AXON® CORPORATION

STYROTECH®

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AUTOMATIC SLEEVE / TAMPER EVIDENT BAND APPLICATORS

© OPERATORS MANUAL
EZ-300

Serial No. E-030709

Part No. 7667

Model No. EZ-300

TABLE OF CONTENTS

WARRANTY

Axon Corporation (Seller) warrants its machines to be free from defects in material and workmanship for a period of six (6) months after the date of installation at purchaser's location. Any part which proves to be defective during normal use and service will be repaired or replaced with a new or functionally operative part, free of shipping or service charges. Seller's liability under this warranty shall be limited to material which has been determined by the Seller to have been defective and upon which a claim has been made to the Seller by the original purchaser during the above warranty period.

Claims under this warranty will be honored only after approval by an authorized representative of the Seller. Seller shall incur no obligation under this warranty prior to such approval. Parts authorized for return must be shipped prepaid to the Seller. This warranty does not apply to: 1) Any machines that have been initially installed and operated without the presence of a Seller's authorized service technician or without prior approval for installation and operation by other than Seller's personnel, 2) Any machine that has been altered, modified or repaired without Seller's approval, 3) Any machine which has been subject to misuse, negligence or accident including, without limitation, use of the machine while any parts are loose, broken, out of order, or damaged by the elements. Parts replaced under this warranty are warranted only through the remainder of the original warranty. All claims for warranty parts replacement or service must include such information as Seller designates and in each case, at a minimum, the serial number of the machine.

The foregoing shall constitute the sole and exclusive remedy of any purchaser and the sole and exclusive liability of the Seller in connection with the machine. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS, IMPLIED OR STATUTORY, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTY OF MERCHANTABILITY OR FITNESS AND ALL OTHER OBLIGATIONS OR LIABILITIES OF SELLER, INCLUDING ALL TORT LIABILITY, FOR NEGLIGENT DESIGN OR MANUFACTURE OF THIS PRODUCT, OR OTHERWISE. It is expressly agreed that the Buyer shall not be entitled to recover any incidental or consequential damages, as those terms are defined in the Uniform Commercial Code, and that Buyer shall have no right of rejection or of revocation of acceptance of any part or all of the goods covered hereby.

INTRODUCTION

All of us here at Axon Corporation thank you for choosing our patented EZ-Seal sleever for your operations. EZ-Seal represents extensive design, engineering, and field proven experience in developing an extremely simple and operator friendly system to provide you with years of efficient and satisfactory operation. We promise to do everything within our capability to help you maximize the return on your investment in this EZ-Seal sleever.

EZ-Seal sleeve applicator is a fully automatic system for the application of heat shrinkable sleeves and tamper evident bands. Prior to shipment, the machine has been completely tested in our factory using production samples of your product. With proper installation and care EZ-Seal will provide years of trouble free and reliable operation under the guidance of a trained line operator.

At first, EZ-Seal may appear as a complex machine. However, the machine is made up of standard control components, sensors, and pneumatic devices. The operator should study this manual to gain a thorough understanding of the machine and its main components. Once familiar, the operator should have little difficulty in maintaining the machine in a good operating condition.

SPECIFICATIONS

MODEL EZ-200 SYSTEM

Machine Speed:	Up to 120 Parts Per Minute depending on product size and shape
Sleeve Size:	Layflat: 25-200mm Sleeve Height: 25-170mm
Material Thickness:	40-100 Microns (1.5 - 4.0 Mil)
Electrical Specifications:	115 VAC, 50/60 Hz., Single Phase, 10.0 Amps (machine must be grounded)
Air Requirements:	6 - 10 SCFM at 80 PSIG depending on machine rate 1/4" NPT connection. Air supply to be clean and dry.
Floor Space Requirements:	36" Wide, 48" Deep, 80" High
Weight:	Approximately 800 pounds

MODEL EZ-300 SYSTEM

Machine Speed:	Up to 70 Parts Per Minute depending on product size and shape
Sleeve Size:	Layflat: 150-300mm Sleeve Height: 25-250mm
Material Thickness:	50-100 Microns (2.0 - 4.0 Mil)
Electrical Specifications:	115 VAC, 50/60 Hz., Single Phase, 10.0 Amps (machine must be grounded)
Air Requirements:	6 - 10 SCFM at 80 PSIG depending on machine rate 1/4" NPT connection. Air supply to be clean and dry.
Floor Space Requirements:	36" Wide, 48" Deep, 80" High
Weight:	Approximately 900 pounds

MODEL EZ-400 SYSTEM

Machine Speed:	Up to 50 Parts Per Minute depending on product size and shape
Sleeve Size:	Layflat: 200-400mm Sleeve Height: 25-300mm
Material Thickness:	50-100 Microns (2.0 - 4.0 Mil)
Electrical Specifications:	115 VAC, 50/60 Hz., Single Phase, 10.0 Amps (machine must be grounded)
Air Requirements:	5 - 8 SCFM at 80 PSIG depending on machine rate 1/4" NPT connection. Air supply to be clean and dry.
Floor Space Requirements:	36" Wide, 60" Deep, 80" High
Weight:	Approximately 1,100 pounds

0.0 How to use this Manual:

This Operators Manual has been written and arranged to present information in an easy to follow and understand manner. We use a logical flow of information and common numbering sequence. Additionally, the page layout has been designed to present graphic elements and text information in an easy to locate format.

1. The **Top Summary Bar** includes:
   a. Axon Corporation
   b. Name of Equipment Series : EZ-Seal
   c. Specific Model: EZ-300 (when model-specific information is shown)
   d. The Sectional or Appendix Title

AXON Corporation	EZ-SEAL	How to use this Manual

AXON Corporation	EZ-SEAL-300	7.0 EZ-Seal Applicator

2. The **Lower Summary Bar** includes:
   a. Revision Date
   b. Specific Information within the Section displayed on that page
   c. Page Number

Rev. 12/01/01	7.4.2 Knife Sub-Assembly	32

3. The placement of:

   Summary Information and/or **Sub-Titles** — **Photo Eye**

   NOTES (Bold text) — NOTE

   and Warnings (different symbols) 

   are placed to the right outside edge for easier location.

While every effort has been made to present the most current and accurate information, typographical and/or printing errors sometimes occur. Please bring any of these to our attention at:

1-800-598-8601

TABLE OF CONTENTS

Appendices:

Figures Index:

WARRANTY

1. **Equipment Manufactured by Others:** Seller makes no warranty to Customer with respect to equipment manufactured by others and resold by Seller hereunder. Instead, such equipment will carry only the manufacturer's warranty.

2. **Other Products:** The basic warranty of Seller's equipment is for a period of twelve months, exclusive of purchased components, which is covered by their manufacturer's warranty. Seller warrants each part of its own manufacture to be free of defects in material and/or workmanship, for a period of twelve months to the original Customer. Each part found to be defective shall be replaced free of charge. Labor incurred in removing or installing the defective parts is not covered by this warranty.

   The above warranty does not extend to goods damaged after date of shipment from Seller's plant where the damage is not directly due to a defect in material or workmanship, nor does it apply to goods altered or repaired by anyone other than Seller's authorized employees.

   The above warranty does not extend to failure or damage due to negligence (other than that of Seller), accident, abuse, improper installation (other than installation made by Seller), improper operation; use under abnormal conditions of temperature, moisture, dirt or corrosion, or use with abrasive or corrosive materials.

   Seller will either examine the Products at their site, or issue shipping instructions for return to Seller (transportation costs pre paid by customer). Any Products which Seller determines not be defective as a result of faulty workmanship or material shall be held subject to Customer's disposition instructions upon payment by Customer of the transportation and other charges, if any, advanced or to be advanced by Seller thereon.

3. **Limitations.** *THE WARRANTIES SET FORTH IN THE FOREGOING PROVISIONS OF THIS SECTION ARE LIMITED TO THEIR PRECISE TERMS AND PROVIDE EXCLUSIVE REMEDIES, EXPRESSLY IN LIEU OF ALL OTHER REMEDIES INCLUDING CLAIMS OF SPECIAL OR CONSEQUENTIAL DAMAGES. SELLER MAKES OR ASSUMES NO OTHER WARRANTIES OR GUARANTEES WHATSOEVER, WHETHER EXPRESSED OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILI TY OR FITNESS FOR A PARTICULAR PURPOSE, AND NEITHER CUSTOMER NOR ANY OTHER PERSON IS AUTHORIZED TO ASSUME FOR SELLER ANY OBLIGATION OR LIABILITY NOT STRICTLY IN ACCORDANCE WITH THE FOREGOING OR TO REPRESENT THAT SELLER MAKES ANY OTHER WARRANTIES OR GUARANTEES.*

4. **OSHA STANDARDS:** Customer is cautioned that all equipment sold by Seller must be used in such manner as to meet the requirements of OSHA, the Occupational Safety and Health Act of 1970, and the regulations issued from time to time thereunder. Seller believes that its equipment is capable of such complying use, but Seller does not represent, warrant or agree to indemnify regarding OSHA matters; and the only warranties Seller makes are those, which are set forth and defined above.

EQUIPMENT SETUP FOR EZ-300 -ALLEN BRADLEY 1500 PLC

CUSTOMER: Quality Assoc. TECHNICIAN: John DATE: 7-9-03
MACHINE SERIAL #: E-030709
ATTACHMENTS : HEAT TUNNEL: ✓ CONVEYOR: ✓
PRODUCT DESCRIPTION: NA

APPLICATOR ADJUSTMENTS:

Conveyor speed (fpm): 60 Applicator rate (ppm): _____
Height adjustment (from the top of conveyor belt to the bottom of applicator enclosure): _____
Band opening adjustment (distance between faces of the suction cups): 6 5/8
Cylinder stroke adjustment measured from:scale(1) or top end of the shaft to top surface of collar(2)
Upstream gripper 1/2 ( ) Downstream gripper 1/2 ( ) Plunger 1 3/8 ( ) After tamp _____ ( )
Air pressure settings (psi):Main regulator 80 Perforation _____ Vacuum _____ Other _____
Film specifications:Layflat width(mm) 304 Thickness(micr) _____ Seam X Tube _____
Film supplier: Customer _____ Other X

T2- 60
T3 80
T4 60
T5 100
T6 30
T7 240
T8 80
T9 100
T10 100

OPERATOR INTERFACE PANEL SETTINGS:

SLEEVE Lowering ON A Blast
Lowering - 20
DELAY - 20
ON - 600
OFF - 40
ON - 40

1. SETUP (Menu screen on OIP):
   Timers (all timers in msecs):

Film cut length (mm)	190	Plunger DOWN Delay (T-6)	40
Number of heads on line	1	Upstream Gripper OUT Delay (T-7)	20
Band Release Delay (T-1)	40	Plunger UP Delay (T-8)	80
Downstream Gripper IN Delay (T-2)	45	Film Feed Delay (T-9)	150
Upstream Gripper IN Delay (T-3)	65	Downstream Gripper OUT Delay(T-10)	250
Knife IN Delay (T-4)	80	Photo Eye Mask ON Delay	0
Knife OUT Delay (T-5)	120	Photo Eye Mask OFF Delay	0

   Master Photo Eye: ON _____ OFF X
   PE Setup Aid _____ PE Delay _____ PE Window _____
   Stepper Settings: Mm to steps scaling (std.=3973) 3973
   Max Speed 2500 Accel/Decel Pulses 56
2. OPTIONS (Menu screen on OIP):
   Print Reg.: ON _____ OFF X
   Undershoot _____ Hunt Time _____ Hunt Speed _____
   Perforation: ON _____ OFF X
   Vertical _____ Horizontal _____ Dwell Timer _____
   Sleeve Lowering: ON X OFF _____
   Plunger Air Blast: Enabled _____ Disabled X
   Delay ~~25~~ Dwell ~~350~~
   Exit Sleeve Lowering: Enabled X Disabled _____
   Device: After Tamp _____ Air Blast X
   ON Delay 25 ON Dwell 350
   ON Time 40 OFF Time 40
   Large Film Mode: ON _____ OFF X
   Pulse Generator: ON _____ OFF X
   Gripper Style: Suction Cup X Cylinder _____
   Low Film Shutdown: Enabled _____ Disabled X Counter _____
   Vacuum Switch: ON _____ OFF X
   Splice Detect: ON _____ OFF X Counter _____
3. SPECIAL (Menu screen onOIP):
   Count
   Test Mode: ON _____ OFF X
   Bypass Mode: ON _____ OFF X
4. REVISION LEVEL (Menu screen on OIP): Program Version PLC 11213 OIP 12207

Fall size Plunger

DANGER

Signifies an operator action or specific equipment area that can result in serious injury or death if proper precautions are not taken.

DANGER

DANGER OF CRUSHING

EXPLOSIVE ATMOSPHERE

KEEP HANDS AWAY FROM PINCH AREA

WARNING

Signifies an operator action or specific equipment area that can result in personal injury if proper precautions are not taken.

WARNING

WARNING: HOT SURFACE

WARNING: KEEP HANDS AWAY FROM KNIFE AREA

CAUTION

Signifies an operator action or specific equipment area that can result in equipment damage if proper actions are not taken.

CAUTION

ELECTRICAL DANGER

Signifies an operator action or specific equipment area that can result in personal injury or death from an electrical hazard if proper precautions are not taken.

ELECTRICAL DANGER

APPROPRIATE MACHINE FUNCTIONS

APPROPRIATE MACHINE FUNCTIONS

INSERT SAFETY LOCKOUT

CONSULT SERVICE MANUAL

ELECTRICAL LOCKOUT

PROTECTIVE EARTH GROUND REQUIRED

TIP

TIP

Signifies information that is provided to help the operator minimize problems in the operation of the machine.

NOTE

NOTE

Useful additional information that the operator should be aware of to perform a certain task.

CHECK

CHECK

Signifies an action that should be reviewed by the operator before proceeding.

IMPORTANT

IMPORTANT

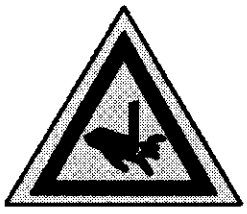
Alerts the operator to actions that can potentially lead to operational problems or equipment damage if instructions are not followed properly.

2.1 Warnings

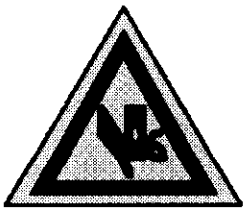
When using this machine, all operating instructions, safety instructions and precautions must be followed and strictly adhered!

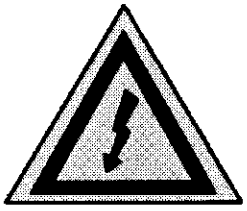
WARNING:

Do not attempt to install, setup or operate this machine before you have read and understood this manual and any accompanying supplier's manuals.



Follow all warnings and safety instructions in this manual. Failure to comply with safety instructions could result in serious injury.

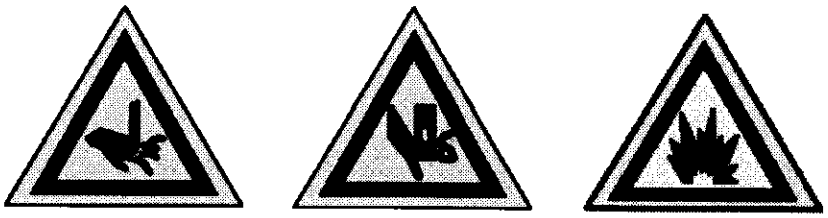




2.2 Safety Instructions

With the use of this machine, the following safety precautions must be obeyed:

- Before installing and first operating the machine, this manual must be read and understood. Follow all operating and safety instructions and exercise extreme care.
- This machine must be operated only by trained personnel. Training must be repeated at regular intervals.
- Safety devices must be checked each day to ensure proper operation. Safety features should be examined once each year by experts.
    - All guards, protective covers and shields must be in place before operating the machine. Do not modify, remove, disable or bypass the guards. Operating this machine with guards, covers and shields removed could result in serious injury.
    - **Never operate this machine without safety devices in place.**
    - Always wear safety glasses and other required safety devices.
- [illegible]eep hands and fingers clear of all moving parts, pinch areas, cut off knife areas, and electrical components at all times. Never touch these areas while the machine is in operation. Do not allow fingers, hands, jewelry or clothes around moving parts during operation of this machine.



Axon Corporation was founded in 1991 with the idea of providing the packaging industry with a family of superior products that are both cost effective and simple to operate. Since the introduction of our first machine we have striven for continuous product improvement while keeping the needs of our customers in mind. Axon offers a range of machine speeds and sizes to meet the needs of a wide range of customers, from the smallest start up business to the largest multi national manufacturer.

Today Axon Corporation is a world wide leading manufacturer of automatic equipment for applying heat shrinkable films in the fields of tamper evident banding, full body sleeve labeling and multi packing. From our base in North Carolina we design, build and test our line of packaging machinery which is then shipped to customers around the world. Axon Corporation is capable of designing custom machinery to meet the specialized packaging needs of any customer. We stand ready to advise you in any application that this technology has to offer.

3.1 Introduction

All of us here at Axon Corporation thank you for choosing our patented EZ-Seal Applicator for your operations. EZ-Seal represents extensive design, engineering, and field proven experience in developing an extremely simple and operator friendly system to provide you with years of efficient and satisfactory operation. We promise to do everything within our capability to help you maximize the return on your investment in this EZ-Seal Applicator.

The EZ-Seal equipment is a fully automatic system for the application of heat shrinkable sleeves and tamper evident bands. Prior to shipment, the machine has been completely tested in our factory using production samples of your product. With proper installation and care EZ-Seal will provide years of trouble free and reliable operation under the guidance of a trained line operator.

At first, EZ-Seal may appear as a complex machine. However, the machine is made up of standard control components, sensors, and pneumatic devices. The operator should study this manual to gain a thorough understanding of the machine and its main components. Once familiar, the operator should have little difficulty in maintaining the machine in a good operating condition.

3.2 Customer Service

While this manual attempts to provide all the information that is needed to properly operate the EZ-Seal Applicator, we realize that there may, on occasion, be questions that you may not be able resolve. Before calling, please have the machine model and serial numbers as well as this manual available to refer to.

PARTS and SERVICE: 800-598-8601

EZ-100

MODEL		EZ-100	EZ-2-100	EZ-4-100
Maximum Machine Speed (Parts per Minute) (Note 1)		150	300	600
Sleeve Size	Lay flat (mm)	20-110		
	Height (mm)	25-200		
Material Thickness	Microns	40-100		
	Mil	1.5-4.0		
Electrical Specifications (Amps at 115 VAC) 50/60 Hz. Single Phase) (Machine must be Grounded)		4	8	16
Air Requirements (CFM at 80 psig) (Note 2)		4	7	12
Floor Space Width x Depth x Height	Inches	40x50x80	40x50x80	80x50x80
	cm	100x130x200	100x130x200	200x130x200
Weight (approximate) (lbs./Kg)		600/270	1200/550	2600/1100

Notes: 1 - Actual product per minute rate achieved will depend on size and shape of the product.

2 - Actual air consumption depends on machine rate. Air connection is 3/8 inch NPT. Air supply to be clean and dry.

EZ-130

MODEL		EZ-130	EZ-2-130	EZ-4-130
Maximum Machine Speed (Parts per Minute) (Note 1)		150	300	600
Sleeve Size	Lay flat (mm)	20-130		
	Height (mm)	25-200		
Material Thickness	Microns	40-100		
	Mil	1.5-4.0		
Electrical Specifications (Amps at 115 VAC) 50/60 Hz. Single Phase) (Machine must be Grounded)		4	8	16
Air Requirements (CFM at 80 psig) (Note 2)		4	7	12
Floor Space Width x Depth x Height	Inches	40x50x80	40x50x80	80x50x80
	cm	100x130x200	100x130x200	200x130x200
Weight (approximate) (lbsJKg)		650/300	1300/600	2600/1200

Notes: 1 - Actual product per minute rate achieved will depend on size and shape of the product.

2 - Actual air consumption depends on machine rate. Air connection is 3/8 inch NPT. Air supply to be clean and dry.

EZ-200

MODEL		EZ-200	EZ-2-200	EZ-4-200
Maximum Machine Speed (Parts per Minute) (Note 1)		120	220	400
Sleeve Size	Lay flat (mm)	20-200		
	Height (mm)	25-200		
Material Thickness	Microns	40-100		
	Mil	1.5-4.0		
Electrical Specifications (Amps at 115 VAC 50/60 Hz. Single Phase) (Machine must be Grounded)		4	8	16
Air Requirements (CFM at 80 psig) (Note 2)		5	8	15
Floor Space Width x Depth x Height	Inches	40x55x80	40x55x80	80x55x80
	cm	100x140x200	100x140x200	200x140x200
Weight (approximate) (lbs./Kg)		800/360	1600/720	3200/1450

Notes: 1 - Actual product per minute rate achieved will depend on size and shape of the product.

2 - Actual air consumption depends on machine rate. Air connection is 3/8 inch NPT. Air supply to be clean and dry.

EZ-300

MODEL		EZ-300	EZ-2-300	EZ-4-300
Maximum Machine Speed (Parts per Minute) (Note 1)		70	130	240
Sleeve Size	Lay flat (mm)	130-300		
	Height (mm)	25-200		
Material Thickness	Microns	50-100		
	Mil	2.0-4.0		
Electrical Specifications (Amps at 115 VAC 50/60 Hz. Single Phase) (Machine must be Grounded)		4	8	16
Air Requirements (CFM at 80 psig) (Note 2)		5	8	15
Floor Space Width x Depth x Height	Inches	46x60x80	46x60x80	72x60x80
	cm	120x150x200	120x150x200	185x150x200
Weight (approximate) (lbs./Kg)		800/360	1600/720	3200/1450

Notes: 1 - Actual product per minute rate achieved will depend on size and shape of the product.

2 - Actual air consumption depends on machine rate. Air connection is 3/8 inch NPT. Air supply to be clean and dry.

EZ-400

MODEL		EZ-400	EZ-2-400
Maximum Machine Speed (Parts perr Minute (Note 1		50	90
Sleeve Size	La at mm	190-400	
	Height mm	25-200	
Material Thickness	Microns	60-100	
	Mil	2.5-4.0	
Electrical Specifications (Amps at 115 VAC) 50/60 Hz. Single Phase) (Machine must be Grounded)		4	8
Air Requirements (CFM at 80 psi) (Note 2)		5	8
Floor Space (Width x Depth x Height)	inches	40x60x80	60x60x80
	cm	100x150x200	150x150x200
Weight (approximate) (lbs./Kg)		1000/460	2000/910

Notes: 1 - Actual product per minute rate achieved will depend on size and shape of the product.

2 - Actual air consumption depends on machine rate. Air connection is 3/8 inch NPT. Air supply to be clean and dry.

EZ-650

MODEL		EZ-650	EZ-2-650
Maximum Machine Speed (Parts perr Minute (Note 1		40	70
Sleeve Size	La at mm	250-600	
	Height mm	25-200	
Material Thickness	Microns	70-100	
	Mil	3.0-4.0	
Electrical Specifications (Amps at 115 VAC) 50/60 Hz. Single Phase) (Machine must be Grounded)		4	8
Air Requirements (CFM at 80 psi) (Note 2)		5	8
Floor Space (Width x Depth x Height)	inches	40x70x80	60x70x80
	cm	100x180x200	150x180x200
Weight (approximate) (lbs./Kg)		1200/550	2400/1100

Notes: 1 - Actual product per minute rate achieved will depend on size and shape of the product.

2 - Actual air consumption depends on machine rate. Air connection is 3/8 inch NPT. Air supply to be clean and dry.

5.1 Safety precautions

THE CUTTING KNIFE IS SHARP AND DANGEROUS. NEVER PLACE YOUR HANDS OR FINGERS BETWEEN THE KNIFE BLADES UNDER ANY CONDITION!

The "MAIN DISCONNECT" switch can be used to power down the machine. Always unplug or disconnect electrical power at the source and disconnect the compressed air source prior to performing any maintenance work on the machine. Work on the electrical components of this machine should be performed by qualified personnel.

The EZ-Seal is a fully automatic machine. Once activated, it starts and stops automatically. **NEVER REMOVE DAMAGED BANDS OR PACKAGES WHILE THE MACHINE IS RUNNING OR WHEN THE MACHINE IS IN "AUTO" MODE.** Always depress the master stop button first.

CAUTION If repair work on the machine necessitates the removal of any of the safety covers or guards, please MAKE CERTAIN that in addition to all normal safety practices covered in this manual, the following steps are also strictly followed:

1. The main air supply to the machine must be disconnected. FIRST PRESS THE EMERGENCY STOP. AIR WILL BE PURGED THROUGH THE AIR DUMP VALVE. THEN DISCONNECT THE MAIN AIR SUPPLY.

2. The main electrical supply to the machine must be disconnected.

3. Upon completion of the service, replace all covers prior to reconnecting the electrical power and compressed air. Replace all machine guards before restarting the machine.

The EZ-Seal machine is heavy and can be tipped over. Follow proper material handling procedures when uncrating and moving the machine.

Always use recommended replacement parts. The use of substandard or non-conforming components for a brief period of time may cause the machine to malfunction. All components have been carefully chosen for efficiency, durability, and reliability. Please refer to this manual for information regarding spare parts. If there is any doubt, please call Axon Corporation.

Good Housekeeping is a good safety practice and aids in improving machine efficiency. Keep the machine and area around the machine clean at all times before restarting the machine. **TIP**

NOTE

Please inspect the machine for any obvious signs of damage, which may have occurred during shipping. Your EZ-Seal system was inspected and found to be in good order when it left our plant. If any signs of damage are detected, contact Axon Corporation immediately.

Prior to attempting the installation of your new EZ-Seal Applicator please review the contents of this entire manual to familiarize yourself with the machine.

Inventory and store in a safe place the change part tooling which has been provided with your EZ-Seal Applicator. If you feel you are missing any of the change parts call Axon Corporation prior to disposing of any of the shipping materials. You should have one change part for each size of film to be run on the applicator.

Locate the crate containing the EZ-Seal machine near its final location if space permits to minimize the amount of handling required.

The EZ-Seal machine is heavy and can be tipped over. Follow proper rigging procedures when uncrating and moving the machine.

Place the machine in its final location ensuring that the grippers are over the center line of the conveyor. Direction of product flow is normally from left to right through the EZ-Seal machine unless it was specified otherwise in the purchase order.

Adjust the four leveling bolts at the bottom of the frame so that the machine sits level front to back and side to side. The leveling bolts have a maximum of 1 inch of adjustment. Once the machine has been leveled tighten the jam nuts.

NOTE

The alignment of the machine over the conveyor is critical to accurate film placement and high operating efficiency. Consideration should be given to fastening the machine to the floor or conveyor to prevent misalignment due to accidental bumping of the machine.

Secure all required utilities, such as power source and compressed air for the Applicator.

Compare the film to be used on the Applicator with the Film Specifications provided. If deviation in excess of the stated tolerances are found, contact Axon Corporation or the film manufacturer immediately.

APPLICATION SPECIFIC DOCUMENTATION

Your EZ-Seal Applicator is made up of standard components but, since each application is unique, there are documents that describe how your Applicator is designed to function. These documents are the Film Specification and Equipment Parameter Sheets.

6.1 FILM SPECIFICATION

In the design and manufacturing process of your machine, Axon Corporation provided a preliminary Film Specification to you or your film supplier to use in the manufacture of the film for your specific application. This specification tells the film supplier how to manufacture the film to be used on your Axon Corporation EZ-Seal Applicator. Since the Applicator is designed to use film manufactured to this specification, out of specification film may adversely effect performance.

A typical Film Specification provided by Axon Corporation provides the following information:

1. Roll Core Size - Usually 4 7/8" (125mm) to fit the hub of the unwind reel
2. Roll Maximum Diameter - 15" (380mm) to fit the unwind reel.
3. Gage - Application dependent but a minimum of 40 Micron.
4. Layflat Width - Application dependant specified in millimeters +/- a tolerance.
5. Splices - Tail in, overlap not to exceed 5mm, thin gage red splicing tape. (Note: The customer can choose to specify a maximum number of splices per roll.)
6. Seam - Off Center, 75/25 (for seamed material)
7. Print Registration - Print sensing area 4 mm in feed direction by 10 mm in cross direction.
8. Unwind Direction - Tail Leading
9. Sleeve Detection - (Optional) 3X UV (360-365nin wavelength) luminescence differential between band and container background.

6.2 EQUIPMENT PARAMETER SHEETS

Prior to shipment every machine is thoroughly tested. This includes running production containers and film if they were provided to Axon Corporation. The Equipment Parameter Sheet provides you with a description of how the EZ-Seal Applicator was setup during the factory test. These setup sheets will aid you in reducing the amount of line down time during product changeover.

An Equipment Parameter Sheet contains the following information:

1. Conveyor Speed (fpm) - Speed of the test conveyor in feet per minute. - This number is based on either the conveyor speed or product per minute rate.
2. Machine Rate (ppm) - The number of products per minute to run through the machine.
3. Machine Height - The distance measured between the top of the conveyor and the bottom of the machine enclosure.
4. Film Layflat Width (mm) -The width of the film in millimeters measured from crease to crease while laying flat.
5. Film Thickness (microns) - The gage of the film.
6. Band Opening Adjustment - Measured from the inner side of the gripper adjustment bracket to the face of the bumper.
7. SETUP - PLC setup values entered via the Operator Interface Panel (OIP)

Film Cut Length (mm)		#
Number of Heads Online		#
Band Release Delay	(T1)	#

cont. ...

Downstream Gripper In Delay	(T2)	#
Upstream Gripper In Delay	(T3)	#
Knife In Delay	(T4).	#
Knife Out Delay	(T5)	#
Plunger Down Delay	(T6)	#
Upstream Gripper Out Delay	(T7)	#
Plunger Up Delay	(T8)	#
Film Feed Delay	(T9)	#
Downstream Gripper Out Delay	(T10)	#
Large Film Mode		On/Off

8. OPTIONS - Optional equipment turned on and off and setup via the OIP.
    - Print Registration — On/Off
        - Print Registration Undershoot — #
        - Print Registration Hunt Time — #
    - Perforation — On/Off
        - Perforation Type — Vertical/Horizontal
        - Perforation Dwell Timer — #
        - Sleeve Lowering — On/Off
        - Device — After Tamp/Air Blast
        - Sleeve Lowering ON Delay — #
        - Sleeve Lowering ON Dwell — #
        - Air Blast OFF Time — #
        - Air Blast ON Time — #
    - More
        - Bypass Mode — On/Off
        - Low Film Alarm — Enabled/Disabled
            - Low Film Shutdown — #
            - Low Film S/D Counter — #
        - Master PE — On/Off
            - Master PE Delay — #
            - Master PE Window — #
9. After Tamp Stroke Adjustment - Measured from top end of shaft to top surface of collar.
10. Test Mode — Normally Off
11. Photo Eye Mask (On & Off Delay) — # & #
12. Gripper Style — Suction Cups/Cylinder
13. Stepper Driver Settings
    - Mm to steps scaling — #
    - Max Speed (Hz) — #
    - Accel/ Decel Pulses — #
    - Print Registration Hunt Speed — #
14. Air Pressure Settings
    - Main Regulator — #
    - Perforator — #
15. PLC and OIP Software Revision Level — # & #
16. Stepper Model — #
17. Miscellaneous

7.0 EZ-Seal Applicator Main Components - Mechanical

This section describes the functions of the different parts of the EZ-Seal Applicator. By breaking down the machine and describing each in detail you will be able to understand how the machine functions and in the case of trouble with the machine, diagnose and fix the problem quickly.

7.1 Film Unwind System

The Film Unwind System is mounted directly behind the machine. The unwind system consists of the film roll holder and a pneumatic cylinder. The holder supports the roll of film in the machine , and the pneumatic cylinder provides a simple and positive means of unwinding the film sleeve to minimize the pull force required by the stepper drive system. The unwind cylinder retracts when the stepper motor starts to advance the film (Index). This provides a loop of slack in the film for the stepper motor to draw from. At the end of the index, the cylinder extends to unwind more film off of the supply roll. The unwind cylinder is controlled by the Programmable Logic Controller via the solenoid valves.

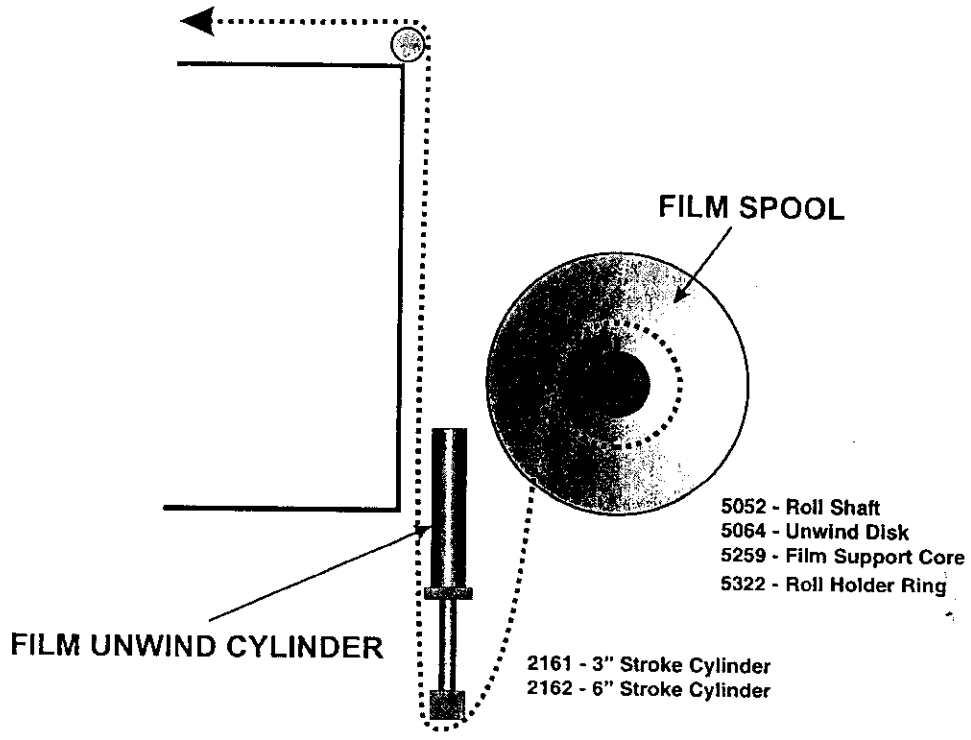


Figure 1 - FILM THREADING PATH

cont. ...

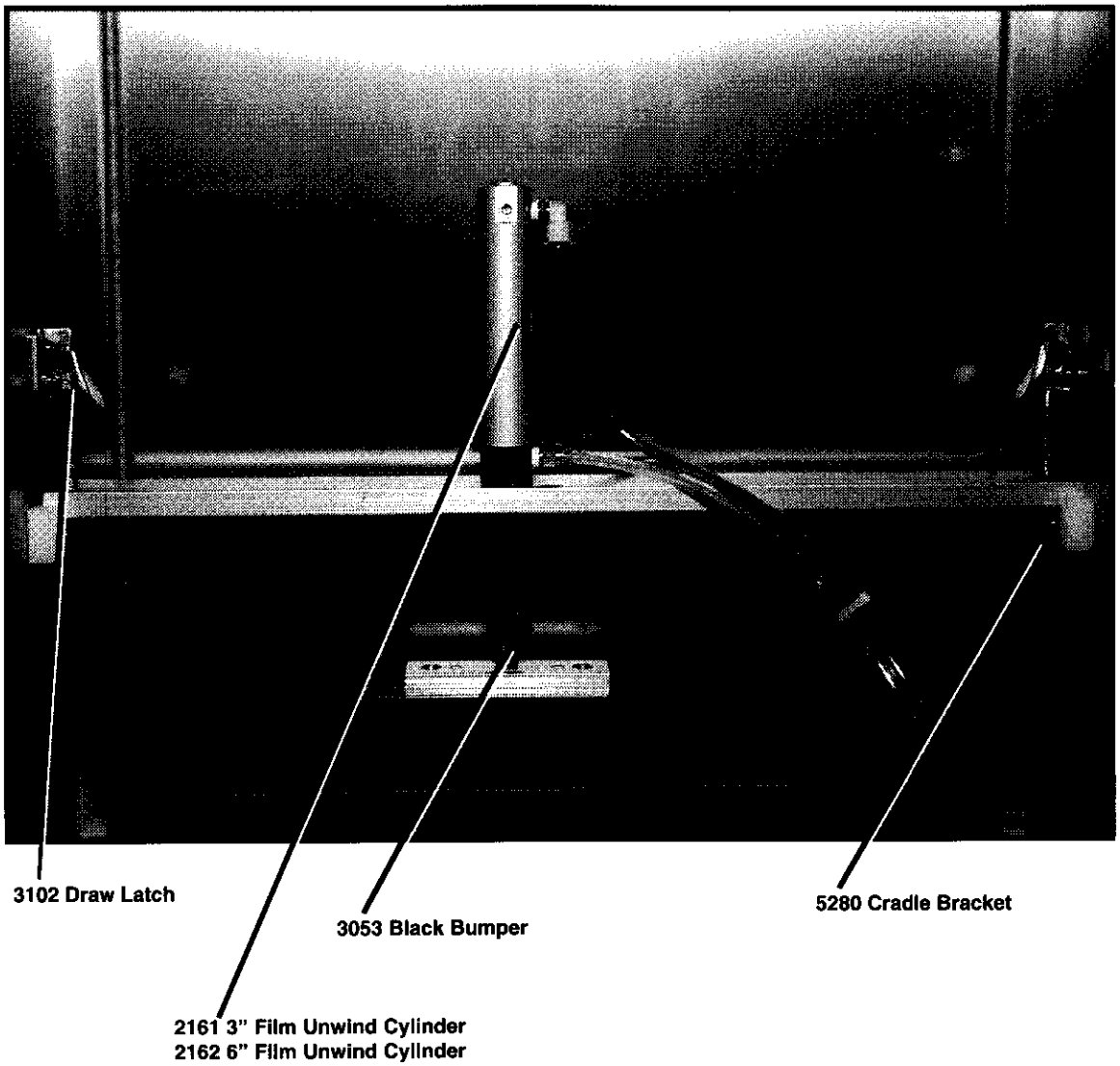


Figure 2 - FILM UNWIND ASSEMBLY

The Unwind Cylinder should retract quickly to leave a loop of film and extend slowly so that the film is not punched out of the drive rollers in the Pull Roll. The extension speed is adjusted using the built-in flow control on the solenoid valve (see Chapter 9.3). Turning the top flow control on the film advance solenoid clockwise will slow the extension speed of the film unwind cylinder.

7.2 Film Path Support

The film travels from the unwind station in the back of the machine to the front of the machine via a series of support rollers. These support rollers and the rails that support them may also provide attachment points for the optional Print Registration, Horizontal Perforation and Vertical Perforation stations. For detailed descriptions of these options, please refer to Appendix E, Installed Options.

