TF 400V / 600V

TRAY-MATIC®

Operation, Maintenance, and Parts Manual

SWF COMPANIES

A DOVER COMPANY

Proud manufacturers of the following packaging machinery lines:
SWF Machinery • Dyna-Pak • McDowell • Padlocker • Salwasser • Tri-Sterling • Yakima Wire

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Web: www.swfcompanies.com

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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 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 thanks 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.

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

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Introduction

The traymatic machines may be referred to by two different machine notations.

New Designation	Old Designation
TF 400V Traymatic	1T4 Traymatic
TF 600V Traymatic	1T6 Traymatic

The following terms are interchangeable:

- Traymatic, Former, Case Former, Tray Former, and Machine
- Carton, Box, Tray, Case, Blank
- Glue, Adhesive, Bonding Material

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Safety

Machinery is hazardous when safety precautions are not followed. Follow these safety rules and practices 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 when a SWF Service Representative assists in starting up new equipment.

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 working 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, employees should follow all safety procedures.
- If any questions arise regarding the safe operation or maintenance of this machine, immediately contact the service department of:

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 safety devices to prevent injury to personnel coming into contact with the machine. Check all safety switches and devices daily to ensure they operate properly. Any removal or alteration of these devices results in serious injury.

Device	Description
	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 when the door opens. The electrical power and air pressure remain off until all guard doors are closed and the start-up sequence is followed.
	**Emergency Stop, or E-Stop** is a lighted push/pull button installed on each operator control panel. The pulled-out (on) position allows for operation. The pushed-in (off) position of any e-stop button causes a complete machine shut-down by shutting 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. WARNING: Do not use the e-stops to prevent inadvertent

Device	Description
	starting of the machine. Always perform power and air lock out procedures on the main disconnect or designated auxiliary disconnect before reaching into the machine.
	The **DISCONNECT SWITCH or CIRCUIT BREAKER** mounts on the main electrical cabinet and shuts off electrical power to the machine. There may be additional remote disconnect switches mounted elsewhere on the machine. To open the electrical cabinet door, first move the disconnect switch to the **off** position. WARNING: Always use the lockout feature of the disconnect switch to ensure the electrical power remains off during any maintenance or repair work. Not all disconnect switches shut off all power. Some switches only shut-off power to a particular area or to certain components. Never assume any single disconnect switch shuts-off ALL power to the machine. Refer to the electrical schematics for specific information.

Precautions and Warnings

1. Always closely observe all DANGER, WARNING and CAUTION signs.
2. Machinery should never be operated or serviced by personnel taking any type of drug or sedative, under the influence of alcohol, or who is experiencing excessive fatigue.
3. Before starting any machinery, confirm all personnel and materials are clear of the machine.
4. Alert all personnel involved with the machine of any automatic cycling features.
5. Do not perform any maintenance or repair work without completing the following:
    a. Turn off electrical power at the main control panel.
    b. Use a padlock or other lock-out device to ensure the power stays off.
    c. Turn off the air supply.
    d. Use a padlock or other lock-out device to ensure the air stays off.
    e. **NOTE:** Always follow ALL Start-up/Shut-down Procedures.
6. **NEVER** reach into or near any moving parts to clear a jam.
7. **NEVER** wear loose clothing or jewelry around moving parts.
8. **NEVER** place fingers near any “nip” point between driving pulleys, gears, belts, or sprockets while the machine is in operation. Take particular care around open areas such as conveyor drive chains, take-up pulleys, overhead ram shafts, case chairs and any carriages.
9. Always wear protective equipment such as safety glasses, hard hats, and hearing protection where required.
10. Keep the areas around transfer carriages, cylinders, case chairs, vacuum cap bars, and other moving parts free of obstructions.
11. Keep all floors around the machine free of obstructions and liquids. All personnel using water nearby should wear non-slip shoes.
12. Always use SWF recommended replacement parts to prevent injury and machine damage. Consult with SWF regarding possible equivalent substitutions prior to replacing any parts.
13. Wear safety glasses, safety gloves, and protective clothing to prevent injury from hot applicator parts, splashed hot melt adhesive material, and hot gun services.

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

- Know what voltages are present before beginning any electrical work.
- NEVER allow any part 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 due its ability to retain moisture. When working on a cement floor, stand on a rubber mat, plywood, or other non-conductive material.

DANGER: LOCK-OUT ALL POWER AND AIR BEFORE CLEARING ANY JAM.

After de-energizing the machine, carefully remove product to prevent personal injury or damage to the machine.

GLUE OPERATIONS: Wear safety glasses, safety gloves, and protective clothing to prevent injury from hot applicator parts, splashed hot melt adhesive material, and hot gun services.

Power Disconnect Switch

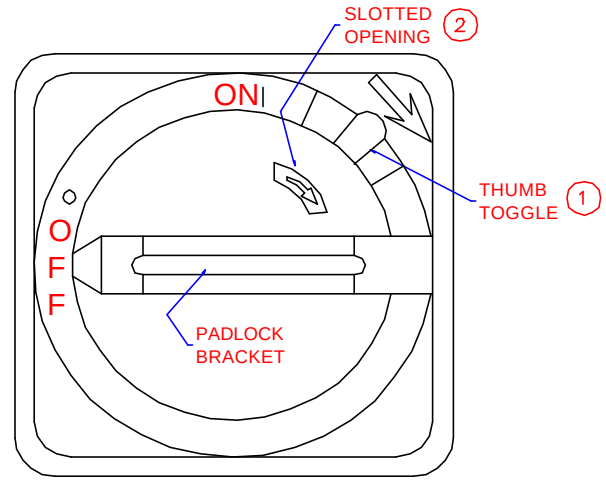
This switch must be in the ON position to operate the machine. Turn OFF when washing the machine or when making repairs or adjustments other than changeovers.

To open the control panel:

1. Twist the disconnect switch to the OFF position
2. Push down on the thumb switch (see figure 4, item 1) and slide the outer ring down
3. Pull open the door.

The power disconnect switch may be locked in the OFF position. To lockout the power, pull the black plastic bracket out from the handle and hook a padlock into the opening (in the off position only).

This prevents the power from being restored to the machine. For further instructions, refer to the documentation for the power lockout switch.



Additional Safety Notes

- Examine the frame and machine surfaces for abraded surfaces and sharp edges. File any sharp edges or surfaces smooth and cushion them against collision if the machine is near employee traffic patterns.
- Turn the main power switch to the “OFF” position before removing any guards at a drive or nip point.
- All guards and safety devices (interlocks) as manufactured and installed at the factory must be reinstalled after maintenance and before machine start-up.
- Maintenance personnel should always use protective measures to avoid contact with hot surfaces, resins, glue, or wax during clean up or repair of the adhesive system.
- The adhesive melt pots are provided with a temperature regulator. Turn the machine main electrical disconnect off at the end of each workday.
- Guards mounted at the factory protect the operator from drive units, nip points, and contact with electrical circuitry.
- All guards for the lower transmission, feed post, and program feed wheel must be securely in place before operating the machine.
- All guarding must always be in place while operating. Take extreme caution while making adjustments or size changes with the guards removed.

Installation

Proper installation of your SWF machine is critical to obtain smooth, efficient operation.

When installing machinery, always follow your facility's safety rules as well as those found in the *Safety* section of this manual, including the use of equipment of adequate capacity when lifting or moving machinery. The machine location must provide a sound footing, adequate lighting, and accessibility from all sides for maintenance and operation.

Improper grounding affects the operation of the machine, operator safety, and can be hazardous. The addition of electrical devices not designed into the machine by SWF Companies may cause erratic operation.

Uncrating

Remove the machine from its crate. Check the packing list to verify all loose parts and attachments are included. Tighten any screws, bolts, or fasteners loosened during shipment.

Placement

Loosen the front wheel brake screws. Push the machine to the required operating station. When the machine is properly positioned, tighten all brake screws.

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 and the voltage is three-phase, reverse the terminal connections of any two of the three power lines.

Electrical Control Box

The electrical control box on the machine contains various circuits and provides an enclosure for the primary power disconnect. Secure this enclosure before beginning machine operation

Machine Guards

The machine is equipped at the factory with guards to protect the operator from contact with drive units, nip points, and electrical circuitry. Front and rear guards have safety interlocks. Do not remove.

Lower Transmission Guards

Securely position all guards for the lower transmission assembly and feed post before operating the machine. All guarding must be in place while the machine is operating. Take extreme caution when making adjustments or size changes with the guards removed.

Electrical Test

The machine has been test run and approved at SWF Machinery. Verify the proper voltage is supplied to the machine and verify the main drive motors rotates in the correct direction.

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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 the machine specifications.

Machine Speed:

12-35 trays per minute (standard) (Contact SWF for other speeds available)

Speed will be dependent upon size and style of blanks to be formed and will be slightly slower for machines operating in the 50 Hertz range.

Electrical

230 Volts AC, 3 Phase, 60 Hertz	STANDARD
230 Volts AC, 1Phase, 60 Hertz	Optional
208/480/600 VAC, 3 Phase, 60 Hertz	Optional
380/415 VAC, 3 Phase, 50 Hertz	Optional
Jefferson Power Transformer (460 Volts - 230/115 Volts, 5 KVA)	Optional

Drive Motor

1 HP or 3/4 HP, totally enclosed, fan cooled, 430/230 Volts ,3 Phase, 1140 RPM

120 Volt Control Circuit, Design "B", S.F= 1.15 .

Vacuum Blower(optional)

FUJI ELECTRIC, 230 Volts AC, 3 Phase, 60 Hertz, 55 CFM output.

Main Power Cabinet

NEMA 12 Enclosure (Hoffman). Main Disconnect and Fusing.

Push Button and Motor Controls

Allen Bradley

SWF Adhesive System

Operating Temperature: 325-375º F

Melt Capacity: 14 Ibs. per hour total

Melt Heaters: 5/8" dia. 230 Volt , 1Phase (wattage and length dependent upon tray size etc.)

Glue Forms: Pillow, Ribbon, Chunk, Granular (Pillow preferred)

Blank Hopper Systems

Standard Hopper: will hold approximately 100 "C" flute blanks

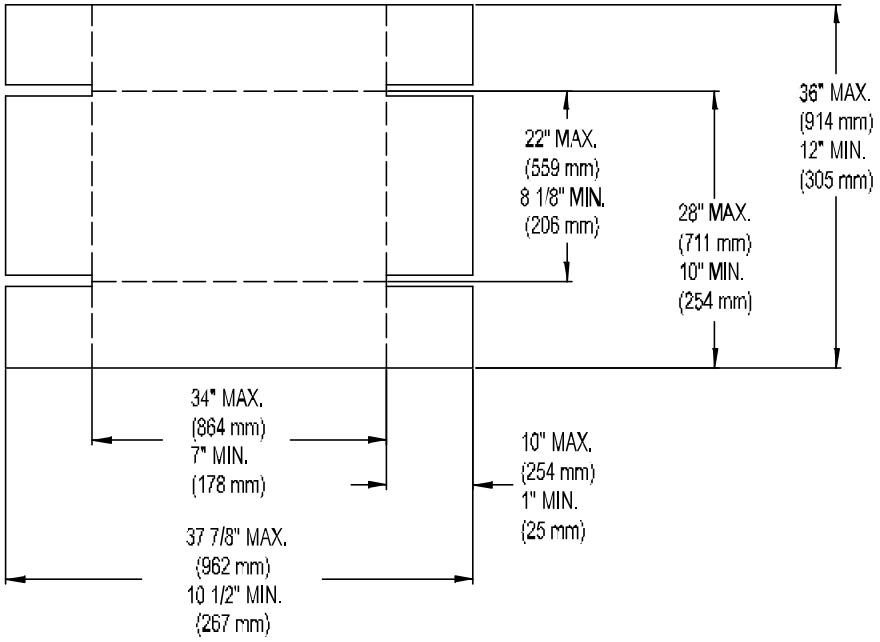
Model 150 Hopper: will hold approximately 150 "C" flute blanks

Large Capacity Hopper: will hold approximately 245 "C" flute blanks

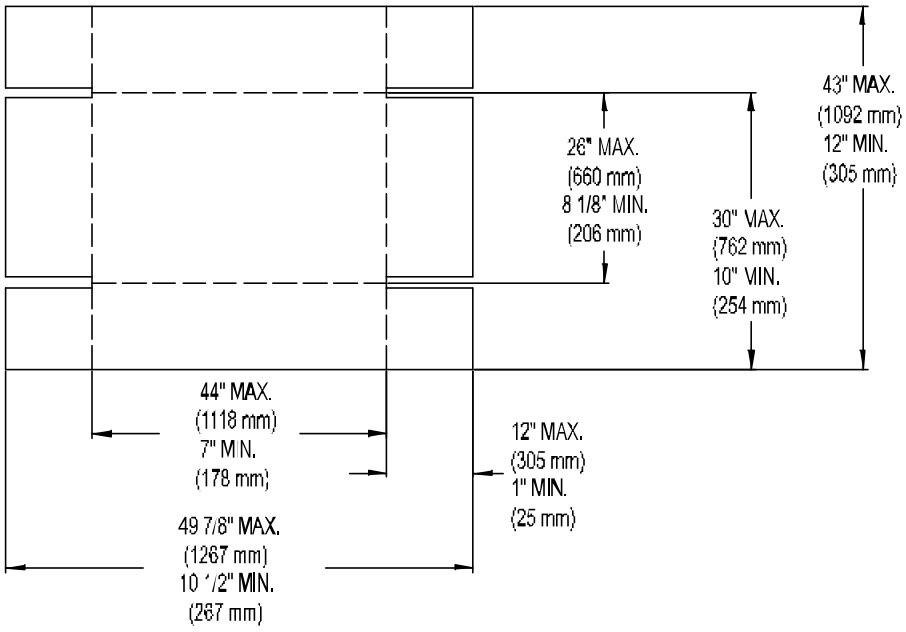
Horizontal Powered Hopper: will hold approximately 460 "C" flute blanks

Corrugated Limitations

The sizes listed below are referred to as standard sizes. For box sizes you require that do not fall within these dimensions, contact SWF Sales /Service department.



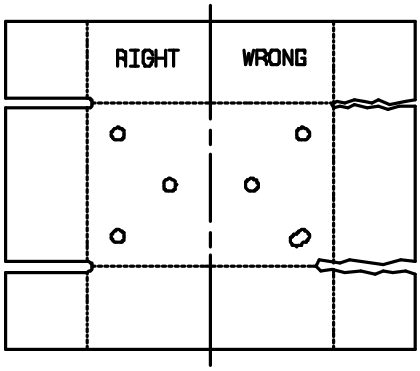
SWF-1T4 STANDARD BASE
STANDARD STROKE

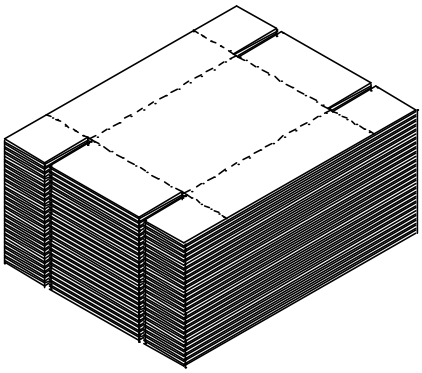


SWF-1T6 WIDE BASE
STANDARD STROKE

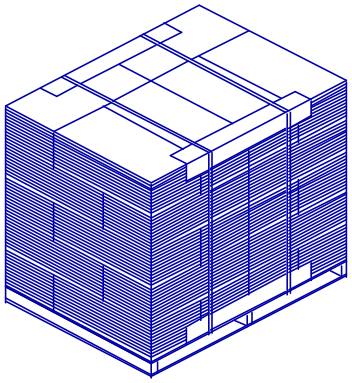
Corrugated :Storage Information

- Check each order for accuracy. Do the blanks agree with the specification for which your machine is set (i.e. dimensions, flute, board weight, scoring, coatings, and slot width)?
- Are slots and vent holes clean and stripped of excess material? (See below.)

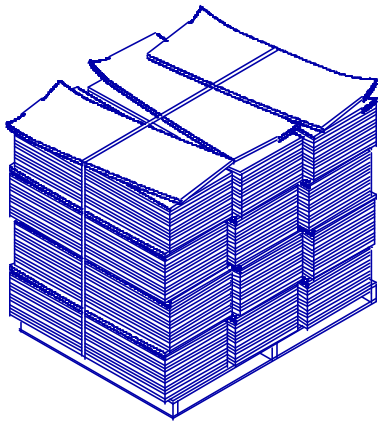




- Verify the case blanks were not damaged due to bundling.
- Use an interlocking pallet pattern to minimize warp in transit or storage.
- Check unitizing for proper pallet size, use of dunnage, and strap tension. (See below.)



