FORMAX®

FD 120
Card Cutter

MyBinding.com
5500 NE Moore Court
Hillsboro, OR 97124
Toll Free: 1-800-944-4573
Local: 503-640-5920

5/2011

MAINTENANCE MANUAL

SAFETY PRECAUTIONS

Always observe the cautions and warnings given below to prevent personal injury or property damage.

The degree of danger and damage that could occur is indicated on two levels by the following marks.

⚠ **WARNING:**	**Ignoring this mark could result in the possibility of serious injury or even death.**
⚠ **CAUTION :**	**Ignoring this mark could result in the possibility of injury or physical damage**

The following graphic symbols indicate the various types of action to be performed or avoided.

This graphic symbol indicates a forbidden action.

means "Do not disassemble."

means "Do not touch."

This graphic symbol indicates actions that must be performed.

means "Disconnect the power plug."

⚠ *WARNING:*

Do not place metal objects or vessels containing liquids on top of the unit. The entry of any metal object or liquid could result in a fire or an electrical shock.

Do not insert any metal or easily-combustible object inside this unit. This could result in a fire or an electrical shock.

Do not touch or insert foreign objects into any rotating part during operation. This could result in injury.

Do not remove the cover or back panel. This unit contains high-voltage components that could cause an electrical shock.

Do not disassemble, modify or repair this unit. There is a danger of fire, electrical shock or injury. Contact your dealer when repairs are necessary.

Use only the power supply voltage specified on the main nameplate. Using other voltages could result in a fire or an electrical shock.

Keep this unit and the power cord away from heaters and heater vents. Excessive heat could melt the cover or power cord covering, and result in a fire or an electrical shock.

Do not use solvent inside or near the unit (e.g. when cleaning the unit). Such solvents may damage the rubber rollers and resin inside the unit, resulting in malfunctions.

Make sure that the combined power consumption of the appliances to be connected does not exceed the capacity rating of the power outlets or plug receptacles. Exceeding the capacity rating could cause the power outlets, plug receptacles, or power extension cords to overheat and catch a fire.

Remove any dust that accumulates on the power plug prongs and the surface of the plug from which the prongs extend. Accumulated dust could result in a fire.

If any foreign object such as metal or liquid should enter this unit, immediately turn the unit off at the power switch and disconnect the power plug from the power outlet. Failure to do so could result in a fire or an electrical shock. Contact your dealer immediately.

Do not damage the power cord or power plug. (Do not scratch, alter, bend, twist, pull or place heavy objects on the power cord or power plug.) This could result in damage, a fire or an electrical shock.

Always grip the plug when disconnecting the power plug from the power outlet. Forcibly pulling on the power cord could cause damage, resulting in a fire or an electrical shock.

Do not handle the power plug with wet hands. This could result in an electrical shock.

Before cleaning this unit, turn the unit off at the power switch and disconnect the power plug from the power outlet. Accidental operation of the unit during cleaning could result in injury.

Do not touch the power switch with wet hands. Otherwise electric hazards may occur

Do not use flammable sprays inside or near the unit (e.g. when cleaning the unit). Such flammable gas may ignite and cause a fire or combustion.

⚠ CAUTION:

Keep away long hair, ties, jewelry and loose clothing. This could result in injury.

	**Do not put fingers inside during operation. This could result in injury.**
	**Always disconnect the power plug from the power outlet when the unit is not to be used for an extended period. Failure to do so could result in a fire due to leakage current if the insulation should deteriorate.**
	**Install this unit on a level, stable stand or floor, with sufficient space around it. Failure to do so could result in the unit overturning and causing injury.**
	**Do not install this unit in a location where there is excessive humidity or where contact with water is possible. Poor choice of location could result in deterioration of the insulation, a fire or an electrical shock.**
	**Disconnect the power plug from the power outlet before attempting to move this unit. Failure to do so could result in power cord damage, a fire or an electrical shock.**

MyBinding.com
5500 NE Moore Court
Hillsboro, OR 97124
Toll Free: 1-800-944-4573
Local: 503-640-5920

Precautions in Maintenance and Handling

1. Repairs should be performed by qualified service personnel.
2. WARNING:
   2.1 To avoid the risk of electrical shock, disconnect the machine from the A.C. power source before performing any service procedure.
3. The hardware used is METRIC. Replace hardware only with the same size as was originally used.
4. Observe caution when cutting cable “tie-wraps” so as not to damage the electrical wires.
5. Note the routing of wiring harnesses, cables and the position of parts and assemblies before disassembly. They must be reassembled in the original configuration to avoid damage from moving components during operation.
6. When using a tool generating heat such as soldering iron, take care not to damage the harnesses and cables.

MyBinding.com
5500 NE Moore Court
Hillsboro, OR 97124
Toll Free: 1-800-944-4573
Local: 503-640-5920

Contents

MyBinding.com
5500 NE Moore Court
Hillsboro, OR 97124
Toll Free: 1-800-944-4573
Local: 503-640-5920

1. Introduction

The FD 120 is designed to simplify business card, photo and post card cutting of paper printed by digital press, color laser printer or inkjet image printer.

2. SPECIFICATIONS

Paper Size	LT / Legal Size/ 9” x 14” (Max)
Paper Weight	120gsm ~ 350gsm
Feeder Capacity	75 sheets (200gsm)
Receiving Tray	500 business cards
Speed	Up to 130 business cards per min
Accuracy	± 0.3 mm
Dimension	13.8” (W) x 15.4” (D) x 13” (H)
Net Weight	60 lbs (27Kgs)
Power	110/220V Selectable, 50/60Hz, 1.2A

MyBinding.com
5500 NE Moore Court
Hillsboro, OR 97124
Toll Free: 1-800-944-4573
Local: 503-640-5920

3. CONTROL PANEL

Note: Depending on ůKŜ 2LJŜ·ůŷ mode, the ˥Ŝěă Ŏl·ƴKl·ØŜ different functions.

Standard Control Panel

Dealer Control Panel

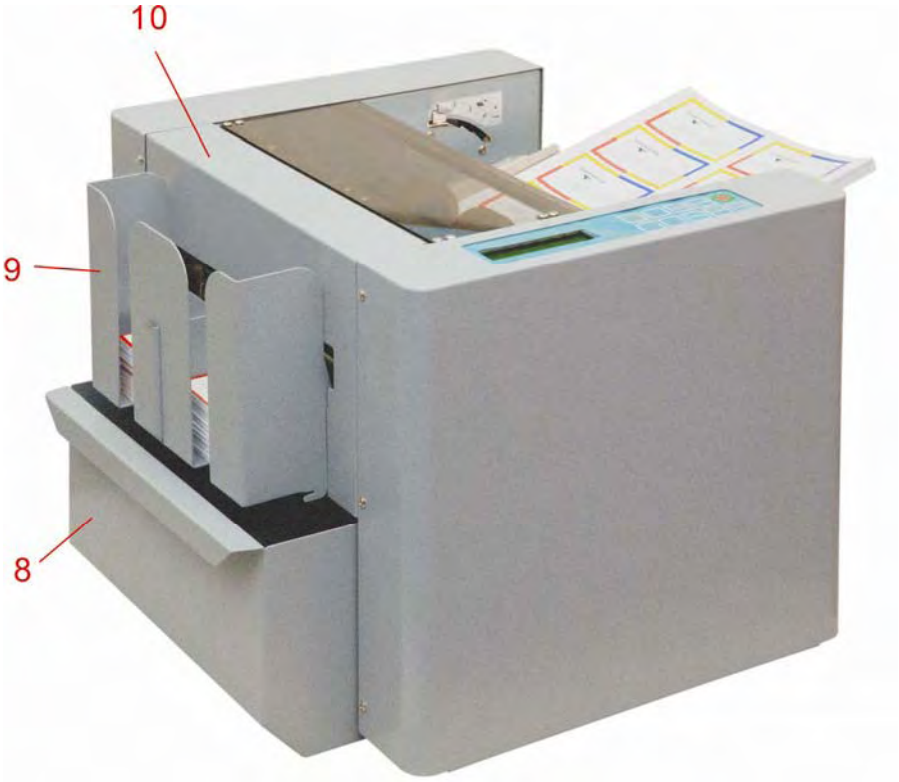
Keys	StaǇŘl·ůŘ Control ƚl·yŜf	Dealer Control Panel
	Start and Stop the cutter	Start and Stop the cutter
JOB	Change job	Change job
BATCH	Select batch count	Select batch count
JOG +	Clear paper jam in case of S3 error.	1. Clear paper jam in case of S3 error. 2. Increment settings by 0.1 mm when pressed.
ENTER −	Confirm job and batch count setting.	1. Confirm job and batch count setting. 2. Decrement settings by 0.1mm when pressed.
RESET	Rest error and counter.	Save settings
MODE	N/A	Enter program mode
TOP MARGIN	N/A	Set top margin
FINISHED LENGTH	N/A	Set finished length
GUTTER	N/A	Set gutter length

