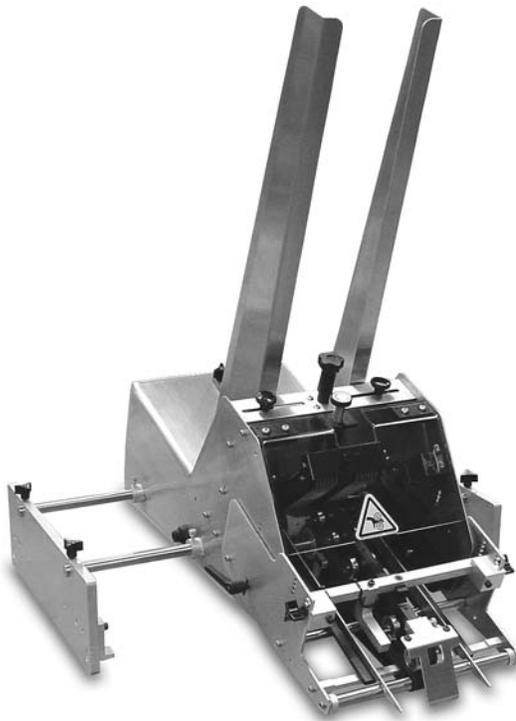


# Converge 900

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## Manual



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**Thiele**  
Technologies  
A Barry-Wehmler Company

***Streamfeeder***  
®

Part Number: 00900474

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# CONTENTS

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	Safety Information .....	ii
	Specifications .....	iv
Section 1:	About the Machine .....	1
Section 2:	Technical Installation and Setup.....	5
Section 3:	Preparing for Operation .....	8
Section 4:	How to Operate .....	19
Section 5:	Operational Troubleshooting .....	21
Section 6:	Inspection and Care .....	23
Section 7:	Additional Wedges .....	29
Section 8:	Mechanical Components .....	33
Section 9:	Electrical Components.....	59
Section 10:	Technical Troubleshooting .....	70

# BEFORE YOU BEGIN

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## Message Conventions



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



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



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



ELECTRICAL DANGER signifies an 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 minimize problems in the installation or operation of the feeder.



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



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



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



WARNING LABELS affixed to this product signify an action or specific equipment area that can result in serious injury or death if proper precautions are not taken.

# BEFORE YOU BEGIN

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## Message Conventions



Avoid injury. Do not reach around guards.



Hazardous voltage. Contact will cause electric shock or burn. Turn off and lock out power before servicing.



Moving parts can crush and cut. Keep guards in place. Lock out power before servicing.



Pinch point. Keep hands and fingers clear.



Moving parts can crush and cut. Keep guards in place. Lock out power before servicing.

# SPECIFICATIONS

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**Maximum Product Size:** ..... 7 W x 6 L in (177 x 152 mm)

**Minimum Product Size:** ..... 2 W x 2.5 L in (50 x 63 mm)

**Min/Max Product Thickness:** ..... .003-.250 in (.076 x 6.35 mm)

**Belt Speed:** ..... 24,000 in/min (609,600 mm/min)

**Placement Tolerance:** ..... Steady speed up to +/- 1/16 in (1.58 mm)

**Electrical Requirements:** ..... 115/230vac, 10A

**Air Requirements:** ..... 4-6 CFM

**Weight:** ..... 60 lbs. (27.22 kg)



# 1 About the Machine

## Main Features

The Converge 900 is designed for reliability, flexibility, and ease of use. All parts required for setup, loading, feeding, sensing and easy operator control are combined into one compact unit.

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

Review the *control panel components* in Figure 1-2 to become familiar with names and locations of specific connectors, switches, and controls. This will help prepare you for installation and operation. Descriptions are found in Table 1-2.

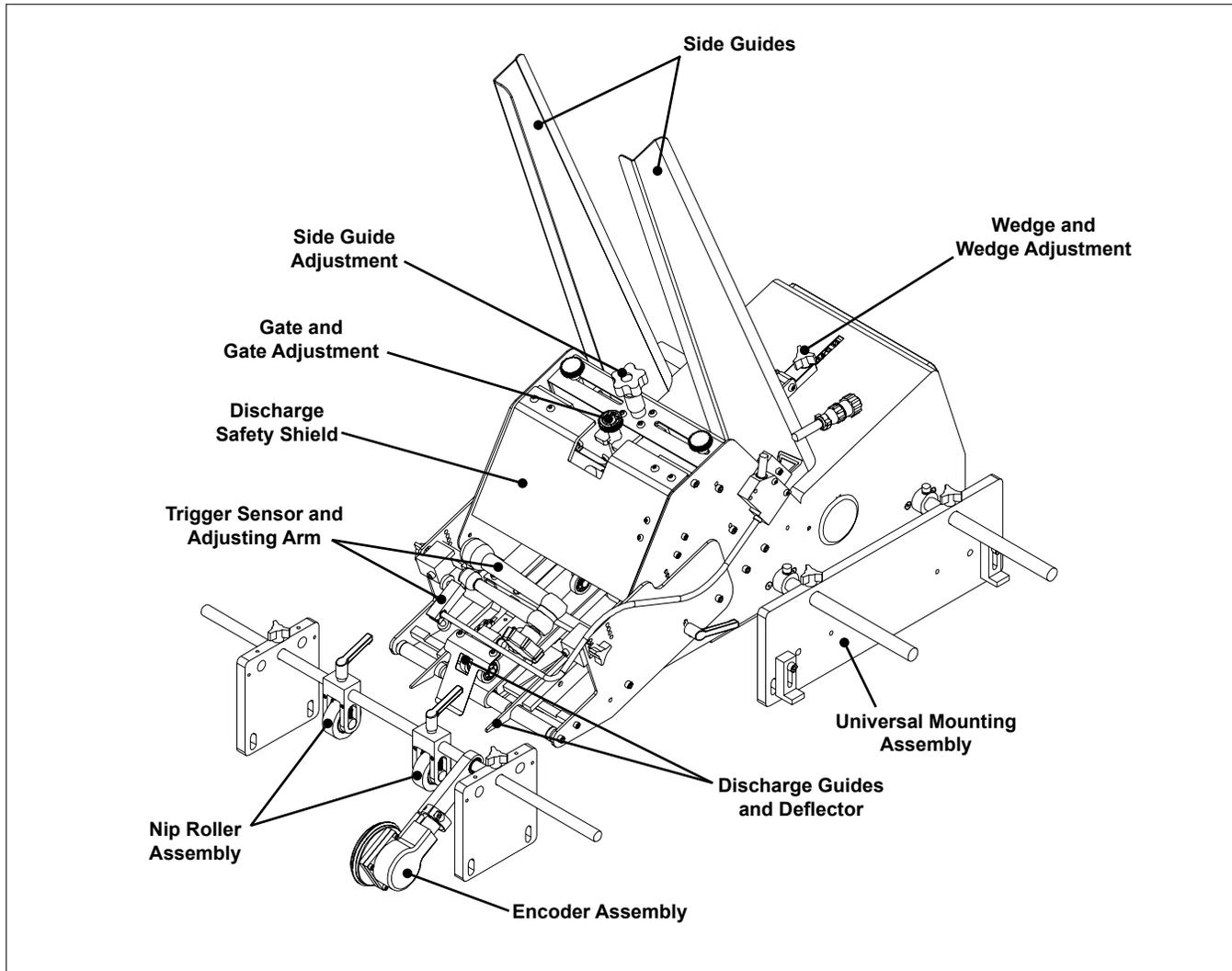
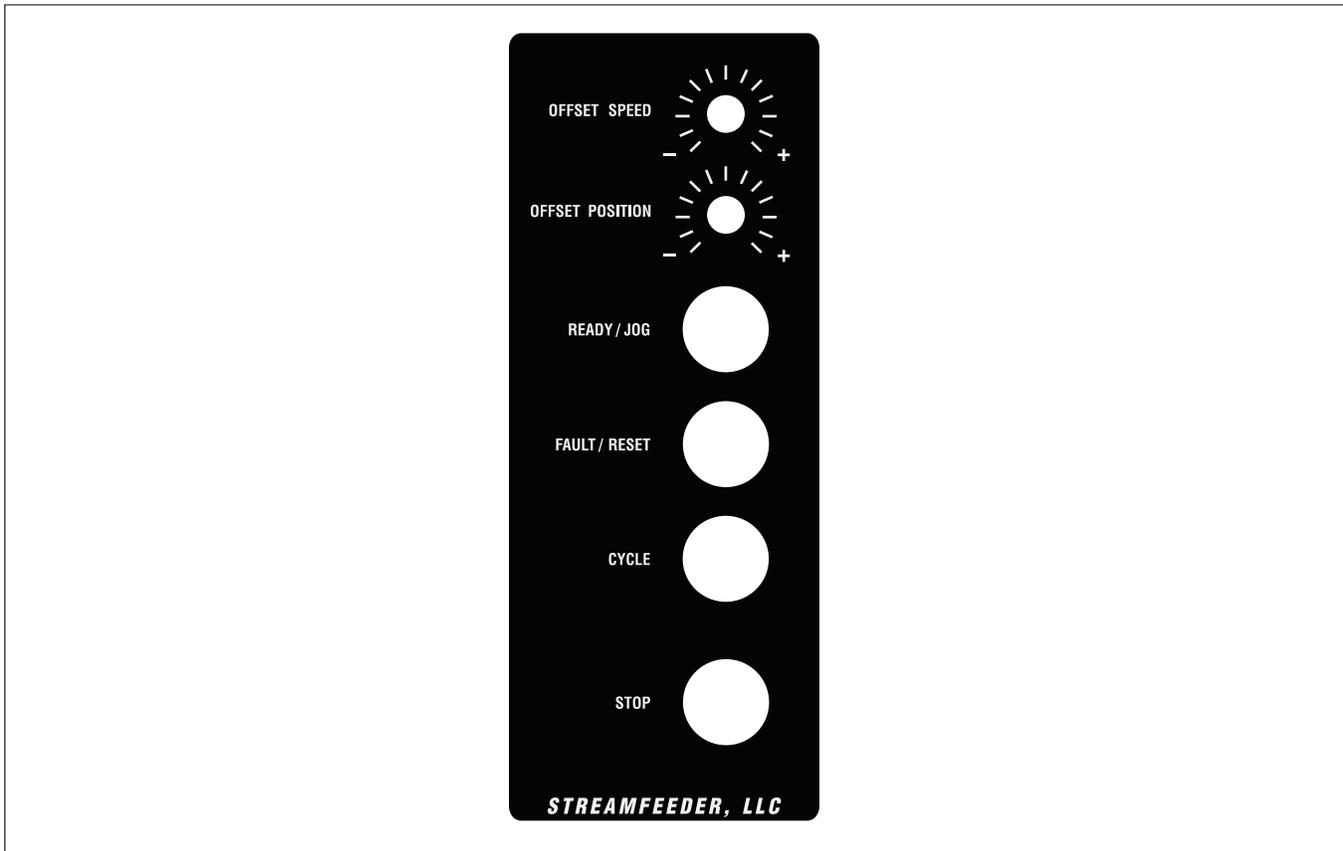


Figure 1-1. Main Assemblies of Converge 900

**Table 1-1. Main Assemblies Feature Descriptions**

<b>Feature</b>	<b>Description</b>
<b>Gate assembly and adjustment</b>	Mounted on a gate plate directly above the feed belt, this device provides a curvature to help preshingle stacked product. Adjustment knob allows you to set downward pressure. When properly adjusted, a gap the thickness of one and a half pieces is created to help singulate and eject product.
<b>Side guides and adjustments</b>	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.
<b>Wedge and adjustments</b>	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.
<b>Hold-down</b>	This series of rollers provides a self-adjusting pressure on top of product to force it down on the discharge belt, helping to eject a single product after it exits the gate assembly area.
<b>Trigger sensor and adjustments</b>	Mounted at a remote location, it “looks” for a target on-line (such as the carrier piece) to start the feeder.
<b>Feed belt</b>	Provides the friction and motion necessary to pull individual product from the bottom of the stack and through the gate assembly area.
<b>Discharge belt</b>	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.
<b>Operator control panel</b>	Remote handheld, containing switches for setup and operation.
<b>Discharge safety shield</b>	Provides residual risk protection to operator when feeder is running.
<b>Nip roller assembly</b>	Adjustable set of wheels to capture product as it is dispensed.
<b>Encoder assembly</b>	Provides RPM data to feeder controls for timing and placement.
<b>Discharge guides and deflector</b>	Provides control of product to minimize skew.
<b>Universal mounting assembly</b>	Consists of shaft and plate mounting for most vacuum bases.



**Figure 1-2. Operator Control Panel Components**

**Table 1-2. Operator Control Panel Feature Descriptions**

Feature	Description
<b>Offset Speed</b>	Adjustment to increase feeder speed above the transport speed for added placement control.
<b>Offset Position</b>	Increases delay to the trigger signal for added placement control.
<b>Ready / Jog</b>	Illuminated lamp indicates the feeder is ready to dispense product when triggered. Also acts as a jog button for setup.
<b>Fault / Reset</b>	Illuminated lamp to indicate a fault. Pressing it resets the fault and brings feeder to ready mode.
<b>Cycle</b>	Provides a manual cycle of the feeder. Typically used during setup.
<b>Stop</b>	Immediately stops the feeder and puts the feeder into fault mode.

# Control Interface

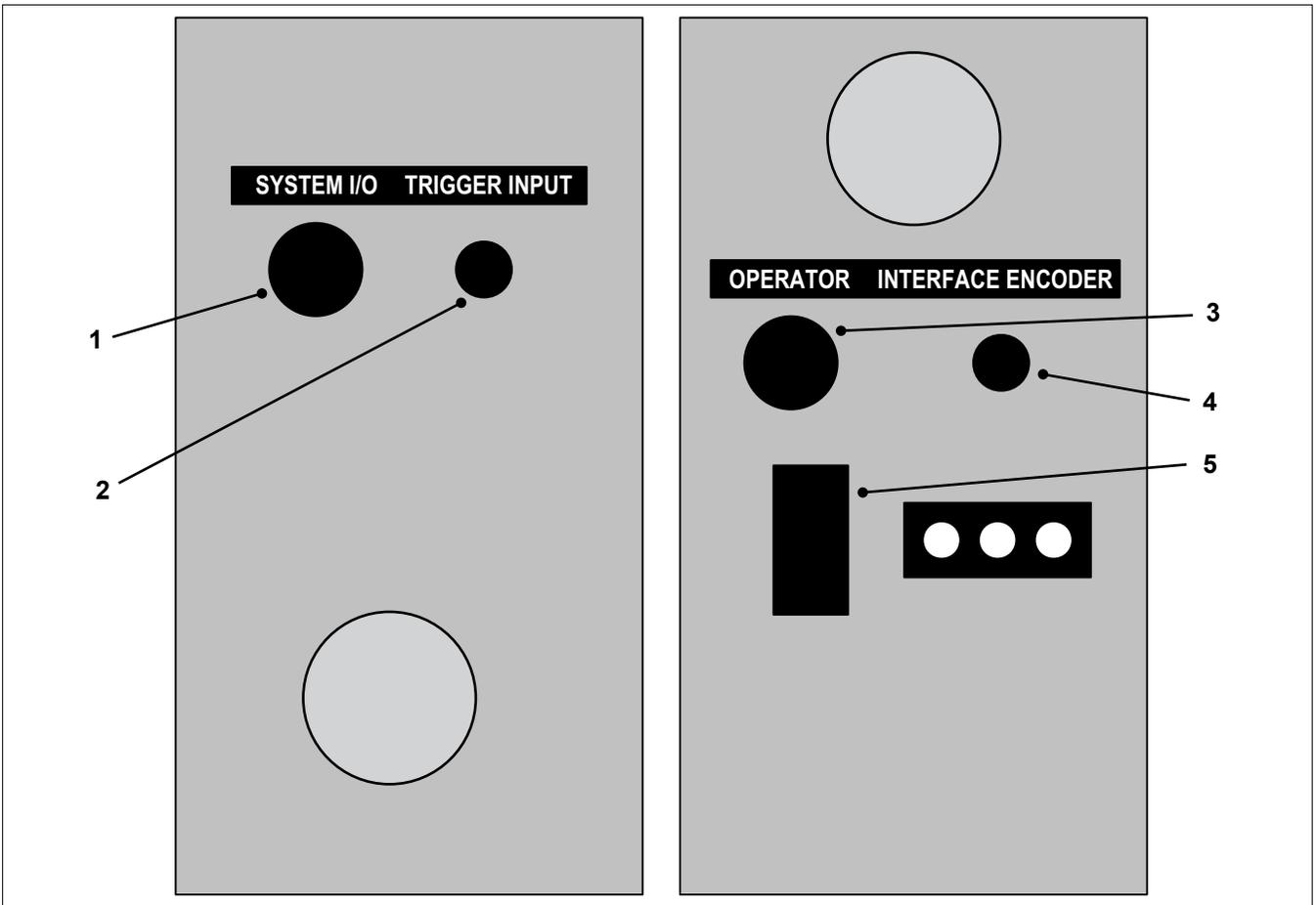


Figure 1-3. Control Interface Features

Table 1-3. Control Interface Feature Descriptions

Feature	Description
1 - System I/O	Provides the interface connection for integration into other equipment. Interface signals include; miss/double output, done output, ready output, and external trigger input.
2 - Trigger Input	Provides the connection of the trigger sensor, which triggers a feed cycle when it senses a passing target (typically the carrier piece).
3 - Operator Interface	Provides connection for the remote operator station. See Figure and Table 1-2 for further information regarding the operator station.
4 - Encoder	Provides the connection for the encoder, which provides RPM info of the base system for operation of the feeder.
5 - AC Inlet Module	Provides connection point for incoming power (115VAC or 230VAC).

# 2 Technical Installation and Setup

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When performing initial installation and 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 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.

Installation and setup should be performed by a qualified technician.

---

## Feeder Mounting

Using the included mounting brackets and shafts, mount the feeder no more than  $\frac{3}{4}$ " above the transport belts of the host transport you are integrating it to. Although the mounting brackets and shafts have been designed to be universal, they may need to be modified to accommodate your transport.

## Flight Sensor Mounting

At the end of the adjustable positioning arm of the fiber optic flight sensor is a clamp block designed to mount at several positions within the feeder and mounting brackets. Positioning of this component is crucial to the size of the carrier piece that the Converge 900 will be tipping on to.

If the carrier piece is narrower than the feeder width, the most suitable mounting position would be directly over the discharge assembly of the feeder and can be mounted to the cross bar of the hold down. If wider than the feeder width, it can be mounted to either of the feeder mounting brackets.

The focal distance of this sensor is variable from 10-240mm. Position the sensor approximately 1-2 inches (25.4 – 50.8mm) above the target and angle the sensor slightly.

## Flight Sensor Mounting (continued)

It is important that the sensor only triggers off the carrier piece passing by. To increase the (GAIN) focal length, turn the adjustment dial clockwise (CW). Counterclockwise (CCW) to decrease the “GAIN” focal length.

---

## Nip Roller Wheel Assembly

Using the included mounting brackets and shaft, mount the Nip Roller Wheel Assembly so they are adjustable toward and away from the feeder (upstream and downstream). Although the mounting brackets and shafts have been designed to be universal, they may need to be modified to accommodate your transport.

The Nip Roller Wheel Assembly will need to be adjusted during product changeovers to accommodate different product lengths. Properly set, the Nip Roller Wheels will capture the product while  $\frac{1}{4}$  -  $\frac{1}{2}$  inch of product is still on the transport of the feeder. It will also provide the best control of the product for placement accuracy.

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## Encoder Mounting

The encoder is designed to be mounted on the “Nip Roller Wheel Assembly” shaft or on one of the feeder mounting shafts. Location is dependent upon your type of transport base. When mounted, the encoder wheel must rotate in the direction labeled on the wheel for proper operation. If not, this system will not function properly.

Should other mounting methods be required, the desired ratio is 9.5 inches of belt travel per rotation of the encoder.

Once the mounting is complete, the encoder must be calibrated. Proceed to the calibration step for instructions.

---

## Encoder Calibration Sequence

The encoder calibration sequence is as follows:

1. Start the transport (according to manufacturer instructions) and set the speed to approximately 3000 inches per minute.
2. Power on the Converge 900 by placing the rocker switch at the control box to the On ( **I** ) position. In approximately 20 seconds, the **FAULT/RESET** lamp will begin to flash.
3. At this time, press and hold the **CYCLE** and **READY/JOG** buttons, then press the **FAULT/RESET** button.
4. Calibration is complete. Power Off ( **O** ) feeder.



*This is only performed during the first power up reset.*

# Feeder Setup Information

## Initial Start Up

Once all components are mounted and the feeder is properly set up with product, the following steps must be performed:

1. Power on the Converge 900 by placing the rocker switch at the control box to the On ( I ) position.
2. After approximately 20 seconds, the FAULT/RESET lamp will begin to flash. Press the FAULT/RESET button to bring the feeder to “ready” mode. This will be indicated by a solid green lamp.
3. With the feeder now in “ready” mode, pressing the READY/JOG button will “jog” product through the feeder and out onto the transport base. Observe the smooth flow of product.
4. Start the transport (according to manufacturer instructions) and run at approximately 3000 inches per minute.
5. Start dispensing the carrier pieces. Verify the triggering of the feeder each time a carrier piece passes by the flight sensor.
6. Verify the placement of the tip on piece to the carrier. Fine tune adjustments can be made with the OFFSET SPEED and OFFSET POSITION dials. OFFSET SPEED increases or decreases the feeder belt speed. This causes the piece to discharge either faster or slower to hit the target. OFFSET POSITION either adds or subtracts a delay from the flight sensor. By doing this, you can move the placement location forward or backward on the carrier.



*Note: Due to differing product weights, characteristics and operating conditions, placement position will need to be readjusted at the start of every run.*

# 3 Preparing for Operation

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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 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 Converge 900 is installed, you are ready to prepare the machine for operation. You must perform a few adjustments with the product you are going to be feeding and 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 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



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



*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 the proper gap to help the feed belts advance 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 (counterclockwise) the gap between the gate assembly and the feed belts. Depending upon 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.

**TIP**

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



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.



Some illustrations may depict other models or optimal features and are for illustration purposes only.