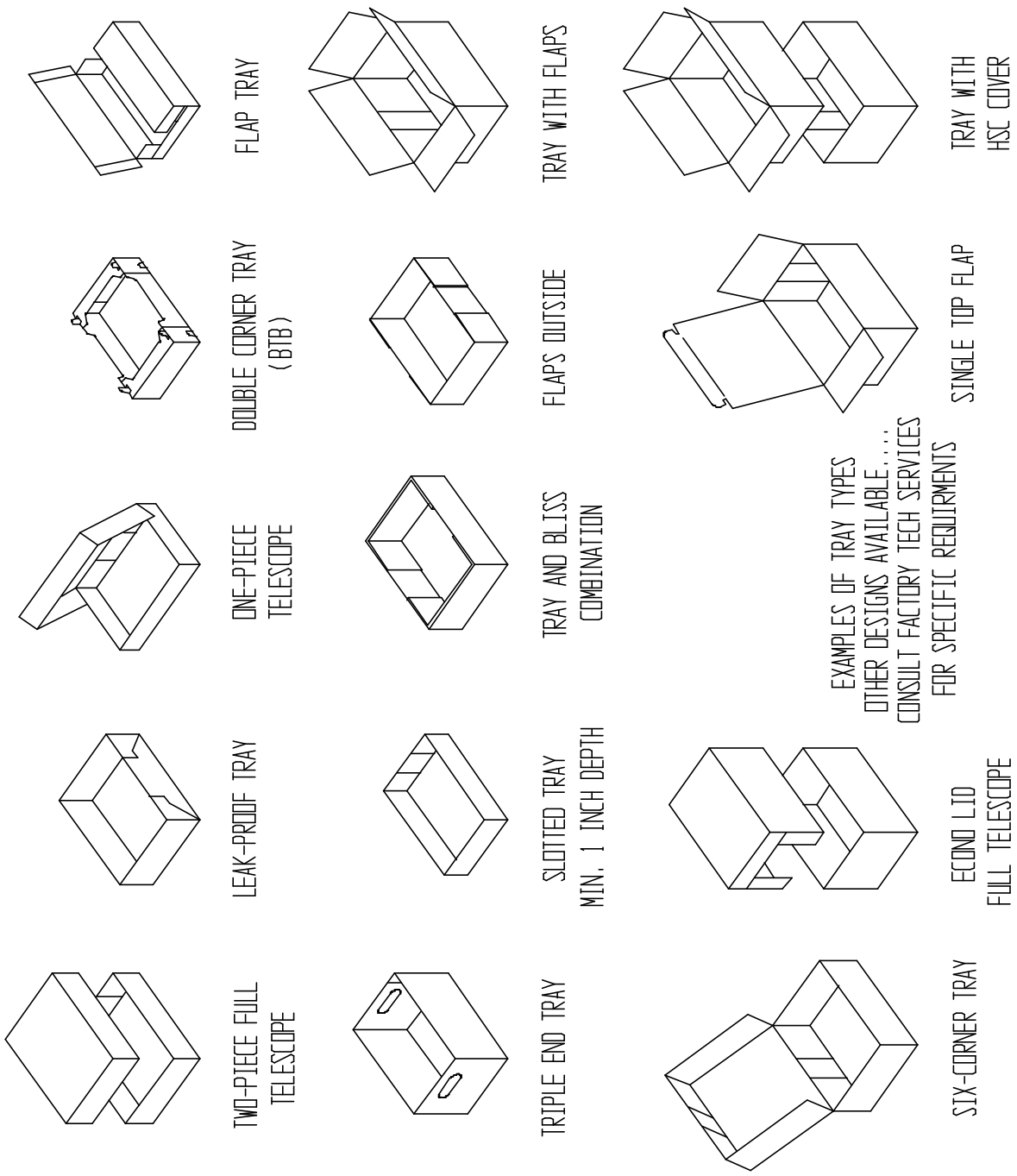
Right



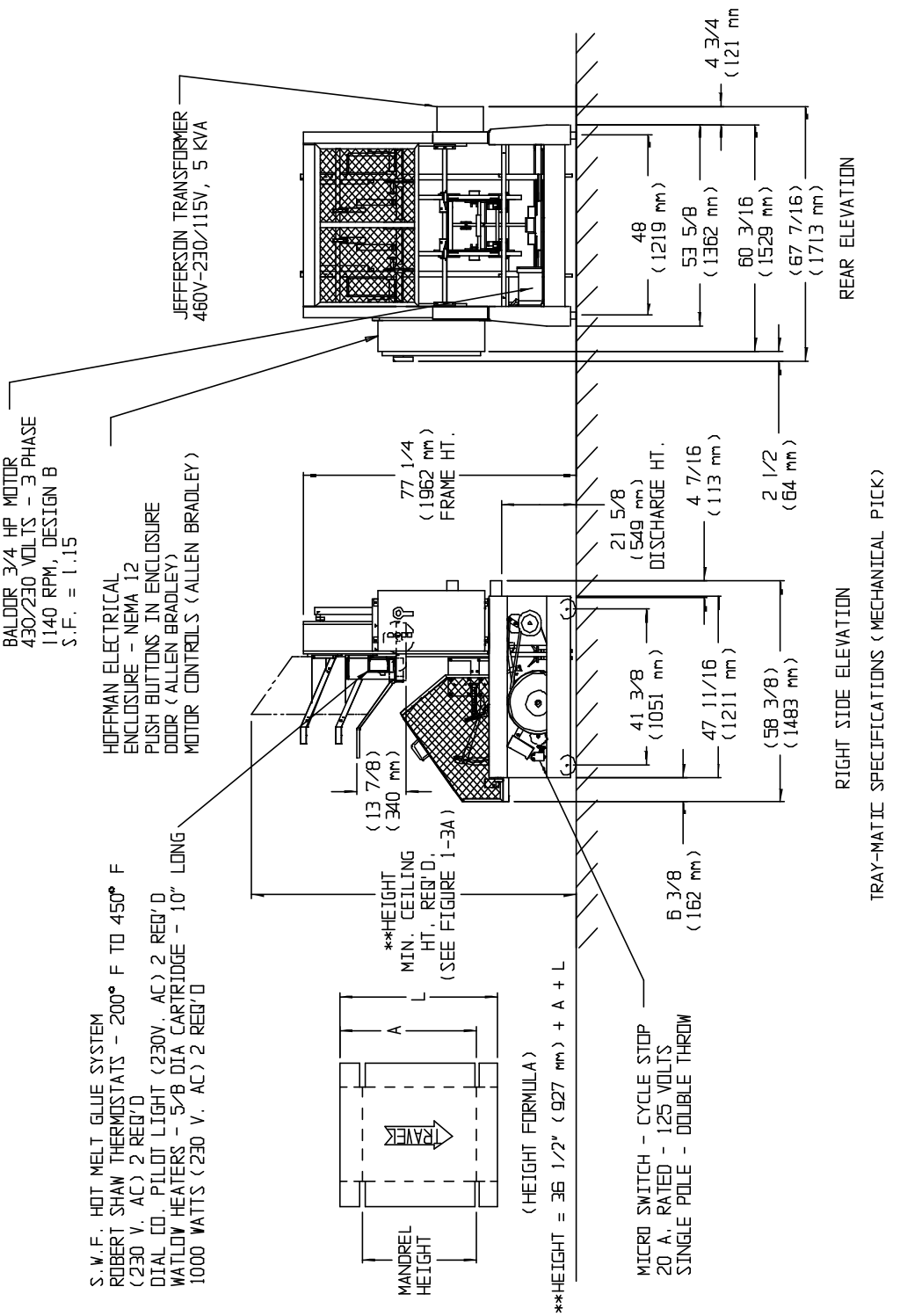
Wrong

- To minimize the loss of strength during storage, store the corrugate indoors to avoid extremes of temperature and humidity.
- Keep storage time to a minimum through stock rotation. (First in - first out.)
- Use handling equipment to move the blanks. Never throw or drag the bundles.
- These suggestions, in addition to normal shipping and handling practices, should lessen the chance of damaged containers.

Case Styles


FLAP TRAY
TRAY WITH FLAPS
TRAY WITH HSC COVER
DOUBLE CORNER TRAY (BTB)
FLAPS OUTSIDE
SINGLE TOP FLAP
ONE-PIECE TELESCOPE
TRAY AND BLISS COMBINATION
EXAMPLES OF TRAY TYPES
OTHER DESIGNS AVAILABLE....
CONSULT FACTORY TECH SERVICES
FOR SPECIFIC REQUIRMENTS
LEAK-PROOF TRAY
SLOTTED TRAY MIN. 1 INCH DEPTH
ECONO LID FULL TELESCOPE
TWO-PIECE FULL TELESCOPE
TRIPLE END TRAY
SIX-CORNER TRAY

Physical Layout



Controls

The following section details the most common control panel buttons used on your machine.

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.

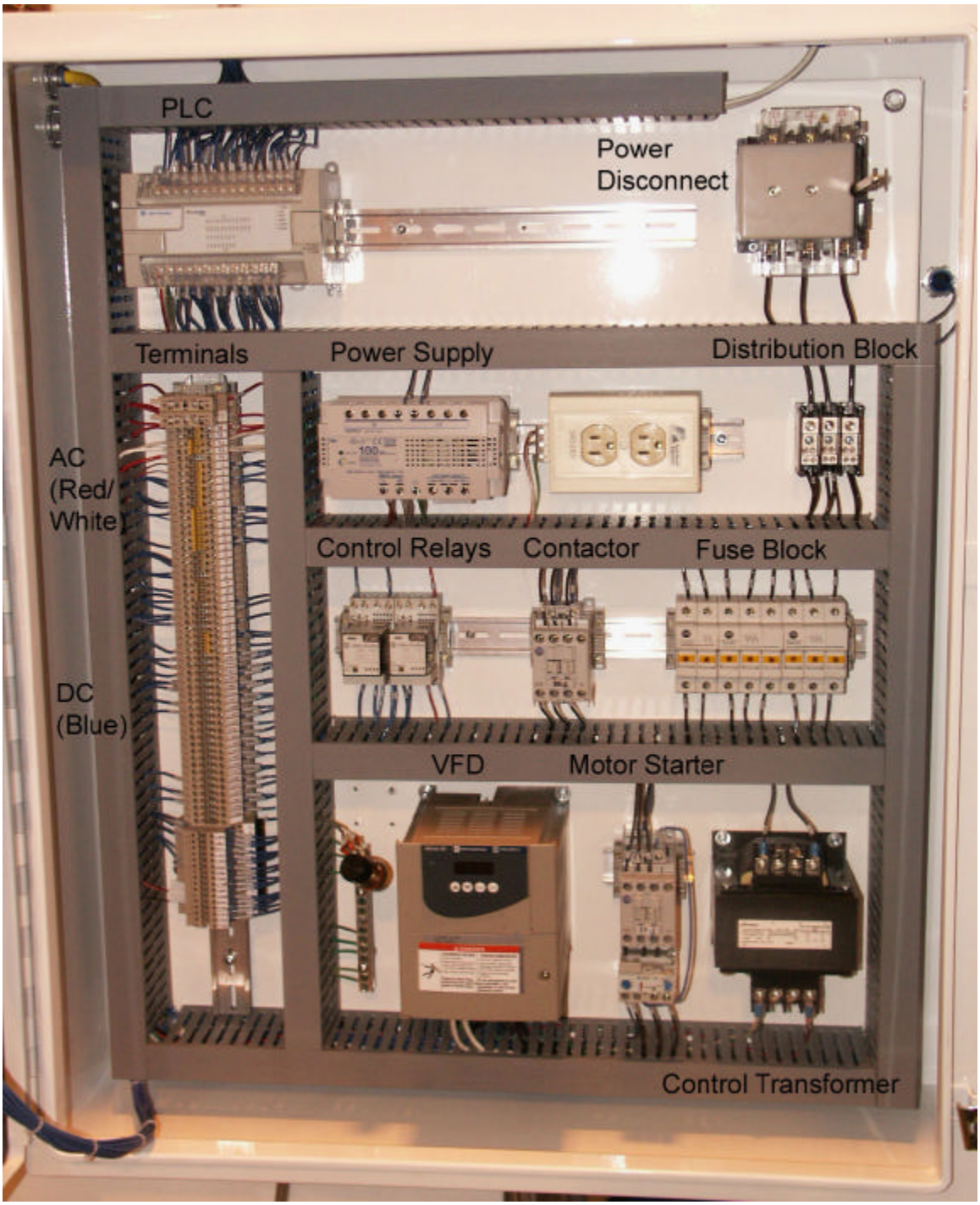
Forward / Off / Reverse

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.



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.

WARNING: Verify there are no cartons, cases, or personnel in the machine before start-up.

1. Verify the electrical power and air are connected properly.
2. Lubricate the machine.
3. Close and secure all access doors and guards.

Warning **Never make adjustments or repairs to the machines, or clear a jam, without first turning off and locking out the electrical power and air.**

Startup

Follow these procedures when operating this SWF machine. Review and follow in sequence all listed procedures to guarantee the safety of personnel and equipment.

1. Adjustments
    a. Verify all machine adjustments and settings are correct for the type and size of trays produced. Consult with the blank manufacturer specifications and confirm with the blank stock on hand for production.
    b. If appropriate, consult with downstream (conveyor) production activities to determine optimal operating speed and to verify any remote control operating requirements.
2. Blank Supply and Hopper Loading
    a. Blank material received from the supplier must be properly packaged to prevent damage. Check each new bundle for torn or excessively warped material. Check for possible deviation from dimension tolerance. The case blank must be correct within 1/16-inches. If these tolerances are not held, the material will not feed and/or form properly in the machine.
    b. Operate the machine indoors or a sheltered location. If the case blanks are exposed to adverse weather conditions such as excessive heat, fog, or rain, the blanks may become unsuitable for use.
    c. Manually place a stack of blanks on the hopper support ramp. Slide the stack forward, engaging the hopper blades with the blank slots. Allow the pile to slide down the incline of the hopper blades until the leading blank rests against the upper support knife. Completely fill the hopper. Do not press the blanks into the hopper.
3. Glue System
    a. The two adhesive pots require about 30 minutes to reach operating temperature.
    b. WARNING: When performing 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.
    c. Fill the applicator melt pots with adhesive material, taking care not to contaminate the adhesive supply.
    d. When the adhesive material is removed from its container, immediately close the container. An open container allows paper, lint, dust, etc., into the adhesive material. Contamination of the adhesive clogs the melt pot and pump to the point of requiring a complete cleaning of the applicator and possible replacement of damaged parts. Keep the melt pot lid closed at all times except when placing new material in the pot.
4. Applying Power to the Traymatic

a. Move the power disconnect lever to the "on" position and set the thermostat dials to the proper operating temperature, 325°-375°F. (Consult the glue manufacturer for the specific working temperature.) When the thermostat pilot lights go off, the applicator is ready for service.

5. To purge the adhesive system, bleed the pumps of all trapped air by manually rotating the pump drive wheels with a scraper.
    a. Frequently check the adhesive melt pots to verify a proper level of adhesive is maintained. The level of molten adhesive should never be less than half the depth of the pot.
6. Pull the emergency stop button out to the start position. If vacuum system is installed, turn the vacuum switch to “on”.
7. Place the “jog/run” switch to the “jog” position and the “hand/off/auto” to the “hand” position.
8. Press the green “start” button to set the internal relays.
9. Press and hold down the green “start” button and allow the machine to produce two or three trays. Verify all set-up procedures have been correctly performed. While the former is in operation, check the adhesive stripes on the blank for proper length, location, and width. Adjust the blank feeding, compression, glue flow, or reprogram the adhesive segments as needed.

Production

10. When starting the main production run, start the machine by setting the variable frequency drive unit to the slowest speed possible.
11. Place the machine in ‘run’ and ‘auto’ mode.
12. Press and hold down the start button to begin operation.
13. During operation, check the formed cartons for correct glue stripe and the length of bead. Verify the bond tears the corrugated material when you pull the glue flaps from the body.
14. When you are satisfied the cartons are bonded and formed to your complete satisfaction, turn the speed potentiometer to the desired production speed.

Monitor

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

Clearing Jams

If your machine uses a blank pick system, a safety feature prevents a stack up of blanks trying to enter the vertical guides.

- If multiple case blanks are picked, the con rod members separate.
- Micro switch interrupts the motor control circuit and the Traymatic stops in the cycle stop position

To correct this condition:

1. Disengage the picks from the blank.
2. Grab the pick arms and pull sharply downward. This engages the micro switch and con rod members.

Potential causes:

- Verify the vertical guide settings are correct (blank width plus 1/8”)
- The blanks much be clean with no chaff or unstripped vent holes
- Are the gate openings clear of foreign material?
- If the blanks partially feed down, pull the picks away from the blank and remove blank by manually rotating the machine back to the cycle start position. Pull the blank free.

After the jam is cleared, press the start button to continue the production run.

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 for testing, 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 machine's operating cycle, monitor all consumable products. 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.

Monitor the glue levels according to the manufacturer's recommendations.

Shut Down

At the end of each production day, follow these shut-down procedures.