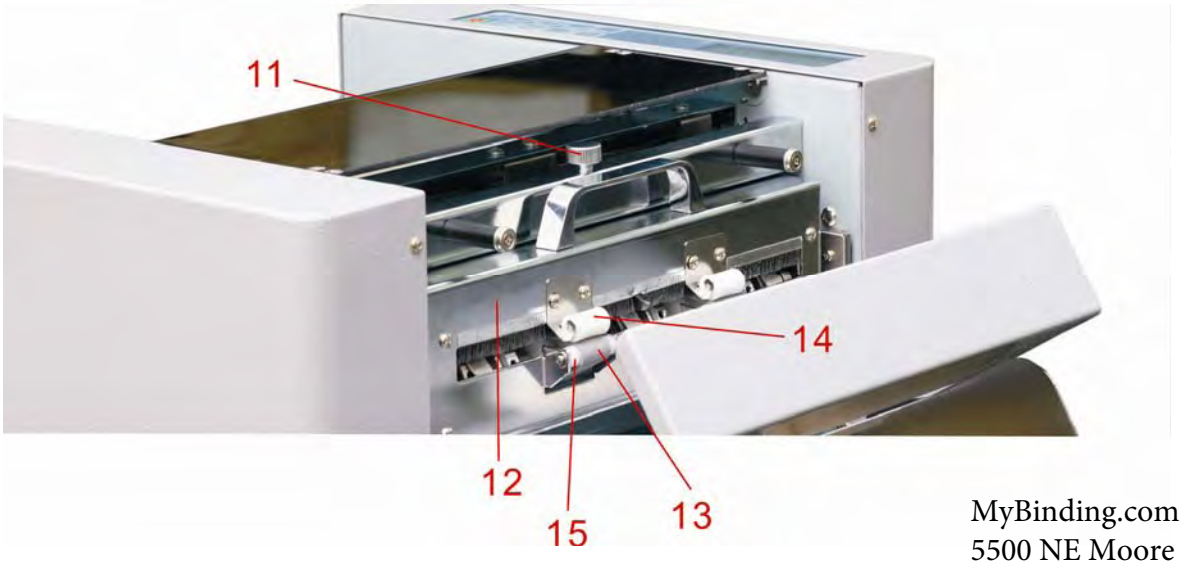
4. KEY COMPONENTS

Index	P/N	Part Name	Qty	Remarks
4-1-01	00S-000-6112	Switch, Power Entry	1	
4-1-02	881-102-0002	Key Pad	1	
4-1-03	881-103-0000	Tray, Extension	1	
4-1-04	881-104-0000	Knob, Center Alignment	1	
4-1-05	881-105-0000	Side Guide, L	1	
4-1-06	00R-000-1052	Roller, Feed	3	
4-1-07	881-107-0000	Cover, Top	1	

MyBinding.com
5500 NE Moore Court
Hillsboro, OR 97124
Toll Free: 1-800-944-4573
Local: 503-640-5920

Index	P/N	Part Name	Qty	Remarks
4-1-08	881-108-0000	Waste Bin	1	
4-1-09	881-109-0000	Tray, Stacking	1	
4-1-10	881-110-0000	Cover, Safety, Rear	1	
4-1-11	881-111-0000	Thumb Screw, Slitter Release	1	
4-1-12	881-112-0000	Module, Slitter, 2” x 3.5”	1	
4-1-13	881-113-0000	Roller, Ejection, Lower	2	
4-1-14	881-114-0000	Roller, Ejection, Upper	2	
4-1-15	881-115-0000	Belt, Slitting Transport	2	

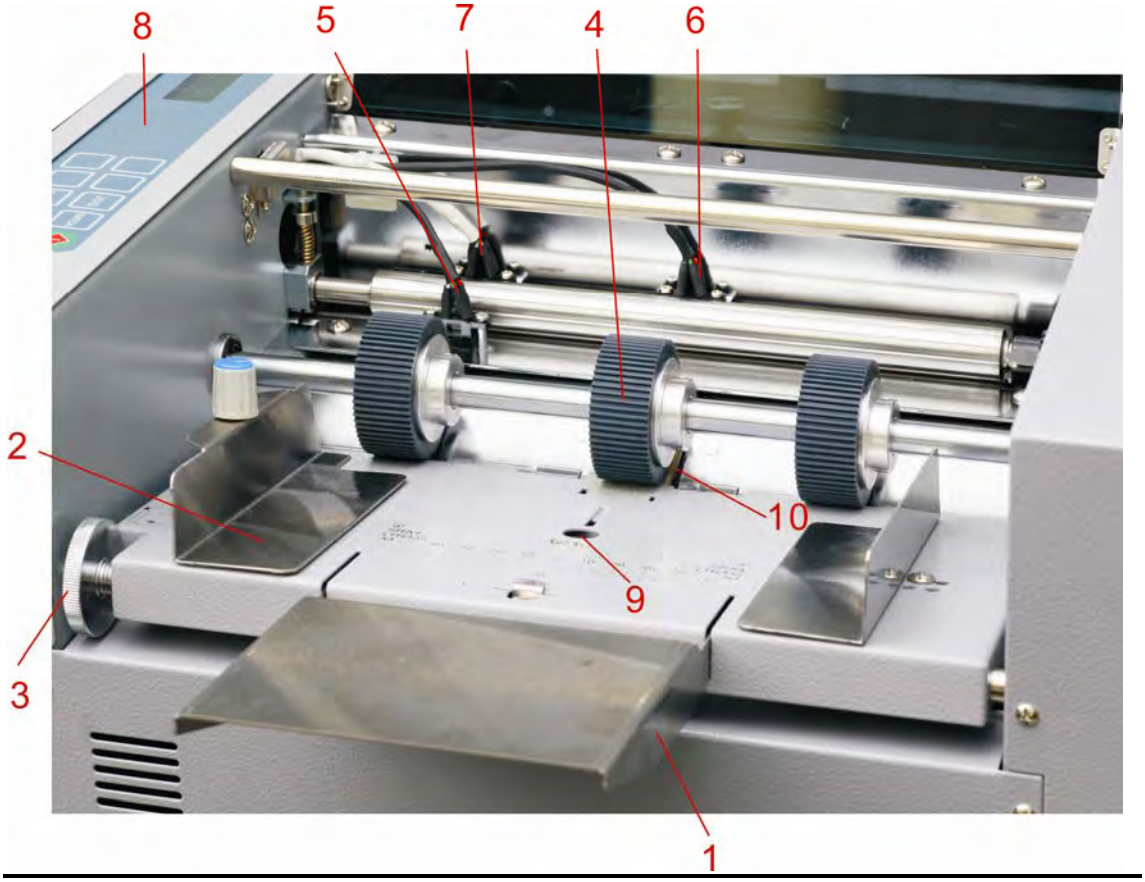




MyBinding.com
5500 NE Moore Court
Hillsboro, OR 97124
Toll Free: 1-800-944-4573
Local: 503-640-5920

