

GLORY

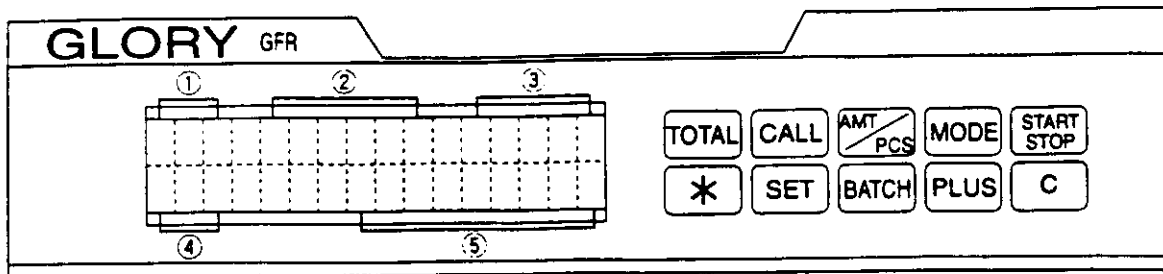
SERVICE MANUAL

**CURRENCY
READER
COUNTER
GFR-100**

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- ① Mode display MIX, D.D, CNT
- ② Detail of Guidance Display Detail of guidance display or error code
- ③ Display of Denomination or Note numbers.... MIX⇒Blank D.D⇒Denomination
CNT⇒Note number
- ④ Batch display MIX⇒Blank D.D, CNT⇒Batch numbers
- ⑤ Counting display MIX, D.D ⇒ Note numbers or Amount
CNT⇒Note numbers

OPERATION KEY FUNCTION

START STOP

Starts and stops counting.

C

Clears errors.
Numbers on display ⑤ are cleared.

MODE

Indicate one of MIX, D.D or CNT Mode
Mode display is changed in order by pressing the key as follows.

→ MIX → D.D → CNT →

AMT PCS

In MIX or D.D mode, count or amount can be specified.

CALL

In MIX or D.D mode, each piece count or total amount is displayed.
Indicate the specified denomination or ALL. The mode on display ③ can be modified as follows by depressing the key.

→ ALL → \$1 → \$2 → \$5 → \$10 → \$20 → \$50 → \$100 → Original →

To get out of this display, press the **START STOP** key.

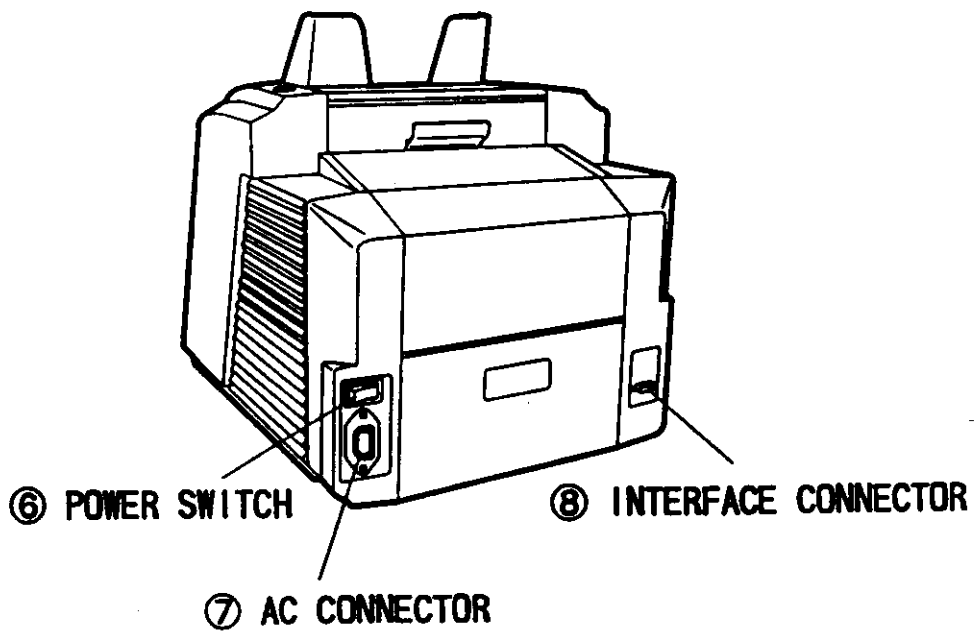
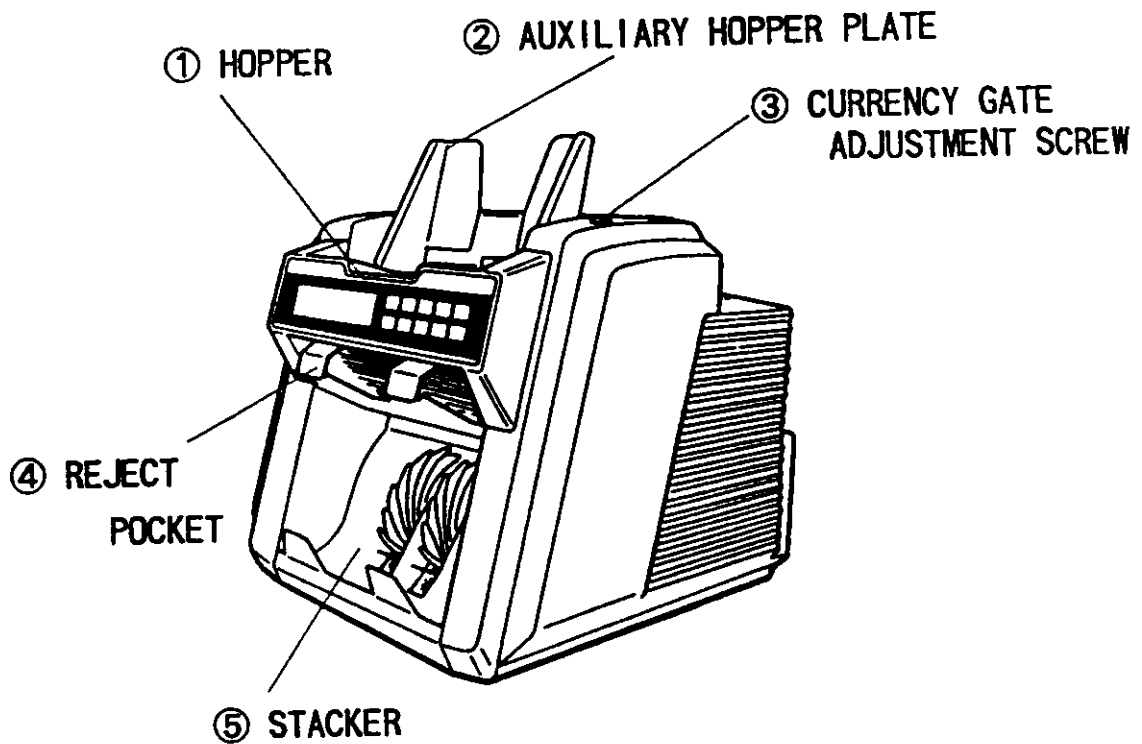
TOTAL

In MIX or D.D mode, this key is used for displaying the piece count or total amount of each denomination.

Indicate the desired denomination or ALL. The following appears in display ③.

→ ALL → \$1 → \$2 → \$5 → \$10 → \$20 → \$50 → \$100 → Original →

1. APPEARANCE AND NAME OF PARTS



In MIX or D.D. mode, this function can be used for data acceptance. Counting numbers or amount shown on display ⑤ is cleared off. Accepted data is printed out. (OPTION)

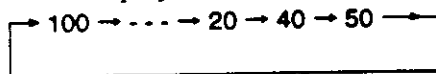
SET

Select category and set functions.

BATCH

In CNT. or D.D. mode, specify the batch numbers.

Batch display is changed by depressing this key as follows.



Number of amount shown on display ⑤ is cleared.

See Chapter 2 to change preset batch numbers.

PLUS

In CNT. or D.D. mode, specify the batch numbers.

Batch number increases with each key depression.

Continuous key depression allows the batch number to increase more rapidly.

Max. batch number is 200.

KEY COMBINATION

CALL



C

MIXED and D.D. mode

Total amount or piece count is cleared.

TOTAL



MIX or D.D. mode

After the trasaction is completed. pres the ***** key, and the accepted data will be printed. (OPTION)

※ Valid when ALL is displayed. No backup is expected nor 'No papaer' and 'Power off'.

TOTAL



C

MIX or D.D. mode

Display the option of clearing data.

Valid at the ALL display.



START STOP

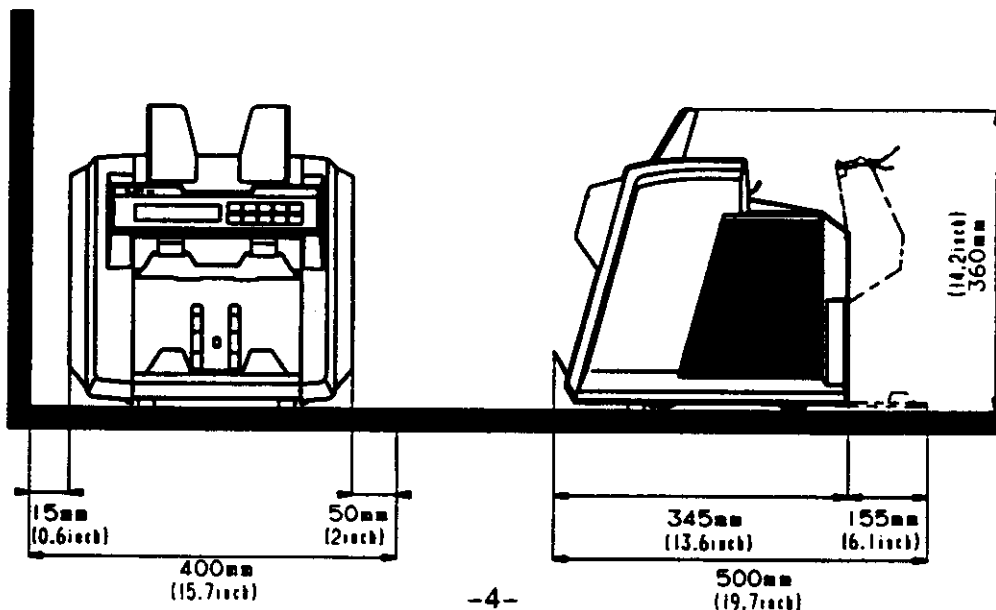
..... Return to the original display.

C

..... Displayed piece count or amount and internal data are cleared. When printer is connected. DAY END data is printed.

2. SPECIFICATION OF MACHINE

- Dimensions:
 - without Hopper 335 (W) x 345 (D) x 300 (H)mm
(13.2 (W) x 13.6 (D) x 11.8 (H) inch)
 - with Hopper 335 (W) x 345 (D) x 360 (H)mm
(13.2 (W) x 13.6 (D) x 14.2 (H) inch)
- Weight: 15kg (33.3 LBS)
- Counting speed: 1000 notes/min.
- Applicable notes:
 - MIX, D.D mode: US currency (\$1,2,5,10,20,50,100)
(Reading face up currency, face down currency is rejected.)
 - CNT mode:
 - Length 140~160mm
(5.5~6.3 inch)
 - Width 56~81mm
(2.2~3.2 inch)
- Feed system: Roller friction type
- Hopper capacity: Approx. 500 notes
- Stacker capacity: 200 notes
- Reject capacity: 20 notes
- Power source: 120VAC \pm 10% 60Hz
- Power consumption
 - During operation: 144VA (1.2A)
 - During stand by: 60VA (0.5A)
- Environmental conditions
 - Temperature:
 - 0°C ~ 35°C (during operation)
 - (32F ~ 95F) (during operation)
 - 10°C ~ 60°C (during storage)
 - (14F ~ 140F) (during storage)
 - Humidity: 20% ~ 90% (no condensation)
- Option: Interface Connector (RS-232-C)
- Life span: 10,000 pcs/day-5 Years
- Installation: Secure necessary space for installation.



4. TABLE FOR CHANGE OF THE SPECIFICATION OR SETTING

Press the **SET** key to get the setting menu, then various setting can be changed.

HOW TO CHANGE

1. Press the **SET** key to get the menu into idle condition.
2. To get the next contents, press the **SET** key.
3. Use the ***** key to change the parameter.
4. The cursor position is default..
5. Press the **START/STOP** key to get out.

● Serial No. 10808 ~

CONTENTS Serial No.10808~	DISPLAY	HOW TO CHANGE	CONTENTS Serial No.10808~	DISPLAY	HOW TO CHANGE
Brightness of LCD	LCD:ADJ. DARK - LIGHT	Move cursor with the * key.	Double Detection (CNT mode) Setting density level of notes in CNT mode.	DENSITY:SET: CNT: ... DARK - LIGHT	Move cursor with the * key.
Interface ON/OFF (Option)	INTERFACE: ... ON / OFF		Double Detection (MIX and D. D. mode) Setting density level of notes in MIX and D.D. mode.	DENSITY:SET: MIX: D.D: ... DARK - LIGHT	
Counterfeit Detection Setting the level of detecting counterfeit note.	C.F. LEVEL:SET: ... OFF - SEVERE		Auto start ON/OFF Machine will start automatically when notes are set on the hopper.	AUTO:START:SET: ... ON / OFF	
Stop on suspected note Machine will stop when a suspected is detected.	STOP:ON: S.U.P. ... ON / OFF		Repeat function ON/OFF Machine will start automatically after removing notes from the stacker.	REPEAT:START:SET: ... ON / OFF	
Sort mode ON/OFF	DENOM: SORT: MIX: ... ON / OFF		Preset batch Preset batch amount can be changed with pressing the BATCH or PLUS key. Preset batch amount is displayed with pressing the CALL key on D.D. or CNT mode.	PRESET: BATCH: SET: ... 20 40 80 100 1 2 3 4 -1-2-3-4-	* ---move cursor BATCH -change batch number by 10 PLUS ---change batch number by 1
Orientation sorting mode ON/OFF	ORIENTATION: D.D: ... ON / OFF		Printer interface ON/OFF (Option)	PRINTER: I/F: ... ON / OFF	Move cursor with the * key.
Add function (MIX mode) Counted data will be accumulated	A.D.D.: ... MIX: ... ON / OFF		Station Address	STATION: ADDRESS: ... 0-1-...F	
Batch accumulation (D.D. mode)	BATCH: ACC: D.D: ... ON / OFF				

● Serial No. 10387 ~ 10807

● Serial No. 10001 ~ 10287

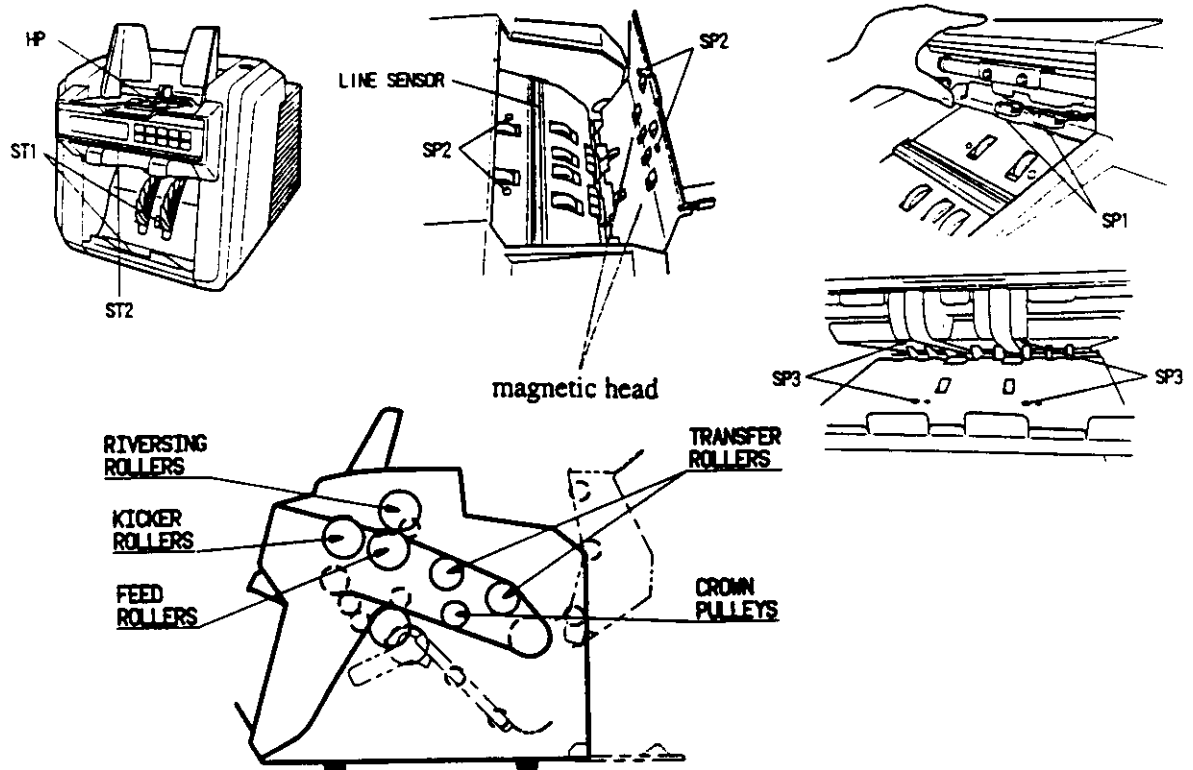
Serial No. 10387 ~ 10807	DISPLAY	HOW TO CHANGE	Serial No. 10001 ~ 10287	DISPLAY	HOW TO CHANGE
Brightness of LCD	L.C.D. A.D.J. DARK -- LIGHT	Move cursor with the ▲ key.	Brightness of LCD	L.C.D. A.D.J. DARK -- LIGHT	Move cursor by ▲ key.
Counterfeit Detection Setting the level of detecting counterfeit note.	C.F. LEVEL SET. OFF -- SEVERE		Double Detection (CNT mode)	DENSITY SET. CNT. DARK -- LIGHT	
Stop on suspected note Machine will stop when a suspected is detected.	STOP ON SUSP. ON / OFF		Double Detection (MIX and D.D. mode)	DENSITY SET. MIX D.D. DARK -- LIGHT	
Sort mode ON/OFF	SENUM SORT MIX ON / OFF		Counterfeit Detection	C.F. LEVEL SET. OFF -- SEVERE	
Orientation sorting mode ON/OFF	ORIENTATION D.D. ON / OFF		Add mode (MIX mode)	ADD MIX ON / OFF	
Add function (MIX mode) Counted data will be accumulated	ADD MIX ON / OFF		Batch accumulation (D.D. mode)	BATCH ACC. D.D. ON / OFF	
Batch accumulation (D.D. mode)	BATCH ACC. D.D. ON / OFF		Auto start ON/OFF	AUTO START SET. ON / OFF	
Double Detection (CNT mode) Setting density level of notes in CNT mode.	DENSITY SET. CNT. DARK -- LIGHT		Repeat function Machine start automatically after remove notes from stacker.	REPEAT START SET. ON / OFF	
Double Detection (MIX and D.D. mode) Setting density level of notes in MIX and D.D. mode.	DENSITY SET. MIX D.D. DARK -- LIGHT		Preset batch Preset batch can be changed.	PRESET BATCH SET. 200 400 800 1600 1 2 3 4 1-2-3-4 Maximum batch number is 200 pcs	▲ --- move cursor BATCH --- change batch number by 10 PLUS --- change batch number by 1
Auto start ON/OFF Machine will start automatically when notes are set on the hopper.	AUTO START SET. ON / OFF		Printer interface ON/OFF	PRINTER I/F ON / OFF	Move cursor with ▲ key.
Repeat function ON/OFF Machine will start automatically after removing notes from the stacker.	REPEAT START SET. ON / OFF		Baud rate setting for printer	BAUD RATE 9600 4800 2400 1200	
Preset batch Preset batch amount can be changed with pressing the BATCH or PLUS key. Preset batch amount is displayed with pressing the CALL key on D.D. or CNT mode.	PRESET BATCH SET. 200 400 800 1600 1 2 3 4 1-2-3-4	▲ --- move cursor BATCH --- change batch number by 10 PLUS --- change batch number by 1	Station Address	STATION ADDRESS 0-1-...-F	
Printer interface ON/OFF (Option)	PRINTER I/F ON / OFF	Move cursor with the ▲ key.	Interface (SR, CPS series)	INTERFACE ON / OFF	

5. HOW TO MAKE AN INSPECTION OR SERVICE

1) Cleaning of sensors

Clean each sensor shown in the drawing with included brush.

