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# EBA® Series

## EBA-40

### Banknote Acceptor

*Operation and Maintenance  
Manual*  
*(Revision 2)*

P/N 960-100930R\_Rev. 2 {EDP #229279}



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## REVISION HISTORY

Rev No.	Date	Reason for Update	Comment
A	09/08/14	Initial Document	
1	07/17/15	Updated Electrical Specification information in Section 2, corrected the USB driver installation procedure and the DIP Switch settings for the Status LEDs performance test without using a PC in Section 6, corrected part number Information in Section 7, and corrected EDP number for the UAC Harness in Appendix A.	
2	06/27/16	Added a Barcode Label figure to Product Descriptions and updated the Sensor and Roller Locations in Section 1, updated the Sensor Test procedures in Section 6, updated EDP number Information in Section 7, and updated Reject Codes and Additional Maintenance Equipment Parts List in Appendix A.	

## International Compliance

- RoHS Directives or or or or
- CE Mark
- CB Scheme

NOTE: The CB Scheme compliance confirmation is currently being examined for approval.

## Electrical Current Symbol

- Direct Current: indicates Direct Current values on product labels.

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# EBA® Series

## EBA-40 Banknote Acceptor

### Section 1

#### 1 GENERAL INFORMATION

This section provides a general overview of the EBA® Series EBA-40 Banknote Acceptor Unit pictured in Figure 1-1. This section is designed to help the user navigate through this guide with ease. It includes the following information:

- EBA-40 Unit
- Product Descriptions
- Precautions
- Primary Features
- Component Names
- Specifications
- Unit Dimensions
- Technical Contact Information

In order to make operating this device and navigating within this manual easier, the following illustrations are used:

- **Safety Instructions** need to be observed in order to protect the operators and the equipment; these are identified with **Bold** text and the following pictographs: ! ⚡ ⚡
- **Special Notes** affect the use of the Banknote Acceptor; these are identified with *italic* text and the following pictograph: ↗
- **Steps** require the operator to perform specific actions; these are identified with sequential numbers (1, 2, 3, etc.).

#### EBA-40 Unit



Without SD3 Stacker



With SD3 Stacker

Figure 1-1 EBA-40 Unit

## Product Descriptions

### Model Descriptions

Table 1-1 lists the product model number descriptions.

**Table 1-1** EBA-40 Model Number Specifications

Nº	 0 0 0 0 0 0 0 0 0 <b>EBA-*</b> * * - ***(*)-* * * * * * * - ** 0 (1)(2)(3)
(1)	Model Number 4 = Standard
(2)	Model Series Number 0 = Standard 1-9 = Reserved
(3)	SD3 Stacker None = Without SD3 Stacker SD3 = With SD3 Stacker

### Type Descriptions

Table 1-2 lists the product type number descriptions.

**Table 1-2** EBA-40 Type Number Specifications

Nº	 0 0 0 0 0 0 0 0 0 <b>EBA-*</b> _ * - ***(*)-* * * * * * * - ** 0 (1)(2)(3)(4)(5)(6)(7)(8)(9)
(1)	Denomination (Country Code)*
(2)	SD3 Stacker Capacity† 0 = None (Without Stacker) 4 = 400 notes (Standard) 6 = Reserved
(3)	Option Unit (Mounting Bracket) 0 = None (Without Mounting Bracket) 1 = With Mounting Bracket
(4)	Bezel (Option) 0 = Without Bezel (Standard) 1 = Bezel Type A
(5)	Interface Conversion Board 0 = Without I/F Conversion Board (Standard)
(6)	Key Switch 0 = Without Key Switch (Standard) 1 = With Key Switch 2 = OEM Key Switch
(7)	Bar Sensor 0 = Without Bar Sensor (Standard) 1 = With Bar Sensor (Up type) 2 = With Bar Sensor (Down type)
(8)	SD3 Security Lock 0 = Without Security Lock 1 = With Security Lock (Standard)
(9)	Interface 03 = ID-003 (JCM Serial) D3 = ID-0D3 (MDB) E3 = ID-0E3 (ccTalk)‡ ** = Other (Last 2 digits of interface ID)

\*. The Country Code is indicated per the ISO 3166 standard.

†. The number of stacked Banknotes depends on each Banknote's condition.

‡. Serial communication protocol developed by Money Control is employed for ccTalk.

## Software Descriptions

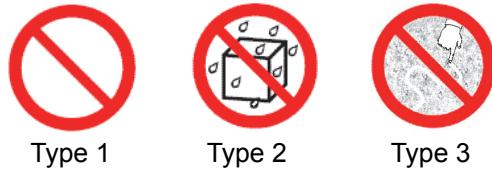
Table 1-3 lists the software number descriptions.

**Table 1-3** EBA-40 Software Number Specifications

Nº	Software: <u>EBA-40</u> * * * - <u>0</u> * * - <u>V</u> * . <u>**</u>			
	(A)	(B)	(C)	(D)
(A)	Software Model Name			
(B)	Denomination (Country Code)*			
(C)	Interface Protocol Name			
(D)	Software Version			

\*. The Country Code is indicated per the ISO 3166 standard.

## Precautions



**Figure 1-2** Precautionary Symbols

Symbols in Figure 1-2 are defined as follows:

- (Type 1) Do not insert a torn, folded, or wet Banknote into the Unit, as this action may cause a Banknote jam inside the Unit.
- (Type 2) Do not expose the unit to water. The unit contains several precision electronic devices that can be damaged if water or other liquid is sprayed or spilled into the unit.
- (Type 3) Do not install the unit in a dusty environment. Dust may affect or degrade the Unit's performance.

## User Cautions

Careful measures are taken in the design of this product to ensure its quality; however, the following cautions should be read and understood by all users for safe operation.

## Installation Cautions

The Installation Cautions are defined as follows:

- The Unit is not designed for outdoor installation. Be sure that the Host Machine contains enough protection to avoid wet or dusty conditions when installing in either an indoor or open-air space.
- Ensure that the Host Machine is designed for daily operational access for maintenance and/or clearing a Banknote jam.
- Be careful not to use excessive outside pressure on the Mounting Plate when removing the SD3 Stacker from the Unit.

4. Avoid exposing the Unit to direct Sunlight and/or Incandescent Lamp illumination having a Gradient Angle of 15 Degrees or more, and an illumination index of 3000 Lux or less. Ensure that the Host Machine is also designed to avoid exposing the Banknote Insertion Slot to direct Sunlight or Incandescent light.
5. Do not allow the Unit to endure or operate at a high temperature, in high humidity, and/or in a dusty environment (refer to “Environmental Specifications” on page 1-7 of this Section).
6. Do not install the unit in an area with excessive vibration or shock present.

## Mounting, Dismounting & Transportation

Methods for mounting, dismounting and transporting the unit:

1. Be sure to turn the Power to the Unit OFF before mounting or removing the Unit from its permanent location. Attaching or unplugging Connector Plugs from their receptacles while the Power is ON may cause damage to the Unit.
2. When reassembling a disassembled Unit Part, ensure that the each part is properly replaced in its correct original location.
3. Be sure to carry the Unit by both hands when transporting it. Holding the Unit by one hand may cause personal injury if the Unit accidentally becomes disassembled and falls away from the Frame Housing.
4. Be careful not to use excessive outside pressure on the Unit, or subject it to excessive vibration during transportation.

## Preventive Maintenance

The preventive maintenance requirements are defined as follows:

1. Be sure to turn the Power OFF on the Unit BEFORE beginning a maintenance procedure. The equipment produces improper operating signals while in maintenance mode that may cause personal injury.
2. When closing the Upper Guide of the Unit, make sure that it clicks firmly into place.



**Caution: Be careful to avoid personal injury to your fingers when closing the Upper Guide Section.**

3. Do not redesign or disassemble the Unit. Unauthorized use by inadequately trained personnel, or use outside the original manufacturer's intent for operation voids the warranty.
4. Perform routine cleaning and maintenance once a month to keep the Unit's performance stable.
5. Use a soft, lint-free Micro-fiber Cloth, cotton swab and non-flammable compressed air spray to clean dust and debris from the Banknote Path.

**WARNING: To minimize risk of damage to internal printed circuit boards, never allow excess fluid (e.g., from a wet cleaning cloth) to drip or leak into the device. Internal printed circuit boards may be damaged. Do not use any alcohol, citrus based cleaners, solvents or scouring agents that can damage the plastic surfaces of the device.**

6. If the Unit is exposed to water or other liquids, use a clean, dry Micro-fiber Cloth to wipe off and absorb excess liquids immediately. Any remaining liquids may affect and degrade the Sensors and Validation component performance.

**Caution: Make Interface Harness connections to the Host Machine shorter than 9.84 Feet (3 Meters) in length. Cut off all unused portions of the Interface Harness wiring to avoid static electrical effects or short circuit possibilities that could cause damage to the Unit.**

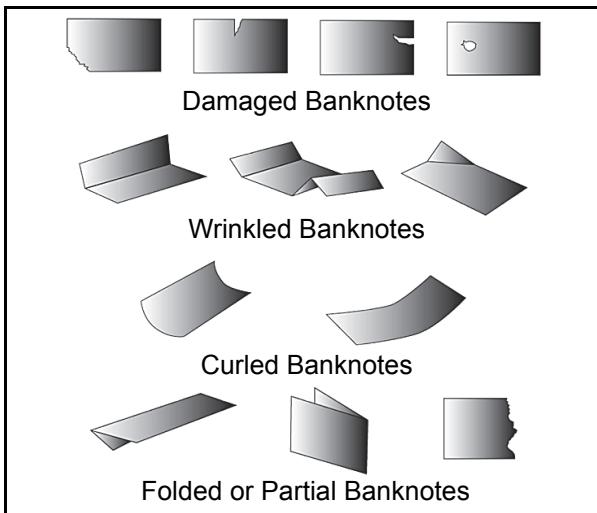
**WARNING: This Unit is designed for use with a Current limiting Power Source! Design the Host Cabinet space to meet all local related safety standards.**

## Banknote Fitness Requirements

The following Banknote types may not validate correctly, or can cause a jam and/or damage to the unit's Transport Path.

Banknotes exhibiting the following conditions and illustrated in Figure 1-3 should be avoided:

- Torn
- Excessive folds or wrinkles
- Dirty
- Wet
- Adhering foreign objects and/or oil

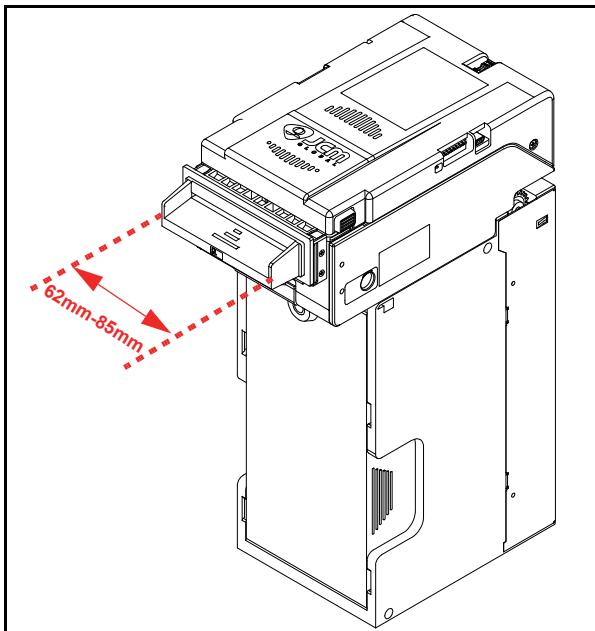


**Figure 1-3 Unacceptable Banknotes**

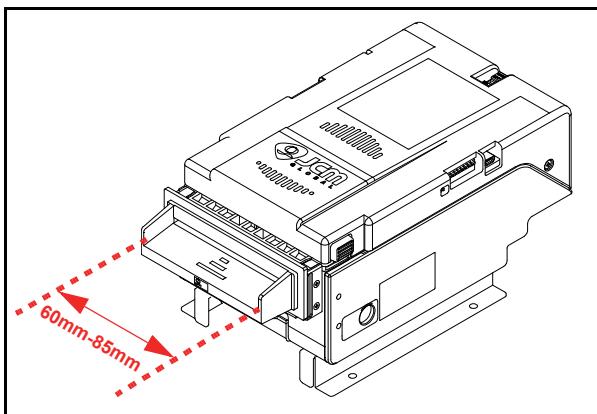
## Primary Features

The EBA-40 Banknote Acceptor Unit contains the following primary features:

- **Proven Anti-Pullback Technology** – The JCM patented Anti-Pullback Mechanism provides powerful protection against Banknote stringing.
- **Automatic Centering** – The Centering Mechanism (Figure 1-4 and Figure 1-5) allows the unit to read Banknotes without using special Banknote Guides. It helps to improve the overall acceptance rate:
  - With the SD3 Stacker: 62mm to 85mm in width
  - Without the SD3 Stacker: 60mm to 85mm in Width



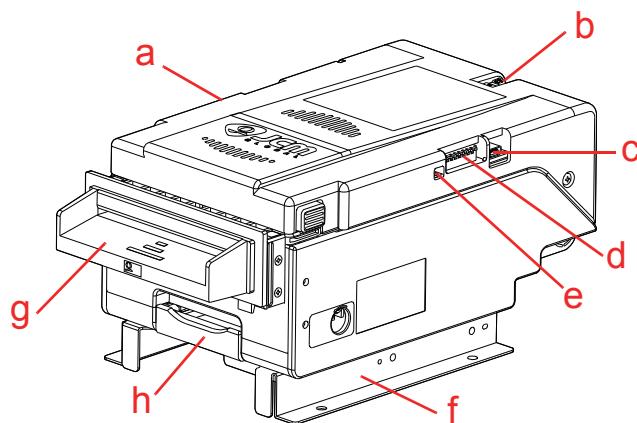
**Figure 1-5 Automatic Centering Mechanism  
(with the SD3 Stacker)**



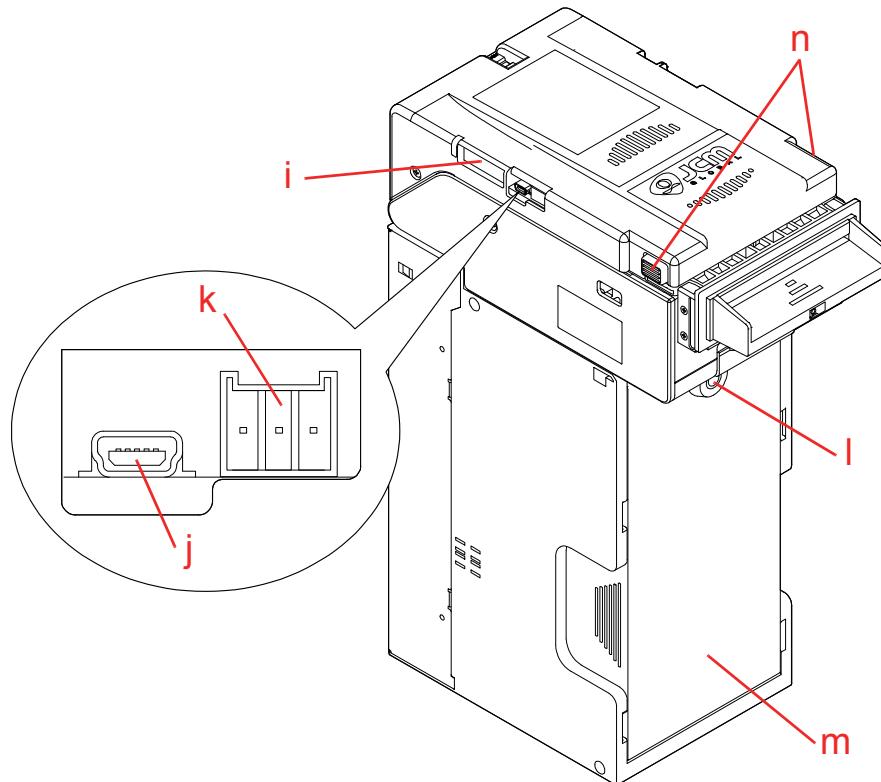
**Figure 1-4 Automatic Centering Mechanism  
(without the SD3 Stacker)**

## Component Names

Figure 1-6 illustrates the EBA-40 component names and locations.



EBA-40 Head Assembly Only



EBA-40 With SD3 Stacker

- a) Acceptor Unit
- b) DIP Switch Block 2 (DS2 Switch #1 through #8)
- c) USB Maintenance Connector
- d) DIP Switch Block 1 (DS1 Switch #1 through #8)
- e) Status LEDs (Red/Green); Centering Mechanism Home Position (Yellow)
- f) Mounting Bracket  
(Optional - for EBA-40 Head Assembly only)

- g) Bezel (Option)
- h) Acceptor Unit Release Latch
- i) Power Supply/Interface Connector
- j) USB Interface Connector
- k) RS232C Connector
- l) Security Lock
- m) SD3 Stacker
- n) Upper Guide Open/Close Button

**Figure 1-6** EBA-40 Component Names

## Specifications

### Technical Specifications

**Table 1-4 EBA-40 Technical Specifications**

Acceptance Rate <sup>*</sup> :	98% or greater The following banknote types are excluded: <ul style="list-style-type: none"><li>• Banknotes with excess or poor magnetism or unclear graphics</li><li>• Double (dual) Notes</li><li>• Worn, dirty, wet, stained, torn or excessively wrinkled Banknotes</li><li>• Banknotes having folded corners or edges</li><li>• Banknotes having the wrong cut dimensions or printing displacement</li><li>• Returned Banknotes because of incorrect or failed insertion.</li></ul>
Banknote Types Accepted:	With the SD3 Stacker <ul style="list-style-type: none"><li>• Long side: 120-160mm (4.72-6.29 in.)</li><li>• Short side: 62-85mm (2.44-3.34 in.)</li></ul> Without the SD3 Stacker <ul style="list-style-type: none"><li>• Long side: 110-181mm (4.33-7.12 in.)</li><li>• Short side: 60-85mm (2.36-3.34 in.)</li></ul>
Barcode Coupon <sup>†</sup> :	Standard Specification <ul style="list-style-type: none"><li>• Read code interleaved: 2 of 5</li><li>• Narrow Bar: 0.5-0.6mm (0.019-0.023 in.)</li><li>• Wide Bar to Narrow Bar ratio = 3:1</li><li>• Characters: 18 Characters</li><li>• Print Position: Middle (Divides a Coupon equally from the left, right, top and bottom of the Coupon's center)</li><li>• Print Width: Wider than 10mm (0.39 in.)</li></ul>
Insertion Direction:	Refer to the Specific Country's "Software Information Sheet"
Processing Speed <sup>‡</sup> :	Approximately 1.8 seconds (from Banknote insertion to sending Vend Signal) Approximately 3.5 seconds (from Banknote insertion to stacking completion)
Validation Method:	Validation Sensor and Magnetic Sensor
Diagnostic Indicators:	Status LEDs (Green/Red/Yellow), Bezel LED (Green)
Escrow:	1 Note
Anti-stringing Mechanism:	Pull-Back (PB) Unit (Anti-pullback System - JCM Patented)
SD3 Stacker Capacity <sup>**</sup> :	Approximately 400 notes (new Banknotes)
SD3 Stacker Access:	Front Access
Interface <sup>††</sup> :	TTL Serial Interface MDB Interface Photo-Coupler Interface ccTalk RS232C USB (USB Specification Rev. 2.0 Compliance) (Full Speed/12Mbps)

\*. Refer to the specific Country's "Software Information Sheet" for each Country's particular Banknote acceptance rate.

†. Refer to the specific Country's "Bar Code Coupon Specification" for more details.

‡. Excluding Host Communication time lag (Power Supply: +12V ±5% DC, Temperature: 25° C ±5° C, Humidity: 30%-60%).

\*\*. The number of Notes stacked depends on each Banknote's condition.

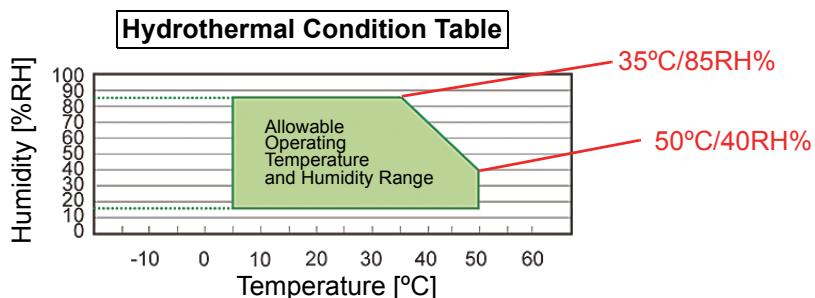
††. The Interface Harness connecting to the Host should be less than 3m (9.84 ft).

## Environmental Specifications

**Table 1-5** EBA-40 Environmental Specifications

Operating Temperature:	+5°C to +50°C (41°F to 122°F)*
Storage Temperature:	-20°C to +60°C (-4°F to 140°F)*
Relative Operating Humidity:	30% to 85% RH (non-condensed)
Relative Storage Humidity:	30% to 85% RH (non-condensed)
Visible Light Sensitivity:	Avoid contact with direct sunlight
Installation:	Indoors Only

\*. Depends on hydrothermal conditions.



## Electrical Specifications

**Table 1-6** EBA-40 Electrical Specifications

	<b>EBA-40 Head Assembly Only</b>	<b>EBA-40 With SD3 Stacker</b>
Supply Voltage * :	12V DC ±5% (Greater than 2.3A) 24V DC ±5% (Greater than 1.3A)	12V DC ±5% (Greater than 3.0A) 24V DC ±5% (Greater than 1.8A)
Current Consumption:	12V DC <ul style="list-style-type: none"> <li>Standby = 160mA</li> <li>Operation = 0.8A</li> <li>Peak = 2.3A</li> </ul> 24V DC <ul style="list-style-type: none"> <li>Standby = 100mA</li> <li>Operation = 0.4A</li> <li>Peak = 1.3A</li> </ul>	12V DC <ul style="list-style-type: none"> <li>Standby = 230mA</li> <li>Operation = 0.9A</li> <li>Peak = 3.0A</li> </ul> 24V DC <ul style="list-style-type: none"> <li>Standby = 130mA</li> <li>Operation = 0.5A</li> <li>Peak = 1.8A</li> </ul>

\*. Use a Current Source Limiting Power Supply

## Structural Specifications

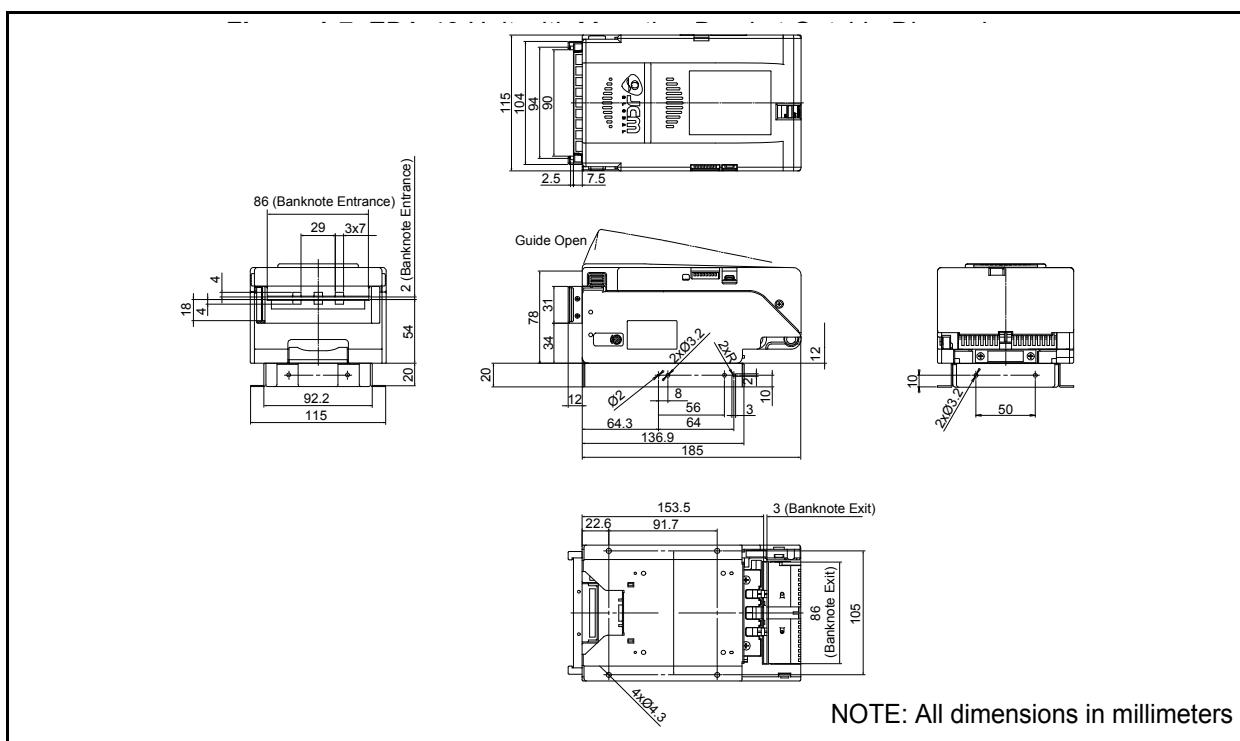
**Table 1-7** EBA-40 Structural Specifications

Weight:	With the SD3 Stacker: Approximately 2.9kg (6.4lbs.) Without the SD3 Stacker: Approximately 1.1kg (2.4lbs.)
Mounting:	Horizontal
Outside Dimensions:	See "Unit Dimensions" on page 1-8 of this Manual

## Unit Dimensions

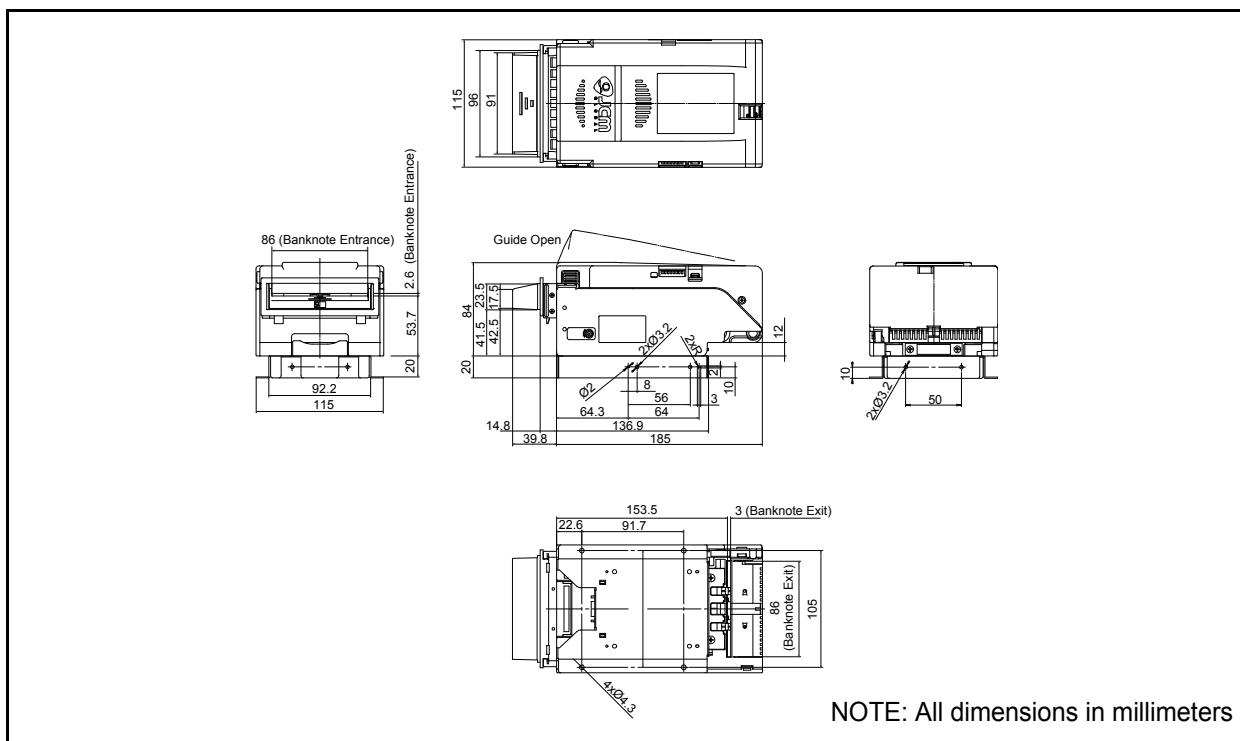
### Head Assembly Outside Dimensions

Figure 1-7 illustrates the EBA-40 Unit with the Mounting Bracket outside dimensions.



**Figure 1-7** EBA-40 Unit with Mounting Bracket Outside Dimensions

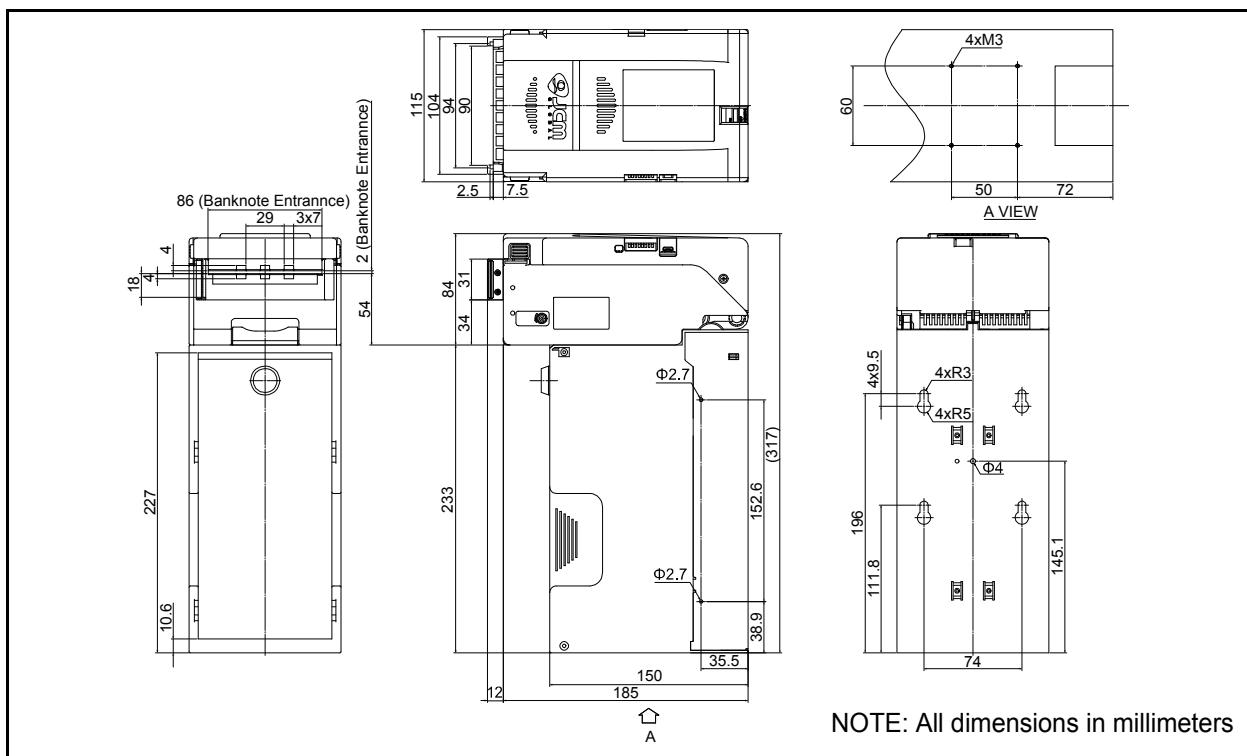
Figure 1-8 illustrates the EBA-40 Unit with the Bezel and Mounting Bracket outside dimensions.



**Figure 1-8** EBA-40 Unit with Bezel and Mounting Bracket Outside Dimensions

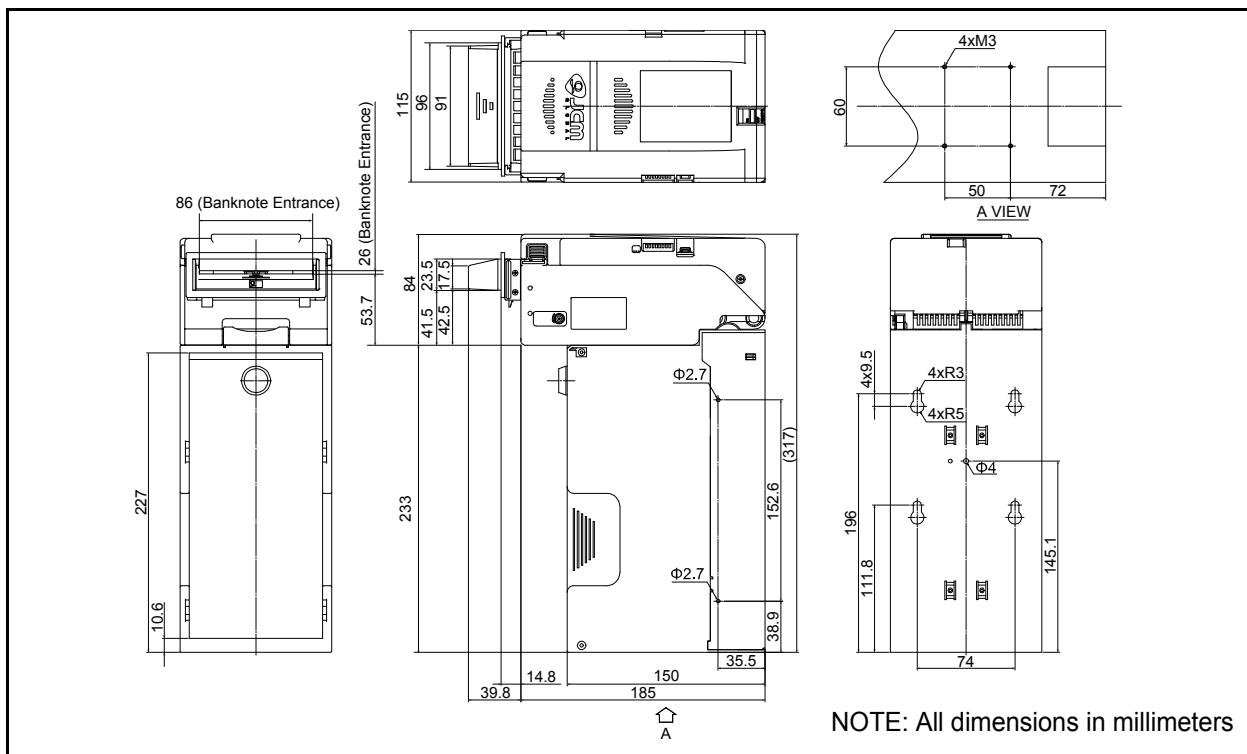
## Head Assembly With SD3 Stacker Outside Dimensions

Figure 1-9 illustrates the EBA-40 Unit with SD3 Stacker outside dimensions.



**Figure 1-9** EBA-40 Unit with SD3 Stacker Outside Dimensions

Figure 1-10 illustrates the EBA-40 Unit with Bezel and SD3 Stacker outside dimensions.



**Figure 1-10** EBA-40 Unit with Bezel and SD3 Stacker Outside Dimensions

## Technical Contact Information

To obtain further technical information regarding the EBA-40 device, please contact the nearest location listed below:

### Americas

#### JCM American

Phone: +1-702-651-0000  
Fax: +1-702-644-5512  
925 Pilot Road, Las Vegas, NV 89119  
E-mail: support@jcmglobal.com

### Europe, Middle East, Africa & Russia

#### JCM Europe GmbH

Phone: +49-211-530-645-60  
Fax: +49-211-530-645-85  
Mündelheimer Weg 60  
D-40472 Düsseldorf Germany  
E-mail: support@jcmglobal.eu

### UK & Ireland

#### JCM Europe (UK Office)

Phone: +44 (0) 190-837-7331  
Fax: +44 (0) 190-837-7834  
Unit B, Third Avenue  
Denbigh West Business Park  
Bletchley, Milton Keynes,  
Buckinghamshire MK1 1DH, UK  
E-mail: support@jcmglobal.eu

### Asia and Oceania

#### JCM Gold (HK) Ltd.

Phone: +852-2429-7187  
Fax: +852-2929-7003  
Unit 1-7, 3/F., Favor Industrial Centre  
2-6 Kin Hong Street, Kwai Chung,  
N.T. Hong Kong  
E-mail: asiasupport@jcmglobal.com

#### JAPAN CASH MACHINE CO., LTD. (HQ)

Phone: +81-6-6703-8400  
Fax: +81-6-6707-0348  
2-3-15, Nishiwaki, Hirano-ku, Osaka 547-0035  
JAPAN  
E-mail: Shohin@jcm-hq.co.jp

The JCM website for all locations is:

<http://www.jcmglobal.com>

# EBA® Series

## EBA-40 Banknote Acceptor

### Section 2

## 2 INSTALLATION

This section provides installation and operating instructions for the EBA® Series EBA-40 Banknote Acceptor Unit. The information within this section contains the following features:

- Installation Process
- DIP Switch Configurations
- Preventive Maintenance
- Cleaning Procedure
- Standard Interface Circuit Schematics
- Operation Flowchart

### Installation Process

The EBA-40 Frame Unit provides installation holes for each surface.

#### Entire Unit Installation

Perform the following steps to install the EBA-40 Unit:

1. Place the EBA-40 Unit Frame in its intended mounting location.
2. Bolt the bottom side of the EBA-40 Frame into its intended location using four (4) M3 Screws (Figure 2-1 a<sub>1</sub> through a<sub>4</sub>) from the outside of the Frame when this mounting configuration is preferred.

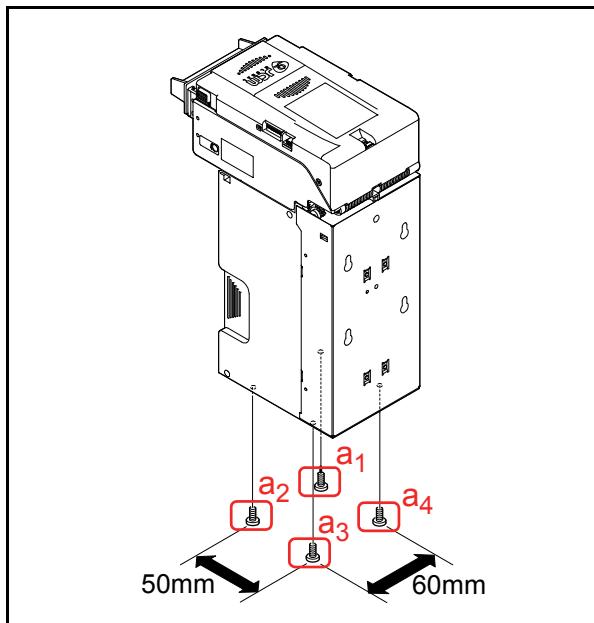


Figure 2-1 M3 Screw Locations (Bottom)



**WARNING: The length of the M3 Screws should be selected considering the Cabinet thickness. The Mounting Screws' length should not be less than 4mm and not extend more than 8mm upward from the bottom of the SD3 Stacker Frame.**

3. Hang the EBA-40 Frame onto shafts which fit in place for the proper width and length of the Key Hole Slots on the rear side of the Frame when this mounting configuration is preferred (Figure 2-2).

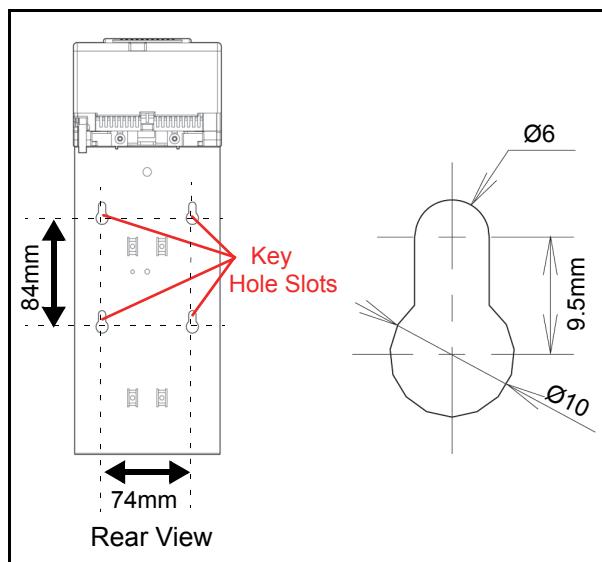
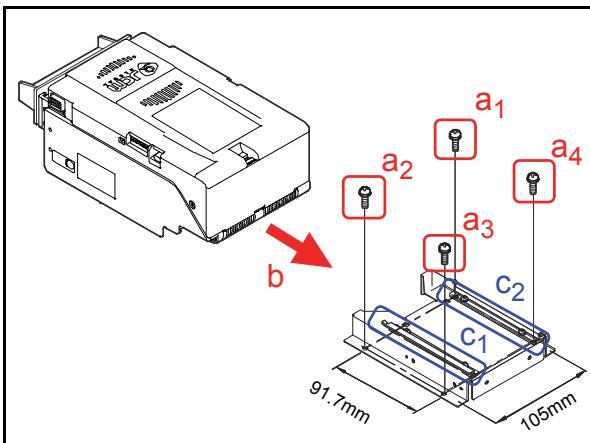


Figure 2-2 Key Hole Slot Locations (Rear)

#### Acceptor Head Installation

Perform the following steps to install the EBA-40 Acceptor Head Assembly using the Mounting Bracket:

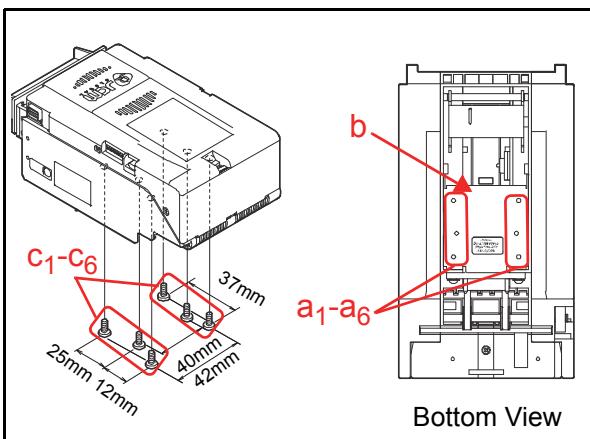
1. Place the EBA-40 Acceptor Head in its intended mounting location.
2. Install the Mounting Bracket into its intended location using four (4) M4x6 Screws (Figure 2-3 a<sub>1</sub> through a<sub>4</sub>) provided with the Mounting Bracket.
3. Slide and install the EBA-40 Acceptor Head Assembly (Figure 2-3 b) onto the Mounting Bracket while simultaneously sliding the "Pedestal Rail" (Figure 2-3 c<sub>1</sub> and c<sub>2</sub>) in place when this mounting configuration is preferred.