1. Turn the main power switch to the 'off' position.
    a. Turning the main power switch off turns off power to the glue units. Prolonged heating of the adhesive causes charring, damaging the system.
2. Perform a power lockout on the machine.
    a. Lockout the power to the machine to prevent inadvertent start-up. Never attempt to perform maintenance or repairs to the machine without first locking out the power.
3. Clean up the machine and operating area
    a. At the end of each production period, remove all adhesive drippings from the machine components.
    b. Remove all debris (flawed trays, paper, scraps, etc.,) from the area.
4. Perform the daily or weekly maintenance.
    a. Verify the main power switch is off and the power disconnect switch is locked out.
    b. Clean the immediate area.
    c. Before performing maintenance on the glue system, verify the maintenance personnel are using goggles, gloves, and other protective gear.
    d. During maintenance, store the guards to protect the interlock system
    e. After all maintenance is complete, re-mount all guards back into their original factory position.

Setup and Adjustments

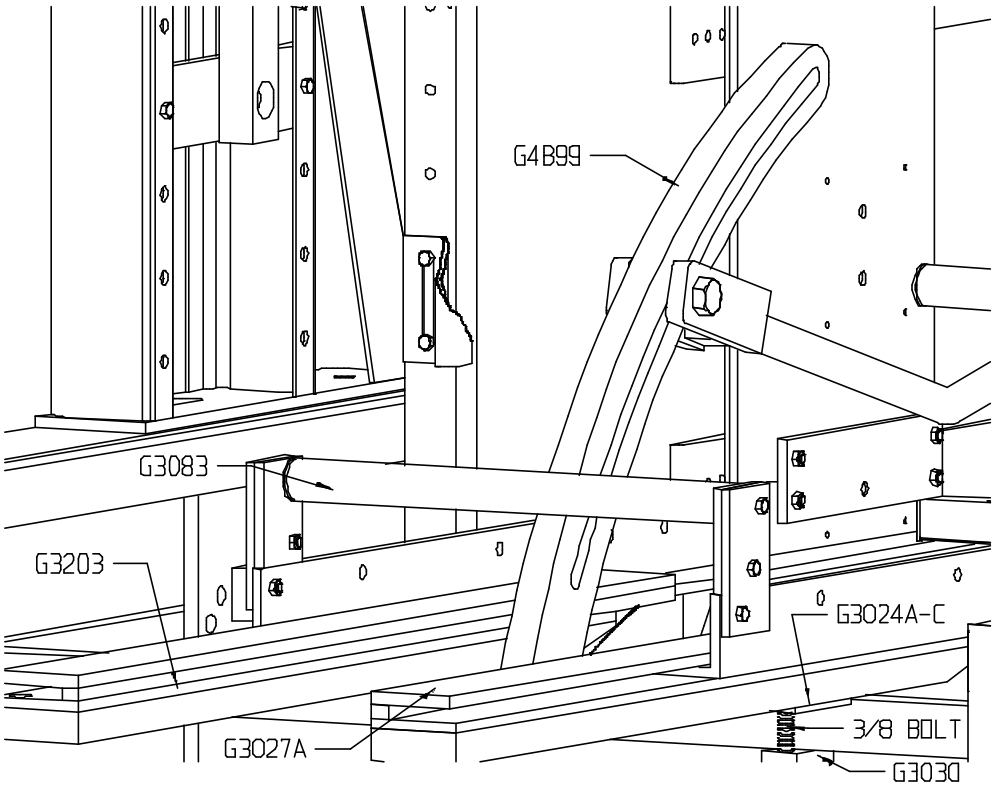
Mandrel

Mandrel guide spacers vary with the corrugated thickness:

Flute	Thickness	Spacer Part Number
"B" and "C" Flute	3/16"	G3024A
"A"	9/32"	G3024B, G3024A
B" / "C"	Doublewall	G3024C

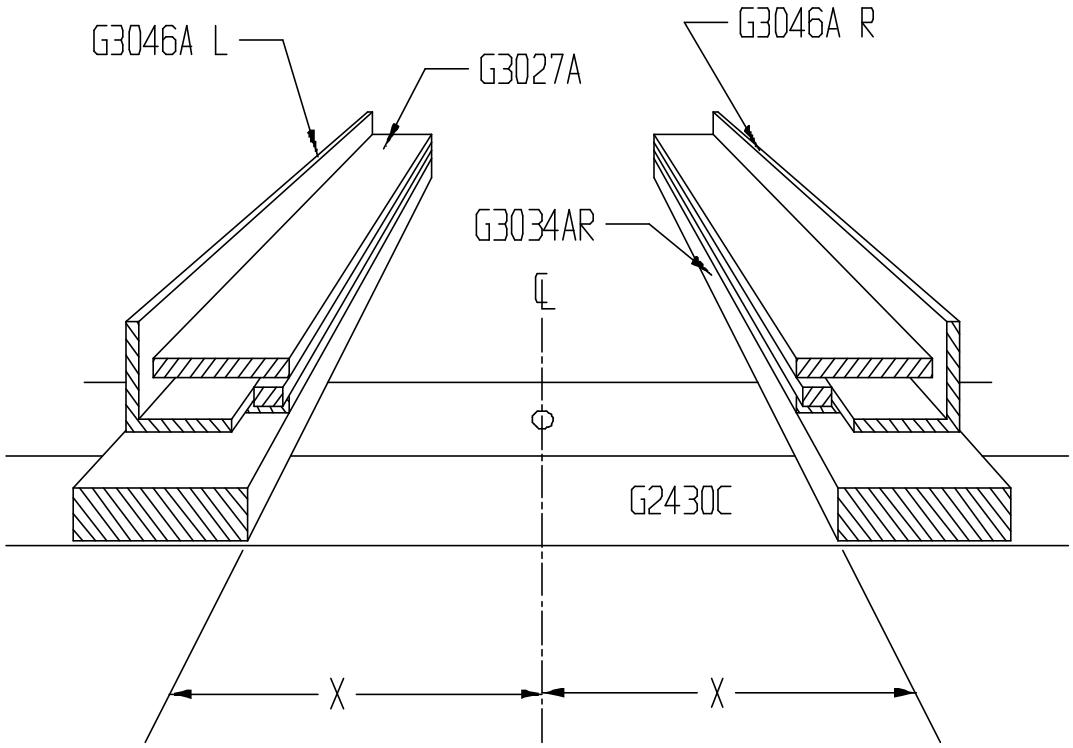
To change spacers (refer to the drawing below):

1. Remove the mandrel base clamp G3030 from the guide rails and support stud G2924D
2. Install the spacer and adjust the support stud to hold the mandrel base clamp parallel when the 3/8-inch bolt is tight. (There are four base clamps per machine.)
3. Remove the rear mandrel spacer bar G3083 from the mandrel. Slide the mandrel rails G3046 R/L into the mandrel guides G3027A and G3203
4. Reinstall the mandrel spacer bar G3083 behind the mandrel operating arm G4899.



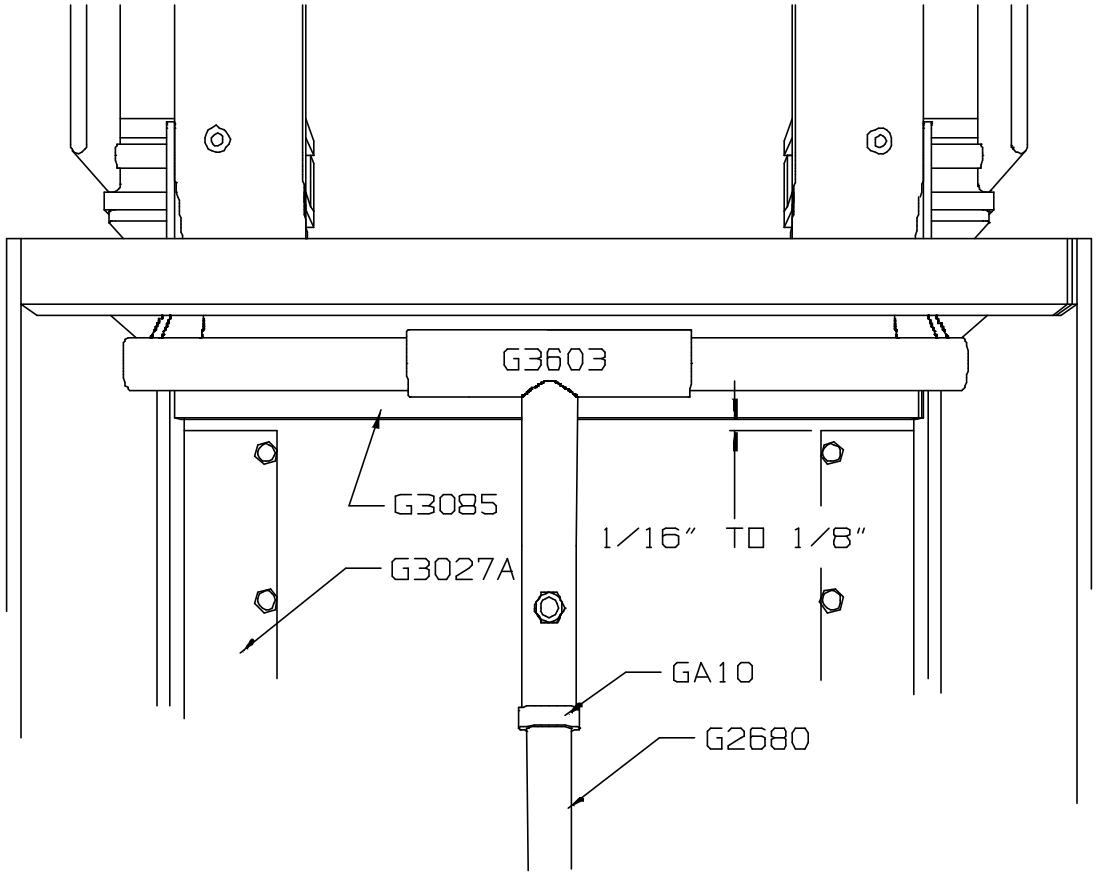
To square the mandrel for forming (refer to the drawing below)

1. Position guides G3034 equally from a centerline marked on the mandrel spreader bar G2430.
2. The mandrel should slide freely with minimum play between the G3027 guides with no clearance.



Mandrel Return Stroke Adjustment:

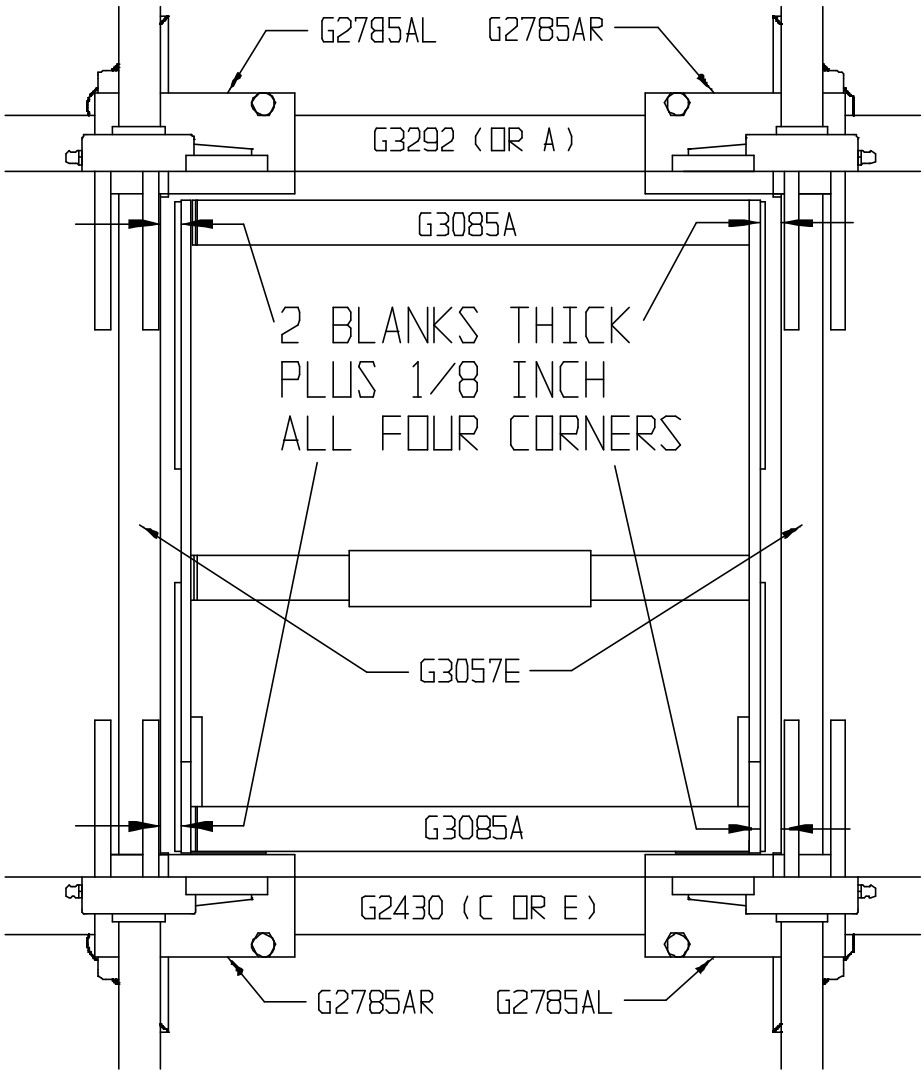
1. Set the mandrel feed post (G4899) at the fully retracted or returned position.
2. Loosen the set screw on the set collar (GA10) sliding over the connecting rod end (G2680) and spreader tube (G3603).
3. Adjust the mandrel's connecting rod end until the rear of the mandrel guides (G3027A) and spreader bar (G3085) have 1/16-inches to 1/8-inches clearance
4. Retighten the set collar and the 3/8-inch set screw.



Side Compression Bar

To apply correct pressure for bonding purposes.

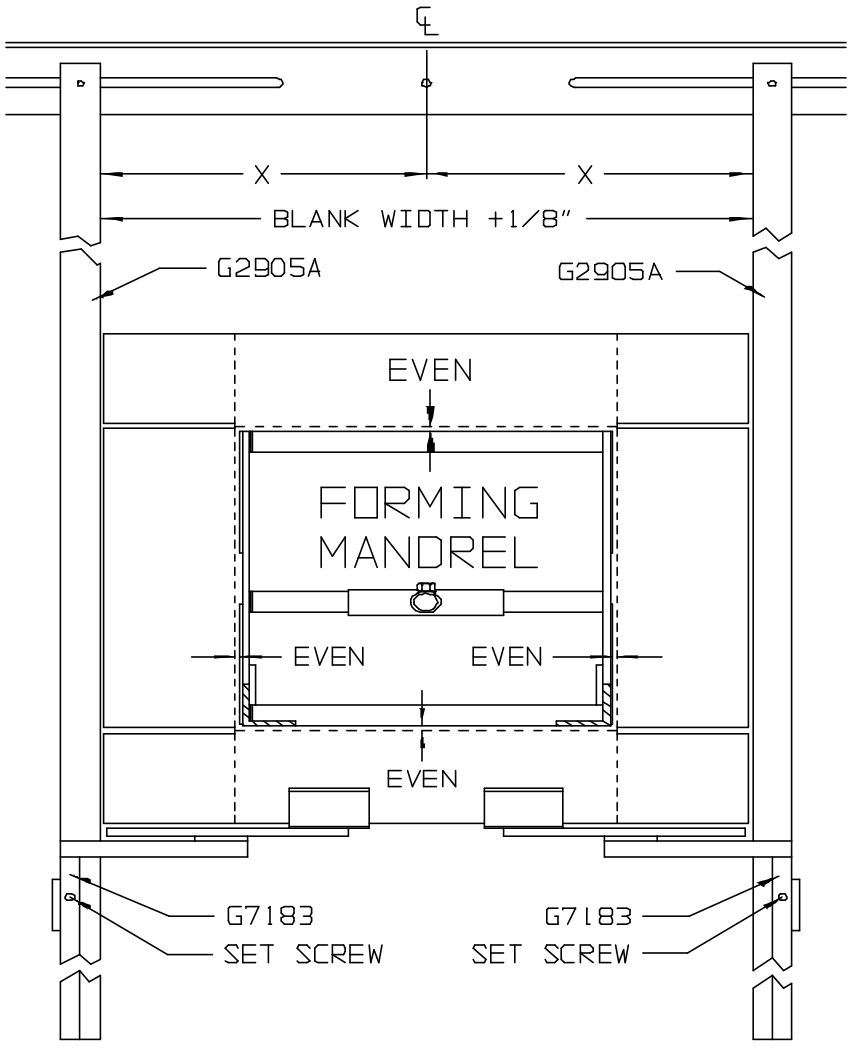
1. Set the front of the mandrel spacer bars G3085 even with the compression bars G3057.
2. Loosen the bolts holding the top and bottom compression shoes G2785.
3. With the mandrel in same position, set the distance of two blank thickness plus 1/8-inches from the mandrel to the compression bars.
4. Retighten all bolts.



Bottom Stop

The bottom stop position the blank for forming.