Caution: Before cleaning, be sure power switch is in off position.



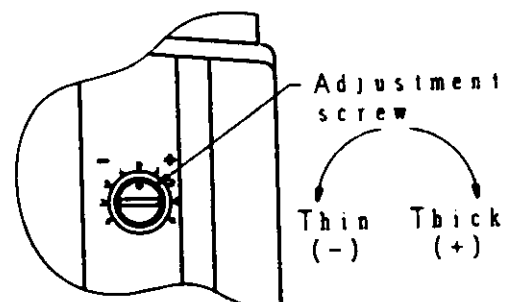
2) Cleaning the rollers and belts

Check the surface of each rubber part of the Reversing roller, Feed roller, Kicker roller and all belts; in case surfaces are stained, clean with a piece of cloth etc. dipped in alcohol. (never use thinner)

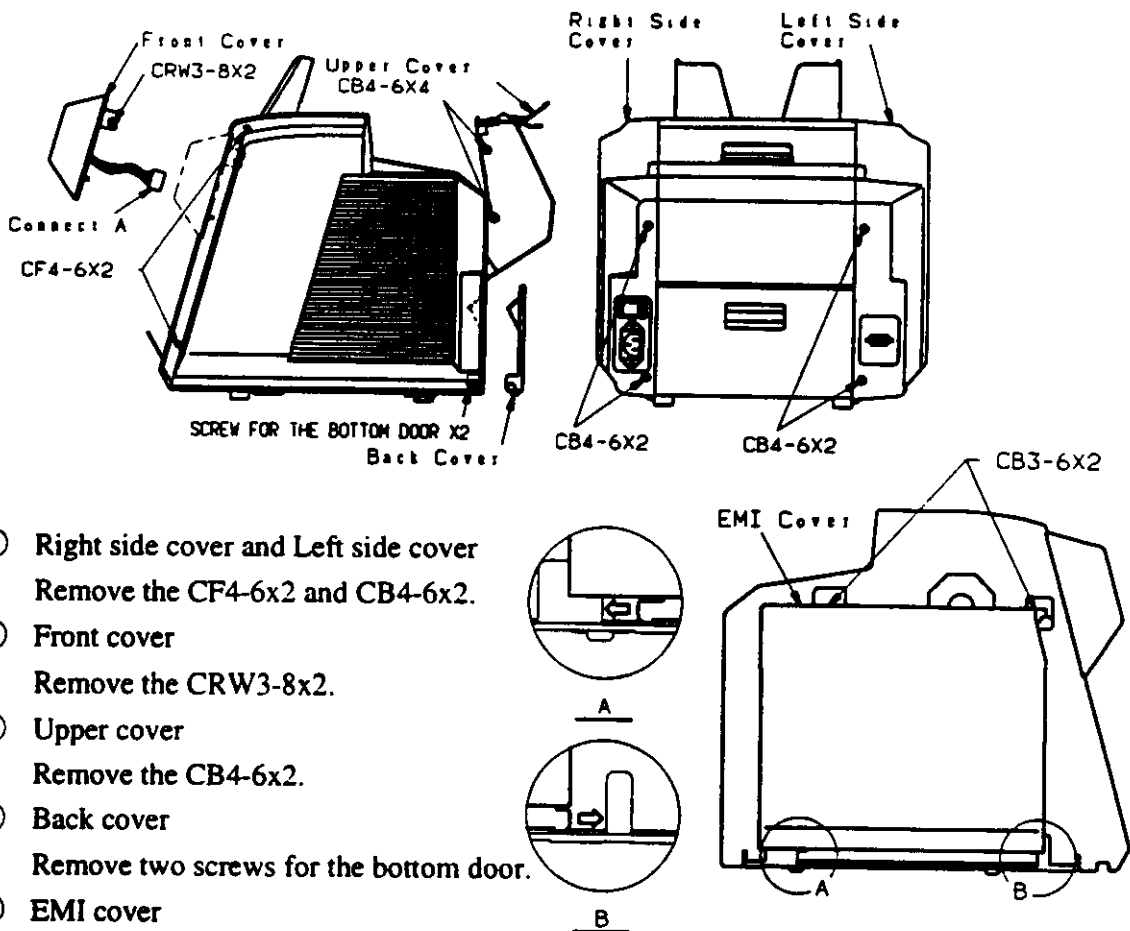
3) Adjustment of gate adjustment screw

To make smooth a counting operation, it is necessary to adjust the gate according to the condition of notes to be counted.

- In case there are too many chain rejects (check by RAS R6-4)
Turn the adjustment screw in the direction of "-" (thin)
- In case of unsmooth feeding or thicker notes to be counted.
Turn the adjustment screw in the direction of "+" (thick)



4) How to remove Covers



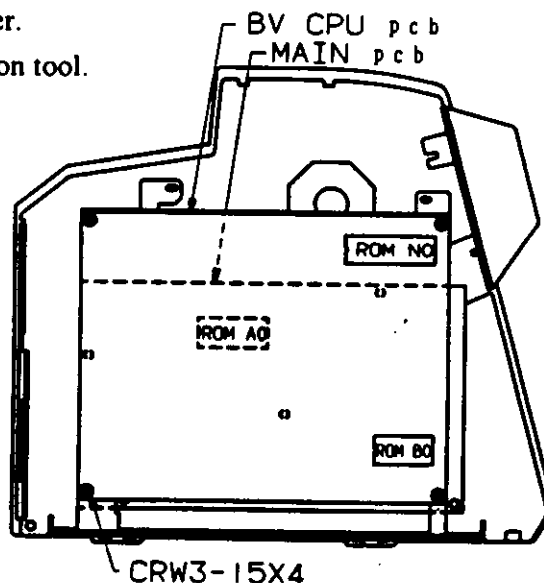
- ① Right side cover and Left side cover
Remove the CF4-6x2 and CB4-6x2.
- ② Front cover
Remove the CRW3-8x2.
- ③ Upper cover
Remove the CB4-6x2.
- ④ Back cover
Remove two screws for the bottom door.
- ⑤ EMI cover

Remove the CRW3-6x2, slide the cover to the left, and unhook the stopper on bottom it.

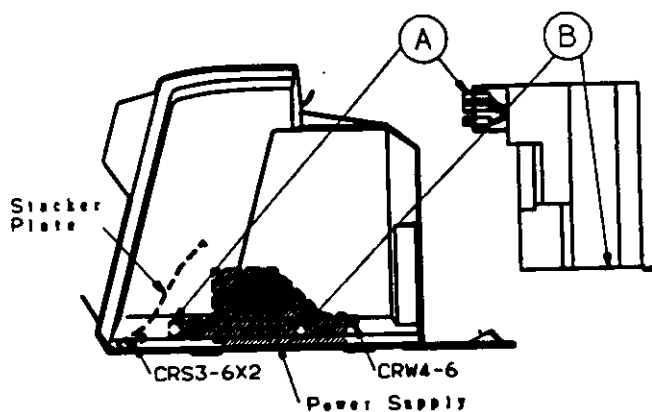
Note: When replacing the EMI cover, make sure that the lower hook snaps in place, before tightening the screw.

5) How to replace ROMs

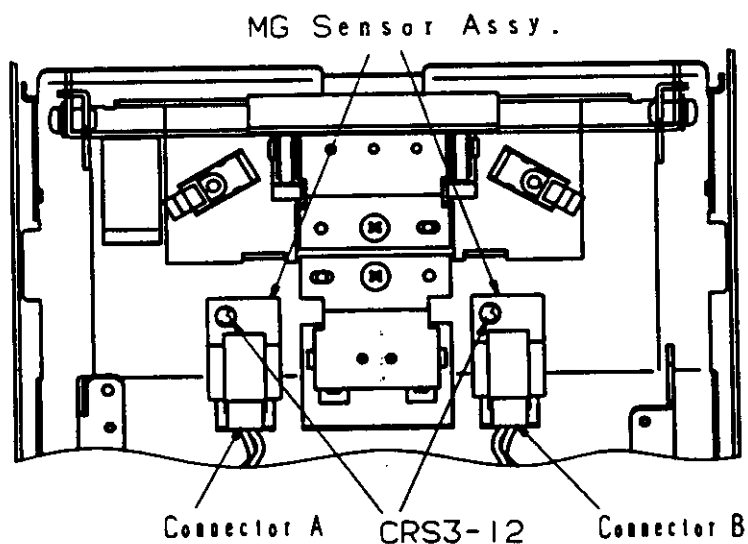
- ① Remove the left cover and EMI cover.
- ② Remove the ROM using the extraction tool.
- ③ Attach the new ROM



- 6) How to replace power supply
- ① Remove the right and left side covers.
 - ② Remove the stacker plate (CRS3-6x2)
 - ③ Disconnect the connectors (A) and (B) on the power supply.
 - ④ Remove a screw (CRW4-6).
 - ⑤ Pull out the power supply from back side.
 - ⑥ Replace the power unit with a new one, and assemble it in reverse order.



- 7) How to replace magnetic head
- ① Remove the upper cover.
 - ② Remove the magnetic head (CRS3-12).
 - ③ Remove the connectors "A" and "B."
 - ④ Replace the components with new one, and assemble them in reverse order.

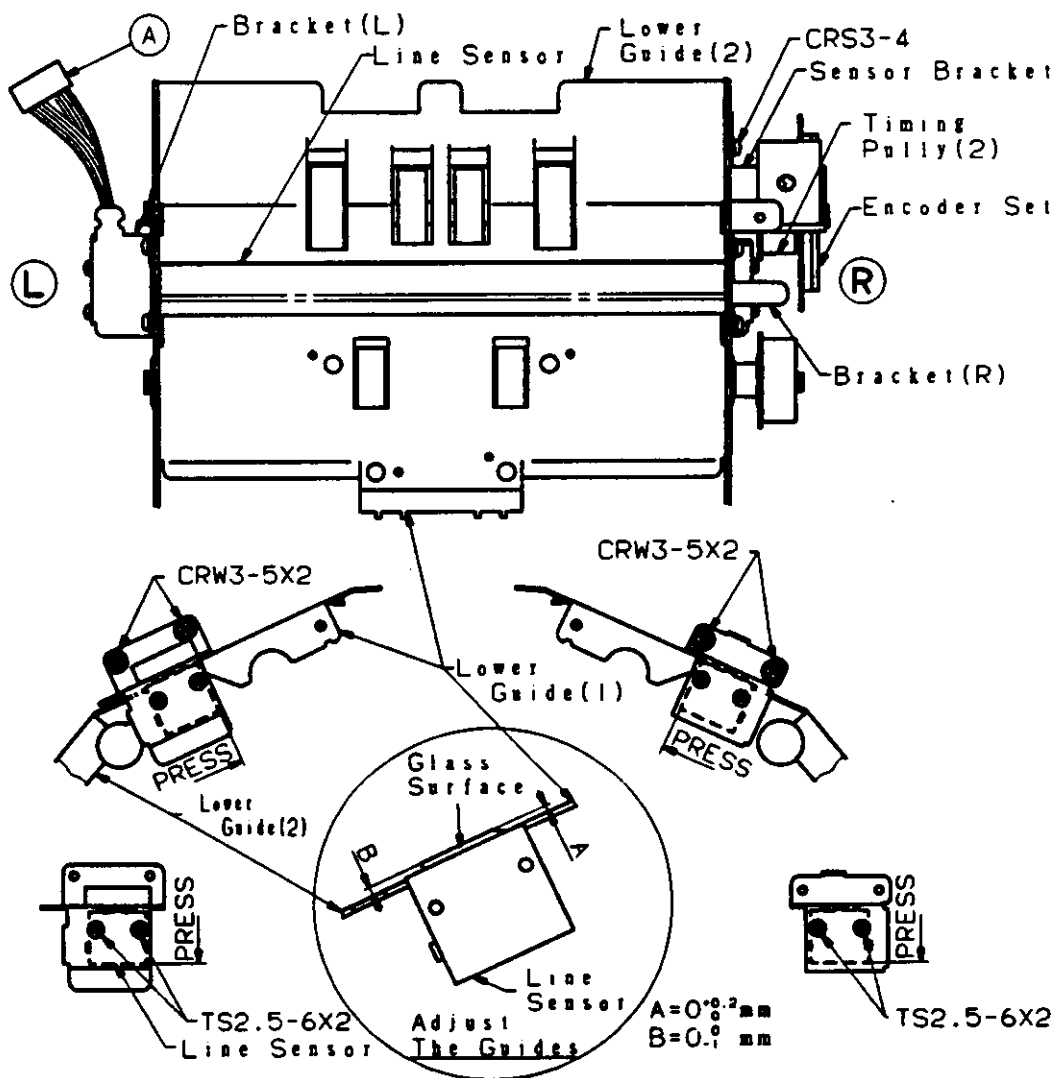


8) How to replace line sensor

- ① Remove the covers at both sides and the EMI cover.
- ② Remove the BV CPU pcb (CRW3-15x4).
- ③ Disconnect the connector "A."
- ④ Loosen the idler set (CRW4-6) and timing belt.
- ⑤ Remove the sensor bracket (CRS4-4).
- ⑥ Remove the encoder set.
- ⑦ Remove the timing pulley (1) (E-6).
- ⑧ Remove the (TS2.6-6x2, CRW3-5x2) of the mounting bracket (R).
- ⑨ Remove the (CRW3-5x2) of the mounting bracket (L).
- ⑩ Draw out the line sensor from the mounting bracket side (L).
- ⑪ Replace these parts with new one, and assemble them in reverse order.

Note: Mount the line sensor, and mounting brackets (L) and (R) as you press them in the direction of the arrow. With the CRW3-6x2 of the mounting brackets (L) and (R), adjust the dimension "A" in the arrow direction. Be careful not to dirty the glass surface of the line sensor.

- ⑫ After assembling, adjust the line sensor. (See 6-9-a.)



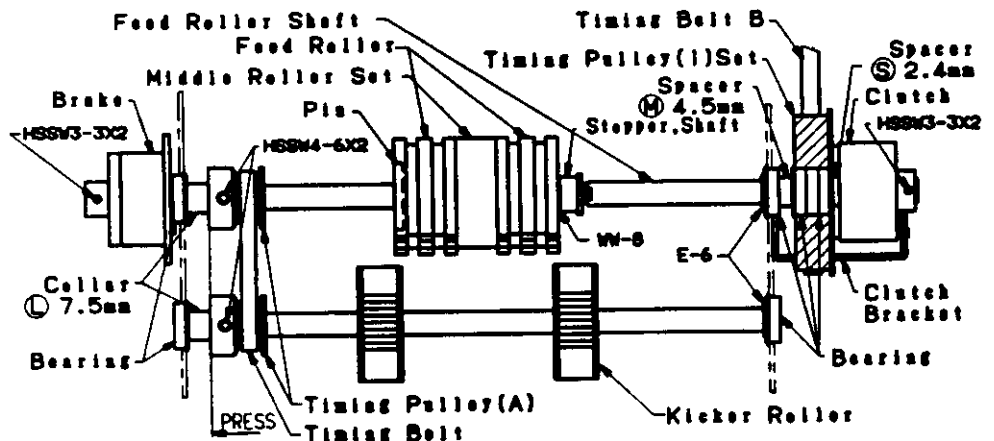
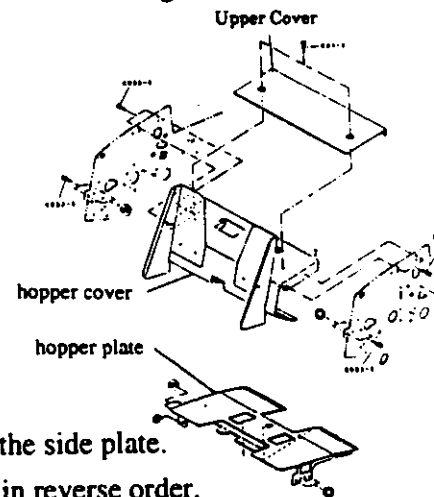
9) How to replace the Feed roller and Kicker roller

● Feed roller

- ① Remove the right and left covers.
- ② Remove the hopper cover (CRS3-6x4).
- ③ Remove the hopper plate (CRS3-6x4).
- ④ Remove the clutch bracket (CRS3-6).
- ⑤ Remove the clutch (HSS3-3x2) and brake (HSS3-3x2).
- ⑥ Loosen the idler set (CRW4-6) and remove the timing pulley (1) set.
- ⑦ Loosen the timing pulley (A) (HSS4-6x2).
- ⑧ Remove the feed roller jig (E-6) and draw it out from the side plate.
- ⑨ Remove the one-touch jig stopper, and remove the feed roller and middle roller.
(Be careful not to let the parallel pin fall.)
- ⑩ Replace the parts with new one, and assemble them in reverse order.
(The feed roller and middle roller, can only be assembled in one direction.)
- ⑪ Assemble the feed roller and kicker roller while adjusting their timing. (See 6-2.)
- ⑫ When necessary, make the left and right adjustment to the reversing rollers (see 6-1-b) and adjust the currency gate clearance (see 6-1-a).
- ⑬ Adjust the brake and clutch.
- ⑭ Adjust the timing belt "b." (see 6-5.)