**Figure 2-3** M4 Screw Locations (Rear & Bottom)

Perform the following steps to install the EBA-40 Acceptor Head Assembly without the Mounting Bracket:

1. Confirm the six (6) installation holes (Figure 2-4 a<sub>1</sub> through a<sub>6</sub>) on the Lower Cover (Figure 2-4 b) located on the bottom side of the EBA-40 Acceptor Head Assembly.
2. Place the EBA-40 Acceptor Head Assembly in its intended mounting location.
3. Bolt the Lower Cover of the EBA-40 Acceptor Head Assembly into its intended location using six (6) M3 Screws (Figure 2-4 c<sub>1</sub> through c<sub>6</sub>) from the bottom side of the Frame when this mounting configuration is preferred.



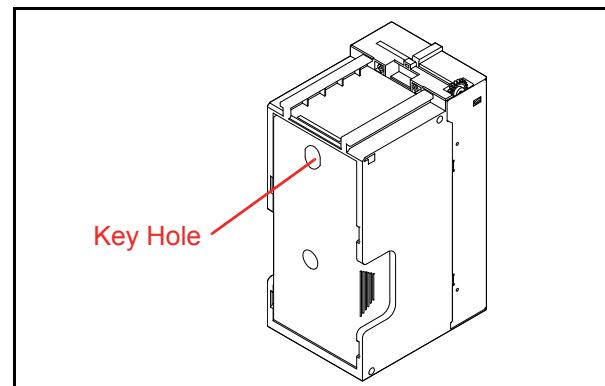
**Figure 2-4** M3 Screw Locations (Rear & Bottom)

**WARNING:** The maximum length of the M3 Screws should be selected considering the Cabinet or Mounting Bracket thickness. The Mounting Screws' length should not extend more than 4mm upward from the Lower Cover.

## Lock Installation

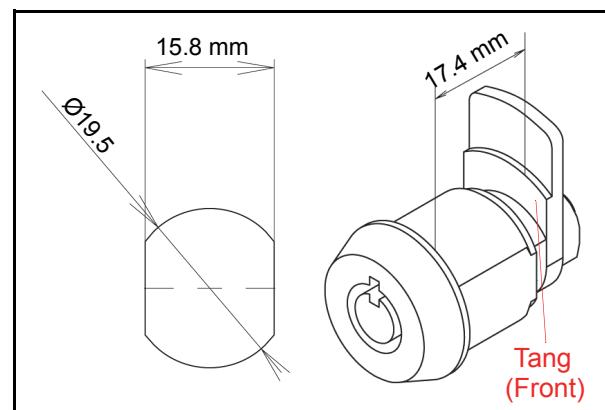
One security lock can be installed onto the EBA-40 SD3 Stacker. When installing a security lock, the following attachment accessories may be required:

- Tang



**Figure 2-5** Key Hole Location

Choose a Lock that fits a standard 17.4 mm cylinder length format. This is the only format that is supported (Figure 2-6).

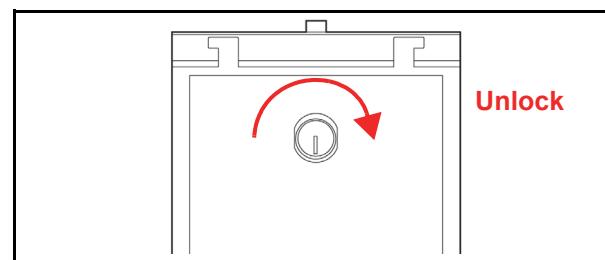


**Figure 2-6** Lock Dimension & Cylinder Length

**NOTE:** Make sure the Tang is correctly installed, as illustrated in Figure 2-6.

**NOTE:** There are many lock designs. Locks vary greatly in price, security, keying policies, etc. The customer is responsible for selecting a lock that is appropriate for the intended purpose.

JCM does not test or endorse any commercially available brand of lock for its security characteristics.

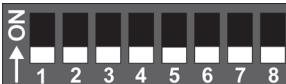


**Figure 2-7** Key Unlock Rotation Requirement

## DIP Switch Configurations

This section provides the denomination DIP Switch Block 1 (DS1) and 2 (DS2) Settings for the EBA-40 Unit.

**Table 2-1** DIP Switch Block 1 Settings

 <b>DS1</b>		
Switch No.	Switch ON	Switch OFF
1	VEND 1 INHIBIT	VEND 1 ACCEPT
2	VEND 2 INHIBIT	VEND 2 ACCEPT
3	VEND 3 INHIBIT	VEND 3 ACCEPT
4	VEND 4 INHIBIT	VEND 4 ACCEPT
5	VEND 5 INHIBIT	VEND 5 ACCEPT
6	VEND 6 INHIBIT	VEND 6 ACCEPT
7	VEND 7 INHIBIT	VEND 7 ACCEPT
8	TEST MODE	FUNCTION

**Table 2-2** DIP Switch Block 2 Settings

 <b>DS2</b>		
Switch No.	Switch ON	Switch OFF
1	With SD3 Stacker	Without SD3 Stacker
2	Key Switch Enabled	Key Switch Disabled*
3	ccTalk (Encrypted)	ccTalk (Non-Encrypted)
4	RS232C Interface	Other Interface
5	With Barcode Sensor Board	Without Barcode Sensor Board
6	Reserved	Reserved
7	Reserved	Reserved
8	Reserved	Reserved

\*. Set the switch to OFF when a unit is not equipped with a SD3 Stacker.

## Connector Pin Assignments

Table 2-3 through Table 2-11 list the EBA-40 Unit's pin assignments.

Table 2-3 lists the EBA-40 TTL Interface Pin Assignments.

**Table 2-3** EBA-40 TTL Interface Pin Assignments

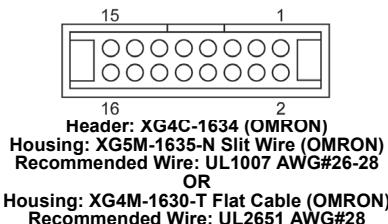
Pin No.	Signal Name	I/O*	Function
1	+12V/+24V	-	Power Supply
2	GND	-	GND
3	+12V/+24V	-	Power Supply
4	GND	-	GND
5	TTL - TXD	OUT	TTL Communication Output Signal Line
6	SG	-	Signal GND
7	TTL - RXD	IN	TTL Communication Input Signal Line
8	ccTalk TXD/RXD	IN/OUT	No Connection
9	MDB - TXD	OUT	No Connection
10	MDB - RXD	IN	No Connection
11	MDB COM	-	No Connection
12	I/F 12V	-	No Connection
13	PC - TXD	OUT	No Connection
14	I/F GND	-	No Connection
15	SW - IN	IN	No Connection
16	PC - RXD	IN	No Connection

\*. I/O (input/output) is the terminal as viewed from the Banknote Acceptor's backside.

## Connector Pin Assignments (Continued 1)

Table 2-4 lists the EBA-40 MDB Interface Pin Assignments.

**Table 2-4** EBA-40 MDB Interface Pin Assignments



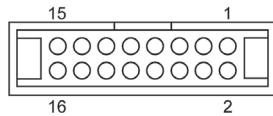
Pin No.	Signal Name	I/O*	Function
1	+12V/+24V	-	Power Supply
2	GND	-	GND
3	+12V/+24V	-	Power Supply
4	GND	-	GND
5	TTL - TXD	OUT	No Connection
6	SG	-	No Connection
7	TTL - RXD	IN	No Connection
8	ccTalk TXD/RXD	IN/OUT	No Connection
9	MDB - TXD	OUT	MDB Communication Output Signal Line
10	MDB - RXD	IN	MDB Communication Input Signal Line
11	MDB COM	-	MDB Common Signal Line
12	I/F 12V		No Connection
13	PC - TXD	OUT	No Connection
14	I/F GND	-	No Connection
15	SW - IN	IN	No Connection
16	PC - RXD	IN	No Connection

\*. I/O (input/output) is the terminal as viewed from the Banknote Acceptor's backside.

## Connector Pin Assignments (Continued 2)

Table 2-5 lists the EBA-40 ccTalk Interface Pin Assignments.

**Table 2-5** EBA-40 ccTalk Interface Pin Assignments



Header: XG4C-1634 (OMRON)  
 Housing: XG5M-1635-N Slit Wire (OMRON)  
 Recommended Wire: UL1007 AWG#26-28  
 OR  
 Housing: XG4M-1630-T Flat Cable (OMRON)  
 Recommended Wire: UL2651 AWG#28

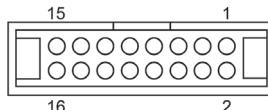
Pin No.	Signal Name	I/O*	Function
1	+12V/+24V	-	Power Supply
2	GND	-	GND
3	+12V/+24V	-	Power Supply
4	GND	-	GND
5	TTL - TXD	OUT	No Connection
6	SG	-	Signal GND
7	TTL - RXD	IN	No Connection
8	ccTalk TXD/RXD	IN/OUT	ccTalk Communication Input/Output Signal Line
9	MDB - TXD	OUT	No Connection
10	MDB - RXD	IN	No Connection
11	MDB COM	-	No Connection
12	I/F 12V	-	No Connection
13	PC - TXD	OUT	No Connection
14	I/F GND	-	No Connection
15	SW - IN	IN	No Connection
16	PC - RXD	IN	No Connection

\*. I/O (input/output) is the terminal as viewed from the Banknote Acceptor's backside.

## Connector Pin Assignments (Continued 3)

Table 2-6 lists the EBA-40 Photo-Coupler Interface Pin Assignments.

**Table 2-6** EBA-40 Photo-Coupler Interface Pin Assignments



Header: XG4C-1634 (OMRON)

Housing: XG5M-1635-N Slit Wire (OMRON)

Recommended Wire: UL1007 AWG#26-28

OR

Housing: XG4M-1630-T Flat Cable (OMRON)

Recommended Wire: UL2651 AWG#28

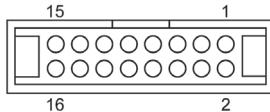
Pin No.	Signal Name	I/O*	Function
1	+12V/+24V	-	Power Supply
2	GND	-	GND
3	+12V/+24V	-	Power Supply
4	GND	-	GND
5	TTL - TXD	OUT	No Connection
6	SG	-	No Connection
7	TTL - RXD	IN	No Connection
8	ccTalk TXD/RXD	IN/OUT	No Connection
9	MDB - TXD	OUT	No Connection
10	MDB - RXD	IN	No Connection
11	MDB COM	-	No Connection
12	I/F 12V	-	Photo-Coupler Communication Interface Power Supply 12V
13	PC - TXD	OUT	Photo-Coupler Communication Output Signal Line
14	I/F GND	-	Photo-Coupler Communication Interface GND
15	SW - IN	IN	No Connection
16	PC - RXD	IN	Photo-Coupler Communication Input Signal Line

\*. I/O (input/output) is the terminal as viewed from the Banknote Acceptor's backside.

## Connector Pin Assignments (Continued 4)

Table 2-7 lists the EBA-40 RS232C Interface Pin Assignments.

**Table 2-7** EBA-40 RS232C Interface Pin Assignments



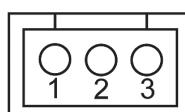
Header: XG4C-1634 (OMRON)  
Housing: XG5M-1635-N Slit Wire (OMRON)  
Recommended Wire: UL1007 AWG#26-28  
OR  
Housing: XG4M-1630-T Flat Cable (OMRON)  
Recommended Wire: UL2651 AWG#28

Pin No.	Signal Name	I/O*	Function
1	+12V/+24V	-	Power Supply
2	GND	-	GND
3	+12V/+24V	-	Power Supply
4	GND	-	GND
5	TTL - TXD	OUT	No Connection
6	SG	-	No Connection
7	TTL - RXD	IN	No Connection
8	ccTalk TXD/RXD	IN/OUT	No Connection
9	MDB - TXD	OUT	No Connection
10	MDB - RXD	IN	No Connection
11	MDB COM	-	No Connection
12	I/F 12V	-	No Connection
13	PC - TXD	OUT	No Connection
14	I/F GND	-	No Connection
15	SW - IN	IN	No Connection
16	PC - RXD	IN	No Connection

\*. I/O (input/output) is the terminal as viewed from the Banknote Acceptor's backside.

Table 2-8 lists the EBA-40 CN13 RS232C Connector Pin Assignments.

**Table 2-8** EBA-40 CN13 RS232C Connector Pin Assignments



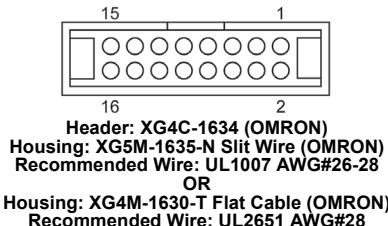
Header: 53426-0310 (MOLEX)  
Housing: 51103-0300 (MOLEX)  
Contact: 50351-8000  
Recommended Wire: UL1007 AWG#22-28

Pin No.	Signal Name	I/O	Function
1	RS232C - TXD	OUT	RS232C Communication Output Signal Line
2	RS232C - RXD	IN	RS232C Communication Input Signal Line
3	SG	-	Signal GND

## Connector Pin Assignments (Continued 5)

Table 2-9 lists the EBA-40 USB Interface Pin Assignments.

**Table 2-9** EBA-40 USB Interface Pin Assignments



Pin No.	Signal Name	I/O*	Function
1	+12V/+24V	-	Power Supply
2	GND	-	GND
3	+12V/+24V	-	Power Supply
4	GND	-	GND
5	TTL - TXD	OUT	No Connection
6	SG	-	No Connection
7	TTL - RXD	IN	No Connection
8	ccTalk TXD/RXD	IN/OUT	No Connection
9	MDB - TXD	OUT	No Connection
10	MDB - RXD	IN	No Connection
11	MDB COM	-	No Connection
12	I/F 12V	-	No Connection
13	PC - TXD	OUT	No Connection
14	I/F GND	-	No Connection
15	SW - IN	IN	No Connection
16	PC - RXD	IN	No Connection

\*. I/O (input/output) is the terminal as viewed from the Banknote Acceptor's backside.

## Connector Pin Assignments (Continued 6)

Table 2-10 lists the EBA-40 CN3 mini-B Connector Pin Assignments.

**Table 2-10** EBA-40 CN3 mini-B Connector Pin Assignments

Pin No.	Signal Name	I/O	Function
1	Vbus	-	USB Communication Vbus Signal Line
2	D-	IN/OUT	USB Communication Input/Output Signal Line
3	D+	IN/OUT	USB Communication Input/Output Signal Line
4	-	-	No Connection
5	USB GND	-	USB Communication GND

Table 2-11 lists the EBA-40 CN2 Bezel Connector Pin Assignments.

**Table 2-11** EBA-40 CN2 Bezel Connector Pin Assignments

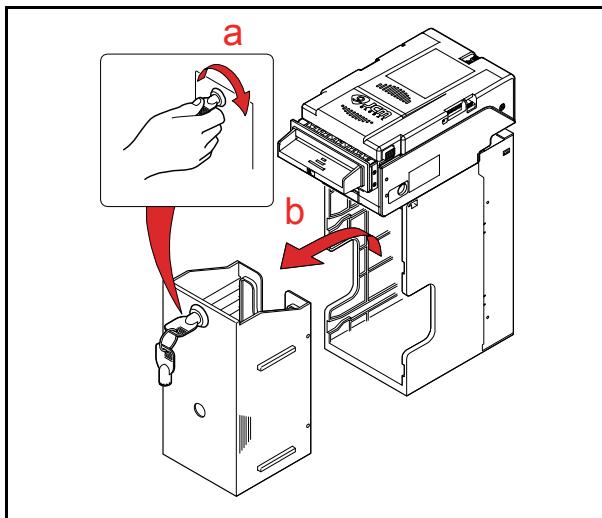
Pin No.	Signal Name	I/O	Function
Pin No.	Signal Name	I/O	Function
1	+12V	-	Power Supply
2	GND	-	GND
3	BZLED_1	-	LED Drive Line (Cathode)
4	BZLED_2	-	LED Drive Line (Cathode)
5	BZLED_3	-	LED Drive Line (Cathode)
6	BZLED_4	-	LED Drive Line (Cathode)
7	BZLED_5	-	LED Drive Line (Cathode)

## Preventive Maintenance

### Retrieving Banknotes

To retrieve SD3 Stacker deposited Banknotes, perform the following steps:

1. Unlock the Stacker Box lock using the supplied Coin Key (Figure 2-8 a).
2. Pull the Stacker Box out of the Frame Housing (Figure 2-8 b) and retrieve the Banknotes.

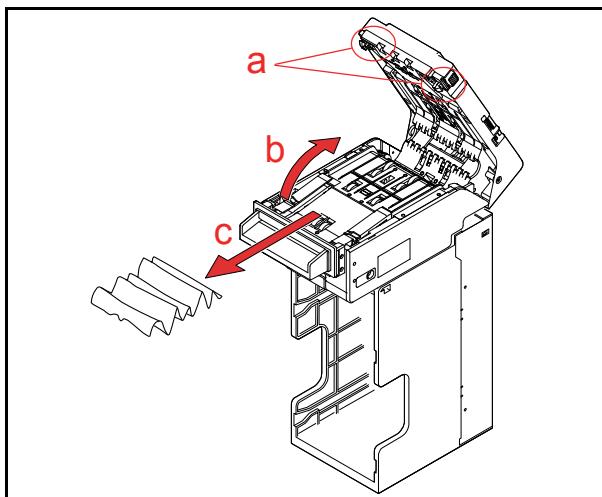


**Figure 2-8** Retrieving Banknotes

### Clearing a Banknote Jam

To retrieve a jammed Banknote located inside the Banknote Acceptor, proceed as follows:

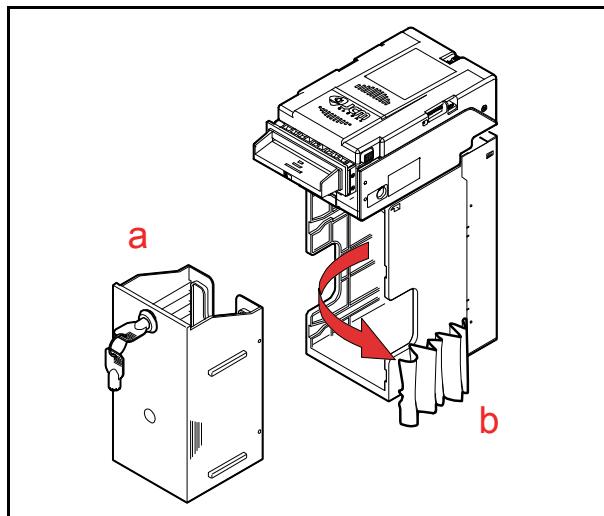
1. Press the Tabs (Figure 2-9 a) located on both sides of the Acceptor Assembly to open the Unit's Upper Guide (Figure 2-9 b).
2. Remove the jammed Banknote (Figure 2-9 c).



**Figure 2-9** Clearing an Entrance Banknote Jam

3. If the Banknote jam location is still not evident, unlock and pull the Stacker Box out of the Frame Unit (Figure 2-10 a).

4. Remove any jammed Banknote (Figure 2-10 b).

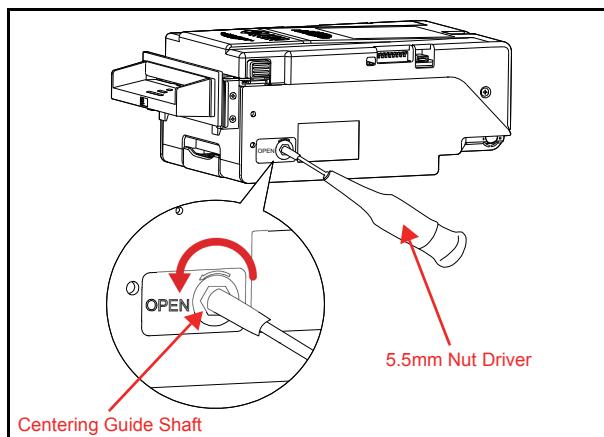


**Figure 2-10** Clearing a Stacker Box Banknote Jam

### Opening the Centering Mechanism

If a Banknote jam occurs in the Banknote Acceptor when the Centering Mechanism is closed, the Upper Guide will not open. To release (open) the Upper Guide, power cycle the Unit and allow it to reset.

*NOTE: If power cycling fails to clear the Banknote jam, use a 5.5mm nut driver to rotate the Centering Guide Shaft, then open the Upper Guide and remove the Banknote from the EBA-40 unit (Figure 2-11).*



**Figure 2-11** Opening Centering Mechanism

## Cleaning Procedure

To clean the EBA-40 Validation Section, gently rub the Sensors and Rollers clean using a dry, soft, lint-free, Micro-fiber Cloth ONLY.



**Caution: Do not use alcohol, solvents citrus based products or scouring agents that may cause damage to the Validation Section Sensors or Rollers.**

## Sensor and Roller Cleaning Procedure

To clean the EBA-40 Unit's Sensors and Rollers, proceed as follows:

1. Turn the EBA-40 Unit and the Host Machine Power Supplies **OFF**.
2. Open the EBA-40 Unit Upper Guide.
3. Clean the appropriate path and Lens of each Sensor.



*NOTE: Refer to Figure 2-13 for Sensor location, and Table 2-12 for Sensor Cleaning Method.*



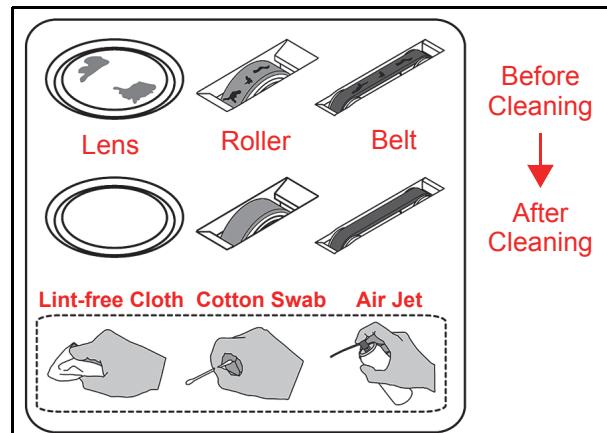
*NOTE: Calibration is recommended after cleaning.*



**Caution: Do not use alcohol, thinner or citrus based products for cleaning any Banknote Transport Sensors or surfaces. The lenses can become clouded by chemical evaporation residue that may cause acceptance errors.**



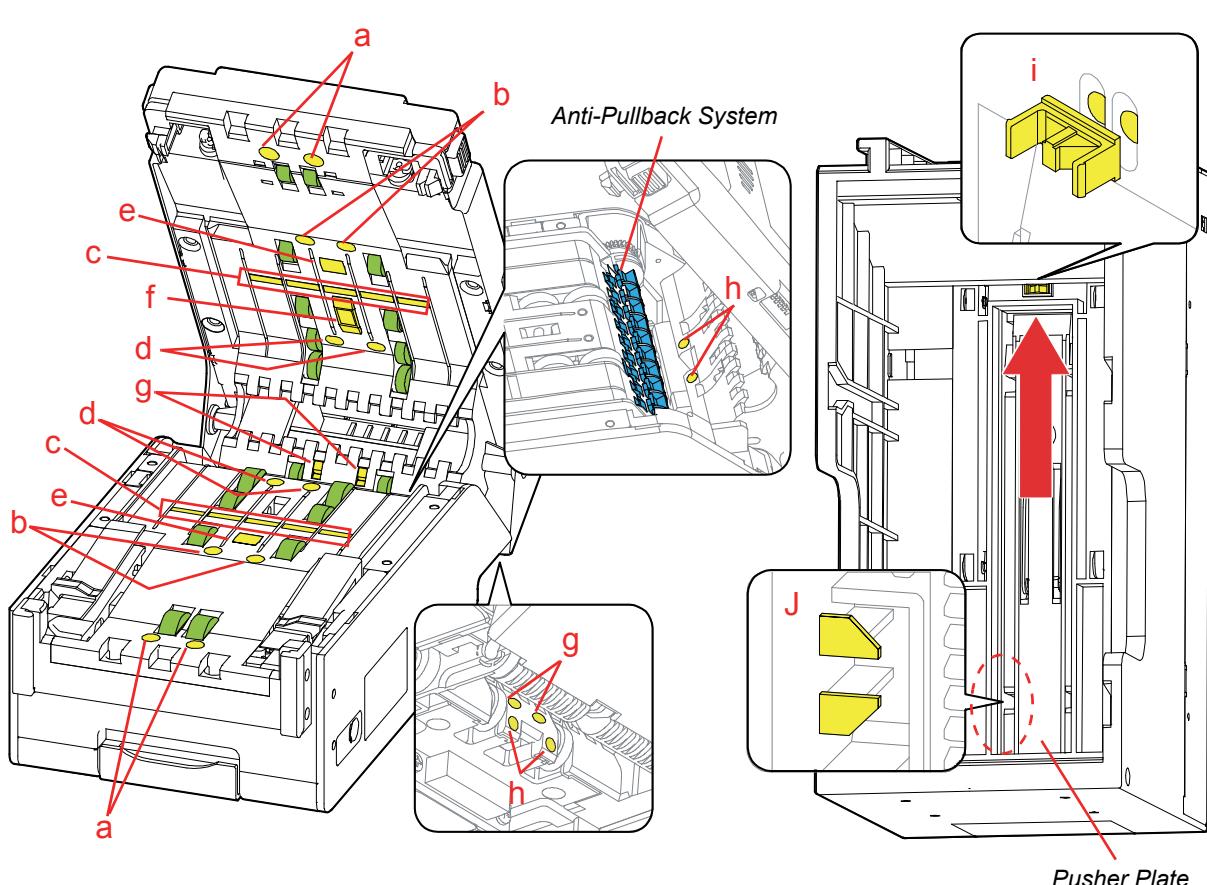
**Caution: Be sure to use non-flammable compressed air only.**



**Figure 2-12 General Cleaning Images**

## Sensor and Roller Locations

Figure 2-13 illustrates the various EBA-40 Unit's Sensor and Roller Locations. Table 2-12 lists the EBA-40 Sensor Type Cleaning Methods.



*Notes: Clean Rollers using a damp, lint-free, Micro-fiber Cloth.*

*Clean the Anti-Pullback System using non-flammable Compressed Air.*

*To clean the Stacker In Sensor, blow non-flammable Compressed Air into the narrow space on the Transport Path, as indicated by the red arrow.*

**Figure 2-13 EBA-40 Sensor and Roller Locations**

**Table 2-12 EBA-40 Sensor Type Cleaning Methods**

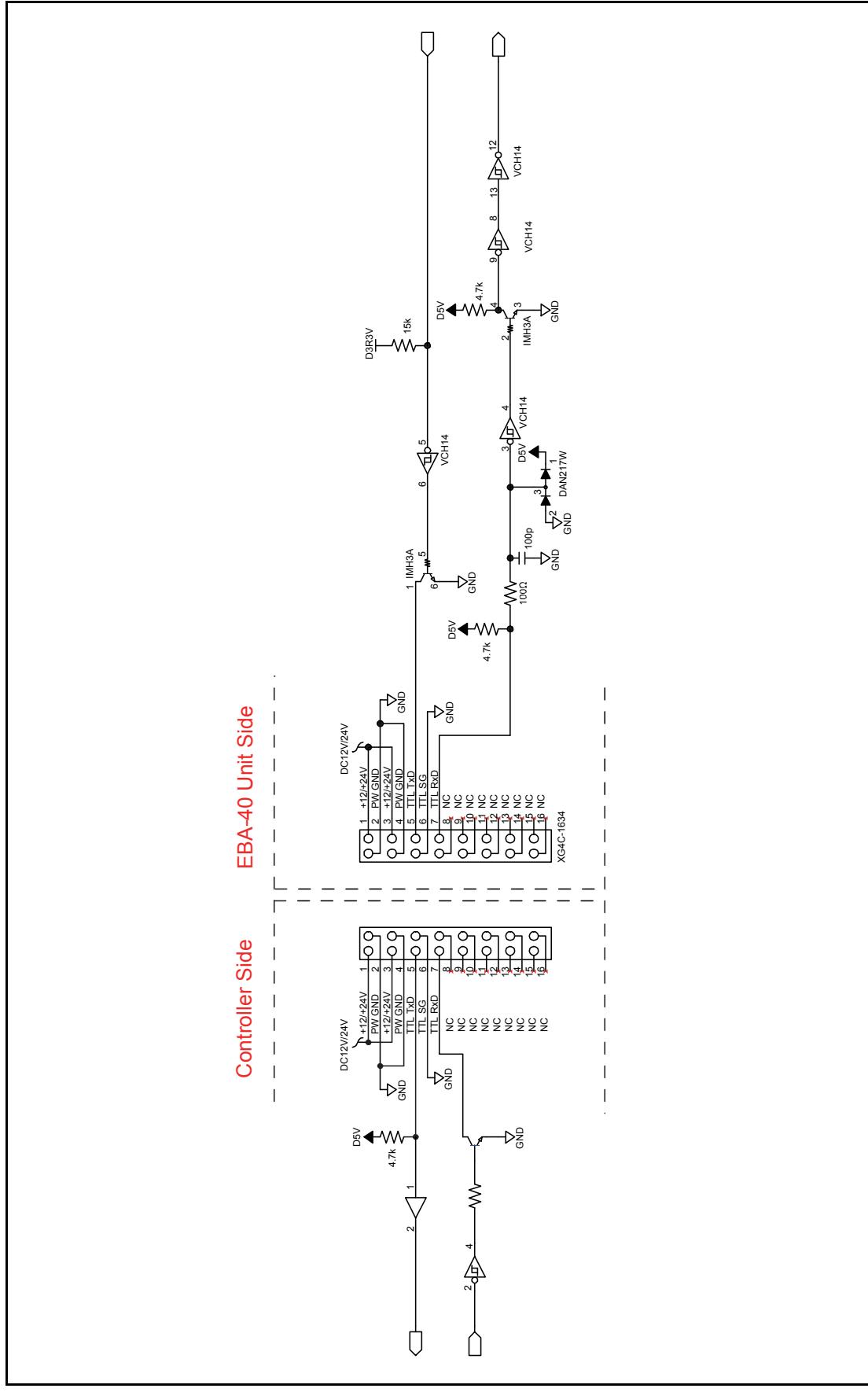
Sym.	Sensor/Roller Type	Cleaning Method
a	Entrance Sensor	
b	Centering Guide Timing Sensor	
c	Validation Sensor	
d	Anti-Pullback Entrance Sensor	
e	Barcode Sensor (Option)*	
f	Magnetic Sensor	
g	Anti-Pullback Exit Sensor	
h	Exit Sensor	
i	SD3 Stacker In Sensor	
j	SD3 Stacker Home Position Sensor†	

\*. Either the Upper or Lower Barcode Sensor is required.

†. The SD3 Stacker Home Position Sensor can be visible by pushing up the Pusher Plate using a screw driver or scotch tape.

## Standard Interface Circuit Schematics

Figure 2-14 illustrates the EBA-40 TTL Interface Schematic Diagram.



**Figure 2-14** EBA-40 TTL Interface Schematic Diagram

## Standard Interface Circuit Schematics (Continued 1)

Figure 2-15 illustrates the EBA-40 MDB Interface Schematic Diagram.

### Controller Side

### EBA-40 Unit Side

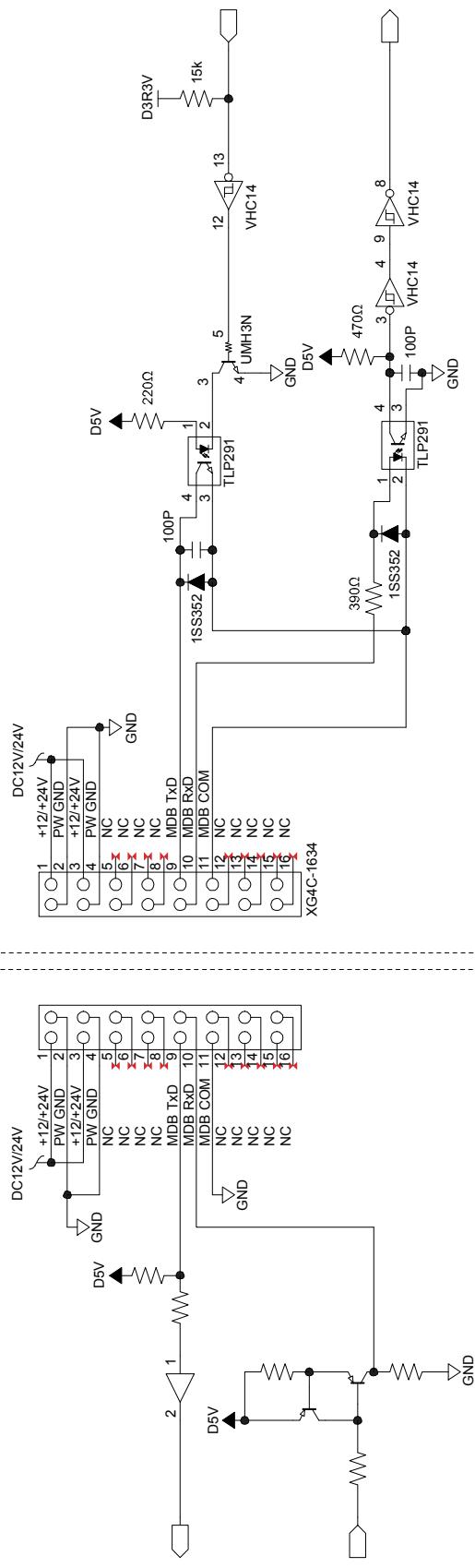


Figure 2-15 EBA-40 MDB Interface Schematic Diagram

## Standard Interface Circuit Schematics (Continued 2)

Figure 2-16 illustrates the EBA-40 ccTalk Interface Schematic Diagram.

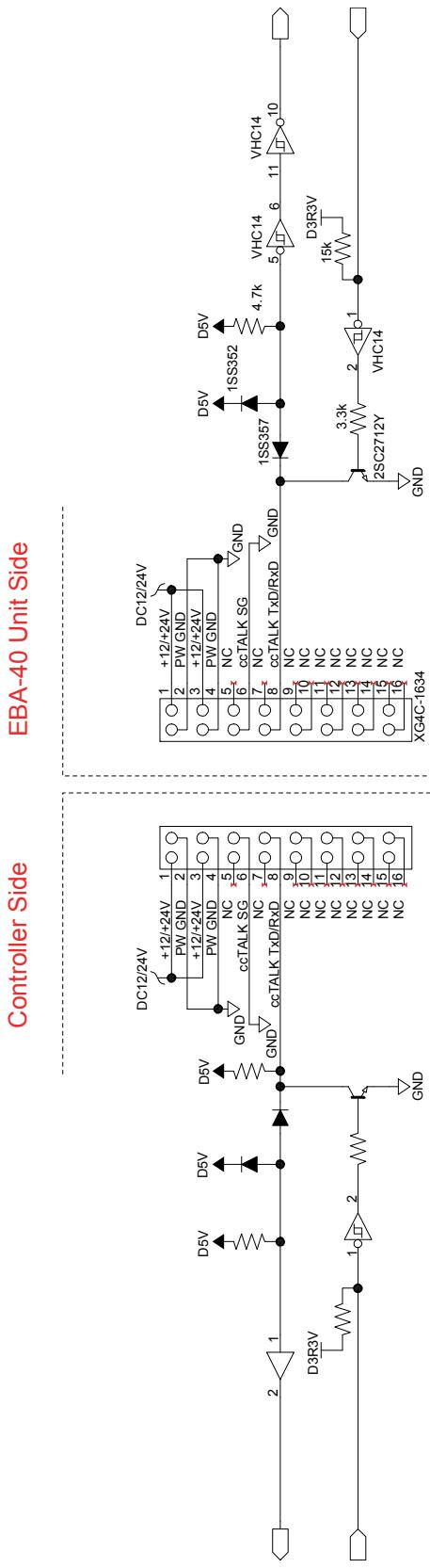


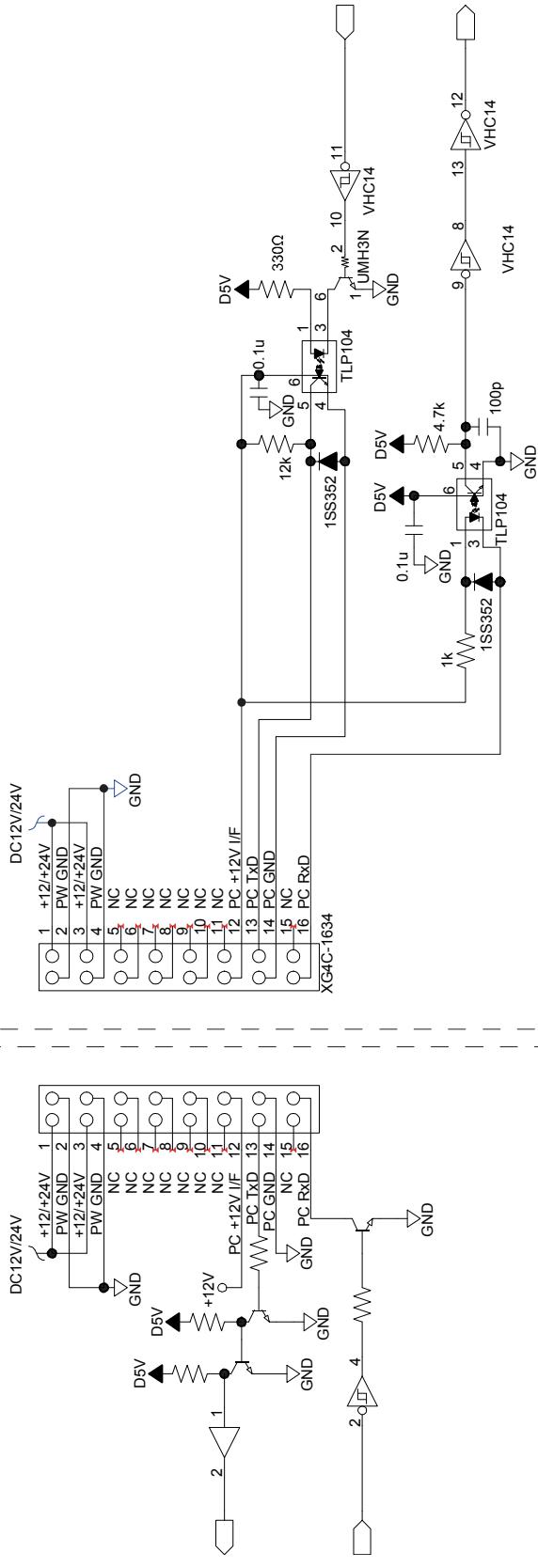
Figure 2-16 EBA-40 ccTalk Interface Schematic Diagram

## Standard Interface Circuit Schematics (Continued 3)

Figure 2-17 illustrates the EBA-40 Photo-Coupler Interface Schematic Diagram.

### Controller Side

### EBA-40 Unit Side



**Figure 2-17** EBA-40 Photo-Coupler Interface Schematic Diagram

## Standard Interface Circuit Schematics (Continued 4)

Figure 2-18 illustrates the EBA-40 RS232C Interface Schematic Diagram.

