

TF 400VK

TrayMatic

Operation, Maintenance, and Parts Manual



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

Machinery can be hazardous if safety precautions are not followed. This section deals with safety rules and practices that **MUST** be followed for safe operation of the machinery and to prevent accidents from occurring. All operators and maintenance personnel working on or near SWF Companies' machinery should be fully informed and correctly supervised concerning safe and correct machine operation.

All equipment manufactured by SWF Companies is safety tested before shipping from the plant. 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 newly installed machinery.

Be sure all supervisors read and fully understand the contents of the operation portion of this manual, with particular attention to safety precautions. Verify anyone working on or around the machine has read and fully understands 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.
- Continually evaluate accident prevention procedures. This means ALL potential hazards must be identified, and eliminated or safeguarded. Along with creating safe conditions, all employees should follow safe practices.
- 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.

Guards

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

Emergency stop controls 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 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.

Power Disconnect

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

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 test the emergency stop and a normal cycle stop buttons 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 cases 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.

Power Disconnect Switch

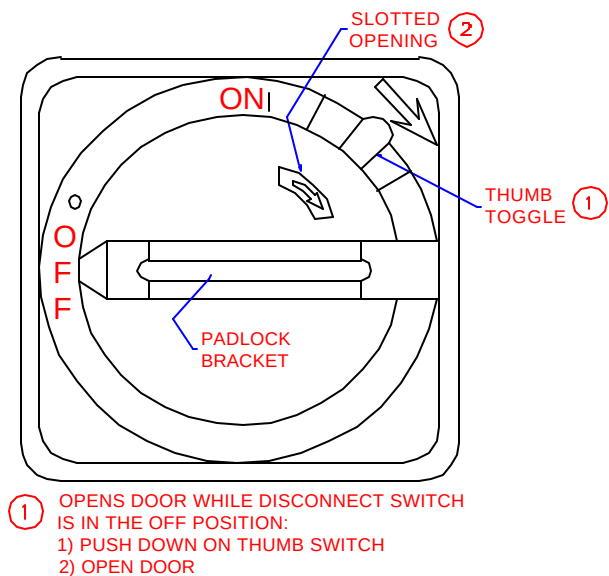
This switch must be in the ON position to operate the machine. Turn OFF when washing the machine or when making repairs or adjustments other than changeovers.

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.



Safety Features

The 1T4K Traymatic has been built with safety as a prime consideration. To protect personnel from moving parts, wire mesh guards are installed front and rear, over the mandrel and feed wheel areas. All mesh guards are prewired to halt the Traymatic when they are removed or not secured properly. A flashing amber strobe light indicates the machine is powered up and operational. The red “E” stop switch located on the main power panel is of the push/pull type and must be manually operated. This power panel also contains the lockable disconnect lever.



Installation

The following are the typical machine installation steps.

Uncrating

Remove the machine from its crate. Check packing list to be sure that all loose parts and attachments have been included. Tighten any screws, bolts, or fasteners that may have loosened during shipment. Note any discrepancies on the carriers Bill of Lading.

Placement

Loosen the front wheel brake screws. The machine may then be pushed to the required operating station. When the machine is properly located, retighten all of the brake screws to secure machine location.

Electrical

Check the plant electrical system to be sure that the voltage and phase agree with the order specifications. Consult the wiring diagram to determine proper connections to machine terminals. When starting the machine, check for proper rotation. On three phase systems, if the machine rotation is incorrect, reverse 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 for an enclosure of the primary disconnect. It is important for this enclosure to be secure prior to the start up of the machine.

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.

Lower Transmission Guards

All guards for the lower transmission assembly and form plunge feed post must be securely in place prior to operating the machine. All of the 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.

Electrical Test

The machine has been test run and approved at SWF Machinery. All that is required is the proper voltage and the proper rotation of the main drive motor, and following the operating procedures of this manual.

Sequence of Events

The 1T4K occupies an area of approximately 6 square feet. It also requires a ceiling height of 9 feet. The machine weighs about 2,300 pounds, dependent upon options taken.

The 1T4K is designed to rapidly adjust and produce a variety of tray types and sizes. The forming mandrel may be changed with the twist of a knurled knob. Five hand-crank and chain assemblies allow height and/or width adjustments to the compression chamber, blank hopper and bottom stops.

Machine Specifications

- **Machine Speed:**
 - ◆ 12-35 trays per minute (standard)
 - ◆ 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 Optional
(460 Volts - 230/115 Volts, 5 KVA)
- **Drive Motor:**
 - ◆ 1 HP, totally enclosed, fan cooled, 430/230 Volts ,3 Phase, 1140 RPM
 - ◆ Variable frequency drive
 - ◆ 120 Volt Control Circuit, Design "B", S.F= 1.15.
- **Vacuum Blower:**
 - ◆ 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
- **Adhesive System:**
 - ◆ Operating Temperature: 325-375° F
 - ◆ Melt Capacity: 14lbs. 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

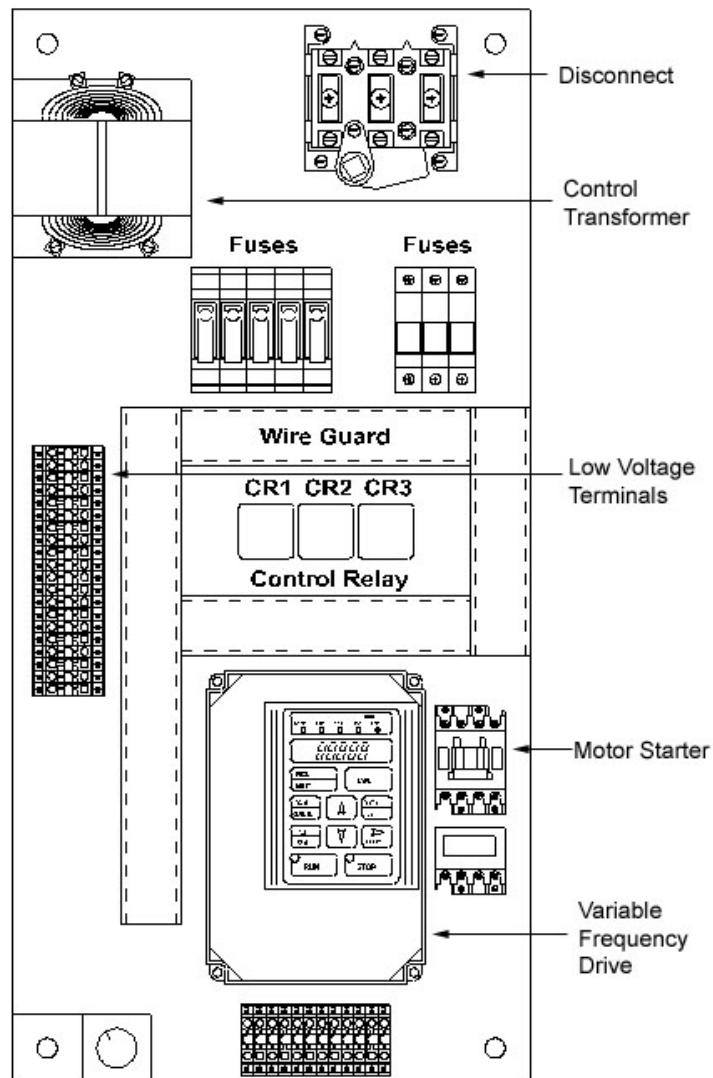
Electrical

The SWF 1T4K operates on 230 Volt AC, 3 phase, 60 hertz(standard) and is adaptable to all standard A.C system voltages as indicated below:

Volt A.C , single phase, 60 hertz 208/480/600 Volt A.C , 3 phase, 60 hertz 380/415 Volt A.C 3 phase, **50** hertz (slower speed) Jefferson power transformer (optional): 460 Volt, 230/415 Volt- 5KVA.

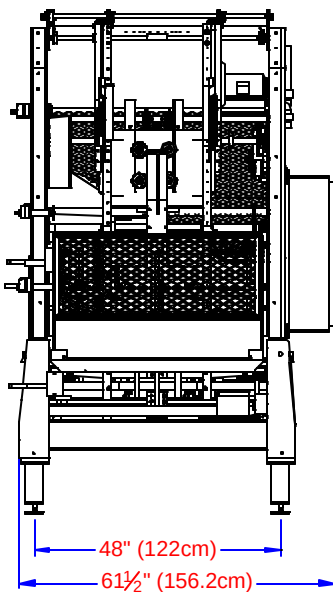
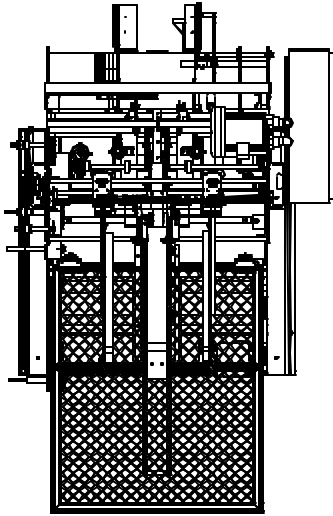
The Main Power cabinet is a NEMA 12 enclosure (Hoffman). Main power disconnect and fusing. 120-Volt AC control circuit.

This picture shows the configuration of the Main Power Panel. The addition of options or deletions may change the layout of this panel.

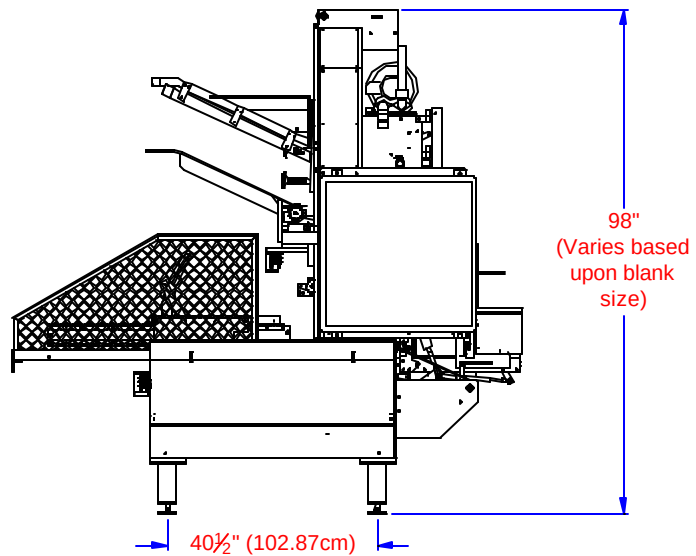


Dimensions

The dimensions of a standard TF400VK are shown below. The TF600VK is typically 12 inches wider at the base. As shown, the frame height is approximately 98-inches but the blanks will extend passed the frame.

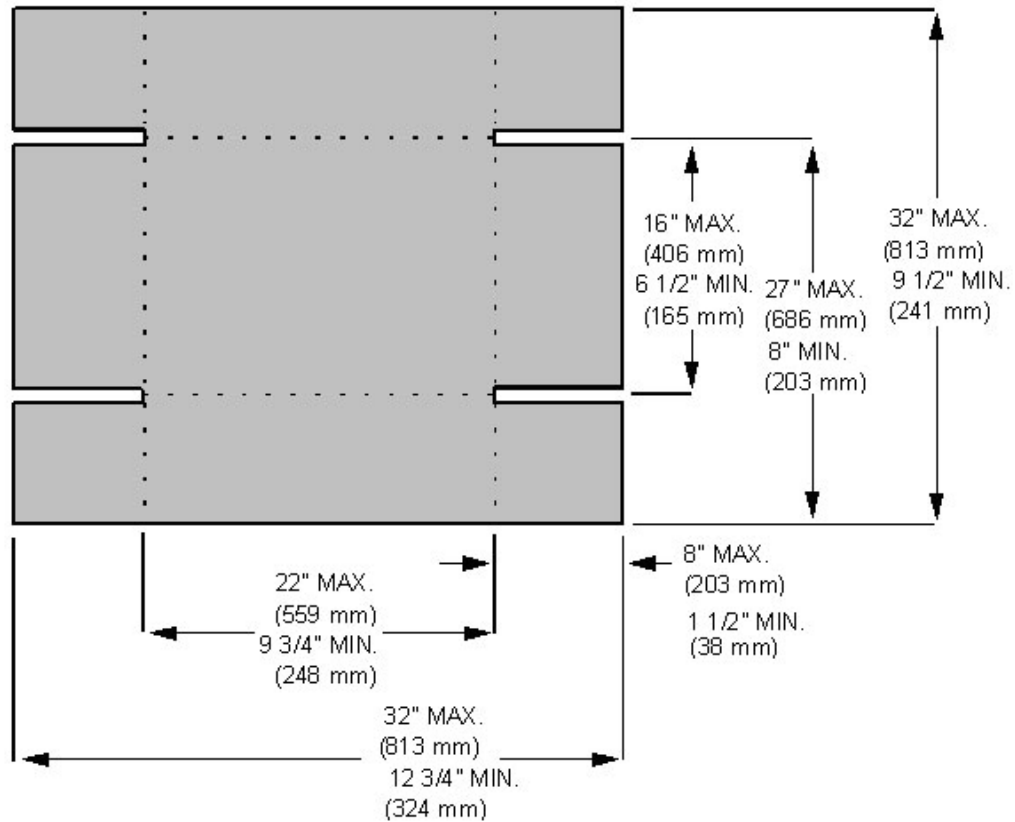


*Add 12" for wide base model



Tray Blanks

Your machine is capable of producing a variety of types and sizes of trays from corrugated blanks. For the 1T4K, allowable blank dimensions are as follows:



(For sizes that do not fall within the above ranges, consult with your SWF representative.) Corrugated blanks may be damaged when mishandled or improperly stored. Once damaged, the 1T4K may have trouble forming a presentable product. Appearance and carton strength may not meet industry standards. To assist you in controlling the quality of your corrugated blanks, we would like you to comply with suggestions found on the following page.

1. 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)?
2. Are slots and vent holes clean and stripped of excess material? (See below.)

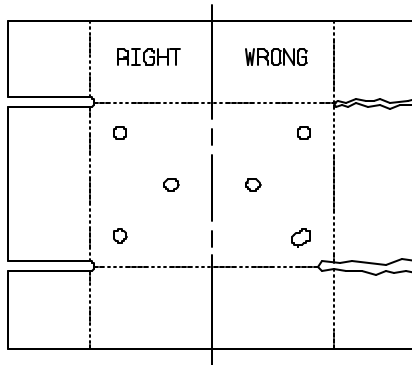


Figure 2

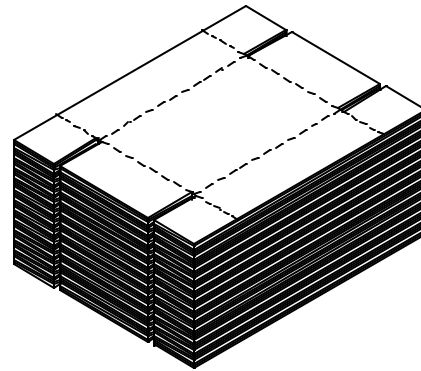
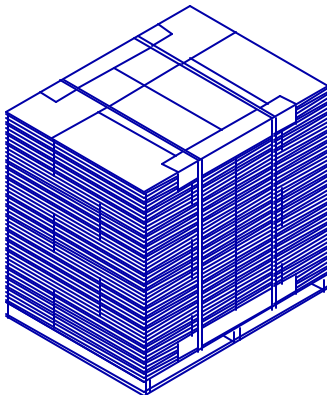
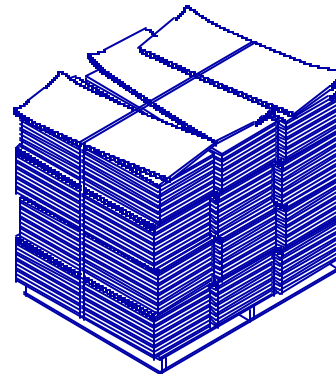


Figure 1

3. Be sure blanks were not damaged because of bundling.
4. Use an interlocking pallet pattern to minimize warp in transit or storage.
5. Check unitizing for proper pallet size, uses of dunnage, and strap tension. (see below)



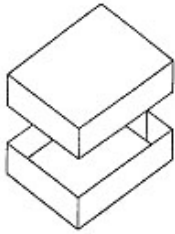
(RIGHT)



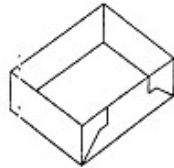
(WRONG)

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

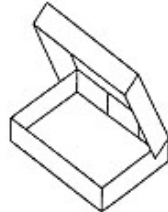
Tray Types



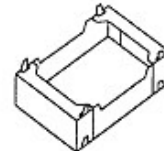
Two piece, full telescope



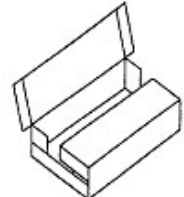
Leak-proof tray



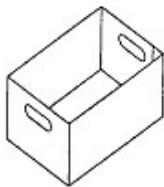
One-piece telescope



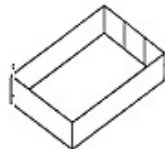
Double corner tray (BTB)



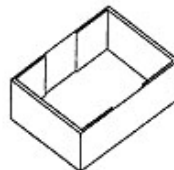
Flap tray



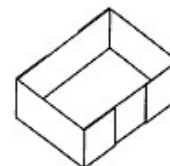
Triple end tray



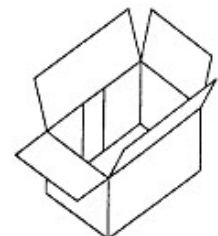
Slotted tray, min 1 inch depth



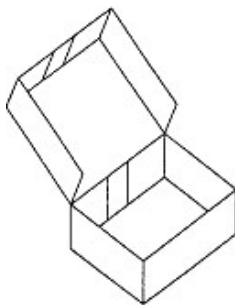
Tray and bliss combination



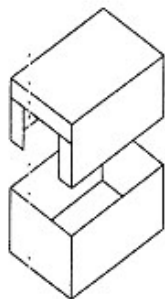
Flaps outside



Tray with flaps

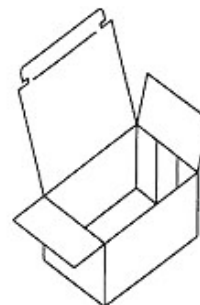


Six corner tray

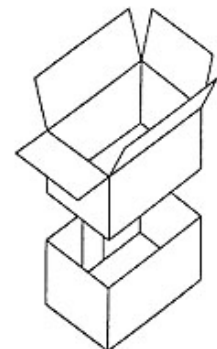


Econo Lid Full telescope

Examples of Tray Blanks



Single top flap



Tray with HSC cover

Controls



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 switch, rotate and hold the switch in the forward or reverse direction to jog the machine.

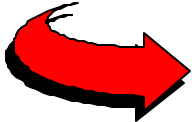
This switch is only used to jog the machine. Under normal operating conditions, this switch returns to the center position.

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.

Start Up

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 blanks to be formed.
2. Blank material must be held 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. (Humid, rain, heat, fog etc.)
5. When blanks have been checked go to step “B”.

STEP “B” CHECKING ALIGNMENT:

1. Place a blank between the Vertical guides (trees) and crank to correct width.
2. With that same blank, set the Vertical body hopper adjustment.
3. Rest a blank on the bottom stops and crank up /down to align blank with 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. Operating temperature will be reached in approximately 30 minutes.



