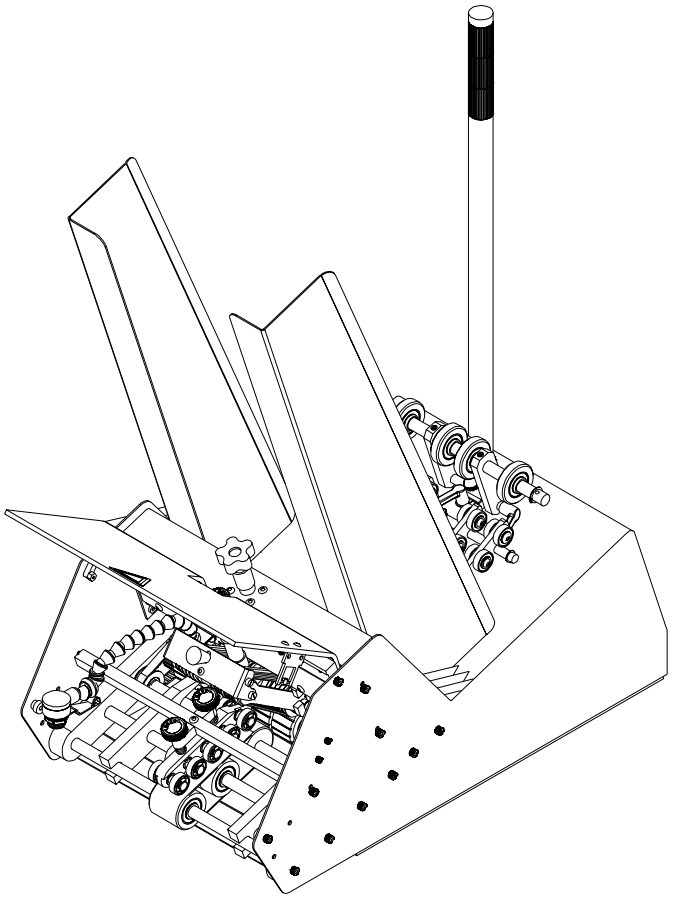
ST Series

Universal Friction Feeders®

Operator Manual



Streamfeeder®

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Before You Begin

Welcome to Streamfeeder. This manual was included with your new Streamfeeder ST Series Universal Friction Feeder. It provides all the information you need to successfully operate and maintain this product.

Who Should Read This Manual

This manual is primarily intended for equipment operators who will be using the ST Series Universal Friction Feeder in their day-to-day operation. *Please read it thoroughly before you operate the machine.*

Qualified technicians should also be familiar with the information in this manual.

How This Manual Is Organized

This manual is divided into the following main areas:

- "Safety": *This section is at the front of this manual for good reason. It covers all safety issues that you should be familiar with before you go any further with adjustments, power-up, or operation.*
- Section 1, "About Your Machine": *Introduces you to the feeder. It provides a complete description of all controls, connectors and sensors.*
- Section 2, "Preparing for Operation": *Includes all adjustments you should make before attempting to do a power-up and successfully run product through the machine.*
- Section 3, "How to Operate": *Walks you through the basic steps needed to get the machine power-up and running — for one-shot or batch control.*
- Section 4, "Troubleshooting": *Gives you the basic diagnostic information you need to quickly and accurately solve problems to minimize downtime.**
- Section 5, "Inspection and Care": *Covers all the steps you can take to keep your feeder running properly to minimize downtime and increase longevity of parts.**
- "Appendices": *Contains information about the setup and use of parts which are standard on various ST models.*

NOTE

**The information in Sections 4 and 5 is designed to be a quick and easy method for the operator to minimize downtime on the production line. Streamfeeder does not recommend opening the feeder compartment, or performing any part replacement based on the information given in this manual. For more detailed information, please see the Technical Information Guide, and/or consult with a qualified technician.*

Message Conventions

Here are eight types of messages that appear in this manual which help emphasize information of particular interest:

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

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

CAUTION signifies an operator action or specific equipment area that can result in equipment damage if proper precautions are not taken.]

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

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

NOTE provides useful additional information that the operator should be aware of to perform a certain task.

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

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

UP/DOWN Arrow Key

ENTER Key

CYCLE Key

STOP Key

Numeric Pad Key

Power On/Off Switch

Other Related Documents

Qualified technicians will want to read the companion *Technical Information Guide*. This document covers such nonoperational topics as installation, controller adjustments, replacement parts, and other technical information intended only for qualified technical personnel.

Safety

Make sure you read and thoroughly review this Section until you become familiar with all the safety issues relating to the safe operation of the Streamfeeder ST Series Universal Friction Feeder.

Please read all of the Warnings that follow to avoid possible injury. Although Streamfeeder has made every effort to incorporate safety features into the design of this machine, there are residual risks which do exist that the operator should be aware of to prevent personal injury.

Please read all of the Cautions that follow to prevent damage to the machine. The ST Series Universal Friction Feeder is built of the highest quality materials. However, damage can occur if the machine is not operated and cared for within design guidelines as recommended by Streamfeeder.

Danger

- **Equipment interior contains incoming 115- or 230-VAC electrical power. Bodily contact with these high voltages can cause electrocution, which can result in serious injury or death.**

Warnings

- **When operating the feeder, always make sure the discharge safety shield is in the closed position (covering the discharge belts and rollers).** Failure to do so may expose your hands or fingers to moving parts which can cause serious injury.
- **When performing service or maintenance on the feeder, always lift the discharge safety shield to engage the safety interlock, turn Off the main power switch, and disconnect the feeder from the electrical power source.** Failure to do so may expose you to dangerous high voltage or moving parts which can cause serious injury.
- **When performing initial adjustments prior to operation, always make sure you lift the discharge safety shield to engage the safety interlock, turn Off the main power switch, and disconnect the feeder from the electrical power source.** Failure to do so may expose you to a potential start-up, and therefore moving parts which can cause serious injury.
- **Make sure you always plug the machine into a 3-prong, properly grounded and fused electrical power source.** Never remove or disable the grounding lug at the outlet. Failure to follow these warnings may expose you to dangerous high voltage which can cause serious injury.

Warnings (cont.)

- **Do not attempt to make any adjustments while the machine is running.** Failure to follow this warning may expose you to moving parts which can cause serious injury.
- **Never attempt to clear a jam from the machine until you lift the discharge safety shield to engage the safety interlock, turn Off the main power switch, and disconnect the feeder from the electrical power source.** Failure to do so may expose you to a potential start-up, and therefore moving parts which can cause serious injury.
- **Avoid disconnecting the AC inlet power cord at the front of the machine.** With the machine still plugged in, 115- or 230-VAC power will still be live at the cable ends. Failure to follow this warning may expose you to dangerous high voltage which can cause serious injury.
- **Do not attempt to gain access to the inside of the feeder.** Refer all questions or problems to a qualified technician.

Cautions

- **When the machine is not in use, avoid stacking or storing materials on the carriage assembly to prevent damage to belts.**
- **When replacing fuses, always use the exact type supplied with the machine as shipped from the factory. IMPORTANT: Always make sure power module is replaced exactly as removed. Failure to follow this caution can result in damaged electrical parts.**
- **When performing routine cleaning of parts, only use those methods and cleaning solvents (isopropyl alcohol) which are specified by Streamfeeder.** Failure to do so may result in unpredictable results and can cause damage to machine parts. See Section 5, “Inspection and Care”, for recommendations.
- **Avoid spraying cleaning solvents directly onto the numeric keypad or vacuum florescent display.** Failure to follow this caution may result in damage to internal electronic components.
- **Do not attempt to use the machine for any other purpose other than what was recommended by Streamfeeder.** Failure to follow this caution may result in unpredictable performance, and/or can cause damage to machine parts.
- **Avoid leaving any loose cabling near any moving parts.** Failure to follow this caution may result in damage to machine parts.
- **Avoid any type of direct impact to the sensor and extension assembly.** Failure to follow this caution may result in damage to the photo sensor or flexible extension.
- **Do not apply lubricants to any part of the machine.**
- **Do not attempt to gain access to the inside the feeder. Do not attempt to remove and replace parts.** Refer all questions or problems to a qualified technician.

Labeling

Streamfeeder has affixed safety labels to those areas of the ST Series Universal Friction Feeder where potential operator hazards do exist (such as, moving belts or rollers). Shown below are label examples, along with respective locations.

Safety Guard

Electrical Noise

The air contains electromagnetic interference (EMI) fields and radio frequency interference (RFI), also known as “electrical noise”. Usually this noise is small enough in size (amplitude) to not be a problem. If intense enough, however, it can cause problems for other electrical equipment.

Streamfeeder has designed the feeder with noise immunity in mind. Even the sensors provided with the machine have a certain amount of noise immunity built-in. However, in extremely noisy environments, these design considerations are not necessarily immune to electrical noise and therefore, operational problems can occur. *If you suspect any such electrical noise problems, please report it to a qualified technician.*

Safety Listings and Certification

CE

This symbol on the back panel means the product is in compliance with the following standards under the provisions of the Machinery Directive 89/392/EEC and the amendments 91/368/EEC, 93/44/EEC and 93/68/EEC, and the EMC Directive 89/336/EEC.

1 About Your Machine

Main Features

The ST Series Universal Friction Feeder is designed for reliability, flexibility, and ease of use. All parts required for setup, loading, feeding, sensing and easy keypad operator control are combined into one compact unit.

Review the *main assemblies* in Figure 1 to become familiar with names and locations of feeder parts and adjustments. This will help to prepare you for initial setup. Descriptions are found in Table 1.

Review the *control panel components* in Figure 2 to become familiar with names and locations of specific connectors, switches, and controls. This will help to prepare you for installation and operation. Descriptions are found in Table 2.

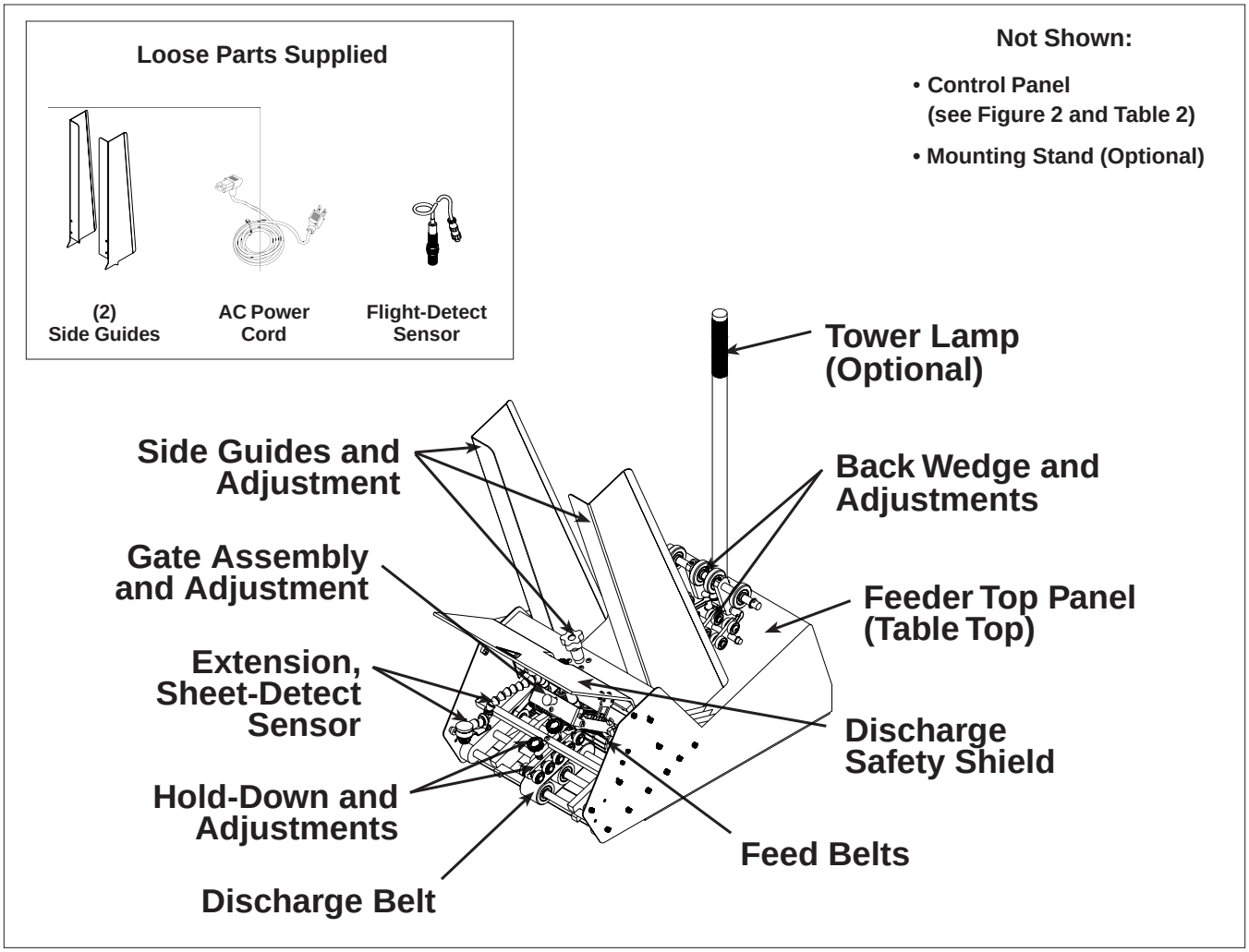


Figure 1. Main Assemblies of ST Series Universal Friction Feeder

Table 1. Main Assemblies Feature Descriptions

Feature	Description
Gate assembly and adjustment	Mounted on a gate plate directly above the feed belts, this device provides a curvature to help preshingle stacked product. Adjustment knob allows you to set downward pressure. When properly adjusted, a one-thickness gap is created to help singulate and eject product. Three types of gate assemblies are available, depending on which model you order: bar gate, standard O-ring gate, and advancing O-ring gate.
Top panel (table top)	Used to support the back wedge.
Side guides and adjustments	Holds a stack of product to be fed and helps keep it straight for proper entry through the gate assembly area. Adjustment knob allows you to move the side guides equally offset for different size products.
Back wedge and adjustments	Lifts the product to keep it off the table top, reduces excessive contact with the feed belts, and helps push the product against the curvature of the gate assembly. To achieve proper lift, adjustment wing-nuts allow you to adjust the wedge to various positions and angles. Six types of wedge assemblies are available, depending on which model you order: separate articulating roller and low-profile, triangle wedge, combination triangle/low-profile, separate triangle and low-profile, articulating roller, and extended narrow.
Hold-down and adjustments	This series of rollers provides a varying pressure on top of product to force it down on the discharge belt, thus helping to eject a single product after it exits the gate assembly area. During setup, knob allows you to set downward pressure.
Extension, sheet-detect sensor	Mounted on the feeder extension arm, it “looks” for the leading edge of the product to stop the feeder momentarily. For effective operation, a flexible extension allows you to adjust for distance and perpendicular to product.
Flight-detect sensor	Mounted at a remote location, it “looks” for a target on-line (such as a flighted conveyor) to start the feeder.
Feed belts	Provides the friction and motion necessary to pull individual product from the bottom of the stack and through the gate assembly area.
Discharge belts	Combined with the hold-down rollers, provides the friction and motion necessary to pull product away from the gate assembly area. Rotates 50% faster than feed belts to separate and eject the bottom product away from next product entering the gate assembly area.
Control panel	All connectors and switches for sensor, interface, and AC power are located here. Also contains numeric keypad and vacuum florescent display for operator control interface. For descriptions, see Figure 2 and Table 2.
Discharge safety shield	Provides residual risk protection to operator when feeder is running.
Stand (optional)	Supports the feeder and allows for easy mobility. Includes built-in height adjustment.
Tower lamp (optional)	Mounted on the feeder, it contains green, amber, and red colored lights which alert the operator to various status conditions.