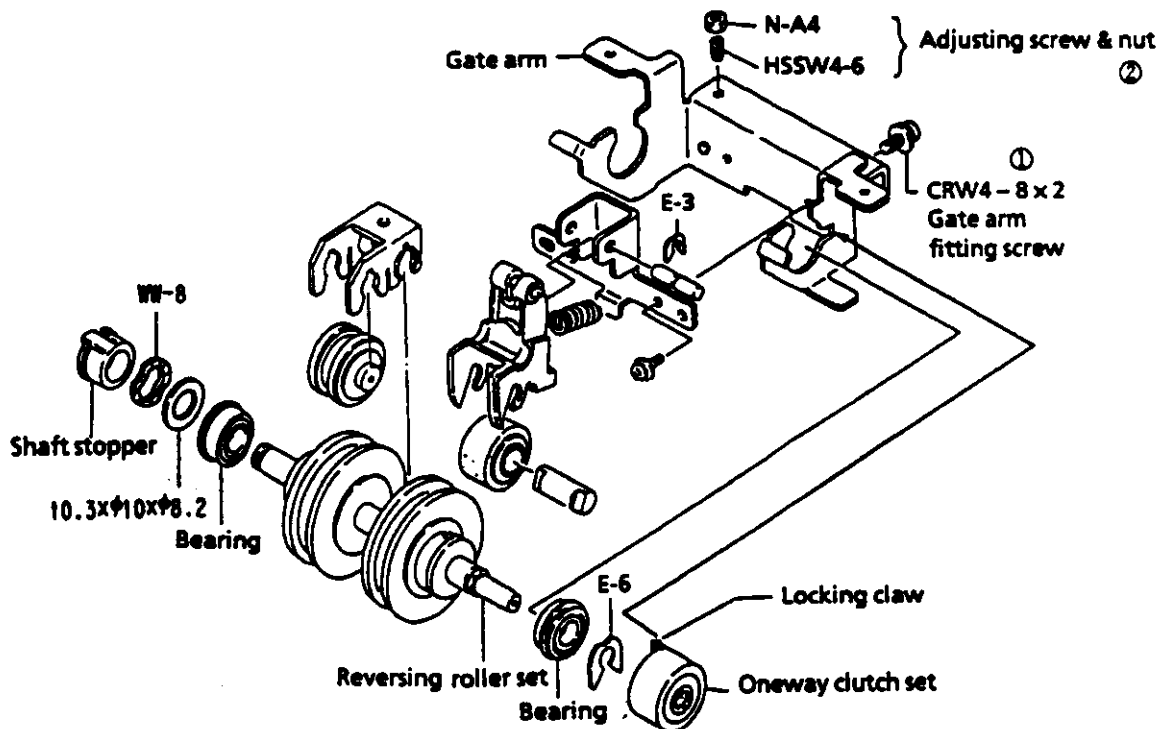
● Kicker roller

- ① Remove the right and left covers.
- ② Remove the hopper cover (CRS3-6x4).
- ③ Remove the hopper plate (CRS3-6x4).
- ④ Loosen the timing pulley (A) (HSS4-6x2).
- ⑤ Remove the kicker roller(E-6) and draw it out from the side plate.
- ⑥ Replace the parts with new one, and assemble them in reverse order.
- ⑦ When assembling the kicker roller also adjust the timing. (see 6-2).



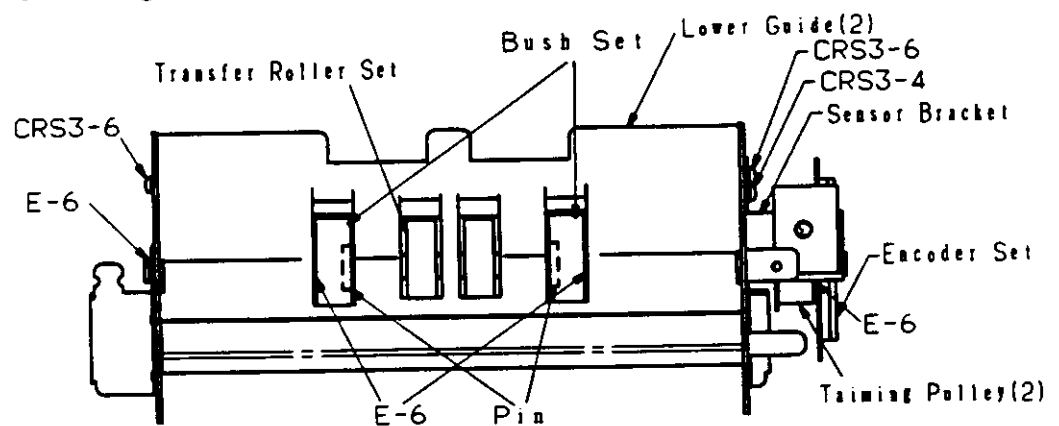
10) How to replace reversing rollers

- ① Remove the right and left covers.
- ② Remove the hopper cover (CRS3-6x4).
- ③ Remove two gate arm mounting screws (NO.①) then remove the Gate arm.
- ④ Remove the shaft stopper, housing set and bearing etc. then remove Reversing roller set from Gate arm.
- ⑤ Replace the parts with new one, and assemble them in reverse order.
- ⑥ Attach the adjustment screws and nuts and make a sideward adjustment of the gate arm. At this moment, also make a sideward adjustment of the mounting position.
- ⑦ Make an adjustment of the right and left clearances of the gate with the adjustment screw and nut. (See 6-1-b.)
- ⑧ After completing whole assembly, using the currency gate adjustment screw, make a slight adjustment of the gate clearance while observing the flow of the medium.



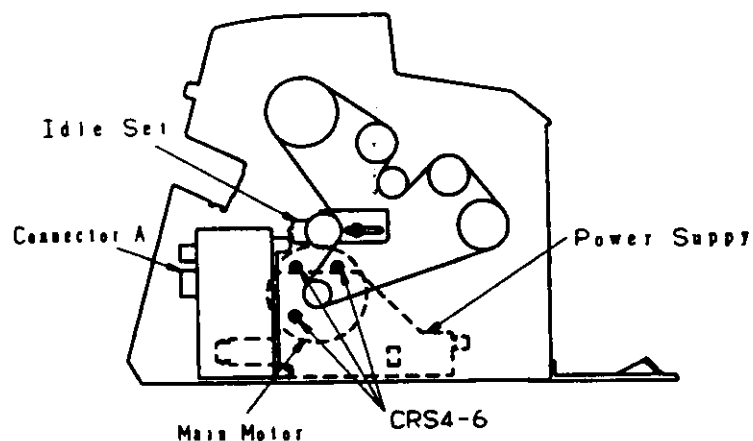
11) How to replace boss set

- ① Remove the right and left covers and EPI cover.
- ② Remove the BV CPU pcb (CRW3-15x4).
- ③ Remove the MAIN pcb (CRW3-18x4).
- ④ Remove the sensor bracket (CRS4-4).
- ⑤ Remove the encoder set.
- ⑥ Remove the timing pulley (1) set (E-6).
- ⑦ Remove the lower guide (2) (CRS3-6x2).
- ⑧ Remove the transfer roller set (E-6), and draw it out from the side plate.
- ⑨ Remove the boss set (E-6). (Do not let the parallel pin fall.)
- ⑩ Replace the parts with new one, and assemble them in reverse order.
- ⑪ During assembly, adjust the timing belt. (See 6-5.)



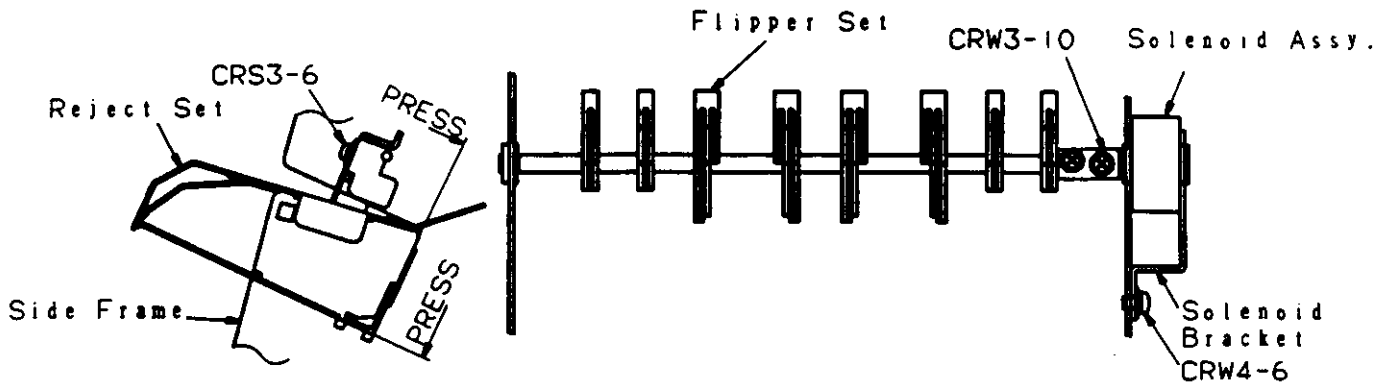
12) How to replace main motor

- ① Remove the right and left covers.
- ② Loosen the idler set (CRW4-6) and the timing belt.
- ③ Remove the stacker plate (CRS3-6x2).
- ④ Disconnect the power supply.
- ⑤ Disconnect the connector "A."
- ⑥ Remove the main motor (CRS4-6x3), and open the rear cover to take out.
- ⑦ Replace the parts with new one, and assemble them in reverse order.
- ⑧ During assembly, make an adjustment of the timing belt (see 6-5).



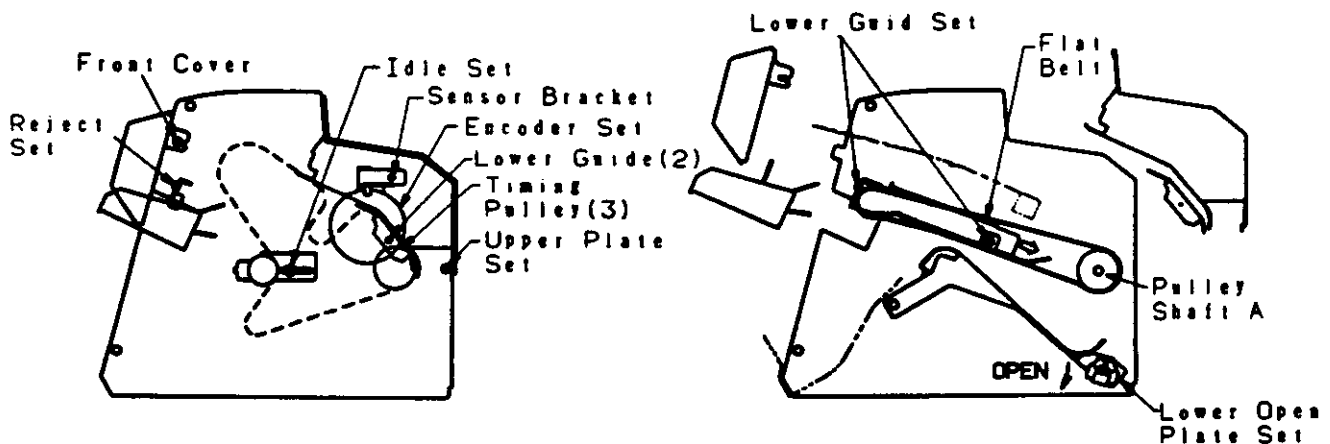
13) How to replace solenoid

- ① Remove the right and left covers.
- ② Remove the front cover.
- ③ Remove the reject set (CRS3-6x2).
- ④ Remove the boss-fixing screws (CRW3-10).
- ⑤ Remove the solenoid bracket (CRW4-6) to take the solenoid out.
- ⑥ Replace the parts and assemble them in reverse order.
- ⑦ During assembly, make an adjustment of the flipper position (see 6-6).



14) How to replace flat belt

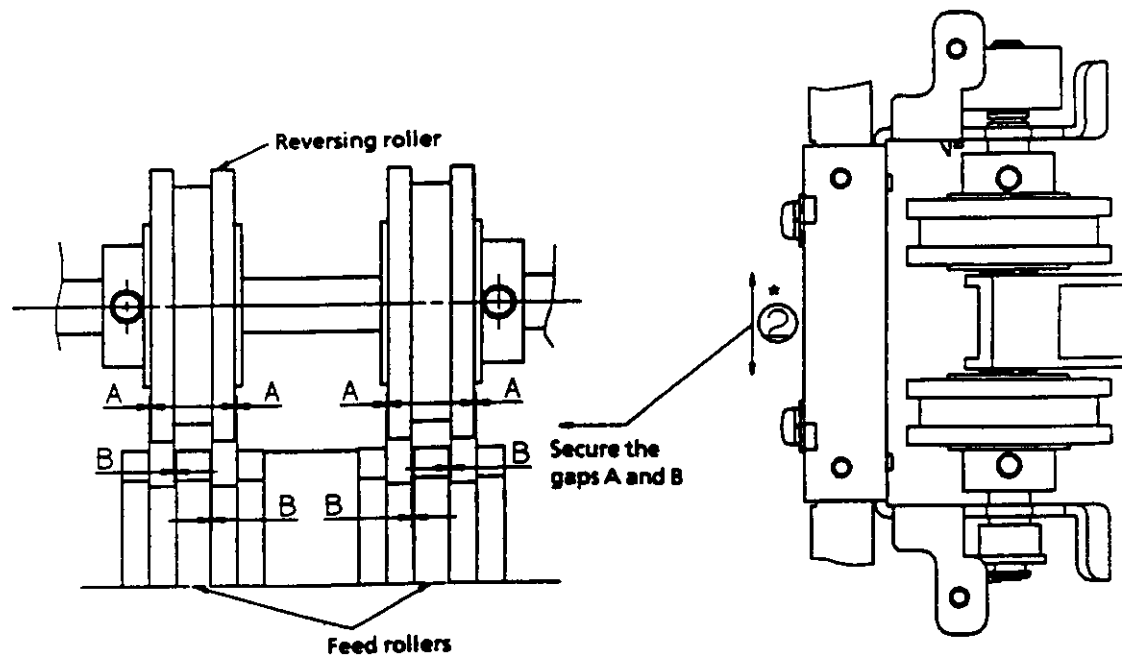
- ① Remove the right, left and front covers.
- ② Remove the EMI cover, MAIN pcb and BV CPU pcb.
- ③ Remove the reject set (CRS3-6x2).
- ④ Remove the sensor bracket (CRS3-4) and the encoder set.
- ⑤ Loosen the idler set (CRW4-6) and the timing belt.
- ⑥ Remove the upper plate set (CRS4-6x2).
- ⑦ Remove the lower guide (2)(CRS3-6x2).
- ⑧ Open the lower open plate set.
- ⑨ Remove the timing pulley (3).
- ⑩ Remove the lower guide set (CRW3-8x2, CRW3-6x2)
- ⑪ Replace flat belts with new one, and assemble them in reverse order.



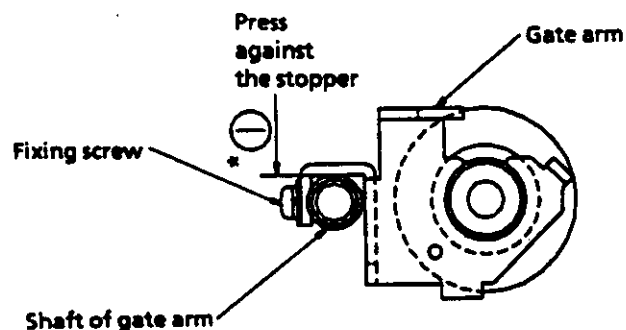
6. ADJUSTMENT OF EACH PART

1) Adjustment of gate

a) Mounting and adjustment of the gate arm

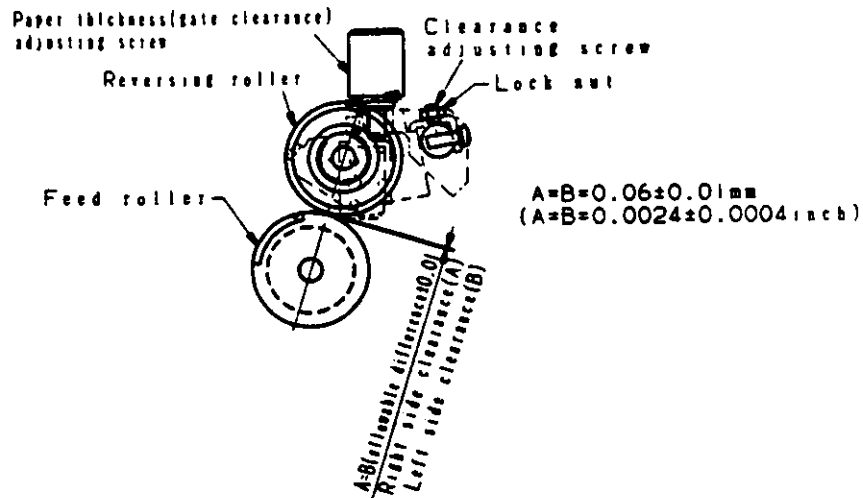


(Adjustment of positions (right and left)
of the Reversing rollers and Feed rollers)



- ① Temporarily fix the gate arm onto the gate arm shaft by pushing it against the mounting surface of the gate arm shaft (*①).
- ② Move the gate arm right and left to make an adjustment of the right and left positions of the reversing rollers and feed rollers (*②).
- ③ As shown in the above diagram, adjust the gap "A" and "B" of each tread for the right and left positions of the reversing rollers and feed rollers (they must not come in contact with each other).
- ④ After the adjustment, tighten lock nuts them on adjustment screws.

