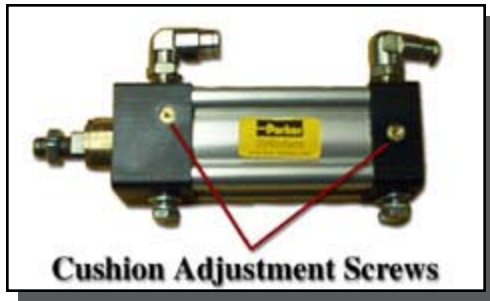
*figure 58-2. Manual Override Button*

## Valves

- 1 Air Dump
- 2 Gate
- 3 Kicker
- 4 Flight Bar Brake/Clutch
- 5 PreCentering Gate



*figure 58-3. Exhaust Restrictors*



*figure 59-1. Air Cylinder*

## **Air Cylinders**

An air cylinder houses a piston that is driven back and forth by high-pressure that actuates the air-driven devices on the machine.

## **Cushion Adjustment Screw**

The cushion adjustment screws are screws that are turned to adjust the last 1” of travel of the piston. Turning the screw clockwise increases the cushion and allows the piston rod to travel at a high rate of speed until the piston rod hits the cushion. The cushion slows the piston rod down for the last 1” of the stroke. This adjustment quiets and saves wear on the cylinders.

# Main Drive Unit

---

## **Flight Lug Drive Assembly**

- Flight Bars  
The flight bars are attached to motor driven chains that rotate. As the chains rotate the flight bars push the cases through the machine.
- Flight Bar Drive Motor  
The flight lug drive motor is a  $\frac{3}{4}$  HP motor with an Air Brake Clutch that transfers the case through the machine.

## **Air Brake Clutch**

The brake clutch module is an air assembly that starts and stops the side lugs as it transfers cases through the machine. This allows cases to be stopped at each station for the performance of various operations, without turning the motor on and off.

## **Gear Box**

The gear box is a set of gears that transfers the power and RPM's of the motor through the gears to a shaft at a ratio of 15:1 (or 30:1, depending on machine). PLEASE REFER TO THE MAINTENANCE SECTION OF THIS MANUAL FOR LUBRICATION INSTRUCTIONS. FAILURE TO LUBRICATE THE GEAR BOX PROPERLY MAY CAUSE MACHINE FAILURE AND VOID YOUR WARRANTY.

## **Sprocket and Chain Drive Assemblies**

A set of motor driven, and idler sprockets, and chains, drive the machine's side lugs which transfer cases through the machine.





figure 61-1. Sync Switch Location



figure 61-2. Arch Safety and Arch Home

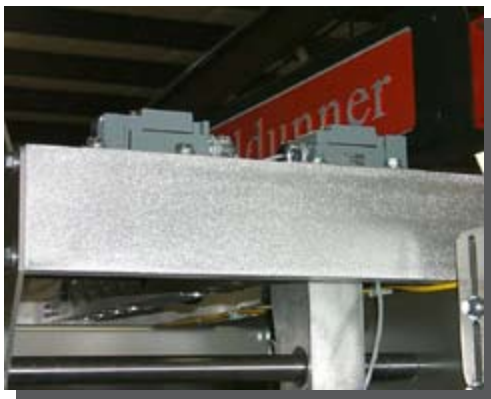


figure 61-3. Top Rails In / Out

## **Limit Switches (LS)**

### **1 Sync**

When a flight lug passes the sync switch, the encoder count is zeroed.

The Sync switch is located inside the machine frame below the rolls, on the left side of the box.

### **2 Arch Up / Down Safety**

When actuated this switch causes the arch motor to stop moving the arch. It prevents the arch from going too high or too low.

The Carriage Up / Down Safety is located on the inside arch support on the infeed side.

### **5 Top Rails Out**

### **6 Top Rails In**

These two switches form the limits of Top rail movement. When a switch is made the rails stop moving. They must then be manually jogged away from the switch.