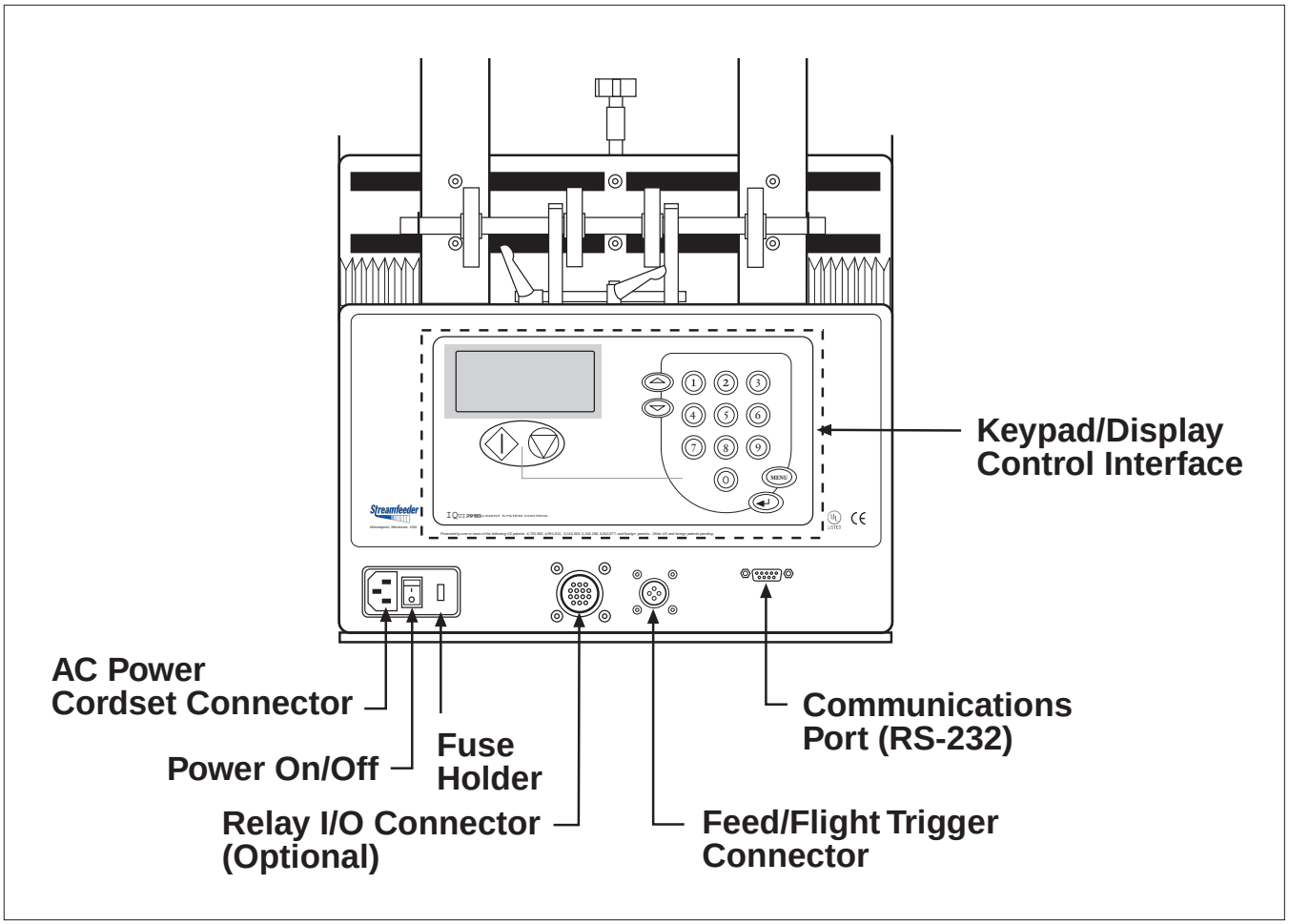


Figure 2. Control Panel Components

Table 2. Control Panel Feature Descriptions

Feature	Description
AC power cordset connector	Cordset plugs into this IEC320 connector to provide feeder with power from 115-VAC or 230-VAC outlet.
Power On/Off	Toggles AC power On or Off.
Fuse holder	Contains a replaceable GMD3, 3-Amp, 5-mm fuse. *IMPORTANT: Always make sure power module is replaced exactly as removed. Failure to follow this caution can result in damaged electrical parts.*
Relay I/O connector (optional)	This 14-pin connector is used to output to other devices either AC or DC voltages or On/Off control signals.
Communications port (RS-232)	This 9-pin connector is used to either receive control/data signals from a computer, or send control/data signals to a computer.
Feed/flight trigger	The remote flight-detect sensor plugs into this 4-pin connector to provide the “start” signal to begin a feed cycle.

Control Interface

The control interface consists of a keypad and display arrangement which allows you to not only control the operation of the ST Series Universal Friction Feeder, but it also allows you to monitor the status of the job being run.

Refer to Figure 3 for names and locations of each part of the control interface. Descriptions are found in Table 3.

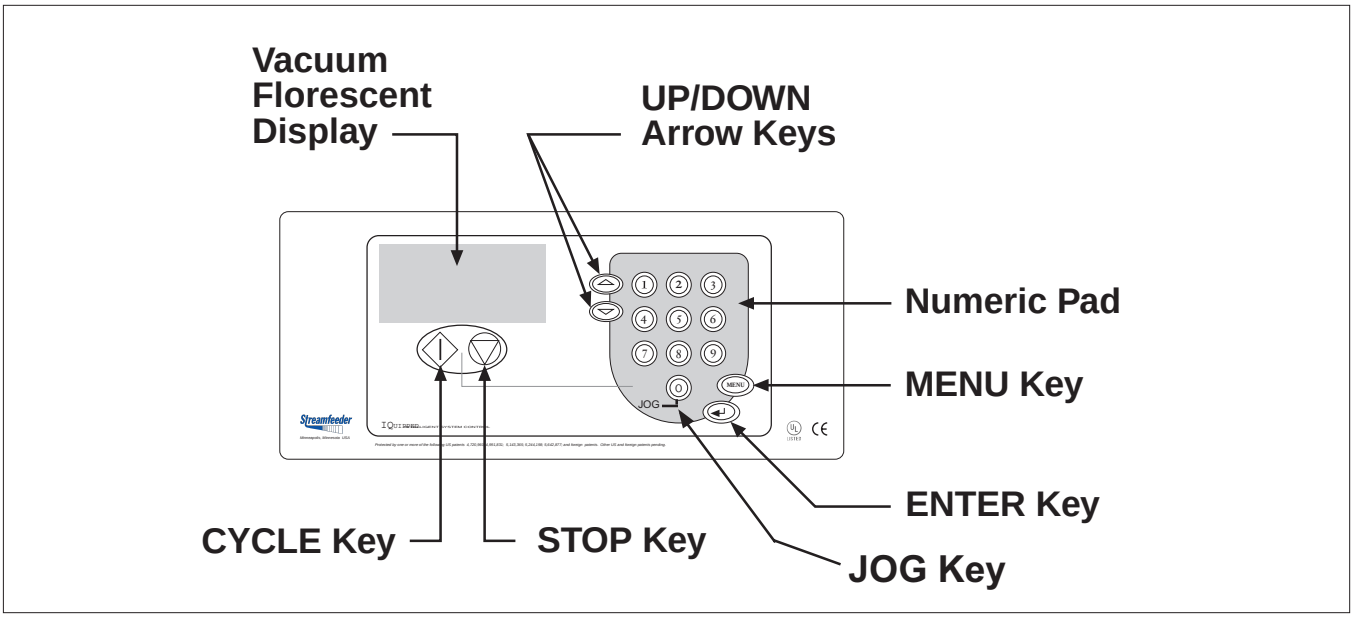


Figure 3. Control Interface Features

Table 3. Control Interface Feature Descriptions

Feature	Description
Vacuum florescent display	This 4-line x 20-character display provides menus for the operator control interface and it also provides status of feeder during cycling.
Numeric keypad	Used to enter data which controls feeder activity, such as speed (or batch count, for “Batch Control” mode only).
UP/DOWN arrow keys	Scrolls through the system configuration menus. Also, is used to increase and decrease the speed (or batch count, for “Batch Control” mode only). Finally, returns feeder to “Ready” mode when in a “Timeout” condition.
MENU key	Toggles display between the Run Display screen and the configuration menus.
ENTER key	Allows run values to be stored from the system configuration menus. Also, it resets the piece count (or batch count, for “Batch Control” mode only).
CYCLE key	First, used to advance feeder from the “Suspended” mode to the “Ready” mode. Second, clears feeder faults, such as doubles and missed feeds (if applicable). Finally, completes one feed cycle when in “Ready” mode.
STOP key	Stops the feeder and holds it in “Suspended” mode.
JOG key	Advances the feed belts at a fixed slow speed. This function is useful during feeder setup and may be used to clear jams.

General

The *control interface* provides you with several different options for monitoring status, entering configuration parameters, and cycling the feeder.

Depending upon your particular needs, the control interface can provide you with either *one-shot* control or *batch* control. *Your machine will be set up for one or the other at the time of shipment.*

To fully understand how the control interface works, you must first understand the Run Display. The default menu from which you will start all control functions is called the *Run Display*. This screen is the default screen that is shown when you press any key after powering On the machine.

Run Display Defined

The Run Display for *one-shot* control is a real-time reporting tool containing information on the status of the feeder, such as run speed, number of pieces fed for a particular job, and the number of pieces being fed per minute.

The Run Display for *batch* control is a real-time reporting tool containing information on the status of the feeder, such as run speed, number of batches fed for a particular job, and the batch size.

IMPORTANT

Even though the Run Display is factory-set for immediate operation, it can be customized to suit your changing on-site needs. For more information, please see the Technical Information Guide, and/or consult with a qualified technician.

There are three types of status messages available for viewing from the Run Display screen: *Ready*, *Suspended*, and *Running*.

Ready	The feeder is ready to feed when a flight signal is received or when the **CYCLE** key is pressed.
Suspended	The feeder will not feed when it receives a flight signal or when the **CYCLE** key is pressed. Pressing the **CYCLE** key will advance the feeder to the "Ready" mode.
Running	The feeder is currently feeding product (cycling).

- When the feeder is "ready" to receive a flight signal, the word "Ready" will scroll across the top line. From the Run Display, you can adjust the speed of the feeder by pressing the **UP/DOWN Arrow** keys.
- When the feeder is "suspended" (or idle), the word "Suspended" will scroll across the top line.
- When the feeder is "running", a rotating wheel is displayed.

Procedures for operating the feeder via the control interface are provided in Section 3, "How to Operate".

2 Preparing for Operation

When performing initial adjustments prior to operation, always make sure you turn Off the main power switch, open the discharge safety shield (to disengage the interlock), and disconnect feeder from the electrical power source. Failure to do so can expose you to a potential start-up, and therefore moving parts which can cause serious injury.

Do not attempt to make any adjustments while the machine is running. Failure to do so can expose you to moving parts which can cause serious injury. Do not wear loose clothing when operating the feeder. Avoid making adjustments with loose or unsecured parts. This can potentially damage parts.

Once the Streamfeeder ST Series Universal Friction Feeder is installed, you are then ready to prepare the machine for operation. To do so, you must perform several adjustments with the product you are going to be feeding. And, you must do a test run with this product to verify that it is set correctly before going on-line. *You will have to perform this procedure for each product that you plan to feed.*

The adjustments you must make (in order) are as follows:

1: Gate assembly adjustment

2: Side guides setting

3: Back wedge setting

4: Hold-down setting

5: Photo sensor adjustment

6: Manual test to verify

STEP 1: Gate Assembly Adjustment

NOTE

Hopper refers to the space where the product is stacked (made up of the side guides and gate plate).

NOTE

Keep in mind that the gate assembly works with the wedge to provide the proper lift, curvature of the product, and proper belt/product contact to separate and feed one sheet at a time.

Review

The gate assembly provides the curvature to help preshingle product and provides the proper gap to help the feed belts pull product through the gate assembly area — one at a time. The downward pressure (or weight) of the stack in the hopper will provide the force to help push the product against the curvature of the gate assembly, and help it contact the feed belts. This preshingling will allow the gate assembly to separate (and singulate) product as it moves toward the gap.

To achieve the optimum separation, you have to use the adjustment knob to either increase (clockwise) or decrease (counter-clockwise) the gap between gate assembly and the feed belts. Depending on the characteristics of the product you are using, you may have to change the gate assembly from the factory-set *high* spring tension to a *low* spring tension. See “Changing from Factory Set High-Tension to Low-Tension” to follow.

Objective

Adjust the gate assembly for minimum gap, with minimum pressure on the product. Feeding problems will occur with either too much pressure on the product, or too large a gap between the gate assembly and the product.

STEP 1: Gate Assembly Adjustment (continued)

Excessive lowering of the gate assembly can damage product or lead to premature wear of the O-rings or feed belts.

If bottom piece of material does not move freely, then the gate assembly is too tight. This can lead to premature wear of the O-rings or feed belts.

Due to the discharge belt and hold-down assembly spinning 50% faster than the feed belts, excessive gate assembly pressure can cause premature wear to O-rings or feed belts. Also see "Step 4, Hold-Down Setting".

TIP

A wider gap between product and belt provides the highest tolerance for curled and bent edges.

NOTE

Feeding problems will occur with either too much material in the hopper, or too large a gap between the gate assembly and the material.