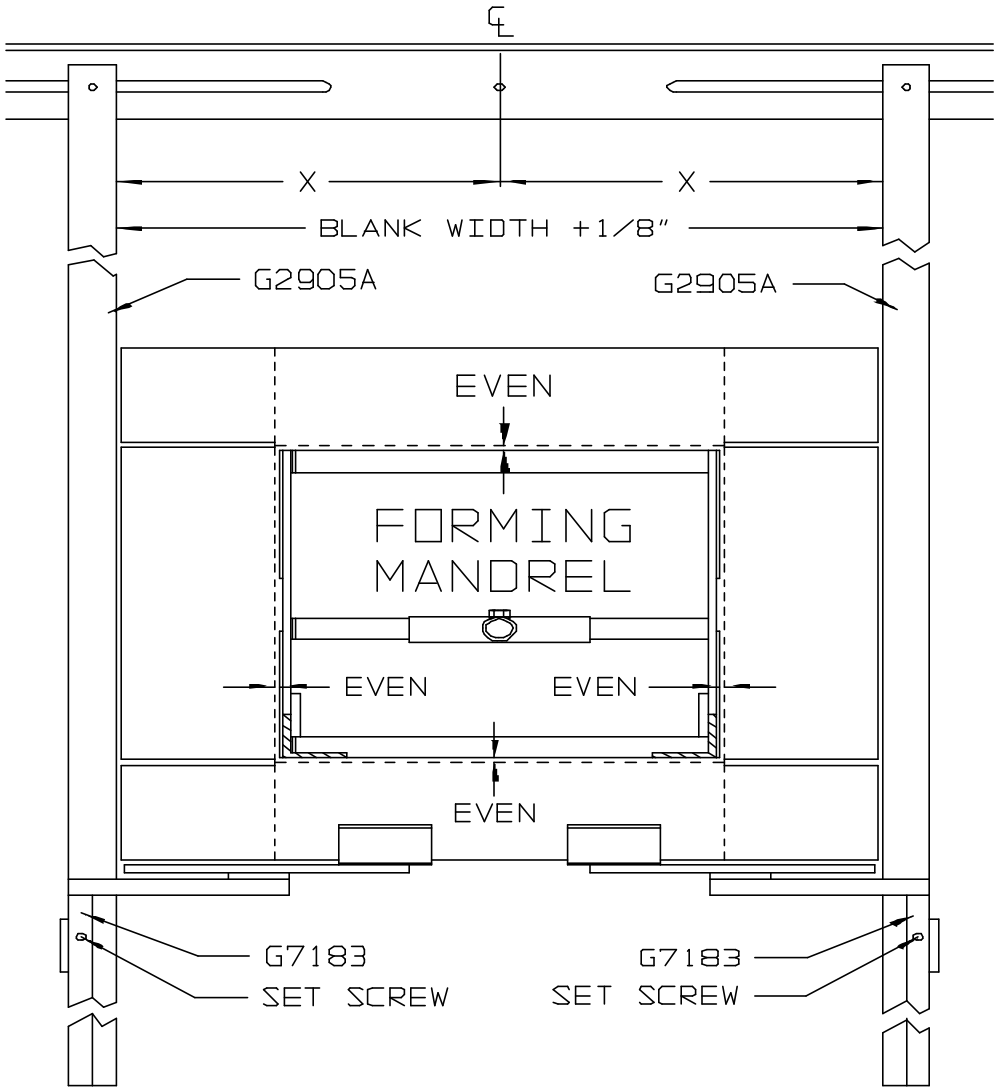
1. Stop the mandrel at the end of the return stroke.
2. Place a blank on the bottom stops.
3. Loosen the set screws on the stop plate support bar G 7183.
4. “Jog” the mandrel to the blank.
5. Adjust the bottom stops up/down until the mandrel completely “mirrors” the blank bottom score lines. (See below)
6. Retighten the set screws.



Vertical Guide Bars Centering

The vertical guide bars provide unrestricted travel and set glue pattern area.

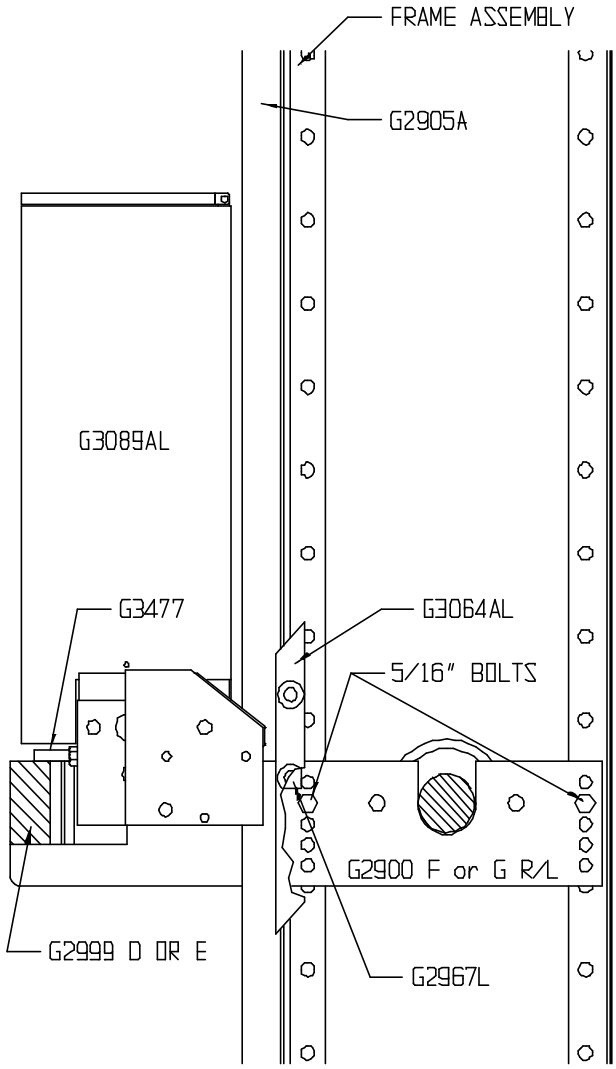
1. Measure the horizontal width of the tray blank as it sits in the hopper. Add 1/8-inches to this measurement.
2. Loosen the bolts at the top and bottom of the vertical guide bars.
3. Adjust the vertical guides G2905A R/L until this measurement is obtained. Blank should travel length of vertical guide bars with the 1/8-inch clearance.
4. Check this measurement at the top and bottom of the guides.
5. Do not exceed the width measurement plus 1/8", or bonding/travel problems occur.



Feed Roll Assembly

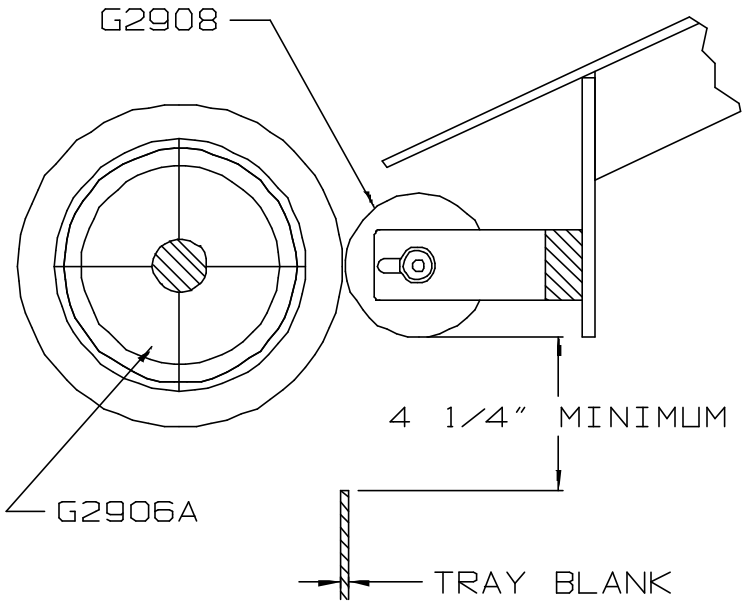
This initial adjustment may be required before setting the distances on the previous pages.

1. Loosen the bolt on the melt pot clamp G2967 R/L located on the vertical guide bars G2905A.
2. Slide the melt pots up.
3. Remove the mounting bar bolts and position the feed roll assembly to match the distances required earlier.
4. Slide the melt pot down until the pot support stud rests on the idle roller mount bar G2999D.



Adjust the blank feed wheel to obtain minimum distance between bottom of the feed roll and the top of the blank. When the rebound stop is used, set to 4 ¼-inches as per the drawing below.

Note: Set to the largest size if multiple sizes will be formed.

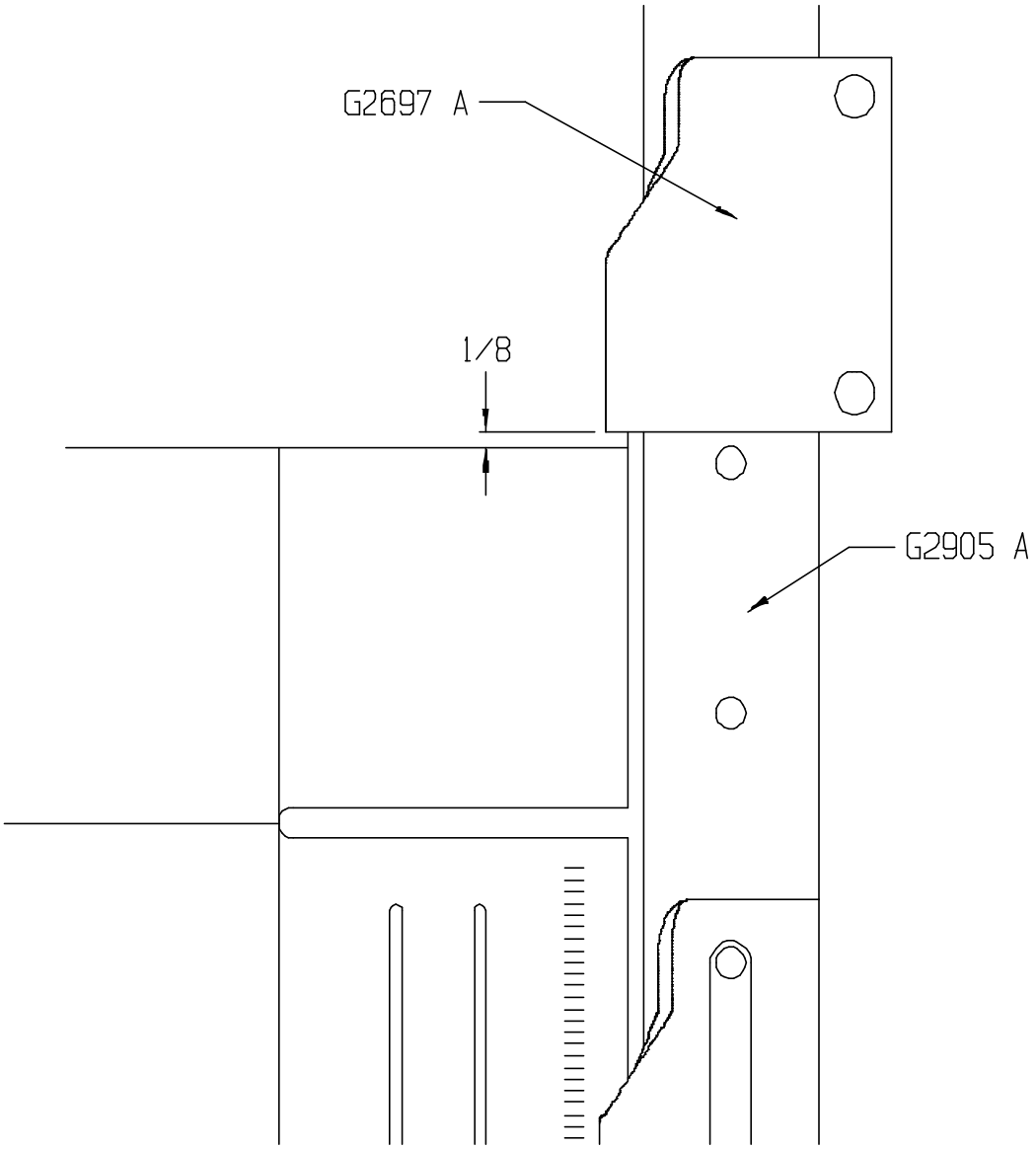


WITHOUT BLANK REBOUND STOP

Rebound Stop

The rebound stop aligns the blank for forming.

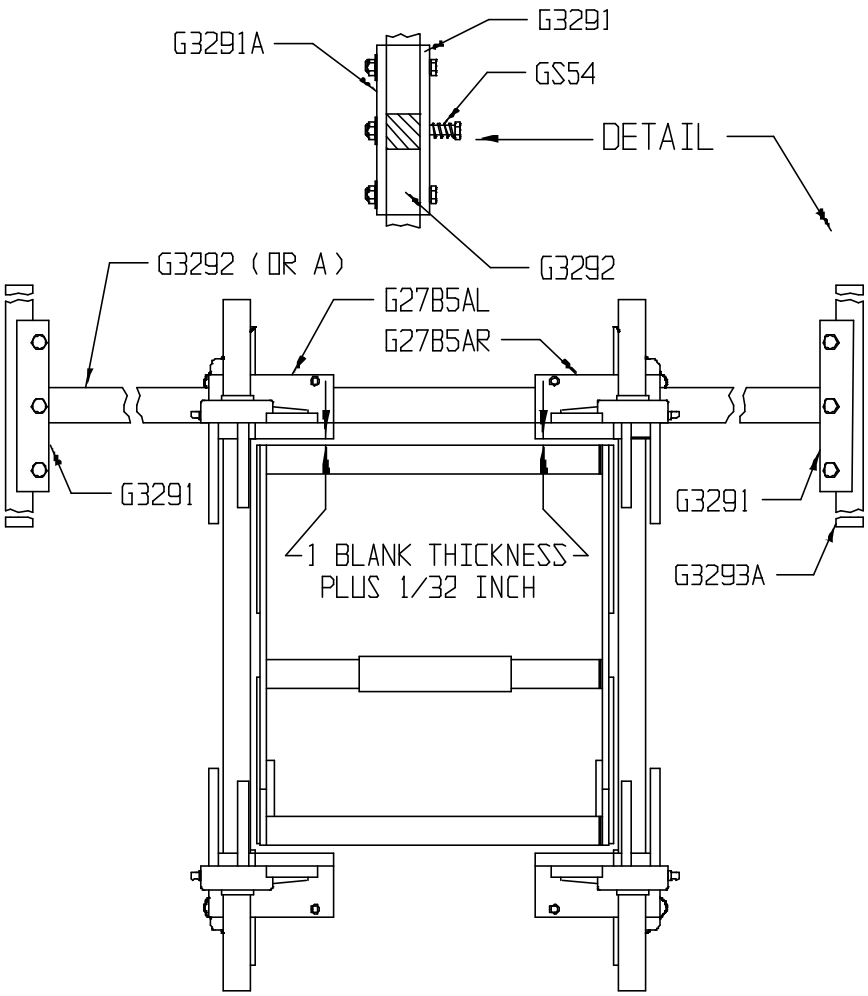
1. The rebound stop (G2697A) is to the right of the vertical guide bar.
2. Adjust the stop until there is 1/8-inch clearance between it and the blank top when the blank rests on the bottom stop).



Top Tray Forming Shoes

The top tray forming shows apply the correct top pressure during forming.

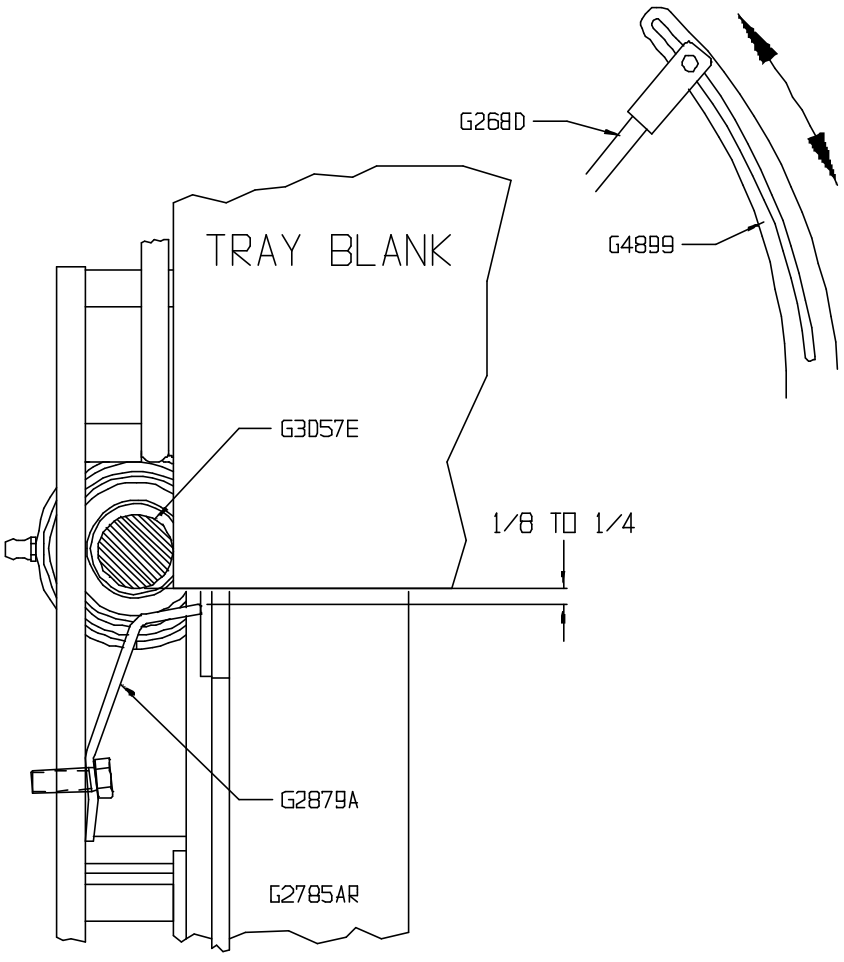
1. Jog the Traymatic until the operating arm G4899 is at the end of the forming stroke (the mandrel is fully into compression).This is done with a formed carton around the mandrel.
2. Loosen the bolts on upper mount bar G3292.
3. Move the bar vertically until obtaining a clearance of one blank thickness plus 1/32-inches between the mandrel top and the forming shoes.
4. Retighten the bolts and check the clearance again.