5. Parts on Top of the Frame

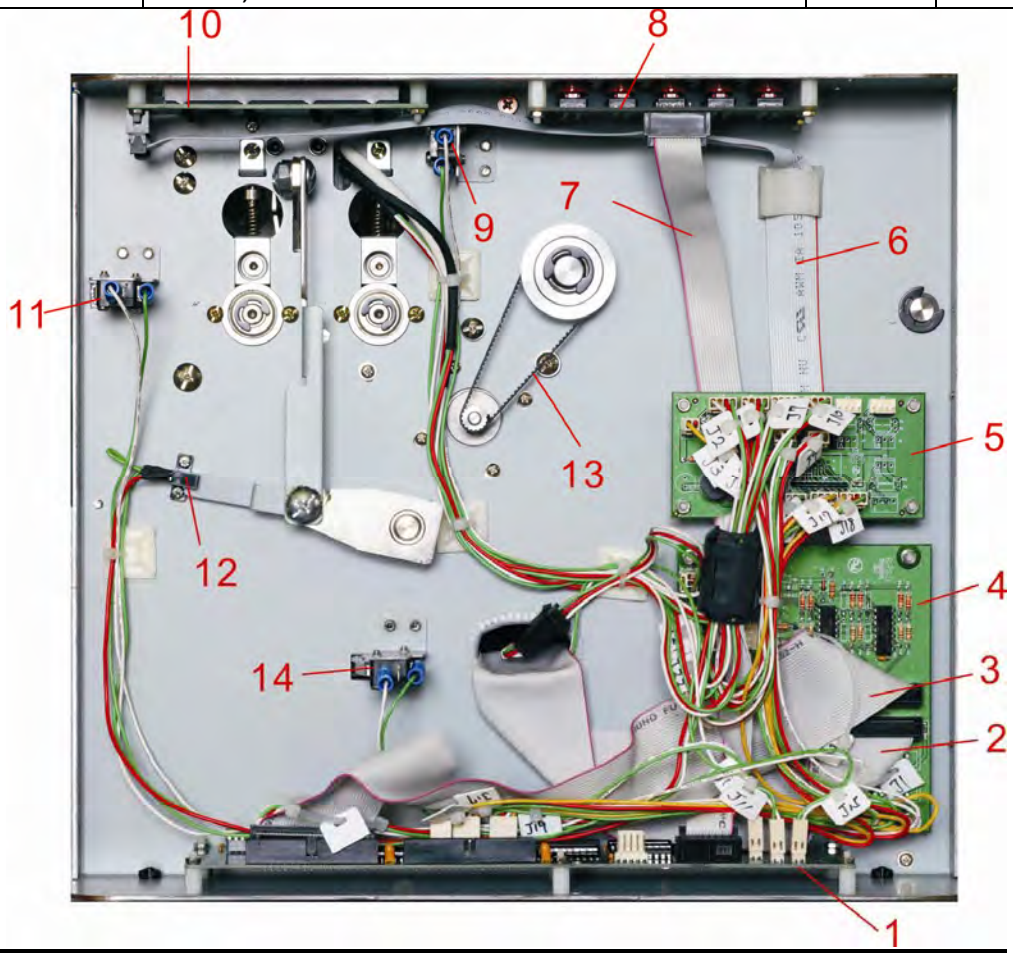
Index	P/N	Part Name	Qty	Remarks
5-2-01	881-103-0000	Tray, Extension, Feed	1	
5-2-02	881-202-0000	Side Guide, L, Feed	1	
5-2-03	881-104-0000	Knob, Cutting Center Alignment	1	
5-2-04	00R-000-1052	Roller, Feed	3	
5-2-05	00S-000-1514	Sensor, Paper	1	
5-2-06	00S-000-1514	Sensor, Paper	1	
5-2-07	00S-000-1515	Sensor, Mark Reader, White	1	
5-2-08	881-102-0001	Key Pad	1	
5-2-09	00A-000-0207	Sensor, Paper, Black	1	
5-2-10	00S-000-1604	Separator, Feed	1	



MyBinding.com
5500 NE Moore Court
Hillsboro, OR 97124
Toll Free: 1-800-944-4573
Local: 503-640-5920

6. Parts on Operating Side

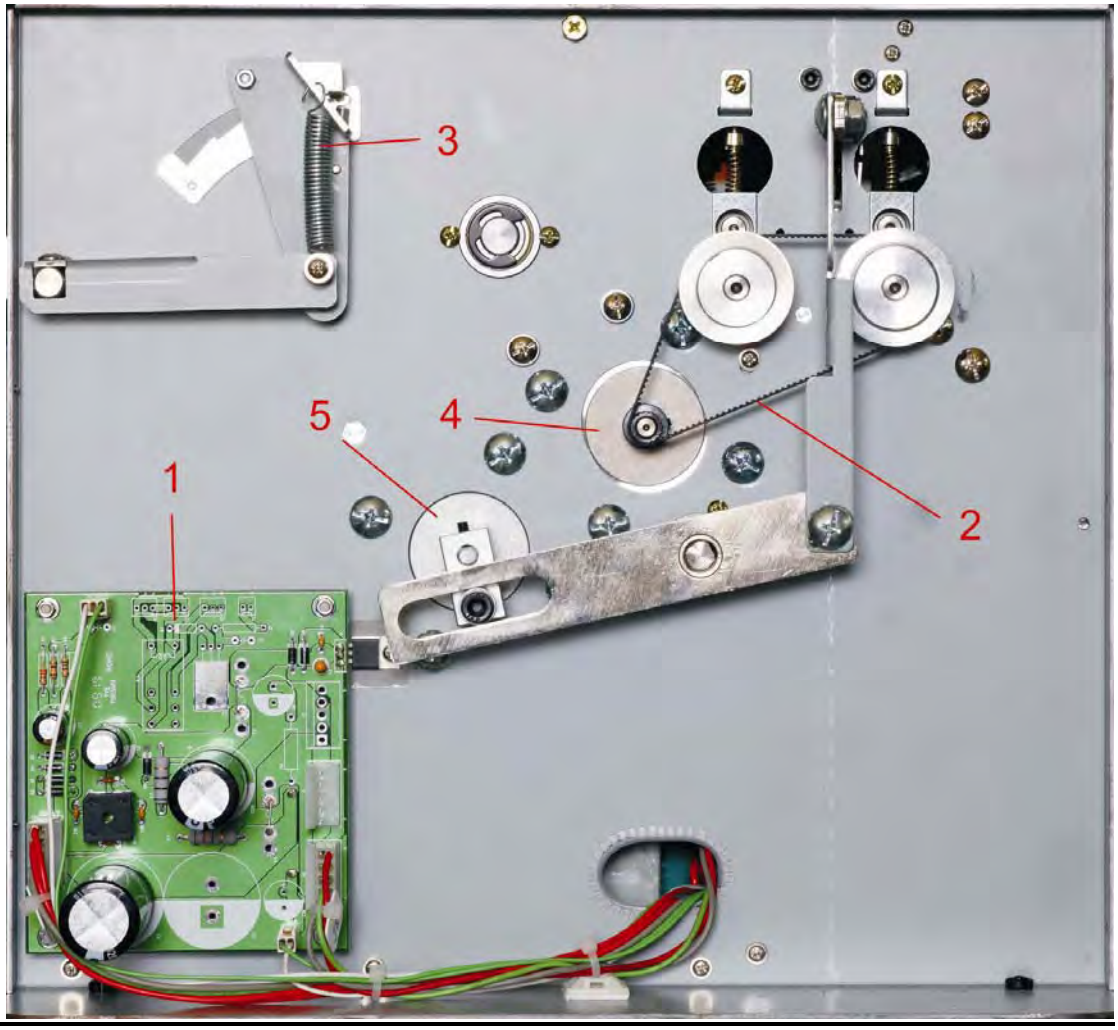
Index	P/N	Part Name	Qty	Remarks
6-3-01	00A-000-1001	Asm, PWB, Logic	1	
6-3-02	00C-000-0083	Cable, 34 pin, 55cm, Driver Interface	1	
6-3-03	00C-000-0071	Cable, 34 pin, 37cm, Logic Interface	1	
6-3-04	00A-000-1121	Asm, PWB, Interface	1	
6-3-05	00A-000-1611	Asm, PWB, LCD Interface	1	
6-3-06	00C-000-0051	Cable, 16 pin, 47cm, LCD Interface	1	
6-3-07	00C-000-0031	Cable, 14 pin, Panel Interface	1	
6-3-08	00A-000-1501	Asm, PWB, Control Panel	1	
6-3-09	00A-000-0188	Switch, Interlock	1	
6-3-10	00D-000-0303	Display, LCD	1	
6-3-11	00A-000-0188	Switch, Interlock	1	
6-3-12	00S-000-1513	Sensor, Interrupter	1	
6-3-13	00B-000-0512	Belt, 0.08P, 102MXL	1	
6-3-14	00A-000-0188	Switch, Interlock	1	



MyBinding.com
5500 NE Moore Court
Hillsboro, OR 97124
Toll Free: 1-800-944-4573
Local: 503-640-5920

