SERVICE MANUAL

For D-100 USD October-10 Edition

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CHAPTER 1 NECESSARY TOOLS & MEASURING INSTRUMENTS

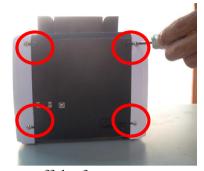
- 1. 2.5" Screwdriver
- 2. 2.5 Cross-point Screwdriver
- 3. 65 mm insulated instrument Screwdriver
- 4. Inner Allen Key
- 5. Nylon-faced Hammer
- 6. Insulated tweezers
- 7. Ring Spanner
- 8. Multi-meter
- 9. Sleeve Barrel
- 10. Needle File Set
- 11. Miniature Soldering Iron
- 12. Narrow Nose Pliers

CHAPTER 2 THE DISASSEMBLY OF EACH PART

Caution: Before you disassemble or assemble the machine, please make sure that you have

disconnected the Power Cord.

1. The Disassembly of Side Covers



Screw off the four screws fixing the Side Covers.



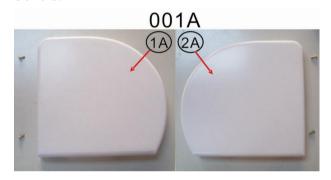
Screw off the two screws on the Bottom Plate fixing the Side Covers.



Screw off the two screws on the Side Plates fixing the Side Covers.



Pull out the Side Covers.



Left Side Cover

Right Side Cover

Unit NO.	Part NO.	Part's name	QTY.	Remark
001.4	1A	Left Side Cover	1	
001A	2A	Right Side Cover	1	

2. The Disassembly of Top Cover



Screw the inside screw counter-clockwise to loose and take off the Thickness Adjustment Knob.



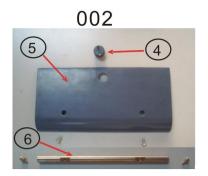
Screw off the two screws fixing the Top Cover.



Loose the two screws on the Rear Cover with your fingers, and take off the Top Cover.



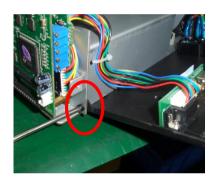
Screw off the two screws fixing the Top Cover Fixer Shaft on the right and left sides.



Top Cover Assembly

Unit NO.	Part NO.	Part's name	QTY.	Remark
	4	Thickness Adjustment Knob	1	
002	5	Top Cover	1	
	6	Top Cover Fixer Shaft	1	

3. The Disassembly of Rear Cover



Screw off two screws fixing the Rear Cover on the right and left sides.



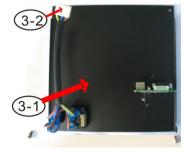
Disconnect the connector on the Rear Cover.



Screw off the three screws fixing the Power Supply Cover on Bottom Plate.

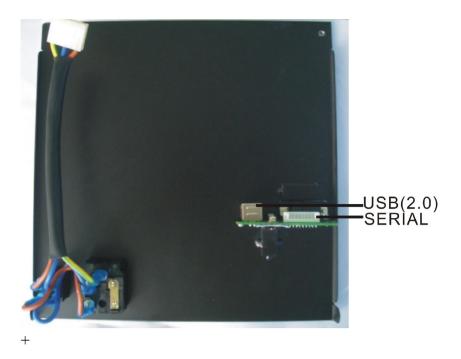


Take out the Power Supply Cover a little so as to pull off the Power Wire.



Rear Cover Assembly

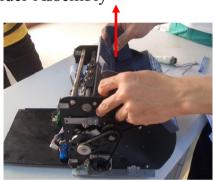
Unit NO.	Part NO.	Part's name	QTY.	Remark
	3-1	Rear Cover	1	
	3-2	Power Wire	1	



4. The Disassembly of Notes Guider Assembly



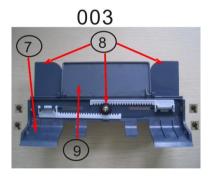
Screw off the four screws fixing the Note Guide Plate on the left and right sides.



Pull upwards to take off the Note Guider Assembly.



Note Guider Assembly (Front Picture)



Note Guider Assembly (Back Picture)

Unit NO.	Part NO.	Part's name	QTY.	Remark
	7	Note Entry Cover	1	
003	8	Note Guider part	2	
	9	Middle Note Guide Plate	1	

5. The Disassembly of Display Panel and LCD Board



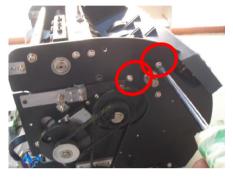
Pull out the C-Ring fixing the Gear.