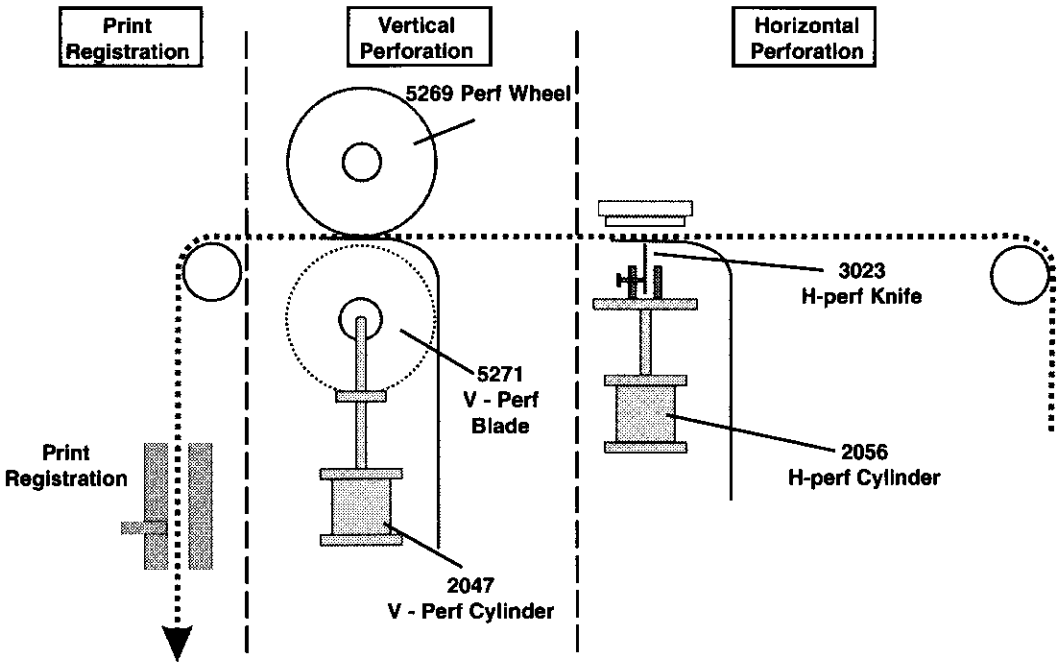


Figure 3 - FILM PATH (Rear to Front)

The Film Support Path also provides for a tensioning device that can maintain a slight and constant tension on the film to minimize web flutter as the stepper motor starts and stops. This tensioning device is especially important with the Print Registration and Perforation options to maintain accuracy of the registration. Typically, a Tensioner is mounted at each support roller.

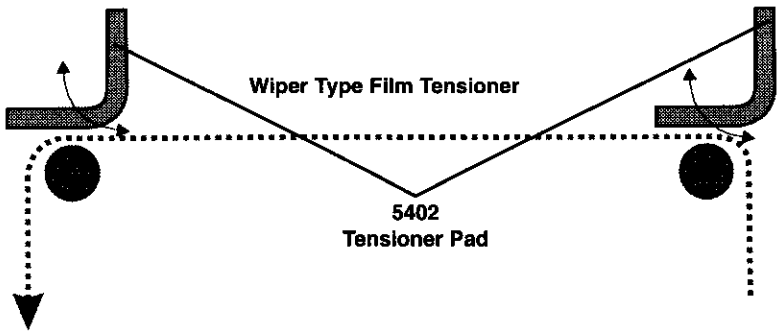


Figure 4 - FILM TENSIONER

7.3 Bullet

The Bullet is a change part that is inserted inside the film tube. The Bullet provides a means to open and cross fold the film as it enters the Pull Roll assembly. The bullet is sized to fit snuggly inside the film tube. The bullet should be tight enough so that it will not fall out if the film tube is held up, and loose enough so that the bullet can be easily moved with the fingers inside the film tube.

NOTE

NOTE: As a rule, the top and bottom plates of the bullet should be adjusted so that when the film is drawn to one side, 1mm of slack is present.

The top plate has pointed ends to maintain proper tracking of the film. The bottom plate has round ends and two small feet at the bottom. The Bullet is made of special low friction plastic where it contacts the film. Be sure to install the bullet in the correct orientation. Installing the bullet upside down will cause poor performance of the Applicator.

In normal operation, the bullet is inserted into the film so that the edges of the top plate align with the original creases on the film tube. Then the bullet is pushed into the film until the leading edge of the film extends beyond the bottom plate of the bullet by 4 to 5 inches. Next, the operator should crease the leading edge of the film tube at 90 degrees from the original creases on the film tube. This makes the subsequent threading of the sleeve through the drive rollers and the knife much easier.

NOTE

NOTE: Refer to Figure 11 for a complete view of the film and bullet installation.

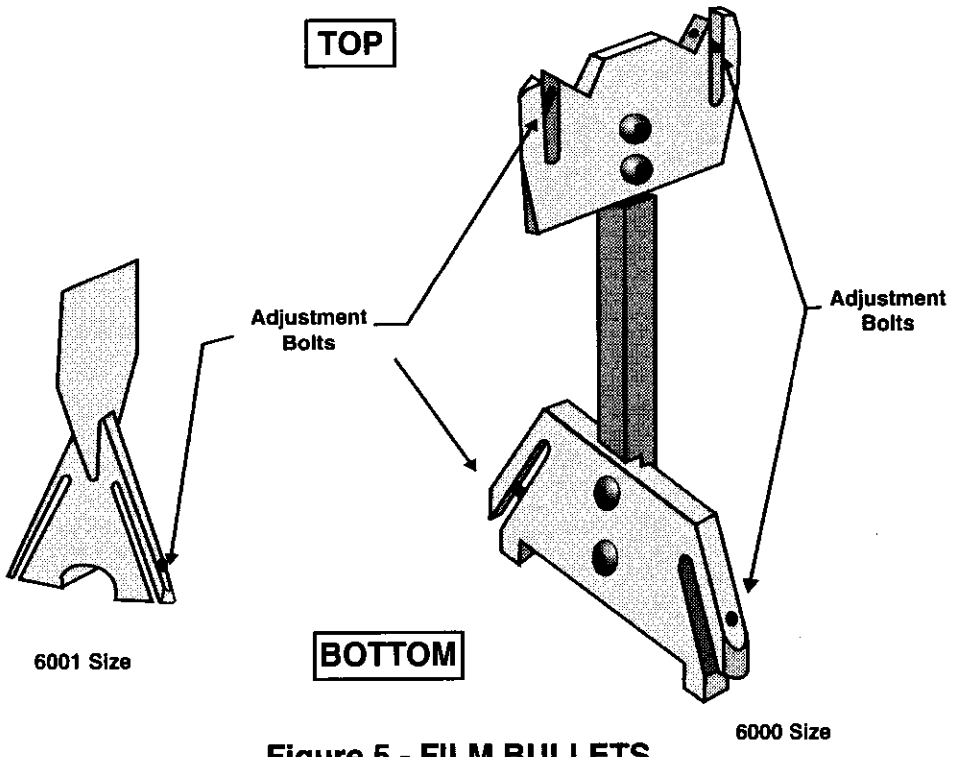


Figure 5 - FILM BULLETS

7.4 Pull Roll Assembly

The pull roll assembly provides the structure for four functions which will be broken down into sub assemblies.

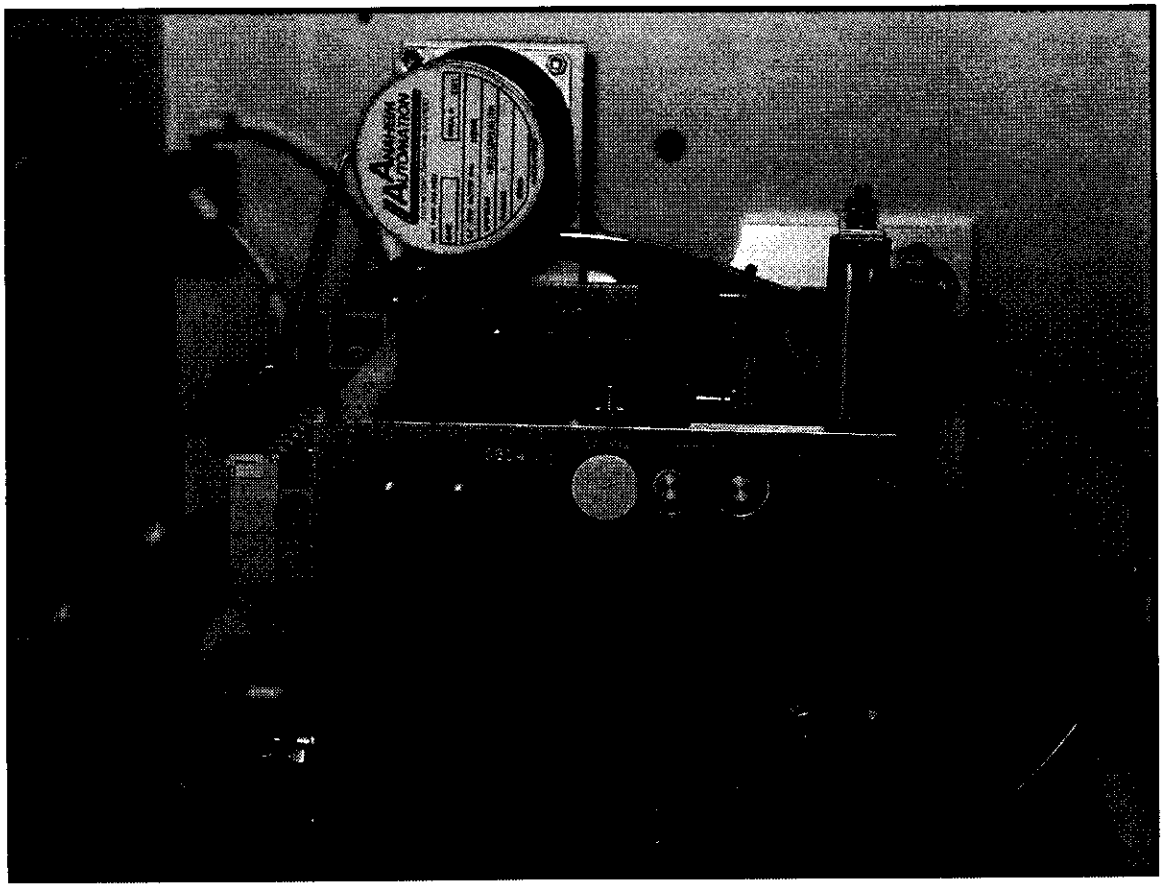


Figure 6 - PULL ROLL ASSEMBLY - EZ - 300

1. The film feed subassembly. It consists of the support and guide rollers for support of the bullet, the stepper motor, pulleys, gears, and nip rollers which advance the film.

2. The knife subassemblies. It consists of a fixed and moving blade which cuts the film after it has been advanced.

3. The grippers subassembly opens the cut film into a shape consistent with the product shape.

4. The plunger subassembly places the cut film onto the product.

cont. ...

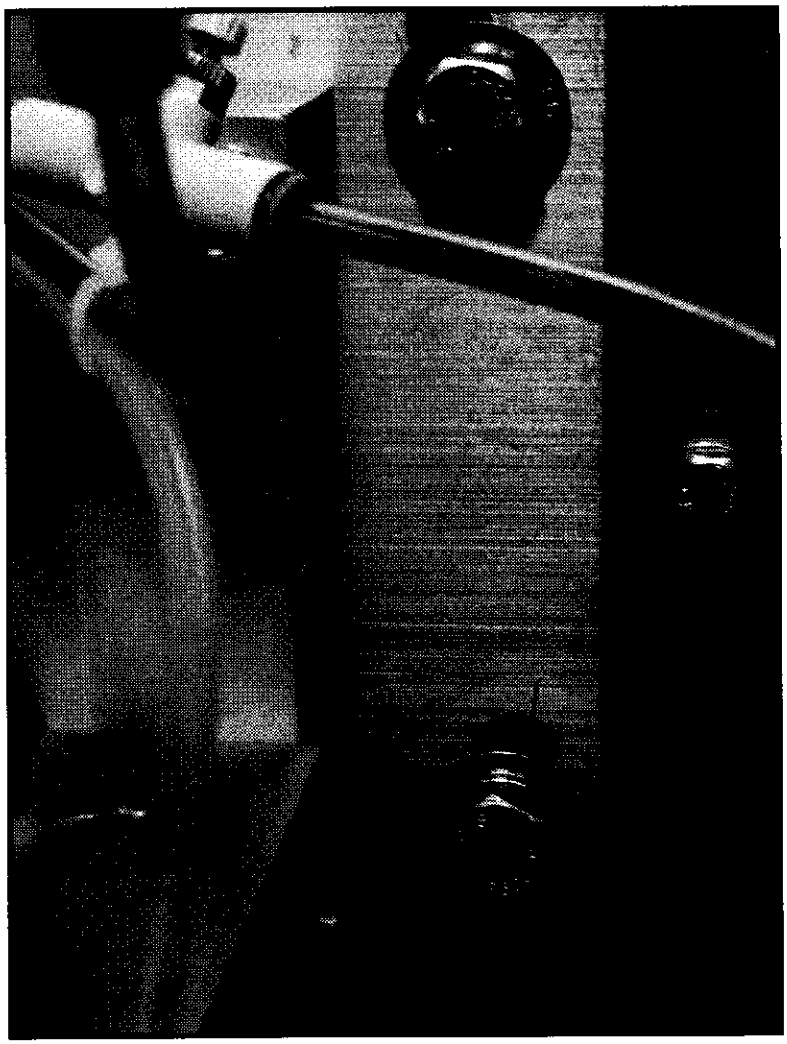


Figure 7 - PULL ROLL ANGLE ADJUSTMENT

NOTE:

NOTE: The entire Pull Roll may be mounted at an angle depending on the application. This is achieved by accessing the mounting bolts on the tooling plate.

7.4.1 Film Feed Sub Assembly

The Film Feed subassembly has two functions. The first is to open the film, cross fold it and advance it to the cutter. The second is to remove the original crease from the film. The upper idler rollers support the bullet in the film tube and the bullet guides hold the bullet in the center of the pull roll. The drive rollers are driven via a timing belt from the stepper motor. These rollers have a rubberized coating which allows them to advance the film through the machine. It is important to keep these rollers clean. Cleaning with a moist, clean cloth and alcohol on a daily basis is recommended.

NOTE:

NOTE: Never use oil based solvents or oily cloths to clean rollers.

cont. ...

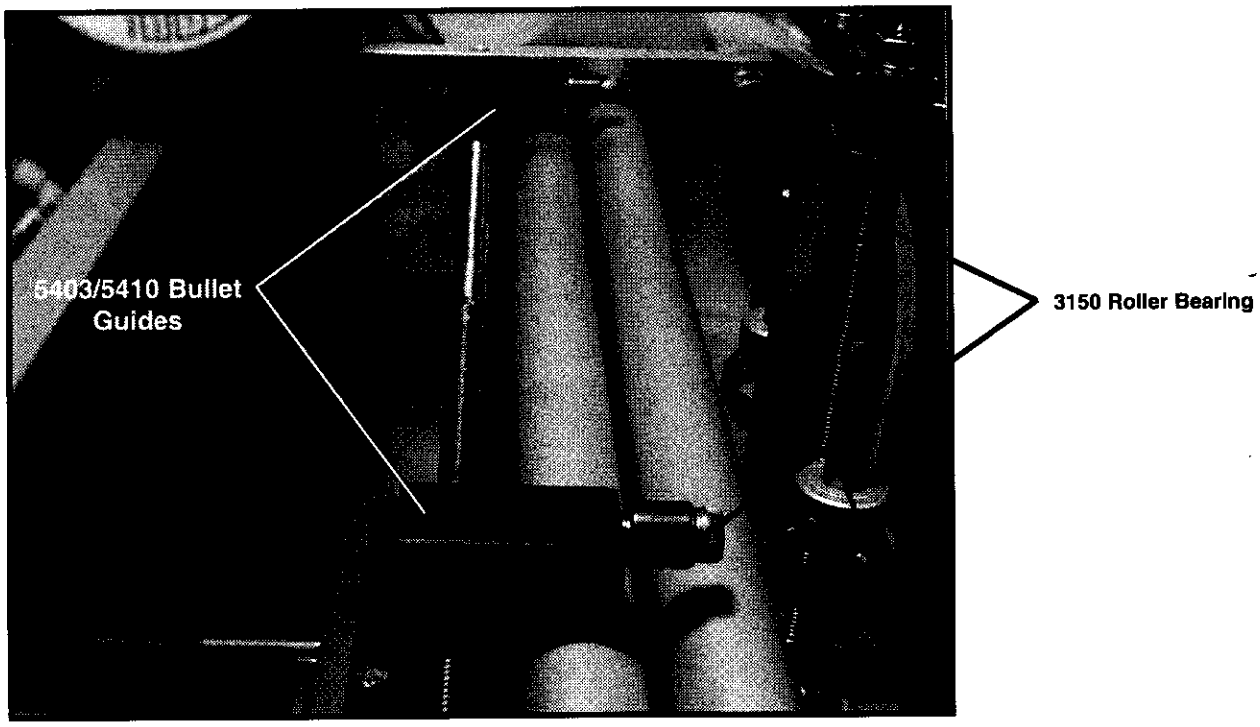


Figure 8 - BULLET GUIDES

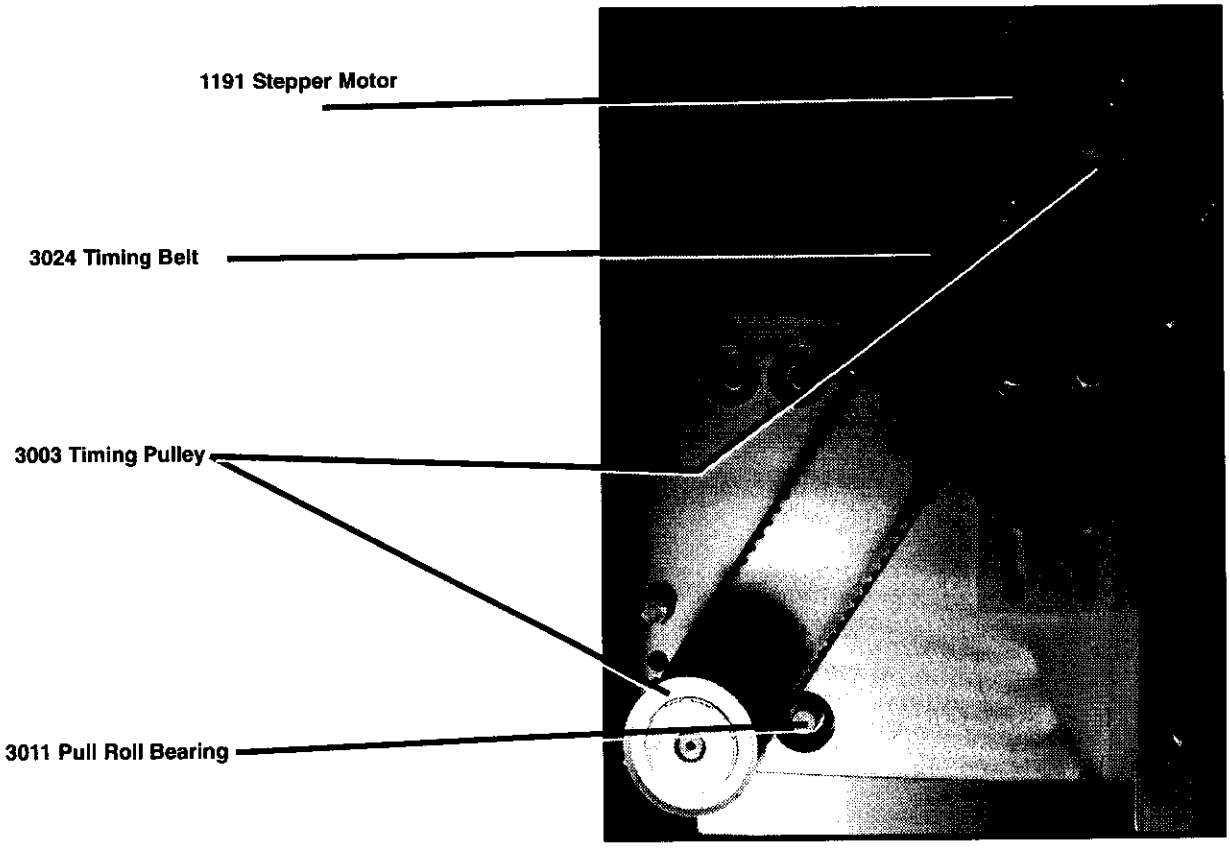


Figure 9 - STEPPER MOTOR DRIVE ASSEMBLY

cont. ...

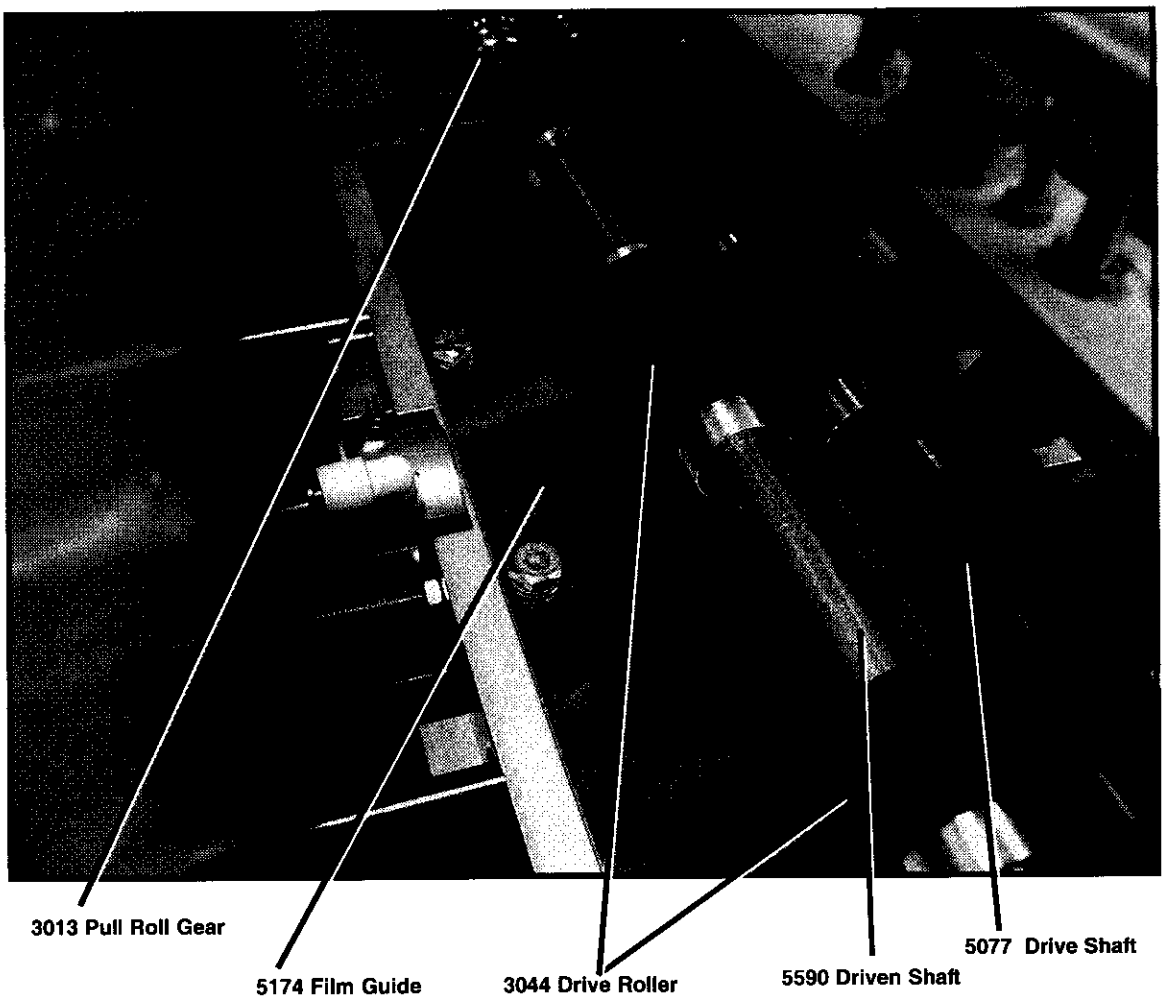


Figure 10 - DRIVE ROLLER ASSEMBLY

When threading the film through the machine, the bullet is placed inside the film tube and the film is creased at 90 degrees to the original creases. The film is then threaded through the idler rollers and the drive rollers. The original crease in the film should fall in the center of the drive rollers. The film can then be manually advanced using the manual film feed knob on the drive rollers until the bullet is resting on the top of the idler rollers and the film is protruding through the knife assembly. When the bullet is resting on the idler rollers the two bullet guides should be brought in to hold the bullet in the center of the idler rollers. Adjust until the guides are tight against the sides of the bottom bullet plate. Then, back off the guides 1/2 turn and tighten the locking bolt.

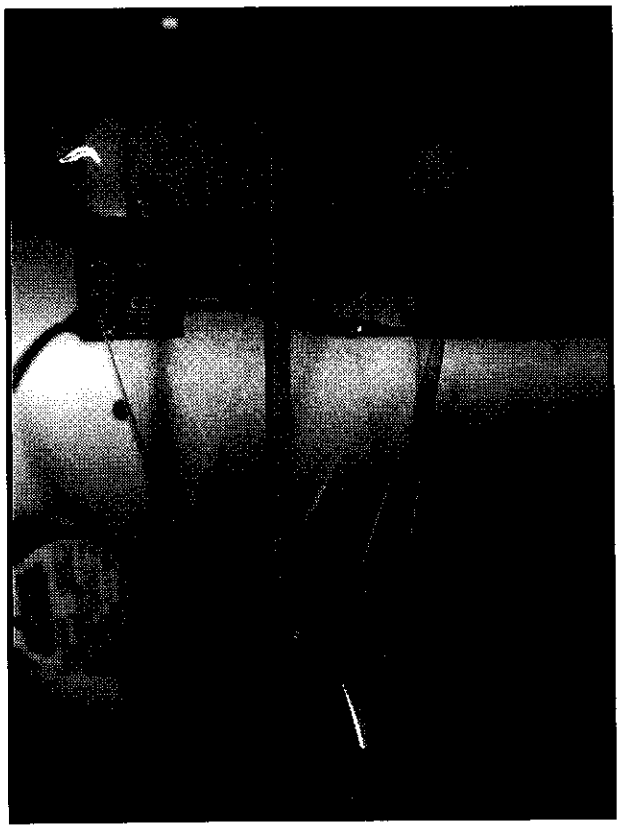


Figure 11 - BULLET with FILM THREADED

7.4.2 Knife Sub-Assembly

The Knife Sub-Assembly forms the foundation for the other parts of the pull roll and forms the connection between the pull roll and the tooling plate. The Knife Block has mounting points for the fixed blade and the air cylinder for the moving blade. The knife blade set is carefully machined and sharpened and made from high carbon steel. With proper adjustment the knife has a rated life of 8 million cycles before it needs re-sharpening. The blade set can be re-sharpened twice for a total life of 24 million cycles.

cont. ...

TO AVOID SERIOUS PERSONAL INJURY DISCONNECT ALL SOURCES OF ELECTRICITY AND PNEUMATIC AIR BEFORE ATTEMPTING ANY SERVICE ON THE BLADE SET OR ATTEMPTING TO CLEAR A POSSIBLE FILM JAM.

For instructions on proper setup of the blade, refer to SECTION 7.4.2.1

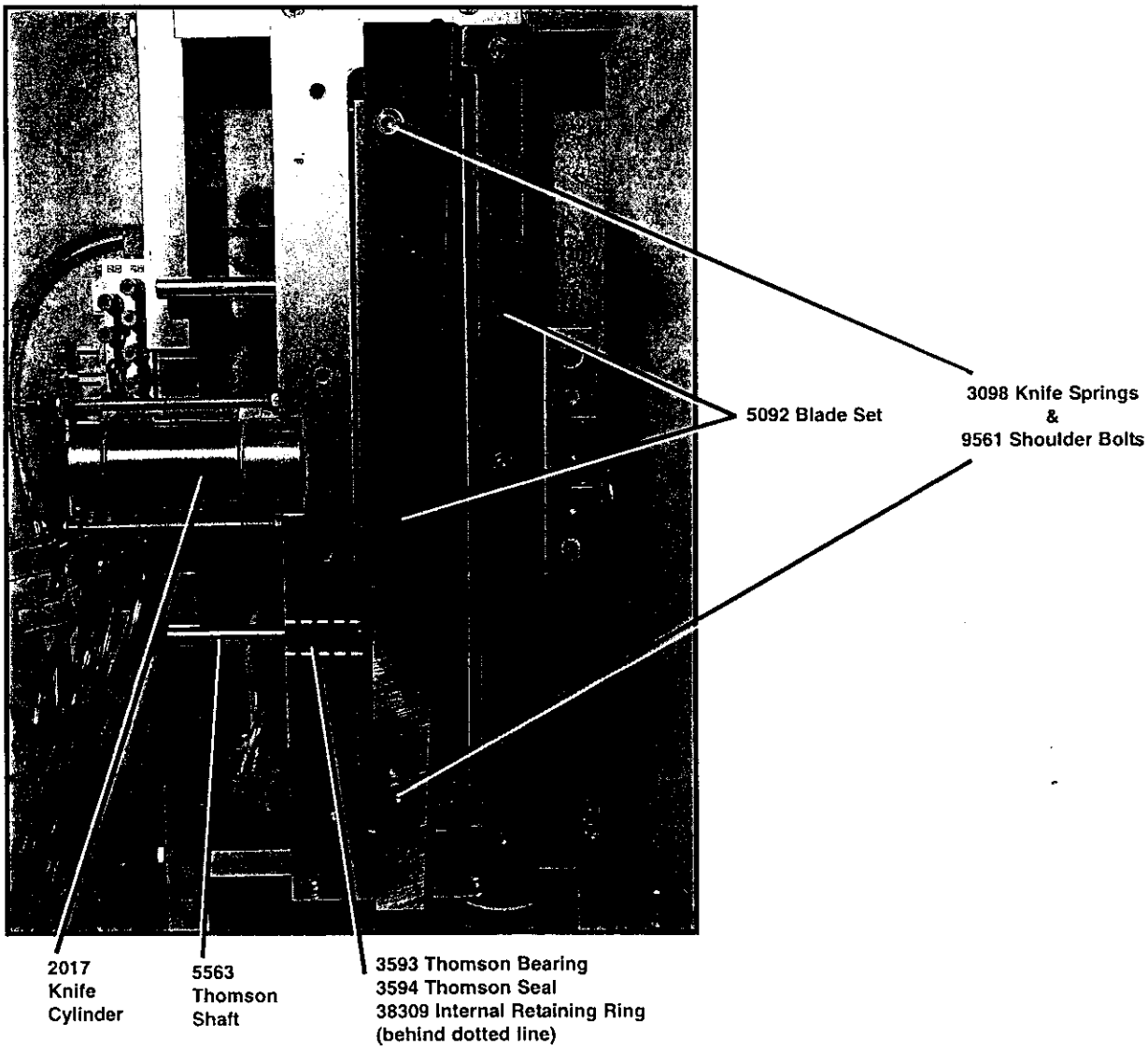


Figure 12 - KNIFE ASSEMBLY

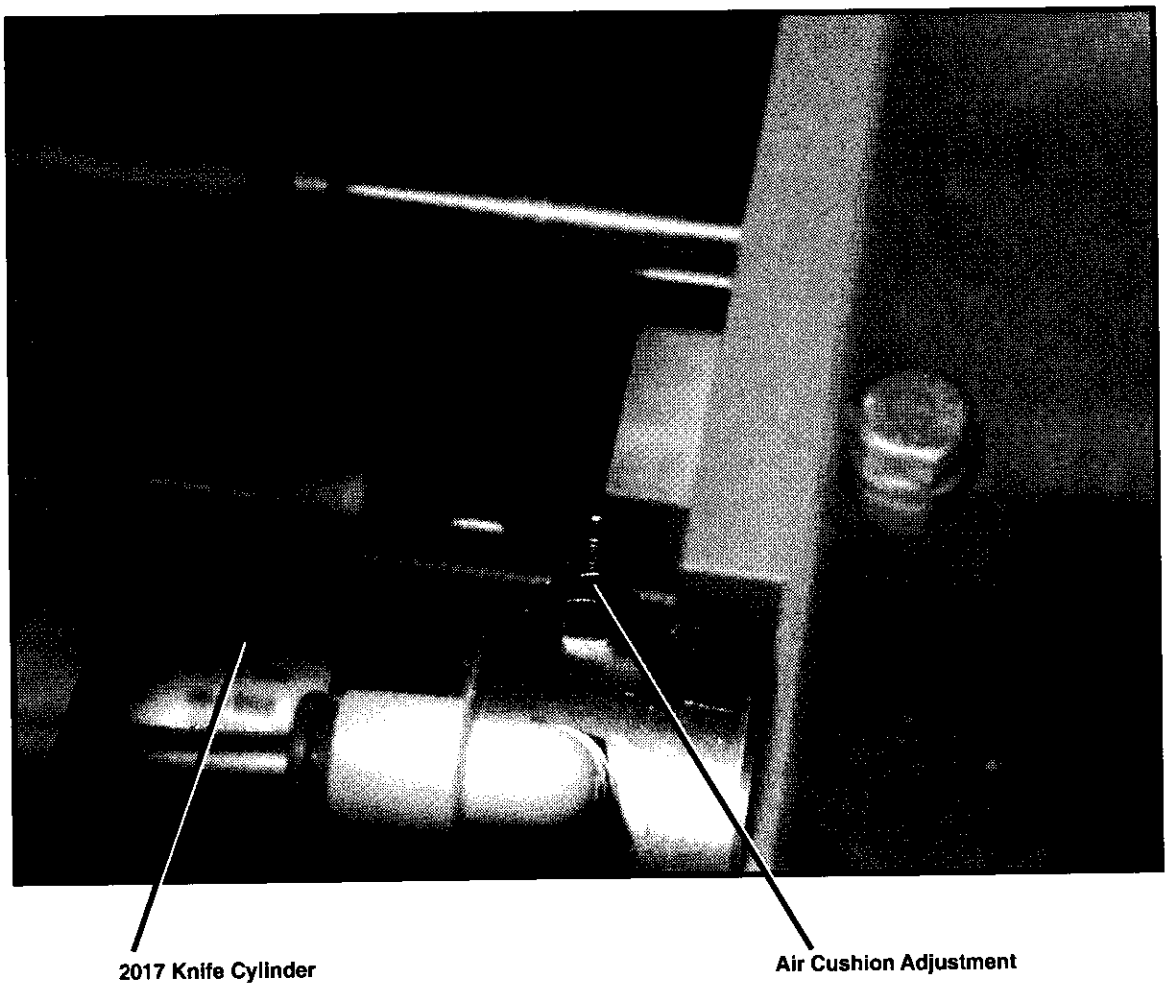


Figure 13 - KNIFE CYLINDER AIR CUSHION

Due to space constraints, the Black Bumpers can not be used to reduce the impact on the knife extension and retration. Instead, the Knife Cylinder is equipped with adjustable Air Cushions at either end to slow the last 1/4" of travel in each direction. To adjust, loosen the locking nut and turn clockwise to provide more cushioning. Remember to tighten the locking nut after making any adjustments.

7.4.2.1 Knife Adjustment Procedure for EZ-300

THE CUTTING KNIFE IS SHARP AND DANGEROUS. NEVER PLACE YOUR HANDS OR FINGERS BETWEEN THE KNIFE BLADES UNDER ANY CONDITION!

DANGER

1. Disconnect air and electric supply from the machine.

2. Remove old blade set if installing new set. Keep all hardware from the old set. Inspect the hardware for damage or wear. Replace springs and shoulder bolts as needed.

3. Remove the stainless steel sheetmetal film guide inside the pull roll in order to access the knife adjustment screws. See Chapter 7.4.1 for location of film guide.

4. The locking set screws must be removed in order to adjust the set screws that angle the blade.

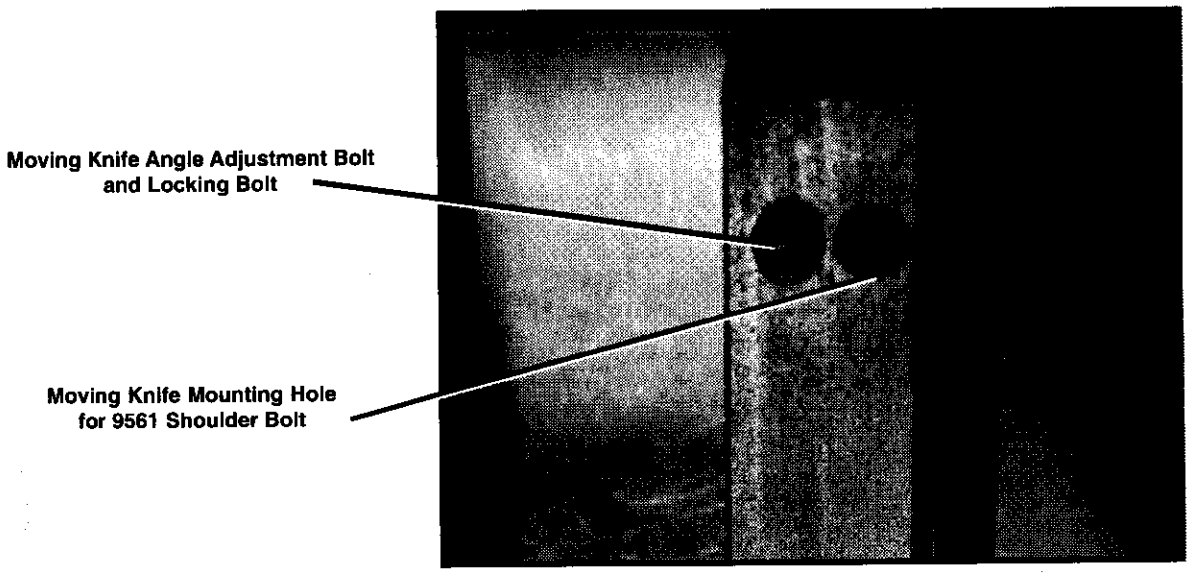


Figure 14 - KNIFE ADJUSTMENT BOLT (Knife Assembly with moving knife blade removed)

5. With the knife blade retracted (fully open), adjust the set screw at the wide end of the blade (closest to the operator door) to achieve a small, but visible angle of the blade up towards the stationary blade.