WARNING: When performing any 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 purposes of loading.
2. Grasp a handful of corrugated bodies blanks and place them on the hopper loading ramp.
3. Slide the blanks forward in order 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 compress 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.
2. Note: This lever is the main source of disconnecting power to the formers when maintenance is required or jam-ups occur.

3. Set the Melt pot thermostats to 325°- 375° Fahrenheit.
4. The manufacturer of the adhesive you are using will specify the correct operating temperature.
5. When the thermostat lights extinguish, the adhesive system is operational.
6. If it is necessary to purge the adhesive system of all trapped air, manually turn each glue pumps drive wheels with a scraper until glue flow is even and minus air bubbles.

Reminder

Frequently check the melt pots to maintain the correct glue level. Never allow the adhesive level to drop below the halfway point on the melt pots.

7. Pull the RED knob out to the “START” position. Turn the Vacuum switch “ON.”
8. Place the “JOG/RUN” selector to the “JOG” position and the “HAND/OFF/AUTO” to the “HAND” position.
9. BUMP the GREEN “START” button to set the internal relays.
10. Hold the GREEN “START” button down and allow the machine to produce 2 or 3 trays. Now verify that 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. It may be necessary to adjust blank feeding, compression, glue flow or reprogram the adhesive segments.

STEP “E” PRODUCTION:

1. When starting the main production run, it is necessary to 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 ot lowest speed.
2. During operation, check the formed cartons for correct glue stripe, length of bead. The bond must tear the corrugated fabric when you pull the glue flaps from the body.
3. When you are satisfied that the cartons being formed are bonded and formed to your complete satisfaction you may turn the **Vari-Frequency potentiometer** or **Vari-speed control knob** (page F-8) to the desired production speed.

JAM CLEARING

If a jam occurs during operation, follow these steps to clear the jam.

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

Shut Down

STEP “F” SHUT DOWN

1. Turn the main power switch to the **“OFF”** position.
2. It is necessary that the Main Power switch be in the **“OFF”** position and LOCKED OUT while the machine is shut down to prevent inadvertent application of power.
3. Most important, is the removal of power to the adhesive melt heaters. Prolonged heating of the adhesive can cause charring, resulting in serious damage to the system.
4. LOCKOUT THE MACHINE.
5. Prevention of inadvertent start-up **is a must** when the days operation are completed or maintenance will be performed. (Refer to **LOCKOUT** instructions)
6. Clean the machine of drippage and dirt and the surrounding area.
7. At the end of each production period, **with Disconnect locked**, it is recommended that all the adhesive drippings be removed from the machine parts. It is also advisable to 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. Maintenance personnel use goggles, 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?

Monitor

Machine operators must always 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.

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 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 to its ability to retain moisture. When working on a cement floor, stand on a rubber mat, plywood, or other non-conductive material.

Supply restock

Throughout the operating cycle of the machine, some 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 uses glue to seal the cases, monitor the glue levels according to the manufacturer's recommendations.

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.
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.

Setup and Adjustment

The SWF 1T4K Traymatic former is mobile, adjustable, and able to form and bond corrugated blanks into cartons. Speed of forming is predicated upon the size and shape of the carton to be formed. The 1T4K may be broken down into six main areas:

Hopper Section: The standard hopper section of a Traymatic holds approximately one -hundred blanks. Larger capacity hoppers are available and in use. The inclined hopper is gravity fed. As a blank is selected, the next blank replaces it and is retained by a series of knives. These knives must be overridden in order for a blank to be selected each and every time. Trays are selected by a set of vacuum cups.

Vacuum System: The vacuum system provides a vertical “pick” of each blank and positions it between the feed and backup roller. A vacuum motor located on the upper part of the right frame powers the system. The systems mechanics are chain driven, coupled to a scissor mechanism that drives the vacuum cups to the first blank, selects and drops it between the feed and back-up rollers, returning to pick the next blank. This is the initial step in application of glue beads to the blank.

Adhesive System: A pair of glue applicator wheels are mounted outboard of the feed wheel. As the blank is drawn through the feed wheel, the applicator wheels, with attached segments, drive the glue pumps. The segments mounted on the applicator wheels are the determinant factor on length and position of the glue beads. Adhesive is applied when the blank is between the segments and the glue pump serrated drive wheel. The pump drive wheel remains inactive at all other times. The corrugated blank, with glue applied, travels the length of the vertical guides, coming to rest on the bottom stops. It is now in position to be formed by the mandrel.

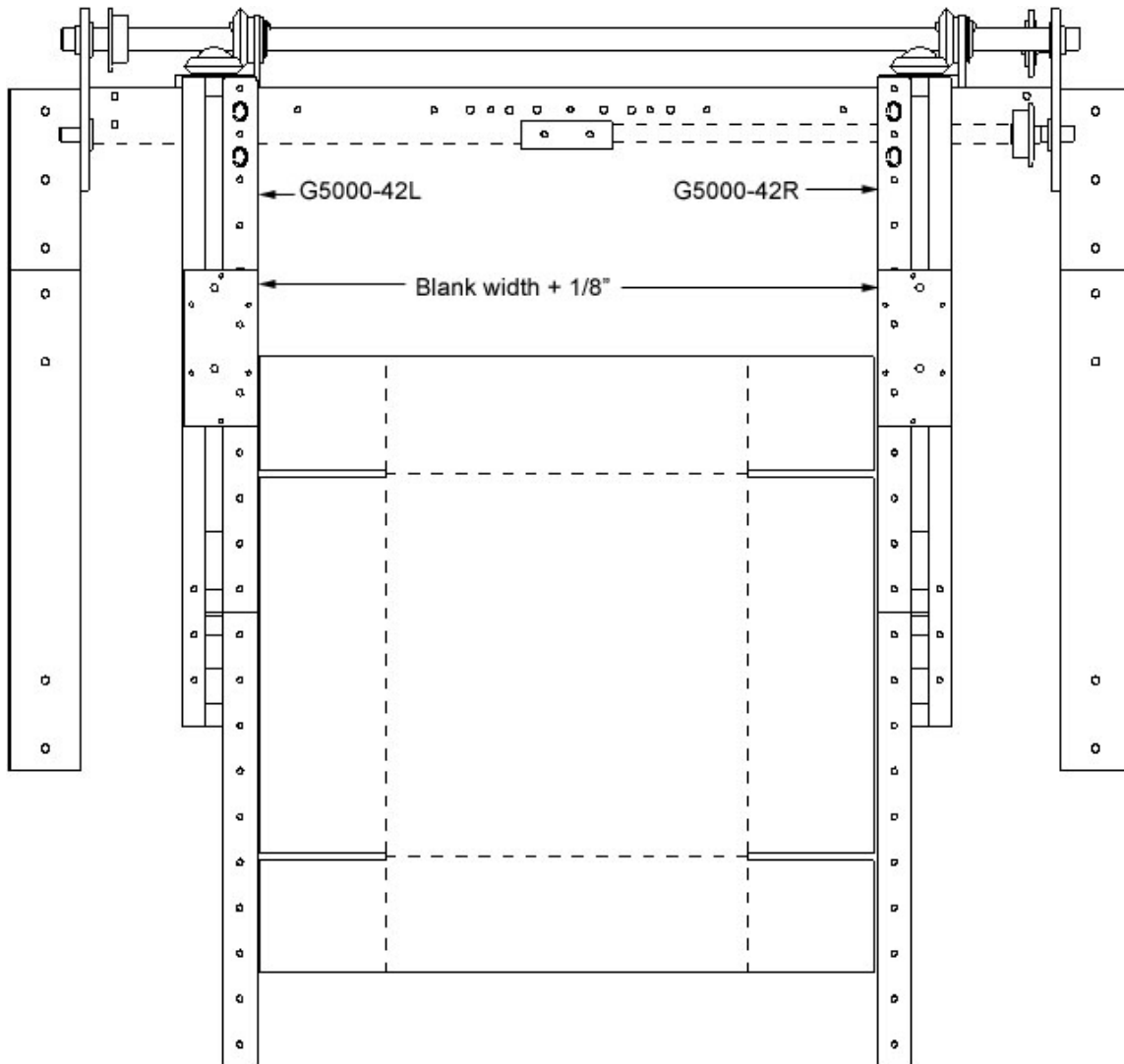
Forming: The outer dimensions of the mandrel are basically the same size as the inner dimensions of the formed blank. The mandrel moves horizontally into the blank that is resting on the bottom stop, makes contact and moves it past forming plows and into compression. Plows are required for pre-positioning sets of closure or glue flaps.

Compression: This section applies the correct pressure to sealing flaps of the corrugated box. This bond must be of such strength, to tear fiber when the bond has been set, then separated by force. Compression is applied by a set of vertical bars and horizontal shoes that apply pressure to the sealing flaps as they are trapped between the mandrel and these compressive units. The grade of adhesive must be of good quality and applicable to the corrugated being formed.

Adjustability: The Traymatic’s main feature is ease of changeover. This is accomplished by a series of crank stations. With a simple turn of a crank, the blank hopper can be positioned up or down, compression moved in two different axis and bottom stops moved up or down. The vertical guides are easily moved to the correct position and the forming mandrel removed with a simple turn of a mount screw.

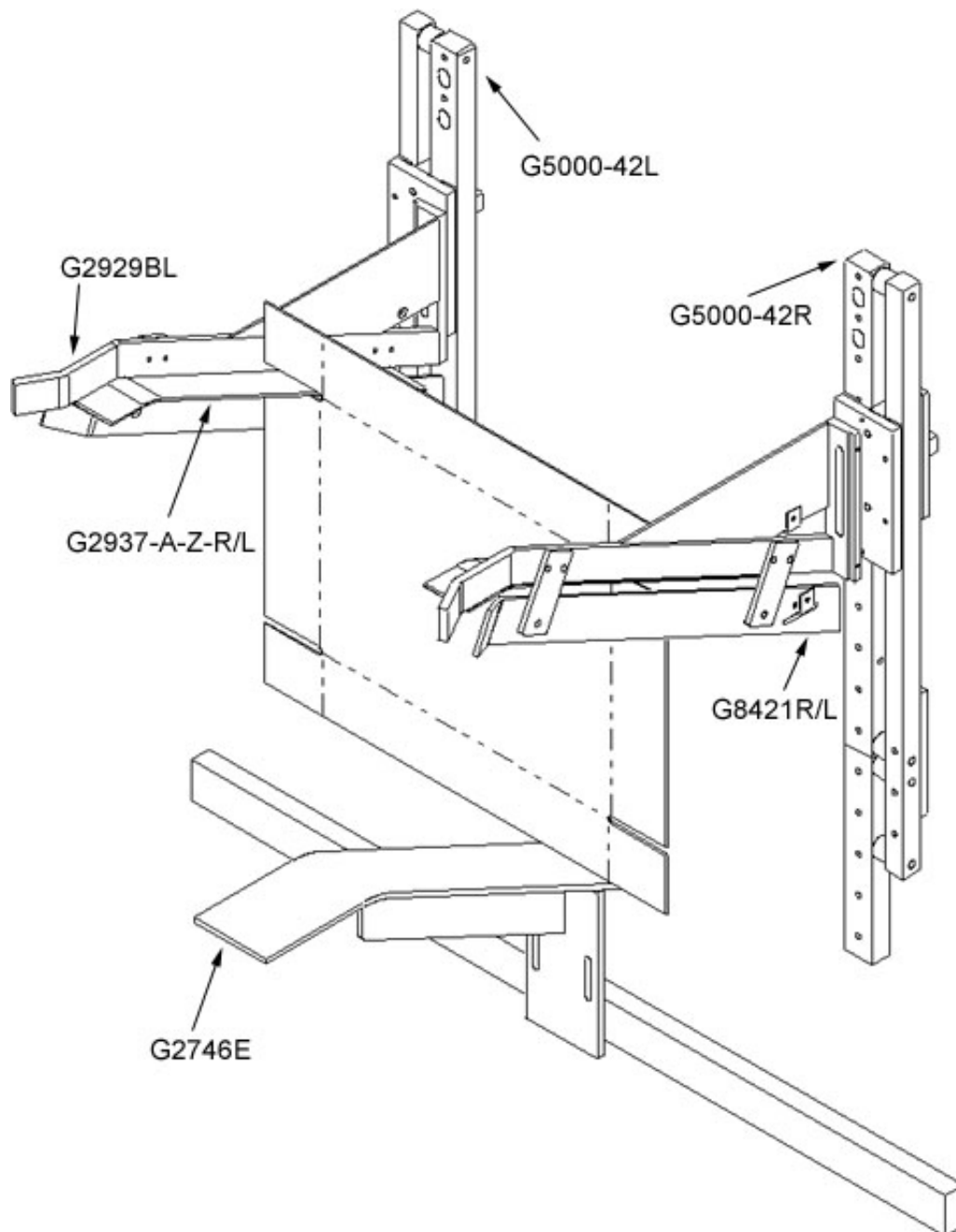
Vertical Guide Bars Adjustment

1. Measure the width of the tray blank to be formed, as it sits in the hopper, and add 1/8" to this measurement.
2. Crank the vertical guides 5000-42 R/L in/out until this measurement is obtained.
3. Check this measurement at the top and bottom of the guides.
4. Do not exceed the width plus 1/8" measurement or feeding/travel problems may occur.



Blank Hopper Adjustment

1. Set the corrugated blank on the horizontal plane of the loading support bar G2746E.
2. Turn the blank hopper crank to center the support bar blades G2937 A-Z and G2929B R/L between the tray slots as it sits on the support bar.
3. Compensate for uneven blank slotting by moving the support bars.

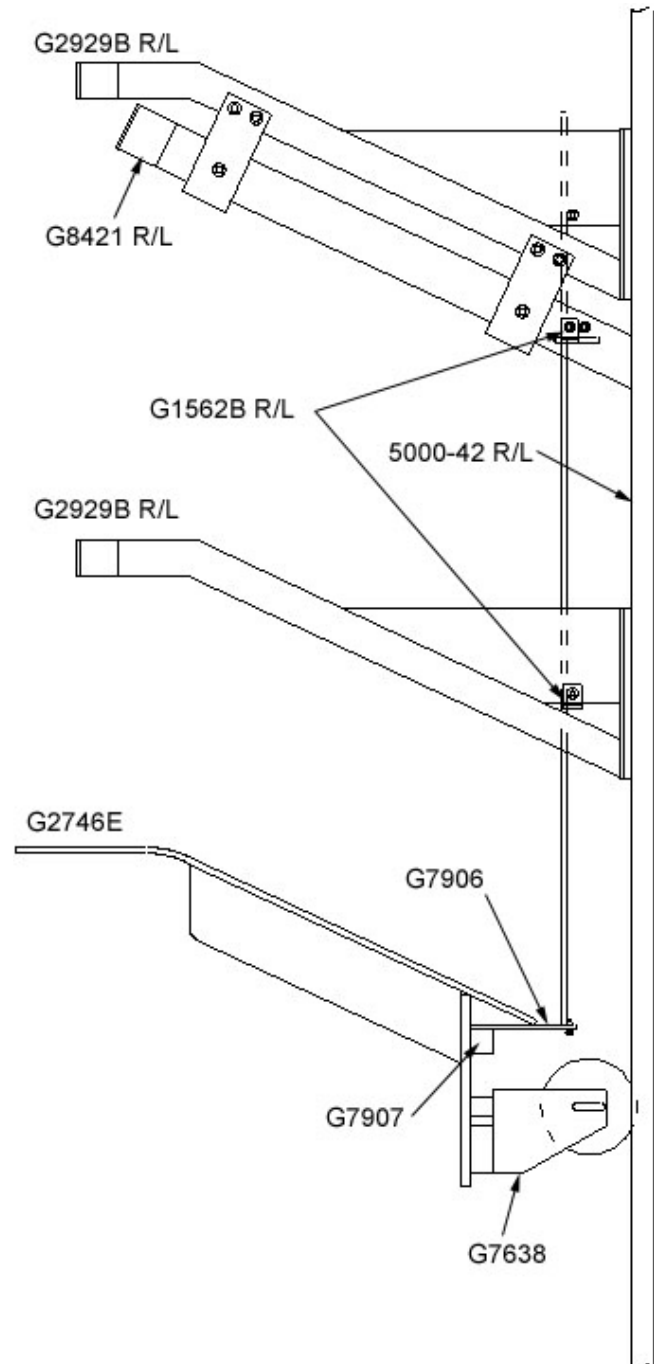


Blank Support Knives Adjustment

1. Blank support knives (G1562B R/L) are located:
 - a. On the hopper side guide, G8421 R/L
 - b. On the hopper bottom stop plate, G7906 (optional)
 - c. On the lower tray blank support bars, G2929B R/L
2. Mount the knives to provide a restraint on the blanks, but also loose enough so that one blank is pulled through the knives at each cycle.
3. Knife adjustment is accomplished by shimming the knife as needed with flat washers mounted between the knife and the hopper support guide, G2929B R/L or G8421 R/L.

Note:

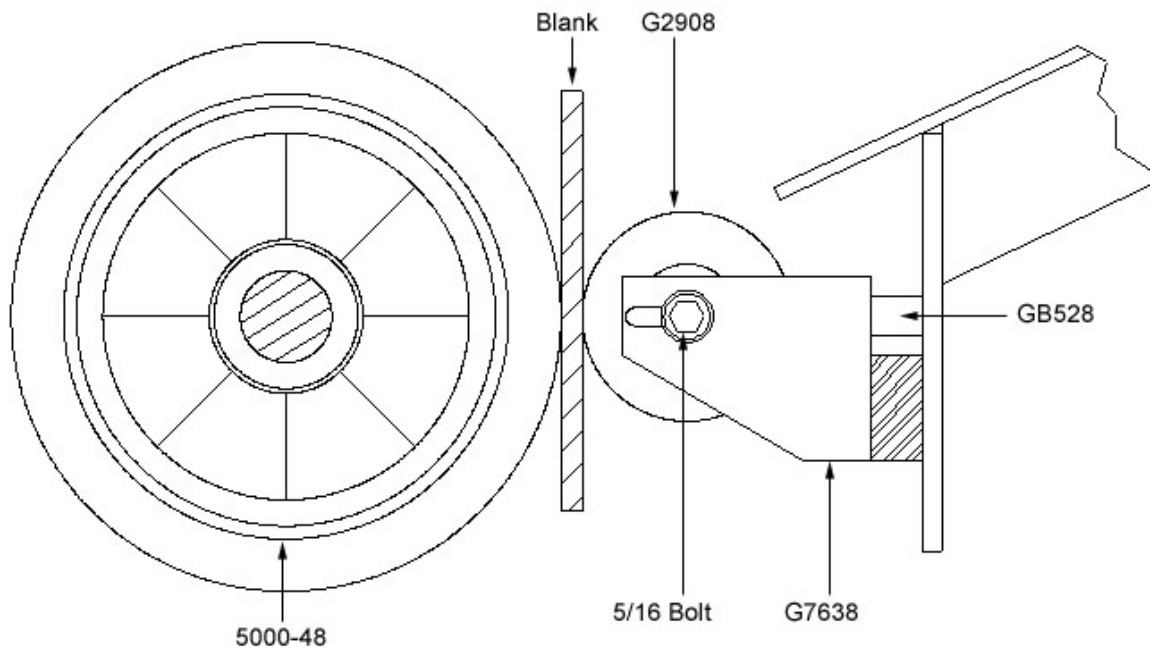
If there is not enough knife restraining the blank, two or more blanks can be pulled through on each cycle. If there is too much restraint, the blank will not be pulled through, causing the vacuum pick cups to release from the corrugated blank.