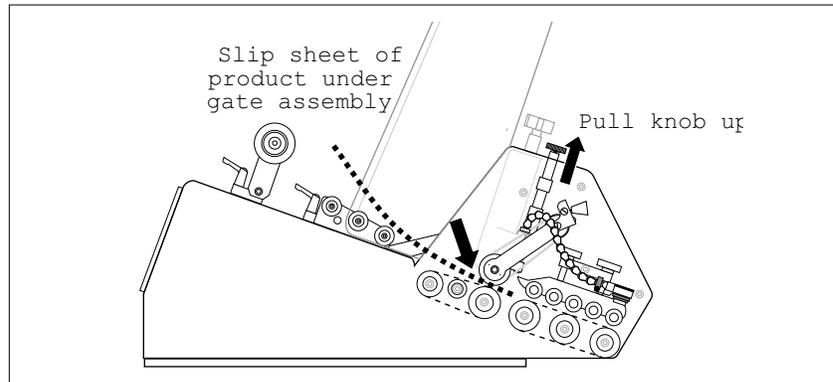


Figure 3-1. Lifting Gate Assembly Upward to Insert Product

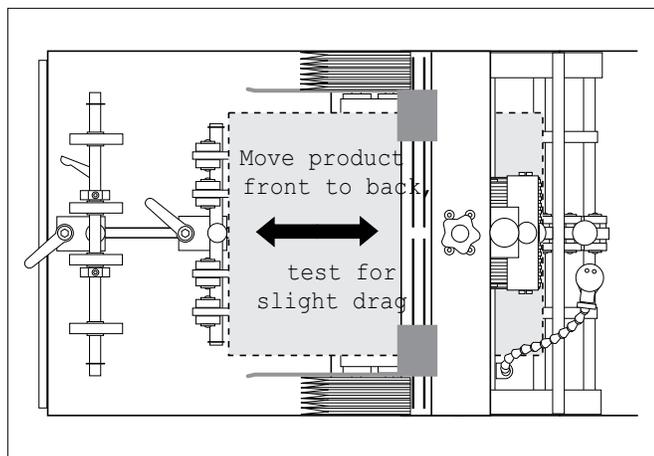


Figure 3-2. Using One-Piece Thickness of Product to Set Gap

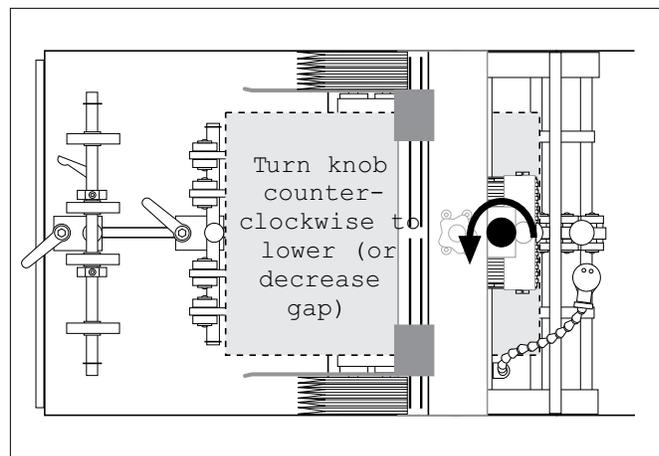


Figure 3-3. Adjusting Gate Assembly for Correct Gap

# STEP 1: Gate Assembly Adjustment (continued)



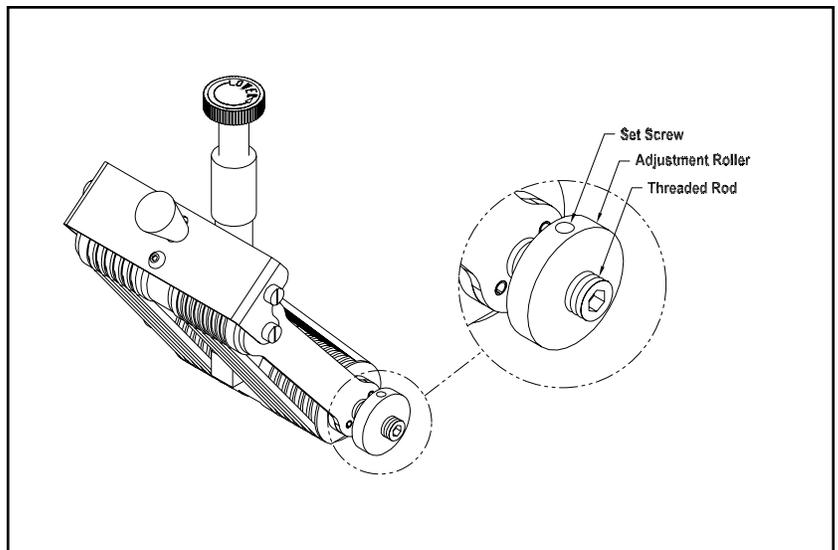
*When feeding product with varying thickness throughout, it may be necessary to turn both adjustment rollers 1-2 **full turns** counterclockwise to compensate for the differential thickness. This procedure allows the gate horizon to “float.”*

## 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 on previous page.
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).



**Figure 3-4. 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 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, 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 counterclockwise (Figure 3-5A).
3. Lift the cylinder off of top of spring (Figure 3-5B).
4. Turn the cylinder around so that the cylinder collar faces up (Figure 3-5C).
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).

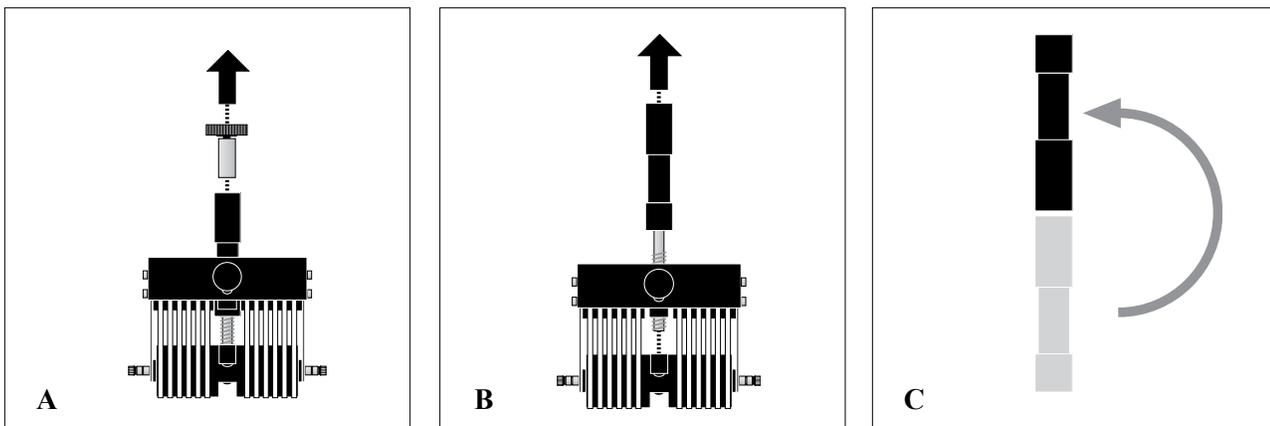


Figure 3-5. Adjusting Gate Assembly for Low-Tension

## STEP 2: Side Guides Setting

### TIP

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

### Review

The side guides hold the stack of product being fed and 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 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). *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.

### Procedure

To adjust each side guide for proper *equidistant* horizontal spacing, follow these steps (Figure 3-6):

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)



Some illustrations may depict other models or optimal features and are for illustration purposes only.

To adjust each side guide for proper *offset* horizontal spacing, follow these steps (Figure 3-7):

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.

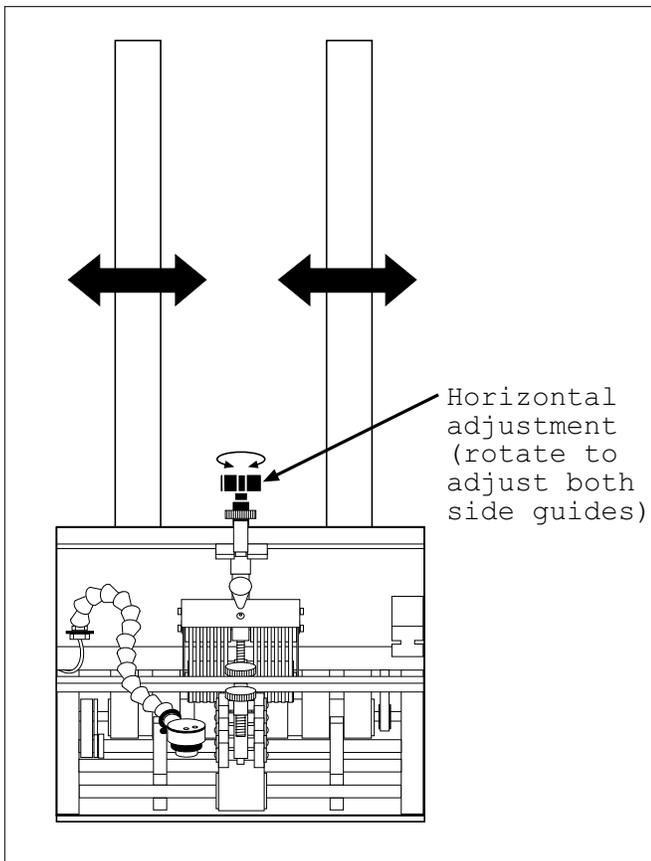


Figure 3-6. Horizontal Adjustment of Side Guides

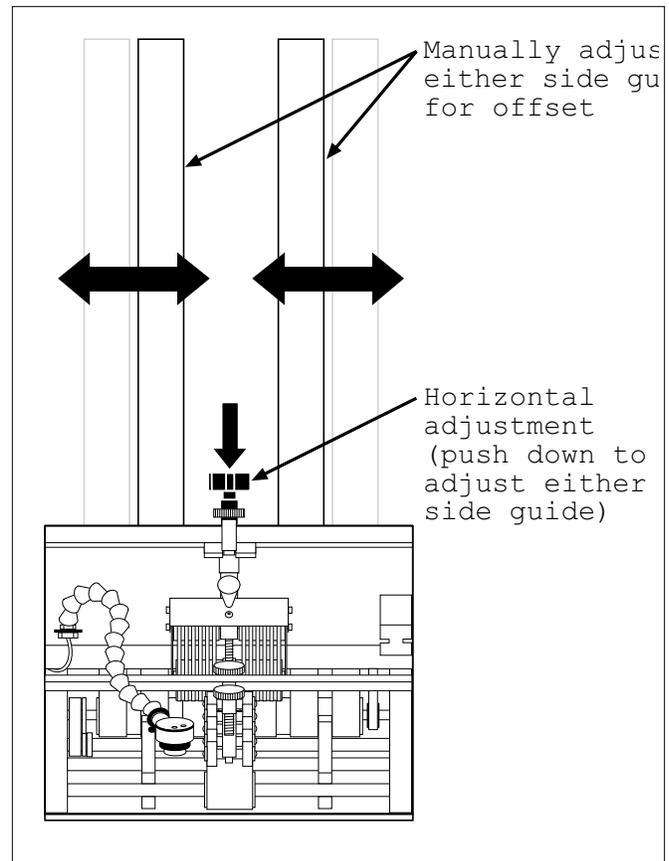


Figure 3-7. Individual Side Guide Offset

# STEP 3: Back Wedge Adjustment



Keep in mind 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.



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.



For more information about optional wedges and their use with various products, see Section 6.



Some illustrations may depict other models or optimal features and are for illustration purposes only.

## 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 (for illustration purposes, the optional Articulating Roller Wedge is shown):

- *Moving the individual rollers to the outside* of the back wedge shaft (Figure 3-8A) 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 3-8B) 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 3-8C), 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 3-8D), then a pinch point can be created between the top surfaces of the individual rollers and the product. Moving the back wedge even closer toward the gate assembly can allow product to overhang the wedge, creating too much lift of the product off the feed belts.

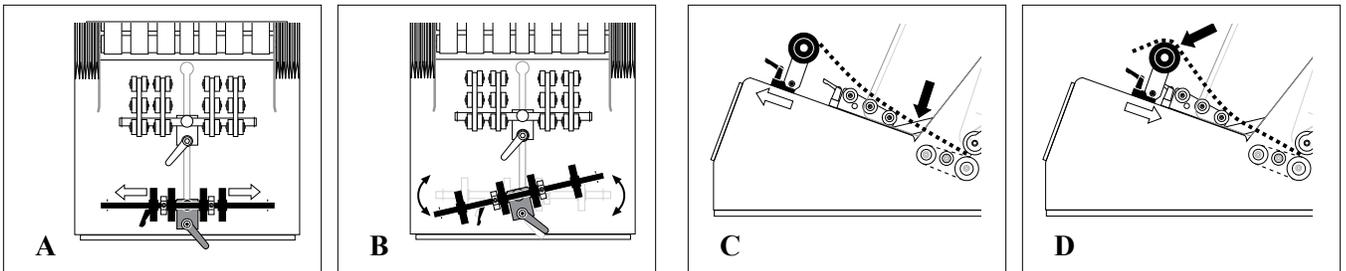


Figure 3-8. Tips for Proper Back Wedge Adjustment

# STEP 3: Back Wedge Adjustment (continued)



Some illustrations may depict other models or optimal features and are for illustration purposes only.



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 Section 7 for more information.

## 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 3-9).
2. Place the preshingled material in the hopper so the edges rest against the curvature of the gate assembly (Figure 3-10).
3. Turn the back wedge wing-nut adjustment counterclockwise to loosen the wedge (Figure 3-10).

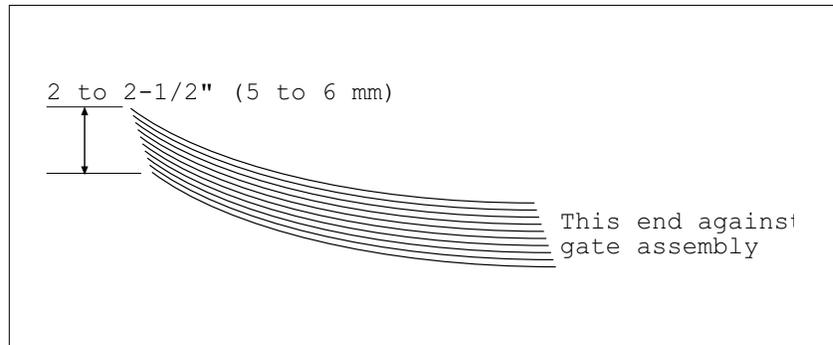


Figure 3-9. Preshingling a Small Stack of Material By Hand

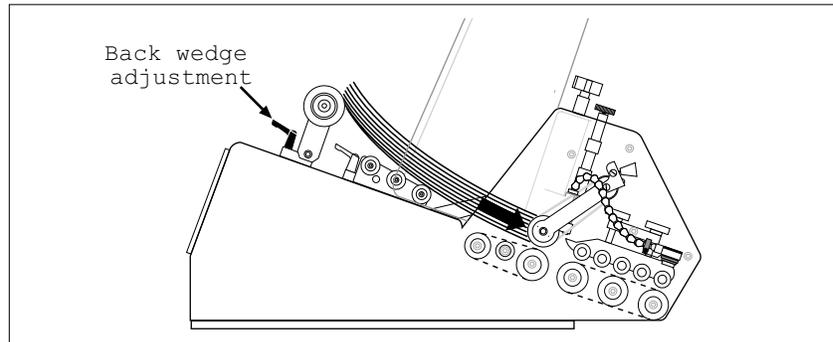


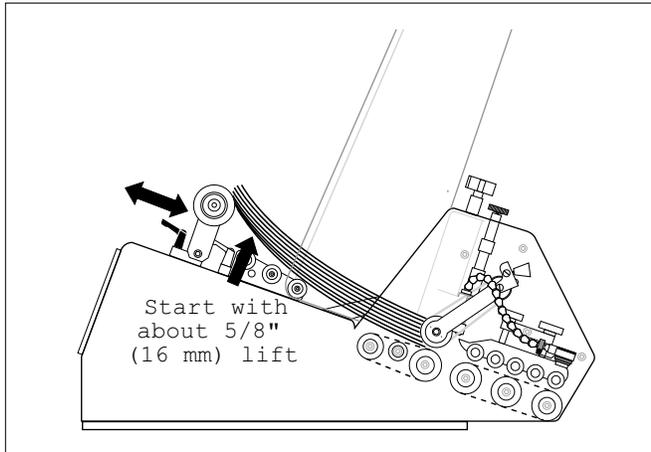
Figure 3-10. Positioning Product Prior to Loosening Back Wedge

4. Move the back wedge forward and backward until the bottom sheet is not touching the table top (Figure 3-11). 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 (Articulating Roller Wedge only (Figure 3-12).

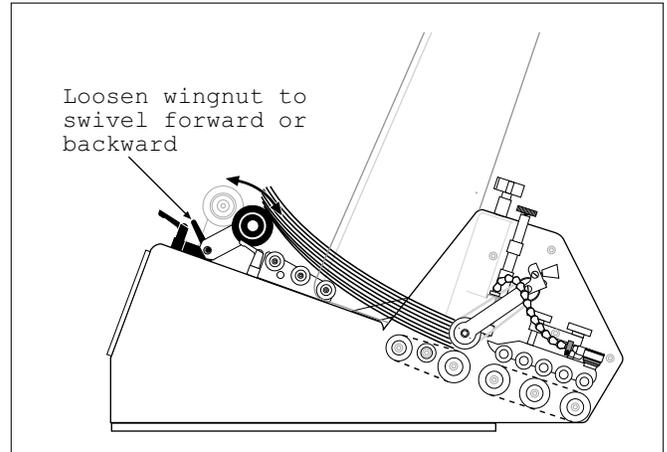
## STEP 3: Back Wedge Adjustment (continued)



*Some illustrations may depict other models or optional features and are for illustration purposes only.*

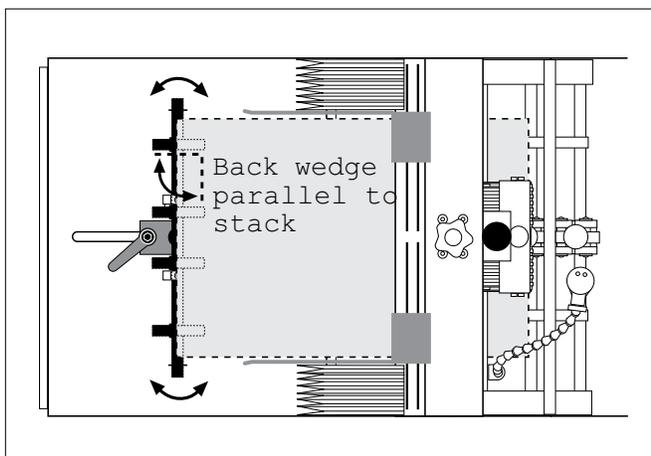


**Figure 3-11. Adjusting Back Wedge for Proper Lift**

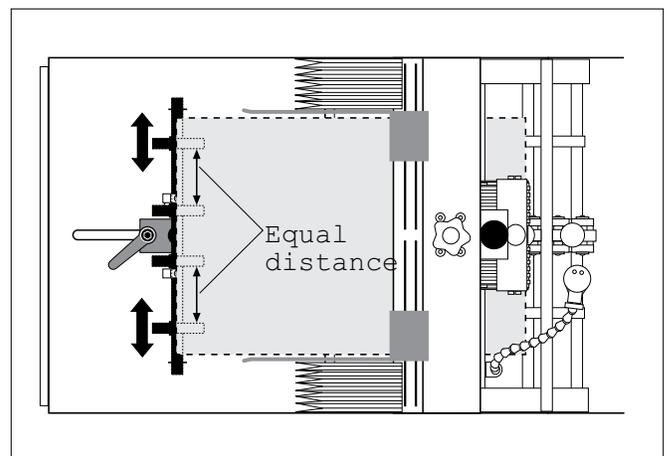


**Figure 3-12. Adjusting Roller Position**

5. Make sure the edge of the back wedge assembly is parallel with the edge of the product stack (Figure 3-13). Adjust as required and then tighten wing-nut.
6. Check that individual rollers are evenly spaced to provide enough support to lift the product off the table top and feed belts, without any bowing or twisting (Figure 3-14).



**Figure 3-13. Adjusting Back Wedge for Parallel**



**Figure 3-14. Evenly Adjusting Individual Rollers**

## STEP 4: Hold-Down Setting



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.

### Review

The hold-down assembly consists of several self-adjusting 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. No need to adjust.

---

## STEP 5: Photo Sensor Adjustment

### Review

The **Flight-Detect** photo sensor is mounted on the line to detect a target and instruct the feeder to eject a product. The **Sheet-Detect** photo sensor is mounted in the discharge assembly to detect the leading edge of a product about to be ejected.

---

### Objective

For the **Sheet-Detect** photo sensor to be effective, it must be adjusted within a specified range and angle to the product. It is factory set and does not need to be changed.

## 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.



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

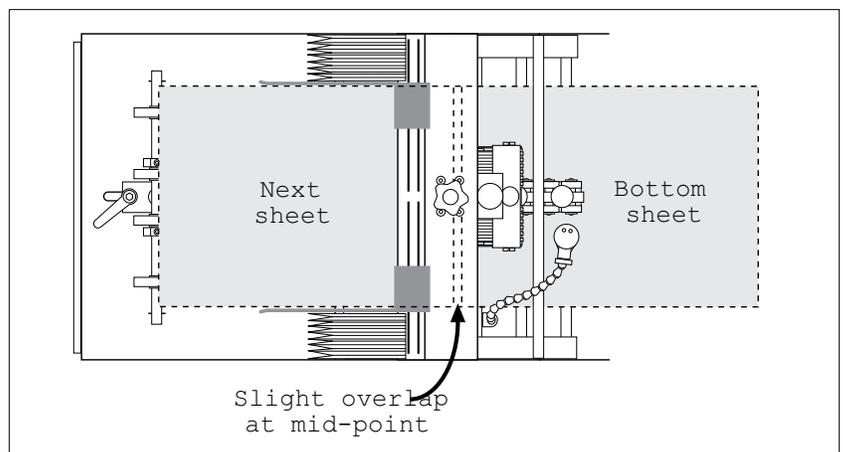
*Moving the back wedge too far forward to the gate assembly can create a pinch point between the tip of the wedge and the product. If moving the back wedge in is not effective, then an optional wedge may be required. See Section 6 for more information.*



NOTE

*Some illustrations may depict other models or optimal features and are for illustration purposes only.*

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 centerline of the cylinder while the bottom sheet is exiting the gate assembly area (Figure 3-15). 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, move the wedge in toward the gate assembly. Test again.
4. If sheets are overlapping excessively or, if the machine is feeding doubles, reduce the gap slightly by moving the knob about 1/8 turn counterclockwise. 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), review all the adjustment procedures in Section 3, Preparing for Operation.