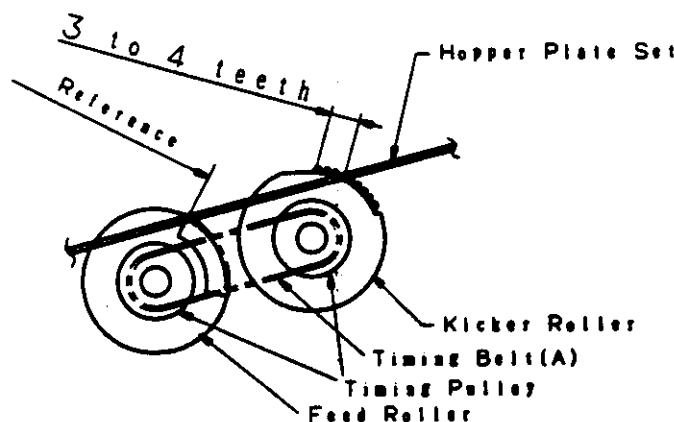
b) Adjustment of the right and left clearances of the gate



- ① Using the currency gate adjustment screw, adjust the clearance between the reversing roller and feed roller to that it becomes to the extent 0.06.
- ② Slightly tighten the adjustment screw for the right and left clearance.
- ③ Check the right and left clearances, and turn the adjustment screw at the side clearance side to make an adjustment (expanding).
- ④ When the clearances at both sides become equal ($A = B \pm 0.01 \text{ mm}$), secure the adjustment screw with a lock nut.
- ⑤ Finally, adjust the currency gate adjustment screw while observing the feeding of notes so that overall clearances become appropriate.

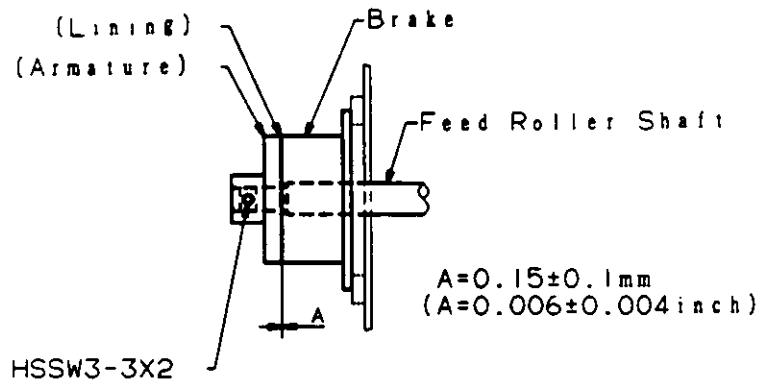
2) Timing adjustment of the kicker rollers and feed rollers

Place the positional relation between the kicker roller and feed roller as shown in the diagram below. With both rollers placed in the positions as shown, secure them by tightening the allen screw on the timing pulley.



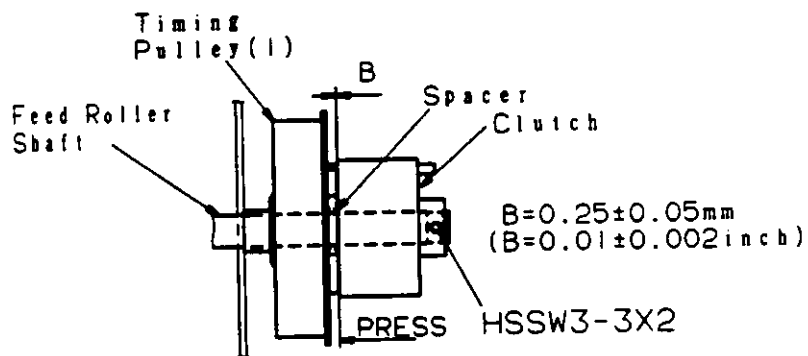
3) Adjustment of brake unit

Using a thickness gauge, adjust the gap "A" between the armature and lining to $A = 0.15 \pm 0.1$ [mm].



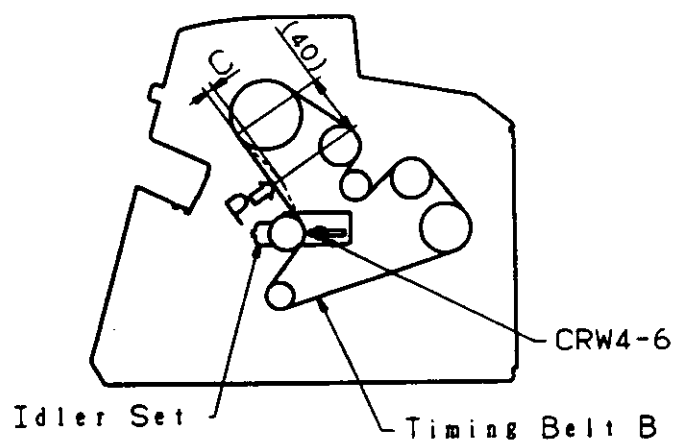
4) Adjustment of clutch

Install the clutch unit by fitting it against the spacer between the clutch and timing pulley (1) set.



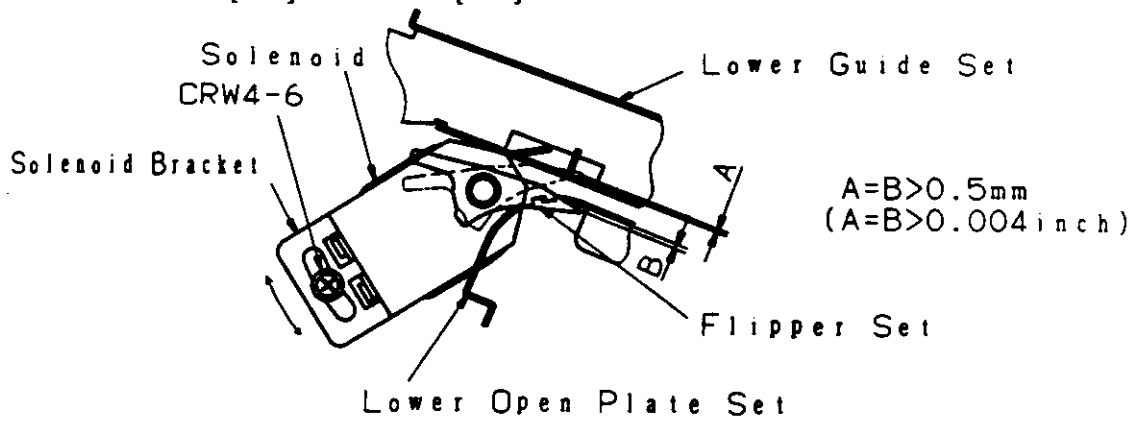
5) Adjustment of timing belt

Adjust the idler set so that "A" becomes 2 ± 0.5 [mm] when "P" of the timing belt "B" is "P" = 75gf.



6) Adjustment of flipper position

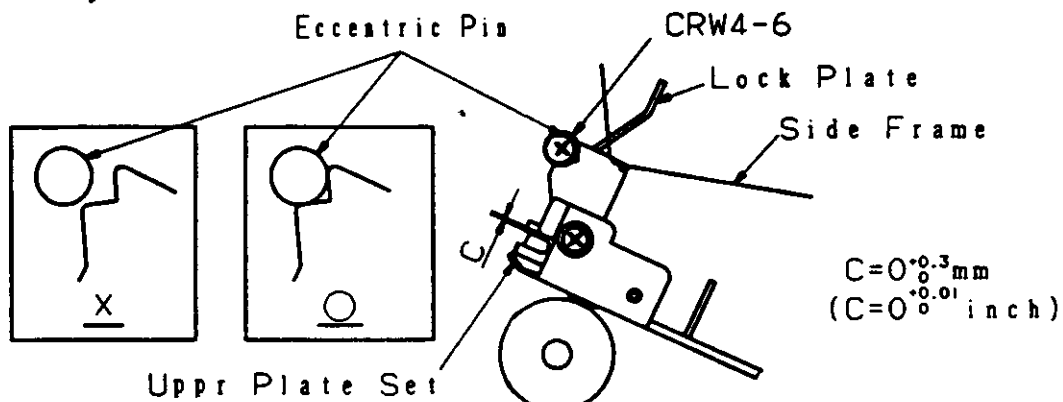
Adjust the mounting screw of the solenoid bracket so that the position of the flipper position to $A > 0.5$ [mm] and $B > 0.5$ [mm].



7) Adjustment of eccentric pin position

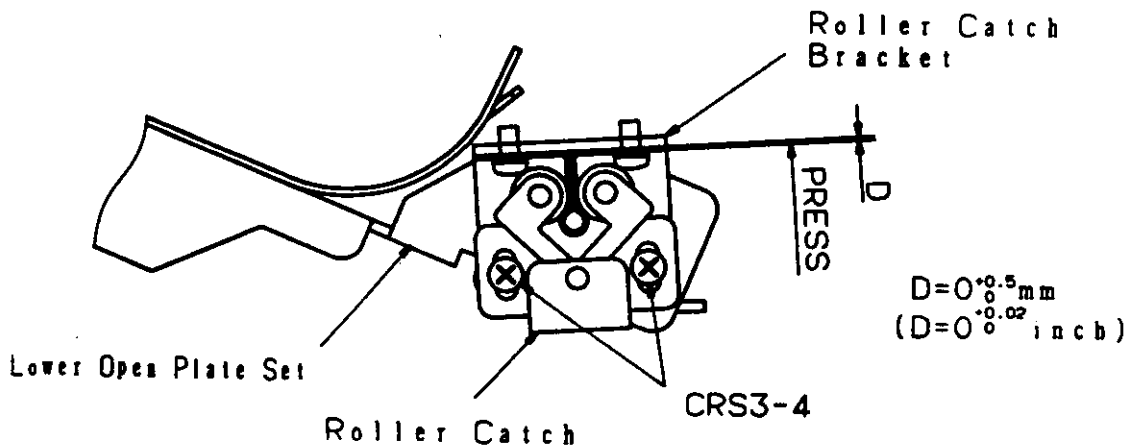
Turn the eccentric pin so that the upper cover lock becomes $A = 0^{\circ}$ [mm].

After the adjustment, try to open and close the upper cover to check if it will not lock halfway.



8) Adjustment of roller catch position

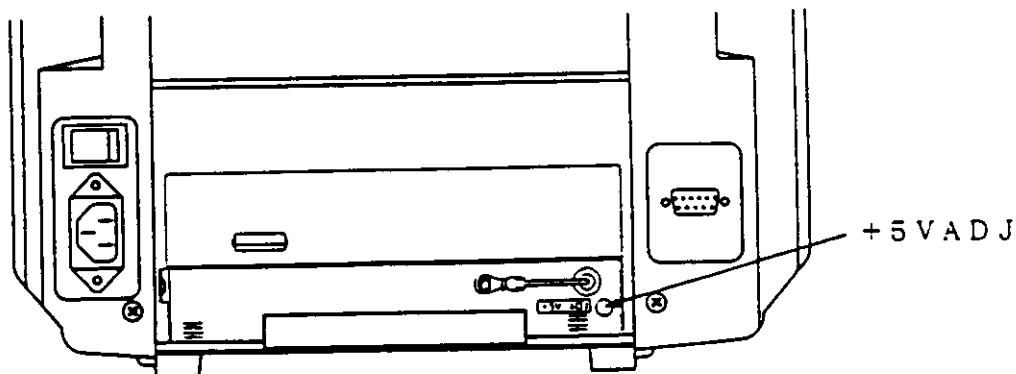
With the lower open/close plate closed, make sure that $D = 0^{\circ}$ [mm] and tighten the roller catch mounting screw.



9) Power supply and sensor adjustments, and the setting of mini jump and switches

a) Adjustment of power supply

Item	Check point	Adjustment point	Target value	Remarks
Adjustment of +5V	TP5V-TPDG on the BV CPU pcb	+5VADJ of the power supply	+5V	



b) Enter the sensor adjust RAS MODE, and it will automatically adjust (HP, SP1L · R, SP2L · R, SP3L · R, ST1 and ST2, by the following operation:

①

R:0	-	1	W	A	I	T			
1	2	3	4	5	6	7	8	9	

- Set to R0-1 and the display shows ①. Press the **START/STOP** key to start operation. The display changes to ②.

The figures 1 through 9 on the display corresponds to HP1, SP1L, SP1R, SP2L, SP2R, SP3L, SP3R, ST1, and ST2, respectively.

②

R:0	-	1	A	D	J				
-	-	3	-	-	6	7	8	9	

- Adjusting
When the adjustment has been normally completed, the sensor No. changes to '—'. If not, sensor No. remain unchanged. After completing all the adjustments, display changes to ③ or ④.

③

R:0	-	1	E	N	D				
-	-	-	-	-	-	-	-	-	

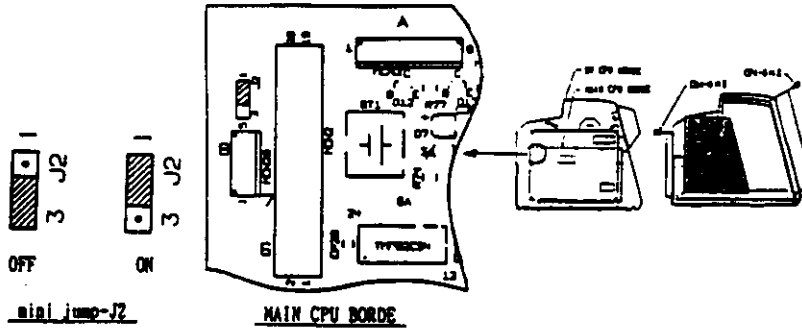
- All the sensors normally terminated.

④

R:0	-	1	E	R	R				
-	-	3	-	-	-	-	-	9	

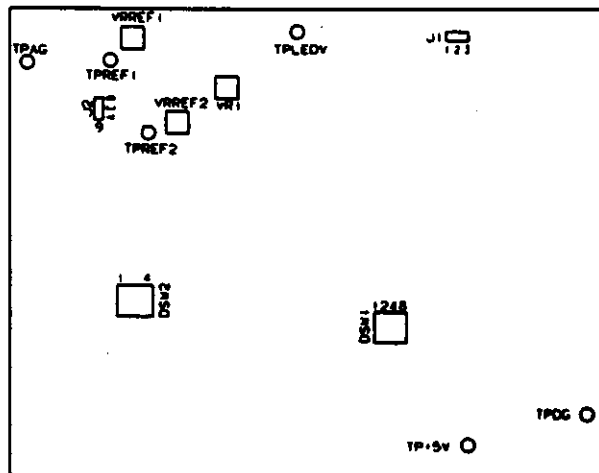
- Abnormal termination
SP1R and ST2 have been terminated abnormally. Press the **START/STOP** key to start readjustment for all the sensors.

- c) Set the mini jump setting, J2, on the MAIN pcb to side "1."
 (Battery-backup for RAM, ON → side 1)



- d) Adjustment of BV CPU pcb and setting of switch and mini jump

Item	Check point	Adjustment point	Target value	Remarks
Mini jump setting	_____	J1	Sides "2" and "3"	
Mini jump setting	_____	J2	Sides "A" and "C"	
Switch setting	_____	DSW1	0	
Switch setting	_____	DSW2	All OFF	Only bit-1 is ON during line sensor adjustment.
Reference voltage adjustment for D/A converter	TPREF1 - TPAG	VRREF1	+10V±0.03V	
Reference voltage adjustment for A/D converter	TPREF2 - TPAG	VRREF2	+3V±0.03V	



BV CPU PCB

e) Adjustment of line sensor

- Enter in RAS mode and perform the following operation after completing the adjustment of the BV CPU pcb and the settings of switches and mini jump.

① Enter in RAS1-1. (with the DSW2-1 on the BV CPU pcb ON)

R:1	-1	W:A:I:T							

Press the **START/STOP** key.

② Clearing EEPROM

R:1	-1								
		E:E:P:R:O:M:	C:L:E:A:R:						

Blinks while clearing (for about one minute).
Moves automatically to ③ after clearing.

③ Adjustment of D/A

R:1	-1								
		L:E:D:	D:/A	W:A:I:T					



R:1	-1								
		L:E:D:	D:/A				214		

Press the **START/STOP** key to display the initial D/A value, "214."
The D/A value increases by one every time you press the **TOTAL** key.
The D/A value decreases by one every time you press the **CALL** key.

[With a circuit tester connected across the TPLEDV and TPAG, press the **TOTAL** and **CALL** keys to adjust the voltage across them until it falls within $+12.0 \pm 0.05V$, and if it reaches a value within the range then press the **SET** key to write the D/A.]

④ Adjustment of amplifier gain (place a dummy on the sensor)

*1: Toppan's G-80 (Part No. 3900T106)

R:1	-1								
		A:M:P	A/D	W:A:I:T					



R:1	-1								
		A:M:P	A/D				XXX		

Press the **START/STOP** key to display the A/D value of amplifier output.
Adjust the VR1 so that the A/D value falls within 230 ± 2 on the display until it reaches a value within this range, then press the **SET** key to write the value.