Blank Feed Idle Roller Adjustment

Corrugated blanks vary in thickness and this must be taken into consideration when setting up a new tray of different board weight. (Example: "B" is thinner than "C" flute.)

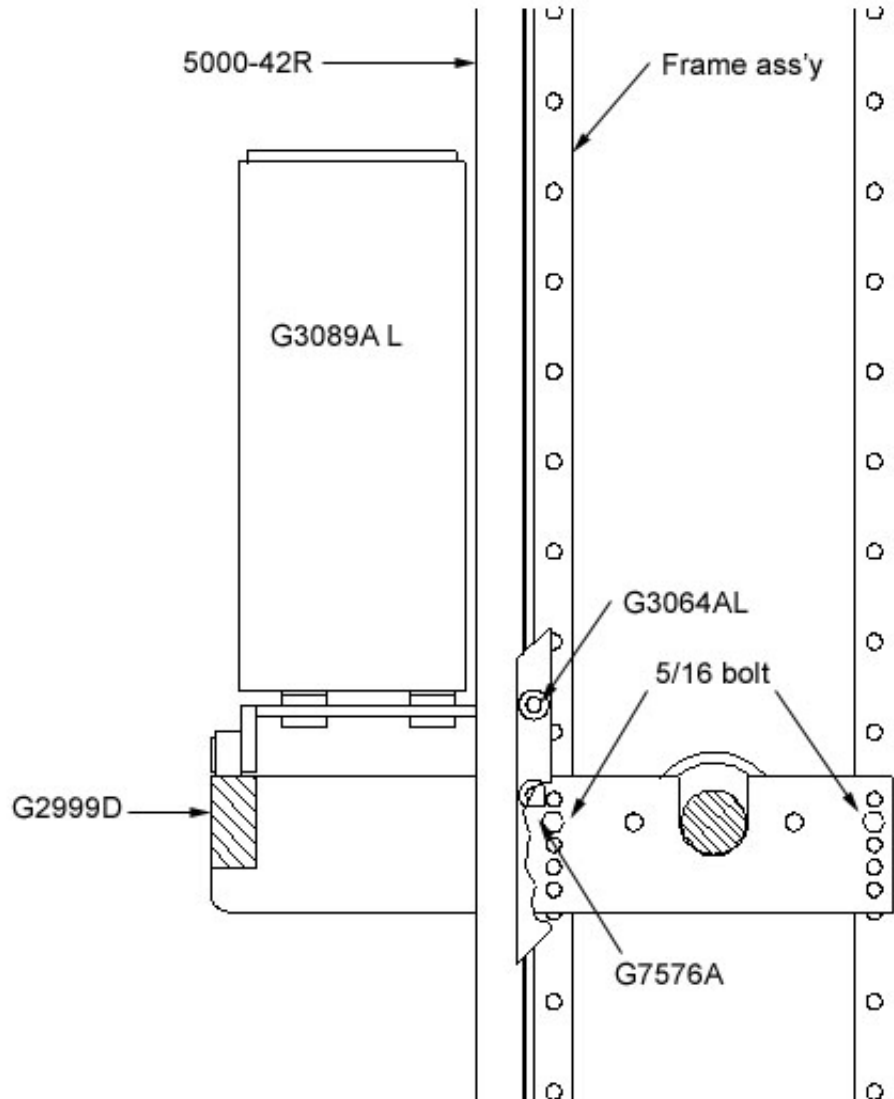
1. Loosen two (2) 5/16" bolts on idler bracket G7638.
2. Move roller in/out from feed wheel 5000-48 to obtain desired clearance. Blanks should pass through rollers without any slippage.
3. Tighten 5/16" bolts and recheck for movement of blanks through feed wheel.



Blank Feed Roll Assembly Adjustment

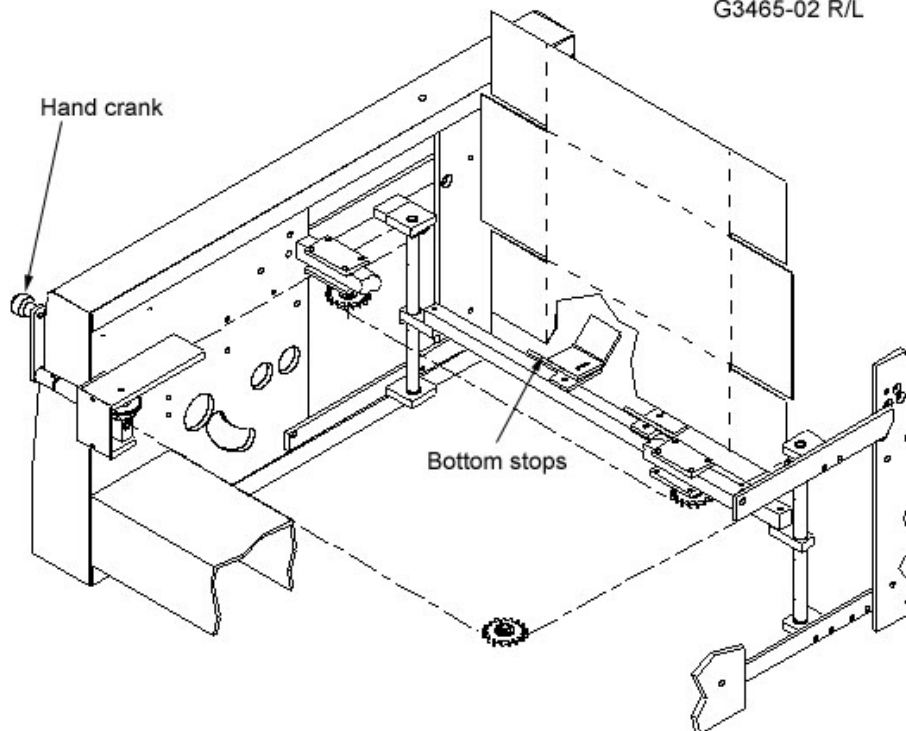
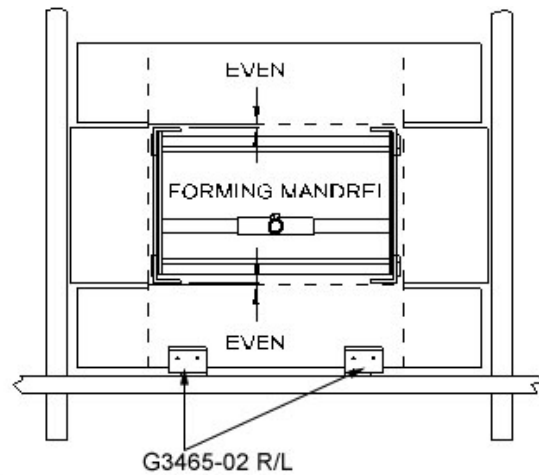
The appropriate distance to set between the bottom of the feed roller and the top of the corrugated blank is 4 1/4" to 4 1/2". To make this adjustment, proceed as follows:

1. Loosen the 5/16" bolt on the melt pot bracket G7576A R/L, located on the vertical guide bars 5000-42 R/L. slide the melt posts up.
2. Remove four (4) feed roll mounting bolts and position the complete feed roll assembly to meet the 4 1/2" setting on the largest blank.
3. Slide the melt pots down until the melt pot support studs rest on the idle roller mounting bar G2999D.
4. Tighten bolts and adjust the chain idle sprocket. Part G3064A R/L must be loose when melt pots are moved.



Blank Bottom Stops Adjustment

1. Position the mandrel at the end of the return stroke.
2. Set a blank on the bottom stops G3465-02 R/L.
3. “Jog” the mandrel up to the blank.
4. Hand crank the bottom stops up/down so that the mandrel “Frames” the blank bottom score lines.
5. The mandrel should “Frame” the scores, as in upper schematic, with even clearance top and bottom.

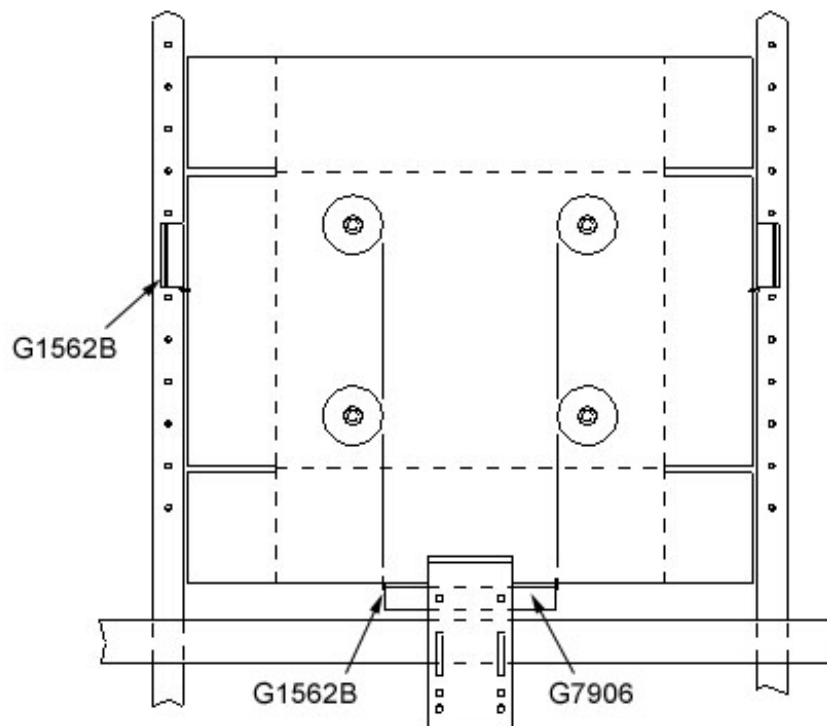
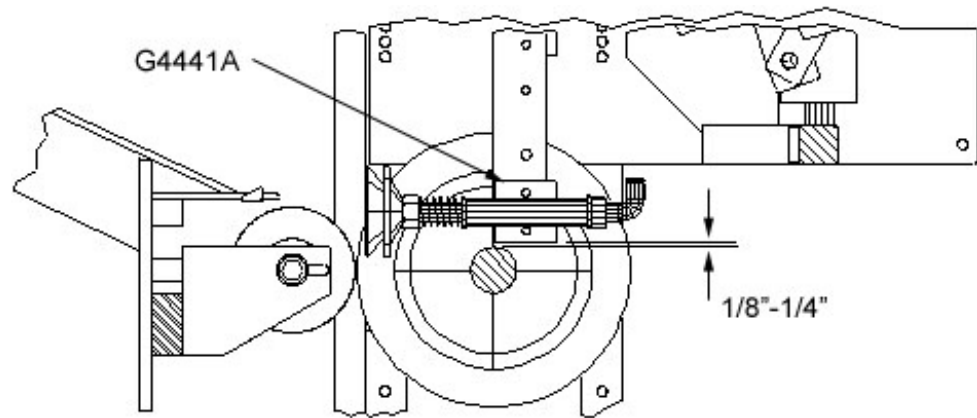


Vacuum Cup Position Adjustment

1. Adjust lower cups first by bottoming out the slide bearing block.
2. Adjust lower brackets (G4441A) to clear the feed roller shaft by 1/8" to 1/4". (See diagram)
3. "Jog" the former until the slide bearing block reaches its maximum "up" position.
4. Now adjust the width of the lower cup pads so that the inside of the cups are in line with the blank support knives (G1562B) that are mounted on the hopper bottom stop plates.
5. Adjust the width of the upper set of cups to align with the lower set.
6. Height of the cups should be such that the centerline of the cups should be in line with, or slightly above the blank support knives.

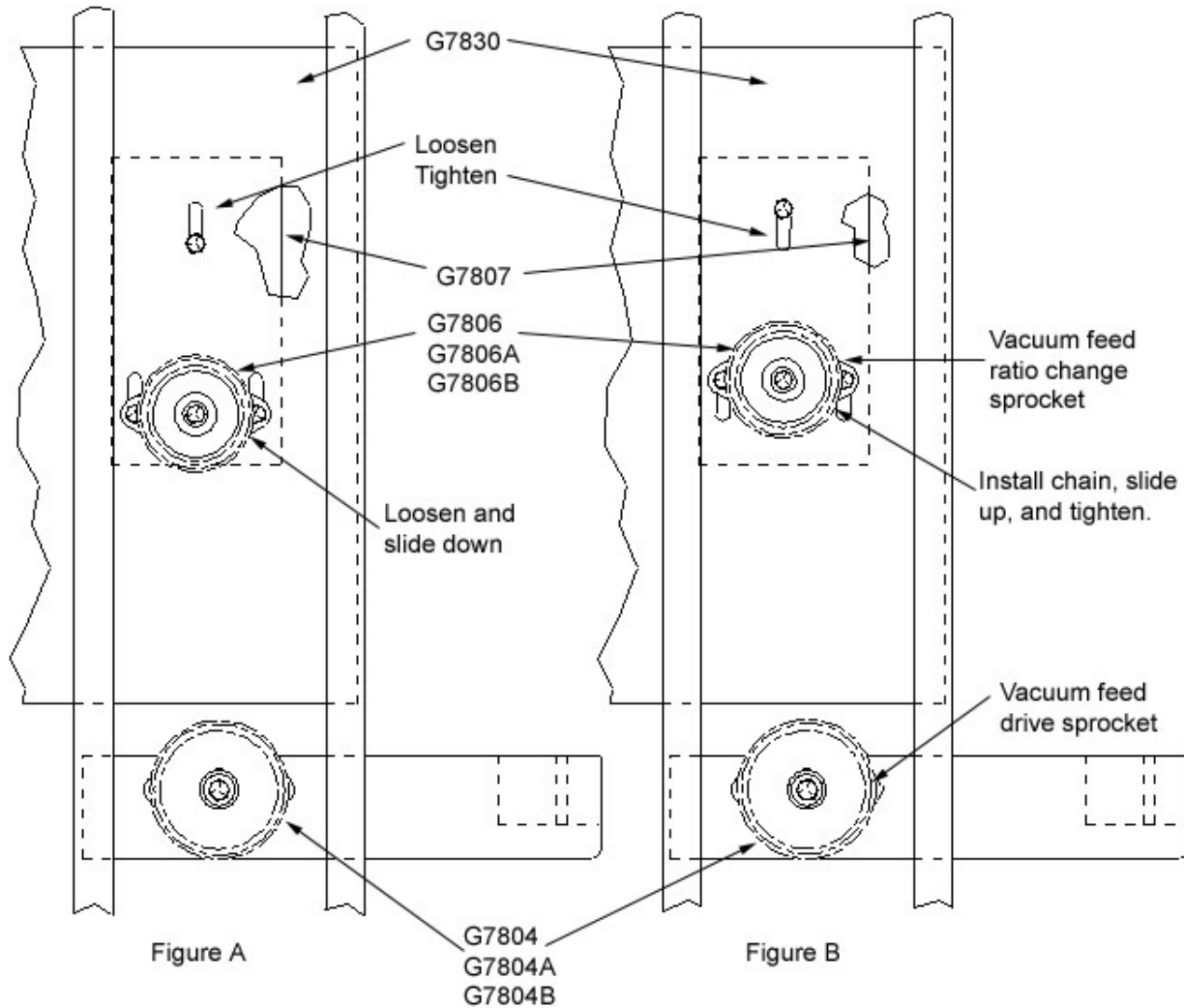
Large and special design blanks may require more cups or different cup locations. Send a blank to SWF to determine the needs with regards to more or different vacuum cups, and the possibility of having to manufacture special parts.

NOTE: For very shallow tray blanks, do not set up the lower set of vacuum cups to contact the blank below the end panel score line. If the end panel is shallow enough it may break away from the cup pads when the blank is pulled through the blank support knives.



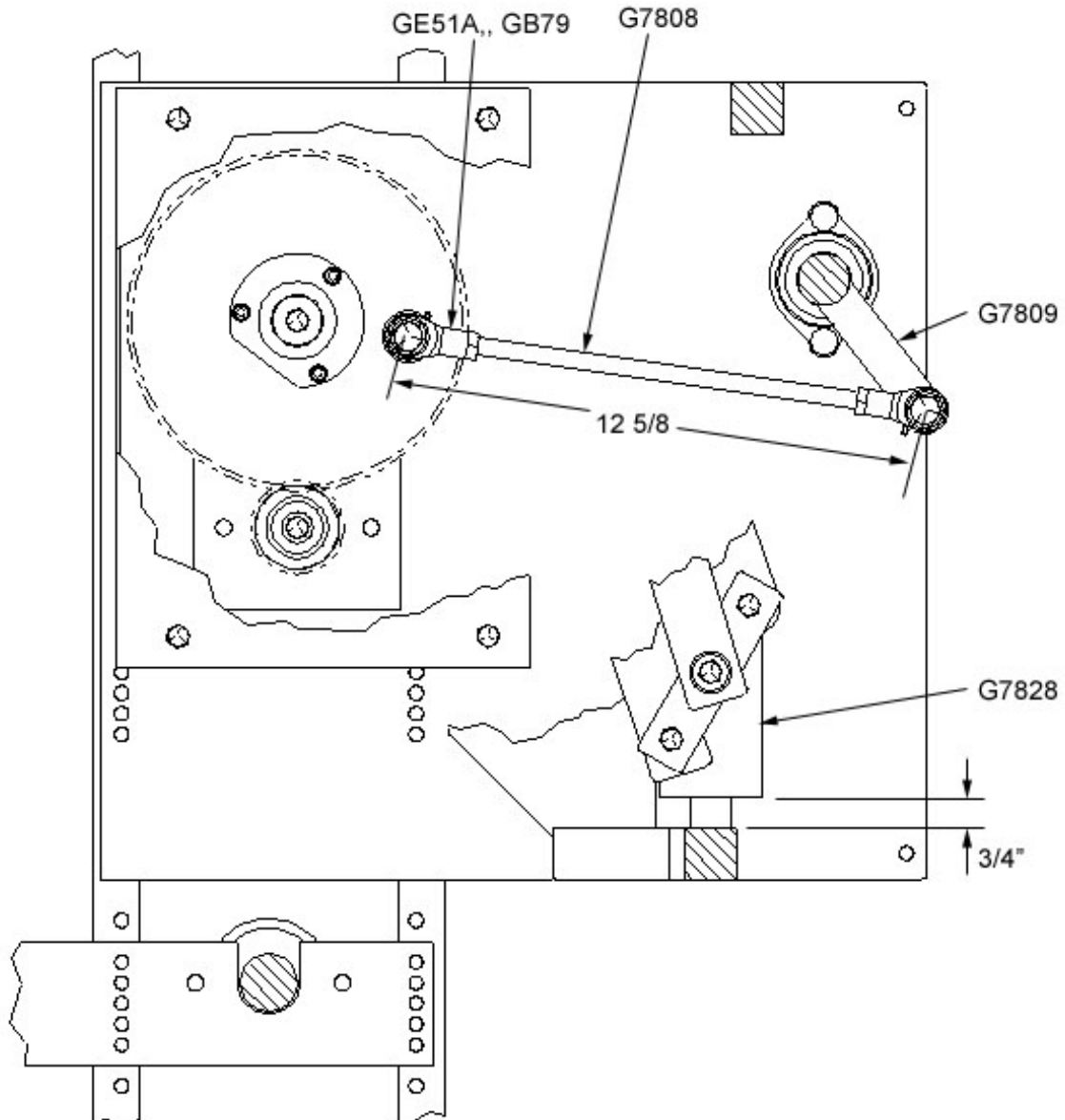
Vacuum Feed Drive Chain Adjustment

1. Loosen bolts holding mount plates (G7807) to mount plates (G7830)
2. Slide the mount plate to the bottom of the mounting slots.
3. Install the chain on the drive sprocket (G7804) A or B; to the ratio sprocket (G7806) A or B. (see next page for illustration)
4. Now slide the mounting plate upwards until the chain is snug and tighten bolts.



