Model 2051 Folder
Installation - Operation – Troubleshooting - Maintenance
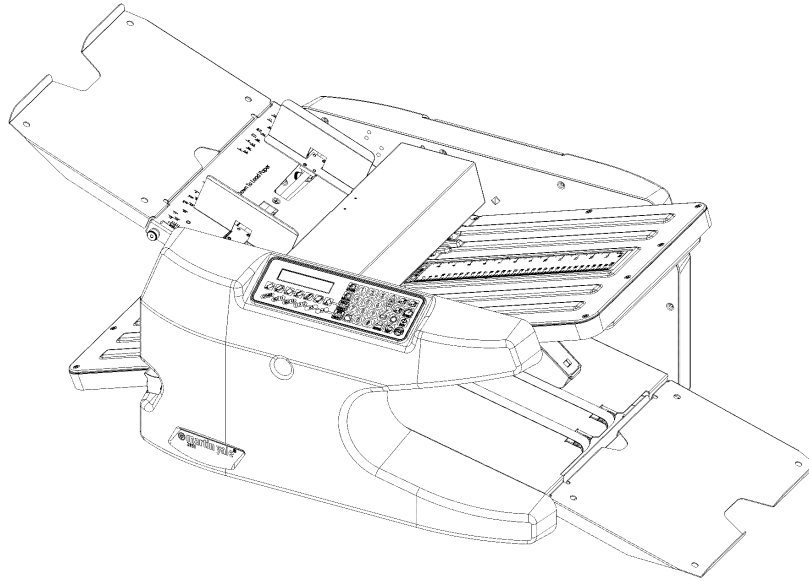
Specifications

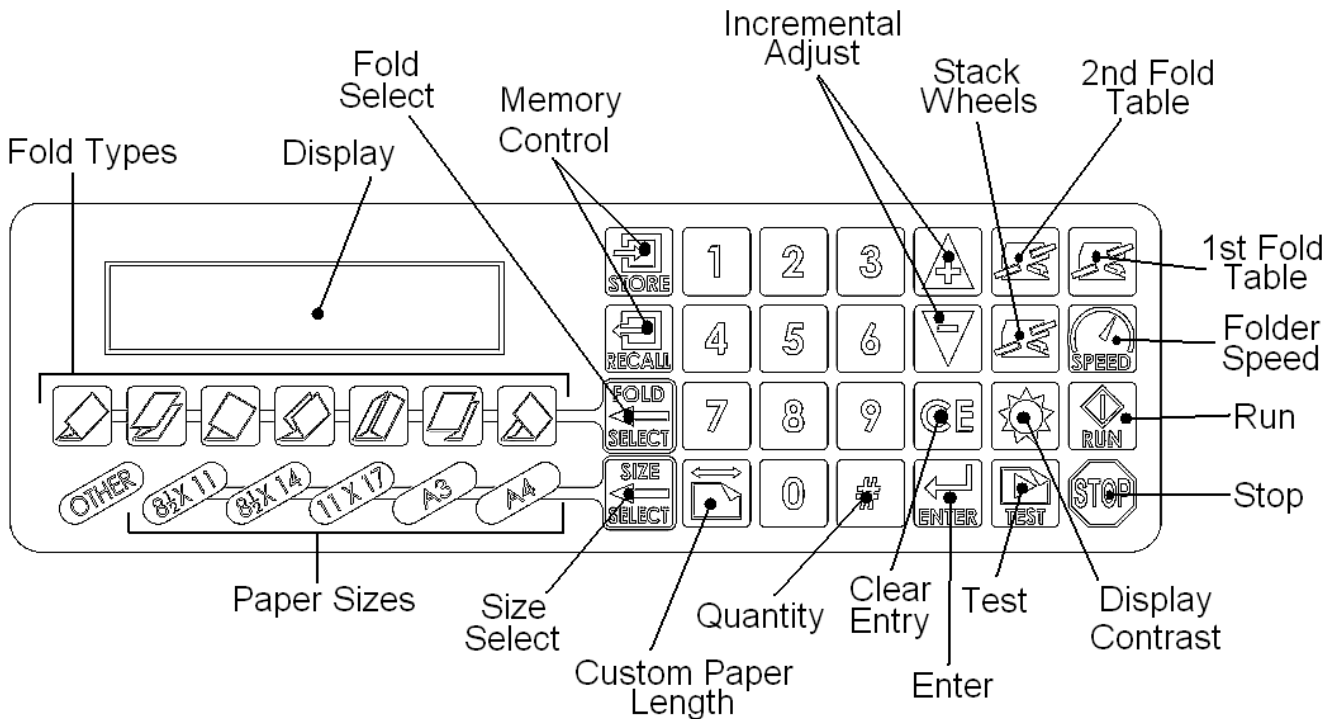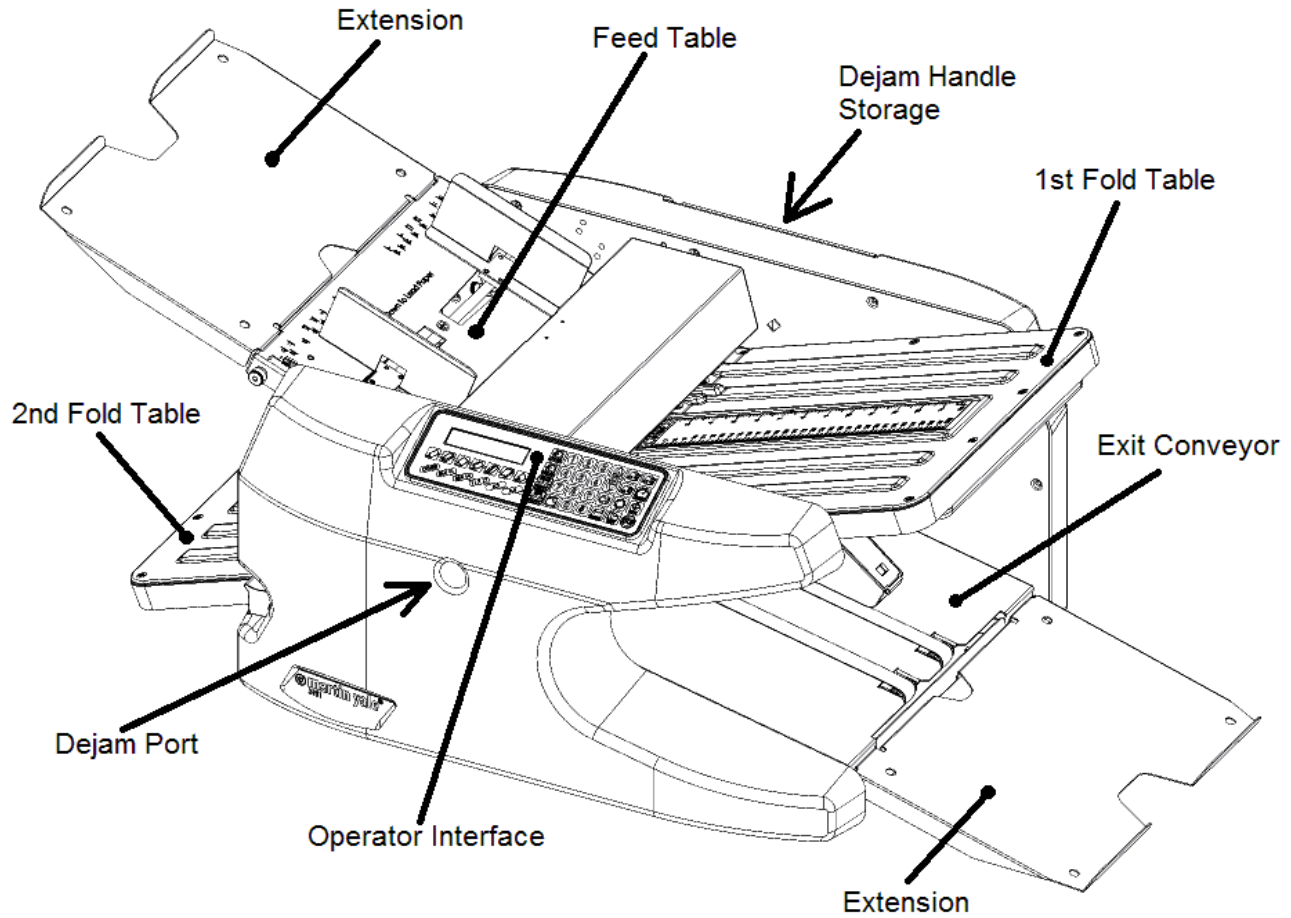|			
Folder Speed	3,000-15,000 SPH	Paper Weight	18# Bond (67.72 gsm) min.
			90# Index (161.78 gsm) max.
Folder Capacity	500 Sheets of 20# Bond	Fold Length (both tables)	2.3" (5.8cm) min.
	(2.25" Stack Height)		14.75" (37.5 cm) max.
Paper Size	2.5" W X 5.2" L Min. (Half Fold Only)	Feed Method	Top feed, friction
	12" W X 18" L Max.		
Programmed Sizes	8 ½" X 11", 8 ½" X 14"	Electrical	115 VAC, 1.4 Amps, 50/60 Hz
	11" X 17", A4, A3		220/230 VAC, .8 Amps, 50/60 Hz
Programmed Folds	Letter, Zee, Half, Double Parallel, Gate,	Dimensions (assembled)	43.2" W X 17.8" H X 22.2" D
	Engineering, Church		110cm W X 452cm H X 564cm D
Memory Capacity	10 custom folds	Shipping Weight	102 Pounds
	Storage of speed, quantity		
	and Batch quantity optional		

Introduction

Thank you for selecting the Martin Yale® Model 2051 AutoFolder. All components have been thoroughly inspected and performance tested to provide you with the best folder value in its class. Before each machine is packed for shipment, it must pass a critical performance test. This folder can execute Letter, Zee, Half, Double Parallel, Gate, Engineering, Church and custom folds within its paper size capacity. Please review this publication in its entirety before attempting to operate your folder. Thorough understanding of this information will help eliminate most operator-associated errors and ensure years of trouble-free performance.

WARNING! Never connect power to the machine until you are ready to set up and operate the folder. This machine contains moving parts. During setup, operation, and maintenance keep hands, hair, loose clothing, and jewelry away from all moving parts. Serious bodily injury could result.

Notice: This folder contains NO USER SERVICALBE COMPONENTS. Service or disassembly should only be completed by a qualified technician, and with the power disconnected and locked out. The AC outlet for this machine must be near by, and access to the outlet must not be blocked.

*for 2051 over serial number 39586.01120.M39 and 2045 over serial number 39570.01049.M46

Extension
Feed Table
Dejam Handle Storage
1st Fold Table
2nd Fold Table
Exit Conveyor
Dejam Port
Operator Interface
Extension

Fold Types
Display
Fold Select
Memory Control
Incremental Adjust
Stack Wheels
2nd Fold Table
1st Fold Table
Folder Speed
Run
Stop
Paper Sizes
Size Select
Custom Paper Length
Quantity
Clear Entry
Test
Enter
Display Contrast

Table of Content

1   Folder Setup

1.1   List of Components

Your shipping container comes complete with the following items;

>   Qty 1 – 2051 Folder
>
>   Qty 2 – Fold Table Assembly
>
>   Qty 2 – Feed Table Extension
>
>   Qty 1 – Power Cord
>
>   Qty 1 – Dejam Handle
>
>   Qty 1 – 9/64" Hex Key

The Fold Table Assemblies are shipped in their own box and included within the folder container. The Feed Table Extensions and the Dejam Handle are in their own box as well.

1.2   Setting Up Your New Folder

Place your folder on a sturdy, flat surface such as a table, desk, or bench. Inspect your folder for signs of damage. If damage is apparent, call the freight carrier immediately, then call Martin Yale for instructions.

1.3   Power Connection

The Power Cord for the folder is a standard computer power cord. Plug the female end of the power cord plug into the folder's power connection (Figure 1).

The power switch is located on the same surface as the power connection, nearest the front of the folder.

⚠️ **Insure the proper voltage is connected to the 2051 or damage can occur. The 2051 voltage requirement can be found on the serial label located just to the right of the power connection.**
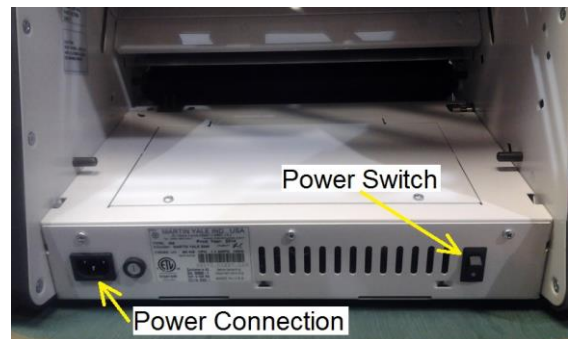
Figure 1

1.4   Fold Tables

Both fold tables are the same, and can be installed into either the first (upper, right) or second (lower, left) fold table positions. The fold table is locked into position by 4 (four) pins located in the folder.

1.4.1   First Fold Table Installation

To install the first fold table, refer to Figure 2.

Step 1: slide the front slot opening of the fold table onto the inner set of pins (closest to the folding rollers).

Step 2: lower the fold table onto the outer set of pins with a light amount of downward pressure as shown. There will be a slight snapping action as the fold table drops into the detent position.
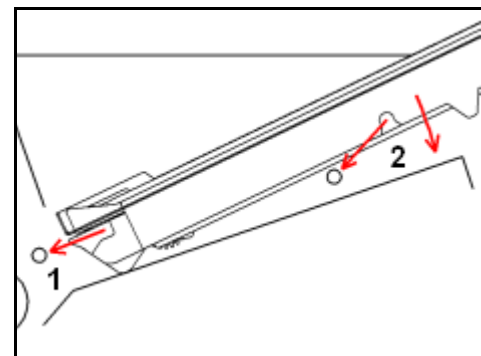
Figure 2

1.4.2   Second Fold Table Installation

To install the second fold table, refer to Figure 3.

Step 1: slide the front slot opening of the fold table onto the inner set of pins (closest to the folding rollers) with a light to moderate amount of pressure.

Step 2: lower the fold table onto the outer set of pins with a light amount of downward pressure as shown. There will be a slight snapping action as the fold table drops into the detent position.
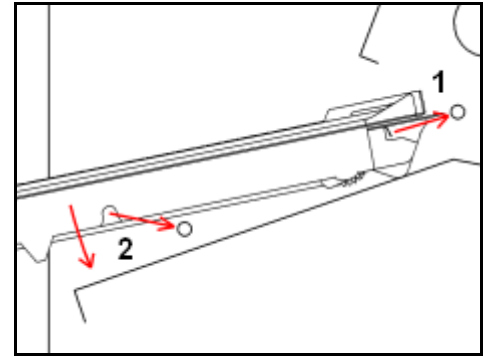
1.5   Feed Table Extension

Your folder comes with 2 Feed Table Extensions. One of the Extensions is used on the Exit Conveyor, and the other extension is used on the Feed Table. Both extensions are identical and can be used on either the Feed Table or the Exit Conveyor.

Figure 3

To install the Extension onto the Feed Table, align the locking tabs of the Extension with the slots in the Feed Table as shown in Figure 4.

Squeeze the Feed Table and Extension together nearest the tabs and slots until the 2 pieces snap together.

To install the Extension onto the Exit Conveyor, align the tabs on the Extension with the slots provided in the Exit Conveyor as shown in Figure 5. No force is required to install the Extension onto the Exit Conveyor – gravity will hold the Extension in place.
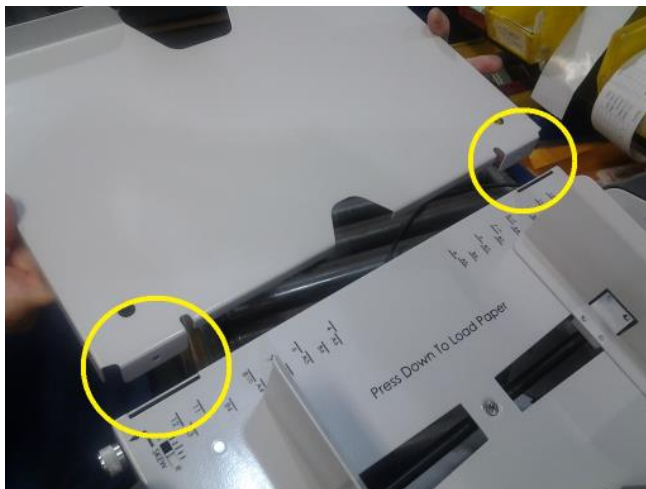
Figure 4

Figure 5

2   Using Your Folder

After performing all of the steps in section 1 (Folder Setup), you're ready to turn on the folder.

2.1   Power Up

Turn on the power (the power switch is located under the Second Fold Table). The 2051 Folder will go through a boot up sequence and the display will show the following messages (see Figure 6, Figure 7 and Figure 8).

The display in Figure 7 shows the software revision level.