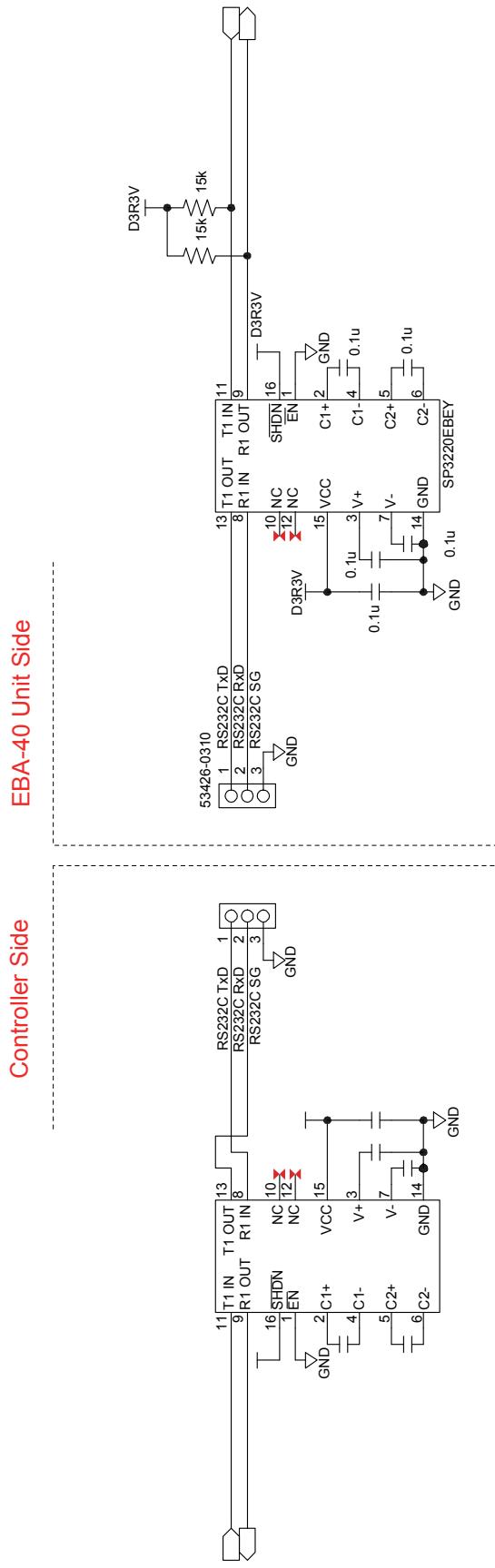


Figure 2-18 EBA-40 RS232C Interface Schematic Diagram

## Standard Interface Circuit Schematics (Continued 5)

Figure 2-19 illustrates the EBA-40 USB Interface Schematic Diagram.

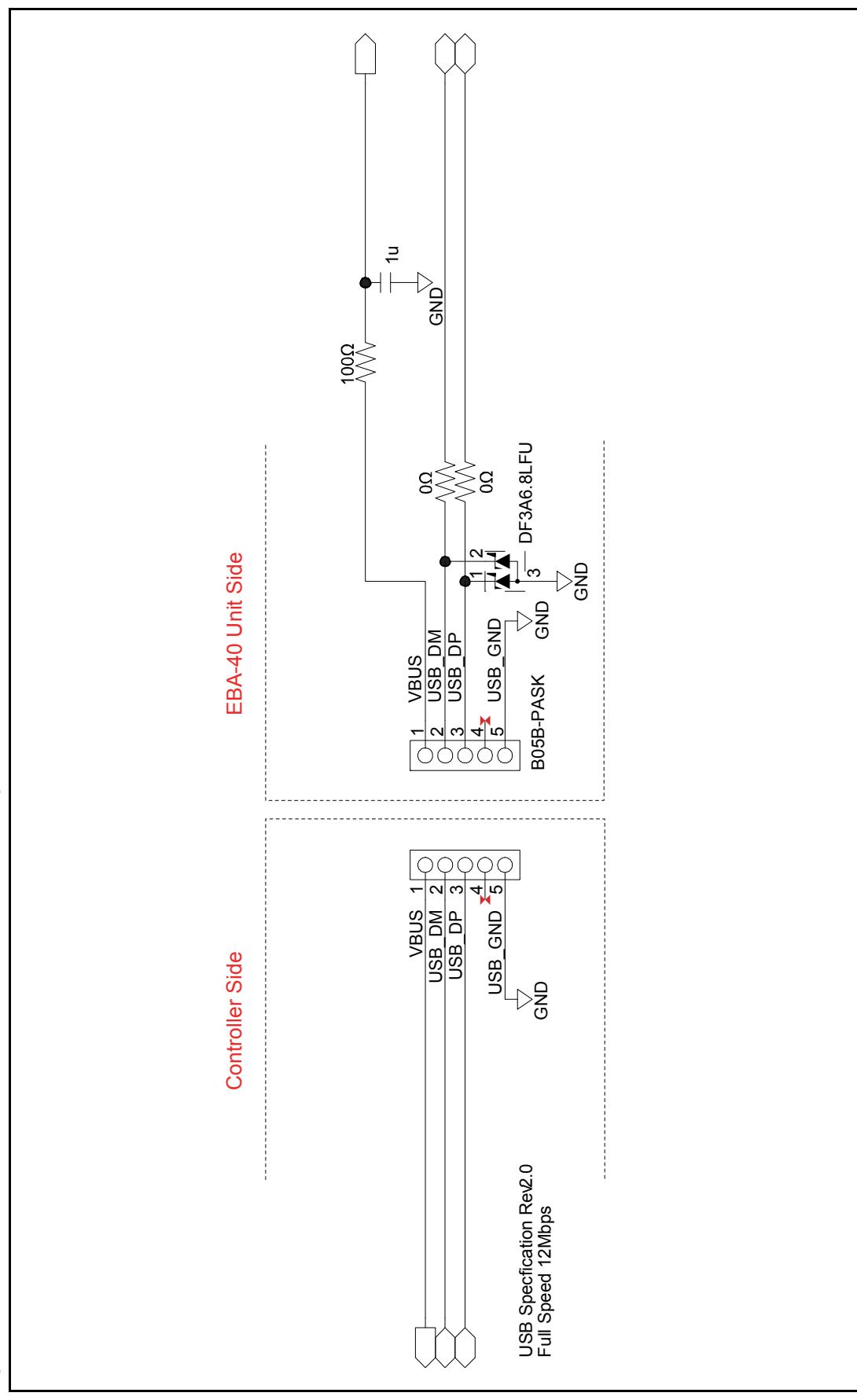


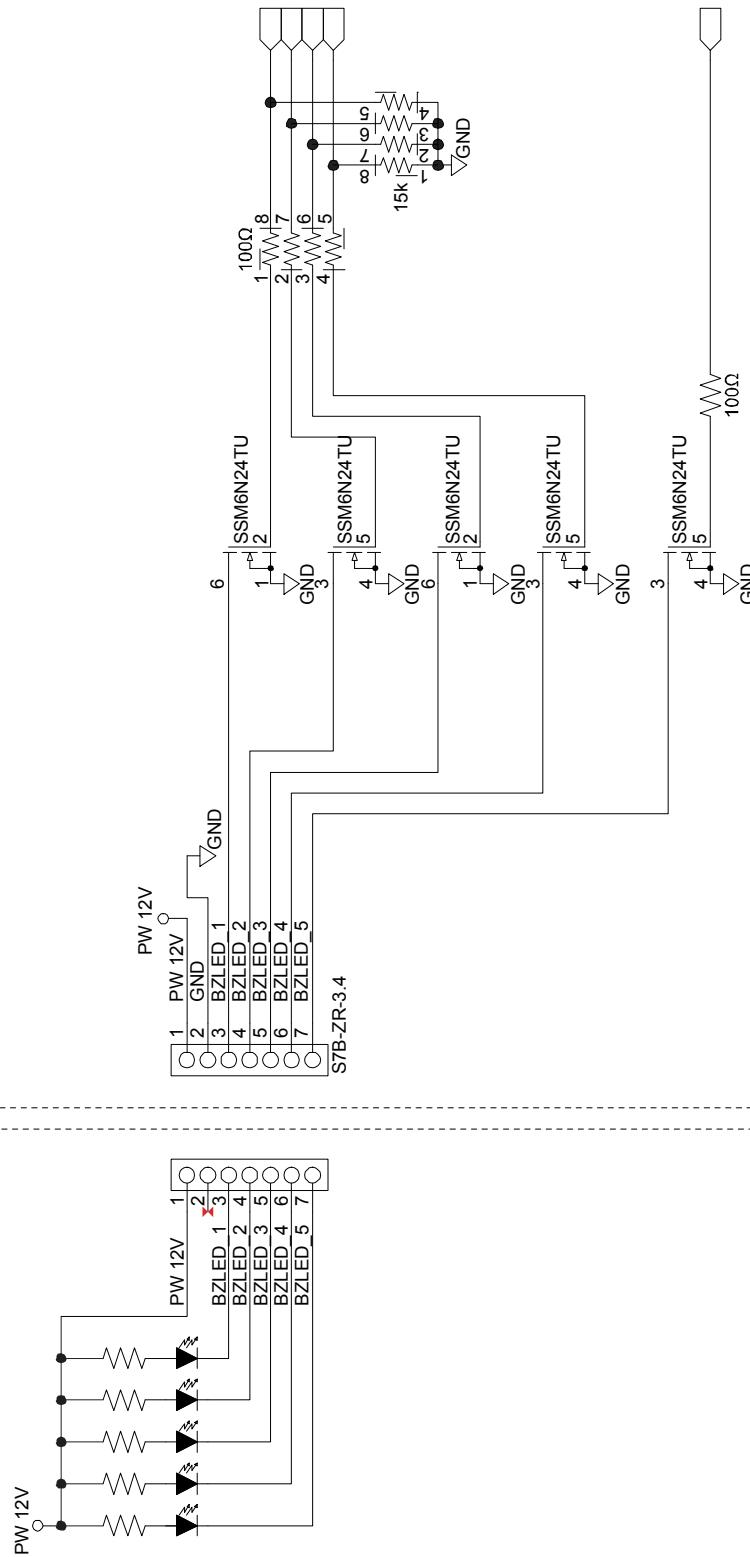
Figure 2-19 EBA-40 USB Interface Schematic Diagram

## Standard Interface Circuit Schematics (Continued 6)

Figure 2-20 illustrates the EBA-40 Bezel LED Interface Schematic Diagram.

### Controller Side

### EBA-40 Unit Side

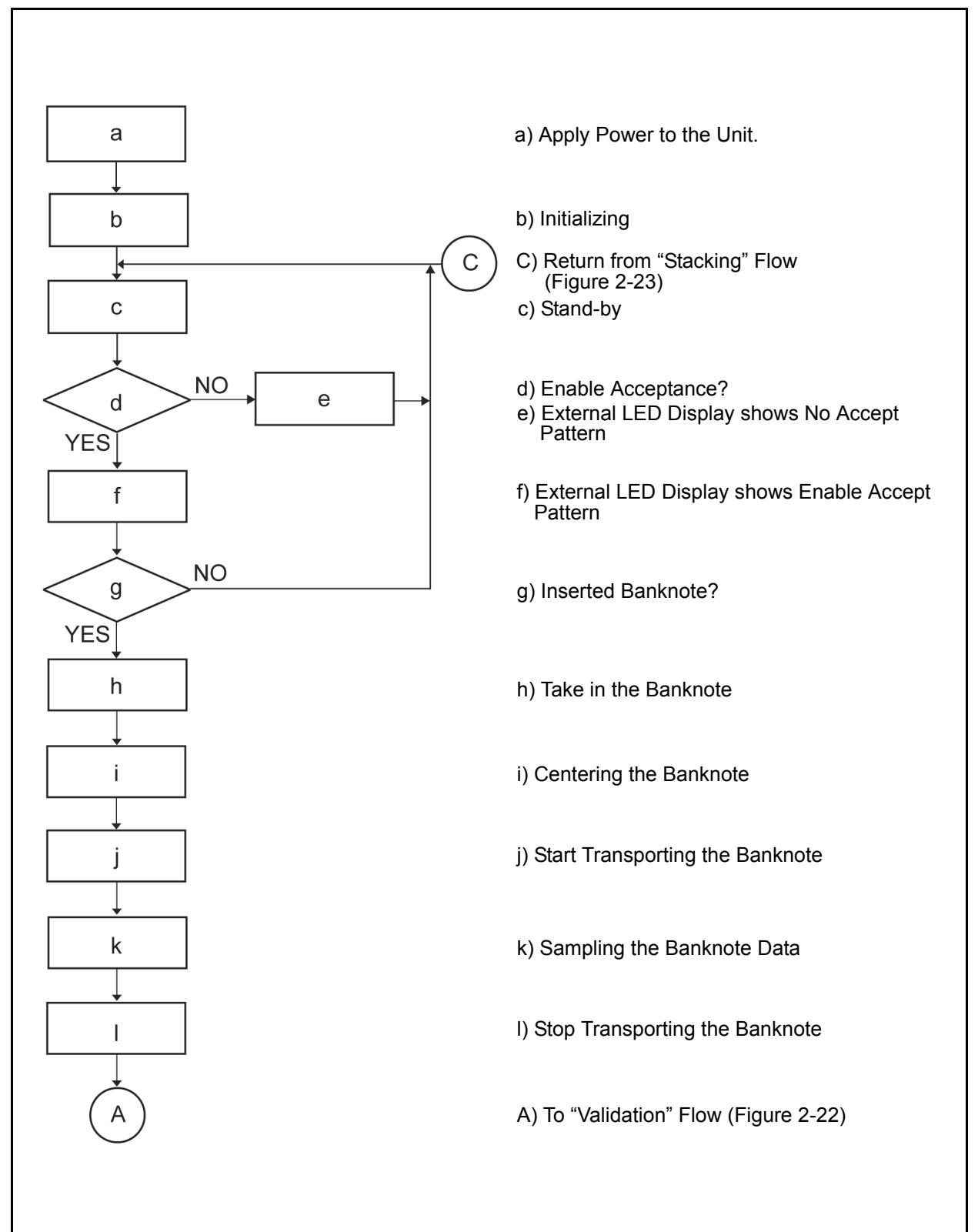


**Figure 2-20** EBA-40 Bezel LED Interface Schematic Diagram

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## Operational Flowchart

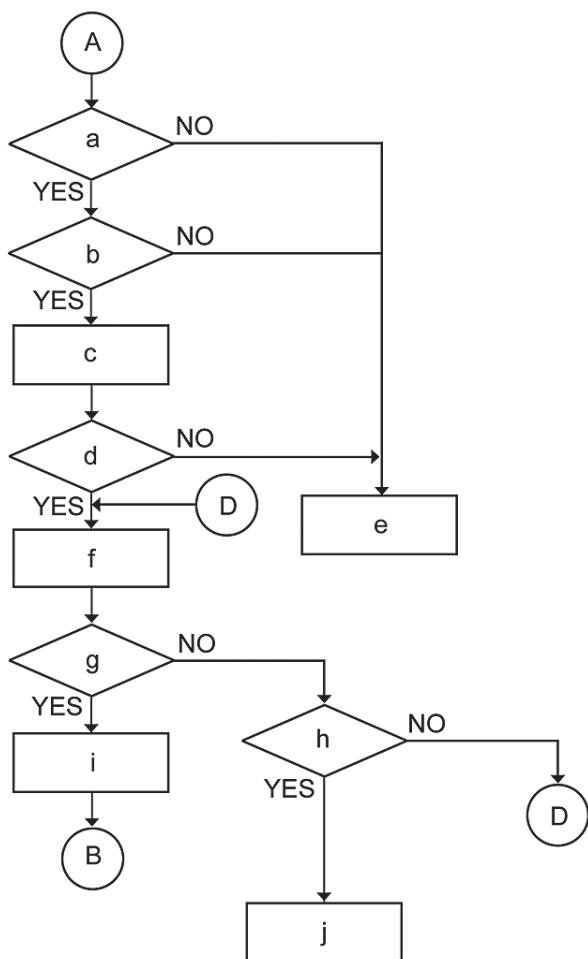
Figure 2-21 depicts a typical EBA-40 Initialization Banknote Acceptance Flow process.



**Figure 2-21** EBA-40 Operational Flowchart (Initializing)

## Operational Flowchart (Continued 1)

Figure 2-22 depicts a typical EBA-40 Validation Banknote Acceptance Flow process.

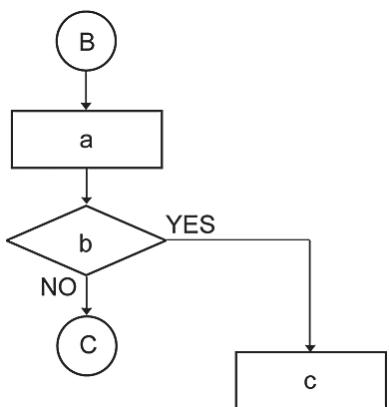


- A) From “Initializing” Flow (Figure 2-21)
- a) Is the Banknote Authentic?
  - b) Is the Banknote acceptable?
  - c) Denomination Signal Output
  - d) Has STACK Command been received?
  - e) Return the Banknote
  - f) Transporting the Banknote
  
  
  
  
  
  
  
  
  
  
  
  - g) Is the Banknote transported to Stacker?
  - h) Retried Acceptance Operation three times?
  - i) VEND Signal Output
  - D) To “f” function on this chart
  - B) To “Stacking” Flow (Figure 2-23)
  
  
  
  
  
  
  
  
  
  
  
  - j) Stop operation (Abnormal Signal Output)(\*1)

\*1). When an abnormal signal is received, remove and reapply Power to the EBA-40 Unit after resolving the problem, or send a RESET Command from the Host Machine.

**Figure 2-22** EBA-40 Operational Flowchart (Validation)

Figure 2-23 depicts a typical EBA-40 Stacking Banknote Acceptance Flow process.



- B) From “Validation” Flow (Figure 2-22)
- a) Stack the Banknote
  - b) Is the SD3 Stacker full?
  - C) To “Initializing” flow (Figure 2-21)
  - c) Stop operation (Stacker Full Signal Output)(\*2)

\*2). When a “SD3 Stacker Full” Signal is received, retrieve the Banknotes from the SD3 Stacker and re-seat the SD3 Stacker back into the Unit. The EBA-40 Unit will automatically perform its re-initialization movement operation.

**Figure 2-23** EBA-40 Operational Flowchart (Stacking)

# EBA® Series

## EBA-40 Banknote Acceptor

### Section 3

#### 3 COMMUNICATION

This section was intentionally left out due to a Non-Disclosure Agreement requirement.  
If this information is required, please contact the closest office location listed below:

##### Americas

###### JCM American

Phone: +1-702-651-0000

Fax: +1-702-644-5512

925 Pilot Road, Las Vegas, NV 89119

E-mail: support@jcmglobal.com

##### Europe, Middle East, Africa & Russia

###### JCM Europe GmbH

Phone: +49-211-530-645-60

Fax: +49-211-530-645-85

Mündelheimer Weg 60

D-40472 Düsseldorf Germany

E-mail: support@jcmglobal.eu

##### UK & Ireland

###### JCM Europe (UK Office)

Phone: +44 (0) 190-837-7331

Fax: +44 (0) 190-837-7834

Unit B, Third Avenue

Denbigh West Business Park

Bletchley, Milton Keynes,

Buckinghamshire MK1 1DH, UK

E-mail: support@jcmglobal.eu

##### Asia and Oceania

###### JCM Gold (HK) Ltd.

Phone: +852-2429-7187

Fax: +852-2929-7003

Unit 1-7, 3/F., Favor Industrial Centre

2-6 Kin Hong Street, Kwai Chung,

N.T. Hong Kong

E-mail: asiasupport@jcmglobal.com

###### JAPAN CASH MACHINE CO., LTD. (HQ)

Phone: +81-6-6703-8400

Fax: +81-6-6707-0348

2-3-15, Nishiwaki, Hirano-ku, Osaka 547-0035  
JAPAN

E-mail: Shohin@jcm-hq.co.jp

The JCM website for all locations is:

<http://www.jcmglobal.com>

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# EBA® Series

## EBA-40 Banknote Acceptor

### Section 4

#### 4 DISASSEMBLY/REASSEMBLY

This section provides disassembly and reassembly instructions for the EBA® Series EBA-40 Banknote Acceptor Unit. This section contains the following information:

- Tool Requirements
- Upper Barcode Sensor Board and Upper Sensor Board Removal
- PB Exit Sensor Board Removal
- Lower Barcode Sensor Board and Lower Sensor Board Removal
- Centering Home Sensor Board Removal
- Transport Motor, Transport Encoder Sensor Board, Centering Motor Removal
- PB Motor and PB Home Sensor Board Removal

#### Tool Requirements

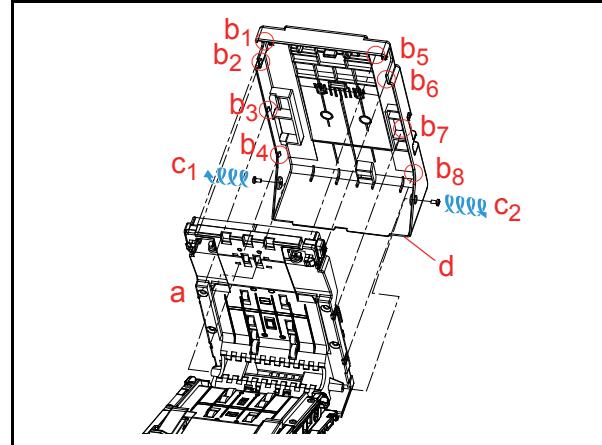
The following tools will be required to perform the EBA-40 disassembly and reassembly:

- #1 & #2 Phillips Screwdrivers
- Slotted Screwdriver
- Pliers
- Tweezers

#### Upper Barcode Sensor Board and Upper Sensor Board Removal

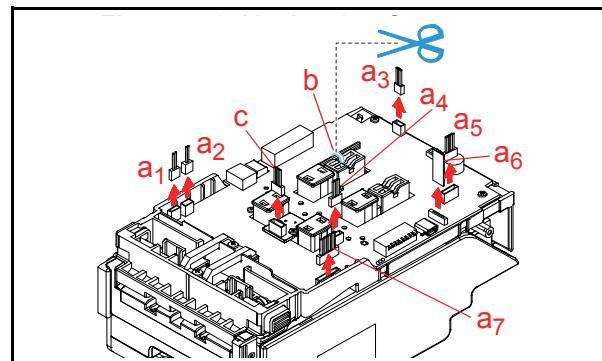
To remove the Upper Barcode Sensor Board and Upper Sensor Board, proceed as follows:

1. Lift the Upper Guide (Figure 4-1 a) while pressing in on the Open/Close Buttons located on each side of the EBA-40 Unit.
2. Remove the two (2) Mounting Screws (Figure 4-1 c<sub>1</sub> and c<sub>2</sub>) securing the Upper Cover (Figure 4-1 d) to the Upper Guide (Figure 4-1 a).
3. Unhook the eight (8) claws (Figure 4-1 b<sub>1</sub> through b<sub>8</sub>) to remove the Upper Cover from the Upper Guide.



**Figure 4-1** Upper Cover Removal

4. Unplug the seven (7) Connectors (Figure 4-2 a<sub>1</sub> through a<sub>7</sub>) and cut the single (1) Cable Tie (Figure 4-2 b).



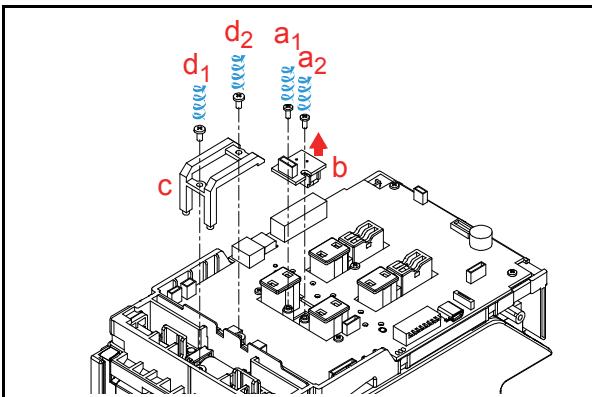
**Figure 4-2** Unplugging Connectors

5. Remove the two (2) Mounting Screws (Figure 4-3 d<sub>1</sub> and d<sub>2</sub>) securing the Entrance Prism (Figure 4-3 c) to the Upper Guide. Then remove the Entrance Prism from the Upper Guide.



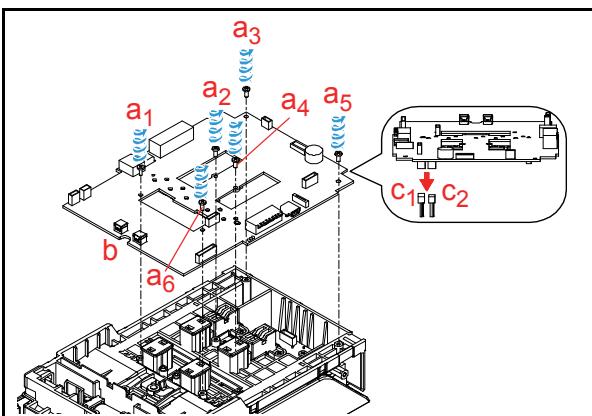
*NOTE: Step 6 is reserved for EBA-40 Units equipped with an Upper Barcode Sensor Board.*

6. Unplug the single (1) Connector (Figure 4-2 c), and remove the two (2) Mounting Screws (Figure 4-3 a<sub>1</sub> and a<sub>2</sub>) securing the Upper Barcode Sensor Board (Figure 4-3 b) to the Upper Guide. Then remove the Upper Barcode Sensor Board from the Upper Guide.



**Figure 4-3** Upper Barcode Sensor Board Removal

7. Remove the six (6) Mounting Screws (Figure 4-4 a<sub>1</sub> through a<sub>6</sub>) securing the Upper Sensor Board (Figure 4-4 b) to the Upper Guide.
8. Unplug the two (2) Connectors (Figure 4-4 c<sub>1</sub> and c<sub>2</sub>), and remove the Upper Sensor Board.

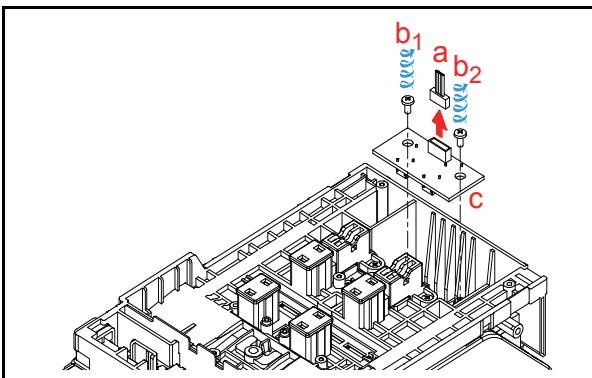


**Figure 4-4** Upper Sensor Board Removal

## PB Exit Sensor Board Removal

Perform the following steps to remove the PB Exit Sensor Board:

1. Unplug the single (1) Connector (Figure 4-5 a).
2. Remove the two (2) Mounting Screws (Figure 4-5 b<sub>1</sub> and b<sub>2</sub>) securing the PB Exit Sensor Board (Figure 4-5 c), and remove the PB Exit Sensor Board from the Transport Unit.

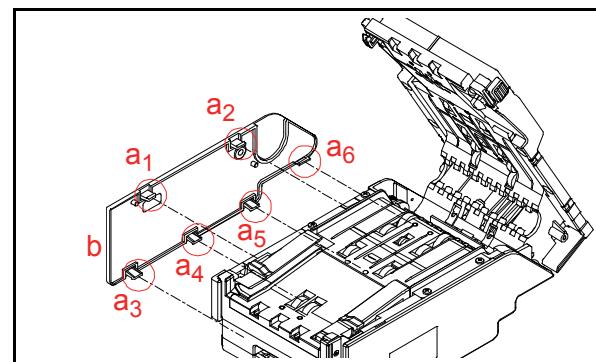


**Figure 4-5** PB Exit Sensor Board Removal

## Lower Barcode Sensor Board and Lower Sensor Board Removal

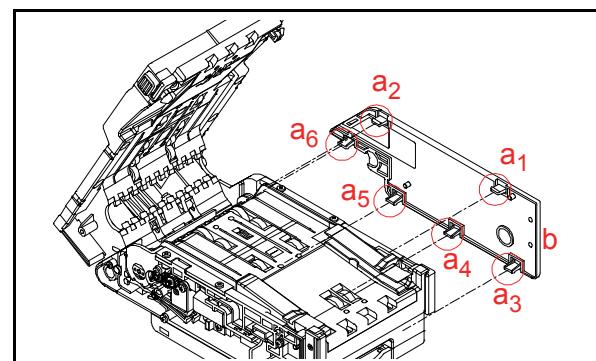
To remove the Lower Barcode Sensor Board and Lower Sensor Board, proceed as follows:

1. Unhook the six (6) claws (Figure 4-6 a<sub>1</sub> through a<sub>6</sub>) of the Left Side Cover using a slotted screwdriver, and remove the Left Side Cover (Figure 4-6 b) from the EBA-40 Unit.



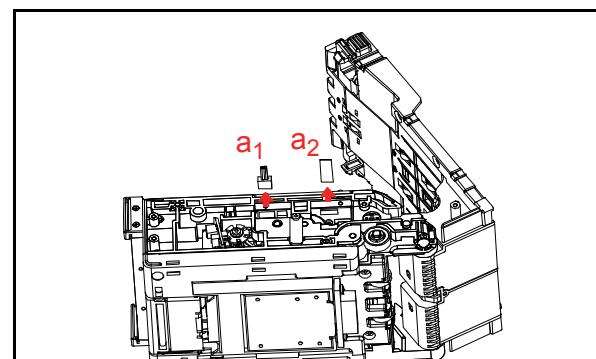
**Figure 4-6** Left Side Cover Removal

2. Unhook the six (6) claws (Figure 4-7 a<sub>1</sub> through a<sub>6</sub>) of the Right Side Cover using a slotted screwdriver, and remove the Right Side Cover (Figure 4-7 b) from the EBA-40 Unit.



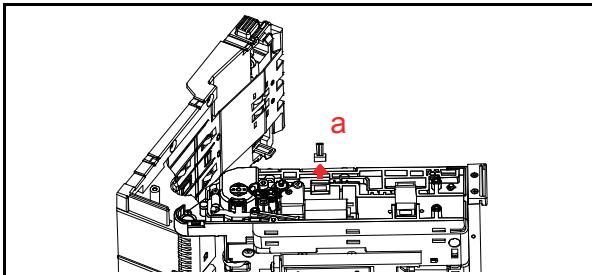
**Figure 4-7** Right Side Cover Removal

3. Unplug the two (2) Connectors (Figure 4-8 a<sub>1</sub> and a<sub>2</sub>).



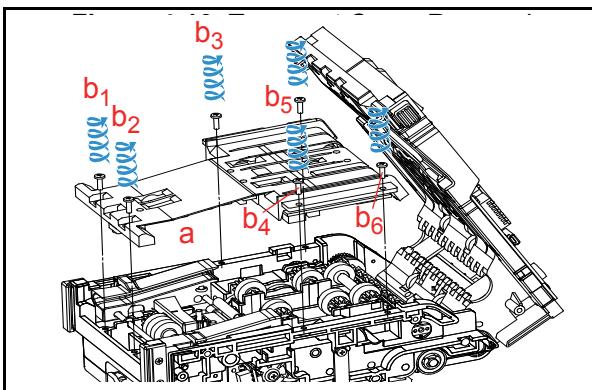
**Figure 4-8** Unplugging Connectors on the Right

4. Unplug the single (1) Connector (Figure 4-9 a).



**Figure 4-9** Unplugging Connectors on the Left

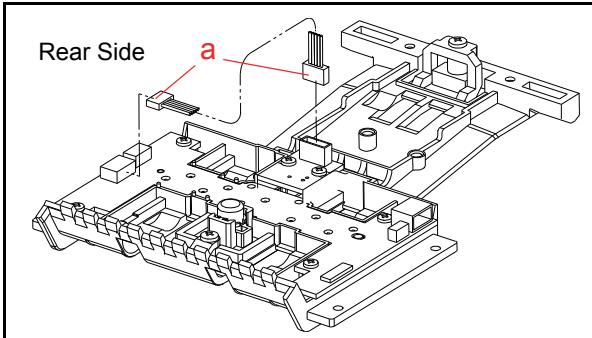
5. Remove the six (6) Mounting Screws (Figure 4-10 b<sub>1</sub> through b<sub>6</sub>) securing the Transport Cover (Figure 4-10 a), and remove the Transport Cover from the EBA-40 Unit.



**Figure 4-10** Transport Cover Removal

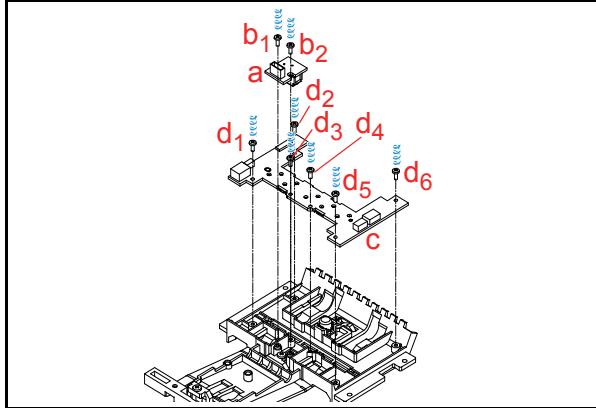
 **NOTE:** Steps 6 and 7 are reserved for EBA-40 Units equipped with a Lower Barcode Sensor Board.

6. Flip the Transport Cover over, and then unplug the two connectors from the Transport Cover (Figure 4-11 a).



**Figure 4-11** Unplug Connectors (EBA-40 Unit with Lower Barcode Sensor Board)

7. Remove the two (2) Mounting Screws (Figure 4-12 b<sub>1</sub> and b<sub>2</sub>) securing the Lower Barcode Sensor Board (Figure 4-12 a), and remove the Lower Barcode Sensor Board from the Transport Cover.
8. Remove the six (6) Mounting Screws (Figure 4-12 d<sub>1</sub> through d<sub>6</sub>) securing the Lower Sensor Board (Figure 4-12 c), and remove the Lower Sensor Board from the Transport Cover.

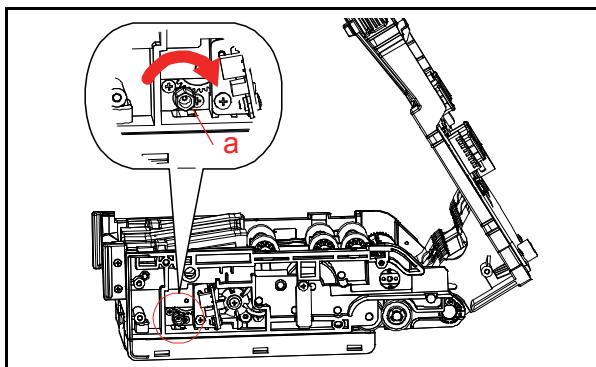


**Figure 4-12** Lower Barcode Sensor Board and Lower Sensor Board Removal

## Centering Home Sensor Board Removal

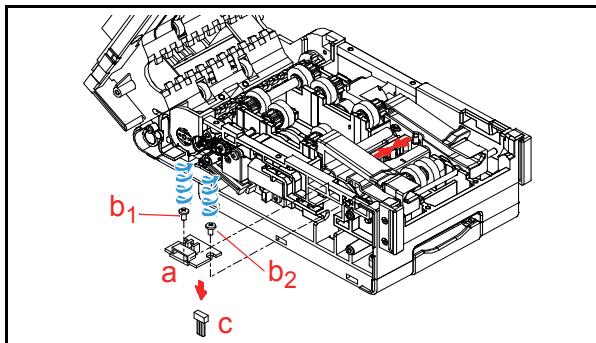
Perform the following steps to remove the Centering Home Position Sensor Board:

1. Rotate the Centering Motor Pinion Gear (Figure 4-13 a) clockwise to move the Right and Left Centering Guides to the center.



**Figure 4-13** Positioning Right and Left Centering Guides

2. Remove the two (2) Mounting Screws (Figure 4-14 b<sub>1</sub> and b<sub>2</sub>) securing the Centering Home Sensor Board (Figure 4-14 a), and remove the Right and Left Centering Guides from the EBA-40 Unit.
3. Unplug the single (1) Connector (Figure 4-14 c). Then remove the Centering Home Sensor Board.

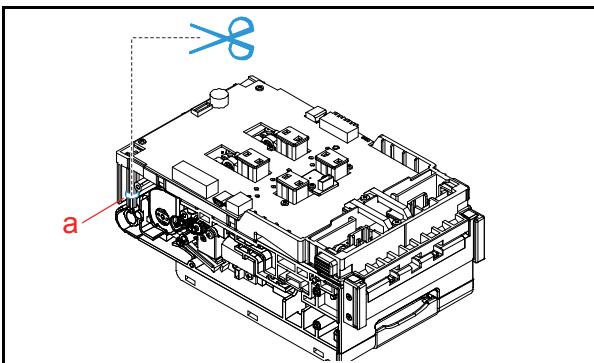


**Figure 4-14** Centering Home Sensor Board Removal

## Transport Motor, Transport Encoder Sensor Board, Centering Motor Removal

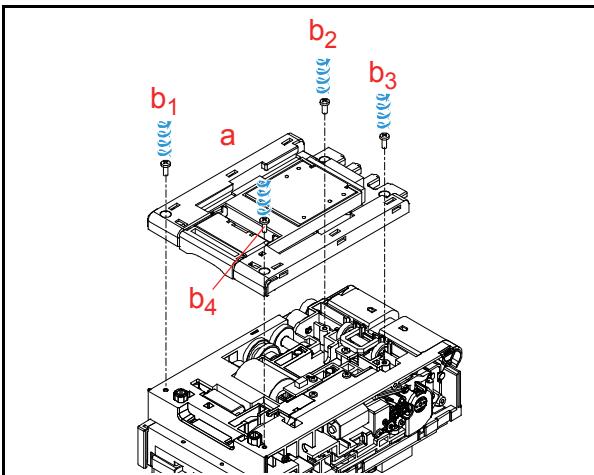
To remove the Transport Motor, Transport Encoder Sensor Board, and Centering Motor, proceed as follows:

- Cut the single (1) Cable Tie (Figure 4-15 a) binding the Transport Motor Harness.



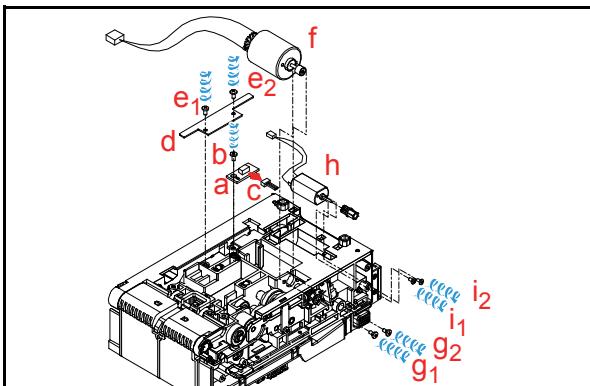
**Figure 4-15** Cutting Cable Tie

- Remove the four (4) Mounting Screws (Figure 4-16 b<sub>1</sub> through b<sub>4</sub>) securing the Rail Guide (Figure 4-16 a). Lift the Rail Guide off the Transport.



**Figure 4-16** Rail Guide Removal

- Remove the single (1) Mounting Screw (Figure 4-17 b) securing the Transport Encoder Sensor Board (Figure 4-17 a), and unplug the single (1) Connector (Figure 4-17 c).
- Remove the two (2) Mounting Screws (Figure 4-17 e<sub>1</sub> and e<sub>2</sub>) securing the Harness Plate 2 (Figure 4-17 d), and remove the Harness Plate 2 from the EBA-40 Unit.
- Remove the two (2) Mounting Screws (Figure 4-17 g<sub>1</sub> and g<sub>2</sub>) securing the Transport Motor (Figure 4-17 f), and remove the Transport Motor from the EBA-40 Unit.
- Remove the two (2) Mounting Screws (Figure 4-17 i<sub>1</sub> and i<sub>2</sub>) securing the Centering Motor (Figure 4-17 h), and remove the Centering Motor from the EBA-40 Unit.

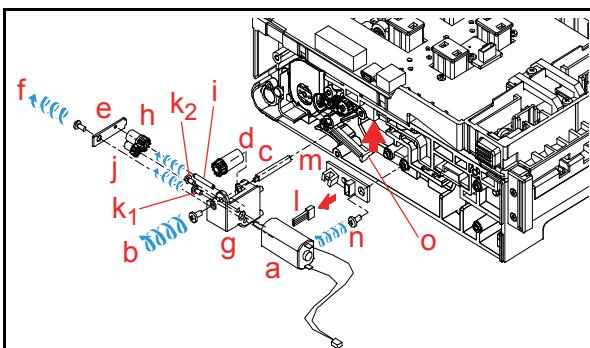


**Figure 4-17** Transport Motor/Transport Encoder Sensor Board/Centering Motor Removal

## PB Motor and PB Home Sensor Board Removal

Perform the following steps to remove the PB Motor and PB Home Sensor Board:

- Remove the single (1) Mounting Screw (Figure 4-18 b) securing the PB Motor (Figure 4-18 a), and remove the PB Motor from the EBA-40 Unit.
- Pull out the PB Worm Shaft (Figure 4-18 c) and remove the PB Gear 1 (Figure 4-18 d).
- Remove the single (1) Mounting Screw (Figure 4-18 f) securing the PB Worm Plate (Figure 4-18 e), and remove the PB Worm Plate from the PB Motor Cover (Figure 4-18 g).
- Remove the PB Gear URF 2 (Figure 4-18 h), PB Gear Shaft A (Figure 4-18 i) and PB Motor Pinion Gear (Figure 4-18 j) from the PB Motor Cover.
- Remove the two (2) Mounting Screws (Figure 4-18 k<sub>1</sub> and k<sub>2</sub>) securing the PB Motor (Figure 4-18 a), and remove the PB Motor from the PB Motor Cover.
- Unplug the single (1) Connector (Figure 4-18 l) and remove the single (1) Mounting Screw (Figure 4-18 n) securing the PB Home Sensor Board (Figure 4-18 m).
- Push the PB Home Lever (Figure 4-18 o) up and remove the PB Home Sensor Board from the EBA-40 Unit.