7. Parts on Non Operating Side

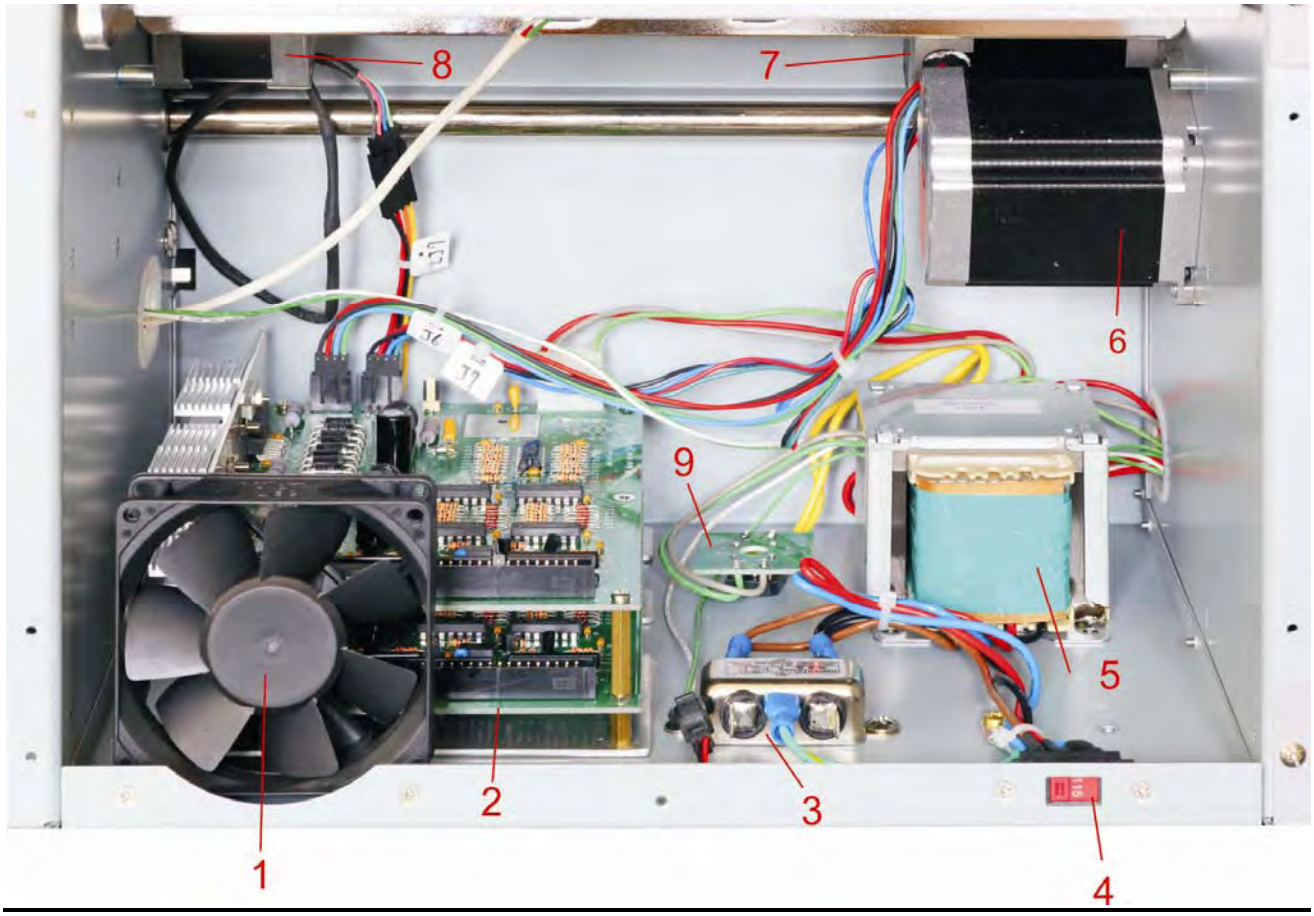
Index	P/N	Part Name	Qty	Remarks
7-4-01	00A-000-1211	Asm, PWB, Power	1	
7-4-02	00B-000-0524	Belt, 0.08P, 132MXL	1	
7-4-03	881-403-0000	Spring, Feed Tray Tension	1	
7-4-04	00M-000-0404	Motor, RD, 2.58V, 3A (replaced by 00M-000-0403)	1	
7-4-05	00M-000-0403	Motor, SQ, 2.58v, 3A	1	



MyBinding.com
5500 NE Moore Court
Hillsboro, OR 97124
Toll Free: 1-800-944-4573
Local: 503-640-5920

8. Parts underneath the Frame

Index	P/N	Part Name	Qty	Remarks
8-5-01	00F-000-0003	Fan, DC, 12V	1	
8-5-02	00A-000-0161	Asm, Driver Box	1	
	00A-000-1402	Asm, PWB, Driver, L298	2	
8-5-03	00F-000-0401	Filter, AC Line	1	
8-5-04	00S-000-6101	Switch, 115/230V Selectable	1	
8-5-05	00T-000-1405	Transformer, 115/230V	1	
8-5-06	00M-000-0403	Motor, SQ, 2.58V, 3A	1	
8-5-07	00M-000-0404	Motor, RD, 2.58V, 3A (Replaced by 00M-000-0403)	1	
8-5-08	00M-000-0401	Motor, SQ, 2,8V, 1.7A (alternative 3.96V, 1.2A)	1	
8-5-09	00R-000-0301	Rectifier	1	



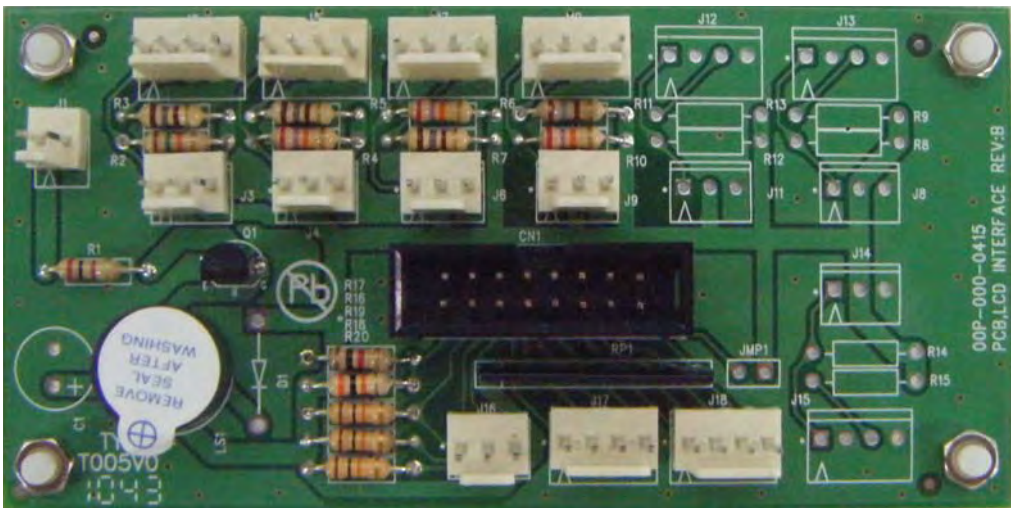
MyBinding.com
5500 NE Moore Court
Hillsboro, OR 97124
Toll Free: 1-800-944-4573
Local: 503-640-5920

9. Electric PWB Asm.

Index	P/N	Part Name	Qty	Remarks
9-6-01	00A-000-1001	Asm, PWB, Logic	1	
9-6-02	00A-000-1611	Asm, PWB, Display, LCD	1	
9-6-03	00A-000-1121	Asm, PWB, Interface	1	
9-6-04	00A-000-0161	Asm, Driver Box	1	
9-6-05	00A-000-1211	Asm, PWB, Power	1	
9-6-06	00A-000-1501	Asm, PWB, Control Panel	1	

