

BF 400V / 600V

Bliss-Matic[®]

Operation, Maintenance, and Parts Manual



Proud manufacturers of the following packaging machinery lines:

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Table of Contents

Table of Contents.....	3
Introduction.....	7
Manual Layout.....	7
Intended Audience.....	7
Safety	9
Equipment Safety	9
Precautions and Warnings.....	10
Installation.....	13
Uncrating.....	13
Placement.....	13
Electrical	13
Guards	13
Sequence of Events.....	15
Machine Specifications	15
Process Flowpath.....	20
Physical Layout.....	21
Controls (Push Buttons).....	22
Emergency Stop.....	22
Jog / Run	22
Start	22
Hand / Off / Auto.....	22
Vacuum Off / On	22
Forward / Off / Reverse.....	22
Electrical Panel	23
Controls (Siemens Controller).....	24
Emergency Stop.....	24
Start Button.....	24
Main Screen.....	24
Jog Screen	25
Alarm Screen.....	25
Setup Screen	26
Glue Screen	27
Cam Screen.....	27
Controls (Allen Bradley PanelView 300 Micro).....	28
Alarm Codes.....	28
Operating Procedures	31
Startup	31
Monitor.....	32
Shutdown	34
Settings and Adjustments	35
Altivar Settings	35
Connecting to Electrical Power.....	35
Vertical Guides to Horizontal Bar Spacing.....	37
Feed Roll Assembly	39
Vacuum Feed Mount Plates	40
Vacuum Feed Mount Plates	41
Mandrel.....	42

Vertical Guide Bar Adjustment.....	44
Vertical Guide Bar Adjustment.....	45
Blank Hopper Adjustment	46
Idle Roller Adjustment	46
Idle Roller Adjustment	47
Bottom Stop Adjustment.....	47
Bottom Stop Adjustment.....	48
Rebound Stop Adjustment.....	48
Rebound Stop Adjustment.....	49
End Panel Hopper Adjustment.....	50
Mandrel Return Stroke Adjustment	52
Mandrel Forward Stroke Adjustment.....	53
End Panel Stripper Adjustment.....	54
Compression Plate Linkage Adjustment	55
Top Compression Adjustment.....	57
Glue Pump to Back Up Roller Adjustment.....	57
Glue Pump to Back Up Roller Adjustment.....	58
Vacuum Feed.....	59
Machine Stop Micro Cam Adjustment	64
Box Clamp Toggle Lever Adjustment.....	65
Maintenance.....	67
Adhesive System	69
Lubrication Procedures:	73
Troubleshooting	77
Spare Parts	83
Glossary of Terms	85

**Thank you for choosing packaging equipment
from SWF Companies.**



The equipment you purchased will provide years of productive service, producing a high return on your investment. Your equipment was thoroughly tested for proper operation prior to shipment.

Before unpacking and installing your new equipment, please read this manual. It is your guide to safe installation, productive operation, and effective maintenance. We recommend you keep this manual available for future reference.

Be aware that our commitment to you does not end with your purchase. That is just the beginning. The safe and efficient operation of your SWF equipment is very important to us as a machine manufacturer.

Training and parts distribution are an integral part of our business. SWF service technicians have spent months of in-plant hands-on training, prior to servicing our worldwide installations. Their expertise on our equipment is as close as your telephone. Given sufficient notice, service technicians are available for dispatch to your installation. We also maintain an extensive inventory of spare parts. We typically can have the parts you may need in your plant the next working day.

The entire family of SWF Companies, a Dover Diversified Company is committed to the success of your operation and thank you again. Feel free to call us anytime.

SWF Companies is committed to providing product manuals that meet the needs of its valued customers. We invite you to offer suggestions for continued improvement of this manual.

<p>To contact SWF Companies, Inc. Parts and Service</p> <p>Local.....(559) 638-8484</p> <p>Toll-Free.....(800) 344-8951</p> <p>Fax.....(559) 638-7478</p>	<p>Published by:</p> <p>SWF Companies, Inc. 1949 E Manning Ave Reedley, CA 93654 April 2003</p>
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Introduction

This manual is divided into the following major sections: Introduction, Safety, Sequence of Events, Controls, Operating Procedures, Maintenance, and Troubleshooting.

Manual Layout

The following manual layout is designed to comply with PMMI recommendations regarding packaging machinery documentation.

Introduction

The Introduction details the arrangement of this manual, as well as preliminary information regarding the intended audience of this manual.

Safety

The safety portion must be read by every person working on or near this equipment. The information contained within the safety section should also be periodically reviewed by supervisors, operators, and maintenance personal.

Information included within the safety section covers all safety devices installed on the machine, general warnings and recommendations regarding operating procedures.

Sequence of Events

This section describes the sequence of events the machine follows to create the machine cycle's end product. The end product of each model varies and may be an erected case, tray, or bliss box, or may be a fully erected, loaded, and sealed case.

Controls

The controls for each model vary, but some basic controls remain the same for all packaging equipment produced by SWF Companies.

Operating Procedures

Standard operating procedures include start up after a shutdown, start up after a jam, shut down, clearing jams, and shutdown for maintenance. Each procedure varies slightly and must be followed for maximum machine performance.

Maintenance

Our maintenance procedures are broken down by component as well as by weekly, monthly, and yearly procedures. Follow all SWF maintenance procedures as well as OEM manufacturer procedures listed on the manufacturer's documentation received with your machine.

Troubleshooting

The troubleshooting guidelines list some basic problems that might occur with your machine and how to detect and correct the problem.

Intended Audience

This manual is intended for use by supervisors and operations with basic English reading skills and basic mechanical skills. Some parts and functions referred to in this manual require basic knowledge of the packaging industry and packaging terminology.

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Safety

Machinery is hazardous when safety precautions are not followed. The following safety rules and practices must be followed for safe operation of the machinery and to prevent accidents. All operators and maintenance personnel working on or near SWF Companies machinery should be informed and supervised regarding safe machine operation.

All equipment manufactured by SWF Companies is safety tested prior to shipment. Records of machine safety tests are filed at the plant. Safety equipment on SWF machines is also tested in the customer's plant if and when a SWF Service Representative assists in starting up newly installed machinery.

Verify all supervisors read and understand the entire contents of the operation portion of this manual, with particular attention to safety precautions. Anyone who works on or around the machine should read and understand the safety precautions noted throughout this manual.

- The responsibility for safe machine operation is shared among the employer, supervisor, operator, attendant, and all maintenance personnel who work with the machine. Read the instructions. Re-read them periodically.
- Accident prevention should be continually evaluated. This means ALL potential hazards must be identified, and either eliminated or safeguarded. Along with creating safe conditions, safe practices should be followed by all employees.
- If any questions ever arise regarding the safe operation or maintenance of this machine, immediately contact:



SWF Companies
1949 E. Manning Ave.
P.O. Box 548
Reedley, CA 93654-0548

Phone: 559-638-8484
Fax: 559-638-7478

Equipment Safety

SWF machinery uses many safety devices designed to prevent injury to personnel who come in contact with the machine. All safety switches and devices should be checked daily to ensure that they operate properly. Any removal or alteration of these devices can result in serious injury.

Device	Description
	GUARD DOORS serve as a vertical barrier around the main operating area. Guarding includes sheet metal fixed guards or transparent polycarbonate plastic. Hinged or sliding guard doors are installed in areas requiring easy access. Doors with safety interlocks automatically stop the machine by disconnecting the electrical power and dropping air from the machine as soon as the door opens. The electrical power and air pressure remain off until all guard doors are closed and the start-up sequence is followed.

Device	Description
 <p>The image shows a red emergency stop button with a silver ring and a red center. Above the button, the text 'FP-1 EMERGENCY STOP' is printed in white on a red background.</p>	<p>EMERGENCY STOP CONTROL or “E-STOP” is an illuminated push/pull button installed on each operator control panel. The pulled-out/on position allows for operation of the machine. The pushed-in/off position of any e-stop button causes a complete machine shut-down.</p> <p>The pushed-in (off) position immediately shuts off power and air to the machine. The dump valve releases air pressure, causing the air pressure switch to open and shut off the master control relay. The machine remains shut down until all emergency stop buttons are reset and the start-up sequence is performed.</p> <p>WARNING: The emergency stop circuit performs an immediate shut down by dropping electrical power and air in the case of an emergency. Do not use the e-stops to prevent inadvertent starting of the machine. Always perform Lock-Out/Tag-Out procedures on the main disconnect or designated auxiliary disconnect prior to entering or reaching into the machine.</p>
 <p>The image shows a metal disconnect switch or circuit breaker with a black handle, mounted on a white panel. The handle is currently in the 'off' position.</p>	<p>The DISCONNECT SWITCH or CIRCUIT BREAKER is on the main electrical cabinet. There may be additional remote disconnect switches mounted elsewhere on the machine. The disconnect switch shuts off all electrical power to the machine. To open the electrical cabinet door, first move the disconnect switch to the off position. The doors will not open until the switch is off.</p> <p>WARNING: Always use the lockout feature of the disconnect switch to ensure the electrical power remains off during any maintenance or repair work.</p> <p>WARNING: Not ALL disconnect switches shut-off ALL power. Some switches only shut-off power to a particular area or to certain components. Never assume that any single disconnect switch shuts-off ALL power to the machine. Refer to the electrical schematics for more information.</p>

Precautions and Warnings

Injury or loss of limbs may result if this machine is improperly operated or maintained. Please note the following precautions:

- ⊗ Never adjust, repair, clean, or clear a jam without turning the power off. To shut down the power, turn the disconnect switch to the off position and lock it in the off position.
- ⊗ Do not operate this machine without the guards in place.
- ⊗ Turn off the power before removing or opening any guards. Turning off the power means locking the power disconnect switch in the off position.
- ⊗ Hot surfaces! Severe burns result from the improper handling of the hot melt glue system. Wear proper clothing and high temperature gloves when cleaning or repairing the hot melt glue system.
- ⊗ Replace all broken or worn parts immediately. Check and tighten all bolts and screws.
- ⊗ High voltage electrical equipment – authorized personnel only.
- ⊗ Turn off the power when the machine is not in use.
- ⊗ This machine starts automatically in the ‘auto’ position when the downstream control contact and/or time delay attachment is used.

- ☠ Always wear proper clothing during operation of heavy-duty machinery.

SWF Machinery endeavors to comply with OSHA standards. You, however, are the most important part of safe equipment operation. In order to provide for your safety, you should be knowledgeable and put into practice the following:

- ↪ Always know the purpose of the control buttons and selector switches before operating any equipment.
- ↪ Always perform an emergency stop and a normal cycle stop before operating this machine.
- ↪ Be familiar with the power off or disconnect procedure. This procedure includes turning off the power and locking the power disconnect switch in the off position.
- ↪ Always be aware of all moving parts and of the danger in putting hands or limbs in or around these areas.
- ↪ Note the high operating temperatures required in operating the glue system. Always wear gloves, goggles, and protective clothing when servicing the glue systems.

Lockout Information

Never attempt to adjust, repair, clean, or remove corrugated in a jam condition, without stopping, powering down, and locking the machine out.

Main Power Panel

To lock out the power:

1. Push the red emergency stop button.
2. Rotate the disconnect switch to the “Off-Lock” position.
3. Under the disconnect switch, locate and push up the lock slide.
4. Insert a lock into the exposed squared area.
5. Test all buttons and try moving the switch to make sure power cannot be applied.

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Installation

The following are the typical machine setup steps.

Uncrating

Remove the machine from its crate. Check the packing list verify all loose parts and attachments have been included. Tighten any screws, bolts, or fasteners loosened during shipment. Note any discrepancies on the carrier's Bill of Lading.

Placement

Loosen the front wheel brake screws and push the machine to the designated operating station. Once the machine is properly positioned, tighten all brake screws to secure the machine.

Electrical

Check the plant electrical system to verify the voltage and phase agree with the order specifications. Consult the wiring diagram to determine proper connections to the machine terminals. When starting the machine, check for proper rotation. If the machine rotation is incorrect, reverse the terminal connections of any two of the three power lines on a three phase system.

The electrical control box on the machine contains various circuits and provides for an enclosure of the primary disconnect. Secure this enclosure before starting up the machine.

The machine has been test run and approved at SWF Machinery. Supply the proper voltage and rotation of the main drive motor. Follow the operating procedures and safety recommendations listed in this manual.

Guards

Machine guards installed at the factory protect the operator from contact with drive units, nip points, and electrical circuitry. Front and rear guards have safety interlocks.

All guards for the lower transmission assembly and form plunge feed post must be securely in place before operating the machine. All guarding must **always** be in place while the machine is operating. Extreme caution should be taken while making adjustments or size changes with the guards off.

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Sequence of Events

The sequence of operations lists all steps involved in the packaging run of your machine. If you have not read the operating instructions, please read them before continuing.

Machine Specifications

The following are some standard specifications for your machine.

Standard Container Sizes

	SWF 1D5A (BF 400V)		SWF 1D6A (BF 600V)	
	Max	Min	Max	Min
Length	31 7/8	9 ¼	43 7/8	9 ¼
Width	20	8	20	8
Depth	16	4	16	4

For sizes outside the limits, contact SWF Sales and Service department.

Machine Speed

12-35 boxes per minute for a standard 60-Hertz machine. Speed range may be restricted by the size of box to be formed. 50-Hertz machine speeds operate at slower speeds. Consult SWF Machinery for speeds required other than those listed above.

Machine Specifications

	BF 400V	BF 600V
Operating weight	1900 pounds	2100 pounds
Crated weight	2200 pounds	2400 pounds
Space required		
Length	58"	58"
Width	78"	102"
Height	76" (Depends upon blank specifications.)	76" (Depends upon blank specifications.)

Electrical requirements

Standard	230 Volt A.C	3 Phase	60 Hertz
Optional	230 Volt A.C	1 Phase	60 Hertz
	208 / 480 / 600 Volt AC	3 Phase	60 Hertz
	380 / 415 Volt AC	3 Phase	50 Hertz (speeds will be slower)
Motors	1 hp	Enclosed, fan cooled	

Main Power Cabinet

NEMA 12 enclosure. Main power disconnect and fusing. 120 Volt A.C control circuit.

SWF Glue System

Operating temperature 325° - 375° F.

Capacity - 14 pounds per hour total. Both sides.

Heaters - 5/8" Dia. cartridge - 230 V. A.C. 1 phase

(Length and wattage dependent upon blank formed. Check option parts list)

Vacuum System

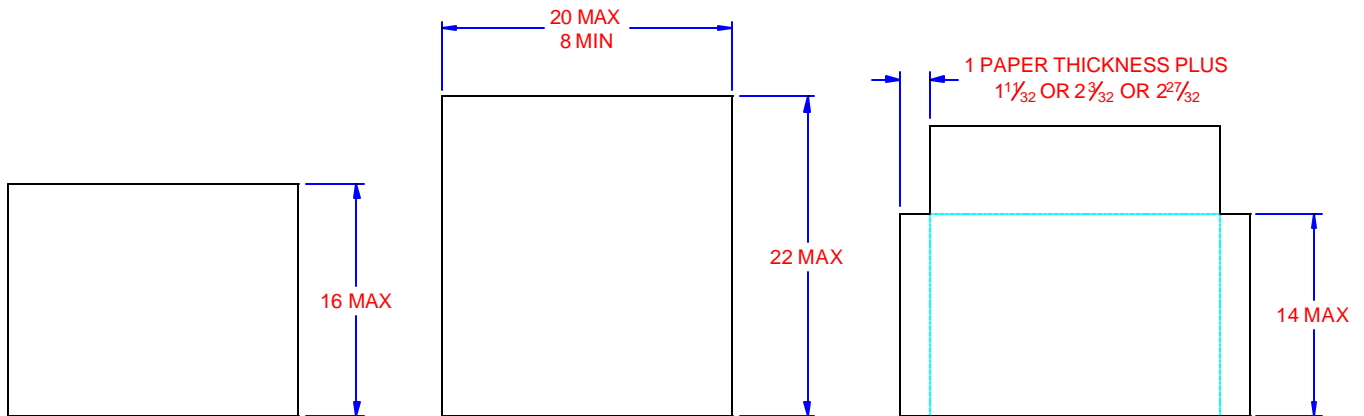
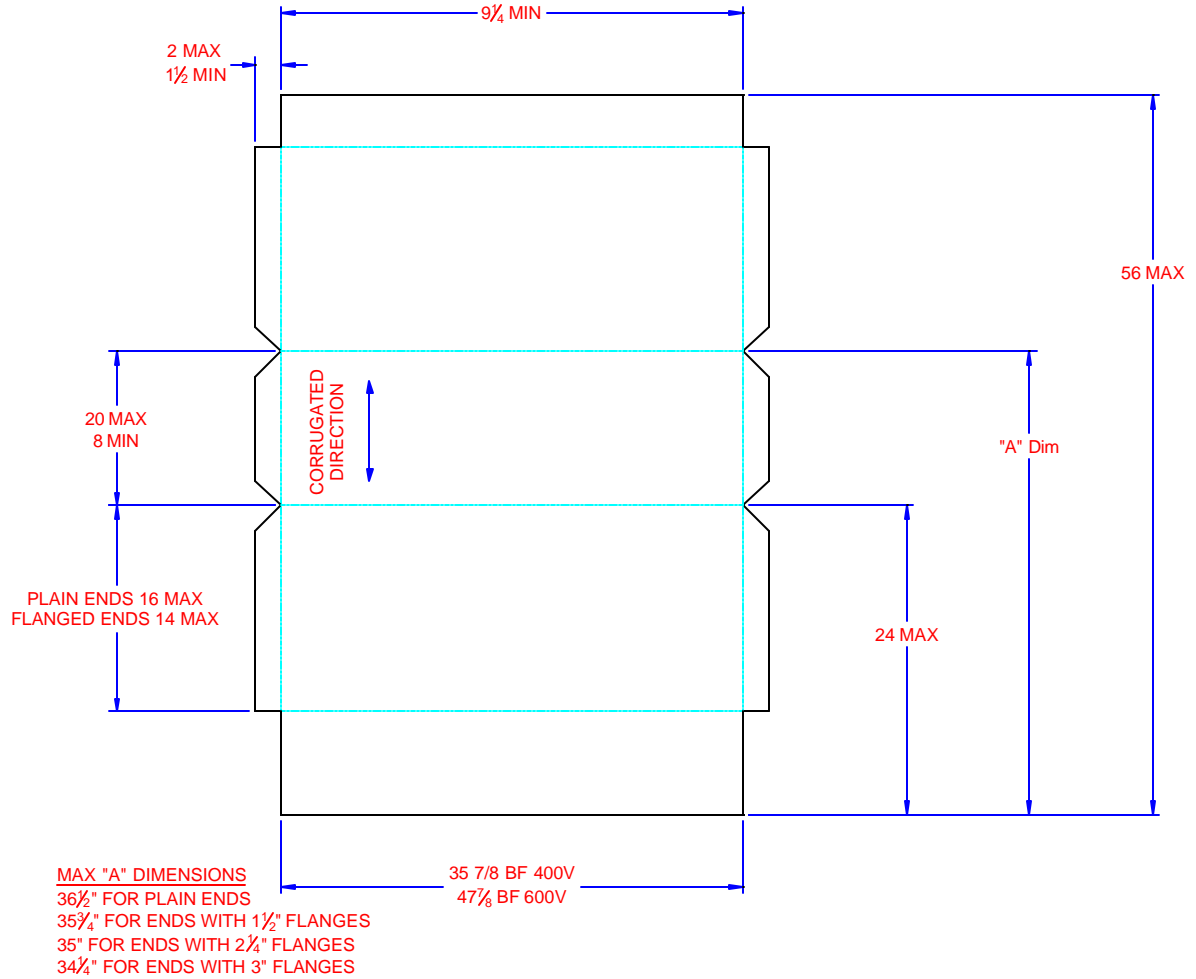
Blower: 62HP 3-Phase 60 Hertz 200-230 / 460 volt standard.

Hopper Capacities

Gravity fed, with a capacity of approximately 85 “C” flute, single wall blanks. (Larger capacity hoppers available upon request)

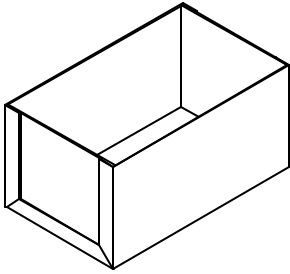
Blank Limitations: 1D5A / 1D6A

Note: Contact SWF for assistance on sizes not conforming to the dimensions listed below. SWF requests that you contact our Sales/Service department before ordering new size blanks.

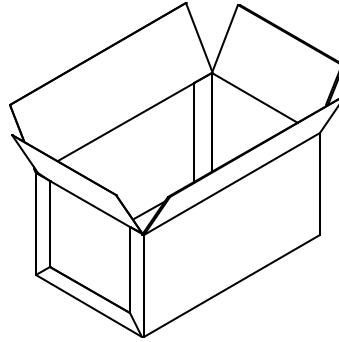


Examples of Box Styles

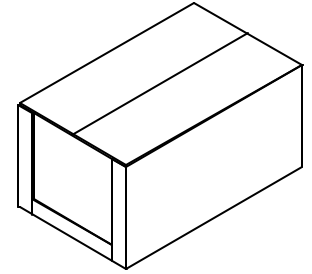
The following box styles may be formed on the BF 400V (1D5A) and BF 600V (1D6A) Blissmatics. Before ordering corrugated blanks to form your carton, check with the SWF Sales and Service Department for machine compatibility.



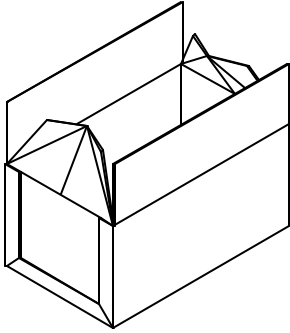
Bliss Tray



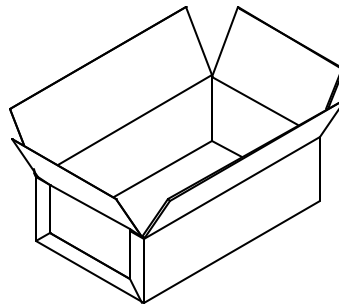
Bliss with Internal Flange



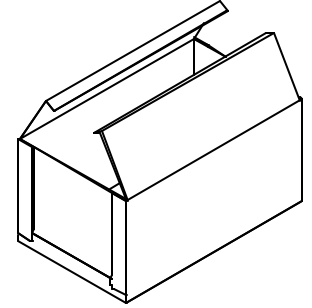
Rotary Run Bliss



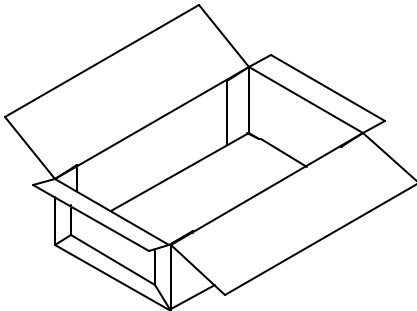
Bellow Top Bliss



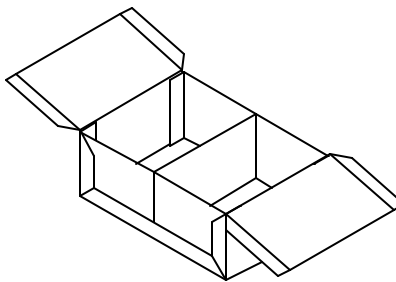
**Bliss with or without
Minor Flap**



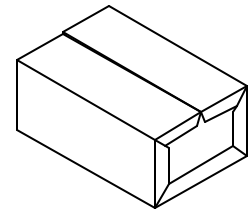
Solid Fiber Bliss



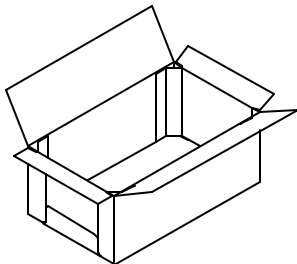
Bliss with Internal Flange



**H-Divider with Internal
Flange**

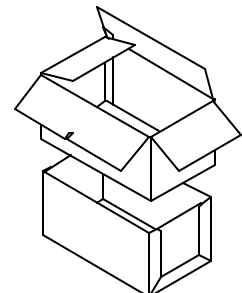


Side Flaps Seal



**Diagonal Corner
Bliss**

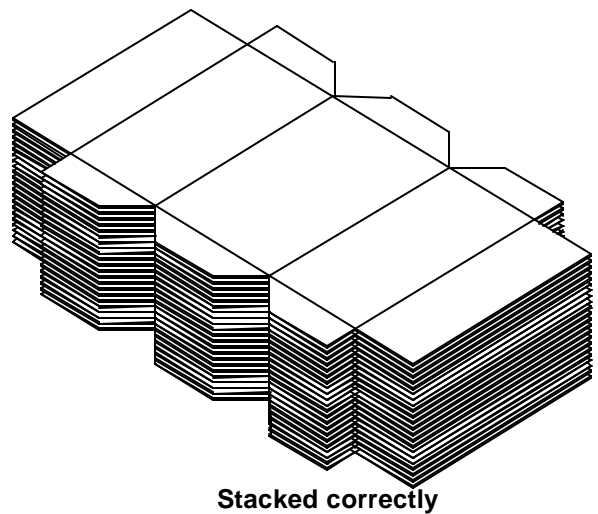
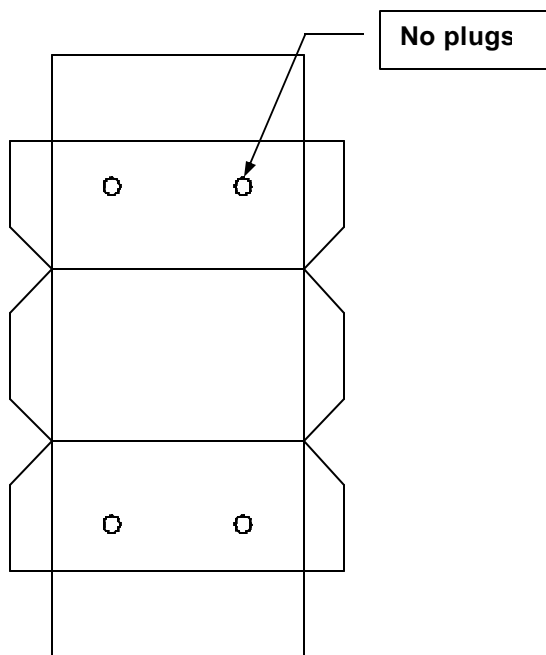
**Bliss with HSC
Cover**



Bliss Corrugated Blanks

Damaged, warped, or blanks not following agreed upon specifications may not form or provide the stacking strength for which they were designed. To provide a satisfactory box, please check the following:

- Do the blank measurements agree with the original machine set-up specifications?
- Are the slots and vent holes clean and clear of chaff?
- Have the blanks been damaged in shipping or handling?
- Is the pallet the correct size to hold the material?
- Will the corrugate be stored in an area that is not subject to extreme temperatures?
- Will the storage location minimize exposure to dampness or humidity?
- Will the blanks be palletized in an interlocking pattern?



Process Flowpath

The SWF BF 400V and the BF 600V machines are similar in appearance and function. The BF 600V has a larger frame to accommodate larger boxes.