**Figure 4-18** Centering Home Sensor Board Removal

# EBA® Series

## EBA-40 Banknote Acceptor

### Section 5

#### 5 WIRING DIAGRAM

This section provides the EBA® Series EBA-40 Banknote Acceptor Unit Wiring Diagrams for the following items:

- Wiring Diagram

#### Wiring Diagram

##### EBA-40 System Wiring Diagram 1

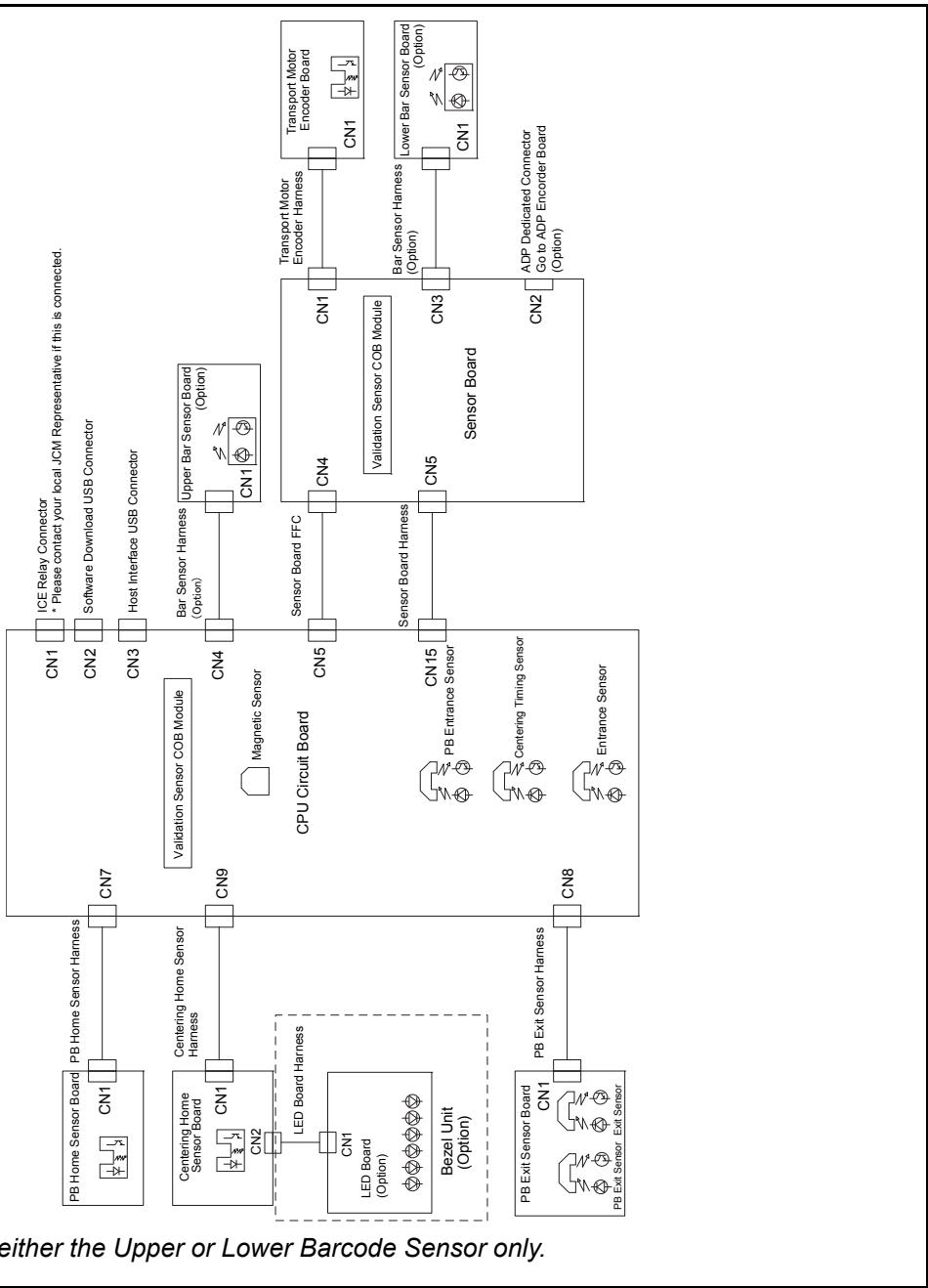
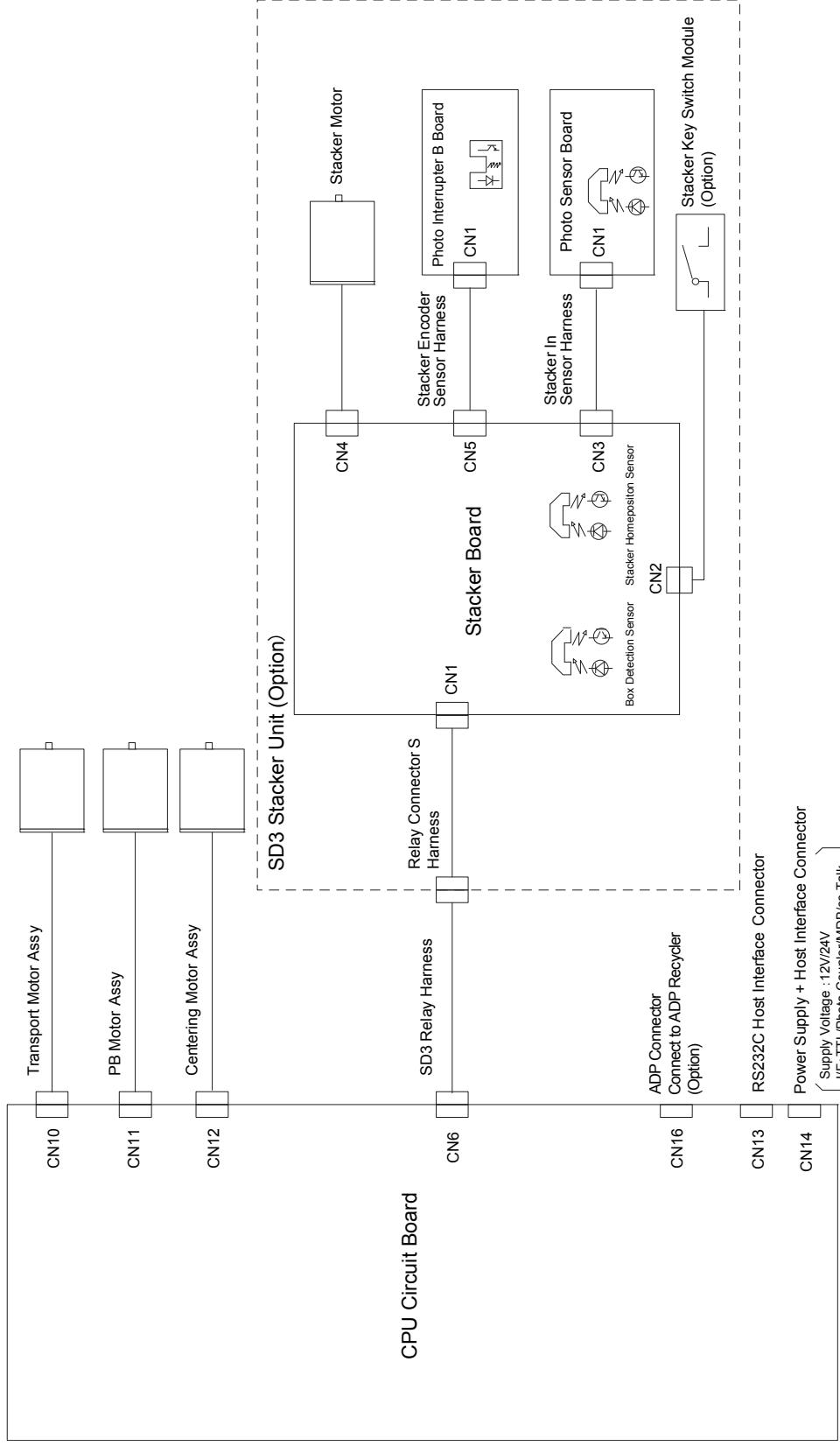


Figure 5-1 EBA-40 System Wiring Diagram 1

## EBA-40 System Wiring Diagram 2



**Figure 5-2 EBA-40 System Wiring Diagram 2**

# EBA® Series

## EBA-40 Banknote Acceptor

### Section 6

## 6 CALIBRATION AND PERFORMANCE TESTING

This section provides Calibration and Performance Testing instructions for the EBA® Series EBA-40 Banknote Acceptor Unit. This section contains the following information:

- Tool Requirements
- Installation Procedures
- JCM Tool Suite Standard Edition Modes
- Download Procedures
- Calibration
- Performance Tests

### Tool Requirements

#### Workbench Tool Requirements With Reference Paper and a PC

Figure 6-1 and Figure 6-2 identify the Tools and equipment interconnects necessary to install and/or download the Application Software, USB driver and Firmware Software, to calibrate the EBA-40 Unit away from its Host Machine, and to perform an EBA-40 Performance Test using a PC. Also, see “Component Names” on page 1-5 for connector locations.

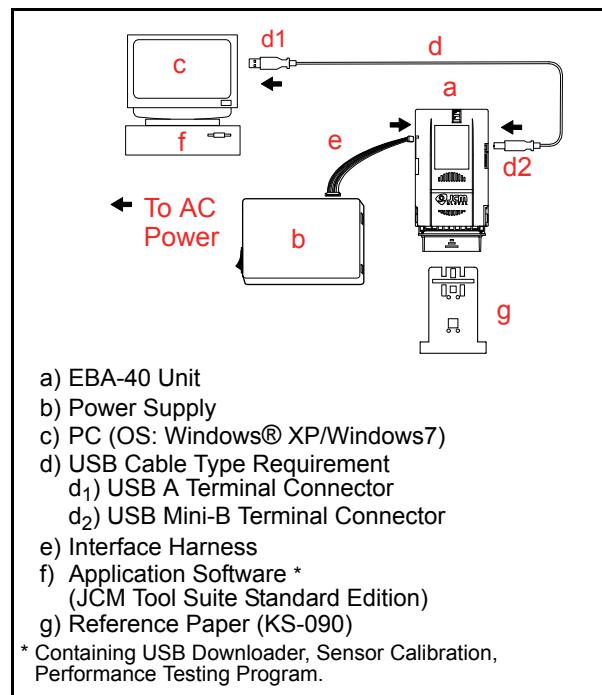


Figure 6-1 Workbench Tool Requirements 1



Figure 6-2 USB Cable Type Requirement

**NOTE:** When the “USB-A Terminal” connects to a USB Hub, the EBA-40 Unit may not operate as expected. Be sure that the USB-A terminal connects DIRECTLY to a PC USB Port!

#### Workbench Tool Requirements Without a PC

Figure 6-3 identifies the Tools and equipment interconnects necessary to perform an EBA-40 Performance Test without a PC.

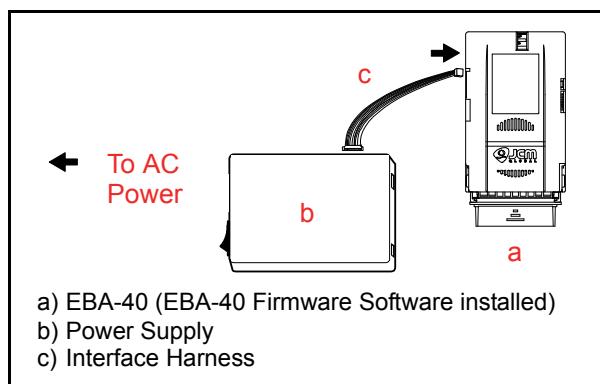


Figure 6-3 Workbench Tool Requirements 2

### Power Supply

The 12V or 24 DC Power Supply for the EBA-40 Series Units is required to perform the following procedures:

- Sensor Calibration
- Downloading Software to Flash Memory
- Communication between the EBA-40 Unit and the PC

The UAC Converter shown in Table A-7 on page A-8 is also available. If using the UAC is preferred, refer to JCM UAC Device Operational Instructions (Part No. 960-100194R) for details on its use.

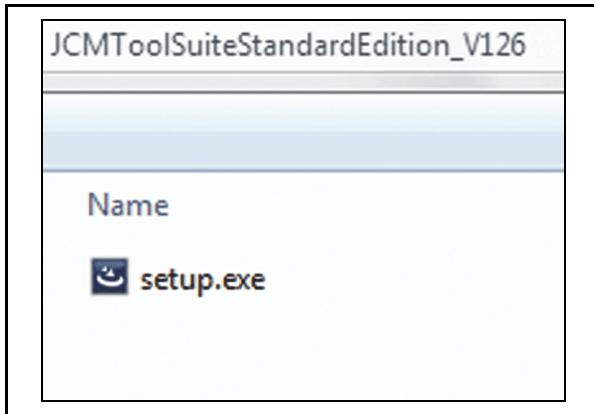
## Installation Procedures

### Application Software Installation

Perform the following steps to install the JCM Tool Suite Standard Edition and USB Drivers (Refer to Figure 6-1 and Figure 6-2 for the necessary Workbench Tool and USB Cable Requirements).

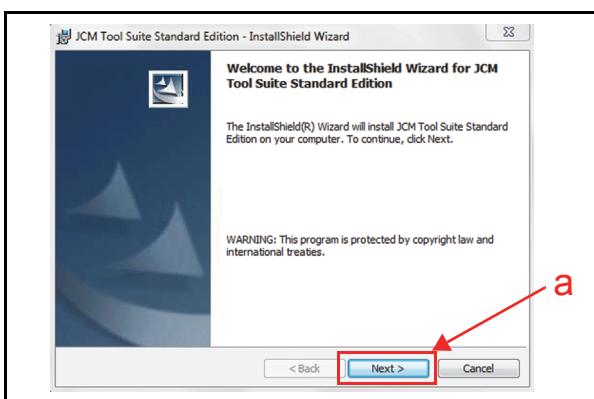
#### Part 1 - JCM Tool Suite Installation

1. Copy the “JCMToolSuiteStandardEdition.zip” Application Software and extract to the Desktop.
2. Open the Third Layer of the extracted Folder and Double-click on “Setup.exe” (Figure 6-4).



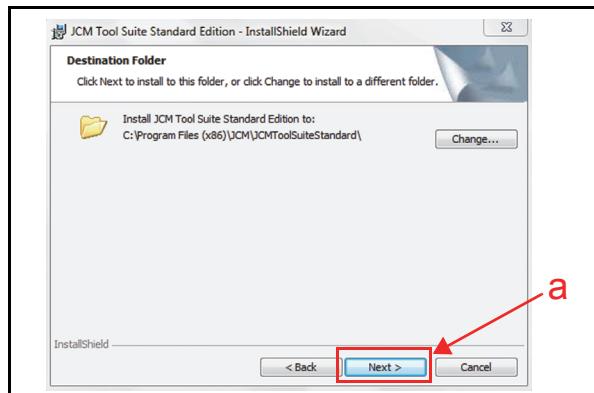
**Figure 6-4** Setup.exe

3. The “JCM Tool Suite Standard Edition - Install Shield Wizard” Screen shown in Figure 6-5 will appear. Click the “Next>” Screen Button (Figure 6-5 a).



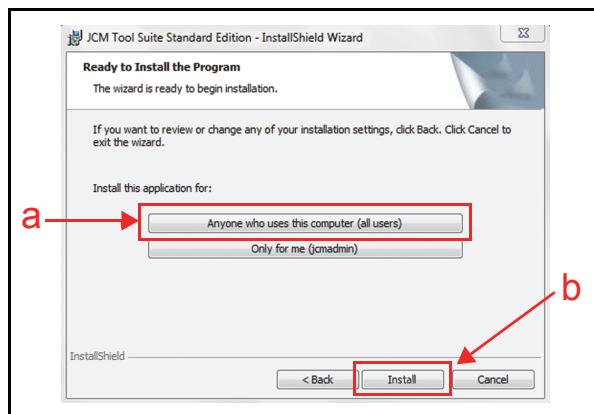
**Figure 6-5** InstallShield Wizard Screen

4. Click the “Next>” Screen Button (Figure 6-6 a), when the “Destination Folder” Screen shown in Figure 6-6 appears.



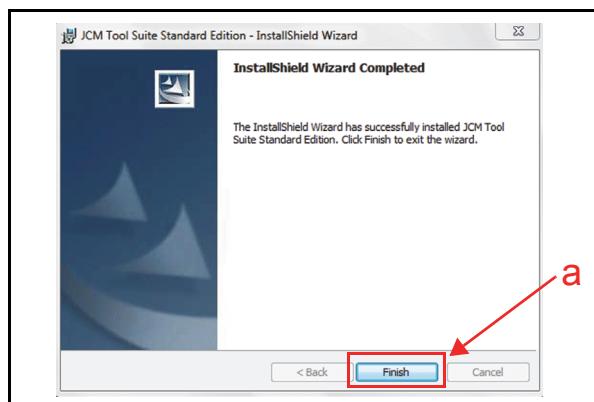
**Figure 6-6** Destination Folder Screen

5. Click the “Anyone who uses this computer (all users)” Screen Button (Figure 6-7 a) and then Click the “Install” Screen Button (Figure 6-7 b) to start the installation.



**Figure 6-7** Ready to Install the Program Screen

6. Verify that the “InstallShield Wizard Completed” Screen shown in Figure 6-8 appears when installation is complete.



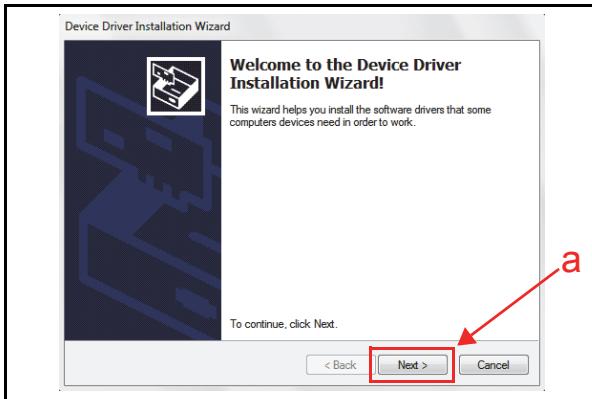
**Figure 6-8** Installation Completion Screen

7. Click the “Finish” Screen Button (Figure 6-8 a) to end the installation process.

## Part 2 - USB Drivers Installation

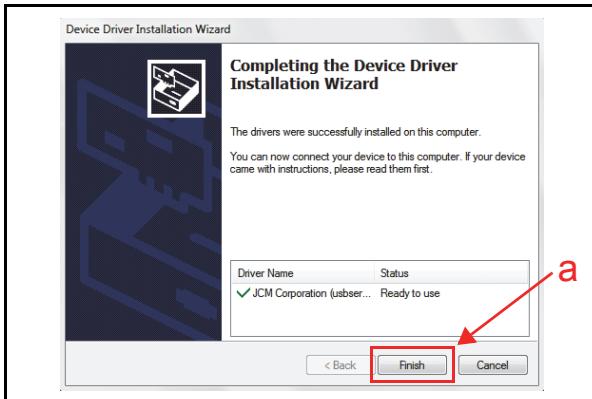
Perform the following steps to install the EBA-40 USB Drivers:

1. Connect the PC and the EBA-40 Unit together using the recommended USB Cable (Figure 6-1 and Figure 6-2).  
The EBA-40 USB Driver Installation Wizard screen shown in Figure 6-9 appears.



**Figure 6-9** Installation Auto-start Screen

2. Click the “Next>” Screen Button (Figure 6-9 a) to start the installation.  
Once installation is complete, the “Completing the Device Driver Installation Wizard” Screen shown Figure 6-10 appears.



**Figure 6-10** Installation Completion Screen

3. Click the “Finish” Screen Button (Figure 6-10 a) to end the installation process.

This completes the Application and USB Drivers installation procedure.

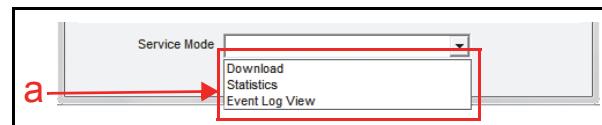
## JCM Tool Suite Standard Edition Modes

The “JCM Tool Suite Standard Edition” package supports two (2) operating modes:

- Normal Mode (No DIP Switches selected)
- Test Mode (DS1 Switch 8 ON)

From Normal Mode, the EBA-40 System Software can be downloaded and the Statistics/Event logs can be viewed. Normal Mode provides access to the Service Mode Pull-down Menu, which displays the following three (3) options (refer to Figure 6-11a):

- Download (for downloading software)
- Statistics (for observing log data)
- Event Log View (for viewing event log)

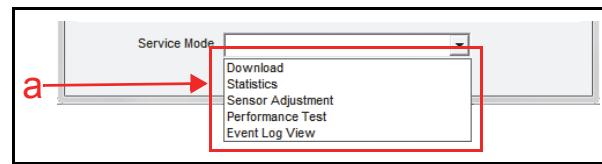


**Figure 6-11** Normal Mode Selection

Test Mode is used to perform EBA-40 Calibration and Performance Testing. Test Mode also provides access to the Service Mode Pull-down Menu, which displays the following five (5) options (refer to

Figure 6-12a):

- Download (for downloading software)
- Statistics (for observing log data)
- Sensor Adjustment (for calibration)
- Performance Test (for performance testing)
- Event Log View (for viewing event log)



**Figure 6-12** Test Mode Selection

## Download Procedures

### Software Download Procedure

Use one of the following Software Download procedures, depending on your EBA-40 operating conditions:

- Upgrade installed EBA-40 software
- First-time installation to a New EBA-40 CPU Circuit Board with NO software installed

### Download the Upgrade Program

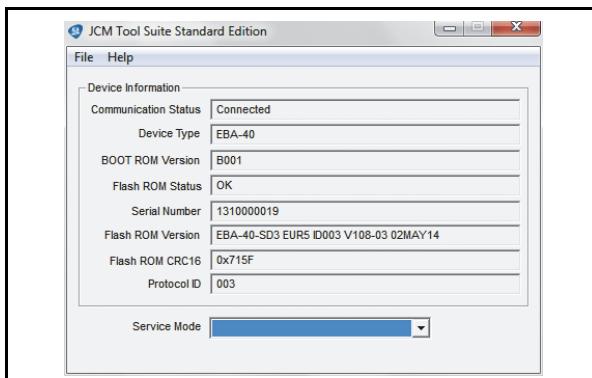
To upgrade the EBA-40 Software, proceed as follows:

1. Remove electrical power from the EBA-40 Unit.
2. Set all the DS1 switches to OFF. (Figure 6-13).



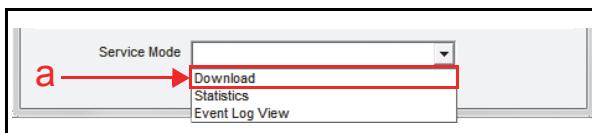
**Figure 6-13 DS1 Switch All OFF**

3. Connect the PC and the EBA-40 Unit together using the recommended USB Cable (Figure 6-1 and Figure 6-2).
4. Apply electrical power to the EBA-40 Unit.
5. Launch the “JCM Tool Suite Standard Edition” Application. The Screen shown in Figure 6-14 will appear when the application becomes active.



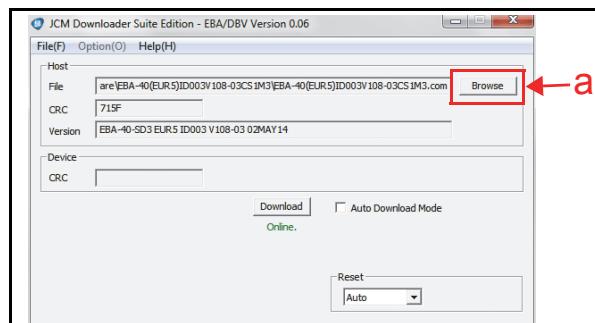
**Figure 6-14 JCM Tool Suite Standard Edition Screen 1**

6. Click the “Service Mode” Pull Down Menu, and select “Download”. When selected, it will highlight the selected Field Blue (Figure 6-15 a), and the Status LEDs will flash at an alternating Red and Green Color rate.



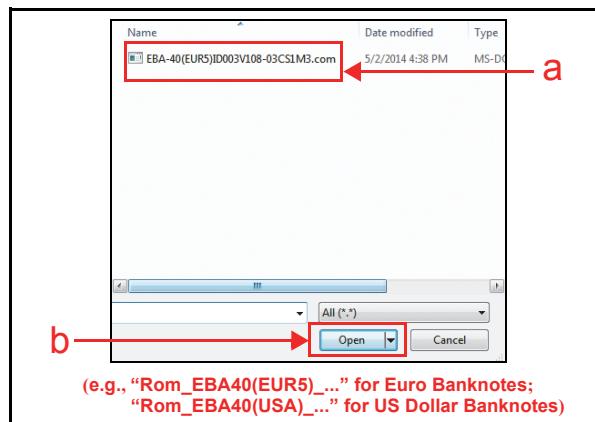
**Figure 6-15 JCM Tool Suite Standard Edition Pull-Down Menu 1**

7. Once “Download” is activated, the “JCM Downloader Suite Edition Version X.XX” Suite Edition Version X.XX will automatically begin functioning, and the Screen shown in Figure 6-16 will appear. Click the “Browse” Screen Button (Figure 6-16 a).



**Figure 6-16 Browse Screen Button Location 1**

8. Select the current EBA-40 Software Version File from the Download File Screen that appears (Figure 6-17 a).
9. Click the “Open” Screen Button (Figure 6-17 b).

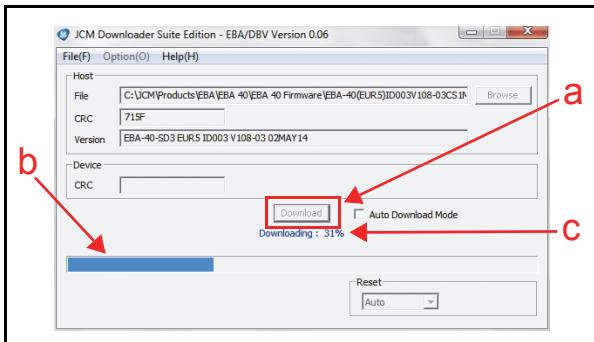


**Figure 6-17 EBA-40 Software Program Selection**

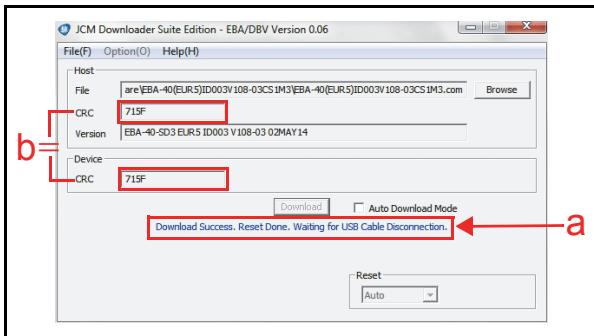


*NOTE: Select the correct EBA-40 Firmware for the Country desired.*

10. When the “JCM Downloader Suite” Screen reappears, click the center “Download” Screen Button (Figure 6-18 a) to begin the Software download into the EBA-40 Unit. The Download Screen displays a Progress Bar during downloading (Figure 6-18 b), and a Blue Text Line below the “Download” Screen Button displays the download Percentage as “Downloading :XX%” (Figure 6-18 c). The Status LEDs will flash at an alternating Red and Green Color rate while downloading.

**Figure 6-18** Download Progress Screen 1

11. Verify that the “Download Success. Reset Done. Waiting for USB Cable Disconnection.” Blue Text Line appears when the download is complete (Figure 6-19 a).
12. Confirm that the Host's Checksum (CRC) value matches the Device's Checksum (CRC) value (Figure 6-19 b).

**Figure 6-19** Download Completed Screen 1

### Download the Program (First Time)

When the EBA-40 Software Program is not previously installed (e.g., when changing the CPU Circuit Board), the download procedure for an “empty” EBA-40 Unit is slightly different from the Download and Upgrade Program procedure.

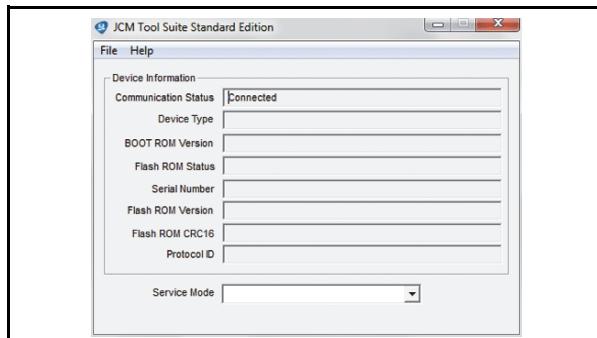
To download the “EBA-40 Software Program” into an “empty” EBA-40 Unit for the first time, proceed as follows:

1. Remove electrical power from the EBA-40 Unit.
2. Set DS1 switch #6, #7 and #8 to ON (Figure 6-20).

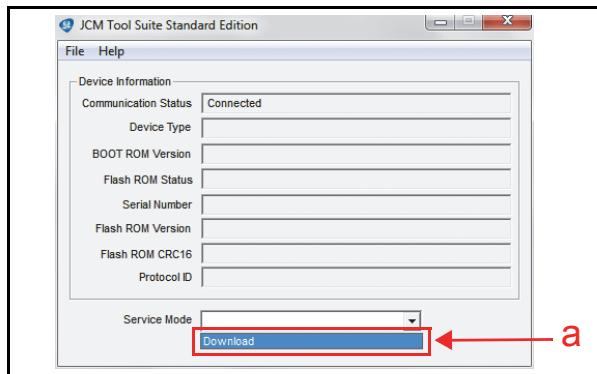
**Figure 6-20** DS1 Switch #6, #7 & 8 ON

3. Connect the PC and the EBA-40 Unit together using the recommended USB Cable (Figure 6-1 and Figure 6-2).
4. Apply electrical power to the EBA-40 Unit. The Status LEDs will flash at an alternating Red and Green Color rate.

5. Launch the “JCM Tool Suite Standard Edition” Application. The PC Screen shown in Figure 6-21 appears when the application is activated.

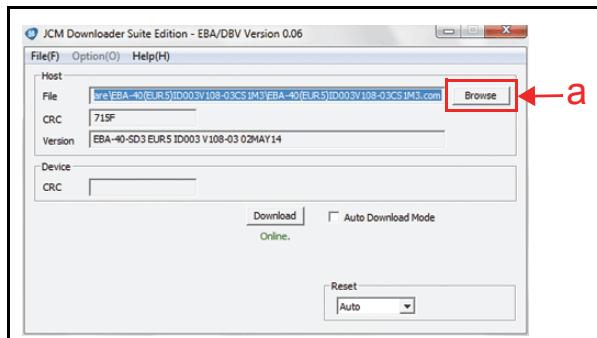
**Figure 6-21** JCM Tool Suite Standard Edition Screen 2

6. Click the “Service Mode” Pull Down Menu, and select “Download”. When selected, it will highlight the selected Field Blue (Figure 6-22 a).

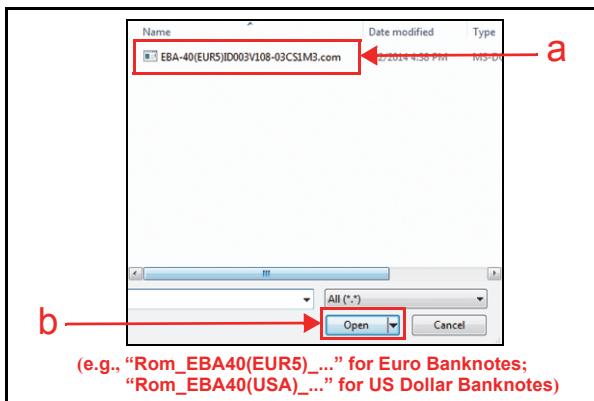
**Figure 6-22** JCM Tool Suite Standard Edition Pull-Down Menu 2

Once “Download” is activated, the “JCM Downloader Suite Edition Version X.XX” will automatically begin functioning, and the Screen shown in Figure 6-23 will appear.

7. Click the “Browse” Screen Button (Figure 6-23 a).

**Figure 6-23** Browse Screen Button Location 2

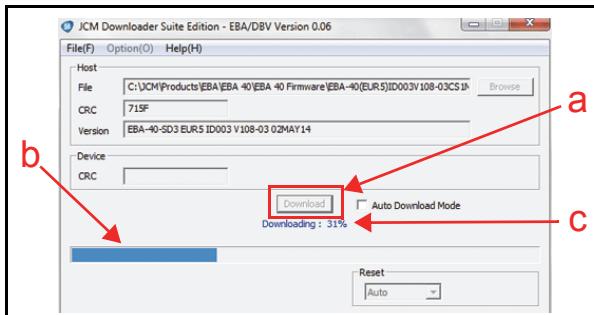
8. Select the current EBA-40 Software Program Version as shown in the Figure 6-24a example from the Download File Screen that appears, then Click the “Open” Screen Button (Figure 6-24 b).



**Figure 6-24** EBA-40 Software Program Selection

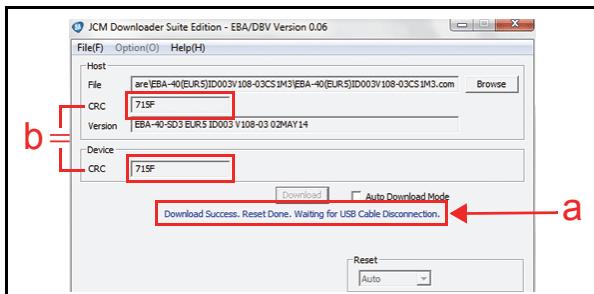
**NOTE:** Select the correct EBA-40 Firmware for the Country desired.

- When the “JCM Downloader Suite” Screen re-appears, click the center “Download” Screen Button (Figure 6-25 a) to begin the Software download into the EBA-40 Unit. The Download Screen displays a Progress Bar during downloading (Figure 6-25 b), and a Blue Text Line below the “Download” Button displays the download Percentage as “Downloading :XX%” (Figure 6-25 c). The Status LEDs will flash at an alternating Red and Green Color rate while downloading.



**Figure 6-25** Download Progress Screen 2

- Verify that the “Download Success. Reset Done. Waiting for USB Cable Disconnection.” Blue Text Line appears (Figure 6-26 a) when downloading is complete.
- Confirm that the Host's Checksum (CRC) value matches the Device's Checksum (CRC) value (Figure 6-26 b).



**Figure 6-26** Download Completed Screen 2

This completes the EBA-40 Software Downloading Procedures.

## Calibration

This section provides instructions for performing calibration of the Positioning Sensors, Validation Sensors and Barcode Sensor (option) within the EBA-40 Unit.

### When to Calibrate Sensors

Calibration should be performed if the following conditions occur:

- When removing and replacing the CPU Circuit Board, the Upper Sensor Circuit Board and/or the Lower Sensor Circuit Board.
- When removing/replacing ANY Sensor.
- When dirt is found adhering to Sensors (Perform Calibration after Cleaning the Sensors and the Rollers. See “Sensor and Roller Locations” on page 2-12).
- When the Banknote Acceptance Rate is drastically degraded.

### Calibration Tool Requirements

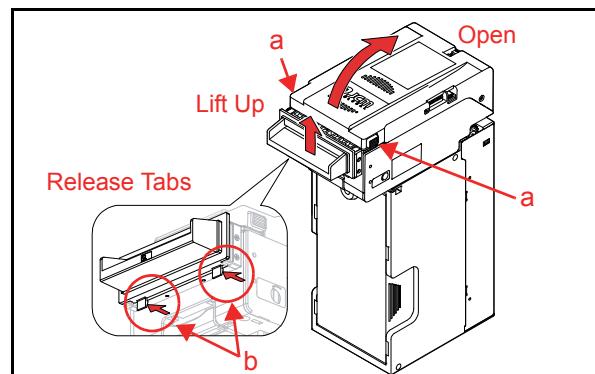
See “Workbench Tool Requirements With Reference Paper and a PC” on page 6-1 for the Tools and equipment interconnects necessary to calibrate the EBA-40 Unit away from its Host Machine.

### Placing Reference Paper

This section provides information concerning Reference Paper placement and treatment.

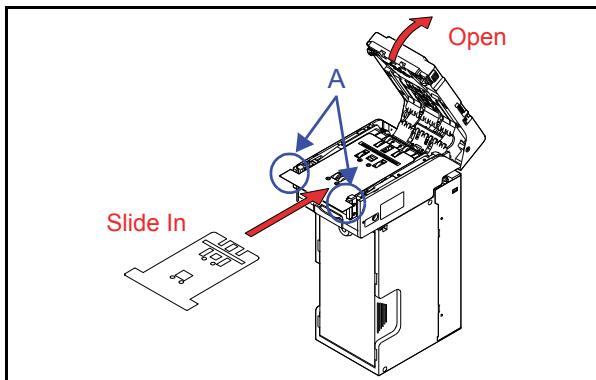
Perform the following steps to properly place Reference Paper (KS-090) into the EBA-40 Unit.

- Lift the Upper Guide while pressing in on the Open/Close Buttons (Figure 6-27 a) located on each side of the EBA-40 Unit (Figure 6-27).
- Release the tabs of the Bezel (if any) as indicated by the red arrows in Figure 6-27b and remove the Bezel by lifting it.



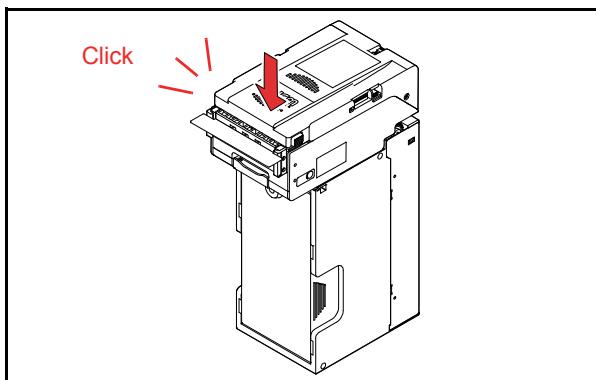
**Figure 6-27** Reference Paper Insertion 1

- Slide the selected Reference Paper (Figure 6-28) into the Transport Unit until its Catch Edges evenly touch both the left and right side of the Frame (Figure 6-28 A).

**Figure 6-28 Reference Paper Insertion 2**

*NOTE: Place the Reference Paper upward so the ID Sticker is visible; otherwise, calibration will not be performed correctly.*

4. Firmly close the Upper Guide (Figure 6-29) until it “clicks” in place, and ensure that both sides are tightly closed and locked in place.

**Figure 6-29 Reference Paper Insertion 3**

## Calibration Procedure

This section provides information for calibrating the Validation Sensors in the EBA-40 Unit. The Calibration Program contains the Calibration, Serial Number Confirmation and Saving Calibration Values (Table 6-1).



*NOTE: Calibration procedures cannot be performed individually.*

**Table 6-1** Contents and Calibration Order

No.	Functions	EBA-40 Reference Paper
1	Positioning Sensor [A/D & D/A Values] Calibration	None
2	Validation Sensor [D/A Value, Non-Paper] Calibration	None
3	Validation Sensor [Gain Value, D/A Value, With Paper] Calibration	KS-090
4	Barcode Sensor Calibration (Option)	KS-090
5	Validation Sensor [A/D Value, Non-Paper] Calibration	None
6	Serial Number Confirmation	None
7	Saving Calibration Values	None

## Sensor Calibration Preparation

To begin adjusting the EBA-40 Unit, proceed as follows:

1. Remove electrical power from the EBA-40 Unit.
2. Connect the PC and the EBA-40 Unit together using the recommended USB Cable (Figure 6-2).
3. Set DS2 switch #1 and #5 located on the back side of the EBA-40 Unit based on if the SD3 Stacker is used and if the Barcode Sensor is present.