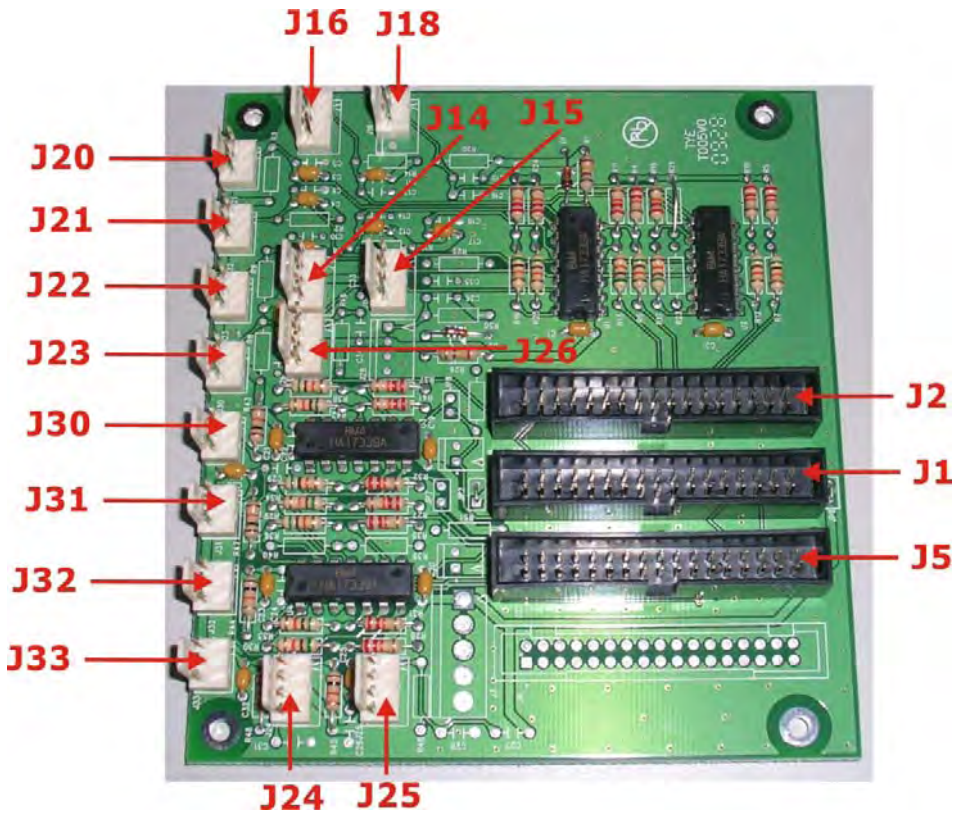
9.1 P/N 00A-000-1001 Assy, PWB, Logic

9.2 P/N 00A-000-1601 Asm, PWB, LCD DISPLAY

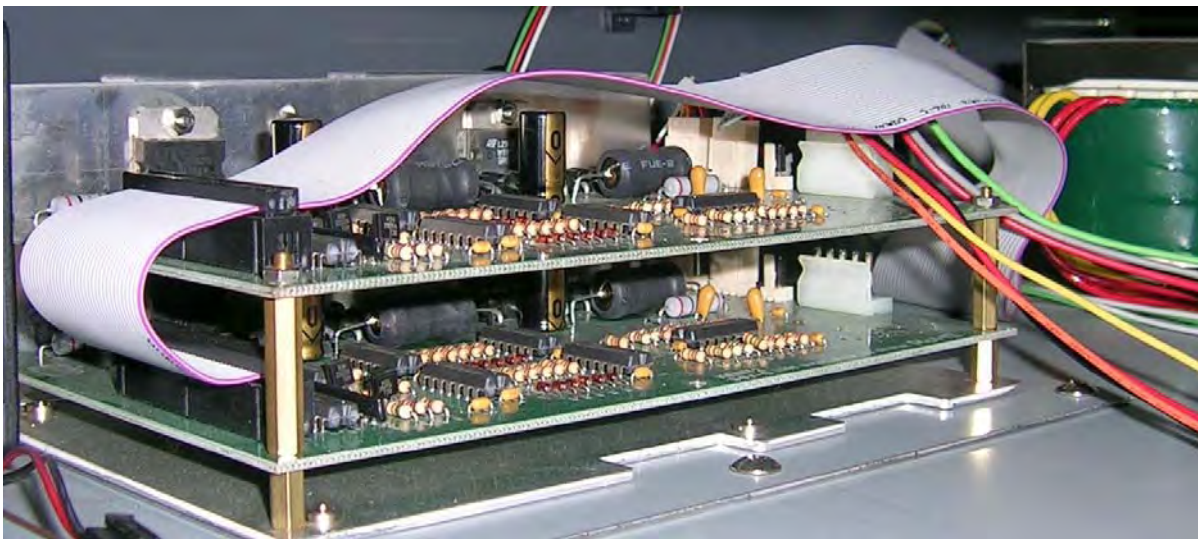


MyBinding.com
5500 NE Moore Court
Hillsboro, OR 97124
Toll Free: 1-800-944-4573
Local: 503-640-5920

9.3 P/N 00A-000-1121 ASM, PWB, INTERFACE

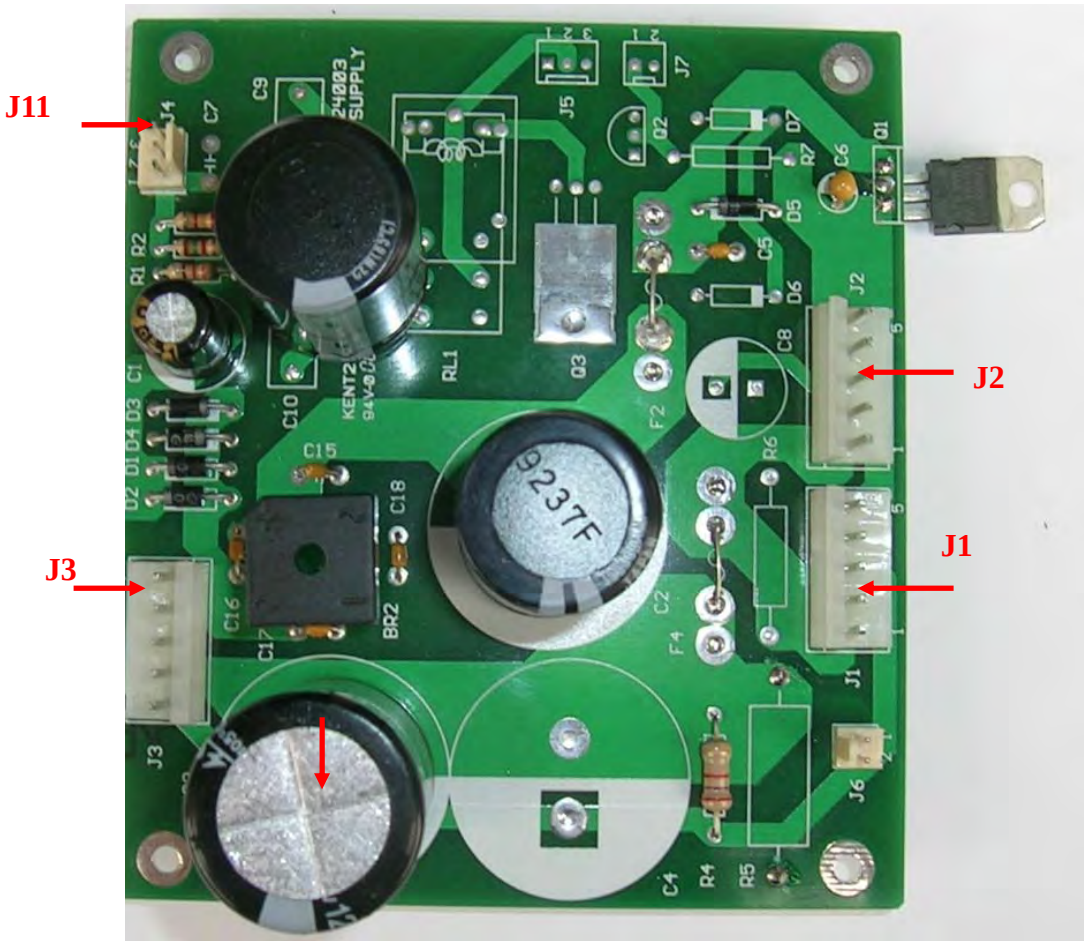


9. 4 P/N 00A-000-0161 ASM, DRIVER BOX



MyBinding.com
5500 NE Moore Court
Hillsboro, OR 97124
Toll Free: 1-800-944-4573
Local: 503-640-5920