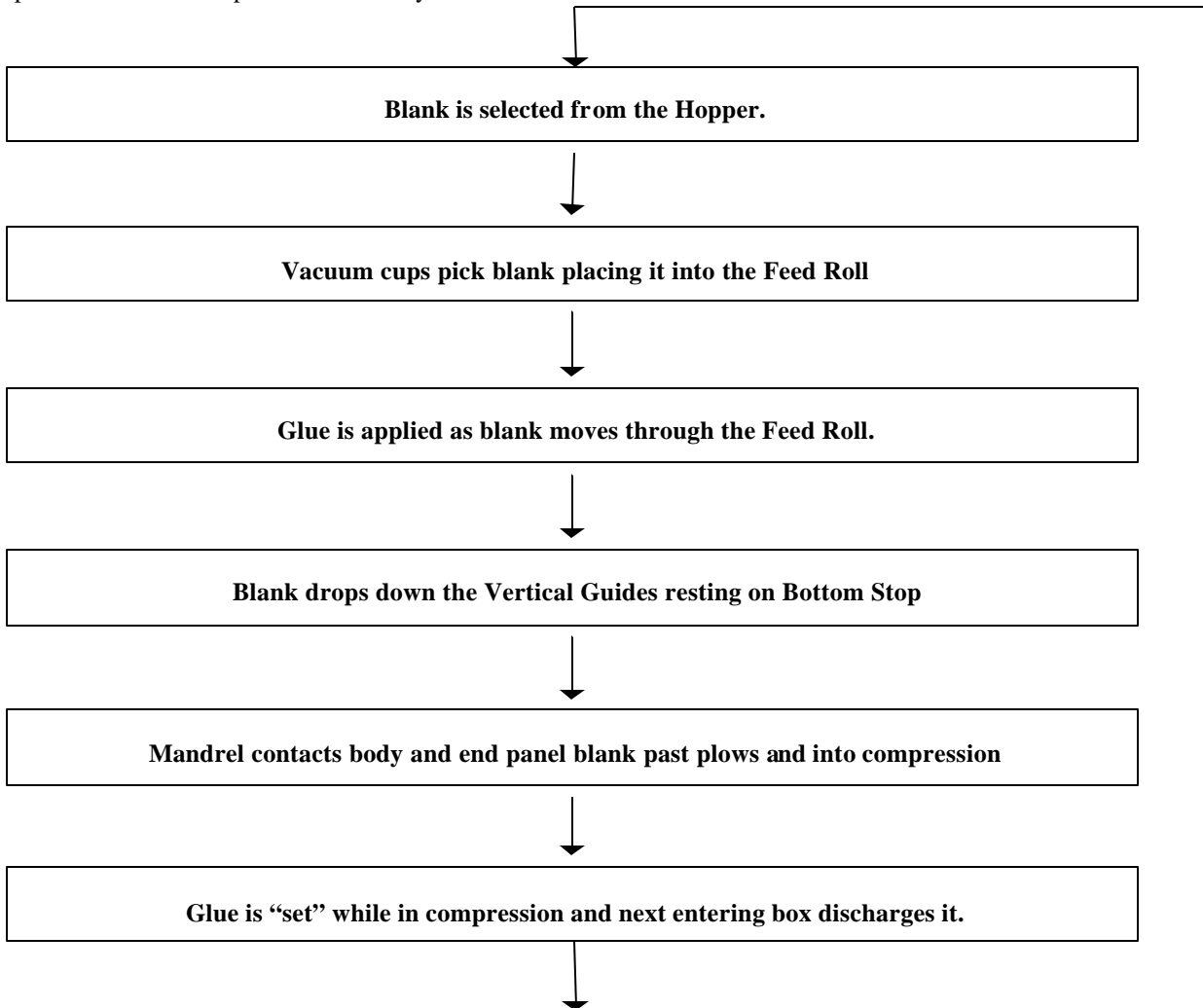
Machine Operation

The operator loads corrugated body blanks on the hopper arms and loads end panels onto the slanted end panel hopper guides on opposite sides of the forming mandrel. Once in operating mode, vacuum cups move horizontally into the vertical blank resting between the vertical guides. The vacuum cups select the blank, return and place the blank into a feed roll. The feed roll moves the blank downward.

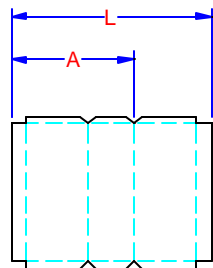
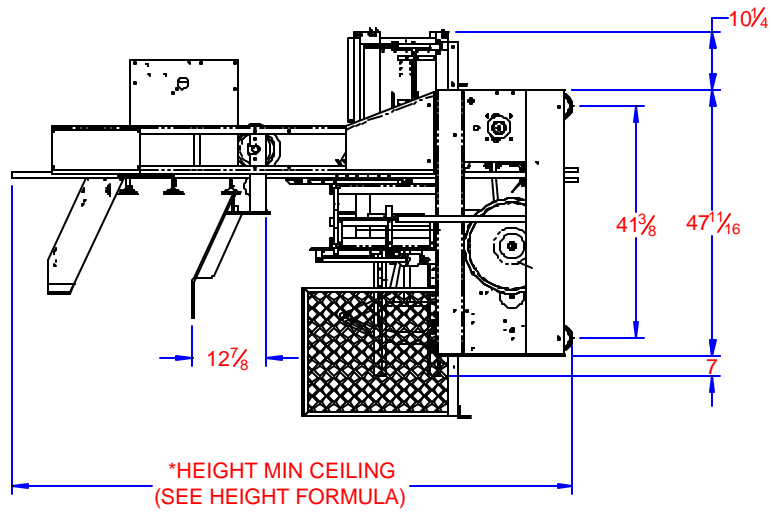
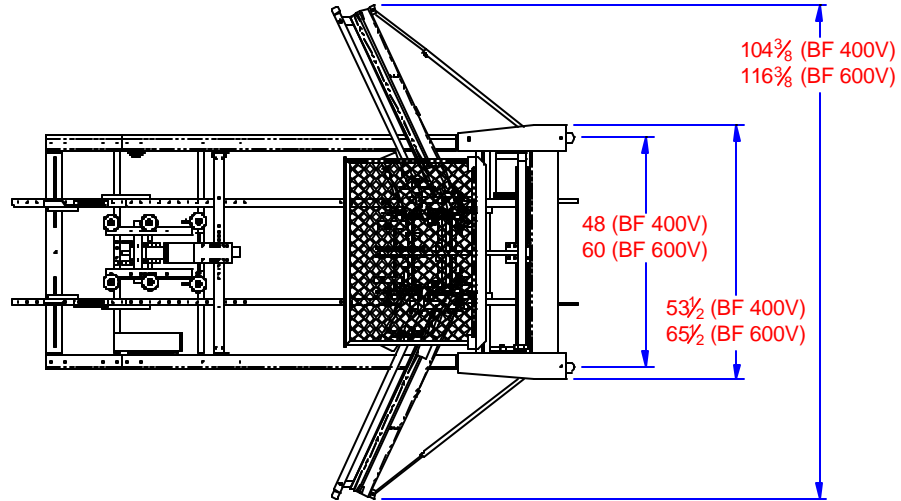
As the case blank passes between the glue pump serrated wheel and the backup roller, the glue pump activates. A programmed glue bead is released onto the case blank.

The case blank continues its vertical movement to rest on the bottom stop. The mandrel, moving forward on guide rails, passes and picks up the end panels. The mandrel contacts the base of the Bliss bank and places the end panels at the end of the box. The mandrel moves the case blank past forming shoes and into the compression station.

The compression plate closes on the formed blank, sealing the Bliss ends to the case blank. The formed box remains in the compression station until the forming cycle repeats for the next box. The formed box is pushed from the compression station by the next box.



Physical Layout



*HEIGHT = A+L+39"
 HEIGHT FORMULA IS
 NOMINAL. CHECK WITH
 ENGINEERING FOR THE
 EXACT DIMENSION

Controls (Push Buttons)



The following section details the most common control panel buttons used on your machine. Most machines use the push buttons shown below.

Emergency Stop

Press the emergency stop button to immediately stop the machine. The emergency stop button drops power and air from the machine.

Pull out on the emergency stop button to restore power to the machine. This does NOT start the machine.

Jog / Run

Place the machine in 'run' mode for normal operation and in 'jog' mode before jogging the machine. A machine in jog mode runs at a fraction of operating speed.

To jog the machine, position this switch in 'jog' mode. Use the FOR/REV switch to jog the machine in the forward or reverse directions.

Start

To start the machine, press and hold down the start button until the machine begins operation.

Hand / Off / Auto

Use 'hand' when running this machine as a stand-alone machine or as part of a line and no other machine controls its operation. Place this switch in 'auto' mode when a downstream or upstream machine controls the speed or operation of this machine.

Vacuum Off / On

Turn the vacuum system on before beginning operation. When the vacuum system is off, the vacuum cups cannot pick case blanks from the hopper.

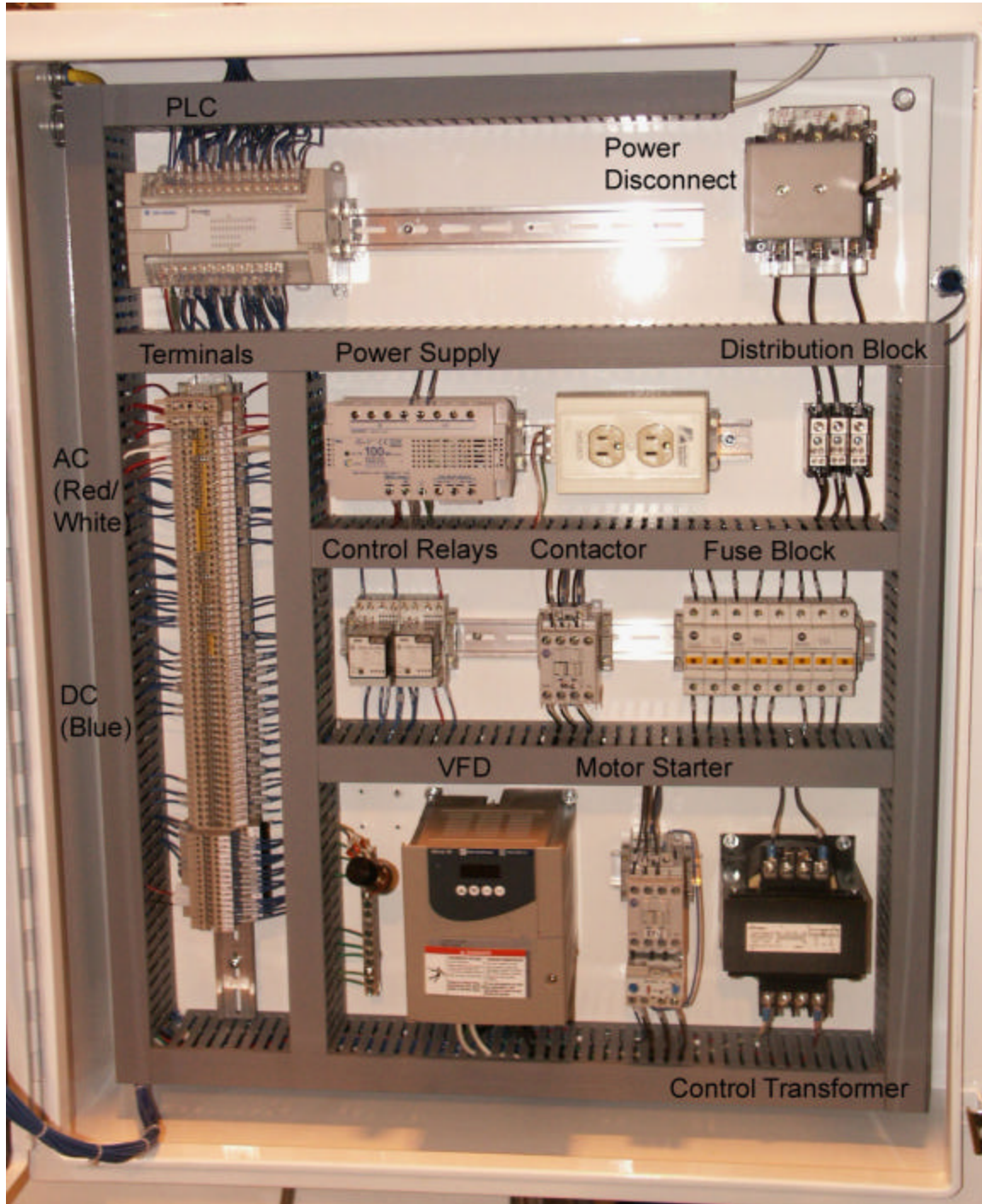
Forward / Off / Reverse

To jog the machine, place the machine in 'jog' mode. Using this spring-operated rotate and hold the swing in the forward or reverse direction to jog the machine.

This switch is only used to jog the machine. Under normal operating conditions, this switch returns to the center position.

Electrical Panel

This picture shows the configuration of the electrical panel. The addition of options may change the layout of this panel.



Controls (Siemens Controller)

Bliss formers may sometimes use small touch screens instead of the standard buttons.

Emergency Stop

Press the emergency stop button to immediately stop the machine. The emergency stop button drops power and air from the machine.

Start Button

A physical start button mounts near the control panel. Press this start button after resetting the emergency stop button to return power and air to the machine. Press and hold down this start button to return power and air to the machine and to start it.

Main Screen

All primary control buttons are on the main screen.

Use the buttons on the right side of the screen to access the other screens.

Start

To start the machine, press and hold down the start button until the machine begins operation.

This start button, unlike the physical start button, does not return power and air to the machine after an emergency stop.

Stop

Press the stop button to stop the machine. Since this is a cycle stop button, the machine does not immediately shut down, but shuts down at its cycle stop position.

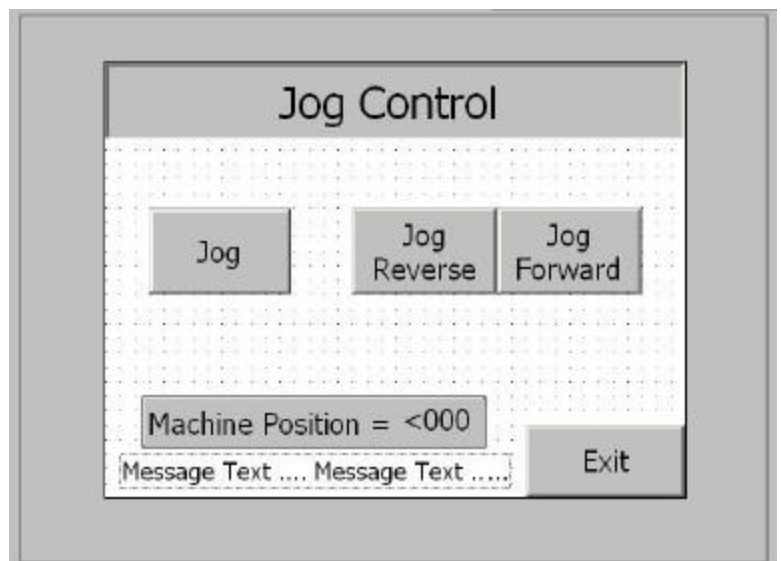
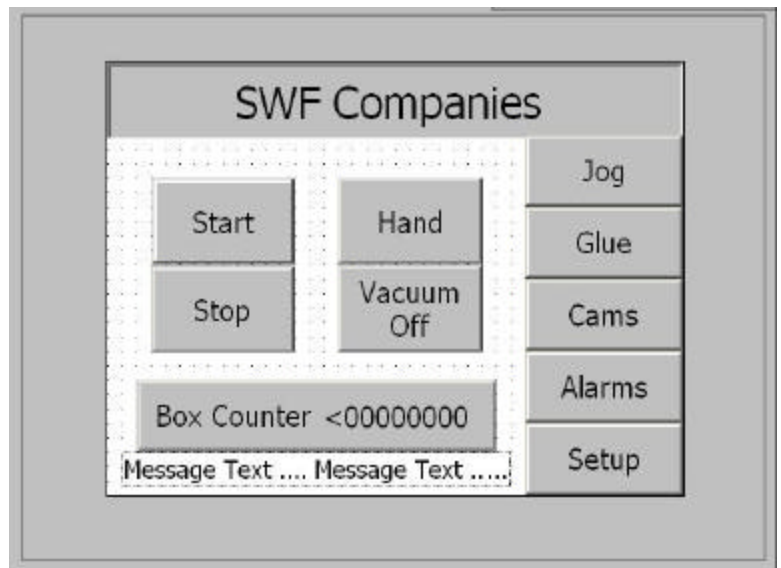
Hand / Auto

The hand/auto button is a toggle button.

Use 'hand' when running this machine as a stand-alone machine or as part of a line and no other machine controls its operation. Place this switch in 'auto' mode when a downstream or upstream machine controls the speed or operation of this machine.

Vacuum On / Off

The vacuum button is also a toggle button. Turn the vacuum system on before beginning operation. When the vacuum system is off, the vacuum cups cannot pick case blanks from the hopper.



Jog Screen

Access the jog screen to jog the machine forward or backward.

To jog, follow these steps:

1. Stop the machine
2. Press the run / jog button to switch into jog mode
3. Press and hold down the jog forward or jog reverse button, depending upon the direction of movement desired.

Jogging the machine moves the machine through a machine cycle at run speed, not at a fraction of the operating speed.

Alarm Screen

The alarm screen displays any active alarms on the machine.

Cam Controller Fault

For any error messages displayed about or on the Siemens' cam controller, please refer to the Siemens documentation that arrived with your machine. If the error condition does not reset, please call SWF Companies' customer support department at 1-800-344-8951 for assistance.

Body Hopper is Empty

Photo-eyes mounted on the various hoppers (case magazines) detect when the hoppers are empty. Refill any empty hoppers and maintain minimum levels to avoid production delays due to empty hoppers. When an empty hopper is detected, the machine shuts down with a cycle stop.

Emergency Stop Pressed

An emergency stop button is pressed, dumping power and air from the machine. The machine will not resume operation until the emergency stop button is reset.

Glue Unit is Not Ready

Turn on the glue unit 30 to 40 minutes before beginning operation to allow the glue unit, glue hoses, glue nozzles, and glue to reach operation temperatures.

Left End Hopper is Empty

Photo-eyes mounted on the various hoppers (case magazines) detect when the hoppers are empty. Refill any empty hoppers and maintain minimum levels to avoid production delays due to empty hoppers. When an empty hopper is detected, the machine shuts down with a cycle stop.

Left Pick Head Fault

Proximity sensors detected a pick head jammed between the pick and place position. Under jamming conditions, the machine shuts down. Initiate an emergency stop and remove the jammed case blanks from the area. Reset the emergency stop button then press the start button to return power and air to the machine. Use the start button on the touch screen to resume operation.

Missing Body Panel Detected

A panel was picked from the body hopper but was not transferred to the mandrel in the forming area. Photo-eyes detect the panel in the correct position. When the photo-eye does not detect a case panel within the proper timing zone, the machine shuts down with an immediate stop. This does not drop power or air from the machine.

Missing Left End Panel Detected

A panel was picked from the left end hopper but was not transferred to the mandrel in the forming area. Photo-eyes detect the panel in the correct position. When the photo-eye does not detect a case panel within the proper timing zone, the machine shuts down with an immediate stop. This does not drop power or air from the machine.

Missing Right End Panel Detected

A panel was picked from the right end hopper but was not transferred to the mandrel in the forming area. Photo-eyes detect the panel in the correct position. When the photo-eye does not detect a case panel within the proper timing zone, the machine shuts down with an immediate stop. This does not drop power or air from the machine.

Not Authorized to Change Settings

To prevent accidental setting changes, parameters may only be changed after entering the 'maintenance level' pass code. In 'operator mode,' no cam or glue settings can be changed by the operator.

Right End Hopper is Empty

Photo-eyes mounted on the various hoppers (case magazines) detect when the hoppers are empty. Refill any empty hoppers and maintain minimum levels to avoid production delays due to empty hoppers. When an empty hopper is detected, the machine shuts down with a cycle stop.

Right Pick Head Fault

Proximity sensors detected a pick head jammed between the pick and place position. Under jamming conditions, the machine shuts down. Initiate an emergency stop and remove the jammed case blanks from the area. Reset the emergency stop button then press the start button to return power and air to the machine. Use the start button on the touch screen to resume operation.

VFD is Faulted

The VFD motor faulted, usually indicating a blank jam, overload, or electrical problem. Remove any jammed case blanks from the machine and reset both the machine and the VFD if necessary. Switch off the main disconnect for 30-seconds to clear the VFD fault.

For specific error codes, refer to the VFD documentation received with your machine or call SWF Companies' technical support department at 1-800-344-8951.

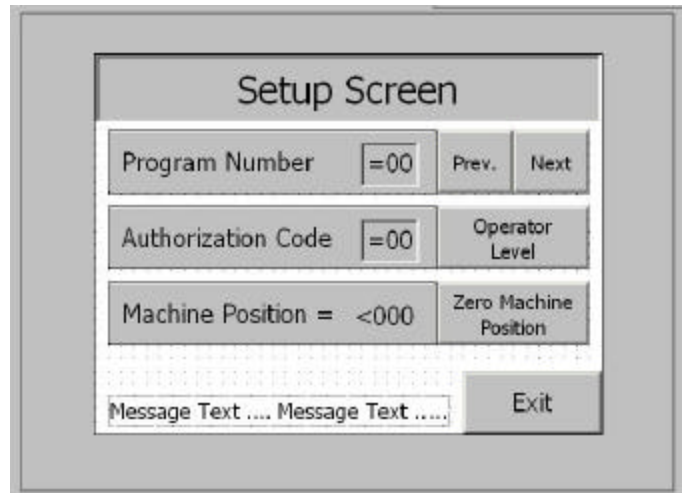
Setup Screen

Program Number – Change the program number to change patterns or cases. Changing the program automatically changes the glue settings and other parameters.

Authorization Code – To re-zero the machine, alter the glue settings, or alter the cam settings, the 'maintenance level' passcode must be entered. Operator level access does not allow for changes or updates in the program settings.

To enter the passcode, press the numbers displayed (a zero may be displayed) to access the keypad. Enter the passcode and press the enter key.

Machine Position – Use the machine position setting to change the zero position, or re-zero, the machine. This parameter can only be changed from the 'maintenance level', not 'operator level.'



Glue Screen

Access to glue setup screen to change the glue bead positions.

Bead – This machine may use multiple glue beads. This is the glue bead id number.

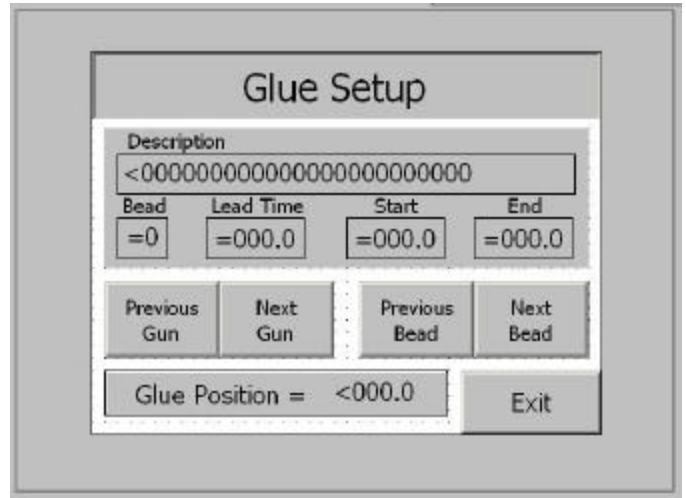
Description – Refer to the glue bead description to verify you are changing or updating the correct glue bead.

Lead Time – The lead time is the time offset that accounts for the delay between activating the glue bead and the actual time the glue is applied to the case blank. The delay results from the time needed to activate the glue valve and the glue traveling through the guns to the corrugate.

Start – The start setting is the position at which the glue bead begins applying to the case blank. The start and end positions are entered on a scale of 0 to 360 degrees. However, the glue cycle position is different than the machine cycle position. The glue cycle begins when the glue trigger photo-eye detects the case blank.

End – The end settings is the position at which the glue stops squirting onto the case blank. The start and end positions are entered on a scale of 0 to 360 degrees. However, the glue cycle position is different than the machine cycle position. The glue cycle begins when the glue trigger photo-eye detects the case blank.

Glue Position – The glue position displays the current position within the glue cycle. The glue position resets to zero when the glue trigger photo-eye detects the case blank.



Cam Screen

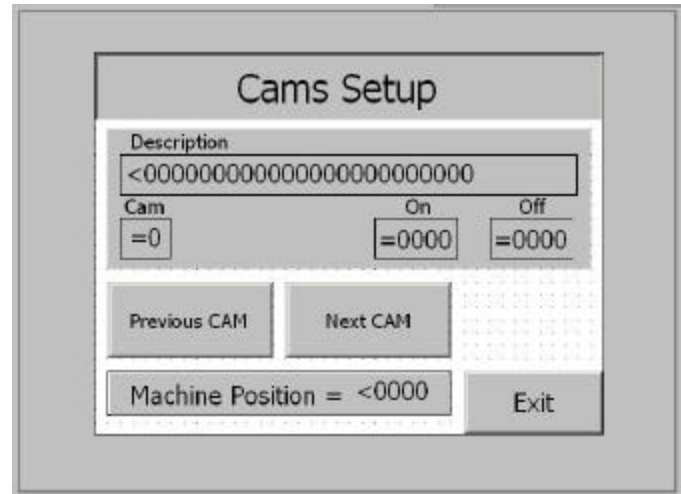
The cam settings may only be changed from the 'maintenance level.' Without the 'maintenance level' password, the settings cannot be altered.

Cam – The cams are numbered.

Description – To verify you are changing the correct cam, refer to the description.

On / Off– Set the on and off points for this cam by pressing on the current settings. The keypad pops up. Enter the new settings.

Machine Position – The machine position is displayed on a range of zero to 360 degrees.



Controls (Allen Bradley PanelView 300 Micro)

Bliss formers may sometimes use small touch screens instead of the standard buttons.

Press the F2 button to access the list of active alarms and use the F4 button to access the main screen. For most machines, the PanelView 300 Micro is used only to display alarm codes. No control buttons are on this screen. For more information on the PanelView 300 Micro, please refer to the manufacturer's documentation shipping with your machine.

Alarm Codes

The following are the most common alarm codes used with the PanelView 300.

MCR Power is Off

The main power is turned off to the machine.

	Message Text	Value/Bit	Trigger	Ack	Display
1	MCR Power is Off	0	Alarm_Bits	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	Body Not Detected	1	Alarm_Bits	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	Left End Not Detected	2	Alarm_Bits	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4	Right End Not Detected	3	Alarm_Bits	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	Main Drive Fault	4	Alarm_Bits	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6	Body Hopper Overtravel	5	Alarm_Bits	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7	Left End Hopper Overtravel	6	Alarm_Bits	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8	Right End Hopper Overtravel	7	Alarm_Bits	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9	Left End Pick Head Jam	8	Alarm_Bits	<input type="checkbox"/>	<input checked="" type="checkbox"/>
10	Right End Pick Head Jam	9	Alarm_Bits	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11	Hot Glue Not Ready	10	Alarm_Bits	<input type="checkbox"/>	<input checked="" type="checkbox"/>
12	No PLS Signal Alarm	11	Alarm_Bits	<input type="checkbox"/>	<input checked="" type="checkbox"/>
13	Spare Message 13	12	Alarm_Bits	<input type="checkbox"/>	<input checked="" type="checkbox"/>
14	Spare Message 14	13	Alarm_Bits	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Body Not Detected

A panel was picked from the body hopper but was not transferred to the mandrel in the forming area. Photo-eyes detect the panel in the correct position. When the photo-eye does not detect a case panel within the proper timing zone, the machine shuts down with an immediate stop. This does not drop power or air from the machine.

Left End Not Detected

A panel was picked from the left end hopper but was not transferred to the mandrel in the forming area. Photo-eyes detect the panel in the correct position. When the photo-eye does not detect a case panel within the proper timing zone, the machine shuts down with an immediate stop. This does not drop power or air from the machine.

Right End Not Detected

A panel was picked from the right end hopper but was not transferred to the mandrel in the forming area. Photo-eyes detect the panel in the correct position. When the photo-eye does not detect a case panel within the proper timing zone, the machine shuts down with an immediate stop. This does not drop power or air from the machine.

Main Drive Fault

The VFD motor faulted, usually indicating a blank jam, overload, or electrical problem. Remove any jammed case blanks from the machine and reset both the machine and the VFD if necessary. Switch off the main disconnect for 30-seconds to clear the VFD fault.

For specific error codes, refer to the VFD documentation received with your machine or call SWF Companies' technical support department at 1-800-344-8951.