**Figure 3-15. Optimum Overlap and Separation of Product**

# 4 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

## Loading Product



*Some illustrations may depict other models or optimal features and are for illustration purposes only.*

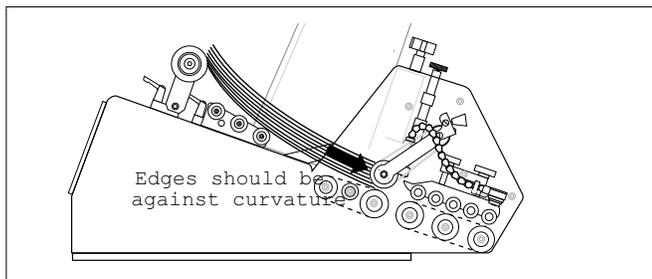


*Preshing prevents multiple sheets from jamming under the gate assembly at start-up.*

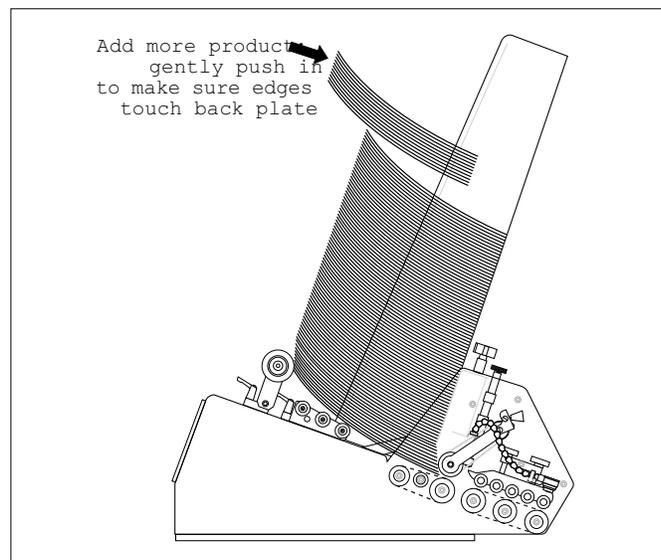


*Stack height affects the downward pressure on the feed belts. Greater downward pressure can increase the chances for misfeeds or double feeds.*

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



**Figure 4-1. Placing Product Against Gate Assembly**



**Figure 4-2. Adding More Product to Fill Hopper**

## Stopping the Feeder

The feeder can be stopped either manually or automatically. Pressing the **STOP** button will stop feed cycles and return the feeder to the “Fault” 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 Fault Lamp will begin to flash. Determine and resolve the cause of the *timeout* and press the **FAULT/RESET** button to resume feeding.

---

## Clearing a Jam

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 5, Operational Troubleshooting).
4. Verify whether any adjustments are loose. If so, refer back to Section 3, Preparing for Operation, for proper adjustment procedures.
5. Reposition trigger sensor (as required).

---

## Shutdown

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.

# 5 Operational Troubleshooting

Table 5-1 is intended to provide you with quick solutions to the more common day-to-day problems you may encounter. For additional troubleshooting information, see Section 10, Technical Troubleshooting.

**Table 5-1. Quick-Look Troubleshooting**

<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
<b>No AC power to feeder</b>	<ol style="list-style-type: none"> <li>1. On/Off switch in "Off" (or "O" position).</li> <li>2. Power cord loose or not plugged into outlet (or AC power source).</li> <li>3. Female end of power cable loose or not plugged into AC power inlet at rear of feeder.</li> </ol>	<p>Move switch to "On" (or "_" position).</p> <p>Check and secure power cord at AC outlet.</p> <p>Check and secure cord at AC power inlet at rear of machine.</p>
<b>Feeding doubles</b>	<ol style="list-style-type: none"> <li>1. Gate assembly improperly adjusted (possibly more than one sheet thickness).</li> <li>2. Back wedge improperly adjusted.</li> <li>3. Worn O-rings (or angled edge).</li> <li>4. Material interlocking.</li> <li>5. Static buildup.</li> </ol>	<p>Review gate adjustment procedure.</p> <p>Review back wedge adjustment procedure.</p> <p>Rotate O-rings (or replace angled edge). If wear is excessive, consult with a qualified technician.</p> <p>Check material and source.</p> <p>Check material and source.</p>
<b>Feed belts are operating, but material not feeding</b>	<ol style="list-style-type: none"> <li>1. Material stack height is too low when stack height is down, resulting in reduction of down pressure.</li> <li>2. Binding in side guides.</li> <li>3. Slippery feed belts.</li> <li>4. Sheet adhesion or interlocking between the bottom and next sheet.</li> <li>5. Gate assembly may be down too tight.</li> <li>6. Too much weight in hopper.</li> </ol>	<p>Review material loading procedure.</p> <p>Adjust side guides farther apart to allow freedom of movement between sheets.</p> <p>Consult with a qualified technician.</p> <p>Review material loading procedure and back wedge adjustment procedure.</p> <p>Review gate assembly adjustment procedure.</p> <p>Remove material from stack. Test again.</p>

**Table 5-1. Quick-Look Troubleshooting (continued)**

<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
<b>Feed belt(s) not tracking on rollers</b>	<ol style="list-style-type: none"> <li>1. Excessive weight in hopper.</li> <li>2. Excessive down pressure on gate assembly.</li> <li>3. Off-centered product from center point of machine.</li> <li>4. Belt wear.</li> </ol>	<p>Reduce weight. Test again.</p> <p>Rotate gate adjustment 1/8 turn to increase gap and manually test. Review gate assembly adjustment procedure.</p> <p>Review side guide setting procedure.</p> <p>Review gate assembly adjustment procedure. Also review inspection and care procedures. If wear is excessive, consult with a qualified technician.</p>
<b>Jamming occurs during operation</b>	<ol style="list-style-type: none"> <li>1. Improperly adjustment in one or more of the following areas:               <ol style="list-style-type: none"> <li>A. Gate assembly.</li> <li>B. Back wedge.</li> <li>C. Top roller hold-down assembly.</li> <li>D. Discharge alignment rails.</li> </ol> </li> </ol>	<ol style="list-style-type: none"> <li>1. Turn the Power switch to "Off" by pressing the circle (O).</li> <li>2. Remove jammed material from feeder. While doing so, try to determine the cause of the jam.</li> <li>3. Verify each adjustment by reviewing the "Preparing for Operation" section of the manual.</li> </ol>
<b>Material skewing</b>	<ol style="list-style-type: none"> <li>1. Back wedge not aligned properly.</li> <li>2. Excessive gate pressure on one side.</li> </ol>	<p>Review back wedge adjustment procedure.</p> <p>Review gate assembly adjustment procedure.</p>

# 6 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 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.



*Some illustrations may depict other models or optimal features and are for illustration purposes only.*

## Visual Inspection

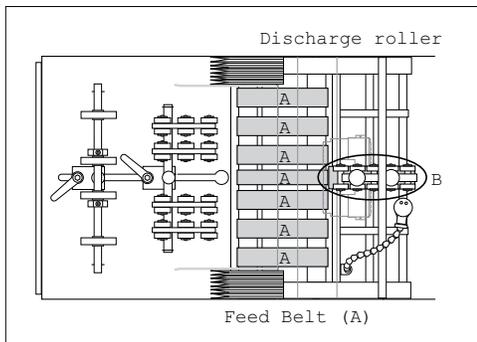


Figure 6-1.

## Checking for Feed and Discharge Belt Wear

Check for visual signs of:

- Walking. Replace as required.
- Cracking. Replace as required.
- Thinning. Replace as required.

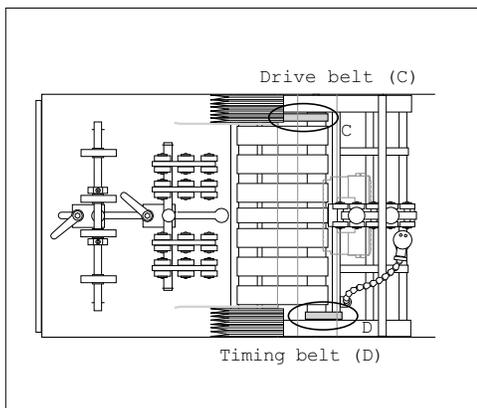


Figure 6-2.

## Checking for Timing and Drive Belt Wear

Check for visual signs of:

- Fraying. Replace as required.
- Missing teeth. Replace as required.
- Cracking. Replace as required.

## Visual Inspection (continued)



Some illustrations may depict other models or optimal features and are for illustration purposes only.

## Ensuring Proper Feed and Discharge Belt Tracking

Check for visual sign of:

- Stretching.
- Improper roller adjustment.

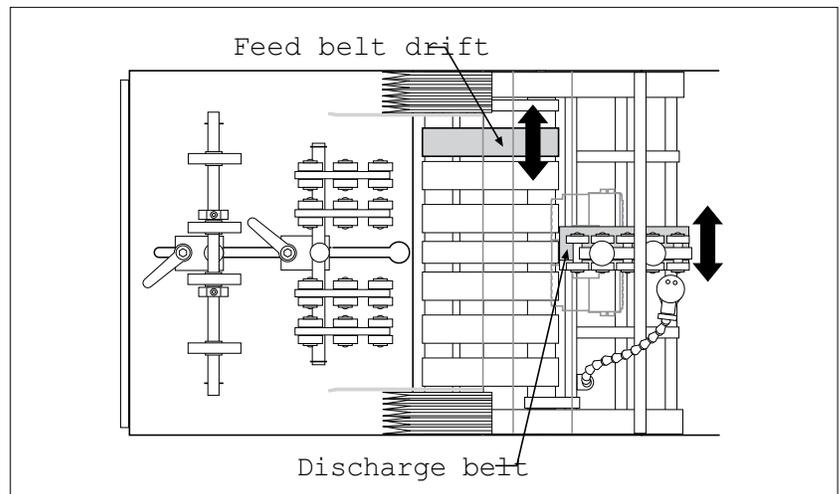


Figure 6-3.

## Ensuring Proper Timing and Drive Belt Tracking

Check for visual signs of:

- Misaligned timing pulleys.

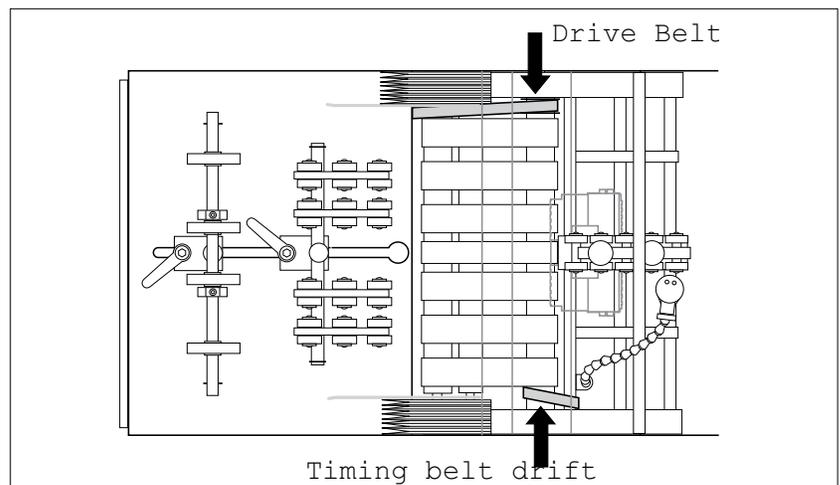


Figure 6-4.

# Visual Inspection (continued)

## Checking for Gate Assembly Wear

Check for visual signs of wear:

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

See “Preventive Care” to follow.

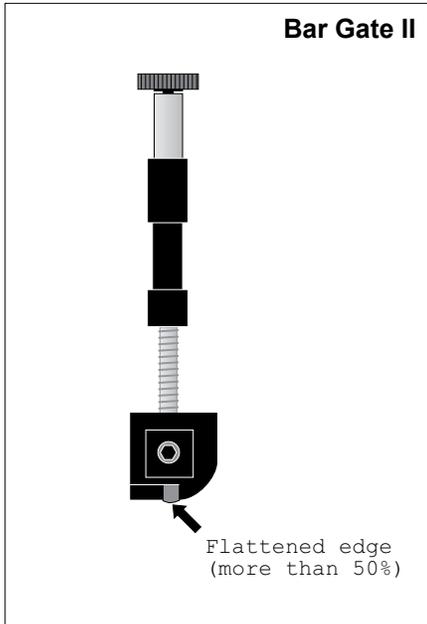


Figure 6-5.

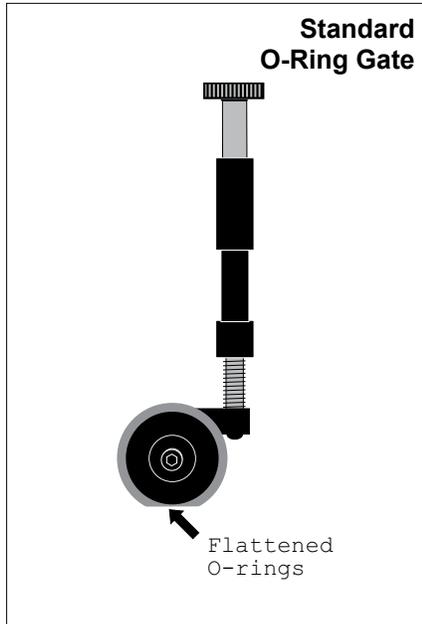


Figure 6-6.

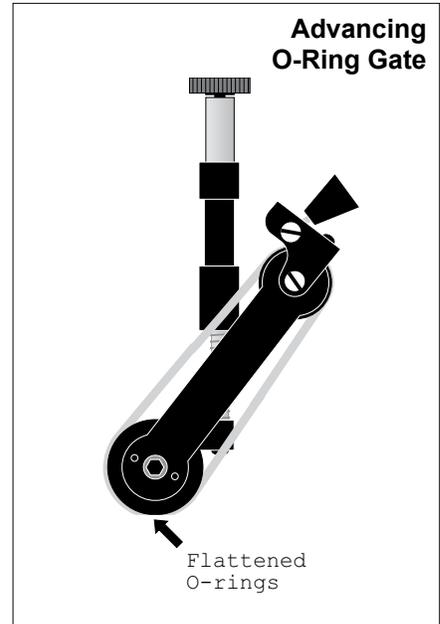


Figure 6-7.

## Visual Inspection (continued)

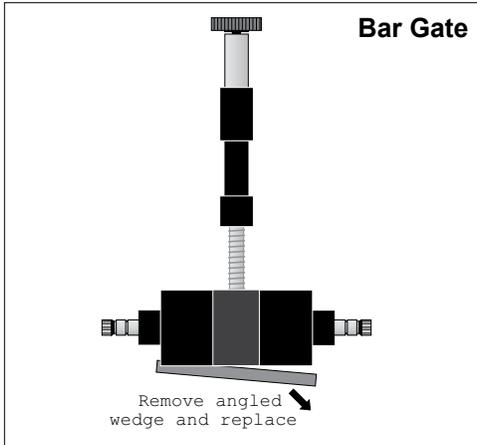


Figure 6-8.

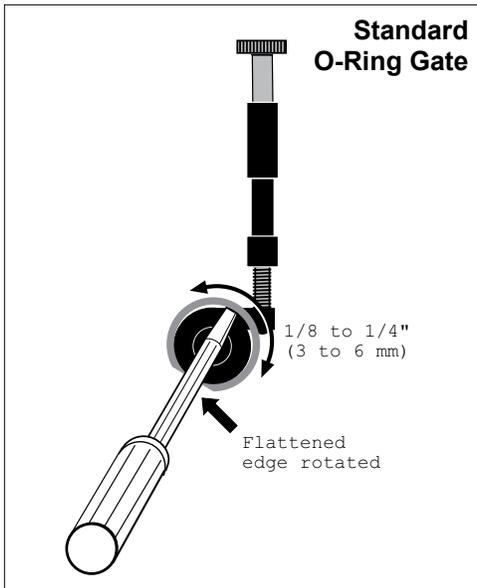


Figure 6-9.

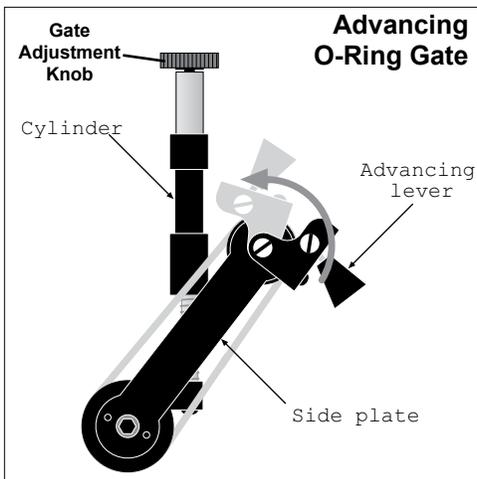


Figure 6-10.

## Replacing Worn Bar Material

To replace a worn bar material:

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 bar material.
5. Install new bar material by inserting one end and then pushing in until centered. *Do not grip bar material with pliers as this may cause damage to the edge.*
6. Reinstall clamp (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 counterclockwise 360° 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.
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. Remove gate assembly from gate plate.
3. Lower advancing lever away from gate adjustment knob.
4. Rotate O-rings by grasping advance knob and pushing toward gate cylinder about 1/8 to 1/4 in. (3 to 6 mm).
5. Lower advancing lever to resting position away from gate adjustment knob.
6. Reinstall gate assembly and restore power.

## Preventive Care



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

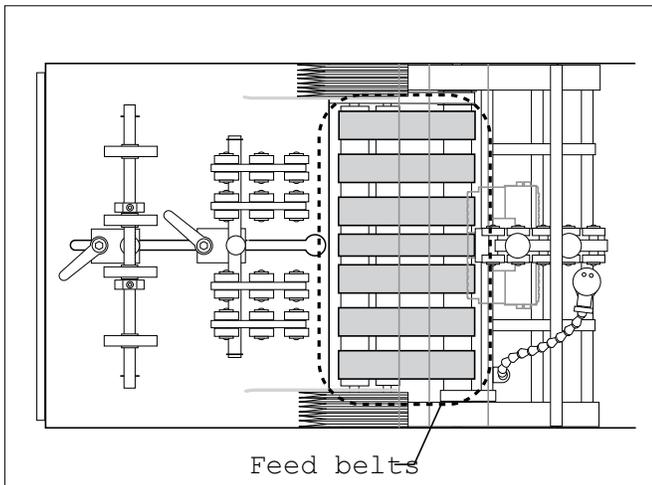


*Some illustrations may depict other models or optimal features and are for illustration purposes only.*

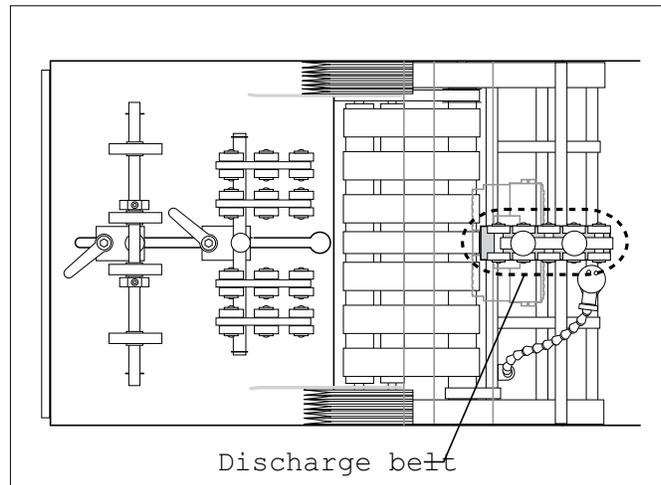
## Cleaning Feed and Discharge Belts

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 through 5 for the discharge belt also.
7. Reinstall gate assembly and restore power.



**Figure 6-11.**



**Figure 6-12.**

## Preventive Care (continued)

### Cleaning Gate Assembly

Use only isopropyl alcohol (98% concentration). Do not use any other types of solvents. They will 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 bar material (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.

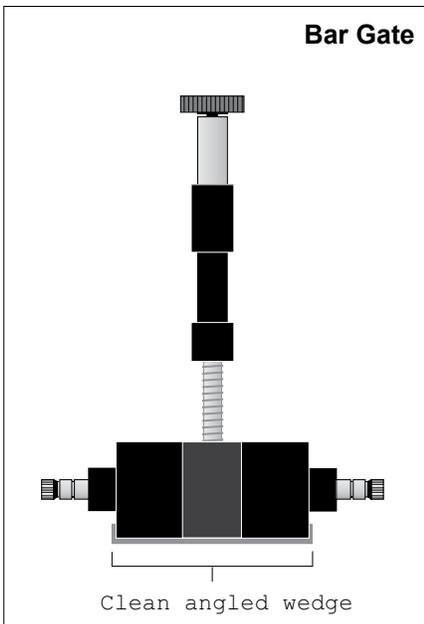


Figure 6-13.

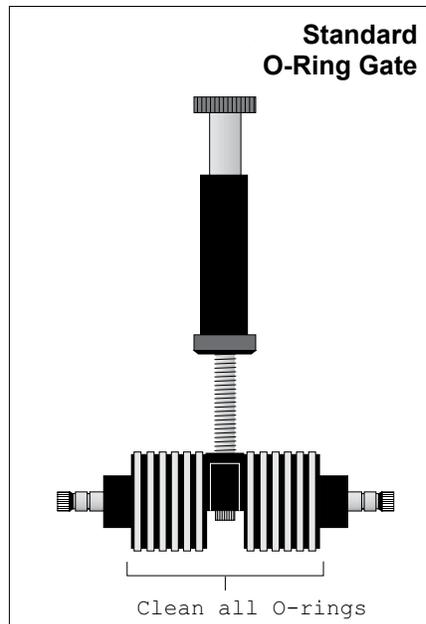


Figure 6-14.

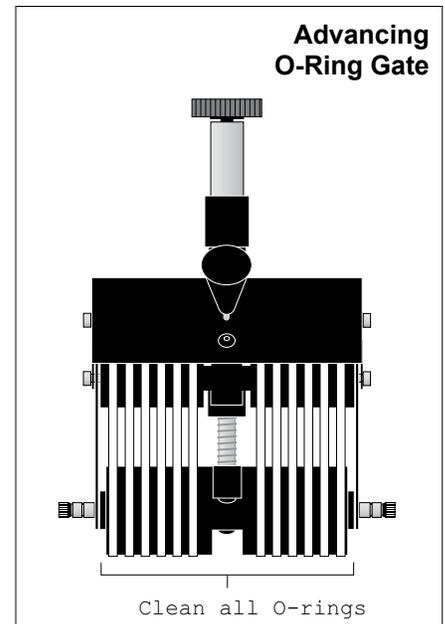


Figure 6-15.