The Top Rails In and Out limits are located on top of the arch on the discharge side of the support. They are on the right side of the machine.

### **7 Precentering Rails Out**

### **8 Precentering Rails In**

These two switches form the limits of Precentering rail movement. When a switch is made the rails stop moving.

They must then be manually jogged away from the switch.

The Precentering Rails In and Out limits are located beneath the roller deck on the right side of the machine.

### **10 Front of Box Detect - Tape**



# Sensing Devices

---



figure 62-1. Front Of Box - Tape Switch



figure 62-2. Bottom Rail Switch Locations

When made the pulses from the Tape movement sensor(s) are monitored for correct operation.

The Front of Box #2 switch is located on the right rail just before the top tape head.

## **11 Arch Home**

## **13 Top Rails Home**

## **14 Precentering Home**

When the machine is started up the servo driven components will move to the home positions designated by the positions of these switches.

The Arch Home Switch is located on the inside of the arch support on the discharge side.

The Bottom Rails Home Switch is located beneath the roller deck near the tape heads.

The Top Rails Home Switch is located on top of the arch, on the infeed side of the support.

The Precentering Home Switch is located beneath the roller deck in the precentering section. It is located on the right side of the machine, between the In and Out Limits for the precentering rails.

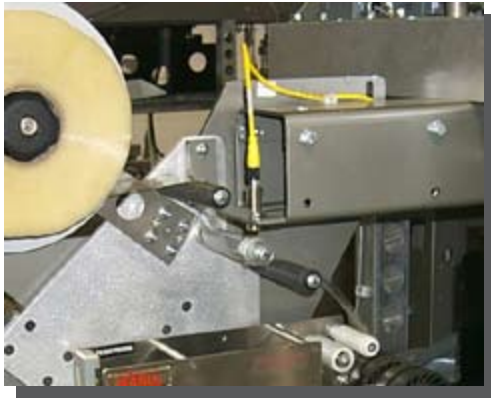


figure 63-1. Top Tape Motion Sensor

## **Proximity Switches (PRX)**

### **1 Top Tape Motion \***

### **2 Bottom Tape Motion \***

The Tape Motion Proximity Switches generate pulses as tape is pulled through the tape head. At a point in transfer the pulse count is compared to a control figure to verify correct tape application. If there are too many pulses a Tape Cut Jam is set. If there are not enough then a Tape Apply Jam is set. The Top Tape Motion Switch is mounted near the top tape head among the tape guides. The Bottom Tape Motion Switch is mounted just outside machine frame on the out-board tape mount.



figure 63-2. Bottom Tape Motion Sensor

# Sensing Devices

---



figure 64-1. Precentering Gate Photoeye



figure 64-2. Main Gate Photoeye

## **Photoeyes (PE)**

### **1 Precentering Gate**

When this switch is made the precentering gate is brought down to allow the case to enter the precentering section of the sealer.

The Precentering Gate PE is located at the infeed end of the machine on the right side of the precentering gate.

### **2 Main Gate**

When this switch is made the main gate is brought down to allow the case to enter the sealer.

The Gate PE is located at the infeed end of the main machine on the right side of the main gate.

### **3 Customer Supplied**

### **4 Bottom Low Tape**

### **5 Bottom No Tape**

When the Low Tape switch is released the system will indicate a low tape situation. The yellow beacon will come on and the display will show the appropriate message. If the No Tape switch is released then the yellow beacon will flash and the system will hold until the tape supply is replenished. The display will show a message indicating the tape is out.

### **6 Top Low Tape**

### **7 Top No Tape**

When the Low Tape switch is released the system will indicate a low tape situation. The yellow beacon will come on and the display will show the appropriate message. If the No Tape switch is released then the yellow beacon will flash and the system will hold until the tape supply is replenished. The display will show a message indicating the tape is out.