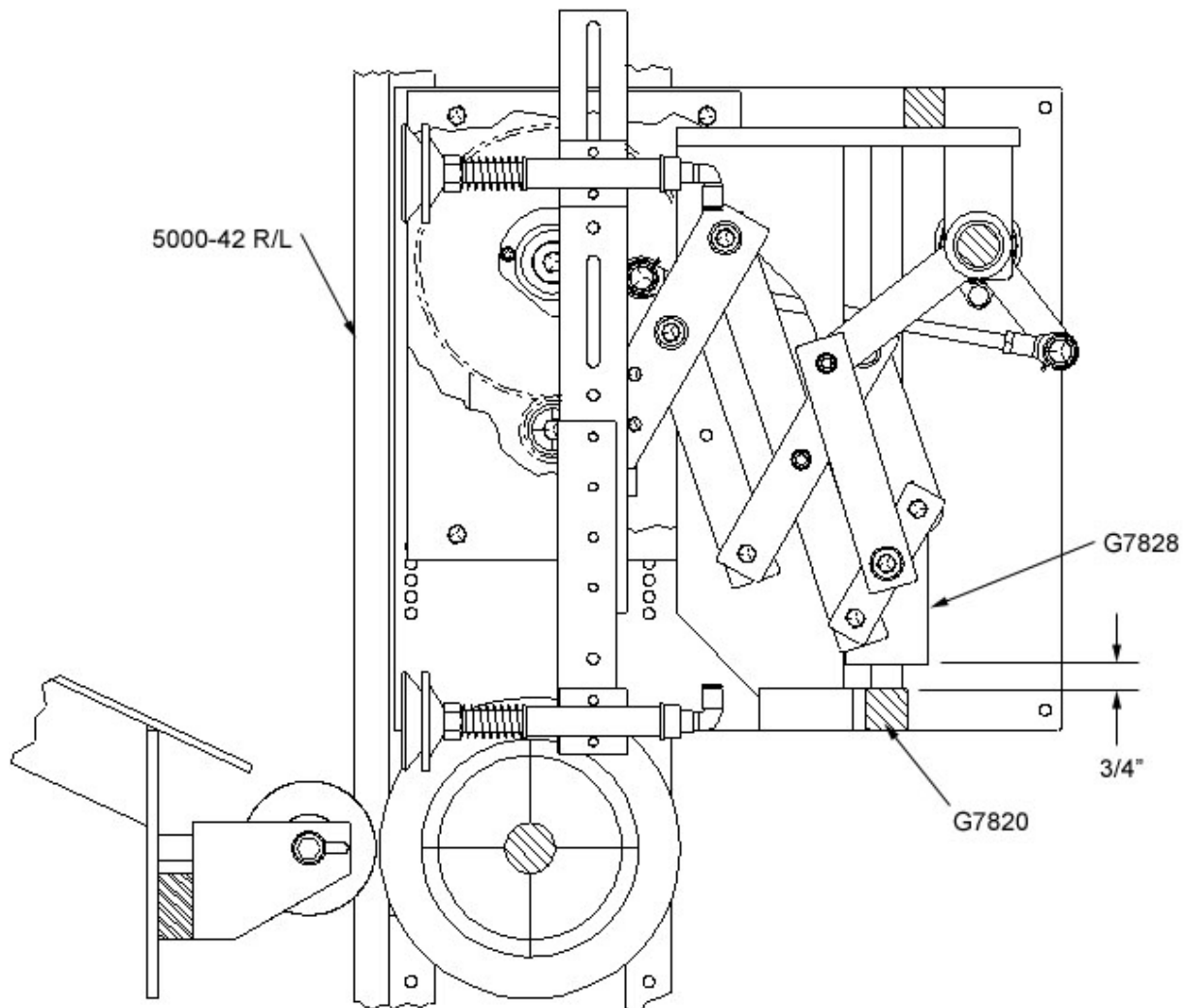
Vacuum Feed Drive Connecting Rod Adjustment

1. Slide bearing block (G7828) must be at the lowest point of travel to start this adjustment.
2. Thread rod end bearing (GE51A)(GB79) in/out until a dimension of 12 5/8" is reached.
3. Arm (G7809) should now point to the rear of the attachment.
4. Attach connecting rod (GE51A)(GB79) to drive gear (G7803) using spacer bushing (GB79).
5. Rotate the drive gear until the connecting rod can be connected to arm (G7809).



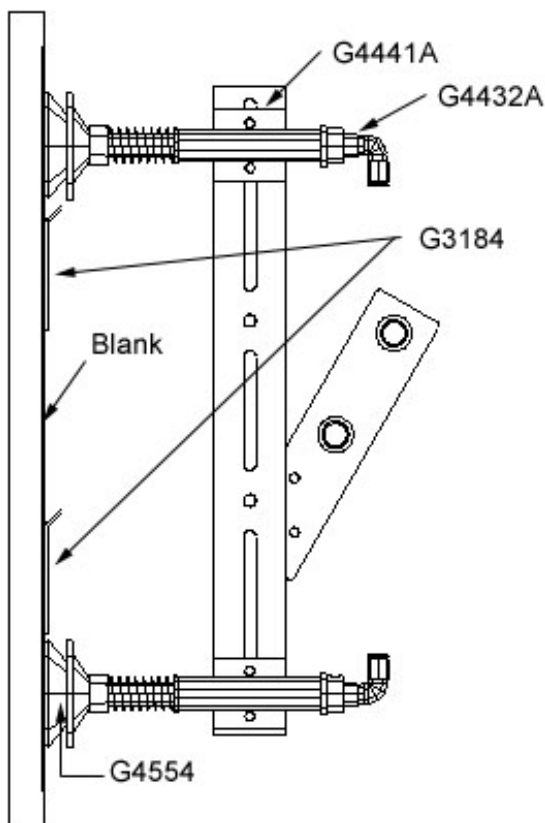
Vacuum Feed Slide Bearing Block Adjustment

1. "Jog" the mandrel until it is on its return stroke.
2. Stop the "jog" when the mandrel is even with the front of vertical guide bars (5000-42).
3. Slide bearing block (G7828) must be set for a distance of $\frac{3}{4}$ " between it and support bar (G7820).
4. Rest the slide bearing block on a $\frac{3}{4}$ " spacer. (See lower figure)
5. Now adjust and connect the vacuum connecting rod (G7808) as previous page instructions.

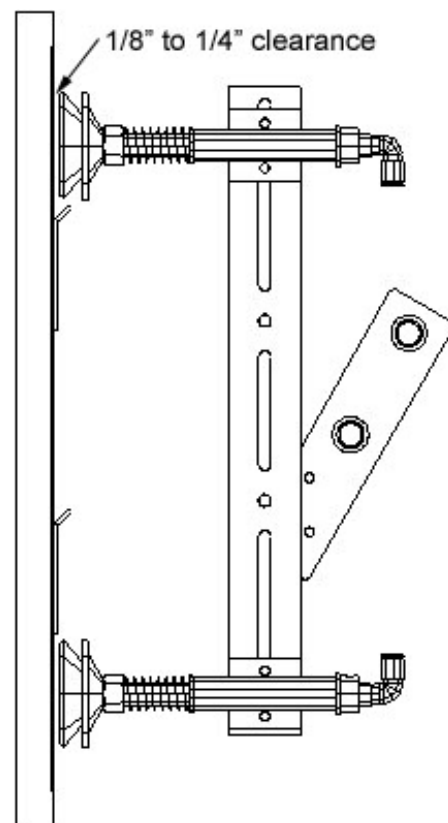


Vacuum Feed Suction Cup Mounting Tube Adjustment

1. Mandrel on the return stroke.
2. Slide bearing block is at its lowest point of travel.
3. Turn the vacuum blower "on" and place a blank against suction cups (G4554).
4. The blank must now be held between the vertical guide bars and against the rear stop (G3184) mounted on the rear side of the vertical guide bars.
5. Slide the tubes in/out until the blanks are held against the rear stops. Loosen, set and tighten the set collars in order to maintain this condition.
6. Now release the suction at the manifold by lifting the manifold pad cover.
7. The suction cup faces should retract slightly ($1/8"$ to $1/4"$) from the blank.
8. The adjustment must be made to prevent the cups from wearing excessively or tearing.



Suction On



Suction Released

Vacuum Feed Timing Adjustment

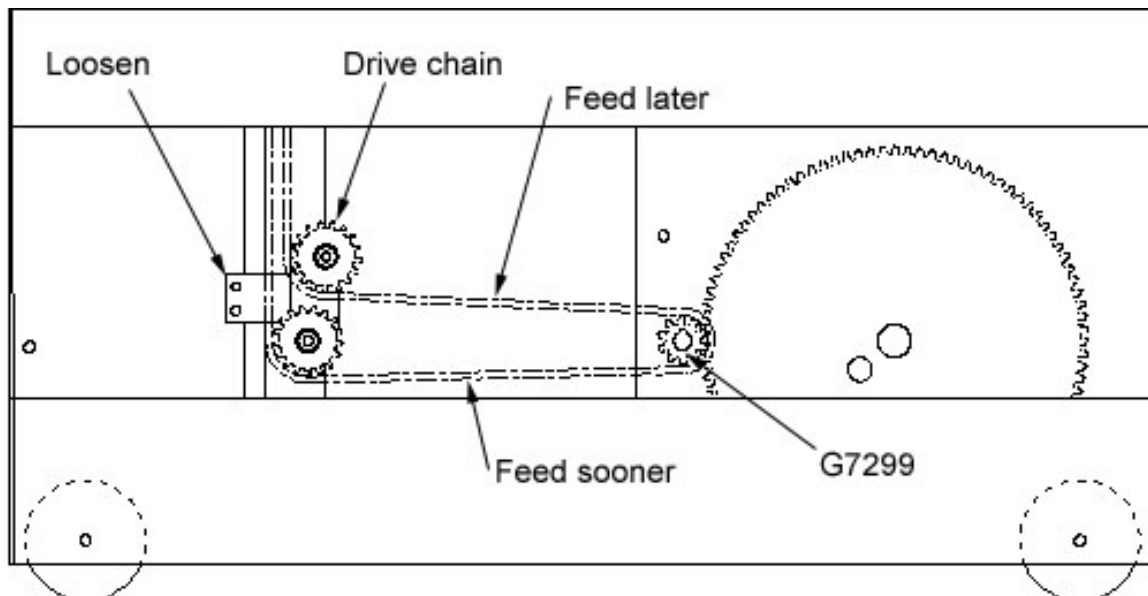
Note: **“Original Start Position”** is: Mandrel on return stroke and forming end of mandrel is even with the front of the vertical guide bars and the slide bearing block is at its lowest point of travel. Method #1 and #2 will require adjustment of the adhesive program segments upon completion.

1. Set former to the “Original Start Position.”
2. Cycle former to determine whether blanks should be fed earlier (mandrel closer to return stroke) or later.
3. When direction is determined, return to “Original Start Position” before starting Method #1.

Method #1

1. The timing is set at the drive sprocket.
2. “Original Start Position” Loosen take up chain idler (located lower left side frame).
3. To feed blanks later: Jump the chain counterclockwise on sprocket (G7299).
4. To feed blanks earlier: Jump chain clockwise on sprocket (G7299).
5. Tighten the idler and cycle the machine to check the timing.

Note: This is a good timing start for most formers, but some may require further adjustment as described in Method #2.



Method #2

Adjusting the timing at the pinion gear:

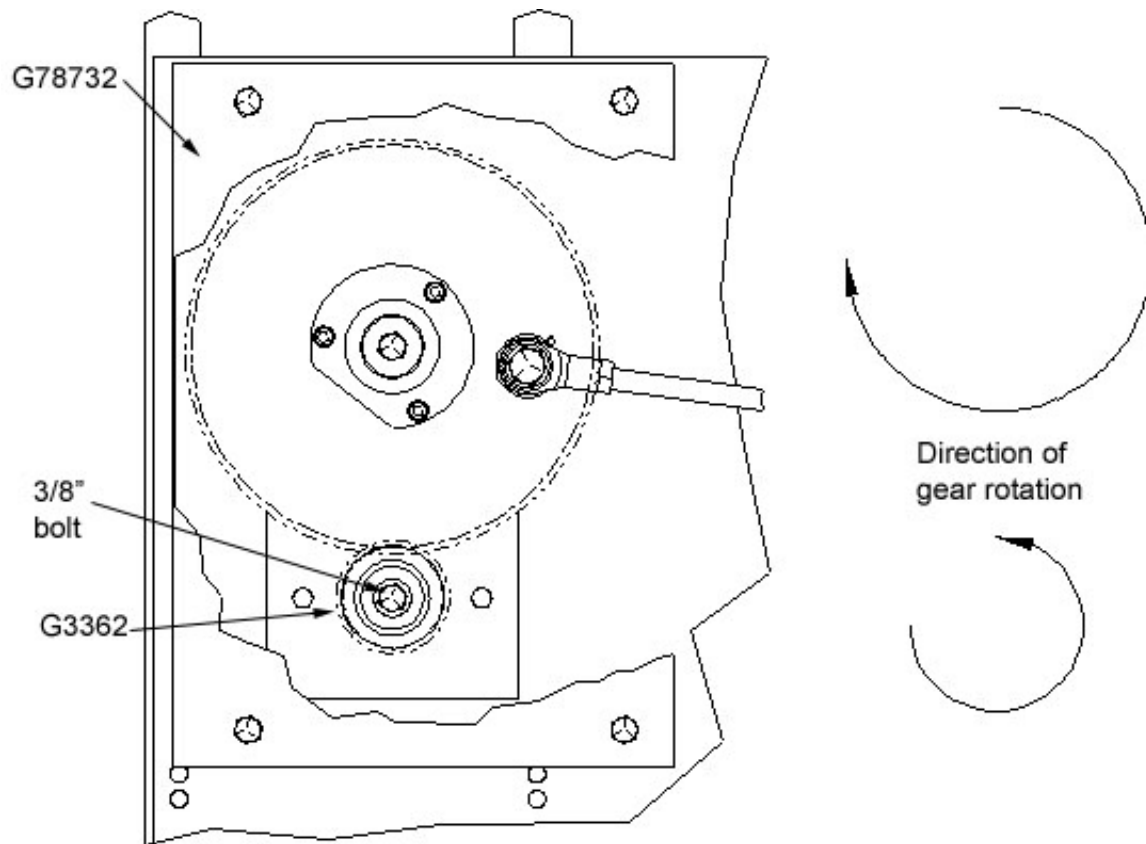
1. **“Original Start Position”** Remove vacuum section guard (G7832).
2. Remove 3/8” bolt that holds pinion gear (G3362) and remove the gear.

To feed later

3. Jog mandrel closer to the end of the return stroke.
4. Rotate blank feed wheel in direction of rotation until blank seems to be in correct position.
5. Blank should clear the mandrel and end up resting on the bottom stop before mandrel starts to move forward on the forming stroke.
6. Reinstall pinion gear and vacuum guard before cycling former to check for correct timing.

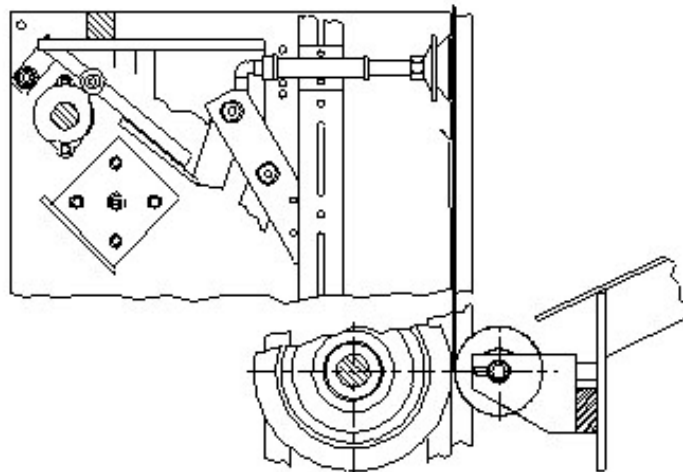
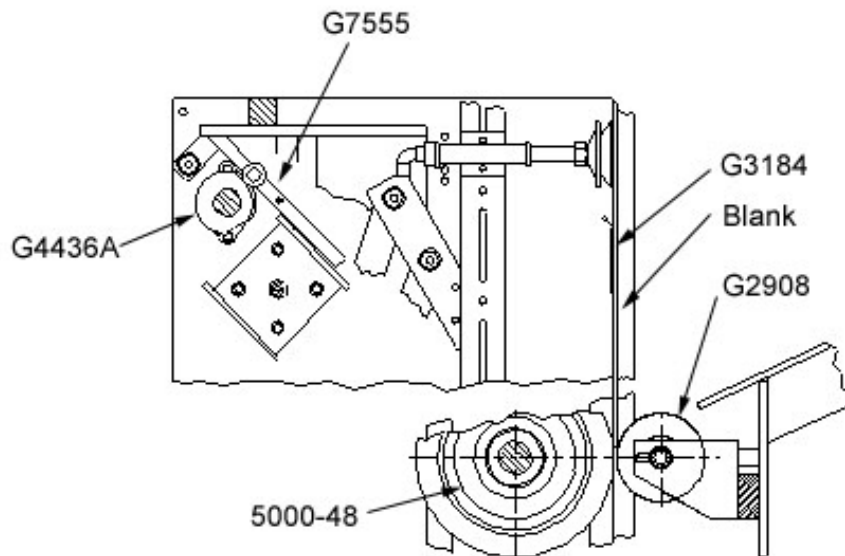
To feed earlier

7. Jog mandrel close to the start of the return stroke.
8. Rotate blank wheel in direction of rotation until blank seems to be in correct position.
9. Blank should clear the mandrel and end up resting on the bottom stop before mandrel starts to move forward on the forming stroke.
10. Reinstall pinion gear and vacuum guard before cycling former to check for correct timing.