Take off the Timing Belt.



Take off the Gear.



Screw off the four screws fixing the Display Panel on the right and left sides.



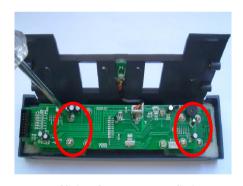
Disconnect the 16 PIN Connector.



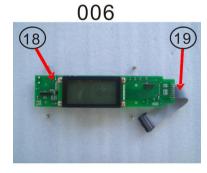
Take off the Display Panel.



Display Panel Assembly



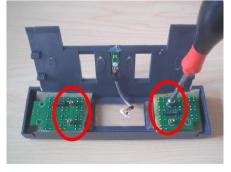
Screw off the four screws fixing the LCD Board.



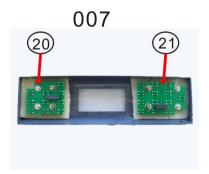
LCD & LCD Board



Screw off the four screws fixing the two Keyboard PCBs.



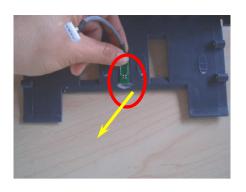
Use a sleeve barrel to screw off the four screws fixing the two Keyboard PCBs.



Keyboard PCB



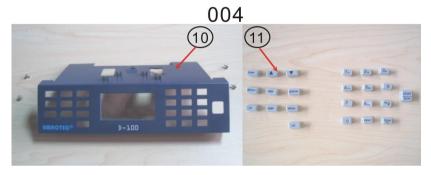
Use a screwdriver to unclench the clasp A and clasp B will get released.



Pull out the Hopper Sensor.



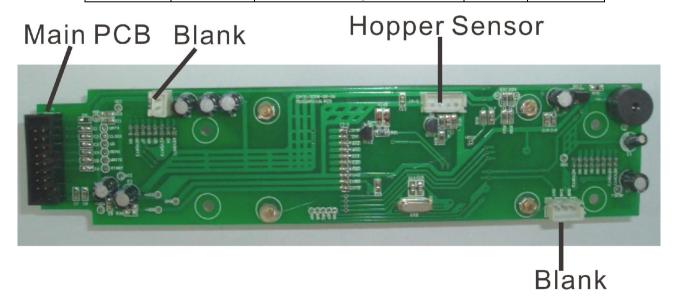
Hopper Sensor



Display Panel

Keys

Unit NO.	Part NO.	Part's name	QTY.	Remark
006	18	LCD & LCD Board	1	
000	19	LCD Board Wire	1	
007	20	Left Keyboard PCB	1	
007	21	Right Keyboard PCB	1	
	54	Hopper Sensor	1	
004	10	Display Panel	1	
004	11	Keys	23	



6. The Disassembly of Stacker



Screw off the two screws fixing the Stacker.



Stacker

Unit NO.	Part NO.	Part's name	QTY.	Remark
	12	Stacker	1	

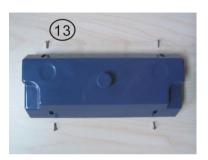
7. The Disassembly of Signal PCB



Press two tabs on the left and right as shown by the arrow sign (), and the Cover will pop up a little.



Screw off the four screws fixing the Signal PCB Cover.



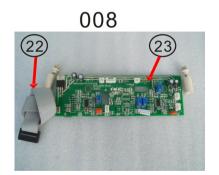
Signal PCB Cover



Screw off the two screws fixing the Signal PCB.

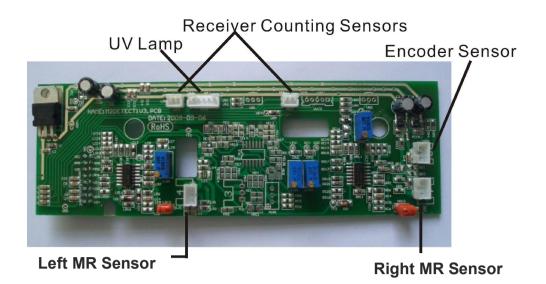


Disconnect all the connectors on the Signal PCB.