⑤ Setting of bit correction value

R:1	-1								
		E:E:P:R:O:M:	W:A:I:T						

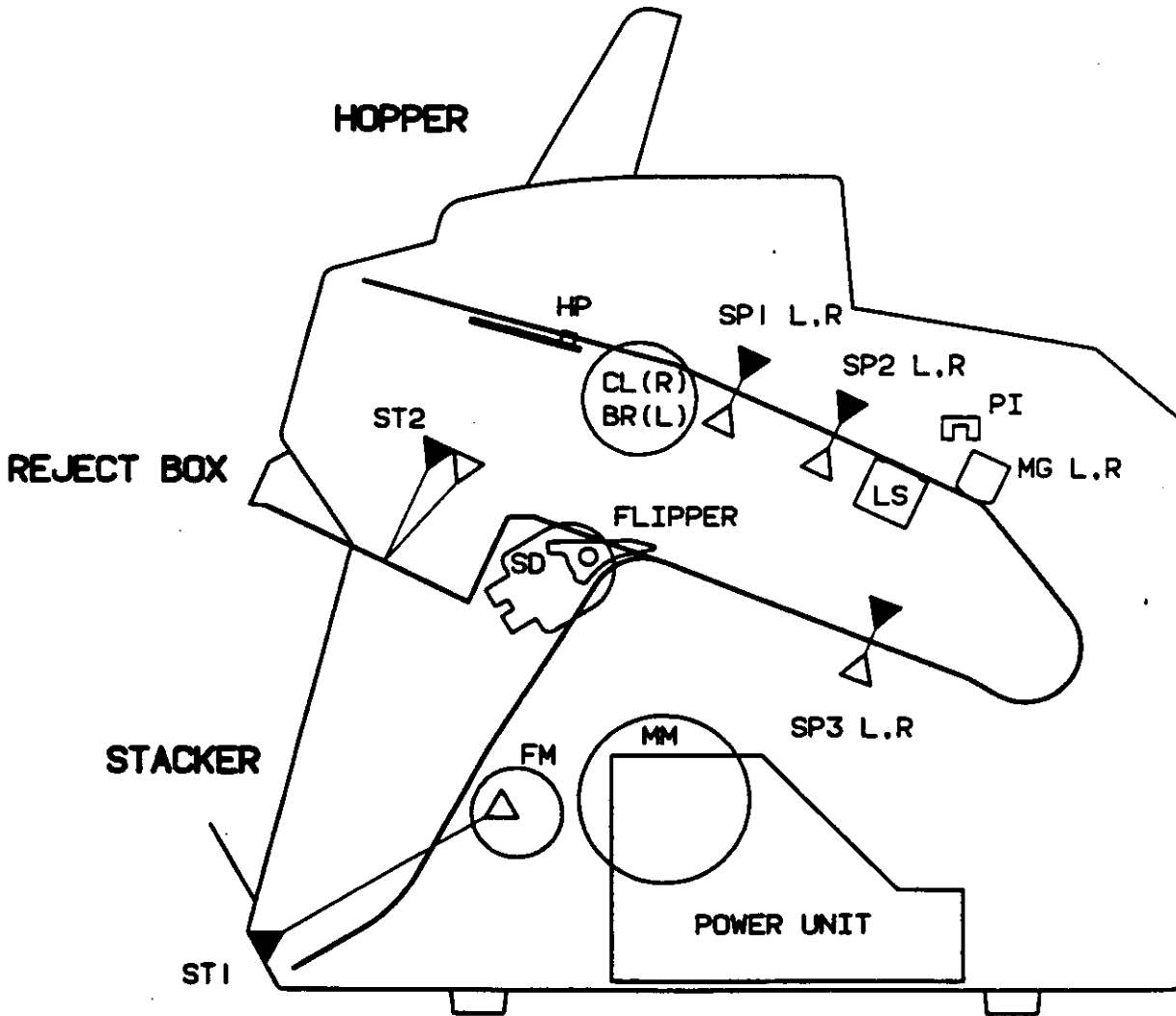
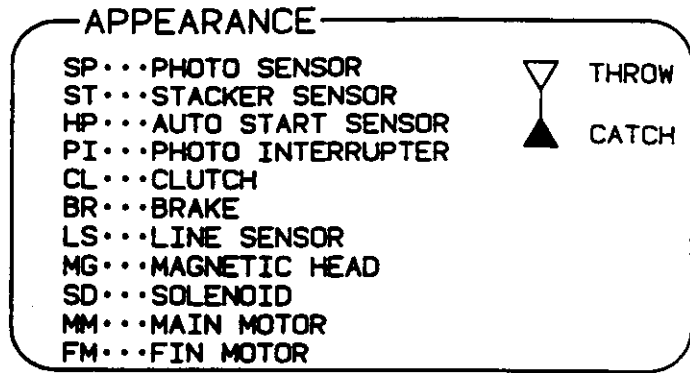
Press the **START/STOP** key, and the display blinks for one minute (automatically under normal conditions).

"WAIT" → "SET" → "END"

(After completing, turn all switches to OFF on DSW2.)

State that a dummy is placed

f) Sensor layout



7. INSTALLING PRINTER I/F KIT AND INTERFACING TO PRINTER AND TERMINAL

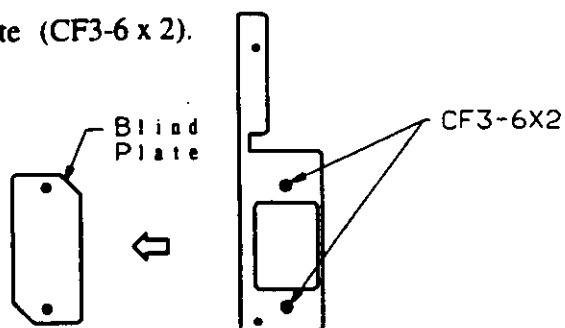
• Interfacing to printer

1) Components to be Mounted

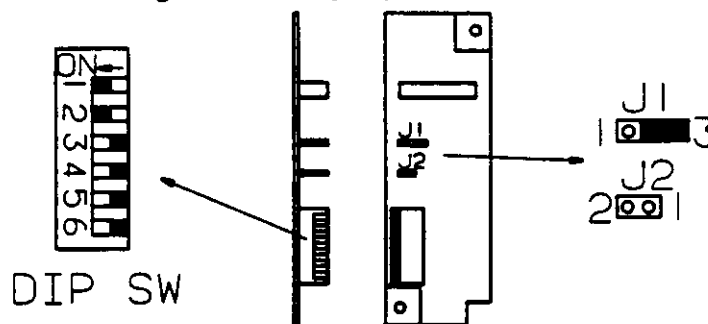
Part No.	Description	Quantity
0290TP220	Printer I/F set	1

2) Installation procedure

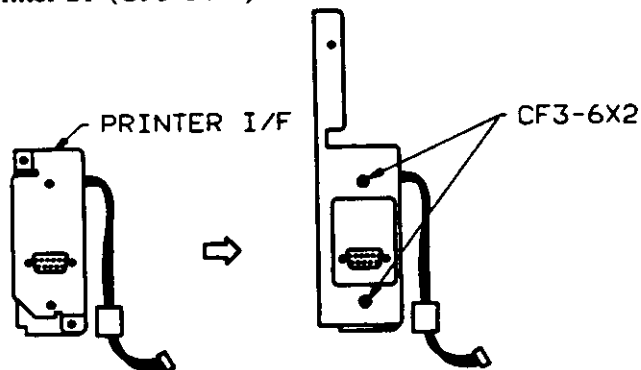
- ① Remove the left cover (CB4-6 x 2, CF4-6 x 2).
- ② Remove the pcb cover (CB3-6 x 2).
- ③ Remove the blind plate (CF3-6 x 2).



- ④ Confirm the settings of the mini jump on the printer I/F set and the DIP SW.



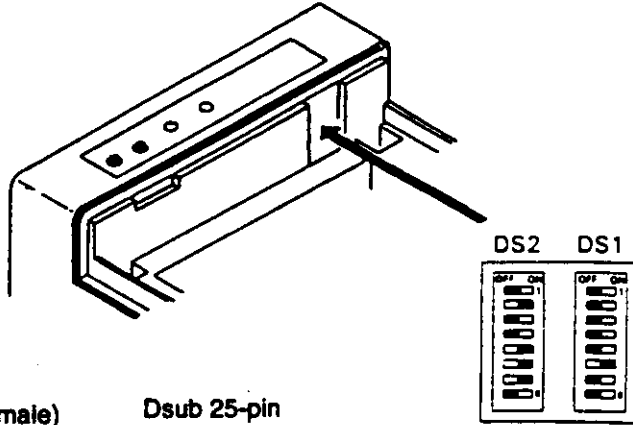
- ⑤ Remove the BV CPU pcb (CRW3-15 x 4).
- ⑥ Install the printer I/F (CF3-6 x 2).



- ⑦ Connect the connector of the printer I/F set to the MCN18 of the MAIN pcb.
- ⑧ Install the BV CPU pcb, pcb cover, and left cover.

3) Setting of Printer DIP SW

Use a printer which is CITIZEN Model IDP3540 or equivalent.



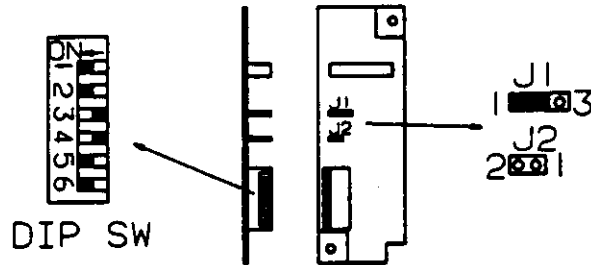
※ Baud Rate setting : 9600

4) Printer Connection Cable

Dsub 9-pin (female) at GFR side		Dsub 25-pin (male)	
FG	1	8	—
T x D	2	3	RD
R x D	3	2	TD
DSR	4	20	DTR
SG	5	7,1	GND
DTR	6	6	—
CTS	7	4	—
RTS	8	5	—
—	9	22	—

• Interfacing to Terminal

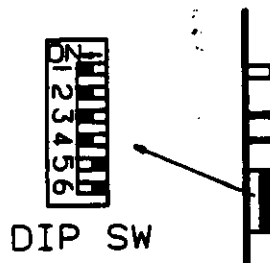
1) Setting Mini Jump and DIP SW with the PC or SR700 series connected



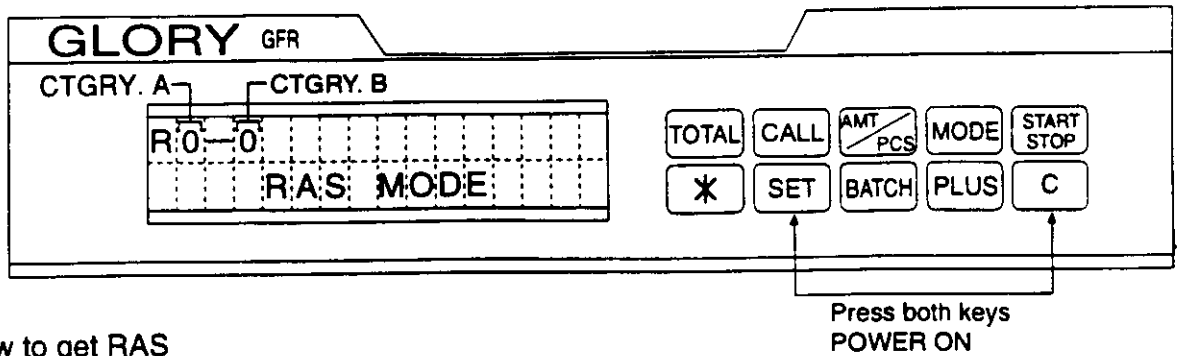
※ Baud Rate setting : 2400

2) Setting DIP SW during communications loop check

• Confirm it with RAS3-2



8. SPECIFICATION OF RAS



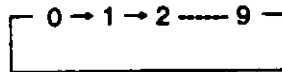
How to get RAS

Power ON pressing **SET** and **C** key.

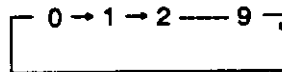
Display is as above.

Explanation of each keys.

- BATCH** Change CTGRY. A and CTGRY. B is changing to "0."



- PLUS** Change CTGRY. B.



- TOTAL** Increase DATA

- CALL** Decrease DATA

- START/STOP** Start RAS mode chosen

RAS ITEMS

CATEGORY A	CONTENTS A	CATEGORY B	CONTENTS B
0	Sensor auto adjustment	1	Sensor auto adjustment
		2	Displaying A/D, D/A value
		3	Displaying ON/OFF condition
1	Line sensor adjustment	1	Line sensor adjustment
		2	Displaying line sensor voltage
2	Factory mode	1	—————
		2	—————
3	Drive function test	1	Drive function moving test
		2	Communication loop check
4	Memory set	1	Fin motor speed adjustment
		2	Factory mode
		3	Setting default value
5	ROM version	1	Displaying model name
		2	Displaying ROM ver.
6	Displaying the logging data	1	Factory mode
		2	Displaying errors in chronological order
		3	Displaying the number of errors by error code
		4	Displaying transaction data
		5	Displaying count data
		6	Displaying user setting data or other data
7	Display check and key check	1	Displaying LCD demo
		2	Displaying LCD demo (Brightness)
		3	Key check
8	Factory mode	1	—————
9	Log data clear	1	Clearing errors in chronological order, error count and transaction data
		2	Factory mode

※ CAUTION
Don't touch factory modes.

0 4/19 227 - 354

CTGRY. A	CTGRY. B	Sensor Auto Adjustment																																																																																							
0	1																																																																																								
Contents	Adjusting sensor voltage automatically.																																																																																								
	<table border="1"> <thead> <tr> <th>Sensor No.</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> <th>6</th> <th>7</th> <th>8</th> <th>9</th> </tr> </thead> <tbody> <tr> <th>Sensor Name</th> <td>HP</td> <td>SP1L</td> <td>SP1R</td> <td>SP2L</td> <td>SP2R</td> <td>SP3L</td> <td>SP3R</td> <td>ST1</td> <td>ST2</td> </tr> </tbody> </table>									Sensor No.	1	2	3	4	5	6	7	8	9	Sensor Name	HP	SP1L	SP1R	SP2L	SP2R	SP3L	SP3R	ST1	ST2																																																												
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4.5
1.5VDC

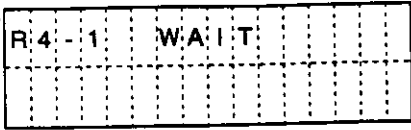
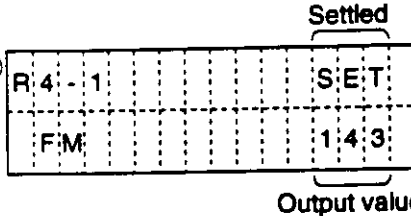
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R:0	-	3																																																				
			W	A	I	T																																																
R:0	-	3																																																				
1	2	3	-	-	7	-	-	A																																														

CTGRY. A	CTGRY. B		
1	1	Line Sensor Adjustment (1/2)	
Contents	<ul style="list-style-type: none"> • Adjusting line sensor ※ No error logging is made. 	(See 5-9-e (P23) Adjustment of line sensor)	
Display	<p>①</p> <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <pre> R:1 -:1 W A I T ----- </pre> </div> <p>②</p> <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <pre> R:1 -:1 ----- E E P R O M C L E A R </pre> </div> <p>③</p> <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <pre> R:1 -:1 ----- L E D D / A W A I T </pre> </div> <p>④</p> <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <pre> R:1 -:1 ----- L E D D / A 2 1 4 </pre> </div>	<ul style="list-style-type: none"> • At the time of startup Press the START/STOP Key to make an adjustment or confirmation. If the adjustment was successful, the display moves to ②, and the adjustment is automatically made. If not, an alarm sounds, notifying the adjustment was invalid. • Clearing EEPROM A message "CLEAR" blinks. ※ It takes time to make an adjustment (for about one minute). When the EEPROM has been cleared normally, the display moves to ③. If an error occurs, the message "CLEAR" changes to "ERR " and the operation ends. • Adjustment of D/A value Press the START/STOP Key, and the display moves to ④, showing the initial D/A value, "214." • Every time the TOTAL key is depressed, the D/A value increases by one. Provided that, when "255" was displayed, it wraps around to "0." Every time the CALL key is depressed, the D/A value decreases by one. Provided that, when "0" was displayed, it wraps around to "255." Press the SET key to establish (write) the D/A value just displayed and the display moves to ⑤. In case of an error, the D/A value is replaced with a message "ERR" and the operation ends. 	

CTGRY. A	CTGRY. B	Drive Function Moving Test						
3	1							
Contents	Checking each driving parts ON or OFF.							
	Item No.	1	2	3	4	5	6	7
	Display	MM	MM+CL	MM+CL+FM	BRAKE	SOLE	SAUTO	BUZ
Part	M. Motor	M. Motor Clutch Fan Motor	M. Motor Clutch FanMotor	Brake	Solenoid ON:Main OFF:RJ	Solenoid Continue	Buzzer	
Display	①	R:3-1: WAIT						
	②	R:3-1: MM OFF						
		Driving part			ON/OFF			
		<ul style="list-style-type: none"> Setting R3-1 and 1 is displayed. Press START/STOP key to start. Display moves to ②. Choosing a part to drive The display shows items from No.1 in order. Every time the TOTAL key is depressed, the item No. is increased and the item is displayed. 						
	<p>Every time the CALL key is depressed, the item No. is decreased and the item is displayed.</p> <p>Press the START/STOP key while the operation is stopped, and the chosen for to be driven is turned ON and the message "OFF" is replaced with "ON."</p> <p>※ The keys BATCH, PLUS, TOTAL, and CALL become non-operable. Press the START/STOP key while the operation is continued, and the chosen part to drive is turned OFF and the message "ON" is replaced with "OFF."</p>							
	Count speed							
	R:3-1: 1830 rpm							
	MM: ON							
	<ul style="list-style-type: none"> Item Nos. 1 and 2 being displayed as ON The display shows the count speed. <p>※ rpm = Number of revolutions/minute (determined by the number of pulses per 600 ms) An encoder of 200pulses/rev is used.</p>							
	R:3-1: DUTY 143							
	MM+CL+FM: OFF							
	<ul style="list-style-type: none"> Item No. 3 being displayed as ON The display shows the duty value of the fin motor. <p>Every time the * key is depressed, the duty value is incremented by one, but when the value becomes 250 then it wraps around to "0."</p> <p>※ The contents in the NVRAM is not changed.</p>							

CTGRY. A	CTGRY. B		
3	2	Communications Loop Check	
Contents	Conducting serial communications loop check.		
Display	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p data-bbox="241 396 680 521">① R:3 - :2 W:A:I:T</p> <p data-bbox="241 573 680 698">② R:3 - :2 L:O:O:P</p> <p data-bbox="241 892 680 1017">③ R:3 - :2 E:N:D O:K</p> <p data-bbox="404 1039 551 1065" style="text-align: center;">Check result</p> </div> <div style="width: 50%;"> <ul style="list-style-type: none"> <li data-bbox="727 396 1323 521">• At the time of startup Press the START/STOP key and the display moves to ②. <li data-bbox="727 573 1323 698">• Checking When the check is completed, the display moves to ③. <li data-bbox="768 750 1323 836">※ The key BATCH and PLUS are regarded to be invalid. <li data-bbox="727 892 1323 978">• Exiting from the check The display shows the check result. <p data-bbox="765 1030 1323 1159">If the check is successful, a message "OK" is displayed. Otherwise, a message "NG" is displayed.</p> <div data-bbox="771 1203 1323 1302" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p style="text-align: center;">Turn ON the DIP switches 1,2,3 and 4 on the Printer I/F pcb.</p> </div> <p data-bbox="768 1353 1229 1388">[See 7 "Interfacing to terminal" 2]]</p> </div> </div>		

CTGRY. A	CTGRY. B	Fin Motor Speed Adjustment	
4	1		
Contents	Setting PWM output value of fin motor		
Display	<p>①</p>  <p>②</p> 		
	<ul style="list-style-type: none"> At the time of startup Press the START/STOP key and the display moves to ②. Setting speed The display shows the output value of the fin motor currently set. Press the TOTAL key and the output value is increased by one, provided that, when the value reaches "200," then it wraps around to "100." The "settled" part on the display goes blank. Press the CALL key and the output value is decreased by one, provided that, when it reaches "100," then it wraps around to "200." The "settled" part on the display goes blank. Press the SET key to write the value, and a message "SET" appears on the "settled" part on the display. The output value on the display is saved. 		