Vacuum Feed Valve Operating Cam Adjustment

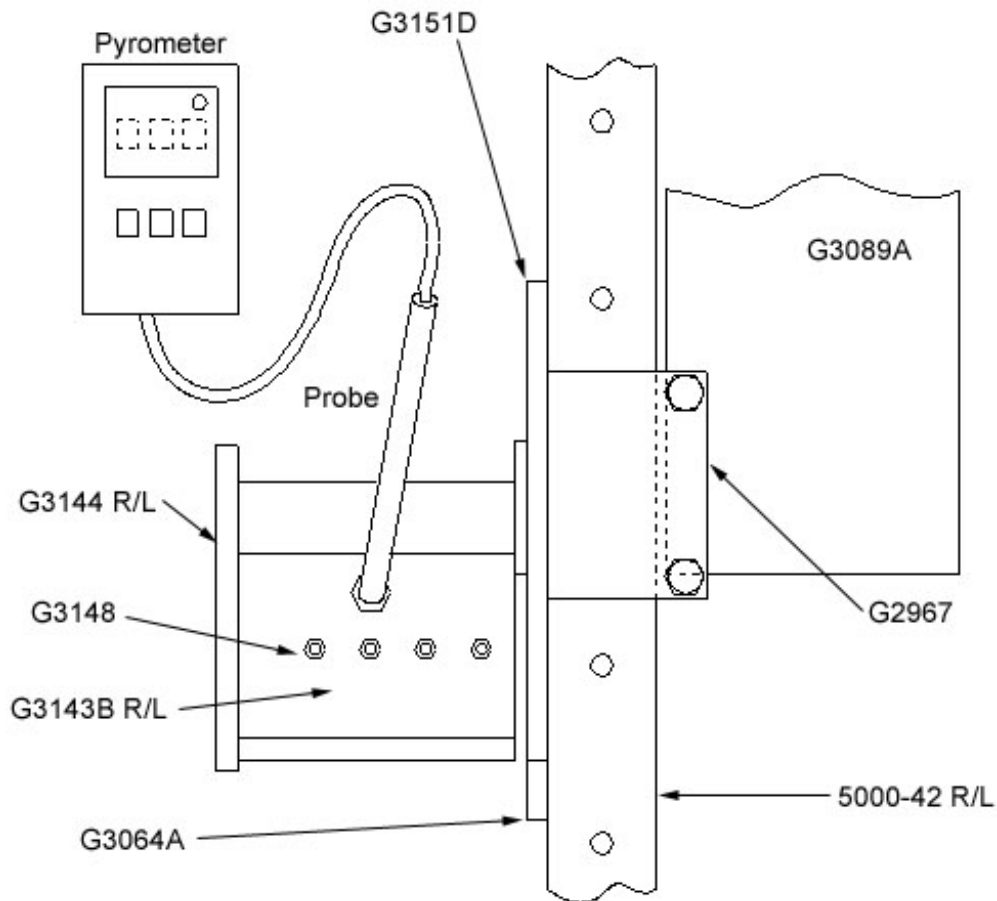
1. Load hopper with blanks and turn the vacuum blower "ON."
2. "Jog" the former until the blank is held by the vacuum cups and in between the vertical guide bars and held against the blank rear stops (G3184).
3. When the blank starts to enter the space between the feed wheel (5000-48) and the Backup roller (G2908), operating cam (G4436A) should start to release suction.
4. Suction should be completely released when the bottom of the blank is in line with the center line of feed wheel (5000-48).
5. An early release may cause the blank to skew and create a feed problem.
6. A late release may cause glue misprogramming and also tear the vacuum cup pads.



Adhesive Applicator Thermostat Adjustment

1. Apply power to the Traymatic. Set melt pot thermostats to 350° F. and allow glue to heat up. This takes about 60 minutes.
2. Press a surface Pyrometer probe against and above the Glue Pump jets (G3148) for large capacity Melt Pots.
3. Note the pyrometer reading. (See lower diagram) for standard melt pots.
4. Pyrometer reading and thermostat reading of 350° F. should be identical.
5. If not: Recalibration may be accomplished by commplying with instructions on the next page.

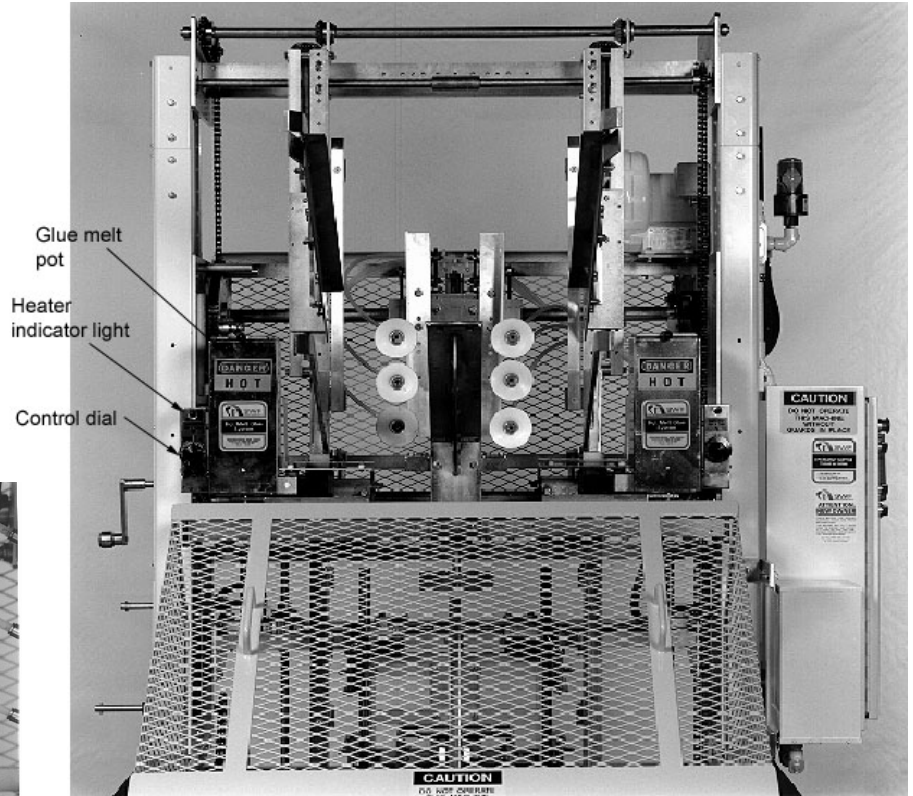
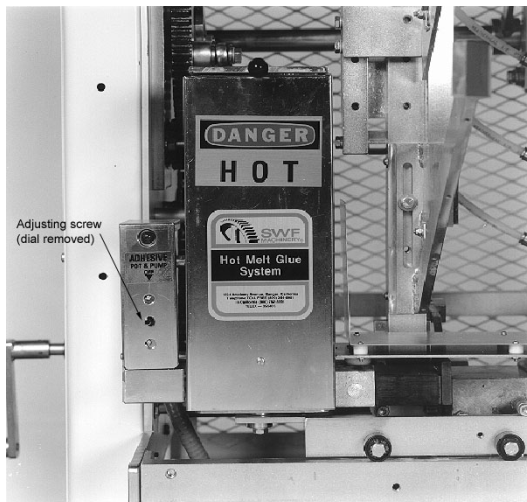
WARNING: When performing any maintenance on the glue system wear safety goggles, heat resistant gloves and protective clothing to prevent injury and burns from hot material and hot parts.



Thermostat Calibration

1. Set the Thermostat control dials to the same temperature measured with the Pyrometer.
2. Carefully remove the Thermostat control dials. With the dial removed, the calibration adjusting screw is visible by looking into the knob mounting stud.
3. Using a small screwdriver, turn the calibration adjusting screw until the heater indicator light just **goes off**. Next, turn the screw in the opposite direction until the light **just comes on**.
4. Again reverse direction and turn the screw until the light **just goes off**.
5. The temperature is now calibrated. Replace the dial and repeat steps with the other pump.

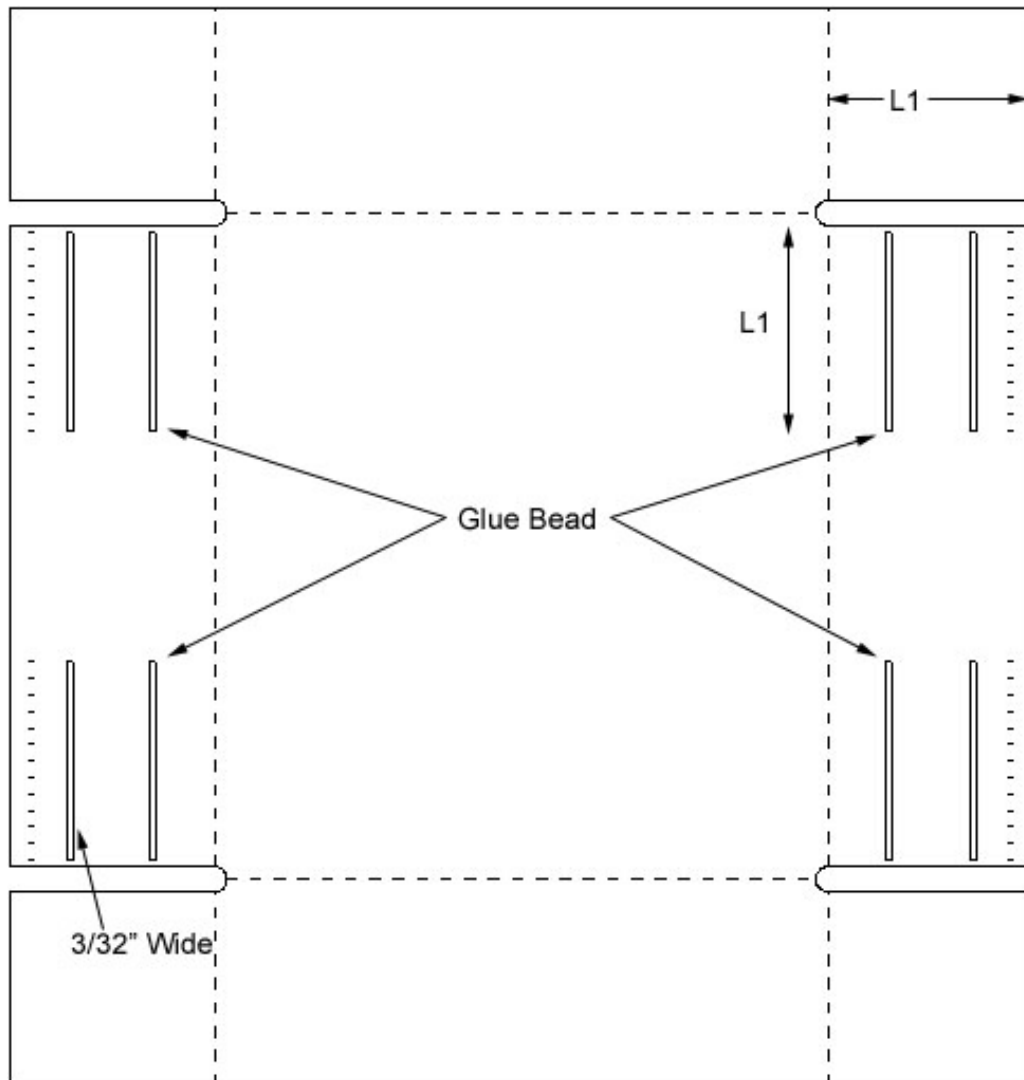
Note: When calibrating an adhesive Thermostat, both Thermostats should be calibrated.



Adhesive Bead Adjustment

1. Glue bead length is determined by the use of program segments.
2. A segment creates approximately 2" of glue bead length.
3. To achieve the correct glue bead length, measure (L) length of the minor flap.
4. Add the necessary segments to the wheel to achieve this length.
5. The standard width of glue bead for non-waxed corrugated is $\frac{3}{32}$ ".
6. To achieve this width see next page.

Note: In some cases a skip pattern is sufficient. This is achieved by leaving a space between the glue segments.



Adhesive Bead Width Adjustment

1. Glue bead width is controlled by the volume of glue put out by the glue pumps.
2. The width of this output is controlled by a Volume Control (G3153) needle valve.
3. To **increase** width to 3/32"; rotate Volume Control Screw **clockwise**.
4. To **decrease** width to 3/32"; rotate Volume Control Screw **counterclockwise**.

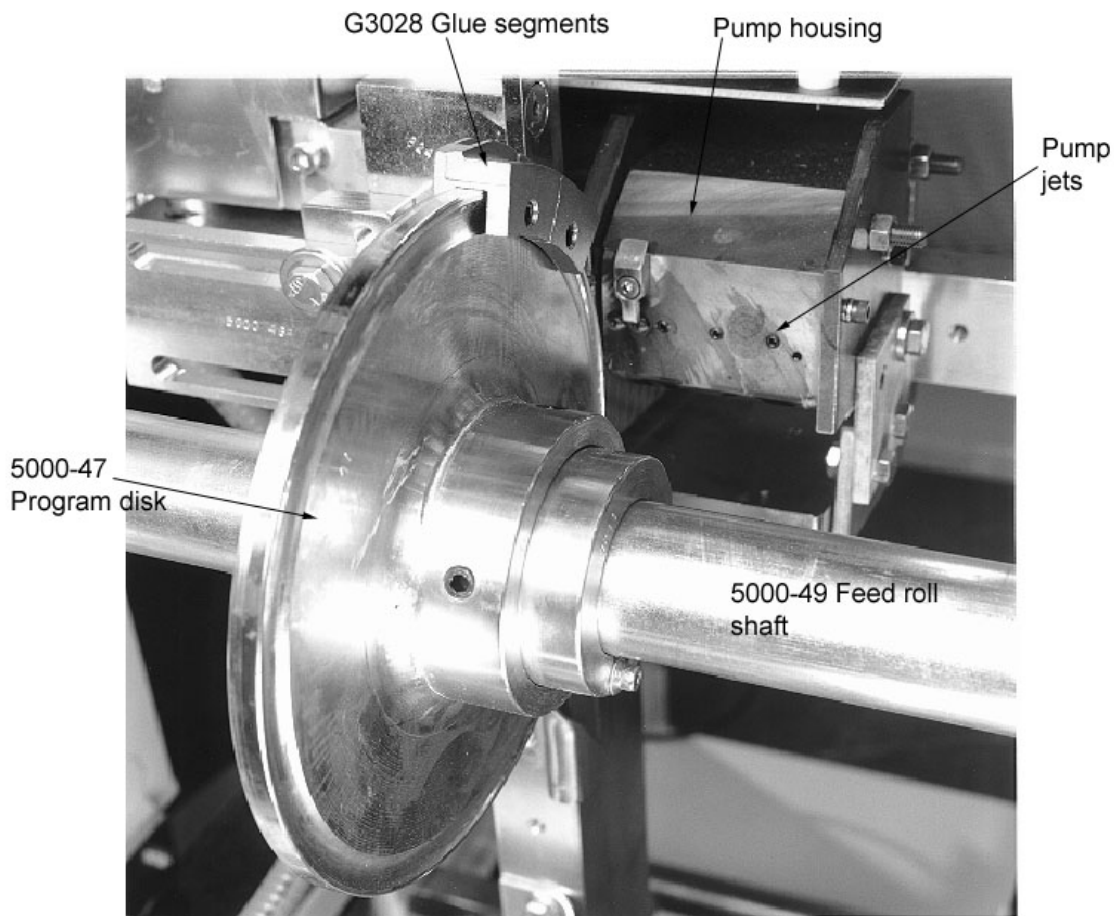
Increasing the width of the glue bead from 3/32" to 1/8" does not necessarily create a better bond. This adjustment may result in an increase of glue consumption by as much as 75%.

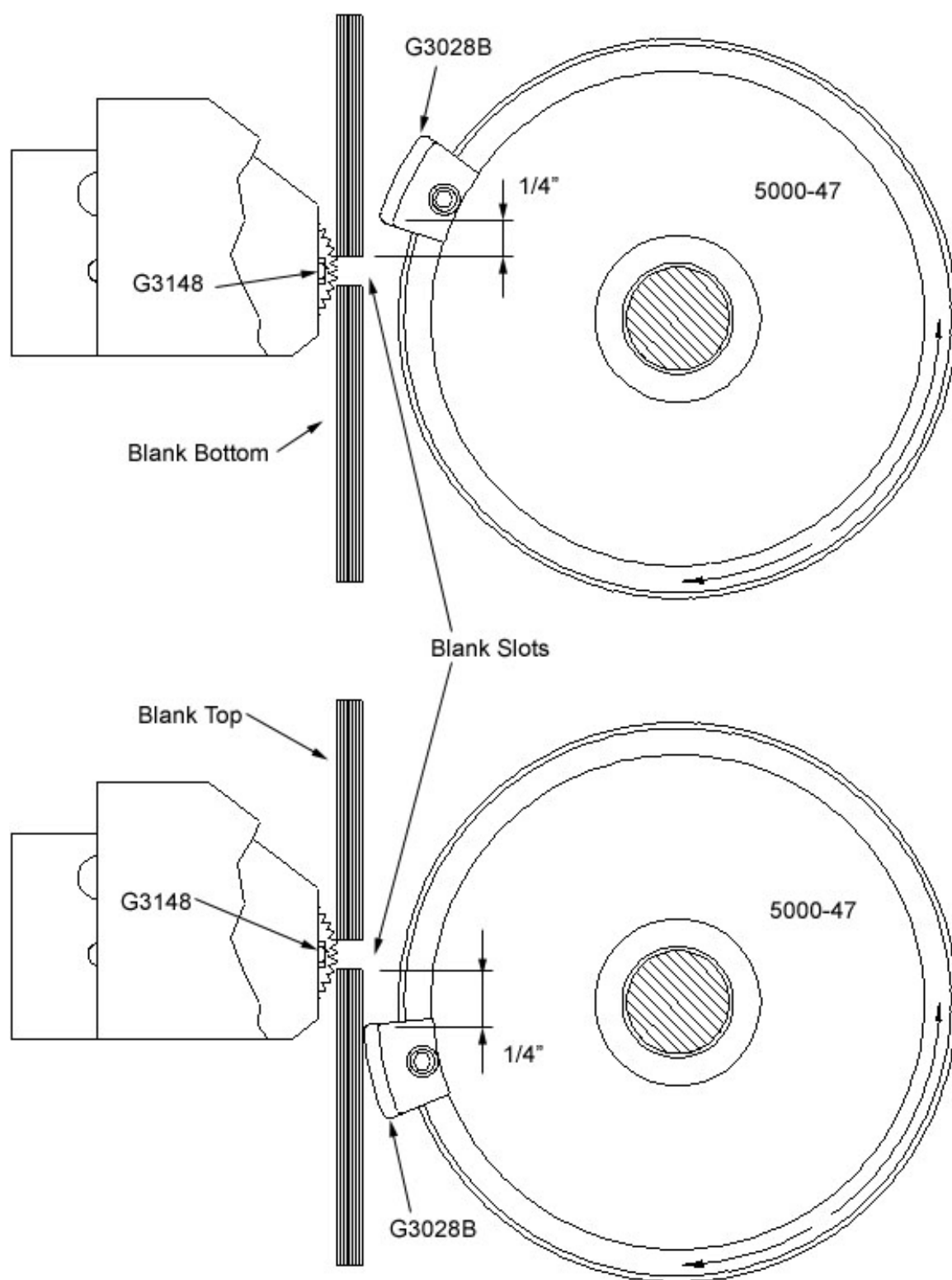


Adhesive Program Segment Adjustment

Glue program Segments (G3028B) are located on Program discs (5000- 47) that rotate on the blank Feed Roller shaft (5000-49). The program segments must be centered with, and aligned to the glue pump drive wheel (G3147) of the glue pump.

