



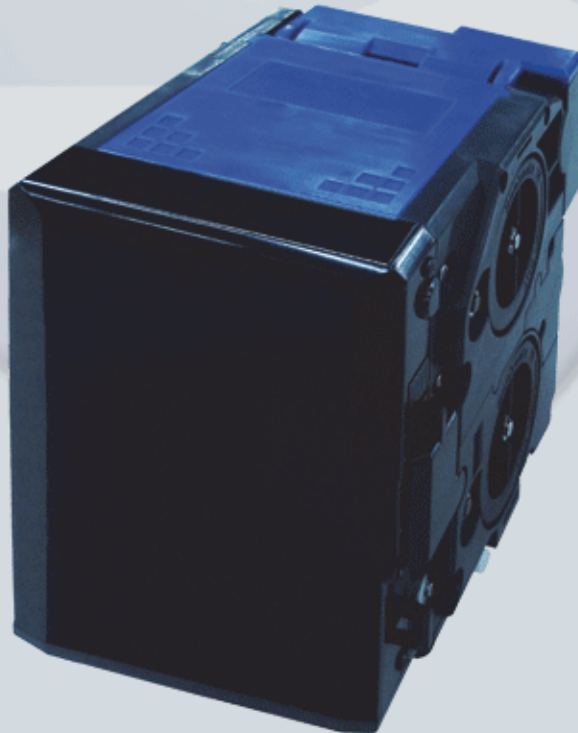
**Support:** <http://www.jcmglobal.com/en/contact/default.aspx>    **Web-Site:** <http://www.jcmglobal.com>

# **VEGA-RC Twin™ Series**

## **Banknote Recycler**

### ***Integration Guide***

***Revision A, November 21, 2012***



**P/N 960-000169R\_Rev. A {EDP #217859}**










**Issue #4094-IGE-01-00**

**© 2012, Japan CashMachine Co., Limited**

REVISION HISTORY			
Rev No.	Date	Reason for Update	Comment
A	11/21/12	Initial Document	

## International Compliance

- RoHS Directives  or  or  or  or 
- UL & c-UL Marks 
- CE Mark 
- CB Scheme

NOTE: The above listed compliance confirmations are currently being examined for approval or certification.

## Copyright © 2012 By Japan CashMachine Co., Limited

This product document (hereinafter referred to as "Manual") is fully covered by legal Copyrights owned by the Japan Cash Machine, Co., Ltd., (hereinafter referred to as "JCM") under Japanese laws and other Foreign Countries. This Manual contains many copyrighted, patented or properly registered equipment items manufactured by JCM, that are prohibited and illegal to duplicate, replicate, copy in whole, or in part, without the express authorization by JCM with the following exceptions:

1. When an authorized JCM agency or distributor duplicates the Manual for sales promotion and/or service maintenance of the product, or technical service personnel education as required; and
2. When an end user duplicates the Manual to maintain operation of the product or operate the product in general. JCM retains all rights to amend, alter, change or delete any portion of this Manual in whole, or in part, or add items thereto without notice regarding the product or its related products.

JCM is a registered trademark of Japan CashMachine Co, Limited. All other product names mentioned herein may be registered trademarks or trademarks of their respective companies. Furthermore, ™, ® and © are not always mentioned in each case throughout this publication.

# VEGA-RC Twin™ Series

## Integration Guide

### Table of Contents

	Page
<b>TOC</b>	
<b>1 GENERAL INFORMATION.....</b>	<b>1</b>
Description .....	1
VEGA-RC Twin Unit.....	1
Model Descriptions .....	2
Precautions .....	2
User Cautions .....	2
Installation Cautions .....	2
Mounting, Dismounting & Transportation.....	2
Preventive Maintenance .....	2
Banknote Fitness Requirements .....	3
Primary Features .....	3
Component Names .....	4
<b>2 SPECIFICATIONS.....</b>	<b>5</b>
Technical Specifications .....	5
Environmental Specifications .....	5
Structural Specifications.....	6
System Configuration.....	6
<b>3 INSTALLATION .....</b>	<b>7</b>
Installation Procedure .....	7
Primary LED Indications .....	7
<b>4 CONNECTOR PIN ASSIGNMENTS .....</b>	<b>8</b>
Connector Pin Assignments (Continued 1).....	9
<b>5 PREVENTIVE MAINTENANCE .....</b>	<b>9</b>
Clearing a Banknote Jam.....	9
Cleaning Procedure .....	10
Sensor and Roller Cleaning Procedure .....	10
<b>6 SENSOR AND ROLLER LOCATIONS.....</b>	<b>11</b>
<b>7 STANDARD INTERFACE CIRCUIT SCHEMATICS.....</b>	<b>12</b>
Standard Interface Circuit Schematics .....	12
<b>8 OPERATIONAL FLOWCHART .....</b>	<b>13</b>
Operational Flowchart (Continued 1).....	14
Operational Flowchart (Continued 2).....	15
Operational Flowchart (Continued 3).....	16
<b>9 UNIT DIMENSIONS.....</b>	<b>17</b>
Entire Unit Outside Dimensions .....	17
VEGA-RC Twin Unit Clearance Dimensions .....	17
<b>10 TROUBLESHOOTING .....</b>	<b>18</b>
Introduction .....	18
Troubleshooting Overview .....	18
Fault Table Listings .....	18
Operation Error Codes .....	18
Warning Codes .....	19
Machine Lock-up Error Codes .....	19
<b>11 INTERNATIONAL COMPLIANCE .....</b>	<b>20</b>
<b>12 TECHNICAL CONTACT INFORMATION .....</b>	<b>21</b>
Americas .....	21

# Table of Contents

	<b>Page</b>
JCM American.....	21
Europe, Africa, Russia & Middle East .....	21
JCM Europe GmbH.....	21
UK & Ireland .....	21
JCM Europe (UK Office).....	21
Asia and Oceania .....	21
JCM Gold (HK) Ltd. ....	21
Japan Cash Machine Co, Limited (HQ).....	21
<b>13 INDEX .....</b>	<b>23</b>

# VEGA-RC Twin™ Series

## Integration Guide

### List of Figures

	Page
<b>LOF</b>	
Figure 1 VEGA-RC Twin Unit.....	1
Figure 2 Precautionary Symbols .....	2
Figure 3 Unacceptable Banknotes .....	3
Figure 4 VEGA-RC Twin Component Names .....	4
Figure 5 VEGA-RC Twin System Configuration.....	6
Figure 6 VEGA-RC Twin Positioning .....	7
Figure 7 Latch Button and Harness Location.....	7
Figure 8 Clearing Banknote Jam.....	9
Figure 9 Clearing Banknote Jam.....	9
Figure 10 Roller Cleaning .....	10
Figure 11 Sensor Cleaning .....	10
Figure 12 VEGA-RC Twin Sensor Cleaning Locations .....	11
Figure 13 VEGA-RC Twin TTL Interface Schematic Diagram (Recycler to Acceptor) .....	12
Figure 14 VEGA-RC Twin TTL Interface Schematic Diagram (Recycler to Indication Board).....	12
Figure 15 VEGA-RC Twin Operational Flowchart (Initializing).....	13
Figure 16 VEGA-RC Twin Operational Flowchart (Main).....	14
Figure 17 VEGA-RC Twin Operational Flowchart (Dispensing 2).....	15
Figure 18 VEGA-RC Twin Operational Flowchart (Dispensing 1).....	15
Figure 19 VEGA-RC Twin Operational Flowchart (Retrieving) .....	16
Figure 20 VEGA-RC Twin Operational Flowchart (Clearing Error) .....	16
Figure 21 VEGA-RC Twin Banknote Recycler's Outside Dimensions .....	17
Figure 22 VEGA-RC Twin Banknote Recycler's Clearance Dimensions .....	17
Figure 23 LED Indication Pattern .....	18

THIS PAGE INTENTIONALLY LEFT BLANK

# VEGA-RC Twin™ Series

## Integration Guide

### List of Tables

	Page
<b>LOT</b>	
Table 2 VEGA-RC Twin Technical Specifications .....	5
Table 3 VEGA-RC Twin Environmental Specifications .....	5
Table 4 VEGA-RC Twin Electrical Specifications .....	6
Table 5 VEGA-RC Twin Structural Specifications .....	6
Table 6 LED Pattern Color Indications .....	7
Table 7 VEGA-RC Twin Recycler to Acceptor Receptacle Pin Assignments .....	8
Table 8 VEGA-RC Twin Recycler to Indication Board Receptacle Pin Assignments .....	9
Table 9 VEGA-RC Twin Sensor Type Cleaning Methods .....	11
Table 10 Operation Error Codes .....	18
Table 11 Warning Codes .....	19
Table 12 Machine Lock Error Codes .....	19

THIS PAGE INTENTIONALLY LEFT BLANK



# VEGA-RC Twin™ Series

## Banknote Recycler

### *Integration Guide*

Revision A

## 1 GENERAL INFORMATION

### Description

This section provides a general overview of the VEGA-RC Twin™ Series Banknote Recycler Unit, pictured in Figure 1. This section is designed to help the user navigate through this guide with ease. It includes the following information:

- VEGA-RC Twin Unit
- Component Names
- Model Description
- Type Description
- Software Description
- Precautions
- Primary Features
- Specifications
- System Configuration
- Unit Dimensions

- International Compliance
- 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.).

### VEGA-RC Twin Unit



Figure 1 VEGA-RC Twin Unit

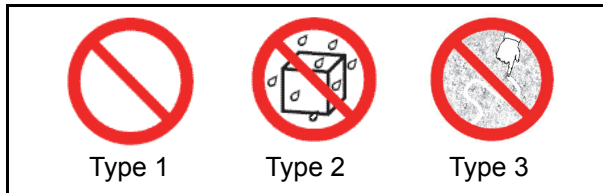
## Model Descriptions

Table 1 lists the product model number descriptions.

**Table 1** VEGA-RC Twin Model Number Specifications

No	Model: <b>VEGA-RC Twin</b> * *		
	No	(1)	(2)
(1)	Product Series Name		
(2)	Input Power Source 12 = 12V DC Power Source 42 = 24 - 36V DC Power Source [MDB Specification] (option)		

## Precautions



**Figure 2** Precautionary Symbols

Symbols in Figure 2 are defined as follows:

- (Type 1) Do not insert a torn, folded, or wet Banknote; it may cause a 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 any liquid is sprayed or spilled into the unit.
- (Type 3) Do not install the unit in a dusty environment. Dust may affect/degrade the sensor's performance.

## USER CAUTIONS

Careful measures were taken in the design of this product to ensure its quality; however, the following cautions pertain to all users and should be followed for safe operation.

### Installation Cautions

The Installation Cautions are defined as follows:

- Do not allow the unit to endure or operate at a high temperature, in high humidity and/or dusty environment.
- Do not install the unit in an area with excessive vibration or shock present.
- This equipment is not fully warranted for outdoor use. Be sure that the host machine contains enough protection to avoid wet or dusty conditions when installing it in either an indoor or open-air space.
- Avoid exposing the unit to direct sunlight/incandescent lamp illumination with a gradient angle of 15 degrees or more, and an illumination index of 3,000 Lux or less.
- Ensure that the host machine is designed for daily operational access for maintenance and/or clearing a Banknote Jam.

