Europe Bill Acceptor

EBA-03

Service Manual

Europe Bill Acceptor
EBA-03

Model Numbers

Contents

EBA Product Name

EBA product name constitutes two kinds, it is [MODEL] name and [TYPE] name.

EBA – 03 – *** – *** – ***

|_____| |_____|
     [MODEL] name   [TYPE] name

[MODEL]   EBA-03

[Type]   * * * – * * * – 03

                            |_____|
                              ①   ②   ③

①   With/without I/F conversion board (future support)
        0 : Without I/F conversion board
        1 : With I/F conversion board

②   With/without faceplate (future support
        0 : No faceplate
        1 : With faceplate

③   Reserved

Europe Bill Acceptor

EBA-03

Operation Manual

Contents

1 Features

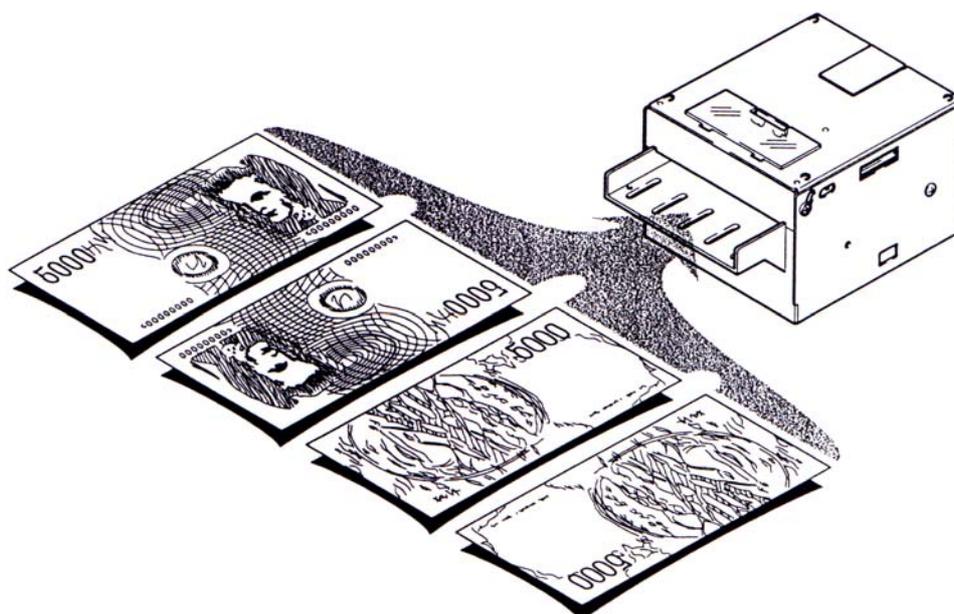Validator EBA-03 provides the following features.

Allows currency setting
    You can use the DIP switches of EBA-03 to set "accept" or "reject" individually for up to four types of
    bills. You can also set "accept" for all types of currency.
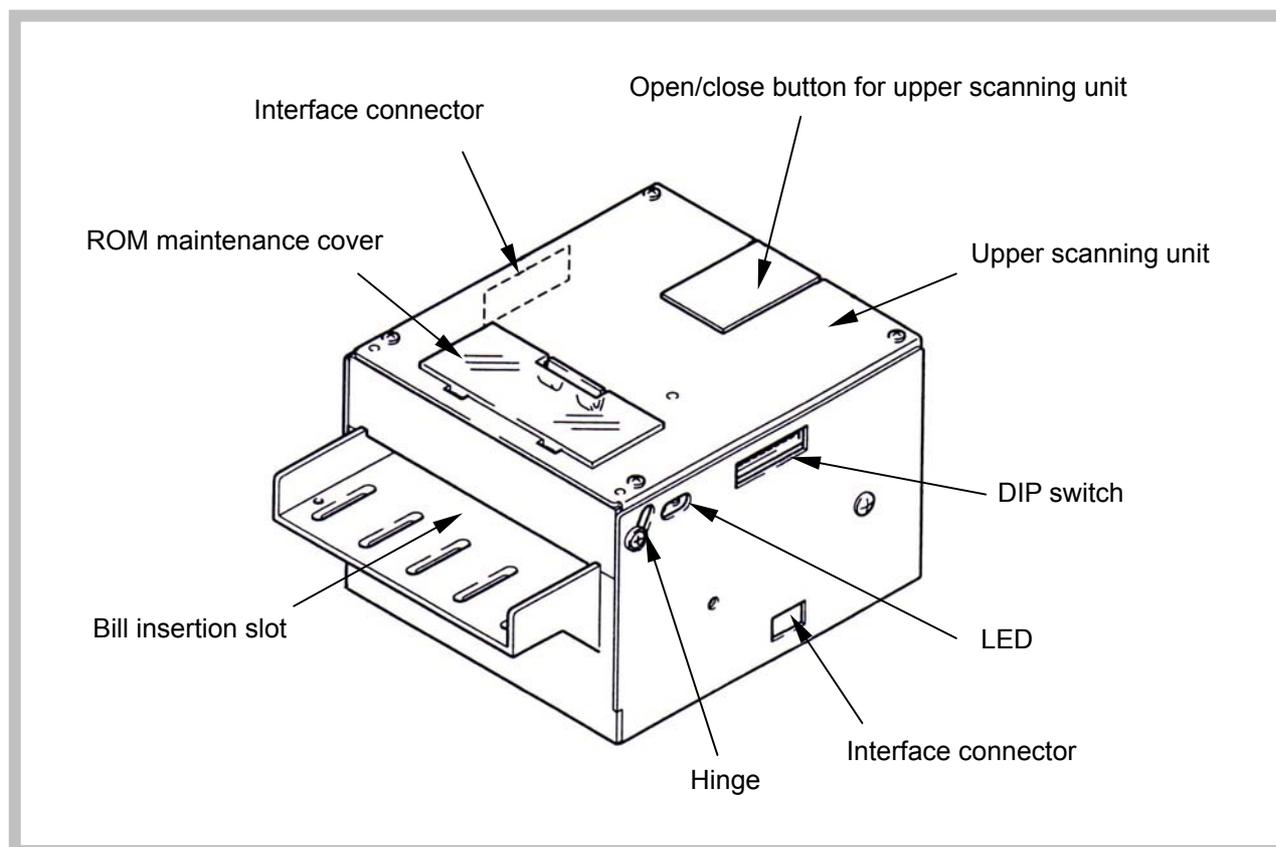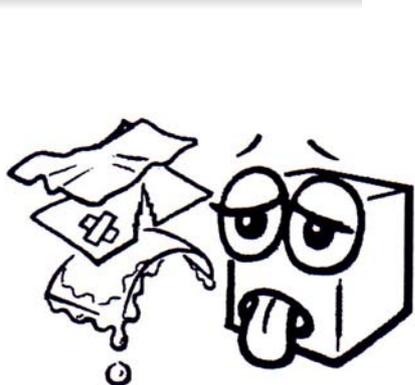

Accepts bills in any lengthwise direction
    EBA-03 accepts bills in any lengthwise direction, regardless of whether these bills are inserted front
    or back facing up.

2 Names of Parts

Interface connector

Open/close button for upper scanning unit

ROM maintenance cover

Upper scanning unit

DIP switch

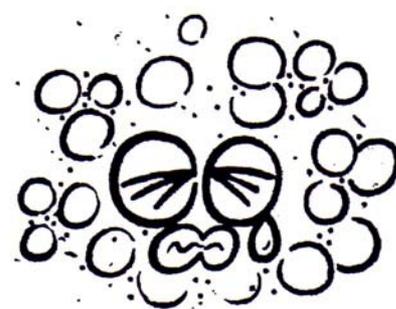Bill insertion slot

LED

Interface connector

Hinge

3 Precautions

1. Don not insert a torn, folded, or wet bill. It will get jammed in the unit.

2. Never spill water or any liquid on the unit. The precision ele-Ctronic parts in the unit will be damaged.
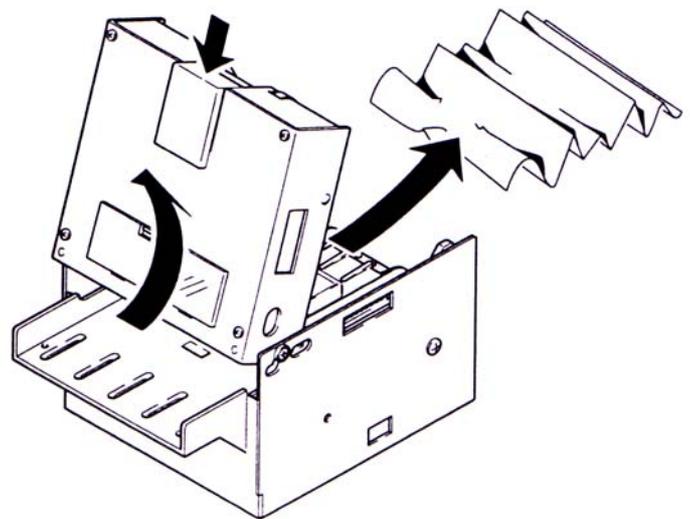
3. Do not install the unit in a dusty environment. Dust will affect the performance of the bill Bill sensor.

4 Removing a Jammed Bill

Press the open / button of the upper scanning unit
and lift it up as shown. Remove the jammed bill.

* Do not raise the upper scanning unit too high;
  the harness could break.

5 Cleaning

Dirt deposited on the scanning unit including the
sensor could cause jamming of bills and
degradation of the bioll identification performance.
Opoen the acceptor and periodically cleasn the
internal parts.
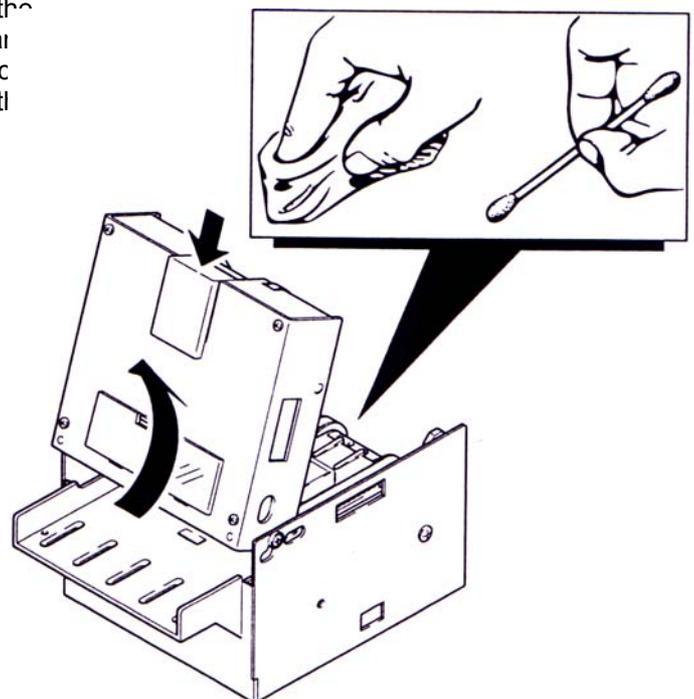
Use a soft cloth or cotton swab to clean the inner
parts. If you can not remove a stain, wipe it using a
cloth or cotton swb moistended with a standard
head cleaner sold in the market. Never use organic
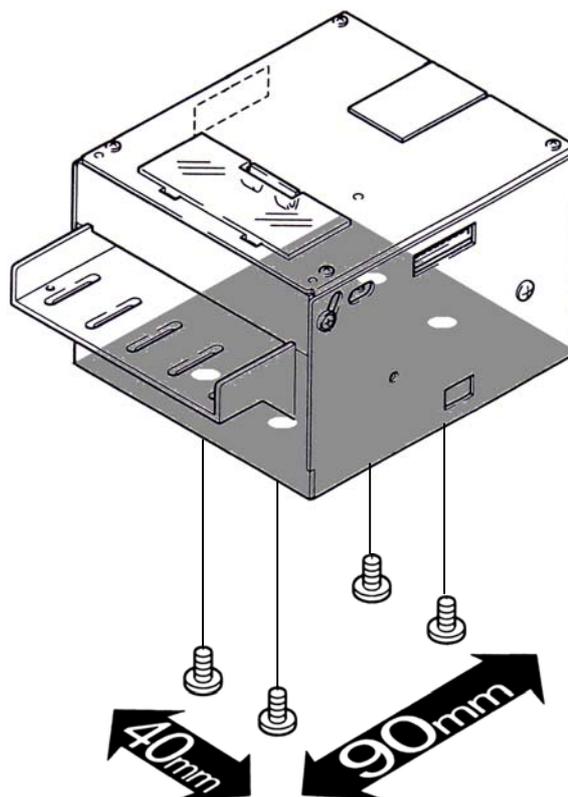solvents such as thinners to clean the inside parts.

* Never use organic solvents such as thinners to
  wipe the head or other parts.

6 Installation

Installing the unit

The unit has four installation holes on its underside.

7 Interface (I / F)

1. Outline of EBA-03 Interface

    Interface of EBA-03 has both bi-direction serial I/F (ID-003) and pulse I/F.
    ID-003 I/F and pulse I/F can be chosen in use by changing DIP switch. (see 11. DIP switch).

2. Outline of bi-directional serial I/F (ID-003)

    Bi-directional serial interface (ID-003) is capable of controlling the status and operation of
    acceptor, and settin and checking its function by polling [STATUS REQUEST] and command
    ([OPERATION COMMAND] [SETTING COMMAND]) from controller.
    Refer to [Communication specifications ID-003] for communication specifications.
    Refer the separate sheet [ID-003 DATA setting specifications] for data configuration such as
    denomination signal.