Do not use any solvents or cleaning agents when cleaning the photo sensor lenses. This can result in surface damage and eventual 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. Recheck the adjustments of both photo sensors to make sure they are still in alignment to the targets.
5. Close discharge safety shield and restore power.

# 7 Additional Wedges



Some illustrations may depict other models or optimal features and are for illustration purposes only.

This section provides information about setting up various wedges which are compatible with the Converge 900.

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 section. 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

## Combination Triangle/ Low-Profile

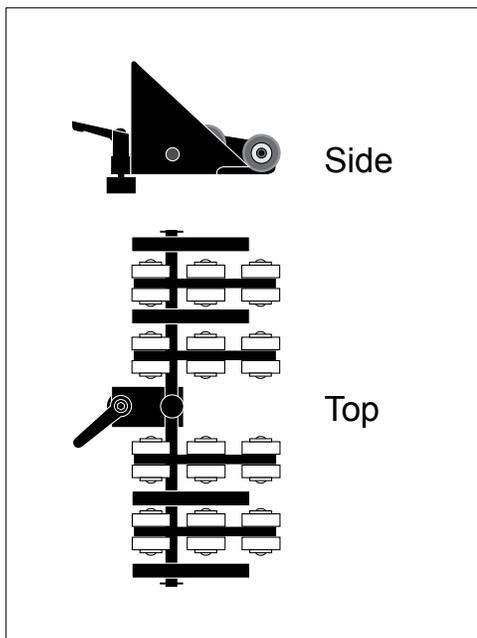


Figure 7-1.

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

**Setup guidelines:** Adjust so 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 7-2.

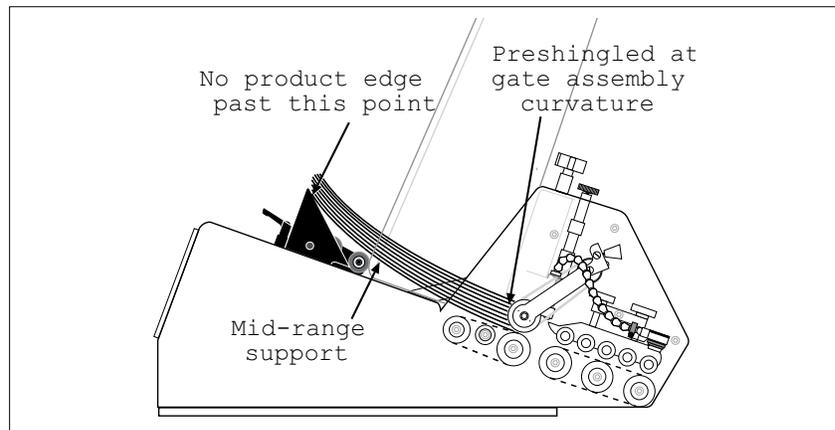


Figure 7-2. Triangle/Low-Profile Wedge Setup

## Separate Triangle and Low-Profile

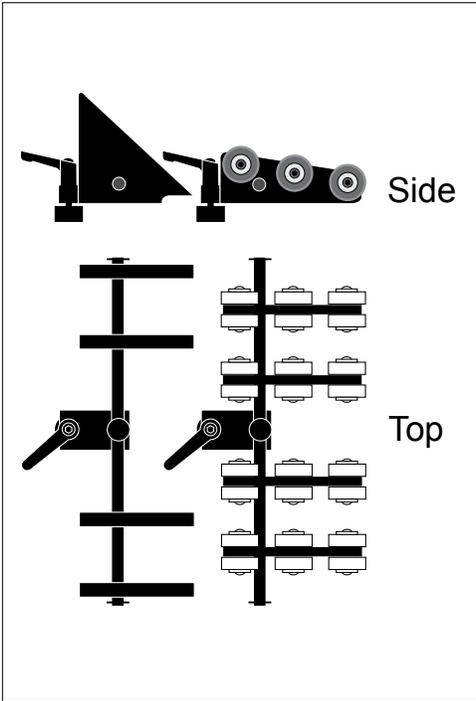


Figure 7-3.

**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 it lifts the 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 7-4.

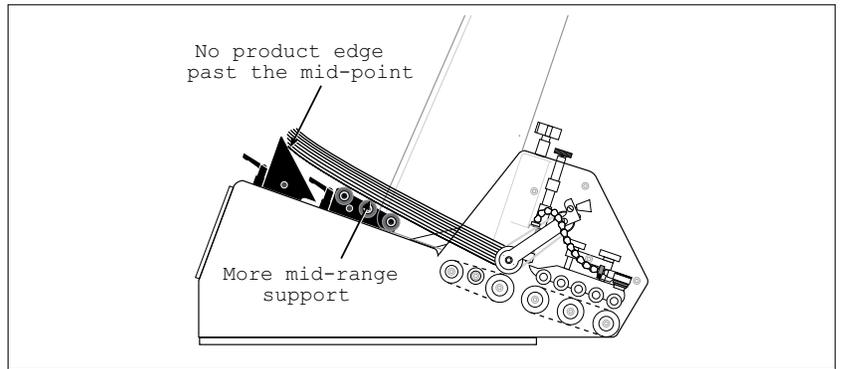


Figure 7-4. Separate Triangle and Low-Profile Wedge Setup

## Separate Articulating Roller and Low-Profile

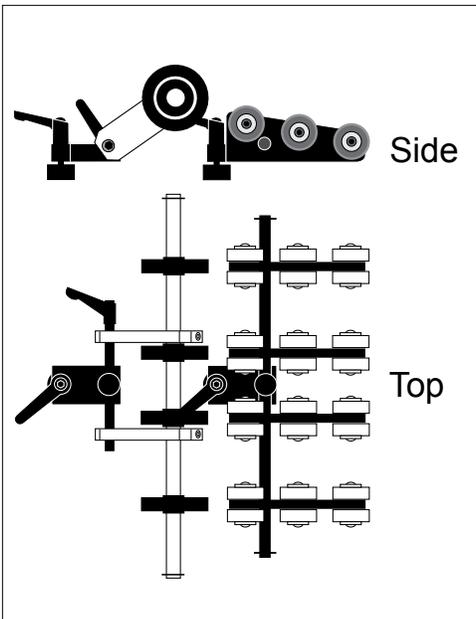


Figure 7-5.

**When to use:** For thicker product with more body 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.

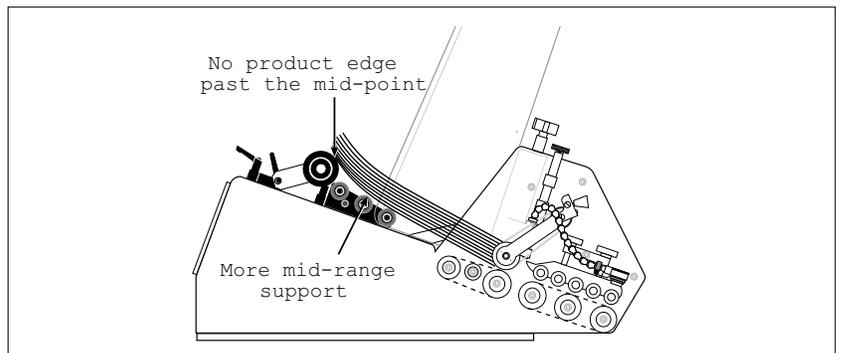


Figure 7-6. Separate Articulating Roller and Low-Profile Wedge Setup

## Articulating Roller

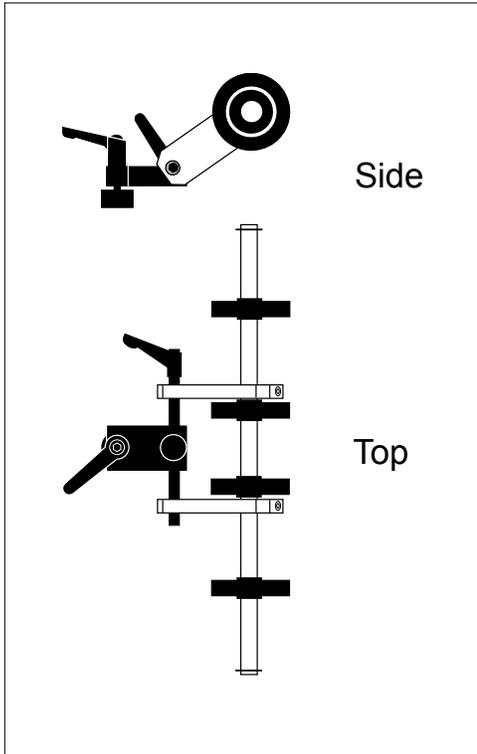


Figure 7-7.

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

**Setup guidelines:** Adjust so 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 7-8.

*NOTE: With some product that tends to bind together (i.e., perforated product), it may be beneficial to separate 4 to 5 sheets of product at the bottom to provide some air space.*

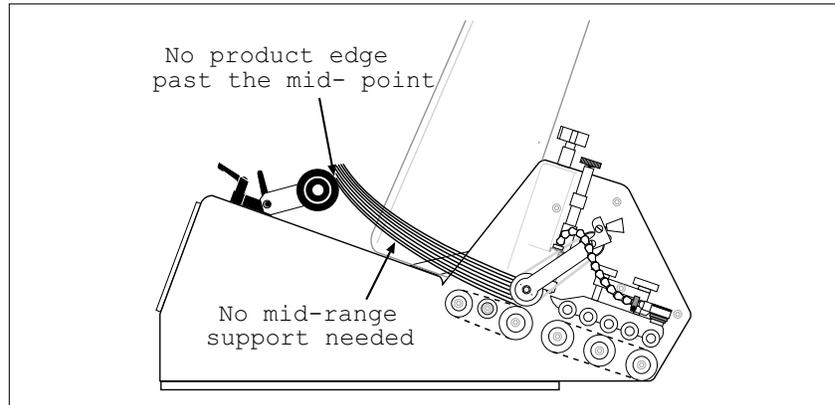


Figure 7-8. **Articulating Roller Wedge Setup**

## Extended Narrow

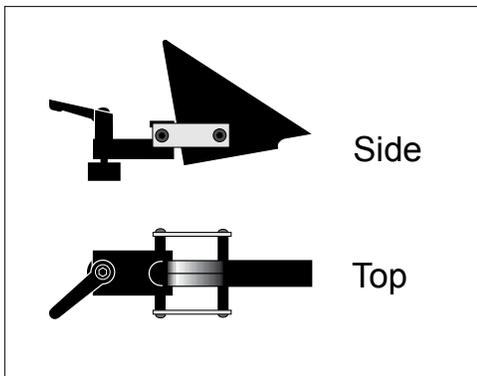


Figure 7-9.

**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 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 7-10.

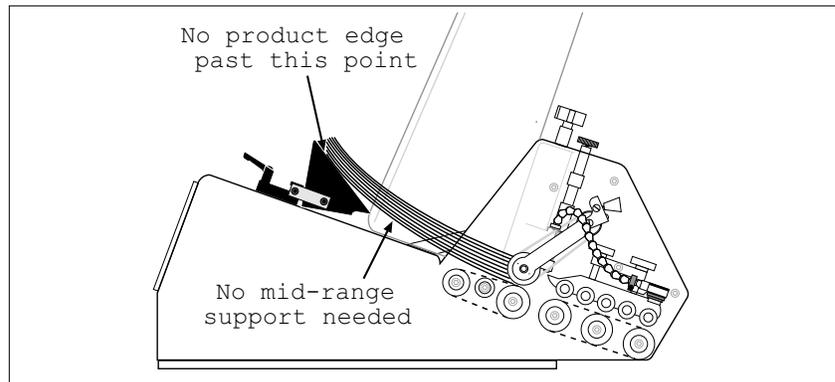


Figure 7-10. **Extended Narrow Wedge Setup**

## Combination Wedge

### When to use:

*Product Length:* 4 in. to 14 in. (10.16 cm to 35.56 cm)

*Product Weight:* Light to Heavy

*Product Body:* Flexible or Rigid

*Product Friction:* Low to High

*Sample Products:* Envelopes, card stock, and booklets

### Setup guidelines:

Adjust the back wedge for proper support of the product off the table top, without creating any pinch or stress points. The combination wedge is a two piece design that allows the ability to run difficult material with a full hopper. The top part of the wedge is designed to hold the weight of the stack and allows the bottom wedge to support only a light stack of product.

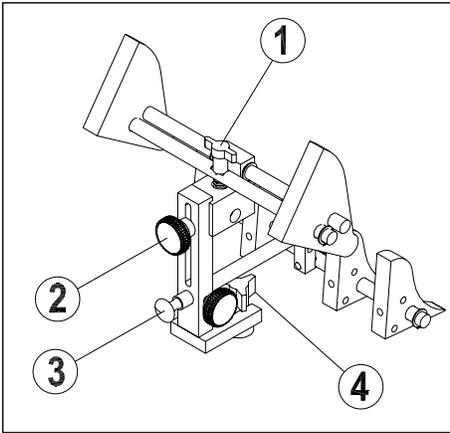


Figure 7-11.

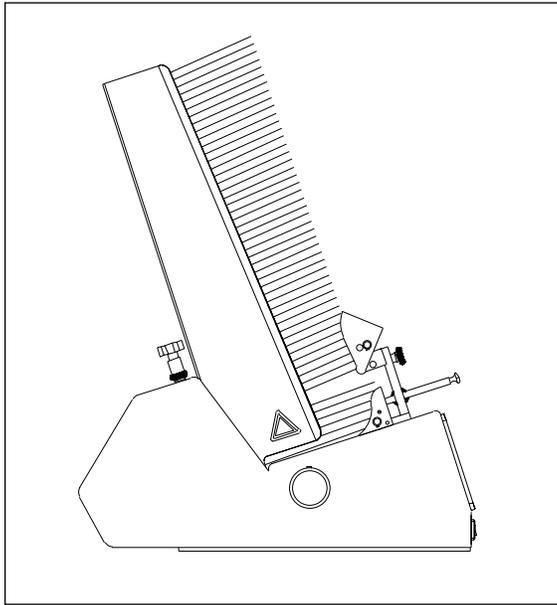


Figure 7-12. Proper Wedge Adjustment (short product)

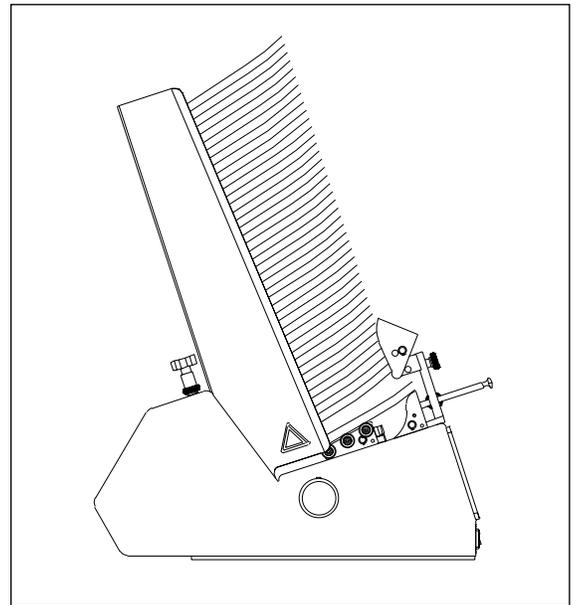
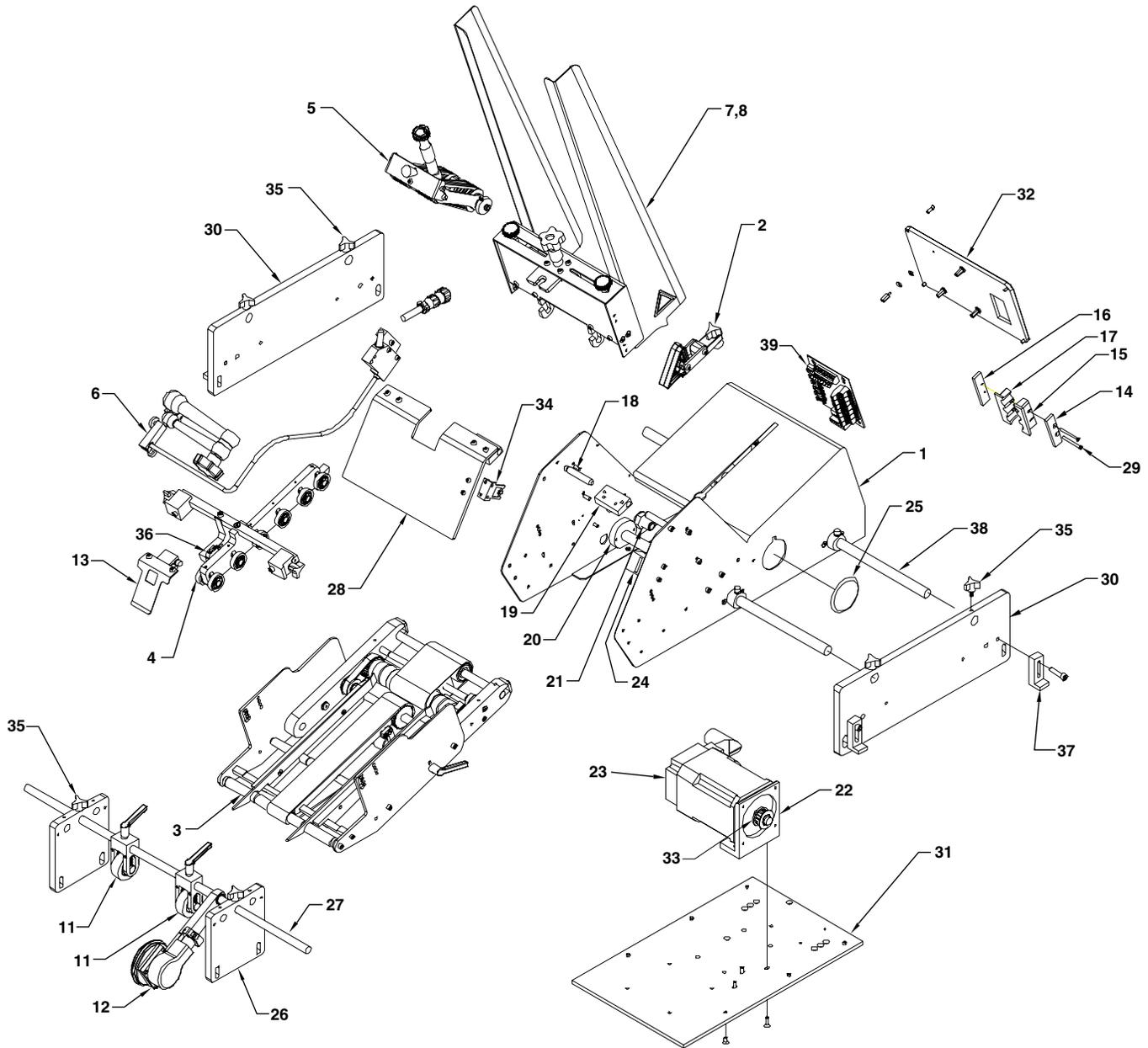


Figure 7-13. Proper Wedge Adjustment (long product)

# 8 Mechanical Components



**Converge 900  
Exploded View  
Assembly: 14600001**

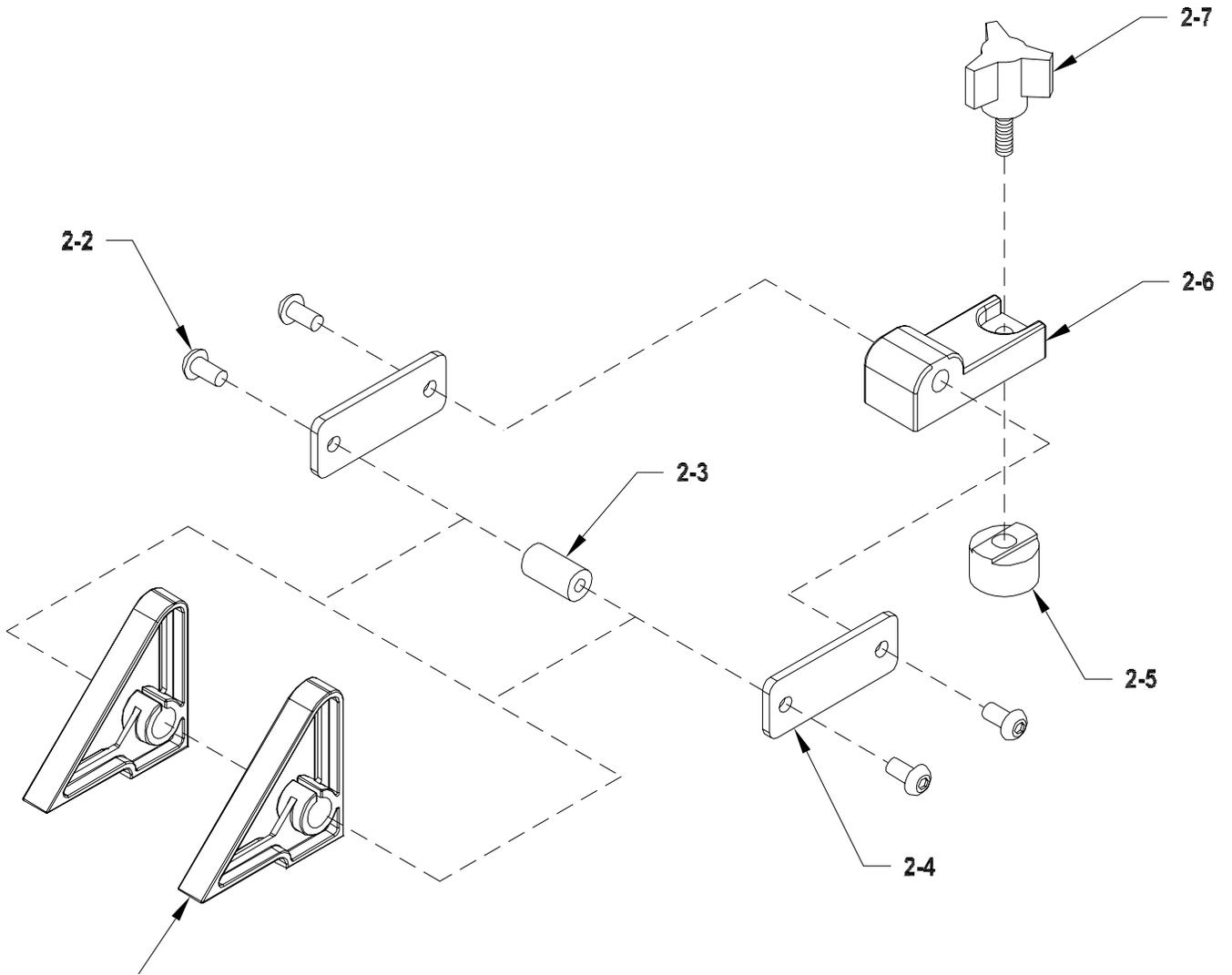
**Converge 900  
Assembly: 14600001**

Diagram Number	Qty.	Description	Part Number
1	1	Shell	51460052
2	1	Extended Narrow Wedge Assembly	63311212
3	1	Carriage C900 Assembly	14601101
4	1	Hold down Assembly, C900	14601108
5	1	Adv O-ring Gate Horizontal Adj HDO	87211007
6	1	Flight Sensor Assembly	14601110
7	1	Solid Gate Plate Assembly	70011004
8	1	Side Guide Assembly Kit 1424	64011017
9	1	Control Panel Assembly (Not Shown)	14601109
10	1	Operator Interface Assembly (Not Shown)	14601113
11	1	Knock Down Assembly	14601112
12	1	Encoder Assembly	14601111
13	1	Deflector Assembly	14601118
14	1	Side Cable Block	44947085
15	1	Side Cable Mount, LH	44947084
16	1	Side Adjust Block	44947086
17	1	Side Cable Mount, RH	44947107
18	2	Guard Cover Mount Shaft	44640011
19	2	Hinge Top Cover Mount Block	44640012
20	4	Alignment Block	51460053
21	1	Bulkhead union, Legris	51476005
22	1	Motor Mount	44630011
23	1	Servo Motor	44946005
24	1	Safety Interlock	70011007
25	1	Plug	44500061
26	2	Knock Down Mount	51460082
27	1	Knock Down Shaft	51460083
28	1	Top Protective Cover	51460080
30	2	Feeder Mount	51460081
31	1	Base Plate	51460070
32	1	C900 Cover Plate	51460049
33	1	Pulley 16T (16 x L37 Dia-.500K DFA)	43560097
34	1	Safety Interlock Key	44649010
35	6	Knob	23500092
36	1	Sheet Sensor Harness	14601119
37	4	Mounting Bracket	51460087
38	2	Mounting Shaft, 5/8 Dia	51460084
39	1	Board ST, I/O Distribution	44700021