Procedure

To adjust the gate assembly for proper gap,:

1. Slide a single sheet of test product under the gate assembly. It may be necessary to pull up on the adjustment knob to allow the piece to be inserted.
2. Test the piece for clearance. Grasp the product with two hands and slide it front-to-back under the gate assembly. A proper adjustment allows a slight amount of drag on the top of the piece.
3. Adjust the knob on the gate assembly until the piece has the desired drag. Turn the knob clockwise to increase clearance or counterclockwise to decrease clearance.
4. Repeat the drag tests and adjust as needed to achieve acceptable clearance.

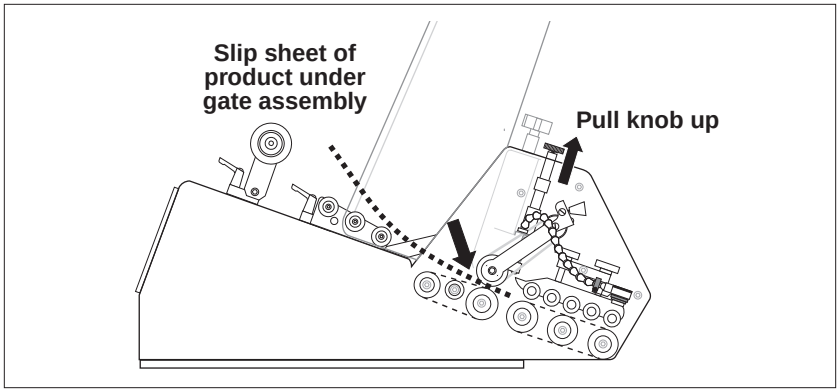


Figure 4. Lifting Gate Assembly Upward to Insert Product

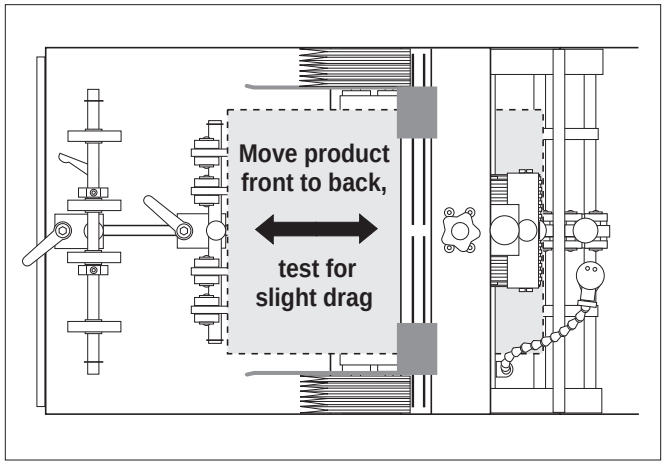


Figure 5. Using One-Piece Thickness of Product to Set Gap

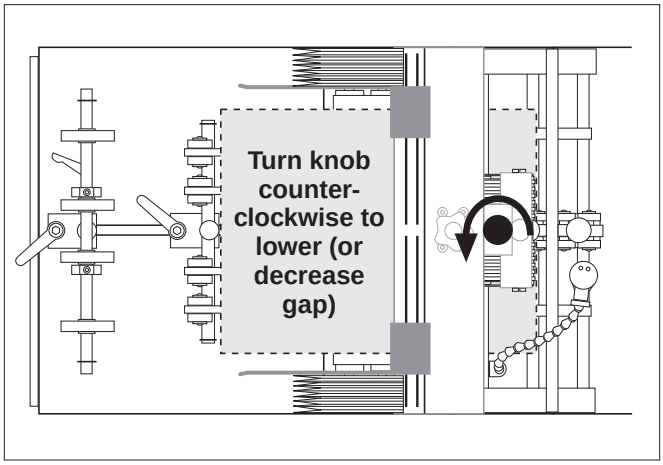


Figure 6. Adjusting Gate Assembly for Correct Gap

STEP 1: Gate Assembly Adjustment (continued)

NOTE

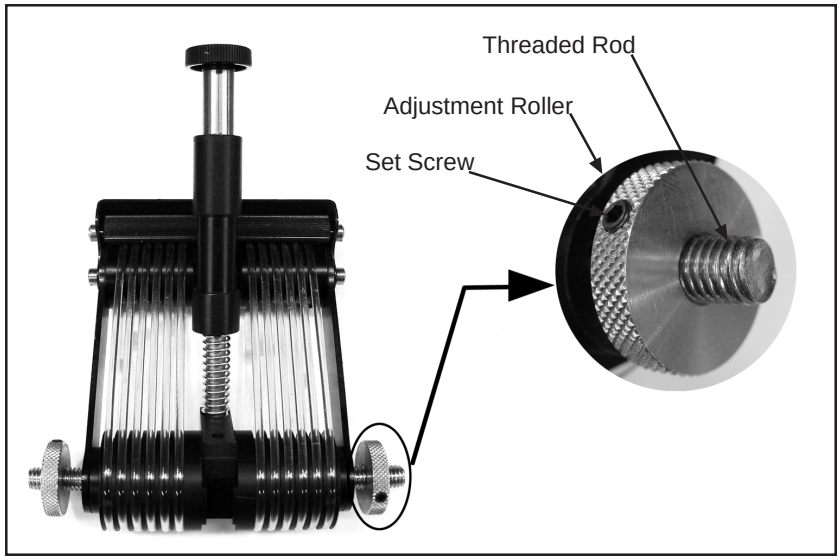
When feeding product with varying thickness throughout, it may be necessary to turn both adjustment rollers 1-2 ***full turns*** *counterclockwise to compensate for the differential thickness. This procedure allows the gate horizon to "float."*

IMPORTANT

The adjustment knob set screws are pre-set at the factory to lock the knob to the threaded rod. DO NOT OVERTIGHTEN! Over-tightening the set screws may damage the components.

To adjust the gate for effective material skew control, follow these steps:

1. Repeat drag test detailed above.
2. Test the piece for uneven side-to-side drag. Grasp with two hands and slide it front-to-back under the gate assembly. A proper adjustment allows for equal drag on the left and right sides of the piece of material.
3. To compensate for greater drag on one side of the material, turn the *opposite* adjustment roller *counterclockwise* 1/8 turn. Next, turn the other adjustment roller *clockwise* 1/8 turn.
4. Repeat drag tests and adjust as needed until equal drag is achieved. You may need to repeat this procedure after observing the feeder cycling (refer to Section 4, "How to Operate").



Horizon Adjustment Mechanism (shown on Advancing O-Ring Gate)

Changing From Factory Set High-Tension to Low-Tension

Excessive lowering of the gate assembly can damage product or lead to premature wear of the O-rings or feed belts.

Review

The friction feeder is shipped to you with a high-tension spring in the gate assembly. Certain types of product may demand that you change the gate assembly from a *high-tension* setting to a *low-tension* setting (for example, irregular shaped product). *This works well for most materials, allows for tall stack height, and helps provide the best performance in preventing doubles.*

If you are feeding a product of irregular thickness, you should change to low-tension. This provides the following benefits:

- Allows the gate assembly to adjust to the irregular thickness among product pieces.
- Prevents marking on the product by the gate assembly.
- Prevents peeling back the top sheet of a multi-page product.

Procedure

To change the spring from a *high* to a *low* spring tension, follow these steps:

1. Remove the gate assembly from gate plate (lift up on knob and tip at slight angle to remove).
2. Remove the adjustment knob by turning counter-clockwise (Figure 7A).
3. Lift the cylinder off of top of spring (Figure 7B).
4. Turn the cylinder around so that the cylinder collar faces up (Figure 7C).
5. Place the cylinder on top of the spring.
6. Replace the adjustment knob (make about 8 revolutions of the knob before reinstalling gate assembly on gate plate).

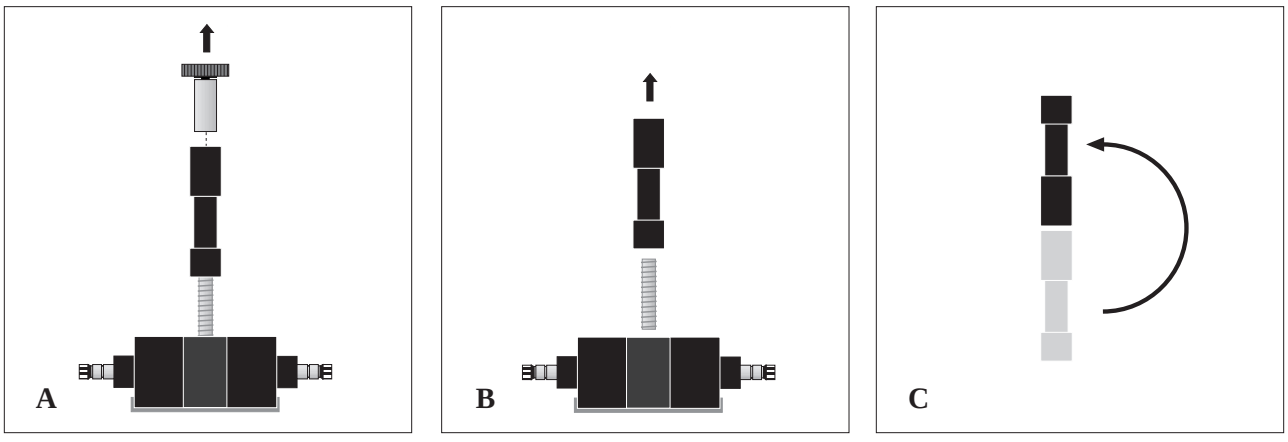


Figure 7. Adjusting Gate Assembly for Low-Tension

STEP 2:
Side Guides Setting

Review

The side guides hold the stack of product being fed, and they guide the product through the feeder in a straight line of movement. You can adjust the side guides to accommodate different sizes of product.

Objective

Adjust the side guides so that the product stack maintains uniformity from top to bottom, with no drifting or binding. Adjustments are made *horizontally*.

Make sure the space between the side guides can accommodate the size of the product being fed. Consider the following as you adjust the guides:

- An initial starting point should always be that each guide is of equal distance from the center point of the machine.
- Each edge of the product should rest equally on belts either side of gate assembly (or equidistant spacing). *However, there can be certain instances where guides do not need to be centered due to product characteristics. This is called offset spacing.*
- Adjust both side guides to be as close as possible to either sides of the product, without causing binding, curling of edges, or resistance to movement.

TIP

A good "rule-of-thumb" measurement to use is about 1/16 in. (1.6 mm) between product edge and side guide (1/8 in. or 3.1 mm overall).

Procedure

To adjust each side guide for proper *equidistant* horizontal spacing, follow these steps (Figure 8):

1. Place a small stack of product in the hopper.
2. Using the side guides adjustment knob (centrally located between the two guides), turn in either direction until guides are located at the recommended distance from the product: 1/16 in. (1.6 mm) for each edge, 1/8 in. (3.1 mm) overall.
3. Visually check both guides for proper spacing from product.

STEP 2: Side Guides Setting (continued)

To adjust each side guide for proper *offset* horizontal spacing, follow these steps (Figure 9):

1. Push down on the side guides adjustment knob to disengage guides from gear mechanism.
2. Grasp whichever side you wish to offset first and move into position.
3. Place a small stack of product in the hopper, with edge of paper against offset guide.
4. Move the second side guide so that it is located at the recommended distance from the product: 1/16 in. (1.6 mm) for each edge, 1/8 in. (3.1 mm) overall.
5. Lift up on the adjustment knob so that the guides lock into place.
6. Visually check both guides for proper spacing from product.

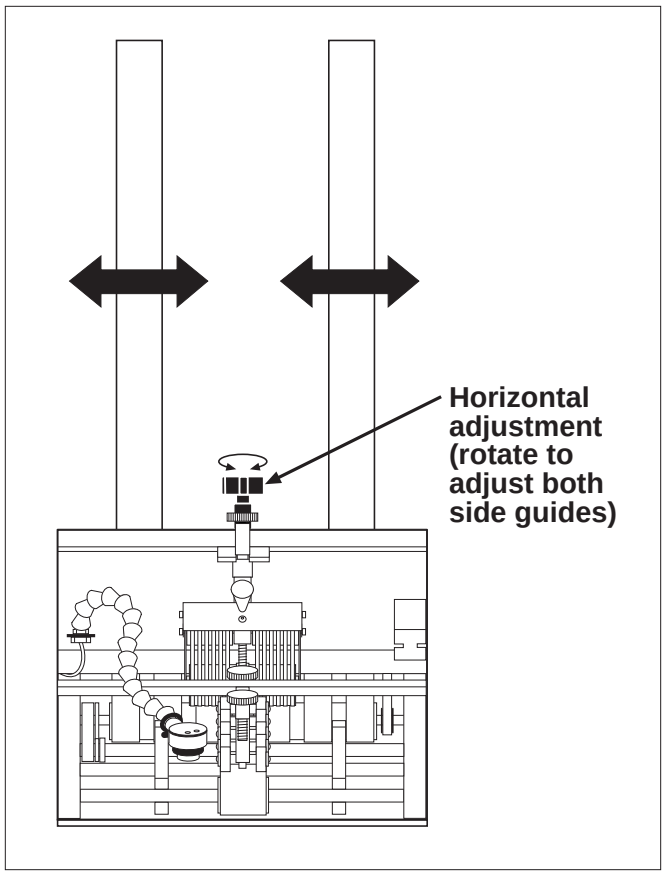


Figure 8. Horizontal Adjustment of Side Guides

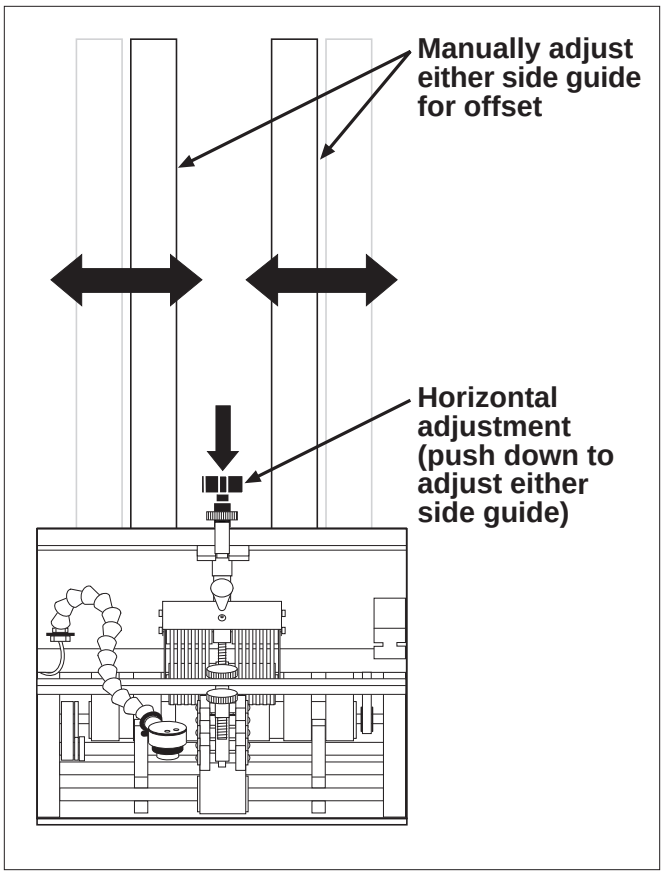


Figure 9. Individual Side Guide Offset

STEP 3: Back Wedge Adjustment

NOTE

Keep in mind that the back wedge works with the gate assembly to provide the proper lift, curvature of the product, and proper belt/product contact to separate and feed one sheet at a time.