Mandrel Travel Length Adjustment

To adjust the mandrel travel, follow these steps and refer to the drawing below.

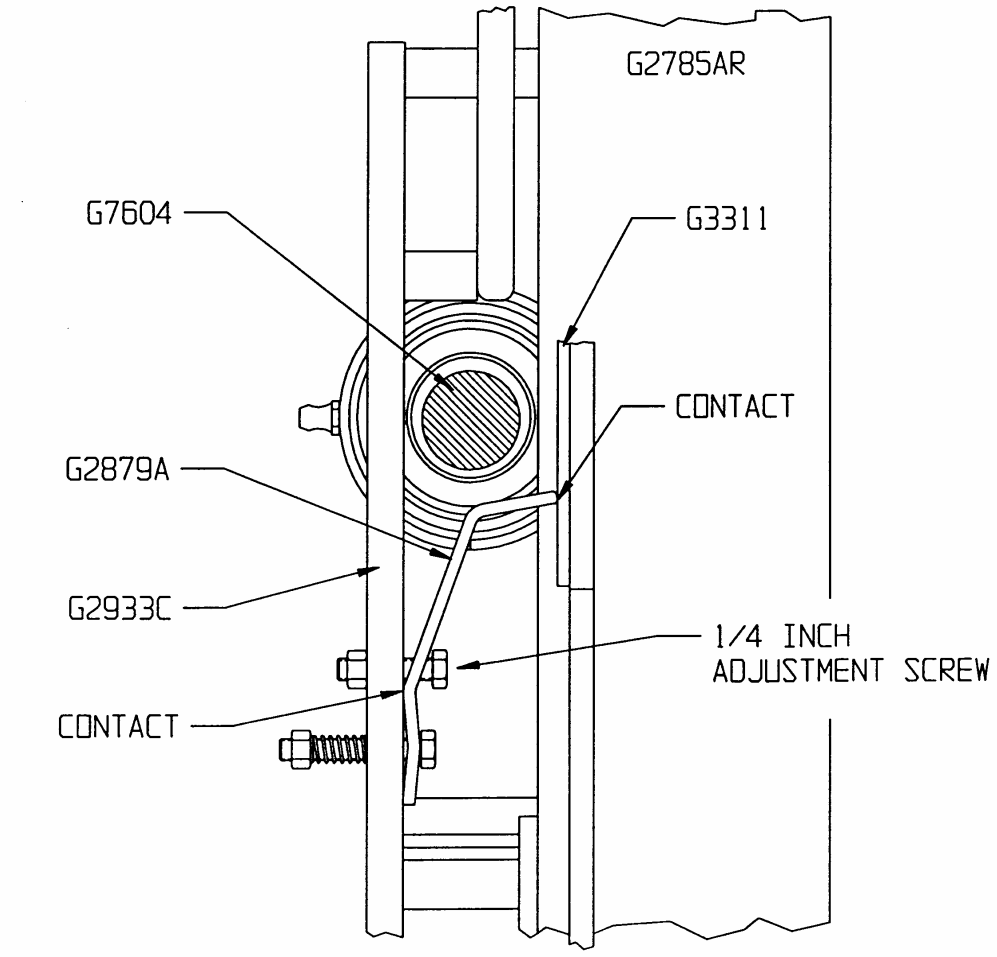
1. Rest a blank on the bottom stops and between the vertical guides. Move the mandrel a full stroke forward into the compression chamber, forming a tray.
2. Loosen the yoke bolt securing the mandrel connecting rod (G2680) at the clevis end to the slot in the mandrel feed post (G4899).
3. Adjust the mandrel connecting rod (G2680), moving the mandrel carriage and attached mandrel until there is 1/8-inch to1/4-inch clearance between the top of the tray depth wall and the tray stripper pawls (G2879A), at all four stripper positions.
4. At this time the compression rod (G3057E) should be directly adjacent to the outside of the tray.
5. Retighten the yoke bolt. Verify this adjustment by jogging the machine from a retracted or returned position to an advanced or forward position.



Stripper Pawl Adjustment :

To adjust the box stripper pawls:

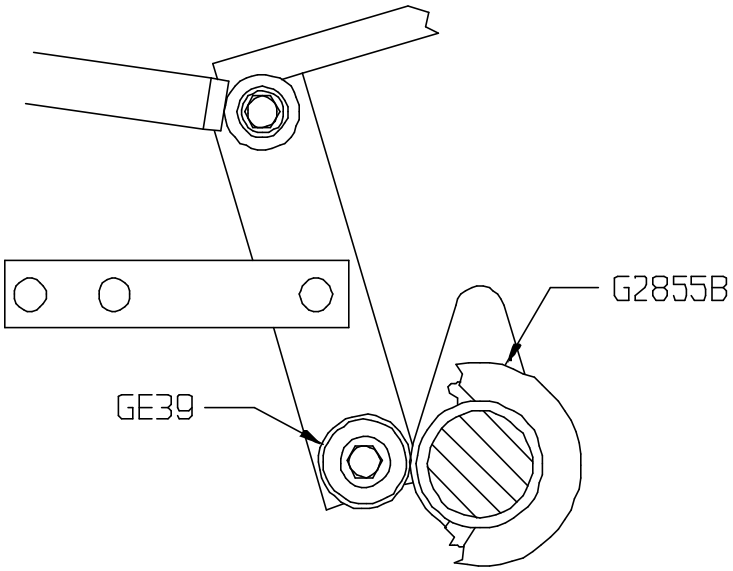
1. Verify the mandrel is clear of the compression chamber and is on the return stroke.
2. Tighten/loosen the box stripper pawl G2879A until it contacts shoe G2933C, as per the illustration below.
3. Rotate the mandrel back into the compression chamber and tighten/loosen the adjustment screw until the stripper pawl *just* makes contact with the mandrel Teflon plates.
4. Do not over-tighten, as this tears the box.

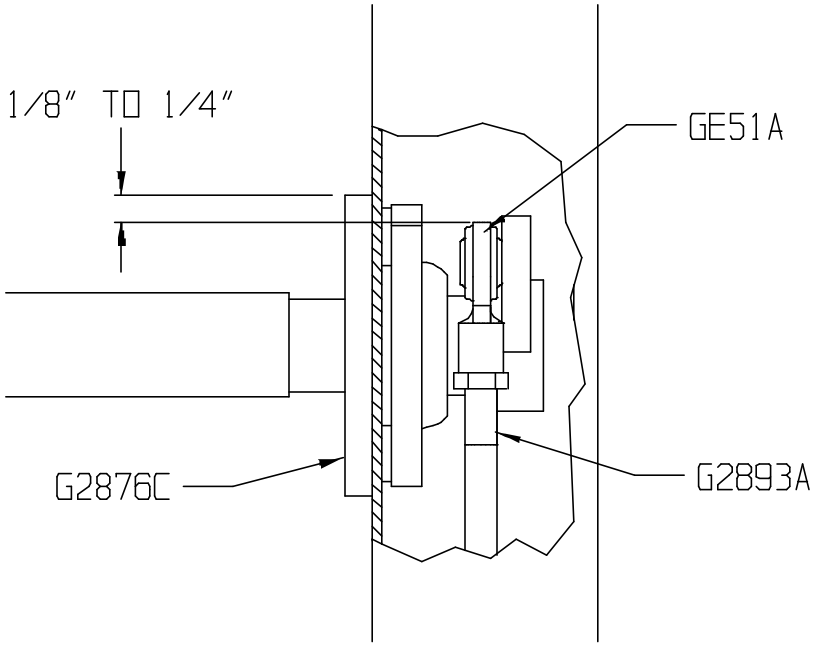


Blank Feed Pick (No Vacuum Feed)

To set pick rod adjustment

1. Set the blank pick cam roller GE39 on the low point of G2855.
2. Adjust the rod end bearing GE51A on the pick con rod G2839 until the top of the bearing is 1/8-inch to ¼-inch below the top of the blank pick mount bracket G2876

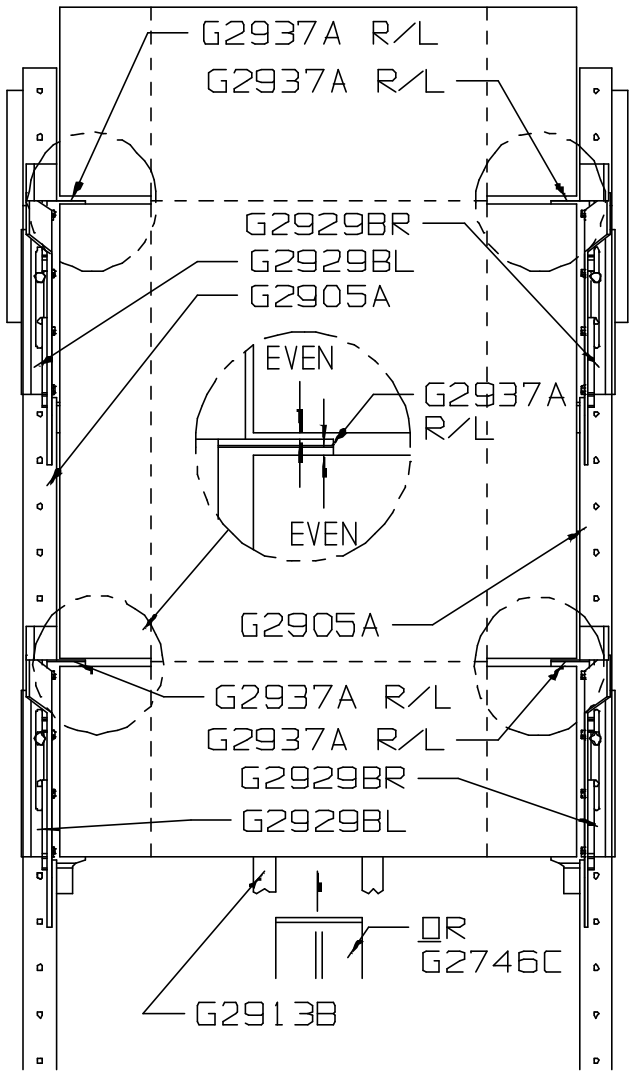




Blank Hopper (No Vacuum Feed)

1. Set a case blank resting on support G2913B or G2746C
2. Adjust the support bars G2929B R/L by loosening the bolt.
3. Slide the bars vertically on the vertical guide bars G2905A.
4. Adjust until the support blades G2937A R/L are centered in the blank cut outs.
5. Retighten all bolts

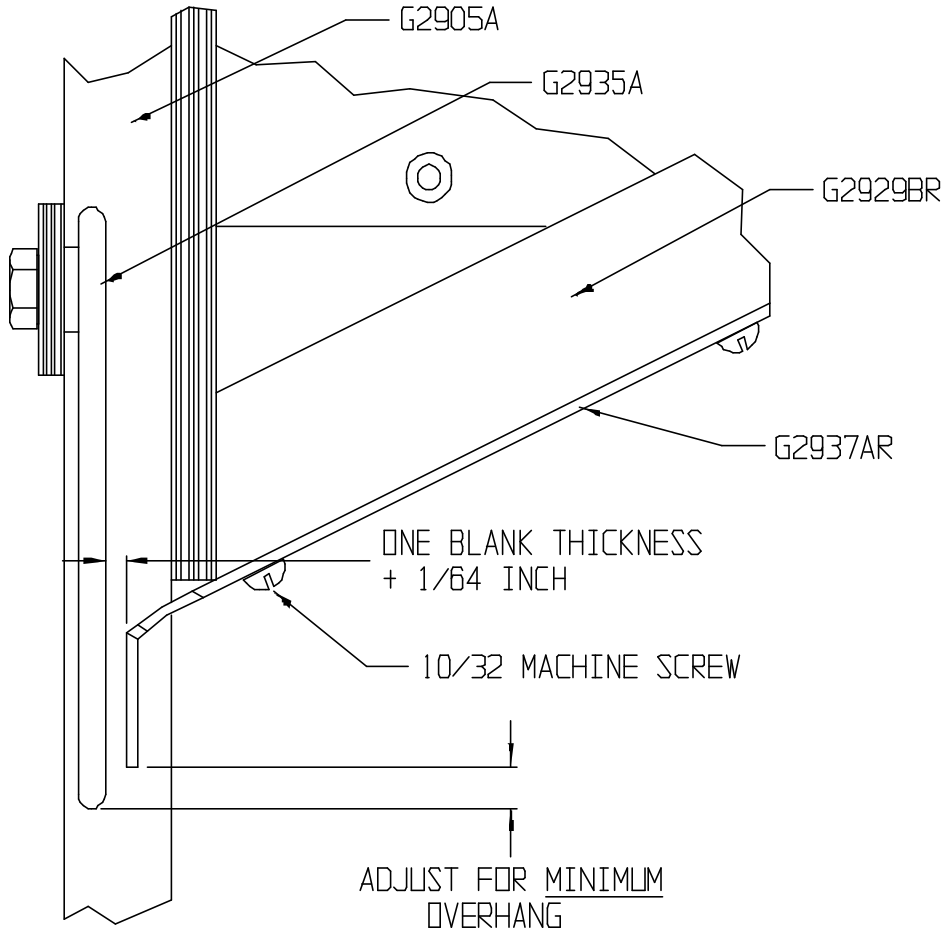
Note: If the forming blank is not square or the slots are uneven, adjust until the blank sits straight in the vertical guide bars. Notify your corrugators.



Blank Hopper Gate (No Vacuum Feed)

The blank hopper gates blocks multiple case blanks from feeding from the hopper.

1. Loosen the screws located at the bottom side of the support blades G2937 R/L.
2. Position the blade at one blank thickness plus 1/64-inch between the support blade and the hopper gate bar G2935.
3. Retighten all bolts or screws.
4. Adjust the hopper gate bar for a minimum overhang based upon where the mount holes line up.

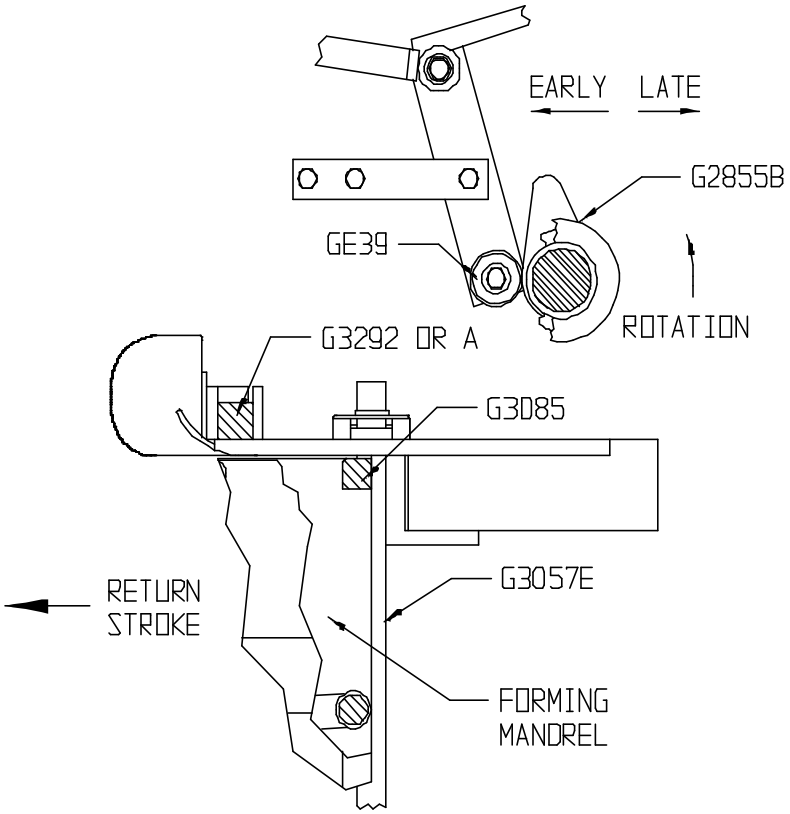


Blank Pick Cam (No Vacuum Feed)

To set timing.