## Mounting, Dismounting & Transportation

Methods for mounting, dismounting and transporting the unit:

- Be sure to turn the VEGA Unit's power OFF before mounting or removing the Recycler unit.
- Plugging or unplugging the Recycler's communications connector while the VEGA Unit's power is ON may cause damage to the Recycler unit.
- When reassembling a disassembled section, ensure that each part is carefully placed in its proper location.
- Be sure to carry the unit using both hands. Holding the unit with only one hand may cause personal injury (if the unit comes apart).
- While transporting, be careful not to apply too much pressure to the unit, or subject it to excess vibration.
- Do not throw or pound on the unit.

## Preventive Maintenance

The preventive maintenance requirements are defined as follows:

- When closing the Rear Cover of the Recycler, ensure that it clicks firmly into place.



**Caution: Be careful to avoid any personal injury to fingers when closing the Rear Cover of the Recycler.**



**Caution: Turn the VEGA Unit's power supply OFF when opening the Rear Cover; otherwise, the rollers could begin operating and cause injury by pulling fingers into the unit.**

- Use a soft, lint-free cloth, cotton swab or compressed air spray to clean dust and debris from the Rollers.
- Perform routine cleaning and maintenance at least once a month to keep the VEGA Recycler Unit's performance stable.
- Be sure that the Guides and unit sections are placed in the proper location after a maintenance procedure.
- Do not replace Banknotes by hand-winding them back into place; instead, use the unit's recycling action ONLY.
- Do not redesign or disassemble the Recycler. Unauthorized use by inadequately trained personnel, or use outside the original manufacturer's intent, voids the warranty.



**WARNING: DO NOT use a cleaning cloth wet enough to allow excess fluid to run into the device; internal printed circuit boards may be damaged.**



**WARNING: Do not inject water or any liquid agent into the Recycler; it can cause extreme damage.**



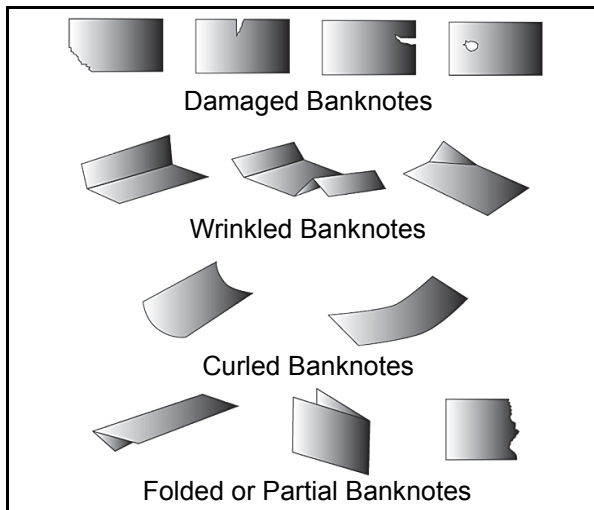
**Caution: Do not use alcohol, thinner, or citrus-based products for cleaning any surfaces or sensors. The lenses can become clouded by chemical evaporation residue, which can result in acceptance errors.**

### BANKNOTE FITNESS REQUIREMENTS

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

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

- torn
- excessive folds or wrinkles
- dirty
- wet
- containing foreign objects and/or oil



**Figure 3** Unacceptable Banknotes

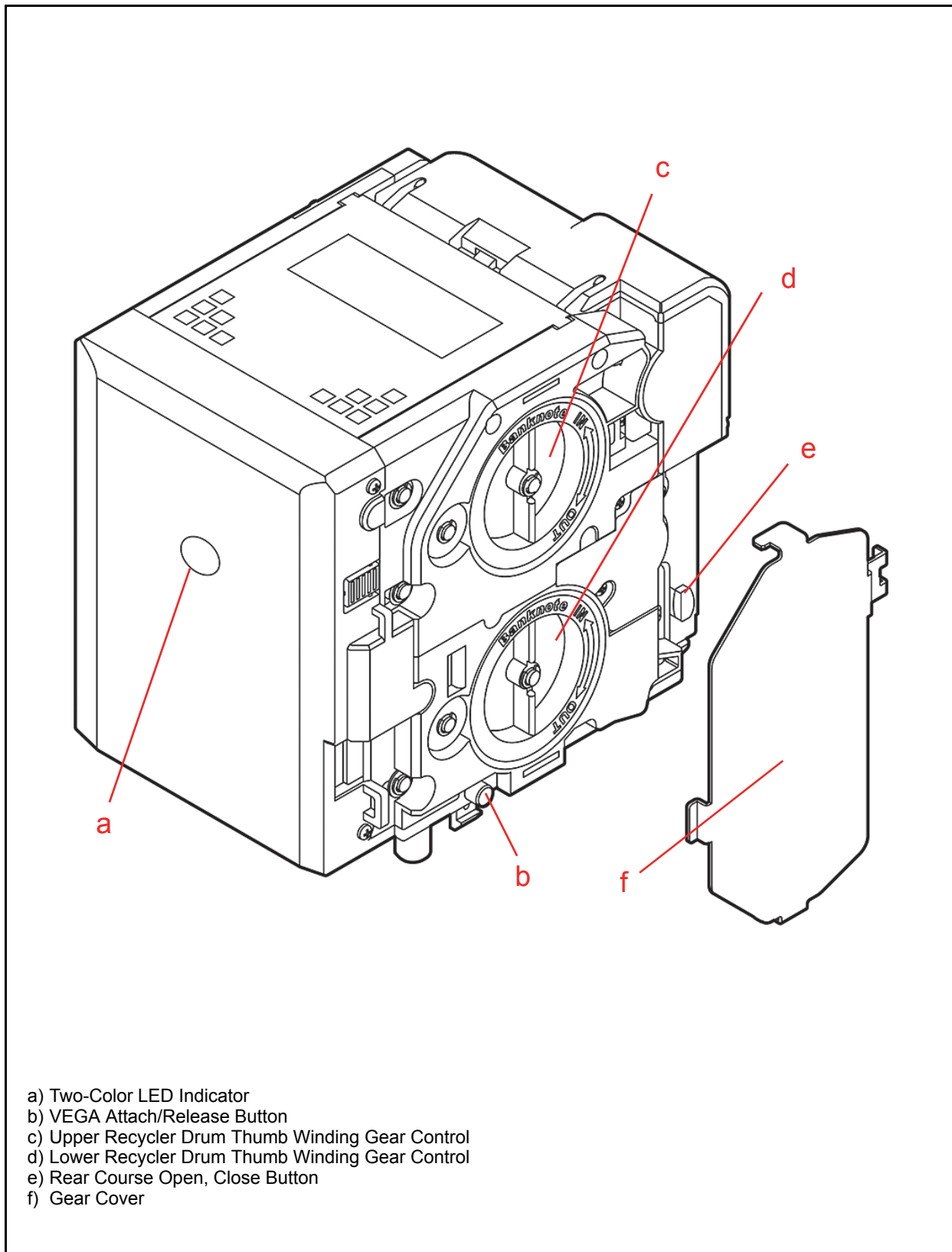
### Primary Features

This VEGA-RC Twin™ Series, VEGA-RC Twin Banknote Recycler contains the following primary features:

- The VEGA-RC Twin is capable of recycling any two (2) denominations that the VEGA accepts. Each Recycler Drum can store 30 notes that enable it to correspond with worldwide requirements.
- The specific design of the Banknote Winding System improves the overall process.
- The VEGA-RC Twin, the optional unit of the VEGA, features two (2) individual Recycler Drums available for two (2) Banknote denominations.

## Component Names

Figure 4 illustrates the VEGA-RC Twin™ component names and locations.



**Figure 4** VEGA-RC Twin Component Names

## 2 SPECIFICATIONS

### Technical Specifications

**Table 2** VEGA-RC Twin Technical Specifications

Acceptance Denomination <sup>*</sup> :	Refer to the VEGA Unit's specific "Software Specification."
Banknote Types Accepted:	Long side: 110~160mm (4.33~6.3 in.) Short side: 60~82mm (2.36~3.23 in.)
Insertion Direction:	Banknote: Four-way
Processing Speed <sup>†</sup> :	With VEGA Unit <ul style="list-style-type: none"> <li>• Approximately 5 seconds (from Banknote insertion to stacking completion)</li> <li>• Approximately 5 seconds (from Banknote insertion to next insertion enable)</li> <li>• Approximately 3 seconds (from Banknote dispense to eject completion)</li> <li>• Approximately 5 seconds (from receiving a retrieve command to Banknote retrieved)</li> </ul>
Diagnostic Indicators:	2 Single-color LEDs
Drum (Stacker) Capacity:	30 Notes x 2 (150mm new Banknote - e.g., 100 Euro Banknotes) Full detection. The number of stored notes can be set to maximum, or between 1 and 30 notes, No Nearly Full End detection
Stacking Method:	Banknote Winding System <sup>‡</sup>
Dispense:	No denomination discrimination No double note detection (e.g., condition is detected by the VEGA Unit) Note length discrimination (when denomination type is set)

<sup>\*</sup>. Acceptable denomination can be selected. (Refer to "VEGA-RC Twin™ Operation Specification".)

<sup>†</sup>. Excluded host communication time lag.

<sup>‡</sup>. DO NOT replace Banknotes by hand-winding them back into place. Allow them to be replaced by the unit's recycling action only!

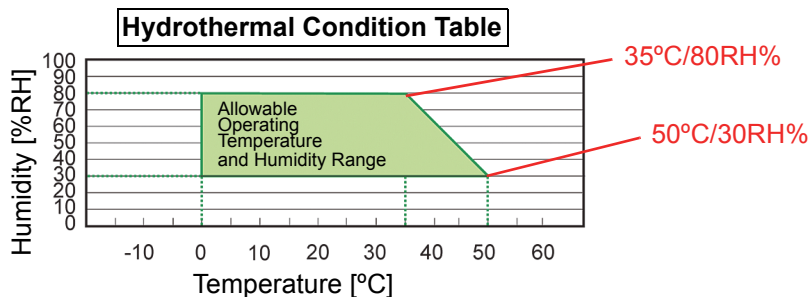
### Environmental Specifications

**Table 3** VEGA-RC Twin Environmental Specifications

Operating Temperature:	0°C to +50°C (32°F to 122°F) <sup>*</sup>
Storage Temperature:	-20°C to +60°C (-4°F to 140°F) <sup>*</sup>
Relative Operating Humidity:	30% to 80% RH (non-condensed)
Relative Storage Humidity:	10% to 85% RH (non-condensed)
Visible Light Sensitivity:	Avoid contact with direct sunlight (Interior lighting must be incandescent with a Radiant Angle of 15 Degrees or more having an Illumination index of 3000 Lux or less)
Installation:	Indoors Only <sup>†</sup>

<sup>\*</sup>. Depends on hydrothermal conditions.

<sup>†</sup>. Do not expose to the elements (including internal parts of the unit).