TIP

There are a number of feeding problems which can be solved by simply adjusting the back wedge to different positions. Some of these problems include double feeds, skewing, twisting, poor singulation, ink or varnish buildup on the belts, and jamming at the gate assembly area.

NOTE

For more information about optional wedges and their use with various products, see Appendix A.

Review

The back wedge provides proper lift to the product to help keep it off the table top and feed belts, and it creates the force necessary to push product against the gate assembly. By adjusting it back and forth from the gate assembly or pivoting side to side, you can create the lift and force necessary to preshingle product against the curvature of the gate assembly. Also, it keeps other sheets off the feed belts until proper separation of the bottom sheet at the gate assembly has occurred.

Here are some general guidelines that should help you determine how the back wedge should be positioned for your particular product:

- *Moving the individual rollers to the outside* of the back wedge shaft (Figure 10A) will create a bow in the center. The bow will stiffen the product to promote better singulation of thinner product.
- *Pivoting the back wedge from its perpendicular to the gate assembly* (Figure 10B) will increase or decrease the amount of drag of contact (or traction) on the feed belts for a given side. This can also be used to control twisting or skewing of product as it leaves the gate assembly area.
- *If the back wedge is positioned too far backward* from the gate assembly (Figure 10C), then the belts are driving the product before the bottom sheet has separated and left the gate assembly area. This pushes the gate assembly up, creating more pressure on the product, O-rings, and feed belts. The result can be premature buildup of ink or varnish on the belt surfaces. It can also cause more than one product at a time to be forced under the gate assembly, creating a double feed.

  By moving the back wedge forward, only the bottom product can make contact with the belt surface. Slippage is reduced, minimizing buildup on the belt surface. Double feeding is also reduced.
- *If the back wedge is positioned too far forward* to the gate assembly (Figure 10D), then a pinch point can be created between the top surfaces of the individual rollers and the product. Moving the back wedge even closer towards the gate assembly can allow product to overhang the wedge, creating too much lift of the product off the feed belts.

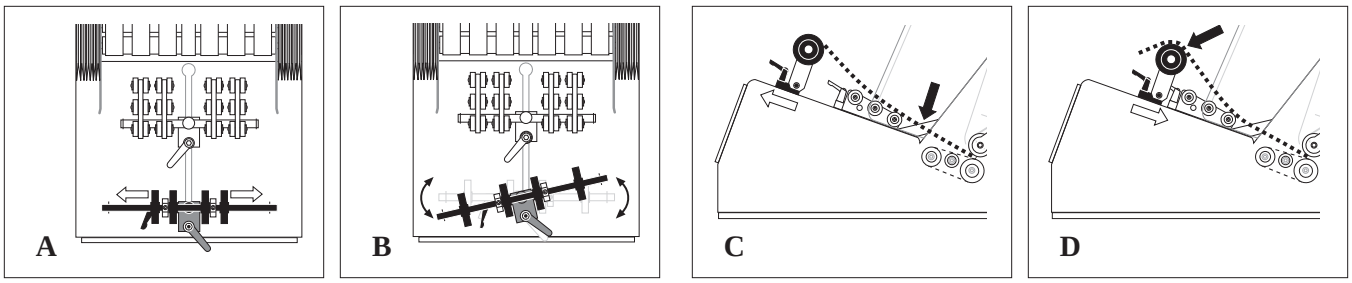


Figure 10. Tips for Proper Back Wedge Adjustment

STEP 3: Back Wedge Adjustment (continued)

Objective

Adjust the back wedge for proper support of the product off the table top, without creating any pinch or stress points.

Procedure

To adjust the back wedge for initial proper positioning, follow these steps:

1. Grasp a handful of product, approximately 2 to 2-1/2 in. (5 to 6 cm) thick, and preshingle the edges with your thumb (Figure 11).
2. Place the preshingled material in the hopper so that the edges rest against the curvature of the gate assembly (Figure 12).
3. Turn the back wedge wing-nut adjustment counter-clockwise to loosen the wedge (Figure 12).

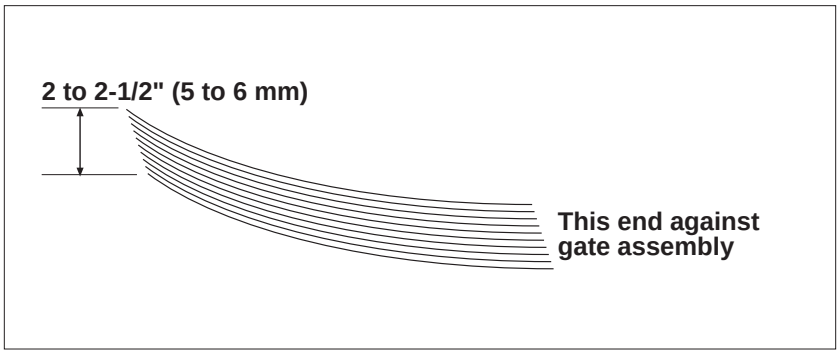


Figure 11. Preshingling a Small Stack of Material By Hand

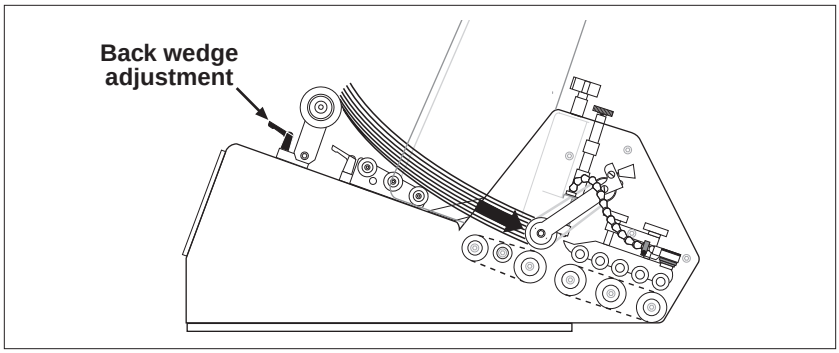


Figure 12. Positioning Product Prior to Loosening Back Wedge

NOTE

Moving the back wedge too far forward to the gate assembly can create a pinch point between upper surface of the rollers and the product. If moving the back wedge in is not effective, then an optional wedge may be required. See Appendix A for more information.

4. Move the back wedge forwards and backwards until the bottom sheet is not touching the table top (Figure 13). A good starting point is to measure about 5/8 in. (16 mm) from the bottom sheet to front edge of table top. Then as you test, you can "fine tune" from this point. *You can also fine-tune back wedge location by loosening the roller swivel wing-nut to pivot the rollers back and forth (Figure 14).*

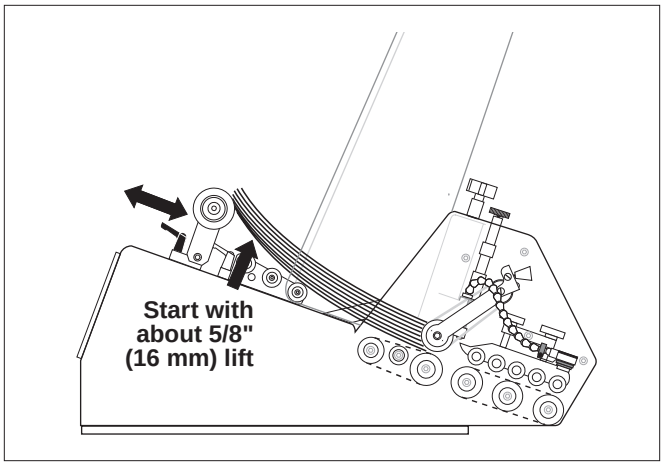


Figure 13. Adjusting Back Wedge for Proper Lift

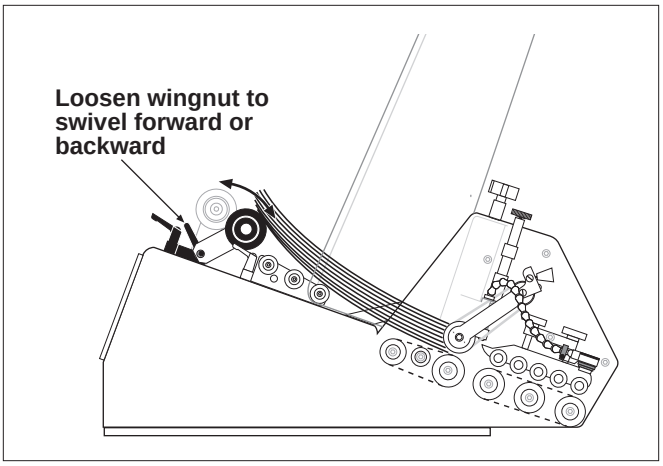


Figure 14. Adjusting Roller Position

STEP 3: Back Wedge Adjustment (continued)

5. Make sure the edge of the back wedge assembly is parallel with the edge of the product stack (Figure 15). Adjust as required and then tighten wing-nut.
6. Check that individual roller are evenly spaced to provide enough support to lift the product off the table top and feed belts, without any bowing or twisting (Figure 16). *Refer back to page 12 for guidelines on adjusting individual rollers for thinner material.*

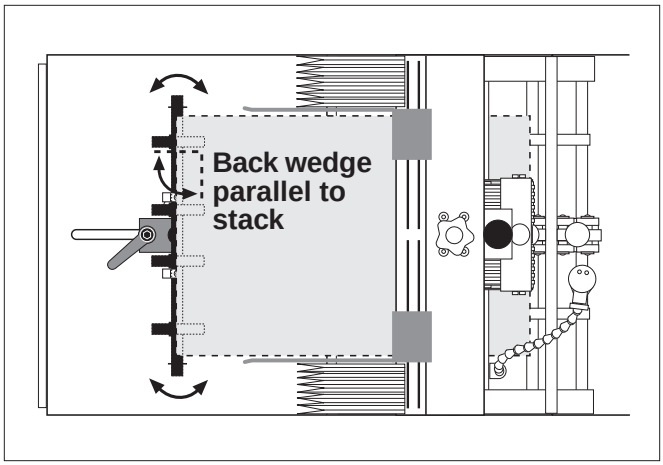


Figure 15. Adjusting Back Wedge for Parallel

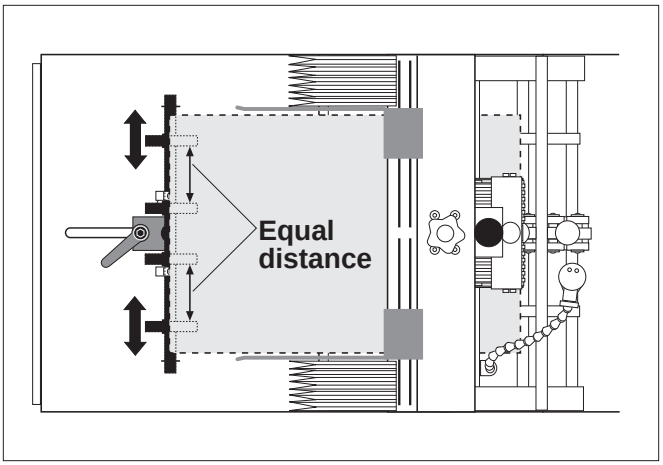


Figure 16. Evenly Adjusting Individual Rollers

STEP 4: Hold-Down Setting

Review

The hold-down assembly consists of several adjustable rollers which rest on top of the product as it exits the gate assembly area. With the correct amount of pressure applied to the product, the discharge belt will have the proper amount of contact and friction needed to pull product away from the gate assembly area. Incorrect hold-down pressure can cause overlap or insufficient gap between one product and the next.

Objective

Adjust the hold-down rollers to the proper amount of pressure to allow the discharge belt to pull and separate the bottom sheet as it exits the gate assembly area.

Procedure

To adjust the hold-down assembly for proper pressure, follow these steps:

1. Insert one piece of product to be fed under the hold-down assembly (Figure 17). To facilitate this, turn all knobs clockwise several turns.
2. Turn knobs A and B counter-clockwise (Figure 18) to lower the hold-down assembly so that a slight drag exists between the product and the hold-down rollers. Verify slight drag by sliding product side-to-side.
3. Turn knob A clockwise 1/8-turn (Figure 19) so that slightly less drag exists on the roller closest to gate assembly. Again, verify drag by sliding product side-to-side.
4. Recheck knob B for proper drag on roller farthest from gate assembly (drag may have changed while adjusting knob A).

IMPORTANT

If the roller furthest from the gate assembly is tighter than the roller closest to the gate assembly, jamming may occur.

If either adjustment is too tight, product damage may occur.

Due to the discharge belt and hold-down assembly spinning 50% faster than the feed belts, excessive gate assembly pressure can cause premature wear to O-rings or feed belts. Review "Step 1, Gate Assembly Adjustment".

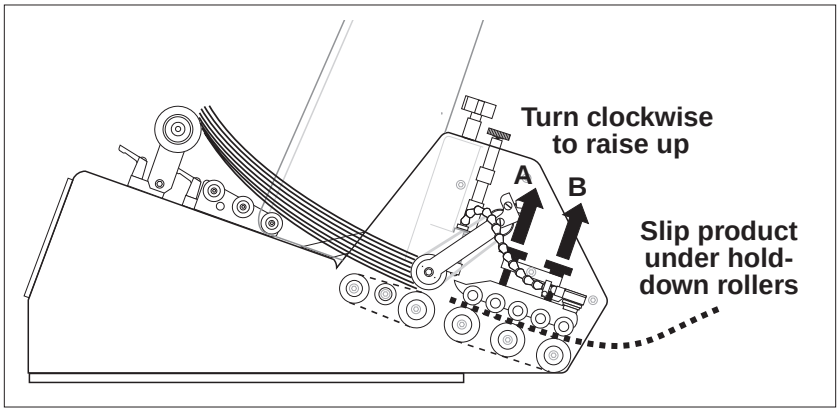


Figure 17. Inserting One Piece of Product Under Hold-down

STEP 4: Hold-Down Setting (continued)

NOTE

Often after you adjust the first roller you have to go back and readjust the second roller to make sure that the drag is correct.