3. Outline of pulse I/F

    Pulse I/F outputs he signal of received denomination by preset number of pulses via *1. VEND
    signal line (Pin No.3).
    BUSY (Pin No.7) and ABN (Pin No.9) signals output the status of acceptor. INH signal (Pin No. 8)
     serves to set inhibition of bill acceptance by acceptor.
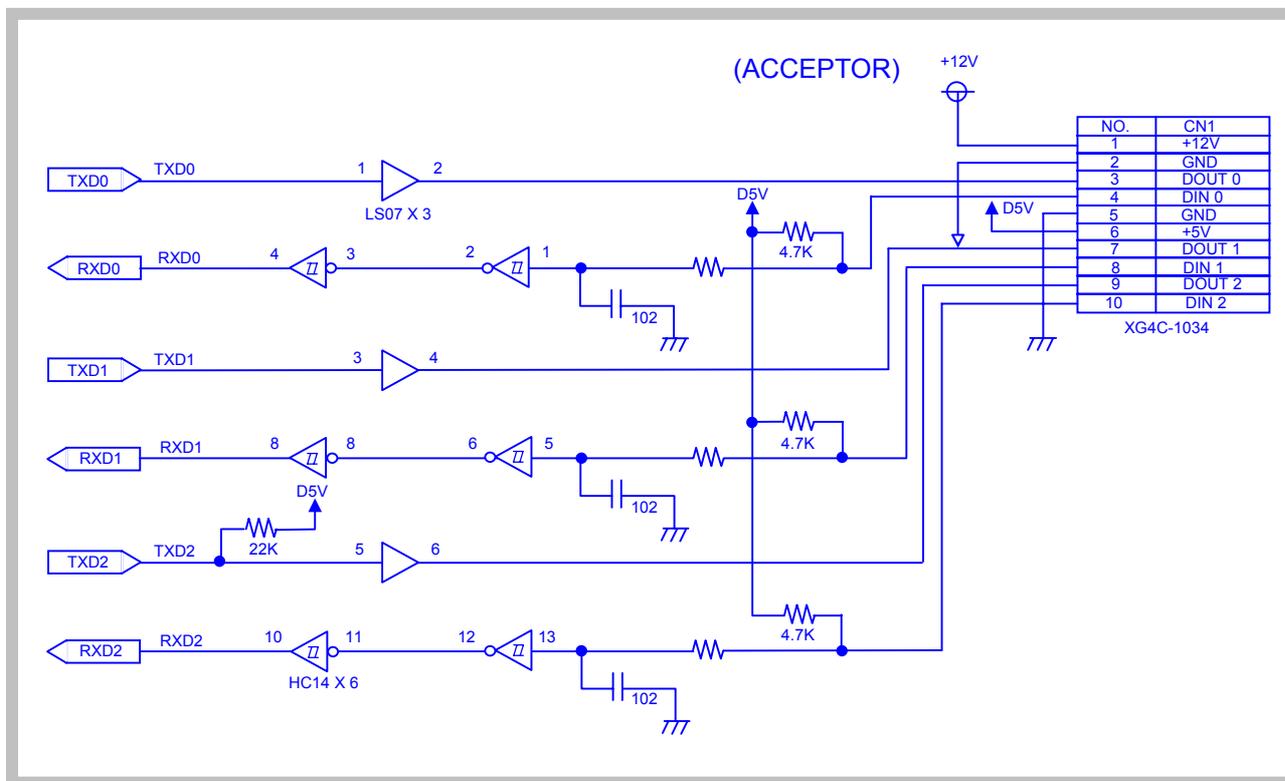
    *1 Changeof DIP switch enables settin No. of Pulses. (see 11. DIP switch)
       Number of pulses depends on bill of each country. Refer to [Specifications per type].
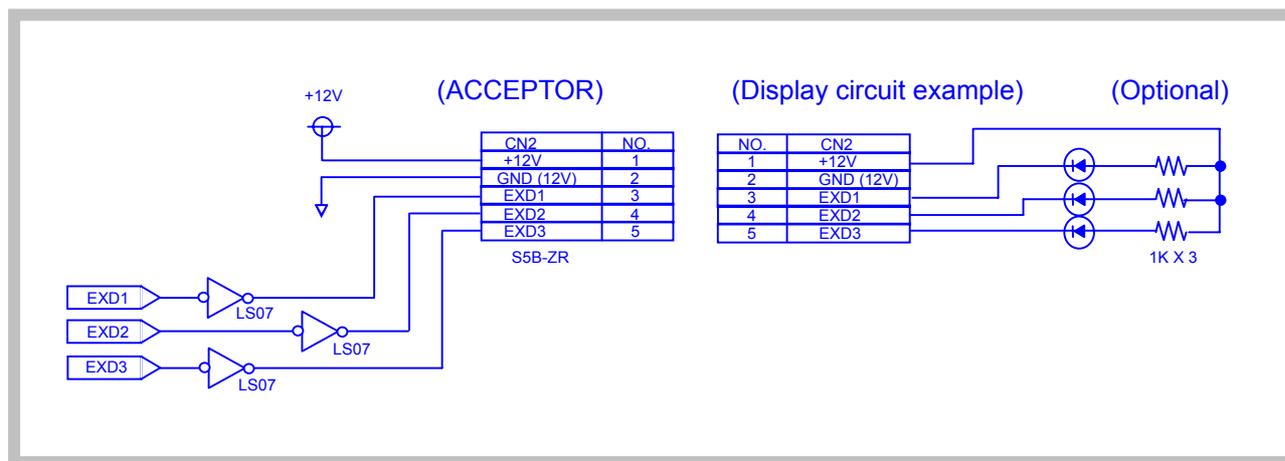
4. Displan interface

    The LED driver of the display interface has three open collector outputs and a power supply
    output (+12V, GND).

8 Input/Output Circuits

1. Interface circuit

2. Data display circuit

9 Cabling Connections

Box type plug
XG4C-1034 (OMRON)

Recommended socket 1
MIL type socket: XG4M-1030-T(OMRON)

Lock lever: XG4Z-0002 (OMRON)

Applocable cable material:
1.27mm pitch flat cable, AWG28 UL2651

Pin header: S5B-ZR (JST)

Recommended socket 2
XG5M-1035-N (OMRON)

Contact (assemlbed in the housing)

Applocable cable material:
Single cable, AWG28 to AWG26 UL2651

Recommended housing
ZHR-5 (JST)

Contact
CZH-002T-P0.5
(1300 contacts per reel)

Applicable cable material
AWG28 to AWG26 UL 1061

10 Pin Assignment

1. For use by bi-directional serial I/F (ID-003)

CPU BOARD   CN1

```
       9         1
      ooooo
      ooooo
      10        2
```

Pin No.	Name of Signal	I / O	Active	Explanation
1	VDD	IN		Power supply 12V (±5%)
2	Vss			GND
3	TXD	OUT		Output signal line from acceptor
4	RXD	IN		Output signal line from controller
5	Vss			GND
6	Vcc	OUT		Power supply 5V (±5%) MAX 20mA
7	NC			Leave unconnected
8	NC			Leave unconnected
9	NC			Leave unconnected
10	NC			Leave unconnected

2. For use by pulse I/F

CPU BOARD   CN1

```
       9         1
      ooooo
      ooooo
      10        2
```

Pin No.	Name of Signal	I / O	Active	Explanation
1	VDD	IN		Power supply 12V (±5%)
2	Vss		LO	GND
3	VEND	OUT		Bill acceptance denomination signal
4	NC			Leave unconnected
5	Vss			GND
6	Vcc	OUT	LO	Power supply 5V (±5%) MAX 20mA
7	BUSY	OUT	HI	Signal to be output when validator is operating
8	INH	IN	LO	Bill acceptance inhibition signal *1
9	ABN	OUT		Signal to be output when validator is abnormal
10	NC			Leave unconnected

3. External display LED

SENSOR BOARD   CN 2

```
      ooooo
      1      5
```

Pin No.	Name of Signal	EXPLANATION
1	VDD	+12V (±5%) output (MAX 100mA)
2	Vss	GND
3	LED 1	Lighting output when bill acceptance is ready
4	LED 2	Flaching output in trouble detection and in fault
5	LED 3	Spare

11 Description of DIP Switch

EBA-03 has two DIP switches, located on the right side of acceptor (DIP switch-1) and under ROM cover (DIP switch-2).
DIP switch-1 allows setting of ACCEPT/INHIBIT of received denomination.
DiP switch-2 allows choice of I/F and detail setting of I/F.
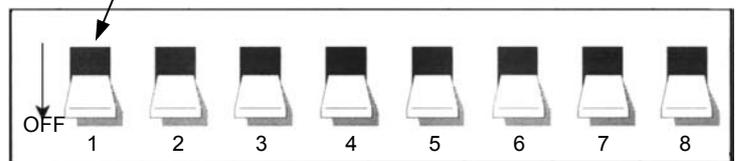
1. Setting of DIP switch-1
Setting of DIP switch-1 allows setting of denomination to be accepted.
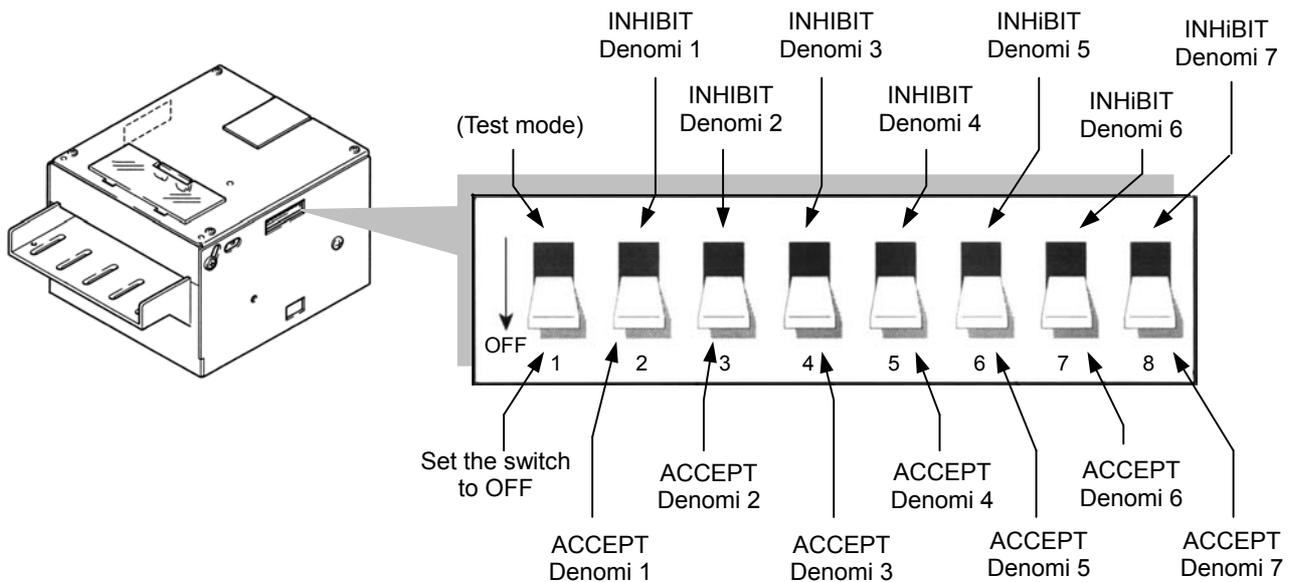
2. Setting of DIP switch-2
Setting of DIP switch-2 allows choice of I/F, and setting of pulse width, pulse value, security, etc. (to be set with power off)
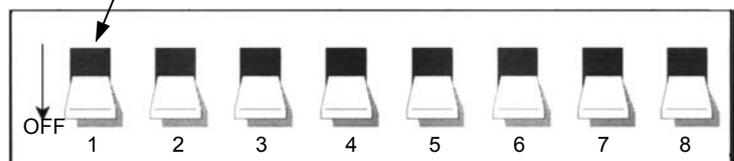
When bi-directional serial I/F (ID-003) is used.

Setting to ON
Bi-directional serial I/F (ID-003)

Refer to [Specification by type] for setting in detail.

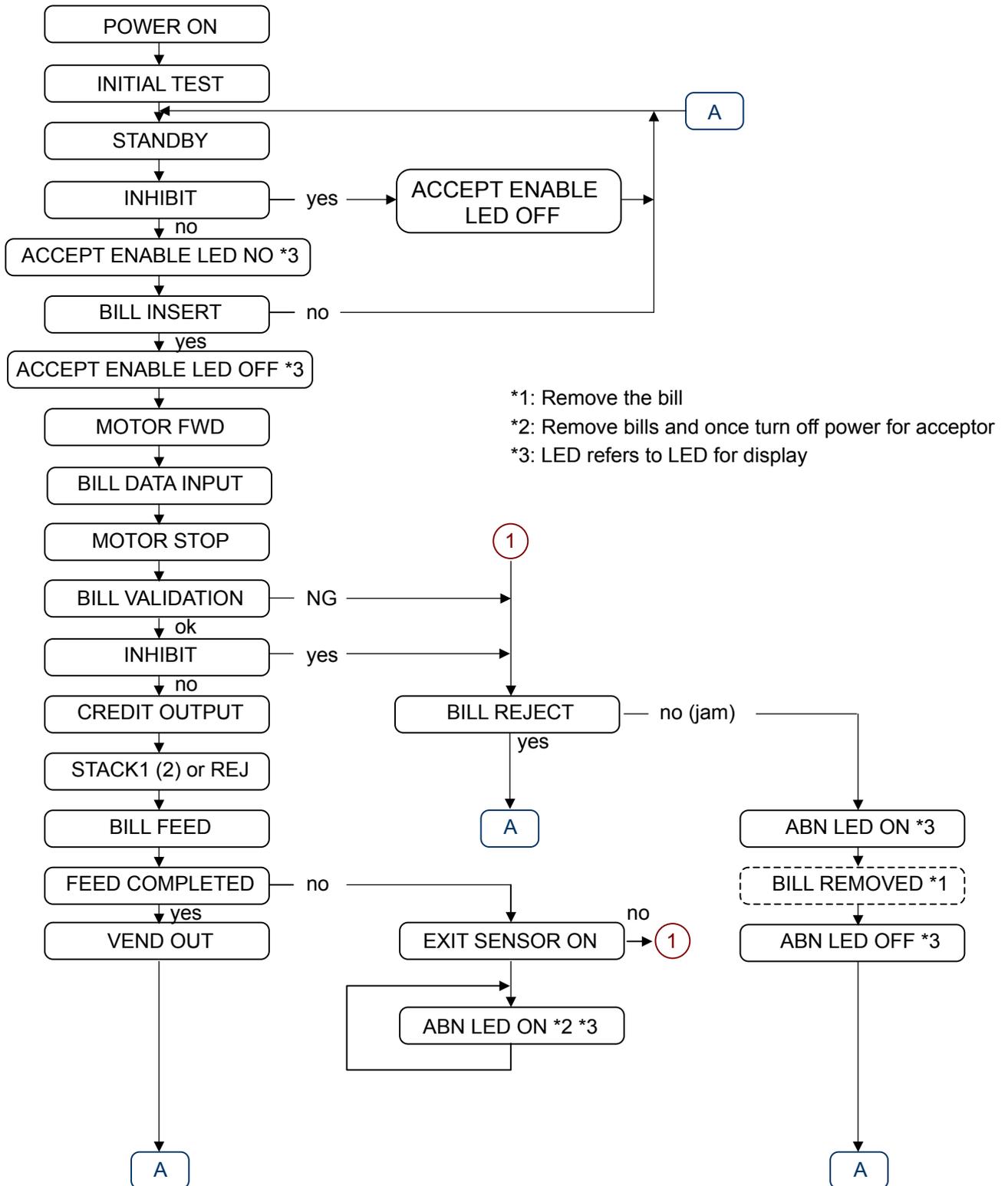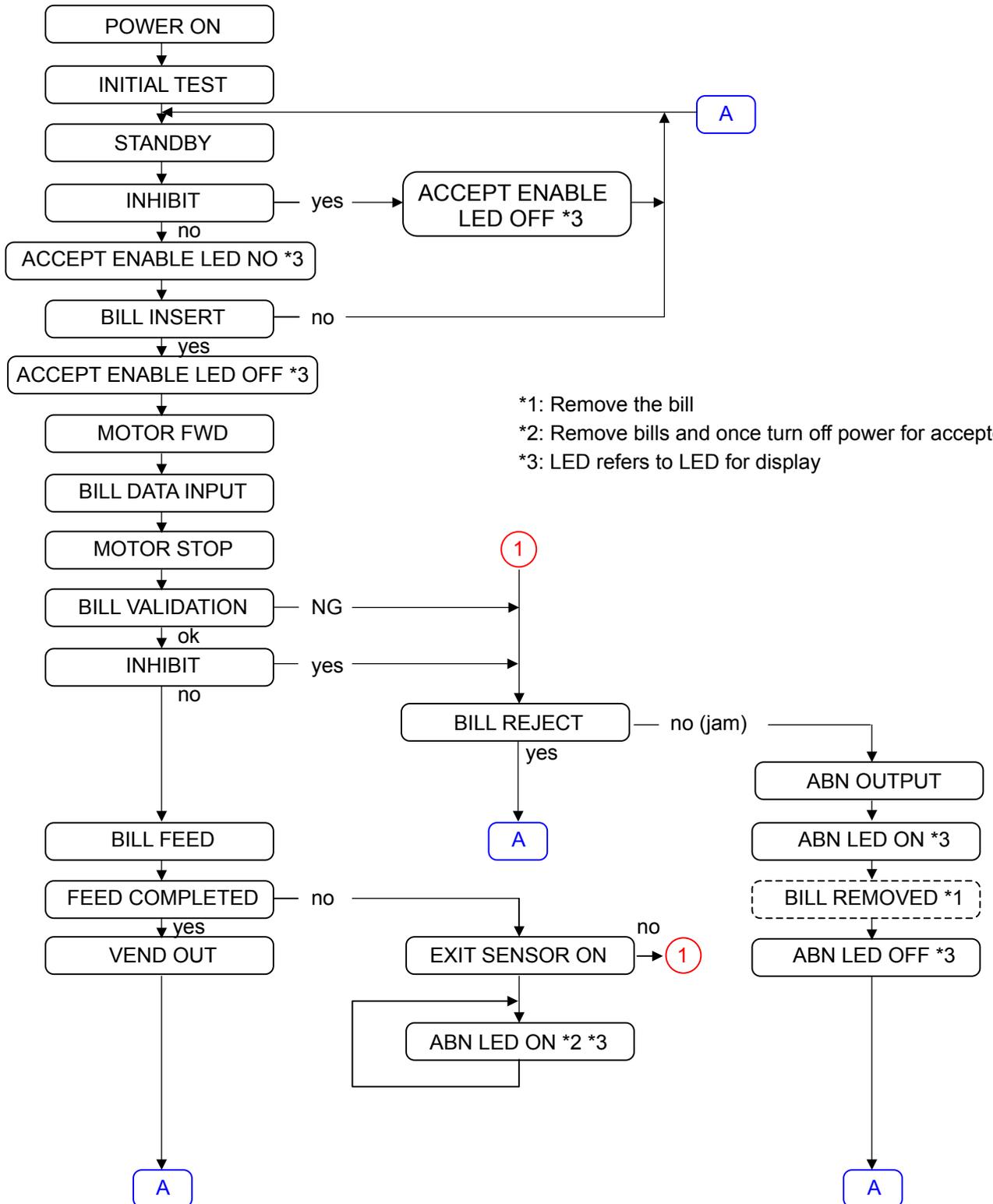When pulse I/F is used.

