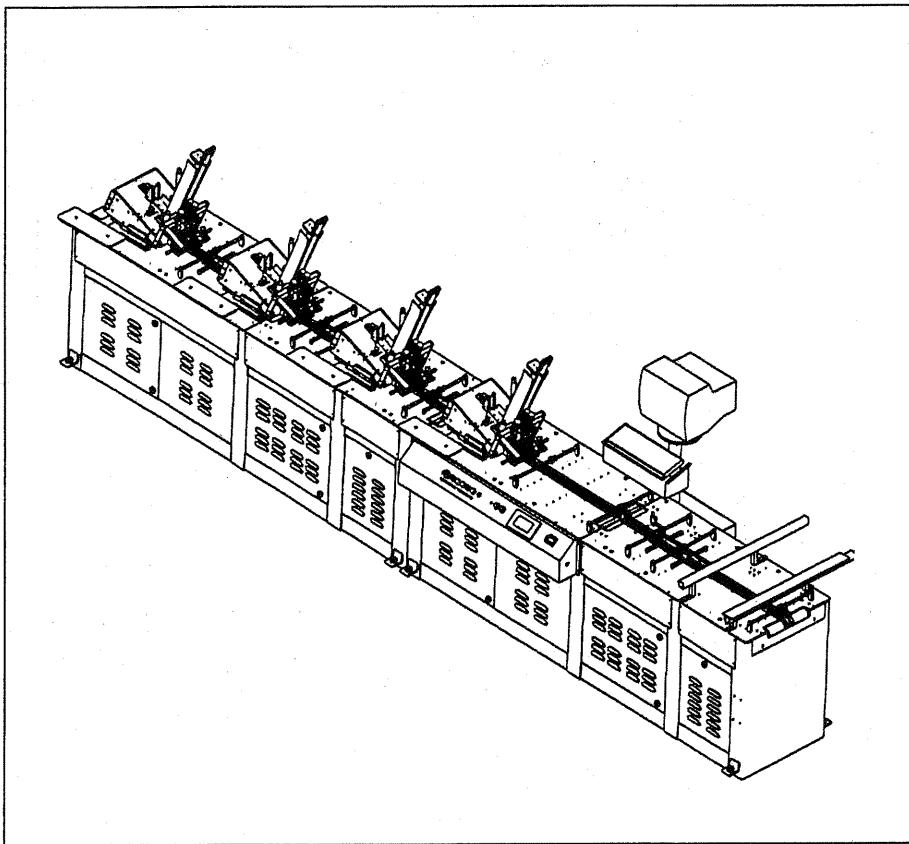


Kirk-Rudy, Inc.

KR805 Church Envelope Collating Inkjet System General Information



Manufactured by Kirk-Rudy, Inc.

Before using this machine, all operators must study this manual to understand and follow the safety warnings and instructions. Keep these instructions with the machine for future reference. If you have any questions, contact your local Kirk-Rudy, Inc. Distributor.

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NOTE: FIGURES AND DIAGRAMS ARE NOT INCLUDED IN PAGE NUMBERS.

1 Important Safety Instructions

SAVE THESE INSTRUCTIONS. Read all instructions before using this product.



WARNING

- * NEVER OPERATE THE MACHINE WITHOUT ALL GUARDS OR SAFETY DEVICES IN PLACE.
- * ALWAYS TURN POWER OFF WHEN MAKING ADJUSTMENTS.
- * ALWAYS DISCONNECT THE POWER SUPPLY BEFORE ANY MAINTENANCE OR SERVICE WORK.
- * NEVER START THE MACHINE WITHOUT FIRST CHECKING ALL PERSONNEL ARE CLEAR OF MOVING PARTS.
- * KEEP FINGERS CLEAR OF ALL MOVING PARTS.
- * NEVER REMOVE THE PRODUCT FROM THE MACHINE WHILE MACHINE IS RUNNING.
- * SHOULD MISFED PRODUCT JAM THE MACHINE AND STOP IT FROM RUNNING, ALWAYS PRESS THE STOP BUTTON BEFORE CLEARING PRODUCT. IF THE STOP BUTTON IS NOT PRESSED AND THE JAM IS CLEARED, THE MACHINE WILL BEGIN RUNNING.
- * IT IS NOT RECOMMENDED THAT LOOSE CLOTHING, JEWELRY AND LONG HAIR BE WORN WHILE OPERATING THIS MACHINERY.
- * ALWAYS USE AN EXPERIENCED ELECTRICIAN WHEN TROUBLE-SHOOTING ELECTRICAL PROBLEMS.
- * CHANGES OR MODIFICATIONS TO THIS UNIT NOT EXPRESSLY APPROVED BY THE PARTY RESPONSIBLE FOR COMPLIANCE COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

2 SPECIFICATIONS

	<u>ENGLISH</u>	<u>METRIC</u>
<u>ELECTRICAL REQUIREMENTS</u>		
Base Main Power Input:	230 VAC 3 Phase, 50 – 60 Hz, Amps Approx. equals 15 x Number Feeders (Contact KR Engineering for final Specification)	

MAXIMUM OPERATING SPEEDS

500 ft/min equals 30,000/hr @ 12" spacing

Note: Speeds are dependent on material (product) being fed.

PHYSICAL SIZE

Length:	2-4 Station	17' 10"	541.0 cm
	5-8 Station	26' 9"	815.0 cm
Width:		25.75"	65.4 cm
Height:		33.25"	84.5 cm

PRODUCTS

Minimum Size:	3"W x 4"L	76 mm W x 101 mm L
Maximum Size:	8"W x 9" L	279 mm W x 305 cm L
Minimum Thickness:	Card Stock (.004")	Card Stock (.10mm)
Maximum Thickness:	.125"	3.18 mm
Maximum Stack Height:	10"	25 cm

SP98200

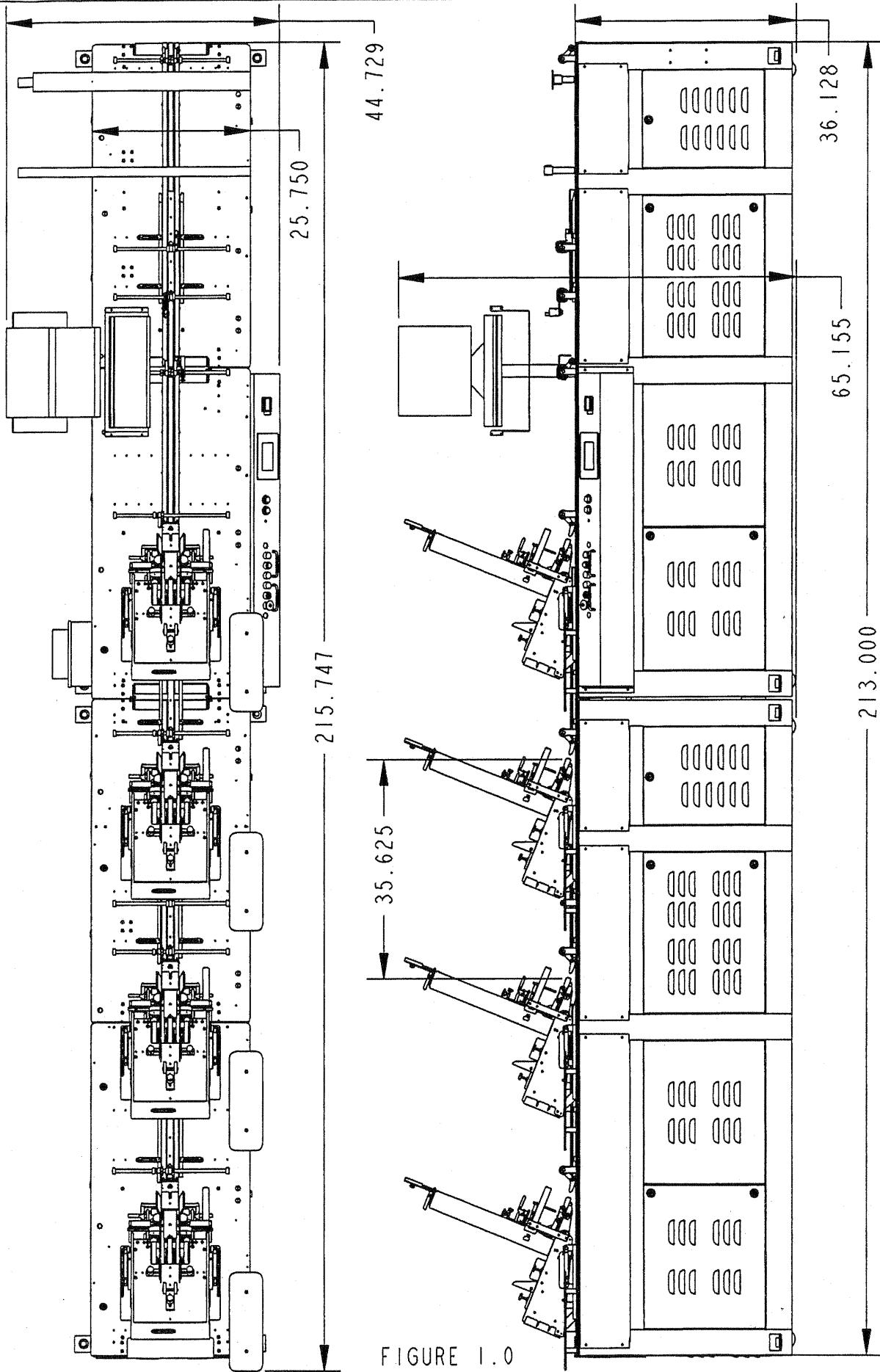
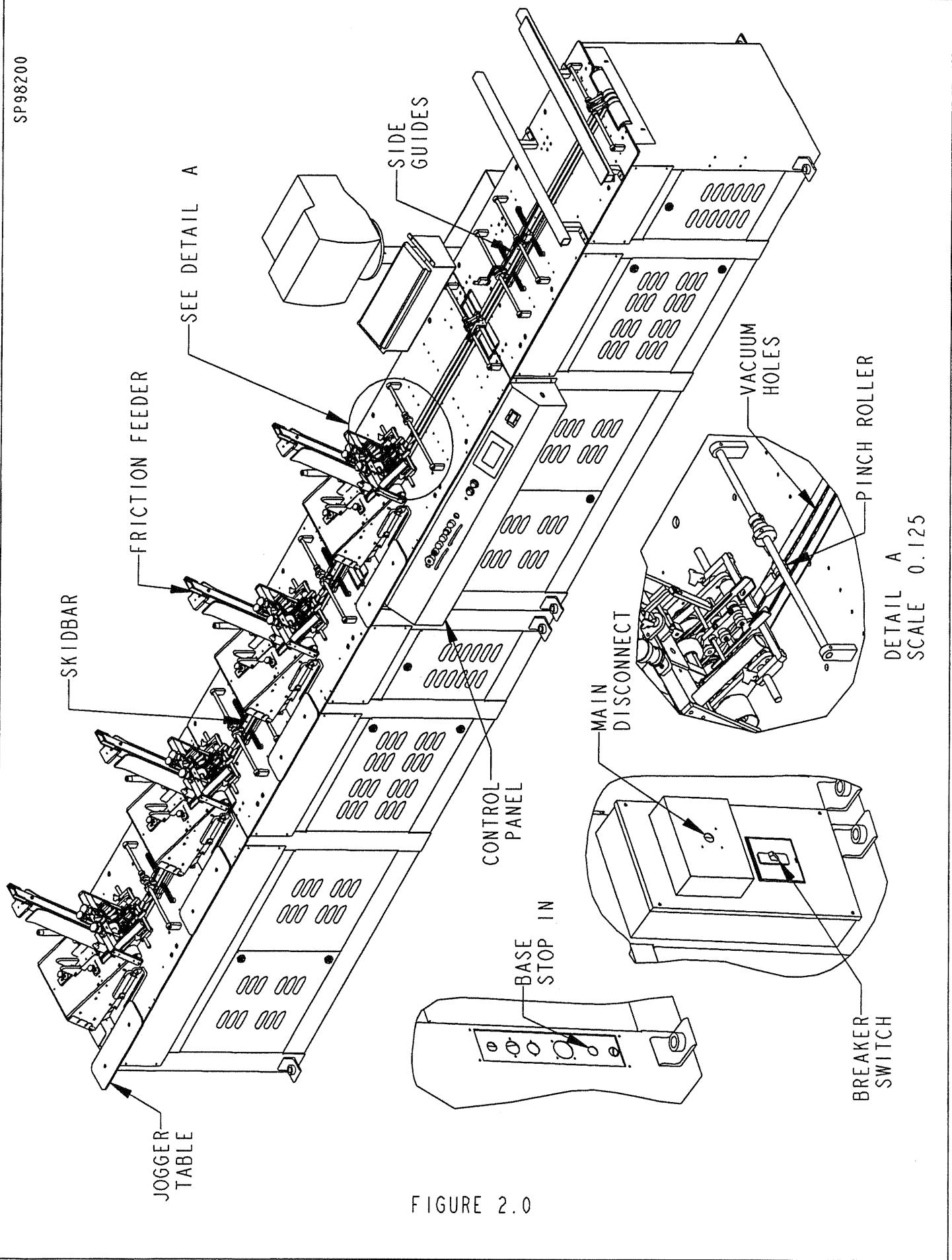
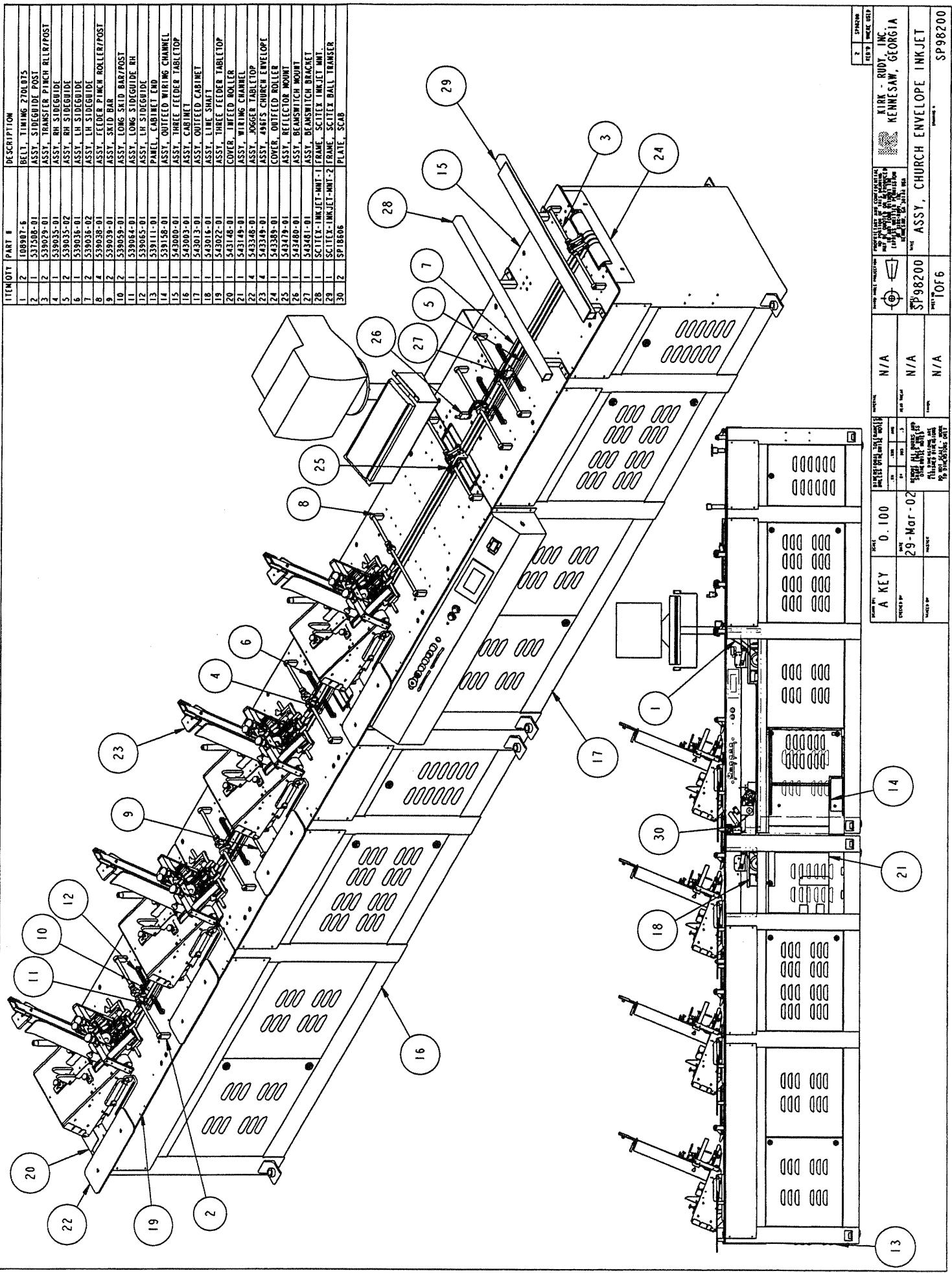