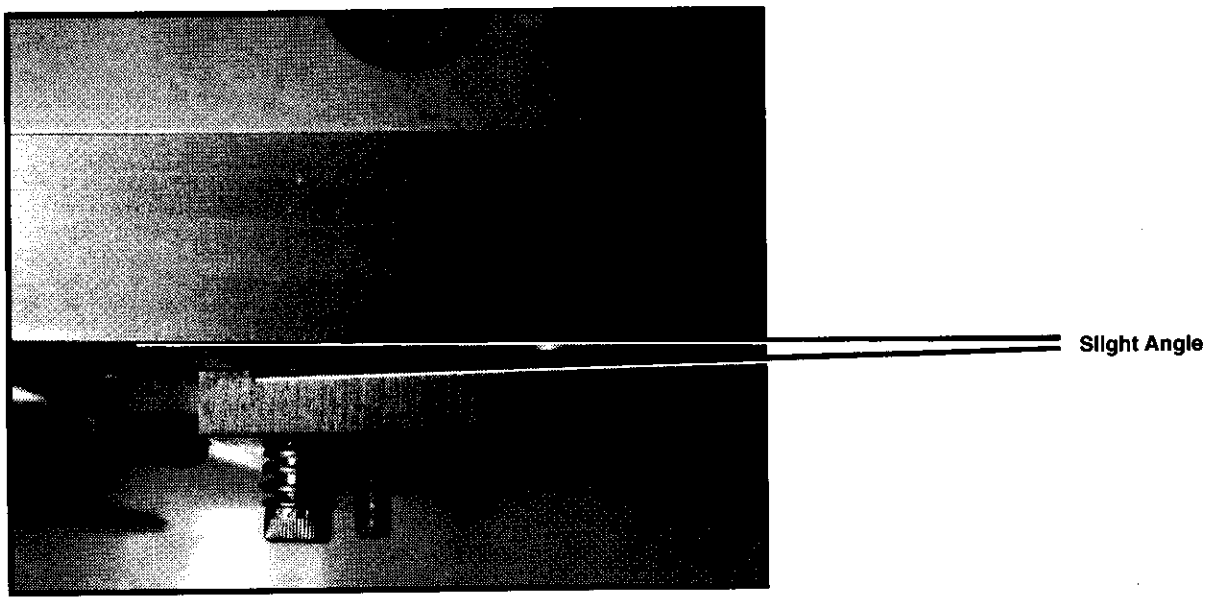


Figure 15 KNIFE ADJUSTMENT (STEP 1) (Knife Open)

6. Close the knife fully. Adjust the knife cylinder main shaft, which screws into the moving knife bar to allow the blades to overlap by 1/16" to 1/8".
7. With the knife still closed, adjust the set screw at the narrow end of the moving blade to achieve a maximum of a 1/16" gap at the wide end of the blade (opposite end of the adjustment screw). This will provide a compound angle, thus allowing a shearing action with the blades.

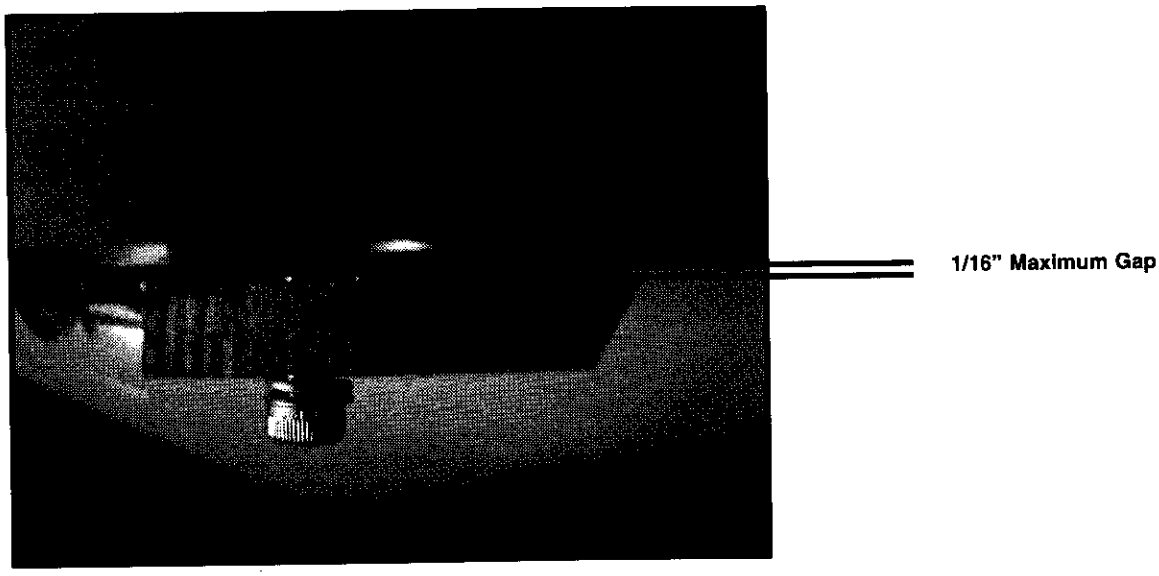


Figure 16 KNIFE ADJUSTMENT (STEP 2) (Knife Closed)

8. After adjusting, be sure to re-install the locking set screws with a serviceable thread-lock applied. While tightening, hold the blade adjustment screw to prevent it from moving.

9. Manually cycle the blade by hand (not air) several times to check for binding. There should only be a moderate amount of resistance as the moving blade crosses the stationary blade.

10. Re-connect the air and electric supply to the machine.

11. Cycle the machine with the film installed and check for proper cut.

When replacing Blades, replace as a set. Do not mix and match.

CAUTION

If repair work on the machine necessitates the removal of any of the safety covers or guards, please MAKE CERTAIN that in addition to all normal safety practices covered in this manual, the following steps are also strictly followed:

1. **The main air supply to the machine must be disconnected. FIRST PRESS THE EMERGENCY STOP, THEN DISCONNECT THE MAIN AIR SUPPLY.**
2. **The main electrical supply to the machine must be disconnected.**
3. **Upon completion of the service, replace all covers prior to reconnecting the electrical power and compressed air.**

Replace all machine guards before restarting the machine.

WARNING

Contact AXON Corporation at 800-598-8601 to discuss our new Knife Blade Exchange Program.

7.4.3 Gripper Sub-Assembly

The Grippers are mounted on the bottom of the knife block and are responsible for opening the film so that it can be placed on the product. The Gripper manifolds contain suction cups to positively hold the film as it is being cut, opened and shuttled to a position under the Plunger. The gripper under the knife assembly is called the Upstream Gripper and the gripper that opens the film is called the Downstream Gripper. The normal flow of product is from left to right through the machine. However, if specified, the Applicator can be setup for product flow in the opposite direction.

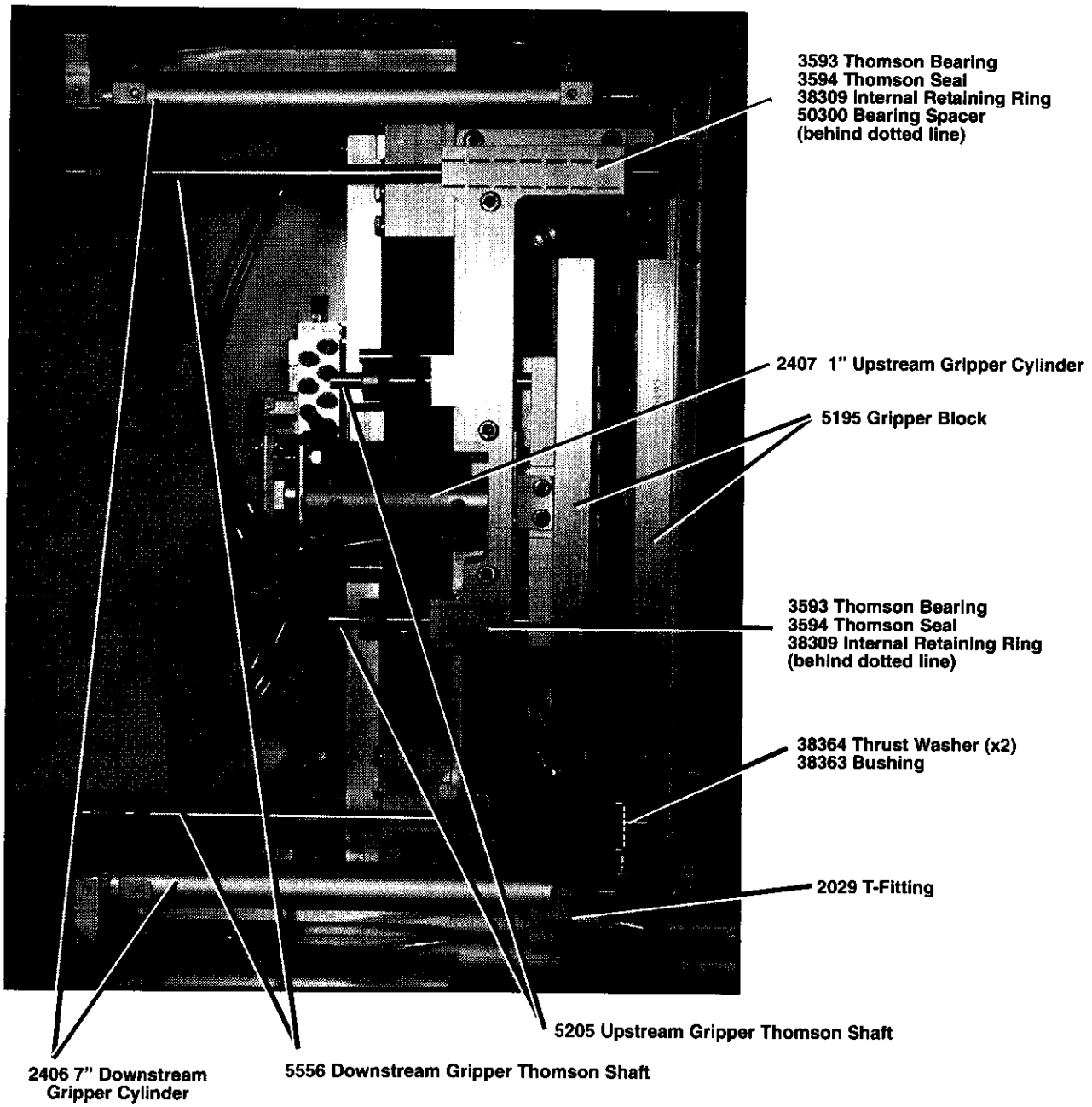


Figure 17 - GRIPPERS ASSEMBLY

The SETUP timer values for the Upstream Gripper IN Delay and the Knife IN Delay are critical in order to consistently hold the film on the suction cups. See Chapter 10.0, Sequence of Operation, for a detailed description of the timers. The downstream gripper must fully retract in to grab the film before the upstream gripper moves, in order to keep the film path straight through the knife assembly. Then the knife should not cut the film until the grippers have had enough time to firmly grab the film.

NOTE

NOTE: It is necessary to repair/replace both downstream gripper cylinders when performing routine maintenance to prevent one cylinder from over-powering the other and causing the mechanism to bind.

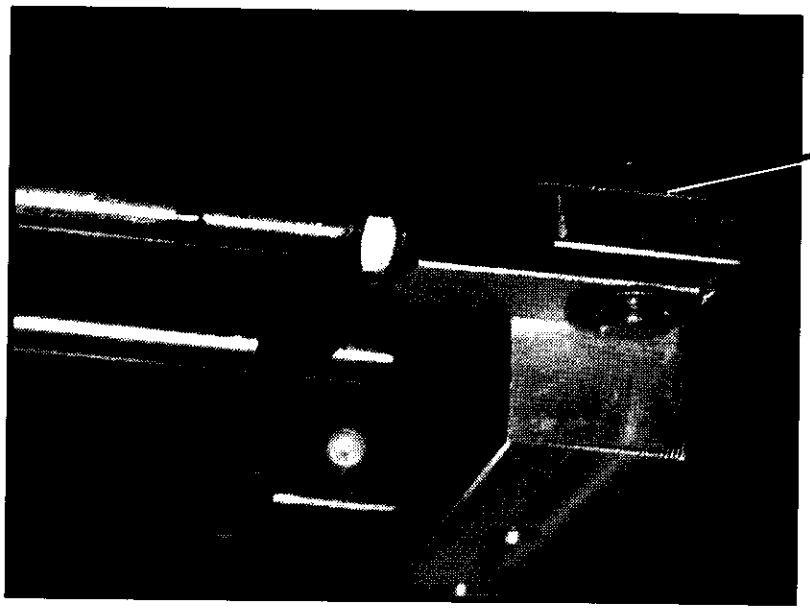


Figure 18
DOWNSTREAM GRIPPER and CLEVIS BRACKET

NOTE

NOTE: When installing the downstream gripper cylinders, always turn the cylinder shafts equally into the clevis brackets to prevent the mechanism from binding.

Since space constraints prevent the use of the black bumpers on the retraction of the upstream gripper, this cylinder has been equipped with adjustable air cushions. To adjust, loosen the locking nut on the air cushion and turn clockwise to slow the last ¼" of travel of the cylinder. Be sure to tighten the locking nut after the adjustment is complete.

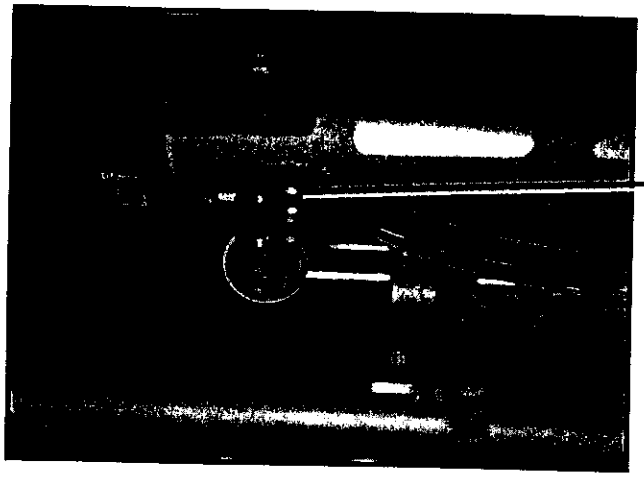


Figure 19 UPSTREAM CYLINDER AIR CUSHION

NOTE

NOTE: The air cushion is provided at both ends of the upstream gripper cylinder. However, only the retraction end of the cylinder should be adjusted. Make sure the extension end of the cylinder is fully open (counter-clockwise) when installing a new cylinder.

The vacuum manifolds contain suction cups and vacuum plugs. The longer vacuum plugs create space between the two manifolds when the grippers grab the film. The space between the manifolds prevents the suction cups from being damaged. The shorter vacuum plugs simply plug the remaining holes on the manifold that are not occupied by the long vacuum plugs or suction cups. The suction cups are typically positioned on the gripper manifolds to create a film shape similar to the container shape when the film is in the opened position. This flexibility allows the EZ-Seal to be adapted to a wide range of product shapes and sizes.

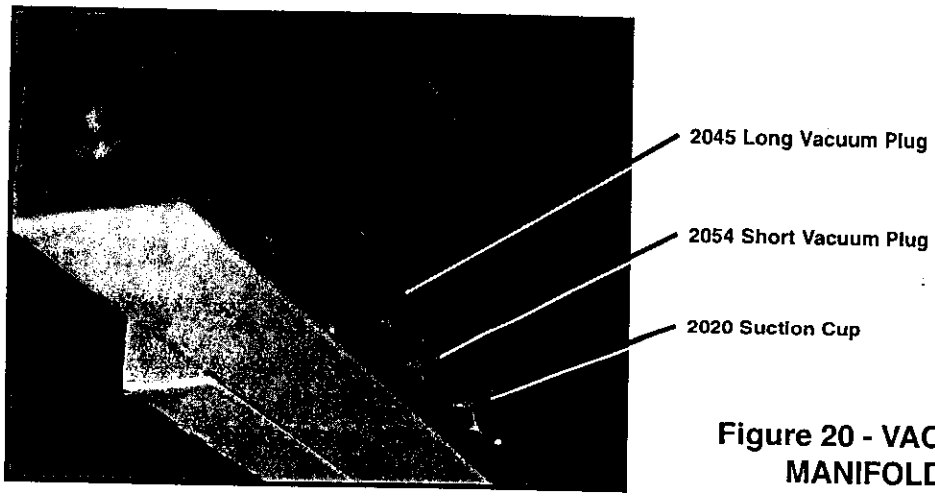


Figure 20 - VACUUM MANIFOLD

NOTE

NOTE: When installing new suction cups, always scuff the film contact surface of the cups using a fine emory cloth or Scotch-Brite pad. This removes any tackiness or contamination from the suction cups and provides a better vacuum release and subsequent film placement.

NOTE

NOTE: The suction cups should never be fully pushed into the vacuum manifolds. Instead, approximately 1/16" of the suction cup body should be visible when correctly installed to allow the suction cups to flex and conform to the film surface.

The film opening shape is typically adjusted to create a shape similar to that of the product. The adjustment is achieved by loosening the split collars on the downstream gripper guide shafts, sliding the split collars to the dimension listed on the Equipment Parameter Sheet, and locking the split collars into position.

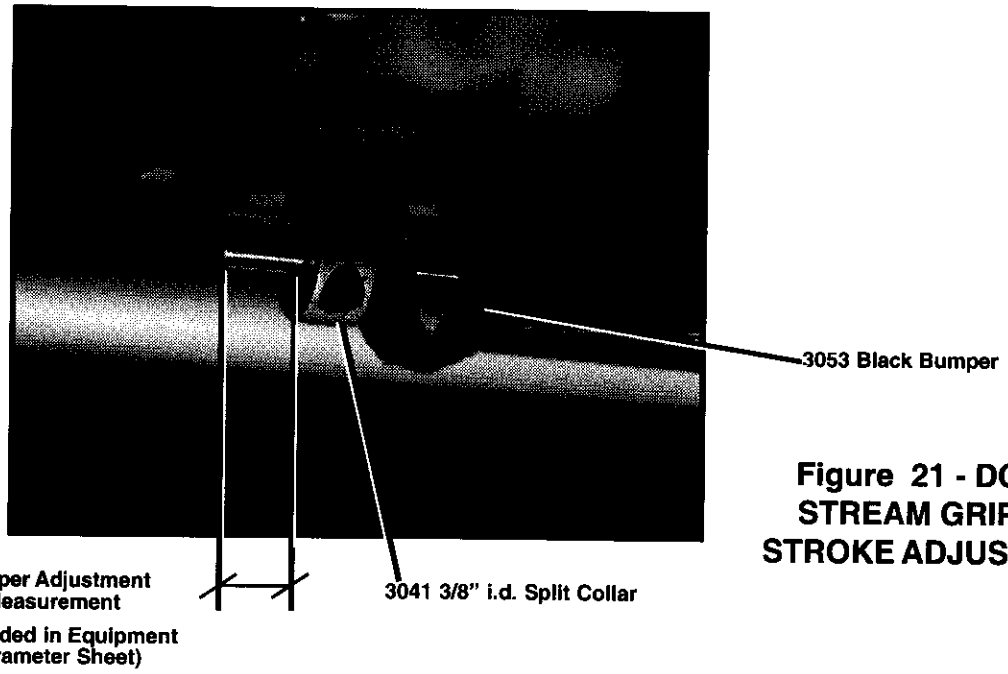


Figure 21 - DOWN-STREAM GRIPPER STROKE ADJUSTMENT

NOTE

NOTE: Always adjust the split collars evenly on each guide shaft to prevent the mechanism from binding.

NOTE

NOTE: When changing the stroke dimensions of the downstream gripper cylinders, it is recommended to always review the SETUP timers to prevent any damage from occurring.

NOTE

NOTE: As a rule, the distance between the suction cups when the film is in the opened position should be equal to, or slightly less than, the diameter of the product where the film is to be applied.

NOTE

NOTE: When reaching the maximum film layflat width for the model, additional opening can be achieved by placing the machine into "Large Film Mode". See Appendix C, Operator Interface Panel, for details.

7.4.4 Plunger Assembly

The Plunger is positioned between the two gripper Suction Cups (while the grippers are extended) so the Plunger Cylinder can push the cut and opened film onto the product. The Plunger Plate is a change part which changes in width (in direction of travel) as the film layflat changes. Once the correct film opening is established (see Chapter 7.4.3, Gripper Sub-Assembly), the edge of the Plunger Plate nearest the Downstream Gripper is cut to just clear the Suction Cup(s) by 1/16". This guarantees a positive leading edge placement of the film.

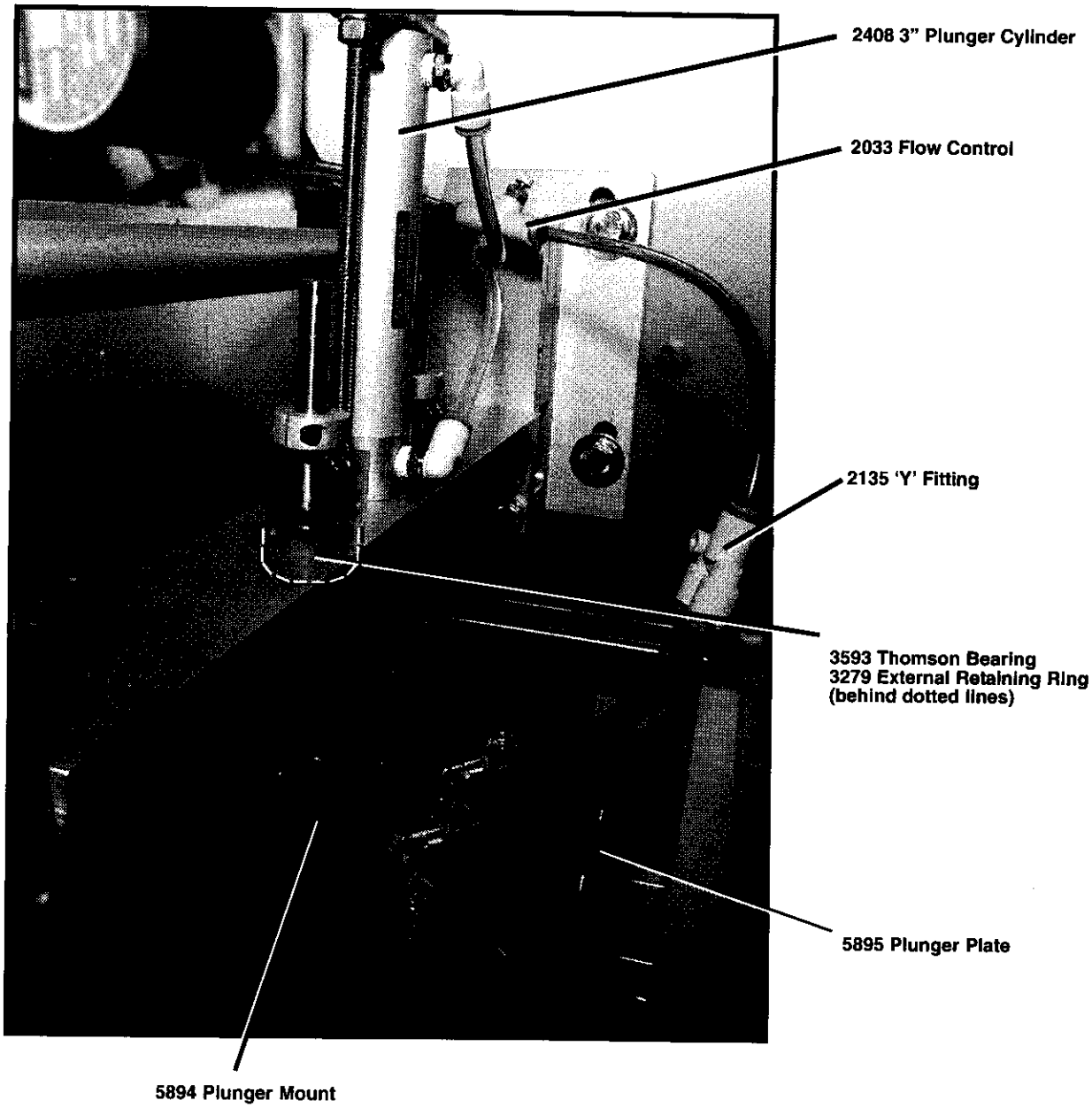


Figure 22 - PLUNGER ASSEMBLY
(Shown with optional Plunger Air Blast)

cont. ...

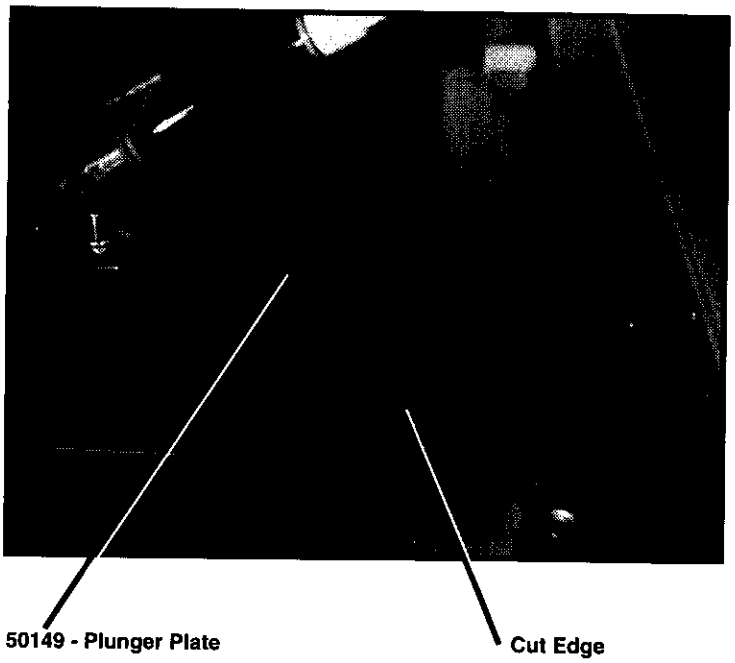


Figure 23
PLUNGER PLATE SIZING

NOTE

NOTE: The plunger extension speed should be adjusted using the flow control on the solenoid valve to provide a smooth film application. See Chapter 9.3 Pneumatic Controls for details on the solenoid valves.

In large film layflat width applications, the plunger assembly may be equipped with an air blast to assist in the application of the film. As the plunger pushes the film onto the product, the air blast will blow the trailing edge of the film open while being applied. The amount of air applied to the air blast is adjustable via the inline flow control. If the trailing edge of the film catches the top of the container, adjust the flow control by turning the valve counter-clockwise to provide more air to the air blast. Likewise, if the leading edge application is inconsistent, the air applied may be too great, causing the film to flutter or even blow upstream of the application area.

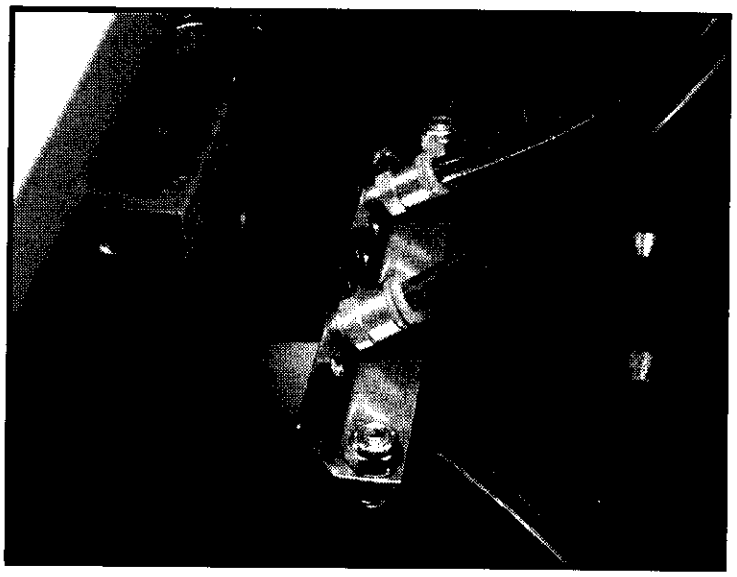


Figure 24
PLUNGER AIR BLAST - OPTIONAL

NOTE

NOTE: As the film opening shape changes, the air blast jets will need to be re-configured to apply the air to the proper area of the film.

The stroke of the plunger is adjusted using the split collars on the guide shafts. Refer to the Equipment Parameter Sheet for the correct setting. For tamper-evident bands, the plunger stroke adjustment is critical. Place a cut film band onto the product and position the container on the conveyor directly under the plunger assembly. Manually override the plunger cylinder (see Chapter 9.3, Pneumatic Controls) and observe the relationship between the top of the film band and the bottom of the plunger plate. The plunger plate should stop 1/16" from the top of the film band. Should it stroke too far, the film band may spring off of the container as the plunger retracts. Should it stroke too short, film application will be inconsistent.

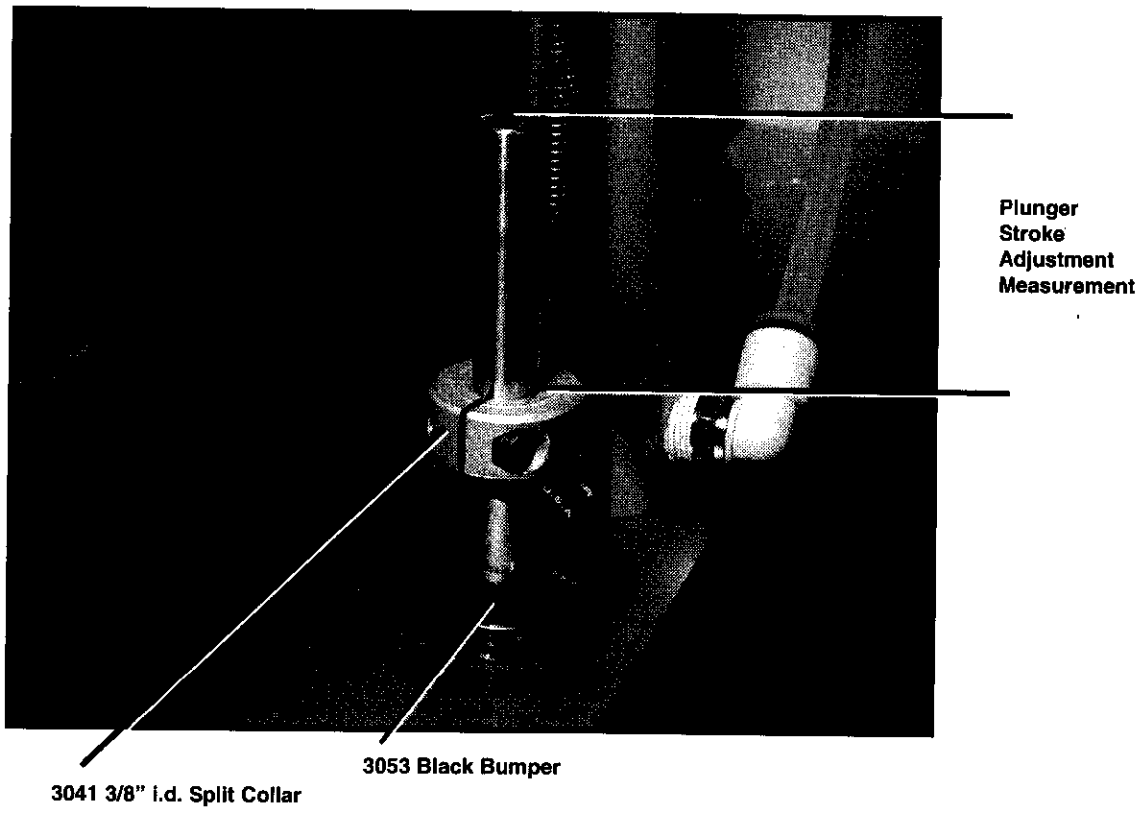


Figure 25
PLUNGER STROKE ADJUSTMENT

NOTE

NOTE: In some sleeving and multi-packing applications, a longer plunger cylinder may be used to positively place the film onto the passing product.

7.5 Machine Height Adjustment

For proper application of film to the product, the Applicator must be set to the proper height above the product. The height is specified on the Equipment Parameter Sheet and is measured from the center line of the surface of the conveyor to the bottom edge of the right hand side of the applicator enclosure. Machine height is adjusted by turning the crank handle at the bottom of the applicator stand. The relationship between the bottom of the film and the top of the product to be banded/sleeved varies, but in general, the following rules apply. If the pull roll is mounted level the bottom edge of the film should be 1/8" to 1/4" above the top of the product to be banded/sleeved. If the pull roll is mounted at an angle, the higher edge of the film band will clear the product by 1/8" to 1/4 ".

Chapter 8: EZ-Seal Machine Main Components - Electrical

8.1 Electrical Power Source

The EZ-Seal Applicator is designed to run on 110 VAC, 60Hz. If specified, a step-down transformer is provided for field installation.

8.2 Operator Controls

The EZ-Seal Applicator has three points which are available for the operator to control. The first two are on the front of the machine and are the Operator Interface Panel (OIP) and the Emergency Stop. The other is the Main Power Disconnect located at the rear of the machine.

The EZ-Seal Applicator is controlled by a Programmable Logic Controller (PLC), which is connected to the OIP on the front of the machine. This allows the machine operator to Start and Stop the machine as well as put the machine in Automatic mode. The OIP is also used to turn options on and off and change machine parameters. The machine can also be shutdown by pushing in the Emergency Stop. For a complete description of the OIP screens, see Appendix C.

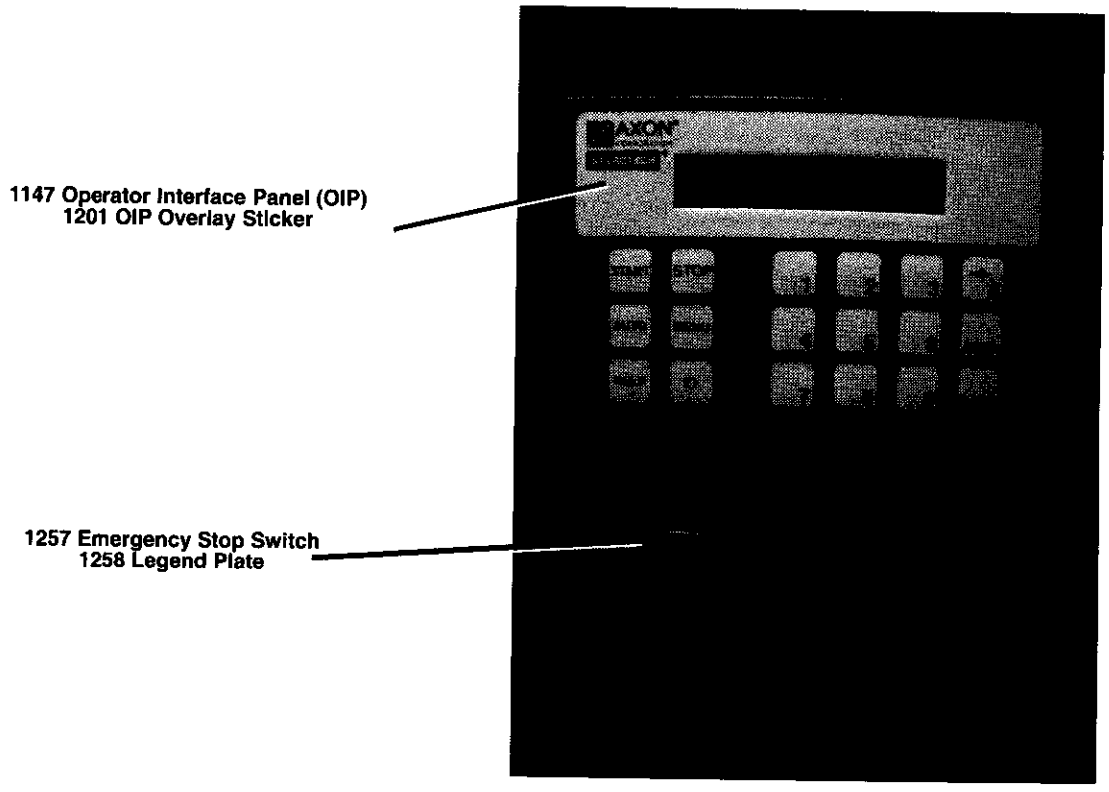


Figure 26 - FRONT PANEL CONTROL

cont. ...

The main power disconnect for the machine is located in the rear of the machine on the door of the electrical enclosure. The style of switch was carefully selected to allow a Lock-Out/Tag-Out procedure during routine maintenance procedures.