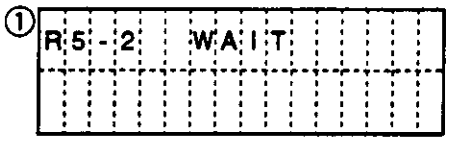
CTGRY. A	CTGRY. B																																																																																																																	
5	1	Displaying Model Name																																																																																																																
Contents	Displaying model name																																																																																																																	
Display	<p data-bbox="467 717 498 761">①</p> <table border="1" data-bbox="498 717 915 847"> <tr> <td>R:5</td> <td>-</td> <td>2</td> <td>W:A</td> <td>I</td> <td>T</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table> <p data-bbox="467 901 498 944">②</p> <table border="1" data-bbox="498 901 915 1030"> <tr> <td>R:5</td> <td>-</td> <td>1</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table> <p data-bbox="655 1052 802 1084" style="text-align: center;">Model Name</p>		R:5	-	2	W:A	I	T																																						R:5	-	1																																																																		<ul style="list-style-type: none"> <li data-bbox="953 707 1539 836">• At the time of start up. Press the START/STOP key to start operation and the display moves to ②. <li data-bbox="953 890 1323 933">• Displaying model name.
R:5	-	2	W:A	I	T																																																																																																													
R:5	-	1																																																																																																																

CTGRY. A	CTGRY. B	Displaying ROM Ver.
5	2	

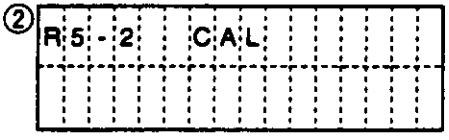
Contents Displaying the version numbers, sum check, and evaluation versions of the main, sum check, and evaluation CPUs.

Display	ROM(A)	ROM(B)	ROM(N)
CPU Name	MAIN CPU	BV CPU	BV CPU

Display

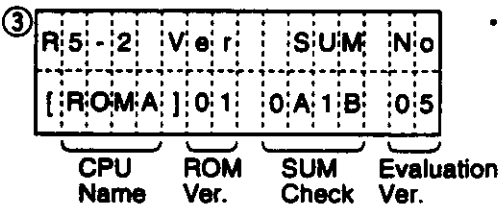


- At the time of startup
Press the **START/STOP** key to start operation and the display moves to ②.



- Calculating sum check value
When the calculation has finished, the display moves to ③.
※ The key **BATCH** and **PLUS** are regarded to be invalid.

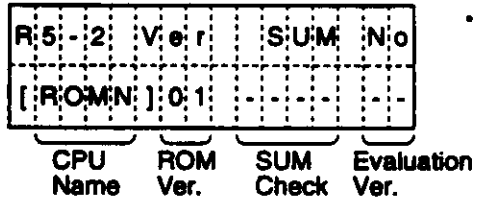
In case of an error, the message "CAL" is replaced with "ERR" and the operation ends.



- Displaying data
Every time the **TOTAL** key is depressed, the display changes in the following sequence:



Every time the **CALL** key is depressed, the display changes in reverse order:



- The ROMN shows the ROM Ver. only.

ROM A
SORT MODE
V 5.0
ROM A
V 2.0 NO SORT MODE

ROMA - BEHIND
01-A286-03
ROMB
09-F860
ROMN
08

CTGRY. A	CTGRY. B	Displaying Errors in Chronological Order																																																																																																																																																																							
6	2																																																																																																																																																																								
Contents	Displaying chronological error data																																																																																																																																																																								
Display	<p>①</p> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr> <td>R:6</td><td>-</td><td>2</td><td>W:A</td><td>T</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </table> <p>• At the time of startup Press the START/STOP key to start operation, and the display moves to ②.</p> <p>②</p> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr> <td>R:6</td><td>-</td><td>2</td><td>D:D</td><td>\$</td><td>5:0</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>[</td><td>1:0</td><td>]</td><td>8:1</td><td>-</td><td>0:1</td><td>-</td><td>0:1</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </table> <p>Counting mode *1 Currency specified</p> <p>Chronological No. Error code Detail code Process code</p> <p>②</p> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr> <td>R:6</td><td>-</td><td>2</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>[</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </table> <p>Counting mode Currency specified</p> <p>Chronological No. Error code Detail code Process code</p> <p>• Displaying chronological error code The code is displayed from the most recent. Every time the TOTAL key is depressed, the data is displayed from more recent one. Every time the CALL key is depressed, the data is displayed from older one. No.1 is newest error as number goes higher to older the error.</p> <p>• Display of no error</p> <p>※1 When there is no currency specified, the display shows "---."</p> <p>※2 There are up to 256 chronological error codes from the oldest "1" to latest "n."</p>			R:6	-	2	W:A	T																																					R:6	-	2	D:D	\$	5:0															[1:0]	8:1	-	0:1	-	0:1																																			R:6	-	2																			[-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-																					
R:6	-	2	W:A	T																																																																																																																																																																					
R:6	-	2	D:D	\$	5:0																																																																																																																																																																				
[1:0]	8:1	-	0:1	-	0:1																																																																																																																																																																		
R:6	-	2																																																																																																																																																																							
[-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-																																																																																																																																																					

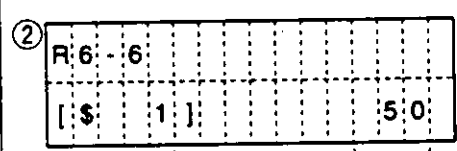
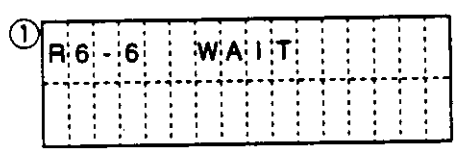
CTGRY. A	CTGRY. B		
6	3	Displaying the Number of Errors by Error Code	
Contents	Displaying count data by error code		
Display	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p data-bbox="235 398 674 528">① R:6-3 WAIT</p> <p data-bbox="235 571 674 786">② R:6-3 [8:0-0:1] 2:5:0 Error code Detail code Number of error occurrences</p> <p data-bbox="266 1088 674 1218">R:6-3 [---:---:---]</p> </div> <div style="width: 50%;"> <ul style="list-style-type: none"> <li data-bbox="721 398 1317 528">• At the time of startup Press the START/STOP key to start operation, and the display moves to ②. <li data-bbox="721 571 1317 1024">• Displaying count data by error code The display shows the smallest error code and the smallest detail code with one or more error occurrences. The data of no error occurrence will not be displayed (skipped). Every time the TOTAL key is depressed, larger detail code is displayed. Every time the CALL key is depressed, smaller detail code is displayed. <li data-bbox="721 1078 1317 1110">• Display of no error </div> </div>		

CTGRY. A	CTGRY. B	Displaying Transaction Data																																																																																																									
6	4																																																																																																										
Contents	Displaying transaction data																																																																																																										
	Item No.		1	2	3	4	5	6	7	8	9	10	11	12																																																																																													
	Number of counted notes	Display	\$1	\$2	\$5	\$10	\$20	\$50	\$100	REV1	REV2	REV3	BVRJ	MNRJ																																																																																													
		Contents	1\$	2\$	5\$	10\$	20\$	50\$	100\$	Spare	Spare	Spare	BVRJ	Main RJ																																																																																													
Item No.		13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29																																																																																									
Number of RJs	Display	FEED	CHAN	SKEW	HALF	LEN	LENE	DATA	BAS	TIME	WID	IMG	PH	SUSP	ORTN	DBL	BV	MNFE																																																																																									
	Contents	Transfer error	Chained notes	Skewing note	Half note	Note length too long	Note length error	Data error	Reference point	TIME OVER	Note width error	Image error	Photo 2 sheets	C.F. note	Orientation	2 denominations passed	BV and others	MN transfer																																																																																									
Item No.		30	31	32	33	34	35	36																																																																																																			
Number of RJs error and its state	Display	DD	MN	ER-1	ER-2	ER-3	ER-4	MCN																																																																																																			
	Contents	Different denomination	MN and others	Error code	Detail code	Process code	Mode denomination	Machine conditions																																																																																																			
Display	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>①</p> <table border="1" style="width: 100%; text-align: center;"> <tr><td>R:6</td><td>-4</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table> </div> <div style="width: 50%;"> <ul style="list-style-type: none"> At the time of startup Press the START/STOP key to start operation, and the display moves to ②. Displaying transaction data The display shows from item No.1 of the latest transaction data. </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 20px;"> <div style="width: 45%;"> <p>②</p> <table border="1" style="width: 100%; text-align: center;"> <tr><td>R:6</td><td>-4</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>[</td><td>3:0</td><td>]</td><td>\$</td><td>1</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table> <div style="display: flex; justify-content: space-around; margin-top: 5px;"> Transact ion No. Item Number of notes or transactions </div> </div> <div style="width: 50%;"> <p>Every time the TOTAL key is depressed, more recent transaction data is displayed, provided that, if the TOTAL key is depressed when the latest transaction data is displayed, it is replaced with the oldest data.</p> <p>On the contrary, every time the CALL key is depressed, older transaction data is displayed, provided that, if the CALL key is depressed when the oldest transaction data is displayed, it is replaced with the latest transaction data.</p> <p>Every time the * key is depressed, the item is updated, provided that, if the key is depressed when the largest item No. is displayed, the display wraps around to item No.1.</p> <p>Pressing either the TOTAL or CALL key will not change the item.</p> <p>※ The contents of characters with hollow item No. is displayed in hexadecimal number.</p> </div> </div>																	R:6	-4																																			R:6	-4																	[3:0]	\$	1																															
	R:6	-4																																																																																																									
R:6	-4																																																																																																										
[3:0]	\$	1																																																																																																							

CTGRY. A	CTGRY. B	Displaying Count Data																																
6	5																																	
Contents	Displaying count data																																	
	Item No.	1	2	3	4	5	6	7																										
	Display	SP2	SP3	REV	MTON	SOL	POFF	CLR																										
	Contents	SP2 counted notes	SP3 counted notes	Spare	Motor ON hour	Number of solenoid ON	Number of power OFF	Cleared log data																										
Display	<p>①</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">R:6</td> <td style="width: 10%;">-5</td> <td style="width: 10%;">W</td> <td style="width: 10%;">A</td> <td style="width: 10%;">I</td> <td style="width: 10%;">T</td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> </tr> </table> <p>②</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">R:6</td> <td style="width: 10%;">-5</td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> </tr> <tr> <td style="width: 10%;">[</td> <td style="width: 10%;">S</td> <td style="width: 10%;">P</td> <td style="width: 10%;">2</td> <td style="width: 10%;">]</td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;">0</td> <td style="width: 10%;">0</td> </tr> </table> <p style="margin-left: 20px;"> Item No. Counted pcs. </p>							R:6	-5	W	A	I	T				R:6	-5								[S	P	2]			0	0
R:6	-5	W	A	I	T																													
R:6	-5																																	
[S	P	2]			0	0																										
	<ul style="list-style-type: none"> At the time of startup Press the START/STOP key to start operation, and the display moves to ②. Displaying count data The display shows the contents from item No.1. <p>Every time the TOTAL key is depressed, the item No. is increased by one.</p> <p>On the contrary, every time the CALL key is depressed, the display shows the item No. is decreased by one.</p>																																	

CTGRY. A	CTGRY. B	Displaying User Setting Data or Other Data (1/1)																																																																														
6	6																																																																															
Contents	Displaying user-defined data and others																																																																															
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Display



- At the time of startup
Press the **START/STOP** key to start operation, and the display moves to ②.

- Displaying user-defined data and others
The display shows the data from item No. 1.

Every time the **TOTAL** key is depressed item No. is increased by one.

CTGRY. A	CTGRY. B	
6	6	Displaying User Setting Data or Other Data (1/2)
		<p data-bbox="765 383 1324 470">Every time the CALL key is depressed item No. is decreased by one.</p> <p data-bbox="765 523 1324 653">※ The contents of characters with hollow item No. is displayed in hexadecimal number.</p>

CTGRY. A	CTGRY. B	Displaying LCD Demo																
7	1																	
Contents	Displaying LCD demonstration																	
	Displaying LCD demonstration	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	■
Display	<p>①</p> <p>②</p>	<ul style="list-style-type: none"> At the time of startup Press the START/STOP key to start operation, and the display moves to ②. Displaying LCD demonstration All the displayed figures change in this sequence every one second and finally the display returns to ①: 0 → blank → 1 → blank → 2 → blank → F → blank → ■ <p>Every time the START/STOP key is depressed, the display changes the message from PAUSE to DISPLAY, or vice versa.</p>																
CTGRY. A	CTGRY. B	Displaying LCD Demo (Brightness)																
7	2																	
Contents	Displaying LCD demonstration (brightness)																	
Display	<p>①</p> <p>②</p>	<ul style="list-style-type: none"> At the time of startup Press the START/STOP key to start operation, and the display moves to ②. Displaying LCD demonstration The brightness of LCD is displayed with the default value ④, and the lower part of the display is filled with this number. <p>Every time the TOTAL key is depressed, the brightness changes in this order:</p> <p style="text-align: center;">→ 0 → 1 → ... 8 →</p> <p>On the contrary, every time the CALL key is depressed, the brightness changes in reverse order:</p> <p style="text-align: center;">→ 8 → 7 → ... 0 →</p> <p>※ These key operations will not change the contents of the NVARM.</p>																

CTGRY. A	CTGRY. B						
7	3	Key Check					
Contents	This function checks the key functions						
		Display	T	C	A	M	S
Upper row	Key	TOTAL	CALL	AMT/PCS	MODE	START/STOP	
		Display	*	S	B	P	C
Lower row	Key	*	SET	BATCH	PLUS	C	
Display	<p data-bbox="221 793 675 929">① R:7 3 WAIT</p> <p data-bbox="221 972 675 1108">② R:7 3 T:CAM'S [KEY CHK] *S:BP:C</p> <ul data-bbox="718 793 1315 1203" style="list-style-type: none"> • At the time of startup Press the START/STOP key to start operation, and the display moves to ②. • Checking keys While any key is being depressed, respective character changes to "blank," provided that by depressing the C key the display returns to ①. 						

CTGRY. A	CTGRY. B	
9	1	Clearing Errors in Chronological Order, Error Count, and Transaction Data
Contents	This function clears all the chronological error data, error count, and transaction data to zero.	
Display	<div style="display: flex; justify-content: space-between;"> <div style="width: 60%;"> <p data-bbox="467 448 906 577">① R:9--1 WAIT</p> <p data-bbox="467 627 906 756">② R:9--1 DATA CLEAR? Y-CLEAR N-START</p> <p data-bbox="467 993 906 1123">③ R:9--1 DATA CLEAR END</p> </div> <div style="width: 35%;"> <ul style="list-style-type: none"> <li data-bbox="953 448 1541 577">• At the time of startup Press the START/STOP key to start operation, and the display moves to ②. <li data-bbox="953 627 1541 929">• Confirming that the data have been cleared Press the START/STOP key, and the display moves back to ① without clearing the data. Press the C key to clear the data, and the display moves to ③. <li data-bbox="953 993 1541 1026">• The data clear has been completed. </div> </div>	

9. TROUBLE SHOOTING

1) Specification of reject

With the R6-4 in RAS mode, you may check all the causes of rejected note.

Reject code	Contents	The way of detection	Possible causes	Remedies
FEED	BV transfer error	Abnormal close transfer	a. Improper gate adjustment (gate too wide). b. Foreign material stuck in the transfer path.	Use paper thickness adjustment screw to adjust the gate opening (see 5-3). Check the transfer path.
MNFE	Main transfer error	Same as "0200" error in the Specification of Error (see 10-3.)	a. Improper gate adjustment (gate too wide). b. Foreign material stuck in lower transfer path.	Use a paper thickness adjustment screw to adjust the gate opening (see 5-3). Check the lower transfer path.
CHAIN	Chained notes	Distance between notes being transferred is 80mm or less.	a. Incorrect gate adjustment (gate too wide or too narrow).	Use a paper thickness adjustment screw to adjust the gate opening (see 5-3).
SKEW	Skewed notes	Skew angle of 10° to 15° or more (When skew angle is within 10°~15°, IMG, and reject, SKEW is recorded.)	a. Notes being fed in skew angles. b. Damaged and folded notes included in the notes to be counted.	Readjust the gaps at both sides of the gate (see 6-1). Remove the damaged and folded notes and restart counting.
HALF	Half notes	Counted notes didn't pass through either of SP2L or SP2R.	Damaged and folded notes included in the notes to be counted.	Remove the damaged and folded notes and restart counting.
LEN	Note length too long	Both sides exceeding the reference value (reference value: 51 ~71 mm, 112 ~ 142 pulses)	Improper gate adjustment (gate too wide or too narrow).	Use a paper thickness adjustment screw to adjust the gate opening.
LENE	Length error	Both sides below the reference value or values for both sides mismatch	Damaged and folded notes included in the notes to be counted.	Remove the damaged and folded notes and restart counting.
DATA	Data error	· Data sampling of line sensor · Not performed normally	a. Dust on the encoder sensor. b. Defective BV CPU pcb.	Check and clean the encoder sensor. Replace it with new one.
BAS	Basic point error	Data sampling of the line sensor not performed normally or longitudinal width of notes more than 190mm	a. Bad condition and setting of notes. b. Defective BV CPU pcb.	Reset the notes correctly. Replace it with new one.
TIME	Time over	BV CPU pcb not completed at the time of allotted by MAIN pcb reading if note by.	a. Damaged and folded notes included in the notes to be counted. b. Defective BV CPU pcb.	Remove the damaged and folded notes and restart counting. Replace it with new one.
WID	Width error	Longitudinal width of notes below the range from 140 ~ 161mm	a. Damaged and folded notes included in the notes to be counted. b. Improper adjustment of Line sensor. c. Defective BV CPU pcb.	Remove the damaged and folded notes and restart counting. Readjust the line sensor (see 6-9-c). Replace it with new one.