Body Hopper Overtravel

For powered hoppers, the hoppers 'overtravel' when they run out of blanks. Refill any empty hoppers and maintain minimum levels to avoid production delays due to empty hoppers. When an empty hopper is detected, the machine shuts down with a cycle stop.

Left End Hopper Overtravel

For powered hoppers, the hoppers 'overtravel' when they run out of blanks. Refill any empty hoppers and maintain minimum levels to avoid production delays due to empty hoppers. When an empty hopper is detected, the machine shuts down with a cycle stop.

Right End Hopper Overtravel

For powered hoppers, the hoppers 'overtravel' when they run out of blanks. Refill any empty hoppers and maintain minimum levels to avoid production delays due to empty hoppers. When an empty hopper is detected, the machine shuts down with a cycle stop.

Left End Pick Head Jam

Proximity sensors detected a pick head jammed between the pick and place position. Under jamming conditions, the machine shuts down. Initiate an emergency stop and remove the jammed case blanks from the area. Reset the emergency stop button then press the start button to return power and air to the machine. Use the start button on the touch screen to resume operation.

Right End Pick Head Jam

Proximity sensors detected a pick head jammed between the pick and place position. Under jamming conditions, the machine shuts down. Initiate an emergency stop and remove the jammed case blanks from the area. Reset the emergency stop button then press the start button to return power and air to the machine. Use the start button on the touch screen to resume operation.

Hot Glue Not Ready

Turn on the glue unit 30 to 40 minutes before beginning operation to allow the glue unit, glue hoses, glue nozzles, and glue to reach operation temperatures.

No PLS Signal

No signal from the PLS unit usually indicates a critical error or failure with the PLS unit. Refer to the manufacturer's documentation shipping with your machine for a troubleshooting guide.

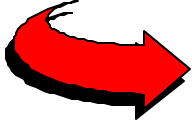
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Operating Procedures

The following operating procedures include the startup and shutdown instructions, changeover guidelines, and a list of consumable usage to monitor the machine for.

Startup

Regular **lubrication and maintenance** is **critical** to machine performance and safe operation. Lubrication and maintenance procedures are recommended on a daily, weekly, and periodic basis. Before beginning production, verify the lubrication and maintenance procedures have been performed.



Before beginning operation, review the checklists for daily, weekly, and periodic lubrication and maintenance requirements. Perform all recommended procedures.

STEP “A” CHECKING THE MATERIAL

1. Check the blanks to be formed.
2. Blank material must be held to within 1/16” tolerance of the original specifications.
3. Do not attempt to run warped or worn material.
4. Blanks must not be exposed to adverse weather. (Humidity, rain, heat, fog etc.)

STEP “B” CHECKING ALIGNMENT:

1. Place a blank between the vertical guides (trees) and crank to the correct width.
2. With that same blank, set the vertical body hopper adjustment.
3. Rest a blank on the bottom stops and crank up or down to align the blank with the mandrel.
4. Set the vertical compression adjustment.
5. Fill the adhesive melt pots with glue. Cover the refill container immediately.
6. Set the melt pot temperature, both sides, to operating temperature.
7. The glue pots reach operating temperature in approximately 30 minutes.

WARNING: When performing service on the glue system, wear safety goggles, heat-resistant gloves and protective clothing to prevent injury and burns from hot material and hot parts.

STEP “C” LOADING THE HOPPERS:

1. Have the corrugated stack within easy reach for re-loading.
2. Grasp a handful of corrugated body blanks and place them on the hopper loading ramp.
3. Slide the blanks forward to align the hopper blades with the blank cutouts.
4. Gently slide the blanks down the loading ramp to a position where the lead blank is against the upper support knife.
5. Completely fill the hopper.
6. Do not press the blanks in the hoppers by hitting blanks with the hand.

STEP “D” APPLYING POWER

1. Turn the disconnect lever on the main power panel to the “on” position. Note: This lever is the main source of disconnecting power to the formers when maintenance is required or jams occur.
2. Set the melt pot thermostats to 325°- 375° Fahrenheit.
3. The adhesive manufacturer specifies the optimum operating temperature.

4. When the thermostat lights extinguish, the adhesive system is operational.
5. If necessary, purge the adhesive system of trapped air by manually turning each glue pump drive wheel with a scraper until the glue flow is even and does not contain air bubbles.

Reminder

Frequently check the melt pots to maintain the correct glue level. The level of molten adhesive must never be less than half the depth of the melt pots.

6. Pull the RED knob out to the “START” position. Turn the Vacuumswitch “ON.”
7. Place the “JOG/RUN” selector to the “JOG” position and the “HAND/OFF/AUTO” to the “HAND” position.
8. BUMP the GREEN “START” button to set the internal relays.
9. Hold the spring-loaded FOR/REV switch to the FOR position to jog. Allow the machine to produce 2 or 3 trays. Verify all set-up procedures have been correctly performed.
10. While the former is in operation, check the adhesive stripes on the blank for proper length, location, and width. If necessary, adjust the blank feeding, compression, or glue flow or reprogram the adhesive segments.

STEP “E” PRODUCTION:

1. When starting the main production run, start the machine by setting the **Variable Frequency Drive**, lower left Power Panel, to the **slowest speed possible**. If equipped with a **Vari-speed control knob** (right front frame), set to the lowest speed.
2. During operation, check the formed cartons for correct glue stripe and bead length. The bond must tear the corrugated fabric when pulling the glued flaps from the case body.
3. When you are satisfied the cartons are bonded and formed to your complete satisfaction, turn the **Vari-Frequency potentiometer** or **Vari-speed control knob** to the desired production speed.

“IF” A JAM OCCURS DURING OPERATION

- a) Push the e-stop button and lockout the power disconnect lever.
 - b) Take your time to observe the most probable cause.
 - c) Is blank travel obstructed? Check for cause of problem.
 - d) Are the vertical guide settings correct (Blank width plus 1/8”)?
 - e) Are the blanks clean? No chaff or unstriped vent holes?
 - f) Are the gate openings clear of foreign material?
 - g) If the blank has been partially fed down, rotate the mandrel back to the “cycle start position.”
 - h) Make sure the emergency stop button is pushed and pull the blank free.
4. Reset the emergency stop and press the start button. If the jammed condition is cleared, continue and complete the run.
 5. Run complete.

Monitor

Machine operators must always monitor several conditions on all packaging machinery, including product or case jams, power problems, alarms, and the various restocking of supplies such as case blanks and glue.

Jam clearing

Follow these steps to clear jams from the machine.

1. Push the e-stop button and lockout the power disconnect lever.
2. Take your time to observe the most probable cause.
3. Is blank travel obstructed? Check for cause of problem.

4. Are the vertical guide settings correct (Blank width plus 1/8")?
5. Are the blanks clean? No chaff or unstriped vent holes?
6. Are the gate openings clear of foreign material?
7. If the blank has been partially fed down, rotate the mandrel back to the "cycle start position."
8. Make sure the emergency stop button is pushed and pull the blank free.

Power Lockout

Always turn off and lock-out the main power disconnect on the electrical cabinet before proceeding with any electrical repairs. When the power remains on to perform tests, use the following guidelines:

- Know what voltages are present before beginning any electrical work.
- NEVER allow any portion of your body to touch the machine while testing voltages.
- NEVER work on a wet floor, a steel floor or other conductive surface. Cement is conductive because of its ability to retain moisture. When working on a cement floor, stand on a rubber mat, plywood, or some other non-conductive material.

Supply restock

Throughout the operating cycle of the machine, a couple of consumable products must be watched. Maintain the level of case blanks in the hoppers or magazines.

Verify all lubricators and grease lines have the appropriate amount of oil or grease. To determine the appropriate measures, refer to the maintenance section of this manual.

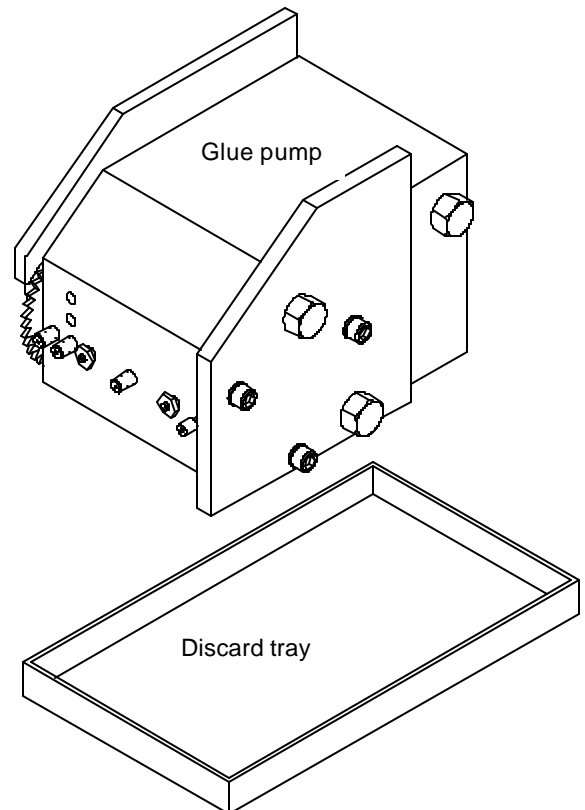
If your machine glue to seal the cases, monitor the glue levels according to the manufacturer's recommendations.

Procedure for Changing the Adhesive – SWF Glue Pump

Sometimes it is necessary to change the adhesive used. The most common reason for change is a change to a new carton with different glue requirements.

To change the glue, following these steps:

1. Turn on machine and allow the glue temperature to reach 325° F to 350° F.
2. Remove pump drip pan.
3. Place a small tray or pan under the melt pot and pump assembly.
4. Remove the socket head screw in the bottom of the glue pump body.
5. Let all of the molten adhesive drain from the system.
6. Add the new glue type into the melt pot.
7. Allow the new glue to force the old glue out. Look for a color change in the glue before inserting the drain plug. (Avoid mixing the two glues as much as possible as a chemical reaction can occur between certain types of glue).
8. When a full flow of new glue is observed, as noted by a color change, insert the drain plug.
9. Replace the screw in the glue pump drain.
10. Pump is now ready to run. However, if the pump has excessive drippage from backpressure, bleed the pump ports of air. The first two or three blanks purge the old remaining glue from the system.



11. Repeat the procedure with other pump.

Procedure for Changing the Adhesive – Nordson Units

When using a Nordson glue system, always refer to the Nordson documentation for all procedural recommendations, safety warnings, and maintenance information.

Resetting Overload Conditions

The machine stops when an overload condition occurs. Several assemblies on the packaging machine can overload. Follow the instructions below to reset the machine.

Air Cylinder Overload

To reset all air cylinders on the machine:

1. Press an emergency stop button on the machine. Never reach into the machine without pressing an emergency stop button. Follow the shutdown instructions before reaching into the machine.
2. Clear out any cases jammed around the air cylinder area.
3. Reset the emergency stop button by pulling it out completely.
4. Press the start or reset button. This prepares the machine for resuming operation.
5. If the error condition does not clear, check all reed switches on the associated air cylinders for proper operation. Verify the signals for retracted and extended positions are registering on the PLC.
6. Press and hold down the start button to resume operation.

Shutdown

STEP “F” SHUT DOWN

1. Turn the main power switch to the “**off**” position.
2. Verify the main power switch is in the “**off**” position and **locked out** while the machine is shut down to prevent inadvertent application of power.
3. Turn off the power to the adhesive melt heaters. Prolonged heating of the adhesive causes charring, resulting in serious damage to the system.
4. Lockout the machine.
5. Prevention of inadvertent start-up **is a must** when operation is complete or maintenance is performed. (Refer to **LOCKOUT** instructions)
6. Clean the machine and the surrounding area of drippage and dirt.
7. At the end of each production period, **with disconnect locked**, remove all adhesive drippings from the machine parts. Remove all debris (flawed trays, paper, scraps, etc.) from the area.

STEP “G” DAILY/WEEKLY MAINTENANCE

1. **MAIN Power switch OFF? Disconnect locked out?**
2. Has the immediate area been swept clean?
3. Use goggles and gloves when working on the adhesive system.
4. During maintenance have the guards been stored in a manner that protects the interlock system?
5. When maintenance is completed, are **all the guards in place?**

Settings and Adjustments

The following section lists some of the main setup and adjustment procedures.

Altivar Settings

The following table lists the standard settings for the Square-D Altivar unit.

460VAC

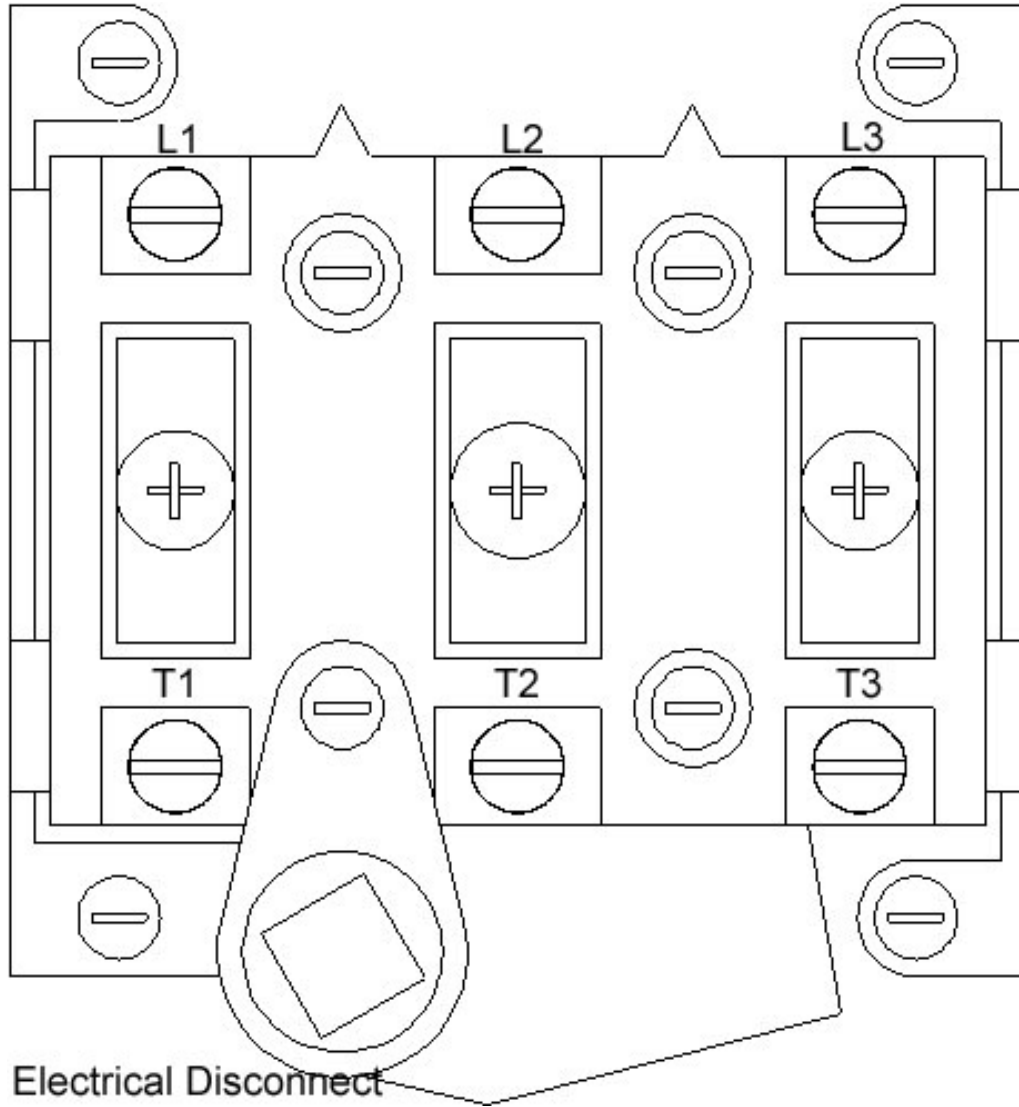
Variable	Setting	Description
ACC	.1	Accel time
DEC	.1	Decel time
LSP	35	Low speed setting
HSP	85	Or match the output of the machine
Idc	2	Auto DC injection time
Tdc	.5	Auto DC injection time
L2A	Yes	This allows access to the level 2 parameters
Tfr	90	Or match the output of the machine
Bfr	60	Base Frequency

230VAC

Variable	Setting	Description
ACC	.1	Accel time
DEC	.1	Decel time
LSP	35	Low speed setting
HSP	85	Or match the output of the machine
Idc	3.6	Auto DC injection time
Tdc	.5	Auto DC injection time
L2A	Yes	This allows access to the level 2 parameters
Tfr	90	Or match the output of the machine
Bfr	60	Base Frequency

Connecting to Electrical Power

1. Check for correct voltage and phasing prior to connecting the electrical power to the Blissomatics.
2. Check for rotation after the immediate machine area is clear of persons, by applying power.
3. Rotation direction can be determined by comparing machine rotation with arrows located on the machines Vacuum Feed mount plates.
4. If rotation is incorrect on a 3-phase machine, reverse wires T1 and T2 in the Main Power control box.
5. Single phase is preset at the factory.

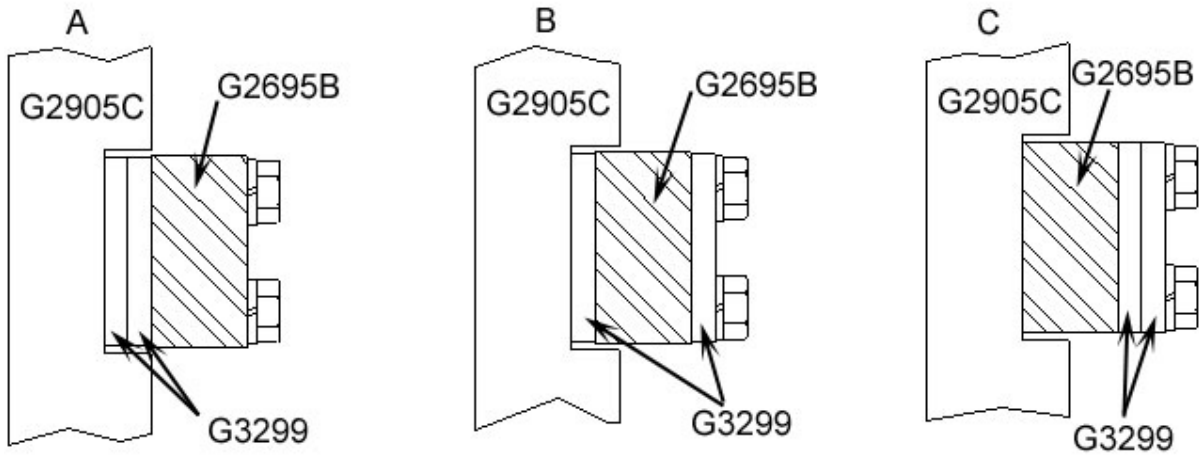


Vertical Guides to Horizontal Bar Spacing

The following spacer placement depends upon external flange width. Spacer G3299 is 1/4" thick and is used as such:

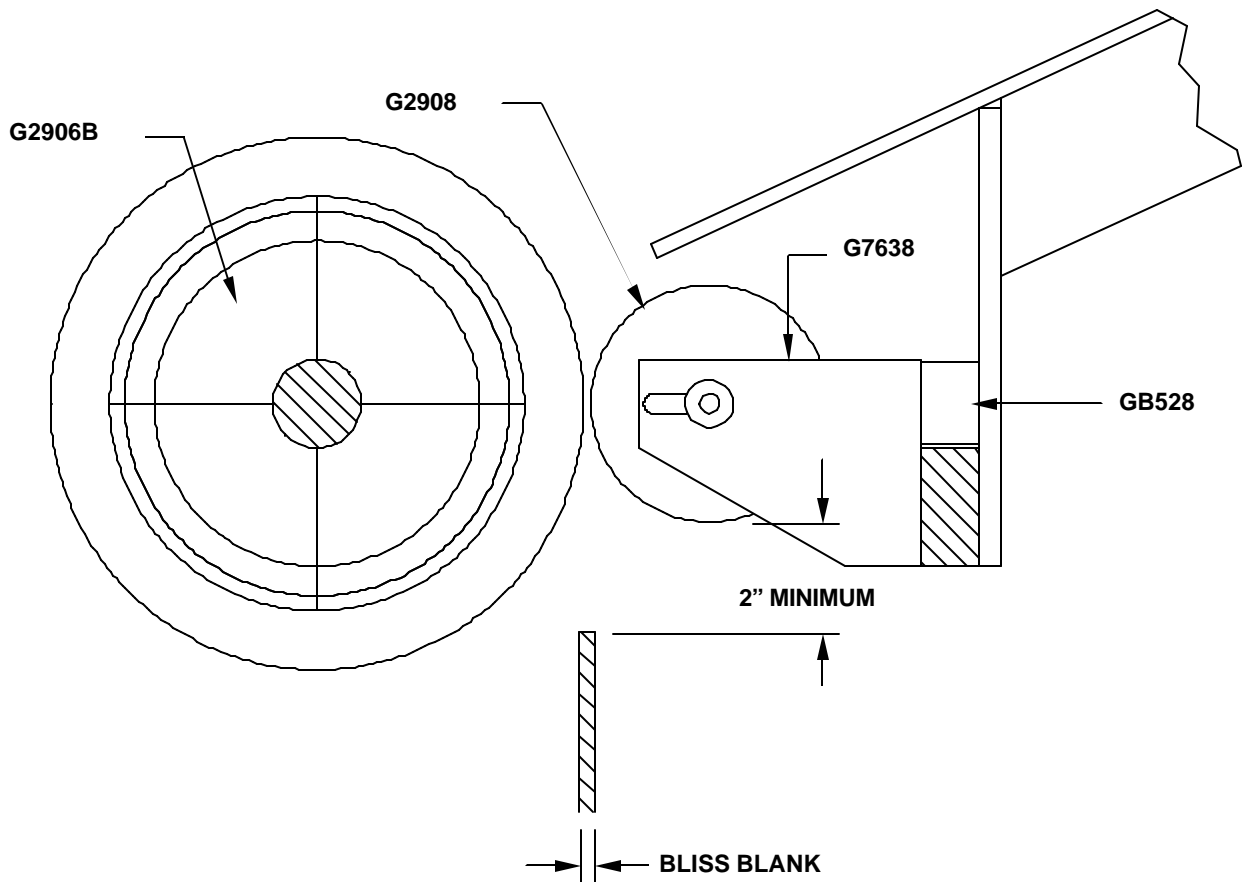
- Figure A for 1 1/2" flanges (flaps)
- Figure B for 1 3/4" flanges (flaps)
- Figure C for 2" flanges (flaps)

Note: Flanges over 2" require special machine parts. Stack the spacers on the outside of the bar when not in use. The spacer G3299 is 1/4-inch thick.

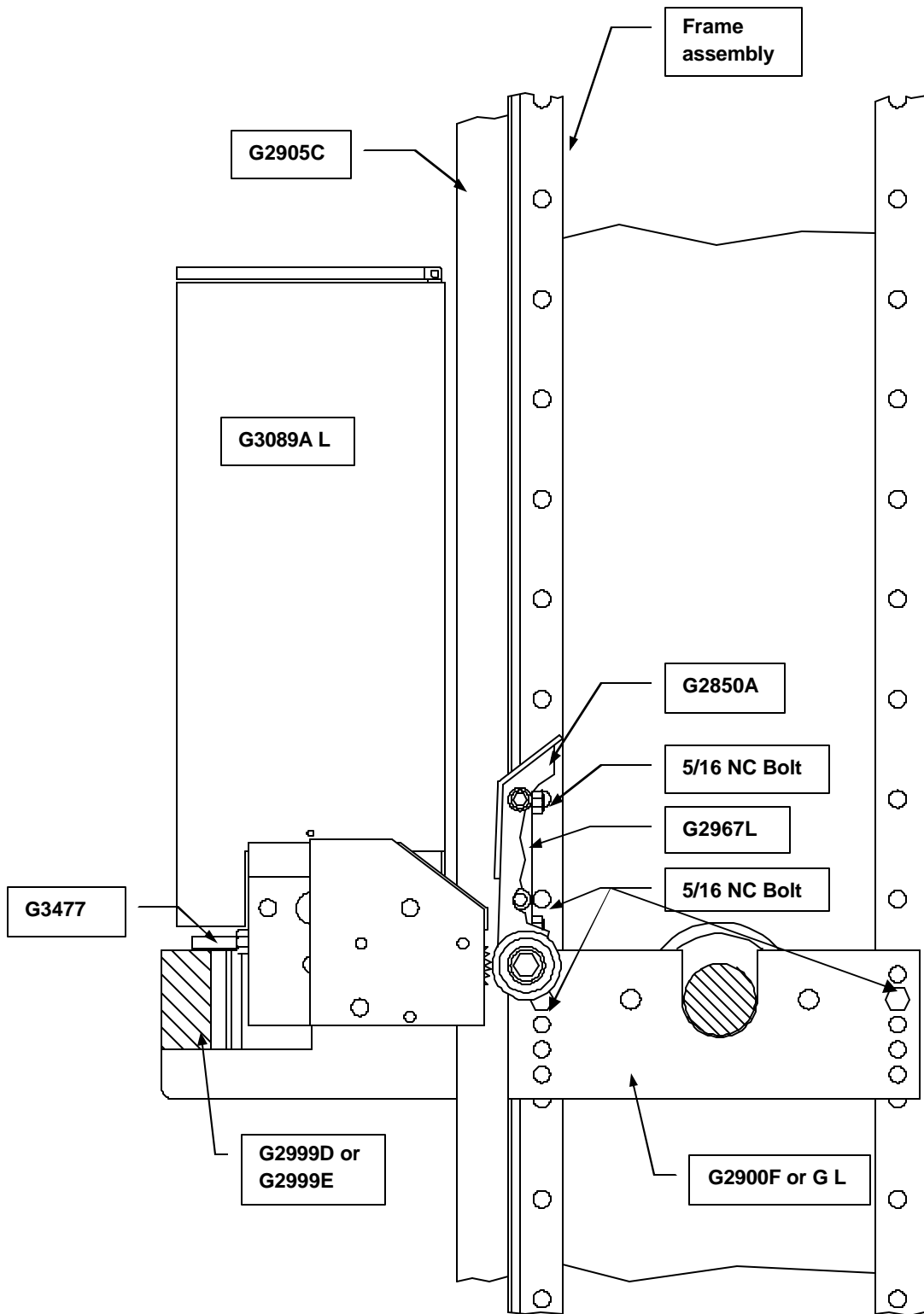


Feed Roll Assembly

1. Loosen the feed chain idle sprocket assembly until it freely slides on its mount.
2. Loosen 5/16" bolts on melt pot clamp G2967 R/L, on the vertical guide bar G2905C.
3. Remove support roller from the melt pot bracket under the idle roller mount bar.
4. Slide the melt pots up and remove the four bolts from the feed roll mount bar G2905C.
5. With the blank resting on bottom stop, position the feed roll assembly to attain the ¼-inch minimum measurement shown below.
6. Back up the roller mount plate G2850A R/L. This part must be loose to move the melt pots into position.
7. Slide the melt pots down until the support roller G3477 rests on the idle roller mount bBar G2999.
8. Reattach the glue pump support to the melt pot bracket. Tighten all bolts and the chain idle sprocket assembly.
9. For multiple size forming, set the feed roll assembly height to the largest size. It may be necessary to move the vacuum feed assembly to allow for larger blanks.