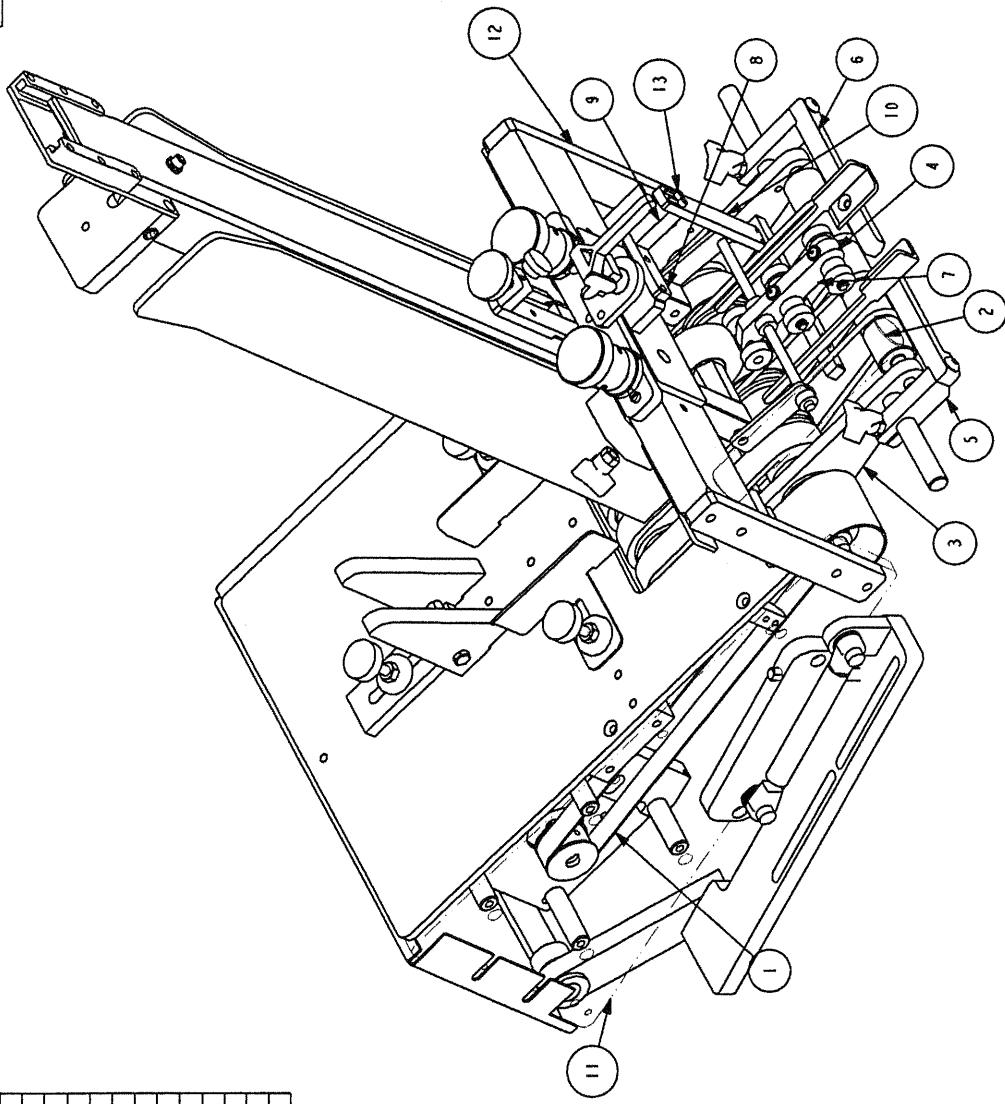
FIGURE 1.0

SP98200





ITEM	QTY	PART #	DESCRIPTION
1	1	109117-10	BELT, TIMING 139-5M-15
2	1	53312-01	SHAFT, DRYER HANDLE
3	1	534911-01	ASSY, FRICTION BELTS
4	1	538051-06	ASSY, SHORT FLOATING SKID BAR
5	1	533387-01	ASSY, OUTFEED RH SIDEGUIDE
6	1	533387-02	ASSY, SIDEGUIDE LH
7	1	533392-01	BLOCK, DOUBLE DETCT SPACER
8	1	533393-01	BRACKET, DOUBLE DETECT
9	1	533394-01	BRACKET, DOUBLE DETECT
10	1	533395-01	BRACKET, DOUBLE DETECT
11	1	543350-01	ASSY, 496 FRAME
12	1	543352-01	ASSY, BRIDGE 496F
13	4	CSD0210	SCREW, SHCS 6-32X.500

REV
NO

DATE

ECN
NO

BT

SP4200

REV D WHEN USED

KIRK - RUDY, INC.
KR KENNESAW, GEORGIA

ASSY, 496FS CHURCH ENVELOPE
 DRAWING # 543349-01

DRAWING BY:		DIMENSIONAL TOLERANCES: INCHES:	
A	KEY	0 .340	N/A
IN	MM	IN	MM
10	May	-02	N/A

ITEM NUMBER:		PROPRIETARY AND CONFIDENTIAL	
ITEM	NUMBER	MANUFACTURED	BY
1	98200	100% TESTED	100% INSPECTED
2	98200	100% TESTED	100% INSPECTED
3	98200	100% TESTED	100% INSPECTED

ITEM NUMBER:		PROPRIETARY AND CONFIDENTIAL	
ITEM	NUMBER	MANUFACTURED	BY
1	98200	100% TESTED	100% INSPECTED
2	98200	100% TESTED	100% INSPECTED
3	98200	100% TESTED	100% INSPECTED

ITEM NUMBER:		PROPRIETARY AND CONFIDENTIAL	
ITEM	NUMBER	MANUFACTURED	BY
1	98200	100% TESTED	100% INSPECTED
2	98200	100% TESTED	100% INSPECTED
3	98200	100% TESTED	100% INSPECTED

3 GENERAL OVERVIEW

KR805 Church Envelope Collating Inkjet System General Specifications and Control Operation

System Information

System Overview

The KR805 Collating Base can be configured with multiple modular bases and multiple KR496FS Servo Friction Feeders mounted in-line to feed church envelopes onto vacuum belts. The base uses virtual lugs that have a product spacing of approximately 12". The KR496FS feeders speed follow the bases vacuum belts and will feed envelopes in to the virtual spaces, one after another, to make a batch according to a downloaded delimited text file from a computer.

A batch of envelopes may have different sequences, for example, the first KR496FS feeds 10 envelopes and skips 2 spaces and then feeds 10 more. The second KR496FS waits for 10 spaces and feeds 1 envelope into the first open space and the third KR496FS waits for 11 spaces and feeds 1 envelope into the last open space. This batch sequence is repeated with no spaces between batches or multiple spaces.

The envelopes are transferred onto a vacuum inkjet section. The inkjet section runs independent of the KR805 Collating Base. This prevents the product from stopping under the inkjet system when the KR805 Collating Base stops.

The envelopes are then transferred to a KR219 Drying Base or KR314 Shingle Conveyor. Batches can be distinguished by batch spacing or conveyor speed-up.

Features

1. PLC Controls: Touch Screen Interface: The touch screen is connected to the programmable logic controller (PLC). Through the use of menus, the touch screen is used to program the PLC to control the functions of the KR805 Collating Base, the KR496 Friction Feeders and, if necessary the KR219 Inkjet Base and the KR314 Conveyor through the use of menu screens.
2. PC to PLC Program Interface: If running a sequenced job from the computer, power up the computer and download the job from the KR Visual Basic Program on the computer to the PLC in the base.
3. Batch Counting without PC: If running batch counts instead of a sequenced job from the computer, program the batch data using the touch screen (the computer is not required to be on to run batch count jobs).
4. Product Counters: This base has three counters. The total product counter counts the total number of envelopes at the end of the base. The total batches counter counts the

completed batches at the end of the base. And the batch product counter counts the number of envelopes in the current batch.