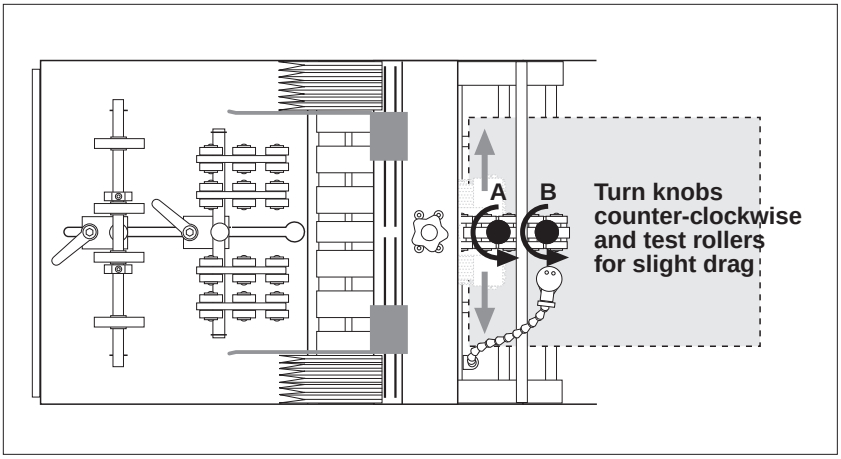


Figure 18. Turning Knobs Counter-Clockwise to Insert Product

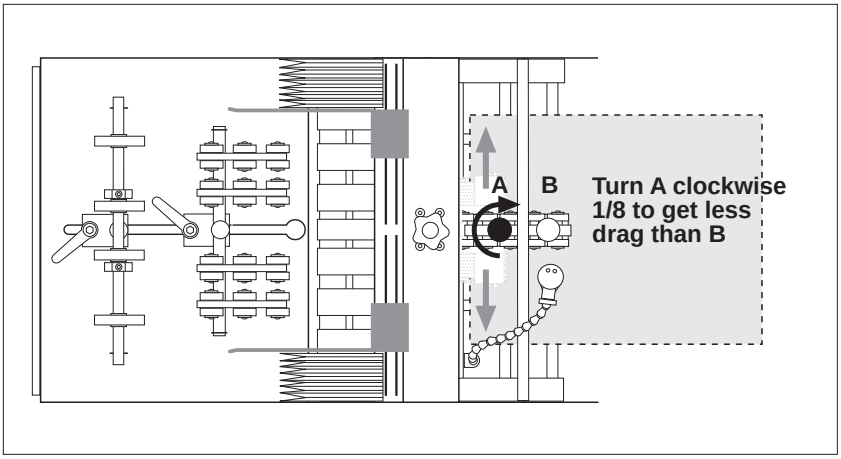


Figure 19. Turning Knob "A" Clockwise to Get Slight Drag

STEP 5: Photo Sensor Adjustment

Review

The **Flight-Detect** photo sensor is mounted on the line to detect a target (for example, box) so as to eject a product. The **Sheet-Detect** photo sensor is mounted on the flexible feeder extension assembly to detect the leading edge of a product about to be ejected so as to turn the feeder Off.

*In preparing for operation, your initial concern should be to properly position the **Sheet-Detect** photo sensor.*

Objective

For the **Sheet-Detect** photo sensor to be effective, it must be adjusted within a specified range and angle to the product.

STEP 5: Photo Sensor Adjustment (continued)

NOTE

Sensors shipped from the factory do not require any adjustment.

NOTE

For any questions you may have about adjusting the Flight-Detect photo sensor, consult with a qualified technician.

TIP

Avoid light colored backgrounds in the discharge area.

Procedure

To adjust the **Sheet-Detect** photo sensor for proper positioning, follow these steps:

1. Aim and align the photo sensor straight toward (perpendicular to) the product (Figure 20). If the photo sensor is at an angle, the light will not be reflected straight back to the receiver.
2. Position the photo sensor at distance between 1 to 1-1/2 in. (25 to 38 mm) from the product. Initially use the adjustable arms on the extension assembly (Figure 21). *When only the green LED is On, you will know when the photo sensor is positioned properly. The amber LED is On when product is staged.*
3. When making the adjustment, be aware of any background objects beyond the product range. *On the feeder, such objects as shafts, guides, belts, and supports may cause false returns if the photo sensor is not adjusted properly for the product (or target). The resulting problem can be continuous feeding. See Section 4, "Troubleshooting", for a solution.*

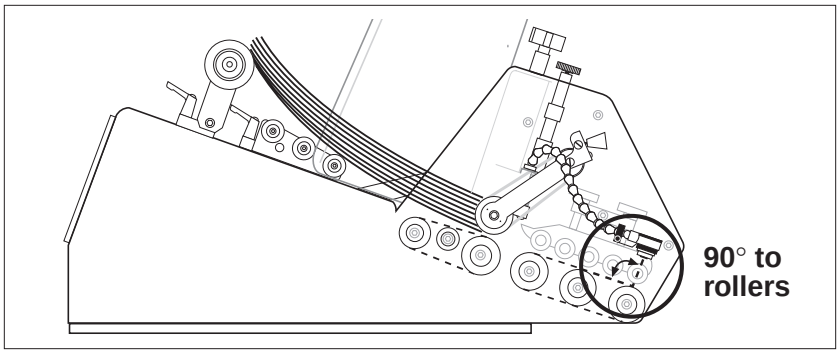


Figure 20. Adjusting Photo Sensor for Perpendicular Position

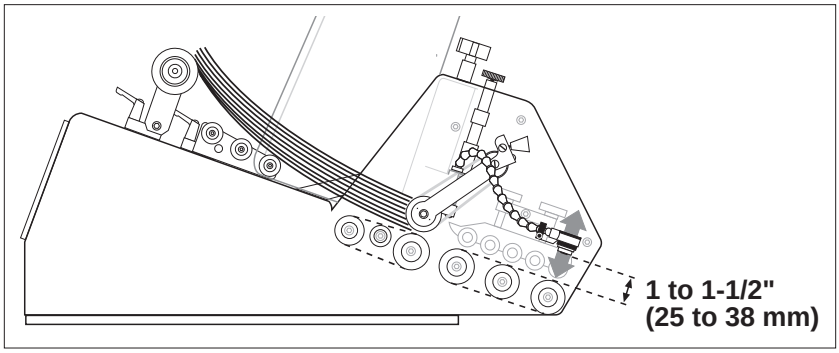


Figure 21. Adjusting Photo Sensor for Distance

STEP 6: Manual Test to Verify

Now that you have made all the necessary adjustments for operation, it is recommended that you verify the singulation and separation of product through the gate assembly area. Before you power-up and run your machine with a full hopper, manually feed several sheets of product through the gate assembly area.

Prepare your test by loading the hopper with approximately 2 to 2-1/2 in. (5 to 6 cm) of product. Make sure you preshingle the stack so that product rests against the curvature of the gate assembly.

1. Manually feed several sheets of product slowly through the gate assembly area. Move the drive belts by pressing your thumb against the discharge belt.
2. Observe how individual product enters and exits the gate assembly area. Remember, a properly set gap will allow each new sheet to enter at about the center line of the cylinder while the bottom sheet is exiting the gate assembly area (Figure 22). Ideally, this means a slight overlap of both the first sheet and the second sheet (1/8 in., or 3 mm) at the gate assembly area. The overlap occurs as the bottom sheet is exiting, and the next sheet is entering.
3. If feeding doubles, then move the wedge in towards the gate assembly. Test again.
4. If sheets are overlapping excessively or, if the machine is feeding doubles, then reduce the gap slightly by moving the knob about 1/8 turn counter-clockwise. Test again.
5. As product moves through the hold-down area, check for any skewing or jamming. Also check for damage to the product.
6. If this or other feeding problems still persist (slipping, skewing, jamming), then review all the adjustment procedures in Section 2, “Preparing for Operation”.

NOTE

If the gate assembly is too tight, the feeder will have difficulty pulling the product through the gate assembly area. This will cause “missed” feeds.

NOTE

Moving the back wedge too far forward to the gate assembly can create a pinch point between the tip of the triangle wedges and the product. If moving the back wedge in is not effective, then an optional wedge may be required. See Appendix A for more information.

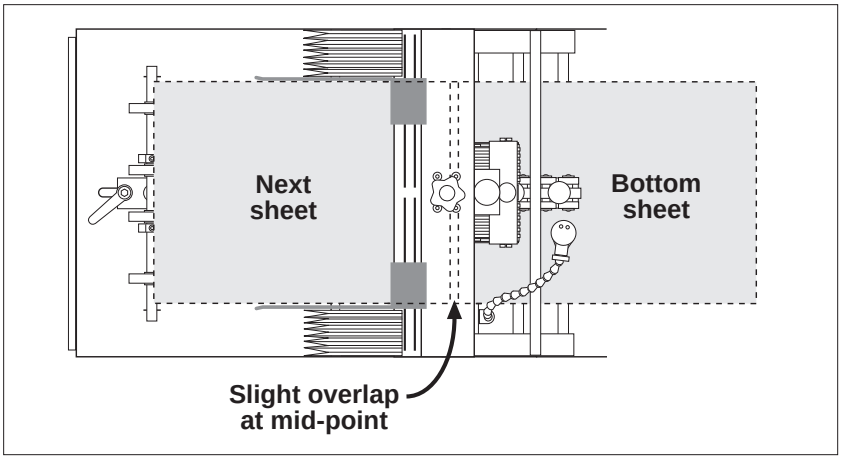


Figure 22. Optimum Overlap and Separation of Product

3 How to Operate

Operational Sequences

Successful power-up and operation of the feeder is assured if you apply each of following sets of procedures where needed:

- Loading product
- Quick setup/cycle sequence
- Accessing the menus for setup
- Starting a cycle
- Stopping the feeder
- Clearing a jam

One-shot control and batch control will be shown separately when there are differences in operational sequence.

Loading Product

1. Preshingle a small stack of material and load in hopper.
2. With one end of the stack resting against the gate assembly, the other end will be resting on the back wedge (Figure 23).
3. Gradually add more product to the hopper. As stack height will have a preferred minimum and a maximum, you will have to experiment to determine the effective range of height (Figure 24).
4. As you add product, tamp each hand-full of product with your hand to make sure it rests evenly against the back plate.

NOTE

Preshingling prevents multiple sheets from jamming under the gate assembly at start-up.

TIP

Stack height affects the downward pressure on the feed belts. Greater downward pressure can increase the chances for misfeeds or double feeds.

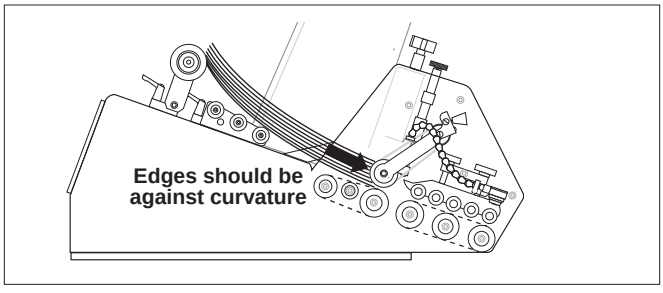


Figure 23. Placing Product Against Gate Assembly

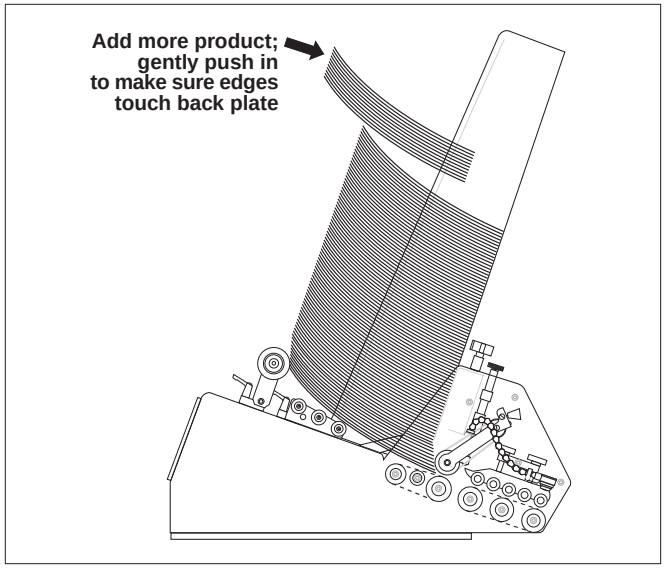


Figure 24. Adding More Product to Fill Hopper

Quick Setup/Cycle Sequence

IMPORTANT

Even though the Run Display is factory-set for immediate operation, it can be customized to suit your changing on-site needs via the "Passcode" menu. For more information, please see the Technical Information Guide, and/or consult with a qualified technician.

If the ST is prepared for operation and you want get the feeder started in the quickest way possible, then use the following sequence for *one-shot* control and *batch* control, respectively:

One-Shot Control

1. Turn power **On**.
2. Press *any* key to advance to "Suspended" screen.
3. Press **UP/DOWN Arrow** keys to desired speed percentage.
4. Press **CYCLE** key to advance to "Ready" screen.
5. Trigger the flight-detect sensor to begin feeding *or,* press **CYCLE** key to test feed for one cycle.

Batch Control

1. Turn power **On**.
2. Press *any* key to advance to "Suspended" screen.
3. Press **UP/DOWN Arrow** keys to desired speed percentage.
4. To set batch size:
   a. Press **MENU** key.
   b. Press **UP/DOWN Arrow** key until batch size is displayed .
   c. Press **ENTER** key.
   d. Press **UP/DOWN Arrow** key to desired batch size ***OR*** enter the desired batch size via the keypad.
   e. Press **ENTER** key to save.
   f. Press **MENU** key to return to "Suspended" screen.
   g. Press **CYCLE** key to advance to "Ready" screen.
   h. Trigger the flight-detect sensor to begin feeding *or,* press **CYCLE** key to test feed for one cycle.

Accessing the Menus for Setup

IMPORTANT

Menus can be customized to suit your changing on-site needs via the "Passcode" menu. For more information, please see the Technical Information Guide, and/or consult with a qualified technician.