### Extended Narrow Wedge Assembly: 63311212

<b>Diagram Number</b>	<b>Qty.</b>	<b>Description</b>	<b>Part Number</b>
2-1	2	Wedge Material Support	33560212
2-2	4	BHCS, 10-32 X 3/8	00002305
2-3	1	Shaft, Belt Tensioner 3/8	43555077
2-4	2	Bracket Extension Narrow Wedge	44633022
2-5	1	T-Nut Round	44633016
2-6	1	Block Hold Down Wedge	44633021
2-7	1	Knob, 3 lobe 10-32 x 5/8	44633033

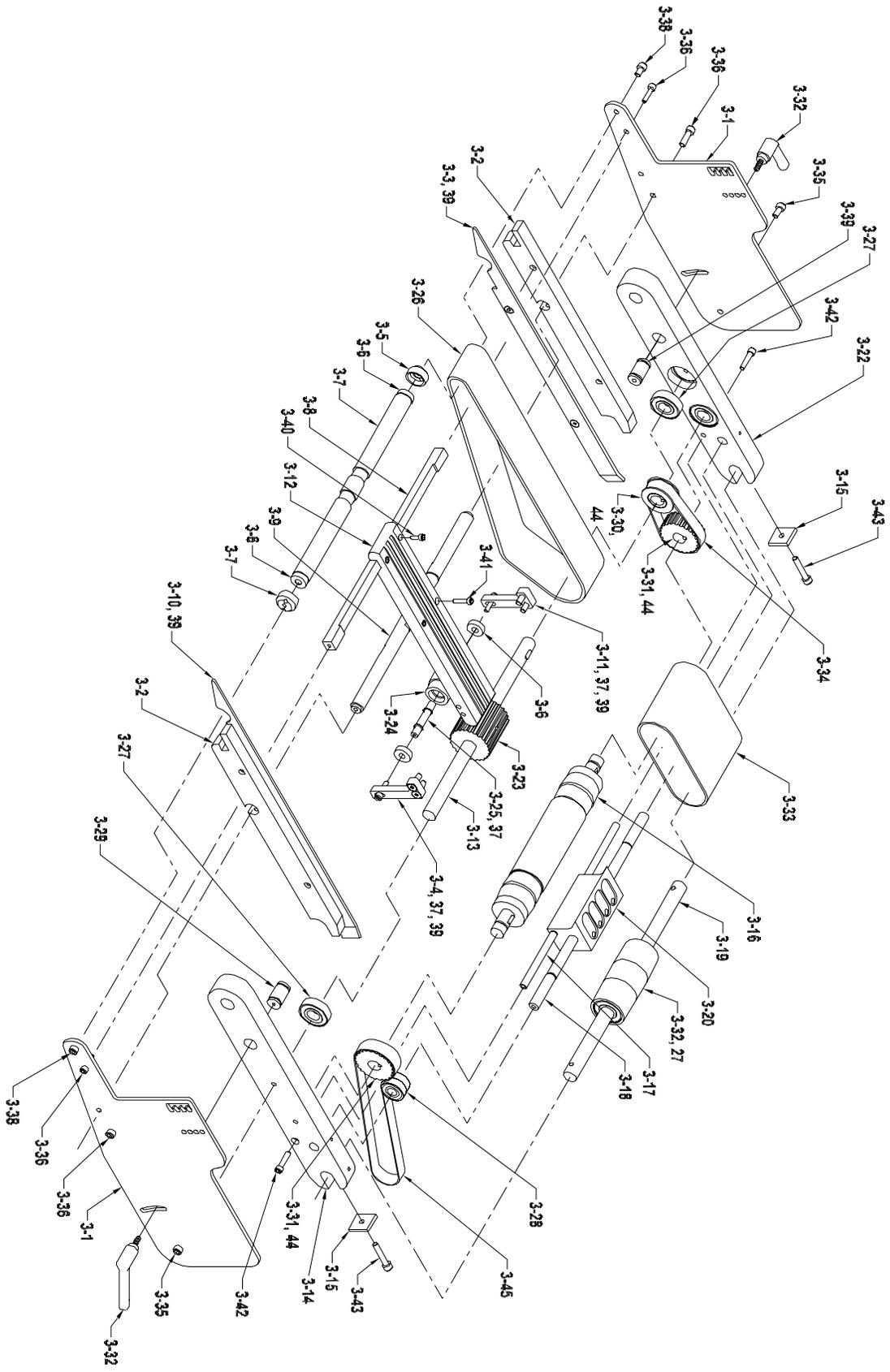
**Extended Narrow Wedge Assembly: 63311212**



### Carriage Assembly: 14601101

Diagram Number	Qty.	Description	Part Number
3-1	2	Side plate	51330002
3-2	2	Material Support Guide Rail	51460050
3-3	1	Alignment Rail, RH	51460059
3-4	1	Belt Tension Block, Left	51460013
3-5	2	Cup, Bearing R4	44846050
3-6	4	Bearing R4	44582021
3-7	1	Vacuum Lower Discharge Shaft	51460010
3-8	1	Support Bar	51460007
3-9	1	Round Support Shaft	51460011
3-10	1	Alignment Rail, LH	51460051
3-11	1	Belt tension Block, Right	51460012
3-12	1	Hold Down Support Block	51460061
3-13	1	Drive Shaft, ½ SS	23560211
3-14	1	Left Side Carriage Holder	51460069
3-15	2	Vacuum Belt Tension Plate	44485004
3-16	1	Drive Shaft	44700016
3-17	1	Shaft Block Support	51460071
3-18	1	Shaft Belt Support Belt	23500040
3-19	1	Idler Shaft	23560147
3-20	1	Manifold	44947038
3-21	1	Driven Tube	44947041
3-22	1	Right Side Carriage Holder	51460068
3-23	1	Pulley, 25T	51460002
3-24	1	Roller Pulley	51460015
3-25	1	Tensioner Shaft	51460014
3-26	1	Discharge Belt, 240XL150 X	51460072
3-27	6	Bearing R8-2RS	23500094
3-28	2	Bearing R6-2RS	23500095
3-29	2	Belt Tension Shaft	44852098
3-30	1	Pulley, 16T (16xL37 Dia .500K DFA)	43560097
3-31	2	Pulley, 24T (24xL37 Dia .500KA)	43560098
3-32	2	Handle, Ratchet 10-32 x 1/2	43555097
3-33	1	Belt, Feed BlueGum Vac Liner, 2.75Wx9.75	44947037
3-34	1	Timing Belt, 78XL037 Kevlar	23560078
3-35	2	SHCS, 10-32 X 1/2	00002815
3-36	10	SHCS, 10-32 X 3/8	00002810
3-37	2	¼ Grip ring	00001105
3-38	2	SHCS, 10-32 X 5-16	00002809
3-39	4	FHCS, 10-32 x ½	00002330
3-40	2	SHCS, 6-32 x 3/8	00003304
3-41	2	SHCS, 6-32 x 5/8	00003303
3-42	2	SHCS, 8-32 x 1	00002303
3-43	2	SHCS, 10-32 x 1	00002335
3-44	3	Woodruff Key, 1/8 x 3/8	00003351
3-45	1	Timing Belt, 160XL037 Kevlar	33560097

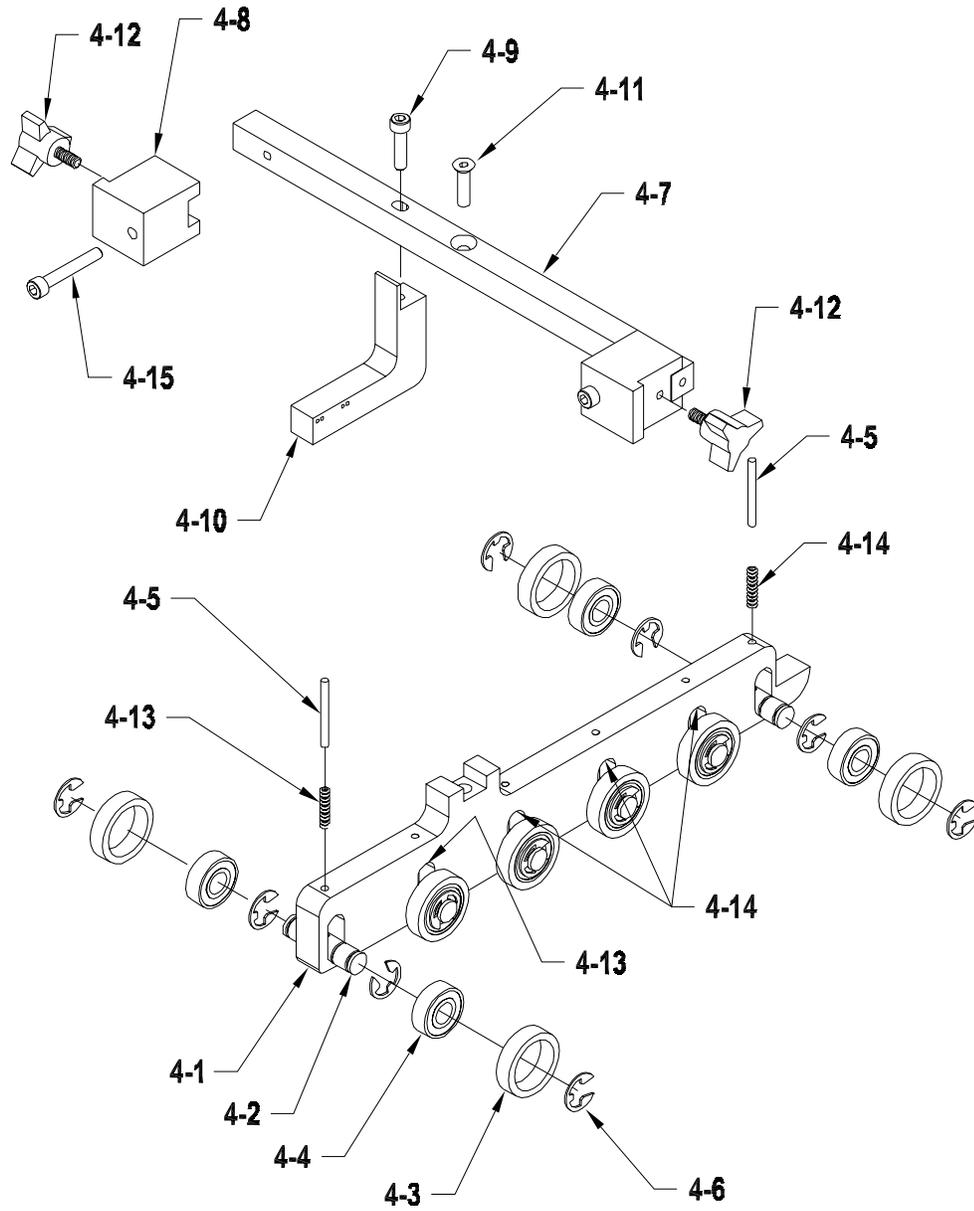
# Carriage Assembly: 14601101



### Hold Down Assembly: 14601108

Diagram Number	Qty.	Description	Part Number
4-1	1	Hold Down Block	51330006
4-2	6	Hold Down Shaft	51277052
4-3	12	Discharge Roller Collar	51277087
4-4	12	Bearing, R6-2RS	23500095
4-5	6	Spring Pin, 1/8 in	51312003
4-6	24	E-Clip, 3/8	00001150
4-7	1	Hold Down Cross Support	51460008
4-8	2	Hold Down Support Block	51460086
4-9	1	SHCS, 10-32 x $\frac{3}{4}$	00002325
4-10	1	Sensor Mount	51460004
4-11	1	FHCS 10-32 x $\frac{3}{4}$	00002338
4-12	2	Knob, Medium	23500092
4-13	2	Spring, Heavy	51460073
4-14	4	Spring, Hold Down	51328001
4-15	2	SHCS, 10-32 x 1 $\frac{1}{4}$	00002312

# Hold Down Assembly: 14601108

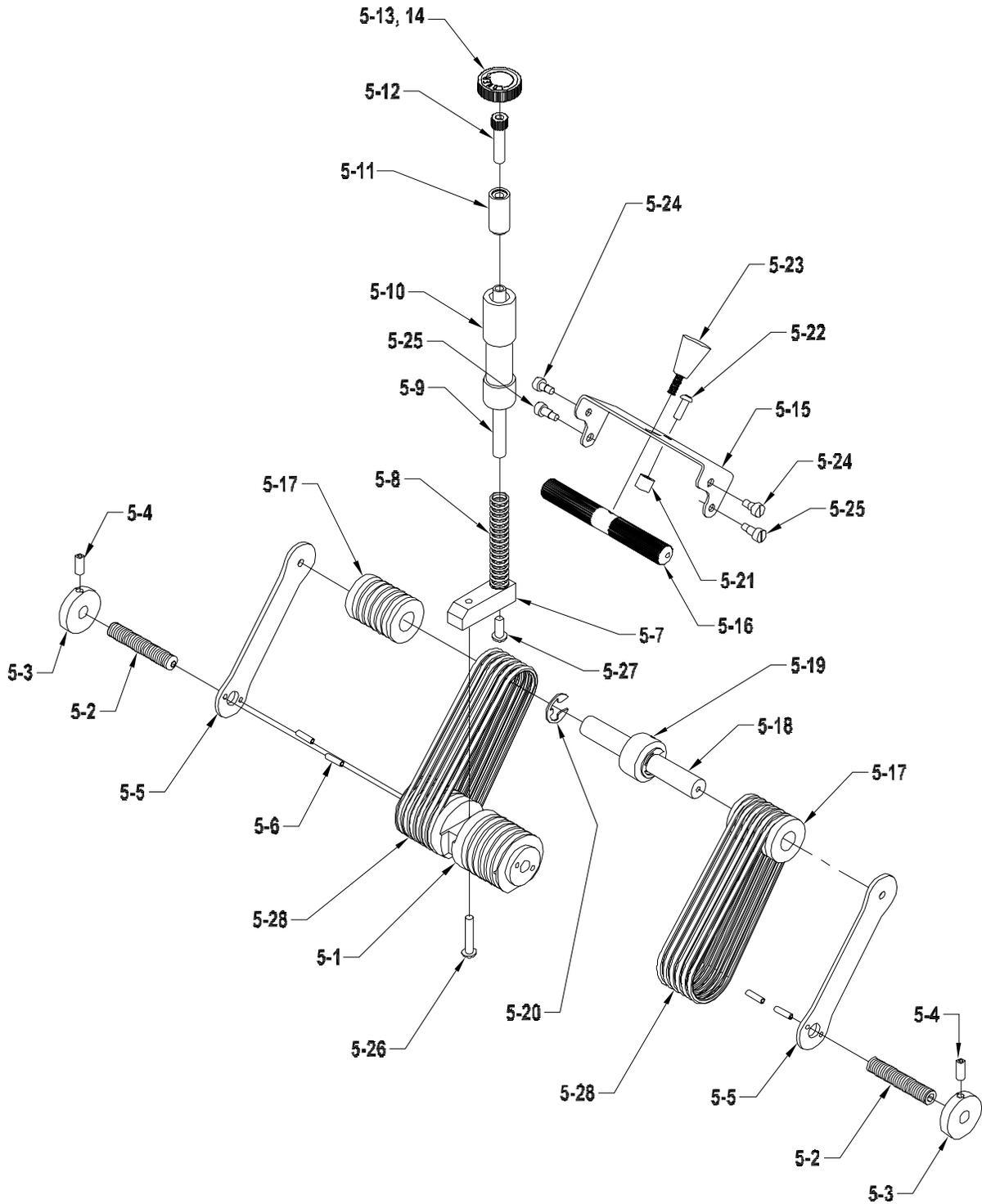


**Advancing O-Ring Gate with Horizon Adjust, HDO: 87211007**

<b>Diagram Number</b>	<b>Qty.</b>	<b>Description</b>	<b>Part Number</b>
5-1	1	Cylinder Gate Advance	44872004
5-2	2	Adjust Screw	44872005
5-3	2	Roller	44872003
5-4	2	SS 10-32 x 3/8	44872007
5-5	2	Adjuster Side Plate	44872002
5-6	4	Spring Roller Pin	00001161
5-7	1	Gate Lift Shaft Mount	15000001
5-8	1	Gate Compression Spring	23500083
5-9	1	Gate Lift Shaft	23560084
5-10	1	Cylinder Gate Spring Tension	23500019
5-11*	1	Adjust Knob Sleeve	23500037
5-12*	1	SHCS, ¼-28 x 1	00002400
5-13*	1	Knob w/o screw	23500077
5-14*	1	Gate Adjust Knob Label	23500084
5-15	1	Belt Indexer Bracket	44657005
5-16	1	Pin Roll Cam	44657003
5-17	2	O-Ring Take up Roller	44657002
5-18	1	Belt Indexer Shaft	44657008
5-19	1	Belt Indexer Center Hub	44657009
5-20	2	E-Clip ½	00001155
5-21	1	Belt Indexer Spacer	44657010
5-22	1	BHCS, 8-32 x ½	00002302
5-23	1	Knob Handle, 10-32	44657007
5-24	2	Shoulder Screw, 3/16 x 1/8 8-32 x 3/16	00003321
5-25	2	Shoulder Screw, 3/16 x 1/4 8-32 x 3/16	00003320
5-26	1	BHCS, 10-32 x 1	00002340
5-27	1	BHCS, 10-32 x ½	00002334
5-28	12	O-Ring Advance Gate, HDO	44657011

\*5-11 thru 5-14 can be ordered as assembly #23511037

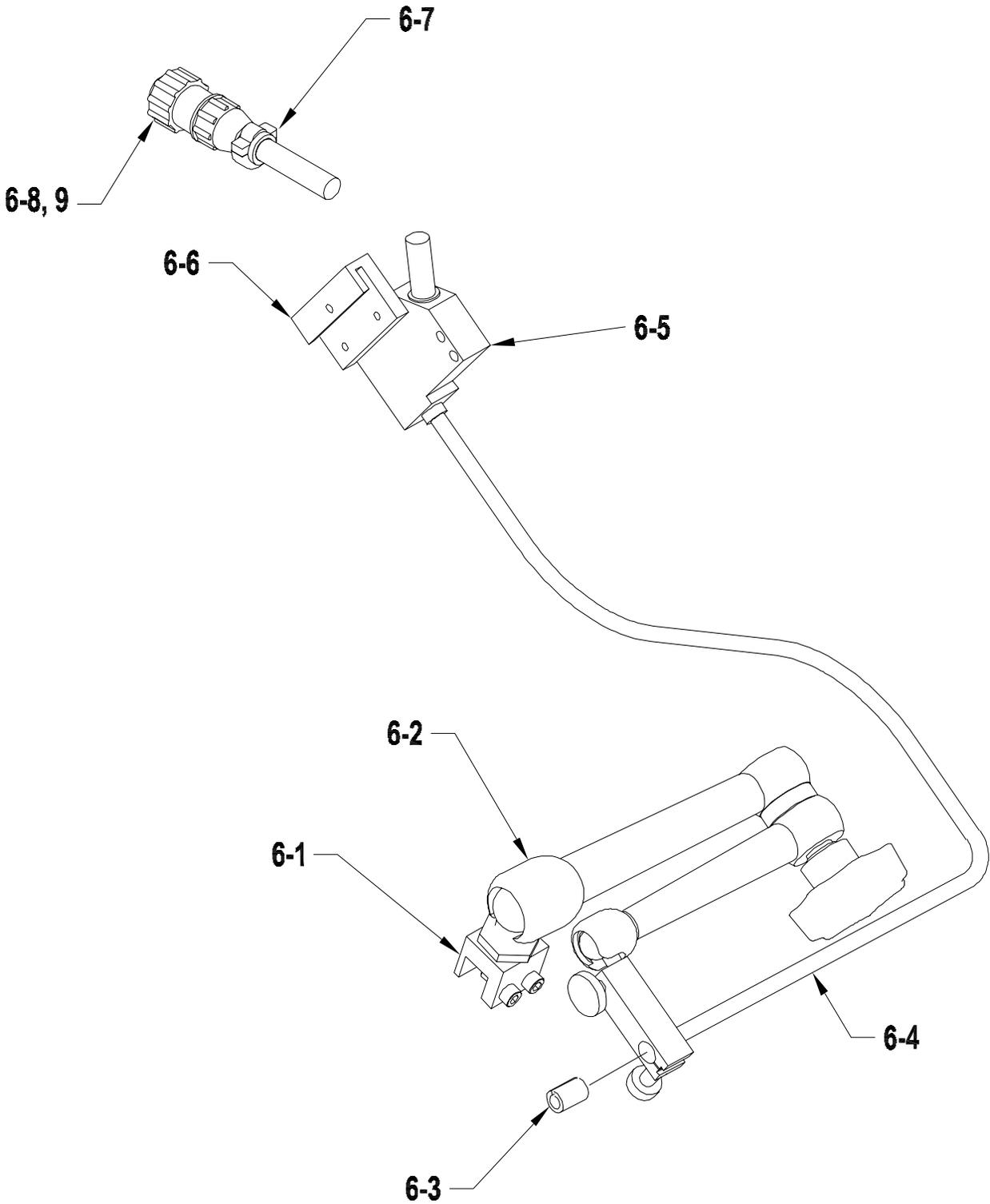
# Advancing O-Ring Gate with Horizon Adjust, HDO: 87211007