5. Base Encoder: An encoder controls items related to product feed.
6. AC Variable Speed Base: The modular sections are line shaft driven with multiple AC Drive motors for accurate belt position.
7. Feed Error Detection: When a feeder station is enabled, miss-feed and double detection monitors proper feeding. If a feeder does not feed properly, the machine will stop and a lighted tower will notify the operator that an error has occurred.
8. Feed Monitoring: This function uses the miss-feed beam-switch and the encoder. When the product feeds out, it triggers the beam-switch. The position at which this occurs is consistent from one cycle to the next. The encoder determines if the product fed out properly. When a station is in use, one piece must be fed at the same position every cycle.
9. Reject System: An optional reject system is controlled by the inkjet system.
10. Shingle Conveyor: The outfeed conveyor can be set in one of two modes: Off or Auto. When the conveyor status is Off, the conveyor will remain off regardless of the base status. In Auto mode, the conveyor runs when the base runs and is stopped when the base is stopped

4 COMPONENT CONTROLS

4.1 MECHANICAL COMPONENT DESCRIPTION

4.1.1 Base Component Description (see Figures 2.0 and 3.0)

1. Friction Feeder: Feeds product down onto the vacuum belts one at a time.
2. Control Panel: Contains operator controls. See 4.2.1 Control Panel Description.
3. Side Guides: Guides product as it travels down the base.
4. Skid Bar: Has balls to allow product to move and register against the side guides.
5. Pinch Roller: A pinch roller mounted on a spring loaded arm insures that the product transfers smoothly from the round belts to the tabletop belts. A pin in the adjacent collar stops the lower movement of the arm and is used to set the height of the pinch roller. The tabletop belts are programmed to run faster than the round belts and the pinch roller helps to accelerate the product in order to create a gap between products.
6. Vacuum Holes and Belts: Vacuum below the tabletop holds the product on the belts to prevent slippage.
7. Spring Loaded Belt Take-up Arms: This flat belt take-up system is spring-loaded to allow for belt stretch and to minimize maintenance time. Tension on these arms should be checked and adjusted weekly to prevent belt slippage.
8. Vacuum Channel: This vacuum channel manifold allows air to pass through the tabletop to help hold the product to the flat belts. The vacuum channel and vacuum holes should be checked and cleaned as necessary to ensure good air flow.

4.1.2 Feeder Component Description (see Figure 4.0)

1. Feed Belts: Five feed belts are mounted on rollers in an assembly and are driven by a servo motor through the use of a high torque drive (HTD) belt. Friction between the bottom product and the feed belts feeds the bottom product under the retard roller onto the round belts when the servo motor is activated.
2. Retard Roller: The retard roller shingles the leading edge of the stack of product in the feeder and gates the product allowing only the bottom product to feed.
3. Quick Release Clamp: The lever action of the quick release clamp allows the retard roller to be locked in place or to be quickly raised to assist in setting up products and clearing jams.
4. Front Guide: The front guide guides the leading edge of the products stacked in the feeder to the bottom half of the retard roller.
5. Side Guides: The side guides allow the product to be stacked in the feeder and prevents skewing.
6. Wedges: The wedges perform several functions. As the stack of products moves downward during feeding, the angle of the leading edge of the wedges helps move the products forward to shingle against the back of the retard roller. The wedges also raise the trailing edge of the products, keeping the stack of products at an angle to the feed belts. Adjusting this angle controls the amount of product that comes in contact with the friction belts. When more drive is needed the wedges should be adjusted