If you wish to configure all the parameters of your machine via the menus, then use the following sequence for accessing the menus for both *one-shot* control and *batch* control, respectively:

ONE-SHOT CONTROL

1. Turn power **On**.
2. Press *any* key to advance to "Suspended" screen.
3. Press **MENU** key.
4. Press **UP/DOWN Arrow** keys to view available menus:
   - Menu 1 Speed
   - Menu 2 Clear
5. Press **ENTER** key to change speed or reset job count.
6. Press **UP/DOWN Arrow** keys to desired speed percentage.
7. Press **ENTER** key to save change.
8. Press **MENU** key to return to "Suspended" screen.

TIP

Press and hold the UP/DOWN Arrow keys to quickly change values.

TIP

Press the MENU key to restore old value and return to "Suspended" screen.

BATCH CONTROL

1. Turn power **On**.
2. Press *any* key to advance to "Suspended" screen.
3. Press **MENU** key.
4. Press **UP/DOWN Arrow** keys to view available menus:
   - Menu 1 Speed
   - Menu 2 Size
   - Menu 3 Clear
5. Press **ENTER** key to change speed or reset job count.
6. Press **UP/DOWN Arrow** keys to desired speed percentage or batch size.
7. Press **ENTER** key to save change.
8. Press **MENU** key to return to "Suspended" screen.

TIP

Press and hold the UP/DOWN Arrow keys to quickly change values.

TIP

Press the MENU key to restore old value and return to "Suspended" screen.

Starting a Cycle

Once setup is complete, you can perform the following steps to start feeding. The procedure below applies to both *one-shot* control and *batch* control.

1. Turn power **On**.
2. Press *any* key to advance to "Suspended" screen.
3. Press **CYCLE** key to *stage* product and advance to "Ready" screen.
4. Trigger the flight-detect sensor to begin feeding *or*, press **CYCLE** key to test feed one cycle.

Stopping the Feeder

The feeder can be stopped either manually or automatically. Pressing the **STOP** ▽ key will stop feed cycles and return the feeder to the "Suspended" status.

When a product fails to be staged in a preset amount of time, the feeder will automatically *timeout* or stop. If this occurs, the display will read "Feeder Timeout." Determine and resolve the cause of the *timeout* and press the **CYCLE** ◇ key to resume feeding.

Clearing a Jam

CHECK

If a jam occurs during operation, follow these steps:

1. *Turn power **Off**.*
2. *Open the discharge safety shield.*
3. *Remove jammed material from feeder. While doing so, try to determine the cause of the jam (see Section 4, "Troubleshooting").*
4. *Verify whether any adjustments are loose. If so, refer back to Section 2, "Preparing for Operation", for proper adjustment procedures.*
5. *Reposition photo sensor (as required).*

If a jam occurs during operation, follow these steps:

1. Turn power ⏻ **Off**.
2. Open the discharge safety shield.
3. Remove jammed product from feeder. While doing so, try to determine the cause of the jam (see Section 4, "Troubleshooting").
4. Verify whether any adjustments are loose. If so, refer back to Section 3, "Preparing for Operation", for proper adjustment procedures.
5. Reposition photo sensor (as required).

Shutdown

NOTE

You may want to follow the same procedure for the Sheet-Detect photo sensor also to prevent damage to any loose or hanging cabling.

Should you not be using a the feeder for long periods of time, follow these steps to ensure a safe and secure storage:

1. Turn power ⏻ **Off**.
2. Disconnect feeder from AC power source.
3. If removing the **Flight-Detect** photo sensor from the production line, disconnect cable connector from feeder and coil up for storage.
4. Cover the feeder with a cloth or plastic tarp to prevent dust and debris from accumulating.

4 Troubleshooting

Table 2 is intended to provide you with quick solutions to the more common day-to-day problems you may encounter. For more detailed troubleshooting information, see the *Technical Information Guide*.

Table 2. Quick-Look Troubleshooting

Problem	Cause	Solution
No AC power to feeder	1. On/Off switch in "Off" (or "**O**" position).	Check that switch pressed to "On" (or "**—**" position).
	2. Power cord loose or not plugged into outlet (or AC power source).	Check and secure power cord at AC outlet.
	3. Female end of power cable loose or not plugged into AC power inlet at rear of feeder.	Check and secure cord at AC power inlet (rear of feeder).
	4. Interconnect cable loose or not connected at controller box.	Check and secure interconnect cable end at controller box. Make sure it is locked.
	5. Faulty safety interlock	Consult with a qualified technician.
Feeding doubles	1. Gate assembly improperly adjusted (possibly more than one sheet thickness).	Review gate assembly adjustment in Section 2, "Preparing for Operation".
	2. Back wedge improperly adjusted.	Review back wedge adjustment in Section 2, "Preparing for Operation".
	3. Worn angled edge (or if applicable, O-rings).	Replace angled edge. Or if applicable, rotate O-rings. (see Section 5, "Inspection and Care", for procedure). If wear is excessive, consult with a qualified technician.*
	4. Product interlocking.	Check product and source.
	5. Static buildup.	Check product and source.
Continuous feeding, no gap	1. Possible overlapping.	See "Feeding Doubles" above.
	2. Incorrect hold-down pressure adjustment.	Review hold-down setting in Section 2, "Preparing for Operation".
Continuous feeding, with gap	1. Photo sensor out of adjustment relative to product (target). Background objects such as shafts, guides, belts, and supports may be causing false returns.	Re-adjust feeder extension/photo sensor to "see" product only. Review photo sensor adjustment in Section 2, "Preparing for Operation".

Table 2. Quick-Look Troubleshooting (continued)

Problem	Cause	Solution
Feed belts are operating, but material not feeding	1. Material stack weight is too low when stack height is down, resulting in reduction of down pressure.	Review loading the product in Section 3, "How To Operate".
	2. Binding in side guides.	Adjust the side guides further apart to allow freedom of movement between sheets.
	3. Slippery feed belts due to buildup of material.	Consult with a qualified technician.*
	4. Sheet adhesion or interlocking between the bottom and next sheet.	Review loading the product in Section 3, "How To Operate", or review back wedge adjustment in Section 2, "Preparing for Operation".
	5. Gate assembly may be down too tight.	Review gate assembly adjustment in Section 2, "Preparing for Operation".
	6. Too much weight in hopper.	Remove product from stack. Test again.
Feed belt(s) not tracking on rollers	1. Excessive weight in hopper.	Reduce weight. Test again.
	2. Excessive down pressure on gate assembly.	Rotate clockwise 1/8 turn to increase gap and manually test. Also, review gate assembly adjustment in Section 2, "Preparing for Operation".
	3. Off-centered product from gate plate.	Review side guides setting in Section 2, "Preparing for Operation".
	4. Stack is bearing down on edge of belt.	Move stack away from belt, even if this causes stack to be aligned off center from center line of feeder.
	5 Belt wear.	Review gate assembly adjustment and back wedge adjustment in Section 2, "Preparing for Operation". Also, see Section 5, "Inspection and Care". If wear is excessive, consult with a qualified technician.*
	6. Rollers out of adjustment.	Consult with a qualified technician.*
Jamming occurs during operation	1. Improper adjustment of any of the following areas: • gate assembly • back wedge • hold-down assembly	1. Turn the **Power** switch to Off by pushing the circle (**O**). 2. Remove jammed product from feeder. While doing so, try to determine the cause of the jam. 3. Verify each adjustment by reviewing Section 2, "Preparing for Operation".

*For replacement procedures or for additional troubleshooting information not covered above, refer to the *Technical Information Guide*.

5 Inspection and Care

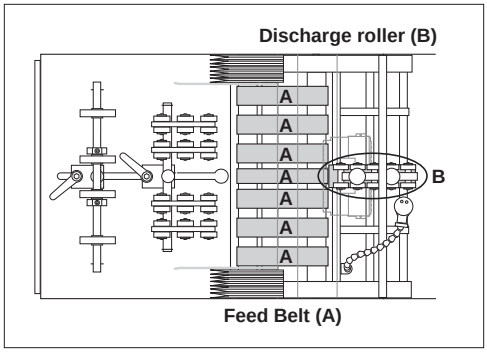
When performing initial adjustments prior to operation, always make sure you turn Off the main power switch, open the discharge safety shield (to disengage the interlock), and disconnect feeder from the electrical power source. Failure to do so can expose you to a potential start-up, and therefore moving parts which can cause serious injury.

Do not attempt to make any adjustments while the machine is running. Failure to do so can expose you to moving parts which can cause serious injury. Do not wear loose clothing when operating the feeder. Avoid making adjustments with loose or unsecured parts. This can potentially damage parts.

Please read this Section to learn how to:

- Visually inspect your machine to detect part problems which may require adjustment or replacement.
- Periodically care for your machine to prevent any operational problems.

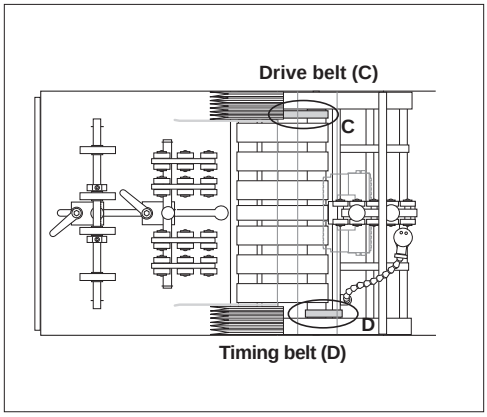
Visual Inspection



Checking for Feed and Discharge Belt Wear

Check for visual signs of:

- Walking. Replace as required (see the *Technical Information Guide* for more information).
- Cracking. Replace as required (see the *Technical Information Guide* for more information).
- Thinning. Replace as required (see the *Technical Information Guide* for more information).



Checking for Timing and Drive Belt Wear

Check for visual signs of:

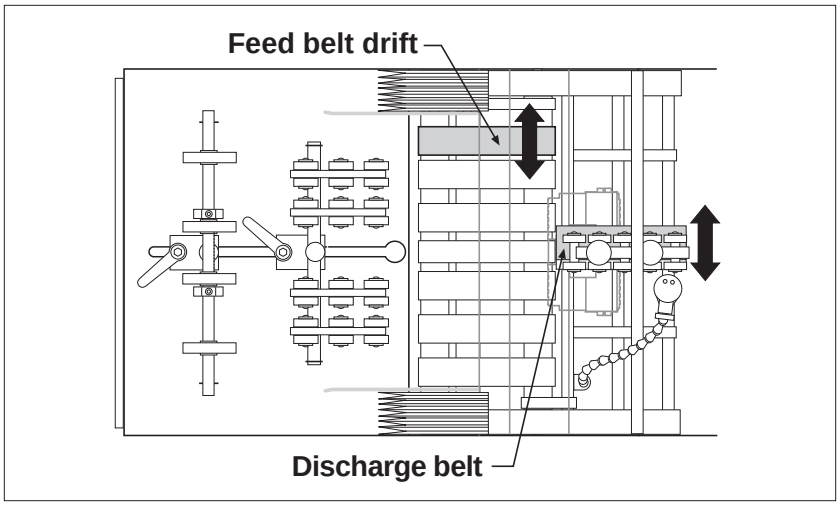
- Fraying. Replace as required (see the *Technical Information Guide* for more information).
- Missing teeth. Replace as required (see the *Technical Information Guide* for more information).
- Cracking. Replace as required (see the *Technical Information Guide* for more information).

Visual Inspection (continued)

Ensuring Proper Feed and Discharge Belt Tracking

Check for visual sign of:

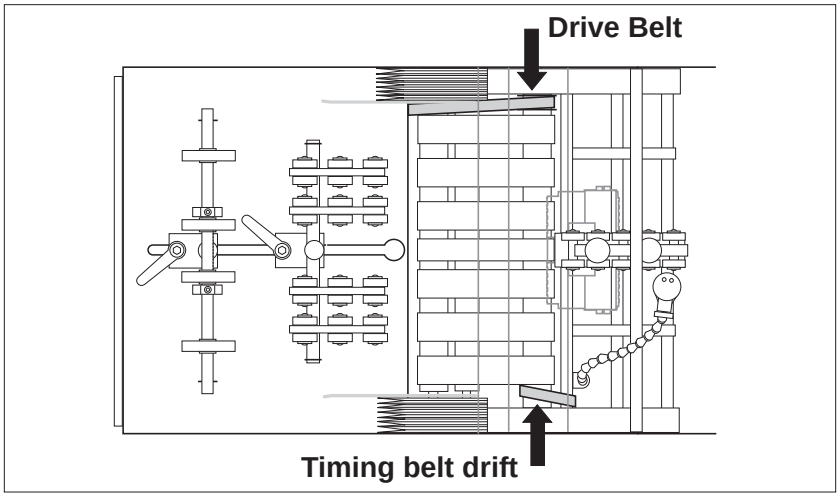
- Stretching (see the *Technical Information Guide* for more information).
- Improper roller adjustment (see the *Technical Information Guide* for more information).



Ensuring Proper Timing and Drive Belt Tracking

Check for visual signs of:

- Misaligned timing pulleys. See the *Technical Information Guide* for more information.



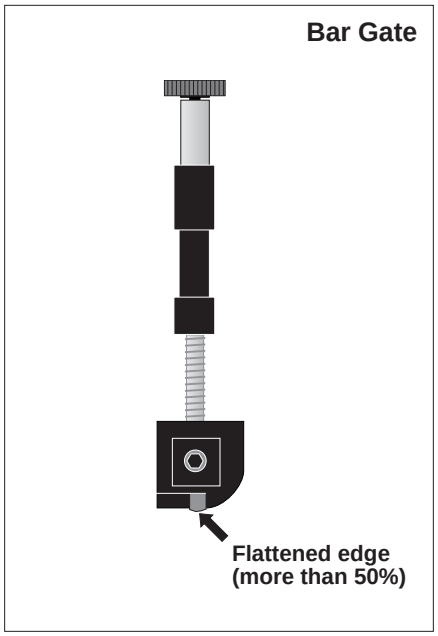
Visual Inspection (continued)

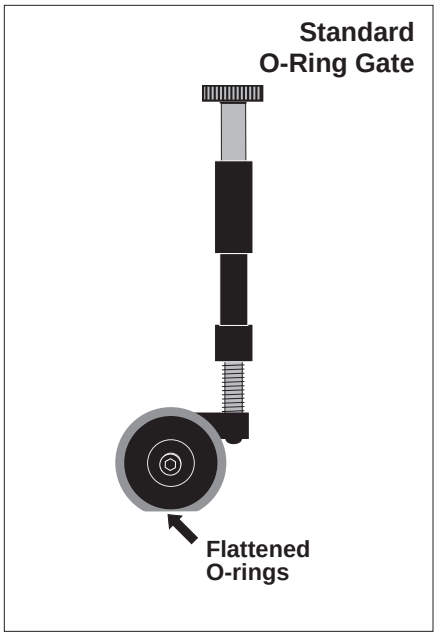
Checking for Gate Assembly Wear

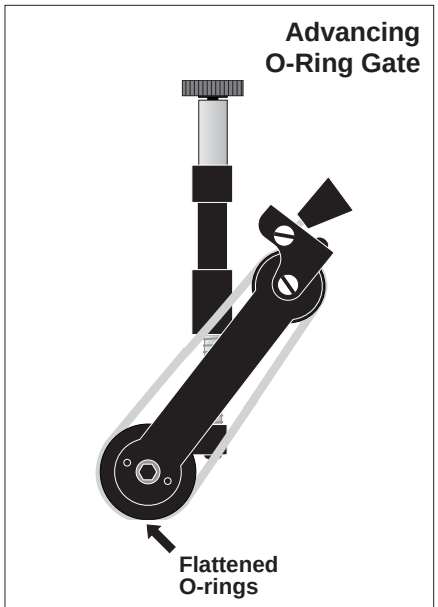
Check for visual signs of wear:

- Bar gate: Angled wedge begins to flatten excessively.
- Standard O-ring or advancing O-ring (if applicable): Flat areas along the O-rings.