**Table 6-2** DS2 Switch Settings

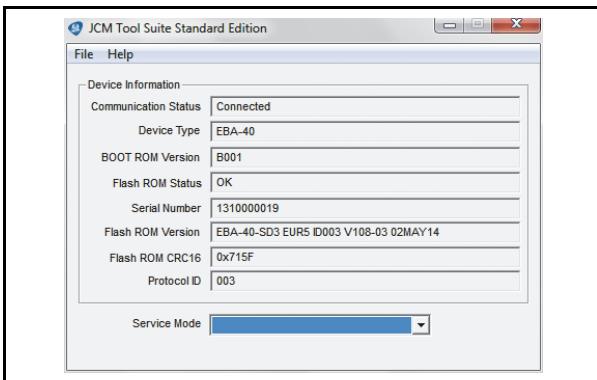
DS2 Switch Settings	SD3 Stacker	Barcode Sensor
	ON	Equipped DS2 #1 = ON Equipped DS2 #5 = ON
	ON OFF	Equipped DS2 #1 = ON None DS2 #5 = OFF
	ON OFF	None DS2 #1 = OFF Equipped DS2 #5 = ON
	OFF	None DS2 #1 = OFF None DS2 #5 = OFF

4. Set DS1 switch #8 to ON (Figure 6-30).

**Figure 6-30** DS1 Switch Settings 1

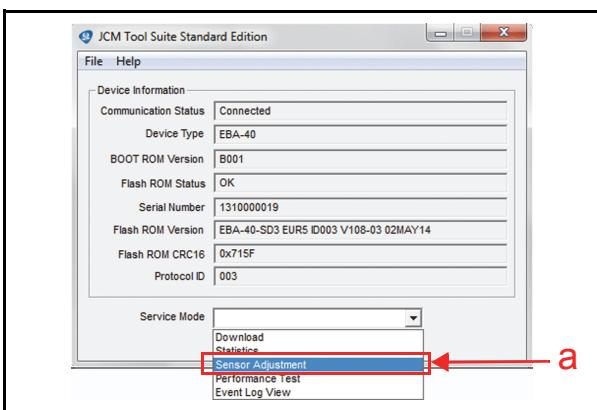
5. Open the Upper Guide and check that Reference Paper and/or foreign objects do not exist in the EBA-40 Transport path (Figure 6-27).
6. Firmly close the Upper Guide until it “clicks” in place, and ensure that both sides are tightly closed and locked in place. (Figure 6-29).
7. Apply electrical power to the EBA-40 Unit. Both the Green and Red Status LEDs (See “Component Names” on page 1-5) should now light.

- Launch the “JCM Tool Suite Standard Edition” Application.



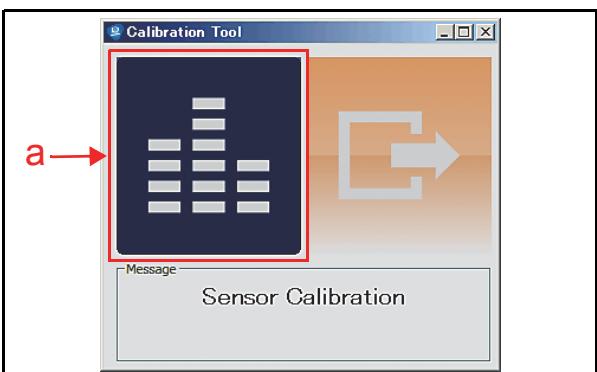
**Figure 6-31** JCM Tool Suite Standard Edition Screen 3

- Click the “Service Mode” Pull Down Menu, and select “Sensor Adjustment”. When selected, it will highlight the selected Field Blue (Figure 6-32 a).



**Figure 6-32** JCM Tool Suite Standard Edition Pull-Down Menu 3

- The Sensor Calibration Program Screen will appear (Figure 6-33).
- Click the “Sensor Calibration” Screen Button (Figure 6-33 a) to begin the Sensor Calibration.

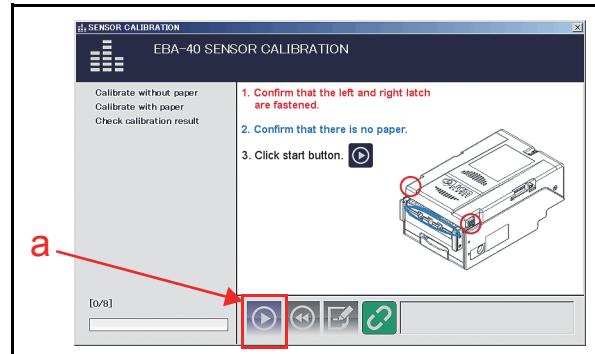


**Figure 6-33** Sensor Calibration Screen

## Positioning Sensor [A/D & D/A Values]

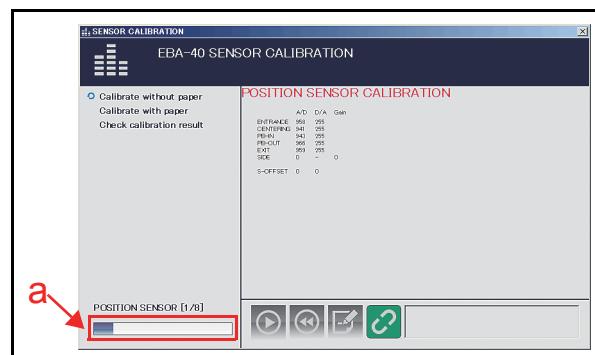
Perform the following steps to complete the first Positioning Sensor [A/D & D/A Values] Calibration Procedure Step.

- Click the “Start” (a) Screen Button (Figure 6-34 a) to begin the Positioning Sensor Calibration.



**Figure 6-34** Positioning Sensor Calibration 1

- The Test's progress will appear on the “POSITION SENSOR CALIBRATION” Screen as indicated by the Figure 6-35a Blue Progress Bar.

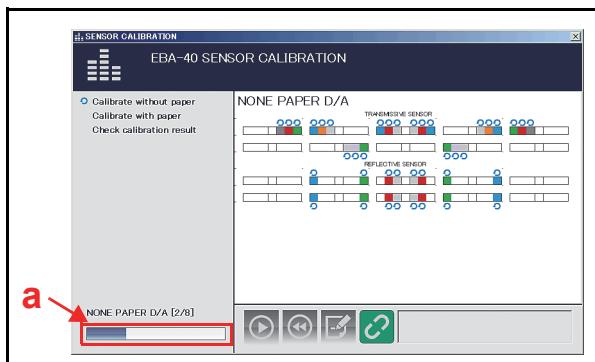


**Figure 6-35** Positioning Sensor Calibration 2

This completes the Positioning Sensor [A/D & D/A Values] Calibration Procedures.

## Validation Sensor [D/A Value, Non-Paper] Calibration

When the Positioning Sensor [A/D & D/A Values] Calibration Procedure is complete, the Validation Sensor [D/A Value, Non-Paper] Calibration will begin automatically: The Test's progress will appear on the “NONE PAPER D/A” Screen as indicated by the Blue Progress Bar (Figure 6-36 a).



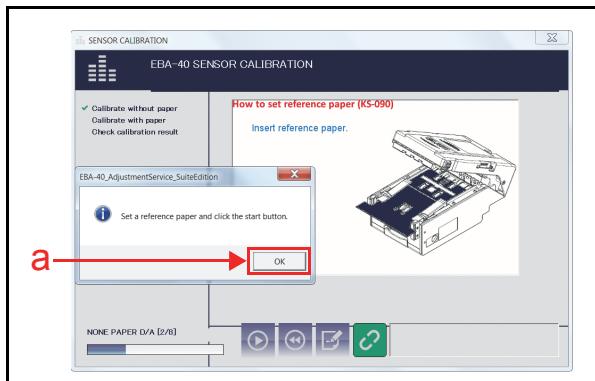
**Figure 6-36** Validation Sensor Non-Paper Calibration Screen

This completes the Validation Sensor [D/A Value, Non-Paper] Calibration Procedures.

## Validation Sensor [Gain & D/A Value, With Paper] Calibration

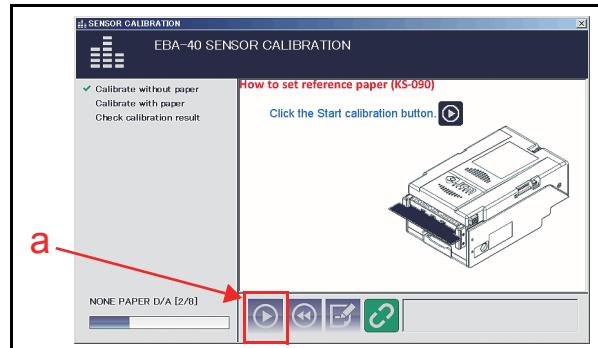
When the Validation Sensor [D/A Value, Non-Paper] Calibration Procedure is complete, perform the following steps to begin the Validation Sensor [Gain & D/A Values, With Paper] Calibration:

1. Place the Reference Paper (KS-090) on to the Transport path, then click the “OK” Screen Button (Figure 6-37 a).



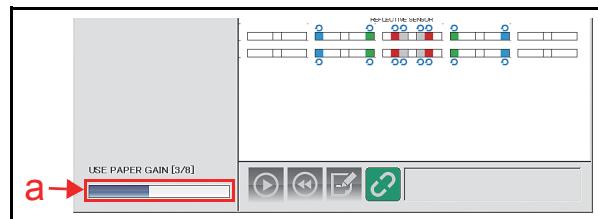
**Figure 6-37** Reference Paper Placement Screen

2. Click the “Start” Screen Button (Figure 6-38 a) to begin the Validation Sensor With Paper Calibration.

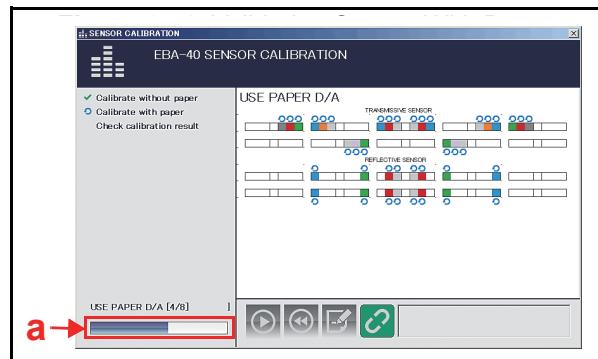


**Figure 6-38** Validation Sensor With Paper Calibration Screen 1

3. The Test's progress will appear on the “USE PAPER GAIN” and “USE PAPER D/A” Screens as indicated by the Figure 6-39a and Figure 6-40a Blue Progress Bar, respectively.

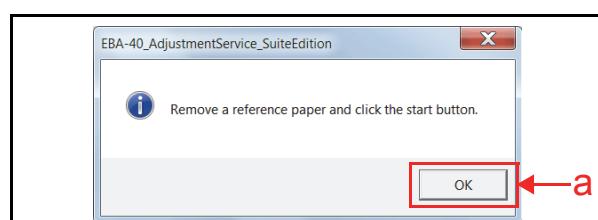


**Figure 6-39** Validation Sensor With Paper Calibration Screen 2



**Figure 6-40** Validation Sensor With Paper Calibration Screen 3

4. When the “Remove a reference paper and click the start button” Pop-up Screen appears (refer to Figure 6-41 on the following page), remove the Reference Paper, then click the “OK” Screen Button.



**Figure 6-41** Remove the Reference Paper Pop-up Screen

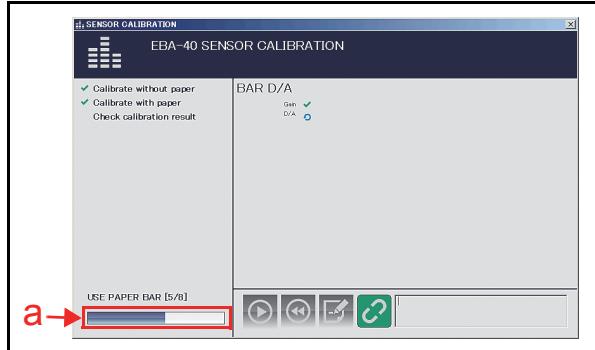
This completes the Validation Sensor [Gain & D/A Values, With Paper] Calibration Procedures.

## Barcode Sensor Calibration (Option)

When the Validation Sensor [Gain & D/A Values, With Paper] Calibration Procedure is complete, the Barcode Sensor (option) Calibration will begin automatically if equipped:

 **NOTE:** This Sensor Calibration is only subject to the EBA-40 Unit with the Barcode Sensor. A DS2 switch setting is required to run this Sensor Calibration. See "Sensor Calibration Preparation" on page 6-7.

- The Test's progress will appear on the "BAR D/A" Screen as indicated by the Blue Progress Bar (Figure 6-42a).



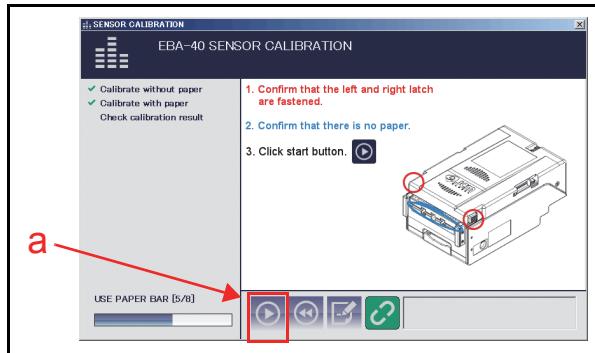
**Figure 6-42** Barcode Sensor Calibration Screen

This completes the Barcode Sensor Calibration (option) Procedure.

## Validation Sensor [A/D Value, Non-Paper] Calibration

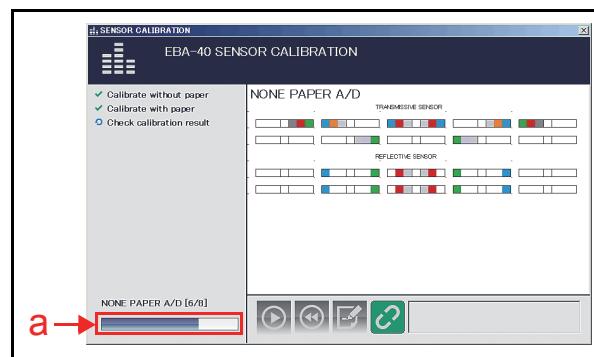
When the Barcode Sensor (option) Calibration Procedure is complete, perform the following steps to begin the next the Validation Sensor [A/D Value, Non-Paper] Calibration:

- Open the Upper Guide and check that Reference Paper and/or foreign objects do not exist in the EBA-40 Transport path (Figure 6-27).
- Firmly close the Upper Guide until it "clicks" in place, and ensure that both sides are tightly closed and locked in place (Figure 6-28).
- Click the "Start"  Screen Button (Figure 6-43 a) to begin the Validation Sensor Non-Paper Calibration.



**Figure 6-43** Validation Sensor Non-Paper Calibration Screen 1

- The Test's progress will appear on the "NONE PAPER A/D" Screen as indicated by the Blue Progress Bar (Figure 6-44a).



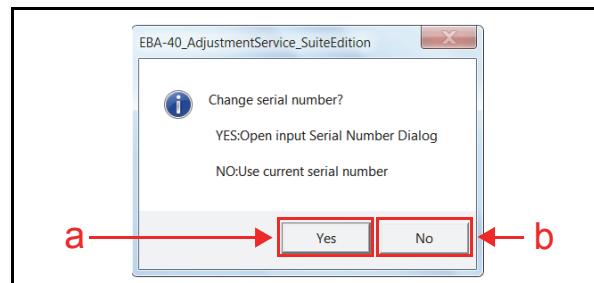
**Figure 6-44** Validation Sensor Non-Paper Calibration Screen 2

This completes the Validation Sensor [A/D Value, Non-Paper] Calibration Procedure.

## Serial Number Confirmation

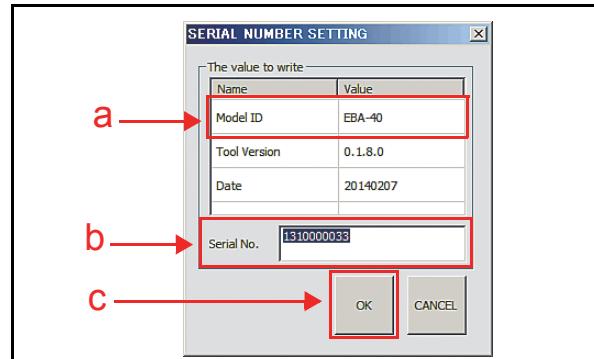
When the Validation Sensor [A/D Value, Non-Paper] Calibration Procedure is complete, perform the following steps to confirm the EBA-40 Unit's serial number:

- Click the "Yes"  Screen Button (Figure 6-45 a) to input or change a serial number if necessary. To skip this step, click the "No"  Screen Button (Figure 6-45 b).



**Figure 6-45** Serial Number Change Confirmation Pop-up Screen

- The Serial Number Change Confirmation Screen will appear (Figure 6-46).



**Figure 6-46** Serial Number Setting Screen

 **NOTE:** The Model ID of EBA-40 Unit (Figure 6-46 a) and the Serial No. (Figure 6-46 b) are default settings for use in this SERIAL NUMBER SETTING example.

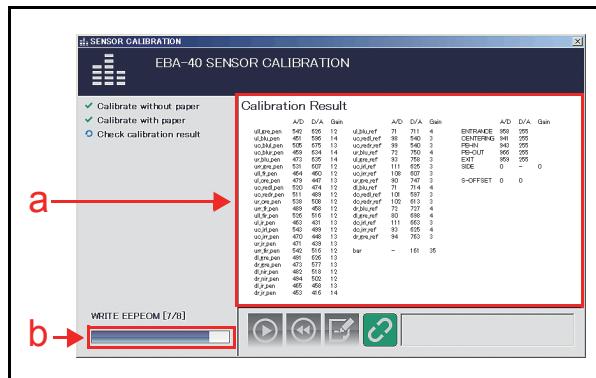
3. Type in a serial number containing a maximum of ten (10) characters into the related Serial No. field (Figure 6-46 b).
4. Click the “OK”  Screen Button to save (Figure 6-46 c).

This completes the Serial Number Confirmation Procedure.

### Saving Positioning Sensor/Validation Sensor/Barcode Sensor (option) Calibration Values

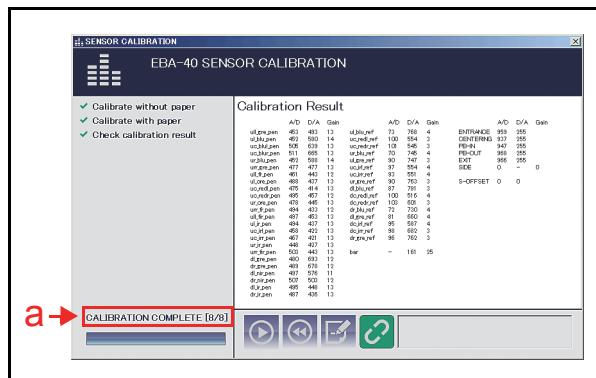
When the Serial Number Confirmation is complete, the Sensor Calibration Values are automatically saved:

1. Verify that all the Calibration Values appear in the “Calibration Result” display (Figure 6-47 a).
2. Monitor the Blue Progress Bar to check the Test's progress (Figure 6-47 b).



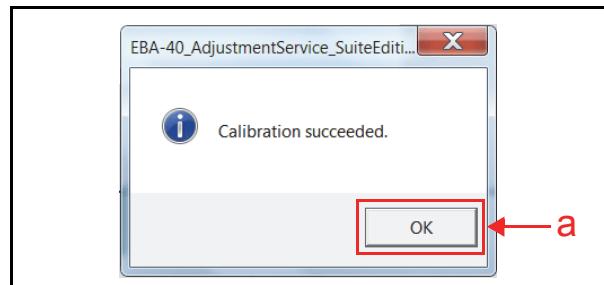
**Figure 6-47 Saving Calibration Values Screen**

3. Confirm that the “CALIBRATION COMPLETE [8/8]” display appears (Figure 6-48 a).



**Figure 6-48 Saving Calibration Values Complete Screen**

4. When the “Calibration Succeeded” Pop-up Screen appears, click the “OK”  Screen Button (Figure 6-49 a).



**Figure 6-49 Calibration Succeeded Pop-up Screen**

This completes the EBA-40 Sensor Calibration Program is completed.

## Performance Tests

This section provides Performance Testing instructions for the EBA-40 Unit. This section contains the following information:

- Performance Test using a PC
- Performance Test without a PC

Choose one (1) of the two (2) above Performance Test Procedures by selecting the one related to the particular circumstance desired.

### Performance Test Using a PC

See “Workbench Tool Requirements With Reference Paper and a PC” on page 6-1 for the Tools and Equipment interconnects necessary to perform an EBA-40 Performance Test using a PC.

Refer to Table 6-3 on the following page for details on Performance Test Items Using a PC and Test Menu Selections.

## Performance Test Items Using a PC And Test Menu Selections

Table 6-3 lists the test items for the EBA-40 Performance Test using a PC.

**Table 6-3 Performance Tests Using a PC and Test Menu Selections**

Test Item	Test Menu Selection (On PC Screen)	Test Purpose	LED		
			Stand-by	Performing (Normal)	Abnormal Indication*
Banknote Acceptance with SD3 Stacker†	ACCEPT_SS_TEST	Tests the Stacker's Movement with a SD3 Stacker and Acceptance Rate.	Red Lit	Extinguished Out	Red Flashes
			Green Lit		Green Flashes
Banknote Acceptance without SD3 Stacker‡	ACCEPT_TEST	Tests the Stacker's Movement without a SD3 Stacker and Acceptance Rate.	Red Lit	Extinguished Out	Red Flashes
			Green Lit		Green Flashes
Banknote Acceptance with SD3 Stacker (No Validation)†	NO_JUDGE_ACCEPT_SS_TEST	Tests the Stacker's Movement with a SD3 Stacker and Acceptance Rate (No Validation).	Red Lit	Extinguished Out	Red Flashes
			Green Lit		Green Flashes
Banknote Acceptance without SD3 Stacker (No Validation)‡	NO_JUDGE_ACCEPT_TEST	Tests the Stacker's Movement without a SD3 Stacker and Acceptance Rate (No Validation).	Red Lit	Extinguished Out	Red Flashes
			Green Lit		Green Flashes
Banknote Reject with SD3 Stacker†	NO_JUDGE_REJECT_SS_TEST	Tests a Banknote's Reject Movement with a SD3 Stacker from the Escrow Position when Off-Line.	Red Lit	Extinguished Out	Red Flashes
			Green Lit		Green Flashes
Banknote Reject without SD3 Stacker‡	NO_JUDGE_REJECT_TEST	Tests a Banknote's Reject Movement without a SD3 Stacker from the Escrow Position when Off-Line.	Red Lit	Extinguished Out	Red Flashes
			Green Lit		Green Flashes
FEED Motor Forward Rotation	FEED_MOTOR_FWD_TEST	Test the Feed Motor Forward Rotation movement and confirm the Feed Motor speed.	Red Lit	Extinguished Out	Red Flashes
FEED Motor Reverse Rotation	FEED_MOTOR_REV_TEST	Test the Feed Motor Reverse Rotation movement and confirm the Feed Motor speed.	Red Lit	Extinguished Out	Red Flashes
LED Indication (Status LEDs)	LED_TEST	Test each Status LED's ON/OFF indications.	Red Lit	Red Lit	Extinguished Out
			Green Lit	Green Lit	
Sensor ON/OFF	SENSOR_TEST	Test each Sensor's performance.	Red Lit	See "Sensor Test" on page 6-16	
Aging with SD3 Stacker† **	AGING_TEST_SS	Tests each moving part and sensor through aging movements.	Red Lit	Extinguished Out	Red Flashes
			Green Lit		
Aging without SD3 Stacker‡ ††	AGING_TEST	Tests each moving part and sensor through aging movements.	Red Lit	Extinguished Out	Red Flashes
			Green Lit		
DIP Switch Block 1 ON/OFF Operation	DIPSWITCH1_TEST	Test each DIP Switch Block 1 switch's performance.	Red Lit	See "DIP Switch Test" on page 6-17	
DIP Switch Block 2 ON/OFF Operation	DIPSWITCH2_TEST	Test each DIP Switch Block 2 switch's performance.	Red Lit	See "DIP Switch Test" on page 6-17	
Denomination Value	DENOMII_TEST	Test each Sensor's detection functionality	Red Lit	Extinguished Out	Green Flashes
Stacking Movement†	STACK_TEST	Test the Stacker Pusher Plate and stacking movement.	Red Lit	Extinguished Out	Red Flashes
			Green Lit		
Pull-Back Unit Movement	PB_TEST	Test the Pull-Back Unit movement.	Red Lit	Extinguished Out	Red Flashes
Centering Mechanism Movement	CENTERING_TEST	Test the Centering Mechanism movement.	Red Lit	Yellow Lit††	Red Flashes
			Green Lit		

\*. Refer to "LED Indication Conditions" on page A-3 when any of these LED Color Errors occurs.

†. This test is available when the SD3 Stacker is correctly in place.

‡. This test is available when the SD3 Stacker is NOT seated in place.

\*\*. When the first cycle Aging Test is complete, the next cycle will begin after an approximate 30 second delay interval.

††. When the Centering Mechanism is in Home Position, the LED appears as a solid Yellow Color. Otherwise, if the Centering Mechanism is in any other position, the LED is extinguished.

## Performance Test Using a PC Procedures

Perform the following steps to perform the EBA-40 Performance Tests using a PC.

### PERFORMANCE TEST PREPARATION

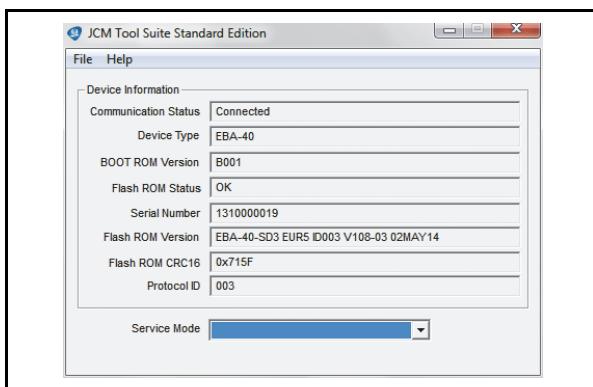
Perform the following steps first to begin the PC Performance Test Preparation Procedure:

1. Remove electrical power from the EBA-40 Unit.
2. Set DS1 #8 to ON (Figure 6-50).



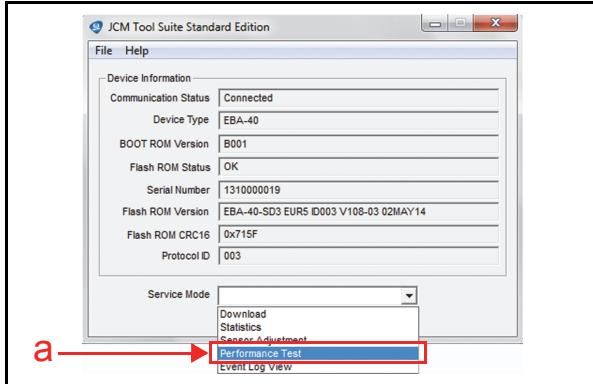
**Figure 6-50 DS1 Switch Settings 1**

3. Apply electrical power to the EBA-40 Unit. The Status LEDs will light a Green and Red Color simultaneously when the EBA-40 Unit is in the Performance Test Stand-By Mode (Table 6-3).
4. Connect the PC and the EBA-40 Unit together using the recommended USB Cable.
5. Launch the “JCM Tool Suite Standard Edition” Application. The “JCM Tool Suite Standard Edition” Screen shown in Figure 6-51 will appear when the application becomes active.



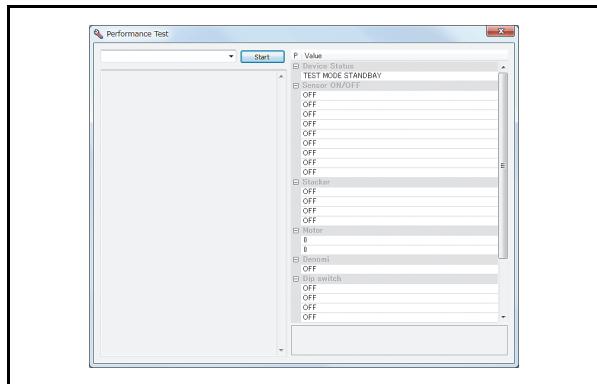
**Figure 6-51 JCM Tool Suite Standard Edition Screen 4**

6. Click the “Service Mode” Pull-down Menu, and select “Performance Test” (Figure 6-51 a).



**Figure 6-52 JCM Tool Suite Standard Edition Pull-Down Menu 4**

The Main Screen will appear at the top of the Screen (Figure 6-53).

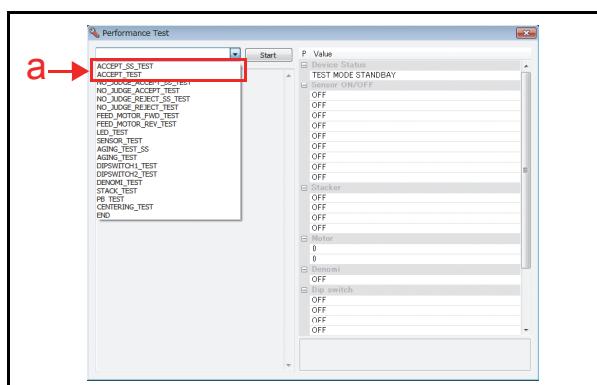


**Figure 6-53 Main Screen**

### BANKNOTE ACCEPTANCE TEST

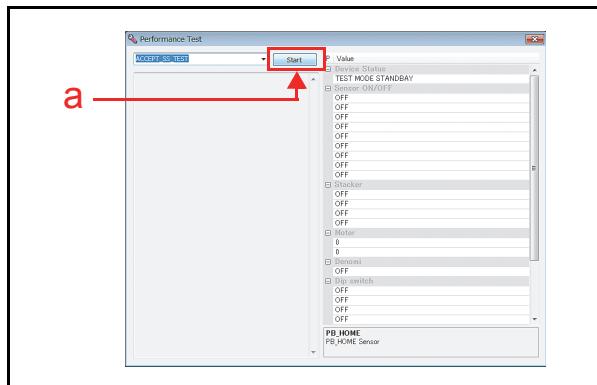
Perform the following steps to begin the Banknote Acceptance Test:

1. Launch the Main Screen (See “Performance Test Using a PC Procedures” on this page).
2. Click the “Performance Test” Pull-down Menu, and select a desired performance test item (Figure 6-54 a). (See “Performance Tests Using a PC and Test Menu Selections” on page 6-12 for a test item to select).



**Figure 6-54 Banknote Acceptance Test Selections**

3. Click the “Start” Screen Button (Figure 6-55 a) to begin the test.



**Figure 6-55 Acceptance Test Screen 1**

4. Verify that the Status LEDs are extinguished when the EBA-40 Unit is ready to accept a Banknote.
5. Insert a Banknote.
6. Confirm the Banknote Denomination Value by counting the number of Status LED(s) flashes (Table 6-4). The Status LED(s) repeats the Flash sequence until the next Banknote is inserted.
7. Click the “Stop”  Screen Button (Figure 6-56 a) to end the test.

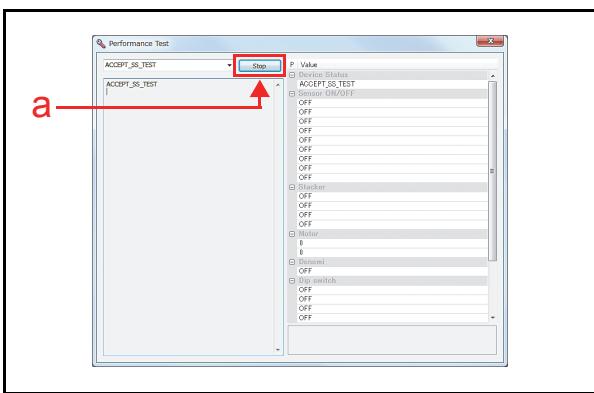


Figure 6-56 Acceptance Test Screen 2

Table 6-4 LED Flash Denomination Values

Test Item	After Banknote Insertion *
Banknote Acceptance with SD3 Stacker†	Red/Green Flash €5 = 1 time €10 = 2 times €20 = 3 times €50 = 4 times €100 = 5 times €200 = 6 times €500 = 7 times
Banknote Acceptance without SD3 Stacker‡	Red Flashes (1 time) Green Flashes (1 time)
Banknote Acceptance with SD3 Stacker (No Validation)†	Red Flashes (1 time) Green Flashes (1 time)
Banknote Acceptance without SD3 Stacker (No Validation)‡	Red Flashes (1 time) Green Flashes (1 time)
Banknote Reject with SD3 Stacker†	Green Flashes (9 times)‡
Banknote Reject without SD3 Stacker‡	

\*. The Status LED(s) flashes one flash sets for each denomination value detected, and keeps flashing until the next Banknote is inserted.

†. This test is available when the SD3 Stacker is correctly in place.

‡. This test is available when the SD3 Stacker is NOT seated in place.

## FEED MOTOR TEST

Perform the following steps to begin the Feed Motor Test:

1. Launch the Main Screen (refer to “Performance Test Using a PC Procedures” on page 6-13).
2. Click the “Performance Test” Pull-down Menu, and select a desired performance test item from the available selections(Figure 6-57 a). (refer to “Performance Tests Using a PC and Test Menu Selections” on page 6-12 for a test item to select).

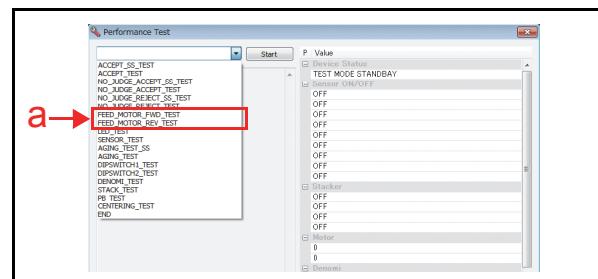


Figure 6-57 Feed Motor Test Selections

3. Click the “Start”  Screen Button (Figure 6-58 a) to begin the test.

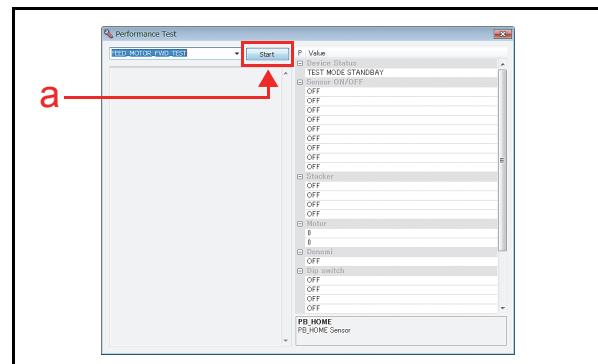


Figure 6-58 Feed Motor Test Screen 1

4. Confirm that the Feed Motor rotates in a specified direction and acceptable motor speed (approximately 200mm/s to 700mm/s). The measured speed will appear in the “Motor” area (Figure 6-59 b).
5. Click the “Stop”  Screen Button (Figure 6-59 a) to end the test.

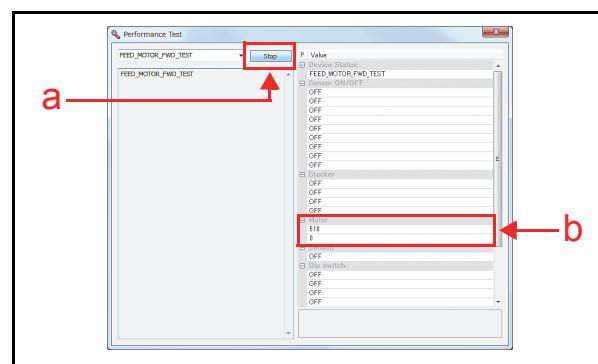
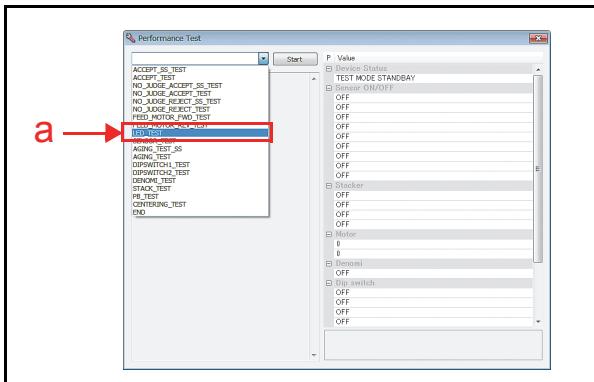


Figure 6-59 Feed Motor Test Screen 2

## LED TEST (STATUS LEDs)

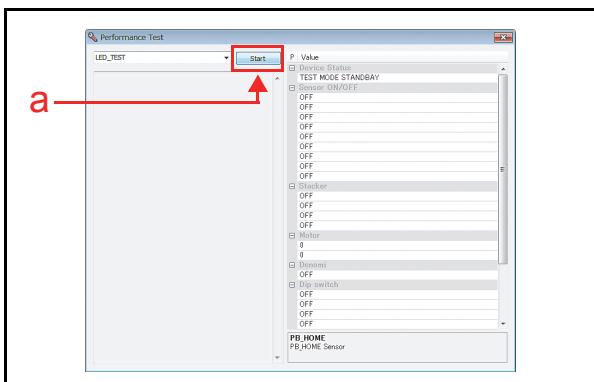
Perform the following steps to begin the LED Test:

1. Launch the Main Screen  
(refer to “Performance Test Using a PC Procedures” on page 6-13).
2. Click the “Performance Test” Pull-down Menu (Figure 6-60 a), and select “LED\_TEST”.



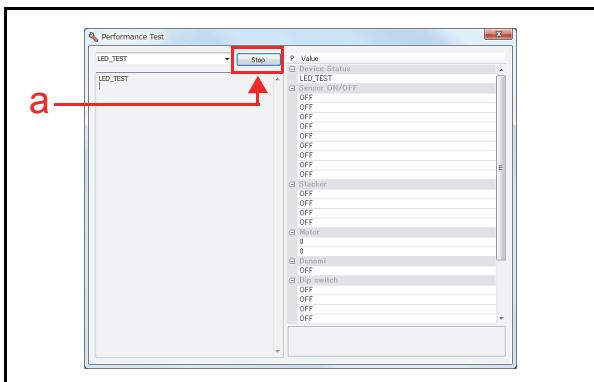
**Figure 6-60** LED Test (Status LEDs) Selections

3. Click the “Start” Screen Button (Figure 6-61 a) to begin the test.



**Figure 6-61** LED Test (Status LEDs) Screen 1

4. Confirm that Status LEDs flash at an alternating Red and Green Color rate.
5. Click the “Stop” Screen Button (Figure 6-62 a) to end the test.



**Figure 6-62** LED Test (Status LEDs) Screen 2

## SENSOR TEST

Thirteen (13) Tests exist within the Sensor Test Menu.

Table 6-5 lists each Sensor Test Item function.

**Table 6-5** Sensor Test Items

No	Sensor Names*	Test Purpose	Test Procedure	PC Screen	
				Detected	NOT Detected
(1)	Entrance Sensor	Detect a Banknote existence on the Entrance Sensor.	Cover/uncover each Sensor using a Banknote.	ON	OFF
(2)	Centering Guide Timing Sensor	Detect a Banknote existence on the Centering Guide Timing Sensor.		ON	OFF
(3)	Anti Pull-Back Entrance Sensor	Detect a Banknote existence on the Pull-Back In Sensor.		ON	OFF
(4)	Anti Pull-Back Exit Sensor	Detect a Banknote existence on the Pull-Back Out Sensor.		ON	OFF
(5)	Exit Sensor	Detect a Banknote existence on the Exit Sensor.		ON	OFF
(6)	Anti Pull-Back Home Position Sensor	Detect that the PB Unit correctly positions at home position.	Rotate the Anti Pull-Back Assembly out of the home position.	ON	OFF
(7)	Centering Guide Home Position Sensor	Detect that the Centering Guide correctly positions at home position.	Move the Centering Guide out/in of the home position. <sup>†</sup>	ON	OFF
(8)	Validation Sensor	Detect a Banknote existence on the Validation Sensor.	Cover/uncover each Validation Sensor using a Banknote. <sup>‡</sup>	ON	OFF
(9)	Reflective Validation Sensor	Detect a Banknote existence on the Reflective Validation Sensor.		ON	OFF
(10)	SD3 Stacker In Sensor	Detect a Banknote existence on the SD3 Stacker In Sensor.	Cover/uncover each Sensor using a Banknote.	ON	OFF
(11)	SD3 Stacker Home Position Sensor**	Detect that the Pusher Plate in the SD3 Stacker correctly positions at home position.	Push up/down the Pusher Plate.	ON	OFF
(12)	SD3 Stacker Box Sensor	Detect that a SD3 Stacker seats in place.	Seat/remove the SD3 Stacker Box.	ON	OFF
(13)	SD3 Stacker Key Sensor	Detect that a SD3 Stacker key is locked.	Lock/unlock the SD3 Stacker.	ON	OFF

\*. Refer to "Sensor and Roller Locations" on page 2-12.

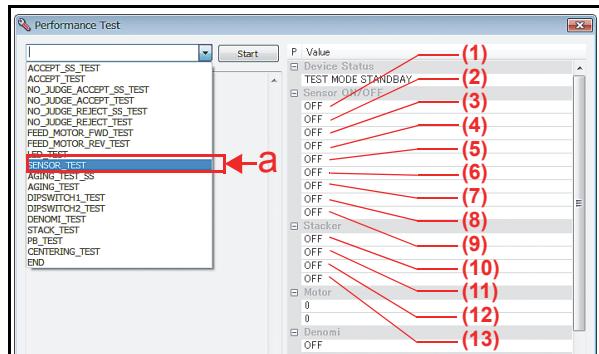
†. Refer to "Opening the Centering Mechanism" on page 2-10.