## Electrical Specifications

**Table 4** VEGA-RC Twin Electrical Specifications

Supply Voltage*:	VEGA-RC Twin <ul style="list-style-type: none"> <li>• 12V DC <math>\pm 5\%</math></li> <li>• 24-36V DC (Minimum: 20V DC/Maximum: 42.5V DC)(option)<sup>†</sup></li> </ul>
Current Consumption‡:	VEGA-RC Twin 12 with VEGA Unit <ul style="list-style-type: none"> <li>• Standby = 0.21A (12V DC)</li> <li>• Operation = 2.2A (12V DC)</li> <li>• Peak = 2.9A (12V DC)</li> </ul> VEGA-RC Twin 42 with VEGA Unit (option) <ul style="list-style-type: none"> <li>• Standby = 1.6A-0.11A (24-36V DC)</li> <li>• Operation = 1.2A-0.8A (24-36V DC)</li> <li>• Peak = 1.7A (24-36V DC)</li> </ul>

\*. Hot-swapping prohibited (e.g., do not plug connectors in or out while the VEGA Unit's power is ON). The limited power source [Class 2] is required.

†. If there is voltage ripple on the applied voltage, be sure that the minimum voltage has not fallen below 20V DC and make that ripple as smooth as possible.

‡. Power voltage is input voltage for the VEGA Unit.

## Structural Specifications

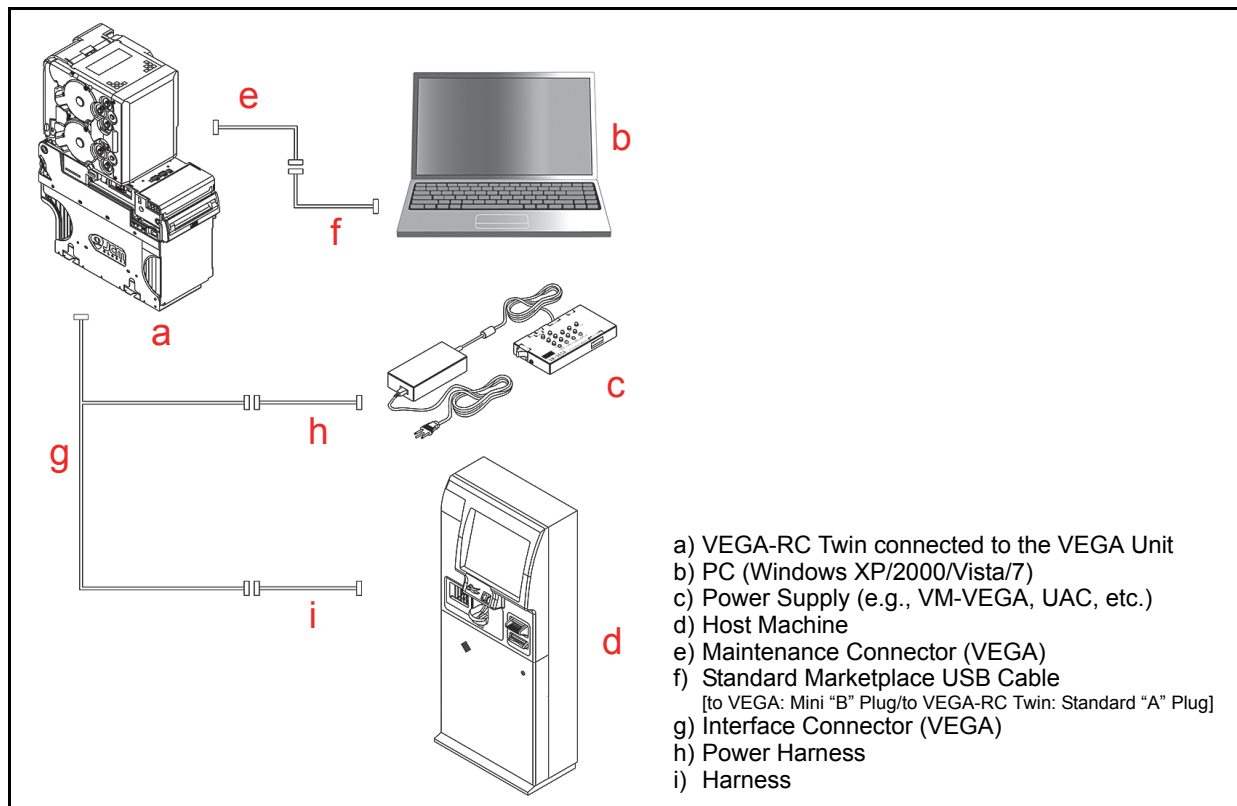
**Table 5** VEGA-RC Twin Structural Specifications

Weight:	Approximately 1.8kg (4lbs.)
Mounting:	Horizontal*
Outside Dimensions:	See "Entire Unit Outside Dimensions" on page 17 of this Manual

\*. Both vertical and transverse types should be installed at a 90-degree angle to the frame.

## System Configuration

Figure 5 illustrates a typical VEGA-RC Twin™ System configuration.



**Figure 5** VEGA-RC Twin System Configuration



### 3 INSTALLATION

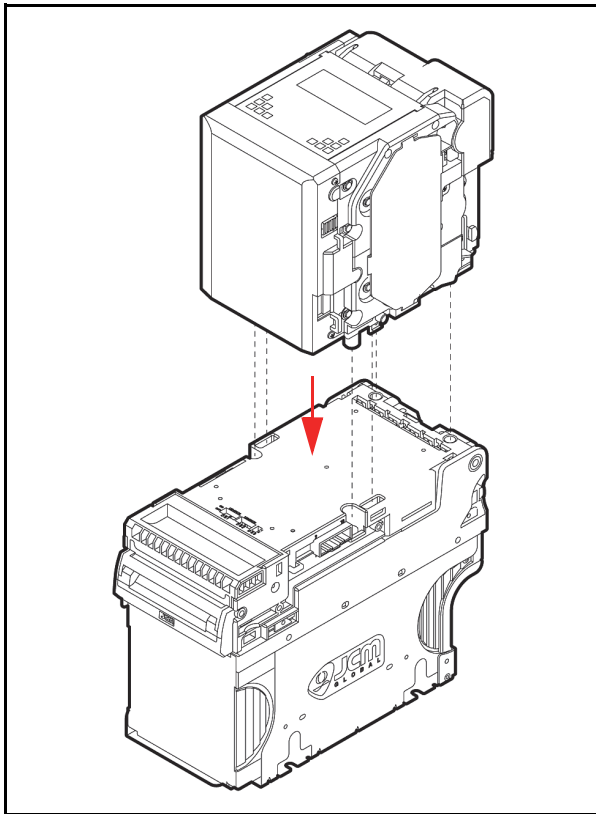
This section provides installation and operating instructions for the VEGA-RC Twin™ Banknote Recycler unit. The information within this section contains the following features:

- Installation Procedure
- Connector Pin Assignments
- Preventive Maintenance
- Interface Schematic
- Operational Flowchart

#### Installation Procedure

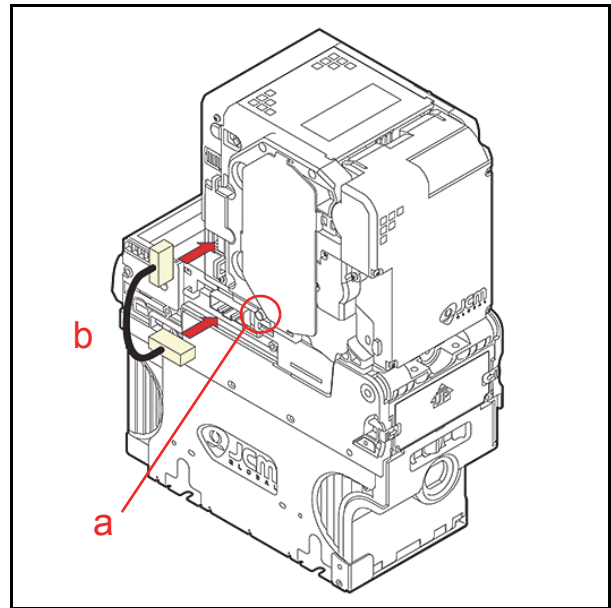
Perform the following steps to install an optional VEGA-RC Twin™ Unit on a VEGA™ Unit body:

1. Place the VEGA-RC Twin™ into position on top of the VEGA™ Unit as shown in Figure 6. The four (4) circular guide posts on the bottom of the VEGA-RC Twin™ Unit should fit directly into the four (4) circular guide hole receptacles located on the VEGA™ Unit.



**Figure 6** VEGA-RC Twin Positioning

2. Gently press the unit down into the mating hole receptacles; listen for a click when the two (2) Latches (See Figure 7 a) lock into place between the VEGA-RC Twin™ and the VEGA™ Unit body.
3. Install the VEGA-RC Twin™ Harness Cable Connector into its VEGA™ Unit mating receptacle to interconnect the units (See Figure 7 b).



**Figure 7** Latch Button and Harness Location

#### Primary LED Indications

The LED Color Pattern indications listed in Table 6 occur during various VEGA-RC Twin™ Unit operating and error conditions.

**Table 6** LED Pattern Color Indications


Description	Sequence	Condition
Power Supply	● ●	RAM Error (interval: 0.3sec)
	● ●	Normal Boot
Download	● ●	Download Mode (When short the Jumper Switch #2)
Downloading	● ●	While downloading from the host (VEGA or PC) (interval: 0.5sec)
Download Complete	● ●	Software Reset
Restore Retrieve Dispense	● ●	Stand-by
Restoring Retrieving Dispensing	● ●	Normal Operation (interval: 0.5sec)
Initialize Indications	● ●	Initial Movement (interval: 0.5sec)
	● ●	Door open (interval: 0.5sec)
	● ●	Banknote jam occur (interval: 0.5sec)
Communication with VEGA Unit	● ●	Waiting for communication from a VEGA Unit (interval: 0.5sec)
Door Open	● ●	While in Normal Operation (interval: 0.5sec)
Error	● ●	Error occurs (Machine Lock)

## 4 CONNECTOR PIN ASSIGNMENTS

Table 7 and Table 8 list the VEGA-RC Twin™ Unit's pin assignments, respectively.

Table 7 lists the VEGA-RC Twin™ to VEGA™ Unit Receptacle connector pin assignments.

**Table 7** VEGA-RC Twin Recycler to Acceptor Receptacle Pin Assignments\*

 <p>Post with Base (Side Type): S14B-PHDSS-B (JST)  Housing: PHDR-14VS  Contact: SPHD-002T-P0.5 / AWG#24-28  Recommended Wire: Slit Wire  Signal Line: UL1061 AWG#28 / Power Supply Line: UL1061 AWG#24</p>			
Pin No.	Signal Name	I/O†	Function
1	S GND	-	Signal GND
2	S GND	-	Signal GND
3	VEGA - TXD (DL-TTL)	OUT	Serial data signal output line from Recycler to Acceptor (both DL-TDX signals used)
4	VEGA - RXD (DL-TTL)	IN	Serial data signal input line from Recycler to Acceptor (both DL-TDX signals used)
5	VEGA - ENC	IN	Serial data signal input line from Acceptor to Recycler
6	VEGA - PSI2	IN	Serial data signal input line from Acceptor to Recycler
7	VEGA - FRP	IN	Serial data signal input line from Acceptor to Recycler
8	VEGA - PSI1	IN	Serial data signal input line from Acceptor to Recycler
9	VDD	-	12V DC (24-36V DC)‡
10	VDD	-	12V DC (24-36V DC)‡
11	VDD	-	12V DC (24-36V DC)‡
12	P GND	-	Power GND
13	P GND	-	Power GND
14	P GND	-	Power GND

\*. Hot-swapping is prohibited (DO NOT plug the interconnect cable in or out of the unit while VEGA Unit's power is ON!).