Setting to OFF
pulse I/F

* Refer to [Specification by type] because pulse value depend on country.

Setting of pulse width and pulse value

12 Operation Flowchart

Bi-direction serial interface (ID-003)

```
  ┌──────────────┐
  │   POWER ON   │
  └──────┬───────┘
         ▼
  ┌──────────────┐
  │ INITIAL TEST │
  └──────┬───────┘
         ▼                                        ┌───┐
  ┌──────────────┐                          ◄─────┤ A │
  │   STANDBY    │                                └───┘
  └──────┬───────┘
         ▼
  ┌──────────────┐    yes    ┌──────────────────┐
  │   INHIBIT    │──────────►│  ACCEPT ENABLE    │──►
  └──────┬───────┘            │     LED OFF       │
        no                    └───────────────────┘
  ┌────────────────────────┐
  │ ACCEPT ENABLE LED NO *3│
  └──────┬─────────────────┘
         ▼
  ┌──────────────┐    no
  │ BILL INSERT  │──────────
  └──────┬───────┘
        yes
  ┌────────────────────────┐
  │ ACCEPT ENABLE LED OFF *3│
  └──────┬─────────────────┘
         ▼
  ┌──────────────┐
  │  MOTOR FWD   │
  └──────┬───────┘
         ▼
  ┌──────────────┐
  │BILL DATA INPUT│
  └──────┬───────┘
         ▼
  ┌──────────────┐                    ( 1 )
  │  MOTOR STOP  │
  └──────┬───────┘
         ▼
  ┌──────────────┐    NG
  │BILL VALIDATION│─────────►
  └──────┬───────┘
        ok
  ┌──────────────┐    yes
  │   INHIBIT    │─────────►
  └──────┬───────┘
        no
  ┌──────────────┐          ┌──────────────┐   no (jam)
  │CREDIT OUTPUT │          │ BILL REJECT  │──────────────
  └──────┬───────┘          └──────┬───────┘
         ▼                        yes
  ┌──────────────┐
  │STACK1 (2) or REJ│
  └──────┬───────┘
         ▼                     ┌───┐
  ┌──────────────┐             │ A │          ┌──────────────┐
  │  BILL FEED   │             └───┘          │ ABN LED ON *3│
  └──────┬───────┘                            └──────┬───────┘
         ▼                                           ▼
  ┌──────────────┐   no                     ┌ ─ ─ ─ ─ ─ ─ ─ ┐
  │FEED COMPLETED│─────────                   │BILL REMOVED *1│
  └──────┬───────┘                           └ ─ ─ ─ ─ ─ ─ ─ ┘
        yes                                          ▼
  ┌──────────────┐          ┌──────────────┐  no  ┌──────────────┐
  │   VEND OUT   │          │EXIT SENSOR ON│──►(1) │ABN LED OFF *3│
  └──────┬───────┘          └──────┬───────┘       └──────┬───────┘
         │                         ▼
         │                  ┌──────────────┐
         │                  │ABN LED ON *2 *3│
         │                  └──────────────┘
         ▼                                                 ▼
       ┌───┐                                             ┌───┐
       │ A │                                             │ A │
       └───┘                                             └───┘
```

*1: Remove the bill

*2: Remove bills and once turn off power for acceptor

*3: LED refers to LED for display

Pulse interface

```
   POWER ON
       │
  INITIAL TEST
       │
    STANDBY ◄─────────────────────────────────────────── A
       │
    INHIBIT ── yes ──►  ACCEPT ENABLE
       │ no             LED OFF *3 ──────────►│
 ACCEPT ENABLE LED NO *3                       │
       │                                        │
   BILL INSERT ── no ──────────────────────────┘
       │ yes
 ACCEPT ENABLE LED OFF *3
       │
   MOTOR FWD
       │
 BILL DATA INPUT
       │
   MOTOR STOP
       │
 BILL VALIDATION ── NG ──────────►│
       │ ok                        │
    INHIBIT ── yes ───────────────►│
       │ no                        ▼
                              BILL REJECT ── no (jam) ──────►
                                   │ yes
                                   ▼                      ABN OUTPUT
                                   A                          │
   BILL FEED                                            ABN LED ON *3
       │                                                      │
 FEED COMPLETED ── no ──►                              ┌ BILL REMOVED *1 ┐
       │ yes              EXIT SENSOR ON ──► 1          └ ─ ─ ─ ─ ─ ─ ─ ┘
   VEND OUT                   │ no                      ABN LED OFF *3
       │                      ▼                              │
                        ABN LED ON *2 *3                     │
       │                                                     │
       ▼                                                     ▼
       A                                                     A
```

*1: Remove the bill
*2: Remove bills and once turn off power for acceptor
*3: LED refers to LED for display

13 General Specifications (WS Model)

1 Acceptable denomination	[Refer specification by type on separate sheet]
2 Direction of insertion	[Refer specification by type on separate sheet]
3 Acceptance rate	95% or more in high acceptance mode
	90% or more in normal acceptance mode
	Includes rejection first time and acceptance second time.
	The following bills are excluded:
	(1) Those with contaminaton, wear, wetting, rip, and extreme wrinkle
	(2) Those with corner or end folded
	(3) Those with cutting size and print significantly different
4 Validating time	Approx. 2 seconds
	(Time required from insertion of bill to output of credit pulse or storage verification signal)
5 Interface	Output: TTL (74LS07 Open collector)
	Input: TTL (74HC14 4.7 KΩ pull-up
6 Escrow	[Refer specification by type on separate sheet]
7 Display	External display
	3-line drive output for LED available (Max 20mA/piece)
	(1) When ready for accepting bills, lighting signal output of 1 line.
	(2) In detection of trouble or in fault mode, flashing signal uptut of 1 line.
	(3) Spare of 1 line
	2 LED's for error code display (Installed on CPU board)
	(1) GREEN LED: Flashing display of rejection reason whe nbill is rejedted
	(2) RED LED: Flashing display of trouble detetion and description of fault
8 Power supply	DC 12V (±5%)
9 Power consumption	(1) Standby status: 2.5VA
	(2) Operation status: 6.0VA (max. 10VA)
10 Service environment	(1) Operating temperature: 5 to 50 c°
	(2) Storage temperature: -20 to 60 c°
	(3) Humidity: 30% to 85%RH (free from dewing)
	(4) Light disturbance: Must not be exposed to direct sun.
	(5) Installation: Indoors
12 Outside dimensions	See the attached drawing.
13 Weight	Main unit 0.6kg
14 Installation	Horizontal installation

14 Outside Dimensions

VIEW A
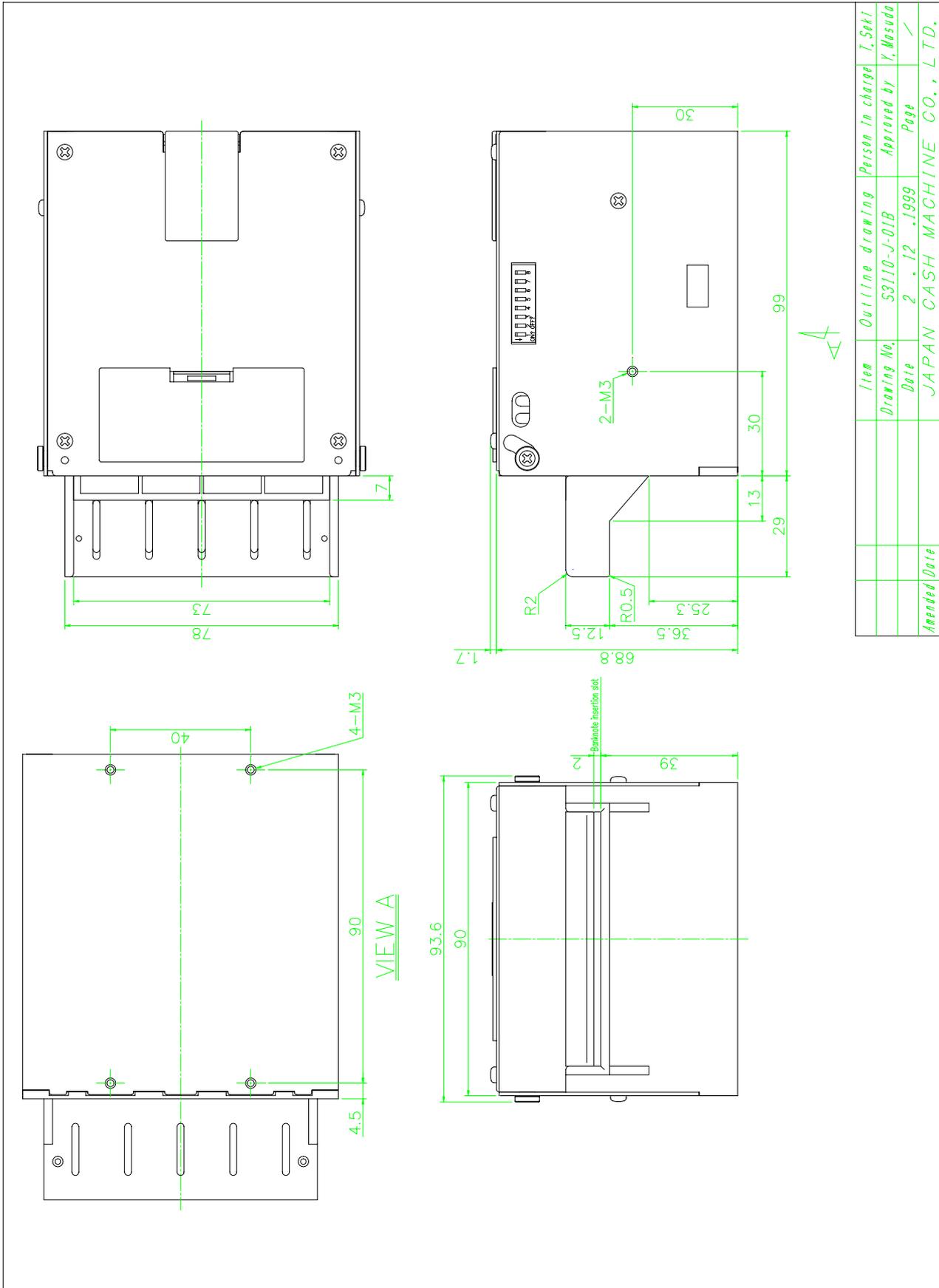
Item	Outline drawing	Person In charge	T.Saki
Drawing No.	S3110-J-01B	Approved by	Y.Masuda
Date	2 . 12 .1999	Page	/
	JAPAN CASH MACHINE CO., LTD.		
Amended Date			

Europe Bill Acceptor

EBA-03

Communication

Specifications

Contents

1 Communication Specifications

1. Bi-directional serial I/F(ID-003)
   See "ID-003 Communication Specifications". See Attached Document "ID-003 Setting Specifications" for information about currency type signals and data structure.
   Note: The bi-directional serial I/F will very depending on the country it is used in.

2. Pulse I/F
   See the sequence chart for the timing of currency type signals. See Attached Document "Specifications in Accordance with Type" for the number of pulses of currency of individual countries.