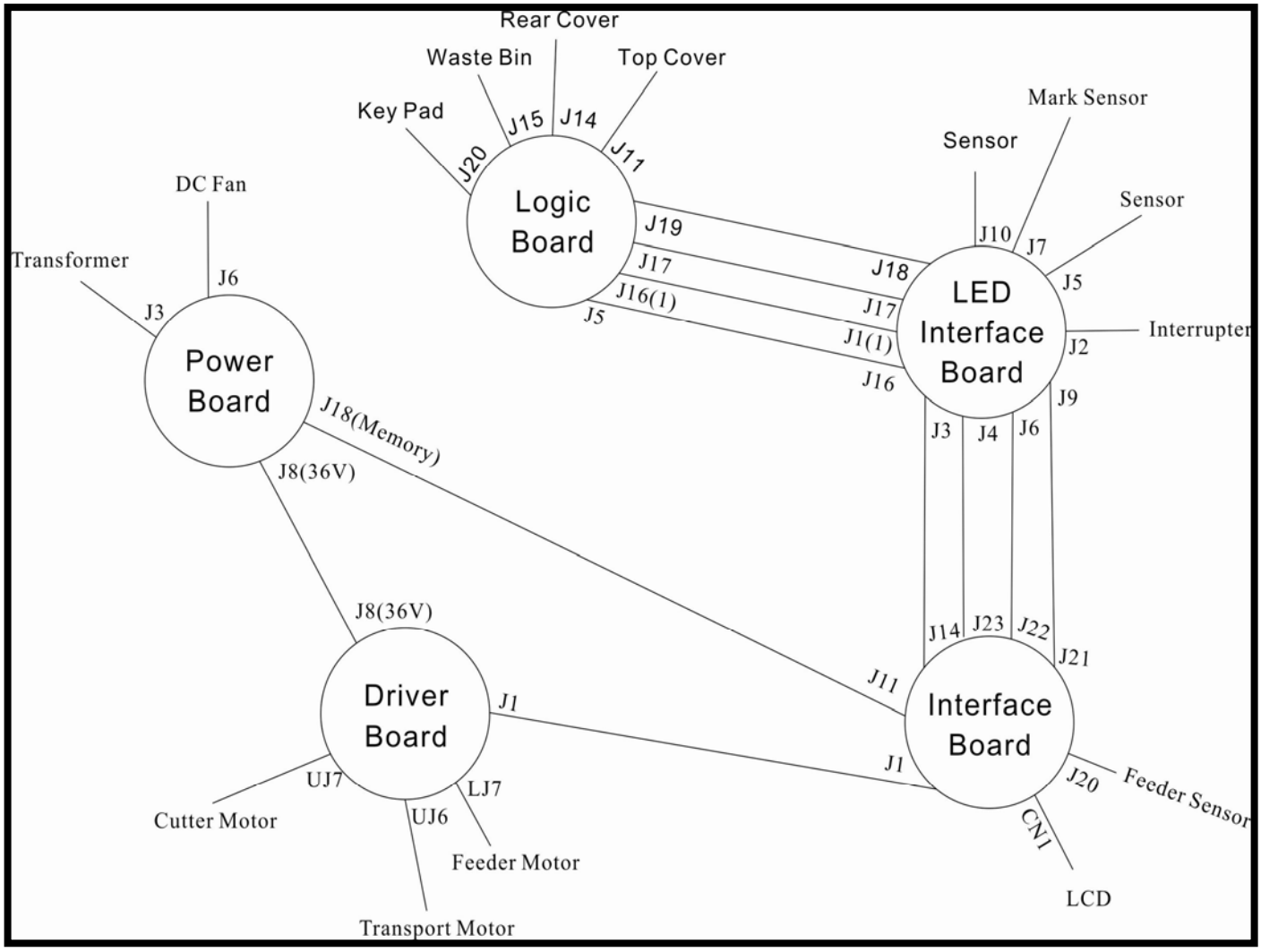
9. 5 P/N 00A-000-1211 ASM, PWB, POWER



9.6. P/N 00A-000-1501 ASM, PWB, CONTROL PANEL

MyBinding.com
5500 NE Moore Court
Hillsboro, OR 97124
Toll Free: 1-800-944-4573
Local: 503-640-5920

10. Electrical Wiring Diagram



MyBinding.com
5500 NE Moore Court
Hillsboro, OR 97124
Toll Free: 1-800-944-4573
Local: 503-640-5920

11. Sensor Voltage Measurement

Sensors play an important role in monitoring and tracking the flow of the media inside of machine. A majority of stall conditions could be sensor related. Therefore, a digital multi-meter (DMM) is used for measuring the voltage reading of the sensors, and assuring proper alignment.

5.1 Set DMM to 20 at the DVC section.
5.2 Using the two probes of the DMM to get voltage, one probe placed at the chassis ground of the system, while the other one probe pin 1 of the sensor connector on the interface board.
5.3 Covering the sensor, the reading of DMM should be less than 0.2V.
5.4 Uncovering the sensor, the reading of DMM should be more than 4.5V.
5.5 Mark Reading Sensors

- Seeing paper 0.2V
- Seeing mark 1.8V

The range of sensor's voltage reading is greater than 4.5V or less than 0.2V has the best state for the sensor to monitoring the media movement. The sensor connector on the sensor board has three pins. The first pin is for signal of sensor voltage reading measurement. The second pin is for VCC (5V). The third pin is for ground. Some sensors connector is 4-pin, the 3rd pin is empty; the 4th pin will be common ground.

MyBinding.com
5500 NE Moore Court
Hillsboro, OR 97124
Toll Free: 1-800-944-4573
Local: 503-640-5920

12. Replace Slitter

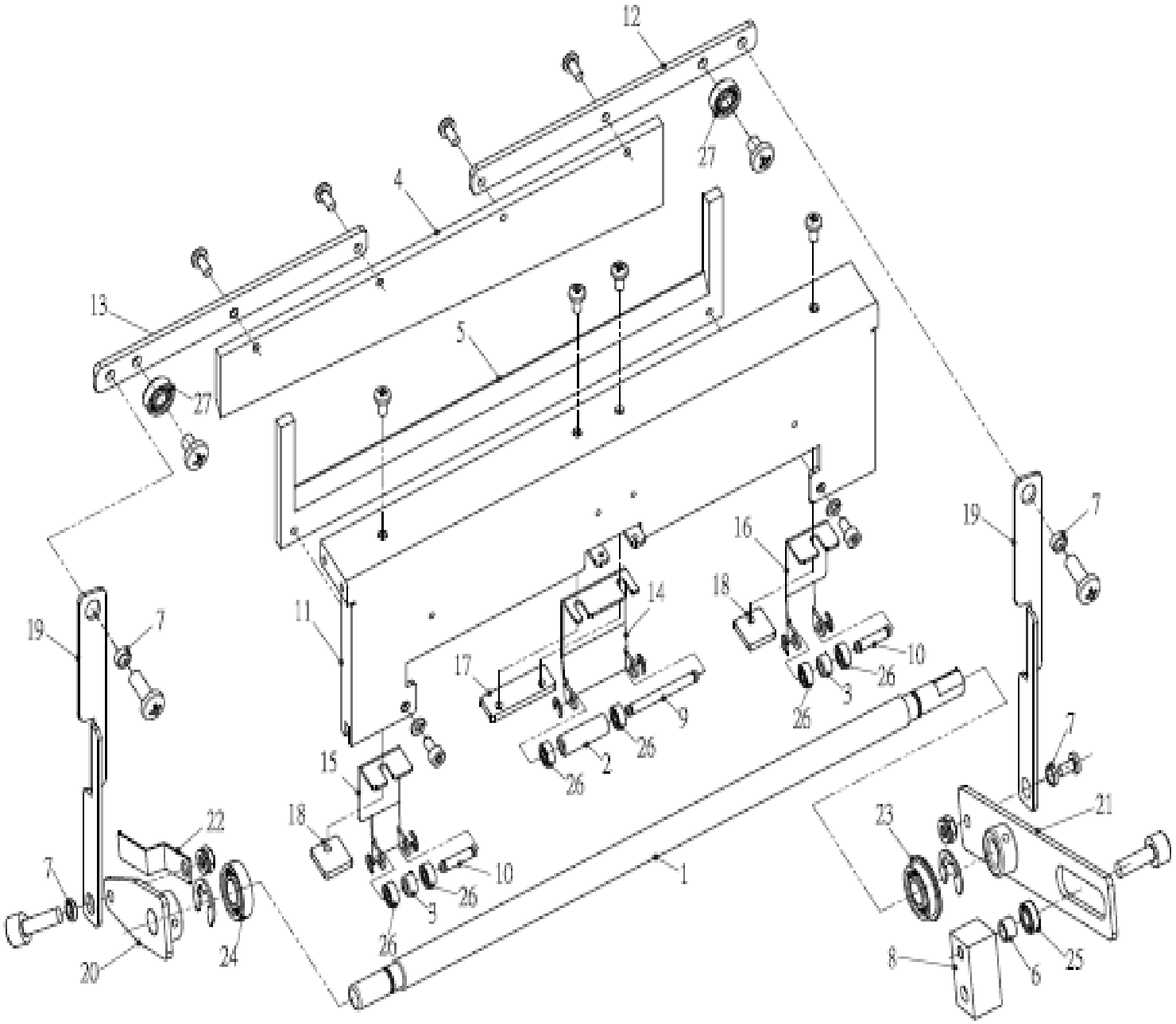
- Open the rear cover
- Rotate the thumb screw loosen the Slitter
- Lay down the slitter and pull it out toward exit direction

*Note: The slitter assembly is replaced as a whole unit.

MyBinding.com
5500 NE Moore Court
Hillsboro, OR 97124
Toll Free: 1-800-944-4573
Local: 503-640-5920

13. Replace Cutting Knife

Index	P/N	Part Name	Usage	Remarks
13-7-04	881-704-0000	Knife, Upper	1	
13-7-05	881-705-0000	Knife, Lower	1	



MyBinding.com
5500 NE Moore Court
Hillsboro, OR 97124
Toll Free: 1-800-944-4573
Local: 503-640-5920

14. Feeding Test and Permanent Count

The system provides view permanent count, mark and feeding testing without cutting features by:

- Select Job #4 and set cutting mark to on by holding 

then tip on 

- Hold 

for 5 seconds, “test mode 23" is displayed

- On the lower right corner of the display will show xxxx. For example, if it shows 23 means the permanent count is 23,000

- Press  to feed paper, the cutting knife will be off without function to make sure feeder and mark reader is OK. This will save a lot of testing time and paper as well.

- Press 

to resume.

MyBinding.com
5500 NE Moore Court
Hillsboro, OR 97124
Toll Free: 1-800-944-4573
Local: 503-640-5920

15. Calibrations

To calibrate cutting mark, cutting length, offset and top margin:

Select Job #4

Holding 

for 5 seconds. mark:50 length:50 offset:50 margin:50 is displayed.

Tip on 

to select the item you are going to calibrate.

Tip on 

to save when the calibration is done.