**Flight Sensor Assembly: 14601110**

<b>Diagram Number</b>	<b>Qty.</b>	<b>Description</b>	<b>Part Number</b>
6-1	1	Sensor Mounting Block	51460065
	2	SHCS, 10-32 x 1/2	00002815
6-2	1	Scanner Arm	51208166
6-3	1	Fiber Optic Bushing	51460063
6-4	1	Fiber Optic Sensor w/Cable	51460074
6-5	1	Fiber Optic Amplifier	51460075
	2	BHCS, 8-32 x 3/4	00003322
6-6	1	Fiber Optic Sensor Mount	51460064
	1	SHCS, 8-32 x 3/8	00002813
6-7	1	Clamp, Cable Circular 4 Pin AMP	53500506
6-8	1	Plug, 4 Pin 206429-1 AMP	53500504
6-9	3	Pin, Contact Male, 24-20 AWG AMP	53500502

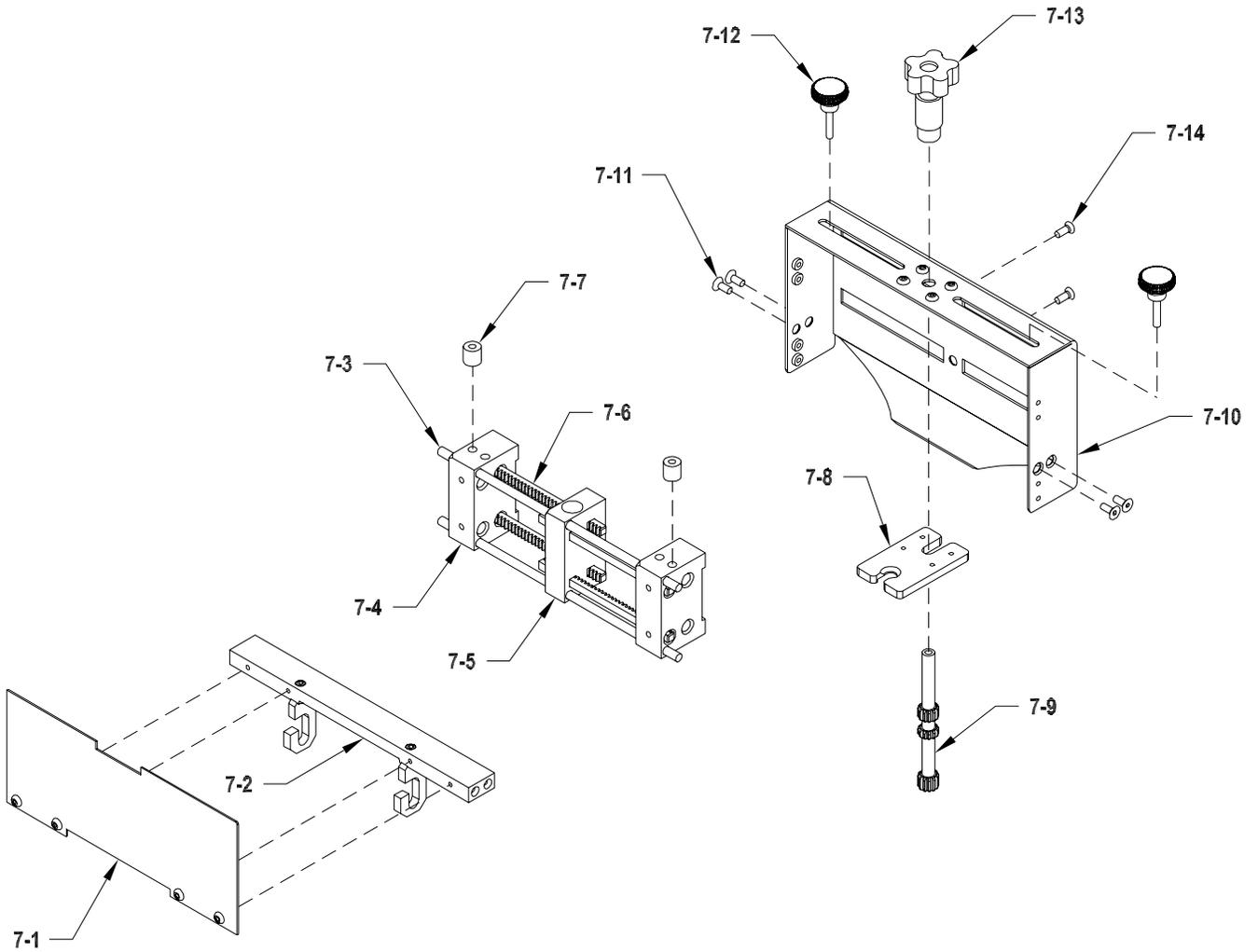
**Flight Sensor Assembly: 14601110**



**Solid Gate Plate: 70011004**

<b>Diagram Number</b>	<b>Qty.</b>	<b>Description</b>	<b>Part Number</b>
7-1	1	Cover Side Guide Adjustment	44700014
	4	BHCS, 10-32 x 3/8	00002805
7-2	1	Bar Lower Gate Support	44700011
	2	Hook Gate J	15000007
	2	SHCS, 8-32 x 5/8	00002215
7-3	2	Rail Side Guide Support	44700012
7-4	2	Side Guide Adjustment Block	44646001
	4	Screw Socket Set, 1/4-20 x 1/4	00002205
7-5	1	Guide Stationary Block Side	44646002
7-6	4	Rack	44700013
7-7	2	Lower Spacer	44646015
7-8	1	Block Adjustment Reference	44646004
	4	BHCS 10-32 x 3/8	00002805
7-9	1	Shaft Pinion Adjustment	44646005
7-10	1	Solid Gate Plate	44700005
7-11	4	Flat Hd Screw, 10-32 x 3/8	00002234
7-12	2	Knob, Plastic, 10-32	44681021
	2	Socket Set Screw, 10-32 x 1 1/2	00003313
	2	Upper Spacer	44646016
7-13	1	Knob, 5 lobe	44646009
	1	Upper Retainer Spring	44646008
	1	Lower Retainer Spring	44646007
	1	Compression Spring	44646013
7-14	2	Flat HD Screw, 10-32 x 1/2	00002830

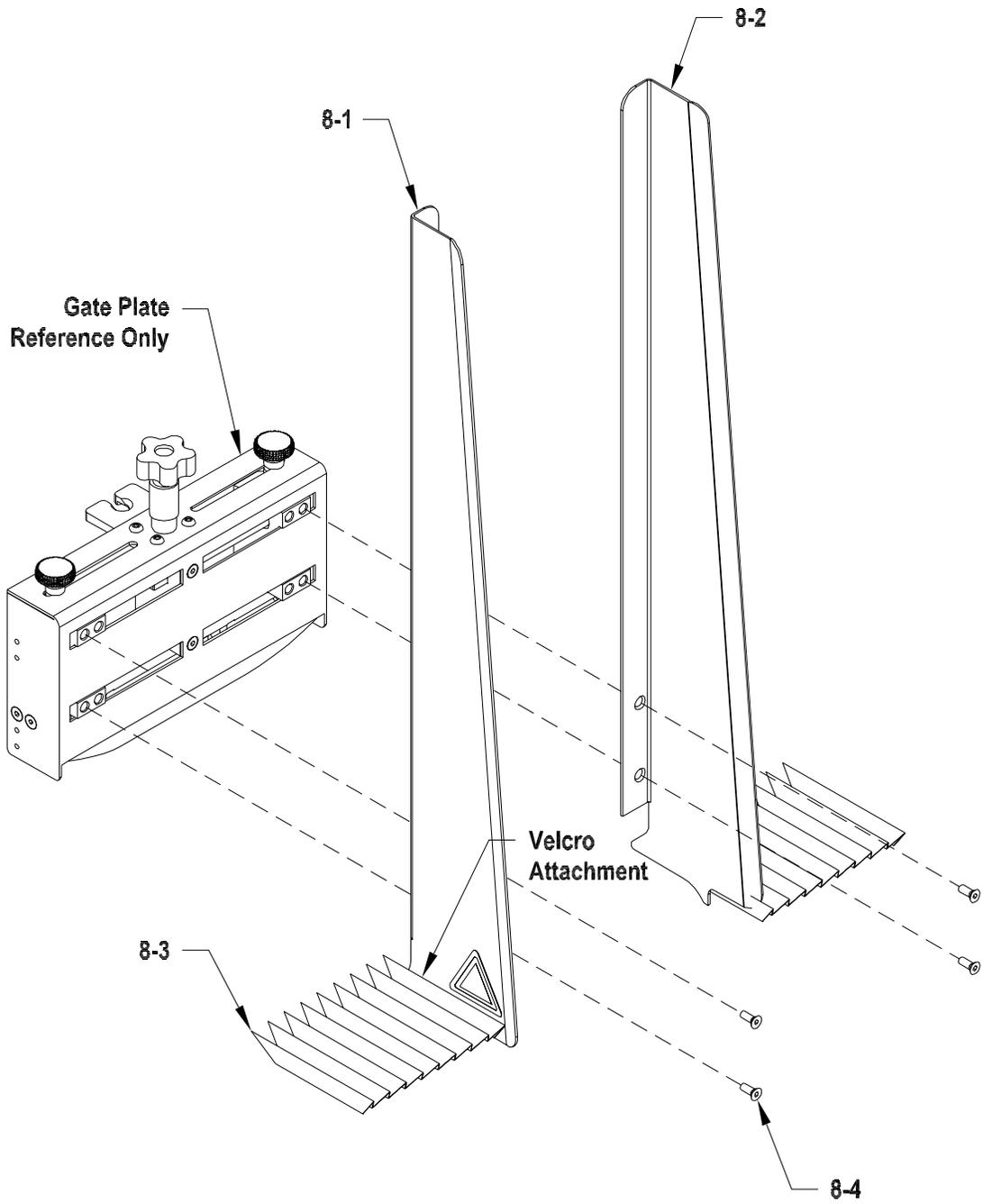
# Solid Gate Plate: 70011004



**Side Guide Kit: 64011017**

<b>Diagram Number</b>	<b>Qty.</b>	<b>Description</b>	<b>Part Number</b>
8-1	1	Side Guide Left 1424	44640017
	1	Label Warning Belt Pinch Point	44600005
8-2	1	Side Guide Right 1424	44640018
	1	Label Warning Belt Pinch Point	44600005
8-3	2	Guard Rear Accordion	44600001
8-4	4	Screw Flat Head 10-32 X 1/2" LG	00002830

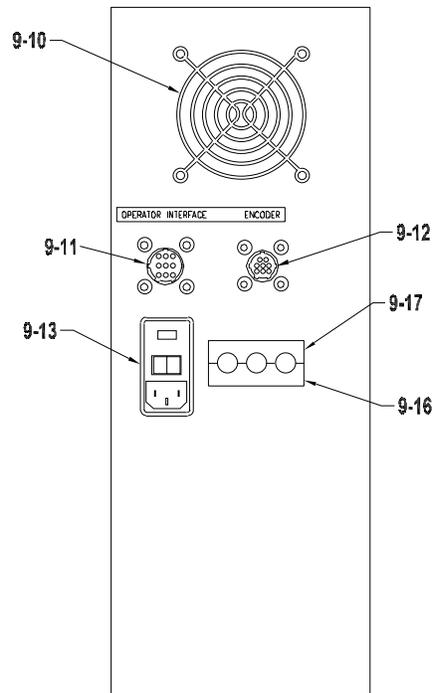
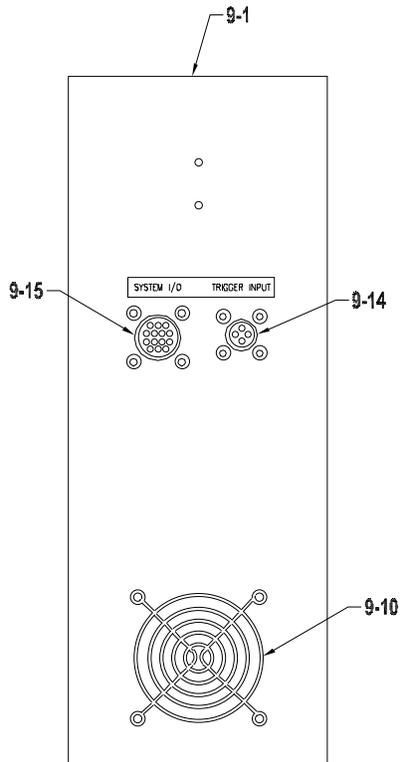
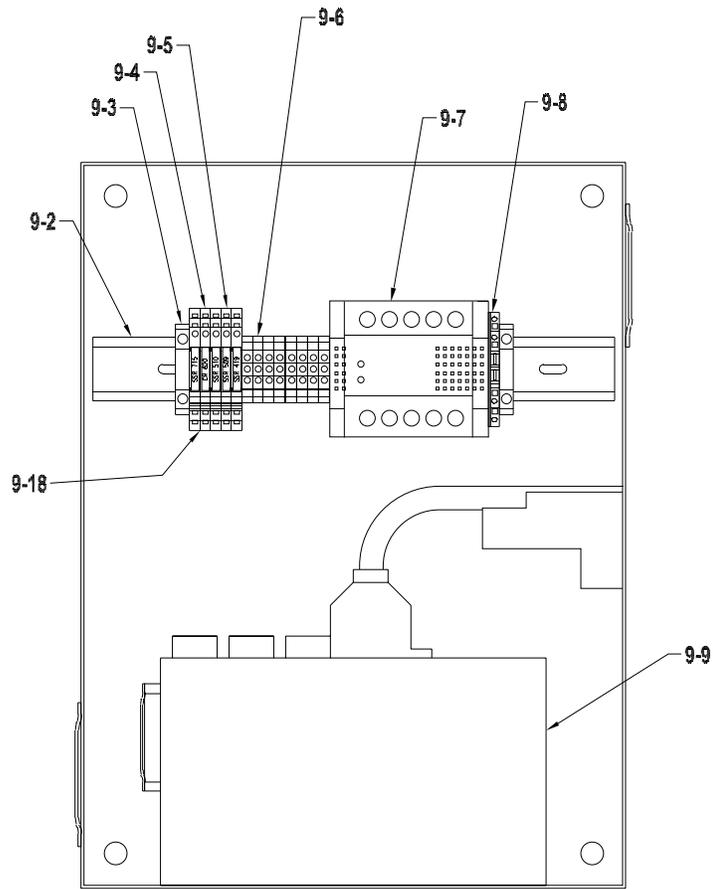
Side Guide Kit: 64011017



### Control Panel Assembly: 14601109

Diagram Number	Qty.	Description	Part Number
9-1	1	Control Box	51460048
9-2	12 in	Din Rail	53500154
	2	BHCS, 8-32 x 3/8	00002306
9-3	2	Plate, Anchor End	53500156
9-4	1	Relay, PLC Form C	51241005
9-5	4	Relay, PLC Solid State	51241006
9-6	8	Terminal Block	53500153
	1	Bridge Bar	53500157
	2	Barrier Plate	53500155
9-7	1	ServoStar SC Drive 6A	51327021
9-8	1	Terminal Block, WAGO Green/Yellow	51327028
	1	Terminal Block, WAGO Side Plate	51327009
9-9	1	Power Supply, Switching 24VDC 50 Watt	53500598
9-10	2	Fan Guard	53500281
	8	BHCS 8-32 x 3/8	00002306
9-11	1	Harness, Remote Operator Station	14601102
	4	BHCS 8-32 x 3/8	00002306
9-12	1	Harness Encoder	14601105
	4	BHCS 6-32 x 3/8	00003314
9-13	1	Module, AC Power Entry w/o Fuse	44649034
	2	Fuse, 10A 125V Fast GMA 5x20mm	53500455
	2	Terminal, female	44649046
9-14	1	Flight Trigger Harness	14131106
	4	BHCS 6-32 x 3/8	00003314
9-15	1	System I/O Harness	14131108
	4	BHCS 8-32 x 3/8	00002306
9-16	1	Mount, Side Cable, RH	44947107
	1	Side Adjust Block	44947086
	2	FHMSPHS/S 6-32 x 1 3/4	00002236
9-17	1	Mount, Side Cable, LH	44947084
	1	Block Side Cable	44947085
9-18	1	Bridge, Snap in	51241013
N/S	1	Harness, DC Power	14131111
N/S	1	Harness, AC Power	14601104
N/S	1	Harness, DC Power	14601107
N/S	1	Harness, Power Ground	14601115
N/S	2	Harness, Secondary Ground	14601116
N/S	1	Feeder Interconnct Cable	14601117
N/S	1	Servo Set Kollmergen Cable	44946006
N/S	1	Power Cord, 115 VAC IEC	53500002
N/S		1I/O Cable	64911012

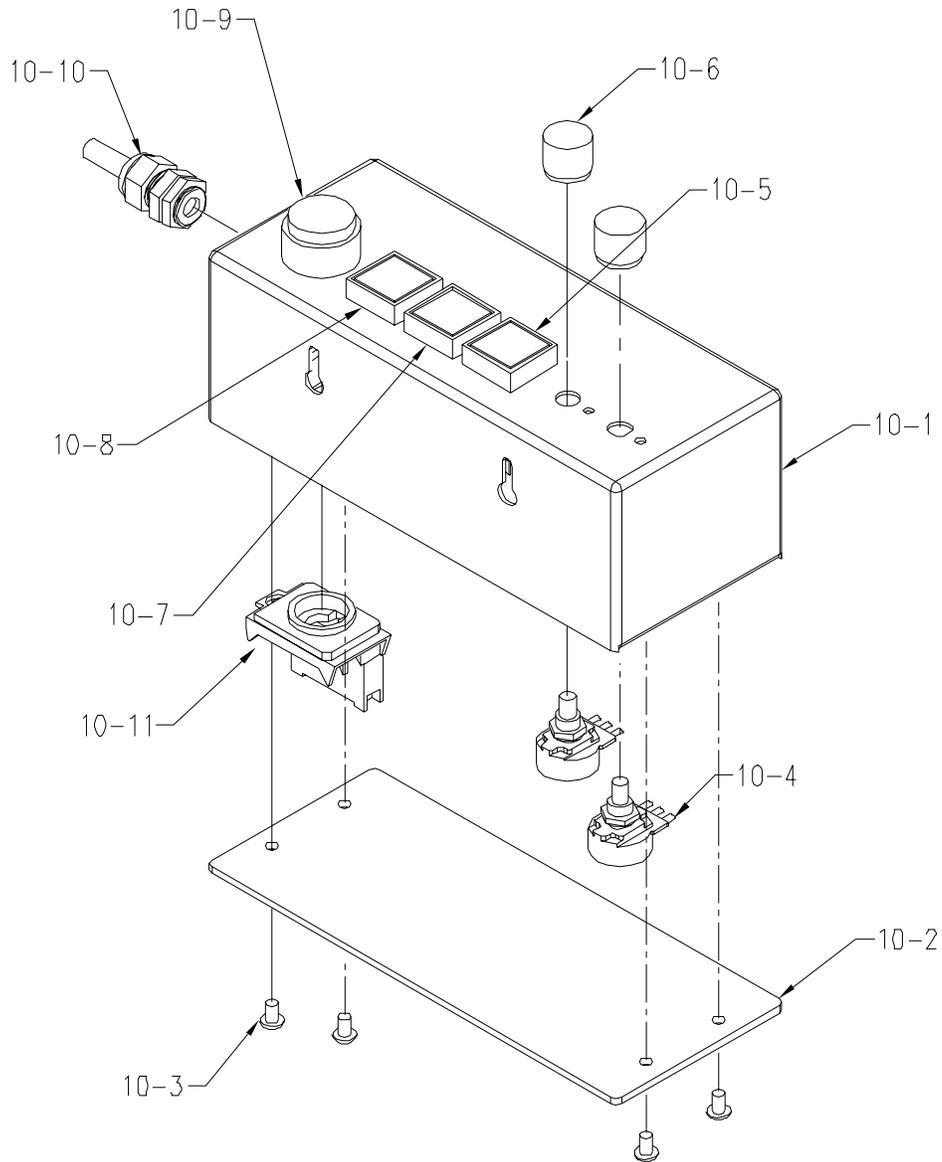
**Control Panel Assembly: 14601109 (continued)**



**Operator Interface Assembly: 14601113**

<b>Diagram Number</b>	<b>Qty.</b>	<b>Description</b>	<b>Part Number</b>
10-1	1	Enclosure Remote Operator Box	51460097
10-2	1	Cover, Remote Operator Box	51460099
10-3	4	BHCS, 10-32 x 3/8	00002805
10-4	2	Harness Speed Pot	14131114
10-5	1	Push Button Square, Green	51413006
10-6	2	Knob, Black, .75 x .75	44675030
10-7	1	Push button, Square, Amber	51379089
10-8	1	Push Button, Square, Blue	51379088
10-9	1	Red Push Button Extended	51241012
10-10	1	Cable Remote Operator Station	14601103
10-11	1	Contact Block NC	51327025
N/S	1	Lamp, LED 24V Green	51379092
N/S	1	Lamp, LED 24V Amber	51379093
N/S	1	Graphics set	51460098