Signal PCB

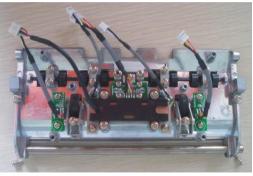
Unit NO.	Part NO.	Part's name	QTY.	Remark
	13	Signal PCB Cover	1	
008	22	Signal PCB Wire	1	
008	23	Signal PCB	1	



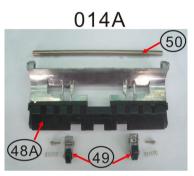
8. The Disassembly of Back Transfer Mechanism Assembly



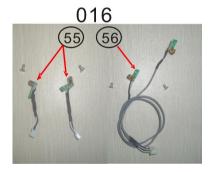
Screw off the two screws fixing the Back Transfer Mechanism on the right and left sides.



Back Transfer Mechanism Assembly



Back Transfer Mechanism



Receiver Counting Sensors (Part No. 55)



UV Sensor Assembly



MR Sensor



Left /Right MR Sensor

Unit NO.	Part NO.	Part's name	QTY.	Remark
	48A	Back Transfer Mechanism	1	
014A	49	Upper Press Roller	2	
	50	Transfer Mechanism Shaft	1	
016	55	Receiver Counting Sensors	1	A pair
	57A	UV Sensor Assembly	1	
	58A	MR Sensor	1	
	58C	Left /Right MR Sensor	2	

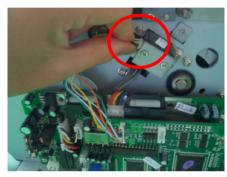
9. The Disassembly of CIS



Screw off the two small screws fixing the CIS on the left side.



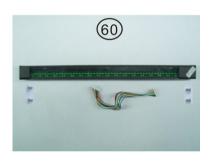
Screw off the two screws fixing the CIS on the right side.



Disconnect the connector on the right side and take off the CIS with Right Bracket.



Screw off the two small screws on CIS Right Bracket.



CIS

Unit NO.	Part NO.	Part's name	QTY.	Remark
	60	CIS	1	

10. The Disassembly of Image PCB



Screw off the two screws fixing the Image PCB.



Disconnect the CIS connector.



Take off the Image PCB.



Image PCB

Unit NO.	Part NO.	Part's name	QTY.	Remark
	25	Image PCB (outer PCB)	1	

11. The Disassembly of Main PCB



Disconnect all the connectors on the Main PCB

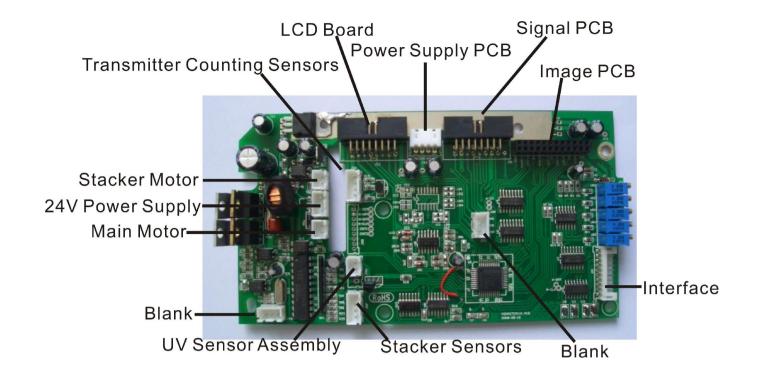


Screw off the four screws fixing the Main PCB



Main PCB

Unit NO.	Part NO.	Part's name	QTY.	Remark
	24	Main PCB (inner PCB)	1	



12. The Disassembly of Encoder Sensor



Cut off the plastic wrappers and disconnect the connector.



Screw off the two screws fixing the Encoder Sensor, and take out the Encoder Sensor.



Encoder Sensor

Unit NO.	Part NO.	Part's name	QTY.	Remark
	61	Encoder Sensor	1	

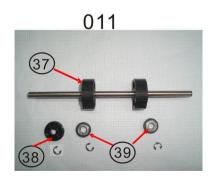
13. The Disassembly of Kicker Roller Assembly



Pull out the c-ring on the right and left sides.



Push the bearings on both sides out, and then take off the Kicker Roller Assembly.