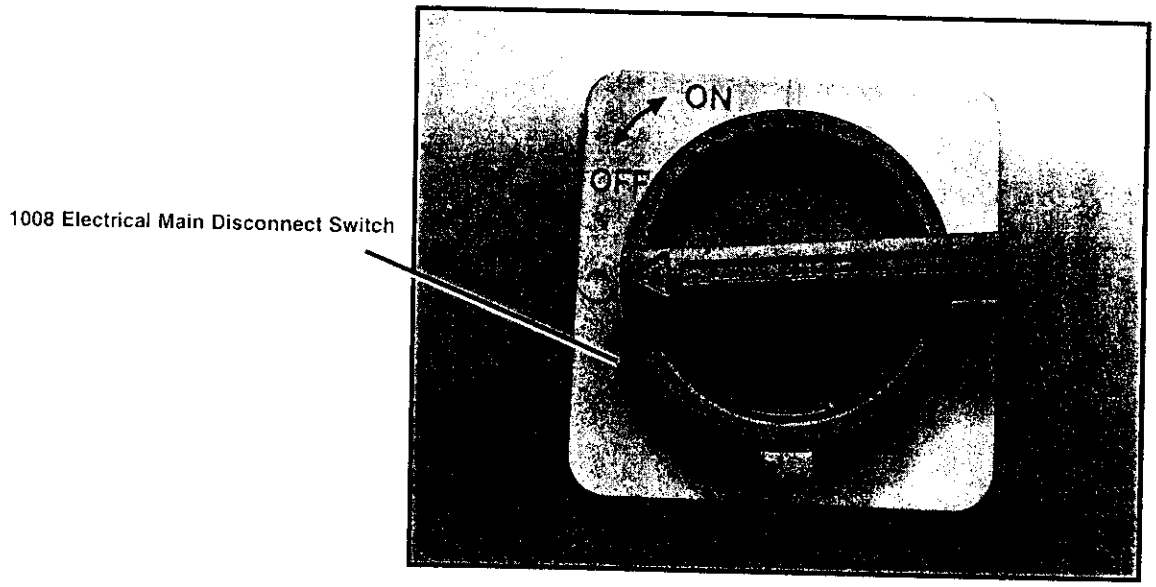


Figure 27 - MAIN ELECTRICAL DISCONNECT SWITCH

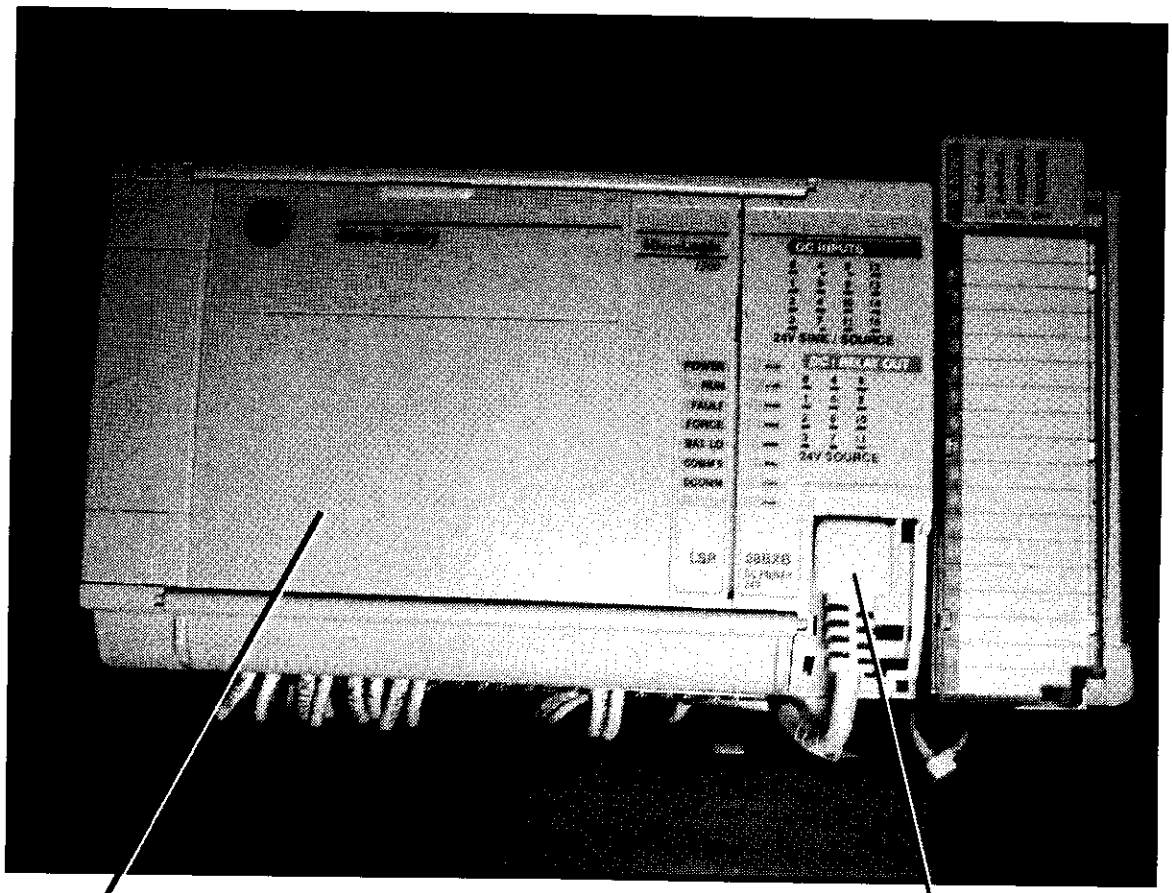
When accessing the Electrical Panel, power should be removed by unplugging the Main Power Supply Cord.

8.3 Electric Panel

The complete Electrical Diagram, which includes a panel layout, can be found in Appendix B. Mounted on the electrical panel are the PLC, the stepper driver and transformer, the DC power supply and control relays.

8.3.1 PLC

A Programmable Logic Controller (PLC) is an industrial computer that has been hardened to operate in harsh factory environments. For EZ-Seal Applicators, the Allen-Bradley MicroLogix™ 1500 PLC is selected because of its incredibly fast program execution times and reliability. The custom program that is running in the PLC is loaded and tested in the factory prior to shipment. For a listing of the inputs and outputs, refer to the electrical diagram in Appendix B.



1246 AB Micrologix™ 1500 PLC CPU
1288 AB PLC Base
1289 AB PLC Output Expansion Module
1290 AB PLC End Cap

1049 OIP-to-PLC Communications Cable

Figure 28 - PROGRAMMABLE LOGIC CONTROLLER (PLC)

cont. ...

The Central Processing Unit (CPU) contains the user program. The CPU receives signals from inputs, processes the information, and satisifies the necessary outputs.

NOTE

NOTE: Using the LED's as a means of troubleshooting can quickly diagnose a problem with the machine.

8.3.2 Stepper Motor/Driver

A stepper system is used to advance the film through the pull roll. The basic function is to control the motor winding currents. This bi-level driver was selected for performance and reliability. A high voltage is applied to the motor winding initially until the desired current level is reached. Then a low voltage is applied to maintain a suitable holding current level. This is supplied by the Stepper Driver Transformer.

When a cut-length is entered into the OIP, the PLC converts the desired length to the number of steps the motor must take to achieve the length.

NOTE: 1 step = 0.9^0 of rotation (referred to as half-stepping). NOTE:

Utilizing the Stepper Motor settings in the OIP, the PLC creates the frequency at which to send the steps to the driver. This is referred to as the pulse train. The driver then amplifies the pulse train to the necessary voltage levels needed to move the motor. For information regarding the fault status indicator, refer to Appendix D.

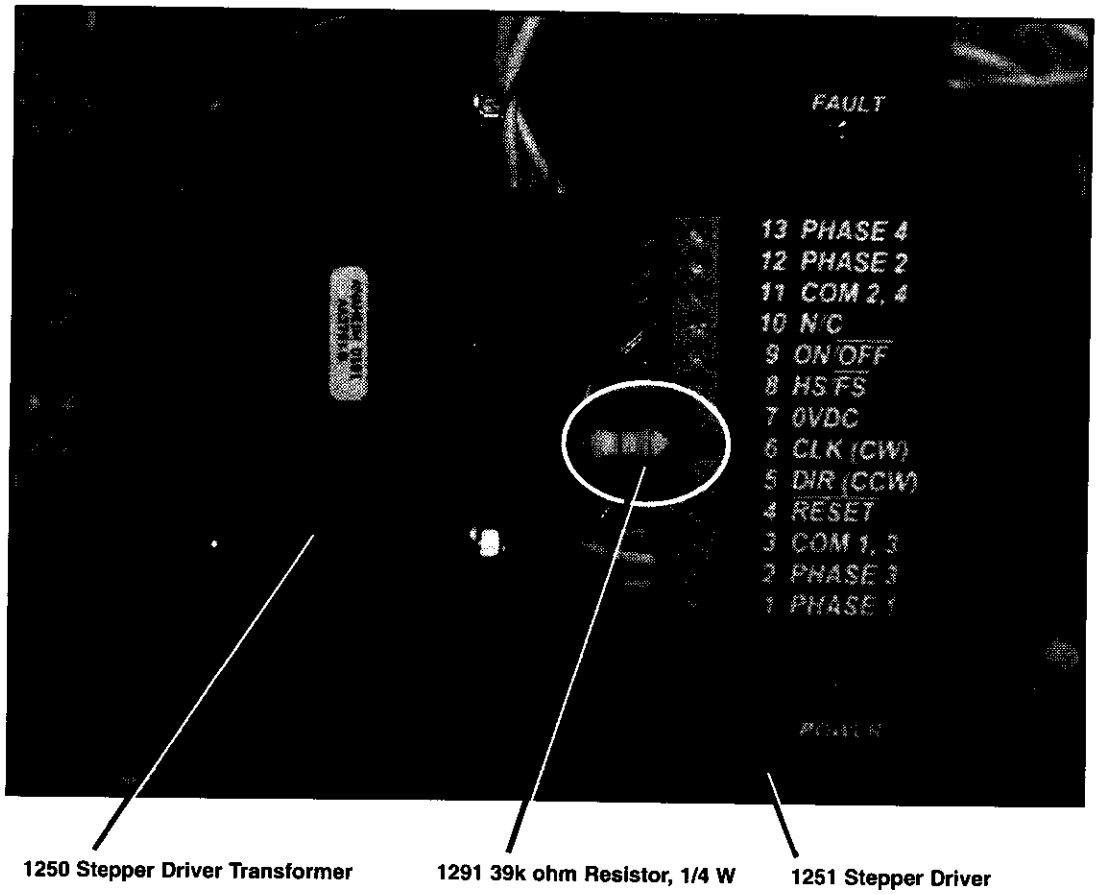


Figure 29 - STEPPER DRIVER PACKAGE

NOTE:

NOTE: Machines that are configured to process containers in the right-to-left direction have a jumper installed between pins 5 and 7. See Appendix B for the detailed electrical wiring diagram.

NOTE:

NOTE: The resistor, on Pin 6 of the Driver, is used to step the 24 VDC signal down to 5 VDC. The Clock Pin (#6) is where the pulse train from the PLC enters the Stepper Driver.

8.4 Photo Eye

The Photo Eye is used to detect the product and send a signal to the PLC. The most common application is the Band Release. In this particular application, the product is detected. The PLC starts the Band Release Delay Timer. After this timer expires, the vacuum is turned off and the film is applied. See Appendix E, Installed Options, for other photo eye applications.

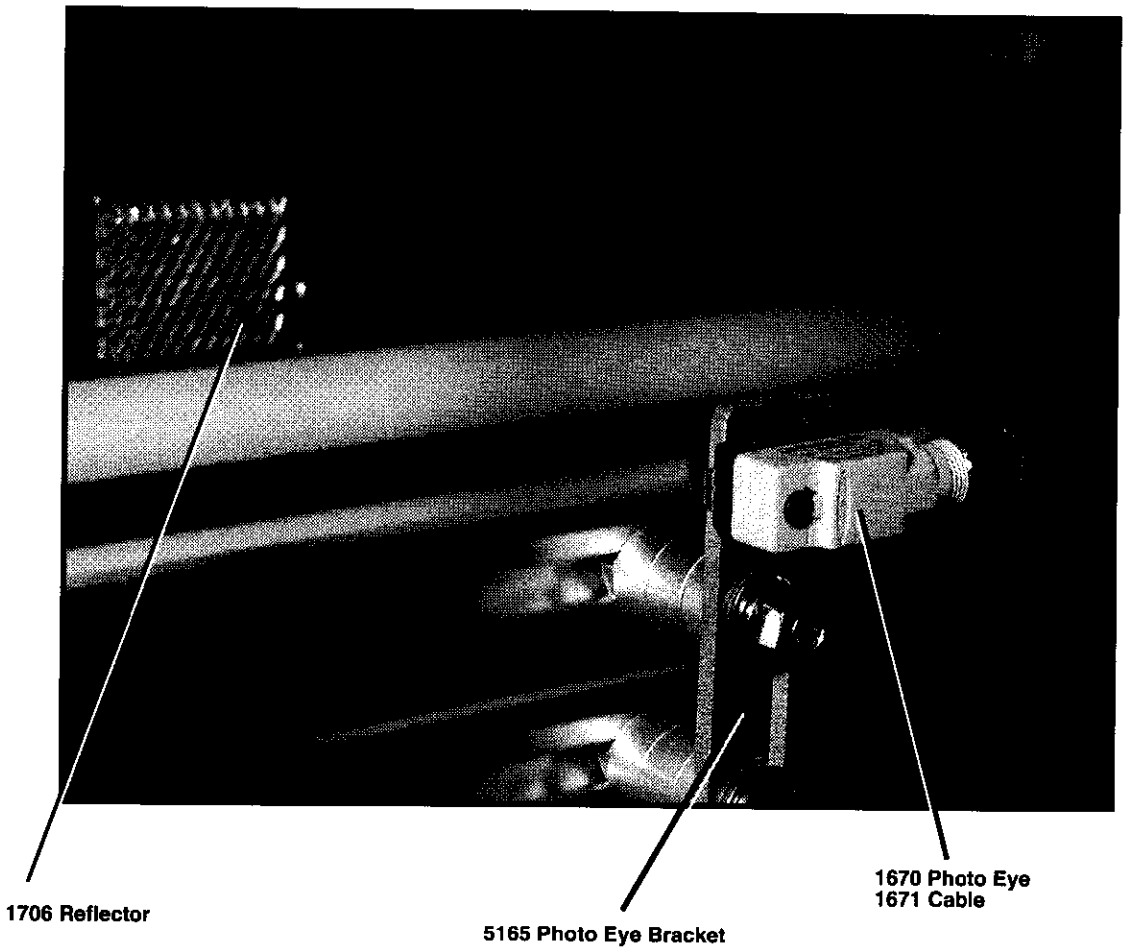


Figure 30 - BAND RELEASE PHOTO EYE

Chapter 9: EZ-Seal Machine Main Components - Pneumatic

9.1 Tubing Color Coding

For all EZ-Seal Applicators shipped after April 30, 2001, the tubing colors will represent the action chart as follows:

Cylinder extend:	RED
Cylinder retract:	YELLOW
Air supply:	BLUE
Vacuum:	CLEAR

9.2 Pneumatic Power Source

The EZ-Seal machine needs to be provided with clean and dry air via a 3/8 inch NPT (National Pipe Thread) connection on the filter/regulator assembly on the side of the Applicator. It is suggested that either a quick disconnect or a lockable venting ball valve be used to supply air to the EZ-Seal Applicator. The Filter body should be checked regularly and any accumulated moisture drained out.

As with any pneumatic system, excessive moisture levels will rapidly degrade the performance. Contact AXON should you need assistance on this matter.

1-800-598-8601

9.3 Pneumatic Controls

The PLC controls the operation of the pneumatic cylinders via solenoid valves which are mounted on the tooling plate on the front of the machine. The valves are individually labeled for quick identification.

The solenoid valves are provided with an override button which can be used to test cycle the cylinders to check for proper pneumatic operation. Inline flow control valves are provided on certain cylinders to control the rate at which air is exhausted from the cylinder. This, in turn, controls the rate at which the cylinder will travel. Refer to Appendix A for the complete Pneumatic Control Diagram.

cont. ...

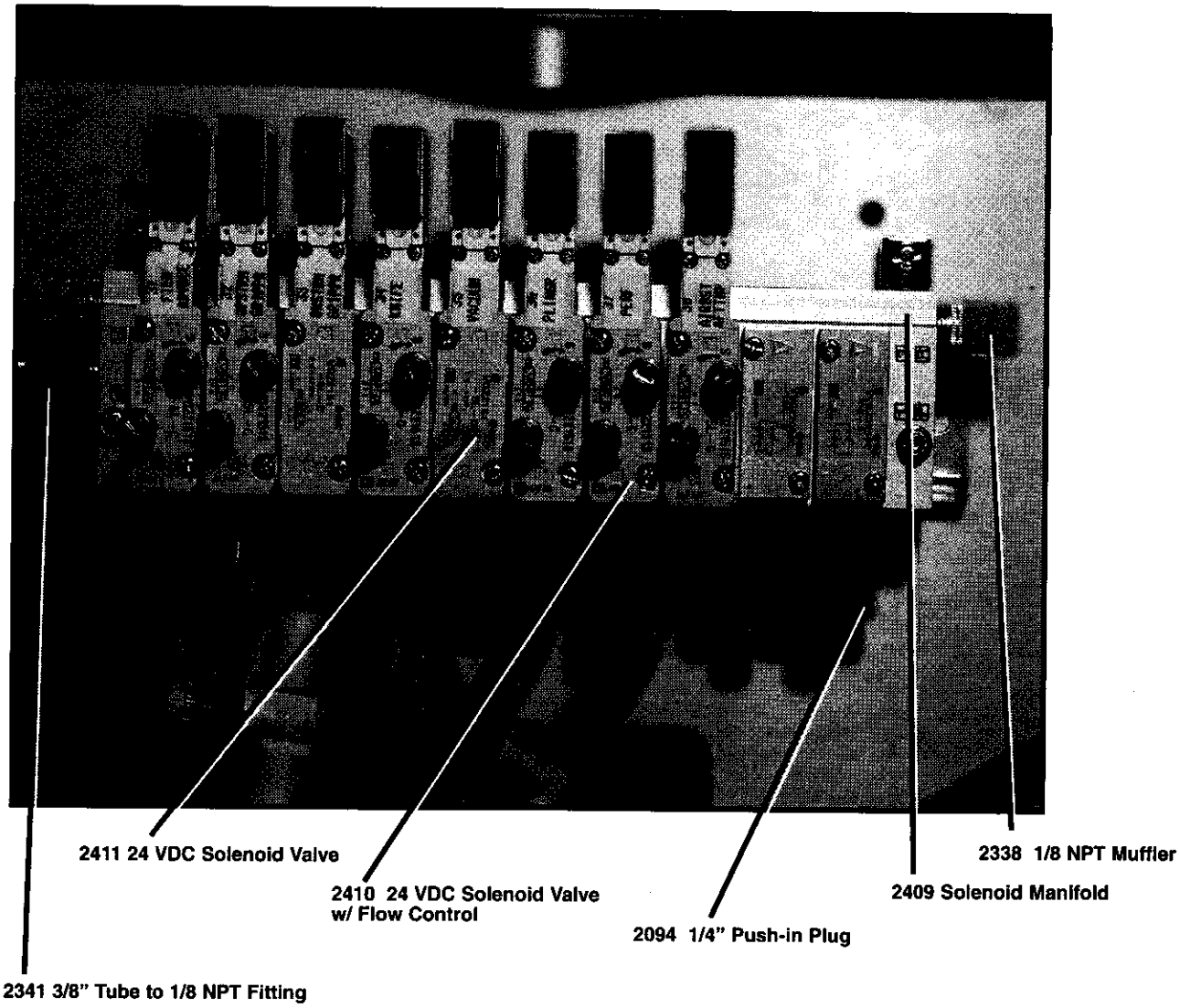


Figure 31 - SOLENOID VALVE PACK

cont. ...

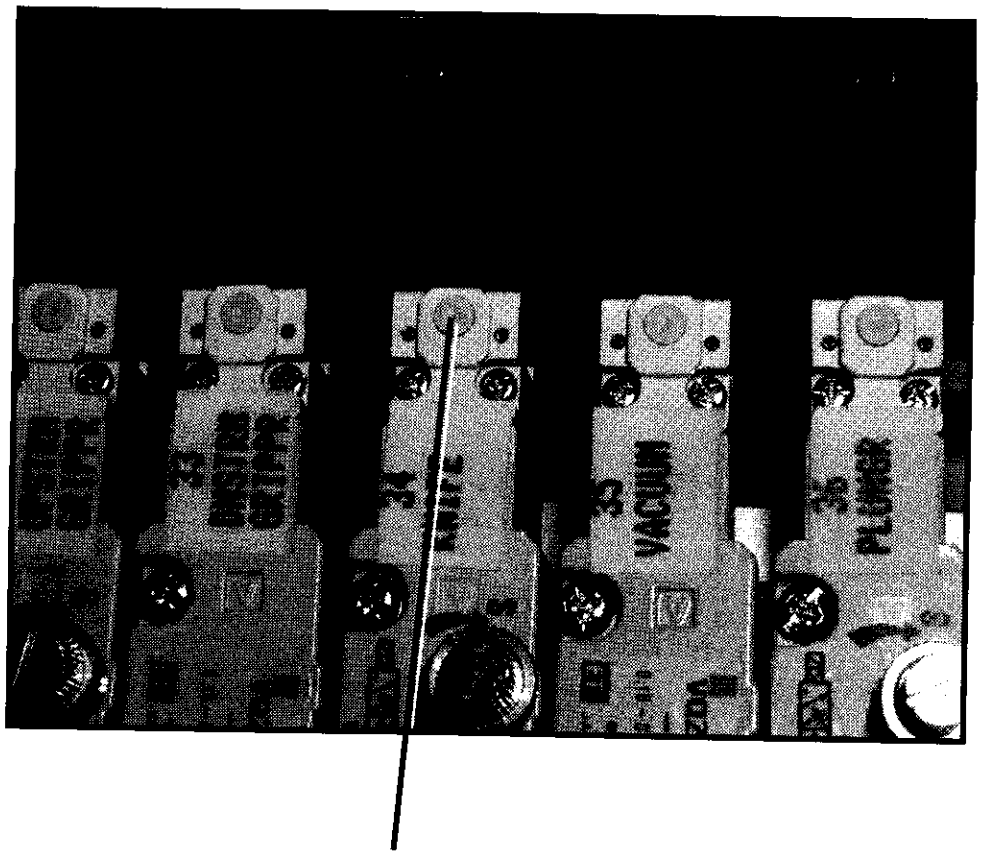


Figure 32 - SOLENOID VALVE PACK (Manual Override)

cont. ...

9.4 Vacuum Generator

Vacuum at the suction cups is created by a venturi or vacuum generator. By applying compressed air into the top port of the generator, a pressure differential is created, causing air to be drawn in from the front port. The front port is the initiation point for vacuum in the system.

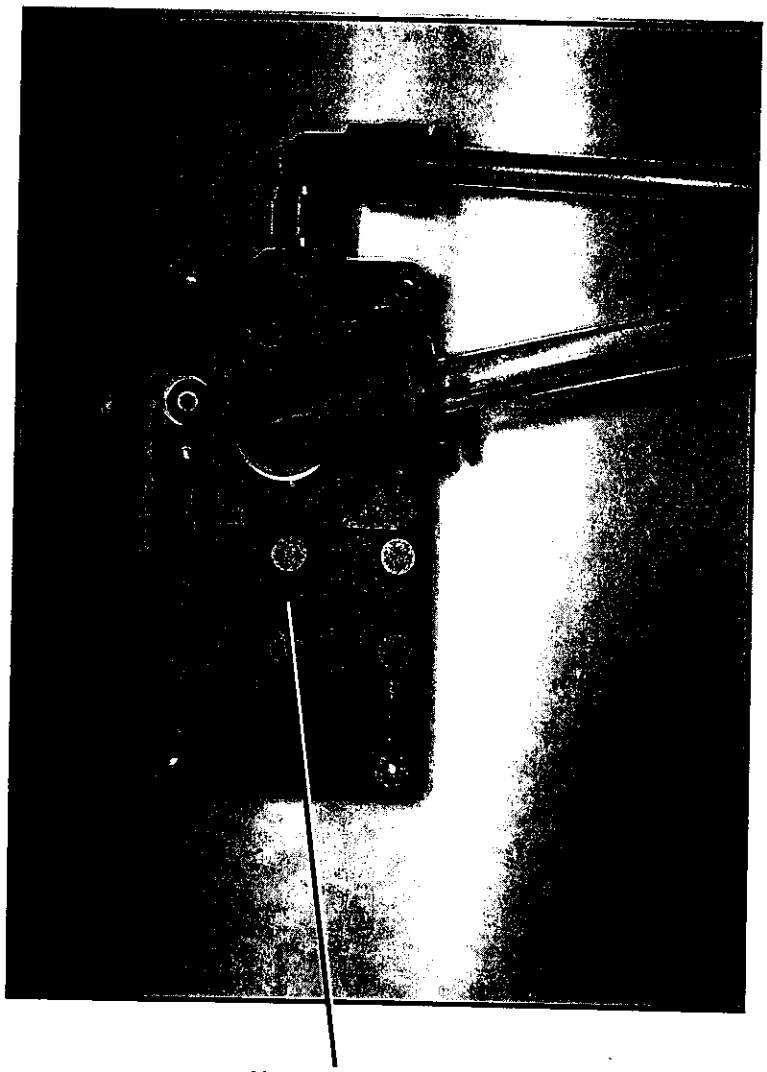


Figure 33 - VACUUM GENERATOR

NOTE

NOTE: Dirty or dusty environments may cause poor vacuum performance. Contact AXON to discuss the option of installing vacuum filters to the lines.

10.0 SEQUENCE OF OPERATION FOR EZ-SEAL APPLICATOR

From the READY Position: Film cut and opened under the plunger and the machine in AUTO Mode.

1. Band Release Delay: (T1) is the delay from when the photo eye detects the product until the vacuum is released. This timer is increased or decreased to accurately place the film onto the product. Range checking the timer is the most precise method to calibrate the delay. Decrease T1 by groups of 5 until the film application is observed to be early. Then slowly increase T1 by 5 until the film application is late. Average the two values and enter the result into T1. A consistent conveyor speed (no more than a 2% variation) should be maintained to maximize efficiency.

2. Plunger DOWN Delay: (T6) controls the delay between the vacuum being released and the plunger applying the film on to the product. This allows enough time for the vacuum to exhaust and the film to relax to its natural shape before application. Forcing the film from the suction cups can cause the edges of the material to catch on parts of the product and get crushed once the plunger makes contact. Typically, T6 is set from 50 to 70 for tamper-evident band applications and 60 to 100 for sleeve label applications.

3. Upstream Gripper OUT Delay: (T7) controls the delay from when the plunger activates until the upstream gripper retracts to the home position. Retracting too soon may cause inconsistent film placement since residual vacuum may still be present in the system, causing the film to be pulled with the upstream suction cup. Typically, T7 is set from 10 to 30.

4. Plunger UP Delay: (T8) controls the duration of the plunger in the down position. For small film layflat widths, the dwell time is small, usually set to 50 to 80. For larger layflat widths, the dwell time should be increased to allow a sweeping motion of the film over the product.

5. Film Feed Delay: (T9) controls the delay from when the plunger activates until the stepper motor advances the next piece of film. Since the upstream gripper arm may still be obstructing the path, T9 should be set larger than T7 to allow a sequential operation. In some sleeve applications, T9 may need to be increased even larger to allow the outgoing product enough time to clear the application area before advancing the next sleeve. Film jams are the typical issue when T9 is too short for sleeve applications.

6. Downstream Gripper IN Delay: (T2) controls the delay from when the plunger activates until the downstream gripper is allowed to move in to grab the advancing film. When T8 is increased, T2 must also be increased to avoid the plunger plate from catching the downstream gripper suction cup when the plunger retracts. Evidence of a damaged suction cup indicates that T2 is set too low.

cont. ...

7. Upstream Gripper IN Delay: (T3) controls the delay from when the plunger activates until the upstream gripper is allowed to move in and grab the film. Since the action should be for the downstream gripper to fully move in first before the upstream gripper activates, T3 should always be larger than T2 to create a sequential operation.

8.) Knife IN Delay: (T4) controls the delay from when the plunger activates until the knife is permitted to cut the film. Since the action should be for the grippers to grab the film firmly before being cut, T4 should always be larger than T3 to create a sequential operation. When adjusted too low, T4 will cause the film to be cut irregular or to be held inconsistent on the suction cups.

9. Knife OUT Delay: (T5) determines the duration of the knife cutting the film. Should the film fail to be cut near the narrow end of the moving knife blade, T5 should be increased to allow more time for the cylinder to fully extend. Typically, T5 is set at 60 to 80.

10. Downstream Gripper OUT Delay: (T10) is the delay from when the downstream gripper cylinder opens the film until the plunger cylinder is permitted to place the film on to the product. Enough time should be allowed for the film to fully open and stabilize before attempting application. For small layflat widths, T10 can be relatively low since the downstream gripper cylinder does not have to open as far. When operating with larger film layflat widths, T10 must be increased to prevent the plunger from hitting the top of the downstream gripper arm. Evidence of a damaged suction cup on the downstream gripper indicates that T10 may be set too low. It is also imperative that the spacing of the product entering the EZ-Seal Applicator is consistent to allow a consistent cycle time of the equipment.

11.0 TROUBLESHOOTING EZ-SEAL APPLICATOR:

For Customer Assistance, call: 800-598-8601

I. Film Does Not Advance:

a. Check for film jams at the knife assembly. The path of the film through the drive rollers and knife assembly must be free from obstructions. Clear film jam and restart.

i. Observe the operation of the knife cylinder. The knife cylinder should be in the fully retracted position when the film is advancing. See Chapter 7.4.2 for a detailed description of the knife assembly and its associated components.

1. Check the knife cylinder for damaged seals. Repair/replace as needed. See Appendix D for instructions on the replacement of the seals.
2. Disconnect the main air supply. Check the knife mechanism for any binding. Replace the cylinder as needed.

ii. Measure the thickness of the film using micrometers. Compare to the Film Specification Sheet that was provided with your EZ-Seal machine. Thin film has a weak wall strength and will tend to jam easily. Replace film roll and test.

iii. Check the quality of the film. The film should be free of wrinkles and crease lines as they will tend to cause film jams. Also check the seam quality on seamed film. Any rolls with seams that are not properly glued should be removed. Replace the film with a new roll and test. Contact your film supplier to discuss the problem.

iv. Check the fit between the film and the bullet. A tightly adjusted bottom bullet plate will cause stress marks in the film, thus weakening the wall strength and causing film jams. See Chapter 7.3 for a detailed description of the bullet.

v. Check the timer settings in the SETUP Menu of the Operator Interface Panel. The EZ-Seal machine is primarily sequential in movement. However, the Downstream Gripper IN Delay, the Upstream Gripper IN Delay and the Knife IN Delay all initiate from the same signal. Typically, these timers are set at the factory to provide a sequential operation between the three operations. Improperly adjusted, the process will be altered and a film jam can occur. Refer to your Equipment Parameter Sheets in the front pocket of your manual for the factory default settings. For a detailed description of the operation of the timers, please refer to Chapter 10.0, Sequence of Operation.

b. The film layflat width may be below specifications. With the bullet properly adjusted, the film should move freely over the device. Measure the film layflat width by cutting a 12" section and placing it flat on a table. Using a metric scale, measure from one folded edge to the other. Please refer to your Film Specifications Sheet and Equipment Parameter Sheet for proper layflat width dimensions for each product. Carefully note the tolerances. Axon provides a minus 0 mm tolerance on film layflat width specifications. The bullet is then sized for that dimension. Adjustments can be made to the bullet to take up slack in additional material. However, film that is below specifications should be removed from the equipment and the film supplier should be notified.

c. Film Unwind Cylinder is not operating. The unwind system for most applicators consists of a cylinder that manually unwinds the roll of film in order for the stepper motor to pull the slack. See Chapter 7.1, Film Unwind System, for details on the cylinder and its associated components. For the Motorized Unwind Assembly, refer to Appendix E, Details of Installed Options.
   i. Remove the cylinder and check the internal seals for failure. Replace as needed. Refer to Appendix D for detailed instructions on the replacement of the cylinder seals.
   ii. Check the operation of the solenoid valve that controls the Film Unwind Cylinder. When a 24VDC signal is present at the solenoid coil, the valve should be activated. If it does not activate, replace the solenoid coil and test.
   iii. Observe the PLC output LED that indicates when the Film Unwind Cylinder should activate. When the output LED is on, a 24VDC signal should be present. Should this fail to occur, replace the PLC output expansion module and test. Refer to Chapter 8.3.1, PLC, for information regarding the PLC.
   iv. Main air supply is too low or off. Refer to your Equipment Parameter Sheet in the front pocket of the manual for the correct air pressure setting. Adjust the main air regulator as needed.
   v. PLC is not in RUN Mode. Should the PLC fault, the program is no longer executed and all outputs become inactive. Call Axon or an Allen Bradley field technician for immediate assistance.

d. Stepper motor does not turn. The stepper drive system is made up of the driver, transformer and the motor. See Chapter 8.3.2, Stepper Driver System, for details.
   i. Check the electrical connections between the motor and the driver. In most applicators, there is a 9-pin connector that forms the junction between the stepper motor leads and the driver wiring harness. Sometimes the pins are not fully seated and can disrupt the movement of the motor.
   ii. Check the driver for faults. An LED indicator will illuminate when the driver is in a fault condition. Refer to Appendix D for specific driver information.
   iii. Check the output voltages on the stepper driver transformer to verify that the driver is being powered correctly. Replace as needed.
   iv. Check the Film Cut Length register under the SETUP Menu on the Operator Interface. Refer to your Equipment Parameter Sheet for the correct value to be entered. For a complete listing of the Operator Interface Panel screens, refer to Appendix C.
   v. Check the motor for failure. Refer to Appendix D for specific information regarding the stepper motor.
   vi. Check the Stepper Settings in the MENU screen on the Operator Interface Panel. Refer to your Equipment Parameter Sheet for the correct settings. For a complete listing of the Operator Interface Panel screens, refer to Appendix C.

e. Check the timing belt, pulleys, gears and drive rollers to make sure all mounting hardware is tight. Refer to Chapter 7.4.1 for information regarding these components.

f. Check the film path and the roll mount to make sure the material is free to unwind and travel through the equipment. Refer to Chapters 7.1 to 7.4.1 for assistance in properly threading the film.

II. Film is cut at inconsistent lengths:

a. Drive rollers may be dirty or contaminated. Using 70% isopropyl rubbing alcoh clean cloth (or Scotchbrite pad for extremely dirty rollers), clean the drive roller removing the film, rotating the manual film feed knob, and scrubbing the surfa rollers. Please refer to Chapter 12.0, Preventative Maintenance, for the recom frequency of cleaning.

b. Drive rollers worn beyond the ability to properly advance the film. Using a s er of film that is cut to a 1" width strip, gage each set of rollers by inserting the the rollers and manually advancing the material using the manual film feed k le applying a slight, opposing force. If slippage occurs, replace the drive rolle e refer to Chapter 12.0, Preventative Maintenance, for the recommended fre replacement.

c. Inspect the film roll for proper tension. The roll should be concentric. Lo und rolls will create an oblong or oval appearance. Backlashing will result on m unwind cylinder retracts. Should the stepper motor not have the required draw from, short or irregular cut lengths will result. Replace the film roll and tes ntact your film supplier for assistance.

d. Optional perforation assemblies are not functioning or setup incorrectly. Please refer to Appendix E, Installed Options, on specific information regarding these options.

e. Bullet is not adjusted correctly. Refer to Chapter 7.3 for information regarding the proper fit between the film and the bullet.

f. The film layflat width may be below specifications. With the bullet properly adjusted, the film should move freely over the device. Measure the film layflat width by cutting a 12" section and placing it flat on a table. Using a metric scale, measure from one folded edge to the other. Please refer to your Film Specifications Sheet and Equipment Parameter Sheet for proper layflat width dimensions for each product. Carefully note the tolerances. Axon provides a minus 0 mm tolerance on film layflat width specifications. The bullet is then sized for that dimension. Adjustments can be made to the bullet to take up slack in additional material. However, film that is below specifications should be removed from the equipment and the film supplier should be notified.

g. Bullet assembly may be damaged or out of square, causing the film to twist on the bullet. Twisting will eventually cause the film to become extremely tight on the bullet. Visually inspect the top and bottom plates for obvious signs of damage. Replace as needed. To check for squareness, position the bullet on a flat surface as it would set in the pull roll assembly. Using a machinist's square with the blade fully extended through the flat side, check the bullet rod by sliding the square's blade beside the bullet. Should the rod not be parallel to the blade, the bullet is not square. Loosen the mounting bolts on the bottom plate and adjust. After correcting, rotate the bullet upside down and repeat the above steps for squareness.

III. Film is not properly held on suction cups:

a. Check the gripper arms for damaged or missing suction cups. When installing new suction cups, always scuff the film contact surface area of the cups with a fine-grade emery cloth or Scotch-Brite pad. This will remove any tackiness or contamination and allow proper vacuum release.

b. Observe the opening speed of the downstream gripper cylinder. The vacuum must be stronger than the block between the two layers of film. In high static rolls or thinner materials, the speed of the cylinder must be slowed to keep the suction cups gripping the film during the opening process. Locate the inline flow control for the downstream gripper cylinder and adjust clockwise to slow the opening speed. It may be necessary to increase the Downstream Gripper OUT Delay (T10) to allow the gripper to get into position fully before attempting to apply the film.

c. Check the alignment of the downstream gripper when fully retracted. When properly installed and adjusted, the face of the downstream gripper suction cup should be aligned with the cutting edge of the stationary knife blade. This keeps the film path straight through the knife while gripping and cutting the film.

d. Observe the operation of the grippers. The downstream gripper must fully retract in towards the film before the upstream gripper fully extends in towards the film. This keeps the film path straight through the knife assembly. The Upstream Gripper IN Delay (T3) should be adjusted to allow this operation.

e. Observe the operation of the knife. The grippers must be allowed enough time to fully grab the film before it is cut. Adjust the Knife IN Delay (T4) to allow this operation.

f. Bullet guides are not properly adjusted to keep the film tracking at the center of the pull roll assembly. Re-thread the film and adjust the guides as explained in Chapter 7.4.1.

g. Low main air pressure. Check the main regulator and compare to the Equipment Parameter Sheet for the factory default setting. Adjust as needed.

h. Inspect all vacuum lines for leaks. Replace as needed.

i. In dusty or dirty environments, it may be necessary to periodically clean the vacuum system. All fittings and the vacuum generator should be free of blockage. If the frequency of the problem increases, contact Axon for information regarding inline vacuum filters for the system.

j. Check the bottom bullet plate adjustment. When adjusted too loose, the rollers will form the film tube to the dimension of the bottom bullet plate by creating a secondary crease. Typically, this crease is observed on the upstream gripper side. The suction cup will not be able to properly seal. Adjust the bullet, re-thread the film and test.

k. High levels of static in the film may be too great for the suction cups to overcome. Contact your film supplier for assistance.

l. Film may not be cut properly. When the knives begin to dull, fusion of the film may occur. The material may be completely cut from the roll stock, but the heat generated during the cutting process can weld the film tube together. See Chapter 12.0 Preventative Maintenance for information regarding the frequency of blade replacement and sharpening. See Chapter 7.4.2.1, Knife Sub-Assembly, for the knife blade adjustment procedure.

m. Film cut-length may be too long. Contact Axon for information regarding extended grippers.

IV. Cylinders do not move properly:

a. Low main air pressure. Check the main regulator and compare to the Equipment Parameter Sheet for the factory default setting. Adjust as needed.
b. PLC output may have failed. Read the voltage across the output when the LED indicator for that output is illuminated. The meter should read 24VDC. If not, replace the output module. See Chapter 8.3.1 and Appendix D.
c. Solenoid controlling the cylinder has failed. If 24VDC is present at the PLC output and the solenoid fails to activate, the solenoid may have failed. Replace and test.
d. Bad electrical connection between the PLC and the solenoid valve may cause erratic performance. Inspect the solenoid leads from the valves to the electrical panel for possible problems.
e. Cylinder may be binding. Disconnect the main air supply and manually slide the mechanism. The cylinder should move freely. Replace the cylinder as needed. Check the Setup Timers in the OIP to ensure that the plunger and downstream gripper cylinders are properly set. Improper timer settings may cause a collision and damage to the cylinders.
f. Cylinder seals may be bad. Once the seals fail, bypass of the air supplied to the cylinder may occur, preventing the cylinder from moving. See Appendix D for information regarding the seal replacement procedure.