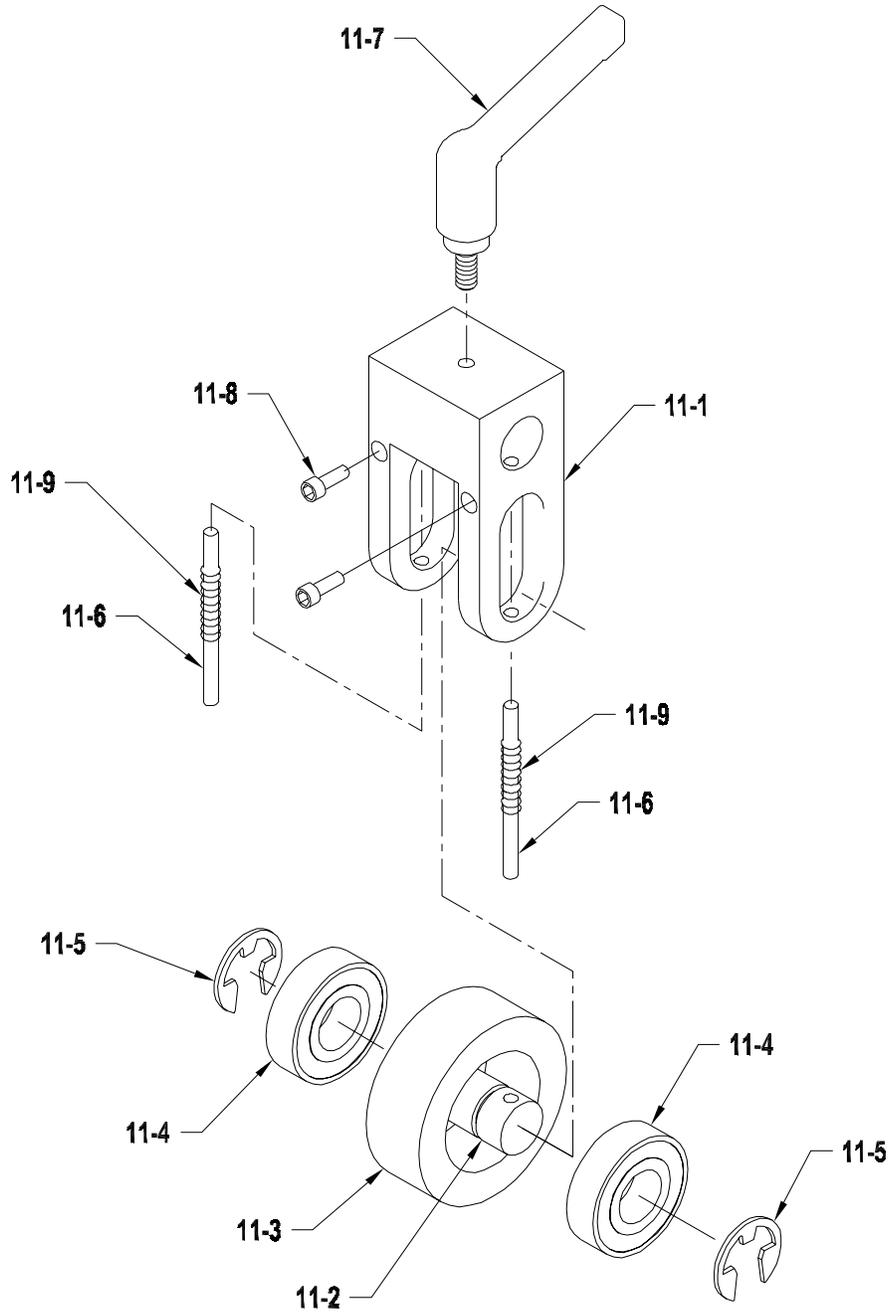
### Operator Interface Assembly: 14601113



### Nip Roller Assembly: 14601112

<b>Diagram Number</b>	<b>Qty.</b>	<b>Description</b>	<b>Part Number</b>
11-1	1	Knock Down Block	51460042
11-2	1	Knock Down Shaft	51460043
11-3	1	Knock Down Roller	51460044
11-4	2	Bearing, R8-2ZZ	51460093
11-5	2	E-clip, 1/2	00001155
11-6	2	Dowel Pin	51450005
11-7	1	Handle, Ratchet 10-32x 1/2	43555097
11-8	2	SHCS, 4-40 x 5/16	00003327
11-9	2	Hold Down Spring	51277076

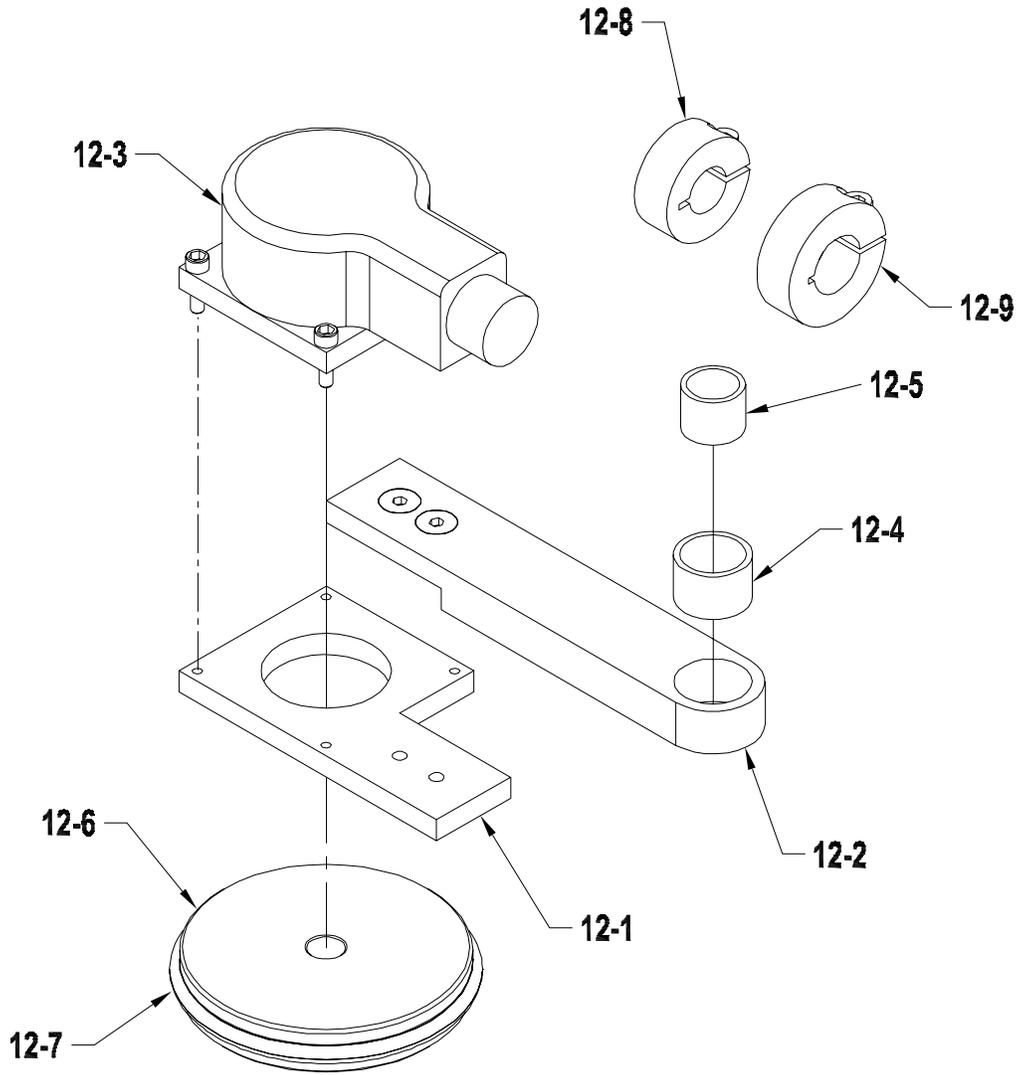
# Nip Roller Assembly: 14601112



**Encoder Assembly: 14601111**

<b>Diagram Number</b>	<b>Qty.</b>	<b>Description</b>	<b>Part Number</b>
12-1	1	Encoder Mount	51460005
12-2	1	Encoder Arm	51460066
	2	FHCS, 10-32 x ½	00002330
12-3	1	Encoder 2048 PPR	51460077
	4	SHCS, 6-32 x ½	00002212
12-4	1	IGUS Bearing Sleeve for 5/8 Dia shaft	44947015
12-5	1	IGUS Bearing Sleeve for 1/2 Dia shaft	51460088
12-6	1	Encoder Wheel	51460067
12-7	1	O-ring, Encoder	51460090
12-8	2	Solid Clamp Collar, 1/2	44635023
12-9	2	Solid Clamp Collar, 5/8	51460089
N/S	1	Encoder Cable	14601106

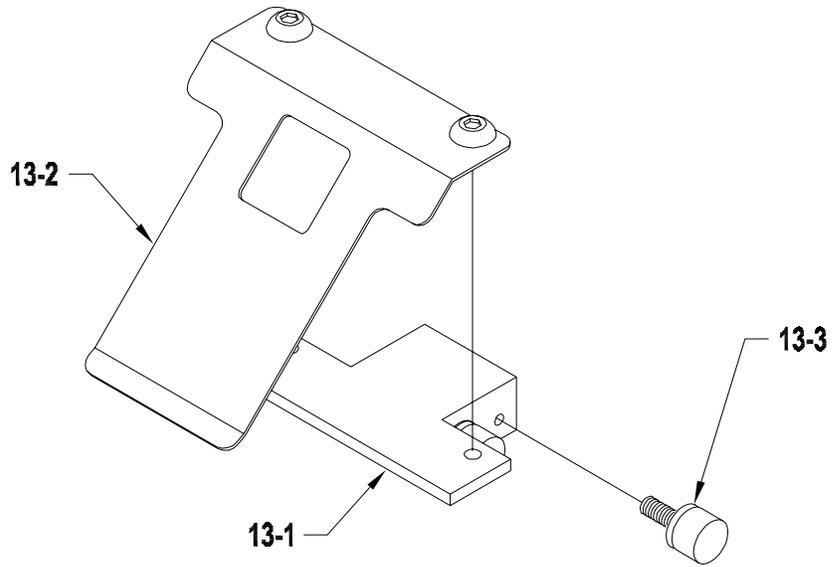
# Encoder Assembly: 14601111



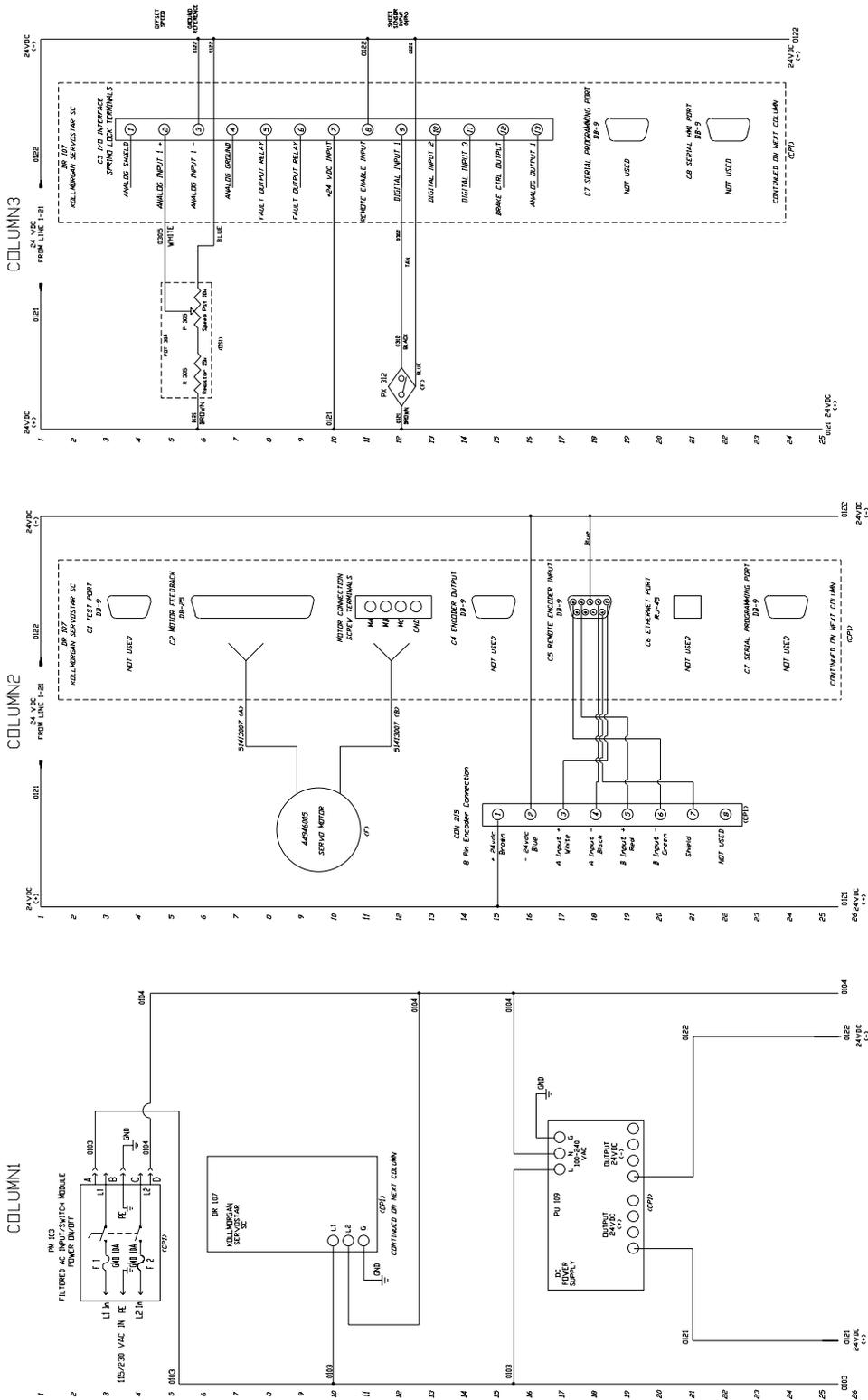
**Deflector Assembly: 14601118**

<b>Diagram Number</b>	<b>Qty.</b>	<b>Description</b>	<b>Part Number</b>
13-1	1	Deflector Plate Mount	51460091
13-2	1	Deflector Plate	43555078
	2	BHCS, 10-32 x 3/16	00003339
13-3	2	Knob, 6-32 x 3/8	435SO269

**Deflector Assembly: 14601118**



# 9 Electrical Components







## Sensorless Feed Trigger Wiring



*This unit operates on 115VAC or 230VAC electrical power. Bodily contact with these voltages can result in serious injury or death. Always disconnect the AC inlet power cord before performing any service activity.*

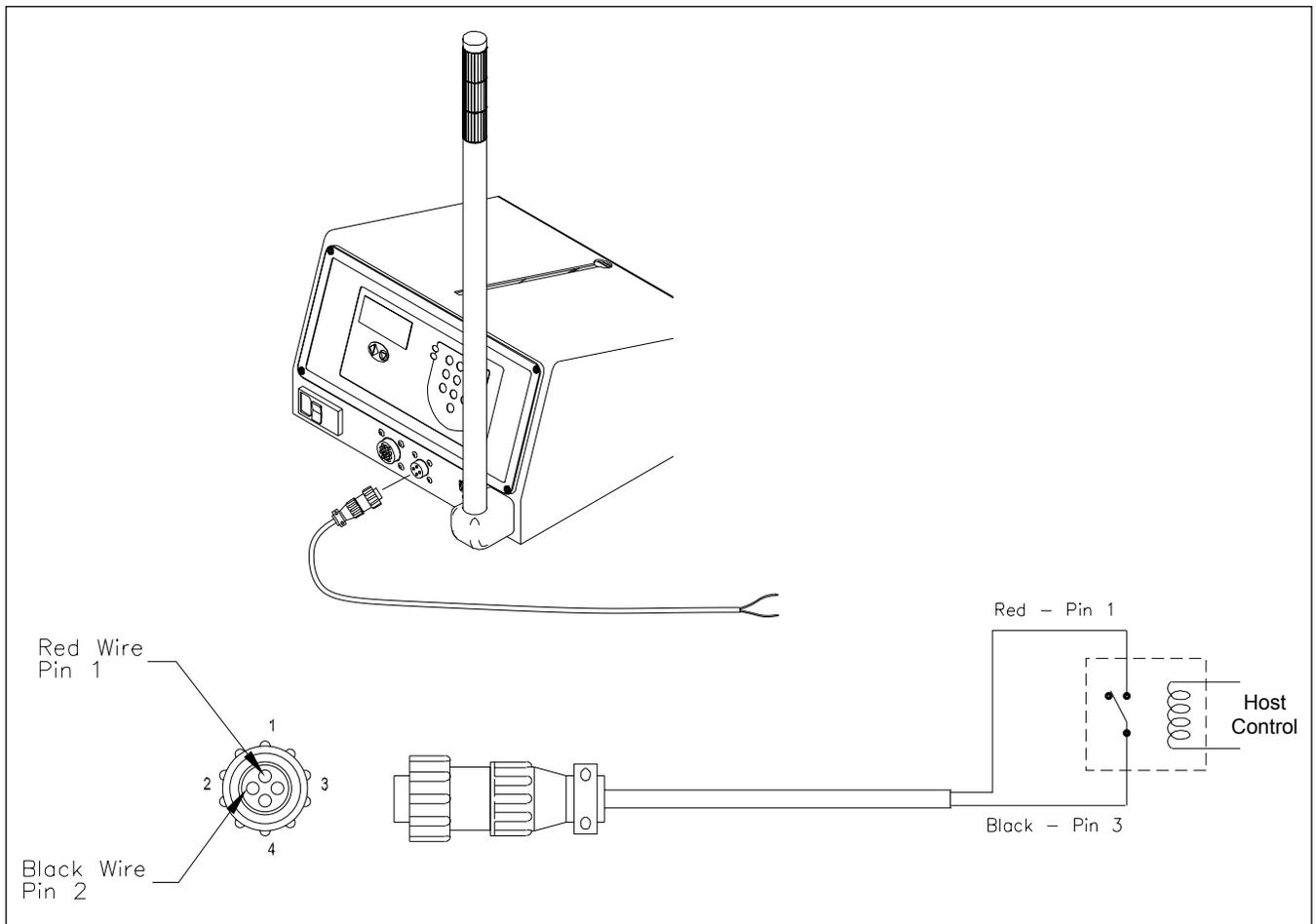
## Connecting to the Trigger Input

### Objective

The information in this section provides an overview of how to interface to the Converge 900 trigger input without using an external photoelectric sensor.

### Procedure

1. Remove any existing trigger sensor from the control panel.
2. Connect the sensorless trigger cable to the feeder trigger input.
3. Wire the sensorless cable to the host equipment. The host equipment triggering the feeder to start is to be a dry contact of a relay. Any other equipment must not power this input. When the host equipment relay or contacts close the feeder should trigger.



**Figure 9-4. Field Wiring.**

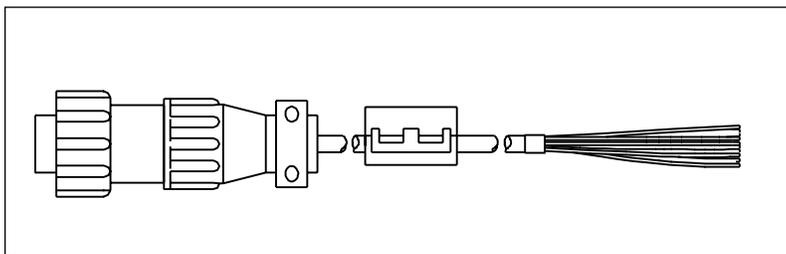
## I/O Cable Wiring



*A qualified service technician should perform the electrical integration of this equipment to the host machinery. Always disconnect the AC inlet power cord before performing any service activity.*

**External I/O Cable Wiring Table**

Pin #	Wire Color	Function	Relay #	Relay Type
1	Brown	Miss/Double Output (-)	0419	SSR
2	Red	Miss/Double Output (+)		24 VDC
3	Orange	+24 VDC Supply (150ma. max)	-	
4	Yellow	Done Output (-)	0510	SSR
5	Green	Done Output (+)		24 VDC
6	Blue	Ready Output (-)	0509	SSR
7	Violet	Ready Output (+)		24 VDC
10	Black & Shield	DC Supply Ground	-	
13	Red /Yellow	External Trigger Input (-)	0715	SSR
14	Red / Green	External Trigger Input (+)		24 VDC