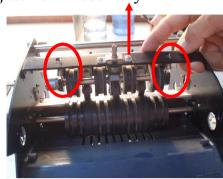
Kicker Roller Assembly

Unit NO.	Part NO.	Part's name	QTY.	Remark
	37	Kicker Roller Assembly	1	
011	38	Gear (MXL)	1	
	39	Bearing 688 (with wrap)	2	

14. The Disassembly of Gap Adjustment Assembly



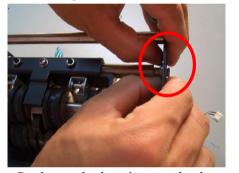
Screw off the four screws fixing the Gap Adjustment Fixer Plate on the right and left sides.



Loose the two springs, and take out the Gap Adjustment Fixer Plate.



Pull out the c-ring on the right and left sides.



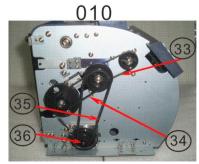
Push out the bearings on both sides, and then take off the Gap Adjustment Assembly.



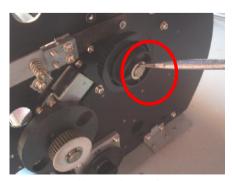
Gap Adjustment Assembly

Unit NO.	Part NO.	Part's name	QTY.	Remark
	15-1	Gap Adjustment Fixer Plate	1	
005	15-2	Spring	2	
003	16	Bearing 688(with blocker)	2	
	17	Gap Adjustment Assembly	1	

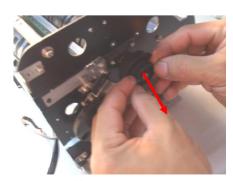
15. The Disassembly of Feed Roller Assembly



Take off the Timing Belts and Encoder Disk & Gear on the left side.



Pull out the c-ring.



Pull out three Gears.



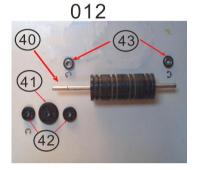
Pull out the inside c-ring with a screwdriver.



Push the bearing out, and do the same thing on the other side.



Take out the Feed Roller Assembly by pushing the Roller Assembly towards left and pull it out.



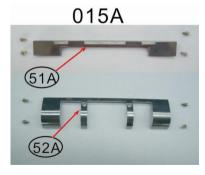
Feed Roller Assembly

Unit NO.	Part NO.	Part's name	QTY.	Remark
	33	Timing Belt (S)	1	
010	34	Timing Belt (M)	1	
	35	Timing Belt (L)	1	
	36	Encoder Disk & Gear	1	
	40	Feed Roller Assembly	1	
012	41	Gear (3M)	1	
012	42	Gear (MXL)	2	
	43	Bearing 688 (with wrap)	2	

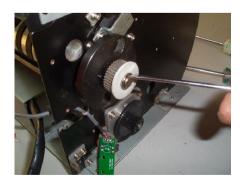
16. The Disassembly of Front Transfer Mechanism



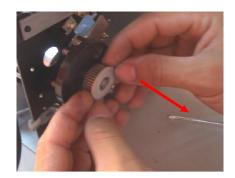
Screw off the four screws fixing the Front Upper Transfer Mechanism on the right and left sides.



Front Upper Transfer Mechanism (Part No. 51A)



Pull out the c-ring with a screwdriver.



Pull out the Gear.



Pull out another c-ring with a screwdriver.



Loose the inner screw of the Flywheel with an Inner Allen Key.



Pull out the Flywheel.



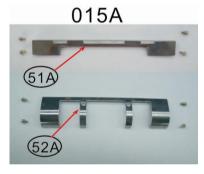
Unclench the threads fixed on the Middle Cover.



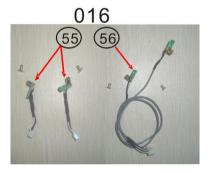
Screw off the four screws fixing the Front Lower Transfer Mechanism on the right and left sides.



Take off the Front Lower Transfer Mechanism.



Front Lower Transfer Mechanism (Part No. 52A)



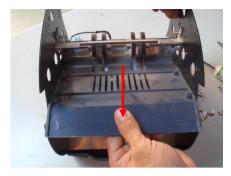
Take off the Transmitter Counting Sensors (Part No. 56) from the Front Lower Transfer Mechanism

Unit NO.	Part NO.	Part's name	QTY.	Remark
015A	51A Front Upper Transfer Mechanism		1	
013A	52A	Front Lower Transfer Mechanism	1	
016	56	Transmitter Counting Sensors	1	

17. The Disassembly of Middle Cover and Transfer Roller Assembly



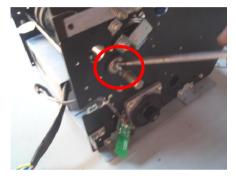
Screw off the four screws fixing the Middle Cover on the right and left sides.