V. Film is not consistently applied to the product:

a. The Band Release Timer (T1) may be set incorrectly. Range check the timer by reducing the value of T1 until the film placement is too early. Then, slowly increase the timer by units of 5 until the film placement becomes too late. Average the two values and enter the result into T1.
b. The Plunger DOWN Delay Timer (T6) may be set incorrectly. Typically, T6 is set to 50 to 70 for tamper-evident band application and 60 to 100 for sleeve label application. Should the vacuum not be fully exhausted when the plunger activates, the film will become distorted during the application.
c. Plunger is moving too fast and causing the film to buckle or collapse. Adjust the speed via the inline flow control valve located near the cylinder while the machine is running.
d. Film opening is not adjusted correctly. As a rule, the distance between the suction cups while in the open position should be equal to or slightly less than the diameter of the product that the fim is to be placed over. Adjust and test.
e. Machine height setting may be incorrect. Refer to your Equipment Parameter Sheets for the correct adjustment.
f. Speed of the conveyor may vary too much. Place a tachometer on the conveyor belt and record the setting. Periodically, test and record the speed. The variation in speed should not exceed a 2% differential.
g. Product is not centered with the film.
    i. Check the guide rails that support the product as it travels through the applicator. Adjust as needed.
    ii. Check that the bullet and film are centered in the pull roll assembly.
h. Plunger cylinder seals may be defective and cause the down stroke speed to become erratic or sluggish. See Appendix D for information regarding seal replacement.
i. Film gage is too thin and collapses when the plunger makes contact. Measure the thickness of the material using a set of micrometers. Compare to the Film Specifications Sheet provided with the purchase of the Axon unit. Replace as needed and contact your film supplier for assistance.

12. PREVENTATIVE MAINTENANCE

DAILY

1. Main Air Regulator:

- Drain collector bowl.
- Adjust the air pressure to the proper setting indicated on the Equipment Parameter Sheet.

NOTE:

NOTE: Excessive amounts of moisture in the pneumatic system will rapidly degrade the performance of the EZ-Seal machine. Contact Axon to discuss the option of installing an Air Dryer to the main air supply.

2. Pull Roll Assembly:

- Clean the drive rollers with 70% isopropyl alcohol. Remove the film. Use a clean cloth and scrub the rollers while rotating the manual film feed knob. Do not allow alcohol to come in contact with the suction cups.
- Clean all other film contact surfaces (idler rollers, film unwind arm, etc.) with 70% isopropyl alcohol.
- Lubricate the knife blades using a cloth soaked in a food-grade type oil. Make sure not to get any oil on the suction cups.
- Inspect knife springs for damage.
- Inspect suction cups for wear. Replace as needed, making sure to scuff the face of all new suction cups with a Scotch-Brite pad or fine-grade emery cloth.
- Make sure all flow control adjustments are tight.

3. Bullet:

- Inspect the feet of the bullet for excessive wear. No more than 3/16" radius is permitted. Contact Axon to order additional bullets as needed.
- Check for shiny areas on the bullet. Over time, the film will buff the bullet edges smooth, causing the film to adhere to these areas and not advance properly. Using a Scotch-Brite pad or fine-grade emery cloth, scuff the film contact areas as needed.
- Make sure that the bullet is properly adjusted for the film being used. Refer to the Chapter 7.3 for detailed information.

WEEKLY

1. Pull Roll Assembly:

- Inspect all hardware for looseness or fatigue. Tighten or replace as needed. As a rule, serviceable thread-lock should be installed to hardware that does not contain a lock-washer.
- Check knife blades for proper cut. See Chapter 7.4.2.1 for proper adjustment.
- Check all air lines for debris. Replace tubing as needed. Debris in air lines may be an indication that a cylinder or solenoid valve may be bad.

- Check all cylinders for leaking seals or binding. Rebuild or replace the cylinders as needed.
- Override all solenoids to ensure proper operation. Sluggish moving cylinders should be inspected for seal failure. If the cylinder appears to be fine, replace the solenoid valve and test.
- Inspect all tensioner pads for wear. Replace as needed.
- Inspect vacuum generator. Remove the air fitting from the front of the vacuum generator and remove any debris. For extremely clogged generators, remove from the tooling plate and use compressed air to further remove debris.
- Check the drive rollers for wear. See Chapter 11.0 for the proper procedure for checking the drive rollers.

EZ-300 Recommended Service Intervals:

Component:	Action:	Cycle Count:
Upstream Gripper Cylinder	Replace seals	27,000,000/12 months
Downstream Gripper Cylinder	Replace seals	8,000,000/8 months
Plunger Cylinder	Replace seals	18,000,000/12 months
Knife Cylinder	Replace cylinder	27,000,000/12 months
Film Unwind Cylinder 3" (Short)	Replace seals	19,000,000/12 months
Film Unwind Cylinder 6" (Long)	Replace seals	9,500,000/12 months
Drive rollers	Replace	10,000,000/12 months
Knife blades	Re-sharpen	8,000,000/8 months
Knife blades	Replace	24,000,000/24 months
Knife springs	Replace	8,000,000/8 months
Solenoids	Replace	40,000,000/24 months
Thomson Bearings and Seals	Replace	40,000,000/24 months

NOTE:

NOTE: By following the above Recommended Service Interval program, your EZ-Seal Applicator should remain in a "like-new" condition and provide years of reliability. The numbers are based on cycle count or time, whichever comes first. Please use the Service Chart on the following page to keep current with your Preventative Maintenance schedule.

SERVICE CHART

Service Performed	Date	Cycle Count	Mechanic

SERVICE CHART

Service Performed	Date	Cycle Count	Mechanic

SERVICE CHART

Service Performed	Date	Cycle Count	Mechanic

EZ-300 SPARE PARTS LIST:

Part Number	Description	Quantity	
1016	10A fuse	3	1.5
1145	3-pole, 24VDC Relay	1	26
1289	Output Module for Allen Bradley Micrologix 1500	1	360
1670	Photo Eye	1	75
1671	Photo Eye Cable	1	29
1706	Reflector	1	9
2017	Knife Cylinder	1	131
2020	Small Suction Cup	20	4.23
2045	Long Vacuum Plug	14	2.75
2339	Cylinder Repair Kit	8	10
2410	Solenoid Valve, 24 VDC with Flow Controls	2	75.5
2411	Solenoid Valve, 24 VDC	2	69
2416	Cylinder Repair Kit, Film Unwind	2	10.5
3044	Drive Roller	8	87.10
3053	Black Bumper	11	7.50
3098	EZ-200/EZ-300/EZ-400 Knife Spring	2	2.00
3279	External Retaining Ring	6	[illegible],25
3593	Thomson Bearing	8	36
3594	Thomson Seals	16	4.75
5092	EZ-300 Knife Blade Set	1	1695
5402	Rubber Tensioner Pad	2	10.50
38309	Internal Retaining Ring	10	1.50

For PARTS and SERVICE: 800-598-8601

Resharpen
$ 189.

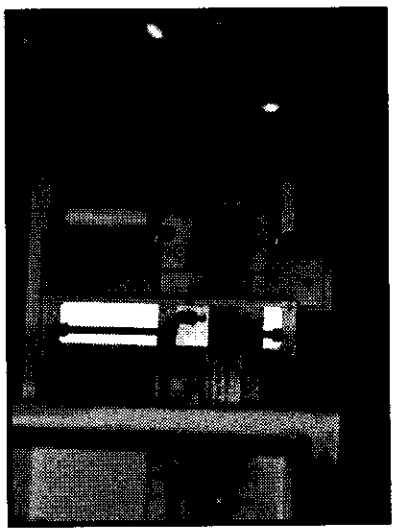
#2 Steve #123

OPTIONS: GENERAL

With the versatility of the EZ-Seal Applicator to process various shapes and sizes of containers, the need for optional components has developed over the years. The following summary of options will enable you to expand the abilities of your EZ-Seal Applicator as your needs change over the years. Refer to Appendix E for detailed information on the specific options installed on your EZ-Seal Applicator.

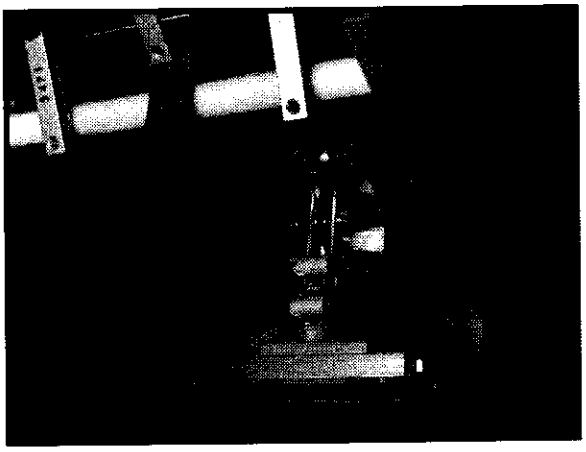
14.1 Print Registration:

The Print Registration option gives the EZ-Seal Applicator the ability to apply printed film to the product. Since graphics in the heat-shrinkable film industry has come a long way, this option has become popular in the sleeve label application. Since the sleeve can cover the entire package, the need for separate machinery to apply labels and tamper evident bands is eliminated.

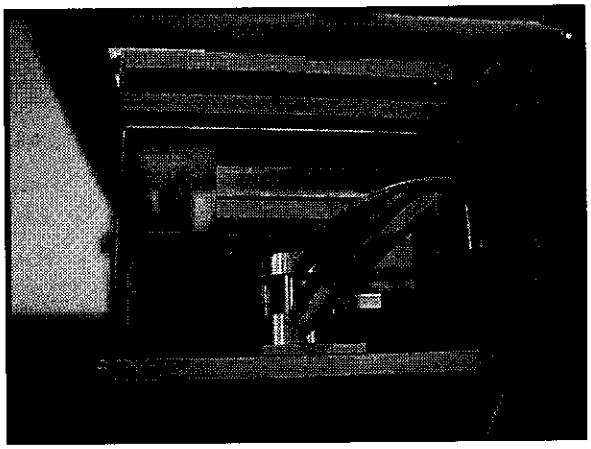


14.2 Perforation:

The various Perforation options that can be installed on the EZ-Seal Applicator provide a means for the consumer to easily remove the film to access the contents of the package. The different styles of perforation available are the Vertical, Horizontal, T-Style and Slit-Tab.



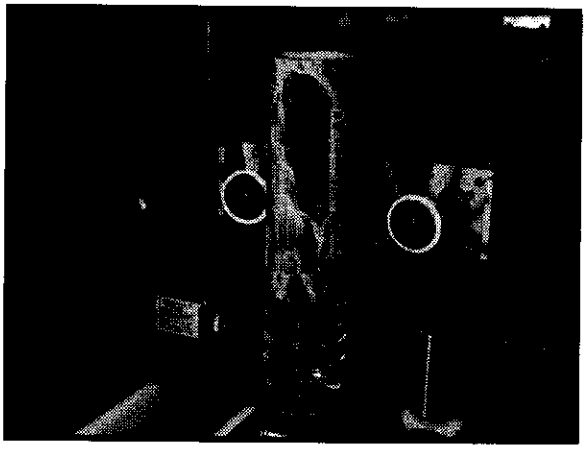
Vertical Perforation



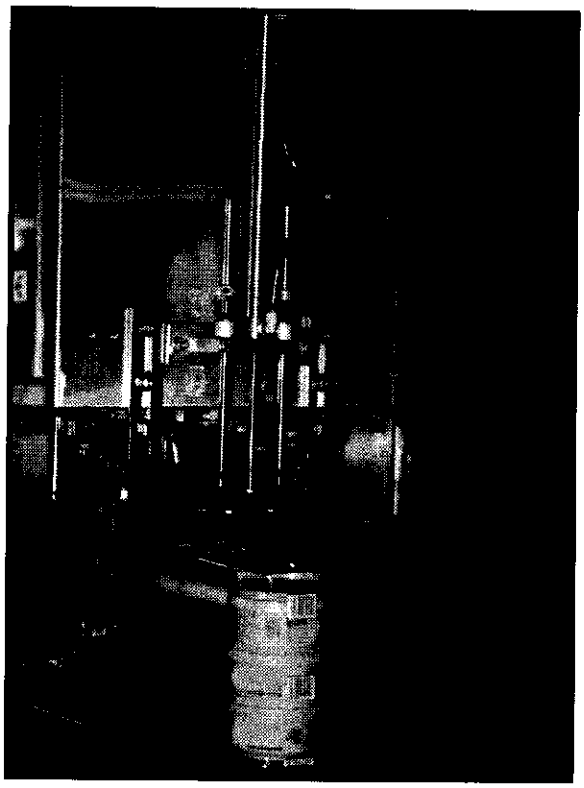
Horizontal Perforation

14.3 Sleeve Lowering:

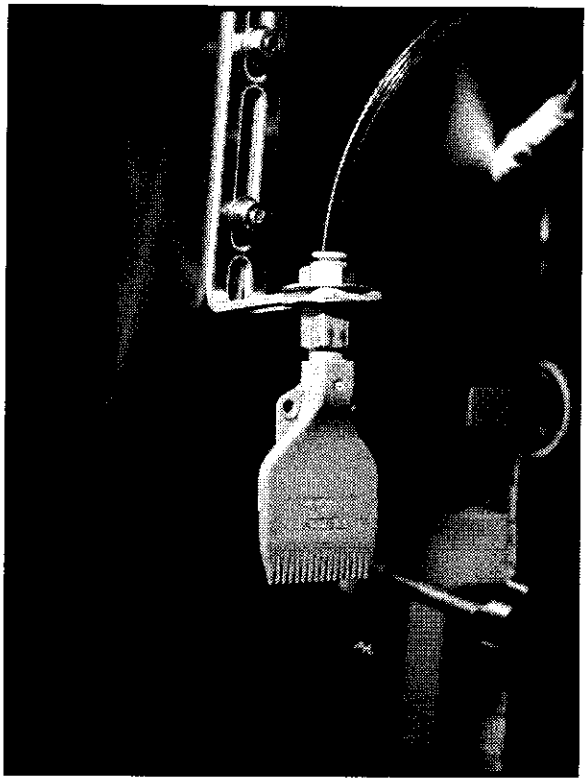
In some applications, the need for external devices to properly position and prepare the film for shrinkage is required. Axon has developed a group of components that are referred to as the Sleeve Lowering options, specifically, Sleeve Lowering Wheels, After Tamp, Air Blast and the Shoe. These devices can overcome most obstacles that prevent the film from being applied directly from the EZ-Seal Applicator, such as sharp edges around the cap and high static levels in the container or film.



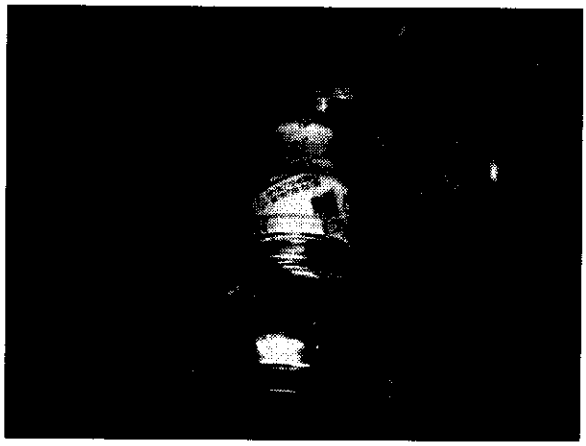
Sleeve Lowering Wheels



After Tamp



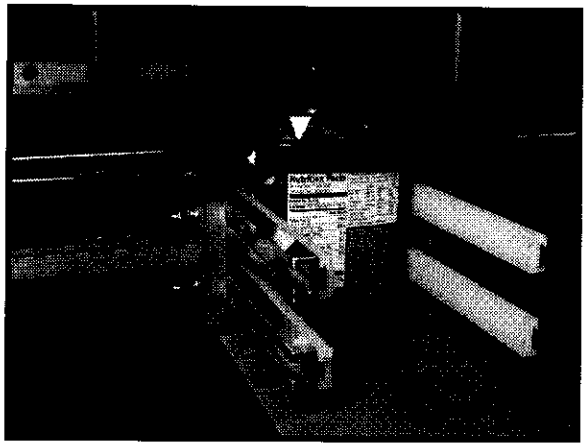
Air Blast



Shoe

14.4 Band Support:

For containers that do not contain a shoulder to support the film naturally, Axon can provide an option referred to as a Band Positioning Station. Several styles of the Band Positioning Station are available, but the primary function is the same. The units will support the film during application and spot-shrink it into place. This allows the product to enter the heat shrink tunnel without the film falling out of position.

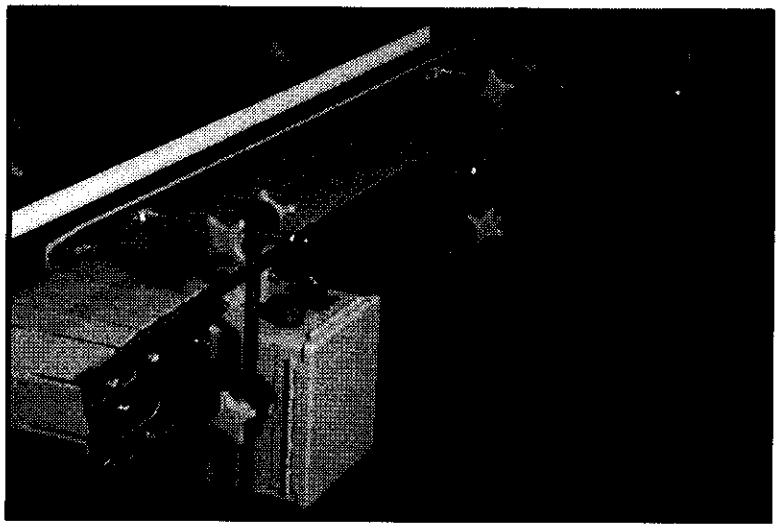


14.5 Head Sequencing:

Provided only for multi-head machines, the Head Sequencing option provides a positive means to alternate the functions of the heads without sacrificing performance.

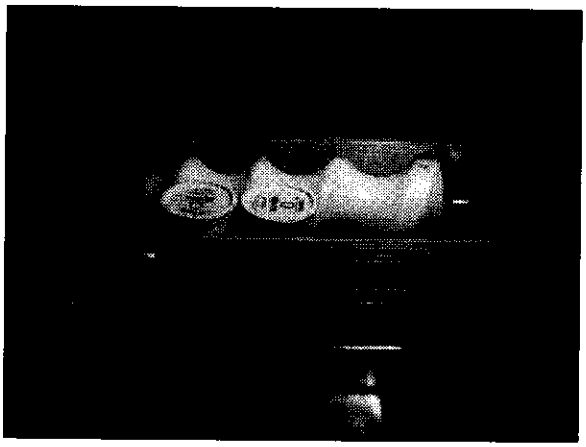
14.6 Conveyors

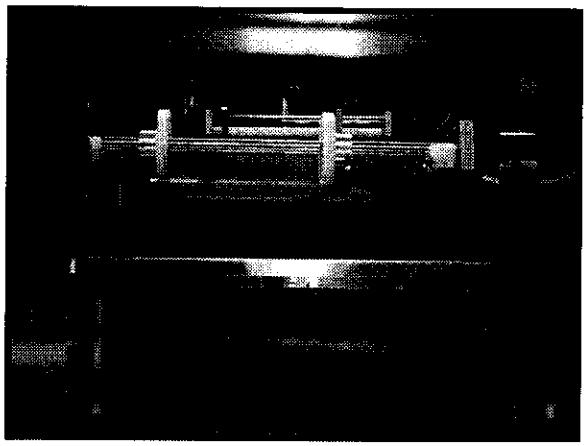
Axon can provide conveying systems to handle the product during the entire film application and shrinking process. The Table Top Conveyor (TTC) and Sleeve Positioning Conveyor (SPC) are primarily constructed of stainless steel and high-impact plastic. The conveyors are driven by a 90VDC variable speed motor to allow the velocity of the conveyor to be adjusted to optimize film application efficiency. Additionally, fixtures can be mounted to the conveyor belts for processing unstable containers



14.7 Product Separation Components:

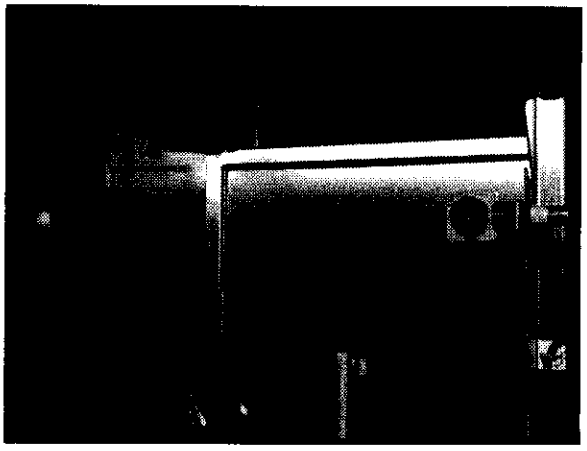
The EZ-Seal Applicator requires a consistent spacing of the product to provide a consistent cycle of the machine. The two popular methods are the Product Spacing Device (PSD) and timing screws. Custom methods can also be designed for difficult or irregular shaped packages.





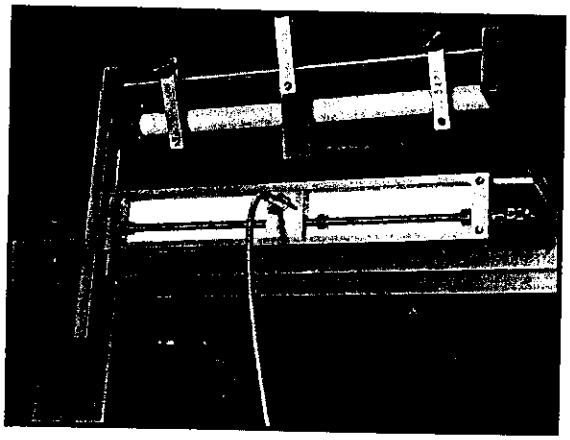
14.8 Motorized Film Unwind:

Where speed or film roll quality may be an issue, the EZ-Seal Applicator can be equipped with a Motorized Film Unwind. The motor provides a direct drive of the film roll support shaft to positively ensure that the stepper motor will have the required slack to pull from.



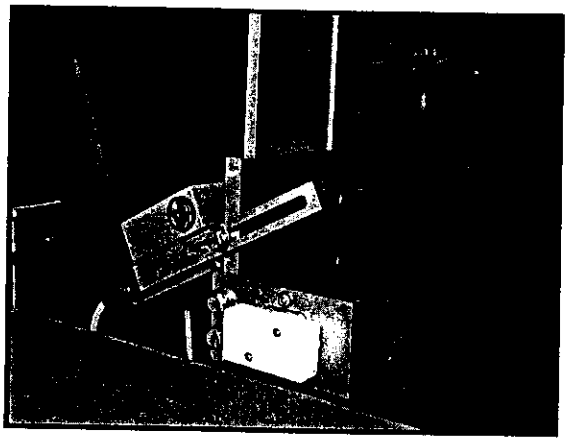
14.9 Low Film Alarm

The Low Film Alarm will alert the operator when the roll of film is in need of changing. Optional warning lights and audible alarms can be installed.



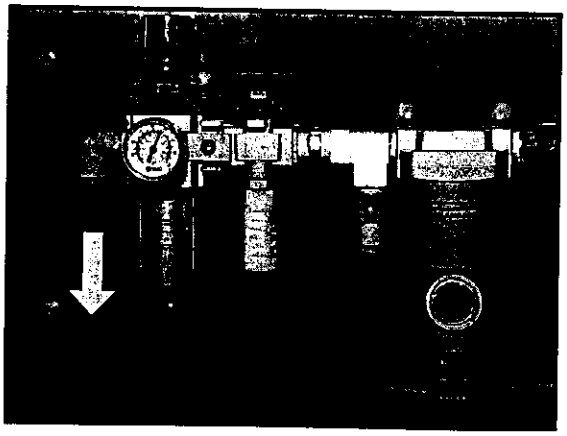
14.10 Splice Detection:

The Splice Detection option will alert the operator when a splice in the film is passing through the EZ-Seal Applicator, avoiding the risk of that product entering the market. Optional warning lights and audible alarms can be installed.



14.11 Inspection/Rejection Stations:

For a truly automated line, the EZ-Seal system can include an option that will detect the presence of film on the container and reject the packages that do not. This option provides the comfort in knowing that the product exiting the EZ-Seal equipment is properly sealed.



14.12 Air Dryer:

For problems with air quality, an Air Dryer can be installed on the EZ-Seal Applicator to provide clean and dry air to the pneumatic system. Moisture in the air supply will rapidly degrade the performance and reliability of the equipment.

APPENDIX "A"

PNEUMATIC DIAGRAMS

REVISION HISTORY			
REV.	DESCRIPTION	DATE	BY
1	CHANGED TITLE BLOCK	2/22/02	MGF

ALL AIR LINES 1/4 INCH POLY FLOW UNLESS OTHERWISE INDICATED

NUMBERS NEXT TO SOLENOID VALVE OPERATORS REFER TO ELECTRICAL SCHEMATIC WIRE NUMBERS

Sheet #	1	2	3	4	5	6	7	8	9	10
Rev. Level	1	1	1	1						
Sheet #	11	12	13	14	15	16	17	18	19	20
Rev. Level										

DRAFT BY: MIKE FLEMING — DATE

CHECKED BY: — DATE

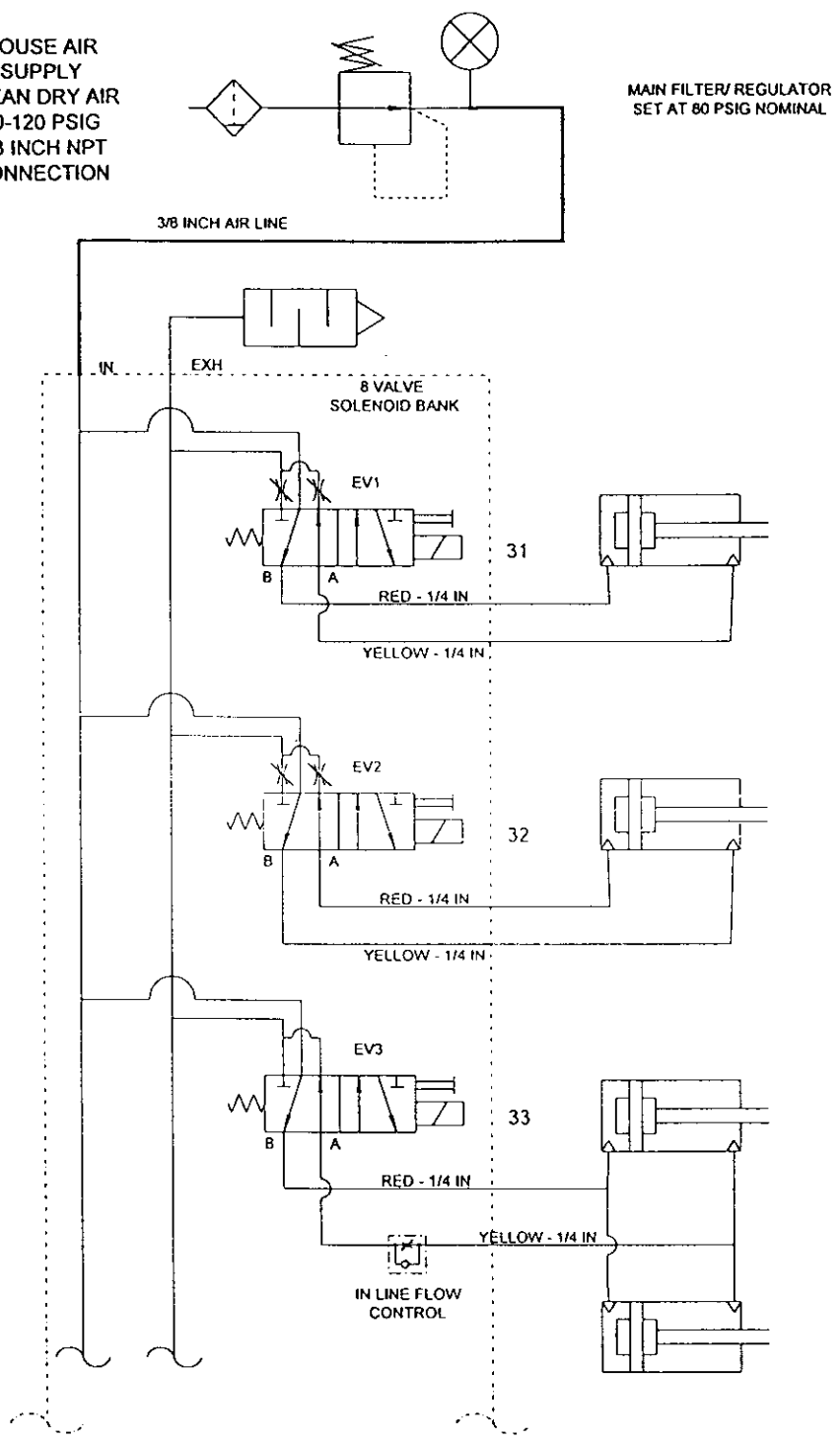
ENGINEER: MIKE FLEMING — DATE

AXON CORPORATION
1341 EXPRESS DRIVE
RALEIGH, NC 27603

TITLE

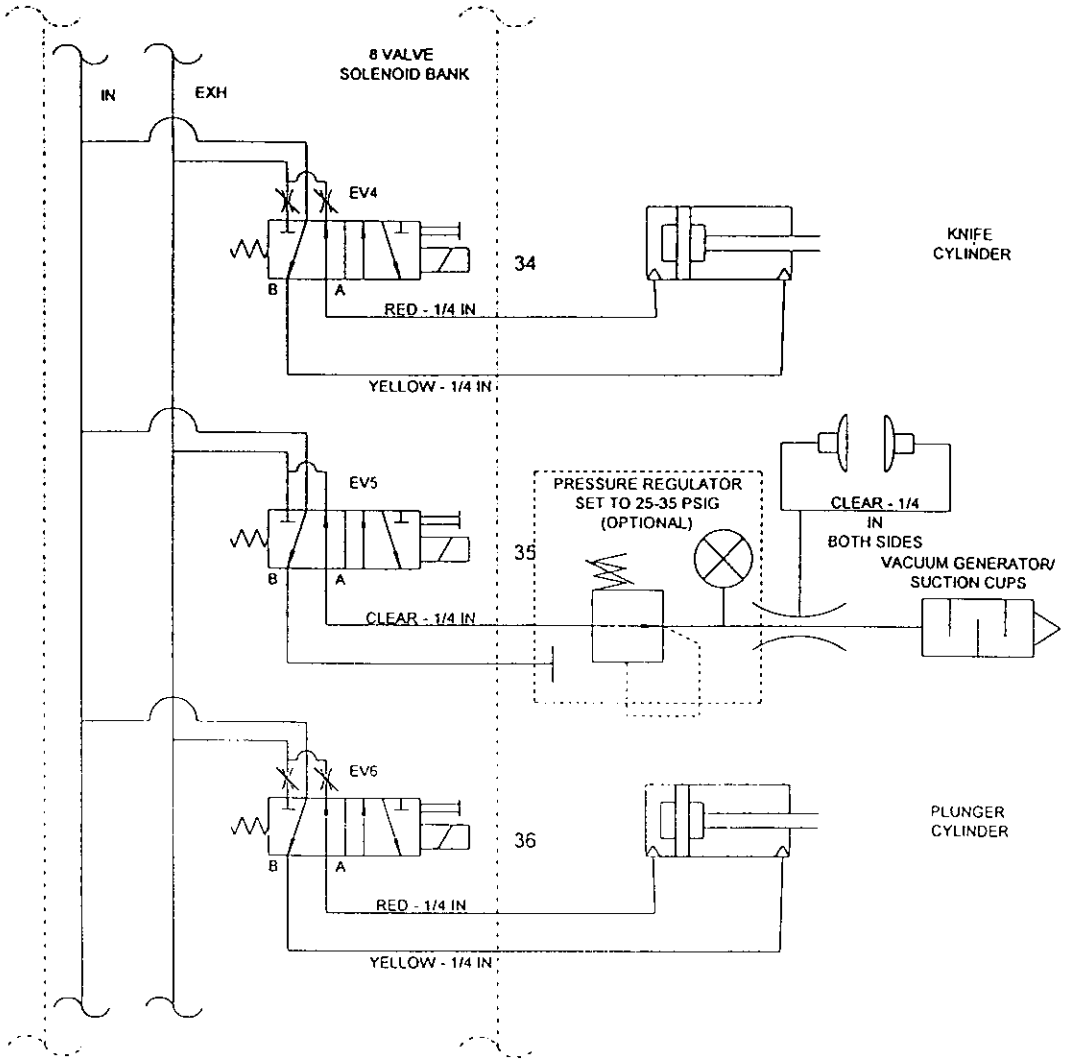
EZ-300, EZ-400, EZ-650
Pneumatic Diagram for EZ-Seal
w/ Allen Bradley PLC

SIZE	DATE	SHEET	DRAWING NUMBER	REVISION LEVEL
A	2/22/02	1 OF 4	PS0003	1



DRAFT BY: MIKE FLEMING	DATE	TITLE	
AXON CORPORATION	1341 EXPRESS DRIVE RALEIGH, NC 27603	EZ-300, EZ-400, EZ-650 Pneumatic Diagram for EZ-Seal w/ Allen Bradley PLC	

SIZE	DATE	SHEET	DRAWING NUMBER	REVISION LEVEL
A	2/22/02	2 OF 4	PS0003	1



DRAFT BY: MIKE FLEMING	DATE	TITLE	
AXON CORPORATION	1341 EXPRESS DRIVE RALEIGH, NC 27603	EZ-300, EZ-400, EZ-650 Pneumatic Diagram for EZ-Seal w/ Allen Bradley PLC	
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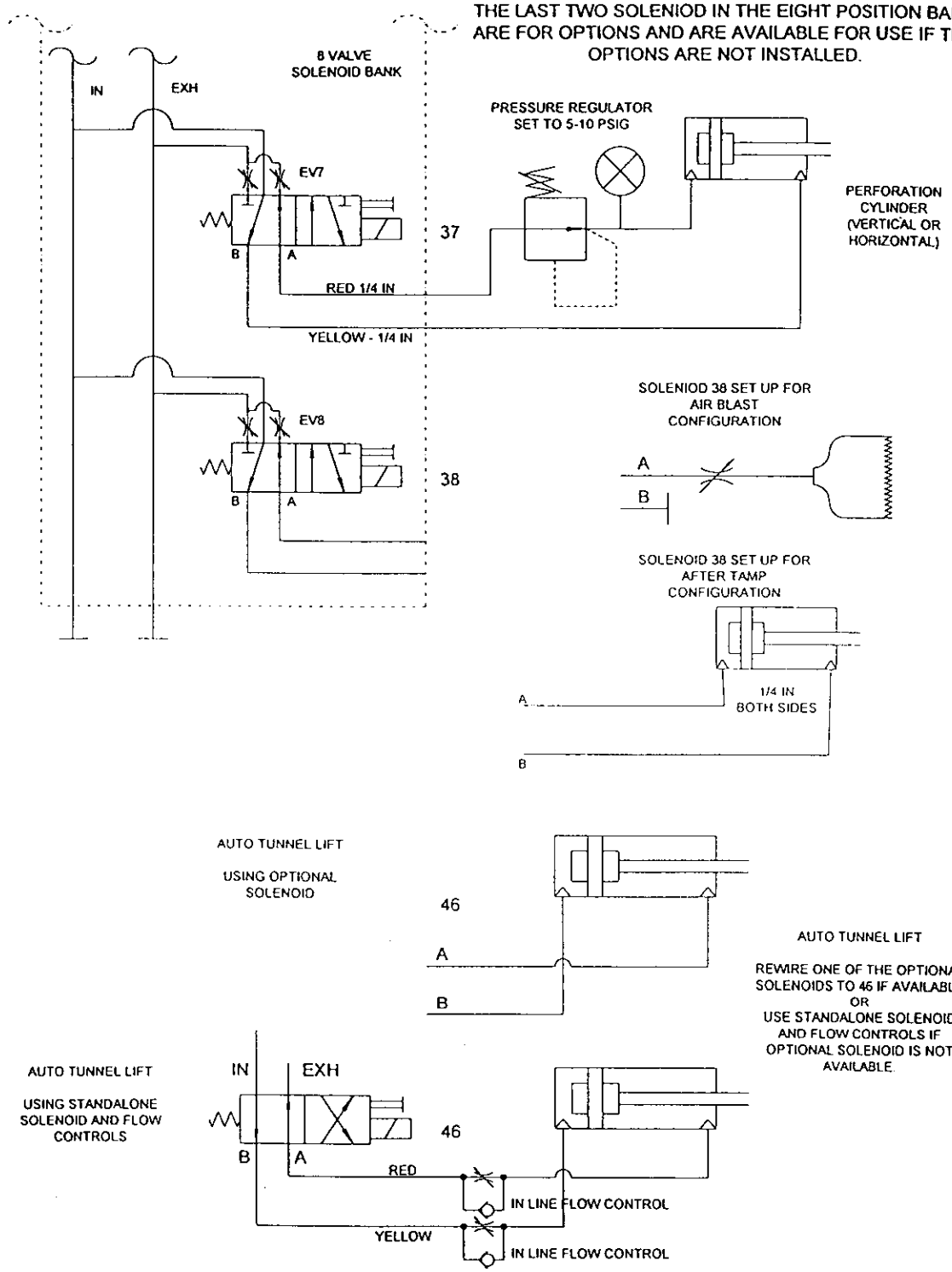
SIZE	DATE	SHEET	DRAWING NUMBER	REVISION LEVEL
A	2/22/02	3 OF 4	PS0003	1

THE LAST TWO SOLENIOD IN THE EIGHT POSITION BANK ARE FOR OPTIONS AND ARE AVAILABLE FOR USE IF THE OPTIONS ARE NOT INSTALLED.



DRAFT BY: MIKE FLEMING	DATE	TITLE	
AXON CORPORATION	1341 EXPRESS DRIVE RALEIGH, NC 27603	EZ-300, EZ-400, EZ-650 Pneumatic Diagram for EZ-Seal w/ Allen Bradley PLC	

SIZE	DATE	SHEET	DRAWING NUMBER	REVISION LEVEL
A	2/22/02	4 OF 4	PS0003	1

APPENDIX "B"

ELECTRICAL DIAGRAMS

REVISION HISTORY			
REV.	DESCRIPTION	DATE	BY
1	CHANGED RELAY TERMINAL NUMBERS	6/27/02	MGF
2	ADDED OPTIONAL PLUNGER AIR BLAST SOLENOID	7/19/02	MGF
3	SEPARATED EXIT AIR BLAST AND EXIT AFTER TAMP SOLENOID	7/29/02	MGF
4	ADDED OPTIONAL ONE-POINT IONIZER	10/10/02	MGF
5	CHANGED OPTIONAL MOTORIZED FILM UNWIND FROM DC MOTOR TO AC MOTOR	10/22/02	MGF
6	ADDED STEPPER DRIVER COOLING FAN	2/4/03	MGF
7	ADDED PANEL LAYOUT DRAWING	2/14/03	MGF
8	ADDED OPTIONAL MAIN AIR DUMP VALVE	3/4/03	MGF
9	CHANGED OPTIONAL SAFETY SWITCH TO STANDARD	3/18/03	MGF

DESCRIPTION	COLOR	SIZE
LINE, LOAD AND CONTROL CIRCUITS AT LINE VOLTAGE.	BLACK	16 AWG
AC CONTROL CIRCUITS AT LESS THAN LINE VOLTAGE	RED	16 AWG
GROUND CONDUCTOR	GREEN OR GREEN/YELLOW	14 AWG
DC CONTROL CIRCUITS	LIGHT BLUE	20 AWG
GROUNDED DC CIRCUIT CONDUCTORS	WHITE W/BLUE STRIPE	20 AWG

BASES FOR OPTIONAL CONVEYOR CONTROL RELAY IS PRE-INSTALLED

NOTE 1 : EXTRA SIGNAL WIRES FROM THE PHOTO EYES WILL HAVE BUTT SPLICES INSTALLED TO PREVENT SHORTING THE PHOTOEYE ELECTRONICS.