1. Stop the mandrel on the return stroke. Verify the hopper is filled with blanks.
2. Align the front edge of mandrel with the centerline of the compression rod G3057. The cam follower GE39 should start to rise on the cam lobe G2855, as viewed from left side of the machine.
3. Loosen the set screws on the cam collar.
    a. To pick earlier: rotate the pick cam counterclockwise
    b. To pick later: rotate the cam clockwise

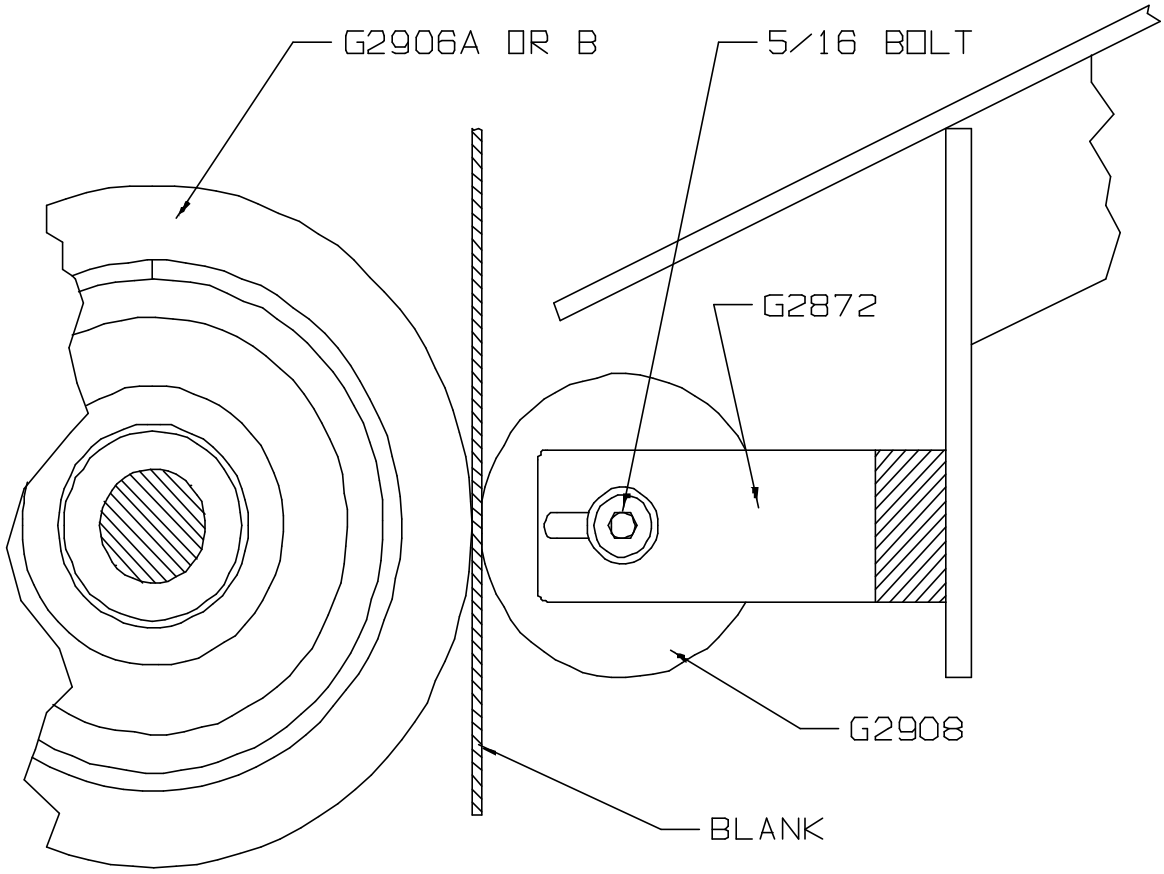
Note: The blank must move to the return position and rest on the bottom stops before the mandrel moves forward. Follow this trial and error method until the blank just misses the mandrel.



Idler Roller

NOTE: Blank thickness determines the distance between the Feed Roll and the Idle roller.

1. Loosen the bolts holding the idle roll G2908.
2. Adjust the distance between the idle roll and the feed wheel G2906 A or B until there is no slippage as the blank travels between these two rolls.



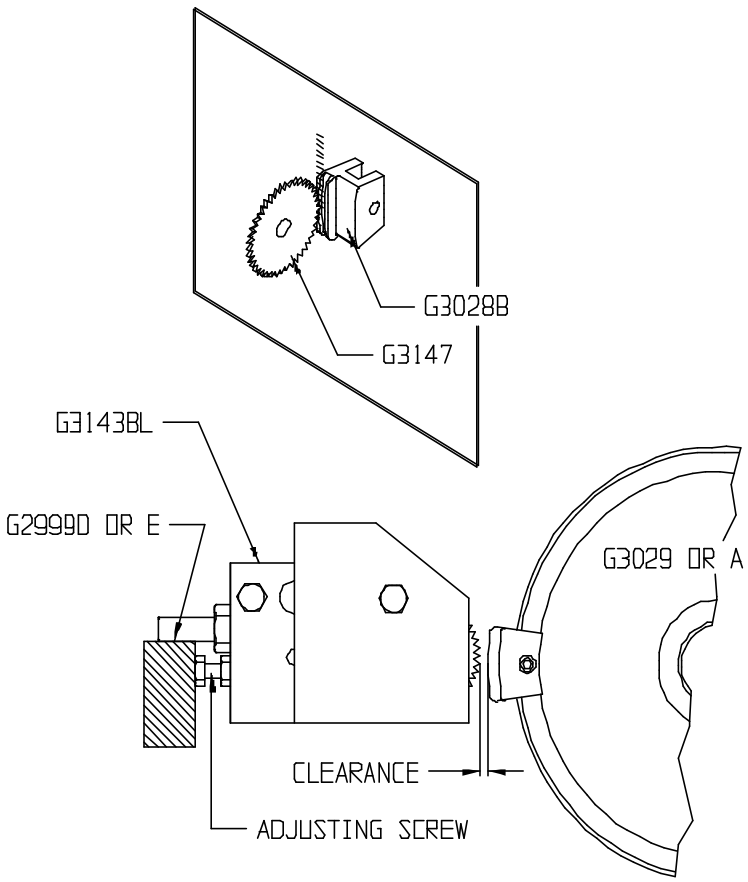
Glue Segment to Glue Pump Clearance

This setting varies according to the thickness of the material formed. A change from “B” to “C” flute, for example, may necessitate a recheck of the clearance.

To adjust the segment and wheel clearance:

1. Loosen the retaining nut on the adjustment screw located in front of the glue pump housing G3143B R/L.
2. Adjust this screw to create visible teeth marks on the blank as it passes between the glue pump drive wheel G3147 and the segments G3028.

The teeth marks must be plainly visible but not deep enough to tear the blank. Tighten the retaining nut when completed.

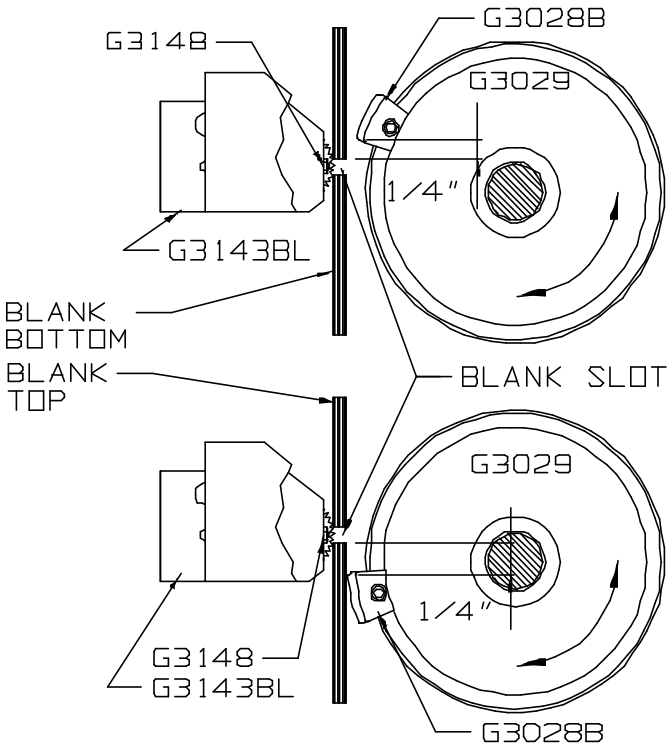


Glue Program Segment

Program segments must be centered with, and aligned to, the glue pump drive wheel G3147.

TO ALIGN

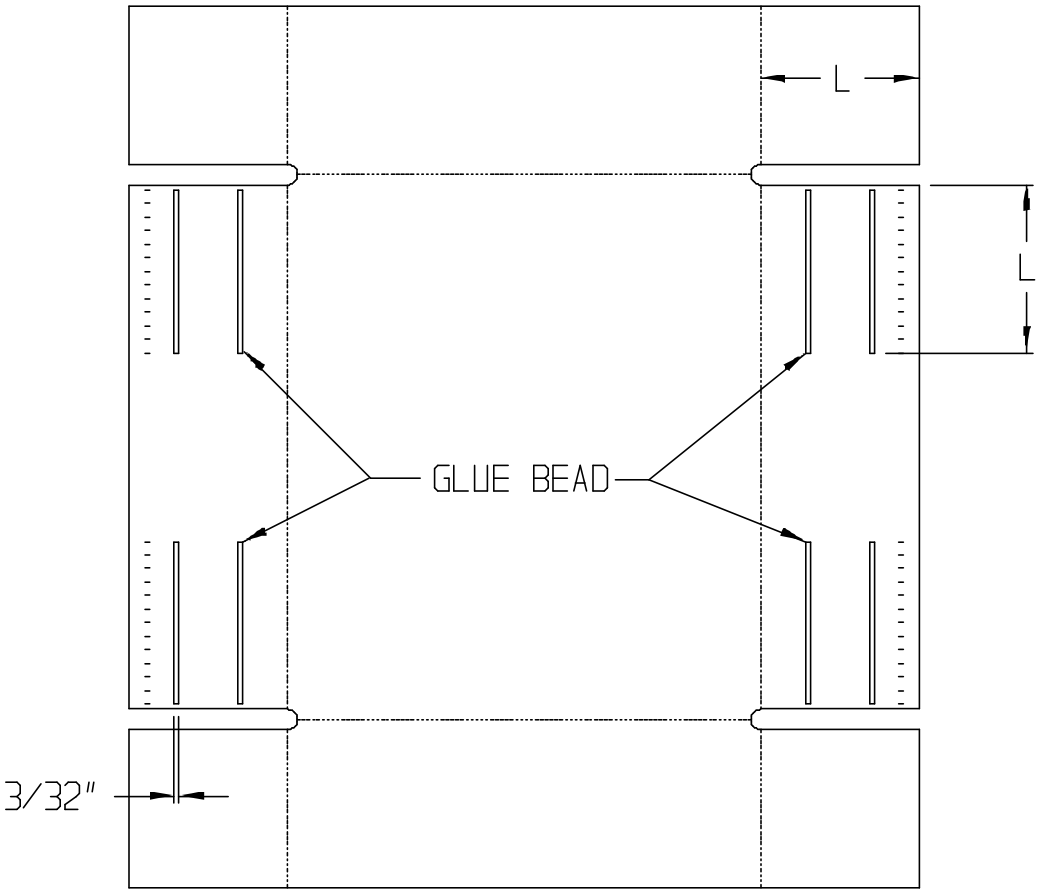
1. Attach segment G3028B to the program disc G3029. Slide the program disc and segment over the glue pump drive wheel. Center the segment slot over the glue pump drive wheel G3148.
2. Tighten the set screw on the program disc and load the blank hopper.
3. Move the blank down through the feed roll until the first set of slots on the blank appear. Line the slots up with the glue pump jets G3148.
4. Loosen the set screw attaching the segment to the program disc and position the disc ¼-inches above the blank slot. Tighten the set screw when complete.
5. Continue to move the blank down until the second set of slots of the blank align with the glue jets.
6. Attach and center a second segment to the disc and position the trailing edge ¼-inches below this slot.
7. Check all screws and tighten.



Adhesive Bead

1. The glue bead length is determined by program segments.
    a. A segment creates approximately two inches of glue bead length.
    b. To achieve the correct glue bead length, measure the length (L) of the minor flap.
    c. Add the necessary segments to the wheel to achieve this length.
2. The standard width of glue bead for non-waxed corrugated is 3/32-inches.
    a. To achieve this width, a volume control needle is located on the glue pump body.

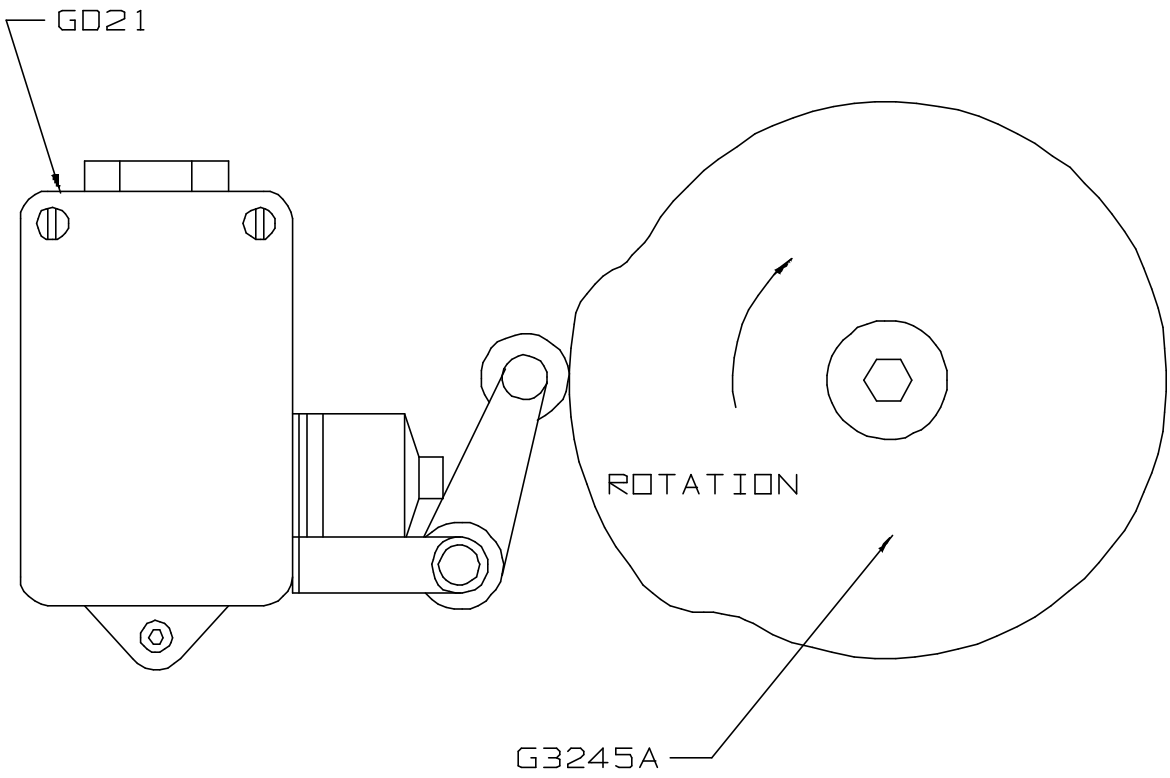
When a skip pattern is needed, leave a space between segments on the glue program disc.



Machine Stop Micro Switch Cam Adjustment

Switch cam adjustment

1. Remove the lower left frame access cover.
2. Jog the mandrel to the end of the forming stroke.
3. Loosen the bolt on Micro Switch cam (G3245A)
4. Rotate the cam until the Micro Switch arm (GD21) just travels to the high point of the cam lobe.
5. Retighten the Allen bolt.
6. The Micro Switch stops the machine at the compression end of the stroke when the operating switch is turned to the "off" position.



Variable Frequency Drive

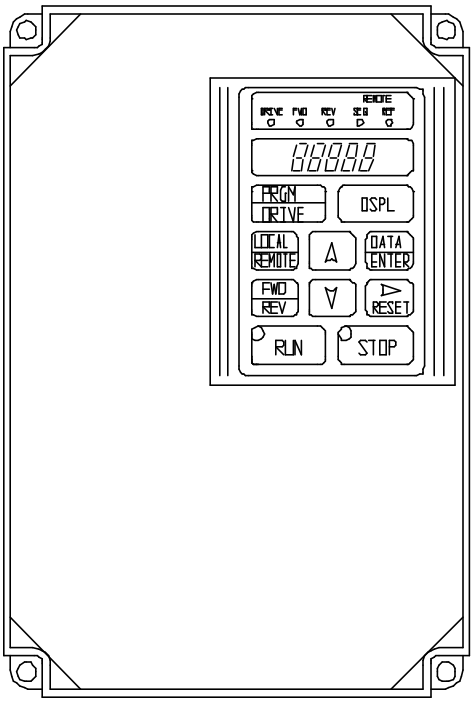
The SWF Variable Frequency Drive is a self contained unit mounted in the Main Power Panel. A potentiometer, to adjust speed, is mounted lower left in this panel. The Speed Control knob will allow the operator to adjust a pre-set range of speeds from the lowest to the highest.