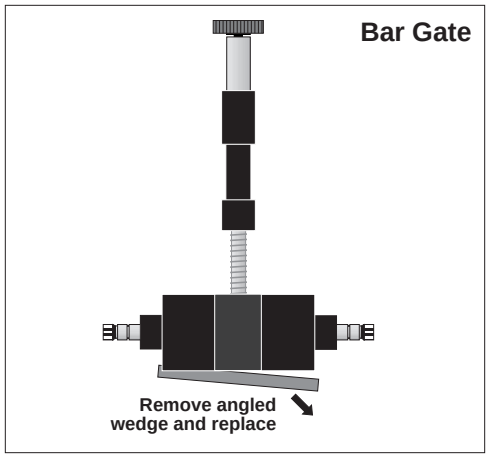
See “Preventive Care” to follow.







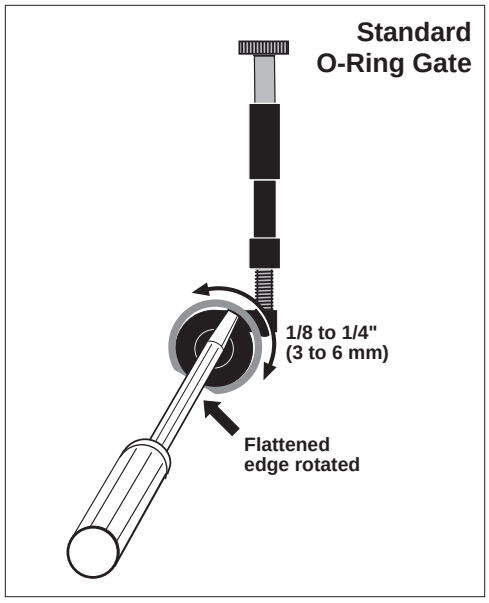
Visual Inspection (continued)



Replacing Worn Angled Wedge

To replace a worn angled wedge:

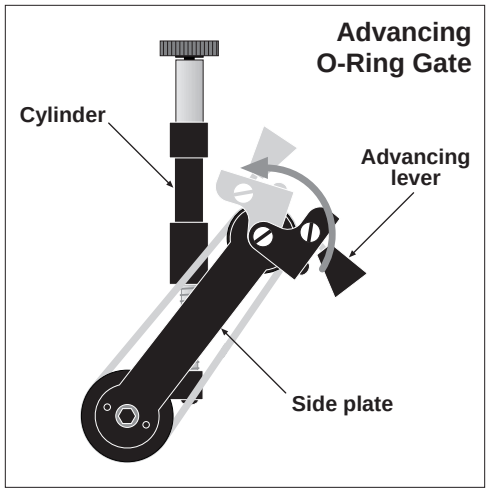
1. Turn Off feeder and remove power cord from outlet.
2. Remove gate assembly from gate plate.
3. Remove plate (two screws).
4. Use a pliers to grip and remove angled wedge.
5. Install new wedge by inserting one end and then pushing in until centered. *Do not grip new wedge with pliers as this may cause damage to the edge.*
6. Reinstall plate (two screws).
7. Reinstall gate assembly and restore power.



Standard O-Ring Gate: Adjusting Worn O-Rings

To adjust worn O-rings on standard O-ring gate:

1. Turn Off feeder and remove power cord from outlet.
2. Remove gate assembly from gate plate.
3. Insert a screwdriver in slot on top of gate assembly and rotate screwdriver clockwise or counter-clockwise 360° so as to move worn area of O-ring about 1/8 to 1/4 in. (3 to 6 mm).
4. Remove screwdriver and repeat for each ring as necessary.
5. Reinstall gate assembly and restore power.



Advancing O-Ring Gate: Adjusting Worn O-Rings

To adjust worn O-rings on advancing O-ring gate:

1. Turn Off feeder and remove power cord from outlet.
2. Make sure advance knob is in-line with the side plate and secure. Then loosen left and right locking wing nuts.
3. Rotate O-rings by grasping advance knob and pushing towards gate cylinder about 1/8 to 1/4 in. (3 to 6 mm).
4. Retighten locking wing nuts. Then loosen advance knob and move to original position (in-line with side plate). Retighten.
5. Reinstall gate assembly and restore power.

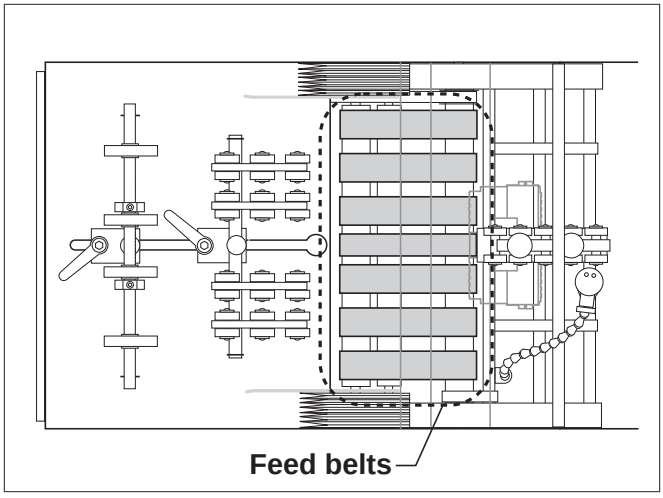
Preventive Care

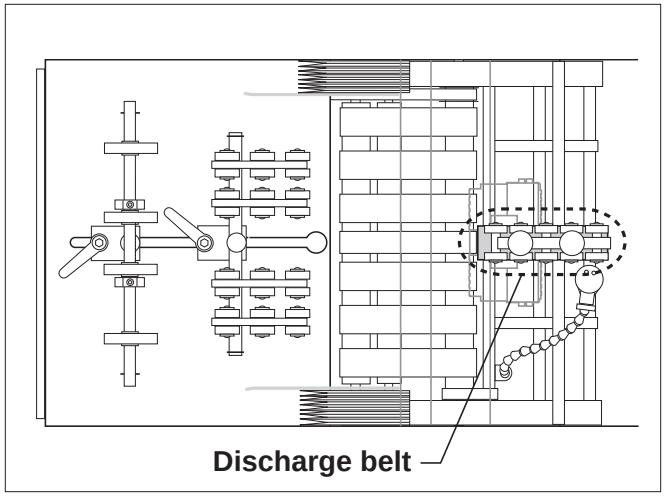
Use only isopropyl alcohol (98% concentration). Other solvents can cause belts to wear prematurely, and even total breakdown of material.

Cleaning Feed and Discharge Belts

To clean feed and discharge belts:

1. Turn Off feeder and remove power cord from outlet.
2. Remove gate assembly from gate plate for easier access to belts.
3. Apply a small amount of isopropyl alcohol to a soft cloth.
4. Use your hand to move the discharge belt, start with one feed belt at a time and carefully press the moistened area of the cloth to the belt. As you rotate the belt, use moderate pressure to wipe across the belt, making sure to wipe in direction of grooves also. After several rotations of the belt, repeat for each belt.
5. Taking a dry portion of the cloth, go back to the first feed belt cleaned and use moderate pressure against the belt for several revolutions to ensure the belt is dried. Repeat for each belt.
6. Repeat steps 3 – 5 for the discharge belt also.
7. Reinstall gate assembly and restore power.





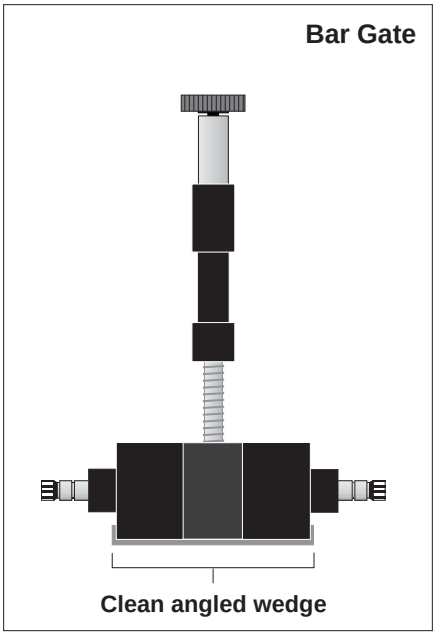
Preventive Care (continued)

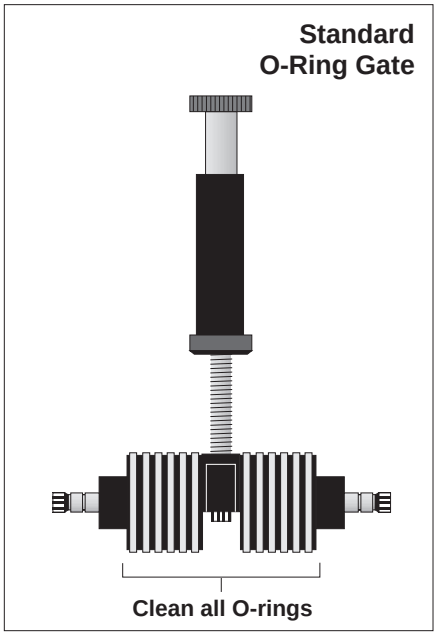
Cleaning Gate Assembly

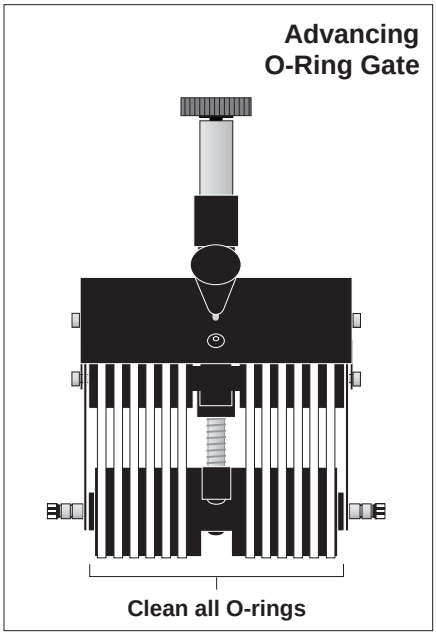
Use only isopropyl alcohol (98% concentration). Do not use any other types of solvents. They can cause premature wear of the belts, or even total breakdown of the material.

To clean gate assemblies:

1. Turn Off feeder and remove power cord from outlet.
2. Remove gate assembly from gate plate.
3. Apply a small amount of isopropyl alcohol to a soft cloth.
4. Wipe across angled wedge (or O-rings if applicable), first in one direction, then the other.
5. Taking a dry portion of the cloth, go back and wipe all surfaces to ensure they are dried.
6. Reinstall gate assembly and restore power.







Cleaning Keypad and Display

Visually check the keypad and display area for excessive dust or grime buildup. When cleaning, use a mild cleaning solution and spray directly on a soft cloth or rag.

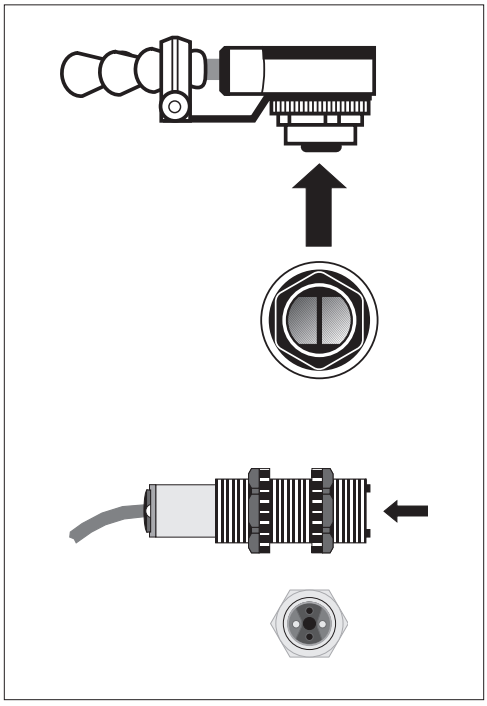
Do not use any solvents or cleaning agents when cleaning the keypad or display. This can result in surface damage. Do not spray any cleaning solutions directly on the keypad or display surfaces, as this could lead to faulty performance.

Cleaning Photo Sensors

To clean the photo sensor lenses:

1. Turn Off feeder and remove power cord from outlet.
2. Open the discharge safety shield (to access sheet-detect sensor).
3. Using a soft, dry cloth, wipe across the face of each lens.
4. Repeat step 3 above for flight-detect sensor.
5. Recheck the adjustments of both photo sensors to make sure they are still in alignment to the targets.
6. Close discharge safety shield and restore power.

Do not use any solvents or cleaning agents when cleaning the photo sensor lenses. This can result in surface damage and eventual faulty performance.



Appendices

Appendix A: Additional Wedges

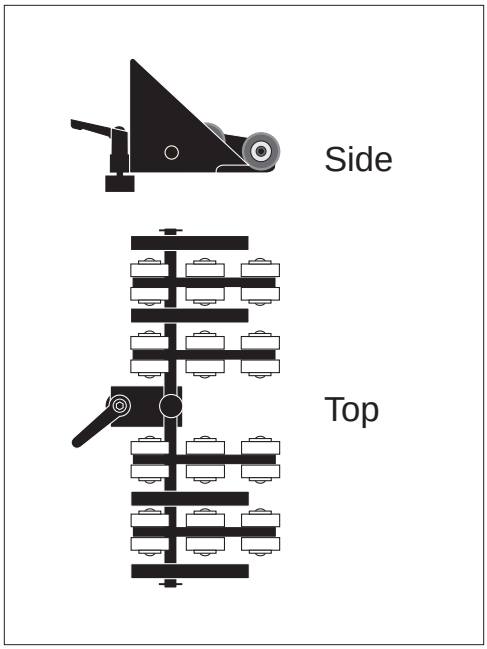
This Appendix provides information about setting up various wedges which are compatible with the ST Series Universal Friction Feeders.