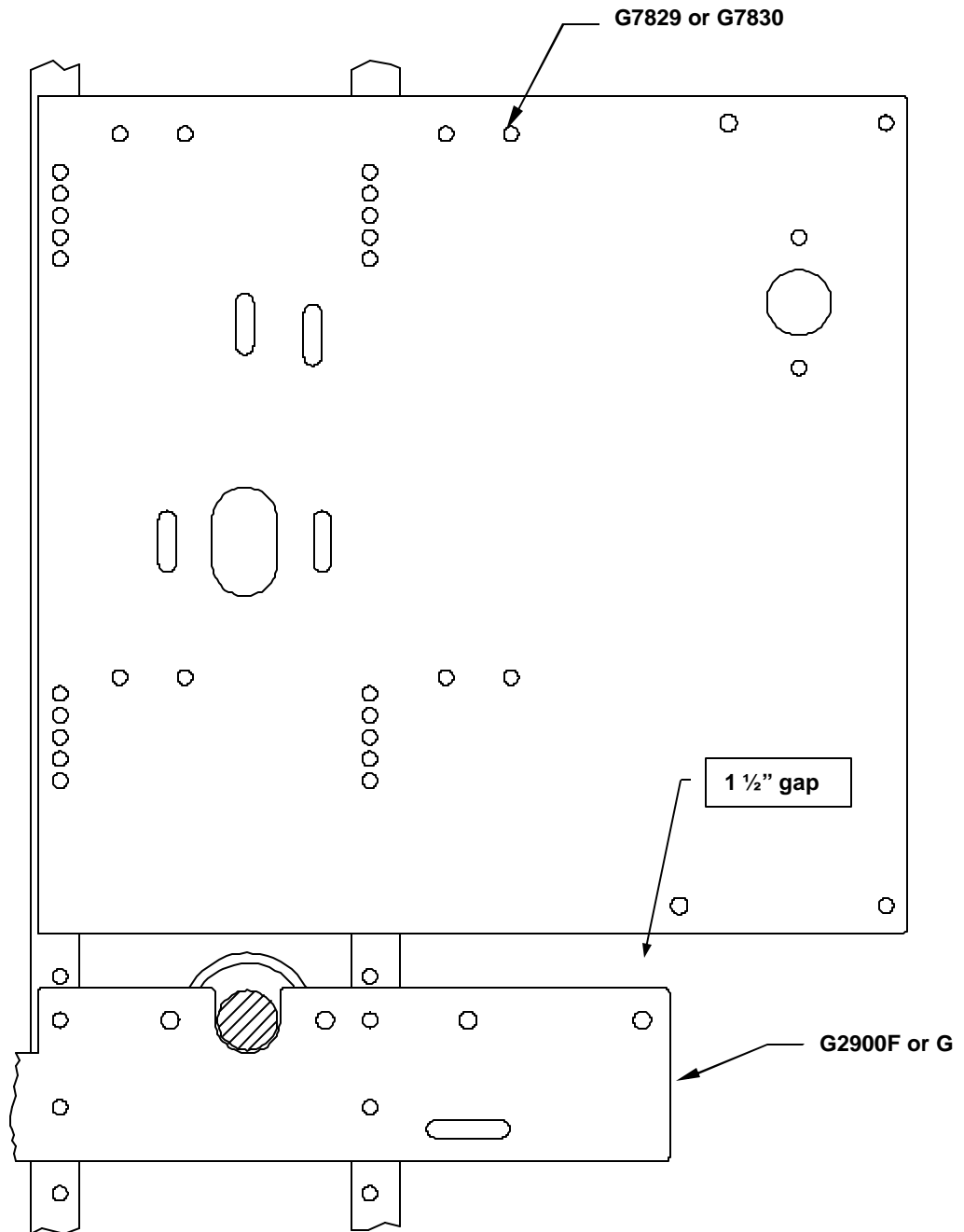


Feed Roll Assembly Height Adjustment



Vacuum Feed Mount Plates

1. Complete the feed roll assembly height adjustment before adjusting the vacuum feed mount plates.
2. Mount the vacuum plates G7829 & G7830 to the machine frame uprights.
3. Position the mount plates above the top of the feed wheel shaft mounting plates G2900F R/L for BF 400V and G2900G R/L for BF 600V.



Mandrel

End Pick Adjustment

Adjust the end picks before installing the Mandrel in the Blissmatic.

1. Adjust the bliss end panel to extend 1/32-inches beyond the Mandrel G2681 R/L
2. Verify the knife edge of the end picks are buried into the end panels.
3. There are three sizes of end picks combined with three sizes of support bars used to pick the flutes.

END PICK REQUIRED (VIEW A-A)

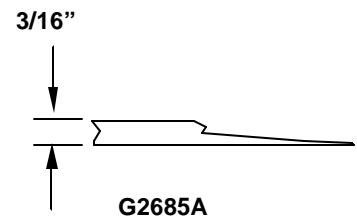
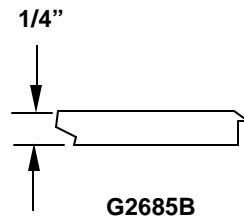
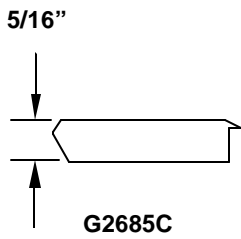
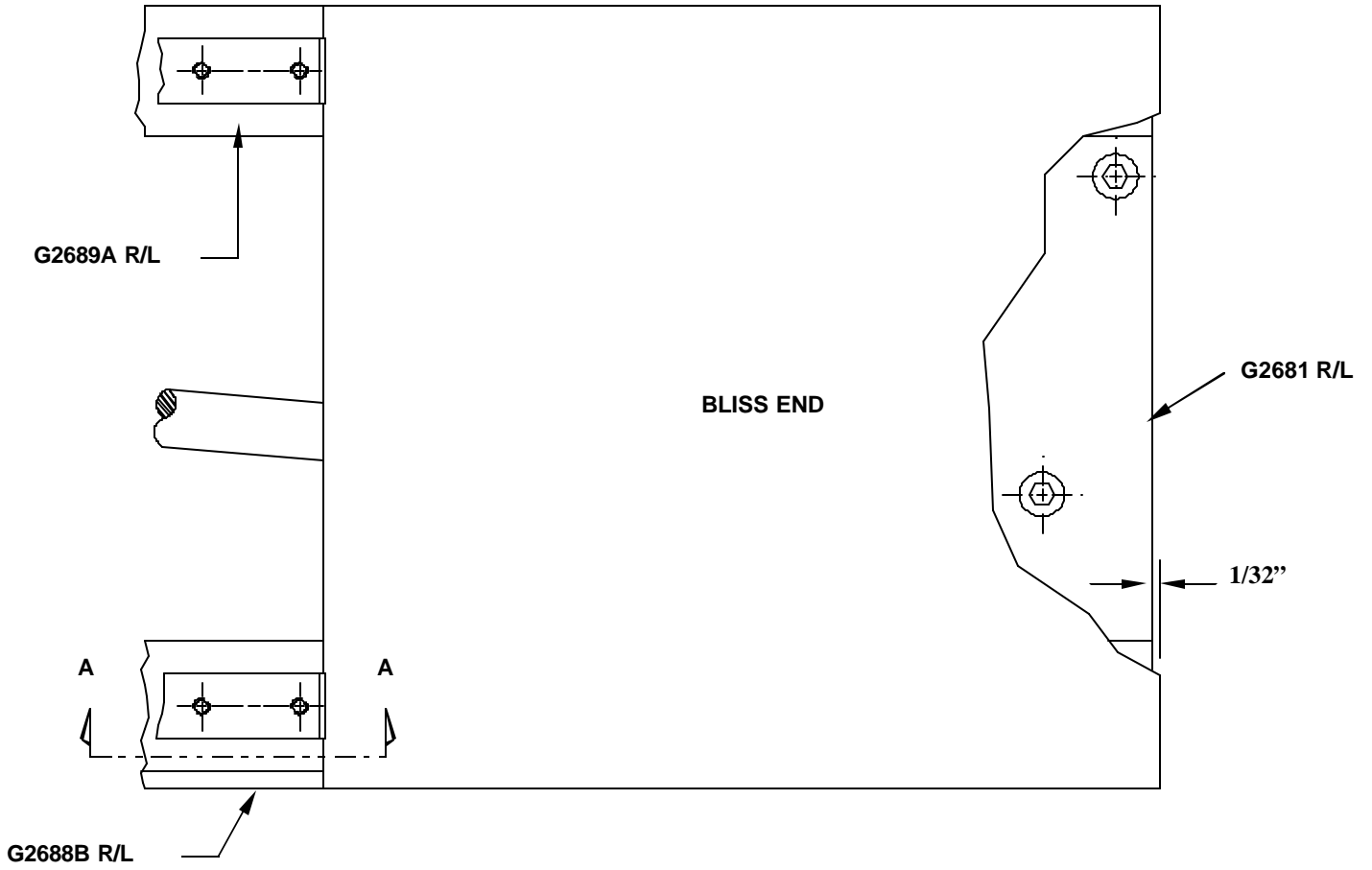
SUPPORT BAR REQUIRED

G2685A _____ for A, B and C flute end panels _____ G2888A & G2887A

G2685B _____ for Double wall ends 1/4" thick _____ G2888B & G2887B

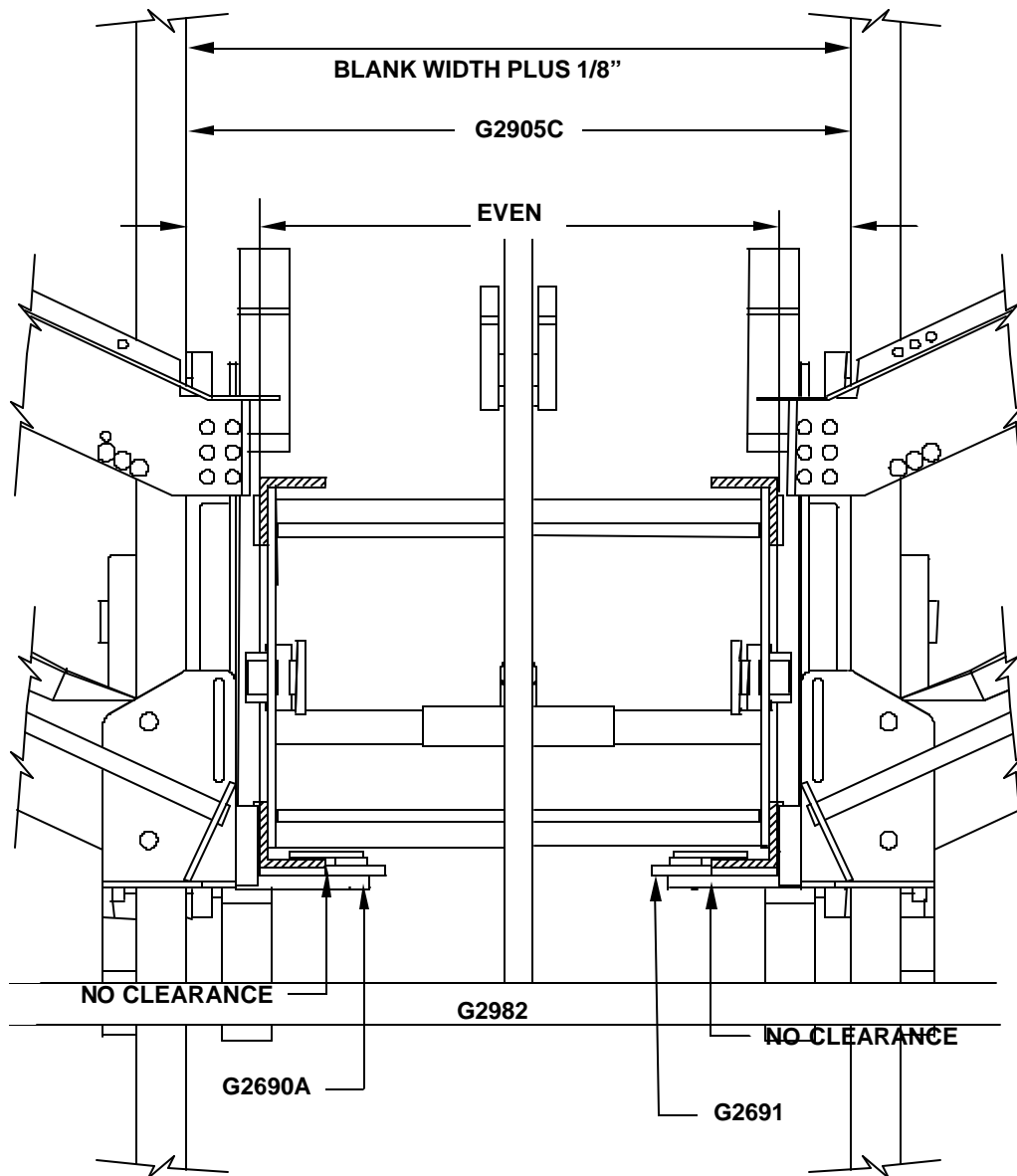
G2685C _____ for Double wall ends 5/16" thick _____ G2888C & G2887C

Mandrel End Pick Adjustment



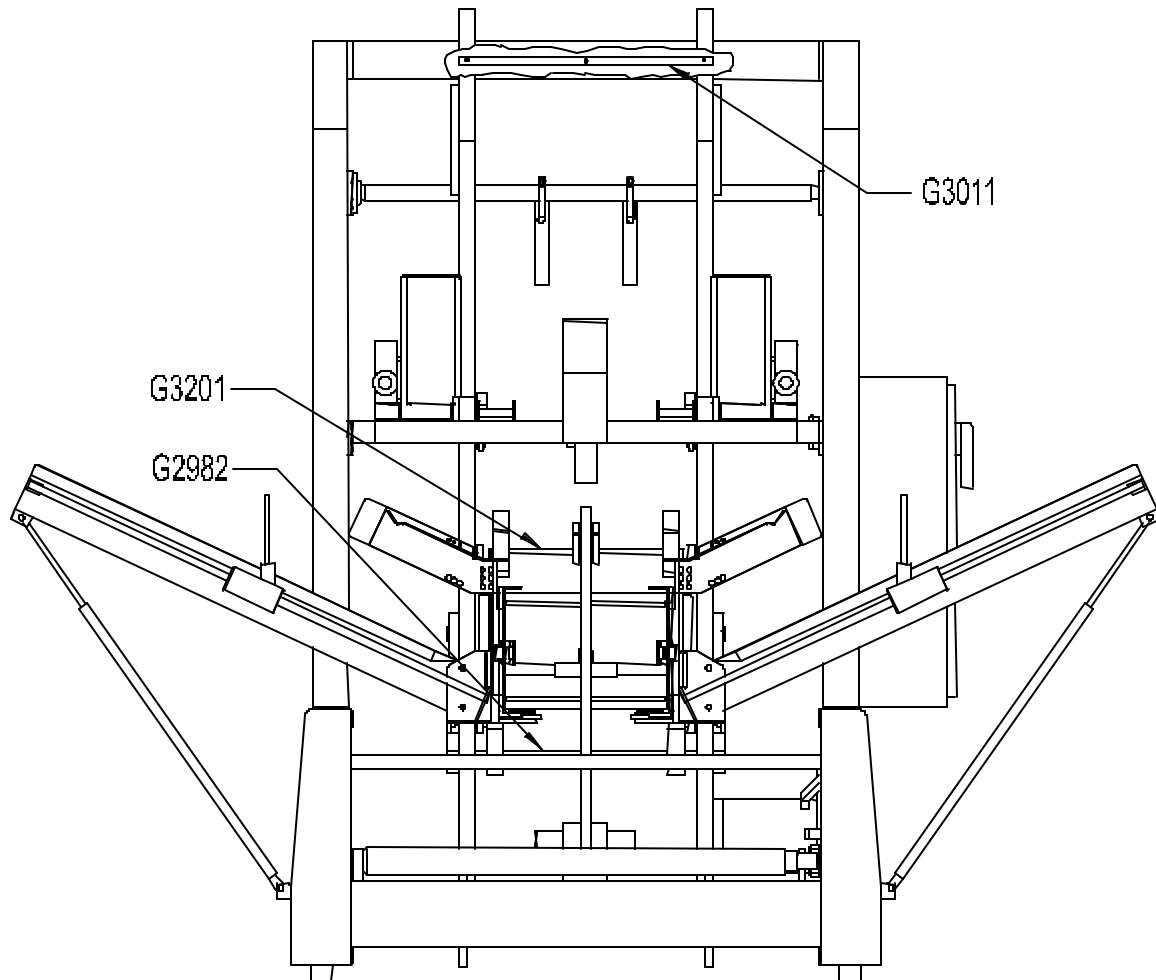
Mandrel Installation

1. Set the vertical guide bars from top to bottom at the measured blank width plus 1/8-inch.
2. Loosen (8) 1/4" x 1" flat head bolts in the rail guide caps.
3. Slide the mandrel through compression into the rail guides G2691.
4. Center the mandrel by adjusting the rail guides G2691 to **zero** clearance.
5. Measure the distance from the inner edge of the mandrel rails G2688F R/L to the inner edge of mandrel support plate G2690A R/L. The measurements should be the **same** on both sides.
6. Move to the front of the mandrel and measure from the edge of the vertical guide bars G2905C to the edge of the mandrel as shown. Measurement should be **equal on both sides**.



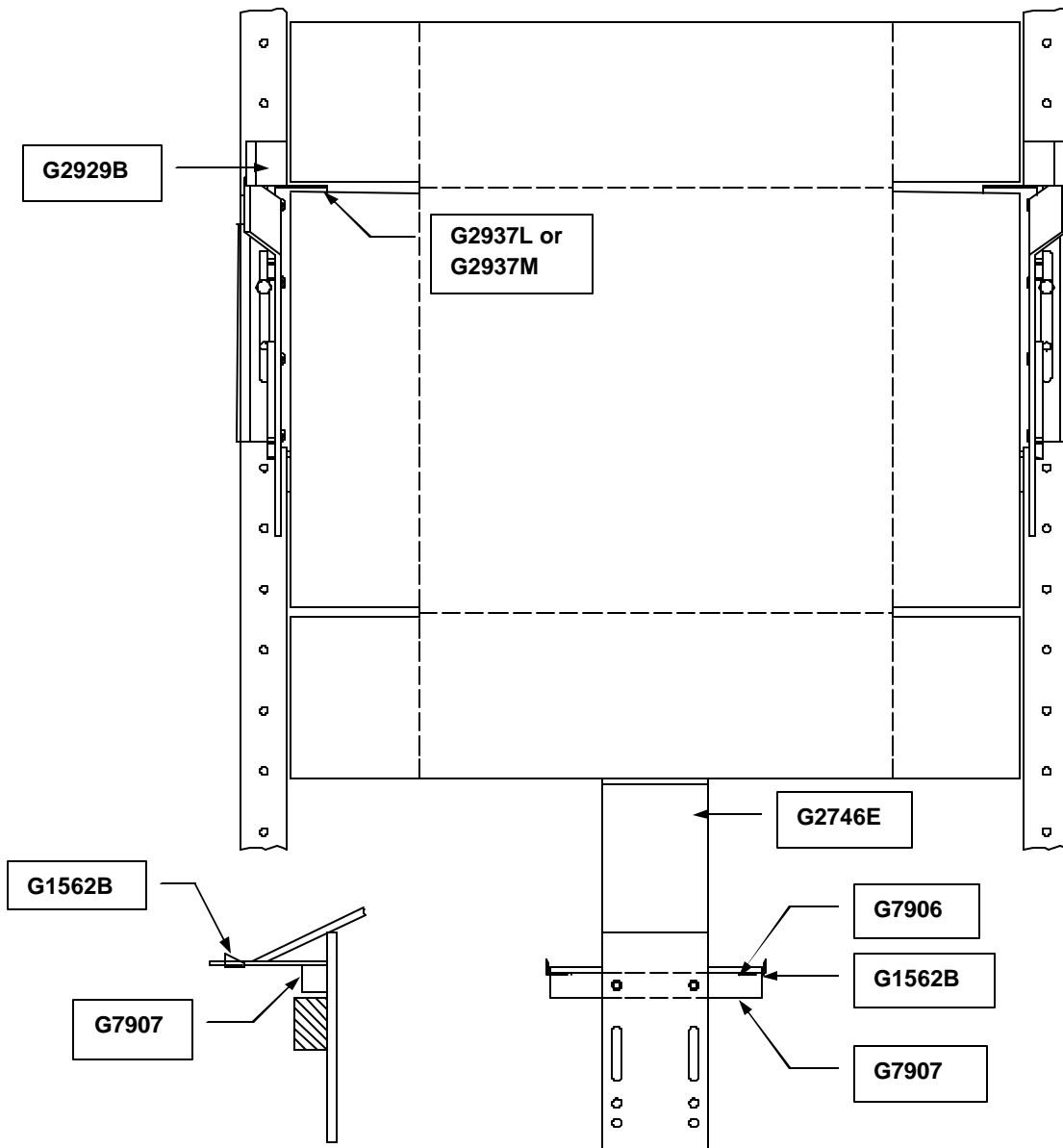
Vertical Guide Bar Adjustment

Spacer bars are required for each individual box size and are placed as shown below. Two lower spacer bars (G2982) are installed; one in the front and one in the rear. Use a top spacer bar (G3011) of ¼-inch material to space the vertical guides out. The compression area bar (G3201) is placed at the rear of the former.



Blank Hopper Adjustment

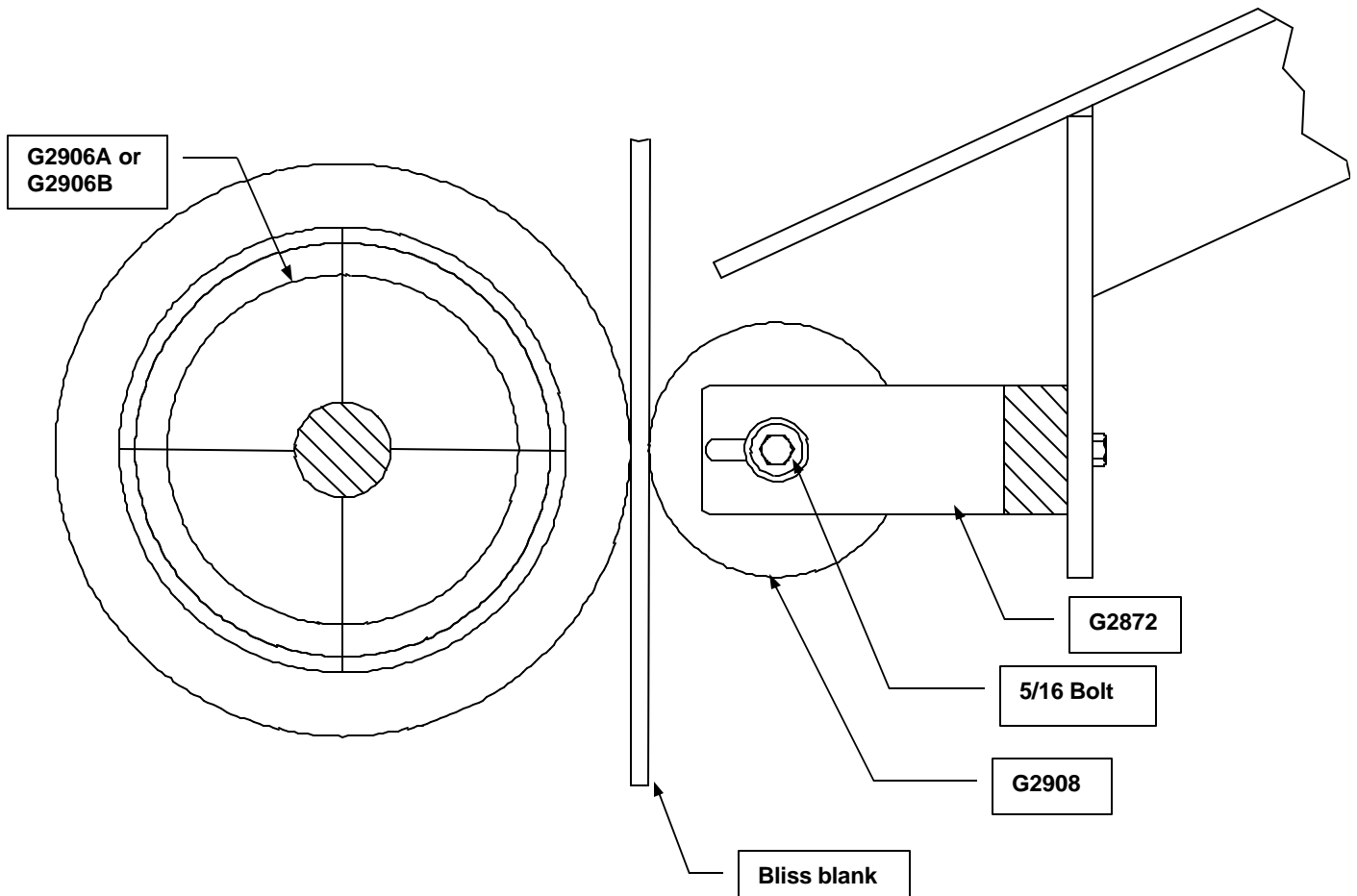
1. Set a blank on the loading ramp G2746E.
2. Adjust the hopper panels G2904B vertically until the support blade aligns with the top cut.
3. Slide some blanks down the hopper to the knife stops G1562B R/L. (Do not hand push.)
4. Adjust the blanks until they are perpendicular to the vertical guide bars.
5. At this point the bottom of the blanks must rest on the ramp G2746E and stop plates G7906.



Idle Roller Adjustment

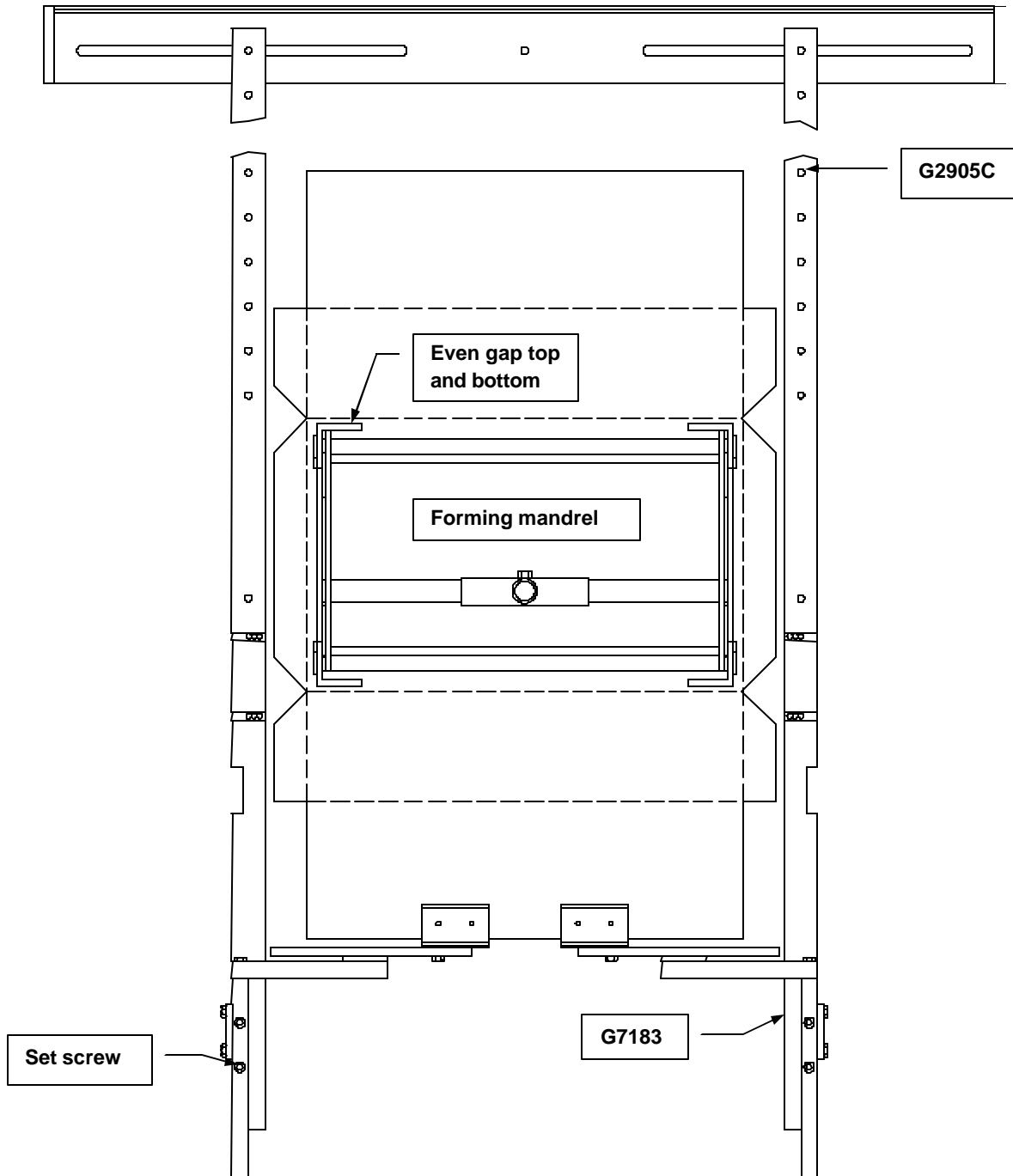
This adjustment varies with the thickness of the blanks.