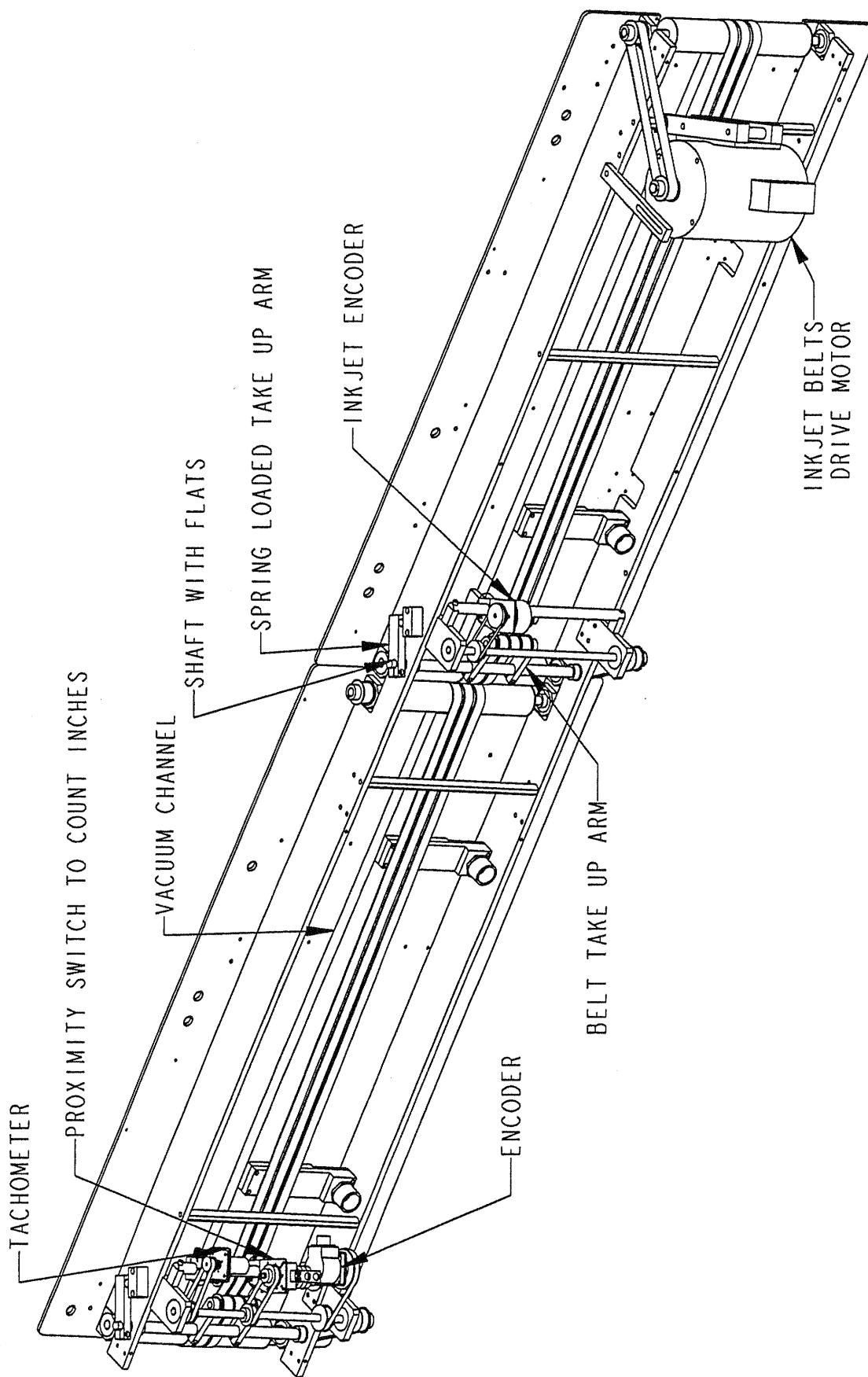


FIGURE 3.0

543349-01

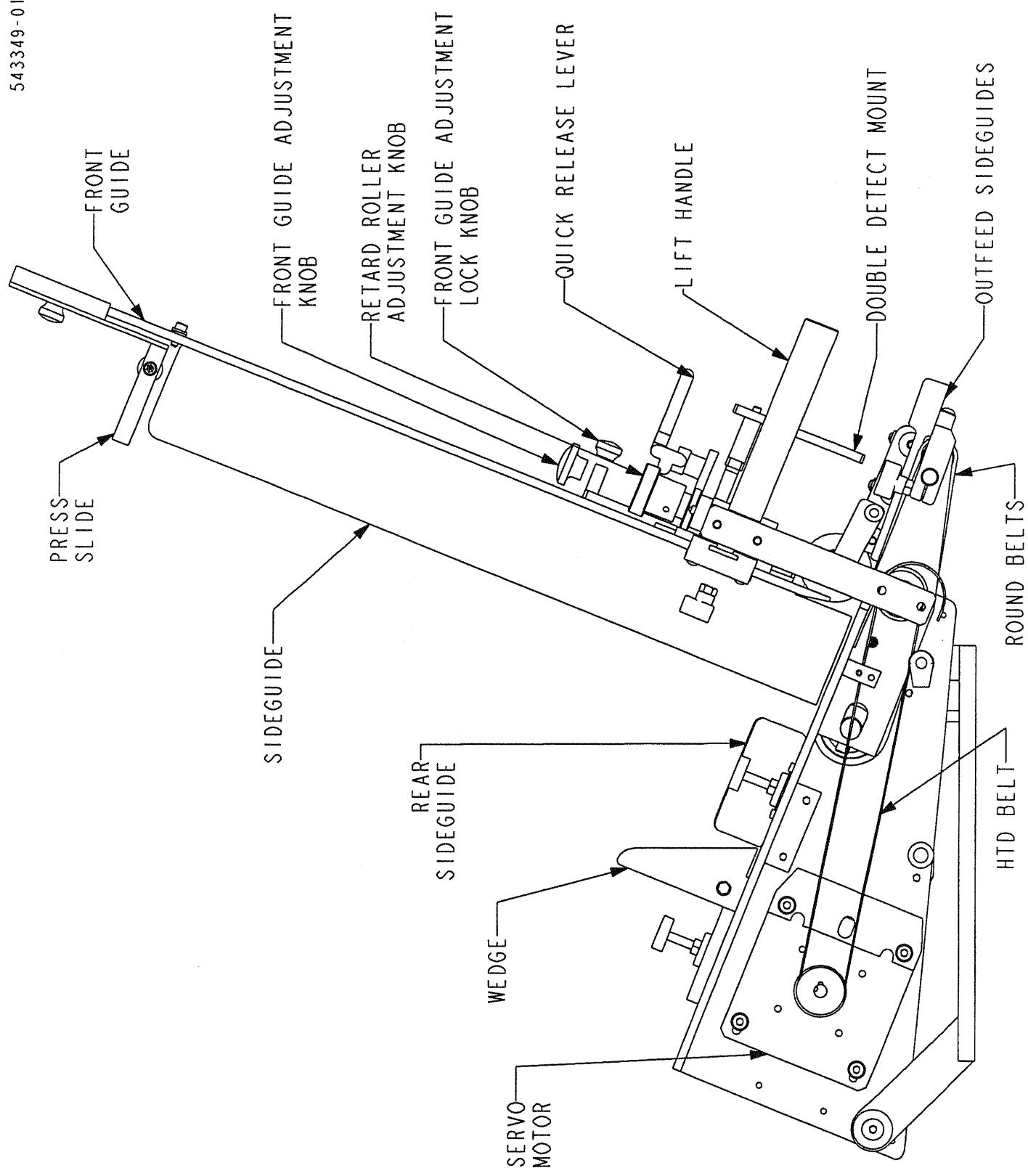


FIGURE 4.0

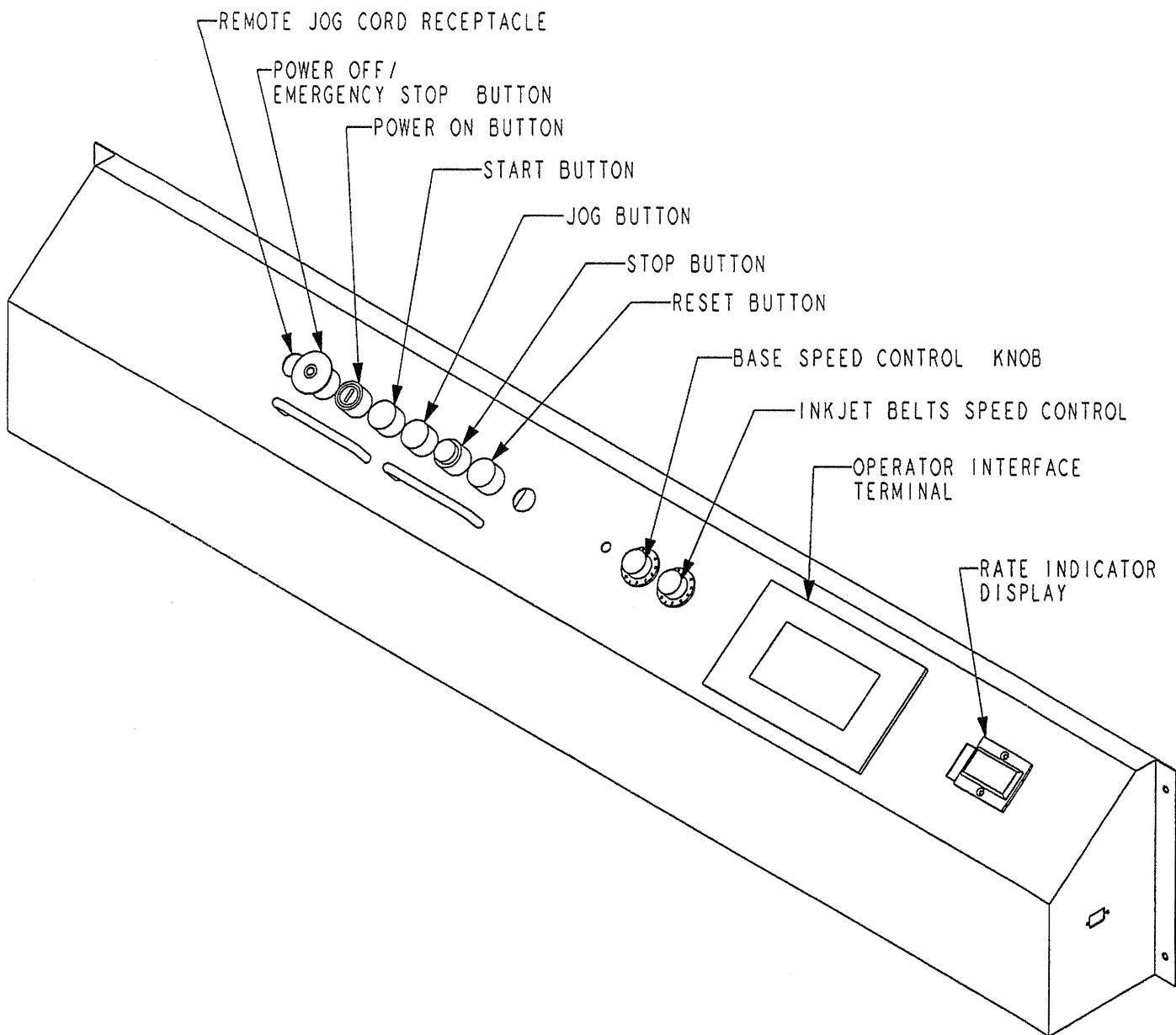


FIGURE 5.0

back to allow more product to touch the belts. The wedges also prevent product from sliding under the side guides.

7. **Round Belts:** After the product is feed out by the feed belts, the round belts convey the product to the belts on the tabletop of the base machine. The round belts run slightly faster than the feed belts in order to create a gap between products during feeding. This gap is necessary in order for the beam switch to detect the leading and trailing edges of the products.
8. **Skid Bar:** The skid bar rides the top of the product while it is being conveyed by the round belts in order to provide the friction necessary for the round belts to drive the product to the tabletop belts.
9. **Retard Roller Adjustment Knob:** This knob adjusts the amount of tension applied to the shingled product below it. With the correct amount of tension the retard roller will only allow one piece to pass at a time.
10. **Adjustment Knob Locking Ring:** This ring is used to lock the retard roller adjustment knob in place after setting.
11. **Feeder Lift Handle:** The feeder can easily be lifted to clear jams and for product guide set up.

4.2 ELECTRICAL COMPONENT DESCRIPTIONS

4.2.1 Control Panel Description (see Figure 5.0)

1. **Remote Jog Cord Receptacle:** The remote jog cord receptacle accepts an extension cord jog button for setting up the machine. The machine will run at a preset speed as long as the button is pressed.
2. **Power Off Button/Emergency Stop:** Pressing the power off button turns off all power to the machine drives and all non signaling output devices. The green power button light will turn off when the power is off. The button must be unlatched to turn the power back on.

CAUTION: After powering down the base, wait a full 20 seconds before powering back up. This allows the servo drives to fully discharge.

3. **Power On Button:** To turn the power on to the machine, press the power on button. When the green button is lit, power is being supplied to the machine. The emergency stop button on the control panel must be unlatched for the power button to function.
4. **Start Button:** If no stop buttons are latched, pressing the start button starts the motor driving the tabletop belts on the SP98200 base.
5. **Jog Button:** Pressing the jog button will cause the whole machine to run as long as the button is pressed.
6. **Stop Button:** Pressing the stop button will stop the motor driving the belts on the SP98200 base and light up the red light at the discharge of the machine. The button must be unlatched to restart the machine.
7. **Batch Reset Button:** The reset button is used to reset batch shift registers to the beginning. Note: Pressing the button will not reset the data currently loaded into the table shift register. Holding the Batch Reset Button in will keep the batch shift

register from loading onto the table's shit registers allowing the table's shift register to clear.

8. Base Speed Control Knob: Used to control the speed of the motor driving the tabletop belts on the SP98200 base.
9. Inkjet Belts Speed Control Knob: Used to control the speed of the motor driving the tabletop belts on the inkjet part of the base.
10. Operator Interface Terminal: The OIT is connected to the programmable logic controller (PLC). Through the use of menus, the OIT is used to program the PLC to control the functions of the SP98200 base and the KR496 friction feeders through the use of menu screens.
11. Rate Indicator Display: Displays the current product per minute rate.

4.2.2 Feeder Control Box Description (see Figure 6.0)

1. Feeder Set Up Switch: The feeder setup switch will turn the associated servo friction feeder on and the feeder will run continuously until the switch is turned off.
2. Stop Button: This is a latching switch. The button must be unlatched to turn the power back on. Pressing this button will stop the machine.
3. Index Button: The index button will feed one product until it reaches the outfeed beam switch for each press and release. Note: The outfeed beam switch must detect a gap between the product before it will turn off.

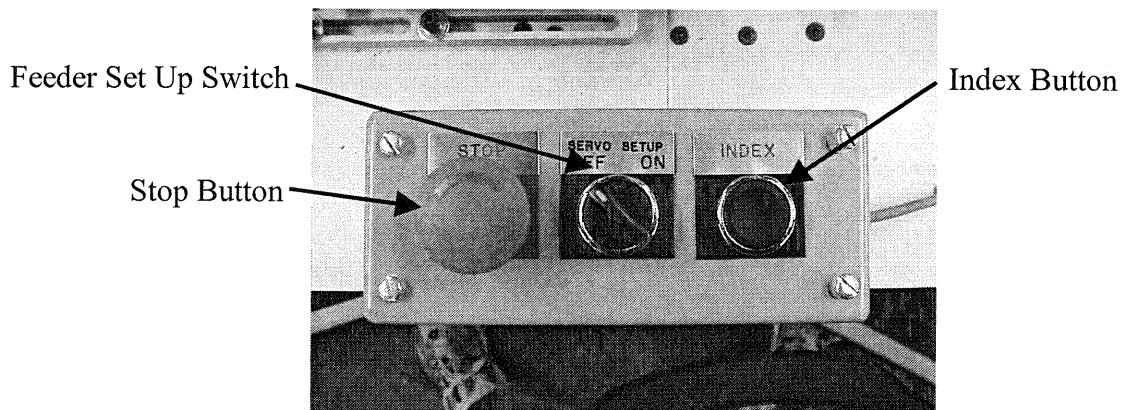


Figure 6.0

4.2.3 Inkjet Base Control Box Description (see Figure 7.0)

1. Stop Button: This is a latching switch. The button must be unlatched to turn the power back on. Pressing this button will stop the machine.
2. Jog Button: Pressing the jog button will cause the inkjet base to run as long as the button is pressed.
3. Start Button: If no stop buttons are latched, pressing the start button starts the motor driving the inkjet tabletop belts on the SP98200 base.

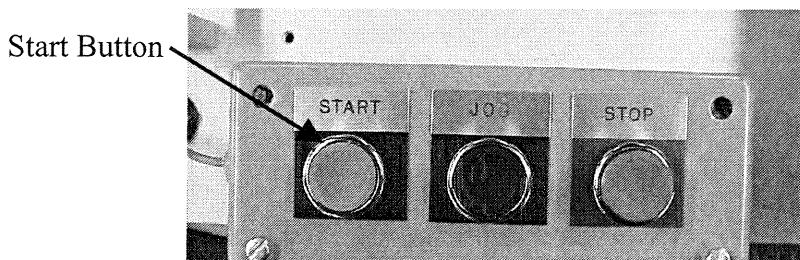




Figure 7.0

4.2.4 Sensor Component Description (see Figure 4.0)

1. **Reflector:** The reflector reflects the light from the beam switch. (The beam switches on the feeders are set in the D/O mode, in this mode the red light on the beam switch will be on when the light from the beam switch is prevented from reflecting back to the beam switch by the reflector.)
2. **Feeder Beam Switch:** (not shown) The beam switch is used to stage a product on the round belts. When the feeder is staging, the bottom product will feed out until the beam switch detects the leading edge of the product. The beam switch is also used to provide inputs to the miss-feed system. After a feeder is activated to feed, to prevent activation of the miss-feed system, the beam switch must detect the leading edge of the product that is feeding from the round belts onto the tabletop when it is time to feed.
3. **Feeder Double Detect:** The double detect emits a light which “burns” through a single piece of product based on the intensity. If two pieces of product pass between the emitter and receiver the light doesn’t “burn” through and stops the base. A gain knob mounted on the double detect amplifier controls the amount of “burn” through. See Figure 8.0.

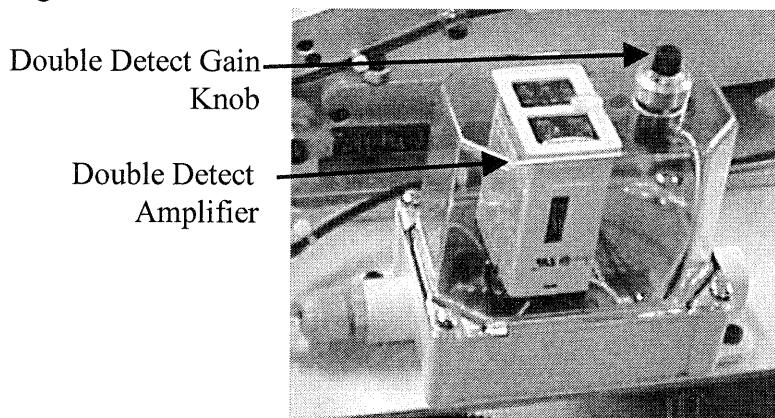


Figure 8.0

4. **Base Beam Switch:** (not shown) The beam switch is located on the out-feed of the base and is used to count product which breaks the light beam between the switch and reflector. The OIT (operator interface terminal) uses this information to display the total number of products run. The beam switch is also used to turn off the discharge conveyor when no product is detected.

4.2.5 Base Electrical Component Description (see Figure 9.0)

1. Proximity Switch: The proximity switch provides belt speed in 1" increments to the rate indicator.
2. Tachometer: Provides voltage to the PLC to determine the belt speed. This information is used by the PLC to allow the feeders to speed follow the base belts.
3. Encoder: Provides the PLC with pulses to determine product location.

CAUTION: Premature failure of the tachometer and encoder will result if the drive belt is too tight.

4. Buzzer: (not shown) Provides a warning signal when the machine is starting up.

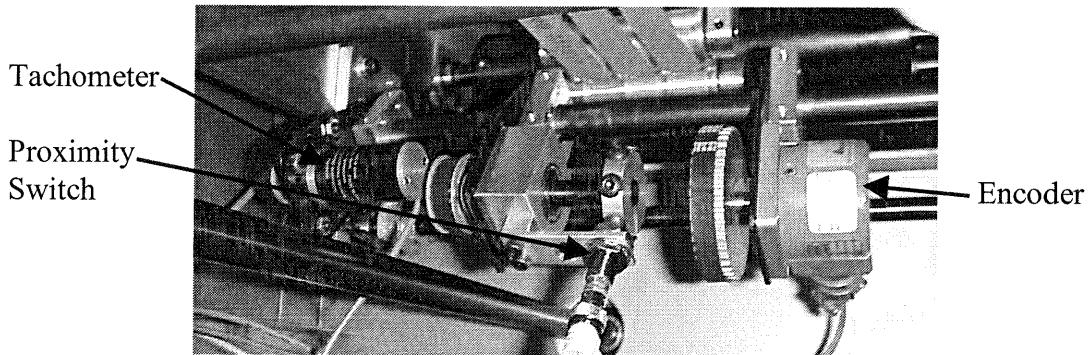


Figure 9.0

4.2.6 Feeder Light Tower Description

1. Red Light: Lights when the stop button on the adjacent feeder remote control is pressed.
2. Yellow Light: Lights when the adjacent KR496 feeder has detected a miss-feed or a double feed of a product.
3. Green Light: Lights each time a product is feed out of the adjacent KR496 servo friction feeder.