**DANGER**

TURN ELECTRICAL AND AIR OFF BEFORE  
CLEANING OR REPAIRING MACHINE

**DANGER**



figure 65-1. Main  
Air Gate Lock-Out

### Lock Out

The Main Disconnect and the Main Air Gate feature Lock-Out capabilities. When turned to the off or exhaust (**EXH.**) position the corresponding switch can be locked into position to prevent power from being supplied to the machine.



figure 65-2. Tension Adjustment

### Flight Bar Drive Chain Tension Adjustment

The tension adjustment bolts for the Flight Bar Chain are located on the outside of the discharge end of the machine (see figure 65-2).

Adjustments made to these bolts affects the bar that runs across the inside of the discharge end of the machine, thus tightening or loosening the tension on the flight bar chains.

- Move the mounting bracket in or out as needed using the 3/8" nuts (moving the bracket toward the chain will increase the tension.)

**NOTE:** Loosen the 3/8" nut on top of sprocket mount before adjusting tension, after adjustment retighten.

- For the motors, loosen the 4 bolts on the gear box that hold the motor in place, and slide motor back for tension.



figure 65-2. Tension Adjustment

# Service Procedures

**DANGER**

TURN ELECTRICAL AND AIR OFF BEFORE  
CLEANING OR REPAIRING MACHINE

**DANGER**

## Solenoid Valve Replacement

1. Stop the machine by pressing one of the Emergency Stop buttons.
2. Place the valve of the Main Air Prep Unit to the exhaust position.
3. Disconnect Air from the machine.
4. Remove the allen head screws on the face of the solenoid valve.
5. Unplug the solenoid valve from the manifold.
6. Plug a new solenoid into the manifold.
7. Make sure gaskets are installed, when replacing the valve.
8. Secure valve to the manifold with the allen head screws.
9. Reconnect Air
10. Reapply air and power to the machine and test the new solenoid valve.
11. Check for air leaks around new valve.

## Air Regulator Diaphragm Replacement

1. Turn the main air valve on the Main Air Prep Unit to Exhaust
2. Press the Emergency Stop button.
3. Unscrew the regulator's body.
4. Remove and check the condition of the regulator's diaphragm.
5. Install a new diaphragm in the regulator if needed.
6. Reassemble.
7. Reapply air and lift Stop, check air pressure and insure that it's 80psi.

## Air Cylinder Replacement

1. Press the stop button and turn the valve on the Main Air Prep Unit to Exhaust.
2. Remove the air line to the cylinder.
3. Remove the cylinder from it's mount.
4. Secure the new cylinder to the mount.
5. Resecure the air line to the cylinder.
6. Reapply air to the machine by turning the valve on the Main Air Prep Unit in the Supply Position.
7. Lift the stop button, to engage the Air Dump Soft Start.
8. Manually actuate the cylinder by pressing the manual override on the appropriate valve, and check for proper operation.

## Drive Chain Replacement

1. Remove master link on chain.
2. Count the number of pitches on the chain.
3. Cut new chain to the same length by counting the pitches.
4. Install new chain and reconnect with master link.
5. Tension chain by loosening the four bolts on the gear box that hold the motor in place, and slide the motor back for tension, retighten the four mounting bolts.

## Motor (drive chain) Replacement

**For more information on any of the above procedures  
please refer to the appropriate vendor documentation.**

# Service Procedures

**DANGER**

TURN ELECTRICAL AND AIR OFF BEFORE  
CLEANING OR REPAIRING MACHINE

**DANGER**

1. Press the Emergency Stop and turn off the Main Disconnect on the Electrical Panel.
2. Remove the electrical conduit connected to the motor.
3. Remove the connector on the chain between the motor and the driven shaft.
4. Remove the mounting bolts of the motor, to the gear box.
5. Remove the motor from the gear box, by sliding motor away from the gear box.
6. Secure a new motor on the gear box with the mounting bolts.
7. Reconnect the drive chain and electrical connections on the motor.
8. Restart and check for any excessive noise coming from the motor.