†. I/O (input/output) is the terminal as viewed from the Banknote Recycler's backside.


‡. Voltages in brackets are optional specifications.



## Connector Pin Assignments (Continued 1)

Table 8 lists the VEGA-RC Twin™ to Indication Board pin assignments.

**Table 8** VEGA-RC Twin Recycler to Indication Board Receptacle Pin Assignments\*

 <p>Post with Base (Side Type): S4B-PH-K-S (JST) Housing: PHR-4 Contact: SPH-002T-P0.5S / AWG#24-30 Recommended Wire: Slit Wire AWG#26</p>			
Pin No.	Signal Name	I/O†	Function
1	VCC	-	3.3V DC
2	S GND	-	Signal GND
3	SUB - RXD	IN	Serial data signal input line from Indication Board to Recycler
4	SUB - TXD	OUT	Serial data signal output line from Recycler to Indication Board

\*. Hot-swapping is prohibited (DO NOT plug the interconnect cable in or out of the unit while VEGA Unit's power is ON!).

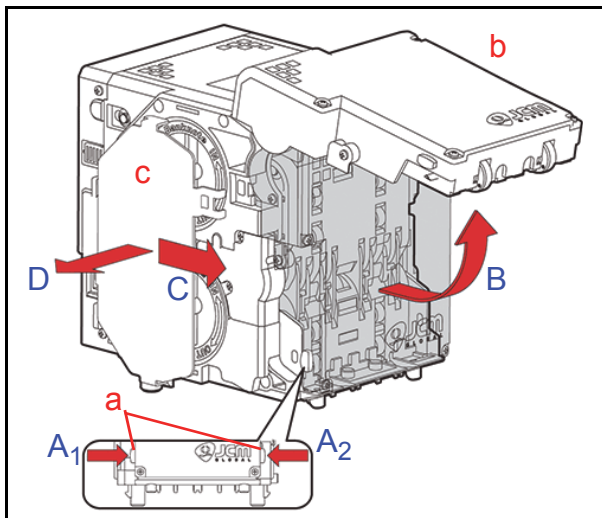
†. I/O (input/output) is the terminal as viewed from the Banknote Recycler's backside.

## 5 PREVENTIVE MAINTENANCE

### Clearing a Banknote Jam

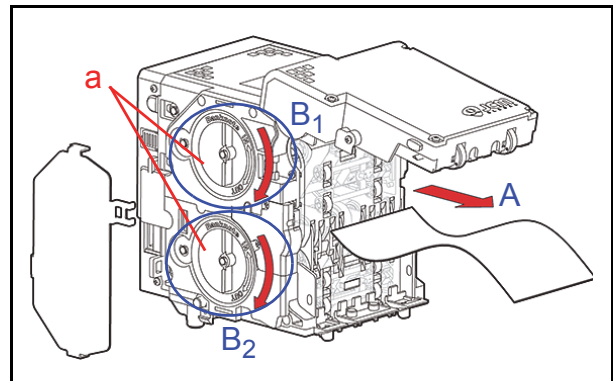
To retrieve a jammed Banknote located inside the Banknote Recycler, proceed as follows:

1. Press the Rear Course Open/Close Buttons (See Figure 8 **a**) on the Rear Cover (See Figure 8 **b**) inward (See Figure 8 **A<sub>1</sub>** & **A<sub>2</sub>**).
2. Open the VEGA-RC Twin™ Rear Cover upward as indicated by red arrow **B** shown in Figure 8.
3. Slide the Gear Cover (See Figure 8 **c**) located on the left side of the VEGA-RC Twin™ Unit in direction indicated by red arrow **C** and
4. Take the Gear Cover off the unit in direction indicated by red arrow **D** shown in Figure 8.



**Figure 8** Clearing Banknote Jam

5. Remove the jammed Banknote from inside of the Banknotes winding part (See Figure 9 **A**).
6. If the Banknote jam location is not evident or inside the Rear Course, rotate the Recycler Drum Thumb Winding Gear Controls (See Figure 9 **a**) in the out direction indicated by red arrows in blue circles **B<sub>1</sub>** & **B<sub>2</sub>** shown in Figure 9.



**Figure 9** Clearing Banknote Jam



**WARNING: DO NOT** rotate the Recycler Drum Thumb Winding Gear Controls in the out direction without a Banknote jam in the unit! The Transport Belt could wind in the wrong direction, resulting in poor performance.

## Cleaning Procedure

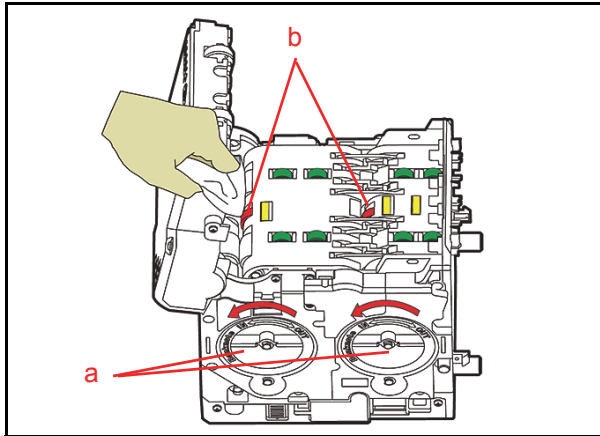
To clean the VEGA-RC Twin™ Recycler section, gently rub the sensors and rollers using **ONLY** a dry, soft, lint-free cloth.

Do not use any alcohol, solvents, citrus-based products, or scouring agents. These can cause damage to the validation section sensors and/or rollers.

### SENSOR AND ROLLER CLEANING PROCEDURE

To clean the VEGA-RC Twin™ Unit, proceed as follows:

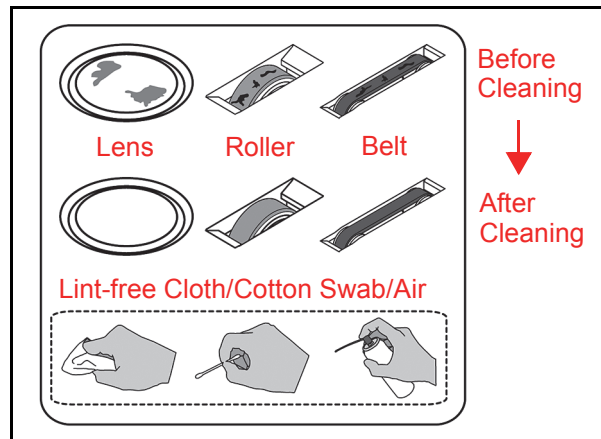
1. Turn the VEGA-RC Twin™ Unit's power supply **OFF**.
2. Open the VEGA-RC Twin™ Unit's Rear Cover.
3. Clean the appropriate path, lens and roller. Be sure to rotate the Drum Thumb Winding Gear Controls (See Figure 10 **a**) in the "IN" direction when cleaning the rubber rollers (See Figure 10 **b**) using the soft-lint free cloths.



**Figure 10** Roller Cleaning

**Caution:** DO NOT rotate the Drum Thumb Winding Gear Controls in the out direction when cleaning! The Transport Belt could wind in the wrong direction, causing poor performance.

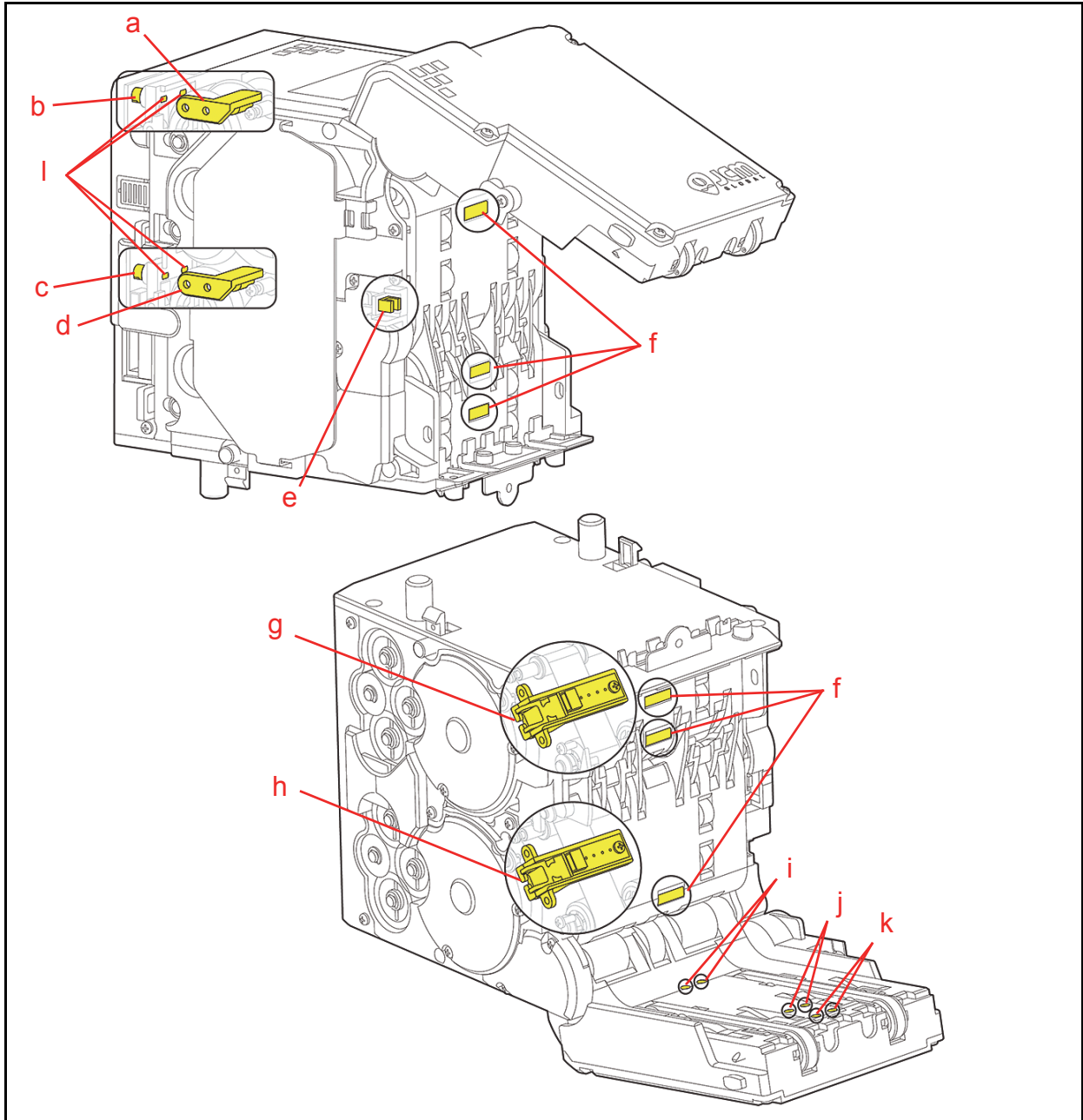
**Caution:** Do not use alcohol, thinner or citrus-based products for cleaning any Banknote Transport Sensors or surfaces. The lenses can become clouded by chemical evaporation residue, causing acceptance errors.