NOTE 2 : OPTIONAL INPUTS SHOWN (PRINT REGISTRATION, LOW FILM, JAM DETECT).

NOTE 2 : OPTIONAL OUTPUTS SHOWN (CONVEYOR, PENCIL HEATER, SLEEVE LOWERING WHEELS, PRODUCT SPACING DEVICE, ETC.).

EZ-SEAL STANDARD

DRAFT BY: MIKE FLEMING	DATE
CHECKED BY:	DATE
ENGINEER: MIKE FLEMING	DATE

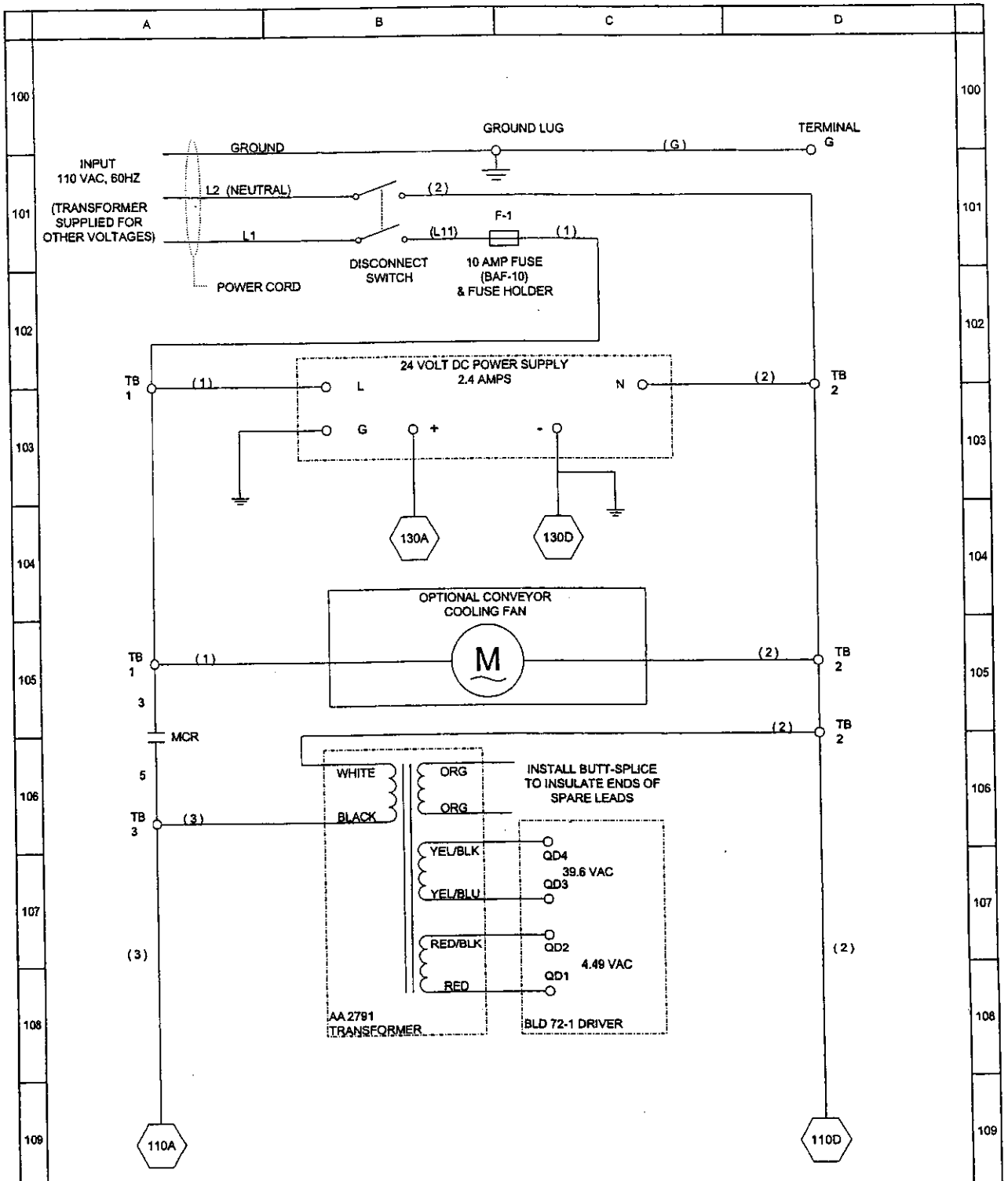
AXON CORPORATION
1341 EXPRESS DRIVE
RALEIGH, NC 27603

Sheet #	1	2	3	4	5	6	7	8	9	10
Rev. Level	9	1	5	5	1	1	8	1	7	
Sheet #	11	12	13	14	15	16	17	18	19	20
Rev. Level										

TITLE

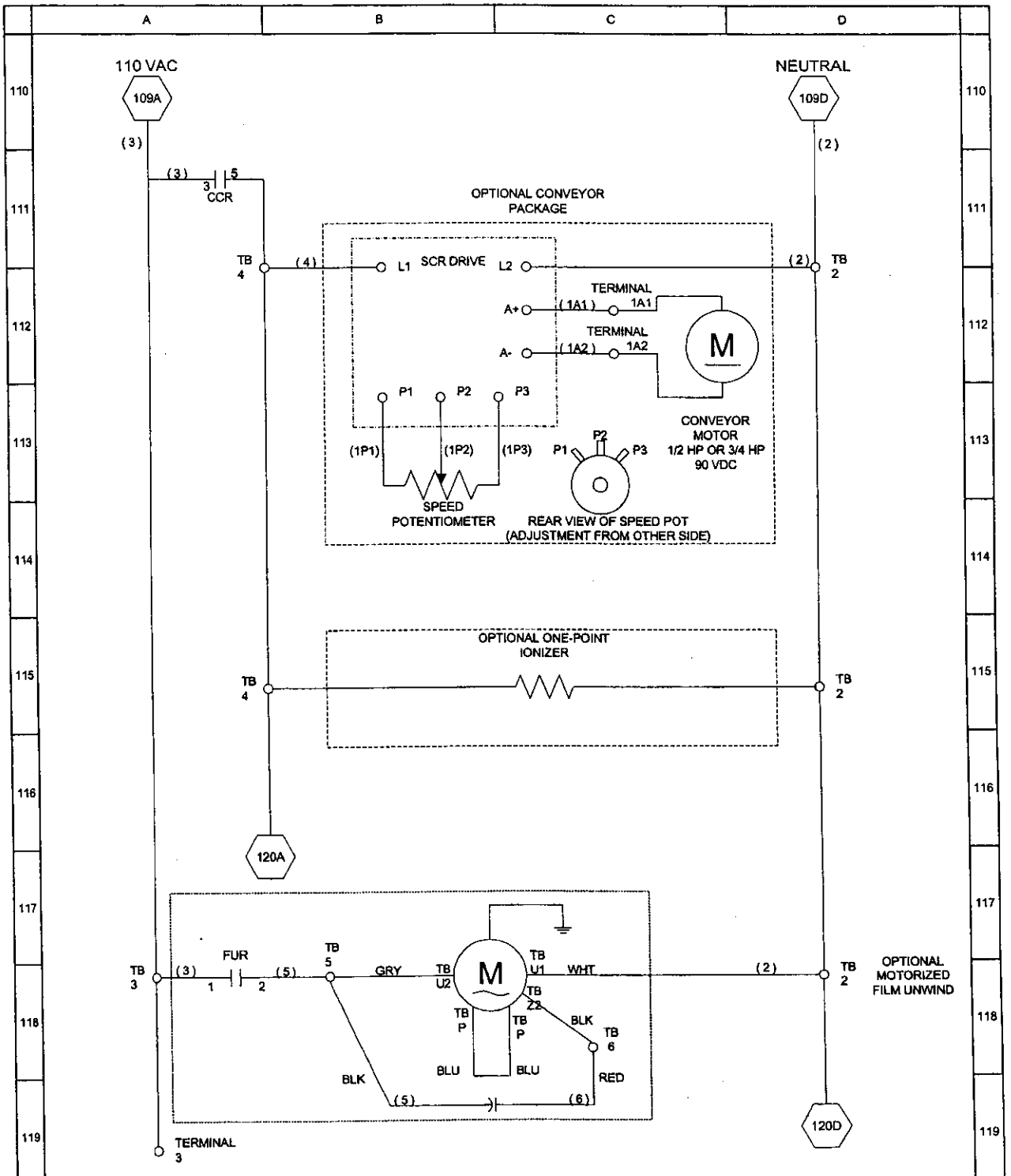
Electrical Schematic for EZ-Seal with A/B MicroLogix 1500 PLC and Anaheim Stepper

SIZE	DATE	SHEET	DRAWING NUMBER	REVISION LEVEL
A	3/18/03	1 OF 9	ES0100	9



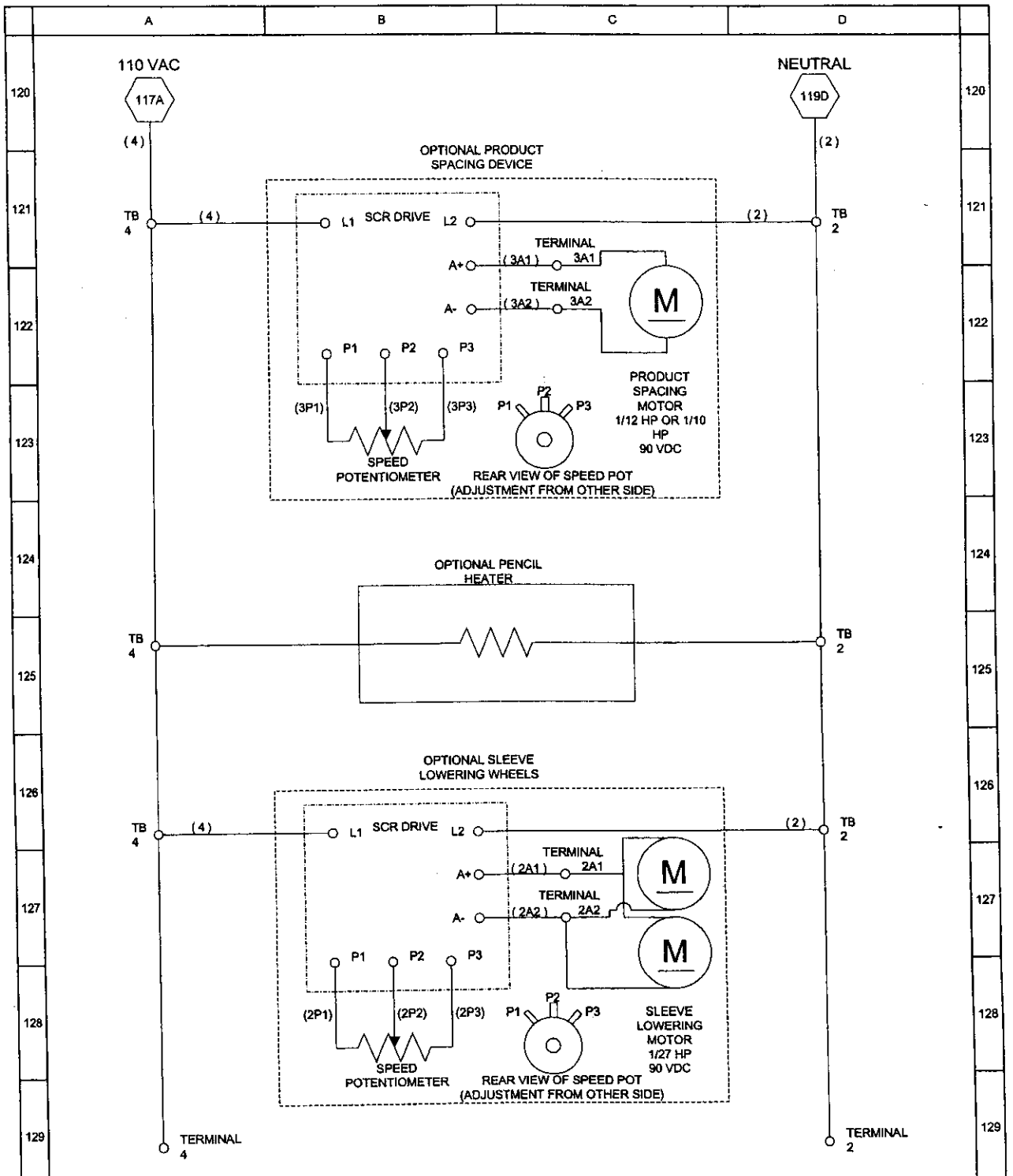
DRAFT BY: MIKE FLEMING	DATE	TITLE	
AXON CORPORATION	1341 EXPRESS DRIVE RALEIGH, NC 27603	Electrical Schematic for EZ-Seal with A/B MicroLogix 1500 PLC and Anaheim Stepper	

SIZE	DATE	SHEET	DRAWING NUMBER	REVISION LEVEL
A	6/27/02	2 OF 9	ES0100	1



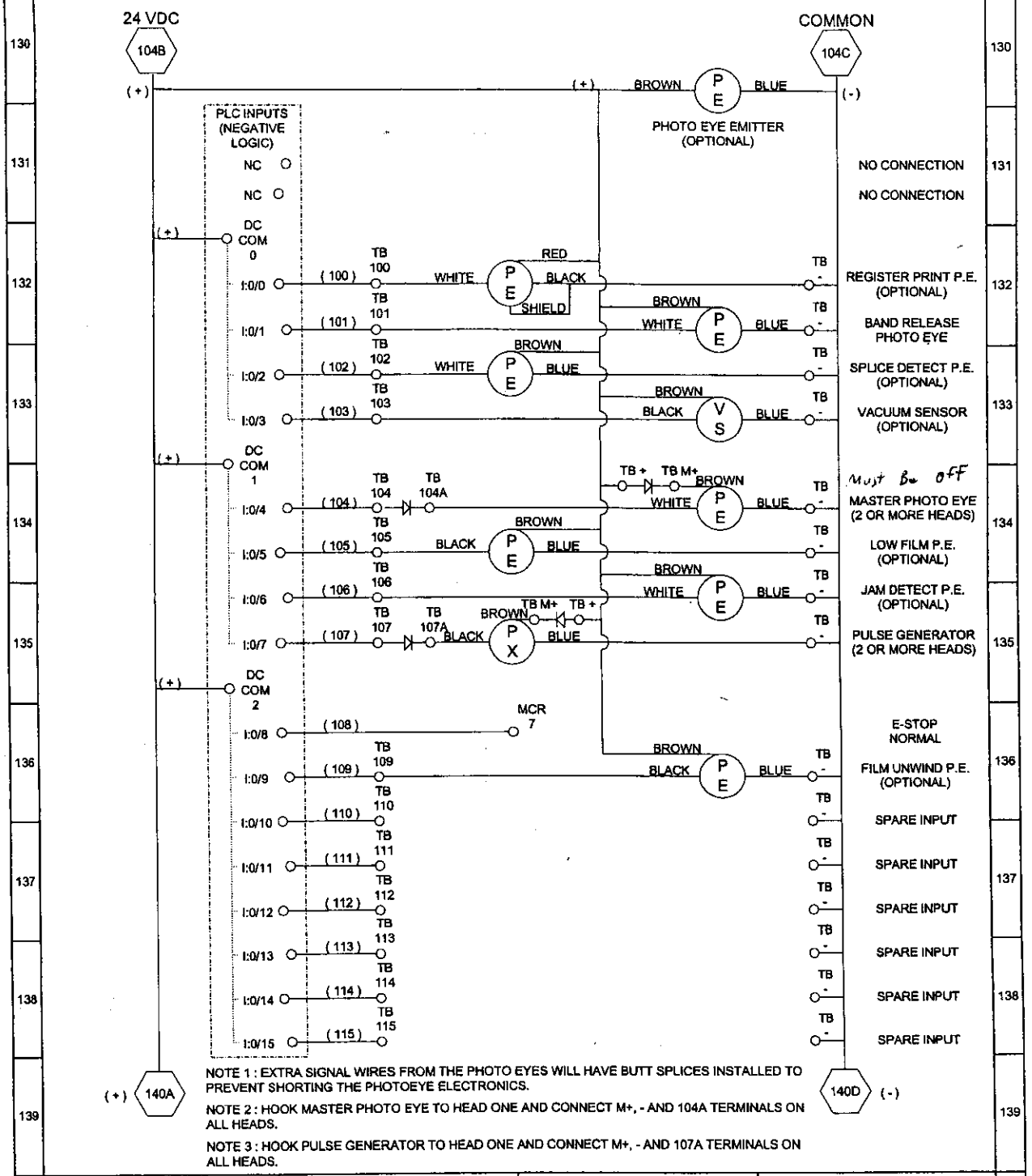
DRAFT BY: MIKE FLEMING	DATE	TITLE	
AXON CORPORATION	1341 EXPRESS DRIVE RALEIGH, NC 27603	Electrical Schematic for EZ-Seal with A/B MicroLogix 1500 PLC and Anaheim Stepper	

SIZE	DATE	SHEET	DRAWING NUMBER	REVISION LEVEL
A	10/22/02	3 OF 9	ES0100	5



DRAFT BY: MIKE FLEMING	DATE	TITLE	
AXON CORPORATION	1341 EXPRESS DRIVE RALEIGH, NC 27603	Electrical Schematic for EZ-Seal with A/B MicroLogix 1500 PLC and Anaheim Stepper	

SIZE	DATE	SHEET	DRAWING NUMBER	REVISION LEVEL
A	10/22/02	4 OF 9	ES0100	5



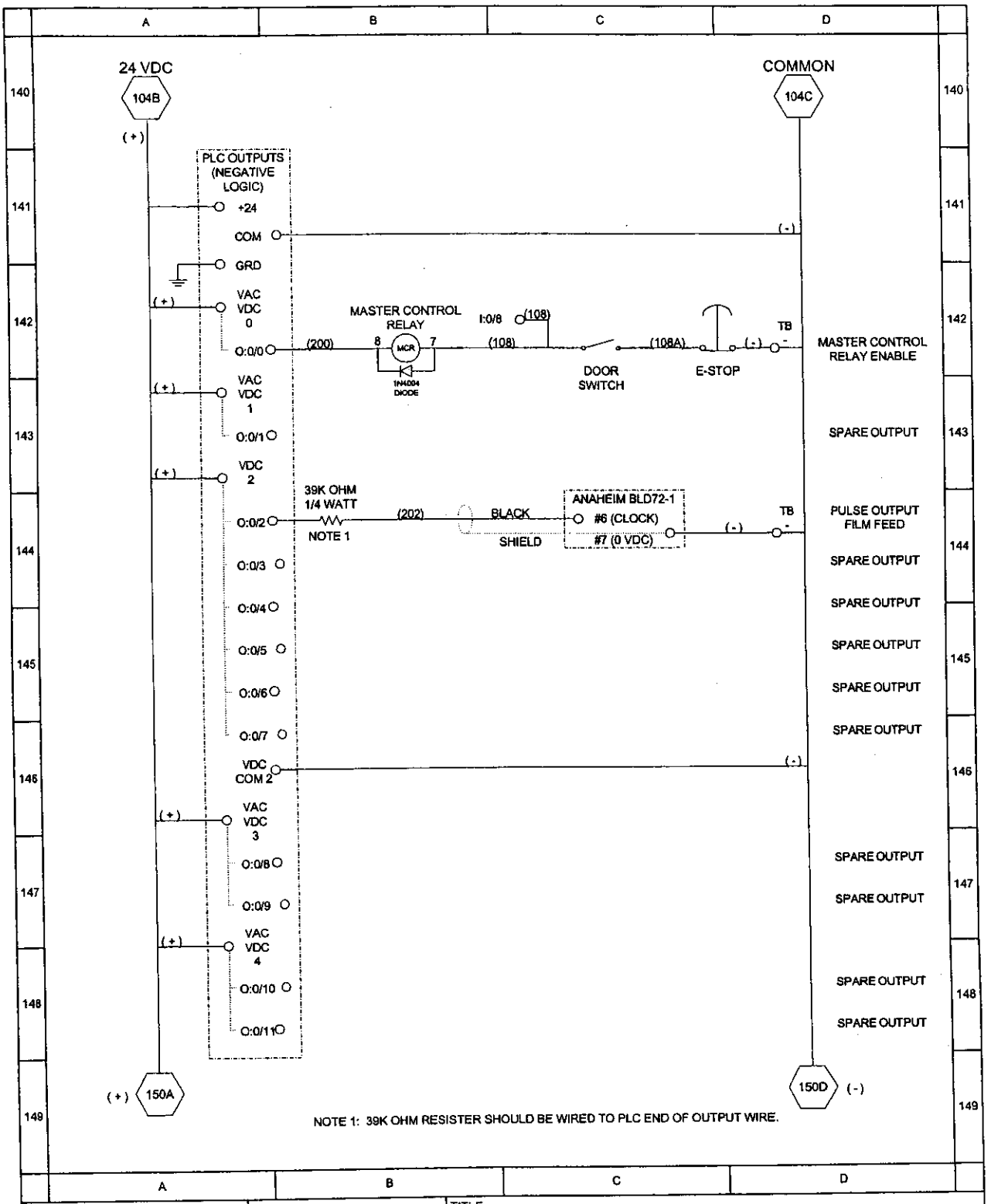
NOTE 1 : EXTRA SIGNAL WIRES FROM THE PHOTO EYES WILL HAVE BUTT SPLICES INSTALLED TO PREVENT SHORTING THE PHOTOEYE ELECTRONICS.

NOTE 2 : HOOK MASTER PHOTO EYE TO HEAD ONE AND CONNECT M+, - AND 104A TERMINALS ON ALL HEADS.

NOTE 3 : HOOK PULSE GENERATOR TO HEAD ONE AND CONNECT M+, - AND 107A TERMINALS ON ALL HEADS.

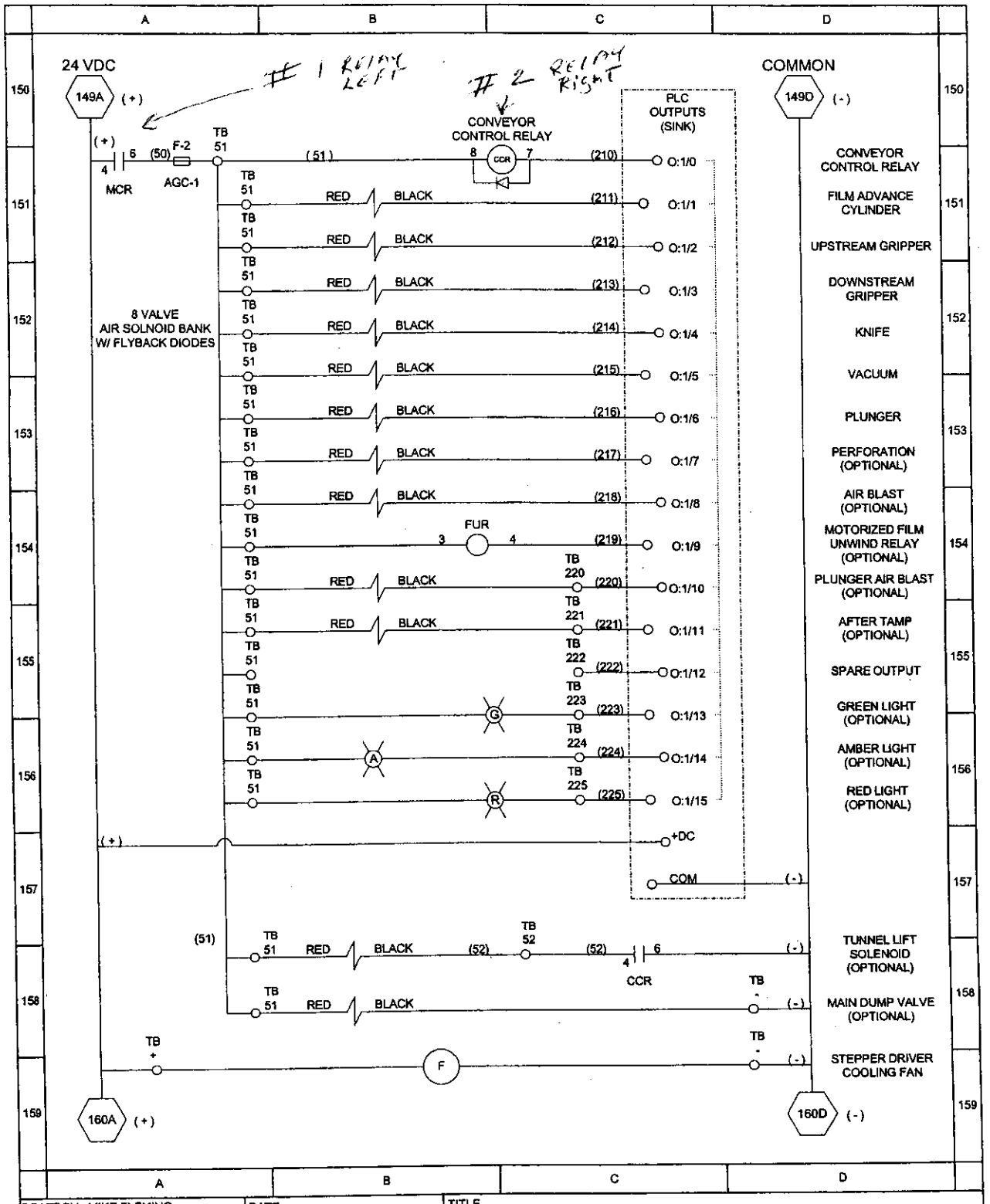
DRAFT BY: MIKE FLEMING	DATE	TITLE	
AXON CORPORATION	1341 EXPRESS DRIVE RALEIGH, NC 27603	Electrical Schematic for EZ-Seal with A/B MicroLogix 1500 PLC and Anaheim Stepper	

SIZE	DATE	SHEET	DRAWING NUMBER	REVISION LEVEL
A	6/27/02	5 OF 9	ES0100	1



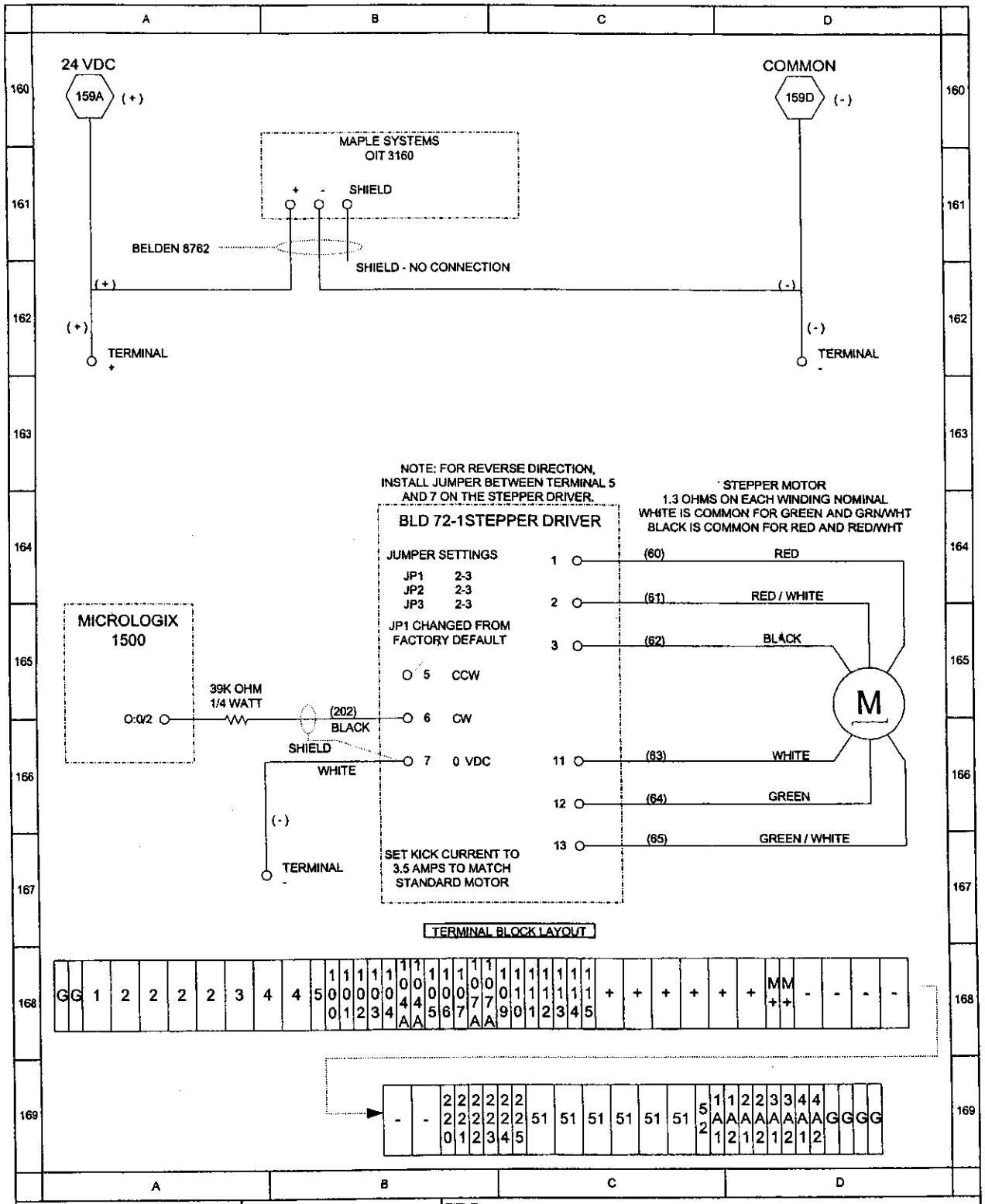
DRAFT BY: MIKE FLEMING	DATE	TITLE	
AXON CORPORATION	1341 EXPRESS DRIVE RALEIGH, NC 27603	Electrical Schematic for EZ-Seal with A/B MicroLogix 1500 PLC and Anaheim Stepper	

SIZE	DATE	SHEET	DRAWING NUMBER	REVISION LEVEL
A	3/18/03	6 OF 9	ES0100	9



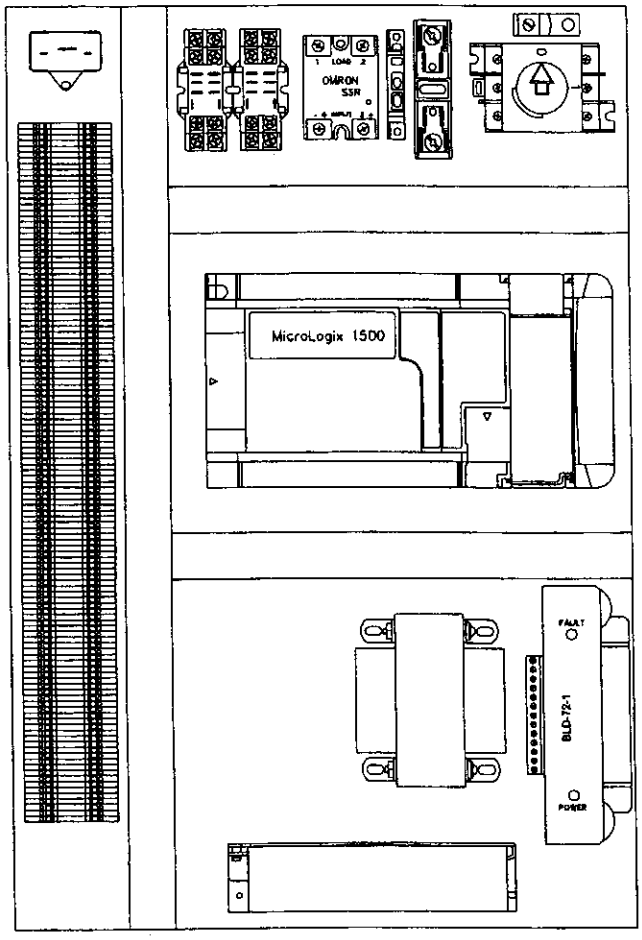
DRAFT BY: MIKE FLEMING	DATE	TITLE	
AXON CORPORATION	1341 EXPRESS DRIVE RALEIGH, NC 27603	Electrical Schematic for EZ-Seal with A/B MicroLogix 1500 PLC and Anaheim Stepper	

SIZE	DATE	SHEET	DRAWING NUMBER	REVISION LEVEL
A	3/4/03	7 OF 9	ES0100	8



DRAFT BY: MIKE FLEMING	DATE	TITLE
AXON CORPORATION	1341 EXPRESS DRIVE RALEIGH, NC 27603	Electrical Schematic for EZ-Seal with A/B MicroLogix 1500 PLC and Anaheim Stepper

SIZE	DATE	SHEET	DRAWING NUMBER	REVISION LEVEL
A	6/27/02	8 OF 9	ES0100	1



PANEL LAYOUT

DRAFT BY: MIKE FLEMING	DATE	TITLE	
AXON CORPORATION	1341 EXPRESS DRIVE RALEIGH, NC 27603	Electrical Schematic for EZ-Seal with A/B MicroLogix 1500 PLC and Anaheim Stepper	
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SIZE	DATE	SHEET	DRAWING NUMBER	REVISION LEVEL
A	6/27/02	9 OF 9	ES0100	7

APPENDIX "C"

OPERATOR INTERFACE PANEL and SCREENS

Chapter 15: Operator Interface Panel

15.1 Operator Interface Panel (OIP) Information

The OIP is in communication with the Programmable Logic Controller (PLC) in the electrical enclosure of the EZ-Seal Applicator. Through the OIP the operator can control various settings in the PLC, which effect the operation of the EZ-Seal Applicator.

15.2 Moving Around

The OIP is set up to be user friendly. The Operator can jump from menu to menu using the number keys. When the "->" is displayed in the lower right hand corner of a screen the operator can scroll through a series of messages by pressing the arrow key.

15.3 Set Point Screens

The operator can view and change values of set points in the PLC by moving to the correct set point screen and then pressing "Clear", entering the new value using the numeric keypad and then pressing "Enter". (The new value is not sent to the PLC until "Enter" is pushed.)

15.4 OIP Control push buttons

Start

Pushing this button signals the EZ-Seal Applicator to start and place a film band on the Grippers.

Stop

Pushing this button will stop the operation of the EZ-Seal Applicator.

Auto

Pushing this button will enable the EZ-Seal Applicator to operate automatically when the band release photo eye detects product.

15.6 Setup Screens

Setup Screen 1 is accessed by pressing "MENU" then 1". The rest of the SETUP SCREEN is accessed by pressing the "->/0" key.

Screen:

Setup Screen 1
Screen Text: **Press → to scroll through screens**
Description: Instruction Screen

15.1 Operator Interface Panel (OIP)
15.2 Moving Around
15.3 Set Point Screens
15.4 OIP Push Buttons
15.5 Setup Screens
cont. ...

Screen:

Setup Screen 2
Screen Text: **To change a value Press CLEAR. Enter**
Description: Instruction Screen.

Screen:

Setup Screen 3
Screen Text: **New value. Press ENTER TO LOAD**
Description: Instruction screen

Screen:

Setup Screen 4
Screen Text: **Film Cut Length = ###**
Description: This is the length of film that the EZ Applicator is to place the product.

Screen:

Setup Screen 5
Screen Text: **Number of Heads Online = #**
Description: Enter the number of on-line EZ-Seal heads, (used in the EZ-2-100 and EZ-4-100 machines for product synchronization).

Screen: Q10 - EXEMPLE

Setup Screen 6 Screen
Text: **Band Release Delay T1 = ###** 305
Description: The time delay between when the product cuts the Photo Eye and is in the proper position for film application. The vacuum holding the film on the grippers is released when this timer expires.

Screen:

Setup Screen 7
Screen Text: **Down Gripper IN Delay T2 = ###** 190
Description: The time delay between when the stepper starts to feed film and when the downstream gripper starts to move to the IN, (retracts) position.

Screen:

Setup Screen 8
Screen Text: **Up Gripper IN Delay T3 = ###** 200
Description: The time delay between when the stepper stop feeding film and the upstream gripper starts to move in the IN, (extended) position.

cont. ...

Screen:

Setup Screen 9
Screen Text: **Knife IN delay T5 = ###** 210
Description: The time delay between when the upstream gripper starts to move to the IN position and when the knife starts to extend to cut the film.

Screen:

Setup Screen 10
Screen Text: **Knife OUT delay T5 = ###** 130
Description: The amount of time the knife dwells in the extended position to complete the film cut.

Screen:

Setup Screen 11
Screen Text: **Plunger DOWN delay T6 = ###** 45
Description: The time delay between when the vacuum is released and the plunger extends down to push the film on the product.

Screen:

Setup Screen 12
Screen Text: **Up Gripper OUT Delay T7 = ###** 5 (10)
Description: The time delay between when the plunger starts to extend and the upstream gripper is retracted.

Screen:

Setup Screen 13
Screen Text: **Plunger UP Delay T8 = ###** 30 (20)
Description: The amount of time that the plunger dwells in the down position.

Screen:

Setup Screen 14
Screen Text: **Film feed delay T9 = ###** 160
Description: The time delay between when the upstream gripper starts to retract and when the stepper starts to feed the film. This delay is provided so that the upstream gripper has time to clear the film path.

Screen:

Setup Screen 15
Screen Text: **Dwn Gripper OUT Delay T10 = ###** 270
Description: The time delay between when the downstream gripper starts to extend and the plunger starts to move down. This delay is provided to allow the film to fully open and the gripper to clear the path of the plunger.

Screen:

Setup Screen 16
Screen Text: **Large Film Mode (On/Off) Press 1 to toggle**
Description: This mode provides for the retraction of the upstream gripper with the film still on the gripper, to enable the opening of larger layflat sizes. Select On or Off.

Screen:

Option Sub-Menu 1
Screen Text: **1-Print Reg. 2-Perf. 3-Sleeve Lower 4-More**
Description: This is the Options Sub-Menu 1. It is accessed by pressing "MENU", then "2". Pressing "4" from the sub menu will display the Options Sub-Menu 2.