1. Loosen the 5/16-inch bolts (2) holding the idle roller G2908 to mount G2872.
2. Move the idle roll in towards the feed wheel G2906A or G2906B until the pressure prevents slippage of the blank as it passes between these two wheels.



Bottom Stop Adjustment

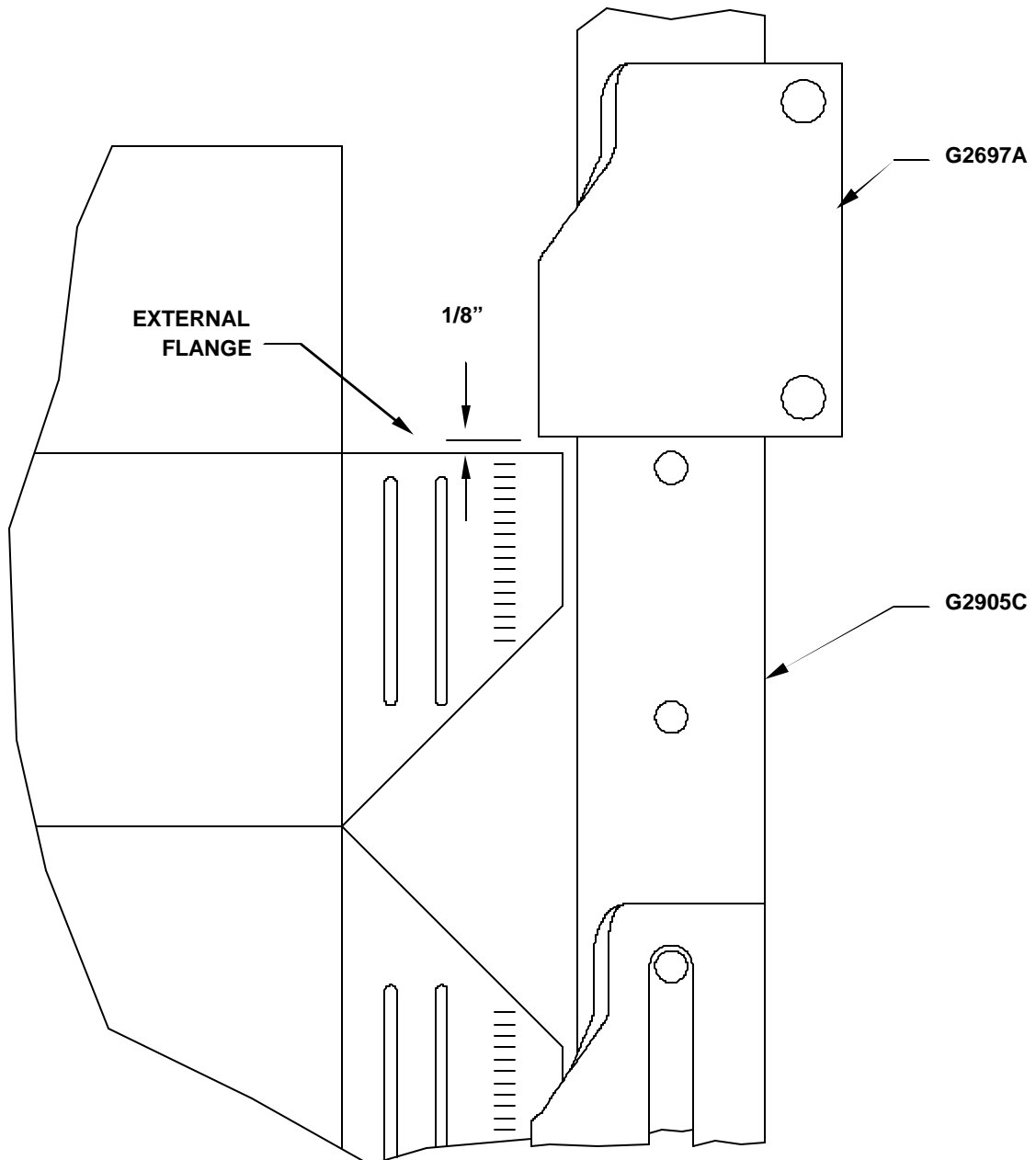
1. Position the mandrel at the end of the return stroke.
2. Place a body blank on the bottom stop.
3. Crank the bottom stop vertically until the forming mandrel outer dimensions match the bottom scoring of the body blank, with even clearance top and bottom.



Rebound Stop Adjustment

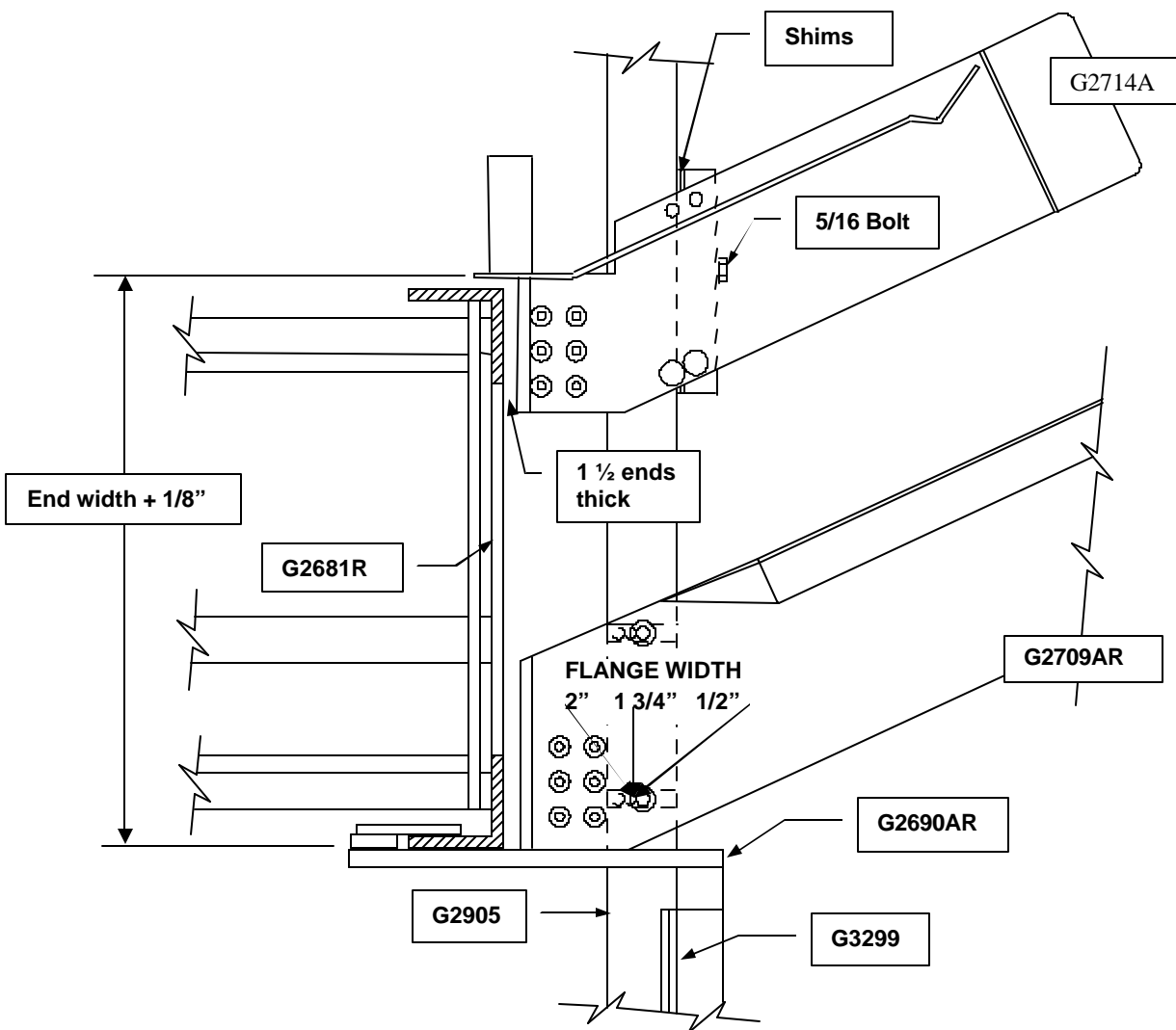
Rebound Stop G2697A is located on the right hand vertical guide bar G2905C.

1. Loosen the 5/16-inch bolt on stop G2697A from the rear and position the rebound stop 1/8-inch above the external flange as shown.
2. Position the rebound stop as shown, as long as the external flange is not cut back. Retighten the loosened bolt.



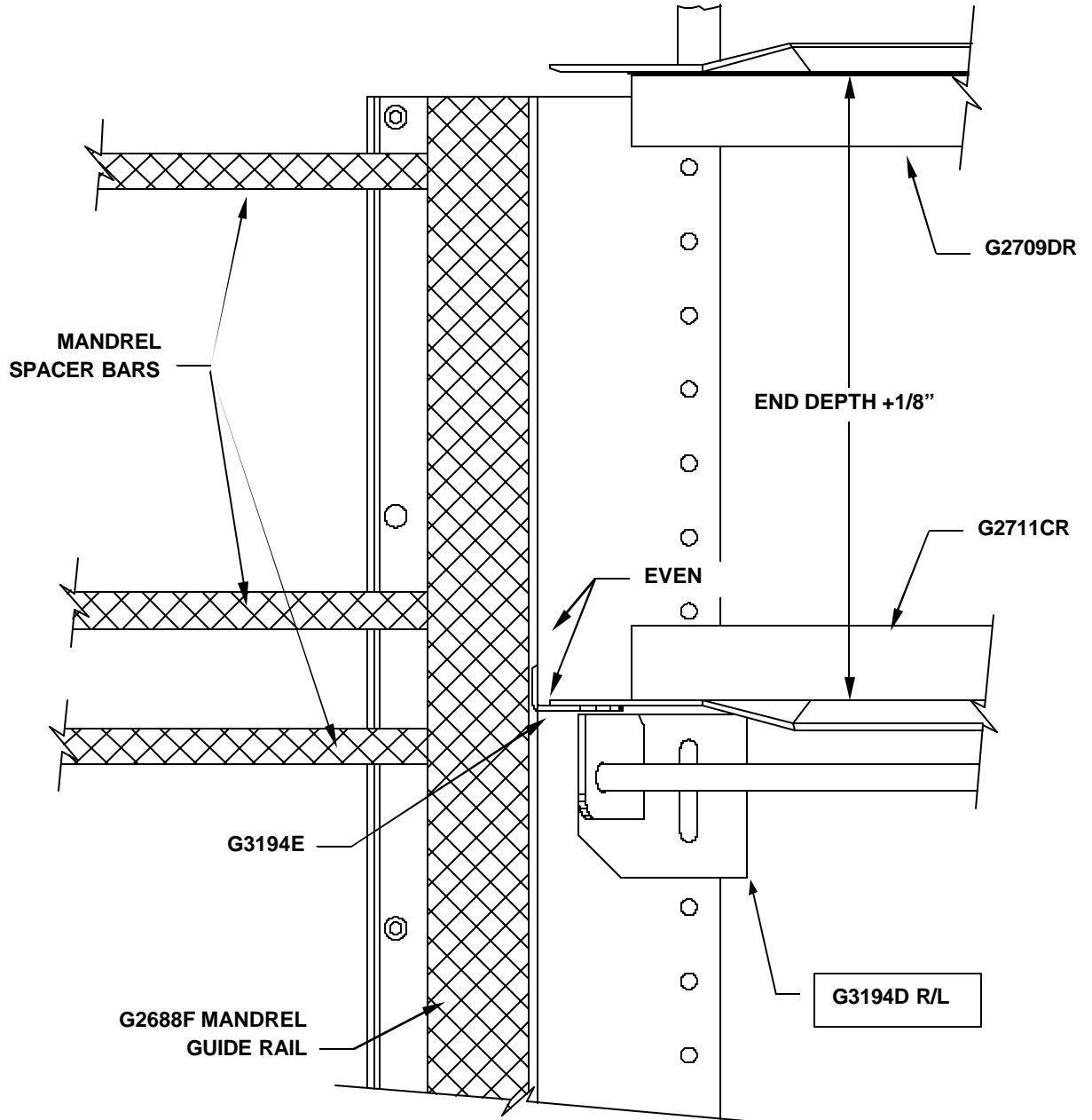
End Panel Hopper Adjustment

1. Adjust the box end guide G2714A R/L vertically by loosening (2) 5/16-inch bolts until the box end guide hopper blade and the mandrel support plate G2690A R/L are one end width plus 1/8-inch.
2. Using 1/8-inch and 1/4-inch shims, adjust the distance between the hopper end gate and the mandrel rail to a measurement of the thickness of 1 1/2-inch ends.
3. The bottom hopper mounts in the hole corresponding to the seal flange width.



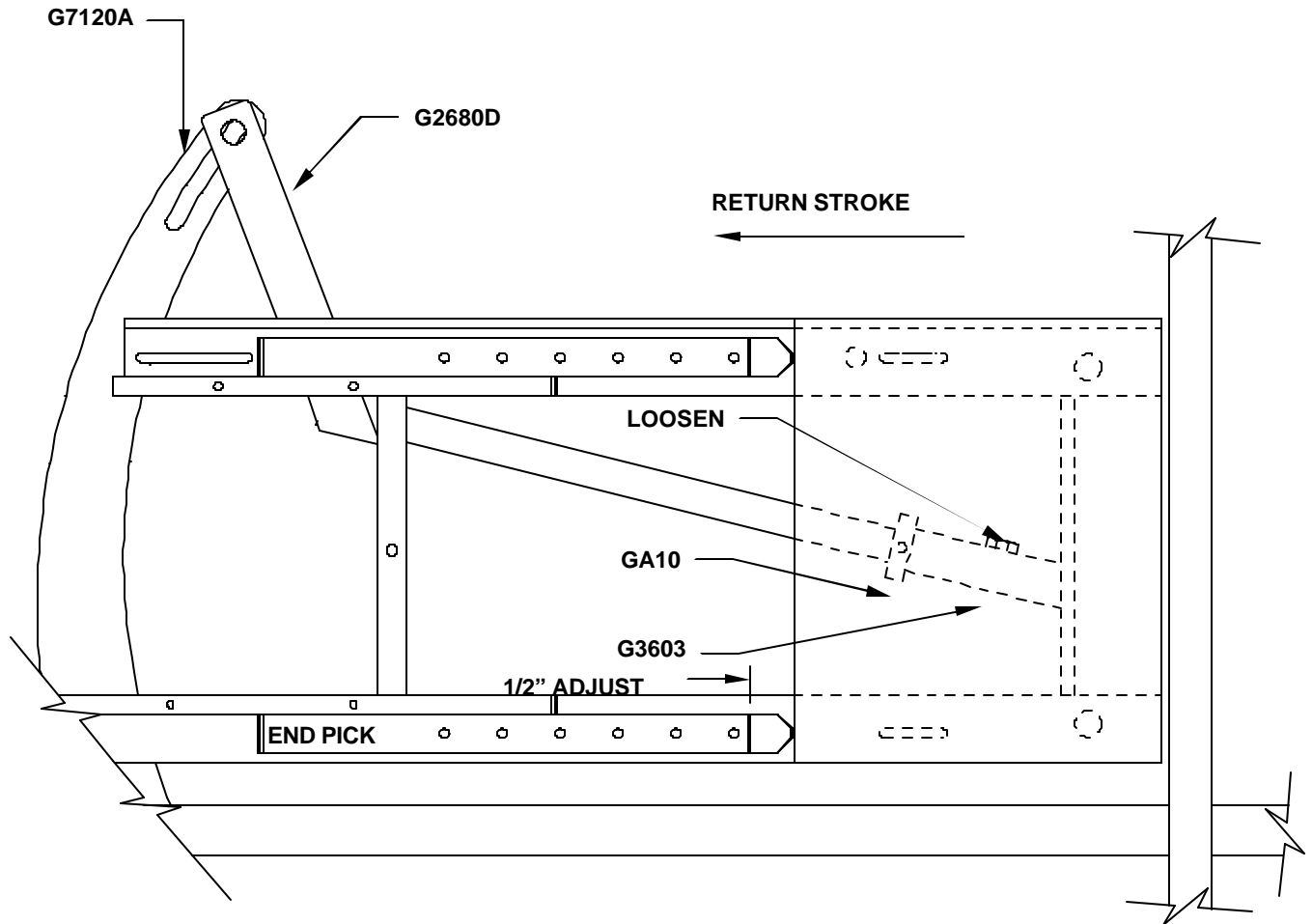
End Panel Hopper Stop Adjustment

1. Adjust the hopper stop tab G3194E R/L until it is even with the mandrel rail G2688F as shown.
2. Adjust the hopper rail mounting bracket attached to the hopper front rail G2711C R/L until reaching a distance between G2711C R/L and G2709D R/L of one end depth plus 1/8-inch.



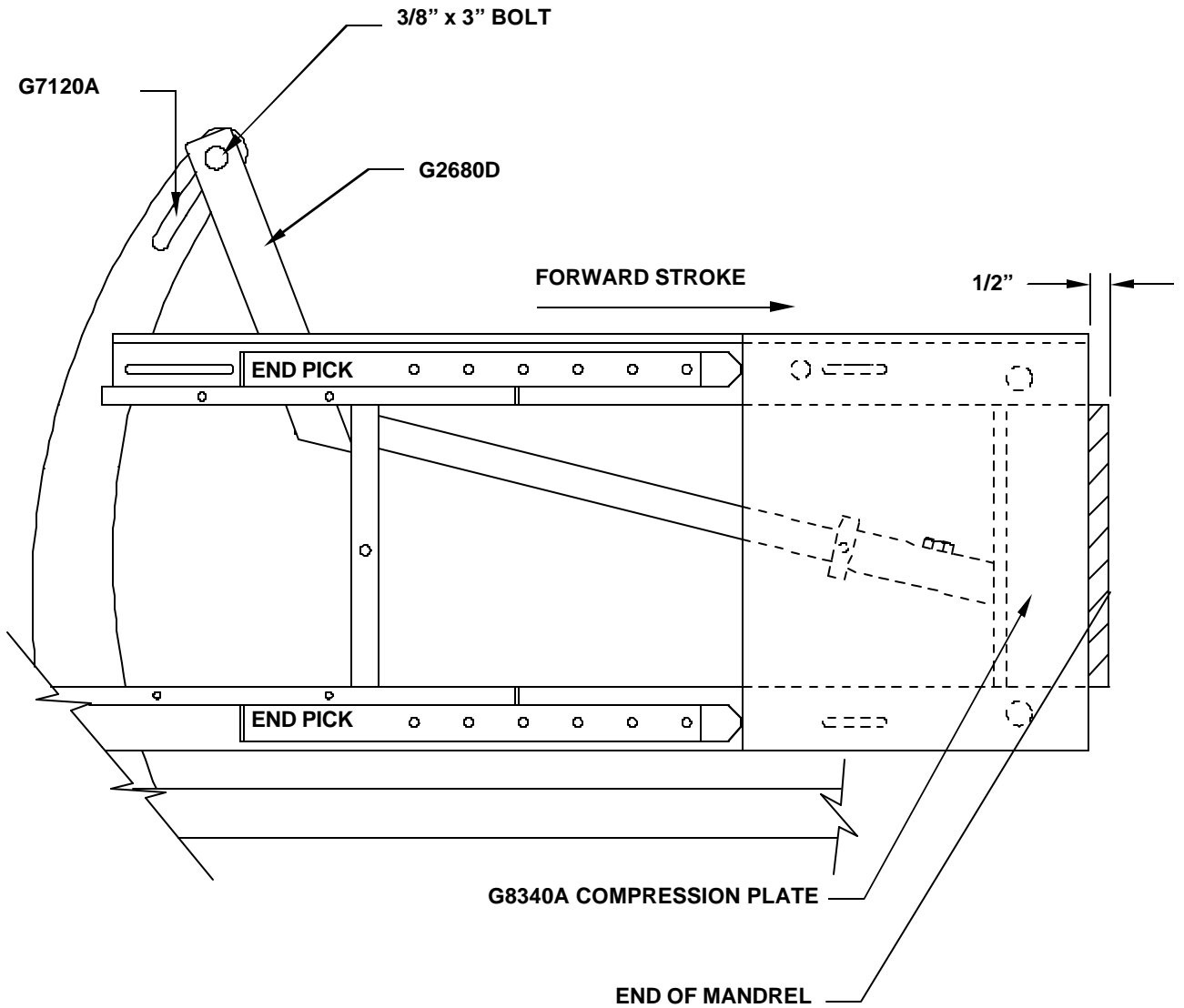
Mandrel Return Stroke Adjustment

1. With the mandrel at the end of the return stroke, loosen the set screw in G3603 and in the set collar GA10.
2. Adjust the mandrel to allow the end picks to clear the end panel by 1/2-inch as shown below.
3. Retighten the set screws when complete.



Mandrel Forward Stroke Adjustment

1. Feed the post arm G7120 at its most forward position into the compression section.
2. Loosen the 3/8" x 3" bolt in the feed post arm and move the connecting rod G2680D up/down in the slot until the mandrel end is 1/2-inch, but not more than 3/4-inch past the compression plate G8340A.
3. Tighten the 3/8" x 3" bolt when complete.



End Panel Stripper Adjustment

1. Strippers G7416A prevent the mandrel from pulling a carton from the compression on the return stroke.
2. Adjust the strippers 1/8-inch behind the carton as it is fully enclosed into compression section.
3. The stripper quantity and size depends upon the carton size.

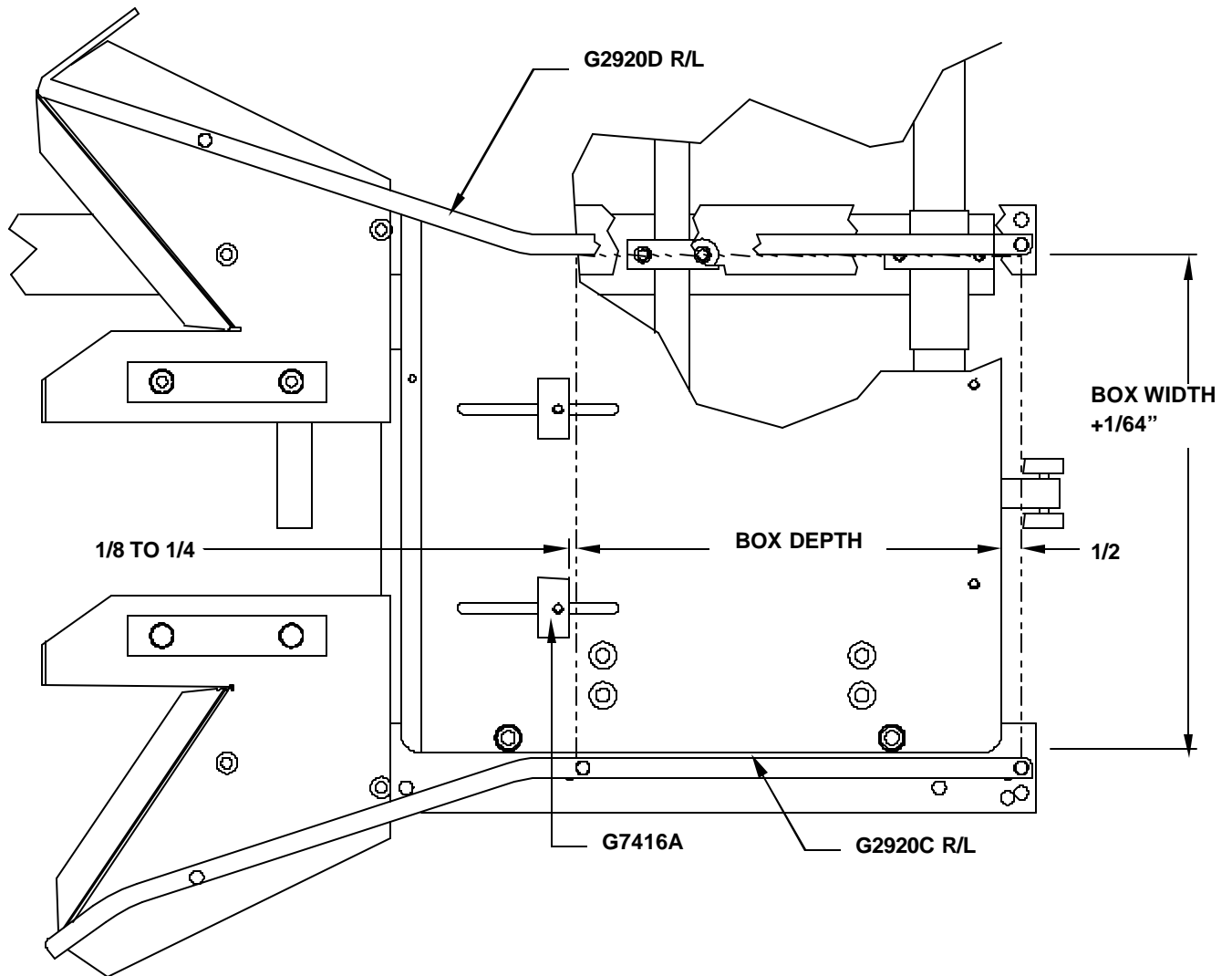
Stripper Sizes for End Panels

G7416A – 3/16" x 4" for "C" flute or "B", "C" double wall.

G7416C – 3/16" x 1 1/2" for "C" flute or "B", "C" double wall.

G7416D – 1/4" x 1 1/2" for Tri-wall.

G7416E – 5/16" x 1 1/2" for Tri-wall.