Take out the Middle Cover.



Middle Cover



Pull out the c-ring on the right and left sides.



Push the bearings on both sides out, and then take off the Transfer Roller Assembly.



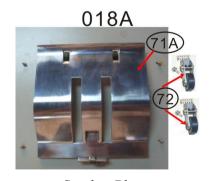
Transfer Roller Assembly

Unit NO.	Part NO.	Part's name	QTY.	Remark
	14	Middle Cover	1	
	44A	Transfer Roller Assembly	1	
013A	45	One-way Bearing & Gear	1	
013A	46	Flywheel	1	
	47	Bearing 688 (with wrap)	2	

18. The Disassembly of Stacker Plate & Sensors



Screw off the four screws fixing the Stacker Plate on the right and left sides. Then take off the Stacker Sensors from the Plate



Stacker Plate



Stacker Sensors

Unit NO.	Part NO.	Part's name	QTY.	Remark
018A	71A	Stacker Plate	1	
UIOA	72	Lower Press Roller	2	
	62 Stacker Sensors		1	

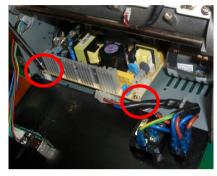
19. The Disassembly of Power Supply



Screw off the three screws fixing the Power Supply Cover on Bottom Plate.



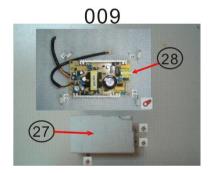
Pull off the Power Wire and take out the Power Supply Cover.



Screw off the two nuts with a sleeve barrel.



Take out the Power Supply.

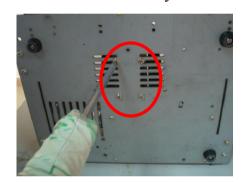


Power Supply Assembly

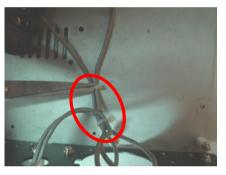
Unit NO.	Part NO.	Part's name	QTY.	Remark
000	27	Power Supply Cover	1	
009	28	Power Supply PCB	1	



20. The Disassembly of Stacker Motor & Stacker Wheel



Screw off the four screws fixing the Stacker Motor.



Cut off the plastic wrappers and take out Stacker Motor & Stacker Wheel.



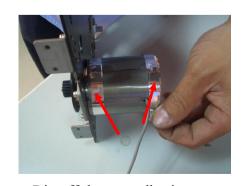
Stacker Motor & Stacker Wheel

Unit NO.	Part NO.	Part's name	QTY.	Remark
017	68	Stacker Motor	1	
017	69	Stacker Wheel	2	

21. The Disassembly of Main Motor, Side Plate, Bottom Plate



Screw off the four screws fixing the Left-Side Plate and take off the Plate.



Rip off the two adhesive tapes.



Take off the steel cylinders from the Main Motor.



Screw off the four screws fixing the Main Motor.



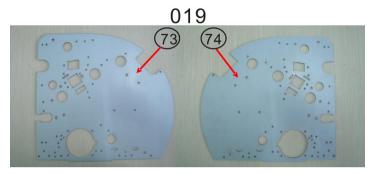
Take out the Main Motor.



Main Motor



Screw off the four screws fixing the Right-Side Plate and take off the Plate.



Left-Side Plate

Right-Side Plate



Bottom Plate

Unit NO.	Part NO.	Part's name	QTY.	Remark
	70	Main Motor	1	
019	73	Left-Side Plate	1	
019	74	Right-Side Plate	1	
75 Bottom Plate		Bottom Plate	1	

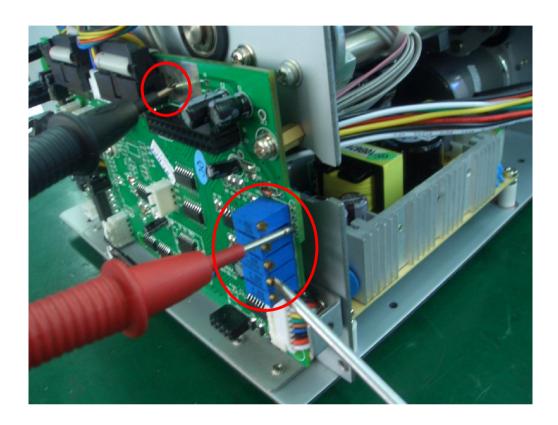
CHAPTER3 FUNCTION ADJUSTMENT

1.1 Double Detection Adjustment

For **USD**, factory adjusted Double Detection Voltage is around **1.10V**.