1. Attach a segment (G3028B) to the program disk (5000-47). Slide the program disk and segment over the glue pump drive wheel and center the segment slot over serrated drive wheel (G3147) of the glue pump.
2. Tighten the set screw on the program disk and load the corrugated hopper with blanks.
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 5/16" set screw attaching the segment to the program disk and position this segment **1/4" above the blank slots**. Tighten the set screw when completed.
5. Continue to move the blank down **until the second set of slots** on the blank align with the glue jets.
6. Attach and center a second segment to the program disk and position the trailing edge **1/4" below this slot**. Check all screws and tighten.

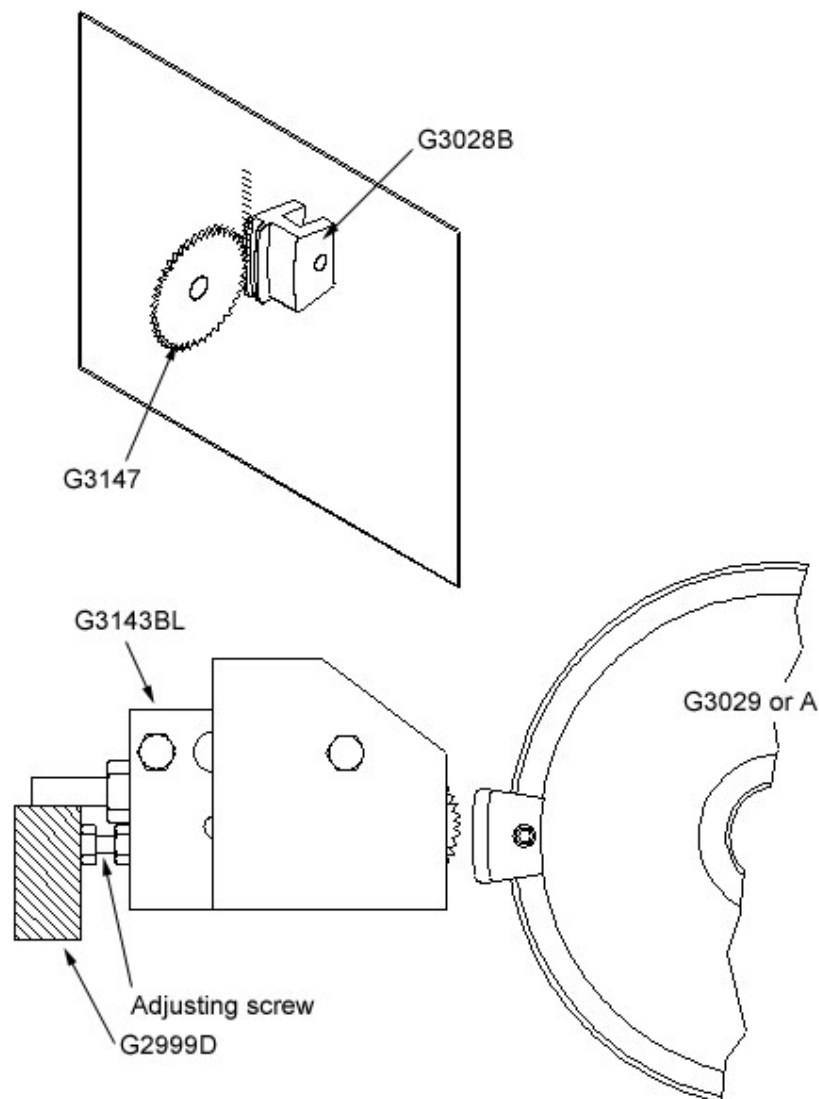




Adhesive Program Segment and Applicator Wheel Clearance

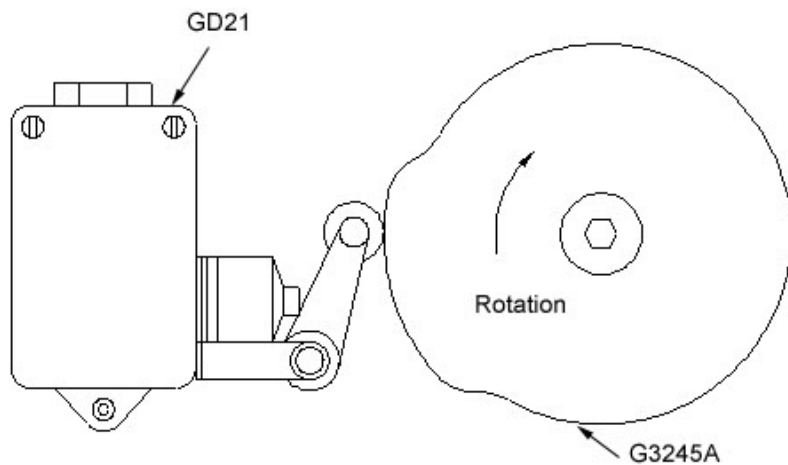
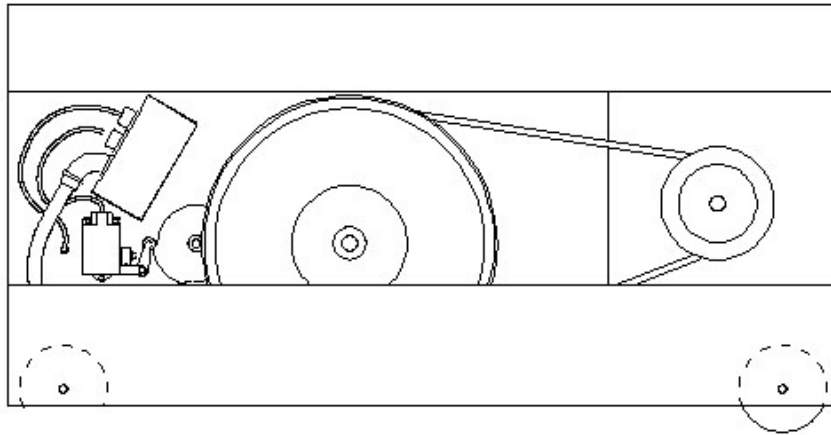
This setting varies according to the thickness of the material to be formed. A change from “B” to “C” flute, for example, may necessitate a recheck of the clearance.

1. Loosen the retaining nut on the adjustment screw located in front of the glue pump housing G3143B R/L.
2. Adjust this screw in/out in order to create visible teeth marks on the blank as it passes between the glue pump drive wheel G3147 and the segments G3028.
3. The teeth marks must be plainly visible but not deep enough to tear the blank. Tighten the retaining nut when completed.



Machine Stop Micro Switch Cam Adjustment

1. Remove lower right frame access cover.
2. “Jog” the mandrel to the end of the forming stroke.
3. Loosen 1/2” flat head Allen 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. Retighten the Allen bolt.
5. The Micro Switch is used to stop the machine at the compression end of the stroke when the operating switch is turned to the “OFF” position.

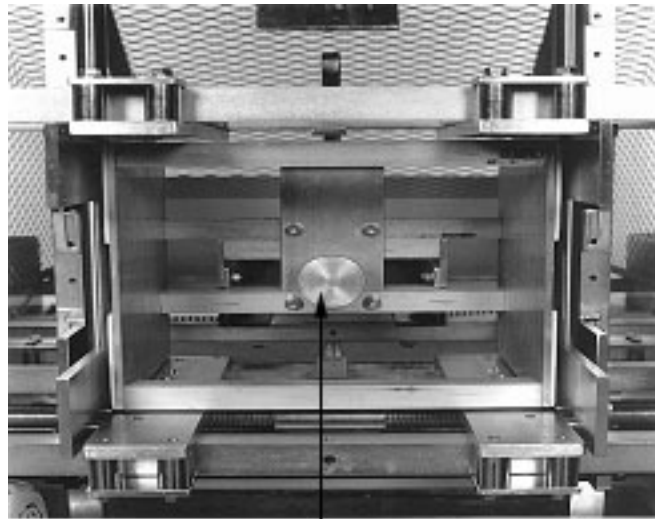


Mandrel Change Out

The 1T4K has been designed so that a mandrel may be exchanged quickly.

To insure a clear path will be provided for mandrel change, we suggest the following steps be taken **after powering down the machine**:

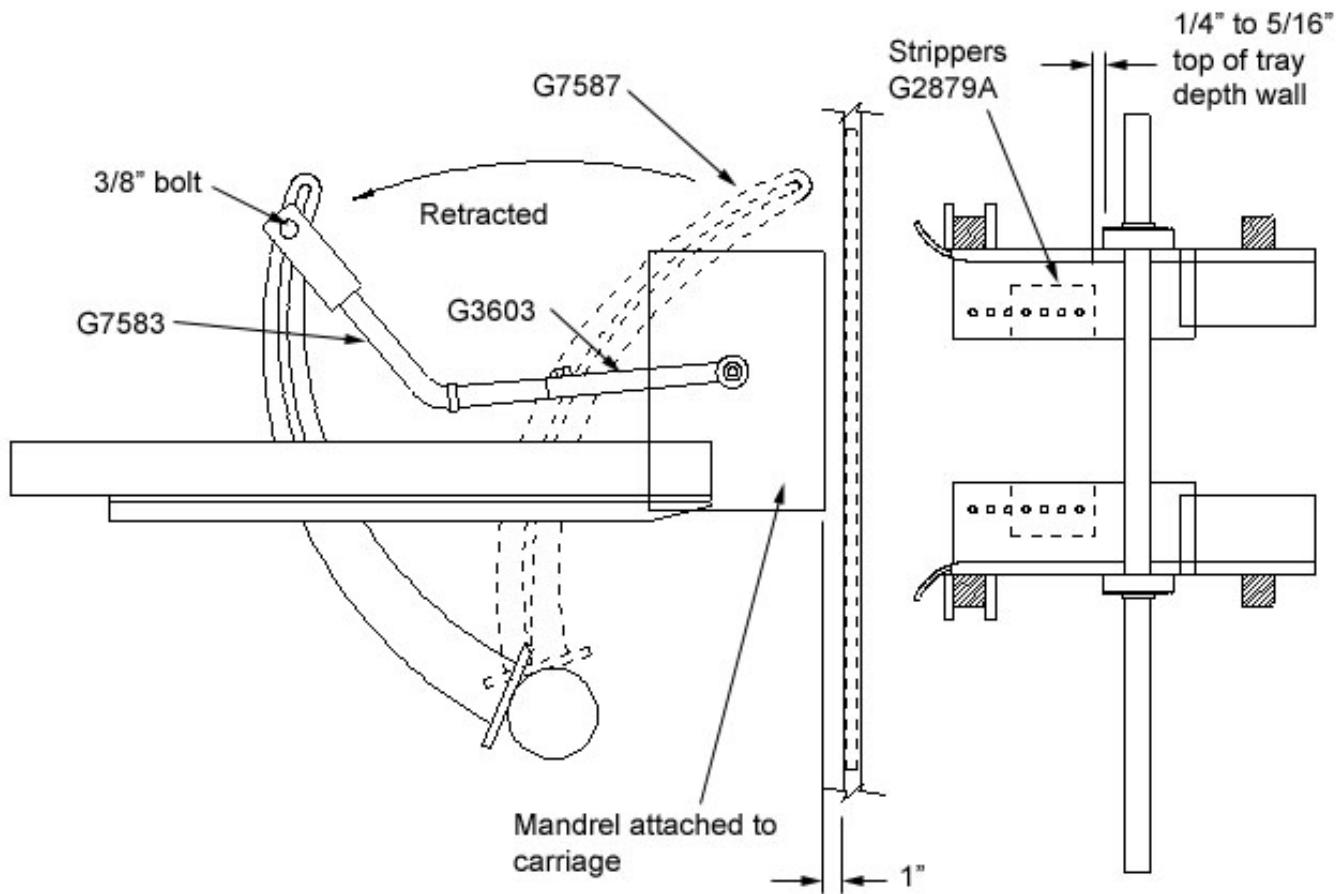
1. Crank out the following in order:
 - a. Vertical Guide Bars
 - b. Top Compression
 - c. Side Compression
2. Mandrel "Full Return Stroke."
3. Loosen knurled knob (G4852) and remove mandrel.
4. Install the new mandrel and tighten the knurled knob.
5. Crank in/out the vertical guide bars to a width of 1/8" plus the width of the tray blank.
6. Rest the tray blank on hopper support bar (G2646E) and crank the hopper blades up/down to align blades with the blank slots.
7. Rest the tray on the bottom stops (G3465A) and crank stops up/down until the scores representing the tray bottom align with the outer perimeter of the forming mandrel.
8. Crank side compression in/out to a clearance of two (2) blank thickness plus 1/8".
9. Crank top compression down/up to a clearance of one (1) blank thickness plus 1/32".
10. Adjust mandrel stroke. Recheck settings and "JOG" through a complete cycle.



Mandrel changeout knob
(in some cases may also be
a bolt)

Mandrel Return Stroke Adjustment

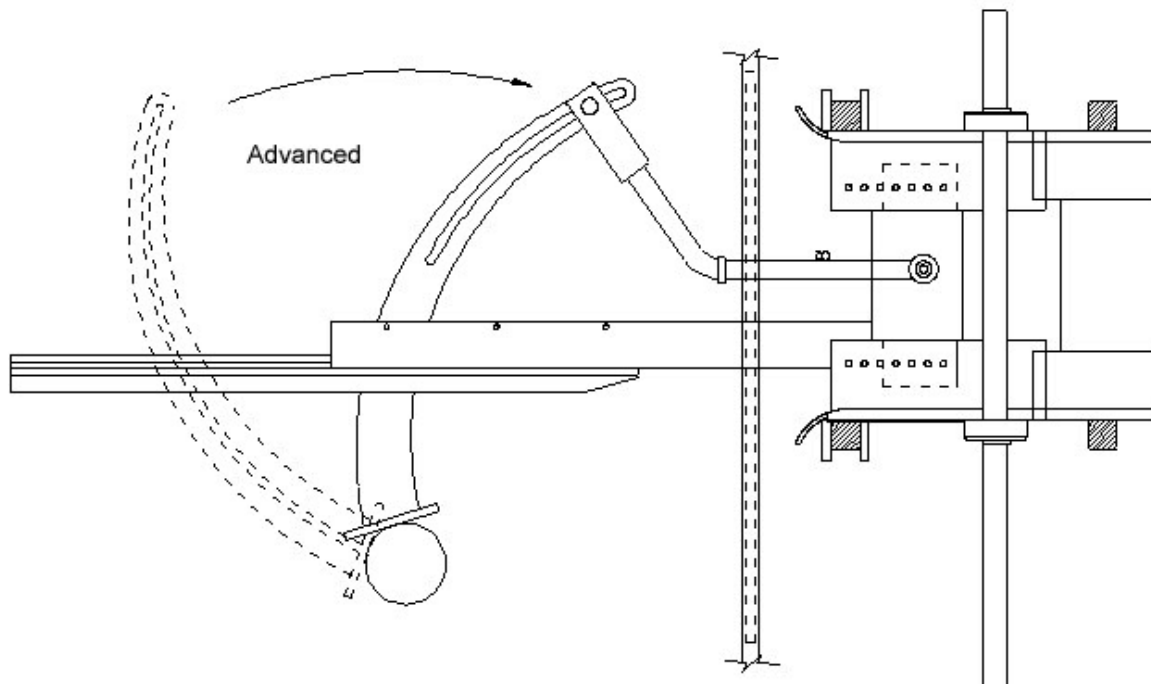
1. Set the mandrel feed post (G7587) at the full retracted or returned position.
2. Loosen both the 7/8" set collar on the mandrel connecting rod (G7583), and the 3/8" set screw on the mandrel carriage connecting rod end (G3603).
3. Pull the carriage so that the mandrel carriage connecting rod end (G3603) slides on the mandrel connecting rod (G7583), to a position where the mandrel itself is approximately 1" from the face of the vertical guides (G7613).
4. Slide the set collar into contact with the end of the connecting rod end. Retighten the set collar and the 3/8" set screw.



Mandrel Travel Length Adjustment

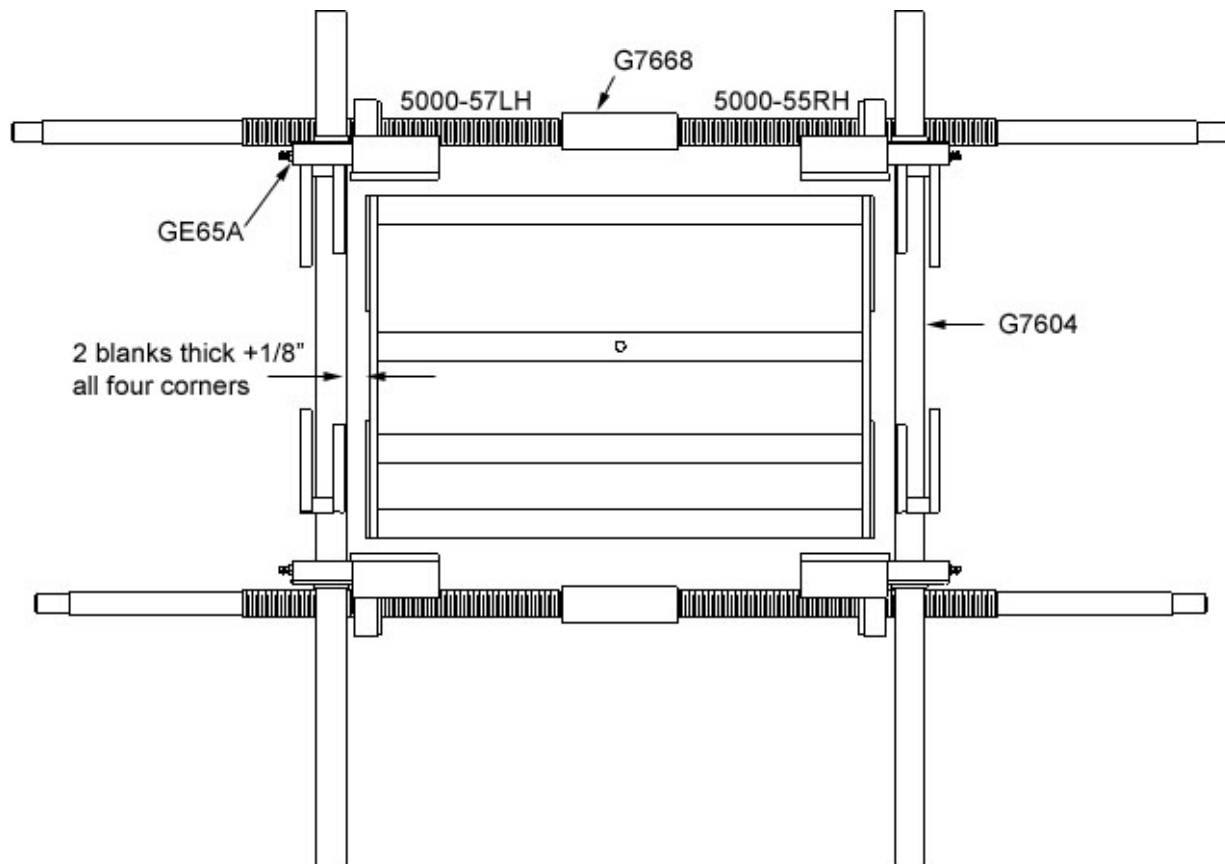
1. Rest a blank on the Bottom Stops and between the Vertical Guides. Move the mandrel full stroke forward into the Compression Chamber, forming a tray.
2. Loosen, **But Do Not Remove**, the 3/8" yoke bolt securing the Connecting Rod to the Feed Post.
3. Position Connecting Rod (G7583) until 1/4" to 5/16" clearance is obtained between the top of the tray depth wall and 4 stripper pawls (G2879).
4. Retighten the 3/8" yoke bolt and recheck this adjustment by jogging the machine from a retracted to returned position to an advanced or forward position.