ⓘ In the event that you must call Martin Yale Support for help, please have the software revision number available.
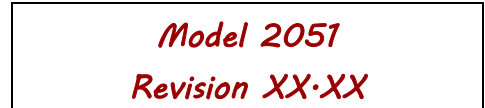
When the display shows Figure 8, both fold tables will begin to move to their respective home positions.

ⓘ Homing of the fold tables is required to insure a proper and accurate fold. This operation may take several seconds. Allow the folder to continue without interruption until the display indicates that it's ready.

Once the Fold Tables have been homed, the display will toggle between 2 different messages (Figure 9 and Figure 10).

ⓘ The "Custom Fold Set" message will be displayed when none of the "Fold Type" lights are illuminated. This also indicates that the folder does not recognize the Fold Table positions as a standard fold type. This is typically referred to a "Manual Mode".

Model 2051 By
Martin Yale Ind·

Figure 6

Model 2051
Revision XX·XX

Figure 7

Homing Fold Tables Please
Stand By

Figure 8

No Paper Present
Qty Done =   O

Figure 9

Custom Fold Set
Qty Done =   O
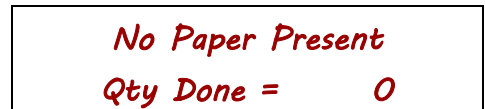
Figure 10

2.2   Loading Paper

To load paper into the Feed Table, firmly push the Feed Table down as show in Figure 11, until it locks into the "Load" position as shown in **Figure 12**.

Figure 11

Fully insert paper to surface indicated

Figure 12

Load the paper into the Feed Table as shown in **Figure 12**, making sure that the paper is fully within the folder, and that the leading edge of the stack is resting against the face indicated.

ⓘ The Feed Table is capable of holding 500 sheets of 20# bond paper, or a stack of paper 2 1/8 inches high, up to the maximum rated weight of paper for this folder.

Once the Feed Table has been loaded with paper, depress the Feed Table Release to unlocked the Feed Table, allowing it to return to the raised position (Figure 13).

ⓘ It's important to understand that the Feed Table rises up using spring tension, and this tension is pre-set to lift a 500 sheet stack of 8 ½ X 11, 20# Bond paper. If loading coated stock (dense paper) or paper that is larger than 8 ½ X 11, you will not be able to fully load the Feed Table with 500 sheets of paper.

Figure 13

2.1   Setting the Paper Guides

To adjust the Paper Guides, loosen the thumb knobs of the Paper Guides by rotating the knobs counter-clockwise (top to the left) approximately 1 full turn (Figure 14). Move the Paper Guides to the desired location, and then retighten the thumb knobs.

⚠ **Do not over tighten the thumb knobs.**

Tighten the thumb knobs just enough to hold the Paper Guides in place. Do not use any tools to tighten the thumb knobs as this will damage the knobs and the Paper Guides.

💡 When setting the Paper Guides, it is easier to have the correct paper in the Feed Table between the guides as you adjust them. Also, it is easier to move the Paper Guides with your left hand from under the Feed Table, rather than from the top by grabbing the Paper Guide itself.
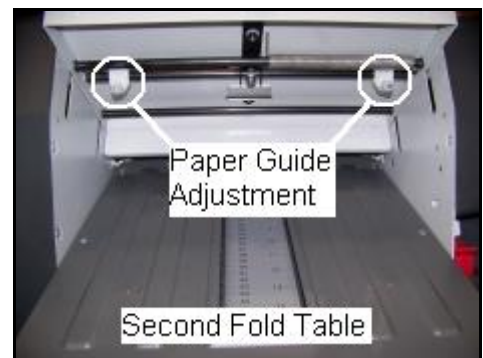
Figure 14

ⓘ For best folding results, the paper should be as close to centered on the Feed Table as possible.

2.2   Setting a Paper Size

To change paper sizes, depress the "SIZE SELECT" button located on the folder keypad. Each time the "SIZE SELECT" button is depressed, the lights indicating the paper size will sequence through all of the paper sizes.

ⓘ You must specify the paper size that you intend to fold prior to running the folder.

2.3   Setting a Fold Type

To change the fold type, depress the "FOLD SELECT" button located on the folder keypad. Each time the "FOLD SELECT" button is depressed, the lights indicating the fold type will sequence through all of the fold types.

ⓘ Once you have selected a fold type, the folder will wait for 8 seconds, for any additional settings that you may want to set, such as a quantity of folds to run. To bypass this time delay, depress the "ENTER" button. Additionally, pressing either the "TEST" or "RUN" buttons will bypass this time delay and then perform either "TEST" or "RUN", whichever was pressed.

2.4 Running a Test Fold

The "TEST" button provides the ability to check the folder settings by feeding 2 sheets of paper from the Feed Table. Pressing the "TEST" button once will turn on the main motor, feed two sheets of paper, and then the main motor will stop.

Folders with older revisions of software will only feed a single sheet of paper when the Test button is depressed.

If the location of the fold is incorrect, adjustment of the Fold Tables is required. See section 3.2 - Fold Table Adjustment.

If the fold is not square (skewed fold), adjustment to the paper guides is required. See section 0 -

Fold Skew Adjustment for more information.

2.5 Fold Skew Adjustment

Skew adjust of the fold is done by changing the angle of the Paper Guides in the Feed Table. Skew adjustments can be made at any time, regardless of paper load in Feed Table, or if the folder is running.

To adjust, rotate the Skew Adjustment Knob located on the side of the Feed Table, closest to the front on the folder (Figure 15).

While the folder is running, as each sheet of paper feeds into the machine, if you observe the paper riding up on the front Paper Guide (closest to the Operator Interface), rotate the Skew Adjustment knob counter-clockwise until the paper is feeding straight and is not riding up the Paper Guide. Rotate the knob clockwise if the paper is riding up on the rear Paper Guide.
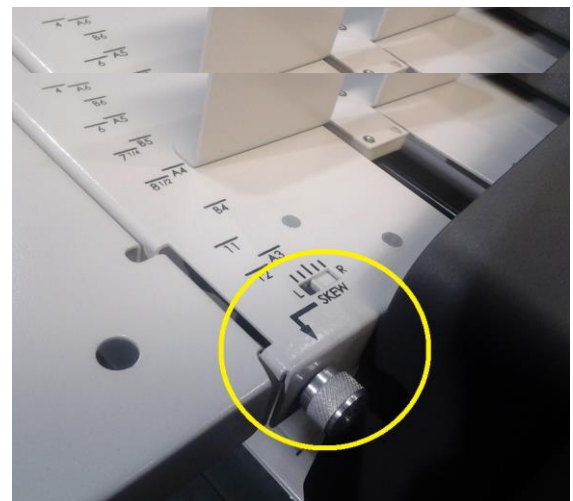
Figure 15

2.6 Ready to Fold

Pressing the "RUN" button will initiate folding – the main motor will start and paper feeding will begin. Feeding will continue until one of the follow conditions is met; 1. The "STOP" button is depressed, 2. The Feed Table becomes empty of paper, 3. A folding error is encountered, 4. Or the programmed quantity reaches 0 (zero).

To program the quantity of sheets to be folded, see section 3.6 - Quantity and Batch Mode.

2.7 Stopping the Folder

Pressing the "STOP" button once instructs the folder to perform a normal shut down, allowing all paper to clear the folder prior to the main motor stopping.

Depressing the "STOP" button twice in quick succession causes an immediate stop of the main motor. This is to be used in the event that there is a paper jam that the folder did not detect, or other condition where an instantaneous stop is necessary.

Double pressing of the "STOP" button is reserved for emergency stopping only, and should not be used for normal stopping when the folder is running.

3   Adjusting and Counting

Pressing any of the following buttons will place you into the respective adjustment mode. If you do not press any other buttons for 8 seconds, the folder will revert to its previous mode.

Pressing the Enter button will bypass the 8 second time delay and will instantly proceed.

3.1   Incremental Adjustment Buttons

The Incremental Adjustment Buttons are used for fine adjustment of various items on your folder. These buttons work for all of the functions that have the matching light-blue background color only. These buttons will auto-repeat if held down for more than one second.

3.2   Fold Table Adjustment

First Fold Table
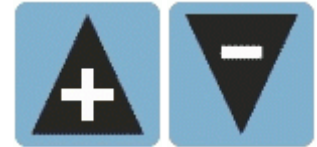
To manually adjust a Fold Table position, press the corresponding Fold Table adjustment button as shown below, and then press either the increase or decrease button (as described in section 3.1 - Incremental Adjustment Buttons).

In addition to the Incremental Adjustment buttons, the Fold Tables can be positioned to a specific location by entering a value using the number buttons on the keypad. To do so, simply type in a value and press the enter button.

Second Fold Table

If you find it necessary to make an adjustment to either fold table when you have a standard fold type specified, changing the Fold Table by more than 1/4 of an inch will place the folder into "manual" mode, as indicated by the illumination of the "Other" LED. Moving the fold table back to within 1/4 of an inch will turn off the "Other" LED and the standard fold type LED will again by illuminated.

> *Fold Table 1*
> *XX·XX IN*

Figure 16

> *Fold Table 2*
> *XX·XX IN*

Figure 17

Your folder is equipped with a "Limp" mode. In the event that either Fold Table Drive malfunctions (see error codes 105, 106, 107, or 108), you can still move the fold table manually and run the folder. For more information regarding "Limp" mode, see section 6 - Limp Mode.

3.3   Stack Wheel Position

To manually adjust the position of the Stack Wheels, press the Stack Wheel button (shown on the left), and then press either the increase or decrease button (as described in section 3.1 - Incremental Adjustment Buttons).

The correct position of the Stack Wheels is automatically calculated based on the length of the paper and the position of the fold tables. Manual adjustment of the Stack Wheels is not normally required when performing a standard, pre-programmed fold.

3.4   Folder Speed

To adjust the speed of your folder, press the "SPEED" button, and then press either the increase or decrease button (as described in section 3.1 - Incremental Adjustment Buttons). Folder speed can be adjusted while the folder is running. For most all folding jobs, the folder can be run at full speed (100%).

3.5   Display Contrast

To adjust the display contrast of the LCD display, press the Display Contrast button, and then press either the increase or decrease button (as described in section 3.1 - Incremental Adjustment Buttons).

3.6   Quantity and Batch Mode

The Quantity (#) is used to specify the total number of sheets to be folded, and to specify a Batch quantity.

3.6.1   Quantity

To program a specific number of pages to be folded, press the Quantity (#) button once.

Pressing the Quantity (#) button twice will skip the Quantity screen and place you directly into Batch Mode.

Using the numbers on the keypad, enter the quantity of sheets to fold, and press the enter key. After entering a quantity, you will automatically enter Batch Mode.

```
ENTER QUANTITY TO GO
Qty To Go=        0
```
Figure 18

3.6.2   Batch Mode

The Batch Mode function gives you the ability to fold and deliver a specified number of sheets as a "batch", and automatically places a gap between batches to allow easy retrieval of the batch to packaging. This run/pause/run sequence will continue until the Stop button is depressed, the Feed Table becomes empty of paper, a folding error is encountered, or the programmed quantity reaches zero.

To enable Batch Mode, enter a Batch quantity value greater than zero. This quantity is the number of sheets that will be folded and delivered as a "batch". When the entered quantity of sheets has been folded, the folder will suspend feeding until the Exit Conveyor has become clear of paper, then folding will resume. To disable Batch Mode, enter a Batch quantity of zero.

3.6.3   Stacking Problems

Occasionally, you may find that the folded paper is not stacking cleanly because of a particular type of fold or paper weight. A condition such as this can result in a paper jam because paper piles up between the Stack Wheels and the fold rollers, allowing paper to be drawn back into the spinning rollers.

To eliminate the possibility of this occurring, as an extension of the Batch Mode, folded sheets can be delivered one at a time with a slight delay between pages to insure that the folded sheets have become captured by the Stack Wheels.

Setting the Batch quantity to "1" instructs the folder to feed one sheet at a time, and to wait for the Exit Conveyor sensor to become clear, before feeding the next sheet. This insures that the Stack Wheels have a firm grasp of the previously folded sheet before the next sheet is fed into the folder.

4 Manual Mode

The folder is in "Manual Mode" if none of the Fold Type lights are illuminated. Manual Mode is entered if the position of either Fold Table is manually change by a more than 1/4 of an inch from a Standard Fold position. Doing so will turn off all Standard Fold lights, indicating that the folder has been placed into "Manual Mode". Also, the top line of the LCD Display will state "Custom Fold Set".

```
Custom Fold Set
Qty Done =      0
```

Figure 19

When in Manual Mode, the folder assumes that the operator knows what they want for a desired fold, and therefore, it is completely up to the operator to specify the paper length and set both Fold Table positions. The position of the Stack Wheels will still automatically adjust based on the paper size and Fold Table positions.

When in Manual Mode, it is still important to set the proper paper length as this helps to control feeding, and insures maximum operating efficiency.

5 Custom Folding Jobs

5.1 Custom Paper Lengths

Your folder has the necessary intelligence to calculate the proper settings for the Fold Tables and the Stack Wheels for all of the pre-programmed fold types for any given paper length. If a pre-programmed fold type is selected, and you enter a custom paper length, the fold tables and stack wheels will automatically be configured to produce that fold.

To specify a custom paper length, press the Paper Length button. Using the number buttons, enter a valid paper size value (see the folder specifications on the cover of this document for valid paper sizes), and press the Enter button to save this value.

5.2 Custom Fold Table Settings

When a custom Fold Table setting is entered, the folder enters a "Manual" mode where you must specify everything manually. You may use the pre-programmed paper sizes, if you wish.

When the folder is in Manual mode, the "Other" light will be illuminated, indicating that you are creating a fold "Other" than the standard, pre-program fold types.

5.3 Custom Fold Programs

The 2051 folder can store up to 10 different custom fold programs. Custom programs store the position of both Fold Tables, Paper Length, Folder Speed, Quantity, and Batch Quantity. The location of the Stack Wheels is calculated automatically when the program is recalled, and therefore, are not part of Custom Fold Programs.

Once a program is stored into a memory location, it cannot be deleted. Programs can only be overwritten with another program. Programs are maintained in memory even if the power is turned off or power is removed.

5.4 Storing a Program

To store a program, press the "STORE" button, then press one of the number buttons (0-9) to specify a storage location.

Each number button is a separate program storage location.

5.5   Recalling a Program

To recall a stored program, press the "RECALL" button, and press a number button where a program is stored. If there is a stored program in the number pressed, the folder will immediately begin to configure itself per the stored program. All of the standard Fold Table and Stack Wheel messages will be displayed. If there is no program stored in the number pressed, the following message will be displayed;

> *Storage Location*
>
> *Empty*

Figure 20

Once a program is stored into a specific memory location, this message will not be displayed again.

6   Limp Mode

Limp mode is entered automatically in the event that the folder encounters one of the following error codes; 105, 106, 107, or 108. Limp mode allows you to manually set the position of the Fold Tables and run the folder at a reduced speed. Limp mode provides a means to continue folding while waiting for service or parts.

When in Limp mode, the number buttons are disabled for the Fold Table where the error occurred. However, the Incremental Adjustment buttons will still be functional. When changing the positions of the Fold Table which has the error, reference the scale on the Fold Table for accurate positioning. A fold chart is provided in the Appendix of this manual showing the positions of both paper stops in the Fold Tables to produce a particular fold for a given paper size.

7   Diagnostics and Setup

7.1   General

To enter diagnostics press and HOLD the STOP key at any time when the machine is turned on.

To enter any of the diagnostics options listed below, from the main diagnostics screen, press the corresponding diagnostics option number on the keypad. Figure 21 shows the Main diagnostics screen.

> *Diagnostics Setup*
>
> *Press 1-8 or STOP*

Figure 21

To exit any of the following diagnostics screens, press the "STOP" button. To exit diagnostics altogether, from the Main diagnostics screen, press the "STOP" button.

7.2   Option 1 – Configure System

This option is used for basic setup of the folder. Using the Incremental Adjustment buttons, scroll through the list of parameters. When you reach the parameter that you which to change, press the "ENTER" button once. This will put you into an edit mode. When in edit mode, the bottom line of the display will show arrows at the extreme right and left.

If you have accidentally entered edit mode, to exit edit mode and abort changing the parameter, press the "STOP" button.

7.2.1   Languages

To change the display language, once you are in edit mode, use the Incremental Adjustment buttons to scroll through the list of languages. Once you have found the language you want, press the "ENTER" button once to save this language and exit edit mode. The display will now read in the language selected.

7.2.2   Units

There are only 2 units programmed into the folder; Inches and Centimeters. To change between units, once you are in edit mode, press the "+" to set the units to "Inches", or press the "-" to set units to "Centimeters". Once you have selected the units, press the "ENTER" button once to save and exit edit mode.

7.2.3   Save Speed

This parameter enables or disables saving of the folder speed setting (see section 3.4 -

Folder Speed) as part of a custom fold program (see section 5.3 - Custom Fold Programs).