2 Pulse I/F Sequence Chart

1 POWER UP

POWER

BUSY

$\overline{\text{VEND 1}}$

$\overline{\text{ABN}}$

STAND BY

MACHINE INITILIZE

MEMORY TEST

2 ACCEPT BILL

INH

$\overline{\text{BUSY}}$

$\overline{\text{VEND 1}}$

$\overline{\text{ABN}}$

50ms±5ms

50ms±5ms

MIN 50ms

DRAWIN BILL
and VALIDATION

INSERT BILL

STAND BY
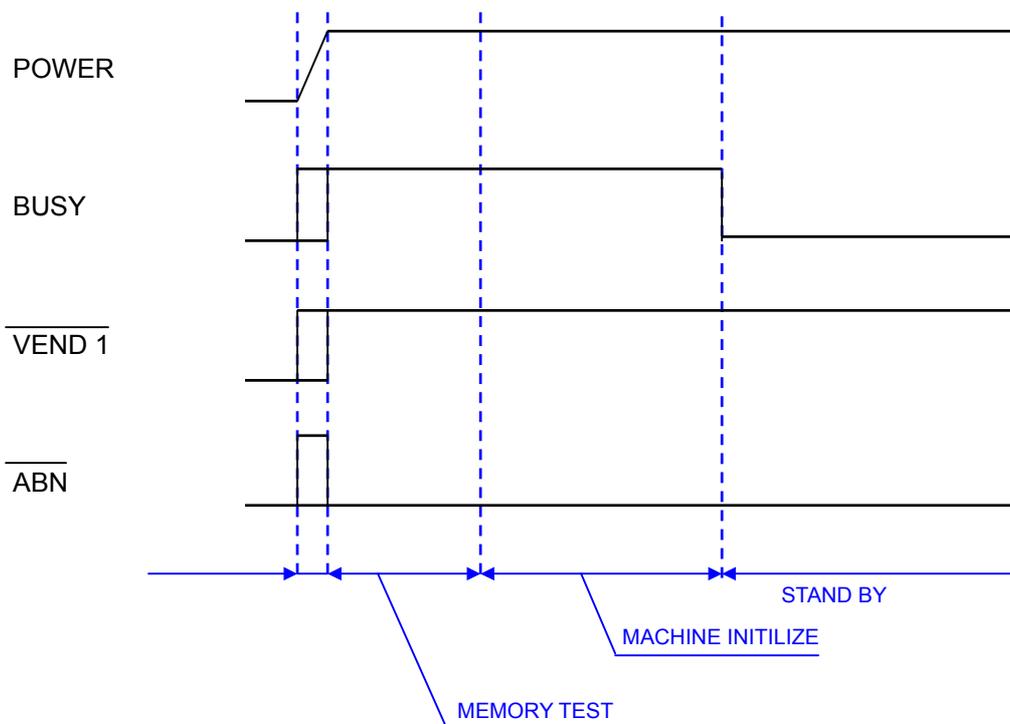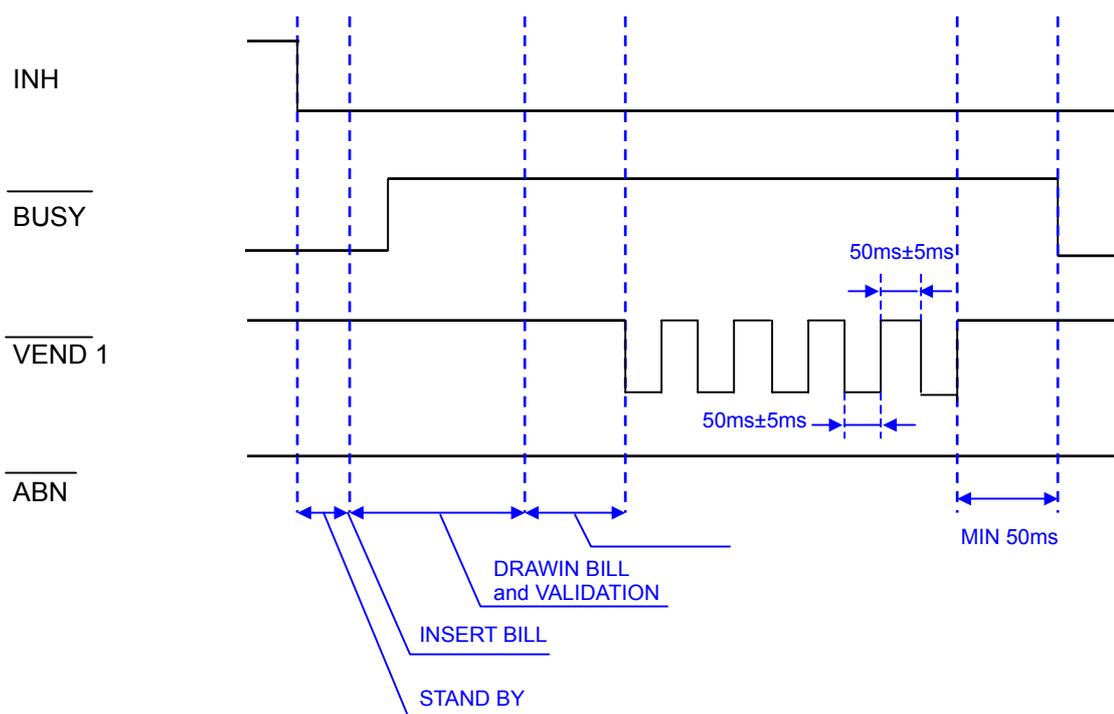
3   REJECT BILL (Returned by INH signal)
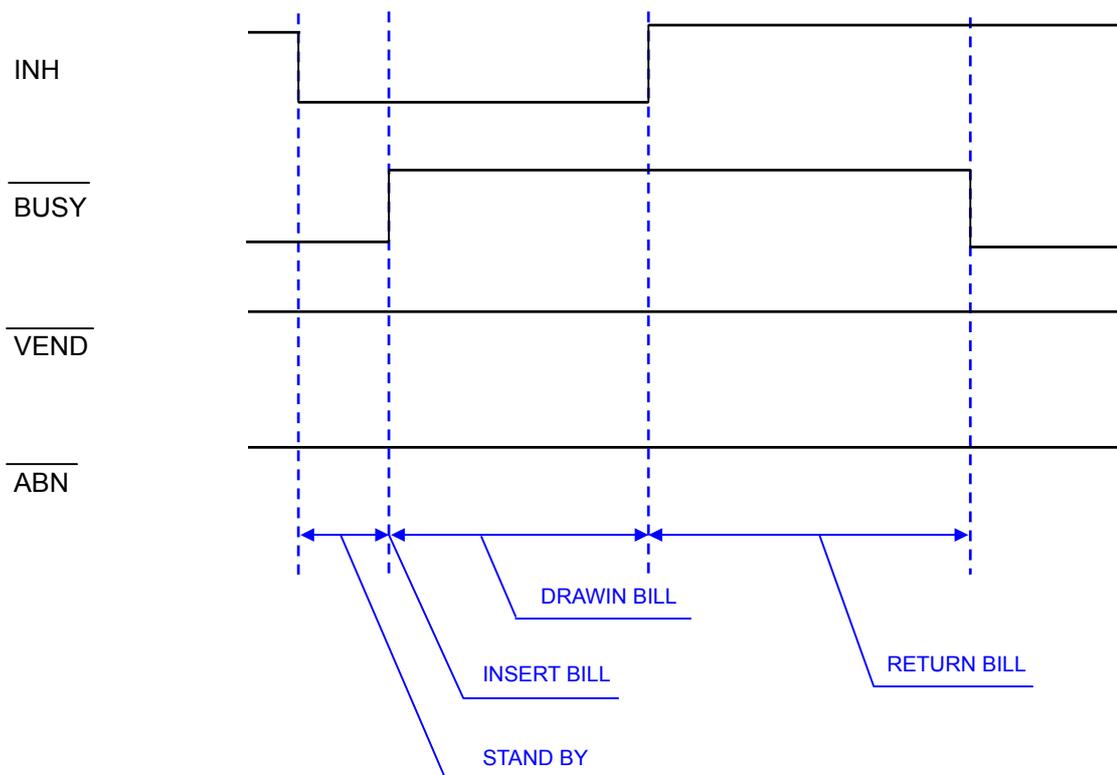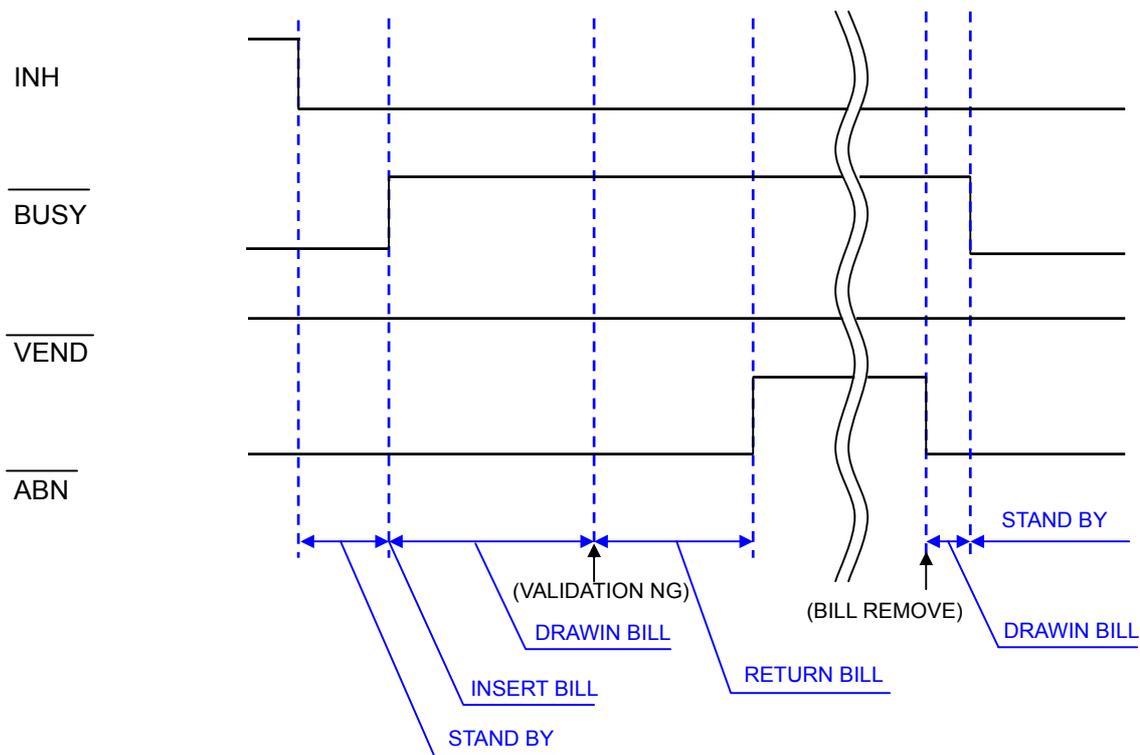
INH

$\overline{\text{BUSY}}$

$\overline{\text{VEND}}$

$\overline{\text{ABN}}$

DRAWIN BILL

INSERT BILL

RETURN BILL

STAND BY

4   JAMMED BILL

INH

$\overline{\text{BUSY}}$

$\overline{\text{VEND}}$

$\overline{\text{ABN}}$

STAND BY

(VALIDATION NG)

DRAWIN BILL

(BILL REMOVE)