**Figure 11** Sensor Cleaning

## 6 SENSOR AND ROLLER LOCATIONS

Figure 12 illustrates the various VEGA-RC Twin™ Unit's sensor cleaning locations. Table 9 lists the VEGA-RC Twin™ sensor type cleaning methods.



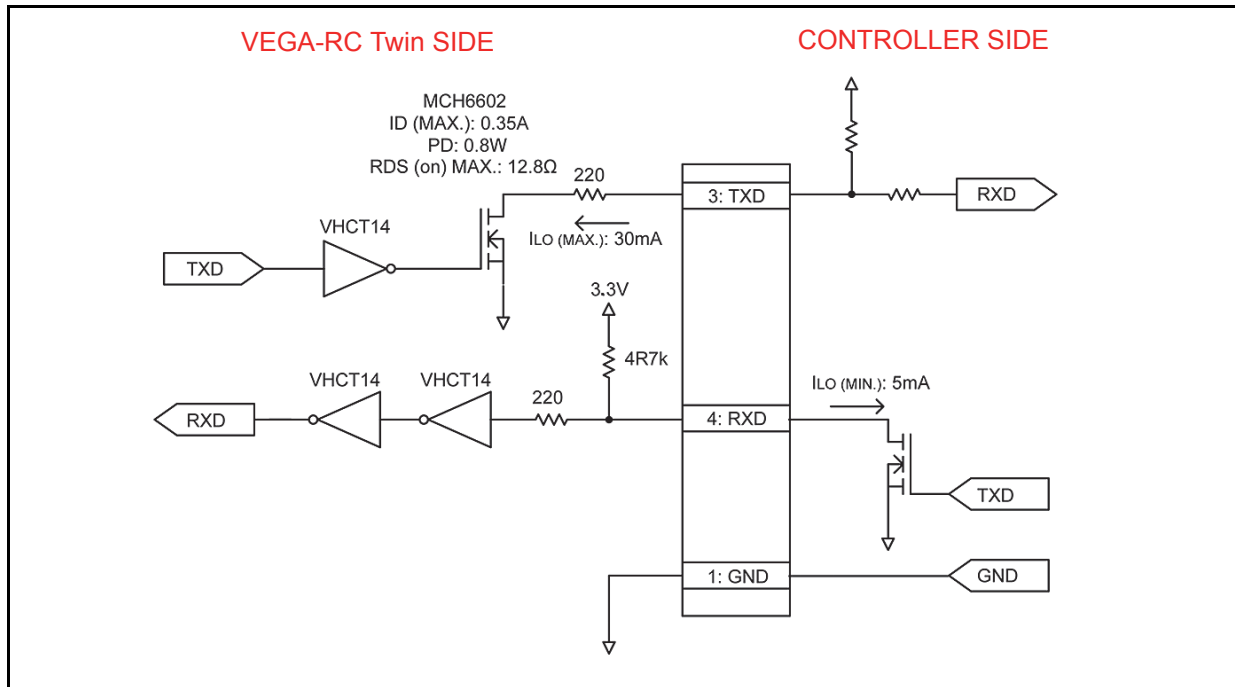
**Figure 12** VEGA-RC Twin Sensor Cleaning Locations

**Table 9** VEGA-RC Twin Sensor Type Cleaning Methods

Sym.	Sensor/Roller Type	Sym.	Sensor/Roller Type	Cleaning Method
a	Upper Bobbin End Sensor Prism	g	Lower Tape End Sensor	Wipe clean using a soft lint-free cloth or blow clean using compressed air.
b	Upper Bobbin End Sensor	h	Upper Tape End Sensor	
c	Lower Bobbin End Sensor	i	Positioning Sensor 3	
d	Lower Bobbin End Sensor Prism	j	Positioning Sensor 2	
e	Door Sensor	k	Positioning Sensor 1	
f	Positioning Sensor Prism	l	Lens	

## 7 STANDARD INTERFACE CIRCUIT SCHEMATICS

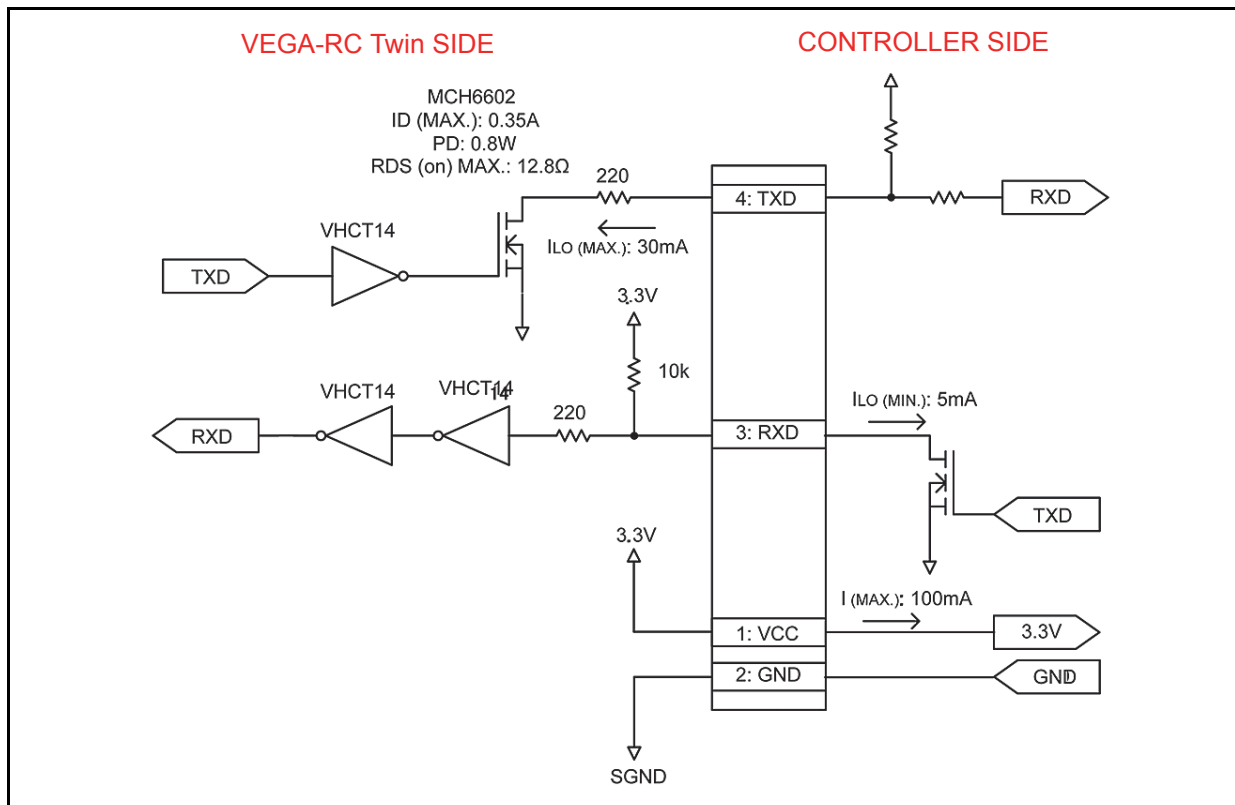
Figure 13 illustrates the VEGA-RC Twin™ TTL Interface Schematic Diagram (Recycler to Acceptor).



**Figure 13** VEGA-RC Twin TTL Interface Schematic Diagram (Recycler to Acceptor)

### STANDARD INTERFACE CIRCUIT SCHEMATICS

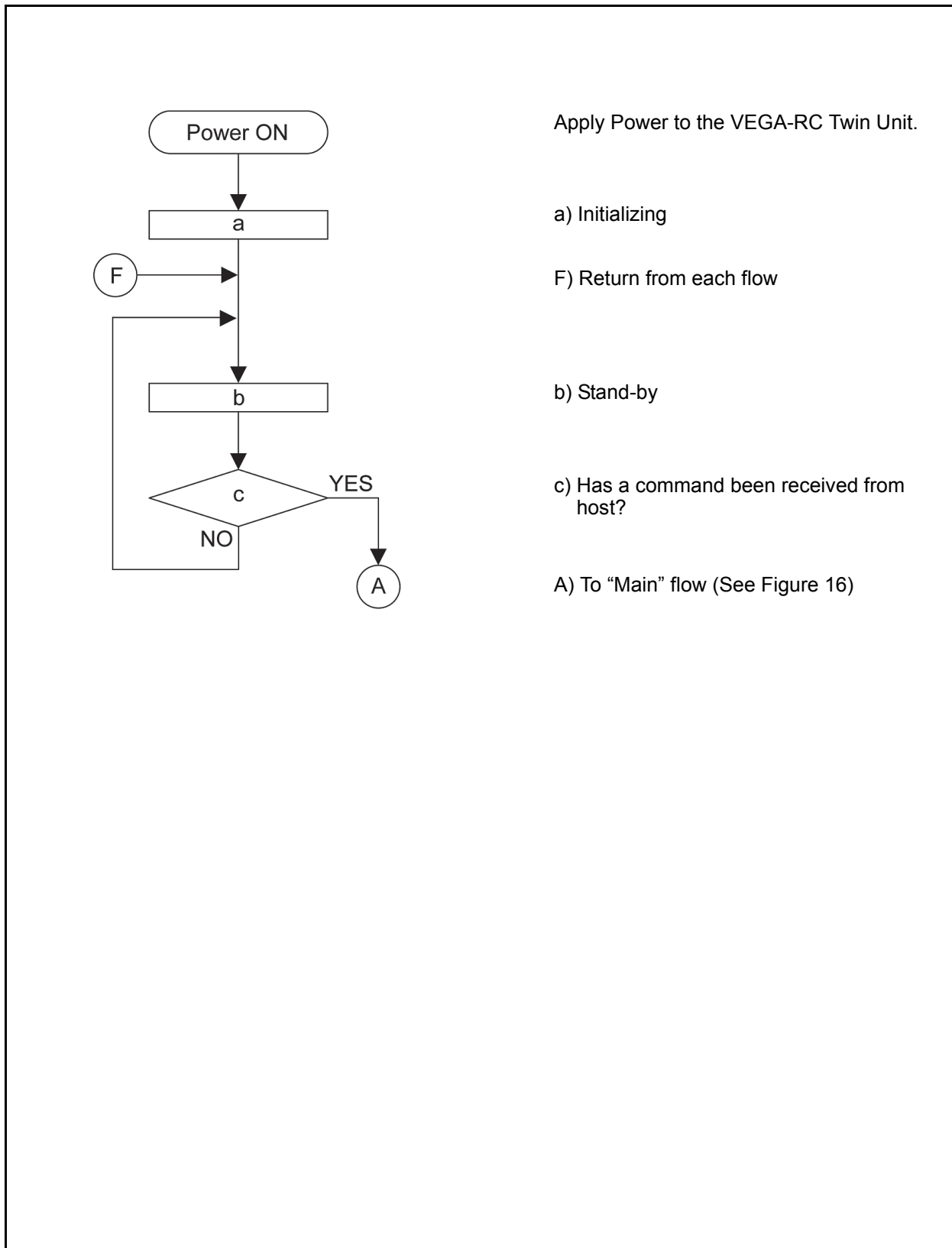
Figure 14 illustrates the VEGA-RC Twin™ TTL Interface Schematic Diagram (Recycler to Indication Board).