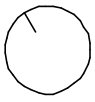
The major advantages of this inverter are:

- An inverter eliminates the need for a motor clutch brake and subsequent wear on speeds of less than 42 boxes per minute.
- An inverter allows a timed regulated “up to speed” and “slow down” speeds.
- An inverter can provide a time delay function with an optional timing relay installed.

Note: On start up, set the Speed Controller for the slowest speeds to monitor the working mechanism before setting production speeds.

*THIS UNIT IS PRESET ACCORDING TO YOUR COMPANIES SPECIFICATIONS. *SETTINGS MUST NOT BE TAMPERED WITH OR ADJUSTED* *.





SPEED CONTROL

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Maintenance

Glue Applicator Maintenance Procedures

The glue system is a key component of your machine and proper maintenance is very important to machine operation. This section describes the following maintenance procedures necessary to maintain this system:

- Cleaning the Glue System
- Purging the Glue Pumps
- Changing the Adhesive

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.

Cleaning the Glue System (monthly)

1. Heat the adhesive to 350º F.
2. Remove the drain plug and drain the adhesive into a scrap container.
3. Remove the nozzles and drain plugs from the pump.
4. Reinstall the drain plug.
5. Fill the melt pot 3/4 full with paraffin wax.
6. Turn the glue pump drive wheel by hand (using a screwdriver or a scraper) until all adhesive is displaced by the paraffin wax.
7. Let the wax stand for approximately two (2) hours at 350º F.
8. Drain the paraffin wax.
9. Add the new adhesive, closing the refill container immediately.
10. When adhesive flows cleanly from the drain hole, reinstall the drain plug.
11. Turn the adhesive pump drive wheel by hand again. When the flow is clean and clear, purge the system of air.

Purging the Glue Pump

1. With all nozzles and plugs removed from the front of the glue pump, screw the needle valve in until it bottoms out.
2. Turn the pump drive wheel by hand. When a clean, clear (no air bubbles) flow of adhesive comes from the port farthest from the drive wheel, reinstall the plug or jet.
3. Continue turning the pump drive wheel manually and install the next successive plug or jet in order.
4. After purging all the ports, adjust the volume control valve to produce a 3/32-inch wide bead of glue.

Changing the Glue

When it is necessary to change the glue used on a case, use the following procedures.

1. Turn on machine and allow the glue temperature to reach 325º F to 350º F. Remove the glue pump drip pan.
2. Place a small tray or pan under the melt pot and pump assembly. Remove the socket head screw in the bottom of the pump body and let all the adhesive drain from the system.
3. Put the new glue type into the melt pot. Allow the new glue to force the old glue out. When the glue color changes, reinsert the drain plug. Avoid mixing the two glue types as much as possible as

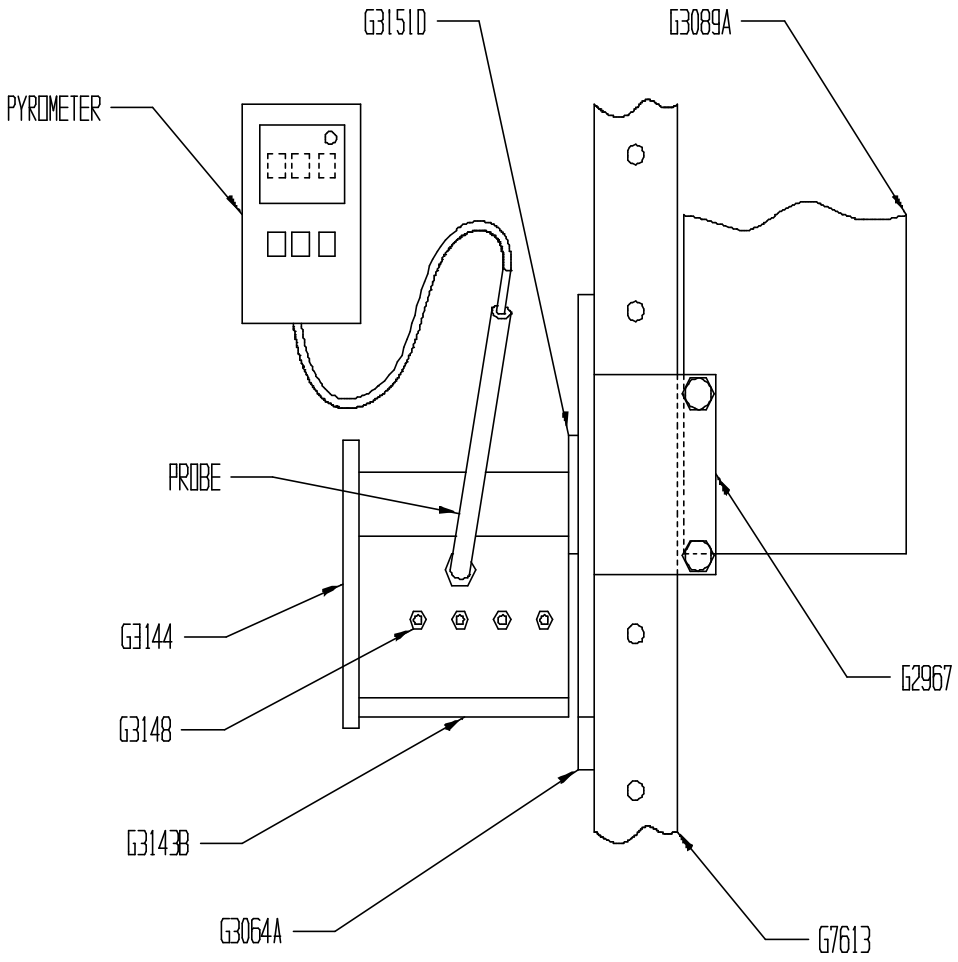
a chemical reaction can occur between certain types of glue. When a full flow of new glue is observed, replace the screw in the pump drain.

4. The pump is ready to run.
    a. If the pump drips excessively from back pressure, bled the air from inside the pump ports.
    b. The first two or three blanks purge the old remaining adhesive from the system.
5. Repeat this procedure with the other glue pump.

Glue Applicator Thermostat

1. Apply power to the Traymatic and set the melt pot thermostats to *350º F*. Allow about 30 to 60 minutes for the glue to heat up.
2. Press a surface Pyrometer probe against and above the glue pump jets (G3148) and note the Pyrometer reading. (See the diagram below.)
3. The Pyrometer reading and Thermostat reading of 350º F should agree.
    a. If not, following the instructions below to recalibrate the thermostat.

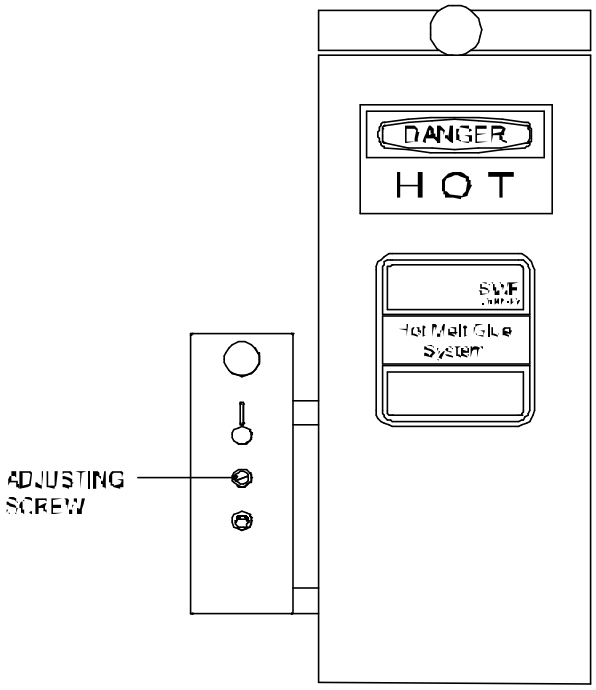
WARNING: When performing any maintenance on the glue system wear safety goggles, heat-resistant gloves, and protective clothing to prevent injury and burns from hot material and hot parts.



Melt Pot Thermostat Calibration

To provide the correct temperature for bonding.

1. Set the Thermostat control dials to the same temperature measured by the Pyrometer.
2. Carefully remove the Thermostat control dial.
3. The mount stud holding the Thermostat dial is now visible.
4. This stud is the adjusting screw to adjust the temperature.
5. Use a small screwdriver to turn the adjusting screw until the heater light just goes off.
6. Reverse the screwdriver direction until the light just comes on.
7. Again, reverse direction and turn the adjusting screw until the light just goes off.
8. The melt pot temperature is calibrated. Carefully replace the dial and repeat with the other pump.
9. Always calibrate both Thermostats at the same time.



Maintenance Procedures

Maintenance on a scheduled basis is critical to performance and longevity of the machine.

Procedures are broken down into three categories:

- Daily
- Weekly
- Periodic

Daily Maintenance Requirements

Number	Item	Required Action
M1	Bolted joints and set screws	Tighten as required.
M2	Glue pots and pumps	Check for residue.-Scrape off excess glue.
M3	Mandrel, Vertical guides, Compression bars (Top & Bottom)	Use a scraper to remove excess glue from all parts.
M4	Total machine	Check for cleanliness. Blow chaff off the machine with compressed air.

Weekly Maintenance Requirements

Number	Item	Required Action
M5	Glue program segments	Check for clearance. Adjust if required
M6	Corrugated blank hoppers	Adjust if required.
M7	Corrugated material	Check specifications. Replace if incorrect
M8	Glue pumps	Check the drive wheel. Replace if bent or broken. Check clearance.
M9	Mandrel	Check for rigidity and loose hardware.
M10	Vertical guide bars	Check for inner spacing, align if required.
M11	Vacuum tube support brackets	Check for wear or tears. Replace
M12	Vacuum cup pads	Check for wear or tears. Replace
M13	Vacuum poly flow tubing	Check for holes, cracks etc. – Replace

Periodic Maintenance Requirements

NUMBER	ITEM	REQUIRED ACTION
M14	Bolts and set screws (monthly)	Tighten or replace if necessary
M15	Melt pots	Check for charring- See page D-3
M16	Melt pot screen	Check for damage or waste. Clean or replace screen if required.
M17	Thermostat (monthly)	Check 350° setting. Calibrate if required.
M18	Wiring (monthly)	Check for cracked or loose. Replace.

Lubrication Procedures

Lubrication is critical to machine performance. Lubrication schedules are divided into three categories:

- Daily
- Weekly
- Periodic

Determine the schedule using visual examination of all equipment. Lubricate as needed.

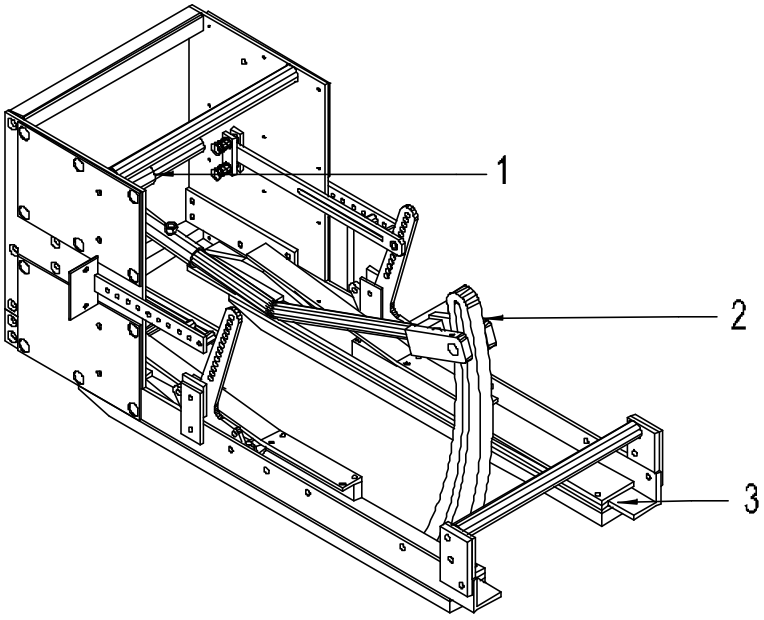
Daily

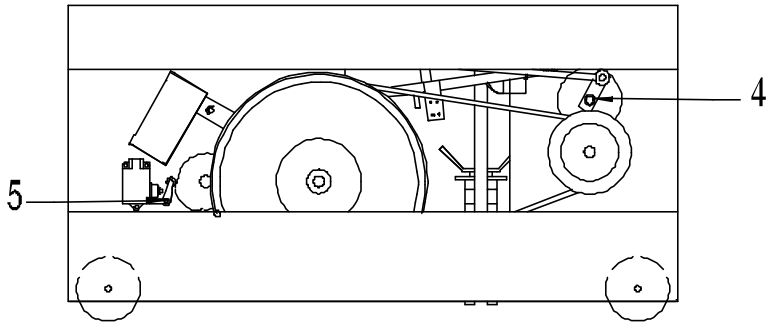
Item	Part	Required Action
1	Mandrel Con rod	Oil con rod pivot and feed post
2	Mandrel connecting bolt	Oil with 10 wt. oil
3	Mandrel guide rails	Oil surfaces between guide rails and fabric guides
4	Vari-speed control rod	Oil between rod and end plate
5	Micro switch cam	Oil roller and switch pivot joints
6	Vacuum dump valve	Oil pivot joints
7	Vacuum assembly	Oil slide bearing block.
8	Vacuum assembly	Oil cup shafts, linkage bushings , scissors
9	Horizontal compression slides	Oil slide surfaces
10	Vertical compression slides	Oil slide surfaces
11	Idler sprockets	Oil

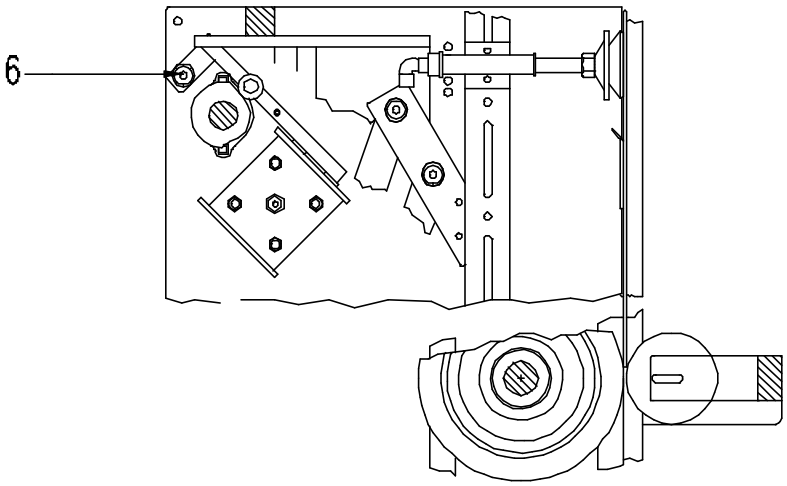
Weekly

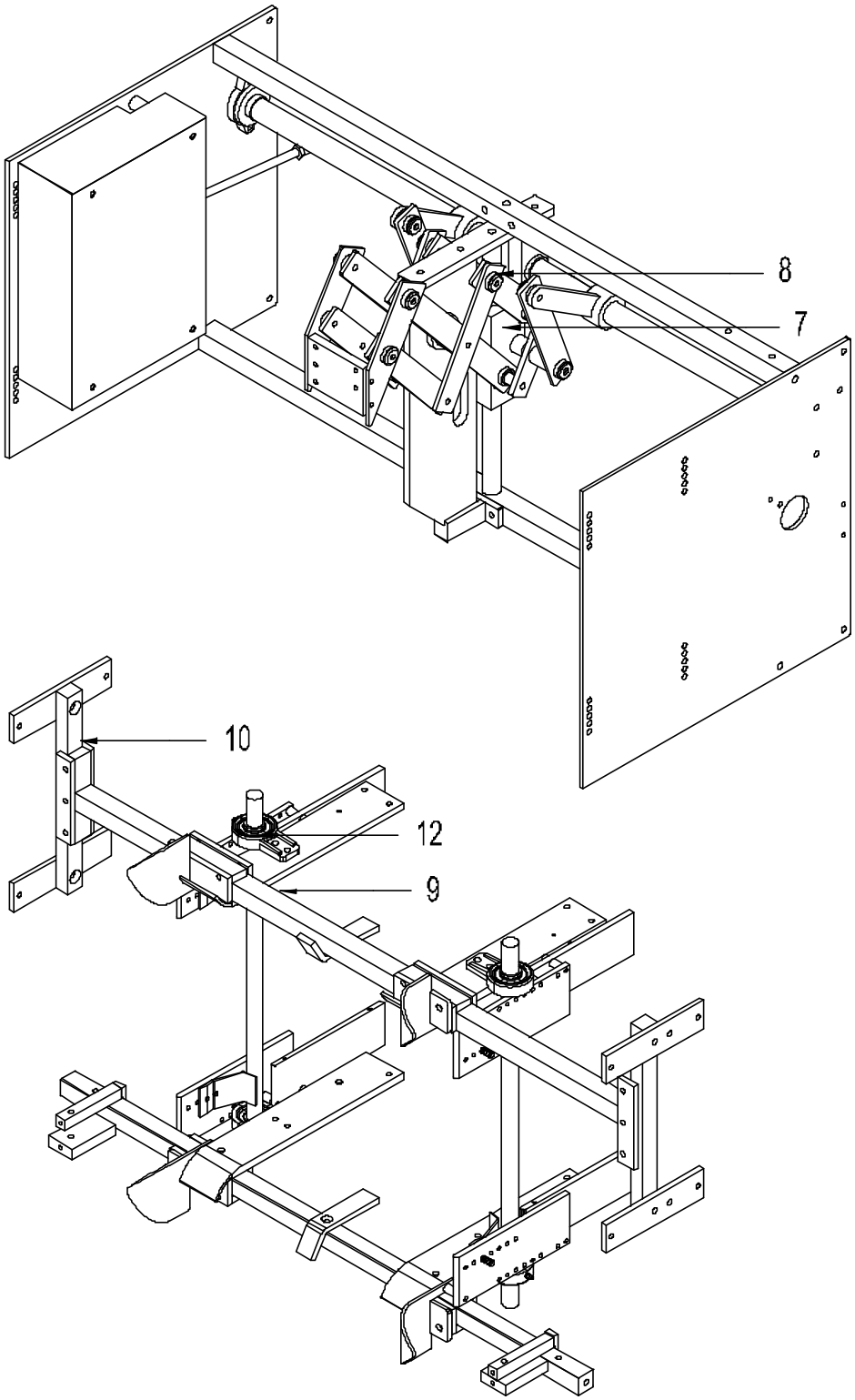
Item	Part	Required Action
12	Compression bearings	Grease zerk fittings
13	Vacuum gear con rod	Oil arm to rod
14	Vacuum drive gear	Use gear grease as needed
15	Drive chain	Use chain oil liberally
16	Main gear	Keep well greased with gear grease.