DRAWIN BILL

INSERT BILL

RETURN BILL

STAND BY

Europe Bill Acceptor

EBA-03

Disassembly
and
Assembly

Contents

1 Disassembling the Acceptor

1. Disassembling the upper scanning unit
    (1) Remove the screw and collar pair from the hinges on each side. Remove a screw from each side.
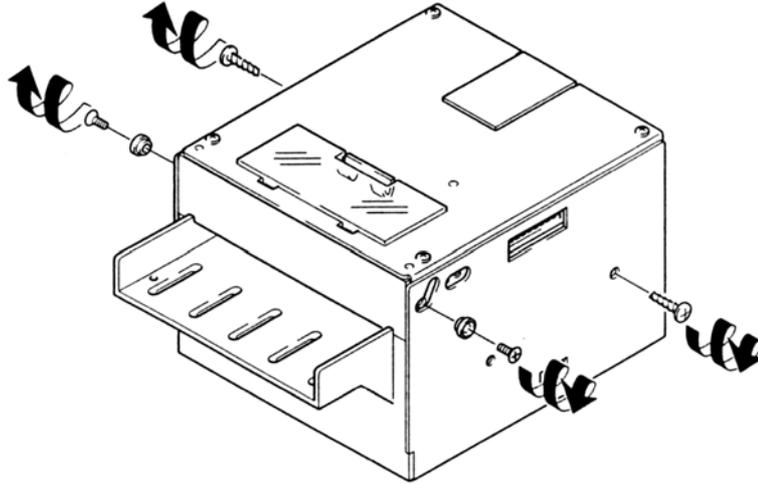
    (2) Detach the body cover from the main unit by moving the cover slightly toward the back and then sliding it downward as indicated by the arrow in the figure.
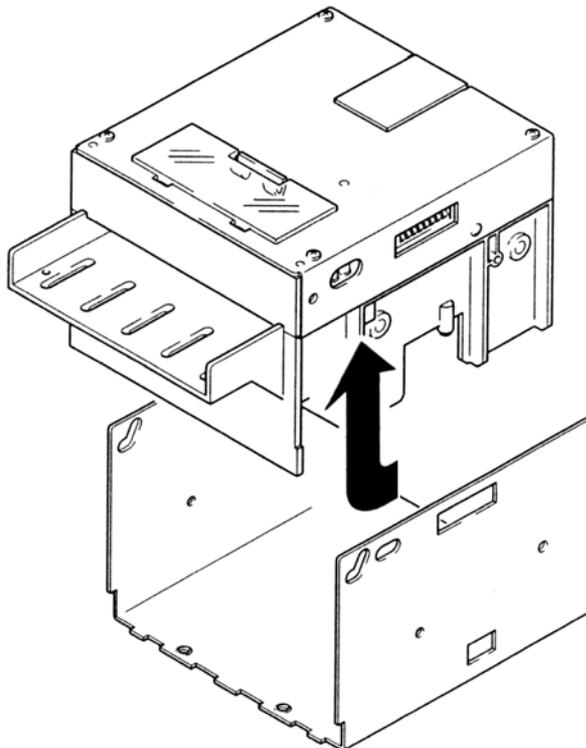
(3) Remove 4 screws on the upper cover and lift
     to remove 1 large and 1 small connector on
     the CPU board. Also detach the open / close
     button of the upper scanning unit at this time
     and keep it safety.
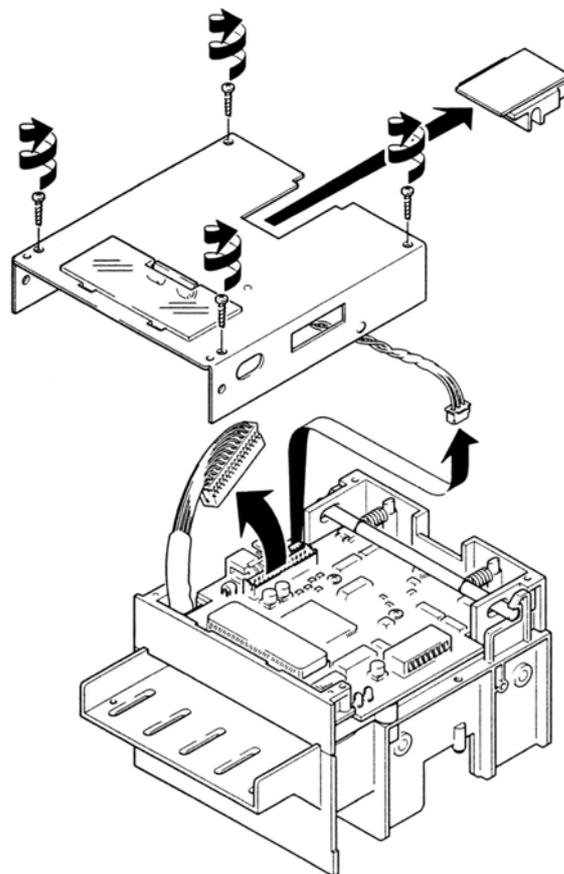
(4) Pull the holding bar at the back toward yourself to disengage and detach the upper scanning unit
     from the main unit.
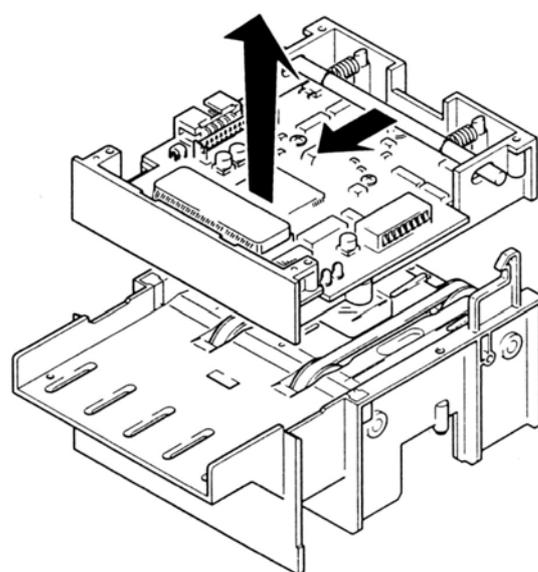
(5) Release the 2 springs of the holding bar from the upper scanning unit, slide one end of the bar out of the hole, and the n remove the bar as shown in the figure.
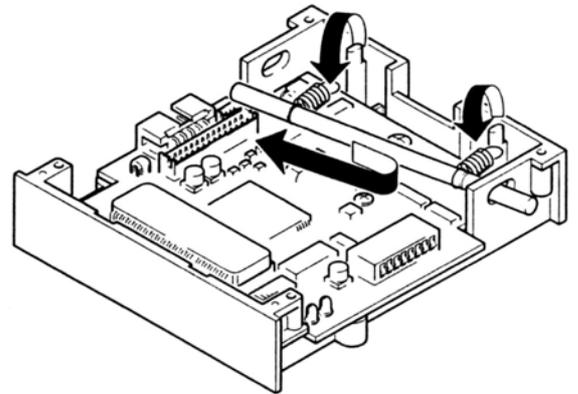
(6) Remove 3 screws to detach the upper CPU board.
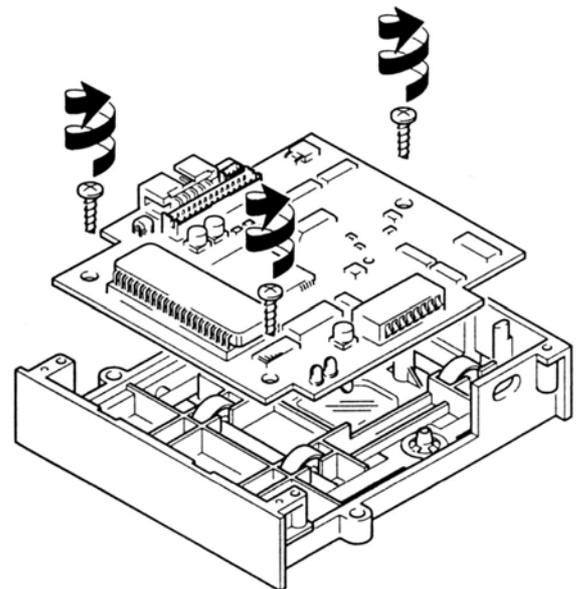
2. Disassembling the lower scanning unit
    (1) Place the main unit upside down, remove 2 screws and 2 screws on the sensor board to
         detach the board.
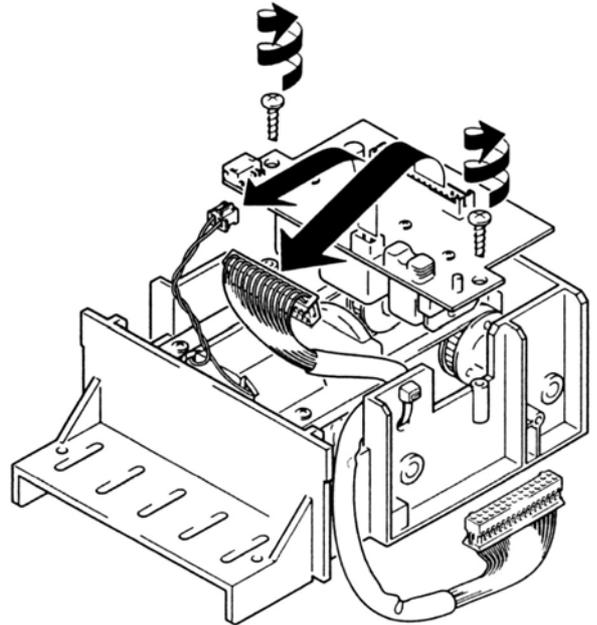
    (2) Remove 2 screws to remove the motor cover and pull out the motor.
         A plastic ball is set in the tip of the worm gear of the motor. Be sure not to loose this
         plastic ball.
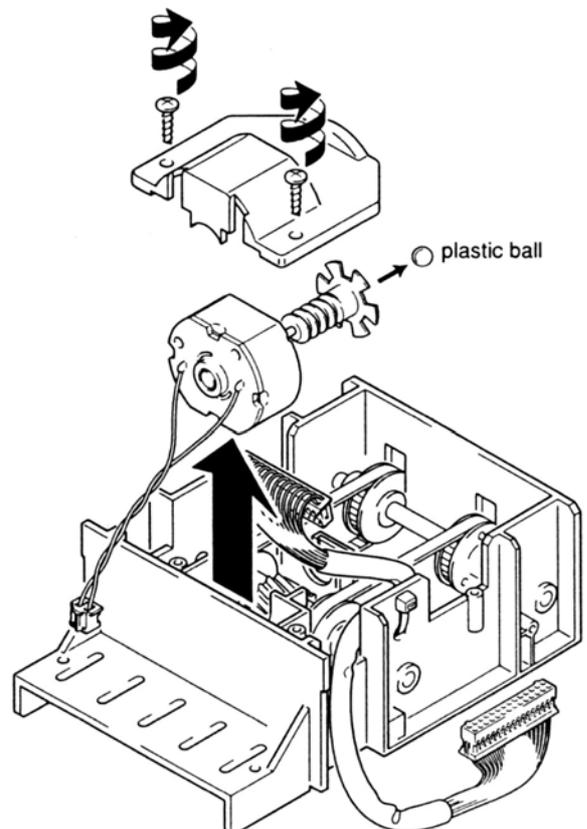
plastic ball

2 Reassembling the Acceptor

1. Assembling the lower scanning unit
   (1) Place the main unit upside down. Be sure to set the plastic ball (removed at the Disassembling) in the tip of the motor worm gear. Then set the motor in place and use 2 screws to attach the motor cover from the top.
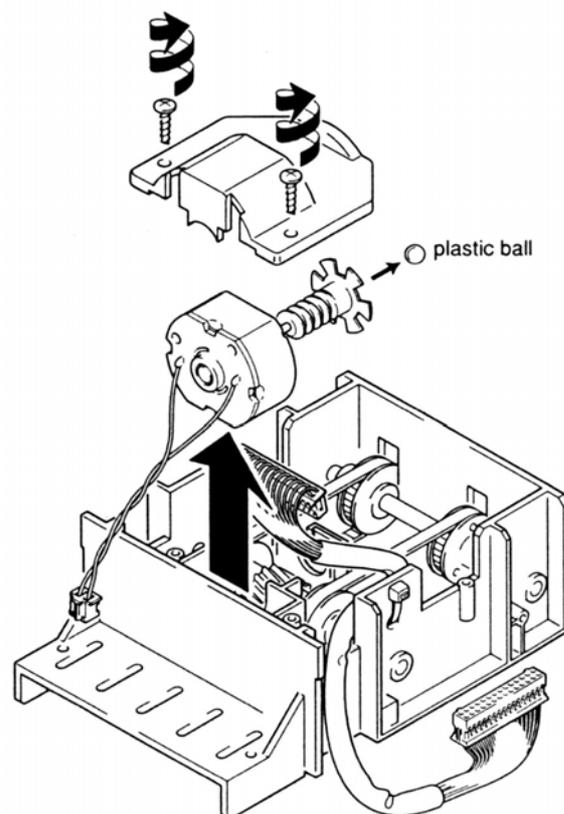
   (2) Use 2 screws to attach the sensor board to the main unit and connect the 2 connectors to the sensor board.
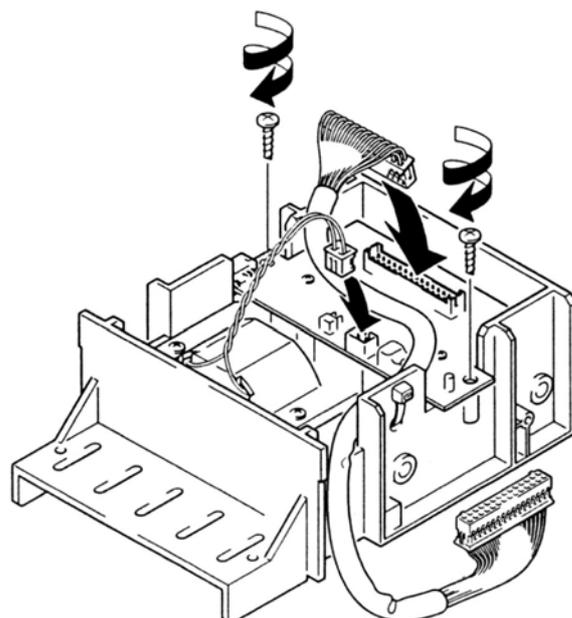
2. Assembling the upper scanning unit

    (1) Use 3 screws to attach the CPU
        board to the main unit.
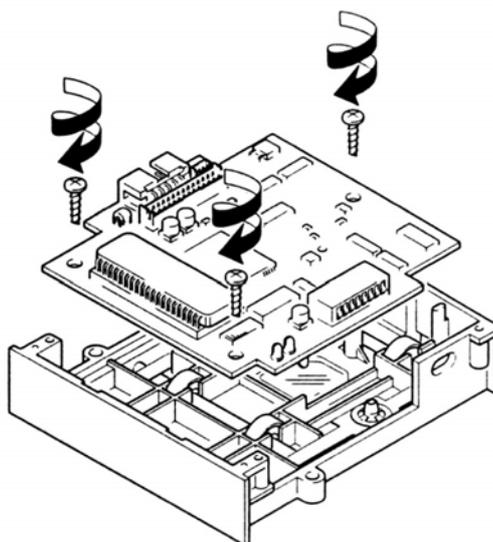
    (2) Insert the holding bar in the holes and the hock the 2 springs of the bar on the studs of the
        upper scanning unit as shown in the figure.
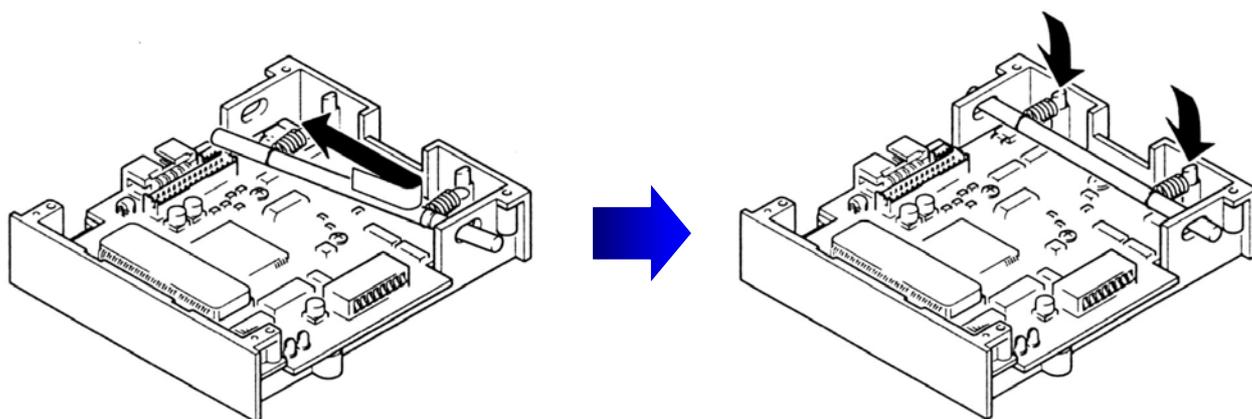
    (3) Set the upper scanning unit on the main
        body. You should hear a click when the
        holding bar attaches itself to the main unit.
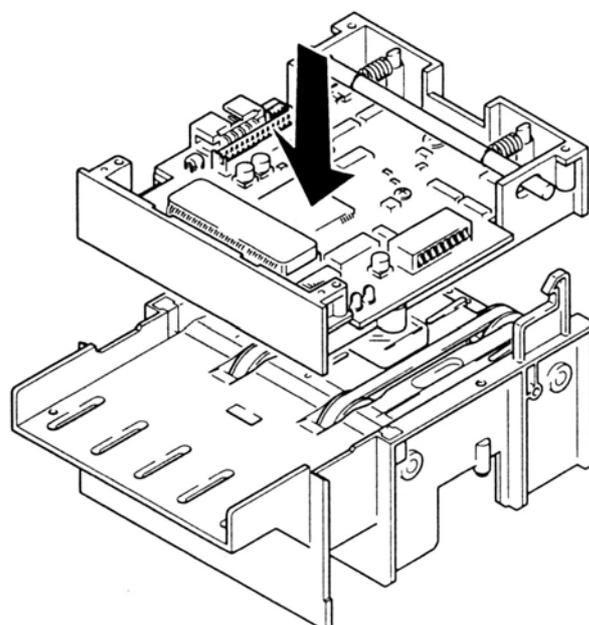
(4) Connect the 2 connectors, one from the main unit and the other from the upper cover, to the CPU board.
Restore the open/close button (removed at the Disassembling) to the upper cover and place the cover on the upper scanning unit. At this time, make sure that the notch under the button is aligned with the holding bar and fits into it. Also make sure that the connector harness from the upper cover is not caught between the button and the holding bar.
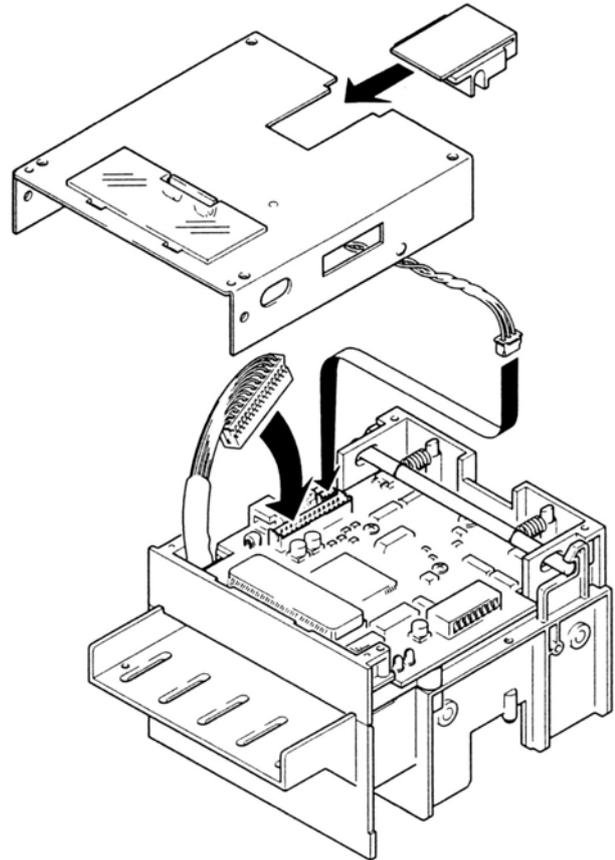
(5) Make sure that the studs on the main unit are firmly set in the holes of the upper cover and then tighten 4 screws.
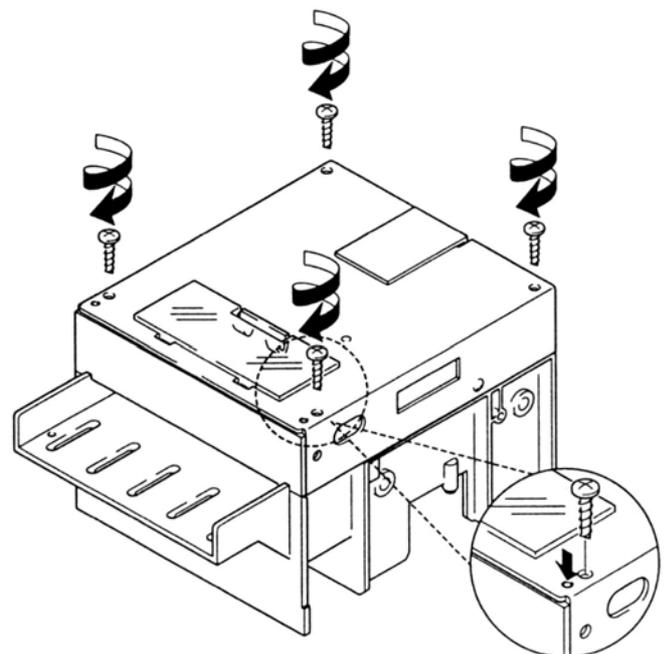
(6) Slide the body cover to attach I to the main unit as shown in the figure. Make sure the claws are hooked and fix the screw and collar pair on the hinges. Fix the screws on either side of the body cover.