Screen:

Option Sub-Menu 2
Screen Text: **1-Bypass. 2-Low Film 3-Master PE 4-Menu**
Description: This is the Options Sub-Menu 2. It is accessed by pressing "MENU", then "2" for Options, then "4" for More. Pressing "4" for this sub-menu will return the display to the Main Menu.

Screen:

Option Screen 1.1.1
Screen Text: **Print Reg. Mode = (ON/OFF) Press 1 to toggle**
Description: This screen allows the operator to enable the Print Registration Option (if provided). Select ON or OFF.

Screen:

Option Screen 1.1.2
Screen Text: **Print Undershoot = ## (steps)**
Description: This is the number of steps prior to the registration mark that the print registration photo eye becomes active in the logic of the PLC program.

Screen:

Option Screen 1.1.3
Screen Text: **Print Reg. Hunt Time = ## (time)**
Description: This is the time that the stepper motor is allowed to look for the registration mark once the undershoot is active.

Screen:

Option Screen 1.2.1
Screen Text: **Perforation=(On/Off) Press 1 to toggle**
Description: This screen allows the operator to enable Perforation Options (if provided). Select ON or OFF.

Screen:

Option Screen 1.2.2
Screen Text: **Perf. Type= (Vert./Horz.) Press 1 to toggle**
Description: This screen allows the operator to select the type of Perforation Option to enable. (Vertical or Horizontal/T) Select Vert. or Horz.

Screen:

Option Screen 1.2.3
Screen Text: **Perf. Dwell Timer = ###**
Description: This is the time allotted for the Perforation Cylinder to disengage (vertical) or engage (horizontal, T-style or split-tab).

Screen:

Option Screen 1.3.1
Screen Text: **Sleeve Lowering =(On/Off) Press 1 to toggle**
Description: This screen allows the operator to enable Sleeve Lowering Options (if provided).

(NOTE: The "Sleeve Lowering Wheel" is not PLC controlled and does not need to be enabled.)

Screen:

Option Screen 1.3.2
Screen Text: **Device=(A.Blast/A Tamp) Press 1 to toggle**
Description: This screen allows the operator to select the type of sleeve lowering device. (Air Blast/After Tamp). Select A. Blast or A. Tamp.

Screen:

Option Screen 1.3.3
Screen Text: **Sleeve Lowering on Delay = ###**
Description: The time delay between when a product is detected by the Band Release Photo Eye and the start of downward movement by the After Tamp device or air blast pulses.

Screen:

Option Screen 1.3.4
Screen Text: **Sleeve Lowering on Dwell Time = ###**
Description: The time delay from when the After Tamp device starts the downward movement and the start of the upward movement or the duration the air blast pulses are permitted.

Screen:

Option Screen 1.3.5
Screen Text: **Air Blast Off Time = ###**
Description: Controls the Off Time for the air blast solenoid valve.

Screen:

Option Screen 1.3.6
Screen Text: **Air Blast On Time = ###**
Description: Controls the On Time for the air blast solenoid valve.

Screen:

Option Screen 2.1.1
Screen Text: **Conv. Bypass Mode=(ON/OFF) Press 1 to toggle.**
Description: Enables the operator to start the conveyor system without starting the EZ-Seal Applicator.

Screen:

Option Screen 2.2.1
Screen Text: **Low Film Shutdown=(Enabled/Disabled) Press 1**
Description: Enables the Low Film Alarm if the option is installed on the EZ-Seal Applicator.

Screen:

Option Screen 2.2.2
Screen Text: **Low Film S/D Counter = ###**
Description: Once low film is detected, the EZ-Seal Applicator will begin counting the number of cycles permitted before stopping.

Screen: Must Be off for our use

Option Screen 2.3.1
Screen Text: **Master Photo Eye = (ON/OFF) Press 1 to toggle.**
Description: Enables the Master Photo Eye in the logic. This is for multi-head machines only.

Screen:

Option Screen 2.3.2
Screen Text: **Master PE Setup Aid = ###**
Description: This register can not be changed—read only. The Setup Aid is the actual time it takes for the product to pass from the Master PE to the Band Release PE for that head.

Screen:

Option Screen 2.3.3
Screen Text: **Master PE Delay = ###**
Description: This value is calculated from data taken from the Master PE Setup Aid. Once the delay has expired, the Band Release PE starts scanning for the product.

Screen:

Option Screen 2.3.4
Screen Text: **Master PE Window = ##**
Description: This is the total time permitted for the Band Release PE to scan for the product.

Screen:

Option Screen 2.3.5
Screen Text: **Head Offset = ##. Press "START" to change.**
Description: When sequencing multi-head EZ-Seal Applicators, it is necessary to identify which head in the series that particular unit is. The Offset for each head, in a series of heads, must be different in order for the heads to alternate the film application.

15.8 Count Screens

Screen:

Count Screen 1
Screen Text: **Product count for EZ-Seal Machine**
Description: Count screen 1 is accessed by pressing "MENU", then "3". The rest of the Count Screens are accessed by pressing the "->/0"key

Screen:

Count Screen 2
Screen Text: **Units per minute ####**
Description: This screen allows the operator to view the number of products banded by the EZ-Seal machine in a one minute period.

Screen:

Count Screen 3
Screen Text: **Total Product Count ########**
Description: This screen allows the operator to view the total number of products banded (since last reset). Counts up to 99,999,999.

Screen:

Count Screen 4
Screen Text: **Press 1 to Reset Count (Reset = Off)**
Description: This screen allows the operator to reset the Total Product Counter. Select On to reset. Register is set automatically back to Off after the reset.

15.9 Special Menu

Screen:

Special Sub-Menu 1
Screen Text: **1-Alt. Language 2-Test 3 - Rev. Lvl. 4-More**
Description: Pressing "MENU", then "4" will access this Special Sub-menu.

Screen:

Special Sub-Menu 2
Screen Text: **1-Photo Eye Mask 2-Grippers 3-Pulse Gen. 4-More**
Description: To access this Special Sub-menu, press "MENU", then "4", "1 ", "4"

Screen:

Special Sub-Menu 3
Screen Text: **1-Stepper Setup 4-Main Menu**
Description: To access this Special Sub-menu, Press "MENU", then "4", "1 ", "4", "W". Pressing "4" from this sub-menu returns the display to the Main Menu.

Screen:

Special Screen 1.1
Screen Text: **Oper. Message (English/Spanish) Press 1 to toggle**
Description: Allows the operator to display messages in English or Spanish.

Screen:

Special Screen 1.2
Screen Text: **Test Mode = (On/Off) Press 1 to toggle**
Description: This screen allows the technician to set the EZ-Seal Machine to cycle for test purposes.

Screen:

Special Screen 1.3
Screen Text: **PLC Rev. Lvl. ##### OIP Rev. LVL. #####**
Description: Displays the program revision level for the PLC and OIP.

Screen:

Special Screen 2.1.1
Screen Text: **Photo Eye Mask On Delay Timer = ###**
Description: This screen allows the technician to set a Photo Eye mask timer for systems using conveyors with pucks to prevent the EZ-Seal machine from triggering on an empty puck.

Screen:

Special Screen 2.1.2
Screen Text: **Photo Eye Mask Off Delay Timer = ###**
Description: This screen allows the technician to set a Photo Eye mask timer for systems using conveyors with pucks to prevent the EZ-Seal machine from triggering on an empty puck.

Screen:

Special Screen 2.2
Screen Text: **Gripper Style = (S. Cups/Cylinder)**
Description: The majority of the EZ-Seal Applicators use suction cups and vacuum to hold the film in position. For very small film layflat widths, the film is fed into a cylindrical gripper.

Screen:

Special Screen 2.3
Screen Text: **Pulse Generator = (On/Off)**
Description: As an option, the Pulse Generator provides a means of synchronizing multi-head machines by pulses instead of timers.

Screen:

Special Screen 3.1
Screen Text: **mm to Steps Scaling (Std = 3973)**
Description:

Screen:

Special Screen 3.1.1
Screen Text: **Max Speed (Hz) = ####** 2000 Hz
Description:

Screen:

Special Screen 3.1.2
Screen Text: **Accel/Decel Pulses = ##** 32
Description:

Screen:

Special Screen 3.1.3
Screen Text: **Print Reg. Hunt Spd = ###**
Description:

15.10 Operator Messages

Screen:

Ops. Message 1
Screen Text: **Axon Corporation EZ-Seal**
Description: Start up screen

Screen:

Ops. Message 2
Screen Text: **Press "START" to Jog film**
Description:
Prompt to Start Machine when conditions are normal.

Screen:

Ops Message 3
Screen Text: **Press "AUTO" to begin Automatic Operation**
Description: Prompt to Start Automatic Operation when conditions are normal.

Screen:

Ops Message 4
Screen Text: **Automatic Mode**
Description: EZ-Seal machine is in Automatic mode.

Screen:

Ops Message 5
Screen Text: **System Halt! Reset Emergency Stop.**
Description: E-Stop is pressed on the front of the machine.

Screen:

Ops Message 7
Screen Text: **Product Jam Detected Check machine**
Description: The EZ-Seal machine has detected a product jam on the conveyor and has halted. (Used with Sleeve Positioning Conveyors.)

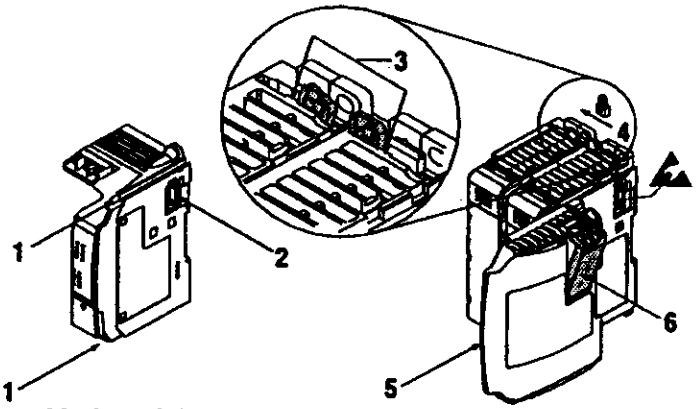
Screen:

Ops Message 8
Screen Text: **Selected Option not Available**
Description: This message will occur in custom systems when the options which the operator has attempted to turn on is not available.

NOTE: All entered time delays are in 0.001 second units.

APPENDIX "D"

ORIGINAL EQUIPMENT MANUFACTURERS PROVIDED LITERATURE



To attach and lock modules:

Note: Remove ESD barrier when attaching I/O modules to a MicroLogix 1500 base unit.

1. Disconnect power.
2. Check that the bus lever of the module to be installed is in the unlocked (fully right) position.
3. Use the upper and lower tongue-and-groove slots (1) to secure the modules together (or to a controller).
4. Move the module back along the tongue-and-groove slots until the bus connectors (2) line up with each other.
5. Push the bus lever back slightly to clear the positioning tab (3). Use your fingers or a small screw driver.
6. To allow communication between the controller and module, move the bus lever fully to the left (4) until it clicks. Ensure it is locked firmly in place.

ATTENTION: When attaching I/O modules, it is very important that the bus connectors are securely locked together to ensure proper electrical connection.

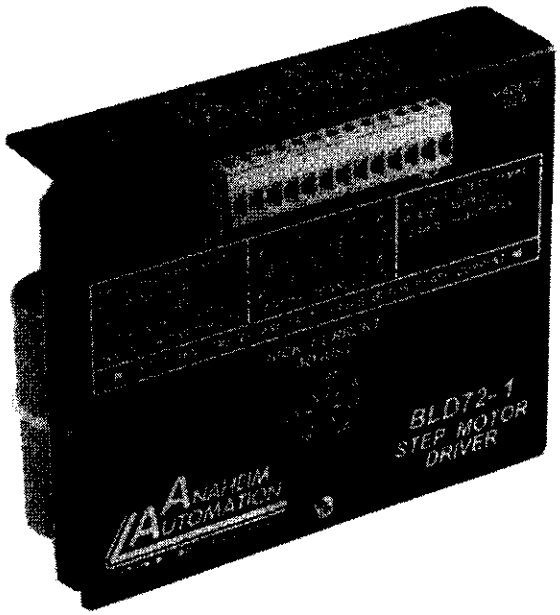
7. Attach an end cap terminator (5) to the last module in the system by using the tongue-and-groove slots as before.
8. Lock the end cap bus terminator (6).

IMPORTANT: A 1769-ECR right end cap must be used to terminate the end of the serial communication bus.

See "Controller Dimensions" on page A-9 for mounting dimensions.

BLD72, BLD72-1
Bilevel Step Motor Driver

User's Guide



ANAHEIM AUTOMATION

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e-mail: info@anaheimautomation.com website: www.anaheimautomation.com

#L010011

Features

- Bilevel Driver Operation
- 10 Amps per Phase Operating Current (Kick Current)
- 7 Amps per Phase Standstill Current
- 70 Volt Operation
- Short Circuit Protection
- Open Circuit Protection
- Unipolar Operation
- Motor ON/OFF Input
- Half-Step and Full-Step Operations
- Fault LED
- Detachable Terminal Block
- CE Certified
- Compact and Rugged
- **Available in Driver Packs**

What Is a Step Motor Driver?

A step motor driver is a device that takes input signals (usually Clock and Direction) and translates this information into phase currents in the motor. Each time the step motor driver receives a pulse, the step motor moves one step. If the driver receives 200 pulses, the motor moves 200 steps. The motor steps at the same frequency as the clock pulses.

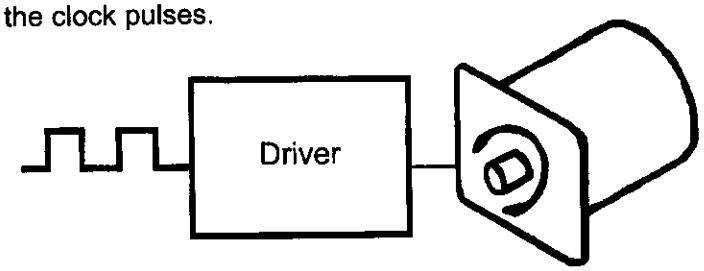


FIGURE 1: Step Motor Driver

General Description

The BLD72 is a step motor driver that can drive motors rated from 1 to 7 amps/phase (unipolar rating). It can handle 6 lead and 8 lead motors. This driver features a unipolar bilevel (or dual voltage) drive technique with short and open circuit protection (with a Fault LED). A transformer is required to power up the driver.

Bilevel Drive

The basic function of a motor driver is to provide the rated motor phase current to the motor windings in the shortest possible time. The bilevel driver uses a high voltage to get a rapid rate of current rise in the motor windings in the least amount of time. When reaching the preset trip current, the driver turns off the high voltage and sustains the current from the low voltage supply.

Half-Step/Full-Step

Users have a choice of full-step operation or half-step operation. Full-step operation occurs by energizing two phases at a time, rotating a typical motor 1.8 degrees per step. Half-step operation occurs by alternately energizing one, and then two, phases at a time, rotating the motor 0.9 degrees per step. Full-step operation is suggested for applications that specifically require that mode, such as when retrofitting existing full-step systems.

Clock Modes

The BLD72 has two clock options: Clock and Direction, or Dual Clock operation. Jumper JP2 is used to select the clock option. Basically JP2 selects Terminal 5 as either the Direction input or the CCW input.

With the Clock and Direction option (most common option), clock pulses applied to the Clock input (Terminal 6) cause the motor to step. The direction of the motor is determined by the logic level of the Direction input (Terminal 5). Jumper JP2 must be in the "2-3" position for this mode (see Figure 4 and Table 1). Physical direction also depends on the motor wiring.

With the Dual Clock option, clock pulses applied to the Clock input (Terminal 6) cause the motor to step in the clockwise direction. Clock pulses applied to the CCW input (Terminal 5) cause the motor to step in the counterclockwise direction. Jumper JP2 must be in the "1-2" position for this mode.

Either positive or negative going pulses may be used by setting jumpers in the appropriate position (see Table 1). To determine which setting to use, first consider the type of clock pulse output on the pulse generator or indexer (controller). If the clock output on the controller is open-collector type (sinking), then use the negative going jumper setting. If the clock output on the controller is a pnp or p-channel (sourcing) type, then use the positive going jumper setting. If the clock output on the controller is a TTL/CMOS type (totem pole), then either setting will work; but the jumper setting should be chosen based on the level of the clock output when the controller is not pulsing. If the clock is low when not pulsing, then use positive going jumper settings. If the clock is high when not pulsing, then use the negative going jumper setting.

The clock inputs (Clock and CCW) are pulled up to +5Vdc through a 10K ohm resistor for negative going clock inputs; or pulled down to 0VDC through a 10K ohm resistor for positive going clock inputs. The pullups/pulldowns are followed by an RC filter. See Figure 2 and Figure 3.

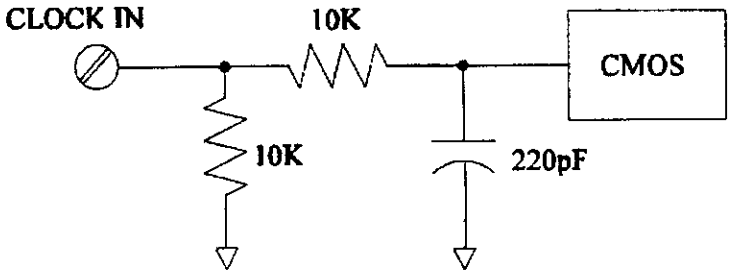


Figure 2: Sourcing Clock Input

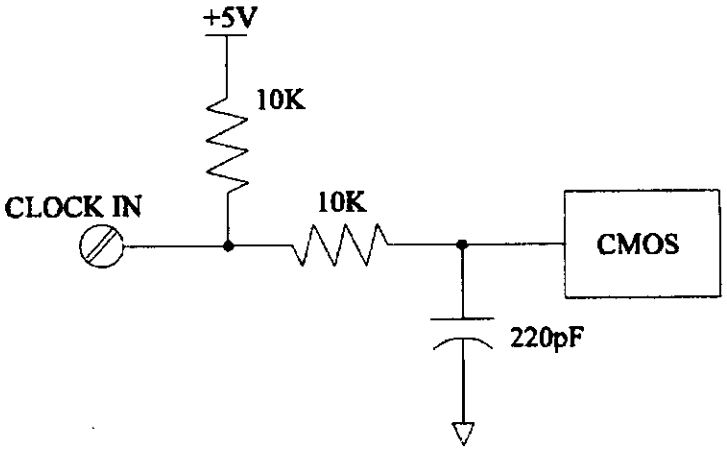


Figure 3: Sinking Clock Input

Motor On/Off Input

The motor on/off input allows de-energizing a motor without disturbing the positioning logic. After reenergizing the motor, a routine can continue. This reduces motor heating and conserves power, especially in applications where motors are stopped for long periods and no holding torque is required. If holding torque is required (such as when lifting a load vertically), then the motor must stay energized.

Jumper Functions/Locations

Function	JP1	JP2	JP3
Negative Going Clocks	1-2	X	X
Positive Going Clocks	2-3	X	X
Terminal 6 = CCW	X	1-2	X
Terminal 6 = Direction	X	2-3	X
Ground Fault Detection Enabled	X	X	2-3
Ground Fault Detection Disabled	X	X	1-2
Standard Product	1-2	2-3	2-3

Table1: Jumper Settings

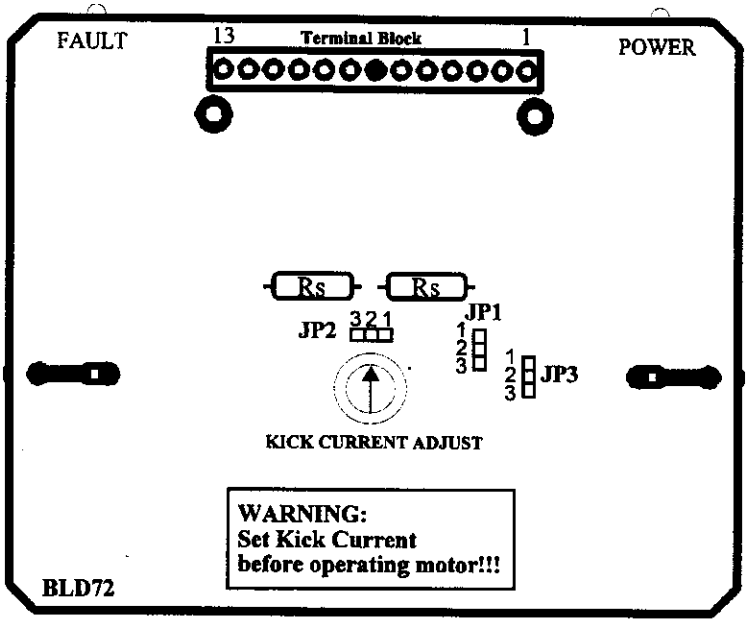
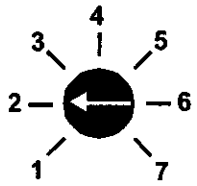


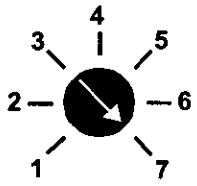
Figure 4: Layout Drawing

Adjusting Kick Current

By following the instructions on the cover, use a small screwdriver to adjust the potentiometer. Line up the potentiometer's arrow to the number corresponding to the motors rated current (amps/phase).



Example 1: 23D104 Motor, Set to 2.0A.



Example 2: 34D314 Motor, Set to 7.0A.

Fault Protection

There are 3 types of fault detection. When a fault is detected, the driver turns off the motor current and the red Fault LED indicates which type of fault occurred. See the Troubleshooting section for more information.

1	LED - Slow Blink	Shorted wire in the motor or cable.
2	LED - Fast Blink	Open wire in the motor or cable.
3	LED - ON Steady	Ground fault (voltage shorted to 0V).

Table 2: LED Blink Definitions

If the driver goes into a fault condition, the fault may be reset by turning the power OFF for at least 15 seconds or by pulling the RESET FAULT input (terminal 4) to a logic "0" for at least 100ms.

Motor Connections

Figure 5 is a hookup diagram for typical BLD72 driver applications. *Wiring connected to inputs must be separated from motor connections and all other possible sources of interference.*

IMPORTANT NOTE: When the wiring from the driver to the step motor extends beyond 25 feet, consult the factory.

Wiring Diagram

The wiring diagram in Figure 5 shows the BLD72 with the AA2791 Transformer. For wiring with the AA2793 Transformer, refer to Figure 9.

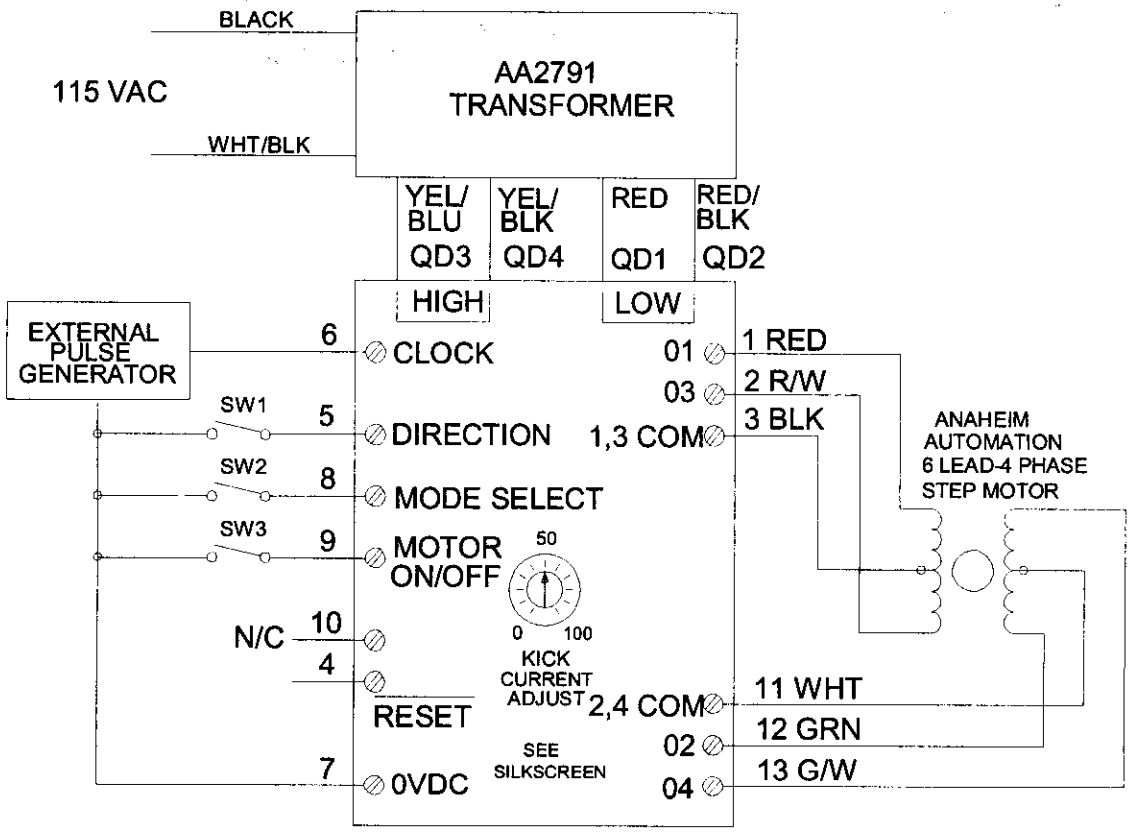


Figure 5: Hook Up Drawing

Power Supply Requirements

The BLD72 must be powered by a recommended Anaheim Automation transformer. The AA2791 transformer and the AA2793 transformer are the most commonly used and are both rated for 300VA. These transformers have a high voltage winding, a low voltage winding, and a logic voltage winding. The AA2793 has two high voltage windings and two low voltage windings for powering two BLD72's. The high voltage winding (yellow) and low voltage winding (red) plug into the quick disconnects on the back of the BLD72 (see hookup diagram in Figure 5). The logic voltage winding (orange) is used to power up optional controllers. When using one of these transformers, the nominal low-voltage is 5.0 volts and the nominal high-voltage is 60V. The transformer voltages are shown in Figures 7 and 8; the physical dimensions are shown in Figure 6. For other transformers, contact the factory.

Transformer Drawings

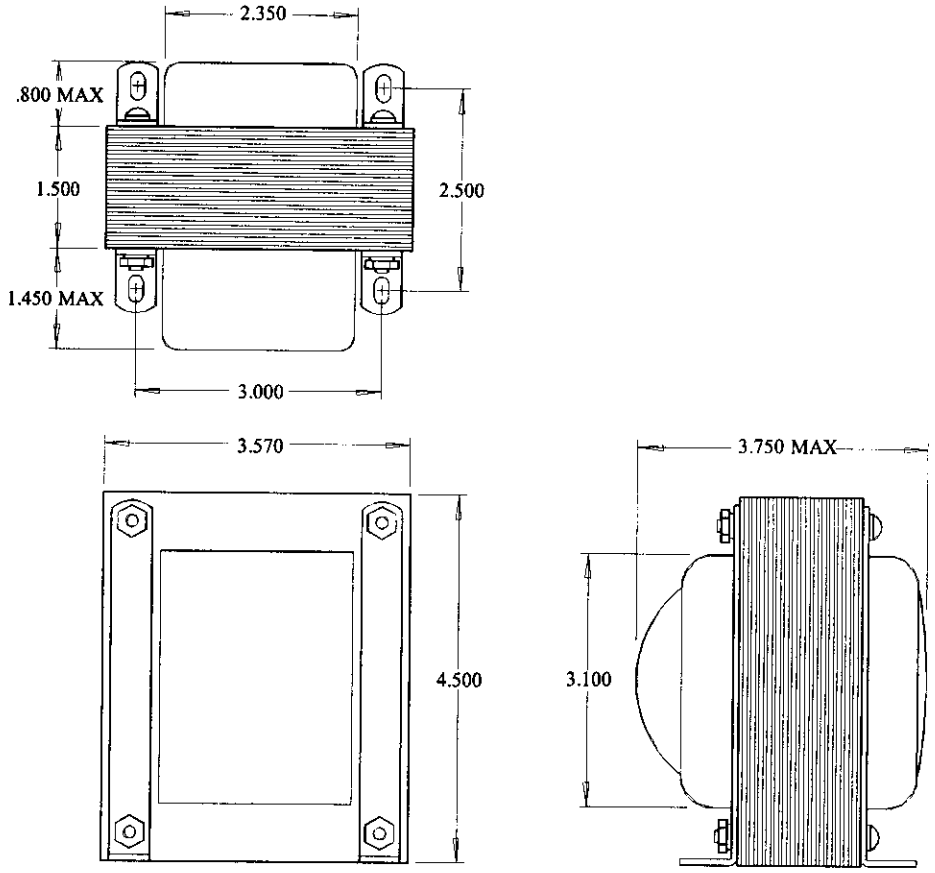


Figure 6: Transformer Dimensions

Note: The AA2793 transformer is the same physical size as the AA2791, but it has two sets of secondary windings (to power two drivers) and a dual primary winding for 115/230V operation.

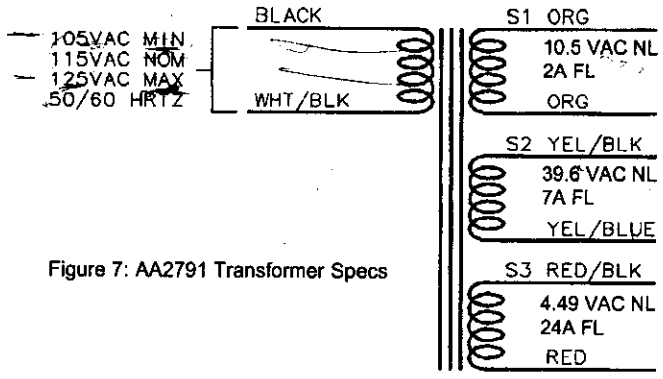


Figure 7: AA2791 Transformer Specs

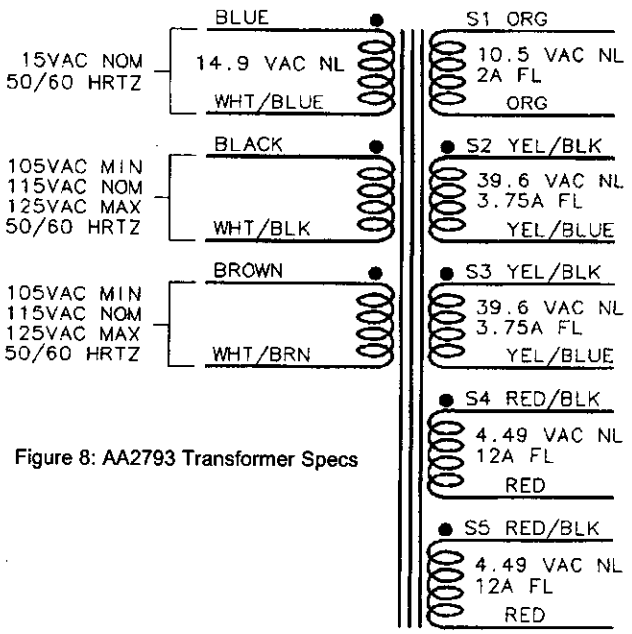


Figure 8: AA2793 Transformer Specs

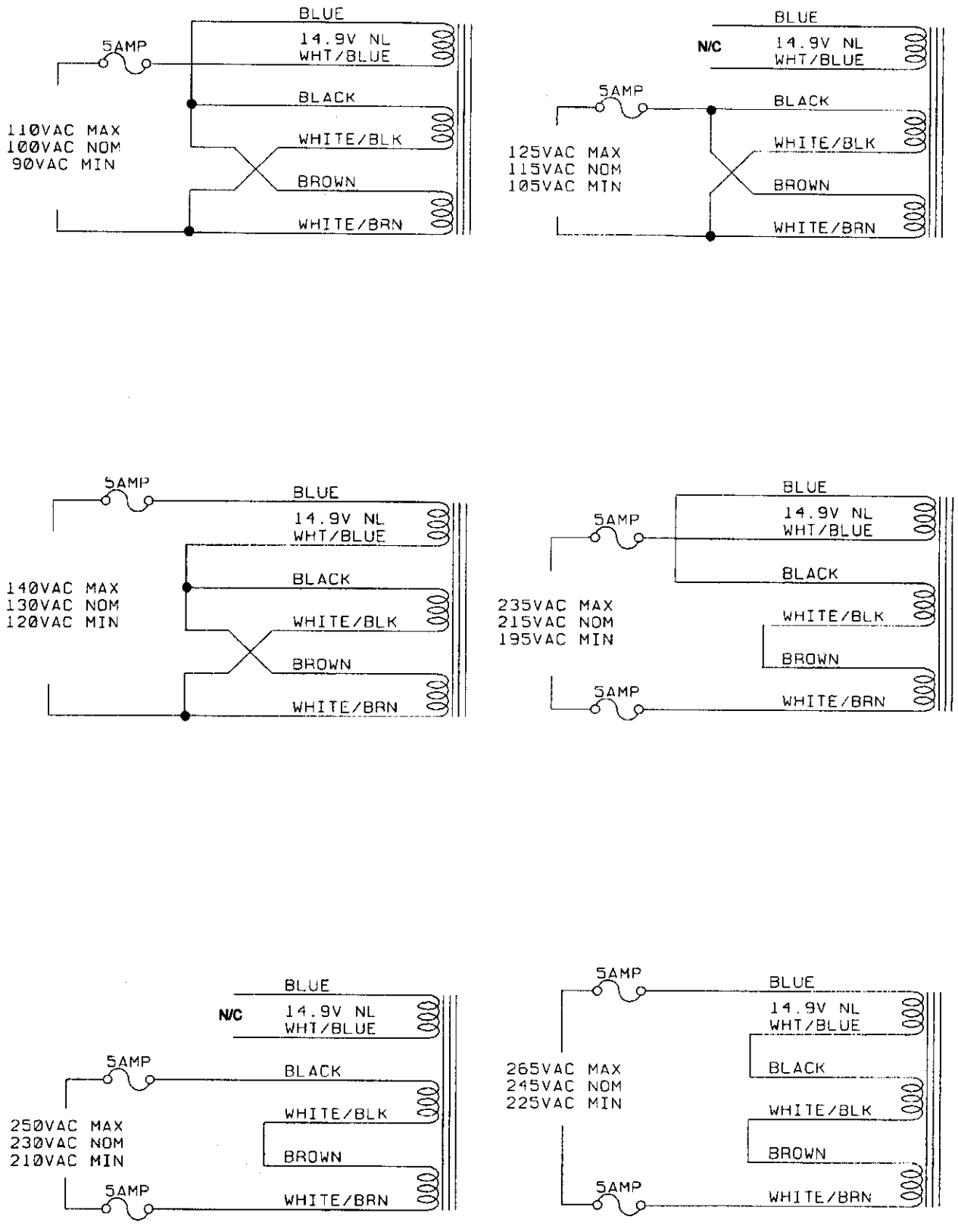


Figure 9: Wiring for different line voltages for the AA2793 transformer.

Dimensions Drawings

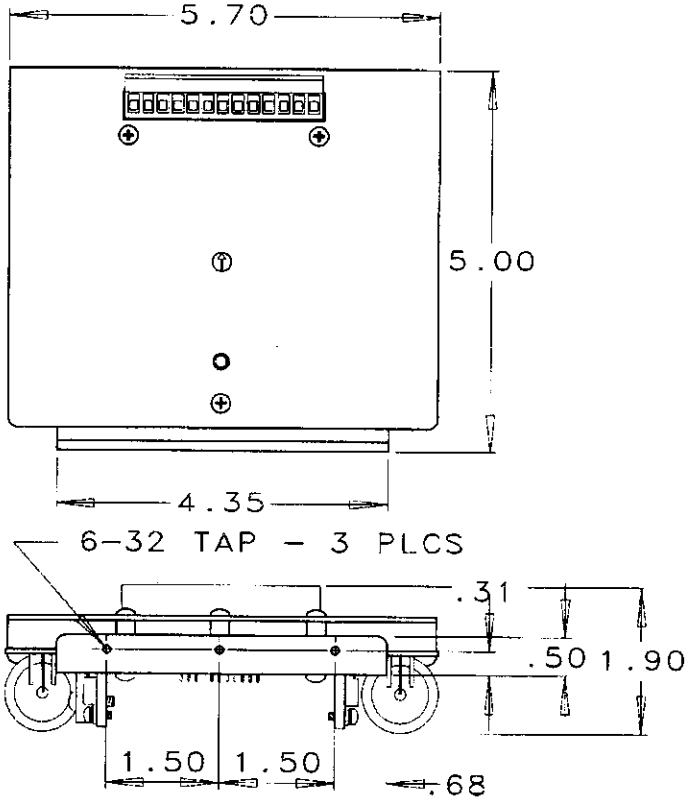


Figure 10: BLD72 Dimensions

Note: The BLD72 and BLD72-1 are the same except for the base plate. The BLD72 is a replacement driver for use in Driver Packs. The BLD72-1 is a modular driver which has a larger base plate.

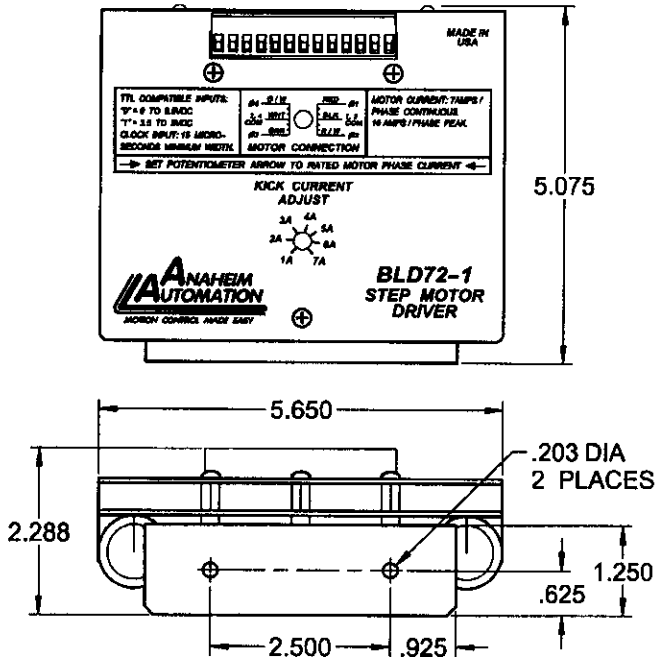


Figure 11: BLD72-1 Dimensions

13 Pin Terminal Description

Terminal #	Description
1	Motor, Phase 1
2	Motor, Phase 3
3	Motor, Common 1, 3
4	Fault Reset
5	Direction (CCW)
6	Clock (CW)
7	0VDC
8	Half-Step/Full Step
9	On/Off
10	N/C
11	Motor, Common 2, 4
12	Motor, Phase 2
13	Motor, Phase 4

Motor Compatibility

Standard Motors

Part #	Unipolar Rating
23D104_	2.0A
23D108_	4.0A
23D209_	4.5A
23D309_	4.5A
34D106_	3.0A
34D109_	4.5A
34D207_	3.5A
34D213_	6.5A
34D314_	7.0A
42D112_	6.0A
42D212_	6.0A

High Torque Motors

Part #	Unipolar Rating
23L206_	3.0A
23L210_	5.0A
23L306_	3.0A
23L310_	5.0A
34N108_	4.0A
34N112_	6.0A
34N207_	3.5A
34N214_	7.0A
34N307_	3.5A
34N314_	7.0A
42N115_	7.5A

Add suffix "S" for single-ended shaft, or suffix "D" for double-ended shaft.