4.2.7 Machine Light Tower Description

1. Red Light: Lights when the system is receiving a remote stop batch signal, remote stop in signal or by pressing the stop push button on the inkjet tabletop. The light is solid when a remote stop signal is received, flashes slowly for a remote stop signal, and flashes quickly when the inkjet tabletop stop button is pressed.
2. Yellow Light: Lights when a cross-feed jam is detected at the discharge.

4.2.8 Base Electrical Connections (see Figure 2.0)

1. Main Disconnect: The main power switch disconnects power to the base and feeders. The switch must be off before removing the breaker box cover.
2. Breaker Switch: The breaker protects the electrical system from overloads and must be reset if tripped.
3. Base Stop In Receptacles: Two two-pin Turck receptacle marked stop in is located on the back of the out-feed end of the SP98200 base. The receptacles serve the purpose

of providing a hook up point for the stop button on the down stream machine and/or a stop signal from a inkjet. The cables tie into the stop circuit of the SP98200 base. When the down stream machine stop cable is connected to the receptacle, a stop signal from the inkjet or pressing the stop button on the down stream machine will stop the SP98200 base.

NOTE: In order to run the machine, the stop circuit must be a closed circuit. If the stop receptacles above are left open, a jumper plug must be connected to the open stop receptacle in order to complete the stop circuit.

4.3 TOUCH SCREEN INTERFACE

4.3.1 Overview: The user interface provides a way to electronically change certain machine settings. This system eliminates most mechanical adjustments and makes the machine user-friendly. Miss feed location, stop conditions, machine status, product count, batch count, and base position is presented on the touch screen. Settings are modified using the buttons on the touch screen.

NOTE: The SP98200 comes in several configurations. Screens appearing on the machine may vary from the manual to accommodate these configurations or may have items that still appear on the screen but are not functional.

4.3.2 Touch Screen Data Entry Terminology

This screen has three types of inputs: screen change, off/on data, and numerical data.

1. Screen Change: At power up, the Main Menu screen is displayed. This is the top menu and all other screens are accessed from here. On any screen they are buttons to change to other screens. These screen change buttons perform the following functions:
 2. Main: Go to first screen
 3. Prev: Go to previous screen
 4. Next: Go to next screen
 5. Off/On Data: Configuration information (such as blower enable) is given as off/on data. If an input is off, the button is white. If an input is on, the button is dark.

Configuration information (such as batch gap distance) is given as numerical data. When entering numerical data, the user controls where the data is entered, and the values of the data. On any data entry screen, a box encloses the current data item. On some screens, there is a single data item. On other screens, there may be multiple columns and multiple rows. The following six buttons are located on the keypad and control data entry.

The first four control the data entry box position:

1. Up: Up one position
2. Dn: Down one position
3. Lt: Left one position
4. Rt: Right one position
5. Clear: Clears the current data entry

6. Enter: Accepts the current data.

IMPORTANT: If the Enter key is not pressed, the new data will not be accepted.

4.3.3 Machine Features

11. Shift Info: The shift registers that control the firing of the 496 feeders can be monitored from this screen. It is useful in recovering from a misfeed by knowing the position of the envelope.
12. Product Counters: This base has three counters. The total product counter counts the total number of envelopes at the end of the base. The total batch counter counts the completed batches at the end of the base. And the batch product counter counts the number of envelopes in the current batch.
13. Encoder: An encoder controls items related to product feed. The encoder, which has 60 pulses per revolution, is mounted internally and rotates once per machine cycle, every 11.88" of belt travel.
14. Feed Error Detection: When a feeder station is enabled, miss-feed and double detection monitors proper feeding. If a feeder does not feed properly, the machine will stop and an error will be given.
15. Feed Monitoring: Uses the miss-feed beam-switch and the encoder. When the product feeds out, it triggers the beam-switch. The position at which this occurs is consistent from one cycle to the next. The encoder determines if the product fed out properly. When a station is in use, one piece must be fed at the same position every cycle.

4.3.4 Main Screen (see 8.1 Touch Screen Menus)

Kirk-Rudy 805 7 ST	Missfeed Location:	0	Stop: (St) (B1) (MF) (CF) (J &) (Rn)
Count: 0000 0000			
Batches: 0000 0000			
Batch: 000	Set Up	Shift Info	
Position: 00			

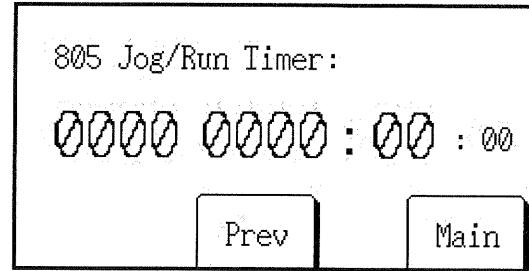
The main screen contains the most often used information. This screen is displayed at power up, and is displayed during normal operation.

1. Screen Label: The label "Kirk-Rudy 805 7 ST" identifies the machine type.
2. Miss-Feed Location: When material is not fed out properly from a friction feeder, a miss-feed occurs. When this occurs, the feeder number (1 to 7) is displayed here. If there was no miss-feed error, a 0 is displayed.
3. Stop Conditions: The right corner of this display gives stop conditions that will cause the base to stop running. When a stop occurs, its indicator will turn on here. Below is the lamp label identification and descriptions.
4. Stop (St): If the stop circuit is open this indicator will be on, and the base will not run. Releasing the stop button will enable the base to run.

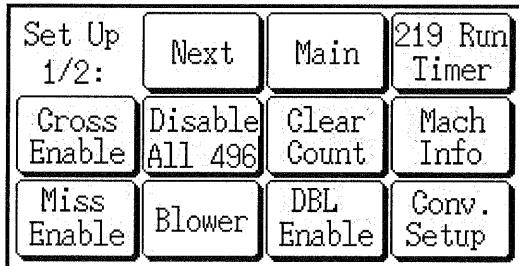
5. Blowers (B1): There are two blowers in the base; they draw air down in the base table to hold the envelopes to the belts. The base may be run with blowers off or on, but jams will occur if the blowers are turned off. If the blowers are turned off, this indicator will flash, reminding the operator that the blowers need to be turned on. When the last blower turns on, this indicator will turn off.
6. Miss-feed (MF): If there is a miss-feed, this indicator will turn on and miss-feed location will be displayed. This lamp turns off and miss-feed number returns to 0 on the next run.
7. Cross-feed (CF): On the end of the base, there is a beam-switch that monitors for product jams. When this beam-switch is covered, the cross-feed indicator will be on constantly; and when the beam-switch covers and is then uncovered, the indicator will flash.
8. Jog (Jg): When in jog mode, this indicator will turn on.
9. Run (Rn): When in run mode, the run indicator will turn on.
10. Count: The total product counter counts the total number of envelopes at the end of the base. This counter is composed of two 4 digit numbers. The right is the lower four digits, and the left is the upper four digits. Example: 0012 0123 = 120,123.
11. Batches: The total batch counter counts the completed batches at the end of the base. This counter is composed of two 4 digit numbers. The right is the lower four digits, and the left is the upper four digits. Example: 0004 0685 = 40,685.
12. Batch: The batch product counter counts the number of envelopes in the current batch. It is cleared at the end of every conveyor speed up. This number is used to determine quality control.
13. Position: The last numerical display is the encoder position, which will range from zero to 59.

4.3.5 Setup Screens

1. Base Run Timer: Press this button to go to the base jog/run timer display. This timer cannot be reset. Two groups of four digits display the hours, then the minutes and seconds are displayed. This timer shows the amount of time the base motor has been on.
2. Cross-feed Enable: Sometimes the cross-feed enable beam-switch may incorrectly detect a jam. In this case, cross-feed enable may be disabled. When cross-feed detection is enabled, this touch switch is on (dark). When cross-feed detection is disabled, this button is off (white). If cross-feed detection is disabled at power down, it is re-enabled when the base is powered up.
3. Disable All 496: If there is a friction feeder or base jam, or if the current batch job is done, the base belts need to be cleared. Pressing the 496 disable touch switch, will stop friction feeder feeding, and will clear the base belts. When the friction feeders are disabled, this touch switch is dark. Pressing this button will re-load the shift registers, re-enable the friction feeder's, and feeding will begin again shortly. If the friction feeder's are disabled at power down, then they are re-enabled when the base is powered up.

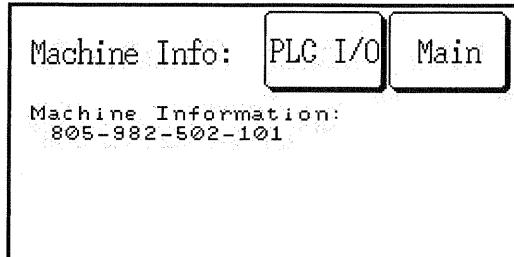


4. Clear Count: Pressing this button will clear the three counters given on the main screen.
5. Machine Information: Pressing this touch switch will display the machine information screens. Information on the PLC program, touch screen file information, and PLC hardware is displayed here. In this screen, there is a touch switch which will display PLC I/O information. Stop, jog, and run information, as well as analog I/O information can be displayed here.
6. Miss-feed Enable: Miss-feed detection monitors the proper feeding from the friction feeders. Under normal circumstances, miss-feed detection would always be enabled. However, when setting up the machine, miss-feed detection may be disabled to simplify the setup. If miss-feed detection is disabled at power down, then it is re-enabled at the next power up.
7. Blower: The blowers draw air through the tabletop, and hold the product down. To turn on the base blowers, press the blower button; when the touch switch is dark, the blowers are enabled. The blowers will turn on sequentially. Pressing this touch switch again will turn the blowers off.
8. Convey: This button displays the conveyor set up screen.
9. DBL Enable: This button activates the double detectors. When lighted the detector will detect double product. Note: The double detector will not work on all products.

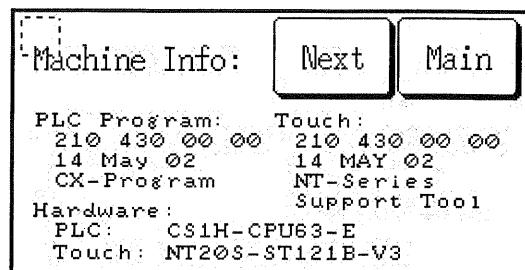


The Set Up 1 of 2 screen contains the most often used configuration.

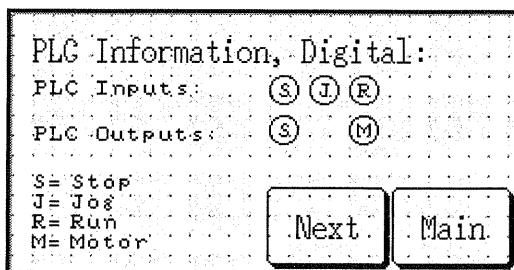
4.3.6 Machine Information Screens



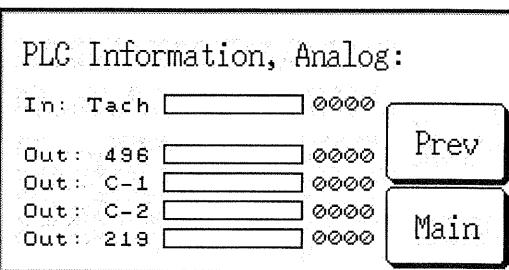
Machine Info: This screen displays the machine serial #, electrical requirements, and the client information.



Machine Info: This screen displays the PLC program and touch screen file information. The PLC type is also listed here.

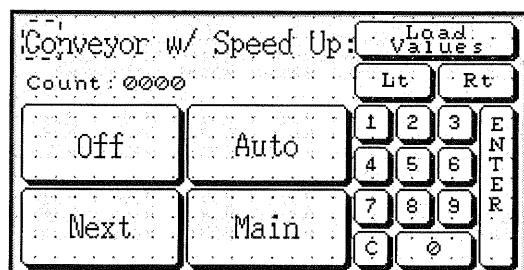


PLC Information, Digital: The stop, jog and run input and output bits are displayed here. These may be used for troubleshooting.



PLC Information, Analog: The tachometer speed input, and the four analog speed outputs are displayed here. These values can range from 0 to 0FA0 hexadecimal. These may be used for troubleshooting.