(See previous image for part numbers and measurements.)



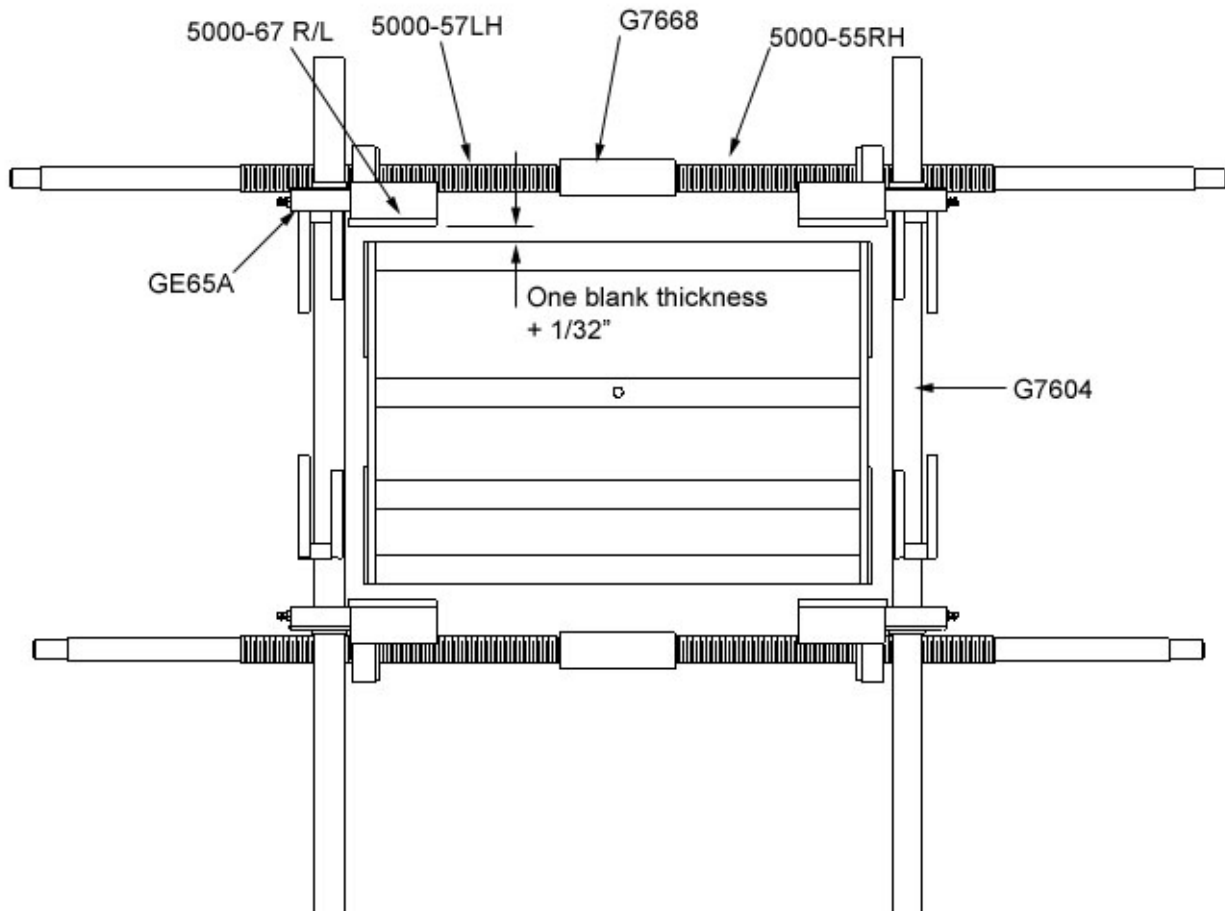
Side Compression Bars Adjustment

1. Set the rear mandrel spacer bar (G7590).
2. Clearance required is two (2) blank thicknesses plus 1/8 inch, measured between the mandrel metal and the compression bar as shown below.
3. Crank the side compression in/out and set this clearance on all four (4) corners.
4. Run a few boxes and check clearance and compression.



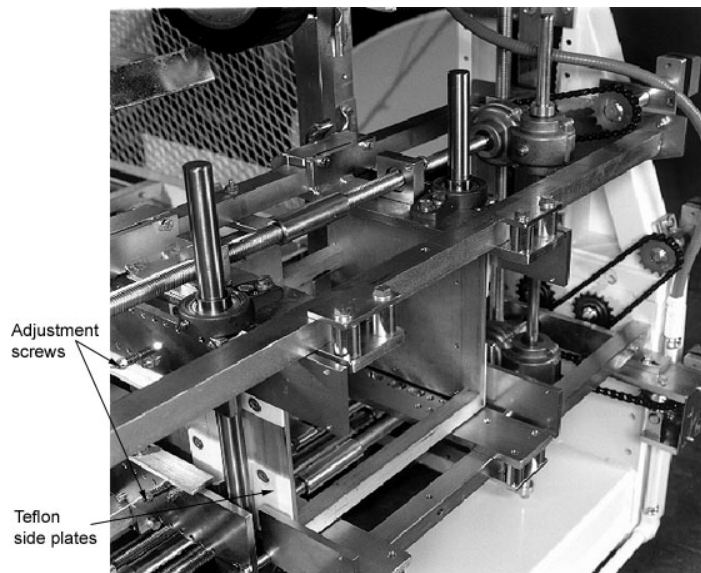
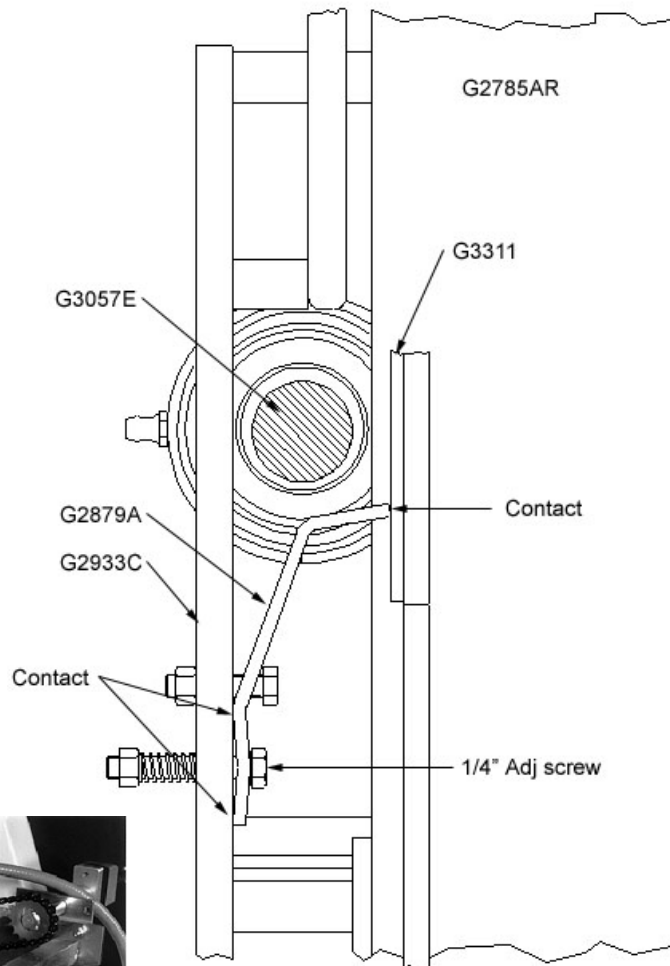
Top Tray Forming Shoes Adjustment

1. With a blank at the forming end of the mandrel, rotate the machine by hand until the mandrel connecting rod is at the end of its forming stroke.
2. Clearance required is one (1) blank thickness plus $\frac{1}{32}$ ", measured between the top of the mandrel and the tray forming shoes (5000-67 R/L), as shown below.
3. Crank the vertical compression up/down to set this clearance.
4. Run a few boxes and check clearance and compression.



Box Stripper Pawl Adjustment

1. Make sure 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 1/4" adjustment screw until the stripper pawl just makes contact with the mandrel teflon plates.
4. Do not overtighten, as this may cause the box to tear.



Maintenance

Machine maintenance is critical to machine performance. Maintenance procedures are presented below in three categories: Daily requirements, Weekly requirements, and periodic maintenance requirements. At the end of the Repair Section, we have provided blank lubrication and maintenance checklists. These checklists are suitable for copying, and are for your use in establishing a regular routine to ensure that machine lubrication and maintenance are completed as required.

Adhesive 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 (Monthly)

1. Heat the adhesive to about 350° F.
2. Remove the drain plug, and drain adhesive into a scrap container.
3. Remove 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 glue pump drive wheel by hand (using a screwdriver or a scraper) until the entire adhesive is displaced by the paraffin wax.
7. Let stand for approximately two (2) hours at 350° F.
8. Drain the paraffin wax.
9. Add the new adhesive; closing refill container immediately.
10. When there is a good clean flow of adhesive from the drain hole, reinstall the drain plug.
11. Turn the adhesive pump drive wheel by hand again. When there is a good clean and clear flow (no air bubbles) of adhesive, you are now ready to purge the system of air.

Purging

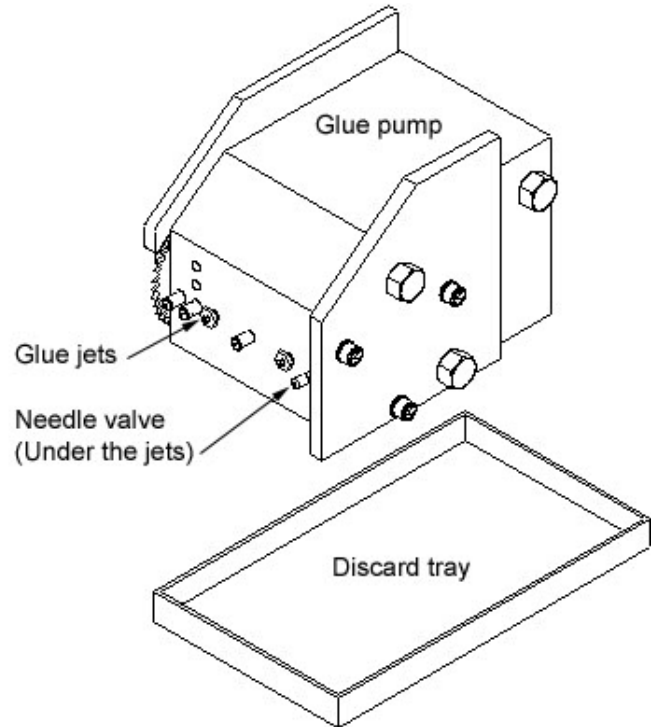
1. With all nozzles and plugs removed from the front of the glue pump, screw the needle valve in until it bottoms out. (See item 10, page E-6)
2. Start turning the pump Drive wheel by hand. When a good clean, (no air bubbles) flow of adhesive comes from the port farthest from the drive wheel, reinstall the plug or jet.
3. Continue to turn the pump drive wheel by hand and install the next successive plug or jet in order.
4. After all the ports have been purged, readjust the Volume control valve so as to produce a 3/32" wide bead.

Changing the Adhesive – SWF Glue Pump

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 drips from backpressure, bleed the air from the pump ports. The first two or three blanks purge the old remaining glue from the system.
11. Repeat the procedure with other pump.



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.

Preventative Maintenance

Daily

Item #	Item	Action Required
M1	Bolted Joints and Set Screws	Check for tightness - tighten joints and set screws.
M2	Glue Pots & Pumps	Check for residual glue waste - use a scraper to remove adhesive.
M3	Mandrel, Vertical Blank Guides, Compression Bars, (top, bottom, side)	Check for residual glue waste - use a scraper to remove adhesive.
M4	Overall Machine	Check for cleanliness - blow with compressed air or brush entire machine.

Weekly

Item #	Item	Action Required
M5	Adhesive Program Segments	Check for correct clearance - adjust if necessary
M6	Blank Hoppers	Check alignment - adjust if necessary
M7	Box Mandrel	Check boxes per specifications - replace material if necessary.
M8	Glue Pump	1. Check drive wheel - replace if broken or bent. 2. Check clearance - adjust if necessary
M9	Mandrel	Check for loose bolts, check mandrel integrity - tighten all bolts.
M10	Vertical Guide Bars	Check alignment - adjust if necessary
M11	Vacuum Cup Tube Support Brackets	Check for excessive wear - replace if necessary.
M12	Vacuum Cup Pads	Check for excessive wear or breaks - replace if necessary.
M13	Poly-Flow Vacuum Tubing	Check for holes, cracks, loose connections - replace or tighten as necessary.

Periodic

Item #	Item	Action Required
M14	Bolts and Set Screws (monthly)	Check all moving parts and joints - tighten all loose bolts and set screws.
M15	Glue Pots (monthly)	Check for charred adhesive in glue system - remove and clean if necessary.
M16	Glue Pot Screen (monthly)	Check for damage and waste - remove and clean.
M17	Thermostat (monthly)	Check for proper setting - Reset or if necessary, recalibrate thermostat. (See Machine Set Up/Adjustment.)
M18	Wires (monthly)	Check for loose connections and any damaged wire - tighten loose connections and remove all damaged wire.

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

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*** (if equipped)
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	Screw top compression	Oil screws
10	Idler sprockets	Oil
11	Screw bottom compression	Oil screw

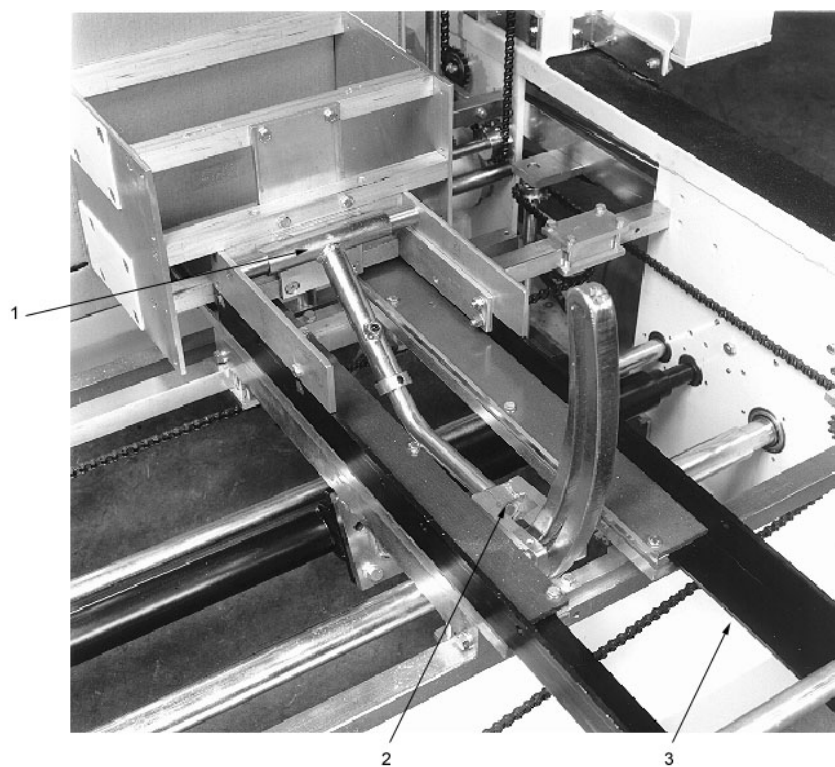
Weekly

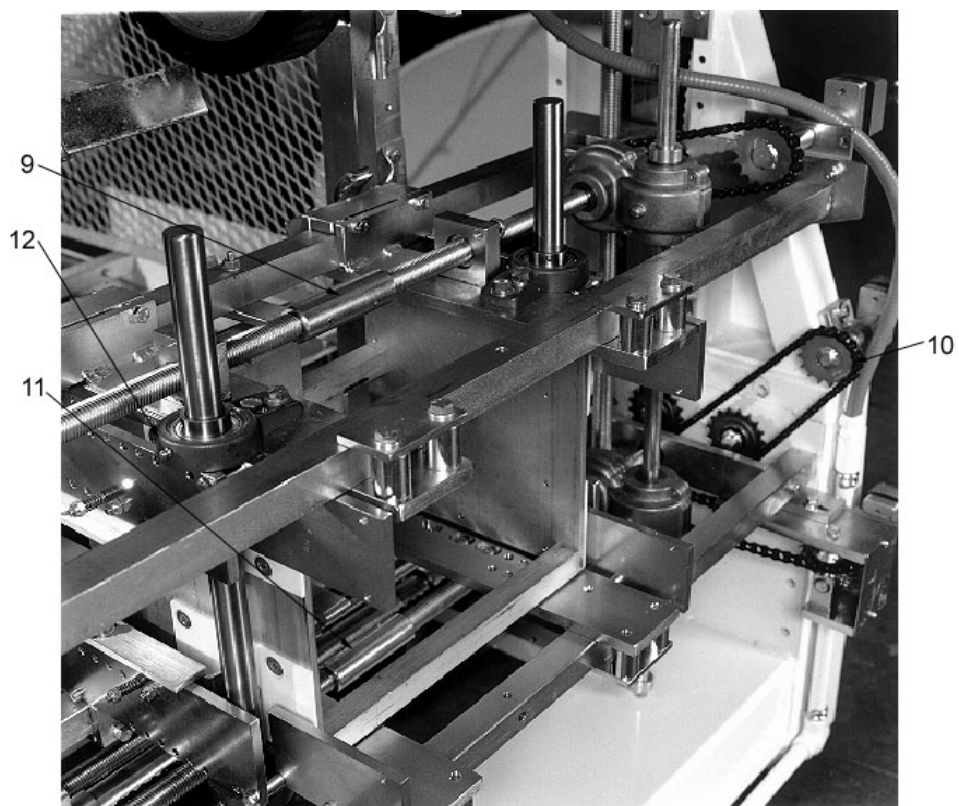
Item #	Part	Action
12	Compression bearings	Grease Zirk fittings
	Cam follower (no pic)	Grease and check bolt security