‡. The Reflective Validation Sensor is tested with reflected light by covering and/or uncovering the Validation Sensor.

\*\*. This test is available when the SD3 Stacker is NOT seated in place.

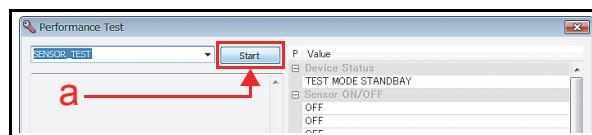
To perform the Sensor Test, proceed as follows:

1. Launch the Main Screen  
(Refer to "Performance Test Using a PC Procedures" on page 6-13).
2. Click the "Performance Test" Pull-down Menu (Figure 6-63 a), and select "SENSOR\_TEST".



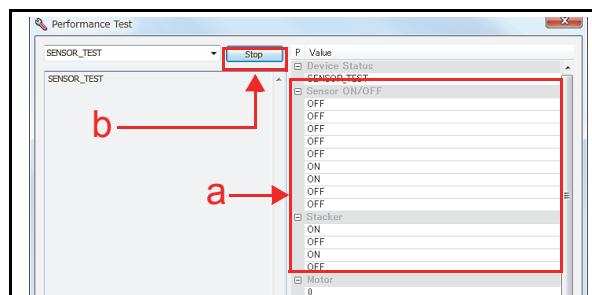
**Figure 6-63** Sensor Test Selections

3. Click the "Start" Screen Button (Figure 6-64 a) to begin the test.



**Figure 6-64** Sensor Test Screen 1

4. Perform each Sensor Test  
(refer to "Test Procedure" in Table 6-5).  
The resulting condition will appear in the "Sensor ON/OFF" and "Stacker" areas (Figure 6-65 a)
5. Confirm that the resulting condition matches the action stated in Table 6-5.
6. Click the "Stop" Screen Button (Figure 6-65 b) to end the test.

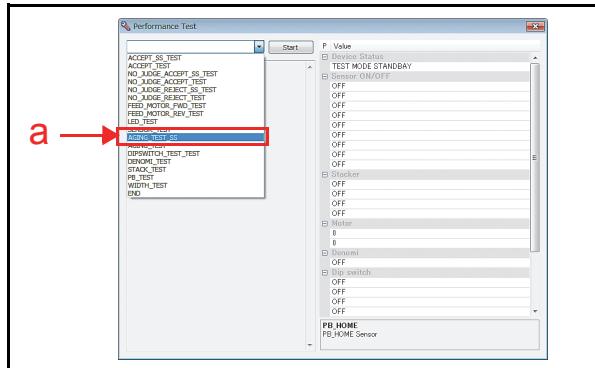


**Figure 6-65** Sensor Test Screen 2

## AGING TEST

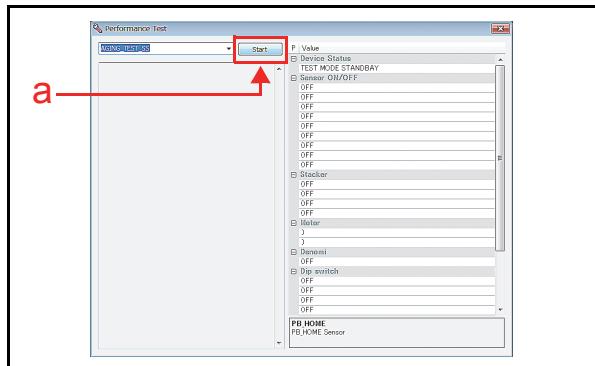
Perform the following steps to begin the Aging Test:

1. Launch the Main Screen (refer to “Performance Test Using a PC Procedures” on page 6-13).
  2. Click the “Performance Test” Pull-down Menu (Figure 6-66 a), and select a desired performance test item.
- (Refer to “Performance Tests Using a PC and Test Menu Selections” on page 6-12 for a test item to select.)



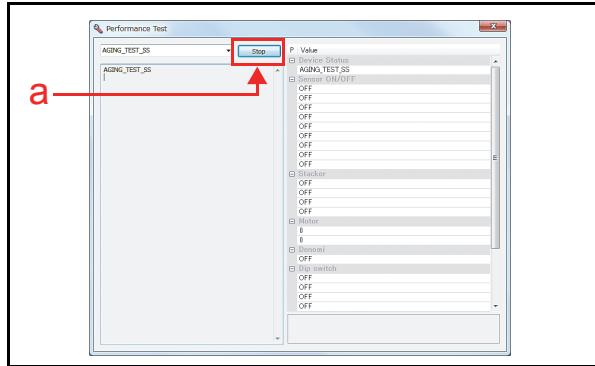
**Figure 6-66 Aging Test Selections**

3. Click the “Start” Screen Button (Figure 6-67 a) to begin the test.



**Figure 6-67 Aging Test Screen 1**

4. Confirm that a cycle movement is performing normally.
5. Click the “Stop” Screen Button (Figure 6-68 a) to end the test.

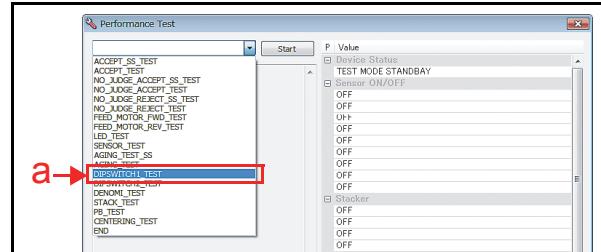


**Figure 6-68 Aging Test Screen 2**

## DIP SWITCH TEST

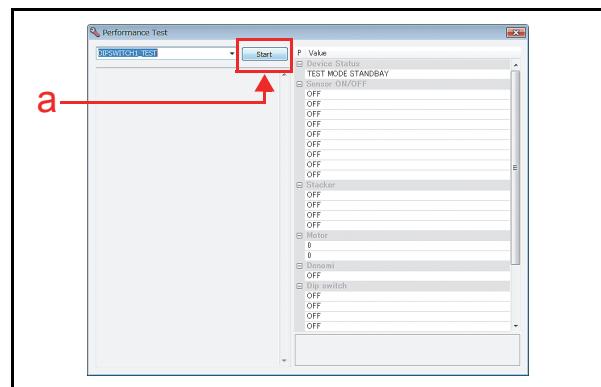
Perform the following steps to begin the DIP Switch Test:

1. Launch the Main Screen (refer to “Performance Test Using a PC Procedures” on page 6-13).
  2. Click the “Performance Test” Pull-down Menu (Figure 6-69 a), and select a desired performance test item.
- (Refer to “Performance Tests Using a PC and Test Menu Selections” on page 6-12 for a test item to select.)



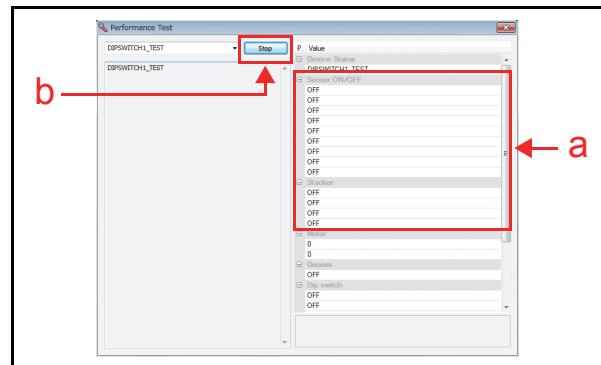
**Figure 6-69 DIP Switch Block Test Selections**

3. Click the “Start” Screen Button (Figure 6-70 a) to begin the test.



**Figure 6-70 DIP Switch Block Test Screen 1**

4. Set each DIP Switch to ON and OFF.
5. Confirm that the DIP Switches are performing normally. The Sensor detection condition indicates “ON” or “OFF” in the Blue Colored Box area on the PC (Figure 6-71 a).
6. Click the “Stop” Screen Button (Figure 6-71 b) to end the test.

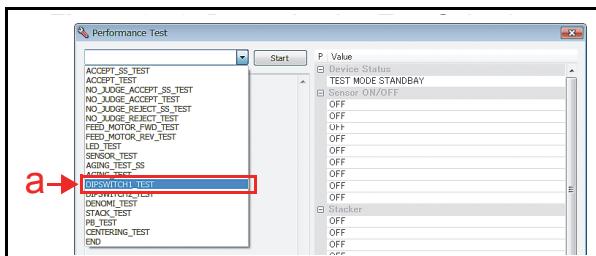


**Figure 6-71 DIP Switch Block Test Screen 2**

## DENOMINATION TEST

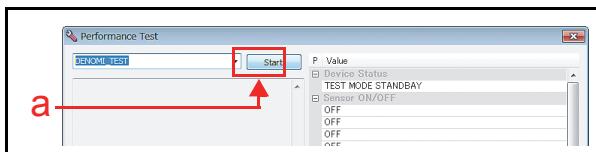
Perform the following steps to begin the Denomination Test:

1. Launch the Main Screen  
(See “Performance Test Using a PC Procedures” on page 6-13).
2. Click the “Performance Test” Pull-down Menu (Figure 6-72 a), and select “DENOMI\_TEST” from the Pull-down Menu.



**Figure 6-72 Denomination Test Selections**

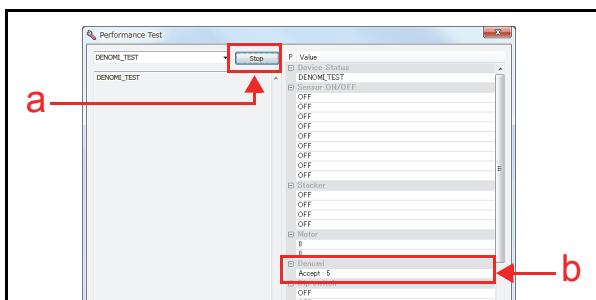
3. Click the “Start” Screen Button (Figure 6-73 a) to begin the test.



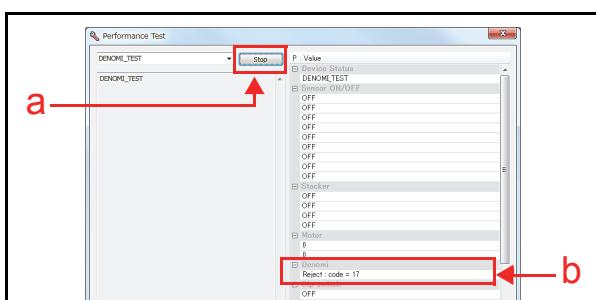
**Figure 6-73 Denomination Test Screen 1**

When the EBA-40 Unit is ready to accept a Banknote, the Status LEDs are extinguished.

4. Insert a Banknote.
5. Confirm that a Banknote is accepted/rejected correctly. The resulting condition will appear in the “Denomi” area (Figure 6-74 b and Figure 6-75 b).



**Figure 6-74 Banknote Accepted Code**



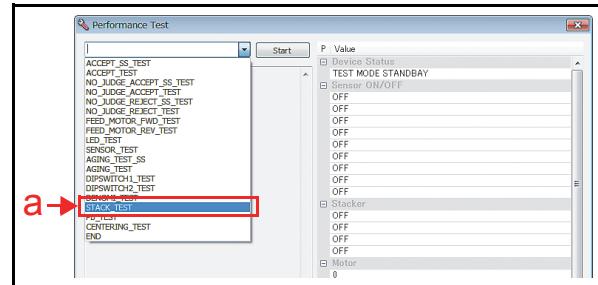
**Figure 6-75 Banknote Rejected Code**

6. Click the “Stop” Screen Button to end the test (Figure 6-74 a and Figure 6-75 a).

## STACKING TEST

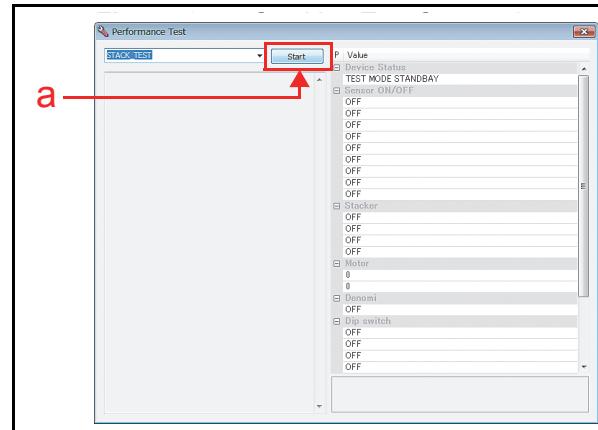
Perform the following steps to begin the Stacking Test:

1. Launch the Main Screen  
(refer to “Performance Test Using a PC Procedures” on page 6-13).
2. Click the “Performance Test” Pull-down Menu (Figure 6-76 a), and select “STACK\_TEST”.



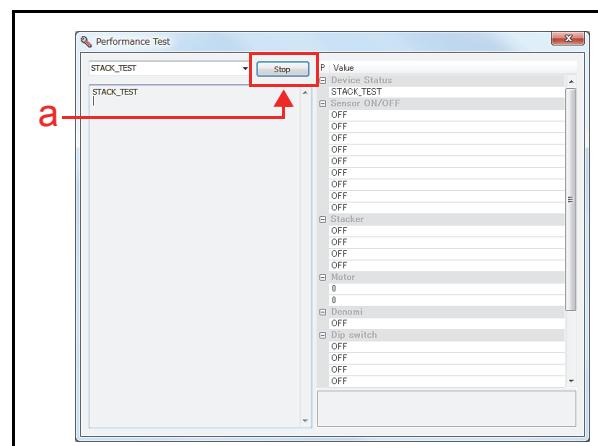
**Figure 6-76 Stacking Test Selections**

3. Click the “Start” Screen Button (Figure 6-77 a) to begin the test.



**Figure 6-77 Stacking Test Screen 1**

4. Confirm that a cycle movement is performing normally.
5. Click the “Stop” Screen Button (Figure 6-78 a) to end the test.

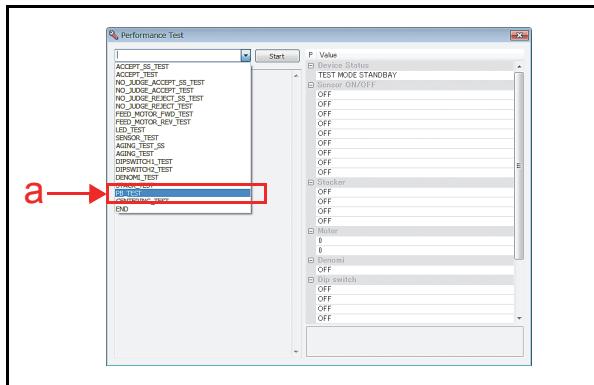


**Figure 6-78 Stacking Test Screen 2**

## PB TEST

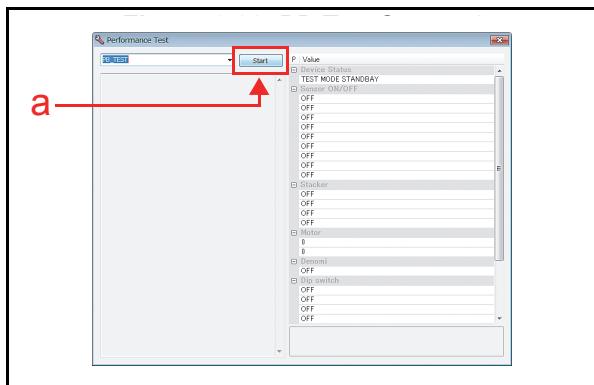
Perform the following steps to begin the PB Test:

1. Launch the Main Screen (refer to “Performance Test Using a PC Procedures” on page 6-13).
2. Click the “Performance Test” Pull-down Menu (Figure 6-79 a), and select “PB\_TEST”.



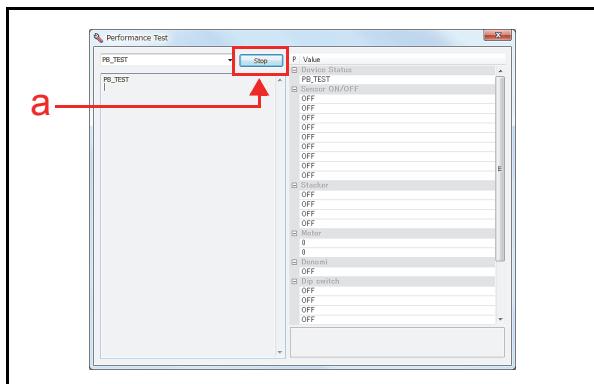
**Figure 6-79 PB Test Selections**

3. Click the “Start” Screen Button (Figure 6-80 a) to begin the test.



**Figure 6-80 PB Test Screen 1**

4. Confirm that the PB unit is performing normally.
5. Click the “Stop” Screen Button (Figure 6-81 a) to end the test.

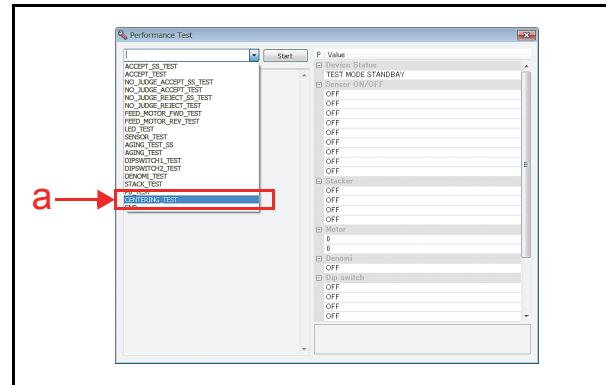


**Figure 6-81 PB Test Screen 2**

## CENTERING TEST

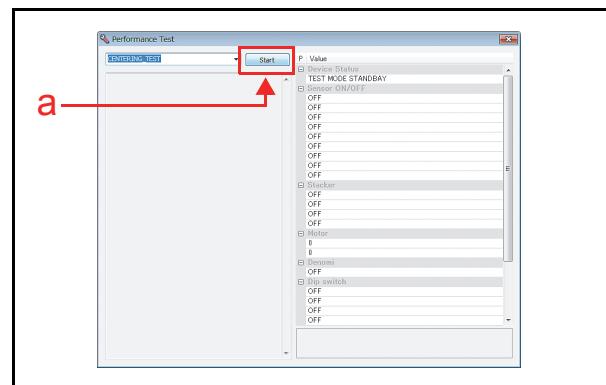
Perform the following steps to begin the Centering Test:

1. Launch the Main Screen (See “Performance Test Using a PC Procedures” on page 6-13).
2. Click the “Performance Test” Pull-down Menu (Figure 6-82 a), and select “CENTERING\_TEST” from the Pull Down Menu.



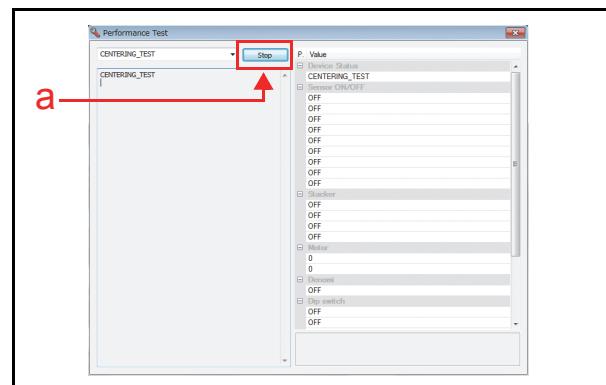
**Figure 6-82 Centering Test Selections**

3. Click the “Start” Screen Button (Figure 6-83 a) to begin the test.



**Figure 6-83 Centering Test Screen 1**

4. Confirm that the Centering Mechanism Movement is performing normally.
5. Click the “Stop” Screen Button (Figure 6-84 a) to end the test.



**Figure 6-84 Centering Test Screen 2**

## Performance Test Without a PC

See “Workbench Tool Requirements Without a PC” on page 6-1 for the Tools and Equipment interconnects necessary to perform an EBA-40 performance Test without a PC.

### Performance Test Items without a PC and DIP Switch Configurations

Table 6-6 lists the DS1 and DS2 Settings for the EBA-40 Performance Test without using a PC for testing.

**Table 6-6** Performance Tests Without a PC and DIP Switch Configurations

No	Test Item	DS1 Switch Settings								DS2 Switch Settings								EBA-40 LED Conditions		
		1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	Stand-by	Performing (Normal)	Abnormal* Indication
1	Transport Motor Forward Rotation	ON	-	-	-	-	-	-	ON/OFF	-	-	-	-	-	-	-	Red Lit Green Lit	Extinguished Out	Red Flashes	
2	Transport Motor Reverse Rotation	-	ON	-	-	-	-	-	ON/OFF	-	-	-	-	-	-	-	Red Lit Green Lit	Extinguished Out	Red Flashes	
3	Stacking Movement†	-	-	ON	-	-	-	-	ON/OFF	-	-	-	-	-	-	-	Red Lit Green Lit	Extinguished Out	Red Flashes	
4	Pull-Back Unit Movement	-	-	-	-	ON	-	-	ON/OFF	-	-	-	-	-	-	-	Red Lit Green Lit	Extinguished Out	Red Flashes	
5	Centering Mechanism Movement	ON	-	-	-	ON	-	-	ON/OFF	-	-	-	-	-	-	-	Red Lit Green Lit	Yellow Lit‡	Red Flashes	
6	Aging Test** (without SD3 Stacker) ††	ON	-	-	ON	-	-	-	ON/OFF	-	-	-	-	-	-	-	Red Lit Green Lit	Extinguished Out	Red Flashes	
7	Aging Test** (with SD3 Stacker) †	-	-	-	ON	-	-	-	ON/OFF	ON	-	-	-	-	-	-	Red Lit Green Lit	Extinguished Out	Red Flashes	
8	Without SD3 Stacker††	Banknote Acceptance Test	ON	ON	ON	-	-	-	ON/OFF	-	-	-	-	-	-	-	Red Lit Green Lit	Extinguished Out	Red Flashes Green Flashes	
	Banknote Acceptance Non-Validation	ON	ON	ON	-	ON	-	-	ON/OFF	-	-	-	-	-	-	-	Red Lit Green Lit	Extinguished Out	Red Flashes Green Flashes	
	Banknote Acceptance Non-Validation	ON	ON	ON	-	ON	ON	-	ON/OFF	-	-	-	-	-	-	-	Red Lit Green Lit	Extinguished Out	Red Flashes Green Flashes	
9	With SD3 Stacker†	Banknote Acceptance Test	ON	ON	ON	ON	-	-	ON/OFF	ON	-	-	-	-	-	-	Red Lit Green Lit	Extinguished Out	Red Flashes Green Flashes	
	Banknote Acceptance Non-Validation	ON	ON	ON	ON	-	ON	-	ON/OFF	ON	-	-	-	-	-	-	Red Lit Green Lit	Extinguished Out	Red Flashes Green Flashes	
	Banknote Acceptance Non-Validation	ON	ON	ON	ON	ON	-	ON	ON/OFF	ON	-	-	-	-	-	-	Red Lit Green Lit	Extinguished Out	Red Flashes Green Flashes	
10	Status LEDs Test	-	-	-	ON	ON	ON	ON	ON/OFF	-	-	-	-	-	-	-	Red Lit Green Lit	Red Lit Green Lit	Extinguished Out	

\*. Refer to “LED Indication Conditions” on page A-3 when any of these LED Color Errors occurs.

†. This test is available when the SD3 Stacker is correctly seated.

‡. When the Centering Mechanism is in Home Position, the Status LED appears as a solid Yellow Color. Otherwise, if the Centering Mechanism is in any other position, the Status LED is extinguished.

\*\*. When the first cycle Aging Test is complete, the next cycle will begin after an approximate 30 second delay interval.

††. This test is available when the SD3 Stacker is NOT seated.

## Performance Test Without a PC Procedures

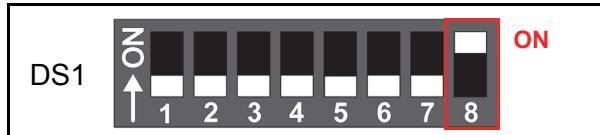
Perform the following steps to perform the EBA-40 Performance Tests without using a PC.

 **NOTE:** Refer to "LED Indication Conditions" on page A-3 when any LED Color Errors and/or Banknote Reject occurs.

### TRANSPORT MOTOR FORWARD & REVERSE TEST/ STACKING MOVEMENT TEST/PULL-BACK UNIT MOVEMENT TEST/CENTERING MECHANISM MOVEMENT

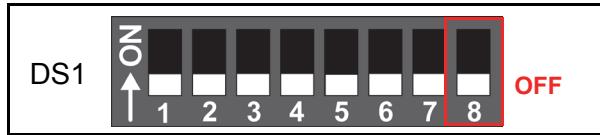
To perform the Transport Motor Forward Test, Transport Motor Reverse Test, Stacking Movement Test, Pull-Back Unit Movement Test or Centering Mechanism Movement, proceed as follows:

1. Remove electrical power from the EBA-40 Unit.
2. Set DS1 #8 to ON (Figure 6-85).



**Figure 6-85** Performance Test DS1 Setting 1

3. Set each DS1 switch according to Table 6-6 on page 6-20.
4. Apply electrical power to the EBA-40 Unit.
5. Set DS1 switch #8 to OFF to start each test (Figure 6-86).



**Figure 6-86** Performance Test DS1 Setting 2

6. Confirm that each test is conducted normally without any error.
7. Set DS1 switch #8 to ON in order to end the test (Figure 6-85). The EBA-40 will revert to Standby Mode Status following each test.
8. Set each DS1 switch according to Table 6-6 on page 6-20 again and then return to Step 5 of this procedure if necessary to perform another Test.

### AGING TEST (WITH SD3 STACKER)/(WITHOUT SD3 STACKER)

To perform the Aging Test, proceed as follows:

1. Remove electrical power from the EBA-40 Unit.
2. Set DS1 switches #1, #4 and #8 based on whether the SD3 Stacker is used or not, according to Table 6-7.

**Table 6-7** Aging Test DS1 Setting

With SD3 Stacker DS1 #4, #8 = ON	Without SD3 Stacker DS1 #1, #4, #8 = ON

3. Set DS2 switch #1 based on whether the SD3 Stacker is used or not, according to Table 6-8.

**Table 6-8** Stacker Use DS2 Setting

With SD3 Stacker DS2 #1 = ON	Without SD3 Stacker DS2 #1 = OFF

4. Apply electrical power to the EBA-40 Unit.
5. Set DS1 switch #8 to OFF to start each test (See Figure 6-86 "Performance Test DS1 Setting 2").
6. A cycle movement interval can be changed by setting DS1 switch #6 and #7 during the operational test (Table 6-9).

 **NOTE:** The cycle interval is set to 30 seconds by default.

The Aging Test will be running with the EBA-40 Unit's Status LEDs (Figure 1-6) being extinguished during the test if it is performing normally.

7. Set DS1 switch #8 to ON in order to end the test (Figure 6-85). The EBA-40 will revert to Standby Mode Status.

**Table 6-9** Cycle Interval DIP Switch Settings

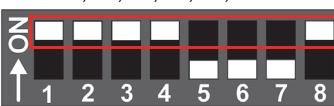
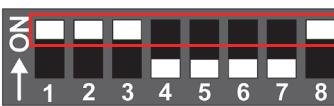
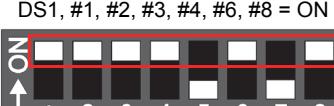
Cycle Interval	Stacker	DIP Switch1 Setting								DIP Switch2 Setting							
		1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
2 seconds	Equipped	-	-	-	ON	-	-	ON	ON	ON	-	-	-	-	-	-	-
	None	ON	-	-	ON	-	-	ON	ON	-	-	-	-	-	-	-	-
10 seconds	Equipped	-	-	-	ON	-	ON	ON	ON	ON	-	-	-	-	-	-	-
	None	ON	-	-	ON	-	ON	ON	ON	-	-	-	-	-	-	-	-
15 seconds	Equipped	-	-	-	ON	-	ON	-	ON	ON	-	-	-	-	-	-	-
	None	ON	-	-	ON	-	ON	-	ON	-	-	-	-	-	-	-	-

## BANKNOTE ACCEPTANCE TEST (WITH SD3 STACKER)/(WITHOUT SD3 STACKER)

To perform the Banknote Acceptance Test, proceed as follows:

1. Remove electrical power from the EBA-40 Unit.
2. Set DS1 switches based on if the SD3 Stacker is used or not according to Table 6-10.

**Table 6-10** Banknote Acceptance Test DS1 Setting

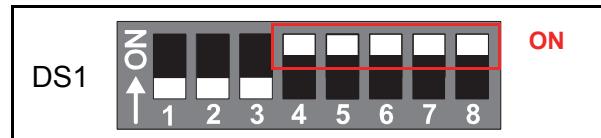
Test Item	SD3 Stacker	DS1 Switch
Banknote Acceptance Test	Equipped	DS1, #1, #2, #3, #4, #8 = ON 
	None	DS1, #1, #2, #3, #8 = ON 
Banknote Acceptance Non-Validation	Equipped	DS1, #1, #2, #3, #4, #6, #8 = ON 
	None	DS1, #1, #2, #3, #5, #8 = ON 
Banknote Acceptance Non-Validation Banknote Reject	Equipped	DS1, #1, #2, #3, #4, #5, #7, #8 = ON 
Banknote Acceptance Non-Validation Banknote Reject	None	DS1, #1, #2, #3, #5, #6, #8 = ON 

3. Set DS2 switch #1 based on the SD3 Stacker use (See Table 6-8 "Stacker Use DS2 Setting" on page 6-21).
4. Apply electrical power to the EBA-40 Unit.
5. Set DS1 switch #8 to OFF to start each test (See Figure 6-86 "Performance Test DS1 Setting 2" on page 6-21).
6. Once the initial movement is complete, insert a Banknote.
7. Confirm that the Banknote is accepted/rejected properly based on the corresponding test.
8. Set DS1 switch #8 to ON in order to end the test (Figure 6-85). The EBA-40 will revert to Standby Mode Status.

## STATUS LEDs TEST

To perform the LED Test, proceed as follows:

1. Remove electrical power from the EBA-40 Unit.
2. Set DS1 switches # 4 through #8 to ON (Figure 6-87).



**Figure 6-87** Status LEDs Test DS1 Switch Setting

3. Apply electrical power to the EBA-40 Unit.
4. Set DS1 switch #8 to OFF to start the test (See Figure 6-86 "Performance Test DS1 Setting 2" on page 6-21).
5. Confirm that the EBA-40 Unit's Status LEDs (Figure 1-6) are lit a steady Green and Red Color.
6. Set DS1 switch #8 to ON in order to end the test (Figure 6-85). The EBA-40 will revert to Standby Mode Status.

# EBA® Series

## EBA-40 Banknote Acceptor

### Section 7

#### 7 EXPLODED VIEWS AND PARTS LISTS

This section provides product exploded views and parts lists for the EBA® Series EBA-40 Banknote Acceptor Unit, and contains the following information:



*NOTE: Parts may be changed for improvement without notice.*

- Entire EBA-40 Unit With SD3-Stacker Unit Exploded View
- EBA-40 Head Assembly Unit Exploded View

- EBA-40 Lower Guide Assembly Exploded View
- EBA-40 Upper Guide Assembly Exploded View
- EBA-40 SD3 Stacker Frame Unit Exploded View
- EBA-40 SD3 Stacker Pusher Plate Unit Exploded View
- EBA-40 SD3 Stacker Box Unit Exploded View
- EBA-30/40 Bezel Unit Exploded View

#### Entire EBA-40 Unit With SD3-Stacker Unit Exploded View

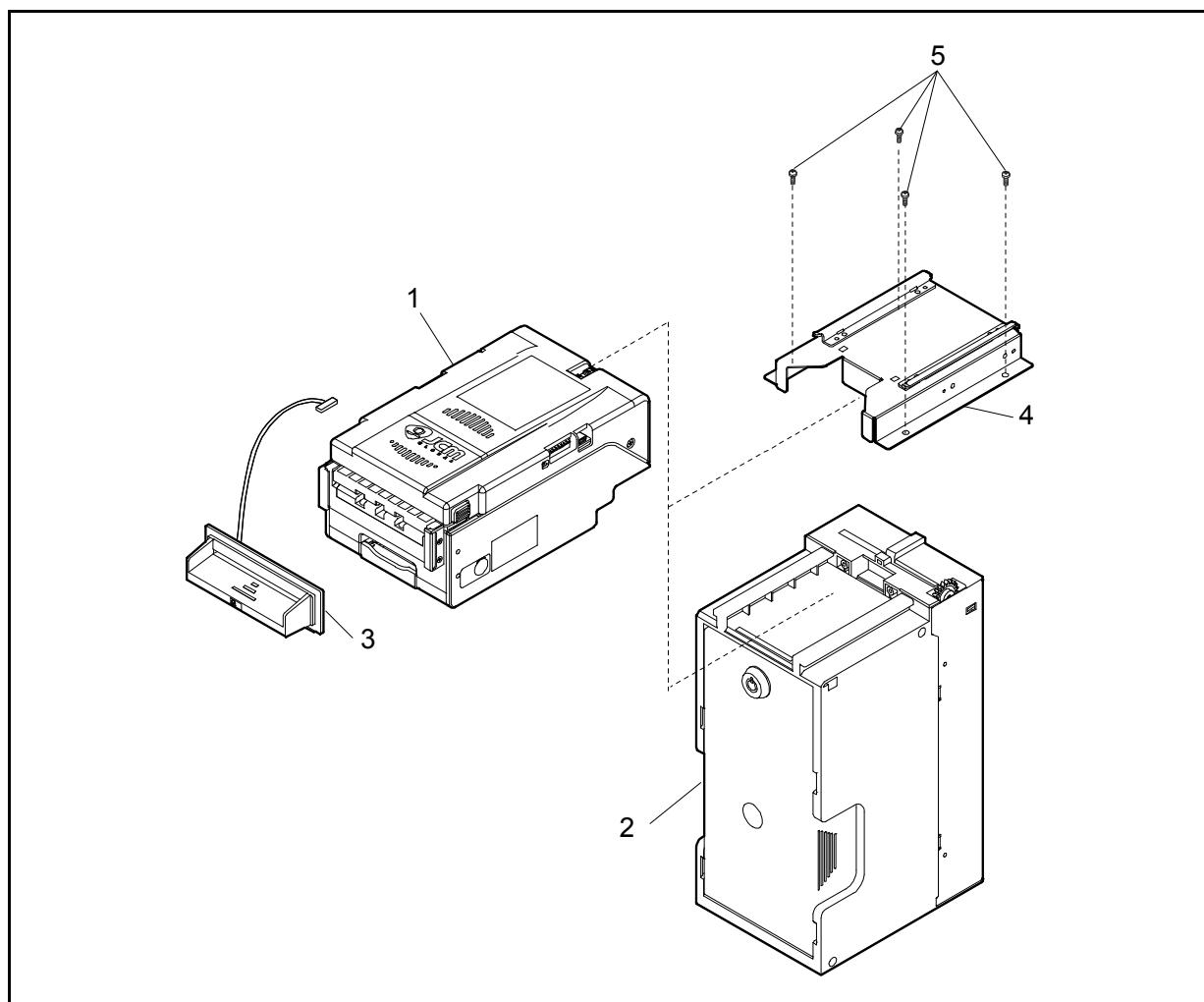
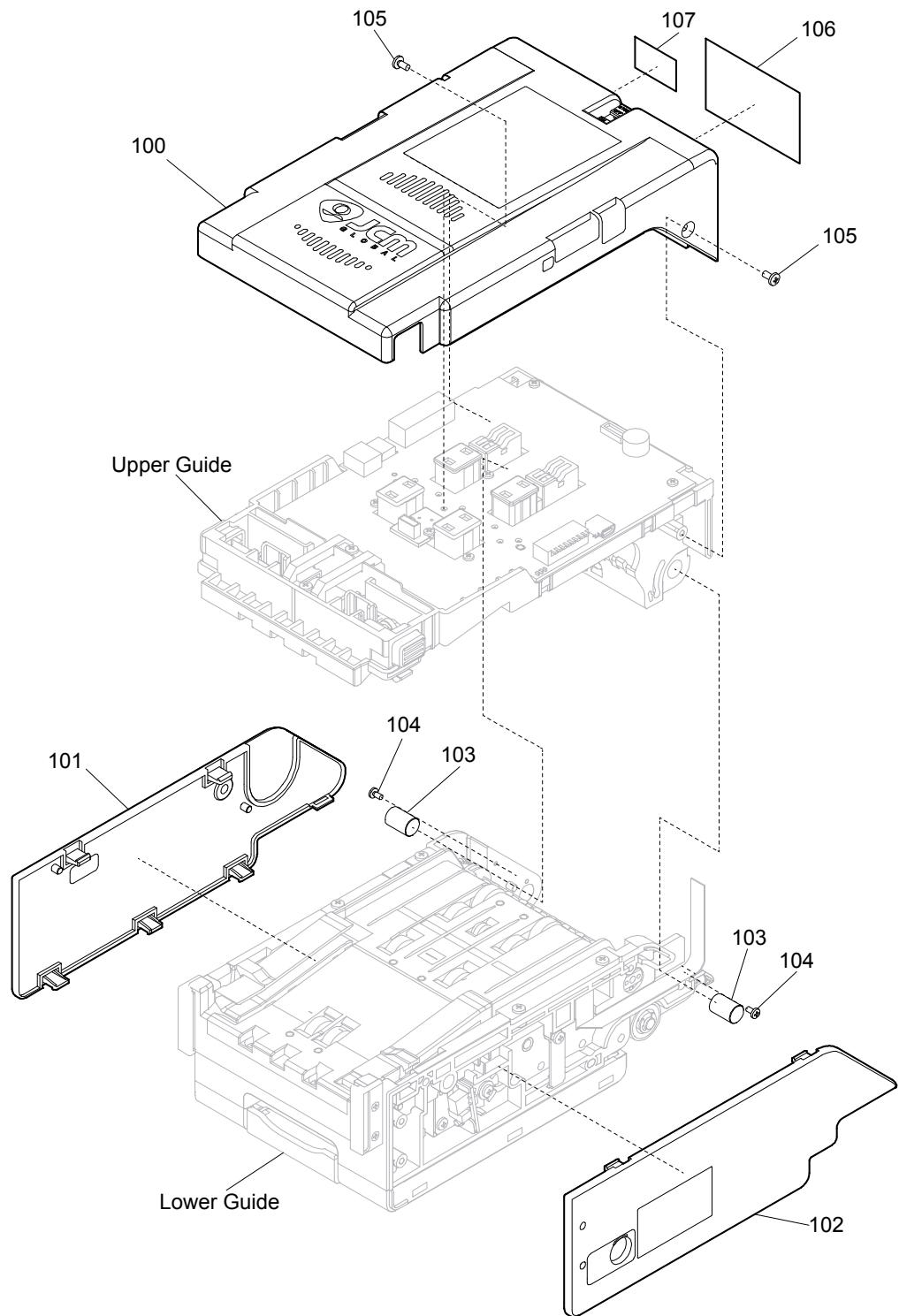


Figure 7-1 Entire EBA-40 Unit With SD3-Stacker Unit Exploded View

**Entire EBA-40 Unit With SD3-Stacker Unit Parts List****Table 7-1 EBA-40 Unit With SD3-Stacker Unit Parts List**

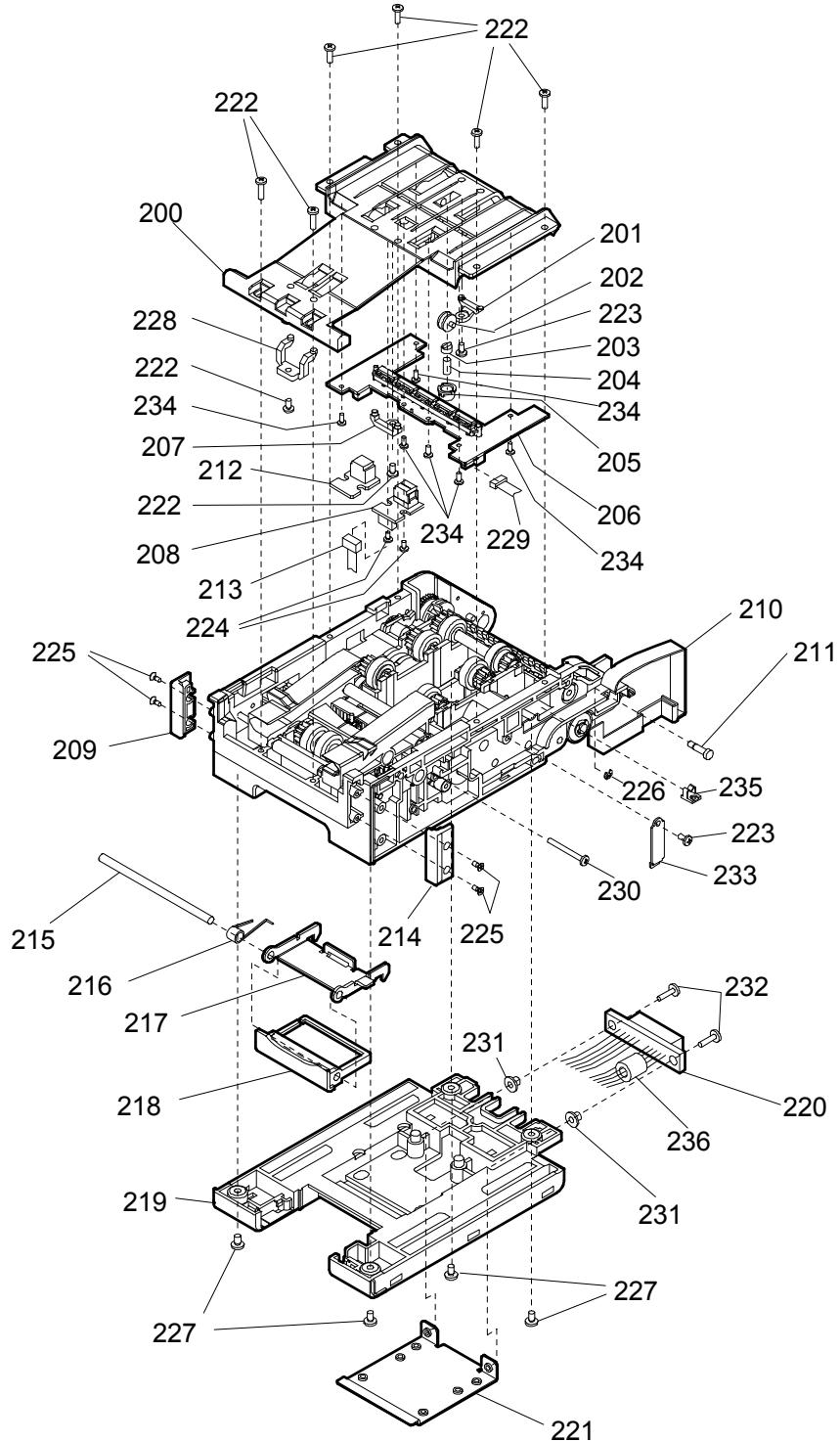
Ref No.	EDP No.	Description	QTY	Remark
1	228339	EBA-40 Unit With Barcode Sensor	1	
	228340	EBA-40 Unit	1	
2	127419	SD3 Stacker Unit R	1	
3	094263	EBA-30/40 Bezel R	1	
4	119136	Mounting Bracket	1	
5	005659	4x6 Pan Head Washer	4	

**EBA-40 Head Assembly Unit Exploded View****Figure 7-2 EBA-40 Head Assembly Unit Exploded View**

**EBA-40 Head Assembly Unit Parts List****Table 7-2 EBA-40 Head Assembly Unit Parts List**

Ref No.	EDP No.	Description	QTY	Remark
100	234680	Upper Cover	1	
101	234683	Side Cover Left	1	
102	234682	Side Cover Right	1	
103	228544	Guide Fulcrum	2	
104	138053	2x5 Phillips, Self-Tapping, Binding Head Screw *	2	
105	055413	2.6x6 Phillips, Self-Tapping, Binding Head Screw (Black) *	2	
106	243854	EBA-40 Rating Label	1	
107	204889	Version Label	1	

\*. P-TITE is recommended.