To change this parameter, once you are in edit mode, pressing "+" will set this parameter to "Yes", and pressing "-" will set this parameter to "No". Once you have set this parameter, press the "ENTER" button once to save and exit edit mode.

With this parameter set to "Yes", when a Custom Fold Program is stored, the current folder speed will also be stored. When the Custom Fold Program is recalled, the Folder Speed will be set to the previously stored Folder Speed.

If this parameter is set to "No", Folder Speed will remain unchanged by Custom Fold Programs.

7.2.4   Save Quantity

This parameter enables or disables saving of a fold Quantity (see section 3.6.1 - Quantity) as part of a custom fold program (see section 5.3 - Custom Fold Programs).

To change this parameter, once you are in edit mode, pressing "+" will set this parameter to "Yes", and pressing "-" will set this parameter to "No". Once you have set this parameter, press the "ENTER" button once to save and exit edit mode.

With this parameter set to "Yes", when a Custom Fold Program is stored, the current fold Quantity value will also be stored. When the Custom Fold Program is recalled, the fold Quantity will be set to the previously stored value.

If this parameter is set to "No", fold Quantity will remain unchanged by Custom Fold Programs.

7.2.5   Save Batch

This parameter enables or disables saving of a Batch quantity (see section 3.6.2 - Batch Mode) as part of a custom fold program (see section 5.3 - Custom Fold Programs).

To change this parameter, once you are in edit mode, pressing "+" will set this parameter to "Yes", and pressing "-" will set this parameter to "No". Once you have set this parameter, press the "ENTER" button once to save and exit edit mode.

With this parameter set to "Yes", when a Custom Fold Program is stored, the current Batch quantity value will also be stored. When the Custom Fold Program is recalled, the Batch quantity will be set to the previously stored value.

If this parameter is set to "No", Batch quantity will remain unchanged by Custom Fold Programs.

7.3   Option 2 – Input Sensor Mode

This option shows the current state of all sensor inputs.

The display will look similar to the example in Figure 22 below. The letters along the top of the display represent the input channel on the folders Main Controller. The numbers along the bottom of the display shows if the input is on or off for that specific input channel, with "1" being on and "0" being off.

ABCDEFGHJKLMNOPQ

1111000110100101

Figure 22

Below is a list of all input channels.

A	Feed Table Load Position Switch
B	Paper Present In Feed Table Sensor
C	Paper Being Fed Sensor
D	(No longer used)
E	Top Cover Switch
F	Fold Table #1 Present Switch
G	Home Sensor #1
H	Quad Sensor #1, Channel A
J	Quad Sensor #1, Channel B
K	Fold Table #2 Present Switch
L	Home Sensor #2
M	Quad Sensor #2, Channel A
N	Quad Sensor #2, Channel B
O	Exit Conveyor Sensor
P	RPM Sensor
Q	Spare

7.4   Option 3 – Keypad Input Mode

This mode is for verifying the function of the keypad. The display will look like the example below in Figure 23. On the top line of the display, the letters represent the "row" position of the button, and the numbers represent the "column" position. When one of the buttons on the keypad is pressed, the corresponding "0" below the row and column values will a change to "1".

```
ABCD     1234567
0000     0000000
```

Figure 23

For example, pressing button "5" will change the display to the example shown in Figure 24, where "B" is the second row down on the keypad, and "3" is the third column from the left.

```
ABCD     1234567
0100     0010000
```

Figure 24

Pressing the "Stop" button will briefly show a "1" in row "D" column "7", then you will exit this diagnostics mode.

7.5   Option 4 – Feed Mode

This mode allows running of the folder, moving of the fold tables and firing of the feed clutch. While in this mode, the Feed Table Load Position switch is disabled.

⚠ **In this mode, all safety interlock switches (fold table present switches and top cover closed switch) are disabled. The main motor can be run and the fold table drives can be run. Do not place any loose items such as hair or hanging jewelry into or near the rubber rollers. Also keep hands and fingers clear of the rollers at all times. Entanglement and injury will occur.**

The buttons listed below are enabled and perform the following functions;

- RUN – Toggles main motor on and off. If Feed Clutch solenoid is on, pressing the "RUN" button will turn off the Feed Clutch solenoid prior to the Main Motor starting.

- SPEED – Allows changing of speed in normal manner

- STOP – If the Main Motor is running, this button will stop the Main Motor. If the Main Motor is not running, pressing the "STOP" button will exit this diagnostics mode.

- TEST – If Main Motor is not running, the "TEST" button toggles the Feed Clutch solenoid on and off. If Main Motor is running, the Feed Clutch fires in one-shot manner each time the "TEST" button is depressed.

- ENTER – Starts the Main Motor and then fires the Feed Clutch once every .5 seconds. The folder will continue to run and fire the Feed Clutch until the "STOP" button is pressed. It's important to adjust the Retarder down (away from the Feed Wheel) prior to pressing "ENTER". This will prevent any possible damage to the Feed Wheel or Retarder.

The display will show the following information;

```
CLT=0  MOTOR=0  L=0
FT=0 PBF=0 RPM=0 X=0
```

Figure 25

- CLT – Shows the output signal for the Feed Clutch solenoid (1=on, 0=off)

- MOTOR – Shows the output signal for the Main Motor (1=on, 0=off)

- L – This value shows how many counts are seen on the RPM sensor while the Paper Being Fed sensor is covered. This value resets to zero when the Main Motor is on and the Clutch is fired ("TEST" button depressed). Counts on the raising and falling edge of RPM sensor signal.

- FT – State of Paper In Feed Table sensor (located in the Top Cover assembly)

- PBF – State of Paper Being Fed sensor (located in the Bridge assembly)

- RPM – State of RPM sensor (located under the Front Cover)

- X – State of Exit Conveyor sensor (located under the Exit Conveyor)

7.6   Option 5 – Output Mode

This mode is used for trouble shooting and testing both fold table drives and the stack wheel drive.

7.6.1   Fold Tables Drives

To move one of the Fold Tables, press the corresponding Fold Table button, then press either the "+" or "-" button. Running of the Fold Table Drives can be done regardless if the fold tables are installed or not. The display will show the current encoder count and where the folder thinks the Fold Table stop is located in either inches or centimeters (depending on the current units set).

```
Fold Table 1
XX·XX  XX,XXX CNTS
```

Figure 26

```
Fold Table 2
XX·XX  XX,XXX CNTS
```

Figure 27

Removal and reinstallation of the Fold Table will NOT force the Fold Table to return to its "home" position, which will cause the position on the display to be different than the pointer on the fold table.

7.6.2   Exercising the Drives

The Fold Table Drives can be "exercised" automatically while in Output mode. Exercising of the drives consists of moving the Fold Table stop between 13" and 3" inches repeatedly. Exercising of the Fold Table Drives is used to confirm the function and accuracy of the Fold Table Drives and the position encoders in the drives.

To exercise a specific Fold Table Drive, with the Fold Table installed, press and release the corresponding Fold Table button, and then press the "RUN" button. The Fold Table will then go to Home. Once the Fold Table has been "Homed", the Fold Table will go to 13", stay in that position for a few seconds, then it will move to 3", stay there for a few second, and then will move back to 13". Exercising of the Fold Table Drives will continue until the "STOP" button is pressed.

7.6.3   Stack Wheels

To move the Stack Wheels, press the Stack Wheel button, and then press either the "+" or "-" button. The display will show the analog sensor reading (A/D) from the Stack Wheels, and it will show the position of the Stack Wheels in either inches or centimeters (depending on the current units set).

7.7   Option 6 – Fold Counters

This mode will display an age reference of the folder. There are 2 different values displayed in this mode; Clutch Count and Age Count. These counters provide a means of tracking the age and the amount of use that the folder receives.

```
CLTCH CNT:

AGE COUNT:
```

Figure 28

In the event that a Tech Support call is required to Martin Yale, the Clutch Count and Age Count of the folder will be required.

7.7.1   CLTCH CNT (Clutch Count)

This value shows the number of times that the clutch has fired since it has last been serviced. In this case, "serviced" means either R&R or maintenance performed in the field by a qualified technician, such as a Clutch replacement, or a Fold Table Drive replacement. The Clutch Count is meant to be reset anytime work is performed on the folder.

To reset the Clutch Counter, depress and release the following buttons in sequence; "CE", "0", "STORE".

7.7.2   Age Count

This value shows the number of clutch firings that have occurred since the machine has been built and first shipped from the factory. This value cannot be reset in the field, and is not meant to be reset. If the Main Controller PCB is replaced, the age of the folder will be lost.

7.8   Option 7 – Output Limits Mode

This mode is used to define the various required operating parameters that the folder uses to function correctly. There are 6 different parameters that must be "taught" to the folder; Fold Table Offset #1, Fold Table Offset #2, Paper Diverter Engagement Distance, Stack Wheel Home, Stack Wheel Maximum and Fold Position Center.

7.8.1   Fold Table Home - #1 & #2

To teach the folder where both Fold Table home positions are, perform the following steps.

1. Install both Fold Tables.

2. Turn the power on and allow both Fold Tables to go to their respective home positions. **ONCE IN HOME POSITION, DO NOT SELECT A FOLD TYPE!**

3. Load several sheets of 8 ½ x 11 (or A4) 20# paper into the Feed Table and press the "TEST" button, which will fold two sheets of paper.

4. Depress and hold the "STOP" button until the folder enters diagnostics mode.
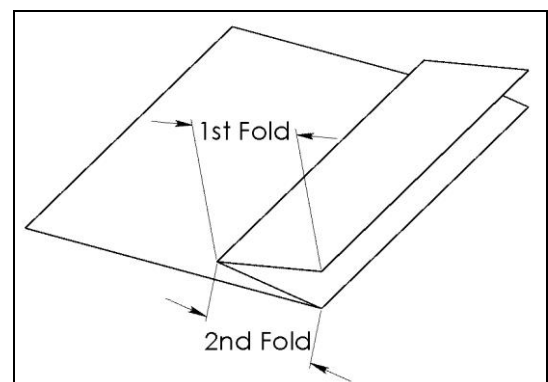
Figure 29

5. Press button "7" to enter Offset Limits Mode

6. Using digital calipers, measure one of the folded pieces of paper as shown in Figure 29 and record these measurements.

⚠️ **It is very important to make all Offset measurements using either dial or digital calipers. A line gage, pica stick, ruler, tape measure, etc., is not accurate enough. Typical Fold Table offset values are between 2.20 and 2.45 inches. If your measurement is outside of this range, contact Martin Yale Technical Support for assistance.**

7.8.2   Fold Table #1 Home

To set the home offset position for Fold Table #1, do the following;

1. Press the Fold Table #1 button. The display will look like the example below (Figure 30).

```
Fold Tbl 1 Home Pos·
Len·=[X·XX]:  ·   IN
```

Figure 30

2. Using the number pad, enter the value that was measured in section 7.8.1 (see Figure 29 – 1st Fold) and press "Enter" when done.

7.8.3   Fold Table #2 Home

To set the home offset position for Fold Table #2, do the following;

1. Press the Fold Table #2 button. The display will look like the example below (Figure 31).

```
Fold Tbl 2 Home Pos·
Len·=[X·XX]:  ·   IN
```

Figure 31

2. Using the number pad, enter the value that was measured in section 7.8.1 (see Figure 29 – 2nd Fold) and press "Enter" when done.

7.8.4   Diverter Offset

ℹ️ This is a continuation of Fold Table #2 Home. To change this value, you must follow the directions starting at section 7.8.3 - Fold Table #2 Home. The Diverter Offset value tells the folder how far Fold Table #2 must move inward to engage the Paper Diverter to perform a half fold.

```
Diverter Offset
Len·=[·XX]:  ·   IN
```

Figure 32

The folder will then ask/show the distance that the fold table must be driven to engage the paper diverter. The default value for this setting is .43 inches. To change this value, use the keypad to enter a new value and press "Enter" to save.

⚠️**The Diverter Offset value does not normally need to be changed for any reason, except when there are problems performing a Half fold, or the fold table is making a loud clicking noise when moving into Half fold. Improperly setting this value can cause damage to the fold table. *This value should ONLY be changed as a last resort!***

7.8.5 Stack Wheel Home

```
Press '-'    A/D=XXX
Press Enter to Teach
```

Figure 33

To teach the home position for the Stack Wheels,

1. Press the Stack Wheel button.

2. Press and hold the "-" button until you hear the Stack Wheel make a clicking noise. This is the home position.

The A/D value should reading greater than zero.

3. Press the "enter" button.

4. The display will now ask for the maximum travel distance. The default value is 10.5. **There should not be any reason to change this value.** Simply press "Enter" to accept this value.

7.8.6 Fold Position Center

```
Fold Position Center·
Len·=[·XX]:  ·   IN
```

Figure 34

This value is used to better balance Fold Table positions. Slight folding errors occur depending on the weight of the paper being folded and where the Fold Tables are set. The heavier the paper weight, the shorter the fold length typically is, and conversely for lighter paper. The greater the position set on the Fold Tables, the greater the error will be for the actual location of the fold in the paper. This is due to rippling (compression) of the paper when the paper impacts the stop inside of the Fold Table. The Fold Position Center helps to offset these fold errors.

To set the Fold Position Center value, perform the following steps.

1. Turn on the folder power and allow the folder to home both fold tables normally. Do not enter diagnostics.

2. Press the Fold Select button and specify Half fold.

3. Press the Size Select button and set the folder for 8 ½ X 11 (or A4).

4. With the Feed Table loaded with a few sheets of 8 ½ X 11 (or A4) 20# paper, press the "TEST" button to fold two sheets.

☑ Pay special attention to how the folded paper exits the folder. The folded edge of the paper will be to the right and the open edges of the paper will be on the left. If the top panel of the folded page is longer than the bottom panel, then Fold Position Center value will have to be increased.

5. Using a pair of digital calipers, measure the distance that the top panel overhangs the bottom panel. If there is no overhang, then do not change the Fold Position Center value.

6. If there is an overhang, enter diagnostics by pressing and holding the "STOP" button for several seconds.

7. Press button "7" to enter Offset Limits Mode

8. Press the "Paper Length" button. This will display the current center position.

9. Enter *HALF* of the overhang measurement value using the keypad and press "ENTER" to save.

10. Repeat steps 2 through 9 if the overhang is greater than .02 inches.

⚠️ **It is very important to make this measurement using either dial or digital calipers. A line gage, pica stick, ruler, tape measure, etc., is not accurate enough.**

ℹ️ The factory settings for all offsets can be found on the underside of the Access Panel, located under the 2nd Fold Table. A Phillips screwdriver will be required to remove the Access Panel.

7.9 Option 8 – LED Test

This option will cycle the LED in a Race Track manner and will continue until the "STOP" button is pressed.

8 Error Codes

8.1 Error 101 – Feed Error

This error is caused when the folder tries to feed a sheet of paper from the Feed Table, but was unable to. This is the most common error and is usually caused by one or more of the following conditions;

1. The Paper Guides may be adjusted too tight against the paper, which is holding the paper back from feeding. Double check the Paper Guides.

2. Coated stocks and paper larger than 8 ½ X 11 can be heavy and if the Feed Table is loaded to its maximum capacity, it's possible that the Feed Table is not able to lift the full stack. Reduce the number of sheets in the Feed Table.

3. Feeding of some coated stocks will cause a build up of static in the last few sheets of paper (less than 30) in the Feed Table, causing the sheets of paper to stick to each other and to stick in the Feed Table. Use of Martin Yale Anti-Static Spray on the paper stack and on the Feed Table may remedy this problem.

4. The Feed Wheel may be dirty. Clean the Feed Wheel with an approved Martin Yale brand roller cleaner or rubbing alcohol. Make sure the Feed Wheel is dry before attempting to run the folder.

5. The Retarder may be adjusted too tight, not allowing the paper to pass under the Feed Wheel. Recheck the Retarder setting. There should be slight contact between the Retarder and the Feed Wheel. If the Retarder requires adjustment, use the supplied 9/64" Hex key to adjust the Retarder.

    a. With the Feed Table down (in the load position), and the Top Cover open, turn the Feed Wheel by hand and feel for drag on the Feed Wheel.

    b. While rotating the Feed Wheel, depress the Retarder Release. There should be a noticeable difference in drag on the Feed Wheel. If not, release the Retarder Release and tighten the Retarder (counter-clockwise = up = tighten).

    c. Without pressing the Retarder Release, if the Feed Wheel has a large amount of drag against the Retarder, loosen the Retarder (clockwise = down = loosen).

    d. Once the Retarder is adjusted, when feeding paper, pay attention to the top sheet in the Feed Table. With a properly adjusted Retarder, the top sheet will be partially into the folder, approximately ½ to ¾ inches more than the remaining sheets. Increasing Retarder pressure will reduce this distance, and reducing Retarder pressure will increase this distance.

6. The Paper Lift Spring may not be applying enough force against the Feed Wheel. This only occurs if there are only a few sheets of paper remaining in the Feed Table (typically, less than 20 sheets). Bending the Paper Lift Spring up a small amount usually remedies this problem.

    a. With the Feed Table down in the load position, and with no paper loaded, the Paper Lift Spring should be above the Feed Table between 1/4 and 3/8 inch. Only bend the Paper Lift Spring if necessary.