4.3.7 Conveyor Set Up



- Count:** In Constant mode, the number of envelopes entered in "Count" will feed out and pause to create a product gap on the conveyor.
- Off/Auto:** When the conveyor mode is off, the conveyor belts never move. When the conveyor is in auto mode, the conveyor belts are enabled when the base is in motion. In auto mode, the belts advance when the conveyor beam-switch is covered, or when the conveyor is in conveyor speed up.
- Load Values:** When a new count is entered, the previous value will normally feed out one more time. To load the new constant count value, press this button. The current batch will now have the new batch count.

4.3.8 Conveyor Speed Set Up

Conveyor #1:	Lt	Rt				
Normal:	00 / 000	Up	Dn			
Speed Up:	00 / 000	1	2	3	E	
Conveyor #2:	Normal:	00 / 000	4	5	6	N
	Speed Up:	00 / 000	7	8	9	T
						R
2=1	Prev	Main	C	○		

This screen displays conveyor #1 and conveyor #2 speed settings. When the conveyor is not in speed up mode, the normal settings are used. When in speed mode, the speed up settings is used. These numbers are in the form of numerator/denominator, and the tachometer input is multiplied by the numerator/denominator.

1. Conveyor Normal Speed: When not at the end of batch (not in conveyor speed up mode), run the conveyor belts at this speed. Generally, speed adjustments should be made to the numerator, and the denominator should be left at 100, however the denominator may also be modified.
2. Conveyor Speed Up: When at the end of batch, the conveyor belts accelerate to the conveyor speed up speed. The conveyor speed up continues until the user selecting number of machine cycles is done. Generally, speed adjustments should be made to the numerator, and the denominator should be left at 100, however the denominator may also be modified.
3. 2=1: If the user wants both sets of conveyor belts to run at the same speed, then pressing “2=1” will cause the Conveyor #1 values to be copied to Conveyor #2.

4.3.9 Shift Register Screen

Shift Word:
1 2 3 4
000 000 000 000
5 6 7 Disch.
000 000 000 00000
Main

Shift Register: This screen displays the status of the shift registers, and the feeder and conveyor speed up

1. Shift Register Words: Shift register controls the 496 servo friction feeders. Each number represents a word in the shift register. Each feeder takes up three pockets or three words in the shift registers. The number above the shift register is feeder number that will feed product into the pocket when the number in the shift register matches it. Each cycle the numbers in the shift registers will shift to the right. That pocket will stay empty until the number in the shift register reaches the feeder with the same number. Example: The machine finishes a cycle. The shift registers are shifted to the right one position and the number 4 is loaded into the first register which is under the number 1. Feeder 1 will not fire a product into the pocket because the value in the pocket does not match the feeder number. The machine will run 9

Conveyor Speed Set Up: The conveyor speed is a ratio of the base speed. That is, the faster the base runs, the faster the conveyor runs. The conveyor speed is:

$$\text{Conveyor Speed} = (\text{base speed}) * \frac{\text{numerator}}{\text{denominator}}$$

Conveyor #1, is the first set of belts, #2 is the second set of belts.

cycles bringing the pocket to the feeder 4 position. At that position the number in the register will match feeder number and product will be placed in the pocket.

2. Disch. Discharge represent the pockets that are located on the inkjet base.

4.3.10 Set Up Screen 2/2

Set Up 2/2:	Next	
Constant=White Variable=Blue		
Load Data	Prev	Main

The Set Up 2 of 2 screen contains the less often-used configuration information.

1. Constant/Variable: the friction feeders may be run in one of two modes, constant or variable. In constant mode a predetermined number of pieces are fed out from the last friction feeder (#3). The number that is fed out is set on the first conveyor setup screen. In variable mode, the feeders feed out product in a pattern set by the shift registers (which is set by the data downloaded from the PC).
2. Load Data: Displays the load data screen, where other machine setup information is entered.

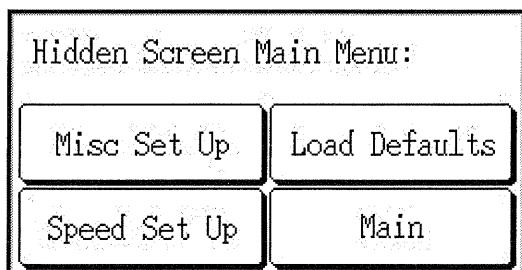
4.3.11 Load Data Screen

Load Data:	UP	Dn		
Batch Distance: 00	1	2	3	E
Conveyor Speed	4	5	6	N
Up Distance: 00	7	8	9	T
In machine cycles,	R	C	0	E
Prev	Main			

The Load Data screen contains entries for batch distance and conveyor speed up distance.

1. Batch Distance: This is the distance from the end of one batch to the beginning of the next batch. It is given in machine cycles.
2. Conveyor Speed Up Distance: The conveyor speed up distance is the number of machine cycles that the conveyor runs faster to create a product gap.

4.3.12 Hidden Screen Main Menu

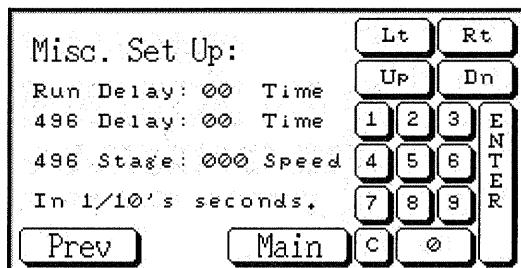


The Hidden Screen contains critical set up information and accessing this screen should be tightly restricted.

CAUTION: The information contained in this section should be restricted to maintenance personnel only. Modification of data in this section could cause the machine to operate improperly!

1. Misc Set Up: Displays the miscellaneous set up screen.
2. Load Defaults: Displays the load defaults screen.
3. Speed Set Up: Displays the ratio entries for friction feeder and 2nd base.

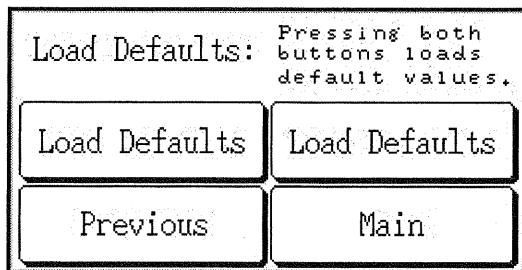
4.3.13 Miscellaneous Set Up Screen



The Miscellaneous Setup screen has entries for run delay, and 496 delay.

1. Run Delay: The run delay sets how long of a delay occurs when the start button is pressed. This delay is a safety feature which gives operators a warning that the machine is about to start to. Note that when the jog button is pressed, the machine starts immediately. In either case, the warning horn sounds. This entry is given in tenths of seconds.
2. 496 Delay: For the friction feeder's to operate properly, a short delay is given when the base starts. This entry is given in tenths of seconds.
3. 496 Stage: If a station is used in the batch, then if its miss-feed beam-switch is uncovered on start up, then the friction feeder will jog the material forward on run start up. This entry is the jog speed for staging the material.

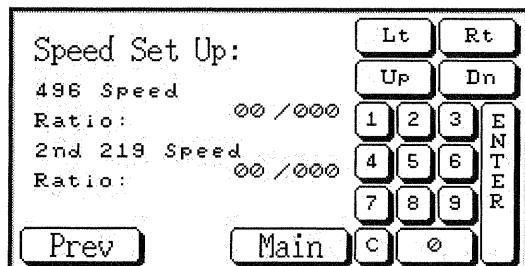
4.3.14 Load Defaults Screen



Pressing both Load Defaults buttons simultaneously will load factory default parameters.

1. Load defaults: If the current values in the PLC cause the machine not to work properly, the factory default values may be re-loaded. Pressing the load defaults touch buttons will cause the factory defaults to be re-loaded.

4.3.15 Speed Set Up Screen



496/2nd base Speed Set Up: The 496 and 2nd base speed is a ratio of the base speed.

Speed=(base speed)*numerator/denominator

These numbers are in the form of numerator/denominator, and the tachometer input is multiplied by the numerator/denominator.

1. 496 Speed: Sets the friction feeder speed ratio. Generally, speed adjustments should be made to the numerator, and the denominator should be left at 100, however the denominator may also be modified.
2. 2nd base Speed: Sets the 2nd base speed ratio. Generally, speed adjustments should be made to the numerator, and the denominator should be left at 100, however the denominator may also be modified.

4.4 PC INTERFACE PROGRAM

4.4.1 Overview

The 805 Interface program is designed to work in conjunction with the SP98200 Base. The interface contains three screens. The first screen appears when the program is activated. This screen is designed to select the program to be downloaded into the SP98200 Base. The second screen is designed to allow the operator to select a different directory to retrieve the program from. The final screen is the Operation Screen. This screen allows the operator to review the data and product location before downloading the program into the PLC.

4.4.2 Specifications

The program is written in Visual Basic and requires Visual Basic to be loaded on the computer to operate. The SP98200 Base comes with a PC preloaded with all the files necessary already loaded on the computer. If the program is needed to be loaded onto another computer, an installation program is available from Kirk-Rudy.

NOTE: The installation program will write files to the Window's operating system and may overwrite an existing file that may affect other programs. Experienced personnel should install the Visual Basic Installation program.

4.4.3 Data Files

The data files have to be in a text file format. Each file must have a “.805” extension for the PC Interface program to see the file. The files may be created by using Notepad or WordPad. (After creating a file in Notepad or WordPad remove the “.txt” and replace it with the “.805” extension by renaming the file.) The first part of the file contains production data, the second part contains the feeder setup, and the third part is the actual feeder information that controls the feed order. The first and second sections of the files are for information only and allow the operator to verify the file information. The example file below is for a 6-station machine. The feeder number and quantity are 4 digit numbers with four spaces in-between.

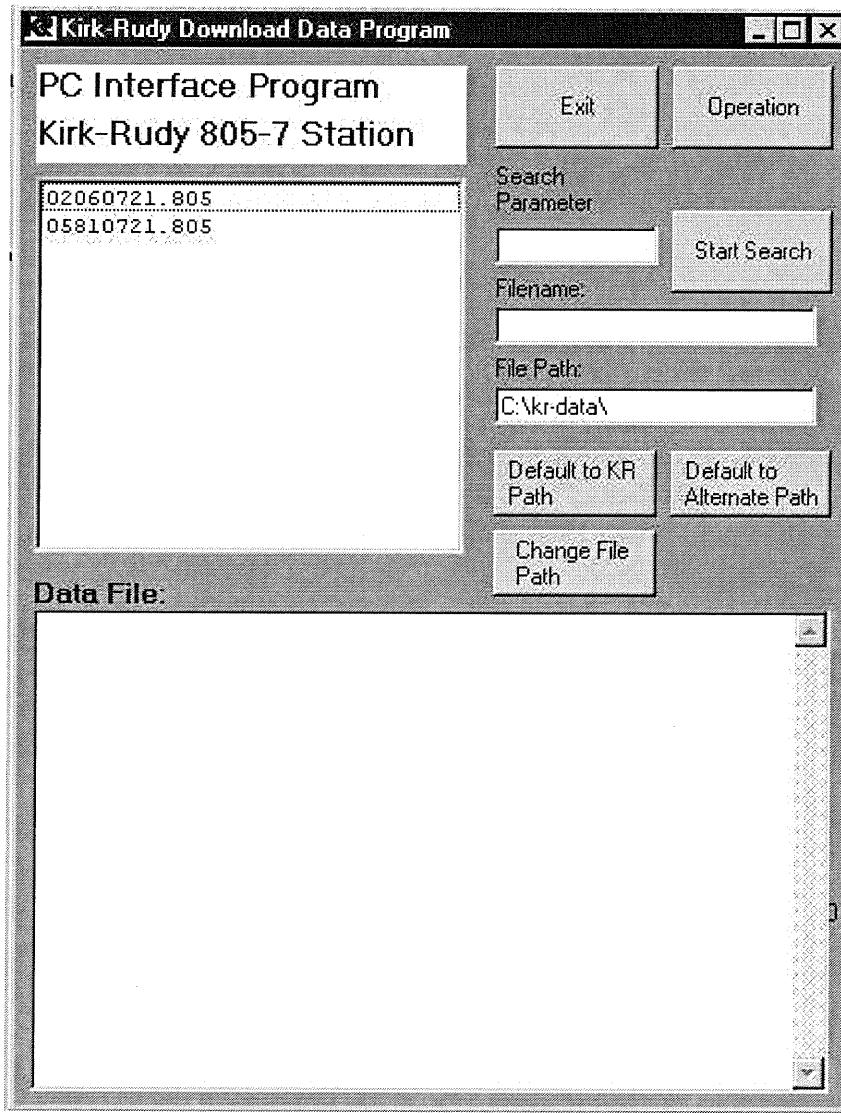
Important: Leave no spaces after the last digit for feeder quantity or an error will occur when the file is opened or downloaded.