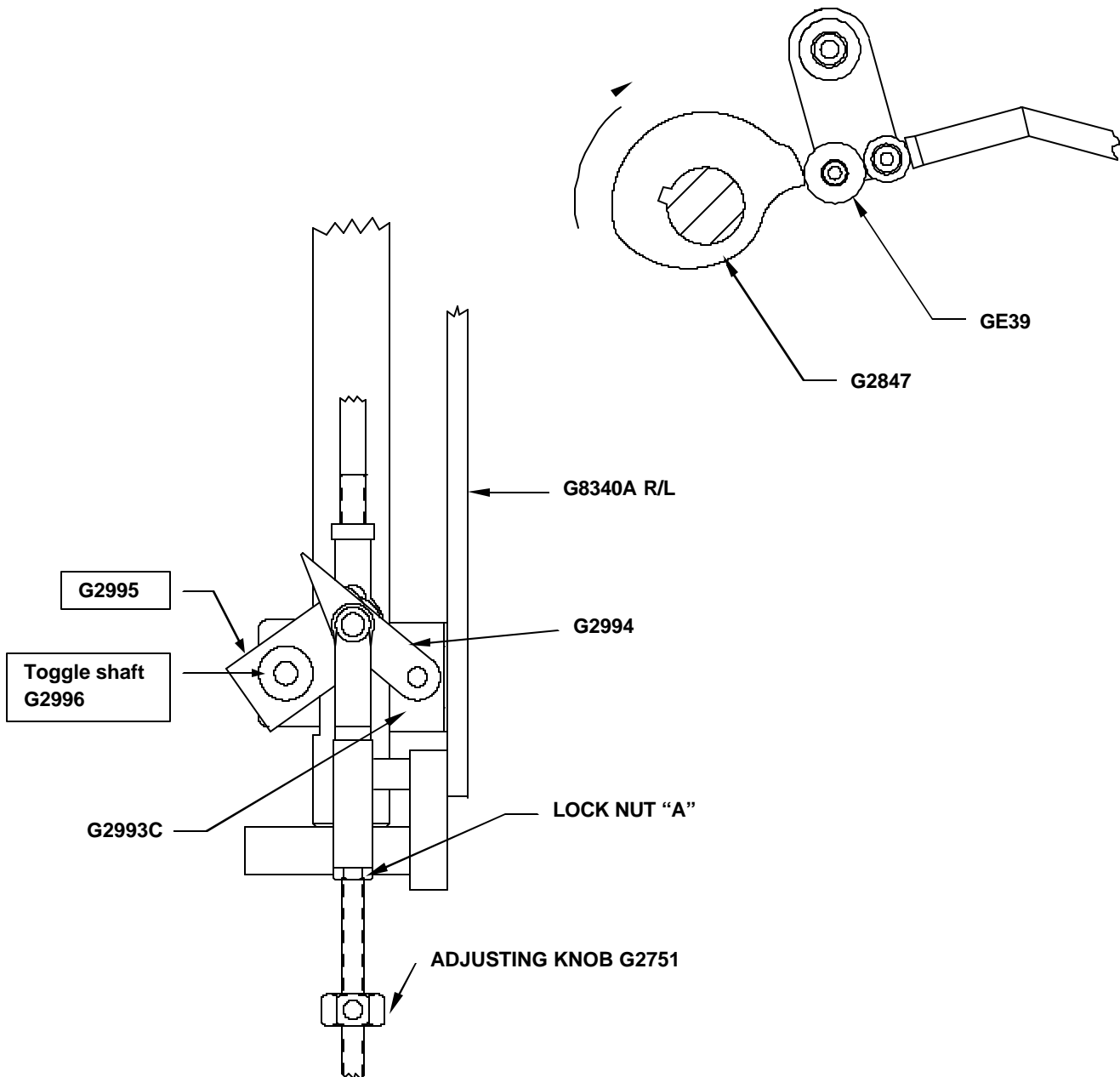


Compression Plate Linkage Adjustment

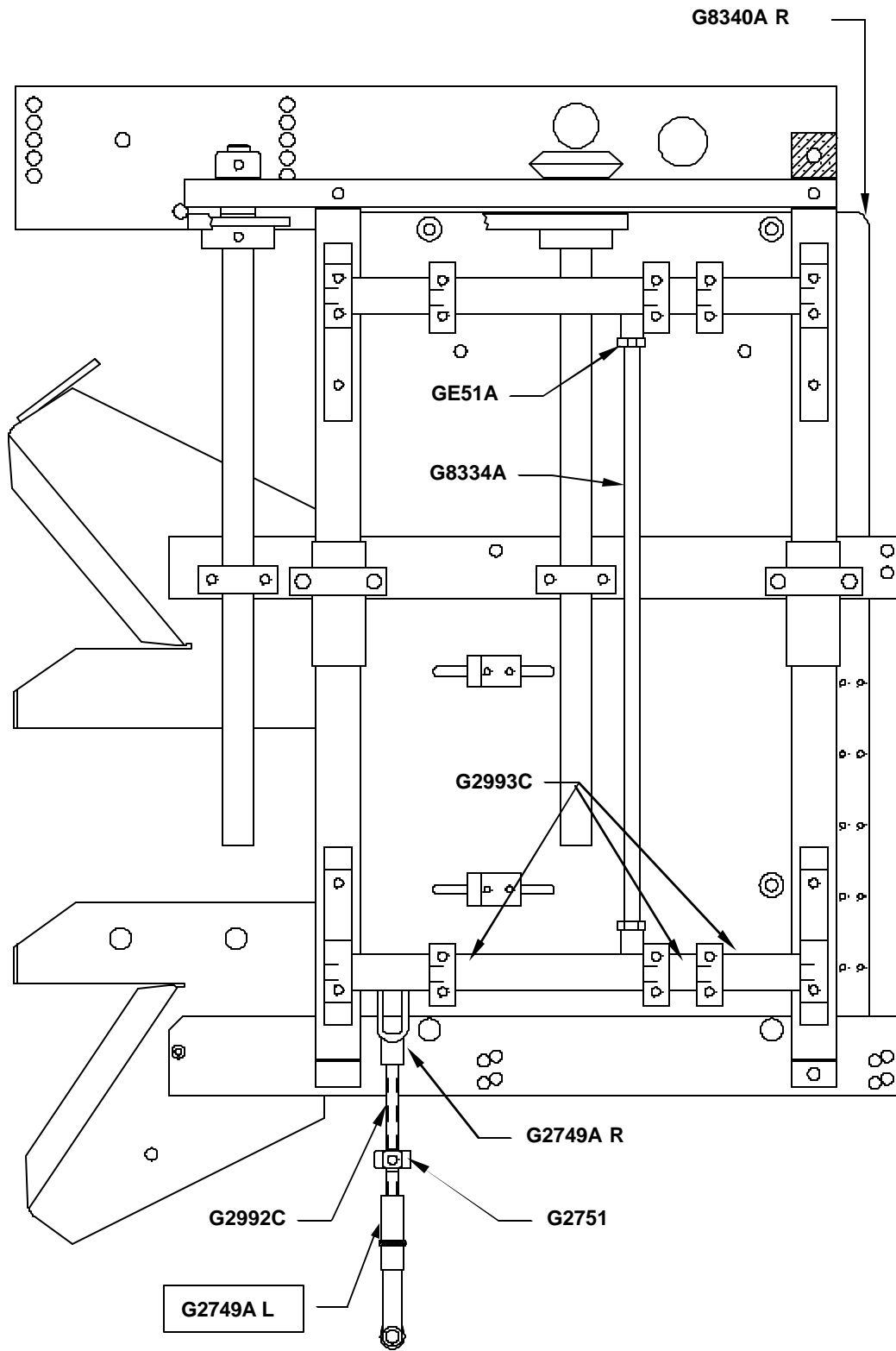
1. Set the cam roller GE39 on the high point of the cam G2847.
2. Loosen lock nut "A" and turn the adjustment knob G2751 to bring into contact the toggle shaft G2996 and the clamp link G2994 as shown below.
3. Adjust both sides, never one side only. If more compression is required, add shims between the plate G8340A R/L and the mount bar G2993C.

Note: If the carton pulls out with the mandrel or with heavy stripper indentation, see the troubleshooting section of this manual.

If problems persist, loosen lock nut "A" and turn the knob G2751 a ½ turn, both sides, providing a gap between G2993C and G2994. Repeat if necessary, but do not exceed two full turns.

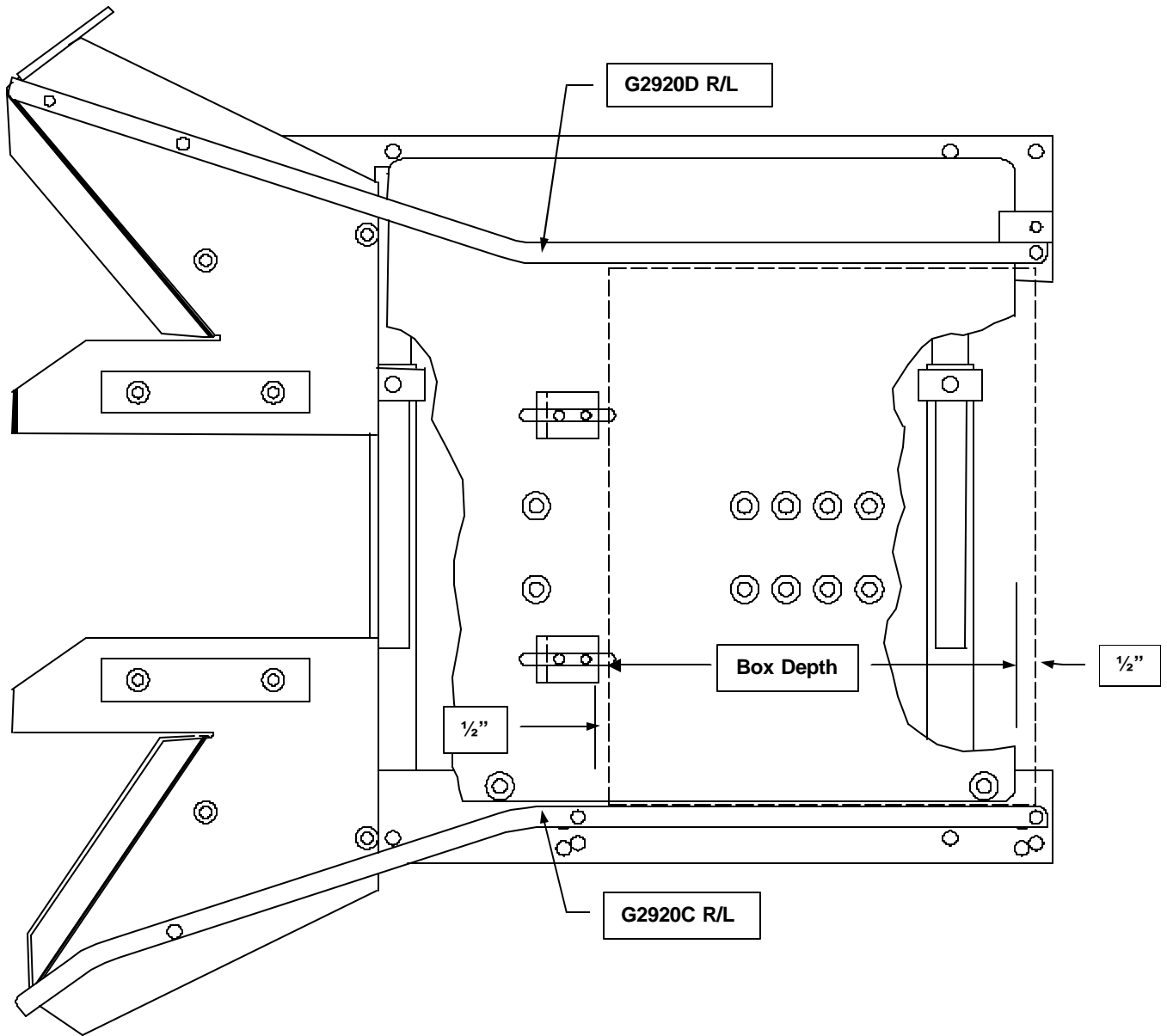


Compression Plate Linkage Adjustment



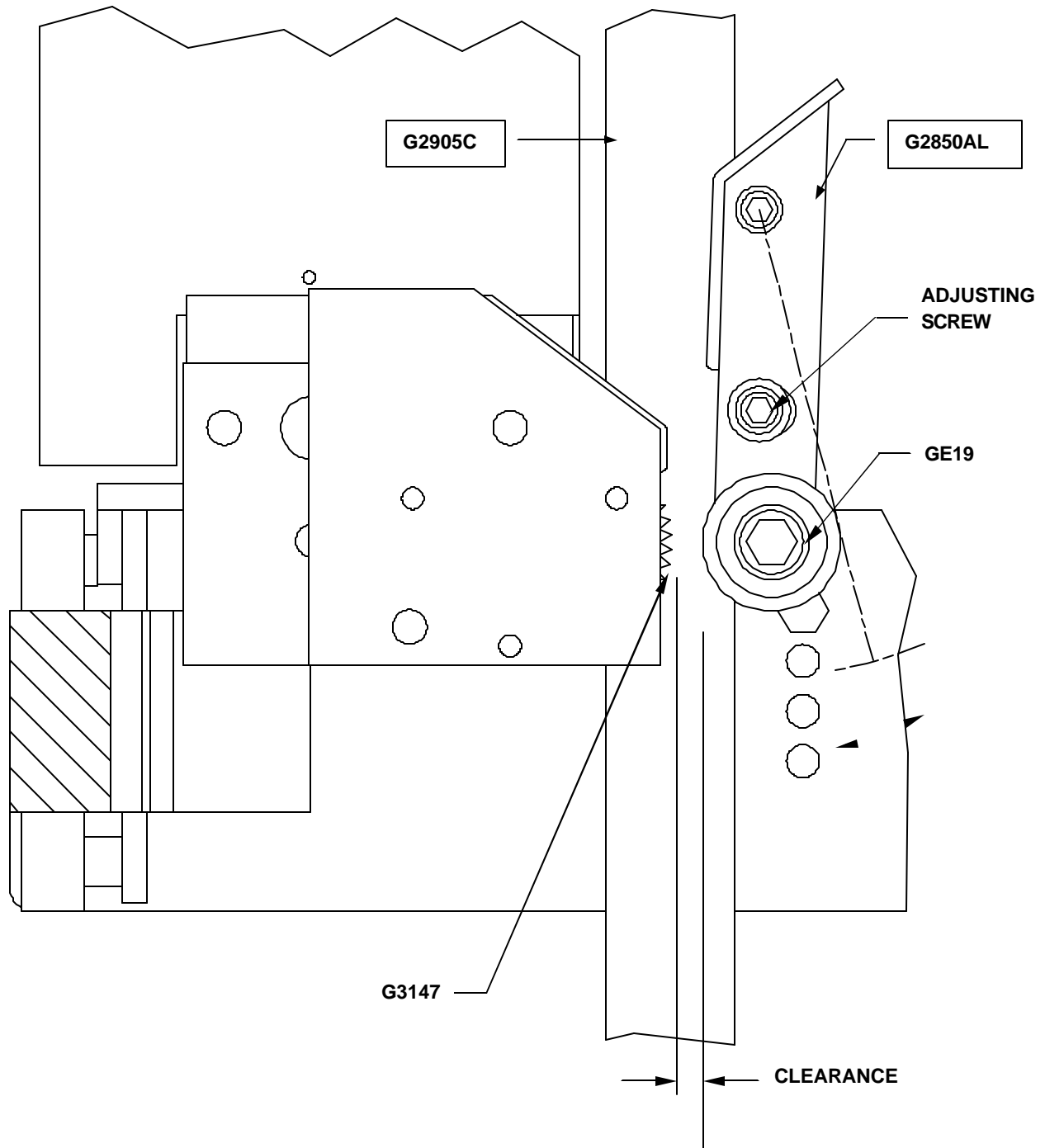
Top Compression Adjustment

1. Place a **complete, but unglued**, carton into the compression chamber.
2. Crank the compression vertically to obtain clearance of 1/64-inch between the compression shoes and the carton. In some cases, the rear edge of the compression is adjusted to 1/32-inch to allow better carton ejection.



Glue Pump to Back Up Roller Adjustment

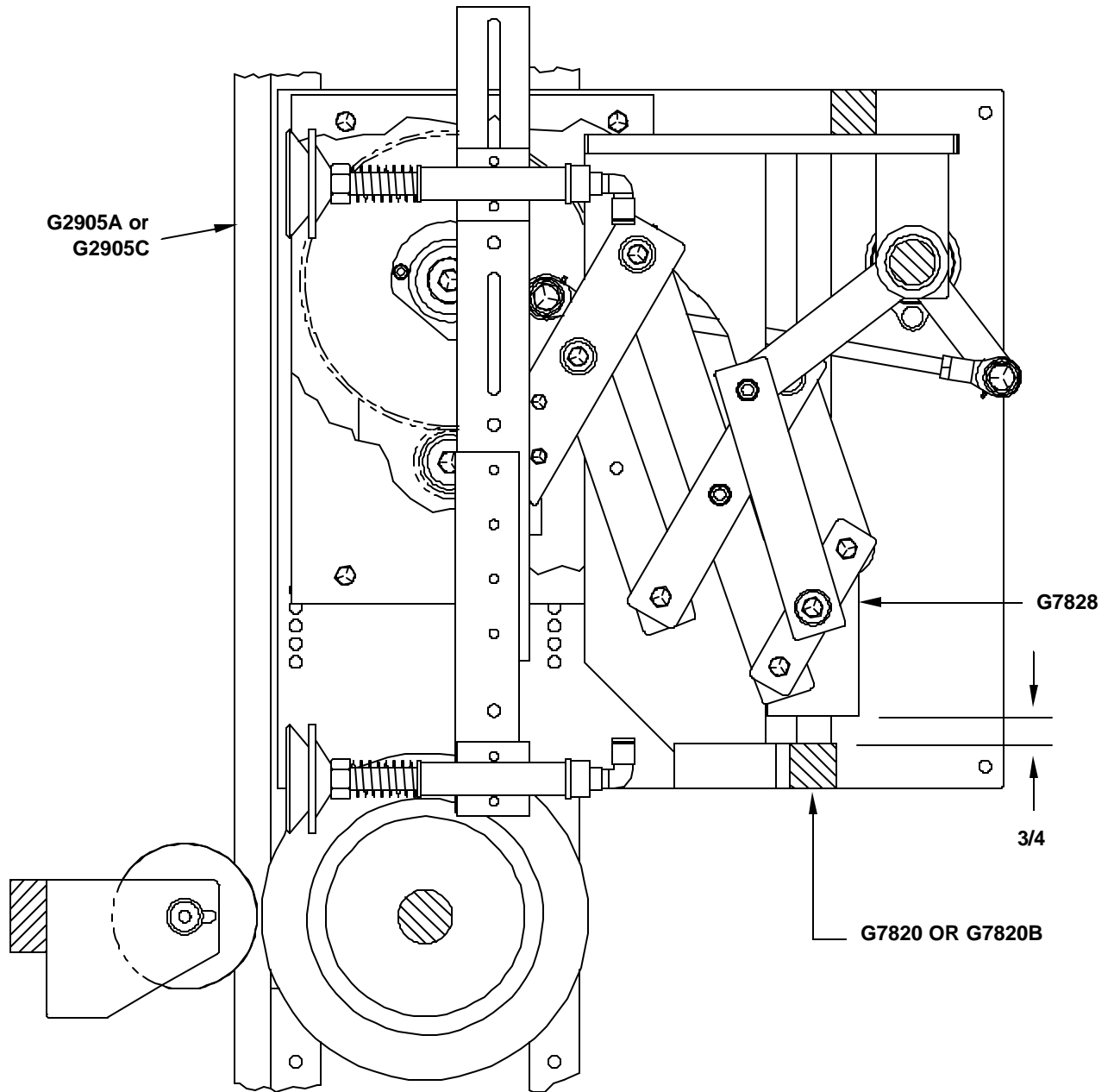
1. Loosen both top and bottom Allen cap screws as shown.
2. Adjust the back up roller GE19 close enough to the glue pump serrated wheel G3147 to leave visible teeth marks on the corrugated blank and turn the wheel as the blank passes between them.
3. If teeth marks are too shallow a “skipping” glue pattern results.



Vacuum Feed

Slide Bearing Block Adjustment

1. Disconnect the vacuum feed drive chain.
2. Jog the mandrel during the return stroke until the mandrel's front end is even with the front of the vertical guide bars G2905C. This is the **original start position** used during the timing adjustments.
3. The lowest point of travel for the slide bearing block G7828 should be $\frac{3}{4}$ -inch and measured between the bearing block and cam support bar G7820 (BF400V / 1D5A) or G7820B (BF600V / 1D6A). Rest the bearing block on a $\frac{3}{4}$ -inch spacer.



Vacuum Feed Timing Adjustment

1. Cycle the former to determine if the blanks should be fed earlier (mandrel closer to the beginning of the return stroke).
2. When timing direction has been determined, return to the **original start position** condition (see previous page for this condition).
3. Remove guard G7832A and the 3/8-inch bolt holding the pinion gear G3362. Remove pinion gear G3362.

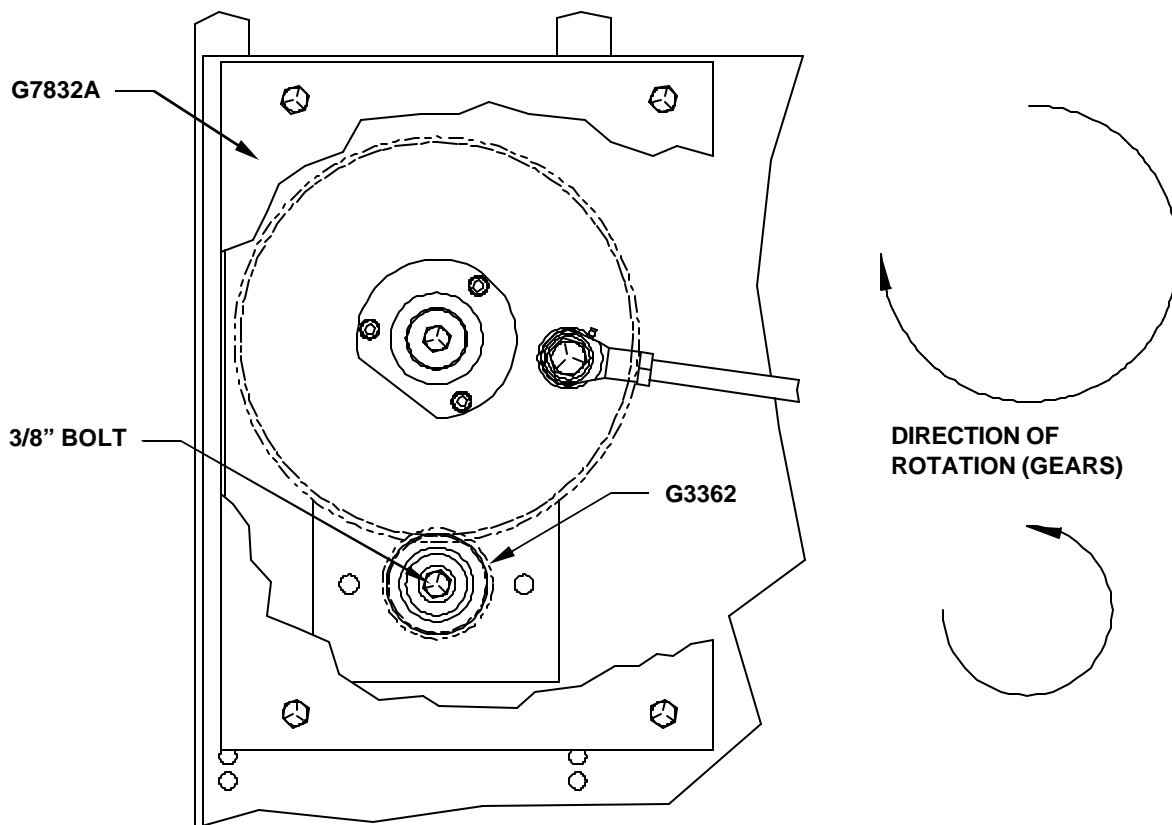
To feed blanks later (the mandrel closer to the **end** of return stroke)

1. Rotate the blank feed wheel in the normal rotational direction to let the blank pass the mandrel and rest on the bottom stop before mandrel contact.
2. Install the pinion gear and cycle the machine to check timing.

To feed blanks earlier (the mandrel closer to just the **beginning** of the return stroke)

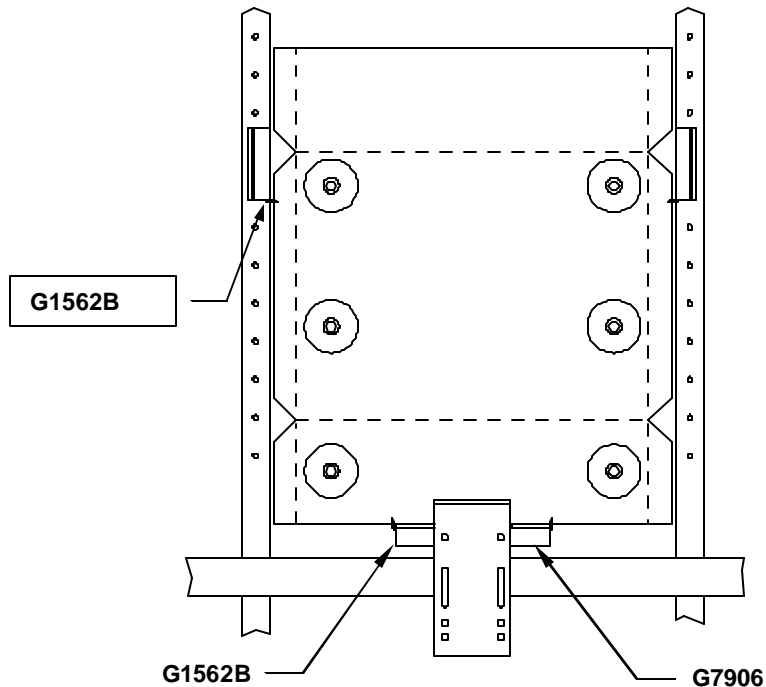
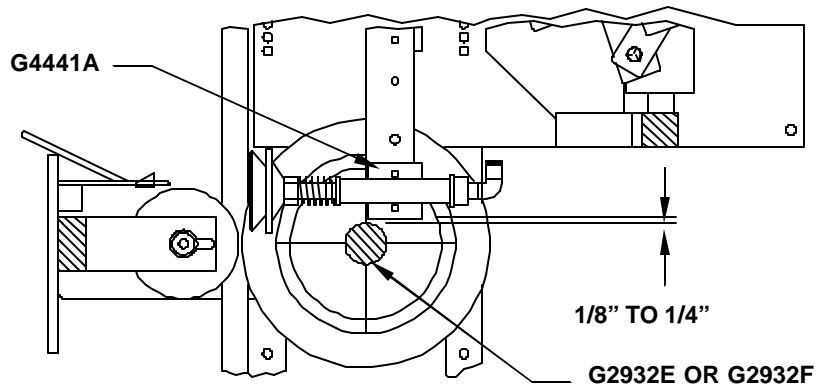
1. Remove the 3/8" bolt and pinion gear.
2. Rotate the blank feed wheel in the normal direction of rotation, allowing the blank to pass the mandrel and rest on the bottom stop before the mandrel starts to form the blank.
3. Reinstall the pinion gear and cycle the former to check timing. Reinstall cover guard G7832A.

Some blanks require more adjustment than others. Repeat these steps until obtaining the correct timing.



Vacuum Feed Cup Adjustment

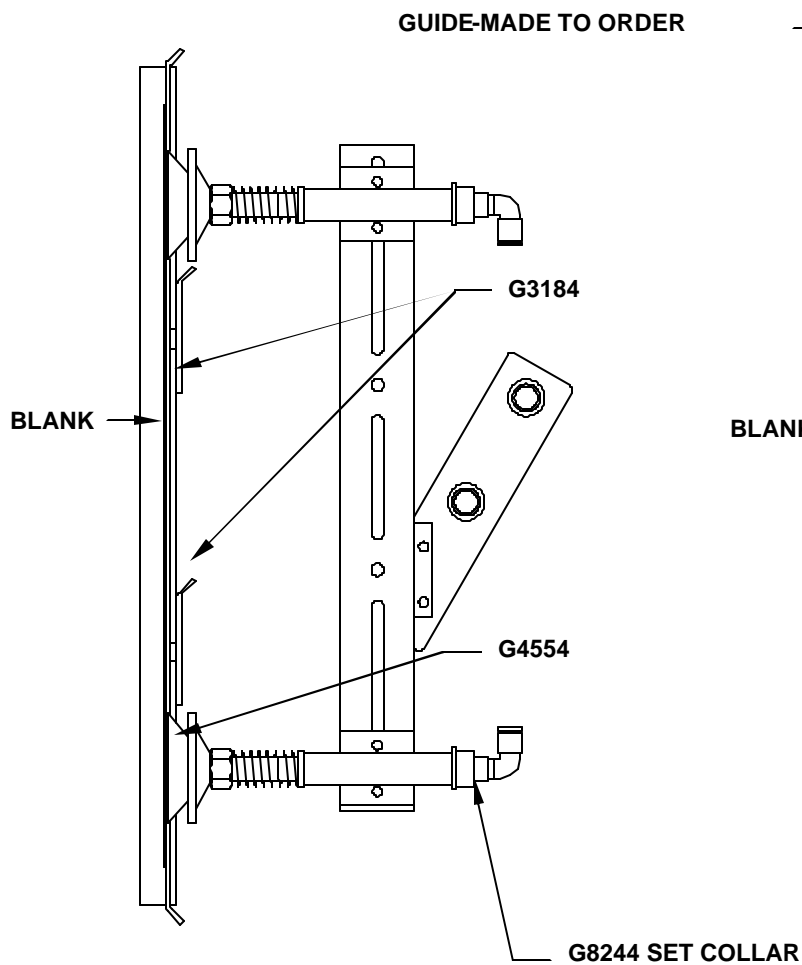
1. Set the slide bearing block at its **lowest** point of travel. Adjust the lower set of cups first.
2. Adjust the support bracket G4441A to clear feed roll shaft G2932E by 1/8-inch to 1/4-inch.
3. Jog the bliss former until the slide bearing block is at its **highest** point of travel.
4. Adjust lower cup width.
5. Adjust center set of cups even with or below the blank stop knives G1562B R/L.
6. Adjust the top set of cups above the set of knives mounted on the side hopper panels G2904.
7. Adjust the width of upper cups to the same width as the lower set. The height should be set to have the centerline of the cups in line with, or slightly above, the support knives mounted on the hopper panels G2904B R/L.