Europe Bill Acceptor

EBA-03

Trouble Shooting

Contents

Introduction

A number of troubles occur from minor causes. Before you start repairing the unit, check the unit. For example, make sure that a connector is connected properly: the tray of acceptor is closed firmly and so on.

Dirt (paper particles, dust etc.) in the tray will lower the accepting rate of bills. Be sure to clean the internal parts periodically.

You can identify a trouble causes by carrying out the performance test described in "Adjustment Manual". You can also use the disassembling procedure.

1 Connecting EBA-03 and TB
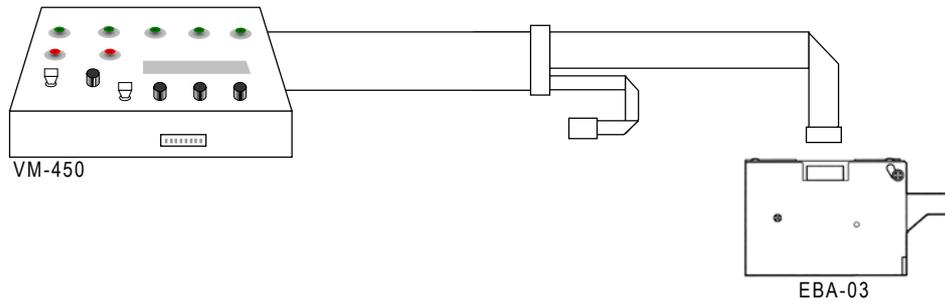
VM-450

EBA-03

2 DIP-Switch Setting of EBA-03 and VM-450

Power OFF the devices before the setting DIP switches of EBA-03 and VM-450 as below:

DIP SW1

off 1 2 3 4 5 6 7 8

off 1 2 3 4 5 6 7 8

on

off

on then off

EBA-03 DSW1-1 ON, DSW1-2 to 8 OFF   **VF-450** DSW all OFF
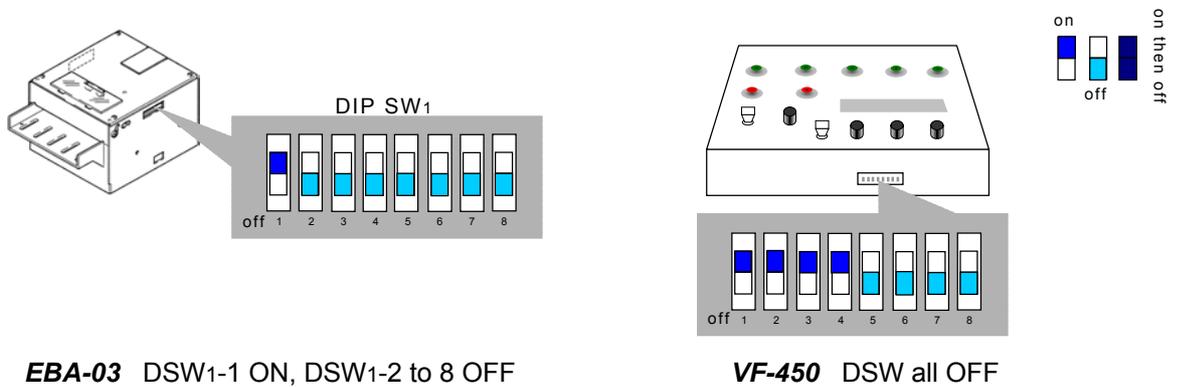
After powering ON both devices, set DIP-SW1-2 and 5 ON to select the bill acceptance test as below:

When the PERFORMANCE TEST starts, the red and green LEDs of EBA-03 on the right side of acceptor and BUSY LED on VM-450 will light. This is the test standby state.

off 1 2 3 4 5 6 7 8
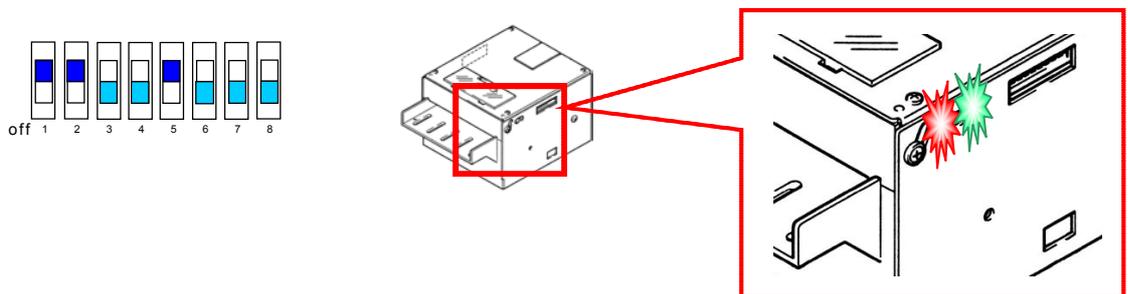
Set DIP-SW1-1 OFF. After initialisation, the acceptance test will start.

off 1 2 3 4 5 6 7 8
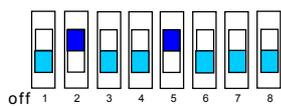
Check if the acceptor accepts a bill and the VEND1 LED on VM-450 flash. The number of flashing LED will vary depending on the type of accepted currency.

3 Reference for errors

Type of errors

The causes of trouble are roughly divided into the following four types. Check the operation status.

Test mode does not start

Initialisation error

Bill is not accepted

Bill transfer is not smooth
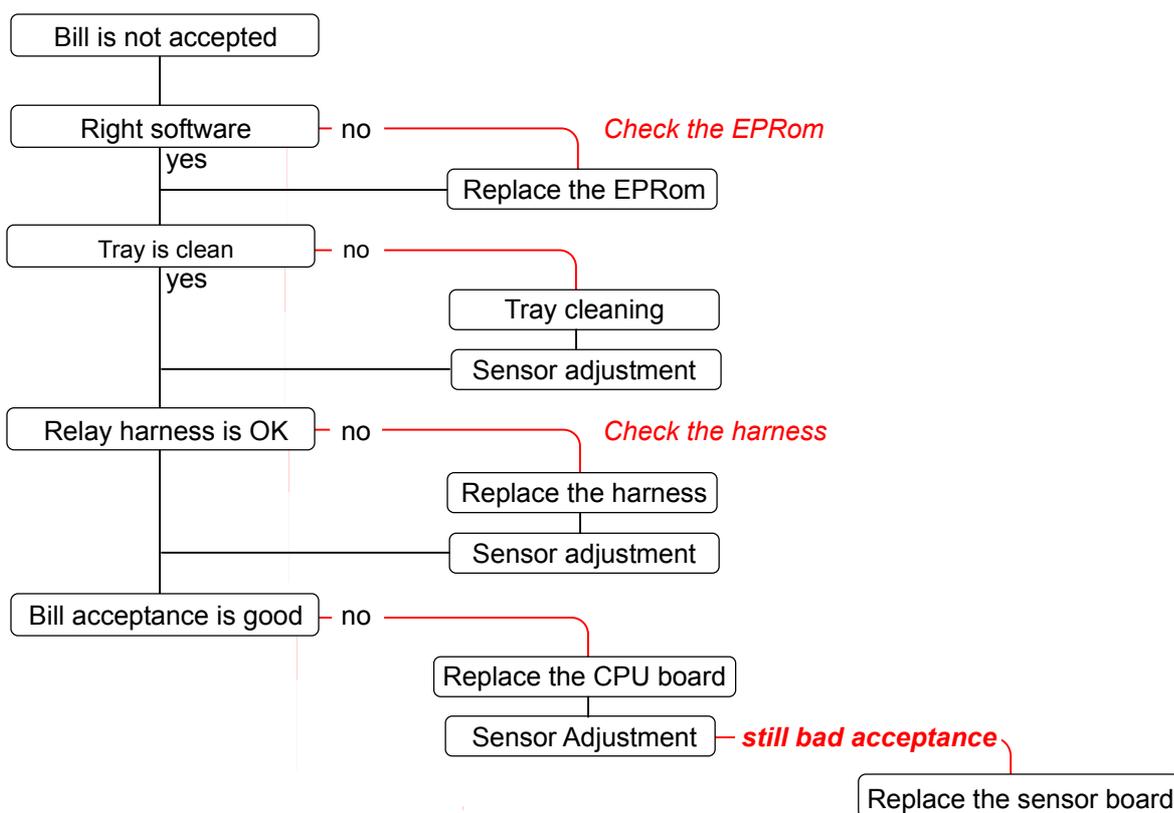
Test mode does not start
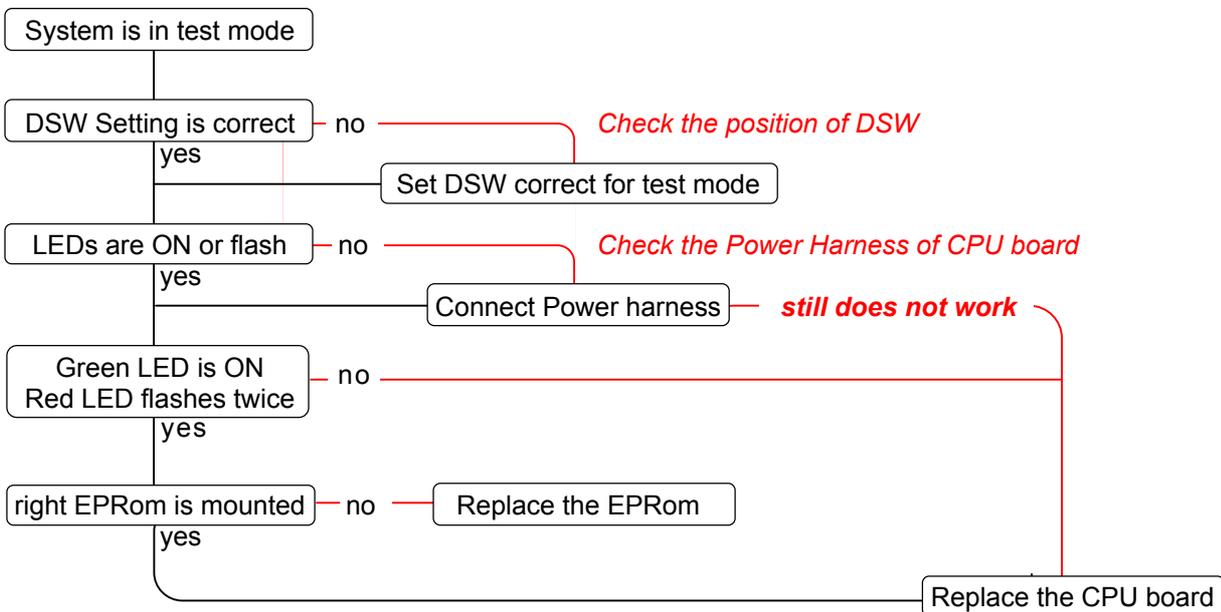
Initialisation error

When the acceptor is not initialised red LED will flashes. Check the number and follow the instruction.

No. of red LED flashing	Cause	Remedy	Last measure
4 times	Acceptor sensor error	Sensor adjustment	Replace CPU board or Replace sensor board
5 times	Motor speed error Acceptor sensor error	Performance test & sensor adjustment	Transfer unit check Replace the motor
6 times	Transfer motor defect Motor harness defect Encoder sensor error Relay harness defect CPU board defect	Replace motor or replace harness & sensor adjustment	Replace CPU board or replace sensor board

Bill is not accepted

Bill is not accepted

Right software — no —— *Check the EPRom*
yes
Replace the EPRom

Tray is clean — no
yes
Tray cleaning
Sensor adjustment

Relay harness is OK — no —— *Check the harness*
Replace the harness
Sensor adjustment

Bill acceptance is good — no
Replace the CPU board
Sensor Adjustment — *still bad acceptance*
Replace the sensor board

Bill transfer is not smooth

When bill transfer is not smooth, please check following points:

Feed passage
Feed roller
Feed belt
Transmission gear

Clean of replace these if necessary, and adjust sensors again.