**Figure 14** VEGA-RC Twin TTL Interface Schematic Diagram (Recycler to Indication Board)

## 8 OPERATIONAL FLOWCHART

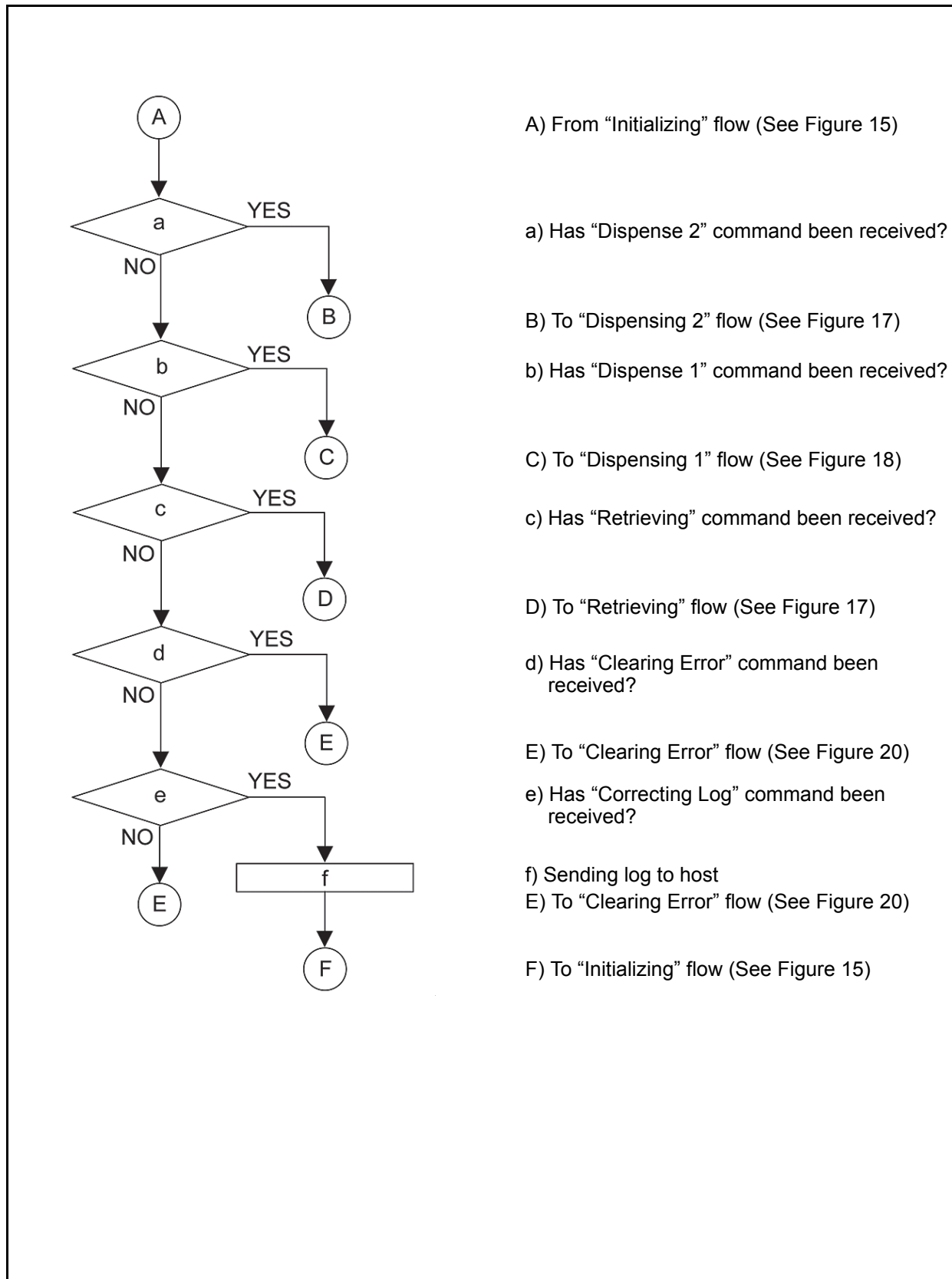
Figure 15 depicts part one of a typical VEGA-RC Twin™ “Initializing” Banknote recycling flow process.



**Figure 15** VEGA-RC Twin Operational Flowchart (Initializing)

## Operational Flowchart (Continued 1)

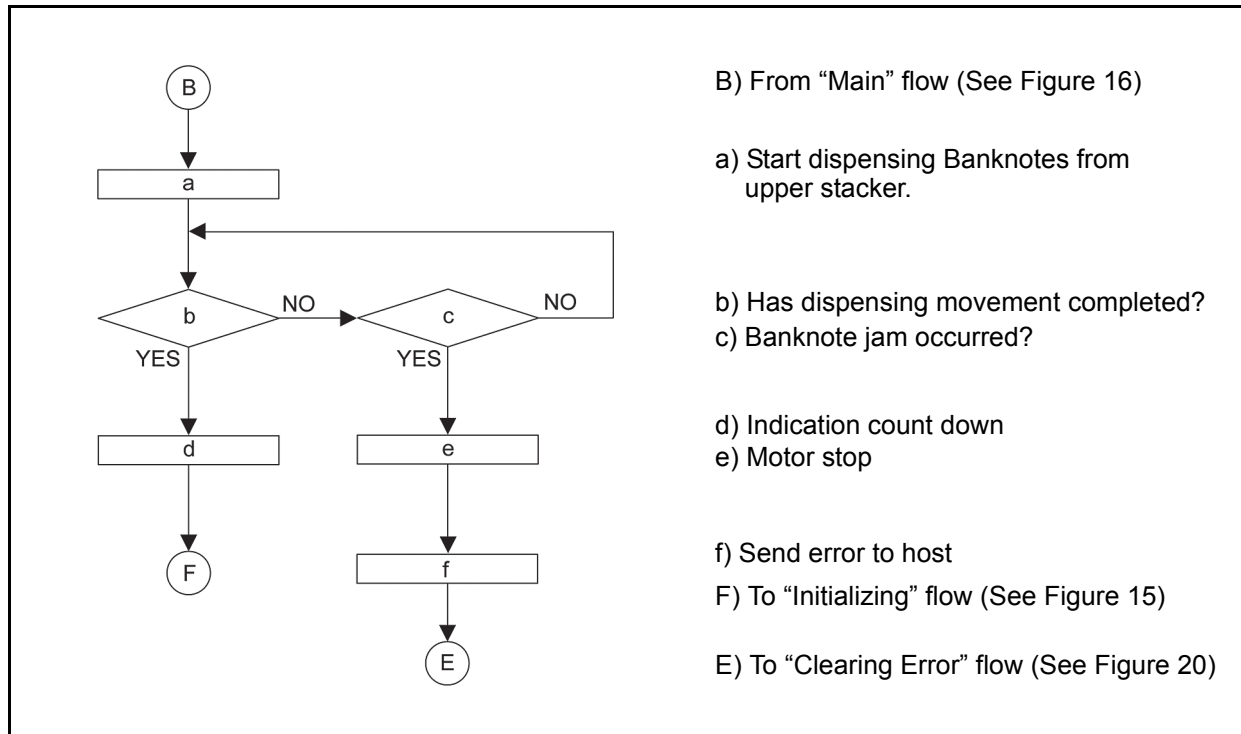
Figure 16 depicts part two of a typical VEGA-RC Twin™ Banknote recycling “Main” flow process.



**Figure 16** VEGA-RC Twin Operational Flowchart (Main)

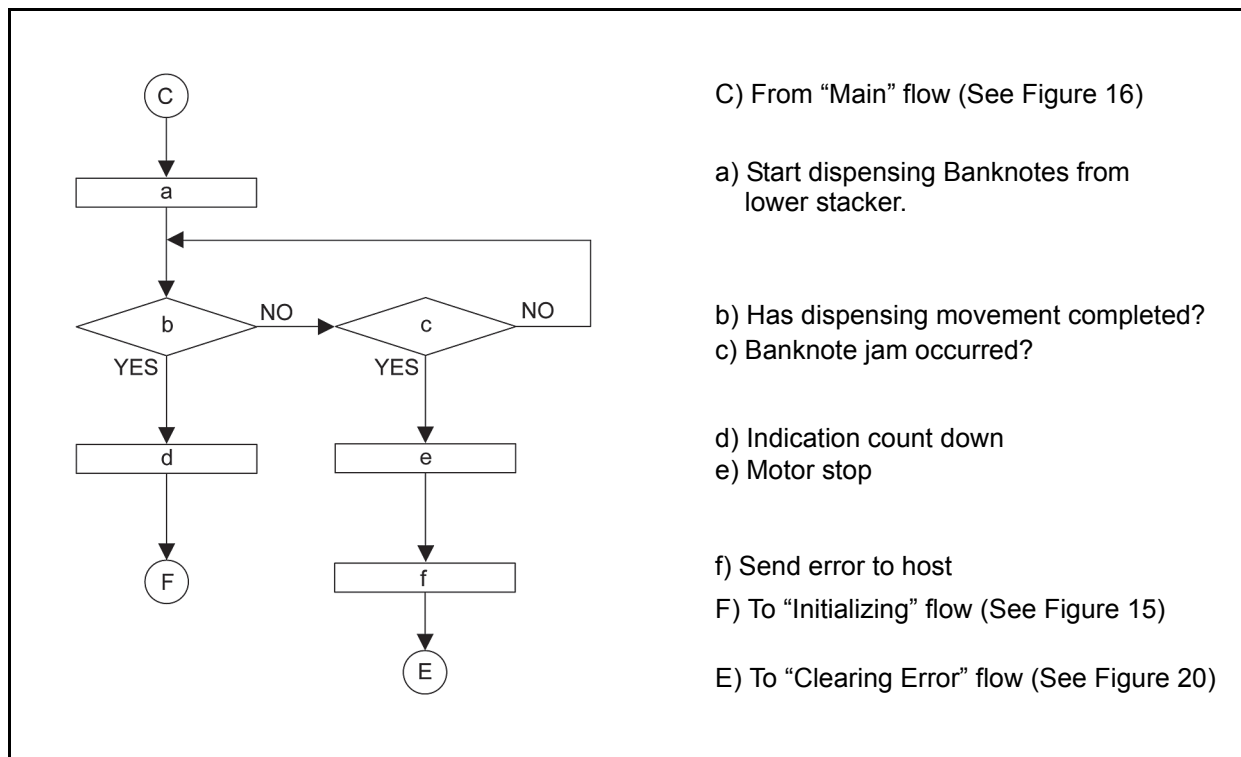
## Operational Flowchart (Continued 2)

Figure 17 depicts part three of a typical VEGA-RC Twin™ “Dispensing 2” Banknote recycling flow process.