## Flight Bar Drive Chain Replacement

1. Remove Power and Air to the machine.
2. Cut new chain to exactly the same number of pitch counts.
3. Transfer flight lugs to new chain, being careful to count pitch counts between each lug (new chain must match the original layout exactly).
4. Remove chain guards.
5. Loosen the tension, remove the connecting link, and remove the old chain.
6. Install the new chain and the new connecting link.
7. Install chain guards.
8. Run Flight lugs to make sure all sprockets are lined up.

**For more information on any of the above procedures  
please refer to the appropriate vendor documentation.**

# Troubleshooting

**DANGER**

TURN ELECTRICAL AND AIR OFF BEFORE  
CLEANING OR REPAIRING MACHINE

**DANGER**

Problem	Cause	Solution
<p>Cases jammed or not transferred in the MARQ Model HPR Random Case Sealer.</p> <p><i>NOTE: The machine will usually stop when jams occur. The appropriate light on the beacon will illuminate indicating the jam. The PLC will display a jam code or description of the jam.</i></p>		<p>Remove all jammed cases from the Random Case Sealer.</p> <ul style="list-style-type: none"> <li>• Determine the location and cause of the jam.</li> <li>• Make the necessary changes and try another case.</li> <li>• Make sure the change that was made solves the problem. If not put the machine back to the same condition it was in before change. (Prior Step)</li> <li>• Try to run another case, watch closely for cause.</li> <li>• Make necessary change and run machine, continue this procedure until smooth operation is obtained, or call MARQ Packaging for technical assistance.</li> </ul>
	<p>Air is not being supplied to the brake clutch which moves the drive chains.</p>	<p>See ‘Air-driven device does not actuate on the machine.’ <a href="#">See page 71.</a></p>
	<p>Make sure that the mechanical components of the machine are operating correctly.</p>	<p>Adjust the flow control on the valve if the movement of the cylinder appears sluggish. To adjust flow control for speed of cylinder, adjustment screws are located between the solenoid valve and the wiring back, there will be screw on the top and one screw on the bottom. One screw adjusts outward stroke speed and one screw adjust return speed. Clockwise slows flow while counterclockwise speeds up flow.</p>
	<p>Lubricate and adjust the drive chain for the machine if needed.</p>	<p>Spray chain lube on the drive chain if needed.</p>

# Troubleshooting

<b>DANGER</b>	TURN ELECTRICAL AND AIR OFF BEFORE CLEANING OR REPAIRING MACHINE	<b>DANGER</b>
---------------	---	---------------

Problem	Cause	Solution
<p>Cases jammed or not transferred in the MARQ Model HPR Random Case Sealer.</p> <p><i>NOTE: The machine will usually stop when jams occur. The appropriate light on the beacon will illuminate indicating the jam. The PLC will display a jam code or description of the jam.</i></p>	<p>Chain tension needs adjustment.</p>	<ul style="list-style-type: none"> <li>• Loosen the two nuts on the mounting bracket of the drive chain's idler. (Infeed end of the machine)</li> <li>• Move the mounting bracket in or out as needed using the 3/8" nuts (moving the bracket toward the chain will increase the tension.)</li> </ul> <p><i>NOTE: Loosen the 3/8" nut on the top of sprocket mount before adjusting tension, after adjustment retighten.</i></p> <ul style="list-style-type: none"> <li>• For the motors, loosen the 4 bolts on the gear box that hold the motor in place, and slide motor back for tension.</li> </ul>
	<hr/> <p>Drive Chain is worn or broken.</p>	<hr/> <p>Replace the drive chain. <a href="#">See page 67.</a></p>
	<hr/> <p>The motor that drives the drive chain is bad.</p>	<hr/> <p>Replace the drive motor. <a href="#">See page 67.</a></p>
	<hr/> <p>Wire is loose to valve operating gate solenoid, or at controller.</p>	<hr/> <p>Check wiring connections at PLC referring to the schematic for proper wire numbers.</p>