Notes: Other motors not listed above may be compatible with this driver.

Anaheim Automation carries a full-line of standard and high torque step motors. Contact the factory regarding compatibility. See back cover for speed/toque curves.

Specifications

Control Inputs (All) : (Terminals 5, 6, 8, 9)
TTL-compatible
Logic "0" - 0 to 0.8 V
Logic "1" - 3.5 to 5.0 V

Fault Reset: (Terminal 4)
Pulled up to +5VDC through a 10k Ohm resistor
Logic "1" (open) - Driver enabled and Fault detection enabled
Logic "0" - Resets a Fault condition (driver is disabled when this input is low). This input must be held low for at least 100ms.

Clock Inputs : (Terminals 5 and 6)
Pulse required; 15 microseconds minimum. The clock input is pulled up/down internally to +5VDC / 0VDC through a 10k Ohm resistor, based upon JP2 selection.

Direction Control: (Terminal 5)
Pulled up to +5Vdc through a 10k Ohm resistor
Logic "1" (open) - CW
Logic "0" - CCW

Excitation Mode Select: (Terminal 8)
Pulled up to +5Vdc through a 10k Ohm resistor
Logic "1" (open) - Half-step
Logic "0" - Full-step

Power ON/OFF: (Terminal 9)
Logic "1" (open) - motor current on
Logic "0" - motor current off

Output Current Rating:
(Terminals 1, 2, 3, 11, 12, and 13)
10 Amps/phase maximum operating current, 7.0 Amps/phase maximum standstill current, over the operating voltage and temperature range. Motor phase ratings of 1.0 Amp minimum are required to meet the minimum kick level.

Power Requirement:
Anaheim Automation recommended transformer.

Operating Temperature : 0 to 60 degrees C
It is recommended that the aluminum driver baseplate be mounted on a larger aluminum plate, or similar heat-conducting structure, whenever possible. This will prevent the driver baseplate from overheating and degrading driver reliability. **Fan cooling is also recommended whenever possible.**

FUSING: A 5 Amp Fast Blow fuse in series with the primary winding of the transformer is required.

Troubleshooting

If a Fault occurs, reset the Fault by applying a logic "0" to the Reset Fault Input (terminal 4) for at least 100ms (or by cycling power OFF for at least 15 seconds). After resetting, try to run the motor again. If the driver faults again then check the conditions listed below.

Is the LED blinking slowly? (Once a second)

This indicates that the motor has a phase shorted or there is a short in the motor cable or wiring. Check the motor and the wiring for shorts. If the driver continues to sense "shorts" after the motor and wiring are determined to be accurate, then the output transistors should be checked (see below).

Is the LED blinking quickly? (Three times a second)

This indicates that there is an open or intermittent connection in one of the motor wires. Check the motor and the wiring for opens. Another condition that may cause this type of fault, is when a large motor is ramped down too quickly so that it loses it's positioning.

Is the LED on steadily?

This indicates that there is a ground fault - a voltage shorted to 0V. This detection is useful in detecting a short-to-case in a motor when the motor's case AND the driver's 0V are both connected to earth ground. Excessive noise on the 0V line may also cause the driver to sense this type of fault. This type of fault sensing may be disabled by placing jumper JP3 in position "1-2". NOTE: If the ground fault detection is disabled, DO NOT connect the driver's 0V to earth ground!

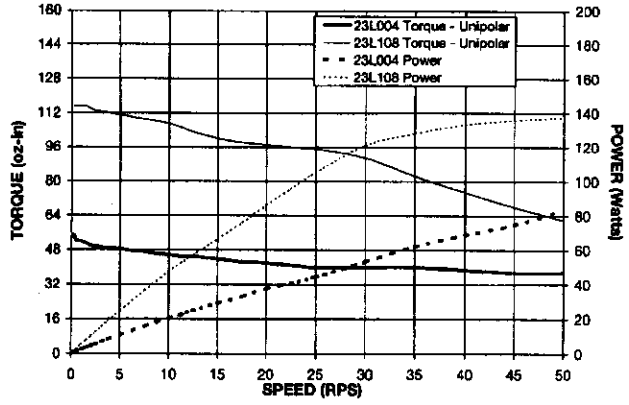
Checking Output Transistors

1. Remove the side plate
2. Set the multimeter to Diode Test
3. Place the RED meter lead on (between) the Sense Resistors (labeled as "R"s in Figure 4)
4. Touch the black meter lead to each phase (terminals 1, 2, 12, and 13)
5. Reading should be between 0.450V and 0.550V
6. If any readings are significantly less than 0.450V, then the unit has been damaged.

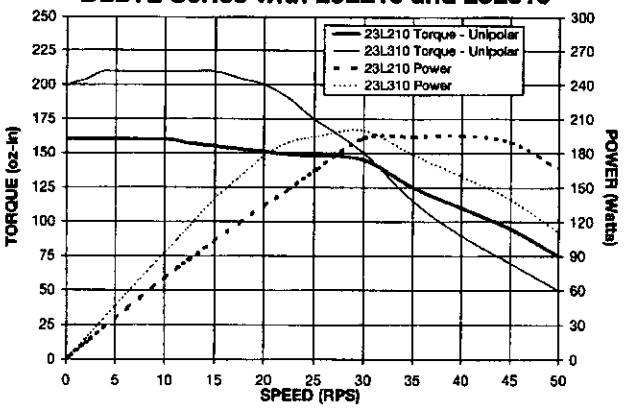
If a factory repair is required, contact Anaheim Automations for an RMA#.
(800) 345-9401 or (714) 992-6990

Torque Speed Curves

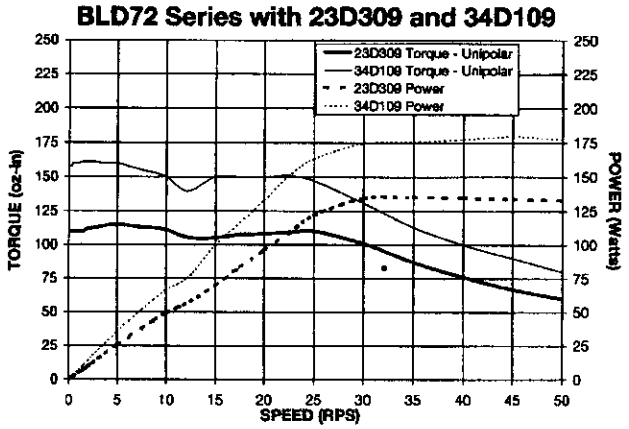
BLD72 Series with 23L004 and 23L108



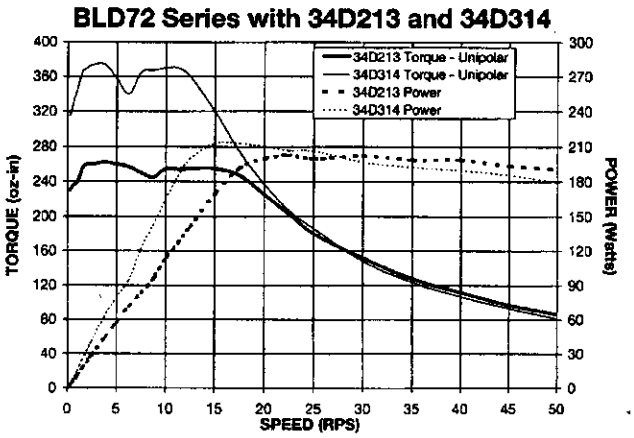
BLD72 Series with 23L210 and 23L310



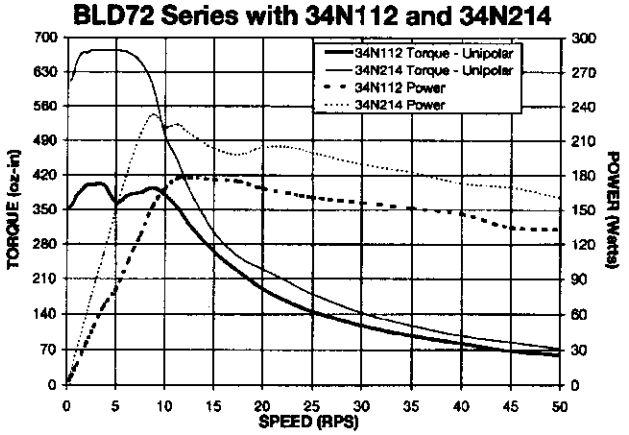
BLD72 Series with 23D309 and 34D109



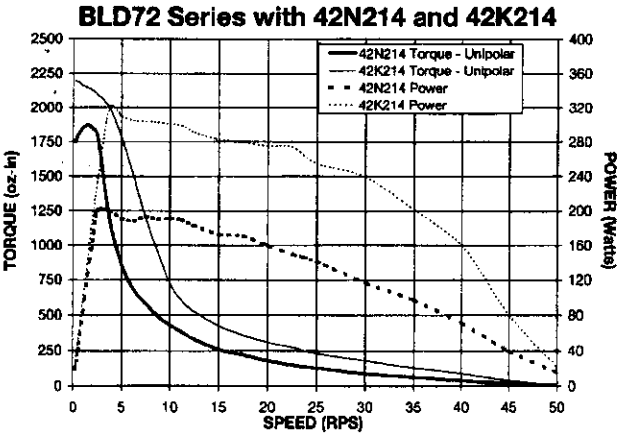
BLD72 Series with 34D213 and 34D314

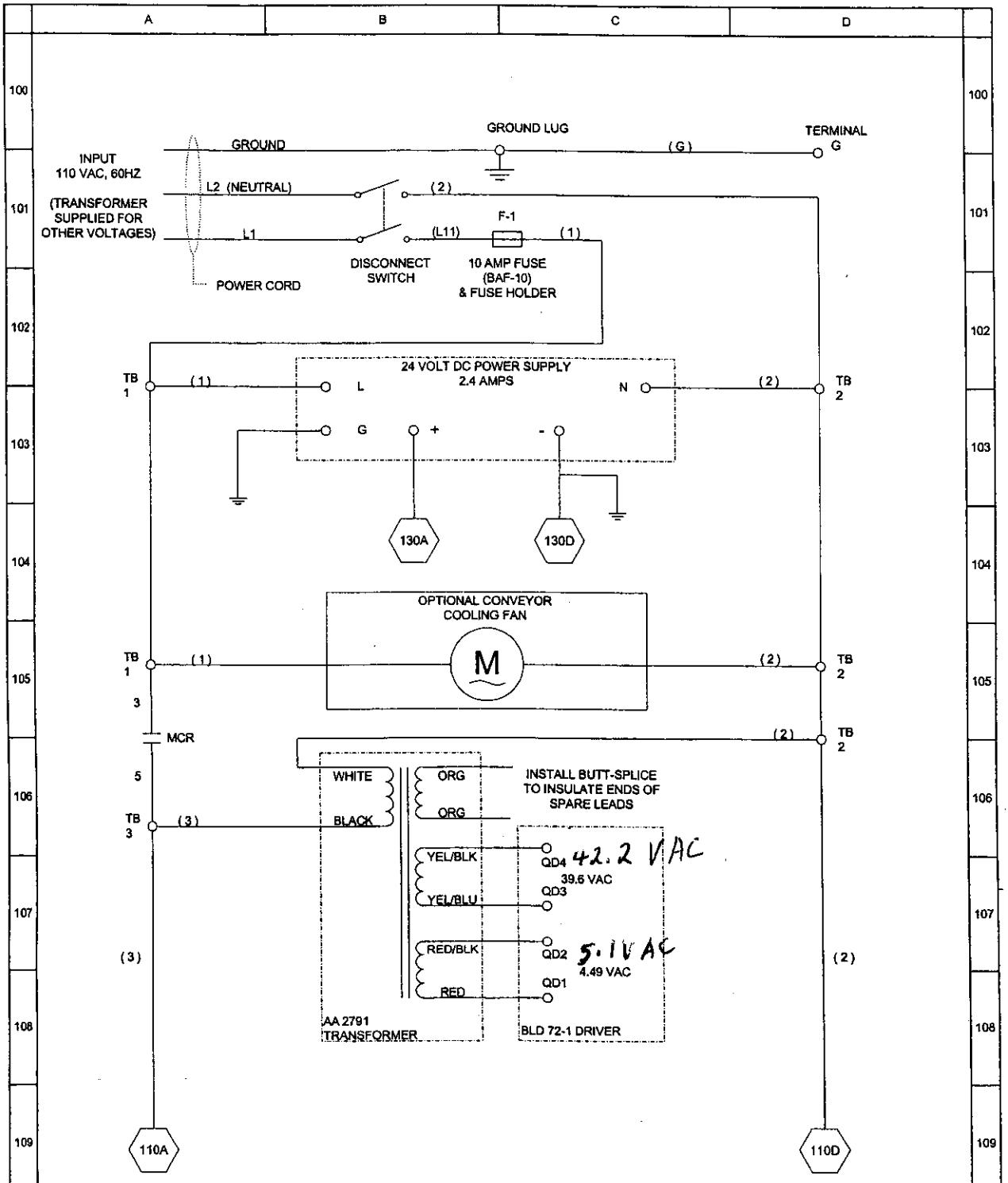


BLD72 Series with 34N112 and 34N214



BLD72 Series with 42N214 and 42K214





DRAFT BY: MIKE FLEMING	DATE	TITLE	
AXON CORPORATION	1341 EXPRESS DRIVE RALEIGH, NC 27603	Electrical Schematic for EZ-Seal with A/B MicroLogix 1500 PLC and Anaheim Stepper	

SIZE	DATE	SHEET	DRAWING NUMBER	REVISION LEVEL
A	6/27/02	2 OF 9	ES0100	1

TROUBLESHOOTING

If a Fault occurs, reset the Fault by applying a logic "0" to the Reset Fault Input (terminal 4) for at least 100ms (or by cycling power OFF for at least 15 seconds). After resetting, try to run the motor again. If the driver faults again then check the conditions listed below.

Is the LED blinking Slowly?
This indicates that the motor has a phase shorted or there is a short in the motor cable or wiring. Check the motor and the wiring for shorts. If the driver continues to sense "shorts" after the motor and wiring are determined to be good, then the output transistors should be checked (see below).

Is the LED blinking Quickly?
This indicates that there is an open connection in one of the motor wires. Check the motor and the wiring for opens. Another condition that may cause this type of fault is when a large motor is ramped down too quickly so that it loses it's positioning.

Is the LED on Steadily?
This indicates that there is a ground fault - a voltage shorted to 0V. This detection is useful in detecting a short-to-case in a motor when the motor's case AND the driver's 0V are both connected to earth ground. Excessive noise on the 0V line may also cause the driver to sense this type of fault. This type of fault sensing may be disabled by placing jumper JP3 in position "1-2". NOTE: IF THE GROUND FAULT DETECTION IS DISABLED, DO NOT CONNECT THE DRIVER'S 0V TO EARTH GROUND!

Checking Output Transistors

1. Remove the side plate.
2. Set the multimeter to Diode Test.
3. Place the RED meter lead on (between) the Sense Resistors (labeled Rs in Figure 5).
4. Touch the BLACK meter lead to each phase (terminals 1, 2, 12, and 13).
5. This should give readings between 0.450V and 0.550V.
6. If any readings are significantly less than 0.450V, then the unit has been damaged. To send the unit in for repair, contact the factory for an RMA#.

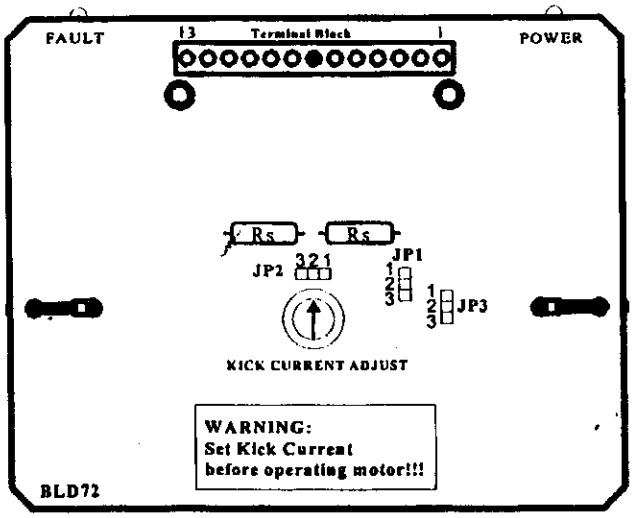
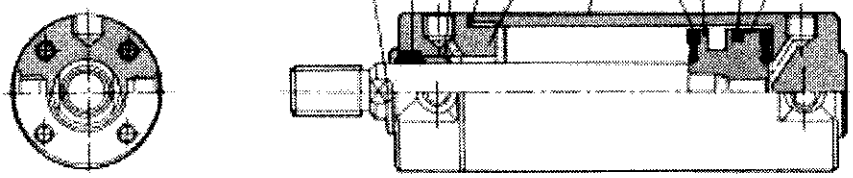


FIGURE 6: JUMPER LOCATIONS.

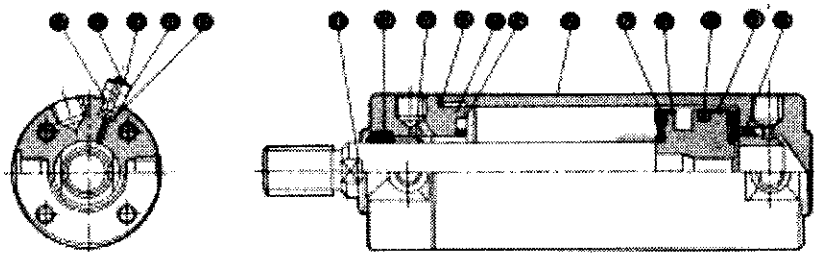
This information is provided by the Original Equipment Manufacturer, AXON is not responsible for its accuracy.

Construction & Parts List

Standard Model with Urethane Bumper



With Adjustable Air Cushion



Parts List

●	Rod Cover	Aluminum alloy	Black anodizing
●	Tube Cover	Aluminum alloy	Black anodizing
●	Piston	Aluminum alloy	Chromate; Black anodizing w/air cushion
●	Piston Rod	Carbon steel*	Hard chrome plated
●	Bushing	Sintered metal	
●	Bumper	Urethane	
●	Cushion valve	Rolled steel	Nickel plated
●	Valve retainer	Rolled steel	Nickel plated
●	Lock nut	Carbon steel	Nickel plated
●	Rod seal	NBR	
●	Piston seal	NBR	
●	Tube gasket	NBR	
●	Wear ring	Phenolic	
●	Cushion seal A	NBR	
●	Cushion seal B	NBR	
●	Valve seal	NBR	
●	Valve retainer gasket	NBR	

*Piston Rod is stainless steel for ø20 ø25 switch capable models.

Note) Rod Jam Nut must be ordered separately on all mounting variations.

Kit contains: 1 rod seal; 1 piston seal; 2 cylinder tube seals; *2 cushion valve seals (Air cushion design only)

Care & Maintenance

❶ Before mounting, completely flush the piping to avoid dust or other particles from entering the cylinder.

❷ The load of the piston rod should always be aligned parallel with the cylinder axis.

❸ Avoid damaging the piston rod. Scratches and nicks can lead to rod seal damage that may result in air leakage.

❹ When disassembling the cylinder, hold the flats on the tube cover in a vise and unscrew the rod cover with a wrench.

When reassembling; tighten an additional 2 degrees beyond the original position. (Bore sizes of ø50 and over may be difficult to disassemble due to the large tightening torque. Please consult SMC when disassembly is required.

Recommended grease for seals: AW-2 (Lithium Soap-Based No. 2 consistency)

This information is provided by the Original Equipment Manufacturer, AXON is not responsible for its accuracy.

EZ-200 HS (LR)

EQUIPMENT SETUP FOR EZ- 200 AB 1500

CUSTOMER: Quality Associates TECHNICIAN: Adam Pierce DATE: 15/SEPT/06
MACHINE SERIAL #: E-060723 A
ATTACHMENTS : HEAT TUNNEL: EZ-48-SS CONVEYOR: New London Engineering
PRODUCT DESCRIPTION: Secret Twin Pack 2.6 oz (x2)

APPLICATOR ADJUSTMENTS

Conveyor speed (fpm) 48-49% Applicator rate (ppm) 43
Height adjustment (from the top of conveyor belt to the bottom of applicator enclosure) 290mm
Band opening adjustment (distance between faces of the suction cups) 73 mm
Cylinder stroke adjustment measured from scale(1) or top end of the shaft to top surface of collar(2):
Upstream gripper N/A ( ) Downstream gripper 30R(1) Plunger 65 R (1) After Tamp N/A ( )
Air pressure settings (psi):Main regulator 80 Perforation N/A Vacuum N/A Other N/A
Film specifications:Layflat width (mm) 125 Thickness (microns) 50 Seam X Tube
Film supplier: Customer X Other

OPERATOR INTERFACE PANEL SETTINGS

1. SETUP (Menu screen on OIP)

1. TIMERS — Actual = 129

Film cut length (mm)	131	Plunger DOWN Delay (T-6)	50
No. of Heads Online (Head 1)	1	Upstream Gripper OUT Delay (T-7)	20
Band Release Delay (T-1)	60	Plunger UP Delay (T-8)	100
Downstream Gripper IN Delay (T-2)	50	Film Feed Delay (T-9)	100
Upstream Gripper IN Delay (T-3)	60	Downstream Gripper OUT Delay (T-10)	100
Knife IN Delay (T-4)	60 ~~100~~	Photo Eye Mask ON Delay	N/A
Knife OUT Delay (T-5)	80	Photo Eye Mask OFF Delay	N/A

2. MASTER PHOTO EYE ON OFF X
PE Set Aid N/A PE Delay N/A PE Window N/A
3. STEPPER @ Cut Length Mm to steps scaling (std. = 3973-Anahiem or 3933-PacSci) 3933
Max Speed (Hz) 2560 Accel / Decel 110

2. OPTIONS (Menu screen on OIP)

1. PRINT REGISTER ON X OFF
Undershoot 40 Hunt Time 200 Hunt Speed 500
2. PERFORATION ON OFF X
Vertical N/A Horizontal N/A Dwell Timer N/A
3. SLEEVE LOWERING ON OFF X
Plunger Air Blast: Enable Disable X
Delay N/A Dwell N/A
Exit Sleeve Lowering: Enable Disable X
Device: After Tamp Air Blast X
ON Delay 45 OFF Delay 40
ON Time 450 OFF Time 40
4. LARGE FILM ON OFF X
5. PULSE GENERATOR ON OFF X
6. GRIPPER S. Cups X Cylinder 2 DOWNSTREAM / 1 UPSTREAM
7. LOW FILM ON OFF X Low Film Shutdown Counter N/A
8. SPLICE DETECT ON OFF X
9. FILM FEED ON X OFF Motorized Film Feed Delay Timer 100

3. SPECIAL (Menu screen on OIP)

1. COUNT
2. TEST MODE ON OFF X
3. BYPASS MODE ON OFF X

4. REVISION LEVEL (Menu screen on OIP)

PLC 11278 OIP 12267

AXON SETTINGS

T1= 200 VARIABLE
T2= 100
T3= 50
T4= 200
T5= 110 120
T6= 50
T7= 20
T8= 80
T9= 120
T10= 200

160 1 400
50 2 60
25 3 40
4 80
35
65 5 120
85 6 25
50 7 80
25 8 20
T9 - 85 9 120
100 10

T1 IS THE ONLY SETTING TO BE ALTERED WITHOUT PERMISSION FROM Keith or [redacted]

EZ-SEAL

AUTOMATIC SLEEVE/TAMPER EVIDENT BAND APPLICATORS

OPERATOR'S MANUAL

AXON CORPORATION
555 Dynamic Drive
Garner, North Carolina 27529
USA

Machine Serial Number: 706173

EQUIPMENT SETUP FOR EZ-300 -ALLEN BRADLEY 1500 PLC

CUSTOMER: Quality Assoc. TECHNICIAN: John DATE: 7-9-03
MACHINE SERIAL #: E-030709
ATTACHMENTS : HEAT TUNNEL: — CONVEYOR: —
PRODUCT DESCRIPTION: NA

APPLICATOR ADJUSTMENTS:

Conveyor speed (fpm): 60 Applicator rate (ppm): _____
Height adjustment (from the top of conveyor belt to the bottom of applicator enclosure): _____
Band opening adjustment (distance between faces of the suction cups): 6 5/8
Cylinder stroke adjustment measured from:scale(1) or top end of the shaft to top surface of collar(2)
Upstream gripper 1/2 ( ) Downstream gripper 1/2 ( ) Plunger 1 3/8 ( ) After tamp _____ ( )
Air pressure settings (psi):Main regulator 80 Perforation _____ Vacuum _____ Other _____
Film specifications:Layflat width(mm) 304 Thickness(micr) _____ Seam X Tube _____
Film supplier: Customer _____ Other X

T2- 60
T3 80
T4 60
T5 100
T6 30
T7 240
T8 80
T9 100
T10 100

SLEEVE LOWERING ON A BLAST
LOWERING - 20
DELAY - 20
DWELL - 600
OFF - 40

OPERATOR INTERFACE PANEL SETTINGS:

1. SETUP (Menu screen on OIP):
   Timers (all timers in msecs):

Film cut length (mm)	190	Plunger DOWN Delay (T-6)	40
Number of heads on line	1	Upstream Gripper OUT Delay (T-7)	20
Band Release Delay (T-1)	40	Plunger UP Delay (T-8)	80
Downstream Gripper IN Delay (T-2)	45	Film Feed Delay (T-9)	150
Upstream Gripper IN Delay (T-3)	65	Downstream Gripper OUT Delay(T-10)	250
Knife IN Delay (T-4)	80	Photo Eye Mask ON Delay	0
Knife OUT Delay (T-5)	120	Photo Eye Mask OFF Delay	0

   Master Photo Eye: ON _____ OFF X
   Stepper Settings: PE Setup Aid _____ PE Delay _____ PE Window _____
   Mm to steps scaling (std.=3973) 3973
   Max Speed 2500 Accel/Decel Pulses 56
2. OPTIONS (Menu screen on OIP):
   Print Reg.: ON _____ OFF X
   Undershoot _____ Hunt Time _____ Hunt Speed _____
   Perforation: ON _____ OFF X
   Vertical _____ Horizontal _____ Dwell Timer _____
   Sleeve Lowering: ON X OFF _____
   Plunger Air Blast: Enabled _____ Disabled X
   Delay ~~25~~ Dwell ~~350~~
   Exit Sleeve Lowering: Enabled X Disabled _____
   Device: After Tamp _____ Air Blast X
   ON Delay 25 ON Dwell 350
   ON Time 40 OFF Time 40
   Large Film Mode: ON _____ OFF X
   Pulse Generator: ON _____ OFF X
   Gripper Style: Suction Cup X Cylinder _____
   Low Film Shutdown: Enabled _____ Disabled X Counter _____
   Vacuum Switch: ON _____ OFF X
   Splice Detect: ON _____ OFF X Counter _____
3. SPECIAL (Menu screen onOIP):
   Count
   Test Mode: ON _____ OFF X
   Bypass Mode: ON _____ OFF X
4. REVISION LEVEL (Menu screen on OIP): Program Version PLC 11213 OIP 12207

Fall size Plunger

AXON SETTINGS

60 T1= 200 VARIABLE

45 T2= 100

65 T3= 50

40 T4= 200

120 T5= 110

40 T6= 50

20 T7= 20

80 T8= 80

150 T9= 120

250 T10= 200

T1 IS THE ONLY SETTING TO BE ALTERED WITHOUT PERMISSION FROM Keith or [redacted]

EZ-200 HS (LR)

EQUIPMENT SETUP FOR EZ-200 AB 1500

CUSTOMER: Quality Associates TECHNICIAN: Adam Pierce DATE: 15/SEPT/06
MACHINE SERIAL #: E-060723 A
ATTACHMENTS : HEAT TUNNEL: EZ-48-SS CONVEYOR: New London Engineering
PRODUCT DESCRIPTION: Secret Twin Pack 2.6 oz (x2)

APPLICATOR ADJUSTMENTS

Conveyor speed (fpm) 48-49% Applicator rate (ppm) 43
Height adjustment (from the top of conveyor belt to the bottom of applicator enclosure) 290 mm
Band opening adjustment (distance between faces of the suction cups) 73 mm
Cylinder stroke adjustment measured from scale(1) or top end of the shaft to top surface of collar(2):
Upstream gripper N/A ( ) Downstream gripper 30R (1) Plunger 65 R (1) After Tamp N/A ( )
Air pressure settings (psi):Main regulator 80 Perforation N/A Vacuum N/A Other N/A
Film specifications:Layflat width (mm) 125 Thickness (microns) 50 Seam X Tube
Film supplier: Customer X Other

OPERATOR INTERFACE PANEL SETTINGS

1. SETUP (Menu screen on OIP)

1. TIMERS — Actual = 129

Film cut length (mm)	131	Plunger DOWN Delay (T-6)	50
No. of Heads Online (Head 1)	1	Upstream Gripper OUT Delay (T-7)	20
Band Release Delay (T-1)	60	Plunger UP Delay (T-8)	100
Downstream Gripper IN Delay (T-2)	50	Film Feed Delay (T-9)	100
Upstream Gripper IN Delay (T-3)	60	Downstream Gripper OUT Delay (T-10)	100
Knife IN Delay (T-4)	60 ~~100~~	Photo Eye Mask ON Delay	N/A
Knife OUT Delay (T-5)	80	Photo Eye Mask OFF Delay	N/A

2. MASTER PHOTO EYE ON OFF X
PE Set Aid N/A PE Delay N/A PE Window N/A
3. STEPPER @ CUT LENGTH Mm to steps scaling (std. = 3973-Anahiem or 3933-PacSci) 3933
Max Speed (Hz) 2500 Accel / Decel 110

2. OPTIONS (Menu screen on OIP)

1. PRINT REGISTER ON X OFF
Undershoot 40 Hunt Time 200 Hunt Speed 500
2. PERFORATION ON OFF X
Vertical N/A Horizontal N/A Dwell Timer N/A
3. SLEEVE LOWERING ON OFF X
Plunger Air Blast: Enable Disable X
Delay N/A Dwell N/A
Exit Sleeve Lowering: Enable Disable X
Device: After Tamp Air Blast X
ON Delay 45 OFF Delay 40
ON Time 450 OFF Time 40
4. LARGE FILM ON OFF X
5. PULSE GENERATOR ON OFF X
6. GRIPPER S. Cups X Cylinder 2 DOWNSTREAM / 1 UPSTREAM
7. LOW FILM ON OFF X Low Film Shutdown Counter N/A
8. SPLICE DETECT ON OFF X
9. FILM FEED ON X OFF Motorized Film Feed Delay Timer 100

3. SPECIAL (Menu screen on OIP)

1. COUNT
2. TEST MODE ON OFF X
3. BYPASS MODE ON OFF X

4. REVISION LEVEL (Menu screen on OIP)

PLC 11278 OIP 12267

SIMCO Industrial Static Control
Spring Loaded Cable Instructions

5. Straighten copper conductor wires. **DO NOT TWIST.**

6. **RED** - Bend the conductor back against the cable insulation to form a double thickness 1/2" long.

7. Slide high voltage connector **N** over conductor until it butts against cable insulation. Be sure all strands of the conductor are inserted in the connector.

8. Slide connector body **P** over high voltage connector until hole in connector body lines up with set screw hole in the connector.

9. Insert set screw **Q** in connector through the hole in the connector body and tighten.

10. After tightening, if set screw is not flush with or slightly below surface of connector body **P**, disassemble and remove additional strands of wire from the conductor to allow the set screw to be at least flush with the connector body **P**.

NOTE:
Removal of additional strands of wire is only necessary on types of static eliminators outlined in step 4.

11. Pull firmly to be sure voltage connector **N** is tight on conductor.

12. Turn contact spring **R** - end with close turns, clockwise, by hand, onto high voltage connector **N** until spring butts against connector body **P**.

13. If an additional contact is needed on the power supply, remove a plug or cap from one of the other holes in the plastic receptacle. To remove plug or cap, jab a screwdriver with an insulated handle through center and pry off. If plug or cap has a screw slot, turn counterclockwise to remove.

14. Insert the connector into the hole and tighten the knurled plug. **FINGER TIGHTEN ONLY.**

NOTE:
On some older style power supplies no longer in production, (prior to January 1971 and with 5 digit serial number less than 78000, with red high voltage connectors and without suffix H or Y) will not be equipped with the spring loaded connector. For these older style power supplies insert a 6-32 x 3/8" stainless steel truss head machine screw into the hole of the plastic receptacle and tighten with a thin blade screwdriver.

SIMCO Industrial Static Control • 2257 North Penn Road • Hatfield, PA 19440 • (215) 822-6401
April 2001 www.simco-static.com • email customerservice@simcomail.com

SIMCO
Industrial Static Control

MAINTENANCE

Turn equipment OFF before cleaning, removing ionizers from machine, or breaking any ground connection. If metal filings or fragments fall into the tip of the ionizer, they are apt to short-circuit the unit and make it inoperative until the particles are removed. Loosen the ionizer brackets and rotate the unit to face downward, tapping it to dislodge the particles. Rotate the ionizer back into position and tighten the brackets. Compressed air may be used to keep the inside of the ionizer clean. Periodic use of a soft brush or compressed air will prevent the points from accumulating hardened balls of lint, grease, and other foreign matter that reduce their sharpness and decrease efficiency. One easy way to remove built-up deposits is to occasionally press a soft pencil eraser down over each point in turn and twist slightly. Including the one-point ionizers in the regular procedure of cleaning the machine will pay dividends in service and excellence of performance.

TROUBLE SHOOTING

When Equipment Fails to Function Properly – Check connections to be sure they are tight before proceeding with the following tests.

NOTE: When the one-point ionizer is operating properly, no visual arcing should occur. If the ionizer should arc constantly, check this particular unit for metal fragments or other contamination that should be removed as outlined under "Maintenance" above. When the Static Bar Checker produces no light, the trouble is either a defective ionizer or defective power unit.

To Locate the Faulty Equipment:

1. Turn OFF current to power unit.
2. Disconnect all ionizers from the power unit by unscrewing knurled plugs from plastic receptacles and pulling out high voltage cables.
3. After all ionizers have been unplugged, turn ON current to power unit and attach a piece of insulated wire or cable to the ground terminal on the power unit
4. Insert the other end of the wire into one of the plastic receptacles. As the conductor approaches the screw at the back of the exposed hole, a spark should occur.

If no spark occurs nor any arcing heard, the trouble is in the power unit. If a spark does occur, the fault is in one or more of the ionizers.

To Find the Faulty Ionizer or Ionizers:

1. Turn OFF current to power unit.
2. Insert the high voltage cable from one of the ionizers into the exposed hole of one of the plastic receptacles "D" and screw knurled plug "M" FINGER TIGHT ONLY.
3. Turn ON current to power unit.
4. Check this ionizer with the SIMCO static bar checker. If it does not light, this is the faulty ionizer. If it does light, add the other ionizers to the power unit until the static bar checker fails to light. The last ionizer connected is the faulty ionizer and should be replaced.

Attach Instruction – SL

SIMCO®
the Simco Company, Inc.
2257 North Penn Road
Hatfield, PA 19440
Phone: (215) 822-6401
FAX: (215) 822-3795

Publication Number 5200199

polorized 3-prong plug for connection into a corresponding AC receptacle of the voltage and frequency marked on the nameplate and with a good electrical ground connection for the ground pin of the plug. If a grounded socket is not available, either bolt the power unit to a well-grounded metal machine frame or connect a heavy copper wire from the ground terminal on the rear of the power unit to a well-grounded electrical conduit or to a cold water pipe.

5. To add one-point ionizers to the installation, pull the plastic plug off the other high voltage receptacle on the power unit. (The power unit is factory-set to operate the exact size and total number of one-point ionizers listed on the label on the underside of the power unit lid. Up to 6 ionizers can be connected on a multiple connector with a single HV lead to be attached to each power unit HV receptacle.)

When adding or removing ionizers or changing to any other type of ionizer bar or equipment, be sure to check with Simco for instructions before proceeding.

MOUNTING THE POWER UNIT

Mount the power unit to the machine frame (preferable on the side away from the operator) or to a convenient wall or post (preferably with the HV terminals down).

CABLE SUPPORTS

Cable supports are used to guide the high voltage cables from the ionizers along the frame of the machine to the power unit. *Cable should always be kept at least 1/4" away from the grounded machine frame and parts, walls, and ceiling, but if it must touch at any points, it should be encased in protective plastic tubing, available from Simco.* To install the cable supports, press the split bushing out of the metal support and apply bushing to cable at desired location. Mount the support, then press the bushing with cable back into the support. Be sure that a cable support is located to remove all strain and motion from the cable where it enters a static ionizer and the power unit.

GROUNDING

Frame of the Machine – It is essential for successful operation of the equipment that the frame of the machine be electrically grounded, either through well-grounded electrical conduit, or by a heavy copper wire connecting the frame to a cold water pipe.

Ionizers – The metal casing must be grounded. If the casing is not grounded, personnel may receive a shock by touching it and in addition, the equipment will not function properly. Grounding is automatic when metal mounting clamps and brackets support the ionizers directly from the grounded metal machine frame. When the ionizers are supported from wooden or other non-conductive members, a separate wire must connect the mounting bracket on one end of the ionizer to a metal part of the grounded machine frame or to a well-grounded electrical conduit or cold water pipe.

Power Unit – The power unit must be grounded either by bolting it to the grounded machine frame or by attaching a heavy copper wire to the ground terminal on the rear of the box (along with the low voltage line cord) and to a well-grounded electrical conduit or cold water pipe.

CHECKING FOR PROPER OPERATION

Once the one-point ionizer has been connected to the power unit using the high voltage cable, turn the power unit ON. Then use SIMCO's Static Bar Checker to check for proper functioning of the emitter point and high voltage supply. Place the Static Bar Checker tip on the one-point ionizer's emitter point. The Static Bar Checker's top will be illuminated to indicate proper funtioning of the emitter point.

APPENDIX "E"

INSTALLED OPTIONS