If single bills in DARK Contrast get "Double Notes" error, please reduce the Double Detection Voltage by 0.05~0.1V by adjusting the VR4 potentiometer (the fourth one) on the right side of the Main PCB with the Multi-Meter's red pen touching the forth point and the black pen touching GND point.

If double notes in LIGHT or NORMAL Contrast can't be detected, please increase the Double Detection Voltage by $0.05V\sim0.1V$.



1.2 Counting Sensors Adjustment

(It is recommended after changing to new counting sensors, or after using for a long time.)



Take off the Signal Board Cover, and press "START" key while turning on Power.



Press key "5" to choose "COUNTER E-VOLT".



Put a white paper on the Hopper.

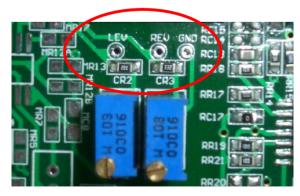


Turn the Kicker Rollers to roll the paper inside until it covers the Counting Sensors.



Using a screwdriver, adjust EVR1 and EVR2 potentiometers until the voltages of LEV and REV points are both around 1.7V with the Multi-Meter's red pen touching LEV/REV Point and its black pen touching Ground Point. Adjust clockwise to increase the voltages, or counter-clockwise to reduce the voltages.

Note: 1.7V is suitable for the factory white paper. With your local white paper, the DEN voltage could be a little higher or lower, so it's better to find out the voltage on a new machine with your local white paper.



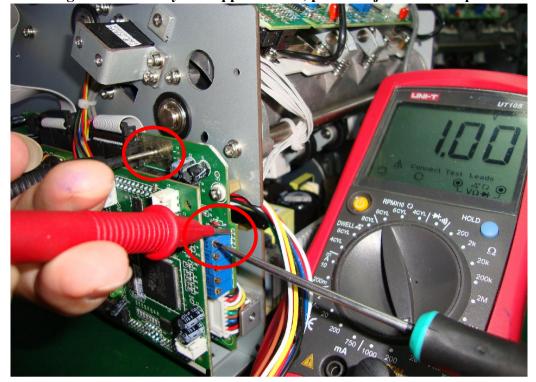
LEV/REV Points & Ground Point (GND)



EVR1 & EVR2 Potentiometers

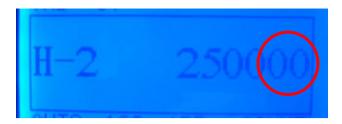
2. Change the Sensitivity of Hopper Sensor

To change the sensitivity of Hopper Sensor, please adjust the VR1 potentiometer on the Main PCB.



Using a screwdriver, adjust VR1 potentiometer (the first potentiometer on the Main PCB) to get a proper voltage, with the Multi-Meter's red pen touching the first point and the black pen touching Ground Point. The range of the voltage is $0\sim1.2V$, the higher voltage means the sensibility of the Hopper Sensor is higher. Normally for USD, the voltage is around 1.0V. Adjust clockwise to reduce the voltage, or counter-clockwise to increase the voltage.

3. UV ADJUSTMENT



Pull out the right side cover. Count genuine banknotes, and press key "9", then press key "ADD" twice. H-2 data (the last two digits) should be 0. If not, adjust VR2 potentiometer (the second potentiometer on the Main PCB).



Adjust the VR2 potentiometer to increase (counter-clockwise) or reduce (clockwise) the UV sensitivity.



Count a white paper or UV Detect Paper. The last two digits of H-2 data should be above **45**. If not, adjust VR2 potentiometer.