7. The Feed Table may not be rising up as it should. This can be caused by the Feed Table Lift Spring being out of adjustment, a lack of lubrication on the moving parts, or a mechanical problem caused by shipping damage.

    a. With no paper in the Feed Table, release the Feed Table and allow the Feed Table to rise up on its own.

    b. If the Feed Wheel compresses the Paper Lift Spring, then the Feed Table is functioning correctly.

    c. If the Feed Table is not raising, and not causing the Paper Lift Spring to make contact with the Feed Wheel, then field service is required.

8. The Feed Clutch may not have fired.

    a. Test the Feed Clutch in Diagnostics (Section 7.5 - Option 4 – Feed Mode)

    b. If there is no auditable "click" coming from the Feed Clutch, and the Feed Wheel is not rotating when the Feed Clutch is commanded to fire, then either the Main Controller PCB has failed (no power going to the Feed Clutch) or the Feed Clutch has failed (replacement required).

    c. If the Feed Clutch is firing intermittently, replacement of the Feed Clutch is required. **Do NOT attempt to adjust the Feed Clutch**. The Feed Clutch is factory adjusted for optimum performance prior to installation onto the Folder.

9. The Paper Present sensor failure. If the Feed Table is empty and the folder continues to feed paper, then this sensor has failed. The reason the folder is attempting to feed paper is because the controller still thinks there is paper in Feed Table when none exists. Verify proper function of sensor through Diagnostics (Section 7.3, Option 2 – Input Sensor Mode).

8.2   Error 102 – Exit Sensor Failure (on)

There are two possible causes for this error to occur;

1. Possible paper jam at exit conveyor and the sensor is covered.

2. If the Exit Sensor has failed and the sensor acts as if it's always sensing paper when none exists. Verify proper function of the sensor through Diagnostics (Section 7.3, Option 2 – Input Sensor Mode).

8.3   Error 103 – Exit Sensor Failure (off)

There are two possible causes for this error to occur;

1. A paper jam in either of the Fold Tables. Clear the paper jam from the Fold Table(s).

2. The Exit Sensor has failed and cannot sense paper in the Exit Conveyor. Verify proper function of the sensor through Diagnostics (Section 7.3, Option 2 – Input Sensor Mode).

8.4   Error 104 – Motor Controller Failure

Caused when power is turned on and the Main Motor starts running when it should not. The Main Motor drive circuitry has failed and the Main Controller PCB requires replacement.

8.5 Error 105 – Fold Table #1 Drive Encoder Fault

The position encoder Fold Table Drive #1 is not functioning correctly. Replacement of the drive is required. Verify proper function of the sensor through Diagnostics (Section 7.6, Option 5 – Output Mode).

8.6 Error 106 – Fold Table #1 Drive Wires Reversed

The motor wires on Fold Table Drive #1 are reversed. In rare occasions, this error can be caused by a faulty encoder. Verify proper function of the position encoder through Diagnostics (Section 7.6, Option 5 – Output Mode).

8.7 Error 107 – Fold Table #2 Drive Encoder Fault

The position encoder on Fold Table Drive #2 is not functioning correctly. Replacement of the drive is required. Verify proper function of the position encoder through Diagnostics (Section 7.6, Option 5 – Output Mode).

8.8 Error 108 – Fold Table #2 Drive Wires Reversed

The motor wires on the Fold Table Drive #2 have been reversed. In rare occasions, this error can be caused by a faulty encoder. Verify proper function of the position encoder through Diagnostics (Section 7.6, Option 5 – Output Mode).

8.9 Error 109 – Clutch Error

This error occurs when the Feed Clutch is engaging the Feed Wheel when it should not. Verify proper function of the Main Controller PCB and the Feed Clutch solenoid through Diagnostics (Section 7.5, Option 4 – Feed Mode). If the Main Controller PCB and the Feed Clutch solenoid is functioning, then mechanical failure of the Feed Clutch has occurred. Replacement of the Feed Clutch is required.

8.10 Error 110 – RPM Sensor Failure

This error is caused when the Main Controller PCB does not detect the rotation of the folding rollers. Check for the following conditions;

1. If the Main Controller PCB has recently been replaced, make sure the red 24 volt jumper wire has been installed correctly on the Main Controller PCB.

2. Paper jam, where the rollers cannot rotate freely. Using the Dejam Handle, insure that the Rollers are free to rotate. Clear paper jam.

3. Mechanical component failure. Using the Dejam Handle, insure that the Rollers are free to rotate.

4. RPM Sensor failure. Verify proper function of the RPM sensor through Diagnostics (Section 7.3, Option 2 – Input Sensor Mode).

5. Main Motor failure. If the rollers are free to rotate and the RPM sensor is functioning, but the Main Motor isn't starting, manually rotate the rollers a small amount, and try to run the folder again. If the motor begins to run, this indicates that there is a sticky brush in the Main Motor, and the motor will have to be replaced.

6. If none of the previous conditions exist, and the folder still does not run, then the Main Motor drive circuitry has failed. Replacement of the Main Controller PCB is required.

8.11 Error 111 – Feed Error

This error occurs when the lower sheets of paper in the Feed Table are not being held back by the Retarder, and the Paper Being Fed sensor, which is behind the Feed Wheel, becomes covered when the folder is running. In short, the Retarder is not tight enough and it is not holding the lower sheets of the paper back. Recheck the Retarder setting. There should be slight contact between the Retarder and the Feed Wheel. If the Retarder requires adjustment, use the supplied 9/64" Hex key to adjust the Retarder.

     a. With the Feed Table down (in the load position), and the Top Cover open, turn the Feed Wheel by hand and feel for drag on the Feed Wheel.

     b. While rotating the Feed Wheel, depress the Retarder Release. There should be a noticeable difference in drag on the Feed Wheel. If not, release the Retarder Release and tighten the Retarder (counter-clockwise = up = tighten).

     c. Without pressing the Retarder Release, if the Feed Wheel has a large amount of drag against the Retarder, loosen the Retarder (clockwise = down = loosen).

     d. Once the Retarder is adjusted, when feeding paper, pay attention to the top sheet in the Feed Table. With a properly adjusted Retarder, the top sheet will be partially into the folder, approximately ½ to ¾ inches more than the remaining sheets. Increasing Retarder pressure will reduce this distance, and reducing Retarder pressure will increase this distance.

You **WILL** experience this error while feeding coated or glossy paper if the folder was originally adjusted for non-glossy, plain paper such as bond, offset, index, etc.

9   Trouble Shooting

9.1   Folder will not start when the "Run" button is pressed.

1. If the display reads "No paper in Feed Table", but there is paper in the Feed Table, replacement of the Feed Table Paper Present sensor may be required. Verify proper function of sensor through Diagnostics (Section 7.3, Option 2 – Input Sensor Mode).

2. If the display reads "Feed Table In Load Position", replacement or adjustment of the Feed Table Switch may be required.

9.2   The LCD Display is blank

1. Insure that the folder is plugged into a functional receptacle.

2. Insure that the power switch is in the "Off" position.

3. Insure that the display contrast is adjusted correctly. Perform the following steps;

     a. While holding the display contrast button down, turn on the folder

     b. Continue to hold the display contrast button for 10 seconds.

     c. Release the display contrast button.

     d. Depress and hold the "+" incremental adjustment button. If the display and the Main Controller PCB are functioning correctly, the display will become visible within a few seconds.

4. Insure that the main fuse (located next to the power inlet) is not blown.

5. Insure that both LED's on the Main Controller PCB are on. If not, check both fuses on Main Controller PCB.

6. LCD Display may be defective. Service required.

7. Main Controller PCB may be defective. Service Required.

9.3 There is a loud popping or clicking noise…

9.3.1 …Only when the Fold Table is trying to Home.

1. If the Fold Table is all the way inward (closest to the Rollers), the Home Sensor may have failed.
   a. Check to see if the sensor is functioning.
   b. Check all electrical connections

2. If the Fold Table is NOT all the way inward, there is a blockage in the Fold Table. Turn off the power and clear the Fold Table blockage inside the Fold Table.

9.3.2 …Anytime the Fold Table is trying to move.

1. If the Fold Table is at the maximum or minimum position, it's possible that the Fold Tables have become lost. Perform the following steps.
   a. Turn the folder power off.
   b. After 3 seconds, turn the power back on and wait for the Fold Tables to home.
   c. After the Fold Tables are in the Home position, press either the First or Second Fold Table button.
   d. Using the number pad, enter a value of 6.00 inches (or 15cm if units are set to Metric).
   e. If the Fold Table does not stop within .2 inches (or 5mm if units are set to Metric) of the value specified above, then the Fold Table Drive is faulty. Service Required.

2. If the Fold Table is not at either the minimum or maximum position, there is a blockage in the Fold Table. Turn off the power and clear the Fold Table blockage inside the Fold Table.

9.4 The Fold Table pointer does not match the LCD display.

The pointers are for reference only and are not normally used except in the event of a Fold Table Drive encoder failure (Limp Mode). In the event of an encoder failure, the pointers can be used to manually set the fold tables to continue folding. However, if the difference is greater than .1 inches, continue with next step below.

1. Insure that the mechanical components in the Fold Table are not slipping.
2. Insure that the output gear on the Fold Table Drive is secure.
3. Insure that the Fold Table Offsets are correct before proceeding. See section 7.8.1 - Fold Table Home - #1 & #2, for more information.
4. Insure that the Fold Table Drive encoders are functioning correctly. See section 7.6.2 - Exercising the Drives, for more information.

9.5 The location of the fold is not correct.

1. Insure that the actual paper length matches the folder setting.
2. Manually adjust the Fold Table positions to produce the desired fold.
3. To further diagnose this problem, follow the steps in section 9.4.

9.6 The Stack Wheels are not moving when they should be.

9.6.1 There is a clicking noise.

1. If the Stack Wheels are at their minimum position (closest to the rollers) and still trying to move inward, the Stack Wheel limits are not set. Refer to section 7.8.5 - Stack Wheel Home.

2. If the Stack Wheels are at their maximum position and still trying to move outward, the Stack Wheel limits are not set. Refer to section 7.8.5 - Stack Wheel Home.3

3. If the Stack Wheels are not at their minimum or maximum position, the Stack Wheels have become jammed. Service and removal of the Stack Wheels Top Cover is required.

9.6.2   There is no sound coming from the Stack Wheels.

1. If the Stack Wheels can be moved by hand with little effort, refer to section 10.2.2 - Stack Wheels.

9.7   Paper is piling up between the Stack Wheels and the rollers.

1. Stack Wheel position has been manually changed. Reselecting the Paper Size or the Fold Type will automatically recalculate the correct Stack Wheel position.

2. The paper size being folded does not match the paper size specified in the folder. Select the correct paper length or specify custom paper length

3. The Stack Wheel limits are incorrectly set. Refer to section 7.8.5 - Stack Wheel Home.

9.8   One line of the LCD display is blank, and the other is all black.

1. The CPU on the Main Controller PCB is not programmed. Service Required.

2. The CPU on the Main Controller PCB is not functioning. Service Required. Replace Main Controller PCB.

9.9   The folder is having feeding problems…

9.9.1   …It's feeding intermittently.

1. Often times, this condition is preceded by an error code 101. See section 8.1, Error 101 – Feed Error, for more

9.9.2   …It's feeding more than one sheet at a time.

The Retarder is out of adjustment. This condition may or may not precede an error code of 111. See section 8.11, Error 111 – Feed Error, for more information.

9.10 The fold is not square…

9.10.1 The folds are all off in the same direction.

1. The Paper Guides are not centered on the Feed Table. Readjust Paper Guides.

2. The Feed Table Skew Adjustment is incorrect. Adjust Skew of Feed Table. See section 2.5, Fold Skew Adjustment, for more information.

3. The paper is not perfectly square.

    a. Adjustment of the Feed Table Skew may correct this problem.

    b. The paper itself may not be perfectly square. Trim paper before loading into Feed Table for folding.

9.10.2 …The folds are off in both directions.

The Paper Guides are not tight enough to the paper. Tighten Paper Guides.

10 Debugging

10.1 Electrical

Most electrical problems encountered will require you to enter Diagnostics (Section 7.3, Option 2 – Input Sensor Mode). This is the best way to determine if a sensor or switch is functioning correctly.

10.1.1 Sensors

Check all electrical connections between the Main Controller and the sensor, to include wires. This can be done using a "known good" sensor and/or wire assembly by connecting either item to the main controller, one at a time until the problem is found.

10.1.2 Switches

Check all electrical connections between the Main Controller and the switch, to include wires. This can be done using a "known good" switch and/or wire assembly by connecting either item to the main controller, one at a time until the problem is found.

10.1.3 Motors

Check all electrical connection between the Main Controller and the motor. Sometimes crimp terminals can become loose and wires will fall out of them, or they become disconnected.

10.2 Mechanical

10.2.1 Fold Table

To insure that the mechanical components in the Fold Table are not slipping, perform the following step;

1. With the Fold Table removed from the folder, restrain the pointer with your finger.

2. Rotate the gear on the bottom of the Fold Table.

3. There should not be any play in the gear. If there is play between the gear and the pointer, service is required.

10.2.2 Stack Wheels

⚠️**The following steps should only be performed by a qualified service technician.**

1. Remove the Top Cover from the Stack Wheels.

2. Inspect the drive belt integrity. Replace if broken or damaged.

3. Confirm drive belt tensioner is in-place and that there is adequate belt tension.

4. If the drive belt is loose, check the belt tensioner to insure that the tensioner stays in-place when the belt is re-tensioned (tensioner is pressed down into plastic). If the tensioner does not stay locked into the plastic, replace the Stack Wheel Assembly.

5. Insure that the pulley on the motor is secure to the motor shaft by trying to rotate the gear by hand.

6. Using the instructions in section 3.3 - Stack Wheel Position, Manually move the Stack Wheels. If the motor is not moving, refer to section 10.1.3 - Motors.

7. If the motor is functioning correctly, but the display is not changing and showing the correct position of the Stack Wheels, refer to section 10.1.1 - Sensors.

8. If the motor is functioning correctly, and the display is changing, but the position is incorrect, resetting of the position sensor is required;

a. Per section 3.3 - Stack Wheel Position, manually move the Stack Wheels to the minimum position.

b. By hand, rotate the pulley on the position sensor clockwise (as viewed from the operator position) until it will not rotate any further. This is the absolute minimum position of the sensor. Skipping past the teeth on the pulley will be required when rotating.

c. Once the position sensor is at the minimum position, skipping pulley teeth, rotate (by hand) the pulley on the position sensor back (counter clockwise) at least 7 teeth, but no more than 20.

d. Replace the Top Cover and follow the steps in section 7.8.5 - Stack Wheel Home, to re-teach the Stack Wheels.

11 Testing and Inspection

11.1 Feed Clutch

1. Turn off the folder and unplug the power cable.
2. Open the Top Cover
3. Either adjust the Retarder down or hold down the Retarder Release
4. Using you hand, rotate the Feed Wheel. Does the Feed Wheel spin freely in only one direction?
    a. Yes – Clutch Spring is functioning correctly
    b. No – Tight both directions (replacement of the Feed Clutch assembly is required).
        i. Spring may be jammed between the Clutch Shaft and the Gear Hub.
        ii. Clutch Spring may have become unwrapped.
5. Using the Dejam Tool, turn the rollers clockwise several revolutions. Does the Feed Wheel continuously rotate with the rollers?
    a. No – The Clutch Spring is releasing properly.
    b. Yes – The Clutch Disconnect is not resetting properly (replacement of the Feed Clutch assembly is required).
        i. The Disconnect capture nut could be too tight.
        ii. There could be a burr in the Disconnect pivot hole.
        iii. The Clutch could be out of adjustment (tampered)
6. With the Retarder properly adjusted (slight friction against the Feed Wheel), connect the power cable to the folder and turn on the power.
7. Enter diagnostics #4, auto-cycle the Clutch. Does the Clutch cycle in a consistent manner?
    a. Yes – No adjustment needed
    b. No – Disconnect not releasing like it should (replacement of the Feed Clutch assembly is required). Possible causes are;
        i. Disconnect capture not is too tight, not allowing the Disconnect to rotate and release when it should.
        ii. The Disconnect pivot hole has a burr, not allowing the Disconnect to rotate and release when it should.
        iii. Clutch electrical cable not plugged in.
        iv. A wire has fallen out of a connector.
        v. The Clutch is worn.
            1. What is the Clutch Count
        vi. Weak solenoid
        vii. Main PCB controller failure

  viii. No grease on the Disconnect or Clutch Spring lever.
   ix. Out of adjustment (tampered)
    x. Disconnect return spring too tight.
   xi. Debris in Clutch
   xii. Burr on the lever end of the Clutch Spring, and it's hanging on the Disconnect.