**Figure 17** VEGA-RC Twin Operational Flowchart (Dispensing 2)

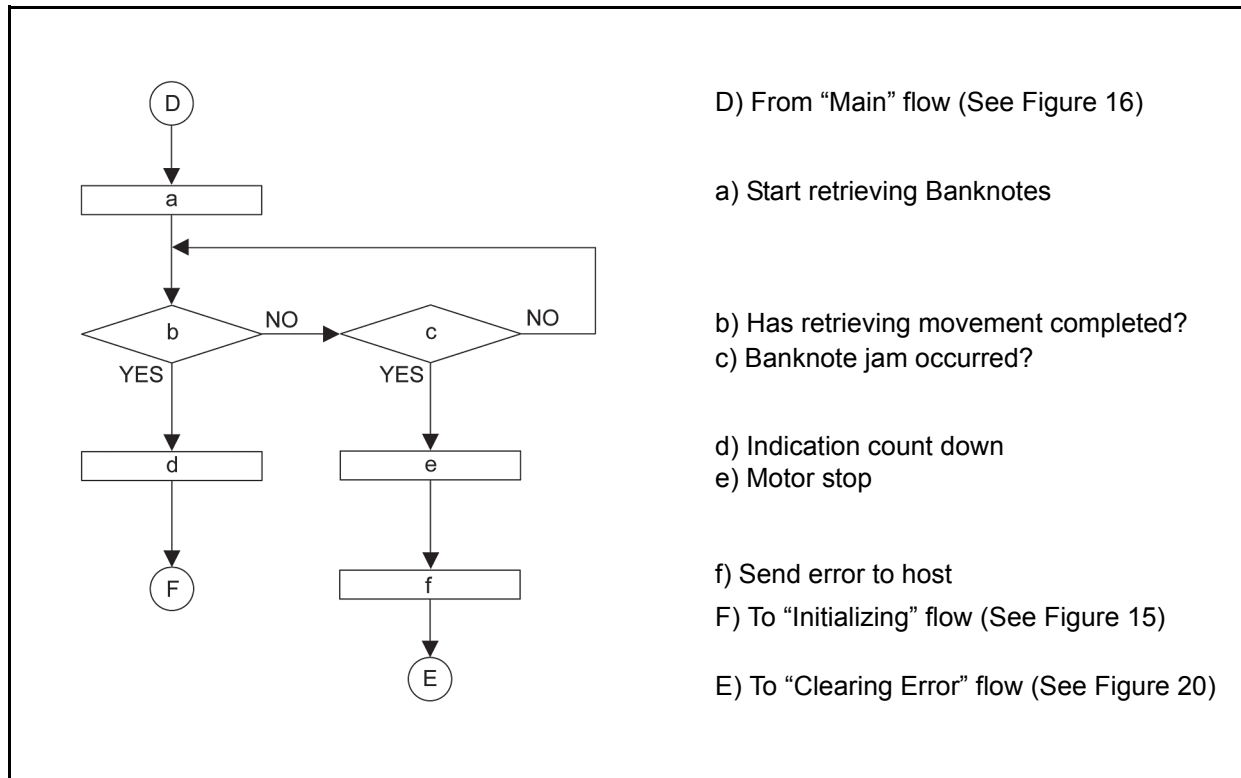
Figure 18 depicts part four of a typical VEGA-RC Twin™ “Dispensing 1” Banknote recycling flow process.



**Figure 18** VEGA-RC Twin Operational Flowchart (Dispensing 1)

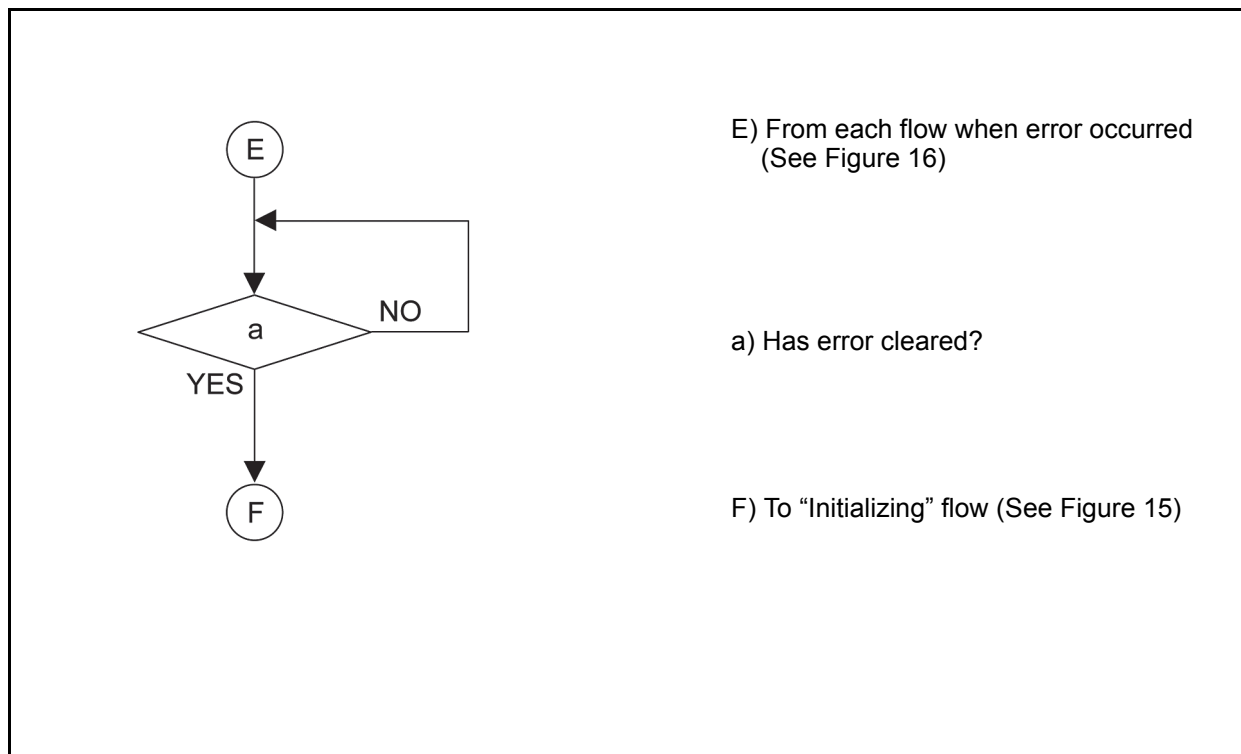
### Operational Flowchart (Continued 3)

Figure 19 depicts part five of a typical VEGA-RC Twin™ “Retrieving” Banknote recycling flow process.



**Figure 19** VEGA-RC Twin Operational Flowchart (Retrieving)

Figure 20 depicts part six of a typical VEGA-RC Twin™ “Clearing Error” Banknote recycling flow process.



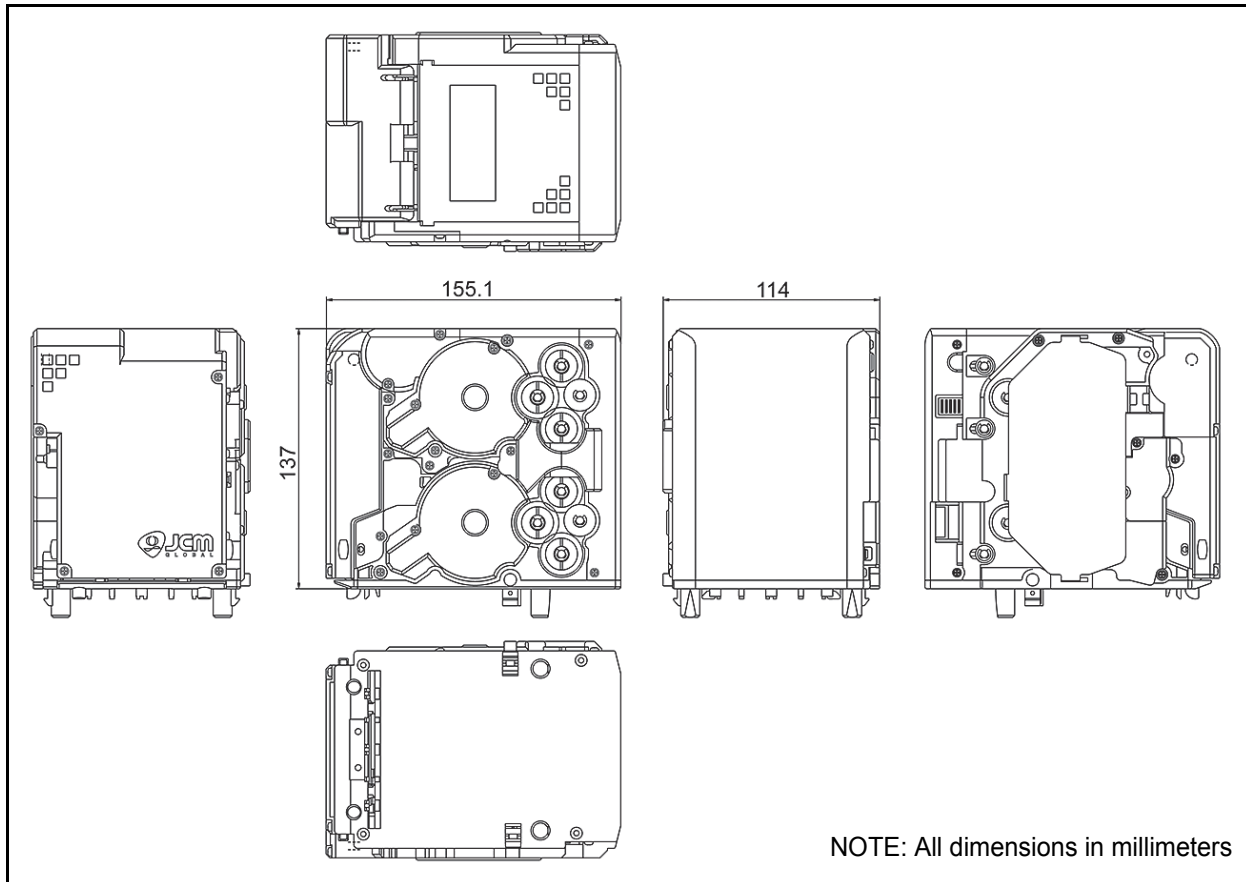
**Figure 20** VEGA-RC Twin Operational Flowchart (Clearing Error)



## 9 UNIT DIMENSIONS

### ENTIRE UNIT OUTSIDE DIMENSIONS

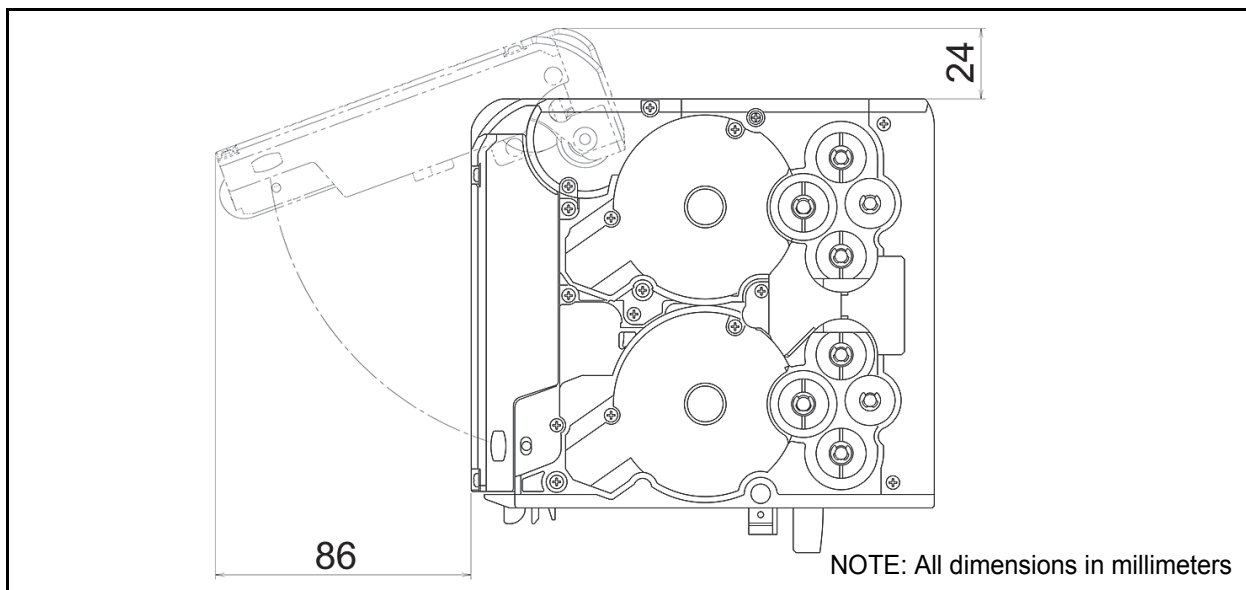
Figure 21 illustrates the VEGA-RC Twin™ Unit's outside dimensions.