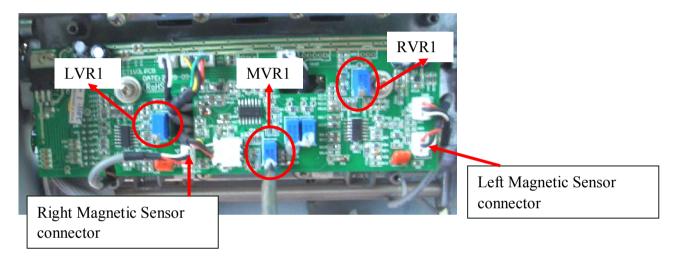
4 MR ADJUSTMENT



Take off the Signal Board Cover. Press key "9", then press key "ADD" three times to enter H-3 data. Count genuine banknotes, the middle two digits show the sum data of the Right Magnetic Sensor and the Left Magnetic Sensor. The last two digits show the data of the Middle Magnetic Sensor.



Count fake banknotes without magnetic ink. The last four digits should be all "0". If not, adjust LVR1, RVR1 and MVR1 potentiometers.



Adjust MVR1 potentiometer to increase (counter-clockwise) or reduce (clockwise) the Middle Magnetic Sensor's sensitivity. The last two digits of H-3 data of genuine \$5 (color version) should be above 10.

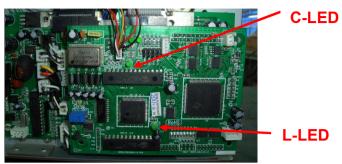
Disconnect the Left Magnetic Sensor connector and count genuine \$1. The middle two digits of H-3 data should be above 10. If not, adjust LVR1 to increase (counter-clockwise) or reduce (clockwise) the Right Magnetic Sensor's sensitivity. Then, disconnect the Right Magnetic Sensor connector, and adjust RVR1 the similar way if the middle two digits of H-3 data of genuine \$1 are not above 10.

Finally, count a batch of different denomination notes to make sure the adjustment is OK for all notes.

5. CIS Contrast Adjustment

Things to check if the image board is working:

- 1. When switching on the machine, L-LED should be from on to off. This means the image software is successfully downloaded to the image processor.
- 2. C-LED should be on when encoder disk moves. This means the image processor is working.



If "NO ID." occurs very often, please adjust the CIS Contrast as below:

- 1. Turn on the machine in MIXED mode.
- 2. Count a new bill of \$1 (circulated condition). Its Rear Face should be above and the forward direction point at the Note Guide Plate should be as shown in the first picture below. Press "9", and then "ADD" key five times to check H-5 data. The suggested CIS contrast is when the first two digits (inside the red circle) of H-5 data are around 75 among the range of 60~80 as in the second picture below.





3. If the CIS contrast is lower than 60 or higher than 80, please adjust VR2 potentiometer clockwise/counter-clockwise to reduce/increase the contrast.

Note: If the machine counts well with CIS contrast not among $60 \sim 80$, there is no need to adjust to $60 \sim 80$.



Count a stack (7 or 8pcs) of circulated bills of \$1 one by one to make sure the CIS contrast value (first two digits of H-5 data) is always correct.

- 4. Count batches of mixed denomination notes. If the machine works well with notes of every denomination, then the CIS Contract is suitable.
- 5. Press CLEAR to escape the H-5 page and return to normal counting mode.

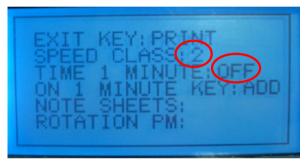
CHAPTER4 SETTINGS

Main Menu:



Press "START" key while turning on the machine. Press corresponding numeric key into submenu and press "PRINT" key to exit from the submenu.

1. SPEED TRIAL



Press key "2" into speed trial of 6 seconds (1min OFF). Press "GT" key to choose the speed class you want to test. "ADD" key is used to switch between 6s trial and 1min trial.



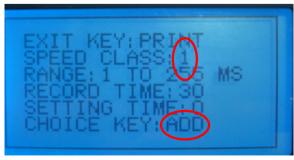
Put notes on Hopper and press "START" key. Machine will count notes and stop in 6 seconds automatically.

2. SETTING TIME

Reference Reversal Time: 15 – SPEED 1

15 - SPEED 2

15 - SPEED 3



Press key "3" into time setting. Press "ADD" key to choose the speed class whose time you want to change.



Press numeric keys to set the time you want.

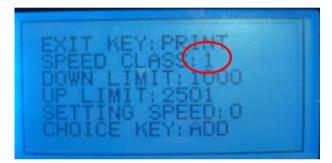


Press "START" key and then enter password "9572". Press "START" key again to save the setting.