# Troubleshooting

**DANGER**

TURN ELECTRICAL AND AIR OFF BEFORE  
CLEANING OR REPAIRING MACHINE

**DANGER**

Problem	Cause	Solution
Kicker carriage comes down too hard on case.	Flow control on solenoid is screwed down too tight.	<ul style="list-style-type: none"> <li>• Change the timing speed of the kicker. Adjust the flow control on the valve if the movement of the cylinder appears sluggish. See <a href="#">page 58</a> for information on adjusting the flow control.</li> <li>• Please refer to vendor documentation for further details.</li> </ul>
	Kicker carriage height sensing actuator are is loose.	Check the point at which the carriage micro switch is activated. Readjust if needed. The proper height for stopping the carriage is 5° from horizontal.
	Pre-Sensing photo eye is not properly aimed, or sensitivity is too low.	Re-aim the pre-sensing photoe eye, adjust sensitivity on back of photo eye.
	Photo Eye mount bent.	Carefully bend the mount to the correct position and re-aim the photo eye if necessary.
Top Guide Rails (side compression), do not come in to fold case.	Photo Eyes nuts loose.	Tighten the photo eye's nut tight against bracket.
	Dirty lines and/or partially blocked valves.	See Air Driven Device does not actuate on machine, <a href="#">page 71</a> .
	Sticky guides for travel of top guide / side compression.	Lube travel assembly with light weight oil.

# Troubleshooting

<b>DANGER</b>	TURN ELECTRICAL AND AIR OFF BEFORE CLEANING OR REPAIRING MACHINE	<b>DANGER</b>
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Problem	Cause	Solution
<p>Air-driven device does not actuate on the machine.</p>	<p>Make sure that air is supplied to the machine.</p>	<ul style="list-style-type: none"> <li>• Check the plant air system.</li> <li>• Check the air lines to the machine for kinks or blockages.</li> </ul>
<p>For a list of air driven devices and their corresponding solenoid valves, see Solenoid Valves.</p> <p><i><b>NOTE:</b> When manually checking the operation of the solenoid valve, the air must be on when pressing the <b>MANUAL OVERRIDE</b> button.</i></p>	<p>Not enough air pressure from the main air prep unit.</p>	<p>If turning the <b>MANUAL OVERRIDE</b> screw does not actuate the cylinder, check the air supply to the solenoid valve.</p> <ul style="list-style-type: none"> <li>• Make power is supplied to the main air prep unit.</li> <li>• Make sure the main air valve is in supply, on the main air prepunit.</li> <li>• Make sure the air regulator gauge is set at 80 psi.                             <ul style="list-style-type: none"> <li>- Pull down and turn the knob on top of the air regulator to adjust the air pressure if necessary. (Turning the knob to the right increases air pressure.) Pushing back up will lock the adjustment in place.</li> </ul> </li> <li>• Make sure the air lines from the main air Prep Unit to the solenoid valve are not kinked or blocked.</li> </ul> <p>See Main Air Prep Unit on <a href="#">page 57</a>. Please refer to vendor documentation for further details.</p>
	<p>Bad diaphragm in regulator.</p>	<p>Change the regulator’s diaphragm if air pressure is still insufficient. See <a href="#">page 67</a>.</p>
	<p>Poor air connections.</p>	<p>Check to be sure the air lines are securely connected from the solenoid valve to the cylinder.</p>
	<p>Blocked air lines.</p>	<p>Check to be sure the air lines are not kinked or blocked.</p>