11.2 Fold Table

1. Remove the Fold Table from the folder.
2. Locate the gear on the bottom surface of the Fold Table
3. By hand, rotate the gear to both extremes of travel. Notice the position of the Paper Stop within the Fold Table by viewing at the top surface of the Fold Table.
4. Does the Paper Stop freely move to its maximum position?
   a. Yes.
   b. No – This can be caused from a serious paper jam which has caused paper to become trapped within the Fold Table, not allowing the Paper Stop to move freely. Disassembly of the Fold Table would be required to remedy this problem.
5. Does the Paper Stop move freely to the minimum position?
   a. Yes.
   b. No - This can be caused from a serious paper jam which has caused paper to become trapped within the Fold Table, not allowing the Paper Stop to move freely. Disassembly of the Fold Table would be required to remedy this problem.
6. With the Paper Stop in the minimum position, do the 2 plastic Diverter Actuators protrude?
   a. Yes.
   b. No - This can be caused from a serious paper jam which has caused paper to become trapped within the Fold Table, not allowing the Paper Stop to move freely. Disassembly of the Fold Table would be required to remedy this problem.
7. When moving the Paper Stops off of the Diverter Actuators, do the Actuators retract on their own?
   a. Yes.
   b. No – There is a small return spring located under the Top Cover of the Fold Table which has come loose. Disassembly of the Fold Table is required.
8. Inspect the paper opening of the Fold Table to insure that is a gap large enough for paper to enter. At the Fold Table opening, is the upper and lower plates parallel with each other?
   a. Yes.
   b. No – The opening is narrow in the middle. If the upper and lower plate openings are not parallel, there is a possibility that wrinkling of the paper can occur.

11.3 Feed Wheel Inspection

There should not be any tearing evident in the Feed Wheel material. The Feed Wheel should be clean and free of any slices or pitting. The Blue material should be secure to the aluminum hub. If there is any damage evident in the blue portion of the Feed Wheel or the blue material is not adhered to the hub, replacement of the Feed Wheel is required. If the Feed Wheel is dirty, clean with either Martin Yale Roller Cleaner or rubbing alcohol and allow to fully dry before use.

11.4 Retarder

To properly inspect the condition of the Retarder, removal of the Feed Wheel is required. The Retarder should not be pitted, torn or have any cuts. The Retarder should be free of any ink, dirt or grease. Clean if necessary. However, with the Feed Wheel installed, cleaning of the Feed Wheel is sufficient enough as the Feed Wheel is typically always in contact with the Retarder, allowing solvents applied to the Feed Wheel to be transferred to the Retarder.

With the Retarder still mounted in the folder, except for a rocking motion to allow for leveling against the Feed Wheel, the Retarder should have very little movement. Excessive motion or play will cause feeding issues and will make the Retarder difficult to adjust for proper function.

Depressing and releasing the Retarder Release Pin should allow the Retarder to drop into the Feed Bridge slightly and then raise back up. This can be checked with or without the Feed Wheel being installed.

12 Tech Support Questions

These are typical questions that will be asked anytime there is a call to Tech Support. Some of these questions may seem insignificant and meaningless. However, each question is another clue to the root cause of the problem. Having answers to as many of these questions as possible will help to expedite a solution. A service technician may ask follow-on questions as needed.

1. What is the serial number of the folder?

   Knowing the age of the machine can help pinpoint when it was manufactured, and by who. If there is a training issue, knowing "when" and "who" will help us correct manufacturing issues.

2. What is the software revision of the folder?

   There are folders in the field that have old programs in them. Some complaints can be attributed to old software. This does not necessarily mean that the folder needs to be returned. Sometimes a better understanding of "why" and "how" the folder functions with older software is all that is necessary.

3. What is the Clutch Count and Age Count of the folder?

   Knowing the Age Count is a good indicator of how much use the folder gets and is generally a better indicator of the folders age. The Clutch Count is a good indicator of how often the Folder receives maintenance. The lower the Clutch Count is, the more often maintenance is being performed. Knowing the Age Count, the Clutch Count, and the Serial Number, the more knowledgeable you will be about the usage level of the Folder.

4. Is there an error code displayed? What is the error code?

   This is very important to know.

5. What size paper is this problem occurring on?

6. What weight of paper is problem occurring on?

   Knowing the dynamics of the paper can sometimes uncover simple setup problems. If the problem is paper related, sometimes a small Retarder or Paper Guide adjustment can be made to resolve the issue.

7. Does it matter how full the Feed Table is loaded for this problem to occur?

   Problems with feeding can sometimes be the root cause for many other problems. Knowing this information will confirm that the Feed Table is setup correctly.

8. What type of fold is being produced?

   a. Fold Table #1 Position:_____

   b. Fold Table #2 Position:_____

9. What is the position of the stacking wheels?

   Knowing the type of fold being performed will usually uncover simple setup problems. If the problem is fold related, the solution is training and knowledge.

10. What is the speed setting of the folder?

Speed is the least significant factor in trouble shooting the folder. However, paper jams that occur all the time can be quickly resolved if the paper type, the fold type, and the folder speed is known.

11. What is the programmed quantity?

General complaints of the folder stopping unexpectedly are sometimes caused by having a quantity programmed. Another reason could be an incorrect retarder setting, or incorrect stack wheel positioning.

12. What is the Batch Counter set to?

General complaints of slow folding can sometimes by caused by having a batch quantity set.

13. Have there been any changes made to the Retarder setting?
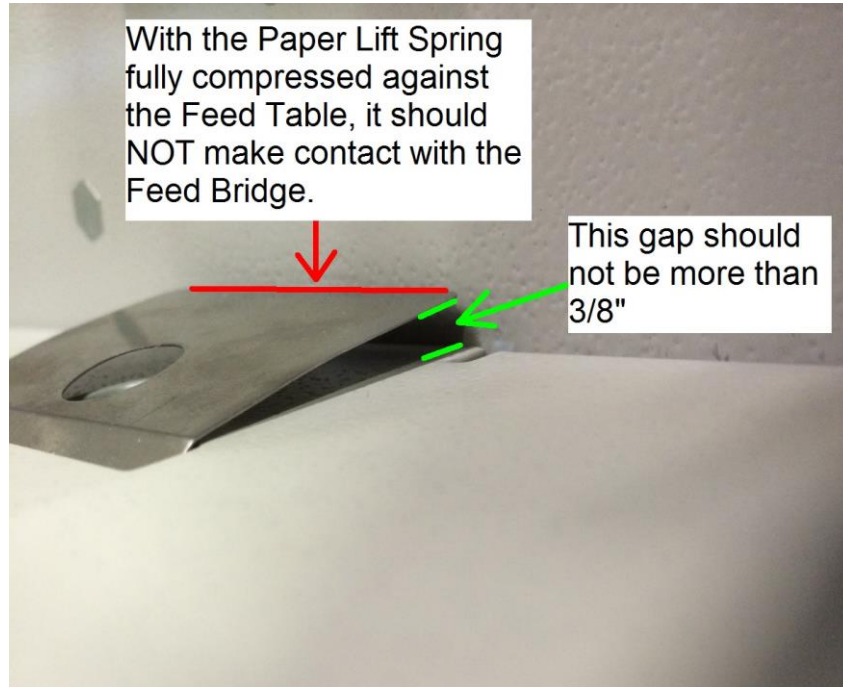
General feeding issues can cause a number of problems. Older machines may have old software which is not capable of accurately identifying improper Clutch or Retarder settings.

14. Has there been any maintenance performed on the folder recently prior to this problem?

If there have been no problems with the folder prior to service, this would be a good place to start looking.

13 Paper lift spring

1. Located on the Feed Table, inspect the Paper Lift Spring to insure that it is set to the proper height. The height of the spring should be roughly 1/4" high, but not more than 3/8".

With the Paper Lift Spring fully compressed against the Feed Table, it should NOT make contact with the Feed Bridge.

This gap should not be more than 3/8"

2. With the Feed Table in the "up" (run) position, the Paper Lift Spring should compress slightly against the Feed Wheel. If it does, then setup of the Feed Table is complete. If the Paper Lift Spring does not contact the Feed Wheel, perform the following;

    a. Insure that the Stop Bolts are fully tightened within both Guide Plates.

    b. Insure that the Feed Table is not binding when raising.

    c. Double check the Paper Lift Spring and make sure that there is at least 1/4 to 3/8 inch gap between the Feed Table and the Paper Lift Spring.

3. Setup of the Feed Table is complete.

14 Retarder Adjustment (sheet separator)

The retarder is also called the sheet separator. It is directly below the feed wheel.

Push the feed tray down and lock in the paper loading position.

Lift the top cover

Press the retarder pressure release button.

This will release the pressure against the feed wheel and allow you to turn the feed wheel in the direction of paper feed. While the button is depressed the feed wheel should turn freely.
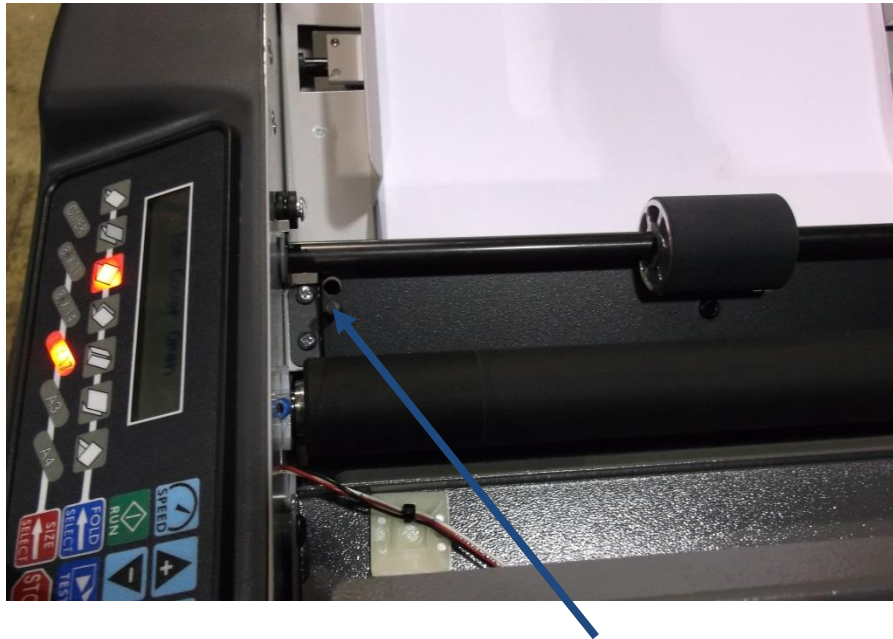
Retarder pressure release button.

When you press the button and turn the wheel it should turn freely in one direction.

When you release this button you should feel the rubbing of the retarder against the feed wheel. This should be a slight drag.
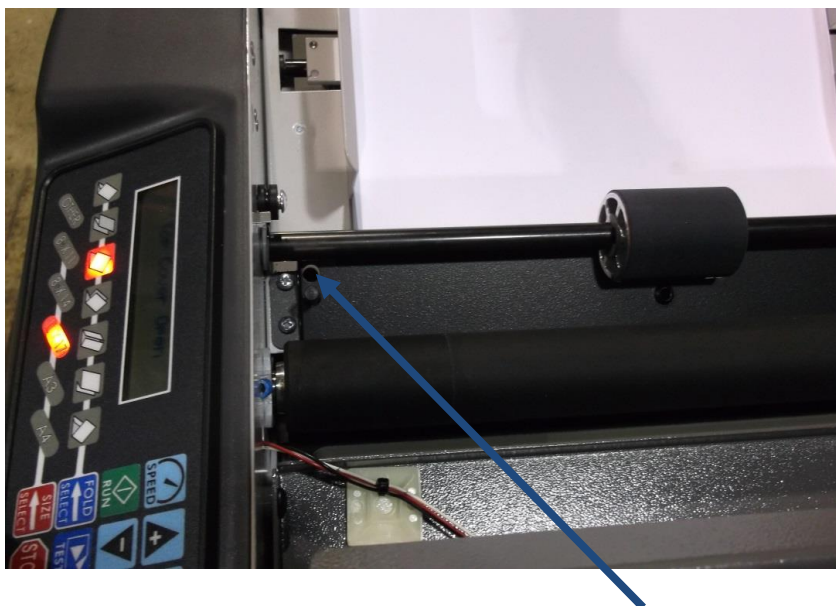
If the retarder adjustment is incorrect, insert the provided 9/64" hex wrench into the adjustment hole.

Turn the wrench clockwise to loosen, counterclockwise to tighten.

If the adjustment is incorrect you may have an Error 101 or Error 111 displayed**.**

Appendix

14.1 Minimum Recommended Tool Kit

- Permanent Marker (black)
- Phillips Screwdrivers
  - o #0, #1, #2, #2 short shank
- Right-Angle Ratcheting Screwdriver (#2 Phillips)
- 5/16" Wide Slotted Head Screwdriver
- Nut Drivers
  - o 1/4 in., 3/16 in., 11/32 in., 5/16 in., 3/8 in., 7/16 in., 1/2 in.
- Ball-End Hex Wrenches
  - o 3/8 in, 5/16 in, 1/4 in, 7/32 in, 3/16 in, 5/32 in, 9/64 in, 1/8 in, 7/64 in, 3/32 in, 5/64 in, 1/16 in, 0.050 in.
- 5" Needle Nose Pliers
- 6" Slip Joint Pliers
- External Snap Right Pliers
- Lock-Jaw Pliers
- Open-End Wrenches
  - o 1/4 in., 5/16 in., 11/32 in., 3/8 in., 7/16 in., 10mm
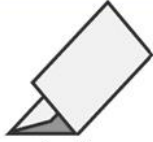- Flashlight
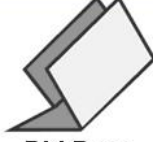
14.2 Tool Kit Consumables

- Martin Yale Roller Cleaner
- Rubbing Alcohol
- General Purpose Grease (Non-Lithium)
- Wire Tie, .1 in. Wide X 5 in. Long

14.3 Fold Chart

The paper stop locations shown in Table 1 are close approximations only. They are to be used in the event that your folder is in "Limp" mode (see section 6 - Limp Mode). Using the scales on the Fold Tables, set the position of the paper stops to the numbers below for a specific fold type at a given paper size. In almost all cases, you will have to deviate slightly from the numbers below to obtain a perfect fold.

Table 1

Paper Size	Letter	Z	Dbl Para	Gate	Eng	Church	Fold Table
8 1/2 X 11	7.33	3.67	5.50	8.25	2.75	8.64	1
	3.67	3.67	2.75	5.50	2.75	4.32	2
8 1/2 X 14	9.33	4.67	7.00	10.50	3.50	11.00	1
	4.67	4.67	3.50	7.00	3.50	5.50	2
11 X 17	11.33	5.67	8.50	12.75	4.25	13.36	1
	5.67	5.67	4.25	8.50	4.25	6.68	2
A4	7.79	3.90	5.85	8.77	2.92	9.18	1
	3.90	3.90	2.92	5.85	2.92	4.59	2
A3	11.03	5.50	8.27	12.41	4.14	13.00	1
	5.50	5.50	4.14	8.27	4.14	4.59	2