3. SETTING SPEED

Reference Rotation Speed: 1850 – SPEED 1

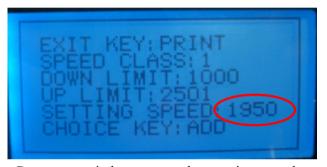
2800 – SPEED 2 3100 – SPEED 3



Press key "4" into speed setting. Press "ADD" key to choose the speed class whose rotation speed you want to change.



Press "START" key and machine will auto test. To exit, press "ESC" key.



Press numeric keys to set the rotation speed you want.



Press "ADD" key and then enter password "2759". Press "START" key to save the setting.

CHAPTER5 DAILY MAINTENANCE

CIS Sensor & Counting Sensor Clear



Open the Rear Cover by loosening the two screws with your fingers.



Pull out the cover.



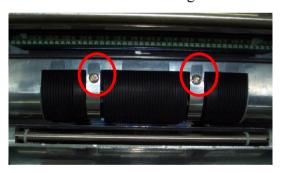
Receiver Counting Sensors



Press two tabs on the left and right as shown by the arrow sign (), and the Cover will pop up a little.



Use dry clean cloth or with alcohol to clean the CIS Sensor and Counting Sensors.



Transmitter Counting Sensors

Feed Gap Adjustment



Adjust the Thickness Adjustment Knob towards "+" to increase the Feed Gap, towards "-" to reduce the Feed Gap.

CHAPTER6 TROUBLESHOOTING

Error Massage Solution

When an error occurs, the corresponding error message will appear on the LCD display. To remove the error and continue counting, please take necessary measures according to the following procedures:

Error Message	Cause of Error	Possible Solution
CHECK HOPPER SENSOR	Hopper Sensor is covered.	Remove notes or objects from Hopper Sensor.
CHECK STACKER	Notes on Stacker when power is on.	Remove banknotes from the Stacker.
DIMENSION ERROR	1, Half-sized note is fed. 2, A small note passes from the left or right side.	1, Remove the half-sized note. 2, Align banknotes nicely and place them on the middle of the Hopper.
ERROR CHAIN NOTES	More than two notes are fed in chain.	If this error appears very often, the thickness adjustment Gap might be too wide. Adjust the size of the gap. (Refer to section 4.3 Adjust thickness adjustment knob)
ERROR DOUBLE NOTES	Two notes are fed at a time or a dirty note is fed.	Adjust Contrast of banknotes. (See section 9.2 Set Contrast of Notes of the User Manual)
SUSPECT NOTE -UV	Suspected counterfeit note is detected by UV detection.	Remove the last note from the Stacker. Press START/ENTER key. If false alarm occurs, recount the last note removed from the Stacker.
SUSPECT NOTE -MR	Suspected counterfeit note is detected by MR detection.	1, Remove the last note from the Stacker. 2, Press START/ENTER key. 3, If false alarm occurs, recount the last note removed from the Stacker.

CHANGE OF DENOM	IN SORT MODE, denomination is changed.	Remove all notes from the Stacker and machine continues counting automatically.
DENOM ERROR	IN SINGLE MODE, banknote is not equal to the denomination information.	Remove the last note from the Stacker and continue counting by pressing START/ENTER key.
ERROR DENOM-FACE	IN FACE MODE, banknote is not equal to the denomination or face information.	Remove the last note from the Stacker and continue counting by pressing START/ENTER key.
FACE ERROR	IN FACE-ALL MODE, banknote is not equal to the face information.	Remove the last note from the Stacker and continue counting by pressing START/ENTER key.
ERROR DENOM-ORIENT	IN ORIENT MODE, banknote is not equal to the denomination, face or direction information.	Remove the last note from the Stacker and continue counting by pressing START/ENTER key.
ORIENT ERROR	IN ORIENT-ALL MODE, banknote is not equal to the face or direction information.	Remove the last note from the Stacker and continue counting by pressing START/ENTER key.
NO ID.	Machine can't read the value of the note.	 Press Denomination key to enter banknote value to current total. Press START/ENTER to resume counting. OR, remove the note from Stacker and place to Hopper to recount.
STACKER IS FULL	When STACKER is full with 200 notes, START/ENTER is pressed.	Remove all the notes from the Stacker. Press START/ENTER key to resume counting
REMOVE NOTES FROM STACKER	There are notes in the STACKER	Remove all the notes from the Stacker.