Lubrication Points





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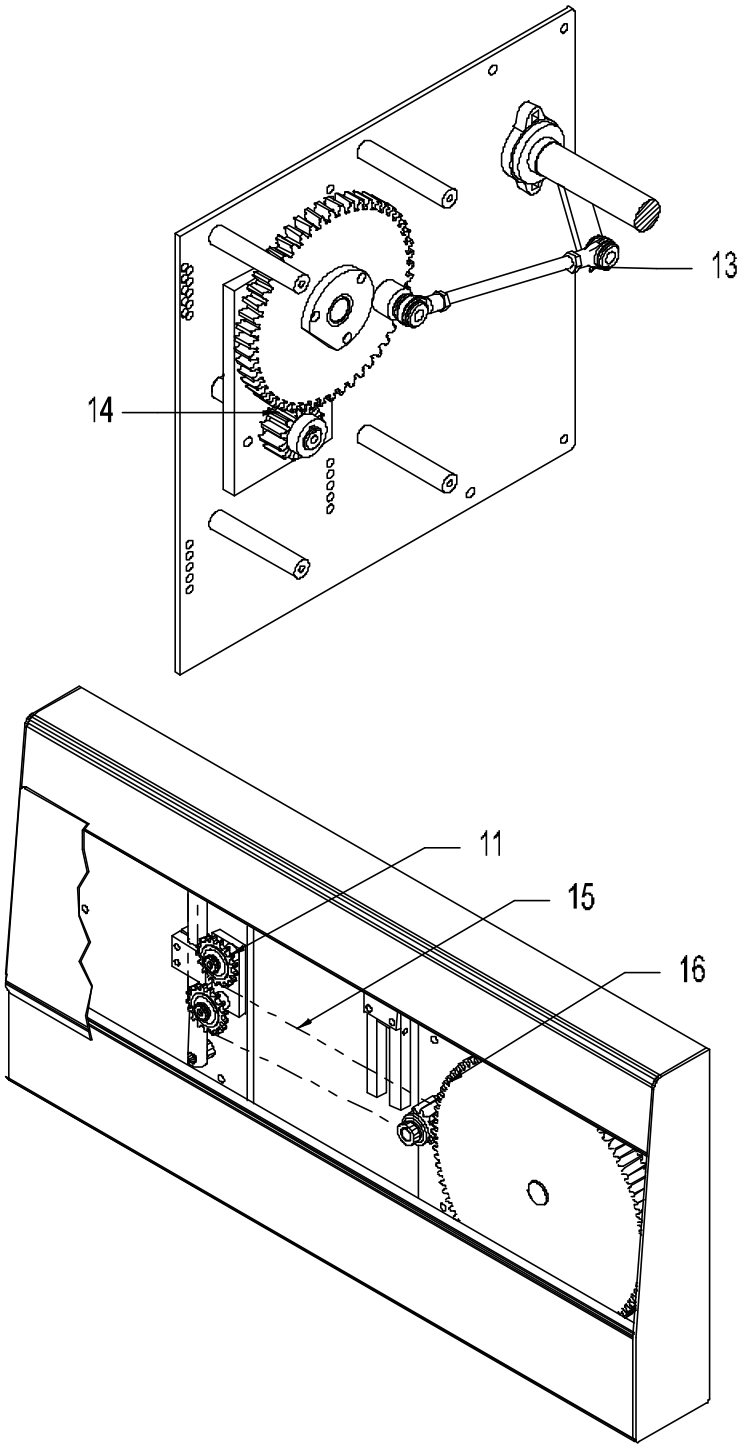
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Lubrication & Maintenance Check List:

Please feel free to reproduce this checklist for your own use.

Daily Lubrication

L1	Feed post actuating arm							
L2	Mandrel con rod							
L3	Mandrel guide rails							
L4	Micro switch cam							
L5	Box strippers							
L6	Vari speed control rod							
L7	Vertical compression slides							
L8	Vacuum assembly							
L9	Vacuum dump valve							

Daily Maintenance

M1	Bolted joints and set screws							
M2	Glue pots and pumps							
M3	Mandrel, Vertical guides							
	Compression bars(top) (bottom)							
	(sides)							

Weekly Lubrication

L1	Compression bearings							
L2	Feed post cam track							

Weekly Maintenance

M1	Glue programming segments							
M2	Blank hoppers							
M3	Mandrel							
M4	Glue pumps							
M5	Vertical guide bars							
M6	Vacuum tube support brackets							
M7	Vacuum cup pads							
M8	Vacuum tubing							

Periodic Lubrication

L1	Hopper sliding surfaces							
L2	Drive chain							
L3	Main gear							
L4	Vacuum feed gear							

Periodic Maintenance

M1	Set screws and bolts							
M2	Melt Pots							
M3	Melt pot screen							
M4	Thermostat (monthly)							
M5	Electrical wiring							

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Troubleshooting

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 product or cartons jammed around the air cylinder area.
3. Reset the emergency stop button by pulling it out completely.
4. Press the reset button on the control panel. This prepares the machine for resuming operation. If your machine has no reset button, resetting the emergency stop button resets the air cylinders.
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.

TROUBLE	PROBABLE CAUSE	POSSIBLE SOLUTION
1. Adhesive constantly running from nozzles.	Air in the system.	See: Purging the pumps.
	Foreign matter under the check valve.	See: Cleaning the system. If this fails the pumps will have to be disassembled. The pump body may be cleaned by a torch or in an oven. All charred glue must be burned off the body. Instal the ball check by using a piece of 1/4" round steel, lightly tapping on the ball.
	Jelled glue in the pot. Glue has been heated at extreme temperatures for too long a period.	See. Changing the glue.
2. Glue stripes on corrugated in wrong place or skipping	Blanks are either too wide or too narrow.	See: Vertical guide bar adjustment.
	Feed wheel drive chain is loose	Tighten chain at the take up idler sprockets. See: Vacuum feed timing adjustments.
	Feed wheel slipping. Idler clearance is too great. .	See: Blank Feed idler roller adjustment.
	Loose sprocket on feed roll shaft.	Tighten sprocket on the shaft. Tighten setscrew.

TROUBLE	PROBABLE CAUSE	POSSIBLE SOLUTION
	Feed roll setscrew loose.	Tighten setscrews.
	Program wheel loose on shaft.	Tighten segments.
	Glue segments loose on wheel.	Check the hopper adjustment. See: Hopper adjustment
	Blanks are not feeding from the hopper properly.	
3.Glue will not feed.	No glue in the melt pots.	Maintain glue level at least one-half way.
	Incorrect clearance between the program segments and the pump drive wheels.	See: Program segment clearance.
	Worn or broken teeth on the pump drive wheel.	Replace the pump drive wheel. G3147.
	Plugged glue jets. G3148.	Clean the jets with a paper clip. Note : Pumps and pots operate at very high temperatures so use gloves and goggles .
	Volume control needle.	Needle valve is not adjusted correctly.
	Heating element is burned out.	Replace the heater element.
	The glue thermostat is out of adjustment.	See: Thermostat adjustment.
	Glue pump wheel hard to turn.	Glue has burned around the shaft. Push out the gear from the pump housing being careful not to damage the gear. Use Emory cloth and polish shaft to the bare metal. Using a “V” drill run through the shaft hole and remove charred glue. Lubricate with graphite.
	Air in the glue and leaking nozzles.	See: Purging the glue pumps. Change brands if air is found in the glue.
	Chaff or other debris in the glue system or glue exhibits signs of charring.	See: Cleaning the glue system.
4..Thermostat light is on but melt	Loose wiring	Check wiring terminals.

TROUBLE	PROBABLE CAUSE	POSSIBLE SOLUTION
pot fails to heat. up to operating temperature.	Defective thermostat.	Replace thermostat.
	Heating element inoperative.	Check element with an Ohmmeter for an open. If bad, replace by loosening two bolts holding the pump assembly to the melt pots. Remove the thermostat cover G2874 and disconnect wiring from the heater element and pull it out. Slide in new heater and check voltage and wattage on new heaters. .
5.Blanks are hitting the forming mandrel**.**	Blanks are warped.	Adjust the blank guides on the vertical guide bars or break blanks on the opposite side of scoring to the warp.
	Blanks are being “picked “ too early.	See: vacuum feed timing adjustments.
	Idle rollers too loose.	Adjust the rollers.
6.Blanks will not feed from the hopper..	Blanks too wide. Vertical guide adjustment.	See: Vertical guide bar adjustment. If too wide per specifications check with corrugater.
	Warped blanks	If warp more than ¼” per foot, contact the supplier and break the blanks on the score opposite to the warp.
7.Blank travel is hindered.	Idler roller may be too tight.	See: Idle roller adjustment.
	Vertical guide bars out of adjustment.	See: Make sure the mandrel is centered.

TROUBLE	PROBABLE CAUSE	POSSIBLE SOLUTION
8.Blank contacts the mandrel on its down travel.	Idle roller out of adjustment	See: Idle roller adjustment.
	Blank is “hanging” up on vertical guides.	See: Guide bar adjustment..
	Late blank timing.	See: Timing.
9.Carton inside flaps are not even with the top of the carton.	Carton blank is not scored or cut correctly	Check with your corrugater.
	Mandrel stroke is too short.	See: Mandrel stroke and travel adjustments.
	Box strippers are not touching the mandrel Teflon.	See: Stripper pawl adjustment.
	Flap pushers not adjusted correctly.	Jog the former to put the cam roller on the high point of the pusher cam. Now measure distance from rear edge of the mandrel to the pusher pawl face. This distance should be the same as the box depth.
	The inside flaps hit the pusher pawls.	In a few case the pawl will have to be cut on an angle so that the flap will miss the top of the pawl.
	Mandrel is not centered.	See: Mandrel change.
	Vertical guide bars are not centered.	See: Guide bar adjustment.
	Bottom stops not set right.	See: Bottom stop adjustment.
	Side compression settings.	See: Compression adjust.
	Top compression adjustment.	See: Forming shoe adjustment.
10.Minor flaps are being torn off.	Blank guide positioning.	Position guides out of the area where the minor flaps fold out of the vertical guide bars.
	Major flap scores are weaker than the minor flap scores.	Add, or adjust down an existing restraint finger if it’s a top compression problem. If the problem is bottom compression, adjust the restraint finger toward

TROUBLE	PROBABLE CAUSE	POSSIBLE SOLUTION
		the rear of the machine.
	Mandrel not hitting the center of the blank.	See: Mandrel change out.
	Inside flap plows not positioned correctly for the caliper of the blank.	Very thin blanks require plows to be spaced out from top and bottom compression shoes. 1/16" to 1/8". Spacing that is added to the inside of the plow must be taken from the outside of the plow.
11.Tray bottom has rounded corners.	Mandrel size.	Change mandrel size or corrugated.
	Top compression .	See top compression adjustment section
	Side compression.	See side compression adjustment section.
	Adhesive bond breaks away on one corner.	Glue too hot or cold. Check temperature or incorrect compression. Adjust temperature or compression.
	Mandrel stroke too short.	Adjust the mandrel return stroke.
	The box strippers not riding on the surface of the mandrel Teflon plates..	See Stripper pawl adjustment.
	Blank scores not centered on the mandrel.	Check the Bottom stop adjustment
	The blank length varies.	Check with the corrugater. Note: For lids two inches or shallower. the Teflon should be all the way to the front edge of the mandrel plate.
12.Tray falls apart after compression**.**	No glue.	Keep glue pots at least half full at all times.
	Improper clearance between the program segments and the pump drive wheel.	Adjust the glue segments and wheel clearance.
	Glue is too hot; appears stringy.	Check temperature and turn it down if necessary.

TROUBLE	PROBABLE CAUSE	POSSIBLE SOLUTION
	Glue is too cold.	The glue bead does not spread out in compression . Raise the temperature.
	Compression adjustment.	Adjust the compression
	Corrugated too thin	Check with corrugated supplier.
13. Tray has a tear in the bottom corners.	Top deflector (G7849) is holding too long.	Adjust top deflector(G7849) up on the bar (G7848). Bottom stops should be rotated toward the front of the machine.
14. Multiple blanks being pulled from the hopper	The blank support knives are not in deep enough to retain the trailing blank	Blank support knives adjustment.
	Vertical guide bars .	Vertical guide bar adjustment.
	Blanks are interlocking.	Check with supplier for complete cut out removal or change in coating.
	Corrugated blanks are varying in width.	Check with your corrugated supplier,

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 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 opens and releases all air in the system. After resetting the safety controls, press the MCR (master control relay) button. This closes the dump valve, 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 also 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 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 when 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 followed.

Hopper: A hopper, or case magazine, holds the case blanks in preparation for forming or loading. The terms hopper and magazine are interchangeable.

Laner, Lane Divider, Lane Diverter: Laner, lane divider, and lane diverter are interchangeable terms describing a mechanical assembly that receives one or two lanes or product and separates it into several

lanes. The most common laners receive one or two lanes of product and separate it into three to eight lanes of product. Laners are powered by air cylinders or servomotors.

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 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 for the erector to pick. The cases are held loosely enough to slide out, but tight enough to minimize sagging and warping.

Major Flap: See Flaps, Major

MCR: Master Control Relay

Metering Belt: Metering belts control and alter the infeed speed of products. Metering belts may increase or decrease infeed speed, or maintain or create specific gaps in product. Metering belts are used when it is necessary to prevent high back pressures.

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 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 display on the touch screen.

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

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 precision 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 main 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. Auxiliary power-disconnect switches drop power from specific components only. For more information, review the electrical schematics for your machine.

Proximity Sensors: Proximity sensors detect products, assemblies, or other parts of the machine and relay the information to the electrical program (PLC). The PLC shuts down the machine and displays 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, press the machine's reset button and re-start the machine.

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

Servomotors: Servomotors are 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.

Stacker Bars: Stacker bars are frequently used with upstacker assemblies. Product flows onto an upstacker or stacker plate. The plate lifts the product onto stacker bars before retracting down to receive the next product grouping. Once the stacker bars hold the complete pack pattern, a side transfer pusher or product load arm moves the product from the stacker bars to the next station in the load cycle.

Upstacker: An upstacker, or stacker plate, receives product and lifts it into a specific pack pattern. Upstackers are used when pack patterns are made up of multiple product layers.

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 upon need. VFD models include: Allen-Bradley Bulletin 160, Allen-Bradley 1305 and 1336, Magnetek GPD 503, and any other VFDs the customer may request.

Vernier Scale – A Vernier scale is a ruler strip with evenly spaced markings denoting positions. Vernier scales mount near adjustable assemblies.

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

Zerks: Grease zerks mounted on the machine fill bearings and lubricated devices with grease. Grease zerks may be used singly or in cluster or group blocks.

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
    (b) The item number, part number and description

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 following page lists suggested spare parts. Stocking these items helps minimize excessive down time while waiting for your shipment of parts.

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