Import: There can be no additional lines or spaces after the last line of data or an error will occur when the file is opened or downloaded.

02060721		
206		> Production Information.
A		
JUL		
NONE		
NONE		
GREEN M206		
MANILA D2900		> Feeder Setup Information.
WHITE 6.75MBNA		
WHITE MBCARDN		
BLUE W206		
Feeder Quantity		
0006 0002		
0002 0001		
0006 0001		
0003 0001		> Feeder Production Sequence.
0006 0001		No Spaces after the last digit.
0004 0001		
0005 0001		
0007 0003		No additional lines after last line of data.

4.4.4 Main Screen

The main screen is used to select the file to be downloaded to the PLC. The files are displayed in the upper left side of the display. Only files with the “.805” extension are displayed. Clicking on the file name will display the data contained in the file in the Display Box.

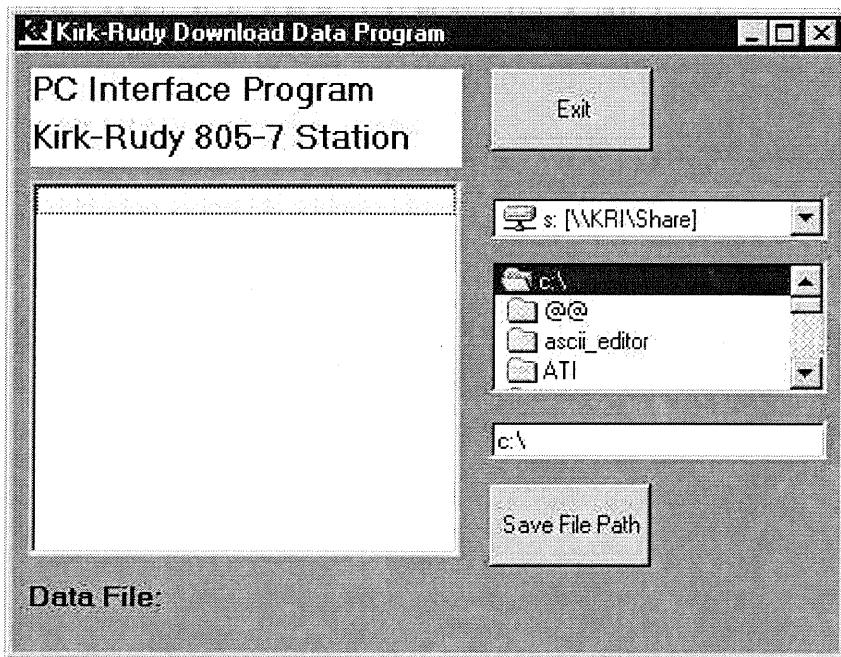


1. **Exit:** Exit out of the program.
2. **Operation:** Activates the Operation Screen to download the program selected.
3. **Search Parameter:** To reduce the number of files displayed in the file box, entering the first letters of the file name will only display the files that start with the same characters.
4. **Start Search:** Pressing this button will activate the search parameters causing only the files that meet the search requirements to be displayed in the file box.
5. **Filename:** The file name that is selected in the file box will be displayed in the text box.

6. **File Path:** Display the current file path that the program will retrieve files from.
7. **Default to KR Path:** Pressing this button will cause the program to change the file path for retrieving programs to the default KR-data Directory.
8. **Default to Alternate Path:** Allow the user to change the file path to an alternate location.
9. **Change File Path:** Activate the screen to allow the user to choose an alternate file location.
10. **Display Box:** The box in which the file names appear.

4.4.5 Alternate File Screen

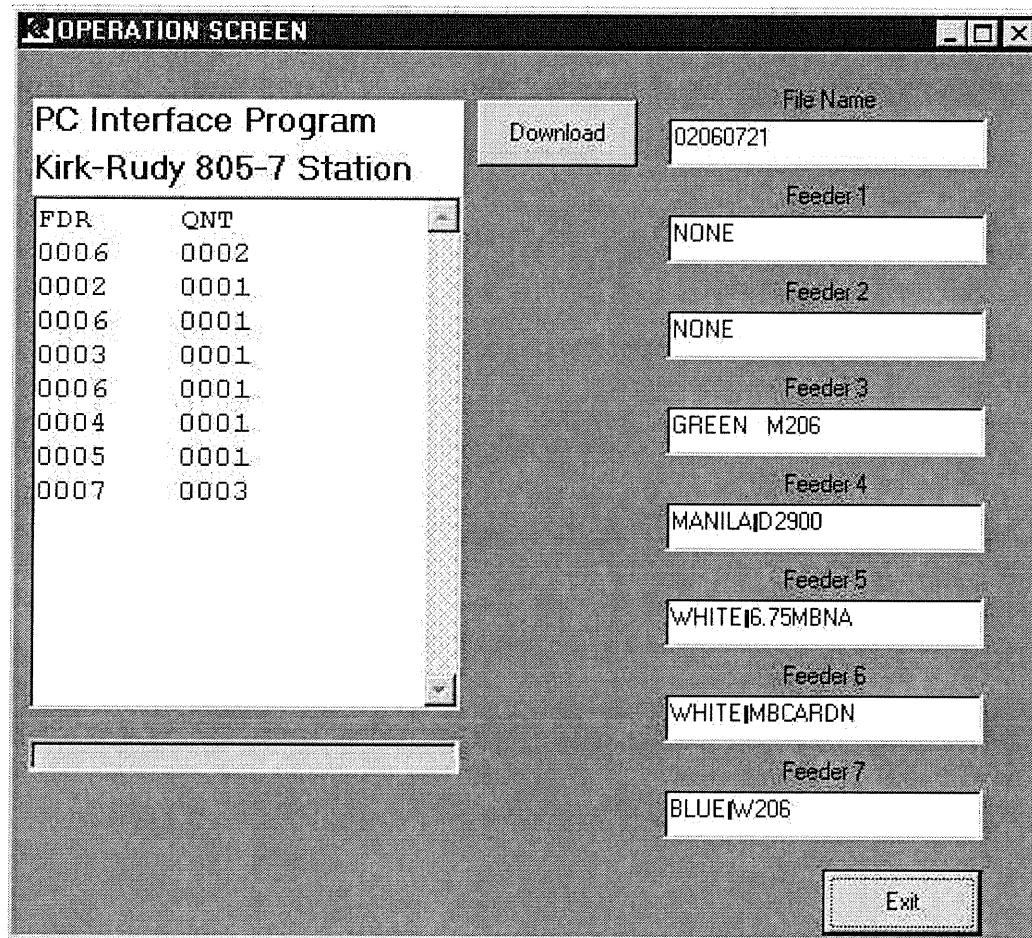
This screen is to allow the operator to choose an alternate file path. The file path selected will be the new path that the Default to Alternate Path button on the main screen will load when pressed.



1. **Exit:** Returns back to the main screen.
2. **Drive Box:** Allow the user to choose a different drive location.
3. **File Box:** Allow the operator to choose a new file path:
4. **Save File Path:** Save the path the operator selected from the drive and file box to the configuration file. The file path will now be the new alternate path when the Default to Alternate Path button is selected.

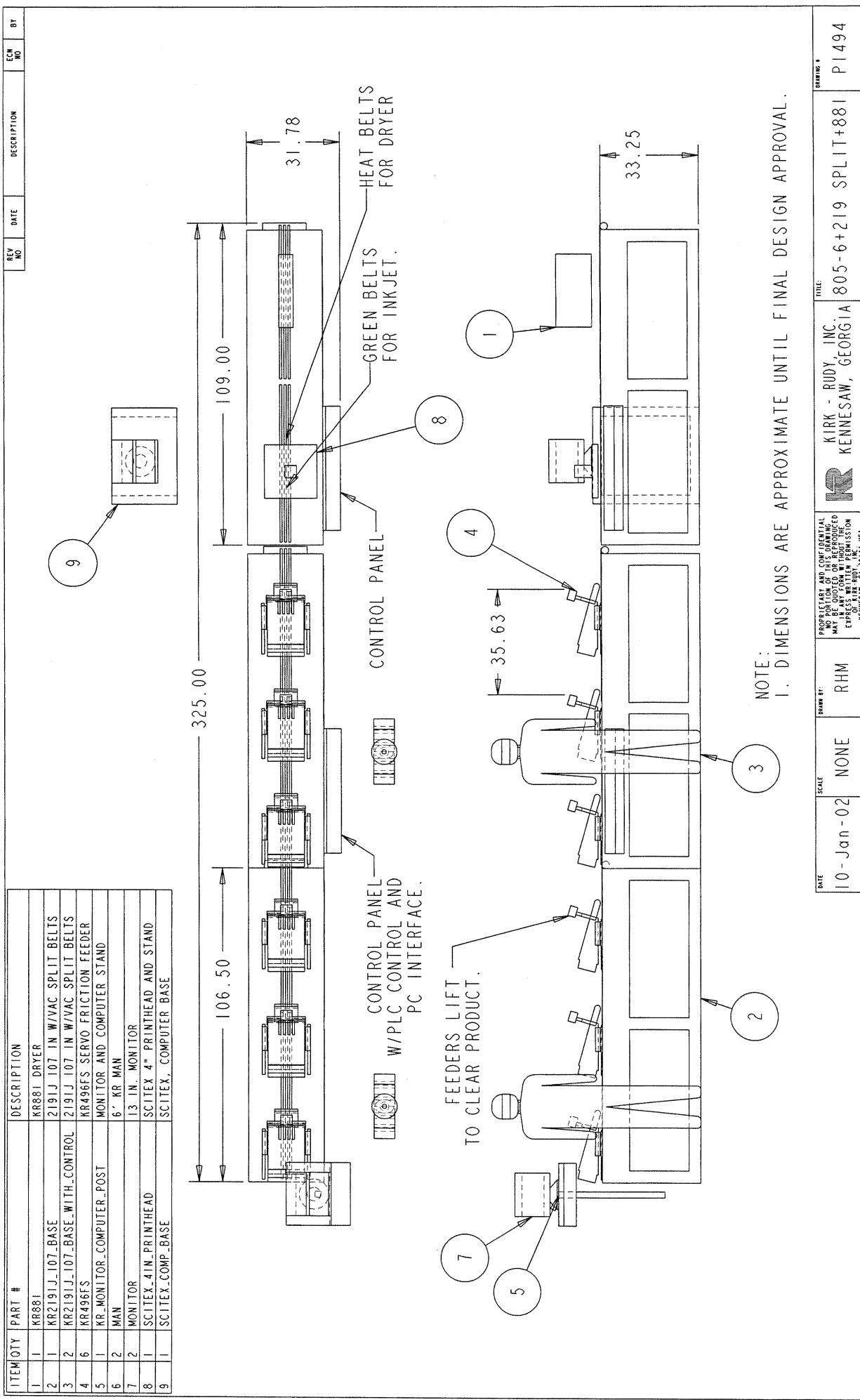
4.4.6 Operation Screen

This screen is used to download the data to the PLC. The data is displayed in a format easy to read for the user.