Now that you are familiar with the basic principles of using a wedge, it is simply a matter of combining these principles with the information provided in this Appendix. This will allow you to get optimum performance when setting up the standard wedge for your particular needs.

The following wedges are covered:

- Combination triangle/low-profile
- Separate triangle and low-profile
- Separate articulating roller and low-profile
- Articulating roller
- Extended narrow

Combination Triangle/ Low-Profile



When to use: For thin product with minimal body, thus requiring minimal mid-range support.

Setup guidelines: Adjust so that bottom of stack preshingles against the curvature of gate assembly; make sure edges of product do not touch or overhang tip of triangle wedges, as this creates pressure points. Roller(s) should lift bottom of stack off table top to eliminate friction and create body. See Figure A1.

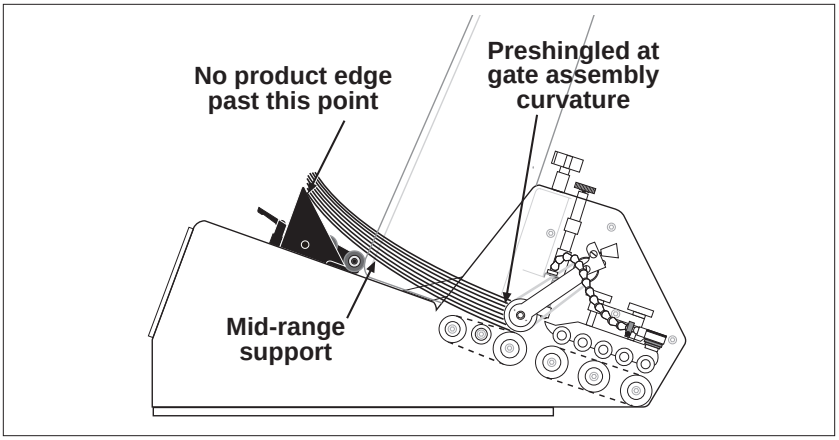
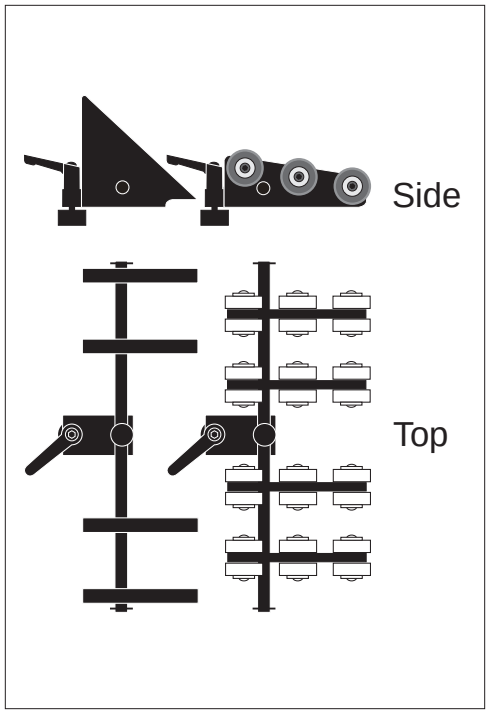


Figure A1. Combination Triangle/Low-Profile Wedge Setup

Separate Triangle and Low-Profile



When to use: If moving combination triangle/low-profile wedge assembly back from the gate assembly, bottom of stack still touches table top. This means you need even more mid-range support.

Setup guidelines: Adjust the triangle wedge the same way that you would the combined triangle/low-profile wedge assembly (see previous page). Set the low-profile wedge relative to the triangle wedge so that it lifts bottom of the stack off the table top to eliminate friction and create body. Again, make sure edges of product do not touch or overhang tips of triangle wedges. See Figure A2.

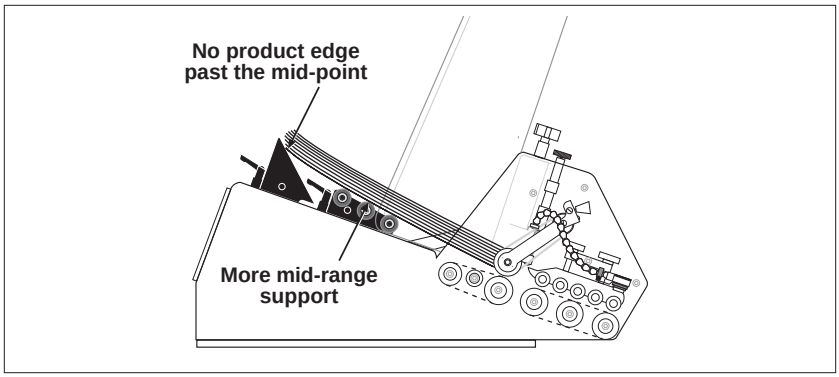
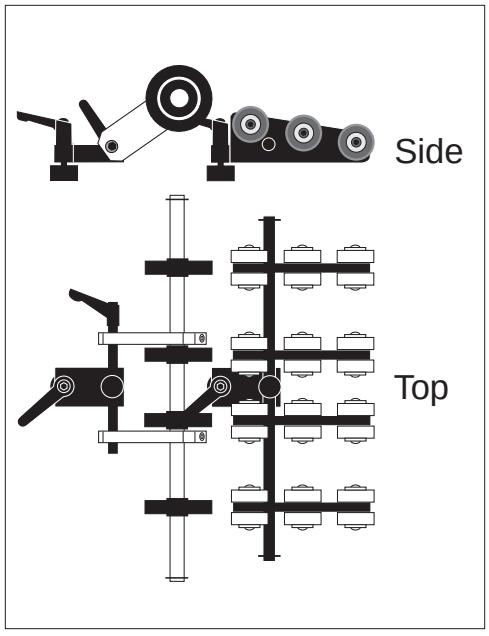


Figure A2. Separate Triangle and Low-Profile Wedge Setup

Separate Articulating Roller and Low-Profile



When to use: For thicker product with more body, thus requiring medium mid-range support. Longer product may also benefit.

Setup guidelines: Initially adjust articulating wedge so that roller edges preshingle the bottom of the stack against the curvature of gate assembly. Make sure edges of product do not extend back more than mid-point of rollers. Set the low-profile wedge so that roller(s) lift bottom of stack off the table top to eliminate friction and create body.

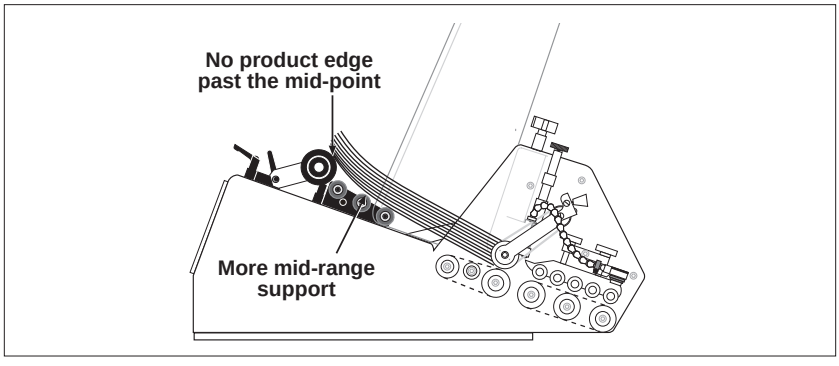
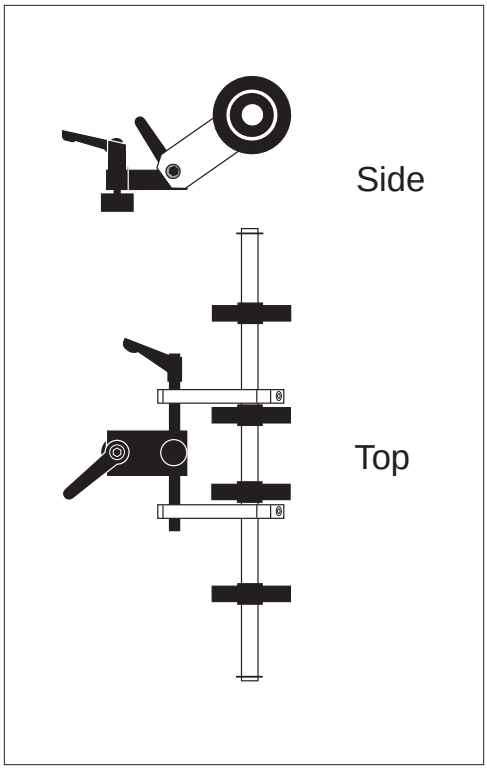


Figure A3. Separate Articulating Roller and Low-Profile Wedge Setup

Articulating Roller



When to use: Effective for very thick and/or ridged product requiring virtually no mid-range support.

Setup guidelines: Adjust so that roller edges preshingle the stack against the curvature of gate assembly. Again, make sure edges of product do not extend back more than the mid-point of roller. See Figure A4. *NOTE: With some product that tends to bind together (for example, perforated product), it may be beneficial to separate 4 to 5 sheets of product at the bottom to provide some air space.*

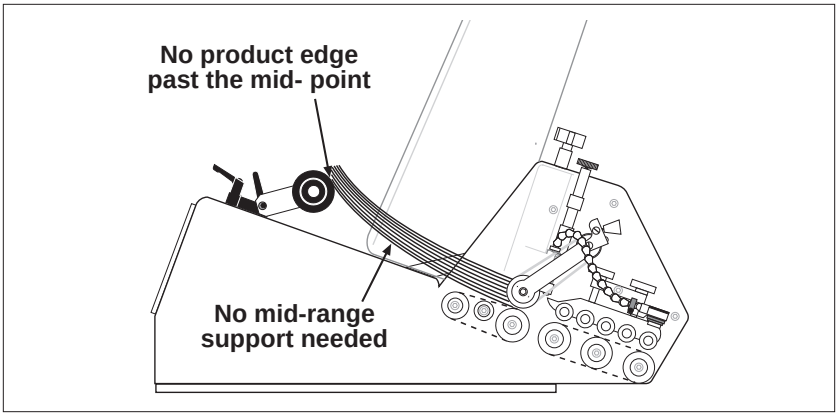
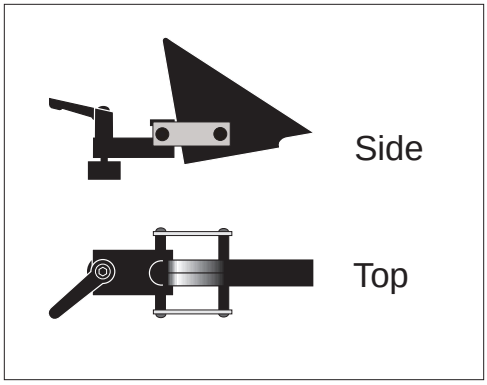


Figure A4. Articulating Roller Wedge Setup

Extended Narrow



Setup guidelines: Effective for moving in close to the gate assembly for supporting very small product. Due to size, no mid-range support is required.

Ideal setup: Adjust so that wedge preshingles the bottom of stack against the curvature of gate assembly. Make sure edges of product do not extend back more than the mid-point of wedge. See Figure A5.

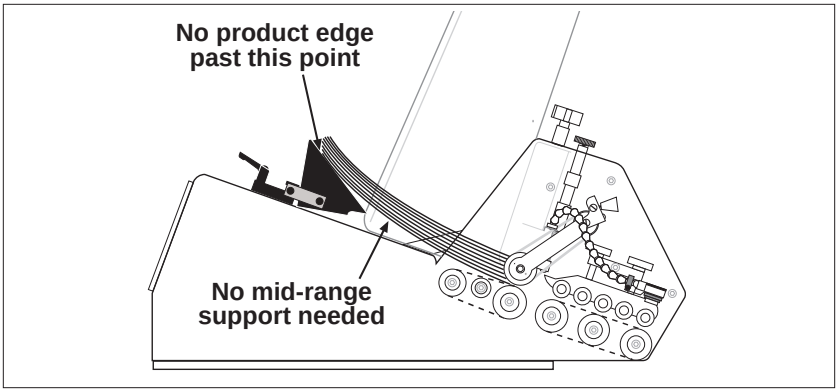


Figure A5. Extended Narrow Wedge Setup

Warranty

STREAMFEEDER® LIMITED WARRANTY

Streamfeeder, LLC (Streamfeeder) warrants this product to be free from defects in materials and workmanship, when used under recommended operating conditions, for a period of one year from the date of original retail purchase.

If you discover a defect during the warranty period, please notify the authorized Streamfeeder distributor from whom you purchased this product, who will make repairs at no charge to you. If the defect is not field-repairable, and if you return it to Streamfeeder during the warranty period, Streamfeeder will, at its sole option, repair or replace this product, at no charge to you other than shipping charges to and from the Streamfeeder facility in Minneapolis Minnesota.

If you return this product to Streamfeeder for warranty repair or replacement, please attach to the returned product your name and your company's name, address, telephone number and fax number; a description of the problem; and a copy of the bill of sale or invoice that shows the appropriate serial number for the product. All returns must be accompanied by an authorized Streamfeeder Returned Goods Authorization (RGA) number. An authorized RGA number can be obtained from Streamfeeder Sales/Service Department.

This warranty applies only to products manufactured by Streamfeeder. This warranty does not apply if the product has been damaged by accident, abuse, misuse, neglect, improper maintenance, misapplication, or as a result of being attached to equipment not supplied by Streamfeeder; if the product has been modified without the written permission of Streamfeeder; or if the product's serial number has been removed or defaced. This warranty further does not apply to the failure of any rubber-based or consumable components, including but not limited to "O" rings, rollers, feed belts, fuses, or bulbs.

ALL IMPLIED WARRANTIES INCLUDING WITHOUT LIMITATION THE IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE AND THE IMPLIED WARRANTY OF MERCHANTABILITY ARE HEREBY DISCLAIMED.

Streamfeeder is not responsible for special, incidental, or consequential damages resulting from any breach of warranty or under any other legal theory, including lost profits, downtime, goodwill, or damage to or replacement of equipment or property.

This warranty and the remedies set forth above are exclusive and are in lieu of all others, oral or written, express or implied. There are no warranties that extend beyond the description on the face hereof. No Streamfeeder employee, distributor, or agent is authorized to make any modification, extension, or addition to this warranty.

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