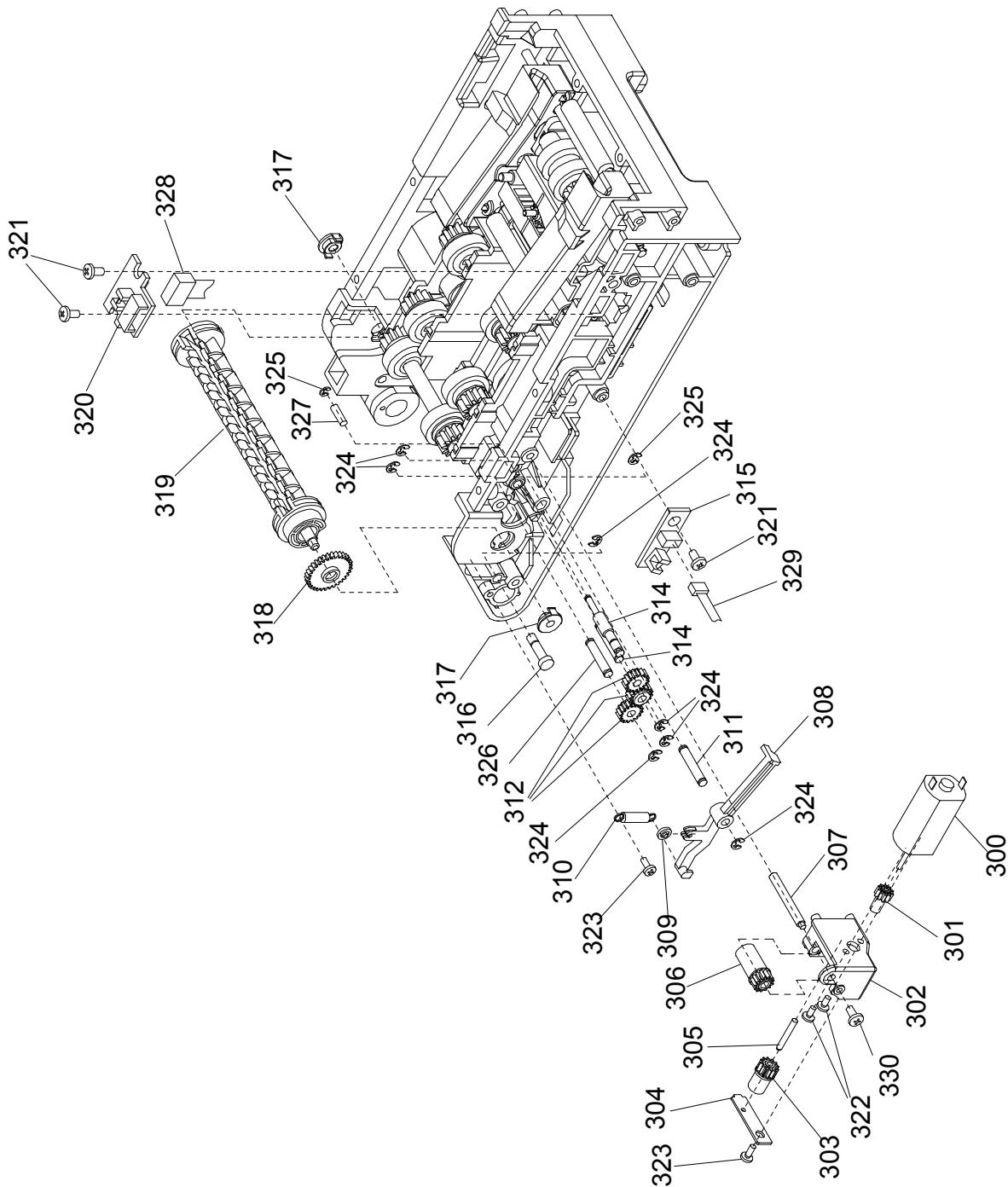
**EBA-40 Lower Guide Assy. Exploded View 1****Figure 7-3 EBA-40 Lower Guide Assy. Exploded View 1**

**EBA-40 Lower Guide Assy. Parts List 1**

Table 7-3 EBA-40 Lower Guide Assy. Parts List 1

Ref No.	EDP No.	Description	QTY	Remark
200	234681	Transport Cover	1	
201	228423	PB Entrance Prism REVO	1	
202	118723	Roller A	1	
203	118658	Roller Guide B	1	
204	228549	Magnetic Spring	1	
205	118657	Roller Guide A	1	
206	234732	Sensor Board	1	
207	252102	Centering Prism REVO	1	
208	234727	Barcode Sensor	1	Optional - Refer to "Wiring Diagram" on page 5-1
209	228412	Bezel Holder Left	1	
210	228334	Sensor Board FFC	1	
211	235110	Guide Stopper ST	1	
212	234693	Barcode Sensor With Cap	1	Sensor Cap is required when no Barcode Sensor is installed.
213	228335	Barcode Sensor Harness	1	For the Barcode Sensor
214	228411	Bezel Holder Right	1	
215	228535	Transport Latch Shaft	1	
216	228553	Transport Latch Spring AP	1	
217	234699	Transport Latch Plate	1	
218	234692	Transport Latch	1	
219	234679	Guide	1	
220	234725	SD3 Relay Connector Harness	1	
221	234700	Lower Guide Cover Plate	1	
222	091526	2.6x8 Phillips, Self-Tapping, Binding Head Screw *	7	
223	055413	2.6x6 Phillips, Self-Tapping, Binding Head Screw (Black) *	3	
224	104414	2x4 Phillips, Self-Tapping, Binding Head Screw *	2	
225	142672	2x5 Phillips, Self-Tapping, Flat Head Screw *	4	
226	091517	Ø2 E-Ring	1	
227	101133	3x8 Phillips, Self-Tapping, Binding Head Screw *	4	
228	234690	Entrance Prism REVO	1	
229	228332	Sensor Board Harness	1	
230	229165	2.6x20 Phillips, Self-Tapping, Binding Head Screw *	1	
231	228940	Connector Collar	2	
232	228565	M3x10 Binding Head Screw (Nyloc)	2	
233	245359	Harness Plate 1	1	
234	138053	2x5 Phillips, Self-Tapping, Binding Head Screw *	6	
235	239930	MN-2 Mini Clamp	1	
236	234005	GRFC-3 Ferrite Core	1	EBA-40 only. A Ferrite Core should be fitted over the following harnesses; 4A (Purple), 4B (Gray), 5A (White), 5B (Black).

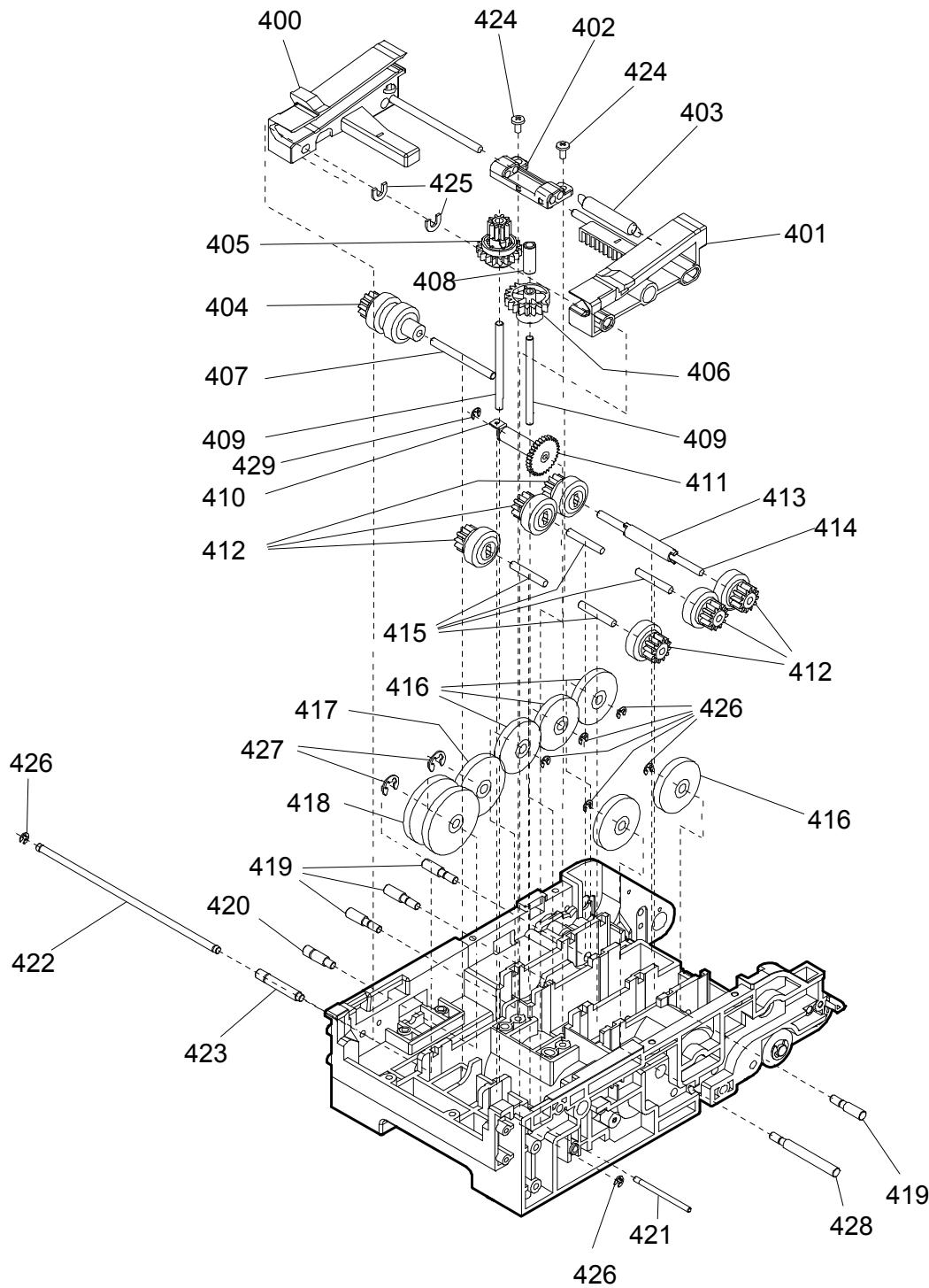
\*. P-TITE is recommended.

**EBA-40 Lower Guide Assy. Exploded View 2****Figure 7-4 EBA-40 Lower Guide Assy. Exploded View 2**

**EBA-40 Lower Guide Assy. Parts List 2****Table 7-4 EBA-40 Lower Guide Assy. Parts List 2**

Ref No.	EDP No.	Description	QTY	Remark
300	228338	PB Motor Assy.	1	
301	234698	PB Motor Pinion Gear	1	
302	234691	PB Motor Cover	1	
303	195313	PB Gear URF 2	1	
304	228516	PB Worm Plate	1	
305	236141	PB Worm Shaft 2	1	
306	228509	PB Gear 1	1	
307	228536	PB Worm Shaft	1	
308	234688	PB Home Lever	1	
309	102976	Roll G Home Roller	1	
310	228554	PB Lever Spring	1	
311	246886	PB Home Lever ST	1	
312	102972	Gear Roll Clutch	3	
313	228942	PB Gear ST 1	1	
314	228946	PB Clutch Gear ST	1	
315	228065	PB Home Sensor Board	1	
316	235110	Guide Stopper ST	1	
317	228936	PB Guide Bush	2	
318	228510	PB Gear 2	1	
319	228432	PB Guide	1	
320	228066	Centering Home Sensor Board	1	
321	058274	2.6x5 Phillips, Self-Tapping, Binding Head Screw *	3	
322	228563	M2x4 Binding Head Screw (Nyloc)	2	
323	138053	2x5 Phillips, Self-Tapping, Binding Head Screw *	2	
324	091517	Ø2 E-Ring	7	
325	091518	Ø1.5 E-Ring	2	
326	228943	PB Gear ST 2	1	
327	228551	PB Clutch Spring	1	
328	228329	Centering Home Sensor Harness	1	
329	228330	PB Home Sensor Harness	1	
330	091526	2.6x8 Phillips, Self-Tapping, Binding Head Screw *	1	

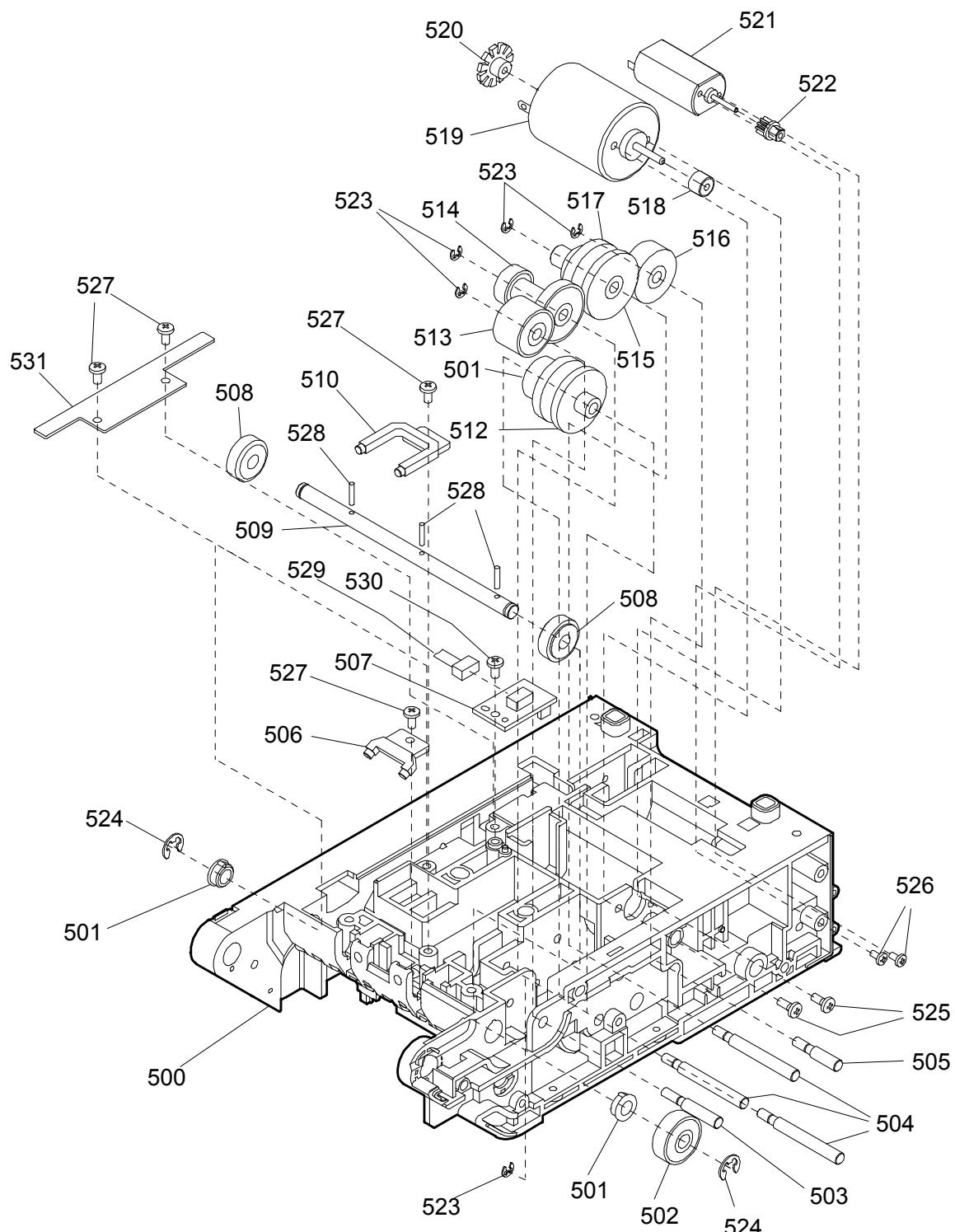
\*. P-TITE is recommended.

**EBA-40 Lower Guide Assy. Exploded View 3****Figure 7-5 EBA-40 Lower Guide Assy. Exploded View 3**

**EBA-40 Lower Guide Assy. Parts List 3****Table 7-5 EBA-40 Lower Guide Assy. Parts List 3**

<b>Ref No.</b>	<b>EDP No.</b>	<b>Description</b>	<b>QTY</b>	<b>Remark</b>
400	234684	Centering Guide Right Assy.	1	
401	234685	Centering Guide Left Assy.	1	
402	228430	Centering Guide Shaft Rail	1	
403	228555	Centering Spring	1	
404	228399	Transport Roller Gear 2 Assy.	1	
405	234674	Centering GE Gear	1	
406	234697	Centering Gear 2	1	
407	234707	Transport Shaft 8	1	
408	228442	Centering Collar	1	
409	228534	Centering Shaft	1	
410	228515	Centering Worm Plate	1	
411	228507	Centering Gear 1	1	
412	228398	Transport Roller Gear 1	6	
413	228443	Gear Coupler	1	
414	234706	Transport Shaft 7	1	
415	234705	Transport Shaft 6	4	
416	228498	Transport Gear 6	5	
417	228499	Transport Gear 7	1	
418	228500	Transport Gear 8	1	
419	234703	Transport Shaft 3	4	
420	234708	Transport Shaft 9	1	
421	237752	Centering Worm Shaft	1	
422	228531	Centering Guide Shaft 2	1	
423	234709	Transport Shaft 10	1	
424	091526	2.6x8 Phillips, Self-Tapping, Binding Head Screw *	2	
425	234962	Centering Rubber	2	
426	091517	Ø2 E-Ring	7	
427	091516	Ø3 E-Ring	2	
428	234710	Transport Shaft 11	1	
429	091518	Ø1.5 E-Ring	1	

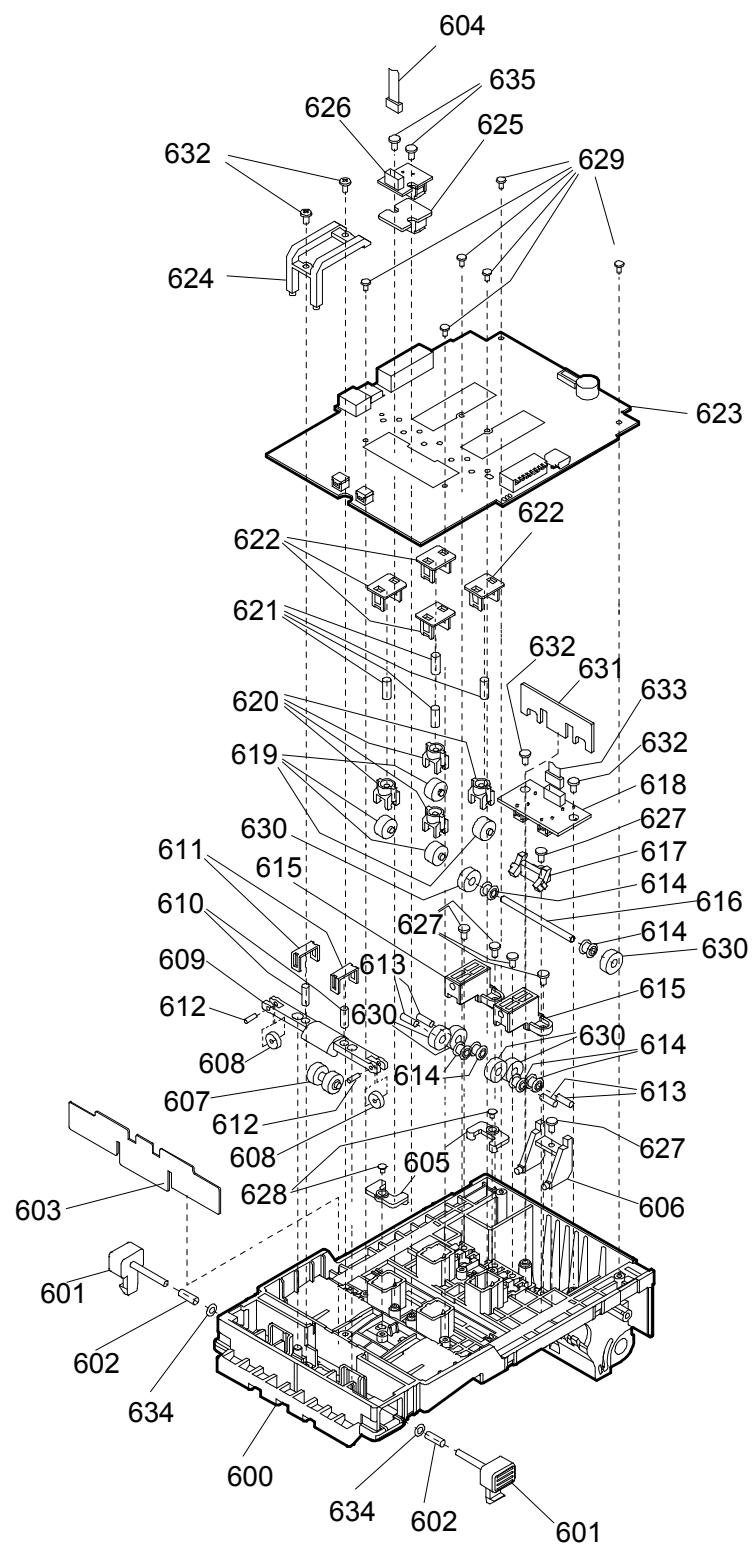
\*. P-TITE is recommended.

**EBA-40 Lower Guide Assy. Exploded View 4****Figure 7-6 EBA-40 Lower Guide Assy. Exploded View 4**

**EBA-40 Lower Guide Assy. Parts List 4****Table 7-6 EBA-40 Lower Guide Assy. Parts List 4**

Ref No.	EDP No.	Description	QTY	Remark
500	245821	Lower Guide	1	
501	144584	Bearing	2	
502	228503	Transport Gear 11	1	
503	234704	Transport Shaft 4	1	
504	234702	Transport Shaft 2	3	
505	244410	Transport Shaft 1	1	
506	228425	PB Exit Prism REVO	1	
507	228064	Transport Encoder Sensor Board	1	
508	228400	Transport Idler Roller Assy.	2	
509	228524	Transport Shaft 5	1	
510	228427	Exit Prism REVO	1	
511	228495	Transport Gear 3	1	
512	228497	Transport Gear 5	1	
513	228502	Transport Gear 10	1	
514	228501	Transport Gear 9	1	
515	228494	Transport Gear 2	1	
516	228493	Transport Gear 1	1	
517	228496	Transport Gear 4	1	
518	234695	Transport Motor Pinion Gear	1	
519	228336	Transport Motor Assy.	1	
520	228435	Transport Encoder	1	
521	228337	Centering Motor Assy.	1	
522	234696	Centering Motor Pinion Gear	1	
523	091517	Ø2 E-Ring	5	
524	093074	Ø4 E-Ring	2	
525	228564	M2.6x5 Binding Head Screw (Nyloc)	2	
526	228563	M2x4 Binding Head Screw (Nyloc)	2	
527	055413	2.6x6 Phillips, Self-Tapping, Binding Head Screw (Black) *	4	
528	091515	Ø1.6x8 Parallel Pin	3	
529	228328	Transport Encoder Harness	1	
530	058274	2.6x5 Phillips, Self-Tapping, Binding Head Screw *	1	
531	228519	Harness Plate 2	1	

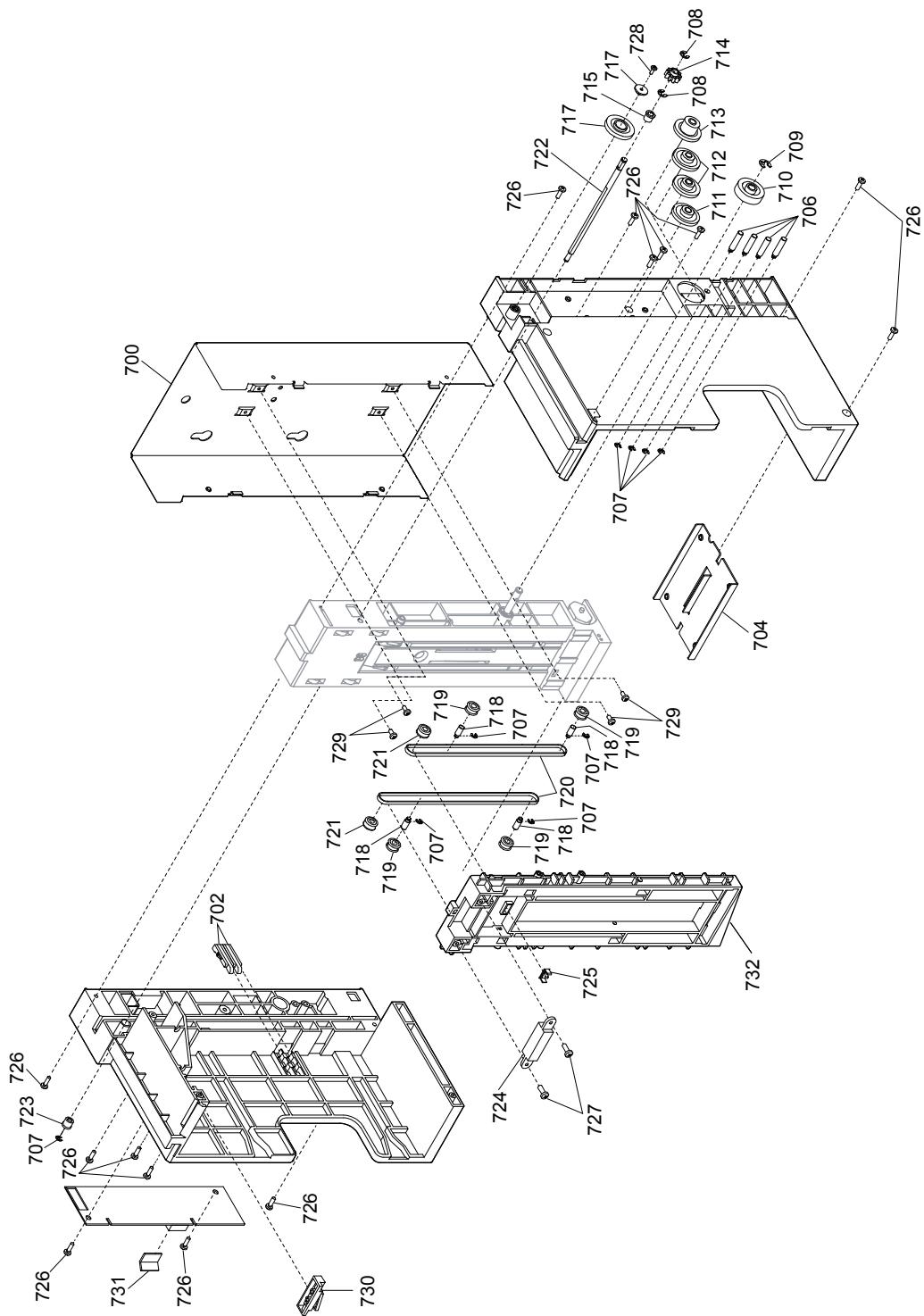
\*. P-TITE is recommended.

**EBA-40 Upper Guide Assy. Exploded View****Figure 7-7 EBA-40 Upper Guide Assy. Exploded View**

**EBA-40 Upper Guide Assy. Parts List****Table 7-7 EBA-40 Upper Guide Assy. Parts List**

Ref No.	EDP No.	Description	QTY	Remark
600	234678	Upper Guide	1	
601	234686	Upper Guide Latch	2	
602	228550	Upper Guide Latch Spring	2	
603	228517	Protection Plate	1	
604	228335	Barcode Sensor Harness	1	For the Barcode Sensor
605	234689	Position Sensor Cover	2	
606	228426	Exit Prism	1	
607	228938	Entrance Idler Roller	1	
608	228939	Centering Arm Roller	2	
609	228414	Centering Arm	1	
610	228552	Entrance Idler Spring	2	
611	228416	Centering Arm Spring Cover	2	
612	228532	Centering Arm Roller Shaft	2	
613	228529	Idler Roller Shaft	4	
614	147966	Transport Roller Core	6	
615	234687	Idler Shaft Cover	2	
616	228528	Idler Roller Shaft	1	
617	228424	PB Exit Prism	1	
618	228067	PB Exit Sensor Board	1	
619	228937	Transport Idler Roller	4	
620	228417	Transport Roller Arm	4	
621	228548	Transport Spring	4	
622	195232	Transport Roller Cap	4	
623	252601	CPU Circuit Board	1	
624	228420	Entrance Prism	1	
625	234693	Barcode Sensor With Cap	1	Sensor Cap is required when no Barcode Sensor is installed.
626	234727	Barcode Sensor	1	Optional - Refer to "Wiring Diagram" on page 5-1
627	091526	2.6x8 Phillips, Self-Tapping, Binding Head Screw *	4	
628	228584	2x4 Phillips, Self-Tapping, 0.2 Ø4 Lamix PS-TITE II Screw	2	
629	138053	2x5 Phillips, Self-Tapping, Binding Head Screw *	6	
630	147767	Sponge Roller	6	
631	228441	Cover Plate	1	
632	058274	2.6x5 Phillips, Self-Tapping, Binding Head Screw *	4	
633	228331	PB Exit Sensor Harness	1	
634	085660	Ø3x7x0.5 Flat Head Washer	2	
635	104414	2x4 Phillips, Self-Tapping, Binding Head Screw *	2	

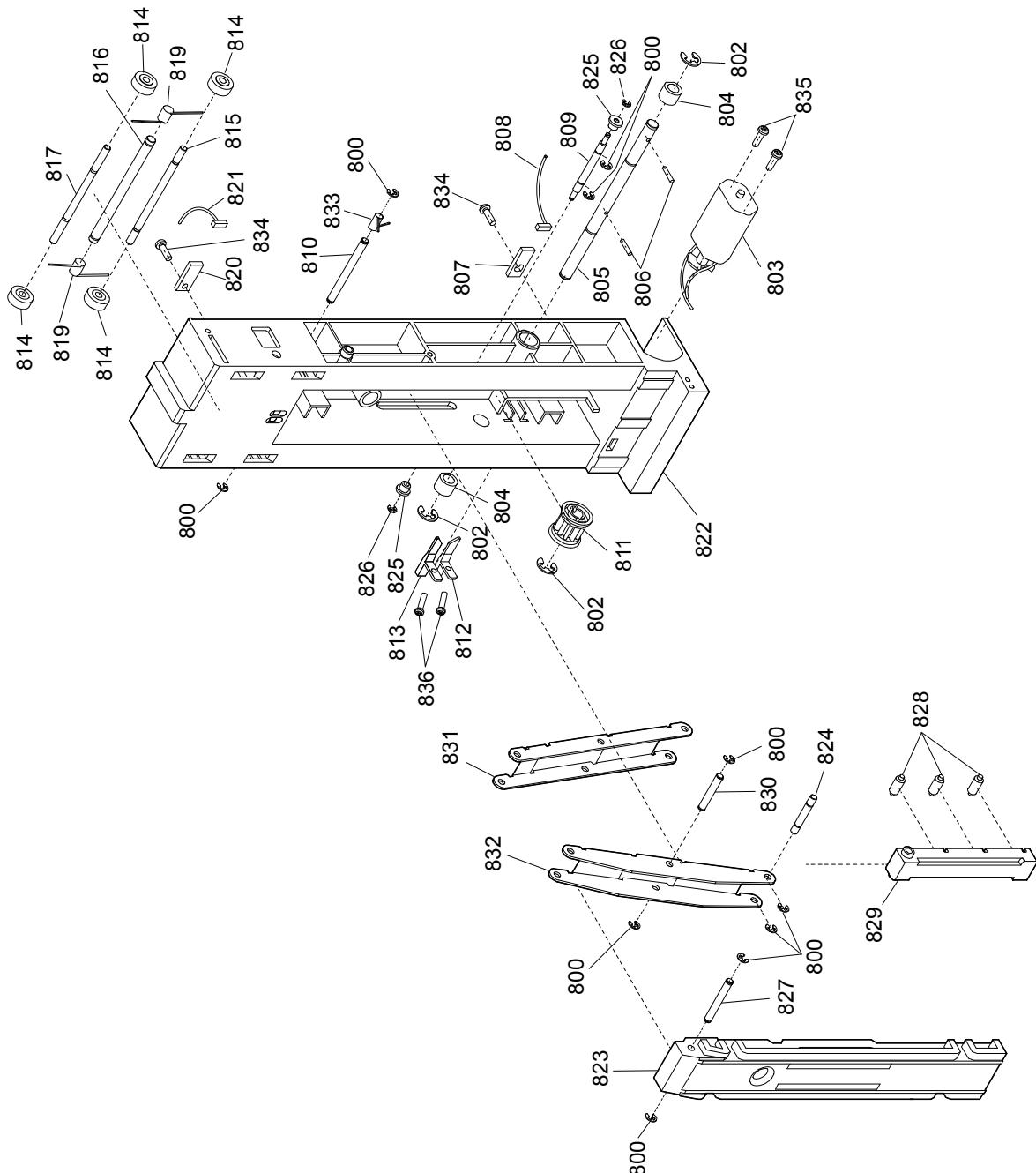
\*. P-TITE is recommended.

**EBA-40 SD3 Stacker Frame Unit Exploded View****Figure 7-8 EBA-40 SD3 Stacker Frame Unit Exploded View**

**EBA-40 SD3 Stacker Frame Unit Parts List****Table 7-8 EBA-40 SD3 Stacker Frame Unit Parts List**

<b>Ref No.</b>	<b>EDP No.</b>	<b>Description</b>	<b>QTY</b>	<b>Remark</b>
700	098200	ST Frame	1	
701	119355	Box Guide L	1	
702	119375	Prism A	2	
703	244903	Stacker Board	1	
704	091156	ST Base	1	
705	119354	Box Guide R	1	
706	091188	Push G Shaft 3	4	
707	091517	Ø2 E-Ring	9	
708	091516	Ø3 E-Ring	2	
709	093074	Ø4 E-Ring	1	
710	119370	Gear Push 3	1	
711	119367	Gear Push	1	
712	119369	Gear Push 2	2	
713	119383	Gear Push 5	1	
714	119363	Gear Box	1	
715	119364	Bearing 0406	1	
716	119361	Bearing	1	
717	119360	Gear TR3	1	
718	091180	Pulley Shaft	4	
719	119380	Pulley ST01	4	
720	091305	Timing Belt	2	
721	119382	Pulley ST02	2	
722	091165	Pulley D Shaft	1	
723	119377	Bearing 0306	1	
724	118752	Relay Connector S Harness	1	
725	091079	Square Prism E30	1	
726	091526	2.6x8 Phillips, Self-Tapping, Bind Head Screw: Chrome Free *	14	
727	091519	3x8 Phillips, Self-Tapping, Bind Head Screw: Chrome Free *	2	
728	093073	2x5 Phillips, Self-Tapping Screw: Chrome Free *	1	
729	093072	M2.6x5 Screw with W Washer (S): Chrome Free *	4	
730	089449	Stacker Key Switch Module	1	
731	149466	Holder Spacer	1	
732	119357	Bill Rail	1	

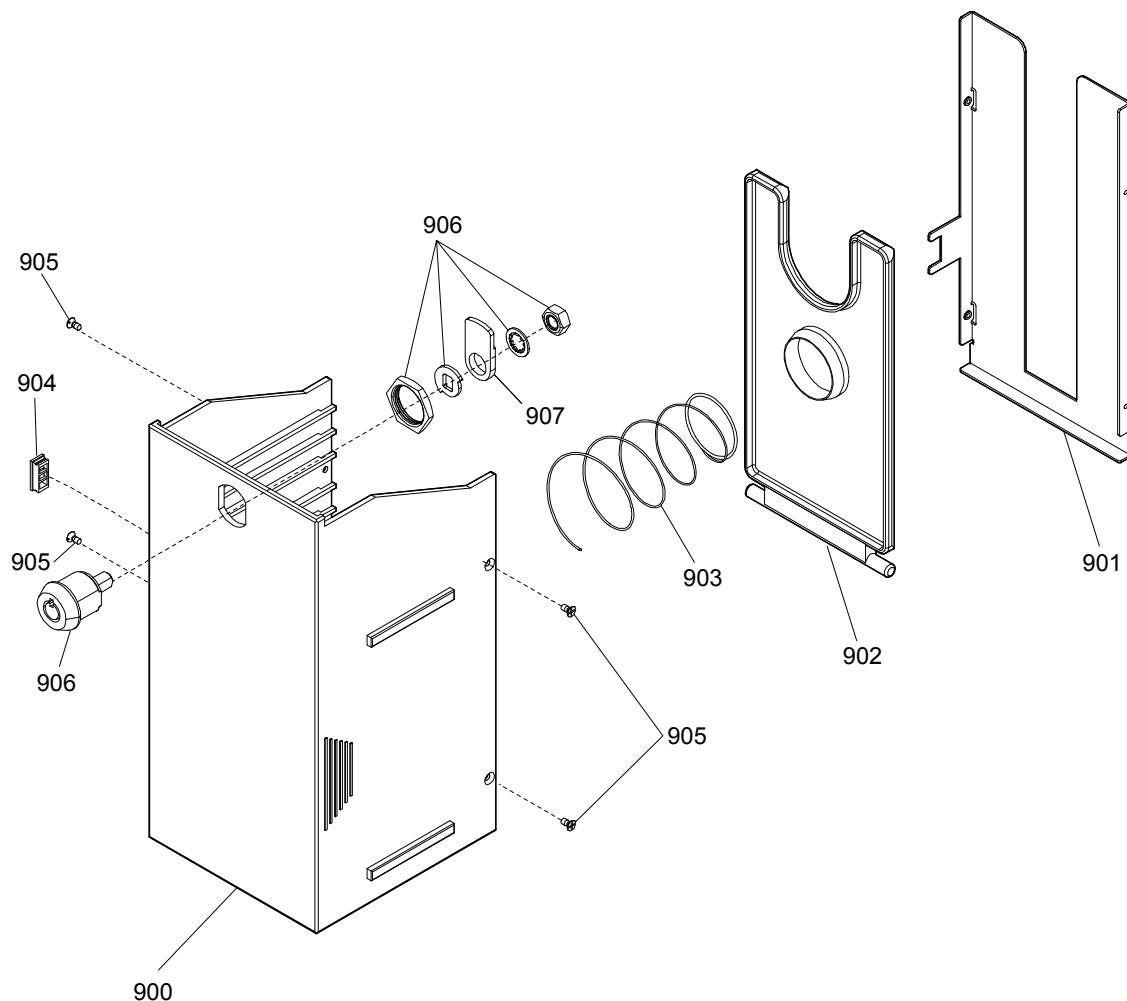
\*. P-TITE is recommended.