Note: All dimensions are in inches

14.4 Exploded View Drawing
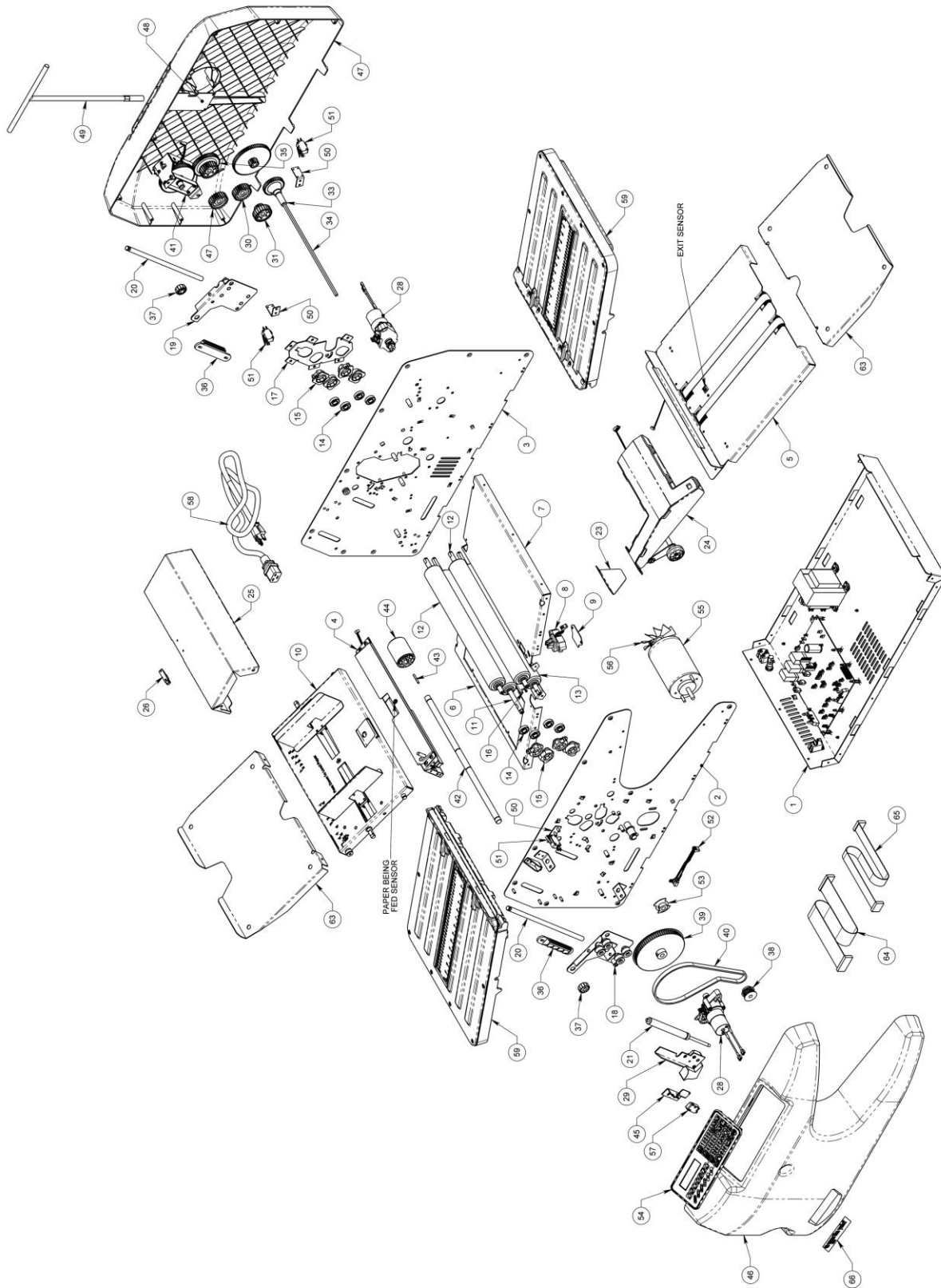
Figure 35 - 2051 Exploded View Drawing

14.5 Part List

Table 2

ITEM	PART NUMBER	DESCRIPTION	QTY
1	W-A2051070	BASE PLATE ASSY	1
2	W-A2051002	FRONT FRAME ASSY	1
3	W-A2051079	BACK FRAME ASSY	1
4	W-A2051042	FEED BRIDGE ASSY	1
5	W-A2051071	EXIT CONVEYOR ASSY	1
6	W-A2051105	MOTOR COVER ASSEMBLY	1
7	W-O2051109	RIVET SUPPORT FRAME	1
8	WRA2051144	COMPLETE HOME SENSOR ASSY.	1
9	W-F2051151	P/C SENSOR COVER	1
10	W-A2051041	FEED TABLE ASSEMBLY	1
11	WRA2051016	SECOND ROLLER ASSEMBLY	1
12	WRA2051013	FIRST ROLLER ASSEMBLY	2
13	WRA2051007	FORTH ROLLER ASSEMBLY	1
14	M-S020016	BNG .375IDX.875OD	8
15	M-O2051006	BEARING CARRIER	8
16	W-N2051068	PAPER DIVERTER	1
17	W-F2051060	P/C ROLLER PLATE	1
18	W-A2051043	FD TBL GUIDE ASSY-F	1
19	W-A2051051	FD TBL GUIDE ASSY-R	1
20	W-O2051086	B/O GUIDE SHAFT	2
21	M-S048015	DAMPER .24" DIA ROD X 3" STROKE	1
22	W-F2051104	P/C ACCESS PANEL	1
23	W-O2051237	POWDER COAT EXIT DEFLECTOR	1
24	W-A2051087	CONVEYOR STACK WHEELS	1
25	W-O2051110	P/C SHEET METAL TOP COVER	1
26	M-S045285	SENSOR RTRO RFLCT	1
27	W-A2051110	TOP COVER ASSEMBLY	1
28	M-O2051019	FOLD TABLE DRIVE	2
29	W-A2051040	FEED TBL LOCK ASSY	1
30	M-O003033	GEAR 24T X 3/8ID	2
31	M-O2051065	FORTH ROLLER DRIVE GEAR	1
32	M-O2051064	EXIT CONVEYOR IDLER GEAR	1
33	M-O2051063	EXIT CONVEYOR DRIVE GEAR	1

ITEM	PART NUMBER	DESCRIPTION	QTY
34	W-O2051073	B/O DRV SHFT	1
35	M-O2051067	SECOND ROLLER DRIVE GEAR	1
36	M-O2051139	ANTI -TWIST GEARRACK	2
37	M-O2051208	FEED TABLE SYNCHRO GEAR	2
38	M-S022144	HTD 3MM 25T 8MM BORE	1
39	M-O2051162	PULLEY, 120T 3MM HTD.375 BORE	1
40	M-S2051163	BELT HTD 3MM 186T 9MM WIDE	1
41	WRA2051081	FEED WHEEL CLUTCH	1
42	W-O2051253	B/O FEED WHEEL SHAFT	1
43	M-S011008	1/8 X 1 SQUARE KEY, 1018 STEEL	1
44	W-O2051249	MOLD FEED WHEEL	1
45	W-F2051106	P/C LOAD SENS BRKT	1
46	M-O2051102	FRONT COVER	1
47	M-O2051103	REAR COVER	1
48	W-O2051224	P/C T-HANDLE COVER	1
49	M-S012016	8MM NUT DRIVER T-HANDLE TYPE	1
50	W-O970034	SWITCH BRKT., B/O	3
51	M-S033040	MICROSWITCH	3
52	W-A2051204	MOTOR SPEED SENSOR	1
53	W-A2051119	OPTICAL ENCODER ASSY	1
54	W-A2051135	OPERATOR INTERFACE	1
55	M-S021076	MAIN MOTOR, 24VDC	1
56	M-S037094	4" FAN LEFT HAND PLAST	1
57	M-S033070	ZIPPY SWITCH - PART NUMBER VK-03B-00D1	1
58	M-S045273	UNIVERSAL 110V CORD	1
59	W-A2051022	FOLD TABLE ASSEMBLY	2
60	M-S030051	GROMMET .25 ID. X .44 OD	2
62	M-S015288	BLANK SERIAL LABEL	1
63	W-F2051056	P/C FEED TABLE EXT	2
64	M-O260177	CABLE,EC CONT.PANEL	1
65	M-O260176	CABLE, EC DISPLAY	1
66	M-O2051114	2051 PRODUCT LABEL	1

#40 part number M-S2051163 should be M-S023055

#41 part number WRA2051081 was replaced with part number W-A2051085

#42 part number W-O2051253 was replaced with part number W-O2051368
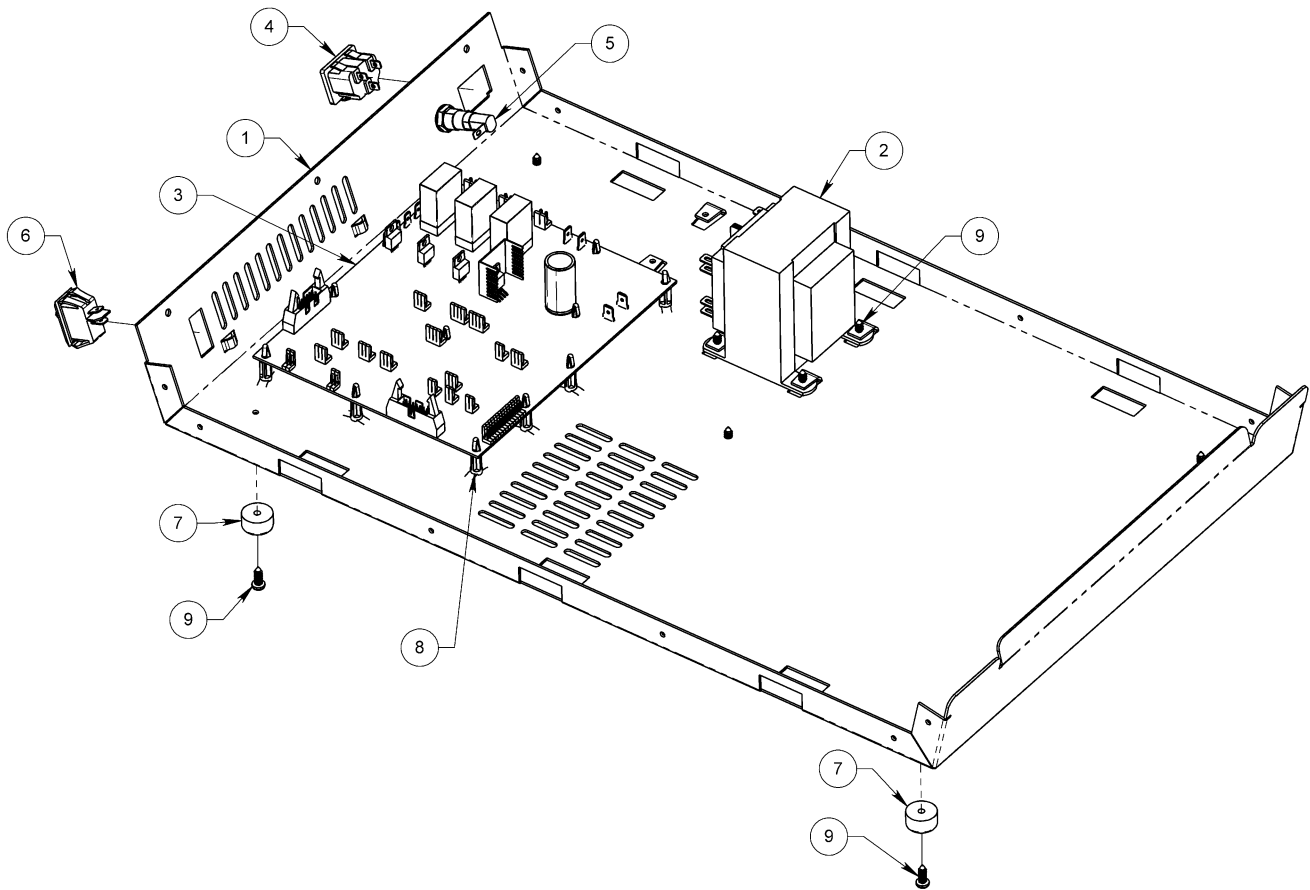
#44 part number W-O2051249 was replaced with part number W-O2051369

For 2051 machines after serial number 39586.01120.M39 and 2045 machines after serial number 39570.01049.M46

#54 2045 only part number W-A2045002 operator interface

Base Assembly

	1	W-A2051070 - BASE PLATE ASSEMBLY	

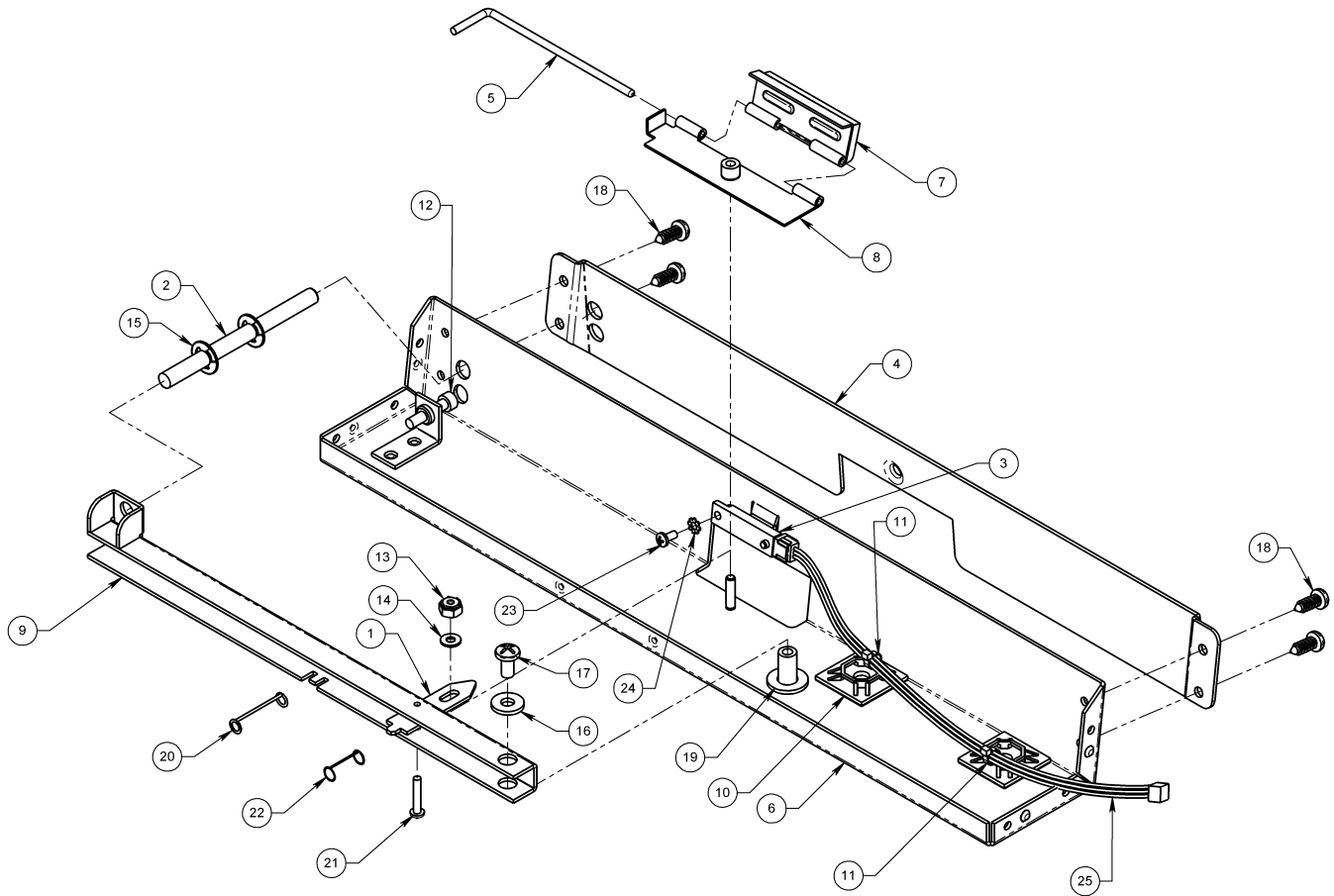| ITEM	PART NUMBER	DESCRIPTION	QTY
1	W-F2051070	BASE PLATE,	1
2	M-S045254	POWER TRANSFORMER	1
3	M-O2051143	MAIN CONTROLER PCB	1
4	M-S045274	UNVERSAL POWER INLET SCHURTER 4300.0704	1
5	M-S045065	FUSE HOLDER PANEL	1
6	M-S033053	SPST ROCKER SWITCH O-I	1
7	M-S030045	755 RW BUMPERS	5
8	M-S019047	LOCKING PCB SUPPORT, 5/8" TALL RICHCO LCBS-10-01	12
9	M-S001169	#8 X 1/2 PHILLIPS PAN HEAD TYPE B, ZINC PLATE	9

#3 part number WRA2051143 main PC board was replaced with part number WRA2051543

(2045 logic board part number WRA2045543)

For 2051 machines after serial number 39586.01120.M39 and 2045 machines after serial number 39570.01049.M46

14.6 Feed Bridge Assembly

ITEM	PART NUMBER	DESCRIPTION	QTY.
	④	W-A2051042 - FEED BRIDGE ASSEMBLY	
1	W-O2051215	RETARDER PRESSURE	1
2	W-O2051222	RETARDER RELEASE	1
3	M-S045285	SENSOR RTRO RFLCT	1
4	W-O2051175	B/O FEED TABLE DEFLECTOR	1
5	W-O2051219	FORM RETARDER PIVOT PIN	1
6	W-I2051042	PEM FEED TABLE BRIDGE 3	1
7	V-O2051254	MOLDED RETARDER ASSEMBLY	1
8	W-I2051218	PEM RETARDER HINGE	1
9	W-F2051214	P/C ACTUATOR ARM	1
10	M-S045005	ADHESIVE TIE BLOCK - HEYMAN #MP-A	2
11	M-S043021	.10 X 4 BLK WIRE TIE	2
12	M-S63751503	8-32X3/4 SHCS	1
13	M-S007120	6-32 NUT NYLON INSERT	1
14	M-S008116	NYLON WASHER 0.14 ID X 0.312 OD X .031 THICK	1
15	M-S010004	WALDES #5133-25, EXTERNAL "E" RING, BLACK OXIDE	2
16	M-S008005	10 SAE FLAT WASHER	1
17	M-S001019	10-32 X 3/8 PHILLIPS PAN HEAD, ZINC PLATE	1
18	M-S001169	#8 X 1/2 PHILLIPS PAN HEAD TYPE B, ZINC PLATE	4
19	M-S008107	NYLON WASHER 0.315 ID X 0.625 OD X 0.062 THICK	1
20	M-S031102	COMP SPR .24OD X 1.00L X .042WIRE	1
21	M-S001155	4-40 X 5/8 PHILLIPS PAN HEAD TYPE F SCR., BRIGHT ZINC PLATE	1
22	M-S031100	C-SPR .24X.625X.02	1
23	M-S001132	4-40X1/4 PHMS,PHL.ZP	1
24	M-S008038	#4 EXTERNAL LOCK WASHER	1
25	W-A2051194	HARNESS, PAPER FED	1