15.1 **Length**

- On Job #4, set it to without cutting mark mode, feed a piece of paper to cut the top margin, make sure the cut top margin is 12.7mm, if not calibrate the top margin first then do Length calibration.
- Select length:50. Feed a Letter Size sheet thru, the sheet will be cut into half which is 5.5", compare the 2 X 5.5", if the 1st half cut is shorter than the 2nd half, tip on 

to adjust until the 1st half and 2nd half are exactly the same; If the first cut is greater than the 2nd half, tip on 

to decrease the setting until the 2 half is equal. Each press on 

or 

represents 0.1mm increment or decrement

15.1 **Cutting Mark**

- On job #4 to hold 

then tip on 

to set cutting mark, cut a printed sheet with mark, make sure the leading edge of the mark to cutting line is 3mm

- Select mark:50, if the cut mark leading edge to cutting line is greater or smaller than 3mm, tip on 

and 

to adjust. Each press represents 0.1mm increment or decrement.

After adjust the mark value, press 

to save the setting. Cut the mark again, if the cut mark is not within spec. repeat the calibration.

15.3 **Offset**

This is allowing calibrate the 5th business card in a sheet which is possibly longer than the spec. Assume the 5th card length is longer than the specification by 0.1mm. Under calibration mode select offset:50 to reduce the figure 50 to 49.

15.4 **Top Margin**

On job #4 without mark to cut the top margin, it should be 12.7mm. If the cut top margin sample is greater or smaller than 12.7mm, select margin:50, tip on 

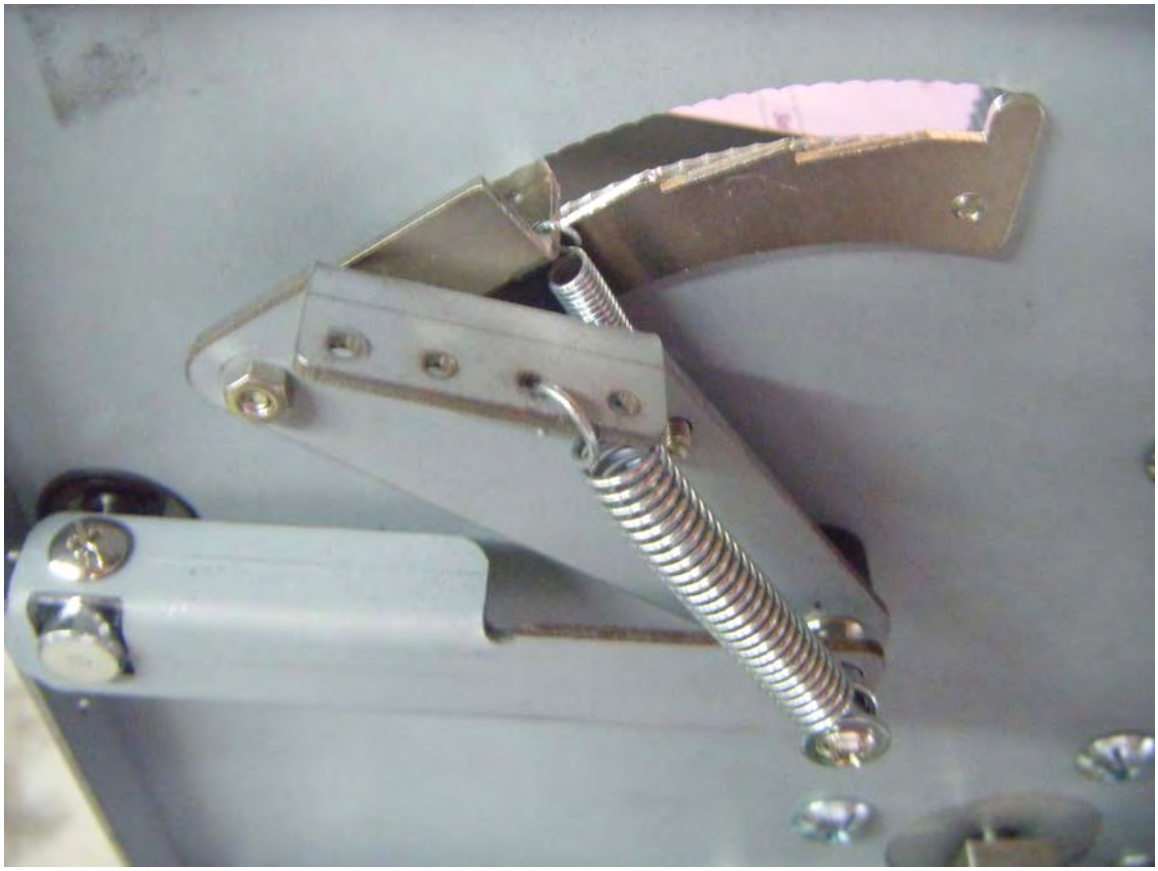
and 

to adjust until the top margin is within the spec. Each press represents 0.1mm increment or decrement.

MyBinding.com
5500 NE Moore Court
Hillsboro, OR 97124
Toll Free: 1-800-944-4573
Local: 503-640-5920

16. Feed Tray Tension Adjustment

16. 1 Factory setting the spring position as shown below:



16.2 If feed hopper tension set to scale 4/Thin Paper, is still causing the paper to buckle, and not get into the 1st set of transport roller, relocate the spring mounting hole to the right to reduce the tension.

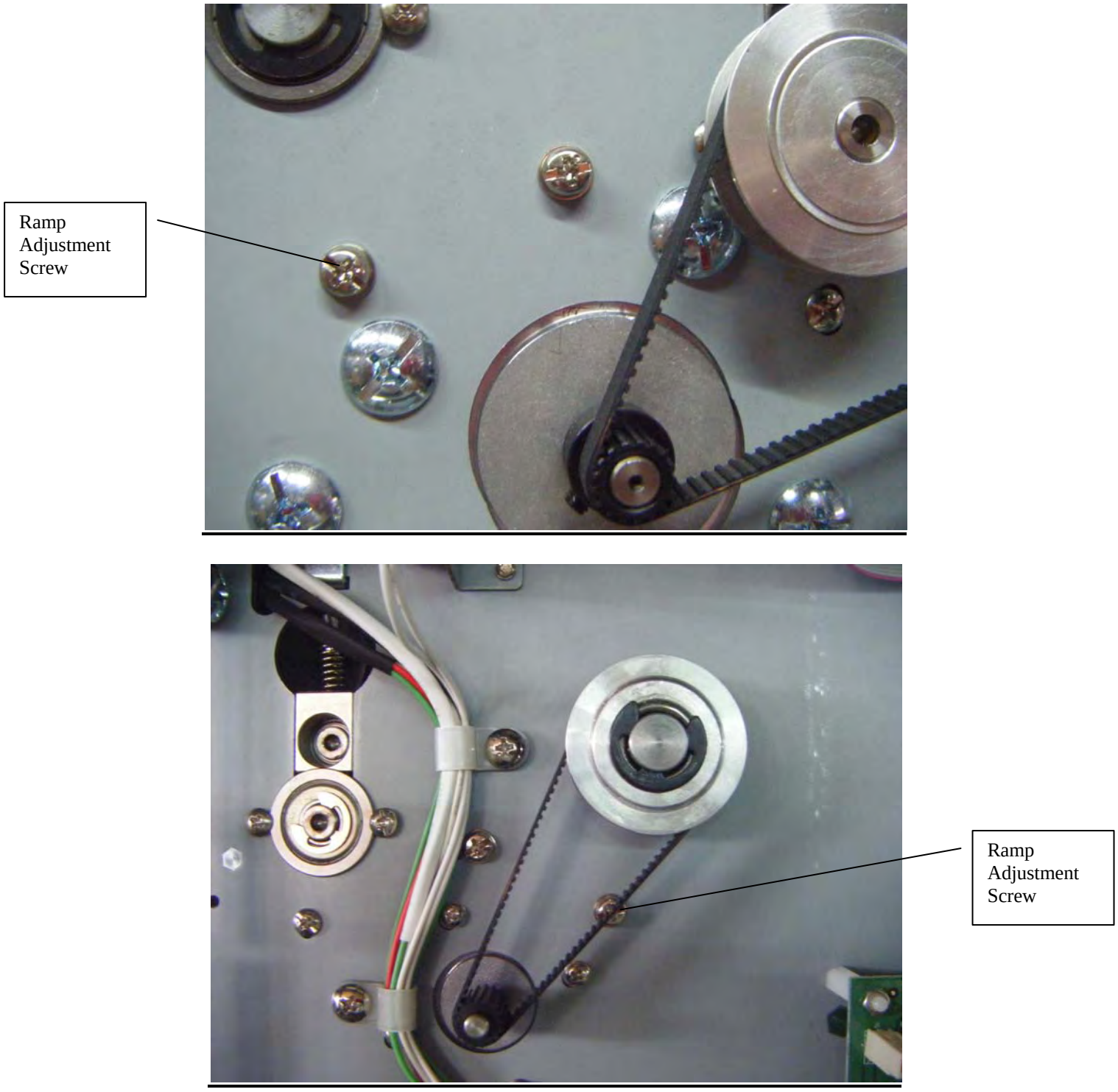
16.3 If feed hopper tension set to scale 1/Thick Paper, still cannot feed the paper well and keep occurring misfeed, relocate the spring to the left to get more tension.