**Figure 9-5. External I/O Cable, 649-11-012**

# AC Power Harness Wiring

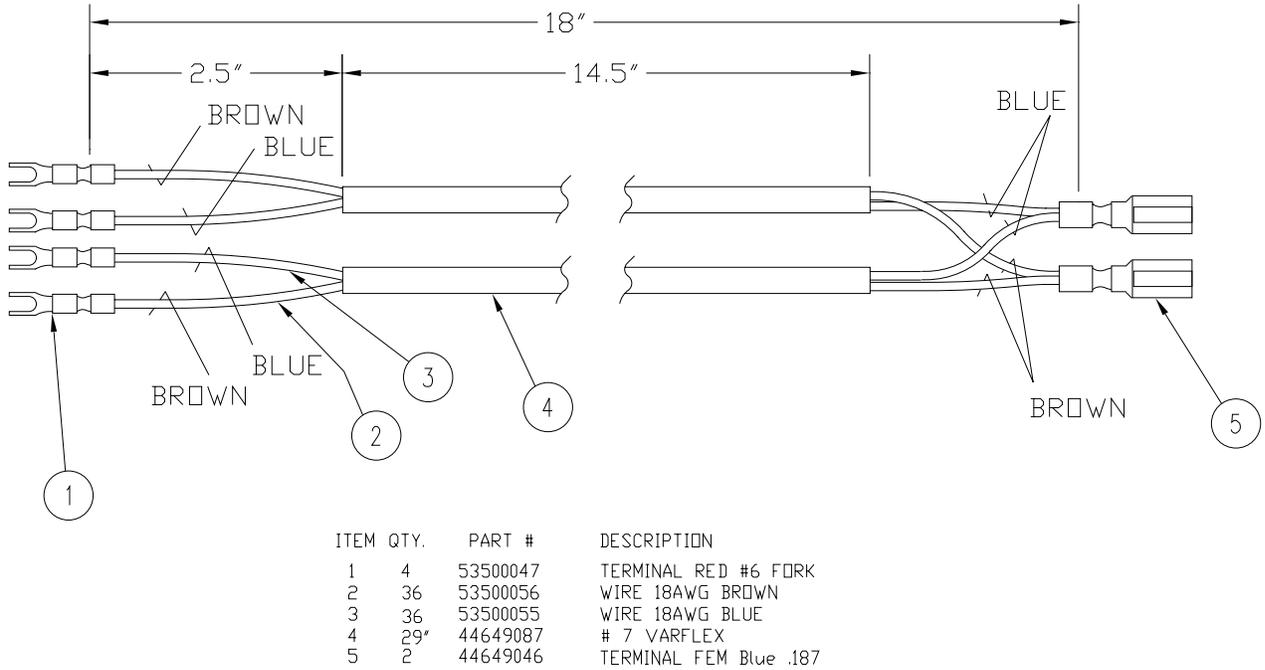


Figure 9-6. Harness, AC Power

# Encoder Harness Wiring

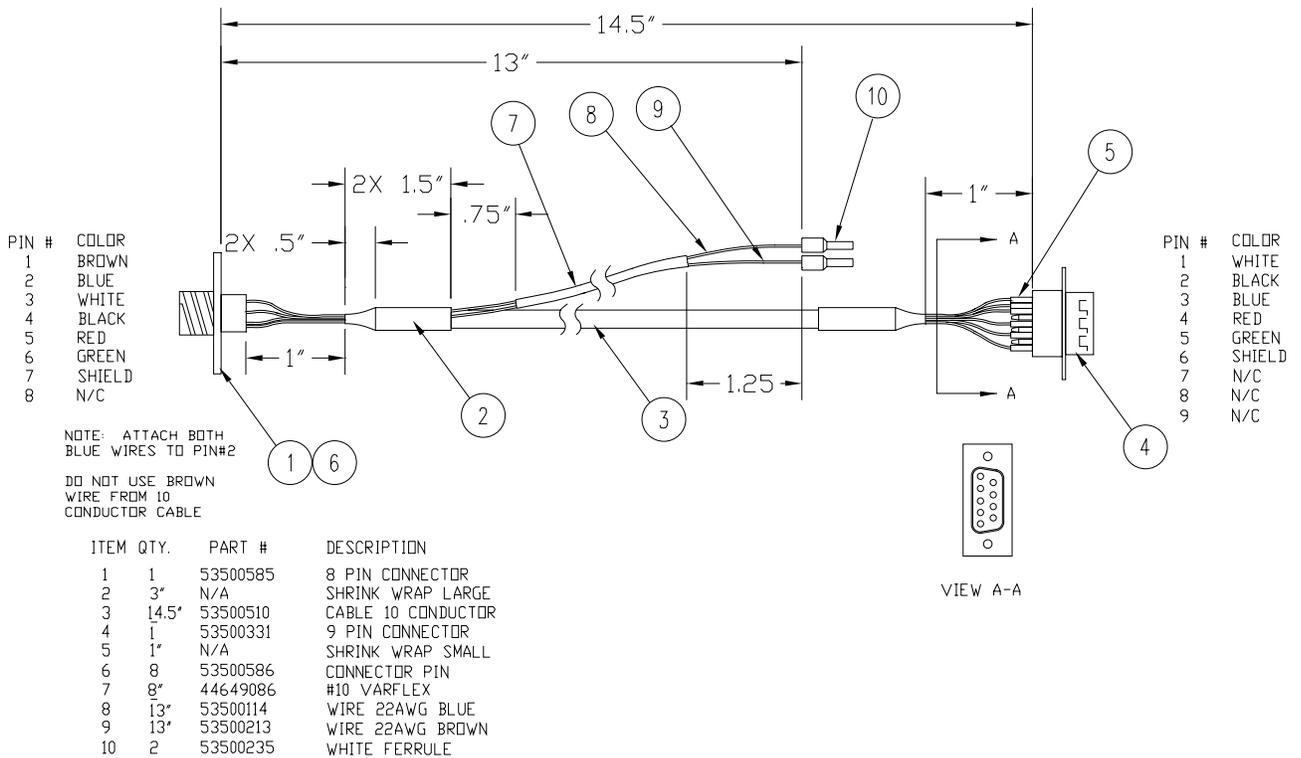
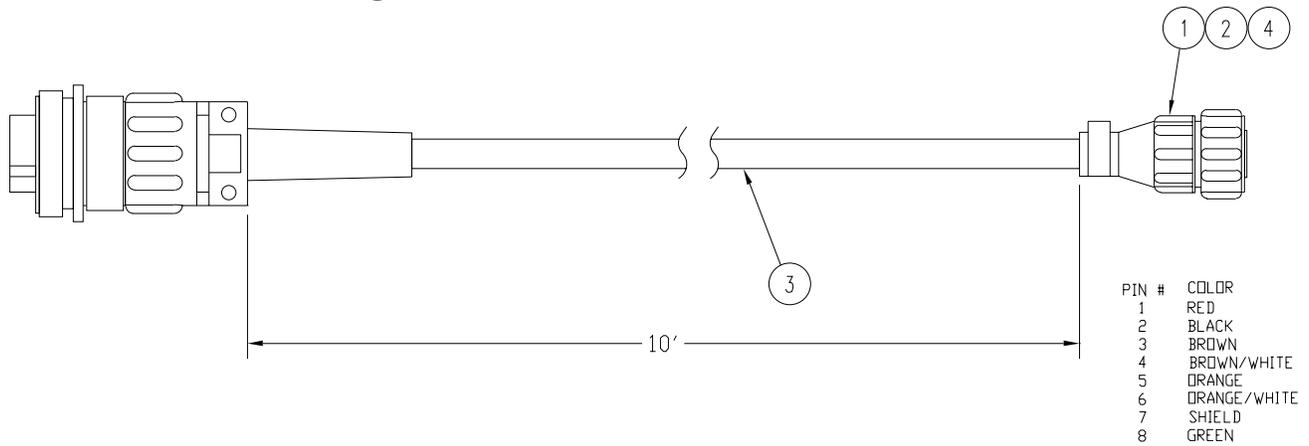


Figure 9-7. Harness, Encoder

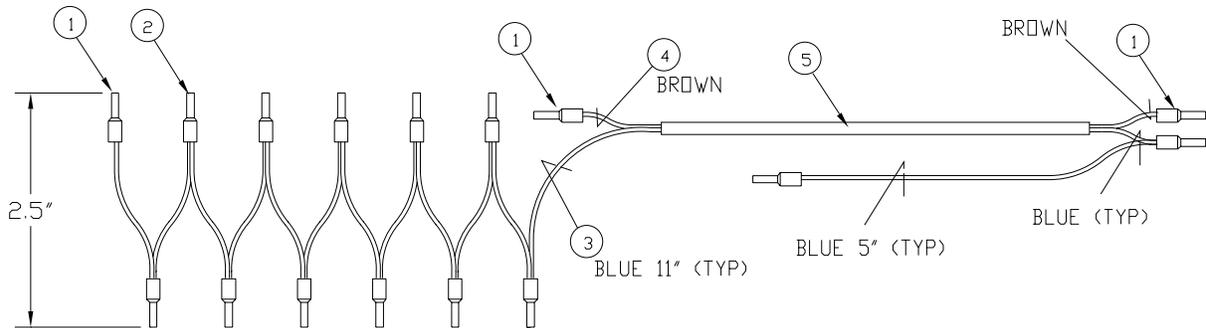
# Encoder Cable Wiring



ITEM	QTY.	PART #	DESCRIPTION
1	1	51277124	8 PIN CONNECTOR
2	8	51277125	CONNECTOR MALE PIN
3	1	51460060	CABLE, DYNAPAR H20 ENCODER 10'
4	1	53500506	CABLE CLAMP

**Figure 9-8. Cable, Encoder**

# DC Power Harness Wiring



ITEM:	QTY:	PART #	DESCRIPTION
1	4	53500235	WHITE FERRULE
2	12	53500236	GRAY FERRULE
3	43.5'	53500114	WIRE 22AWG BLUE
4	11'	53500213	WIRE 22AWG BROWN
5	8.0'	44649086	#10 VARFLEX

**Figure 9-9. Harness, DC Power**

## Feeder Interconnect Cable Wiring

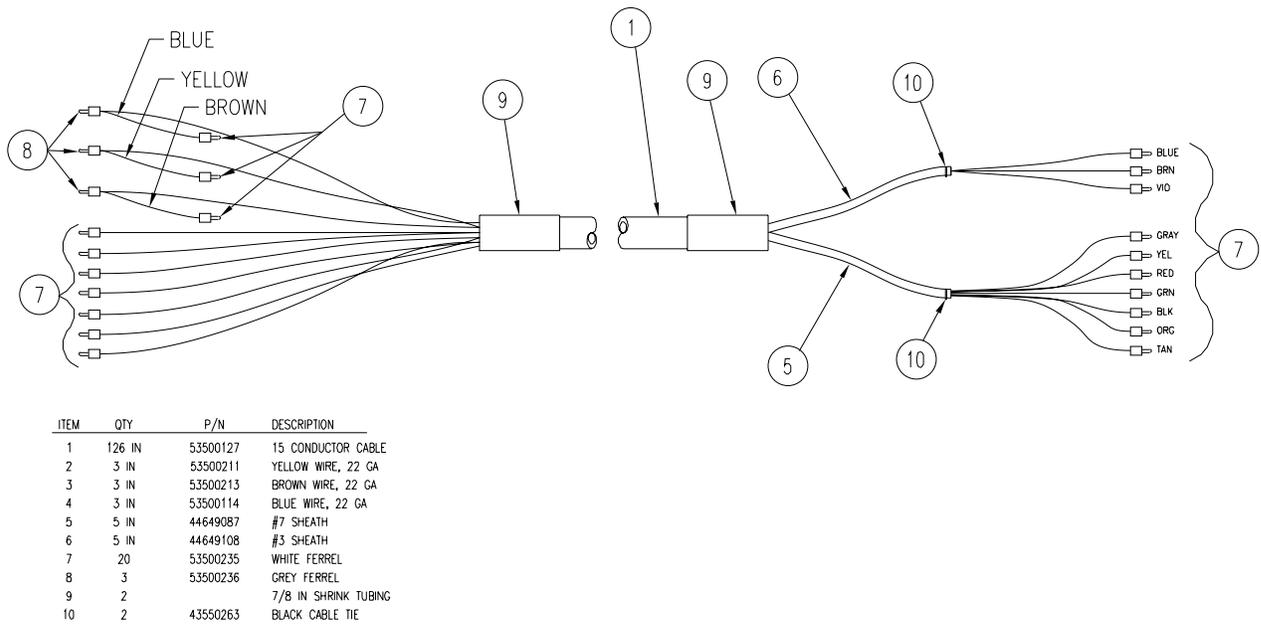


Figure 9-10. Cable, Feeder, Interconnect

## Sheet Sensor Harness Wiring

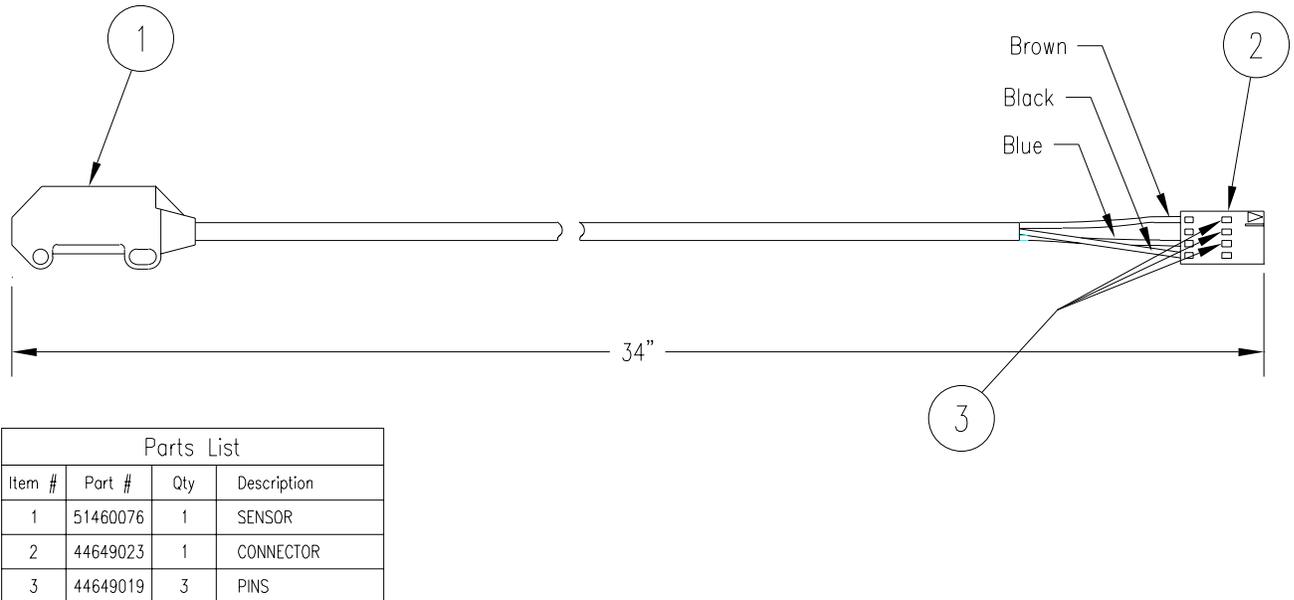


Figure 9-11. Sheet Sensor Harness



## Power Ground Harness Wiring



ITEM	QTY	P/N	DESCRIPTION
1	13.25 IN	53500057	GREEN/YELLOW WIRE
2	1	53500254	RED CONNECTOR

**Figure 9-14. Harness Power Ground**

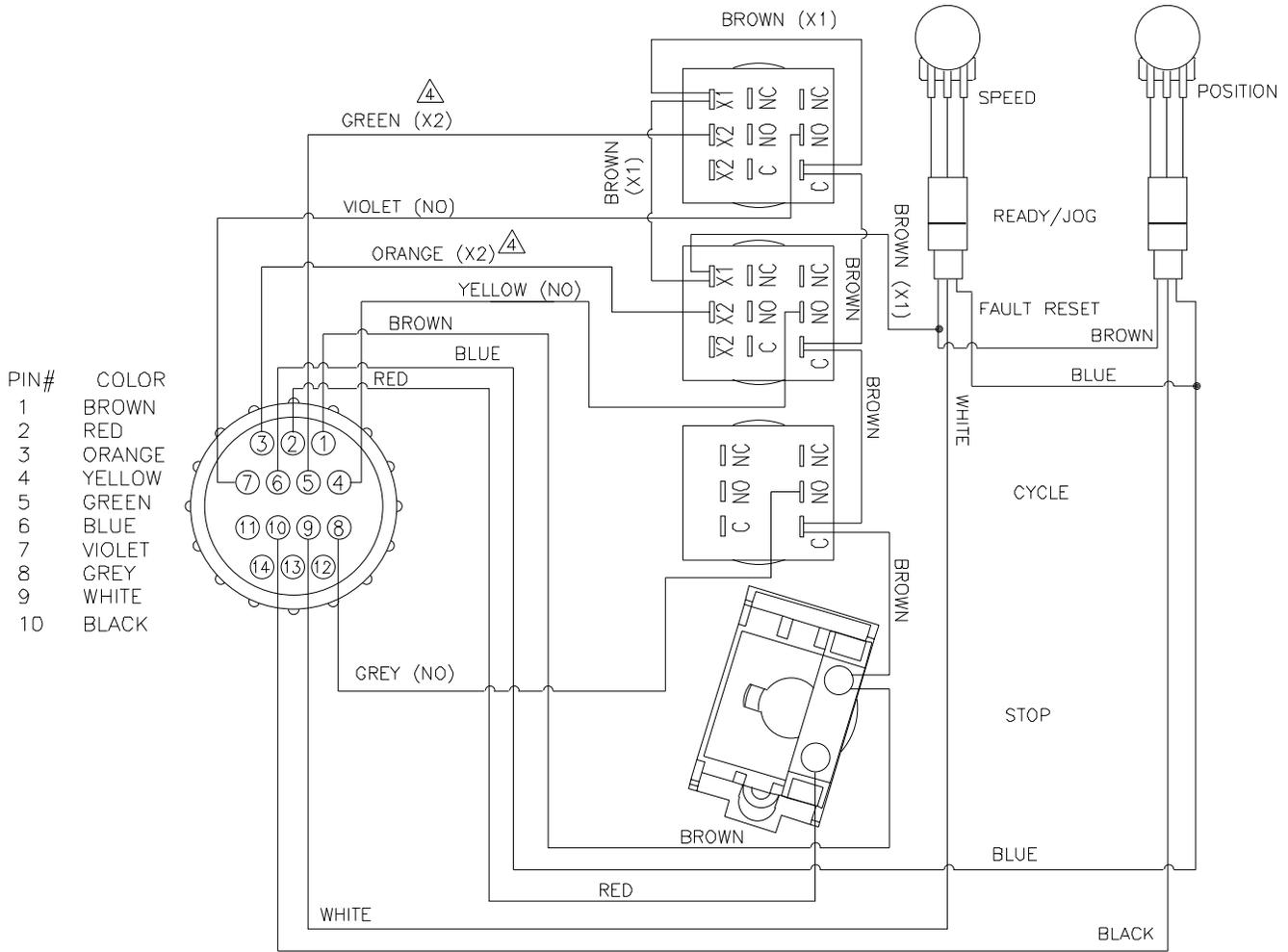
## Secondary Ground Harness Wiring



ITEM	QTY	P/N	DESCRIPTION
1	13.25 IN	53500057	GREEN/YELLOW WIRE
2	1	53500047	FORK

**Figure 9-15. Harness Secondary Ground**

# Operator Interface Wiring



Unless otherwise specified, all Brown connections go to Common Terminal

# 10 Technical Troubleshooting

The tables that follow are designed to be a “quick lookup” for a problem you may be having. Wiring diagrams also contained in this manual are provided for reference and component recognition and connection during troubleshooting.

## General Troubleshooting Terms



Only a qualified technician should perform electrical troubleshooting activities. This unit operates on 115V or 230V electrical power. Bodily contact with these voltages can result in serious injury or death.

Table 10-1. Quick-Look Troubleshooting

Problem	Solution
<p><b>No power to feeder when power switch is turned on</b></p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px 0;"> <p>IMPOR TANT</p> </div> <p><i>A visual inspection will not always be sufficient to determine fuse integrity.</i></p> <p><i>After power has been applied, allow 20-30 seconds for the feeder to power up.</i></p>	<ol style="list-style-type: none"> <li>1. Make sure there is power present at the AC main where the feeder is plugged in.</li> <li>2. Check three-wire AC power cord for integrity at all three points.</li> <li>3. Remove power cord from AC input switch module and disconnect the four connections to AC loads located on the back of the module inside the feeder.</li> <li>4. Check the two fuses located inside the feeder’s input power module. BOTH fuses must be present and test good. Note: This power module is designed to hold 5mm x 20mm fuses, as well as 1.25" x .25" fuses. The machine ships from Streamfeeder’s facility with 5mm x 20mm fuses.               <ol style="list-style-type: none"> <li>a. Observe the voltage label showing through the window on the fuse housing for proper orientation when the holder is re-inserted.</li> <li>b. A small screwdriver inserted under the tab will allow you to pry open the fuse housing. Remove the red fuse holder. If the smaller 5mm x 20mm fuse is present, verify that the metal tab “finger” is holding the fuse in the forward position and has not allowed the fuses to slide back toward the outside of the feeder and away from where contact with the metal pressure points inside the module body is made.</li> <li>c. Use an ohmmeter to test the fuses. If necessary, replace with fuses of the same rating only.</li> </ol> </li> <li>5. Reconnect power cable and with power switch turned “On,” check for presence of AC at the output connectors on the back of module.</li> <li>6. If steady AC power is not measured as in the previous step, the module’s internal contacts are most likely worn, and the module must be replaced.</li> </ol>
<p><b>Fuses blow on power up</b></p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px 0;"> <p>NOTE</p> </div> <p><i>A fuse failure indicates a problem with the last item connected before failure occurs.</i></p>	<ol style="list-style-type: none"> <li>1. Install known good fuses of same rating only.</li> <li>2. Disconnect all AC loads from the input:               <ol style="list-style-type: none"> <li>a. The Servo Amplifier.</li> <li>b. The DC Supply.</li> </ol> </li> <li>3. Reconnect AC loads one item at a time while alternately applying power between new connections. Connect each load as follows one at a time to determine the faulty part:               <ol style="list-style-type: none"> <li>a. Connect DC Power Supply to the AC input module.</li> <li>b. Connect Servo Amplifier.</li> </ol> </li> </ol>

**Table 10-1. Quick-Look Troubleshooting (continued)**

Problem	Solution
<p><b>Cannot clear fault</b></p>	<ol style="list-style-type: none"> <li>1. Make sure the Safety Interlock (located under the front guard) is fully engaged.</li> <li>2. Make sure DC Power Supply Harness integrity is intact.</li> <li>3. Jumper J3 pins 1 and 2 on the Breakout Board inside the feeder.                             <ol style="list-style-type: none"> <li>a. If amber light continues flashing after pressing the reset button, check the integrity of cable 14601117 Feeder Interconnect.</li> <li>b. If amber light turns off after pressing the reset button, check the integrity of harness 70011007 Safety Interlock.</li> </ol> </li> </ol>
<p><b>Flight photo sensor does not trigger feeder</b></p> <div style="border: 1px solid black; padding: 2px; margin: 5px 0;">  <b>NOTE</b> </div> <ul style="list-style-type: none"> <li>• Pin 1 is 24VDC.</li> <li>• Pin 2 is the signal input pin.</li> <li>• Pin 3 is DC ground.</li> <li>• Pins 1 and 3 give life to the sensor.</li> <li>• Pin 2 requires 24VDC to be applied to it when a “flight” is present and the output of the sensor is on.</li> </ul>	<ol style="list-style-type: none"> <li>1. Test the integrity of the wiring harness leading to the flight sensor input connector.                             <ol style="list-style-type: none"> <li>a. Measure 24VDC across pins 1 and 3 on the 4-pin circular connector. If voltage is not present, repair broken wire.</li> <li>b. Jumper pin 1 to pin 2. This should trigger a cycle. If not, repair broken wire.</li> </ol> </li> <li>2. Connect “flight” sensor to 4-pin circular connector and verify the sensor is getting power by checking the status LEDs on the sensor body for illumination. If not, check sensor leads for integrity.</li> <li>3. Test the flight sensor for a switching output. If not present, replace flight sensor.</li> </ol>



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