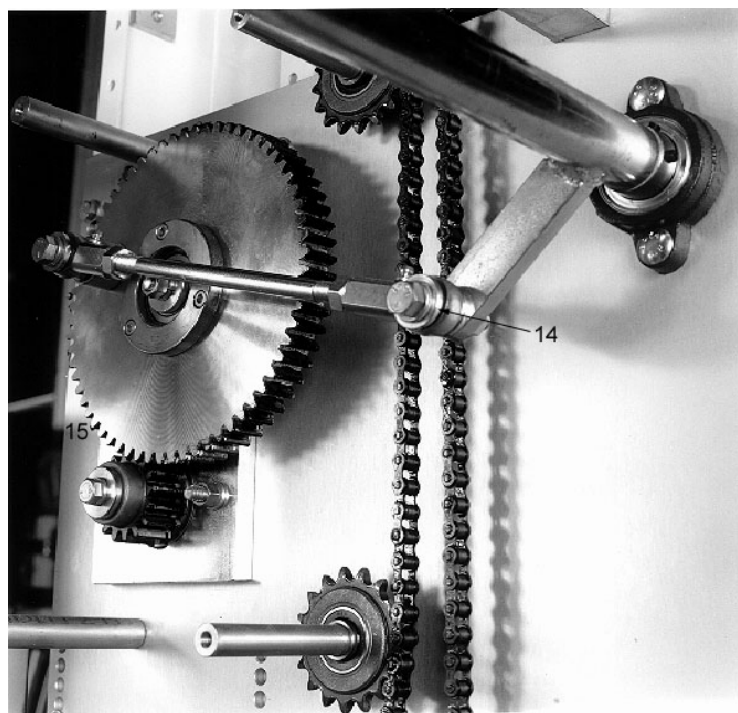
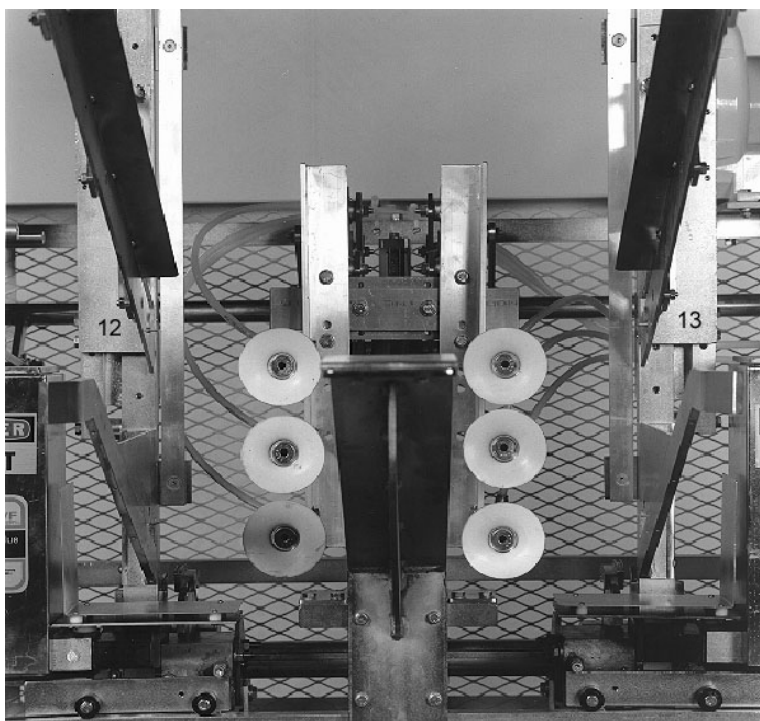
Periodic

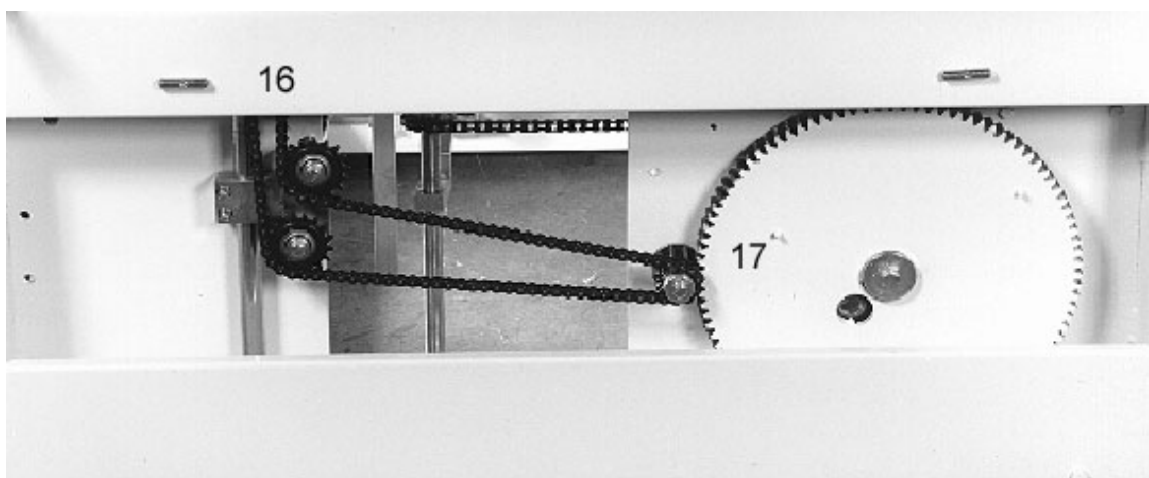
Item #	Part	Action
13	Blank hopper slides	Oil surfaces frequently if heavy usage
14	Vacuum gear con rod	Oil arm to rod
15	Vacuum and drive gear	Use gear grease as required
16	Drive chain	Use chain oil and keep well lubricated
17	Main gear	Use gear grease and keep greased
18	Drive chains (no picture)	Chain lube spray. Spray as required
19	Kwik chge. screw rods (no pic)	Oil vertical and horizontal screw threads. Oil as required.

Lubrication Locations









*Check Lists****Daily Lubrication***

L1 Feed Post Actuating Cam							
L2 Mandrel Connecting Rod							
L3 Mandrel Guide Rails							
L4 Micro Switch Cam							
L5 Box Strippers							
L6 Vacuum Assembly							
L7 Vacuum Dump Valve							
L8 Vertical Compression Slides							

Daily Maintenance

M1 Bolted Joints & Set Screws							
M2 Glue Pots and Pumps							
M3 Mandrel							
M4 Vertical Blank Guides							
M5 Compression Bars (Top & Btm.)							
M6 Overall Machine Cleanliness							

Weekly Lubrication

L10 Compression Bearings							
L11 Feed Post Cam Track							

Weekly Maintenance

M5 Glue Program Segments							
M6 Blank Hopper							
M7 Mandrel							
M8 Glue Pump							
M9 Feed Wheel & Back Up Roller							
M10 Vertical Guide Bars							
M11 Vacuum Cup Tubes & Brackets							
M12 Vacuum Cup Pads							
M13 Vacuum Tubing							

Periodic Lubrication

L12 Hopper Slides (as required)							
L13 Drive Chain Assemblies (as req'd.)							
L14 Screw Rods Compression							
L15 Screw Rod Vertical Guides							
L16 Main Gear & Vacuum Gear							

Periodic Maintenance

M14 Bolts & Set Screws (monthly)							
M15 Glue Pots (monthly)							
M16 Wiring (monthly)							
M17 Glue Pot Screen (monthly)							
M18 Thermostat (monthly)							

Troubleshooting

The following charts list some common problems and their solutions. The contact information below may be subject to change. Please refer to our website at: www.swfcompanies.com/cs1.html for updated service department information.

General Information

1949 E Manning Ave ♦ PO Box 548 ♦ Reedley, CA 93654
 559-638-8484 ♦ 559-638-7478 (Fax)
 800-344-8951 (USA Toll Free)
 Web: www.swfcompanies.com

Parts Sales Department

800-344-8951 (USA Toll Free)
 559-638-7478 (Fax)
parts@swfcompanies.com

Technical Service

559-638-8484 ♦ 559-638-7478 (Fax)
 800-344-8951 (USA Toll Free)
 Service and Support 24/7 Mobile: 559-250-6046
 Marty Silveiria, Keith Henvit, Alan Eastep

Adhesive Application Problems

The following problems are common with the glue system.

Trouble	Probable Cause	Possible Solution
Adhesive constantly running from nozzles.	Air in the system.	See Purging the Adhesive Pump.
	Foreign matter under the check valve.	See Cleaning the Adhesive System. If this fails, the pump will have to be removed and disassembled. The pump body may be cleaned with a torch or an oven. All charred adhesives must be burned off the body. Reinstall ball check valve using a piece of 1/4" round steel approx. 6" long, lightly tapping on ball.
	Jell in pot. Adhesive heated to extreme temperatures for too long a period. Mixing glue types may also cause this condition.	See Changing the Adhesive.
Adhesive Misprogramming.	Blanks are either too wide or too narrow.	See Vertical Guide Bar Adjustment.
	Feed wheel drive chain loose.	Tighten chain with chain idler take-up sprockets. See Vacuum Feed Timing Adjustment.
	Feed wheel slipping: idler clearance too great.	See Blank Feed Idle Roller Adjustment.
	Loose sprocket on feed roll shaft.	Tighten sprocket on feed roll shaft.
	Feed roll set screw loose.	Adjust and tighten set-screw.
	Program wheel loose on shaft.	Adjust and tighten set-screws.
	Program segments loose on	Adjust and tighten set-screws.

Trouble	Probable Cause	Possible Solution
	program wheel. Blanks not feeding out of hoppers correctly.	Check hopper adjustment. See Blank Hopper Adjustment.
Adhesive will not feed.	No adhesive in pot. Improper clearance between program segments and pump drive wheel. Worn or broken teeth on the pump drive wheel. A plugged applicator jet (G3148). The volume control needle valve is not adjusted correctly. The heating element is burned out. The adhesive thermostat is out of calibration Pump wheel is hard to turn: adhesive has burned around the drive wheel shaft. Air in adhesive: skip pattern or no adhesive on leading edge of body blank, and leaking nozzles. Moisture or air in the adhesive, or temperature too hot. Debris in the adhesive system, or burned adhesive	Fill pot to at least the half way mark. See Adhesive Program Segment and Applicator Wheel Clearance. Replace the pump drive wheel (G3147). Use a paper clip or a piece of piano wire to clean the jets. (NOTE: The orifice diameter is .040"). WARNING: Glue pumps and pots are extremely hot, use safety goggles, heat resistant gloves and protective clothing. Take your time when performing any adjustment related to the adhesive applicator system. See Adhesive Bead Adjustment. Replace the heating element. See Adhesive Applicator Thermostat Adjustment Drain adhesive, and remove end cap from pump. Push out gear from pump housing being careful not to damage the gear. Using #120 grit emery cloth, polish gear shaft to bare metal. Using a "V" drill by hand, run through the shaft hole to remove burnt adhesive from pump housing. Lubricate with graphite and reinstall. Make sure that the drive wheel set screw is in the counter-bored hole in the drive gear shaft, and that it is tight. See Purging the Adhesive Pump. Change glue manufacturer if air is found in the glue. See Cleaning the Adhesive System
Thermostat light on, but melt pot fails to heat glue to operating temperature.	Loose wires. Defective thermostat. Defective heating element.	Check for loose terminal connections or presence of broken wires. Replace thermostat. Check the element with an Ohmmeter for presence of an open circuit. If defective, replace. Warm melt pot to approximately 250° F. Loosen the bolts holding the pump assembly to the adhesive melt pot. Remove thermostat cover (G2874). Disconnect the wires from the heating element (G2997) and pull it out. Slide in the new heater. Check voltage and wattage requirements on the new heaters.

Blank Feed Problems

Trouble	Probable Cause	Possible Solution
Blanks hit the forming mandrel.	Blanks excessively warped.	Adjust blank guides on vertical guide bars as needed. If not enough to remedy the problem, break blanks on score opposite of warp.
	Vacuum feed timing.	See Vacuum Feed Timing Adjustment.
Blanks will not feed out of hopper.	Blanks too wide.	See Vertical Guide Bar Adjustment. If width varies, check with corrugated supplier.
	Vacuum suction incorrectly adjusted	See Vacuum Feed Suction Cup Mounting Tube Adjustment
	Vertical guides incorrectly adjusted	See Vertical Guide Bar Adjustment
	Warped Blank	If warp is more than 1/4" / foot, break blanks on score opposite of warp or replace blanks
Blank travel is hindered.	Idler roller may be too tight.	See Blank Feed Idle Roller Adjustment.
	Vertical guide bars out of adjustment	See Vertical Guide Bar Adjustment. Make sure that mandrel is centered properly
Mandrel makes contact before blank hits bottom stops.	Blank feed idle roller out of adjustment.	See Blank Feed Idle Roller Adjustment.
	Blank binding on vertical guides	See Vertical Guide Bar Adjustment. Blank may be too wide
	Late blank timing	See Vacuum Feed Timing Adjustment
Inside flaps not even with top of blank.	Corrugated material not scored or cut correctly.	Check with corrugator.
	Mandrel stroke is too short	See Mandrel Return Stroke and Mandrel Travel Length Adjustments
	Box strippers are not touching the mandrel Teflon	See Box Stripper Pawl Adjustment
	Flap pushers are not adjusted correctly	Jog the machine so that the pusher cam roller is on the high point of the pusher cam. Measure from the rear edge of the mandrel to the face of the pusher pawl. This measurement should be the same as the box depth
	Inside flaps hit on the pusher pawls	In some cases, the pawl will have to be cut on an angle, so that the flap will miss the top of the pawl
	The mandrel is not centered	See Mandrel Change Out
	Vertical guide bars are not centered	See Vertical Guide Bar Adjustment
	Misaligned bottom stops	See Blank Bottom Stop Adjustment
	Side compression out of adjustment	See Side Compression Bars Adjustment
	Top compression out of adjustment	See Top Tray Forming Shoes Adjustment

Tray Formation Problems

Trouble	Probable Cause	Possible Solution
Minor flaps are being torn off.	Blank guides are positioned wrong.	Guides (G3198 R/L) should not be in the area where the minor flaps fold out of the vertical guide bars. Reposition.
	Major flap scores are weaker than the minor flap scores	Add (or adjust down existing) top restraining finger, if a top compression problem. If the problem is at the bottom of the compression, add or adjust the restraining finger toward the rear of the machine.
	Mandrel not hitting the center of the blank	See Mandrel Change Out
	Inside flap plows not positioned correctly for caliper of blank	Some very thin blanks require plows to be spaced out from the top and bottom compression shoes, (1/16" to 1/8"). Spacing added to inside of plow must be taken from outside of the plow
Tray bottom has round corners.	Wrong mandrel size.	Change mandrel size or change corrugated.
	Top compression too tight.	See Top Tray Forming Shoes Adjustment
	Side compression too tight	See Side Compression Bars Adjustment. If blanks vary in thickness set compression for thinnest blank
	Adhesive bond breaks on one corner	Glue too hot or too cold, check temperature. Incorrect compression, readjust per blank thickness
	Mandrel stroke too short to push tray beyond box strippers.	See Mandrel Return Stroke and Mandrel Travel Length Adjustments.
	Box strippers not riding surface of teflon plates on mandrel	See Box Stripper Pawl Adjustment
	Blank scores are not centered on mandrel	See Blank Bottom Stops Adjustment
Tray falls apart after compression.	Variation in length of the Blank	Check with Corrugator. NOTE: for lids 2" or shallower, teflon should be all the way to the front edge of the mandrel plate.
	No glue.	Fill adhesive pot. Keep the glue level over the half waypoint at all times.
	Improper clearance between program segments and pump drive wheel	See Adhesive Program Segment and Applicator Wheel Clearance.
	The glue is too hot. (Stringy look.)	Check temperature and turn down if necessary.
	The glue is too cold	The glue bead does not spread out in compression. Raise temperature.
	Improperly adjusted compression.	See Side Compression Bars and Top Tray Forming Shoes Adjustments.
	Corrugated too thin	Check with corrugated supplier or adjust compression
Tray has tear in bottom corners.	Top deflector (G7849) holding too long.	Adjust top deflector (G7849) up on bar (G7848). Rotate bottom stops toward the front.

Vacuum Feed Problems

Trouble	Probable Cause	Possible Solution
Blank drops from vacuum cups before it is placed into feed wheels.	Vacuum valve operating cam (G4436A) not adjusted correctly.	See Vacuum Feed Valve Operating Cam Adjustment.
	Return stroke for vacuum cup mounting tubes (G4432A) not adjusted correctly	See Vacuum Feed Suction Cup Mounting Tube Adjustment
	Vertical guide bars set too tight	See Vertical Guide Bars Adjustment.
Blank hits top of mandrel on return stroke.	Blanks are being fed too early.	See Vacuum Feed Timing Adjustment.
Mandrel hits blank before blank is on the bottom stops.	Blanks are being fed too late.	See Vacuum Feed Timing Adjustment.
More than one blank being pulled from hopper.	Blank support knives not in deep enough to hold trailing blank.	See Blank Support Knives Adjustment.
	Vertical guide bars not adjusted correctly	See Vertical Guide Bars Adjustment
	Blanks interlocking due to cut-outs or coating	Check with corrugated supplier
	Blanks vary in width	Check with corrugated supplier
No suction at vacuum cups.	Blower not operating.	Refer to "Vacuum Blower Does Not Work."
	Poly-flow tubing damaged	Check tubing for loose connections, cracks, or holes. Replace if necessary
	Suction hole in the vacuum cup bolt clogged	Push foreign material through with rod while blower is operating
	Vacuum valve cover pad not seating on vacuum valve manifold	See Vacuum Feed Valve Operating Cam Adjustment
	Vacuum cup pads damaged or worn out	Replace if necessary
Suction does not release.	Vacuum valve operating cam is not adjusted correctly.	See Vacuum Feed Valve Operating Cam Adjustment.
Vacuum blower does not operate.	Main disconnect switch in "Off" position	Turn main disconnect switch to "On" position.
	Blower "On/Off" switch in "Off" position	Turn blower switch to "On" position
	Loose wires or terminal connections	Check/correct loose or broken wires and terminal connections
	Defective motor starter	Replace motor starter
	Blower shuts off after short period of operation	Check/correct incoming voltage versus wired voltage
	Blower shuts off after prolonged period of operation	Motor thermistor is hot. Allow motor to cool. Replace unit if faulty
Vacuum blower is blowing, not producing suction.	Wrong direction of rotation for blower motor.	For three phase machines, reverse wires M1 and M2.

Trouble	Probable Cause	Possible Solution
Vacuum feed mechanism cycles but does not pull a blank from the hopper.	Blower not operating.	Refer to "Vacuum Blower Does Not Work."
	Vacuum cups contact blank over slots or holes	See Vacuum Feed Cup Position Adjustment
	Lower set of vacuum cups positioned too low	See Vacuum Feed Cup Position Adjustment
	Blank support knives not allowing blank to be pulled from hopper	See Blank Support Knives Adjustment
	Too few blanks in hopper	Add blanks to hopper

Miscellaneous Problems

Trouble	Probable Cause	Possible Solution
Machine stops suddenly.	Blanks jammed in hopper.	Clear the jam.
	Machine guard open or ajar.	Check guards
Mandrel does not stop at the "Cycle Start" position.	Stop micro switch cam is out of adjustment.	See Machine Stop Micro Switch Cam Adjustment.

Spare Parts Ordering

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 contact information below may be subject to change. Please refer to our website at: www.swfcompanies.com/cs1.html for updated service department information.

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800-344-8951 (USA Toll Free)
559-638-7478 (Fax)
parts@swfcompanies.com

Technical Service

559-638-8484 ♦ 559-638-7478 (Fax)

800-344-8951 (USA Toll Free)

Service and Support 24/7 Mobile: 559-250-6046

Marty Silveiria, Keith Henvit, Alan Eastep

Machine Upgrades and Conversions

1949 E Manning Ave ♦ PO Box 548 ♦ Reedley, CA 93654

559-638-8484 ♦ 559-638-7478 (Fax)

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