16.4 If the tension set tight still cannot feed well, replace the feed roller.

MyBinding.com
5500 NE Moore Court
Hillsboro, OR 97124
Toll Free: 1-800-944-4573
Local: 503-640-5920

17. Feed Gap Adjustment

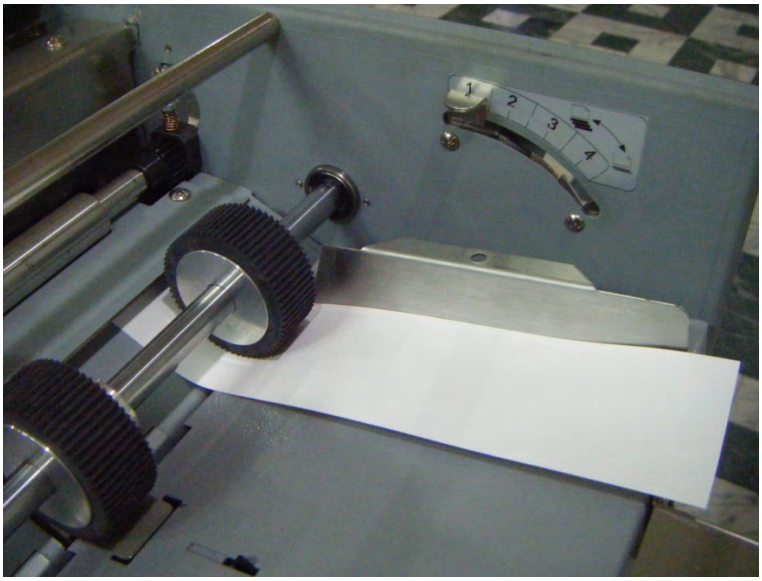
17.1 Loosen the Feed Ramp Mounting Screw on Both Sides



17.2 Press the feed ramp down to increase the gap, tilt it up to reduce the gap.

MyBinding.com
5500 NE Moore Court
Hillsboro, OR 97124
Toll Free: 1-800-944-4573
Local: 503-640-5920

17.3 Place a 600gsm (2 x 300gsm) paper underneath the 2 side roller as shown below. Press the feed tray down and pull the paper to make sure the gap is right. It should not have too much drag.



17.4 Fasten the ramp mounting screw

18. Top Margin Parallel Adjustment

18.1 Power off

18.2 Remove the rear cover

18.3 Use a 300gsm or 14 pt. sheet as a gauge, hand feed it into and against registration roller firmed.

18.4 Underneath the feed tray has 5.5mm nut to hold the side guide, loosen the nut and align it against the paper to make it straight. Fasten the nut.

18.5 Feed a sheet to cut, measure the left and right of the top margin cut is 12.7mm +/- 0.1mm, if not re adjust the side guide.

MyBinding.com
5500 NE Moore Court
Hillsboro, OR 97124
Toll Free: 1-800-944-4573
Local: 503-640-5920

19. Self-diagnose for Malfunction

The system provides a unique feature to help service people pin point the sensor malfunction, detailed below:

19.1 Hold 

then turn the power to on, Firmware Version: 01
Sensor Scan: OK is displayed

19.2 using a piece of paper to trigger the sensor, the sensor on the interface board connection are showing as below. Remove the trigger, the display will change to Firmware Version: 01
Sensor Scan: OK , If the display Firmware Version: 01
Sensor Scan: I-20 remains, it means that sensor is bad.

Sensor	Function	Board Connection	Connector #
S1	Feed Tray Sensor	Interface Board	**I – 20**
S2	Input Sensor	Interface Board	**I – 21**
S3	Paper Monitoring Sensor	Interface Board	**I – 23**
S4	Mark Reading Sensor	Interface Board	**I – 22**
Top cover	Safety Switch	Logic Board	**L – 11**
Rear Cover	Safety Switch	Logic Board	**L – 14**
Wast Bin	Safety Switch	Logic Board	**L – 15**

MyBinding.com
5500 NE Moore Court
Hillsboro, OR 97124
Toll Free: 1-800-944-4573
Local: 503-640-5920

20. Error Message and Trouble Shooting

Error Message	Trouble Shooting
Misfeed	1.Check S1 voltage 2.Check feed motor belt 3.Check pulley screw 4.Check motor detain torque, if no torque 5. Replace driver board
Jam in Sensor 2	1.Check S2 2.Adjust the feed tray tension 3.Adjust the ramp
Jam in Sensor 3	1. Check S3 2. check detain torque of transport motor, if no torque 3. Replace driver board
Mark error	1. Check mark sensor voltage; see paper 0.2V 2. Seeing mark has to be greater than 1.8V 3. Change mark sensor and do mark, top margin calibration
Check Top Cover	Check top cover interlock switch
Check Rear Cover	Check rear cover interlock switch
Check Waste Bin	Check waste bin interlock switch
Finish card not clean and neat	1. Adjust the cutting knife guiding plate, if problem still 2. Replace cutting knife
Finish card length uneven	1. Adjust the cutter Assy. frame mounting screw on the side plates
Cutter Error	1. Turn the cutting knife crane plate, if no detain torque, replace driver box 2. Driving crane screw loose
Top margin not even left and right	Adjust the side guide, make sure it is right angle to the first set of roller
Transport no function	Rotate transport motor on the side frame, if no detain torque, replace driver box
Slitting not good	Replace the slitter
No Power	1. Check Fuse 2. Check power plug

MyBinding.com
5500 NE Moore Court
Hillsboro, OR 97124
Toll Free: 1-800-944-4573
Local: 503-640-5920

21. Recommended Spare Parts List

Index	P/N	Part Name
4-1-01	00S-000-6112	Switch, Power Entry
	00F-000-3006	Fuse, Time Delay, 3.15 A, 250V
4-1-02	881-102-0001	Key Pad
4-1-12	881-112-0000	Module, Slitter, 2 x 3.5”
	881-112-0051	Module, Perforator
	881-112-0052	Module, Scoring
4-1-13	881-113-0000	Roller, Ejection, Lower
4-1-14	881-114-0000	Roller, Ejection, Upper
4-1-15	881-115-0000	Belt, Slitting Transport
5-2-04	00R-000-1052	Roller, Feed
5-2-05	00S-000-1514	Sensor, Paper
5-2-07	00S-000-1515	Sensor, Mark Reader, White
5-2-09	00A-000-0207	Sensor, Paper, Black
5-2-10	00S-000-1604	Separator, Feed
6-3-01	00A-000-1001	Asm, PWB, Logic
6-3-02	00C-000-0083	Cable, 34 pin, 55cm, Driver Interface
6-3-03	00C-000-0071	Cable, 34 pin, 37cm, Logic Interface
6-3-04	00A-000-1121	Asm, PWB, Interface
6-3-05	00A-000-1611	Asm, PWB, LCD Interface
6-3-06	00C-000-0051	Cable, 16 pin, 47cm, LCD Interface
6-3-07	00C-000-0031	Cable, 14 pin, Panel Interface
6-3-08	00A-000-1501	Asm, PWB, Control Panel
6-3-09	00A-000-0188	Switch, Interlock
6-3-10	00D-000-0303	Display, LCD
6-3-11	00A-000-0188	Switch, Interlock
6-3-12	00S-000-1513	Sensor, Interrupter
6-3-13	00B-000-0512	Belt, 0.08P, 102MXL
7-4-01	00A-000-1211	Asm, PWB, Power
7-4-02	00B-000-0524	Belt, 0.08P, 132MXL
7-4-03	881-403-0000	Spring, Feed Tray Tension
8-5-01	00F-000-0003	Fan, DC, 12V
8-5-02	00A-000-0161	Asm, Driver Box, L298
	00A-000-1402	Asm, PWB, Driver, L298
8-5-03	00F-000-0401	Filter, AC Line
8-5-04	00S-000-6101	Switch, 115/230V Selectable
8-5-06	00M-000-0403	Motor, SQ, 2.58V, 3A
8-5-08	00M-000-0401	Motor, SQ, 2,8V, 1.7A (Alternative 3.9V, 1.2A)
8-5-09	00R-000-0301	Rectifier
13-7-04	881-704-0000	Knife, Upper
13-7-05	881-705-0000	Knife, Lower