**Figure 21** VEGA-RC Twin Banknote Recycler's Outside Dimensions

### VEGA-RC Twin Unit Clearance Dimensions

Figure 22 illustrates the VEGA-RC Twin™ Unit's open Recycler clearance dimensions.



**Figure 22** VEGA-RC Twin Banknote Recycler's Clearance Dimensions

## 10 TROUBLESHOOTING

This section provides troubleshooting instructions for the VEGA-RC Twin™ Banknote Recycler Units, including the following information:

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

### Introduction

Most Banknote Recycler 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 VEGA-RC Twin™ Banknote Recycler 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 Recycler when re-initializing power. This observation is important in locating any causes of failure and the possible fault location.

Perform all repairs by referring to Calibration and Testing in Section 6 of the VEGA-RC Twin™ Service Manual, and the Disassembly/Reassembly instructions in Section 4 of the VEGA-RC Twin™ Service Manual.

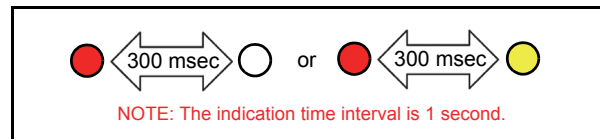
### Troubleshooting Overview

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

After determining the cause of the failure, execute the Performance Test, and then repair the unit replacing any appropriate parts deemed necessary.

### Fault Table Listings

Table 10 through Table 12 list the various possible fault conditions that can occur, and the necessary actions required to correct them. Refer to the LED error indication pattern shown in Figure 23 to read the Error Codes tables.



**Figure 23** LED Indication Pattern





### OPERATION ERROR CODES

The VEGA-RC Twin™ connected to the VEGA™ Unit shows an error LED indication or Error Code (when featuring the option board) anytime an error occurs like a Banknote jam inside the unit. Table 10 lists the possible Banknote jam Error Codes.

**Table 10** Operation Error Codes

Error Codes	LED Indication	Possible Fault Causes	Corrective Action Required
11	Red LED on x 1 Time	[Restore error] A Banknote remains in the VEGA-RC Twin™ internal drum when power is re-supplied.	Verify there is not a Banknote jam, or an in-path foreign object. Also, check that assemblies are properly connected and/or harnessed, and all unit sensors are clean. Recovery movement will start after removing the jam.
12	Red LED on x 2 Times	[Dispense error] A dispensable Banknote remains in the VEGA-RC Twin internal drum when power is re-supplied.	
13	Red LED on x 3 Times	[Retrieving error] A retrievable Banknote remains in the VEGA-RC Twin internal drum when power is re-supplied.	
14	Red LED on x 4 Times	Open the door while the VEGA-RC Twin™ is operating.	
15		[Performance inactive] Does not operate, but receiving commands from host (display does not appear, but returns a response to a host command.)	
20	Red LED and Yellow LED on x 1 Time	[Restore error - upper] Banknote jam occurs within the VEGA-RC Twin™ Unit.	
21	Red LED and Yellow LED on x 2 Times	[Restore error - upper] Banknote jam occurs at the VEGA™ insertion slot.	
23	Red LED and Yellow LED on x 3 Times	[Restore error - lower] Banknote jam occurs within the VEGA-RC Twin™ Unit.	
24	Red LED and Yellow LED on x 4 Times	[Restore error - lower] Banknote jam occurs at the VEGA™ insertion slot.	
30	Red LED and Yellow LED on x 5 Times	[Dispense/Retrieving error - upper] Banknote jam occurs within the VEGA-RC Twin™ Unit.	
31	Red LED and Yellow LED on x 6 Times	[Dispense/Retrieving error - upper] Banknote jam occurs at the VEGA™ insertion slot.	

**Table 10** Operation Error Codes (Continued)

Error Codes	LED Indication	Possible Fault Causes	Corrective Action Required
35	  x 7 Times	[Dispense/Retrieving error - lower] Banknote jam occurs within the VEGA-RC Twin™ Unit.	Verify there is not a Banknote jam, or an in-path foreign object. Also, check that assemblies are properly connected and/or harnessed, and all unit sensors are clean. Recovery movement will start after removing the jam.
36	  x 8 Times	[Dispense/Retrieving error - lower] Banknote jam occurs at the VEGA™ insertion slot.	



**NOTE:** Dispensing performance from the VEGA-RC Twin will have an abnormal termination anytime a Banknote remains on one of the sensors in the VEGA Unit. The Banknote being processed is counted as a dispense completed Banknote.







**NOTE:** When a command from the host machine is being received or an electrical power failure occurs before the dispensing process begins, the processing Banknote is counted as a dispense completed Banknote.

## WARNING CODES

When the following errors occur, they can be cleared automatically in five (5) seconds, but future performance is not guaranteed. For this reason, replacing the CPU Board is recommended.











**Table 11** Warning Codes

Error Codes	LED Indication	Possible Fault Causes	Corrective Action Required
98	  x 5 Times	Program rewriting time is over limit (more than 1,000 occurrences). [Warning issued for over limit program rewriting because that is limited to 1,000 times.]	When program rewriting time has occurred over 1,000 times, this error code will appear for five (5) seconds and every time thereafter.
99	  x 6 Times	EEPROM malfunction. Warning issued if an abnormal EEPROM reading occurs.	Change the CPU Board. [When this occurs, EEPROM data, such as the number of accepted Banknotes, errors, the total number of errors, the operation log, dispense times, and serial number will be lost.]

## MACHINE LOCK-UP ERROR CODES

When the following errors occur, the unit will stop operating.

**Table 12** Machine Lock Error Codes

Error Codes	LED Indication	Possible Fault Causes	Corrective Action Required
01	 Lit	The VEGA-RC Twin™ Upper Brushless Motor is not moving - VEGA-RC Twin™ Motor abnormality error.	Check that the assemblies are properly connected and/or harnessed, and all of the unit's sensors are clean.
02	 Lit	The VEGA-RC Twin™ Lower Brushless Motor is not moving - VEGA-RC Twin™ Motor abnormality error.	Check that the assemblies are properly connected and/or harnessed, and all of the unit's sensors are clean.
05	 Lit	Receive different denomination information (money class) during communication.	Check that the VEGA-RC Twin™ stacking denomination matches the VEGA™ limit's command denomination (confirm that both denomination settings agree).
06	 Lit	VEGA™ Unit Motor abnormal error. Motor encoder signal not received from VEGA™ Unit.	Check that the assemblies are properly connected and/or harnessed, and all of the unit's sensors are clean.
07	 Lit	Abnormal INHIBIT information.	The VEGA™ Unit's denomination setting for the VEGA-RC Twin™ is INHIBITED. Check that the VEGA™ Unit's denomination settings match the VEGA-RC Twin's denomination settings.
08	 Lit	Using a 24V DC Supply for a 12V DC specification.	Check that the working voltage is for the related Circuit Board.
09	 Lit	Using a 12V DC Supply for a 24V DC specification.	Check that the working voltage is for the related Circuit Board.
10	 Lit	EEPROM writing error - Failed to write data into EEPROM normally.	Change the CPU Board.
16	 Lit	The Brushless Motors for transport is not moving - VEGA-RC Twin™ Motor abnormality error.	Check that the assemblies are properly connected and/or harnessed, and all of the unit's sensors are clean.
17	 Lit	VEGA's Flapper is ON when the VEGA-RC Twin™ "initialization" process is over.	

## 11 INTERNATIONAL COMPLIANCE

- RoHS Directives  or  or  or  or 
- UL & c-UL Marks 
- CE Mark 
- CB Scheme

NOTE: The above listed compliance confirmations are currently being examined for approval or certification.

## 12 TECHNICAL CONTACT INFORMATION

To obtain further technical information regarding the VEGA-RC Twin™ 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, AFRICA, RUSSIA & MIDDLE EAST

#### JCM Europe GmbH

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

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

Muendelheimer Weg 60

D-40472 Duesseldorf 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: asiapactechsupport@jcmglobal.com

#### Japan Cash Machine Co, Limited (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

All of these Websites are available via:

<http://www.jcmglobal.com>

THIS PAGE INTENTIONALLY LEFT BLANK

# VEGA-RC Twin™ Series

## Integration Guide

### Index

#### 13 INDEX

##### B

##### Banknote Jam

clearing a... Page 13

##### Banknote Recycler

general information describing a... Page 1

##### C

##### Cautions

special boxed areas providing important safety information... Page 2; Page 3; Page 13

##### Cleaning

methods of, and equipment required for... Page 13

##### D

##### Dimensions

entire unit clearance

illustrated drawing for... Page 21

##### E

##### Error Codes

table listings of... Page 22

##### F

##### Flowchart

Operational

symbol language describing flow functions... Page 17

##### I

##### Installation

steps required for... Page 7

##### M

##### Model Descriptions

Product Number Specifications of... Page 2

##### N

##### Navigation

within manual

procedure for... Page 1

##### P

##### Pin Assignments

Table Listing of... Page 12

##### Precautionary Symbols

types of... Page 2

##### Primary Features

VEGA-RC Twin

VEGA-RC Twin Product Series of... Page 3

##### S

##### Safety

pictographs indicating

1 to 3 symbols inside boxed area... Page 1

##### Special Notes

italic text highlights

finger points to... Page 1

##### Steps

sequential numbering of... Page 1

##### T

##### Technical Contact Information

location listing of... Page 25

##### Troubleshooting

Instructions for... Page 22

##### Type Descriptions

Product Type Specifications of... Page 2

##### V

##### VEGA-RC Twin

photo of a... Page 1

##### W

##### Warning

liquid damage... Page 3



**JCM**<sup>®</sup>  
G L O B A L



Issue #4094-IGE-01-00