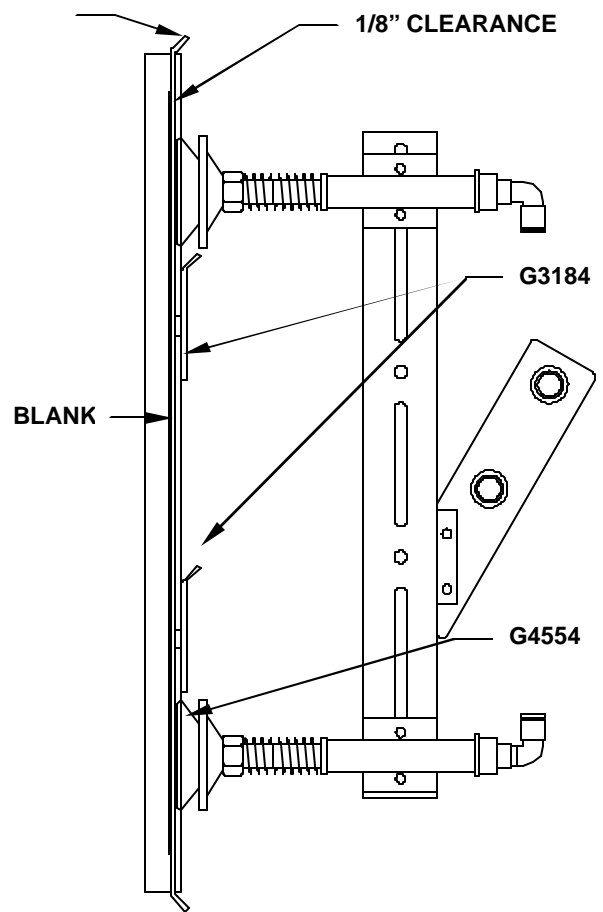
Suction Cup Mount Tube Adjustment

1. Turn the vacuum on. Jog the machine until one body blank is pulled from hopper and starts to move into the feed rolls.
2. The blank should be in contact with the rear blank guide mounted on the vertical guides.
3. If it's not in contact, loosen the screw on the set collar GB244 and pull the tube back until the body blank touches the rear guide. Tighten the set screw.
4. Jog the body blank into the feed rolls.
5. When the vacuum releases, there should be 1/8-inch clearance between the suction cups and the body blank.

Suction On



Suction Released

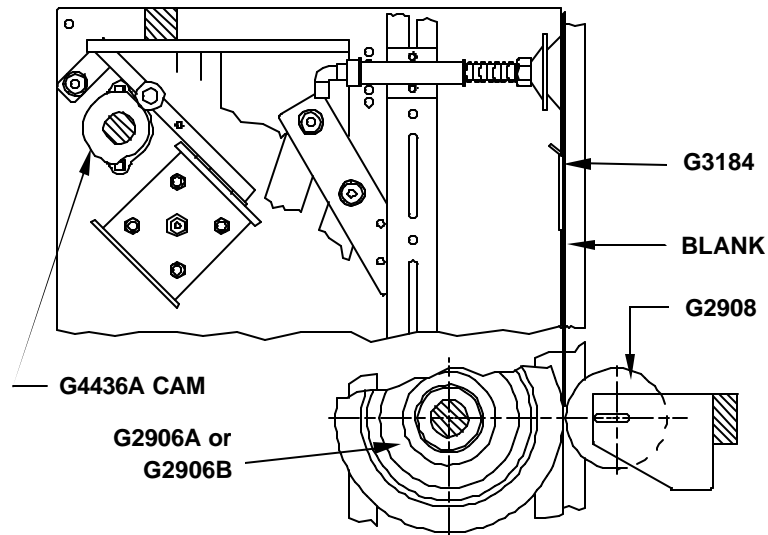


Vacuum Operating Cam Adjustment

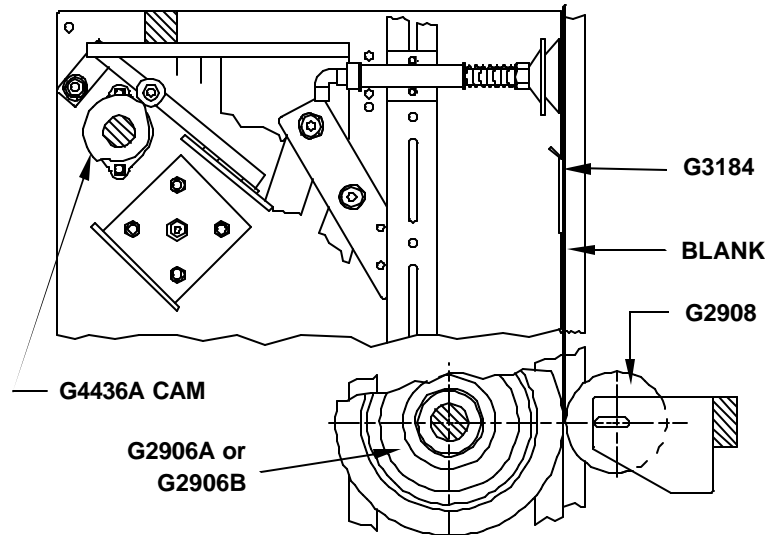
1. Load the hopper with blanks and turn on the vacuum system.
2. Jog the machine until a blank is pulled from the hopper and held by the suction cups.
3. Continue to jog until the blank is between the vertical guide bars and held against the rear stops.
4. When the blank bottom touches the feed roll G2906A or B and idle roller G2908, the cam should begin releasing suction as shown in **DWG "A"**.
5. When the blank bottom meets the **centerline** of feed roll G2906 A or B suction should be completely released as shown in **DWG "B"**.

These settings must be maintained to prevent blanks from misalignment, glue pattern misprogramming, or tearing the vacuum cups.

DWG "A"

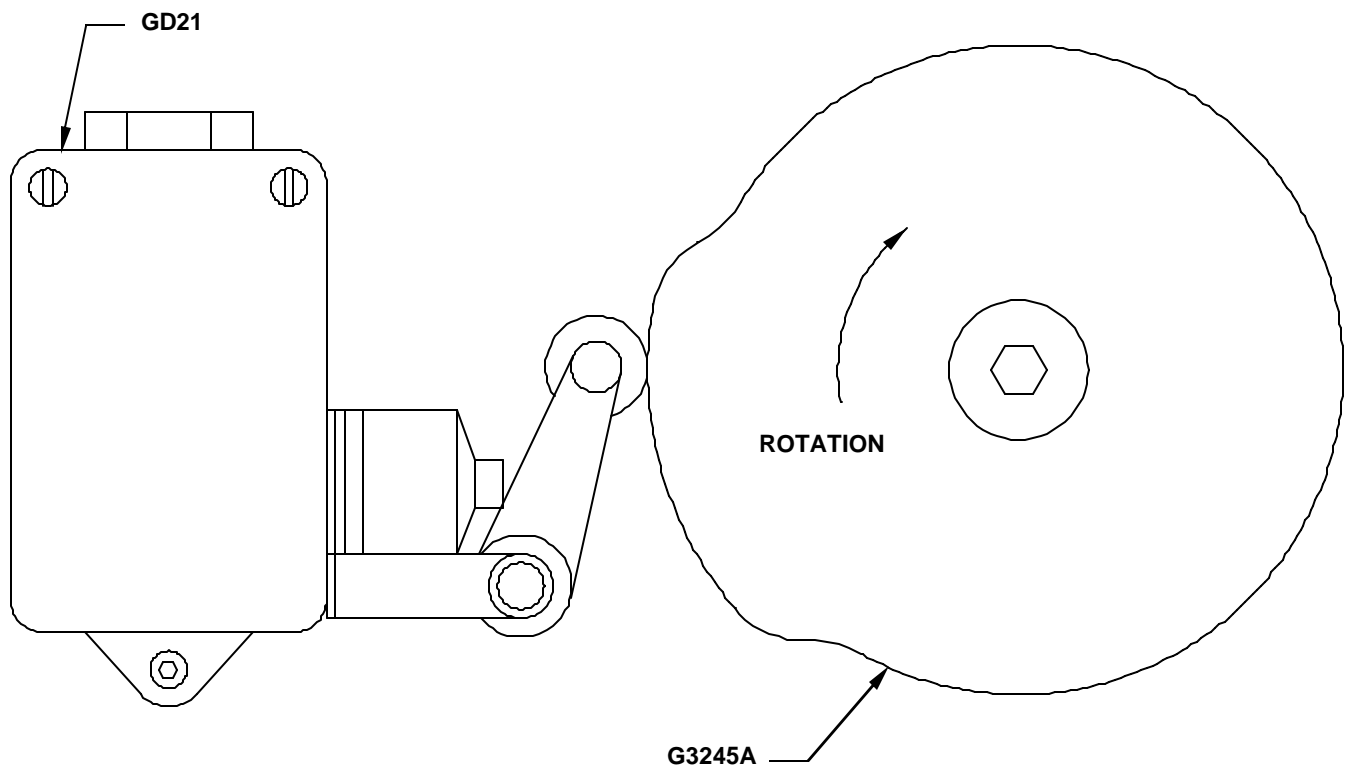


DWG "B"



Machine Stop Micro Cam Adjustment

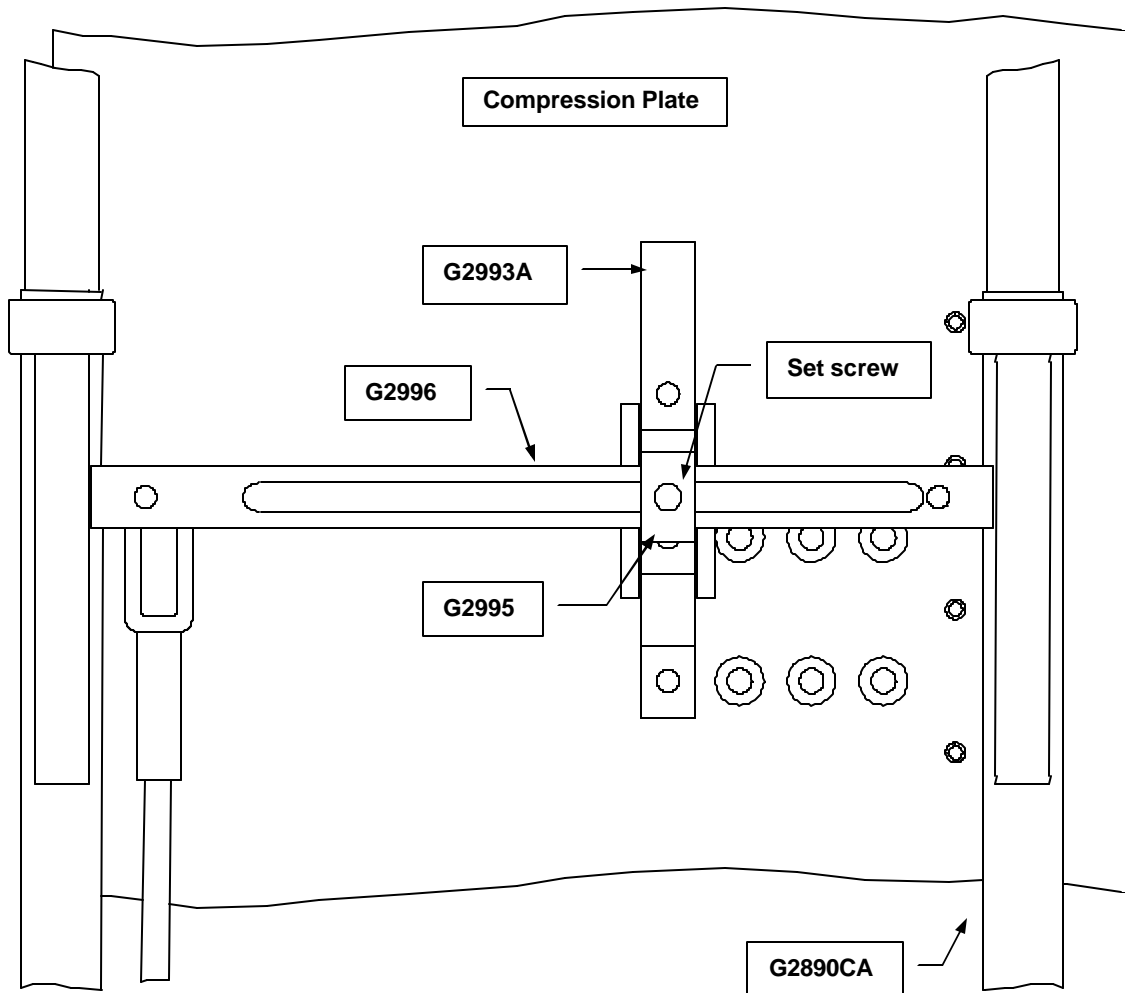
1. Cam switch GD21 is inside the right lower access cover of the Blissmatic.
2. Position the mandrel operating arm to the end of the forming stroke; full into compression.
3. Loosen the ½-inch flathead Allen bolt securing cam G3245A.
4. Rotate cam G3245A until the arm of GD21 travels to the high point of cam lobe of G3245A.
5. Retighten the Allen screw.
6. This adjustment stops the machine at the compression end of the stroke when the operating switch is turned off. This setting varies with machine speed.



Box Clamp Toggle Lever Adjustment

To adjust the box clamp toggle lever, follow these instructions:

1. Set Cam Roller GE39 on the high point of Cam G2847 as shown on page B-28.
2. Loosen set screw in the Box Clamp Toggle Lever G2995.
3. Slide the Box Clamp Toggle Shaft G2996 until it makes contact against the Box Form Upright Tube G2980CA.
4. Slide the Box Clamp Toggle Shaft in the same direction until it bottoms out on the Box Clamp Toggle Lever.
5. Make sure the screw is an oval point and is locked into the groove of the Box Clamp Toggle Shaft. This adjustment allows for ample play in the compression linkage.



Maintenance

Item	Inspection	Freq	Action
Thermostat	Check the setting.	Hourly	Reset or recalibrate if necessary.
Glue pots & pumps	Check for residual glue waste.	Daily	Scrape off the excess glue.
Bolted joints	Check for security.	Daily	Tighten all joints.
Mandrel, compression plates & vertical guides	Check for foreign material.	Daily	Remove excess glue with scraper.
Former	Check for cleanliness.	Daily	Blow former off with compressed air or brush entire machine.
Mandrel	Check for loose bolts, alignment or guide adjustment.	Weekly	Tighten all bolts. Align mandrel on support bars. Should be no clearance.
Blank hoppers	Check alignment.	Weekly	Adjust as necessary.
Glue backup rollers	Check for clearance.	Weekly	Adjust as necessary.
Glue pump	Check drive wheel. Check clearance.	Weekly	Replace if broken or bent. Adjust if necessary.
Corrugated material	Check specifications	Weekly	Replace material. Contact supplier.
Melt pot screen	Check for damage or waste.	Weekly	Remove, replace or clean
Wiring	Check for connections or damaged wire	Monthly	Tighten connectors or replace wiring
Set screws & bolts	Check security	Monthly	Tighten or replace if damaged
Melt pots	Check for charring	Monthly	Remove charred glue
Main gear	Check lubrication	6 mos	Lubricate with gear grease as required
Mandrel connecting rod		Daily	Lubricate on the pivot point and feed post
Vari speed control rod (if so equipped)		Daily	Lube between knob & end plate. Lube at pivot end.
Mandrel stop brake assembly (if equipped)		Daily	Lube the spring joint
Machine stop micro switch		Daily	Lube roller & pivot points on switch
Feed post actuating arm		Daily	Lube the cam through the grease fittings
Mandrel guide rails		Daily	Lube between mandrel rails and fabric guides. Heavy wear area
Compression shaft & linkage	Must lube daily	Daily	Lube both ends of shaft at transmission plate lube arm, cam roller, pivots and connecting points
Compression		Daily	Lube the plate mount spacer, actuator shaft and pivot parts
Box end pressure		Daily	Lube spacers & spring. Do not get lube on the outside of shoe. This would transfer to the box
Vacuum feed linkage			Use 10 wt. Oil or lighter
Slide bearing block assembly G7825			Use 10 wt. Oil or lighter
Rod end bearings for G7809			Use 10 wt. Oil or lighter
Bushing in the cam top bracket G7825			Use 10 wt. Oil or lighter
Rod end bearings G7809		Daily	Use 10 wt. Oil or lighter

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Bushing in cam top bracket G7825		Daily	Use 10 wt. Oil or lighter
Bolted joints & set screws	Check for security	Daily	Tighten all loose hardware
Vacuum cup pads	Check for wear	Weekly	Replace if cracked or worn
Suction cup mount tubes G4432A	Check lubrication	Weekly	Use Lubriplate 630-AA or equal
Vacuum cup tube support brackets G4441A	Check for wear.	Weekly	Replace if necessary.
Poly flow vacuum tubing	Check for wear & holes	Weekly	Replace tubing
Bliss end holder		Weekly	Lubricate shaft and roller
Feed post cam track		Weekly	Use Lubriplate 630-AA or equal
Roller chain drive	Check for wear	Monthly	Lubricate with chain oil
Vacuum feed drive gear	Check grease	6 months	Lubricate with open type gear grease

Adhesive System

Cleaning the Glue System

1. Turn the power on. Heat the adhesive to a temperature of **350° F**.
2. Remove the drain plug (under side of glue pump) and drain glue into a scrap container.
3. Remove all nozzles and plugs from the glue pump.
4. When all glue is drained, install the drain plug removed in step 2.
5. Fill the melt pot to the $\frac{3}{4}$ full level with paraffin wax.
6. Using a scraper, rotate the pump drive wheel until all glue is displaced by the paraffin wax.
7. Let the paraffin wax remain in the melt pot for **two hours at 350° F**.
8. Remove the lower plug and drain all the paraffin wax.
9. Add the new adhesive, making sure to close the supplying box immediately.
10. When a clean flow of glue is seen coming from the drain hole, install the drain plug.
11. Rotate the pump wheel with a scraper until a clean, bubble free flow is seen.
12. At this point you are ready to purge the adhesive system of air.

Purging the Glue Pump of Air

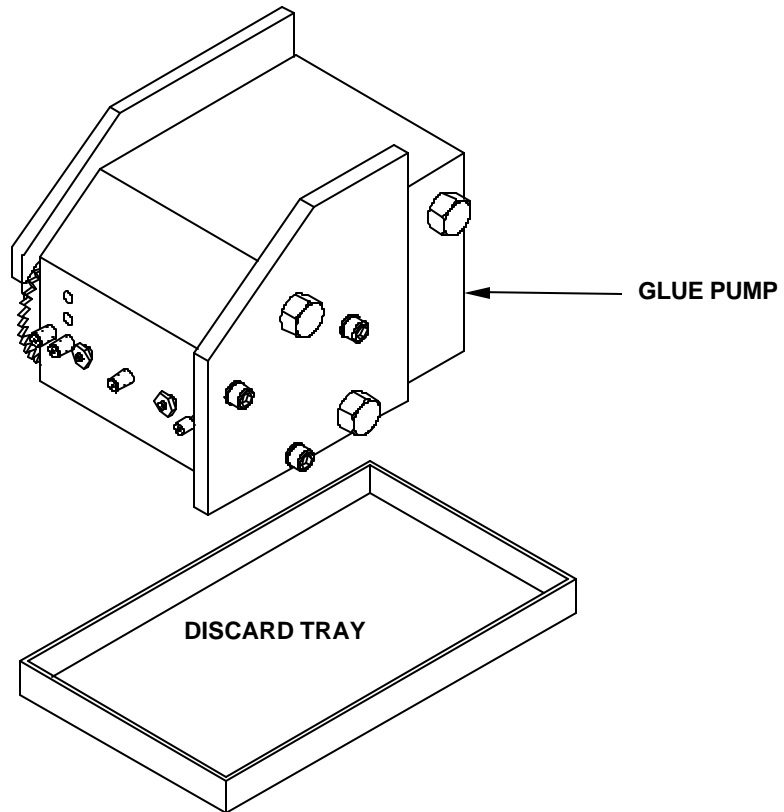
1. Remove all nozzles and plugs from the glue pump front.
2. Screw the volume control needle valve in, until it bottoms out.
3. Using a scraper, rotate the pump drive wheel.
4. When a bubble free glue flow is seen coming from the port farthest away from the wheel, start to install the plug or jets.
5. Rotating the drive wheel, continue to install plugs and jets in successive order.
6. When all ports are purged, adjust the volume control valve in order to produce a 3/32-inch wide bead.

Changing Adhesives

When changing adhesives, follow these steps:

1. Apply power to the bliss former and allow the glue temperature to stabilize at 325° F to 350° F.
2. Remove the pump drip pan and install a small disposable tray under the glue pump.
3. Remove a socket head screw beneath the glue pump body. Drain the glue system.
4. Add the new glue to the system. The new glue forces the old glue out.
5. Note the color change when the new glue displaces the old.
6. Replace the socket head screw under the glue pump.
7. The glue pump may drip from back pressure. The first three or four case blanks purge the system. Repeat this procedure with the other pump.

Do not mix glues. A chemical reaction may result.



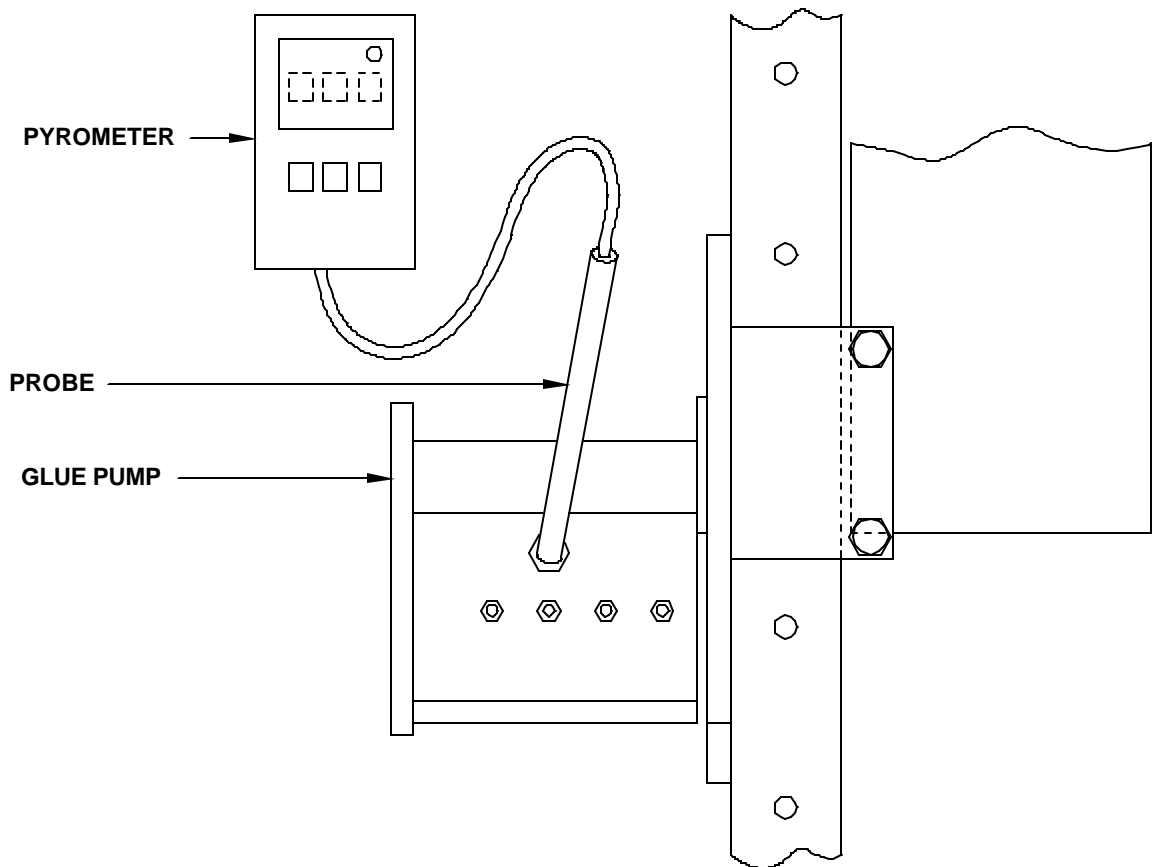
Protective gloves, eyewear and clothing must be worn when changing the adhesive.

Adhesive System

1. Set thermostat dial to **350° F** with power applied.
2. Allow approximately 30 minutes for the glue to heat up.
3. Press the Pyrometer probe to the glue pump as shown and note the reading.
4. The Pyrometer and the thermostat dial readings of 350° F **should be identical**.
5. **If not:** Recalibrate the adhesive system. Recalibration instructions are included on the next page.

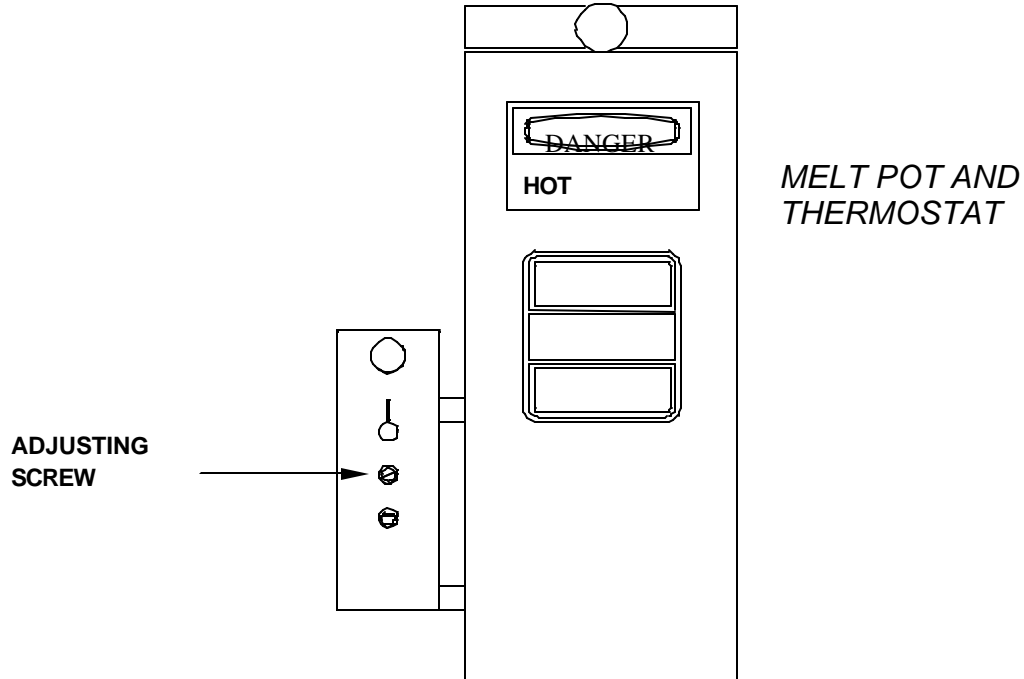


WARNING: When performing any maintenance on the glue system wear safety goggles, heat-resistant gloves, and protective clothing to prevent injury and burns from hot material and hot parts.