4 Error Codes

Error code list

Number of LED flashings	Description of error
1	reserved
2	reserved
3	reserved
4	A bill is in the feed passage
5	Feed motor speed error Sensor adjustment error
6	Motor error (does not rotate / stop) No signal form the encoder
7	reserved
8	reserved
9	reserved
10	reserved
11	reserved
12	Sensor turned ON in a timing impossible in normal operation

Rejection code list

Number of LED flashings	Description of rejection
1	Rejection by bill insertion trouble
2	reserved
3	Rejection by residual bill
4	Rejection by optical sensor error 1
5	Rejection by feed error
6	Rejection by identification error
7	Rejection by optical sensor error 2
8	Rejection by optical sensor error 3
9	Rejection by INHIBIT (acceptance inhibit)
10	Rejection by input a reject signal
11	reserved
12	Rejection by back sensor error
13	Illegal bill length
14	Rejection by optical sensor error 4
15	Rejection by optical sensor error 5

Europe Bill Acceptor

EBA-03

Adjustment Manual

Contents

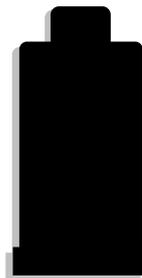# 1 Connecting EBA-03 to PC
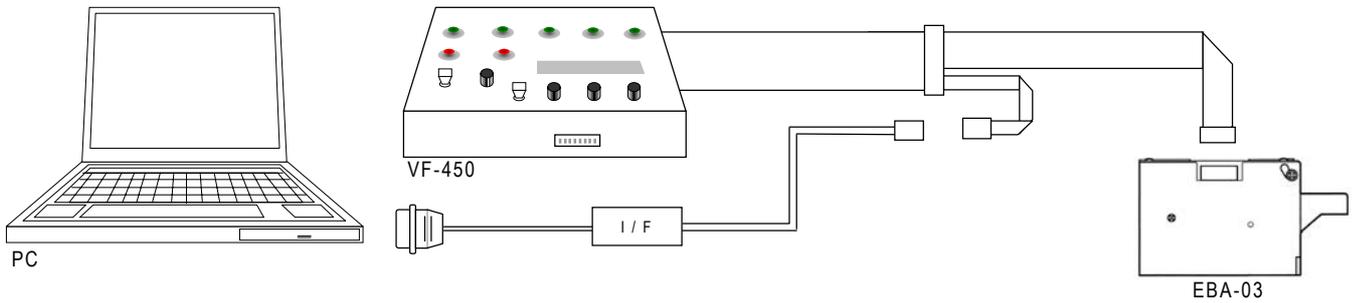
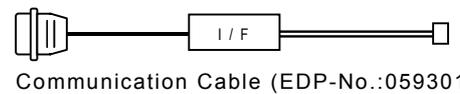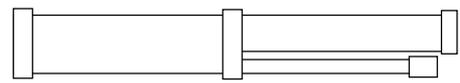**Tools required for adjustment**

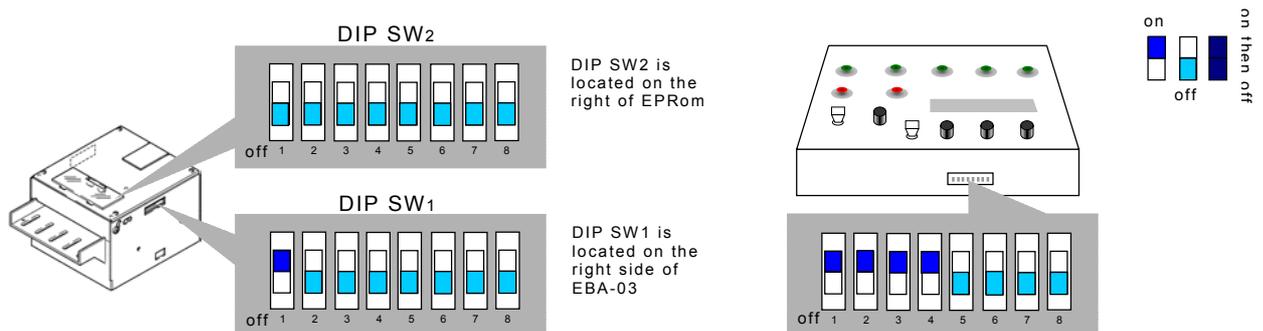

Adjustment Software
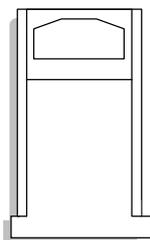
KS-044

KS-045

Communication Cable (EDP-No.:059301)

Conversion Cable (EDP-No.:074744)

2 DIP-Switch Setting of EBA-03 and VM-450

Power ON the devices after the setting DIP switches of EBA-03 and VM-450 as below:

DIP SW2

DIP SW2 is located on the right of EPRom

DIP SW1

DIP SW1 is located on the right side of EBA-03

EBA-03 DSW1-1 on, DSW2 all off

VF-450 DSW all off

When the test mode starts, the red and green LEDs on the front face of acceptor will both light. This is the test standby state. Sensor adjustment and selection of various performance test are also performed in this state.

If the red and green LEDs both do not light, check the DIP-Switch setting. If the DIP-Switches are set correctly, check the ROM and CPU board (see the chapter "Troubleshooting").

(6)   When all adjustment are done, "Complete" will appear in the message area.
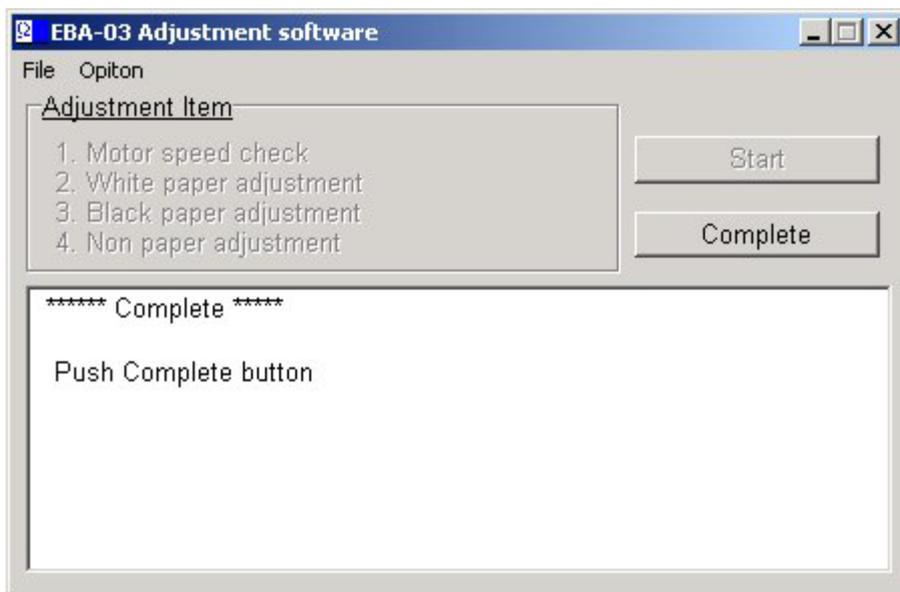
To return to the main screen, click "OK".

(7)   If an adjustment is not performed successfully, "Error" will appear in the message area together with the location of sensor where the trouble is.
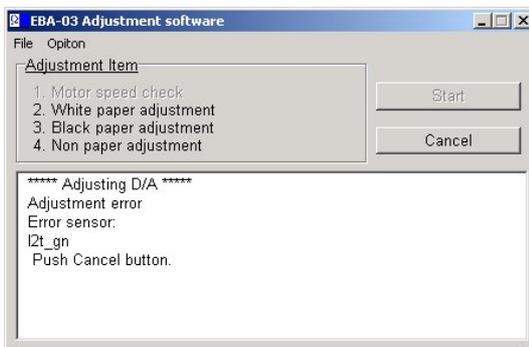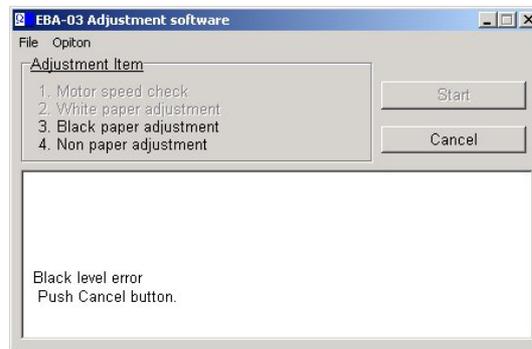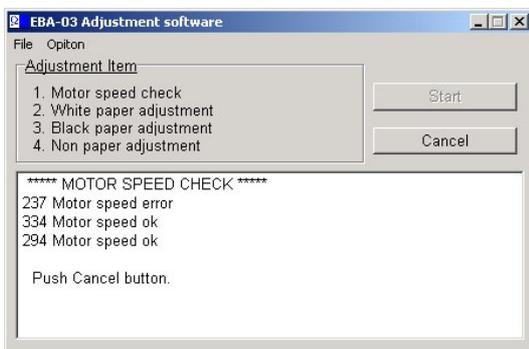
Click "Cancel" to return to main screen. Solve the problem and adjust again from the beginning.
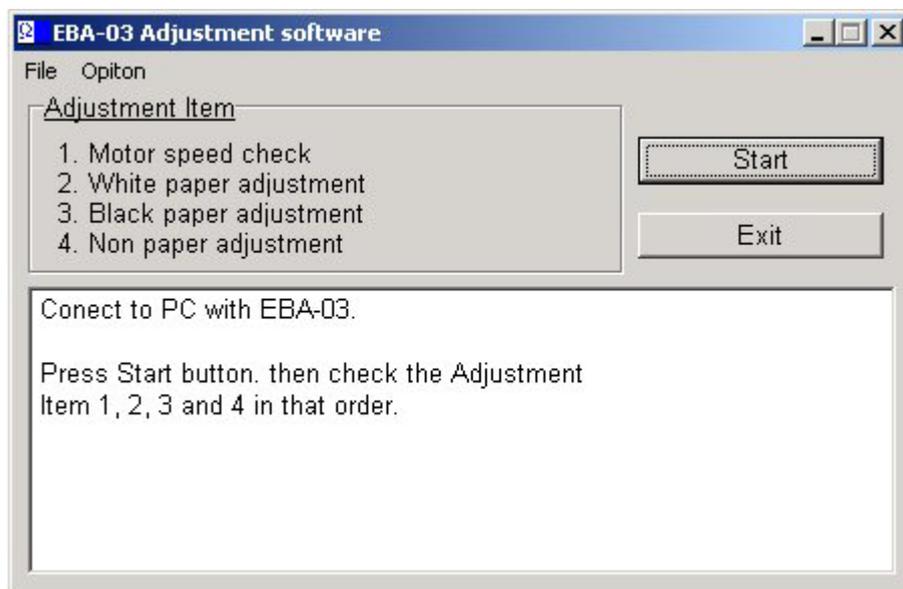
3 Sensor Adjustment

Tools required for adjustment

1. Environment for running the adjustment software

    Personal computer : Must have at least one RS-232C communication port (Dusb-9 pin).
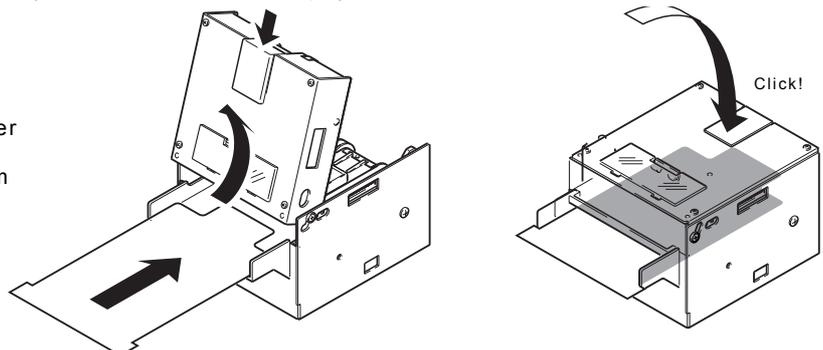   OS   : Windows 95/98 or 2000

2. Operation the adjustment software

    (1) Start up the adjustment software "EBA03.EXE"

    (2) The main screen will appear.

    (3) Make sure that EBA-03 is in the test mode standby state (the red and green LEDs on CPU board are lit). Also make sure that the tray of EBA-03 is empty since adjustment starts from the motor speed check.

    (4) Click "Start". The EBA-03 motor starts running and adjustment start.

    (5) After the adjustment of each item is completed, the following instruction will appear in the message area. "Perform adjustment sequentially in the order of the items displayed."
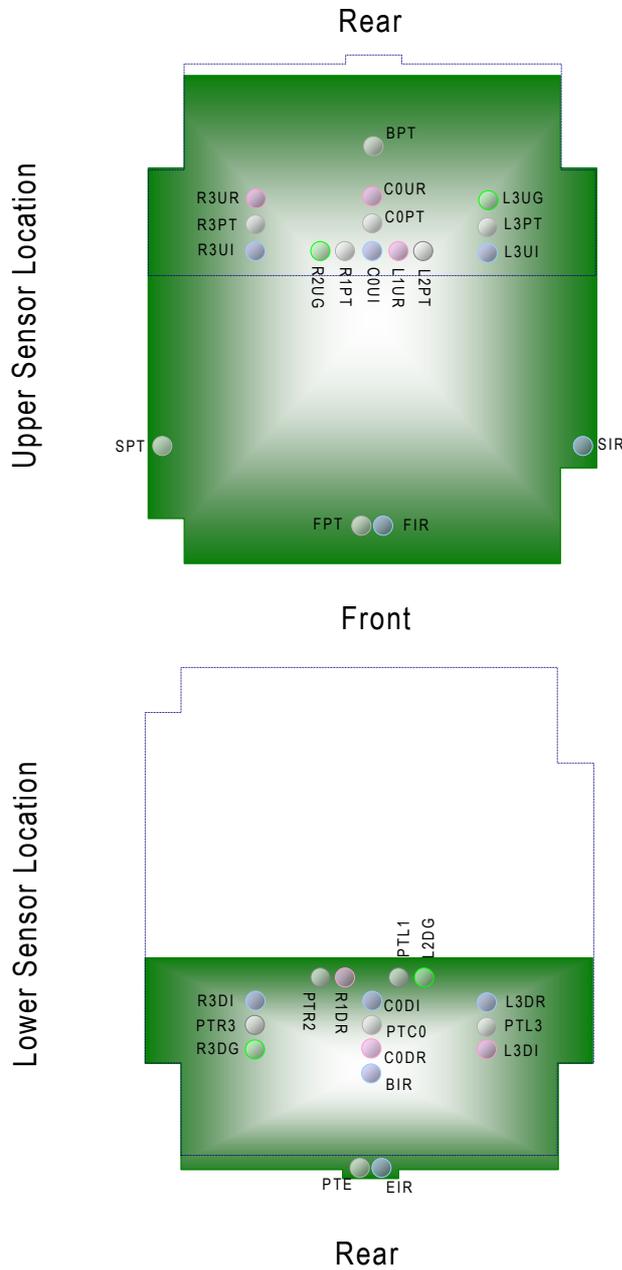
    Set the reference paper (KS-044/KS-045) properly and close firm the acceptor tray.