**EBA-40 SD3 Stacker Pusher Plate Unit Exploded View****Figure 7-9 EBA-40 SD3 Stacker Pusher Plate Unit Exploded View**

**EBA-40 SD3 Stacker Pusher Plate Unit Parts List****Table 7-9 EBA-40 SD3 Stacker Pusher Plate Unit Parts List**

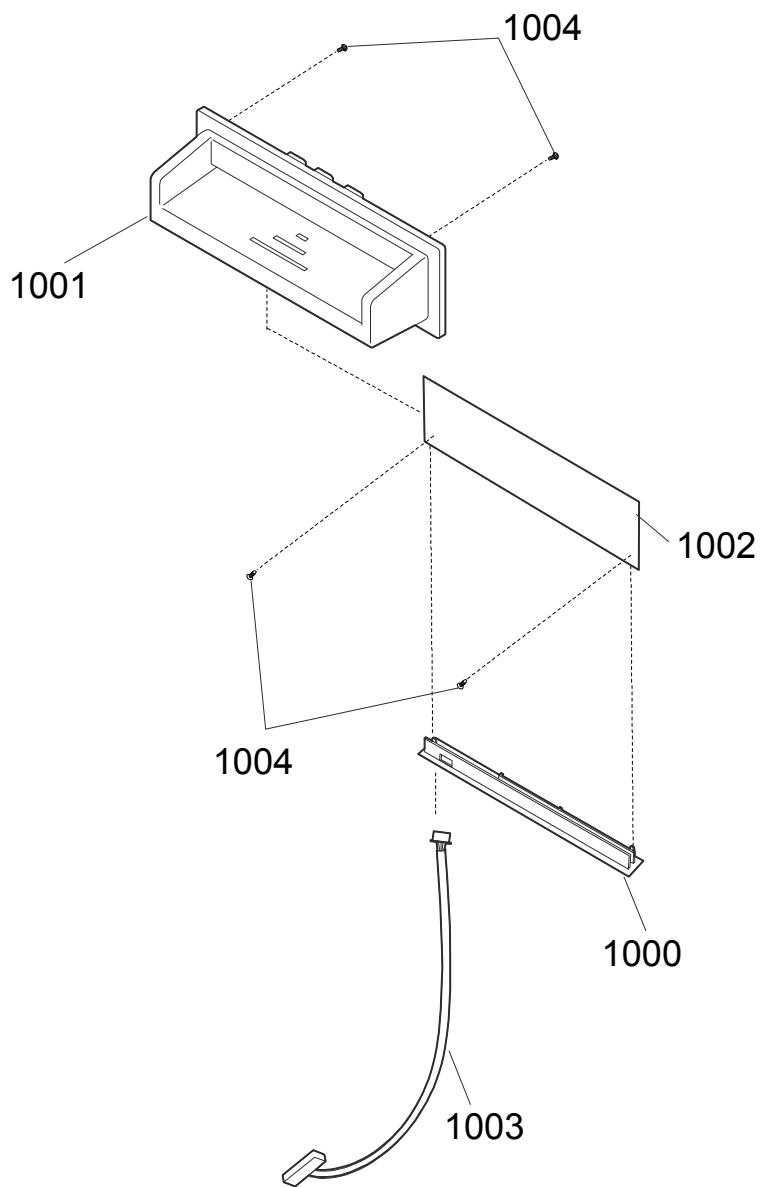
<b>Ref No.</b>	<b>EDP No.</b>	<b>Description</b>	<b>QTY</b>	<b>Remark</b>
800	091517	Ø2 E-Ring	10	
801	091516	Ø3 E-Ring	2	
802	093074	Ø4 E-Ring	3	
803	121635	Stacker Motor Assy	1	
804	119308	Bearing TR	2	
805	091177	Push G Shaft Final	1	
806	091515	1.6x8 Parallel Pin	2	
807	118857	Photo Interrupter B	1	
808	118766	Stacker Encoder Sensor Harness	1	
809	091176	Link Rack Shaft	1	
810	091172	Link B Shaft	1	
811	119371	Gear Push 4	1	
812	119374	Prism L	1	
813	119373	Prism R	1	
814	119378	Roller 031204	4	
815	091182	ST Roller Shaft 2	1	
816	091178	Spring Shaft	1	
817	091170	ST Roller Shaft 1	1	
818	091162	ST TR Spring B	1	
819	091160	ST TR Spring A	1	
820	118848	Photo Sensor Board	1	
821	118762	Stacker-in Sensor Harness	1	
822	119356	Push Base	1	
823	239378	Pusher Plate	1	
824	091186	Link PP Shaft 2	1	
825	119372	Bearing 0204	2	
826	091518	Ø1.5 E-Ring	2	
827	091184	Link PP Shaft 1	1	
828	091189	Push Roller	3	
829	119359	Rack	1	
830	235749	Link C Shaft	1	
831	091153	Push Link 1	1	
832	091154	Push Link 2	1	
833	091163	Push Link Spring	1	
834	091526	2.6x8 Phillips, Self-Tapping, Bind Head Screw: Chrome Free *	2	
835	091533	M2.5x5 Pan Head Screw with W Washer (S): Chrome Free	2	
836	093073	2x5 Phillips, Self-Tapping Screw: Chrome Free *	2	

\*. P-TITE is recommended.

**EBA-40 SD3 Stacker Box Unit Exploded View****Figure 7-10 EBA-40 SD3 Stacker Box Unit Exploded View**

**EBA-40 SD3 Stacker Box Unit Parts List****Table 7-10 EBA-40 SD3 Stacker Box Unit Parts List**

Ref No.	EDP No.	Description	QTY	Remark
900	119384	SD3 Box	1	
901	091158	Box Rail	1	
902	119385	Receiver Board	1	
903	057259	Box Spring	1	
904	119387	Prism Box	1	
905	005846	M2.6x5 Flat Head Screw	4	
906	032057	Coin Lock	1	
907	119389	Tang	1	

**EBA-30/40 Bezel Unit Exploded View****Figure 7-11 EBA-30/40 Bezel Unit Exploded View**

**EBA-30/40 BEZEL UNIT PARTS List****Table 7-11 EBA-30/40 Bezel Unit Parts List**

Ref No.	EDP No.	Description	QTY	Remark
1000	119324	Entrance Sensor Holder	1	
1001	119325	EBA Insert Guide	1	
1002	094774	LED Board	1	
1003	094773	LED Board Harness	1	
1004	091523	2x5 Phillips, Self-Tapping 4.5 H5 Lamix Head Screw *	4	

\*. P-TITE is recommended.

# EBA® Series

## EBA-40 Banknote Acceptor

### Section 8

## 8 INDEX

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# EBA® Series

## EBA-40 Banknote Acceptor

### Appendix A

## A TROUBLESHOOTING

This section provides Troubleshooting instructions for the EBA® Series EBA-40 Banknote Acceptor Unit, and includes the following information:

- Introduction
- Troubleshooting Overview
- Fault Table Listings
- LED Indication Conditions

### Introduction

Most Banknote Acceptor failures result from minor causes. Before replacing any parts, be sure that all assembly and circuit board connectors are properly fitted, with their harnesses properly connected.

Poor performance by the EBA-40 Banknote Acceptor is often caused when dust or foreign objects adhere to the Sensors or Transport Belt. Clean the Banknote insertion section first, then carefully observe the operating state of the Acceptor when re-initializing power in order to locate any causes of failure and the possible fault locations.

Perform all repairs by referring to Calibration and Testing in Section 6 and the Disassembly/Reassembly instructions in Section 4 of this manual.

### Troubleshooting Overview

This product allows the operator to perform fault diagnosis by checking various Fault Table Listings against the symptoms, and surveying the cause(s) of any failure occurrences during the process.

After determining the cause of a failure, repair the Unit by replacing any appropriate parts deemed necessary. Perform the Performance Tests, and then perform a Sensor readjustment to complete the repair.

### Fault Table Listings

Table A-1 lists the symptoms, error messages and possible fault conditions that can occur on the EBA-40 Unit, and the necessary actions required to correct them.

**Table A-1** General Fault Conditions

Symptoms/Error Messages	Possible Fault Causes	Corrective Action Required
Banknote Acceptor is not working (e.g., does not accept any Banknotes)	No external Power is applied to the Banknote Acceptor (+12/24V DC & GND)	Verify that the Power Supply +12/24V DC and Ground Cables are connected to their appropriate Pins on the main connector. NOTE: When lit, the small LED left of the DS1 DIP Switches indicates that electrical power is properly supplied to the Banknote Acceptor.
	Wrong or inappropriate connections	Verify that all Harness Connectors are properly seated. Check for any bent, missing or damaged Pins in the Connector Plugs and mating Receptacles.
	Corrupted Software	Download the correct Software.
	CPU Board failure	Conduct an Initial Operational Test. If the test result is Negative (NG), replace the CPU Board. Make sure to re-calibrate the Sensors after CPU Board is replaced.
Banknote jams occur often	A pressure Roller is dirty or damaged.	Clean all Pressure Rollers. Replace as necessary.
	A pressure Roller Spring is loose or missing.	Check all Pressure Roller Springs using a finger pressure test. Replace as necessary.
	A foreign object is lodged in the Transport path and/or inside the SD3 Stacker.	Clean the Transport path and remove any objects.
	The Acceptor Unit is not properly seated all the way into the Frame (the Acceptor Unit's Latch Release Levers are not locked onto the Frame).	Re-seat the Acceptor Unit back into the Frame so it is firmly seated all the way back into the Frame so the Acceptor Unit Release Lever Latches securely lock onto the Frame.
Acceptance rate is degraded	Banknote is wider than 85 mm or narrower than 62mm (60mm without the Stacker) (out of the EBA Banknote width specifications).	Use only Banknotes that are within the EBA Unit's Banknote size specifications.
	Dirt and/or stains on the Rollers, Belts and Lenses.	Clean the Transport path. Refer to "Preventive Maintenance" on page 2-10.
	The Unit has been disassembled, and calibration adjustments have not occurred following reassembly.	Calibrate the Sensors after reassembling the EBA Unit.
	The wrong Software version or an older Software version is being used.	Make sure that the programmed Software is the latest version, and it supports the Currency values for the specific Country.

**Table A-1 General Fault Conditions (Cont'd)**

Symptoms/Error Messages	Possible Fault Causes	Corrective Action Required
Acceptance rate is degraded	Software is not designed to accept current Banknotes.	Check the specifications for the required Banknote Type Acceptance, and make sure the Banknotes will be accepted by the Software loaded (e.g., check denomination/issuing year).
Upper Guide cannot be opened	Centering Guides are not at their Home position.	Disconnect and reconnect an external power source to the EBA-40 Unit. This action should tell the Host Machine to send a Reset Command to re-initialize the Unit. If power cannot be applied, use a 5.5mm nut driver to open the Upper Guide, and manually reset the Guide.
All Banknotes are being rejected	Incorrect software (different Currency type) Banknotes are not being accepted by the Software. Incorrect DIP Switch settings Banknote acceptance is being inhibited by a Host Controller command. Validation Sensor failure Unit was disassembled and calibration did not occur following reassembly.	Download the correct Software for Currency being accepted. Make sure the Banknote values required are included in the Software Specifications (e.g., denominations/issuing year). Enable all denominations by setting all DIP Switches to OFF. Enable Banknote acceptance for the required Host Command. Change the CPU Board and Sensor Board. Calibrate all EBA Sensors following reassembly.
Motor continues to run	Upper Guide is open. A foreign object or a jammed Banknote is stuck in the Transport path. Motor Driver failure	Firmly close the Upper Guide. Open the Upper Guide, remove the foreign object or jammed Banknote, and then close the Cover. Conduct a Forward/Reverse Motor Rotation Test.
Cannot enter the TEST mode	Incorrect DIP Switch settings Dip Switch failure CPU Board failure	Set the DS1 Switch No. 8 to ON, and reapply power to the EBA Unit. Refer to "DIP Switch Test" on page 6-17 regarding the DIP Switch Test, and conduct a DIP Switch TEST to check if the specific DIP Switch Block contains a failure. Exchange the CPU Circuit Board with a known good Circuit Board.

**Table A-2 Adjustment Fault Conditions**

Symptoms/Error Messages	Possible Fault Causes	Corrective Action Required
Cannot start the EBA Calibration Tool for Maintenance.exe program by double-clicking on its Icon	PC Operating System (OS) is not compatible. The Program Files are corrupted.	The current Adjustment program only supports the Windows XP and Windows 7 Operating Systems. Request the correct programs from JCM.
Communication Error	Wrong or inappropriate connections EBA Switch settings are incorrect. DIP Switch failure CPU Board failure	Check the PC Harness connections and the related EBA Interface Connectors for damage. Check for any bent, missing or damaged Pins in the Connector Plug and/or Receptacle. Set the DS1 Switch No. 8 to ON, and reapply power to the EBA Unit. Refer to "DIP Switch Test" on page 6-17 regarding DIP Switch settings and conduct a DIP Switch Test. Exchange the CPU Circuit Board with a known good Circuit Board.
Adjustment Error	Incorrect Reference Paper type Validation Sensor failure	Follow the instructions provided in the "EBA Calibration Tool for Maintenance.exe" Program and use the correct recommended Reference Paper. Change the CPU Board and Sensor Board.

**Table A-3 Communication Fault Conditions**

Symptoms/Error Messages	Possible Fault Causes	Corrective Action Required
Cannot communicate with the Host Machine	DIP Switch settings are incorrect. Connectors are disconnected or loosely connected. Damaged Connector Pins CPU Board is corrupted Incorrect Interface	Set DS1 Switch No.8 to OFF. See "DIP Switch Configurations" on page 2-3 for the DIP Switch settings. Firmly re-seat all of the Communication Connectors. Check for any bent, missing or damaged Pins in the Connector Plugs and mating Receptacles. Exchange the CPU Circuit Board with a known good Circuit Board. Verify that the correct interface between the Host Machine and the Banknote Acceptor is being used.

## LED Indication Conditions

The External LED Display provides information about Standard Error and Reject Codes (See Table A-4 through Table A-6).

 Before troubleshooting error conditions, be sure that all Assemblies are properly connected and harnessed, and all Sensors are clean.

To identify an indicated Error and its resolution, compare the LED Sequence and LED Color State listed in Table A-4.

Ensure that the relative Assemblies are properly connected and/or harnessed, and all of the Unit's sensors are clean before proceeding to troubleshoot the error condition.

## LED Flash Error Code Conditions

Table A-4 lists the various LED Flash Error Code causes and solutions.

**Table A-4** EBA-40 Unit LED Flash Error Codes

LED Sequence	LED Color State	Error	Causes and Solutions
Red (1)	Green Lit	External Flash ROM Boot Program ROM Check Error	The Boot Program that is supposed to run after Power is supplied is not correctly written in ROM, or it cannot be read. [Solution] Check that the following part is properly assembled and/or Harness connected. [Relative Parts] CPU Circuit Board. If the error is not resolved, change the above related part or parts.
Red (2)	Green Lit	External Flash ROM Boot I/F Area ROM Check Error	The Boot Interface Area was not written correctly or cannot be read. [Solution] Re-download the Program. If the error is not resolved, check that the following part is assembled and/or Harness connected. [Relative Parts] CPU Circuit Board. If the error is not resolved, change the above related part or parts.
		External Flash ROM Main Program ROM Check Error	The Main Operating Program is not written into the ROM correctly, or cannot be read. [Solution] Re-download the Program. If the error is not resolved, check that the following part is properly assembled and/or Harness connected. [Relative Parts] CPU Circuit Board. If the error is not resolved, change the above related part or parts.
Red (3)	Green Lit	CPU Internal RAM Check Error	RAM reading or writing was not properly performed. [Solution] Check that the following part is properly assembled and/or Harness connected. [Relative Parts] CPU Circuit Board. If the error is not resolved, change the above related part or parts.
Red (4)	Green Lit	External SD-RAM Error	External SD-RAM reading or writing was not properly performed. [Solution] Check that the following part is properly assembled and/or Harness connected. [Relative Parts] CPU Circuit Board. If the error is not resolved, change the above related part or parts.
Red (5)	Green Lit	EEPROM Error	EEPROM reading, writing and/or saving was not properly performed. [Solution] Perform the Sensor Calibration procedure. If the error is not resolved, check that the following part is properly assembled and/or Harness connected. [Relative Parts] CPU Circuit Board. If the error is not resolved, change the above related part or parts.
Red (6)	Green Lit	Downloading File Error	Downloading files does not proceed. [Solution] Select a file supported by the EBA Unit.
Red (7)	Green Lit	Magnetic Sensor Setting Abnormal	An abnormal Magnetic Sensor setting is detected. [Solution] Check that the following part is properly assembled and/or Harness connected. Clean the following Sensor. [Relative Parts] Magnetic Sensor. If the error is not resolved, change the above related part or parts.
Red (8)	Green Lit	I2C Access Error	While communicating with each device on the CPU Board, Sensors detect an abnormal operating condition. [Solution] Check that the following part is properly assembled and/or Harness connected. Clean the following part. [Relative Parts] Stacker. If the error is not resolved, change the above related part or parts.
Red (1)	OFF	SD3 Stacker Full	Sensors detected that the SD3 Stacker is full. [Solution] Remove Banknotes from the SD3 Stacker. Check that the following parts are properly assembled and/or Harness connected. Clean or adjust the following parts and Sensors. [Relative Parts] Pusher Mechanism, Stacker Motor, Stacker Home Sensor, Stacker Motor Encoder. If the error is not resolved, change the above related part or parts.
Red (2)	OFF	Pusher Mechanism Home Position Error	When stacking Banknotes, the Pusher Mechanism is not returning to the Home position. [Solution] Check that the following parts are properly assembled and/or Harness connected. Clean or adjust the following parts and Sensors. [Relative Parts] Pusher Mechanism, Stacker Motor, Stacker Home Sensor, Stacker Motor Encoder. If the error is not resolved, change the above related part or parts.

**Table A-4 EBA-40 Unit LED Flash Error Codes (Cont'd)**

LED Sequence	LED Color State	Error	Causes and Solutions
Red (3)	OFF	Banknote Jam (SD3 Stacker)	When transporting a Banknote in the SD3 Stacker, the Sensors are not detecting a Banknote present condition when the time interval is too long, or the pulse number is greater than the specified value for the function. [Solution] Remove Banknotes from the SD3 Stacker. Check that the following parts are properly assembled and/or Harness connected. Clean or adjust the following parts and Sensors. [Relative Parts] Exit Sensor, Pusher Mechanism, Stacker Motor, Stacker Home Sensor, Stacker Motor Encoder. If the error is not resolved, change the above related part or parts.
Red (4)	OFF	Banknote Jam (Transport Unit)	When transporting or returning a Banknote in the Transport Unit, the Sensors did not detect a Banknote present condition when the time interval was too long, or the pulse number is greater than the specified value for the function. [Solution] Check that the following parts are properly assembled and/or Harness connected. Clean or adjust the following parts and Sensors. [Relative Parts] Entrance Sensor, Centering Timing Sensor, Validation Sensor, PB Entrance Sensor, Exit Sensor, Feed Motor, Feed Motor Encoder. If the error is not resolved, change the above related part or parts.
Red (5)	OFF	Feed Motor Speed Error	While Initializing, no pulse inputs exist greater than the specified value. [Solution] Remove Banknotes from the EBA Unit. Check that the following parts are properly assembled and/or Harness connected. Clean or adjust the following parts and Sensors. [Relative Parts] Feed Motor, Feed Motor Encoder. If the error is not resolved, change the above related part or parts.
Red (6)	OFF	Feed Motor Lock-Up	While operating the Feed Motor, no pulse inputs occurred greater than the specified value. [Solution] Check that the following parts are properly assembled and/or Harness connected. Clean or adjust the following parts and Sensors. [Relative Parts] Feed Motor, Feed Motor Encoder If the error is not resolved, change the above related part or parts.
Red (7)	OFF	Stacker Motor Lock-Up	While operating the Stacker Motor, no pulse inputs occurred greater than the specified value. [Solution] Check that the following parts are properly assembled and/or Harness connected. Clean or adjust the following parts and Sensors. [Relative Parts] Stacker Motor, Stacker Encoder. If the error is not resolved, change the above related part or parts.
Red (8)	OFF	Reserved	Contact your local JCM Representative if this error occurs.
Red (9)	OFF	PB Unit Error	The Anti-Pullback (PB) Unit has not performed correctly. [Solution] Check that the following parts are properly assembled and/or Harness connected. [Relative Parts] PB Unit, PB Home Position Sensor. If the error is not resolved, change the above related part or parts.
Red (10)	OFF	SD3 Stacker Removal	The SD3 Stacker has been removed. [Solution] Firmly re-seat the SD3 Stacker. Check that the following part is properly assembled and/or Harness connected. Clean or adjust the following Sensor. [Relative Parts] Box Sensor. If the error is not resolved, change the above related part or parts.
Red (11)	OFF	Reserved	Contact your local JCM Representative if this error occurs.
Red (12)	OFF	Fraud Detection	Sensors detect Banknotes occurring with abnormal timing. [Solution] Check that the following parts are properly assembled and/or Harness connected. Clean or adjust the following parts and Sensors. [Relative Parts] Entrance Sensor, Centering Timing Sensor, Validation Sensor, PB Entrance Sensor, PB Exit Sensor, Exit Sensor, Feed Motor and Feed Motor Encoder. If the error is not resolved, change the above related part or parts.
Red (13)	OFF	Centering Mechanism Abnormal	The Centering Guide has not moved. [Solution] Check that the following parts are properly assembled and/or Harness connected. Clean or adjust the following parts and Sensors. [Relative Parts] Centering Guide, Centering Motor, Centering Guide Home Sensor. If the error is not resolved, change the above related part or parts.
Red (14)	OFF	Box Key Unlocked	The Box Key has been unlocked, [Solution] Lock the Box Key, Check that the following part is properly assembled and/or Harness connected. Clean the following Sensor. [Relative Parts] Box Key Sensor. If the error is not resolved, change the above related part or parts.
Red (15)	OFF	Stacker Removal	The Stacker has been removed from the EBA Unit. [Solution] Check that the following part is properly assembled and/or Harness connected. Clean or adjust the following part. [Relative Parts] Stacker. If the error is not resolved, change the above related part or parts.

## LED Flash Reject Error Code Conditions; Banknotes

Table A-5 lists the various LED Flash Reject Code causes & solutions for Banknotes.

**Table A-5** LED Flash Reject Error Codes For Banknotes

LED Color State	LED Sequence	Error	Causes and Solutions
OFF	Green (1)	Skewed Insertion Error	The Banknote has been inserted in an incorrect/crooked direction. [Solution] Insert a Banknote in the proper alignment. Clean the Banknote Path and check the Centering Mechanism for proper operation. [Relative Parts] Centering Mechanism, Rollers. If the error is not resolved, change the above related part or parts.
OFF	Green (2)	Abnormal Magnetic Detection	The Magnetic Sensor detected an abnormal Banknote Type. [Solution] Check the Banknote's condition. Refer to "Banknote Fitness Requirements" on page 1-3 for the required Banknote conditions. [Relative Parts] Magnetic Sensor. If the error is not resolved, change the above related part or parts and calibrate the unit.
OFF	Green (3)	Remaining Banknotes Returned	While Initializing, a Banknote is detected in the EBA Unit. [Solution] Clean or adjust the following parts. [Relative Parts] Centering Mechanism, Rollers, Validation Sensors. Entrance and Exit Sensors. If the error is not resolved, change the above related part or parts and calibrate the unit.
OFF	Green (4)	Magnification Abnormal	The Sensors detected improper levels. [Solution] Clean the Banknote Path. Check that the Banknote is not damaged nor exhibiting unfit conditions. Refer to "Banknote Fitness Requirements" on page 1-3 for unacceptable Banknote types. [Relative Parts] Validation Sensor. If the error is not resolved, change the above related part or parts and calibrate the unit.
OFF	Green (5)	Transport Time-out Error	The Sensors detected improper movement of a Banknote. [Solution] Clean the Rollers and Banknote Path. [Relative Parts] Rollers, Sensors, Validation Sensors. If the error is not resolved, change the above related part or parts and calibrate the unit.
OFF	Green (6)	Denomination Error	The Sensor detected abnormal Banknote Type. [Solution] Clean the Banknote Path. Check that the Banknote is not damaged nor exhibiting unfit conditions. Refer to "Banknote Fitness Requirements" on page 1-3 for unacceptable Banknote types. [Relative Parts] Validation Sensor. If the error is not resolved, change the above related part or parts and calibrate the unit.
OFF	Green (7)	Pattern Error	The Sensor detected an abnormal Banknote Type. [Solution] Clean the Banknote Path. Check that the Banknote is not damaged nor exhibiting unfit conditions. Refer to "Banknote Fitness Requirements" on page 1-3 for unacceptable Banknote types. [Relative Parts] Validation Sensor. If the error is not resolved, change the above related part or parts and calibrate the unit.
OFF	Green (8)	Photo Level Error	While transporting a Banknote, improper sensor levels were detected. [Solution] Clean the Banknote Path. Check that the Banknote is not damaged nor exhibiting unfit conditions. Refer to "Banknote Fitness Requirements" on page 1-3 for unacceptable Banknote types. [Relative Parts] Validation Sensor. If the error is not resolved, change the above related part or parts and calibrate the unit.
OFF	Green (9)	Inhibit Setting Abnormal	The Banknote has been inhibited by DIP Switch Setting or Host Command. [Solution] Check DIP Switch Block 1 Settings, refer to the Software Information Sheet for proper settings. Check Harness connections and communications. [Relative Parts] DIP Switch Block 1, Harnesses If the error is not resolved, change the above related part or parts.
OFF	Green (10)	Return Commanded	The Banknote was returned in response to a Host Command. [Solution] Check for proper communications with the Host computer. [Relative Parts] CPU. If the error is not resolved, change the above related part or parts and calibrate the unit.
OFF	Green (11)	Reserved	Contact your local JCM Representative if this error occurs.
OFF	Green (12)	Banknote Detection Error	The Sensors detected a Banknote with abnormal timing. [Solution] Clean debris from the Banknote Path. [Relative Parts] Entrance, Exit and Validation Sensors. If the error is not resolved, change the above related part or parts and calibrate the unit.

**Table A-5 LED Flash Reject Error Codes For Banknotes (Cont'd)**

LED Color State	LED Sequence	Error	Causes and Solutions
OFF	Green (13)	Banknote Length Abnormal	The Sensors detected the Banknote length was longer or shorter than the specified value. [Solution] Clean the Banknote Path. Check that the Banknote is not damaged nor exhibiting unfit conditions. Refer to "Banknote Fitness Requirements" on page 1-3 for unacceptable Banknote types. [Relative Parts] Rollers, Validation Sensor. If the error is not resolved, change the above related part or parts and calibrate the unit.
OFF	Green (14)	Pattern Error 1	The Sensors detected an improper Banknote pattern. [Solution] Clean the Banknote Path. Check that the Banknote is not damaged nor exhibiting unfit conditions. Refer to "Banknote Fitness Requirements" on page 1-3 for unacceptable Banknote types. [Relative Parts] Validation Sensor. If the error is not resolved, change the above related part or parts and calibrate the unit.
OFF	Green (15)	Invalid Banknote Error	The Banknote has been validated as invalid. [Solution] Clean the Banknote Path. Check that the Banknote is not damaged nor exhibiting unfit conditions. Refer to "Banknote Fitness Requirements" on page 1-3 for unacceptable Banknote types. [Relative Parts] Validation Sensor. If the error is not resolved, change the above related part or parts and calibrate the unit.
OFF	Green (16)	Pattern Error 2	The Sensors detected an improper Banknote pattern. [Solution] Clean the Banknote Path. Check that the Banknote is not damaged nor exhibiting unfit conditions. Refer to "Banknote Fitness Requirements" on page 1-3 for unacceptable Banknote types. [Relative Parts] Validation Sensor. If the error is not resolved, change the above related part or parts and calibrate the unit.

## LED Reject Error Code Conditions; Barcode Coupons

Table A-6 lists the various LED Flash Reject Code causes & solutions for Barcode Coupons

**Table A-6 LED Flash Reject Error Codes For Barcode Coupons**

LED State	LED Sequence	Error	Causes and Solutions
OFF	Green (1)	Unconfigured Barcode Coupon	Barcode Coupon information is not set yet. [Solution] Check that a proper Barcode Coupon is used and the Ticket is not damaged or dirty. Check the Barcode Coupon's specifications and set correct information.
OFF	Green (2)	Format Error	The format does not meet the Barcode Coupon's specification. [Solution] Check that a proper Barcode Coupon is used, and the Ticket is not damaged or dirty. Check that the following part is properly assembled and/or Harness connected. Clean or adjust the following Sensor. [Relative Parts] Barcode Sensor. If the error is not resolved, change the above related part or parts and calibrate the unit.
OFF	Green (3)	Number Of Characters is less or more than its Settings	The number of Barcode Coupon's characters does not match its settings. [Solution] Check that a proper Barcode Coupon is used, and the Ticket is not damaged or dirty. Check that the following part is properly assembled and/or Harness connected. Clean or adjust the following Sensor. [Relative Parts] Barcode Sensor. If the error is not resolved, change the above related part or parts and calibrate the unit.
OFF	Green (4)	Start Bit Detection Error	A start bit of a Barcode Coupon cannot be detected. [Solution] Check that a proper Barcode Coupon is used, and the Ticket is not damaged or dirty. Check that the following part is properly assembled and/or Harness connected. Clean or adjust the following Sensor. [Relative Parts] Barcode Sensor. If the error is not resolved, change the above related part or parts and calibrate the unit.
OFF	Green (5)	Stop Bit Detection Error	A stop bit of a Barcode Coupon cannot be detected. [Solution] Check that a proper Barcode Coupon is used, and the Ticket is not damaged or dirty. Check that the following part is properly assembled and/or Harness connected. Clean or adjust the following Sensor. [Relative Parts] Barcode Sensor. If the error is not resolved, change the above related part or parts and calibrate the unit.
OFF	Green (6)	Barcode Coupon Type Error	A Barcode Coupon Type does not match its settings. [Solution] Check that a proper Barcode Coupon is used, and the Ticket is not damaged or dirty. Check that the following part is properly assembled and/or Harness connected. Clean or adjust the following Sensor. [Relative Parts] Barcode Sensor. If the error is not resolved, change the above related part or parts and calibrate the unit.

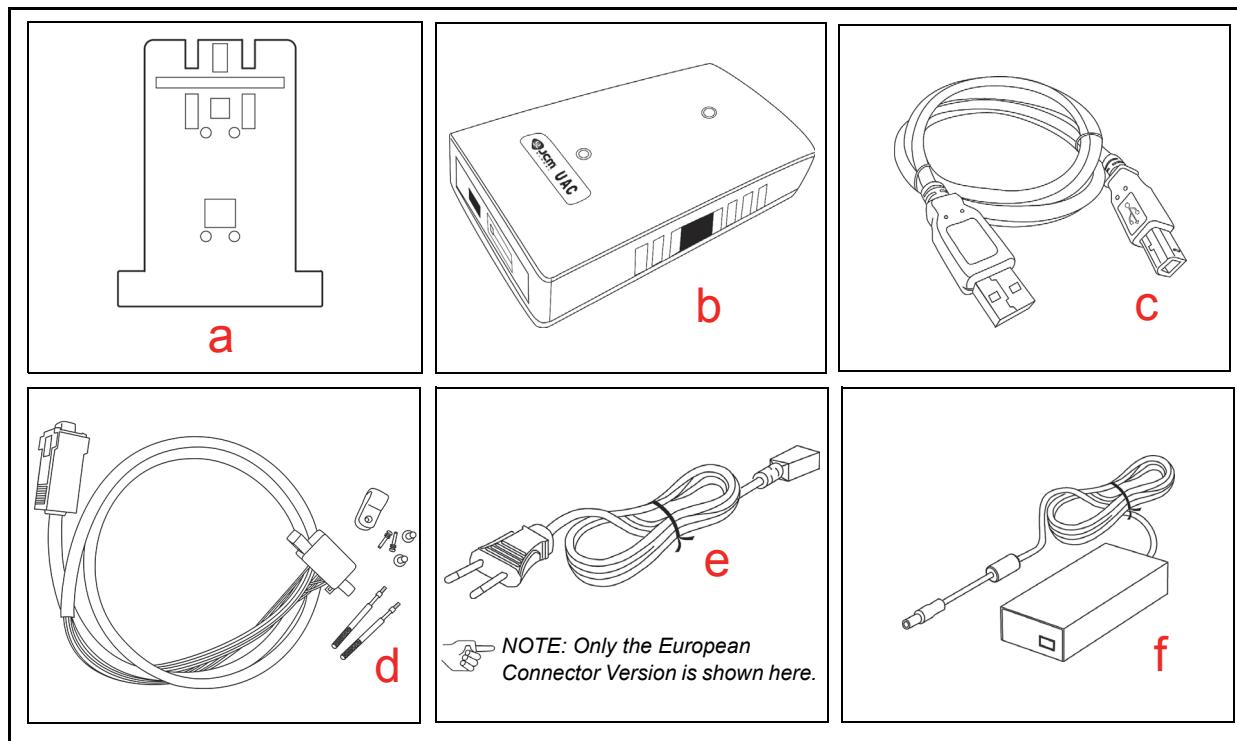
**Table A-6 LED Flash Reject Error Codes For Barcode Coupons (Cont'd)**

<b>LED State</b>	<b>LED Sequence</b>	<b>Error</b>	<b>Causes and Solutions</b>
OFF	Green (7)	Magnification Abnormal	When adjusting Barcode Coupon data, Sensors detected an abnormal Barcode Coupon magnification condition. [Solution] Check that a proper Barcode Coupon is used, and the Ticket is not damaged or dirty. Check that the following part is properly assembled and/or Harness connected. Clean or adjust the following Sensor. [Relative Parts] Barcode Sensor. If the error is not resolved, change the above related part or parts and calibrate the unit.
OFF	Green (8)	Doubled Insertion Error	Two or more Barcode Coupons are inserted. [Solution] Insert a single Barcode Coupon.
OFF	Green (9)	Reserved	Contact your local JCM Representative if this error occurs.
OFF	Green (10)	Reserved	Contact your local JCM Representative if this error occurs.
OFF	Green (11)	Upside-Down Insertion	A Barcode Coupon is inserted upside-down. [Solution] Insert a Barcode Coupon in the proper direction.
OFF	Green (12)	Reserved	Contact your local JCM Representative if this error occurs.
OFF	Green (13)	Barcode Coupon Length Abnormal	The Barcode Sensor calculated a Ticket length longer or shorter than the specified value. [Solution] Check that a proper Barcode Coupon is used, and the Ticket is not damaged or dirty. Check that the following part is properly assembled and/or Harness connected. Clean or adjust the following Sensor. [Relative Parts] Barcode Sensor. If the error is not resolved, change the above related part or parts and calibrate the unit.
OFF	Green (14)	Abnormal Barcode Coupon	A Barcode Coupon inhibited by the Settings is inserted. [Solution] Check that a proper Barcode Coupon is used, and the Ticket is not damaged or dirty. Check that the following part is properly assembled and/or Harness connected. Clean or adjust the following Sensor. [Relative Parts] Barcode Sensor. If the error is not resolved, change the above related part or parts and calibrate the unit.

## Maintenance Equipment

This section identifies the EBA-40 Maintenance Equipment.

### EBA-40 Maintenance Equipment



**Figure A-1** Additional Maintenance Equipment Requirements

**Table A-7** Additional Maintenance Equipment Parts List

Ltr.	EDP No.*	JAC No.	Description	Qty.	Remark
a	234414	N/A	Reference Paper (KS-090)	1	
b	G00205	501-100218R	UAC	1	
c	G00230	400-100249R	UAC USB Cable	1	
d	G00063	302-200407R	UAC Harness (ID-003)	1	
e	G00213	302-100007RA	Power Cord	1	For AC Adapter
f	G00286	N/A	AC Adapter	1	For UAC

\*. A Product EDP Number that begins with a "G" is a Product developed by JCM-E Germany.

 Refer to *JCM UAC Device Operational Instructions* (Part No. 960-100194R) for details on its use.

### Reference Paper Handling

All JCM Reference Paper should be handled as follows:

1. Do not allow the Reference Papers to endure high temperatures and/or high humidity environments.
2. Store unused Reference Papers in their original Shipping Carton to avoid exposing them to direct Sunlight and/or bright indoor light. Ensure that the Reference Papers being stored are not damaged as they are replaced into their shipping carton.
3. Do not use Reference Paper containing damaged areas that are worn, dirty, wrinkled, distorted and/or discolored.
4. Use new Reference Paper for every 400 Units being calibrated. Incorrect calibration errors may occur when using Reference Paper that has been used for calibrating more than 400 Units.

# **EBA® Series**

## **EBA-40 Banknote Acceptor**

### **Appendix B**

#### **B GLOSSARY**

##### **A**

- 1 Acceptor**  
one of several devices used to validate and accept Banknotes, then communicate the acceptance results to Host Machine ...1-1
- 2 Anti-Pullback Mechanism**  
a mechanism (optical, mechanical, or a combination of both) designed to prevent the unauthorized retrieving of Banknotes from a SD3 Stacker ...1-4

##### **B**

- 3 Bezel**  
a removable Plastic Assembly attached to the front of the Banknote Insertion Slot of an EBA-40 Unit. It features a rectangular shaped access opening (slot) for easy insertion and retrieval of Banknotes. Bezels are available in different shapes and sizes in order to accommodate Banknotes of different widths and different stacking configurations ...1-2

##### **C**

- 4 Calibration**  
process performed on electronic equipment which ensures that all circuits are properly aligned and operating at optimum levels. For EBA-40 Unit, calibration is accomplished using a software based program which checks and sets the operational reference levels for sensors. This helps to ensure that the Unit operates with the highest Banknote acceptance rate possible. Calibration is recommended whenever the CPU Board, or one of the Sensor Boards are replaced ...6-1
- 5 ccTalk**  
a Serial based Communication Protocol commonly used in control, electronic payment, and vending systems. Developed by Money Controls Ltd., the format enjoys widespread use throughout Europe ...1-2
- 6 Centering Mechanism**  
a mechanical assembly designed to center Banknotes that enter the Acceptor at a skewed angle ...1-4

**7 Checksum**

a numerical value assigned to a data file or block of data (usually expressed in Hexadecimal notation). Checksum values are used to verify that the contents of a data file are not corrupted in any way during transmission or encryption. The Checksum values of both the original and duplicate files are compared to each other. If the values do not match, it is recommended that the file be copied (uploaded) again until the Checksums do match ...6-5

**D****8 DIP Switch Block**

Dual In-line Package Switch - a mountable two-position slide switch containing up to 16 individual Switches per block assembly, located on a Printed Circuit Board (PCB) and set to an ON or OFF position. DIP Switches are often used in circuits where manual selection of operational changes, options, and features are desired ...2-3

**E****9 EEPROM**

Electrically Erasable Programmable Read-Only Memory. A form of non-volatile Read-Only Memory (ROM) that can be written to and erased via electronic signals without being removed from its Circuit Board housing. EEPROMs are often used to store system command instructions and reference data sets that are accessed frequently, or when the equipment is first powered up ...A-3

**H****10 Host Machine**

a generic term for any electronic cabinet, equipment or platform where a EBA-40 Unit will be installed. The Host Machine supplies both the power and the communications interface necessary for proper operation of the EBA-40 Unit ...A-2

**J****11 JCM Tool Suite Standard Edition**

a PC application software program that includes sub-routine programs for Downloading a File, Calibrating Sensors, examining Performance Metrics, testing Acceptor functions, Enabling and disabling the ICB feature, and viewing an image of the last Banknote accepted ...6-2

# M

## 12 MDB

Multi Drop Bus. In the automated vending industry, MDB is a serial interface standard/communications data protocol commonly used for communications between a Vending Machine Controller (VMC) and installed peripherals, such as Banknote Acceptors and Coin Changers. MDB compatibility is a featured option in the EBA-40 Unit ...1-2

# P

## 13 Pictograph

small, internationally-recognized safety and attention symbols placed to the left of Notes, Cautions and Warnings throughout a JCM Maintenance Manual ...1-1

## 14 Precautions

special instructions and warnings that appear in JCM Maintenance Manuals. They are intended to promote personal safety and prevent damage to equipment when working with the applicable JCM Product ...1-2

# S

## 15 Special Notes

notation within JCM Maintenance Manuals that alerts the reader to specific information that can affect operation of the Unit. Notations often appear throughout the manual, and are identified by the pictograph icon. Special Notes are always written in italic text ...1-1

# V

## 16 Validation

In Banknote Acceptors (such as the EBA-40 Unit), the process of drawing a Banknote into the Unit and then using various Sensors to read and determine the authenticity of the Banknote based on the comparison of collected readings to a set of reference data stored in memory ...2-11

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a  
RoHS  
Compliant  
Product



JCM  
G L O B A L



Contains  
RoHS  
Compliant  
Components

Issue #4103-SME-01-02