14.7 Exit Conveyor Assembly

ITEM	PART NUMBER	DESCRIPTION	QTY
	⑤	**W-A2051071 - EXIT CONVEYOR ASSEMBLY**	
1	W-I2051071	RIVET CONVEYOR TRAY	1
2	M-O2051072	CONVEYOR BELT PULLEY	4
3	M-S023058	O-RING #113 EPDM	4
4	M-S024013	.75X26.25 CONV BELT	2
5	W-B2051077	CONVEYOR	1
6	M-O2051076	FLXP-10A ANTI-STATIC STRIP	1
7	W-O2051078	TENSION SHAFT BRACKET B/O	2
8	W-O2051176	B/O TENSION BAR	1
9	M-S045285	SENSOR RTRO RFLCT	1
10	W-O2051246	POWDER COAT FAN COVER	1
11	W-A2051200	EXIT CONV. SENSOR HARNESS	1
12	M-S63801522	#4 HEX KEPSNUT ZP	2
13	M-S014016	THOMPSON NYLINER, #4L1-FF, TYPE 7	2
14	M-S010004	WALDES #5133-25, EXTERNAL "E" RING, BLACK OXIDE	2
15	M-S001169	#8 X 1/2 PHILLIPS PAN HEAD TYPE B, ZINC PLATE	3
16	M-S001132	4-40X1/4 PHMS,PHL.ZP	1
17	M-S045005	ADHESIVE TIE BLOCK - HEYMAN #MP-A	1
18	M-S043021	.10 X 4 BLK WIRE TIE	1
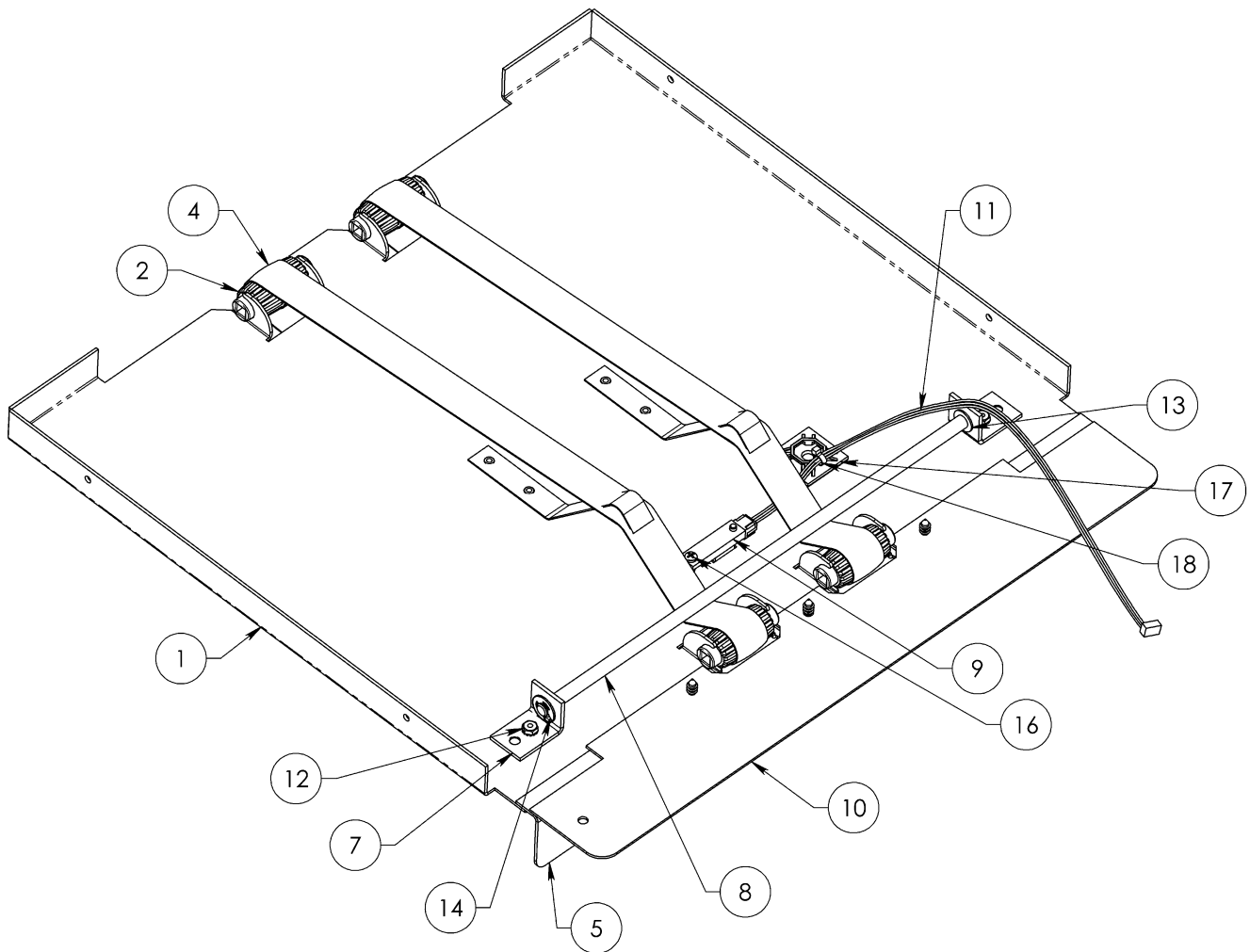
14.8 Motor Cover Assembly

⑥ W-A2051105 - MOTOR COVER ASSEMBLY

ITEM	PART NUMBER	DESCRIPTION	QTY
1	W-I2051105	PEM MOTOR COVER	1
2	WRA2051144	COMPLETE HOME SENSOR ASSY.	1
3	W-F2051151	P/C SENSOR COVER	1
4	M-S001019	10-32 X 3/8 PHILLIPS PAN HEAD, ZINC PLATE	2
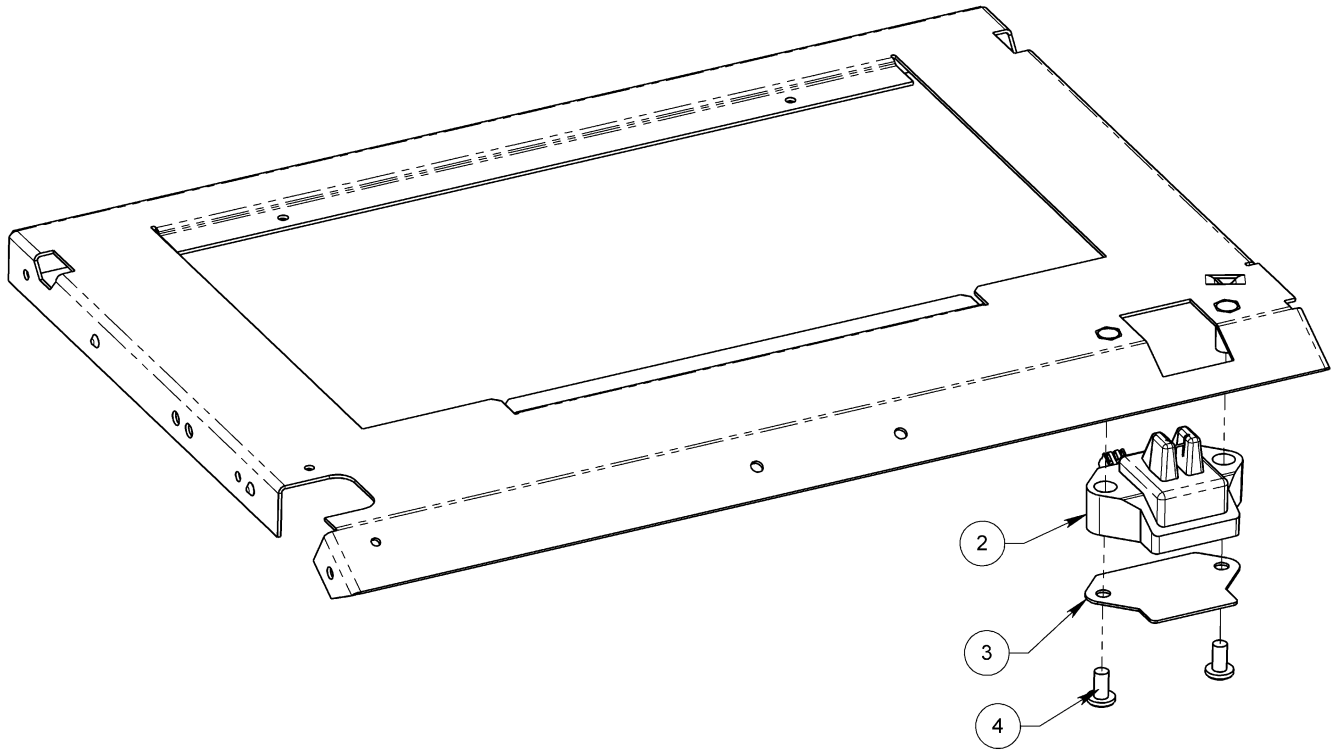
14.9 Feed Table Assembly

(10)	W-A2051041 - FEED TABLE ASSEMBLY		
ITEM	**PART NUMBER**	**DESCRIPTION**	**QTY**
1	W-O2051044	SILK SCREEN FEED TABLE	1
2	M-O2051157	PAPER GUIDE SHAFT SPACER	1
3	W-N2051050	FEED TABLE ROD	1
4	W-O2051049	B/O TORSION ROD	1
5	W-O2051055	B/O SKEW BAR	1
6	M-O2051163	PAPER GUIDE CLAMP	2
7	W-I2051054	PEM PAPER GUIDE	2
8	M-O2051141	FEED TABLE LIFT SPR	1
9	W-B2051225	PAPER LIFT SPRING	1
10	W-O2051244	P/C SKEW BELLCRANK	1
11	W-N2051247	MACHINED KNOB	1
12	W-N2051248	SKEW ADJ ROD	1
13	W-I2051243	PEM SKEW ADJUSTMENT ARM	1
14	W-I2051245	PEM SKEW ADJUSMENT BRACKET	1
15	M-S010011	WALDES #5133-37, EXTERNAL "E" RING, BLACK OXIDE	4
16	M-S014029	IGLIDE PLASTIC CLIP BEARING, IGUS #MCI-06-01	2
17	M-S007040	10-32 ELAS NUT	1
18	M-S008005	10 SAE FLAT WASHER	1
19	M-S001011	8-32 X 1/2 PHILLIPS PAN HEAD	1
20	M-S030051	GROMMET .25 ID. X .44 OD	1
21	M-S008108	NYLON WASHER 0.172 ID X 0.5 OD X 0.062 THICK	3
22	M-S007118	10-24 NYLOC NUT	2
23	M-S031105	EXTENSION SPRING	1
24	M-S008030	3/8 OD X 3/16 ID X 1/32, NYLON WASHER	1
25	M-S007033	10-32 HEX ACORN NUT	1
26	M-S001530	#10-32 X 1.00 FLAT HEAD PHILLIPS ZINC PLATE	1
27	M-S006040	10-24 X 1 1/4 STAINLESS STEEL CARRIAGE BOLT	2
28	M-S032070	10-24 NYLON THUMBNUT	2
29	M-S001132	4-40X1/4 PHMS,PHL.ZP	4
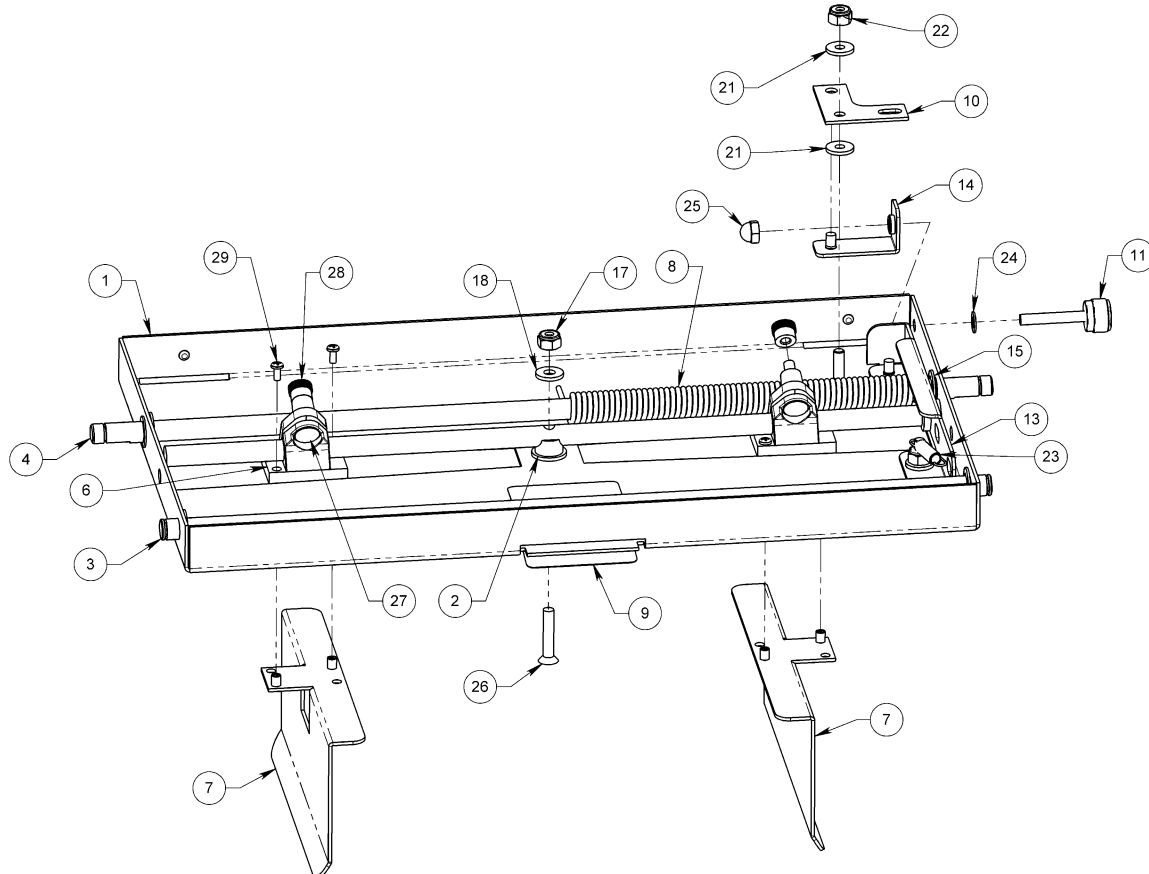
14.10 Conveyor Stack Wheels