3.   Sensor Error Code

Names and Location of Sensors   Error Codes

Rear

Upper Sensor Location

BPT

R3UR   C0UR   L3UG
R3PT   C0PT   L3PT
R3UI   L3UI

R2UG R1PT C0UI L1UR L2PT

SPT   SIR

FPT   FIR

Front

Bill feed direction

Lower Sensor Location

PTL1 L2DG

PTR2 R1DR

R3DI   C0DI   L3DR
PTR3   PTC0   PTL3
R3DG   C0DR   L3DI

BIR

PTE   EIR

Rear

Code	Sensor
l3t_ir	L3DI / L3PT
l3t_gn	L3UG/PTL3
l3d_ir	L3DI
l3d_rd	L3DR
l3u_ir	L3UI
l3u_gn	L3UG
c0t_ir	C0DI / C0PT
c0t_rd	C0UR / PTC0
c0d_ir	C0DI
c0d_rd	C0DR
c0u_ir	C0UI
c0u_rd	C0UR
r3t_ir	R3DI / R3PT
r3t_rd	R3UR / PTR3
r3d_ir	R3DI
r3d_gn	R3DG
r3u_ir	R3UI
r3u_rd	R3UR
l1t_rd	L1UR / PTL1
r1t_rd	R1DR / R1PT
l2t_gn	L2 DG / L2PT
r2t_gn	R2UG / PTR2
b0t_ir	BIR / BPT
f0t_ir	FIR / FPT
e0t_ir	EIR / PTE
s0t_ir	SIR / SPT

4 Test mode

Selection of test mode

1. To enable test mode turn DSW1-1 on, and DSW1-2 to 8 off, then power up.
2. Red LED will be on, Green LED will flash on the face plate of unit.
3. Select a test mode (e.g. DSW1-2 on for Motor reverse test)
4. Turn DSW1-1 off, the wished test mode will start.
5. To enable and disable test mode
   DSW1-8 on : Test Disabled
   DSW1-8 off : Test Enabled

on

off

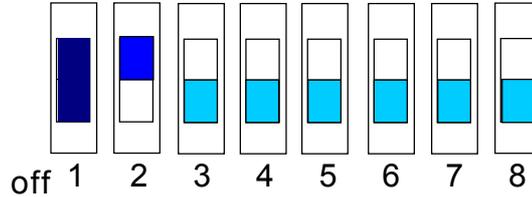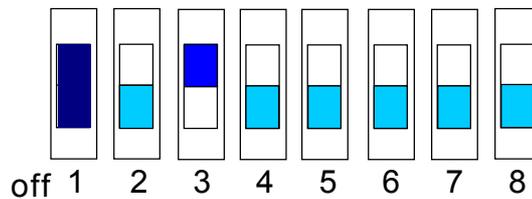on then off
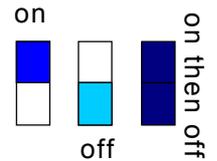
Test mode settings

DIP SW1

Motor forward test

off 1 2 3 4 5 6 7 8
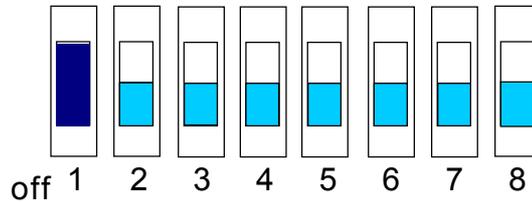
-1 on
-Power up
-Turn 1 off
-Ready

Motor reverse test

off 1 2 3 4 5 6 7 8

-1 and 2 on
-Power up
-Turn 1 off
-Ready

Sensor on/off test[1]

off 1 2 3 4 5 6 7 8

-1 and 3 on
-Power up
-Turn 1 off
-Ready

I/F test

off 1 2 3 4 5 6 7 8
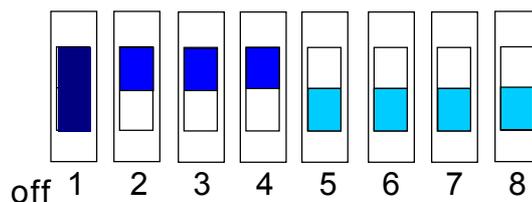
-1 to 3 on
-Power up
-Turn 1 off
-Ready

Aging test[*1]

off	1	2	3	4	5	6	7	8
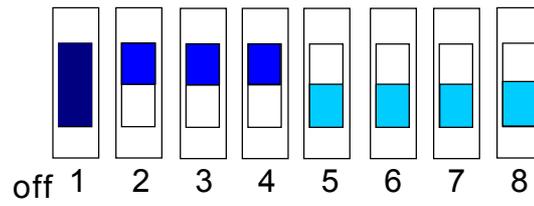
-1 to 4 on
-Power up
-Turn 1 off
-Ready

Acceptance test[*1]

off	1	2	3	4	5	6	7	8
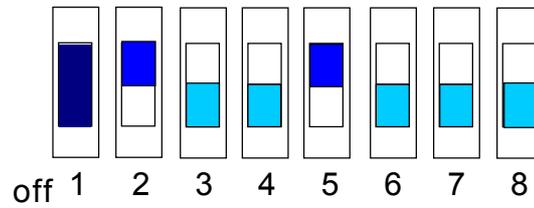
-1, 2 and 5 on
-Power up
-Turn 1 off
-Ready

DIP SW test

off	1	2	3	4	5	6	7	8
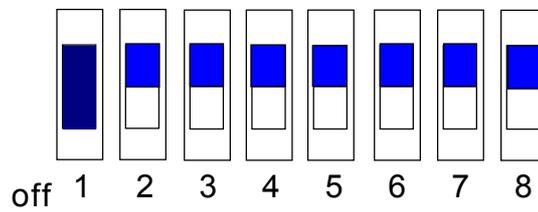
-all on
-Power up
-Turn 1 off
-Ready

[*1] : these test are effective only after the sensor adjustment is performed.

1. Details of Test Mode

(1) Motor forward test
Checking the feed speed of an acceptor in forward rotation
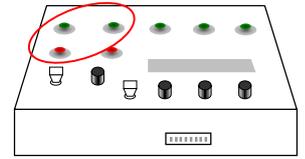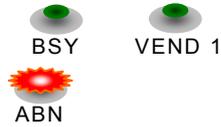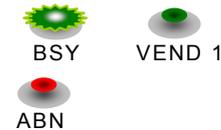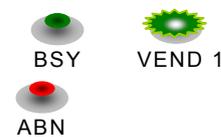The feed speed is indicated by the LEDs of VM-450 as below:

ABN LED is ON feed speed too fast	**-NG-**	BSY VEND 1 ABN
BSY LED is ON correct feed speed	**-OK-**	BSY VEND 1 ABN
VEND 1 LED is ON feed speed too slow	**-NG-**	BSY VEND 1 ABN

(2) Motor reverse test
Checking the feed speed of an acceptor in reverse rotation
The feed speed is indicated by the LEDs of VM-450 as same as in "Motor forward test".

(3) Sensor ON/OFF test
Checking the status(ON: detection enabled, OFF: detection disabled) of each sensor the acceptor feed unit

When the sensor selected by the setting of Enable/Disable, ACK switch on VF-450 detects a bill, LED of the ABN, BSY and VEND1 corresponding to each sensor will light.
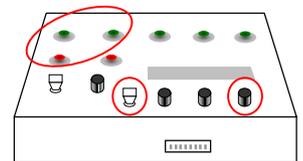
* Unless sensor adjustment is performed, this test will not be effective.

			LED	Sensor[1]
ENABLE ↓ DISABLE	ACK	BSY VEND 1 ABN	BSY VEND1 ABN	: R1DR / R1PT : FIR / FPT : R1UR / PTL1
ENABLE ↓ DISABLE	Push down ↓ ACK	BSY VEND 1 ABN	BSY VEND1 ABN	: R3UR / PTR3 : C0UR / PTC0 : L3UG / PTL3
ENABLE ↑ DISABLE	ACK	BSY VEND 1 ABN	BSY VEND1	: EIR / PTE : BIR / BPT

[1] : Refer to „Name and Location of Sensors"

(4) I/F test
Checking the status of I/F signal line of the acceptor

Operate the Enable/Disable, ACK, and REJ switches on VM-450, the VEND1, BSY and ABN LEDs corresponding to each signal line will light. Thus you can check if the signal line is in force.

						EBA-03 Signal Line	
	Push down						
ENABLE	ACK	REJ	BSY	VEND 1		CN1	No.
DISABLE			ABN			DOUT0	3
						DIN 0	4
ENABLE	ACK	REJ	BSY	VEND 1		CN1	No.
DISABLE			ABN			DOUT0	7
						DIN 0	8
		Push down					
ENABLE	ACK	REJ	BSY	VEND 1		CN1	No.
DISABLE			ABN			DOUT0	9
						DIN 0	10
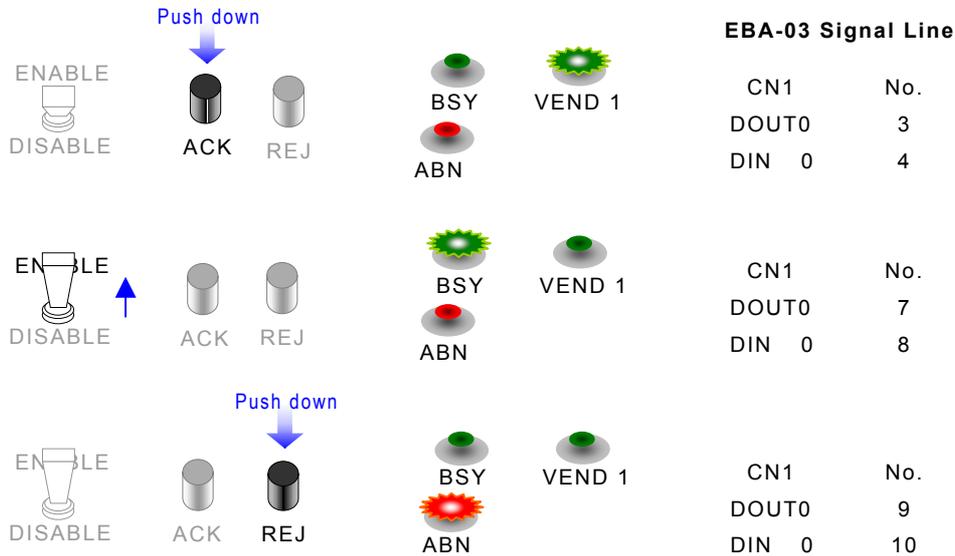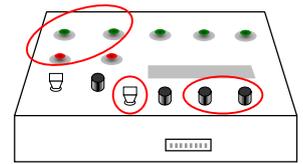
(5) Aging test
The acceptor continues to repeat the standard operation cycle.
If an error occurs during operation cycle, the ABN LED on VM-450 will light and the operation cycle will be stopped. Check the number of flashing time[2] and identify the cause of trouble.

(6) Acceptance test
Checking the bill acceptance operation when the acceptor is not connected to VM-450

After the initial operation is completed, you can accept a bill and check the bill acceptance rate.

    a) Acceptor does not accept bill
Acceptor operation error: Check the flashing time[2] of red LED on the PCU board and repair or replace the required part.

    b) Acceptor rejects bill
Acceptor validation error: Check the flashing time[2] of red LED on the PCU boad and perform sensor adjustments/cleaning the acceptor, and repair or replace the required part.

[2] Refer to "Error/Rejection code"

When you perform the banknote acceptance test, be sure to use a clean banknote. Do not use banknotes described as below:

- Dirty, worn, wet , torn and extremely wrinkled banknotes
- Banknotes with folded corners or edges
- Banknotes with oil stains ad iron particle deposits

(7) DIP Switch test
Checking the operation of DIP Switch 1 and DIP Switch 2

When the DIP Switch test stats, the BSY, VEND1 and ABN LEDs of VM-450 are turned OFF.

Set all even bits of DIP SW1 and DIP SW2 to ON, and all odd number of bits to OFF. The DIP Switches are working properly, when the VEND1 LED lights.

DIP SW1   DIP SW2

off 1 2 3 4 5 6 7 8   off 1 2 3 4 5 6 7 8

BSY   VEND 1

ABN
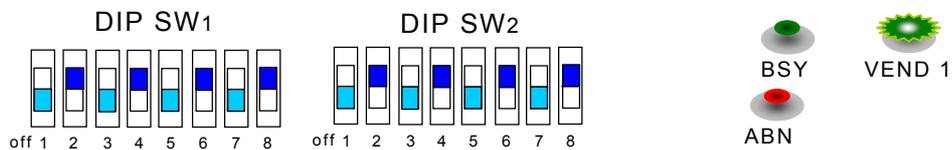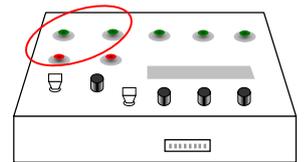
Set all even bits of DIP SW1 and DIP SW2 to OFF and all odd number of bits to ON. The DIP Switches are working properly, when the VEND1 and ABN LEDs light.

DIP SW1   DIP SW2

off 1 2 3 4 5 6 7 8   off 1 2 3 4 5 6 7 8

BSY   VEND 1

ABN
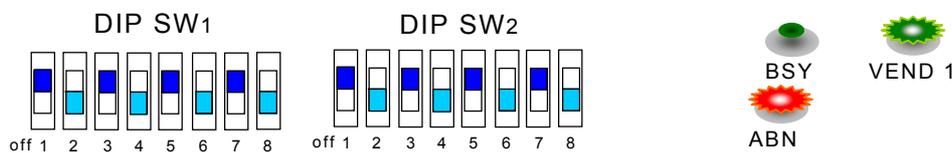
Set all DIP Switches to ON. BSY LED will light and the acceptor returns to standby mode for the test mode.

DIP SW1   DIP SW2

off 1 2 3 4 5 6 7 8   off 1 2 3 4 5 6 7 8

BSY   VEND 1

ABN
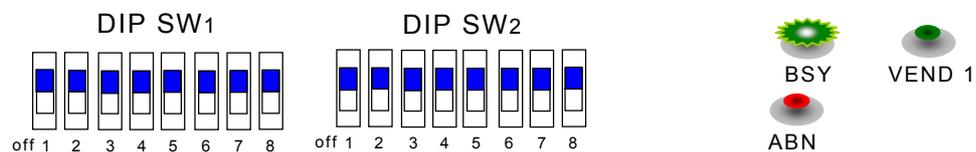
2. Error/ Rejection Code

If acceptor does not operate, as it should when you perform various operation tests, the red and green LEDs on the CPU board will flash. You can determine the cause and location of trouble by checking the flashing status and number of the red or green LED flashes.

(1) The acceptor does not accept a banknote at all.

Acceptor operation error
Check the number of flashing time of red LED and specify the type of error with the error codes shown below. Repair (adjust) or replace the required part.

Number of red LED flashing time	Description of error
1	Reserved
2	Reserved
3	Reserved
4	Banknote remains in the acceptor
5	Feed motor speed error Sensor is not adjusted
6	Motor does not rotate Motor does not stop No signal is sent from the encoder sensor
7	Reserved
8	Reserved
9	Reserved
10	Reserved
11	Reserved
12	Error by fraud behaviour

(2) The acceptor rejects a banknote.

Validation error
Check the number of flashing time of green LED and specify the type of error with the rejection codes shown below. Perform sensor adjustments and repair or replace the required part.

Number of red LED flashing time	Description of error	
1	Bill insertion trouble	Crooked insertion
2	Reserved	
3	Residual Bill	Paper jam
4	Optical sensor error 1	X-ray error
5	Feed error	Sync detect error
6	Identification error	Near error
7	Optical sensor error 2	Pattern error
8	Optical sensor error 3	Photo level error
9	INHIBIT	
10	Input a reject signal	Reject error
11	Reserved	
12	Back sensor error	
13	Illegal bill length	Length error
14	Optical sensor error 4	IR error
15	Optical sensor error 3	Counterfeit bill

Europe Bill Acceptor

EBA-03

Parts List

Contents

Parts Diagram

Parts List

No.	EDP-No.	Parts Name
1	067383	CPU Board Assy
2	067382	Sensor Board Assy
3	067412	Regulator Module Assy
4	067416	DC Motor Module Assy
5	067489	Relay Harness
6	067478	Frame Low
7	067479	Frame Up
8	067480	Plate Spring
9	067481	Metal Plate
10	069760	Bill Guide Low
11	069761	Bill Guide Up
12	067464	Square Prism
13	067467	Window Cover A
14	067468	Window Cover B
15	067469	Prism Wall
16	067470	Motor Cover
17	067471	Worm Wheel
18	067472	Worm Gear
19	067473	Pulley GT2
20	067474	Driven Roller
21	067465	ROM Cover Wide
22	067476	Open Button
23	067477	Sensor Spacer A
24	069492	Sensor Spacer B
25	069491	Square Prism 2
26	069493	CA Snap Ring
27	067482	Pulley Beam
28	067483	Fulcrum Collar
29	067484	Open Shaft
30	067485	Roller Shaft
31	067486	Open Spring
32	067487	Timing Belt
33	069519	Nylon Ball
34	069762	M2.3x4 Screw
35	005846	M2.6x5 Flat Head Screw
36	062887	M2x10 Screw
37	061502	M2.6x10 Screw

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Technical bulletins will be added to web page
for any technical and/or manual updates