Thermostat Calibration

1. Set the Thermostat control dials **to the same temperature** measured by the Pyrometer.
2. Carefully re move the Thermostat control dial.
3. The mount stud holding the Thermostat dial should be visible.
4. Use this slotted stud to adjust the Melt pot temperature.



1. Use a small screwdriver to turn the adjusting screw until the heater light **just goes off**.
2. Reverse direction until the light **just comes on**.
3. Again reverse direction and turn the adjusting screw until the light **just goes off**.
4. The melt pot temperature is now calibrated.
5. Carefully replace the dial and repeat with the other thermostat.
6. Both Thermostats must be calibrated at the same time.

Lubrication Procedures:

Lubrication is critical to machine performance. Lubrication schedules are divided into three categories: Daily, Weekly and periodic. The schedule however should be determined by visual examination of all equipment and lubricated as needed.

Daily Requirements

Item #	Part	Action
1	Mandrel Connecting Rod	Oil mandrel, pivot and feed post
2	Mandrel connecting bolt	Oil with 10 weight oil
3	Mandrel guide rails	Oil surfaces between guide rails and fabric guides
4	Vari-Speed control rod	Oil between rod and end plate*** (optional, not shown)
5	Micro switch cam	Oil roller and pivot joints on the switch
6	Vacuum dump valve	Oil pivot joints
7	Vacuum assembly	Oil slide bearing block
8	Vacuum assembly	Oil cup shafts, feed linkage bushings, scissors
9	Compression Linkage	Oil surfaces
10	Idler sprockets	Oil
11	Compression pivot	Oil
12	Cam follower	Grease and check bolt security

Weekly Requirements

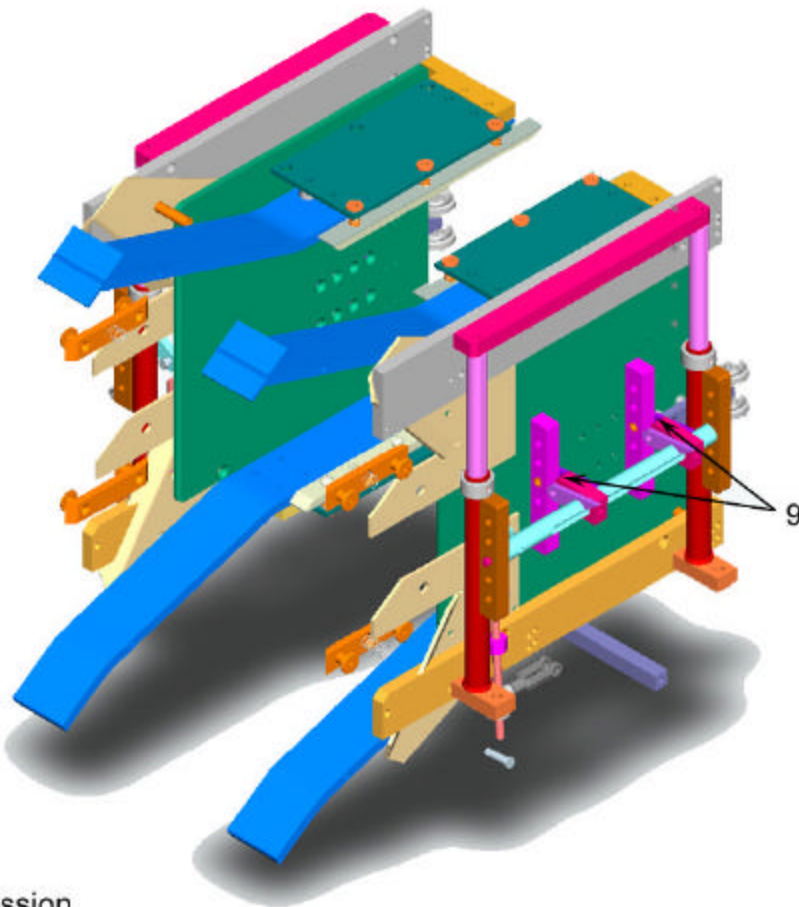
Item #	Part	Action
13	Vacuum gear con rod	Oil arm to rod
14	Vacuum and drive gear	Use gear grease as required
15	Drive chain	Use chain oil and keep well lubricated
16	Main gear	Use gear grease and keep greased



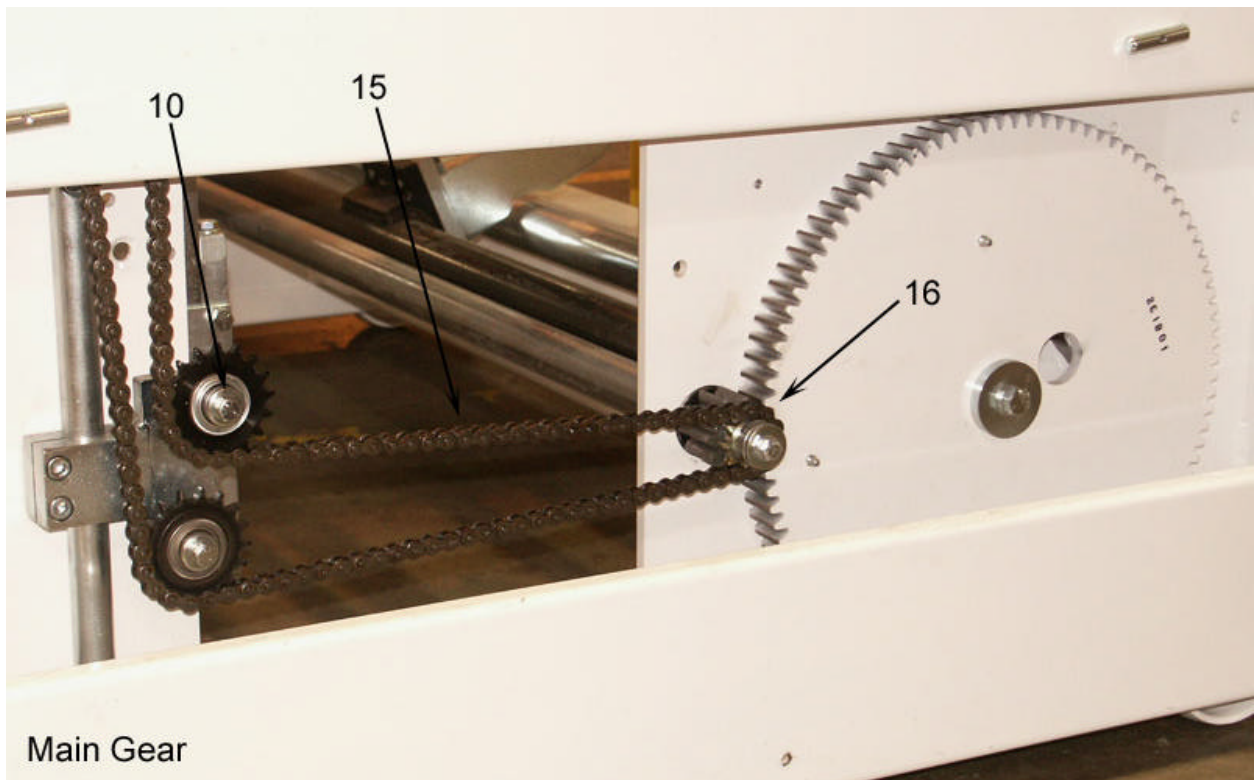
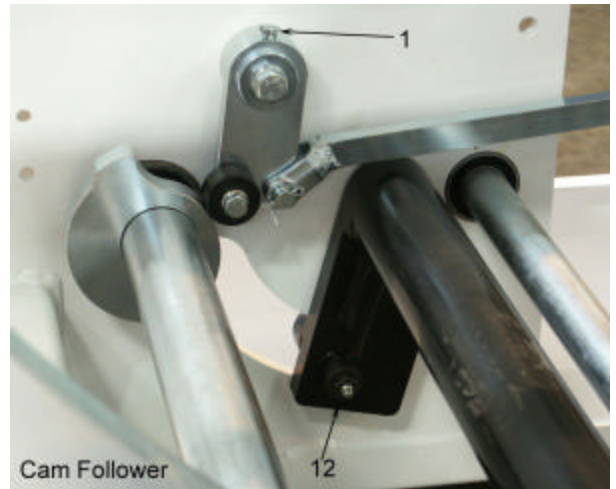
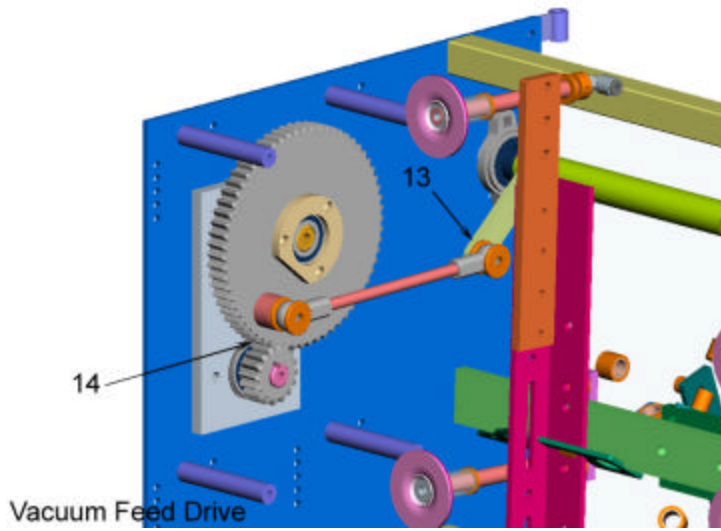
Mandrel System



Pinion Gear



Compression



Troubleshooting

Trouble	Possible Cause	Possible Solution
Machine stops suddenly.	Ground safety switch not making contact.	Check the fuses. The control wire is not making contact.
	Motor overload relays tripped.	Check amperage and voltage.
Blanks will not feed out of the hopper.	Blank support bars dirty.	Polish with Scotch Brite.
	Blanks too wide.	Replace blanks.
	Warped blanks.	Replace blanks. If warped more than ¼-inch per foot, break blank opposite of warp.
	No vacuum.	See <i>No Vacuum</i> below.
Blanks will not slide down the hopper.	Loading ramp dirty or rusty.	Polish ramp with Scotch Brite.
	Blank support bars not adjusted.	Adjust bars.
	Support bars dirty.	Polish with Scotch Brite.
Bottom of blank not sliding between vertical guide bars.	Loading blank guides not adjusted correctly.	Adjust lower guide as low as possible on the body wrap. Make sure inside edge of guide is even with the vertical guides.
		Adjust the vertical guides out and shim compression in. Readjust mandrel guide or replace blank.
		Adjust roller.
No glue on sealing flanges.	Body blanks too wide.	The glue wheel is not touching the sealing flange. Adjust the vertical guide bars or replace the blanks. Add shims to bars and adjust top nuts.
	Back up roller too loose.	
	Body blanks too narrow.	See glue problems listed below.
	Glue pump problem.	
Blanks will not feed straight down.	Glue back up rollers too tight.	Adjust rollers to show distinct teeth marks on the blanks.
Blank hits the mandrel.	Blank timing too early.	Time vacuum feed.
	Blanks have excessive warp.	Adjust guides on the vertical guide bars. Break blank on the opposite side of the score. Contact corrugators if the warp is more than ¼-inch per foot.
Body blank hits end guides.	Blanks have excessive warp.	Install spring loaded blank guides or break blanks on opposite side of warp.
End panel picks not returning far enough to get behind end panels.	Mandrel stroke too short.	Readjust stroke.
	Main gear worn.	Replace gear.
	Cam roll worn or loose.	Tighten set screw or replace.

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Trouble	Possible Cause	Possible Solution
Seal flanges being torn as carton is formed.	Possible old style plates. Compression plates not opening fully. Broken return spring.	Replace with G3132D or E R/L plates. Check shaft G2992C and all actuating linkage for binding. Remove chaff or excess paper waste that may have clogged the linkage. Lubricate when finished. Replace the spring. Set the stroke.
Mandrel is pulling the cartons back out of compression.	Mandrel stroke is too short. Top compression shoes tight. Dirty mandrel.	Readjust compression. Scrape off excessive glue from the mandrel.
End panels pulling back with the mandrel.	Wrong size mandrel. End panels too thick or thin. Excess glue or glue too hot. Misadjusted strippers.	Change the mandrel. Change end panels. Check the adhesive section. Adjust the strippers.
Mandrel hits the blank before it reaches the bottom stop.	Blanks too wide. Idle roller too close. Blank timing incorrect. Backup roller too tight.	Replace body wraps. Adjust roller. Adjust blank timing. Adjust backup roller.
Blank bounces off the bottom stop, hitting mandrel.	Rebound stop set wrong. Blank timing late.	Add stop or adjust. Adjust timing.
End panels will not feed.	Insufficient hopper clearance. Hopper end too low. Pick is missing the end panels due to warp. Wrong size end picks.	Adjust hoppers. Do not run with less than 4-inches of blanks in hopper. Adjust hopper. Replace ends. If end panels not printed reverse in hopper. Replace end pick.
Bottom corners of carton torn.	Mandrel too large. Misadjusted bottom stop.	Check fit by removing mandrel and sitting on the body wrap. Place end panels in and fold the body wrap around the mandrel. A snug fit is expected. Crank the stop to reach correct setting.
Carton bottom has rounded corners.	Mandrel size incorrect. Top compression too tight. Blank length varies.	Change mandrel or corrugated. Adjust compression. Check with the corrugator.
Mandrel passes "cycle Start" position.	The mandrel stop-brake is worn. (no Variable Freq. Drive) Stop micro switch not adjusted.	Replace brake if so equipped. Adjust micro switch cam.
Carton falls apart after leaving compression.	No glue in pots.	Fill the glue pots; never letting them go lower than ½ way.

Trouble	Possible Cause	Possible Solution
	<p>Clearance between glue pump and backup roller.</p> <p>Glue too hot, stringy or cold.</p> <p>Compression not correct.</p> <p>Corrugated too thin.</p>	<p>Adjust clearance.</p> <p>Adjust temperature.</p> <p>Adjust compression.</p> <p>Check with the corrugator. Shim if required.</p>
<p>Glue will not flow.</p>	<p>The glue melt pot is empty.</p> <p>Clearance between backup roller and pump setting.</p> <p>Worn or broken teeth on glue pump.</p> <p>Glue jets plugged.</p>	<p>Fill the melt pots.</p> <p>Set clearance.</p> <p>Replace pump drive wheel G3147.</p> <p>Use a paper clip to clean the jets. Remove the jets and turn the pump wheel until a clear flow is observed. Replace the jet. Orifice .040"</p>
<p>Glue will not flow.</p>	<p>Jets are plugged.</p> <p>Volume control needle.</p> <p>Heating element burned out.</p> <p>Thermostat out of calibration.</p> <p>Glue burned around drive wheel shaft. Pump wheel hard to turn.</p> <p>Air in the glue. A skip glue pattern or drooling from the nozzles. Moisture in the melt pots.</p> <p>Debris or charred glue in the adhesive system.</p>	<p>Remove and clean jets. <u>Be aware of high temperatures.</u></p> <p>Using a 1/16-inch Allen wrench, adjust "in" for more glue (clockwise) or out for less. Glue bead width should be 3/32-inch wide on most board except waxed board, which may need full flow.</p> <p>Replace the element.</p> <p>Calibrate.</p> <p>Drain glue. Remove end cap from pump. Push out gear from housing. Polish shaft with #120 grit Emory cloth to bare metal. By hand; using a "V" drill, insert it into the shaft hole and remove burned glue from the housing. Lubricate shaft with "Never Seize" and reinstall. Make sure the drive wheel set screw is in the counter-bored hole and tight.</p> <p>Prevent water from entering the pots when washing down. Change glue if air or water present. The SWF glue system is gravity fed and will not operate properly with air or water in system.</p> <p>Clean the system.</p>
<p>Thermostat light "on" but glue does not reach operating temperatures.</p>	<p>Loose wiring.</p> <p>Defective Thermostat.</p>	<p>Check for loose connectors or broken wiring.</p> <p>Replace the Thermostat.</p>
<p>The thermostat light is on but the glue does not reach operating temperature.</p>	<p>Defective heating element.</p>	<p>Check element with an Ohmmeter for an open circuit. If "open," warm melt pots to 250° F. Loosen the bolts holding the pump to the melt pot.</p> <p>Remove the thermostat cover G2784B and</p>

Trouble	Possible Cause	Possible Solution
		disconnect wires and remove G2997. Slide the new heater in and check voltage and wattage on the new heater. Coat heater with "Never Seize" compound.
Glue constantly running from nozzles.	<p>Air in the system.</p> <p>Foreign material under the ball check valve.</p> <p>Glue jells in the melt pots.</p>	<p>See maintenance information. If this fails, clean the pump with a torch or in an oven. Remove all charred glue. When completed, reinstall the ball check valve with a ¼-inch bar of round steel by lightly tapping on the ball. (Always use a new ball and spring).</p> <p>Clean the system. Prolonged overheating causes the glue to jell.</p> <p>Calibrate the thermostat.</p>
Glue does not bond on one corner.	<p>Glue is too hot or cold.</p> <p>Compression problem.</p> <p>Blank caliper too thin.</p>	<p>Adjust compression</p> <p>Shim compression or mandrel or replace blanks.</p> <p>Turn switch to "on."</p>
Vacuum blower inoperative.	<p>Main disconnect switch is in the "off" position.</p> <p>Vacuum switch is in the "off" position.</p> <p>Loose wiring.</p>	<p>Turn switch to "on."</p> <p>Check for wiring and terminals.</p>
Vacuum blower inoperative.	<p>Motor starter GD63.</p> <p>Blower shuts off after a short period.</p> <p>Blower shuts off after long period.</p>	<p>Replace if defective.</p> <p>Compare incoming voltage versus wired.</p> <p>Motor thermostat is overheated. Allow motor to cool.</p>
No suction at the vacuum cups.	<p>The blower is inoperative.</p> <p>Vacuum tubing damaged.</p> <p>Vacuum cup bolt G4553 suction hole clogged.</p> <p>Vacuum valve cover pad G7555 not seating on valve manifold.</p> <p>G4554 cup pads damaged or worn.</p> <p>Filters are dirty.</p>	<p>Refer to blower problems listed above.</p> <p>Check tubing for cracks or holes.</p> <p>Clean out the tubes.</p> <p>Adjust.</p> <p>Replace pads.</p> <p>Replace or clean the filters.</p>
Suction will not release.	<p>Valve operating cam G4463A is not adjusted.</p>	<p>Adjust cam.</p>
Vacuum cups not pulling blanks from the hopper.	<p>The blower is inoperative.</p> <p>Cups contact blank over slots or holes.</p>	<p>See <i>Too few blanks in the hopper.</i></p> <p>Reposition the cups.</p>

SWF Companies

Trouble	Possible Cause	Possible Solution
	<p>Lower set of vacuum cups are set too low.</p> <p>Blank support knives G1562B R/L are resisting the pull of the cups.</p>	<p>Reposition the lower set.</p> <p>Use 1 or 2 washers to space the knives out.</p>
<p>Blank drops from the vacuum cups before it is placed into the feed wheel.</p>	<p>Vacuum valve operating cam G4436A not set right.</p> <p>Vacuum cup mount tube return stroke needs adjustment.</p> <p>Vertical guide bars.</p>	<p>Adjust the cam.</p> <p>Adjust tubes.</p> <p>Bars set too tight.</p>
<p>Multiple blanks being pulled from the hopper.</p>	<p>Support knives.</p> <p>Vertical guide bars.</p> <p>Blanks are interlocking.</p> <p>Blanks are varying in dimensions.</p>	<p>Remove washers under knives in order to provide more restraint.</p> <p>Adjust bars. Bars are set to blank width +1/8-inch.</p> <p>Check with the corrugator if the plugs or coating is the problem.</p> <p>Check with corrugator after measuring samples.</p>
<p>Vacuum blower is blowing and not creating suction.</p>	<p>Blower rotation incorrect.</p>	<p>For three phase machines , reverse wires M1 and M2.</p>

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Spare Parts

For General Information and Ordering Parts Contact:



1949 E Manning Ave • Reedley, CA 93654
Tel. (559) 638-8484 • Fax. (559) 638-7478 • (800) 344-8951
Web: www.swfcompanies.com

Before contacting SWF Companies for parts or service, please know the machine model and serial number of your equipment. Locate the serial number, usually noted on a metal tag riveted to the frame. You need this serial number when ordering parts:

- 1) Included with this manual is a complete set of assembly drawings to assist you in locating your part. Locate the assembly the part is ordered for.
- 2) Once you have the assembly drawing, locate the item number of the part you want to order and write down the part number from the bill of materials.
- 3) When calling the SWF Companies for parts, have the following information ready:
 - (a) Machine model and serial number (Example: CE-300 TA, s/n CG00001).
 - (b) The assembly drawing number and description (CG-000150, vacuum lift arm).
 - (c) The item number, part number and description (item #16, 201806, male rod end bearing).

Following the above procedure assists us in supplying you with the correct parts for your machine and eliminates misunderstandings between your purchasing agent and our parts department.

The engineers designing your machine include a list of spare parts with your machine when it ships.

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Glossary of Terms

Air Cylinder: Air cylinders use air pressure to power a linear or rotational motion.

Air Pressure Switch: The air pressure switch is an adjustable, air-pressure actuated electrical switch controlling the voltage to the Master Control Relays (MCR) in the electrical cabinet. Air pressure in the system must reach a pre-designated pressure setting before the switch closes and completes the circuit. If an emergency stop or hand valve are activated, the resulting drop in air pressure causes the air pressure switch to open and shut-off power to the MCR.

Carton: A container made from one layer of material, generally a thin, flexible cardboard.

Case: A packaging container made from multiple layers of material. Cases are generally made from three layers of material, the middle layer being corrugated cardboard.

Case Extractor: The case extractor vacuum cups pull cases from the magazine and transfer them to the case hold vacuum cups. Air cylinders power the linear movement of the case extractor cups.

Case Hold: The case hold vacuum cups receive the cases from the extractor cups and hold the case while the pivot cups open the case.

Case Pivot: The case pivot cups rotate out to grab and open the case on the hold cups.

Changeover: A changeover is a series of adjustments made to the machine when a different sized case or carton is packaged.

Depth: Measure the carton's depth along the load axis.

Dump Valve: The dump valve releases ALL air within the machine's air pressure system. When another safety control device, such as a door switch, emergency stop, or hand valve, activates, the dump valve energizes, opens, and releases ALL air pressure in the system. After the safety controls are reset, press the "Master Control Relay (MCR) Reset" button. This causes the dump valve to close, allowing air pressure back to the machine.

Easy On Valve: The easy-on valve works in conjunction with and is usually located near the dump valve. As air pressure returns to the machine at start-up or following a shut-down condition, the easy-on valve prevents the air from reaching full pressure too quickly. The valve opens gradually, allowing pressure to build slowly, preventing air activated assemblies from engaging too quickly.

Emergency Stop: An emergency stop causes the machine to shut down immediately. Use the emergency stop buttons after a product jam, personnel injury, or other emergency. Restarting from an emergency stop requires all emergency stop buttons be reset. The reset button usually must be pushed to clear any error conditions from the machine. Do not use an emergency stop for standard shutdown procedures.

Flaps, Major: Major flaps are the larger top and bottom flaps of the carton.

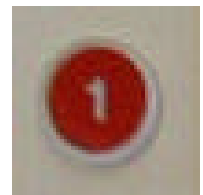
Flaps, Minor: Minor flaps are the smaller side flaps of the carton. The flap in the forward position is the leading minor flap while the flap in the back position is the trailing minor flap. Leading and trailing are always taken with reference to the direction of product or carton flow.

Guard Doors: The guard doors are vertical barriers mounted to the frame around the perimeter of the machine. Doors with safety interlocks automatically stop the machine by disconnecting the electrical power and dropping the air from the machine as soon as the door opens. Power and air remain off until all guard doors are closed and the startup sequence is followed.

Hand Valve: The hand valve, or manual air shut-off valve, is a two-position air shut-off valve controlling the air pressure supplied to the machine. With the handle pulled-out (on), compressed air flows throughout the machine. When the handle is pushed in (off), air pressure is released through the dump valve. The drop in air pressure causes the air pressure switch to open, shutting off power to the MCR. The machine will not re-start until all hand valves are returned to the on position and the start-up sequence is performed.

Length: Measure the carton's length along the direction of travel through the machine.

Locator Tag – Used to mark changeover points, locator tags are small, red, round aluminum



Locator Tag

tags mounted to the machine. Each locator tag is marked with a number corresponding to a changeover setting.

Machine Stop: Machine (cycle) stops, are used for normal shutdown procedures. Once initiated, the machine cycles down to its zero point before stopping completely.

Magazine: The magazine holds the cases or cartons for the erector to pick. The cases or cartons are typically held loosely so they can slide out, but tight enough to minimize sagging and warping.

Major Flap: See Flaps, Major

MCR: Master Control Relay

Minor Flap: See Flaps, Minor

Motor Starter (Thermal Overload): A thermal overload occurs when a motor draws more current than the cutoff current rating. This is interpreted as overheating and shuts the motor down. A motor operating against resistance or a jam typically causes a thermal overload.

PanelView 600: A PanelView 600 is a touch screen control panel manufactured by Allen-Bradley. Visual representations of machine controls and error conditions are displayed on the control panel touch screen.

Photo-eyes: Photo-eyes detect product or cartons at various locations on the packaging machine. Photo-eyes are typically used to trigger glue guns, erectors, blowers, or any other action dependant upon the presence (or lack) of product or cartons.

PLC: PLC (Programmable Logic Control) refers to the logic control running the electrical program of the machine.

PLS: PLS (Programmable Limit Switch) refers to the electrical program of the machine. The PLS settings control when any electrically controlled functions occur. Generally, an electrical program is only required on the packaging machine when glue guns are used and precise timing is required.

Power Disconnect (Circuit Breaker): The disconnect switch or circuit breaker mounts to the main electrical cabinet. There may be additional remote disconnect switches mounted elsewhere on the machine. The disconnect switch shuts off all electrical power to the machine. To open the electrical cabinet door, first move the disconnect switch to the **off** position. The doors will not open until the switch is off.

Proximity Sensors: Proximity sensors are used to detect products, assemblies, or other parts of the machine and relay the information to the electrical program (PLC). The PLC can then shut down the machine and display the appropriate warning light. Proximity sensors detect metals, though stainless steel doesn't detect as well as metals with magnetic properties.

When a proximity sensors detects a problem, simply clear the problem or jam, hit the machine's reset button and re-start the machine.

Scale – A scale is a ruler strip with evenly spaced markings denoting positions. Scales are typically mounted near adjustable assemblies.

Scoreline: The scoreline is the fold line of the carton or case being packed.

Servomotors: Similar to variable frequency drives but with feedback. Servos generally serve on a smart belt system that requires quick speed changes, or on belts and moveable assemblies requiring precise position and speed control.

VFD (Variable Frequency Drive): The VFD changes the standard 60Hz line to DC current and varies the frequency of the DC to control the machine's speed. The standard VFDs come in low voltage (240 Volts) and high voltage (480 Volts) varieties. VFDs are also available in 208 Volt versions as well as some extra high voltages depending on customer need. VFD models include: Allen-Bradley Bulletin 160, Allen-Bradley 1305 and 1336, Magnetek GPD 503, and any other VFDs the customer may request.

Width: The carton's width is the vertical dimension, or height.

Zerks: Grease zerks mounted on the machine are used to fill bearings and lubricated devices with grease.