Reject code	Contents	The way of detection	Possible causes	Remedies
IMG	Image error	The reading of the type of denomination.	a. Damaged and folded notes included in the notes to be counted. b. Improper adjustment of line sensor. c. Defective BV CPU pcb.	Remove the damaged and folded notes and restart counting. Readjust the line sensor (see 6-9-e). Replace it with new one.
PH	Photo two sheet detection error	Transparent light level passing through notes at SP2L and R, less than that for one single note	d. Dust, paper, etc. Stuck in the sensor. a. Improper gate adjustment (gate too wide). b. Inappropriate evaluation value of two notes detection.	Check and clean the line sensor. Use a paper thickness adjustment screw to adjust the gate opening. Set it in user RAS, corresponding to the number of notes.
SUSP	Counterfeit notes	Insufficient amount of magnetic ink or normal notes read around the area of note with no magnetic ink.	a. Damaged and folded notes included in the notes to be counted. b. Improper evaluation value of false note detection.	Remove the damaged and folded notes and restart counting. Set it in user RAS, corresponding to the number of notes.
DBL	Two kinds of denomination recognized	In reading of type of denomination, two denominations (\$10 or below) in two directions (\$20 or below) accepted.	c. Disconnected connector. d. Defective BV CPU pcb.	Check the connector for its connection (ACN3, ACN4). Replace it with new one.
BV	BV other error	Face-down notes accepted in evaluation.	a. Damaged and folded notes included in the notes to be counted. b. Improper adjustment of line sensor. c. Defective BV CPU pcb.	Remove the damaged and folded notes and restart counting. Readjust the line sensor (see 6 - 9 - e). Replace it with new one.
DD	Different denomination error	In D.D. mode, machine reads notes as other denomination.	a. Face-down notes included in the counted notes. b. Improper adjustment of Line sensor. c. Defective BV CPU pcb.	Set them again. Readjust the line sensor (see 6 - 9 - e). Replace it with new one.
MN	MN and others	Over count or batch.	a. Improper adjustment of Line sensor. b. Defective BV CPU pcb. a. Improper gate adjustment (gate too wide). b. Damaged and folded notes included in the counted notes.	Readjust the line sensor (see 6 - 9 - e). Replace it with new one. Use a paper thickness adjustment screw to adjust the gate opening (see 5 - 3). Remove the damaged and folded notes and restart counting.

★ Priorities of reject codes (Where two or more reject codes are found, the one with higher priority is recorded.) This list shows priorities from lower to higher.

- | | | | | | | | | |
|----------|---------|---------|----------|---------|---------|----------|--------|---------|
| 1. FEBED | 2. CHAN | 3. SKEW | 4. HALF | 5. LEN | 6. LENE | 7. DATA | 8. BAS | 9. TIME |
| 10. WID | 11. IMG | 12. PH | 13. SUSP | 14. DBL | 15. BV | 16. MNFE | 17. DF | 18. MN |

2) Specification of guidance

Guidance	Contents	The way of detection	Possible causes	Remedies
CHK. ST	Notes remaining in stacker	Difference of A/D values at the time of D/A '00' H output and at the time of D/A latest adjustment value output: 0.75V or below.	a. Disconnected connector. b. Dust, paper rag, etc. stuck in the sensor. c. Defective sensor. d. Defective MAIN pcb.	Check the connector for its connection (MCN15, MCN 23). Check and clean the sensor. Replace the sensor with new one. Replace the MAIN pcb with new one.
CHK. RJ	Notes remaining in reject pocket	Difference of A/D values at the time of D/A '00' H output and at the time of D/A latest adjustment value output: 0.9V or below.	a. Disconnected connector. b. Dust, paper rag, etc. stuck in the sensor and reject plate. c. Defective sensor. d. Defective MAIN pcb.	Check the connector for its connection (MCN15, MCN 23). Check and clean the sensor and reject plate. Replace the sensor with new one. Replace the MAIN pcb with new one.
ST. FLL	Stacker full	When there are 200 notes in stacker if batch is not set.	• Causes similar to CHK.ST.	• Remedies similar to CHK.ST.
RJ. FLL	Display of reject stacker full	When there are 20~22 notes in reject pocket.	• Causes similar to CHK.RJ.	• Remedies similar to CHK.RJ.
CHK. HP	Display of defective feed	① First note • Any note has not reached the SP2 sensor in one second after the main motor is turned on. ② Second note and after • In the case of HP sensor blocked, and note has not reached the SP2 in one second after the previous note passed the SP2. • In the case of HP sensor blocked, and note has not reached the SP2 even 0.5 seconds after the previous note passed the SP2.	a. Notes not set on hopper.	Set the notes again.
			b. Disconnected connector between MAIN pcb and clutch.	Check the connector for connection (MCN11, MCN22).
			c. Defective clutch.	Replace the clutch with new one.
			d. Improper gate adjustment (gate no narrow).	Use paper thickness adjustment screw to adjust the gate opening.
			e. Improper HP1 sensor adjustment.	After cleaning, readjust the sensor (using RAS).
			f. Defective MAIN pcb.	Replace the MAIN pcb with new one.

Guidance	Description of guidance	The way of detection	Possible causes	Remedies
CL. SNR	Something blocking sensor	<ul style="list-style-type: none"> • HPI Difference (C) of A/D values at the time of D/A '00' H output and at the time of D/A 'FF' H output: Within the range of $2 \times S > C \geq 1.7 \times S$ * S is a difference between D/A values at the time of D/A '00' H output and at the time of D/A 'FF' H output. • SP1, 2, and 3 After the sensor adjustment, D/A becomes 'FF' H. • ST1 After the sensor adjustment, D/A becomes 'FF' H, and the A/D at this moment is within the range: $1.3V > A/D \text{ value} > 0.75V$ • ST2 After the sensor adjustment, D/A becomes 'FF' H, and the A/D at this moment is within the range: $1.3V > A/D \text{ value} > 0.9V$ 	<ul style="list-style-type: none"> • Dust stuck the sensors: HPI, SP1, SP2, SP3, and ST1 Check and clean the sensors. • ST2 Dust, paper, etc. stuck the sensor and reject plate Check and clean the sensor and reject plate. 	<ul style="list-style-type: none"> • Check and clean sensor. • Check and clean the sensor and reject plate.
SUSP	Suspected note counted	During counting, counterfeit note detected.	<ol style="list-style-type: none"> Damaged and folded notes included in the counted notes. Improper reading value or suspect note detected. Disconnected connector. Defective MG AMP pcb. 	<ul style="list-style-type: none"> Remove the damaged and folded notes and restart counting. Set it in user RAS, corresponding to the number of notes. Check the connector for its connection (ACN3, ACN4). Replace it with new one.
RJ	Notes are in the reject pocket		<ol style="list-style-type: none"> Disconnected connector. Dust, paper bag stuck on sensor and reject plate. Defective sensor. Defective main pcb. 	<ul style="list-style-type: none"> Check connector (MCN 15, MCN 23). Check and clean sensor. Change sensor. Replace main pcb.
CHK. PR	Printer error	Failed to make interfacing with a printer.	<ol style="list-style-type: none"> Disconnected connector. Wrong settings of switches on the printer I/F pcb. Defective printer I/F pcb. Defective MAIN pcb. 	<ul style="list-style-type: none"> Check the connector for its connection (MCN15, MCN23). Check the switches and set them again where necessary. Replace the printer I/F pcb with new one. Replace the MAIN pcb with new one.

3) Specification of error

Error code	Error name	Detail code	Detailed description	The way of detection	Possible causes	Remedies
01	Defective feed	00		<ol style="list-style-type: none"> 1. First note Note does not reach SP2 sensor in one second after the feed motor is turned ON. 2. Second note and after <ul style="list-style-type: none"> • Timer set only when notes are on the hopper. • Timer decrement by 10ms timer interrupt. <p>※ Nothing but error log is displayed.</p>	<ol style="list-style-type: none"> a. Notes not set correctly on the hopper. b. Disconnected connector between the MAIN pcb and clutch. c. Defective clutch. d. Improper gate adjustment (gate too narrow). e. Incorrect adjustment of HPI sensor. f. Defective MAIN pcb. 	<p>Reset the notes.</p> <p>Check the connector (MCN11, MCN22).</p> <p>Replace the clutch with new one.</p> <p>Use paper thickness adjustment screw to adjust the gate.</p> <p>After cleaning, readjust the sensor (using RAS).</p> <p>Replace the MAIN pcb with new one.</p>
02	Defective transfer	00		<p>Abnormal transfer condition (skew, chain, etc...) or not readable by software.</p> <ul style="list-style-type: none"> • When a note exits from the SP1, both sides of the SP2 are transparent (possibly half note). • When the note has reached the SP2, sampling of photo two sheet data of the previous note has not finished. • When the note has reached the SP2, sampling of magnetic data of the previous note has not finished. • When the note has reached the SP3, sampling of the previous note has not finished. • When the note is to be read, no ID data is available from BV. • When the sampling of magnetic data of the note has finished, the ID side of magnetic data of the previous note has not been read. • When the note is to be read, it is found that the note is abnormal. <p>※ Nothing but error log is displayed.</p>	<ol style="list-style-type: none"> a. Improper gate adjustment (gate too wide). b. Damaged and folded notes included in the notes to be counted. c. Wrong adjustment of sensors: SP1, SP2, and SP3. 	<p>Use a paper thickness adjustment screw to adjust the gate opening.</p> <p>Remove the damaged and folded notes and restart counting.</p> <p>After cleaning, readjust the sensors (using RAS).</p>
03	HP sensor down	00	HP sensor adjustment error		<ol style="list-style-type: none"> a. Disconnected connector. b. Defective HPI sensor. c. Defective MAIN pcb. 	<p>Check the connector for its connection (MCN9).</p> <p>Replace the sensor with new one.</p> <p>Repalce the MAIN pcb with new one.</p>

Error code	Error name	Detail code	Detailed description	The way of detection	Possible causes	Remedies
04	SPIL sensor down	01	SPIL sensor OFF check error	After the output of the D/A value "00" of the light emitting sensor, of light receiving sensor is in note blocked (check 30 seconds after the D/A output). • Not used.	a. Defective sensor. b. Defective MAIN pcb.	Replace the sensor with new one. Replace the MAIN pcb with new one.
		02	SPIL sensor ON check error [common to both 03 and 04]	In sensor ON check, adjust the voltage so that it becomes $3.7V \pm 0.2V$ for transparent light. Even when the D/A output value reaches the lower limit (00H), A/D input value is out of setting range.	a. Defective sensor.	Replace the sensor with new one.
		03	SPIL sensor adjustment, lower limit error		b. Defective MAIN pcb.	Replace the MAIN pcb with new one.
		04	SPIL sensor adjustment, upper limit error	Even when the D/A output value reaches the upper limit (FFH), the A/D input value is out of the setting range the sensor is blocked.	a. Upper cover open. b. Disconnected connector. c. Defective sensor. d. Defective MAIN pcb.	Close the upper cover. Check the connector for its connection (MCN3, MCN4). Replace the sensor with new one. Replace the MAIN pcb with new one.
05	SPIR sensor down	01	SPIR sensor OFF check error	• Method of detection, similar to 0401 error.	a. Defective sensor.	Replace the sensor with new one.
		02	SPIR sensor ON check error	• Not used.	b. Defective MAIN pcb.	Replace the MAIN pcb with new one.
		03	SPIR sensor adjustment, lower limit error	• Method of detection, similar to 0403 error.	a. Defective sensor. b. Defective MAIN pcb.	Replace the sensor with new one. Replace the MAIN pcb with new one.
		04	SPIR sensor adjustment, upper limit error	• Method of detection, similar to 0404 error.	a. Upper cover open. b. Disconnected connector. c. Defective sensor. d. Defective MAIN pcb.	Close the upper cover. Check the connector for its connection (MCN3, MCN4). Replace the sensor with new one. Replace the MAIN pcb with new one.
08	HP sensor cleaning	00		Difference (C) of A/D values at the time of D/A '00' H output and at the time of D/A 'FF' H output: Within the range of $2 \times S > C > = 1.7 \times S$ * S is a difference between D/A values at the time of D/A '00' H output and at the time of D/A 'FF' H output.	Dust, paper rag, etc. stuck in the sensor.	Check and clean the sensors.
09	SP1 sensor cleaning	01	SP1L sensor cleaning	After the sensor adjustment, D/A becomes "FFH."	Dust, paper rag, etc. stuck in the sensor.	Check and clean the sensors.
		02	SP1R sensor cleaning	• Method of detection, similar to 0901 error.	Dust, paper rag, etc. stuck in the sensor.	Check and clean the sensors.

Error code	Error name	Detail code	Detailed description	The way of detection	Possible causes	Remedies
10	SP2L	01	SP2L sensor OFF check error.	• Similar to 0401 error.	a. Defective sensor. b. Defective MG AMP pcb. c. Defective MAIN pcb.	Replace the sensor with new one. Replace the MG AMP with new one. Replace the MAIN pcb with new one.
		02	SP2L sensor ON check error.	• After the output light emitting sensor with previous D/A value, the light emitting sensor is in light block state.	a. Upper cover open. b. Dust, paper, etc. stuck in the sensor. c. Disconnected connector. d. Defective sensor. e. Defective MG AMP pcb. f. Defective MAIN pcb.	Close the upper cover. Check and clean the sensor. Check the connector for its connection (MCN2, MCN3, ACN1, ACN2). Replace the sensor with new one. Replace the MG AMP pcb with new one. Replace the MAIN pcb with new one.
		03	[common to both 03 and 04]. SP2L sensor adjustment, lower limit error.	After sensor ON check, adjust the voltage so that it becomes $3V \pm 0.2V$ for unblocked sensor. • Similar to 0403 error.	a. Defective sensor. b. Defective MG AMP pcb. c. Defective MAIN pcb.	Replace the sensor with new one. Replace the MG AMP pcb with new one. Replace the MAIN pcb with new one.
		04	SP2L sensor adjustment, upper limit error.	• Similar to 0404 error.	• Similar to 1002 error.	• Similar to 1002 error.
		01	SP2R sensor OFF check error.	• Similar to 0401 error.	• Similar to 1001 error.	• Similar to 1001 error.
		02	SP2R sensor ON check error.	• Similar to 1002 error.	• Similar to 1002 error.	• Similar to 1002 error.
11	SP2R sensor down	03	[common to both 03 and 04]. SP2R sensor adjustment, lower limit error.	After sensor ON check, adjust the voltage so that it becomes $3V \pm 0.2V$ for unblocked sensor. • Similar to 0403 error.	• Similar to 1003 error.	• Similar to 1003 error.
		04	SP2R sensor adjustment, upper limit error.	• Similar to 0404 error.	• Similar to 1004 error.	• Similar to 1004 error.

Error code	Error name	Detail code	Detailed description	The way of detection	Possible causes	Remedies
13	Jamming on SP2 sensor	00		During counting, the SP2 sensor is brocked for more than the set time. [Set time]	a. Damaged note included in the notes to be counted. b. Foreign matters stuck in the transfer path.	Remove the damaged notes and restart counting. Check and inspect the transfer path.
15	Jamming between SP2 and flipper	00		Note has not reached within the set time of the timing between the SP2 and flipper. [Set time] Distance 229.0mm (in the case of division timing 17.5mm) 800msec (theoretical value 76.5ms)	• Similar to 1300 error.	• Similar to 1300 error.
22	E2PROM error	00			a. Line sensor not adjusted. b. Defective BV CPU pcb.	Adjust the line sensor (see 6 - 9 - e). Replace the BV CPU with new one.
23	LSR set error	00		Line sensor adjustment completion flag has not been set in E2PROM.	• Similar to 2200 error.	• Similar to 2200 error.
25	Scanning error	00		No DLI interrupt generated in the line sensor control circuit.	Defective BV CPU pcb.	Replace the BV CPU pcb with new one.
26	LSR sensor error	00		No adjustment can be made even when the number of feedbacks for the line sensor has reached 20 times.	a. Disconnected connector. b. Wrong adjustment of line sensor. c. Defective line sensor. d. Defective BV CPU.	Check the connector for its connection (VCN2). Readjust the line sensor (see 6 - 9 - e). Replace the line sensor with new one (see 5 - 8). Replace the BV CPU with new one.
27	LSR level error	00			a. Foreign matter such as dust, paper, etc. stuck in the line sensor. b. Wrong adjustment of line sensor. c. Defective line sensor.	Check and clean the line sensor. Readjust the line sensor (see 6 - 9 - e). Replace the line sensor with new one (see 5 - 8).

Error code	Error name	Detail code	Detailed description	The way of detection	Possible causes	Remedies
28	Abnormal LBSY signal	00			Defective BV CPU pcb.	Replace the BV CPU pcb with new one.
29	Abnormal BLE signal	00		Malfunction of line sensor control circuit.	Defective BV CPU pcb.	Replace the BV CPU pcb with new one.
30	Communications error from BV to MAIN	00		No response received from the BV CPU pcb against a command of MAIN pcb within specified time.	a. Disconnected connector.	Check the connector for its connection (VCNI).
					b. Defective BV CPU pcb.	Replace the BV CPU pcb with new one.
					c. Defective MAIN pcb.	Replace the MAIN pcb with new one.
31	Communications error from BV to MAIN Response mismatch	01 02 03	Command response mismatch. Response data not defined. Abnormal BV command.	Command transmitted from the MAIN pcb and command received by the BV CPU mismatch. No response data from BC CPU defined.	• Similar to 3000 error.	• Similar to 3000 error.
					• Similar to 3000 error.	• Similar to 3000 error.
					• Similar to 3000 error.	• Similar to 3000 error.
32	Communications error from BV to main → Data mismatch	00		ID data in the double buffers mismatch.	• Similar to 3000 error.	• Similar to 3000 error.
33	Communications error from BV to main → Parity error	00			• Similar to 3000 error.	• Similar to 3000 error.
34	Communications error from BV to main → Sense error	00		When the MAIN pcb reads the sense counter at BV CPU pcb, the value does not change for 300 msec.	• Similar to 3000 error.	• Similar to 3000 error.