# Troubleshooting

**DANGER**

TURN ELECTRICAL AND AIR OFF BEFORE  
CLEANING OR REPAIRING MACHINE

**DANGER**

Problem	Cause	Solution
Air-driven device does not actuate on the machine.	Oil buildup in air lines.	<ul style="list-style-type: none"> <li>Adjust the amount of oil supplied in the air lines by turning the adjustment knob on top of the lubricator. Turning the adjustment knob clockwise decreases the amount of oil supplied in the air lines. A window next to the lubricator allows you to count the drops of oil being supplied.</li> <li>The air lubricator should be adjusted to supply one drop of oil into the air lines for every 10 to 15 cases moved through the machine.</li> </ul>
<p><i>NOTE: When manually checking the operation of the solenoid valve, the air must be on when turning the <b>MANUAL OVERRIDE</b> screw. This requires the <b>stop</b> button to be lifted, the <b>guard doors (optional)</b> to be closed and the machine put in <b>manual</b>, and the <b>start</b> to be pressed.</i></p>	Wire is loose to the solenoid valve, or in the electrical panel.	<p>Check wiring connections. A red LED light on the top of the solenoid valve illuminates when an electrical signal is received by the valve.</p> <p><i>NOTE: There may be wire connections in the junction boxes, in the machine.</i></p>
	Bad solenoid valve.	<p>Change the solenoid valve if the cylinder does not actuate. See <a href="#">page 67</a>.</p>
	Cylinder movement sluggish or slow.	<p>Adjust the cylinder cushion restrictor if movement of the cylinder appears sluggish, or slow for the last 1" of travel. See <a href="#">page 59</a>, for more information on the air cylinders.</p>
	Cylinder does not actuate properly.	<p>Replace the cylinder if it still does not actuate properly. See <a href="#">page 67</a>.</p>

# Service Training

**Service Training**

Trainee prerequisites: Completion of Operator Training, Maintenance Training, Completion of PLC Training for the Appropriate PLC System, and Knowledge of basic repair operations, and reading.

PLC Training Materials can be obtained from the PLC Manufacturer.

Classroom hours: ½ hour

Hand-on-training: 3½ hours

Total training hours: 4 hours

Instructor Materials: Two (2) Locks with keys for Air Dump and Main Electrical Panel, Screw Driver Set, Volt Meter, Basic Tool Kit, 1/4-3/8” driver set.  
May need a laptop with software for the machine.

Trainee Materials: Service and Troubleshooting Manual (pages 47-72 of this manual) and Vendor documentation including service information for machine components.

Task or Teaching Point	Additional Information
<b><u>CLASSROOM</u></b>	
I. INTRODUCTION	
A. Briefly describe the course and what each trainee will learn.	
II. MANUAL TRAINING	
A. Installation	Service Manual - You may want to run copies or print the appropriate pages to hand out. Pg. 49 - Pay special attention to air line requirements. Pgs. 50-52 Pgs. 53-64 Pgs. 65-67 Pgs. 68-72
B. Sequence of Operation	
C. Components	
D. Service Procedures	
E. Troubleshooting	
<b><u>HANDS-ON-TRAINING</u></b>	
I. The Machine Does Not Start.	
A. STOP Button.	Each task should be demonstrated for the trainees and whenever possible the trainees should be allowed to perform the tasks.
B. Safety Features (if applicable).	
C. Power Supplied to the Machine.	
D. Fuse.	
E. Motor.	
II. Case Jams.	
A. Clearing the Jam.	Brief Review of procedure covered in operator course.
III. An Air Driven Device Does Not Actuate.	
A. Electrical or Wiring Connections to the Valve.	Have the trainees locate electrical and wiring connections related to each valve operation. Trainees should be able to verify air supply, air
B. Check Air Supply and Pressure.	



# Service Performance Assessment

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## **Before the Performance Assessment**

1. Verify that the work area conforms to all safety standards.
2. Replace one fuse with spent fuse.
3. Decrease the air speed on the kicker valve.
4. Raise the arch just enough (more than 3/8") so the flaps are not sealed well.

## **During the Performance Assessment**

1. Stress the importance of following all safety standards.
2. Ask the trainee to complete each task on the checklist.
  - a. Hypothetical situations - have the trainee go through each step as though the problem is not resolved. Verbally indicate to the trainee that the problem has been resolved after the final step.
3. Check each block of the performance checklist as the trainee satisfactorily performs or satisfactorily demonstrates the ability to perform the step.
4. If the trainee fails to complete a task satisfactorily:
  - a. End the evaluation.
  - b. Review the correct procedure with the trainee.
  - c. Schedule a new assessment time for the trainee.