	W-A2051087 - CONVEYOR STACK WHEELS			
ITEM	**PART NUMBER**	**DESCRIPTION**	**QTY**
1	M-O1701131	PULLEY MXL IDLER	3
2	M-S018040	.187 (3/16) X 1, DOWEL	3
3	M-S023056	STACK WHEEL DRIVE BELT	1
4	M-O2051088	CONVEYOR STACK WHEEL FRAME	1
5	M-O2051093	STACK WHEEL COVER	1
6	M-O2051238	STACK WHEEL DRIVE	1
7	M-O2051091	STACK WHEEL SLIDER	1
8	W-F2051090	P/C STACK WHEEL CARRIER	1
9	M-O2051089	STACK WHEEL	2
10	W-N2051095	STACK WHEEL AXLE SHAFT	1
11	W-O2051094	STACK WHEEL CARRIER SHAFT	1
12	W-O2051239	BLACK OXIDE RETAINER	1
13	M-S010004	WALDES #5133-25, EXTERNAL "E" RING, BLACK OXIDE	2
14	M-S010011	WALDES #5133-37, EXTERNAL "E" RING, BLACK OXIDE	2
15	M-S63751518	#6 FLAT WASHER	1
16	M-S004003	#6 X 3/8 PHILLIPS PAN HEAD, TYPE AB, BRIGHT ZINC PLATE	1
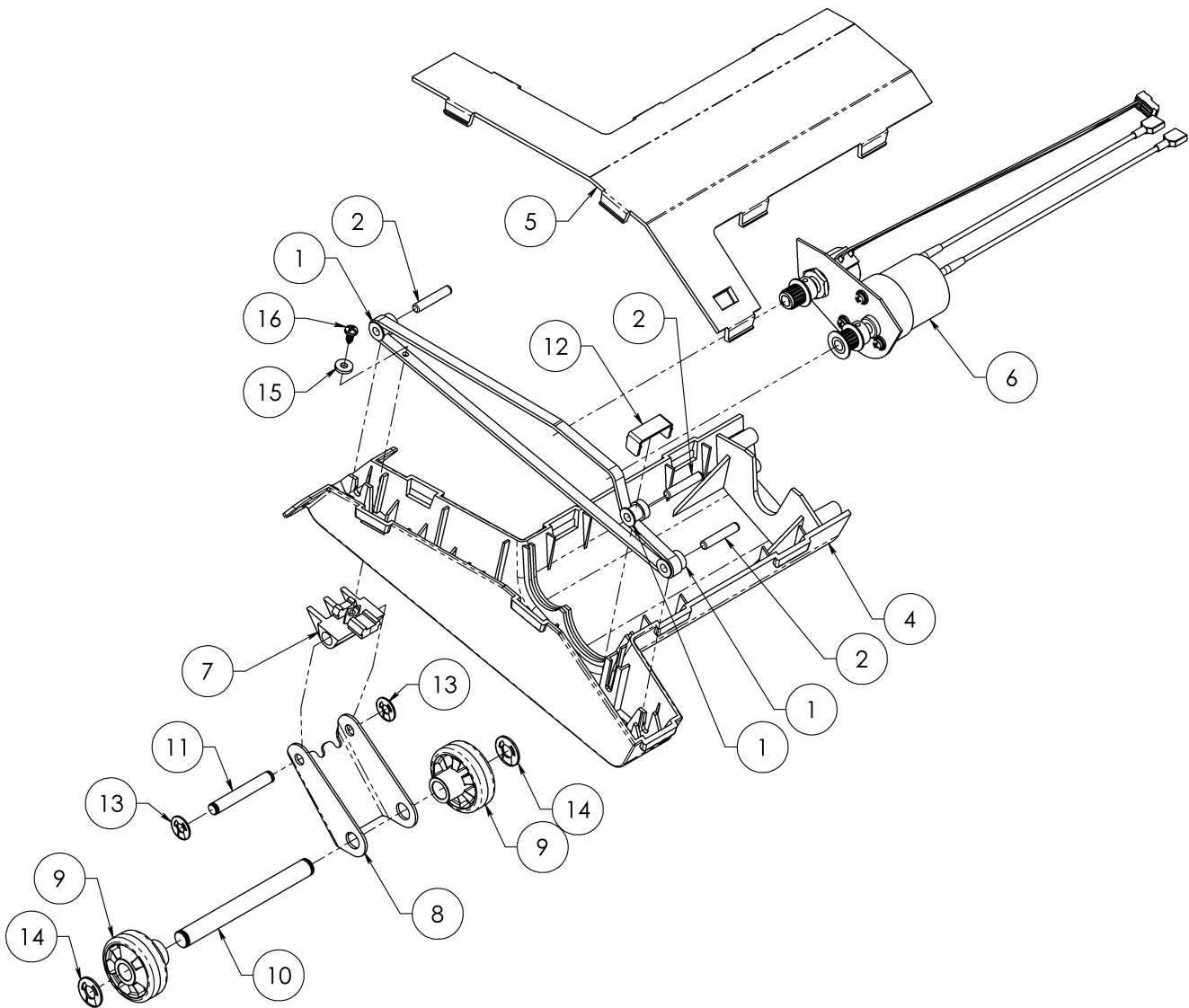
14.11 Fold Table Assembly

| 59	W-A2051022 - FOLD TABLE ASSEMBLY		
ITEM	PART NUMBER	DESCRIPTION	QTY.
1	W-I2051025	PEM FOLD TBL UPR PLT	1
2	W-I2051027	PEM LOWER PLATE	1
3	M-O2051026	PAPER DIVERTER ACTUATOR	2
4	M-O2051140	FOLD TABLE PULLEY	2
5	M-S023057	FOLD TABLE BELT, MXL 295T 1/4 WIDE	1
6	M-O2051170	PLASTIC GEAR 24PITCH 24T, .25 FACE	1
7	M-O2051030	FOLD TABLE TRAY	1
8	W-O2051029	FOLD TABLE DRIVE SHAFT	1
9	W-O2051036	FOLD TABLE GUDE SHAFT	1
10	W-I2051035	PEM STOP FENCE	1
11	M-O2051038	PAPER STOP CLAMP BLOCK	1
12	M-O2051174	FOLD TABLE COVER	1
13	M-O2051037	FOLD TABLE SCALE	1
14	W-O2051209	FOLD TABLE SPACER - SIDE, B/O	2
15	W-O2051210	FOLD TABLE SPACER - BACK, B/O	1
16	W-O2051205	DRIVE SHAFT	2
17	W-F2051131	FOLD TABLE BELT TENSIONER	1
18	W-B2051206	GROUNDING TAB	2
19	M-S004003	#6 X 3/8 PHILLIPS PAN HEAD, TYPE AB, BRIGHT ZINC PLATE	6
20	M-S008049	#6 EXTERNAL TOOTH LOCK	2
21	M-S018070	3/32 X 1 DOWEL PIN	1
22	M-S004038	#10 X 1 PHILLIPS FLAT HEAD, TYPE AB, ZINC	8
23	M-S031103	EXTSPR .18X1.0X.015	2
24	M-S007114	#4-40 NUT W/ NYLON INSERT	7
25	M-S010014	WALDES #5133-31, EXTERNAL "E" RING, BLACK OXIDE	2
26	M-S014064	IGUS MCI-05-01	2
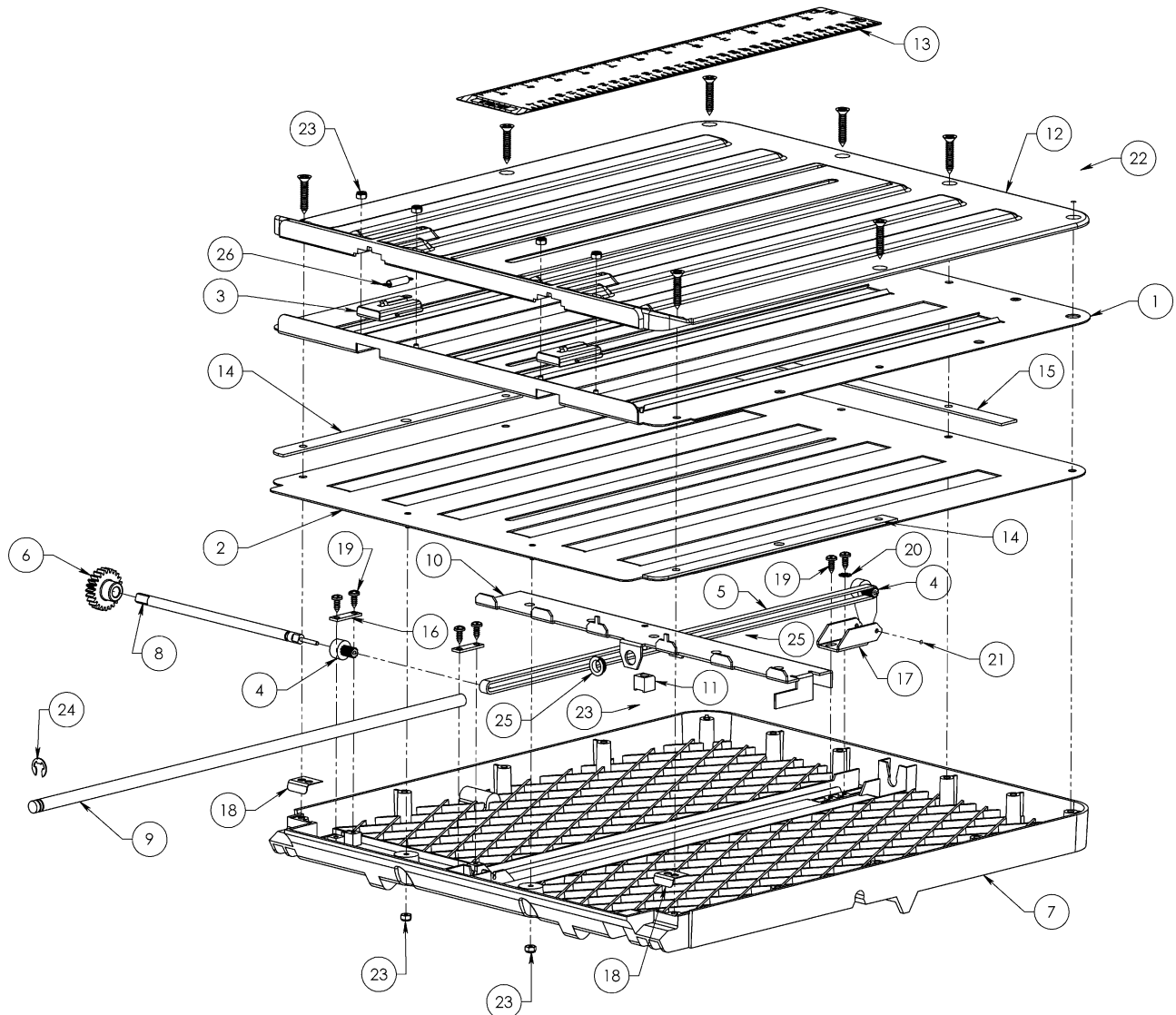
14.12 110 Volt Wiring Layout
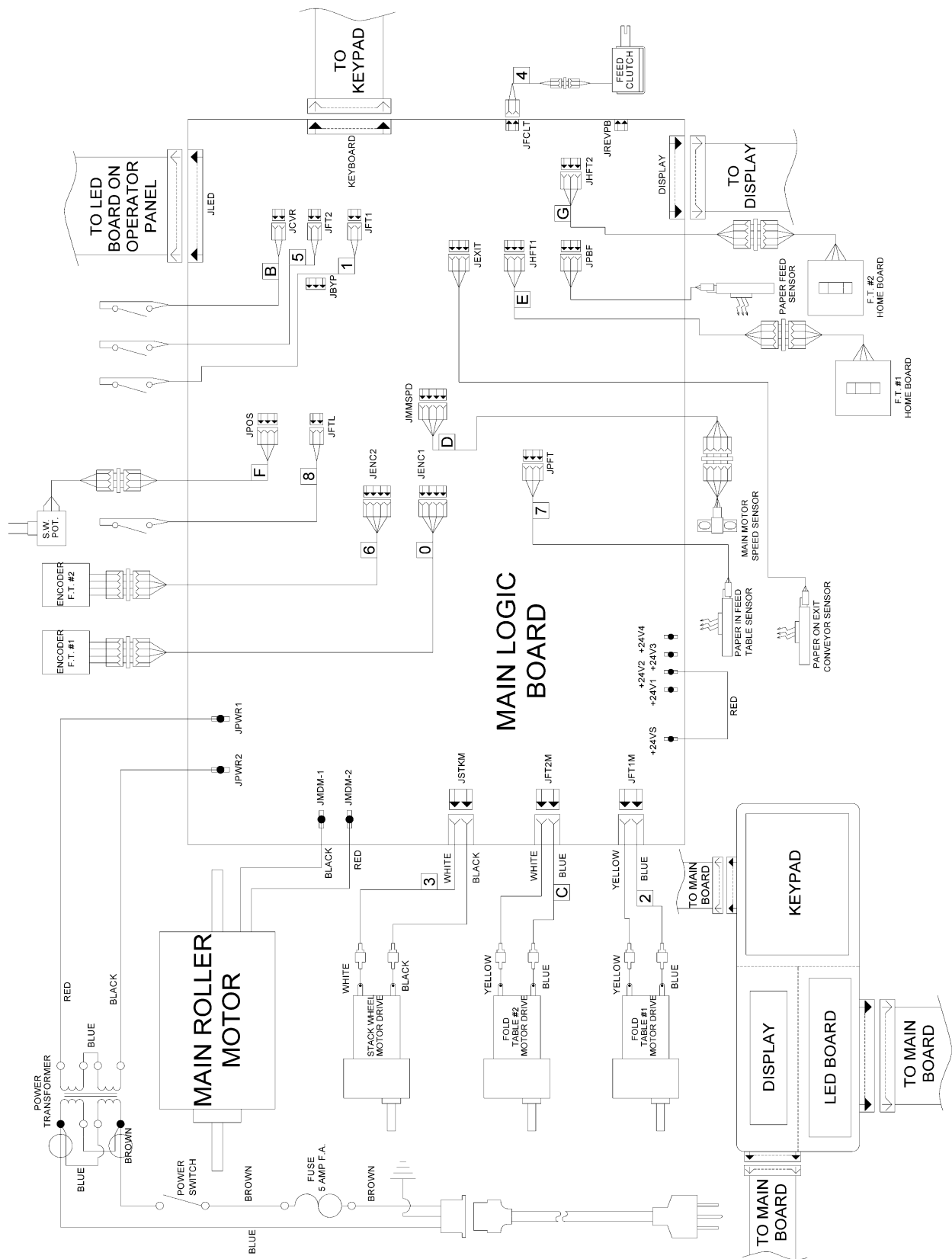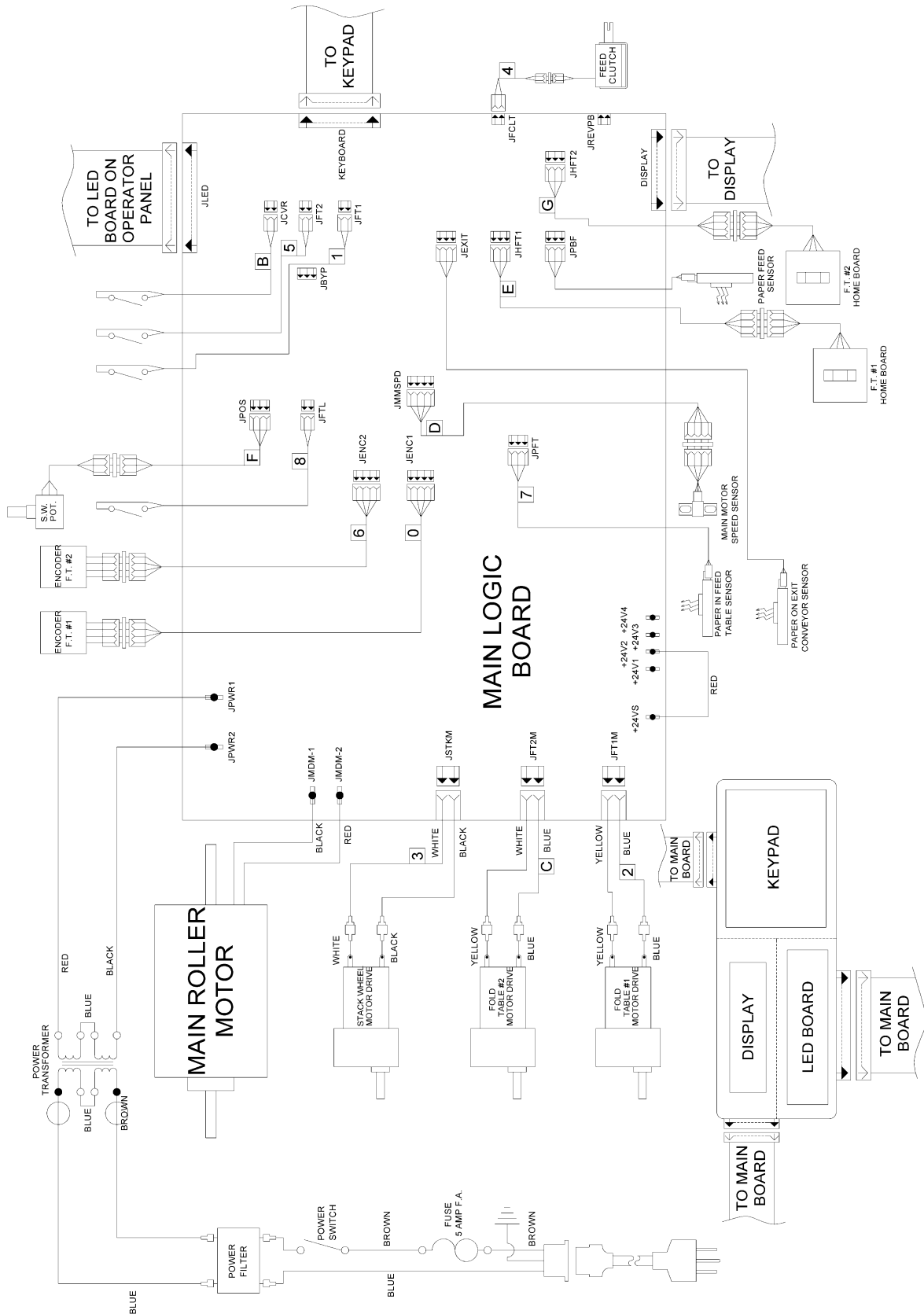
Figure 36

14.13 220/230 Volt Wiring Layout

Figure 37

Electromagnetic Disc Clutch Information

For 2051 machines after serial number 39586.01120.M39 and 2045 machines after serial number 39570.01049.M46 the clutch has been changed.   A new clutch, feed wheel and logic board part number is needed.

Part number WRA2051543   2051 logic board

Part number WRA2045543   2045 logic board

Part number W-O2051085   2051 and 2045 new style clutch

Part number W-O2051369   feed wheel when using new clutch

Part number WRA2054510   retro kit to upgrade older machines to the new style clutch