Error code	Error name41	Detail code	Detailed description	The way of detection	Possible causes	Remedies	
35	Communications error from BV to MIAN Abnormal denomination	00	_____	Denomination type code "0", although the evaluation result of ID data is normal.	• Similar to 3000 error.	• Similar to 3000 error.	
36	Communications error from BV to MAIN Abnormal false note code	00	_____	Reject code implies false note, but no false code exists.	• Similar to 3000 error.	• Similar to 3000 error.	
40	SP3L sensor down	01	SP3L sensor OFF check error.	• Similar to 0401 error.	a. Defective sensor. b. Defective MAIN pcb.	Replace the sensor with new one. Replace the MAIN pcb with new one.	
		02	SP3L sensor ON check error.	• Similar to 1002 error.	a. Foreign matter such as dust, paper, etc. stuck in the sensor. b. Defective sensor. c. Disconnected connector. d. Defective MAIN pcb.	Check and clean the sensor. Replace the sensor with new one. Check the connector for its connection. Replace the MAIN pcb with new one.	
					e. Lower open/close guide not closed.	Confirm that the lower open/close guide is firmly closed.	
					f. Lower transfer path not closed.	Confirm that the lower transfer path is firmly closed.	
						a. Defective sensor. b. Defective MAIN pcb.	Replace the sensor with new one. Replace the MAIN pcb with new one.
						• Similar to 4002 error.	• Similar to 4002 error.
41	SP3R sensor down	01	SP3R sensor off check error.	• Similar to 0401 error.	• Similar to 4001 error.	• Similar to 4001 error.	
		02	SP3R sensor ON check error.	• Similar to 1002 error.	• Similar to 4002 error.	• Similar to 4002 error.	
		03	SP3R sensor adjustment, error.	• Similar to 0403 error.	• Similar to 4003 error.	• Similar to 4003 error.	
		04	SP3R sensor adjustment, upper limit error.	• Similar to 0404 error.	• Similar to 4004 error.	• Similar to 4004 error.	

Error code	Error name	Detail code	Detailed description	The way of detection	Possible causes	Remedies
43	Jamming on SP3 sensor	00		During counting, the SP3 sensor is in light blocking state for more than set time. [Set time] 100 msec	a. Damaged notes included in the notes to be counted. b. Foreign matters stuck in the lower transfer path.	Remove the damaged notes and restart counting. Check the lower transfer path.
50	ST1 sensor down (long distance)	01	Abnormal sensor voltage level.	During D/A "0" output, A/D input value is 4.5V or above.	a. Defective sensor. b. Defective MAIN pcb.	Replace the sensor with new one. Replace the MAIN pcb with new one.
			[common to both 02 and 03].			
		02	Sensor adjustment, lower limit error.		• Similar to 5001 error.	• Similar to 5001 error.
		03	Sensor adjustment, upper limit error.		a. Disconnected connector. b. Defective sensor. c. Defective MAIN pcb.	Check the connector for its connection (MCN15, MCN23). Replace the sensor with new one. Replace the MAIN pcb with new one.
		04	Sensor adjustment error.		• Similar to 5001 error.	• Similar to 5001 error.

Error code	Error name	Detail code	Detailed description	The way of detection	Possible causes	Remedies
51	ST2 sensor down, long distance, reflection	01	Abnormal sensor voltage level.	• Similar to 5001 error.	• Similar to 5001 error.	• Similar to 5001 error.
		02	Sensor adjustment, lower limit error.	• Similar to 5002 error.	• Similar to 5002 error.	• Similar to 5002 error.
		03	Sensor adjustment, upper limit error.	• Similar to 5003 error.	a. Disconnected connector.	Check the connector for its connection (MCN8).
				b. Defective sensor.	Replace the sensor with new one.	
57	Motor rpm error.	04	Sensor adjustment error.	• Similar to 5004 error.	• Similar to 5001 error.	• Similar to 5001 error.
		01	Too small number of revolutions.	500msec after the transfer motor is turned ON, checking is started. If motor doesn't start for 200 msec out of range. After stires this is considered on error.	a. Disconnected connector.	Check the connector for its connection (MCN11, FCN1, FCN2, MCN5).
				b. Abnormality in the encoder or photo interrupter.	Check the encoder board and photo interrupter, and replace them with new one when necessary.	
				c. Defective motor.	Replace the motor with new one (see 5-12).	
59	Short distance sensor cleaning	02	Excess number of revolutions.	d. Defective MAIN pcb.	Replace the MAIN pcb with new one.	
				• Similar to 5701 error.	a. Disconnected connector.	Check the connector for its connection (MCN11, FCN1, FCN2, MCN5).
				• Similar to 0901 error.	b. Abnormality in the encoder or photo interrupter.	Check the encoder board and photo interrupter, and replace them with new one when necessary.
				• Similar to 0901 error.	c. Defective MAIN pcb.	Replace the MAIN pcb with new one.
59	Short distance sensor cleaning	01	SP2L sensor cleaning.	• Similar to 0901 error.	• Similar to 0901 error.	• Similar to 0901 error.
		02	SP2R sensor cleaning.	• Similar to 0901 error.	• Similar to 0901 error.	• Similar to 0901 error.

Error code	Error name	Detail code	Detailed description	The way of detection	Possible causes	Remedies
59	Short distance sensor cleaning	03	SP3L sensor cleaning.	Similar to 0901 error.	Similar to 0901 error.	Similar to 0901 error.
		04	SP3R sensor cleaning.	Similar to 0901 error.	Similar to 0901 error.	Similar to 0901 error.
60	Power failure during counting	00	_____	Power is turned OFF during counting.	<ul style="list-style-type: none"> a. Abnormalities in wiring between the inlet and power supply, and between the power supply and the MAIN pcb. b. Defective power supply. c. Defective MAIN pcb. 	<ul style="list-style-type: none"> Check the wiring and replace with new one when necessary. Replace the power supply unit with new one. Replace the MAIN pcb with new one.
				* Nothing but error log is displayed.		
61	Abnormal counting Total number of notes mismatch	01	MAIN < BV CPU	The number of notes counted by BV cpu doesn't much with MAIN are counted. (except reject notes)	Improper adjustment of the sensors: SP2 and SP3.	After cleaning, readjust the SP2 and SP3.
				Number of notes counted by the MAIN is fewer than that by the BV CPU.		
65	(A/D error)	00	_____	Similar to 6101 error.	Similar to 6102 error.	Similar to 6102 error.
				Number of notes of MAIN is more than that of BV CPU.		
66	NVRAM error	01	Sum error.	The check sum of NVRAM doesn't match with in set time. (on power up)	Defective MAIN pcb.	Replace the MAIN pcb with new one.
				When writing or reading to NVRAM is RAS mode doesn't match.		
67	Backup data error	00	_____	On power up data doesn't match what is in back up area.	<ul style="list-style-type: none"> a. Before the power is turned ON, the mini jump (J2) has been inserted or removed on the MAIN pcb. b. Defective MAIN pcb. 	<ul style="list-style-type: none"> Press the <input type="checkbox"/> C key. Replace the MAIN pcb with new one.
				Read/write error.		

Error code	Error name	Detail code	Detailed description	The way of detection	Possible causes	Remedies
68	Battery error	00	_____	At the time of power-up, no battery connection. * Detected by triple port readings.	a. J2 on the MAIN pcb is set to '3'. b. Defective MAIN pcb.	Turn it to '1'. Replace the MAIN pcb with new one.
70	Disconnected connector MAIN pcb BV CPU pcb or Main pcb MG AMP pcb	00	_____	Disconnected connector is detected consecutively five times with the 10, sec. • MAIN pcb ⇔ BV CPU pcb • MAIN pcb ⇔ MG AMP pcb	a. Incomplete connection of connector or abnormal flat cable. b. Defective MAIN pcb. c. Defective BV CPU pcb. d. Defective MG AMP pcb.	Check the connector and flat cable and replace them with new one where necessary (MCN2, VCNI, ACNI). Replace the MAIN pcb with new one. Replace the BV CPU pcb with new one. Replace the MG AMP pcb with new one.
72	Cover open during counting	00	_____	Cover open is detected five times consecutively with 10msec timer during counting. * Since no switch is provided for detecting cover open, currently not used.	• Similar to 3000 error.	• Similar to 3000 error.
76	DPM error, BV timeout	01	BV no response.		• Similar to 3000 error.	• Similar to 3000 error.
		02	Step timeout.		• Similar to 3000 error.	• Similar to 3000 error.
77	DPM error, data mismatch	00	_____	The data the BV CPU has written and the data the MAIN CPU has read does not match.	• Similar to 3000 error.	• Similar to 3000 error.
78	MAIN, ROM error	01	ROM SUM error.	Check sum doesn't match.	a. Defective ROM on the MAIN pcb. b. Defective MAIN pcb.	Replace the ROM with new one. Replace the MAIN pcb with new one.

Error code	Error name	Detail code	Detailed description	The way of detection	Possible causes	Remedies
78	MAIN, ROM error	02	ROM BCC error.	Check som doesn't match.	Defective ROM of the MAIN pcb.	Replace the ROM with new one.
79	MAIN, RAM error	01	Built-in RAM error.	Read data and write data in the built-in RAM area don't match.	Defective CPU on the MAIN pcb.	Replace the ROM with new one.
		02	External RAM error.	• Check som doesn't match. • Similar to 7901 error.	Defective MAIN pcb.	Replace the MAIN pcb with new one.
80	Communications error from MAIN to BV Undefined command	00	_____ [BV CPU detection]	Command received from the MAIN pcb not defined.	• Similar to 3000 error.	• Similar to 3000 error.
81	Communications error from MAIN to BV Abnormal ID timing	00	_____ [BV CPU detection]		• Similar to 3000 error.	• Similar to 3000 error.
82	Communications error from MAIN to BV Abnormal echo timing	00	_____ [BV CPU detection]		• Similar to 3000 error.	• Similar to 3000 error.
83	Communications error from MAIN to BV	00	_____ [BV CPU detection]		• Similar to 3000 error.	• Similar to 3000 error.
89	Long distance sensor cleaning	01	ST1 sensor cleaning.	a. Dust, paper, etc stuck in the sensor.	a. Dust, paper, etc stuck in the sensor.	Check and clean the sensor.
				b. Defective sensor.	b. Defective sensor.	Replace the sensor with new one.
		02	ST2 sensor cleaning.	a. Dust, paper, etc. stuck in the sensor and reject plateb. b. Defective sensor.	a. Dust, paper, etc. stuck in the sensor and reject plateb. b. Defective sensor.	Check and clean the sensor and reject plate. Replace the sensor with new one.

GFR-100 Error Code Table

※1) No error but an error log is displayed.
 ※2) Jam error is shown as "JAM."
 ※3) Alarm display
 Other errors are displayed with respective error code.

1st digit 10th digit	0	1	2	3	4	5	6	7	8	9	
0		※1 Defective feed	※1 Defective transfer		SP1L sensor down	SP1R sensor down			※3 HP sensor cleaning	※3 SPI sensor cleaning	Hopper section
1	SP2L sensor down	SP2R sensor down		※2 Jamming on SP2 sensor		※2 Jamming between SP2 and flipper					BV section
2			E²PROM error	LSR set error		Scanning error	LSR sensor error	LSR level error	Abnormal LBSY signal	Abnormal BLE signal	
3	Communica- tions error from BV to MAIN Response timeout	Communica- tions error from BV to MAIN Response mismatch	Communica- tions error from BV to MAIN Data mismatch	Communica- tions error from BV to MAIN Parity error	Communica- tions error from BV to MAIN Sense error	Communica- tions error from BV to MAIN Abnormal denomination code	Communica- tions error from BV to MAIN Abnormal false note code				
4	SP3L sensor down	SP3R sensor down		※2 Jamming on SP3 sensor							Transfer section
5	ST1 sensor down (long distance)	ST2 sensor down, long distance, reflection						Motor revolution error		※3 Short distance sensor cleaning	
6	※1 Power failure during counting	Abnormal counting Total number of notes mismatch				(A/D error)	NVRAM error	Backup data error	Battery error		
7	Disconnected connector MAIN pcb BV or MG pcb							DPM error, data mismatch	※1 MAIN, ROM error	※1 MAIN, RAM error	MAIN section
8	Communication error from MAIN to BV Undefined command	Communication error from MAIN to BV Abnormal ID timing	Communication error from MAIN to BV Abnormal echo timing	Communication error from MAIN to BV Echo data mismatch			DPM error, BV timeout			※3 Long distance sensor cleaning	
9											For OP

4) Other troubles

NO.	Situation	Causes	Remedies
1	No display even with the power turned ON.	<ul style="list-style-type: none"> a. Disconnected connector. b. Defective MAIN pcb and DISP pcb. c. Defective power. 	<ul style="list-style-type: none"> Check the connector (MCN7, MCN14, PCN1, PCN3). Replace these pcbs with new one. Replace the power unit with new one.
2	No key operation accepted. (although displayed)	<ul style="list-style-type: none"> a. Disconnected connector. b. Defective DISPLAY SW. c. Defective pcb. d. Defective MAIN pcb. 	<ul style="list-style-type: none"> Check the connector (DCN2). Replace the DISPLAY SW with new one. Replace the pcb with new one. Replace the MAIN pcb with new one.
3	Auto-start failed.	<ul style="list-style-type: none"> a. Notes not set correctly on hopper. b. Dust or foreign matters stuck onto the count sensor. c. Disconnected connector. d. Wrong adjustment of the HPI sensor. e. Defective HPI sensor. f. Defective MAIN pcb. 	<ul style="list-style-type: none"> Set the notes again. Check the sensor and clean it. Check the connector for its connection (MCN9). After cleaning up, readjust the sensor (using RAS). Replace the sensor with new one. Replace the MAIN pcb with new one.
4	Failed to start even with depression of the start switch. (CHP, HP is displayed)	<ul style="list-style-type: none"> a. Notes not set correctly on hopper. b. Disconnected connector. c. Wrong adjustment of the HPI sensor. d. Defective HPI sensor. e. Defective MAIN pcb. 	<ul style="list-style-type: none"> Set the notes again. Check the connector for its connection (MCN11, MCN22). After cleaning up, readjust the sensor (using RAS). Replace the sensor with new one.
5	Failed to start the machine both by manual and auto-start (but the display is normal.) Replace the MAIN pcb with new one.	<ul style="list-style-type: none"> a. There is a part which is hard to move in the driving section. b. Disconnected connector. c. Defective MAIN pcb. 	<ul style="list-style-type: none"> Replace the MAIN pcb with new one. Check the belt and pulley for movement by manually turning them, and take action for the check result. Check the connector for its connection (MCN9). Replace the MAIN pcb with new one.

NO.	Situation	Causes	Remedies
6	Failed to start even by depressing the start switch. (CHK.ST displayed)	<ul style="list-style-type: none"> a. Foreign matters such as dust, paper, etc. stuck in the ST1 sensor. b. Disconnected connector. c. Wrong adjustment of ST1 sensor. d. Defective ST1 sensor. e. Defective MAIN pcb. 	<ul style="list-style-type: none"> Inspect and clean the sensor. Check the connector for its connection (MCN15, MCN23). After cleaning, readjust the sensor (using RAS). Replace the ST1 sensor with new one. Replace the MAIN pcb with new one.
7	Note feed not smooth.	<ul style="list-style-type: none"> a. Improper gate adjustment (gate too wide). b. Inappropriate timing of kicker roller and feed roller. c. Notes overloaded from the hopper plate. d. Damaged or folded notes included in the notes. e. Notes sticking to each other because of the ink on the notes. 	<ul style="list-style-type: none"> Use paper thickness adjustment screw to adjust the gate opening (see 5-3). Adjust the timing (see 6-2). Remove some of the papers to the hopper capacity specified. Remove the damaged or folded notes, then restart counting. This is usually found in new notes. Fan the notes and restart counting.
8	Scatched notes.	<ul style="list-style-type: none"> a. Improper gate adjustment (gate too narrow). b. Foreign matters stuck in the transfer path. 	<ul style="list-style-type: none"> Use paper thickness adjustment screw to adjust the gate opening (Notes more than 0.12mm is not countable). Inspect the transfer path.
9	Foreign sound during driving.	<ul style="list-style-type: none"> a. Improper mounting or damages of motor and pulley. b. Inadequate tension adjustment of timing pulley. c. Soiled surface of the transfer rollers. 	<ul style="list-style-type: none"> Inspect the pulley for its mounting condition. Adjust the position of the idler (see 6-5). Inspect and clean rollers.
10	Notes jumping out.	<ul style="list-style-type: none"> a. Note transfer speed and stacker fin revolution mismatch. b. Soiled surface of the transfer rollers. 	<ul style="list-style-type: none"> Replace the brush with new one. Confirm the revolution of stacker fin, and make an adjustment where necessary (using RAS). Remove and clean up the sticky particles on the roller surface with alcohol (paint thinner not acceptable).

NO.	Situation	Causes	Remedies
11	Too many undercounts occurred (number of notes lacking the number on the display.)	<ul style="list-style-type: none"> a. Improper gate adjustment (gate opening too wide) b. Surface of reversing rollers very soiled c. Reversing rollers worn too much or damaged d. Defective SP2 and SP3 sensors e. Notes sticking to each other because of printing ink f. Wrong setting of two notes detection level g. Abnormalities in encoder board or photo interrupter h. Insufficient division of notes 	<ul style="list-style-type: none"> Use a paper thickness adjustment screw to adjust the gate opening (see 5-3). Clean the dirt on the rollers with alcohol (paint thinner not acceptable). Replace it with new one (see 5-10). Replace them with new one. This is found in notes newly issued. Flip them and restart counting. Using user RAS, set the two notes detection level so that it fits the notes to count. Check the encoder board or photo interrupter, and replace them with new one where necessary. Turn off the power, and manually move the flipper nail to confirm if it is hard to move. If the solenoid is not actuated, replace it with new one.
12	Too many overcounts (Number of notes exceeds the number on the display.)	<ul style="list-style-type: none"> a. Damaged notes included in the counted notes b. Abnormalities in encoder board or photo interrupter c. Defective SP2 and SP3 sensors d. Insufficient division of notes 	<ul style="list-style-type: none"> Remove the damaged notes, then restart counting. Check the encoder board or photo interrupter, and replace them with new one where necessary. Replace them with new one. Turn off the power, and manually move the flipper nail to confirm if it is hard to move. If the solenoid is not actuated, replace it with new one.
13	All the counted notes rejected or entering into the stacker	<ul style="list-style-type: none"> a. Insufficient division of notes 	<ul style="list-style-type: none"> Turn off the power, and manually move the flipper nail to confirm if it is hard to move. If the solenoid is not actuated, replace it with new one.
14	Main motor and fin motor continue turning.	<ul style="list-style-type: none"> a. Abnormality in the harness between the MAIN pcb and the motor b. Defective MAIN pcb 	<ul style="list-style-type: none"> Check the harness between them, and replace it with new one where necessary. Replace it with new one.
15	Buzzer sounding without stopping	<ul style="list-style-type: none"> a. Defective DISP pcb b. Defective MAIN pcb 	<ul style="list-style-type: none"> Replace it with new one. Replace it with new one.

10. GENERAL WIRING DIAGRAM