## **After the Performance Assessment**

1. Verify that the work area has been cleaned up.
2. Verify that the work area is safe.
3. Review the Performance Checklist with the trainee.
4. Sign and date the Performance Checklist on the line provided.
5. Have the trainee sign and date the Performance Checklist on the line provided.
7. Forward all records to the appropriate department, for record maintenance (ie. Training Department, Personnel...)

# Service Performance Assessment

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Tasks	Sat	Unsat
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**Start the Machine**

- |  |                          |                          |
|--|--------------------------|--------------------------|
| 1. Checked STOP Button(s).                         | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Checked Safety Features (if applicable).        | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Checked Power to the Machine.                   | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Checked Fuses.                                  | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. What else would cause the machine not to start? | <input type="checkbox"/> | <input type="checkbox"/> |
| _____  | <input type="checkbox"/> | <input type="checkbox"/> |
- 

**Hypothetical Situation:**

**The gate will not drop - find the problem.**

- |   |                          |                          |
|---|--------------------------|--------------------------|
| 1. Pressed the STOP button.                 | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Check electrical and wiring connections. | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Check the air supply.                    | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Check the air pressure.                  | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Check the air quality.                   | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Replace the Regulator Diaphragm.         | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Replace the Solenoid Valve.              | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. Adjust the Air Cylinder Cushion.         | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. Replace the Air Cylinder.                | <input type="checkbox"/> | <input type="checkbox"/> |
- 

**Hypothetical Situation:**

**The case is not being transferred by the lugs through the machine - find the problem.**

- |                               |                          |                          |
|-------------------------------|--------------------------|--------------------------|
| 1. Check Lug Chain Tension.   | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Check Drive Chain Tension. | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Check Chain Lubrication.   | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Replace the Chain(s).      | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Replace the Motor.         | <input type="checkbox"/> | <input type="checkbox"/> |
- 

**Run the Case Sealer**

- |  |                          |                          |
|--|--------------------------|--------------------------|
| 1. Determined Kicker Problem.              | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Checked Air Pressure on Kicker Valve.   | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Increased Flow Control on Kicker Valve. | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Determined Arch Problem.                | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Corrected Arch Adjustment.              | <input type="checkbox"/> | <input type="checkbox"/> |
- 

**Comments**

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Evaluator Signature and Date

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Trainee Signature and Date

# Warranty

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The warranty for parts or components not manufactured by seller is limited to the warranty as issued by the original equipment manufacturer. No warranties, either express or implied, are made by seller with respect to parts or components not manufactured by seller.

Seller warrants the equipment and parts manufactured by the seller to be free of defective workmanship and materials for a period of one year from the date of shipment from Yakima, Washington. Seller's sole obligation under this warranty is limited to replacing or repairing defective parts found by seller after seller's inspection to be defective, without charge, F.O.B. place of shipment, excluding installation. Seller reserves the right to inspect any claimed defect, repair defective part or install replacement parts, and to perform any adjustment incident satisfactory operation of the equipment.

This warranty applies only to the original customer-owner of the equipment and is not transferable with subsequent resale.

Seller's warranty shall not apply to any equipment or parts that have been improperly maintained, or repaired and/or altered by persons other than the seller. Seller's warranty shall not apply to any equipment and parts damaged by misuse, neglect, or accident. Seller's warranty shall not apply to any equipment and/or parts which have been improperly installed.

No other warranties, either express or implied, as to description, quality, merchantability, fitness for a particular purpose, or any other matter is made by seller. No course of dealing or usage or trade not expressly set forth in this section shall be admissible to explain, modify or contradict seller's warranty in any way.

Seller shall not in any event be liable for incidental or consequential damages or for loss of property resulting from any breach of warranty of this agreement or defect in the equipment or part.

Seller shall not in any event be liable for the failure of the equipment or parts to comply with any federal, state, or local law.



# Notes

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