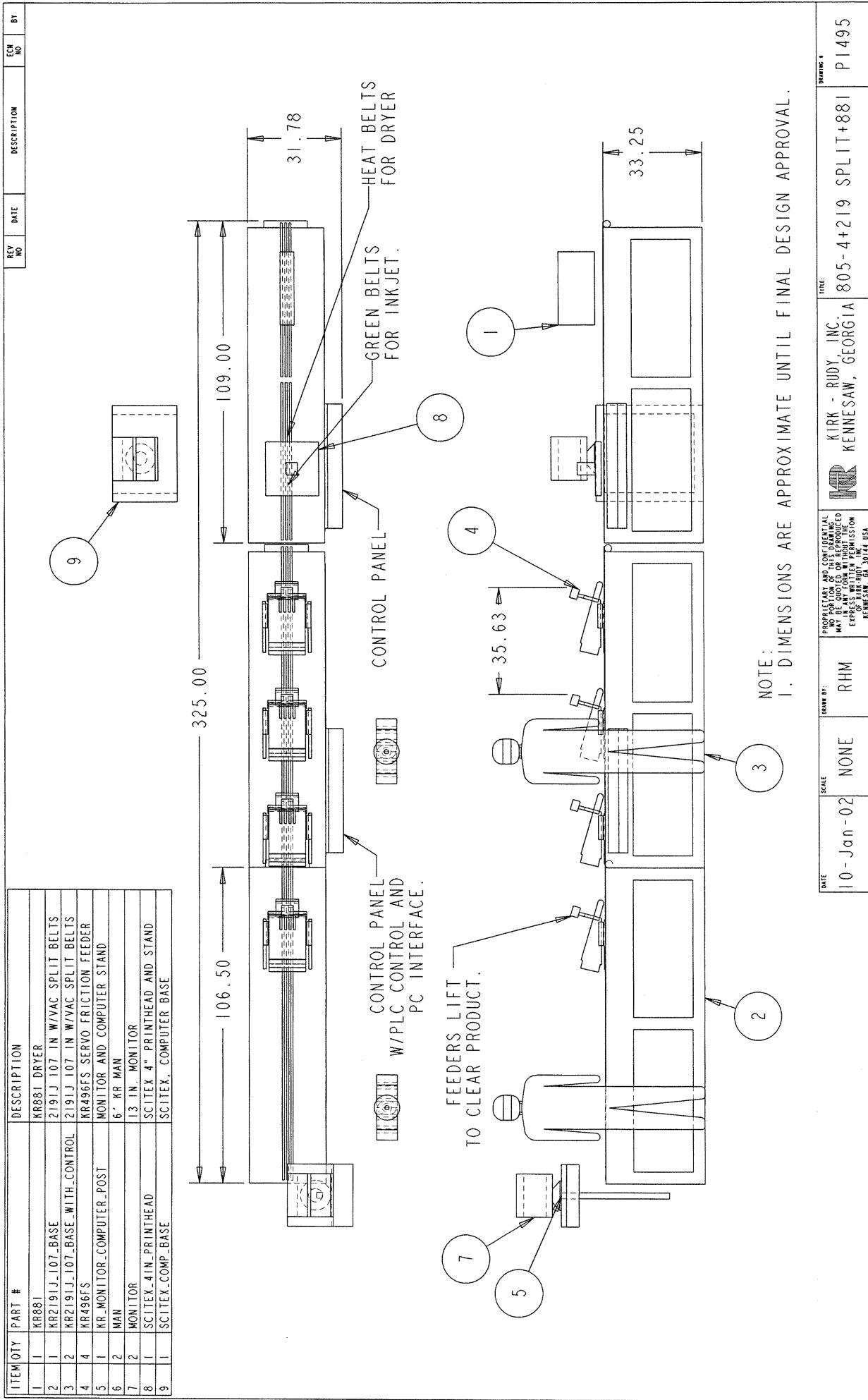
1. **Data Box:** Display the feeders and the quantity for the feeders to dispense. The firings of the feeders are in the sequence displayed on the screen.
2. **Progress Bar:** Located below the Data Box. This displays the progress of the PC downloading data to the PLC.
3. **Download:** Pressing the button will start downloading the program.
4. **File Name:** Display the name of the file that the data was extracted from.
5. **Feeder #:** Display product information for the feeder for the current production.
6. **Exit:** Exit from this screen and returns to the Main screen.

5 PROPOSAL DRAWINGS



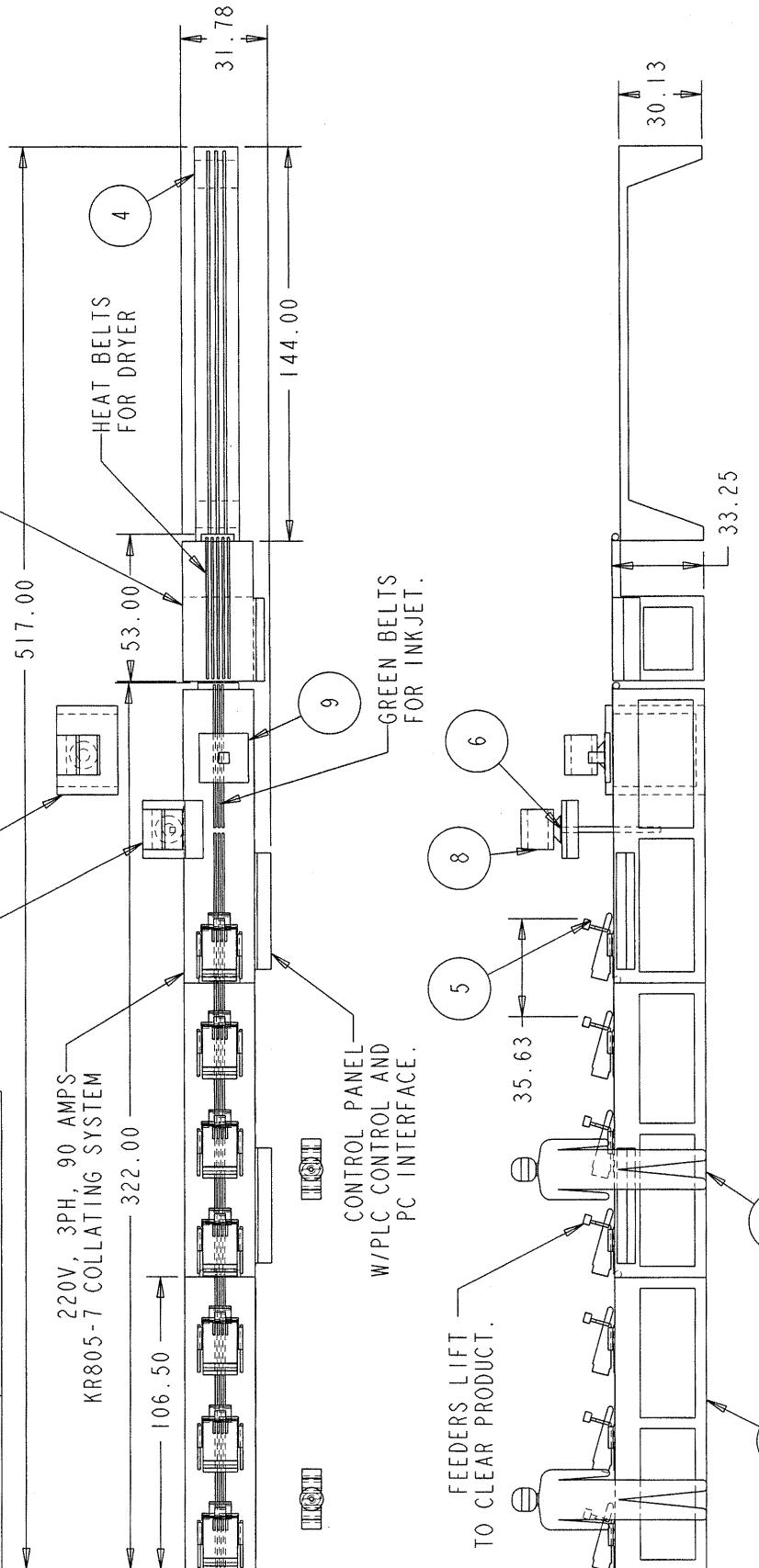
DATE	SCALE	DRAWN BY:	REVIEWED BY:	APPROVED BY:	DRAWING #:
10 - Jan - 02	NONE	RHM		KIRK - RUDY INC. KENNEBUNK, GEORGIA 805-6+219 SPLIT+881	P1494

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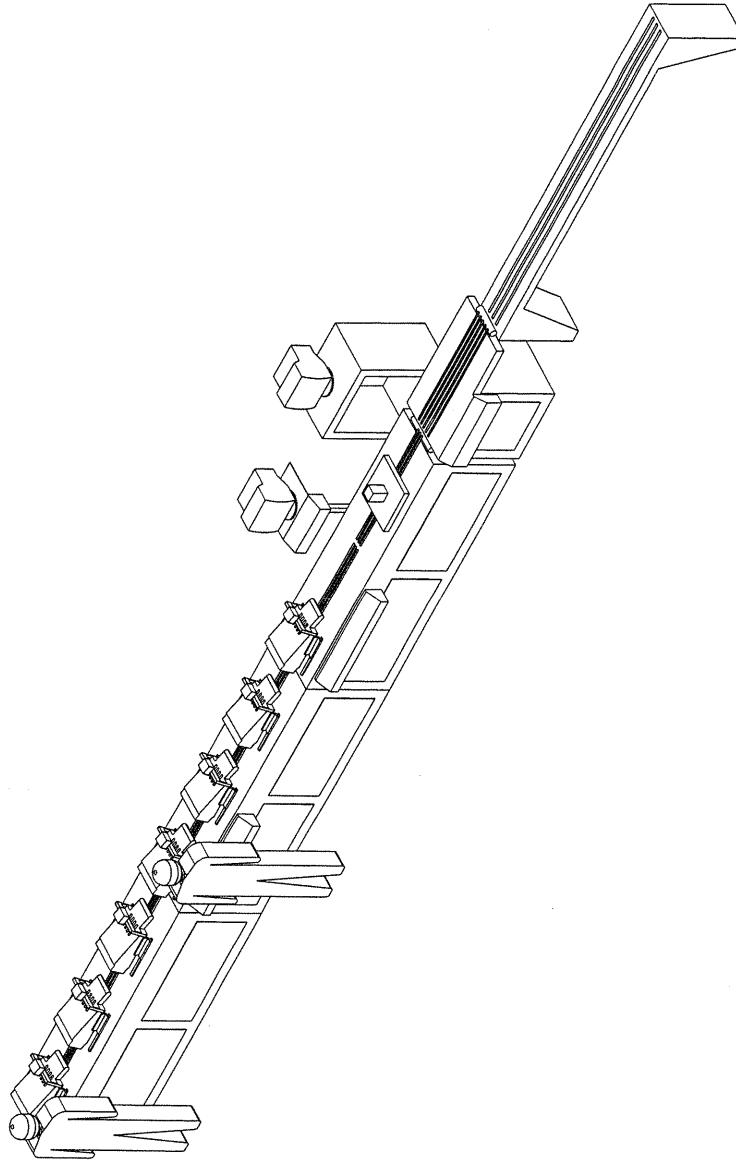
DATE	SCALE	NAME BY:	NAME BY:	REMARKS
10 - Jan - 02	NONE	RHM	KIRK - RUDY, INC. KENNEASAW, GEORGIA 805-4219 SPLIT+81	P1495

ITEM QTY	PART #	DESCRIPTION	REV NO	DATE	ECN NO	BY
1	KR219J1J20	219J1 VACUUM BASE				
2	KR219J_107_BASE	219J1 107 IN W/VAC SPLIT BELTS				
3	KR219J_107_BASE_WITH_CONTROL	219J1 107 IN W/VAC SPLIT BELTS 12 FT CONVEYOR				
4	KR314_12	KRA96FS SERVO FRICTION FEEDER				
5	KR496FS	KRA96FS SERVO FRICTION FEEDER MONITOR AND COMPUTER STAND				
6	KR_MONITOR-COMPUTER_POST	6' KR MAN				
7	2 MAN	13 IN. MONITOR				
8	2 MONITOR	SCITEX 4" PRINthead AND STAND				
9	1 SCITEX_4IN_PRINthead	SCITEX, COMPUTER BASE				
10	1 SCITEX_COMP_BASE					



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REV NO	DATE	DESCRIPTION	ECN NO	BY
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6 NOTES

7 WARRANTY AND SERVICE

WARRANTY

Warranty: Kirk-Rudy, Inc., warrants to the original retail purchaser that this product is free from defects in the material and workmanship, and agrees to repair or replace, at Kirk-Rudy's option, any defective product within (90) days from the date of purchase. This warranty is not transferable. It covers damage resulting from defects in material or workmanship, and it does not cover conditions or malfunctions resulting from normal wear, neglect, abuse or accident.

THIS WARRANTY IS IN LIEU OF ALL OTHER EXPRESSED WARRANTIES ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY IMPLIED WARRANTY ARISING OUT OF A COURSE OF DEALING, CUSTOM, OR USAGE OF TRADE.

Limitation of Remedies: If product is proven to be defective within the warranty period stated above, THE EXCLUSIVE REMEDY, AT KIRK-RUDY'S OPTION, SHALL BE TO REFUND THE PURCHASE PRICE OF OR TO REPAIR OR REPLACE THE DEFECTIVE PRODUCT, provided that the defective product is, at Kirk-Rudy's choice, returned immediately to Kirk-Rudy or authorized service representative designated by Kirk-Rudy, or made available at user's premises in a location suitable for servicing.

Limitation of Liability: Kirk-Rudy shall not otherwise be liable for any losses or damages, whether direct, indirect, special, incidental, or consequential, regardless of the legal or equitable theory asserted, including contract, negligence, warranty, or strict liability.

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